

# **9819-5050: JCB T65D Helpfile**

## **USER MANUAL**

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# Introduction

## 1 Introduction

### T65D [T3] & T65D [T4F] Telescopic Boom

JCB design and manufacture the machines for the construction, maintenance, warehousing, utility and manufacturing Industries.

JCB introduces the all new T65D [T3] & T65D [T4F] Telescopic Boom to the range of articulated boom lifts. T65D [T3] & T65D [T4F] system consists of multiple controllers for Hydraulics, Engine, displays and live link. Hydraulic functionality shall be managed by 2 controllers – Bosch (Base & Platform). Engine functionality shall be controlled\monitored by JCB controller. Both displays – one at chassis and one at platform shall be managed by Parker.

This Help Files is for T65D [T3] & T65D [T4F] Telescopic Boom



List of [Introduction](#) <sup>18</sup>

Number	Components
1	<a href="#">Introduction</a> <sup>18</sup>
2	<a href="#">Machine Details</a> <sup>22</sup>
3	<a href="#">System Level Function</a> <sup>38</sup>
4	<a href="#">Machine Components</a> <sup>134</sup>
5	<a href="#">Flashing of Controllers</a> <sup>328</sup>
6	<a href="#">Machine Setup and Calibration</a> <sup>342</sup>

7	<a href="#">Machine Fault Codes</a>   384
8	<a href="#">Support File</a>   716

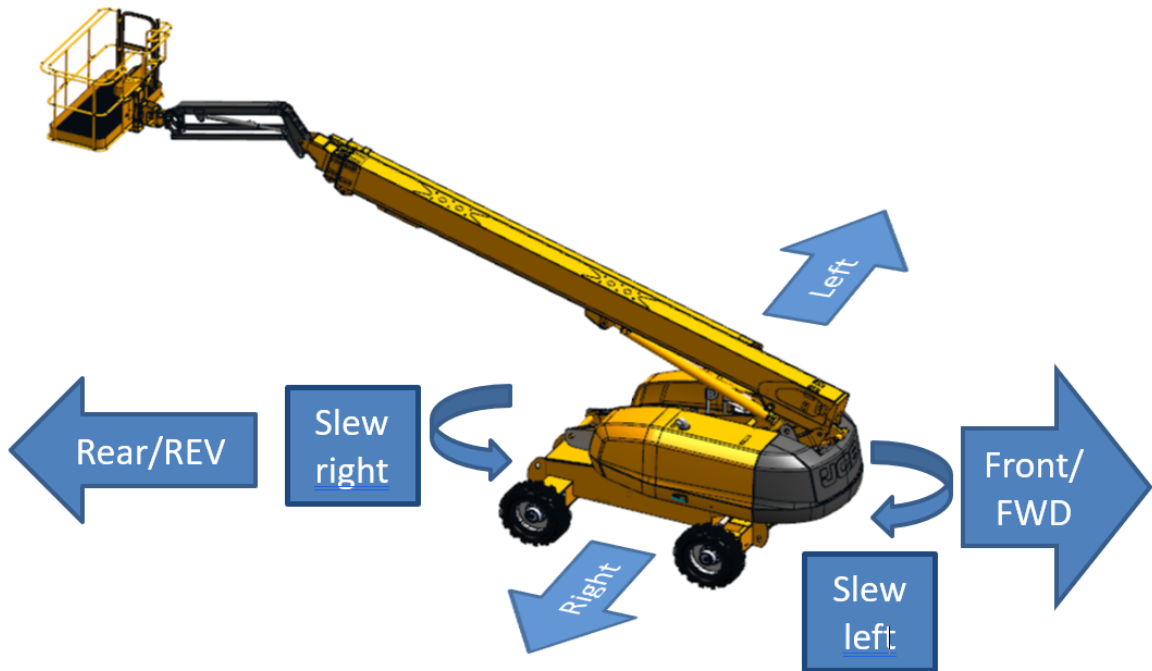
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# Machine Details

## 2 Machine Details

List of [Machine Details](#) <sup>22</sup>

Number	Component
1	<a href="#">Machine Speed and Time</a> <sup>23</sup>
2	<a href="#">CAN Layout</a> <sup>24</sup>
3	<a href="#">Harness Layout</a> <sup>26</sup>
4	<a href="#">Battery Lead Layout</a> <sup>27</sup>
5	<a href="#">Machine Structural Diagram</a> <sup>28</sup>



Directions taken with respect to an operator in the [platform](#)

## 2.1 Machine Speed and Times sheet

**The speeds and times for the machine should be checked and validated.**

If the speeds are not correct, an unlock code will be required to adjust the min and max currents set in the controller.

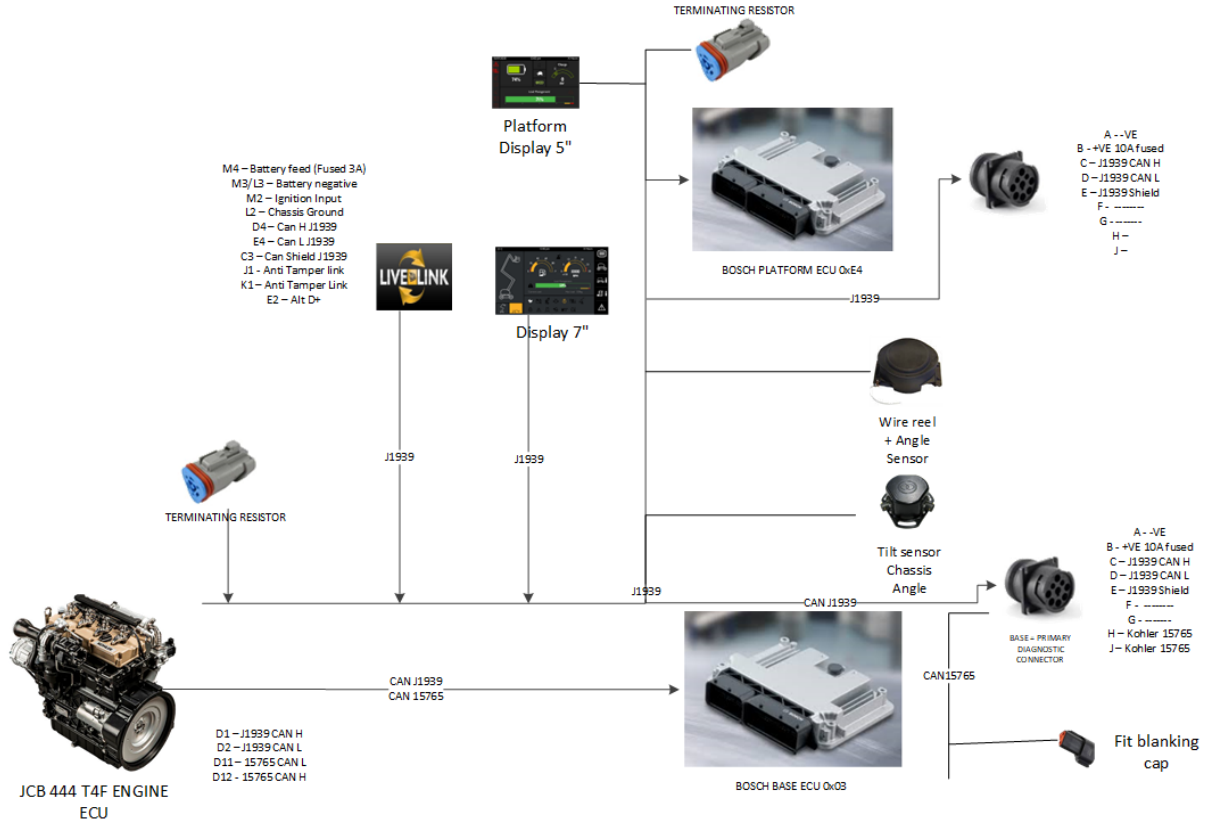
The parameters that need to be adjusted are shown in the applicable system level functions.

Functions		Min. Current (mA)	Max. Current (mA)	Base Operation (1500RPM) Time in Seconds	Platform Operation (1500RPM) Time in Seconds	Platform Operation (2200RPM) Time in Seconds
Main Boom	Raise (Telescopic Retract)	850	1240	60±6	60 ± 6	60 ± 6
	Lower (Telescopic Retract)	830	1120	60±6	60 ± 6	60 ± 6
Telescopic Boom	Extend	1060	1400	60±6	60±6 (125±15)	48±6 (125±15)
	Retract	930	1065	48±6	48±6 (90±15)	48±6 (90±15)
Jib	Raise	900	1130	23±3	23 ± 3	23 ± 3
	Lower	800	1050	17±3	17 ± 3	17 ± 3
Platform Rotate	Left to right	835	970	15±3	15 ± 3	15 ± 3
	Right to left	800	945	15±3	15 ± 3	15 ± 3
Slew Speed	90° Clockwise (Retracted) Left	800	1225	21±3	21 ± 3	21 ± 3
	90° Anti-Clockwise (retracted) Right	800	1250	21±3	21 ± 3	21 ± 3
Slew Speed	90° Clockwise (Extended) Left	800	1225	39±4	39 ± 4	39 ± 4
	90° Anti-Clockwise (Extended) Right	800	1250	39±4	39 ± 4	39 ± 4
Levelling	Levelling Up	800	1170	55±7	N/A	N/A
	Levelling Down	800	1155	55±7	N/A	N/A
Steer left	Lock-to-lock right	1200	1400	N/A	5 ± 1	5 ± 1
Steer right	Lock-to-lock left	1200	1400	N/A	5 ± 1	5 ± 1

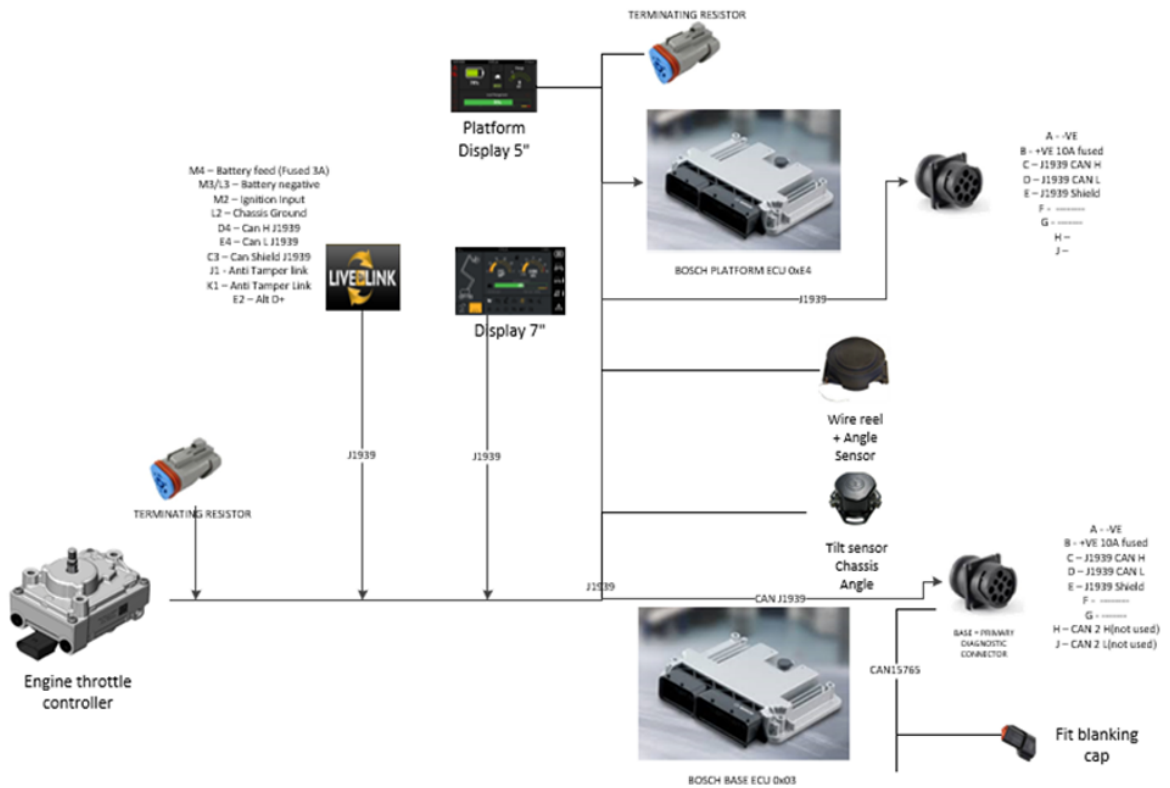
Drive speed targets				
Operation	state	POT	Speed (Kmph)	Speed (m/s)
Forward-Stowed	2200 (LOW TORQUE)	100%	5.5 - 7	1.5 - 1.9
Reverse Stowed	2200 (LOW TORQUE)	100%	5.5 - 7	1.5 - 1.9
Forward-Raised	2200 (LOW TORQUE)	100%	0.7 - 1	0.2 - 0.27
Reverse-Raised	2200 (LOW TORQUE)	100%	0.7 - 1	0.2 - 0.27

