

# USER MANUAL

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<b>1. Introduction</b>	<b>17</b>
1.1 Contents .....	18
<b>2. Machine Details</b>	<b>19</b>
2.1 CAN Layout .....	20
2.2 Harness Layout .....	22
2.3 Electrical Connection .....	23
2.4 Auto Start Stop for Hybrid .....	24
2.5 Battery Lead Layout .....	25
2.6 Earth Point Locations .....	25
2.6.1 Earth Point Platform .....	25
2.6.2 Earth Point Turn Table .....	27
2.7 Fuse and Relays .....	31
2.7.1 PF01 - Electric Pump .....	31
2.7.2 PF02 - Control System Primary .....	32
2.7.3 PF03 - Engine Glow Plug (Hybrid) .....	33
<b>3. System Level Function</b>	<b>35</b>
3.1 Ignition .....	36
3.2 Horn .....	37
3.3 Electric Pump .....	38
3.4 Emergency Stop .....	39
3.5 Crush Protection System .....	40
3.6 Steering .....	42
3.7 Slew .....	42
3.8 Limit Switch Position .....	43
3.9 Platform Rotate .....	44
3.10 Overload .....	45
3.11 Main Boom .....	46
3.12 Leveling .....	47
3.13 Jib .....	48
3.14 Tilt .....	49
3.15 Telescope .....	50
3.16 Articulate .....	51
3.17 Oscillating Axle .....	51
3.18 Override .....	52

<b>3.19</b>	<b>Drive</b> .....	<b>53</b>
<b>3.20</b>	<b>Display Functions</b> .....	<b>53</b>
3.20.1	Setting Time .....	53
3.20.2	Setting Date .....	55
3.20.3	Setting Units .....	56
3.20.4	Setting Brightness .....	56
3.20.5	Speed Configuration .....	57
3.20.6	Setting Travel Alarm .....	60
3.20.7	Setting Language .....	61
3.20.8	Setting Load Cell Calibration .....	63
<b>4.</b>	<b>Components</b> .....	<b>65</b>
4.1	Main Boom Lower Limit switch .....	66
4.2	Main Boom Telescope retract Limit switch .....	68
4.3	Articulated Boom Lower Limit Switch .....	72
4.4	Slew Position Limit Switch .....	75
4.5	Work Light (Optional Fit) .....	77
4.6	White Noise Alarm .....	80
4.7	Beacon .....	82
4.8	Isolator .....	84
4.9	Horn .....	86
4.10	Steering Sensor .....	89
4.11	Axle Lock Pressure Sensor .....	92
4.12	Platform and Jib Valve Block .....	94
4.13	Weight Sensor .....	98
4.14	Tilt Sensor .....	101
4.15	Slew Limit Switch .....	103
4.16	Main Valve Block .....	105
4.17	Electric Pump .....	112
4.18	AC Connector .....	114
4.19	Diagnostic Connector .....	117
4.20	Customer Telematics .....	120
4.21	LiveLink ECU .....	122
4.22	Base Bosch ECU .....	125
4.23	Battery Charger .....	131
4.24	AC Generator .....	135

<b>4.25</b>	<b>Platform &amp; Control Panel .....</b>	<b>137</b>
4.25.1	Foot Pedal Switch .....	137
4.25.2	Crush Protection .....	139
4.25.3	Platform Control Panel .....	141
4.25.4	Platform ECU .....	145
4.25.5	Platform Buzzer .....	151
4.25.6	Drive and Steer Joystick .....	154
4.25.7	Slew & Main Boom Up/Down Joystick .....	157
4.25.8	Main Boom Telescope Extend/Retract Switch(PCP) .....	160
4.25.9	Articulated Raise/Lower Switch(PCP) .....	162
4.25.10	Jib Up/Down Switch(PCP) .....	164
4.25.11	Platform Rotate Left/Right Switch(PCP) .....	167
4.25.12	Platform Leveling Up/Down Switch(PCP) .....	170
4.25.13	Potentiometer .....	173
4.25.14	Slew Acknowledgement Switch with LED .....	175
4.25.15	Horn Switch(PCP) .....	178
4.25.16	Emergency Stop Switch(PCP) .....	181
4.25.17	Electric Pump Switch (AUX) .....	183
4.25.18	Worklight Switch .....	186
4.25.19	Fault LED .....	189
4.25.20	PCP Interface Connectors .....	191
4.25.21	Jumper Bars .....	194
4.25.22	Din Rail Terminals - Small .....	197
4.25.23	USB Connection .....	204
<b>4.26</b>	<b>Base Control Panel .....</b>	<b>206</b>
4.26.1	Ignition Relay .....	206
4.26.2	Horn Relay .....	208
4.26.3	D+ Relay .....	210
4.26.4	Fusing Turntable Control Panel .....	212
4.26.5	Large Jumper Bar .....	217
4.26.6	Ignition Switch .....	219
4.26.7	Emergency STOP Switch(TCP) .....	221
4.26.8	Slew Switch(TCP) .....	224
4.26.9	Horn Switch(TCP) .....	226
4.26.10	Large Din Rail Terminal .....	228
4.26.11	Engine Start Switch(TCP) .....	231
4.26.12	Base/Platform Enable Switch .....	234
4.26.13	Main Boom Raise/Lower Switch(TCP) .....	236
4.26.14	Articulated Boom Raise/Lower switch(TCP) .....	238
4.26.15	Jib Raise/Lower Switch(TCP) .....	240
4.26.16	Main Boom Telescope Extend/Retract Switch(TCP) .....	242

4.26.17	Platform Rotate Left/Right Switch(TCP) .....	244
4.26.18	Platform Leveling Raise/Lower Switch(TCP) .....	246
4.26.19	Oscillating Axle Solenoid .....	248
4.26.20	Over Ride Switch .....	250
4.26.21	Buzzer Relay(TCP) .....	252
4.26.22	Display 7" .....	255
4.26.23	TCP Interface Connector .....	257

## **5. HV Component 263**

<b>5.1</b>	<b>48V Contactor .....</b>	<b>264</b>
<b>5.2</b>	<b>Battery 12V .....</b>	<b>267</b>
<b>5.3</b>	<b>Battery 48V .....</b>	<b>269</b>
<b>5.4</b>	<b>Voltage Convertor 12V to 5V .....</b>	<b>272</b>
<b>5.5</b>	<b>High Voltage Fuse .....</b>	<b>273</b>
<b>5.6</b>	<b>DC Convertor .....</b>	<b>275</b>
<b>5.7</b>	<b>Hydraulic Pump Motor .....</b>	<b>277</b>
<b>5.8</b>	<b>Traction Motor Rear Drive .....</b>	<b>281</b>
<b>5.9</b>	<b>Traction Motor Front Drive .....</b>	<b>283</b>
<b>5.10</b>	<b>Pump Invertor .....</b>	<b>286</b>
<b>5.11</b>	<b>Front Traction Invertor .....</b>	<b>288</b>
<b>5.12</b>	<b>Rear Traction Invertor .....</b>	<b>291</b>

## **6. Machine Fault Codes 295**

<b>6.1</b>	<b>DTC ERROR CODE .....</b>	<b>296</b>
6.1.1	B1001-17 .....	296
6.1.2	B1005-24 .....	297
6.1.3	B1006-16 .....	298
6.1.4	B1007-16 .....	299
6.1.5	B1008-16 .....	300
6.1.6	B1009-16 .....	302
6.1.7	B1010-13 .....	303
6.1.8	B1011-17 .....	304
6.1.9	B1012-17 .....	305
6.1.10	B1013-16 .....	307
6.1.11	B1014-13 .....	308
6.1.12	B1015-16 .....	309
6.1.13	B1016-92 .....	310
6.1.14	B1017-17 .....	312
6.1.15	B1018-16 .....	313

6.1.16	B1019-17 .....	314
6.1.17	B1020-17 .....	315
6.1.18	B1021-16 .....	317
6.1.19	B1022-13 .....	318
6.1.20	B1023-16 .....	320
6.1.21	B1024-92 .....	321
6.1.22	B1025-13 .....	322
6.1.23	B1026-17 .....	323
6.1.24	B1027-16 .....	324
6.1.25	B1028-16 .....	325
6.1.26	B1029-17 .....	326
6.1.27	B1036-17 .....	327
6.1.28	B1037-16 .....	328
6.1.29	B1038-13 .....	329
6.1.30	B1039-17 .....	330
6.1.31	B1040-16 .....	331
6.1.32	B1041-17 .....	332
6.1.33	B1042-16 .....	333
6.1.34	B1043-17 .....	334
6.1.35	B1044-16 .....	335
6.1.36	B1045-13 .....	335
6.1.37	B1048-17 .....	336
6.1.38	B1049-16 .....	337
6.1.39	B1050-17 .....	338
6.1.40	B1051-16 .....	339
6.1.41	B1052-24 .....	340
6.1.42	B1053-17 .....	341
6.1.43	B1054-16 .....	342
6.1.44	B1055-17 .....	343
6.1.45	B1056-16 .....	344
6.1.46	B1058-17 .....	345
6.1.47	B1059-16 .....	345
6.1.48	B1060-13 .....	346
6.1.49	B1061-17 .....	347
6.1.50	B1062-16 .....	348
6.1.51	B1063-92 .....	349
6.1.52	B1064-17 .....	349
6.1.53	B1065-16 .....	351
6.1.54	B1066-24 .....	352
6.1.55	B1067-17 .....	353
6.1.56	B1069-17 .....	354

6.1.57	B1070-16 .....	355
6.1.58	B1071-17 .....	356
6.1.59	B1072-17 .....	358
6.1.60	B1073-92 .....	359
6.1.61	B1074-16 .....	360
6.1.62	B1075-16 .....	361
6.1.63	B1076-17 .....	363
6.1.64	B1077-16 .....	364
6.1.65	B1078-13 .....	366
6.1.66	B1079-17 .....	367
6.1.67	B1080-17 .....	368
6.1.68	B1081-16 .....	370
6.1.69	B1082-13 .....	371
6.1.70	B1083-17 .....	373
6.1.71	B1084-17 .....	374
6.1.72	B1086-13 .....	376
6.1.73	B1087-17 .....	377
6.1.74	B1088-17 .....	378
6.1.75	B1089-16 .....	380
6.1.76	B1090-13 .....	381
6.1.77	B1091-17 .....	382
6.1.78	B1092-17 .....	384
6.1.79	B1093-16 .....	385
6.1.80	B1094-13 .....	387
6.1.81	B1095-92 .....	388
6.1.82	B1096-17 .....	389
6.1.83	B1097-17 .....	390
6.1.84	B1098-92 .....	392
6.1.85	B1099-16 .....	393
6.1.86	B1100-16 .....	394
6.1.87	B1101-17 .....	395
6.1.88	B1102-17 .....	396
6.1.89	B1103-92 .....	398
6.1.90	B1104-16 .....	399
6.1.91	B1105-16 .....	400
6.1.92	B1106-17 .....	401
6.1.93	B1107-17 .....	403
6.1.94	B1108-92 .....	404
6.1.95	B1109-16 .....	405
6.1.96	B1110-16 .....	406
6.1.97	B1111-17 .....	408

6.1.98	B1112-17 .....	409
6.1.99	B1113-92 .....	410
6.1.100	B1114-16 .....	411
6.1.101	B1115-16 .....	412
6.1.102	B1116-17 .....	414
6.1.103	B1117-17 .....	415
6.1.104	B1118-92 .....	416
6.1.105	B1119-16 .....	418
6.1.106	B1120-16 .....	419
6.1.107	B1121-17 .....	420
6.1.108	B1122-17 .....	422
6.1.109	B1123-92 .....	423
6.1.110	B1124-16 .....	424
6.1.111	B1125-16 .....	425
6.1.112	B1126-17 .....	427
6.1.113	B1127-17 .....	428
6.1.114	B1128-16 .....	429
6.1.115	B1129-13 .....	430
6.1.116	B1130-16 .....	431
6.1.117	B1131-2F .....	432
6.1.118	B1133-17 .....	433
6.1.119	B1134-16 .....	434
6.1.120	B1135-13 .....	436
6.1.121	B1136-16 .....	437
6.1.122	B1138-17 .....	438
6.1.123	B1139-17 .....	439
6.1.124	B1140-16 .....	440
6.1.125	B1141-13 .....	441
6.1.126	B1142-16 .....	442
6.1.127	B1143-92 .....	443
6.1.128	B1144-17 .....	445
6.1.129	B1145-16 .....	446
6.1.130	B1146-17 .....	447
6.1.131	B1147-16 .....	448
6.1.132	B1148-17 .....	449
6.1.133	B1149-16 .....	450
6.1.134	B1150-17 .....	451
6.1.135	B1151-16 .....	452
6.1.136	B1167-13 .....	454
6.1.137	B1168-16 .....	455
6.1.138	B1169-13 .....	456

6.1.139	B1170-16 .....	457
6.1.140	B1171-13 .....	459
6.1.141	B1172-16 .....	460
6.1.142	B1173-13 .....	461
6.1.143	B1174-16 .....	462
6.1.144	B1175-13 .....	464
6.1.145	B1176-16 .....	465
6.1.146	B1177-16 .....	466
6.1.147	B1178-13 .....	467
6.1.148	B1179-13 .....	469
6.1.149	B1180-16 .....	470
6.1.150	B1181-16 .....	471
6.1.151	B1182-13 .....	472
6.1.152	B1183-16 .....	473
6.1.153	B1184-13 .....	474
6.1.154	B1190-16 .....	475
6.1.155	B1191-17 .....	476
6.1.156	B1198-16 .....	477
6.1.157	B1199-17 .....	478
6.1.158	B1206-17 .....	479
6.1.159	B1207-16 .....	480
6.1.160	B1208-24 .....	481
6.1.161	B1215-17 .....	483
6.1.162	B1216-16 .....	483
6.1.163	B1217-24 .....	484
6.1.164	B1221-17 .....	485
6.1.165	B1222-16 .....	487
6.1.166	B1223-17 .....	488
6.1.167	B1224-16 .....	489
6.1.168	B1225-2F .....	491
6.1.169	B1227-17 .....	492
6.1.170	B1228-16 .....	493
6.1.171	B1232-17 .....	495
6.1.172	B1233-16 .....	495
6.1.173	B1235-17 .....	496
6.1.174	B1236-2F .....	498
6.1.175	B1238-2F .....	499
6.1.176	B1239-17 .....	500
6.1.177	B1240-16 .....	501
6.1.178	B1241-24 .....	502
6.1.179	B1242-17 .....	503

6.1.180	B1243-17 .....	504
6.1.181	B1244-92 .....	505
6.1.182	B1245-16 .....	506
6.1.183	B1246-16 .....	507
6.1.184	B1247-17 .....	508
6.1.185	B1248-17 .....	509
6.1.186	B1249-92 .....	510
6.1.187	B1250-16 .....	511
6.1.188	B1251-16 .....	512
6.1.189	B1252-17 .....	513
6.1.190	B1253-17 .....	514
6.1.191	B1254-92 .....	515
6.1.192	B1255-16 .....	516
6.1.193	B1256-16 .....	517
6.1.194	B1257-17 .....	518
6.1.195	B1258-17 .....	519
6.1.196	B1259-92 .....	520
6.1.197	B1260-16 .....	521
6.1.198	B1261-16 .....	522
6.1.199	B1262-17 .....	523
6.1.200	B1263-17 .....	524
6.1.201	B1264-92 .....	525
6.1.202	B1265-16 .....	526
6.1.203	B1266-16 .....	527
6.1.204	B1267-17 .....	528
6.1.205	B1268-16 .....	529
6.1.206	B1269-16 .....	530
6.1.207	B1270-17 .....	531
6.1.208	B1272-2F .....	532
6.1.209	B1273-17 .....	534
6.1.210	B1274-16 .....	534
6.1.211	B1275-24 .....	535
6.1.212	B1276-24 .....	536
6.1.213	B1277-24 .....	537
6.1.214	B1281-16 .....	538
6.1.215	B1283-16 .....	540
6.1.216	B1284-16 .....	541
6.1.217	B1285-16 .....	542
6.1.218	B1287-2F .....	543
6.1.219	B1288-2F .....	544
6.1.220	B1301-2F .....	545

6.1.221	B1302-2F .....	547
6.1.222	B1303-2F .....	548
6.1.223	B1304-24 .....	549
6.1.224	B1305-24 .....	549
6.1.225	B1306-24 .....	550
6.1.226	B1307-24 .....	551
6.1.227	B1308-24 .....	552
6.1.228	B1309-24 .....	553
6.1.229	B1310-24 .....	554
6.1.230	B1311-24 .....	555
6.1.231	B1312-24 .....	555
6.1.232	B1313-24 .....	556
6.1.233	B1314-24 .....	557
6.1.234	B1315-24 .....	558
6.1.235	B1316-24 .....	559
6.1.236	B1317-24 .....	560
6.1.237	B1318-24 .....	561
6.1.238	B1319-24 .....	562
6.1.239	B1320-24 .....	564
6.1.240	B1321-24 .....	565
6.1.241	B1329-13 .....	566
6.1.242	B1330-16 .....	567
6.1.243	B1332-17 .....	568
6.1.244	B1333-16 .....	570
6.1.245	B1334-13 .....	571
6.1.246	B1335-17 .....	572
6.1.247	B1336-16 .....	574
6.1.248	B1337-13 .....	575
6.1.249	B1338-17 .....	576
6.1.250	B1339-16 .....	577
6.1.251	B1340-13 .....	578
6.1.252	B1341-17 .....	579
6.1.253	B1342-16 .....	581
6.1.254	B1344-17 .....	582
6.1.255	B1345-16 .....	583
6.1.256	B1347-17 .....	584
6.1.257	B1348-16 .....	586
6.1.258	B1349-13 .....	587
6.1.259	B1350-17 .....	588
6.1.260	B1351-16 .....	589
6.1.261	B1353-16 .....	591

6.1.262	B1354-13 .....	592
6.1.263	B1357-16 .....	593
6.1.264	B1358-13 .....	594
6.1.265	B1365-17 .....	595
6.1.266	B1366-16 .....	596
6.1.267	B1367-17 .....	598
6.1.268	B1368-16 .....	599
6.1.269	B1389-13 .....	600
6.1.270	B1401-13 .....	602
6.1.271	B1404-13 .....	603
6.1.272	B1414-17 .....	604
6.1.273	B1415-16 .....	605
6.1.274	B1417-13 .....	606
6.1.275	B1419-13 .....	607
6.1.276	B1420-13 .....	608
6.1.277	B1437-17 .....	609
6.1.278	B1438-16 .....	610
6.1.279	B1439-13 .....	610
6.1.280	B1440-17 .....	611
6.1.281	B1441-16 .....	612
6.1.282	B1442-13 .....	613
6.1.283	B1670-17 .....	614
6.1.284	B1675-17 .....	614
6.1.285	B1676-16 .....	615
6.1.286	B1677-17 .....	617
6.1.287	B1678-16 .....	618
6.1.288	B1694-17 .....	619
6.1.289	B1695-16 .....	620
6.1.290	B1696-13 .....	621
6.1.291	B1697-92 .....	622
6.1.292	U0411-87 .....	623
6.1.293	U1293-87 .....	623
6.1.294	U1294-56 .....	624
6.1.295	U1295-41 .....	626
6.1.296	U1296-87 .....	627
6.1.297	U1297-56 .....	628
6.1.298	U1298-41 .....	630
6.1.299	U1299-87 .....	631
6.1.300	U1323-56 .....	633
6.1.301	U1324-56 .....	634
6.1.302	U1325-56 .....	635

6.1.303	U1326-41 .....	636
6.1.304	U1327-41 .....	638
6.1.305	U1328-41 .....	639
6.1.306	(34) .....	640
6.1.307	(35) .....	641
6.1.308	(36) .....	641
6.1.309	(37) .....	642
6.1.310	(38) .....	642
6.1.311	(39) .....	643
6.1.312	(40) .....	643
6.1.313	(41) .....	644
6.1.314	(42) .....	644
6.1.315	(43) .....	645
6.1.316	(44) .....	645
6.1.317	(45) .....	645
6.1.318	(46) .....	646
6.1.319	(47) .....	646
6.1.320	(48) .....	647
6.1.321	(49) .....	647
6.1.322	(50) .....	648
6.1.323	(51) .....	648
6.1.324	(52) .....	649
6.1.325	(53) .....	649
6.1.326	(54) .....	650
6.1.327	(55) .....	650
6.1.328	(56) .....	651
6.1.329	(57) .....	651
6.1.330	(58) .....	651
6.1.331	(59) .....	652
6.1.332	(60) .....	652
6.1.333	(61) .....	653
6.1.334	(62) .....	653
6.1.335	(63) .....	654

**7. General Sensor Fault Table 655**

7.1	General Sensor Fault Table .....	656
-----	----------------------------------	-----

**8. Live Link 657**

8.1	Introduction .....	658
8.2	Setup Tool .....	658
8.3	Diagnostic Tool .....	660

8.4	General Information .....	663
8.5	Getting Started with JCB ServiceMaster .....	663
8.6	Diagnostic Connector .....	664
8.7	Service Master Driver Version .....	666
8.8	Testing CAN Activity with ServiceMaster .....	667
8.9	Diagnostic Tool Help .....	668
8.10	Using the DLA .....	669
8.11	LL4 Connector .....	671
<b>9.</b>	<b>Software Flashing</b>	<b>673</b>
9.1	Display Flashing .....	674
9.2	Bosch ECU Flashing .....	677
9.3	Invertor ECU Flashing .....	685
9.4	Steering Sensor Calibration .....	694
<b>10.</b>	<b>Service Master Tools Help</b>	<b>697</b>
10.1	Install Software - Service Master .....	698
10.2	Using JCB Service Master .....	700
10.3	Using DLA (Data Link Adapter) .....	701
10.4	Diagnostic Tool .....	705
10.5	Flashloader Tool .....	706
<b>11.</b>	<b>ZAPI Error Code</b>	<b>713</b>
11.1	Pump Error Code .....	714
11.2	Traction Motor Error Code .....	720
<b>Index</b>		<b>0</b>

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# Introduction

## 1 Introduction

# AJ45E HELPFILE



## 1.1 Contents

### Contents

Introduction

- Support Files
- Components
- Machine ECU Fault Codes
- Software Flashing

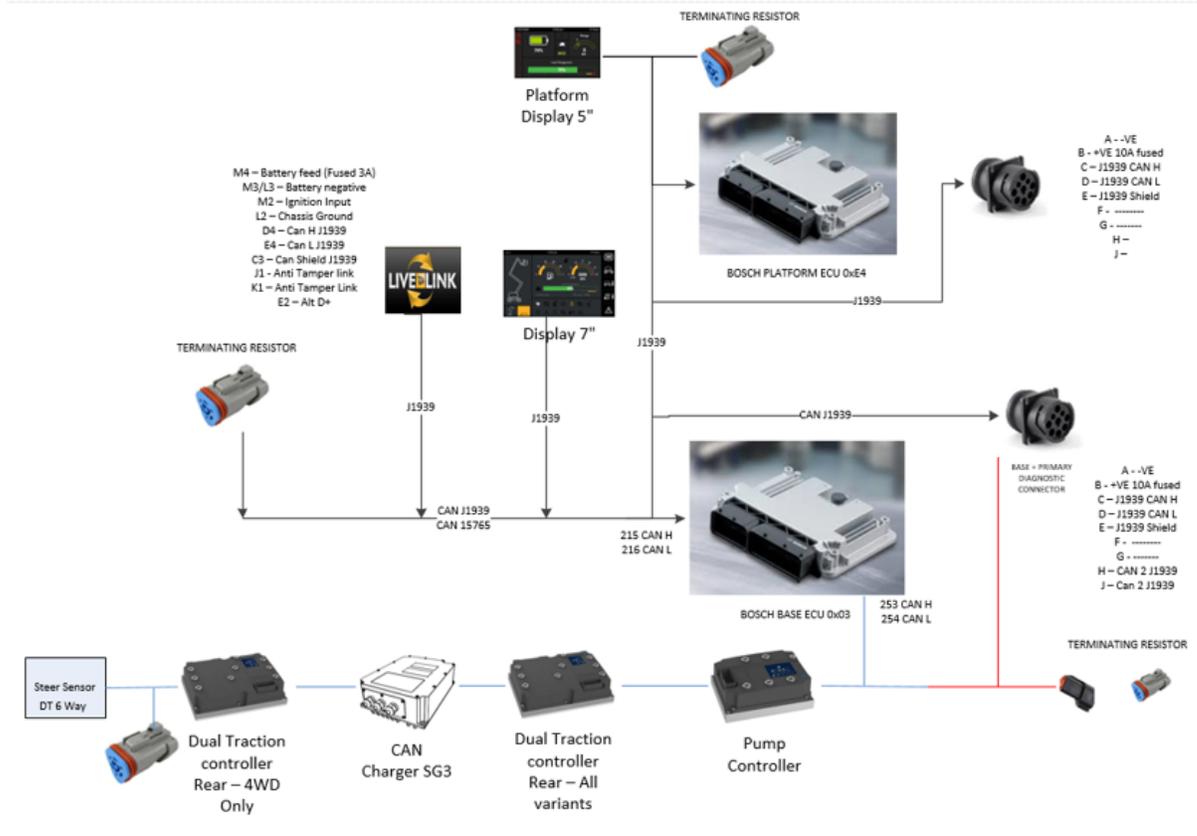
# Machine Details

## 2 Machine Details



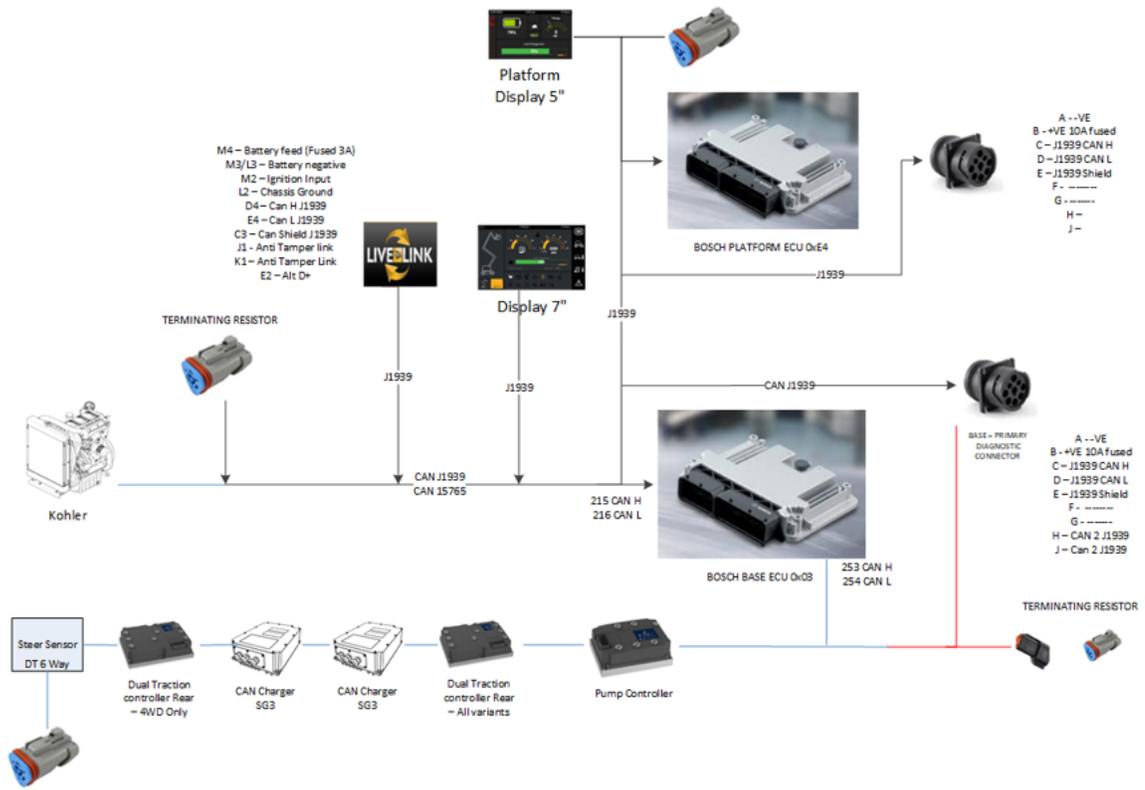
### 2.1 CAN Layout

**A45E**



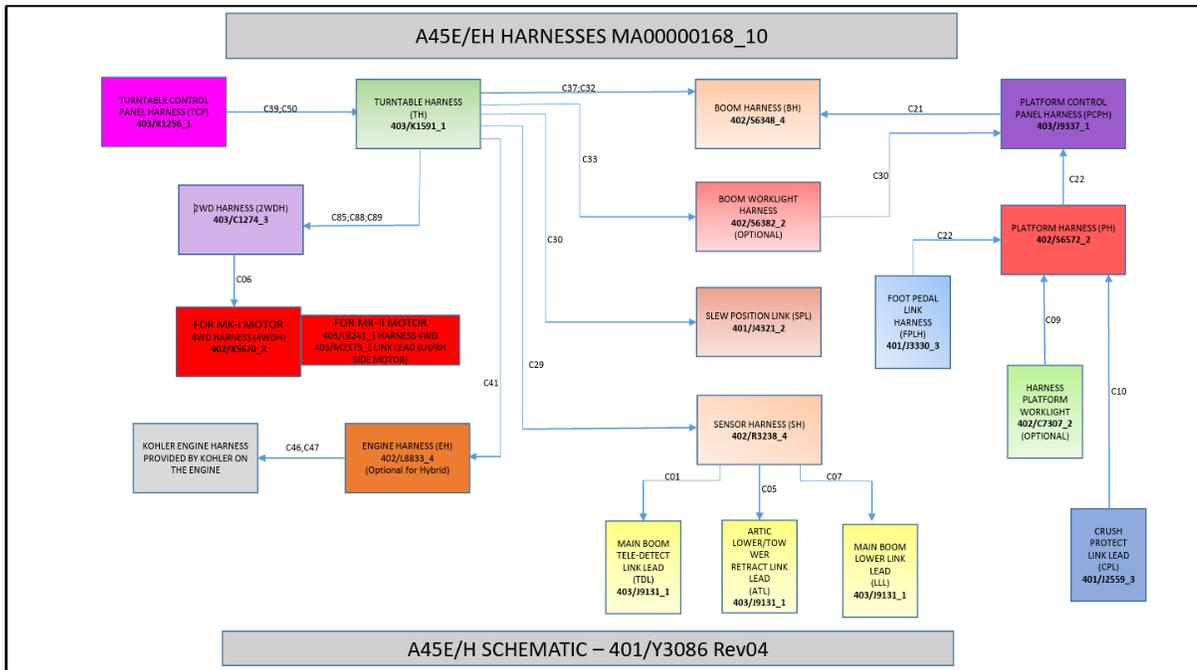
## A45E

## A45EH



## A45H

## 2.2 Harness Layout



## 2.3 Electrical Connection

### Integrity

Important: The operator must have completed the relevant training before starting work on any part of the HaV system of this machine, the correct voltage tester must be used. DO NOT work on any part of the HaV system until you have read and understood all the relevant service information. You MUST disconnect isolator before working on any part of the HaV system.

The Electronic Control Unit (ECU) and the devices connected to it are of rugged construction and inherently more reliable than the interconnecting wires and connectors.

Before testing or renewing electrical devices ensure that the relevant wires and connectors are fitted and functioning correctly. In many instances electrical faults are easily remedied by rectifying faulty wires, connectors or earth points. Before proceeding isolate the electrical system by disconnecting the battery. See the applicable machine documentation for the correct procedure.

1. Wiring harness - Visually inspect the interconnecting wires and connectors for signs of damage. Check the following:
  - a. Chaffed wires - Intermittent short circuits.
  - b. Cut wires - Open circuits. Possibly caused by wires becoming trapped in machine mechanical mechanisms.
  - c. Broken wires - Open circuits. Possibly caused by incorrect routing or tying of wires allowing insufficient length for machine movements.
  - d. Melted wires - Intermittent short circuits.
2. Connectors - Visually inspect the applicable connectors. Check the following:
  - a. Coupling - Intermittent open circuits. Ensures that connectors are coupled correctly with the locking mechanisms properly latched.
  - b. Damage - Intermittent open or short circuits. Inspect the connectors for signs of physical damage such as broken housings or locking clips. Connectors can also melt if they come into contact with hot parts. Uncouple the connectors and inspect the pins for damage such as corroded, bent or broken pins. DO NOT touch the connector pins on the electronic control unit (ECU). Broken connectors must be renewed.
  - c. Contamination - Intermittent open or short circuits. Uncouple the connectors and inspect the inside for signs of contamination, typically with water, oil, or hydraulic fluid. If necessary clean the connector pins and receptacle using a cotton bud or similar. If water contamination is evident allow it to dry completely before coupling the connectors. Carefully inspect any sealing elements for signs of contamination or damage. Fluids can 'creep' along wires so always check surrounding wires and connections for contamination if an instance of contamination is found.
3. Earth points - locate the electrical earth points on the and machine. Make sure that the wires terminals are correctly fitted. Make sure that the earth point is free from contamination and corrosion.

## 2.4 Auto Start Stop for Hybrid

### Engine Auto-Start /Stop

Auto engine start feature is enabled in the machine at every key cycle.

- The engine will start automatically when the battery charge level drops below 50%.it shall flash the auto engine start icon (Yellow Colour) at both the display and also buzzer will beep for 5 sec. (he engine will turn OFF automatically when the battery charge level reaches 80%.)
- When we press engine start push button, glow plug icon shall pop up at both display until engine starts.

The engine auto start feature can be disabled either from the base display menu or by pressing the auto engine start push button on the platform control panel.



- When auto start option is enabled and engine is started, auto engine icon will be solid yellow.



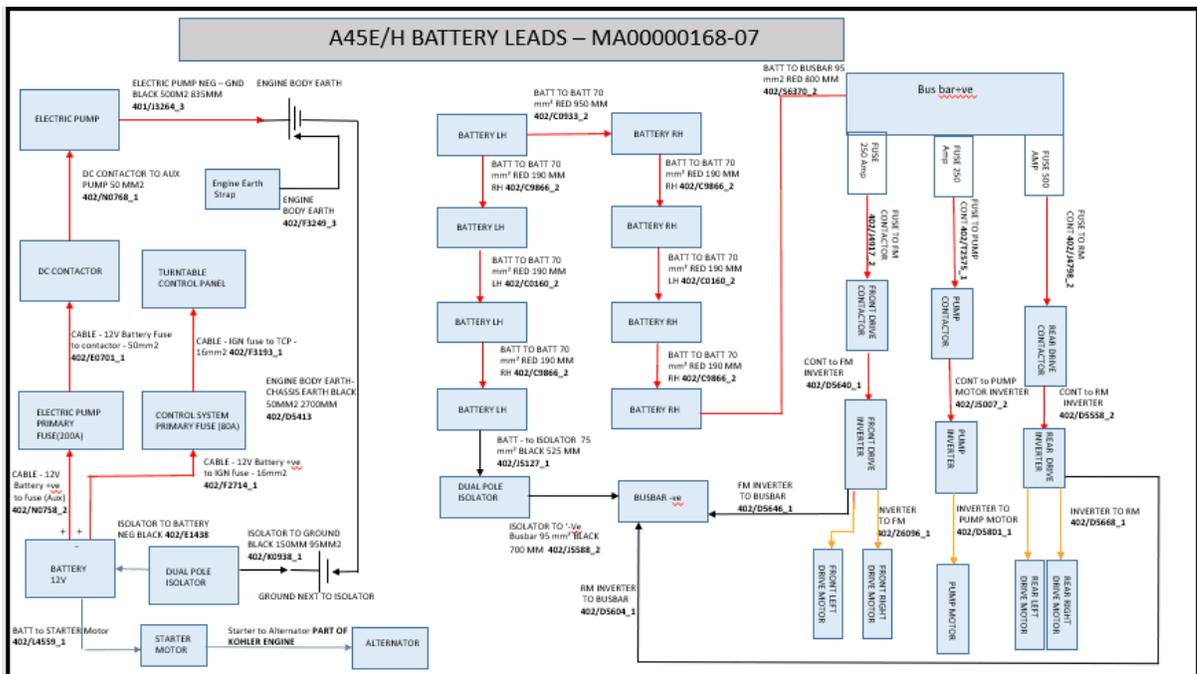
- When auto start option is enabled and engine is not running (BDI is > than 50%), auto engine icon will be Solid white



- When auto start option is disabled through platform Control panel or display, auto engine icon will be solid white with crossed.



## 2.5 Battery Lead Layout



## 2.6 Earth Point Locations

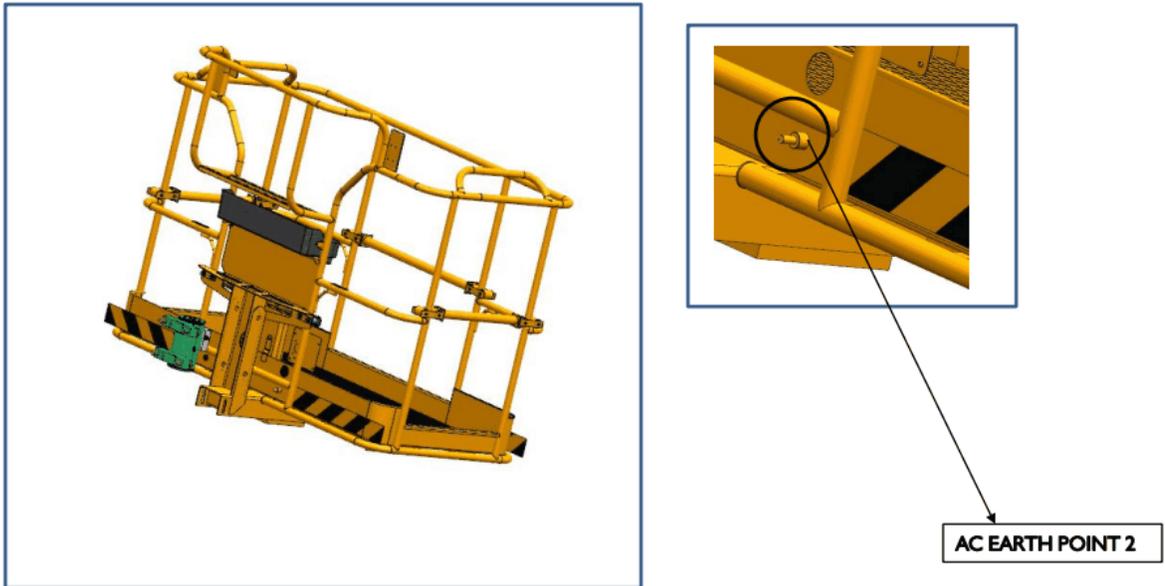
### 2.6.1 Earth Point Platform

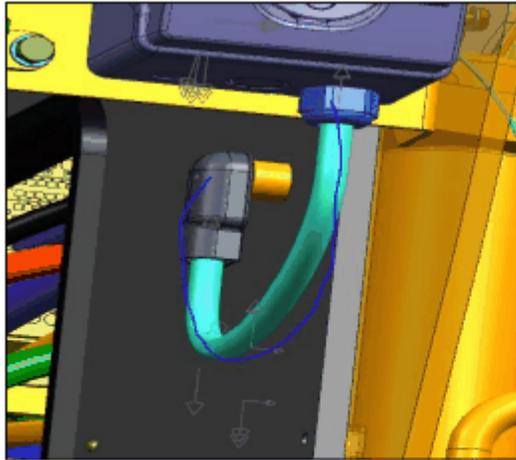
#### Function

Earth Points - locate the electrical earth points on the machine. make sure that the wires terminals are correctly fitted. Make sure that the earth point is free from contamination paint and corrosion.

**Note** - Earth Position is common for A45E & H

**Location-** Fitted on the Platform





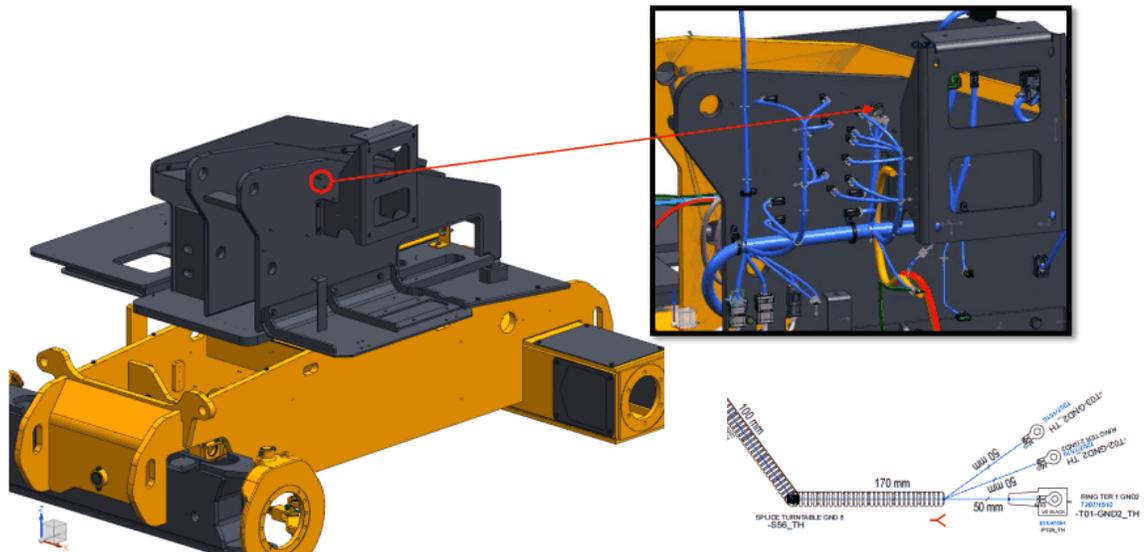
This connection comes only in case of power to platform electric

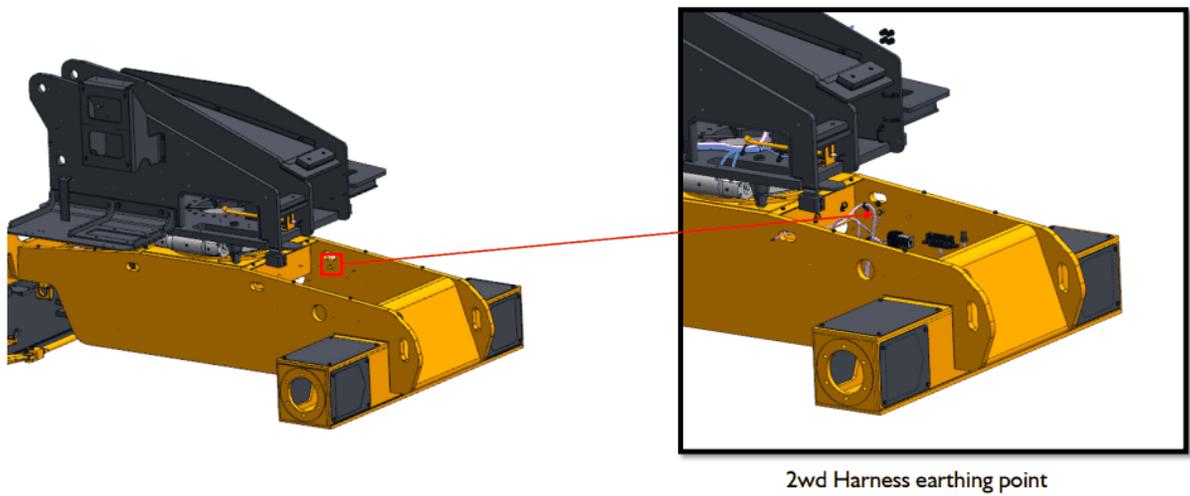
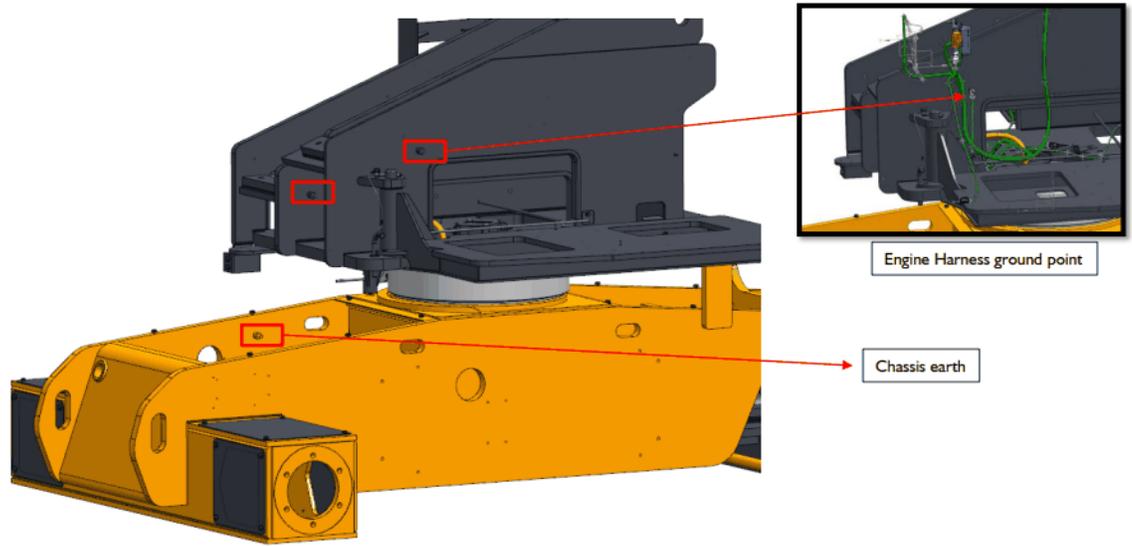
## 2.6.2 Earth Point Turn Table

**Function** - Earth Points - locate the electrical earth points on the machine. make sure that the wires terminals are correctly fitted. Make sure that the earth point is free from contamination paint and corrosion.

**Note** - Earth Position is common for A45E & H

**Location** -



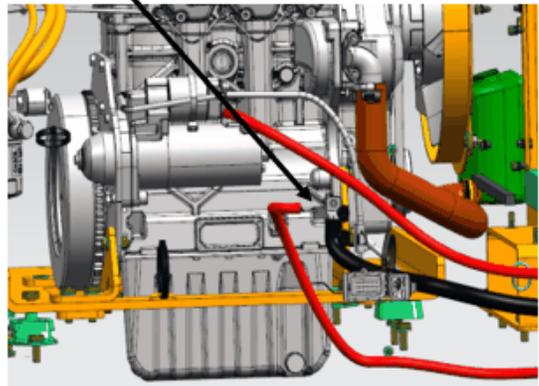


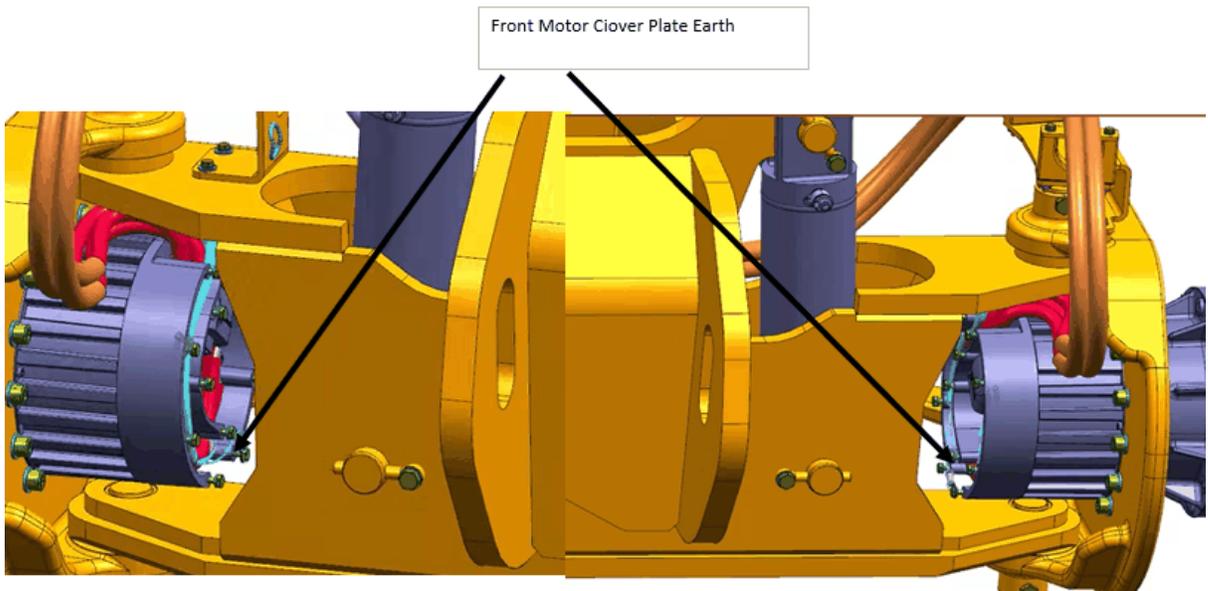
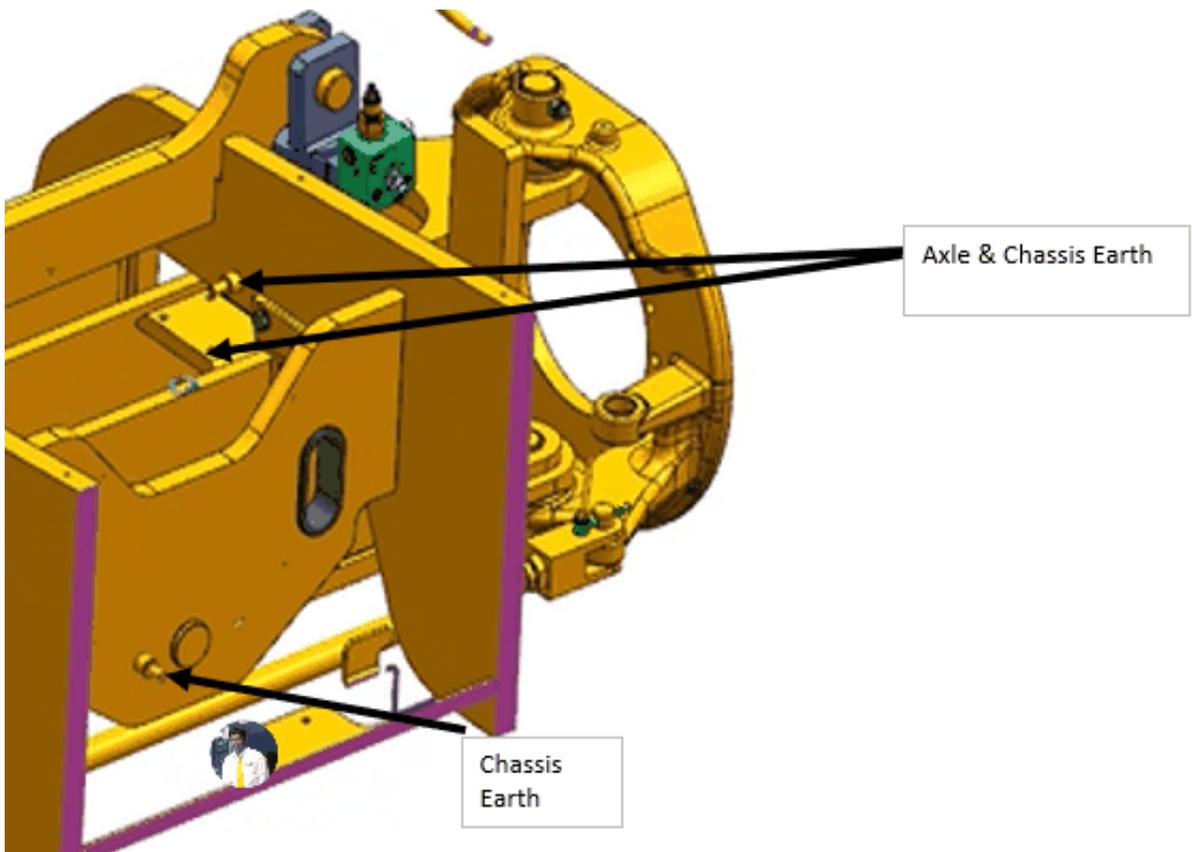


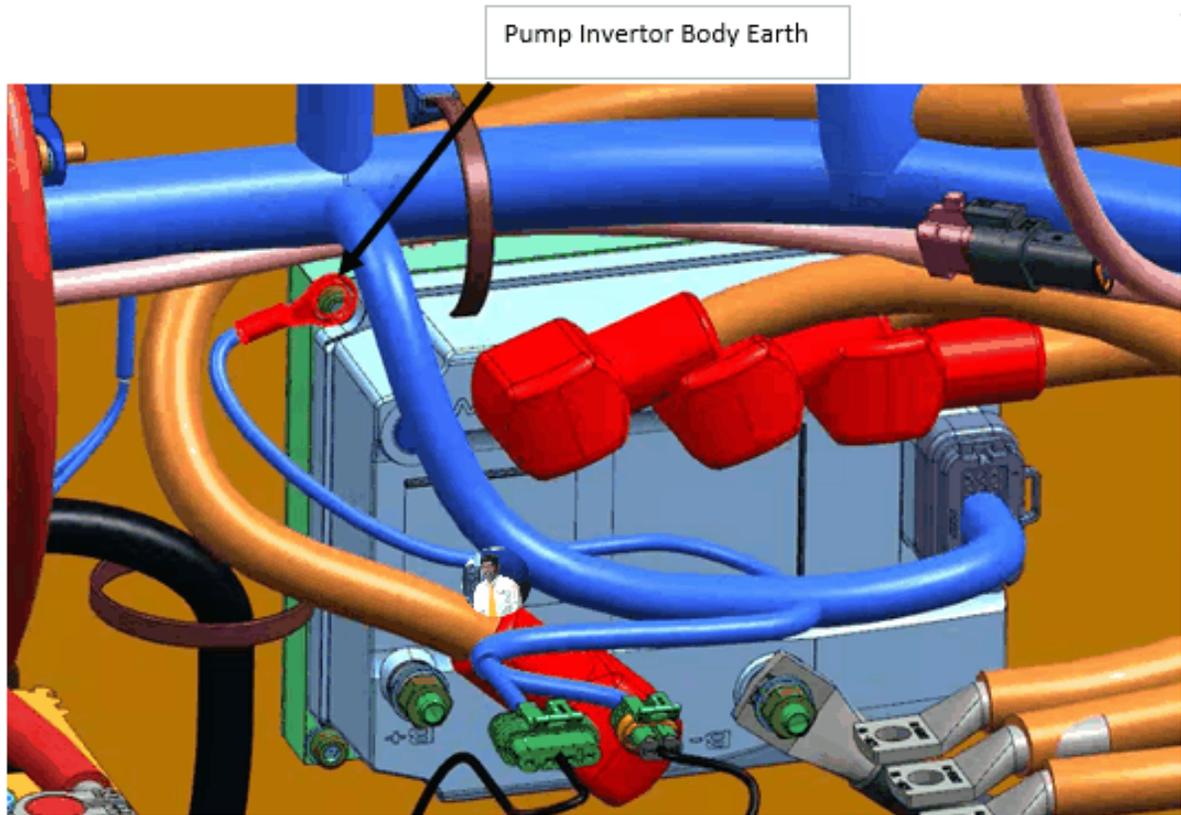
Earth point for Aux motor



Earth point for Engine

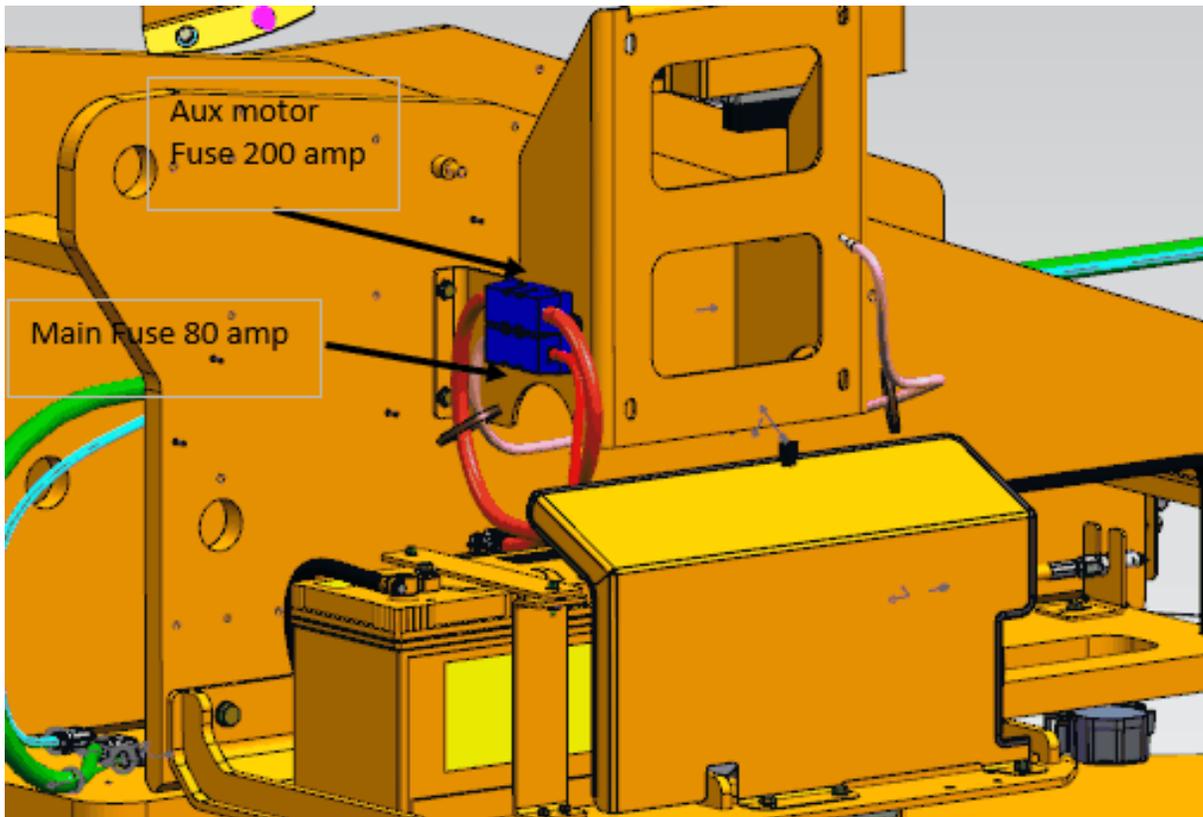






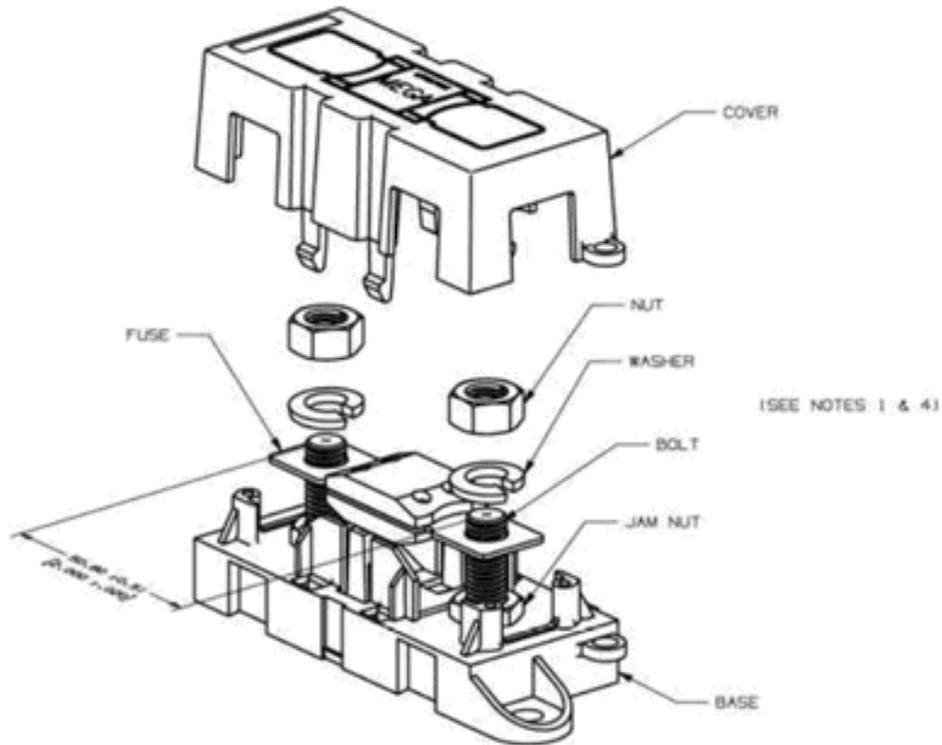
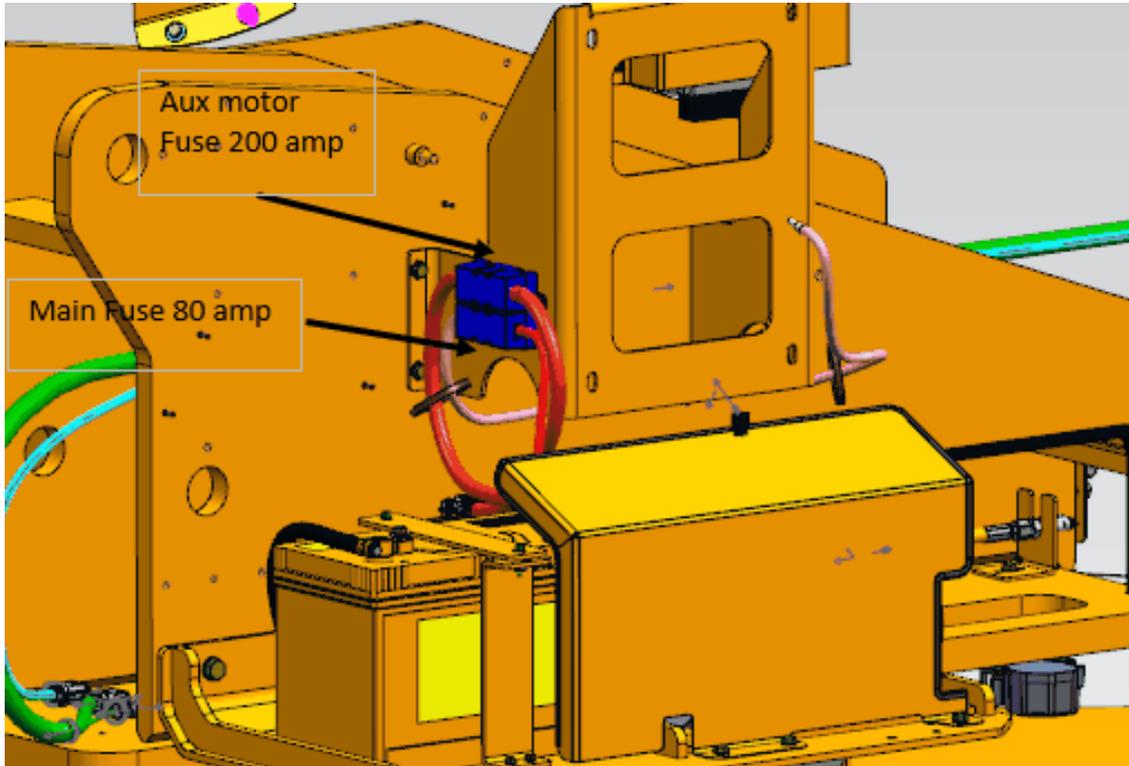
## 2.7 Fuse and Relays

### 2.7.1 PF01 - Electric Pump



### 2.7.2 PF02 - Control System Primary

Control system primary 80amp fuse is used for protection to control panel in case of over current. This Fuse is the main fuse for 12V control system.



2.7.3 PF03 - Engine Glow Plug (Hybrid)

Engine glow plug 40amp fuse is used for protection to the glow plug in case of over current.  
( For hybrid machine only.

# System Level Function

## 3 System Level Function

### 3.1 Ignition

#### Function

- The ignition turns on and off the main power of the machine.
- The system diagram is assuming the isolator key is fitted and 'ON'
- The diagram below shows the main components that will turn on when the ignition is cycled 'ON'
- When the key is turned on there should be 3 beeps from the base and platform buzzers

#### Signal

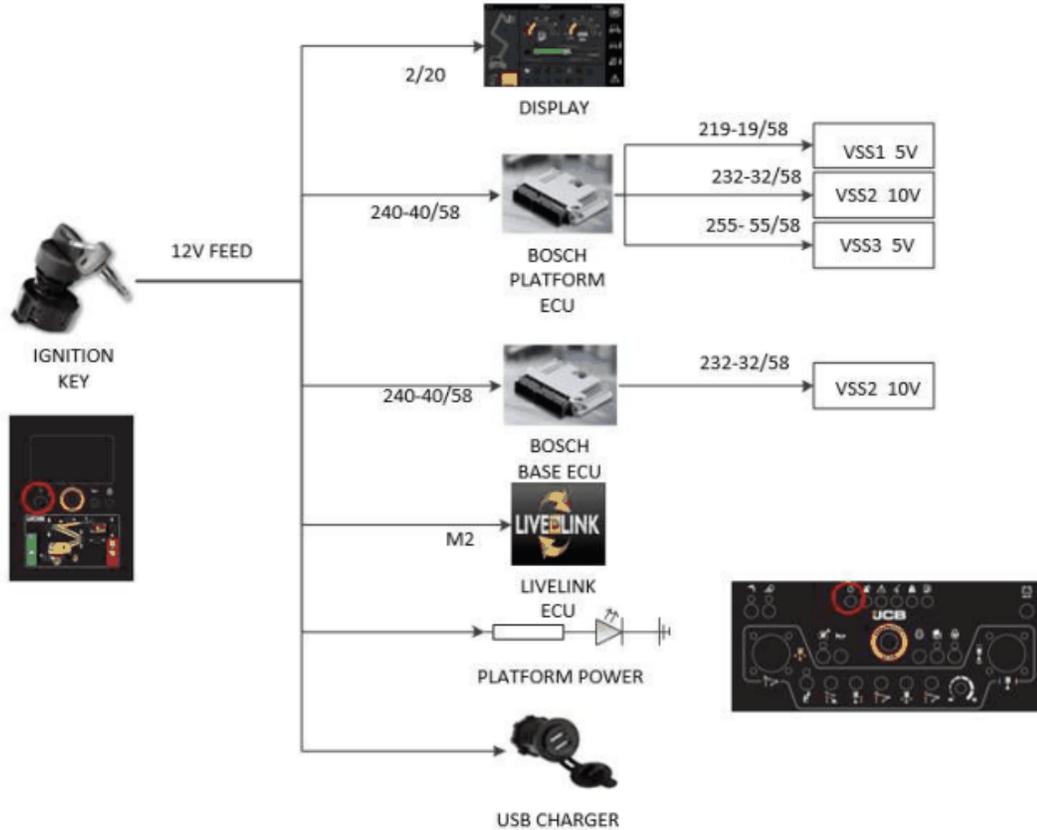
- The main power is fed from the battery into the lower control box through an 80A primary fuse and into the large din rail terminal S11-21.
- The din rail terminals are connected together with large jumper bars to S11-24, which then fed FU16\_TCP (7.5A) Fuse.
- FU16\_TCP then feds power to the ignition key. This signal is a permanent fed as long as there is power in the batteries and no fuse is blown.
- From the ignition key feds S11-9 din rail terminal that feeds out to the 4 ignition relays.

- **Parts in Circuit**

- Ignition Switch
- Base Bosch ECU
- Platform ECU
- Large Jumper Bar
- Large Din Rail Terminal
- PF02 - Control System Primary

#### System diagram

Below shows an overview on what the operator should see when the ignition key is set to the 'ON' position.



## 3.2 Horn

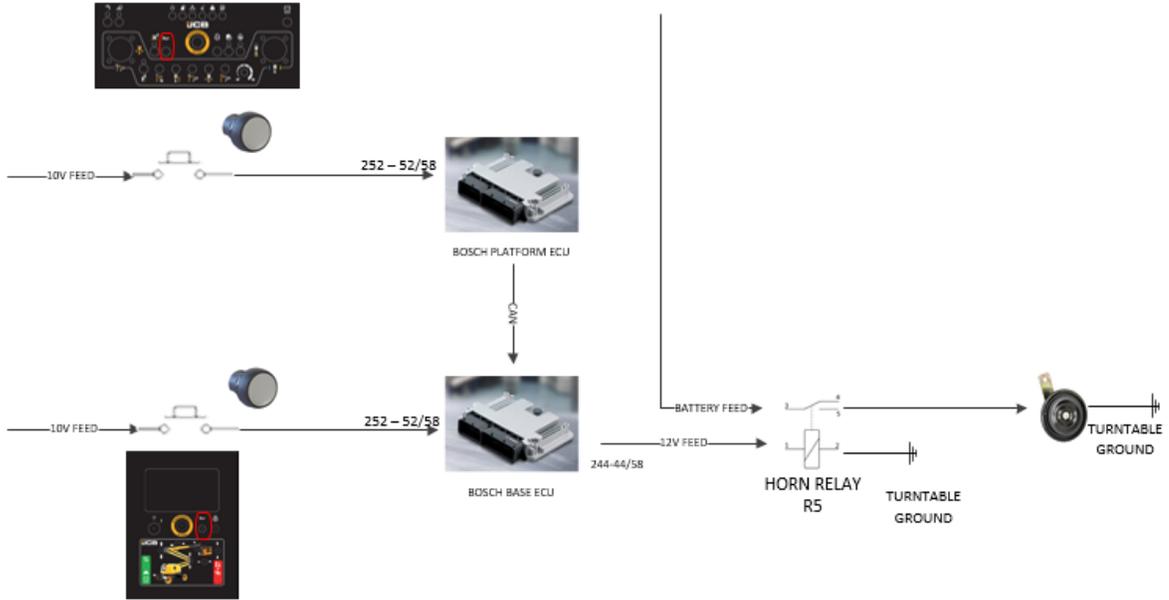
### Function

- The horn can be pressed from the Base or Platform control station. There is only one horn output which is below the base control box.
- The horn must be working correctly for safe machine operation.
- The horn can be operated from the platform and base control panel. The horn is located under the turntable. An improperly functioning horn may prevent the operator from alerting the ground personnel of hazards or unsafe conditions.
- Use the horn wherever necessary, particularly at blind corners.

### • Parts in system

- Base Bosch ECU
- Platform ECU
- Horn Switch(TCP)
- Horn Switch(PCP)
- Horn Relay
- Horn

## System Diagram



## 3.3 Electric Pump

### Function

The electric pump is there for recovering an operator or very low usage of the booms. Using the recovery system will be explained in override procedure

The isolator and ignition key must both be in the 'ON' position. It is advised that only one function at a time should be used.

### To use the electric pump from the base control station.

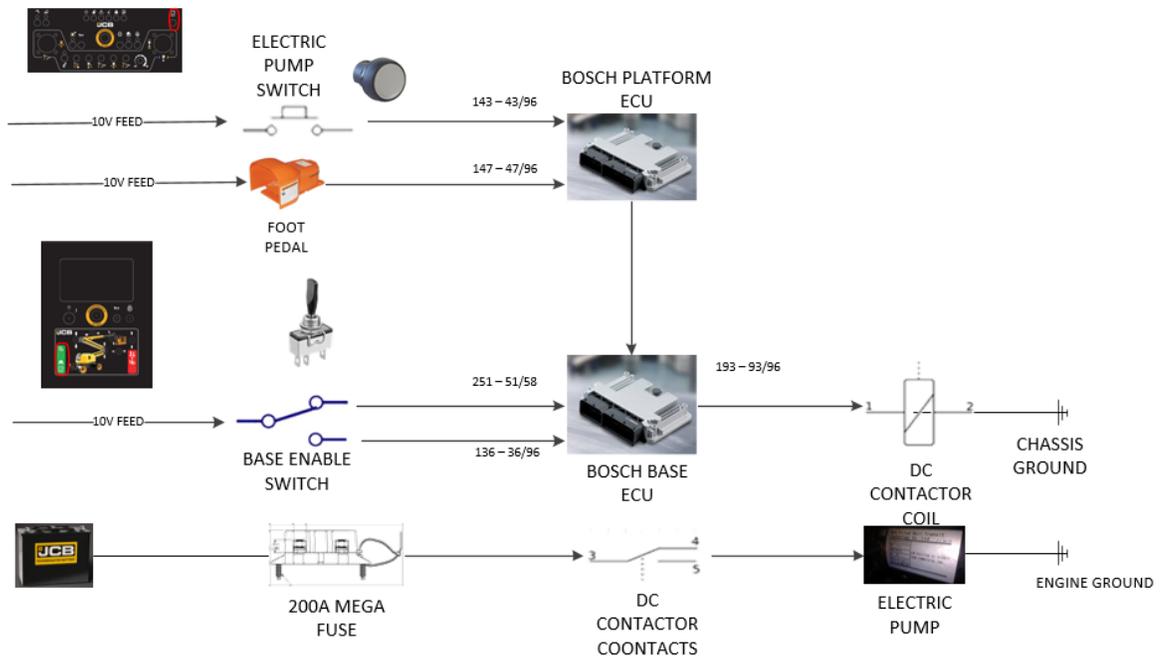
- The engine should not be running,
- Press and hold base enable switch
- Operate function button while keeping the base enable pressed
- Only one function may be operated at a time
- To use the electric pump from the platform
- Platform enable button on base control station (default position)
- Press the foot pedal and hold
- Press the AUX button and hold

- Press required function

**The following functions will not work with the electric pump:**

- Drive
- Steer
- Hydraulic Generator

## System Diagram

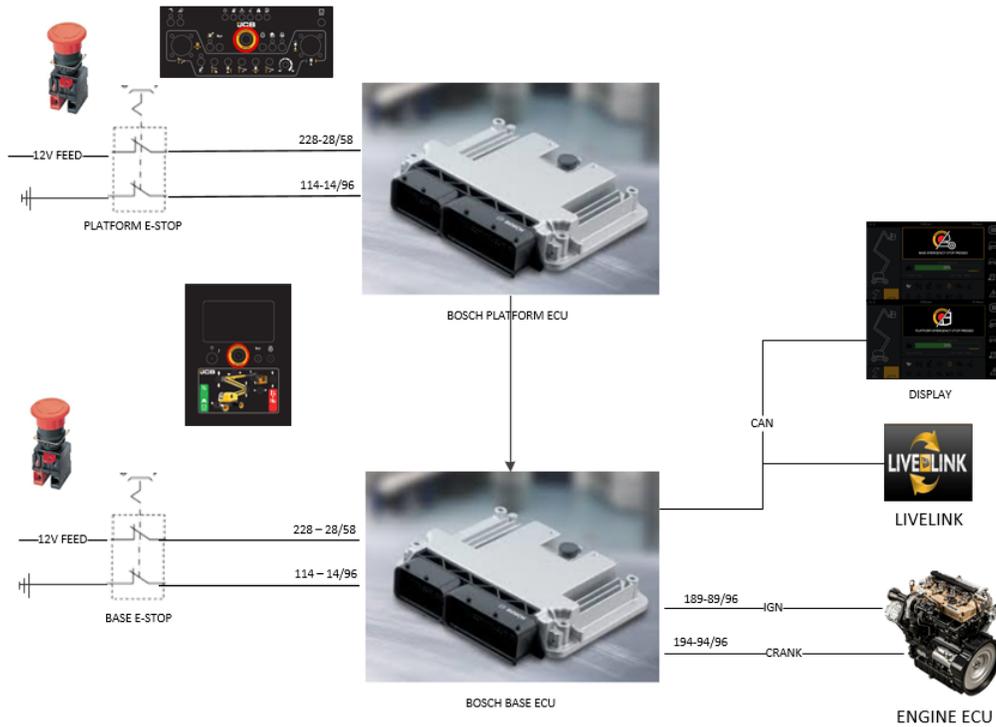


## 3.4 Emergency Stop

### Function

The emergency stop is for the operator to stop all machine movement immediately. This will not turn power on the machine off and only disable outputs from the machine controllers.

### System Diagram



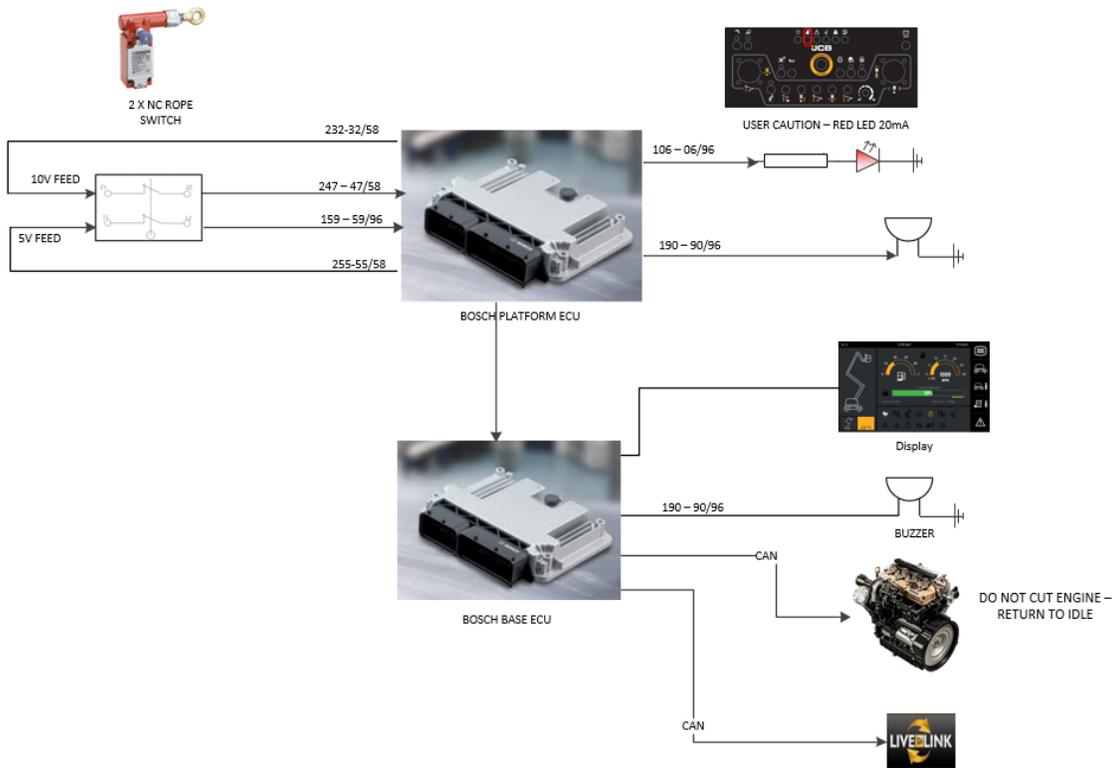
## 3.5 Crush Protection System

### Function

- The crush protection system is to avoid an operator from being pressed into the platform control panel.
- The crush protection system is x2 NC switches.
- The system can only be engaged if the wire rope is fitted and torqued up correctly. Have no torque in rope is the same effect as the switch being pressed
- The system may need adjusting at times via the quick tension pulley.
- when the system is engaged correctly (not pressed):
- The full system should operate as normal
- When the system is disengaged (pressed)
- The system will stop all raise and extend controls
- The engine will return to idle

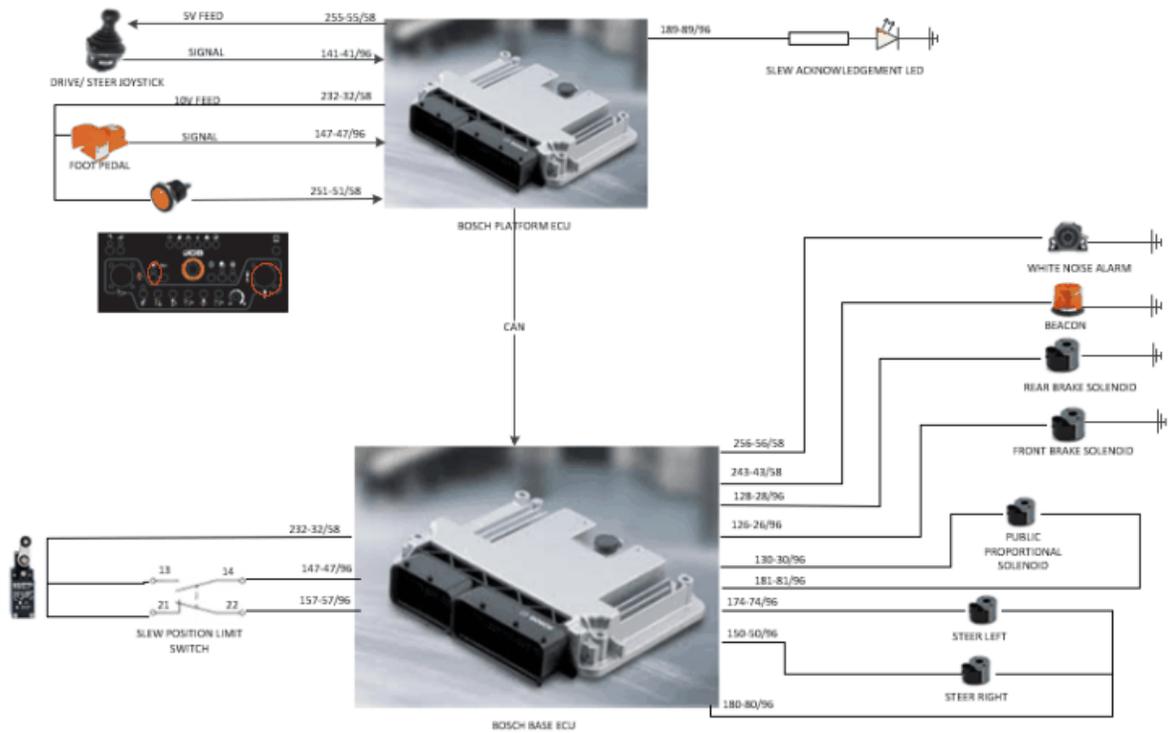
- The buzzer from both control stations will sound
- The xxx light at the platform will become active
- The crush protection icon will become active on the display
- Once the system has been pressed it will need to be reset via the pull level on the front of the switch.

## System Diagram



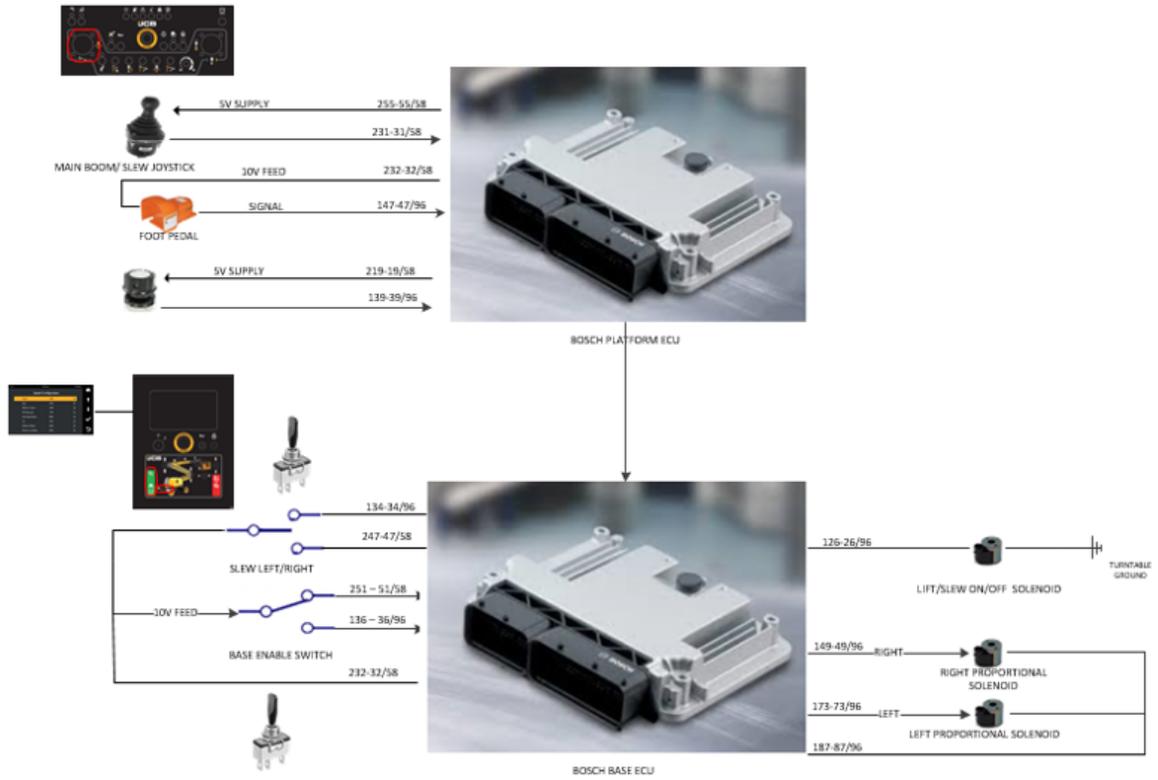
## 3.6 Steering

### System Diagram



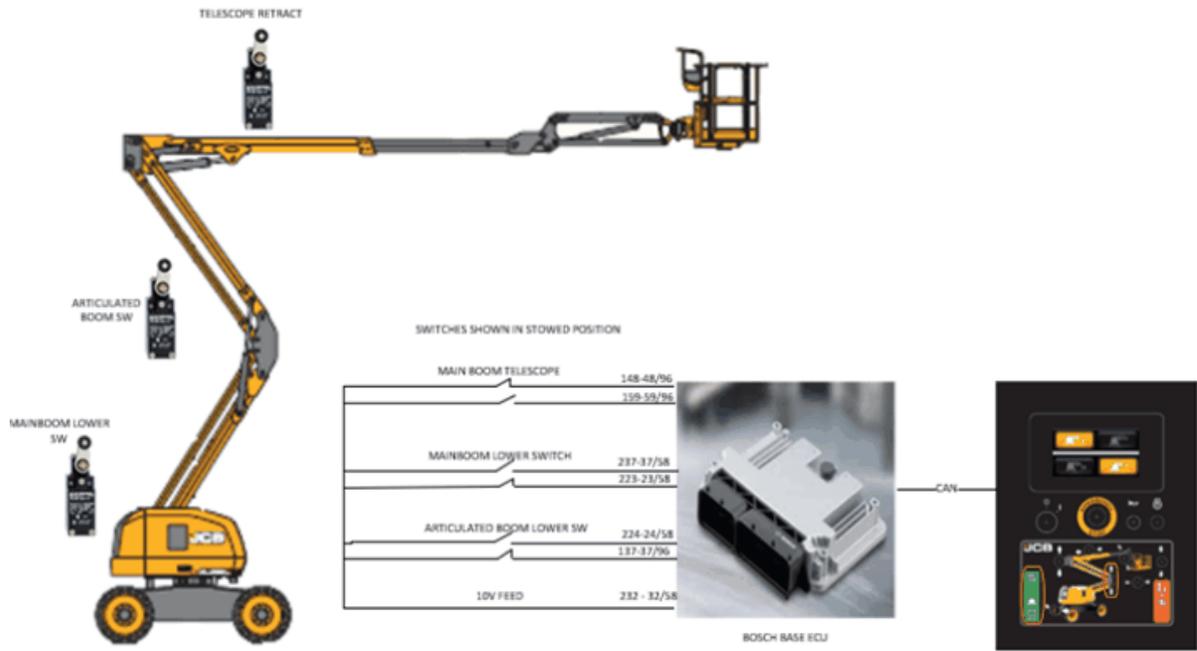
## 3.7 Slew

### System Diagram



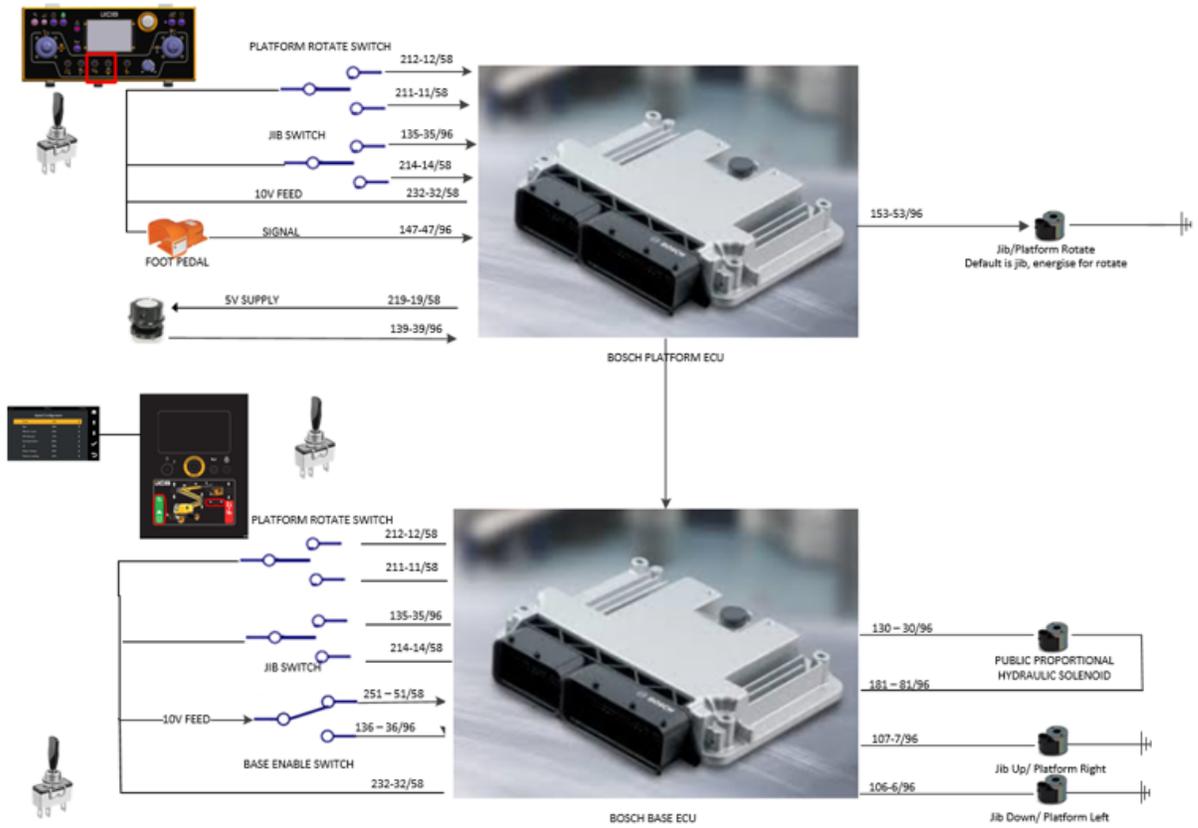
## 3.8 Limit Switch Position

### System Diagram



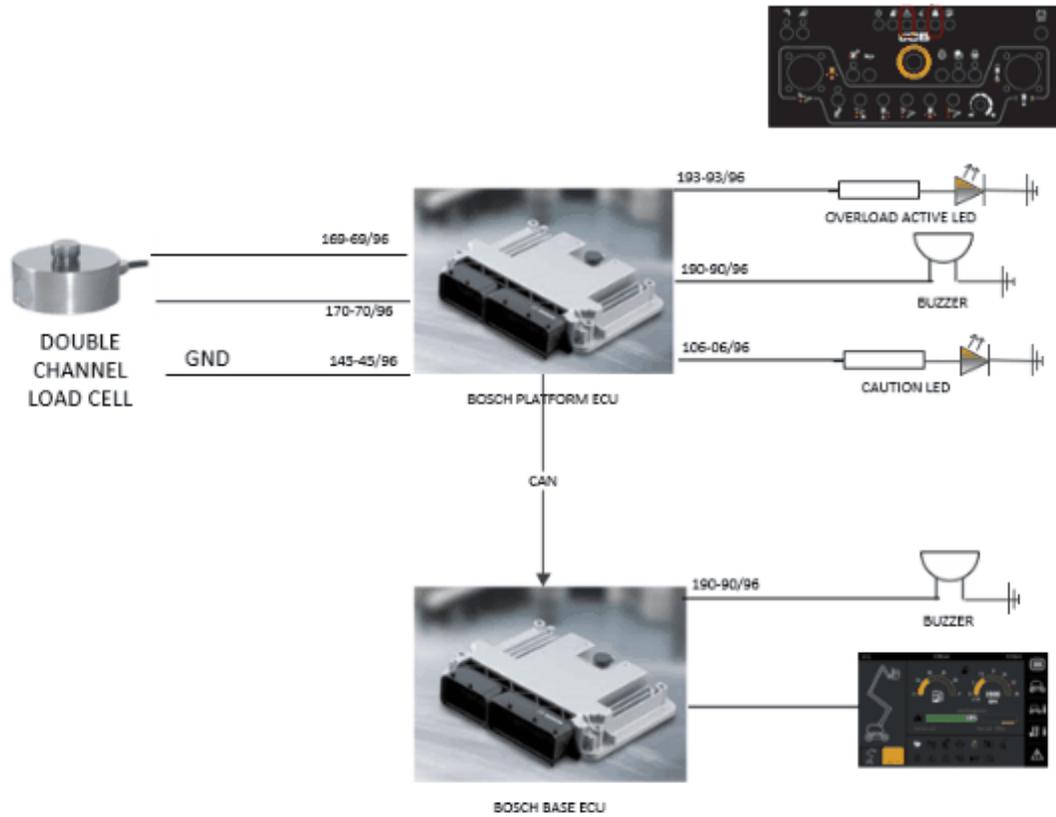
## 3.9 Platform Rotate

### System Diagram



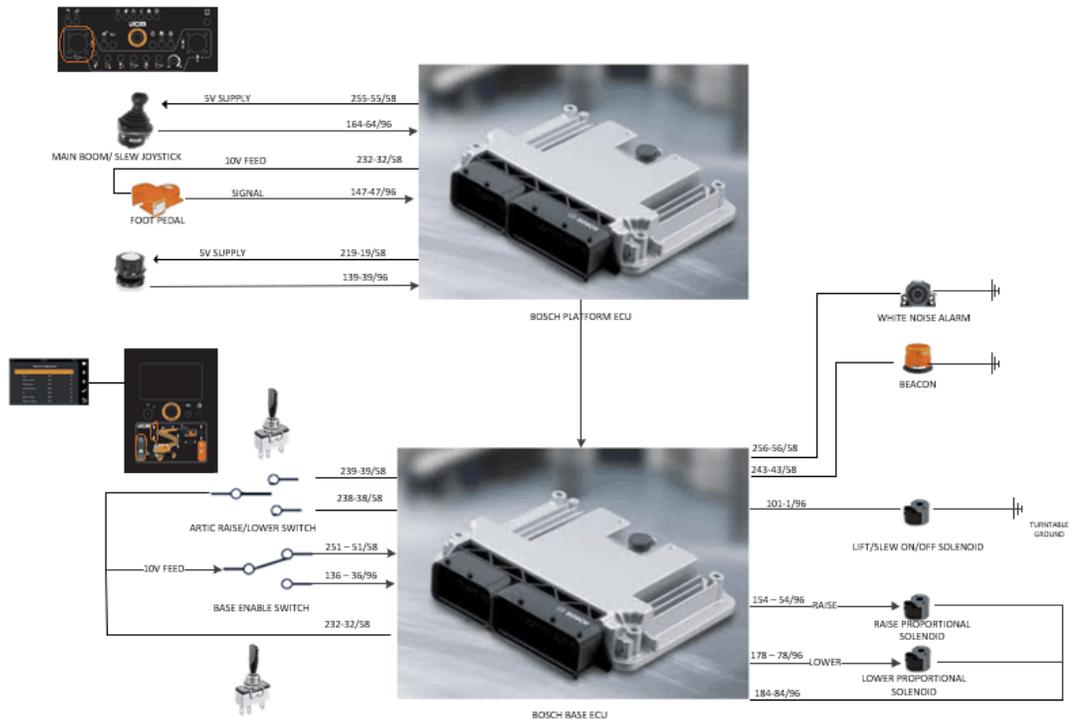
## 3.10 Overload

### System Diagram



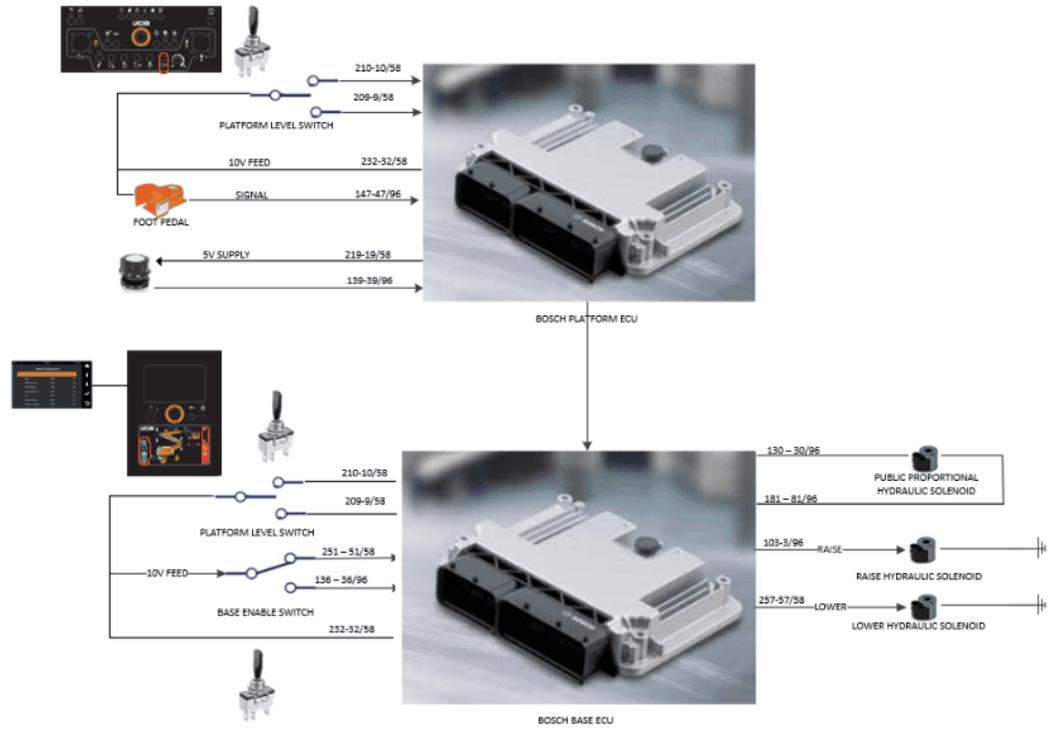
## 3.11 Main Boom

### System Diagram



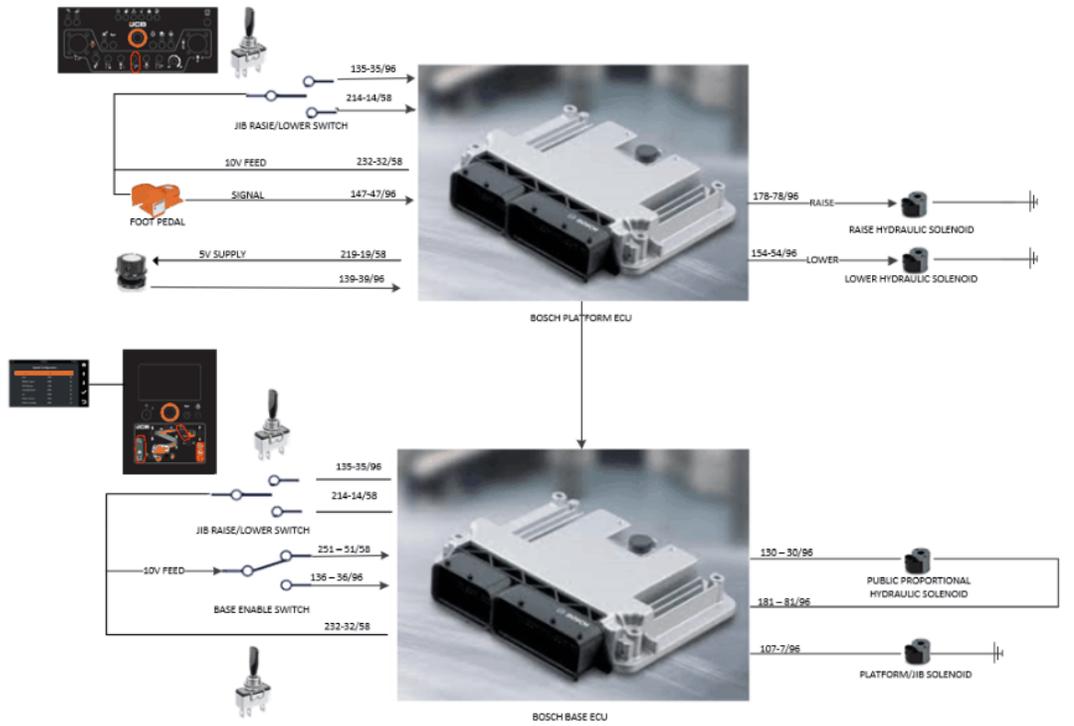
## 3.12 Leveling

### System Diagram



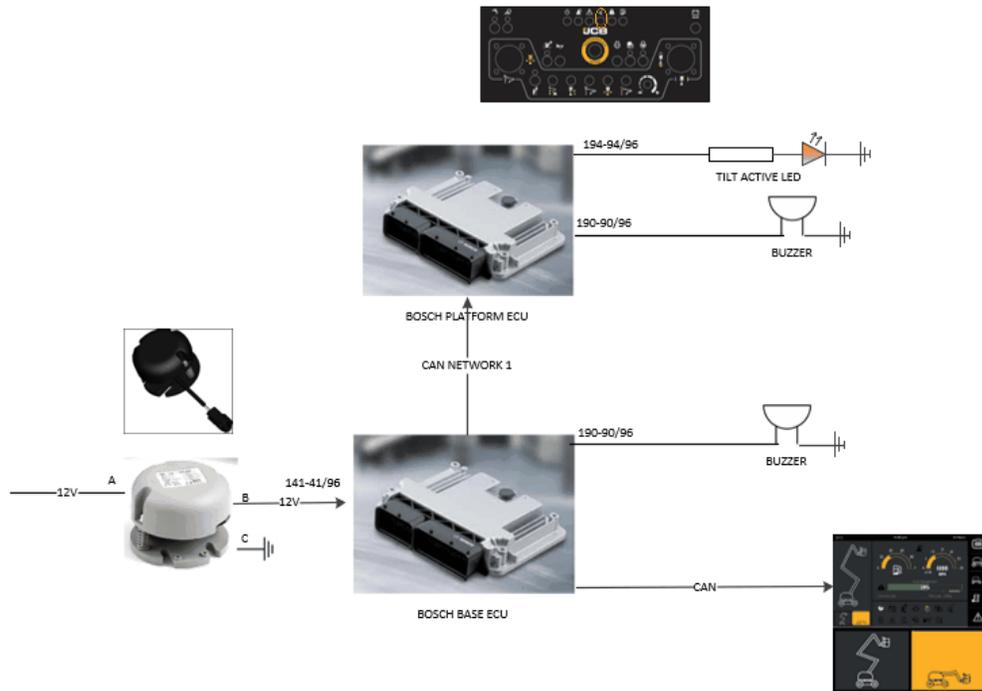
## 3.13 Jib

### System Diagram



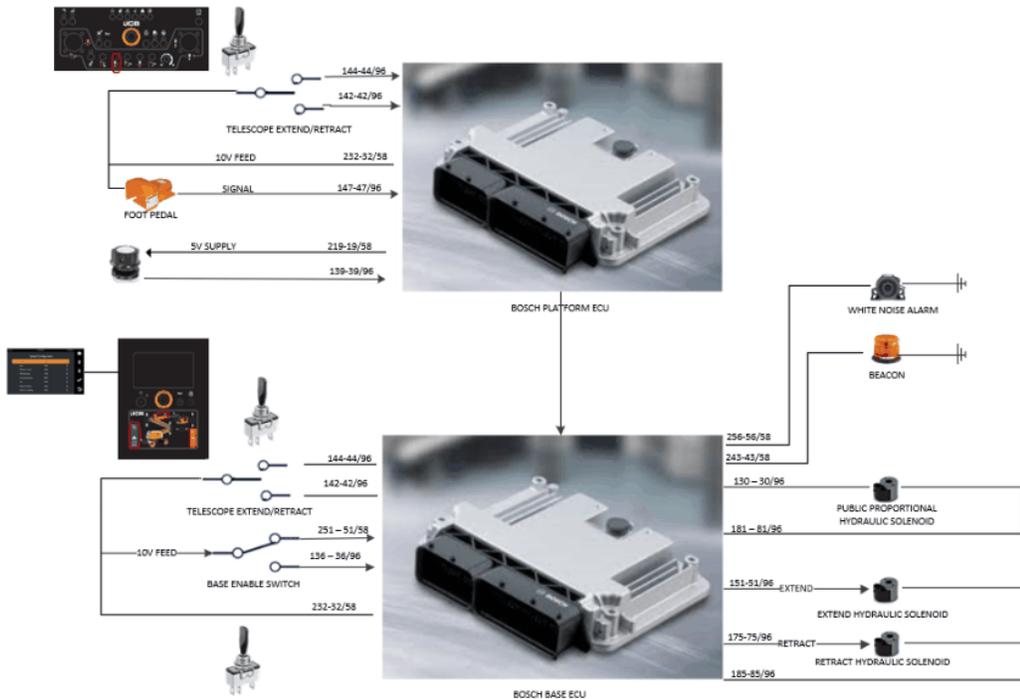
## 3.14 Tilt

### System Diagram



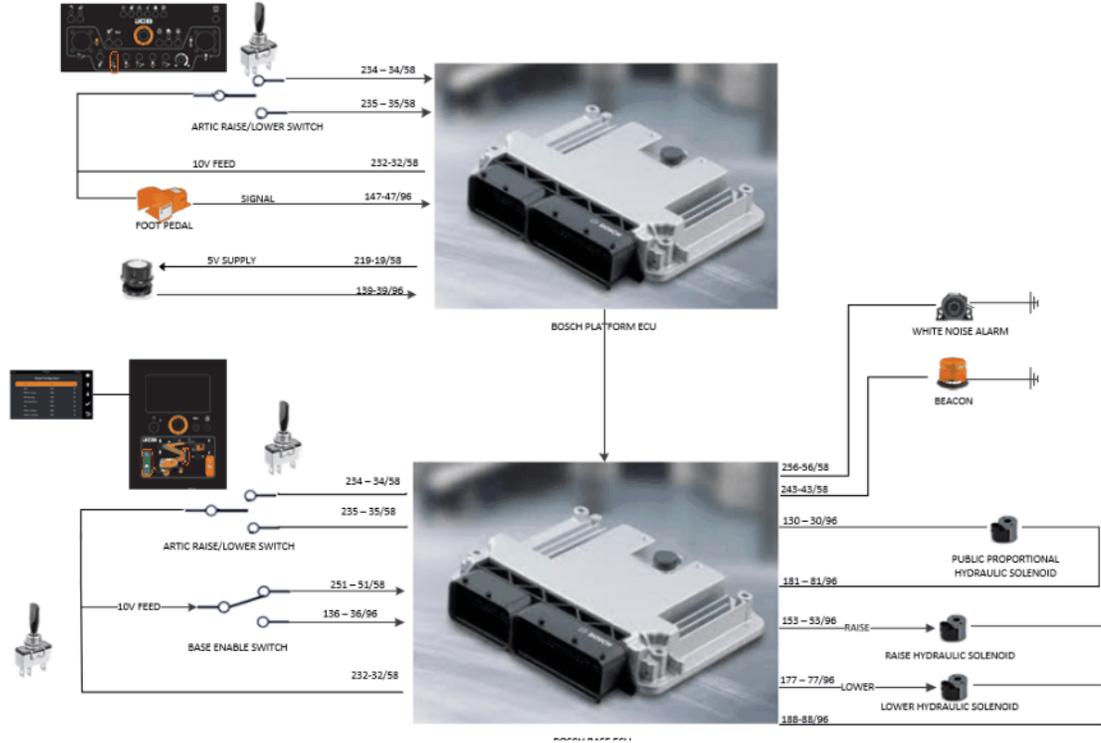
## 3.15 Telescope

### System Diagram



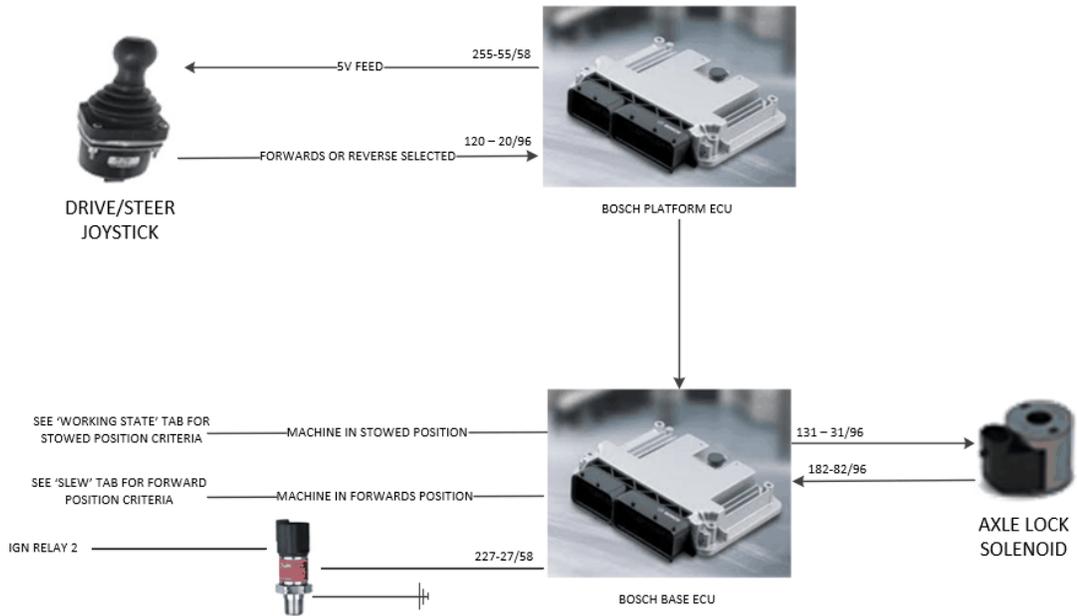
## 3.16 Articulate

### System Diagram



## 3.17 Oscillating Axle

### System Diagram

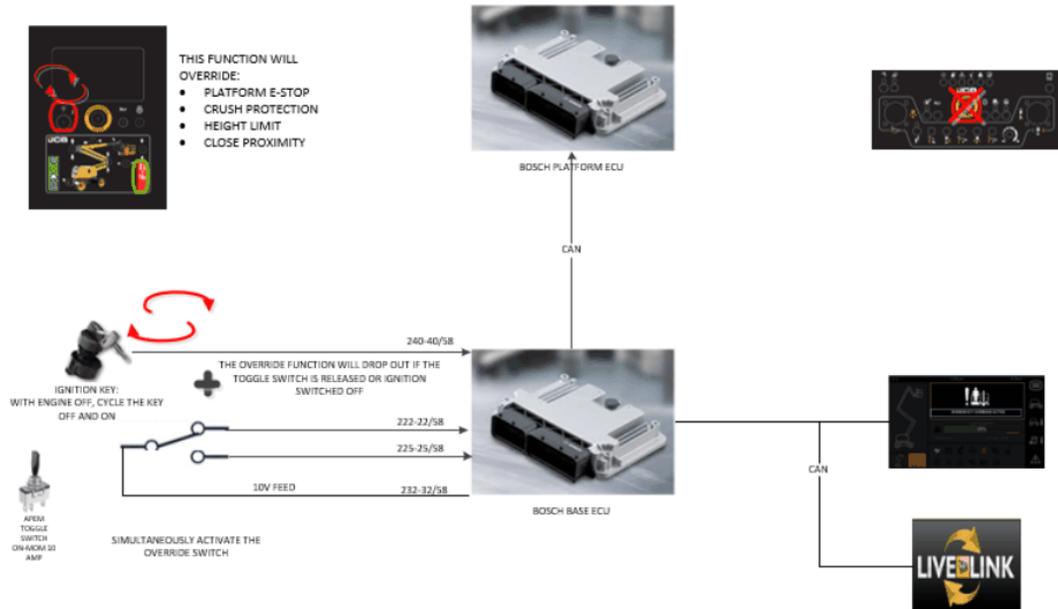


## 3.18 Override

### System Diagram

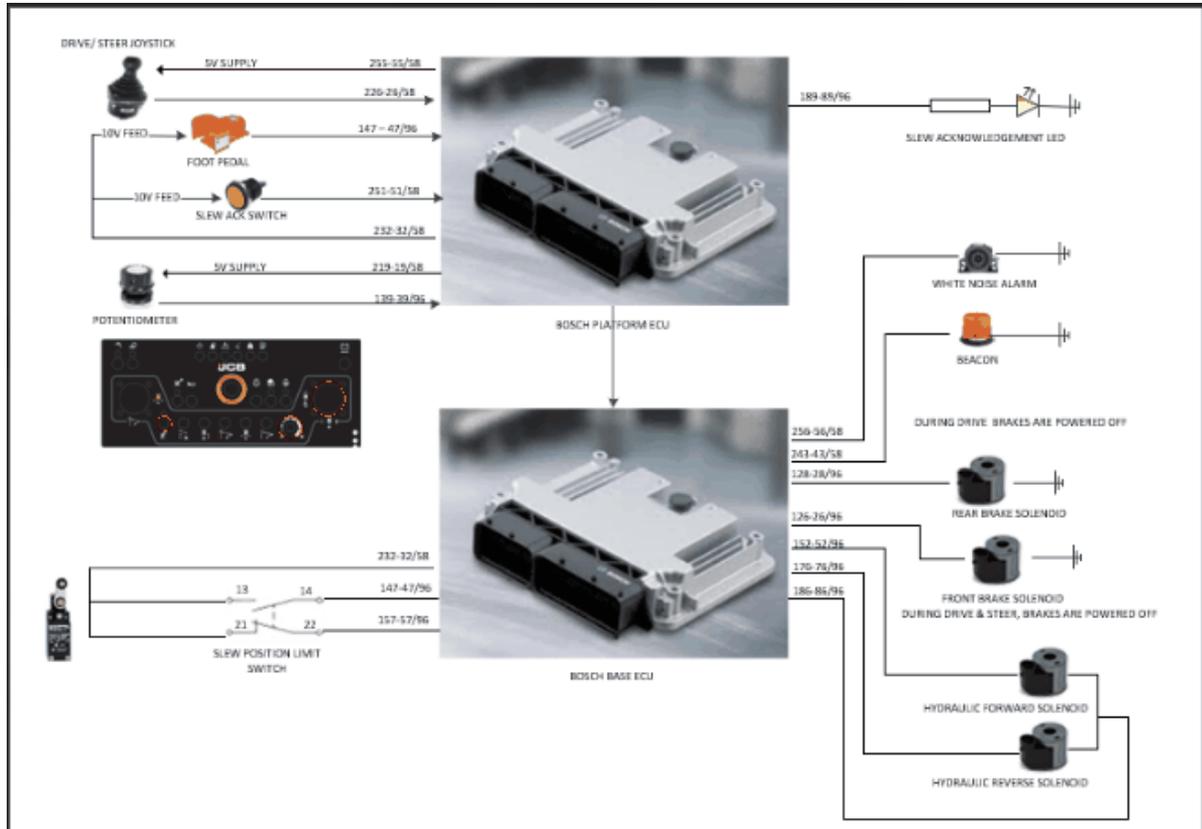
#### E-STOP OVERRIDE

ONLY FOR THE PURPOSE OF RESCUING A TRAPPED OR INCAPACITATED OPERATOR FROM THE PLATFORM



## 3.19 Drive

### System Diagram



## 3.20 Display Functions

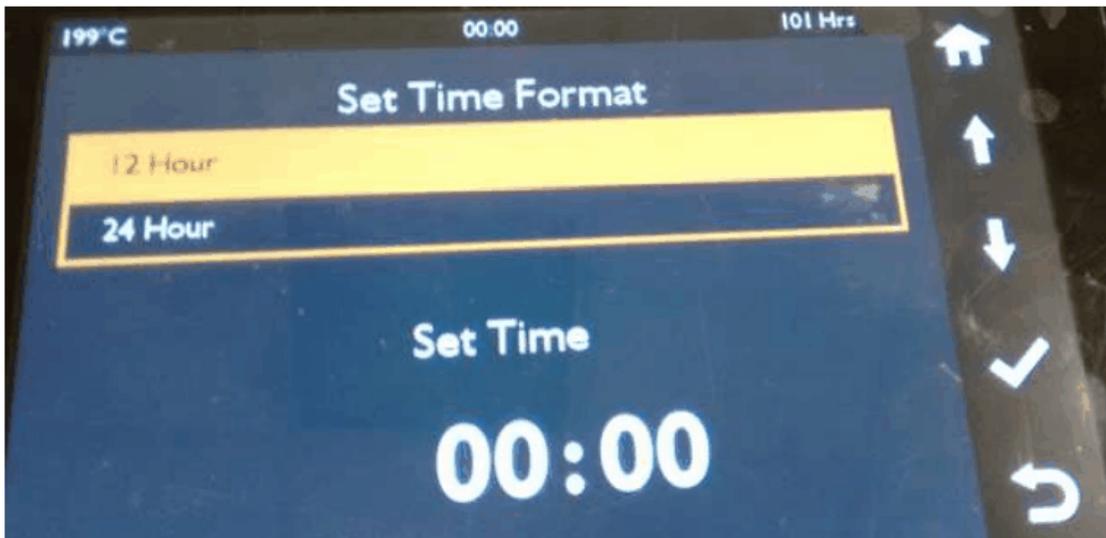
### 3.20.1 Setting Time

#### To Set the time in the display menu

1. Select Display settings
2. Select 'Time' using the arrows and tick button



3.This screen allows the operator to select between 12/24Hr clock and also to set the time.



Use the arrow keys to select up and down and the tick button to set.

Use the arrow keys to select up and down and the tick button to set.

### 3.20.2 Setting Date

#### To Set Date in the display menu

1. Select display settings.
2. Select 'Date' from the menu using the arrow keys and the tick to select.



3. This screen allows to set the format and date to the machine.



Using the arrows keys to navigate up and down the the tick button to select.

### 3.20.3 Setting Units

#### Setting units in the display menu

1. Select Display settings
2. Select 'Units' using the arrows and tick button



3. Using the arrow keys the operator can select between 'Metric' and 'Imperial'

### 3.20.4 Setting Brightness

#### To Set the 'Brightness' in the display menu

1. Select Display settings
2. Select 'Brightness' using the arrows to scroll down and tick to select



3. Use the arrow keys to select required brightness.



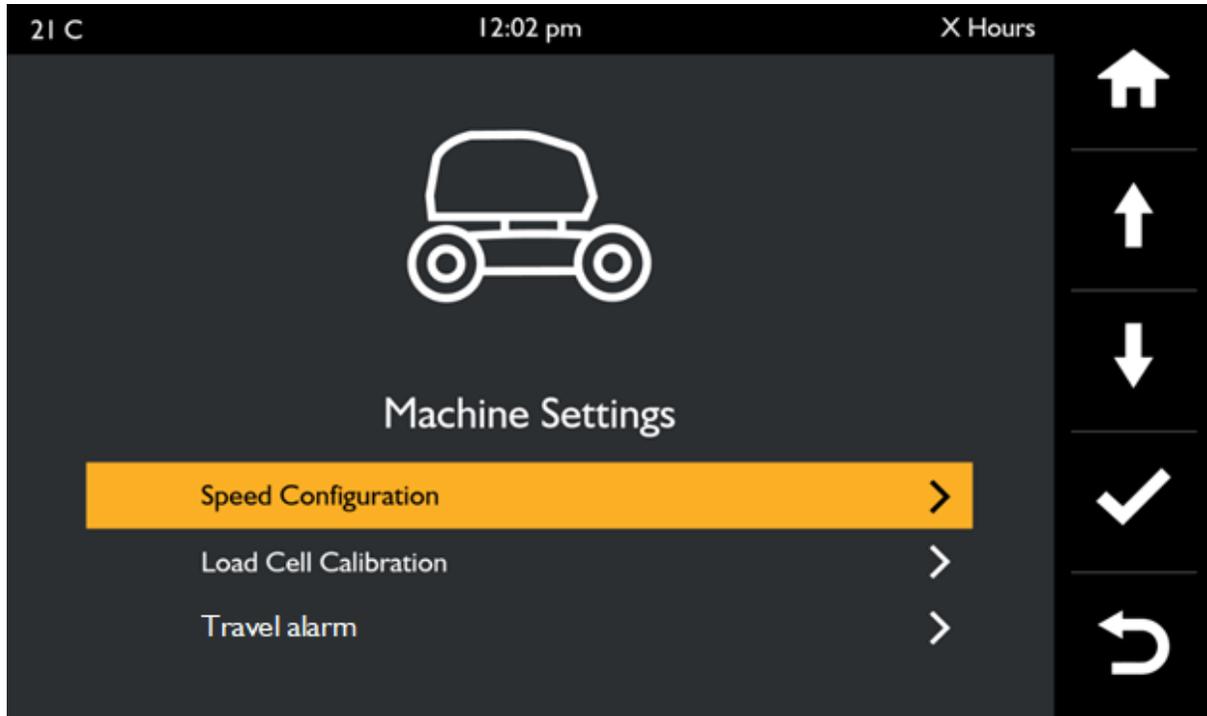
4. Use the tick to confirm selection.

### 3.20.5 Speed Configuration

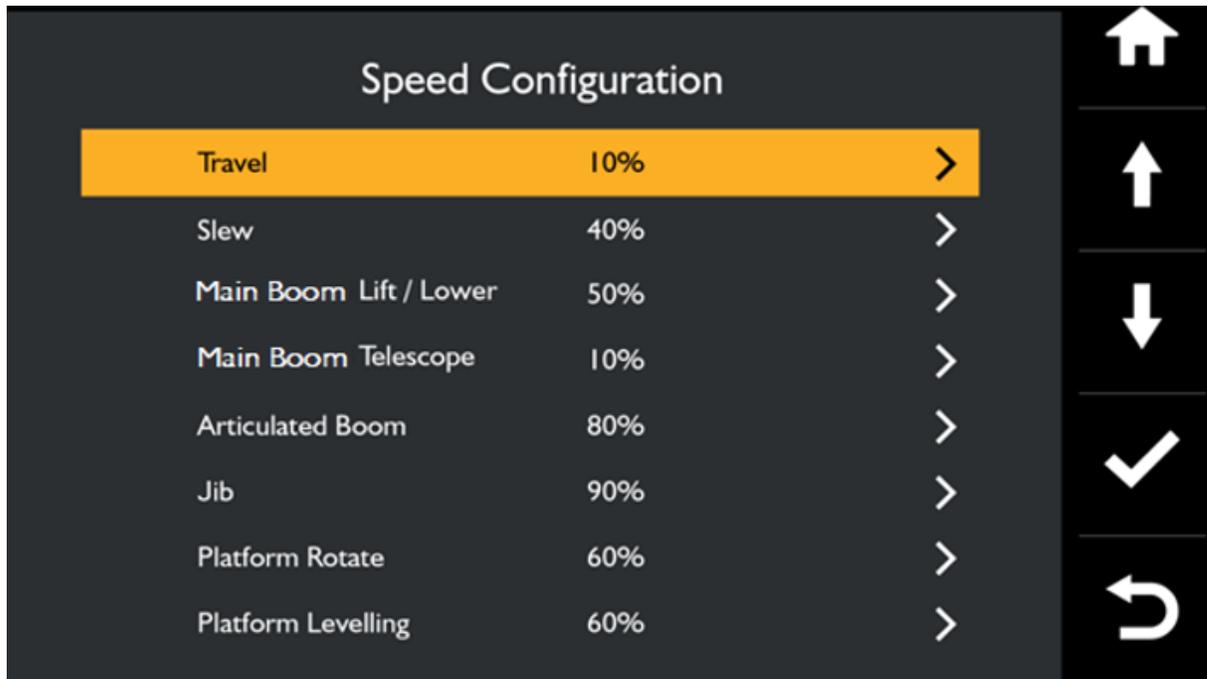
**To Set the configure speeds in the display menu**

This allows an operator to adjust machine speeds per function. The machine will be set at 100% as it leaves the factory but may be slowed down for new operators or un-familiar operators or even block a function off. For example if you didnt want to allow slew this function could be set to 0%

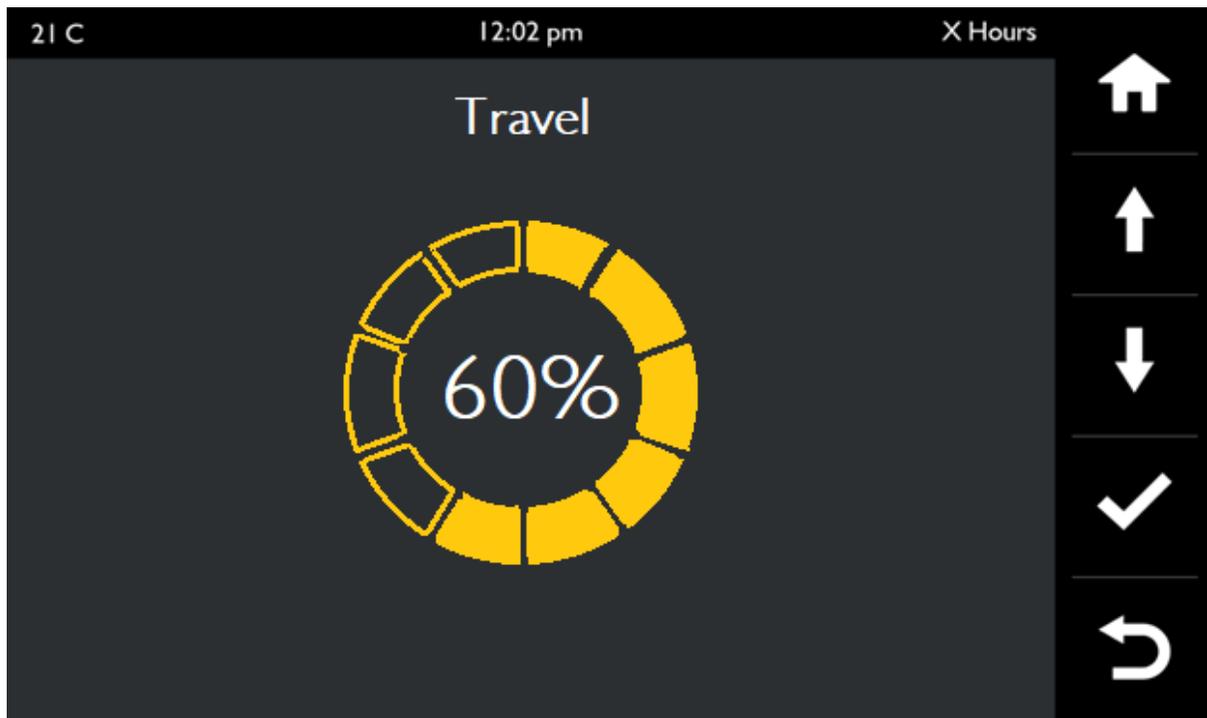
1. Select 'machine settings'
2. Select 'Speed configuration' using the arrows and tick button



3. Using the arrow buttons then select the desired function and use the tick to select



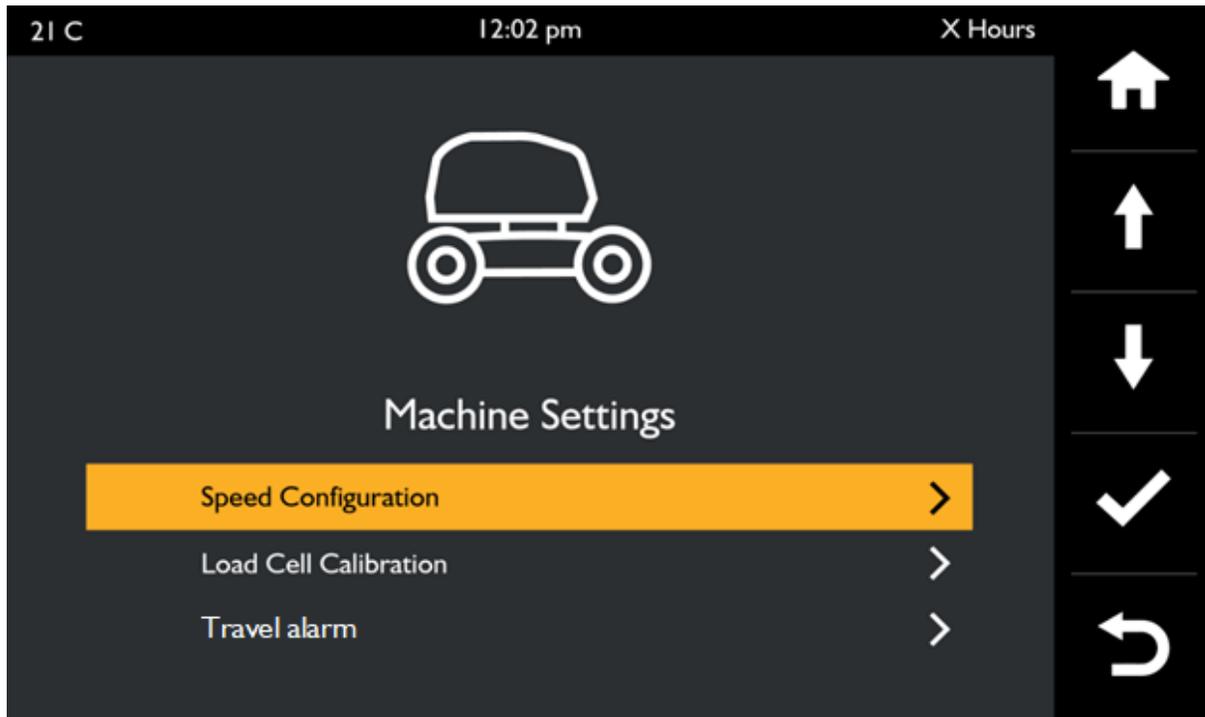
4. Use the up and down arrows to adjust the % speed allowed



5. Use the tick around to confirm

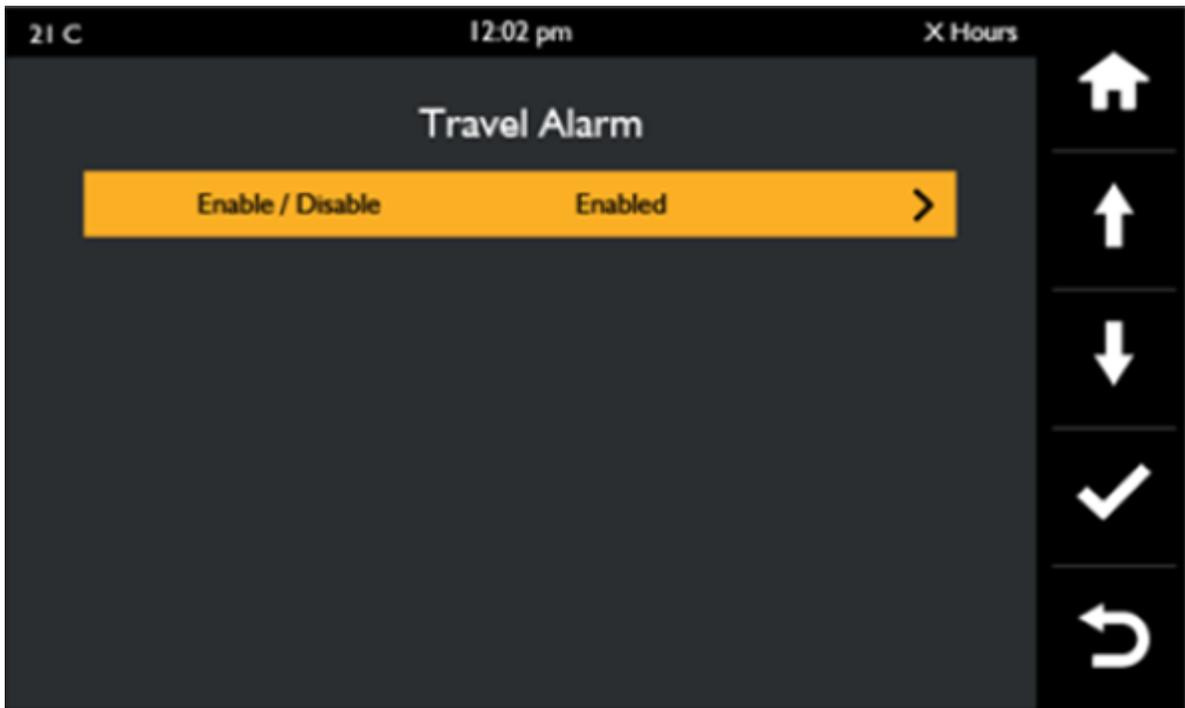
## 3.20.6 Setting Travel Alarm

1. Go to machine settings in the display

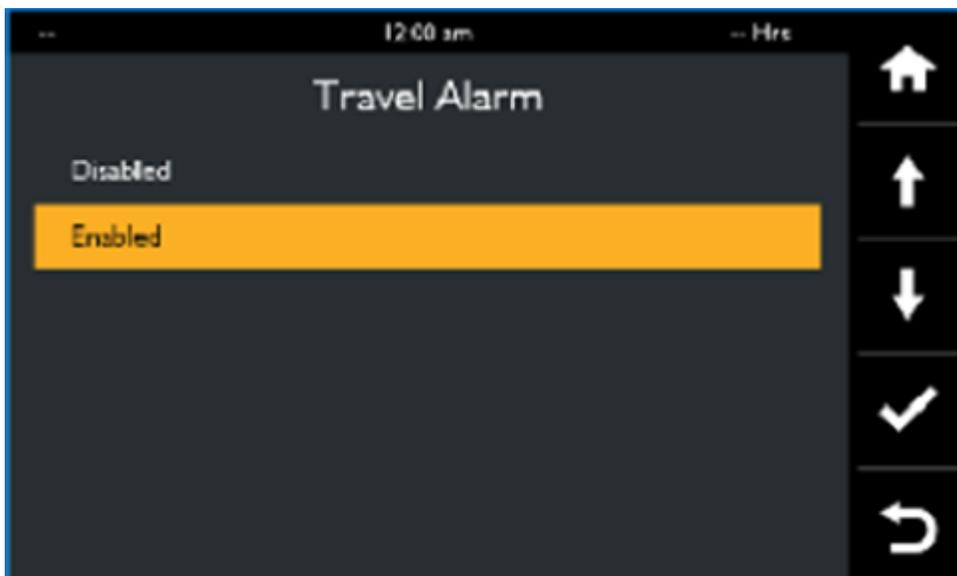


2. Using the arrow keys select travel alarm and use the tick button to confirm

3. The right hand side shows current status, to change use the tick button



4. Use the arrows keys to select required state and tick to select



### 3.20.7 Setting Language

#### To Set the 'Language' in the display menu

1. Select Display settings
2. Select 'Language' using the arrows and tick button



3. Using the arrow keys select the correct language from the drop down menu

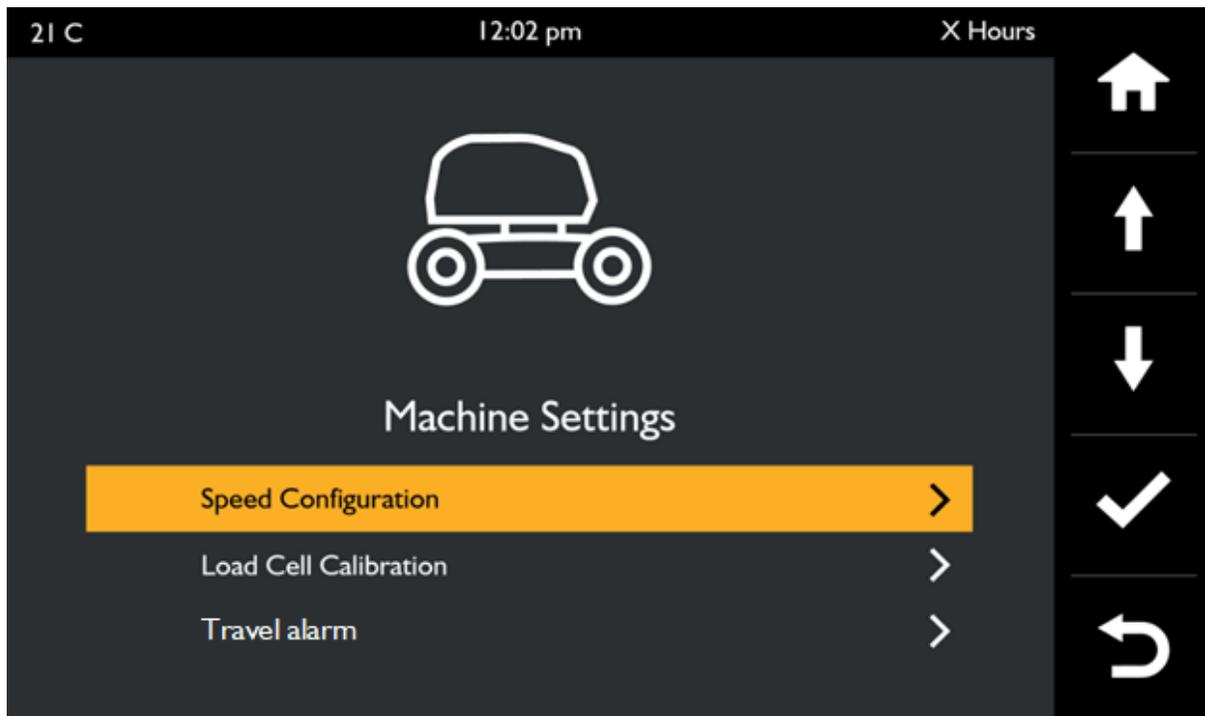


4. Use the tick button to confirm language selection

## 3.20.8 Setting Load Cell Calibration

### Load cell Calibration

1. Select 'machine settings on the display screen
2. Select load cell calibration and use the tick to confirm



3. Use the arrow keys and select the 'NO load' or 'Rated load' depending on the calibration to be carried out.

Ensure there is nothing in the platform when the 'NO load' is selected

Ensure 250Kg is in the platform to set the 'rated load'

4. When the machine has the correct loading, use the tick arrow to confirm setting.

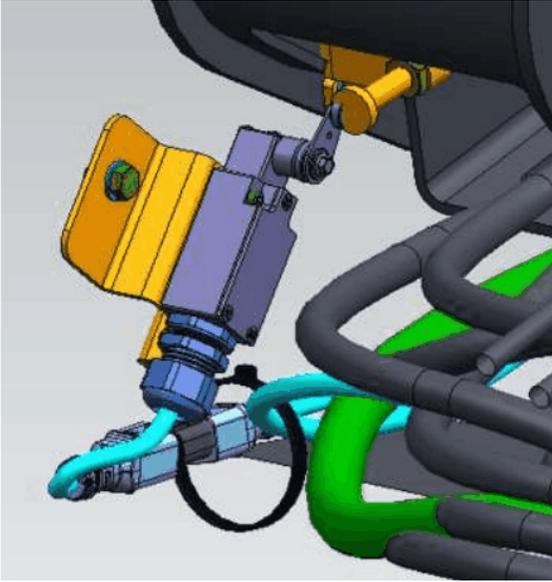
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# Components

## 4 Components

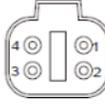
### Components

#### 4.1 Main Boom Lower Limit switch

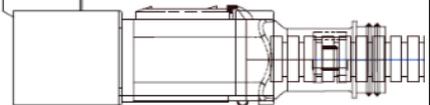
<b>Component :</b>	Main Boom Lower Limit switch																	
<b>Function:</b>	<ul style="list-style-type: none"> <li>The main boom lower limit switch is to detect when the main boom is fully lowered.</li> <li>This is also part of the machine mode that indicates whether the machine is in the Stowed or Raised mode.</li> </ul>																	
<b>Location:</b>	The switch is located on the rear side of the boom front knuckle cover plate																	
<b>Location Image:</b>																		
<b>Signal:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Pin Number</th> <th style="width: 50%;">Description</th> <th style="width: 25%;">Wire Number</th> </tr> </thead> <tbody> <tr> <td>13 (1)</td> <td>10V Feed</td> <td>1046EA</td> </tr> <tr> <td>14 (2)</td> <td>Switch Signal 1</td> <td>4013</td> </tr> <tr> <td>21 (3)</td> <td>10V Feed</td> <td>1046EB</td> </tr> <tr> <td>22 (4)</td> <td>Switch Signal 2</td> <td>4105</td> </tr> </tbody> </table>			Pin Number	Description	Wire Number	13 (1)	10V Feed	1046EA	14 (2)	Switch Signal 1	4013	21 (3)	10V Feed	1046EB	22 (4)	Switch Signal 2	4105
Pin Number	Description	Wire Number																
13 (1)	10V Feed	1046EA																
14 (2)	Switch Signal 1	4013																
21 (3)	10V Feed	1046EB																
22 (4)	Switch Signal 2	4105																

## Wires & Connectors:

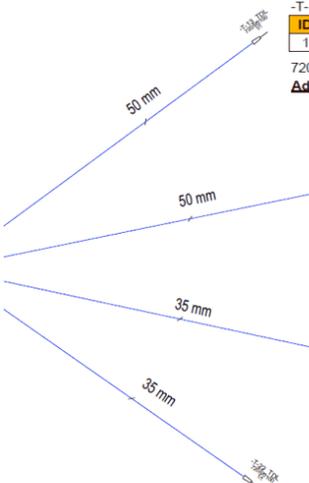
**-C01\_TDL#1**  
7214/0060  
SENSOR HARNESS INTERCONN



**-C01\_TDL**      **-P02\_TDL**  
7243/0206





**-T-13\_TDL**      **BOOTLACE FERRULE 13**

ID	Wire ID	Size	Destination	Terminal / Plug	Colour	Cable
1	1 - 13	1.00 mm <sup>2</sup>	-C01_TDL:1		Yellow	-W01_TDL

7205/0100    1.0mm2 Red Bootlace Ferrule  
Additional Components

**-T-14\_TDL**      **BOOTLACE FERRULE 14**

ID	Wire ID	Size	Destination	Terminal / Plug	Colour	Cable
1	2 - 14	1.00 mm <sup>2</sup>	-C01_TDL:2		Yellow	-W01_TDL

7205/0100    1.0mm2 Red Bootlace Ferrule  
Additional Components

**-T-21\_TDL**      **BOOTLACE FERRULE 21**

ID	Wire ID	Size	Destination	Terminal / Plug	Colour	Cable
1	4 - 21	1.00 mm <sup>2</sup>	-C01_TDL:4		Yellow	-W01_TDL

7205/0100    1.0mm2 Red Bootlace Ferrule  
Additional Components

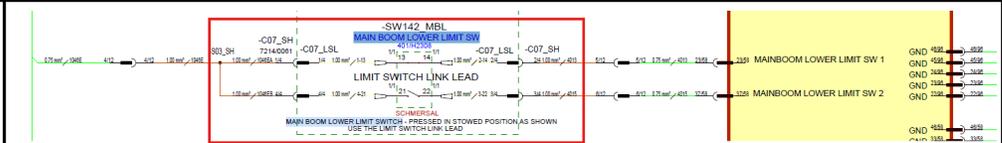
  

**-T-22\_TDL**      **BOOTLACE FERRULE 22**

ID	Wire ID	Size	Destination	Terminal / Plug	Colour	Cable
1	3 - 22	1.00 mm <sup>2</sup>	-C01_TDL:3		Yellow	-W01_TDL

7205/0100    1.0mm2 Red Bootlace Ferrule  
Additional Components

## Internal Electrical Schematic:



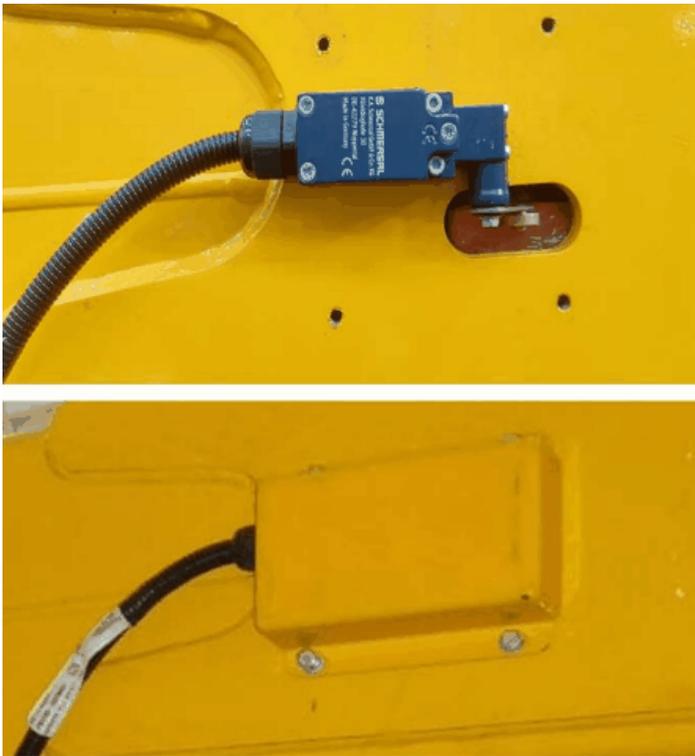
## Testing:

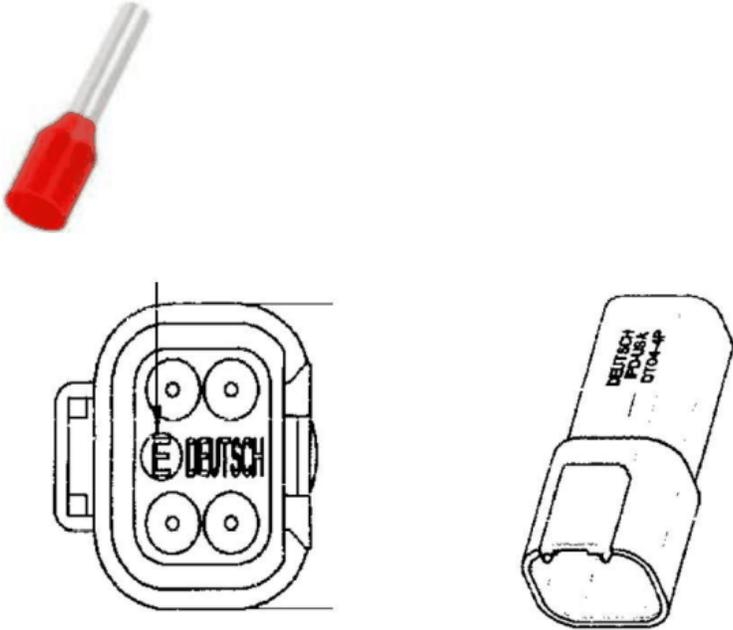
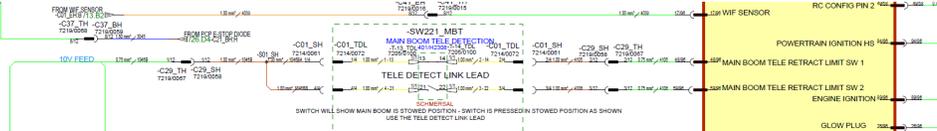
- Important: Use the multi-meter on the harness connector pins. **DO NOT USE** the meter on the ECU pins.
1. Check the gland nut tightened properly there should be no water ingress
  2. Check the switch position pressed or undressed.
  3. It should be pressed In stowed state
  4. Check the continuity between pin 13 and 14 it should be open circuit
  5. Check the continuity between pin 21 and 22 it should be close circuit

	6. When switch is pressed then Pin 13 & 14 should be closed circuit and 21 & 22 should be open circuit	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1138-17	Main Boom Telescopic retract limit switch 1SC to High
	B1139-17	Main Boom Telescopic retract limit switch 2SC to High
	B1140-16	Main Boom Telescopic retract limit switch 1SC to Low
	B1141-13	Main Boom Telescopic retract limit switch 1 and switch 2OC
	B1142-16	Main Boom Telescopic retract limit switch 2SC to Low
	B1143-92	Main Boom Telescopic retract limit switch 1 and switch 2 sh
	B1252-17	Main Boom Extend switch SC to High
	B1254-92	Main Boom extend and retract switches both activated (5-10
	B1255-16	Main Boom extend switch SC to low
	B1253-17	Main Boom to High Retract switch SC
	B1256-16	Main Boom Retract switch SC to Low

## 4.2 Main Boom Telescope retract Limit switch

<b>Component:</b>	Main Boom Telescope retract Limit switch
<b>Function:</b>	<ul style="list-style-type: none"> <li>The main boom telescopic retract switch is to detect when the telescopic section of the main boom is fully retracted.</li> <li>This is also part of the machine mode that indicates whether the machine is in the Stowed or Raised mode in conjunction.</li> </ul>
<b>Location:</b>	The switch is located on the side of the boom under the cover

<p><b>Location Image:</b></p>																		
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>13 (1)</td> <td>10V Feed</td> <td>1024A</td> </tr> <tr> <td>14 (2)</td> <td>Switch Signal 1</td> <td>4105</td> </tr> <tr> <td>21 (3)</td> <td>10V Feed</td> <td>1024GB</td> </tr> <tr> <td>22 (4)</td> <td>Switch Signal 2</td> <td>4106</td> </tr> </tbody> </table>			Pin Number	Description	Wire Number	13 (1)	10V Feed	1024A	14 (2)	Switch Signal 1	4105	21 (3)	10V Feed	1024GB	22 (4)	Switch Signal 2	4106
Pin Number	Description	Wire Number																
13 (1)	10V Feed	1024A																
14 (2)	Switch Signal 1	4105																
21 (3)	10V Feed	1024GB																
22 (4)	Switch Signal 2	4106																

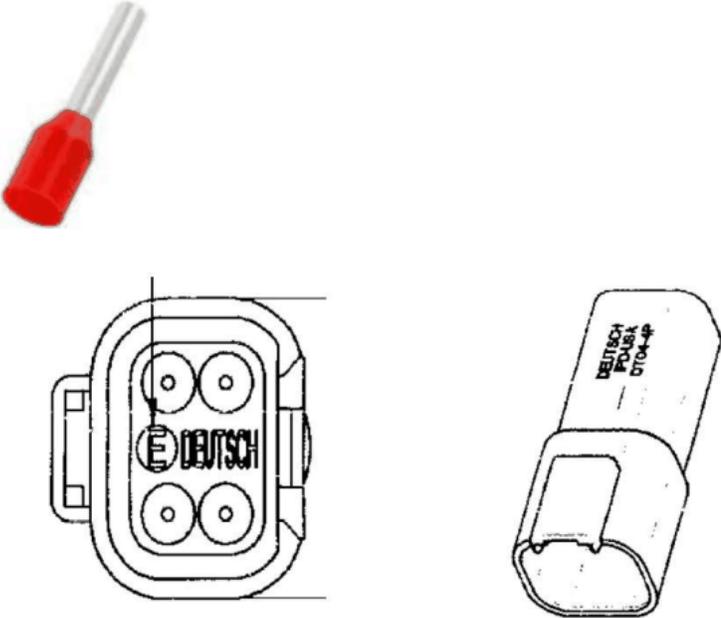
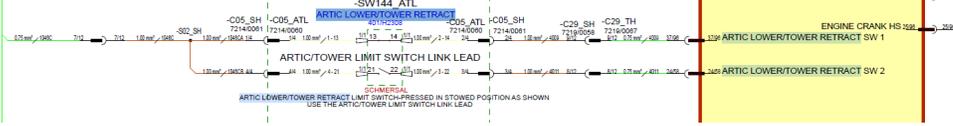
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Check the gland nut tightened properly there should be no water ingress</li> <li>2. Check the switch position pressed or undressed.</li> <li>3. It should be un-pressed In natural state</li> <li>4. Check the continuity between pin 13 and 14 it should be open circuit</li> <li>5. Check the continuity between pin 21 and 22 it should be close circuit</li> <li>6. When switch is pressed then Pin 13 &amp; 14 should be closed circuit and 21 &amp; 22 should be open circuit</li> <li>7. Switch position is at 0 degree when is not pressed</li> </ol>

	 <p>8. Switches changes at 30 degrees going from center and 12 degrees on the way back towards center</p>						
<p><b>Expected Values:</b></p>							
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1138-17</td> <td>Main Boom Telescopic retract limit switch 1SC to High</td> </tr> <tr> <td>B1139-17</td> <td>Main Boom Telescopic retract limit switch 2SC to High</td> </tr> </tbody> </table>	Fault Code	Description	B1138-17	Main Boom Telescopic retract limit switch 1SC to High	B1139-17	Main Boom Telescopic retract limit switch 2SC to High
Fault Code	Description						
B1138-17	Main Boom Telescopic retract limit switch 1SC to High						
B1139-17	Main Boom Telescopic retract limit switch 2SC to High						

B1140-16	Main Boom Telescopic retract limit switch 1SC to Low
B1141-13	Main Boom Telescopic retract limit switch 1 and switch 2OC
B1142-16	Main Boom Telescopic retract limit switch 2SC to Low
B1143-92	Main Boom Telescopic retract limit switch 1 and switch 2 short t
B1252-17	Main Boom Extend switch SC to High
B1254-92	Main Boom extend and retract switches both activated (5-10V)
B1255-16	Main Boom extend switch SC to low
B1253-17	Main Boom to High Retract switch SC
B1256-16	Main Boom Retract switch SC to Low

### 4.3 Articulated Boom Lower Limit Switch

<b>Component :</b>	Articulated Boom Lower Limit Switch
<b>Function:</b>	<ul style="list-style-type: none"> <li>Articulated boom limit switch is to detect when the artic boom sections fully lowered</li> <li>This is also part of the machine mode that indicates whether the machine is in the Stowed or Raised mode.</li> </ul>
<b>Location:</b>	The switch is located on the side of the boom under the cover
<b>Location Image:</b>	

<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>13 (1)</td> <td>10V Feed</td> <td>1046A</td> </tr> <tr> <td>14 (2)</td> <td>Switch Signal 1</td> <td>4009</td> </tr> <tr> <td>21 (3)</td> <td>10V Feed</td> <td>1046GB</td> </tr> <tr> <td>22 (4)</td> <td>Switch Signal 2</td> <td>4011</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	13 (1)	10V Feed	1046A	14 (2)	Switch Signal 1	4009	21 (3)	10V Feed	1046GB	22 (4)	Switch Signal 2	4011
Pin Number	Description	Wire Number														
13 (1)	10V Feed	1046A														
14 (2)	Switch Signal 1	4009														
21 (3)	10V Feed	1046GB														
22 (4)	Switch Signal 2	4011														
<p><b>Wires &amp; Connectors:</b></p>																
<p><b>Internal Electrical Schematic:</b></p>																
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Check the gland nut tightened properly there should be no water ingress</li> <li>2. Check the switch position pressed or undressed.</li> <li>3. It should be un-pressed In natural state</li> <li>4. Check the continuity between pin 13 and 14 it should be open circuit</li> <li>5. Check the continuity between pin 21 and 22 it should be close circuit</li> <li>6. When switch is pressed then Pin 13 &amp; 14 should be closed circuit and 21 &amp; 22 should be open circuit</li> <li>7. Switch position is at 0 degree when is not pressed</li> </ol>															

	 <p>8. Switches changes at 30 degrees going from center and 12 degrees on the way back towards center</p>						
<p><b>Expected Values:</b></p>							
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1247-17</td> <td>ARTICULATED BOOM RAISE Switch SC to High</td> </tr> <tr> <td>B1248-17</td> <td>ARTICULATED BOOM LOWER Switch SC to High</td> </tr> </tbody> </table>	Fault Code	Description	B1247-17	ARTICULATED BOOM RAISE Switch SC to High	B1248-17	ARTICULATED BOOM LOWER Switch SC to High
Fault Code	Description						
B1247-17	ARTICULATED BOOM RAISE Switch SC to High						
B1248-17	ARTICULATED BOOM LOWER Switch SC to High						

B1249-92	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)
B1250-16	ARTICULATED BOOM RAISE Switch SC to Low
B1251-16	ARTICULATED BOOM LOWER Switch SC to Low

#### 4.4 Slew Position Limit Switch

<b>Component :</b>	Slew Position Limit Switch																	
<b>Function:</b>	<ul style="list-style-type: none"> <li>The Slew position limit sensor is to understand the slew position of the machine and operator.</li> <li>As the machine is slewed round out of the forward position, the machine will pause any drive conditions until the operator has pressed the slew acknowledgment switch. This is so the operator is sure of the direction that the machine will operate in.</li> </ul>																	
<b>Location:</b>	On Turntable																	
<b>Location Image:</b>																		
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire number</th> </tr> </thead> <tbody> <tr> <td>13</td> <td>10V</td> <td>A-13 1046D</td> </tr> <tr> <td>14</td> <td>Slew position Sw 1</td> <td>B-14 4022</td> </tr> <tr> <td>21</td> <td>10V</td> <td>A-21 1046D</td> </tr> <tr> <td>22</td> <td>Slew position Sw 2</td> <td>C-22 4021</td> </tr> </tbody> </table>			Pin Number	Description	Wire number	13	10V	A-13 1046D	14	Slew position Sw 1	B-14 4022	21	10V	A-21 1046D	22	Slew position Sw 2	C-22 4021
Pin Number	Description	Wire number																
13	10V	A-13 1046D																
14	Slew position Sw 1	B-14 4022																
21	10V	A-21 1046D																
22	Slew position Sw 2	C-22 4021																

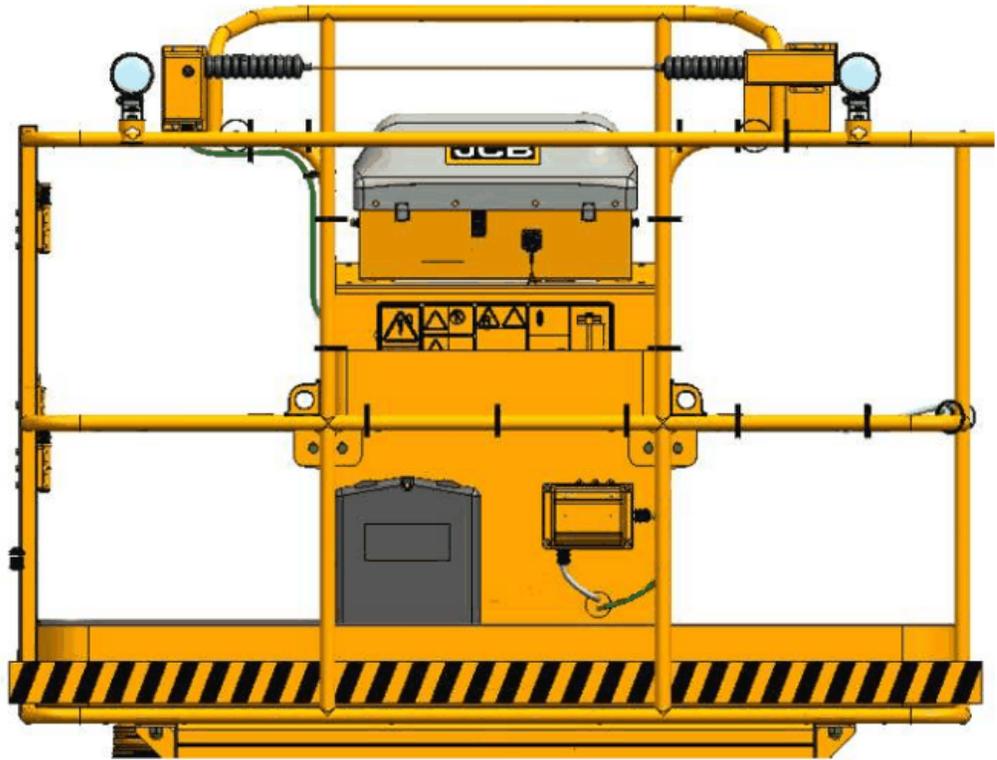
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Check the gland nut tightened properly there should be no water ingress</li> <li>2. Check the switch position pressed or undressed.</li> <li>3. It should be un-pressed In natural state</li> <li>4. Check the continuity between pin 13 and 14 it should be open circuit</li> <li>5. Check the continuity between pin 21 and 22 it should be close circuit</li> <li>6. When switch is pressed then Pin 13 &amp; 14 should be closed circuit and 21 &amp; 22 should be open circuit</li> <li>7. Switch position is at 0 degree when is not pressed</li> <li>8. Switches changes at 30 degrees going from center and 12 degrees on the way back towards center</li> </ol>
<p><b>Expected Values:</b></p>	

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1019-17	Slew position limit switch 1 short circuit to high
	B1020-17	Slew position limit switch 2 short circuit to high
	B1021-16	Slew position limit switch 1 short circuit to low
	B1022-13	Slew position limit switch 1 and 2 open circuit
	B1023-16	Slew position limit switch 2 short circuit to low
	B1024-92	Slew position limit switch 1 and 2 both at 10V at the same time

## 4.5 Work Light (Optional Fit)

<b>Component:</b>	Work Light (Optional Fit)
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The work-light is LED and is optional fit.</li> <li>• It will only operate when the engine is running.</li> <li>• A work light is a high-intensity light fixture which is used to illuminate the stage for the benefit of technicians</li> </ul>
<b>Location:</b>	On Platform Rail

Location  
Image:

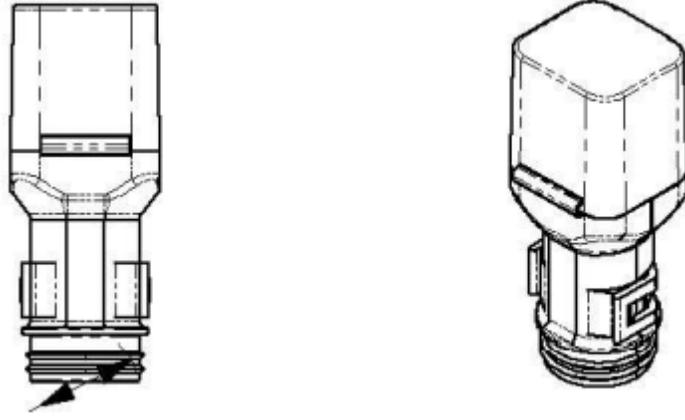
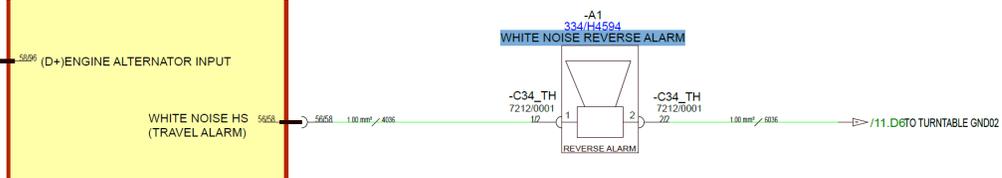


<p><b>Signal:</b></p>	<table border="1"> <tr> <th colspan="3">C02_LWH</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> <tr> <td>1</td> <td>D+ Supply</td> <td>8079B</td> </tr> <tr> <td>2</td> <td>GND</td> <td>6079B</td> </tr> <tr> <th colspan="3">C03_LWH</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> <tr> <td>1</td> <td>D+ Supply</td> <td>8079B</td> </tr> <tr> <td>2</td> <td>GND</td> <td>6079B</td> </tr> </table>	C02_LWH			Pin Number	Description	Wire Number	1	D+ Supply	8079B	2	GND	6079B	C03_LWH			Pin Number	Description	Wire Number	1	D+ Supply	8079B	2	GND	6079B	
C02_LWH																										
Pin Number	Description	Wire Number																								
1	D+ Supply	8079B																								
2	GND	6079B																								
C03_LWH																										
Pin Number	Description	Wire Number																								
1	D+ Supply	8079B																								
2	GND	6079B																								
<p><b>Wires &amp; Connectors:</b></p>																										
<p><b>Internal Electrical Schematic:</b></p>																										
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector from the beacon.</li> <li>2. With the ignition on, and the work light button selected, check using a multimeter if there is 12V present at pin 1 and at pin 2 the earth resistance .</li> <li>3 If there is 12V present and the earth resistance is within range, replace the work light</li> </ol>																									
<p><b>Expected</b></p>																										

<b>Values:</b>	
<b>Related Fault Codes:</b>	

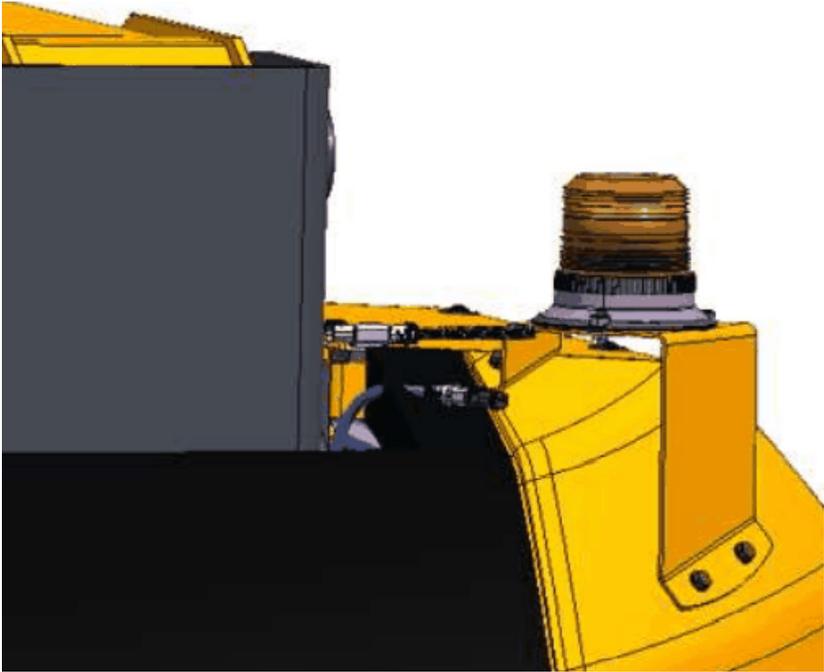
### 4.6 White Noise Alarm

<b>Component:</b>	White Noise Alarm											
<b>Function:</b>	The travel white noise alarm will sound when the machine is traveling or steering to make people around the machine aware of machine movement. The travel white noise alarm will only come on when command from the platform control station for drive or steer is applied. The travel alarm may be turned off through the display or service-master.											
<b>Location :</b>	On Turntable RHS											
<b>Location Image:</b>												
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Numbers</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V</td> <td>4036C</td> </tr> <tr> <td>2</td> <td>GND</td> <td>6022</td> </tr> </tbody> </table>	Pin Number	Description	Wire Numbers	1	12V	4036C	2	GND	6022		
Pin Number	Description	Wire Numbers										
1	12V	4036C										
2	GND	6022										

<p><b>Wires &amp; Connectors:</b></p>					
<p><b>Internal Electrical Schematic:</b></p>					
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pin</p> <p><b>Before fault finding on the white noise alarm ensure that it is enabled in the software.</b></p> <p>To check the white noise alarm, go to the platform control station and press the foot pedal and use drive joystick for either drive forwards and backwards or steer functions.</p> <ol style="list-style-type: none"> <li>1. The foot pedal is fed from 10V ECU pin (232-32/58) platform ECU</li> <li>2. Foot pedal input (147-47/96) on the platform ECU</li> <li>3. The joystick feed is via a 5V ECU pin (255-55/58) platform ECU</li> <li>4. Joystick drive pin (120-20/96) platform ECU</li> <li>5. Steer joystick pin (141-41/96) platform ECU</li> <li>6. White noise alarm output (256-56/58) turntable ECU</li> </ol>				
<p><b>Expected Values:</b></p>					
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1183-16</td> <td>WHITE NOISE ALARM SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1183-16	WHITE NOISE ALARM SC to Low
Fault Code	Description				
B1183-16	WHITE NOISE ALARM SC to Low				

B1184-13	WHITE NOISE ALARM OC
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## 4.7 Beacon

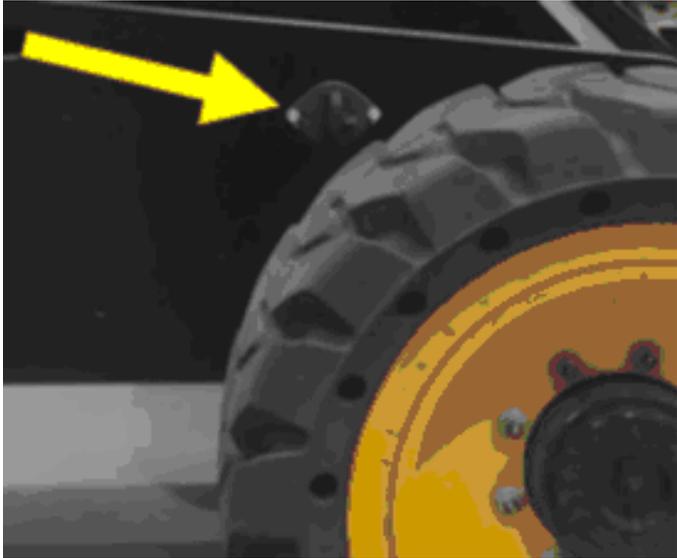
<b>Component:</b>	Beacon											
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The travel beacon will flash when the machine is traveling or steering to make people around the machine aware of machine movement.</li> <li>• The beacon will only come on when command from the platform control station</li> </ul>											
<b>Location:</b>	Top side of Counter Weight											
<b>Location Image:</b>												
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Beacon positive from 43/58 turntable ECU</td> <td>4036</td> </tr> <tr> <td>2</td> <td>Negative - turntable GND</td> <td>6063K</td> </tr> </tbody> </table>	Pin Number	Description	Wire number	1	Beacon positive from 43/58 turntable ECU	4036	2	Negative - turntable GND	6063K		
Pin Number	Description	Wire number										
1	Beacon positive from 43/58 turntable ECU	4036										
2	Negative - turntable GND	6063K										

<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector from the beacon.</li> <li>2. With the ignition on, and the beacon button selected, check using a multimeter if there is 12V present at pin 1 and at pin 2 the earth resistance (harness side).</li> <li>3. If there is 12V present and the earth resistance is within range, replace the beacon/beacon socket.</li> <li>4. If there is not 12V present check fuse FU19 and the beacon relay , if the resistance is outside the range specified in step 2, check the continuity of the wire and condition of the earth stud</li> </ol>
<p><b>Expected</b></p>	<p>12 V</p>

<b>Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1179-13	BEACON OC
	B1180-16	BEACON SC to Low

## 4.8 Isolator

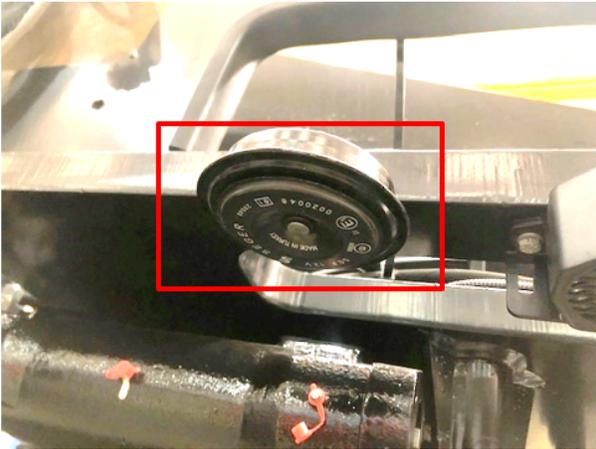
<b>Component:</b>	Isolator
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The isolator is fitted to isolate the machine for maintenance.</li> <li>• This should not be used to cut power while the engine is on.</li> <li>• Always take care when working on machine isolator</li> <li>• Always ensure cables are wired to schematic as there is cables to both sides of the isolator, this is to allow permanent connections when the key is out such as display clock and Livelink.</li> </ul>
<b>Location:</b>	On Turntable LHS

<p><b>Location Image:</b></p>	 
<p><b>Signal:</b></p>	<p>12 V</p>
<p><b>Wires &amp; Connectors:</b></p>	<p>Connections to the isolator are M10 Ring terminals</p> 

	<p>The thickest cable should always be put on to isolator first and thinnest at the top.</p>
<p><b>Internal Electrical Schematic:</b></p>	<p>The schematic shows a battery pack consisting of eight L16-AGM 6V 370AH batteries connected in two parallel strings of four. A master electric and hybrid charger (401U3570) is connected to the battery pack via a switch (SW4) and a busbar. A positive busbar (FB11-FB13) is connected to the charger and a DC-DC converter (401U3572). The DC-DC converter provides a 12V output from a 48V input. Various fuses (FU1-FU3) and cables are also shown.</p>
<p><b>Testing :</b></p>	<p><b>Identify the issue</b></p> <ol style="list-style-type: none"> <li>1. Test the isolator using a multimeter across the back of the 2 terminals.</li> <li>2. With the key removed this should show open circuit across the switch</li> <li>3. When the key is inserted and turned to the ON position the multimeter should show closed circuit.</li> </ol> <p>If the isolator does not show this then replace the part or contact JCB Service department</p>
<p><b>Expected Values:</b></p>	<p>12 V</p>
<p><b>Related Fault Codes:</b></p>	

### 4.9 Horn

<p><b>Component:</b></p>	<p>Horn</p>
--------------------------	-------------

<b>Function:</b>	<ul style="list-style-type: none"> <li>• The horn can be pressed from the Base or platform control station. There is only one horn output which is below the base control box.</li> <li>• The horn input buttons are fed from a 10V feed on the Bosch ECU (Pin 32/58 - VSS2).</li> <li>• Once the button is pressed the 10V will pass through to the Horn input pin on the ECU (Pin 52/58)</li> <li>• The platform ECU will communicate to the base ECU over CAN communication.</li> <li>• The output for the Horn is from the base ECU, (Pin 44/58)</li> <li>• When an input signal is received the horn output (Pin 44/58) will output 12V's and then enable the Horn relay.</li> <li>• As the relay pulls in the horn will sound.</li> </ul>									
<b>Location:</b>	On Turntable LHS									
<b>Location Image:</b>										
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Horn relay to Horn output positive</td> <td>77</td> </tr> <tr> <td>2</td> <td>Horn ground</td> <td>6077</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	1	Horn relay to Horn output positive	77	2	Horn ground	6077
Pin Number	Description	Wire Number								
1	Horn relay to Horn output positive	77								
2	Horn ground	6077								



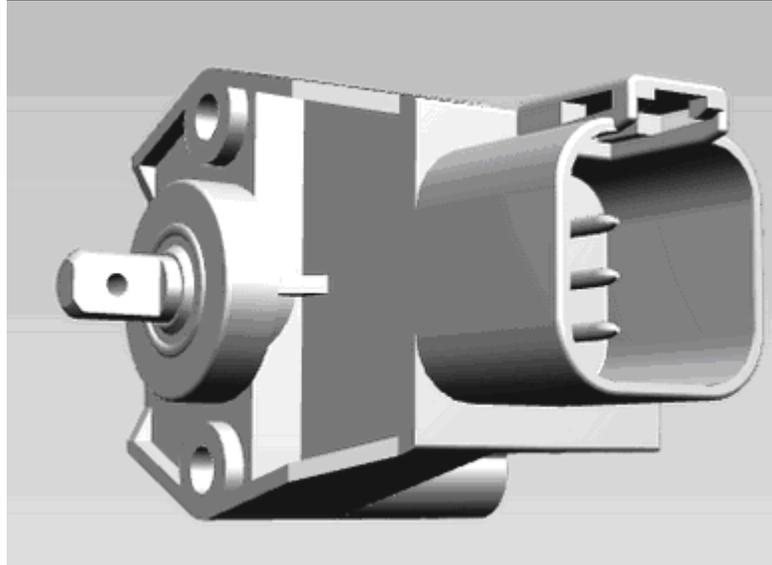
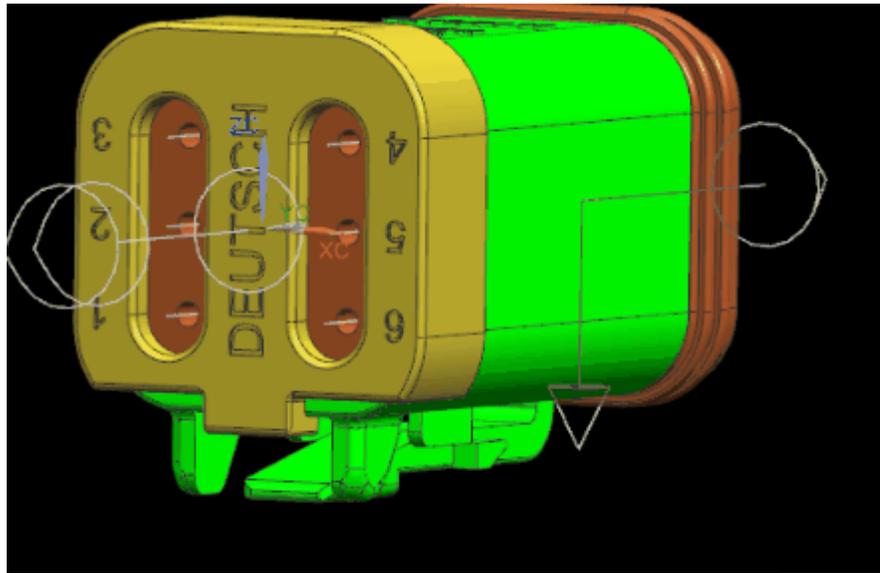
	<p>3. if no voltage at the horn connector, check relay R05, &amp; 10A fuse at FU02 in turntable control panel.</p> <p>4. If no voltage at FU02 then check ignition relay 1 (R01_TCP).</p> <p>5. If the input is received with no output, contact JCB Service team as likely software issue.</p>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1181-16	Horn Output, high side has a short to ground at the base ECU
	B1182-13	Horn Output, high side has a open at the base ECU

## 4.10 Steering Sensor

<b>Component :</b>	Steering Sensor
<b>Function:</b>	<p>The Steer Angle sensor measures the rear axle steer angle. This is CAN based sensor to measure the steer angle of the wheels &amp; angle of measure shall be 360 degrees.</p> <p>The sensor is wired into the MECU, which normalizes the steer angle to +180° to -180° and broadcasts the steer angle on CAN.</p> <p>The Master Traction Inverter then uses this steer angle to speed up, slow down or reverse the drive wheels accordingly to help the machine spin turn.</p> <p>The Sensor can be calibrated using the JCB Servicemaster Set-up tool.</p>
<b>Location:</b>	The Steer Angle Sensor is mounted on top of the rear axle on the right hand side. It is protected by a metal cover.