## 2.2 CAN Layout

### T65D [T4F]

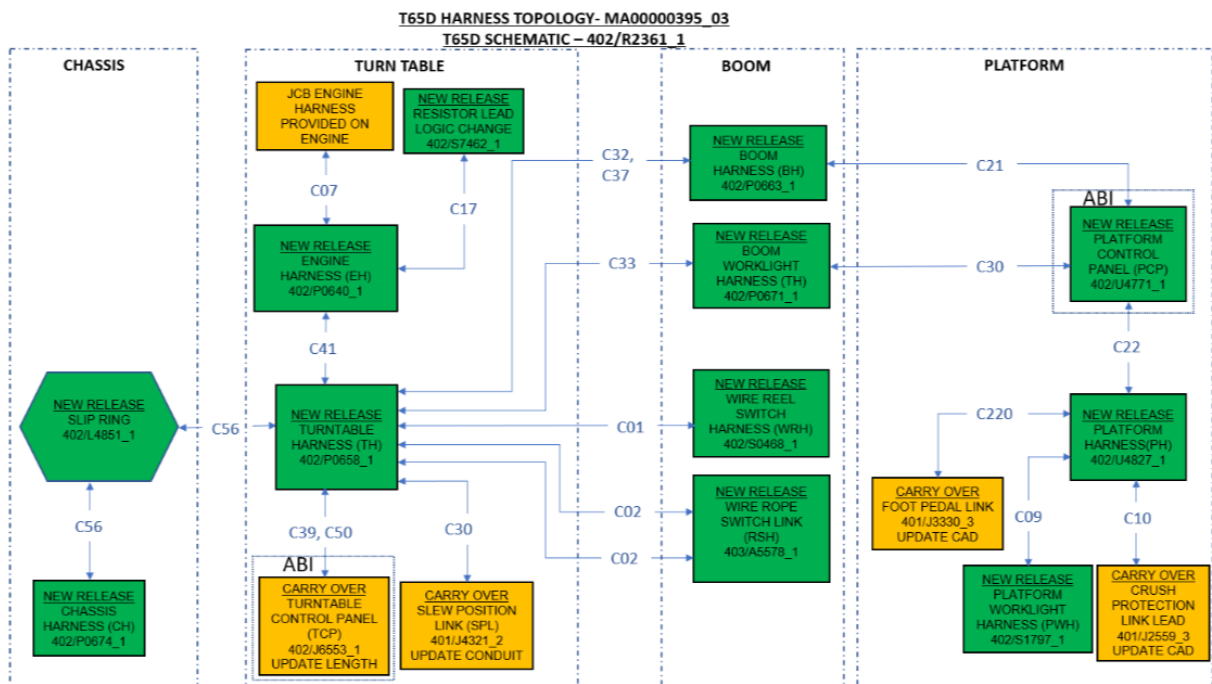


## T65D [T3]

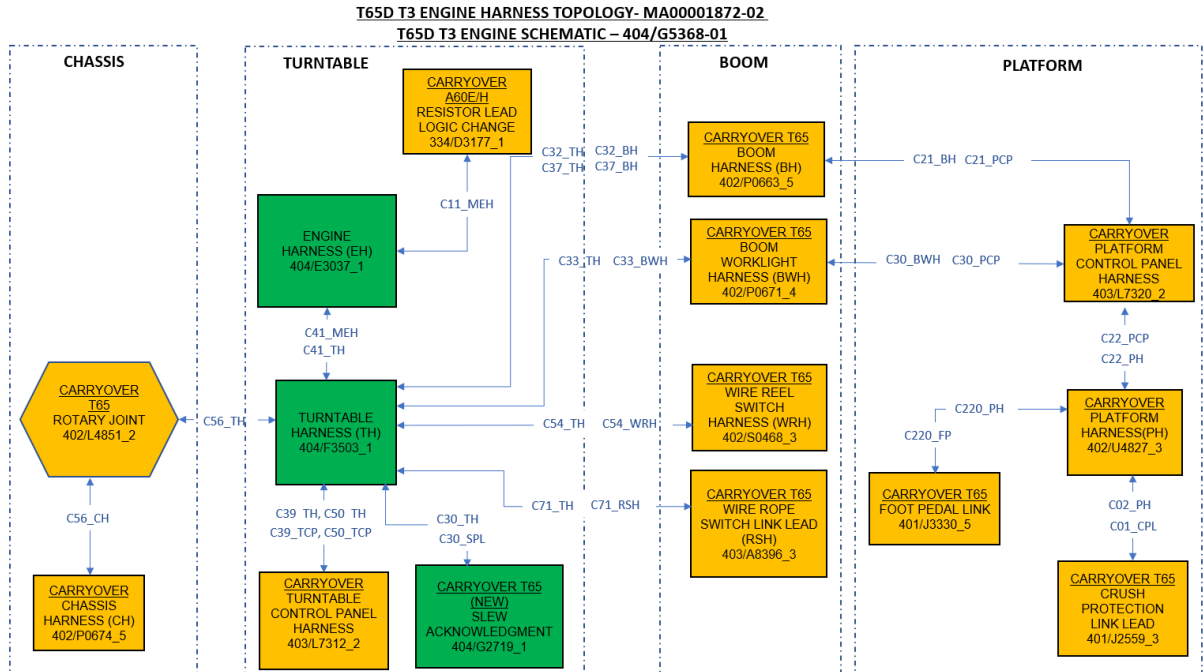


## 2.3 Harness Layout

### T65D [T4F]

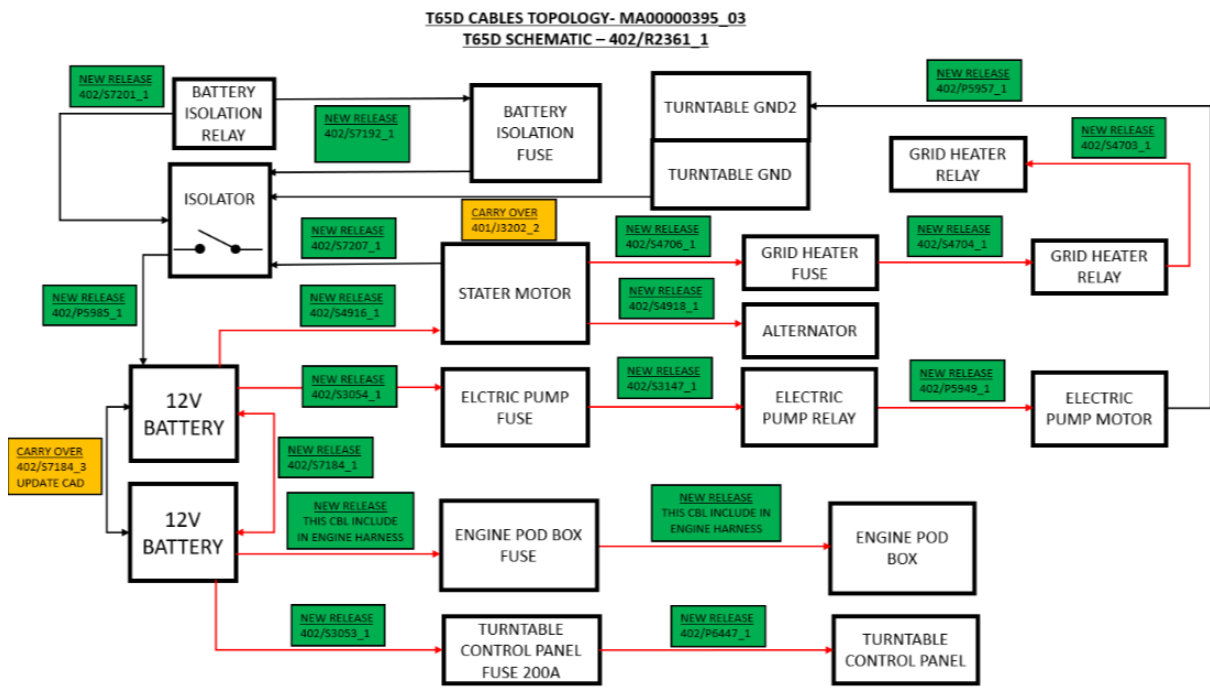


## T65D [T3]

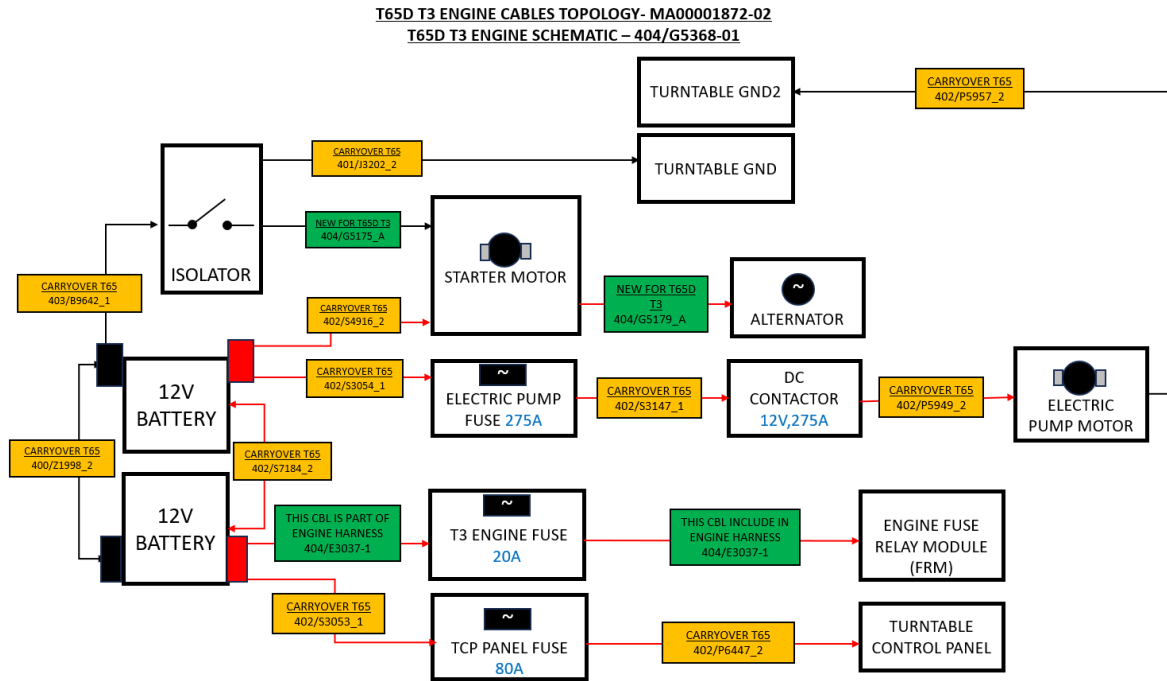


## 2.4 Battery Lead Layout

### T65D [T4F]

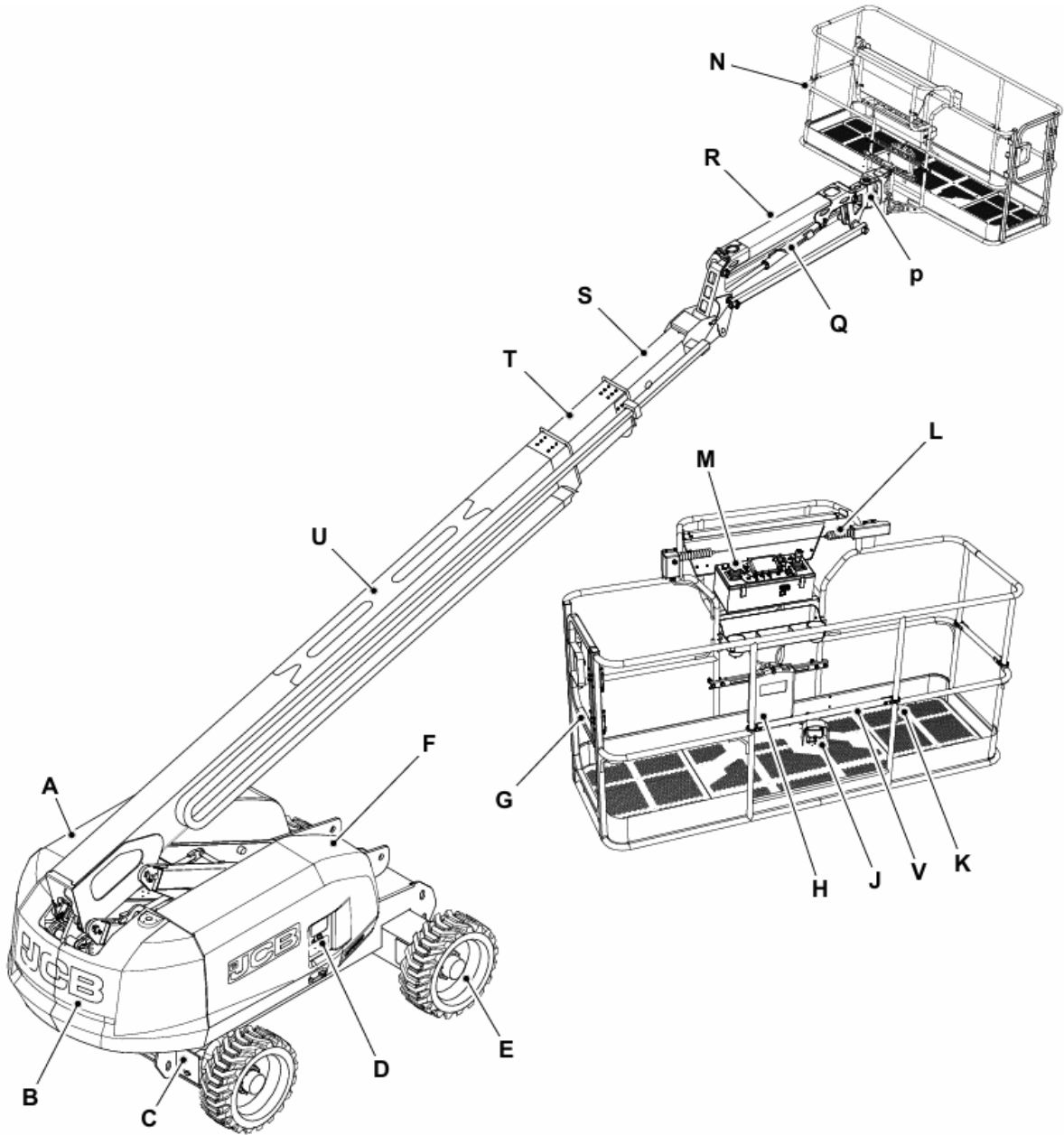


### T65D [T3]



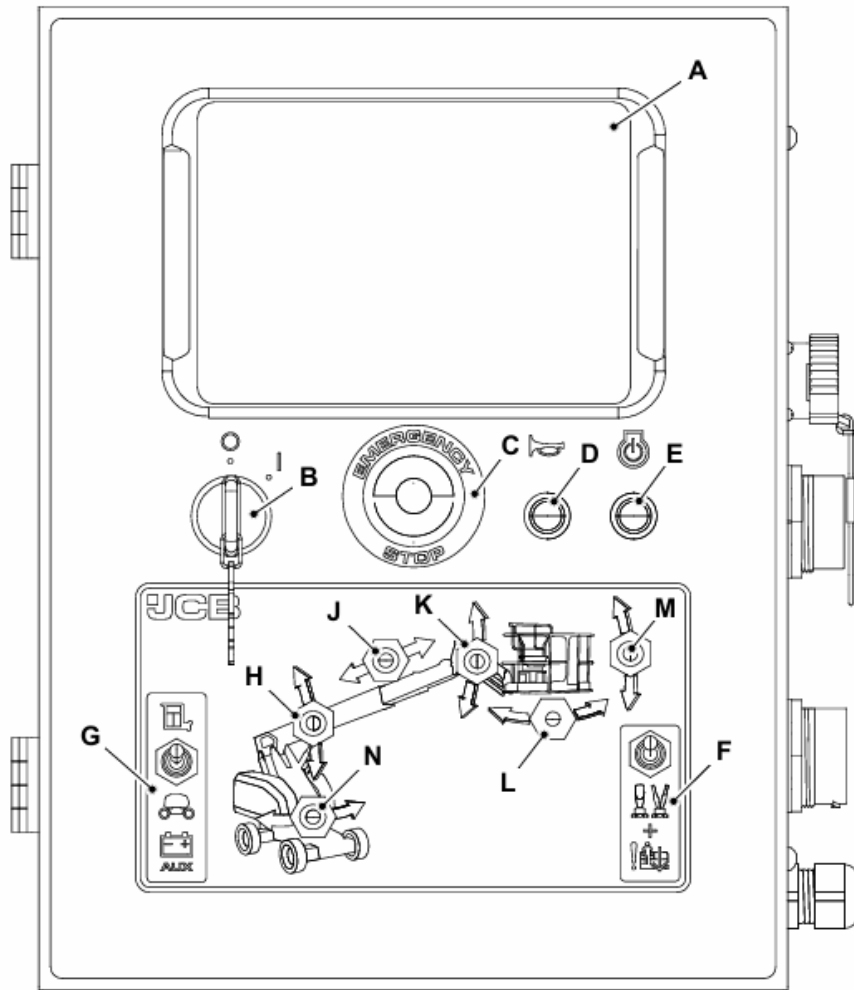
## 2.5 Machine Structural Diagram

### T65D & T65D Tier3

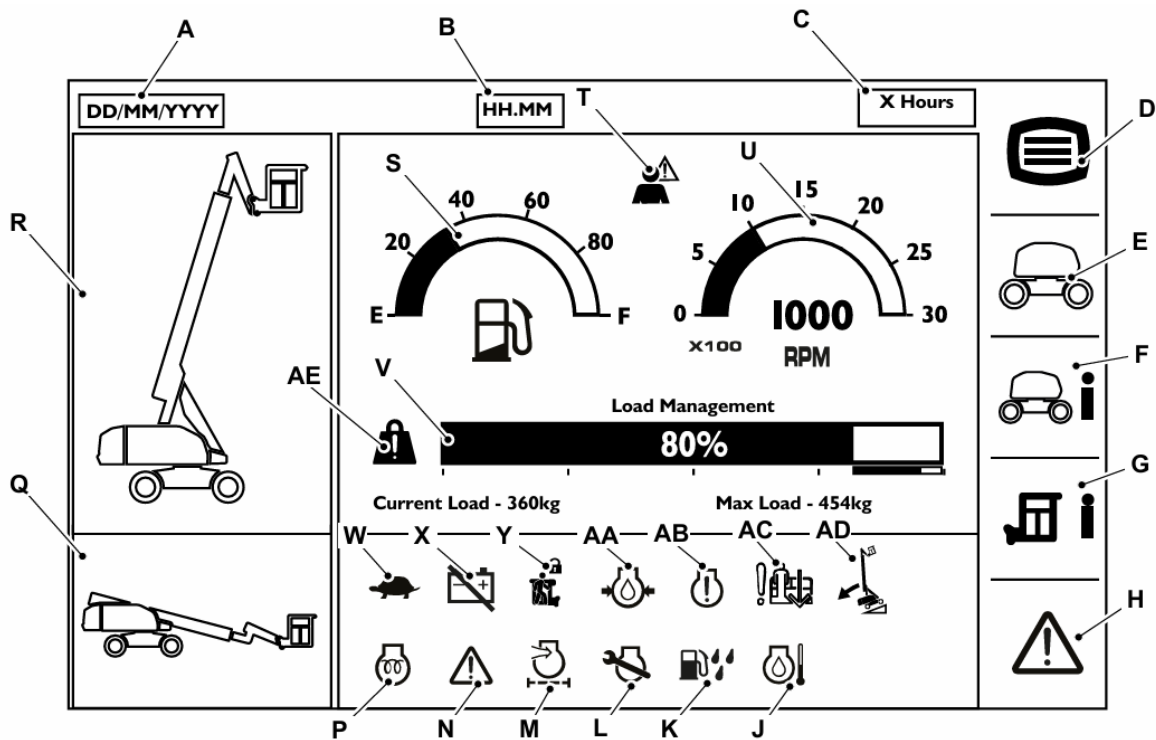


<b>A</b>	Engine canopy
<b>B</b>	Counter weight
<b>C</b>	Front axle
<b>D</b>	Base controller
<b>E</b>	Wheel
<b>F</b>	Control side canopy
<b>G</b>	Platform entry door
<b>H</b>	Operator manual's case
<b>J</b>	Foot pedal switch

<b>K</b>	Safety harness anchorage point
<b>L</b>	Secondary guarding system
<b>M</b>	Platform controller
<b>N</b>	Work platform
<b>P</b>	Rotary actuator
<b>Q</b>	Jib lift cylinder
<b>R</b>	Jib
<b>S</b>	Telescopic boom (Stage 3)
<b>T</b>	Telescopic boom (Stage 2)
<b>U</b>	Telescopic boom (Stage 1)
<b>V</b>	Platform entry slider

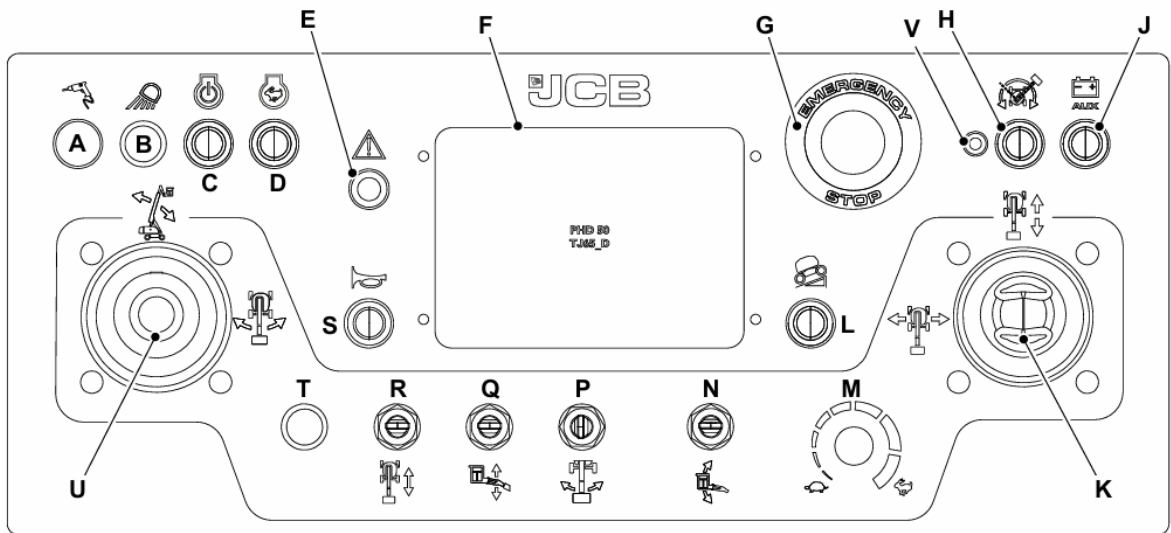


- |  |                                       |
|--|---------------------------------------|
| <b>A</b> Digital display                       | <b>B</b> Key switch                   |
| <b>C</b> Emergency stop button                 | <b>D</b> Horn button                  |
| <b>E</b> Engine start/stop button              | <b>F</b> Emergency override switch    |
| <b>G</b> Base control enable switch            | <b>H</b> Main boom raise/lower switch |
| <b>J</b> Telescopic boom extend/retract switch | <b>K</b> Jib raise/lower switch       |
| <b>L</b> Platform rotate switch                | <b>M</b> Platform level switch        |
| <b>N</b> Slew left/right switch                |                                       |

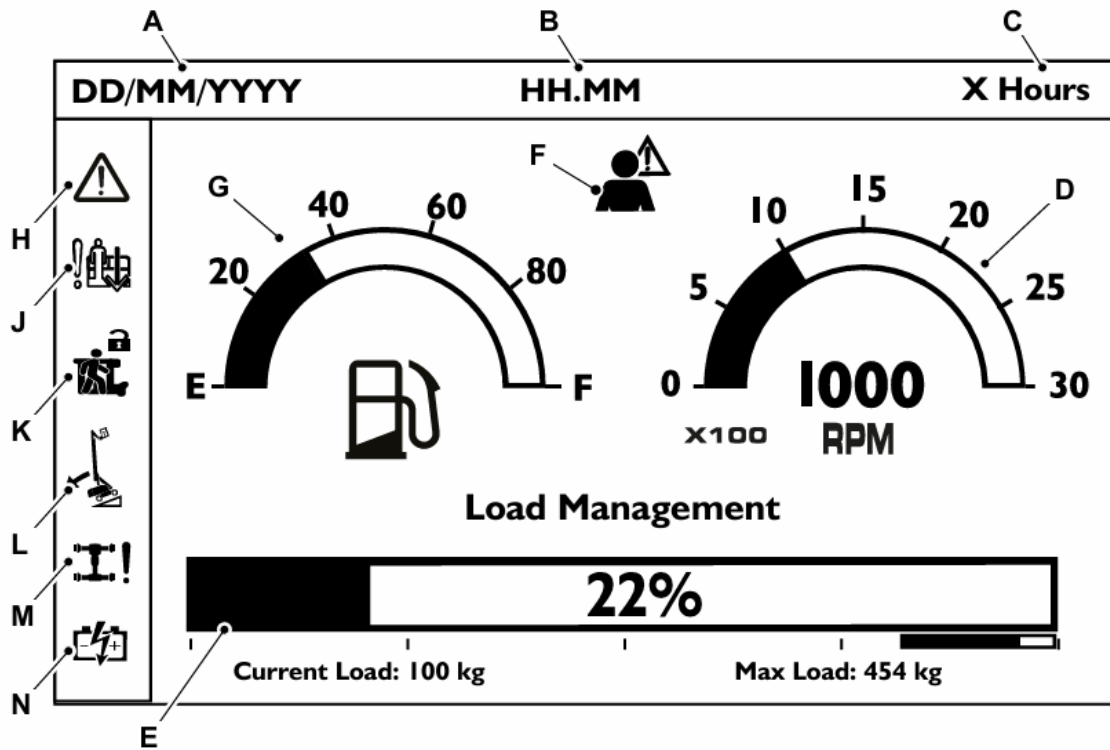


Callout	Indicator	Description
A	Date	Displays current date.
B	Time	Displays current time.
C	Machine hours	Displays machine running hours.
D	Machine control settings	Displays settings for the display.
E	Machine control setup	Displays locked screen for new settings of machine.
F	Base information	Displays base information of machine like input, output and machine information.
G	Platform information	Displays platform input / output information.
H	Alarm information	Displays live and historic faults.
J	Coolant temperature	Displays when coolant temperature is high.
K	Water in fuel	Displays if moisture is detected in fuel.
L	Service Lamp	Displays when the engine service is due.
M	Blocked air filter	Displays when the engine air filter is blocked.

N	Fault indicator	Displays when there is a fault on the machine.
P	Engine pre-heater	Applicable for machines fitted with grid heater. Indicates wait to heat in cold conditions.
Q	Machine stowed position	Displays when machine is in stowed position.
R	Machine raised position	Displays when machine is in raised position.
S	Fuel level indicator	Displays the level of diesel fuel in the tank. Do not let the tank run dry, or air will enter the fuel system. Do not run the engine if the indicator needle goes into the red area. First segment of fuel gauge blinks to show reserve capacity.
T	Operator error or caution alarm	Displays when there is error in the operation and requires operator's attention.
U	Engine speed indicator	Displays the engine RPM (Revolutions Per Minute).
V	Load management indicator	Displays the amount of load machine is carrying in percentage.
W	Travel speed	Displays machine operation is in slow / high or tortoise / hare mode.
X	Alternator lamp	Displays if there is a battery charging circuit fault while the engine is running.
Y	Secondary guarding	Displays when the platform secondary guarding is in active condition.
AA	Engine oil pressure	Displays if the engine oil pressure is too low. Stop the engine. The light should go out after the engine is started.
AB	Engine warning lamp	Displays during fault state of engine.
AC	Emergency mode used	Displays when emergency override has been activated.
AD	Tilt limit exceeded	Displays when machine tilt limit is exceeded. Solid lamp if the machine is stowed. Flashing lamp if the machine is raised.
AE	Overload lamp	Displays when the platform load limit is exceeded. Solid lamp if the load is approaching the limit. Flashing lamp if the load is above the limit.



A	Hydraulic generator ON/OFF button (if installed)
B	Work lights ON/OFF switch (if installed)
C	Engine start/stop button
D	Engine high/low speed select button
E	Error indicator
F	Display
G	Emergency stop button
H	Slew acknowledgment button
J	Auxiliary power button
K	Drive and steer joystick
L	High torque button
M	Potentiometer
N	Manual platform level switch
P	Platform rotate switch
Q	Jib boom up/down switch
R	Telescope in/out function switch
S	Horn button
T	Spare
U	Main boom lift and slew joystick
V	Slew acknowledge LED (Light Emitting Diode) indicator



Callout	Indicator
A	Date
B	Time
C	Machine hours
D	Engine speed indicator
E	Load management indicator
F	Operator error or caution alarm
G	Battery charging level indicator
H	Fault indicator
J	Emergency override
K	Secondary guarding
L	Tilt limit exceeded
M	Power train fault lamp
N	Battery voltage warning

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# System Level Functions

## 3 System Level Functions

List of [System Level Function](#) <sup>38</sup>

Number	Component
1	<a href="#">Ignition</a> <sup>39</sup>
2	<a href="#">Horn Function</a> <sup>40</sup>
3	<a href="#">Potentiometer</a> <sup>43</sup>
4	<a href="#">Engine Start &amp; Stop</a> <sup>45</sup>
5	<a href="#">Engine Speed Selection</a> <sup>48</sup>
6	<a href="#">Drive Function</a> <sup>50</sup>
7	<a href="#">Steer Function</a> <sup>55</sup>
8	<a href="#">High Torque Function</a> <sup>60</sup>
9	<a href="#">Main Boom Function</a> <sup>62</sup>
10	<a href="#">Telescope Function</a> <sup>67</sup>
11	<a href="#">Jib Function</a> <sup>71</sup>
12	<a href="#">Platform Rotate Function</a> <sup>75</sup>
13	<a href="#">Slew Function</a> <sup>79</sup>
14	<a href="#">Platform Levelling Function</a> <sup>84</sup>
15	<a href="#">Slew Acknowledgment</a> <sup>89</sup>
16	<a href="#">Tilt Sensor</a> <sup>92</sup>
17	<a href="#">E-Stop Function</a> <sup>94</sup>
18	<a href="#">Position Control</a> <sup>96</sup>
19	<a href="#">Oscillating Axle</a> <sup>100</sup>
20	<a href="#">Crush Protection</a> <sup>102</sup>
21	<a href="#">Overload Function</a> <sup>104</sup>
22	<a href="#">Wire Rope Switches</a> <sup>108</sup>
23	<a href="#">Beacons</a> <sup>109</sup>
24	<a href="#">Travel Alarm</a> <sup>111</sup>
25	<a href="#">Disable of Overload System</a> <sup>114</sup>
26	<a href="#">Drive Restriction</a> <sup>116</sup>
27	<a href="#">Speed Configuration from Display</a> <sup>117</sup>
28	<a href="#">Work Lights</a> <sup>118</sup>
29	<a href="#">Hydraulic Generator(USA)</a> <sup>119</sup>
30	<a href="#">Customer Telematics</a> <sup>122</sup>
31	<a href="#">Livelinek</a> <sup>123</sup>
32	<a href="#">Aux Function</a> <sup>124</sup>
33	<a href="#">Override from Platform Control</a> <sup>126</sup>
34	<a href="#">Override from Baser Control</a> <sup>127</sup>

35	<a href="#">Auto Engine Stop</a>   128
36	<a href="#">Power to Platform Function (Only for T65D T3 machine)</a>   130

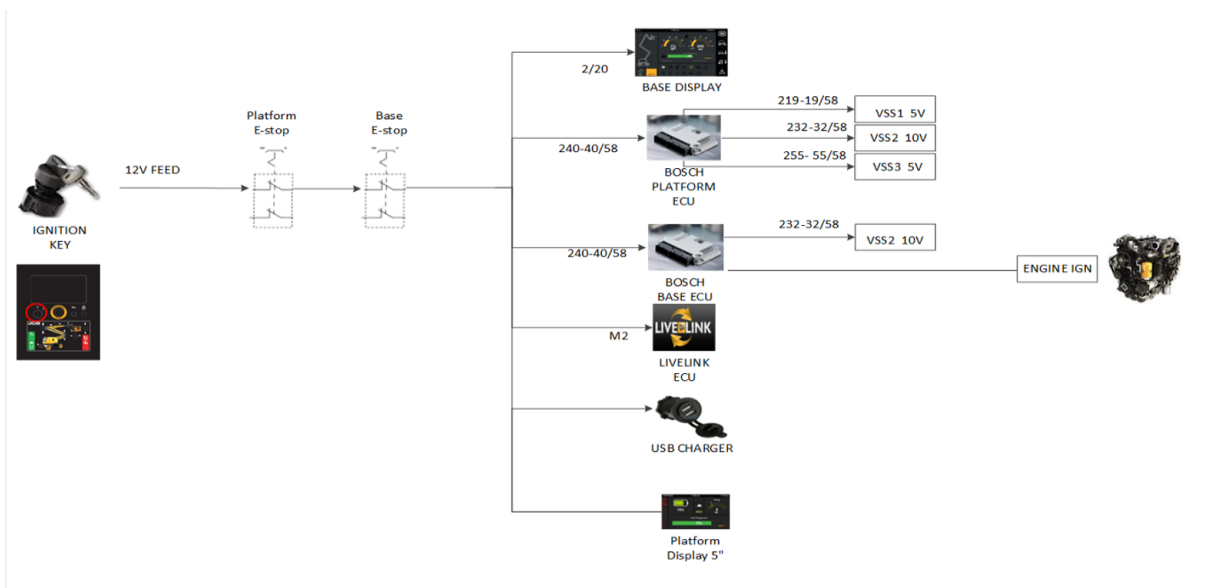
## 3.1 Ignition

### Function

- The ignition turns on and off the main power of the machine.
- Part of the E-stop circuit is wired in series with the ignition line. Ensure E-stops are released to turn the ignition on
- 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

### System diagram

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



## Signal

- The ignition signal is a 12V signal.
- It is fed from FU-16\_TCP. This is fuse 16 of the turntable control panel box.
- Please follow the schematic diagram for more details and exact wiring.

## Parts in Circuit

- [Ignition Switch](#) 152
- [Base E-Stop](#) 147
- [Platform E-Stop](#) 303
- [Base Display](#) 144
- [Platform Display](#) 318
- [USB Socket](#) 316
- [Livelihood](#) 223
- [Base ECU](#) 169
- [Platform ECU](#) 305

## Related Fault Codes

Fault Code	Description
<a href="#">B1353-16</a> <small>604</small>	ENGINE IGNITION Short Circuit to Low
<a href="#">B1354-13</a> <small>605</small>	ENGINE IGNITION Open Circuit OR Short Circuit to High

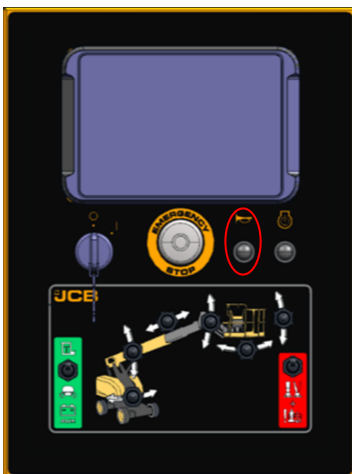
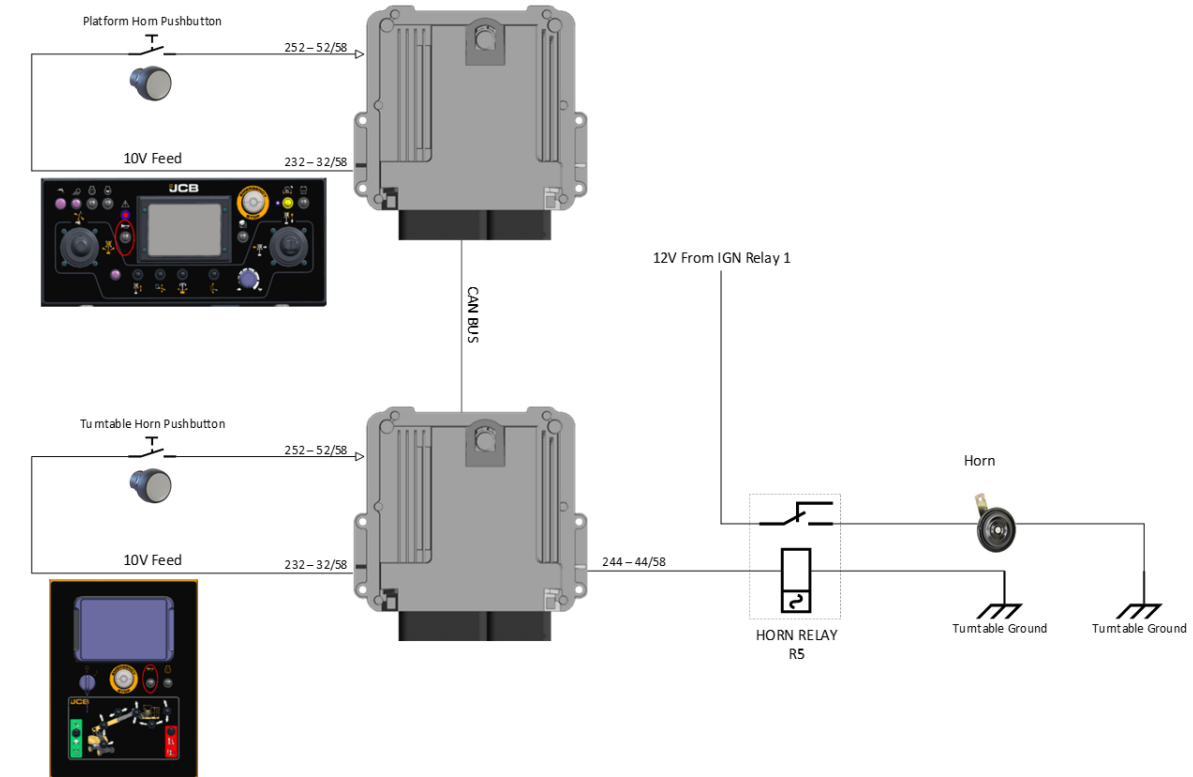
## 3.2 Horn Function

---

### 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.







## System diagram











## Signal

- Base input - 10V input fed from Base ecu
- Platform input - 10V input fed from platform input
- Output from base controller - 12V

## Parts in Circuit

- [Horn Button Base](#)  164
- [Horn Button Platform](#)  277
- [Base ECU](#)  169
- [Platform ECU](#)  305
- [Horn Relay](#)  158
- [Horn](#)  215

## Related Fault Codes

Fault Code	Description
<a href="#">B1181-16</a>  502	Horn - Horn High Side Short Circuit to Low.
<a href="#">B1182-13</a>  503	Horn - Horn High Side Open Circuit.
<a href="#">B1206-17</a>  509	Horn - Base Horn Button Short Circuit to High.
<a href="#">B1207-16</a>  510	Horn - Base Horn Button Short Circuit to Low.
<a href="#">B1208-24</a>  511	Horn - Base Horn Button Stuck >10s.
<a href="#">B1273-17</a>  557	Horn - Platform Horn Button Short Circuit to High.
<a href="#">B1274-16</a>  558	Horn - Platform Horn Button Short Circuit to Low.
<a href="#">B1275-24</a>  559	Horn - Platform Horn Button Stuck >10s.

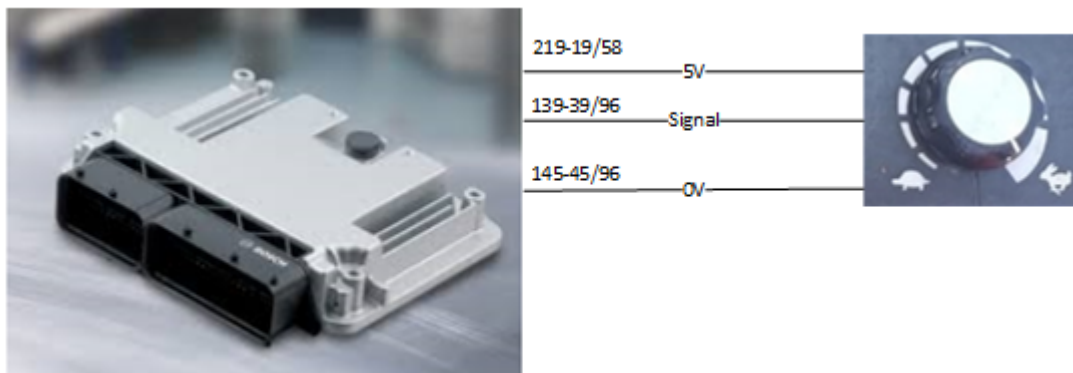
### 3.3 Potentiometer

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#### Function

- The potentiometer is used to control the speed of each function from the platform control panel. The output from potentiometer is from 0V min – 5.15V max
- The potentiometer reduces the Max Current value applied to a solenoid by a percentage
- The potentiometer shall only affect the controls at the platform except steer. The functions affected shall be:
  1. Jib up/down (Raise/Lower)
  2. Platform level
  3. Platform rotate
  4. Telescope extend / retract
  5. Drive forward/ Reverse
  6. Slew
  7. Telescopic Boom Up/down

#### System diagram



BOSCH PLATFORM ECU



## Signal

- The 5V supply is an output from the platform controller also known as VSS1 Pin 19/58
- The ground for the potentiometer also feeds back into the ECU Pin 45/96.
- This supply is separated from the rest of the control system.
- The potentiometer provides a voltage which is altered between these voltages based on the position of the knob.
- This is fed back into the ECU on pin 39/96.

## Parts in Circuit

- [Potentiometer](#) 299
- [Platform ECU](#) 305

## Related Fault Codes

Fault Code	Description
<a href="#">B1067-17</a> <small>443</small>	Potentiometer Short Circuit to High (>5.5V)

### 3.4 Engine Start & Stop

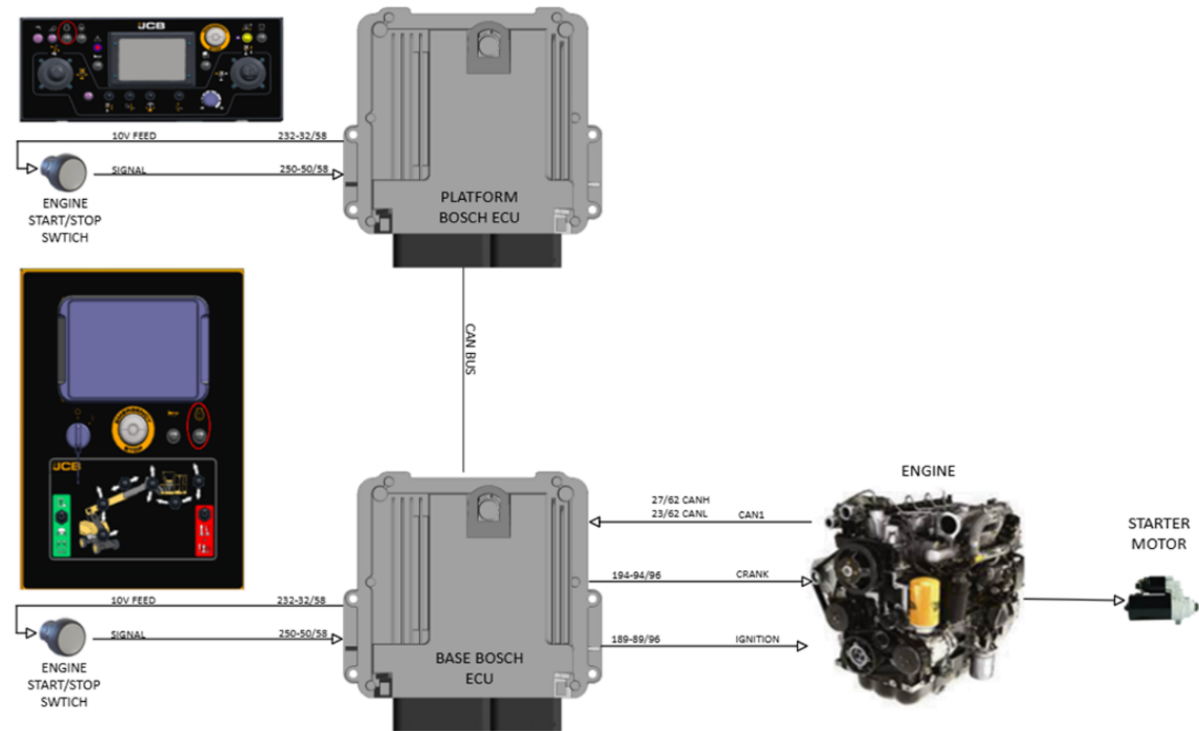
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#### Function

- This function is to start & stop the engine.
- The engine start switch also works as engine stop switch.
- The engine can be started from either the base or platform control panel.
- The engine run state shall be "OFF" before engine start push button is enabled .
- When the ignition key for the machine is turned on, as long as there is no faults, then base ecu will turn on the engine ignition.
- Once the ignition is on with both e-stop in the released position then the engine start request can be made.
- The foot pedal should not be pressed when starting the engine.
- The base enable switch should not be pressed when starting the engine.
- Once the engine start button pressed either from Base or platform ,the base ECU shall initiate the start sequence.
- The engine shall stop if Base or platform E-Stop is pressed.
- The engine shall stop if engine stop button is pressed either from base or platform .
- The engine shall stop if the Key switch is turned off.
- The input switch will provide an input into the base or platform controller. If input to the platform controller, this will send a CAN message to the base controller.
- The base controller will apply the crank output to turn on the negative feed to the start relay in the engine fuse/relay box.