<b>Location Image:</b>																
<b>Signal:</b>	<table border="1"><thead><tr><th>Pin Number</th><th>Description</th><th>Wire Number</th></tr></thead><tbody><tr><td>1</td><td>Ground</td><td>6510</td></tr><tr><td>2</td><td>Supply</td><td>1033A</td></tr><tr><td>5</td><td>CAN L</td><td></td></tr><tr><td>6</td><td>CAN H</td><td></td></tr></tbody></table>	Pin Number	Description	Wire Number	1	Ground	6510	2	Supply	1033A	5	CAN L		6	CAN H	
Pin Number	Description	Wire Number														
1	Ground	6510														
2	Supply	1033A														
5	CAN L															
6	CAN H															

**Wires & Connectors:**

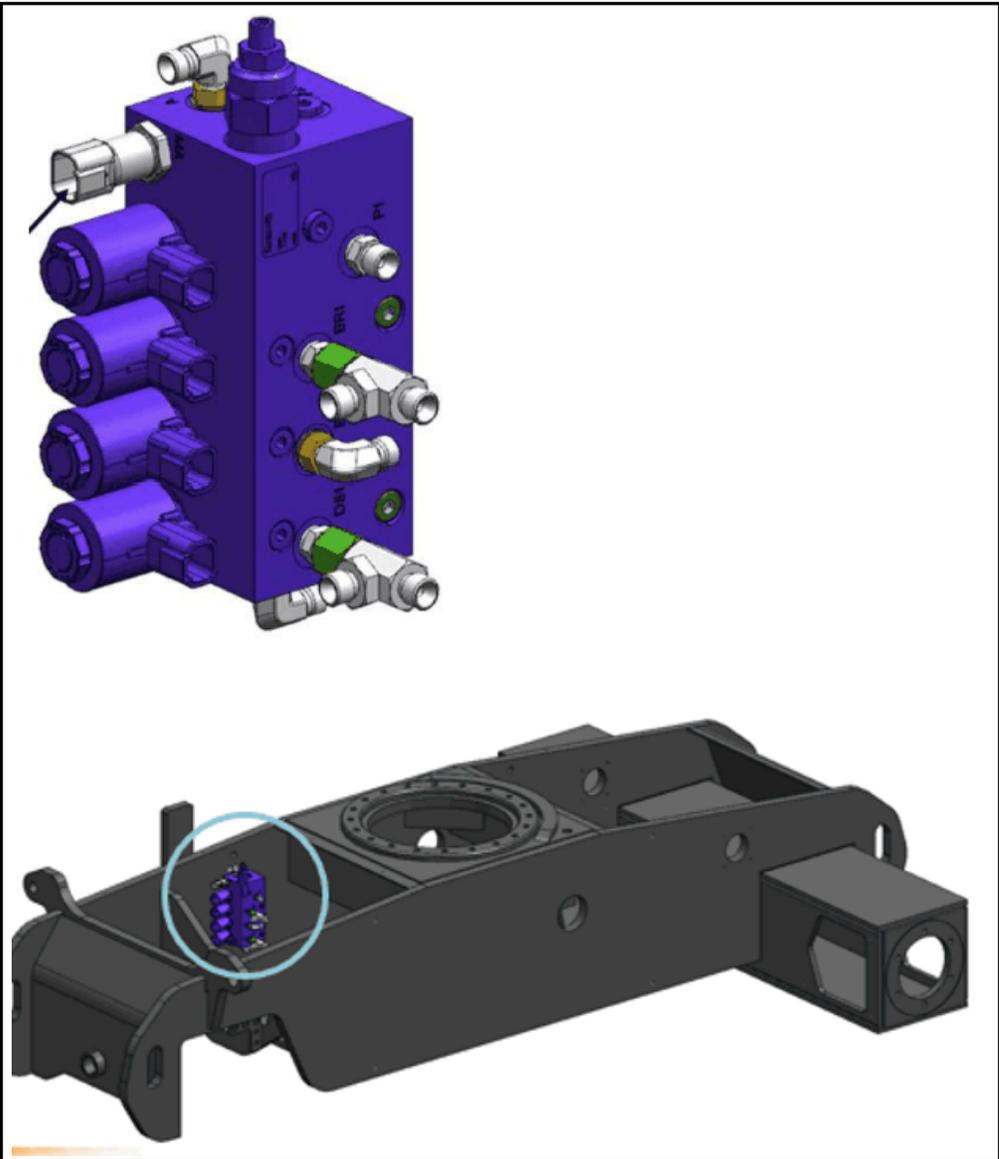


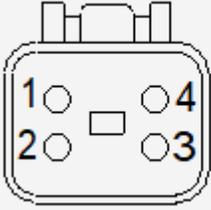
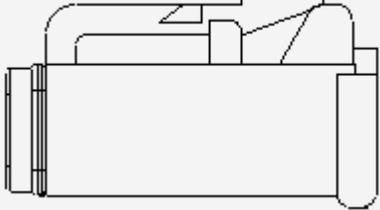
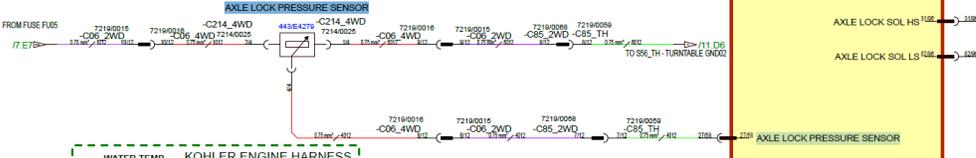
Plug pins	Function
1	OV (GND)
2	+ Vs (+9 - 36 Vdc)
3	NC
4	NC
5	CAN-L
6	CAN-H

<p><b>Internal Electrical Schematic:</b></p>					
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT use the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>Using a multimeter, check the continuity between the two pins on the Fuse. value should be 0 Ω</li> <li>If there is no continuity then replace the Fuse</li> </ol>				
<p><b>Expected Values:</b></p>					
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1464-17</td> <td>Steer Angle Sensor Output SC to High (5v or greater)</td> </tr> </tbody> </table>	Fault Code	Description	B1464-17	Steer Angle Sensor Output SC to High (5v or greater)
Fault Code	Description				
B1464-17	Steer Angle Sensor Output SC to High (5v or greater)				

### 4.11 Axle Lock Pressure Sensor

<p><b>Component :</b></p>	<p>Axle Lock Pressure Sensor</p>
<p><b>Function:</b></p>	<p>The Axle lock pressure sensor is there to ensure the control system has locked the axle correctly and to give feedback to the machine control system</p>
<p><b>Location:</b></p>	<p>Rear Side of Chassis</p>

<p><b>Location Image:</b></p>																		
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>6063L</td> </tr> <tr> <td>2</td> <td>12V from ignition relay 2</td> <td>1024A</td> </tr> <tr> <td>3</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>4</td> <td>Signal output to Bosch ecu</td> <td>4034</td> </tr> </tbody> </table>			Pin Number	Description	Wire number	1	GND	6063L	2	12V from ignition relay 2	1024A	3	NOT USED	NOT USED	4	Signal output to Bosch ecu	4034
Pin Number	Description	Wire number																
1	GND	6063L																
2	12V from ignition relay 2	1024A																
3	NOT USED	NOT USED																
4	Signal output to Bosch ecu	4034																

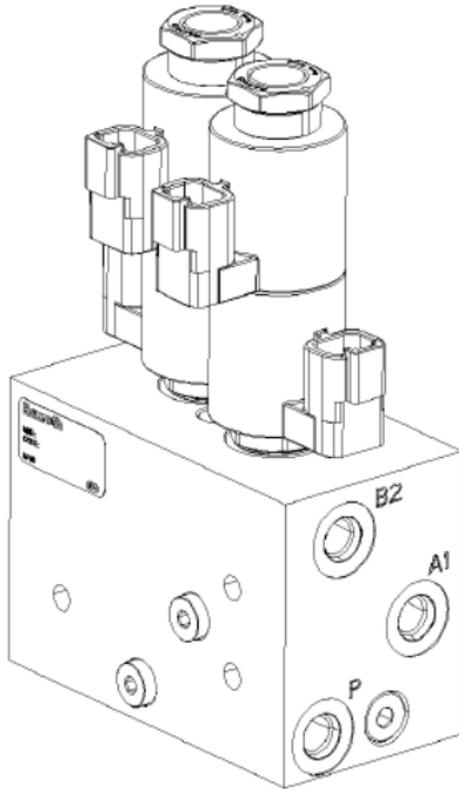
<p><b>Wires &amp; Connectors:</b></p>	 								
<p><b>Internal Electrical Schematic:</b></p>									
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Axle lock pressure sensor measure pressure and convert to voltage</li> <li>2. Ensure no water ingress inside sensor</li> <li>3. Check out put signal at connector C214_TH Pin no 4/4. This should read 0.5V to 4.5V</li> <li>4. If there is no out put check input voltage at connector C214_TH (Pin 1 &amp; 2) this should read 12V</li> <li>5. If there is no 12V then investigate wiring as per schematic</li> <li>6. If there is 12V inputs available but no out put signal then it might internal damage to sensor, Replace it</li> </ol>								
<p><b>Expected Values:</b></p>	<p>12 V</p>								
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1138-17</td> <td>AXLE LOCK PRESSURE SENSOR SC to High</td> </tr> <tr> <td>B1139-17</td> <td>AXLE LOCK PRESSURE SENSOR SC to Low or OC</td> </tr> <tr> <td>B1348-16</td> <td>OSCILLATING AXLE PRESSURE SENSOR SOFTWARE Failure</td> </tr> </tbody> </table>	Fault Code	Description	B1138-17	AXLE LOCK PRESSURE SENSOR SC to High	B1139-17	AXLE LOCK PRESSURE SENSOR SC to Low or OC	B1348-16	OSCILLATING AXLE PRESSURE SENSOR SOFTWARE Failure
Fault Code	Description								
B1138-17	AXLE LOCK PRESSURE SENSOR SC to High								
B1139-17	AXLE LOCK PRESSURE SENSOR SC to Low or OC								
B1348-16	OSCILLATING AXLE PRESSURE SENSOR SOFTWARE Failure								

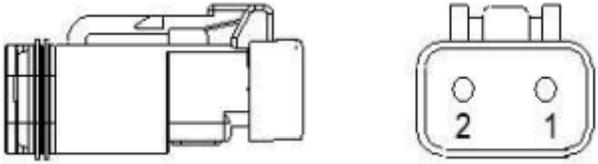
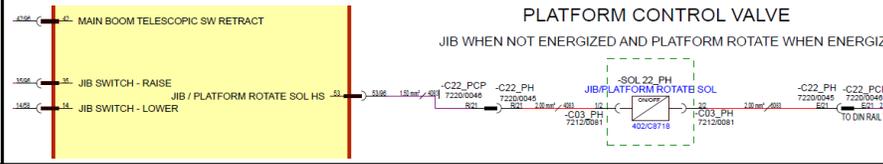
### 4.12 Platform and Jib Valve Block

<p><b>Component :</b></p>	<p>Platform and Jib Valve Block</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• This valve block is used to divert oil between the Jib and Platform rotate functions.</li> </ul>

	<ul style="list-style-type: none"><li>• When the platform rotate or Jib switch is pressed this enables the correct solenoid to energize.</li><li>• This is used in conjunction with the Public proportional solenoid and platform flow solenoid from the turntable valve block</li></ul>
<b>Location:</b>	Near Platform Rotator

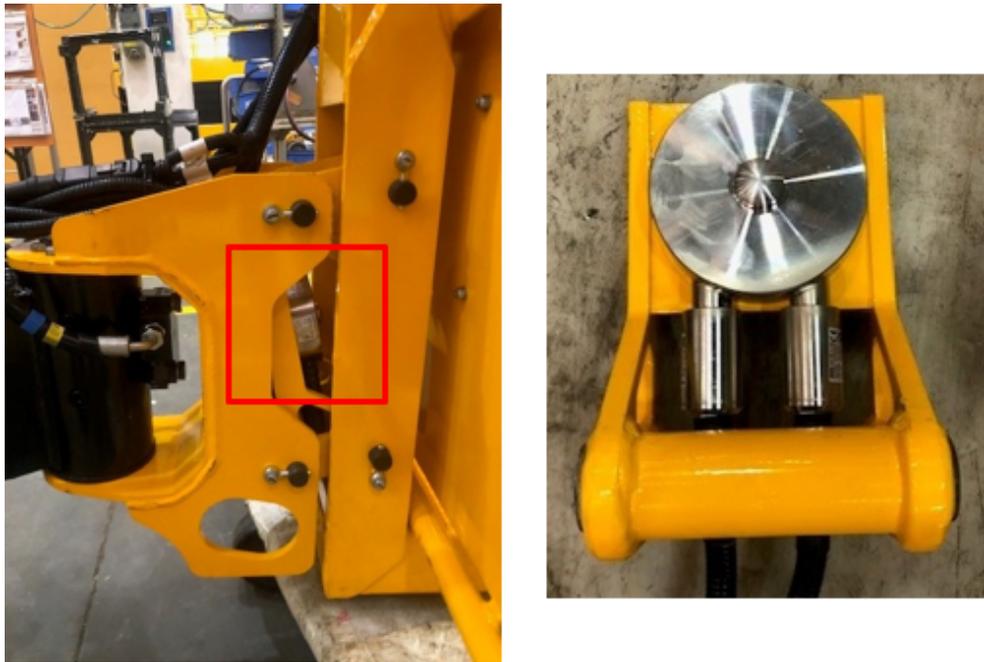
Location  
Image:

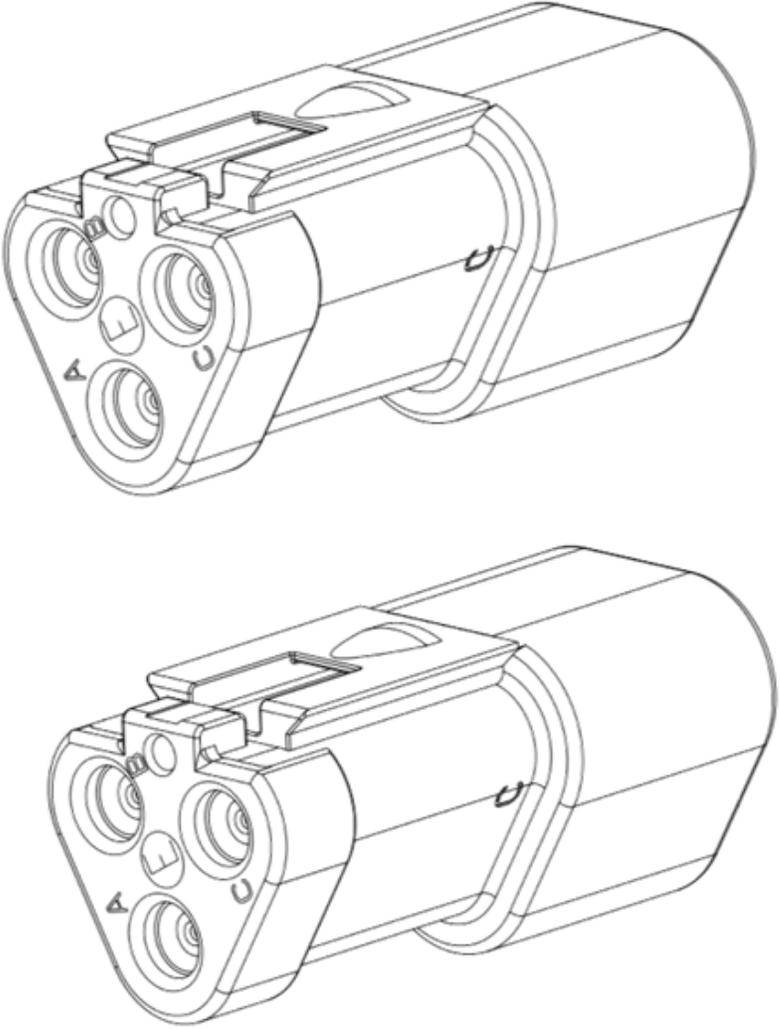


<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Solenoid</th> <th>Pin Number</th> <th>Description</th> <th>Wire Number on Harness</th> </tr> </thead> <tbody> <tr> <td>Platform Rotate Right</td> <td>1</td> <td>Feed</td> <td>4083</td> </tr> <tr> <td>Platform Rotate Right</td> <td>2</td> <td>GND</td> <td>6050C</td> </tr> <tr> <td>Platform Rotate Left</td> <td>1</td> <td>Feed</td> <td>4084</td> </tr> <tr> <td>Platform Rotate Left</td> <td>2</td> <td>GND</td> <td>6050G</td> </tr> <tr> <td>Jib Down</td> <td>1</td> <td>Feed</td> <td>4081</td> </tr> <tr> <td>Jib Down</td> <td>2</td> <td>GND</td> <td>6050A</td> </tr> <tr> <td>Jib Up</td> <td>1</td> <td>Feed</td> <td>4082</td> </tr> <tr> <td>Jib Up</td> <td>2</td> <td>GND</td> <td>6050B</td> </tr> </tbody> </table>	Solenoid	Pin Number	Description	Wire Number on Harness	Platform Rotate Right	1	Feed	4083	Platform Rotate Right	2	GND	6050C	Platform Rotate Left	1	Feed	4084	Platform Rotate Left	2	GND	6050G	Jib Down	1	Feed	4081	Jib Down	2	GND	6050A	Jib Up	1	Feed	4082	Jib Up	2	GND	6050B
Solenoid	Pin Number	Description	Wire Number on Harness																																		
Platform Rotate Right	1	Feed	4083																																		
Platform Rotate Right	2	GND	6050C																																		
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Platform Rotate Left	2	GND	6050G																																		
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<b>Wires &amp; Connectors:</b>																																					
<b>Internal Electrical Schematic:</b>																																					
<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins..</p> <ol style="list-style-type: none"> <li>Using a solenoid pen, check to see if the solenoid is powered when the function is in use.</li> <li>If the solenoid pen shows no power, disconnect the harness from the solenoid.</li> <li>Check the resistance across the solenoid. The reading should as per specification as mentioned in below table</li> <li>If readings are incorrect, replace the solenoid. If correct disconnect the harness at the ECU and check harness continuity, repair/replace if necessary</li> <li>If the harness continuity is OK, replace the solenoid</li> </ol>																																				
<b>Expected Values:</b>																																					
<b>Related Fault</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Fault Code	Description																																		
Fault Code	Description																																				

<b>Codes:</b>	B1329-13	JIB/PLATFORM FLOW Sol SC to High or OC
	B1330-16	JIB/PLATFORM FLOW Sol SC to Low

### 4.13 Weight Sensor

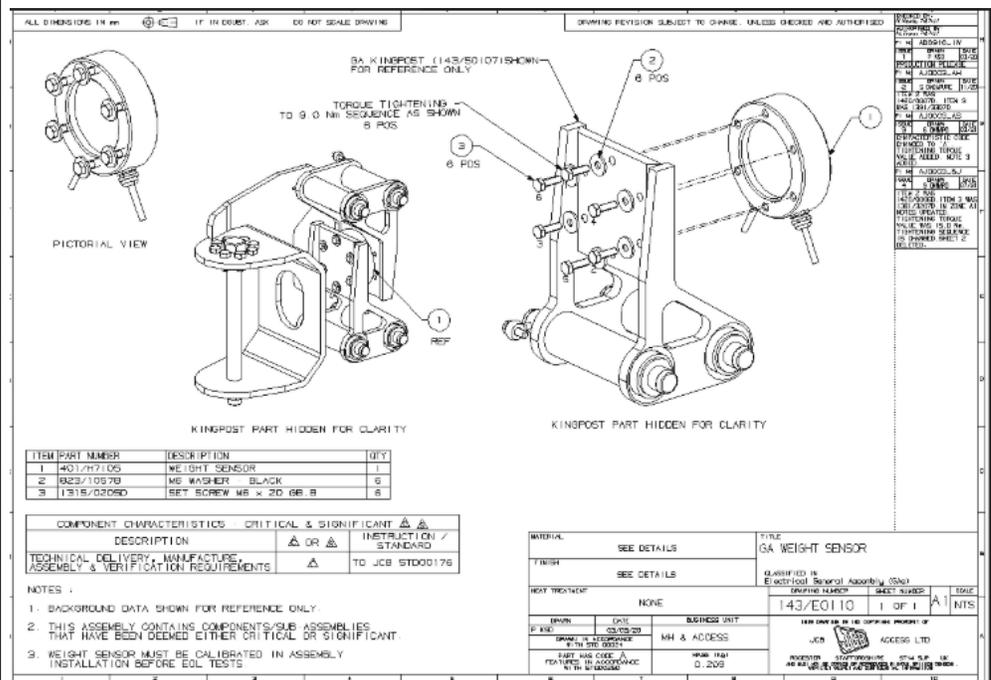
<b>Component :</b>	Weight Sensor																																		
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The load cell is to understand the load in the platform.</li> <li>• This is 2 channel and is part of the machines safety functions</li> </ul>																																		
<b>Location:</b>	The load cell is located near the platform control station																																		
<b>Location Image:</b>																																			
<b>Signal:</b>	<table border="1"> <thead> <tr> <th colspan="4">Sensor 1</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire number</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12V Feed</td> <td>1075R</td> <td>red</td> </tr> <tr> <td>B</td> <td>Signal output (4-20mA)</td> <td>4101</td> <td>green</td> </tr> <tr> <td>C</td> <td>GND</td> <td>6048C</td> <td>black</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Sensor 2</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire number</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12V Feed</td> <td>1075T</td> <td>Red</td> </tr> </tbody> </table>			Sensor 1				Pin Number	Description	Wire number	Colour	A	12V Feed	1075R	red	B	Signal output (4-20mA)	4101	green	C	GND	6048C	black	Sensor 2				Pin Number	Description	Wire number	Colour	A	12V Feed	1075T	Red
Sensor 1																																			
Pin Number	Description	Wire number	Colour																																
A	12V Feed	1075R	red																																
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	<table border="1"> <tr> <td>B</td> <td>Signal output (4-20mA)</td> <td>4102</td> <td>Green</td> </tr> <tr> <td>C</td> <td>GND</td> <td>6048B</td> <td>Black</td> </tr> </table>	B	Signal output (4-20mA)	4102	Green	C	GND	6048B	Black
B	Signal output (4-20mA)	4102	Green						
C	GND	6048B	Black						
<p><b>Wires &amp; Connectors:</b></p>	<p style="text-align: center;">Harness side connectors Sensor side connector</p> 								
<p><b>Internal Electrical Schematic:</b></p>									

**Testing:**

Important: Use the multi-meter on the harness connector pins. **DO NOT USE** the meter on the ECU pins.

1. The weight sensor fitted on machine have two channels
2. Double channel load cell which is fitted at the point the platform is connected.
3. Each channel is connected with 3 Pins A for power supply (12V) Pin C for ground Pin B for output ( analogue )
4. Make sure assembly of load cell is done as per SOP mentioned below (143/E0110 )

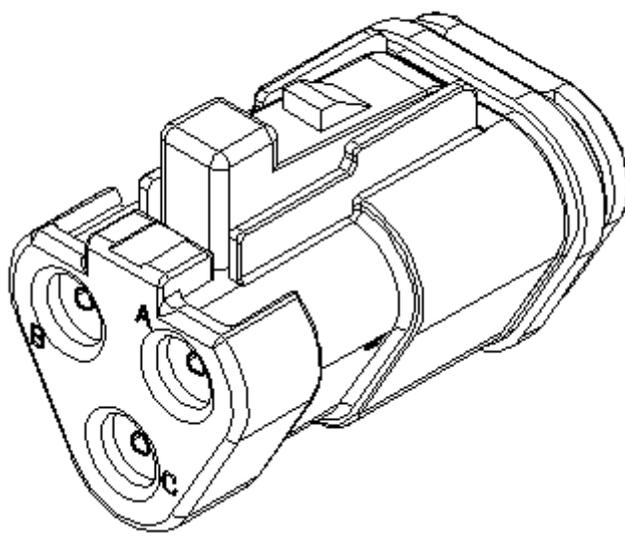
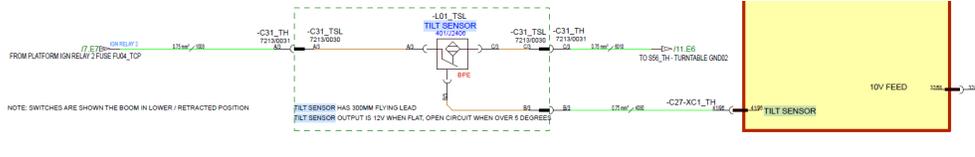


- 5 Check the current shown at both the channel out put it should be more then 4000 mAmp ( with platform connected)
- 6 If any channel showing less then 4000 mAmp check the assembly tightening of weight cell,
- 7 If still issues persists check the load cell bracket flatness (should be within tolerance as mentioned in drawings)
- 8 Check the voltage at Pin A ( should read 12V) if no voltage need to investigate as per schematic
- 9 If voltage is there & no out put then it might be the internal damage to components , replace the load cell

<b>Expected Values:</b>													
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1221-17</td> <td>LOAD SENSOR 1 OOR High</td> </tr> <tr> <td>B1222-16</td> <td>LOAD SENSOR 1 OOR Low OR OC</td> </tr> <tr> <td>B1223-17</td> <td>LOAD SENSOR 2 OOR High</td> </tr> <tr> <td>B1224-16</td> <td>LOAD SENSOR 2 OOR Low OR OC</td> </tr> <tr> <td>B1225-2F</td> <td>LOAD SENSOR Data Erratic (Difference &gt; 20%)</td> </tr> </tbody> </table>	Fault Code	Description	B1221-17	LOAD SENSOR 1 OOR High	B1222-16	LOAD SENSOR 1 OOR Low OR OC	B1223-17	LOAD SENSOR 2 OOR High	B1224-16	LOAD SENSOR 2 OOR Low OR OC	B1225-2F	LOAD SENSOR Data Erratic (Difference > 20%)
	Fault Code	Description											
	B1221-17	LOAD SENSOR 1 OOR High											
	B1222-16	LOAD SENSOR 1 OOR Low OR OC											
	B1223-17	LOAD SENSOR 2 OOR High											
B1224-16	LOAD SENSOR 2 OOR Low OR OC												
B1225-2F	LOAD SENSOR Data Erratic (Difference > 20%)												

### 4.14 Tilt Sensor

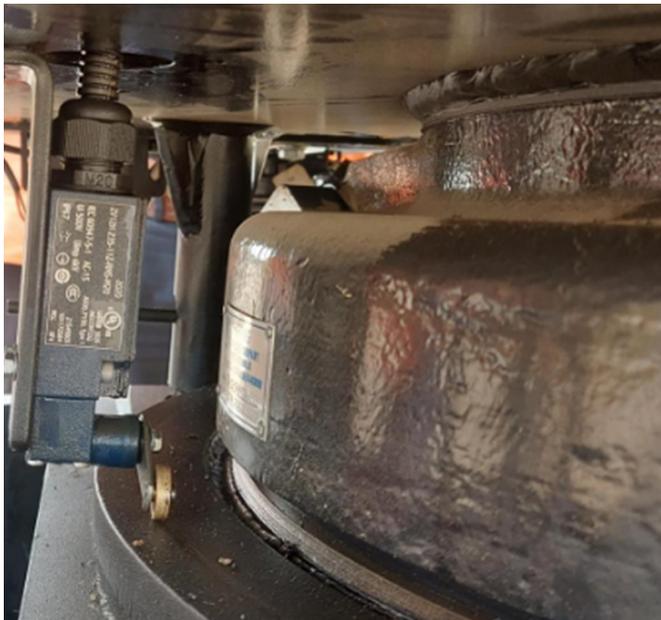
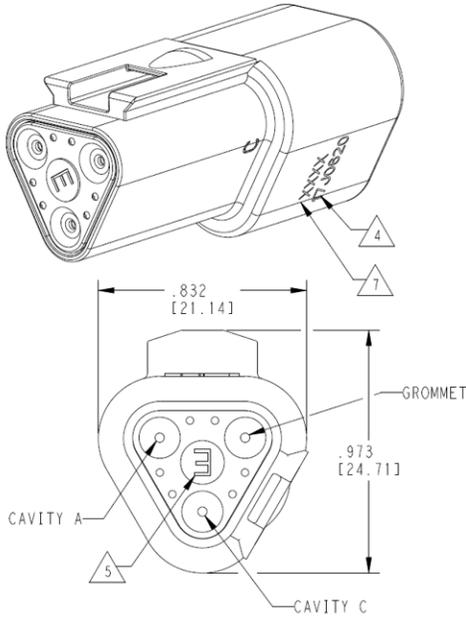
<b>Component :</b>	Tilt Sensor														
<b>Function:</b>	<ul style="list-style-type: none"> <li>The tilt sensor is so the machine can understand the inclination of the machine.</li> <li>The AJ48D tilt sensor will be open circuit when the inclination reaches &gt;5° in the X or Y axis.</li> </ul>														
<b>Location:</b>	On Turntable														
<b>Location Image:</b>															
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12V feed</td> <td>1028K</td> </tr> <tr> <td>B</td> <td>Output Signal</td> <td>4022</td> </tr> <tr> <td>C</td> <td>GND</td> <td>6063M</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	A	12V feed	1028K	B	Output Signal	4022	C	GND	6063M		
Pin Number	Description	Wire Number													
A	12V feed	1028K													
B	Output Signal	4022													
C	GND	6063M													

<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT use the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Check the tilt angle of the chassis with a level gauge</li> <li>2. Re-set tilt sensor at zero degree position. Refer to the Service Manual</li> <li>3. Drive the machine 5° level &amp; check the tilt alarm icon at display &amp; tilt alarm LED at platform</li> <li>4. If machine is stow mode it will allow all operation but if the machine is in raised mode it would not allow raise &amp; drive operation</li> <li>5. Check the voltage at Pin A ( should read 12V) if no voltage need to investigate as per schematic</li> <li>6. If voltage is there &amp; no out put then it might be the internal damage to components , replace the tilt censor.</li> </ol> <p><b>Calibration</b></p> <ol style="list-style-type: none"> <li>1. Ensure the machine is made safe on flat level ground in both X and Y axis.</li> <li>2. Turn on machine ignition</li> </ol>

	<p>3. Below the tilt sensor there is a red lead</p> <p>4. Use lead number 400/J2673</p> <p>5. Connect crocodile clip side to the battery positive</p> <p>6. press the terminal into the red lead below tilt sensor for between 3 - 7 seconds and remove</p> <p>7. Below the tilt sensor there will be a green light that flashes very quickly to show the calibration has been accepted.</p>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1017-17	TILT Sensor SC to High (not possible to detect until sensor connected 10V)
	B1018-16	TILT SENSOR SC to Low

### 4.15 Slew Limit Switch

<b>Component:</b>	Slew Limit Switch
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The Slew position limit sensor is to understand the slew position of the machine and operator.</li> <li>• As the machine is slewed round out of the forward position, the machine will pause any drive condition until the operator has pressed the slew acknowledgment switch. This is so the operator is sure of the direction that the machine will operate in.</li> </ul>
<b>Location:</b>	On Turntable

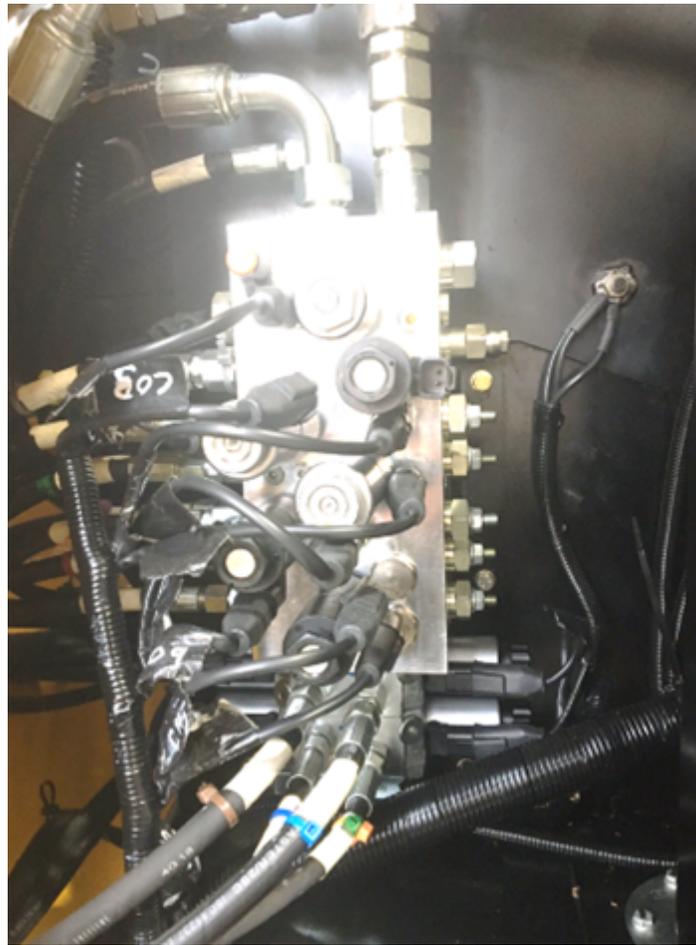
<p><b>Location Image:</b></p>													
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>10V feed</td> <td>1046D</td> </tr> <tr> <td>B</td> <td>Input Signal</td> <td>4020</td> </tr> <tr> <td>C</td> <td>Input Signal</td> <td>4021</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	A	10V feed	1046D	B	Input Signal	4020	C	Input Signal	4021
Pin Number	Description	Wire Number											
A	10V feed	1046D											
B	Input Signal	4020											
C	Input Signal	4021											
<p><b>Wires &amp; Connectors:</b></p>													

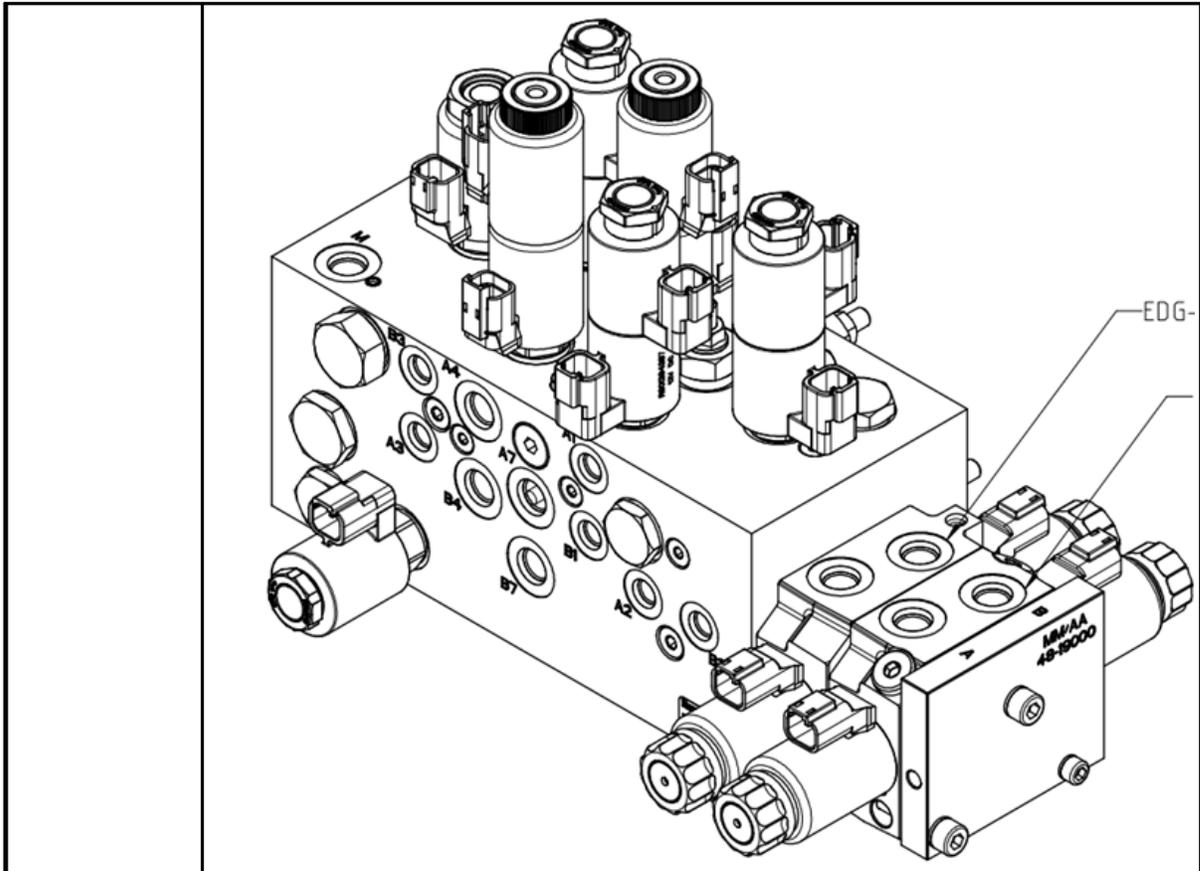
<p><b>Internal Electrical Schematic :</b></p>															
<p><b>Testing:</b></p>	<p>Check Continuity on contact block terminal.</p>														
<p><b>Expected Values:</b></p>															
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1019-17</td> <td>Slew Position limit switch 1 Short circuit to High</td> </tr> <tr> <td>B1020-17</td> <td>Slew Position limit switch 2 Short circuit to High</td> </tr> <tr> <td>B1021-16</td> <td>Slew Position limit switch 1 Short circuit to low</td> </tr> <tr> <td>B1022-13</td> <td>Slew Position limit switch 1 and slew position limit switch 2 open circuit</td> </tr> <tr> <td>B1023-16</td> <td>Slew Position limit switch 2 short circuit to low</td> </tr> <tr> <td>B1024-92</td> <td>Slew Position limit switch 1 and slew position limit switch 2 short to</td> </tr> </tbody> </table>	Fault Code	Description	B1019-17	Slew Position limit switch 1 Short circuit to High	B1020-17	Slew Position limit switch 2 Short circuit to High	B1021-16	Slew Position limit switch 1 Short circuit to low	B1022-13	Slew Position limit switch 1 and slew position limit switch 2 open circuit	B1023-16	Slew Position limit switch 2 short circuit to low	B1024-92	Slew Position limit switch 1 and slew position limit switch 2 short to
Fault Code	Description														
B1019-17	Slew Position limit switch 1 Short circuit to High														
B1020-17	Slew Position limit switch 2 Short circuit to High														
B1021-16	Slew Position limit switch 1 Short circuit to low														
B1022-13	Slew Position limit switch 1 and slew position limit switch 2 open circuit														
B1023-16	Slew Position limit switch 2 short circuit to low														
B1024-92	Slew Position limit switch 1 and slew position limit switch 2 short to														

### 4.16 Main Valve Block

<p><b>Component :</b></p>	<p>Main Valve Block</p>
<p><b>Function:</b></p>	<p>The main valve block is used to control the hydraulic flow around the machine.</p>
<p><b>Location:</b></p>	<p>On Turntable near Fuel Tank</p>

Location  
Image:





Signal:

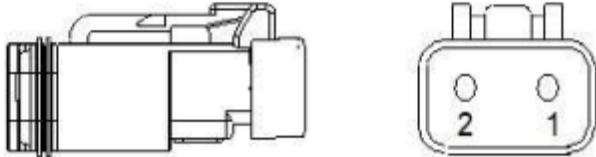
C01_TH Articboom lower			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Artic boom lower	4043	77/96
2	Shared low side with Artic boom raise	4044B	89/96
C02_TH Articboom raise			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Artic boom raise	4042	53/96
2	Shared low side with Artic boom lower	4044B	89/96
C03_TH Main boom Telescopic Retract			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	telescopic retract	4049	75/96

2	Shared low side with telescopic extend	4050B	85/96
C04_TH Main boom telescopic Extend			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	telescopic extend	4043	51/96
2	Shared low side with telescopic retract	4044C	85/96
C05_TH Main boom raise			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	main boom lower	4045	54/96
2	Shared low side with main boom raise	4047A	84/96
C06_TH Main boom lower			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	main boom lower	4043	78/96
2	Shared low side with main boom raise	4047A	84/96
C07_TH Slew left proportional			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Steer left	4054	7396
2	Shared low side with right proportional	4056C	87/96
C08_TH Slew right proportional			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Steer left	4055	49/96
2	Shared low side with left proportional	4056B	87/96
C09_TH Steer Left			

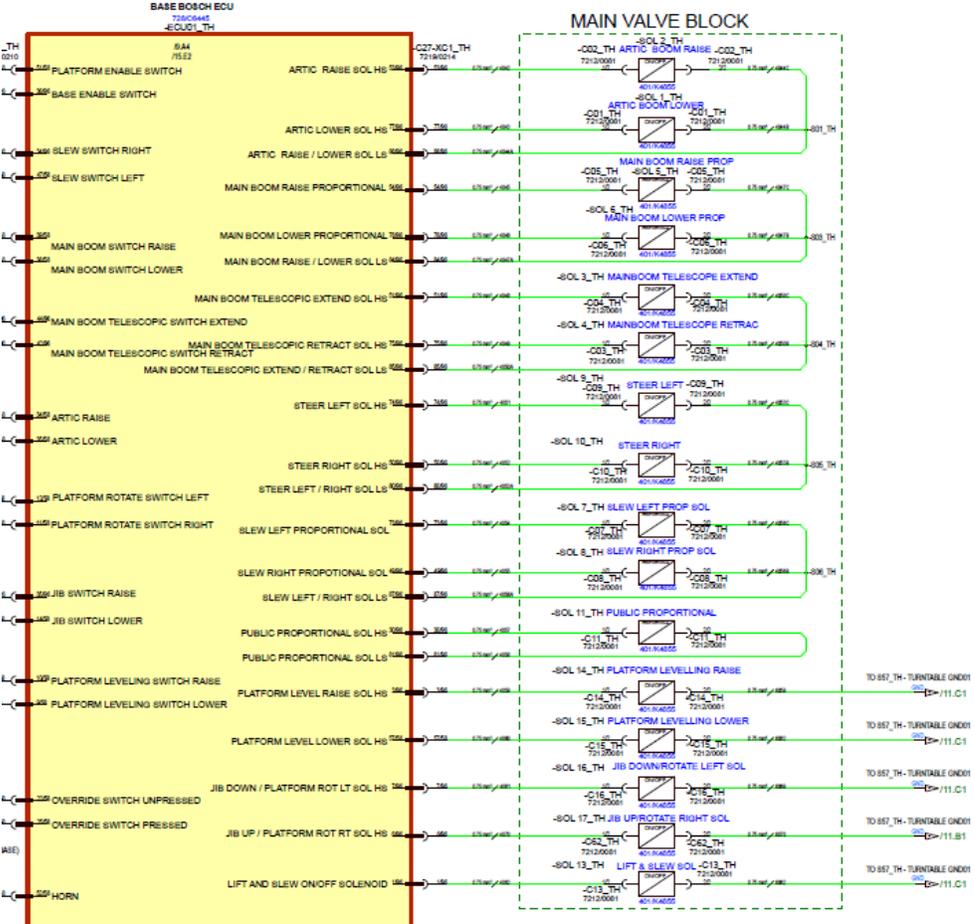
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Steer left	4051	74/96
2	Shared low side with Steer right	4053C	80/96
C10_TH Steer Right			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Steer right	4052	50/96
2	Shared low side with Steer left	4053B	80/96
C11_TH Public proportional			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	High Side	4057	30/96
2	Lowside	4058	81/96
C13_TH Lift & Slew flow valve			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	lift and slew flow	4062	Jan-96
2	GND	6064L	GND
C14_TH Platform level raise			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Level Raise	4059	Mar-96
2	GND	6064P	GND
C15_TH Platform level lower			
Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
1	Level lower	4060	57/58
2	GND	6064N	GND
C16_TH Platform rotate/jib flow valve			

	Pin Number	Description	Wire Harness Numbers	Pin Number on ECU
	1	Platform flow valve	4061	Jul-96
	2	GND	6064M	GND

<p><b>Wires &amp; Connectors:</b></p>	<p>The image below shows a Deutsch 2 way connector. This is used for each solenoid on the valve block.</p> 
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<p><b>Internal Electrical Schematic:</b></p>	
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<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p>
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1. Using a solenoid pen, check to see if the solenoid is powered when the function is in use.
2. If the solenoid pen shows no power, disconnect the harness from the solenoid.
3. Check the resistance across the solenoid. The reading should as per specification as mentioned in below table
4. If readings are incorrect, replace the solenoid. If correct disconnect the harness at the ECU and check harness continuity, repair/replace if necessary
5. If the harness continuity is OK, replace the solenoid.

ELECTRICAL CHARACTERISTICS COIL POS: 31 - 32	
Connections	DEUTSCH DT 04-2PA
Voltage	12V ±15%
Coils Protection	IP69K
Insulation Class of Coil	H 180°C (356°F)
Current	I <sub>max</sub> 1760 mA
Resistance at 20°C (68°F)	3.71 Ohm ±7%

ELECTRICAL CHARACTERISTICS COIL POS: 18	
Connections	DEUTSCH DT 04-2PA
Voltage	12V ±15%
Coils Protection	IP69K
Insulation Class of Coil	H 180°C (356°F)
Ambient temperature range	-40°C / +110°C (-40°F / +230 °F)
Current	I <sub>max</sub> 1760 mA
Resistance at 20°C (68°F)	2.3 Ohm ±5%

ELECTRICAL CHARACTERISTICS COIL POS NO: 2.1 - 2.2	
Connections	DT04-2PA DEUTSCH
Voltage	12V ±10%
Coils Protection	IP69K
Circuit	Standard
Insulation Class of Coil	H 180°C (356°F)
Ambient temperature range	-40°C / +110°C (-40°F / +230 °F)
Power	22 W
Resistance at 20°C (68°F)	6.4 Ohm ±5%

**Expected Values:**

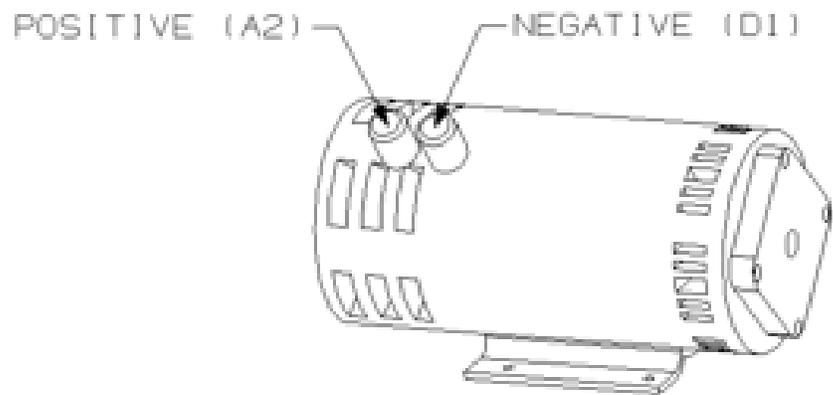
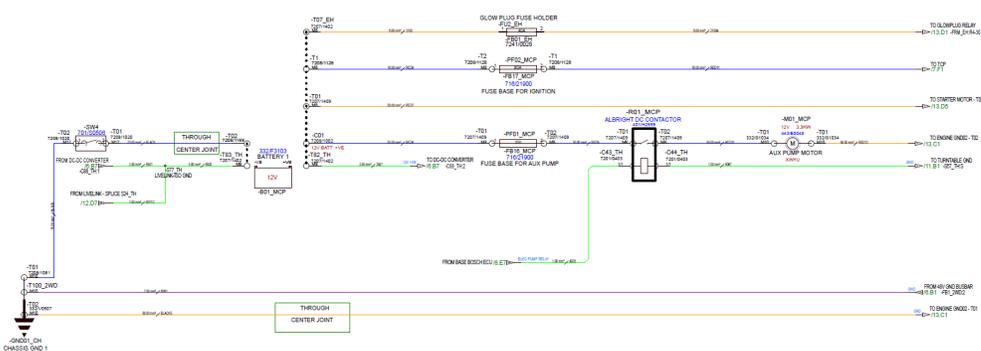
**Related Fault Codes:**

Fault Code	Description
B1036-17	Public proportional output solenoid valve short circuit to high (>10.5V)
B1037-16	Public proportional output solenoid valve short circuit to low
B1038-13	Public proportional output solenoid valve open circuit

B1039-17	Platform leveling raise output solenoid valve HS open circuit or short to high at machine start up
B1040-16	Platform leveling raise output solenoid valve HS short circuit to low
B1041-17	Platform leveling lower output solenoid high side open circuit or short to high on start up
B1042-16	Platform leveling lower output solenoid high side is short circuit to low
B1076-17	Main boom raise proportional output solenoid is short circuit to high at the base control station
B1077-16	Main boom raise and lower proportional output solenoids at the base control station are short circuit to low
B1078-13	Main boom raise and lower proportional output solenoids are open circuit
B1079-17	Main boom lower proportional output solenoid short circuit to high
B1080-17	Slew right proportional output solenoid short circuit to high
B1081-16	Slew right and left proportional output solenoids short circuit to low
B1082-13	Slew right and left proportional output solenoids open circuit
B1083-17	Slew left proportional output solenoid short circuit to high
B1084-17	Main boom extend output solenoid is short circuit to high
B1085-16	Main boom extend and retract output solenoid short circuit to low
B1086-13	Main boom extend or retract output solenoid open circuit
B1087-17	Main boom retract output solenoid short circuit to high
B1088-17	Steer right directional output solenoid short circuit to high
B1089-16	Steer left or right directional output solenoid short circuit to low
B1090-13	Steer left or right directional output solenoid open circuit
B1091-17	Steer left directional output solenoid short circuit to high

### 4.17 Electric Pump

<b>Component :</b>	Electric Pump
<b>Function:</b>	Electric pump is used in case of emergency to get the basket down when the primary supply (Engine) fails.
<b>Location:</b>	On Turntable rear side

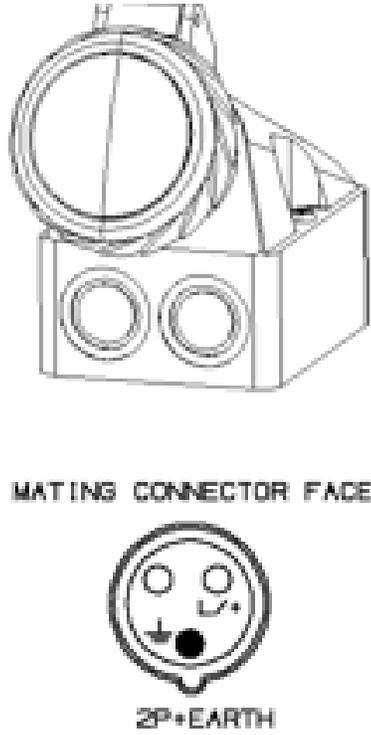
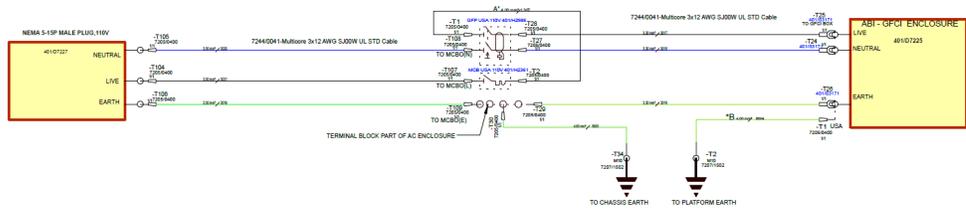
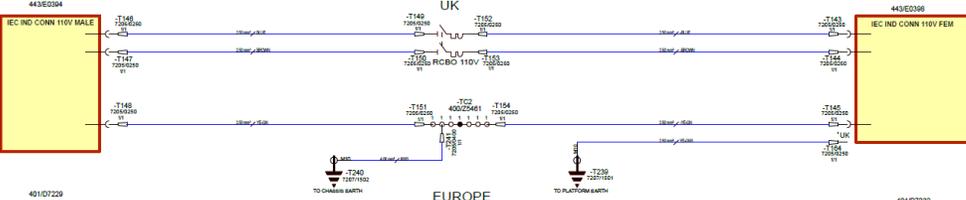
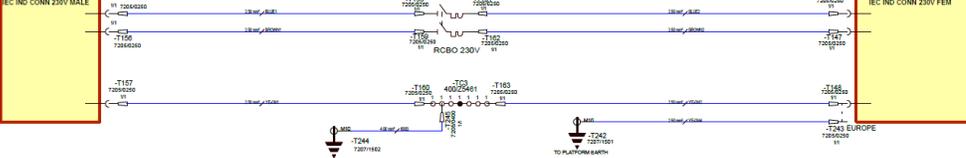
<p><b>Location Image:</b></p>							
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Battery Cable Connected to</th> </tr> </thead> <tbody> <tr> <td>+VE</td> <td>Red</td> </tr> <tr> <td>-VE</td> <td>Black</td> </tr> </tbody> </table>	Pin	Battery Cable Connected to	+VE	Red	-VE	Black
Pin	Battery Cable Connected to						
+VE	Red						
-VE	Black						
<p><b>Wires &amp; Connectors:</b></p>							
<p><b>Internal Electrical Schematic:</b></p>							
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. There is a 3.3KW DC motor fitted inside turntable.</li> </ol>						

	<ol style="list-style-type: none"> <li>2. Check the terminal properly connected at motor . Red (positive) cable should be connected at A2 &amp; Black ( negative ) cable should be connected at B1</li> <li>3. Visually inspect the motor winding, bushes &amp; commutator</li> <li>4. Check the voltage at DC contactor power contacts. This should read 12V</li> <li>5. If there is no 12V then check DC contactor coil supply &amp; investigate wiring as schematic</li> <li>6. If there is 12V supply then there may be internal damage to motor , replace it.</li> </ol>						
<b>Expected Values:</b>							
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1055-17</td> <td>ELECTRIC PUMP BUTTON SC to High</td> </tr> <tr> <td>B1056-16</td> <td>ELECTRIC PUMP BUTTON SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1055-17	ELECTRIC PUMP BUTTON SC to High	B1056-16	ELECTRIC PUMP BUTTON SC to Low
Fault Code	Description						
B1055-17	ELECTRIC PUMP BUTTON SC to High						
B1056-16	ELECTRIC PUMP BUTTON SC to Low						

## 4.18 AC Connector

<b>Component :</b>	AC Connector
<b>Function:</b>	The GFCI is the power outlet 110V AC Supply it is fitted on Platform of the machine when Hydraulic generator option is used.
<b>Location:</b>	In Platform near Manual Box

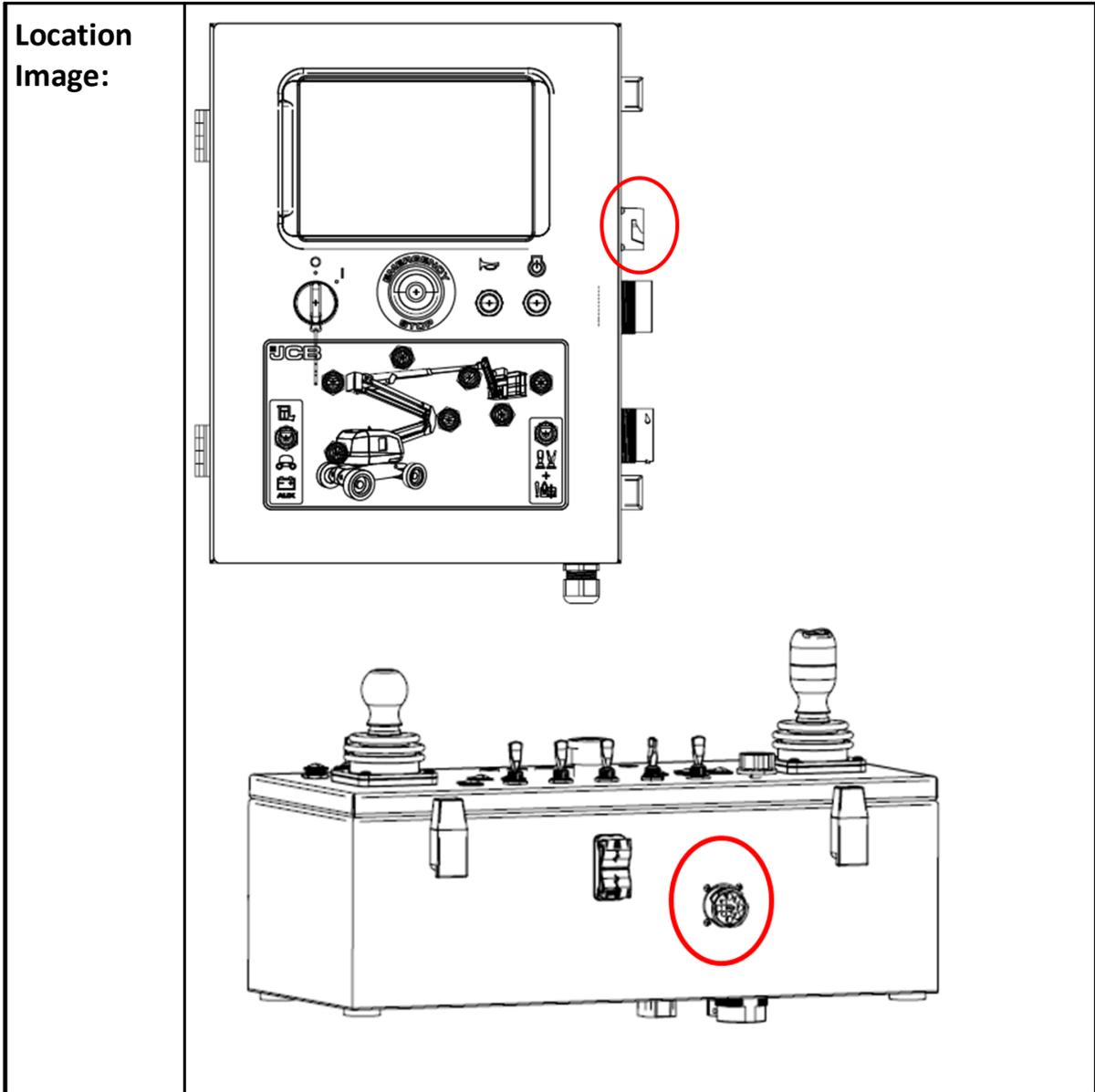
<p><b>Location Image:</b></p>																		
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>T4 (Terminal)</td> <td>Line</td> <td>2.5mm2 Brown</td> </tr> <tr> <td>T5 (Terminal)</td> <td>Neutral</td> <td>2.5mm2 Blue</td> </tr> <tr> <td>T6 (Terminal)</td> <td>Earth</td> <td>2.5mm2 YE-GN</td> </tr> <tr> <td>T7 (Terminal)</td> <td>GND</td> <td>6004</td> </tr> </tbody> </table>			Pin Number	Description	Wire Number	T4 (Terminal)	Line	2.5mm2 Brown	T5 (Terminal)	Neutral	2.5mm2 Blue	T6 (Terminal)	Earth	2.5mm2 YE-GN	T7 (Terminal)	GND	6004
Pin Number	Description	Wire Number																
T4 (Terminal)	Line	2.5mm2 Brown																
T5 (Terminal)	Neutral	2.5mm2 Blue																
T6 (Terminal)	Earth	2.5mm2 YE-GN																
T7 (Terminal)	GND	6004																

<p><b>Wires &amp; Connectors:</b></p>	 <p>MATING CONNECTOR FACE</p> <p>2P+E-EARTH</p>
<p><b>Internal Electrical Schematic:</b></p>	<p style="text-align: center;">AC 110V USA SPEC</p>  <p style="text-align: center;">UK</p>  <p style="text-align: center;">EUROPE</p> 
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Visually inspect the connectors should not be broken</li> <li>2. Check for the live neutral and earth connection it should be correctly fitted</li> </ol>

	3.Check for the continuity as per the PAT guide for live earth and neutral
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

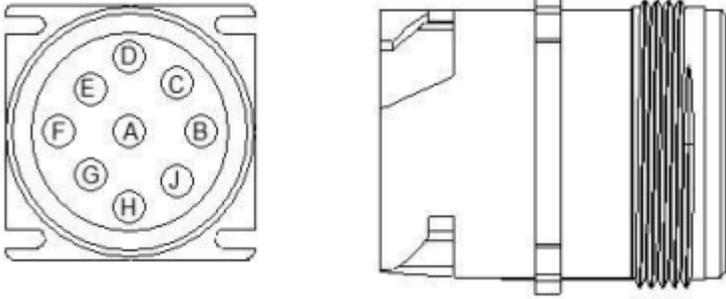
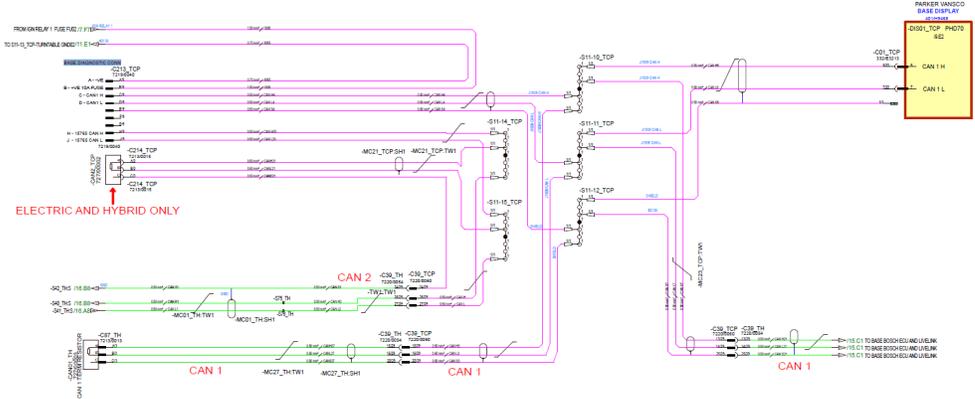
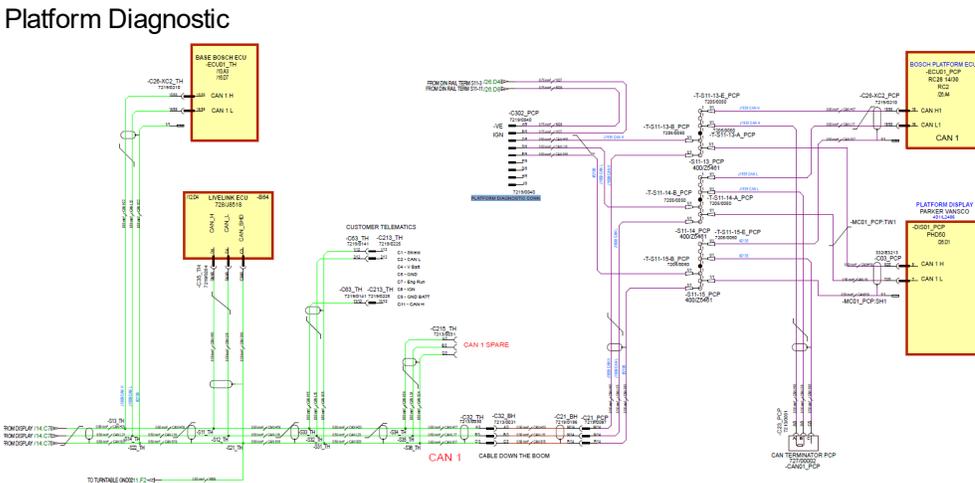
## 4.19 Diagnostic Connector

<b>Component :</b>	Diagnostic Connector
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The diagnostic connectors are to allow for a laptop connection to the machine. There are 2 connectors and they both have the same access to the machine but in 2 locations to assist various tasks.</li> <li>• The base connection also has a second CAN installed that is for the engine.</li> </ul>
<b>Location:</b>	One available on Base Control and One available in Platform Control box.



**Signal:**

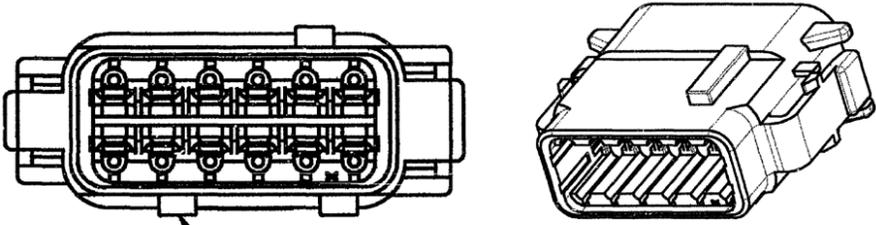
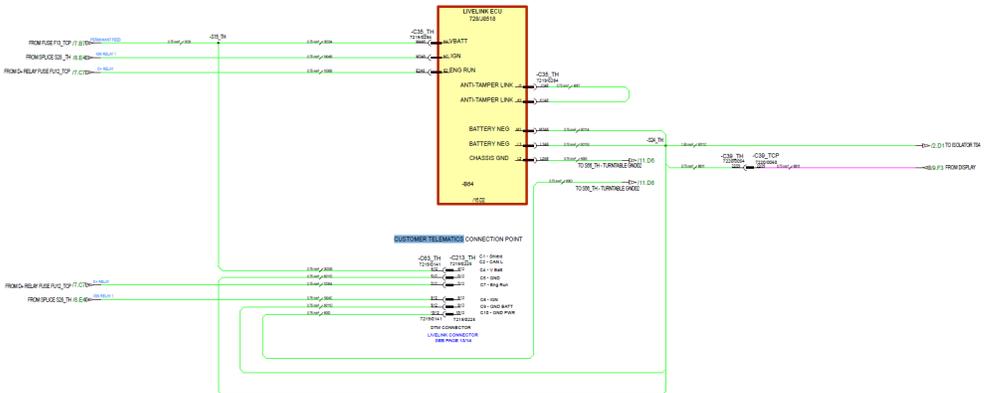
Pin Number	Description	Wire Number/ Colour
A	GND	6063T
B	12V	1016
C	CAN H	Yellow
D	CAN L	Green
E	Shield	Bare Shield
F	NOT IN USE	NOT IN USE
G	NOT IN USE	NOT IN USE
H	15765 CAN H (Only in base connection)	Yellow
J	15765 CAN L (Only in base connection)	Green

<p><b>Wires &amp; Connectors:</b></p>	<p>7219/0040 Diagnostic Connector</p> 
<p><b>Internal Electrical Schematic:</b></p>	<p><b>Base Diagnostic</b></p>  <p><b>Platform Diagnostic</b></p> 
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Ensure the machine is switched off.</li> <li>2. Measure CAN1 resistance between pin 'C' and 'D'</li> </ol>

	<p>3. This should read 60 ohms.</p> <p>4. If this isn't the case the DLA connector is faulty.</p>
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

## 4.20 Customer Telematics

<b>Component :</b>	Customer Telematics		
<b>Function:</b>	<ul style="list-style-type: none"> <li>• Customer Telematics connector is a point that customers can connect up there own Telematics system.</li> <li>• This is done by some of the large rental fleets that do not use JCB Livelink and have their own solution in place.</li> </ul>		
<b>Location:</b>	The Telematics ecu is mounted on the rear of the base control panel box the plug should just be visible from the top of the control panel.		
<b>Location Image:</b>			
<b>Signal:</b>	<b>PIN NUMBER</b>	<b>DESCRIPTION</b>	<b>WIRE NUMBER</b>

	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%; text-align: center;">1</td><td style="width: 60%;">SHIELD</td><td style="width: 30%;">BARE</td></tr> <tr><td style="text-align: center;">2</td><td>CAN L</td><td>GREEN</td></tr> <tr><td style="text-align: center;">3</td><td></td><td></td></tr> <tr><td style="text-align: center;">4</td><td>V-BATT</td><td>3002C</td></tr> <tr><td style="text-align: center;">5</td><td>GND</td><td>6022DD</td></tr> <tr><td style="text-align: center;">6</td><td></td><td></td></tr> <tr><td style="text-align: center;">7</td><td>ALTERNATOR RUN SIGNAL</td><td>1032D</td></tr> <tr><td style="text-align: center;">8</td><td>IGNITION</td><td>0040D</td></tr> <tr><td style="text-align: center;">9</td><td>GND BATT</td><td>6022C</td></tr> <tr><td style="text-align: center;">10</td><td>GND POWER</td><td>6063G</td></tr> <tr><td style="text-align: center;">11</td><td>CAN H</td><td>YELLOW</td></tr> <tr><td style="text-align: center;">12</td><td></td><td></td></tr> </table>	1	SHIELD	BARE	2	CAN L	GREEN	3			4	V-BATT	3002C	5	GND	6022DD	6			7	ALTERNATOR RUN SIGNAL	1032D	8	IGNITION	0040D	9	GND BATT	6022C	10	GND POWER	6063G	11	CAN H	YELLOW	12		
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12																																					
<b>Wires &amp; Connectors:</b>																																					
<b>Internal Electrical Schematic:</b>																																					

<p><b>Testing:</b></p>	<p>Refer existing Live Link ECU help file for testing procedure</p>																														
<p><b>Expected Values:</b></p>																															
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>U1900-16</td> <td>Livelink - Vehicle Battery Voltage Below Normal</td> </tr> <tr> <td>U1901-16</td> <td>Livelink - Internal Voltage Below Normal</td> </tr> <tr> <td>U1902-18</td> <td>Livelink - Telematics Output for Relay 0 Current Below Normal or Open</td> </tr> <tr> <td>U1903-18</td> <td>Livelink - Telematics Output for Relay 1 Current Below Normal or Open</td> </tr> <tr> <td>U1904-85</td> <td>Livelink - ECU Above Temperature Threshold</td> </tr> <tr> <td>U1905-84</td> <td>Livelink - ECU Below Temperature Threshold</td> </tr> <tr> <td>U1906-96</td> <td>Livelink - Accelerometer Internal Failure</td> </tr> <tr> <td>U1907-09</td> <td>Livelink - Modem Jammed</td> </tr> <tr> <td>U1908-09</td> <td>Livelink - GPS Antenna Not OK</td> </tr> <tr> <td>U1909-96</td> <td>Livelink - No Comms with GPS Module</td> </tr> <tr> <td>U190A-09</td> <td>Livelink - SIM Card Failure</td> </tr> <tr> <td>U190B-96</td> <td>Livelink - No Comms with GSM Module</td> </tr> <tr> <td>U190C-86</td> <td>Livelink - GSM Network Registration Failure</td> </tr> <tr> <td>U190D-06</td> <td>Livelink - Anti Tamper Lockout</td> </tr> </tbody> </table>	Fault Code	Description	U1900-16	Livelink - Vehicle Battery Voltage Below Normal	U1901-16	Livelink - Internal Voltage Below Normal	U1902-18	Livelink - Telematics Output for Relay 0 Current Below Normal or Open	U1903-18	Livelink - Telematics Output for Relay 1 Current Below Normal or Open	U1904-85	Livelink - ECU Above Temperature Threshold	U1905-84	Livelink - ECU Below Temperature Threshold	U1906-96	Livelink - Accelerometer Internal Failure	U1907-09	Livelink - Modem Jammed	U1908-09	Livelink - GPS Antenna Not OK	U1909-96	Livelink - No Comms with GPS Module	U190A-09	Livelink - SIM Card Failure	U190B-96	Livelink - No Comms with GSM Module	U190C-86	Livelink - GSM Network Registration Failure	U190D-06	Livelink - Anti Tamper Lockout
Fault Code	Description																														
U1900-16	Livelink - Vehicle Battery Voltage Below Normal																														
U1901-16	Livelink - Internal Voltage Below Normal																														
U1902-18	Livelink - Telematics Output for Relay 0 Current Below Normal or Open																														
U1903-18	Livelink - Telematics Output for Relay 1 Current Below Normal or Open																														
U1904-85	Livelink - ECU Above Temperature Threshold																														
U1905-84	Livelink - ECU Below Temperature Threshold																														
U1906-96	Livelink - Accelerometer Internal Failure																														
U1907-09	Livelink - Modem Jammed																														
U1908-09	Livelink - GPS Antenna Not OK																														
U1909-96	Livelink - No Comms with GPS Module																														
U190A-09	Livelink - SIM Card Failure																														
U190B-96	Livelink - No Comms with GSM Module																														
U190C-86	Livelink - GSM Network Registration Failure																														
U190D-06	Livelink - Anti Tamper Lockout																														

**4.21 LiveLink ECU**

<p><b>Component :</b></p>	<p>Livelink ECU</p>
<p><b>Function:</b></p>	<p>The Live-link ECU is used for remote monitoring of machine operation, location, health and critical parameters.</p>

<p><b>Location:</b></p>	<p>The Livelink ecu is mounted on the rear of the base control panel box the plug should just be visible from the top of the control panel.</p>																																																				
<p><b>Location Image:</b></p>																																																					
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th colspan="3">12 WAY DTM FEM KEY C HSG</th> </tr> <tr> <th>PIN NUMBER</th> <th>DESCRIPTION</th> <th>WIRE NUMBER</th> </tr> </thead> <tbody> <tr> <td>M4</td> <td>V_Batt</td> <td>3033A</td> </tr> <tr> <td>M2</td> <td>V_IGN</td> <td>1904B</td> </tr> <tr> <td>E2</td> <td>ENG_RUN</td> <td>1036B</td> </tr> <tr> <td>H1</td> <td>CH1_INPUT</td> <td>-</td> </tr> <tr> <td>G1</td> <td>CH2_INPUT</td> <td>-</td> </tr> <tr> <td>F1</td> <td>CH3_INPUT</td> <td>-</td> </tr> <tr> <td>C1</td> <td>CH4_INPUT</td> <td>1036A</td> </tr> <tr> <td>D4</td> <td>IGN</td> <td>1904C</td> </tr> <tr> <td>E4</td> <td>CAN_L</td> <td>6011D</td> </tr> <tr> <td>C3</td> <td>CAN_SHD</td> <td>6002</td> </tr> <tr> <td>L2</td> <td>CHASSIS GND</td> <td>CANH12</td> </tr> <tr> <td>L3</td> <td>BATT_NEG</td> <td>6011B</td> </tr> <tr> <td>M3</td> <td>BATT_NEG</td> <td>6011A</td> </tr> <tr> <td>K1</td> <td>ANTI_TAMPER LINK</td> <td>4067</td> </tr> <tr> <td>J1</td> <td>ANTI_TAMPER LINK</td> <td>4067</td> </tr> </tbody> </table>		12 WAY DTM FEM KEY C HSG			PIN NUMBER	DESCRIPTION	WIRE NUMBER	M4	V_Batt	3033A	M2	V_IGN	1904B	E2	ENG_RUN	1036B	H1	CH1_INPUT	-	G1	CH2_INPUT	-	F1	CH3_INPUT	-	C1	CH4_INPUT	1036A	D4	IGN	1904C	E4	CAN_L	6011D	C3	CAN_SHD	6002	L2	CHASSIS GND	CANH12	L3	BATT_NEG	6011B	M3	BATT_NEG	6011A	K1	ANTI_TAMPER LINK	4067	J1	ANTI_TAMPER LINK	4067
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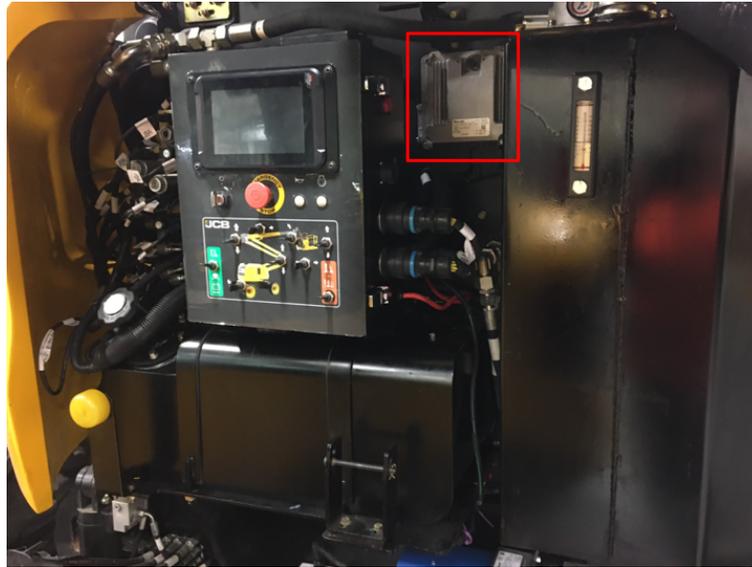


U1905-84	LiveLink - ECU Below Temperature Threshold
U1906-96	LiveLink - Accelerometer Internal Failure
U1907-09	LiveLink - Modem Jammed
U1908-09	LiveLink - GPS Antenna Not OK
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U190A-09	LiveLink - SIM Card Failure
U190B-96	LiveLink - No Comms with GSM Module
U190C-86	LiveLink - GSM Network Registration Failure
U190D-06	LiveLink - Anti Tamper Lockout

## 4.22 Base Bosch ECU

<b>Component :</b>	Base Bosch ECU
<b>Function:</b>	<ul style="list-style-type: none"> <li>• When the ECU turns on, there is a check in the Bosch software to ensure the ECU is in a safe state to turn on and enable.</li> <li>• After the Bosch boot block check there should be a check in the software to check for status of inputs to ensure the software is in a safe condition before allowing all functions.</li> <li>• The base Bosch ECU perform all the functions of machine.</li> </ul>
<b>Location:</b>	On Chassis near Hydraulic Tank

**Location  
Image:**



**Signal:**

58 Way connector		
Pin Number	Description/ Signal	Wire Number
1	Power Supply - 12V	1023C
2	GND	6060M
3	Power Supply - 12V	1023D
4	Power Supply - 12V	1023E
5	Power Supply - 12V	1018C
6	Power Supply - 12V	1018G
7	GND	6060L
8	NOT USED	NOT USED
9	Platform leveling Switch input - Lower (10V when pressed)	61

10	Platform leveling Switch input - Raised (10V when pressed)	60
11	Platform rotate switch input - right (10V when pressed)	57
12	Platform rotate switch input - left (10V when pressed)	56
13	NOT USED	NOT USED
14	Jib Switch input - Lower (10V when pressed)	59
15	CAN H1 (yellow)	yellow
16	CAN L1 (Green)	green
17	NOT USED	NOT USED
18	NOT USED	NOT USED
19	NOT USED	NOT USED
20	GND	6060N
21	NOT USED	NOT USED
22	Override switch unpressed (10V when not pressed)	62
23	NOT USED	NOT USED
24	Boom rest switch input 2	4011
25	Override switch pressed (10V when pressed)	63
26	NOT USED	NOT USED
27	Axle lock pressure sensor (0.5-4.5)	4034
28	E-stop positive (12V when unpressed)	41
29	NOT USED	NOT USED
30	NOT USED	NOT USED
31	NOT USED	NOT USED
32	10V output from ECU	1030C
33	GND	6060P
34	Artic boom input switch - raise (10V when pressed)	54
35	Artic boom input switch - lower (10V when pressed)	55
36	NOT USED	NOT USED
37	NOT USED	NOT USED
38	main boom switch input - lower (10V when pressed)	51
39	main boom switch input - raise (10V when pressed)	50
40	ignition switch input (12V)	0040B
41	Hydraulic generator solenoid output (12V)	4041
42	high torque solenoid output (12V)	4040
43	beacon output (12V)	4032

44	horn relay output (12V)	4035
45	power electronics input (12V)	1029C
46	GND	6060R
47	slew switch input - left (10V when pressed)	49
48	NOT USED	NOT USED
49	RC Config 2 (GND)	6060K
50	Engine start switch input (10V when pressed, momentary)	66
51	Platform enable switch (10V when switch at platform)	46
52	Horn input switch (10V when pressed, momentary)	65
53	NOT USED	NOT USED
54	NOT USED	NOT USED
55	NOT USED	NOT USED
56	White noise alarm output	4036C
57	Platform level lower solenoid output	4060
58	Power electronics supply (12V)	1029B
96 Way connector		
Pin Number	Description/ Signal	Wire Number
1	Lift & slew on/off solenoid output	4062
2	NOT USED	NOT USED
3	Platform level solenoid output - Raise	4059
4	NOT USED	NOT USED
5	NOT USED	NOT USED
6	NOT USED	NOT USED
7	Platform rotate/ Jib flow solenoid	4061
8	NOT USED	NOT USED
9	NOT USED	NOT USED
10	NOT USED	NOT USED
11	NOT USED	NOT USED
12	NOT USED	NOT USED
13	NOT USED	NOT USED
14	E-Stop -ve (GND when unpressed)	42
15	NOT USED	NOT USED
16	NOT USED	NOT USED
17	NOT USED	NOT USED
18	Blocked air filter signal (GND when blocked)	4023
19	NOT USED	NOT USED

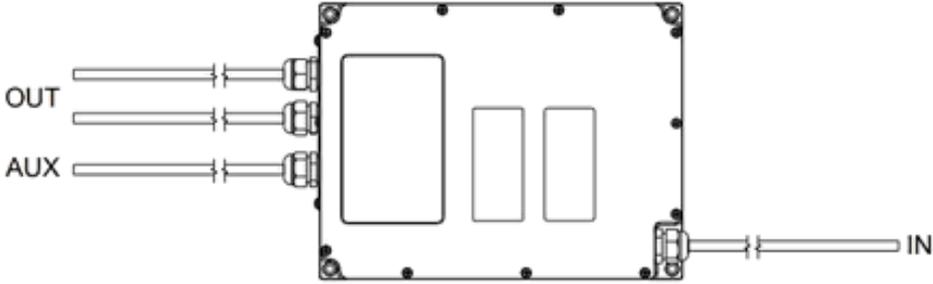
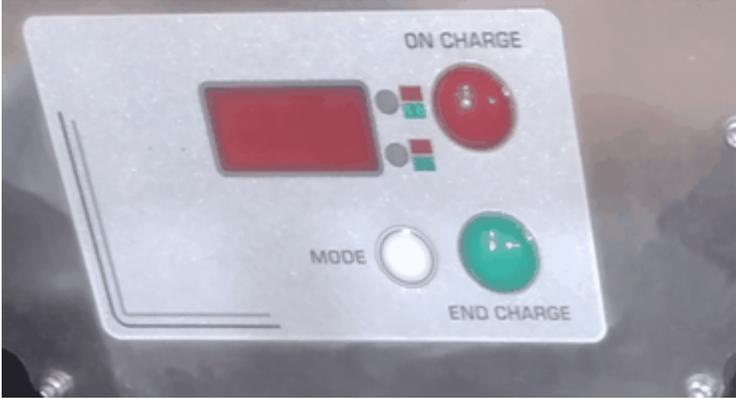
20	NOT USED	NOT USED
21	NOT USED	NOT USED
22	GND	6060C
23	GND	6060D
24	GND	6060G
25	NOT USED	NOT USED
26	Front brake solenoid output	26/96
27	NOT USED	NOT USED
28	Rear brake solenoid output	4039
29	NOT USED	NOT USED
30	Public proportional solenoid output Highside	4057
31	Axle lock solenoid output Highside	4037
32	NOT USED	NOT USED
33	NOT USED	NOT USED
34	Slew switch input - right (10V when pressed)	48
35	Jib Switch input - raise (10V when pressed)	58
36	Base enable switch (10V when pressed)	47
37	Boom Rest Input switch 1	4009
38	NOT USED	NOT USED
39	Fuel sender input (resistance to gnd)	39/96
40	NOT USED	NOT USED
41	Tilt sensor input	4022
42	main boom telescope input switch - retract	53
43	NOT USED	NOT USED
44	main boom telescope input switch - extend	52
45	GND	6060H
46	GND	6060J
47	Slew position switch input switch 1	4020
48	main boom telescope limit switch input sw1	4105
49	Slew right proportional output solenoid	4055
50	Steer right solenoid highside output	4052
51	main boom telescope extend solenoid output	4048
52	forward drive solenoid output highside	4064
53	Artic boom raise highside output	4042
54	main boom raise solenoid output	4045
55	NOT USED	NOT USED
56	NOT USED	NOT USED
57	Slew position limit switch input sw2	4021
58	Engine alternator input signal	1032B
59	main boom telescope retract limit sw2	4106

60	NOT USED	NOT USED
61	NOT USED	NOT USED
62	NOT USED	NOT USED
63	NOT USED	NOT USED
64	NOT USED	NOT USED
65	NOT USED	NOT USED
66	NOT USED	NOT USED
67	NOT USED	NOT USED
68	NOT USED	NOT USED
69	NOT USED	NOT USED
70	NOT USED	NOT USED
71	NOT USED	NOT USED
72	NOT USED	NOT USED
73	slew left proportional solenoid highside	4054
74	Steer left highside output	4051
75	main boom telescope retract hs output	4049
76	reverse highside solenoid output	4065
77	Articboom lower highside output	4043
78	main boom lower proportional highside output	4046
79	NOT USED	NOT USED
80	Steer left/right lowside	4053A
81	Public proportional Lowside	4058
82	Axle lock solenoid lowside	4038
83	NOT USED	NOT USED
84	main boom raise/lower lowside	4047A
85	Main boom telescope output lowside	4050A
86	Forward/ Reverse output lowside	6015C
87	Slew left/ right output lowside	4065A
88	Artic raise/ lower lowside	4044A
89	Engine ignition output (12V)	4027
90	buzzer highside output	4024
91	NOT USED	NOT USED
92	NOT USED	NOT USED
93	electric pump relay highside output	4025
94	Engine start (crank signal)	4028
95	NOT USED	NOT USED
96	NOT USED	NOT USED

<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Connect machine to the Servicemaster diagnostic tool using the <a href="#">DLA Connector</a>.</li> <li>2. Ensure LED's change state when the corresponding function is selected and ensure a CAN message is being sent from the ECU on the network tab.</li> <li>3. If faulty replace the MECU.</li> </ol>
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	<p>Refer PLM doc.AC00001178 for all ECU related fault codes. ( Fault code start from B relates to ECU)</p>

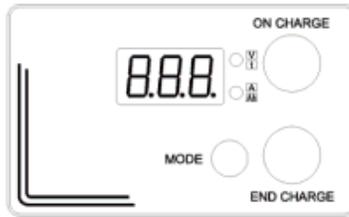
### 4.23 Battery Charger

<p><b>Component :</b></p>	<p>Battery Charger</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• For A45E-There is only one Battery Charger used to charge 48V batteries using a mains power source. Main supply can be connected to the port given at chassis</li> </ul>

	<ul style="list-style-type: none"> <li>• For A45H- There are two battery chargers used to charge 48V batteries. when engine is ON (power to platform is not pressed at platform), 48V batteries will be charged through both the charger</li> <li>• In case engine is not running operator can charge these batteries through main power source , but in that case only one charger (Master) will be running.</li> </ul>																																																																		
<p><b>Location:</b></p>	<ul style="list-style-type: none"> <li>• The battery Charger is located at Chassis covered with plate,</li> <li>• Charger post will be located in front of the chassis</li> </ul>																																																																		
<p><b>Location Image:</b></p>	<p style="text-align: center;"><b>Connections</b></p>  																																																																		
<p><b>Signal:</b></p>	<p><b>Auxiliary inputs and outputs cable</b></p> <table border="1"> <thead> <tr> <th colspan="3"><i>Super seal 6 ways Female connector</i></th> </tr> <tr> <th>PIN</th> <th>Colore filo</th> <th>Descrizione</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>White</td> <td>AUX1 COM</td> </tr> <tr> <td>2</td> <td>Brown</td> <td>AUX1 NO</td> </tr> <tr> <td>3</td> <td>Violet</td> <td>AUX1 NC</td> </tr> <tr> <td>4</td> <td>Grey</td> <td>AUX2 COM</td> </tr> <tr> <td>5</td> <td>Pink</td> <td>AUX2 NO</td> </tr> <tr> <td>6</td> <td>Red/Blue</td> <td>AUX2 NC</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3"><i>Super seal 5 ways Male Connector</i></th> </tr> <tr> <th>PIN</th> <th>Colore filo</th> <th>Descrizione</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Grey/Pink</td> <td>Thermal sensor PT100</td> </tr> <tr> <td>2</td> <td>White/Yellow</td> <td>Thermal Sensor NPT100</td> </tr> <tr> <td>3</td> <td>Yellow/Brown</td> <td>Remote Led COM</td> </tr> <tr> <td>4</td> <td>Black</td> <td>Remote Led Green</td> </tr> <tr> <td>5</td> <td>Red</td> <td>Remote Led Red</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3"><i>Super-seal 5 ways Female connector</i></th> </tr> <tr> <th>PIN</th> <th>Colore filo</th> <th>Descrizione</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Blue</td> <td>CAN NEG</td> </tr> <tr> <td>2</td> <td>Yellow</td> <td>CAN H</td> </tr> <tr> <td>3</td> <td>Green</td> <td>CAN L</td> </tr> <tr> <td>4</td> <td>Brown / Green</td> <td>CAN L</td> </tr> <tr> <td>5</td> <td>White/ Green</td> <td>CAN HT: 120Ω termination resistor internally connected to CAN H</td> </tr> </tbody> </table>	<i>Super seal 6 ways Female connector</i>			PIN	Colore filo	Descrizione	1	White	AUX1 COM	2	Brown	AUX1 NO	3	Violet	AUX1 NC	4	Grey	AUX2 COM	5	Pink	AUX2 NO	6	Red/Blue	AUX2 NC	<i>Super seal 5 ways Male Connector</i>			PIN	Colore filo	Descrizione	1	Grey/Pink	Thermal sensor PT100	2	White/Yellow	Thermal Sensor NPT100	3	Yellow/Brown	Remote Led COM	4	Black	Remote Led Green	5	Red	Remote Led Red	<i>Super-seal 5 ways Female connector</i>			PIN	Colore filo	Descrizione	1	Blue	CAN NEG	2	Yellow	CAN H	3	Green	CAN L	4	Brown / Green	CAN L	5	White/ Green	CAN HT: 120Ω termination resistor internally connected to CAN H
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## Visualization

### Digital instrument (display version)



From the starting the digital instrument will display the string of the following parameters:

- **BATTERY VOLTAGE** (two-tone red upper led).
- **CURRENT** provided by the charger (two-tone red lower led).
- **TIME** in hours lacking to the end of charge (two-tone green upper led).
- **Ah** supplied (two-tone green lower led).

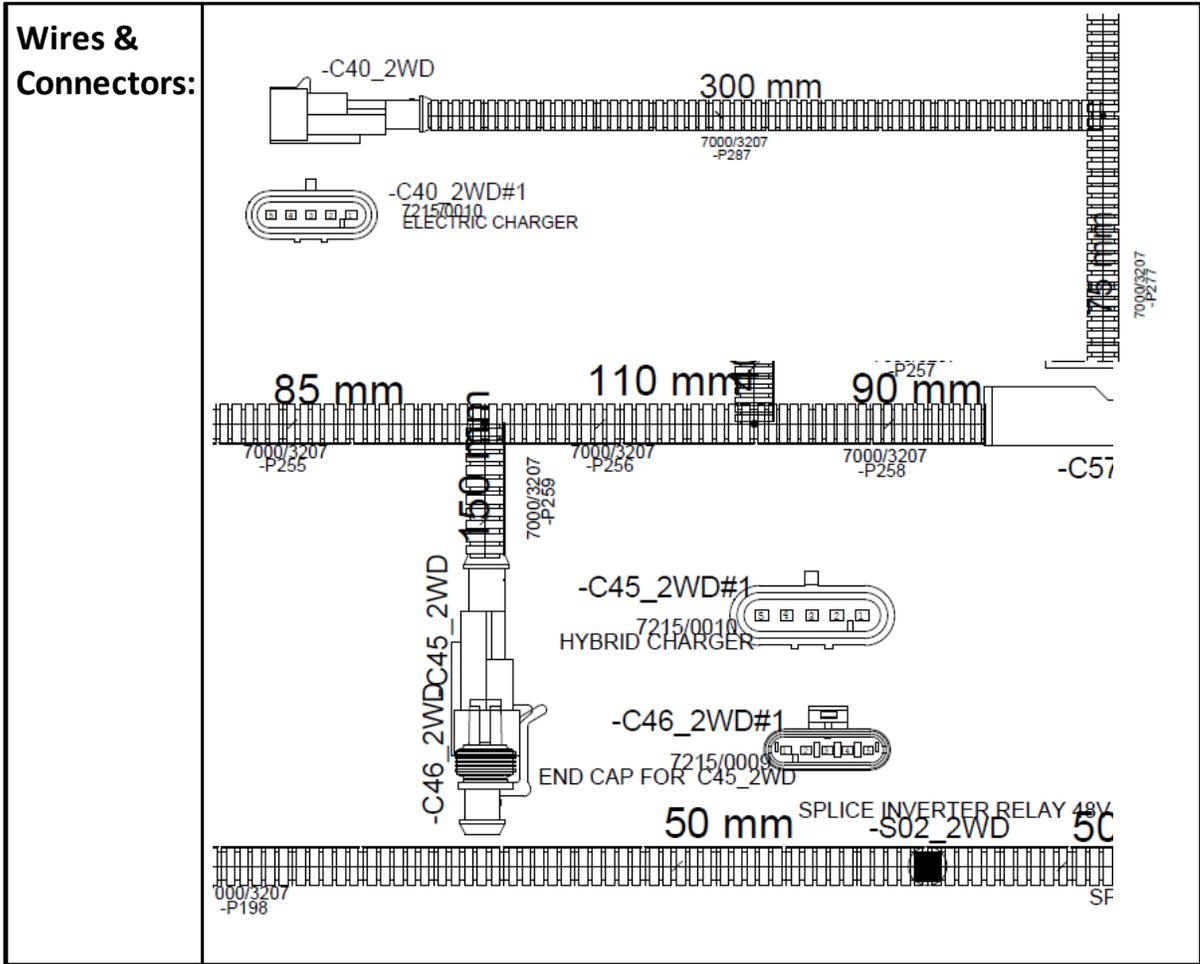
By pressing the MODE button, the parameters' sequence is blocked and it will be kept the last value displayed. By pressing again on the MODE button the sequence of parameters restarts.

### BIG LED indicators (display version)

Colour	Description
Red	Constant or Max current phase (IU1a).
Blinking red (4s ON – 1s OFF)	Voltage control phase (IU1a).
Red and blinking green (4s ON – 1s OFF)	Overcharging phase (IU1a).
Blinking green (4s ON – 1s OFF)	Wait phase (for equalization) (IU1a).
Green	End charge (only for CU1 BA2)
Blinking green (4s ON – 1s OFF)	Equalization pulse and floating
Green and red blinking together	Connection with CanConsole or S/S HW-SW.

### BI-COLOR LED indicator (version without display)

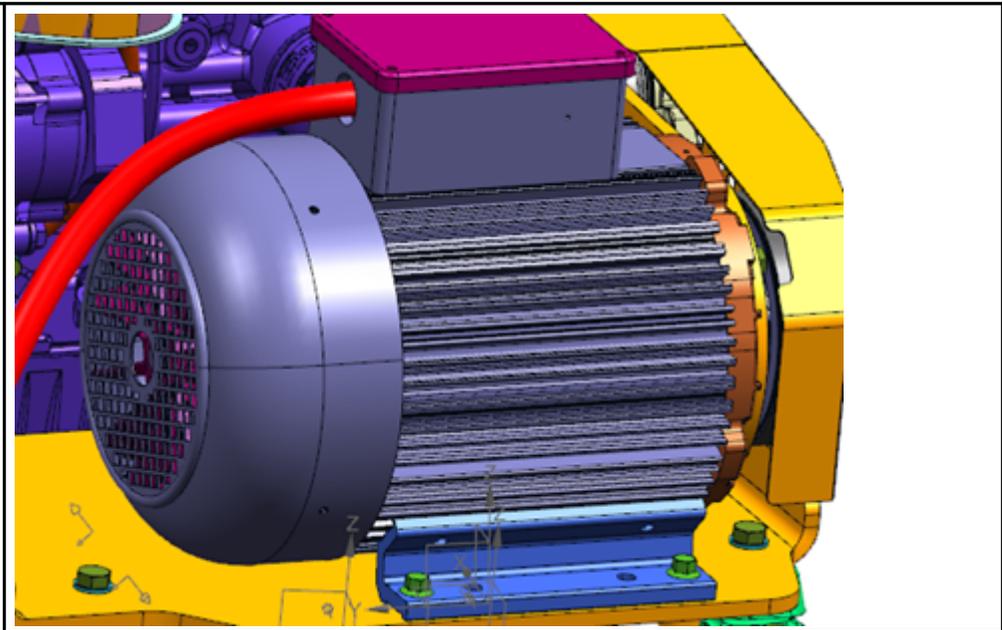
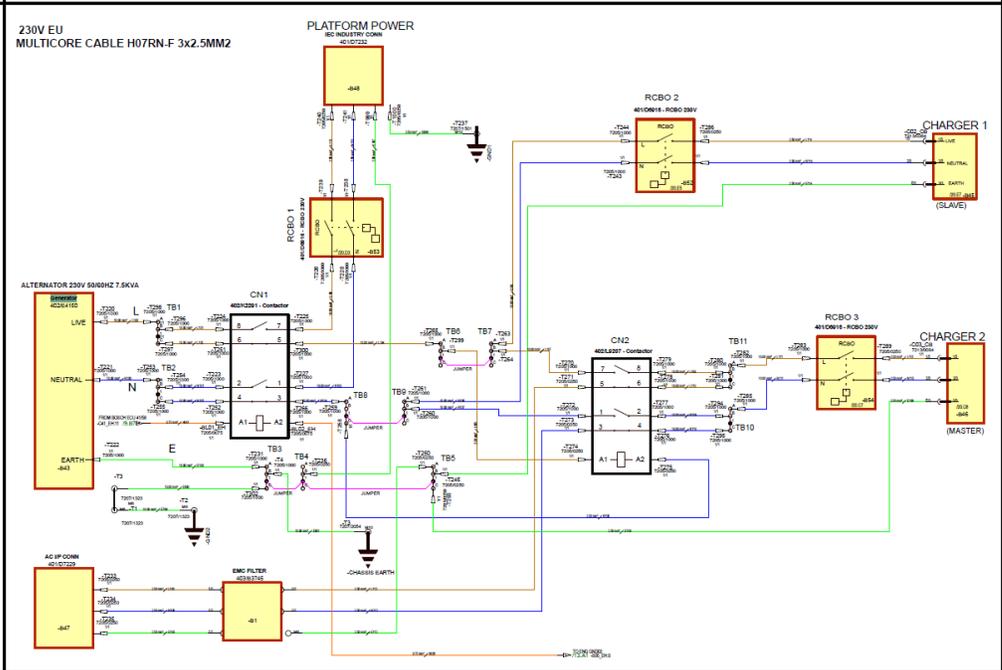
Colour	Description
Red	Constant or Max current phase (IU1a).
Blinking red (4s ON – 1s OFF)	Voltage control phase (IU1a).
Orange	Overcharging phase (IU1a).
Blinking green (4s ON – 1s OFF)	Wait phase (for equalization) (IU1a).
Blinking Orange (1s ON – 1s OFF)	Allarm.
Green	End charge
Blinking green (4s ON – 1s OFF)	Equalization pulse and floating
Green red alternated	Connection with CanConsole or S/S HW-SW.



<p><b>Internal Electrical Schematic:</b></p>	<p>The schematic illustrates the electrical system's power flow. It starts with a 3-way HAN Q (TO WALL / CHANGEOVER) which feeds into a Slave Hybrid Charger (401U3570) labeled 'HYBRID ONLY'. This Slave charger is connected to a Master Hybrid Charger (401U3570) labeled 'HYBRID AND ELECTRIC'. The Master charger is connected to a Positive Busbar (716.2 100) which contains fuses FU1, FU2, and FU3. The Positive Busbar is also connected to a DC-DC Converter (401U3572). Power is also supplied to four 18-AGM 8V 370AH batteries (B15, B19, B20) through a series of fuses and switches. A Negative Busbar is also shown, connected to various components like pumps and motors.</p>
<p><b>Testing:</b></p>	<p>Check out put Voltage</p>
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

4.24 AC Generator

<p><b>Component :</b></p>	<p>AC Generator</p>
<p><b>Function:</b></p>	<p>AC generator (or alternator) converts mechanical energy from the engine into electrical energy in the form of alternating current (AC), which is then used for either power to platform feature or for charging the 48V battery pack.</p>
<p><b>Location:</b></p>	<p>On Engine Tray</p>

<p><b>Location Image:</b></p>	
<p><b>Signal:</b></p>	
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>The generator should be checked for the correct voltage and frequency.</p>
<p><b>Expected Values:</b></p>	<p>230V should be at connector</p>

<b>Related Fault Codes:</b>	
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## 4.25 Platform & Control Panel

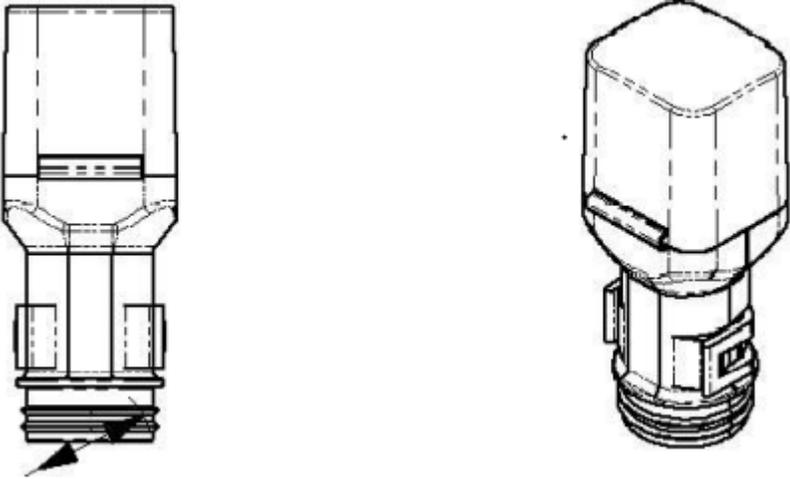
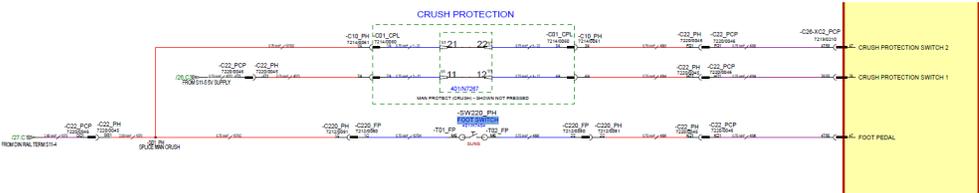
### 4.25.1 Foot Pedal Switch

<b>Component :</b>	Foot Pedal Switch														
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The foot pedal is used as an enable button for the platform control station in most cases.</li> <li>• The exception to this is engine start and hydraulic generator.</li> </ul>														
<b>Location:</b>	The foot pedal is located on the platform floor. When depressed and held, it activates the controls on the platform control console.														
<b>Location Image:</b>															
<b>Signal:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #A9A9A9;"> <th style="text-align: center;">Pin Number</th> <th style="text-align: center;">Description</th> <th style="text-align: center;">Wire Numbers</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">Common feed in 10V</td> <td style="text-align: center;">1075H</td> </tr> <tr> <td style="text-align: center;">N/O</td> <td style="text-align: center;">Foot Pedal pressed Signal</td> <td style="text-align: center;">4096</td> </tr> <tr> <td style="text-align: center;">N/C</td> <td style="text-align: center;">Not Used</td> <td style="text-align: center;">Not Used</td> </tr> </tbody> </table>	Pin Number	Description	Wire Numbers	C	Common feed in 10V	1075H	N/O	Foot Pedal pressed Signal	4096	N/C	Not Used	Not Used		
Pin Number	Description	Wire Numbers													
C	Common feed in 10V	1075H													
N/O	Foot Pedal pressed Signal	4096													
N/C	Not Used	Not Used													

<p><b>Wires &amp; Connectors:</b></p>	<p style="text-align: center;"><b>FIGURE 1</b></p>						
<p><b>Internal Electrical Schematic:</b></p>							
<p><b>Testing:</b></p>	<p>Check Continuity and Voltage between Switch Terminal</p>						
<p><b>Expected Values:</b></p>							
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th style="background-color: #cccccc;">Fault Code</th> <th style="background-color: #cccccc;">Description</th> </tr> </thead> <tbody> <tr> <td>B1053-17</td> <td>Foot pedal is short circuit to high (Platform)</td> </tr> <tr> <td>B1054-16</td> <td>Foot pedal is short circuit to low (Platform)</td> </tr> </tbody> </table>	Fault Code	Description	B1053-17	Foot pedal is short circuit to high (Platform)	B1054-16	Foot pedal is short circuit to low (Platform)
Fault Code	Description						
B1053-17	Foot pedal is short circuit to high (Platform)						
B1054-16	Foot pedal is short circuit to low (Platform)						

## 4.25.2 Crush Protection

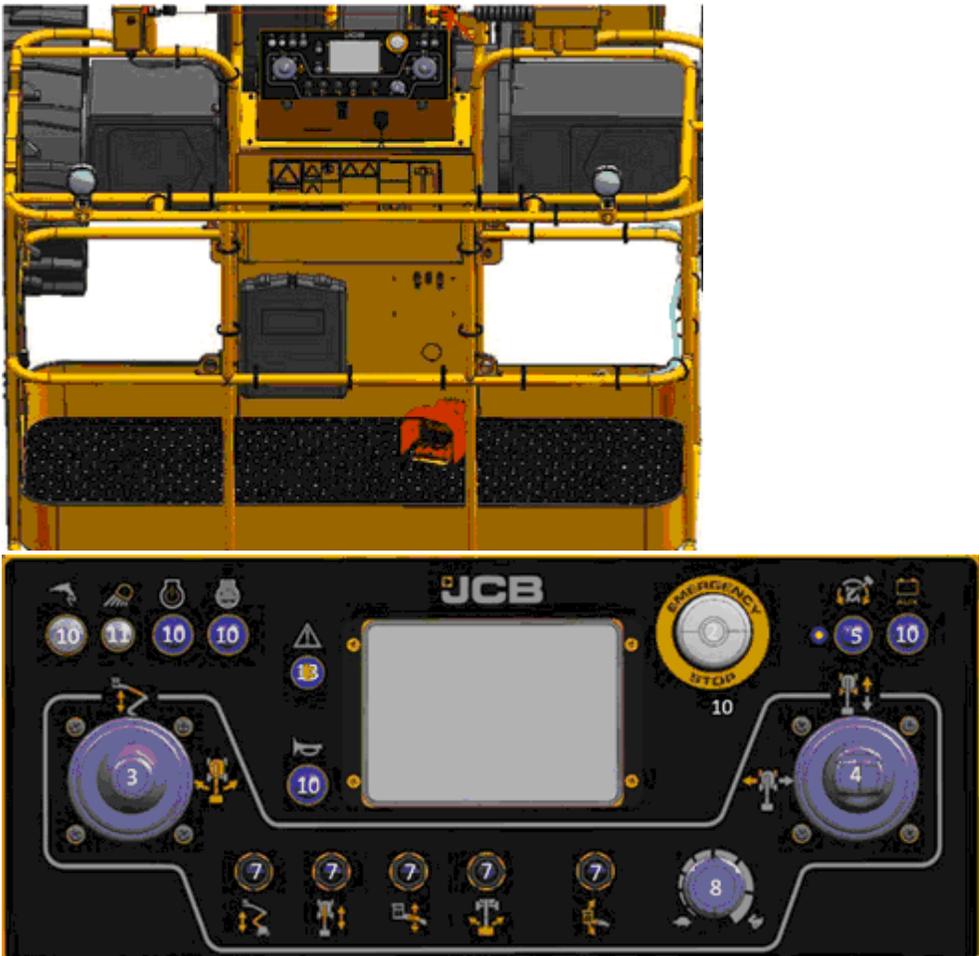
<b>Component :</b>	Crush Protection
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The crush protect rope switch is to protect the operator from being crushed onto the controls.</li> <li>• This will automatically limit the permitted movement of the platform so that only downward and/or inward movement (i.e. away from an obstacle) is available, following detection of a crush. In other words, tripping the crush sensor automatically triggers the system to limit the available movement of the platform so that only movement away from the obstacle is possible.</li> <li>• No override mechanism is provided at either the base or the platform; the permitted movement is automatically restricted upon detection of a crush.</li> <li>• A reset switch is provided to enable full movement. An operator would actuate this reset switch once they determine it is safe to do so.</li> </ul>
<b>Location:</b>	On Platform near Platform Control Box
<b>Location Image:</b>	

																
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>5V Feed In</td> <td>4085</td> </tr> <tr> <td>12</td> <td>Signal</td> <td>4094</td> </tr> <tr> <td>21</td> <td>10V Feed In</td> <td>1075TT</td> </tr> <tr> <td>22</td> <td>Signal</td> <td>4093</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	11	5V Feed In	4085	12	Signal	4094	21	10V Feed In	1075TT	22	Signal	4093
Pin Number	Description	Wire Number														
11	5V Feed In	4085														
12	Signal	4094														
21	10V Feed In	1075TT														
22	Signal	4093														
<p><b>Wires &amp; Connectors:</b></p>																
<p><b>Internal Electrical Schematic:</b></p>	<p>The crush protection is shown with the switch reset and the rope not pressed.</p> <p>If there is no tension on the rope switch or the rope switch has been pressed both switches will open circuit.</p> 															

<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT use the meter on the ECU pins</p> <p>Turn on the machine ignition</p> <ol style="list-style-type: none"> <li>1. Press on the rope</li> <li>2. Crush protection Icon should be shown on the display with buzzer</li> <li>3. User Caution LED at the platform will light up with buzzer.</li> <li>4. Pull the blue knob out on the switch to reset, Alarms/ icons should go off.</li> </ol>							
<b>Expected Values:</b>								
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1025-13</td> <td>CRUSH Protection Switch 1 and 2 Plausibility Check</td> </tr> <tr> <td>B1026-17</td> <td>CRUSH Protection Switch 1 SC to &gt;5V</td> </tr> </tbody> </table>	Fault Code	Description	B1025-13	CRUSH Protection Switch 1 and 2 Plausibility Check	B1026-17	CRUSH Protection Switch 1 SC to >5V	
Fault Code	Description							
B1025-13	CRUSH Protection Switch 1 and 2 Plausibility Check							
B1026-17	CRUSH Protection Switch 1 SC to >5V							

### 4.25.3 Platform Control Panel

<b>Component :</b>	Platform Control Panel
<b>Function:</b>	The platform control panel is used for the machine operations.
<b>Location:</b>	On Platform

<p><b>Location Image:</b></p>																																				
<p><b>Signal:</b></p>	<p>-C30_PCP                      PLATFORM WORKLIGHTS CONN</p> <table border="1"> <thead> <tr> <th>ID</th> <th>Tag</th> <th>Size</th> <th>Colour</th> <th>Destination</th> <th>Cable</th> <th>Cavity Seal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1035</td> <td>2.00 mm<sup>2</sup></td> <td>YE</td> <td>-C216-1_PCP:1</td> <td>-W01_PCP</td> <td></td> </tr> <tr> <td>2</td> <td>6079</td> <td>2.00 mm<sup>2</sup></td> <td>YE</td> <td>-C22_PCP:G</td> <td>-W01_PCP</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7210/0030</td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>7210/0030</td> </tr> </tbody> </table> <p>7214/0035      4 Way DTP04 Pin Housing Flange Mount  <u>Additional Components</u>                  7214/0031;1 # 4 Way DTP04 Wedge</p>	ID	Tag	Size	Colour	Destination	Cable	Cavity Seal	1	1035	2.00 mm <sup>2</sup>	YE	-C216-1_PCP:1	-W01_PCP		2	6079	2.00 mm <sup>2</sup>	YE	-C22_PCP:G	-W01_PCP		3						7210/0030	4						7210/0030
ID	Tag	Size	Colour	Destination	Cable	Cavity Seal																														
1	1035	2.00 mm <sup>2</sup>	YE	-C216-1_PCP:1	-W01_PCP																															
2	6079	2.00 mm <sup>2</sup>	YE	-C22_PCP:G	-W01_PCP																															
3						7210/0030																														
4						7210/0030																														

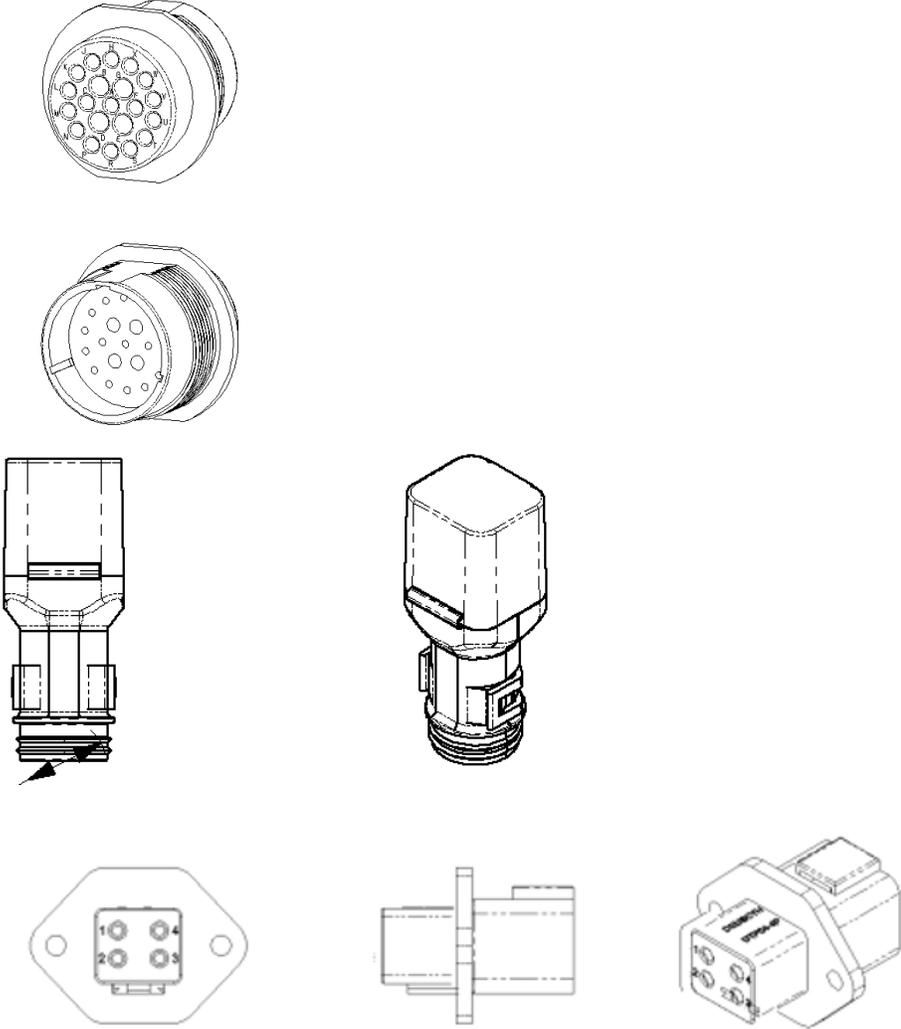
		-C22_PCP PLATFORM INTERCONNECT					
ID	Tag	Size	Colour	Destination	Cable	Cavity Seal	
A	4091	0.75 mm <sup>2</sup>	YE	-C26-XC2_PCP:22	-W01_PCP		
B	8079	2.00 mm <sup>2</sup>	YE	-T-S11-12-F_PCP:4	-W01_PCP		
C	4092	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:57	-W01_PCP		
D	1070	2.00 mm <sup>2</sup>	YE	-T-S11-4-F_PCP:1	-W01_PCP		
E	6036	2.00 mm <sup>2</sup>	YE	-T-S11-10-E_PCP:4	-W01_PCP		
F	4093	0.75 mm <sup>2</sup>	YE	-C26-XC2_PCP:47	-W01_PCP		
G	6079	2.00 mm <sup>2</sup>	YE	-C30_PCP:2	-W01_PCP		
H	4094	0.75 mm <sup>2</sup>	YE	-C26-XC2_PCP:36	-W01_PCP		
J	4070	0.75 mm <sup>2</sup>	YE	-T-S11-5-D_PCP:1	-W01_PCP		
K	4096	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:47	-W01_PCP		
L	4097	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:37	-W01_PCP		
M	4098	0.75 mm <sup>2</sup>	YE	-C26-XC2_PCP:24	-W01_PCP		
N	4081	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:54	-W01_PCP		
P	4082	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:78	-W01_PCP		
R	4083	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:53	-W01_PCP		
S	4084	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:77	-W01_PCP		
T	1030	0.75 mm <sup>2</sup>	YE	-T-S11-2-F_PCP:1	-W01_PCP		
U	6072	0.75 mm <sup>2</sup>	YE	-T-S11-6-B_PCP:1	-W01_PCP		
V	6070	0.75 mm <sup>2</sup>	YE	-T-S11-6-D_PCP:1	-W01_PCP		
W	4101	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:69	-W01_PCP		
X	4102	0.75 mm <sup>2</sup>	YE	-C27-XC1_PCP:70	-W01_PCP		

7220/0046 21 Way HDP Bulkhead Pin Housing (Receptacle)  
Additional Components  
 7210/0047;1 # Size 24 Lockwasher  
 7210/0048;1 # Size 24 Plastic Jam Nut

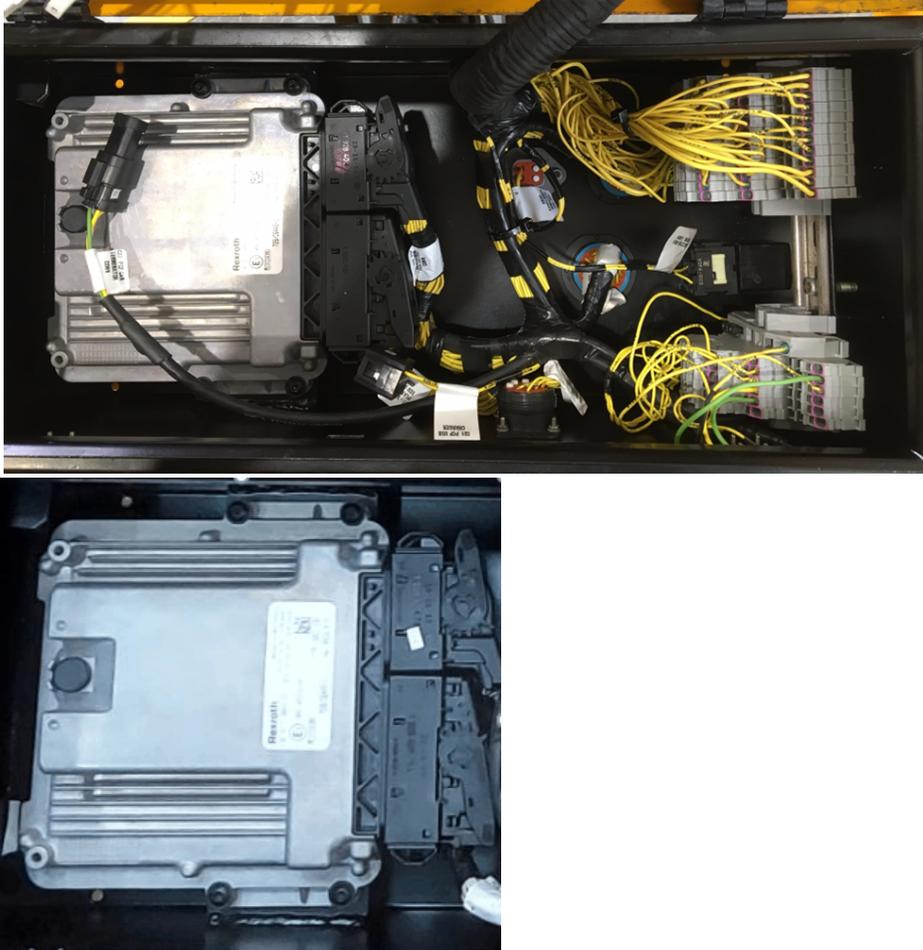
		-C21_PCP BOOM HARNESS CONN					
ID	Tag	Size	Colour	Destination	Cable	Cavity Seal	
A	1014	2.00 mm <sup>2</sup>	YE	-T-S11-1-E_PCP:1	-W01_PCP		
B	1015	2.00 mm <sup>2</sup>	YE	-T-S11-2-E_PCP:1	-W01_PCP		
C						7204/0028	
D	6078	2.00 mm <sup>2</sup>	YE	-T-S11-7-B_PCP:1	-W01_PCP		
E	6040	2.00 mm <sup>2</sup>	YE	-T-S11-10-F_PCP:4	-W01_PCP		
F	6028	2.00 mm <sup>2</sup>	YE	-T-S11-11-D_PCP:4	-W01_PCP		
G						7210/0030	
H						7210/0030	
J						7210/0030	
K						7210/0030	
L						7210/0030	
M	CAN H15	0.50 mm <sup>2</sup>	YE	-T-S11-13-F_PCP:4	MC11_PCP		
N	CAN L15	0.50 mm <sup>2</sup>	GN	-T-S11-14-F_PCP:4	MC11_PCP		
P	CAN S15	0.50 mm <sup>2</sup>	N/A	-T-S11-15-F_PCP:4	MC11_PCP		

7219/0087 14 Way HDP Bulkhead Pin Housing (Receptacle) Size 18  
Additional Components  
 7210/0119;1 # Size 18 Plastic Jam Nut  
 7210/0120;1 # Size 18 Lockwasher  
 7243/0606;1 # Gasket - TE/HDP Series

<b>Wires &amp; Connectors:</b>	Boom Harness connector C21:	Platform interconnection C22:
		Platform work light interconnection C31:

	
<p><b>Internal Electrical Schematic:</b></p>	<p>Refer A45E Boom Schematic Part No : 401/Y3086</p>
<p><b>Testing:</b></p>	
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

## 4.25.4 Platform ECU

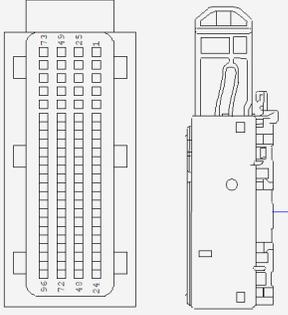
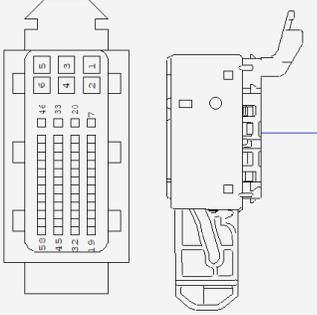
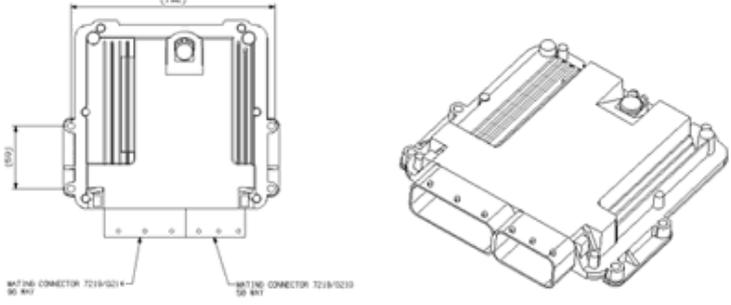
<b>Component :</b>	Platform ECU											
<b>Function:</b>	<ul style="list-style-type: none"> <li>• When the ECU turns on, there is a check in the Platform software to ensure the ECU is in a safe state to turn on and enable.</li> <li>• After the Bosch boot block check there should be a check in the software to check for status of inputs to ensure the software is in a safe condition before allowing all functions.</li> <li>• The Platform Bosch ECU perform all the functions of machine.</li> </ul>											
<b>Location:</b>	The platform ECU is located inside the control box.											
<b>Location Image:</b>												
<b>Signal:</b>	<table border="1"> <thead> <tr> <th colspan="3">58 Way Connector</th> </tr> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			58 Way Connector			Pin Number	Description/Signal	Wire Number			
58 Way Connector												
Pin Number	Description/Signal	Wire Number										

1	Power Supply 12V input	1017
2	GND Signal	6031
3	Power Supply 12V input	1018
4	Power Supply 12V input	1019
5	Power Supply 12V input	1020
6	Power Supply 12V input	1021
7	GND Signal	6032
8	NOT USED	NOT USED
9	Platform level lower switch input (10V when pressed)	81
10	Platform level raise switch input (10V when pressed)	80
11	Platform rotate right switch input (10V when pressed)	79
12	platform rotate left switch input (10V when pressed)	78
13	NOT USED	NOT USED
14	Jib Lower switch input (10V when pressed)	77
15	CAN H1 J1939	Yellow
16	CAN L1 J1939	Green
17	NOT USED	NOT USED
18	NOT USED	NOT USED
19	5V Supply potentiometer (5V)	4074
20	GND	6033
21	NOT USED	NOT USED
22	NOT USED	NOT USED
23	Auto start switch input to ECU	88
24	NOT USED	NOT USED
25	Power to Platform switch input (10V when pressed, momentary)	82
26	Drive joystick input (0.5-2.5-4.5)	4073
27	NOT USED	NOT USED
28	E-Stop Positive (12V when un-pressed)	28
29	NOT USED	NOT USED
30	NOT USED	NOT USED
31	Slew joystick input (0.5-2.5-4.5)	4065
32	10V ECU Output (10V)	1068
33	GND	6034
34	Artic boom switch raise (10V when pressed)	73
35	Artic boom switch lower (10V when pressed)	72
36	Crush protection (5V when not pressed and reset)	4094

37	NOT USED	NOT USED
38	NOT USED	NOT USED
39	NOT USED	NOT USED
40	Ignition feed (12V with key on)	1029
41	Fault LED Output (12V when fault)	4071
42	NOT USED	NOT USED
43	NOT USED	NOT USED
44	NOT USED	NOT USED
45	Power supply input (12V)	1022
46	GND	6035
47	Crush protection (10V when not pressed and reset)	4093
48	NOT USED	NOT USED
49	RC Config 2 open circuit	NOT USED
50	Engine start switch input (10V when pressed, momentary)	86
51	Slew acknowledgment switch input	83
52	Horn switch input	85
53	NOT USED	NOT USED
54	NOT USED	NOT USED
55	5V Feed to Joysticks via din rail S11-5 (5V output from ecu)	4069
56	NOT USED	NOT USED
57	NOT USED	NOT USED
58	power supply electronics (12V)	1023
<b>96 Way connector</b>		
Pin Number	Description/Signal	Wire Number
1	NOT USED	NOT USED
2	NOT USED	NOT USED
3	NOT USED	NOT USED
4	NOT USED	NOT USED
5	NOT USED	NOT USED
6	NOT USED	NOT USED
7	NOT USED	NOT USED
8	NOT USED	NOT USED
9	NOT USED	NOT USED
10	NOT USED	NOT USED
11	NOT USED	NOT USED
12	NOT USED	NOT USED

13	NOT USED	NOT USED
14	E-Stop -ve feed (GND when unpressed)	6048
15	NOT USED	NOT USED
16	NOT USED	NOT USED
17	NOT USED	NOT USED
18	NOT USED	NOT USED
19	NOT USED	NOT USED
20	NOT USED	NOT USED
21	NOT USED	NOT USED
22	GND	6037
23	GND	6038
24	GND	6039
25	NOT USED	NOT USED
26	NOT USED	NOT USED
27	NOT USED	NOT USED
28	NOT USED	NOT USED
29	NOT USED	NOT USED
30	NOT USED	NOT USED
31	NOT USED	NOT USED
32	NOT USED	NOT USED
33	NOT USED	NOT USED
34	NOT USED	NOT USED
35	Jib Switch input - raise (10V when pressed)	76
36	High Torque switch input (10V when pressed, momentary)	90
37	NOT USED	NOT USED
38	NOT USED	NOT USED
39	Potentiometer signal (0-5V)	4075
40	NOT USED	NOT USED
41	Steer Joystick signal	4072
42	Main boom telescope input switch - retract (10V when pressed)	75
43	electric pump switch input (10V when pressed, momentary)	89
44	Main boom telescope input switch - extend (10V when pressed)	74
45	5V GND potentiometer	6074
46	5V GND joysticks, potentiometer	6069
47	Foot pedal input (10V when pressed)	4096
48	NOT USED	NOT USED
49	NOT USED	NOT USED

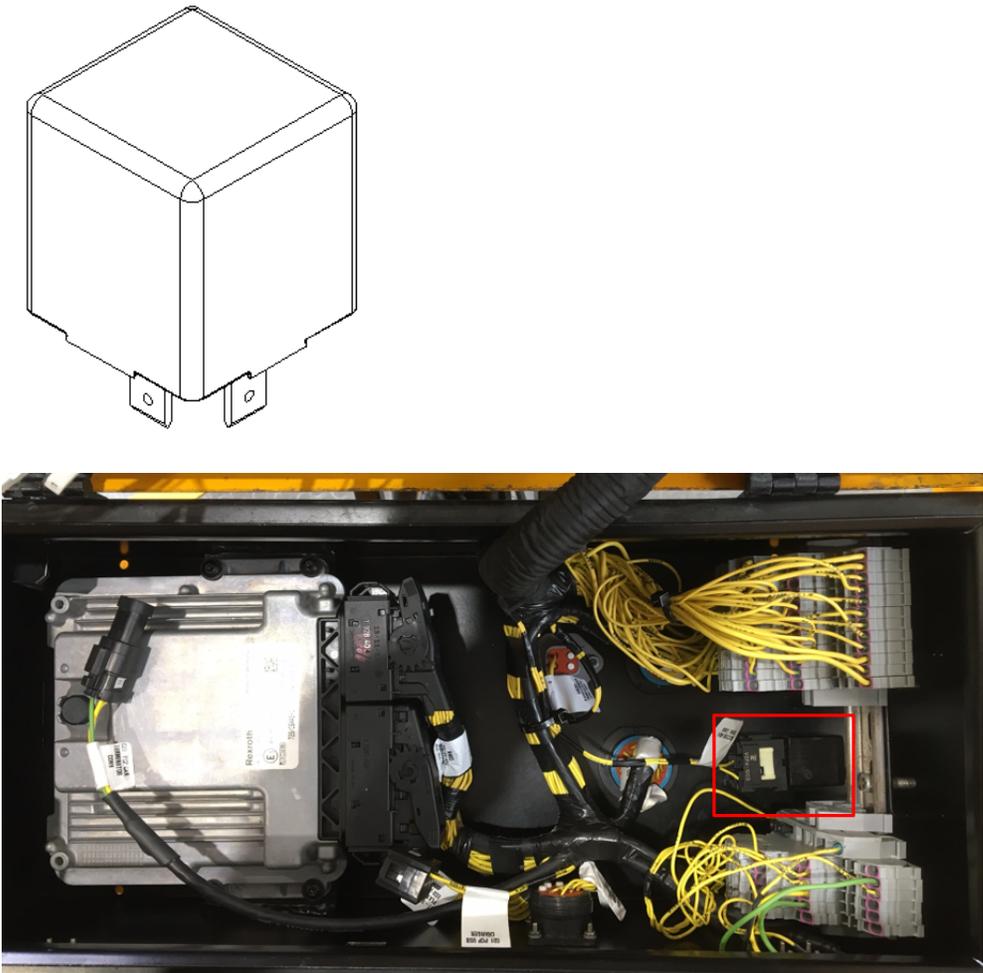
50	NOT USED	NOT USED
51	NOT USED	NOT USED
52	NOT USED	NOT USED
53	Platform rotate right solenoid output (12V when active)	4083
54	NOT USED	NOT USED
55	NOT USED	NOT USED
56	NOT USED	NOT USED
57	NOT USED	NOT USED
58	NOT USED	NOT USED
59	NOT USED	NOT USED
60	NOT USED	NOT USED
61	NOT USED	NOT USED
62	NOT USED	NOT USED
63	NOT USED	NOT USED
64	Main boom joystick input signal (0.5-2.5-4.5)	4066
65	NOT USED	NOT USED
66	NOT USED	NOT USED
67	NOT USED	NOT USED
68	NOT USED	NOT USED
69	Load cell sensor 1	4101
70	Load cell sensor 2	4102
71	NOT USED	NOT USED
72	NOT USED	NOT USED
73	NOT USED	NOT USED
74	NOT USED	NOT USED
75	NOT USED	NOT USED
76	NOT USED	NOT USED
77	NOT USED	NOT USED
78	NOT USED	NOT USED
79	NOT USED	NOT USED
80	NOT USED	NOT USED
81	NOT USED	NOT USED
82	NOT USED	NOT USED
83	NOT USED	NOT USED
84	NOT USED	NOT USED
85	NOT USED	NOT USED
86	NOT USED	NOT USED
87	NOT USED	NOT USED
88	NOT USED	NOT USED

	<table border="1"> <tr> <td>89</td> <td>Slew acknowledgment LED output</td> <td>4086</td> </tr> <tr> <td>90</td> <td>Buzzer output</td> <td>4076</td> </tr> <tr> <td>91</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>92</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>93</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>94</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>95</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>96</td> <td>RC Config pin 1 (GND)</td> <td>6027</td> </tr> </table>	89	Slew acknowledgment LED output	4086	90	Buzzer output	4076	91	NOT USED	NOT USED	92	NOT USED	NOT USED	93	NOT USED	NOT USED	94	NOT USED	NOT USED	95	NOT USED	NOT USED	96	RC Config pin 1 (GND)	6027
89	Slew acknowledgment LED output	4086																							
90	Buzzer output	4076																							
91	NOT USED	NOT USED																							
92	NOT USED	NOT USED																							
93	NOT USED	NOT USED																							
94	NOT USED	NOT USED																							
95	NOT USED	NOT USED																							
96	RC Config pin 1 (GND)	6027																							
<b>Wires &amp; Connectors:</b>	<div style="text-align: center;"> <p><b>-C27-XC1_PCP#1</b> 7219/0214 PLATFORM ECU 96PIN CONN</p>  </div> <div style="text-align: center; margin-top: 20px;"> <p><b>-C26-XC2_PCP#1</b> 7219/0210 PLATFORM ECU 58PIN CONN</p>  </div> <div style="text-align: center; margin-top: 20px;">  </div>																								
<b>Internal Electrical Schematic:</b>	Refer A45E Boom Electrical schematic:-Part No: 401/Y3086.																								
<b>Testing:</b>	Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins																								

	<ol style="list-style-type: none"> <li>1. Connect machine to the Servicemaster diagnostic tool using the <a href="#">DLA Connector</a>.</li> <li>2. Ensure LED's change state when the corresponding function is selected and ensure a CAN message is being sent from the ECU on the network tab.</li> <li>3. If faulty replace the MECU.</li> </ol>				
<b>Expected Values:</b>					
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>U1299-87</td> <td>CAN PAIRING FAILED ERROR</td> </tr> </tbody> </table>	Fault Code	Description	U1299-87	CAN PAIRING FAILED ERROR
	Fault Code	Description			
U1299-87	CAN PAIRING FAILED ERROR				

### 4.25.5 Platform Buzzer

<b>Component :</b>	Platform Buzzer
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The buzzer is there to warn the operator when either an fault or error has happened with the machine or to warn of machine is awaiting for operator action.</li> <li>• For example, if the foot pedal is pressed for longer than 10 seconds without a function being pressed, this will time out and make the buzzer sound.</li> <li>• The platform buzzer and the base buzzer should be a repeat of each other.</li> <li>• If 1 buzzer is working and the other is not then there is issue with the buzzer</li> </ul>
<b>Location:</b>	Inside the Platform Control Box

<p><b>Location Image:</b></p>																					
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>IGN</td> <td>4076</td> </tr> <tr> <td>2</td> <td>BUZZ</td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>GND</td> <td>6076</td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> </tbody> </table>			Pin Number	Description	Wire number	1	IGN	4076	2	BUZZ		3			4	GND	6076	5		
Pin Number	Description	Wire number																			
1	IGN	4076																			
2	BUZZ																				
3																					
4	GND	6076																			
5																					

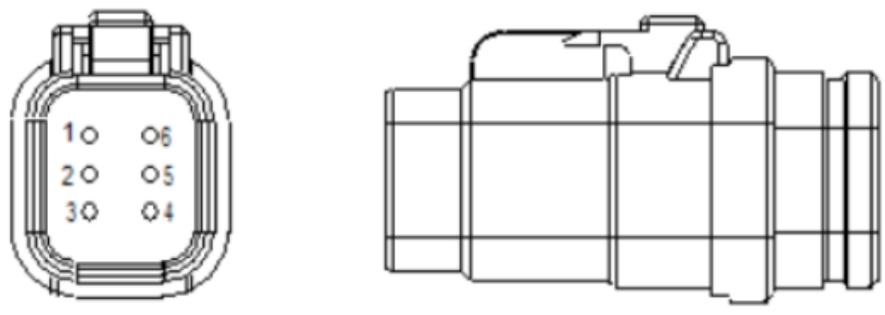
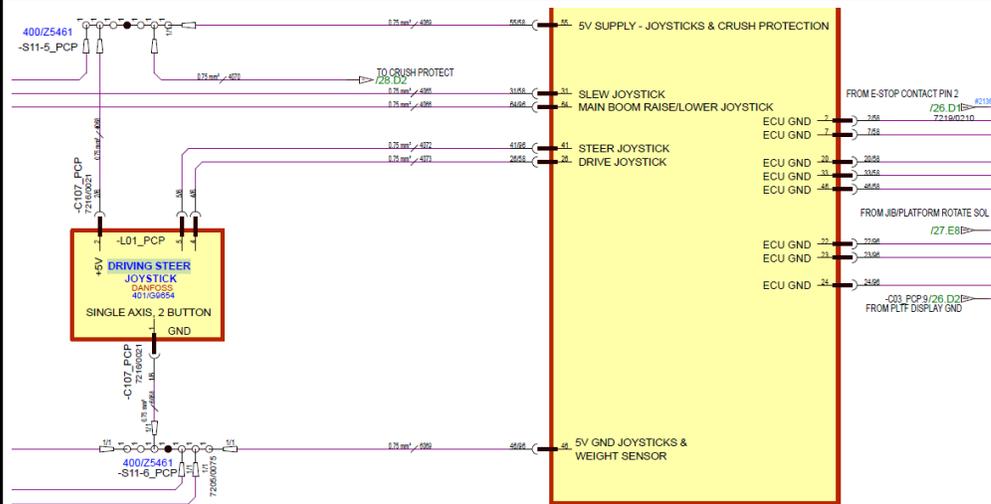
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. There are two buzzer fitted on machine one is inside base control panel and another is inside platform control panel. Ensure no water ingress</li> <li>2. Check supply at connector R01_TCP pin no 1 &amp; 4 This should read 12V</li> <li>3. If there is no supply check wiring as per the schematic</li> <li>4. If there is supply on harness there may be internal damage to buzzer</li> </ol> <p>Note-Remove the buzzer from its holder and wire to 12V and GND signals and the buzzer should sound</p>
<p><b>Expected Values:</b></p>	

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1177-16	BUZZER SC to Low
	B1178-13	BUZZER OC

### 4.25.6 Drive and Steer Joystick

<b>Component :</b>	Drive and Steer Joystick
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This Joystick is used for Drive and Steer functions.</li> <li>• This is a proportional Single axis joystick with additional buttons on top</li> <li>• Y axis = Drive forward and backward control</li> <li>• Buttons on top - Left and Right steer control</li> </ul>
<b>Location:</b>	The Drive joystick is located RHS on the platform control panel

<p><b>Location Image:</b></p>																					
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>6068</td> </tr> <tr> <td>2</td> <td>+5V</td> <td>4068</td> </tr> <tr> <td>3</td> <td>Not Used</td> <td>Not Used</td> </tr> <tr> <td>4</td> <td>Drive Signal</td> <td>4073</td> </tr> <tr> <td>5</td> <td>Steer Signal</td> <td>4072</td> </tr> </tbody> </table>			Pin Number	Description	Wire Number	1	GND	6068	2	+5V	4068	3	Not Used	Not Used	4	Drive Signal	4073	5	Steer Signal	4072
Pin Number	Description	Wire Number																			
1	GND	6068																			
2	+5V	4068																			
3	Not Used	Not Used																			
4	Drive Signal	4073																			
5	Steer Signal	4072																			

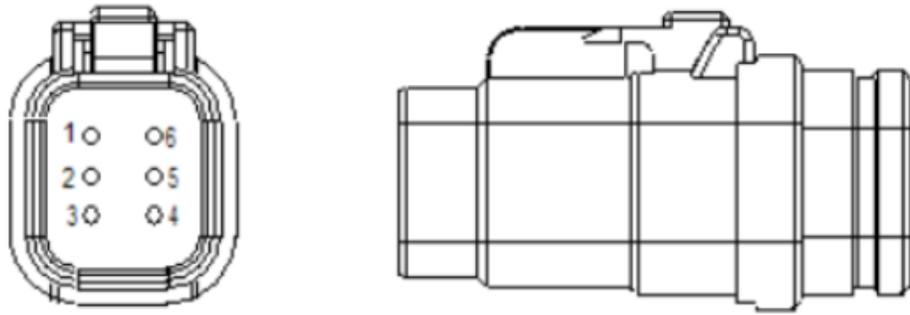
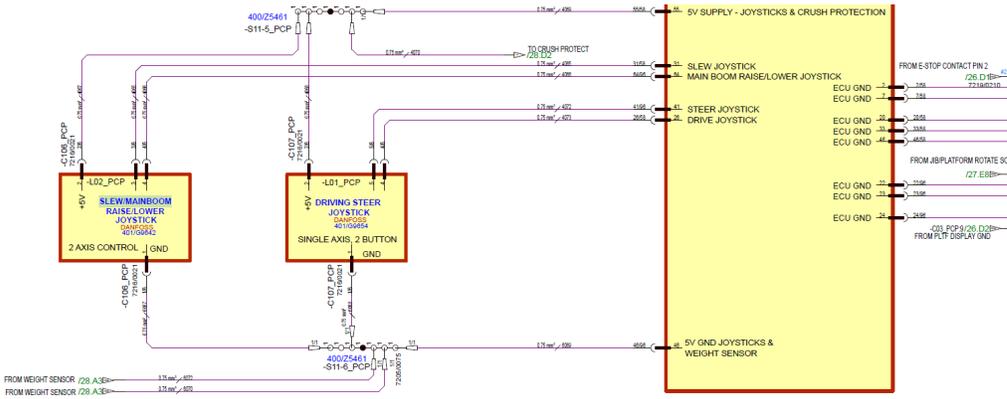
<p><b>Wires &amp; Connectors:</b></p>	 <p>7216/0021 6 Way Connector</p>
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <p>1. Note- Drive and steer is a single axis joystick with 2 buttons on the top for steer. This switch is of 5V hence be careful there is no protection on this input if over 5v goes it will break and damage beyond repair.</p> <ol style="list-style-type: none"> <li>1. There are 4 wires, 2 input and 2 output, 2 inputs are 5V and 5V ground</li> <li>2. The 2 outputs are one for steer and one for drive.</li> <li>3. Make sure joystick is fitted properly so no water ingress.</li> <li>4. Check supply at C107 (Pin 1 &amp; 2). It should read 5V. If there is no 5V then investigate wiring as per schematic.</li> </ol>

	<p>5. Joystick on center position. Check voltage on connector C107 (Pin 5) &amp; also at C107 (Pin4). It should read 2.5V. There is 8% tolerance deadband at centre position.</p> <p>6. Voltage changes from 0.5V to 4.5 V after moving joystick.</p> <p>7. If Input voltage OK then it may be internal damage inside the joystick.</p> <p>8. Replace it</p>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1146-17	STEER JOYSTICK SC to High (>4.75V)
	B1147-16	STEER JOYSTICK SC to Low (<0.25V) or OC
	B1069-17	Drive JOYSTICK SC to High (>4.75V)
	B1070-16	Drive JOYSTICK SC to Low (<0.25V) or OC

### 4.25.7 Slew & Main Boom Up/Down Joystick

<b>Component:</b>	Slew & Main Boom Up/Down Joystick
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This joystick is for Main Boom Lift and Slew control of the machine</li> <li>• The joystick gives proportional control of the functions of 2 Axis</li> <li>• X Axis = Slew control</li> <li>• Y Axis = Main boom control</li> </ul>
<b>Location:</b>	The joystick is located on the LHS of the platform control panel.

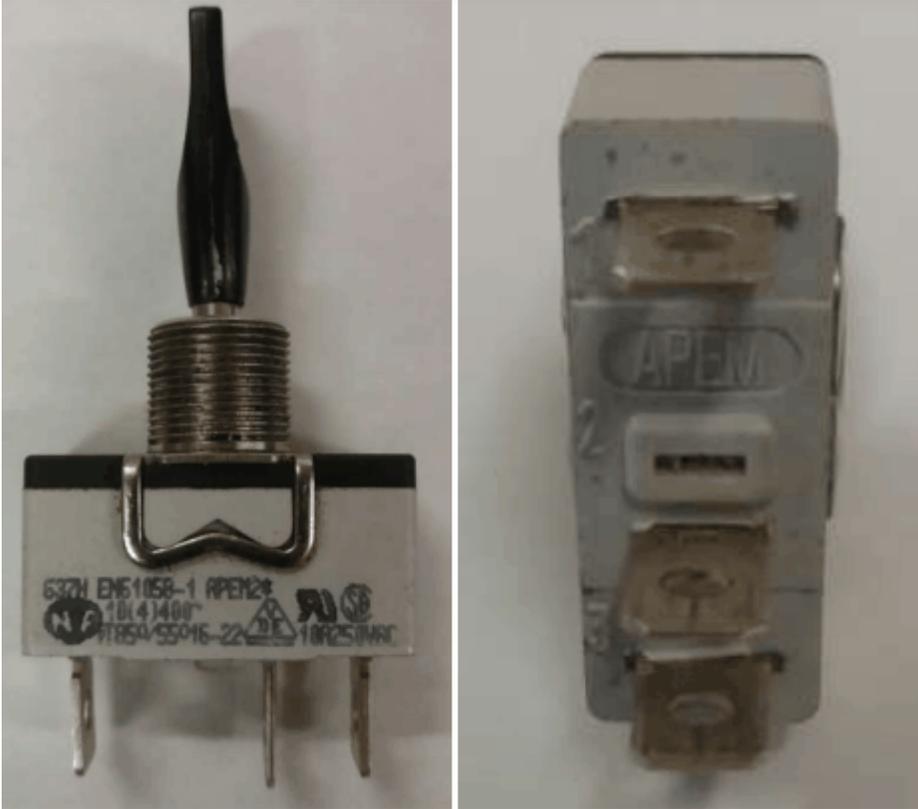
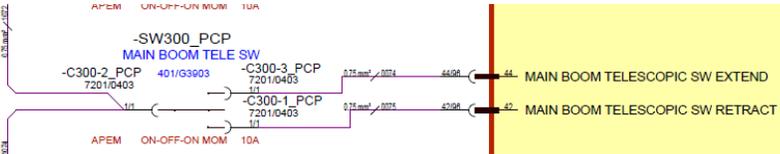
<p><b>Location Image:</b></p>																								
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>6067</td> </tr> <tr> <td>2</td> <td>+5V</td> <td>4067</td> </tr> <tr> <td>3</td> <td>Slew Signal</td> <td>4065</td> </tr> <tr> <td>4</td> <td>Main Boom Signal</td> <td>4066</td> </tr> <tr> <td>5</td> <td>Not Used</td> <td>Not Used</td> </tr> <tr> <td>6</td> <td>Not Used</td> <td>Not Used</td> </tr> </tbody> </table>			Pin Number	Description	Wire Number	1	GND	6067	2	+5V	4067	3	Slew Signal	4065	4	Main Boom Signal	4066	5	Not Used	Not Used	6	Not Used	Not Used
Pin Number	Description	Wire Number																						
1	GND	6067																						
2	+5V	4067																						
3	Slew Signal	4065																						
4	Main Boom Signal	4066																						
5	Not Used	Not Used																						
6	Not Used	Not Used																						

<p><b>Wires &amp; Connect ors:</b></p>	 <p>7216/0021 6 Way Connector</p>
<p><b>Internal Electrical Schemati c:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>Note- Slew &amp; main boom raise and lower joystick is double axis joystick.</li> <li>5V hence be careful there is no protection on this input if over 5v goes it will break and damage beyond repair.</li> <li>There are 4 wires, 2 input and 2 output, 2 inputs are 5V and 5V ground</li> <li>The 2 outputs are one for slew &amp; one for main boom.</li> <li>Make sure joystick is fitted properly and there is no water ingress.</li> <li>Check supply at C106 (Pin 1 &amp; 2). It should read 5V. If there is no 5V then investigate wiring as per schematic.</li> <li>Joystick on center position. Check voltage on connector C106 (Pin 3) &amp; also at C106 (Pin4). It should read 2.5V.</li> </ol>

	<p>6. Voltage changes from 0.5V to 4.5 V after moving joystick.</p> <p>7. If Input voltage OK then it may be internal damage inside the joystick.</p> <p>8. Replace it</p>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1148-17	LIFT JOYSTICK SC to High (>4.75V)
	B1149-16	LIFT JOYSTICK SC to Low (<0.25V) or OC
	B1150-17	SLEW JOYSTICK SC to High (>4.75V)
	B1151-16	SLEW JOYSTICK SC to Low (<0.25V) or OC

4.25.8 Main Boom Telescope Extend/Retract Switch(PCP)

<b>Component :</b>	Main Boom Telescope Extend/Retract Switch(PCP)					
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This switch is to operate the main boom telescope in either extend or retract positioning from the platform control station.</li> <li>• This switch is and on-off-on switch.</li> <li>• The foot pedal is required to enable operation</li> </ul>					
<b>Location:</b>	On Platform Control Box					
<b>Location Image:</b>						
<b>Signal:</b>	<b>Pin Number</b>	<b>Description/ Signal</b>	<b>Connector number</b>	<b>Wire number(s)</b>	<b>Voltage with switch unpressed</b>	<b>Voltage with switch pressed</b>
	1	Telescope Retract	C300-1 PCP	0075	2.7 V	10V

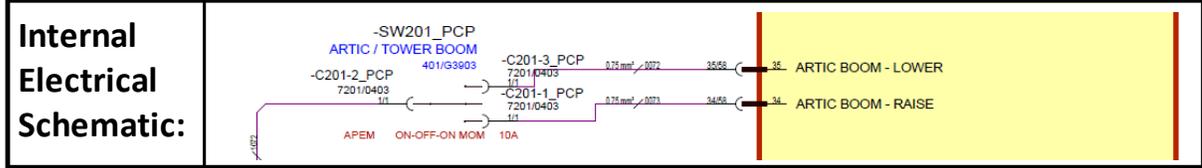
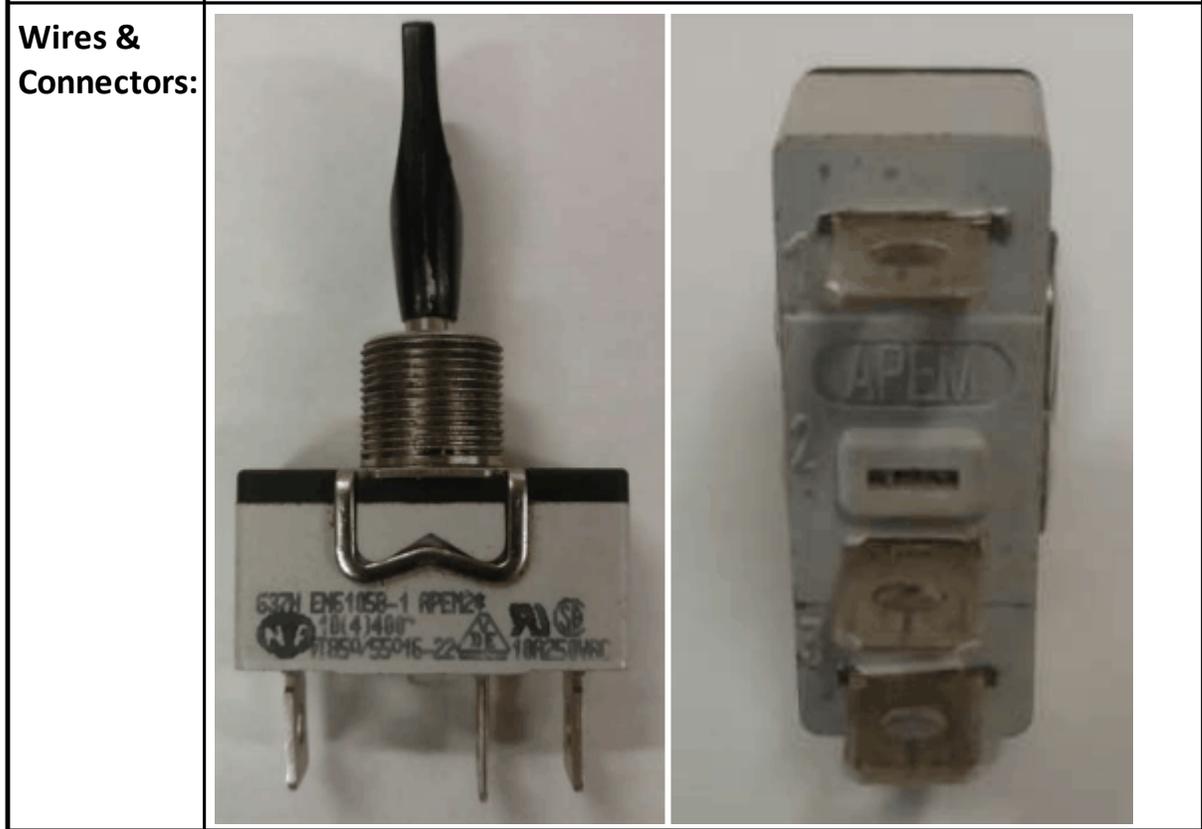
	<table border="1"> <tr> <td>2</td> <td>Power in (10V)</td> <td>C300-2 PCP</td> <td>1074, 1072</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Telescope Extend</td> <td>C300-3 PCP</td> <td>0074</td> <td>2.7V</td> <td>10V</td> </tr> </table>	2	Power in (10V)	C300-2 PCP	1074, 1072	10V	NA	3	Telescope Extend	C300-3 PCP	0074	2.7V	10V
2	Power in (10V)	C300-2 PCP	1074, 1072	10V	NA								
3	Telescope Extend	C300-3 PCP	0074	2.7V	10V								
<p><b>Wires &amp; Connectors:</b></p>													
<p><b>Internal Electrical Schematic:</b></p>													
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> <li>3. Terminal 2 is for incoming supply</li> <li>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</li> <li>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</li> </ol>												

	<p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it</p>													
<b>Expected Values:</b>														
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1252-17</td> <td>MAIN BOOM TELESCOPE EXTEND Switch SC to High</td> </tr> <tr> <td>B1253-17</td> <td>MAIN BOOM TELESCOPE RETRACT Switch SC to High</td> </tr> <tr> <td>B1254-92</td> <td>MAIN BOOM TELESCOPE EXTEND &amp; RETRACT Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1255-16</td> <td>MAIN BOOM TELESCOPE EXTEND Switch SC to Low</td> </tr> <tr> <td>B1256-16</td> <td>MAIN BOOM TELESCOPE RETRACT Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1252-17	MAIN BOOM TELESCOPE EXTEND Switch SC to High	B1253-17	MAIN BOOM TELESCOPE RETRACT Switch SC to High	B1254-92	MAIN BOOM TELESCOPE EXTEND & RETRACT Switches both activated (5 - 10V)	B1255-16	MAIN BOOM TELESCOPE EXTEND Switch SC to Low	B1256-16	MAIN BOOM TELESCOPE RETRACT Switch SC to Low	
Fault Code	Description													
B1252-17	MAIN BOOM TELESCOPE EXTEND Switch SC to High													
B1253-17	MAIN BOOM TELESCOPE RETRACT Switch SC to High													
B1254-92	MAIN BOOM TELESCOPE EXTEND & RETRACT Switches both activated (5 - 10V)													
B1255-16	MAIN BOOM TELESCOPE EXTEND Switch SC to Low													
B1256-16	MAIN BOOM TELESCOPE RETRACT Switch SC to Low													

4.25.9 Articulated Raise/Lower Switch(PCP)

<b>Component :</b>	Articulated Raise/Lower Switch(PCP)
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This switch is to operate the Articulated boom in either raise or lower positioning.</li> <li>• This switch is and on-off-on switch.</li> <li>• The foot switch is required to enable operation</li> </ul>
<b>Location:</b>	On Platform Control Box
<b>Location Image:</b>	

Signal:	Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed
	1	Artic boom raise	C201-1 PCP	73	3.4 V	10V
	2	Power in (10V)	C201-2 PCP	1072	10V	NA
	3	Artic boom lower	C201 - 3 PCP	72	2.7V	10V



**Testing:**

Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.

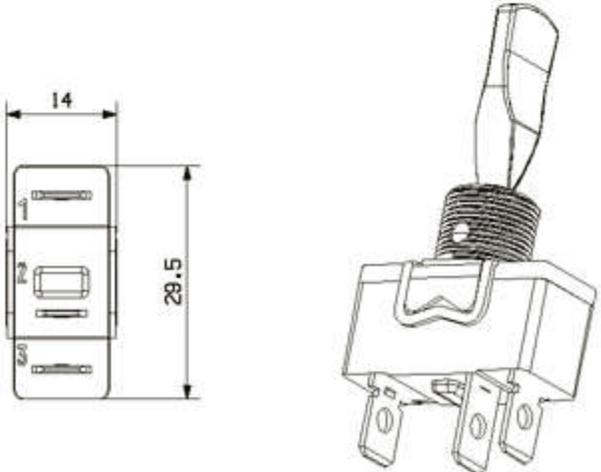
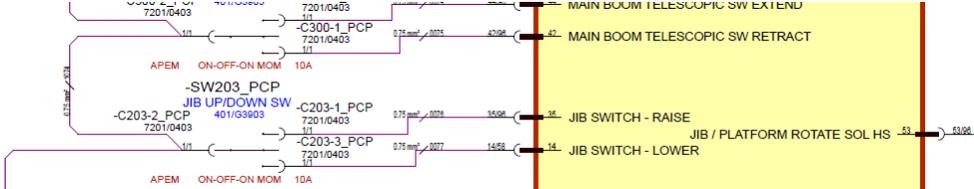
1. There are 3 contact on the back of switch.
2. Check terminal 1, 2 & 3 connected correctly with wiring harness terminal 1, 2 & 3 respectively.
3. Terminal 2 is for incoming supply

	<p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>												
<b>Expected Values:</b>													
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1247-17</td> <td>ARTICULATED BOOM RAISE Switch SC to High</td> </tr> <tr> <td>B1248-17</td> <td>ARTICULATED BOOM LOWER Switch SC to High</td> </tr> <tr> <td>B1249-92</td> <td>ARTICULATED BOOM RAISE &amp; LOWER Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1250-16</td> <td>ARTICULATED BOOM RAISE Switch SC to Low</td> </tr> <tr> <td>B1251-16</td> <td>ARTICULATED BOOM LOWER Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1247-17	ARTICULATED BOOM RAISE Switch SC to High	B1248-17	ARTICULATED BOOM LOWER Switch SC to High	B1249-92	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)	B1250-16	ARTICULATED BOOM RAISE Switch SC to Low	B1251-16	ARTICULATED BOOM LOWER Switch SC to Low
Fault Code	Description												
B1247-17	ARTICULATED BOOM RAISE Switch SC to High												
B1248-17	ARTICULATED BOOM LOWER Switch SC to High												
B1249-92	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)												
B1250-16	ARTICULATED BOOM RAISE Switch SC to Low												
B1251-16	ARTICULATED BOOM LOWER Switch SC to Low												

### 4.25.10 Jib Up/Down Switch(PCP)

<b>Component :</b>	Jib Up/Down Switch(PCP)
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This switch is to operate the jib in either raise or lower positioning from the platform control station.</li> <li>• This switch is and on-off-on switch.</li> <li>• The foot pedal is required to enable operation</li> </ul>
<b>Location:</b>	On Platform Control Box

<p><b>Location Image:</b></p>																														
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/ Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage with switch unpressed</th> <th>Voltage with switch pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Jib Lower</td> <td>C203-1 PCP</td> <td>0077</td> <td>2.7 V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C203-2 PCP</td> <td>1076, 1074</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Jib Raise</td> <td>C203-3 PCP</td> <td>0076</td> <td>2.7V</td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed	1	Jib Lower	C203-1 PCP	0077	2.7 V	10V	2	Power in (10V)	C203-2 PCP	1076, 1074	10V	NA	3	Jib Raise	C203-3 PCP	0076	2.7V	10V
Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed																									
1	Jib Lower	C203-1 PCP	0077	2.7 V	10V																									
2	Power in (10V)	C203-2 PCP	1076, 1074	10V	NA																									
3	Jib Raise	C203-3 PCP	0076	2.7V	10V																									

<p><b>Wires &amp; Connectors:</b></p>	 
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> </ol>

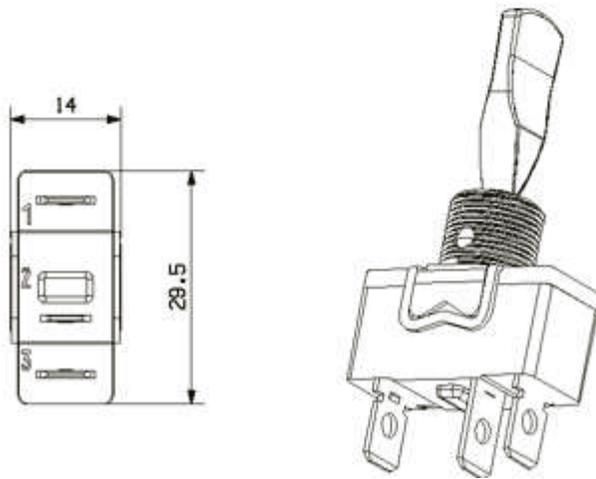
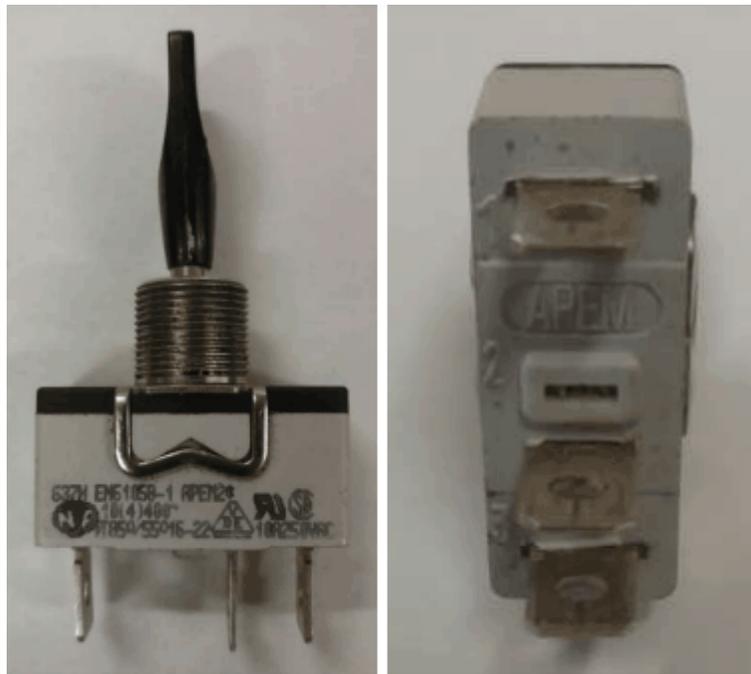
	<p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>												
<b>Expected Values:</b>													
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1262-17</td> <td>JIB RAISE Switch SC to High</td> </tr> <tr> <td>B1263-17</td> <td>JIB LOWER Switch SC to High</td> </tr> <tr> <td>B1264-92</td> <td>JIB RAISE &amp; LOWER Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1265-16</td> <td>JIB RAISE Switch SC to Low</td> </tr> <tr> <td>B1266-16</td> <td>JIB LOWER Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1262-17	JIB RAISE Switch SC to High	B1263-17	JIB LOWER Switch SC to High	B1264-92	JIB RAISE & LOWER Switches both activated (5 - 10V)	B1265-16	JIB RAISE Switch SC to Low	B1266-16	JIB LOWER Switch SC to Low
Fault Code	Description												
B1262-17	JIB RAISE Switch SC to High												
B1263-17	JIB LOWER Switch SC to High												
B1264-92	JIB RAISE & LOWER Switches both activated (5 - 10V)												
B1265-16	JIB RAISE Switch SC to Low												
B1266-16	JIB LOWER Switch SC to Low												

4.25.11 Platform Rotate Left/Right Switch(PCP)

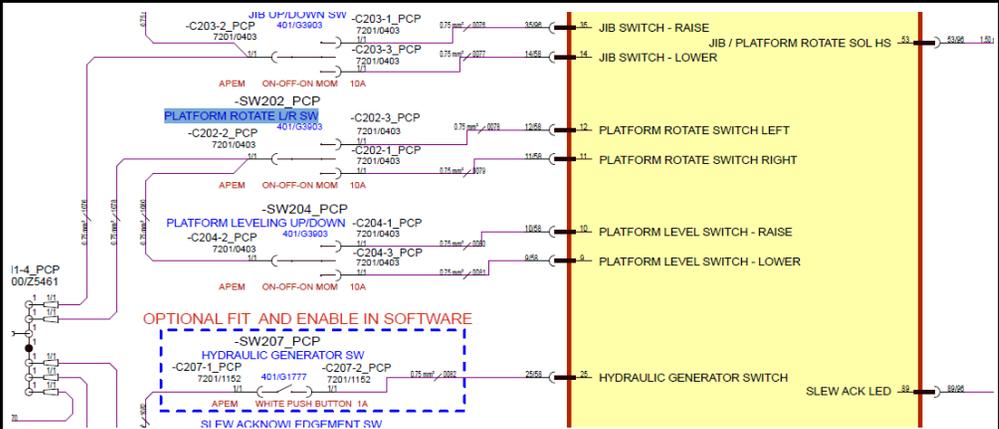
<b>Component :</b>	Platform Rotate Left/Right Switch(PCP)
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This switch is to operate the platform rotate in either left or right positioning from the platform control station.</li> <li>• This switch is and on-off-on switch.</li> <li>• The foot pedal is required to enable operation</li> </ul>
<b>Location:</b>	On Platform Control Box

<p><b>Location Image:</b></p>																														
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/ Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage with switch unpressed</th> <th>Voltage with switch pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>platform rotate right</td> <td>C202-1 PCP</td> <td>0079</td> <td>2.7 V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C202-2 PCP</td> <td>1078, 1080</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>platform rotate left</td> <td>C202-3 PCP</td> <td>0078</td> <td>3.4 V</td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed	1	platform rotate right	C202-1 PCP	0079	2.7 V	10V	2	Power in (10V)	C202-2 PCP	1078, 1080	10V	NA	3	platform rotate left	C202-3 PCP	0078	3.4 V	10V
Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed																									
1	platform rotate right	C202-1 PCP	0079	2.7 V	10V																									
2	Power in (10V)	C202-2 PCP	1078, 1080	10V	NA																									
3	platform rotate left	C202-3 PCP	0078	3.4 V	10V																									

**Wires & Connectors:**



**Internal Electrical Schematic:**

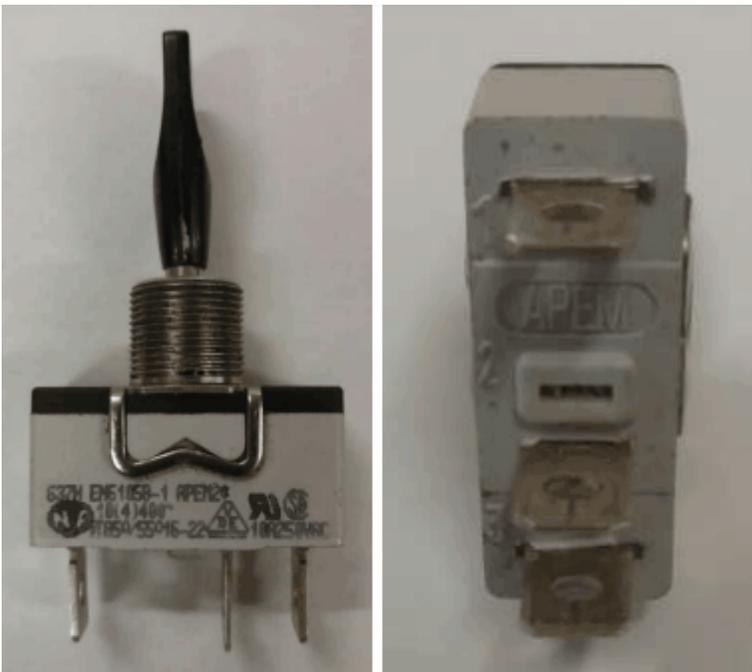
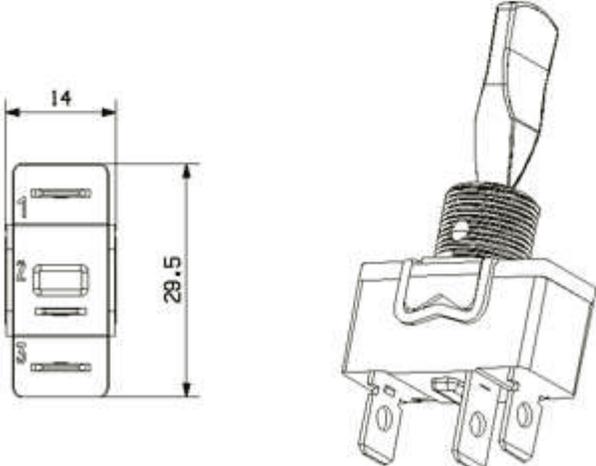
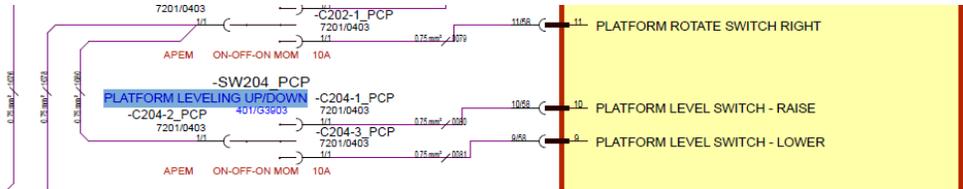


<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> <li>3. Terminal 2 is for incoming supply</li> <li>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</li> <li>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</li> <li>6. Check supply at terminal 2. It should read 10V.</li> <li>7. If there is no 10V then investigate wiring as per schematic.</li> <li>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it</li> </ol>												
<b>Expected Values:</b>													
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th style="background-color: #cccccc;">Fault Code</th> <th style="background-color: #cccccc;">Description</th> </tr> </thead> <tbody> <tr> <td>B1257-17</td> <td>PLATFORM ROTATE RIGHT Switch SC to High</td> </tr> <tr> <td>B1258-17</td> <td>PLATFORM ROTATE LEFT Switch SC to High</td> </tr> <tr> <td>B1259-92</td> <td>PLATFORM ROTATE RIGHT &amp; LEFT Switches both activated (5 - 10)</td> </tr> <tr> <td>B1260-16</td> <td>PLATFORM ROTATE RIGHT Switch SC to Low</td> </tr> <tr> <td>B1261-16</td> <td>PLATFORM ROTATE LEFT Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1257-17	PLATFORM ROTATE RIGHT Switch SC to High	B1258-17	PLATFORM ROTATE LEFT Switch SC to High	B1259-92	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10)	B1260-16	PLATFORM ROTATE RIGHT Switch SC to Low	B1261-16	PLATFORM ROTATE LEFT Switch SC to Low
Fault Code	Description												
B1257-17	PLATFORM ROTATE RIGHT Switch SC to High												
B1258-17	PLATFORM ROTATE LEFT Switch SC to High												
B1259-92	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10)												
B1260-16	PLATFORM ROTATE RIGHT Switch SC to Low												
B1261-16	PLATFORM ROTATE LEFT Switch SC to Low												

4.25.12 Platform Leveling Up/Down Switch(PCP)

<b>Component :</b>	Platform Leveling Up/Down Switch(PCP)
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This switch is to operate the platform leveling in either raise or lower positioning from the platform control station.</li> <li>• This switch is and on-off-on switch.</li> <li>• The foot pedal is required to enable operation.</li> </ul>
<b>Location:</b>	On Platform Control Box

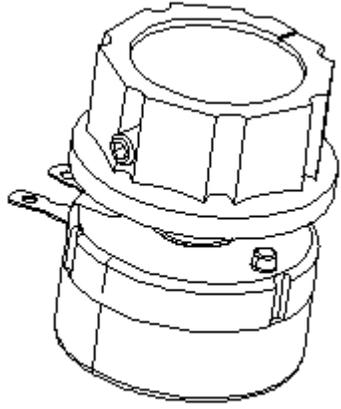
<p><b>Location Image:</b></p>																														
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/ Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage with switch unpressed</th> <th>Voltage with switch pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Leveling raise</td> <td>C204-1 PCP</td> <td>0080</td> <td>2.7 V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C204-2 PCP</td> <td>1080</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Leveling lower</td> <td>C204-3 PCP</td> <td>0081</td> <td>2.7V</td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed	1	Leveling raise	C204-1 PCP	0080	2.7 V	10V	2	Power in (10V)	C204-2 PCP	1080	10V	NA	3	Leveling lower	C204-3 PCP	0081	2.7V	10V
Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed																									
1	Leveling raise	C204-1 PCP	0080	2.7 V	10V																									
2	Power in (10V)	C204-2 PCP	1080	10V	NA																									
3	Leveling lower	C204-3 PCP	0081	2.7V	10V																									

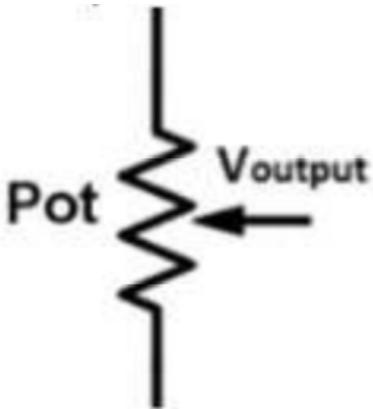
<p><b>Wires &amp; Connectors:</b></p>	 
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> </ol>

	<p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1242-17	PLATFORM LEVELING RAISE Switch SC to High
	B1243-17	PLATFORM LEVELING LOWER Switch SC to High
	B1244-92	PLATFORM LEVELING RAISE and LOWER Switches both activated
	B1245-16	PLATFORM LEVELING RAISE Switch SC to Low
	B1246-16	PLATFORM LEVELING LOWER Switch SC to Low

### 4.25.13 Potentiometer

<b>Component :</b>	Potentiometer
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The potentiometer is used to alter the speeds of the machine functions by the operator.</li> <li>• This will only effect controls at the platform control panel.</li> </ul>
<b>Location:</b>	On Platform Control Box

<p><b>Location Image:</b></p>													
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5V SUPPLY</td> <td>4074</td> </tr> <tr> <td>2</td> <td>Signal output</td> <td>4075</td> </tr> <tr> <td>3</td> <td>5V GND</td> <td>6074</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	1	5V SUPPLY	4074	2	Signal output	4075	3	5V GND	6074
Pin Number	Description	Wire Number											
1	5V SUPPLY	4074											
2	Signal output	4075											
3	5V GND	6074											
<p><b>Wires &amp; Connectors:</b></p>	<p>The potentiometer has 3 fully insulated push on terminals that mate with the potentiometer connections</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: right;">ISO VIEW</p>												
<p><b>Internal Electrical Schematic:</b></p>													
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>Ensure no water ingress inside the potentiometer fitted on platform control panel plate</li> </ol>												

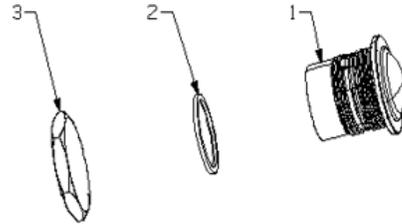
	<p>2. Check Pin3 (C-L11-3) for positive, Pin 2 (C-L11-2) signal , Pin 1 C-L11-1)is input – ground</p>  <p>3. Check the voltage at Pin 2 (C-L11-2) &amp; Pin 1 (C-L11-1) it should vary by rotating the potentiometer knob ( should be between 0.5V to 4.5V)</p> <p>4. If it is not varying check the supply voltage between Pin C-L11-1 Pin 1 C-L11-3. This should read 5V</p> <p>5. If there is no input voltage then investigate wiring as per schematic</p> <p>6. If input voltage is available and out put voltage is not , it might be internal damage to potentiometer , replace it.</p>				
<p><b>Expected Values:</b></p>					
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1067-17</td> <td>Potentiometer is short circuit to high &gt;5.5V</td> </tr> </tbody> </table>	Fault Code	Description	B1067-17	Potentiometer is short circuit to high >5.5V
Fault Code	Description				
B1067-17	Potentiometer is short circuit to high >5.5V				

4.25.14 Slew Acknowledgement Switch with LED

<p><b>Component :</b></p>	<p>Slew Acknowledgment Switch with LED</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• The push button is so the operator can acknowledge that the machine has been slewed around and the drive/ steer directions may be reverse.</li> <li>• All drive operation will be cut until the operator has enabled this button.</li> <li>• The LED above the switch will flash to show the operator that it is required</li> <li>• The button is a momentary push button.</li> </ul>

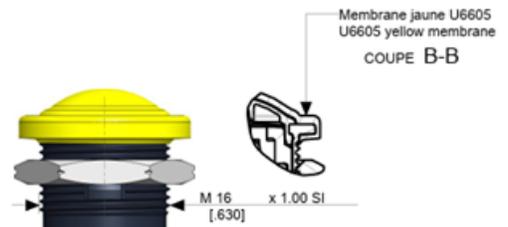
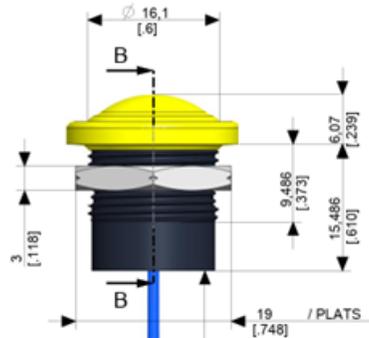
<b>Location:</b>	On Platform Control Box																							
<b>Location Image:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Connector number</th> <th>Wire number</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V Feed In</td> <td>C205-1</td> <td>1084, 1082</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>2</td> <td>Signal to ECU (10V when pressed)</td> <td>C205-2</td> <td>0083</td> <td></td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description	Connector number	Wire number	Voltage unpressed	Voltage pressed	1	10V Feed In	C205-1	1084, 1082	10V	NA	2	Signal to ECU (10V when pressed)	C205-2	0083		10V
Pin Number	Description	Connector number	Wire number	Voltage unpressed	Voltage pressed																			
1	10V Feed In	C205-1	1084, 1082	10V	NA																			
2	Signal to ECU (10V when pressed)	C205-2	0083		10V																			

## Wires & Connectors:



ASSEMBLY SEQUENCE FOR PUSH BUTTON  
 1 - PUSHBUTTON FROM OUTSIDE THE PANEL  
 2 - WASHER FROM INSIDE THE PANEL  
 3 - HEX NUT FROM INSIDE THE PANEL

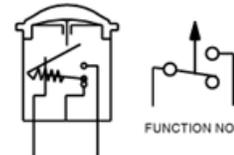
ISOMETRIC VIEW



Membrane jaune U6605  
 U6605 yellow membrane  
 COUPE B-B

M 16 x 1.00 SI  
 [630]

Epoxy Sealing



Electrical diagram

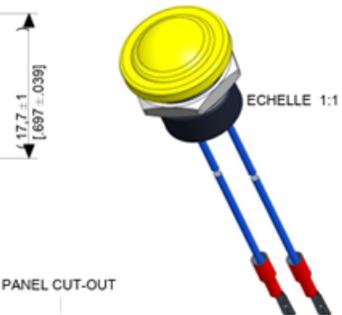
FUNCTION NO

NOTA : Quotations in brackets are for reference only

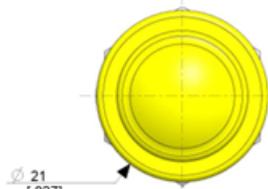
Conrad 736753-2.5 (x2)  
 Material : Copper  
 Insulation : PVC  
 Plating : TIN

(0,8 ± 0,1) [032 ± .003]

(2,8 ± 0,2) [110 ± .007]

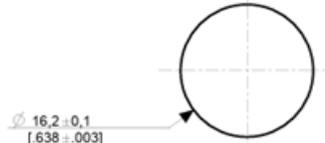


ECHELLE 1:1



∅ 21 [827]

PANEL CUT-OUT



∅ 16,2 ± 0,1 [638 ± .003]

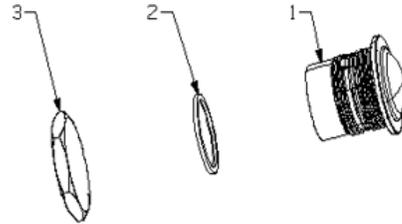
<p><b>Internal Electrical Schematic:</b></p>									
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>Note-All the bush button fitted on machine are 10V ,normally open and closed when pressed</li> </ol> <p>Diagnostic feedback on push button are coming from ECU</p> <ol style="list-style-type: none"> <li>Check supply at wiring harness terminal-1 with (respect to ground) on push button (when not pressed). It should read 10V.</li> <li>Check the voltage at wiring harness terminal-2 on push button (When not pressed). It should read 2-3V</li> <li>Check the continuity between terminal 1 &amp; 2 after pressing the push button. It should buzz.</li> <li>If there is continuity and we are getting 10V supply then it may be internal damage to push button.</li> <li>If issue still there replace the push button.</li> </ol>								
<p><b>Expected Values:</b></p>									
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1064-17</td> <td>Slew Acknowledgment switch is short circuit to high</td> </tr> <tr> <td>B1065-16</td> <td>Slew acknowledgment switch is short circuited to low</td> </tr> <tr> <td>B1066-24</td> <td>Slew acknowledgment switch is stuck on for longer than 10 seconds</td> </tr> </tbody> </table>	Fault Code	Description	B1064-17	Slew Acknowledgment switch is short circuit to high	B1065-16	Slew acknowledgment switch is short circuited to low	B1066-24	Slew acknowledgment switch is stuck on for longer than 10 seconds
Fault Code	Description								
B1064-17	Slew Acknowledgment switch is short circuit to high								
B1065-16	Slew acknowledgment switch is short circuited to low								
B1066-24	Slew acknowledgment switch is stuck on for longer than 10 seconds								

4.25.15 Horn Switch(PCP)

<p><b>Component :</b></p>	<p>Horn Switch(PCP)</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>Horn switch is for audible warning that the operator can use</li> <li>The horn is located at the base of the machine.</li> </ul>

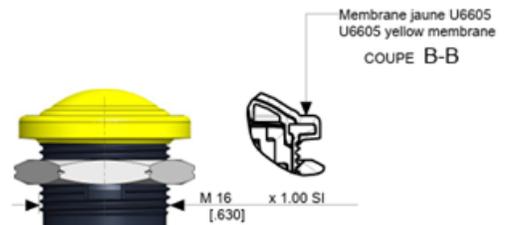
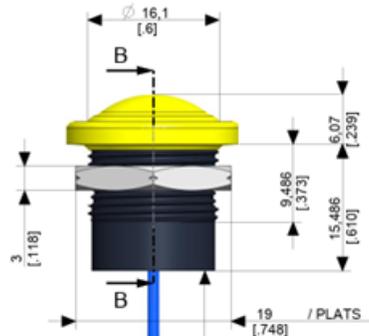
<b>Location:</b>	On Platform Control Box																							
<b>Location Image:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C206-1_PCP</td> <td>1085, 1084</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>2</td> <td>Signal output to ECU (10V when pressed)</td> <td>C206-2_PCP</td> <td>0085</td> <td></td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	10V input	C206-1_PCP	1085, 1084	10V	NA	2	Signal output to ECU (10V when pressed)	C206-2_PCP	0085		10V
Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																			
1	10V input	C206-1_PCP	1085, 1084	10V	NA																			
2	Signal output to ECU (10V when pressed)	C206-2_PCP	0085		10V																			

**Wires & Connectors:**

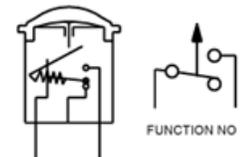


ASSEMBLY SEQUENCE FOR PUSH BUTTON  
 1 - PUSHBUTTON FROM OUTSIDE THE PANEL  
 2 - WASHER FROM INSIDE THE PANEL  
 3 - HEX NUT FROM INSIDE THE PANEL

ISOMETRIC VIEW



Epoxy Sealing

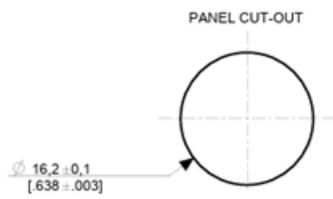
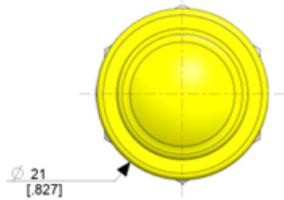
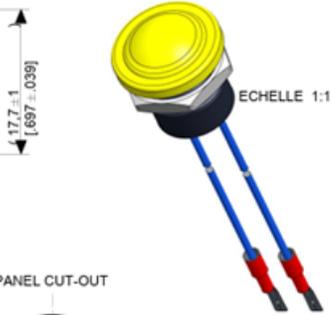


NOTA : Quotations in brackets are for reference only

Conrad 736753-2.5 (x2)  
 Material : Copper  
 Insulation : PVC  
 Plating : TIN

$(0,8 \pm 0,1)$  [032  $\pm$  .003]

$(2,8 \pm 0,2)$  [110  $\pm$  .007]



<p><b>Internal Electrical Schematic:</b></p>									
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Check horn button in platform is not stuck on remove horn button and check continuity.</li> <li>2. Check wire code 0085 for voltage.</li> </ol>								
<p><b>Expected Values:</b></p>									
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1273-17</td> <td>Horn button as the base control station is short circuit to h</td> </tr> <tr> <td>B1274-16</td> <td>Horn button at base controller is short circuit to ground</td> </tr> <tr> <td>B1275-24</td> <td>Horn button at the base is stuck in for longer than 10 seco</td> </tr> </tbody> </table>	Fault Code	Description	B1273-17	Horn button as the base control station is short circuit to h	B1274-16	Horn button at base controller is short circuit to ground	B1275-24	Horn button at the base is stuck in for longer than 10 seco
Fault Code	Description								
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B1274-16	Horn button at base controller is short circuit to ground								
B1275-24	Horn button at the base is stuck in for longer than 10 seco								

4.25.16 Emergency Stop Switch(PCP)

<p><b>Component :</b></p>	<p>Emergency Stop Switch(PCP)</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• The E-stop is there for the operator to stop any functioning with immediate action.</li> <li>• This will stop all functions at the base and platform controls stations.</li> <li>• The E-stop will cut the engine but it is not to be used to power down the machine. The machine is still powered on with the E-stop pressed.</li> <li>• The E-stop uses x2 NC contacts that open when pressed.</li> </ul>
<p><b>Location:</b></p>	<p>On Platform Control Box</p>

**Location Image:**

**Signal:**

Pin Number and contactor block	Description	Connector number	Wire number	Voltage unpressed	Voltage pressed
contact 1 NC pin 1	12V feed	T-SW-01-1-1 PCP	1028	12V	NA
contact 1 NC pin 2	Output to platform ECU	T-SW-01-1-2 PCP	0028		12V
contact 2 NC pin 1	GND feed	T-SW-01-2-2 PCP	6030	GND	NA
contact 2 NC pin 2	Output to ECU	T-SW-01-2-1 PCP	6048		GND

**Wires & Connectors:**

**Internal Electrical Schematic:**

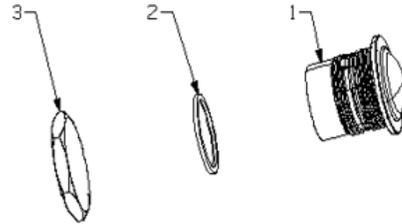
<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Do the below steps for both contacts separately.</li> <li>2. Take multimeter and check the multi meter is working</li> <li>3. Set the multimeter in continuity mode (Sound wave or Diode or both)</li> <li>4. Place the red probe on one of the terminal on the switch and black probe on other terminal on the switch</li> <li>5. In E-Stop switch in PUSHED IN state, Multimeter should read as 'OL' (open circuit)</li> <li>6. In E-Stop switch in OUT state, Multimeter should read as '1' or less.</li> <li>7. Operate the switch in PUSHED IN and OUT state in few more times. Multimeter reading should change while operating from PUSHED IN to OUT. If the reading doesn't change means E-Stop switch is defective</li> <li>8. Replace the defective E-Stop switch with same type and size, please contact JCB Service department.</li> </ol>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	Fault Code	Description
	B1235-17	E-Stop Plausibility Check

4.25.17 Electric Pump Switch (AUX)

<b>Component :</b>	Electric Pump Switch (AUX)
<b>Function:</b>	<ul style="list-style-type: none"> <li>• This button is used to activated the Auxiliary Pump. All Boom functions shall be operated from the Platform control panel with 12V battery (when Auxiliary/Electric pump is requested).</li> </ul>
<b>Location:</b>	On Platform Control Box

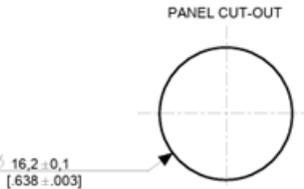
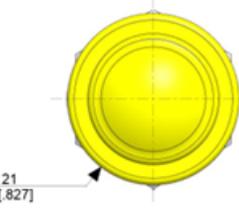
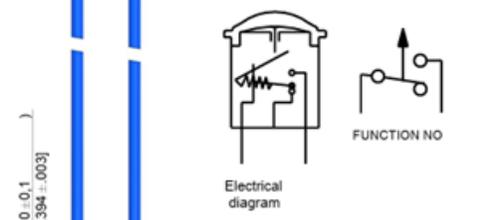
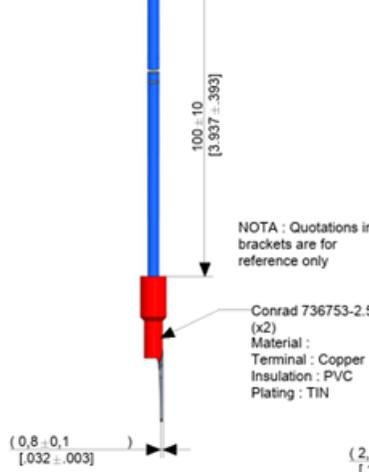
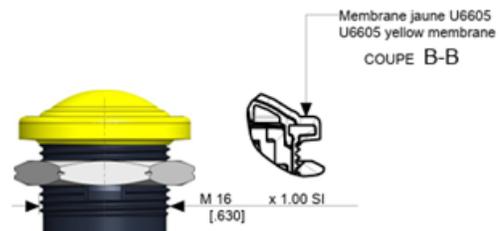
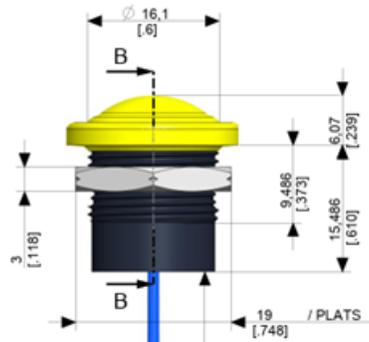
<p><b>Location Image:</b></p>																								
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C209-1_PCP</td> <td>1089</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>2</td> <td>Signal output to ECU (10V when pressed, momentary)</td> <td>C209-2_PCP</td> <td>0089</td> <td></td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	10V input	C209-1_PCP	1089	10V	NA	2	Signal output to ECU (10V when pressed, momentary)	C209-2_PCP	0089		10V
Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																			
1	10V input	C209-1_PCP	1089	10V	NA																			
2	Signal output to ECU (10V when pressed, momentary)	C209-2_PCP	0089		10V																			

**Wires & Connectors:**



ASSEMBLY SEQUENCE FOR PUSH BUTTON  
 1 - PUSHBUTTON FROM OUTSIDE THE PANEL  
 2 - WASHER FROM INSIDE THE PANEL  
 3 - HEX NUT FROM INSIDE THE PANEL

ISOMETRIC VIEW



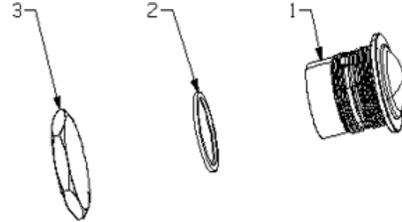
<p><b>Internal Electrical Schematic:</b></p>							
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Check the continuity between terminal 1 &amp; 2 after pressing the push button. It should buzz.</li> <li>2. Check Wire no. 1089 and 0089.</li> </ol>						
<p><b>Expected Values:</b></p>							
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1055-17</td> <td>Electric Pump button (AUX) at the platform short circuit to high</td> </tr> <tr> <td>B1056-16</td> <td>Electric Pump button (AUX) at the platform short circuit to low</td> </tr> </tbody> </table>	Fault Code	Description	B1055-17	Electric Pump button (AUX) at the platform short circuit to high	B1056-16	Electric Pump button (AUX) at the platform short circuit to low
Fault Code	Description						
B1055-17	Electric Pump button (AUX) at the platform short circuit to high						
B1056-16	Electric Pump button (AUX) at the platform short circuit to low						

4.25.18 Worklight Switch

<p><b>Component :</b></p>	<p>Work light Switch</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• This switch is optional fit and may not be fitted to all machines.</li> <li>• The Switch will turn on LED work lights at the platform.</li> <li>• The Lights will only work when the engine is running to avoid a battery drain condition and being stuck up in the air.</li> <li>• The LED will be active when the work lights are turned on.</li> </ul>
<p><b>Location:</b></p>	<p>On Platform Control Box</p>

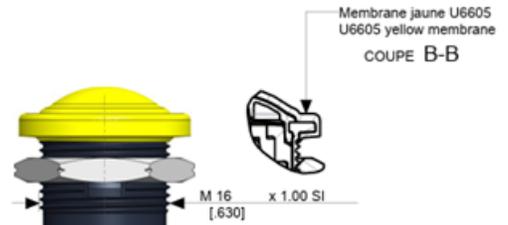
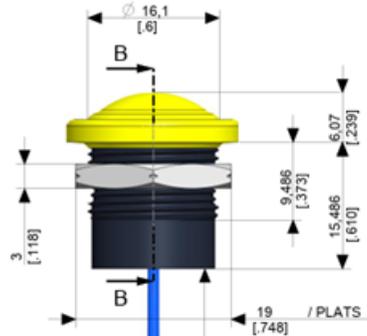
<p><b>Location Image:</b></p>																																									
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th colspan="6">Switch wiring</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C216-1_PCP</td> <td>1035</td> <td>12V</td> <td>NA</td> </tr> <tr> <td>2</td> <td>Signal output</td> <td>C216-2_PCP</td> <td>8035</td> <td>0V</td> <td>12V</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">LED wiring</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Connector number</th> <th>Wire</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input from switch</td> <td>C225-1_PCP</td> <td></td> </tr> <tr> <td>2</td> <td>GND</td> <td>C225-2_PCP</td> <td></td> </tr> </tbody> </table>	Switch wiring						Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	12V input	C216-1_PCP	1035	12V	NA	2	Signal output	C216-2_PCP	8035	0V	12V	LED wiring				Pin Number	Description	Connector number	Wire	1	12V input from switch	C225-1_PCP		2	GND	C225-2_PCP	
Switch wiring																																									
Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																																				
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2	Signal output	C216-2_PCP	8035	0V	12V																																				
LED wiring																																									
Pin Number	Description	Connector number	Wire																																						
1	12V input from switch	C225-1_PCP																																							
2	GND	C225-2_PCP																																							

## Wires & Connectors:

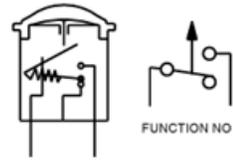


ASSEMBLY SEQUENCE FOR PUSH BUTTON  
 1 - PUSHBUTTON FROM OUTSIDE THE PANEL  
 2 - WASHER FROM INSIDE THE PANEL  
 3 - HEX NUT FROM INSIDE THE PANEL

ISOMETRIC VIEW



Epoxy Sealing

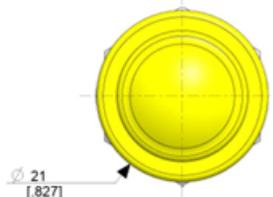
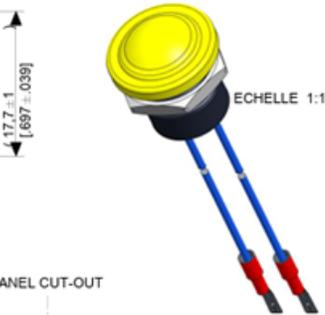


NOTA : Quotations in brackets are for reference only

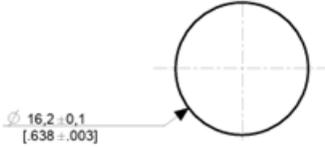
Conrad 736753-2.5 (x2)  
 Material : Copper  
 Insulation : PVC  
 Plating : TIN

$(0,8 \pm 0,1)$   
 [032 ± .003]

$(2,8 \pm 0,2)$   
 [110 ± .007]



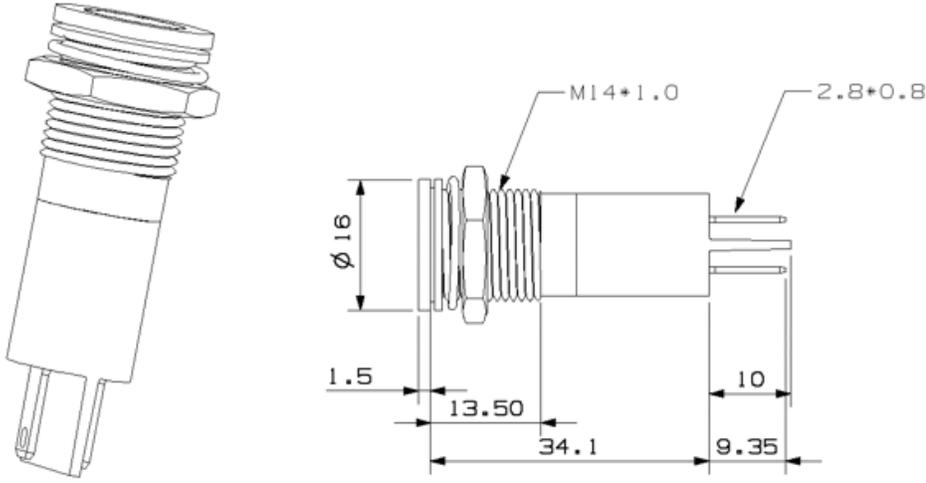
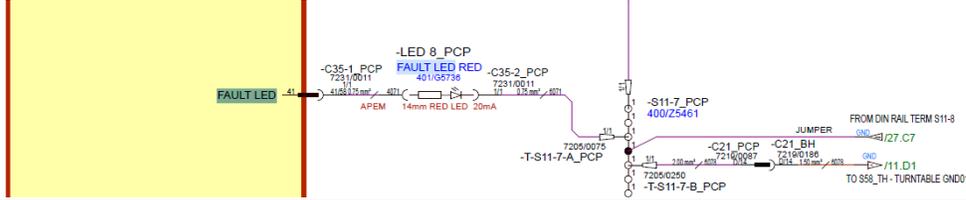
PANEL CUT-OUT



<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>Note-All the bush button fitted on machine are 10V ,normally open and closed when pressed</li> </ol> <p>Diagnostic feedback on push button are coming from ECU</p> <ol style="list-style-type: none"> <li>Check supply at wiring harness terminal-1 with (respect to ground) on push button (when not pressed). It should read 10V.</li> <li>Check the voltage at wiring harness terminal-2 on push button (When not pressed). It should read 2-3V</li> <li>Check the continuity between terminal 1 &amp; 2 after pressing the push button. It should buzz.</li> <li>If there is continuity and we are getting 10V supply then it may be internal damage to push button.</li> <li>If issue still there replace the push button.</li> </ol>
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

4.25.19 Fault LED

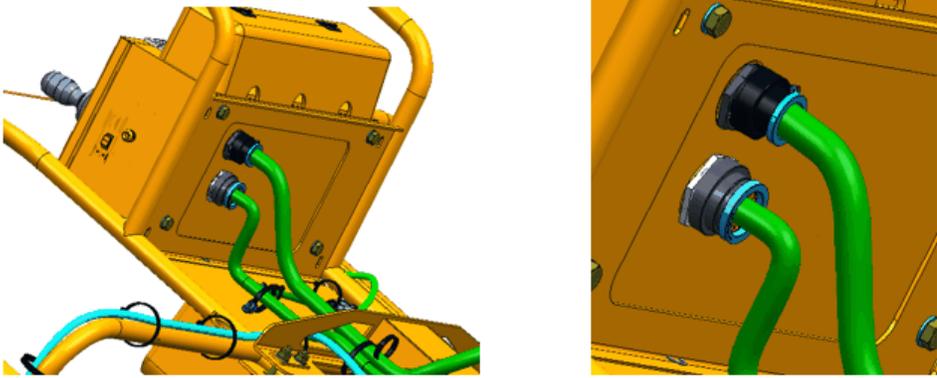
<p><b>Component :</b></p>	<p>Fault LED</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>The Fault LED shall be in the platform control station and also displayed on the display.</li> <li>Due to the display being at the base and not as much information being shown in the platform to the operator the fault LED shall indicate there is an issue with the machine and the operator should return to the base and take a look at the screen to understand the actual reason of the fault.</li> </ul>

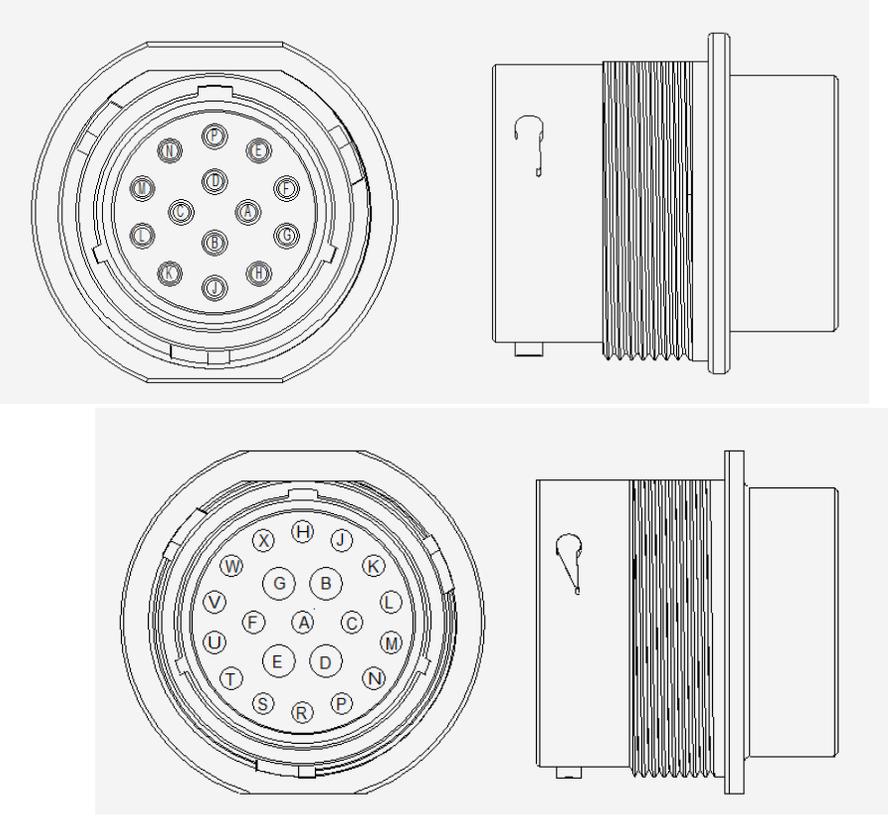
<b>Location:</b>	On Platform Control Box															
<b>Location Image:</b>																
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Colour of pin</th> <th>Connector number</th> <th>Wire number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Input</td> <td>Gold</td> <td>C35-1_PCP</td> <td>4071</td> </tr> <tr> <td>2</td> <td>GND</td> <td>Silver</td> <td>C35-2_PCP</td> <td>6071</td> </tr> </tbody> </table>	Pin Number	Description	Colour of pin	Connector number	Wire number	1	Input	Gold	C35-1_PCP	4071	2	GND	Silver	C35-2_PCP	6071
Pin Number	Description	Colour of pin	Connector number	Wire number												
1	Input	Gold	C35-1_PCP	4071												
2	GND	Silver	C35-2_PCP	6071												
<b>Wires &amp; Connectors:</b>																
<b>Internal Electrical Schematic:</b>																
<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>All LED fitted on machines are 12V</li> <li>Gold terminal is positive &amp; silver terminal is negative</li> </ol>															

	<p>3. Check LED should not be broken</p> <p>4. IF LED light up it could be the wiring issues</p> <p>5. Check the continuity on gold (positive) terminal &amp; silver (negative) terminal of LED</p> <p>6. If continuity is there on both terminal then</p> <p>7. Check 12volt supply by using a multi meter</p> <p>8. Connect the live terminal to the positive multi meter probe and the negative probe directly to the a main earth point on the machine or the negative terminal of the battery.</p> <p>9. If this shows voltage below 12 volts then follow the schematic and investigate where the break in the wire/ circuit is.</p> <p>10. If 12 volt feed is coming next check the earth by placing the positive probe of the multi meter on the live feed of the led and the negative probe onto the earth feed to the led.</p> <p>11. if this again reads 12 volts this indicate LED failure , replace with new LED.</p>						
<b>Expected Values:</b>							
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1190-16</td> <td>FAULT LED SC to Low</td> </tr> <tr> <td>B1191-13</td> <td>FAULT LED OC</td> </tr> </tbody> </table>	Fault Code	Description	B1190-16	FAULT LED SC to Low	B1191-13	FAULT LED OC
Fault Code	Description						
B1190-16	FAULT LED SC to Low						
B1191-13	FAULT LED OC						

### 4.25.20 PCP Interface Connectors

<b>Component :</b>	PCP Interface Connectors
<b>Function:</b>	<ul style="list-style-type: none"> <li>• There is 2 connectors that interface with the machine.</li> <li>• 1 feeds the platform harness around the platform C21_PCP</li> <li>• 2. feed and return to the base of the machine C22_PCP</li> </ul>
<b>Location:</b>	On Platform Control Box bottom side

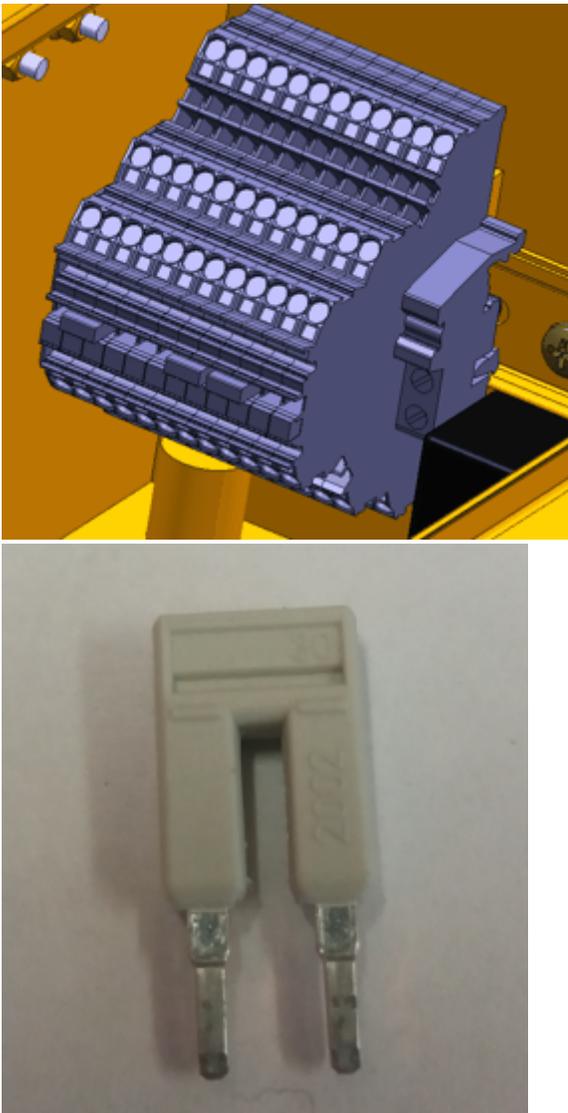
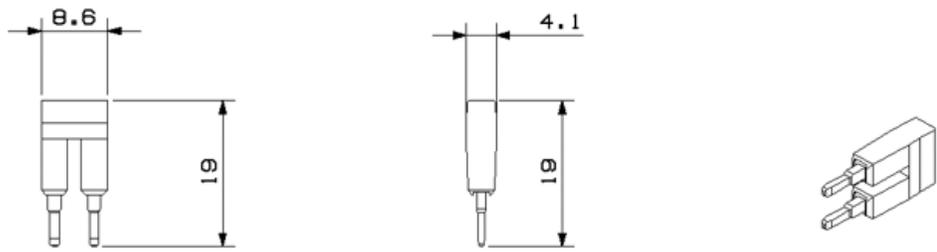
<p><b>Location Image:</b></p>																																																																																					
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th colspan="3">C21_PCP_BOOM HARNESS CONN. :</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr><td>A</td><td>IGN</td><td>1014</td></tr> <tr><td>B</td><td>IGN</td><td>1015</td></tr> <tr><td>C</td><td>-</td><td>-</td></tr> <tr><td>D</td><td>GND</td><td>6078</td></tr> <tr><td>E</td><td>GND</td><td>6040</td></tr> <tr><td>F</td><td>GND</td><td>6028</td></tr> <tr><td>G</td><td>-</td><td>-</td></tr> <tr><td>H</td><td>-</td><td>-</td></tr> <tr><td>J</td><td>-</td><td>-</td></tr> <tr><td>K</td><td>-</td><td>-</td></tr> <tr><td>L</td><td>-</td><td>-</td></tr> <tr><td>M</td><td>CAN HIGH</td><td>CANH15</td></tr> <tr><td>N</td><td>CAN LOW</td><td>CANL15</td></tr> <tr><td>P</td><td>CAN SHIELD</td><td>CANS15</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">C22_PCP_PLATFORM INTERCONNECT</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr><td>A</td><td>-</td><td>-</td></tr> <tr><td>B</td><td>WORK LIGHT INPUTS</td><td>8079</td></tr> <tr><td>C</td><td>-</td><td>-</td></tr> <tr><td>D</td><td>10V FEED</td><td>1070</td></tr> <tr><td>E</td><td>GND</td><td>6036</td></tr> <tr><td>F</td><td>CRUSH PROTECTION SIGNAL 10V</td><td>4093</td></tr> <tr><td>G</td><td>GND</td><td>6079</td></tr> <tr><td>H</td><td>CRUSH PROTECTION SIGNAL 5V</td><td>4094</td></tr> <tr><td>J</td><td>CRUSH PROTECTION SWITCH 5V</td><td>4070</td></tr> <tr><td>K</td><td>FOOT PEDAL SIGNAL</td><td>4096</td></tr> </tbody> </table>	C21_PCP_BOOM HARNESS CONN. :			Pin Number	Description	Wire Number	A	IGN	1014	B	IGN	1015	C	-	-	D	GND	6078	E	GND	6040	F	GND	6028	G	-	-	H	-	-	J	-	-	K	-	-	L	-	-	M	CAN HIGH	CANH15	N	CAN LOW	CANL15	P	CAN SHIELD	CANS15	C22_PCP_PLATFORM INTERCONNECT			Pin Number	Description	Wire Number	A	-	-	B	WORK LIGHT INPUTS	8079	C	-	-	D	10V FEED	1070	E	GND	6036	F	CRUSH PROTECTION SIGNAL 10V	4093	G	GND	6079	H	CRUSH PROTECTION SIGNAL 5V	4094	J	CRUSH PROTECTION SWITCH 5V	4070	K	FOOT PEDAL SIGNAL	4096
C21_PCP_BOOM HARNESS CONN. :																																																																																					
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L	-	-																																
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<p><b>Wires &amp; Connectors:</b></p>	<p>C21_PCP Boom harness connection C22_PCP Platform interconnect from base</p> 																																	
<p><b>Internal Electrical Schematic:</b></p>	<p>Refer Schematic: 401/Y3086</p>																																	

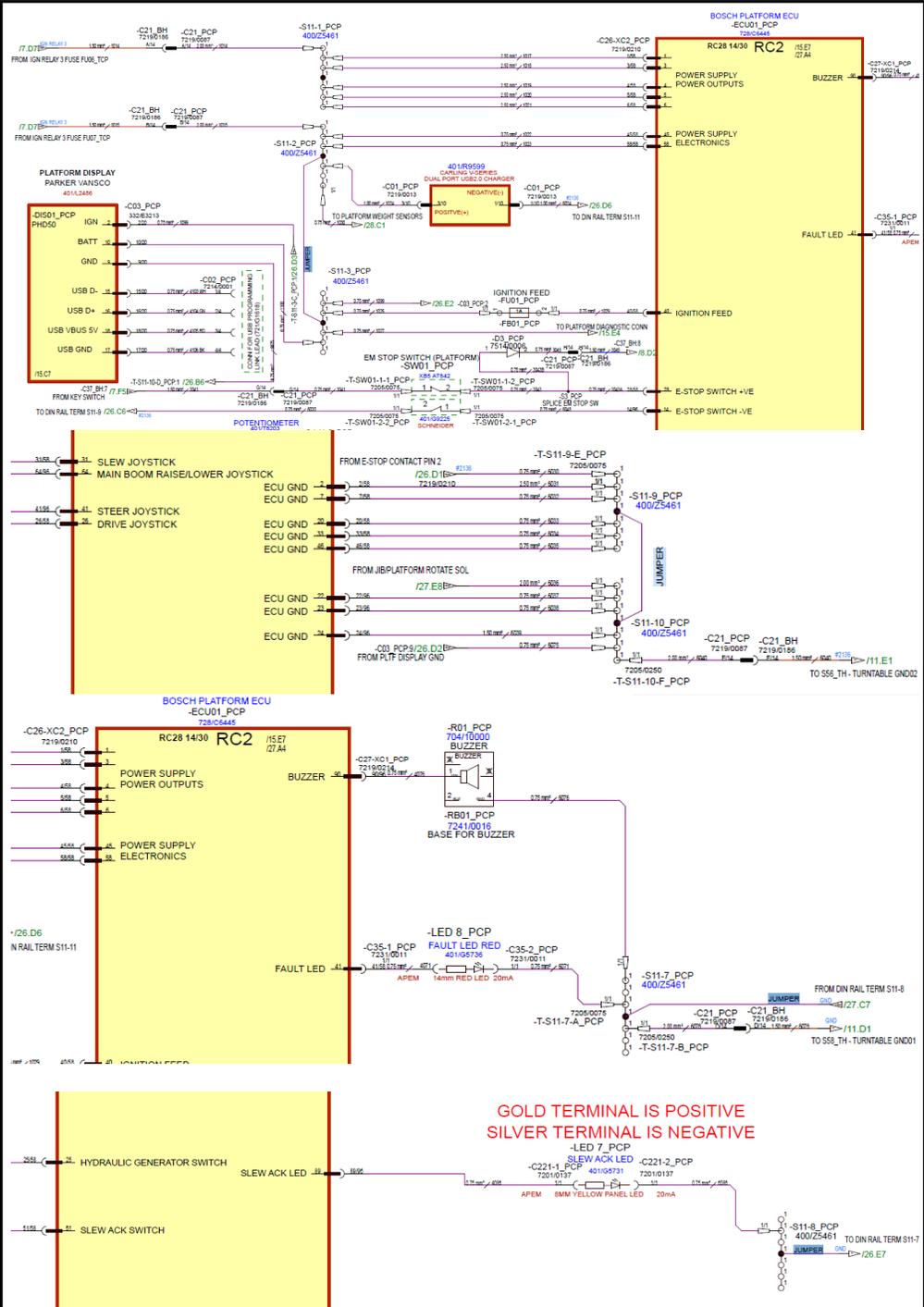
<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Check all the wire and connector are fitted correctly. No wire should be backed out</li> <li>2. Check male &amp; female connector are mating properly.</li> </ol>
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

### 4.25.21 Jumper Bars

<b>Component :</b>	Jumper Bars
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The jumper bars are used for connecting the din rail terminals together. This allows for the same signals to be connected together.</li> <li>• Always ensure they are wired to schematic wiring otherwise damage to components could be caused.</li> </ul>
<b>Location:</b>	Inside the Platform Control Box

<p><b>Location Image:</b></p>	
<p><b>Signal:</b></p>	<p>See din rail terminals for location of fitting</p>
<p><b>Wires &amp; Connectors:</b></p>	<p>The jumper bars fit into the top of the din rail terminals. Ensure they are fully pushed in and flush with top of din rail terminal for a good connection.</p> 

## Internal Electrical Schematic:



## Testing:

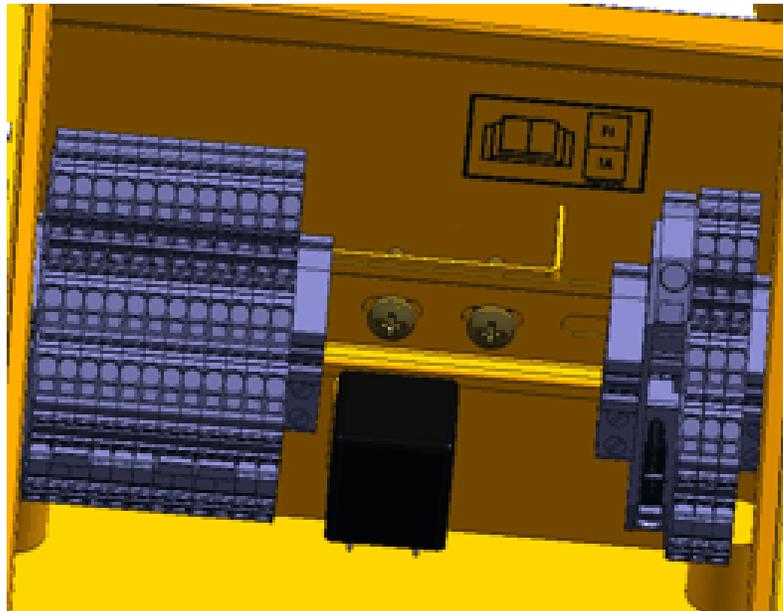
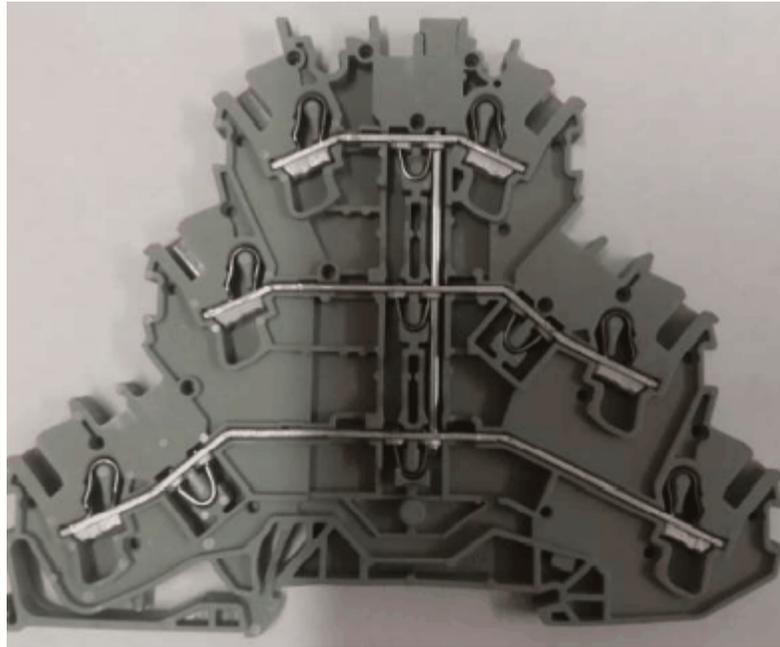
Important: Use the multi-meter on the harness connector pins. **DO NOT** USE the meter on the ECU pins

1. Check jumper bar is inserted properly inside din rail terminals

	2. Check continuity between din rail terminals where jumper is fitted it should buzz.
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

### 4.25.22 Din Rail Terminals - Small

<b>Component :</b>	Din Rail Terminals - Small
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The din rail terminals work like bus bars and allow connections of wires of the same signal.</li> <li>• The din rail terminals can also be joined together using jumper bars.</li> <li>• Each din rail is capable of holding 6 individual wires.</li> <li>• There should always be a bootlace ferrule on the wire before inserting.</li> <li>• There should only be 1 wire per terminal.</li> <li>• A screw driver is required to remove terminals.</li> </ul>
<b>Location:</b>	The din rail terminals are located in the platform control panel on the right hand side.
<b>Location Image:</b>	They clip onto the din rail fixed on the inside of the control box.



**Signal:**

The din rail terminals are not marked with numbering. Because they are a bus bar the wires can be inserted into any slot in the correct din rail terminal.

They may not be in the order described below depending on assembly

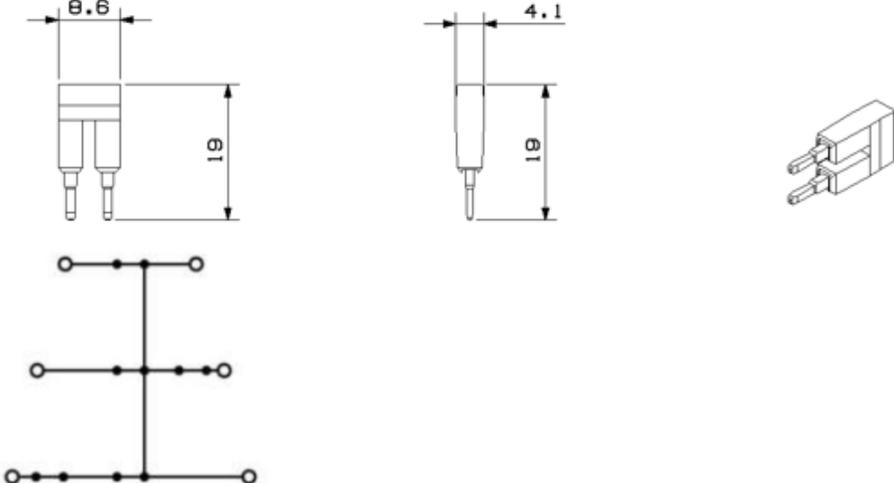
S11-1_PCP - main power		
Pin Ident	Wire number	Description
1	1018	Bosch power supply input

2	1019	Bosch power supply input
3	1017	Bosch power supply input
4	1020	Bosch power supply input
5	1014	Ignition relay feed input
6	1021	Bosch power supply input
<b>S11-2 - main power</b>		
Pin Ident	Wire number	Description
1	1023	Bosch ecu power supply
2	1024	USB power supply
3	1022	Bosch ecu power supply
4		
5	1015	Ignition relay feed input
6	1030	Weight Sensor Supply
Jumper bar	Jumper to S11-3	
<b>S11-3 - main power</b>		
Pin Ident	Wire number	Description
1	1026	Ignition feed to Bosch ECU
2	1027	Platform diagnostic connector
3	1099	Parker (Platform) Display Input
4	1100	Parker (Platform) Display ECU
5		
6	1028	E-Stop positive feed
Jumper bar	Jumper to S11-2	
<b>S11-4 - 10V feed</b>		
Pin Ident	Wire number	Description
1	1068	10V input from ECU
2	1085	Feed to horn, slew acknowledgment switch, power to platform switch (Optional for Hybrid)
3	1078	Feed to platform rotate switch, platform leveling switch

4	1086	Feed to engine start (Optional for Hybrid) switch, Auto start/stop switch (Optional for Hybrid, electric pump switch)
5	1076	Feed to artic boom , main boom tele & Jib switch
6	1070	Crush protection switch 2, foot pedal switch
<b>S11-5 - 5V feeds</b>		
Pin Ident	Wire number	Description
1		
2		
3	4068	feed to Drive/ steer joystick
4	4070	feed to Crush protection Switch 1
5	4067	feed to slew/ mainboom joystick
6	4069	5V feed from ECU
7		
<b>S11-6 - 5V GND</b>		
Pin Ident	Wire number	Description
1	6068	5V GND for Drive/Steer joystick
2	6072	5V GND for weight sensor
3		
4	6070	5V GND for weight sensor
5	6067	5V GND for slew/ mainboom joystick
6	6069	5V GND ECU Connection
<b>S11-7 - GND terminal block</b>		
Pin Ident	Wire number	Description
1	6071	GND for fault LED
2	6078	Feed to turntable ground
3		
4		
5	6076	Buzzer GND
6		
7	Jumper to S11-8	

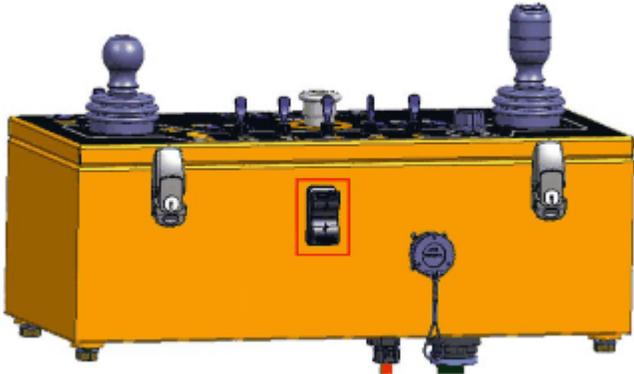
<b>S11-8 GND</b>		
<b>Pin Ident</b>	<b>Wire number</b>	<b>Description</b>
1		
2		
3	6086	Slew Acknowledgment LED ground
4		
5		
6		
7	Jumper to S11-7	
<b>S11-9 GND</b>		
<b>Pin Ident</b>	<b>Wire number</b>	<b>Description</b>
1	6032	Bosch ECU GND
2	6033	Bosch ECU GND
3	6031	Bosch ECU GND
4	6034	Bosch ECU GND
5	6030	GND to Platform E-Stop
6	6035	Bosch ECU GND
7	Jumper to S11-10	
<b>S11-10 GND</b>		
<b>Pin Ident</b>	<b>Wire number</b>	<b>Description</b>
1	6038	Bosch ECU GND,
2	6039	Bosch ECU GND
3	6037	Bosch ECU GND
4	6075	Platform display ECU GND
5	6036	GND for platform rotate solenoids
6	6040	Turntable GND
7	Jumper to S11-9	
<b>S11-11 - GND</b>		
<b>Pin Ident</b>	<b>Wire number</b>	<b>Description</b>
1		

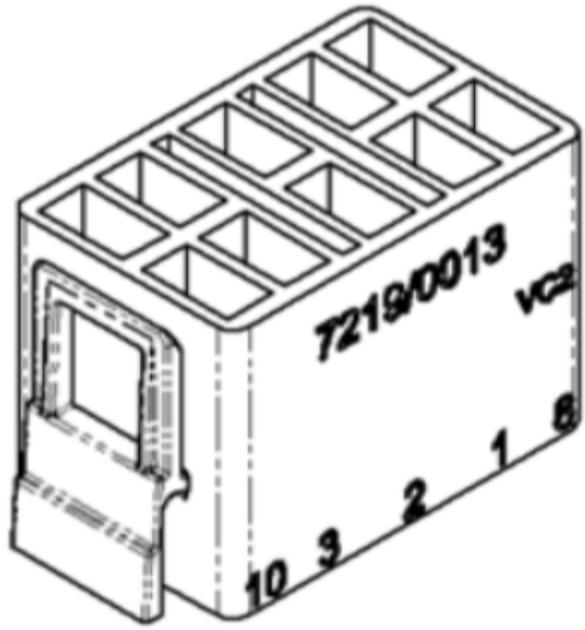
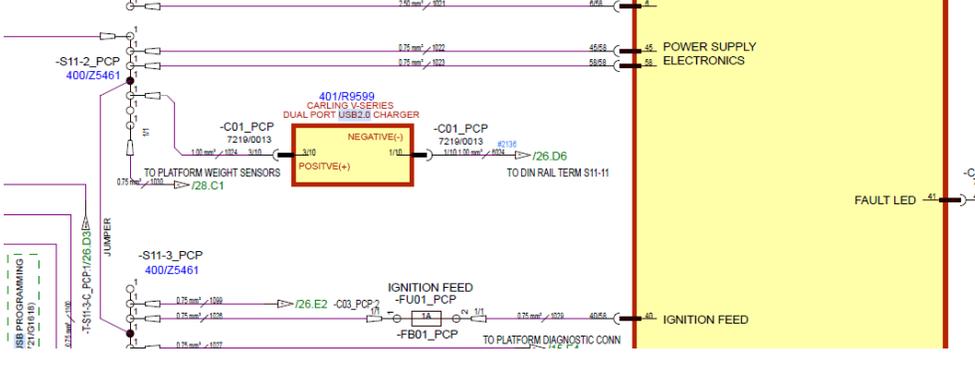
2	6024	GND for USB
3	6029	GND to diagnostic connector
4	6028	GND feed to base harness
5		
6	6027	RC config pin on Bosch Platform ECU (GND)
<b>S11-12 - Worklight</b>		
Pin Ident	Wire number	Description
1		
2		
3		
4		
5	8035	Work light Feed from switch
6	8079	Work light LED feed
<b>S11-13 CAN H J1939</b>		
Pin Ident	Wire number	Description
1	CAN H18	CAN High Channel 1
2	CAN H16	CAN High Channel 1
3		
4	CAN H19	CAN High Channel 1
5	CAN H17	CAN High Channel 1
6	CAN H15	CAN High Channel 1
<b>S11-14 - CAN L J1939</b>		
Pin Ident	Wire number	Description
1	CAN L18	CAN Low Channel 1
2	CAN L16	CAN Low Channel 1
3		
4	CAN L19	CAN Low Channel 1
5	CAN L17	CAN Low Channel 1
6	CAN L15	CAN Low Channel 1
<b>S11-15 - CAN S J1939</b>		

	<table border="1"> <thead> <tr> <th>Pin Ident</th> <th>Wire number</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CAN S18</td> <td>CAN Shield Channel 1</td> </tr> <tr> <td>2</td> <td>CAN S 16</td> <td>CAN Shield Channel 1</td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>CAN S 19</td> <td>CAN Shield Channel 1</td> </tr> <tr> <td>5</td> <td>CAN S17</td> <td>CAN Shield Channel 1</td> </tr> <tr> <td>6</td> <td>CAN S 15</td> <td>CAN Shield Channel 1</td> </tr> </tbody> </table>	Pin Ident	Wire number	Description	1	CAN S18	CAN Shield Channel 1	2	CAN S 16	CAN Shield Channel 1	3			4	CAN S 19	CAN Shield Channel 1	5	CAN S17	CAN Shield Channel 1	6	CAN S 15	CAN Shield Channel 1
Pin Ident	Wire number	Description																				
1	CAN S18	CAN Shield Channel 1																				
2	CAN S 16	CAN Shield Channel 1																				
3																						
4	CAN S 19	CAN Shield Channel 1																				
5	CAN S17	CAN Shield Channel 1																				
6	CAN S 15	CAN Shield Channel 1																				
<p><b>Wires &amp; Connectors:</b></p>																						
<p><b>Internal Electrical Schematic:</b></p>	<p>Refer Schematic: 401/Y3086</p>																					
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT use the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. Each din rail is capable of holding 6 individual wires.</li> <li>2. Ensure no water ingress inside the din rail terminals</li> <li>3. Check ferrule is inserted properly inside din rail</li> <li>4. Check din rail terminal are placed &amp; locked properly over din rail</li> <li>5. Check end stops are fitted correctly</li> <li>6. Check all wires fitted on one din rail terminal should have continuity</li> </ol>																					
<p><b>Expected Values:</b></p>																						

<b>Related Fault Codes:</b>	
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### 4.25.23 USB Connection

<b>Component :</b>	USB Connection											
<b>Function:</b>	<ul style="list-style-type: none"> <li>• There is a twin port USB connection at the platform for use as a charger device.</li> <li>• There is no data transfer in either direction and this will make no effect to the machine.</li> </ul>											
<b>Location:</b>	The USB connection is located on the front of the platform control box											
<b>Location Image:</b>												
<b>Signal:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th style="width: 25%;">Pin Number</th> <th style="width: 50%;">Description</th> <th style="width: 25%;">Wiring Number</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Negative feed</td> <td style="text-align: center;">6024</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Positive feed</td> <td style="text-align: center;">1024</td> </tr> </tbody> </table>			Pin Number	Description	Wiring Number	1	Negative feed	6024	3	Positive feed	1024
Pin Number	Description	Wiring Number										
1	Negative feed	6024										
3	Positive feed	1024										

<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <p>Note-USB connector is fitted on platform control panel to charge the mobile accessories</p> <ol style="list-style-type: none"> <li>1. Check if there is any water ingress inside USB</li> <li>2. Check the supply at connector C01 (Pin 1 and 3). It should read 12V.</li> <li>3. If there is no 12V supply then need to investigate wiring as per schematic.</li> <li>4. If there is 12V supply then it may be internal damage to USB. Replace it</li> </ol>

<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

## 4.26 Base Control Panel

### 4.26.1 Ignition Relay

<b>Component :</b>	Ignition Relay
<b>Function:</b>	Ignition Relay is responsible for providing power to the vehicle ignition system, and some of the fuel system's components.
<b>Location:</b>	Ignition Relay is located in Base control panel. Relay R1 is the Ignition Relay

<p><b>Location Image:</b></p>																			
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>High Current</td> <td>0001</td> </tr> <tr> <td>2</td> <td>Ground</td> <td>6001</td> </tr> <tr> <td>3</td> <td>High Current</td> <td>-</td> </tr> <tr> <td>4</td> <td>12V</td> <td>3001</td> </tr> <tr> <td>5</td> <td>12V</td> <td>2001</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	1	High Current	0001	2	Ground	6001	3	High Current	-	4	12V	3001	5	12V	2001
Pin Number	Description	Wire Number																	
1	High Current	0001																	
2	Ground	6001																	
3	High Current	-																	
4	12V	3001																	
5	12V	2001																	
<p><b>Wires &amp; Connectors:</b></p>																			

<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Remove the relay &amp; use multi meter to measure the resistance between Pin 85 and 86 on the relay</li> <li>2. Resistance should read 90+/- 10 Ω</li> <li>3. If reading are incorrect replace the relay if correct check the harness as per schematic</li> <li>4. If harness continuity is OK replace the relay</li> </ol>
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

4.26.2 Horn Relay

<p><b>Component :</b></p>	<p>Horn Relay</p>
<p><b>Function:</b></p>	<p>It serves as the relay that controls power to the vehicle's horn. When current is applied to the relay, the horn's power circuit is completed, allowing the horn to function and ring.</p>
<p><b>Location:</b></p>	<p>Horn Relay is located in Base control panel.</p>

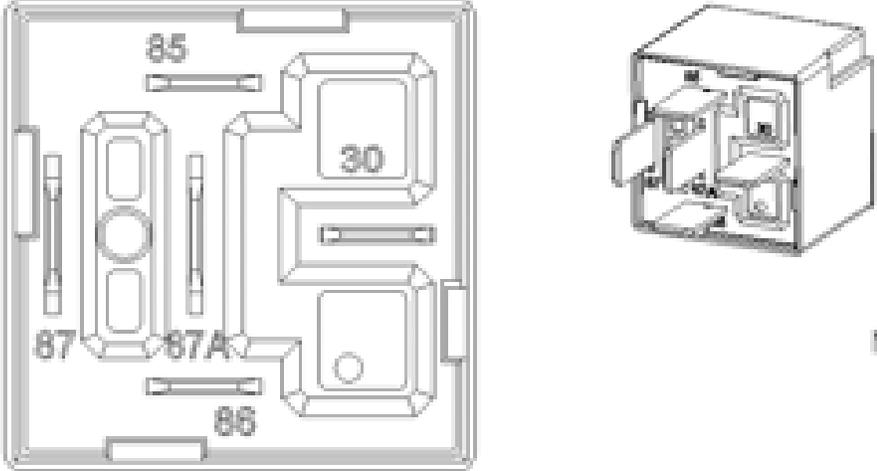
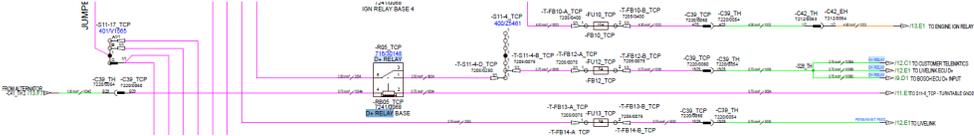
<p><b>Location Image:</b></p>																			
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>High Current</td> <td>0077</td> </tr> <tr> <td>2</td> <td>Ground</td> <td>6035</td> </tr> <tr> <td>3</td> <td>High Current</td> <td>-</td> </tr> <tr> <td>4</td> <td>12V</td> <td>4035</td> </tr> <tr> <td>5</td> <td>12V</td> <td>1077</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	1	High Current	0077	2	Ground	6035	3	High Current	-	4	12V	4035	5	12V	1077
Pin Number	Description	Wire Number																	
1	High Current	0077																	
2	Ground	6035																	
3	High Current	-																	
4	12V	4035																	
5	12V	1077																	
<p><b>Wires &amp; Connectors:</b></p>																			

<p><b>Internal Electrical Schematic:</b></p>							
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1.Remove the relay &amp; use multi meter to measure the resistance between Pin 85 and 86 on the relay</li> <li>2. Resistance should read 90+/- 10 Ω</li> <li>3. If reading are incorrect replace the relay if correct check the harness as per schematic</li> <li>4. If harness continuity is OK replace the relay.</li> </ol>						
<p><b>Expected Values:</b></p>							
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1181-16</td> <td>Horn Output, high side has a short to ground at the base ECU</td> </tr> <tr> <td>B1182-13</td> <td>Horn Output, high side has a open at the base ECU</td> </tr> </tbody> </table>	Fault Code	Description	B1181-16	Horn Output, high side has a short to ground at the base ECU	B1182-13	Horn Output, high side has a open at the base ECU
Fault Code	Description						
B1181-16	Horn Output, high side has a short to ground at the base ECU						
B1182-13	Horn Output, high side has a open at the base ECU						

4.26.3 D+ Relay

<p><b>Component :</b></p>	<p>D+ Relay</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• The base ECU shall receive a 12V alternator signal feed when the alternator is working from D+ relay.</li> <li>• If there is a 12V input from D+ relay and the engine is off – the alternator icon should be lit.</li> <li>• If there is no 12V feed from D+ relay but engine is running then identify as fault and turn icon on display, fault led at platform and buzzer in both locations.</li> </ul>
<p><b>Location:</b></p>	<p>D+ Relay is located in Base control panel. Relay R5 is the D+ Relay</p>

<p><b>Location Image:</b></p>																			
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>High Current</td> <td>0034</td> </tr> <tr> <td>2</td> <td>Ground</td> <td>6034</td> </tr> <tr> <td>3</td> <td>High Current</td> <td>-</td> </tr> <tr> <td>4</td> <td>12 V</td> <td>4034</td> </tr> <tr> <td>5</td> <td>12 V</td> <td>2034</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	1	High Current	0034	2	Ground	6034	3	High Current	-	4	12 V	4034	5	12 V	2034
Pin Number	Description	Wire Number																	
1	High Current	0034																	
2	Ground	6034																	
3	High Current	-																	
4	12 V	4034																	
5	12 V	2034																	

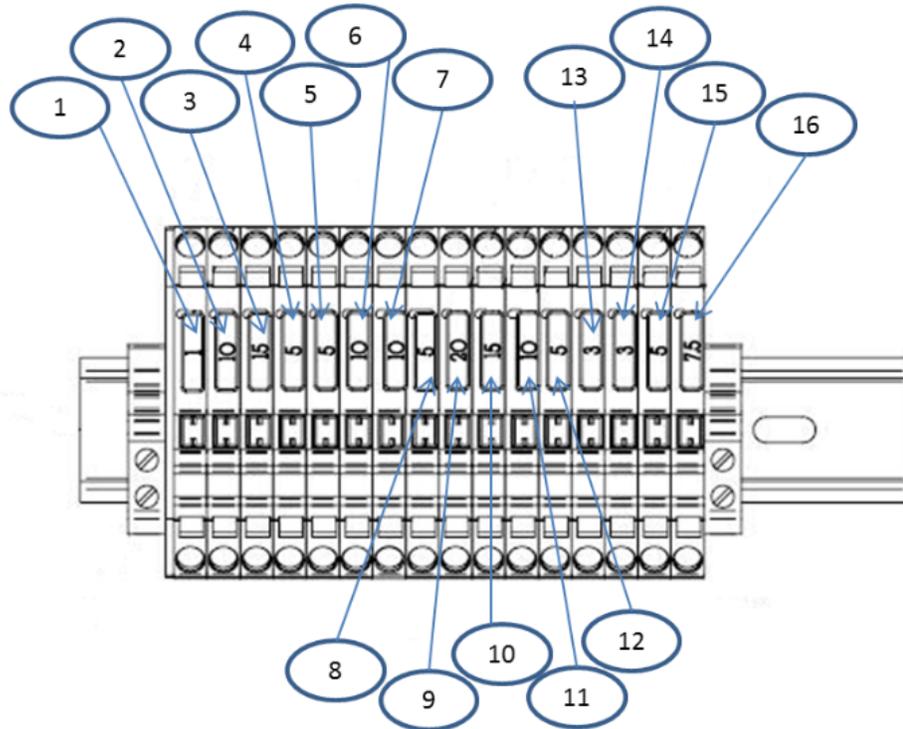
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Remove the relay &amp; use multi meter to measure the resistance between Pin 85 and 86 on the relay</li> <li>2. Resistance should read 90+/- 10 Ω</li> <li>3. If reading are incorrect replace the relay if correct check the harness as per schematic</li> <li>4. If harness continuity is OK replace the relay.</li> </ol>
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

4.26.4 Fusing Turntable Control Panel

<p><b>Component :</b></p>	<p>Fusing Turntable Control Panel</p>
---------------------------	---------------------------------------

<b>Function:</b>	The Fuses are to provide power to the controllers and devices of the machine.
<b>Location:</b>	The Fuses are fitted into Din Rail Fuse Holder

Location  
Image:



Shows the Fuse Ratings for Turntable control panel

Number	Fuse Rating	Description	Sc
1	1A	Ignition Fuse	F
2	10A	Base E-Stop, Horn Relay, Diagnostic connector	F
3	15A	Bosch ECU Base	F
4	5A	Platform weight sensor, Tilt Sensor	F
5	5A	Display, Axle Lock pressure Sensor	F
6	10A	Bosch ECU Platform supply	F
7	10A	Bosch ECU Platform supply	F
8	5A	Bosch ECU Base supply	F
9	20A	Engine Pod box Power hold relay	F
10	15A	Engine Pod box Starter Relay	FU
11	10A	Work light (Optional)	FU
12	5A	Engine run signal for Telematics and Bosch ECU base	FU
13	3A	Livelink	FU
14	3A	Display	FU
15	5A	Engine Pod box power hold coil	FU
16	7.5A	Key Switch	FU

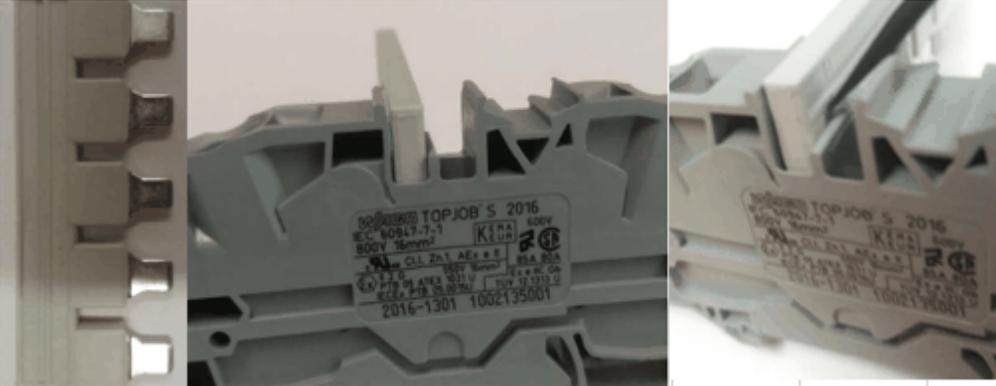
  

Fuse	Wire in	Wire out
FU01_TCP Ignition Fuse	1013 from ignition relay 1	0040 to Bosch ecu, Livelink, customer Telematics
FU02_TCP Ignition Fuse	0024 from S11-7 TCP	1012 to S11-4_TCP
FU03_TCP Ignition Fuse	0025 from S11-7 TCP	1018 to Bosch ECU
FU04_TCP Ignition Fuse	0028 from S11-8 TCP	1083 to S11-1_TCP
FU05_TCP Ignition Fuse	0029 from S11-8 TCP	1084 to S11-3_TCP
FU06_TCP Ignition Fuse	0032 from S11-5 TCP	1025 to platform ecu supply
FU07_TCP Ignition Fuse	0033 from S11-5 TCP	1026 to platform ecu supply
FU08_TCP Ignition Fuse	0036 from S11-5 TCP	1029 to Bosch base ecu
FU09_TCP Ignition Fuse	0034 from S11-2 TCP	0034 to pod box power hold relay
FU10_TCP Ignition Fuse	0035 from S11-2 TCP	0035 to pod box starter relay
FU11_TCP Ignition Fuse	0039 from S11-6 TCP	1031 Work light (optional fit)

	<table border="1"> <tr> <td>FU12_TCP Ignition Fuse</td> <td>0038 from S11-6 TCP</td> <td>1032 customer Telematics, Livelink D+ and Bosch ecu D+ input</td> </tr> <tr> <td>FU13_TCP Permanent Fuse</td> <td>2005 from S11-23 TCP</td> <td>3004 Livelink</td> </tr> <tr> <td>FU14_TCP Permanent Fuse</td> <td>2006 from S11-23 TCP</td> <td>3003 to Display</td> </tr> <tr> <td>FU15_TCP Permanent Fuse</td> <td>2007 from S11-23 TCP</td> <td>3002 to pod box power hold coil</td> </tr> <tr> <td>FU16_TCP Permanent Fuse</td> <td>2008 from S11-23 TCP</td> <td>3001 to key switch</td> </tr> </table>	FU12_TCP Ignition Fuse	0038 from S11-6 TCP	1032 customer Telematics, Livelink D+ and Bosch ecu D+ input	FU13_TCP Permanent Fuse	2005 from S11-23 TCP	3004 Livelink	FU14_TCP Permanent Fuse	2006 from S11-23 TCP	3003 to Display	FU15_TCP Permanent Fuse	2007 from S11-23 TCP	3002 to pod box power hold coil	FU16_TCP Permanent Fuse	2008 from S11-23 TCP	3001 to key switch	
FU12_TCP Ignition Fuse	0038 from S11-6 TCP	1032 customer Telematics, Livelink D+ and Bosch ecu D+ input															
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FU15_TCP Permanent Fuse	2007 from S11-23 TCP	3002 to pod box power hold coil															
FU16_TCP Permanent Fuse	2008 from S11-23 TCP	3001 to key switch															
<p><b>Wires &amp; Connectors:</b></p>																	
<p><b>Internal Electrical Schematic:</b></p>	<p>Refer Schematic: 401/Y3086</p>																
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. To test the fuse terminal block set a multiple to continuity</li> <li>2. remove fuse and check one side of block to the other there should be no connection</li> </ol>																

	3. insert a fuse and then test one end of terminal block to the other side and now there should be continuity.
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

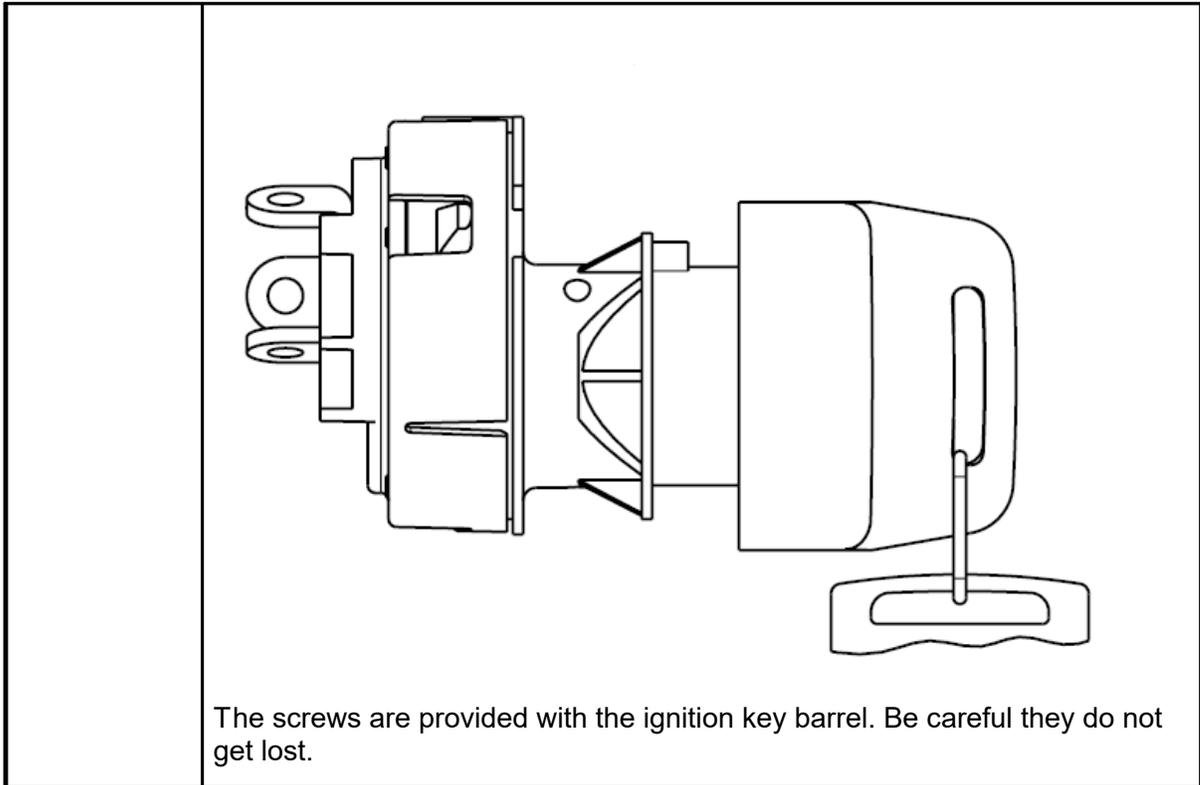
### 4.26.5 Large Jumper Bar

<b>Component:</b>	Large Jumper Bar
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The jumper bars are to make electrical connection between the din rail terminals.</li> <li>• This allows for connections to be made from one din rail terminal to another.</li> <li>• There is 2 different sizes of Jumper bar dependent on the terminal block size they fit into and multiple configurations dependent on number of ways are available.</li> </ul>
<b>Location:</b>	Below shows an image of a 5 Way Large Jumper Bar. This is for example only.
<b>Location Image:</b>	 <p>The large jumper bars are connecting the main power in on the large terminal blocks in the turntable control panel.</p>
<b>Signal:</b>	The Large jumper bars in the turntable control panel will connect up the 12V Permanent power.

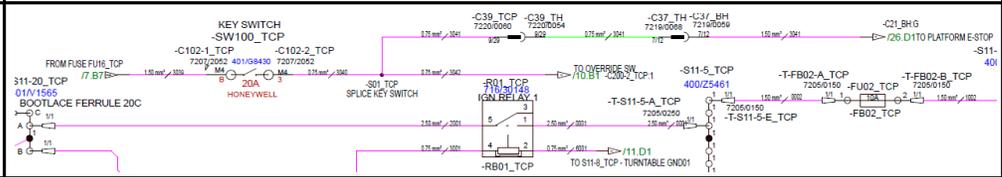


## 4.26.6 Ignition Switch

<b>Component :</b>	Ignition Switch											
<b>Function:</b>	<ul style="list-style-type: none"> <li>Ignition switch is used for Turn ON / OFF the machine power (Ignition signal). The key is not removable in the ON position. Base Bosch ECU controls the Engine ignition feed.</li> <li>The Key is a 455 industry standard Key and not a JCB machine key.</li> </ul>											
<b>Location:</b>	Key switch located at base, on the Turntable control panel.											
<b>Location Image:</b>												
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>B</td> <td>Feed</td> <td>3001</td> </tr> <tr> <td>3</td> <td>Switched Output</td> <td>0018</td> </tr> </tbody> </table>			Pin Number	Description	Wire Number	B	Feed	3001	3	Switched Output	0018
Pin Number	Description	Wire Number										
B	Feed	3001										
3	Switched Output	0018										
<b>Wires &amp; Connectors:</b>	<p>The connections are ring terminal on the harness and screw terminals into the ignition switch.</p> <p>The ignition has numbers impressed into the molding at the bottom, they are small and some are on the outer ring.</p>											



**Internal Electrical Schematic:**



**Testing:**

Important: Use the multi-meter on the harness connector pins. **DO NOT USE** the meter on the ECU pins.

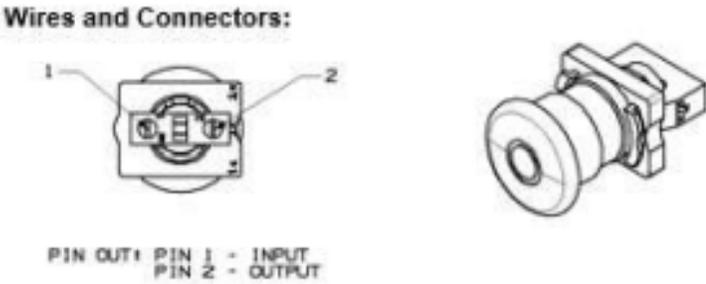
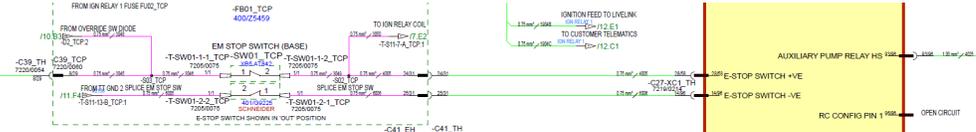
1. Take multimeter and [Check the multimeter is working](#)
2. Set the multimeter in continuity mode (Sound wave or Diode or both)
3. Place the red probe on one of the terminals on the switch and black probe on other terminal on the switch.

4. In Key switch in OFF position, Multimeter should read as 'OL' (open circuit)
5. In Key switch in ON position, Multimeter should read as '1' or less.

	<p>6. Operate the switch in ON and OFF in few more times. Multimeter reading should change while operating from ON to OFF. If the reading doesn't change means key switch is defective</p> <p>7. Replace the defective key switch with part number.</p> 						
<p><b>Expected Values:</b></p>							
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1357-16</td> <td>ENGINE CRANK SC to Low</td> </tr> <tr> <td>B1358-13</td> <td>ENGINE CRANK SC to High or OC</td> </tr> </tbody> </table>	Fault Code	Description	B1357-16	ENGINE CRANK SC to Low	B1358-13	ENGINE CRANK SC to High or OC
Fault Code	Description						
B1357-16	ENGINE CRANK SC to Low						
B1358-13	ENGINE CRANK SC to High or OC						

4.26.7 Emergency STOP Switch(TCP)

<p><b>Component :</b></p>	<p>Emergency STOP Switch(TCP)</p>
<p><b>Function:</b></p>	<p>Emergency stop switch will cut off the Engine and all ECU outputs except CAN. Display and Bosch ECU are remain in the ON. It is equipped with 2 normally closed contacts, one has +12V and other one has GND signals.</p>

<p><b>Location:</b></p>	<p>E-STOP switch located in Base, on the Turntable control panel.</p>																							
<p><b>Location Image:</b></p>																								
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number and contactor block</th> <th>Description</th> <th>Connector number</th> <th>Wire number</th> </tr> </thead> <tbody> <tr> <td>contact 1 NC pin 1</td> <td>12V feed</td> <td>T-SW-01-1-1 TCP</td> <td>1014</td> </tr> <tr> <td>contact 1 NC pin 2</td> <td>Output to platform ECU</td> <td>T-SW-01-1-2 TCP</td> <td>0041</td> </tr> <tr> <td>contact 2 NC pin 2</td> <td>GND feed</td> <td>T-SW-01-2-2 TCP</td> <td>6005</td> </tr> <tr> <td>contact 2 NC pin 1</td> <td>Output to ECU</td> <td>T-SW-01-2-1 TCP</td> <td>0042</td> </tr> </tbody> </table>				Pin Number and contactor block	Description	Connector number	Wire number	contact 1 NC pin 1	12V feed	T-SW-01-1-1 TCP	1014	contact 1 NC pin 2	Output to platform ECU	T-SW-01-1-2 TCP	0041	contact 2 NC pin 2	GND feed	T-SW-01-2-2 TCP	6005	contact 2 NC pin 1	Output to ECU	T-SW-01-2-1 TCP	0042
Pin Number and contactor block	Description	Connector number	Wire number																					
contact 1 NC pin 1	12V feed	T-SW-01-1-1 TCP	1014																					
contact 1 NC pin 2	Output to platform ECU	T-SW-01-1-2 TCP	0041																					
contact 2 NC pin 2	GND feed	T-SW-01-2-2 TCP	6005																					
contact 2 NC pin 1	Output to ECU	T-SW-01-2-1 TCP	0042																					
<p><b>Wires &amp; Connectors:</b></p>	<p><b>Wires and Connectors:</b></p> 																							
<p><b>Internal Electrical Schematic:</b></p>																								
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>Do the below steps for both contacts separately.</li> <li>Take multimeter and check the multi meter is working</li> </ol>																							

3. Set the multimeter in continuity mode (Sound wave or Diode or both)
4. Place the red probe on one of the terminal on the switch and black probe on other terminal on the switch.



5. In E-Stop switch in PUSHED IN state, Multimeter should read as 'OL' (open circuit)
6. In E-Stop switch in OUT state, Multimeter should read as '1' or less.
7. Operate the switch in PUSHED IN and OUT state in few more times. Multimeter reading should change while operating from PUSHED IN to OUT. If the reading doesn't change means E-Stop switch is defective
8. Replace the defective E-Stop switch with same type and size, please contact JCB Service department.



**Expected Values:**

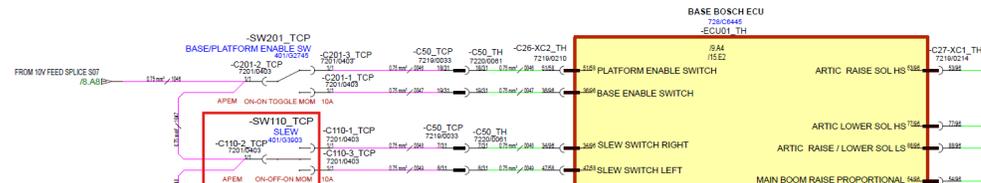
**Related Fault**

Fault Code	Description
B1235-17	E-Stop Plausibility Check

<b>Codes:</b>	
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### 4.26.8 Slew Switch(TCP)

<b>Component :</b>	Slew Switch(TCP)																													
<b>Function:</b>	Slew switch is for slew the Machine i.e. Chassis part stays standstill and the upper portion of the machine slew either right or left.																													
<b>Location:</b>	Slew switch located at base, on the Turntable control panel.																													
<b>Location Image:</b>																														
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/ Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage with switch unpressed</th> <th>Voltage with switch pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Slew Right</td> <td>C110-1 TCP</td> <td>0048</td> <td>2.7 V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C110-2 TCP</td> <td>1034, 1035</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Slew Left</td> <td>C110-3 TCP</td> <td>0049</td> <td>3.4 V</td> <td>10V</td> </tr> </tbody> </table>	Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed	1	Slew Right	C110-1 TCP	0048	2.7 V	10V	2	Power in (10V)	C110-2 TCP	1034, 1035	10V	NA	3	Slew Left	C110-3 TCP	0049	3.4 V	10V					
Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage with switch unpressed	Voltage with switch pressed																									
1	Slew Right	C110-1 TCP	0048	2.7 V	10V																									
2	Power in (10V)	C110-2 TCP	1034, 1035	10V	NA																									
3	Slew Left	C110-3 TCP	0049	3.4 V	10V																									

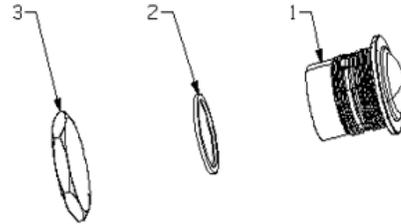
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1,2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> <li>3. Terminal 2 is for incoming supply</li> <li>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should buzz for one combination and should not buzz for other. When switch is pressed, it should buzz vice verse.</li> <li>5. Check supply at terminal 2. It should read 10V.</li> <li>6. If there is no 10V then investigate wiring as per schematic.</li> <li>7. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</li> </ol>
<p><b>Expected Values:</b></p>	

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1338-17	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve LS SC to High
	B1339-16	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve LS SC to Low
	B1340-13	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve LS OC

### 4.26.9 Horn Switch(TCP)

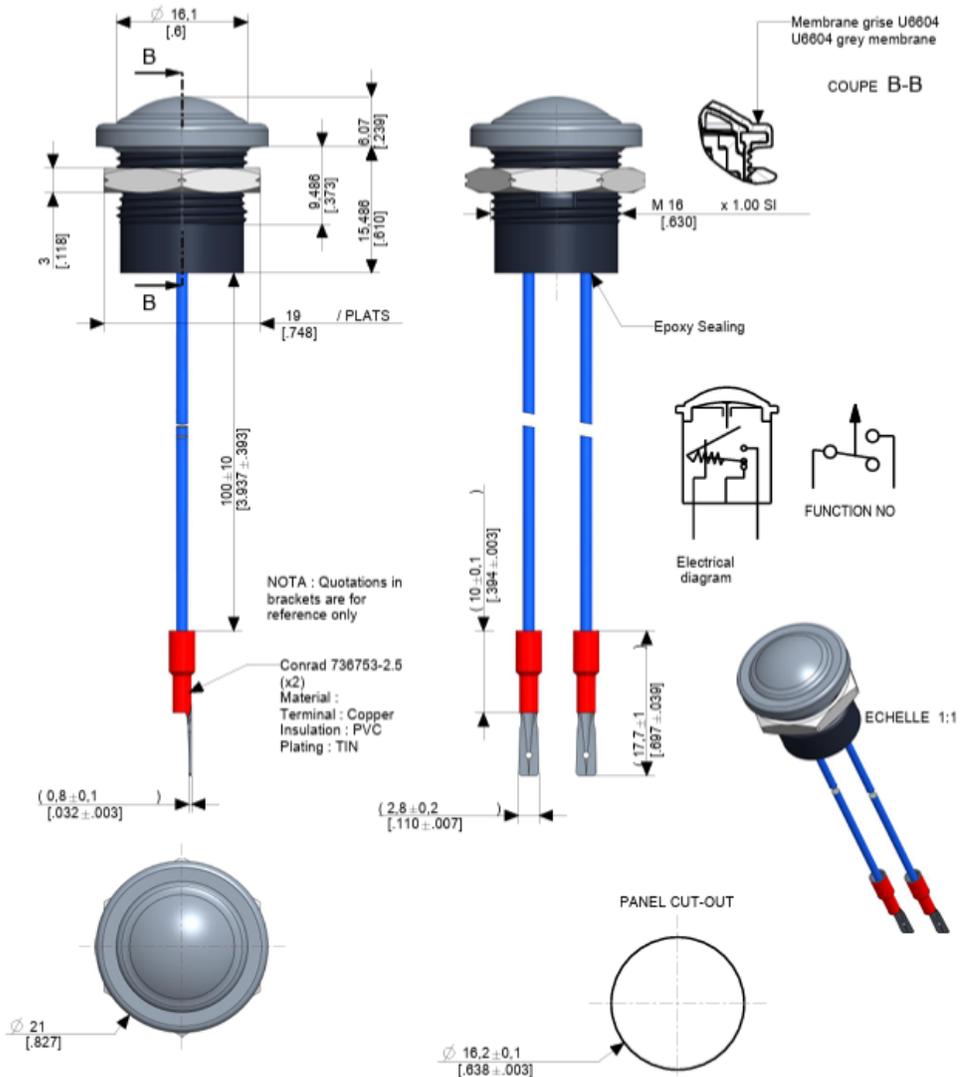
<b>Component :</b>	Horn Switch(TCP)					
<b>Function:</b>	Horn switch is for audible warning that the operator can use.					
<b>Location:</b>	Horn switch located at base, on the Turntable control panel.					
<b>Location Image:</b>						
<b>Signal:</b>	<b>Pin Number</b>	<b>Description</b>	<b>Connector number</b>	<b>Wire number(s)</b>	<b>Voltage unpressed</b>	<b>Voltage pressed</b>
	1	10V input	C101-2 TCP	1030B, 1043		
	2	Signal output to ECU (10V when pressed)	C101-1_TCP	0065		10V

**Wires & Connectors:**



ASSEMBLY SEQUENCE FOR PUSH BUTTON  
 1 - PUSHBUTTON FROM OUTSIDE THE PANEL  
 2 - WASHER FROM INSIDE THE PANEL  
 3 - HEX NUT FROM INSIDE THE PANEL

ISOMETRIC VIEW

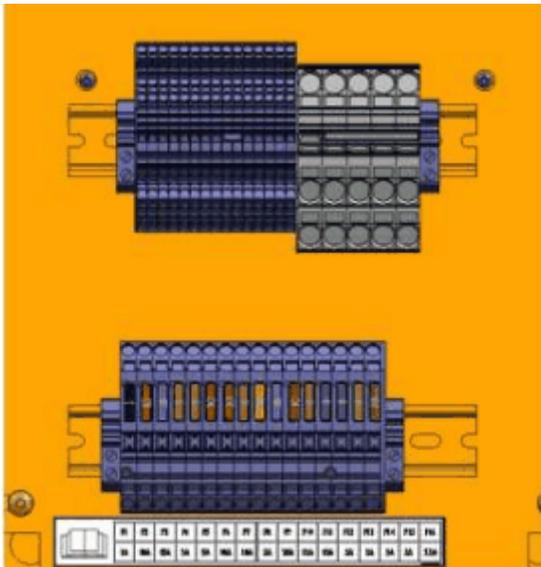


<p><b>Internal Electrical Schematic:</b></p>													
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <p>Refer <a href="#">Test the Push Button</a></p> <p>Note-All the bush button fitted on machine are 10V ,normally open and closed when pressed</p> <p>Diagnostic feedback on push button are coming from ECU</p> <ol style="list-style-type: none"> <li>1. Check supply at wiring harness terminal-1 with (respect to ground) on push button (when not pressed). It should read 10V.</li> <li>2. Check the voltage at wiring harness terminal-2 on push button (When not pressed). It should read 2-3V</li> <li>3. Check the continuity between terminal 1 &amp; 2 after pressing the push button. It should buzz.</li> <li>4. If there is continuity and we are getting 10V supply then it may be internal damage to push button.</li> <li>5. If issue still there replace the push button.</li> </ol>												
<p><b>Expected Values:</b></p>	<p>10V when pressed</p>												
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1181-16</td> <td>HORN HS SC to Low</td> </tr> <tr> <td>B1182-13</td> <td>HORN HS OC</td> </tr> <tr> <td>B1206-17</td> <td>HORN BUTTON SC to High</td> </tr> <tr> <td>B1207-16</td> <td>HORN BUTTON SC to Low</td> </tr> <tr> <td>B1208-24</td> <td>HORN BUTTON Stuck for &gt;= 10 seconds</td> </tr> </tbody> </table>	Fault Code	Description	B1181-16	HORN HS SC to Low	B1182-13	HORN HS OC	B1206-17	HORN BUTTON SC to High	B1207-16	HORN BUTTON SC to Low	B1208-24	HORN BUTTON Stuck for >= 10 seconds
Fault Code	Description												
B1181-16	HORN HS SC to Low												
B1182-13	HORN HS OC												
B1206-17	HORN BUTTON SC to High												
B1207-16	HORN BUTTON SC to Low												
B1208-24	HORN BUTTON Stuck for >= 10 seconds												

4.26.10 Large Din Rail Terminal

<p><b>Component :</b></p>	<p>Large Din Rail Terminal</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• The Terminal blocks are to allow for connections of signal to a common feed.</li> </ul>

	<ul style="list-style-type: none"><li>• In the turntable control panel these are used to distribute the main 12V permanent feed in.</li><li>• Always ensure bootlace ferrules are fitted to wire ends before inserting into a terminal block</li></ul>
<b>Location:</b>	Inside the Base Control Box
<b>Location Image:</b>	 The image contains four photographs of terminal blocks. The top-left photo shows a vertical grey terminal block with three circular openings. The top-right photo shows a grey terminal block with its cover removed, revealing internal metal contacts and a central screw. The bottom-left photo shows a similar terminal block with a wire inserted into one of the terminals. The bottom-right photo shows a close-up of a terminal block with a screwdriver being used to adjust a terminal.

																																																	
<p><b>Signal:</b></p>	<p>The signal from all of the above terminal blocks is 12V permanent feed to provide power to the ignition relays.</p>																																																
<p><b>Wires &amp; Connectors:</b></p>	<table border="1"> <tr> <td colspan="3" style="text-align: center;">S11-21_TCP</td> </tr> <tr> <td style="text-align: center;"><b>Signal</b></td> <td style="text-align: center;"><b>Wire Number</b></td> <td style="text-align: center;"><b>Wire Size</b></td> </tr> <tr> <td>Main Feed in</td> <td>Battery lead feed in</td> <td>16mm</td> </tr> <tr> <td>12V to Ign Relay 1 Contacts</td> <td>2000</td> <td>2.5mm<sup>2</sup></td> </tr> <tr> <td>12V to Ign Relay 2 Contacts</td> <td>2001</td> <td>2.5mm<sup>2</sup></td> </tr> <tr> <td colspan="3" style="text-align: center;">S11-22_TCP</td> </tr> <tr> <td style="text-align: center;"><b>Signal</b></td> <td style="text-align: center;"><b>Wire Number</b></td> <td style="text-align: center;"><b>Wire Size</b></td> </tr> <tr> <td>12V to Ign Relay 3 Contacts</td> <td>2002</td> <td>2.5mm<sup>2</sup></td> </tr> <tr> <td>12V to Ign Relay 4 Contacts</td> <td>2003</td> <td>2.5mm<sup>2</sup></td> </tr> <tr> <td>12V to Ign D+ Relay Contacts</td> <td>2004</td> <td>2.5mm<sup>2</sup></td> </tr> <tr> <td colspan="3" style="text-align: center;">S11-23_TCP</td> </tr> <tr> <td style="text-align: center;"><b>Signal</b></td> <td style="text-align: center;"><b>Wire Number</b></td> <td style="text-align: center;"><b>Wire Size</b></td> </tr> <tr> <td>12V to FU13_TCP Fuse</td> <td>2005</td> <td>0.75mm<sup>2</sup></td> </tr> <tr> <td>12V to FU14_TCP Fuse</td> <td>2006</td> <td>0.75mm<sup>2</sup></td> </tr> <tr> <td>12V to FU15_TCP Fuse</td> <td>2007</td> <td>1.00mm<sup>2</sup></td> </tr> <tr> <td colspan="3" style="text-align: center;">S11-24_TCP</td> </tr> </table>	S11-21_TCP			<b>Signal</b>	<b>Wire Number</b>	<b>Wire Size</b>	Main Feed in	Battery lead feed in	16mm	12V to Ign Relay 1 Contacts	2000	2.5mm <sup>2</sup>	12V to Ign Relay 2 Contacts	2001	2.5mm <sup>2</sup>	S11-22_TCP			<b>Signal</b>	<b>Wire Number</b>	<b>Wire Size</b>	12V to Ign Relay 3 Contacts	2002	2.5mm <sup>2</sup>	12V to Ign Relay 4 Contacts	2003	2.5mm <sup>2</sup>	12V to Ign D+ Relay Contacts	2004	2.5mm <sup>2</sup>	S11-23_TCP			<b>Signal</b>	<b>Wire Number</b>	<b>Wire Size</b>	12V to FU13_TCP Fuse	2005	0.75mm <sup>2</sup>	12V to FU14_TCP Fuse	2006	0.75mm <sup>2</sup>	12V to FU15_TCP Fuse	2007	1.00mm <sup>2</sup>	S11-24_TCP		
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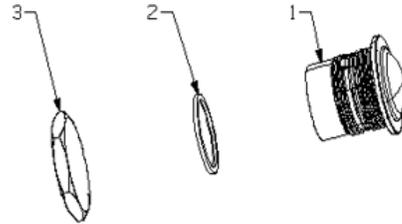
	<table border="1"> <thead> <tr> <th>Signal</th> <th>Wire Number</th> <th>Wire Size</th> </tr> </thead> <tbody> <tr> <td>12V to FU16_TCP Fuse</td> <td>2008</td> <td>1.5mm2</td> </tr> <tr> <td>Spare</td> <td></td> <td></td> </tr> <tr> <td>Spare</td> <td></td> <td></td> </tr> </tbody> </table>	Signal	Wire Number	Wire Size	12V to FU16_TCP Fuse	2008	1.5mm2	Spare			Spare		
Signal	Wire Number	Wire Size											
12V to FU16_TCP Fuse	2008	1.5mm2											
Spare													
Spare													
<b>Internal Electrical Schematic:</b>													
<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Each din rail is capable of holding 3 individual wires.</li> <li>2. Ensure no water ingress inside the din rail terminals.</li> <li>3. Check ferrule is inserted properly inside din rail.</li> <li>4. Check din rail terminal are placed &amp; locked properly over din rail.</li> <li>5. Check end stops are fitted correctly.</li> <li>6. Check all wires fitted on one din rail terminal should have continuity.</li> </ol>												
<b>Expected Values:</b>													
<b>Related Fault Codes:</b>													

4.26.11 Engine Start Switch(TCP)

<b>Component :</b>	Engine Start Switch(TCP)
<b>Function:</b>	Engine start switch is to start / Crank the engine. Engine crank only possible if Ignition signal available at Engine (Key switch should be turned ON).
<b>Location:</b>	Engine start switch located at base, on the Turntable control panel.

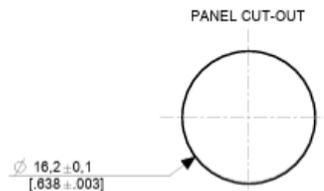
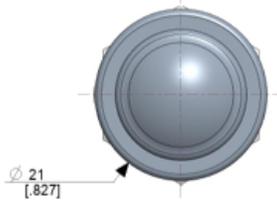
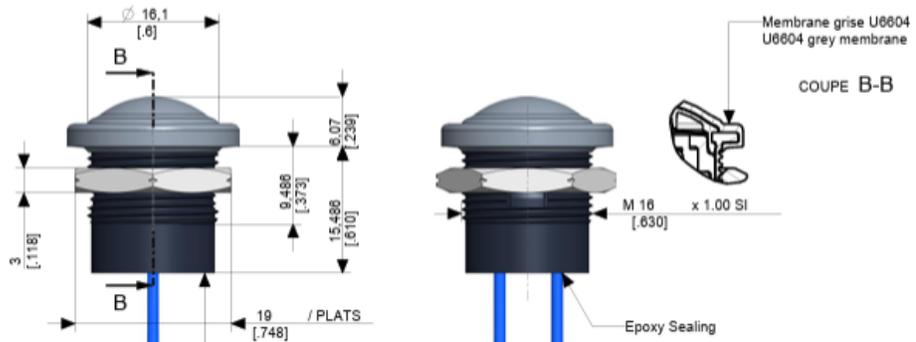
<p><b>Location Image:</b></p>																								
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Signal output to ECU (10V when pressed)</td> <td></td> <td></td> <td></td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	10V input					2	Signal output to ECU (10V when pressed)				10V
Pin Number	Description	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																			
1	10V input																							
2	Signal output to ECU (10V when pressed)				10V																			

## Wires & Connectors:



ASSEMBLY SEQUENCE FOR PUSH BUTTON  
 1 - PUSHBUTTON FROM OUTSIDE THE PANEL  
 2 - WASHER FROM INSIDE THE PANEL  
 3 - HEX NUT FROM INSIDE THE PANEL

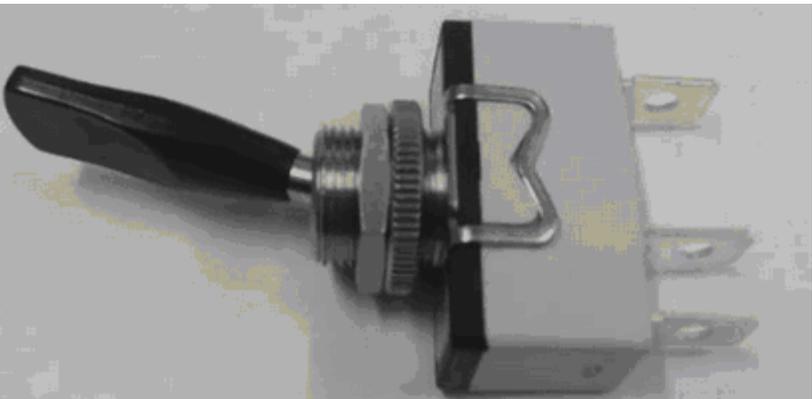
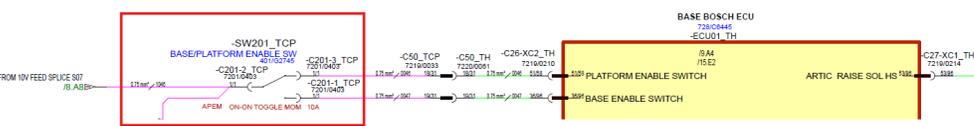
ISOMETRIC VIEW



<p><b>Internal Electrical Schematic:</b></p>									
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <p>Refer <a href="#">Test the Push Button</a></p> <p>Note-All the bush button fitted on machine are 10V ,normally open and closed when pressed.</p> <p>Diagnostic feedback on push button are coming from ECU.</p> <ol style="list-style-type: none"> <li>1. Check supply at wiring harness terminal-1 with (respect to ground) on push button (when not pressed). It should read 10V.</li> <li>2. Check the voltage at wiring harness terminal-2 on push button (When not pressed). It should read 2-3V.</li> <li>3. Check the continuity between terminal 1 &amp; 2 after pressing the push button. It should buzz.</li> <li>4. If there is continuity and we are getting 10V supply then it may be internal damage to push button.</li> <li>5. If issue still there replace the push button.</li> </ol>								
<p><b>Expected Values:</b></p>									
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1050-17</td> <td>Engine start button short circuit to high at the turntable control station</td> </tr> <tr> <td>B1051-16</td> <td>Engine start button is short circuit to low at the turntable control station</td> </tr> <tr> <td>B1052-24</td> <td>Engine start button stuck on for longer than 10 seconds at the turntable control station</td> </tr> </tbody> </table>	Fault Code	Description	B1050-17	Engine start button short circuit to high at the turntable control station	B1051-16	Engine start button is short circuit to low at the turntable control station	B1052-24	Engine start button stuck on for longer than 10 seconds at the turntable control station
Fault Code	Description								
B1050-17	Engine start button short circuit to high at the turntable control station								
B1051-16	Engine start button is short circuit to low at the turntable control station								
B1052-24	Engine start button stuck on for longer than 10 seconds at the turntable control station								

4.26.12 Base/Platform Enable Switch

<p><b>Component :</b></p>	<p>Base/Platform Enable Switch</p>
---------------------------	------------------------------------

<b>Function:</b>	Base / Platform Enable switch is for Indication that Machine is moving or coming, so that the place will be clear for safety.																													
<b>Location:</b>	Base / Platform Enable switch located at base, on the Turntable control panel.																													
<b>Location Image:</b>																														
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Base Enable</td> <td>C201-1_TCP</td> <td>47</td> <td></td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C201-2_TCP</td> <td>1046</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Platform enable</td> <td>C201-3_TCP</td> <td>46</td> <td></td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	Base Enable	C201-1_TCP	47		10V	2	Power in (10V)	C201-2_TCP	1046	10V	NA	3	Platform enable	C201-3_TCP	46		10V
Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																									
1	Base Enable	C201-1_TCP	47		10V																									
2	Power in (10V)	C201-2_TCP	1046	10V	NA																									
3	Platform enable	C201-3_TCP	46		10V																									
<b>Wires &amp; Connectors:</b>																														
<b>Internal Electrical Schematic:</b>																														
<b>Testing:</b>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <p>Note- Override switch and the base/ platform enable are the same switch at the base control panel. There are NO in state</p>																													

	<ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1,2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> <li>3. Terminal 2 is for incoming supply</li> <li>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should buzz for one combination and should not buzz for other. When switch is pressed, it should buzz vice verse.</li> <li>5. Check supply at terminal 2. It should read 10V.</li> <li>6. If there is no 10V then investigate wiring as per schematic.</li> <li>7. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</li> </ol>														
<b>Expected Values:</b>															
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1005-17</td> <td>Base enable switch short circuit to high &gt;10.5V</td> </tr> <tr> <td>B1006-17</td> <td>Platform enable switch is short circuit to high &gt;10.5V</td> </tr> <tr> <td>B1007-92</td> <td>Base enable and platform enable are both active</td> </tr> <tr> <td>B1008-16</td> <td>Base enable switch is short circuit to low</td> </tr> <tr> <td>B1009-16</td> <td>Platform enable short circuit to low</td> </tr> <tr> <td>B1010-13</td> <td>Base enable switch and platform enable switch open circuit</td> </tr> </tbody> </table>	Fault Code	Description	B1005-17	Base enable switch short circuit to high >10.5V	B1006-17	Platform enable switch is short circuit to high >10.5V	B1007-92	Base enable and platform enable are both active	B1008-16	Base enable switch is short circuit to low	B1009-16	Platform enable short circuit to low	B1010-13	Base enable switch and platform enable switch open circuit
Fault Code	Description														
B1005-17	Base enable switch short circuit to high >10.5V														
B1006-17	Platform enable switch is short circuit to high >10.5V														
B1007-92	Base enable and platform enable are both active														
B1008-16	Base enable switch is short circuit to low														
B1009-16	Platform enable short circuit to low														
B1010-13	Base enable switch and platform enable switch open circuit														

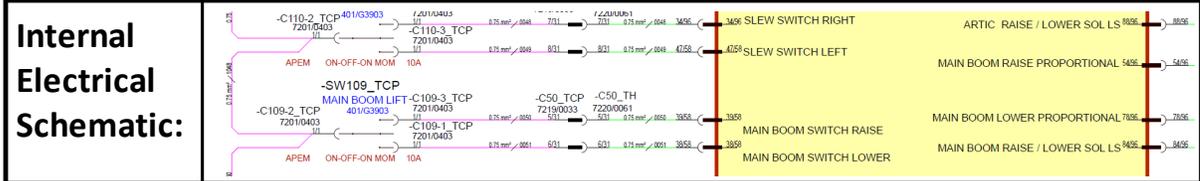
**4.26.13 Main Boom Raise/Lower Switch(TCP)**

<b>Component :</b>	Main Boom Raise/Lower Switch(TCP)
<b>Function:</b>	Main boom lift switch is for to lift the main boom in up or down directions.
<b>Location:</b>	Main boom lift switch located at base, on the Turntable control panel.



**Signal:**

Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed
1	Main boom Lower	C109-1_TCP	0050	2.7V	10V
2	Power in (10V)	C109-2_TCP	1048	10V	NA
3	Main boom Raise	C109-3_TCP	0051	3.4V	10V



**Testing:**

Important: Use the multi-meter on the harness connector pins. **DO NOT USE** the meter on the ECU pins.

Refer ' [Test OFF-ON-OFF Momentary Toggle switch](#) '

	<ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> <li>3Terminal 2 is for incoming supply</li> <li>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</li> <li>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</li> <li>6. Check supply at terminal 2. It should read 10V.</li> <li>7. If there is no 10V then investigate wiring as per schematic.</li> <li>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</li> </ol>														
<b>Expected Values:</b>															
<b>Related Fault Codes:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th style="text-align: left;">Fault Code</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td>B1126-17</td> <td>MAIN BOOM Lower Limit Switch 1 SC to High</td> </tr> <tr> <td>B1127-17</td> <td>MAIN BOOM Lower Limit Switch 2 SC to High</td> </tr> <tr> <td>B1128-16</td> <td>MAIN BOOM Lower Limit Switch 1 SC to Low</td> </tr> <tr> <td>B1129-13</td> <td>MAIN BOOM Lower Limit Switch 1 AND Switch 2 OC</td> </tr> <tr> <td>B1130-16</td> <td>MAIN BOOM Lower Limit Switch 2 SC to Low</td> </tr> <tr> <td>B1131-2F</td> <td>MAIN BOOM Lower Limit Switch 1 AND Switch 2 Short to 10V</td> </tr> </tbody> </table>	Fault Code	Description	B1126-17	MAIN BOOM Lower Limit Switch 1 SC to High	B1127-17	MAIN BOOM Lower Limit Switch 2 SC to High	B1128-16	MAIN BOOM Lower Limit Switch 1 SC to Low	B1129-13	MAIN BOOM Lower Limit Switch 1 AND Switch 2 OC	B1130-16	MAIN BOOM Lower Limit Switch 2 SC to Low	B1131-2F	MAIN BOOM Lower Limit Switch 1 AND Switch 2 Short to 10V
Fault Code	Description														
B1126-17	MAIN BOOM Lower Limit Switch 1 SC to High														
B1127-17	MAIN BOOM Lower Limit Switch 2 SC to High														
B1128-16	MAIN BOOM Lower Limit Switch 1 SC to Low														
B1129-13	MAIN BOOM Lower Limit Switch 1 AND Switch 2 OC														
B1130-16	MAIN BOOM Lower Limit Switch 2 SC to Low														
B1131-2F	MAIN BOOM Lower Limit Switch 1 AND Switch 2 Short to 10V														

**4.26.14 Articulated Boom Raise/Lower switch(TCP)**

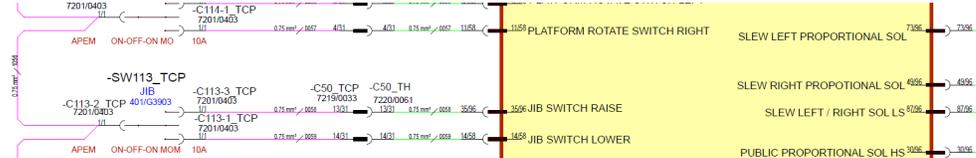
<b>Component :</b>	Articulated Boom Raise/Lower switch(TCP)
<b>Function:</b>	Articulated boom switch is for to lift the articular boom in up or down directions.
<b>Location:</b>	Articulated boom switch located at base, on the Turntable control panel.

<p><b>Location Image:</b></p>																									
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Artic Lower</td> <td>C115-1_TCP</td> <td>55</td> <td>2.7V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C115-2_TCP</td> <td>1052</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Artic Raise</td> <td>C115-3_TCP</td> <td>54</td> <td>3.4V</td> <td>10V</td> </tr> </tbody> </table>	Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	Artic Lower	C115-1_TCP	55	2.7V	10V	2	Power in (10V)	C115-2_TCP	1052	10V	NA	3	Artic Raise	C115-3_TCP	54	3.4V	10V
Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																				
1	Artic Lower	C115-1_TCP	55	2.7V	10V																				
2	Power in (10V)	C115-2_TCP	1052	10V	NA																				
3	Artic Raise	C115-3_TCP	54	3.4V	10V																				
<p><b>Wires &amp; Connectors:</b></p>																									
<p><b>Internal Electrical Schematic:</b></p>																									
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <p>Refer ' <a href="#">Test OFF-ON-OFF Momentary Toggle switch</a> '</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> </ol>																								

	<p>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</p> <p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>												
<b>Expected Values:</b>													
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1096-17</td> <td>ARTICULATED BOOM RAISE Switch SC to High</td> </tr> <tr> <td>B1097-17</td> <td>ARTICULATED BOOM LOWER Switch SC to High</td> </tr> <tr> <td>B1098-92</td> <td>ARTICULATED BOOM RAISE &amp; LOWER Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1099-16</td> <td>ARTICULATED BOOM RAISE Switch SC to Low</td> </tr> <tr> <td>B1100-16</td> <td>ARTICULATED BOOM LOWER Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1096-17	ARTICULATED BOOM RAISE Switch SC to High	B1097-17	ARTICULATED BOOM LOWER Switch SC to High	B1098-92	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)	B1099-16	ARTICULATED BOOM RAISE Switch SC to Low	B1100-16	ARTICULATED BOOM LOWER Switch SC to Low
Fault Code	Description												
B1096-17	ARTICULATED BOOM RAISE Switch SC to High												
B1097-17	ARTICULATED BOOM LOWER Switch SC to High												
B1098-92	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)												
B1099-16	ARTICULATED BOOM RAISE Switch SC to Low												
B1100-16	ARTICULATED BOOM LOWER Switch SC to Low												

### 4.26.15 Jib Raise/Lower Switch(TCP)

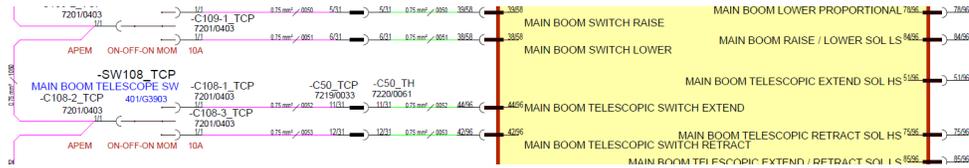
<b>Component :</b>	Jib Raise/Lower Switch(TCP)
<b>Function:</b>	Jib switch is for to lift the Jib in up or down directions.
<b>Location:</b>	Jib switch located at base, on the Turntable control panel.

<p><b>Location Image:</b></p>																														
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Jib Lower</td> <td>C113-1_TCP</td> <td>59</td> <td>2.7V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C113-2_TCP</td> <td>1056</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Jib Raise</td> <td>C113-3_TCP</td> <td>58</td> <td>2.7V</td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	Jib Lower	C113-1_TCP	59	2.7V	10V	2	Power in (10V)	C113-2_TCP	1056	10V	NA	3	Jib Raise	C113-3_TCP	58	2.7V	10V
Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																									
1	Jib Lower	C113-1_TCP	59	2.7V	10V																									
2	Power in (10V)	C113-2_TCP	1056	10V	NA																									
3	Jib Raise	C113-3_TCP	58	2.7V	10V																									
<p><b>Wires &amp; Connectors:</b></p>																														
<p><b>Internal Electrical Schematic:</b></p>																														
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> </ol>																													

	<p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1111-17	JIB RAISE Switch SC to High
	B1112-17	JIB LOWER Switch SC to High
	B1113-92	JIB RAISE & LOWER Switches both activated (5 - 10V)
	B1114-16	JIB RAISE Switch SC to Low
	B1115-16	JIB LOWER Switch SC to Low

**4.26.16 Main Boom Telescope Extend/Retract Switch(TCP)**

<b>Component :</b>	Main Boom Telescope Extend/Retract Switch(TCP)
<b>Function:</b>	Main boom telescope switch is for to lift the articular boom in up or down directions.
<b>Location:</b>	Main boom telescope switch located at base, on the Turntable control panel.

<p><b>Location Image:</b></p>																														
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Telescopic Extend</td> <td>C108-1_TCP</td> <td>0052</td> <td>2.7V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C108-2_TCP</td> <td>1050</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Telescopic Retract</td> <td>C108-3_TCP</td> <td>0053</td> <td>2.7V</td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	Telescopic Extend	C108-1_TCP	0052	2.7V	10V	2	Power in (10V)	C108-2_TCP	1050	10V	NA	3	Telescopic Retract	C108-3_TCP	0053	2.7V	10V
Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																									
1	Telescopic Extend	C108-1_TCP	0052	2.7V	10V																									
2	Power in (10V)	C108-2_TCP	1050	10V	NA																									
3	Telescopic Retract	C108-3_TCP	0053	2.7V	10V																									
<p><b>Wires &amp; Connectors:</b></p>																														
<p><b>Internal Electrical Schematic:</b></p>																														
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins</p> <p>1. There are 3 contact on the back of switch.</p>																													

	<p>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</p> <p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>												
<p><b>Expected Values:</b></p>													
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1101-17</td> <td>MAIN BOOM EXTEND Switch SC to High</td> </tr> <tr> <td>B1102-17</td> <td>MAIN BOOM RETRACT Switch SC to High</td> </tr> <tr> <td>B1103-92</td> <td>MAIN BOOM EXTEND &amp; RETRACT Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1104-16</td> <td>MAIN BOOM EXTEND Switch SC to Low</td> </tr> <tr> <td>B1105-16</td> <td>MAIN BOOM RETRACT Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1101-17	MAIN BOOM EXTEND Switch SC to High	B1102-17	MAIN BOOM RETRACT Switch SC to High	B1103-92	MAIN BOOM EXTEND & RETRACT Switches both activated (5 - 10V)	B1104-16	MAIN BOOM EXTEND Switch SC to Low	B1105-16	MAIN BOOM RETRACT Switch SC to Low
Fault Code	Description												
B1101-17	MAIN BOOM EXTEND Switch SC to High												
B1102-17	MAIN BOOM RETRACT Switch SC to High												
B1103-92	MAIN BOOM EXTEND & RETRACT Switches both activated (5 - 10V)												
B1104-16	MAIN BOOM EXTEND Switch SC to Low												
B1105-16	MAIN BOOM RETRACT Switch SC to Low												

**4.26.17 Platform Rotate Left/Right Switch(TCP)**

<p><b>Component:</b></p>	<p>Platform Rotate Left/Right Switch(TCP)</p>
<p><b>Function:</b></p>	<p>Platform rotate switch is for to rotate the Basket in left or right directions.</p>
<p><b>Location:</b></p>	<p>Platform rotate switch located at base, on the Turntable control panel.</p>

<p><b>Location Image:</b></p>																														
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Platform Rotate Right</td> <td>C114-1_TCP</td> <td>0057</td> <td>2.7V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C114-2_TCP</td> <td>1054</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Platform Rotate Left</td> <td>C114-3_TCP</td> <td>0056</td> <td>3.4V</td> <td>10V</td> </tr> </tbody> </table>						Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	Platform Rotate Right	C114-1_TCP	0057	2.7V	10V	2	Power in (10V)	C114-2_TCP	1054	10V	NA	3	Platform Rotate Left	C114-3_TCP	0056	3.4V	10V
Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																									
1	Platform Rotate Right	C114-1_TCP	0057	2.7V	10V																									
2	Power in (10V)	C114-2_TCP	1054	10V	NA																									
3	Platform Rotate Left	C114-3_TCP	0056	3.4V	10V																									
<p><b>Wires &amp; Connectors:</b></p>																														
<p><b>Internal Electrical Schematic:</b></p>																														
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <p>Refer ' <a href="#">Test OFF-ON-OFF Momentary Toggle switch</a>'</p>																													

	<ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> <li>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</li> <li>3. Terminal 2 is for incoming supply</li> <li>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</li> <li>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</li> <li>6. Check supply at terminal 2. It should read 10V.</li> <li>7. If there is no 10V then investigate wiring as per schematic.</li> <li>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</li> </ol>												
<p><b>Expected Values:</b></p>													
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1106-17</td> <td>PLATFORM ROTATE RIGHT Switch SC to High</td> </tr> <tr> <td>B1107-17</td> <td>PLATFORM ROTATE LEFT Switch SC to High</td> </tr> <tr> <td>B1108-92</td> <td>PLATFORM ROTATE RIGHT &amp; LEFT Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1109-16</td> <td>PLATFORM ROTATE RIGHT Switch SC to Low</td> </tr> <tr> <td>B1110-16</td> <td>PLATFORM ROTATE LEFT Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1106-17	PLATFORM ROTATE RIGHT Switch SC to High	B1107-17	PLATFORM ROTATE LEFT Switch SC to High	B1108-92	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)	B1109-16	PLATFORM ROTATE RIGHT Switch SC to Low	B1110-16	PLATFORM ROTATE LEFT Switch SC to Low
Fault Code	Description												
B1106-17	PLATFORM ROTATE RIGHT Switch SC to High												
B1107-17	PLATFORM ROTATE LEFT Switch SC to High												
B1108-92	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)												
B1109-16	PLATFORM ROTATE RIGHT Switch SC to Low												
B1110-16	PLATFORM ROTATE LEFT Switch SC to Low												

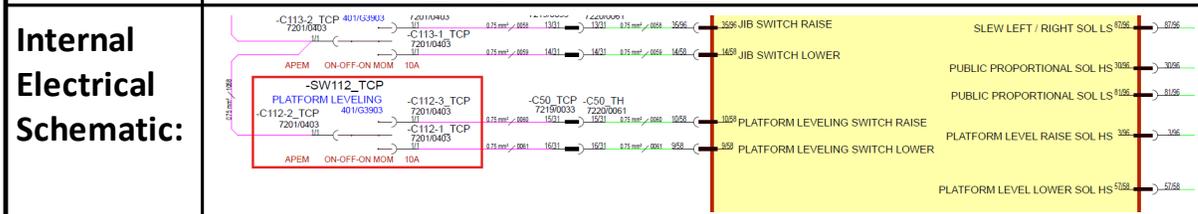
**4.26.18 Platform Leveling Raise/Lower Switch(TCP)**

<p><b>Component :</b></p>	<p>Platform Leveling Raise/Lower Switch(TCP)</p>
<p><b>Function:</b></p>	<p>Platform leveling switch is for to raise the Platform in up or down directions.</p>
<p><b>Location:</b></p>	<p>Platform leveling switch located at base, on the Turntable control panel.</p>



**Signal:**

Pin Number	Description/Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed
1	Platform Leveling Lower	C112-1_TCP	61	2.7V	10V
2	Power in (10V)	C112-2_TCP	1058	10V	NA
3	Platform Leveling Raise	C112-3_TCP	60	2.7V	10V



**Testing:**

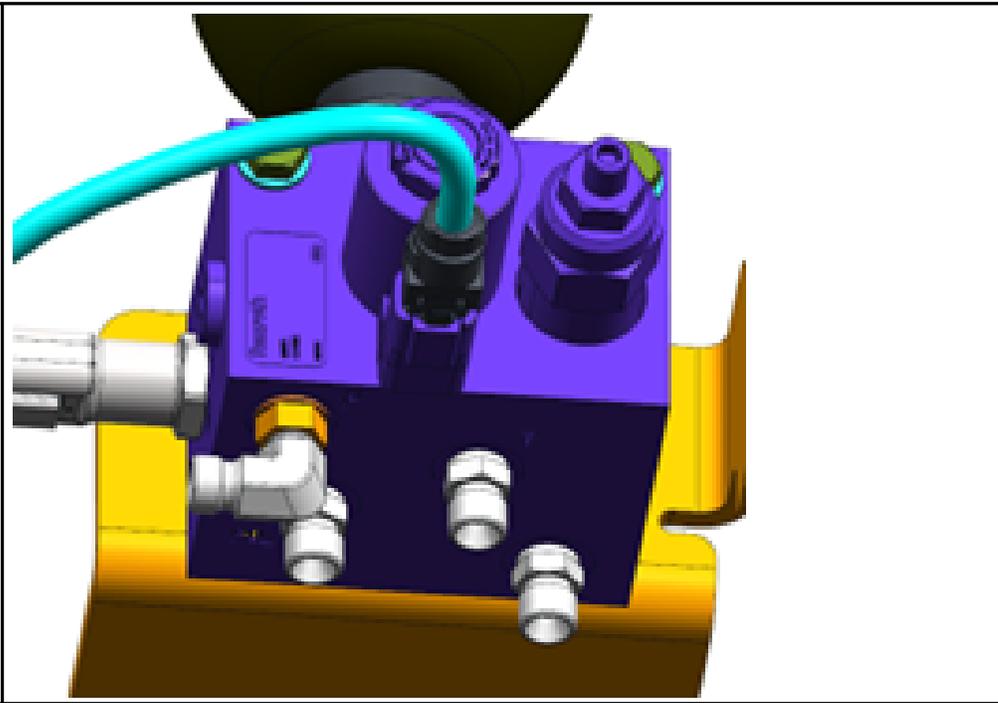
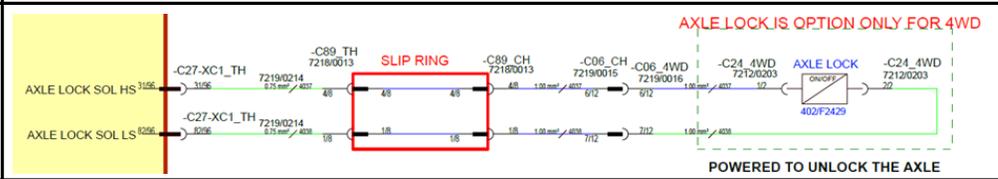
Important: Use the multi-meter on the harness connector pins. **DO NOT USE** the meter on the ECU pins.

1. There are 3 contact on the back of switch.

	<p>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</p> <p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>												
<p><b>Expected Values:</b></p>													
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1071-17</td> <td>PLATFORM LEVELING RAISE Switch SC to High</td> </tr> <tr> <td>B1072-17</td> <td>PLATFORM LEVELING LOWER Switch SC to High</td> </tr> <tr> <td>B1073-92</td> <td>PLATFORM LEVELING RAISE and LOWER Switches both activated (5 - 10V)</td> </tr> <tr> <td>B1074-16</td> <td>PLATFORM LEVELING RAISE Switch SC to Low</td> </tr> <tr> <td>B1075-16</td> <td>PLATFORM LEVELING LOWER Switch SC to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1071-17	PLATFORM LEVELING RAISE Switch SC to High	B1072-17	PLATFORM LEVELING LOWER Switch SC to High	B1073-92	PLATFORM LEVELING RAISE and LOWER Switches both activated (5 - 10V)	B1074-16	PLATFORM LEVELING RAISE Switch SC to Low	B1075-16	PLATFORM LEVELING LOWER Switch SC to Low
Fault Code	Description												
B1071-17	PLATFORM LEVELING RAISE Switch SC to High												
B1072-17	PLATFORM LEVELING LOWER Switch SC to High												
B1073-92	PLATFORM LEVELING RAISE and LOWER Switches both activated (5 - 10V)												
B1074-16	PLATFORM LEVELING RAISE Switch SC to Low												
B1075-16	PLATFORM LEVELING LOWER Switch SC to Low												

4.26.19 Oscillating Axle Solenoid

<p><b>Component :</b></p>	<p>Oscillating Axle Solenoid</p>
<p><b>Function:</b></p>	<p>Oscillating Axle solenoid will be powered to allow the axle to float.</p>
<p><b>Location:</b></p>	

<p><b>Location Image:</b></p>																			
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Released</th> <th>Locked</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Axle +ve from ecu</td> <td>C24_CH</td> <td>4037</td> <td>12V</td> <td>0V</td> </tr> <tr> <td>2</td> <td>GND return to ecu</td> <td>C24_CH</td> <td>4038</td> <td>GND</td> <td>Open Circuit</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Released	Locked	1	Axle +ve from ecu	C24_CH	4037	12V	0V	2	GND return to ecu	C24_CH	4038	GND	Open Circuit
Pin	Description	Connector Number	Wire Number	Released	Locked														
1	Axle +ve from ecu	C24_CH	4037	12V	0V														
2	GND return to ecu	C24_CH	4038	GND	Open Circuit														
<p><b>Wires &amp; Connectors:</b></p>	<p>-C24_4WD#1 7212/0203 AXLE LOCK SOL CONN</p> 																		
<p><b>Internal Electrical Schematic:</b></p>																			
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <p>When the machine is static the axle will be locked. The solenoid will receive 0V</p> <p>When the axle is floating is should receive 12V</p>																		

	This will need to be checked with the solenoid plugged in otherwise it will fault.	
<b>Expected Values:</b>		
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1043-17	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to High
	B1044-16	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to Low
	B1045-13	OSCILLATING AXLE Solenoid Valve High Side & Low Side Open
	B1347-17	OSCILLATING AXLE Solenoid Valve Low Side Short Circuit to High
	B1348-16	OSCILLATING AXLE Solenoid Valve Low Side Short Circuit to Low
	B1349-13	OSCILLATING AXLE Solenoid Valve Fault

### 4.26.20 Over Ride Switch

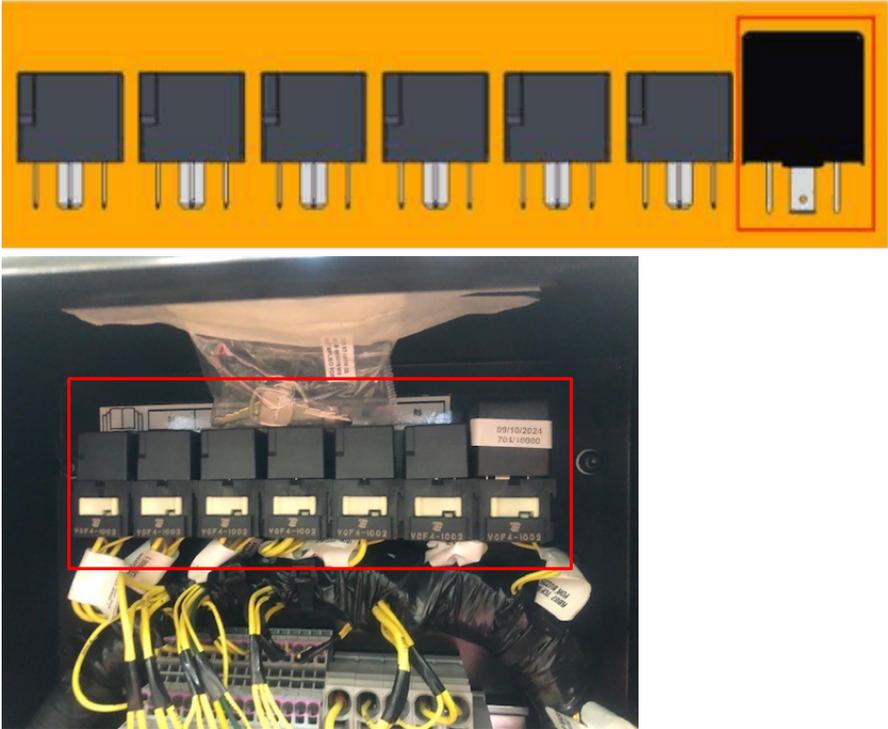
<b>Component :</b>	Over Ride Switch
<b>Function:</b>	<ul style="list-style-type: none"> <li>• The override switch is used for emergency purposes to allow someone to rescue incapacitated operator.</li> <li>• The switch needs to be held with the ignition cycle while switch is still pressed, on start up this will then allow one function at a time to be operated via the electric pump to bring the operator down.</li> <li>• As soon as the switch is released then override function will drop out.</li> <li>• If override is operated the machine will need to be checked over and the reset via service master tool.</li> <li>• This switch is an on - on switch.</li> <li>• Both contacts should always be on/off at opposite times otherwise the ecu will detect a fault</li> </ul>
<b>Location:</b>	Override switch located at base, on the Turntable control panel.

<p><b>Location Image:</b></p>																									
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description/ Signal</th> <th>Connector number</th> <th>Wire number(s)</th> <th>Voltage unpressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Pressed Contact</td> <td>C200-1_TCP</td> <td>63</td> <td>3.4V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Power in (10V)</td> <td>C200-2_TCP</td> <td>3042</td> <td>10V</td> <td>NA</td> </tr> <tr> <td>3</td> <td>Unpressed Contact</td> <td>C200-3_TCP</td> <td>62</td> <td></td> <td>10V</td> </tr> </tbody> </table>	Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed	1	Pressed Contact	C200-1_TCP	63	3.4V	10V	2	Power in (10V)	C200-2_TCP	3042	10V	NA	3	Unpressed Contact	C200-3_TCP	62		10V
Pin Number	Description/ Signal	Connector number	Wire number(s)	Voltage unpressed	Voltage pressed																				
1	Pressed Contact	C200-1_TCP	63	3.4V	10V																				
2	Power in (10V)	C200-2_TCP	3042	10V	NA																				
3	Unpressed Contact	C200-3_TCP	62		10V																				
<p><b>Wires &amp; Connectors:</b></p>																									
<p><b>Internal Electrical Schematic:</b></p>																									
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <p>Note- Override switch and the base/ platform enable are the same switch at the base control panel. There are NO in state</p> <ol style="list-style-type: none"> <li>1. There are 3 contact on the back of switch.</li> </ol>																								

	<p>2. Check terminal 1, 2 &amp; 3 connected correctly with wiring harness terminal 1,2 &amp; 3 respectively.</p> <p>3. Terminal 2 is for incoming supply</p> <p>4. Check continuity between 'terminal 2 &amp; terminal 3' and 'terminal 2 &amp; terminal 1'. It should not buzz</p> <p>5. When switch is pressed up. Terminal 2 should buzz with bottom terminal &amp; when switch is pressed down. Terminal 2 should buzz with up terminal.</p> <p>6. Check supply at terminal 2. It should read 10V.</p> <p>7. If there is no 10V then investigate wiring as per schematic.</p> <p>8. If there is 10V available and continuity is OK then it should be internal damage to switch. Replace it.</p>														
<p><b>Expected Values:</b></p>															
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1058-17</td> <td>Override Switch is short circuit to high at the base control station</td> </tr> <tr> <td>B1059-16</td> <td>Override switch pressed short circuit to low</td> </tr> <tr> <td>B1060-13</td> <td>Override switch is open circuit on both contacts</td> </tr> <tr> <td>B1061-17</td> <td>Override switch unpressed short circuit to high</td> </tr> <tr> <td>B1062-16</td> <td>Override unpressed position is short circuit to low</td> </tr> <tr> <td>B1063-92</td> <td>Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)</td> </tr> </tbody> </table>	Fault Code	Description	B1058-17	Override Switch is short circuit to high at the base control station	B1059-16	Override switch pressed short circuit to low	B1060-13	Override switch is open circuit on both contacts	B1061-17	Override switch unpressed short circuit to high	B1062-16	Override unpressed position is short circuit to low	B1063-92	Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)
Fault Code	Description														
B1058-17	Override Switch is short circuit to high at the base control station														
B1059-16	Override switch pressed short circuit to low														
B1060-13	Override switch is open circuit on both contacts														
B1061-17	Override switch unpressed short circuit to high														
B1062-16	Override unpressed position is short circuit to low														
B1063-92	Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)														

4.26.21 Buzzer Relay(TCP)

<p><b>Component :</b></p>	<p>Buzzer Relay(TCP)</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• The buzzer is there to warn the operator when either an fault or error has happened with the machine or to warn of machine is awaiting for operator action.</li> <li>• For example, if the foot pedal is pressed for longer than 10 seconds without a function being pressed,this will time out and make the buzzer sound.</li> <li>• The platform buzzer and the base buzzer should be a repeat of each other.</li> </ul>

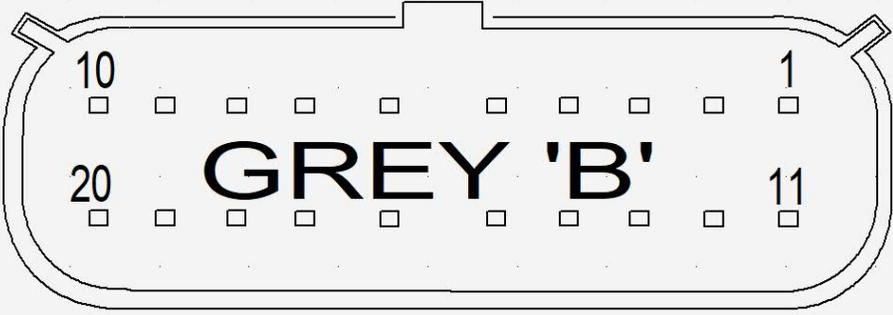
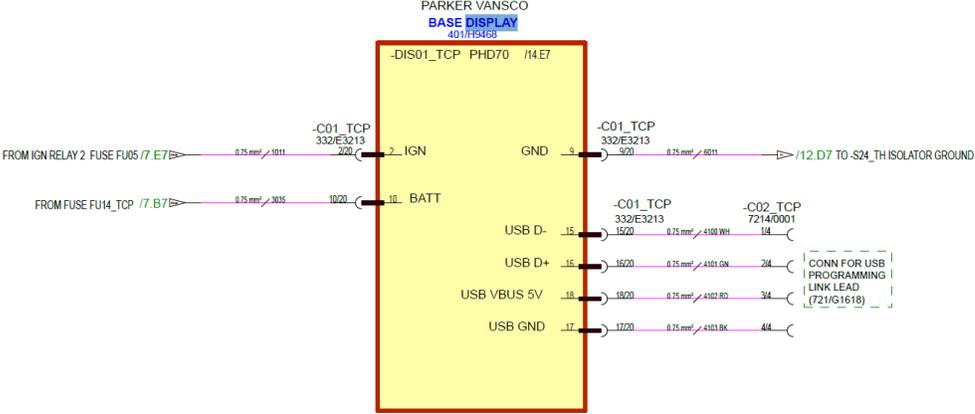
	<ul style="list-style-type: none"> <li>If 1 buzzer is working and the other is not then there is issue with the buzzer.</li> </ul>																		
<p><b>Location:</b></p>	<p>Inside the Base Control Box</p>																		
<p><b>Location Image:</b></p>																			
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buzzer HS</td> <td>4024</td> </tr> <tr> <td>2</td> <td>Buzzer HS</td> <td>-</td> </tr> <tr> <td>3</td> <td>-</td> <td>-</td> </tr> <tr> <td>4</td> <td>GND</td> <td>6024</td> </tr> <tr> <td>5</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	1	Buzzer HS	4024	2	Buzzer HS	-	3	-	-	4	GND	6024	5	-	-
Pin Number	Description	Wire Number																	
1	Buzzer HS	4024																	
2	Buzzer HS	-																	
3	-	-																	
4	GND	6024																	
5	-	-																	

<p><b>Wires &amp; Connectors:</b></p>					
<p><b>Internal Electrical Schematic:</b></p>					
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. There are two buzzer fitted on machine one is inside base control panel and another is inside platform control panel. Ensure no water ingress</li> <li>2. Check supply at connector RB07_TCP pin no 1 &amp; 4 This should read 12V</li> <li>3. If there is no supply check wiring as per the schematic</li> <li>4. If there is supply on harness there may be internal damage to buzzer</li> <li>5. If harness continuity is OK replace the Buzzer</li> </ol> <p>Note-Remove the buzzer from its holder and wire to 12V and GND signals and the buzzer should sound.</p>				
<p><b>Expected Values:</b></p>					
<p><b>Related Fault</b></p>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Fault Code	Description		
Fault Code	Description				

<b>Codes:</b>	B1177-16	BUZZER SC to Low
	B1178-13	BUZZER OC

### 4.26.22 Display 7"

<b>Component :</b>	Display 7"																																
<b>Function:</b>	The display is there to the operator information and also assist with machine maintenance.																																
<b>Location:</b>	The display is located in the turntable control panel.																																
<b>Location Image:</b>																																	
<b>Signal:</b>	<table border="1"> <thead> <tr> <th colspan="3">Connector J1</th> </tr> <tr> <th>Pin Number</th> <th>Signal</th> <th>Wire number in harness</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Ignition wire</td> <td>1011</td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>CAN L</td> <td>Green CAN cable</td> </tr> <tr> <td>8</td> <td>CAN H</td> <td>Yellow CAN cable</td> </tr> </tbody> </table>			Connector J1			Pin Number	Signal	Wire number in harness	1			2	Ignition wire	1011	3			4			5			6			7	CAN L	Green CAN cable	8	CAN H	Yellow CAN cable
Connector J1																																	
Pin Number	Signal	Wire number in harness																															
1																																	
2	Ignition wire	1011																															
3																																	
4																																	
5																																	
6																																	
7	CAN L	Green CAN cable																															
8	CAN H	Yellow CAN cable																															

	<table border="1"> <tr><td>9</td><td>GND</td><td>6011</td></tr> <tr><td>10</td><td>Battery +ve</td><td>3035</td></tr> <tr><td>11</td><td></td><td></td></tr> <tr><td>12</td><td></td><td></td></tr> <tr><td>13</td><td></td><td></td></tr> <tr><td>14</td><td></td><td></td></tr> <tr><td>15</td><td>USB D-</td><td>4100 WH</td></tr> <tr><td>16</td><td>USB D+</td><td>4101 GN</td></tr> <tr><td>17</td><td>USB GND</td><td>4103 BK</td></tr> <tr><td>18</td><td>USB 5V</td><td>4102 RD</td></tr> <tr><td>19</td><td></td><td></td></tr> <tr><td>20</td><td></td><td></td></tr> </table> <p>Connector J2 - not used</p>	9	GND	6011	10	Battery +ve	3035	11			12			13			14			15	USB D-	4100 WH	16	USB D+	4101 GN	17	USB GND	4103 BK	18	USB 5V	4102 RD	19			20		
9	GND	6011																																			
10	Battery +ve	3035																																			
11																																					
12																																					
13																																					
14																																					
15	USB D-	4100 WH																																			
16	USB D+	4101 GN																																			
17	USB GND	4103 BK																																			
18	USB 5V	4102 RD																																			
19																																					
20																																					
<p><b>Wires &amp; Connectors:</b></p>	 <p>J1 - 332/E3213</p>																																				
<p><b>Internal Electrical Schematic:</b></p>	 <p>PARKER VANSCO BASE DISPLAY 401F19368</p> <p>-DIS01_TCP_PHD70 /14E7</p> <p>FROM IGN RELAY 2 FUSE FU05 /7.E7E → 0.75 mm<sup>2</sup> / 1011 → 2_IGN → -C01_TCP 332/E3213 → 2/20 → GND → -C01_TCP 332/E3213 → 5/20 → 0.75 mm<sup>2</sup> / 6011 → /12.D7 TO -S24_TH ISOLATOR GROUND</p> <p>FROM FUSE FU14_TCP /7.B7E → 0.75 mm<sup>2</sup> / 3035 → 10/20 → -10_ BATT</p> <p>USB D- → -15 → -C01_TCP 332/E3213 → 15/20 → 0.75 mm<sup>2</sup> / 4100 WH → 14 → -C02_TCP 7214F0001 → 14 → CONN FOR USB PROGRAMMING LINK LEAD (721/G1618)</p> <p>USB D+ → -16 → -C01_TCP 332/E3213 → 16/20 → 0.75 mm<sup>2</sup> / 4101 GN → 2/4 →</p> <p>USB VBUS 5V → -18 → -C01_TCP 332/E3213 → 18/20 → 0.75 mm<sup>2</sup> / 4102 RD → 3/4 →</p> <p>USB GND → -17 → -C01_TCP 332/E3213 → 17/20 → 0.75 mm<sup>2</sup> / 4103 BK → 4/4 →</p>																																				
<p><b>Testing:</b></p>	<p>1. Check IGN RELAY 2 FUSE FU05 and wire 1011.</p>																																				

	<ol style="list-style-type: none"> <li>2. Check FUSE FU14 and wire 3035.</li> <li>3. Check Ground cable 6011.</li> <li>4. Check connector and wire for any damage or loose connection.</li> </ol>
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

### 4.26.23 TCP Interface Connector

<b>Component :</b>	TCP Interface Connector
<b>Function:</b>	There is 2 connectors that interface with the machine. Feed the Turntable harness around the base Control panel C39_TH and C50_TH.
<b>Location:</b>	On Base Control Box RHS

<p><b>Location Image:</b></p>																																										
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th colspan="3">C39 pin out</th> </tr> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire num</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FU03_TCP to Bosch ECU power supply</td> <td>1018</td> </tr> <tr> <td>2</td> <td>FU09_TCP to podbox power hold relay</td> <td>34</td> </tr> <tr> <td>3</td> <td>NOT USED</td> <td>NOT USE</td> </tr> <tr> <td>4</td> <td>FU10_TCP to podbox starter relay</td> <td>35</td> </tr> <tr> <td>5</td> <td>NOT USED</td> <td>NOT USE</td> </tr> <tr> <td>6</td> <td>Alternator D+ to D+ relay</td> <td>4005C</td> </tr> <tr> <td>7</td> <td>FY15_TCP to podbox power hold coil</td> <td>3002</td> </tr> <tr> <td>8</td> <td>NOT USED</td> <td>NOT USE</td> </tr> <tr> <td>9</td> <td>NOT USED</td> <td>NOT USE</td> </tr> <tr> <td>10</td> <td>FU13_TCP to Livelink</td> <td>3004</td> </tr> <tr> <td>11</td> <td>S11-3 Din rail terminal to Axle lock pressure sensor</td> <td>1024A</td> </tr> </tbody> </table>			C39 pin out			Pin Number	Description	Wire num	1	FU03_TCP to Bosch ECU power supply	1018	2	FU09_TCP to podbox power hold relay	34	3	NOT USED	NOT USE	4	FU10_TCP to podbox starter relay	35	5	NOT USED	NOT USE	6	Alternator D+ to D+ relay	4005C	7	FY15_TCP to podbox power hold coil	3002	8	NOT USED	NOT USE	9	NOT USED	NOT USE	10	FU13_TCP to Livelink	3004	11	S11-3 Din rail terminal to Axle lock pressure sensor	1024A
C39 pin out																																										
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1	FU03_TCP to Bosch ECU power supply	1018																																								
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4	FU10_TCP to podbox starter relay	35																																								
5	NOT USED	NOT USE																																								
6	Alternator D+ to D+ relay	4005C																																								
7	FY15_TCP to podbox power hold coil	3002																																								
8	NOT USED	NOT USE																																								
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10	FU13_TCP to Livelink	3004																																								
11	S11-3 Din rail terminal to Axle lock pressure sensor	1024A																																								

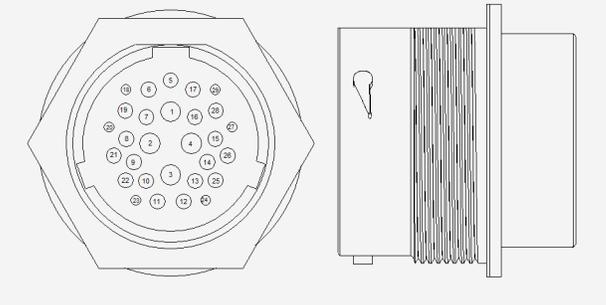
12	FU06_TCP to platform ecu power supply	1025
13	CAN H J1939 to Livelink and platform	
14	CAN L J1939 to Livelink and platform	
15	CAN H J1939 to kohler engine	
16	CAN L J1939 to kohler engine	
17	FU11_TCP to worklights	1031
18	S11-18_TCP Terminal block to turntable earth	6063U
19	D+ signal to Livelink and Bosch base ECU	1032
20	CAN Shield J1939 to kohler engine	
21	S11-11 terminal block to turntable ground	6061H
22	Display GND	6011
23	FU07_TCP to platform ecu supply	1026
24	S11-1_TCP to platform weight sensors	1027
25	CAN Shield to Livelink and platform	
26	CAN H 15765 to kohler engine	
27	CAN L 15765 to Kohler engine	
28	S11-1_TCP to Tilt sensor	1028K
29	FU08_TCP to Bosch base ecu	1029A
<b>C50 Pin out</b>		
<b>Pin Number</b>	<b>Description</b>	<b>Wire num</b>
1	NOT USED	NOT USE
2	NOT USED	NOT USE
3	Platform rotate left sw to base ecu	56
4	Platform rotate right sw to base ecu	57
5	main boom raise sw to base ecu	50
6	main boom lower sw to base ecu	51
7	Slew right switch to base ecu	48
8	Slew left switch to base ecu	49
9	Artic boom raise sw to base ecu	54
10	Artic boom lower sw to base ecu	55
11	main boom telescope extend sw to base ecu	52
12	main boom telescope retract sw to base ecu	53
13	Jib Raise sw to base ecu	58
14	Jib Lower sw to base ecu	59
15	platform level raise sw to base ecu	60
16	platform level lower sw to base ecu	61
17	override ride sw pressed signal to base ecu	63
18	platform enable switch to base ecu	46

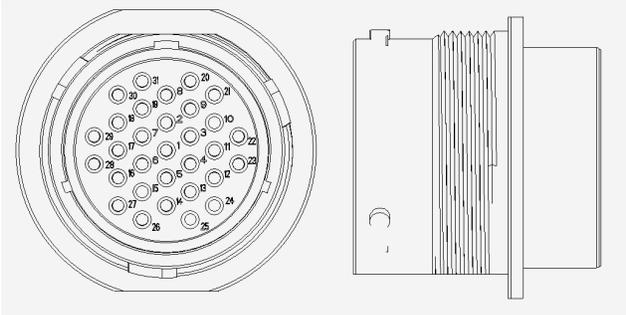
19	base enable switch to base ecu	47
20	NOT USED	NOT USED
21	horn switch to base ecu	65
22	engine start switch to base ecu	66
23	FU01_TCP ignition signal to base ecu	40
24	E-Stop +ve signal to base ecu	41
25	E-Stop -ve to base ecu	42
26	ECU Buzzer output to buzzer	4024
27	base ecu horn output to horn relay	4035
28	Horn relay output to horn	43
29	Override unpressed switch to base ecu	62
30	base ecu 10V feed to panel switches	1030A
31	base ecu 10V feed to panel switches	1030B

**Wires & Connectors:**

**Turntable Interconnect C39**  
**Turntable Interconnect C50**

Connector C39\_TCP:  
Connector C50\_TCP: 31 way Deutsch Inline connector HDP24-24-31P





Connector C50\_TCP Pin out information:

	<p>C39_TH TCP Interconnect</p> <p>55.5</p> <p>25.1 30.4</p> <p>SIDE VIEW</p> <p>LOIS MODIFICATION</p> <p>ISOMETRIC VIEW</p>
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Check all the wire and connector are fitted correctly. No wire should be backed out</li> <li>2. Check male &amp; female connector are mating properly.</li> </ol>
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

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template if you want it completely blank.