**NOTE : \* Engine CAN is not applicable for T65D Tier3 mechanical engine.**

#### System diagram



## Signal

- Input Switches are 10V
- Engine ignition signal is 12V
- Crank Signal is 12V

## Parts in Circuit

- [Engine start button - Platform](#) 300
- [Engine start button - Base](#) 162
- [Base ECU](#) 169
- [Platform ECU](#) 305
- Starter Motor
- [JCB 444 T4F Engine for T65D](#) 236
- [JCB 444 Mechanical Engine for T65D Tier3](#) 246

## Related Fault Codes

Fault Code	Description
<a href="#">B1050-17</a> <small>429</small>	Base ENGINE START BUTTON Short Circuit to High
<a href="#">B1051-16</a> <small>429</small>	Base ENGINE START BUTTON Short Circuit to Low
<a href="#">B1052-24</a> <small>430</small>	Base ENGINE START BUTTON Stuck for >= 10 seconds
<a href="#">B1239-17</a> <small>532</small>	Platform ENGINE START BUTTON Short Circuit to High
<a href="#">B1240-16</a> <small>533</small>	Platform ENGINE START BUTTON Short Circuit to Low
<a href="#">B1241-24</a> <small>534</small>	Platform ENGINE START BUTTON Stuck for >= 10 seconds
<a href="#">B1357-16</a> <small>607</small>	Engine Start (Crank) High Side Signal (Base ECU to Engine ECU) Short Circuit to Low
<a href="#">B1358-13</a> <small>608</small>	Engine Start (Crank) High Side Signal (Base ECU to Engine ECU) Short Circuit to High or Open Circuit

### 3.5 Engine Speed Selection

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#### Function

- This function is to change the engine speed. The engine speed will be in idle RPM until the base enable or platform foot pedal is pressed during operation.
- The machine has an idle speed of **900 RPM** for **T3 mechanical engine**.
- The machine has an idle speed of **850 RPM** for **T4F electronic engine**.
- From the base control station when base enable switch is pressed the engine RPM should be 1500RPM(Low RPM).
- When engine high speed button is pressed on platform control panel ,the engine RPM should be 2200RPM.
- From the platform control station when the foot pedal is pressed the engine RPM will be raised to low or high RPM based on the status set by engine high speed button.
- (configured in Service master parameters, default value will be 1500RPM for low RPM or 2200 RPM for High RPM).
- Engine RPM shall be shown on the display screen from base ECU.
- Icon should be shown on both displays when high engine speed mode is activated.



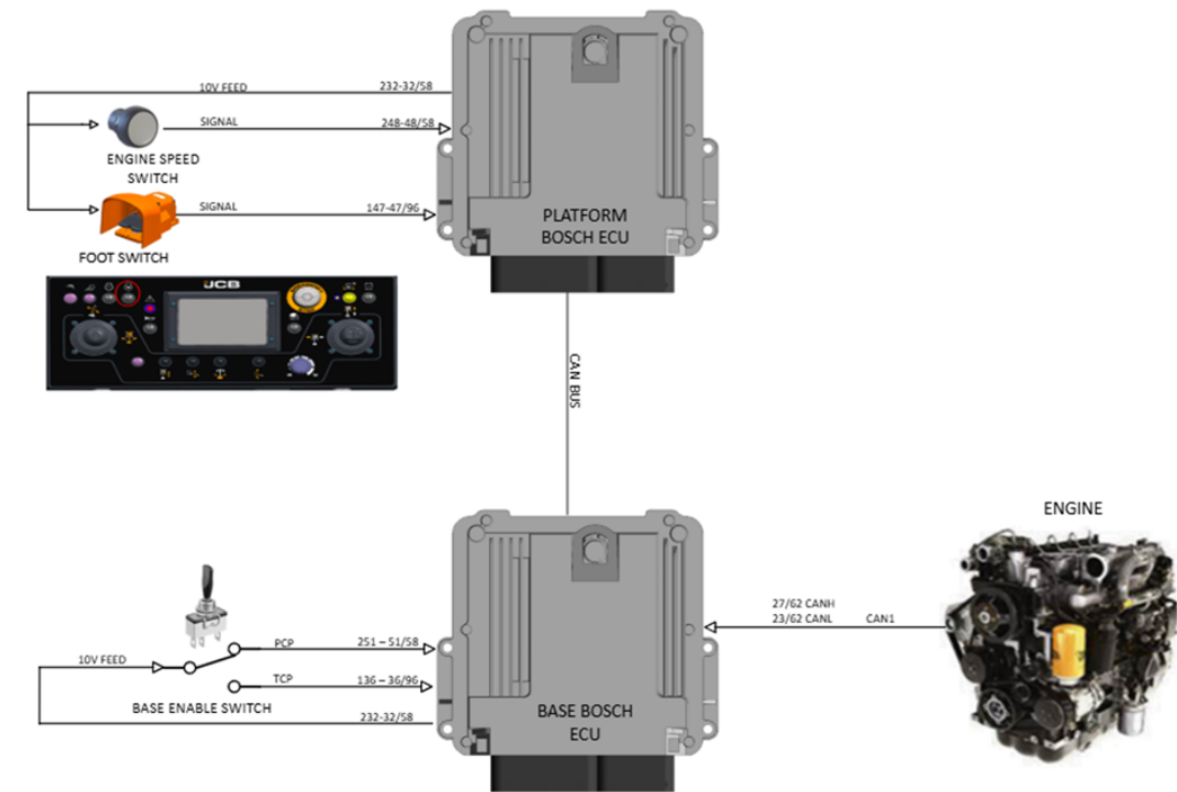
- Icon should be shown on both displays when low engine speed mode is activated



- Hydraulic Generator speed is 1800RPM.

**NOTE : \*Hydraulic Generator speed is not applicable for T65D-T3 mechanical engine.**

#### System diagram

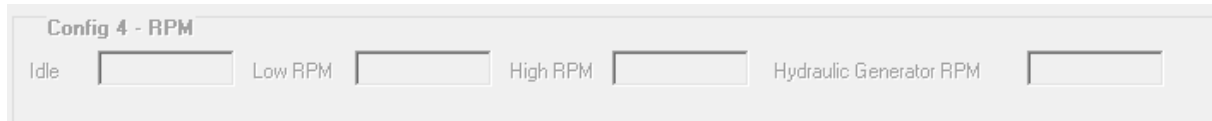


## Signal

- Input Switches are 10V
- The engine speed is control via CAN message to the throttle controller from the base control unit.

## Parameters

- The machine engine speeds are set via parameters with the the service-master setup tool.
- These parameters are locked and should not be adjusted without JCB Access approval.



**NOTE :** Hydraulic Generator RPM is not applicable for T65D-T3 machine.

### Parts in Circuit

- [High Engine Speed Button - Platform](#) <sup>297</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Base Enable switch](#) <sup>154</sup>
- [Foot Pedal - Platform](#) <sup>267</sup>

### Related Fault Codes

Fault Code	Description
<a href="#">B1209-17</a> <sup>512</sup>	Engine Speed - High Engine Speed Button Short Circuit to High
<a href="#">B1210-16</a> <sup>513</sup>	Engine Speed - High Engine Speed Button Short Circuit to Low
<a href="#">B1211-24</a> <sup>514</sup>	Engine Speed - High Engine Speed Button Stuck >10s

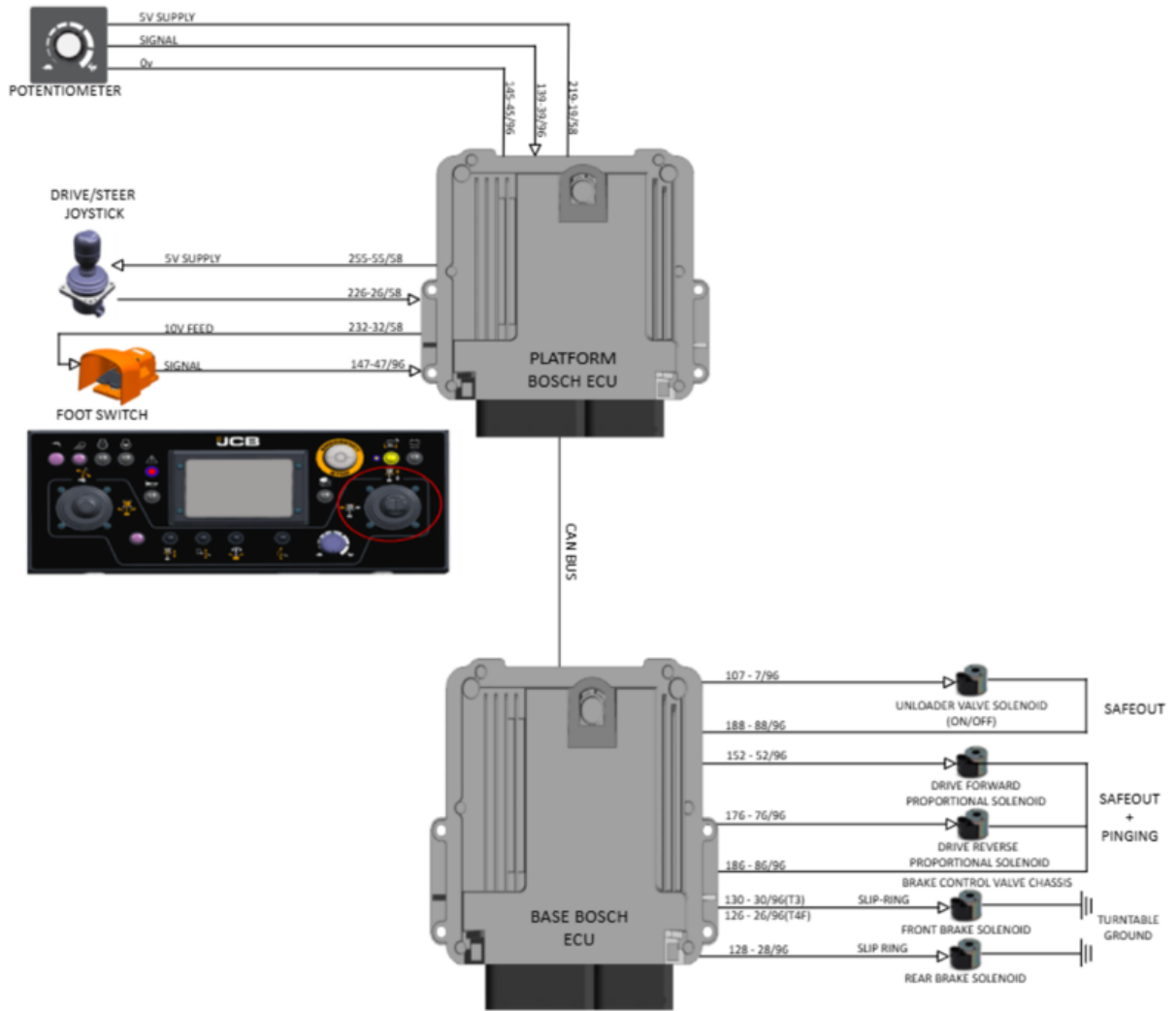
## 3.6 Drive Function

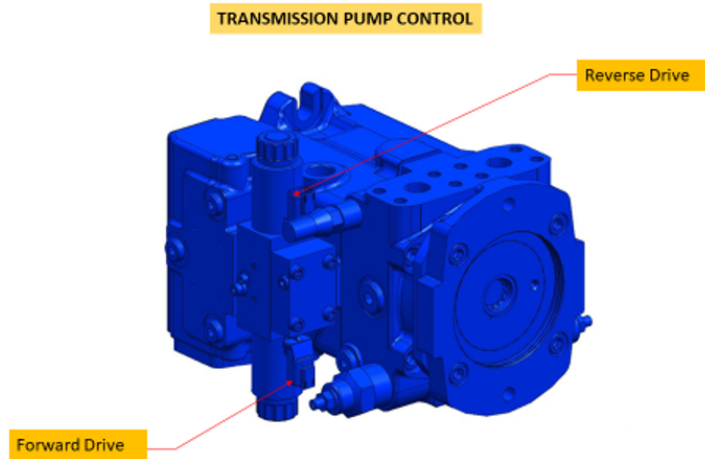
### Function

- The drive function allows the machine to travel forwards and backwards.
- There shall be drive joystick at the platform control station to operate Drive forward & reverse.

- To Operate drive, the engine must be started and the foot pedal pressed with the direction command & Joystick position controls shall be held to run.
- Platform shall send Joystick voltage to Base ECU through CAN
- The speed of the drive operation will be reduced when the machine is in the raised condition.
- The stowed or raised condition will be considered in Position Control
- The drive can also be effected by the Slew Acknowledgment depending on the slew position of the machine.
- The Potentiometer position will effect the drive speed.
- The High Torque mode will effect the drive speed when in the stowed condition.
- The Engine speed selection will effect the drive speed
- To Operate drive, the engine must be started and the foot pedal pressed with the direction command.
- There is no Drive available with AUX pump
- The brakes on the machine will be released when a drive command is active
- During travel the White Noise Alarm and the Beacon(s) will be active.
- During drive unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state .(Applicable for T65D-T3 mechanical engine.)
- In case of overload situation in raised mode Engine will get stopped by ECU to make machine in safe state. (T65D-T4F electronic engine)

## System diagram





## Signal

The 5V supply is an output from the Bosch platform ecu Pin 55/58

The 5V ground is returned to Bosch platform ecu Pin 46/96

The signal from the joystick is 0.5 - 4.5V depending on joystick position 26/58

Foot pedal signal is 10V when the foot pedal is pressed and open circuit when unpressed

The Front and Rear brakes will be powered off when the drive command is active. These are a 12V output from the base controller (Front brakes pin 30/96(T3)& 26/96(T4F), Rear brakes 28/96)

The forward solenoid is a proportional output from the base controller pin 52/96

The reverse solenoid is a proportional output from the base controller pin 76/96

The forward and reverse both share a negative return path back to the base controller Pin 86/96

## Parameters

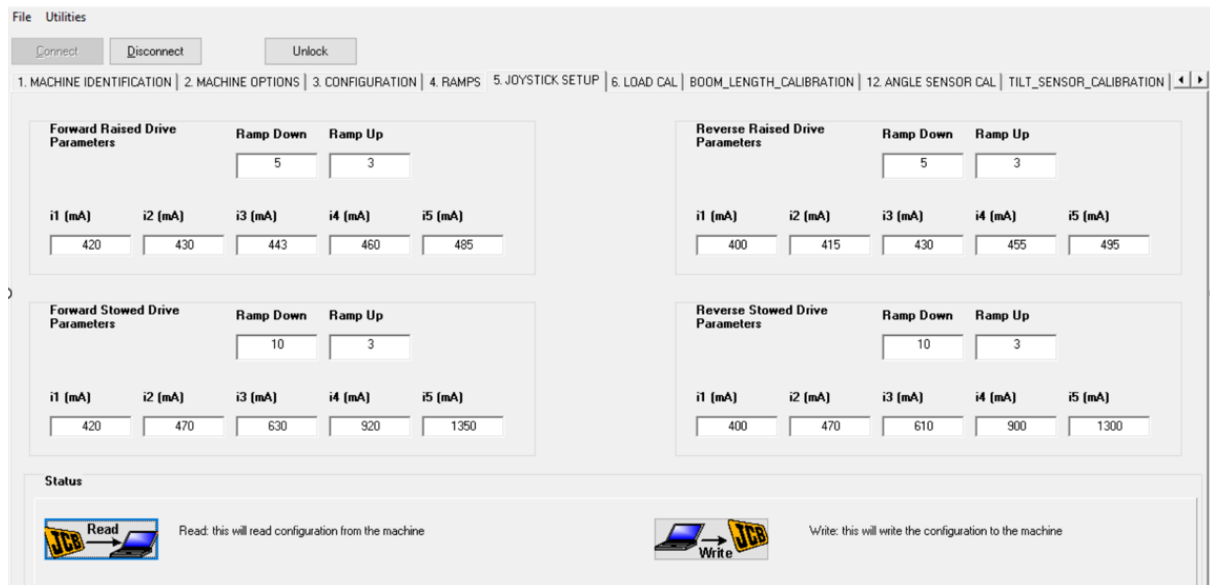
The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards. The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

There is different parameters for the raised and stowed in the forwards and reverse direction.

From the joysticks these are a 5 point curve. i1 - i5. The figures applied are the amount of mA applied to the drive solenoid during the joystick position.

There is a minimum current to allow any movement and the maximum will control the max drive speed. When checking max drive speeds it should not be from a standing start.

The ramp up and down figures are when speeding up or slowing down in speeds. They are in mA for every 20ms of time until the desired value is reached based on joystick position.