# HV Component

## 5 HV Component

### 5.1 48V Contactor

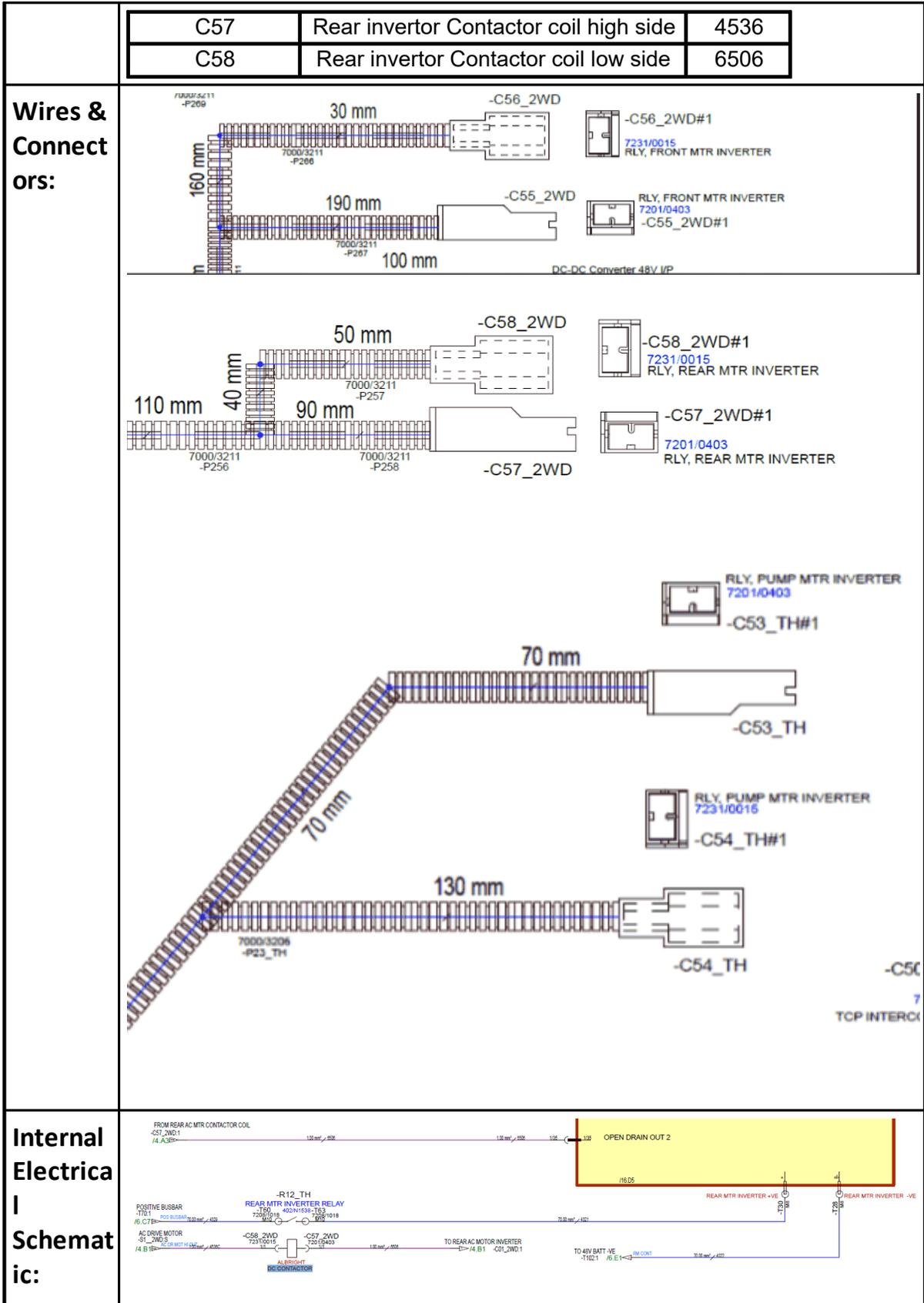
<b>Component:</b>	48V Contactor
<b>Function:</b>	<ul style="list-style-type: none"> <li>• Contactor is used to supply 48V to inventor (front rear &amp; pump).</li> <li>• There are 3 separate contactor for each I inventors ( For Electric Boom).</li> <li>• Contactor coil is controlled by inverter to switch on &amp; off.</li> </ul>
<b>Location:</b>	On Chassis Rear RHS

Location  
Image:



Signal:

Pin Number	Description	Wire Number
C60	Pump Contactor coil high side	4545
C53	Pump Contactor coil low side	6507
C55	Front inverter Contactor coil high side	4540
C56	Front inverter Contactor coil low side	6505



<b>Testing:</b>	<ul style="list-style-type: none"> <li>• Check Resistance on respective DC contactor coil</li> </ul>
<b>Expected Values:</b>	
<b>Related Fault Codes:</b>	

## 5.2 Battery 12V

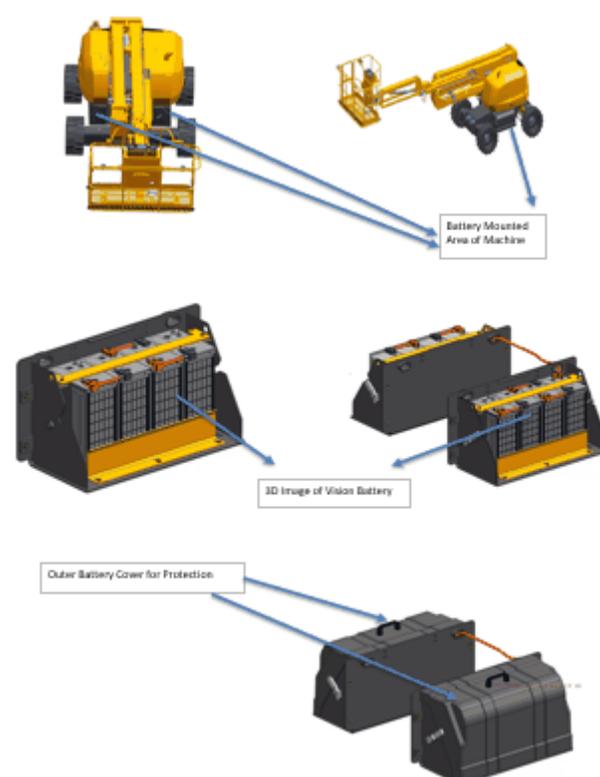
<b>Component :</b>	Battery 12V
<b>Function:</b>	All Boom functions shall be operated from Base & Platform control panel with 12V battery (when Auxiliary/Electric pump is requested).
<b>Location:</b>	12v Battery is location near to BCP

<p><b>Location Image:</b></p>	
<p><b>Signal:</b></p>	<p>12V</p>
<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	<p>Battery Discharged-</p> <p>Ensure the battery has sufficient charge to power the machine.</p> <ul style="list-style-type: none"> <li>• Measure the voltage should be more the 12V If battery has sufficient charge or fault remains, proceed to step 2.</li> <li>• Battery connection fault-Check the electrical connectors from the battery for signs of damage/corrosion, clean the terminals and apply a suitable</li> </ul>

	<p>electrically conductive grease to the connections. Repair/replace battery or connectors as necessary. If the fault remains, proceed to Step 3.</p> <ul style="list-style-type: none"> <li>Poor Earth-Check battery earth and machine earth(s) for signs of damage/corrosion, clean the terminals and ensure bolts are tighten to the appropriate torque (see machine service manual for torque value).</li> </ul>
<b>Expected Values:</b>	12V
<b>Related Fault Codes:</b>	

## 5.3 Battery 48V

<b>Component:</b>	Battery 48V
<b>Function:</b>	<ul style="list-style-type: none"> <li>6V batteries to be connected in series to make 48V system to be used for Electric drive &amp; hydraulic pump drive.</li> <li>The 6V Vision Make (VRLA) maintenance free, non spill able , high capacity (400 AH @ 20-H)</li> </ul>
<b>Location:</b>	<ul style="list-style-type: none"> <li>The 2X4 batteries are located on both side of chassis.</li> <li>Access to batteries for battery removal is through the covers.</li> </ul>

<p><b>Location Image:</b></p>	 <p>The diagram illustrates the battery location on a JCB machine. It shows a top-down view of the machine with blue arrows pointing to the battery area, labeled "Battery Mounted Area of Machine". Below this, there are two 3D views of the "Vision Battery" and an "Outer Battery Cover for Protection".</p>  <p>A close-up photograph of the JCB A45EH machine's battery compartment. The machine is yellow with "JCB" and "A45EH" branding. The battery compartment is a black plastic cover with a handle and a latch. Safety warning icons are visible on the machine's body.</p>
<p><b>Signal:</b></p>	<p>48V</p>

<p><b>Wires &amp; Connectors:</b></p>	
<p><b>Internal Electrical Schematic:</b></p>	<p>The schematic diagram illustrates the high-voltage (HV) system architecture. Key components include:</p> <ul style="list-style-type: none"> <li><b>Battery Pack:</b> A 48V battery pack consisting of six 8V batteries connected in series.</li> <li><b>Positive Busbar:</b> A central red busbar that distributes power to various components.</li> <li><b>DC-DC Converter:</b> A component that converts the battery voltage to a higher level for the charging units.</li> <li><b>Charging Units:</b> A 'SLAVE' unit (Hybrid Only) and a 'MASTER' unit (Hybrid and Electric) connected to a 3-way male HGG. They are powered via 'PART OF CHARGER CABLE'.</li> <li><b>Relays and Fuses:</b> Various relays (e.g., Pre-charge, Four Inverter, DC-DC Converter) and fuses (e.g., F1, F2, F3) are shown to protect the system.</li> <li><b>Wiring:</b> Numerous wires connect the battery, busbar, converter, and charging units, with labels for wire IDs and connector types.</li> </ul>
<p><b>Testing :</b></p>	<p><b>Battery Discharged-</b></p> <ul style="list-style-type: none"> <li>• Ensure the battery has sufficient charge to power the machine. Test state of charge using a battery charger/conditioner. Recharge/replace as required. If battery has sufficient charge or fault remains, proceed to step 2.</li> <li>• Battery connection fault-Check the electrical connectors from the battery for signs of damage/corrosion, clean the terminals and apply a suitable electrically conductive grease to the connections. Repair/replace battery or connectors as necessary. If the fault remains, proceed to Step 3.</li> <li>• Poor Earth-Check battery earth and machine earth(s) for signs of damage/corrosion, clean the terminals and ensure bolts are tighten to the appropriate torque (see machine service manual for torque value). If the fault remains, proceed to Step 4.</li> <li>• Battery fault-Test battery voltage and power hold relay voltage at the ECU. Compare these 2 values. If values do not match, follow the relay testing procedure below:             <ul style="list-style-type: none"> <li>A. Repair or replace as required.</li> </ul> </li> </ul>

	<p>B. With the relay installed, apply 5V across the relay. If the relay does not click, replace the relay. If the fault is still active proceed to step 5.</p> <p>C. Check continuity back to power supply - especially around the pins and coils. Turn on the ignition and check for 5V at the power hold fuse, Podbox connector, inside the Podbox at the power hold relay base power in terminal. Repair or replace as required. If the fault remains, proceed to Step 5.</p> <ul style="list-style-type: none"> <li>Battery charging circuit-Check the battery charge circuit (see engine service manual for alternator diagnosis and repair).Repair/replace as necessary.</li> </ul>
<b>Expected Values:</b>	48V
<b>Related Fault Codes:</b>	

### 5.4 Voltage Convertor 12V to 5V

<b>Component:</b>	Voltage Convertor 12V to 5V								
<b>Function:</b>	5V converter provided to convert 12 V output to 5V for Front wheels.								
<b>Location:</b>									
<b>Location Image:</b>									
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Description</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>A/3</td> <td>12V</td> <td>4512B</td> </tr> </tbody> </table>	Pin Number	Description	Wire Number	A/3	12V	4512B		
Pin Number	Description	Wire Number							
A/3	12V	4512B							

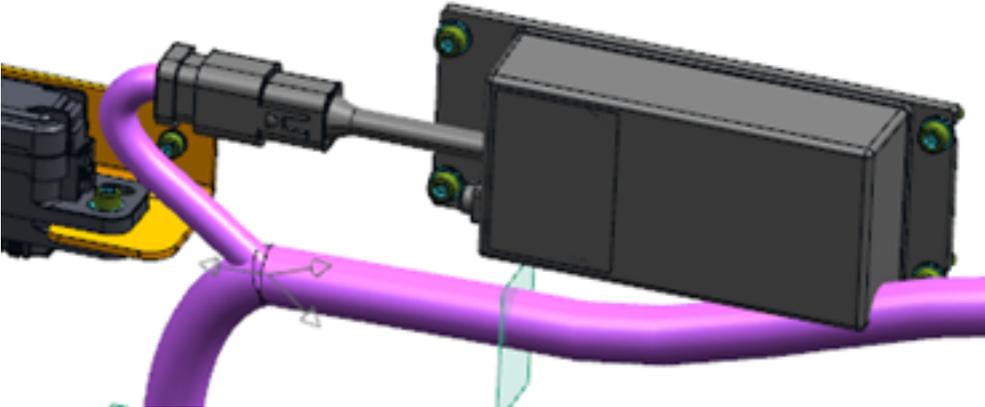
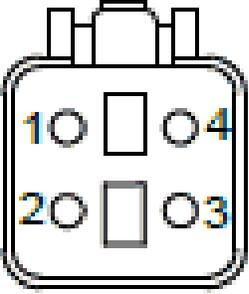
	<table border="1"> <tr> <td>C/3</td> <td>Ground</td> <td>4513B</td> </tr> <tr> <td>B/3</td> <td>OP</td> <td>4512T</td> </tr> </table>	C/3	Ground	4513B	B/3	OP	4512T
C/3	Ground	4513B					
B/3	OP	4512T					
Wires & Connectors:	<p style="text-align: center;">-C03_4WD#1 7213/0098 VOLTAGE CONVERTER</p> <p style="text-align: center;">-C03_4WD</p> <p style="text-align: right;">5V GROUND SPLICE -S6_4WD</p> <p style="text-align: center;">100 mm      50 mm</p>						
Internal Electrical Schematic:							
Testing:							
Expected Values:							
Related Fault Codes:							

### 5.5 High Voltage Fuse

Component:	High Voltage Fuse
------------	-------------------

<b>Function:</b>	<ul style="list-style-type: none"> <li>• High Voltage fuses are used to protect front invert , rear inverter &amp; pump inverter from over current &amp; short circuit.</li> <li>• 500amp used for front and rear drive inverter each 250 amp used for pump.</li> </ul>
<b>Location:</b>	
<b>Location Image:</b>	
<b>Signal:</b>	
<b>Wires &amp; Connectors:</b>	
<b>Internal Electrical Schematic:</b>	
<b>Testing:</b>	Check Continuity between fuse terminal by Multimeter
<b>Expected Values:</b>	Multimeter Beep sound should be when check Continuity between fuse terminal by Multimeter
<b>Related Fault Codes:</b>	

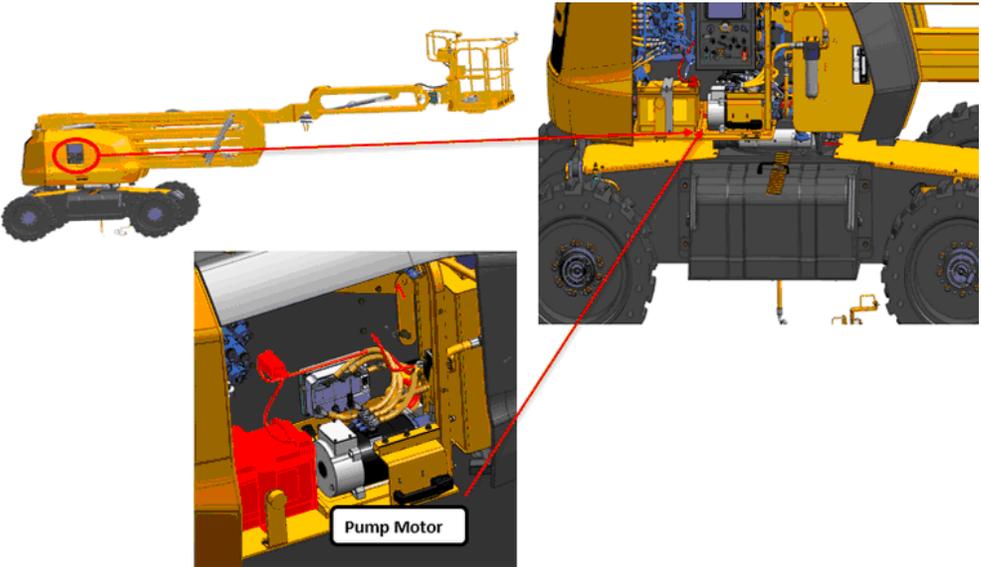
## 5.6 DC Convertor

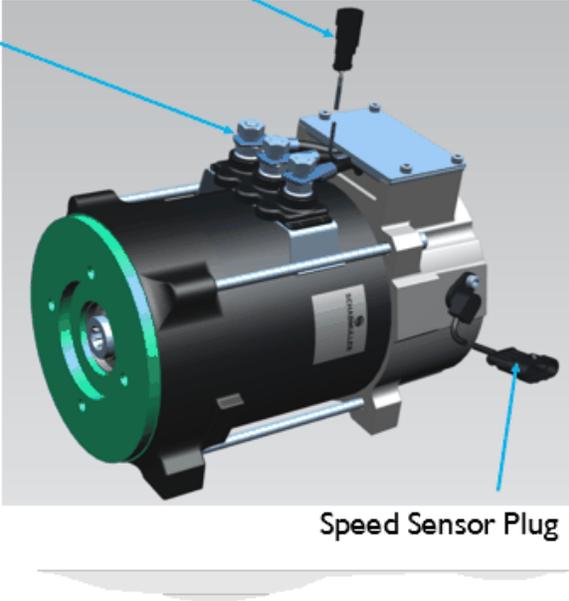
<b>Component:</b>	DC Convertor
<b>Function:</b>	<ul style="list-style-type: none"> <li>• DC converter shall charge the 12V battery from 48V when Isolator is closed.</li> <li>• The 2 DC DC Converters convert 480V DC input, into the 12V DC Output to power the 12V electrics .</li> <li>• The 2 DC DC Converters are wired in parallel to provide a total output of 48Amps @ 12v. If 1 DC DC Fails, the 12v electrics will still work</li> <li>• providing the maximum current draw is less than 24Amps.</li> </ul>
<b>Location:</b>	
<b>Location Image:</b>	
<b>Signal:</b>	The DC Converters receive 48v and output 12v.
<b>Wires &amp; Connectors:</b>	<p>-C80_2WD#1</p> <p>7214/0034</p> <p>DC-DC CONVERTER</p> 



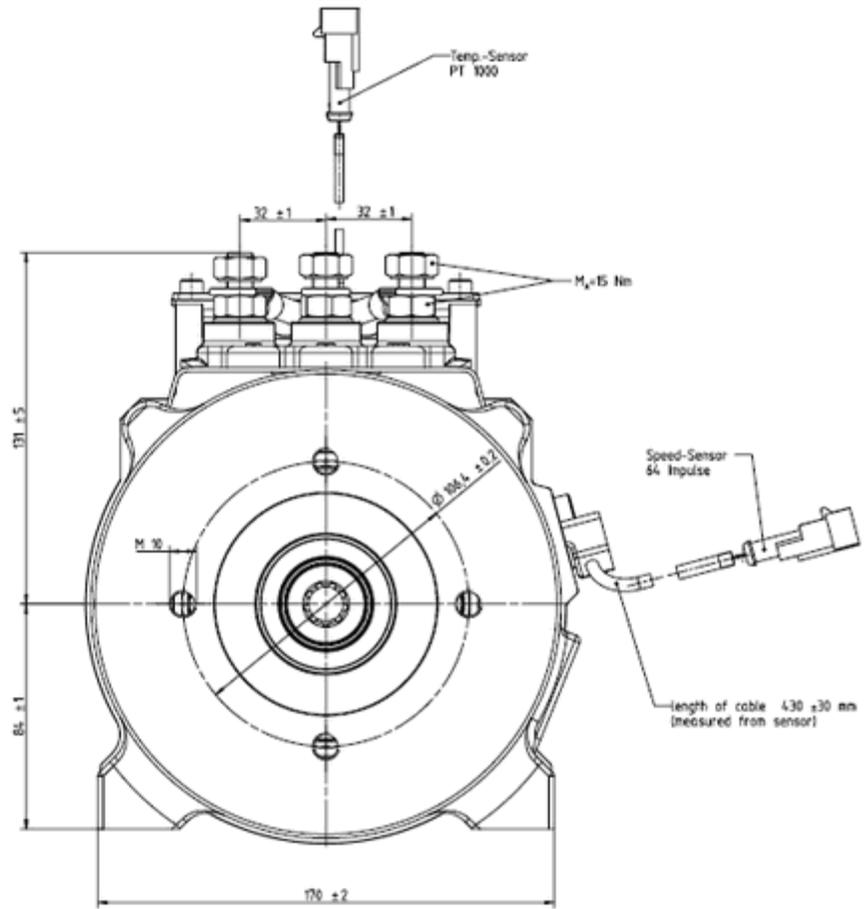
<b>Related Fault Codes:</b>	
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### 5.7 Hydraulic Pump Motor

<b>Component :</b>	Hydraulic Pump Motor
<b>Function:</b>	The Hydraulic Motor run the hydraulic for the all the hydraulic control operation except Drive.
<b>Location:</b>	The AC Hydraulic motor is located near base control panel.
<b>Location Image:</b>	

	 <p>The image shows a 3D CAD model of a hydraulic AC motor. It has a black cylindrical body with a green circular end cap on the left. On top, there are three blue electrical connectors labeled '3 Phase Cables (Delta)'. To the right of these, there is a black plug labeled 'Temp. Sensor Plug'. On the bottom right, there is another black plug labeled 'Speed Sensor Plug'. The motor is mounted on a silver-colored base.</p>
<p><b>Signal:</b></p>	<p>The Hydraulic AC Motor is powered by a 3 phase supply from the MLS unit.</p>

**Wires & Connectors:**

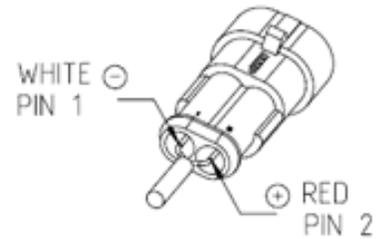
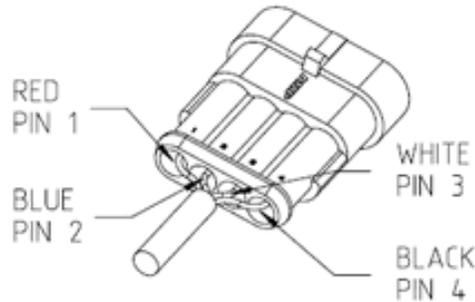


SPEED SENSOR

TEMP. SENSOR PT1000

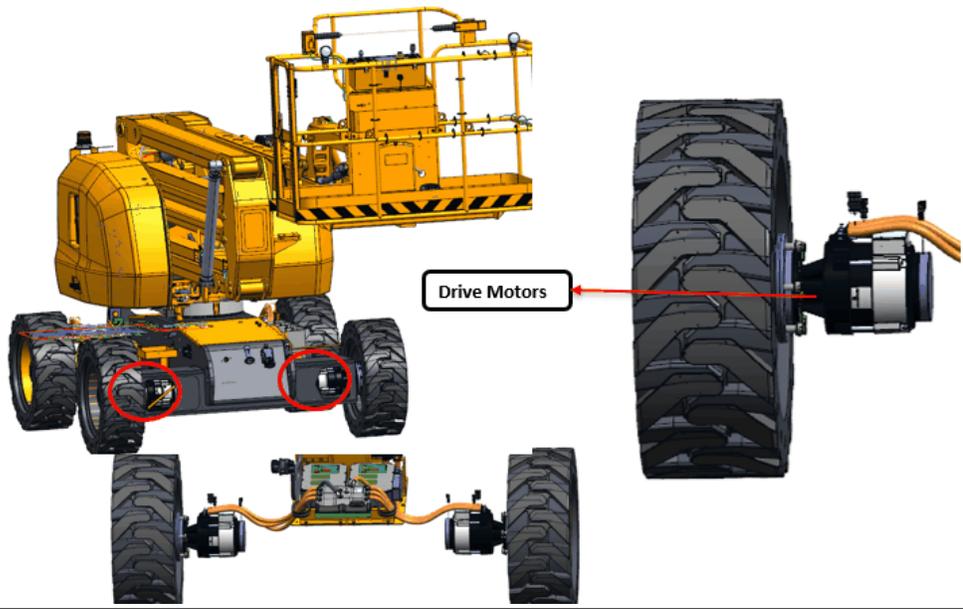
CONNECTOR SUPERSEAL  
 TAB AMP 282106-1  
 PIN AMP 282404-1  
 WIRE SEAL 281934-4

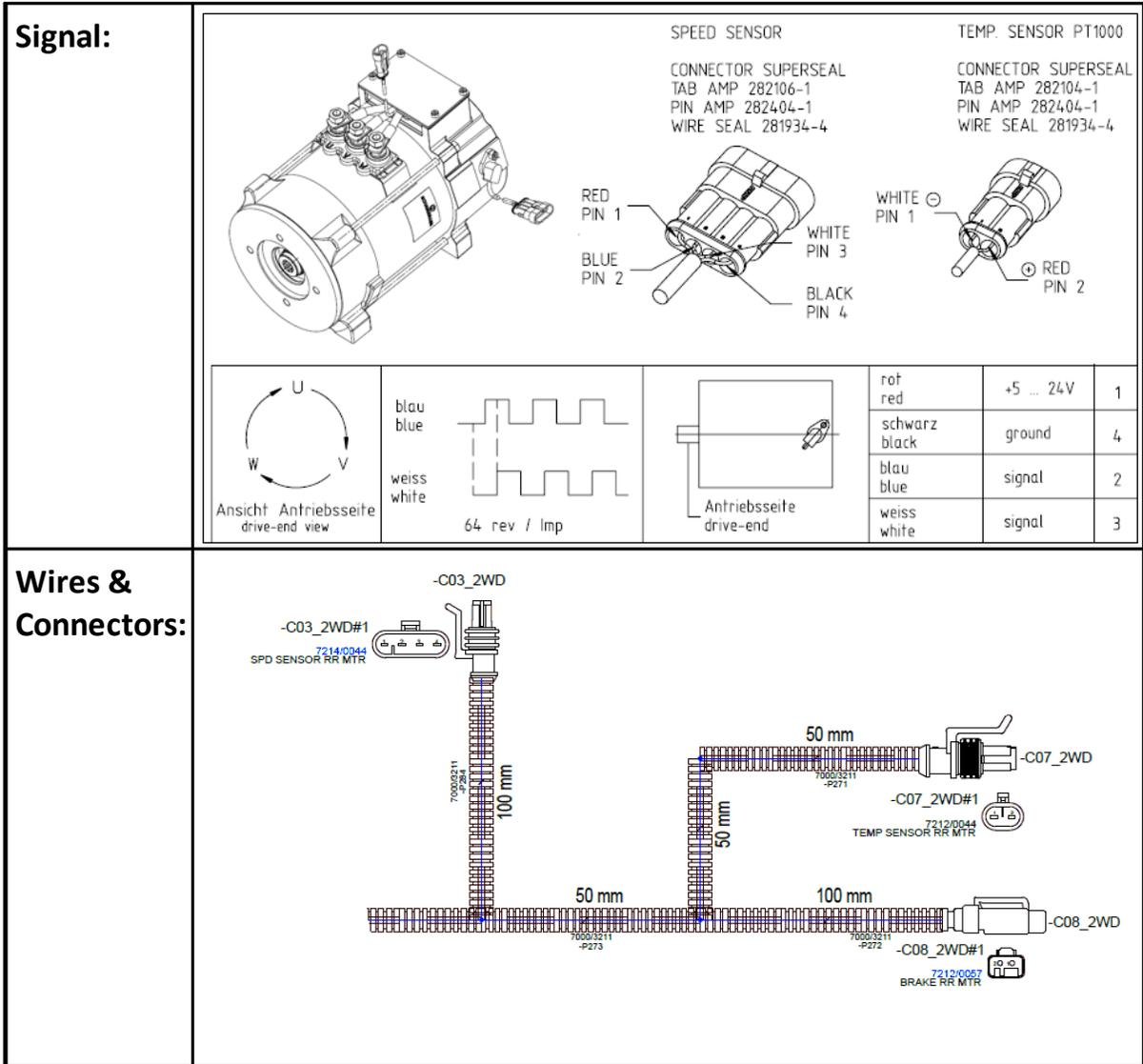
CONNECTOR SUPERSEAL  
 TAB AMP 282104-1  
 PIN AMP 282404-1  
 WIRE SEAL 281934-4



<p><b>Internal Electrical Schematic:</b></p>											
<p><b>Testing:</b></p>	<p>Check Voltage on motor terminal</p>										
<p><b>Expected Values:</b></p>	<p>Supply Voltage 48V</p> <table border="1"> <thead> <tr> <th colspan="2">Pump Motor</th> </tr> </thead> <tbody> <tr> <td>Motor Voltage</td> <td>32V AC</td> </tr> <tr> <td>Current Rating</td> <td>240A</td> </tr> <tr> <td>Speed</td> <td>1920 RPM</td> </tr> <tr> <td>Ingress Protection</td> <td>IP 54</td> </tr> </tbody> </table>	Pump Motor		Motor Voltage	32V AC	Current Rating	240A	Speed	1920 RPM	Ingress Protection	IP 54
Pump Motor											
Motor Voltage	32V AC										
Current Rating	240A										
Speed	1920 RPM										
Ingress Protection	IP 54										
<p><b>Related Fault Codes:</b></p>											

5.8 Traction Motor Rear Drive

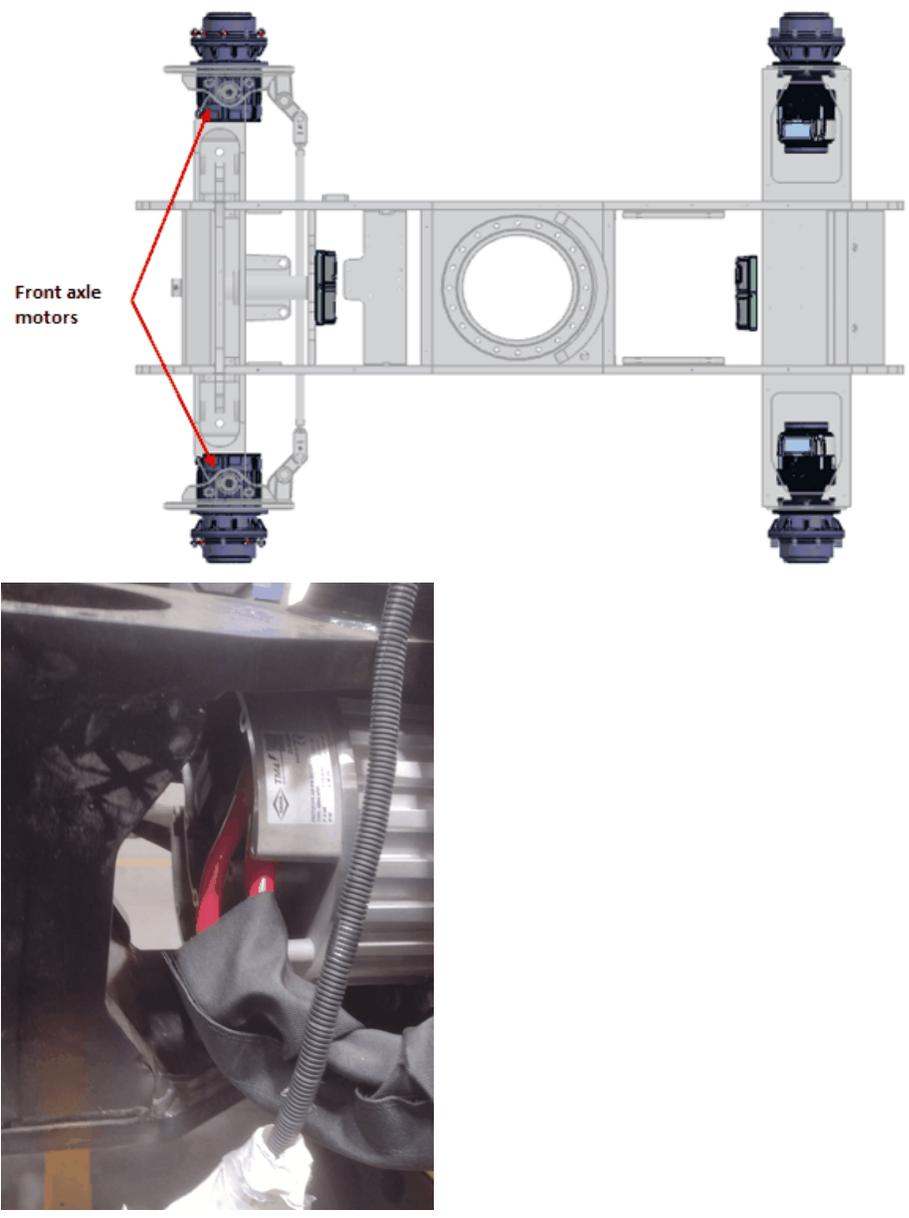
<p><b>Component :</b></p>	<p>Traction Motor Rear Drive</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• Traction motor is a type of electric motor that is specifically designed for providing propulsion or generate the driving of the machine</li> <li>• It delivers torque to drive the wheels or axles of the vehicle, providing the necessary traction to power the vehicle's movement.</li> </ul>
<p><b>Location:</b></p>	<p>The traction motors are mounted onto the chassis wheel motor plates. Mounted to the other side is the Torque Hub.</p>
<p><b>Location Image:</b></p>	

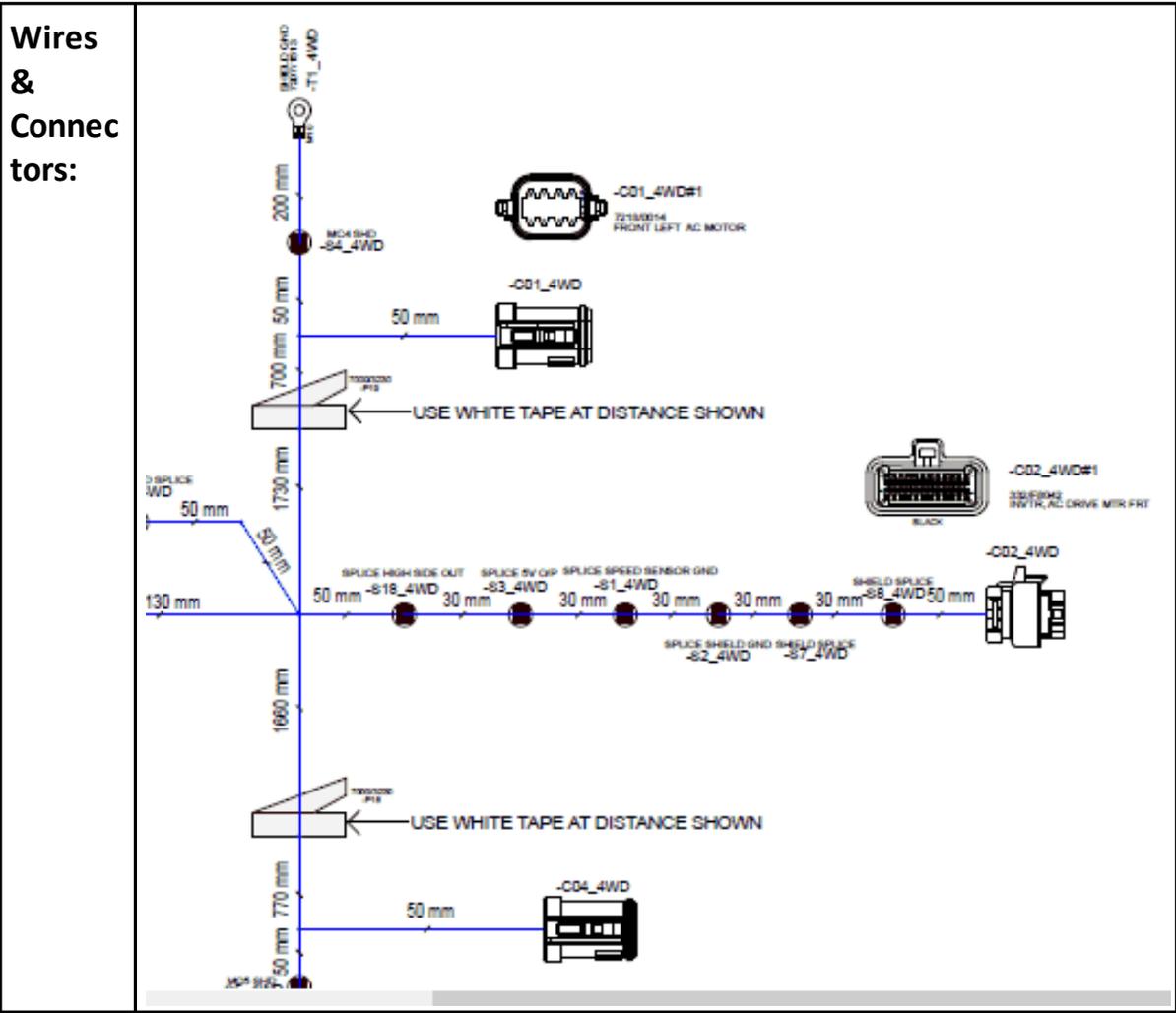


<p><b>Internal Electrical Schematic:</b></p>													
<p><b>Testing:</b></p>	<p>Check Input Voltage</p>												
<p><b>Expected Values:</b></p>	<table border="1"> <thead> <tr> <th colspan="2">AC Drive Motor</th> </tr> </thead> <tbody> <tr> <td>Motor Voltage</td> <td>32V AC</td> </tr> <tr> <td>Motor Current</td> <td>87A</td> </tr> <tr> <td>Speed</td> <td>3230 RPM</td> </tr> <tr> <td>Ingress Protection</td> <td>IP 54</td> </tr> <tr> <td>Supply Voltage</td> <td>48V DC</td> </tr> </tbody> </table>	AC Drive Motor		Motor Voltage	32V AC	Motor Current	87A	Speed	3230 RPM	Ingress Protection	IP 54	Supply Voltage	48V DC
AC Drive Motor													
Motor Voltage	32V AC												
Motor Current	87A												
Speed	3230 RPM												
Ingress Protection	IP 54												
Supply Voltage	48V DC												
<p><b>Related Fault Codes:</b></p>													

### 5.9 Traction Motor Front Drive

<p><b>Component:</b></p>	<p>Traction Motor Front Drive</p>
<p><b>Function:</b></p>	<ul style="list-style-type: none"> <li>• Traction motor is a type of electric motor that is specifically designed for providing propulsion or generate the driving of the machine</li> <li>• It delivers torque to drive the wheels or axles of the vehicle, providing the necessary traction to power the vehicle's movement.</li> </ul>

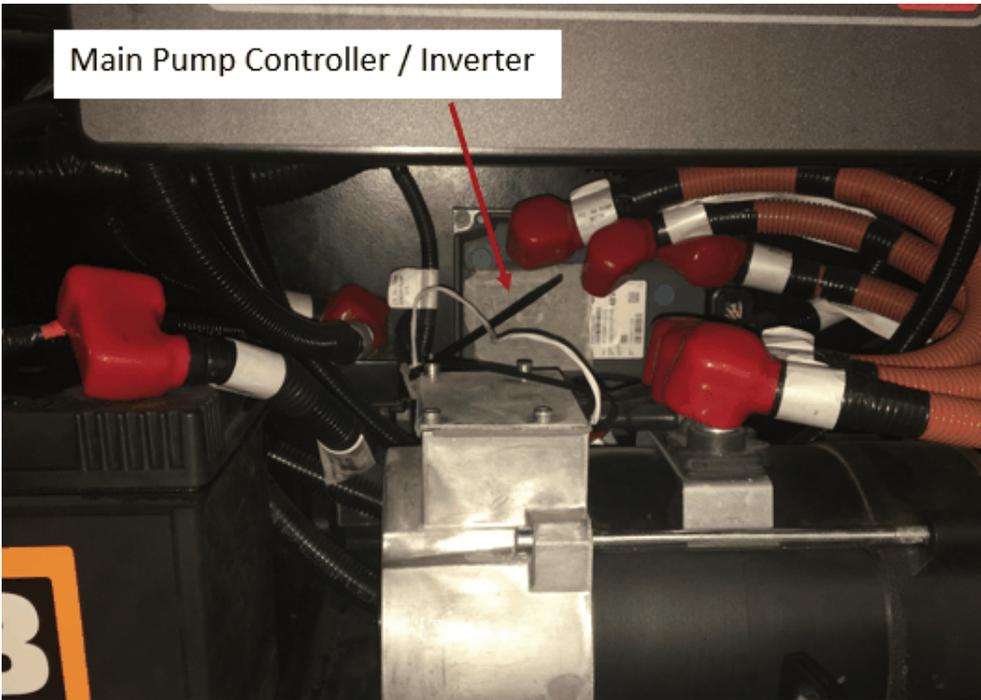
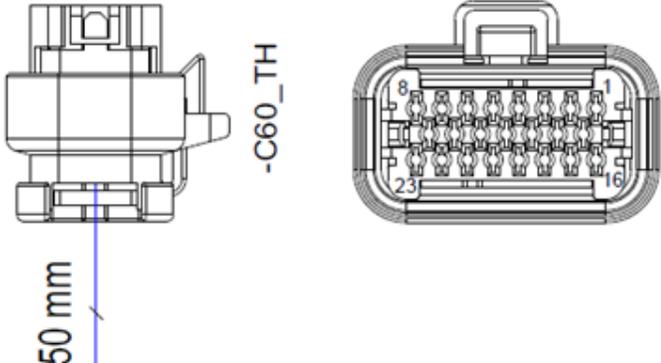
<b>Location:</b>	The traction motors are mounted onto the chassis wheel motor plates. Mounted to the other side is the Torque Hub.
<b>Location Image:</b>	 <p>The image contains two parts. The top part is a technical diagram of a vehicle chassis from a top-down perspective. It shows a central frame with a large circular opening. On the left side, two blue traction motors are mounted on vertical plates. Red lines point from the text 'Front axle motors' to these two motors. On the right side, there are two black torque hubs. The bottom part is a photograph showing a close-up of a blue traction motor mounted on a metal plate. A grey corrugated cable is connected to the motor. A white label with a diamond logo and some text is visible on the motor's housing.</p>
<b>Signal:</b>	



<p><b>Internal Electric al Schematic:</b></p>													
<p><b>Testing:</b></p>	<p>Check Input Voltage</p>												
<p><b>Expected Values:</b></p>	<table border="1"> <tr> <td>Motor Type</td> <td>IPM</td> </tr> <tr> <td>Speed</td> <td>6750 RPM Max.</td> </tr> <tr> <td>No. of Poles</td> <td>8</td> </tr> <tr> <td>IP Class</td> <td>IP67</td> </tr> <tr> <td>Speed Sensor</td> <td>SIN/COS Encoder (4 Per Revolution)</td> </tr> <tr> <td>Temperature Sensor</td> <td>PT1000</td> </tr> </table>	Motor Type	IPM	Speed	6750 RPM Max.	No. of Poles	8	IP Class	IP67	Speed Sensor	SIN/COS Encoder (4 Per Revolution)	Temperature Sensor	PT1000
Motor Type	IPM												
Speed	6750 RPM Max.												
No. of Poles	8												
IP Class	IP67												
Speed Sensor	SIN/COS Encoder (4 Per Revolution)												
Temperature Sensor	PT1000												
<p><b>Related Fault Codes:</b></p>													

### 5.10 Pump Invertor

<p><b>Component :</b></p>	<p>Pump Invertor</p>
<p><b>Function:</b></p>	<p>Invertor is converting DC supply to AC supply to run the AC motor and controlling the Motors.</p>
<p><b>Location:</b></p>	<p>On Turntable near 12V Battery, LHS canopy</p>

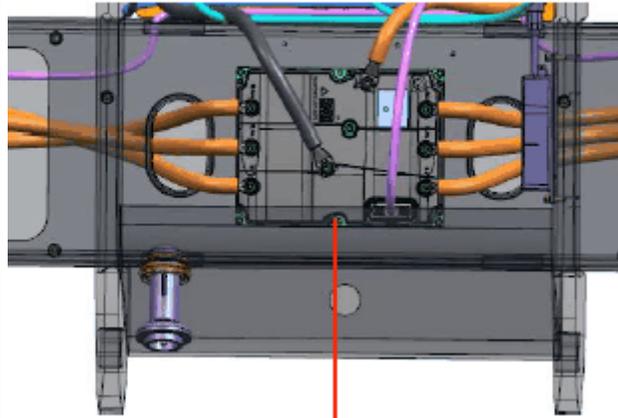
<p><b>Location Image:</b></p>	 <p>Main Pump Controller / Inverter</p>
<p><b>Signal:</b></p>	
<p><b>Wires &amp; Connectors:</b></p>	 <p>50 mm</p> <p>-C60_TH</p> <p>-C60_TH#1 7219/0351 INVERTER, PUMP MTR</p>

<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

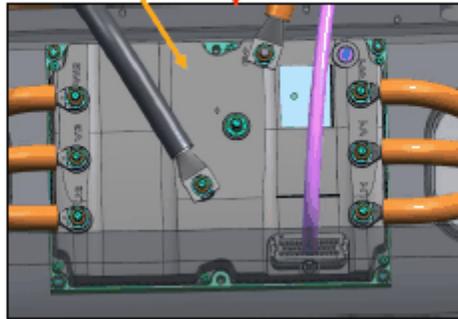
## 5.11 Front Traction Inverter

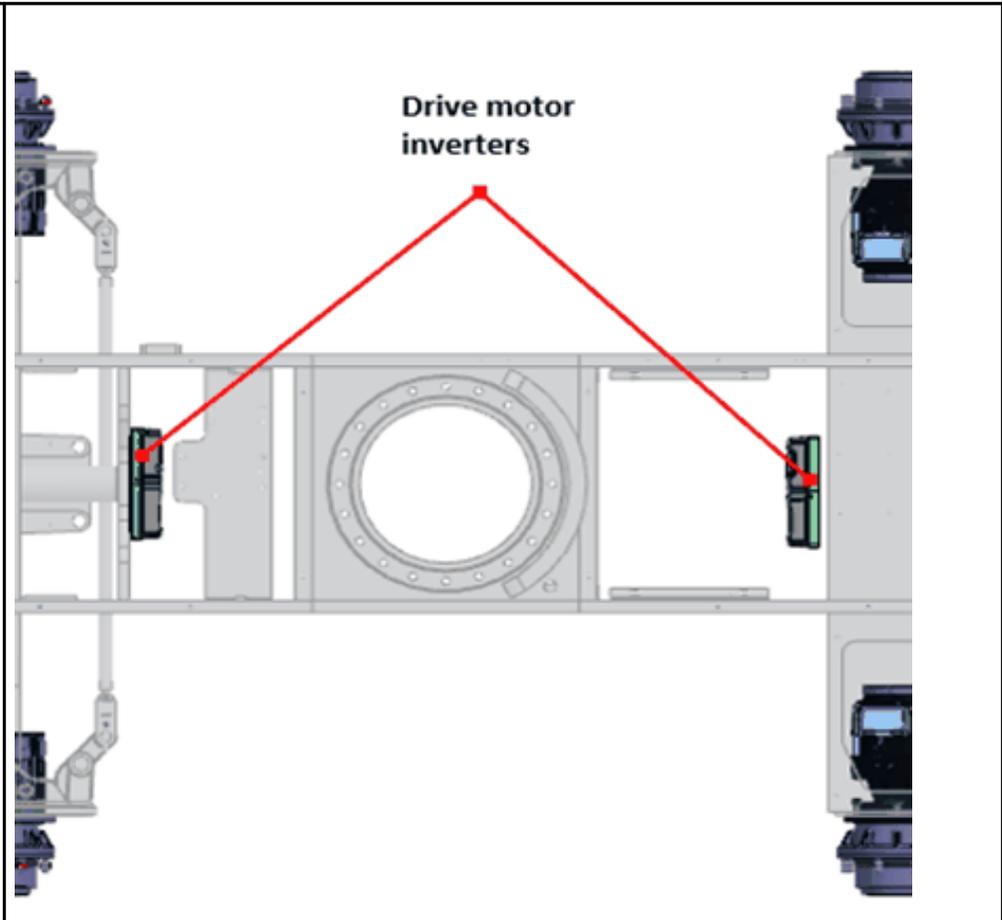
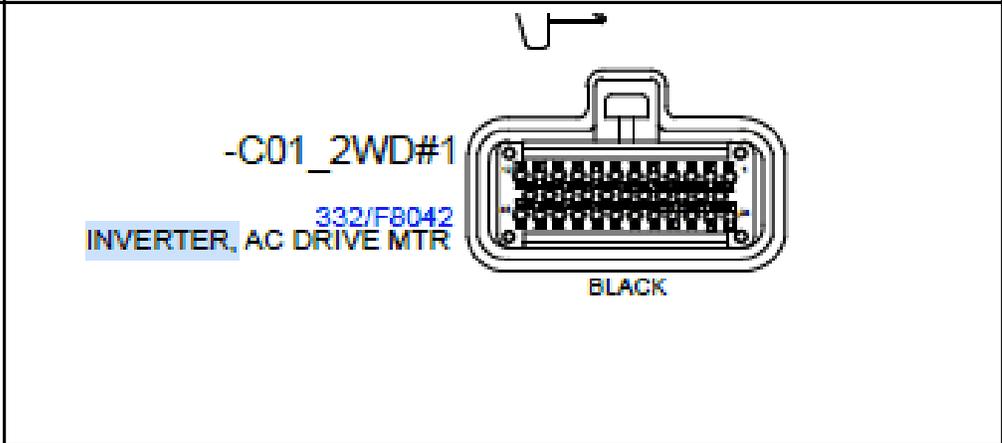
<p><b>Component :</b></p>	<p>Front Traction Inverter</p>
<p><b>Function:</b></p>	<p>Inventor is converting DC supply to AC supply to run the AC motor and controlling the Motors.</p>
<p><b>Location:</b></p>	<p>On Chassis near axle</p>

**Location  
Image:**



INVERTER AC DRIVE  
MOTOR - FRONT

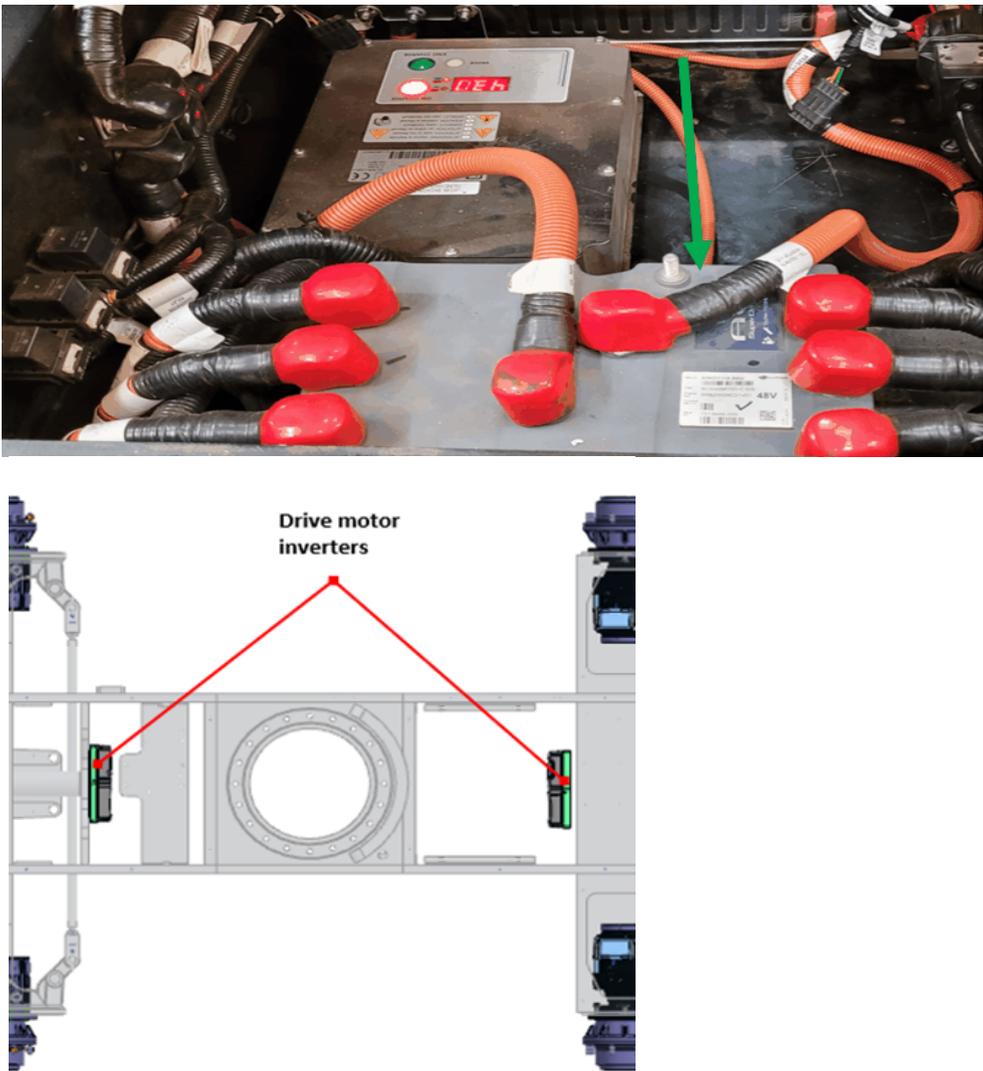
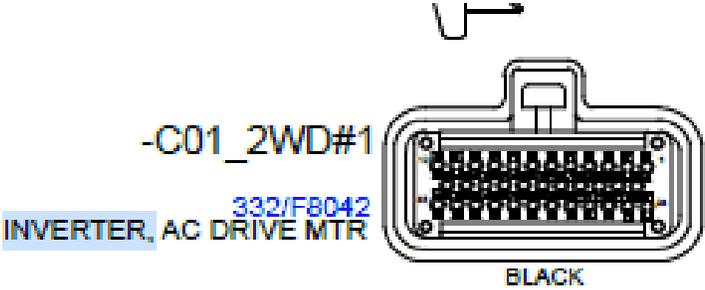


	 <p>Drive motor inverters</p>
<p>Signal:</p>	
<p>Wires &amp; Connectors:</p>	 <p>-C01_2WD#1 332/F8042 INVERTER, AC DRIVE MTR BLACK</p>

<p><b>Internal Electrical Schematic:</b></p>	
<p><b>Testing:</b></p>	
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

### 5.12 Rear Traction Invertor

<p><b>Component :</b></p>	<p>Rear Traction Invertor</p>
<p><b>Function:</b></p>	<p>Invertor is converting DC supply to AC supply to run the AC motor and controlling the Motors.</p>
<p><b>Location:</b></p>	<p>On Chassis Near axle</p>

<p><b>Location Image:</b></p>	 <p>The top image shows a close-up of a vehicle's high-voltage battery pack. A green arrow points to a specific connector on the right side of the pack. The bottom image is a schematic diagram of the battery pack, with a red arrow pointing to two green connectors labeled 'Drive motor inverters'.</p>
<p><b>Signal:</b></p>	
<p><b>Wires &amp; Connectors:</b></p>	 <p>-C01_2WD#1 332/F8042 INVERTER, AC DRIVE MTR BLACK</p> <p>The diagram shows a rectangular connector with a latch on top and a pin header. The text below the connector identifies it as -C01_2WD#1, 332/F8042, INVERTER, AC DRIVE MTR, and BLACK.</p>

<p><b>Internal Electrical Schematic:</b></p>	<p>The diagram illustrates the internal electrical connections for three main components: AC Drive Motor (Left), Inverter (Center), and Rear Motor (Right). The AC Drive Motor section includes terminals for SP SENS (12V, GND, SIG), TEMP SENS (+VE, -VE), BRAKE (+VE, GND), and TOOL_RELAY. The Inverter section features terminals for SENS SUPPLY (12V), ENCODER (IN 1A, IN 1B), MOTOR 1/2 TEMP, OPEN DRAIN (OUT 1, 2, 3), and KEY_INPUT. The Rear Motor section includes terminals for SP SENS (12V, GND, SIG), TEMP SENS (+VE, -VE), BRAKE (+VE, GND), and TOOL_RELAY. Connections are shown with color-coded lines (purple, blue, red) and include labels for relays like 'REAR MOTOR INVERTER RELAY' and 'Rear Motor Inverter Relay'. A central yellow box highlights the Inverter's internal components.</p>
<p><b>Testing:</b></p>	
<p><b>Expected Values:</b></p>	
<p><b>Related Fault Codes:</b></p>	

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template if you want it completely blank.

# Machine Fault Codes

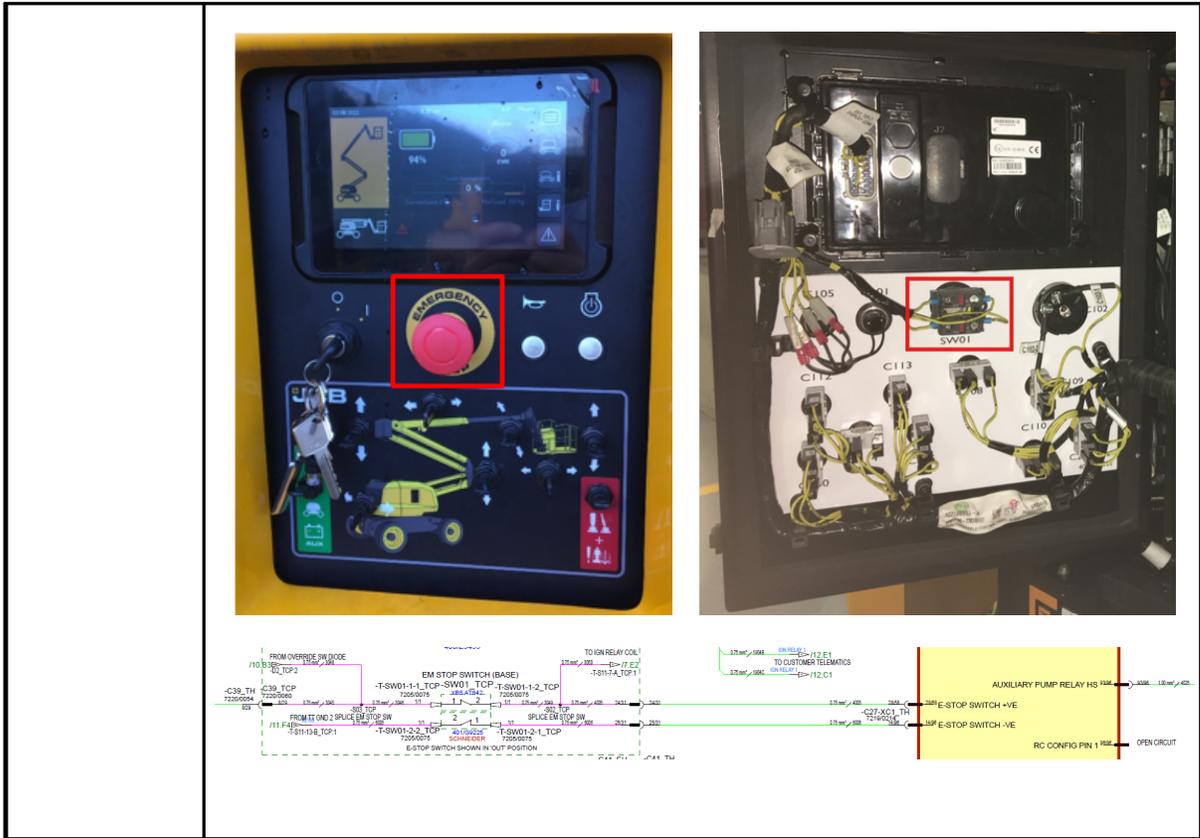
## 6 Machine Fault Codes

### 6.1 DTC ERROR CODE

#### DTC Error Codes

##### 6.1.1 B1001-17

<b>Error code:</b>	<b>B1001-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop Plausibility Check
<b>Component</b> :	E-Stop(s)
<b>Vehicle reaction:</b>	Disable all outputs except CAN (Emergency stop pressed) Default to E-Stop pressed condition
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A poor connection or damaged terminal within the connector(s)</li> <li>3. A damaged or broken wire within the wiring harness</li> <li>4. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check no short in wiring harness between E-STOP SWITCH +VE to GND or E-STOP -VE to GND on Base E-Stop terminals.</li> <li>2. Check terminals for damage at E-stop terminals, -SW01_TCP(terminals 24/31 and 25/31), -SW01_TCP(terminals 24/31 and 25/31) and on Base Bosch ECU Connector (-C27-XC1_TH, Pin 14/96 and -C27-XC2_TH, Pin 28/58).</li> <li>3. Check Continuity of wire #4005-#3049 and #6006 between Bosch Base ECU and E-Stop terminals.</li> <li>4. Check operation of E-Stop switch to ensure correct switching. Contacts should be normally closed during normal operation (Unpressed) and Open contacts when switch is pressed. Switch terminal attached to wire #3049 should be 12V (unpressed) and 0V (pressed). Switch terminal attached to wire #6006 should be 0V (GND) (Unpressed) and open circuit to GND when pressed. IF fault found, check operation of switch with multimeter, checking the closed and open conditions.</li> </ol>



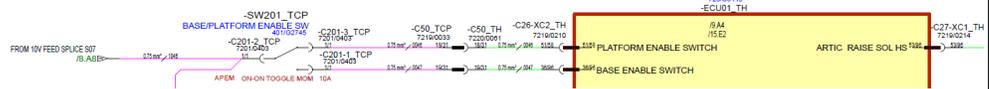
6.1.2 B1005-24

<b>Error code:</b>	<b>B1005-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Enable Switch Short Circuit to High(10V)
<b>Component</b> :	Base Enable Switch
<b>Vehicle reaction:</b>	Before operation: Default to platform controls Allow base enable After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	1. A short circuit within the wiring harness 2. A short circuit within the harness connectors 3. Water damage/ingress within the harness connectors 4. Damaged component

**Service Action:**

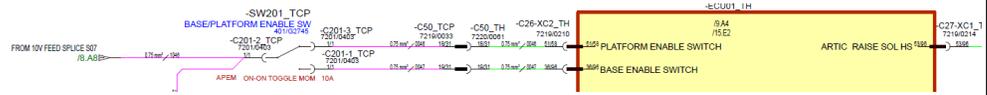
1. Check wiring between Base enable Switch and Base Bosch ECU. Check interconnect connector. Check wiring and diode between override switch and e-stop switch.
2. Disconnect connector to Bosch ECU, check continuity between Base Enable switch terminals -C201-3 & -C201-1. This should be 'Open Circuit'. Investigate if testing does not concur.
3. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.
4. Check operation of Base Enable Switch.



### 6.1.3 B1006-16

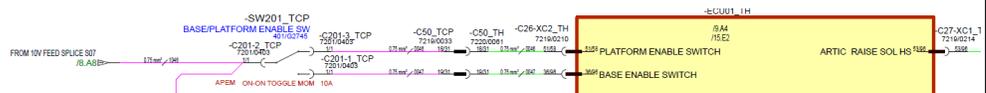
<b>Error code:</b>	<b>B1006-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Enable Switch SC to High
<b>Component</b> :	Platform Enable Switch

<b>Vehicle reaction:</b>	Before operation: Disable engine and default to platform controls Allow base override After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Platform Enable Switch and Platform Bosch ECU.</li> <li>2. Disconnect connector to Bosch ECU, check continuity between Platform Enable Switch terminals -C201-1 &amp; -C201-2. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>3. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>4. Check operation of Platform Enable Switch.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center;">  </div>

6.1.4 B1007-16

<b>Error code:</b>	<b>B1007-16</b>
<b>ECU</b>	Platform ECU

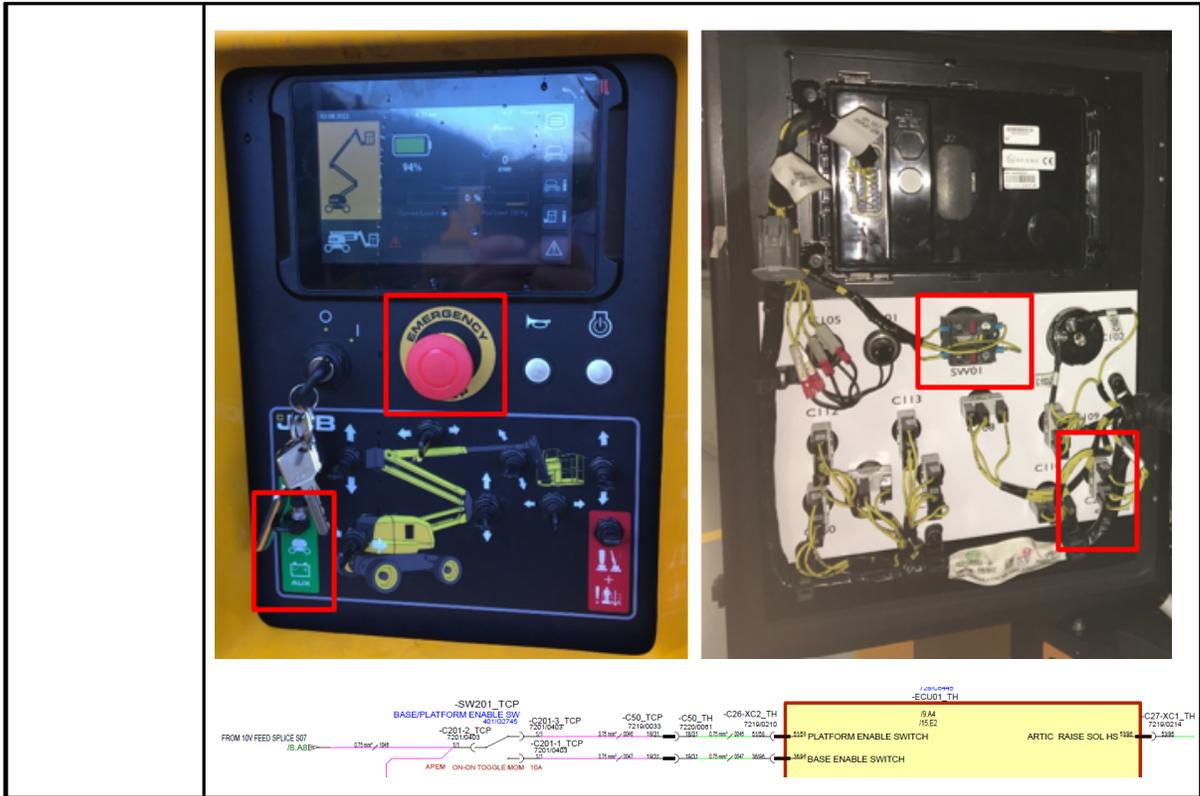
<b>Description</b> :	Platform Enable & Base Enable Selector both activated (5 - 10V)
<b>Component</b> :	Base Enable Switch
<b>Vehicle reaction:</b>	Disable engine and default to platform controls Allow base override
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Platform Enable Switch and Platform Bosch ECU.</li> <li>2. Disconnect connector to Bosch ECU, check continuity between Enable Switch terminals -C201-3 &amp; -C201-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>3. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>4. Check operation of Enable Switch.</li> </ol>



6.1.5 B1008-16

<b>Error code:</b>	<b>B1008-16</b>
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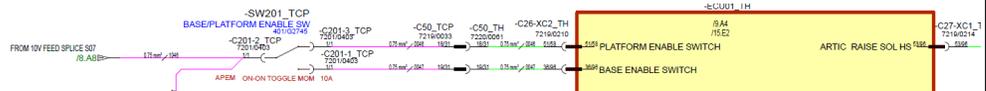
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Enable Switch Short Circuit to Low
<b>Component</b> :	Base Enable Switch
<b>Vehicle reaction:</b>	<p>Before operation:            Disable engine and default to platform controls            Allow base override</p> <p>After operation: Refer to 10V System Short Circuit Fault reaction</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Base Enable Switch and Base Bosch ECU. Check interconnect connector.</li> <li>2. Check the wiring has not been shorted to the chassis of the vehicle (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect connector to Bosch ECU, check continuity between Base Enable switch terminals -C201-3 &amp; -C201-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>4. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>5. Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.</li> </ol>



6.1.6 B1009-16

<b>Error code:</b>	<b>B1009-16</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Platform Enable Switch Short Circuit to Low
<b>Component :</b>	Platform Enable Switch
<b>Vehicle reaction:</b>	Before operation: Disable engine and default to platform controls Allow base override After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	1. A short circuit within the wiring harness 2. A short circuit to the chassis 3. A short circuit within the harness connectors 4. Water damage/ingress within the harness connectors 5. Damaged component

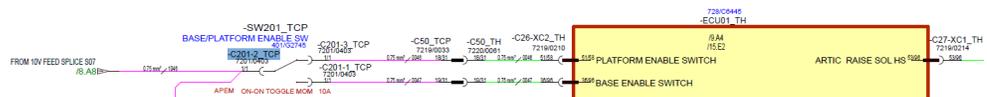
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Platform Enable Switch and Platform Bosch ECU.</li> <li>2. Check the wiring has not been shorted to the chassis of the vehicle (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect connector to Bosch Platform ECU, check continuity between Enable switch terminals -C201-3 &amp; -C201-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>4. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>5. Check operation of Enable Switch. Check for any physical damage to the switch, connectors or harness components.</li> </ol>
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6.1.7 B1010-13

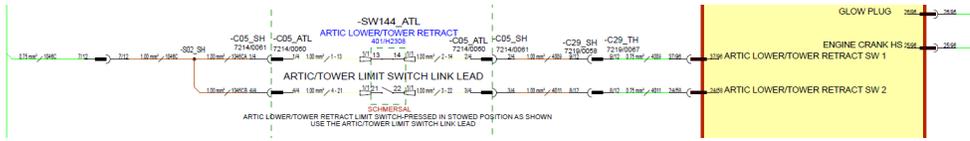
<b>Error code:</b>	<b>B1010-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Base Enable Switch Open Circuit AND Platform Enable Switch Open Circuit
<b>Component :</b>	Base Enable Switch
<b>Vehicle reaction:</b>	Disable engine and default to platform controls. Allow base override
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A poor connection or damaged terminal within the connector(s)</li> <li>2. A damaged or broken wire within the wiring harness</li> <li>3. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. At Base Control Panel, measure voltage at Base/Platform Enable Switch Terminal -C201-2_TCP (Measure between Terminal and Turntable Ground). If voltage is not present, Check interconnect -C50_TH (31-way HDP). Measure Voltage at pin 30/31 (Wire #1046). If voltage not present, Check continuity from -C50_TH Pin 30 to Bosch Base ECU Pin 32/58 (Wire #1046A) (Disengage Bosch ECU connector to perform this test). If no continuity - Check Continuity from Bosch Base ECU Pin 32/58 to -C50_TH pin 31/31 (Wire #1065). Note, this should be the same voltage and continuity as Pin 30/31. If Pin -C50_TH Pin 31 has continuity and voltage is present, Consider wire break of Wire #1046 between Splice -S07_TH and -C50 Pin 30/31.</li> <li>2. Check Interconnects -C50_TH and -C50_TCP. Check for backed out pins or wire damage to pins. Check interconnects -C50_TCP Pins 18/31 and</li> </ol>

19/31. Check Continuity from Base/Platform Enable Switch -C201-3 to Base Bosch ECU Pin 51/58 and also from -S201-1 to Base Bosch ECU Pin 36/96.  
 3. Confirm correct operation of Base/Platform Enable Switch -SW201\_TCP.  
 Check all wiring is intact.



## 6.1.8 B1011-17

<b>Error code:</b>	<b>B1011-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Artic Boom Lower Limit Switch 1 Short Circuit to High
<b>Component</b> :	Artic Boom Lower Limit Switch
<b>Vehicle reaction:</b>	Default to raised position so machine is at slow speed, prevent main boom raise, articulated boom raise and telescopic extend functions

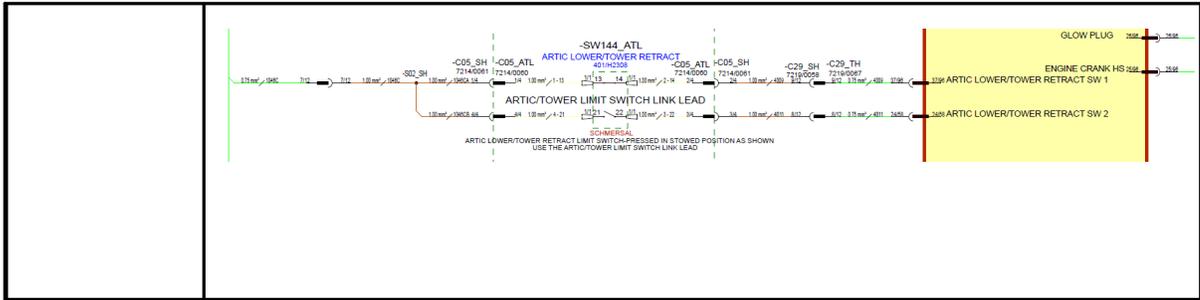
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Remove switch cover lid.</li> <li>2. Check for water ingress/corrosion.</li> <li>3. Check inputs on pin 13 and 21 for 10volt input.</li> <li>4. Check Ground cable 1046C for and cut or damage.</li> <li>5. Check Base ECU pin 37/96 and 24/58 for bent or loose connection.</li> <li>6. Check wire from limit switch to Base ECU connector 4009 and 4011.</li> <li>7. Check if valve is mechanically jammed</li> <li>8. Check switch function with multi-meter.</li> <li>9. Turn machine ignition on and off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="text-align: center; margin-top: 10px;">  </div>

**6.1.9 B1012-17**

<b>Error code:</b>	<b>B1012-17</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	Artic Boom Lower Limit Switch 2 Short Circuit to High
<b>Component</b> :	Artic Boom Lower Limit Switch
<b>Vehicle reaction:</b>	Default to raised position so machine is at slow speed, prevent main boom raise, articulated boom raise and telescopic extend functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Remove switch cover lid.</li> <li>2. Check for water ingress/corrosion.</li> <li>3. Check inputs on pin 13 and 21 for 10volt input.</li> <li>4. Check Ground cable 1046C for and cut or damage.</li> <li>5. Check Base ECU pin 37/96 and 24/58 for bent or loose connection.</li> <li>6. Check wire from limit switch to Base ECU connector 4009 and 4011.</li> <li>7. Check if valve is mechanically jammed</li> <li>8. Check switch function with multi-meter.</li> <li>9. Turn machine ignition on and off to clear code.</li> </ol>





### 6.1.10 B1013-16

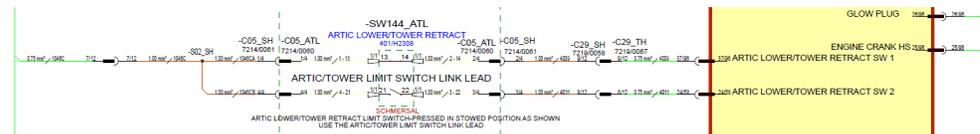
<b>Error code:</b>	<b>B1013-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Artic Boom Lower Limit Switch 1 Short Circuit to Low
<b>Component</b> :	Artic Boom Lower Limit Switch
<b>Vehicle reaction:</b>	Default to raised position so machine is at slow speed, prevent main boom raise, articulated boom raise and telescopic extend functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Remove switch cover lid.</li> <li>2. Check for water ingress/corrosion.</li> <li>3. Check inputs on pin 13 and 21 for 10volt input.</li> <li>4. Check Ground cable 1046C for bent and cut or damage.</li> <li>5. Check Base ECU pin 37/96 and 24/58 for bent or loose connection.</li> <li>6. Check wire from limit switch to Base ECU connector 4009 and 4011.</li> <li>7. Check if valve is mechanically jammed</li> <li>8. Check switch function with multi-meter.</li> <li>9. Turn machine ignition on and off to clear code.</li> </ol>



### 6.1.11 B1014-13

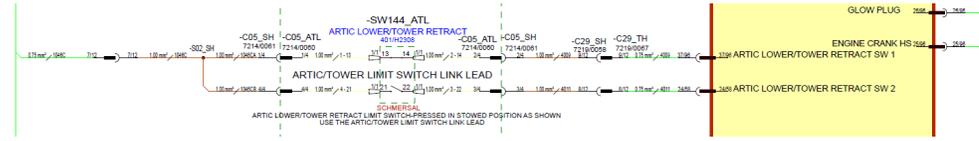
<b>Error code:</b>	<b>B1014-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Artic Boom Lower Limit Switch 1 AND Switch 2 Open Circuit
<b>Component :</b>	Limit Switch
<b>Vehicle reaction:</b>	Default to raised position so machine is at slow speed, prevent main boom raise, articulated boom raise and telescopic extend functions.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in switch</li> <li>4. Broken switch</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Remove switch cover lid.</li> <li>2. Check for water ingress/corrosion.</li> </ol>

3. Check inputs on pin 13 and 21 for 10volt input.
4. Check Ground cable 1046C for and cut or damage.
5. Check Base ECU pin 37/96 and 24/58 for bent or loose connection.
6. Check wire from limit switch to Base ECU connector 4009 and 4011.
7. Check if valve is mechanically jammed
8. Check switch function with multi-meter.
9. Turn machine ignition on and off to clear code.



### 6.1.12 B1015-16

<b>Error code:</b>	<b>B1015-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Artic Boom Lower Limit Switch 2 Short Circuit to Low
<b>Component</b> :	Artic Boom Lower Limit Switch
<b>Vehicle reaction:</b>	Default to raised position so machine is at slow speed, prevent main boom raise, articulated boom raise and telescopic extend functions

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Remove switch cover lid.</li> <li>2. Check for water ingress/corrosion.</li> <li>3. Remove switch cover, Check if pin 22 as continuity to ground</li> <li>4. Check inputs on pin 13 and 21 for 10volt input.</li> <li>5. Check Ground cable 1046C for and cut or damage.</li> <li>6. Check Base ECU pin 37/96 and 24/58 for bent or loose connection.</li> <li>7. Check wire from limit switch to Base ECU connector 4009 and 4011.</li> <li>8. Check if valve is mechanically jammed</li> <li>9. Check switch function with multi-meter.</li> <li>10. Turn machine ignition on and off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div> <div style="text-align: center; margin-top: 10px;">  </div>

**6.1.13 B1016-92**

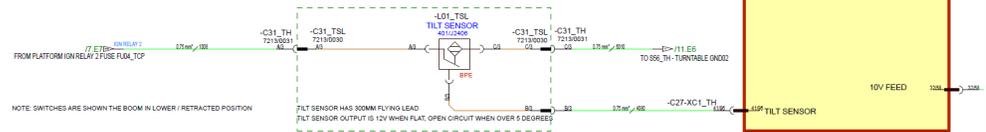
<b>Error code:</b>	<b>B1016-92</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	Artic Boom Lower Limit Switch 1 AND Switch 2 short to 10V
<b>Component</b> :	Artic Boom Lower Limit Switch
<b>Vehicle reaction:</b>	default to raised position so machine is at slow speed, prevent main boom raise, articulated boom raise and telescopic extend functions.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in switch</li> <li>4. Broken switch</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Remove switch cover lid.</li> <li>2. Check for water ingress/corrosion.</li> <li>3. Check inputs on pin 13 and 21 for 10volt input.</li> <li>4. Check Ground cable 1046C for and cut or damage.</li> <li>5. Check Base ECU pin 37/96 and 24/58 for bent or loose connection.</li> <li>6. Check wire from limit switch to Base ECU connector 4009 and 4011.</li> <li>7. Check if valve is mechanically jammed</li> <li>8. Check switch function with multi-meter.</li> <li>9. Turn machine ignition on and off to clear code.</li> </ol>
	



**6.1.14 B1017-17**

<b>Error code:</b>	<b>B1017-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	TILT Sensor SC to High (not possible to detect until sensor connected to 10V)
<b>Component :</b>	Tilt Sensor
<b>Vehicle reaction:</b>	Implement tilt alarm, when in raised position: prevent travel, prevent main boom and articulated boom raise and telescopic extend blocked
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Tilt Sensor not connected correctly</li> <li>2. A short circuit within the wiring harness</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged or Faulty component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check connections to tilt sensor</li> <li>2. Check the voltage at Pin A ( should read 12V) if no voltage need to investigate as per schematic</li> <li>2. Check wiring at tilt sensor connector</li> <li>3. Recalibrate Til Sensor</li> <li>4. Replace the tilt sensor if damage or Faulty</li> </ol>

NOTE: SWITCHES ARE SHOWN THE BOOM IN LOWER / RETRACTED POSITION

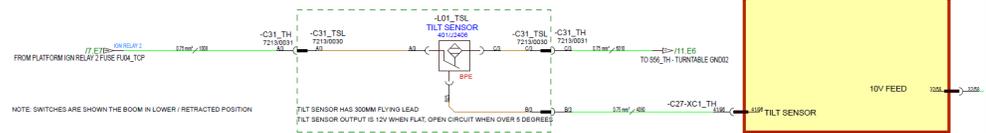
TILT SENSOR HAS 300MM FLYING LEAD  
TILT SENSOR OUTPUT IS 12V WHEN FLAT. OPEN CIRCUIT WHEN OVER 5 DEGREES

### 6.1.15 B1018-16

<b>Error code:</b>	<b>B1018-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Tilt Sensor short circuit to low
<b>Component</b> :	Tilt Sensor
<b>Vehicle reaction:</b>	Implement tilt alarm, when in raised position: prevent travel, prevent main boom and articulated boom raise and telescopic extend blocked
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Tilt Sensor not connected correctly</li> <li>2. A short circuit within the wiring harness</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged or Faulty component</li> </ol>

**Service Action:**

1. Check connections to tilt sensor
2. Check the voltage at Pin A ( should read 12V) if no voltage need to investigate as per schematic
2. Check wiring at tilt sensor connector
3. Recalibrate Til Sensor
4. Replace the tilt sensor if damage or Faulty

NOTE: SWITCHES ARE SHOWN THE BOOM IN LOWER / RETRACTED POSITION

TLT SENSOR HAS 300MM FLYING LEAD  
TLT SENSOR OUTPUT IS 12V WHEN FLAT. OPEN CIRCUIT WHEN OVER 5 DEGREES

6.1.16 B1019-17

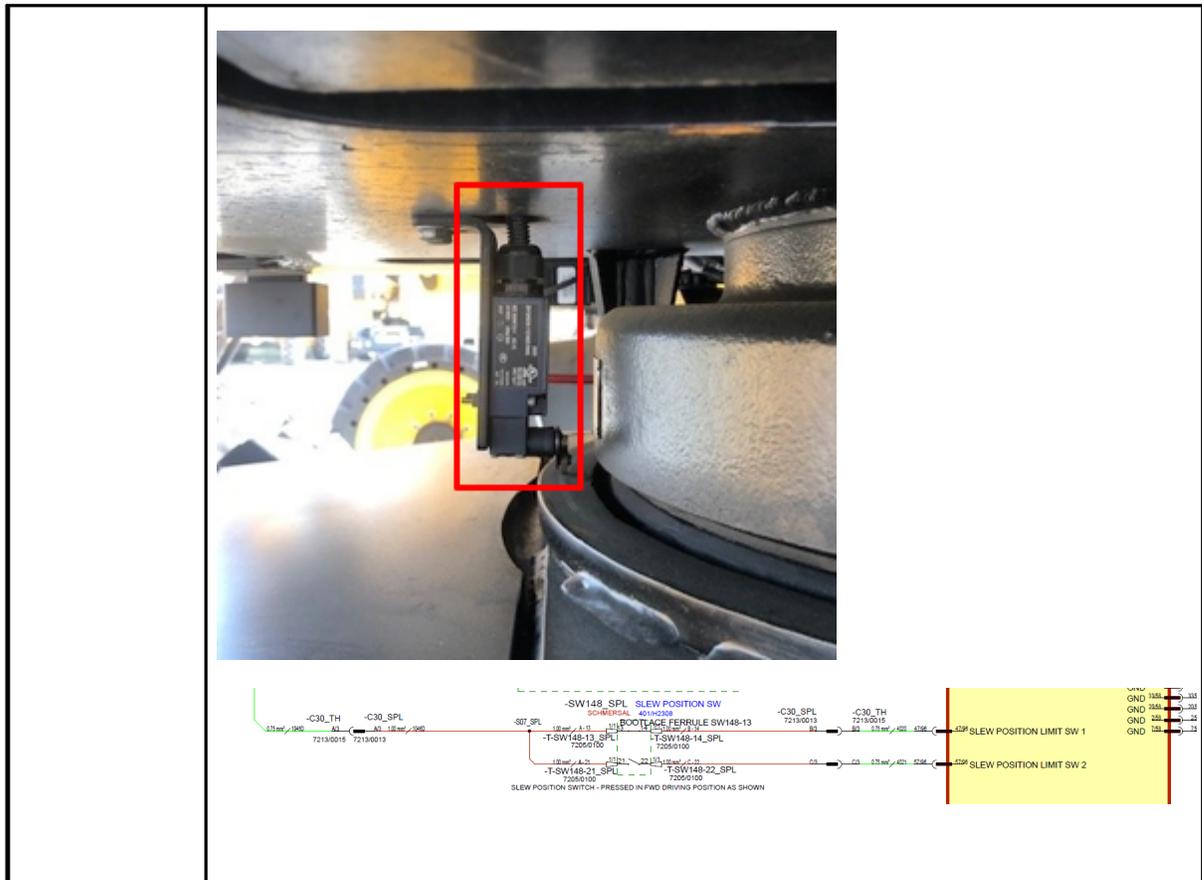
<b>Error code:</b>	<b>B1019-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW POSITION Limit Switch 1 Short Circuit to High
<b>Component</b> :	Slew Limit Switch 1
<b>Vehicle reaction:</b>	Default to Slew position Implement slew acknowledge safety function (SF#10) in all positions

	Implement axle lock in all positions (axle is locked)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Slew Position Switch -SW148_SPL Pin 14. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check Interconnect -C30_SPL / -C30_TH. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 14, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Interconnects, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</li> </ol> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div>

6.1.17 B1020-17

<b>Error code:</b>	<b>B1020-17</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW POSITION Limit Switch 2 Short Circuit to High
<b>Component</b> :	Slew Limit Switch 1
<b>Vehicle reaction:</b>	Default to Slew position Implement slew acknowledge safety function (SF#10) in all positions Implement axle lock in all positions (axle is locked)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Slew Position Switch -SW148_SPL Pin 14. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check Interconnect -C30_SPL / -C30_TH. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 14, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Interconnects, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</li> </ol>



**6.1.18 B1021-16**

<b>Error code:</b>	<b>B1021-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW POSITION Limit Switch 1 Short Circuit to Low
<b>Component</b> :	Slew Limit Switch 1
<b>Vehicle reaction:</b>	Default to Slew position Implement slew acknowledge safety function (SF#10) in all positions Implement axle lock in all positions (axle is locked)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>

<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage of Slew Position Switch -SW148_SPL Pin 14. Actuate the switch to check that the voltage level changes between 0V and 10V. If this does not happen, check operation of switch. Check Interconnect -C30_SPL / -C30_TH. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 14, measure voltage of switch output at this pin. If voltage remains at 0V when switch is actuated then there is a short circuit to ground within the switch or the input to the switch.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Interconnects, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</li> </ol> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div>
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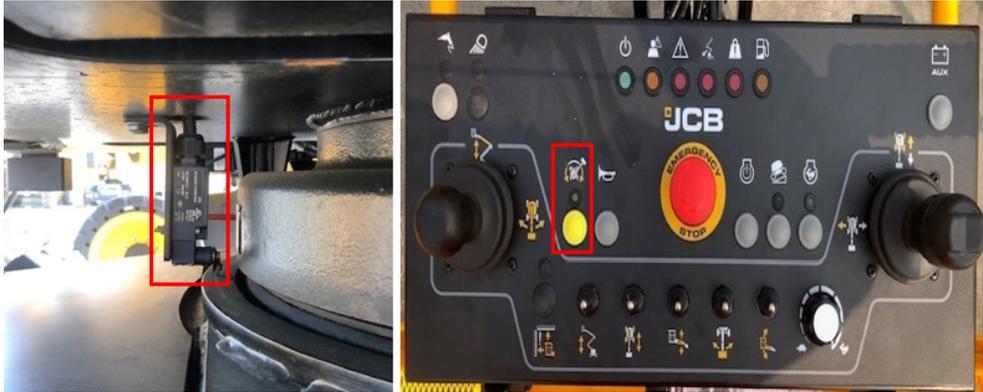
**6.1.19 B1022-13**

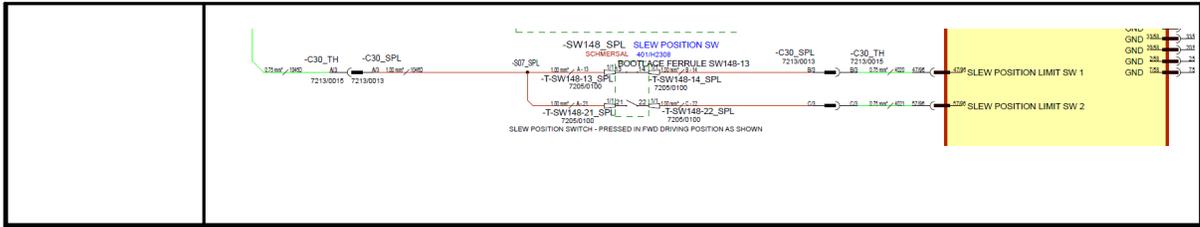
<b>Error code:</b>	<b>B1022-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 Open Circuit

<b>Component</b> :	Slew Limit Switch(es)
<b>Vehicle reaction:</b>	1. Default to Slew position 2. Implement slew acknowledge safety function (SF#10) in all positions 3. Implement axle lock in all positions (axle is locked)
<b>Possible Cause:</b>	1. A poor connection or damaged terminal within the connector(s) 2. A damaged or broken wire within the wiring harness 3. Component is damaged
<b>Service Action:</b>	1. Check Terminals at Slew Position Switch -SW148_SPL. Check Terminals at interconnects -C30_SPL / -C30_TH. Check terminals at Base Bosch ECU Connectors. Ensure all connectors are fully seated. 2. Check continuity with resistance meter between -C30_TH to Slew Position Switch -SW148_SPL terminals. Check from -C30_TH Pins B and C to Base Bosch ECU Connector Pins 47/96 and 57/96 respectively. 3. Check Operation of Slew Position Switch. Observe all parts for damage. Check terminals no9t backed out in Base Bosch ECU Connector. Check Terminals within -C30_TH and -C30_SPL,



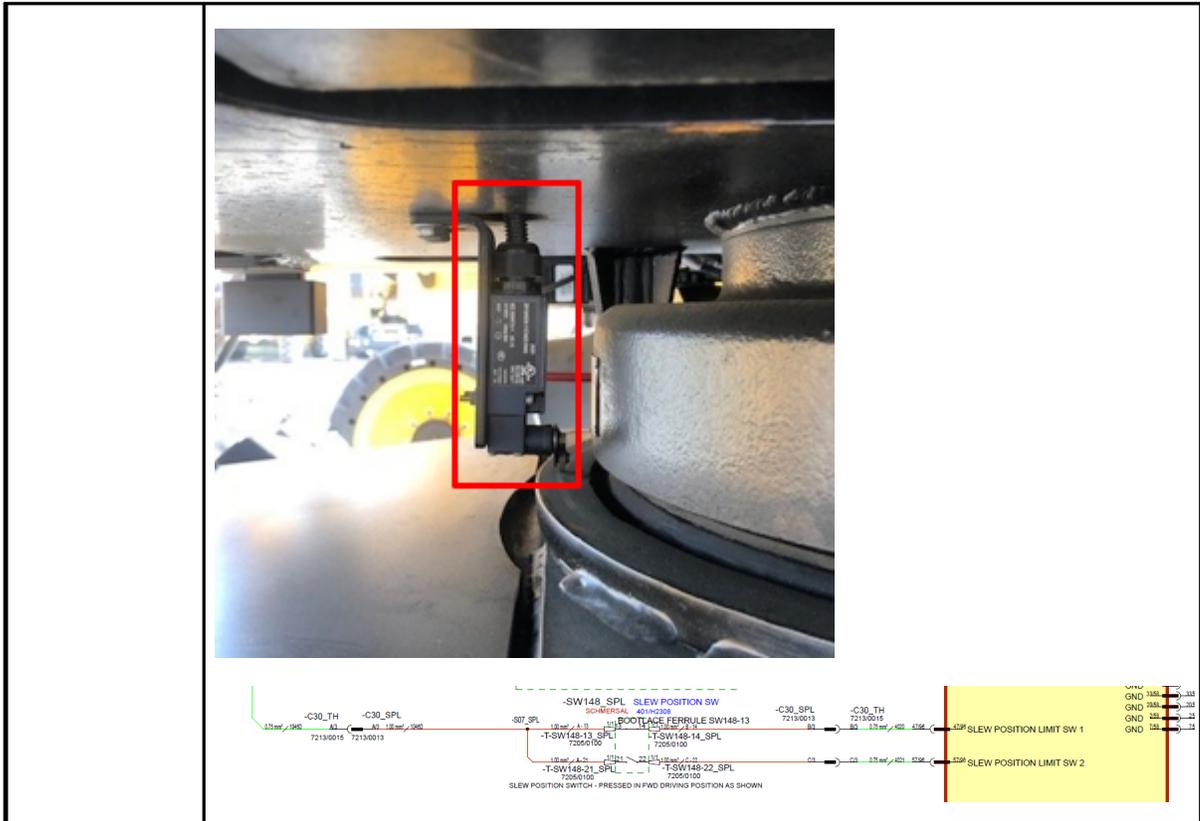
6.1.20 B1023-16

<b>Error code:</b>	<b>B1023-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW POSITION Limit Switch 2 Short Circuit to Low
<b>Component</b> :	Slew Limit Switch 2
<b>Vehicle reaction:</b>	Default to Slew position Implement slew acknowledge safety function (SF#10) in all positions Implement axle lock in all positions (axle is locked)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Slew Position Switch -SW148_SPL Pin 22. Actuate the switch to check that the voltage level changes between 0V and 10V. If this does not happen, check operation of switch. Check Interconnect -C30_SPL / -C30_TH. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 22, measure voltage of switch output at this pin. If voltage remains at 0V when switch is actuated then there is a short circuit to ground within the switch or the input to the switch.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Interconnects, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</li> </ol>
	



## 6.1.21 B1024-92

<b>Error code:</b>	<b>B1024-92</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 Short Circuit to 10V or 12V
<b>Component :</b>	Slew Limit Switch(es)
<b>Vehicle reaction:</b>	Default to Slew position Implement slew acknowledge safety function (SF#10) in all positions Implement axle lock in all positions (axle is locked)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect interconnect connectors from each other (-C30_SPL and -C30_TH). Measure continuity on -C30_SPL Terminal B and C. This should be 'Open Circuit'. Actuate the switch, The measurement should remain 'Open Circuit'. If the measurements do not concur with this, then check wiring terminals at Slew Position Switch -SW148_SPL and check wiring from Switch to connector.</li> <li>2. With Interconnects disconnected from each other, Check wires 4020 and 4021 are not shorted together.</li> <li>3. Check Bosch Base ECU Connectors for Damage, Bent pins and water ingress.</li> <li>4. Check Switch or harness for damage.</li> </ol>



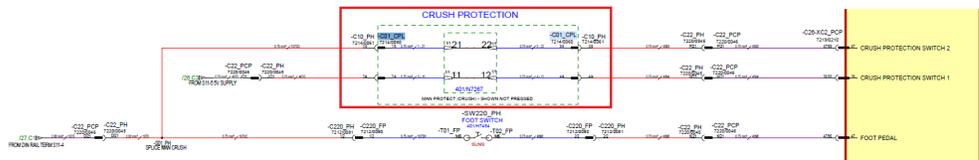
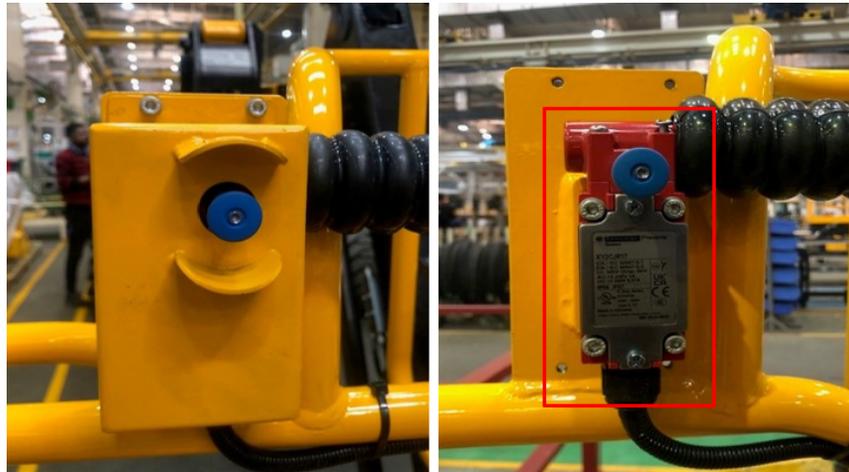
### 6.1.22 B1025-13

<b>Error code:</b>	<b>B1025-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Crush Protection - Plausibility Check
<b>Component</b> :	Crush Protection Switch(es)
<b>Vehicle reaction:</b>	Detect failure mode and activate Crush protection functionality; Also includes Short Circuit to Low
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short or open circuit within the wiring harness</li> <li>2. A short to the Chassis or other signal</li> <li>3. Water damage to the component, connectors or harness</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check voltages at Crush Protection Switch. Pin 21 and 22 should measure 10V. Pin 11 and 12 should measure 5V.</li> <li>2. Disconnect Crush Protection Connector -C01_CPL from -C10_PH. Check</li> </ol>

resistance between Pin 22 and Pin 12. Value should be open Circuit. Check operation of switch by actuating the device. Check continuity from Crush Protection switch to Platform Bosch ECU connector, Terminals 47/58 and 36/58.

3. Check for water damage at Crush Protection Connector, Interconnects - C22\_PH / -C22\_PHP and Platform Bosch ECU connectors

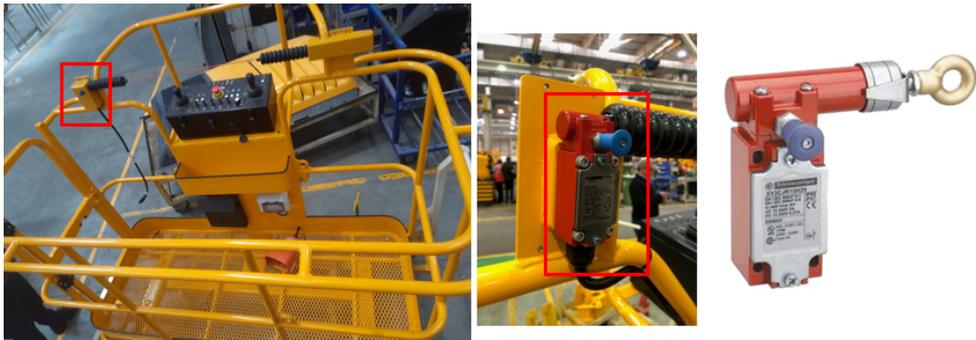
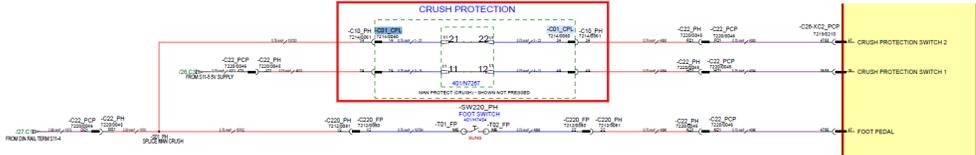
4. Visually inspect wiring harness, Switch and all connectors for any damage or for mis-seated components. Check connectors for bent or backed out terminals.



### 6.1.23 B1026-17

<b>Error code:</b>	<b>B1026-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Crush Protection - Switch 1 Short Circuit to >5v
<b>Component</b> :	Crush Protection Switch 1
<b>Vehicle reaction:</b>	Detect failure mode and activate Crush protection functionality

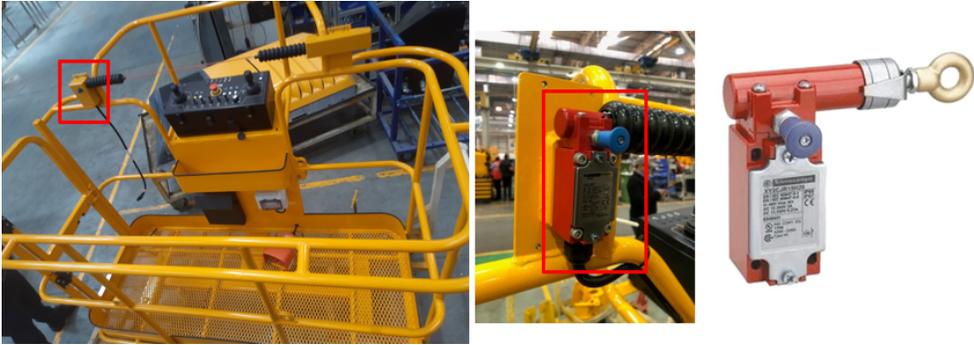


<b>Vehicle reaction:</b>	Detect failure mode and activate Crush protection functionality
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check voltages at Crush Protection Switch. Pin 21 and 22 should measure 10V. Pin 11 and 12 should measure 5V.</li> <li>2. Disconnect Crush Protection Connector -C01_CPL from -C10_PH. Check resistance between Pin 22 and Pin 12. Value should be open Circuit. Check operation of switch by actuating the device. Check continuity from Crush Protection switch to Platform Bosch ECU connector, Terminals 47/58 and 36/58.</li> <li>3. Check for water damage at Crush Protection Connector, Interconnects - C22_PH / -C22_PHP and platform Bosch ECU connectors</li> <li>4. Visually inspect wiring harness, Switch and all connectors for any damage or for mis-seated components. Check connectors for bent or backed out terminals.</li> </ol>
	
	

6.1.25 B1028-16

<b>Error code:</b>	<b>B1028-16</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Crush Protection - Switch 2 Short Circuit to low

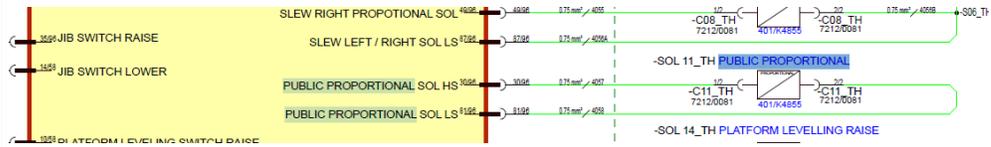
<b>Component :</b>	Crush Protection Switch 2
<b>Vehicle reaction:</b>	Detect failure mode and activate Crush protection functionality
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check voltages at Crush Protection Switch. Pin 21 and 22 should measure 10V. Pin 11 and 12 should measure 5V.</li> <li>2. Disconnect Crush Protection Connector -C01_CPL from -C10_PH. Check resistance between Pin 22 and Pin 12. Value should be open Circuit. Check operation of switch by actuating the device. Check continuity from Crush Protection switch to Platform Bosch ECU connector, Terminals 47/58 and 36/58.</li> <li>3. Check for water damage at Crush Protection Connector, Interconnects - C22_PH / -C22_PHP and platform Bosch ECU connectors</li> <li>4. Visually inspect wiring harness, Switch and all connectors for any damage or for mis-seated components. Check connectors for bent or backed out terminals.</li> </ol>




6.1.26 B1029-17

<b>Error code:</b>	<b>B1029-17</b>
<b>ECU</b>	Platform ECU

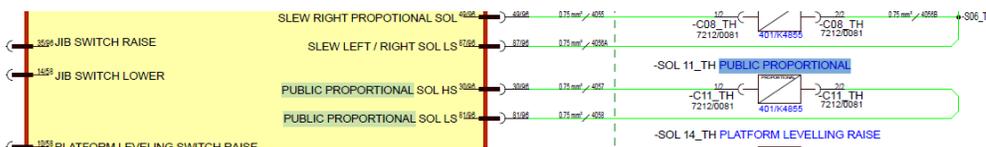


<b>ECU</b>	Base ECU
<b>Description</b> :	Public proportional output solenoid short circuit to high (>10.5V)
<b>Component</b> :	Public proportional output solenoid
<b>Vehicle reaction:</b>	Public proportional solenoid will be switched off, this will effect:Articulated boom, steer, leveling, jib, platform rotate, telescopic boom.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from ECU to the coil</li> <li>3. Turn machine ignition on/off to clear code</li> <li>4. Check wire on solenoid connector C11_TH Pin 1 and 2.</li> <li>5. Check wire no. 4057 and 4058 for any loose connection, cut or any damage.</li> <li>6. Check if valve is mechanically jammed</li> </ol> 

6.1.28 B1037-16

<b>Error code:</b>	<b>B1037-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Public proportional output solenoid short circuit to low.



<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>Poor connection</li> <li>Break in wiring</li> <li>Water in connector</li> <li>Broken pin or connector</li> <li>Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>Check resistance of the coil 5-10 ohms</li> <li>Check wiring from ECU to the coil</li> <li>Turn machine ignition on/off to clear code</li> <li>Check wire on solenoid connector C11_TH Pin 1 and 2.</li> <li>Check wire no. 4057 and 4058 for any loose connection, cut or any damage.</li> <li>Check if valve is mechanically jammed</li> </ol> 

6.1.30 B1039-17

<b>Error code:</b>	<b>B1039-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve Raise High Side Short Circuit to High OR Open Circuit
<b>Component :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>Poor connection</li> <li>Break in wiring</li> </ol>

	<ol style="list-style-type: none"> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from ECU to the coil wire no 4059</li> <li>3. Check Ground wire 6059</li> <li>4. Check wire on solenoid connector C14_TH Pin 1 and 2.</li> <li>5. Check wire no. 4047 and 4058 for any loose connection, cut or any damage</li> <li>6. Check Base ECU pin 3/96 for bent or loose connection.</li> <li>7. Check if valve is mechanically jammed</li> <li>8. Turn machine ignition on/off to clear code</li> </ol>

**6.1.31 B1040-16**

<b>Error code:</b>	<b>B1040-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve Raise High Side Short Circuit to Low
<b>Component :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve Raise
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> </ol>

	<p>4. Broken pin or connector</p> <p>5. Damage solenoid</p>
<b>Service Action:</b>	<p>1. Check resistance of the coil 5-10 ohms</p> <p>2. Check wiring from ECU to the coil wire no 4059</p> <p>3. Check Ground wire 6059</p> <p>4. Check wire on solenoid connector C14_TH Pin 1 and 2.</p> <p>5. Check Base ECU pin 3/96 for bent or loose connection.</p> <p>6. Check if valve is mechanically jammed</p> <p>7. Turn machine ignition on/off to clear code</p>

6.1.32 B1041-17

<b>Error code:</b>	<b>B1041-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve Lower High Side Short Circuit to High OR Open Circuit
<b>Component :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	<p>Detect failure modes. Don't disable any output and don't ignore any input</p> <p>Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault.</p>
<b>Possible Cause:</b>	<p>1. Poor connection</p> <p>2. Break in wiring</p> <p>3. Water in connector</p> <p>4. Broken pin or connector</p> <p>5. Damage solenoid</p>

<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from ECU to the coil wire no 4060</li> <li>3. Check Ground wire 6082</li> <li>4. Check wire on solenoid connector C15_TH Pin 1 and 2.</li> <li>5. Check Base ECU pin 57/58 for bent or loose connection.</li> <li>6. Check if valve is mechanically jammed</li> <li>7. Turn machine ignition on/off to clear code</li> </ol>

**6.1.33 B1042-16**

<b>Error code:</b>	<b>B1042-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve Lower High Side Short Circuit to Low
<b>Component :</b>	PLATFORM LEVELING DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from ECU to the coil wire no 4060</li> <li>3. Check Ground wire 6082</li> </ol>

4. Check wire on solenoid connector C15\_TH Pin 1 and 2.
5. Check Base ECU pin 57/58 for bent or loose connection.
6. Check if valve is mechanically jammed
7. Turn machine ignition on/off to clear code

### 6.1.34 B1043-17

<b>Error code:</b>	<b>B1043-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to High
<b>Component</b> :	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock output to off; Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check harness from Base Bosch ECU through interconnect -C24_TH / -C24_TH and through to -C06_CH (Axle Lock Solenoid connector). Disconnect connectors and check for short circuit to high (12V)</li> <li>2. Check condition of all connectors, especially for bent pins and shorts within the connectors.</li> <li>3. Check for any water ingress inside the connector housings, ECU built in connector and Solenoid connector.</li> <li>4. check harness for damage, especially abrasions and pinching and check all connectors, solenoid valve and ECU for any visual defects.</li> </ol>

## 6.1.35 B1044-16

<b>Error code:</b>	<b>B1044-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to Low
<b>Component</b> :	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock output to off;
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check harness from Base Bosch ECU through interconnect -C24_TH / -C24_TH and through to -C06_CH (Axle Lock Solenoid connector).</li> <li>2. Disconnect connectors and check for short circuit to GND</li> <li>3. Check condition of all connectors, especially for bent pins and shorts within the connectors.</li> <li>4. Check for any water ingress inside the connector housings, ECU built in connector and Solenoid connector.</li> <li>5. check harness for damage, especially abrasions and pinching and check all connectors, solenoid valve and ECU for any visual defects.</li> </ol>

## 6.1.36 B1045-13

<b>Error code:</b>	<b>B1045-13</b>
<b>ECU</b>	Base ECU



<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check connector -C01 &amp; -C01(For left side) and -C02 &amp; -C04(For right side) at Front Brake. Check wire at terminal 3/8, 4/8 and 3/12, 4/12. Check Inverter Terminal 25/35 and 4/35.</li> <li>2. Inspect wiring from Inverter to Front Brake connector. Check Continuity in wire 4541 &amp; 4540B . Check continuity in wire 4542 &amp; 4540A.</li> <li>3. Check all connectors for water ingress</li> <li>4. Check harness especially for abrasions and pinching. Check condition of Connectors, checking especially for backed out or bent pins.</li> </ol>
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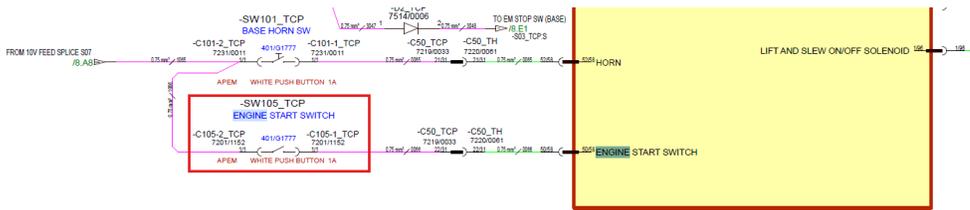
The diagram shows a complex wiring harness. Key components include:
 

- VOLTAGE CONVERTER** (70250202) at the top, connected to the chassis ground.
- INVERTER** (40112000) in the center, with terminals for SENS DIV, SENS SUPPLY, ENCODER IN, and MOTOR TEMP.
- AC DRIVE MTR FRONT LEFT** (40114008) on the left, with terminals for SP SENS DIV, TEMP SENS +VE, and BRAKE +VE.
- AC DRIVE MTR FRONT RIGHT** (40114008) on the right, with similar terminals.
- Wiring** is color-coded: red for power/supply, blue for ground, and green for signal.
- Labels** include '4WD ONLY' and '4WD ONLY MOTOR'.

**6.1.38 B1049-16**

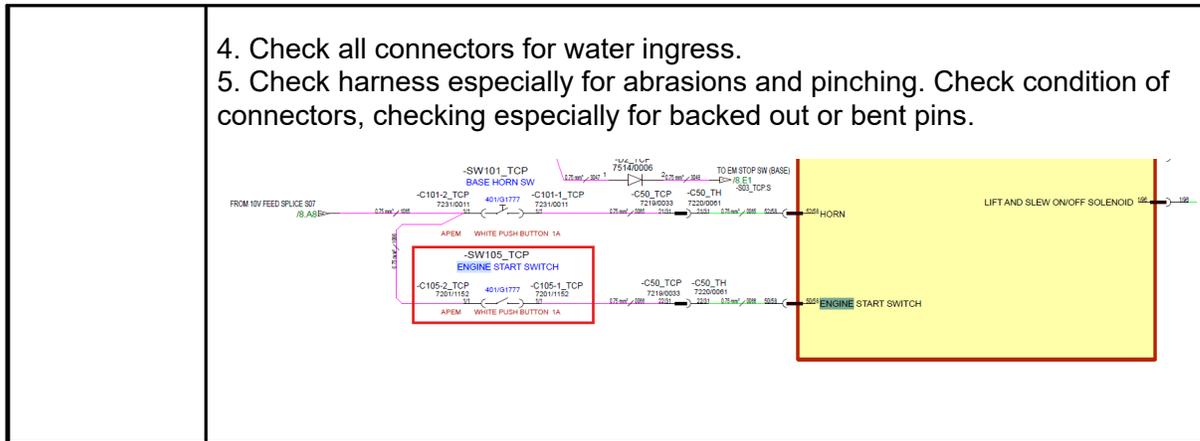
<b>Error code:</b>	<b>B1049-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	FRONT BRAKE Solenoid Valve Short Circuit to Low
<b>Component :</b>	Front Brakes Solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>



<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Inspect Engine Start Switch -SW105_TCP. Inspect wiring to Switch. With switch unpressed - Pin 1 should measure +10V, Pin 2 should measure 0V. Check wire #0066 from switch to interconnects -C50_TCP pin 21/31, - C50_TH Pin 22/31 and through to the Base Bosch ECU pin 50/58.</li> <li>2. Check Interconnect terminals and Bosch ECU terminals for damage or bent pins. Check wire connections to terminals.</li> <li>3. Check all connectors for water ingress.</li> <li>4. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins.</li> </ol> 
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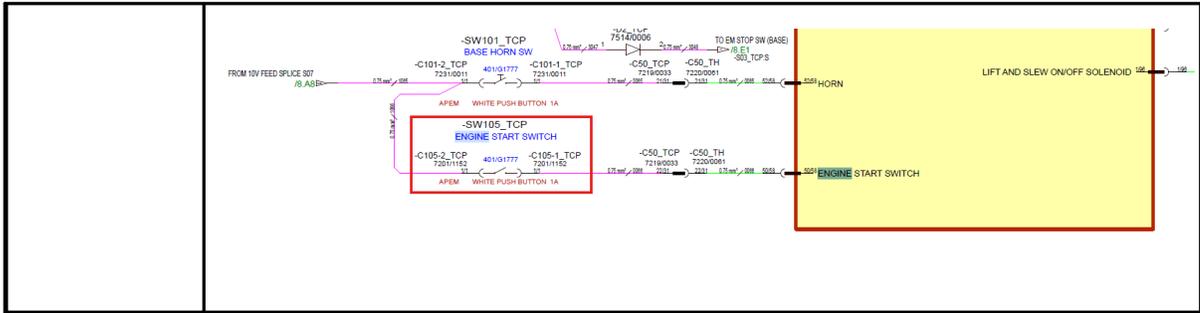
6.1.40 B1051-16

<b>Error code:</b>	<b>B1051-16</b>
<b>ECU</b>	Base ECU
<b>Description</b>	Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to Low.
<b>Component</b>	Engine Start/Stop Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input (switch off engine)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Inspect Engine Start Switch -SW105_TCP. Inspect wiring to Switch. With switch unpressed - Pin 1 should measure +10V, Pin 2 should measure 0V. When pressed, Pin 2 should measure +10V. Check wire #0066 from switch to interconnects -C50_TCP pin 21/31, -C50_TH Pin 22/31 and through to the Base Bosch ECU pin 50/58.</li> <li>2. Check wire #0066 is not shorted to GND</li> <li>3. Check Interconnect terminals and Bosch ECU terminals for damage or bent pins. Check wire connections to terminals.</li> </ol>



## 6.1.41 B1052-24

<b>Error code:</b>	<b>B1052-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Engine Start/Stop - Base Engine Start/Stop Button Stuck for >10s.
<b>Component</b> :	Engine Start/Stop Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input (switch off engine)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Button failure / Damage</li> <li>2. Short circuit within the harness</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connectors -C105-1_TCP and -C105-2_TCP from the Engine Start Switch -SW105_TCP. Use a multimeter to test the operation of the switch.</li> <li>2. Check wire #0066 is not shorted to +10V. Check wire #0066 from switch to interconnects -C50_TCP pin 22/31, -C50_TH Pin 22/31 and through to the Base Bosch ECU pin 50/58.</li> <li>3. Check all connectors for water ingress.</li> <li>4. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol>



## 6.1.42 B1053-17

<b>Error code:</b>	<b>B1053-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform 10v Output - Foot Pedal Short Circuit to High
<b>Component</b> :	Foot Pedal
<b>Vehicle reaction:</b>	Before operation: Detect fault and ignore the input (allow base operation) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect the foot switch connector from the platform harness connector -C220_PH. Measure voltage at -C220_PH Pin 2. Voltage should read 2.5 - 3.0V. If voltage is above 10V then there is a short to High (12VDC) in wire #4096. Check wiring through interconnects-C22_PH / -C22_PCP pin K back to the Platform ECU pin 47/96.</li> <li>2. Check no shorts exist within the Foot switch connector, Interconnects and Platform ECU Connector. Check ECU for bent pins.</li> <li>3. Check no water ingress in any of the connectors.</li> <li>4. check operation of the switch pedal. Check all connectors and harness for visible damage, especially abrasions and pinching.</li> </ol>



**6.1.43 B1054-16**

<b>Error code:</b>	<b>B1054-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform 10v Output - Foot Pedal Short Circuit to Low
<b>Component</b> :	Foot Pedal
<b>Vehicle reaction:</b>	Before operation: Detect fault and ignore the input (allow base operation) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect the foot switch connector from the platform harness connector -C220_PH. Measure voltage at -C220_PH Pin 2. Voltage should read 2.5 - 3.0V. If voltage is 0V (or close to 0V compared to 2.5V) then there is a short to GND in wire #4096. Check wiring through interconnects-C22_PH / - C22_PCP pin K back to the Platform ECU pin 47/96.</li> <li>2. Check no shorts exist within the Foot switch connector, Interconnects and Platform ECU Connector. Check ECU for bent pins.</li> </ol>

3. Check no water ingress in any of the connectors.
4. check operation of the switch pedal, ensuring no short exists between the foot switch connector terminals and GND. Check all connectors and harness for visible damage, especially abrasions and pinching.



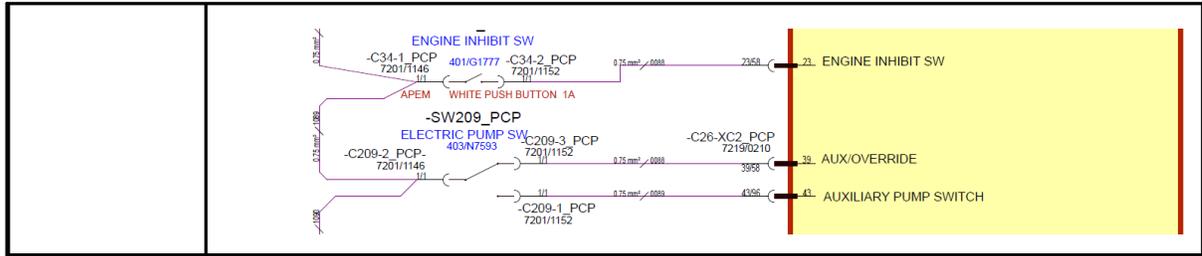
6.1.44 B1055-17

<b>Error code:</b>	<b>B1055-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Aux Pump Switch - Pressed - Short Circuit to High
<b>Component</b> :	Platform Aux Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check switch Aux Pump Switch -SW209_PCP. Check Wire #0088 from Aux Switch connector -C209-2_PCP to Platform Bosch ECU Pin 43/96. Voltage should be +10V</li> </ol>

2. Check Voltage a Aux Pump Switch Pin 2 at -C209-2\_PCP. This should be +10V  
 3. Check Operation of switch  
 4. Check all connectors for water ingress.  
 5 Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins

### 6.1.45 B1056-16

<b>Error code:</b>	<b>B1056-16</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Aux Pump Switch - Pressed - Short Circuit to Low
<b>Component :</b>	Platform Aux Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check switch Aux Pump Switch -SW209_PCP. Check Wire #0089 from Aux Switch connector -C209-3_PCP to Platform Bosch ECU Pin 43/96. Voltage should be +0V</li> <li>2. Check Voltage a Aux Pump Switch Pin 2 at -C209-2_PCP. This should be +10V</li> <li>3. Check Operation of switch</li> <li>4. Check all connectors for water ingress.</li> <li>5. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol>



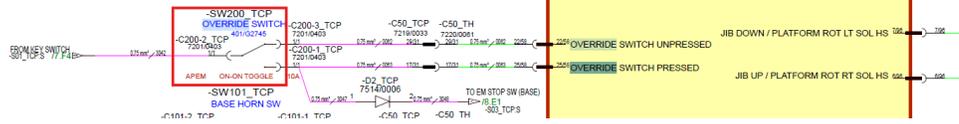
### 6.1.46 B1058-17

<b>Error code:</b>	<b>B1058-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Override switch pressed short circuit to high
<b>Component</b> :	Override switch
<b>Vehicle reaction:</b>	Input will be ignored
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Override Switch and Base Bosch ECU for Voltage greater than 10.5 volts. Check interconnect connector. Check wiring and diode between override switch and e-stop switch.</li> <li>2. Disconnect connector to Bosch ECU, check continuity between override switch terminals -C200-3 &amp; -C200-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>3. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>4. Check operation of Override Switch.</li> </ol>

### 6.1.47 B1059-16

<b>Error code:</b>	<b>B1059-16</b>
<b>ECU</b>	Base ECU

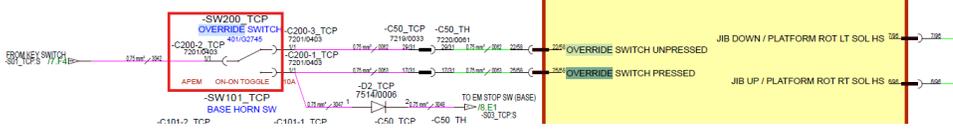
<b>Description</b> :	E-Stop & Base Override - Override Switch Pressed Short Circuit to Low
<b>Component</b> :	Base Override Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input Default to Override unpressed state
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Override Switch and Base Bosch ECU. Check interconnect connector. Check wiring and diode between override switch and e-stop switch.</li> <li>2. Check the wiring has not been shorted to the chassis of the vehicle (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect connector to Bosch ECU, check continuity between override switch terminals -C200-3 &amp; -C200-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>4. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>5. Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.</li> </ol>



6.1.48 B1060-13

<b>Error code:</b>	<b>B1060-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop & Base Override - Override Switch Pressed and Override Switch Unpressed Open Circuit
<b>Component</b> :	Base Override Switch

<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1. Detect failure mode; Ignore input</li> <li>2. Default to Override unpressed state</li> </ol>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A poor connection or damaged terminal within the connector(s)</li> <li>2. A damaged or broken wire within the wiring harness</li> <li>3. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check for broken wires at terminals of Override switch, Interconnect and Base Bosch ECU connectors. Check for 'backed out' terminals on Bosch connectors. Check Connectors were engaged or plugged in correctly.</li> <li>2. Check continuity from Override switch to interconnect and from interconnect to Bosch ECU.</li> <li>3. Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.</li> </ol>



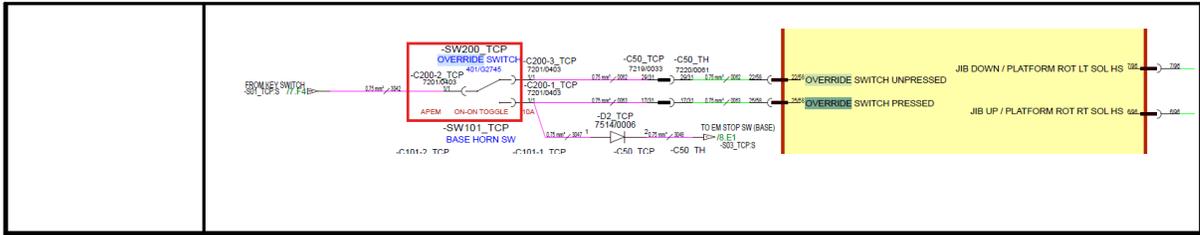
**6.1.49 B1061-17**

<b>Error code:</b>	<b>B1061-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Override switch unpressed short circuit to high
<b>Component :</b>	Override switch
<b>Vehicle reaction:</b>	Input will be ignored
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Override Switch and Base Bosch ECU for Voltage greater than 10.5 volts. Check interconnect connector. Check wiring and diode between override switch and e-stop switch.</li> <li>2. Disconnect connector to Bosch ECU, check continuity between override switch terminals -C200-3 &amp; -C200-1. This should be 'Open Circuit'.</li> </ol>

Investigate if testing does not concur.  
 3. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.  
 4. Check operation of Override Switch.

**6.1.50 B1062-16**

<b>Error code:</b>	<b>B1062-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop & Base Override - Override Switch Unpressed Short Circuit to Low
<b>Component</b> :	Base Override Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input Default to Override unpressed state
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Override Switch and Base Bosch ECU. Check interconnect connector. Check wiring and diode between override switch and e-stop switch. Disconnect Bosch Base ECU and check continuity between override switch terminals -C200-3 &amp; -C200-1</li> <li>2. Check the wiring has not been shorted to the chassis of the vehicle (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect connector to Bosch ECU, check continuity between override switch terminals -C200-3 &amp; -C200-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>4. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>5. Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.</li> </ol>



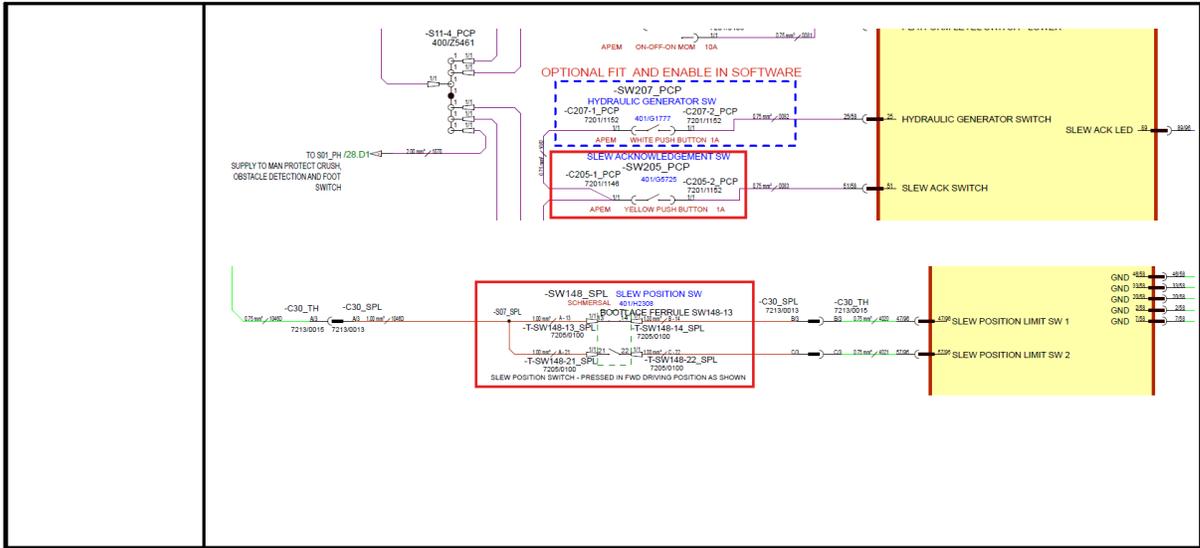
### 6.1.51 B1063-92

<b>Error code:</b>	<b>B1063-92</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	E-Stop & Base Override - Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)
<b>Component :</b>	Base Override Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input Default to Override unpressed state
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between Override Switch and Base Bosch ECU. Check interconnect connector. Check wiring and diode between override switch and e-stop switch.</li> <li>2. Disconnect connector to Bosch ECU, check continuity between override switch terminals -C200-3 &amp; -C200-1. This should be 'Open Circuit'. Investigate if testing does not concur.</li> <li>3. Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</li> <li>4. Check operation of Override Switch.</li> </ol>

### 6.1.52 B1064-17

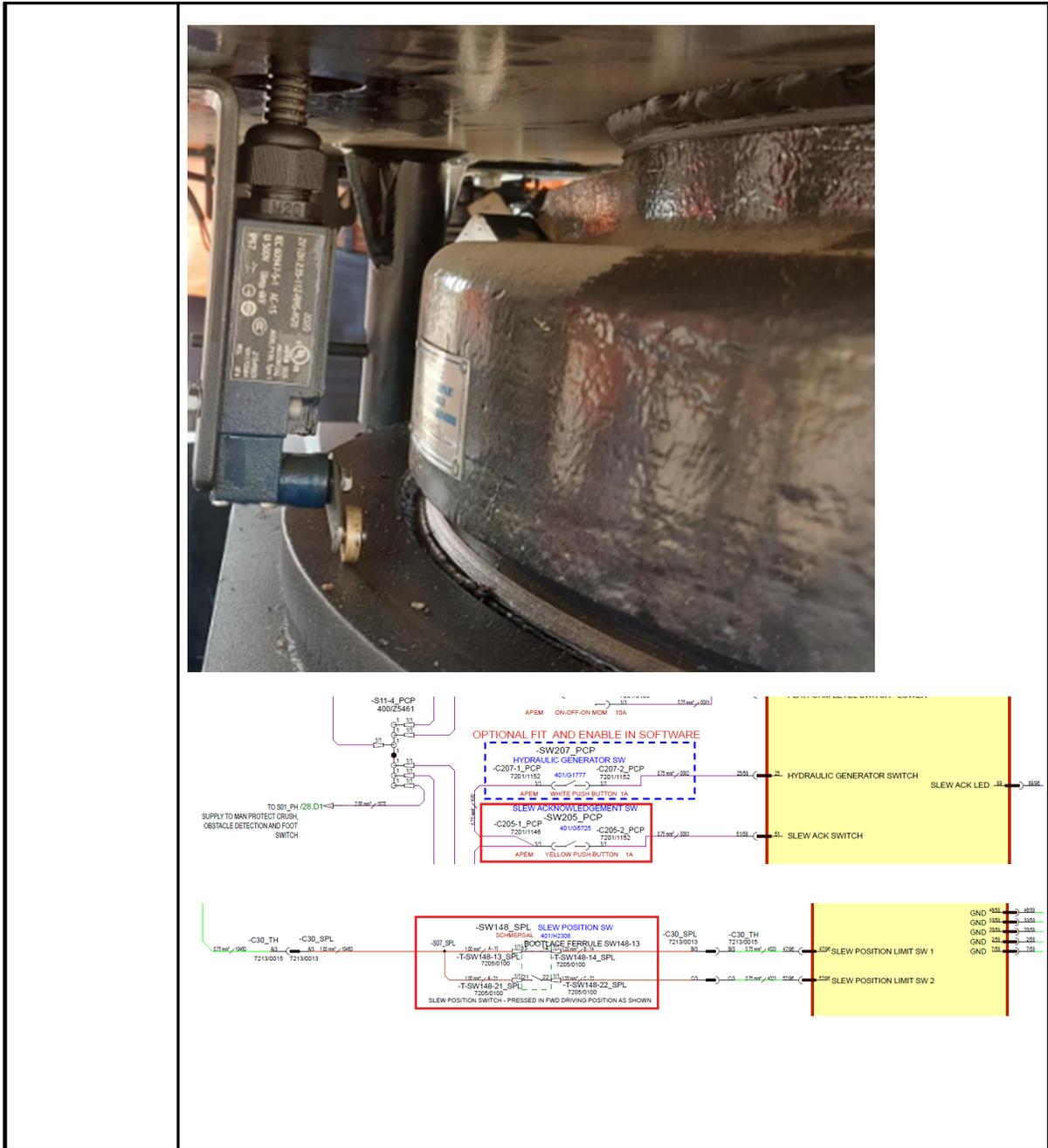
<b>Error code:</b>	<b>B1064-17</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	SLEW ACK SWITCH Short Circuit to High
<b>Component</b> :	Slew Acknowledgment Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect -C205-2_PCP from the Slew Acknowledgment Switch. Measure voltage at -C205-2_PCP. If voltage is high (&gt;5V) then there is a short circuit to high between the wiring from the terminal to the Platform Bosch ECU pin 51/58.</li> <li>2. Check Platform Bosch ECU Connectors for any bent terminals or stray wiring.</li> <li>3. Check all connectors / terminals for any water ingress.</li> <li>4. Check operation of the Slew Acknowledgment switch. Check wiring for damage, especially abrasion or pinching.</li> </ol> 



### 6.1.53 B1065-16

<b>Error code:</b>	<b>B1065-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	SLEW ACK SWITCH Short Circuit to Low
<b>Component</b> :	Slew Acknowledgment Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect -C205-2_PCP from the Slew Acknowledgment Switch. Measure voltage at -C205-2_PCP. If voltage is Low (&lt;2V) then there is a short circuit to Low between the wiring from the terminal to the Platform Bosch ECU pin 51/58.</li> <li>2. Check no exposed wiring near switch that may be touching metalwork.</li> <li>3. Check Platform Bosch ECU Connectors for any bent terminals or stray wiring.</li> <li>4. Check all connectors / terminals for any water ingress.</li> <li>5. Check operation of the Slew Acknowledgment switch. Check wiring for damage, especially abrasion or pinching.</li> </ol>



6.1.54 B1066-24

<b>Error code:</b>	<b>B1066-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	SLEW ACK SWITCH Short Circuit Stuck for >= 10 seconds

<b>Component :</b>	Slew Acknowledgment Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connectors -C205-1_PCP and -C205-2_PCP from the Slew Acknowledgment Switch. Use a multimeter to test the operation of the switch.</li> <li>2. Check wire #0083 is not shorted to +10V.</li> <li>3. Check all connectors for water ingress.</li> <li>4. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol>

6.1.55 B1067-17

<b>Error code:</b>	<b>B1067-17</b>
<b>ECU</b>	Platform ECU

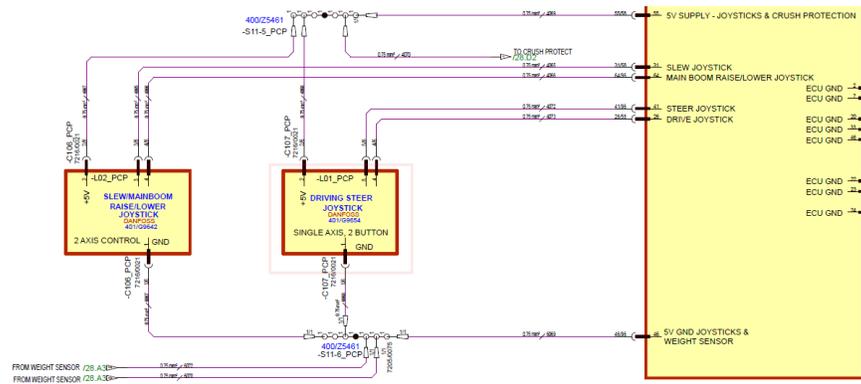
<b>Description</b> :	Potentiometer Selector Short Circuit to High (>5.5V)
<b>Component</b> :	Potentiometer
<b>Vehicle reaction:</b>	Detect failure mode - Set Potentiometer to 10%
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at pin 2 of speed selector potentiometer. The voltage should range from 0V - 5V as the knob is turned. If voltage stays at 5V, then it is likely the potentiometer has failed. If the voltage is above 5.5V then it is likely to be a short circuit to high within the wiring from potentiometer to Platform Bosch ECU pin 39/96.</li> <li>2. Check wire #4075 from Potentiometer to Platform Bosch ECU pin 39/96.</li> <li>3. Check for water ingress at Platform Bosch ECU Connectors.</li> <li>4. Check Wiring for any abrasions or pinching. Check function of potentiometer. Resistance value from pin 1 to pin 3 = 5000ohms. Check resistance from pin 1 to pin 2 - should change value from 0 to 5000 ohms depending on knob position.</li> </ol>



6.1.56 B1069-17

<b>Error code:</b>	<b>B1069-17</b>
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<b>ECU</b>	Platform ECU
<b>Description</b> :	Drive JOYSTICK Short Circuit to High (>4.75V)
<b>Component</b> :	Drive Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore drive & Steer input (machine stops immediately)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 4/6 (Drive) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is above 4.75V then there is likely a short circuit to high either within the joystick or wiring back to the Platform Bosch ECU Pin 26/58.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> <li>3. Check Connectors at joystick and Platform Bosch ECU for water ingress.</li> <li>4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</li> </ol>



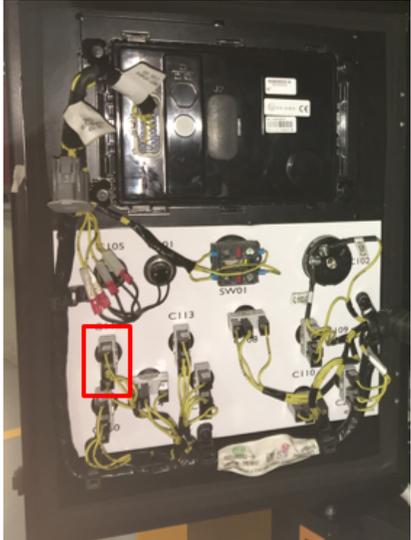
### 6.1.57 B1070-16

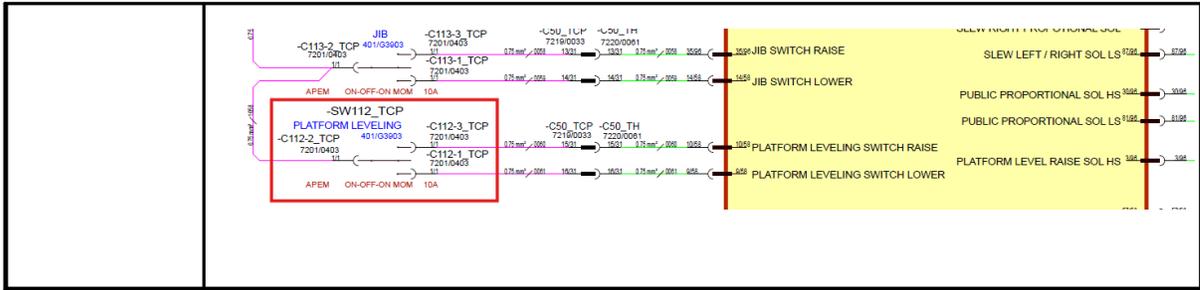
<b>Error code:</b>	<b>B1070-16</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Drive JOYSTICK Short Circuit to Low (<0.25V) or Open Circuit
<b>Component</b> :	Drive Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore drive & Steer input (machine stops immediately)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> <li>6. A damaged or broken wire within the wiring harness</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 4/6 (Drive) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is below 0.25V then there is likely a short circuit to GND either within the joystick or wiring back to the Platform Bosch ECU Pin 26/58.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> <li>3. Check Connectors at joystick and Platform Bosch ECU for water ingress.</li> <li>4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</li> </ol>

6.1.58 B1071-17

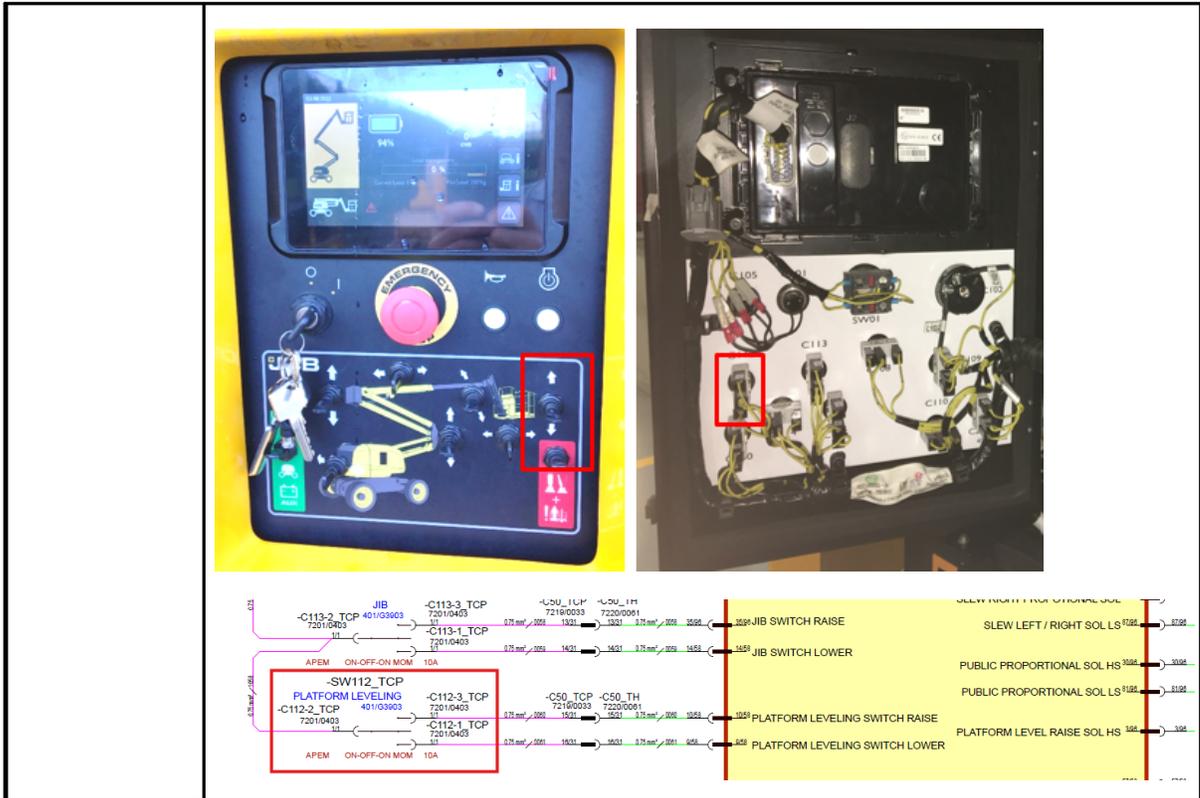
<b>Error code:</b>	<b>B1071-17</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	PLATFORM LEVELING RAISE Switch Short Circuit to High (Base Control)
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not o/p as it can be operated from where there is no fault) After operation (in case of STto12V): Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Platform Leveling Raise terminal, -C112-3 TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C112-2_PCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>



6.1.59 B1072-17

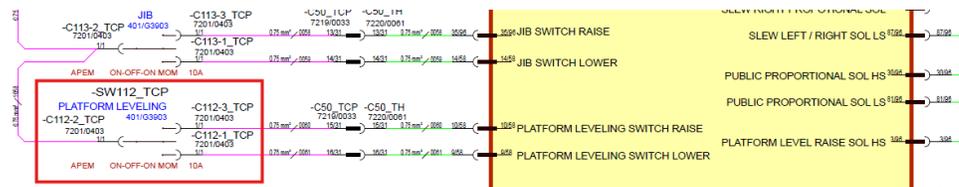
<b>Error code:</b>	<b>B1072-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVELING LOWER Switch Short Circuit to High (Base Control)
<b>Component :</b>	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Platform Leveling Lower terminal, -C112-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C112-2_PCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



## 6.1.60 B1073-92

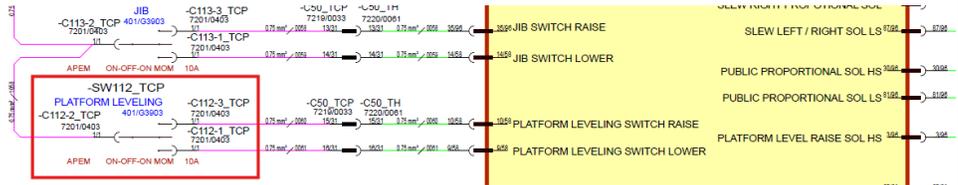
<b>Error code:</b>	<b>B1073-92</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVELING RAISE and LOWER Switches both activated (5 - 10V) (Base Control)
<b>Component :</b>	Platform Level Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	1. Measure voltage at Platform Leveling Raise & Lower terminals, -C112-1_PCP & -C112-3_PCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the

- switch, wiring harness or at the Base Bosch ECU connectors (Pins 9/58 & 10/58). If voltage is high, remove -C112-2\_PCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.
- Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
- Check connectors for any sign of water ingress.
- Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.



### 6.1.61 B1074-16

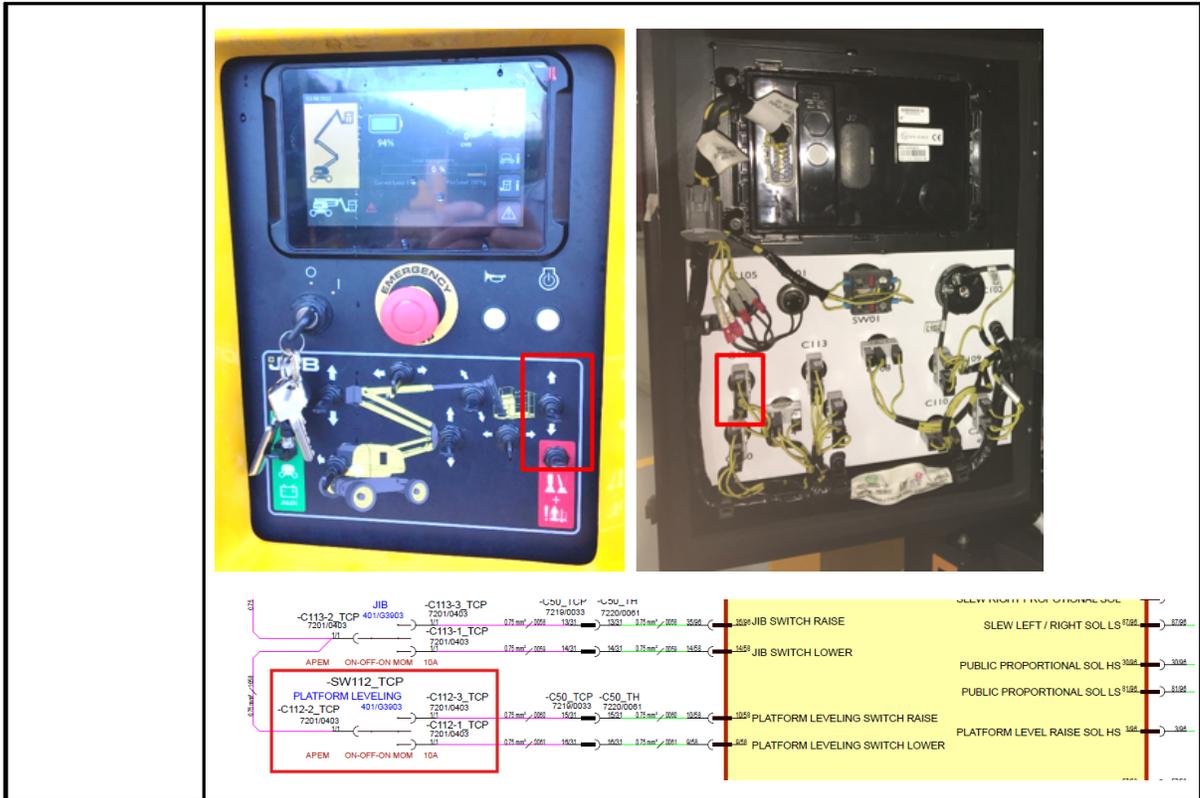
<b>Error code:</b>	<b>B1074-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELING RAISE Switch Short Circuit to Low (Base Control)
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage at Platform Leveling Raise terminal, -C112-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C112-2_PCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> 

6.1.62 B1075-16

<b>Error code:</b>	<b>B1075-16</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELING LOWER Switch Short Circuit to Low(Base Control)
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Platform Leveling Lower terminal, -C112-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C112-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>

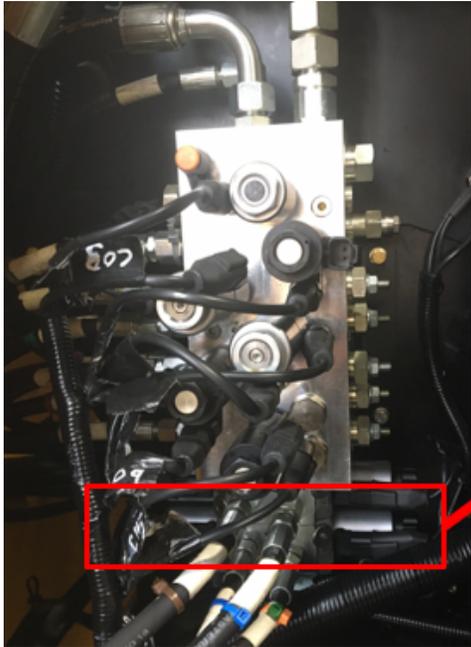
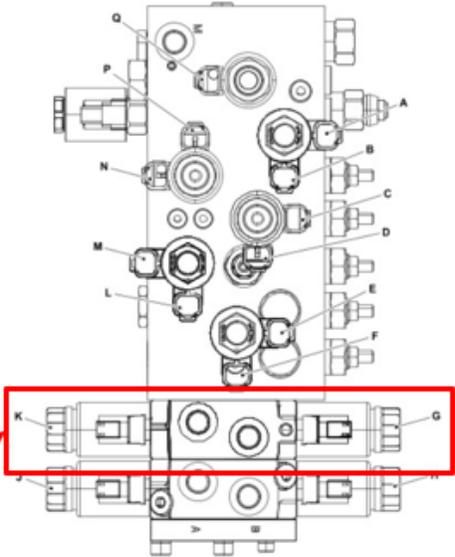


6.1.63 B1076-17

<b>Error code:</b>	<b>B1076-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve High Side Short Circuit to High
<b>Component :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable main-boom raise and lower outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>

**Service Action:**

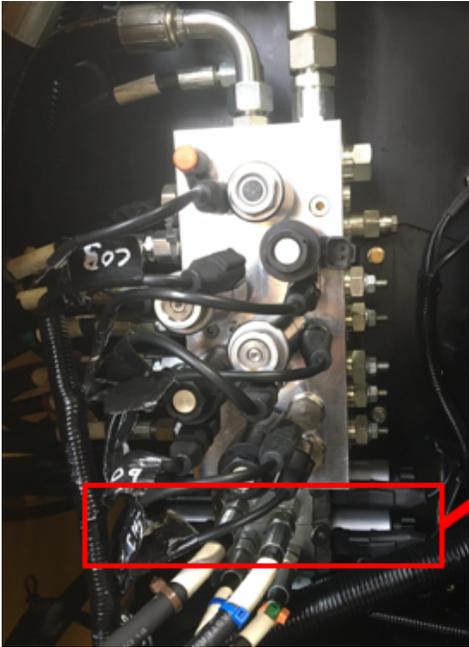
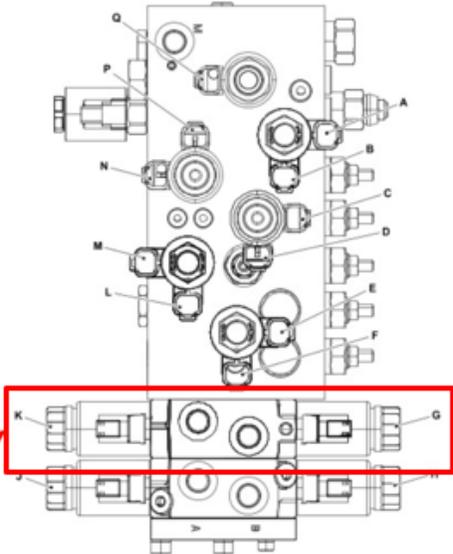
1. Check resistance of the coil 5-10 ohms
2. Check wiring from coil to ECU wire 4045,4046 & 4047A, 4047B, 4047C for cut, pinch or and damage.
3. Check ECU Pin 54/96, 78/96, 84/96 for bend or back out or any damage.
4. Check solenoid connector C05\_TH and C06\_TH for loose connection or any damage.
5. Check if valve is mechanically jammed
6. Turn machine ignition on/off to clear code.

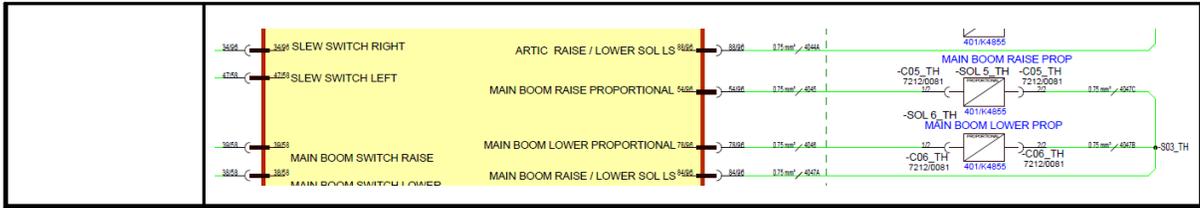



<p>3499 C 3499 SLEW SWITCH RIGHT</p> <p>4251 C 4251 SLEW SWITCH LEFT</p> <p>3003 C 3003 MAIN BOOM SWITCH RAISE</p> <p>3001 C 3001 MAIN BOOM SWITCH LOWER</p>	<p>ARTIC RAISE / LOWER SOL LS 7604</p> <p>MAIN BOOM RAISE PROPORTIONAL 9404</p> <p>MAIN BOOM LOWER PROPORTIONAL 7604</p> <p>MAIN BOOM RAISE / LOWER SOL LS 9404</p>	<p>8000 0.75 mm<sup>2</sup> / 0.046"</p> <p>5400 0.75 mm<sup>2</sup> / 0.046"</p> <p>7800 0.75 mm<sup>2</sup> / 0.046"</p> <p>8400 0.75 mm<sup>2</sup> / 0.046"</p>	<p>401X4855</p> <p>MAIN BOOM RAISE PROP</p> <p>-C05_TH 7212/0081 1/2 -SOL 5_TH 7212/0081 1/2 -C05_TH 7212/0081 1/2</p> <p>-SOL 6_TH 401X4855 MAIN BOOM LOWER PROP</p> <p>-C06_TH 7212/0081 1/2 -SOL 6_TH 401X4855 -C06_TH 7212/0081 1/2</p> <p>8003_TH</p>
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### 6.1.64 B1077-16

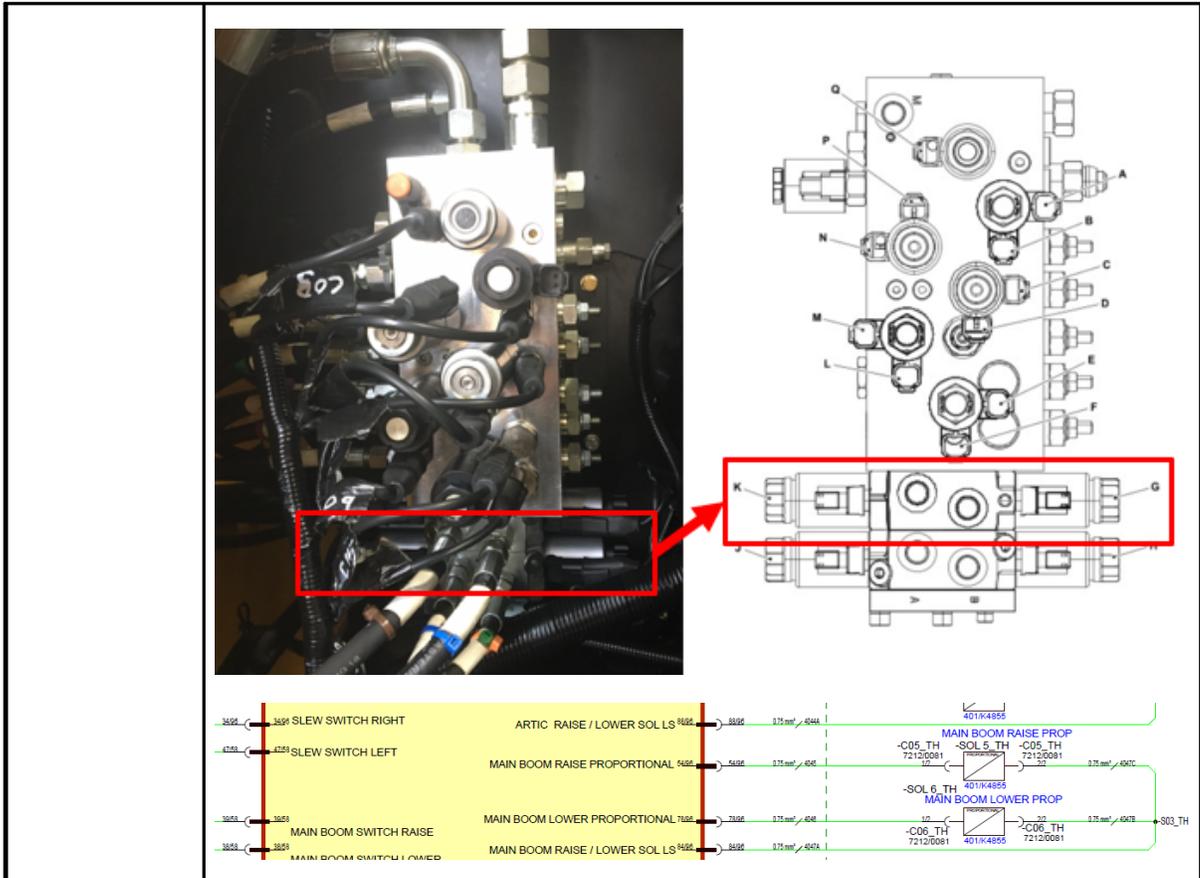
<b>Error code:</b>	<b>B1077-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve High Side Short Circuit to Low

<b>Component :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable main-boom raise and lower outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4045,4046 &amp; 4047A, 4047B, 4047C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 54/96, 78/96, 84/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C05_TH and C06_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn machine ignition on/off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



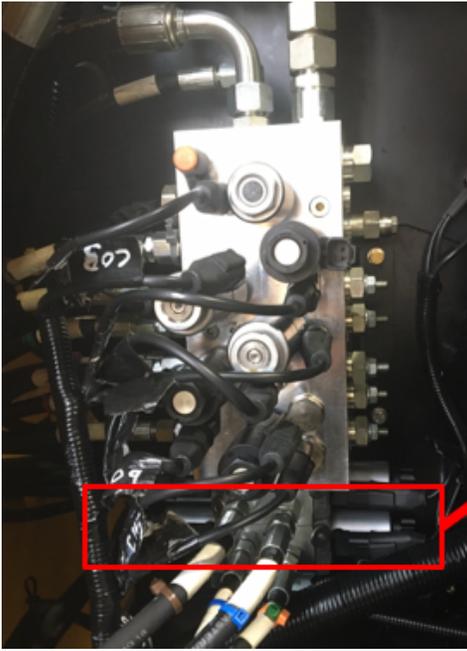
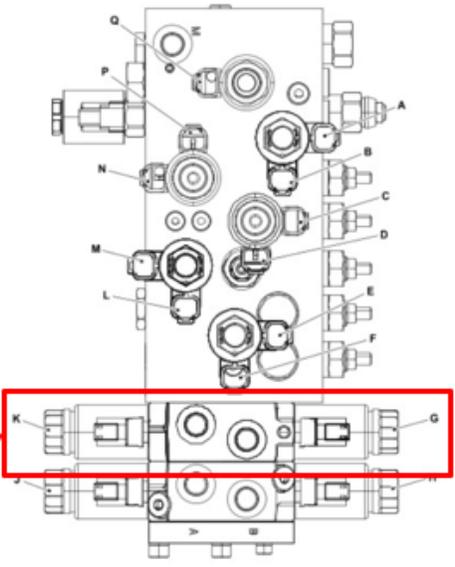
## 6.1.65 B1078-13

<b>Error code:</b>	<b>B1078-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve High Side Open Circuit
<b>Component :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable main-boom raise and lower outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4045,4046 &amp; 4047A, 4047B, 4047C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 54/96, 78/96, 84/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C05_TH and C06_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn machine ignition on/off to clear code.</li> </ol>



**6.1.66 B1079-17**

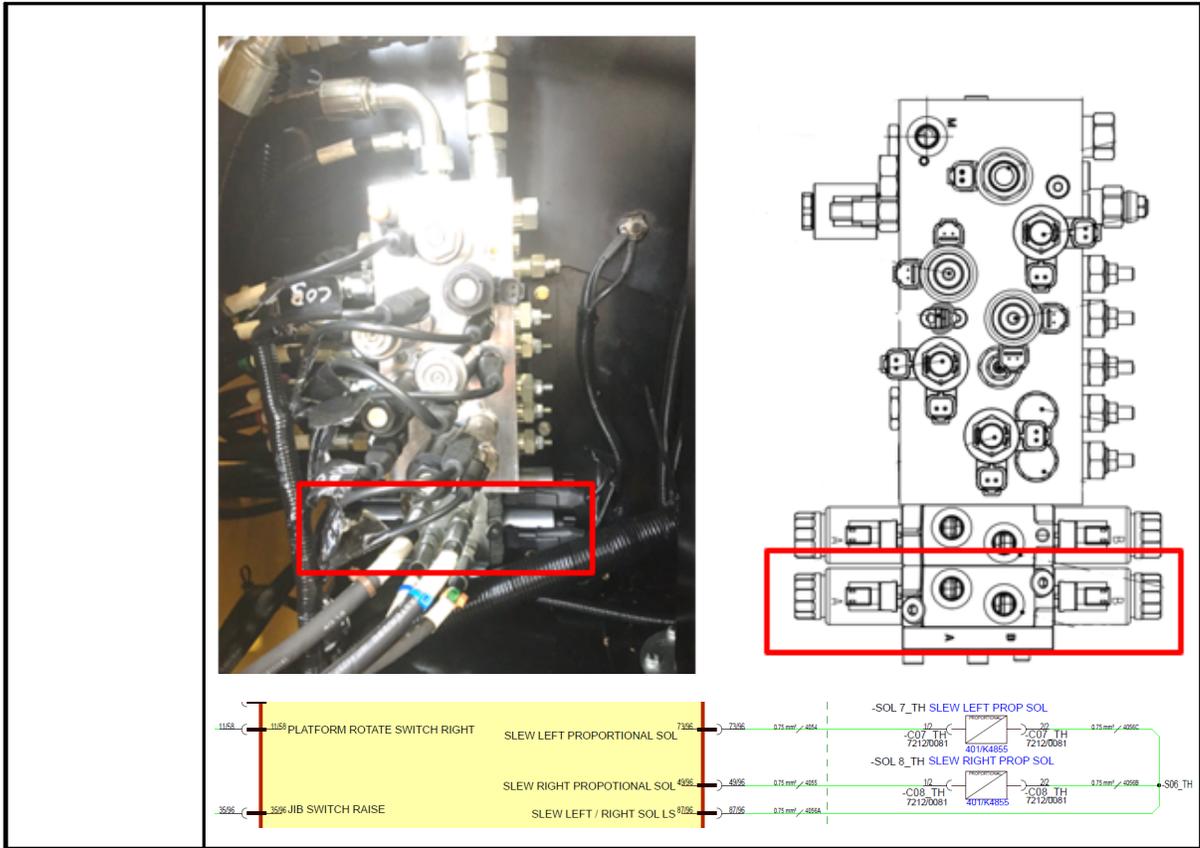
<b>Error code:</b>	<b>B1079-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve Fault
<b>Component</b> :	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable main boom lower solenoid
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> </ol>

	5. Damage solenoid																
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4045,4046 &amp; 4047A, 4047B, 4047C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 54/96, 78/96, 84/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C05_TH and C06_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn machine ignition on/off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="margin-top: 20px;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"><b>369</b> SLEW SWITCH RIGHT</td> <td style="width: 25%;"><b>ARTIC RAISE / LOWER SOL LS</b> 7896</td> <td style="width: 25%;"><b>369</b> 0.75 mm<sup>2</sup> / 30AW</td> <td style="width: 25%;"><b>4019/4855</b></td> </tr> <tr> <td><b>4253</b> SLEW SWITCH LEFT</td> <td><b>MAIN BOOM RAISE PROPORTIONAL</b> 5496</td> <td><b>5496</b> 0.75 mm<sup>2</sup> / 30AW</td> <td><b>MAIN BOOM RAISE PROP</b> -C05_TH 7212/0081 → SOL 5_TH 7212/0081 → -C05_TH 7212/0081 0.75 mm<sup>2</sup> / 30AW</td> </tr> <tr> <td><b>3823</b> MAIN BOOM SWITCH RAISE</td> <td><b>MAIN BOOM LOWER PROPORTIONAL</b> 7896</td> <td><b>7896</b> 0.75 mm<sup>2</sup> / 30AW</td> <td><b>SOL 6_TH</b> 4019/4855 → <b>MAIN BOOM LOWER PROP</b> -C06_TH 7212/0081 → SOL 6_TH 4019/4855 → -C06_TH 7212/0081 0.75 mm<sup>2</sup> / 30AW</td> </tr> <tr> <td><b>3824</b> MAIN BOOM SWITCH LOWER</td> <td><b>MAIN BOOM RAISE / LOWER SOL LS</b> 5496</td> <td><b>5496</b> 0.75 mm<sup>2</sup> / 30AW</td> <td><b>303_TH</b></td> </tr> </table> </div>	<b>369</b> SLEW SWITCH RIGHT	<b>ARTIC RAISE / LOWER SOL LS</b> 7896	<b>369</b> 0.75 mm <sup>2</sup> / 30AW	<b>4019/4855</b>	<b>4253</b> SLEW SWITCH LEFT	<b>MAIN BOOM RAISE PROPORTIONAL</b> 5496	<b>5496</b> 0.75 mm <sup>2</sup> / 30AW	<b>MAIN BOOM RAISE PROP</b> -C05_TH 7212/0081 → SOL 5_TH 7212/0081 → -C05_TH 7212/0081 0.75 mm <sup>2</sup> / 30AW	<b>3823</b> MAIN BOOM SWITCH RAISE	<b>MAIN BOOM LOWER PROPORTIONAL</b> 7896	<b>7896</b> 0.75 mm <sup>2</sup> / 30AW	<b>SOL 6_TH</b> 4019/4855 → <b>MAIN BOOM LOWER PROP</b> -C06_TH 7212/0081 → SOL 6_TH 4019/4855 → -C06_TH 7212/0081 0.75 mm <sup>2</sup> / 30AW	<b>3824</b> MAIN BOOM SWITCH LOWER	<b>MAIN BOOM RAISE / LOWER SOL LS</b> 5496	<b>5496</b> 0.75 mm <sup>2</sup> / 30AW	<b>303_TH</b>
<b>369</b> SLEW SWITCH RIGHT	<b>ARTIC RAISE / LOWER SOL LS</b> 7896	<b>369</b> 0.75 mm <sup>2</sup> / 30AW	<b>4019/4855</b>														
<b>4253</b> SLEW SWITCH LEFT	<b>MAIN BOOM RAISE PROPORTIONAL</b> 5496	<b>5496</b> 0.75 mm <sup>2</sup> / 30AW	<b>MAIN BOOM RAISE PROP</b> -C05_TH 7212/0081 → SOL 5_TH 7212/0081 → -C05_TH 7212/0081 0.75 mm <sup>2</sup> / 30AW														
<b>3823</b> MAIN BOOM SWITCH RAISE	<b>MAIN BOOM LOWER PROPORTIONAL</b> 7896	<b>7896</b> 0.75 mm <sup>2</sup> / 30AW	<b>SOL 6_TH</b> 4019/4855 → <b>MAIN BOOM LOWER PROP</b> -C06_TH 7212/0081 → SOL 6_TH 4019/4855 → -C06_TH 7212/0081 0.75 mm <sup>2</sup> / 30AW														
<b>3824</b> MAIN BOOM SWITCH LOWER	<b>MAIN BOOM RAISE / LOWER SOL LS</b> 5496	<b>5496</b> 0.75 mm <sup>2</sup> / 30AW	<b>303_TH</b>														

6.1.67 B1080-17

<b>Error code:</b>	<b>B1080-17</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Short Circuit to High
<b>Component</b> :	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable slew outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check harness connector is fully inserted into solenoid connector</li> <li>2. Check resistance of coil 5-10 ohms.</li> <li>3. Check no shorts to GND, check for abrasions and pinching in harness and stray wires</li> <li>4. Check wiring from coil to ECU wire 4054,4055 &amp; 4056A, 4056B, 4056C for cut, pinch or and damage.</li> <li>5. Check ECU Pin 73/96, 49/96, 87/96 for bend or back out or any damage.</li> <li>6. Measure continuity at Pin 1 to GND of both connectors to determine which wire is shorted to GND.</li> <li>7. Check solenoid connector C07_TH and C08_TH for loose connection or any damage.</li> <li>8. Check if valve is mechanically jammed</li> <li>9. Turn machine ignition on/off to clear code.</li> </ol>

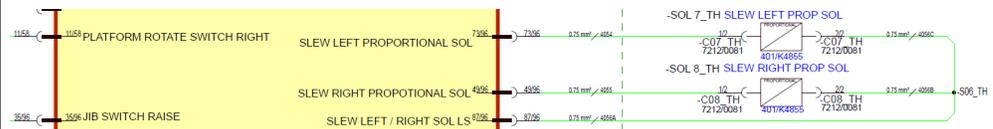
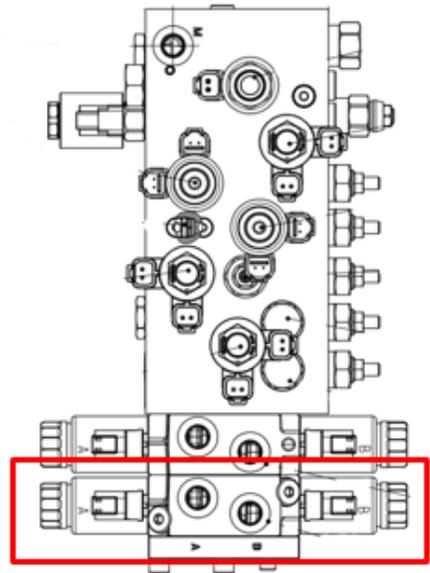
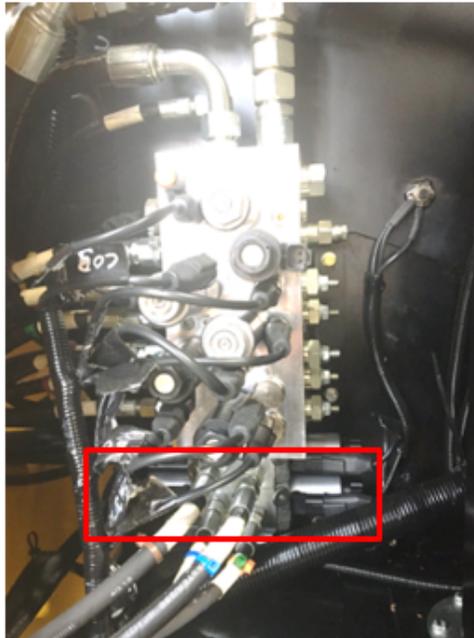


**6.1.68 B1081-16**

<b>Error code:</b>	<b>B1081-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Short Circuit to Low
<b>Component :</b>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable slew outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>

**Service Action:**

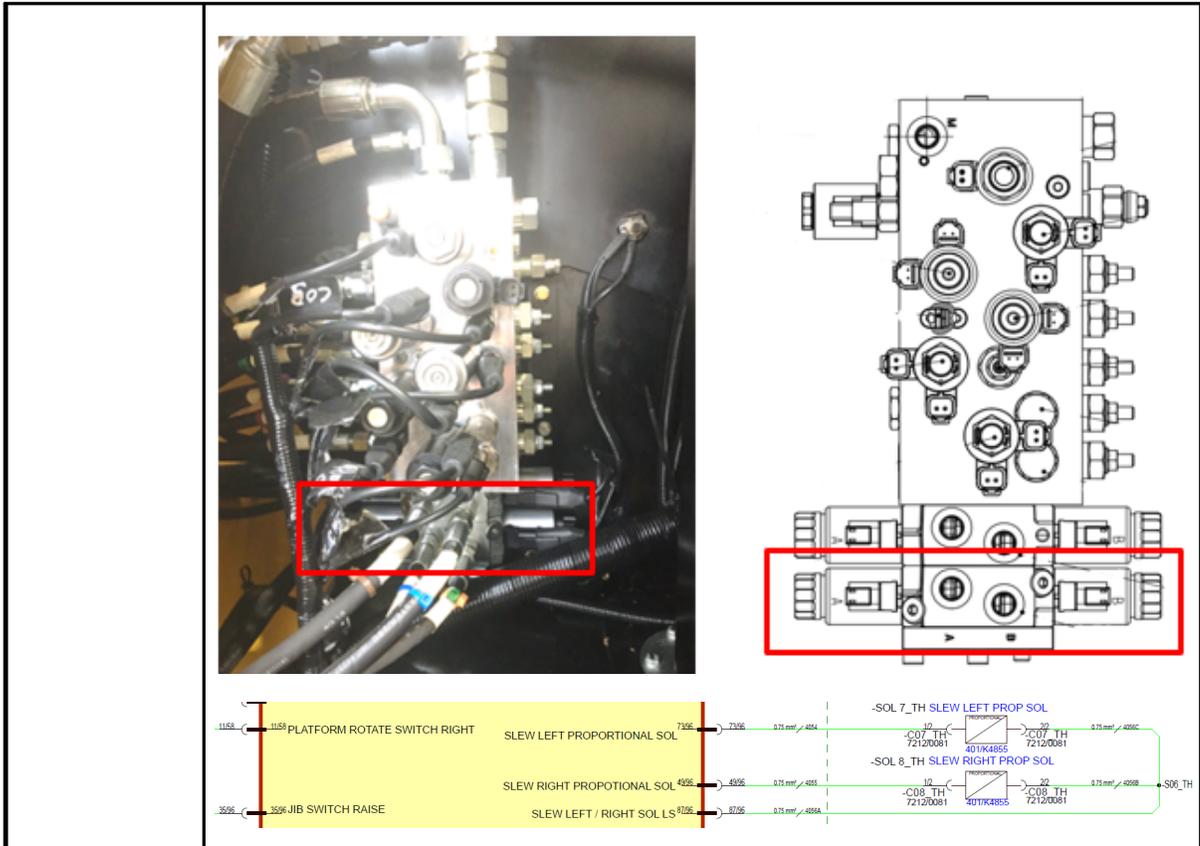
1. Check harness connector is fully inserted into solenoid connector
2. Check resistance of coil 5-10 ohms.
3. Check no shorts to GND, check for abrasions and pinching in harness and stray wires
4. Check wiring from coil to ECU wire 4054,4055 & 4056A, 4056B, 4056C for cut, pinch or and damage.
5. Check ECU Pin 73/96, 49/96, 87/96 for bend or back out or any damage.
6. Measure continuity at Pin 1 to GND of both connectors to determine which wire is shorted to GND.
7. Check solenoid connector C07\_TH and C08\_TH for loose connection or any damage.
8. Check if valve is mechanically jammed
9. Turn machine ignition on/off to clear code.



**6.1.69 B1082-13**

<b>Error code:</b>	<b>B1082-13</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Open Circuit
<b>Component</b> :	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable the slew outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of coil 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4054,4055 &amp; 4056A, 4056B, 4056C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 73/96, 49/96, 87/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C07_TH and C08_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn machine ignition on/off to clear code.</li> </ol>

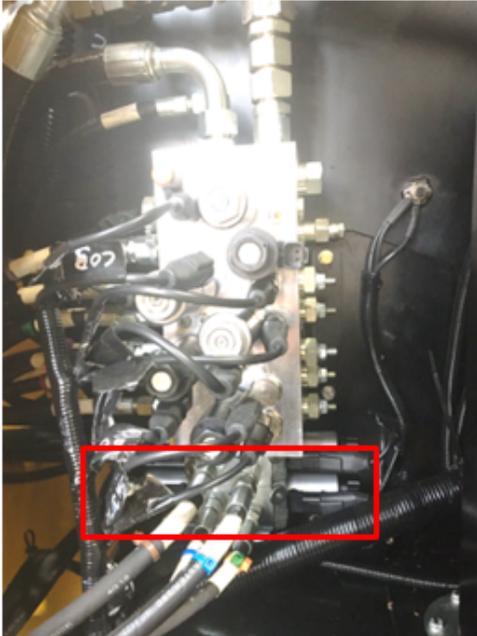
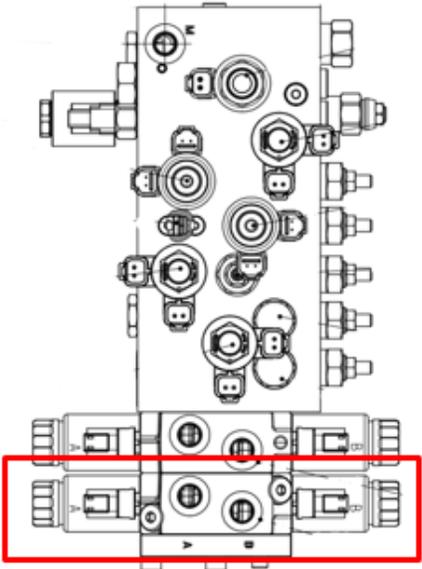


**6.1.70 B1083-17**

<b>Error code:</b>	<b>B1083-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Fault
<b>Component :</b>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable slew outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>

**Service Action:**

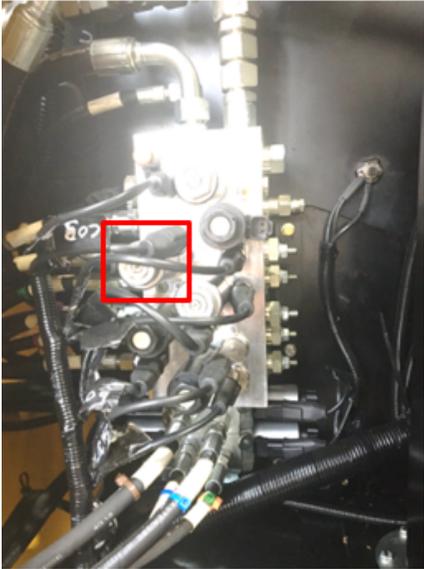
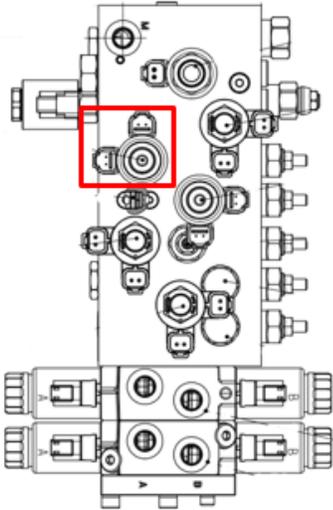
1. Check harness connector is fully inserted into solenoid connector
2. Check resistance of coil 5-10 ohms
3. Check wiring from coil to ECU wire 4054,4055 & 4056A, 4056B, 4056C for cut, pinch or and damage.
4. Check ECU Pin 73/96, 49/96, 87/96 for bend or back out or any damage.
5. Check solenoid connector C07\_TH and C08\_TH for loose connection or any damage.
6. Check if valve is mechanically jammed
7. Turn machine ignition on/off to clear code.

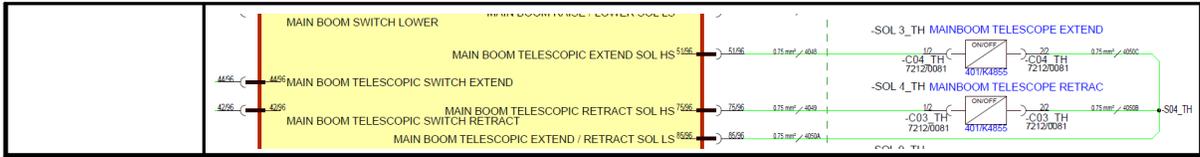



<p>1153 1153 PLATFORM ROTATE SWITCH RIGHT</p> <p>3526 3526 JIB SWITCH RAISE</p>	<p>SLEW LEFT PROPORTIONAL SOL 7396</p> <p>SLEW RIGHT PROPORTIONAL SOL 4956</p> <p>SLEW LEFT / RIGHT SOL LS 8756</p>	<p>-SOL 7_TH SLEW LEFT PROP SOL</p> <p>-SOL 8_TH SLEW RIGHT PROP SOL</p>
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**6.1.71 B1084-17**

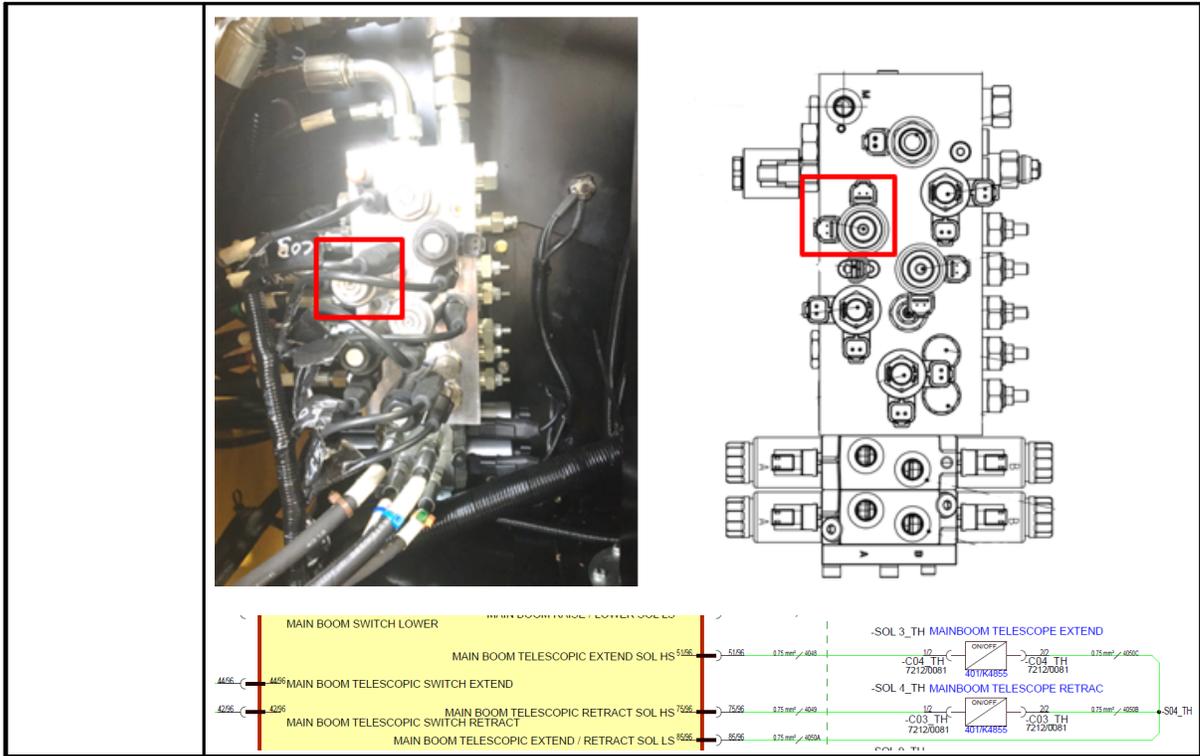
<b>Error code:</b>	<b>B1084-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve High Side Short Circuit to High OR Short Circuit to Low

<b>Component :</b>	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch this output to off Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between ECU and solenoid for voltage greater than 10.5 volts.</li> <li>2. check for continuity to ground.</li> <li>3. Check wiring from coil to ECU wire 4048,4049 &amp; 4050A, 4050B, 4050C for cut, pinch or and damage.</li> <li>4. Check ECU Pin 51/96, 75/96, 85/96 for bend or back out or any damage.</li> <li>5. Check solenoid connector C04_TH and C03_TH for loose connection or any damage.</li> <li>6. Check if valve is mechanically jammed</li> </ol> <p>2. Turn machine ignition on/off to clear code.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



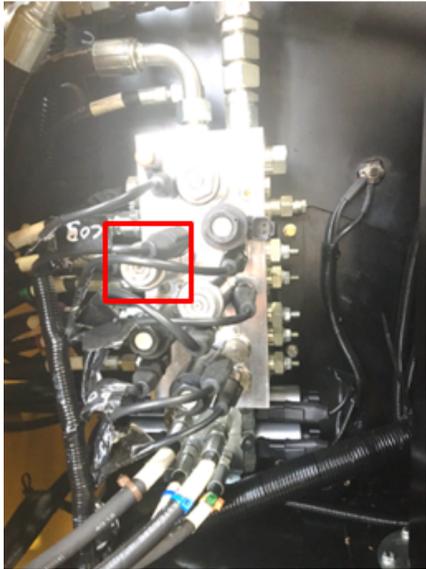
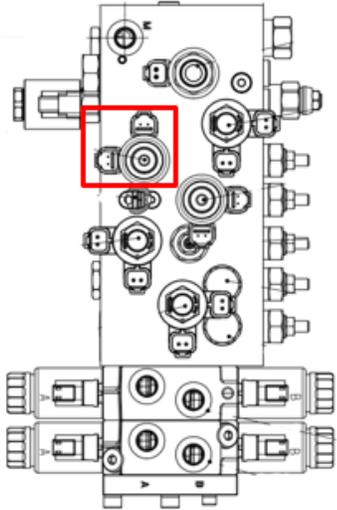
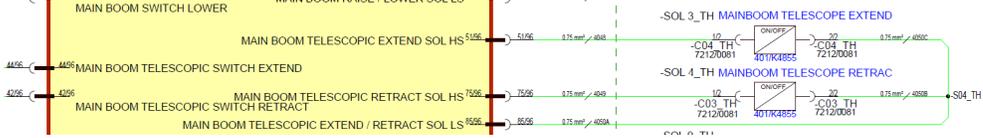
6.1.72 B1086-13

<b>Error code:</b>	<b>B1086-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve High Side & Low Side Open Circuit
<b>Component</b> :	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable main boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component.</li> <li>5. Break in wiring, poor connection at solenoids</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between ECU and solenoid for voltage greater than 10.5 volts.</li> <li>2. check for continuity to ground.</li> <li>3. Check wiring from coil to ECU wire 4048,4049 &amp; 4050A, 4050B, 4050C for cut, pinch or and damage.</li> <li>4. Check ECU Pin 51/96, 75/96, 85/96 for bend or back out or any damage.</li> <li>5. Check solenoid connector C04_TH and C03_TH for loose connection or any damage.</li> <li>6. Check if valve is mechanically jammed</li> <li>7. Turn machine ignition on/off to clear code.</li> </ol>



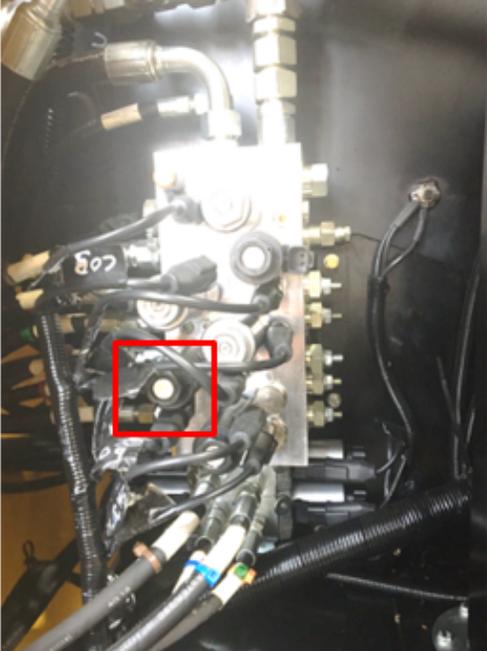
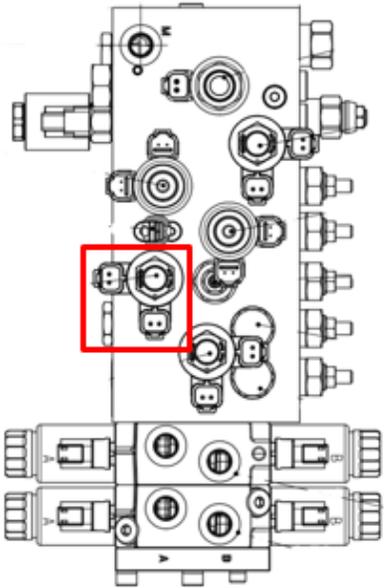
### 6.1.73 B1087-17

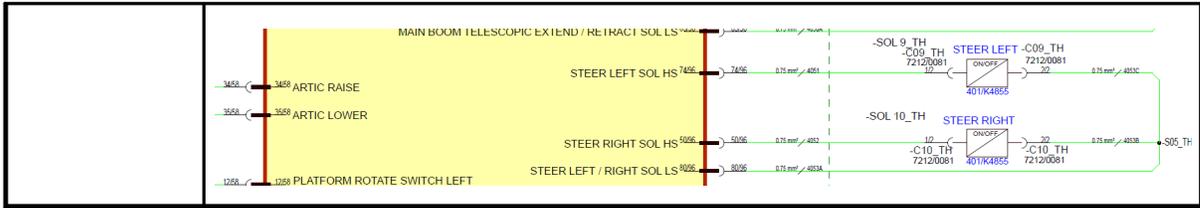
<b>Error code:</b>	<b>B1087-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve Fault
<b>Component</b> :	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Main Boom output to off (High Side & Low Side Short Circuit to Low or Open Circuit)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>

<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check wiring between ECU and solenoid for voltage greater than 10.5 volts.</li> <li>2. Check wiring from coil to ECU wire 4048,4049 &amp; 4050A, 4050B, 4050C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 51/96, 75/96, 85/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C04_TH and C03_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn ignition on off to clear code</li> </ol>
	<div style="display: flex; justify-content: space-around;">   </div>
	

**6.1.74 B1088-17**

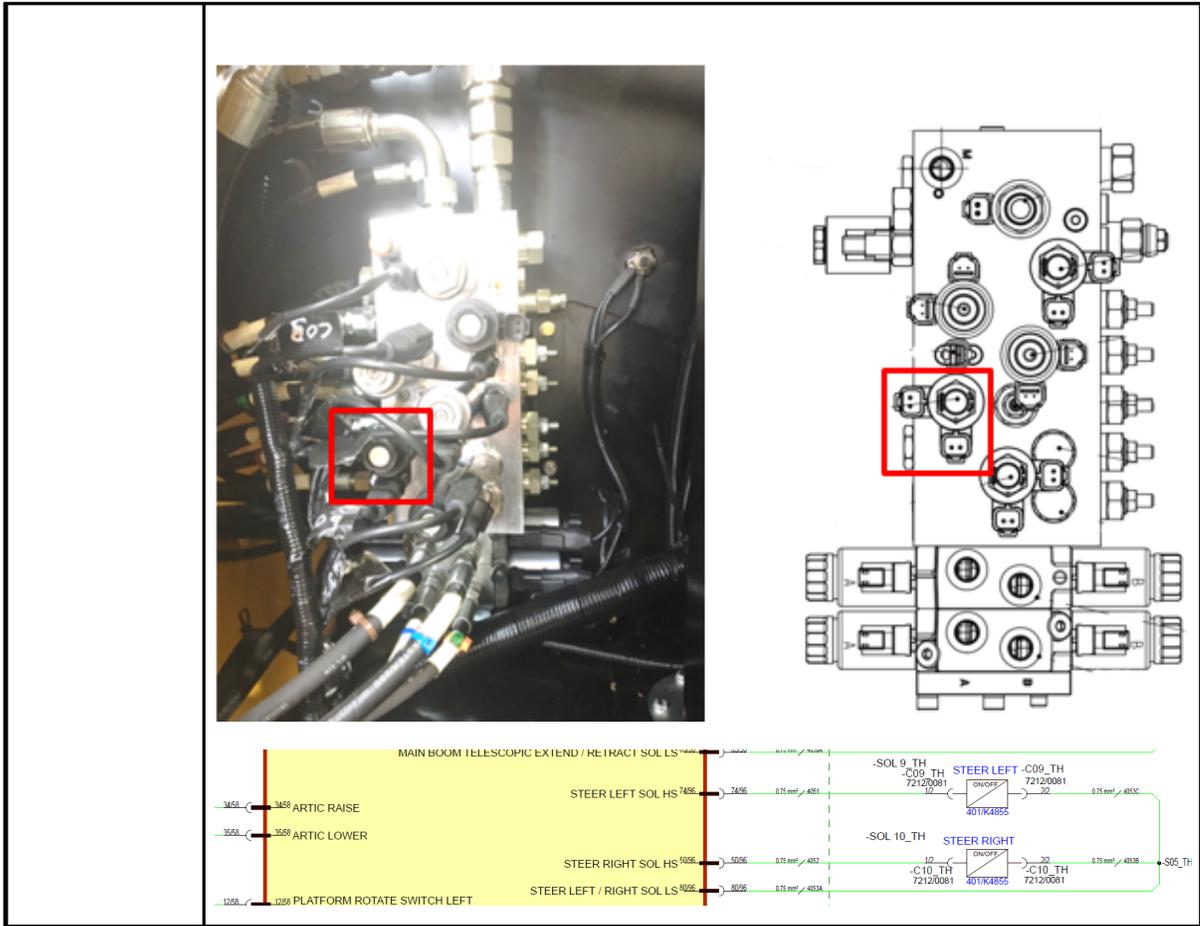
<b>Error code:</b>	<b>B1088-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve High Side Short Circuit to High
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve

<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4051,4052 &amp; 4053A, 4053B, 4053C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C09_TH and C10_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed.</li> <li>6 Turn ignition on off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



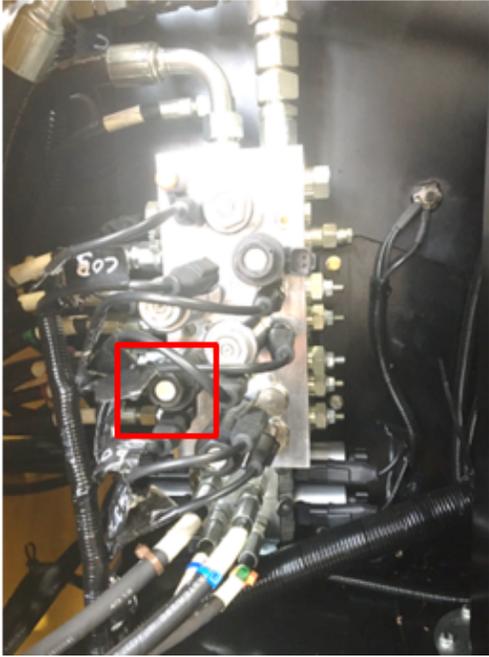
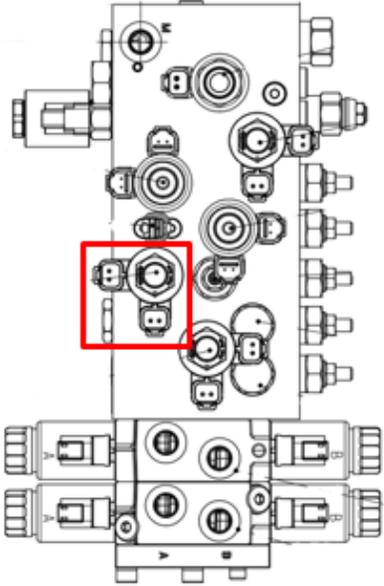
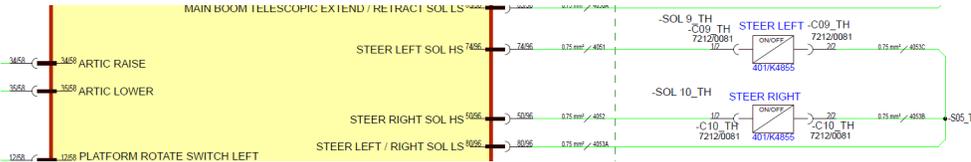
**6.1.75 B1089-16**

<b>Error code:</b>	<b>B1089-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve High Side Short Circuit to Low
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4051,4052 &amp; 4053A, 4053B, 4053C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C09_TH and C10_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed.</li> <li>6 Turn ignition on off to clear code.</li> </ol>



**6.1.76 B1090-13**

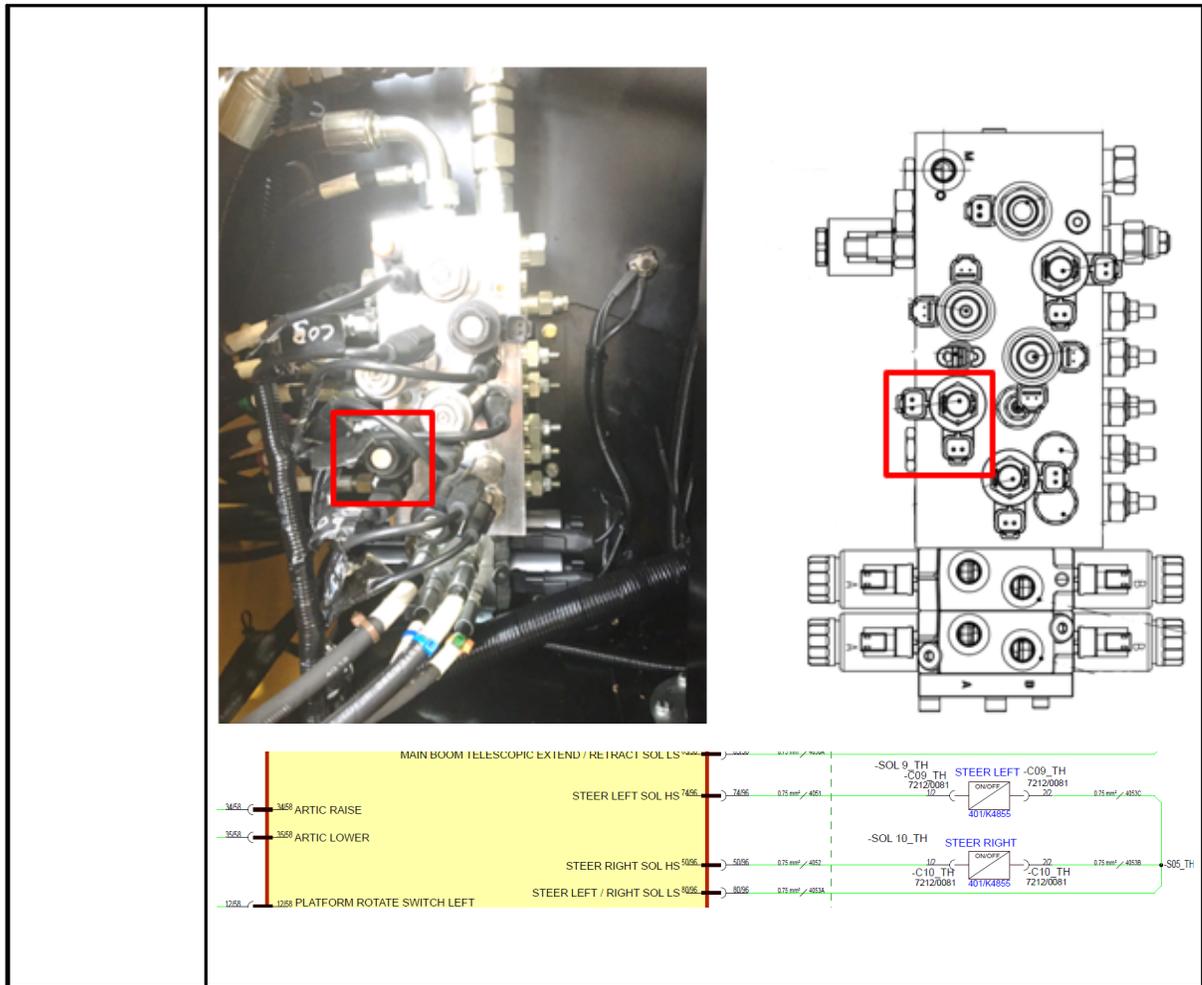
<b>Error code:</b>	<b>B1090-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve High Side & Low Side Open Circuit
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>Poor or loose connection</li> <li>Break in wiring</li> <li>Water in connector</li> </ol>

	<p>4. Broken pin or connector</p> <p>5. Faulty or Damage solenoid</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4051,4052 &amp; 4053A, 4053B, 4053C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C09_TH and C10_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed.</li> <li>6 Turn ignition on off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div> 

**6.1.77 B1091-17**

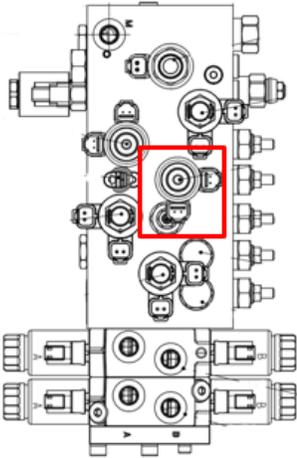
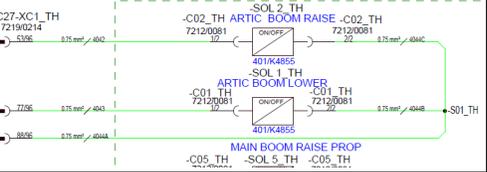
<b>Error code:</b>	<b>B1091-17</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve Fault.
<b>Component</b> :	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4051,4052 &amp; 4053A, 4053B, 4053C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C09_TH and C10_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed.</li> <li>6 Turn ignition on off to clear code.</li> </ol>



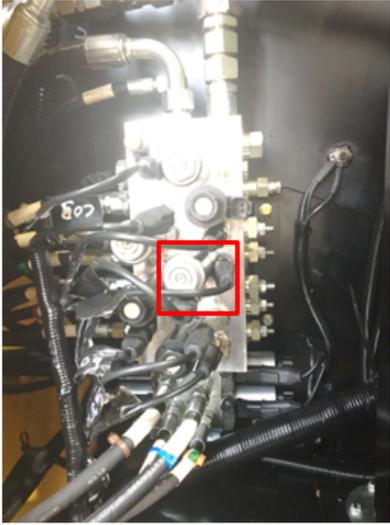
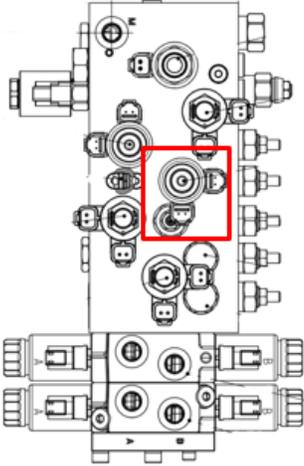
### 6.1.78 B1092-17

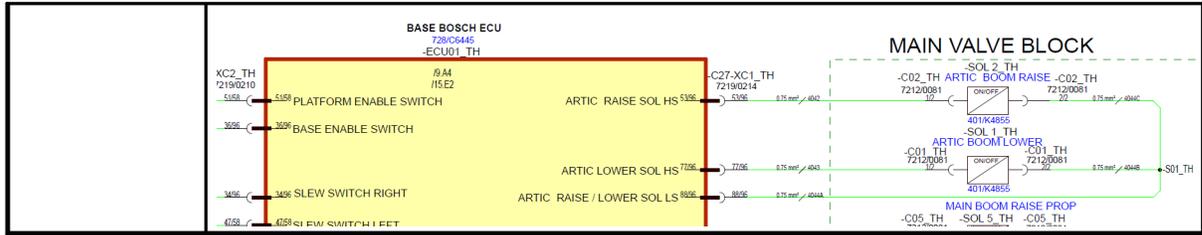
<b>Error code:</b>	<b>B1092-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve High Side Short Circuit to High
<b>Component :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable articulated boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>Poor or loose connection</li> <li>Break in wiring</li> </ol>

	<ol style="list-style-type: none"> <li>Water in connector</li> <li>Broken pin or connector</li> <li>Faulty or Damage solenoid</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>Check coil resistance 5-10 ohms</li> <li>Check wiring from coil to ECU wire 4042,4043 &amp; 4044A, 4044B, 4044C for cut, pinch or and damage.</li> <li>Check ECU Pin 53/96, 77/96, 88/96 for bend or back out or any damage.</li> <li>Check solenoid connector C01_TH and C02_TH for loose connection or any damage.</li> <li>Check if valve is mechanically jammed</li> <li>Turn ignition on off to clear code</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;"> <p><b>BASE BOSCH ECU</b> 728/C6445 -ECU01_TH</p>  </div> <div style="text-align: center;"> <p><b>MAIN VALVE BLOCK</b></p>  </div> </div>

**6.1.79 B1093-16**

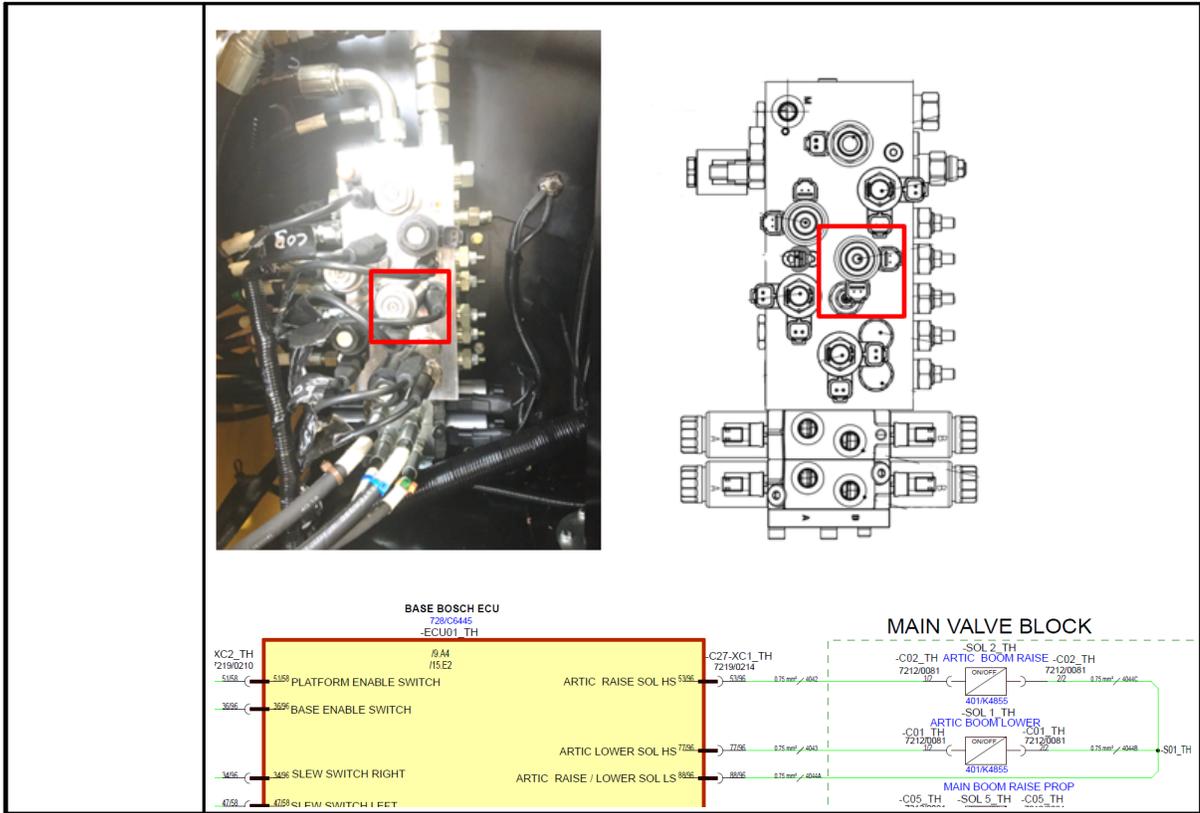
<b>Error code:</b>	<b>B1093-16</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve High Side Short Circuit to Low
<b>Component</b> :	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable articulated boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4042,4043 &amp; 4044A, 4044B, 4044C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 53/96, 77/96, 88/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C01_TH and C02_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn ignition on off to clear code</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



**6.1.80 B1094-13**

<b>Error code:</b>	<b>B1094-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve High Side & Low Side Open Circuit
<b>Component :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable articulated boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4042,4043 &amp; 4044A, 4044B, 4044C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 53/96, 77/96, 88/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C01_TH and C02_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn ignition on off to clear code</li> </ol>

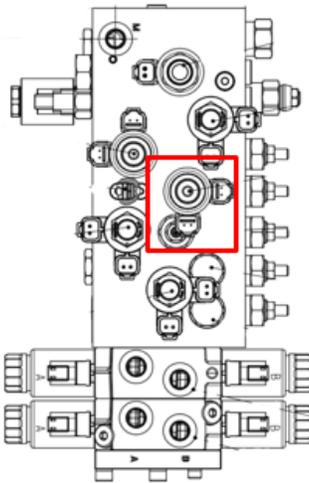


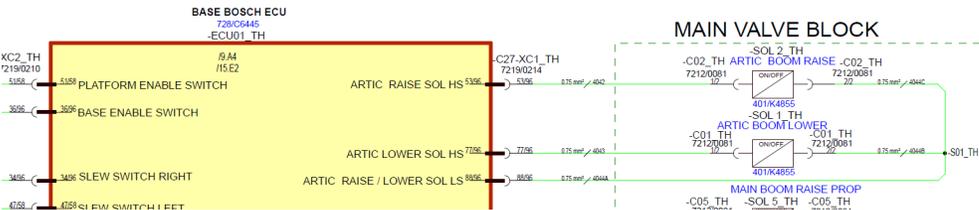
6.1.81 B1095-92

<b>Error code:</b>	<b>B1095-92</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve Fault
<b>Component :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable articulated boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>

**Service Action:**

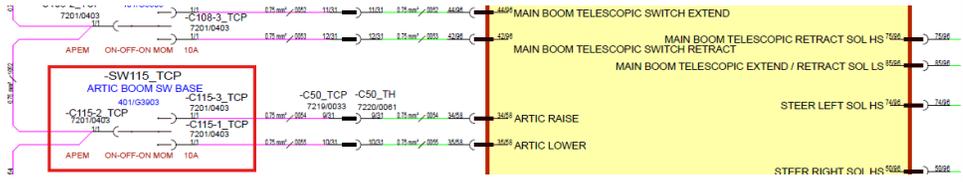
1. Check coil resistance 5-10 ohms
2. Check wiring from coil to ECU wire 4042,4043 & 4044A, 4044B, 4044C for cut, pinch or and damage.
3. Check ECU Pin 53/96, 77/96, 88/96 for bend or back out or any damage.
4. Check solenoid connector C01\_TH and C02\_TH for loose connection or any damage.
5. Check if valve is mechanically jammed
6. Turn ignition on off to clear code



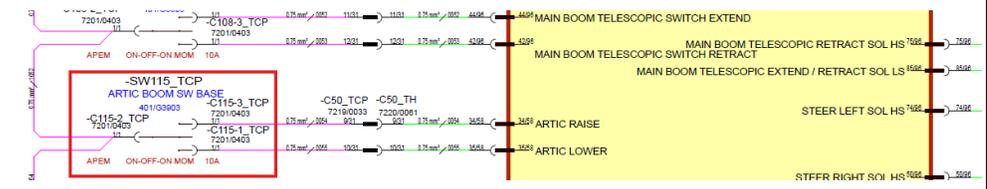
**6.1.82 B1096-17**

<b>Error code:</b>	<b>B1096-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ARTICULATED BOOM RAISE Switch Short Circuit to High
<b>Component</b> :	ARTICULATED BOOM RAISE Switch

<b>Vehicle reaction:</b>	Input from base control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C115-2_TCP from the rear of the ARTICULATED BOOM RAISE Switch on the Base Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0054 to Base Bosch ECU pin 34/58.</li> <li>2. Check Wire #0054 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C115-3_TCP</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

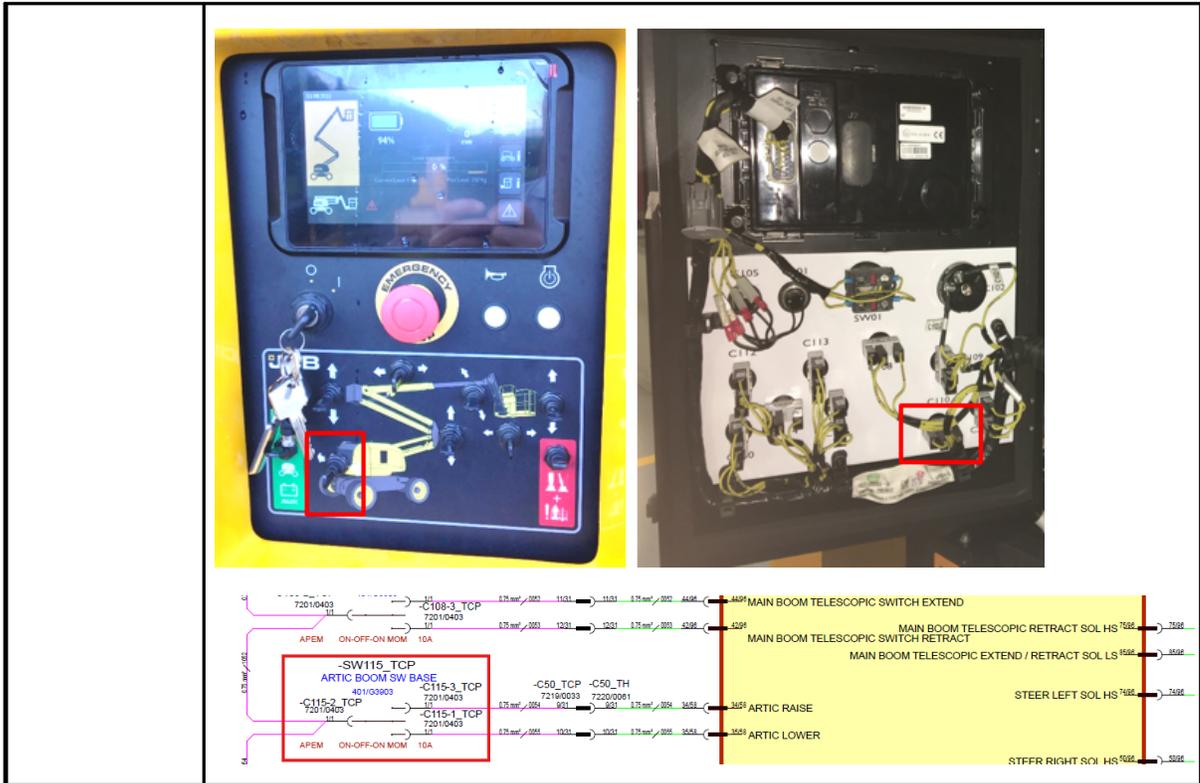
**6.1.83 B1097-17**

<b>Error code:</b>	<b>B1097-17</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	ARTICULATED BOOM LOWER Switch Short Circuit to High
<b>Component</b> :	ARTICULATED BOOM LOWER Switch
<b>Vehicle reaction:</b>	Input from base control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C115-2_TCP from the rear of the ARTICULATED BOOM RAISE Switch on the Base Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0055 to Base Bosch ECU pin 35/58.</li> <li>2. Check Wire #0055 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C115-1_TCP</li> </ol>
<div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center; margin-top: 10px;">  </div>	

## 6.1.84 B1098-92

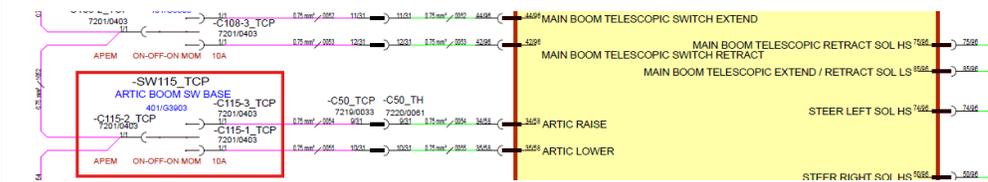
<b>Error code:</b>	<b>B1098-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)
<b>Component</b> :	ARTICULATED BOOM RAISE & LOWER Switches
<b>Vehicle reaction:</b>	Input from base control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C115-2_TCP from the rear of the ARTICULATED BOOM RAISE Switch on the Base Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0054 to Base Bosch ECU pin 34/58.</li> <li>2. Check Wire #0054 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Disconnect connector -C115-2_TCP from the rear of the ARTICULATED BOOM RAISE Switch on the Base Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0055 to Base Bosch ECU pin 35/58.</li> <li>4. Check Wire #0055 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>5. Check condition of pins in Base Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>6. Check for water ingress in the Base Bosch ECU Connectors.</li> <li>7. Check Switch for damage or shorting to connector -C115-1_TCP</li> </ol>



6.1.85 B1099-16

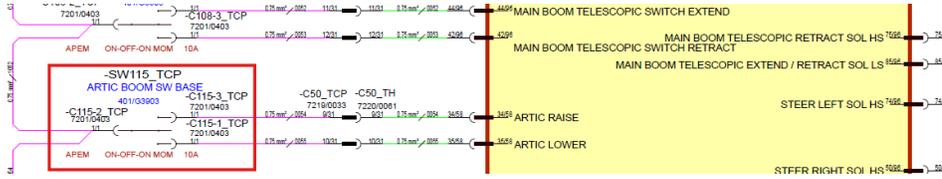
<b>Error code:</b>	<b>B1099-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ARTICULATED BOOM RAISE Switch Short Circuit to Low
<b>Component</b> :	ARTICULATED BOOM RAISE Switch
<b>Vehicle reaction:</b>	Input from base control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	1. Disconnect connector -C115-2_TCP from the rear of the ARTICULATED BOOM RAISE Switch on the Base Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0054 to Base Bosch ECU pin

- 34/58.
2. Check Wire #0054 is not shorted to GND / Chassis. Check for abrasions and pinching.
3. Check condition of pins in Base Bosch ECU. Check for Bent pins, debris or stray wires causing a short.
4. Check for water ingress in the Base Bosch ECU Connectors.
5. Check Switch for damage or shorting to connector -C115-3\_TCP



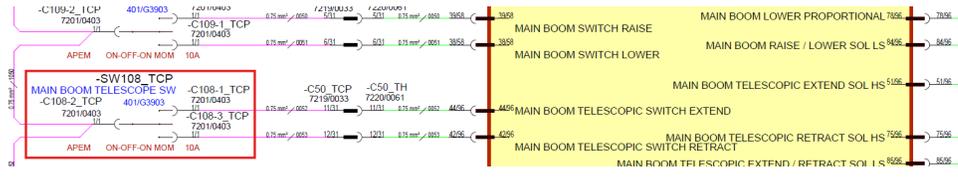
### 6.1.86 B1100-16

<b>Error code:</b>	<b>B1100-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ARTICULATED BOOM LOWER Switch Short Circuit to Low
<b>Component</b> :	ARTICULATED BOOM LOWER Switch
<b>Vehicle reaction:</b>	Input from base control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> </ol>

	<p>4. Water damage/ingress within the harness connectors 5. Damaged component</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C115-2_TCP from the rear of the ARTICULATED BOOM RAISE Switch on the Base Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0055 to Base Bosch ECU pin 35/58.</li> <li>2. Check Wire #0055 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Base Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Base Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C115-3_TCP</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

**6.1.87 B1101-17**

<b>Error code:</b>	<b>B1101-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM EXTEND Switch Short Circuit to High
<b>Component</b> :	Telescopic Switch

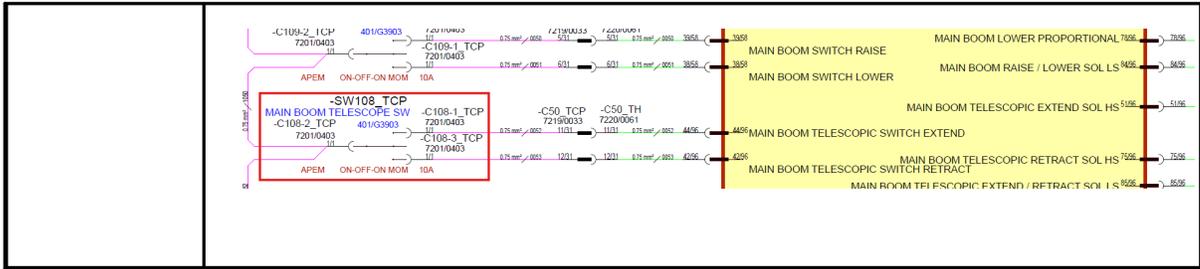
<p><b>Vehicle reaction:</b></p>	<p>Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction</p>
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Telescope Extend terminal, -C108-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C108-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> 

6.1.88 B1102-17

<b>Error code:</b>	<b>B1102-17</b>
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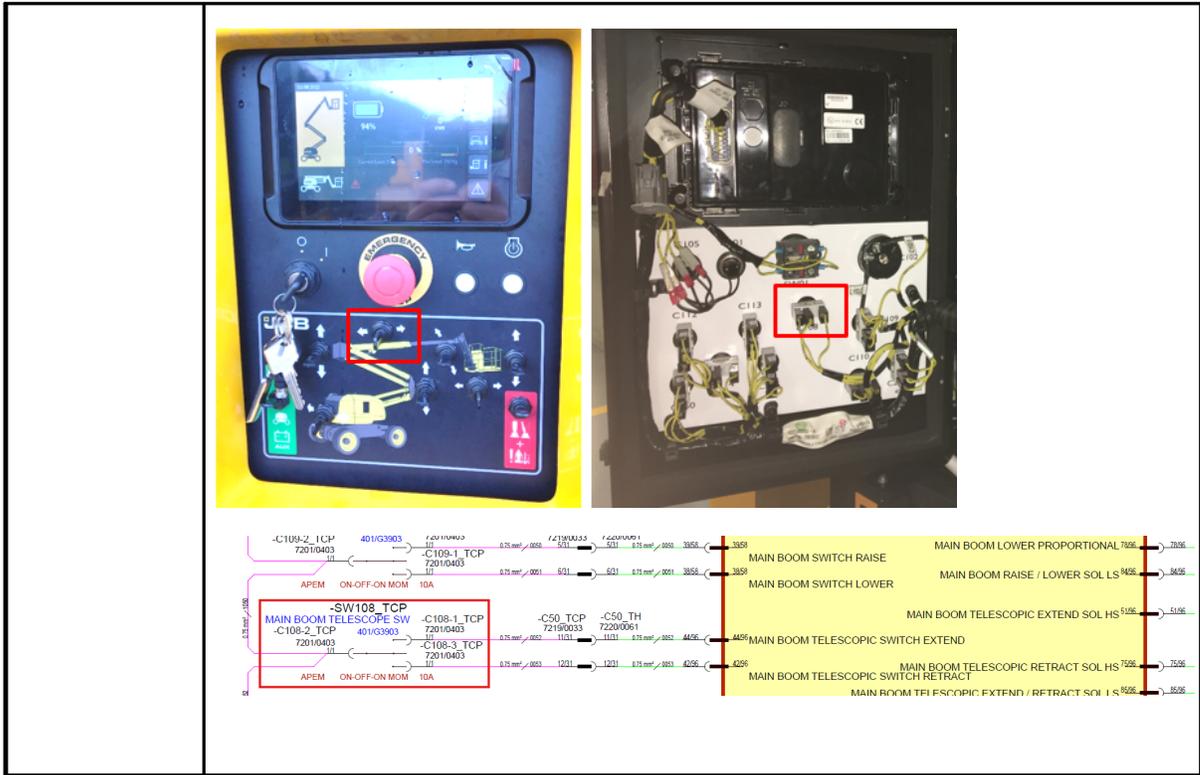
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM RETRACT Switch Short Circuit to High
<b>Component</b> :	Telescopic Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Telescope Retract terminal, -C108-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C108-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>





## 6.1.89 B1103-92

<b>Error code:</b>	<b>B1103-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM EXTEND & RETRACT Switches both activated (5 - 10V)
<b>Component</b> :	Telescopic Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Telescope Extend/Retract &amp; Lower terminals, -C108-1_TCP &amp; -C108-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors (Pins 44/96 &amp; 42/96). If voltage is high, remove -C108-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>

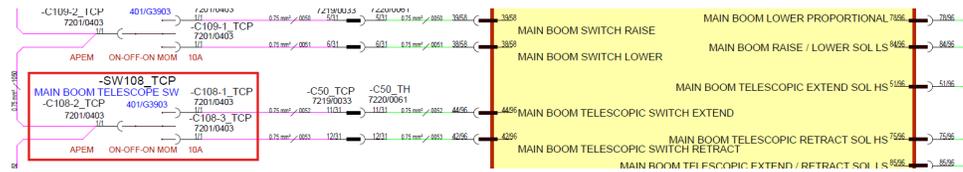


### 6.1.90 B1104-16

<b>Error code:</b>	<b>B1104-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM EXTEND Switch Short Circuit to Low
<b>Component</b> :	Telescopic Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	1. Measure voltage at Base Main Boom Telescope Extend terminal, -C108-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is

constantly <2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C108-2\_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.

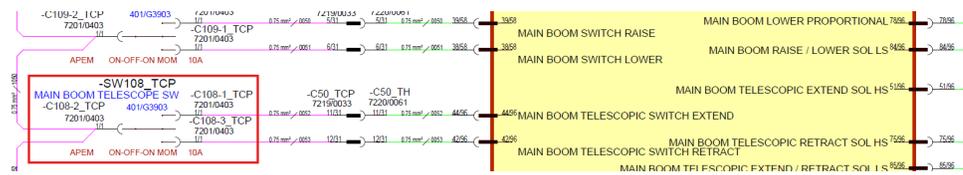
2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND
3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
4. Check connectors for any sign of water ingress.
5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.



### 6.1.91 B1105-16

<b>Error code:</b>	<b>B1105-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM RETRACT Switch Short Circuit to Low
<b>Component</b> :	Telescopic Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault)

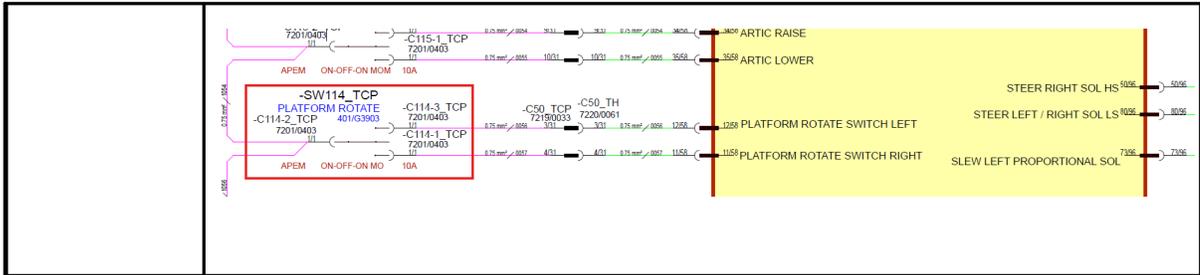
	After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Telescope Retract terminal, -C108-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C108-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



## 6.1.92 B1106-17

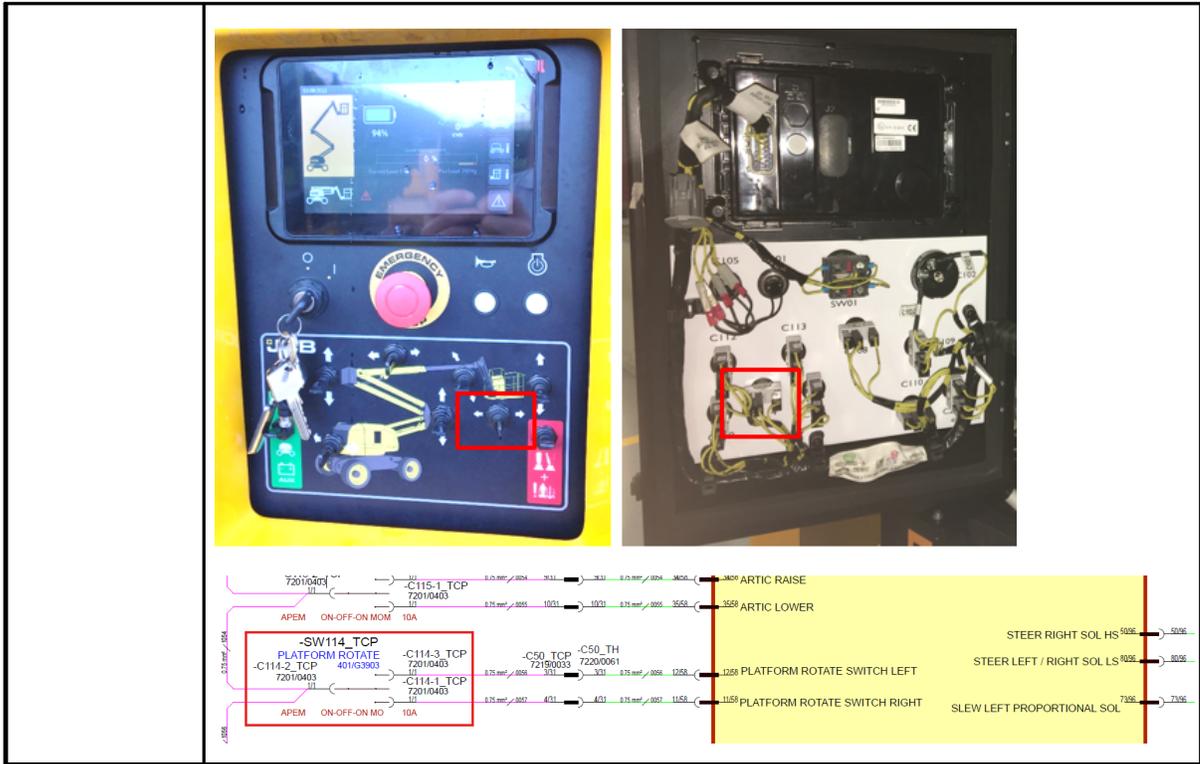
<b>Error code:</b>	<b>B1106-17</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE RIGHT Switch Short Circuit to High
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Platform Rotate terminal, -C114-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C114-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>



6.1.93 B1107-17

<b>Error code:</b>	<b>B1107-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE LEFT Switch Short Circuit to High
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Platform Rotate terminal, -C114-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C114-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



6.1.94 B1108-92

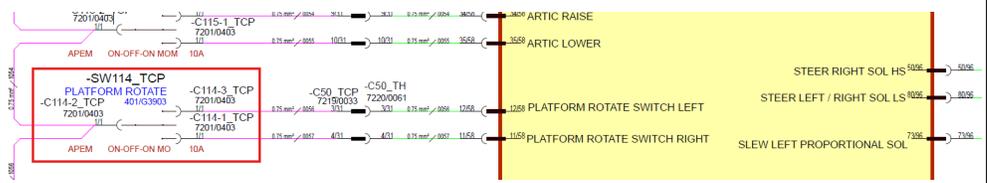
<b>Error code:</b>	<b>B1108-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Platform Rotate terminals, -C114-1_TCP &amp; -C114-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors (Pins 11/58 &amp;</li> </ol>

- 12/58). If voltage is high, remove -C114-2\_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.
2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
3. Check connectors for any sign of water ingress.
4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.



### 6.1.95 B1109-16

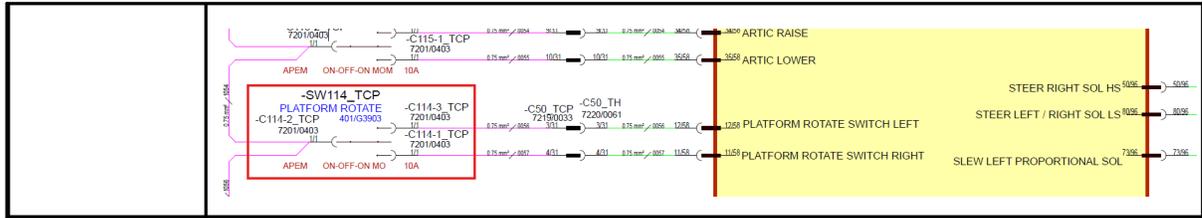
<b>Error code:</b>	<b>B1109-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE RIGHT Switch Short Circuit to Low
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	1. A short circuit within the wiring harness 2. A short circuit to the chassis

	<ol style="list-style-type: none"> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Platform Rotate terminal, -C114-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C114-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center;">  </div>

**6.1.96 B1110-16**

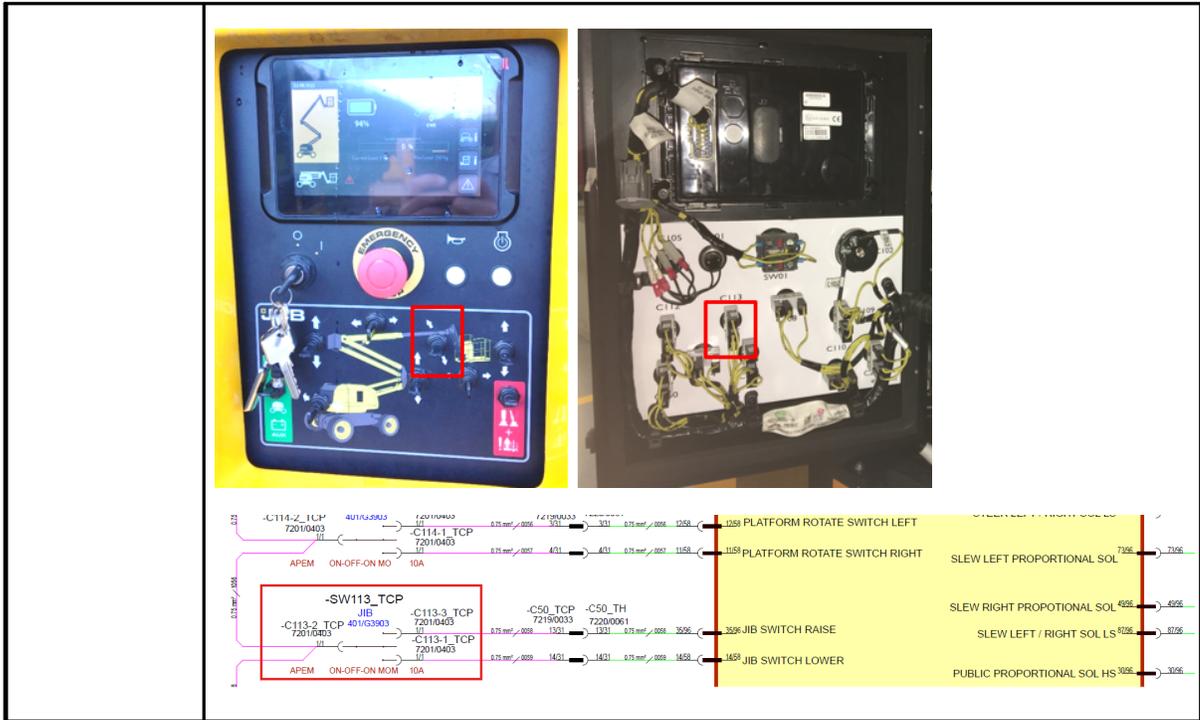
<b>Error code:</b>	<b>B1110-16</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	PLATFORM ROTATE LEFT Switch Short Circuit to Low
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Platform Rotate terminal, -C114-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C114-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>



## 6.1.97 B1111-17

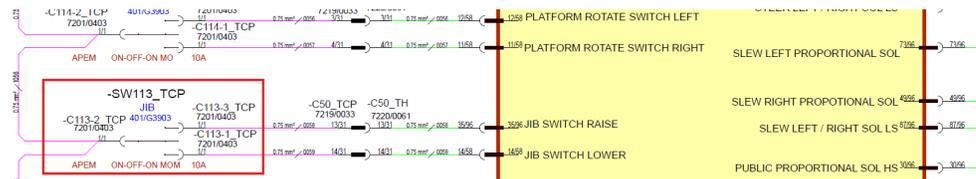
<b>Error code:</b>	<b>B1111-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB RAISE Switch Short Circuit to High
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Jib Raise terminal, -C113-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C113-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



**6.1.98 B1112-17**

<b>Error code:</b>	<b>B1112-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Jib Lower Switch Short Circuit to High
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	1. Measure voltage at Base Jib Lower terminal, -C113-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C113-2_TCP, if

- voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.
2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
3. Check connectors for any sign of water ingress.
4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage



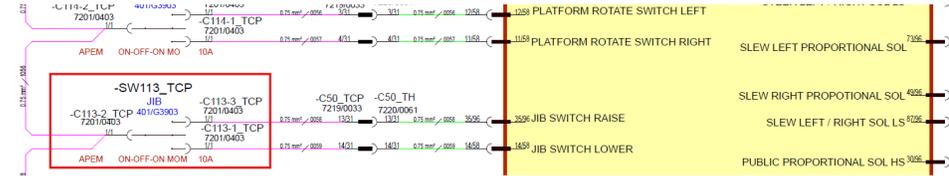
### 6.1.99 B1113-92

<b>Error code:</b>	<b>B1113-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB RAISE & LOWER Switches both activated (5 - 10V)
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>

**Service Action:**

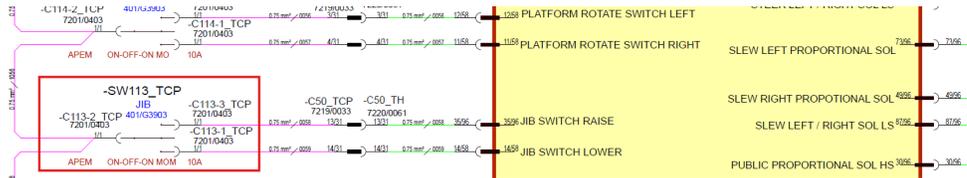
1. Measure voltage at Base Jib Switch terminals, -C113-1\_TCP & -C113-3\_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors (Pins 35/96 & 14/58). If voltage is high, remove -C113-2\_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.
2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
3. Check connectors for any sign of water ingress.
4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.



### 6.1.100 B1114-16

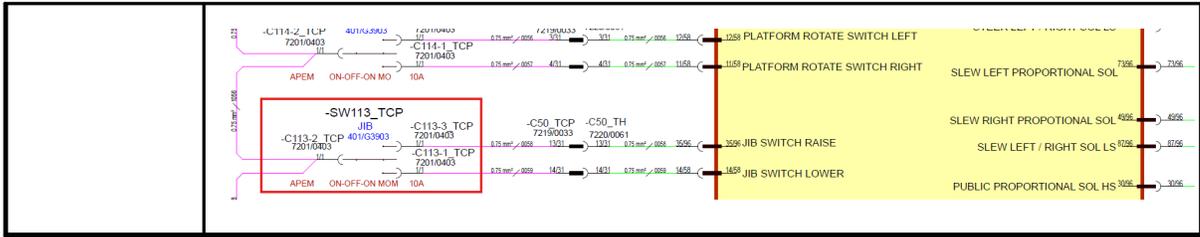
<b>Error code:</b>	<b>B1114-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Jib Raise Switch Short Circuit to Low
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault)

	After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Jib Raise terminal, -C113-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C113-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> 

### 6.1.101 B1115-16

<b>Error code:</b>	<b>B1115-16</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	Jib Lower Switch Short Circuit to Low
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Jib Lower terminal, -C113-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C113-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>



## 6.1.102 B1116-17

<b>Error code:</b>	<b>B1116-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM RAISE (BASE) Switch Short Circuit to High
<b>Component</b> :	Main Boom Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Raise terminal, -C109-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C109-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



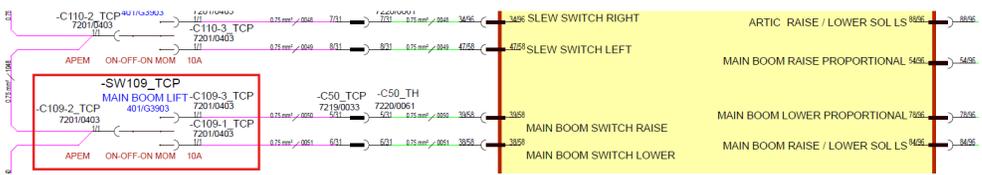
### 6.1.103 B1117-17

<b>Error code:</b>	<b>B1117-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM LOWER (BASE) Switch Short Circuit to High
<b>Component</b> :	Main Boom Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>

**Service Action:**

1. Measure voltage at Base Main Boom Lower terminal, -C109-1\_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C109-2\_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.
2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
3. Check connectors for any sign of water ingress.
4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage

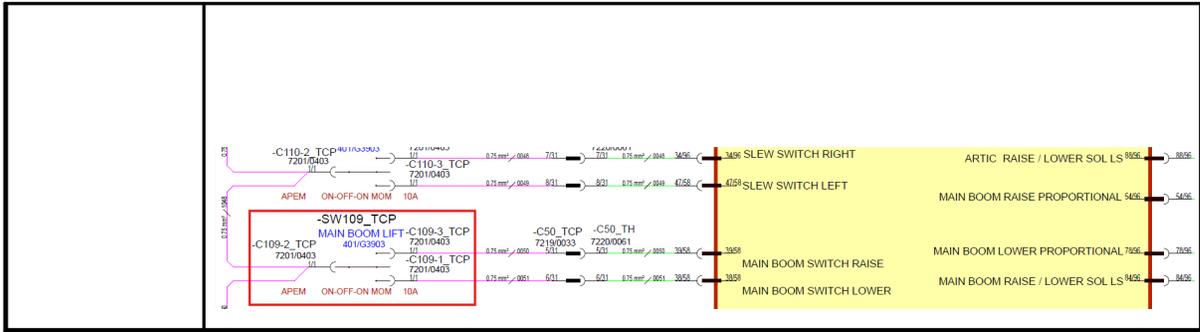


### 6.1.104 B1118-92

<b>Error code:</b>	<b>B1118-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM RAISE & LOWER (BASE) Switches both activated (5 - 10V)

<b>Component :</b>	Main Boom Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Raise/Lower Switch terminals, - C109-1_TCP &amp; -C109-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors (Pins 39/58 &amp; 38/58). If voltage is high, remove -C109-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div>



### 6.1.105 B1119-16

<b>Error code:</b>	<b>B1119-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM RAISE (BASE) Switch Short Circuit to Low
<b>Component</b> :	Main Boom Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Main Boom Raise terminal, -C109-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C109-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage</li> </ol>



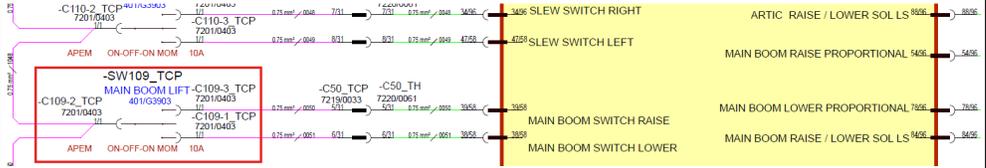
### 6.1.106 B1120-16

<b>Error code:</b>	<b>B1120-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM LOWER (BASE) Switch Short Circuit to Low
<b>Component</b> :	Main Boom Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>

**Service Action:**

1. Measure voltage at Base Main Boom Raise terminal, -C109-1\_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly <2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C109-2\_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.
2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND
3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
4. Check connectors for any sign of water ingress.
5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.



### 6.1.107 B1121-17

<b>Error code:</b>	<b>B1121-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW RIGHT (BASE) Switch Short Circuit to High

<b>Component :</b>	Slew Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Slew Right terminal, -C110-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C110-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



## 6.1.108 B1122-17

<b>Error code:</b>	<b>B1122-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW LEFT (BASE) Switch Short Circuit to High
<b>Component</b> :	Slew Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Slew Left terminal, -C110-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is high, remove -C110-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> <li>4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>



- switch is faulty, else, the fault is at the harness to the Bosch ECU.
2. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.
3. Check connectors for any sign of water ingress.
4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.



### 6.1.110 B1124-16

<b>Error code:</b>	<b>B1124-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW RIGHT (BASE) Switch Short Circuit to Low
<b>Component</b> :	Slew Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> </ol>

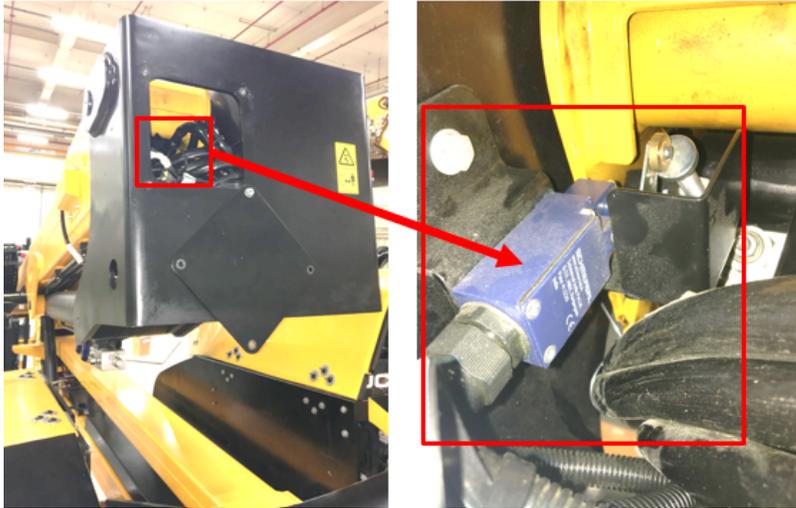
	<p>4. Water damage/ingress within the harness connectors 5. Damaged component</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Slew Right terminal, -C110-1_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C110-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center;">  </div>

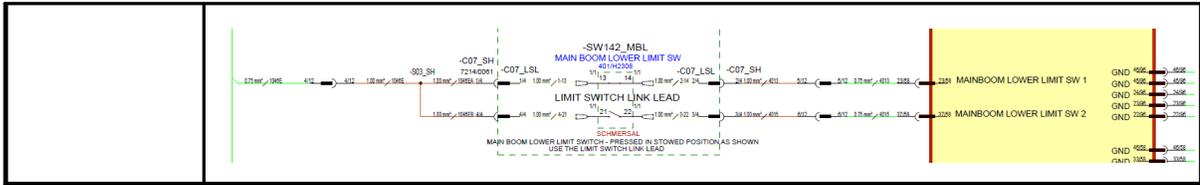
**6.1.111 B1125-16**

<b>Error code:</b>	<b>B1125-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	SLEW LEFT (BASE) Switch Short Circuit to Low

<b>Component :</b>	Slew Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Base Slew Left terminal, -C110-3_TCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch ECU connectors. If voltage is Low, remove -C110-2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check there are no visible defects in the wiring causing a short circuit to chassis / GND</li> <li>3. Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>4. Check connectors for any sign of water ingress.</li> <li>5. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</li> </ol>
<div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center; margin-top: 10px;">  </div>	

6.1.112 B1126-17

<b>Error code:</b>	<b>B1126-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM Lower Limit Switch 1 Short Circuit to High
<b>Component</b> :	Main Boom Limit Switch 1
<b>Vehicle reaction:</b>	Default to raised position Prevent main boom raise & extend
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom Down Limit Switch -SW142_MBL Pin 2. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 2, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch,Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</li> </ol>
	



6.1.113 B1127-17

<b>Error code:</b>	<b>B1127-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM Lower Limit Switch 2 Short Circuit to High
<b>Component</b> :	Main Boom Limit Switch 2
<b>Vehicle reaction:</b>	Default to raised position Prevent main boom raise & extend
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom Down Limit Switch -SW142_MBL Pin 4. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Inspect harness, check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 4, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</li> </ol>

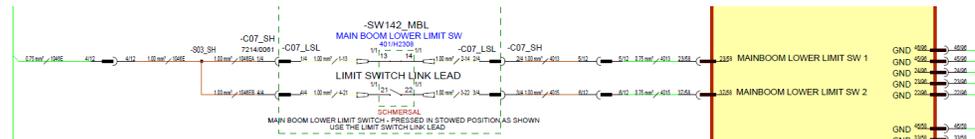
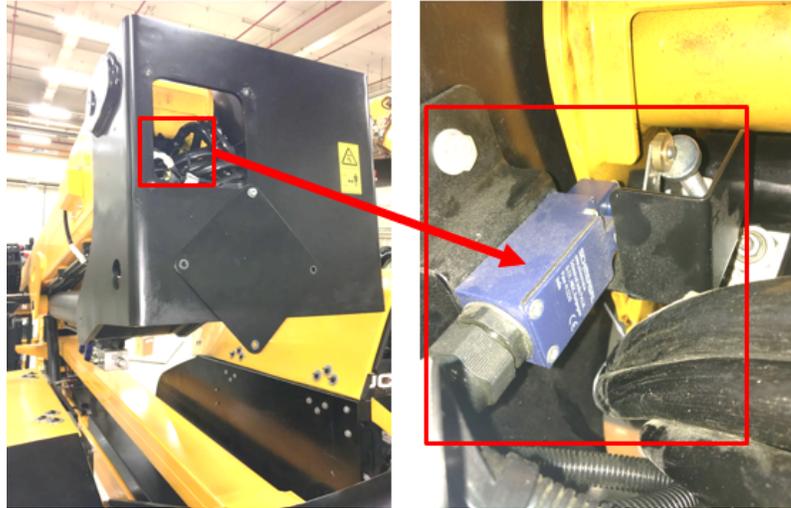


### 6.1.114 B1128-16

<b>Error code:</b>	<b>B1128-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM Lower Limit Switch 1 Short Circuit to Low
<b>Component</b> :	Main Boom Limit Switch 1
<b>Vehicle reaction:</b>	Default to raised position Prevent main boom raise & extend
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom Down Limit Switch -SW142_MBL Pin 2. Actuate the switch to check that the voltage level changes between 0V and 10V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Inspect harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 2, measure voltage of switch output at this</li> </ol>

pin. If voltage remains at 0V when switch is actuated then there is a short circuit to ground within the switch or the input to the switch.

3. Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.
4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.



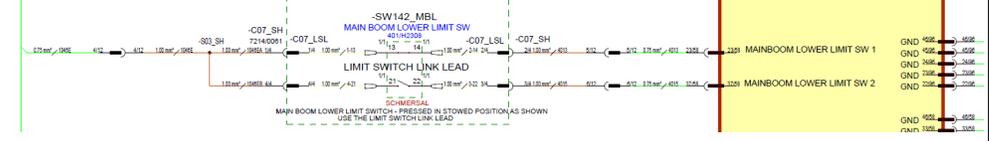
### 6.1.115 B1129-13

<b>Error code:</b>	<b>B1129-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM Lower Limit Switch 1 AND Switch 2 Open Circuit
<b>Component</b> :	Main Boom Limit Switch(es)
<b>Vehicle reaction:</b>	Default to raised position Prevent main boom raise & extend
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A poor connection or damaged terminal within the connector(s)</li> <li>2. A damaged or broken wire within the wiring harness</li> <li>3. Component is damaged</li> </ol>

**Service Action:**

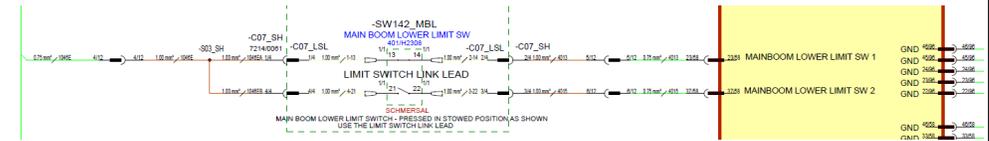
1. Check Terminals at Boom Down Limit Switch -SW142\_MBL. Check terminals at Base Bosch ECU Connectors. Ensure all connectors are fully seated.
2. Check continuity with resistance meter between ECU to Boom Down Limit Switch -SW142\_MBL terminals.
3. Check Operation of Main Boom Limit Switch. Observe all parts for damage. Check terminals not backed out in Base Bosch ECU Connector.



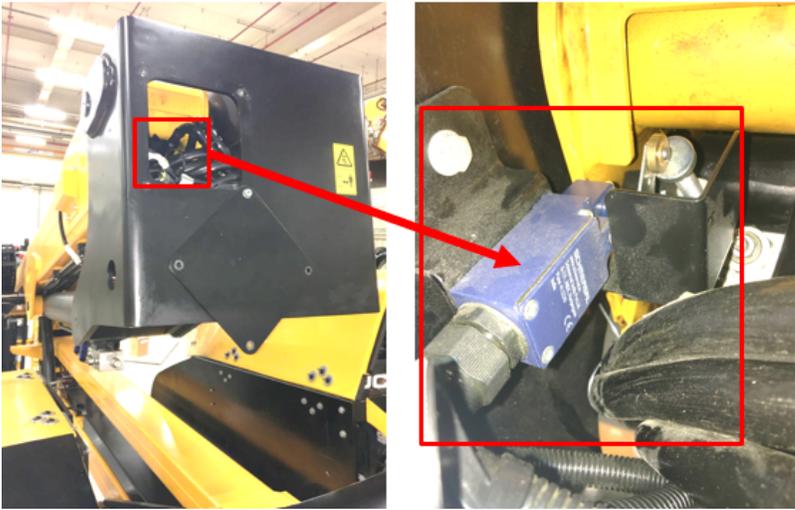
6.1.116 B1130-16

<b>Error code:</b>	<b>B1130-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM Lower Limit Switch Short Circuit to Low
<b>Component</b> :	Main Boom Limit Switch
<b>Vehicle reaction:</b>	Default to raised position Prevent main boom raise & extend
<b>Possible Cause:</b>	1. A short circuit within the wiring harness 2. A short circuit to the chassis

	<p>3. A short circuit within the harness connectors          4. Water damage/ingress within the harness connectors          5. Damaged component</p>
<p><b>Service Action:</b></p>	<p>1. Measure voltage of Boom Down Limit Switch -SW142_MBL Pin 4. Actuate the switch to check that the voltage level changes between 0V and 10V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.          2. Disconnect terminal from Pin 4, measure voltage of switch output at this pin. If voltage remains at 0V when switch is actuated then there is a short circuit to ground within the switch or the input to the switch.          3. Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.          4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins as these could be bent.</p> <div style="display: flex; justify-content: space-around;">   </div> 

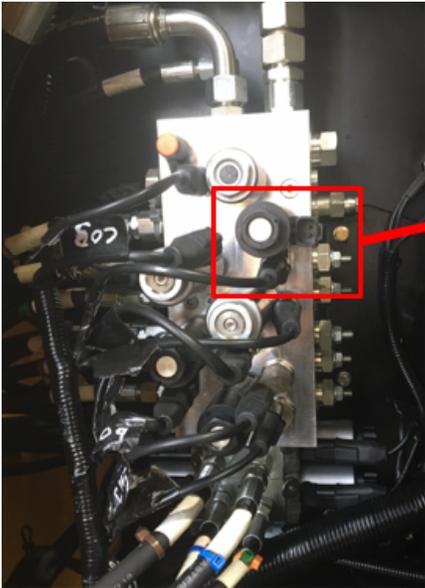
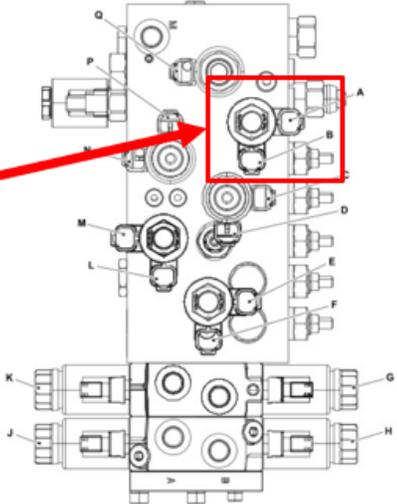
6.1.117 B1131-2F

<b>Error code:</b>	<b>B1131-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Position Control - Main Boom Lower Limit Switch Short Circuit to High
<b>Component</b> :	Main Boom Limit Switch

<b>Vehicle reaction:</b>	Default to raised position Prevent main boom raise & extend
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring terminals at Boom Down Limit Switch -SW142_MBL and check wiring from Switch to connector.</li> <li>2. Check none of the wires to the switch connector are not shorted together</li> <li>3. Check Bosch Base ECU Connectors for Damage, Bent pins and water ingress.</li> <li>4. Check Switch or harness for damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <div style="text-align: center; margin-top: 10px;">  </div>

### 6.1.118 B1133-17

<b>Error code:</b>	<b>B1133-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB/PLATFORM FLOW High Side Solenoid Short Circuit to High
<b>Component</b> :	JIB/PLATFORM FLOW Solenoid

<b>Vehicle reaction:</b>	Detect failure mode for Short Circuit to High and disable platform rotate and allow Jib functions Note: Before Ignition ON, POST Fail (stuck in startup logic for Short Circuit to High only) and Generic output fault.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Jib Up / Platform Right solenoid connector -C62_TH. Disconnect connector and measure voltage at pin 1/2. If voltage is high, check harness and Base Bosch ECU Connector terminal 7/96 for short to high.</li> <li>2. Measure voltage at -C62_TH pin 2/2. If voltage is high, check return path for short to high.</li> <li>3. Check -C62_TH and Base Bosch ECU Connector for water ingress, damage, debris or stray wires that may cause short circuit.</li> <li>4. Check for any damage to the harness or components that may cause short circuit.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="margin-top: 10px;">  </div>

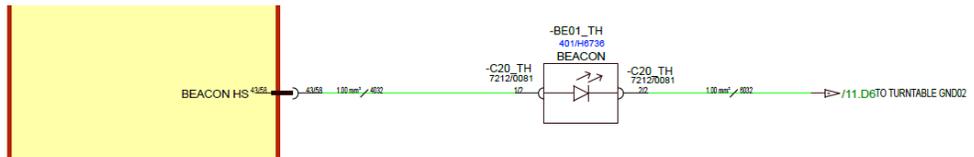
### 6.1.119 B1134-16

<b>Error code:</b>	<b>B1134-16</b>
<b>ECU</b>	Base ECU

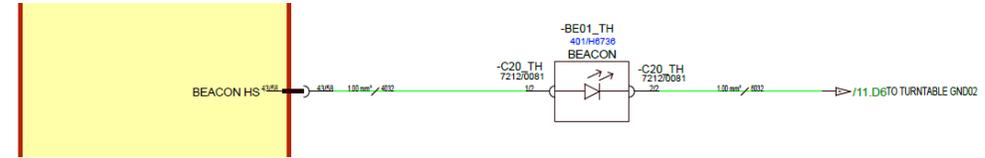
<b>Description</b> :	JIB/PLATFORM FLOW High Side Solenoid Short Circuit to Low
<b>Component</b> :	JIB/PLATFORM FLOW Solenoid
<b>Vehicle reaction:</b>	Detect failure mode for Short Circuit to Low and disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Jib Up / Platform Right solenoid connector -C62_TH. Disconnect connector and test pin 1/2 for short to GND. Check harness and Base Bosch ECU Connector terminal 7/96 for short to GND.</li> <li>2. Test for short to GND at -C62_TH pin 2/2. Check return path for short to GND.</li> <li>3. Check -C62_TH and Base Bosch ECU Connector for water ingress, damage, debris or stray wires that may cause short circuit.</li> <li>4. Check for any damage to the harness or components that may cause short circuit.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div> </div> <div> </div> </div> <div style="margin-top: 20px;"> </div>

6.1.120 B1135-13

<b>Error code:</b>	<b>B1135-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon Open Circuit or Short Circuit to High.
<b>Component</b> :	Beacon
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short or open circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check continuity between Beacon connector -C20_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 43/58 (Wire #4032). Check Wire #4032 not short circuit to high.</li> <li>2. Check Beacon connector and ECU Connectors. Ensure no bent pins or stray wire causing short circuit. Ensure wires correctly terminated.</li> <li>3. Check Beacon connector and ECU Connectors for any water ingress.</li> <li>4. Check Beacon for any damage.</li> </ol>

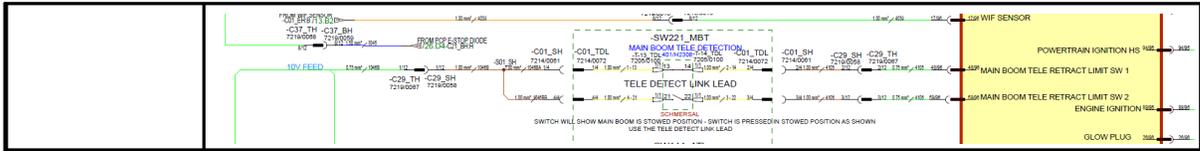


6.1.121 B1136-16

<b>Error code:</b>	<b>B1136-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon Short Circuit to Low.
<b>Component</b> :	Beacon
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check continuity between Beacon connector -C20_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 43/58 (Wire #4032).</li> <li>2. Check Wire #4032 not short circuit to GND. Check for abrasions and pinching of the harness.</li> <li>3. Check Beacon connector and ECU Connectors. Ensure no bent pins or stray wire causing short circuit. Ensure wires correctly terminated.</li> <li>4. Check Beacon connector and ECU Connectors for any water ingress.</li> <li>5. Check Beacon for any damage.</li> </ol>
	 

6.1.122 B1138-17

<b>Error code:</b>	<b>B1138-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main boom telescopic retract limit switch 1 short circuit to high
<b>Component</b> :	Main boom telescopic retract limit switch
<b>Vehicle reaction:</b>	<p>Default to raised position</p> <p>Prevent main boom raise &amp; extend, and articulated boom raise</p> <p>Allow main boom retract at cushioning speed only</p> <p>Allow slew speed * 50%</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom telescopic retract Limit Switch -SW221_MBT Pin 2. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 2, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins 48/96 &amp; 59/96 as these could be bent.</li> </ol>
	



### 6.1.123 B1139-17

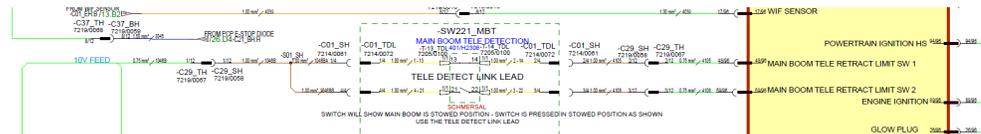
<b>Error code:</b>	<b>B1139-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main boom telescopic retract limit switch 2 short circuit to high
<b>Component</b> :	Main boom telescopic retract limit switch
<b>Vehicle reaction:</b>	<p>Default to raised position</p> <p>Prevent main boom raise &amp; extend, and articulated boom raise</p> <p>Allow main boom retract at cushioning speed only</p> <p>Allow slew speed * 50%</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom telescopic retract Limit Switch -SW221_MBT Pin 4. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Inspect harness, check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 4, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins 48/96 &amp; 59/96 as these could be bent.</li> </ol>



### 6.1.124 B1140-16

<b>Error code:</b>	<b>B1140-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main boom telescopic retract limit switch 1 short circuit to low
<b>Component</b> :	Main boom telescopic retract limit switch
<b>Vehicle reaction:</b>	<p>Default to raised position</p> <p>Prevent main boom raise &amp; extend, and articulated boom raise</p> <p>Allow main boom retract at cushioning speed only</p> <p>Allow slew speed * 50%</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom telescopic retract Limit Switch -SW221_MBT Pin 2. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 2, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</li> </ol>

4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins 48/96 & 59/96 as these could be bent.

### 6.1.125 B1141-13

<b>Error code:</b>	<b>B1141-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main boom telescopic retract limit switch 1 and 2 are both open circuit
<b>Component</b> :	Main boom telescopic retract limit switch
<b>Vehicle reaction:</b>	<p>Default to raised position</p> <ul style="list-style-type: none"> <li>• Prevent main boom raise &amp; extend, and articulated boom raise</li> <li>• Allow main boom retract at cushioning speed only</li> <li>• Allow slew speed * 50%</li> </ul>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in switch</li> <li>4. Broken switch</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between switch and ECU for continuity</li> <li>2. Check switch function with multi-meter.</li> </ol>

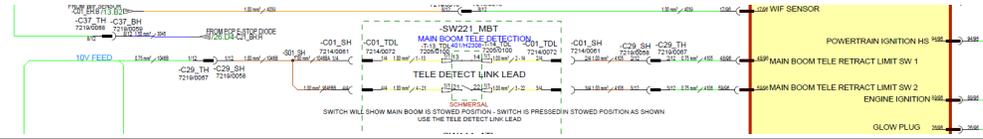
3. Check switch functionality
4. Check for water ingress
5. Check for water ingress/corrosion.
6. Check wire from limit switch to Base ECU connector 4105 and 4016.
7. Check inputs on pin 13 and 21 for 10volt input.
8. Check wire 1046B for and cut or damage.
9. Check Base ECU pin 48/96 and 59/96 for bent or loose connection.
10. Check connector C29\_TH and C01\_TH for loose connection or any damage.
11. Turn ignition on off to clear code





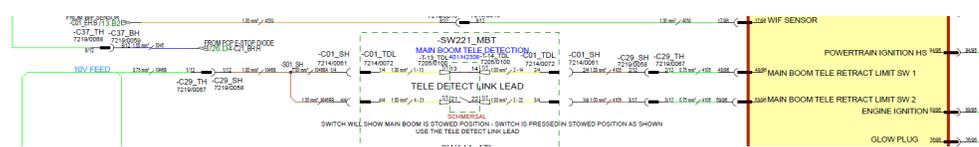

### 6.1.126 B1142-16

<b>Error code:</b>	<b>B1142-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main boom telescopic retract limit switch 2 short circuit to Low
<b>Component</b> :	Main boom telescopic retract limit switch
<b>Vehicle reaction:</b>	<p>Default to raised position</p> <p>Prevent main boom raise &amp; extend, and articulated boom raise</p> <p>Allow main boom retract at cushioning speed only</p>

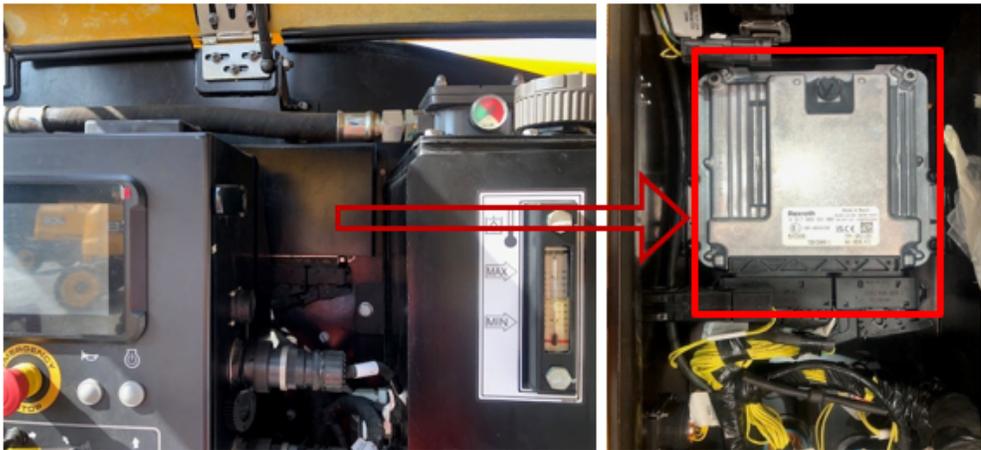
	Allow slew speed * 50%
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage of Boom telescopic retract Limit Switch -SW221_MBT Pin 4. Actuate the switch to check that the voltage level changes between 10V and 0V. If this does not happen, check operation of switch. Check pins at Base Bosch ECU connector. Inspect harness, check for any pinching / damage.</li> <li>2. Disconnect terminal from Pin 4, measure voltage of wire. If voltage is high 10V (or Higher) then there is a short circuit to high within the harness.</li> <li>3. Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.</li> <li>4. Check the Switch, Base Bosch ECU and harnessing connectors for any damage. Pay particular attention to ECU pins 48/96 &amp; 59/96 as these could be bent.</li> </ol>
	
	

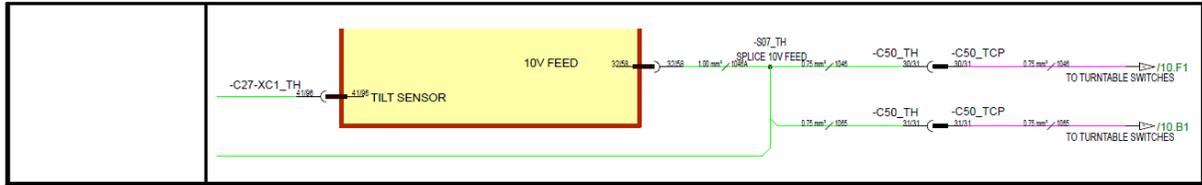
### 6.1.127 B1143-92

<b>Error code:</b>	<b>B1143-92</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Main boom telescopic retract limit switch 1 and 2 Short to 10V
<b>Component :</b>	Main boom telescopic retract limit switch
<b>Vehicle reaction:</b>	Default to raised position

	<ul style="list-style-type: none"> <li>• Prevent main boom raise &amp; extend, and articulated boom raise</li> <li>• Allow main boom retract at cushioning speed only</li> <li>• Allow slew speed * 50%</li> </ul>
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in switch</li> <li>4. Broken switch</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check wiring between switch and ECU for continuity</li> <li>2. Check switch function with multi-meter.</li> <li>3. Check switch functionality</li> <li>4. Check for water ingress</li> <li>5. Check for water ingress/corrosion.</li> <li>6. Check wire from limit switch to Base ECU connector 4105 and 4016.</li> <li>7. Check inputs on pin 13 and 21 for 10volt input.</li> <li>8. Check wire 1046B for and cut or damage.</li> <li>9. Check Base ECU pin 48/96 and 59/96 for bent or loose connection.</li> <li>10. Check connector C29_TH and C01_TH for loose connection or any damage.</li> <li>11. Turn ignition on off to clear code</li> </ol> <div style="display: flex; justify-content: space-around;">   </div>  <p>SWITCH WILL SHOW MAIN BOOM IS STOWED POSITION - SWITCH IS PRESSED IN STOWED POSITION AS SHOWN USE THE TRUE DETECT LINK LEAD</p>

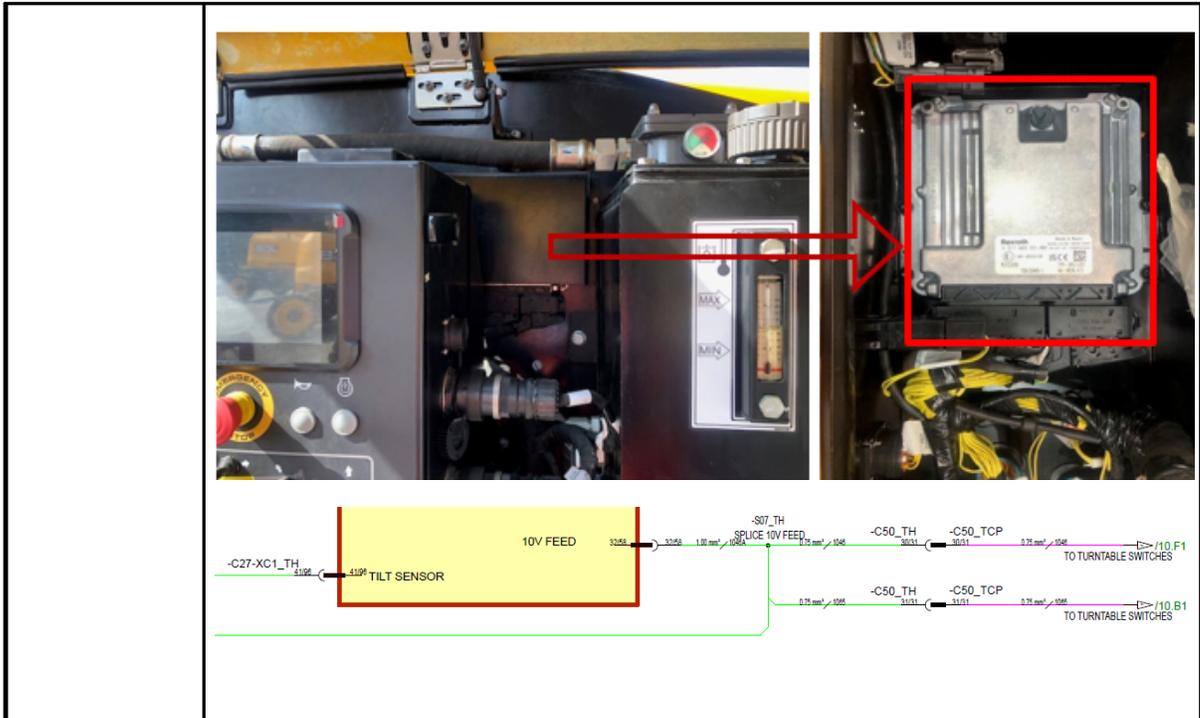
6.1.128 B1144-17

<b>Error code:</b>	<b>B1144-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base 10v Output - 10v Input System Short Circuit to High
<b>Component</b> :	Base ECU
<b>Vehicle reaction:</b>	Block all inputs connected to 10V present on the respective control panel.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates the 10V output from the Base Bosch ECU (Terminal 32/58) has shorted to +12V. To narrow down fault location, Disconnect Interconnection HDP Connector -C50_TH. Measure Voltage at pin 30 and 31 of -C50_TH. If voltage is +10V, then fault is within Turntable Control Panel (else, it is the feed to the turntable limit switches). The 10V feed runs to terminal 1 on all Control Panel Switches. Check Wiring and look for shorts, abrasions and pinching within harness.</li> <li>2. Check for any damage or wiring faults either at the Base Bosch ECU, Turntable Control Panel, Boom Down Limit Switch or Slew Position Switch. Check all wiring and interconnects (Control Panel Only).</li> <li>3. Check all connectors above for water damage</li> <li>4. Check operation of switches and all connectors for any damage.</li> </ol>
	



### 6.1.129 B1145-16

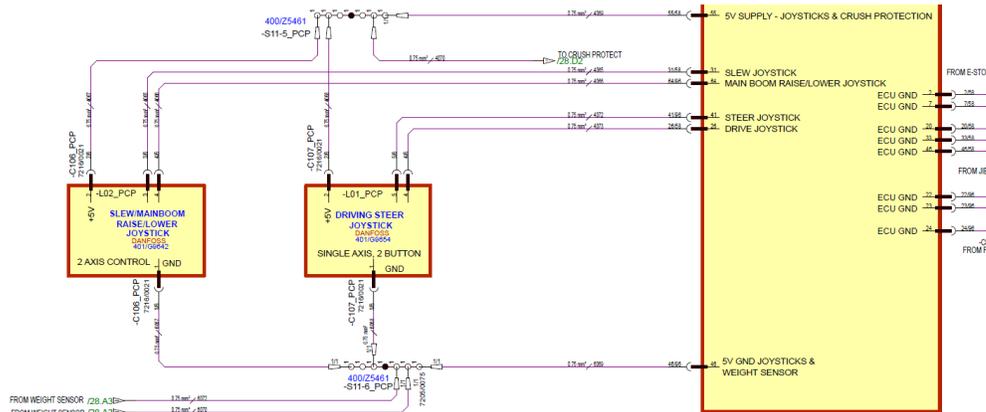
<b>Error code:</b>	<b>B1145-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base 10v Output - 10v Input System Short Circuit to Low
<b>Component</b> :	Base ECU
<b>Vehicle reaction:</b>	Block all inputs connected to 10V present on the respective control panel.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates the 10V output from the Base Bosch ECU (Terminal 32/58) has shorted to GND. To narrow down fault location, Disconnect Interconnection HDP Connector -C50_TH. Measure resistance to GND on -C50_TCP (Control Panel mounted connector). If a short to GND exists, then fault lies within Turntable Control Panel (Else, check the Turntable Harness to the Limit switches). The 10V feed runs to terminal 1 on all Control Panel Switches. Check Wiring and look for shorts, abrasions and pinching within harness.</li> <li>2. Check for any damage or wiring faults either at the Base Bosch ECU, Turntable Control Panel, Boom Down Limit Switch or Slew Position Switch. Check all wiring and interconnects (Control Panel Only).</li> <li>3. Check all connectors above for water damage</li> <li>4. Check operation of switches and all connectors for any damage.</li> </ol>



6.1.130 B1146-17

<b>Error code:</b>	<b>B1146-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	STEER JOYSTICK Short Circuit to High (>4.75V)
<b>Component</b> :	Steer Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore steer input (machine stops immediately)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 5/6 (Steer) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is above 4.75V then there is likely a short circuit to high either within the joystick or wiring back to the Platform Bosch ECU Pin 41/96.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> </ol>

3. Check Connectors at joystick and Platform Bosch ECU for water ingress.
4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.



### 6.1.131 B1147-16

<b>Error code:</b>	<b>B1147-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	STEER JOYSTICK Short Circuit to Low (<0.25V) or Open Circuit
<b>Component</b> :	Steer Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore steer input (machine stops immediately)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> <li>6. A damaged or broken wire within the wiring harness</li> </ol>

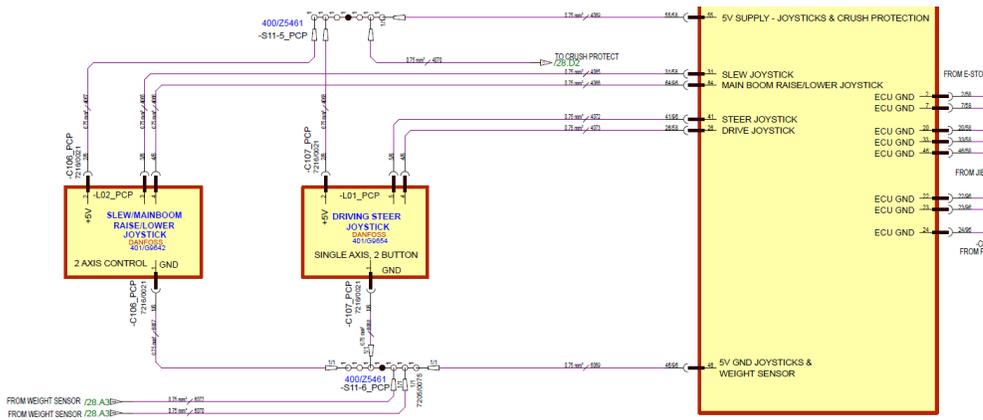
**Service Action:**

1. Measure voltage between pin 1/6 (GND) and pin 5/6 (Steer) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is below 0.25V then there is likely a short circuit to GND either within the joystick or wiring back to the Platform Bosch ECU Pin 41/96.
2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.
3. Check Connectors at joystick and Platform Bosch ECU for water ingress.
4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.

The wiring diagram shows two joysticks: a 'SLEW MAIN BOOM RAISE/LOWER JOYSTICK' (2 AXIS CONTROL) and a 'DRIVING STEER JOYSTICK' (SINGLE AXIS, 2 BUTTON). It details the power supply (5V and 5V GND) and ground connections for both joysticks, along with various sensor inputs like weight sensors and crash protection. A yellow box highlights the power and ground connections for the joystick system.

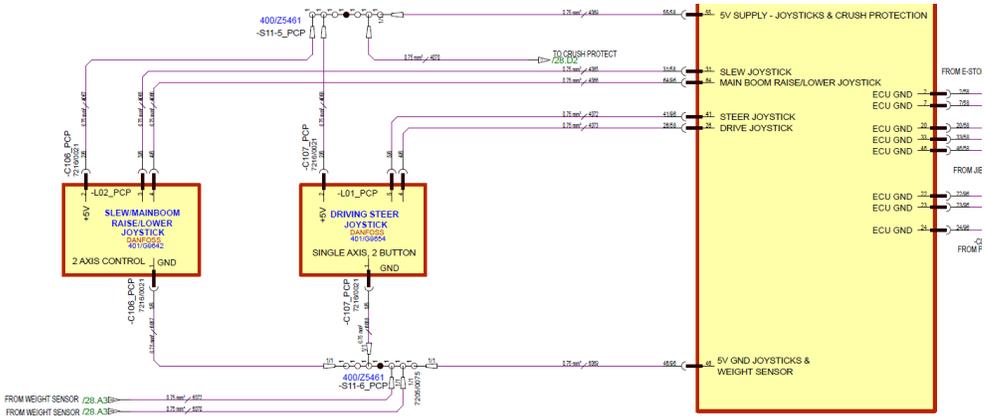
### 6.1.132 B1148-17

<b>Error code:</b>	<b>B1148-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Joystick Boom Raise/Lower Short Circuit to High (>4.75V)
<b>Component</b> :	Main Boom Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore lift input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> </ol>

	<p>3. Water damage/ingress within the harness connectors                  4. Damaged component</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 4/6 (Main Boom Raise/Lower) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is above 4.75V then there is likely a short circuit to high either within the joystick or wiring back to the Platform Bosch ECU Pin 64/96.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> <li>3. Check Connectors at joystick and Platform Bosch ECU for water ingress.</li> <li>4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

6.1.133 B1149-16

<b>Error code:</b>	<b>B1149-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Joystick Boom Raise/Lower Short Circuit to Low (<0.25V) or Open Circuit
<b>Component</b> :	Main Boom Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore lift input

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> <li>6. A damaged or broken wire within the wiring harness</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 4/6 (Main Boom Raise/Lower) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is below 0.25V then there is likely a short circuit to GND either within the joystick or wiring back to the Platform Bosch ECU Pin 64/96.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> <li>3. Check Connectors at joystick and Platform Bosch ECU for water ingress.</li> <li>4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

6.1.134 B1150-17

<p><b>Error code:</b></p>	<p><b>B1150-17</b></p>
<p><b>ECU</b></p>	<p>Platform ECU</p>
<p><b>Description :</b></p>	<p>SLEW JOYSTICK Short Circuit to High (&gt;4.75V)</p>

<b>Component :</b>	Slew Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore slew input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 3/6 (Slew) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is above 4.75V then there is likely a short circuit to high either within the joystick or wiring back to the Platform Bosch ECU Pin 31/58.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> <li>3. Check Connectors at joystick and Platform Bosch ECU for water ingress.</li> <li>4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</li> </ol>

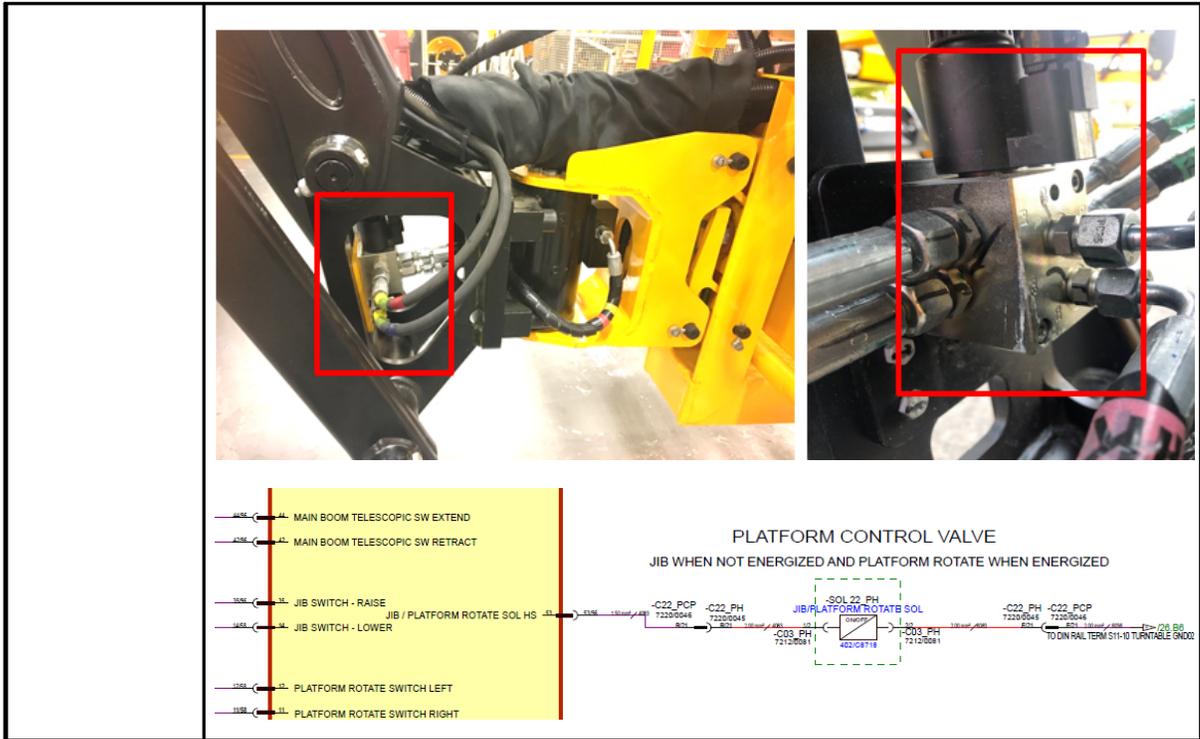
**6.1.135 B1151-16**

<b>Error code:</b>	<b>B1151-16</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	SLEW JOYSTICK Short Circuit to Low (<0.25V) or Open Circuit
<b>Component</b> :	Slew Joystick
<b>Vehicle reaction:</b>	Detect failure mode - Ignore slew input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> <li>6. A damaged or broken wire within the wiring harness</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage between pin 1/6 (GND) and pin 3/6 (Slew) on joystick connector. Voltage should measure between 0.25 - 4.75V depending on position of Joystick. If value is below 0.25V then there is likely a short circuit to GND either within the joystick or wiring back to the Platform Bosch ECU Pin 31/58.</li> <li>2. Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</li> <li>3. Check Connectors at joystick and Platform Bosch ECU for water ingress.</li> <li>4. Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</li> </ol>

## 6.1.136 B1167-13

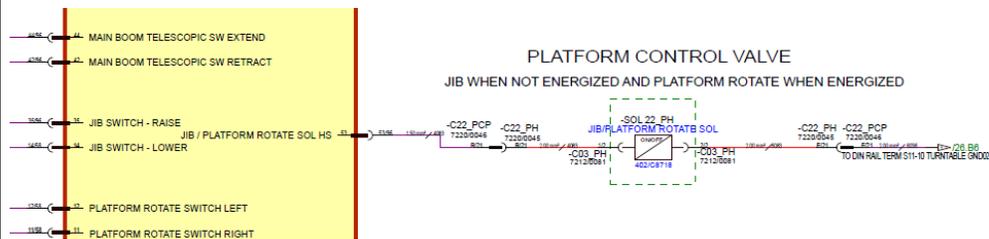
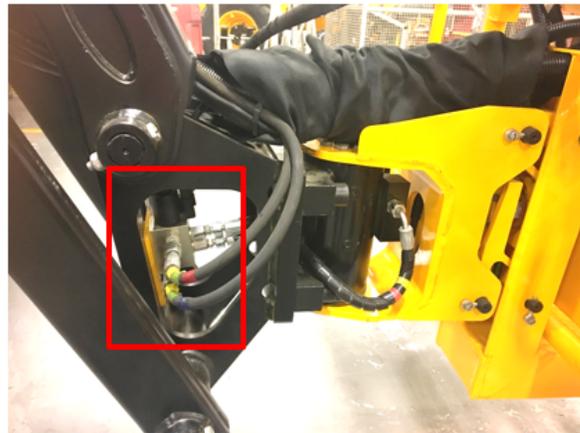
<b>Error code:</b>	<b>B1167-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform rotate left output solenoid short circuit to high or open circuit
<b>Component</b> :	Platform rotate left output solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to Platform rotate left Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance..</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> <li>3. Check Interconnect -C22_PCP / -C22_PH pin R/21. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4083 for continuity from Platform ECU pin 53/96 to Platform rotate left Solenoid connector -C03_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed</li> </ol>



6.1.137 B1168-16

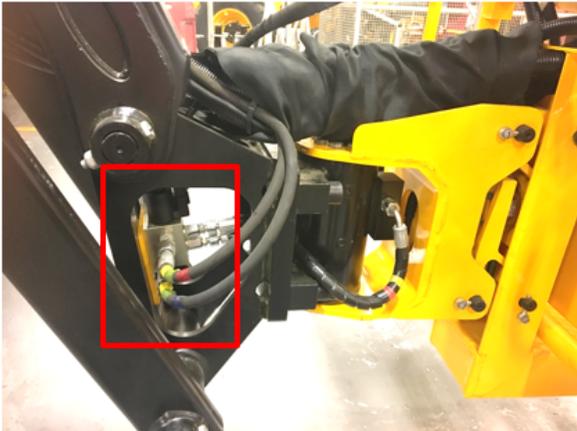
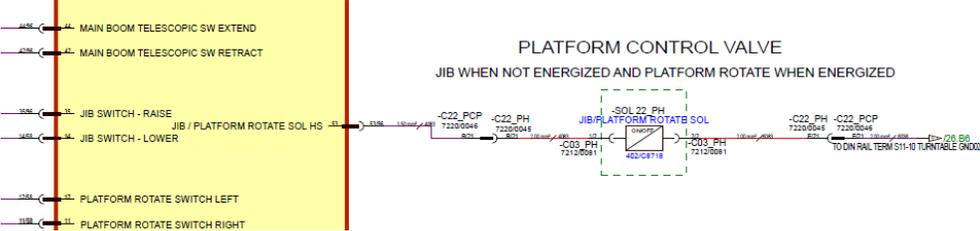
<b>Error code:</b>	<b>B1168-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b>	PLATFORM ROTATE LEFT Solenoid Valve Short Circuit to Low
<b>Component</b>	Platform rotate left solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to Platform rotate left Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance..</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> </ol>

3. Check Interconnect -C22\_PCP / -C22\_PH pin R/21. Check bent / backed out pins, debris, shorts or water ingress.
4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.
5. Check wire #4083 for continuity from Platform ECU pin 53/96 to Platform rotate left Solenoid connector -C03\_PH pin 1/2.
6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.
7. Check if valve is mechanically jammed



**6.1.138 B1169-13**

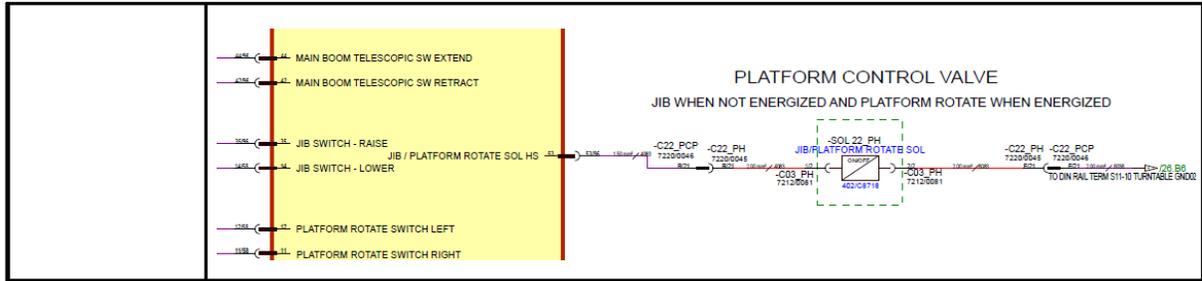
<b>Error code:</b>	<b>B1169-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform rotate right output solenoid short circuit to high or open circuit
<b>Component</b> :	Platform rotate right output solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1 A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to Platform rotate right Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> <li>3. Check Interconnect -C22_PCP / -C22_PH pin R/21. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4083 for continuity from Platform ECU pin 53/96 to Platform rotate right Solenoid connector -C03_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center; margin-top: 20px;"> <p><b>PLATFORM CONTROL VALVE</b>              JIB WHEN NOT ENERGIZED AND PLATFORM ROTATE WHEN ENERGIZED</p>  </div>

**6.1.139 B1170-16**

<p><b>Error code:</b></p>	<p><b>B1170-16</b></p>
<p><b>ECU</b></p>	<p>Platform ECU</p>

<b>Description</b> :	PLATFORM ROTATE RIGHT Solenoid Valve Short Circuit to Low
<b>Component</b> :	Platform rotate right solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1 A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to Platform rotate right Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> <li>3. Check Interconnect -C22_PCP / -C22_PH pin R/21. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4083 for continuity from Platform ECU pin 53/96 to Platform rotate right Solenoid connector -C03_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>



6.1.140 B1171-13

<b>Error code:</b>	<b>B1171-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB RAISE Solenoid Valve short circuit to high or open circuit
<b>Component</b> :	JIB RAISE Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to JIB RAISE Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> <li>3. Check Interconnect -C22_PCP / -C22_PH pin P/21. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4083 for continuity from Platform ECU pin 53/96 to JIB RAISE Solenoid connector -C03_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed</li> </ol>

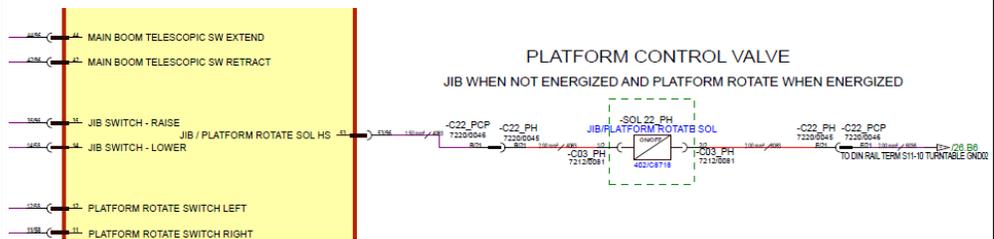
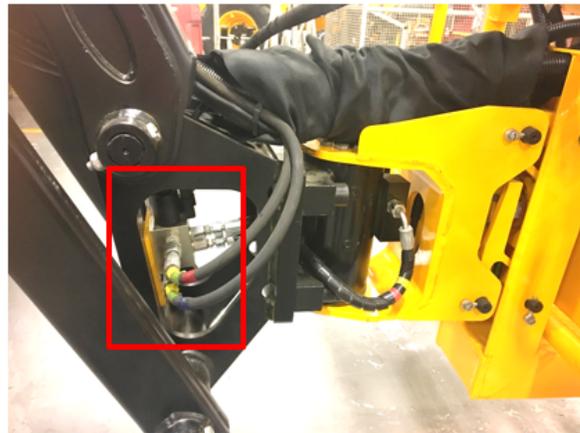
**PLATFORM CONTROL VALVE**  
 JIB WHEN NOT ENERGIZED AND PLATFORM ROTATE WHEN ENERGIZED

Wiring diagram labels:  
 -C22\_PCP 72209046  
 -C22\_PH 72209046  
 -C03\_PH 72120081  
 -C03\_PH 72120081  
 -C22\_PH 72209046  
 -C22\_PCP 72209046  
 TO DIN RAIL TERM S11-10 TURNTABLE GND03

### 6.1.141 B1172-16

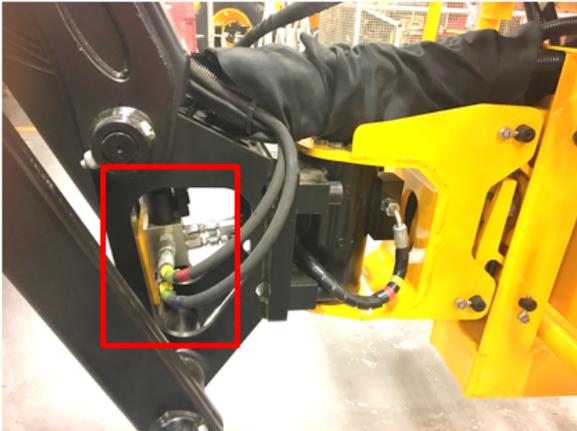
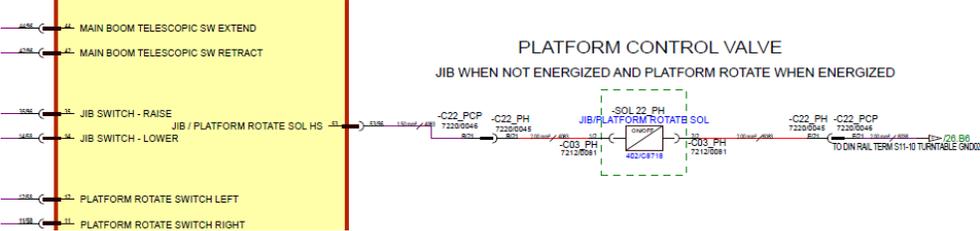
<b>Error code:</b>	<b>B1172-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB RAISE Solenoid Valve Short Circuit to Low
<b>Component</b> :	JIB RAISE Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to JIB RAISE Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> </ol>

3. Check Interconnect -C22\_PCP / -C22\_PH pin P/21. Check bent / backed out pins, debris, shorts or water ingress.
4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.
5. Check wire #4083 for continuity from Platform ECU pin 53/96 to JIB RAISE Solenoid connector -C03\_PH pin 1/2.
6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.
7. Check if valve is mechanically jammed



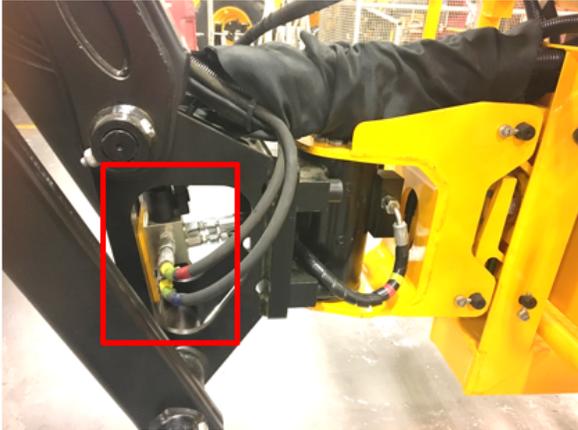
### 6.1.142 B1173-13

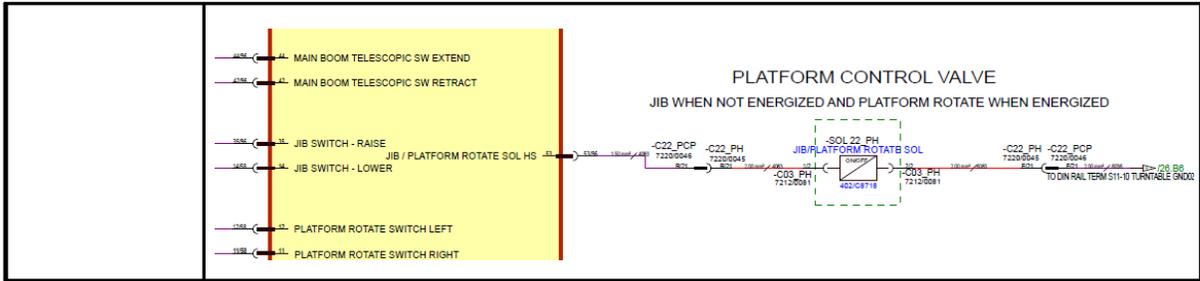
<b>Error code:</b>	<b>B1173-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB LOWER Solenoid Valve short circuit to high or open circuit
<b>Component</b> :	JIB LOWER Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to JIB RAISE Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> <li>3. Check Interconnect -C22_PCP / -C22_PH pin P/21. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4083 for continuity from Platform ECU pin 53/96 to JIB RAISE Solenoid connector -C03_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center;"> <p><b>PLATFORM CONTROL VALVE</b>              JIB WHEN NOT ENERGIZED AND PLATFORM ROTATE WHEN ENERGIZED</p>  </div>

6.1.143 B1174-16

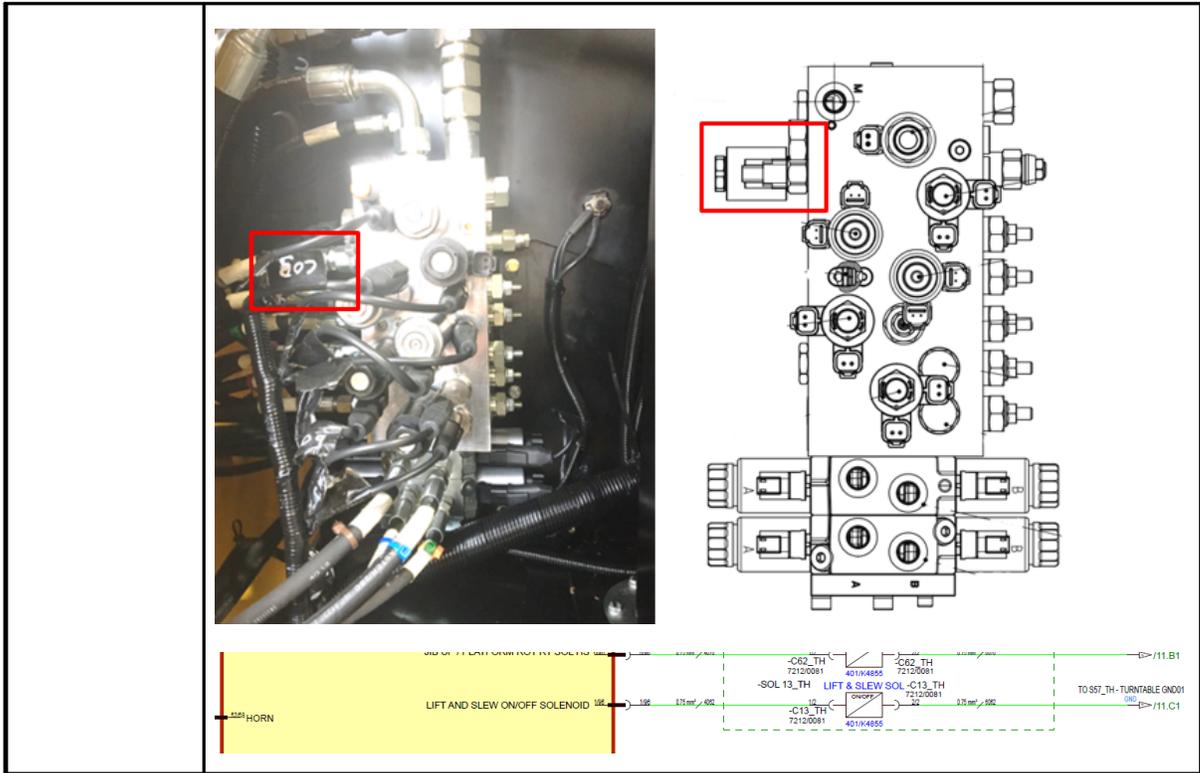
<b>Error code:</b>	<b>B1174-16</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	JIB LOWER Solenoid Valve Short Circuit to Low
<b>Component</b> :	JIB LOWER Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to JIB RAISE Solenoid. Check voltage at solenoid connector -C03_PH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C03_PH pin 2/2 to Turntable GND &amp; Check Ground wire 6083.</li> <li>3. Check Interconnect -C22_PCP / -C22_PH pin P/21. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Platform ECU terminal 53/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4083 for continuity from Platform ECU pin 53/96 to JIB RAISE Solenoid connector -C03_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed</li> </ol> <div style="display: flex; justify-content: space-around; margin-top: 10px;">   </div>



### 6.1.144 B1175-13

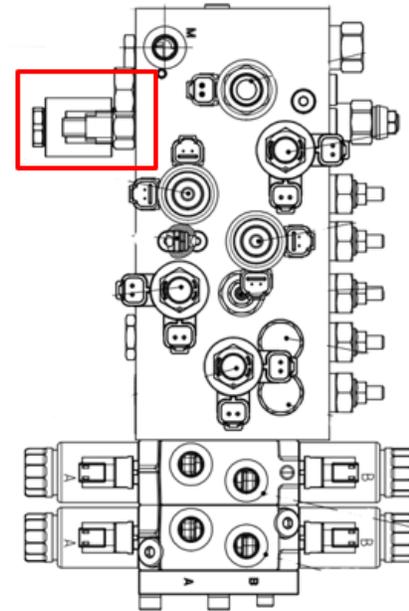
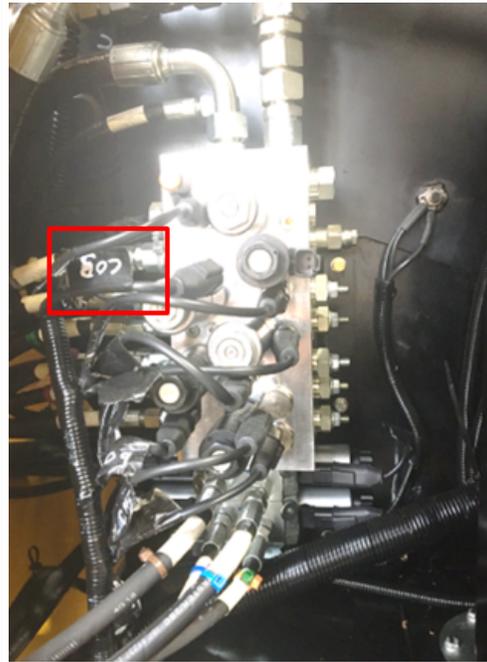
<b>Error code:</b>	<b>B1175-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid Valve Short Circuit to High or Open Circuit
<b>Component :</b>	MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid. Check voltage at solenoid connector -C13_TH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C13_TH pin 2/2 to Turntable GND &amp; Check Ground wire 6062.</li> <li>3. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4. Check Base ECU terminal 1/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5. Check wire #4062 for continuity from Base ECU pin 1/96 to MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid connector -C13_PH pin 1/2.</li> <li>6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> <li>7. Check if valve is mechanically jammed.</li> </ol>



6.1.145 B1176-16

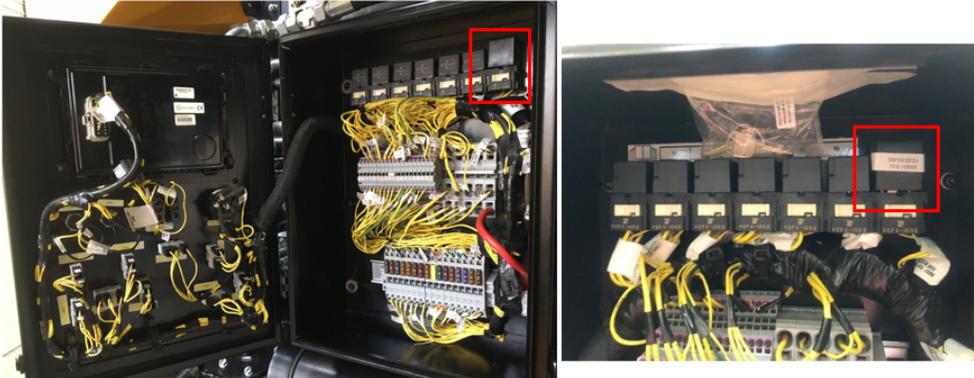
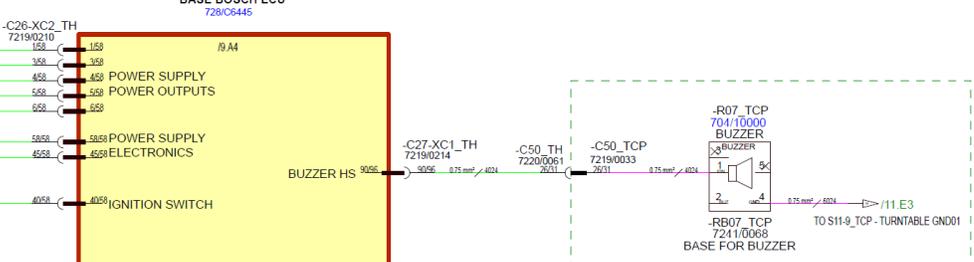
<b>Error code:</b>	<b>B1176-16</b>
<b>ECU</b>	Base ECU
<b>Description</b>	MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid Valve Short Circuit to Low :
<b>Component</b>	MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid Valve :
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any output and don't ignore any input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Fault indicates short to high or open circuit to MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid. Check voltage at solenoid connector -C13_TH pin 1/2 greater than 10.5 volt and check coil resistance.</li> <li>2. Check continuity of GND path from Solenoid connector -C13_TH pin 2/2 to</li> </ol>

- Turntable GND & Check Ground wire 6062.
- 3. Check bent / backed out pins, debris, shorts or water ingress.
- 4. Check Base ECU terminal 1/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.
- 5. Check wire #4062 for continuity from Base ECU pin 1/96 to MAIN BOOM LIFT/SLEW DIRECTIONAL Solenoid connector -C13\_PH pin 1/2.
- 6. Check the harness for any abrasions, pinching or any other damage that may lead to a fault.
- 7. Check if valve is mechanically jammed.



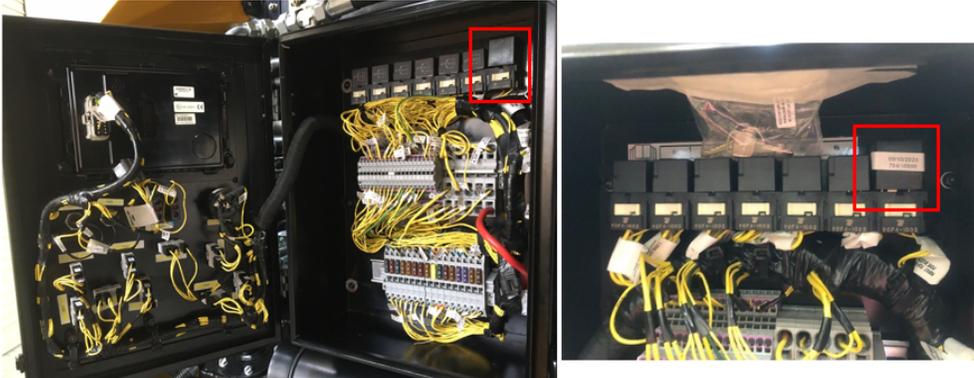
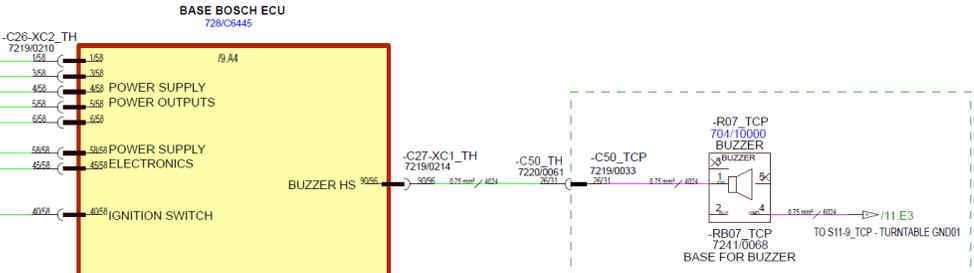
6.1.146 B1177-16

<b>Error code:</b>	<b>B1177-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	BUZZER Short Circuit to Low
<b>Component</b> :	Buzzer

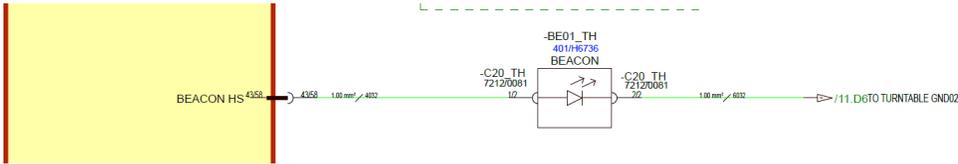
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check condition of Wire #4024 from Base Bosch ECU Pin 90/96 to Panel Interconnect -C50_TH. Check condition of wire 4024 from Panel interconnect -C50_TCP to Buzzer holder -RB07_TCP pin 1.</li> <li>2. Check above wires for any shorts to GND / Chassis. Look for damage to harness, especially abrasions and pinching.</li> <li>3. Check the interconnects for debris or stray wire etc that may cause short circuit. Check Buzzer holder -RB07_TCP. Check Bosch ECU connectors for bent pins or debris / stray wires.</li> <li>4. Check all above connectors for water damage.</li> <li>5. Remove buzzer and check wire resistance again, check buzzer for damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <div style="text-align: center; margin-top: 10px;"> <p><b>BASE BOSCH ECU</b> 728/06445</p>  </div>

**6.1.147 B1178-13**

<b>Error code:</b>	<b>B1178-13</b>
<b>ECU</b>	Base ECU

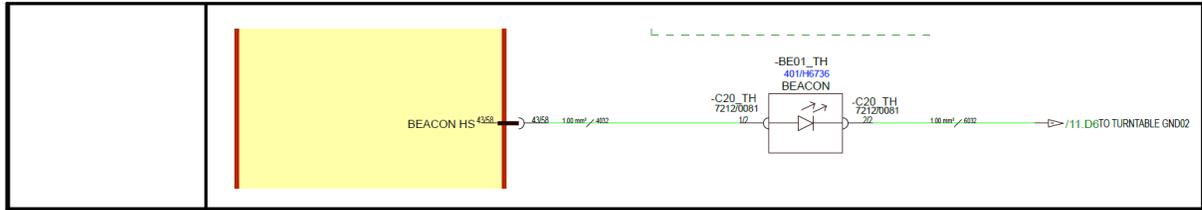
<b>Description</b> :	BUZZER Open Circuit OR Short Circuit to High
<b>Component</b> :	Buzzer
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check condition of Wire #4024 from Base Bosch ECU Pin 90/96 to Panel Interconnect -C50_TH. Check condition of wire 4024 from Panel interconnect -C50_TCP to Buzzer holder -RB07_TCP pin 1.</li> <li>2. Check the interconnects for debris or stray wire etc that may cause short circuit. Check Buzzer holder -RB07_TCP. Check Bosch ECU connectors for bent pins or debris / stray wires.</li> <li>3. Check all above connectors for water damage.</li> <li>4. Check above wires for any shorts to High (&gt;10V). Look for damage to harness, especially abrasions and pinching. Remove buzzer and check wire resistance again, check buzzer for damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> <div style="text-align: center; margin-top: 20px;"> <p><b>BASE BOSCH ECU</b> 728/C6445</p>  </div>

6.1.148 B1179-13

<b>Error code:</b>	<b>B1179-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon Open Circuit or Short Circuit to High.
<b>Component</b> :	Beacon
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short or open circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check continuity between Beacon connector -C20_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 43/58 (Wire #4032). Check Wire #4032 not short circuit to high.</li> <li>2. Check Beacon connector and ECU Connectors. Ensure no bent pins or stray wire causing short circuit. Ensure wires correctly terminated.</li> <li>3. Check Beacon connector and ECU Connectors for any water ingress.</li> <li>4. Check Beacon for any damage.</li> </ol>
	 

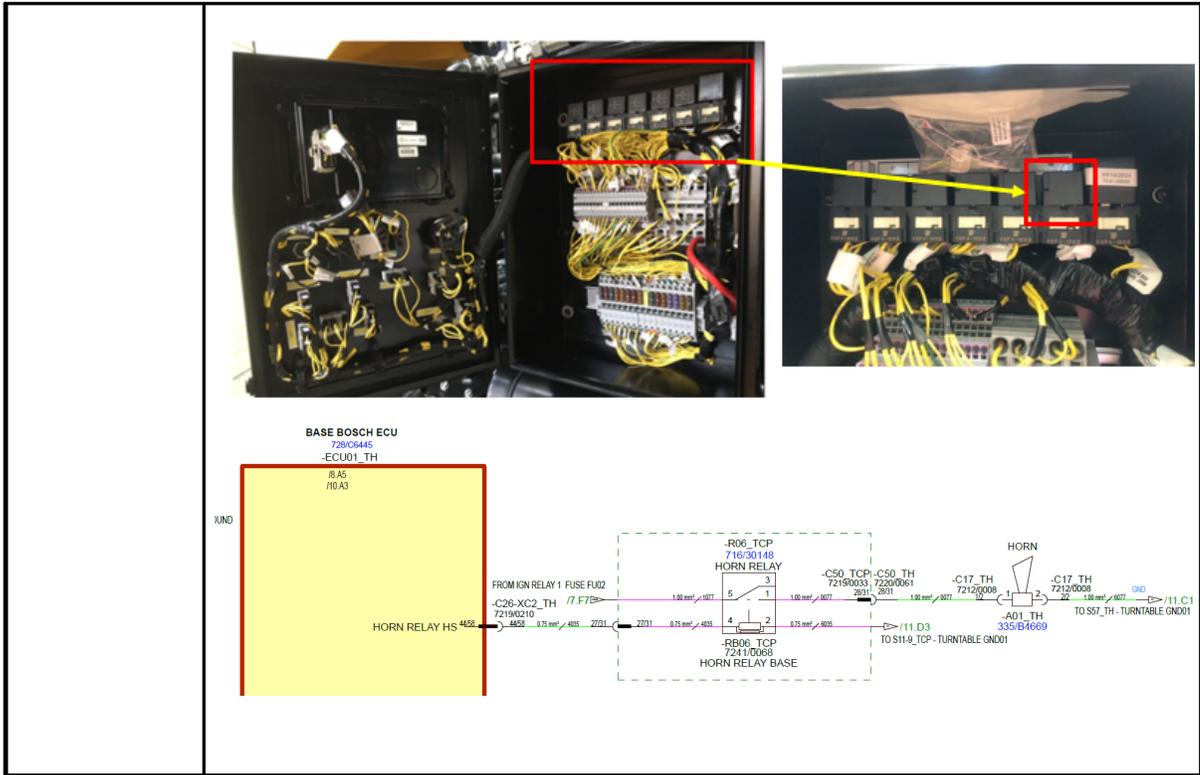
6.1.149 B1180-16

<b>Error code:</b>	<b>B1180-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon Short Circuit to Low.
<b>Component</b> :	Beacon
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check continuity between Beacon connector -C20_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 43/58 (Wire #4032).</li> <li>2. Check Wire #4032 not short circuit to GND. Check for abrasions and pinching of the harness.</li> <li>3. Check Beacon connector and ECU Connectors. Ensure no bent pins or stray wire causing short circuit. Ensure wires correctly terminated.</li> <li>4. Check Beacon connector and ECU Connectors for any water ingress.</li> <li>5. Check Beacon for any damage.</li> </ol>
	



### 6.1.150 B1181-16

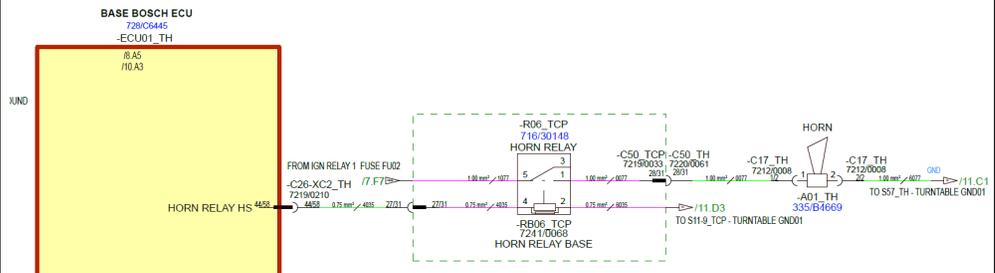
<b>Error code:</b>	<b>B1181-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Horn - Horn High Side Short Circuit to Low.
<b>Component</b> :	Horn Relay
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C26-XC2_TH Pin 44/58 on the Bosch Base ECU Connector' and 'Pin 4 on the Horn Relay Base'.</li> <li>2. Check the wiring has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect 'C26-XC2_TH Bosch Base ECU Connector' and check terminal 44/58 ensuring that nothing is touching it. Same with Pin 4 at the Horn Relay Base.</li> <li>4. Check connectors are dry and free of debris. Check for damaged pins on the 'C26-XC2_TH Bosch Base ECU Connector'.</li> <li>5. Check operation of the system. Check for physical damage to the Horn Relay, connectors and other harness components.</li> </ol>



6.1.151 B1182-13

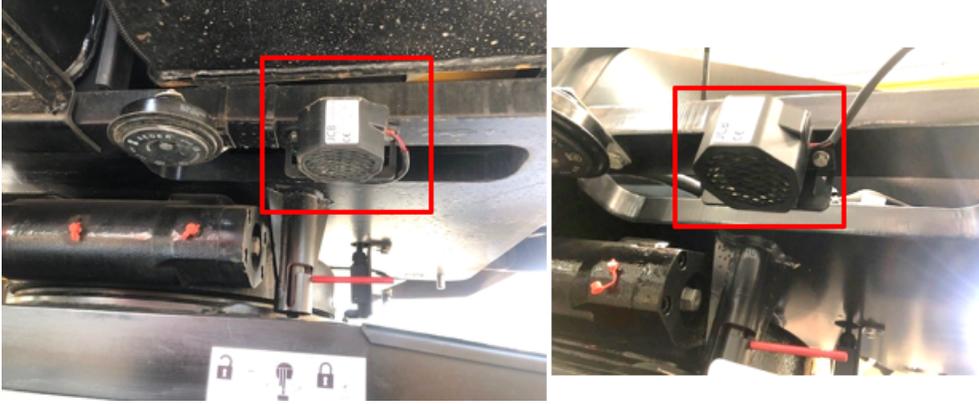
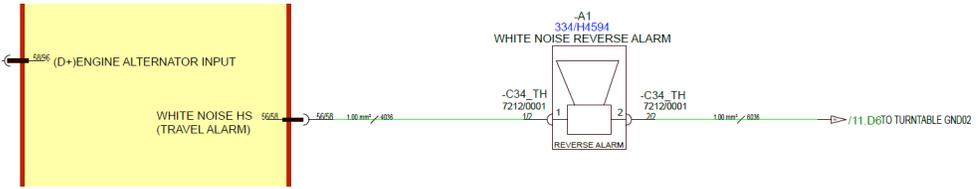
<b>Error code:</b>	<b>B1182-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Horn - Horn High Side Open Circuit.
<b>Component</b> :	Horn Relay
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A poor connection or damaged terminal within the connector(s)</li> <li>2. A damaged or broken wire within the wiring harness</li> <li>3. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Ensure all terminals are seated correctly with no damage at 'C26-XC2_TH Pin 44/58 on the Bosch Base ECU Connector' and 'Pin 4 on the Horn Relay Base'.</li> <li>2. Check for continuity with a multimeter between 'C26-XC2_TH Pin 44/58 on the Bosch Base ECU Connector' and 'Pin 4 on the Horn Relay Base'.</li> </ol>

3. Check operation of the system. Check for physical damage to the Horn Relay, connectors and other harness components.



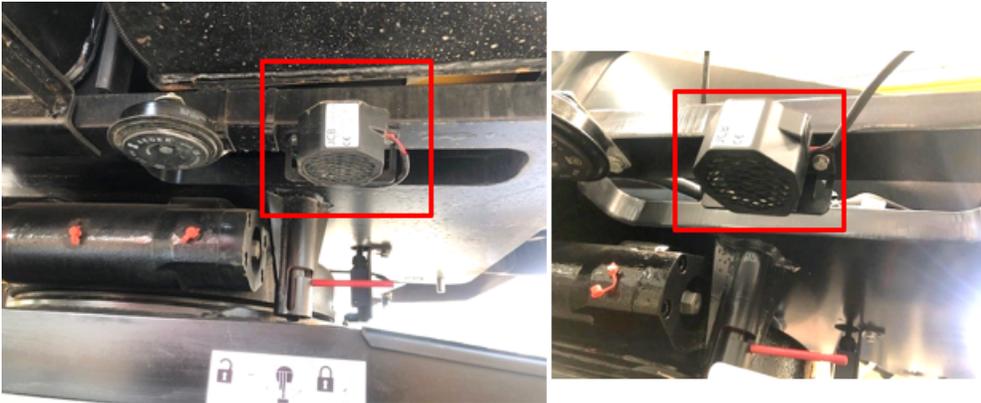
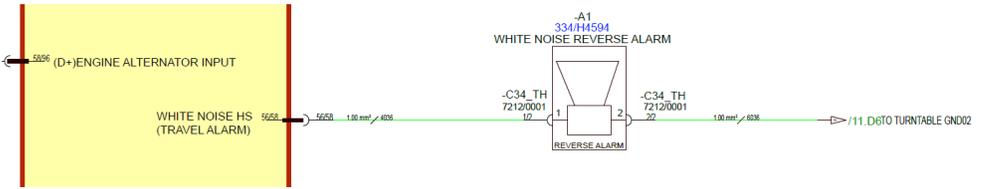
### 6.1.152 B1183-16

<b>Error code:</b>	<b>B1183-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	White Noise Alarm - White Noise Alarm Short Circuit to Low.
<b>Component</b> :	White Noise Alarm
<b>Vehicle reaction:</b>	Detect failure mode.

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check wiring (#4036) between 'C26-XC2_TH Pin 56/58 on the Bosch Base ECU Connector' and 'C34_TH on the White Noise Alarm'.</li> <li>2. Check the wiring (#4036) has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect 'C26-XC2_TH Bosch Base ECU Connector' and check terminal 56/58 ensuring that nothing is touching it. Same with 'C34_TH on the White Noise Alarm'.</li> <li>4. Check connectors are dry and free of debris. Check for damaged pins on the 'C26-XC2_TH Bosch Base ECU Connector'.</li> <li>5. Check operation of the system. Check for physical damage to the White Noise Alarm, connectors and other harness components.</li> </ol> <div style="display: flex; justify-content: space-around;">  </div> <div style="text-align: center;">  </div>

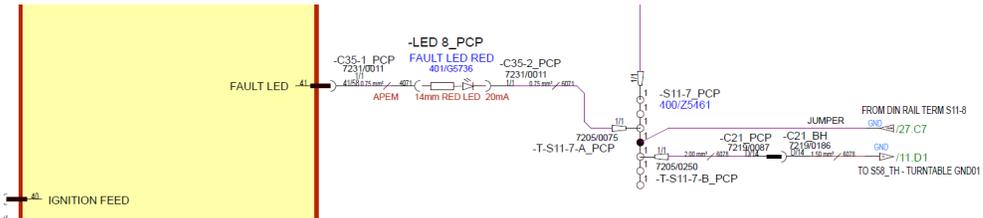
6.1.153 B1184-13

<p><b>Error code:</b></p>	<p><b>B1184-13</b></p>
<p><b>ECU</b></p>	<p>Base ECU</p>
<p><b>Description :</b></p>	<p>White Noise Alarm - White Noise Alarm Open Circuit or Short Circuit to High.</p>

<b>Component</b> :	White Noise Alarm
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short or open circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check continuity between White Noise Alarm C34_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 56/58 (Wire #4036). Check Wire #4036 not short circuit to high.</li> <li>2. Check White Noise Alarm connector and ECU Connectors. Ensure no bent pins or stray wire causing short circuit. Ensure wires correctly terminated.</li> <li>3. Check White Noise Alarm connector and ECU Connectors for any water ingress.</li> <li>4. Check White Noise Alarm for any damage.</li> </ol>
	
	

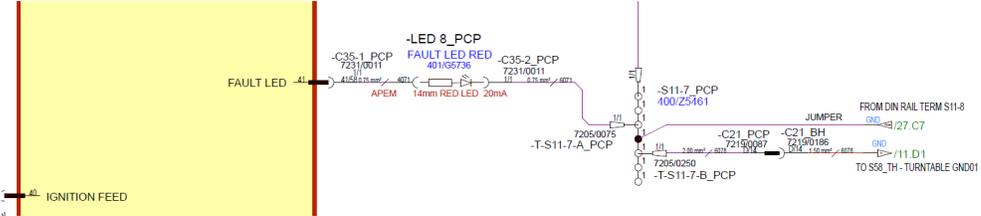
### 6.1.154 B1190-16

<b>Error code:</b>	<b>B1190-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Fault Indicator - Fault LED Short Circuit to Low.

<b>Component</b> :	Fault LED
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C35-1_PCP Pin 41/58 on the Bosch Platform ECU Connector' and 'C35-2_PCP on the Fault LED'.</li> <li>2. Check the wiring has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect 'C35-1_PCP Bosch Platform ECU Connector' and check terminal 41/58 ensuring that nothing is touching it. Same with 'C35-1_PCP on the Fault LED'.</li> <li>4. Check connectors are dry and free of debris. Check for damaged pins on the 'C35-2_PCP Bosch Platform ECU Connector'.</li> <li>5. Check operation of the system. Check for physical damage to the Fault LED, connectors and other harness components.</li> </ol>
	
	

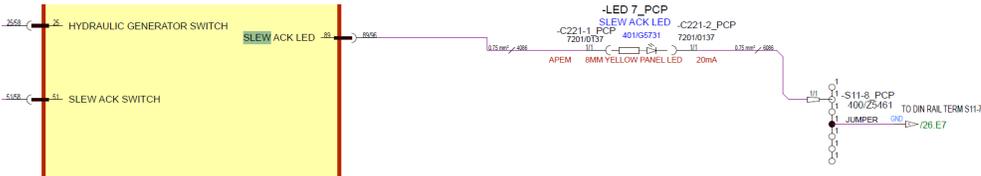
### 6.1.155 B1191-17

<b>Error code:</b>	<b>B1191-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Fault Indicator - Fault LED Short Circuit to High.

<b>Component :</b>	Fault LED
<b>Vehicle reaction:</b>	Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C35-1_PCP Pin 41/58 on the Bosch Platform ECU Connector' and 'C35-2_PCP on the Fault LED'.</li> <li>2. Disconnect 'C35-1_PCP Bosch Platform ECU Connector' and check terminal 41/58 ensuring that nothing is touching it. Same with 'C35-1_PCP on the Fault LED'.</li> <li>3. Check connectors are dry and free of debris. Check for damaged terminals on the 'C35-2_PCP Bosch Platform ECU Connector'.</li> <li>4. Check operation of the system. Check for physical damage to the LED, connectors and other harness components.</li> </ol>
	
	

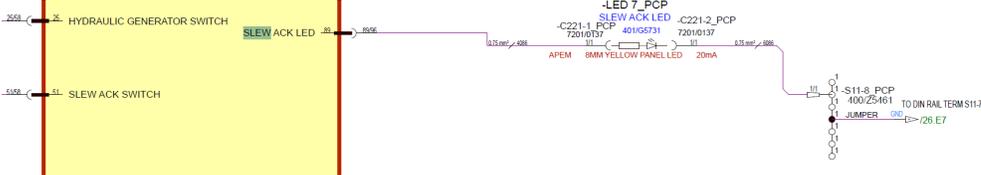
**6.1.156 B1198-16**

<b>Error code:</b>	<b>B1198-16</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Slew Acknowledgment - Slew Acknowledgment LED Short Circuit to Low.
<b>Component :</b>	Slew Acknowledgment LED

<b>Vehicle reaction:</b>	Detect failure mode
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C221-1_PCP from the rear of the Slew Acknowledge LED on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #4086 to Platform Bosch ECU pin 89/96.</li> <li>2. Check Wire #4086 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check LED for damage or shorting to connector -C221-2_PCP</li> </ol>
	
	

### 6.1.157 B1199-17

<b>Error code:</b>	<b>B1199-17</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Slew Acknowledged - Slew Acknowledgment LED Short Circuit to High.
<b>Component :</b>	Slew Acknowledgment LED
<b>Vehicle reaction:</b>	Detect failure mode.

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C221-1_PCP from the rear of the Slew Acknowledge LED on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #4086 to Platform Bosch ECU pin 89/96.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check LED for damage or any loose wiring in the control panel.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

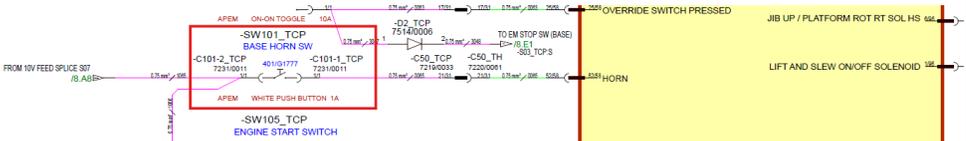
6.1.158 B1206-17

<b>Error code:</b>	<b>B1206-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Horn - Base Horn Button Short Circuit to High.
<b>Component :</b>	Horn Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>

**Service Action:**

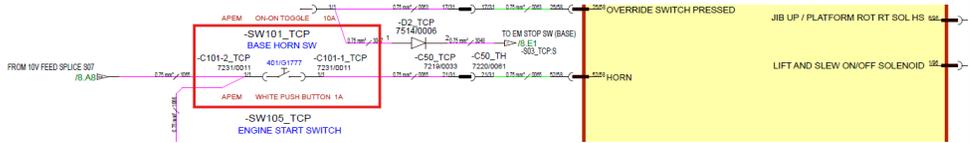
1. Check wiring between Pin 52/58 on the Bosch Base ECU Connector' and 'C101-1\_TH on the Base Horn Button'.
2. Disconnect 'C50\_TH Bosch Base ECU Connector' and check terminal 52/58 ensuring that nothing is touching it. Same with 'C101-1\_TH on the Base Horn Button'.
3. Check connectors are dry and free of debris. Check for damaged terminals on the 'C50\_TH Bosch Base ECU Connector'.
4. Check operation of the Base Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.