## Parts in Circuit

- [Joystick - Drive/Steer](#) <sup>282</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>

- [Front Brake](#) 135
- [Rear Brake](#) 139
- [Transmission solenoids](#) 230
- [Foot Pedal](#) 267
- [Potentiometer](#) 299
- [Unloader Solenoid](#) 187

## Related Fault Codes

Fault Code	Description
<a href="#">B1030-17</a> <small>417</small>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to High
<a href="#">B1031-16</a> <small>418</small>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to Low
<a href="#">B1032-13</a> <small>419</small>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Open Circuit
<a href="#">B1033-17</a> <small>420</small>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to High
<a href="#">B1034-16</a> <small>420</small>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to Low
<a href="#">B1035-13</a> <small>421</small>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Open Circuit
<a href="#">B1069-17</a> <small>444</small>	Drive JOYSTICK Short Circuit to High (>4.75V)
<a href="#">B1070-16</a> <small>445</small>	Drive JOYSTICK Short Circuit to Low (<0.25V) or Open Circuit

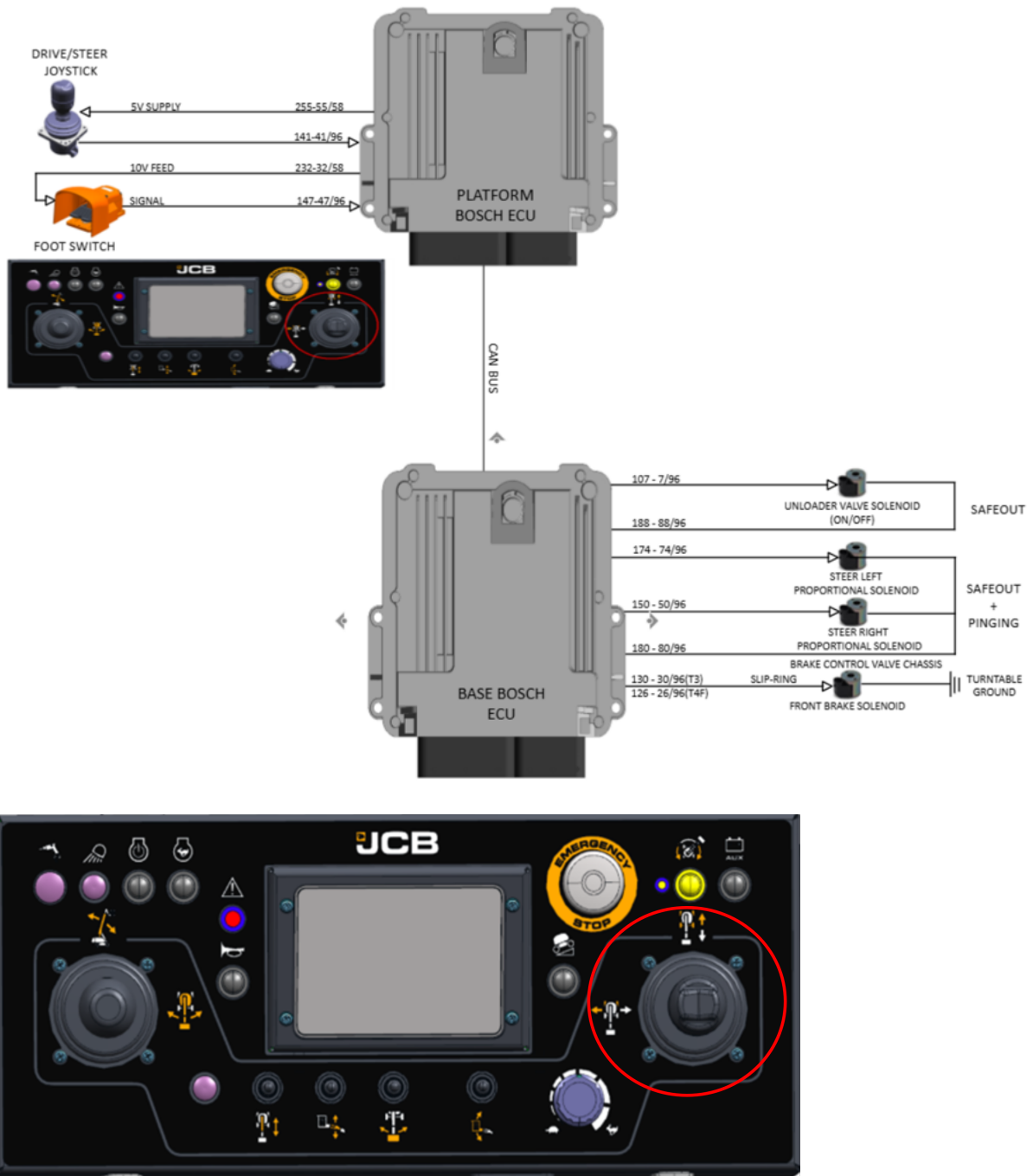
### 3.7 Steer Function

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#### Function

- The Steer function allows the machine to change direction of the front axle wheels in the left and right direction
- The speed of the steer is fixed. Steering is only available from the platform control station.
- Steer shall be operated from the Platform control panel with Engine ON
- Steering is controlled via the buttons on the top of the joystick, this is fed into the Platform Controller and sent to the base controller via CAN.
- The base controller controls the steer solenoids on the main valve block and also controls the brakes
- The foot pedal must be pressed for the steering function to operate
- Steer is not available via the AUX pump
- If steer is activated without drive the front brakes will be released.
- When drive is operated both front and rear brakes will be released.
- During steer the White Noise Alarm and the Beacon(s) will be active
- During steer ,unloader solenoid will be activated via foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state .

## System diagram



## Signal

- The 5V supply is an output from the Bosch platform ecu Pin 55/58
- The 5V ground is returned to Bosch platform ecu Pin 46/96
- The signal from the joystick is 0.5 - 4.5V depending on joystick position 41/96
- Foot pedal signal is 10V when the foot pedal is pressed and open circuit when unpressed pin 47/96

- The Front brake will be powered OFF when the steer command is active at tilt activated <5deg.
- The Front brake will be powered ON when the steer command is active at tilt activated >5deg. These is a 12V output from the base controller (Front brake pin 30/96(T3)& 26/96(T4F))
- The Steer left solenoid is a proportional output from the base controller pin 74/96
- The Steer right solenoid is a proportional output from the base controller pin 50/96
- The forward and reverse both share a negative return path back to the base controller Pin 80/96
- The steer left and steer right both share a negative return path back to the base controller Pin 80/96

## Parameters

The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards. The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

Config 1 - Min/Max					
	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	Jib (Raise)	900	1130
MB Lift (Lower)	830	1120	Jib (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155

Config 5 - Ramp Up/Down					
	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	Jib (Raise)	13	4
MB Lift (Lower)	13	3	Jib (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

## Parts in Circuit

- [Joystick - Drive/Steer](#) <sup>282</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Front Brake](#) <sup>135</sup>
- [Main Control Valve](#) <sup>187</sup>
- [Unloader Solenoid](#) <sup>187</sup>
- [Foot Pedal](#) <sup>267</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1146-17</a> <sup>491</sup>	STEER JOYSTICK Short Circuit to High (>4.75V)
<a href="#">B1147-16</a> <sup>491</sup>	STEER JOYSTICK Short Circuit to Low (<0.25V) or Open Circuit
<a href="#">B1387-17</a> <sup>633</sup>	STEER LEFTRIGHT PROPORTIONAL High Side Short Circuit to high
<a href="#">B1388-16</a> <sup>634</sup>	STEER LEFTRIGHT PROPORTIONAL High Side Short Circuit to low
<a href="#">B1389-13</a> <sup>635</sup>	STEER LEFTRIGHT PROPORTIONAL High Side Open Circuit

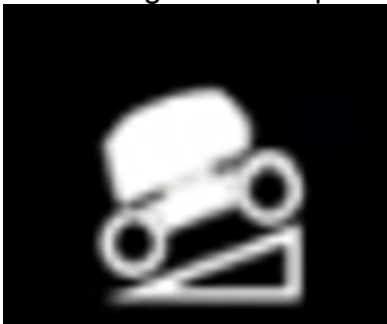
Fault Code	Description
<a href="#">B1390-17</a> <small>636</small>	STEER LEFT\RIGHT PROPORTIONAL Low Side Short Circuit to high
<a href="#">B1391-16</a> <small>637</small>	STEER LEFT\RIGHT PROPORTIONAL Low Side Short Circuit to low
<a href="#">B1392-13</a> <small>638</small>	STEER LEFT\RIGHT PROPORTIONAL Low Side Open Circuit

## 3.8 High Torque Function

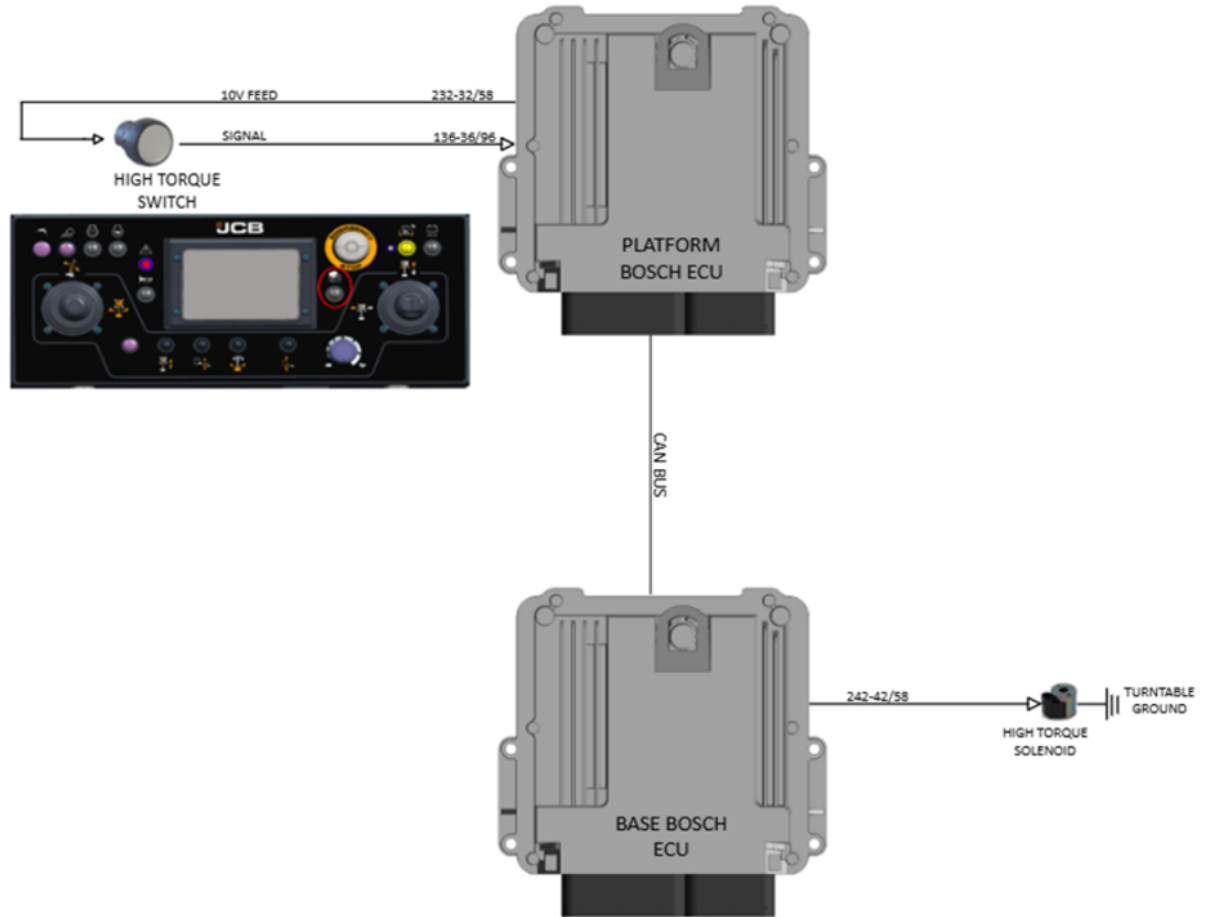
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### Function

- The high torque function is to allow easier gradiability on steep banks without causing the engine to stall.
- High torque can only be selected from the platform control station
- The high torque function is only available in the stowed position
- The foot pedal must be pressed for the function to operate
- The high torque solenoid shall be connected to Base ECU output
- State of High torque shall be retained when transiting from stowed to raised and back to stowed
- If high torque is selected, it will remain in the mode after an ignition cycle.
- There shall be a high torque icon on Platform Display to indicate the operator about high drive torque



### System diagram



## Signal

- The High Torque input is 36/96 of the platform controller.
- This switch is 10V input when the switch is pressed
- The base ECU output for high torque solenoid is 42/58
- The base ECU will apply 12V output when the high torque is switched OFF

- The base ECU will apply 0V output when the high torque is ON

## Parts in Circuit

- [High Torque Switch - platform](#) 295
- [Platform ECU](#) 305
- [Base ECU](#) 169
- [Main Control Valve](#) 187
- Chassis Control Valve
- Torque Control Valve

## Related Fault Codes

Fault Code	Description
<a href="#">B1046-17</a> <small>425</small>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to High or Open Circuit
<a href="#">B1047-16</a> <small>426</small>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to Low
<a href="#">B1212-17</a> <small>515</small>	HIGH TORQUE SPEED BUTTON Short Circuit to High
<a href="#">B1213-16</a> <small>516</small>	HIGH TORQUE SPEED BUTTON Short Circuit to Low
<a href="#">B1214-24</a> <small>517</small>	HIGH TORQUE SPEED BUTTON Stuck for >= 10 seconds

## 3.9 Main Boom Function

### Function

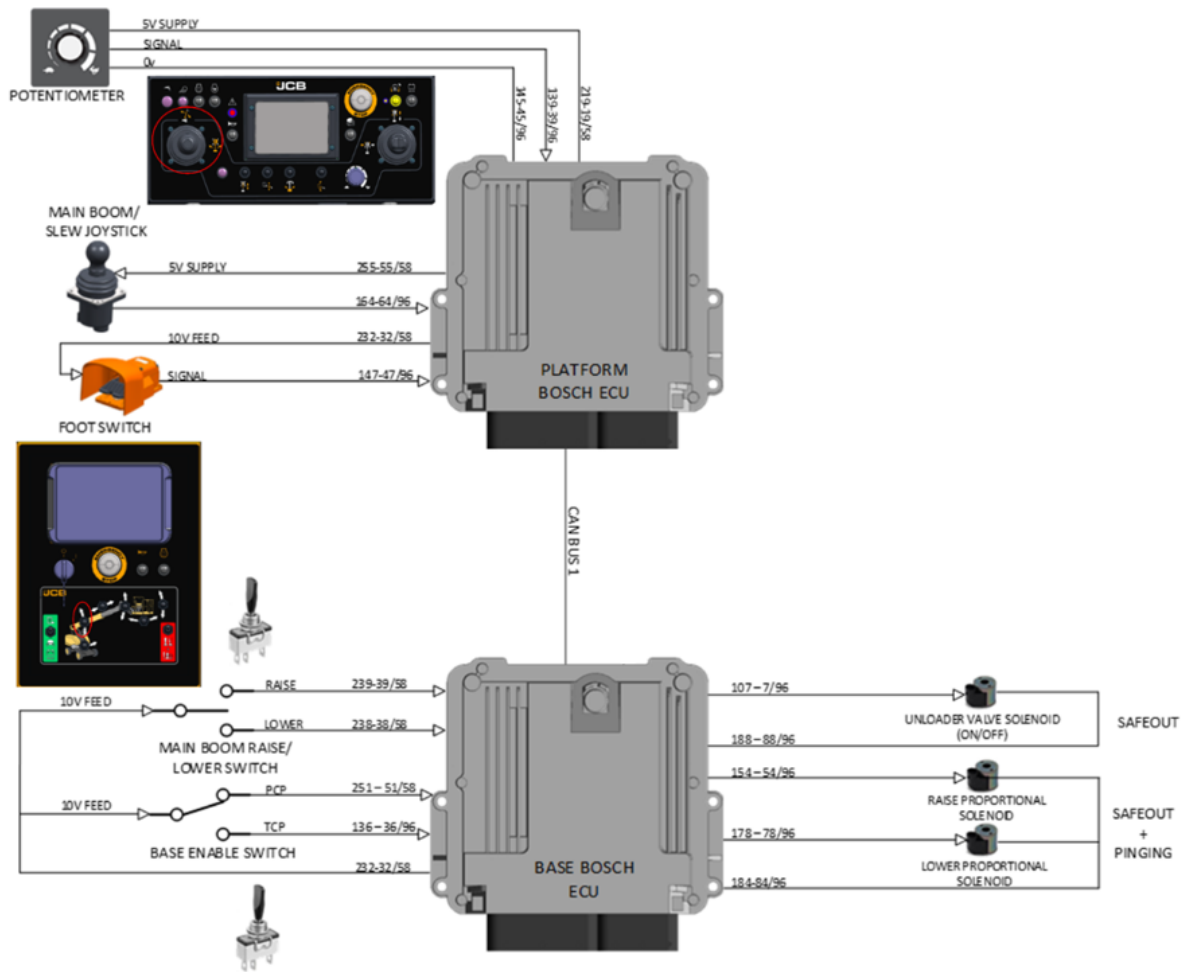
- The main boom allows the main boom to operated from the base or platform control panel.
- From the platform, the control is proportional and operated via a joystick and foot pedal
- From the base the operation can be controlled via TCP Main Boom Switch and Base Enable Switch
- The foot pedal must be pressed for the function to operate from the platform
- The base enable switch must be pressed to operate from the base.
- The Potentiometer position will effect the boom speed.

- During downwards boom movement the White Noise Alarm and the Beacon(s) will be active **(T65D)**
- During all boom movements ,the White Noise Alarm and the Beacon will be activated **(T65D-T3)**
- During main boom raise,unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state.
- There is a function for auto retract on lowering of the main boom. This function is to keep the machine in its correct weight zone for stability
- There will be an icon at base and platform displays when Auto retract is activated



**Note : \* Unloader Solenoid valve is not applicable for T65D T4F machine.**

## System diagram



## Signal

### Platform control

- The 5V supply is an output from the Base platform ecu Pin 55/58
- The 5V ground is returned to Base platform ecu Pin 46/96
- The signal from the joystick is 0.5 - 4.5V depending on joystick position 64/96

### Base Input

- The base input switch is a toggle switch ON-OFF-ON configuration
- The base input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For base enable the base controller will see 10V on pin 36/96
- For main boom raise the base controller will see 10V on pin 39/58
- For main boom lower the base controller will see 10V on pin 38/58

### Outputs

- The unloader valve solenoid is fed from base ECU from pin 7/96.
- The unloader valve solenoid share the negative feed back to the ecu on Pin 88/96.
- The outputs for Main boom are on the main valve control valve. These are proportional solenoids.
- Main boom raise is fed from 54/96
- Main boom lower is fed from 78/96
- Main boom raise and lower share the negative feed back to the ecu on Pin 84/96

## Parameters

- The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards.
- The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

Config 1 - Min/Max					
	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	MB Lift (Raise)	900	1130
MB Lift (Lower)	830	1120	MB Lift (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155

Config 5 - Ramp Up/Down					
	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	MB Lift (Raise)	13	4
MB Lift (Lower)	13	3	MB Lift (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

## Parts in Circuit

- [Toggle Switch ON-OFF-ON](#) <sup>159</sup>
- [Joystick Main Boom/ Slew](#) <sup>279</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Main Control Valve](#) <sup>187</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1076-17</a> <sup>451</sup>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve High Side Short Circuit to High
<a href="#">B1077-16</a> <sup>452</sup>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve High Side Short Circuit to Low
<a href="#">B1078-13</a> <sup>453</sup>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve High Side Open Circuit

Fault Code	Description
<a href="#">B1079-</a> 17 <small>454</small>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve Fault
<a href="#">B1116-</a> 17 <small>473</small>	MAIN BOOM RAISE (BASE) Switch Short Circuit to High
<a href="#">B1117-</a> 17 <small>474</small>	MAIN BOOM LOWER (BASE) Switch Short Circuit to High
<a href="#">B1118-</a> 92 <small>475</small>	MAIN BOOM RAISE & LOWER (BASE) Switches both activated (5 - 10V)
<a href="#">B1119-</a> 16 <small>476</small>	MAIN BOOM RAISE (BASE) Switch Short Circuit to Low
<a href="#">B1120-</a> 16 <small>477</small>	MAIN BOOM LOWER (BASE) Switch Short Circuit to Low
<a href="#">B1148-</a> 17 <small>492</small>	Joystick Boom Raise/Lower Short Circuit to High (>4.75V)
<a href="#">B1149-</a> 16 <small>493</small>	Joystick Boom Raise/Lower Short Circuit to Low (<0.25V) or Open Circuit