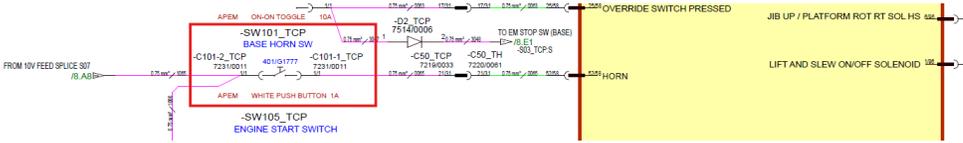
6.1.159 B1207-16

<b>Error code:</b>	<b>B1207-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Horn - Base Horn Button Short Circuit to Low.
<b>Component</b> :	Horn Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input

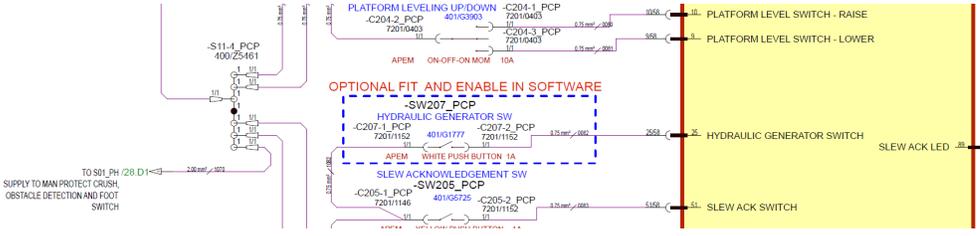
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C50_TH Pin 52/58 on the Bosch Base ECU Connector' and 'C101-1_TCP on the Base Horn Button'.</li> <li>2. Check the wiring has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect 'C50_TH Bosch Base ECU Connector' and check terminal 52/58 ensuring that nothing is touching it. Same with 'C101-1_TCP on the Base Horn Button'.</li> <li>4. Check connectors are dry and free of debris. Check for damaged terminals on the 'C50_TH Bosch Base ECU Connector'.</li> <li>5. Check operation of the Base Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> 

6.1.160 B1208-24

<p><b>Error code:</b></p>	<p><b>B1208-24</b></p>
<p><b>ECU</b></p>	<p>Base ECU</p>

<b>Description</b> :	Horn - Base Horn Button Stuck >10s.
<b>Component</b> :	Horn Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C50_TH Pin 52/58 on the Bosch Base ECU Connector' and 'C101-1_TCP on the Base Horn Button'.</li> <li>2. Disconnect 'C50_TH Bosch Base ECU Connector' and check terminal 52/58 ensuring that nothing is touching it. Same with 'C101-1_TCP on the Base Horn Button'.</li> <li>3. Check connectors are dry and free of debris. Check for damaged terminals on the 'C50_TH Bosch Base ECU Connector'.</li> <li>4. Check operation of the Base Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div> 

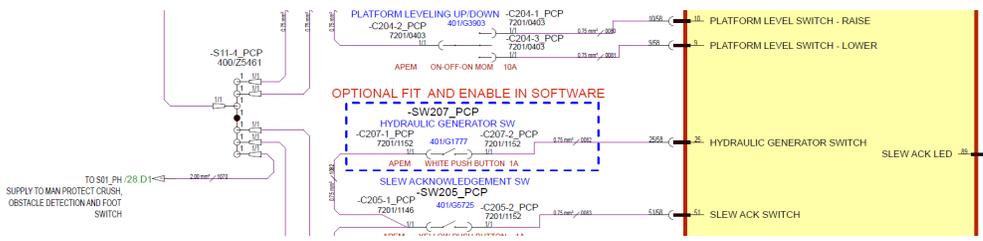
## 6.1.161 B1215-17

<b>Error code:</b>	<b>B1215-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b>	Hydraulic Generator - Hydraulic Generator Button Short Circuit to High.
<b>Component</b>	Power to Platform Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C207-2_PCP from the rear of the Hydraulic Generator Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0082 to Platform Bosch ECU pin 25/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>
 	

## 6.1.162 B1216-16

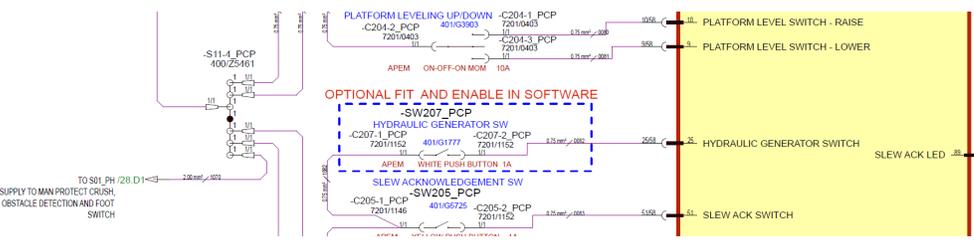
<b>Error code:</b>	<b>B1216-16</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Hydraulic Generator - Hydraulic Generator Button Short Circuit to Low.
<b>Component</b> :	Power to Platform Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C207-2_PCP from the rear of the Hydraulic Generator Button on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0082 to Platform Bosch ECU pin 25/58.</li> <li>2. Check Wire #0082 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C207-2_PCP.</li> </ol>



### 6.1.163 B1217-24

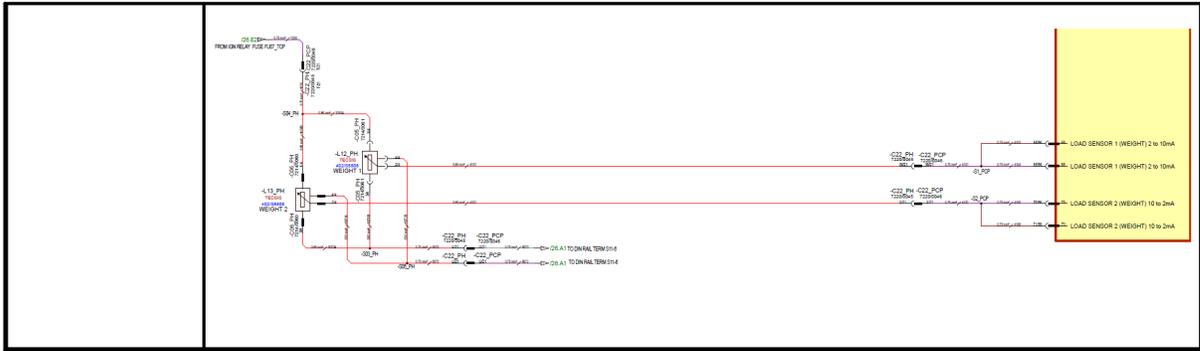
<b>Error code:</b>	<b>B1217-24</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Hydraulic Generator - Hydraulic Generator Button Stuck >10s.
<b>Component</b> :	Power to Platform Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C207-2_PCP from the rear of the Hydraulic Generator Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0082 to Platform Bosch ECU pin 25/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check operation of the system. Check for physical damage to the Hydraulic Generator Button, connectors and other harness components.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">  </div> 

6.1.164 B1221-17

<b>Error code:</b>	<b>B1221-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Overload - Overload Sensor 1 Out of Range (High).

<b>Component :</b>	Overload Sensor 1
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Load sensor is not calibrated</li> <li>2. Load sensor is faulty</li> <li>3. Short Circuit to High</li> <li>4. Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Perform weight sensor calibration from display screen.</li> <li>2. Check condition of weight sensor and connectors, replace if faulty</li> <li>3. Check condition of wiring from Weight Sensor. Check Interconnects - C05_PH and -C05_PH. Check connections to DIN Rail terminal (Wires #6070 and #6072). Check inputs to Platform Bosch ECU on pins 69/96 through to 70/96. Check platform connector -C22_PH terminals W/21 and X/21. Check for bent or backed out terminals or debris within connectors. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to +12V and +10V on -C22_PH terminals W/21 and X/21, checking for shorts to High.</li> <li>4. Check all connectors for water ingress.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



### 6.1.165 B1222-16

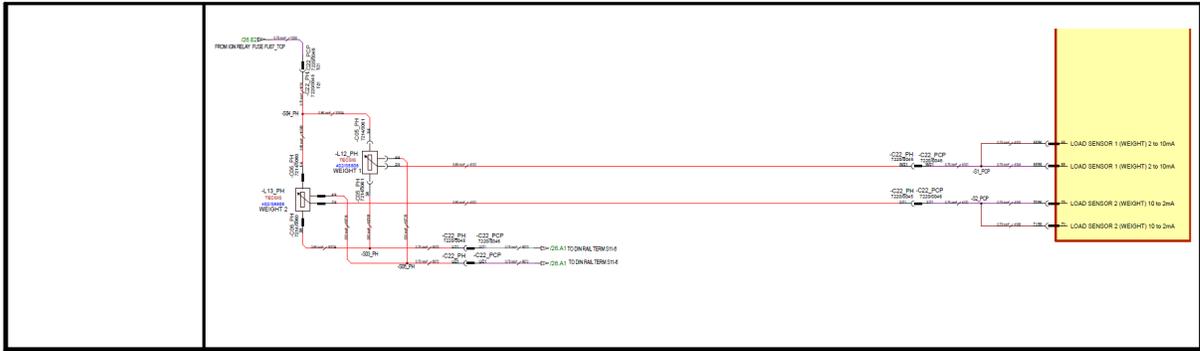
<b>Error code:</b>	<b>B1222-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Overload - Overload Sensor 1 Out of Range (Low) or Open Circuit.
<b>Component</b> :	Overload Sensor 1
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED NOTE:- The Fault code in case of Open Circuit is detected only when fault is detected on both pins(68,69)of load sensor 1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Load sensor is not calibrated</li> <li>2. Connectors not fully inserted.</li> <li>3. Load sensor is faulty</li> <li>4. Short Circuit to Low</li> <li>5. Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Perform weight sensor calibration from display screen.</li> <li>2. Check condition of weight sensor and connectors -C05_PH and -C06_PH, Ensure connectors are fully inserted. Check platform connector -C22_PH. Check for backed out terminals.</li> <li>3. Replace weight sensor if faulty</li> <li>4. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to GND on -C22_PH terminals W/21 and X/21, checking for shorts to Low.</li> <li>5. Check all connectors for water ingress.</li> </ol>





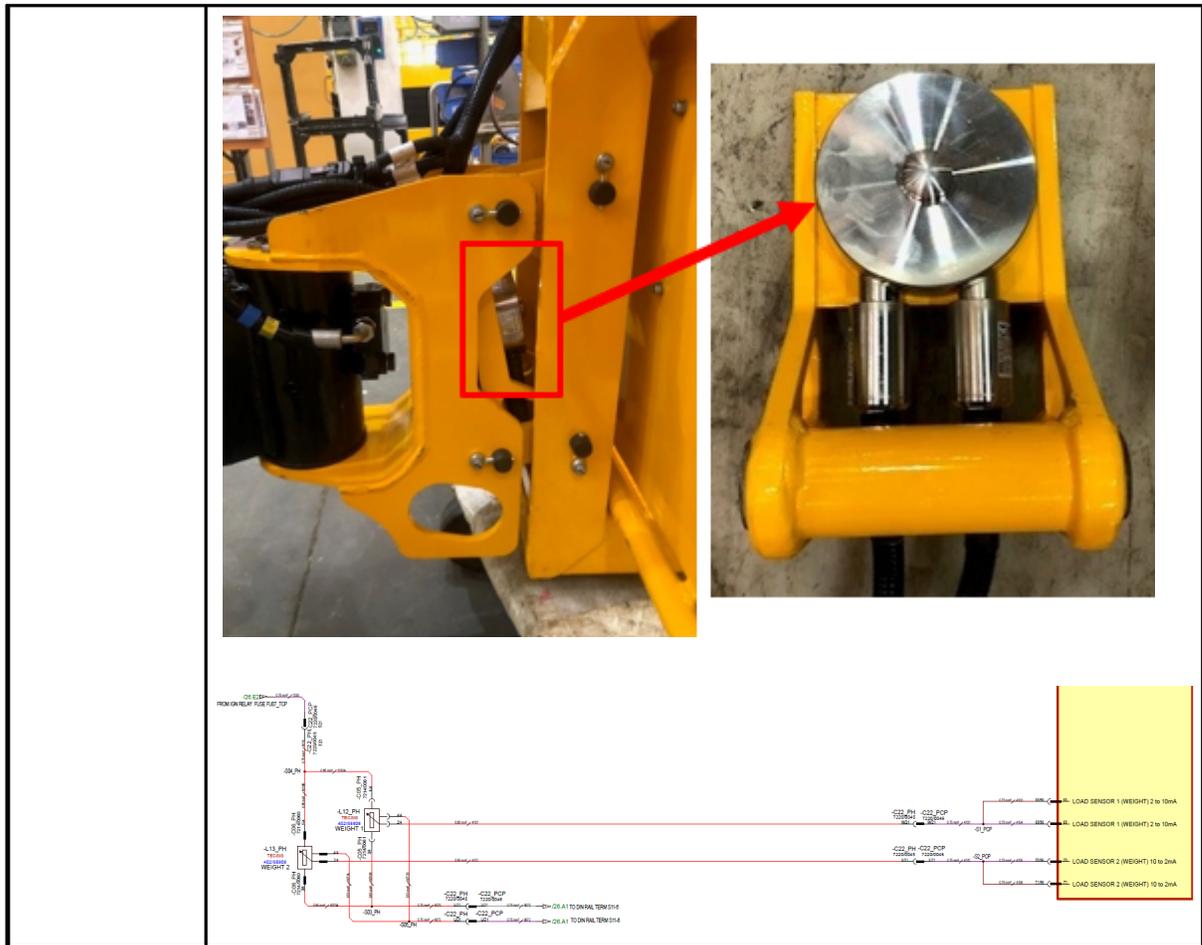
<b>Component :</b>	Overload Sensor 2
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED NOTE:- The Fault code in case of Open Circuit is detected only when fault is detected on both pins(70,71)of load sensor 2.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Load sensor is not calibrated</li> <li>2. Connectors not fully inserted.</li> <li>3. Load sensor is faulty</li> <li>4. Short Circuit to Low</li> <li>5. Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Perform weight sensor calibration from display screen.</li> <li>2. Check condition of weight sensor and connectors -C05_PH and -C06_PH, Ensure connectors are fully inserted. Check platform connector -C22_PH. Check for backed out terminals.</li> <li>3. Replace weight sensor if faulty</li> <li>4. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to GND on -C22_PH terminals W/21 and X/21, checking for shorts to Low.</li> <li>5. Check all connectors for water ingress.</li> </ol>





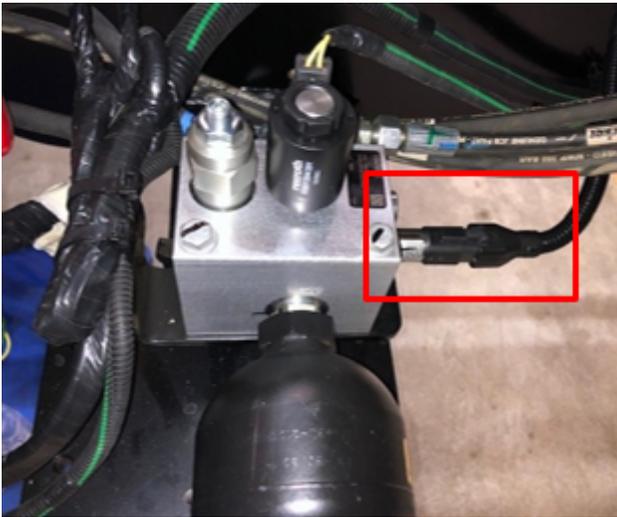
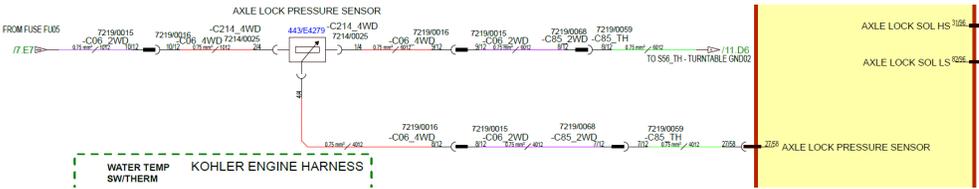
### 6.1.168 B1225-2F

<b>Error code:</b>	<b>B1225-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Overload - Overload Sensor Data Erratic (Difference >20%).
<b>Component</b> :	Overload Sensor(s)
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Load sensor is not calibrated</li> <li>2. Load sensor is not secured correctly</li> <li>3. Wiring fault to load sensor</li> <li>4. Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Perform weight sensor calibration from display screen.</li> <li>2. Check mounting of Sensor, check for damage to both sensor and platform basket. Check no debris.</li> <li>3. Check condition of wiring to sensor. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. check inputs to Platform Bosch ECU - Check terminals 68/96 through to 71/96. Note Load sensor 2 signals are in opposite to Load sensor 1. Check condition of platform connector -C22_PH, checking terminals T/21, V/21, W/21 and X/21. Check weight sensor connectors -C04_PH and -C05_PH for damage. Ensure all connectors fully inserted. Check DIN rail terminal -S11-6. Check wiring inserted correctly. Check FU07_TCP.</li> <li>4. Check all connectors for water ingress.</li> </ol>



### 6.1.169 B1227-17

<b>Error code:</b>	<b>B1227-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillating Axle - Axle Lock Pressure Sensor Short Circuit to High.
<b>Component</b> :	Oscillating Axle Pressure Sensor
<b>Vehicle reaction:</b>	Detect failure mode; Prevent all Raise, Extend and Slew; In Raised or Slew position - prevent drive & steer; In Stowed and Forward position - allow drive
<b>Possible Cause:</b>	1. A short circuit within the wiring harness 2. A short circuit within the harness connectors

	<p>3. Water damage/ingress within the harness connectors 4. Damaged component</p>
<p><b>Service Action:</b></p>	<p>1. Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C214_TH and -C214_TH. Measure voltage at pin 4/4 (Wire #4012) on both connectors. If one of the measurements is above 4.5VDC then there is a short to high on that connection. Trace the fault back to where there is a short circuit to high. 2. Check interconnects -C214_TH and -C214_TH for any damage, shorts, debris or stray wire. Check the Base Bosch ECU connector (58-way) for any damage, bent pins debris etc. Check pin 27/58. 3. Check all above connectors for any water ingress. 4. Check the pressure sensor for damage or malfunction. Replace component.</p>  

6.1.170 B1228-16

<p><b>Error code:</b></p>	<p><b>B1228-16</b></p>
<p><b>ECU</b></p>	<p>Base ECU</p>
<p><b>Description</b> :</p>	<p>Oscillating Axle - Axle Lock Pressure Sensor Short Circuit to Low or Open Circuit.</p>

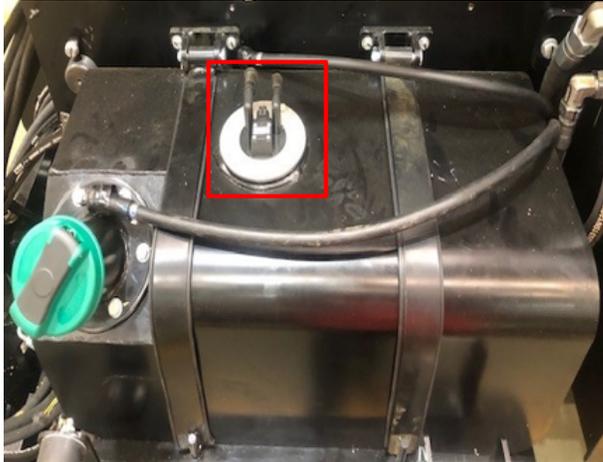
<b>Component :</b>	Oscillating Axle Pressure Sensor
<b>Vehicle reaction:</b>	Detect failure mode; Prevent all Raise, Extend and Slew; In Raised or Slew position - prevent drive & steer; In Stowed and Forward position - allow drive
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C214_TH and -C214_TH. Measure voltage at pin 4/4 (Wire #4012) on both connectors. If one of the measurements is below 0.5VDC then there is a short to low on that connection. Trace the fault back to where there is a short circuit to Low. Check for abrasions or pinching on the wire harness.</li> <li>2. Check interconnects -C214_TH and -C214_TH for any damage, shorts, debris or stray wire. Check the Base Bosch ECU connector (58-way) for any damage, bent pins debris etc. Check pin 27/58.</li> <li>3. Check all above connectors for any water ingress.</li> <li>4. Check the pressure sensor for damage or malfunction. Replace component.</li> </ol> <div> </div> <div> </div>

## 6.1.171 B1232-17

<b>Error code:</b>	<b>B1232-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Fuel Sender - Fuel Sender out of Range (High).
<b>Component</b> :	Fuel Sender
<b>Vehicle reaction:</b>	Detect failure mode; Resistance reads more than 183 ohms
<b>Possible Cause:</b>	1. Open Circuit 2. Faulty Component
<b>Service Action:</b>	1. Resistance reads above 183 Ohms to GND. Check for open Circuit between Fuel Level Sensor connector -C28_TH Pin 1/2 and Base Bosch ECU pin 21/96. 2. Check resistance across Fuel Level Sender, replace if value reads above 183 Ohms.
<div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center; margin-top: 10px;"> <p><b>HYBRID ONLY</b></p>  </div>	

## 6.1.172 B1233-16

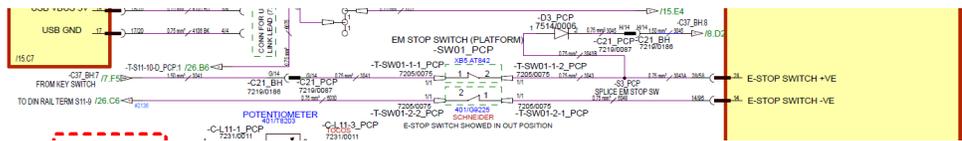
<b>Error code:</b>	<b>B1233-16</b>
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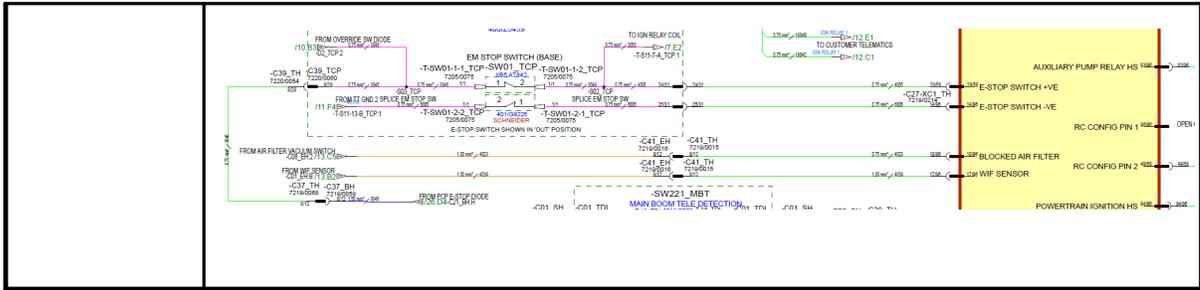
<b>ECU</b>	Base ECU
<b>Description</b> :	Fuel Sender - Fuel Sender out of Range (Low).
<b>Component</b> :	Fuel Sender
<b>Vehicle reaction:</b>	Detect failure mode; Resistance reads less than 5 ohms
<b>Possible Cause:</b>	1. Short Circuit 2. Faulty Component
<b>Service Action:</b>	<p>1. Resistance reads below 5 Ohms to GND. Check for Short Circuit between Fuel Level Sensor connector -C28_TH Pin 1/2 (Wire #4033) and GND.</p> <p>2. Check resistance across Fuel Level Sender, replace if value reads below 0 Ohms.</p>
<div style="display: flex; justify-content: space-around;">   </div> <div style="text-align: center; margin-top: 10px;"> <p><b>HYBRID ONLY</b></p>  </div>	

**6.1.173 B1235-17**

<b>Error code:</b>	<b>B1235-17</b>
<b>ECU</b>	Platform ECU

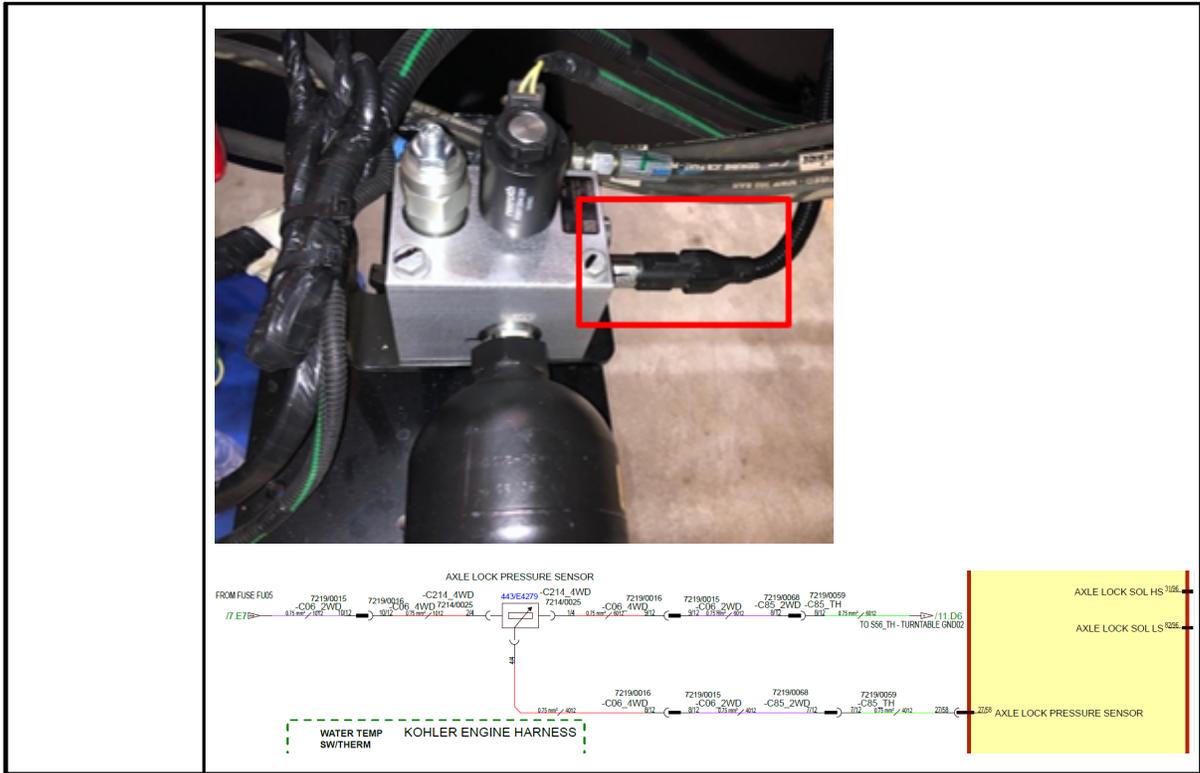
<b>Description</b> :	E-Stop Plausibility Check - Signal plausibility failure
<b>Component</b> :	E-Stop(s)
<b>Vehicle reaction:</b>	1. Disable all outputs except CAN (Emergency stop pressed) 2. Default to E-Stop pressed condition
<b>Possible Cause:</b>	1. A short circuit within the wiring harness 2. A poor connection or damaged terminal within the connector(s) 3. A damaged or broken wire within the wiring harness 4. Component is damaged
<b>Service Action:</b>	1. Check no short in wiring harness between E-STOP SWITCH +VE to GND or E-STOP -VE to GND on Base E-Stop terminals. 2. Check terminals for damage at E-stop terminals, and on Base Bosch ECU Connector (-C27-XC1_PCP, Pin 14/96 and -C27-XC2PCP, Pin 28/58). 3. Check Continuity of wire #3043A-#3043 and #6048 between Bosch Base ECU and E-Stop terminals. 4. Check operation of E-Stop switch to ensure correct switching. Contacts should be normally closed during normal operation (Unpressed) and Open contacts when switch is pressed. Switch terminal attached to wire #3043 should be 12V (unpressed) and 0V (pressed). Switch terminal attached to wire #6048 should be 0V (GND) (Unpressed) and open circuit to GND when pressed. IF fault found, check operation of switch with multimeter, checking the closed and open conditions.





### 6.1.174 B1236-2F

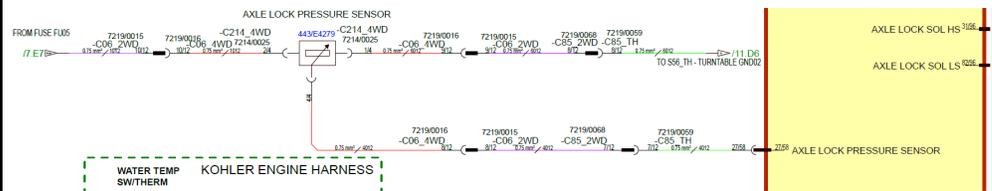
<b>Error code:</b>	<b>B1236-2F</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Oscillating Axle - Axle Lock Pressure Sensor Failure.
<b>Component :</b>	Oscillating Axle Pressure Sensor
<b>Vehicle reaction:</b>	Detect failure mode; Prevent all Raise, Extend and Slew; In Raised or Slew position - prevent drive & steer; In Stowed and Forward position - allow drive
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C214_TH and -C214_TL. Measure voltage at pin 4/4 (Wire #4012) on both connectors. If one of the measurements is above 4.5VDC then there is a short to high on that connection. Trace the fault back to where there is a short circuit to high.</li> <li>2. Check interconnects -C214_TH and -C214_TL for any damage, shorts, debris or stray wire. Check the Base Bosch ECU connector (58-way) for any damage, bent pins debris etc. Check pin 27/58.</li> <li>3. Check all above connectors for any water ingress.</li> <li>4. Check the pressure sensor for damage or malfunction. Replace component.</li> </ol>



6.1.175 B1238-2F

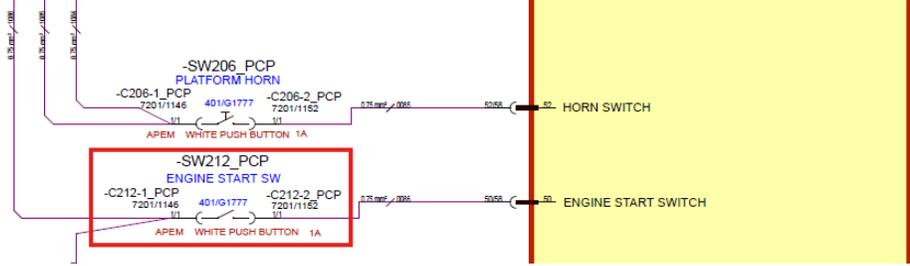
<b>Error code:</b>	<b>B1238-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillating Axle - Axle Lock Pressure Sensor Output is less than 1v when it should be greater than 1v.
<b>Component</b> :	Oscillating Axle Pressure Sensor
<b>Vehicle reaction:</b>	Detect failure mode; Prevent all Raise, Extend and Slew; In Raised or Slew position - prevent drive & steer; In Stowed and Forward position - allow drive
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	1. Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C214_TH and -C214_TH. Measure voltage at pin 4/4 (Wire #4012) on both connectors. If one of the measurements is above 4.5VDC then there is a short to high on that connection. Trace the fault back

- to where there is a short circuit to high.
2. Check interconnects -C214\_TH and -C214\_TH for any damage, shorts, debris or stray wire. Check the Base Bosch ECU connector (58-way) for any damage, bent pins debris etc. Check pin 27/58.
3. Check all above connectors for any water ingress.
4. Check the pressure sensor for damage or malfunction. Replace component.



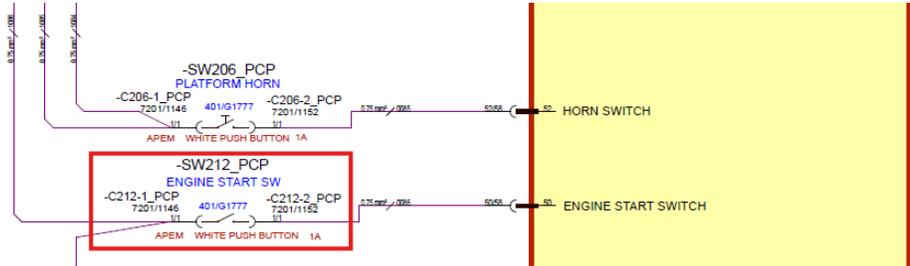
### 6.1.176 B1239-17

<b>Error code:</b>	<b>B1239-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Engine Start/Stop - Platform Engine Start/Stop Button Short Circuit to High.
<b>Component</b> :	Engine Start/Stop Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input (switch off engine)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> </ol>

	<p>3. Water damage/ingress within the harness connectors          4. Damaged component</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C212-2_PCP from the rear of the Engine Start/Stop Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0086 to Platform Bosch ECU pin 50/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

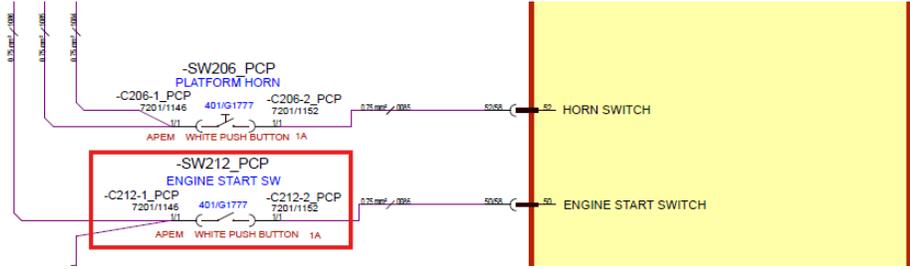
6.1.177 B1240-16

<b>Error code:</b>	<b>B1240-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Engine Start/Stop - Platform Engine Start/Stop Button Short Circuit to Low.
<b>Component</b> :	Engine Start/Stop Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input (switch off engine)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> </ol>

	<p>4. Water damage/ingress within the harness connectors                      5. Damaged component</p>
<p><b>Service Action:</b></p>	<p>1. Disconnect connector -C212-2_PCP from the rear of the Engine Start/Stop Button on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0086 to Platform Bosch ECU pin 50/58.                      2. Check Wire #0086 is not shorted to GND / Chassis. Check for abrasions and pinching.                      3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.                      4. Check for water ingress in the Platform Bosch ECU Connectors.                      5. Check Switch for damage or shorting to connector -C212-2_PCP.</p>
	
	

6.1.178 B1241-24

<b>Error code:</b>	<b>B1241-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Engine Start/Stop - Platform Engine Start/Stop Button Stuck for >10s.
<b>Component</b> :	Engine Start/Stop Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input (switch off engine)
<b>Possible Cause:</b>	<p>1. A short circuit within the wiring harness                      2. A short circuit within the harness connectors                      3. Water damage/ingress within the harness connectors                      4. Damaged component</p>

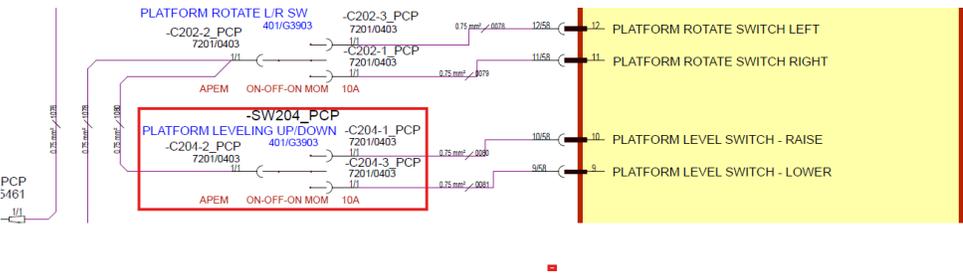
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C212-2_PCP from the rear of the Engine Start/Stop Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0086 to Platform Bosch ECU pin 50/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check operation of the system. Check for physical damage to the Engine Start/Stop Button, connectors and other harness components.</li> </ol>
	
	

### 6.1.179 B1242-17

<b>Error code:</b>	<b>B1242-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Level - Platform Level Switch Raise Short Circuit to High.
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not output as it can be operated from where there is no fault)</p> <p>After operation: Refer to 10V System Short Circuit Fault reaction</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>

**Service Action:**

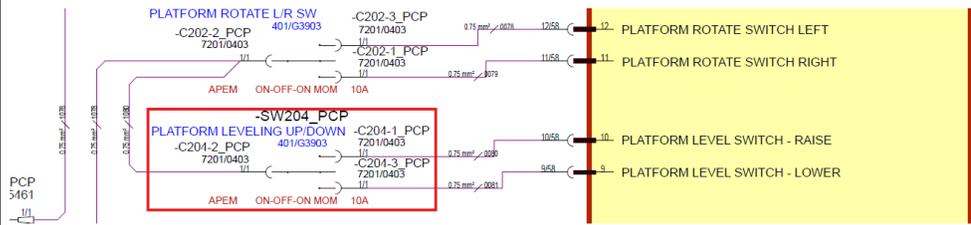
1. Disconnect connector -C204-1\_PCP from the rear of the Platform Level Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high >12V, check wire #0080 to Platform Bosch ECU pin 10/58.
2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.
3. Check for water ingress in the Platform Bosch ECU Connectors.
4. Check Switch for damage or any loose wiring in the control panel.

### 6.1.180 B1243-17

<b>Error code:</b>	<b>B1243-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Level - Platform Level Switch Lower Short Circuit to High.
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	1. Disconnect connector -C204-3_PCP from the rear of the Platform Level Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high >12V, check wire #0081 to Platform Bosch ECU pin 9/58.

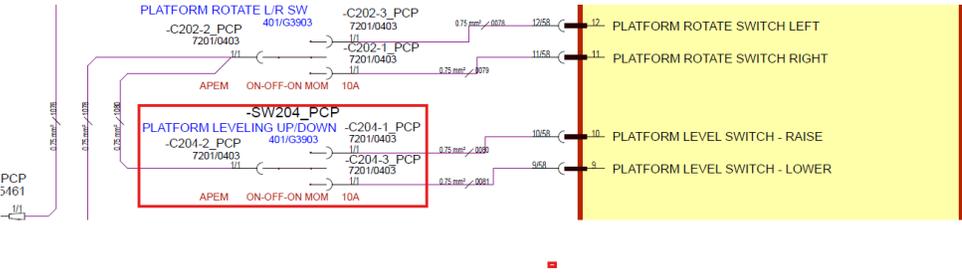
2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.
3. Check for water ingress in the Platform Bosch ECU Connectors.
4. Check Switch for damage or any loose wiring in the control panel.



### 6.1.181 B1244-92

<b>Error code:</b>	<b>B1244-92</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Level - Platform Level Switch Raise & Lower Both Activated (5-10v).
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C204-1_PCP and -C204-3_PCP from the rear of the Platform Level Switch on the Platform Control Panel. Measure voltage at both terminals. If voltage is high &gt;12V, check wires #0080 &amp; #0081 to Platform Bosch ECU pin 10/58 &amp; pin 9/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

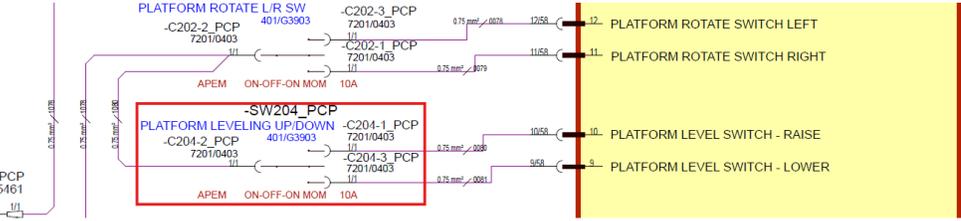
3. Check for water ingress in the Platform Bosch ECU Connectors.  
 4. Check Switch for damage or any loose wiring in the control panel.

6.1.182 B1245-16

<b>Error code:</b>	<b>B1245-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Level - Platform Level Switch Raise Short Circuit to Low.
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C204-1_PCP from the rear of the Platform Level Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0080 to Platform Bosch ECU pin 10/58.</li> <li>2. Check Wire #0080 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

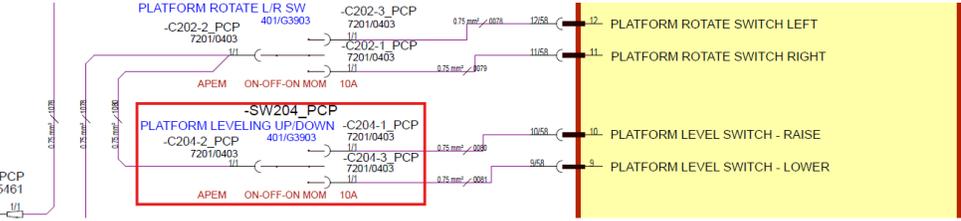
4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C204-1\_PCP

6.1.183 B1246-16

<b>Error code:</b>	<b>B1246-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Level - Platform Level Switch Lower Short Circuit to Low.
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C204-3_PCP from the rear of the Platform Level Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0081 to Platform Bosch ECU pin 9/58.</li> <li>2. Check Wire #0081 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

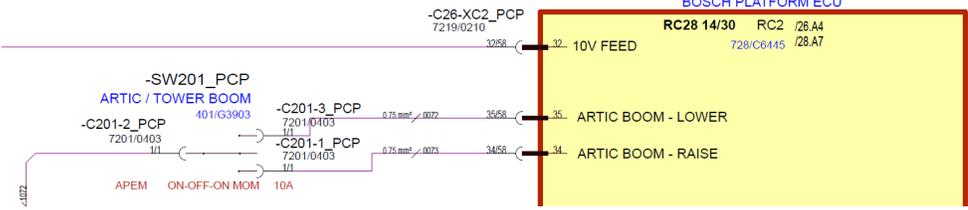
4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C204-3\_PCP

### 6.1.184 B1247-17

<b>Error code:</b>	<b>B1247-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	ARTICULATED BOOM RAISE Switch Short Circuit to High
<b>Component</b> :	ARTICULATED BOOM RAISE Switch
<b>Vehicle reaction:</b>	Input from Platform control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C201-2_PCP from the rear of the ARTICULATED BOOM RAISE Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0073 to Platform Bosch ECU pin 34/58.</li> <li>2. Check Wire #0073 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins,</li> </ol>

debris or stray wires causing a short.  
 4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C201-1\_PCP

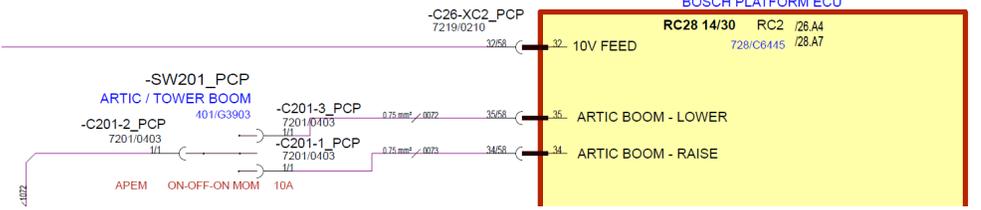
**BOSCH PLATFORM ECU**  
 RC28 14/30 RC2 /28 A4  
 728/C6445 /28 A7

32- 10V FEED  
 35- ARTIC BOOM - LOWER  
 34- ARTIC BOOM - RAISE

6.1.185 B1248-17

<b>Error code:</b>	<b>B1248-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	ARTICULATED BOOM LOWER Switch Short Circuit to High
<b>Component</b> :	ARTICULATED BOOM LOWER Switch
<b>Vehicle reaction:</b>	Input from Platform control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C201-3_PCP from the rear of the ARTICULATED BOOM Lower Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0073 &amp; #0072 to Platform ECU pin 34/58 &amp; 35/58.</li> <li>2. Check Wire #0073 &amp; #0072 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C201-1\_PCP & -C201-3\_PCP

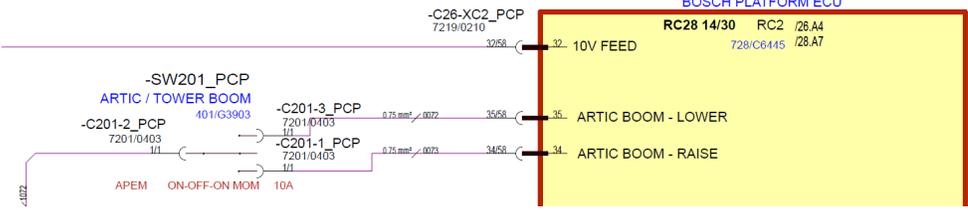
**BOSCH PLATFORM ECU**  
 RC28 14/30 RC2 /28 A4  
 728/C6445 /28 A7

32- 10V FEED  
 35- ARTIC BOOM - LOWER  
 34- ARTIC BOOM - RAISE

6.1.186 B1249-92

<b>Error code:</b>	<b>B1249-92</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	ARTICULATED BOOM RAISE & LOWER Switches both activated (5 - 10V)
<b>Component</b> :	ARTICULATED BOOM RAISE & LOWER
<b>Vehicle reaction:</b>	Input from Platform control station will be disabled, output can still be operated from platform control station.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C201-2_PCP from the rear of the ARTICULATED BOOM RAISE Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0073 &amp; #0072 to Base Bosch ECU pin 34/58 &amp; 35/58.</li> <li>2. Check Wire #0073 &amp; #0072 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

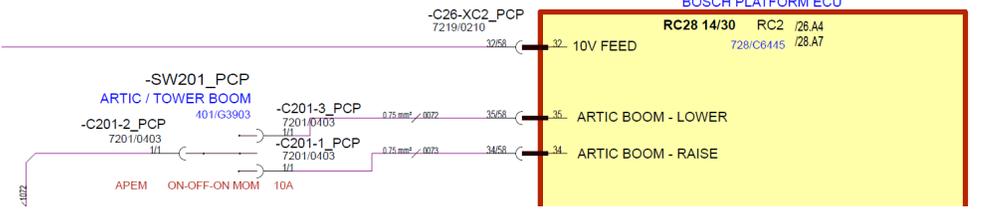
4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C201-1\_PCP & -C201-3\_PCP

6.1.187 B1250-16

<b>Error code:</b>	<b>B1250-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	ARTICULATED BOOM RAISE Switch Short Circuit to Low
<b>Component</b> :	ARTICULATED BOOM RAISE Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault)  After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C201-2_PCP from the rear of the ARTICULATED BOOM RAISE Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0073 to Platform Bosch ECU pin 34/58.</li> <li>2. Check Wire #0073 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins,</li> </ol>

debris or stray wires causing a short.  
 4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C201-1\_PCP

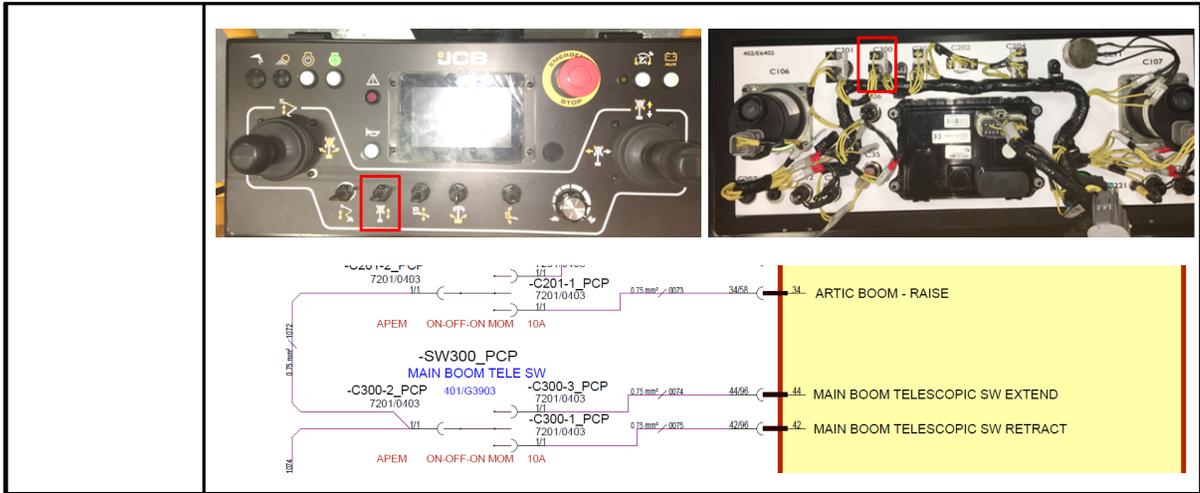
**6.1.188 B1251-16**

<b>Error code:</b>	<b>B1251-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b>	ARTICULATED BOOM LOWER Switch Short Circuit to Low
<b>Component</b>	ARTICULATED BOOM LOWER Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not output as it can be operated from where there is no fault)</p> <p>After operation: Refer to 10V System Short Circuit Fault reaction</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C201-2_PCP from the rear of the ARTICULATED BOOM LOWER Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0072 to Platform Bosch ECU pin 35/58.</li> <li>2. Check Wire #0072 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins,</li> </ol>

debris or stray wires causing a short.  
 4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C201-3\_PCP

6.1.189 B1252-17

<b>Error code:</b>	<b>B1252-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	MAIN BOOM TELESCOPE EXTEND Switch SC to High.
<b>Component</b> :	MAIN BOOM TELESCOPE EXTEND
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C300-3_PCP from the rear of the Main Boom Telescopic Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0074 to Platform Bosch ECU pin 44/96.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



### 6.1.190 B1253-17

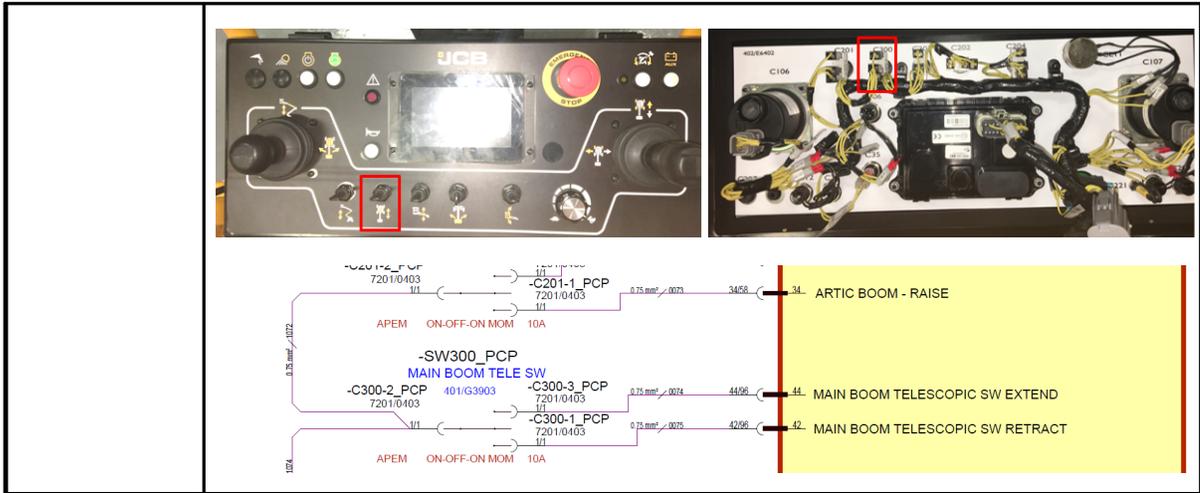
<b>Error code:</b>	<b>B1253-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	MAIN BOOM TELESCOPE RETRACT Switch SC to High.
<b>Component</b> :	MAIN BOOM TELESCOPE RETRACT Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C300-1_PCP from the rear of the Main Boom Telescopic Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0075 to Platform Bosch ECU pin 42/96.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>

The diagram shows the following connections:

- C201-2\_PCP (7201/0403) to -C201-1\_PCP (7201/0403) via 0.75 mm² / 0074 wire to terminal 34 (ARTIC BOOM - RAISE).
- SW300\_PCP (MAIN BOOM TELE SW) to -C300-2\_PCP (7201/0403) via 0.75 mm² / 0074 wire to terminal 44 (MAIN BOOM TELESCOPIC SW EXTEND).
- C300-2\_PCP (7201/0403) to -C300-3\_PCP (7201/0403) via 0.75 mm² / 0074 wire to terminal 42 (MAIN BOOM TELESCOPIC SW RETRACT).
- C300-1\_PCP (7201/0403) to -C300-3\_PCP (7201/0403) via 0.75 mm² / 0074 wire to terminal 42.

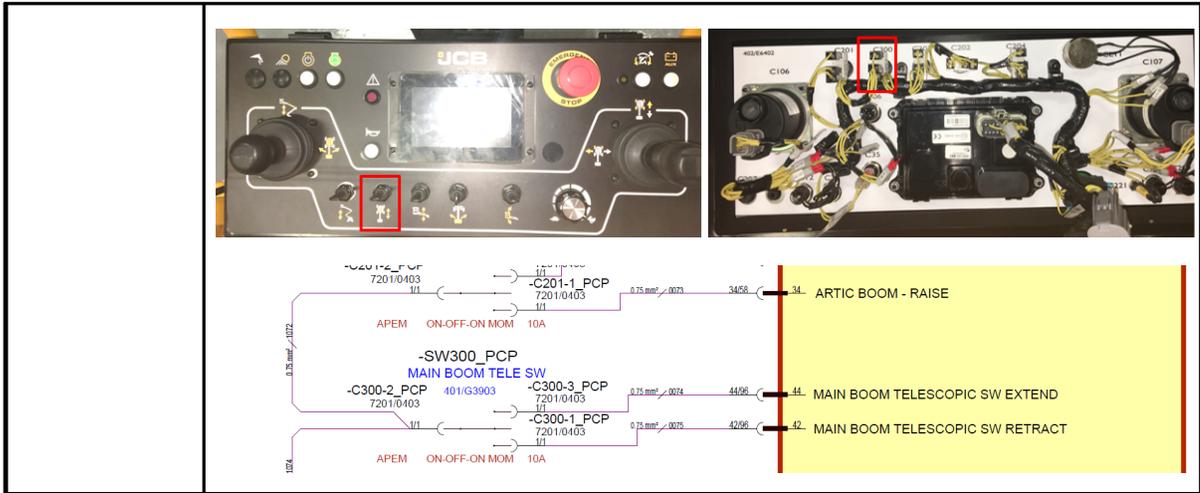
### 6.1.191 B1254-92

<b>Error code:</b>	<b>B1254-92</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	MAIN BOOM TELESCOPE EXTEND & RETRACT Switches both activated (5 - 10V).
<b>Component</b> :	MAIN BOOM TELESCOPE EXTEND & RETRACT Switches
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C300-3_PCP and -C300-1_PCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure voltage at both terminals. If voltage is high &gt;12V, check wires #0074 &amp; #0075 to Platform Bosch ECU pin 44/96 &amp; pin 42/96.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



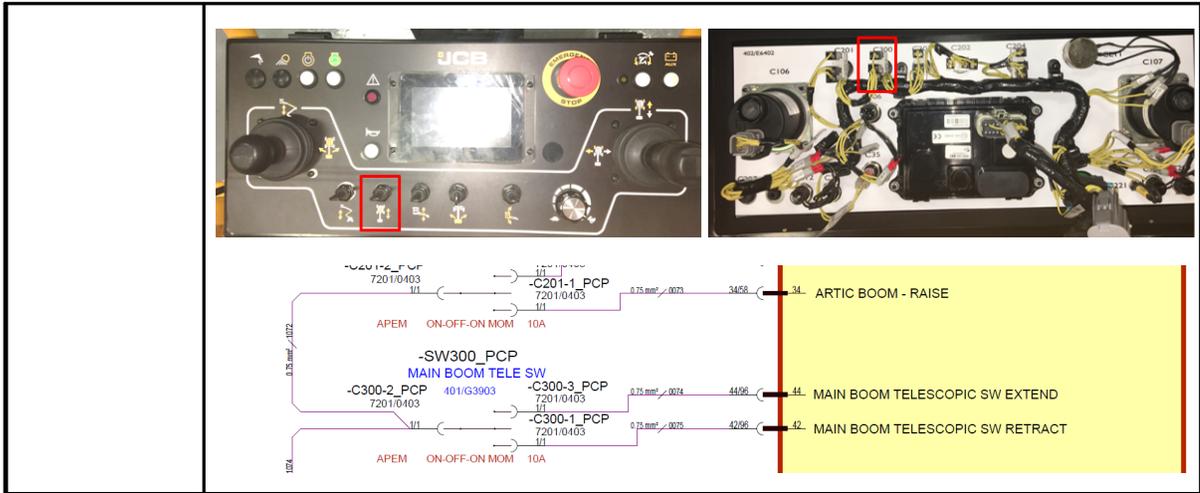
**6.1.192 B1255-16**

<b>Error code:</b>	<b>B1255-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	MAIN BOOM TELESCOPE EXTEND Switch SC to Low.
<b>Component</b> :	MAIN BOOM TELESCOPE EXTEND
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C300-3_PCP from the rear of the Main Boom Telescopic Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0074 to Platform Bosch ECU pin 44/96.</li> <li>2. Check Wire #0074 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C202-1_PCP</li> </ol>



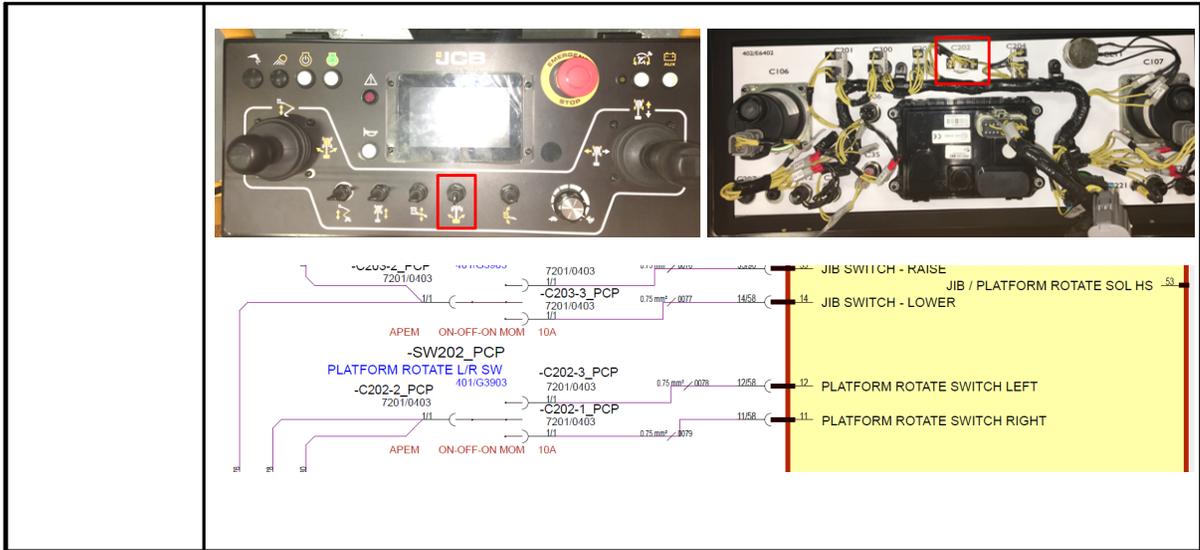
**6.1.193 B1256-16**

<b>Error code:</b>	<b>B1256-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	MAIN BOOM TELESCOPE RETRACT Switch SC to Low.
<b>Component</b> :	MAIN BOOM TELESCOPE RETRACT Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C300-1_TCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0075 to Platform Bosch ECU pin 42/96.</li> <li>2. Check Wire #0075 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C300-1_PCP</li> </ol>



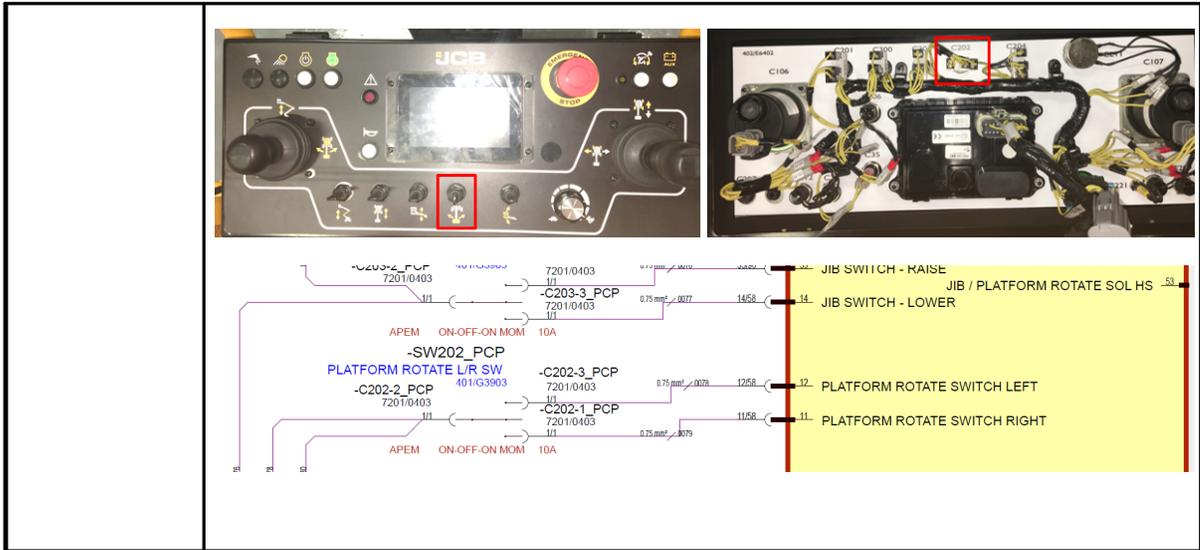
**6.1.194 B1257-17**

<b>Error code:</b>	<b>B1257-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Rotate Switch Right Short Circuit to High.
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C202-1_PCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0079 to Platform Bosch ECU pin 11/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



### 6.1.195 B1258-17

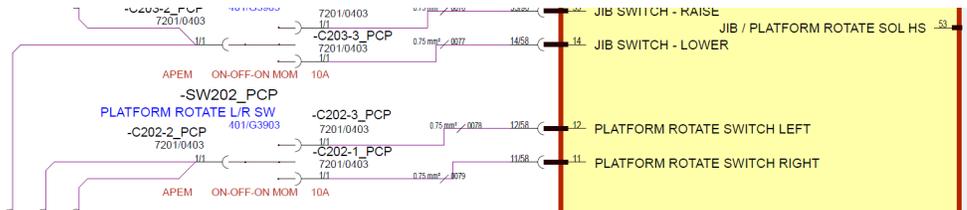
<b>Error code:</b>	<b>B1258-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Rotate Switch Left Short Circuit to High.
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C202-3_PCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0078 to Platform Bosch ECU pin 12/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



### 6.1.196 B1259-92

<b>Error code:</b>	<b>B1259-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)
<b>Component</b> :	PLATFORM ROTATE RIGHT & LEFT Switches
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Measure voltage at Platform Rotate Left and Right terminals, -C202-1_PCP &amp; -C202-3_PCP. With switch not pressed, terminal voltage should be approx 2.5-3.0V. With switch pressed, voltage should rise to 10V. If Voltage at terminal is constant 10V or higher, then there is a short to high either at the switch, wiring harness or at the Platform Bosch ECU connectors (Pins 11/58 &amp; 12/58). If voltage is high, remove -C202-2_PCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</li> <li>2. Check Platform Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</li> <li>3. Check connectors for any sign of water ingress.</li> </ol>

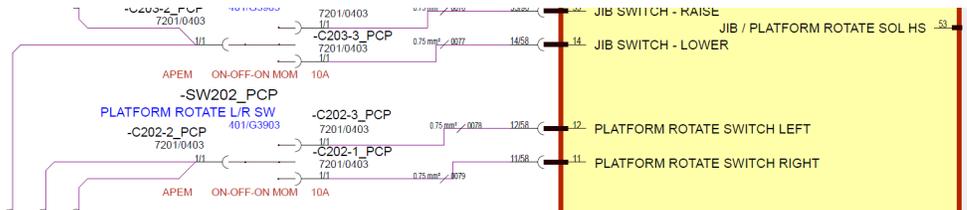
4. Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.

6.1.197 B1260-16

<b>Error code:</b>	<b>B1260-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Rotate Switch Right Short Circuit to Low.
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C202-1_PCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0079 to Platform Bosch ECU pin 11/58.</li> <li>2. Check Wire #0079 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

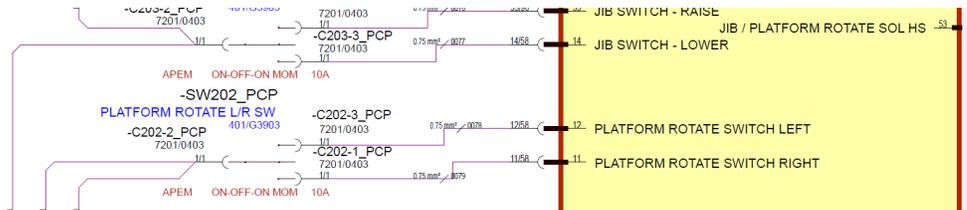
4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C202-1\_PCP

6.1.198 B1261-16

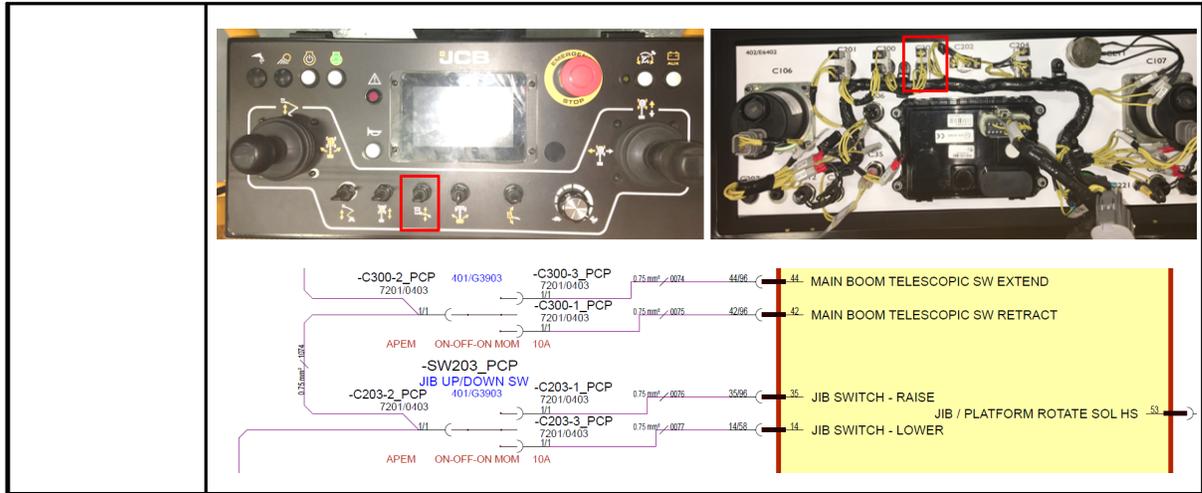
<b>Error code:</b>	<b>B1261-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Rotate Switch Left Short Circuit to Low.
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C202-3_PCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0078 to Platform Bosch ECU pin 12/58.</li> <li>2. Check Wire #0078 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> </ol>

4. Check for water ingress in the Platform Bosch ECU Connectors.  
 5. Check Switch for damage or shorting to connector -C202-3\_PCP

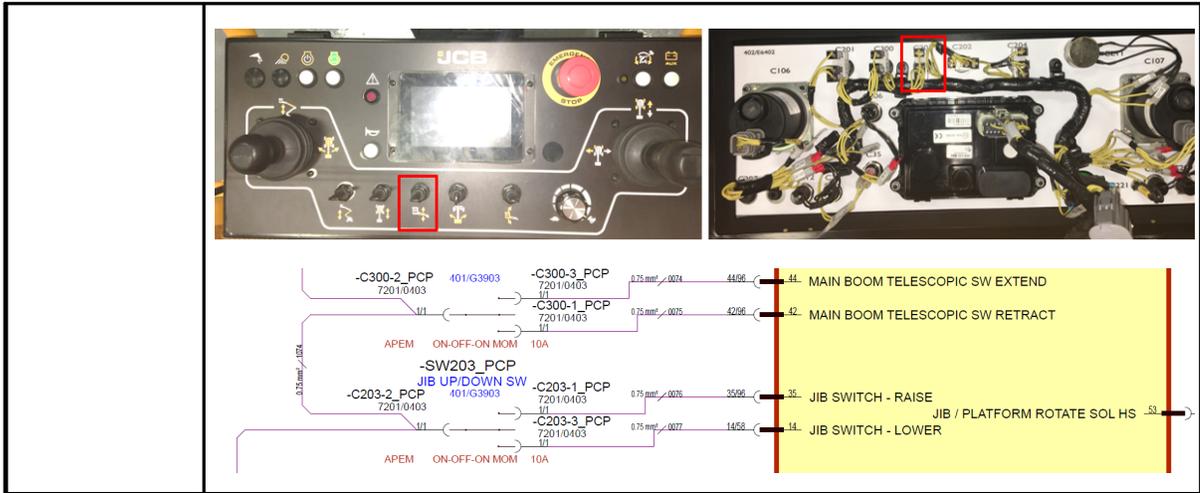
**6.1.199 B1262-17**

<b>Error code:</b>	<b>B1262-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Jib - Jib Switch Raise Short Circuit to High.
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C203-1_PCP from the rear of the Jib Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0076 to Platform Bosch ECU pin 35/96.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



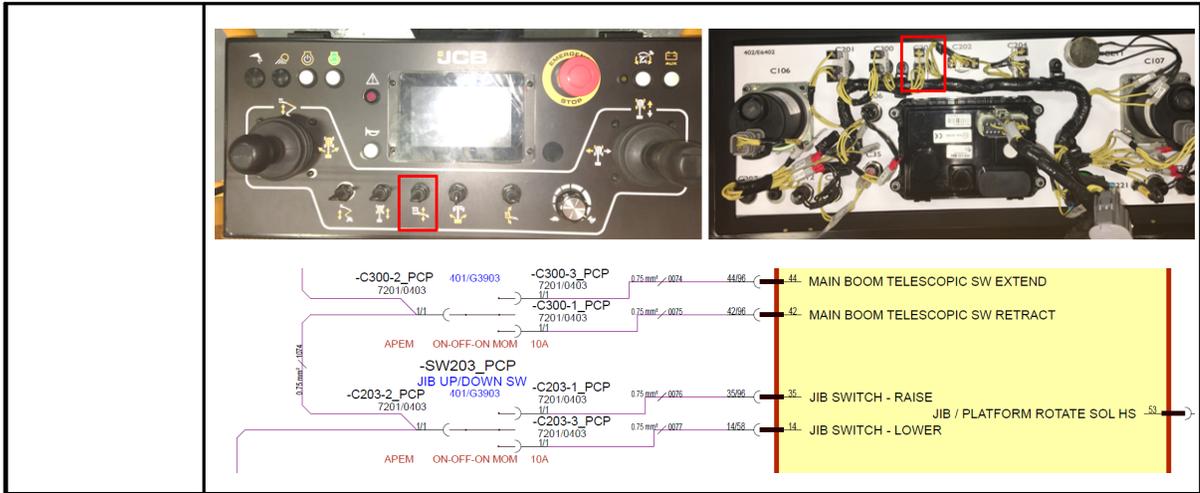
### 6.1.200 B1263-17

<b>Error code:</b>	<b>B1263-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Jib - Jib Switch Lower Short Circuit to High.
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C203-3_PCP from the rear of the Jib Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0077 to Platform Bosch ECU pin 14/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



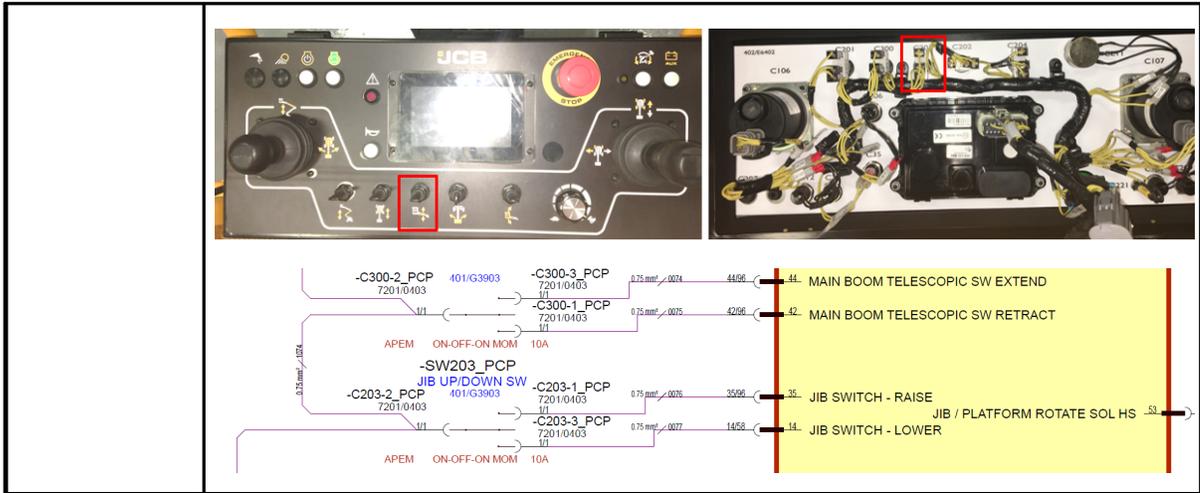
### 6.1.201 B1264-92

<b>Error code:</b>	<b>B1264-92</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Jib - Jib Switch Raise & Lower both Activated (5 - 10v).
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Ignore the input (but not output as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C203-1_PCP and -C203-3_PCP from the rear of the Jib Switch on the Platform Control Panel. Measure voltage at both terminals. If voltage is high &gt;12V, check wires #0076 &amp; #0077 to Platform Bosch ECU pin 35/96 &amp; pin 14/58.</li> <li>2. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>3. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>4. Check Switch for damage or any loose wiring in the control panel.</li> </ol>



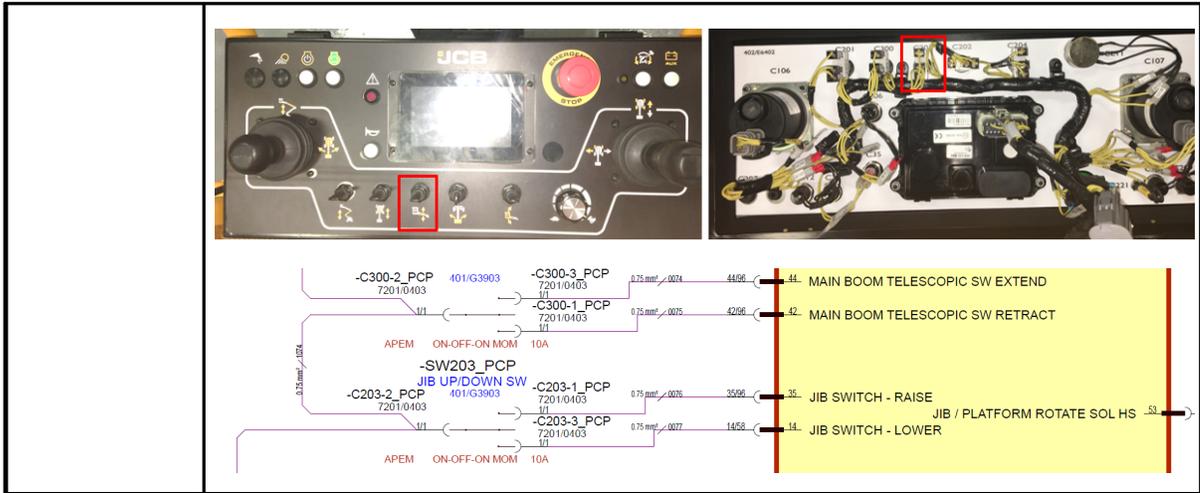
6.1.202 B1265-16

<b>Error code:</b>	<b>B1265-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Jib - Jib Switch Raise Short Circuit to Lower.
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C203-1_PCP from the rear of the Jib Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0076 to Platform Bosch ECU pin 35/96.</li> <li>2. Check Wire #0076 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C203-1_PCP</li> </ol>



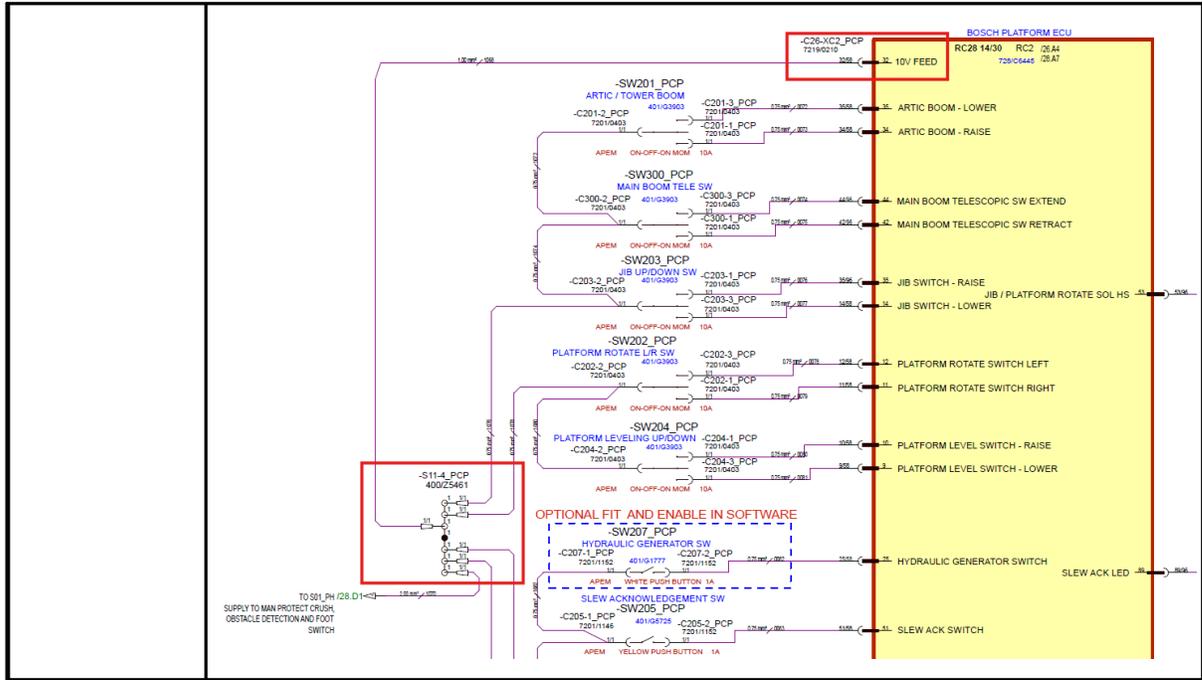
### 6.1.203 B1266-16

<b>Error code:</b>	<b>B1266-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Jib - Jib Switch Lower Short Circuit to Lower.
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	Before operation: Ignore the input (but not output as it can be operated from where there is no fault) After operation: Refer to 10V System Short Circuit Fault reaction
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Disconnect connector -C203-3_PCP from the rear of the Jib Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0077 to Platform Bosch ECU pin 14/58.</li> <li>2. Check Wire #0077 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>3. Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</li> <li>4. Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5. Check Switch for damage or shorting to connector -C203-3_PCP</li> </ol>



### 6.1.204 B1267-17

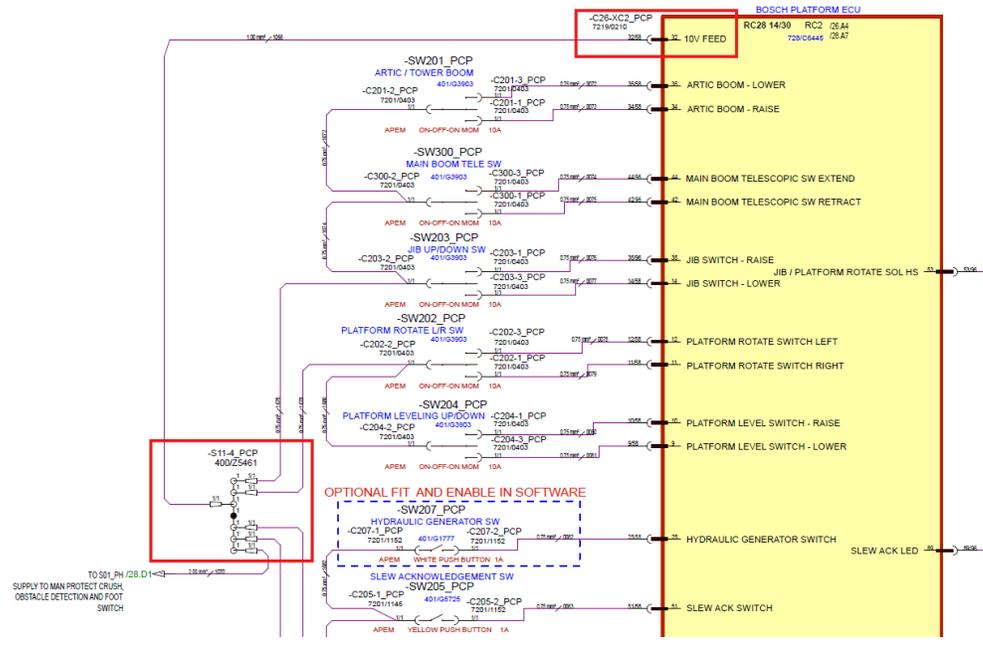
<b>Error code:</b>	<b>B1267-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	10V FEED System Short Circuit to High - Platform
<b>Component</b> :	Platform ECU
<b>Vehicle reaction:</b>	Block all inputs connected to 10V present on the respective control panel.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. At platform control panel, measure voltage at DIN rail terminal -S11-4_PCP (Contains wires: #1068, #1070 #1076, #1078, #1085, #1086). Voltage should be +10VDC. If voltage is &gt;+10VDC then there is likely a short circuit to High. To narrow down fault location, remove each wire one at a time and re-measure voltage until the problem circuit has been identified. Wire #1068 is the +10V Feed from the Platform ECU - If this circuit is &gt;+10V, then the fault may be within the Platform Bosch ECU connector. Check Pin 32/58 and surrounding pins for shorts, bent pins, debris or water ingress.</li> <li>2. Check the wiring harness for any abrasions, pinching or any other sign of damage that may lead to a short circuit.</li> </ol>



## 6.1.205 B1268-16

<b>Error code:</b>	<b>B1268-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform 10v Feed - Platform 10v Feed Short Circuit to Low.
<b>Component</b> :	Platform ECU
<b>Vehicle reaction:</b>	Block all inputs connected to 10V present on the respective control panel.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. At platform control panel, measure voltage at DIN rail terminal -S11-4_PCP (Contains wires: #1068, #1070 #1076, #1078, #1085, #1086). Voltage should be +10VDC. If voltage is less than +10VDC then there is likely a short circuit to GND / Chassis. To narrow down fault location, remove each wire one at a time and re-measure voltage until the problem circuit has been identified. Wire #1068 is the +10V Feed from the Platform ECU - If this circuit is less than +10V, then the fault may be within the Platform Bosch ECU connector.</li> </ol>

Check Pin 32/58 and surrounding pins for shorts, bent pins, debris or water ingress.  
 2. Check the wiring harness for any abrasions, pinching or any other sign of damage that may lead to a short circuit to other wires or chassis.

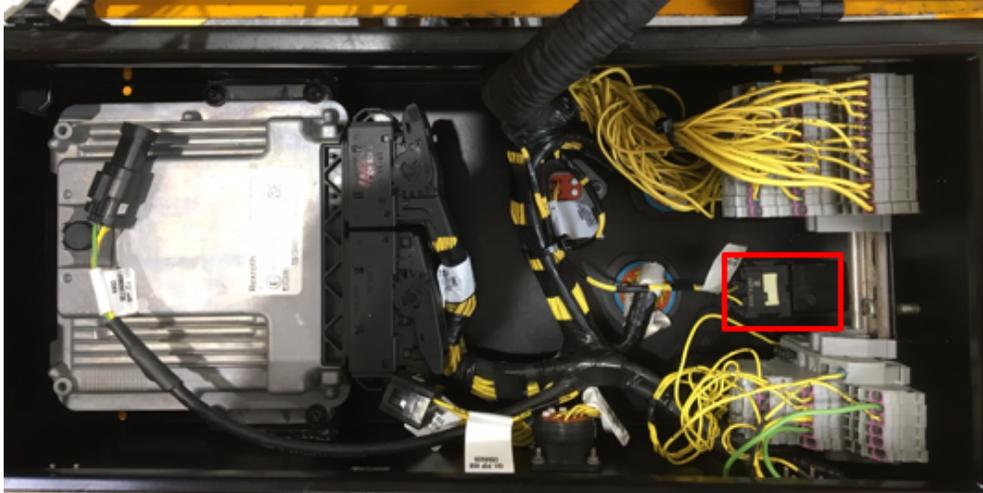
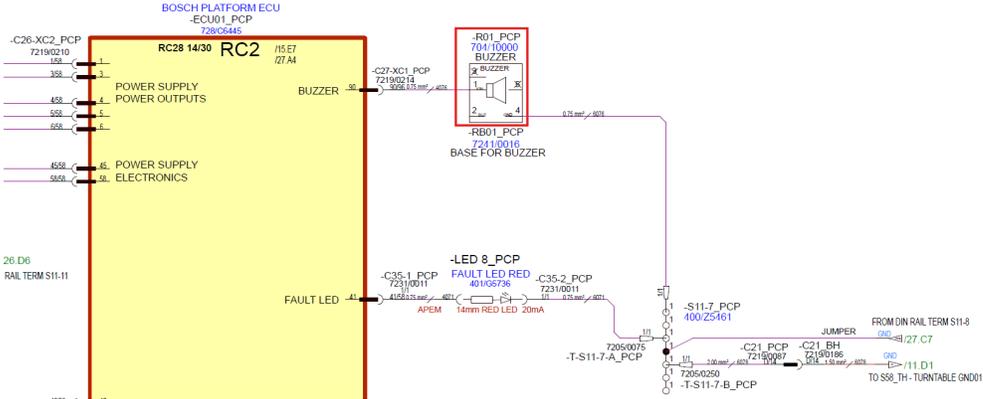


### 6.1.206 B1269-16

<b>Error code:</b>	<b>B1269-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Buzzer - Buzzer Short Circuit to Low.
<b>Component</b> :	Buzzer
<b>Vehicle reaction:</b>	Detect failure mode. Disable output
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>

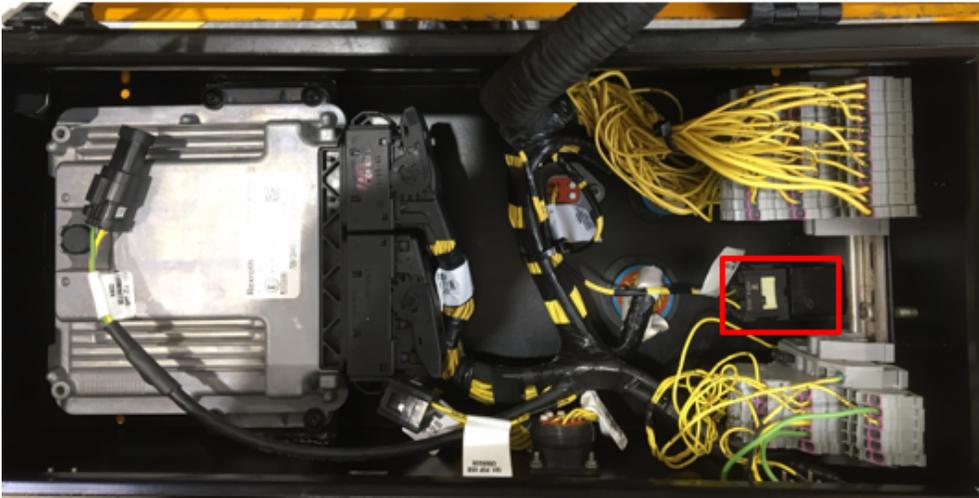
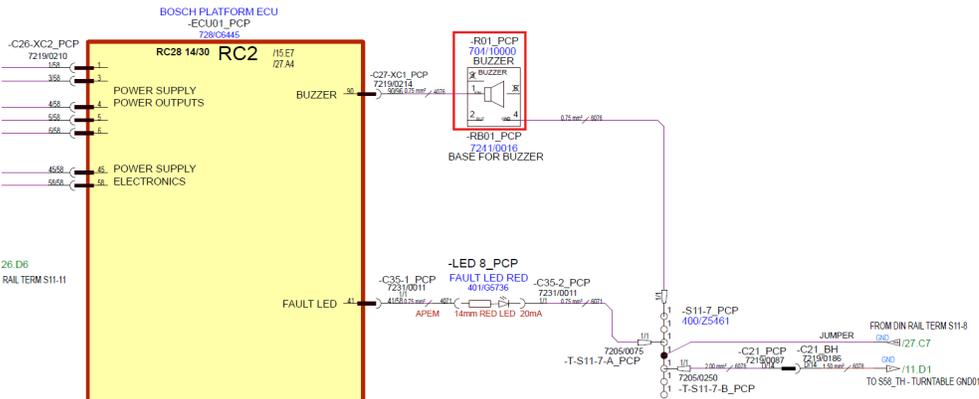
**Service Action:**

1. In platform Control Panel, Check wire #4076 to Buzzer base -RB01\_PCP Pin 1.
2. Check for short circuit to GND / Chassis.
3. Check terminals of Buzzer base for any damage, debris, water ingress etc
4. Check buzzer has not malfunctioned, test with new buzzer.

### 6.1.207 B1270-17

<b>Error code:</b>	<b>B1270-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Buzzer - Buzzer Short Circuit to High.
<b>Component</b> :	Buzzer
<b>Vehicle reaction:</b>	Detect failure mode. Disable output

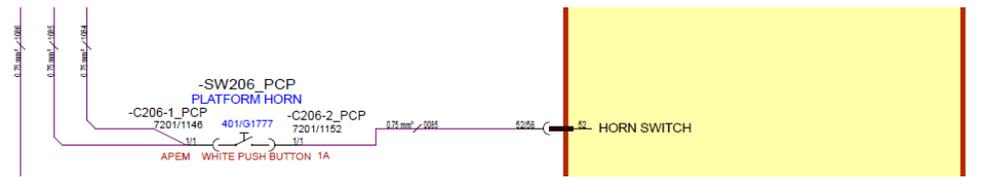
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. In platform Control Panel, Check wire #4076 to Buzzer base -RB01_PCP Pin 1.</li> <li>2. Check for short circuit to High.</li> <li>3. Check terminals of Buzzer base for any damage, debris, water ingress etc</li> <li>4. Check buzzer has not malfunctioned, test with new buzzer.</li> </ol>  

**6.1.208 B1272-2F**

<p><b>Error code:</b></p>	<p><b>B1272-2F</b></p>
<p><b>ECU</b></p>	<p>Base ECU</p>
<p><b>Description :</b></p>	<p>Oscillating Axle - Axle Lock Pressure Sensor Output is less than 1v when it should be greater than 1v.</p>

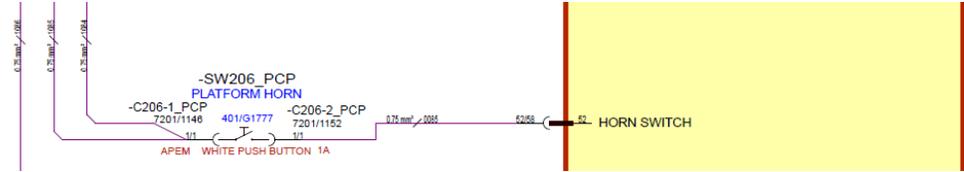
<b>Component :</b>	Oscillating Axle Pressure Sensor
<b>Vehicle reaction:</b>	Detect failure mode; Prevent all Raise, Extend and Slew; In Raised or Slew position - prevent drive & steer; In Stowed and Forward position - allow drive
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C214_TH and -C214_TH. Measure voltage at pin 4/4 (Wire #4012) on both connectors. If one of the measurements is above 4.5VDC then there is a short to high on that connection. Trace the fault back to where there is a short circuit to high.</li> <li>2. Check interconnects -C214_TH and -C214_TH for any damage, shorts, debris or stray wire. Check the Base Bosch ECU connector (58-way) for any damage, bent pins debris etc. Check pin 27/58.</li> <li>3. Check all above connectors for any water ingress.</li> <li>4. Check the pressure sensor for damage or malfunction. Replace component.</li> </ol> <div> </div> <div> <p>The diagram shows the electrical circuit for the Axle Lock Pressure Sensor. It starts with a 'FROM FUSE F05' connection leading to a 'WATER TEMP SWITHER' and the 'KOHLER ENGINE HARNESS'. The sensor is connected to the 'AXLE LOCK SOL LS' through a series of connectors: C214_4WD, C08_4WD, C08_2VWD, C85_TH, and C85_TH. The sensor output is labeled 'AXLE LOCK PRESSURE SENSOR'.</p> </div>

6.1.209 B1273-17

<b>Error code:</b>	<b>B1273-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Horn - Platform Horn Button Short Circuit to High.
<b>Component</b> :	Horn Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C26-XC2_PCP Pin 52/58 on the Bosch Platform ECU Connector' and 'C206-2_PCP on the Platform Horn Button'.</li> <li>2. Disconnect 'C26-XC2_PCP Bosch Platform ECU Connector' and check terminal 52/58 ensuring that nothing is touching it. Same with 'C206-2_PCP on the Platform Horn Button'.</li> <li>3. Check connectors are dry and free of debris. Check for damaged terminals on the 'C26-XC2_PCP Bosch Platform ECU Connector'.</li> <li>4. Check operation of the Platform Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</li> </ol>
	 

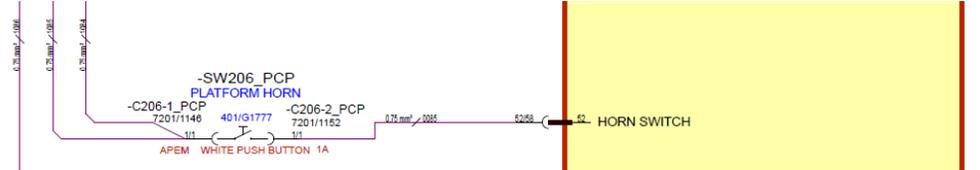
6.1.210 B1274-16

<b>Error code:</b>	<b>B1274-16</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Horn - Platform Horn Button Short Circuit to Low.
<b>Component</b> :	Horn Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C26-XC2_PCP Pin 52/58 on the Bosch Platform ECU Connector' and 'C206-2_PCP on the Platform Horn Button'.</li> <li>2. Check the wiring has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</li> <li>3. Disconnect 'C26-XC2_PCP Bosch Platform ECU Connector' and check terminal 52/58 ensuring that nothing is touching it. Same with 'C206-2_PCP on the Platform Horn Button'.</li> <li>4. Check connectors are dry and free of debris. Check for damaged terminals on the 'C26-XC2_PCP Bosch Platform ECU Connector'.</li> <li>5. Check operation of the Platform Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</li> </ol>
 	

### 6.1.211 B1275-24

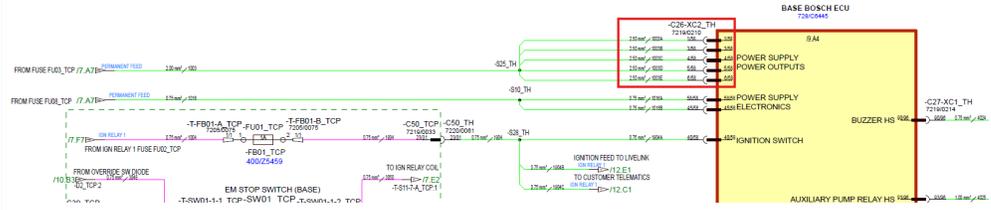
<b>Error code:</b>	<b>B1275-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Horn - Platform Horn Button Stuck >10s.

<b>Component :</b>	Horn Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between 'C26-XC2_PCP Pin 52/58 on the Bosch Platform ECU Connector' and 'C206-2_PCP on the Platform Horn Button'.</li> <li>2. Disconnect 'C26-XC2_PCP Bosch Platform ECU Connector' and check terminal 52/58 ensuring that nothing is touching it. Same with 'C206-2_PCP on the Platform Horn Button'.</li> <li>3. Check connectors are dry and free of debris. Check for damaged terminals on the 'C26-XC2_PCP Bosch Platform ECU Connector'.</li> <li>4. Check operation of the Platform Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</li> </ol>
 	

6.1.212 B1276-24

<b>Error code:</b>	<b>B1276-24</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Base Start lock Stuck (VBATT <8.5VDC)
<b>Component :</b>	ECU

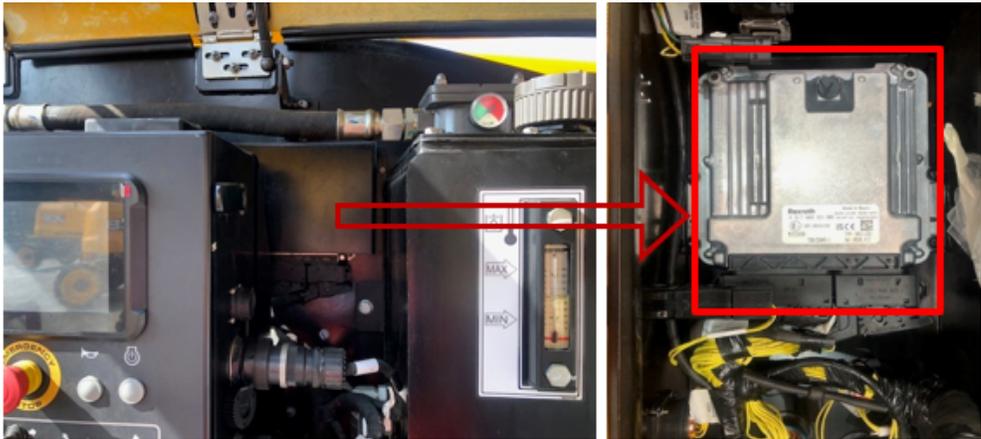
<b>Vehicle reaction:</b>	Base ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A open circuit within the harness connectors</li> <li>2. Water damage/ingress within the harness connectors</li> <li>3. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check voltage at Base ECU pins 1/58, 3/58, 4/58, 5/58 and 6/58. Voltage can be measured at ECU feed fuse FU03_TCP.</li> <li>2. Check continuity of GND pin 2/58 to Turntable Ground.</li> <li>3. Check connectors for water ingress, bent or backed out pins, debris or any damage to the wiring harness.</li> <li>4. If no fault found, replace ECU</li> </ol>

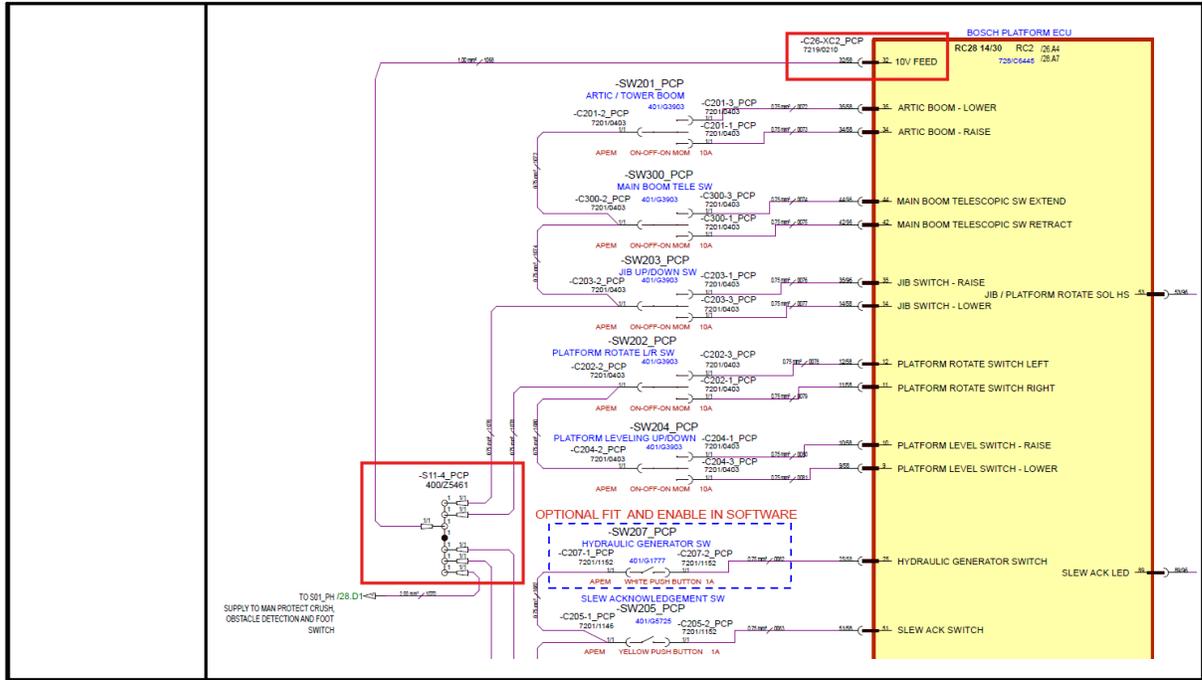


### 6.1.213 B1277-24

<b>Error code:</b>	<b>B1277-24</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Platform Startlock Stuck (Generic o/p fault) - Turntable ECU Power supply less than 8.5v
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Base ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A open circuit within the harness connectors</li> <li>2. Water damage/ingress within the harness connectors</li> <li>3. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check voltage at Platform ECU pins 1/58, 3/58, 4/58, 5/58 and 6/58. Voltage can be measured at DIN Rail Terminal -S11-1_PCP. Check all wires are fully inserted.</li> </ol>

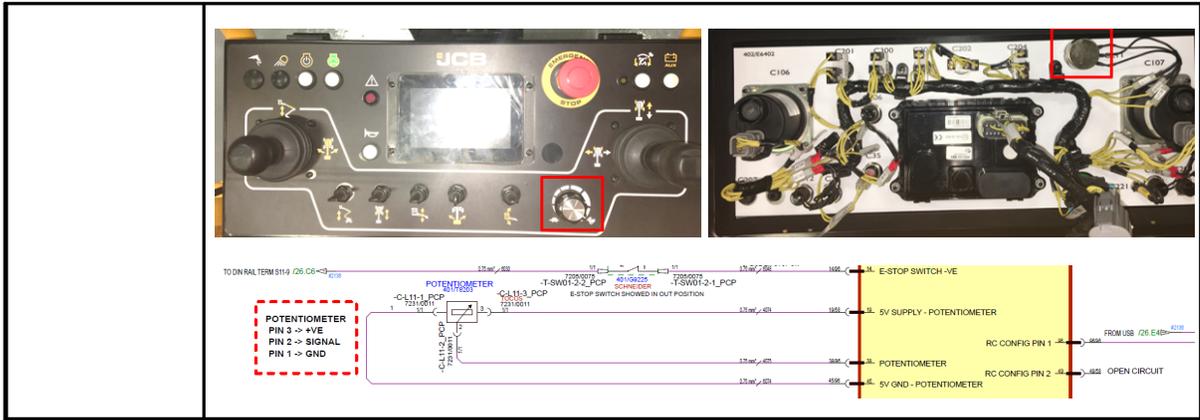


<b>ECU</b>	Base ECU
<b>Description</b> :	Startlock Failure - VSS2 Low Voltage ( $\leq 9.5V$ )
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all Disable output and ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. VSS 2 (+10V) Voltage at Pin 32/58 on the Base Bosch ECU is equal to or below +9.5V. There is no circuitry attached to this pin. Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</li> <li>2. Check System voltage</li> </ol>
	



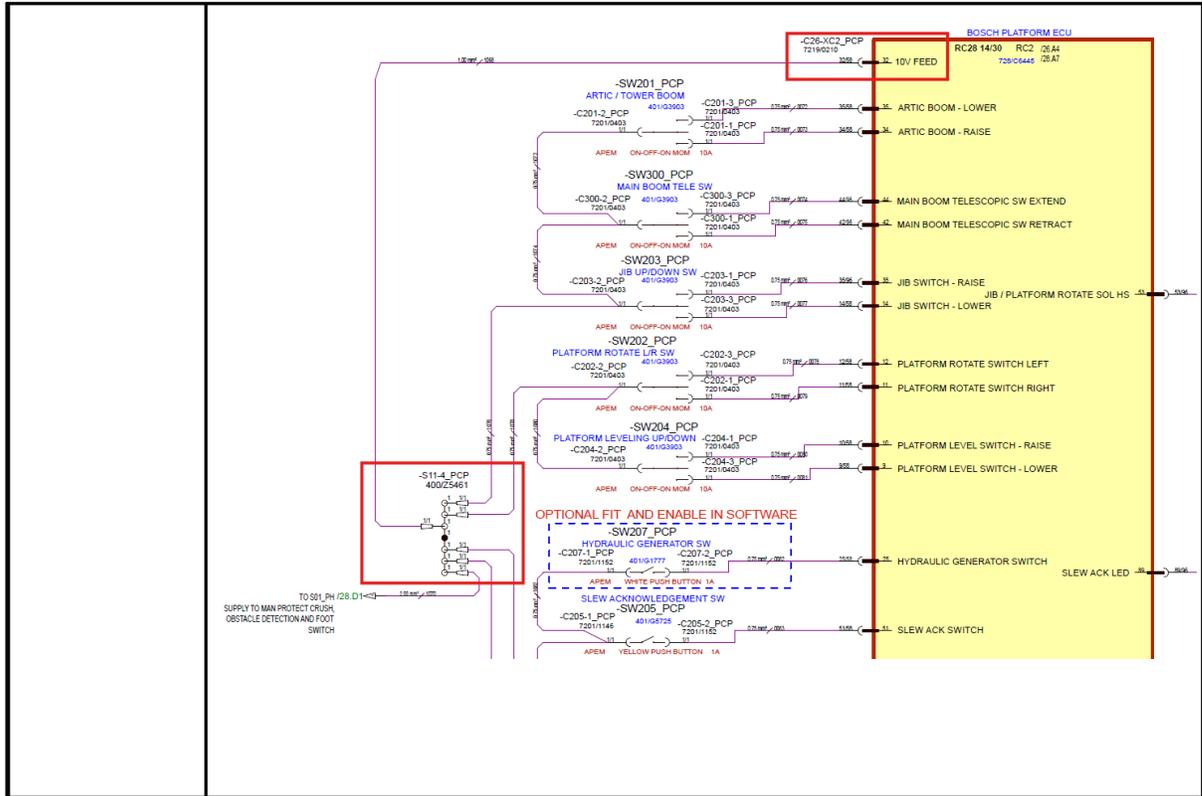
### 6.1.215 B1283-16

<b>Error code:</b>	<b>B1283-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b>	Startlock Failure - VSS1 Low Voltage ( $\leq 4.5V$ )
<b>Component</b>	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all Disable output and ignore input of Platform Panel
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. VSS 1 (+5 V) Voltage at Pin 19/58 on the Platform Bosch ECU is equal to or below +4.5V. This voltage can be measured at the speed potentiometer terminal -C-L11-3_PCP. Check no short or damage at potentiometer. Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</li> <li>2. Check System voltage.</li> </ol>



### 6.1.216 B1284-16

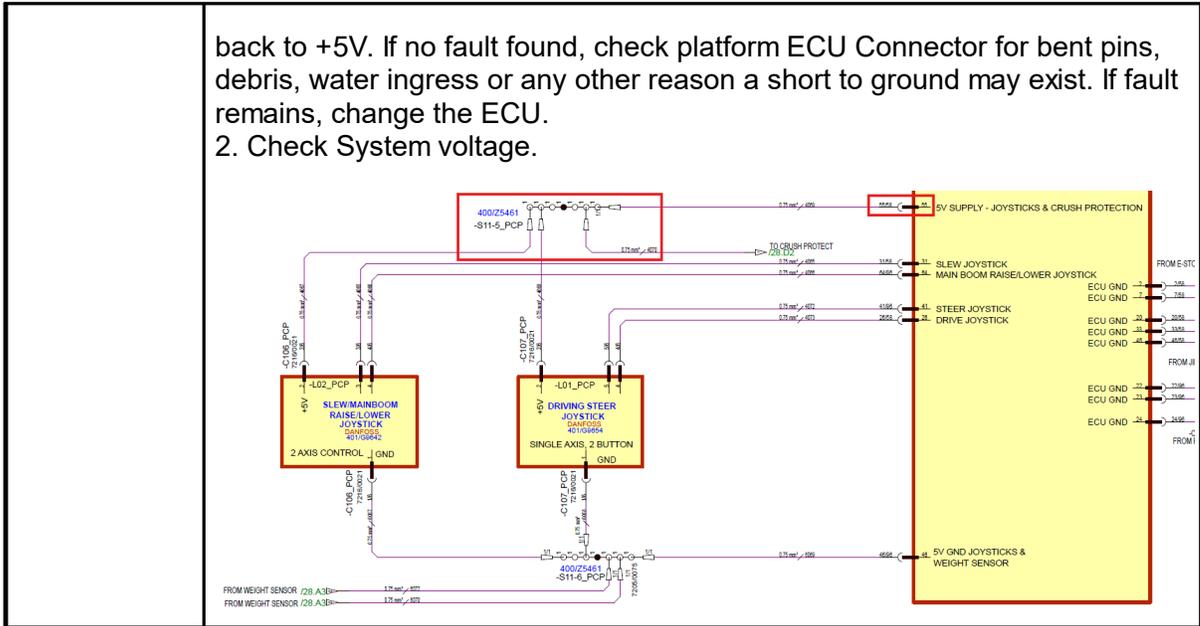
<b>Error code:</b>	<b>B1284-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock Failure - VSS2 Low Voltage ( $\leq 9.5V$ )
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all Disable output and ignore input of Platform Panel
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<p>1. VSS 2 (+10V) Voltage at Pin 32/58 on the Platform Bosch ECU is equal to or below +9.5V. Voltage can be measured at DIN Rail Terminal -S11-4_PCP. Check other wires coming from this DIN Rail Terminal (#1070, #1076, #1078, #1085, #1086) Try removing these wires one at a time to narrow down fault location. If no fault found, check platform ECU Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</p>



### 6.1.217 B1285-16

<b>Error code:</b>	<b>B1285-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock Failure - VSS3 Low Voltage ( $\leq 4.5V$ )
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all Disable output and ignore input of Platform Panel
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. VSS 3 (+5 V) Voltage at Pin 55/58 on the Platform Bosch ECU is equal to or below +4.5V. This voltage provides supply to Joysticks and Crush Protection. The voltage can be measured at DIN Rail Terminal -S11-5_PCP (Wire #4069). Check all wires at DIN Rail Terminal (#4067, #4068, #4070). Remove one wire at a time and measure voltage from ECU to see if it raises</li> </ol>

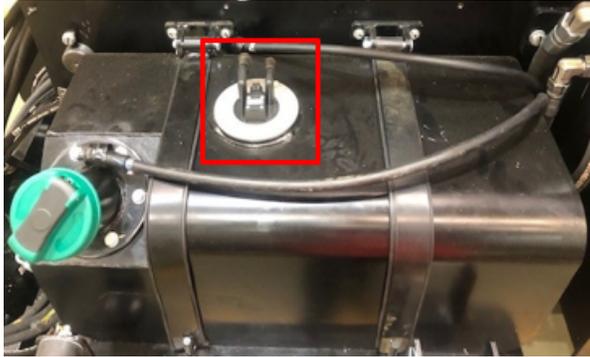
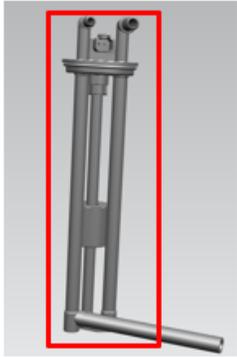
back to +5V. If no fault found, check platform ECU Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.  
 2. Check System voltage.



### 6.1.218 B1287-2F

<b>Error code:</b>	<b>B1287-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Fuel Sender - Fuel Sender Data Erratic.
<b>Component</b> :	Fuel Sender
<b>Vehicle reaction:</b>	Detect failure mode; Don't send any value to Display
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Open Circuit</li> <li>3. Poor Connection</li> <li>4. Water Ingress</li> <li>5. Damaged Component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check connections of Fuel Level Sender -C28_TH. Ensure connections are well made, free of contaminant. Check terminals are seated correctly. Disconnect connector from fuel level sender and measure resistance. Resistance should measure between 10 and 178 Ohms (depending on quantity of fuel in tank). Check fuel level sender connector is undamaged.</li> <li>2. Check continuity of GND from -C28_TH pin 2/2 to Turntable Ground (Wire #6033).</li> <li>3. Check continuity of Fuel Level Signal from -C28_TH pin 1/2 to Base Bosch</li> </ol>

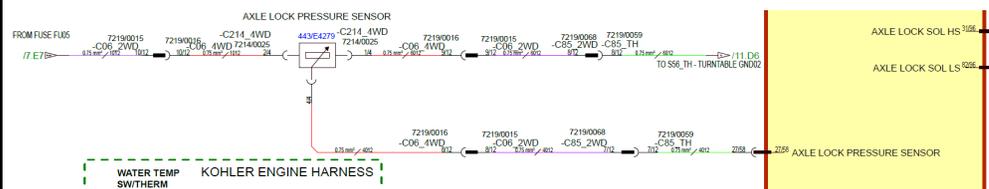
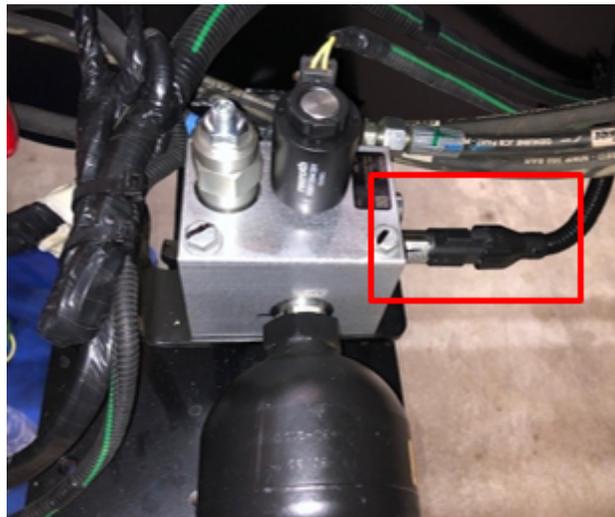
ECU pin 21/96 (Wire #4033)  
 4. Check condition of Base Bosch ECU connector, check for bent or backed out pins, water ingress, debris or any other fault.  
 5. Check condition of wiring harness between fuel level sender and ECU  
 6. Replace fuel level sender.


6.1.219 B1288-2F

<b>Error code:</b>	<b>B1288-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	OSCILLATING AXLE PRESSURE SENSOR SOFTWARE Failure
<b>Component</b> :	OSCILLATING AXLE PRESSURE SENSOR
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock o/p to off; Base disables Lift – Main Boom and Artic Boom, Extend – Main Boom, Slew and Drive functions (in slew position and Raised mode)
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Open Circuit</li> <li>3. Poor Connection</li> <li>4. Water Ingress</li> <li>5. Damaged Component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check connections to Pressure sensor</li> </ol>

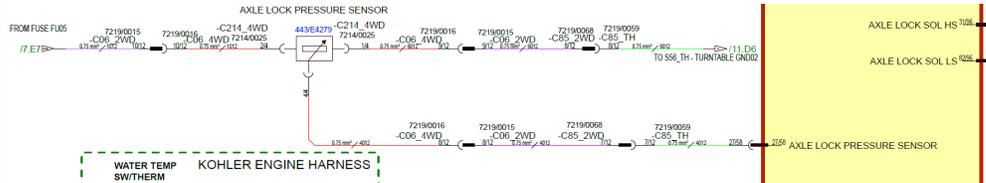
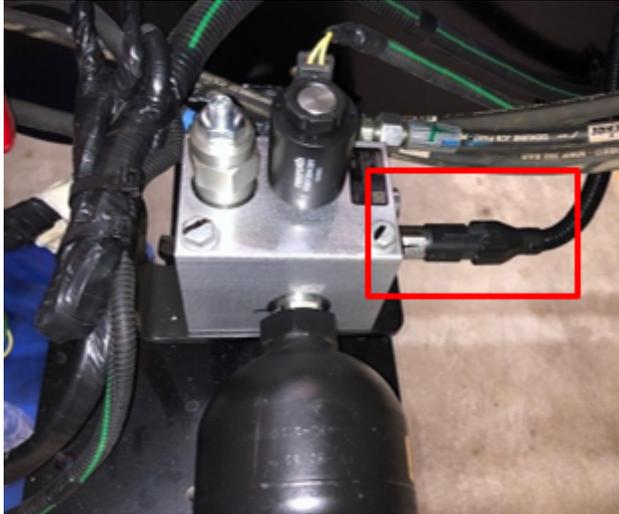
2. Check the voltage at Connector C214\_TH 2/4, if no voltage need to investigate as per schematic
2. Check wiring at Pressure sensor connector
4. Check Base ECU Pin 27/58 for any damage, bent or back out.
5. Check wire 1012, 6012 and 4012 for any cut, short or damage.
6. Replace the Pressure sensor if damage or Faulty.
7. If Sensor is OK, Reflash the software with latest Version.



### 6.1.220 B1301-2F

<b>Error code:</b>	<b>B1301-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillating Axle - Oscillating Axle Pressure Sensor Failure.

<b>Component :</b>	Oscillating Axle Pressure Sensor
<b>Vehicle reaction:</b>	Detect failure mode; Prevent all Raise, Extend and Slew; In Raised or Slew position - prevent drive & steer; In Stowed and Forward position - allow drive
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C214_TH and -C214_TH. Measure voltage at pin 9/12 (Wire #4012) on both connectors. If one of the measurements is above 4.5VDC then there is a short to high on that connection. Trace the fault back to where there is a short circuit to high.</li> <li>2. Check interconnects -C214_TH and -C214_TH for any damage, shorts, debris or stray wire. Check the Base Bosch ECU connector (58-way) for any damage, bent pins debris etc. Check pin 27/58.</li> <li>3. Check all above connectors for any water ingress.</li> <li>4. Check the pressure sensor for damage or malfunction. Replace component.</li> </ol>



## 6.1.221 B1302-2F

<b>Error code:</b>	<b>B1302-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	RC CONFIG Short Circuit Plausibility Check
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	After ignition: Detect failure mode; Disable all functionalities of respective controller; Before ignition: check in start lock logic and control will be stuck in start lock mode; Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short or Open Circuit on CAN Bus network</li> <li>2. Water ingress on CAN Bus connector / device</li> <li>3. Harness damage</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check CAN Bus terminators at both ends of CAN Network (Platform and Base Control Panels)</li> <li>2. Remove one CAN Bus terminator and measure resistance of CAN-H to CAN-L. Should be 120 Ohms. If value is low, check CAN Bus for short circuits, If value is High, Check for open circuits (including interconnects)</li> <li>3. Check for water ingress, short or open circuits in all connectors of devices attached to CAN Bus.</li> <li>4. Connect Service Master via diagnostic connector, User CAN diagnostics to check which devices are connected and operating correctly.</li> </ol>
<p>The diagram illustrates the CAN bus network architecture. It shows the Base Bosch ECU (ECU1) connected to the CAN-H and CAN-L lines. The ECU Leveling ECU (ECU2) is also connected to the CAN bus. The Customer Telematics unit is connected to the CAN bus via a CAN 1 spare line. The Platform Expansion Conv. unit is connected to the CAN bus. The Bosch Platform ECU (ECU3) is connected to the CAN bus. The Platform Display (PDR) is connected to the CAN bus. The diagram also shows various PCP units (Platform Control Panels) connected to the CAN bus, including PCP1, PCP2, PCP3, PCP4, PCP5, PCP6, PCP7, PCP8, PCP9, PCP10, PCP11, PCP12, PCP13, PCP14, PCP15, PCP16, PCP17, PCP18, PCP19, PCP20, PCP21, PCP22, PCP23, PCP24, PCP25, PCP26, PCP27, PCP28, PCP29, PCP30, PCP31, PCP32, PCP33, PCP34, PCP35, PCP36, PCP37, PCP38, PCP39, PCP40, PCP41, PCP42, PCP43, PCP44, PCP45, PCP46, PCP47, PCP48, PCP49, PCP50, PCP51, PCP52, PCP53, PCP54, PCP55, PCP56, PCP57, PCP58, PCP59, PCP60, PCP61, PCP62, PCP63, PCP64, PCP65, PCP66, PCP67, PCP68, PCP69, PCP70, PCP71, PCP72, PCP73, PCP74, PCP75, PCP76, PCP77, PCP78, PCP79, PCP80, PCP81, PCP82, PCP83, PCP84, PCP85, PCP86, PCP87, PCP88, PCP89, PCP90, PCP91, PCP92, PCP93, PCP94, PCP95, PCP96, PCP97, PCP98, PCP99, PCP100. The diagram also shows the CAN 1 spare line and the CAN terminator PCP.</p>	

## 6.1.222 B1303-2F

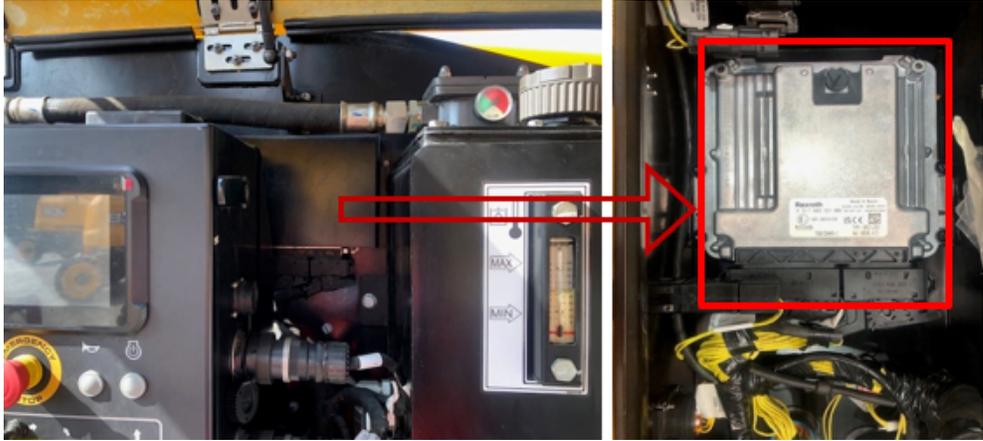
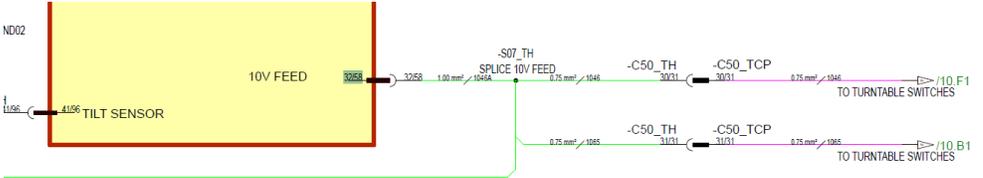
<b>Error code:</b>	<b>B1303-2F</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	RC CONFIG Short Circuit Plausibility Check
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	After ignition: Detect failure mode; Disable all functionality of respective controller; Before ignition: check in startlock logic and control will be stuck in Startlock mode; Detect failure mode.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short or Open Circuit on CAN Bus network</li> <li>2. Water ingress on CAN Bus connector / device</li> <li>3. Harness damage</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check CAN Bus terminators at both ends of CAN Network (Platform and Base Control Panels)</li> <li>2. Remove one CAN Bus terminator and measure resistance of CAN-H to CAN-L. Should be 120 Ohms. If value is low, check CAN Bus for short circuits, If value is High, Check for open circuits (including interconnects)</li> <li>3. Check for water ingress, short or open circuits in all connectors of devices attached to CAN Bus.</li> <li>4. Connect Service Master via diagnostic connector, User CAN diagnostics to check which devices are connected and operating correctly.</li> </ol>
<p>The diagram illustrates the CAN 1 network layout. Key components include:         <ul style="list-style-type: none"> <li><b>BASE BORCH ECU (65001 TH)</b>: Connected to CAN 1 H and CAN 1 L.</li> <li><b>LEVELING ECU (654)</b>: Connected to CAN 1 H and CAN 1 L.</li> <li><b>CUSTOMER TELEMATICS</b>: Includes C1-Brake, C1-Steer, C1-1-Bat, C1-Seat, C1-Bye Bus, C1-1-ON, C1-1-ON BATT, and C1-1-ON SW.</li> <li><b>PLATFORM ECU (65001 TH)</b>: Connected to CAN 1 H and CAN 1 L.</li> <li><b>PLATFORM DISPLAY (PANEL MANICO 6501 TH)</b>: Connected to CAN 1 H and CAN 1 L.</li> <li><b>ECU TERMINATOR PCP (65001 TH)</b>: Connected to CAN 1 H and CAN 1 L.</li> </ul> </p>	

## 6.1.223 B1304-24

<b>Error code:</b>	<b>B1304-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Base ECU - VSS1 Low Voltage ( $\leq 4.5V$ )
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. VSS 1 (+5 V) Voltage at Pin 19/58 on the Platform Bosch ECU is equal to or below +4.5V. There is no circuitry attached to this pin. Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</li> <li>2. Check System voltage</li> </ol>
	
	

## 6.1.224 B1305-24

<b>Error code:</b>	<b>B1305-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base ECU - VSS2 Low Voltage ( $\leq 9.5V$ )

<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. VSS 2 (+10V) Voltage at Pin 32/58 on the Base Bosch ECU is equal to or below +9.5V. There is no circuitry attached to this pin. Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</li> <li>2. Check System voltage</li> </ol>
	
	

### 6.1.225 B1306-24

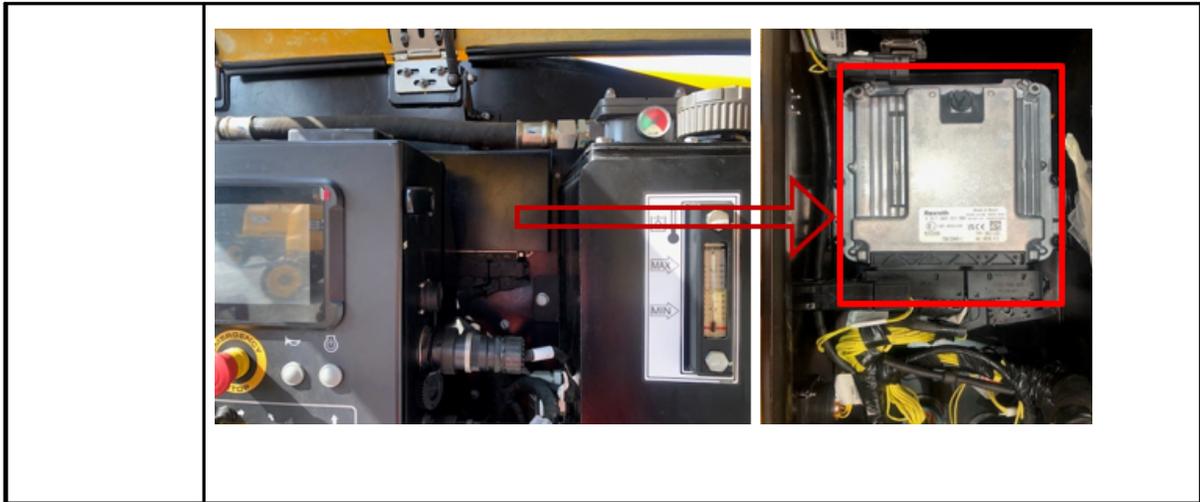
<b>Error code:</b>	<b>B1306-24</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Base ECU - Turntable ECU Internal 5v voltage supply (VSS_3) circuit short to low

<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) VSS 3 (+5 V) Voltage at Pin 55/58 on the Base Bosch ECU is equal to or below +4.5V. There is no circuitry attached to this pin. Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</li> <li>2) Check System voltage</li> </ol>

6.1.226 B1307-24

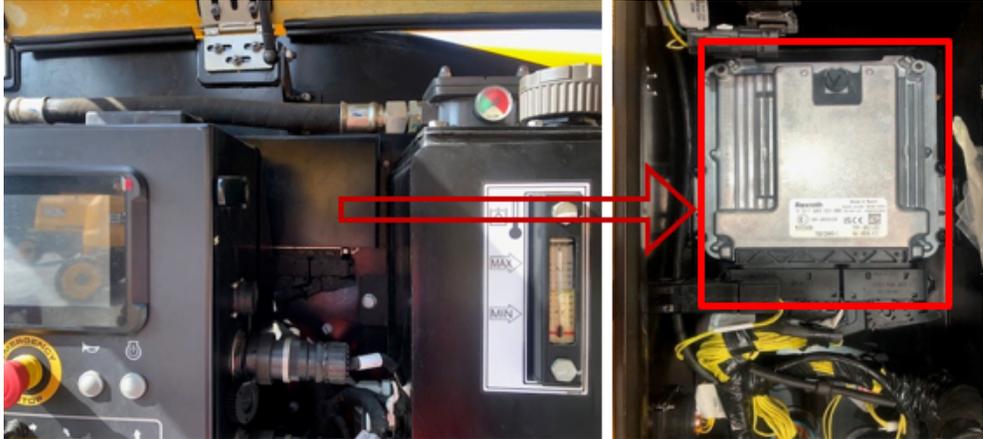
<b>Error code:</b>	<b>B1307-24</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Base Startlock Stuck (Generic o/p fault)
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Base ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Low system voltage</li> <li>3. Faulty ECU</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Test system voltage of machine - ensure not flat batteries</li> <li>2) Replace ECU</li> </ol>



6.1.227 B1308-24

<b>Error code:</b>	<b>B1308-24</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Startlock failure - Turntable ECU Proportional outputs circuit short to high (12v)
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Base ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) A short-circuit to high fault exists on the proportional outputs (Solenoids) from the Base Bosch ECU.</li> <li>2) Check Fuse_03 has not blown at the turntable control panel.</li> <li>3) Check voltage supply up to turntable ECU connector, pins: 1/58, 3/58, 4/58, 5/58, 6/58.</li> <li>4) The following pins are potential causes: VP_1 (All on 96 way connector) Pins 1/96, 2/96, 3/96, 4/96, 5/96, 25/96, 26/96, 27/96, 28/96, 29/96, 30/96, 31/96, 49/96, 50/96, 51/96, 52/96, 53/96, 54/96, 73/96, 74/96, 75/96, 76/96, 77/96, 78/96 (Only marked pins are connected)</li> <li>5) Disconnect 96-way connector from Base Bosch ECU and check pins for damage, debris or water ingress.</li> </ol>

6) If voltage supply is okay, check I/O page in the turntable display to see which output is on.  
 7) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found.



6.1.228 B1309-24

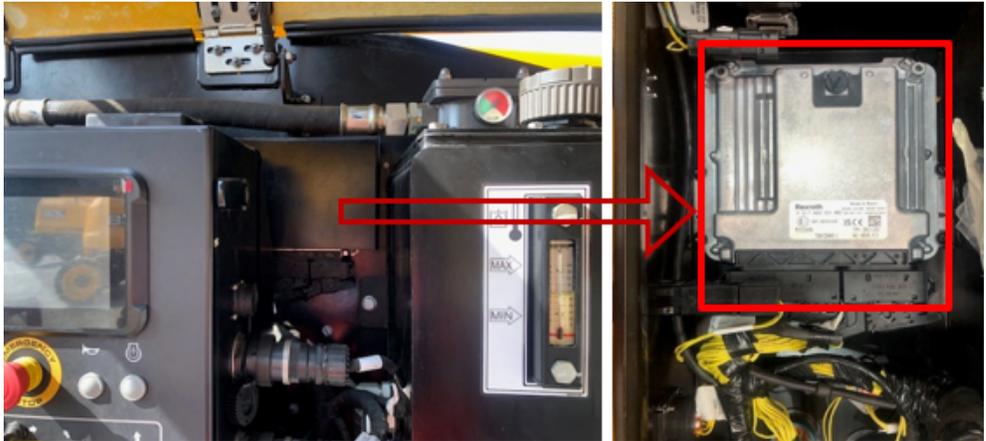
<b>Error code:</b>	<b>B1309-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Startlock failure - Turntable ECU Switch outputs circuit short to high (12v)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Base ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) A short-circuit to high fault exists on the proportional outputs (Solenoids) from the Base Bosch ECU.</li> <li>2) Check Fuse_03 has not blown at the turntable control panel.</li> <li>3) Check voltage supply up to turntable ECU connector, pins: 1/58, 3/58, 4/58, 5/58, 6/58.</li> <li>4) The following pins are potential causes: VP_1 (All on 96 way connector) Pins 1/96, 2/96, 3/96, 4/96, 5/96, 25/96, 26/96, 27/96, 28/96, 29/96, 30/96,</li> </ol>

31/96, 49/96, 50/96, 51/96, 52/96, 53/96, 54/96, 73/96, 74/96, 75/96, 76/96, 77/96, 78/96 (Only marked pins are connected)

5) Disconnect 96-way connector from Base Bosch ECU and check pins for damage, debris or water ingress.

6) If voltage supply is okay, check I/O page in the turntable display to see which output is on.

7) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found.



6.1.229 B1310-24

<b>Error code:</b>	<b>B1310-24</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Base Startlock Stuck (Base Enable Switch enabled during startup)
<b>Component :</b>	Base ECU
<b>Vehicle reaction:</b>	All Turntable Control Panel controls disabled. Base enable switch must be reset before base controls can be used.
<b>Possible Cause:</b>	Base Enable Switch set to active during start-up
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. The Base Enable switch on the Turntable Control Panel is enabled during startup.</li> <li>2. Check switch not held active during startup.</li> <li>3. Check for short circuit at rear of switch.</li> </ol>

4. Check voltage at Base Bosch ECU pin 36/96. Pin should be 10V when enabled and less than 3v when disabled. If Switch is unpressed at startup and value is 10V or higher, check Wire #0047 for short to 10V or High.

5. Check function of switch.

### 6.1.230 B1311-24

<b>Error code:</b>	<b>B1311-24</b>
<b>ECU</b>	Base ECU
<b>Description</b>	Base Startlock Stuck- Turntable ECU Internal hardware monitor 2 fault
<b>Component</b>	ECU
<b>Vehicle reaction:</b>	Base ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	1) Internal EVU Fault.
<b>Service Action:</b>	1) Hardware monitor detected fault in internal VSS supplies. Replace ECU

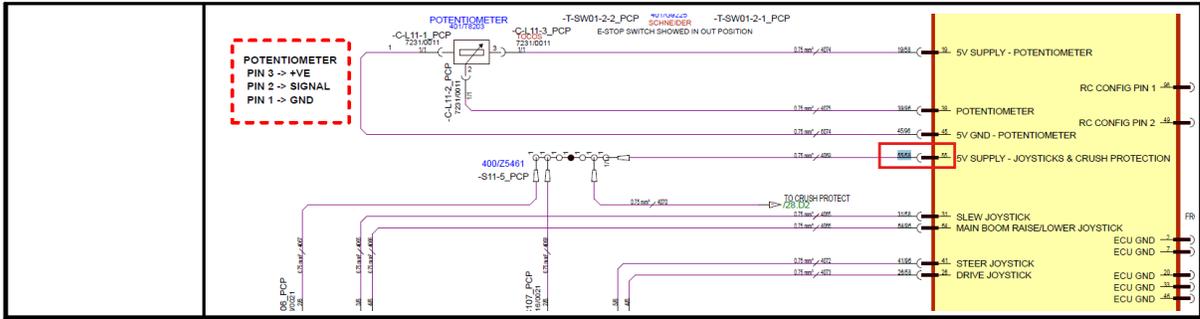
### 6.1.231 B1312-24

<b>Error code:</b>	<b>B1312-24</b>
<b>ECU</b>	Base ECU
<b>Description</b>	Startlock failure - Turntable ECU 10v input enabled during startup
<b>Component</b>	ECU
<b>Vehicle reaction:</b>	Incorrectly enabled switch on Turntable Control Panel is disabled. All other functions operate as normal. Switch must be reset before function can

	operate.
<b>Possible Cause:</b>	Base Input enable at start-up
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) An input to the Base ECU has been enabled during startup.</li> <li>2) Check no switches physically held on during startup.</li> <li>3) Check inputs on Display to see which input is held high</li> <li>4) Visually Check wiring to all switches in base control panel.</li> </ol>
<p>The diagram shows a network of electrical connections. Key components include:         <ul style="list-style-type: none"> <li><b>SW201_TCP</b> (72160210) connected to <b>BASEPLATFORM ENABLE SW</b> (72160748).</li> <li><b>BASEPLATFORM ENABLE SW</b> connected to <b>BASE BOSCH ECU</b> (72160449).</li> <li><b>BASE BOSCH ECU</b> connected to <b>SC001_TH</b> (72160214).</li> <li><b>BASE BOSCH ECU</b> also connected to <b>BASE ENABLE SWITCH</b> (72160210).</li> <li><b>BASE ENABLE SWITCH</b> connected to <b>PLATFORM ENABLE SWITCH</b> (72160210).</li> <li><b>PLATFORM ENABLE SWITCH</b> connected to <b>ARTIC RAISE SOLHS</b> (72160214).</li> <li><b>ARTIC RAISE SOLHS</b> connected to <b>C27-XC1_TH</b> (72160214).</li> <li>Other components shown include <b>FROM 10V FEED SPLICE S07</b>, <b>APPEM ON-OFF TOGGLE MOM 10A</b>, and various TCP and TH terminals.</li> </ul> </p>	

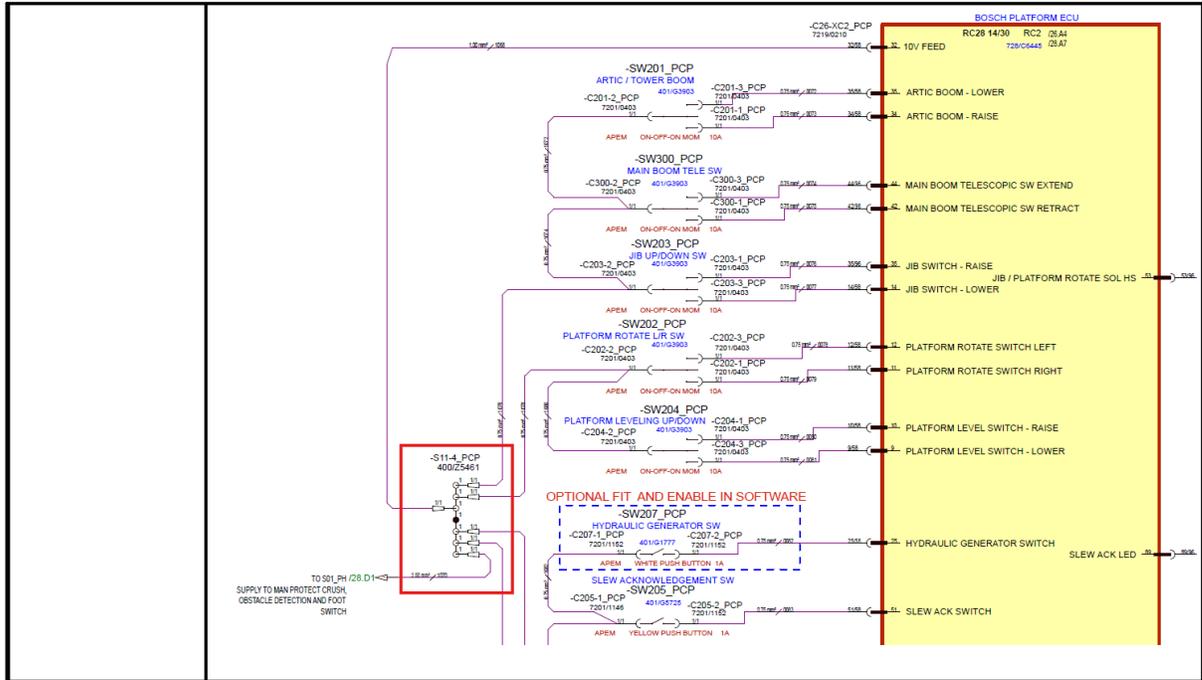
### 6.1.232 B1313-24

<b>Error code:</b>	<b>B1313-24</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Startlock failure - Platform ECU Internal 5v voltage supply (VSS_1) circuit short to low
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Platform ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Short Circuit</li> <li>2) Excessive load</li> <li>3) Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) VSS 1 (+5 V) Voltage at Pin 19/58 on the Platform Bosch ECU is equal to or below +4.5V. This voltage can be measured at the speed potentiometer terminal -C-L11-3_PCP. Check no short or damage at potentiometer. Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</li> <li>2) Check System voltage</li> </ol>



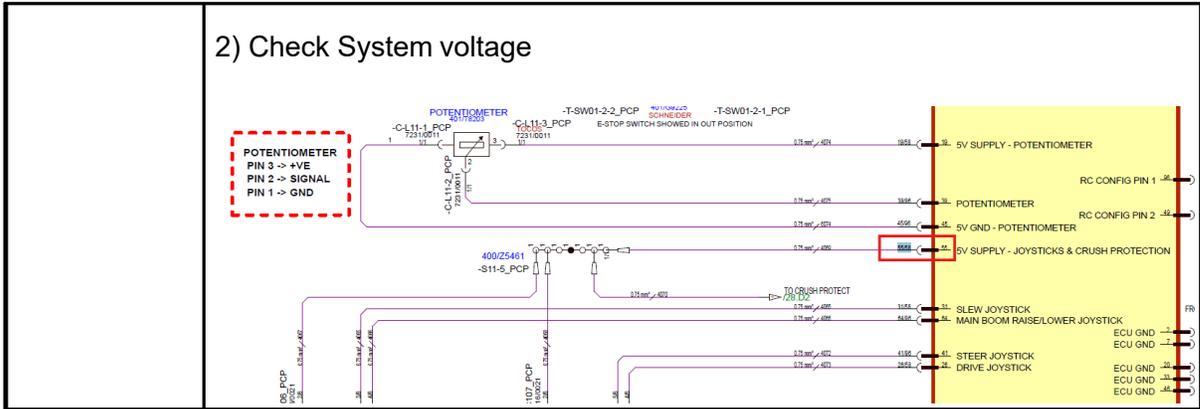
6.1.233 B1314-24

<b>Error code:</b>	<b>B1314-24</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Startlock failure - Platform ECU Internal 10v voltage supply (VSS_2) circuit short to low
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	TxDM1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Short Circuit</li> <li>2. Excessive load</li> <li>3. Water Ingress</li> </ol>
<b>Service Action:</b>	<p>1) VSS 2 (+10V) Voltage at Pin 32/58 on the Platform Bosch ECU is equal to or below +9.5V. Voltage can be measured at DIN Rail Terminal -S11-4_PCP. Check other wires coming from this DIN Rail Terminal (#1070, #1076, #1078, #1085, #1086) Try removing these wires one at a time to narrow down fault location. If no fault found, check platform ECU Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</p> <p>2) Check System voltage</p>



### 6.1.234 B1315-24

<b>Error code:</b>	<b>B1315-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock failure - Platform ECU Internal 5v voltage supply (VSS_3) circuit short to low
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Platform ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Short Circuit</li> <li>2) Excessive load</li> <li>3) Water Ingress</li> </ol>
<b>Service Action:</b>	<p>1) VSS 3 (+5 V) Voltage at Pin 55/58 on the Platform Bosch ECU is equal to or below +4.5V. This voltage provides supply to Joysticks and Crush Protection. The voltage can be measured at DIN Rail Terminal -S11-5_PCP (Wire #4069). Check all wires at DIN Rail Terminal (#4067, #4068, #4070). Remove one wire at a time and measure voltage from ECU to see if it raises back to +5V. If no fault found, check platform ECU Connector for bent pins, debris, water ingress or any other reason a short to ground may exist. If fault remains, change the ECU.</p>



### 6.1.235 B1316-24

<b>Error code:</b>	<b>B1316-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock failure - Platform ECU Internal hardware monitor 1 fault
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Platform ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	1) Low system voltage 2) Faulty ECU
<b>Service Action:</b>	1) Test system voltage of machine - ensure not flat batteries 2) Replace ECU

## 6.1.236 B1317-24

<b>Error code:</b>	<b>B1317-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock failure - Platform ECU Proportional outputs circuit short to high
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Platform ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Short Circuit to high</li> <li>2) Water Ingress</li> <li>3) Faulty ECU</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) A short-circuit to high fault exists on the proportional outputs (Solenoids) from the Platform Bosch ECU.</li> <li>2) Check voltage supply up to platform ECU connector, pins: 1/58, 3/58, 4/58, 5/58, 6/58.</li> <li>3) Check Fuse_06 has not blown at the turntable control panel.</li> <li>4) The following pins are potential causes: VP_1 (All on 96 way connector) Pins 1/96, 2/96, 3/96, 5/96, 4/96, 25/96, 26/96, 27/96, 28/96, 29/96, 30/96, 31/96, 49/96, 50/96, 51/96, 52/96, 53/96, 54/96, 73/96, 74/96, 75/96, 76/96, 77/96, 78/96 (Only pin 53 is connected) i.e. all proportional outputs.</li> <li>5) Check Platform Interconnect -C22_PCP pin R, Check Jib/Platform Rotate Solenoid connector -C03_PH. Check Solenoid -SOL 22_PH.</li> <li>6) Disconnect 96-way connector from Platform Bosch ECU and check pins for damage, debris or water ingress.</li> <li>7) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found..</li> </ol>

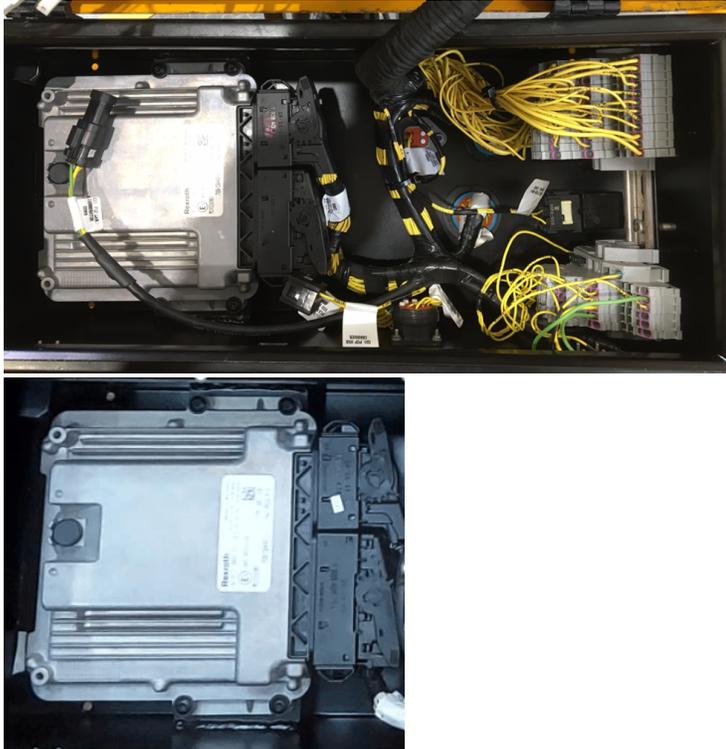
**PLATFORM CONTROL VALVE**  
 JIB WHEN NOT ENERGIZED AND PLATFORM ROTATE WHEN ENERGIZED

Wiring diagram showing connections for:

- MAIN BOOM TELESCOPIC SW EXTEND
- MAIN BOOM TELESCOPIC SW RETRACT
- JIB SWITCH - RAISE
- JIB SWITCH - LOWER
- JIB / PLATFORM ROTATE SOL HS
- C22\_PCP (7220/0046)
- C22\_PH (7212/0081)
- SOL 22\_PH (402C8715)
- JIB/PLATFORM ROTATE SOL
- C22\_PH (7220/0046)
- C22\_PCP (7220/0046)
- TO DIN RAL TERM 511-10 TURNABLE 08003

### 6.1.237 B1318-24

<b>Error code:</b>	<b>B1318-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock failure - Platform ECU Switch outputs circuit short to high
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Platform ECU Software execution terminated. ECU does not run. Machine disabled.
<b>Possible Cause:</b>	1) Short Circuit to high 2) Water Ingress

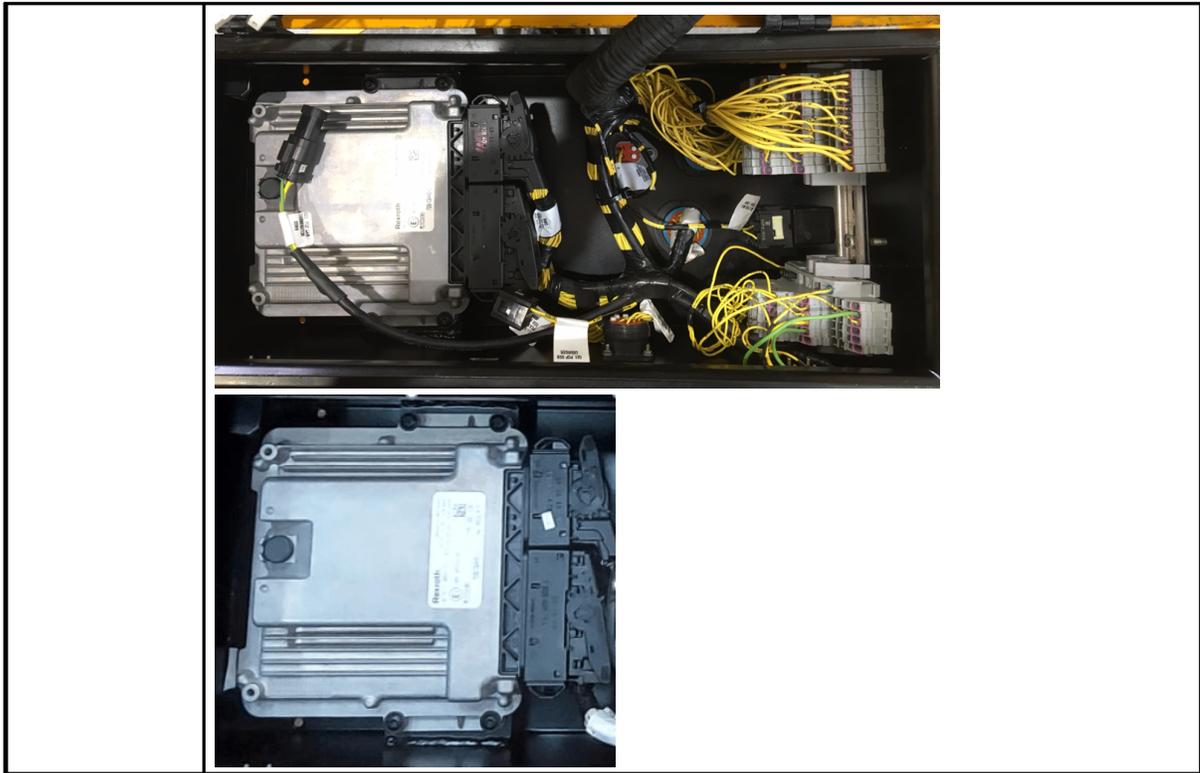
	3) Faulty ECU
<b>Service Action:</b>	<p>1) A short-Circuit to high fault exists on the switch outputs.</p> <p>2) Check Fuse_06 has not blown at the turntable control panel.</p> <p>3) Check voltage supply up to platform ECU connector, pins: 1/58, 3/58, 4/58, 5/58, 6/58.</p> <p>4) The following are potential causes: VP_2 (96 way Connector) Pins: 6/96, 7/96, 89/96, 90/96, 93/96, 94/96. ( i.e. all switch outputs. The short to high is back feeding the ECU and making unsafe to start up ) or (58 way Connector) Pins: 41/58, 41/58, 43/58, 56/58, 57/58 (only Pin 41 connected - Fault LED). Check all connected components for damage or wiring faults.</p> <p>5) Disconnect 58-way and 96-way connector from Platform Bosch ECU and check pins for damage, debris or water ingress.</p> <p>6) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found..</p> 

6.1.238 B1319-24

<b>Error code:</b>	<b>B1319-24</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Startlock failure - Foot pedal input enabled during startup
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	All Platform Control Panel controls disabled. Foot switch must be reset before platform controls can be used.
<b>Possible Cause:</b>	Base input enabled at startup.
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) The Foot switch at the Platform is pressed during startup.</li> <li>2) Check switch not held active during startup.</li> <li>3) Check for short circuit at rear of switch or at Interconnect -C220_FP. Contacts should be closed when switch pressed, Open when switch is not pressed.</li> <li>4) Check voltage at Platform Bosch ECU pin 47/96. Pin should be 10V when enabled and less than 3v when disabled. If Switch is unpressed at startup and value is 10V or higher, check Wire #4096 for short to 10V or High.</li> <li>5) Check function of switch. Check for water ingress or damage to Harness.</li> </ol> <div style="display: flex; flex-direction: column; align-items: center;">   </div>





**6.1.240 B1321-24**

<b>Error code:</b>	<b>B1321-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Startlock failure - Platform ECU 10v input enabled during startup
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Incorrectly enabled switch on Platform Control Panel is disabled. All other functions operate as normal. Switch must be reset before function can operate.
<b>Possible Cause:</b>	Base input enabled at startup.
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) An input to the Platform ECU has been enabled during startup.</li> <li>2) Check no switches physically held on during startup.</li> <li>3) Check inputs on Display to see which input is held high</li> </ol>

4) Visually Check wiring to all switches in base control panel.

5) Check all interconnector for damage, water ingress or any pushed back pins.



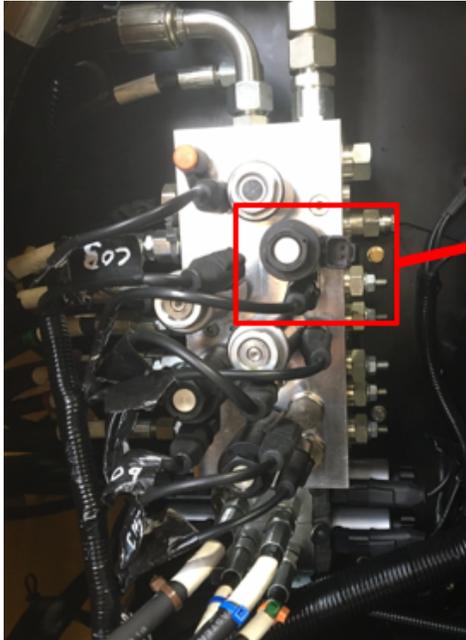
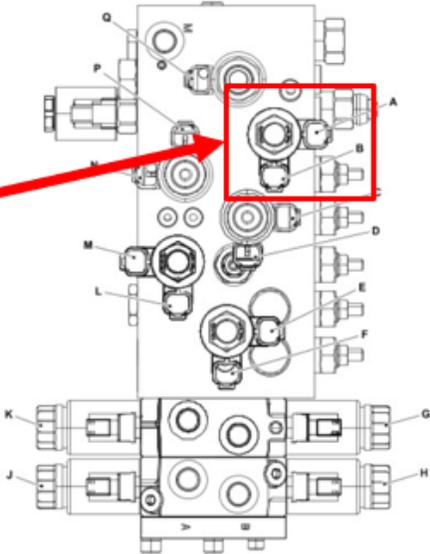
**6.1.241 B1329-13**

<b>Error code:</b>	<b>B1329-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB/PLATFORM FLOW High Side Sol Short Circuit to High
<b>Component</b> :	Jib/Platform Solenoid
<b>Vehicle reaction:</b>	Detect failure mode for Short Circuit to High and disable platform rotate and allow Jib functions Note: Before Ignition ON, POST Fail (stuck in startup logic for Short Circuit to High only) and Generic Disable output fault.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Jib Up / Platform Right solenoid connector -C16_TH. Disconnect connector and measure voltage at pin 1/2. If voltage is high, check harness and Base Bosch ECU Connector terminal 7/96 for short to high.</li> <li>2. Measure voltage at -C16_TH pin 2/2. If voltage is high, check return path for short to high.</li> <li>3. Check -C16_TH and Base Bosch ECU Connector for water ingress, damage, debris or stray wires that may cause short circuit.</li> <li>4. Check for any damage to the harness or components that may cause short circuit.</li> </ol>



**Service Action:**

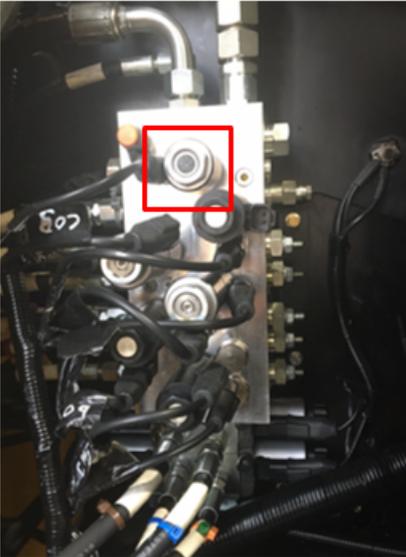
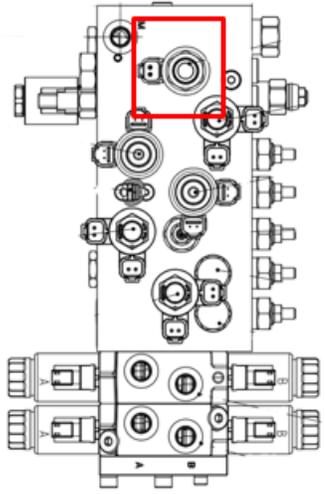
1. Locate Jib Up / Platform Right solenoid connector -C16\_TH. Disconnect connector and test pin 1/2 for short to GND. Check harness and Base Bosch ECU Connector terminal 7/96 for short to GND.
2. Test for short to GND at -C16\_TH pin 2/2. Check return path for short to GND.
3. Check -C16\_TH and Base Bosch ECU Connector for water ingress, damage, debris or stray wires that may cause short circuit.
4. Check for any damage to the harness or components that may cause short circuit.



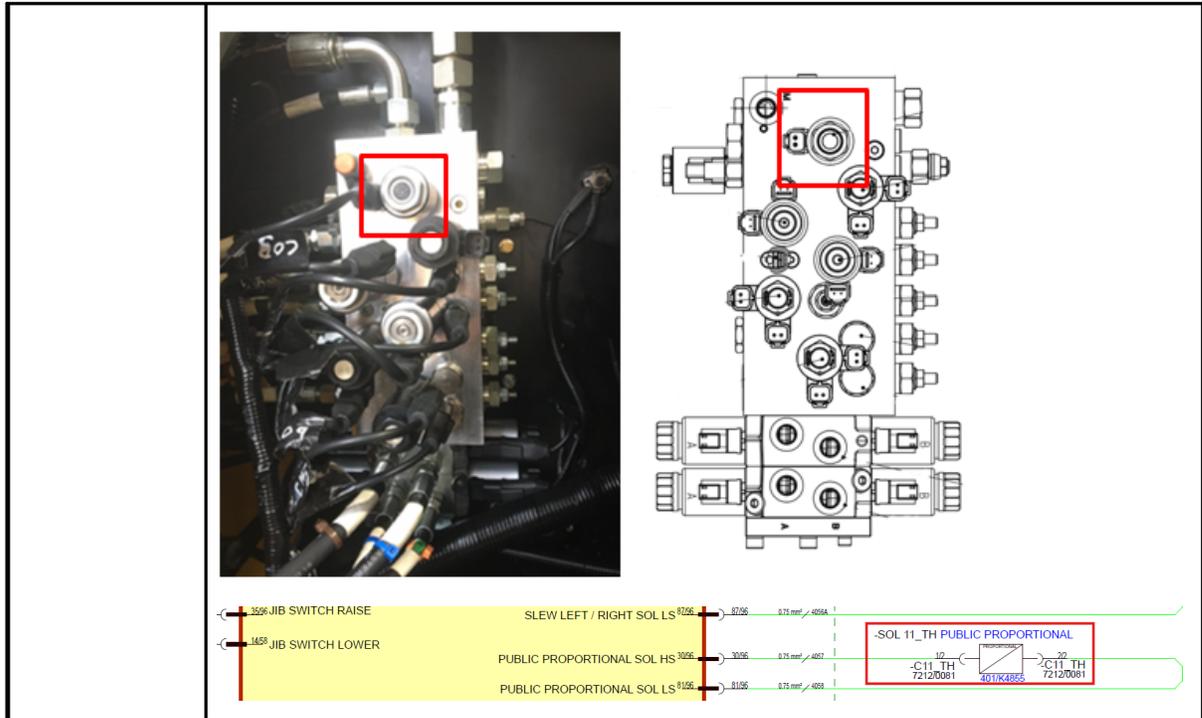
### 6.1.243 B1332-17

<b>Error code:</b>	<b>B1332-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PUBLIC Proportional Solenoid Valve Low Side Short Circuit to High
<b>Component</b> :	PUBLIC Proportional Solenoid Valve

<p><b>Vehicle reaction:</b></p>	<p>Public proportional solenoid will be switched off, this will effect: Articulated boom, steer, leveling, jib, platform rotate, telescopic boom.</p>												
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>												
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from ecu to the coil</li> <li>3. Turn machine ignition on/off to clear code</li> <li>4. Check wire on solenoid connector C11_TH Pin 1 and 2.</li> <li>5. Check wire no. 4047 and 4058 for any loose connection, cut or any damage.</li> <li>6. Check if valve is mechanically jammed</li> </ol> <div style="display: flex; justify-content: space-around; align-items: flex-start;">   </div> <div style="margin-top: 10px;"> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-right: 1px solid black; padding-right: 5px;"> <p>← 3596 JIB SWITCH RAISE</p> <p>← 1453 JIB SWITCH LOWER</p> </td> <td style="width: 30%; border-right: 1px solid black; padding-right: 5px;"> <p>SLEW LEFT / RIGHT SOL LS 8706</p> <p>PUBLIC PROPORTIONAL SOL HS 7006</p> <p>PUBLIC PROPORTIONAL SOL LS 8106</p> </td> <td style="width: 30%; padding-left: 5px;"> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">8706</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4054</td> <td style="border-left: 1px solid black; padding-left: 5px;">12</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">3006</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4052</td> <td style="border-left: 1px solid black; padding-left: 5px;">20</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">8106</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4053</td> <td style="border-left: 1px solid black; padding-left: 5px;">20</td> </tr> </table> </td> </tr> </table> <div style="margin-top: 5px; text-align: right;"> <p><b>SOL 11_TH PUBLIC PROPORTIONAL</b></p> <p>C11_TH 72120081</p> <p>C11_TH 72120081</p> </div> </div>	<p>← 3596 JIB SWITCH RAISE</p> <p>← 1453 JIB SWITCH LOWER</p>	<p>SLEW LEFT / RIGHT SOL LS 8706</p> <p>PUBLIC PROPORTIONAL SOL HS 7006</p> <p>PUBLIC PROPORTIONAL SOL LS 8106</p>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">8706</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4054</td> <td style="border-left: 1px solid black; padding-left: 5px;">12</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">3006</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4052</td> <td style="border-left: 1px solid black; padding-left: 5px;">20</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">8106</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4053</td> <td style="border-left: 1px solid black; padding-left: 5px;">20</td> </tr> </table>	8706	0.75 mm <sup>2</sup> / 4054	12	3006	0.75 mm <sup>2</sup> / 4052	20	8106	0.75 mm <sup>2</sup> / 4053	20
<p>← 3596 JIB SWITCH RAISE</p> <p>← 1453 JIB SWITCH LOWER</p>	<p>SLEW LEFT / RIGHT SOL LS 8706</p> <p>PUBLIC PROPORTIONAL SOL HS 7006</p> <p>PUBLIC PROPORTIONAL SOL LS 8106</p>	<table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">8706</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4054</td> <td style="border-left: 1px solid black; padding-left: 5px;">12</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">3006</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4052</td> <td style="border-left: 1px solid black; padding-left: 5px;">20</td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 5px;">8106</td> <td style="padding-left: 5px;">0.75 mm<sup>2</sup> / 4053</td> <td style="border-left: 1px solid black; padding-left: 5px;">20</td> </tr> </table>	8706	0.75 mm <sup>2</sup> / 4054	12	3006	0.75 mm <sup>2</sup> / 4052	20	8106	0.75 mm <sup>2</sup> / 4053	20		
8706	0.75 mm <sup>2</sup> / 4054	12											
3006	0.75 mm <sup>2</sup> / 4052	20											
8106	0.75 mm <sup>2</sup> / 4053	20											

## 6.1.244 B1333-16

<b>Error code:</b>	<b>B1333-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PUBLIC Proportional Solenoid Valve Low Side Short Circuit to Low
<b>Component</b> :	PUBLIC Proportional Solenoid Valve
<b>Vehicle reaction:</b>	Public proportional solenoid will be switched off, this will effect:Articulated boom, steer, leveling, jib, platform rotate, telescopic boom.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from ecu to the coil</li> <li>3. Turn machine ignition on/off to clear code</li> <li>4. Check wire on solenoid connector C11_TH Pin 1 and 2.</li> <li>5. Check wire no. 4047 and 4058 for any loose connection, cut or any damage.</li> <li>6. Check if valve is mechanically jammed</li> </ol>

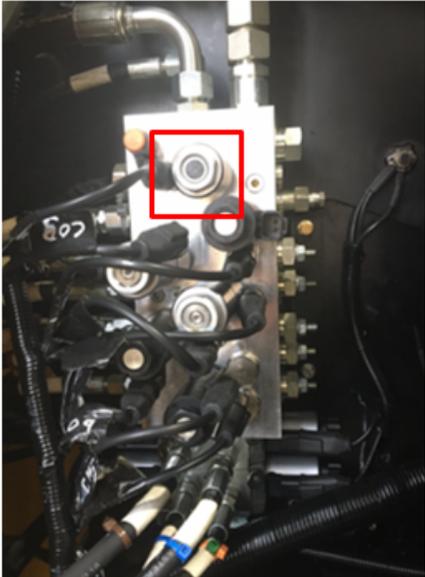
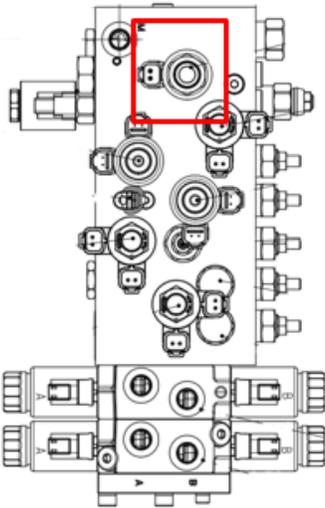


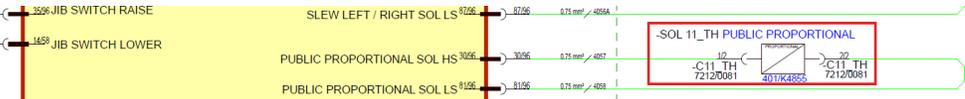
### 6.1.245 B1334-13

<b>Error code:</b>	<b>B1334-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PUBLIC Proportional Solenoid Valve Fault
<b>Component</b> :	PUBLIC Proportional Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Public Prop. output (related to all switch functions) to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>

**Service Action:**

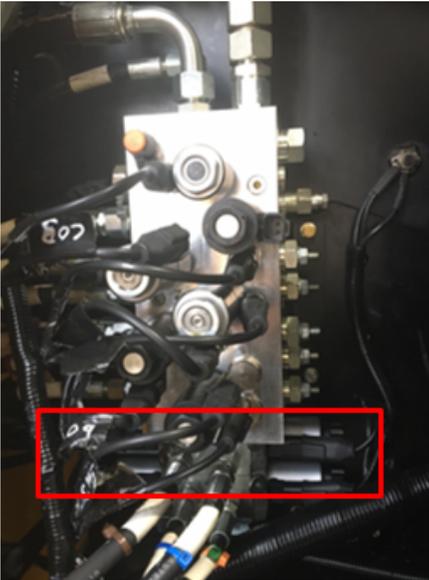
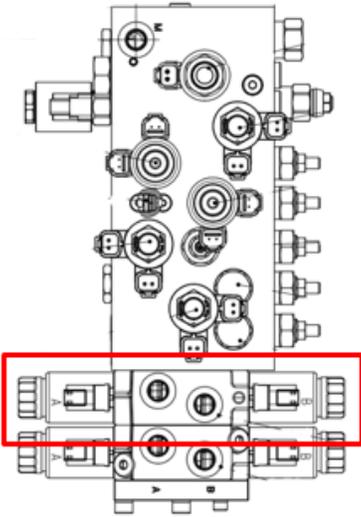
1. Check resistance of the coil 5-10 ohms
2. Check wiring from ECU to the coil
3. Turn machine ignition on/off to clear code
4. Check wire on solenoid connector C11\_TH Pin 1 and 2.
5. Check wire no. 4047 and 4058 for any loose connection, cut or any damage.
6. Check if valve is mechanically jammed



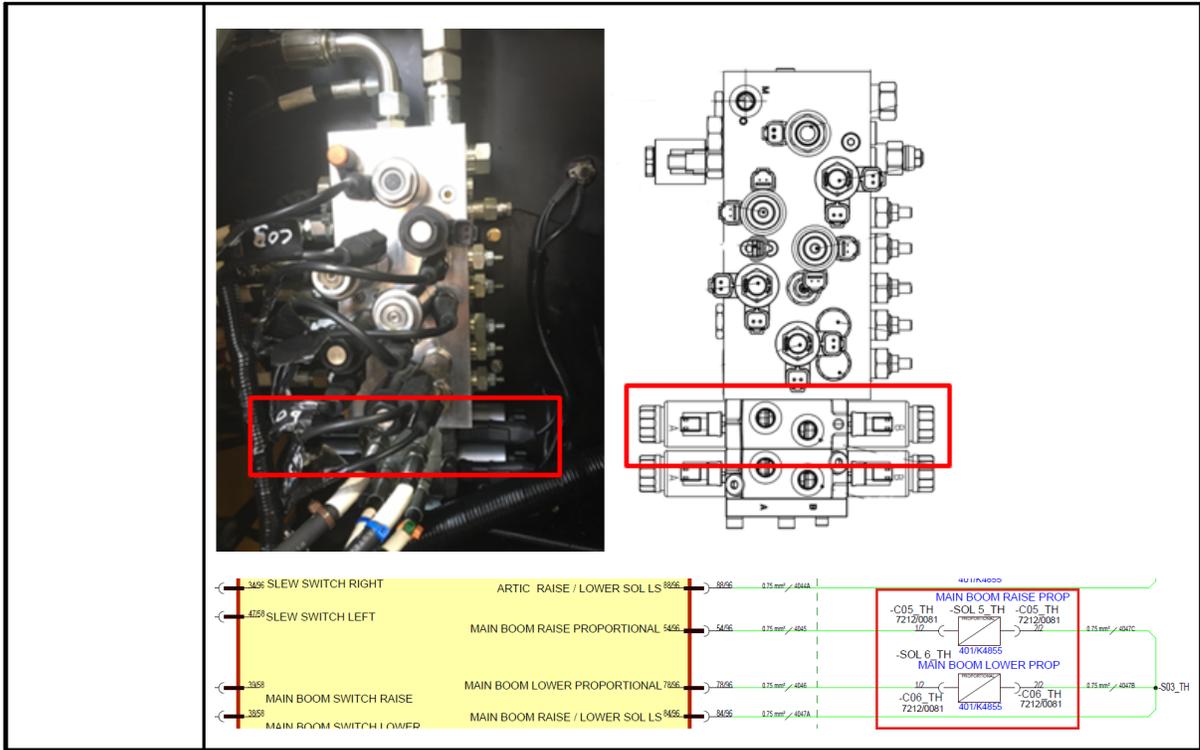
**6.1.246 B1335-17**

<b>Error code:</b>	<b>B1335-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main Boom - Main Boom Solenoid Valve Low Side Short Circuit to High.
<b>Component</b> :	Main Boom Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Main Boom output to off

	<p>Before Ignition ON, POST Fail (stuck in start up logic) and Generic output fault</p>					
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>					
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Base Bosch ECU terminal 84/96 measuring short circuit to high (12V). Locate and disconnect Main Boom Lower Solenoid Connector -C06_TH and measure voltage at Pin 2/2. If High, Locate and disconnect the Main Boom Raise Connector -C05_TH and measure voltage again at -C06_TH Pin 2/2. If voltage remains high, inspect return path back to ECU terminal 84/96 (Wire #4047A). If voltage drops when either connector is removed, then check the high side to the solenoid connectors back to the ECU (Wires #4045 and #4046).</li> <li>2. Check the harness for any faults, abrasions or pinching that may cause short circuit.</li> <li>3. Check all connectors (above) for any water ingress, short circuits, damage or stray wires that may cause a short.</li> <li>4. Check solenoid connector for any damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 20px;"> <tr> <td style="width: 20%; border: none;"> <p>← 3406 SLEW SWITCH RIGHT</p> <p>← 4029 SLEW SWITCH LEFT</p> <p>← 3959 MAIN BOOM SWITCH RAISE</p> <p>← 3959 MAIN BOOM SWITCH LOWER</p> </td> <td style="width: 40%; border: none;"> <p>ARTIC. RAISE / LOWER SOL LS 8056</p> <p>MAIN BOOM RAISE PROPORTIONAL 5456</p> <p>MAIN BOOM LOWER PROPORTIONAL 7056</p> <p>MAIN BOOM RAISE / LOWER SOL LS 8456</p> </td> <td style="width: 20%; border: none;"> <p>8056 0.75 mm<sup>2</sup> / 4044</p> <p>5456 0.75 mm<sup>2</sup> / 4042</p> <p>7056 0.75 mm<sup>2</sup> / 4048</p> <p>8456 0.75 mm<sup>2</sup> / 4047A</p> </td> <td style="width: 20%; border: none;"> <p>MAIN BOOM RAISE PROP -C05_TH 7212/0081 1/2</p> <p>SOL 5_TH 7212/0081 2/2</p> <p>MAIN BOOM LOWER PROP -SOL 6_TH 401K4855 1/2</p> <p>-C06_TH 7212/0081 2/2</p> </td> <td style="width: 10%; border: none;"> <p>0.75 mm<sup>2</sup> / 4047C</p> <p>0.75 mm<sup>2</sup> / 4047B</p> <p>S03_TH</p> </td> </tr> </table>	<p>← 3406 SLEW SWITCH RIGHT</p> <p>← 4029 SLEW SWITCH LEFT</p> <p>← 3959 MAIN BOOM SWITCH RAISE</p> <p>← 3959 MAIN BOOM SWITCH LOWER</p>	<p>ARTIC. RAISE / LOWER SOL LS 8056</p> <p>MAIN BOOM RAISE PROPORTIONAL 5456</p> <p>MAIN BOOM LOWER PROPORTIONAL 7056</p> <p>MAIN BOOM RAISE / LOWER SOL LS 8456</p>	<p>8056 0.75 mm<sup>2</sup> / 4044</p> <p>5456 0.75 mm<sup>2</sup> / 4042</p> <p>7056 0.75 mm<sup>2</sup> / 4048</p> <p>8456 0.75 mm<sup>2</sup> / 4047A</p>	<p>MAIN BOOM RAISE PROP -C05_TH 7212/0081 1/2</p> <p>SOL 5_TH 7212/0081 2/2</p> <p>MAIN BOOM LOWER PROP -SOL 6_TH 401K4855 1/2</p> <p>-C06_TH 7212/0081 2/2</p>	<p>0.75 mm<sup>2</sup> / 4047C</p> <p>0.75 mm<sup>2</sup> / 4047B</p> <p>S03_TH</p>
<p>← 3406 SLEW SWITCH RIGHT</p> <p>← 4029 SLEW SWITCH LEFT</p> <p>← 3959 MAIN BOOM SWITCH RAISE</p> <p>← 3959 MAIN BOOM SWITCH LOWER</p>	<p>ARTIC. RAISE / LOWER SOL LS 8056</p> <p>MAIN BOOM RAISE PROPORTIONAL 5456</p> <p>MAIN BOOM LOWER PROPORTIONAL 7056</p> <p>MAIN BOOM RAISE / LOWER SOL LS 8456</p>	<p>8056 0.75 mm<sup>2</sup> / 4044</p> <p>5456 0.75 mm<sup>2</sup> / 4042</p> <p>7056 0.75 mm<sup>2</sup> / 4048</p> <p>8456 0.75 mm<sup>2</sup> / 4047A</p>	<p>MAIN BOOM RAISE PROP -C05_TH 7212/0081 1/2</p> <p>SOL 5_TH 7212/0081 2/2</p> <p>MAIN BOOM LOWER PROP -SOL 6_TH 401K4855 1/2</p> <p>-C06_TH 7212/0081 2/2</p>	<p>0.75 mm<sup>2</sup> / 4047C</p> <p>0.75 mm<sup>2</sup> / 4047B</p> <p>S03_TH</p>		

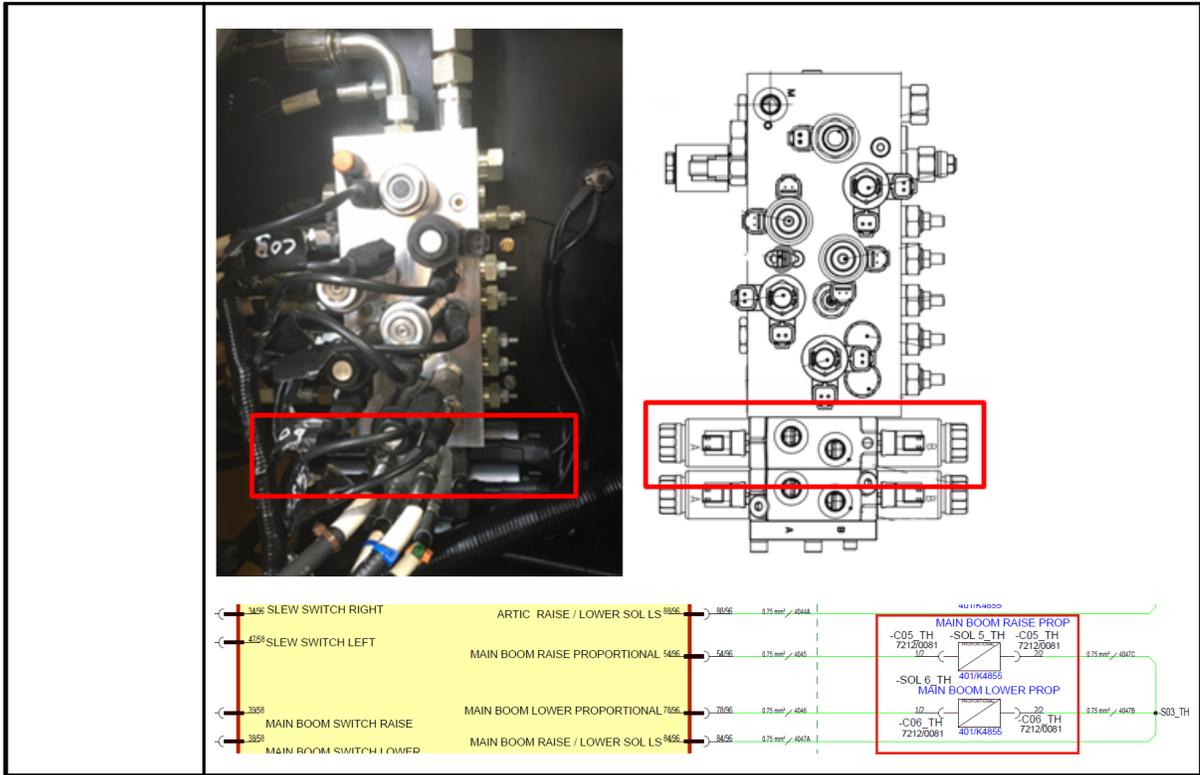
6.1.247 B1336-16

<b>Error code:</b>	<b>B1336-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve Low Side Short Circuit to Low
<b>Component :</b>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable main-boom raise and lower outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check resistance of the coil 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4045,4046 &amp; 4047A, 4047B, 4047C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 54/96, 78/96, 84/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C05_TH and C06_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn machine ignition on/off to clear code.</li> </ol>



**6.1.248 B1337-13**

<b>Error code:</b>	<b>B1337-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main Boom - Main Boom Solenoid Valve Low Side Open Circuit.
<b>Component</b> :	Main Boom Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Main Boom output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A poor connection or damaged terminal within the connector(s)</li> <li>2. A damaged or broken wire within the wiring harness</li> <li>3. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Main Boom Raise/Lower Solenoid Connectors -C05_TH and -C06_TH. Ensure both connectors are fully seated.</li> <li>2. Check wiring and terminations at both connectors</li> <li>3. Check continuity from both connectors pin 2/2 back to the Base Bosch ECU terminal 84/96.</li> <li>4. Check ECU terminal is not backed out or damaged.</li> </ol>

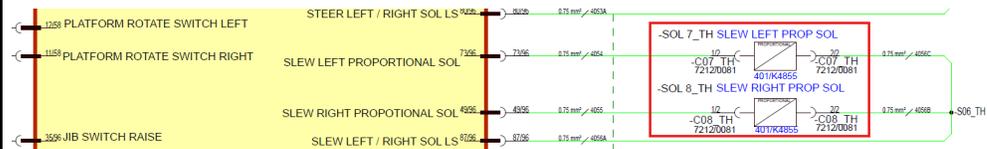
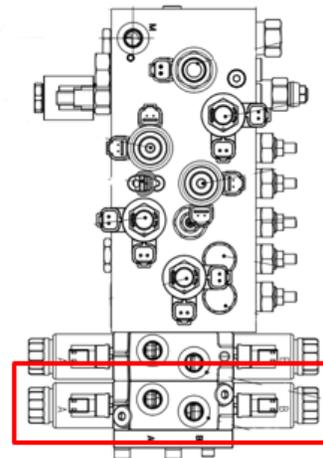
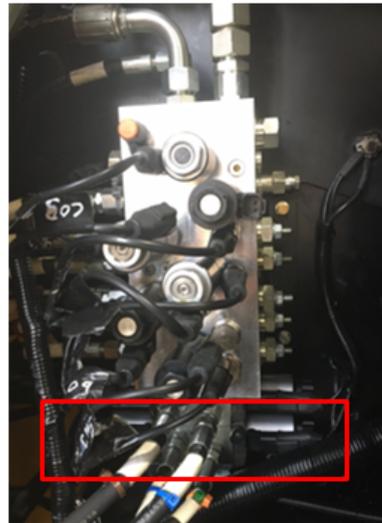


6.1.249 B1338-17

<b>Error code:</b>	<b>B1338-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Slew - Slew Solenoid Value Low Side Short Circuit to High
<b>Component</b> :	Slew Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew output to off Note: Before Ignition ON, POST Fail (stuck in start up logic) and Generic output fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Base Bosch ECU terminal 87/96 measuring short circuit to high (12V). Locate and disconnect Slew Right Solenoid Connector -C08_TH and measure voltage at Pin 2/2. If High, Locate and disconnect the Slew Left Connector -C07_TH and measure voltage again at -C08_TH Pin 2/2. If</li> </ol>

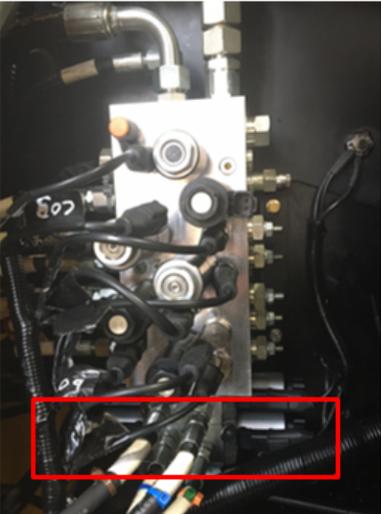
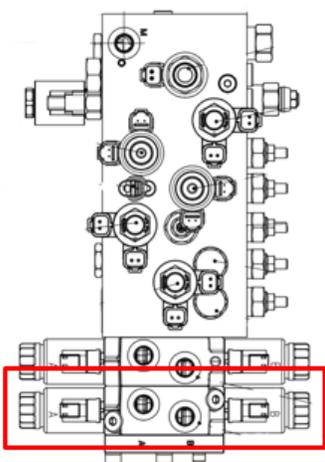
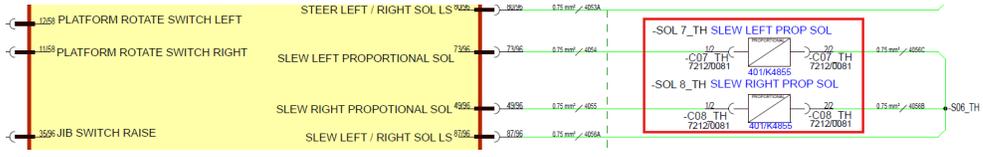
voltage remains high, inspect return path back to ECU terminal 87/96 (Wire #4056A). If voltage drops when either connector is removed, then check the high side to the solenoid connectors back to the ECU (Wires #4054 and #4055).

2. Check the harness for any faults, abrasions or pinching that may cause short circuit.
3. Check all connectors (above) for any water ingress, short circuits, damage or stray wires that may cause a short.
4. Check solenoid connector for any damage.



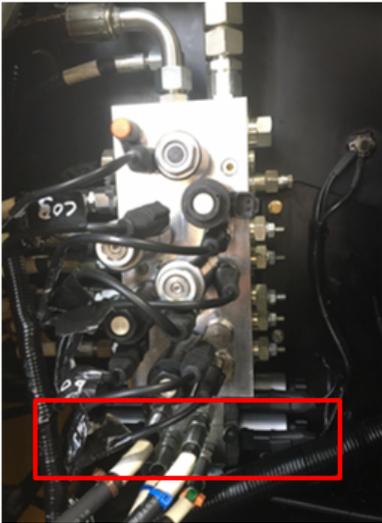
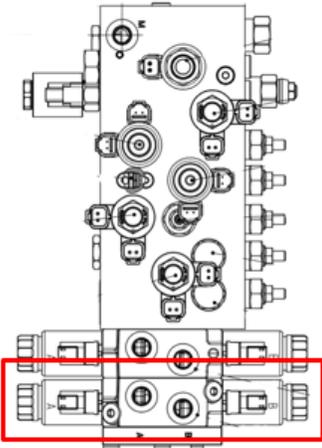
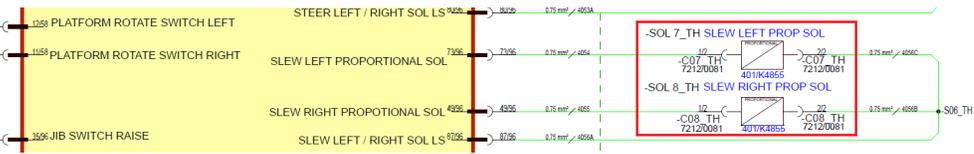
### 6.1.250 B1339-16

<b>Error code:</b>	<b>B1339-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Slew - Slew Solenoid Value Low Side Short Circuit to Low.
<b>Component :</b>	Slew Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew output to off

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Base Bosch ECU terminal 87/96 measuring short circuit to GND. Locate and disconnect Slew Right Solenoid Connector -C08_TH and measure resistance at Pin 2/2 to GND. if short circuit, Locate and disconnect the Slew Left Connector -C07_TH and measure resistance again at -C08_TH Pin 2/2. If short remains, inspect return path back to ECU terminal 87/96 (Wire #4056A). If short to GND disappears when either connector is removed, then check the high side to the solenoid connectors back to the ECU (Wires #4054 and #4055).</li> <li>2. Check the harness for any faults, abrasions or pinching that may cause short circuit.</li> <li>3. Check all connectors (above) for any water ingress, short circuits, damage or stray wires that may cause a short.</li> <li>4. Check solenoid connector for any damage.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="margin-top: 10px;">  </div>

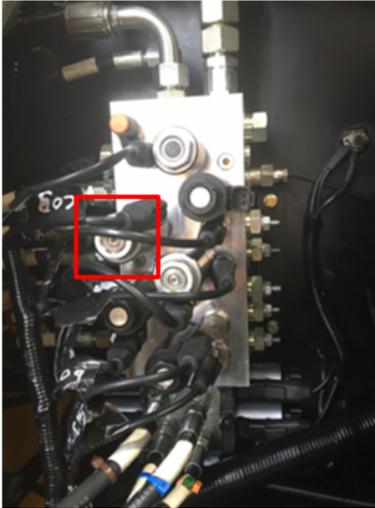
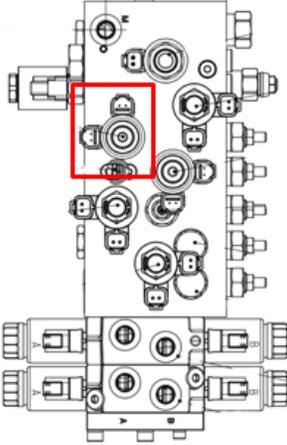
6.1.251 B1340-13

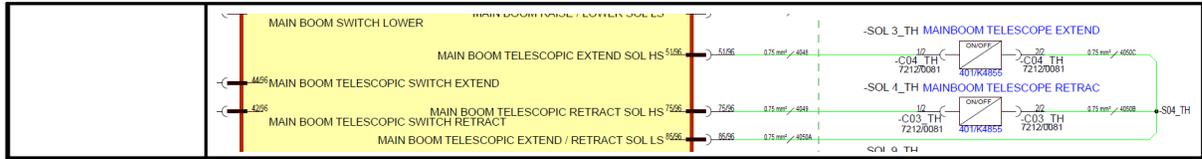
<p><b>Error code:</b></p>	<p><b>B1340-13</b></p>
<p><b>ECU</b></p>	<p>Base ECU</p>

<b>Description</b> :	Slew - Slew Solenoid Value Low Side Open Circuit.
<b>Component</b> :	Slew Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A poor connection or damaged terminal within the connector(s)</li> <li>2. A damaged or broken wire within the wiring harness</li> <li>3. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Slew Left/Right Solenoid Connectors -C07_TH and -C08_TH. Ensure both connectors are fully seated.</li> <li>2. Check wiring and terminations at both connectors</li> <li>3. Check continuity from both connectors pin 2/2 back to the Base Bosch ECU terminal 87/96.</li> <li>4. Check ECU terminal is not backed out or damaged.</li> </ol>
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6.1.252 B1341-17

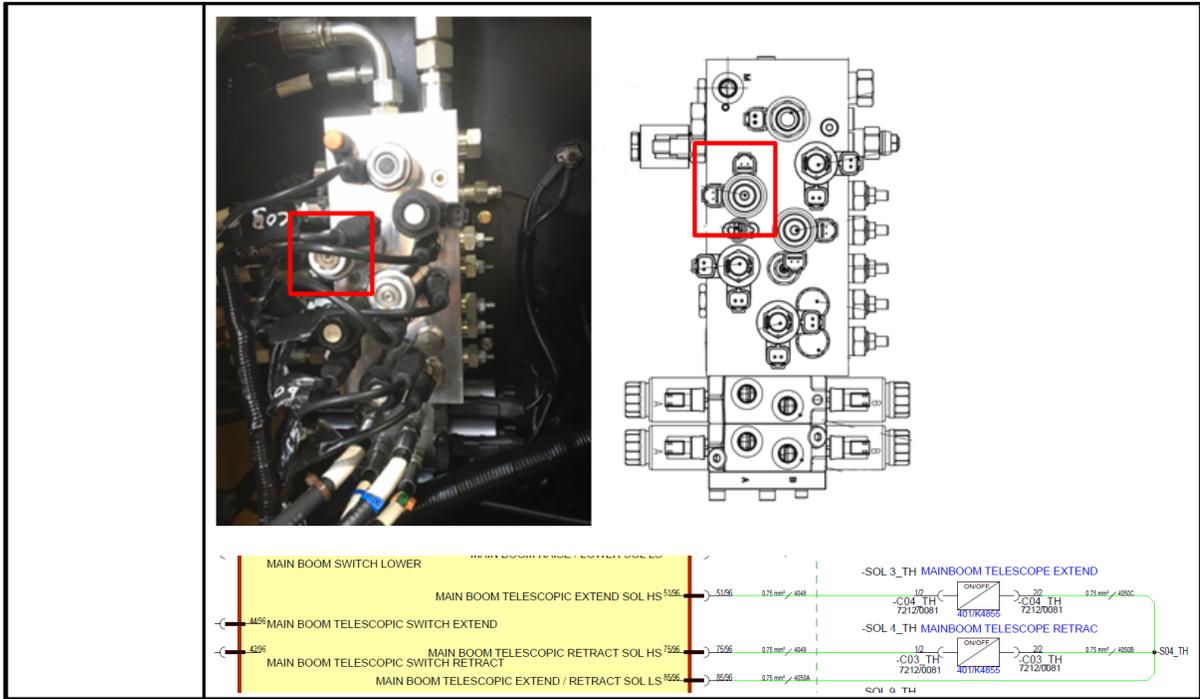
<b>Error code:</b>	<b>B1341-17</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve Low Side Short Circuit to High
<b>Component</b> :	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch this output to off Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between ECU and solenoid for voltage greater than 10.5 volts.</li> <li>2. check for continuity to ground.</li> <li>3. Check wiring from coil to ECU wire 4048,4049 &amp; 4050A, 4050B, 4050C for cut, pinch or and damage.</li> <li>4. Check ECU Pin 51/96, 75/96, 85/96 for bend or back out or any damage.</li> <li>5. Check solenoid connector C04_TH and C03_TH for loose connection or any damage.</li> <li>6. Check if valve is mechanically jammed</li> <li>7. Turn machine ignition on/off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



## 6.1.253 B1342-16

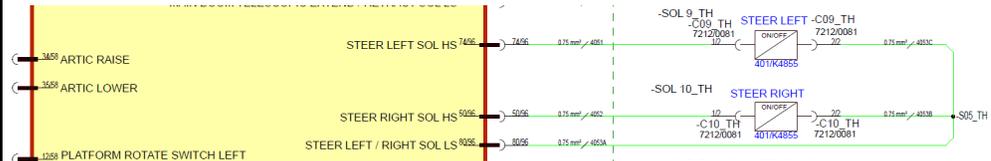
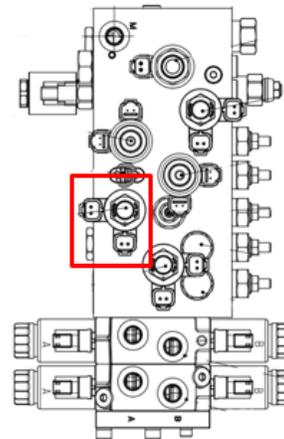
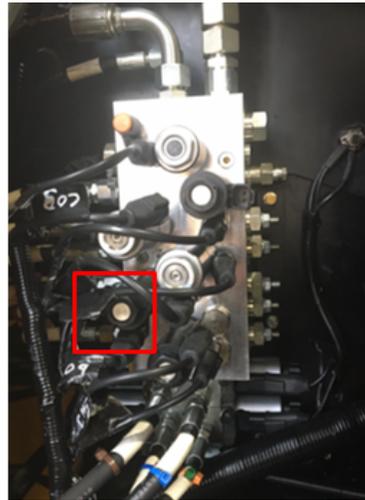
<b>Error code:</b>	<b>B1342-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve Low Side Short Circuit to Low
<b>Component :</b>	MAIN BOOM EXTEND OR RETRACT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch this output to off Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check wiring between ECU and solenoid for voltage greater than 10.5 volts.</li> <li>2. check for continuity to ground.</li> <li>3. Check wiring from coil to ECU wire 4048,4049 &amp; 4050A, 4050B, 4050C for cut, pinch or and damage.</li> <li>4. Check ECU Pin 51/96, 75/96, 85/96 for bend or back out or any damage.</li> <li>5. Check solenoid connector C04_TH and C03_TH for loose connection or any damage.</li> <li>6. Check if valve is mechanically jammed</li> <li>7. Turn machine ignition on/off to clear code.</li> </ol>



6.1.254 B1344-17

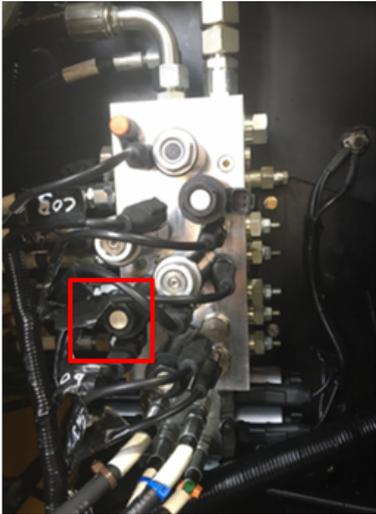
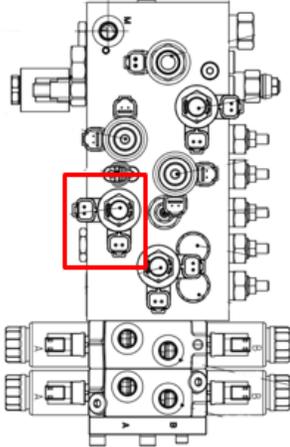
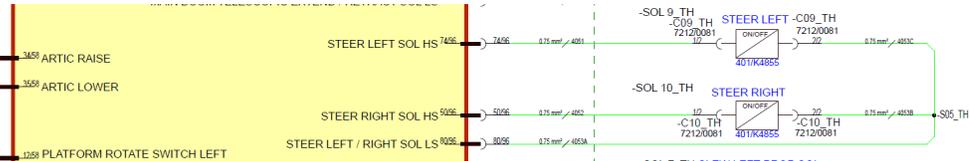
<b>Error code:</b>	<b>B1344-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve Low Side Short Circuit to High
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	1. Check coil resistance 5-10 ohms

2. Check wiring from coil to ECU wire 4051,4052 & 4053A, 4053B, 4053C for cut, pinch or and damage.
3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.
4. Check solenoid connector C09\_TH and C10\_TH for loose connection or any damage.
5. Check if valve is mechanically jammed.
- 6 Turn ignition on off to clear code.



### 6.1.255 B1345-16

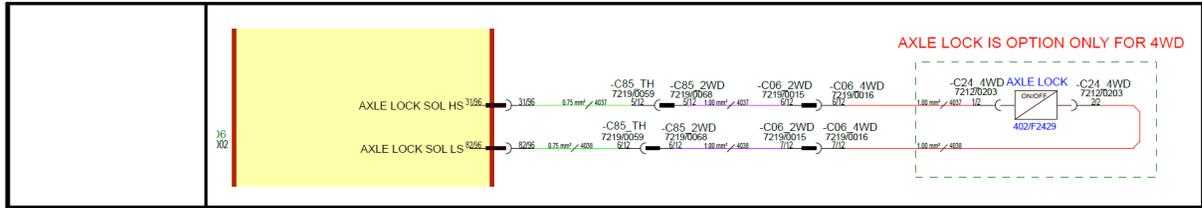
<b>Error code:</b>	<b>B1345-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve Low Side Short Circuit to Low
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4051,4052 &amp; 4053A, 4053B, 4053C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C09_TH and C10_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed.</li> <li>6 Turn ignition on off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> 

6.1.256 B1347-17

<b>Error code:</b>	<b>B1347-17</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillation Axle - Oscillating Axle Solenoid Value Low Side Short Circuit to High.
<b>Component</b> :	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock output to off;  Before Ignition ON, POST Fail (stuck in startup logic) and Generic output fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Axle Lock Solenoid connector -C06_CH and disconnect from the valve block. Measure voltage at pin 2/2. If voltage is high, disconnect interconnect -C24_TH / -C24_TH and measure pin 2/12 on both connectors. Trace the fault back to high from the connector measuring high.</li> <li>2. Check Base Bosch CU connector. Examine Pin 82/96 &amp; 31/96 - check for bent pins, debris, stray wires, water ingress.</li> <li>3. Check all connectors for water ingress</li> <li>4. Check harness for damage, especially abrasions, pinching. Check all connectors for damage. Check solenoid valve connector for any water ingress, debris etc.</li> </ol> 



## 6.1.257 B1348-16

<b>Error code:</b>	<b>B1348-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Oscillation Axle - Oscillating Axle Solenoid Value Low Side Short Circuit to Low.
<b>Component :</b>	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock output to off;
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Axle Lock Solenoid connector -C06_CH and disconnect from the valve block. Measure resistance to GND / Chassis at pin 2/2. If resistance is low, disconnect interconnect -C24_TH / -C24_TH and measure pin 2/12 on both connectors. Trace the fault back to GND Short from the connector measuring Low.</li> <li>2. Check Base Bosch CU connector. Examine Pin 82/96 &amp; 31/96 - check for bent pins, debris, stray wires, water ingress.</li> <li>3. Check all connectors for water ingress</li> <li>4. Check harness for damage, especially abrasions, pinching. Check all connectors for damage. Check solenoid valve connector for any water ingress, debris etc.</li> </ol>

AXLE LOCK IS OPTION ONLY FOR 4WD

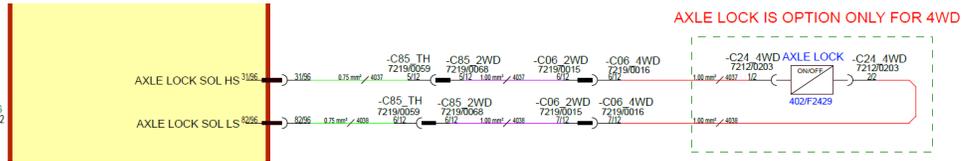
**6.1.258 B1349-13**

<b>Error code:</b>	<b>B1349-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillating Axle - Oscillating Axle Solenoid Value Fault.
<b>Component</b> :	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock output to off;
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short or open circuit within the wiring harness</li> <li>2. A short or open circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate Axle Lock Solenoid Connector -C06_TH. Disconnect the connector and inspect. Check for backed out pins, water ingress, broken or poorly terminated wires, damaged terminals. Inspect Solenoid valve connector also, checking for any damage, debris, water ingress etc.</li> <li>2. Perform continuity checks. Check Pin 1/2 to Base Bosch ECU terminal 31/96 (Wire #4037). Check Pin 2/2 to Base Bosch ECU terminal 82/96 (Wire</li> </ol>

#4038).

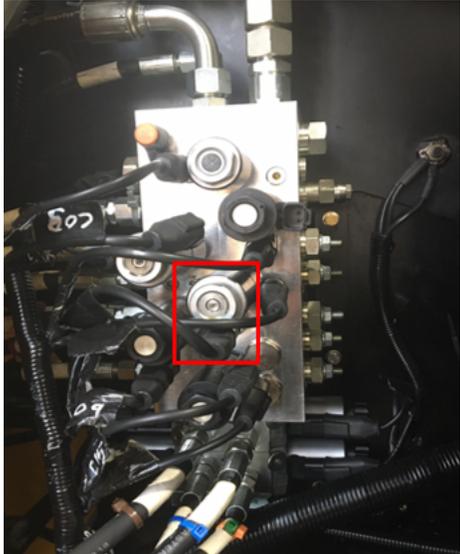
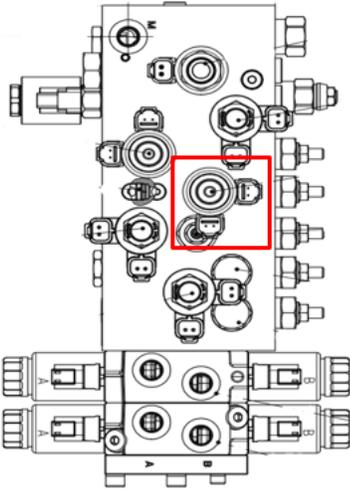
3. Check Interconnects -C85\_TH / -C85\_CH. ensure seated correctly. Check for damage, backed out pins, water ingress, damaged wires etc.

4. Check Base Bosch ECU connector (96-way) for any damage, bent pins, backed out pins, water ingress or any other damage that may cause issue.

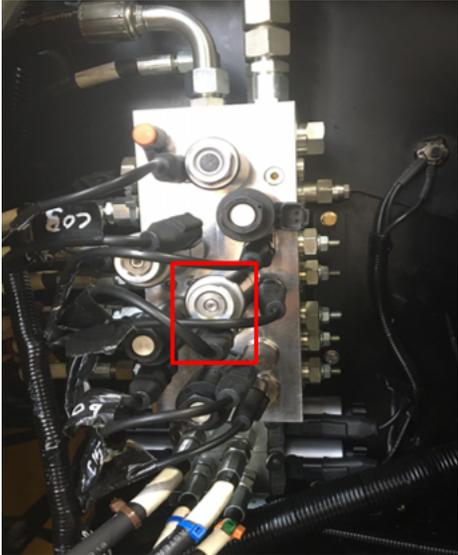
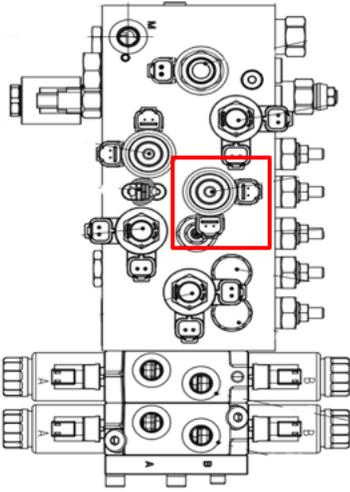
6.1.259 B1350-17

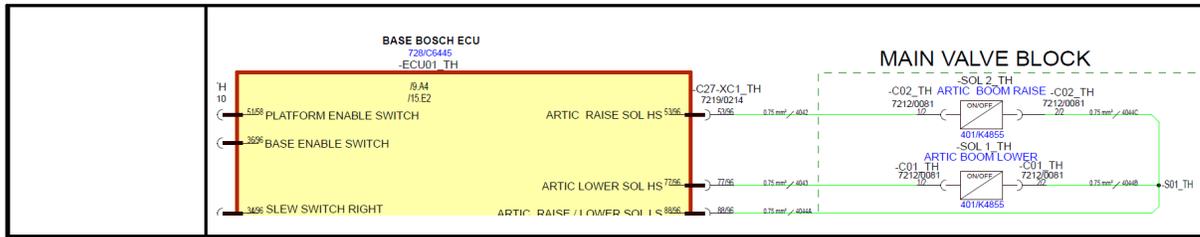
<b>Error code:</b>	<b>B1350-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve Low Side Short Circuit to High
<b>Component :</b>	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable articulated boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> </ol>

	<p>4. Broken pin or connector</p> <p>5. Faulty or Damage solenoid</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4042,4043 &amp; 4044A, 4044B, 4044C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 53/96, 77/96, 88/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C01_TH and C02_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn ignition on off to clear code</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; font-size: small;">BASE BOSCH ECU 72803445 -ECU01_TH</p> <p>TH 10 5159 PLATFORM ENABLE SWITCH 350F BASE ENABLE SWITCH 3496 SLEW SWITCH RIGHT</p> <p style="text-align: right; font-size: small;">B/A1 115 E2 -ECU01_TH</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p style="text-align: center; font-size: small;">MAIN VALVE BLOCK</p> <p style="text-align: center; font-size: small;">SOL 2_TH SOL 1_TH</p> <p style="text-align: center; font-size: small;">ARTIC BOOM RAISE ARTIC BOOM LOWER</p> <p style="text-align: center; font-size: small;">401K4855 401K4855</p> </div> </div>

**6.1.260 B1351-16**

<b>Error code:</b>	<b>B1351-16</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve Low Side Short Circuit to Low
<b>Component</b> :	ARTICULATED BOOM RAISE OR LOWER DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Disable articulated boom outputs
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4042,4043 &amp; 4044A, 4044B, 4044C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 53/96, 77/96, 88/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C01_TH and C02_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed</li> <li>6. Turn ignition on off to clear code</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



## 6.1.261 B1353-16

<b>Error code:</b>	<b>B1353-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Ignition - Engine Ignition Short Circuit to Low.
<b>Component</b> :	Engine Ignition
<b>Vehicle reaction:</b>	Detect failure mode. Switch output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate wire #4201 from Base Bosch ECU pin 89/96. Check wire through to interconnect -C41_TH / -C41_EH pin 1/12. Test for short to GND. Disconnect Interconnects and test for short to GND again on both connectors Pin 1/12</li> <li>2. Locate wire #4021 from interconnect -C41_EH Pin 1/12 and check wire through to Engine ECU Connector -C05_EH Pin 44/62. Check for shorts to GND</li> <li>3. Check Base Bosch ECU, Interconnects and Engine ECU Connectors for water ingress, damage, bent pins, debris or stray wires.</li> <li>4. Check harness between Base Bosch ECU to Interconnects and Engine ECU Connectors for any damage</li> </ol>

5096 MAIN BOOM TELE RETRACT LIMIT SW 2  
ENGINE IGNITION 89/96

3196 ARTIC LOWER/TOWER RETRACT SW 1

7219/0015 -C41\_TH 1/12

7219/0016 -C41\_EH 1/12

TO ENG IGN\_RELAY /13.E1 -FRM\_EH R2-86

26/96 GLOW PLUG 26/96

12/12

TO GLOWPLUG\_RELAY /13.D1 -FRM\_EH R4-86

25/96 ENGINE CRANK HS 25/96

6/12

TO CRANK\_RELAY /13.D1 -FRM\_EH R3-86

### 6.1.262 B1354-13

<b>Error code:</b>	<b>B1354-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Ignition - Engine Ignition Open Circuit or Short Circuit to High.
<b>Component</b> :	Engine Ignition
<b>Vehicle reaction:</b>	Detect failure mode. Switch output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Locate wire #4201 from Base Bosch ECU pin 89/96. Check wire through to interconnect -C41_TH / -C41_EH pin 1/12. Test for short to high. Disconnect Interconnects and test for short to high again on both connectors Pin 1/12</li> <li>2. Locate wire #4201 from interconnect -C41_EH Pin 1/12 and check wire through to Engine ECU Connector -C05_EH Pin 44/62. Check for shorts to High.</li> <li>3. Check Base Bosch ECU, Interconnects and Engine ECU Connectors for water ingress, damage, bent pins, debris or stray wires.</li> </ol>

4. Check harness between Base Bosch ECU to Interconnects and Engine ECU Connectors for any damage.

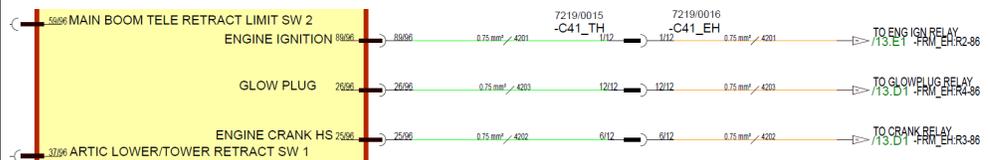


### 6.1.263 B1357-16

<b>Error code:</b>	<b>B1357-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Engine Start (Crank) High Side Signal (Base ECU to Engine ECU) Short Circuit to Low
<b>Component :</b>	Engine Crank
<b>Vehicle reaction:</b>	Detect failure mode. Switch output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	1. Locate wire #4202 from Base Bosch ECU pin 25/96 to interconnect - C41_TH. Disconnect -C41_TH from mating half -C41_EH. Measure voltage at pin 2/12 on both interconnect connectors. If one is stuck high, then trace to

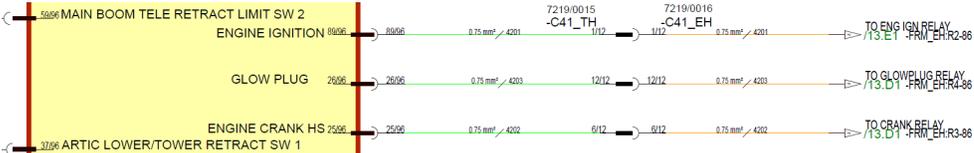
fault.

2. Check continuity from interconnect pins 2/12 back to Base Bosch ECU pin 25/96 and to engine ECU on connector -C05\_EH pin 39/62.
3. Check all connectors mentioned above for damage, backed out pins, short circuits and water ingress
4. Check wire #4202 back through the harness, checking for breaks, abrasions, pinching or any other damage.



### 6.1.264 B1358-13

<b>Error code:</b>	<b>B1358-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Engine Start (Crank) High Side Signal (Base ECU to Engine ECU) Short Circuit to High or Open Circuit
<b>Component :</b>	Engine Crank
<b>Vehicle reaction:</b>	Detect failure mode. Switch output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short or open circuit within the harness.</li> <li>2. A short or open circuit within the harness connectors.</li> </ol>

	<p>3. Water damage/ingress within the harness connectors. 4. Damaged component(s).</p>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check continuity between Base Bosch ECU Pin 25/96 and Engine ECU Pin 39/92 (Wire #408). Check Wire #4202 is not short circuit to high.</li> <li>2. Check ECU Connectors and inter connector -C41. Ensure no bent pins or stray wires causing short circuit. Ensure wires are correctly terminated.</li> <li>3. Check ECU Connectors and inter connector -C41 for any water damage or water ingress.</li> <li>4. Check connectors and harness between Base ECU pin 25/96 and Engine ECU pin 39/92 for any damage.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> <div style="margin-top: 10px;">  </div>

**6.1.265 B1365-17**

<b>Error code:</b>	<b>B1365-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Overload - Load Sensor 1 Out of Range (High).
<b>Component</b> :	Overload Sensor 1
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1) Load sensor is not calibrated</li> <li>2) Load sensor is faulty</li> <li>3) Short Circuit to High</li> <li>4) Water ingress</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1) Perform weight sensor calibration from display screen.</li> <li>2) Check condition of weight sensor and connectors, replace if faulty</li> <li>3) Check condition of wiring from Weight Sensor. Check Interconnects - C05_PH and -C06_PH. Check connections to DIN Rail terminal -S11-6 (Wires #6070 and #6072). Check inputs to Platform Bosch ECU on pins 68/96 through to 71/96. Check platform connector -C22_PH terminals W/21 and X/21. Check for bent or backed out terminals or debris within connectors. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to +12V and +10V on -C22_PH terminals W/21 and X/21, checking for shorts to High.</li> <li>4) Check all connectors for water ingress.</li> </ol> <div style="display: flex; justify-content: space-around;">   </div> 

6.1.266 B1366-16

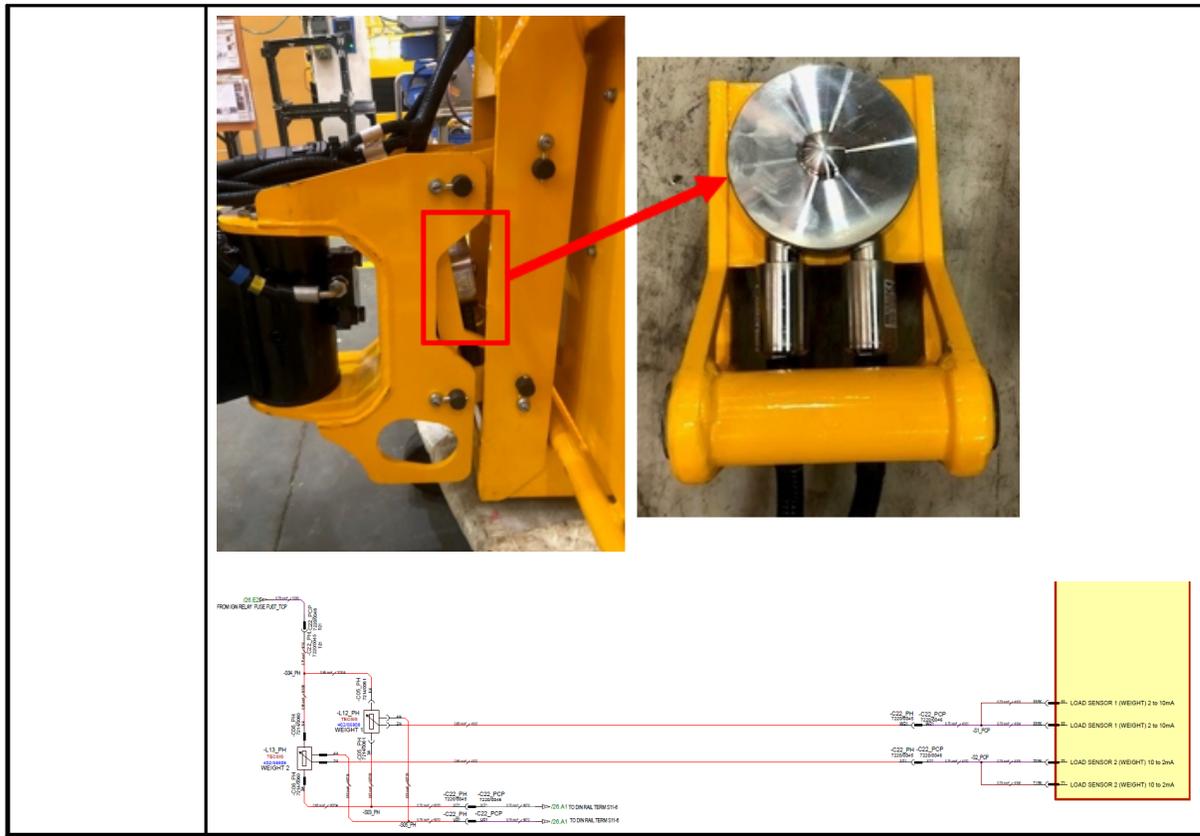
<p><b>Error code:</b></p>	<p><b>B1366-16</b></p>
<p><b>ECU</b></p>	<p>Platform ECU</p>

<b>Description</b> :	Overload - Load Sensor 1 Out of Range (Low) or Open Circuit.
<b>Component</b> :	Overload Sensor 1
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED NOTE:- In case of Open Circuit, the above machine reaction is applicable only when fault is detected on both pins(68,69) of load sensor 1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Load sensor is not calibrated</li> <li>2) Connectors not fully inserted.</li> <li>3) Load sensor is faulty</li> <li>4) Short Circuit to Low</li> <li>5) Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Perform weight sensor calibration from display screen.</li> <li>2) Check condition of weight sensor and connectors -C05_PH and -C06_PH, Ensure connectors are fully inserted. Check platform connector -C22_PH. Check for backed out terminals.</li> <li>3) Replace weight sensor if faulty</li> <li>3) Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to GND on -C22_PH terminals W/21 and X/21, checking for shorts to Low.</li> <li>4) Check all connectors for water ingress.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



**6.1.267 B1367-17**

<b>Error code:</b>	<b>B1367-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Overload - Load Sensor 2 Out of Range (High).
<b>Component</b> :	Overload Sensor 2
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Load sensor is not calibrated</li> <li>2) Load sensor is faulty</li> <li>3) Short Circuit to High</li> <li>4) Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Perform weight sensor calibration from display screen.</li> <li>2) Check condition of weight sensor and connectors, replace if faulty</li> <li>3) Check condition of wiring from Weight Sensor. Check Interconnects - C05_PH and -C06_PH. Check connections to DIN Rail terminal -S11-6 (Wires #6070 and #6072). Check inputs to Platform Bosch ECU on pins 70/96 through to 71/96. Check platform connector -C22_PH terminals W/21 and X/21. Check for bent or backed out terminals or debris within connectors. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to +12V and +10V on -C22_PH terminals W/21 and X/21, checking for shorts to High.</li> <li>4) Check all connectors for water ingress.</li> </ol>



### 6.1.268 B1368-16

<b>Error code:</b>	<b>B1368-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Overload - Load Sensor 2 Out of Range (Low) OR Open Circuit.
<b>Component</b> :	Overload Sensor 2
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED NOTE:- In case of Open Circuit, the above machine reaction is applicable only when fault is detected on both pins(70,71) of load sensor 2
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Load sensor is not calibrated</li> <li>2) Connectors not fully inserted.</li> <li>3) Load sensor is faulty</li> <li>4) Short Circuit to Low</li> <li>5) Water ingress</li> </ol>

**Service Action:**

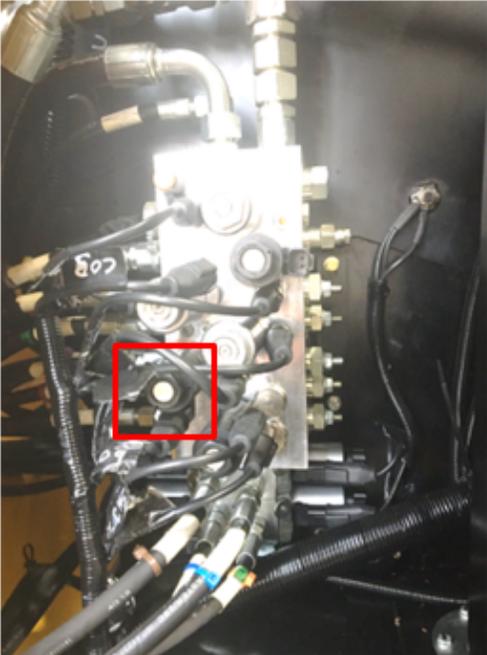
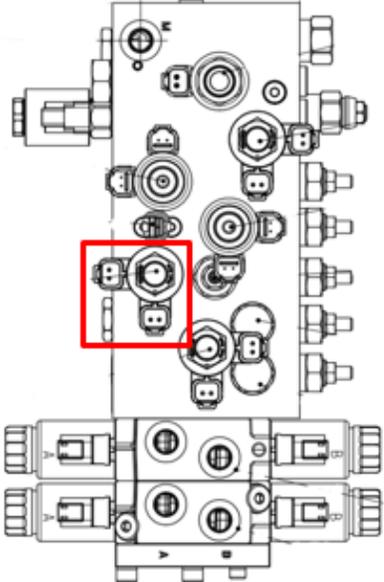
- 1) Perform weight sensor calibration from display screen.
- 2) Check condition of weight sensor and connectors -C05\_PH and -C06\_PH, Ensure connectors are fully inserted. Check platform connector -C22\_PH. Check for backed out terminals.
- 3) Replace weight sensor if faulty
- 3) Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to GND on -C22\_PH terminals W/21 and X/21, checking for shorts to Low.
- 4) Check all connectors for water ingress.

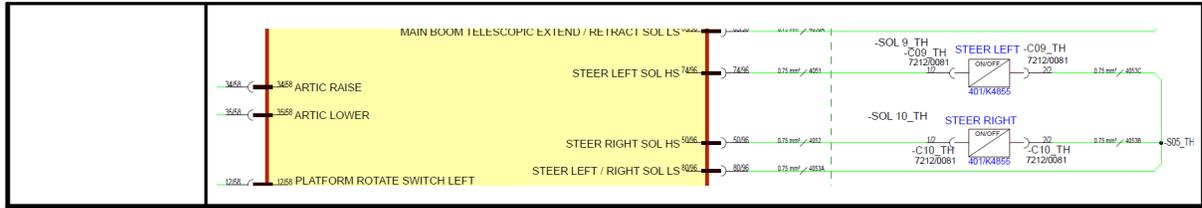





6.1.269 B1389-13

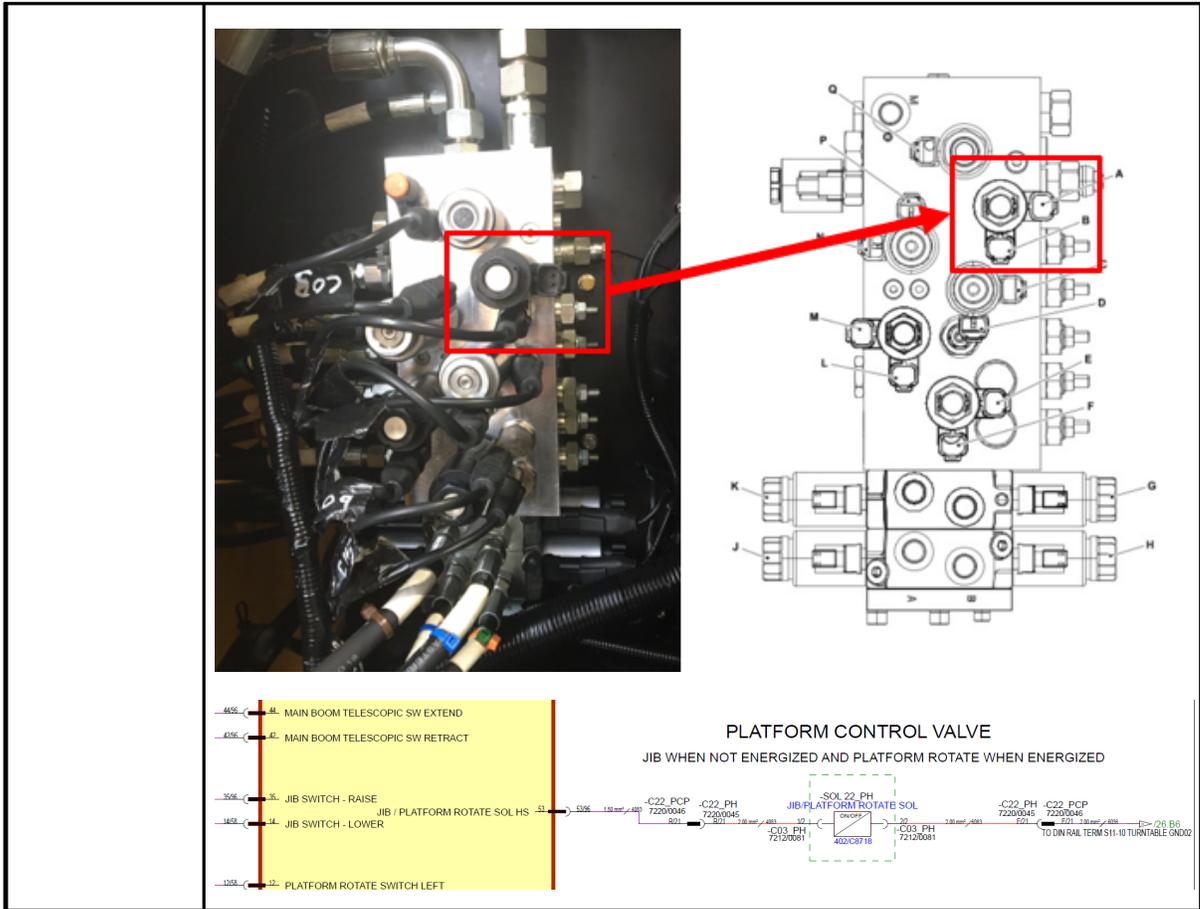
<b>Error code:</b>	<b>B1377-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve High Side & Low Side Open Circuit
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve

<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check coil resistance 5-10 ohms</li> <li>2. Check wiring from coil to ECU wire 4051,4052 &amp; 4053A, 4053B, 4053C for cut, pinch or and damage.</li> <li>3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.</li> <li>4. Check solenoid connector C09_TH and C10_TH for loose connection or any damage.</li> <li>5. Check if valve is mechanically jammed.</li> <li>6 Turn ignition on off to clear code.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>



### 6.1.270 B1401-13

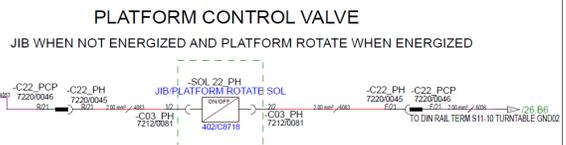
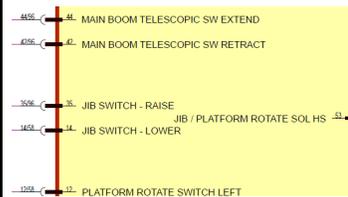
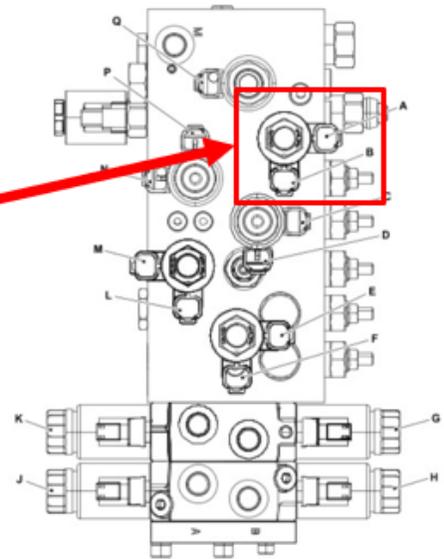
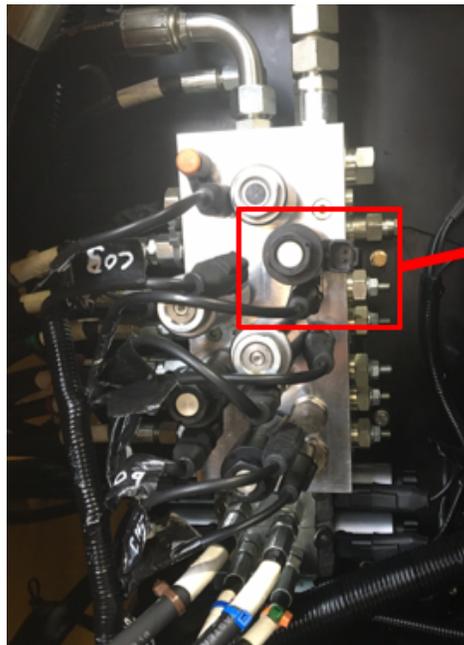
<b>Error code:</b>	<b>B1378-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL High Side Open Circuit
<b>Component :</b>	JIB\PLATFORM PROPORTIONAL Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Jib\Platform Rotate o/ps to off Note:During operation , refer to JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL Low Side Open Circuit Fault code
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Locate Jib/Platform Rotate Solenoid connectors -C16_TH and -C13_TH. Disconnect connectors from valve block. Check both connectors for backed out pins, short circuits, water ingress or short circuits.</li> <li>2) Check wires #4061 and #4062 (Pin 1/2 on both connectors) for shorts to high, open circuits or any other damage. Check continuity back to Base Bosch ECU pins 53/96 and 77/96.</li> <li>3) Check Bosch Connector (96 way) for any damage, backed out pins, short circuits, water ingress, debris etc.</li> <li>4) Check Jib/Rotate return wires from pin 2/2 on both connectors for short or open circuits.</li> <li>5) Check valve block connector for water ingress, damage, bent pins etc.</li> <li>6) Check Wiring harness for any abrasions, pinching or any other damage between Base Bosch ECU and Main Valve Block.</li> </ol>



6.1.271 B1404-13

<b>Error code:</b>	<b>B1379-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB\PLATFORM PROPORTIONAL Low Side Open Circuit
<b>Component</b> :	JIB\PLATFORM PROPORTIONAL Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Jib\Platform Rotate o/ps to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	1) Locate Jib/Platform Rotate Solenoid connectors -C16_TH and -C13_TH. Disconnect connectors from valve block. Check both connectors for backed

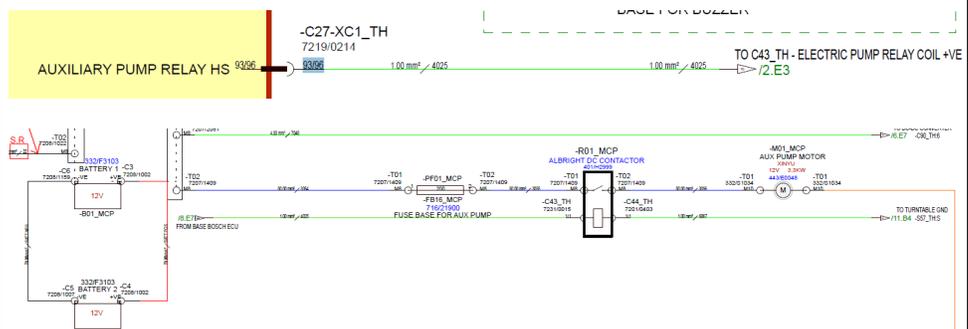
- out pins, short circuits, water ingress or short circuits.
- 2) Check wires #4061 and #4062 (Pin 1/2 on both connectors) for shorts to high, open circuits or any other damage. Check continuity back to Base Bosch ECU pins 53/96 and 77/96.
- 3) Check Bosch Connector (96 way) for any damage, backed out pins, short circuits, water ingress, debris etc.
- 4) Check Jib/Rotate return wires from pin 2/2 on both connectors for short or open circuits.
- 5) Check valve block connector for water ingress, damage, bent pins etc.
- 6) Check Wiring harness for any abrasions, pinching or any other damage between Base Bosch ECU and Main Valve Block.



### 6.1.272 B1414-17

<b>Error code:</b>	<b>B1414-17</b>
<b>ECU</b>	Base ECU
<b>Description:</b>	ELECTRIC PUMP OUTPUT Short Circuit to High OR Open Circuit
<b>Component:</b>	Electric Pump

<b>Vehicle reaction:</b>	Detect failure mode for Short Circuit to High and Base will report the Fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Locate wire #4025 between Base Bosch ECU pin 93/96 and Albright DC Contactor connector -C43_TH. Check for short to high or open circuit. Check termination at the Contactor.</li> <li>2) Check the condition of the Base Bosch ECU 96-way connector, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check other side of the contactor solenoid at connector -C44_TH (Wire #6067). Check there is good connection to GND at -T04-GND02_TH.</li> <li>4) Check condition of Albright DC Contactor, replace if necessary.</li> <li>5) Check the wire harness for any abrasions, pinching or any other form of damage.</li> </ol>



### 6.1.273 B1415-16

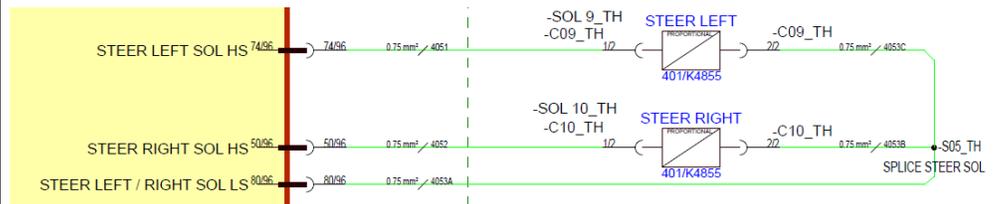
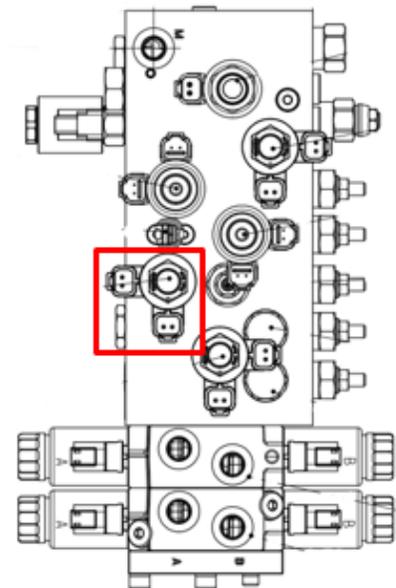
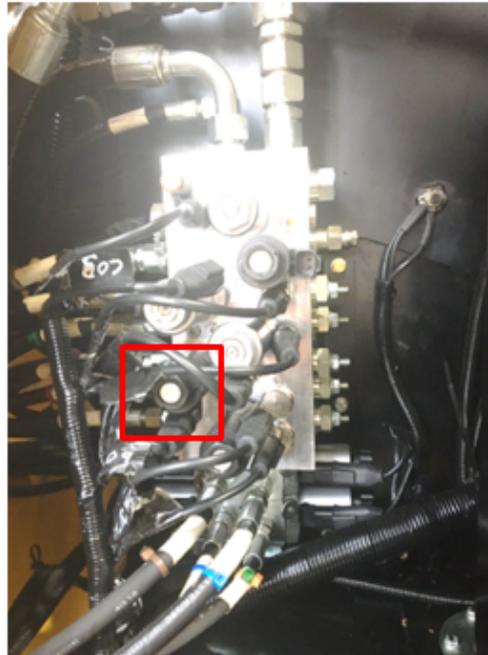
<b>Error code:</b>	<b>B1415-16</b>
<b>ECU</b>	Base ECU
<b>Description</b>	ELECTRIC PUMP OUTPUT Short Circuit to Low
<b>Component</b>	Electric Pump
<b>Vehicle reaction:</b>	Detect failure mode for Short Circuit to High and Base will report the Fault
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A short circuit within the wiring harness</li> <li>2) A short circuit to the chassis</li> <li>3) A short circuit within the harness connectors</li> <li>4) Water damage/ingress within the harness connectors</li> <li>5) Damaged component</li> </ol>

<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1) Locate wire #4025 between Base Bosch ECU pin 93/96 and Albright DC Contactor connector -C43_TH. Check for short to GND or open circuit. Check termination at the Contactor.</li> <li>2) Check the condition of the Base Bosch ECU 96-way connector, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check other side of the contactor solenoid at connector -C44_TH (Wire #6067). Check there is good connection to GND at -T04-GND02_TH.</li> <li>4) Check condition of Albright DC Contactor, replace if necessary.</li> <li>5) Check the wire harness for any abrasions, pinching or any other form of damage.</li> </ol>
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6.1.274 B1417-13

<b>Error code:</b>	<b>B1417-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve High Side & Low Side Open Circuit
<b>Component :</b>	STEER RIGHT OR LEFT DIRECTIONAL Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer output to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Poor or loose connection</li> <li>2. Break in wiring</li> <li>3. Water in connector</li> <li>4. Broken pin or connector</li> <li>5. Faulty or Damage solenoid</li> </ol>
<b>Service Action:</b>	1.Check coil resistance 5-10 ohms

2. Check wiring from coil to ECU wire 4051,4052 & 4053A, 4053B, 4053C for cut, pinch or and damage.
3. Check ECU Pin 74/96, 50/96, 80/96 for bend or back out or any damage.
4. Check solenoid connector C09\_TH and C10\_TH for loose connection or any damage.
5. Check if valve is mechanically jammed.
- 6 Turn ignition on off to clear code.



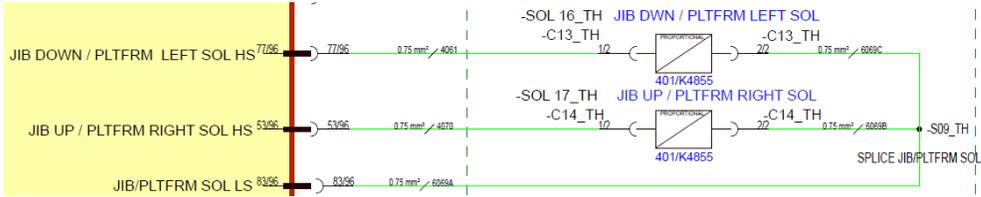
### 6.1.275 B1419-13

<b>Error code:</b>	<b>B1419-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB\PLATFORM ROTATE Solenoid Valve Fault

<b>Component :</b>	Platform Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Jib\Platform Rotate o/ps to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>

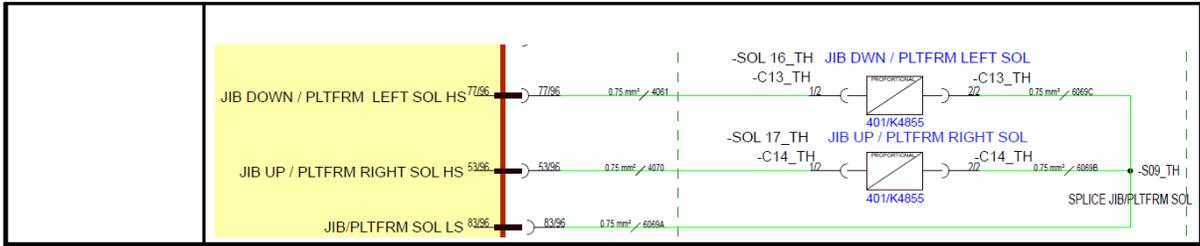
### 6.1.276 B1420-13

<b>Error code:</b>	<b>B1420-13</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	JIB/PLATFORM FLOW Solenoid Valve Fault
<b>Component :</b>	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>

<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>  <p>The diagram shows three solenoid lines: JIB DOWN / PLTFRM LEFT SOL HS (77/96), JIB UP / PLTFRM RIGHT SOL HS (53/96), and JIB/PLTFRM SOL LS (83/96). These connect to connectors C13 and C14, which are linked to solenoid valves 401/K4855. A splice point for JIB/PLTFRM SOL is also indicated.</p>
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### 6.1.277 B1437-17

<b>Error code:</b>	<b>B1437-17</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	JIB/PLATFORM FLOW Solenoid raise / right functions - Circuit open or short to high (12v)
<b>Component :</b>	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>



### 6.1.278 B1438-16

<b>Error code:</b>	<b>B1438-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Solenoid raise / right functions - Circuit short to low
<b>Component</b> :	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>

### 6.1.279 B1439-13

<b>Error code:</b>	<b>B1439-13</b>
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<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Solenoid lower / left functions - Circuit short to low
<b>Component</b> :	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>

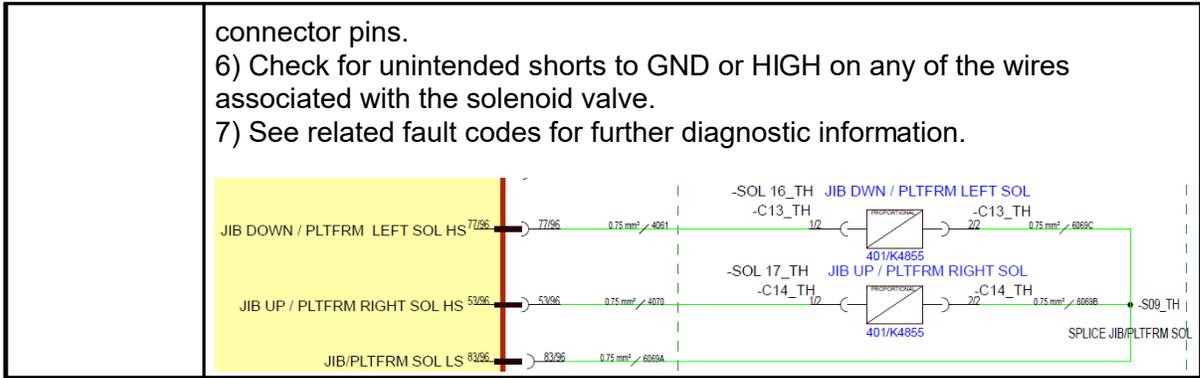
**6.1.280 B1440-17**

<b>Error code:</b>	<b>B1440-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Solenoid - Circuit short to high (12v)
<b>Component</b> :	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions

<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>

**6.1.281 B1441-16**

<b>Error code:</b>	<b>B1441-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Solenoid - Circuit short to low
<b>Component</b> :	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve</li> </ol>



## 6.1.282 B1442-13

<b>Error code:</b>	<b>B1442-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Solenoid - Circuit open
<b>Component</b> :	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>

6.1.283 B1670-17

<b>Error code:</b>	<b>B1670-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Solenoid lower / left functions - Circuit open or short to high (12v)
<b>Component</b> :	Platform Solenoid
<b>Vehicle reaction:</b>	Disable platform rotate and allow Jib functions
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A poor connection or damaged terminal within the connector(s)</li> <li>2) A damaged or broken wire within the wiring harness</li> <li>3) Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</li> <li>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</li> <li>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</li> <li>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> <li>7) See related fault codes for further diagnostic information.</li> </ol>
	<p>The diagram shows three solenoid valve inputs: JIB DOWN / PLTFRM LEFT SOL HS (77/96) connected to -SOL 16_TH / JIB DWN / PLTFRM LEFT SOL -C13_TH (1/2) and -C13_TH (2/2); JIB UP / PLTFRM RIGHT SOL HS (53/96) connected to -SOL 17_TH / JIB UP / PLTFRM RIGHT SOL -C14_TH (1/2) and -C14_TH (2/2); and JIB/PLTFRM SOL LS (83/96) connected to a splice point labeled SPLICE JIB/PLTFRM SOL. Wire gauges are specified as 0.75 mm² for various segments.</p>

6.1.284 B1675-17

<b>Error code:</b>	<b>B1675-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Overload - Load Sensor 1 Out of Range (High).
<b>Component</b> :	Overload Sensor 1

<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Load sensor is not calibrated</li> <li>2) Load sensor is faulty</li> <li>3) Short Circuit to High</li> <li>4) Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Perform weight sensor calibration from display screen.</li> <li>2) Check condition of weight sensor and connectors, replace if faulty</li> <li>3) Check condition of wiring from Weight Sensor. Check Interconnects - C05_PH and -C06_PH. Check connections to DIN Rail terminal -S11-6 (Wires #6070 and #6072). Check inputs to Platform Bosch ECU on pins 68/96 through to 71/96. Check platform connector -C22_PH terminals W/21 and X/21. Check for bent or backed out terminals or debris within connectors. Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to +12V and +10V on -C22_PH terminals W/21 and X/21, checking for shorts to High.</li> <li>4) Check all connectors for water ingress.</li> </ol> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <div style="text-align: center; margin-top: 20px;">  </div>

6.1.285 B1676-16

<b>Error code:</b>	<b>B1676-16</b>
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<b>ECU</b>	Platform ECU
<b>Description</b> :	Overload - Load Sensor 1 Out of Range (Low) or Open Circuit.
<b>Component</b> :	Overload Sensor 1
<b>Vehicle reaction:</b>	Detect failure mode; Implement Overload alarm and switch on Fault LED NOTE:- In case of Open Circuit, the above machine reaction is applicable only when fault is detected on both pins(68,69) of load sensor 1
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Load sensor is not calibrated</li> <li>2) Connectors not fully inserted.</li> <li>3) Load sensor is faulty</li> <li>4) Short Circuit to Low</li> <li>5) Water ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Perform weight sensor calibration from display screen.</li> <li>2) Check condition of weight sensor and connectors -C05_PH and -C06_PH, Ensure connectors are fully inserted. Check platform connector -C22_PH. Check for backed out terminals.</li> <li>3) Replace weight sensor if faulty</li> <li>3) Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to GND on -C22_PH terminals W/21 and X/21, checking for shorts to Low.</li> <li>4) Check all connectors for water ingress.</li> </ol>
	





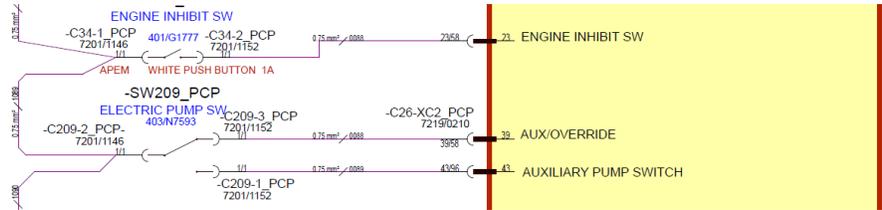
**Service Action:**

- 1) Perform weight sensor calibration from display screen.
- 2) Check condition of weight sensor and connectors -C05\_PH and -C06\_PH, Ensure connectors are fully inserted. Check platform connector -C22\_PH. Check for backed out terminals.
- 3) Replace weight sensor if faulty
- 3) Check wiring for any breaks, abrasions or pinching. Observe for any obvious fault or damage on wiring harness. Perform continuity checks if necessary and check resistance to GND on -C22\_PH terminals W/21 and X/21, checking for shorts to Low.
- 4) Check all connectors for water ingress.



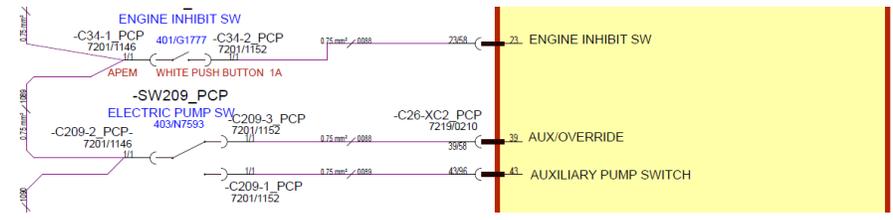

6.1.288 B1694-17

<b>Error code:</b>	<b>B1694-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	AUX / Overload override button unpressed condition - Circuit short to high (10v)
<b>Component</b> :	Platform Aux Switch

<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit within the harness connectors</li> <li>3. Water damage/ingress within the harness connectors</li> <li>4. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check switch Aux Pump Switch -SW209_PCP. Check Wire #0088 from Aux Switch connector -C209-2_PCP to Platform Bosch ECU Pin 43/96. Voltage should be +10V</li> <li>2. Check Voltage a Aux Pump Switch Pin 2 at -C209-2_PCP. This should be +10V</li> <li>3. Check Operation of switch</li> <li>4. Check all connectors for water ingress.</li> <li>5 Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol> 

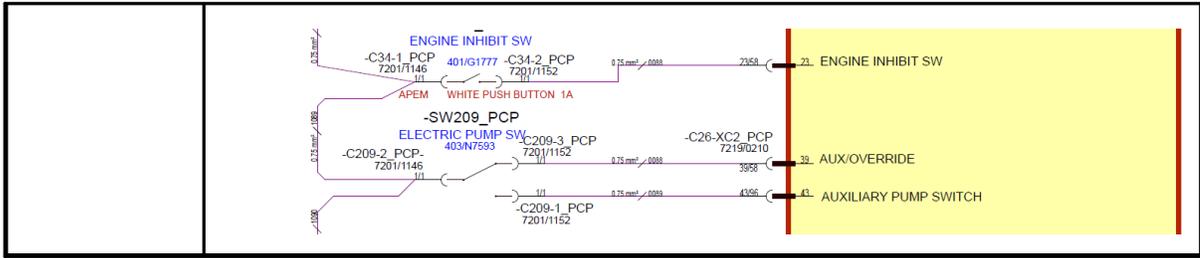
### 6.1.289 B1695-16

<b>Error code:</b>	<b>B1695-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	AUX / Overload override button unpressed condition - Circuit short to low
<b>Component</b> :	Platform Aux Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>

<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check switch Aux Pump Switch -SW209_PCP. Check Wire #0089 from Aux Switch connector -C209-3_PCP to Platform Bosch ECU Pin 43/96. Voltage should be +0V</li> <li>2. Check Voltage a Aux Pump Switch Pin 2 at -C209-2_PCP. This should be +10V</li> <li>3. Check Operation of switch</li> <li>4. Check all connectors for water ingress.</li> <li>5. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol> 
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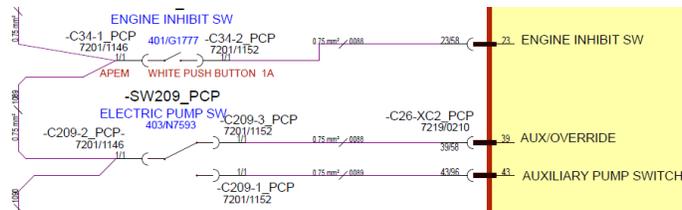
6.1.290 B1696-13

<p><b>Error code:</b></p>	<p><b>B1696-13</b></p>
<p><b>ECU</b></p>	<p>Platform ECU</p>
<p><b>Description :</b></p>	<p>AUX / Overload override button both conditions - Signal plausibility failure (Circuit open)</p>
<p><b>Component :</b></p>	<p>Platform Aux Switch</p>
<p><b>Vehicle reaction:</b></p>	<p>Detect failure mode; Ignore input</p>
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Check switch Aux Pump Switch -SW209_PCP. Check Wire #0089 from Aux Switch connector -C209-3_PCP to Platform Bosch ECU Pin 43/96. Voltage should be +0V</li> <li>2. Check Voltage a Aux Pump Switch Pin 2 at -C209-2_PCP. This should be +10V</li> <li>3. Check Operation of switch</li> <li>4. Check all connectors for water ingress.</li> <li>5. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol>



## 6.1.291 B1697-92

<b>Error code:</b>	<b>B1697-92</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	AUX / Overload override button both conditions - Signal plausibility failure (10v)
<b>Component :</b>	Platform Aux Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. A short circuit within the wiring harness</li> <li>2. A short circuit to the chassis</li> <li>3. A short circuit within the harness connectors</li> <li>4. Water damage/ingress within the harness connectors</li> <li>5. Damaged component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check switch Aux Pump Switch -SW209_PCP. Check Wire #0089 from Aux Switch connector -C209-3_PCP to Platform Bosch ECU Pin 43/96. Voltage should be +0V</li> <li>2. Check Voltage a Aux Pump Switch Pin 2 at -C209-2_PCP. This should be +10V</li> <li>3. Check Operation of switch</li> <li>4. Check all connectors for water ingress.</li> <li>5. Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</li> </ol>

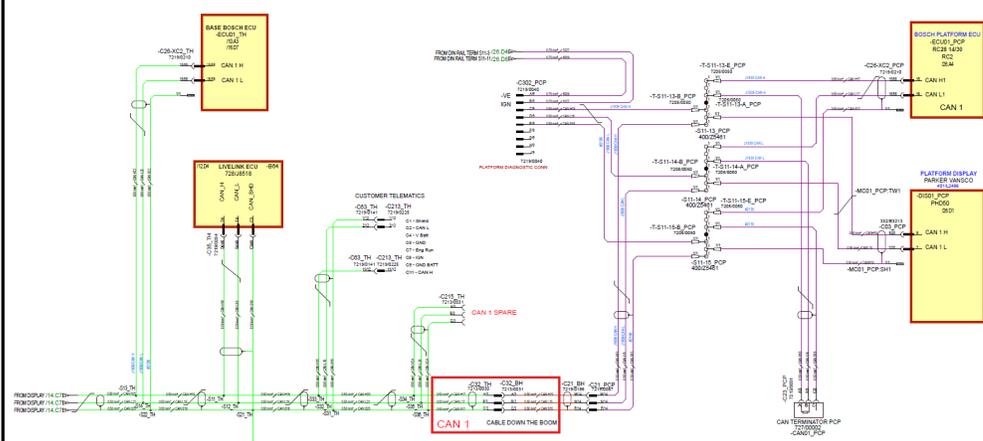


## 6.1.292 U0411-87

<b>Error code:</b>	<b>U0411-87</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	EGR no transmission/not received failure (for CAN)
<b>Component</b> :	EGR
<b>Vehicle reaction:</b>	This error code will display an red warning light on the <a href="#">DECU</a> as well as an red warning prompt.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Damaged harness or harness connectors.</li> <li>2. Faulty EGR</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Check that the electrical connector is plugged into the component.</li> <li>2. Check for any debris or water inside the ECU, EGR, Machine connection connector terminals. This may be as a consequence of pressure washing the engine, loose connectors or poor connector sealing.</li> <li>3. Check the harness is not damaged and is routed correctly.</li> <li>4. Check the harness continuity, and machine earth contacts.</li> <li>5. Check the tension on the EGR wiring connector, If under 8,0 volts verify the machine electric circuits.</li> <li>6. If the error Still persists, replace the component.</li> </ol>

## 6.1.293 U1293-87

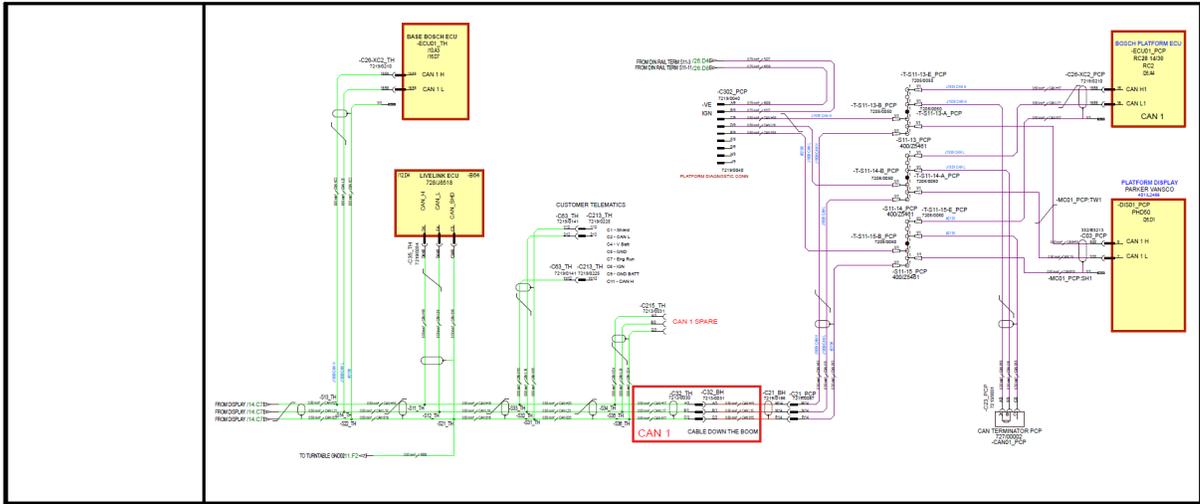
<b>Error code:</b>	<b>U1293-87</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN TIME OUT ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1. Recipient transmits DM1 with SPN field = PGN of missing CAN message and FMI = 9</li> <li>2. Recipient resets RC (rolling counter) to 0</li> <li>3. Recipient disables all outputs</li> </ol>

	<p>4. Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. Incorrect software or mis configured device</li> <li>2. A poor connection or damaged terminal within the connector(s)</li> <li>3. A damaged or broken wire within the wiring harness</li> <li>4. Component is damaged</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Live link Connector from Live link ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</li> <li>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</li> <li>4. Ensure all interconnects and device connectors are fully inserted.</li> <li>5. Ensure all interconnects and device connectors have no water ingress issues.</li> </ol> 

6.1.294 U1294-56

<p><b>Error code:</b></p>	<p><b>U1294-56</b></p>
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<b>ECU</b>	Base ECU
<b>Description</b> :	CAN RC ERROR - Rolling counter for platform input signal1 message
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 10</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Incorrect software or mis configured device</li> <li>2. A poor connection or damaged terminal within the connector(s)</li> <li>3. A damaged or broken wire within the wiring harness</li> <li>4. Component is damaged</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</li> <li>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</li> <li>4. Ensure all interconnects and device connectors are fully inserted.</li> <li>5. Ensure all interconnects and device connectors have no water ingress issues.</li> </ol>

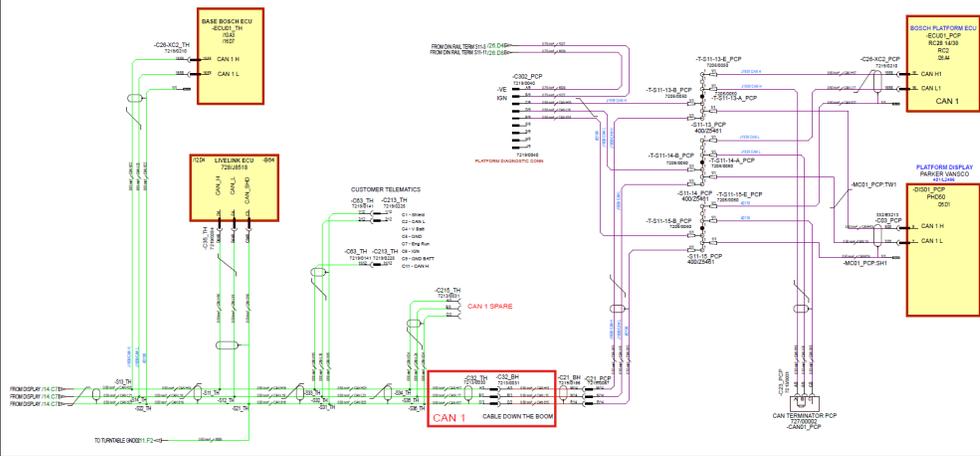


### 6.1.295 U1295-41

<b>Error code:</b>	<b>U1295-41</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN CHECK SUM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	1. Mismatch between transmitting and receiving message between ECU's
<b>Service Action:</b>	<p>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</p> <p>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the</p>

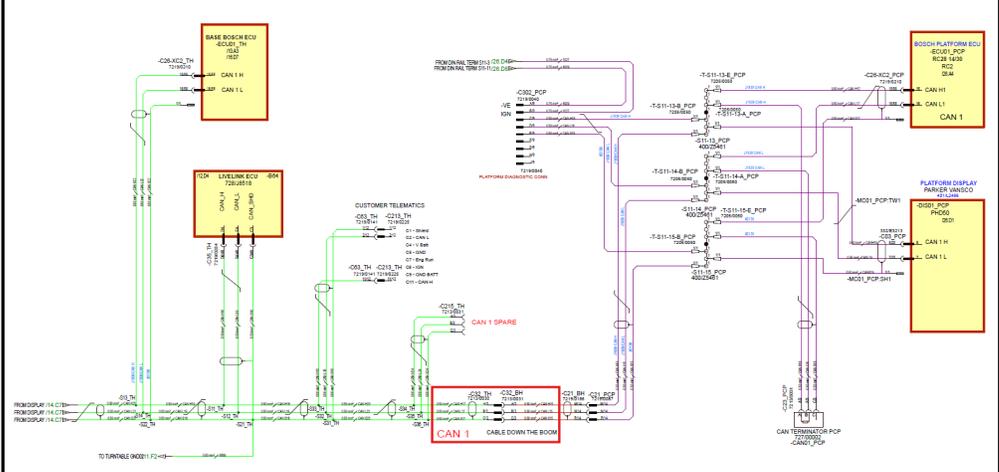
resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.

3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)
4. Ensure all interconnects and device connectors are fully inserted.
5. Ensure all interconnects and device connectors have no water ingress issues.



## 6.1.296 U1296-87

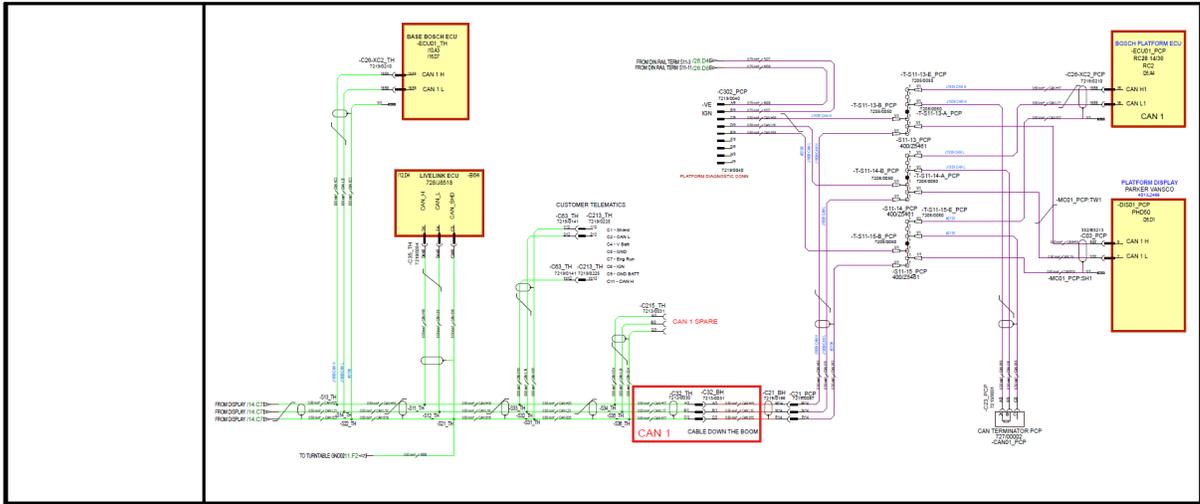
<b>Error code:</b>	<b>U1296-87</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	CAN TIME OUT ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient transmits DM1 with SPN field = PGN of missing CAN message and FMI = 9</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Recipient disables all outputs</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Mismatched or un programmed VIN number in either Bosch ECU</li> <li>2. Unterminated CAN network</li> </ol>

	<p>3. Damaged CAN network          4. Poorly connected CAN network          5. Water Ingress</p>
<p><b>Service Action:</b></p>	<p>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</p> <p>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</p> <p>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</p> <p>4. Ensure all interconnects and device connectors are fully inserted.</p> <p>5. Ensure all interconnects and device connectors have no water ingress issues.</p> 

6.1.297 U1297-56

<p><b>Error code:</b></p>	<p><b>U1297-56</b></p>
<p><b>ECU</b></p>	<p>Platform ECU</p>

<b>Description</b> :	CAN RC ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<ul style="list-style-type: none"> <li>- Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 10</li> <li>- Recipient retains existing values.</li> <li>- Recipient resets RC (rolling counter) to 0</li> <li>- Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</li> </ul>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Mismatched or un programmed VIN number in either Bosch ECU</li> <li>2) Unterminated CAN network</li> <li>3) Damaged CAN network</li> <li>4) Poorly connected CAN network</li> <li>5) Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2) Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</li> <li>3) Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</li> <li>4) Ensure all interconnects and device connectors are fully inserted.</li> <li>5) Ensure all interconnects and device connectors have no water ingress issues.</li> </ol>



6.1.298 U1298-41

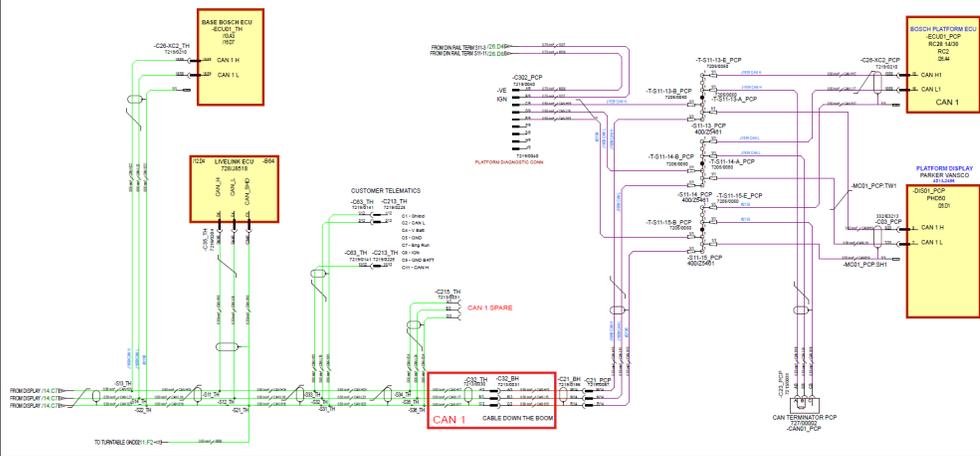
<b>Error code:</b>	<b>U1298-41</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	CAN CHECK SUM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	1. Mismatch between transmitting and receiving message between ECU's
<b>Service Action:</b>	<p>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</p> <p>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then</p>

disconnect the CAN bus interconnect at -C32\_TH / -C32\_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.

3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)

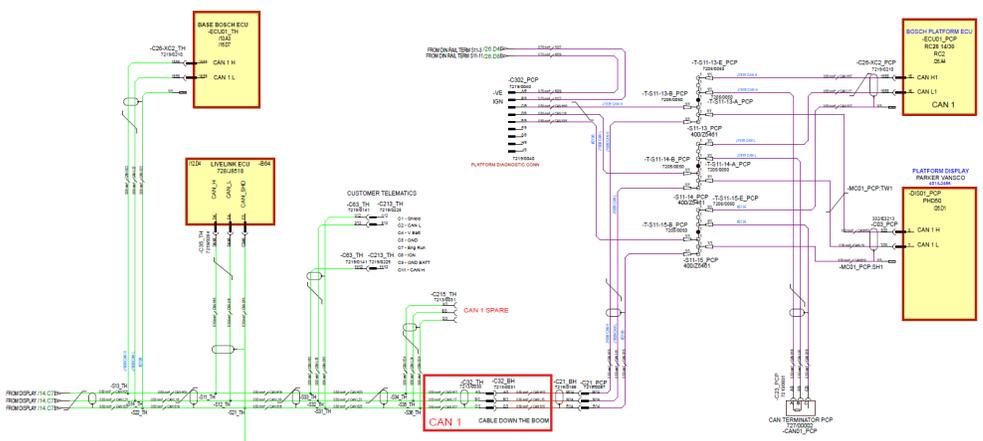
4. Ensure all interconnects and device connectors are fully inserted.

5. Ensure all interconnects and device connectors have no water ingress issues.



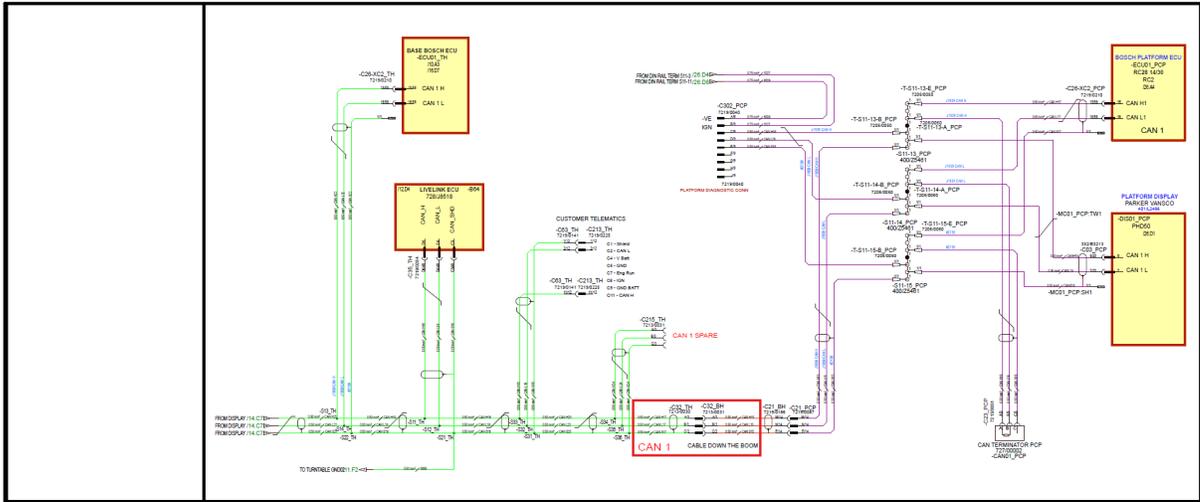
## 6.1.299 U1299-87

<b>Error code:</b>	<b>U1299-87</b>
<b>ECU</b>	BASE ECU
<b>Description</b> :	CAN PAIRING FAILED ERROR
<b>Component</b> :	BASE ECU
<b>Vehicle reaction:</b>	Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2 Recipient resets RC (rolling counter) to 0 Transmitter re-transmits CAN message requested by Recipient with RC set to 0.
<b>Possible Cause:</b>	1) Mismatched or un programmed VIN number in either Bosch ECU 2) Unterminated CAN network 3) Damaged CAN network

	<p>4) Poorly connected CAN network 5) Water Ingress</p>
<p><b>Service Action:</b></p>	<p>1. Check for any other faults codes that may cause an ECU to not turn on, eg startlock. If faults codes follow these fault codes first.</p> <p>If no other fault codes:</p> <p>2. Check base and platform ECU's are available on the network, this can be done by scanning on the flash loader tool.</p> <p>Use vehicle setup tool.</p> <p>3. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</p> <p>4. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</p> <p>5. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</p> <p>6. Ensure all interconnects and device connectors are fully inserted.</p> <p>7. Ensure all interconnects and device connectors have no water ingress issues.</p> 

## 6.1.300 U1323-56

<b>Error code:</b>	<b>U1323-56</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN RC ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 10</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Mismatched or un programmed VIN number in either Bosch ECU</li> <li>2. Unterminated CAN network</li> <li>3. Damaged CAN network</li> <li>4. Poorly connected CAN network</li> <li>5. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</li> <li>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</li> <li>4. Ensure all interconnects and device connectors are fully inserted.</li> <li>5. Ensure all interconnects and device connectors have no water ingress issues.</li> </ol>

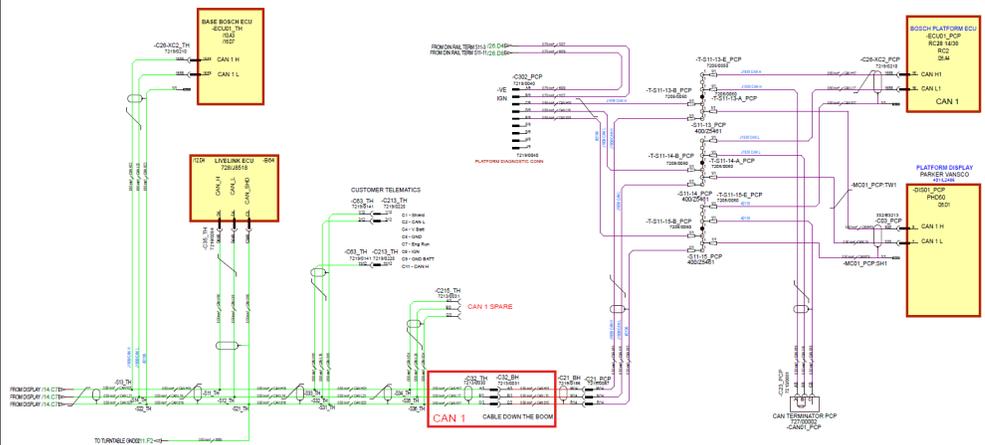


### 6.1.301 U1324-56

<b>Error code:</b>	<b>U1324-56</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN RC ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 10</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. Mismatched or un programmed VIN number in either Bosch ECU</li> <li>2. Unterminated CAN network</li> <li>3. Damaged CAN network</li> <li>4. Poorly connected CAN network</li> <li>5. Water Ingress</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms.</li> </ol>

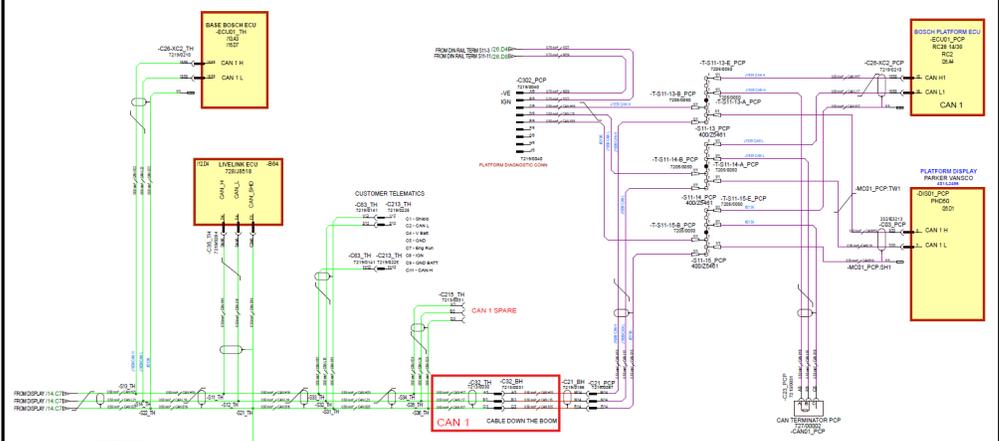
Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32\_TH / -C32\_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.

3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)
4. Ensure all interconnects and device connectors are fully inserted.
5. Ensure all interconnects and device connectors have no water ingress issues.



### 6.1.302 U1325-56

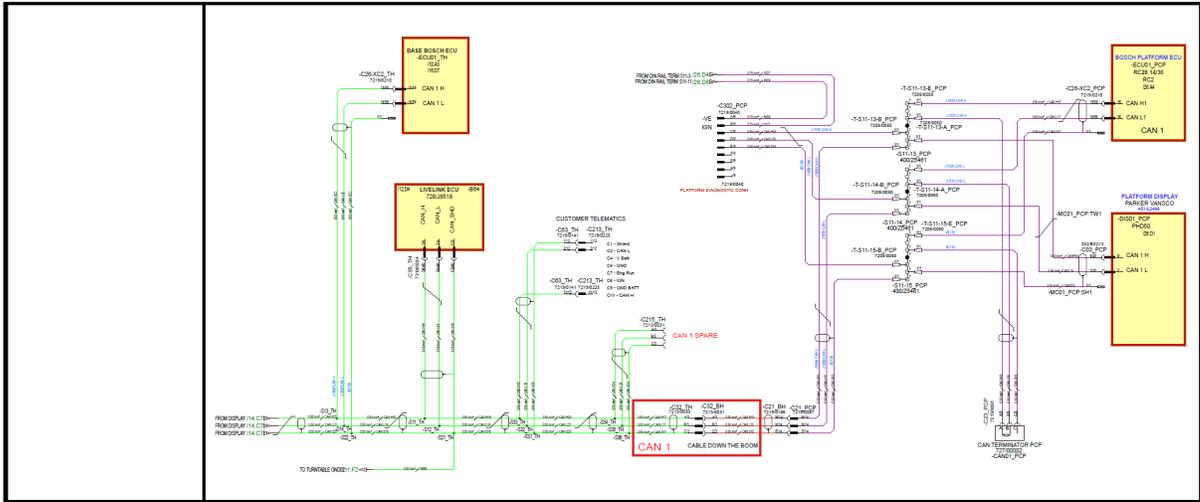
<b>Error code:</b>	<b>U1325-56</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN RC ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 10 Recipient retains existing values. Recipient resets RC (rolling counter) to 0 Transmitter re-transmits CAN message requested by Recipient with RC set to 0.

<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1. Mismatched or un programmed VIN number in either Bosch ECU</li> <li>2. Unterminated CAN network</li> <li>3. Damaged CAN network</li> <li>4. Poorly connected CAN network</li> <li>5. Water Ingress</li> </ol>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</li> <li>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</li> <li>4. Ensure all interconnects and device connectors are fully inserted.</li> <li>5. Ensure all interconnects and device connectors have no water ingress issues.</li> </ol>  <p>The diagram illustrates the CAN 1 network architecture. It shows a central 'CUSTOMER TELEMATICS' unit connected to a 'BASE ECU' and a 'LIVELINK ECU'. The 'BASE ECU' is connected to 'CAN 1 H' and 'CAN 1 L'. The 'LIVELINK ECU' is connected to 'CAN 1 H' and 'CAN 1 L'. The 'CUSTOMER TELEMATICS' unit has multiple CAN 1 connections. The 'BOSCH PLATFORM ECU' is connected to 'CAN 1 H' and 'CAN 1 L'. The 'PLATFORM DISPLAY' is connected to 'CAN 1 H' and 'CAN 1 L'. Various 'PCP' (Platform Control Panel) units are connected to the CAN 1 network. A 'CAN 1 SPARE' connection is also shown. A red box highlights a 'CAN 1 CABLE DOWN THE BOOM' connection.</p>

6.1.303 U1326-41

<p><b>Error code:</b></p>	<p><b>U1326-41</b></p>
<p><b>ECU</b></p>	<p>Base ECU</p>

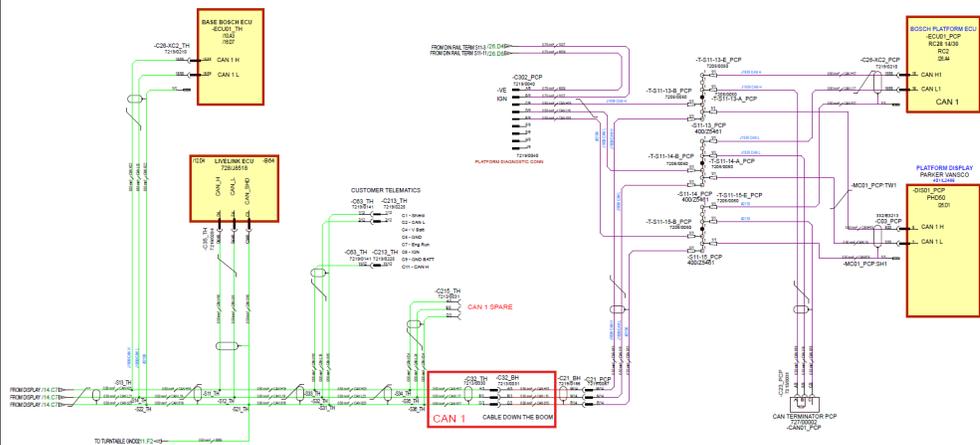
<b>Description</b> :	CAN CHECK SUM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	1. Mismatch between transmitting and receiving message between ECU's
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</li> <li>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</li> <li>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</li> <li>4. Ensure all interconnects and device connectors are fully inserted.</li> <li>5. Ensure all interconnects and device connectors have no water ingress issues.</li> </ol>



### 6.1.304 U1327-41

<b>Error code:</b>	<b>U1327-41</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN CHECK SUM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</p> <p>Recipient retains existing values.</p> <p>Recipient resets RC (rolling counter) to 0</p> <p>Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</p>
<b>Possible Cause:</b>	1. Mismatch between transmitting and receiving message between ECU's
<b>Service Action:</b>	<p>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</p> <p>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then</p>

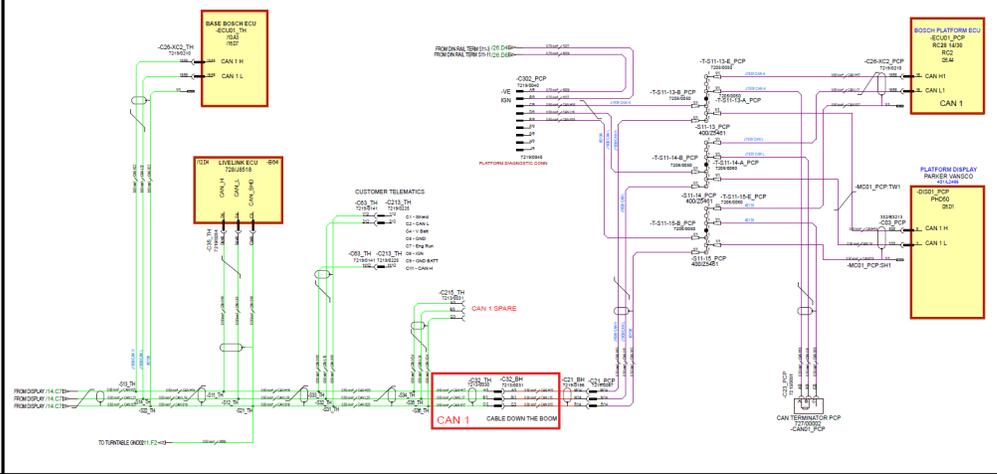
- disconnect the CAN bus interconnect at -C32\_TH / -C32\_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.
3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)
  4. Ensure all interconnects and device connectors are fully inserted.
  5. Ensure all interconnects and device connectors have no water ingress issues.



### 6.1.305 U1328-41

<b>Error code:</b>	<b>U1328-41</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN CHECK SUM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2 Recipient retains existing values. Recipient resets RC (rolling counter) to 0 Transmitter re-transmits CAN message requested by Recipient with RC set to 0.

<p><b>Possible Cause:</b></p>	<p>1. Mismatch between transmitting and receiving message between ECU's</p>
<p><b>Service Action:</b></p>	<p>1. Connect to the machine via JCB Service Master and run the 'Vehicle Setup' tool. Ensure that the VIN number is displayed in Green and that the CAN Bus devices have paired successfully.</p> <p>2. Check both can terminator resistors are placed correctly at either end of the CAN network (at base and platform control panels). Turn Ignition to OFF and remove Livelink Connector from Livelink ECU. Remove the CAN terminator at the base platform and then measure the resistance of CAN-L to CAN-H on the harness connector. This should measure 120 ohms. Measuring a value close to 0 ohms will indicate a short circuit on the CAN bus. To narrow down the fault location, replace the CAN terminator and then disconnect the CAN bus interconnect at -C32_TH / -C32_BH. Measure the resistance of the CAN bus on each connector, the one that reads low will be the section with the short circuit. If the original measurement was a high reading, then there is a break in the CAN bus wiring. Again, section up the CAN Bus network and complete continuity testing to isolate the faulty section.</p> <p>3. Check the CAN bus wiring runs to check for damage to the harness, especially abrasions and pinching. Check there is no damage at any of the CAN device connectors (Interconnects and ECU's / Displays etc)</p> <p>4. Ensure all interconnects and device connectors are fully inserted.</p> <p>5. Ensure all interconnects and device connectors have no water ingress issues.</p>



6.1.306 (34)

<p><b>Error code:</b></p>	<p><b>B121-1</b></p>
<p><b>ECU</b></p>	
<p><b>Description :</b></p>	

<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.307 (35)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.308 (36)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	

<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.309 (37)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.310 (38)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	

<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.311 (39)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.312 (40)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	

<b>Service Action:</b>	
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6.1.313 (41)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.314 (42)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.315 (43)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.316 (44)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.317 (45)

<b>Error code:</b>	<b>B121-1</b>
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<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

## 6.1.318 (46)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

## 6.1.319 (47)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	

<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.320 (48)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.321 (49)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	

<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.322 (50)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.323 (51)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	

<b>Possible Cause:</b>	
<b>Service Action:</b>	

## 6.1.324 (52)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

## 6.1.325 (53)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	

<b>Service Action:</b>	
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6.1.326 (54)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.327 (55)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.328 (56)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.329 (57)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.330 (58)

<b>Error code:</b>	<b>B121-1</b>
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<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.331 (59)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.332 (60)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	

<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.333 (61)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.334 (62)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description</b> :	
<b>Component</b> :	

<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

6.1.335 (63)

<b>Error code:</b>	<b>B121-1</b>
<b>ECU</b>	
<b>Description :</b>	
<b>Component :</b>	
<b>Vehicle reaction:</b>	
<b>Possible Cause:</b>	
<b>Service Action:</b>	

# General Sensor Fault Table

## 7 General Sensor Fault Table

### 7.1 General Sensor Fault Table

Step	Trouble	Action
1	Sensor supply voltage fault	Disconnect the sensor, check sensor voltage supply at the harness connector (see relevant sensor help file for pin numbers or refer to engine electrical schematic) If voltage supply is faulty, disconnect all other sensors in turn until the voltage supply returns. If sensor supply voltage is OK, proceed to Step 2
2	Sensor connection faulty	Check condition of sensor to harness connection, make sure the seals are in place. Check for signs of corrosion or contamination. Repair/replace as necessary. If no fault is found, proceed to Step 3.
3	Sensor failure	Check the sensor resistance (see relevant help file for values). If sensor is out of specification, replace. If no fault is found, proceed to Step 4
4	Wiring fault	Check the harness continuity, and machine and earth contacts. Repair/replace as necessary. If no fault is found, proceed to Step 5.
5	ECU fault	Disconnect the harness from the ECU and inspect. Check seals are in place, check for signs of corrosion and pin damage. If harness is damaged repair/replace as necessary. If ECU pins are damaged, replace ECU and Reflash, see section on ECU flashing. If no fault is found, raise a Tech web Help desk Call.

**Live Link**

8 Live Link

8.1 Introduction

JCB LiveLink : Introduction

	<p><b>JCB Live Link: Introduction</b></p>	
<p><b>Overview :-</b></p> <p>JCB LiveLink uses the latest global tracking system and satellite navigation technology. A transmitter is installed on the machine and sends data via satellite and cellular networks to a database that you can access through our secure website from anywhere in the world at anytime, day or night. The unit is hard wired into your machine's electrical equipment allowing critical machine performance data to be collected remotely.</p>		
<p><b>LiveLink ECU :-</b> The LiveLink ECU is the electronic control unit that processes the data from the machine and transmits this to the web server. The GPS and GSM Cellular antennae are internal to the unit.</p>		
<div style="text-align: center;">  </div>		
<p><b>Further Information :- Setup Tool</b></p> <p><b>Diagnostic Tool General Information</b></p> <p><b>Getting Started with JCB ServiceMaster</b></p>		

8.2 Setup Tool

Live Link Set Up Tool



## JCB Livelink : Getting Started with JCB Service Master

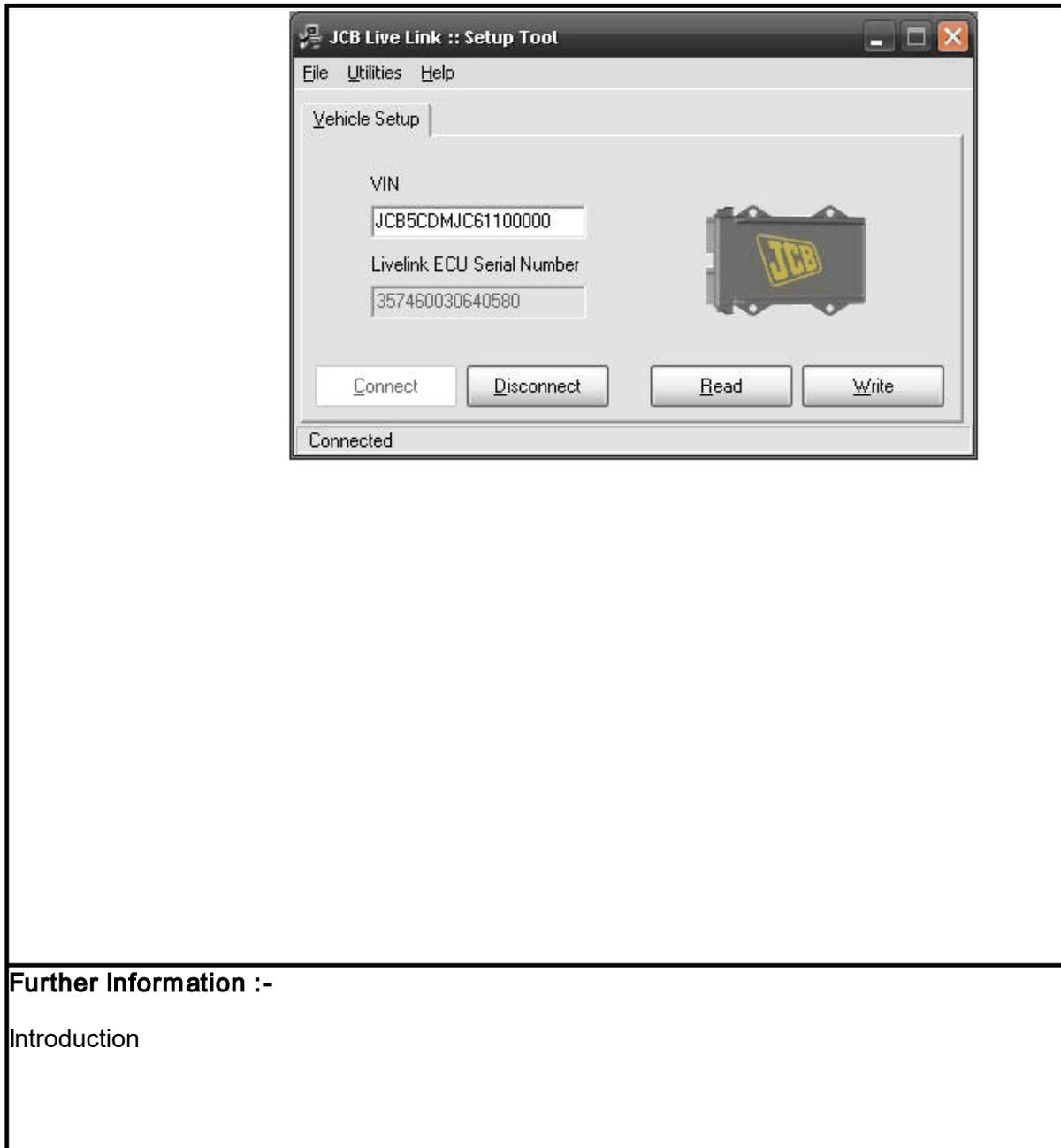


### Overview :-

The Setup Tool is used to configure the JCB LiveLink ECU.  
A Vehicle Identification Number (17 Digit VIN) is the only parameter required for setup.

### To use the Setup Tool :-

1. Connect a 'USB DLA' between the computer's USB port and the Diagnostic Socket.
2. Turn the vehicle Ignition 'On'.
3. Run the 'Setup Tool' program from ServiceMaster.
4. Click the 'Connect' button at the bottom of the Setup Screen.
5. 'Connecting to Bus' should be displayed in the lower left hand corner of the screen as the tool communicates with the ECU.
6. Once connected, the picture of the LiveLink ECU will have the 'LiveLink Disconnected' stamp removed and become clear.
7. If no communication occurs:
  - Check you have clicked the 'Connect' button.
  - Check the Ignition has been turned 'On' and there is not a vehicle power fault.
  - Check if ECU's are functioning using the CanBus statistics page.
  - Refer to the notes on using the DLA.
  - Refer to testing CAN activity with ServiceMaster.
8. Click the 'Read' button, the VIN currently associated with the ECU is displayed.
9. Check this is correct for the vehicle that LiveLink is fitted to.
10. To enter a new VIN, type it in the VIN field and press the 'write' button. If the VIN is not correct a pop-up box will be displayed and writing it will not be permitted.  
After 15s, the tool will automatically read back the new VIN and ECU Serial Number.
11. Contact the JCB LiveLink Team to pair the ECU serial number to the machine VIN for the customer tenancy.



## 8.3 Diagnostic Tool

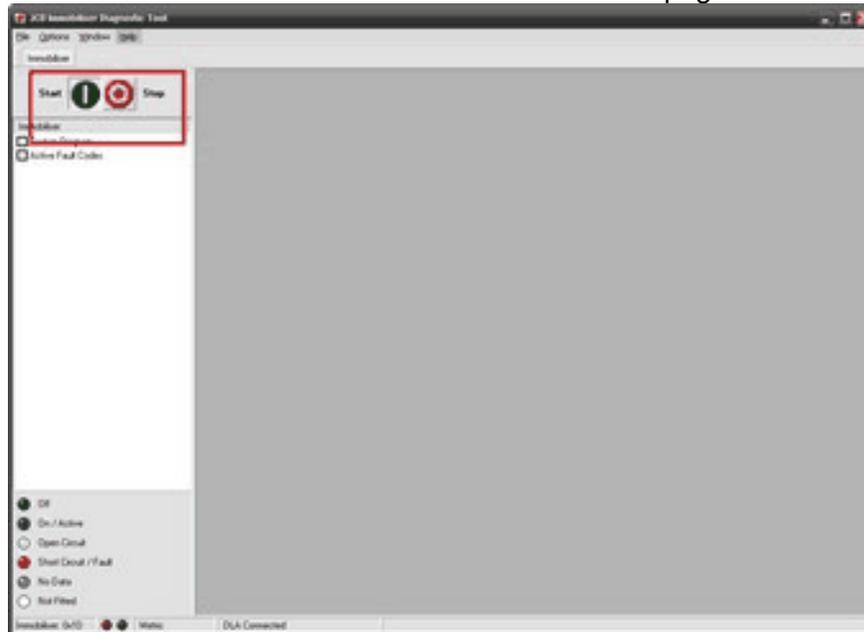
### JCB LiveLink : Diagnostic Tool

	<b>JCB Livelink : Diagnostic Tool</b>	
<p><b>Overview :-</b></p> <p>The Diagnostic Tool is used to check operation of the JCB LiveLink ECU and also to diagnose problems if required.</p> <p>There are 4 program menus in the Diagnostic Tool:</p> <ol style="list-style-type: none"><li>1. Critical Parameters.</li><li>2. System Diagram.</li><li>3. Active Fault Codes.</li><li>4. Advanced Parameters.</li></ol>		

**To use the Diagnostic Tool :-**

1. Connect a 'USB DLA' between the computer's USB port and the Diagnostic Socket.
2. Turn the vehicle Ignition 'On'.
3. Run the 'Diagnostic Tool' program from ServiceMaster.
4. Click the Green 'Start' button at the top of the Diagnostic Screen (highlighted below).
5. Use the links across the top of the screen to view information menus. Select the required menu from the left hand column.
6. If no communication occurs:
  - Check you have clicked the Green 'Start' button.
  - Check the Ignition is 'On' and there is not a vehicle power fault.
  - Check if ECU's are functioning using the CanBus statistics page.
  - Refer to the notes on using the DLA.

Note:- Not all vehicles / service tools have the CanBus statistics page.



**Further Information :-**

Introduction

Setup Tool

Diagnostic Tool Help

**8.4 General Information**

	<b>JCB Livelink : General Information</b>	
1.1	Getting Started with JCB ServiceMaster	
1.2	Diagnostic Connector	
1.3	ServiceMaster Driver Versions	
1.4	Testing CAN Activity with ServiceMaster	
1.5	Diagnostic Tool Help	
1.6	Using the DLA	
1.7	Understanding Digital Inputs in ServiceMaster	

**8.5 Getting Started with JCB ServiceMaster**

	<b>JCB Livelink : Getting Started with JCB Service Master</b>	
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**Overview :-**

The ServiceMaster Tool allows communication between the service laptop and the vehicle.

A 'DLA' connects the computer USB Port to the vehicle CanBus through the Diagnostic Connector.

The Vehicle ECU's control output signals according to a software decision based on sensor and switch inputs.

The states of ECU inputs, (switches and sensors) outputs (solenoids valves etc) and internal components are broadcast on the CanBus. These values can be monitored using the Diagnostic Tool.

If a switch is 'hardwired' directly to a component (eg the horn), rather than being wired to an ECU, then there is no means of monitoring its state on the CanBus using the Diagnostic Tool.

**Further Information :-**

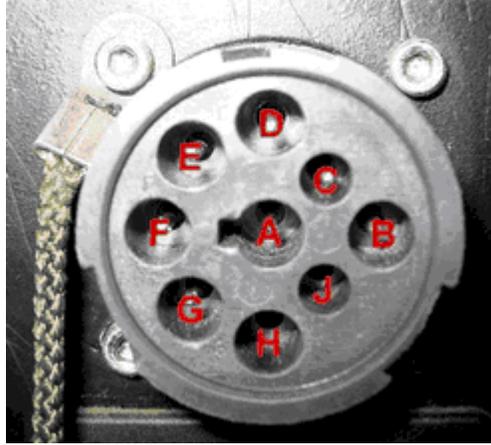
Testing CAN activity with ServiceMaster.

## 8.6 Diagnostic Connector

	<b>JCB Livelink : Diagnostic Connector</b>	
<b>Overview :-</b> <p>A Diagnostic connector allows communication between the vehicle CanBus systems through a DLA (Data Link Adapter) to the Service Laptop.</p> <p>Note: For communication between a Service Laptop and the vehicle a DLA must be used and the Service Laptop correctly setup.</p> <p>Refer to Getting started with JCB ServiceMaster for details.</p>		

**Pin Out :-**

9 Pin Deutsch Connector:



Diagnostic Connector	
Diagnostic Connector Pin	Function
A	Earth
B	12 volt (Fuse FB-5)
C	CAN1 H
D	CAN1 L
E	CAN1 Screen
F	J1708 +
G	J1708 -
H	CAN2 H
J	CAN2 L

**How to Test :-**

Measure CAN1 resistance between pin 'C' and 'D'. A resistance of 60 ohms should be measured.

BEFORE testing the CanBus system with a multimeter, you must first disconnect the Service Laptop and DLA from the Diagnostic Socket and Switch the vehicle Ignition 'OFF'.

ECU messages will affect the multimeter and cause inaccurate readings.

**Further Information :-**

Testing CAN activity with ServiceMaster.

## 8.7 Service Master Driver Version



### JCB Livelink : Service Master Driver Version



**Overview :-**

The Setup and LiveLink Diagnostic tools are intended for usage with the following driver versions.

- USB / RS232 Data Link Adapter Installation CD Version 1.5
- USB Data Link Adapter Firmware (App. Version) 2.02

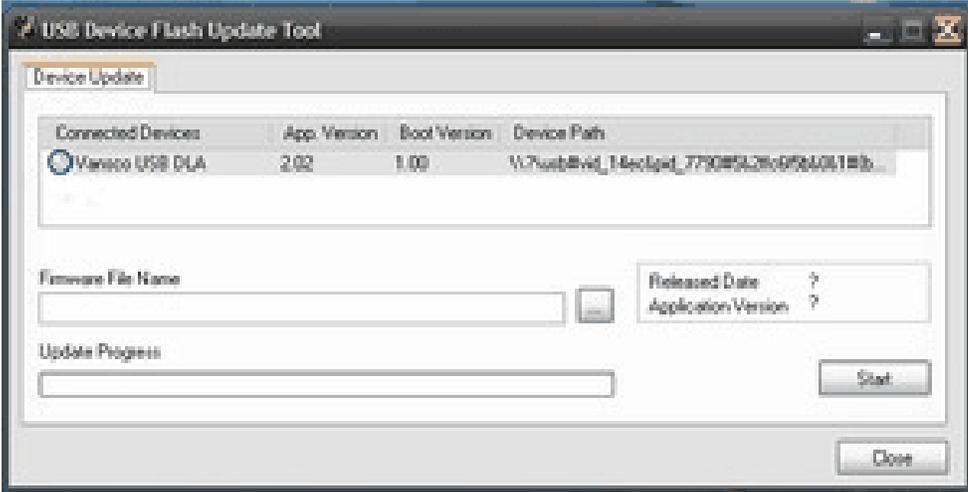
If you are experiencing communication issues, check the driver versions on the computer which the DLA is connected to.

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**Checking DLA Firmware :-**

The Data Link Adapter firmware versions can be found by opening the "Vansco USB DLA Software - USB Update Tool"

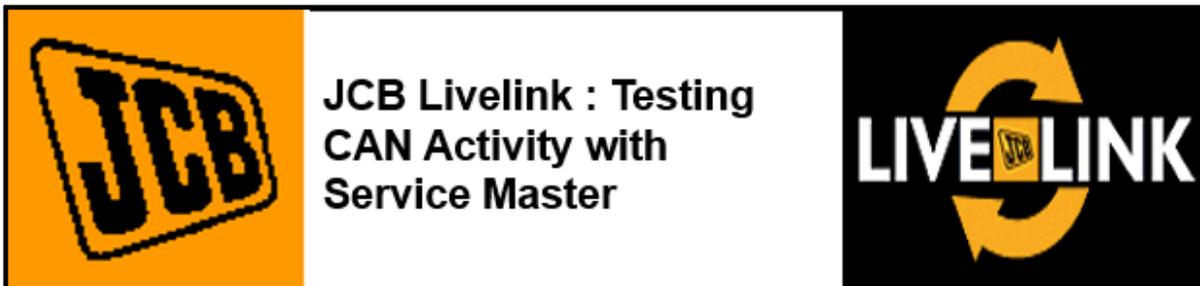
When the DLA is connected to the computer this tool will allow you to view which firmware versions are installed.



**Further Information :-**

Testing CAN activity with ServiceMaster.

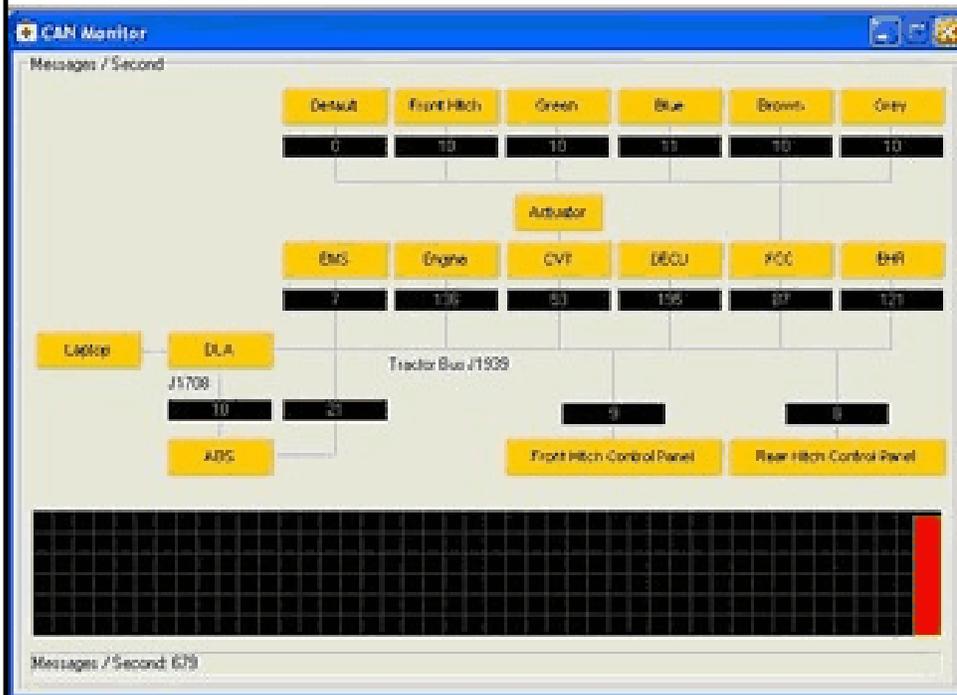
**8.8 Testing CAN Activity with ServiceMaster**



**Overview :-**

ECU activity using JCB ServiceMaster.

Monitor ECU CanBus activity using the JCB ServiceMaster Diagnostics 'CanBus Statistics' screen.



With the ignition 'On' there should never be an ECU message rate of '0'.

If an ECU is not communicating, check the DLA J1939 or J1708 communication lights are on or flashing. If necessary, restart the service laptop.

The most likely cause of a lack of activity is an ECU supply fuse blown, or the engine is not running.

Check the supply fuses.

Check the ECU supply and grounds are correct at the ECU connector.

If the message rate is still '0' perform the test outlined below.

#### **How to test :-**

Measure CAN1 resistance between pin 'C' and 'D' of the Diagnostic Connector.

A resistance of 60 ohms should be measured.

BEFORE testing the CanBus system with a multimeter, you must first disconnect the Service Laptop and DLA from the Diagnostic Socket and Switch the vehicle Ignition 'OFF'.

ECU messages will affect the multimeter and cause inaccurate readings.

If the system is correct, then the resistance between 'CAN H' and 'CAN L' at an ECU connector should be 60 ohms regardless if ECU's are connected or not.

If the resistance is not 60 ohms, likely causes are:

-The multimeter is affected by ECU messages because the vehicle Ignition 'On' or the Service Laptop and DLA is connected.

-Terminating Resistor(s) not fitted correctly.

-CanBus wiring shorted to ground or a voltage.

-CanBus wires not connected properly to an ECU or wiring fault at an ECU connector.

## **8.9 Diagnostic Tool Help**

	<b>JCB Livelink : Diagnostic Tool Help</b>	
<b>Overview :-</b>  If sensors and switches are wired to one of the vehicle ECU's then their values or states are generally sent over the CanBus.  The Diagnostic Tool monitors information available on the CanBus to display the value detected by the ECU. The DLA must be used, connecting to the CanBus through the vehicle Diagnostic Socket		
<b>Understanding ECU Digital Inputs in ServiceMaster.</b>  If a switch is 'hardwired' directly to a component (eg the horn), rather than being wired to an ECU, then there is no means of monitoring its state on the CanBus using the Diagnostic Tool.  Manual Mode: ABS Modulators, Suspension Valves and Pilot Valve can be manually energized using the Diagnostic Tool.  The Diagnostic Tool can also be used to monitor activity of ECU's from their message rates.  If an ECU has a message rate of '-' then it is likely there is an ECU Power fault or a CanBus fault.  Note: With multiple Diagnostic Screens open, the computer can be reading so much vehicle information that the Diagnostic Tool response time is reduced.		
<b>Further Information :-</b>		

## 8.10 Using the DLA



**Overview :-**

The DLA (Data link Adapter) allows CanBus communication between a service laptop and the vehicle ECU's through the Diagnostic Socket.

The DLA must be installed on the Laptop before it can be used.

Aftermarket installations of JCB LiveLink may only be used with a USB DLA, a parallel / serial DLA will not work.

Note: Some computers install the DLA on only one USB port.

In this case, if the DLA is connected to a different USB port then no communication can be made with the vehicle.



**Important Note :-**

It is recommended that a 'USB DLA' which connects to the computer's USB port must be used rather than the traditional

'Serial / Parallel port' DLA. (part number 892/01174).

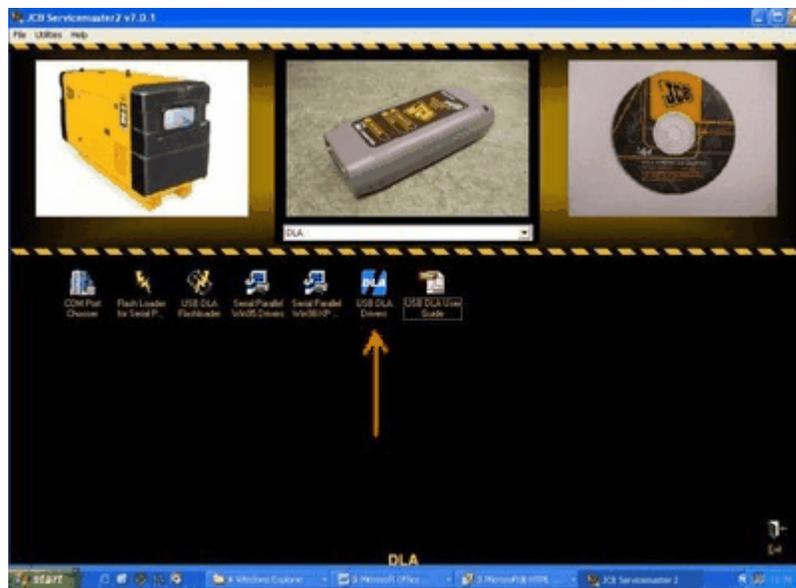
It may also be necessary to configure the Service Computer to be used with a USB DLA.

The 'DLA Chooser' option (below) may be found by right clicking on the JCB ServiceMaster Start-up screen.

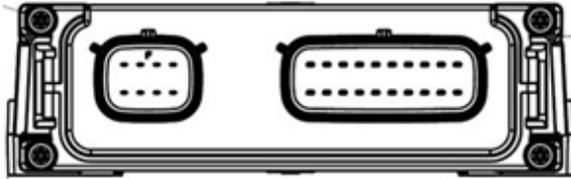
**Installing DLA Drivers :-**

Install the drivers using the DLA menu in JCB ServiceMaster (see below).

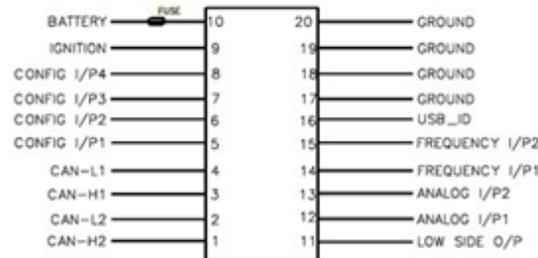
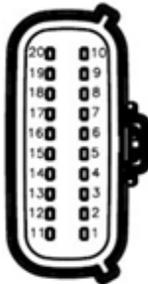
On some computers, the USB DLA is only assigned to certain USB ports. If it plugged in an incorrect port Windows shows a 'New Hardware' pop-up message.

**Further Information :-****8.11 LL4 Connector**

# LiveLink 4



## 20 - PIN connector



## 8 - PIN connector



PIN NO	SIGNAL NAME	SIGNAL TYPE
1	USB POWER	USB POWER
2	USB DP	USB POSITIVE
3	USB DM	USB NEGATIVE
4	USB GND	USB GND
5	SPEAKER +	SPEAKER POSITIVE
6	SPEAKER -	SPEAKER NEGATIVE
7	MIC P	MIC POSITIVE
8	MIC N	MIC NEGATIVE

# Software Flashing

## 9 Software Flashing

This section is to describe the method for updating software on the machine.

**Always ensure the platform and base ecu's are updated together to ensure the versions match.**

**The display software should always be aligned to the correct bosch ecu software, please check before updating any files on a machine**

### 9.1 Display Flashing

#### Overview

The display can be flashed and updated through USB.

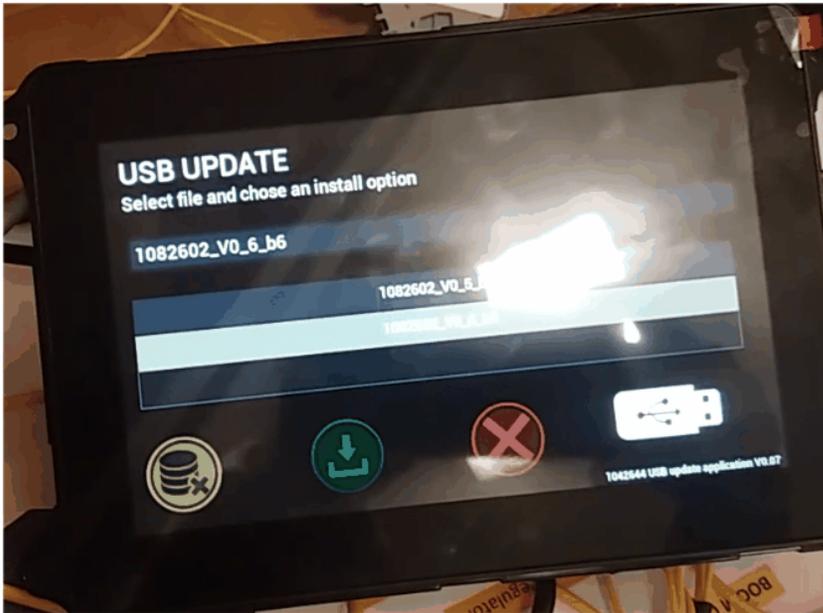
Please ensure the display software being flashed is at a suitable revision to match the Bosch software.

There will need an additional lead 721/G1618

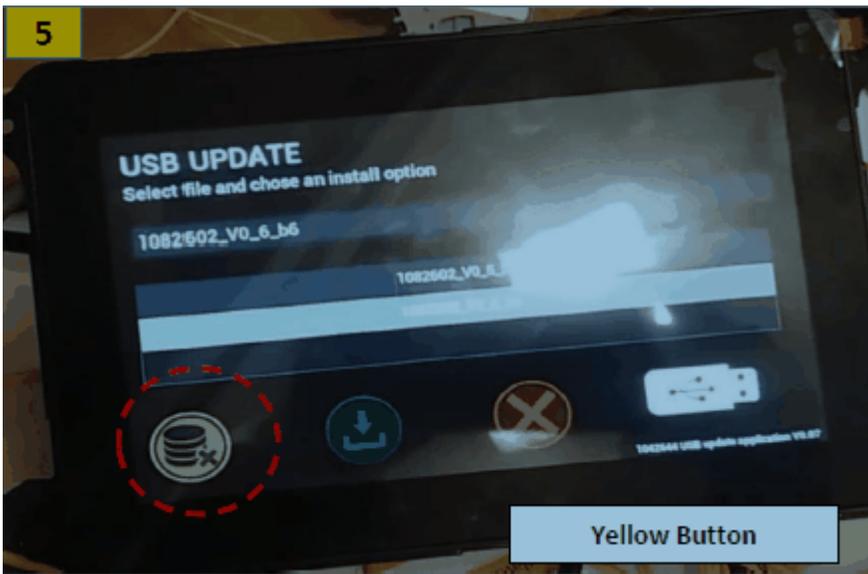


#### To flash the display through USB

1. Connect the additional lead 721/G1618 to the connector to the 4 way connector on the rear of the display panel.
2. Save software file onto a memory stick (FAT32 formatted)
3. Insert USB into the USB connection on additional lead
4. View display screen - at this point the screen is touch screen.

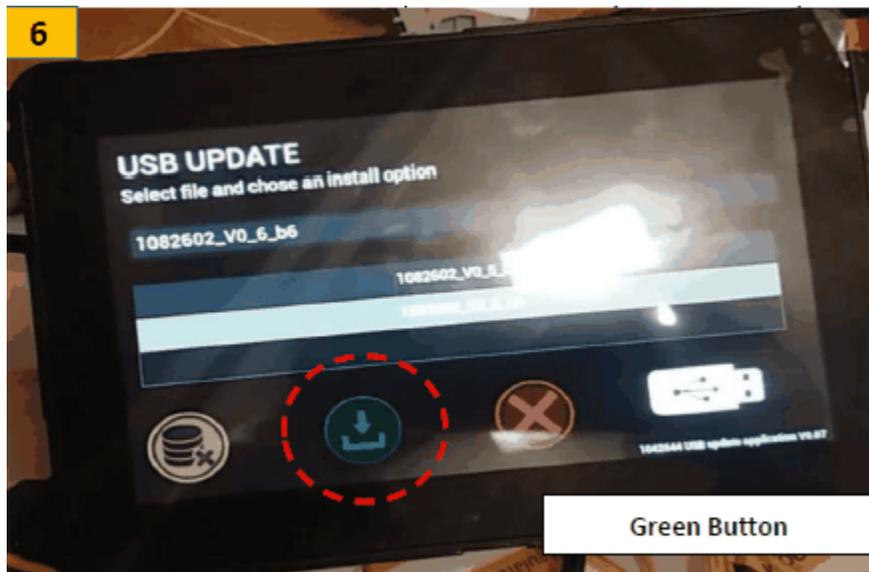


5. Use the yellow button first to remove any old parameters and software that is saved to the display

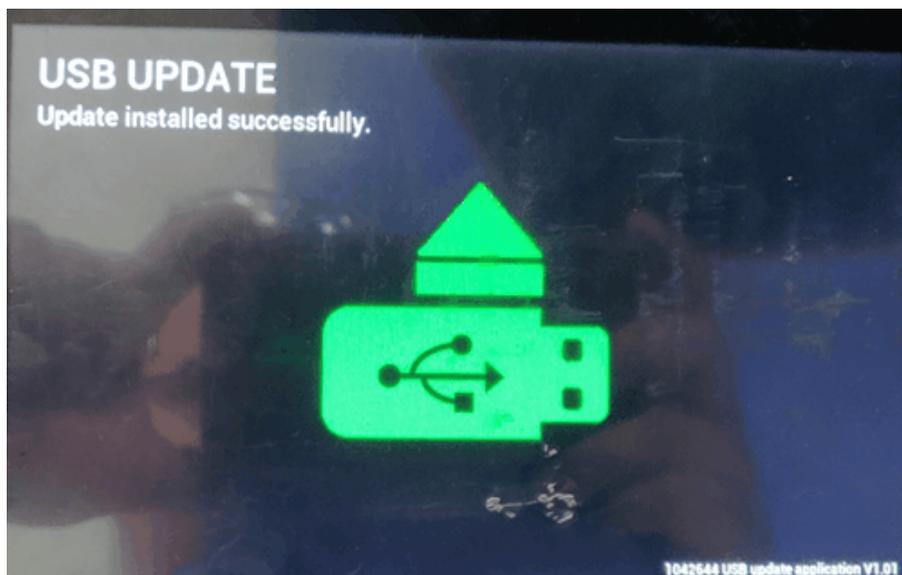


6. Select the software required to be flashed so it appears in the top file box (multiple software can be on the memory stick)

7. Press the green download button to update new software



8. wait for the software to complete its update and then remove memory stick and the display will reset



9. The machine VIN number will need to be updated through service-master tool.

**Note-**

- Make Sure All Electrical harness connections completed as per SOP.
- Make sure all Electrical Interconnections are tight and are properly locked.
- Visually inspect the High Voltage cables properly fitted & terminal tightened on device as specified torque.

- Check the Individual 6V battery & record the voltage.
- Make sure system voltage is more than 48V after all eight 6V batteries connections.
- Check continuity between the positive & negative busbar.
- There shall be no continuity.
- Check 12V battery, shall measure more than 12V.
- Check all grounds are paint free & terminal properly placed over it
- Make Ignition On & do the display software flashing for both Base & Platform display

## 9.2 Bosch ECU Flashing

### Flashing on the Base Bosch ECU's

Use the JCB Flashloader.

For information on the Flashloader tool, see JCB Servicemaster tools section

This instruction begins with the tool connected to the machine

### Available ECU's on the machine

Available ECU's are displayed (Base ECU at boot and run mode shown).

While flashing the new ECU,

While flashing the Pre-programmed ECU,

The Flashloader tool relies on the 'source' address (or hardware identity) to display ECU's as thumbnail images. An ECU not recognized by the Flashloader Tool is displayed as '?' - Unknown.

In this case take care to check the ECU' source address before attempting to program it with new software.

### Flashing the Base ECU Software

- Connect the Service Master using DLA-2 Connector (Ensure latest revision Service Master must be uploaded )

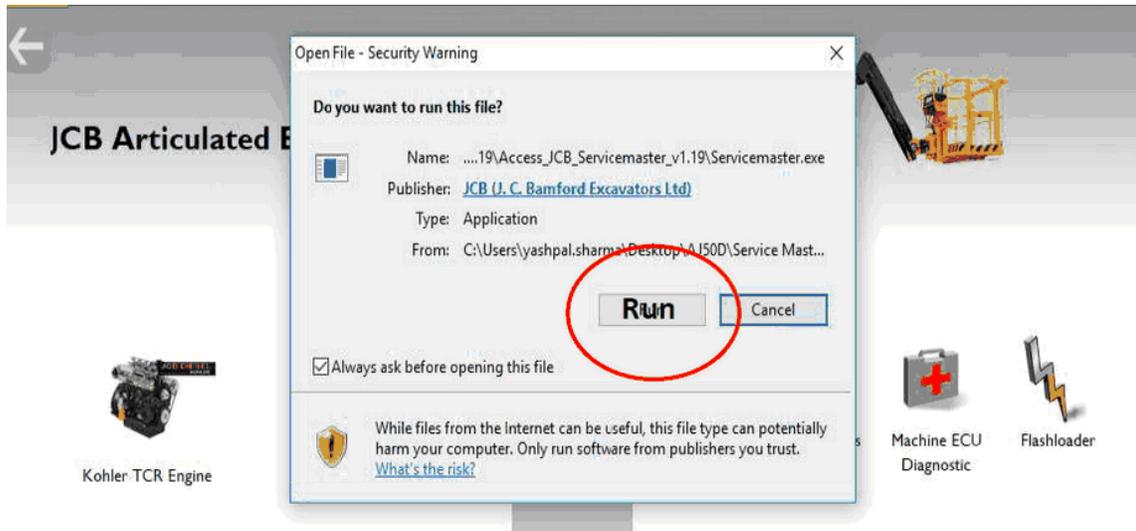
- Go on JCB Articulated Boom section
- Click on service master JCB Access Service master
- Click on JCB Access icon.
- Click on Access (Articulated Booms) icon.



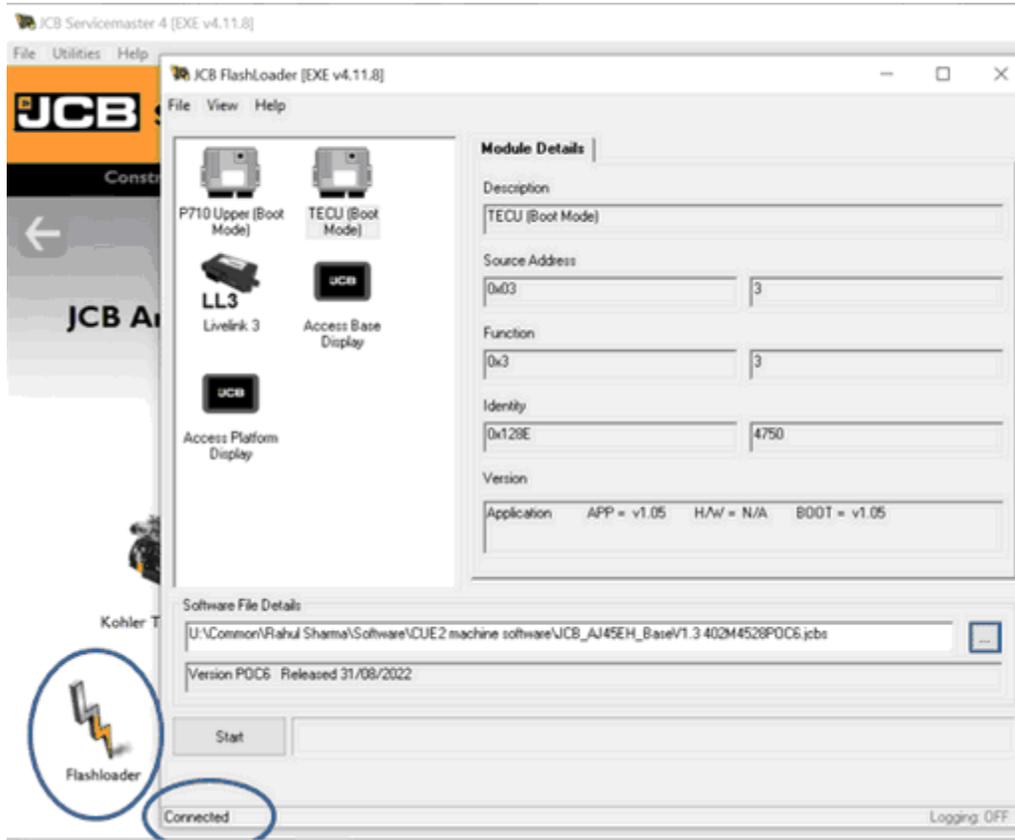


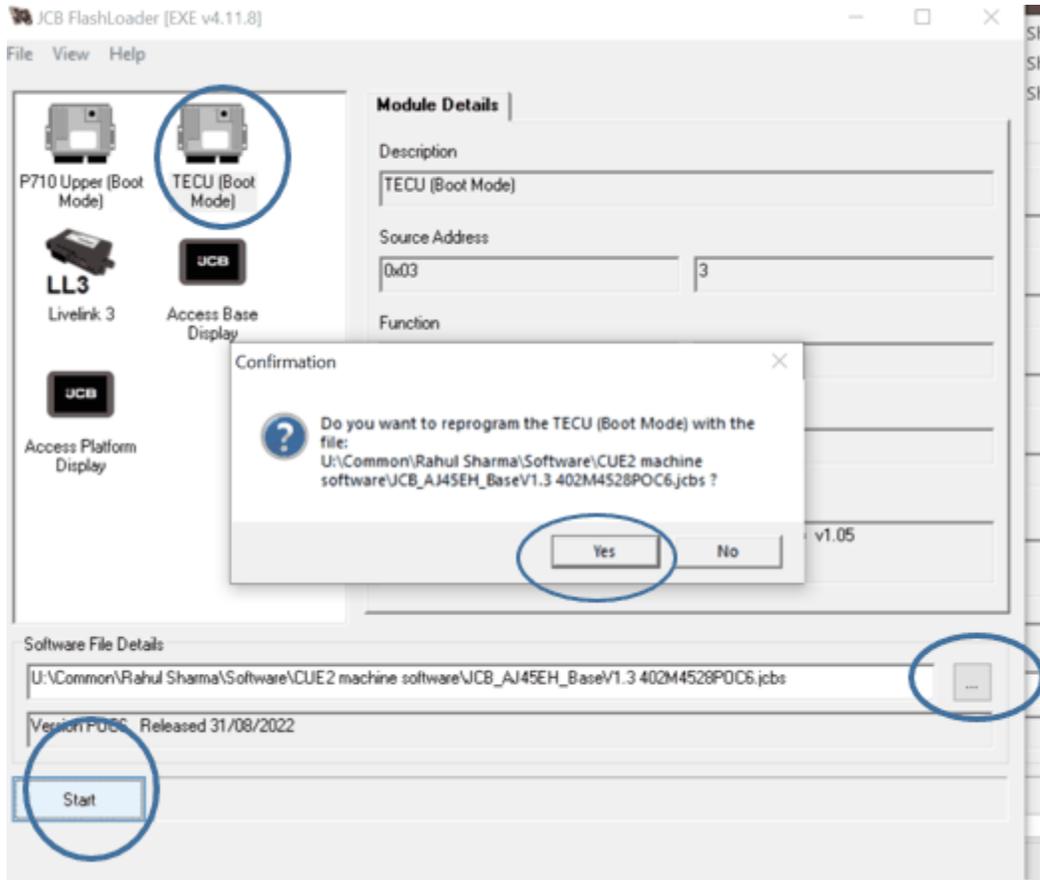
- Click on Flashloader icon. Wait until it shows connected.
- The system will ask. "DO YOU WANT TO RUN THIS FILE:- Run OR Cancel"
- Click on "RUN" button.





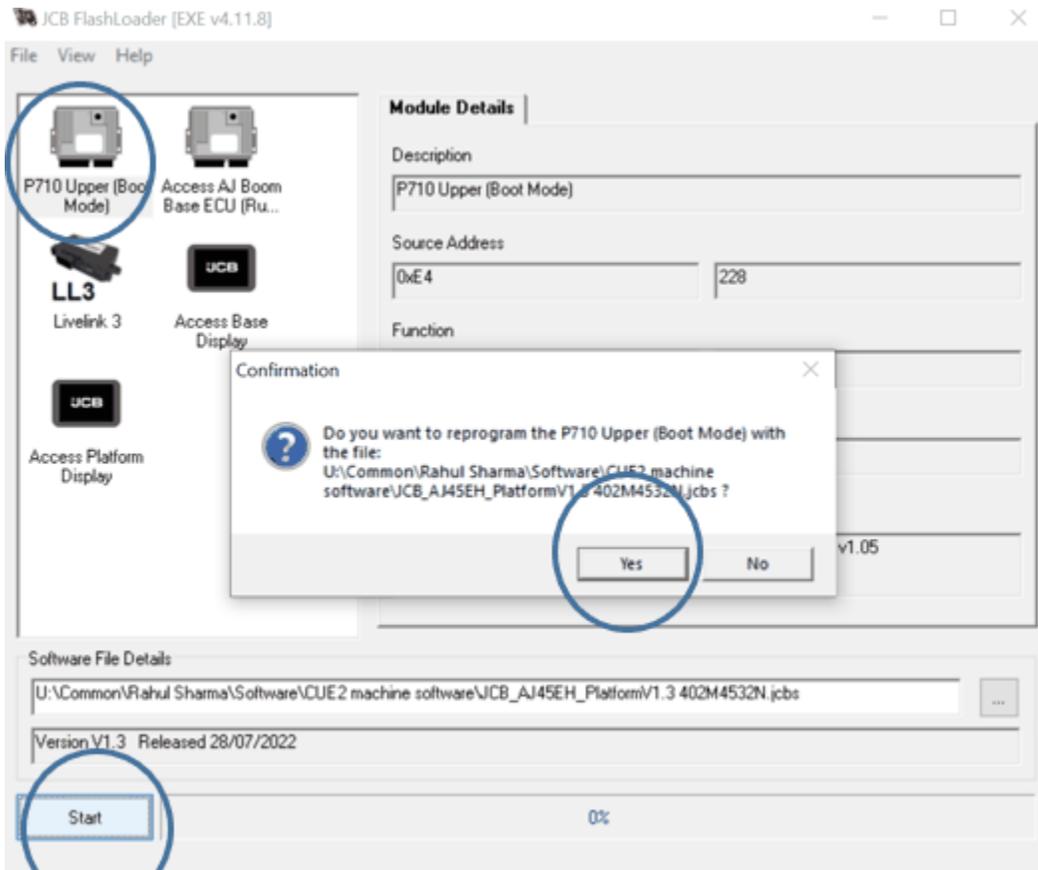
- Wait for 3 to 5 seconds & Click on TECU (boot mode) icon.
- After fulfilling all requirements wait for 3 to 5 seconds and then click on Start button.
- System connects with software, let this process happen until it is 100%.
- System erases the old program, wait for it to be 100%
- Select software from PC
- And, the system creates a new program, let this process happen until it is 100%.
- After select software from PC click start button & Flashing complete





### Flashing on the Platform Bosch ECU

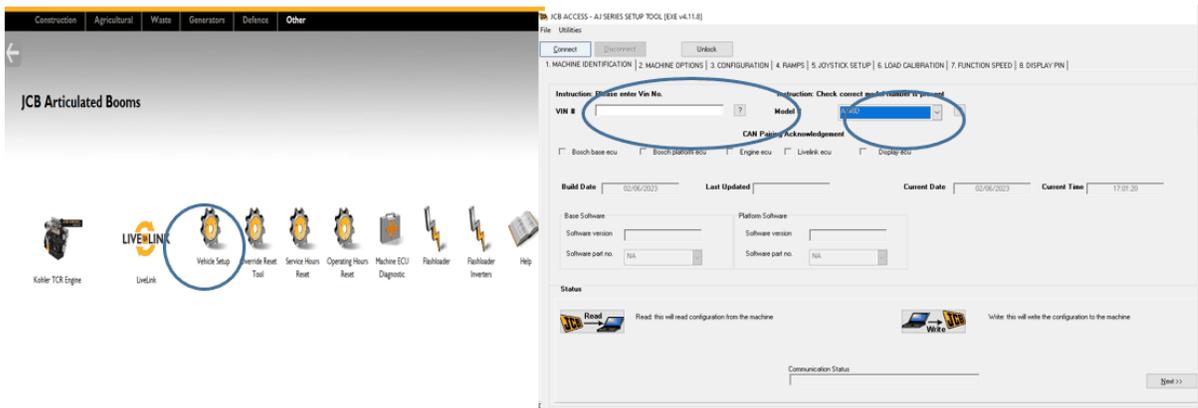
- Click on P710 Upper (Boot Mode),
- Import the Platform ECU software file & click on Start.
- It will ask “Do you want to reprogram”, click Yes over it & wait until it says successfully flashed



Once it flashed, will show as below, Flash programming has completed successfully.

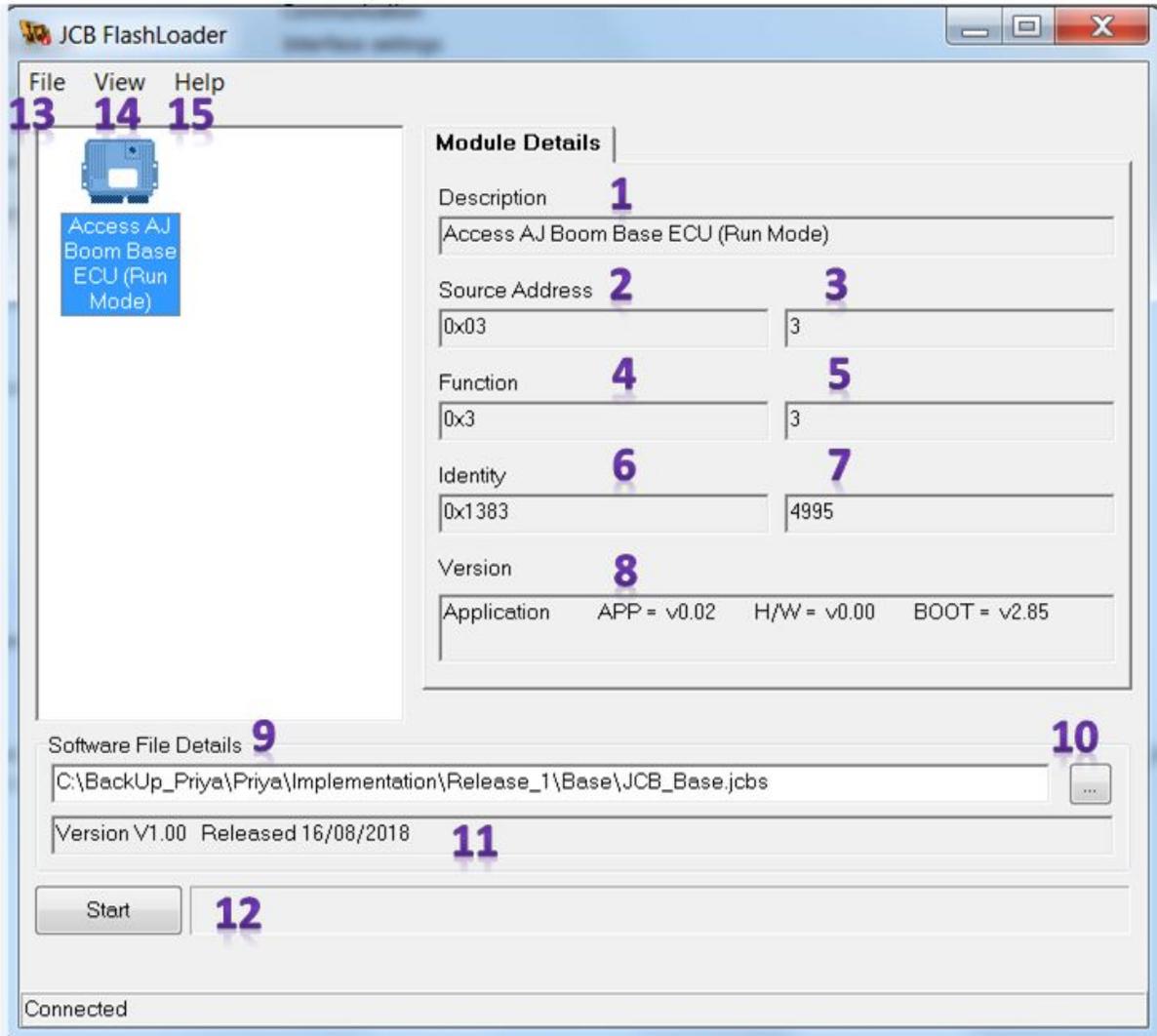
## Vehicle Set Up

- Click On to Vehicle set up & Write the VIN number
- Select the variant as A45EH or A45E



## Flash Loader Tool bar

If you select one of ECU, the Flash loader gives the attribute values for specific selected ECU (after click on 'Flash Loader' tool in Service master)



1	Description of the selected ECU
2	The J1939 source address for the ECU in Hexadecimal
3	The J1939 source address for the ECU in Decimal
4	The function of the ECU in Hexadecimal
5	The function of the ECU in Decimal
6	The identity of the ECU in Hexadecimal
7	The identity of the ECU in Decimal
8	The current version of software currently installed in the selected ECU.
9	The file location on the service laptop of the software that will be programmed if 'START' is selected – see note below

10	Click on (“ ... ”) to open a window to chose a different file location of the software files on the service laptop
11	The version of software that will be programmed from the service laptop if ‘START’ is selected
12	Click on this button to start programming the selected ECU with the listed software file
13	‘File’ – change the language of the Flashloader wording from the Preferences option
14	‘View’ > ‘Refresh’ to update the Flashloader display
15	‘Help’ > ‘User Guide’ displays this guide. ‘Help’ > ‘About...’ displays the Flashloader Tool Version number.

### Choosing the Required Software File

ECU Software files are stored within a Team center.

Both Turntable and platform software should be updated in pairs.