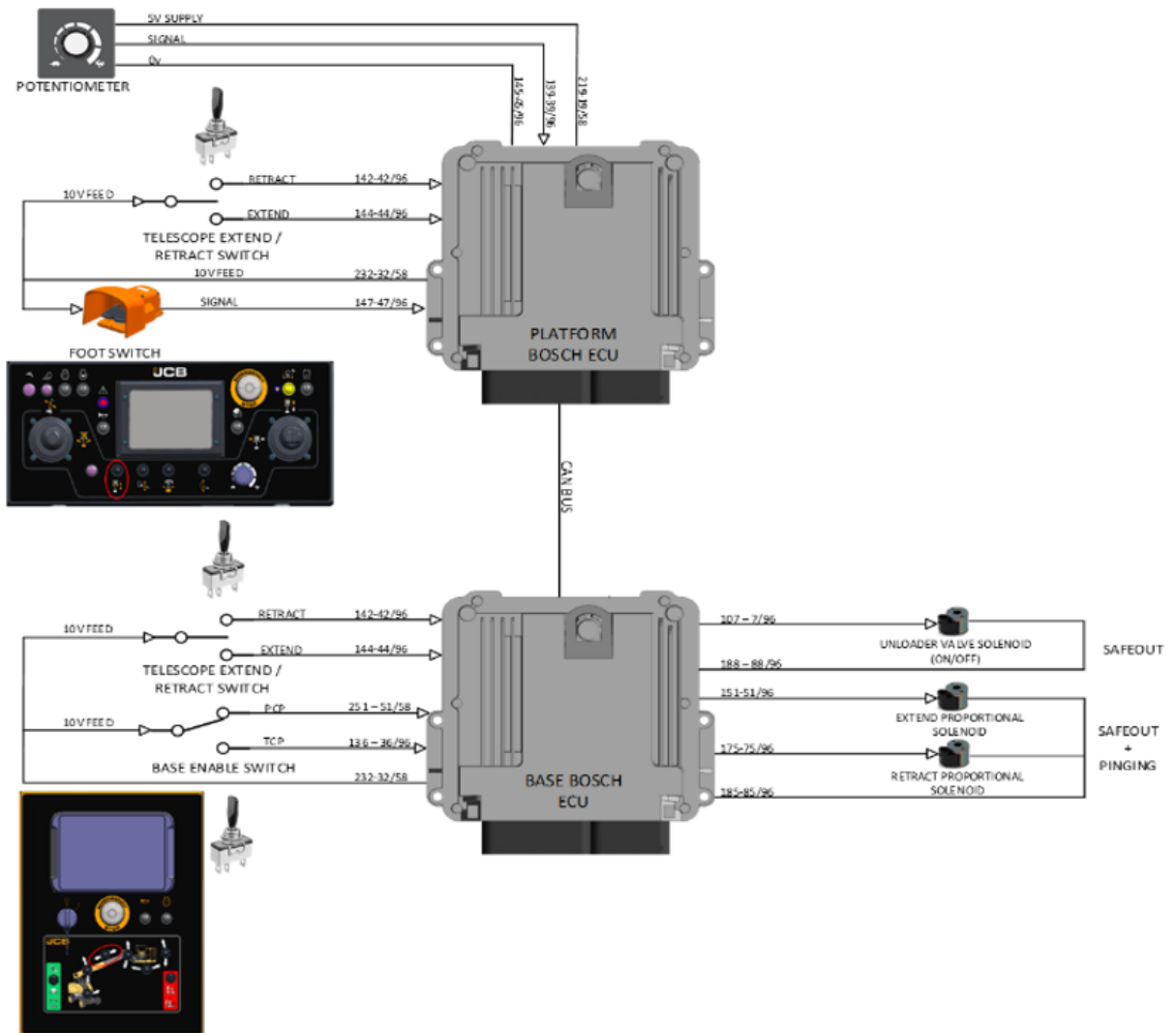
### 3.10 Telescope Function

#### Function

- The Telescope function allows the main boom to extend and retract from the base or platform control panel.
- From the platform, the control is via an On/Off/ON switch, the foot pedal must be pressed for the function to operate from the platform
- From the base the operation is via an On/Off/ON switch, the base enable switch must be pressed to operate from the base.
- The Potentiometer position will effect the boom speed
- During retract boom movement the White Noise Alarm and the Beacon(s) will be active **(T65D)**
- During all boom movements the white Noise Alarm and the Beacons will be active **(T65D-T3)**
- During telescopic boom extend, unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state

**Note : \* Unloader Solenoid valve is not applicable for T65D T4F machine.**

#### System diagram



## Signal

### Platform control

- The platform input switch is a toggle switch ON-OFF-ON configuration
- The platform input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For telescopic extend the base controller will see 10V on pin 44/96
- For telescopic retract the base controller will see 10V on pin 42/96

### Base Input

- The base input switch is a toggle switch ON-OFF-ON configuration
- The base input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For telescope extend the base controller will see 10V on pin 44/96
- For telescope retract the base controller will see 10V on pin 42/96

### Outputs

- The unloader valve solenoid is fed from base ECU from pin 7/96.
- The unloader valve solenoid share the negative feed back to the ecu on Pin 88/96.
- The outputs for Main boom Telescopic extend/retract are on the main control valve. These are proportional solenoids.
- Main Boom Telescopic extend is fed from pin no 51/96
- Main Boom Telescopic retract is fed from pin no 75/96
- Telescope extend and retract share the negative feed back to the base ecu on Pin 85/96

## Parameters

- The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards.
- The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

Config 1 - Min/Max					
	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	Jib (Raise)	900	1130
MB Lift (Lower)	830	1120	Jib (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155

Config 5 - Ramp Up/Down					
	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	Jib (Raise)	13	4
MB Lift (Lower)	13	3	Jib (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

## Parts in Circuit

- [Toggle Switch ON-OFF-ON](#) <sup>159</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Main Control Valve](#) <sup>187</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1101-17</a> <sup>458</sup>	MAIN BOOM EXTEND Switch Short Circuit to High
<a href="#">B1102-17</a> <sup>459</sup>	MAIN BOOM RETRACT Switch Short Circuit to High
<a href="#">B1103-92</a> <sup>460</sup>	MAIN BOOM EXTEND & RETRACT Switches both activated (5 - 10V)
<a href="#">B1104-16</a> <sup>461</sup>	MAIN BOOM EXTEND Switch Short Circuit to Low
<a href="#">B1105-16</a> <sup>462</sup>	MAIN BOOM RETRACT Switch Short Circuit to Low

Fault Code	Description
<a href="#">B1252-17</a> <small>540</small>	MAIN BOOM TELESCOPE EXTEND Switch Short Circuit to High
<a href="#">B1253-17</a> <small>540</small>	MAIN BOOM TELESCOPE RETRACT Switch Short Circuit to High
<a href="#">B1254-92</a> <small>541</small>	MAIN BOOM TELESCOPE EXTEND & RETRACT Switches both activated (5 - 10V)
<a href="#">B1255-16</a> <small>542</small>	MAIN BOOM TELESCOPE EXTEND Switch Short Circuit to Low
<a href="#">B1256-16</a> <small>543</small>	MAIN BOOM TELESCOPE RETRACT Switch Short Circuit to Low
<a href="#">B1373-87</a> <small>619</small>	TELESCOPIC BOOM LENGTH SENSOR Communication fault
<a href="#">B1374-2F</a> <small>620</small>	TELESCOPIC BOOM LENGTH SENSOR Channel plausibility fault
<a href="#">B1375-17</a> <small>621</small>	TELESCOPIC BOOM LENGTH Range fault
<a href="#">B1381-17</a> <small>628</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL High Side Short Circuit to high
<a href="#">B1382-16</a> <small>628</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL High Side Short Circuit to low
<a href="#">B1383-13</a> <small>629</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL High Side Open Circuit
<a href="#">B1384-17</a> <small>630</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Short Circuit to high
<a href="#">B1385-16</a> <small>631</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Short Circuit to low
<a href="#">B1386-13</a> <small>632</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Open Circuit
<a href="#">B1416-13</a> <small>665</small>	TELE BOOM EXTEND\RETRACT Solenoid Valve Fault

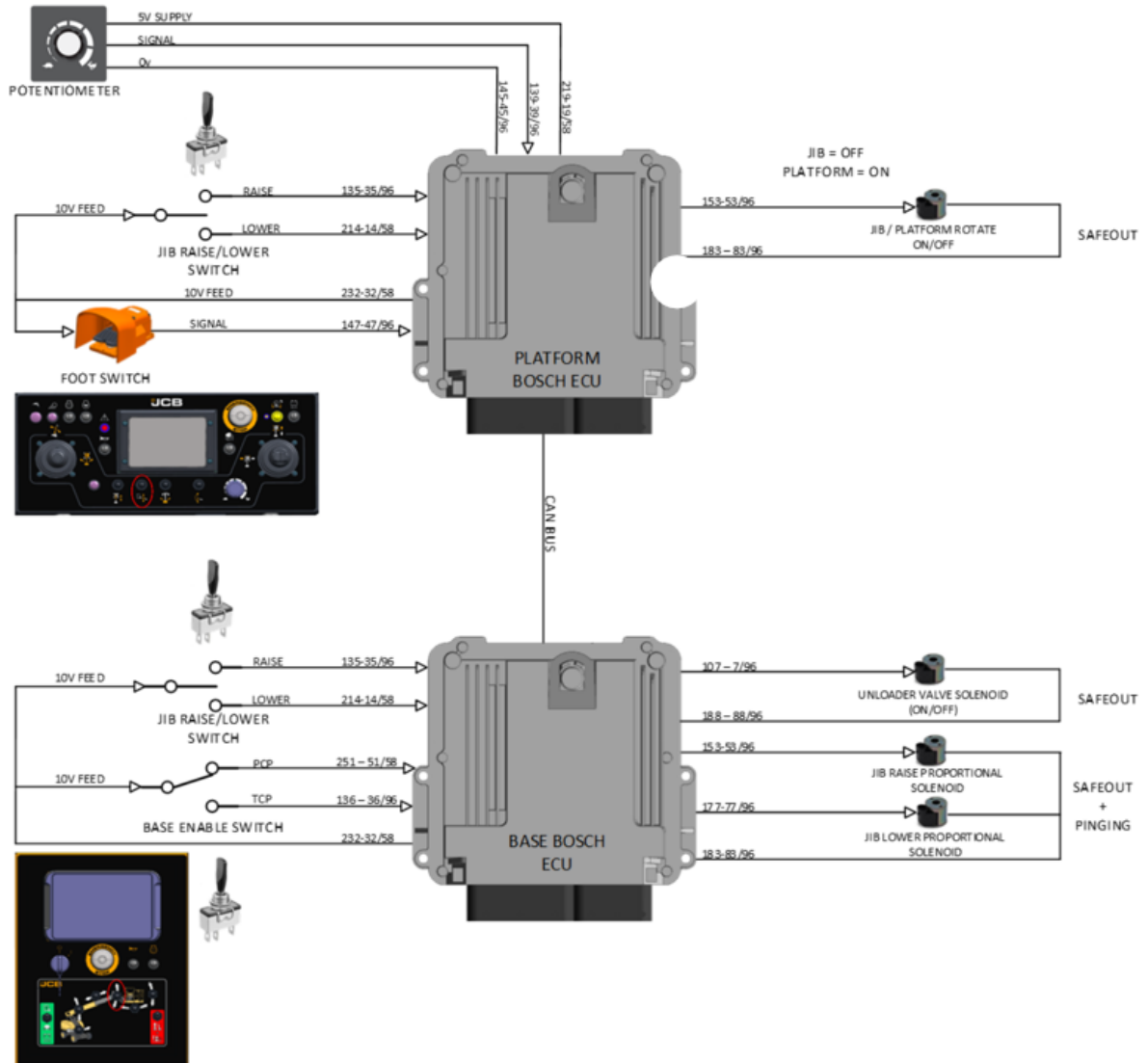
## 3.11 Jib Function

### Function

- The Jib function allows the Jib to raise and lower from the base or platform control panel.
- From the platform, the control is via an On/Off/ON switch, the foot pedal must be pressed for the function to operate from the platform
- From the base the operation is via an On/Off/ON switch, the base enable switch must be pressed to operate from the base.
- The Potentiometer position will effect the Jib speed
- During all Platform movements the white Noise Alarm and the Beacons will be active **(T65D-T3)**
- During Jib raise, unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state

**NOTE: \* Unloader Solenoid valve is not applicable for T65D T4F machine.**

## System diagram





## Signal

### Platform control

- The platform input switch is a toggle switch ON-OFF-ON configuration
- The platform input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For Jib Raise the base controller will see 10V on pin 35/96
- For Jib Lower the base controller will see 10V on pin 14/58

### Base Input

- The base input switch is a toggle switch ON-OFF-ON configuration
- The base input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For Jib raise the base controller will see 10V on pin 35/96
- For Jib lower the base controller will see 10V on pin 14/58

### Outputs from base controller

- The unloader valve solenoid is fed from base ECU from pin 7/96.
- The unloader valve solenoid share the negative feed back to the ecu on Pin 88/96.
- The outputs for Jib are on the main valve control valve. These are proportional solenoids.
- Jib raise is fed from 53/96
- Jib lower is fed from 77/96
- Jib raise and lower share the negative feed back to the ecu on Pin 83/96

## Parameters

- The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards.
- The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

Config 1 - Min/Max					
	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	Jib (Raise)	900	1130
MB Lift (Lower)	830	1120	Jib (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155

Config 5 - Ramp Up/Down					
	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	Jib (Raise)	13	4
MB Lift (Lower)	13	3	Jib (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

## Parts in Circuit

- [Toggle Switch ON-OFF-ON](#) <sup>159</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>

- [Main Control Valve](#) 187
- [Foot Pedal](#) 267
- [Potentiometer](#) 299
- [Unloader Solenoid](#) 187

## Related Fault Codes

Fault Code	Description
<a href="#">B1111-17</a> <small>468</small>	JIB RAISE Switch Short Circuit to High
<a href="#">B1112-17</a> <small>469</small>	JIB LOWER Switch Short Circuit to High
<a href="#">B1113-92</a> <small>470</small>	JIB RAISE & LOWER Switches both activated (5 - 10V)
<a href="#">B1114-16</a> <small>471</small>	JIB RAISE Switch Short Circuit to Low
<a href="#">B1115-16</a> <small>472</small>	JIB LOWER Switch Short Circuit to Low
<a href="#">B1262-17</a> <small>549</small>	JIB RAISE Switch Short Circuit to High
<a href="#">B1263-17</a> <small>550</small>	JIB LOWER Switch Short Circuit to High
<a href="#">B1264-92</a> <small>551</small>	JIB RAISE & LOWER Switches both activated (5 - 10V)
<a href="#">B1265-16</a> <small>551</small>	JIB RAISE Switch Short Circuit to Low
<a href="#">B1266-16</a> <small>552</small>	JIB LOWER Switch Short Circuit to Low

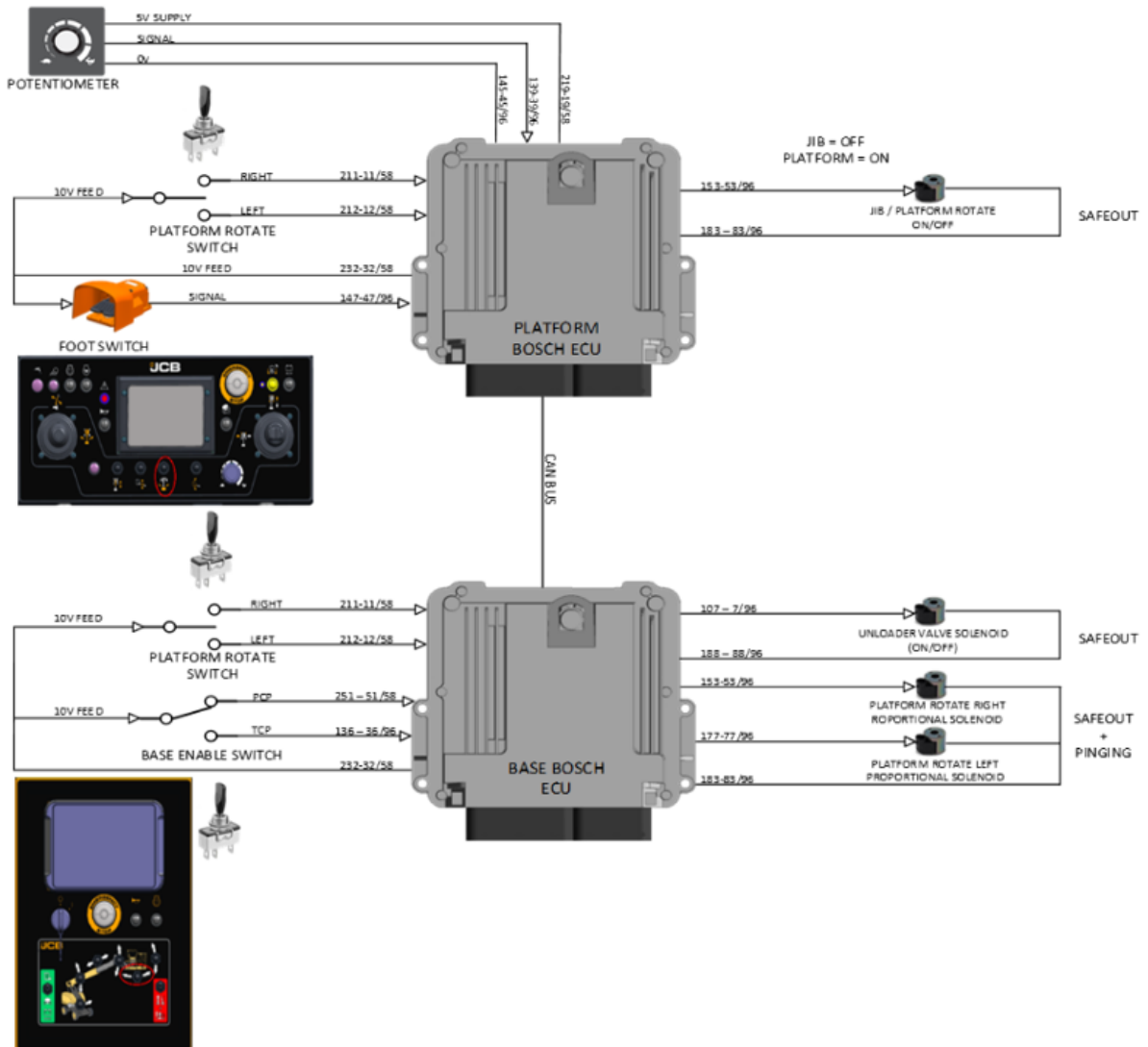
## 3.12 Platform Rotate Function

### Function

- The Platform rotate function allows the platform to rotate from the base or platform control panel.
- The Platform Rotate can be controlled from either the PCP Platform Rotate Switch and Foot Switch or the TCP Platform Rotate Switch and Base Enable Switch
- From the platform, There shall be a momentary ON-OFF-ON switch at the PCP to operate Platform Rotate Right & Left
- From the base the operation is via an On/Off/ON switch, the base enable switch must be pressed to operate from the base.
- During all Platform movements the white Noise Alarm and the Beacons will be active.
- The Potentiometer position will effect the platform rotate speed
- During platform rotate ,unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state .

**NOTE - \* Unloader Solenoid valve is not applicable for T65D T4F machine.**

## System diagram





## Signal

### Platform control

- The platform input switch is a toggle switch ON-OFF-ON configuration
- The platform input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For Platform rotate left the base controller will see 10V on pin 12/58
- For Platform rotate right controller will see 10V on pin 11/58

### Base Input

- The base input switch is a toggle switch ON-OFF-ON configuration
- The base input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For Platform rotate left the base controller will see 10V on pin 12/58
- For Platform rotate right the base controller will see 10V on pin 14/58

### Outputs from base controller

- The unloader valve solenoid is fed from base ECU from pin 7/96.
- The unloader valve solenoid share the negative feed back to the ecu on Pin 88/96.
- The outputs for platform rotate are on the main valve control valve. These are proportional solenoids.
- Platform rotate right is fed from 53/96
- Platform rotate left is fed from 77/96
- Platform rotate left and right share the negative feed back to the ecu on Pin 83/96

### Output from the platform controller

- Platform rotate solenoid high side is 53/96

- Platform rotate solenoid low side is 83/96

## Parameters

- The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards.
- The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

Config 1 - Min/Max					
	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	Jib (Raise)	900	1130
MB Lift (Lower)	830	1120	Jib (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155











Config 5 - Ramp Up/Down					
	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	Jib (Raise)	13	4
MB Lift (Lower)	13	3	Jib (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

## Parts in Circuit

- [Toggle switch ON-OFF-ON](#) <sup>159</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Main Control Valve](#) <sup>187</sup>
- [Platform Control Valve](#) <sup>274</sup>

- [Foot Pedal](#)  267

## Related Fault Codes

Fault Code	Description
<a href="#">B1106-17</a>  463	PLATFORM ROTATE RIGHT Switch Short Circuit to High
<a href="#">B1107-17</a>  464	PLATFORM ROTATE LEFT Switch Short Circuit to High
<a href="#">B1108-92</a>  465	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)
<a href="#">B1109-16</a>  466	PLATFORM ROTATE RIGHT Switch Short Circuit to Low
<a href="#">B1110-16</a>  467	PLATFORM ROTATE LEFT Switch Short Circuit to Low
<a href="#">B1257-17</a>  544	PLATFORM ROTATE RIGHT Switch Short Circuit to High
<a href="#">B1258-17</a>  545	PLATFORM ROTATE LEFT Switch Short Circuit to High
<a href="#">B1259-92</a>  546	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)
<a href="#">B1260-16</a>  547	PLATFORM ROTATE RIGHT Switch Short Circuit to Low
<a href="#">B1261-16</a>  548	PLATFORM ROTATE LEFT Switch Short Circuit to Low

### 3.13 Slew Function

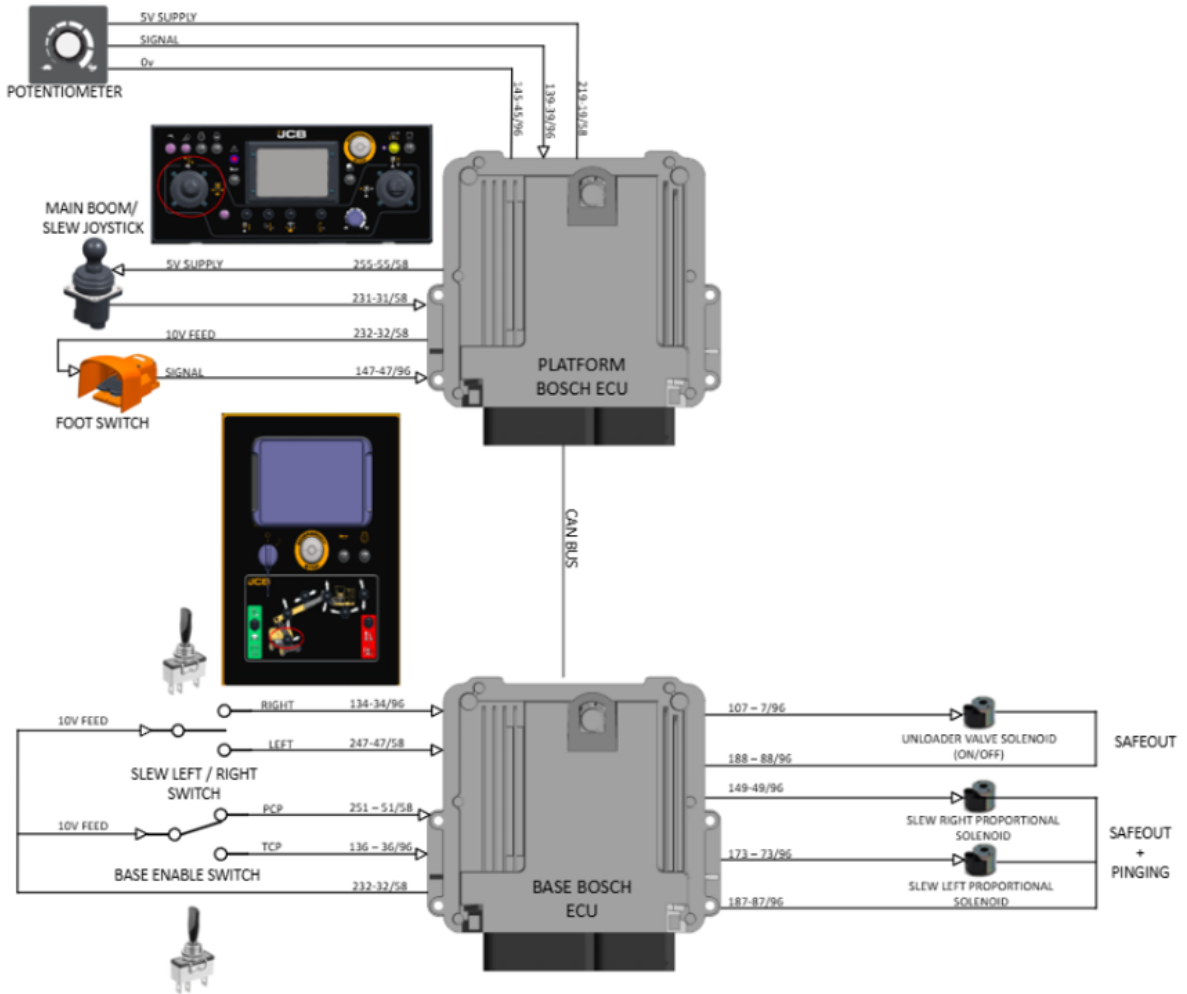
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#### Function

- The Slew function allows the turntable to rotate from the base or platform control panel.
- From the platform, the control is via an On/Off/ON switch, the foot pedal must be pressed for the function to operate from the platform
- From the base the operation is via an On/Off/ON switch, the base enable switch must be pressed to operate from the base.
- The Potentiometer position will effect the Slew speed
- During all slew movements the white Noise Alarm and the Beacons will be active.
- The Potentiometer position will effect the Slew speed
- During Slew , the unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state

**NOTE - \* Unloader Solenoid valve is not applicable for T65D T4F machine.**

## System diagram





## Signal

### Platform control

- The platform Joystick is fed from the 5V output from the base ECU. (pin 55/58)
- The joystick is in the center position the signal will be around 2.5V
- Dependent on the direction in which the joystick is pressed the voltage will vary between 0.5V and 4.5V

### Base Input

- The base input switch is a toggle switch ON-OFF-ON configuration
- The base input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For slew left the base controller will see 10V on pin 47/58
- For slew right the base controller will see 10V on pin 36/96

### Outputs from base controller

- The outputs for platform are on the main valve control valve. These are proportional solenoids.
- Slew left solenoid is fed on Pin no 73/96
- Slew right solenoid is fed on Pin no 49/96
- Slew left and right share the negative feed back to the ecu on Pin 87/96
- The unloader valve solenoid is fed from base ECU from pin 7/96.
- The unloader valve solenoid share the negative feed back to the ecu on Pin 88/96.

## Parameters

- The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards.
- The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

**Config 1 - Min/Max**

	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	Jib (Raise)	900	1130
MB Lift (Lower)	830	1120	Jib (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155

**Config 5 - Ramp Up/Down**

	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	Jib (Raise)	13	4
MB Lift (Lower)	13	3	Jib (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

- With slew there is an extra parameter to alter the speed of the slew when the telescope is in the extending position.
- This is needed so the slew does not seem faster as the machine is extended out.

**Config 3 - Speeds**

Base Function Speed	100
Slew Speed (Extend)	60

## Parts in Circuit

- [Toggle switch ON-OFF-ON](#) <sup>159</sup>
- [Main boom/ Slew joystick - Platform](#) <sup>279</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Main Control Valve](#) <sup>187</sup>
- [Platform Control Valve](#) <sup>274</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1080-17</a> <sup>455</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Short Circuit to High
<a href="#">B1081-16</a> <sup>455</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Short Circuit to Low
<a href="#">B1082-13</a> <sup>456</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Open Circuit
<a href="#">B1083-17</a> <sup>457</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Fault
<a href="#">B1121-17</a> <sup>478</sup>	SLEW RIGHT (BASE) Switch Short Circuit to High
<a href="#">B1122-17</a> <sup>479</sup>	SLEW LEFT (BASE) Switch Short Circuit to High
<a href="#">B1123-92</a> <sup>480</sup>	SLEW RIGHT & LEFT (BASE) Switches both activated (5 - 10V)
<a href="#">B1124-16</a> <sup>481</sup>	SLEW RIGHT (BASE) Switch Short Circuit to Low
<a href="#">B1125-16</a> <sup>482</sup>	SLEW LEFT (BASE) Switch Short Circuit to Low
<a href="#">B1150-17</a> <sup>494</sup>	SLEW JOYSTICK Short Circuit to High (>4.75V)
<a href="#">B1151-16</a> <sup>495</sup>	SLEW JOYSTICK Short Circuit to Low (<0.25V) or Open Circuit
<a href="#">B1338-17</a> <sup>595</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Low Side Short Circuit to High
<a href="#">B1339-16</a> <sup>596</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Low Side Short Circuit to Low
<a href="#">B1340-13</a> <sup>597</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Low Side Open Circuit

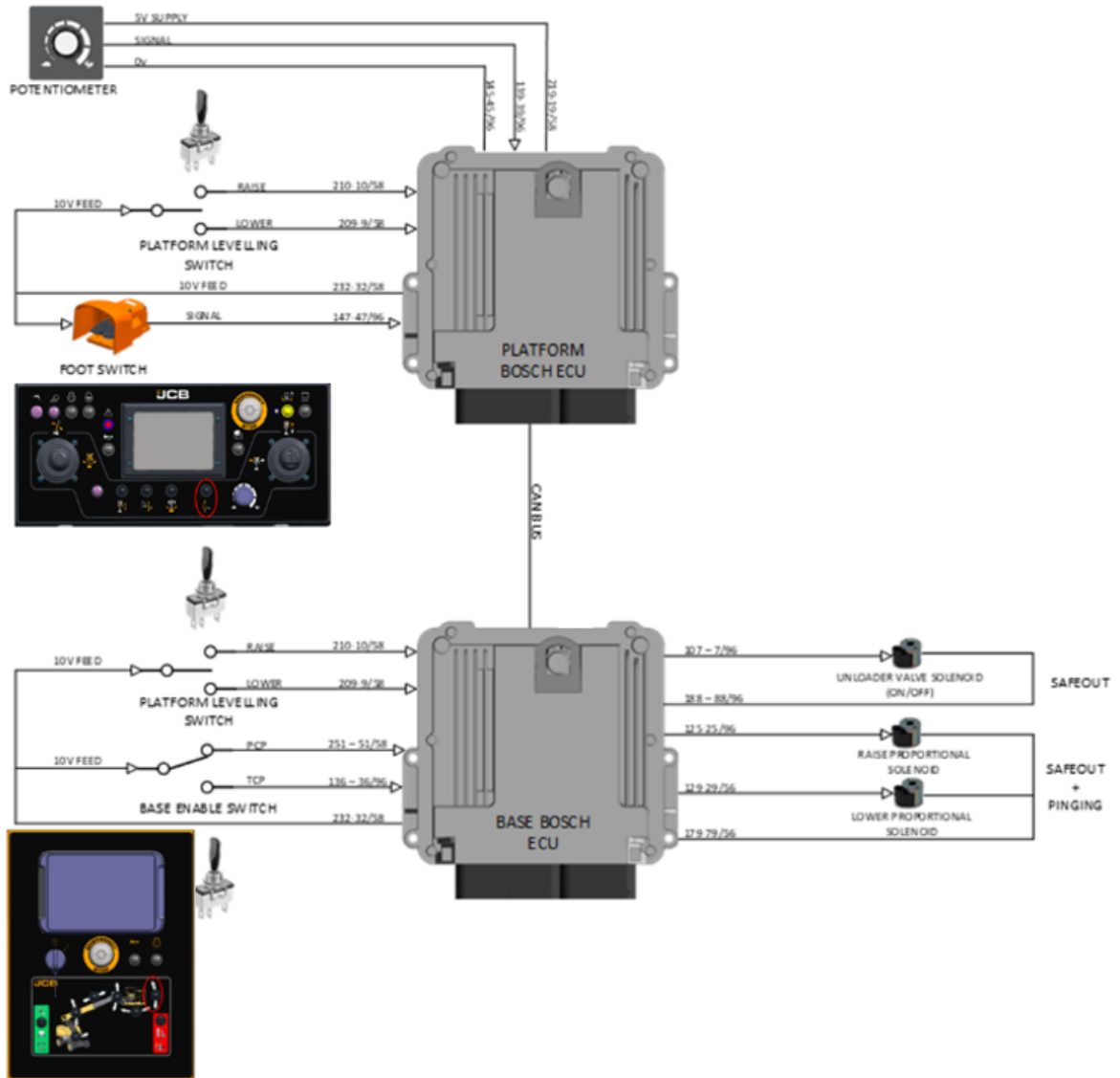
### 3.14 Platform Levelling Function

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#### Function

- The level function allows the platform to be manually leveled up or down from the base or platform control station.
- From the platform, the control is via an On/Off/ON switch, the foot pedal must be pressed for the function to operate from the platform
- From the base the operation is via an On/Off/ON switch, the base enable switch must be pressed to operate from the base.
- During all Platform movements the white Noise Alarm and the Beacons will be active. **(T65D-T3)**
- The Potentiometer position will effect the level speed
- During platform levelling , the unloader solenoid will be activated via base enable or foot pedal pressing .In case of overload situation unloader solenoid will get deactivated by ECU to make machine in safe state .

#### System diagram





## Signal

### Platform control

- The platform input switch is a toggle switch ON-OFF-ON configuration
- The platform input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For level Raise the base controller will see 10V on pin 10/58
- For level Lower the base controller will see 10V on pin 9/58

### Base Input

- The base input switch is a toggle switch ON-OFF-ON configuration
- The base input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The switch outputs will be open circuit when the switch is un-pressed
- For level raise the base controller will see 10V on pin 10/96
- For level lower the base controller will see 10V on pin 9/58

### Outputs from base controller

- The outputs for platform levelling are on the main control valve. These are proportional solenoids.
- level raise is fed from 25/96
- level lower is fed from 29/96
- level raise and lower share the negative feed back to the ecu on Pin 79/96
- The unloader valve solenoid is fed from base ECU from pin 7/96.
- The unloader valve solenoid share the negative feed back to the ecu on Pin 88/96.

## Parameters

- The parameters will be locked out and require an unlock code to edit. These values should not be changed without full understanding of the product and legal standards.
- The machine should always be checked against the machine speeds and times sheet. When checking these should always be done with the potentiometer in the maximum position for the various engine speeds

Config 1 - Min/Max					
	Min Current (mA)	Max Current (mA)		Min Current (mA)	Max Current (mA)
Slew (left)	800	1225	Steer (Left)	1200	1400
Slew (Right)	800	1250	Steer (Right)	1200	1400
MB Lift (Raise)	850	1240	Jib (Raise)	900	1130
MB Lift (Lower)	830	1120	Jib (Lower)	800	1050
MB Telescope (Extend)	1060	1400	Platform Rotate (Left)	800	945
MB Telescope (Retract)	930	1065	Platform Rotate (Right)	835	970
Artic Boom Raise	305	1	Platform Levelling (Raise)	800	1170
Artic Boom Lower	0	0	Platform Levelling (Lower)	800	1155

Config 5 - Ramp Up/Down					
	Ramp Down	Ramp Up		Ramp Down	Ramp Up
Slew (left)	13	3	Steer (Left)	13	3
Slew (Right)	13	3	Steer (Right)	13	3
MB Lift (Raise)	13	3	Jib (Raise)	13	4
MB Lift (Lower)	13	3	Jib (Lower)	13	4
MB Telescope (Extend)	13	10	Platform Rotate (Left)	13	3
MB Telescope (Retract)	13	10	Platform Rotate (Right)	13	3
Artic Boom Raise	1040	930	Platform Levelling (Raise)	13	3
Artic Boom Lower	1065	4744	Platform Levelling (Lower)	13	3

## Parts in Circuit

- [Toggle switch ON-OFF-ON](#) <sup>159</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Main Control Valve](#) <sup>187</sup>
- [Main boom/Slew Joystick - Platform](#) <sup>279</sup>

## Related Fault Codes

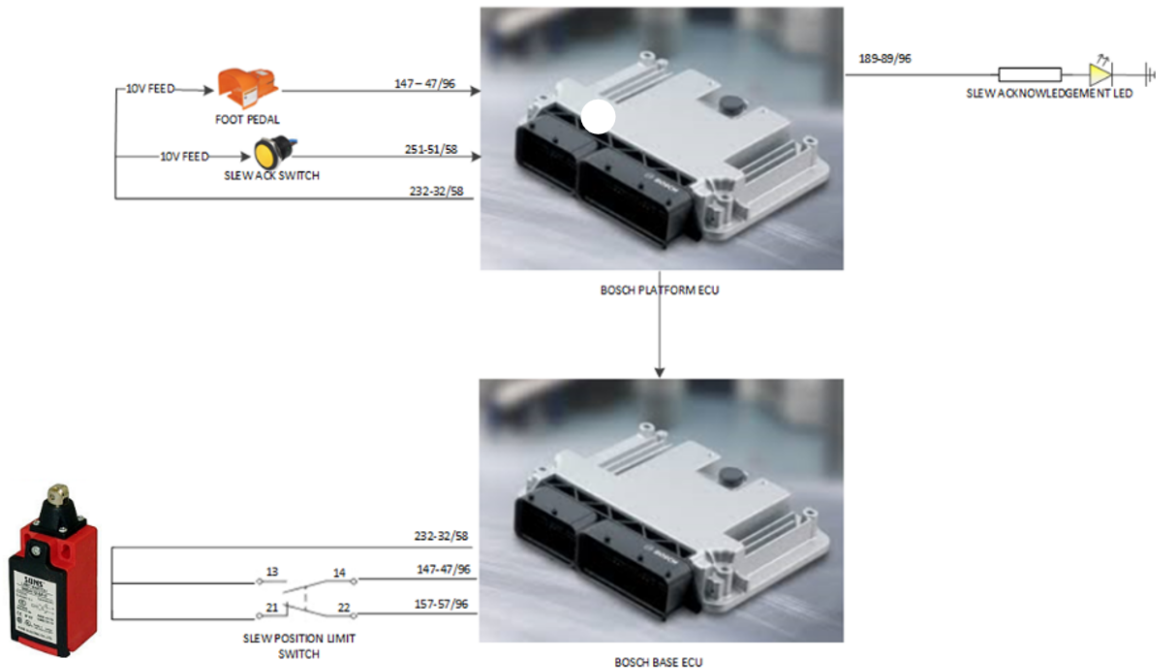
Fault Code	Description
<a href="#">B1071-17</a> <small>446</small>	PLATFORM LEVELING RAISE Switch Short Circuit to High
<a href="#">B1072-17</a> <small>447</small>	PLATFORM LEVELING LOWER Switch Short Circuit to High
<a href="#">B1073-92</a> <small>448</small>	PLATFORM LEVELING RAISE and LOWER Switches both activated (5 - 10V)
<a href="#">B1074-16</a> <small>449</small>	PLATFORM LEVELING RAISE Switch Short Circuit to Low
<a href="#">B1075-16</a> <small>450</small>	PLATFORM LEVELING LOWER Switch Short Circuit to Low
<a href="#">B1242-17</a> <small>535</small>	PLATFORM LEVELING RAISE Switch Short Circuit to High
<a href="#">B1243-17</a> <small>536</small>	PLATFORM LEVELING LOWER Switch Short Circuit to High
<a href="#">B1244-92</a> <small>537</small>	PLATFORM LEVELING RAISE and LOWER Switches both activated (5 - 10V)
<a href="#">B1245-16</a> <small>538</small>	PLATFORM LEVELING RAISE Switch Short Circuit to Low
<a href="#">B1246-16</a> <small>539</small>	PLATFORM LEVELING LOWER Switch Short Circuit to Low
<a href="#">B1393-17</a> <small>639</small>	PLATFORM LEVEL RAISE/LOWER PROPORTIONAL High Side Short Circuit to high
<a href="#">B1394-16</a> <small>640</small>	PLATFORM LEVEL RAISE/LOWER PROPORTIONAL High Side Short Circuit to low
<a href="#">B1395-13</a> <small>641</small>	PLATFORM LEVEL RAISE/LOWER PROPORTIONAL High Side Open Circuit
<a href="#">B1396-17</a> <small>642</small>	PLATFORM LEVEL RAISE/LOWER PROPORTIONAL Low Side Short Circuit to high
<a href="#">B1397-16</a> <small>643</small>	PLATFORM LEVEL RAISE/LOWER PROPORTIONAL Low Side Short Circuit to low
<a href="#">B1398-13</a> <small>644</small>	PLATFORM LEVEL RAISE/LOWER PROPORTIONAL Low Side Open Circuit
<a href="#">B1418-13</a> <small>667</small>	PLATFORM LEVEL RAISE/LOWER Solenoid Valve Fault