### Reprogramming ECU Software - Progress Bar

Once the software is being loaded a progress bar is shown.

Some ECU’s take several minutes to receive the software file.

If Reprogramming fails, check the correct file is selected. Switch the vehicle Ignition ‘Off’ and ‘On’ and re-attempt the process.

If necessary, restart the Service Laptop and close other windows.

If necessary, disconnect other ECU’s on the CAN-Bus in case they are affecting the data transmission.

### Reprogramming Complete

A message box indicates when the upload is complete. The file has been successfully received by the ECU.

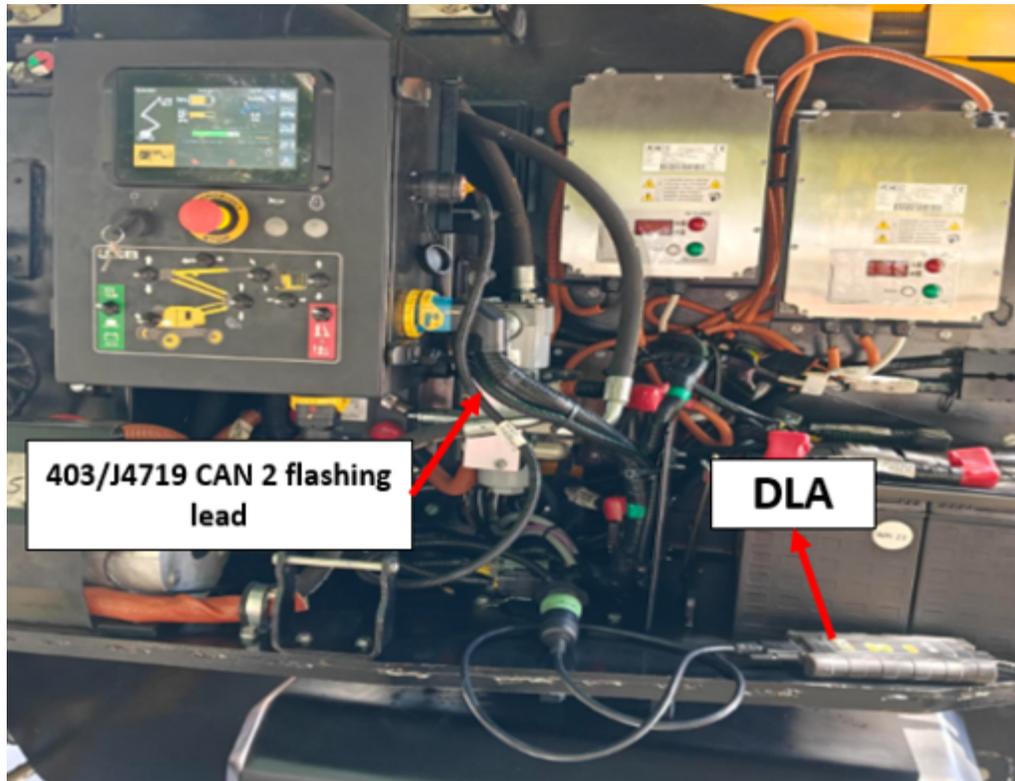
Switch the Ignition ‘Off’ and ‘On’.

It is not normally necessary to recalibrate sensors as this is not overwritten by these software files.

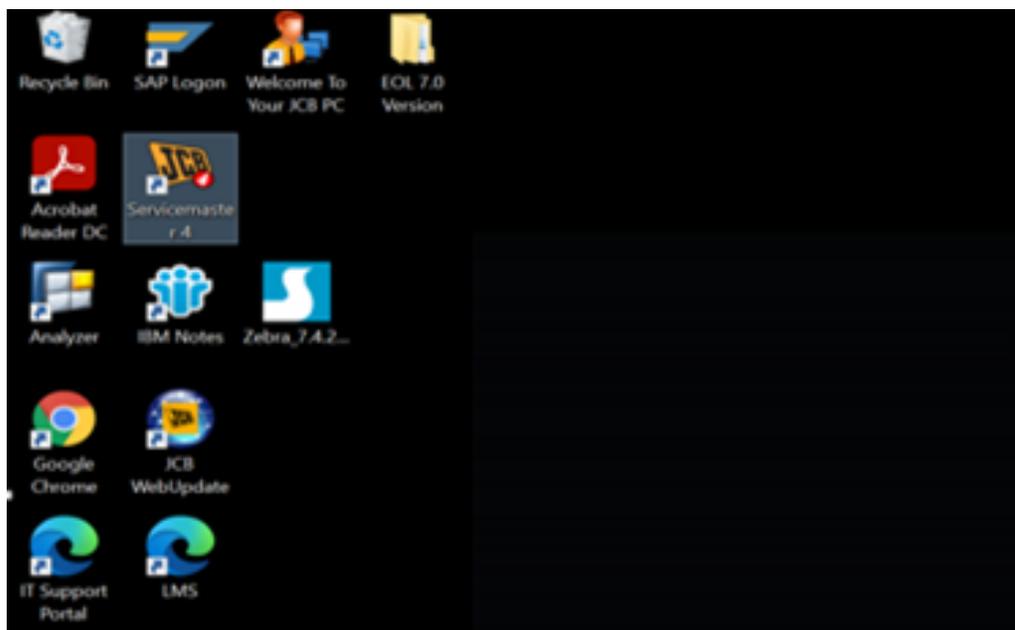
## 9.3 Invertor ECU Flashing

### Flashing on the ZAPI ECU s

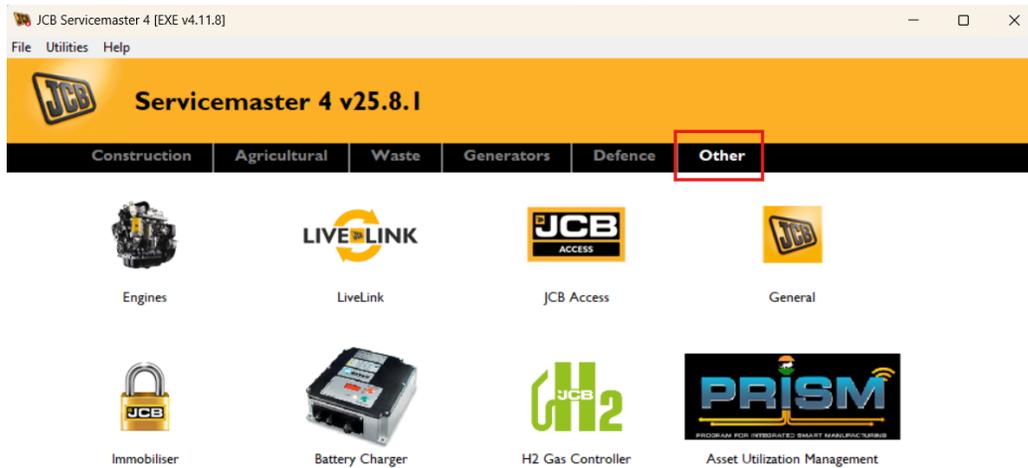
Connect 403/J4719 CAN 2 flashing lead to Base Control through DLA cable & setup (tough book) to the machine



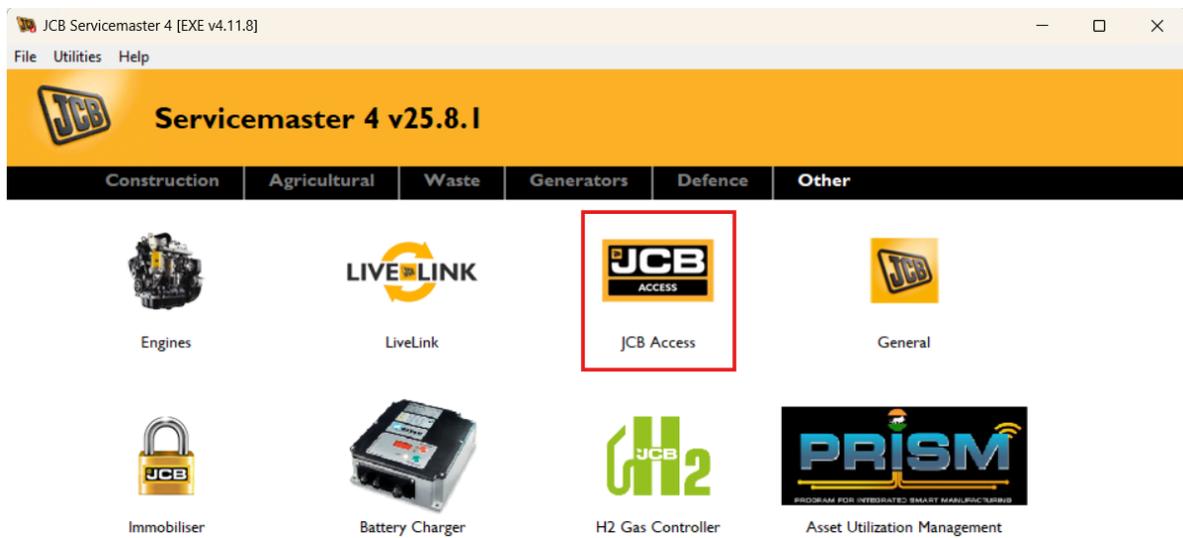
Go to Service Master



Click on others tab



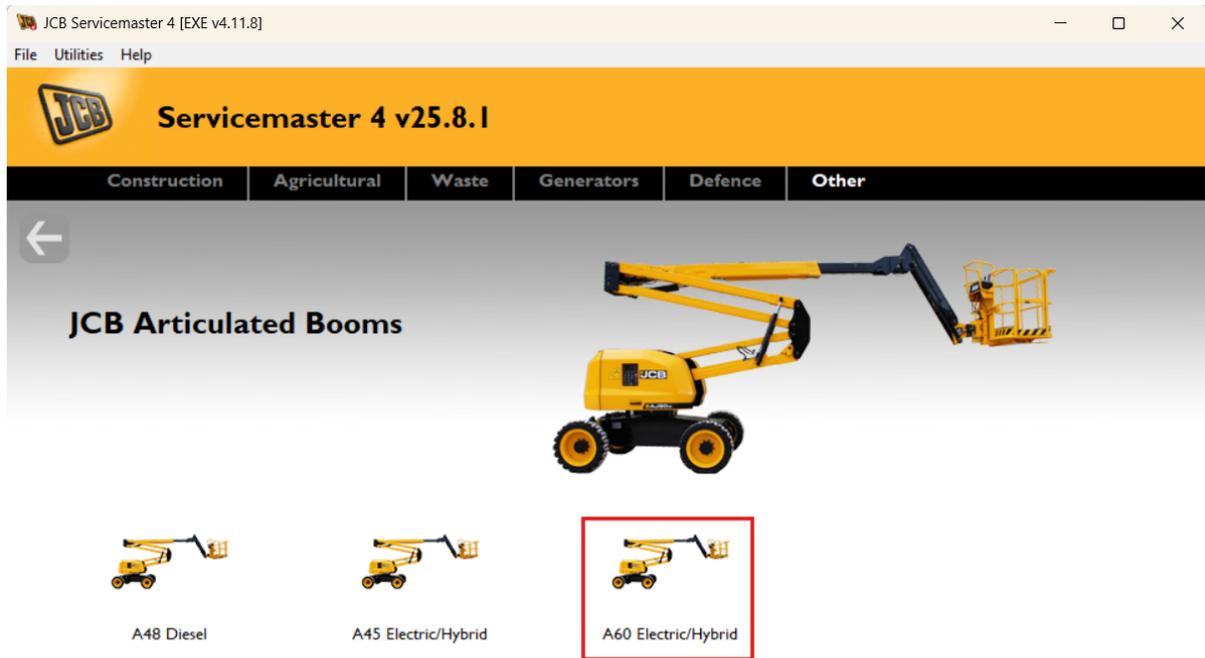
Go to Access Icon



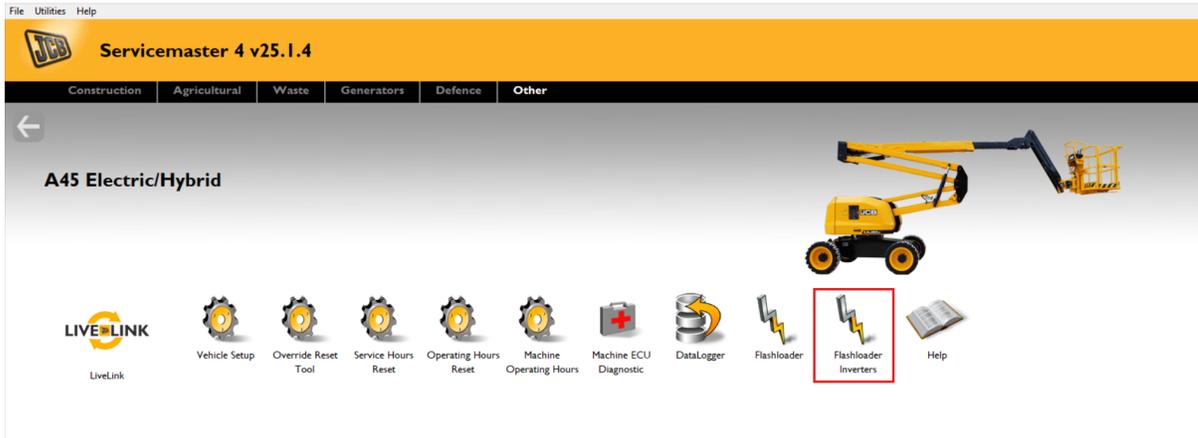
Click on Access( Articulated Booms) icon



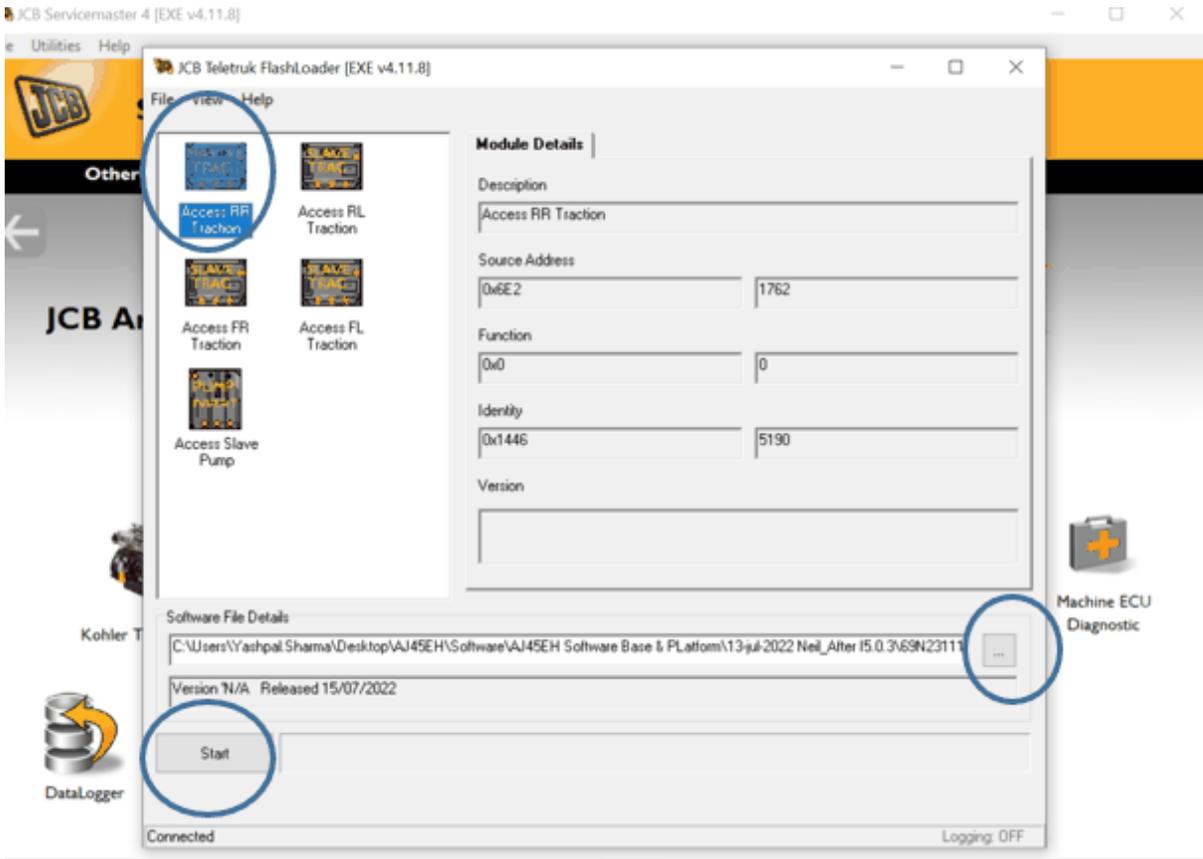
Click on A60 Electric/Hybrid



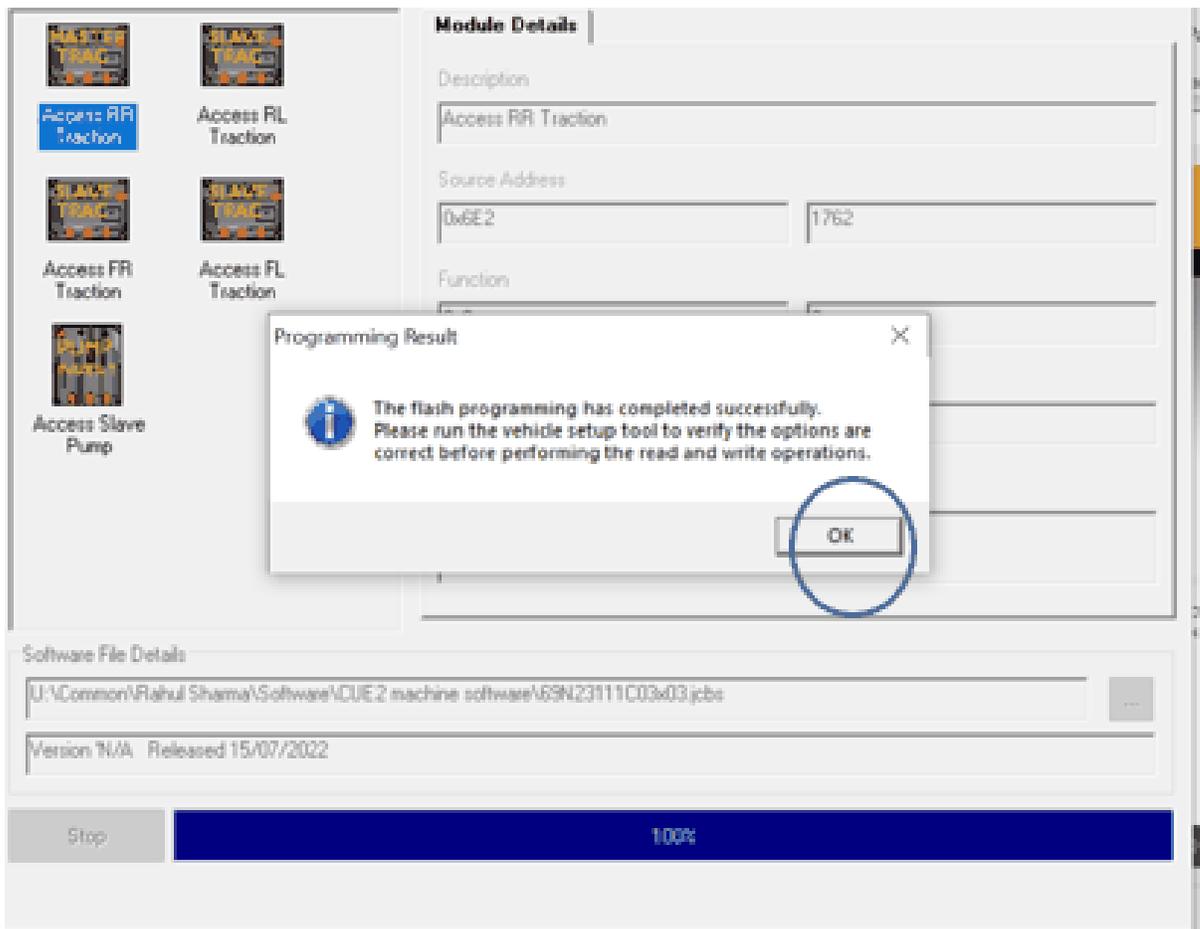
Click On 'Flashloader Inverters' & wait until service master shows connected



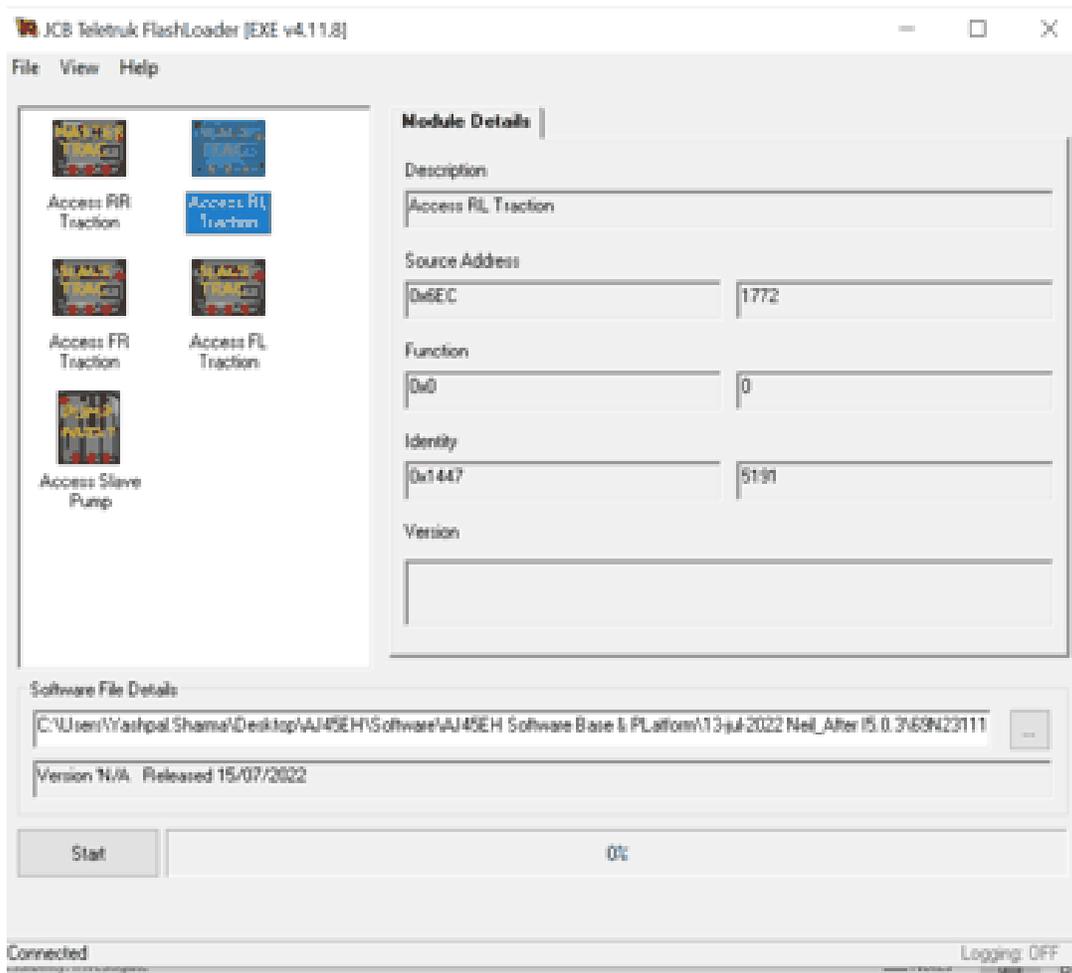
Click On 'Access RR Traction' & import the traction software file & start. Once it completes, it will show as successfully flashed. It is the same file to be flashed under Access RL traction, Access FR traction & Access FL traction



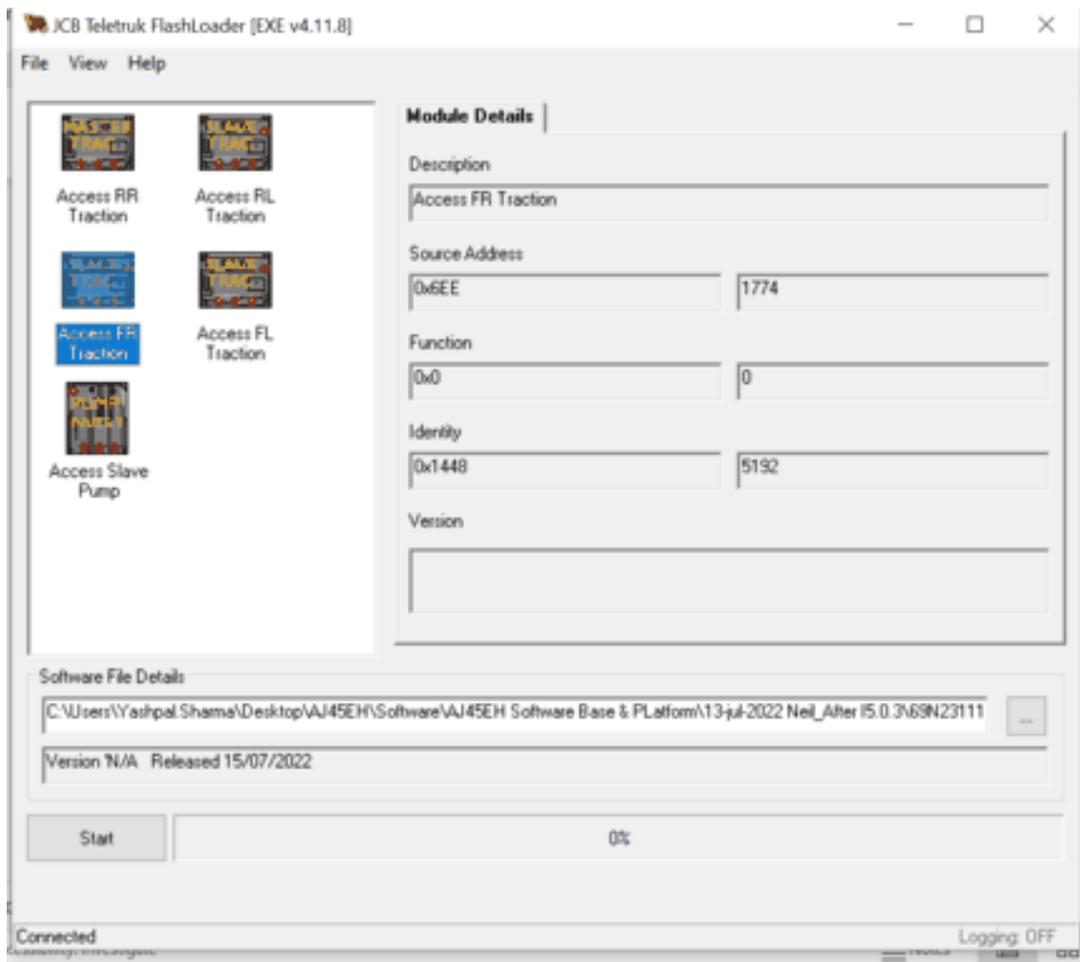
Once it is flashed, it will show as below. "Flash programming has completed successfully" Click OK then repeat the same for Access RL Traction, Access FR Traction & Access FL traction.



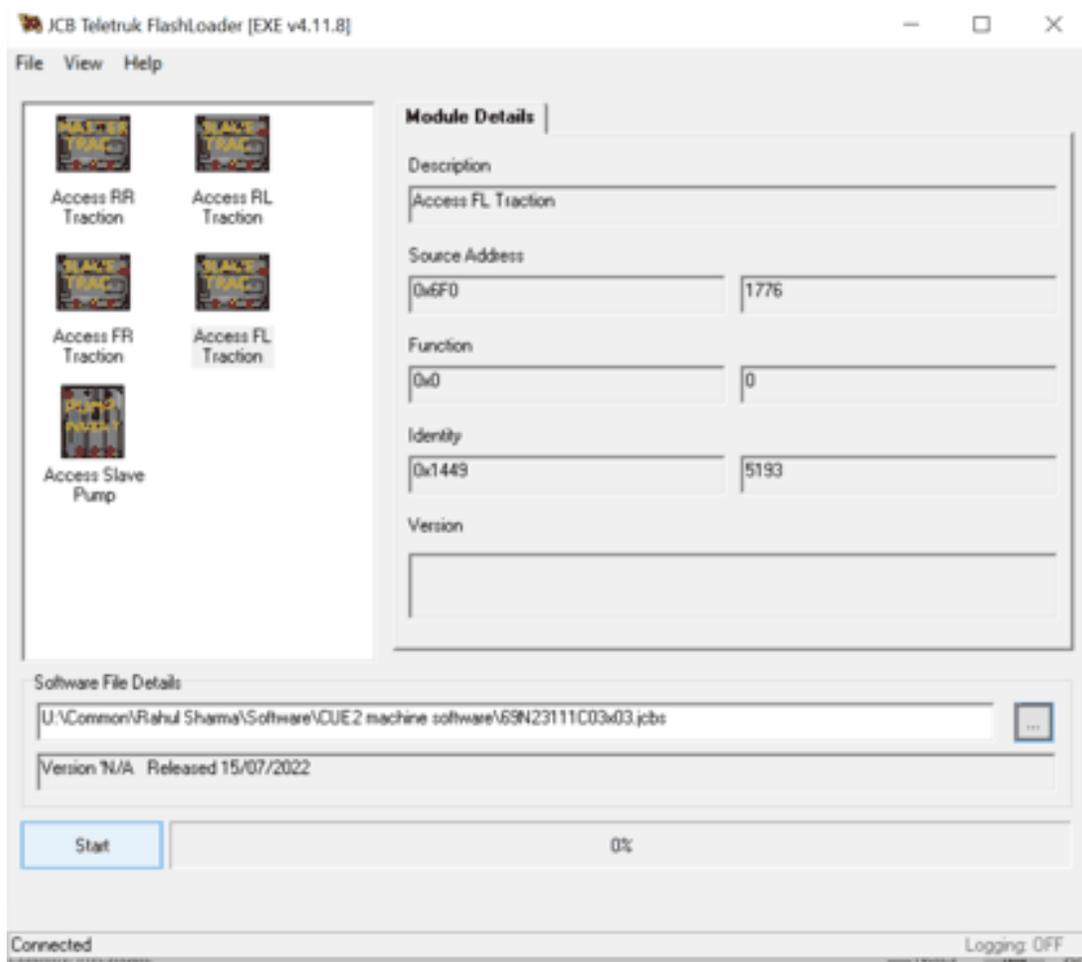
Follow the same process for Access RL Traction



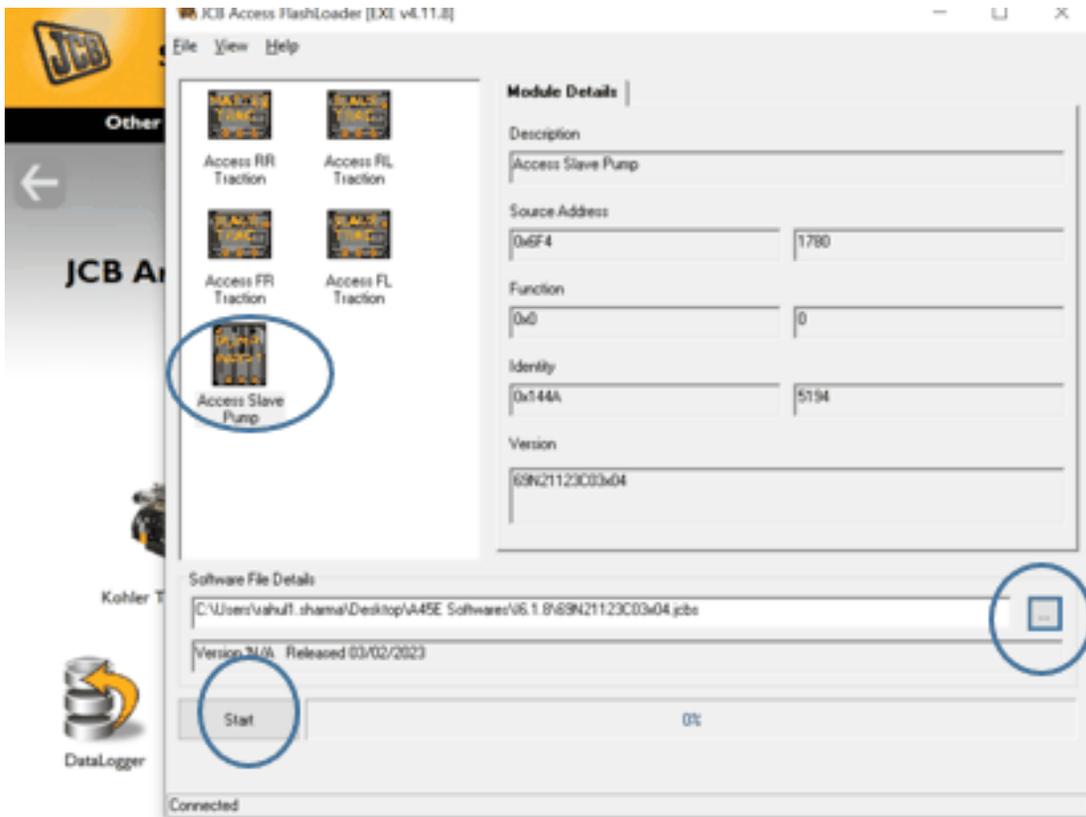
Follow the same process for Access FR Traction



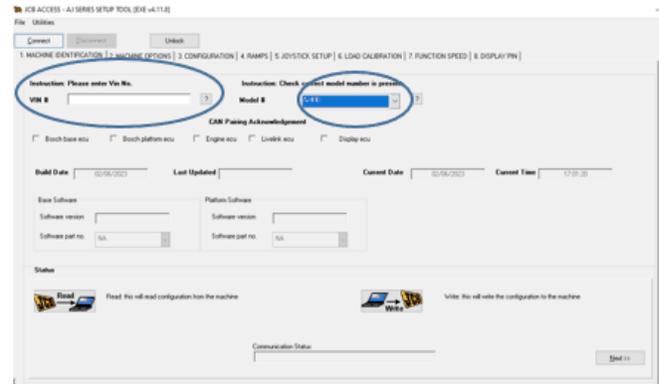
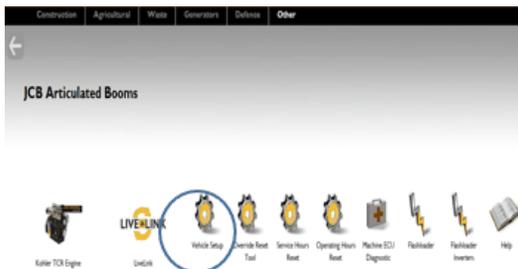
Follow the same process for Access FL Traction



Click On 'Access Slave Pump' & import the pump software file & start. Once it completes, it will show as successfully flashed.



Once Inverter flashing completed. Again click On to Vehicle set up & Write the VIN number punched at Data plate fitted at Chassis & select the variant as A45EH or as per built ticket.



## 9.4 Steering Sensor Calibration

**Steer Angle Calibration:**

Step 1: Park the machine on firm, level ground. Make Sure machine's all four wheels are in straight line.

Step 2: Connect the service master. Clicking on 'Servicemaster' tool, the below pop-up window will appear. Click on 'Other'> JCB Access>JCB Articulated Boom>Vehicle setup

Step 3: Clicking on 'Vehicle Setup', the below pop-up window will appear. Click on 'MACHINE IDENTIFICATION' and enter VIN and Model number.

Step 4: Entering VIN and Model number. Steering calibration 'STEER CAL' pop-up window will appear.

Step 5: Clicking on 'STEER CAL', the below pop-up window will appear. Check the values shown, it shall be approx. 1800 and click on 'Write'.

Step 6: Clicking on 'Write' the steering angle sensor is calibrated.

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template if you want it completely blank.

# Service Master Tools Help

## 10 Service Master Tools Help

[Install software - ServiceMaster](#)

[Using JCB ServiceMaster](#)

[Using the DLA \(Data Link Adapter\)](#)

[Setup Tool](#)

[Diagnostic Tool](#)

[Flashloader Tool](#)

### 10.1 Install Software - Service Master

#### General

The ServiceMaster Tools allows communication between the service laptop and the machine.

To use the 'ServiceMaster Tool', the operator must install the latest version software into service laptop.

#### Instructions for Install Software - ServiceMaster

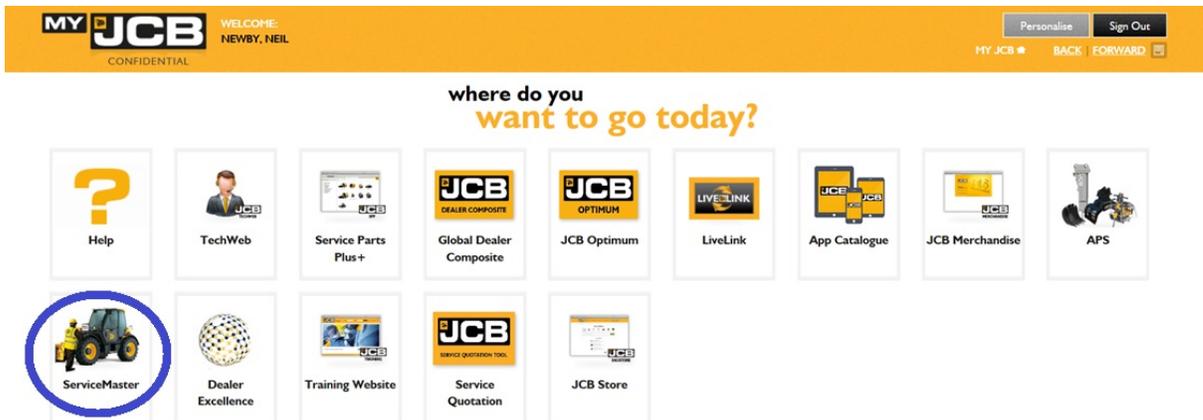
Follow the below steps to install the software

Step 1: Visit the [JCB Dealer Business Portal](#)

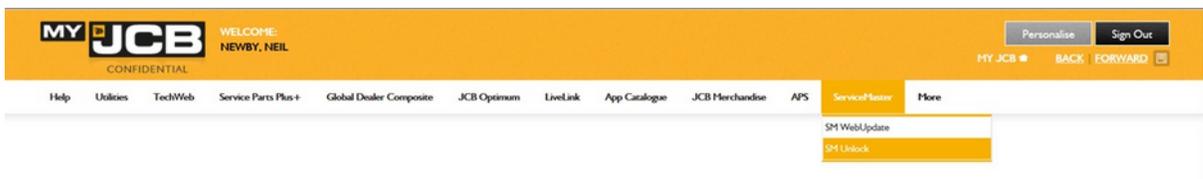
Step 2: Enter your User and password details to login



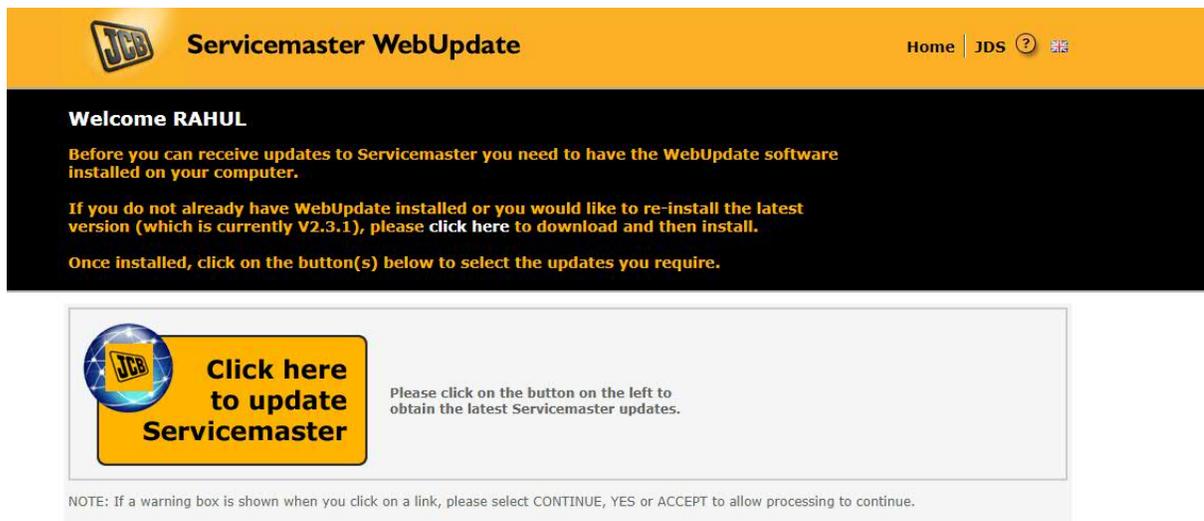
Step 3: Click on 'ServiceMaster' icon



Step 4: Go to ServiceMaster tab --> SM Web Update



Step 5: Download or update the ServiceMaster tool software (check the text 'click here' to download)



**Welcome RAHUL**

Before you can receive updates to Servicemaster you need to have the WebUpdate software installed on your computer.

If you do not already have WebUpdate installed or you would like to re-install the latest version (which is currently V2.3.1), please [click here](#) to download and then install.

Once installed, click on the button(s) below to select the updates you require.

 Please click on the button on the left to obtain the latest Servicemaster updates.

NOTE: If a warning box is shown when you click on a link, please select CONTINUE, YES or ACCEPT to allow processing to continue.

## 10.2 Using JCB Service Master

### Overview

- The ServiceMaster Tools allows communication between the service laptop and the machine.
- A '[Data Link Adapter \(DLA\)](#)' connects the computer USB Port to the machine Can-Bus through the Diagnostic Connector.

### Fault Codes:

- Each ECU can generate a fault code if it detects the behaviour of an input or output is not as expected. Fault codes are transmitted by each ECU over the CanBus and stored on the DECU for future reference. View a complete list of error codes.
- The states of ECU inputs (switches and sensors) and outputs (solenoids, LED's etc) are broadcaster on the Can Bus. These values can be monitored using the Diagnostic Tool.
- If a switch is 'hardwired' directly to a component (e.g. the horn), rather than being wired to an ECU, then there is no means of monitoring its state on the CanBus using the Diagnostic Tool.
- Information Pages detail many ECU inputs and outputs.
- The Flashloader Tool is used to program ECU's with new software, sending information to the ECU over the Can Bus.

## 10.3 Using DLA (Data Link Adapter)

### Overview

The DLA (Data Link Adapter) allows Can-Bus communication between a service laptop and the Machine ECU's through the Diagnostic Socket.

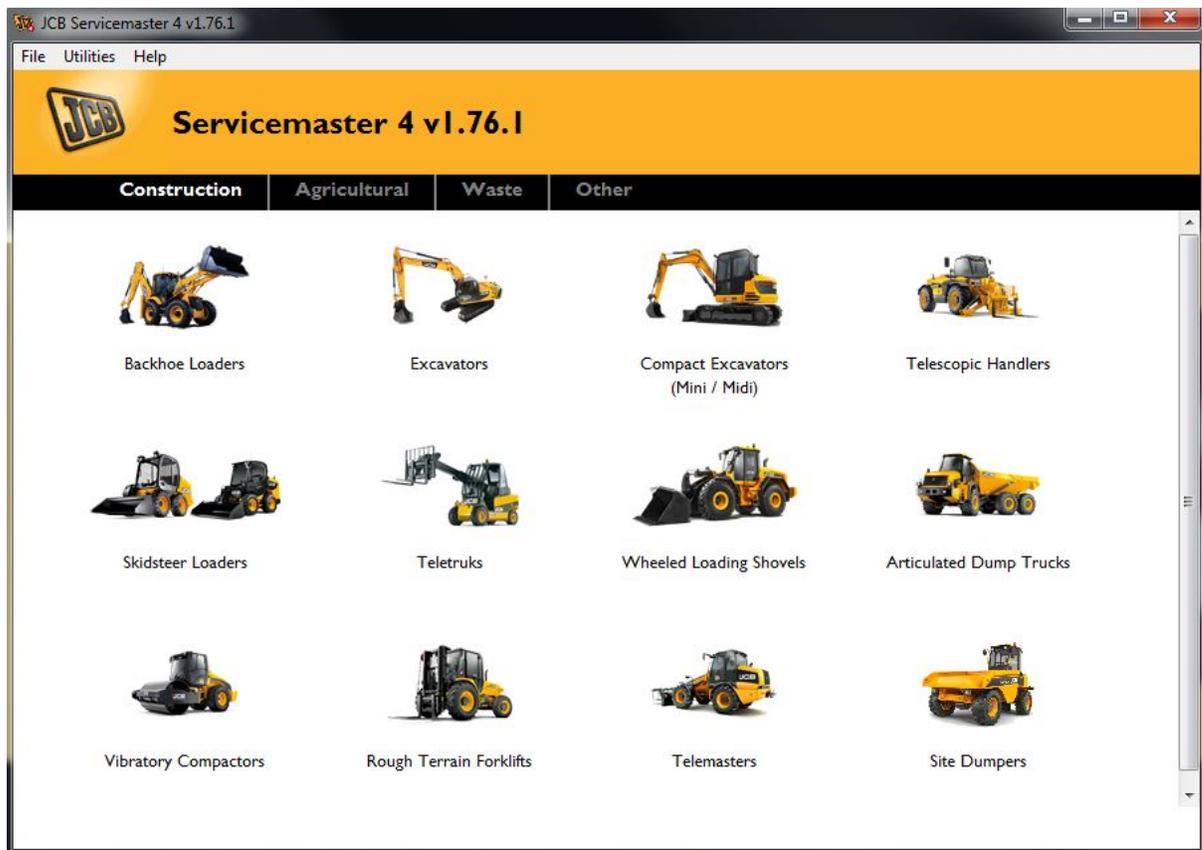
The DLA must be installed on the Laptop before it can be used.

Note: Some computers install the DLA on only one USB port. In this case, if the DLA is connected to a different USB port then no communication can be made with the Machine.

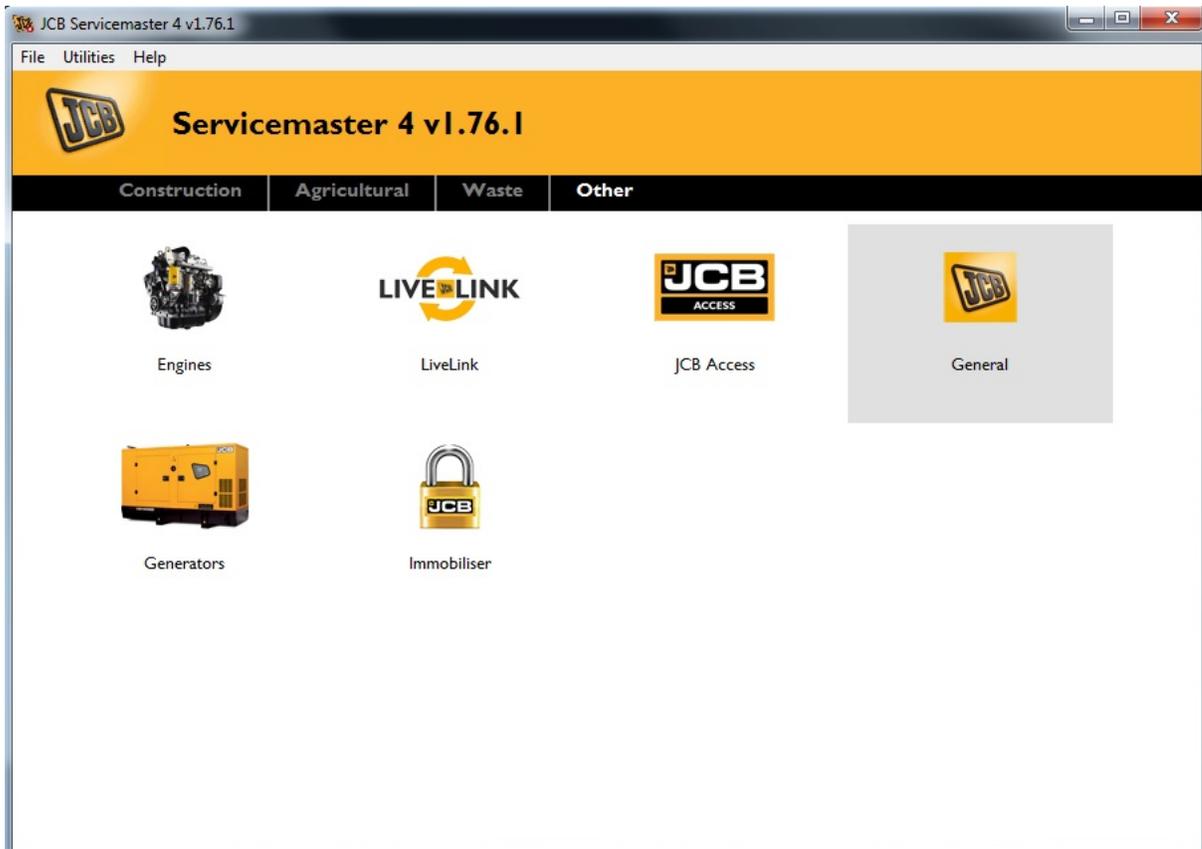
### Installation Procedure - DLA Drives

Follow the below steps to install the drives

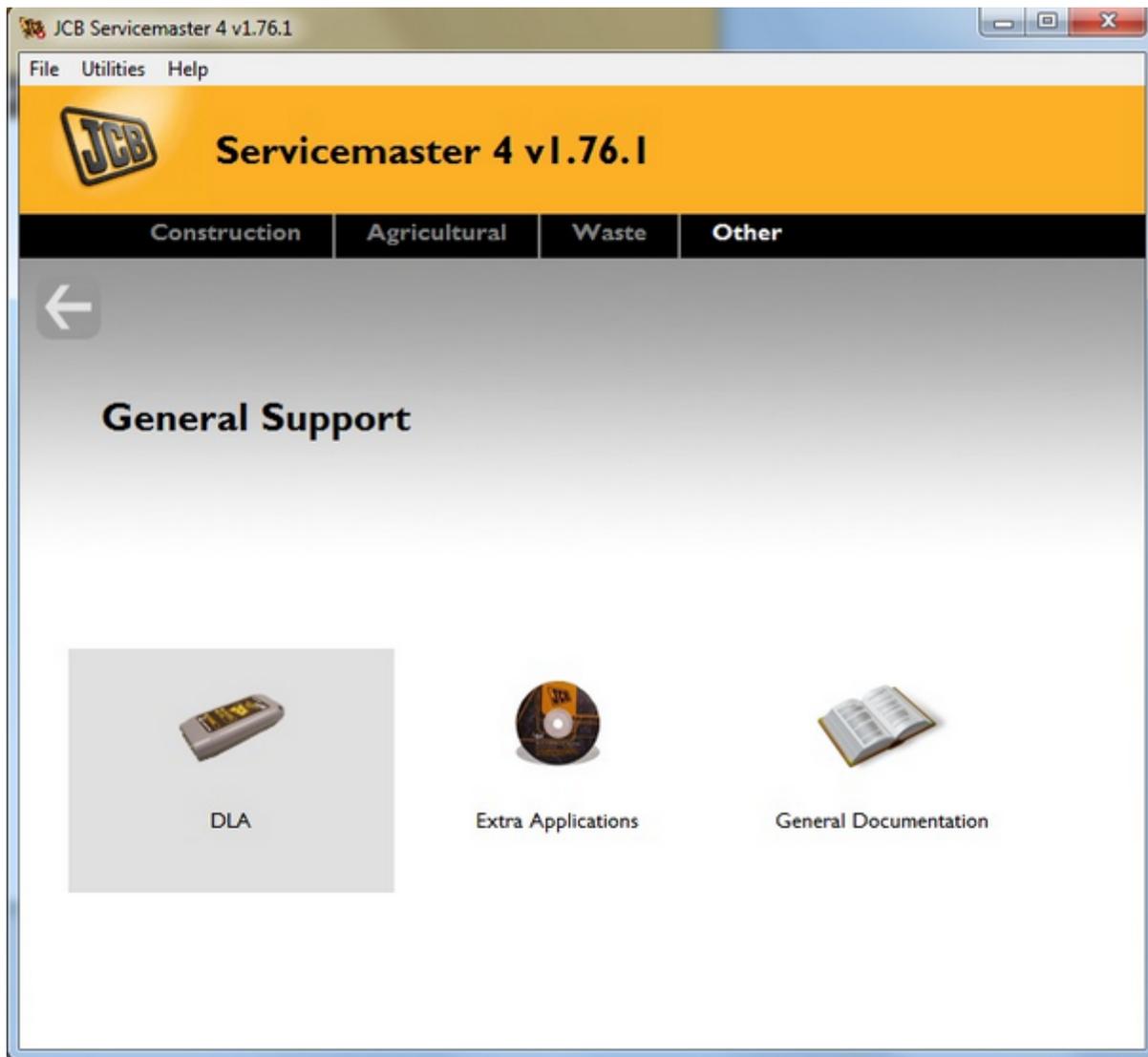
Step 1: After [ServiceMaster software install](#) into the service laptop, Open 'ServiceMaster' tool link (shortcut should be available at desktop)



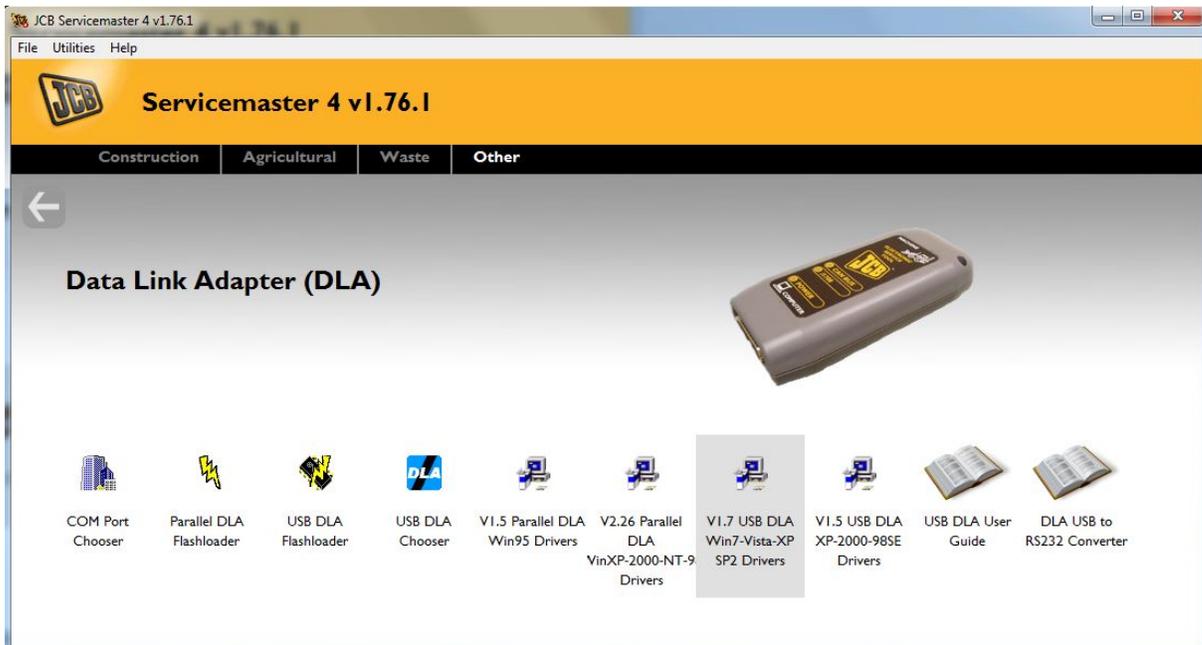
Step 2: Go to Other --> General



Step 3: Go to DLA

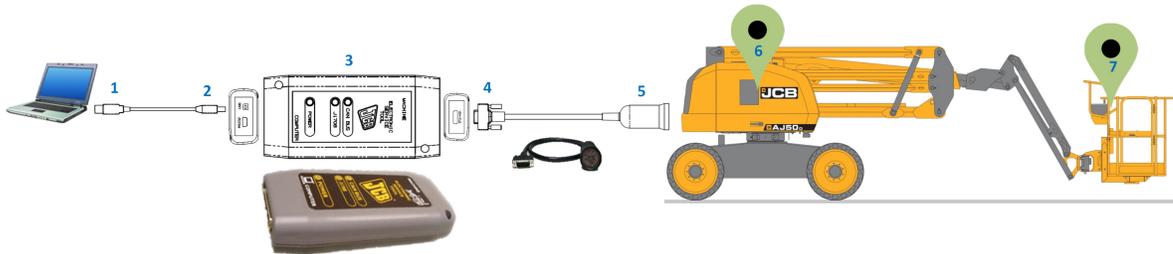


Step 4: Go to V1.7 USB DLA Win 7



## DLA Connections and Parts

Data Link Adapter should connect between service laptop and machine as shown below.



Parts	Description
1	To PC / Laptop USB
2	USB port at DLA
3	DLA
4	15 way D type connector at DLA
5	Deutsch 9 way 1939SE connector
6	Diagnostic connector location at Base control Panel
7	Diagnostic connector location at Platform control Panel

Machine has Diagnostic connectors in two locations

1. Base control panel
2. Platform control panel

## 10.4 Diagnostic Tool

### Overview

If sensors and switches are wired to one of the Machine ECU's then their values or states are generally sent over the CAN Bus.

The Diagnostic Tool monitors information available on the CAN Bus to display the value detected by the ECU. The DLA must be used, connecting to the CAN Bus through the Machine Diagnostic Sockets.

If a switch is 'hardwired' directly to a component, rather than being wired to an ECU, then there is no means of monitoring its state on the CAN Bus using the Diagnostic Tool.

The Diagnostic Tool can also be used to monitor activity of ECU's from their message rates.

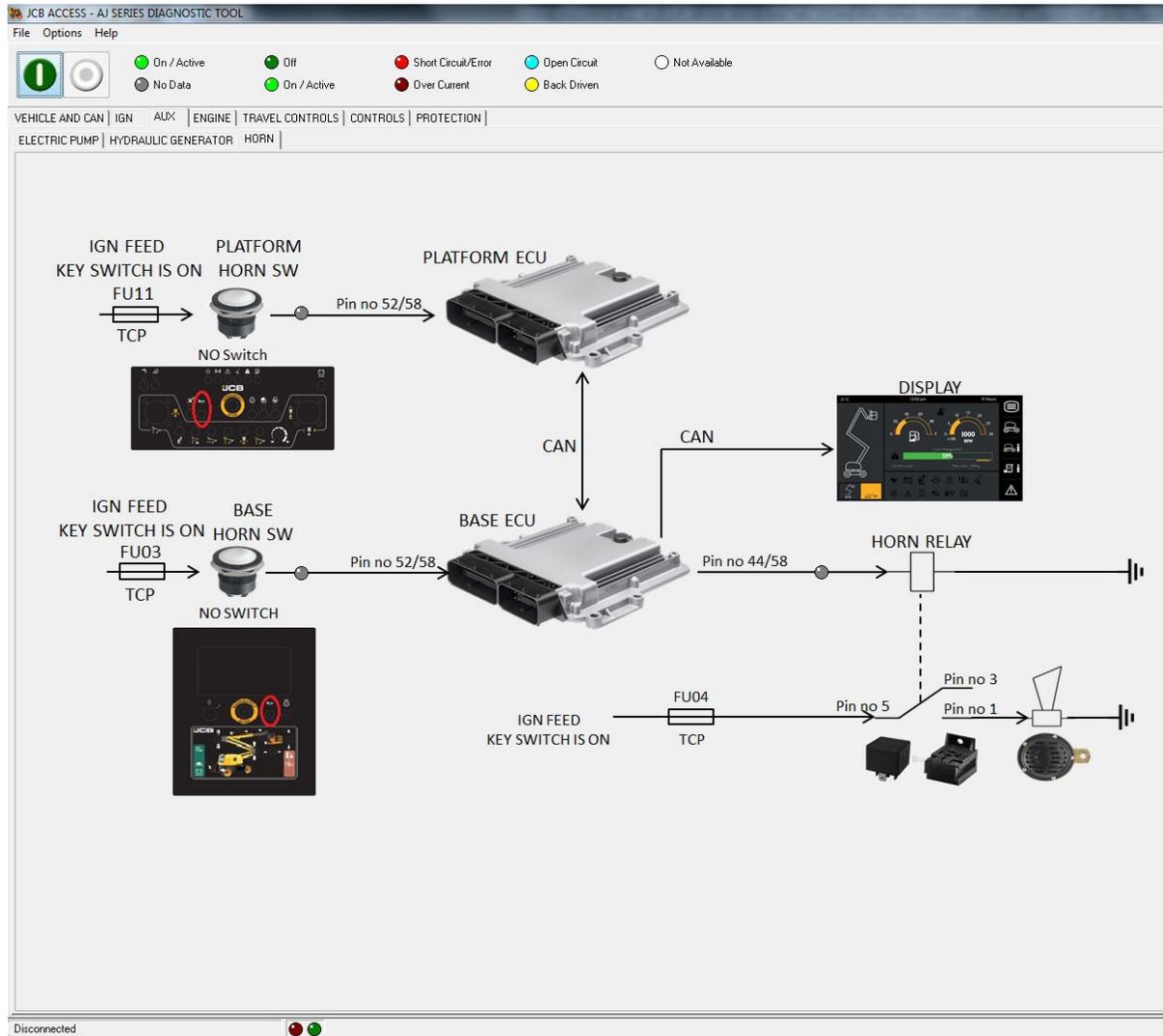
If an ECU has a message rate of '-' then it is likely there is an ECU Power fault or a CAN Bus fault.

Note: With multiple Diagnostic Screens open, the computer can be reading so much tractor information that the Diagnostic Tool response time is reduced.

### To use the Diagnostic Tool

1. Connect a 'USB DLA' between the computer's USB port and the Machine Diagnostic connector
2. Switch the Machine Ignition 'On'.
3. Run the 'AJ Series Diagnostic Tool' program from ServiceMaster.
4. Click the Green 'Start' button at the top of the Diagnostic Screen (highlighted below).
5. Use the links across the top of the screen to view information menus. Select the required menu from the left hand column.
6. If no communication occurs:
  - Check you have clicked the Green 'Start' button.
  - Check the Ignition is 'On' and there is not a Machine power fault.
  - Check if ECU's are functioning using the Can bus statistic page.

[Refer to the notes on using the DLA.](#)



## 10.5 Flashloader Tool

### Overview

The ServiceMaster Flashloader program is used to load software into the Electronic Control Units (ECU's) on JCB machines.

During the process, the Vehicle Ignition should remain 'On' and the Laptop should not be disconnected or allowed to enter 'Standby'. Close other programs running on the laptop.

This tool can not be used for flashing display ECU's.

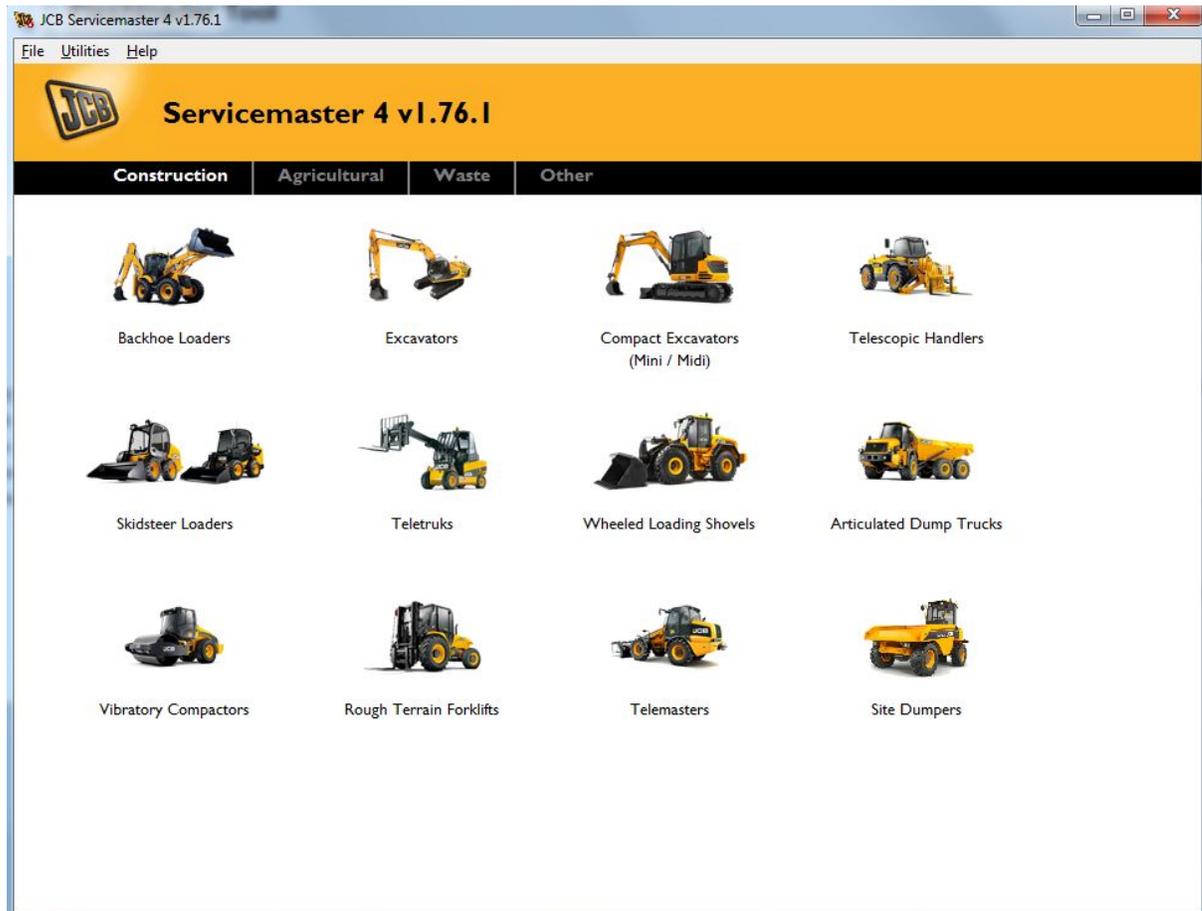
### Flashloader

Check the service machine has installed the [ServiceMaster software](#) and [DLA drives](#).

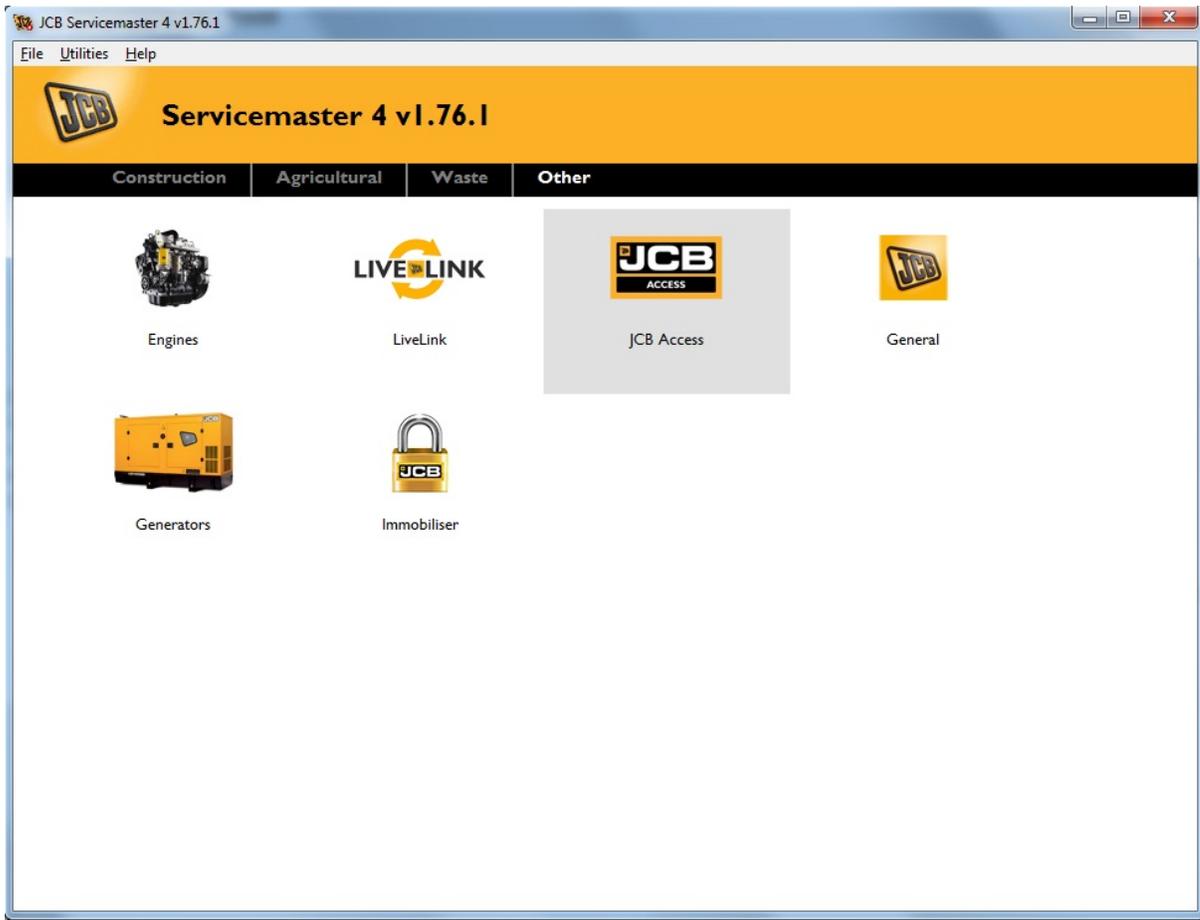
Connect the Data Link Adapter (DLA) USB port to service laptop and Data Link Adapter (DLA) diagnostic connector to machine (see [DLA connections and parts](#))

Follow the below steps for Flash loader tool

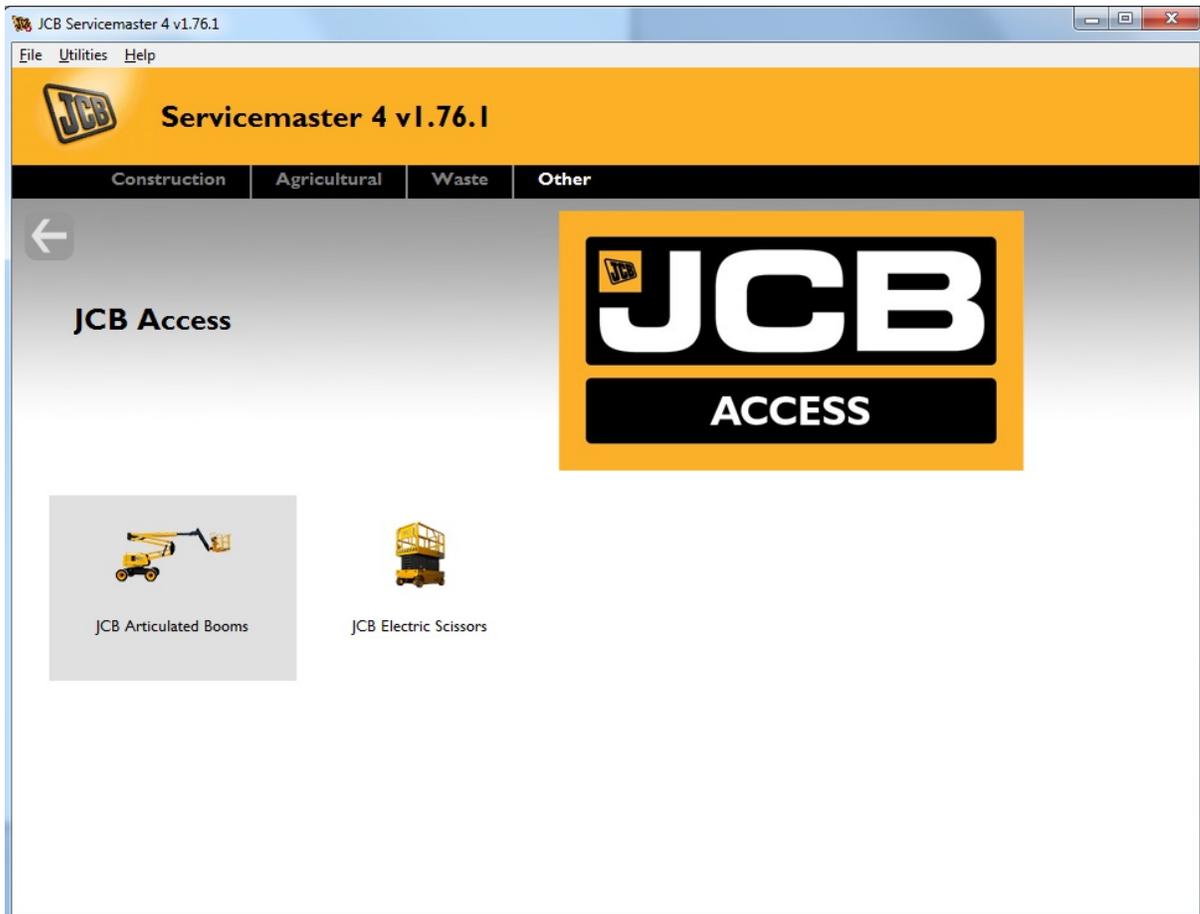
Step 1: Open ServiceMaster --> Others



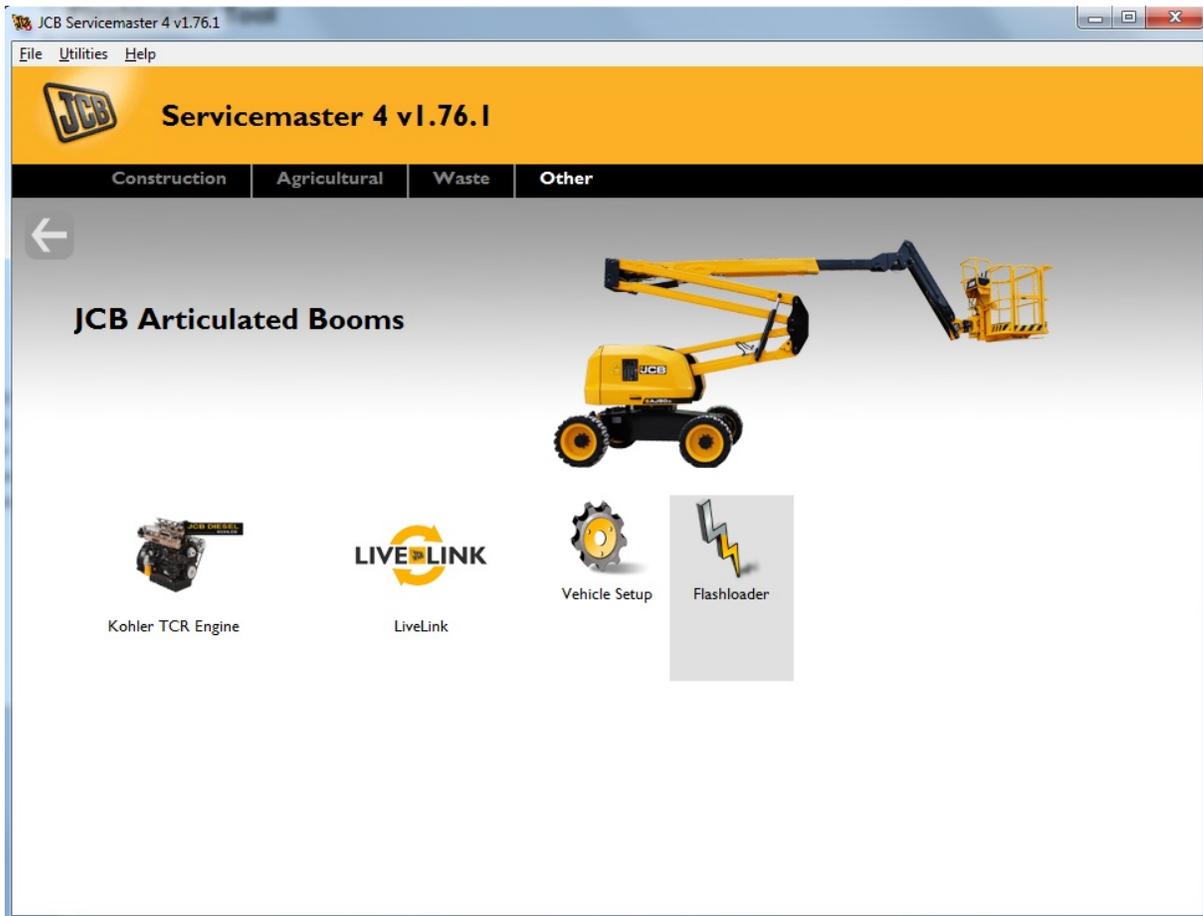
Step 2: Go to Others --> JCB Access



Step 3: Go to Articulated boom

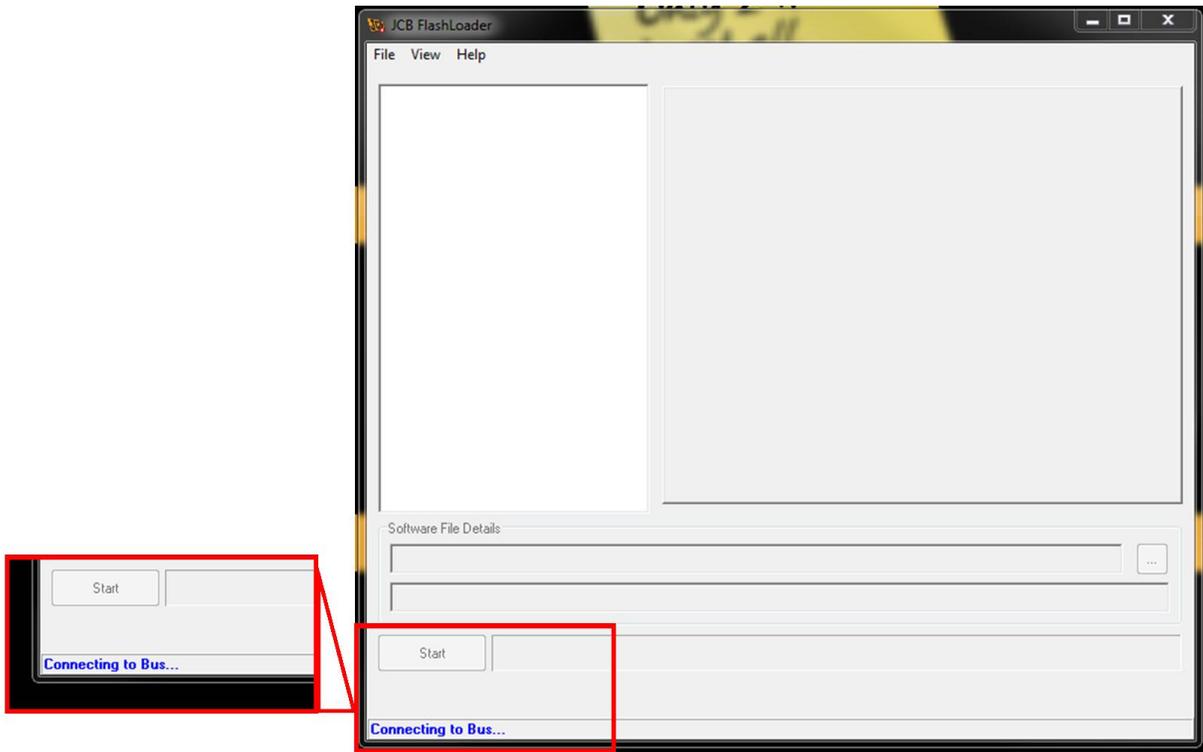


Step 4: Click on Flashloader icon (single click only)



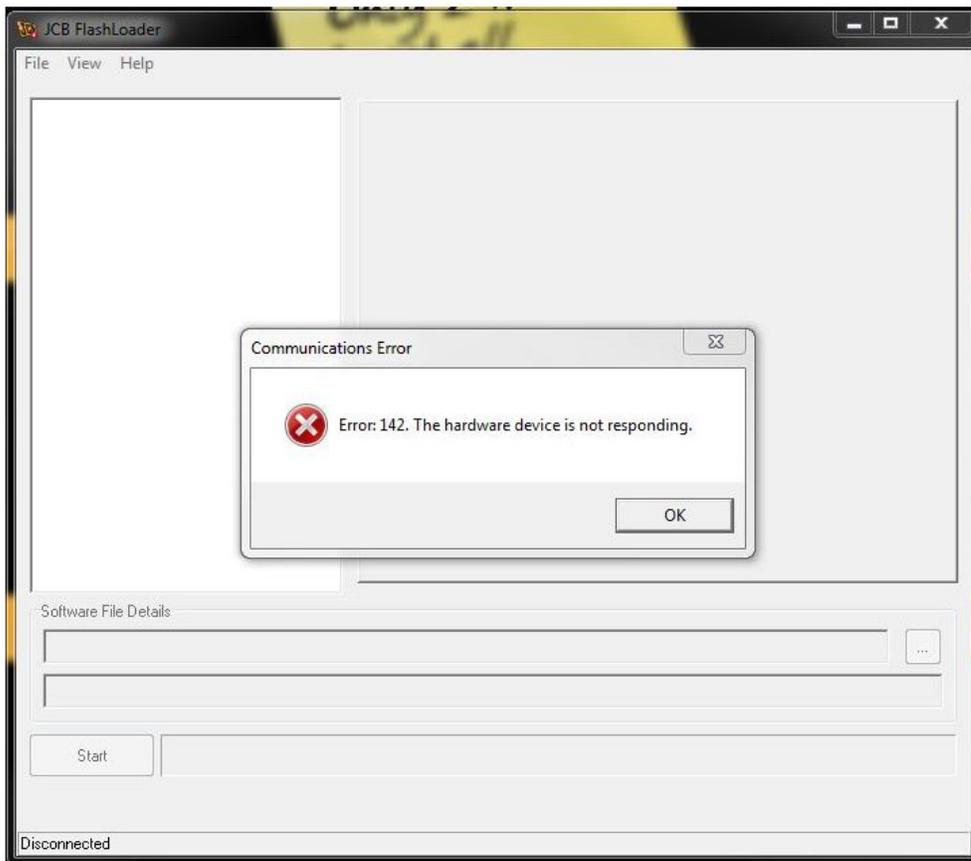
## Flashing the ECU

Flashloader tool searches the ECU's connected in the machine



## Communication Faults

“Unable to connect to the DLA ...”



This screen is shown if:

- The Vehicle Ignition is not 'On'
- The DLA is not connected to the laptop/machine
- The DLA is not configured for the USB port which it is plugged into
- The wrong type of DLA is configured [Selecting the DLA](#)
- The DLA does not show a red 'power' light – possibly due to a supply / earth fault with the Diagnostic Socket (fuse blown).

“No modules found ...”

- The machine is not fitted with any programmable ECU's
- There is a supply fault to the ECU's. fuse fault/ Primary fuse fault / wiring fault
- The Diagnostic socket is not connected to the CAN-Bus.
- There are no ECU's disconnected from the CAN-Bus.
- There is a CAN-Bus fault – Refer to 4000 Help Pages (CAN-Bus Tests)

# ZAPI Error Code

11 ZAPI Error Code

This section is to describe the method for updating software on the machine.

Always ensure the platform and base ecu's are updated together to ensure the versions match.

The display software should always be aligned to the correct bosch ecu software, please check before updating any files on a machine

11.1 Pump Error Code

Error Code	Description	Service Action
B1487	B1487 - Pump Inverter / Pump Motor Inverter Relay	<p>Area Affected - High Side Input/Output, Open Drain Out 1, 2 &amp; 3</p> <p>On the Pump Inverter check continuity from -C60_TH pin 19/23 (wire #4545) to the Pump Motor Inverter Relay, connector -C54_TH, pin 1/1</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Pump Inverter check continuity from Connector - C60_TH pin 2/23 (Wire #6507) to Pump Motor Inverter Relay, connector -C53_TH pin 1/1.</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter, check continuity from -C60_TH pin 18/23 (Wire #1500F) to Precharge Relay -R7_2WD pin 1 (Wire #1500C). Note: Relay -R7_2WD provides pre-charge voltage to all 3 inverters. Check Function of Relay - R7_2WD. Check Continuity from -FU1_2WD pin A to - R7_2WD pin 5. Check Fuse -FU1_2WD (10A Fuse).</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Pump Inverter check for a Short Circuit fault from B-Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C60_TH pin 18/23</li> <li>(2) -C60_TH pin 19/23</li> </ul> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Pump Inverter check for a Short Circuit fault from + Terminal to -C60_TH pin 2/23</p>

		<p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>Test condition and function of Coil and Switch of Relay - R10_TH (Albright DC Contactor)</p> <p>Consider replacement/swap of Pump Motor, Pump Inverter or Relay -R10_TH</p>
<b>B1488</b>	<b>B1488 - Pump AC Motor Contactor Coil</b>	<p>Check Rear Inverter connector -C60_TH pin 2/23 is seated correctly and for damage.</p> <p>Check Pump Motor Inverter Relay -R10_TH for damage.</p> <p>Check connector -C53_TH is connected correctly.</p> <p>Measure resistance from Relay connector -C53_TH (Wire #6507) to Inverter connector -C60_TH pin 2/23. Expected value &lt; 2.0 Ohms.</p>
<b>B1489</b>	<b>B1489 - Rear Left Motor exceeding temperature limit (165 Celsius)</b>	<p>Check Motor connector is fully engaged and no damage is visible.</p> <p>Check cable is damage free from Motor to Inverter.</p> <p>Check sensor is returning correct values in Service Master.</p> <p>Check brakes are not partially or fully stuck on.</p> <p>Check for damage to Motor.</p> <p>Allow motor to cool down and re-check.</p> <p>Replace motor if necessary.</p>

<p><b>B1490</b></p>	<p><b>B1490 - Pump Inverter Pump Motor Temp.</b></p>	<p>Area Affected - Motor Temp +/-, Temp Sens +VE/-VE.                  On Pump Inverter, check condition and seating of -C60_TH.                  On Pump Motor, check condition and seating of -C01_4WD.                  On Pump Inverter check resistance from -C60_TH pin 16/23 (Wire #4500) to Pump Motor -C70_TH pin 2/2. Expect &lt; 2 Ohms.                  On Pump Inverter check resistance from -C60_TH pin 17/23 (Wire #4501) to Pump Motor -C70_TH pin 1/2. Expect &lt; 2 Ohms.                  On Pump Inverter check resistance from -C60_TH pin 16/23 to B+. Expect &gt; 200 Ohms.                  On Pump Inverter check resistance from -C60_TH pin 17/23 to B-. Expect &gt; 200 Ohms.                  If fault(s) found, isolate components to identify faulty component.</p>
<p><b>B1491</b></p>	<p><b>B1491 - Pump Motor / Inverter Temp High</b></p>	<p>Indicates that the motor is operating above the predefined operating temperature limits.                  Motor performance will be reduced. Allow the motor to cool down before continuing to operate.                  Check via Service Master that correct / expected temperature values are being read from the AC Motor.                  Check connectors and harness between motor and inverter for damage.                  Replace motor if issue persists.</p>
<p><b>B1492</b></p>	<p><b>B1492 - Pump Motor Temperature Low</b></p>	<p>Indicates that the minimum operating temperature has been exceeded.                  Check via Service Master that correct / expected temperature values are being read from the Traction Motors.                  Allow machine to warm up to correct operating temperature range.                  Check connectors and harness between motor and inverter for damage.</p>
<p><b>B1493</b></p>	<p><b>B1493 - Pump Inverter exceeding temperature limit (110 Celsius)</b></p>	<p>Indicates the the Inverter internal temperature has reached 110 Celsius. This is measured at the inverter heat sink.                  Check movement of wheels is not impaired.                  May be caused by prolonged use in high ambient temperatures.                  Allow Inverter to cool and check fault clears after power cycle.                  If fault continues, replace Inverter.</p>
<p><b>B1494</b></p>	<p><b>B1494 - Pump AC Motor Inverter Internal Temp Sensor</b></p>	<p>This is an internal fault to the Pump Inverter Module.                  Check for any obvious damage to the connectors and power supply terminals.                  Replace Inverter module.</p>

<p><b>B1495</b></p>	<p><b>B1495 - Pump Motor Inverter at 85 Deg C</b></p>	<p>Fault indicates the Motor Inverter internal temperature has risen above nominal operating range. Acceleration current is reduced. Turn off machine and allow to cool before continuing to drive vehicle. If issue persists, Check motor, pump harness or connectors related to the fault area are not damaged. If no faults found - replace Inverter</p>
<p><b>B1496</b></p>	<p><b>B1496 - Pump Motor / Inverter Temp Low</b></p>	<p>Indicates that the machine is operating below the predefined safe operating temperature limits. Allow the machine to warm up before continuing to operate. Check via Service Master that correct / expected temperature values are being read from the Pump Motor. Check connectors and harness between motor and inverter for damage.</p>
<p><b>B1497</b></p>	<p><b>B1497 - Pump Motor</b></p>	<p>Motor speed is above normal operating conditions. Power to motor is reduced. If problem persists, check via SM that Pump rotation is at predicted values</p>
<p><b>B1498</b></p>	<p><b>B1498 - Pump Motor Sensor Supply out of range</b></p>	<p>Indicates the following issues:          - Sensor supply current is too low (lower limit 0.006A)          - Sensor supply Current is too high (Higher limit 0.068A)          - Sensor readings are out of nominal readings          - Sensor supply voltage is out of range (11-16VDC)          Check Pump Motor and rear Inverter connectors are seated correctly and no damage visible.          On Pump Inverter, disconnect -C60_TH connector and check no short circuit between pins 3, 4, 5 and 6.          On Pump Inverter, disconnect -C60_TH connector and measure resistance of the following pins to the Pump Motor Connector -C71_TH:          - -C60_TH pin 3 to -C71_TH pin 1          - -C60_TH pin 4 to -C71_TH pin 4          - -C60_TH pin 5 to -C71_TH pin 2          - -C60_TH pin 6 to -C71_TH pin 3          On Pump Inverter, disconnect -C60_TH connector and measure resistance of the following pins to the Pump Motor Connector -C70_TH:          - -C60_TH pin 16 to -C70_TH pin 2          - -C60_TH pin 17 to -C70_TH pin 1          Check cable shield is connected and grounded at T-84_TH          Speed Sensor may be faulty.          Temp Sensor may be faulty.</p>
<p><b>B1499</b></p>	<p><b>B1499 - Pump Inverter Reading 67 V DC supply</b></p>	<p>This is detecting the supply battery voltage reached 67 V DC. The system is shutdown          This happens if the machine is trying to regen particularly when the battery is full and the current produced that has nowhere to go          Check batteries are not over swelled or damaged          Restart machine and re-test</p>

<b>B1500</b>	<b>B1500 - Front Inverter Reading 36 V DC</b>	<p>This is detecting the +48 V DC supply battery voltage has reduced to a lower limit of +36 V DC</p> <p>Check the B+, X and B- terminals on the Inverter for damage or discoloration. Check Terminals are seated correctly.</p> <p>Recharge battery pack.</p> <p>Check battery voltages to ensure there is not a damaged battery in the pack.</p> <p>Replace batteries or cables as required.</p>
<b>B1501</b>	<b>B1501 - Pump Motor</b>	<p>WARNING! During REGEN Battery voltage spiking above 65V. Warning Only. Fault will clear when battery voltage has stabilized. Cycle ignition to clear fault.</p> <p>If fault persists, Check Motor connectors, battery health.</p> <p>Seek advice from Access Engineering Team.</p>
<b>B1502</b>	<b>B1502 - Pump Motor Inverter registering low voltage</b>	<p>Supply voltage has dropped below 36 V DC. Recharge is required.</p>
<b>B1503</b>	<b>B1503 - Pump Motor - Speed Encoder Feedback Sensor Fail</b>	<p>The Speed Encoders are enclosed within the motor housing. It provides Speed and Direction feedback to the Inverter.</p> <p>The front motors require a 12V to 5V voltage regulator to provide a 5V supply to the speed sensors. This is not required on the rear motors or pump motor.</p> <p>Check connectors at pump motor and inverter. Check for correct seating, termination and damage.</p> <p>On the motor connector, measure voltage at -C71_TH pin 1/4 (+12V) (Wire #4529) to pin 4/4 (GND) (Wire #4530). Expected value, 12V DC.</p> <p>Measure resistance from Rear Inverter Connector - C60_TH pin 5/23 (Wire #4526) to Rear Left Motor Connector -C71_TH pin 2/4. Expected value &lt;2.0 Ohms.</p> <p>Measure resistance from Rear Inverter Connector - C60_TH pin 6/23 (Wire #4527) to Rear Left Motor Connector -C71 TH pin 3/4. Expected value &lt;2.0 Ohms.</p>
<b>B1505</b>	<b>B1505 - AC Drive Current Above Limit (350 Amperes)</b>	<p>This is detecting that the U,V,W terminals on the motor are drawing to much current from the inverter above 150% of allowed. Current can be checked through diagnostic tool.</p> <p>Need to know what normal current is.</p> <p>Check U,V,W cables from inverter to motor and ensure there is no damage or short circuit from other phases or to ground and B+.</p> <p>Check terminal tightness to correct torque values</p>
<b>B1506</b>	<b>B1506 - Pump Motor Speed High</b>	<p>Motor speed is above 6500RPM.</p> <p>Check electrical connections to motor and Inverter and seated correctly and no damage found.</p> <p>Check U, V &amp; W cables are correctly fastened and no damage visible.</p> <p>Reset machine and check via Service Master that Pump rotation speed is within predicted values.</p> <p>Check condition of Pump.</p>

<b>B1507</b>	<b>B1507 - Pump Inverter Power stage Fault</b>	This is an internal power stage fault within the inverter. The torque current to the AC motor has been lost or intermittent. Replace the affected Inverter.
<b>B1508</b>	<b>B1508 - Pump Inverter Incorrect Parameter / Software Setup</b>	Reflash SW via CAN2 (Diag Socket). See Help File for information on how to re-flash inverters. Restart machine - If no change, Replace Inverter
<b>B1509</b>	<b>B1509 - Pump Inverter Internal Short Circuit Detected</b>	Indicates the Inverter has checked its internal power stage and detected a short-circuit to the MOSFETs. Check no obvious fault at B+ and U.V & W terminals. Check for damage. Replace Inverter
<b>B1510</b>	<b>B1510 - Pump Motor Current Draw Mismatch</b>	This is an internal current measurement made within the inverter. Expected current draw does not meet tolerance for measured current draw. System will be disabled. Check phasing of U,V, W cables from inverter to motor are correct. I.e. Inverter 'U' is attached to Motor 'U'. Check no damage to Motor connections for U, V, W. If no issues found, replace Pump Inverter.
<b>B1511</b>	<b>B1511 - Pump Inverter Precharge Fail</b>	Indicates at start-up that +48 V DC was not present at the pre-charge input to the inverter. Check function of pre-charge relay -R7_2WD. If relay not switching, Check continuity of Relay coil GND from Pin 2 to Turntable GND2, Terminal -T03-GND_TH. Check Continuity from Relay Pin 4 (via center joint) to Base Bosch ECU pin 94/96. Check presence of 48 V DC at -R7_2WD pin 5. If not present, check condition of fuse -FU1_2WD (10A). If fuse is not blown, Check Wire #1500 is correctly terminated at positive busbar via terminal -T84_2WD. Check Continuity from -R7_2WD to the pre-charge input of Front Inverter at connector -C60 TH pin 18/23.
<b>B1512</b>	<b>B1512 - System Restart Required</b>	Indicates that the system must be restarted after the fault has been cleared to remove stored fault.

<p><b>B1513</b></p>	<p><b>B1513 - Pump Inverter CAN Timeout Error</b></p>	<p>Indicates an issue on the CAN 2 network. Refer to schematic sheet named CAN 2 Network.                  Inspect ALL connectors on the CAN 2 Network.  <b>IMPORTANT!</b> Isolate machine before commencing any further testing.                  Check CAN terminator is in place -CAN2_2WD (Near Front Right Wheel) and -CAN2_TCP (found inside base display enclosure)                  Remove -CAN2_TCP and measure resistance between pin A &amp; B. Should measure 120 Ohm. If resistance measurement is significantly higher than this, recheck -CAN2_2WD is connected.                  Perform a continuity check of the CAN 2 Network by first checking continuity of CAN 2 LOW signals (GREEN) and Then CAN 2 HIGH signals (YELLOW)                  Perform a continuity check of the CAN 2 SHIELD.                  These tests must be performed to all devices on the CAN 2 Network.                  Check center joint interconnect -C89_2WD / -C89_TH is seated correctly and not damaged.                  Remember to replace -CAN2_TCP                  If still failing, disconnect all devices from the CAN 2 Network and check no short circuit between the CAN 2 HIGH and CAN 2 LOW signals. If a short is discovered, disconnect the center joint interconnect connectors and repeat the test to narrow down the search area for the fault.                  Remember to check all Connections have been re-made after rectifying fault.</p>
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**11.2 Traction Motor Error Code**

Error Code	Description	Service Action
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<p>B1514</p>	<p><b>B1514 - Rear Inverter / Rear Left Brake / Rear Motor Inverter Relay</b></p>	<p>Area Affected - High Side Input/Output, Open Drain Out 1, 2 &amp; 3</p> <p>On the Rear Inverter check continuity from -C01_2WD pin 29/35 (wire #4536E) to the following:</p> <p>(1) RL AC Drive Motor, connector -C10_2WD, pin 1/2 (wire #4536B)</p> <p>(2) Rear Motor Inverter Relay Coil, connector -C56_2WD, pin 1/1 (wire #4536C)</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check continuity from connector -C01_2WD pin 25/35 (Wire #4537) to Rear Left Motor, connector -C10_2WD pin 2/2.</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check continuity from Connector -C01_2WD pin 1/35 (Wire #6506) to Front Motor Inverter Relay, connector -C57_2WD pin 1/1.</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter, check continuity from -C01_2WD pin 28/35 (Wire #1500K) to Precharge Relay -R7_2WD pin 1 (Wire #1500C). Note: Relay -R7_2WD provides pre-charge voltage to all 3 inverters. Check Function of Relay -R7_2WD. Check Continuity from -FU1_2WD pin A to -R7_2WD pin 5. Check Fuse -FU1_2WD (10A Fuse).</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check for a Short Circuit fault from B-Terminal to the following:</p> <p>(1) -C01_2WD pin 28/35</p> <p>(2) -C01_2WD pin 29/35</p> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check for a Short Circuit fault from + Terminal to the following:</p> <p>(1) -C01_2WD pin 1/35</p> <p>(2) -C01_2WD pin 4/35</p> <p>(3) -C01_2WD pin 28/35</p> <p>(4) -C01_2WD pin 29/35</p> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>Test condition and function of Coil and Switch of Relay -R12_TH (Albright DC Contactor)</p>
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		<p>Consider replacement/swap of Rear Left Motor, Rear Inverter or Relay -R12_TH</p>
<p><b>B1515</b></p>	<p><b>B1515 - Rear Left Brake Fault</b></p>	<p>Fault detected on Rear Left Motor Brake.                      Check Rear Motor connector -C10_2WD is seated correctly and for damage.                      Check pin 2/2 (Wire #4537) is inserted correctly and for damage.                      Check Rear inverter connector -C01_2WD is seated correctly and for damage.                      Check pin 25/35 (Wire #4537) is inserted correctly and for damage.                      Measure resistance between -C10_2WD pin 2/2 and -C01_2WD pin 25/35. Expected value &lt; 2.0 Ohms.                      Check condition of harness between Rear Motor and Inverter.</p>

<p><b>B1516</b></p>	<p><b>B1516 - Front Left Motor exceeding temperature limit (165 Celsius)</b></p>	<p>Check Motor connector is fully engaged and no damage is visible.                  Check cable is damage free from Motor to Inverter.                  Check sensor is returning correct values in Service Master.                  Check brakes are not partially or fully stuck on.                  Check for damage to Motor.                  Allow motor to cool down and re-check.                  Replace motor if necessary.</p>
<p><b>B1517</b></p>	<p><b>B1517 - Rear AC Motor Inverter / Rear Left AC Drive Motor Temp.</b></p>	<p>Area Affected - Motor2 Temp +/-, Temp Sens +VE/-VE.                  On Rear Inverter, check condition and seating of -C01_2WD.                  On Rear Left AC Drive Motor, check condition and seating of -C02_2WD.                  On Rear Inverter check resistance from -C01_2WD pin 15/35 (Wire #4500) to Rear Left AC Motor -C02_2WD pin 6/8. Expect &lt; 2 Ohms.                  On Rear Inverter check resistance from -C01_2WD pin 16/35 (Wire #4501) to Rear Left AC Motor -C02_2WD pin 5/8. Expect &lt; 2 Ohms.                  On Rear Inverter check resistance from -C01_2WD pin 15/35 to B+. Expect &gt; 200 Ohms.                  On Rear Inverter check resistance from -C01_2WD pin 16/35 to B-. Expect &gt; 200 Ohms.                  If fault(s) found, isolate components to identify faulty component.</p>
<p><b>B1518</b></p>	<p><b>B1518 - Rear Left Motor / Inverter Temp High</b></p>	<p>Indicates that the motor is operating above the predefined operating temperature limits.                  Issue may be caused by extended current requirements i.e. driving long distance uphill, erratic driving or damage to the wheel.                  Motor performance will be reduced. Allow the motor to cool down before continuing to operate.                  Check via Service Master that correct / expected temperature values are being read from the AC Motor.                  Check connectors and harness between motor and inverter for damage.                  Replace motor if issue persists.</p>
<p><b>B1519</b></p>	<p><b>B1519 - Rear Left Motor Temperature Low</b></p>	<p>Indicates that the minimum operating temperature has been exceeded.                  Check via Service Master that correct / expected temperature values are being read from the Traction Motors.                  Allow machine to warm up to correct operating temperature range.                  Check connectors and harness between motor and inverter for damage.</p>

B1520	<b>B1520 - Rear Inverter exceeding temperature limit (110 Celsius)</b>	Indicates the the Inverter internal temperature has reached 110 Celsius. This is measured at the inverter heat sink. Check movement of wheels is not impaired. May be caused by prolonged use in high ambient temperatures. Allow Inverter to cool and check fault clears after power cycle. If fault continues, replace Inverter.
B1521	<b>B1521 - Rear AC Motor Inverter Internal Temp Sensor</b>	This is an internal fault to the Rear Inverter Module. Check for any obvious damage to the connectors and power supply terminals. Replace Inverter module.
B1522	<b>B1522 - Rear Left Motor Inverter at 85 Deg C</b>	Fault indicates the Motor Inverter internal temperature has risen above nominal operating range. Acceleration current is reduced. Turn off machine and allow to cool before continuing to drive vehicle. If issue persists, Check motor, wheel harness or connectors related to the fault area are not damaged. Check brakes are not partially or fully engaged. If no faults found - replace Inverter
B1523	<b>B1523 - Rear Left Motor / Inverter Temp Low</b>	Indicates that the machine is operating below the predefined safe operating temperature limits. Allow the machine to warm up before continuing to operate. Check via Service Master that correct / expected temperature values are being read from the Traction Motors. Check connectors and harness between motor and inverter for damage.
B1524	<b>B1524 - Rear Left Motor</b>	Motor speed is above normal operating conditions. Power to motor is reduced. If problem persists, check via SM that wheel rotation is at predicted values

<p><b>B1525</b></p>	<p><b>B1525 - Rear Left AC Motor Sensor Supply out of range</b></p>	<p>Indicates the following issues:</p> <ul style="list-style-type: none"> <li>- Sensor supply current is too low (lower limit 0.006A)</li> <li>- Sensor supply Current is too high (Higher limit 0.068A)</li> <li>- Sensor readings are out of nominal readings</li> <li>- Sensor supply voltage is out of range (11-16VDC)</li> </ul> <p>Check Rear Left AC Motor and rear Inverter connectors are seated correctly and no damage visible.</p> <p>On Rear Inverter, disconnect -C01_2WD connector and check no short circuit between pins 31/35 (Wire #4520) and 32/25 (Wire #4521). Measure resistance of these pins to Rear Left AC Motor -C02_2WD Pins 4/4 and 1/4 respectively. Expect &lt;2.0 Ohms.</p> <p>Speed Sensor may be faulty.</p> <p>On Rear Inverter, disconnect -C01_2WD connector and check no short circuit between pins 15/35 and 16/35.</p> <p>On Rear Inverter measure resistance from -C01_2WD pin 15/35 (Wire #4504) to Rear Left AC Motor -C09_2WD pin 2/2. Expect &lt; 2 Ohms.</p> <p>On Rear Inverter measure resistance from -C01_2WD pin 16/35 (Wire #4505) to Rear Left AC Motor -C09_2WD pin 1/2. Expect &lt; 2 Ohms.</p> <p>If fault(s) found, isolate components to identify faulty component.</p> <p>Motor Temp Sensor may be faulty</p>
<p><b>B1526</b></p>	<p><b>B1526 - Rear Inverter Reading 67 V DC supply</b></p>	<p>This is detecting the supply battery voltage reached 67 V DC. The system is shutdown</p> <p>This happens if the machine is trying to regen particularly when the battery is full and the current produced that has nowhere to go</p> <p>Check batteries are not over swelled or damaged</p> <p>Restart machine and re-test</p>
<p><b>B1527</b></p>	<p><b>B1527 - Rear Inverter Reading 36 V DC</b></p>	<p>This is detecting the +48 V DC supply battery voltage has reduced to a lower limit of +36 V DC</p> <p>Check the B+, X and B- terminals on the Inverter for damage or discoloration. Check Terminals are seated correctly.</p> <p>Recharge battery pack.</p> <p>Check battery voltages to ensure there is not a damaged battery in the pack.</p> <p>Replace batteries or cables as required.</p>
<p><b>B1528</b></p>	<p><b>B1528 - Rear Left Motor</b></p>	<p>WARNING! During REGEN Battery voltage spiking above 65V. Warning Only. Fault will clear when battery voltage has stabilized. Cycle ignition to clear fault.</p> <p>If fault persists, Check Motor connectors, battery health.</p> <p>Seek advice from Access Engineering Team.</p>
<p><b>B1529</b></p>	<p><b>B1529 - Rear Left Motor Inverter registering low voltage</b></p>	<p>Supply voltage has dropped below &lt;44 V DC. Recharge is required.</p>

B1530	<b>B1530 - Rear Left Motor - Speed Encoder Feedback Sensor Fail</b>	<p>The Speed Encoders are enclosed within the motor housing. It provides Speed and Direction feedback to the Inverter.</p> <p>The front motors require a 12V to 5V voltage regulator to provide a 5V supply to the speed sensors. This is not required on the rear motors or pump motor.</p> <p>Check connector at motor, voltage regulator (front motors only) and inverter. Check for correct seating, termination and damage.</p> <p>On the motor connector, measure voltage at -C02_2WD pin 1/4 (+12V) (Wire #4521) to pin 4/4 (GND) (Wire #4520). Expected value, 12V DC.</p> <p>Measure resistance from Rear Inverter Connector - C01_2WD pin 17/35 (Wire #4522) to Rear Left Motor Connector -C02_2WD pin 2/4. Expected value &lt;2.0 Ohms.</p> <p>Measure resistance from Rear Inverter Connector - C01_2WD pin 19/35 (Wire #4523) to Rear Left Motor Connector -C02_2WD pin 3/4. Expected value &lt;2.0 Ohms.</p> <p>The machine ignition will require a power cycle (Key Off-Key On) to reset any errors. Note: extra errors may have been created during fault finding process, i.e. removing connectors.</p>
B1531	<b>B1531 - Pump or Rear inverter internal power supply out of range error.</b>	<p>This fault indicates there has been an internal fault to the inverter.</p> <p>Replace the Inverter</p>
B1532	<b>B1532 - AC Drive Current Above Limit (350 Amperes)</b>	<p>This is detecting that the U,V,W terminals on the motor are drawing too much current from the inverter above 150% of allowed. Current can be checked through diagnostic tool. Need to know what normal current is.</p> <p>Check U,V,W cables from inverter to motor and ensure there is no damage or short circuit from other phases or to ground and B+.</p> <p>Check terminal tightness to correct torque values</p>
B1533	<b>B1533 - Rear Left Motor Speed High</b>	<p>Motor speed is above 6500RPM.</p> <p>Check electrical connections to motor and Inverter and seated correctly and no damage found.</p> <p>Check U, V &amp; W cables are correctly fastened and no damage visible.</p> <p>Reset machine and check via Service Master that wheel rotation speed is within predicted values.</p> <p>Check condition of wheel.</p>
B1534	<b>B1534 - Rear Inverter Power stage Fault</b>	<p>This is an internal power stage fault within the inverter. The torque current to the AC motor has been lost or intermittent.</p> <p>Replace the affected Inverter.</p>
B1535	<b>B1535 - Rear Inverter Incorrect Parameter / Software Setup</b>	<p>Reflash SW via CAN2 (Diag Socket). See Help File for information on how to re-flash inverters.</p> <p>Restart machine - If no change, Replace Inverter</p>

B1536	<b>B1536 - Rear Inverter Internal Short Circuit Detected</b>	Indicates the Inverter has checked its internal power stage and detected a short-circuit to the MOSFETs. Check no obvious fault at B+ and U,V & W terminals. Check for damage. Replace Inverter
B1537	<b>B1537 - Rear Left Motor Current Draw Mismatch</b>	This is an internal current measurement made within the inverter. Expected current draw does not meet tolerance for measured current draw. System will be disabled. Check phasing of U,V, W cables from inverter to motor are correct. I.e. Inverter 'U' is attached to Motor 'U'. Check no damage to Motor connections for U, V, W. If no issues found, replace Rear Inverter.
B1538	<b>B1538 - Rear Inverter Precharge Fail</b>	Indicates at start-up that +48 V DC was not present at the pre-charge input to the inverter. Check function of pre-charge relay -R7_2WD. If relay not switching, Check continuity of Relay coil GND from Pin 2 to Turntable GND2, Terminal -T03-GND_TH. Check Continuity from Relay Pin 4 (via center joint) to Base Bosch ECU pin 94/96. Check presence of 48 V DC at -R7_2WD pin 5. If not present, check condition of fuse -FU1_2WD (10A). If fuse is not blown, Check Wire #1500 is correctly terminated at positive busbar via terminal -T84_2WD. Check Continuity from -R7_2WD to the pre-charge input of Front Inverter at connector -C01_2WD pin 28/35.
B1539	<b>B1539 - System Restart Required</b>	Indicates that the system must be restarted after the fault has been cleared to remove stored fault.
B1540	<b>B1540 - Rear Inverter CAN Timeout Error</b>	Indicates an issue on the CAN 2 network. Refer to schematic sheet named CAN 2 Network. Inspect ALL connectors on the CAN 2 Network. <b>IMPORTANT!</b> Isolate machine before commencing any further testing. Check CAN terminator is in place -CAN2_2WD (Near Front Right Wheel) and -CAN2_TCP (found inside base display enclosure) Remove -CAN2_TCP and measure resistance between pin A & B. Should measure 120 Ohm. If resistance measurement is significantly higher than this, recheck -CAN2_2WD is connected. Perform a continuity check of the CAN 2 Network by first checking continuity of CAN 2 LOW signals (GREEN) and Then CAN 2 HIGH signals (YELLOW) Perform a continuity check of the CAN 2 SHIELD. These tests must be performed to all devices on the CAN 2 Network. Check center joint interconnect -C89_2WD / -C89_TH is seated correctly and not damaged. Remember to replace -CAN2_TCP If still failing, disconnect all devices from the CAN 2 Network and check no short circuit between the CAN 2

		<p>HIGH and CAN 2 LOW signals. If a short is discovered, disconnect the center joint interconnect connectors and repeat the test to narrow down the search area for the fault.</p> <p>Remember to check all Connections have been re-made after rectifying fault.</p>
<p><b>B1570</b></p>	<p><b>B1570 - Rear Left Wheel Abnormal Deceleration Detected</b></p>	<p>Indicates that an extreme deceleration has been detected from the motor.</p> <p>Potential causes include loss of an encoder channel.                  Extreme driving behaviour.                  Partially Stuck or Stuck Brakes                  Poor signal being returned from speed sensor.</p> <p>Check connectors on the motor for correct seating and damage.                  Check connector on inverter for for correct seating and damage.</p> <p>Check continuity of Speed Sense Signal:                  Check continuity between Wheel Motor -C02_2WD pin 2/4 (Wire #4522) to Inverter -C01_2WD pin 17/35                  Check continuity between Wheel Motor -C01_4WD pin 3/4 (Wire #4523) to Inverter -C01_2WD pin 19/35                  Check no short circuit between above pins.</p> <p>Power will need to be cycled to inverter to clear faults.</p>

<p><b>B1571</b></p>	<p><b>B1571 - Rear Left Motor Invalid or out of range speed signal</b></p>	<p>Indicated that the amplitude of the speed sensor input to the inverter (sin / cos) is too high or the RPM value is too high. Possible causes to this can be due to: Sensor failure; Poor connection to the motor or inverter connectors; Electromagnetic interference; Damaged shielding of motor to inverter harness. Check connectors on the motor for correct seating and damage. Check connector on inverter for for correct seating and damage. Check continuity of Speed Sense Signal: Check continuity between Wheel Motor -C02_2WD pin 2/4 (Wire #4522) to Inverter -C01_2WD pin 17/35 Check continuity between Wheel Motor -C01_4WD pin 3/4 (Wire #4523) to Inverter -C01_2WD pin 19/35 Check no short circuit between above pins. Power will need to be cycled to inverter to clear faults.</p>
<p><b>B1572</b></p>	<p><b>B1572 - Rear Inverter 2WD/4WD Config Missing</b></p>	<p>Indicates that the 2WD/4WD Config has not been setup in SM. Follow correct Service Master procedure to configure device(s).</p>
<p><b>B1573</b></p>	<p><b>B1573 - Rear Inverter Safety Fault Active</b></p>	<p>Indicates a Safety Critical Fault is active. This fault code will be displayed In conjunction with active fault e.g. with Speed Sensor error / Brake / CAN.</p>
<p><b>B1574</b></p>	<p><b>B1574 - Pump Inverter Safety Fault Active</b></p>	<p>Indicates a Safety Critical Fault is active. This fault code will be displayed In conjunction with active fault e.g. with Speed Sensor error / Brake / CAN.</p>

<p><b>B1575</b></p>	<p><b>B1575 - Front Inverter / Front Right Brake / Front Motor Inverter Relay</b></p>	<p>Area Affected - High Side Input/Output, Open Drain Out 1, 2 &amp; 3</p> <p>On the Front Inverter check continuity from -C02_4WD pin 29/35 (wire #4540F) to the following:</p> <ul style="list-style-type: none"> <li>(1) FR AC Drive Motor, connector -C04_4WD, pin 3/8 (wire #4540A)</li> <li>(2) Front Motor Inverter Relay Coil, connector -C56_2WD, pin 1/1 (wire #4540C)</li> </ul> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. Check interconnect connectors (-C06_2WD and -C06_4WD). If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check continuity from connector -C02_4WD pin 4/35 (Wire #4542) to Front Right Motor, connector -C04_4WD pin 4/8.</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check continuity from Connector -C02_4WD pin 1/35 (Wire #6505) to Front Motor Inverter Relay, connector -C55_2WD pin 1/1.</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. Check interconnect connectors (-C06_2WD and -C06_4WD). If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter, check continuity from -C02_4WD pin 28/35 (Wire #1500CA) to Precharge Relay -R7_2WD pin 1 (Wire #1500C). Note: Relay -R7_2WD provides pre-charge voltage to all 3 inverters. Check Function of Relay -R7_2WD. Check Continuity from -FU1_2WD pin A to -R7_2WD pin 5. Check Fuse -FU1_2WD (10A Fuse).</p> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check for a Short Circuit fault from B- Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C02_4WD pin 28/35</li> <li>(2) -C02_4WD pin 29/35</li> </ul> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check for a Short Circuit fault from + Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C02_4WD pin 1/35</li> <li>(2) -C02_4WD pin 4/35</li> <li>(3) -C02_4WD pin 28/35</li> <li>(4) -C02_4WD pin 29/35</li> </ul> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p>
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		<p>Test condition and function of Coil and Switch of Relay - R11_TH (Albright DC Contactor)                  Consider replacement/swap of Front Right Motor, Front Inverter or Relay -R11_TH</p>
<p><b>B1576</b></p>	<p><b>B1576 - Front Right Brake Fault / AC Motor Contactor Coil</b></p>	<p>Fault detected on Front Right Motor Brake or AC Motor Contactor Coil.                  Check Front Motor connector -C04_4WD is seated correctly and for damage.                  Check pin 4/8 (Wire #4541) is inserted correctly and for damage.                  Check Front inverter connector -C02_4WD is seated correctly and for damage.                  Check pin 4/35 (Wire #4541) is inserted correctly and for damage.                  Measure resistance between -C04_4WD pin 4/8 and -C02_4WD pin 4/35. Expected value &lt; 2.0 Ohms.                  Check condition of harness between Front Motor and Inverter. Check multi core shield is connected to GND at -T1_4WD.</p>

		<p>Check Front Inverter connector -C02_4WD pin 1/35 is seated correctly and for damage.</p> <p>Check Front Motor Inverter Relay -R11_TH for damage.</p> <p>Check -C55_2WD is connected correctly and for damage.</p> <p>Measure resistance from Relay connector -C55_2WD (Wire #6505) to Inverter connector -C02_4WD pin 1/35. Expected value &lt; 2.0 Ohms.</p>
B1578	<b>B1578 - Front AC Motor Inverter / Front Right AC Drive Motor Temp.</b>	<p>Area Affected - Motor1 Temp +/-, Temp Sens +VE/-VE.</p> <p>On Front Inverter, check condition and seating of -C02_4WD.</p> <p>On Front Right AC Drive Motor, check condition and seating of -C04_4WD.</p> <p>On Front Inverter check resistance from -C02_4WD pin 26/35 (Wire #4500) to Front Right AC Motor -C04_4WD pin 6/8. Expect &lt; 2 Ohms.</p> <p>On Front Inverter check resistance from -C02_4WD pin 27/35 (Wire #4501) to Front Right AC Motor -C04_4WD pin 5/8. Expect &lt; 2 Ohms.</p> <p>On Front Inverter check resistance from -C02_4WD pin 26/35 to B+. Expect &gt; 200 Ohms.</p> <p>On Front Inverter check resistance from -C02_4WD pin 27/35 to B-. Expect &gt; 200 Ohms.</p> <p>If fault(s) found, isolate components to identify faulty component.</p>
B1579	<b>B1579 - Front AC Motor Inverter Internal Temp Sensor</b>	<p>This is an internal fault to the Front Inverter Module.</p> <p>Check for any obvious damage to the connectors and power supply terminals.</p> <p>Replace Inverter module.</p>
B1580	<b>B1580 - Front Right Motor</b>	<p>Motor speed is above normal operating conditions. Power to motor is reduced.</p> <p>If problem persists, check via SM that wheel rotation is at predicted values</p>
B1581	<b>B1581 - Front Right Motor</b>	<p>WARNING! During REGEN Battery voltage spiking above 65V. Warning Only. Fault will clear when battery voltage has stabilized. Cycle ignition to clear fault.</p> <p>If fault persists, Check Motor connectors, battery health. Seek advice from Access Engineering Team.</p>
B1582	<b>B1582 - Front Right Motor Inverter registering low voltage</b>	<p>Supply voltage has dropped below &lt;44 V DC. Recharge is required.</p>

<p><b>B1583</b></p>	<p><b>B1583 - Front Right motor Inverter at 85 Deg C</b></p>	<p>Fault indicates the Motor Inverter internal temperature has risen above nominal operating range. Acceleration current is reduced. Turn off machine and allow to cool before continuing to drive vehicle. If issue persists, Check motor, wheel harness or connectors related to the fault area are not damaged. Check brakes are not partially or fully engaged. If no faults found - replace Inverter</p>
<p><b>B1584</b></p>	<p><b>B1584 - Front Right Motor / Inverter Temp Low</b></p>	<p>Indicates that the machine is operating below the predefined safe operating temperature limits. Allow the machine to warm up before continuing to operate. Check via Service Master that correct / expected temperature values are being read from the Traction Motors. Check connectors and harness between motor and inverter for damage.</p>
<p><b>B1585</b></p>	<p><b>B1585 - Front Right Motor / Inverter Temp High</b></p>	<p>Indicates that the motor is operating above the predefined operating temperature limits. Issue may be caused by extended current requirements i.e. driving long distance uphill, erratic driving or damage to the wheel. Motor performance will be reduced. Allow the motor to cool down before continuing to operate. Check via Service Master that correct / expected temperature values are being read from the AC Motor. Check connectors and harness between motor and inverter for damage. Replace motor if issue persists.</p>
<p><b>B1586</b></p>	<p><b>B1586 - Front Right Motor Temperature Low</b></p>	<p>Indicates that the minimum operating temperature has been exceeded. Check via Service Master that correct / expected temperature values are being read from the Traction Motors. Allow machine to warm up to correct operating temperature range. Check connectors and harness between motor and inverter for damage.</p>

<p><b>B1587</b></p>	<p><b>B1587 - Front Right Wheel Abnormal Deceleration Detected</b></p>	<p>Indicates that an extreme deceleration has been detected from the motor.                  Potential causes include loss of an encoder channel.                  Extreme driving behaviour.                  Partially stuck or Stuck Brakes.                  Poor signal being returned from speed sensor.                  Check connectors on the motor for correct seating and damage.                  Check connector on inverter for for correct seating and damage.                  For front wheels check 12V - 5V voltage converter is operating correctly, Connector is seated correctly and no damage.                  Check continuity of Speed Sense Signal:                  Check continuity between Wheel Motor -C04_4WD pin 7/8 (Wire #4518) to Inverter -C02_4WD pin 7/35                  Check continuity between Wheel Motor -C04_4WD pin 8/8 (Wire #4519) to Inverter -C02_4WD pin 8/35                  Check no short circuit between above pins.                  Power will need to be cycled to inverter to clear faults.</p>
<p><b>B1588</b></p>	<p><b>B1588 - Front Right Motor Invalid or out of range speed signal</b></p>	<p>Indicated that the amplitude of the speed sensor input to the inverter (sin / cos) is too high or the RPM value is too high.                  Possible causes to this can be due to:                  Sensor failure;                  Poor connection to the motor or inverter connectors;                  Electromagnetic interference;                  Damaged shielding of motor to inverter harness.                  Check connectors on the motor for correct seating and damage.                  Check connector on inverter for for correct seating and damage.                  For front wheels check 12V - 5V voltage converter is operating correctly, Connector is seated correctly and no damage.                  Check continuity of Speed Sense Signal:                  Check continuity between Wheel Motor -C04_4WD pin 7/8 (Wire #4518) to Inverter -C02_4WD pin 7/35                  Check continuity between Wheel Motor -C04_4WD pin 8/8 (Wire #4519) to Inverter -C02_4WD pin 8/35                  Check no short circuit between above pins.                  Power will need to be cycled to inverter to clear faults.</p>

<p><b>B1589</b></p>	<p><b>B1589 - Front Right AC Motor Sensor Supply out of range</b></p>	<p>Indicates the following issues:</p> <ul style="list-style-type: none"> <li>- Sensor supply current is too low (lower limit 0.006A)</li> <li>- Sensor supply Current is too high (Higher limit 0.068A)</li> <li>- Sensor readings are out of nominal readings</li> <li>- Sensor supply voltage is out of range (11-16VDC)</li> </ul> <p>For front motors, check 12V - 5V Voltage converter. Check connector is seated correctly and no damage visible. Check Front Right AC Motor and Front Inverter connectors are seated correctly and no damage visible.</p> <p>On Front Inverter, disconnect -C02_4WD connector and check no short circuit between pins 31/35 (Wire #4512) and 32/25 (Wire #4512E). Measure resistance of these pins to voltage converter connector -C03_4WD pins A/3 and C/3 respectively. Expect &lt;2.0 Ohms.</p> <p>On Front Right AC Motor, disconnect -C04_4WD connector and check no short circuit between pins 1/8 (Wire #4525) and 2/8 (Wire #4528). Measure resistance of these pins to voltage converter connector -C03_4WD pins B/3 and C/3 respectively. Expect &lt;2.0 Ohms.</p> <p>Speed Sensor may be faulty. Voltage converter may be faulty.</p> <p>On Front Inverter, disconnect -C02_4WD connector and check no short circuit between pins 7/35 and 8/35.</p> <p>On Front Inverter measure resistance from -C02_4WD pin 7/35 (Wire #4518) to Front Left AC Motor -C04_4WD pin 6/8. Expect &lt; 2 Ohms.</p> <p>On Front Inverter measure resistance from -C02_4WD pin 8/35 (Wire #4519) to Front Left AC Motor -C04_4WD pin 5/8. Expect &lt; 2 Ohms.</p> <p>If fault(s) found, isolate components to identify faulty component. Motor Temp Sensor may be faulty</p>
<p><b>B1590</b></p>	<p><b>B1590 - Front Right Motor - Speed Encoder Feedback Sensor Fail</b></p>	<p>The Speed Encoders are enclosed within the motor housing. It provides Speed and Direction feedback to the Inverter.</p> <p>The front motors require a 12V to 5V voltage regulator to provide a 5V supply to the speed sensors. This is not required on the rear motors or pump motor.</p> <p>Check connector at motor, voltage regulator (front motors only) and inverter. Check for correct seating, termination and damage.</p> <p>On the motor connector, measure voltage at -C01_4WD pin 1/8 (+5V) (Wire #4525) to pin 2/8 (GND) (Wire #4528). Expected value, 5V DC. Follow back to inverter via voltage regulator in case of voltage loss.</p> <p>Measure resistance from Front Inverter Connector - C02_4WD pin 7/35 (Wire #4518) to Front Right Motor Connector -C04_4WD pin 7/8. Expected value &lt;2.0 Ohms.</p>

		<p>Measure resistance from Front Inverter Connector - C02_4WD pin 8/35 (Wire #4519) to Front Right Motor Connector -C04_4WD pin 8/8. Expected value &lt;2.0 Ohms.</p> <p>The machine ignition will require a power cycle (Key Off-Key On) to reset any errors. Note: extra errors may have been created during fault finding process, i.e. removing connectors.</p>
B1591	<b>B1591 - Front inverter internal power supply out of range error.</b>	<p>This fault indicates there has been an internal fault to the inverter.</p> <p>Replace the Inverter</p>
B1592	<b>B1592 - Front Right Motor exceeding temperature limit (165 Celsius)</b>	<p>Check Motor connector is fully engaged and no damage is visible.</p> <p>Check cable is damage free from Motor to Inverter.</p> <p>Check sensor is returning correct values in Service Master.</p> <p>Check brakes are not partially or fully stuck on.</p> <p>Check for damage to Motor.</p> <p>Allow motor to cool down and re-check.</p> <p>Replace motor if necessary.</p>
B1593	<b>B1593 - Front Inverter exceeding temperature limit (110 Celsius)</b>	<p>Indicates the the Inverter internal temperature has reached 110 Celsius. This is measured at the inverter heat sink.</p> <p>Check movement of wheels is not impaired.</p> <p>May be caused by prolonged use in high ambient temperatures.</p> <p>Allow Inverter to cool and check fault clears after power cycle.</p> <p>If fault continues, replace Inverter.</p>
B1594	<b>B1594 - AC Drive Current Above Limit (350 Amperes)</b>	<p>This is detecting that the U,V,W terminals on the motor are drawing to much current from the invertor above 150% of allowed. Current can be checked through diagnostic tool. Need to know what normal current is.</p> <p>Check U,V,W cables from invertor to motor and ensure there is no damage or short circuit from other phases or to ground and B+.</p> <p>Check terminal tightness to correct torque values</p>

B1595	<b>B1595 - Front Inverter Reading 67 V DC supply</b>	This is detecting the supply battery voltage reached 67 V DC. The system is shutdown This happens if the machine is trying to regen particularly when the battery is full and the current produced that has nowhere to go Check batteries are not over swelled or damaged Restart machine and re-test
B1596	<b>B1596 - Front Inverter Reading 36 V DC</b>	This is detecting the +48 V DC supply battery voltage has reduced to a lower limit of +36 V DC Check the B+, X and B- terminals on the Inverter for damage or discoloration. Check Terminals are seated correctly. Recharge battery pack. Check battery voltages to ensure there is not a damaged battery in the pack. Replace batteries or cables as required.
B1597	<b>B1597 - Front Right Motor Speed High</b>	Motor speed is above 6500RPM. Check electrical connections to motor and Inverter and seated correctly and no damage found. Check U, V & W cables are correctly fastened and no damage visible. Reset machine and check via Service Master that wheel rotation speed is within predicted values. Check condition of wheel.
B1598	<b>B1598 - Front Inverter Power stage Fault</b>	This is an internal power stage fault within the inverter. The torque current to the AC motor has been lost or intermittent. Replace the affected Inverter.
B1599	<b>B1599 - Front Inverter Incorrect Parameter / Software Setup</b>	Reflash SW via CAN2 (Diag Socket). See Help File for information on how to re-flash inverters. Restart machine - If no change, Replace Inverter
B1600	<b>B1600 - Front Inverter Internal Short Circuit Detected</b>	Indicates the Inverter has checked its internal power stage and detected a short-circuit to the MOSFET's. Check no obvious fault at B+ and U,V & W terminals. Check for damage Replace Inverter
B1601	<b>B1601 - Front Right Motor Current Draw Mismatch</b>	This is an internal current measurement made within the inverter. Expected current draw does not meet tolerance for measured current draw. System will be disabled. Check phasing of U,V, W cables from inverter to motor are correct. I.e. Inverter 'U' is attached to Motor 'U'. Check no damage to Motor connections for U, V, W. If no issues found, replace Front Inverter.

B1602	<b>B1602 - Front Inverter Precharge Fail</b>	<p>Indicates at start-up that +48 V DC was not present at the pre-charge input to the inverter.</p> <p>Check function of pre-charge relay -R7_2WD. If relay not switching, Check continuity of Relay coil GND from Pin 2 to Turntable GND2, Terminal -T03-GND_TH. Check Continuity from Relay Pin 4 (via center joint) to Base Bosch ECU pin 94/96.</p> <p>Check presence of 48 V DC at -R7_2WD pin 5. If not present, check condition of fuse -FU1_2WD (10A). If fuse is not blown, Check Wire #1500 is correctly terminated at positive busbar via terminal -T84_2WD.</p> <p>Check Continuity from -R7_2WD to the pre-charge input of Front Inverter at connector -C02 4WD pin 28/35.</p>
B1603	<b>B1603 - System Restart Required</b>	<p>Indicates that the system must be restarted after the fault has been cleared to remove stored fault.</p>
B1604	<b>B1604 - Front Inverter CAN Timeout Error</b>	<p>Indicates an issue on the CAN 2 network. Refer to schematic sheet named CAN 2 Network.</p> <p>Inspect ALL connectors on the CAN 2 Network.</p> <p><b>IMPORTANT!</b> Isolate machine before commencing any further testing.</p> <p>Check CAN terminator is in place -CAN2_2WD (Near Front Right Wheel) and -CAN2_TCP (found inside base display enclosure)</p> <p>Remove -CAN2_TCP and measure resistance between pin A &amp; B. Should measure 120 Ohm. If resistance measurement is significantly higher than this, recheck -CAN2_2WD is connected.</p> <p>Perform a continuity check of the CAN 2 Network by first checking continuity of CAN 2 LOW signals (GREEN) and Then CAN 2 HIGH signals (YELLOW)</p> <p>Perform a continuity check of the CAN 2 SHIELD.</p> <p>These tests must be performed to all devices on the CAN 2 Network.</p> <p>Check center joint interconnect -C89_2WD / -C89_TH is seated correctly and not damaged.</p> <p>Remember to replace -CAN2_TCP</p> <p>If still failing, disconnect all devices from the CAN 2 Network and check no short circuit between the CAN 2 HIGH and CAN 2 LOW signals. If a short is discovered, disconnect the center joint interconnect connectors and repeat the test to narrow down the search area for the fault.</p> <p>Remember to check all Connections have been re-made after rectifying fault.</p>
B1605	<b>B1605 - Front Inverter 2WD/4WD Config Missing</b>	<p>Indicates that the 2WD/4WD Config has not been setup in SM.</p> <p>Follow correct Service Master procedure to configure device(s).</p>
B1606	<b>B1606 - Front Inverter Safety Fault Active</b>	<p>Indicates a Safety Critical Fault is active.</p> <p>This fault code will be displayed In conjunction with active fault e.g. with Speed Sensor error / Brake / CAN.</p>

<p><b>B1607</b></p>	<p><b>B1607 - Front Inverter / Front Left Brake / Front Motor Inverter Relay</b></p>	<p>Area Affected - High Side Input/Output, Open Drain Out 1, 2 &amp; 3</p> <p>On the Front Inverter check continuity from -C02_4WD pin 29/35 (wire #4540F) to the following:</p> <ul style="list-style-type: none"> <li>(1) FL AC Drive Motor, connector -C01_4WD, pin 3/8 (wire #4540B)</li> <li>(2) Front Motor Inverter Relay Coil, connector -C56_2WD, pin 1/1 (wire #4540C)</li> </ul> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. Check interconnect connectors (-C06_2WD and -C06_4WD). If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check continuity from connector -C02_4WD pin 25/35 (Wire #4541) to Front Left Motor, connector -C01_4WD pin 4/8. If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check continuity from Connector -C02_4WD pin 1/35 (Wire #6505) to Front Motor Inverter Relay, connector -C55_2WD pin 1/1. If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. Check interconnect connectors (-C06_2WD and -C06_4WD). If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter, check continuity from -C02_4WD pin 28/35 (Wire #1500CA) to Precharge Relay -R7_2WD pin 1 (Wire #1500C). Note: Relay -R7_2WD provides pre-charge voltage to all 3 inverters. Check Function of Relay -R7_2WD. Check Continuity from -FU1_2WD pin A to -R7_2WD pin 5. Check Fuse -FU1_2WD (10A Fuse). If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check for a Short Circuit fault from B- Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C02_4WD pin 28/35</li> <li>(2) -C02_4WD pin 29/35</li> </ul> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Front Inverter check for a Short Circuit fault from + Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C02_4WD pin 1/35</li> </ul>
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		<p>(2) -C02_4WD pin 4/35                  (3) -C02_4WD pin 28/35                  (4) -C02_4WD pin 29/35</p> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>Test condition and function of Coil and Switch of Relay - R11_TH (Albright DC Contactor)                  Consider replacement/swap of Front Left Motor, Front Inverter or Relay -R11_TH</p>
<p><b>B1608</b></p>	<p><b>B1608 - Front Left Brake Fault</b></p>	<p>Fault detected on Front Left Motor Brake.                  Check Front Motor connector -C01_4WD is seated correctly and for damage.                  Check pin 4/8 (Wire #4541) is inserted correctly and for damage.                  Check Front inverter connector -C02_4WD is seated correctly and for damage.                  Check pin 25/35 (Wire #4541) is inserted correctly and for damage.                  Measure resistance between -C01_4WD pin 4/8 and -C02_4WD pin 25/35. Expected value &lt; 2.0 Ohms.                  Check condition of harness between Front Motor and Inverter. Check multi core shield is connected to GND at -T1_4WD.</p>

B1609	<b>B1609 - Front AC Motor Inverter / Front Left AC Drive Motor Temp.</b>	<p>Area Affected - Motor2 Temp +/-, Temp Sens +VE/-VE.</p> <p>On Front Inverter, check condition and seating of -C02_4WD.</p> <p>On Front Left AC Drive Motor, check condition and seating of -C01_4WD.</p> <p>On Front Inverter check resistance from -C02_4WD pin 15/35 (Wire #4500) to Front Left AC Motor -C01_4WD pin 6/8. Expect &lt; 2 Ohms.</p> <p>On Front Inverter check resistance from -C02_4WD pin 16/35 (Wire #4501) to Front Left AC Motor -C01_4WD pin 5/8. Expect &lt; 2 Ohms.</p> <p>On Front Inverter check resistance from -C02_4WD pin 15/35 to B+. Expect &gt; 200 Ohms.</p> <p>On Front Inverter check resistance from -C02_4WD pin 16/35 to B-. Expect &gt; 200 Ohms.</p> <p>If fault(s) found, isolate components to identify faulty component.</p>
B1610	<b>B1610 - Front AC Motor Inverter Internal Temp Sensor</b>	<p>This is an internal fault to the Front Inverter Module.</p> <p>Check for any obvious damage to the connectors and power supply terminals.</p> <p>Replace Inverter module.</p>
B1611	<b>B1611 - Front Left Motor</b>	<p>Motor speed is above normal operating conditions. Power to motor is reduced.</p> <p>If problem persists, check via SM that wheel rotation is at predicted values</p>
B1612	<b>B1612 - Front Left Motor</b>	<p>WARNING! During REGEN Battery voltage spiking above 65V. Warning Only. Fault will clear when battery voltage has stabilized. Cycle ignition to clear fault.</p> <p>If fault persists, Check Motor connectors, battery health. Seek advice from Access Engineering Team.</p>
B1613	<b>B1613 - Front Left Motor Inverter registering low voltage</b>	<p>Supply voltage has dropped below &lt;44 V DC. Recharge is required.</p>
B1614	<b>B1614 - Front Left Motor Inverter at 85 Deg C</b>	<p>Fault indicates the Motor Inverter internal temperature has risen above nominal operating range. Check Acceleration current is reduced. Turn off machine and allow to cool before continuing to drive vehicle. If issue persists, Check motor, wheel harness or connectors related to the fault area are not damaged. Check brakes are not partially or fully engaged. If no faults found - replace Inverter</p>
B1615	<b>B1615 - Front Left Motor / Inverter Temp Low</b>	<p>Indicates that the machine is operating below the predefined safe operating temperature limits.</p> <p>Allow the machine to warm up before continuing to operate.</p> <p>Check via Service Master that correct / expected temperature values are being read from the Traction Motors.</p> <p>Check connectors and harness between motor and inverter for damage.</p>

<p><b>B1616</b></p>	<p><b>B1616 - Front Left Motor / Inverter Temp High</b></p>	<p>Indicates that the motor is operating above the predefined operating temperature limits.                      Issue may be caused by extended current requirements i.e. driving long distance uphill, erratic driving or damage to the wheel.                      Motor performance will be reduced. Allow the motor to cool down before continuing to operate.                      Check via Service Master that correct / expected temperature values are being read from the AC Motor.                      Check connectors and harness between motor and inverter for damage.                      Replace motor if issue persists.</p>
<p><b>B1617</b></p>	<p><b>B1617 - Front Left Motor Temperature Low</b></p>	<p>Indicates that the minimum operating temperature has been exceeded.                      Check via Service Master that correct / expected temperature values are being read from the Traction Motors.                      Allow machine to warm up to correct operating temperature range.                      Check connectors and harness between motor and inverter for damage.</p>
<p><b>B1618</b></p>	<p><b>B1618 - Front Left Wheel Abnormal Deceleration Detected</b></p>	<p>Indicates that an extreme deceleration has been detected from the motor.                      Potential causes include loss of an encoder channel.                      Extreme driving behaviour.                      Intermittent Brakes                      Poor signal being returned from speed sensor.                      Check connectors on the motor for correct seating and damage.                      Check connector on inverter for for correct seating and damage.                      For front wheels check 12V - 5V voltage converter is operating correctly, Connector is seated correctly and no damage.                      Check continuity of Speed Sense Signal:                      Check continuity between Wheel Motor -C01_4WD pin 7/8 (Wire #4514) to Inverter -C02_4WD pin 17/35                      Check continuity between Wheel Motor -C01_4WD pin 8/8 (Wire #4515) to Inverter -C02_4WD pin 19/35                      Check no short circuit between above pins.                      Power will need to be cycled to inverter to clear faults.</p>

<b>B1619</b>	<b>B1619 - Front Left Motor Invalid or out of range speed signal</b>	<p>Indicated that the amplitude of the speed sensor input to the inverter (sin / cos) is too high or the RPM value is too high.</p> <p>Possible causes to this can be due to:</p> <ul style="list-style-type: none"><li>Sensor failure;</li><li>Poor connection to the motor or inverter connectors;</li><li>Electromagnetic interference;</li><li>Damaged shielding of motor to inverter harness.</li></ul> <p>Check connectors on the motor for correct seating and damage.</p> <p>Check connector on inverter for for correct seating and damage.</p> <p>For front wheels check 12V - 5V voltage converter is operating correctly, Connector is seated correctly and no damage.</p> <p>Check continuity of Speed Sense Signal:</p> <p>Check continuity between Wheel Motor -C01_4WD pin 7/8 (Wire #4514) to Inverter -C02_4WD pin 17/35</p> <p>Check continuity between Wheel Motor -C01_4WD pin 8/8 (Wire #4515) to Inverter -C02_4WD pin 19/35</p> <p>Check no short circuit between above pins.</p> <p>Power will need to be cycled to inverter to clear faults.</p>
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<p><b>B1620</b></p>	<p><b>B1620 - Front Left AC Motor Sensor Supply out of range</b></p>	<p>Indicates the following issues:</p> <ul style="list-style-type: none"> <li>- Sensor supply current is too low (lower limit 0.006A)</li> <li>- Sensor supply Current is too high (Higher limit 0.068A)</li> <li>- Sensor readings are out of nominal readings</li> <li>- Sensor supply voltage is out of range (11-16VDC)</li> </ul> <p>For front motors, check 12V - 5V Voltage converter. Check connector is seated correctly and no damage visible. Check Front Left AC Motor and Front Inverter connectors are seated correctly and no damage visible.</p> <p>On Front Inverter, disconnect -C02_4WD connector and check no short circuit between pins 31/35 (Wire #4512) and 32/25 (Wire #4512E). Measure resistance of these pins to voltage converter connector -C03_4WD pins A/3 and C/3 respectively. Expect &lt;2.0 Ohms.</p> <p>On Front Left AC Motor, disconnect -C01_4WD connector and check no short circuit between pins 1/8 (Wire #4512B) and 2/8 (Wire #4513). Measure resistance of these pins to voltage converter connector -C03_4WD pins B/3 and C/3 respectively. Expect &lt;2.0 Ohms.</p> <p>Speed Sensor may be faulty. Voltage converter may be faulty.</p> <p>On Front Inverter, disconnect -C02_4WD connector and check no short circuit between pins 15/35 and 16/35.</p> <p>On Front Inverter measure resistance from -C02_4WD pin 15/35 (Wire #4500) to Front Left AC Motor -C01_4WD pin 6/8. Expect &lt; 2 Ohms.</p> <p>On Front Inverter measure resistance from -C02_4WD pin 16/35 (Wire #4501) to Front Left AC Motor -C01_4WD pin 5/8. Expect &lt; 2 Ohms.</p> <p>If fault(s) found, isolate components to identify faulty component. Motor Temp Sensor may be faulty</p>
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B1621	<b>B1621 - Front Left Motor - Speed Encoder Feedback Sensor Fail</b>	<p>The Speed Encoders are enclosed within the motor housing. It provides Speed and Direction feedback to the Inverter.</p> <p>The front motors require a 12V to 5V voltage regulator to provide a 5V supply to the speed sensors. This is not required on the rear motors or pump motor.</p> <p>Check connector at motor, voltage regulator (front motors only) and inverter. Check for correct seating, termination and damage.</p> <p>On the motor connector, measure voltage at -C01_4WD pin 1/8 (+5V) (Wire #4512B) to pin 2/8 (GND) (Wire #4513). Expected value, 5V DC. Follow back to inverter via voltage regulator in case of voltage loss.</p> <p>Measure resistance from Front Inverter Connector - C02_4WD pin 17/35 (Wire #4514) to Front Left Motor Connector -C01_4WD pin 7/8. Expected value &lt;2.0 Ohms.</p> <p>Measure resistance from Front Inverter Connector - C02_4WD pin 19/35 (Wire #4514) to Front Left Motor Connector -C01_4WD pin 8/8. Expected value &lt;2.0 Ohms.</p> <p>The machine ignition will require a power cycle (Key Off-Key On) to reset any errors. Note: extra errors may have been created during fault finding process, i.e. removing connectors.</p>
B1622	<b>B1622 - Front inverter internal power supply out of range error.</b>	<p>This fault indicates there has been an internal fault to the inverter.</p> <p>Replace the Inverter</p>
B1624	<b>B1624 - Front Inverter exceeding temperature limit (110 Celsius)</b>	<p>Indicates the the Inverter internal temperature has reached 110 Celsius. This is measured at the inverter heat sink.</p> <p>Check movement of wheels is not impaired.</p> <p>May be caused by prolonged use in high ambient temperatures.</p> <p>Allow Inverter to cool and check fault clears after power cycle.</p> <p>If fault continues, replace Inverter.</p>
B1625	<b>B1625 - AC Drive Current Above Limit (350 Amperes)</b>	<p>This is detecting that the U,V,W terminals on the motor are drawing to much current from the invertor above 150% of allowed. Current can be checked through diagnostic tool. Need to know what normal current is.</p> <p>Check U,V,W cables from invertor to motor and ensure there is no damage or short circuit from other phases or to ground and B+.</p> <p>Check terminal tightness to correct torque values</p>

B1626	<b>B1626 - Front Inverter Reading 67 V DC supply</b>	<p>This is detecting the supply battery voltage reached 67 V DC. The system is shutdown                  This happens if the machine is trying to regen particularly when the battery is full and the current produced that has nowhere to go                  Check batteries are not over swelled or damaged                  Restart machine and re-test</p>
B1627	<b>B1627 - Front Inverter Reading 36 V DC</b>	<p>This is detecting the +48 V DC supply battery voltage has reduced to a lower limit of +36 V DC                  Check the B+, X and B- terminals on the Inverter for damage or discoloration. Check Terminals are seated correctly.                  Recharge battery pack.                  Check battery voltages to ensure there is not a damaged battery in the pack.                  Replace batteries or cables as required.</p>
B1628	<b>B1628 - Front Left Motor Speed High</b>	<p>Motor speed is above 6500RPM.                  Check electrical connections to motor and Inverter and seated correctly and no damage found.                  Check U, V &amp; W cables are correctly fastened and no damage visible.                  Reset machine and check via Service Master that wheel rotation speed is within predicted values.                  Check condition of wheel.</p>
B1629	<b>B1629 - Front Inverter Power stage Fault</b>	<p>This is an internal power stage fault within the inverter.                  The torque current to the AC motor has been lost or intermittent.                  Replace the affected Inverter.</p>
B1630	<b>B1630 - Front Inverter Incorrect Parameter / Software Setup</b>	<p>Reflash SW via CAN2 (Diag Socket). See Help File for information on how to re-flash inverters.                  Restart machine - If no change, Replace Inverter</p>
B1631	<b>B1631 - Front Inverter Internal Short Circuit Detected</b>	<p>Indicates the Inverter has checked its internal power stage and detected a short-circuit to the MOSFETs.                  Check no obvious fault at B+ and U.V &amp; W terminals.                  Check for damage.                  Replace Inverter</p>
B1632	<b>B1632 - Front Left Motor Current Draw Mismatch</b>	<p>This is an internal current measurement made within the inverter. Expected current draw does not meet tolerance for measured current draw.                  System will be disabled.                  Check phasing of U,V, W cables from inverter to motor are correct. I.e. Inverter 'U' is attached to Motor 'U'.                  Check no damage to Motor connections for U, V, W.                  If no issues found, replace Front Inverter.</p>

<p><b>B1633</b></p>	<p><b>B1633 - Front Inverter Precharge Fail</b></p>	<p>Indicates at start-up that +48 V DC was not present at the pre-charge input to the inverter.                  Check function of pre-charge relay -R7_2WD. If relay not switching, Check continuity of Relay coil GND from Pin 2 to Turntable GND2, Terminal -T03-GND_TH. Check Continuity from Relay Pin 4 (via centrejoint) to Base Bosch ECU pin 94/96.                  Check presence of 48 V DC at -R7_2WD pin 5. If not present, check condition of fuse -FU1_2WD (10A). If fuse is not blown, Check Wire #1500 is correctly terminated at positive busbar via terminal -T84_2WD.                  Check Continuity from -R7_2WD to the pre-charge input of Front Inverter at connector -C02_4WD pin 28/35.</p>
<p><b>B1634</b></p>	<p><b>B1634 - System Restart Required</b></p>	<p>Indicates that the system must be restarted after the fault has been cleared to remove stored fault.</p>
<p><b>B1635</b></p>	<p><b>B1635 - Front Inverter CAN Timeout Error</b></p>	<p>Indicates an issue on the CAN 2 network. Refer to schematic sheet named CAN 2 Network.                  Inspect ALL connectors on the CAN 2 Network.  <b>IMPORTANT!</b> Isolate machine before commencing any further testing.                  Check CAN terminator is in place -CAN2_2WD (Near Front Right Wheel) and -CAN2_TCP (found inside base display enclosure)                  Remove -CAN2_TCP and measure resistance between pin A &amp; B. Should measure 120 Ohm. If resistance measurement is significantly higher than this, recheck -CAN2_2WD is connected.                  Perform a continuity check of the CAN 2 Network by first checking continuity of CAN 2 LOW signals (GREEN) and Then CAN 2 HIGH signals (YELLOW)                  Perform a continuity check of the CAN 2 SHIELD.                  These tests must be performed to all devices on the CAN 2 Network.                  Check center joint interconnect -C89_2WD / -C89_TH is seated correctly and not damaged.                  Remember to replace -CAN2_TCP                  If still failing, disconnect all devices from the CAN 2 Network and check no short circuit between the CAN 2 HIGH and CAN 2 LOW signals. If a short is discovered, disconnect the center joint interconnect connectors and repeat the test to narrow down the search area for the fault.                  Remember to check all Connections have been re-made after rectifying fault.</p>

<p><b>B1637</b></p>	<p><b>B1637 - Front Inverter Safety Fault Active or Front Inverter 2WD/4WD Config Missing</b></p>	<p>Indicates a Safety Critical Fault is active. This fault code will be displayed In conjunction with active fault e.g. with Speed Sensor error / Brake / CAN. Or Indicates that the 2WD/4WD Config has not been setup in SM. Follow correct Service Master procedure to configure device(s).</p>
<p><b>B1638</b></p>	<p><b>B1638 - Rear Inverter / Rear Right Brake / Rear Motor Inverter Relay</b></p>	<p>Area Affected - High Side Input/Output, Open Drain Out 1, 2 &amp; 3</p> <p>On the Rear Inverter check continuity from -C01_2WD pin 29/35 (wire #4526E) to the following:</p> <ul style="list-style-type: none"> <li>(1) RR AC Drive Motor, connector -C08_2WD, pin 1/2 (wire #4536A)</li> <li>(2) Rear Motor Inverter Relay Coil, connector -C56_2WD, pin 1/1 (wire #4536C)</li> </ul> <p>If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check continuity from connector - C01_2WD pin 4/35 (Wire #4537) to Rear Right Motor, connector -C08_2WD pin 2/2. If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check continuity from Connector - C02_4WD pin 1/35 (Wire #6505) to Rear Motor Inverter Relay, connector -C55_2WD pin 1/1. If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault.. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter, check continuity from -C01_2WD pin 28/35 (Wire #1500K) to Precharge Relay -R7_2WD pin 1 (Wire #1500C). Note: Relay -R7_2WD provides pre-charge voltage to all 3 inverters. Check Function of Relay -R7_2WD. Check Continuity from -FU1_2WD pin A to - R7_2WD pin 5. Check Fuse -FU1_2WD (10A Fuse). If Open Circuit or High Reading (&gt;2 Ohms) Inspect wiring for fault. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check for a Short Circuit fault from B-Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C02_4WD pin 28/35</li> <li>(2) -C02_4WD pin 29/35</li> </ul>

		<p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>On the Rear Inverter check for a Short Circuit fault from + Terminal to the following:</p> <ul style="list-style-type: none"> <li>(1) -C02_4WD pin 1/35</li> <li>(2) -C02_4WD pin 4/35</li> <li>(3) -C02_4WD pin 28/35</li> <li>(4) -C02_4WD pin 29/35</li> </ul> <p>If Short Circuit or Low Reading (&lt;100 Ohms) Inspect wiring for fault in respective area. If fault found: Replace as necessary. Cycle Ignition and check fault cleared.</p> <p>Test condition and function of Coil and Switch of Relay - R12_TH (Albright DC Contactor) Consider replacement/swap of Rear Right Motor, Rear Inverter or Relay -R12_TH</p>
<p><b>B1639</b></p>	<p><b>B1639 - Rear Right Brake Fault / AC Motor Contactor Coil</b></p>	<p>Fault detected on Rear Right Motor Brake or AC Motor Contactor Coil.</p> <p>Check Rear Motor connector -C08_2WD is seated correctly and for damage. Check pin 2/2 (Wire #4538) is inserted correctly and for damage. Check Rear inverter connector -C01_2WD is seated correctly and for damage. Check pin 4/35 (Wire #4541) is inserted correctly and for damage. Measure resistance between -C08_2WD pin 2/2 and -C01_2WD pin 4/35. Expected value &lt; 2.0 Ohms. Check condition of harness between Rear Motor and Inverter.</p>

		<p>Check Rear Inverter connector -C01_2WD pin 1/35 is seated correctly and for damage.                  Check Rear Motor Inverter Relay -R12_TH for damage.                  Check connector -C57_2WD is connected correctly.                  Measure resistance from Relay connector -C57_2WD (Wire #6505) to Inverter connector -C01_2WD pin 1/35.                  Expected value &lt; 2.0 Ohms.</p>
B1640	<b>B1640 - Rear AC Motor Inverter / Rear Right AC Drive Motor Temp.</b>	<p>Area Affected - Motor1 Temp +/-, Temp Sens +VE/-VE.</p> <p>On Rear Inverter, check condition and seating of -C01_2WD.                  On Rear Right AC Drive Motor, check condition and seating of -C03_2WD.                  On Rear Inverter check resistance from -C01_2WD pin 26/35 (Wire #4500) to Rear Right AC Motor -C03_2WD pin 6/8. Expect &lt; 2 Ohms.                  On Rear Inverter check resistance from -C01_2WD pin 27/35 (Wire #4501) to Rear Right AC Motor -C03_2WD pin 5/8. Expect &lt; 2 Ohms.                  On Rear Inverter check resistance from -C01_2WD pin 26/35 to B+. Expect &gt; 200 Ohms.                  On Rear Inverter check resistance from -C01_2WD pin 27/35 to B-. Expect &gt; 200 Ohms.                  If fault(s) found, isolate components to identify faulty component.</p>
B1642	<b>B1642 - Rear AC Motor Inverter Internal Temp Sensor</b>	<p>This is an internal fault to the Rear Inverter Module.                  Check for any obvious damage to the connectors and power supply terminals.                  Replace Inverter module.</p>
B1643	<b>B1643 - Rear Right Motor</b>	<p>Motor speed is above normal operating conditions. Power to motor is reduced.                  If problem persists, check via SM that wheel rotation is at predicted values</p>
B1644	<b>B1644 - Rear Right Motor</b>	<p>WARNING! During REGEN Battery voltage spiking above 65V. Warning Only. Fault will clear when battery voltage has stabilized. Cycle ignition to clear fault.                  If fault persists, Check Motor connectors, battery health.                  Seek advice from Access Engineering Team.</p>
B1645	<b>B1645 - Rear Right Motor Inverter registering low voltage</b>	<p>Supply voltage has dropped below &lt;44 V DC. Recharge is required.</p>

<p><b>B1646</b></p>	<p><b>B1646 - Rear Right Motor Inverter at 85 Deg C</b></p>	<p>Fault indicates the Motor Inverter internal temperature has risen above nominal operating range. Acceleration current is reduced. Turn off machine and allow to cool before continuing to drive vehicle. If issue persists, Check motor, wheel harness or connectors related to the fault area are not damaged. Check brakes are not partially or fully engaged. If no faults found - replace Inverter</p>
<p><b>B1647</b></p>	<p><b>B1647 - Rear Right Motor Inverter Temp Low</b></p>	<p>Indicates that the machine is operating below the predefined safe operating temperature limits. Allow the machine to warm up before continuing to operate. Check via Service Master that correct / expected temperature values are being read from the Traction Motors. Check connectors and harness between motor and inverter for damage.</p>
<p><b>B1648</b></p>	<p><b>B1648 - Rear Right Motor Inverter Temp High</b></p>	<p>Indicates that the motor is operating above the predefined operating temperature limits. Issue may be caused by extended current requirements i.e. driving long distance uphill, erratic driving or damage to the wheel. Motor performance will be reduced. Allow the motor to cool down before continuing to operate. Check via Service Master that correct / expected temperature values are being read from the AC Motor. Check connectors and harness between motor and inverter for damage. Replace motor if issue persists.</p>
<p><b>B1649</b></p>	<p><b>B1649 - Rear Right Motor Temperature Low</b></p>	<p>Indicates that the minimum operating temperature has been exceeded. Check via Service Master that correct / expected temperature values are being read from the Traction Motors. Allow machine to warm up to correct operating temperature range. Check connectors and harness between motor and inverter for damage.</p>

<p><b>B1650</b></p>	<p><b>B1650 - Rear Right Wheel Abnormal Deceleration Detected</b></p>	<p>Indicates that an extreme deceleration has been detected from the motor.                  Potential causes include loss of an encoder channel.                  Extreme driving behaviour.                  Partially Stuck or Stuck Brakes                  Poor signal being returned from speed sensor.                  Check connectors on the motor for correct seating and damage.                  Check connector on inverter for for correct seating and damage.                  Check continuity of Speed Sense Signal:                  Check continuity between Wheel Motor -C03_2WD pin 2/4 (Wire #4526) to Inverter -C01_2WD pin 7/35                  Check continuity between Wheel Motor -C03_4WD pin 3/4 (Wire #4527) to Inverter -C01_2WD pin 8/35                  Check no short circuit between above pins.                  Power will need to be cycled to inverter to clear faults.</p>
<p><b>B1651</b></p>	<p><b>B1651 - Rear Right Motor Invalid or out of range speed signal</b></p>	<p>Indicated that the amplitude of the speed sensor input to the inverter (sin / cos) is too high or the RPM value is too high.                  Possible causes to this can be due to:                  Sensor failure;                  Poor connection to the motor or inverter connectors;                  Electromagnetic interference;                  Damaged shielding of motor to inverter harness.                  Check connectors on the motor for correct seating and damage.                  Check connector on inverter for for correct seating and damage.                  Check continuity of Speed Sense Signal:                  Check continuity between Wheel Motor -C03_2WD pin 2/4 (Wire #4526) to Inverter -C01_2WD pin 7/35                  Check continuity between Wheel Motor -C03_4WD pin 3/4 (Wire #4527) to Inverter -C01_2WD pin 8/35                  Check no short circuit between above pins.                  Power will need to be cycled to inverter to clear faults.</p>

<p><b>B1652</b></p>	<p><b>B1652 - Rear Right AC Motor Sensor Supply out of range</b></p>	<p>Indicates the following issues:</p> <ul style="list-style-type: none"> <li>- Sensor supply current is too low (lower limit 0.006A)</li> <li>- Sensor supply Current is too high (Higher limit 0.068A)</li> <li>- Sensor readings are out of nominal readings</li> <li>- Sensor supply voltage is out of range (11-16VDC)</li> </ul> <p>Check Rear Right AC Motor and rear Inverter connectors are seated correctly and no damage visible.</p> <p>On Rear Inverter, disconnect -C01_2WD connector and check no short circuit between pins 6/35 (Wire #4520) and 5/25 (Wire #4521). Measure resistance of these pins to Rear Right AC Motor -C03_2WD Pins 4/4 and 1/4 respectively. Expect &lt;2.0 Ohms.</p> <p>Speed Sensor may be faulty.</p> <p>On Rear Inverter, disconnect -C01_2WD connector and check no short circuit between pins 26/35 and 27/35.</p> <p>On Rear Inverter measure resistance from -C01_2WD pin 26/35 (Wire #4504) to Rear Right AC Motor -C07_2WD pin 2/2. Expect &lt; 2 Ohms.</p> <p>On Rear Inverter measure resistance from -C01_2WD pin 27/35 (Wire #4505) to Rear Right AC Motor -C07_2WD pin 1/2. Expect &lt; 2 Ohms.</p> <p>If fault(s) found, isolate components to identify faulty component.</p> <p>Motor Temp Sensor may be faulty</p>
<p><b>B1653</b></p>	<p><b>B1653 - Rear Right Motor Speed Encoder Feedback Sensor Fail</b></p>	<p>The Speed Encoders are enclosed within the motor housing. It provides Speed and Direction feedback to the Inverter.</p> <p>The front motors require a 12V to 5V voltage regulator to provide a 5V supply to the speed sensors. This is not required on the rear motors or pump motor.</p> <p>Check connector at motor, voltage regulator (front motors only) and inverter. Check for correct seating, termination and damage.</p> <p>On the motor connector, measure voltage at -C03_2WD pin 1/4 (+12V) (Wire #4520B) to pin 4/4 (GND) (Wire #4528). Expected value, 12V DC.</p> <p>Measure resistance from Rear Inverter Connector - C01_2WD pin 7/35 (Wire #4526) to Rear Left Motor Connector -C03_2WD pin 2/4. Expected value &lt;2.0 Ohms.</p> <p>Measure resistance from Rear Inverter Connector - C01_2WD pin 8/35 (Wire #4527) to Rear Left Motor Connector -C03_2WD pin 3/4. Expected value &lt;2.0 Ohms.</p> <p>The machine ignition will require a power cycle (Key Off-Key On) to reset any errors. Note: extra errors may have been created during fault finding process, i.e. removing connectors.</p>

B1654	<b>B1654 - Rear inverter internal power supply out of range error.</b>	This fault indicates there has been an internal fault to the inverter. Replace the Inverter
B1655	<b>B1655 - Rear Right Motor exceeding temperature limit (165 Celsius)</b>	Check Motor connector is fully engaged and no damage is visible. Check cable is damage free from Motor to Inverter. Check sensor is returning correct values in Service Master. Check brakes are not partially or fully stuck on. Check for damage to Motor. Allow motor to cool down and re-check. Replace motor if necessary.
B1656	<b>B1656 - Rear Inverter exceeding temperature limit (110 Celsius)</b>	Indicates the the Inverter internal temperature has reached 110 Celsius. This is measured at the inverter heat sink. Check movement of wheels is not impaired. May be caused by prolonged use in high ambient temperatures. Allow Inverter to cool and check fault clears after power cycle. If fault continues, replace Inverter.
B1657	<b>B1657 - AC Drive Current Above Limit (350 Amperes)</b>	This is detecting that the U,V,W terminals on the motor are drawing to much current from the invertor above 150% of allowed. Current can be checked through diagnostic tool. Need to know what normal current is. Check U,V,W cables from invertor to motor and ensure there is no damage or short circuit from other phases or to ground and B+. Check terminal tightness to correct torque values
B1658	<b>B1658 - Rear Inverter Reading 67 V DC supply</b>	This is detecting the supply battery voltage reached 67 V DC. The system is shutdown This happens if the machine is trying to regen particularly when the battery is full and the current produced that has nowhere to go Check batteries are not over swelled or damaged Restart machine and re-test
B1659	<b>B1659 - Rear Inverter Reading 36 V DC</b>	This is detecting the +48 V DC supply battery voltage has reduced to a lower limit of +36 V DC Check the B+, X and B- terminals on the Inverter for damage or discoloration. Check Terminals are seated correctly. Recharge battery pack. Check battery voltages to ensure there is not a damaged battery in the pack. Replace batteries or cables as required.
B1660	<b>B1660 - Rear Right Motor Speed High</b>	Motor speed is above 6500RPM. Check electrical connections to motor and Inverter and seated correctly and no damage found. Check U, V & W cables are correctly fastened and no damage visible. Reset machine and check via Service Master that wheel rotation speed is within predicted values.

		Check condition of wheel.
B1661	<b>B1661 - Rear Inverter Power stage Fault</b>	This is an internal power stage fault within the inverter. The torque current to the AC motor has been lost or intermittent. Replace the affected Inverter.
B1662	<b>B1662 - Rear Inverter Incorrect Parameter / Software Setup</b>	Reflash SW via CAN2 (Diag Socket). See Help File for information on how to re-flash inverters. Restart machine - If no change, Replace Inverter
B1663	<b>B1663 - Rear Inverter Internal Short Circuit Detected</b>	Indicates the Inverter has checked its internal power stage and detected a short-circuit to the MOSFETs. Check no obvious fault at B+ and U,V & W terminals. Check for damage. Replace Inverter
B1664	<b>B1664 - Rear Right Motor Current Draw Mismatch</b>	This is an internal current measurement made within the inverter. Expected current draw does not meet tolerance for measured current draw. System will be disabled. Check phasing of U,V, W cables from inverter to motor are correct. I.e. Inverter 'U' is attached to Motor 'U'. Check no damage to Motor connections for U, V, W. If no issues found, replace Rear Inverter.
B1665	<b>B1665 - Rear Inverter Precharge Fail</b>	Indicates at start-up that +48 V DC was not present at the pre-charge input to the inverter. Check function of pre-charge relay -R7_2WD. If relay not switching, Check continuity of Relay coil GND from Pin 2 to Turntable GND2, Terminal -T03-GND_TH. Check Continuity from Relay Pin 4 (via center joint) to Base Bosch ECU pin 94/96. Check presence of 48 V DC at -R7_2WD pin 5. If not present, check condition of fuse -FU1_2WD (10A). If fuse is not blown, Check Wire #1500 is correctly terminated at positive busbar via terminal -T84_2WD. Check Continuity from -R7_2WD to the pre-charge input of Front Inverter at connector -C01_2WD pin 28/35.
B1666	<b>B1666 - System Restart Required</b>	Indicates that the system must be restarted after the fault has been cleared to remove stored fault.

<p><b>B1667</b></p>	<p><b>B1667 - Rear Inverter CAN Timeout Error</b></p>	<p>Indicates an issue on the CAN 2 network. Refer to schematic sheet named CAN 2 Network.                  Inspect ALL connectors on the CAN 2 Network.                  IMPORTANT! Isolate machine before commencing any further testing.                  Check CAN terminator is in place -CAN2_2WD (Near Front Right Wheel) and -CAN2_TCP (found inside base display enclosure)                  Remove -CAN2_TCP and measure resistance between pin A &amp; B. Should measure 120 Ohm. If resistance measurement is significantly higher than this, recheck -CAN2_2WD is connected.                  Perform a continuity check of the CAN 2 Network by first checking continuity of CAN 2 LOW signals (GREEN) and Then CAN 2 HIGH signals (YELLOW)                  Perform a continuity check of the CAN 2 SHIELD.                  These tests must be performed to all devices on the CAN 2 Network.                  Check center joint interconnect -C89_2WD / -C89_TH is seated correctly and not damaged.                  Remember to replace -CAN2_TCP                  If still failing, disconnect all devices from the CAN 2 Network and check no short circuit between the CAN 2 HIGH and CAN 2 LOW signals. If a short is discovered, disconnect the center joint interconnect connectors and repeat the test to narrow down the search area for the fault.                  Remember to check all Connections have been re-made after rectifying fault.</p>
<p><b>B1668</b></p>	<p><b>B1668 - Rear Inverter 2WD/4WD Config Missing</b></p>	<p>Indicates that the 2WD/4WD Config has not been setup in SM.                  Follow correct Service Master procedure to configure device(s).</p>
<p><b>B1669</b></p>	<p><b>B1669 - Rear Inverter Safety Fault Active</b></p>	<p>Indicates a Safety Critical Fault is active.                  This fault code will be displayed In conjunction with active fault e.g. with Speed Sensor error / Brake / CAN.</p>