## 3.15 Slew Acknowledgment

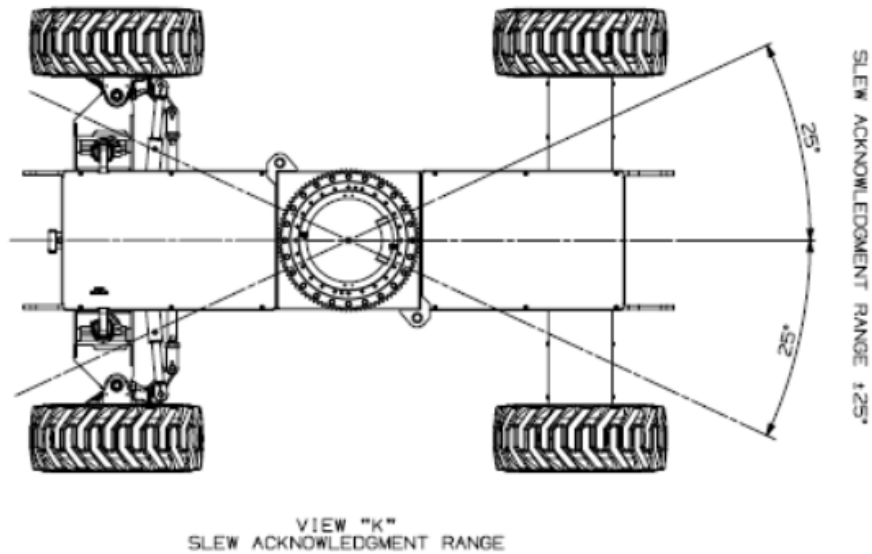
### Function

- The slew Acknowledgment function is implemented to block the drive function when the machine is slewed around.
- This is so the operator has to acknowledge the fact the controls may move the opposite direction than expected to to the slew turntable to the chassis of the machine
- The machine can either be slewed back to the front location and the driving will be allowed as normal. Outside of the forward condition the drive will be blocked and the slew acknowledgment led will flash.
- The foot pedal and the slew acknowledgment button will be need to be pressed to accept the function, this will make the LED light solid and enable the drive function.
- When the foot pedal is released the function will reset and will need to be accepted if outside of the forward position.
- There is a slew switch which determines the position of the boom. The switch is pressed when the boom is in the forward position and unpressed when the machine is slewed around.

### System diagram



The forward position is classed as 25 degrees either side of the center position. Anything outside of this range will need the slew acknowledgment to be accepted with a button press to enable drive.



**Signal**

**Platform Input**

- The platform input switch is fed from the 10V output from the base ECU. (pin 32/58)
- The Slew Acknowledgment switch is a push button
- This is open circuit when not pressed
- When the switch is pressed this is 10V

### Base Input

- This is a dual pole limit switch.
- In the forward position the switch is pressed
- Pin 47/96 will be 10V
- Pin 57/96 will be open circuit

### Out of the forward position

- Pin 47/96 will be open circuit
- Pin 57/96 will be 10V

### Platform output

- The LED 12V is driven by the pin 89/96. This will be 12V on and off when flashing, out of forward position
- The LED will be 12V when the slew acknowledgment button has been pressed and accepted and drive is re-enabled

### Parts in Circuit

- [Slew Position Limit Switch](#) <sup>182</sup>
- [Slew Acknowledgment LED](#) <sup>291</sup>
- [Slew Acknowledgment Switch](#) <sup>293</sup>
- [Base ECU](#) <sup>169</sup>
- [Platform ECU](#) <sup>305</sup>

### Related Fault Codes

Fault Code	Description
<a href="#">B1019-17</a> <sup>406</sup>	SLEW POSITION Limit Switch 1 Short Circuit to High
<a href="#">B1020-17</a> <sup>407</sup>	SLEW POSITION Limit Switch 2 Short Circuit to High
<a href="#">B1021-16</a> <sup>408</sup>	SLEW POSITION Limit Switch 1 Short Circuit to Low
<a href="#">B1022-13</a> <sup>409</sup>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 Open Circuit

Fault Code	Description
<a href="#">B1023-16</a> <small>410</small>	SLEW POSITION Limit Switch 2 Short Circuit to Low
<a href="#">B1024-92</a> <small>411</small>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 Short Circuit to 10V
<a href="#">B1064-17</a> <small>441</small>	SLEW ACK SWITCH Short Circuit to High
<a href="#">B1065-16</a> <small>441</small>	SLEW ACK SWITCH Short Circuit to Low
<a href="#">B1066-24</a> <small>442</small>	SLEW ACK SWITCH Short Circuit Stuck for $\geq 10$ seconds
<a href="#">B1198-16</a> <small>507</small>	SLEW ACK LED Short Circuit to Low
<a href="#">B1199-17</a> <small>508</small>	SLEW ACK LED Short Circuit to High

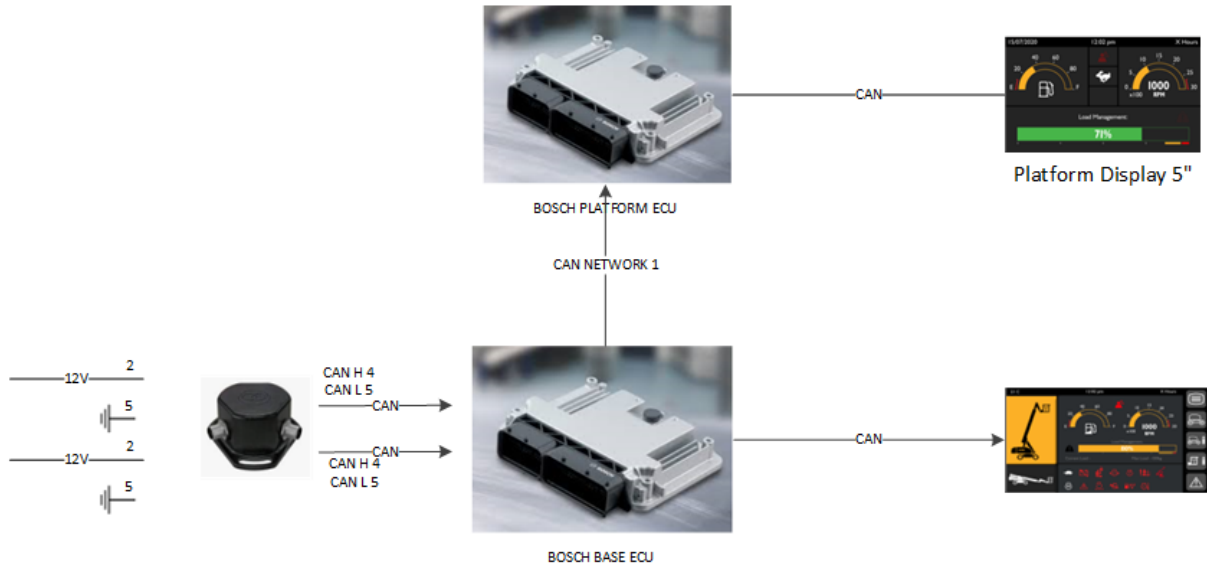
### 3.16 Tilt Sensor

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#### Function

- The tilt sensor is for monitoring of the inclination of the turntable to ensure the machine stability is maintained.
- The tilt sensor will be calibrated at the Zero position and will allow 5 degrees in the X and Y position.
- All functions will operate when the machine is in the stowed condition and just give the operator a warning that the machine is over 5 degrees of tilt.
- In the raised condition the drive and boom up and slew functions will be blocked.
- The Tilt sensor is a dual CAN based tilt sensor.

#### System diagram



## Signal

- The ECU will receive x2 CAN inputs from the sensor in channel 1 and channel 2.
- This is carried on CAN 1 network to the base ECU. CAN H is 15/58 and CAN L is 16/58

## Calibration

The tilt sensor can be calibrated in 2 methods:

- Calibrate from the Display
- Calibrate from the Servicemaster

## Parts in Circuit

- [Tilt Sensor](#) <sup>219</sup>
- [Base ECU](#) <sup>169</sup>

## Related Fault Codes

Fault Code	Description
B1376-87 <small>622</small>	TILT ANGLE SENSOR Communication fault
B1377-2F <small>623</small>	TILT ANGLE SENSOR Channel plausibility fault
B1378-17 <small>624</small>	TILT ANGLE SENSOR Range fault

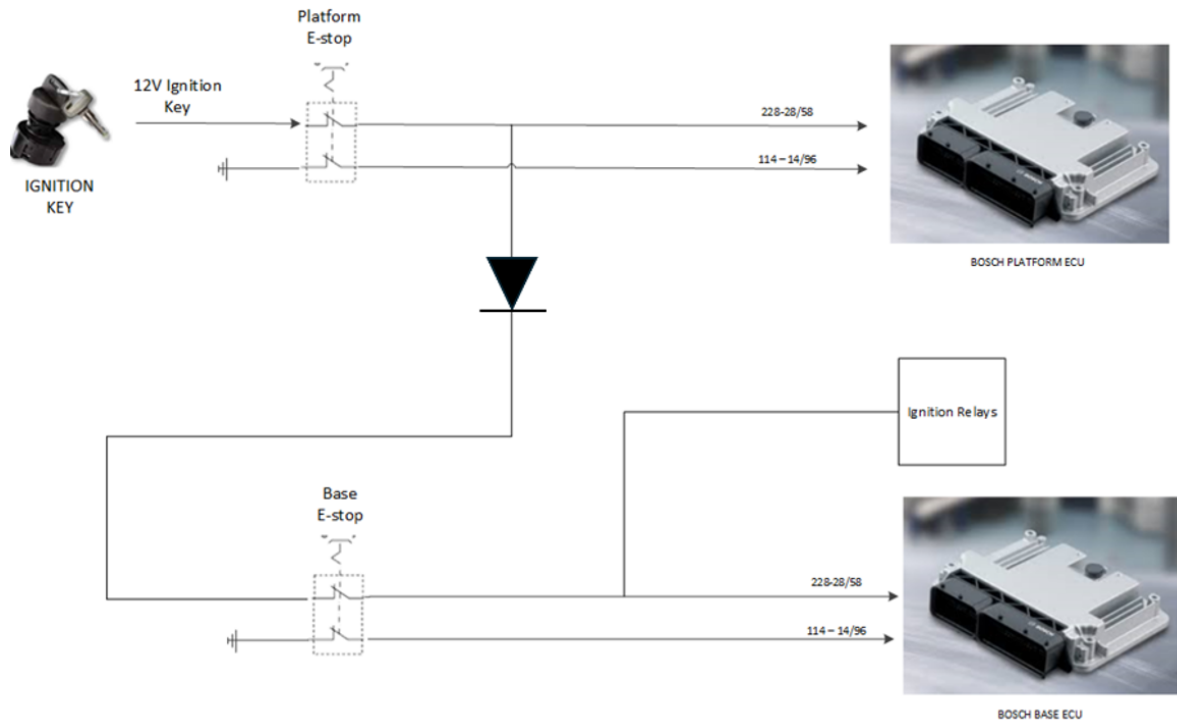
### 3.17 E-Stop Function

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#### Function

- The E-stop is to stop any function under an emergency.
- When E-Stop is pressed either from base or platform, Ignition to the Base and platform Controller shall be turned off
- E-Stop buttons are located at Base and Platform.
- The Platform Emergency Stop can be overridden by the Base Override except Platform Rotate function.
- The E-stop function will stop the engine and turn off the ignition circuit and turn off the machine displays.
- This may bring the machine to a harsh stop if moving at speed.

#### System diagram



Please view schematic for true wiring diagrams.



## Signal

- There are 2 signals used by the control system.
- A 12V signal and a Ground signal.
- For the control system to operate both signals need to be on at the same time, if either is incorrect the control system will be blocked.

## Parts in Circuit

- [E-Stop Base](#) 147
- [E-Stop Platform](#) 303
- [Platform ECU](#) 305
- [Base ECU](#) 169
- [Ignition Relays](#) 149
- [Ignition Switch](#) 152

## Related Fault Codes

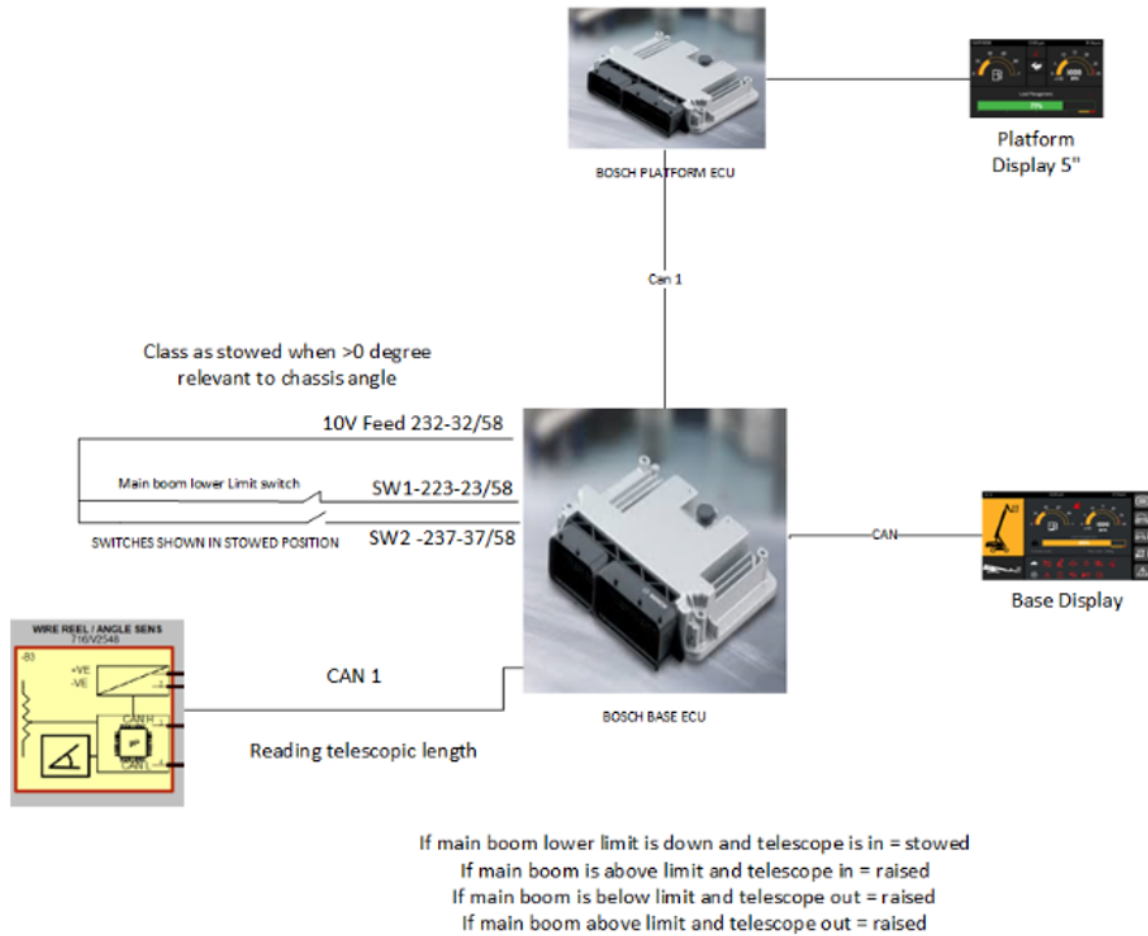
Fault Code	Description
<a href="#">B1235-17</a> <small>531</small>	E-Stop & Base Override - E-Stop & Base Override - E-Stop Plausibility Check
<a href="#">B1001-17</a> <small>399</small>	E-Stop & Base Override - E-Stop Plausibility Check
<a href="#">B1008-16</a> <small>403</small>	E-Stop & Base Override - Base Enable Switch Short Circuit to Low
<a href="#">B1063-92</a> <small>440</small>	E-Stop & Base Override - Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)
<a href="#">B1060-13</a> <small>437</small>	E-Stop & Base Override - Override Switch Pressed and Override Switch Unpressed Open Circuit
<a href="#">B1059-16</a> <small>435</small>	E-Stop & Base Override - Override Switch Pressed Short Circuit to Low
<a href="#">B1062-16</a> <small>438</small>	E-Stop & Base Override - Override Switch Unpressed Short Circuit to Low

## 3.18 Position Control

### Function

- The position control function is what sets the machine state: raised or stowed.
- This control many functions especially speed of functions and when the tilt sensor starts to block functionality.
- The Stowed function is when the telescope is retracted and the main boom is below the 4 degrees in relation to the chassis.
- The raised state is when either the telescope is extended or main boom is above the 0 degrees in relation to the chassis position.

### System diagram



**Note -**  
 Boom Lower Limit Switch is not applicable for T65D T3 machine.  
 Boom Lower Limit Switch is not applicable for T65D machine in which V3.0 or higher version software available.

## Signal

### Input at the base ECU.

- The wire reel and angle sensor is all in one device and send x2 channels of CAN messages on the CAN 1 network to the Base ECU.
- The main boom lower switch is fed for the 10V input from the base ECU from pin 32/58.
- one part of the switch will be closed and the other part will be open circuit.
- When in the stowed condition pin 37/58 will be 10V for Switch 2
- When in the stowed condition pin 23/58 will be 0V for Switch 1
- When in the raised condition pin 37/58 will be 0V for Switch 2
- When in the raised condition pin 23/58 will be 10V for Switch 1

## Testing

To test the position control ensure the telescope has been calibrated.

**Applicable for T65D machine in the field which are which are flashed with software below V3.0 version.**

**Test 1**

- Ensure telescope is fully retract and raise the main boom >0 degrees horizontal to the chassis, the base display should show raised mode.  
Move the main boom back to <0Degrees horizontal to the chassis, the base display should show the stowed mode  
If this does not work correctly, look at Main boom lower switch

**Test 2**

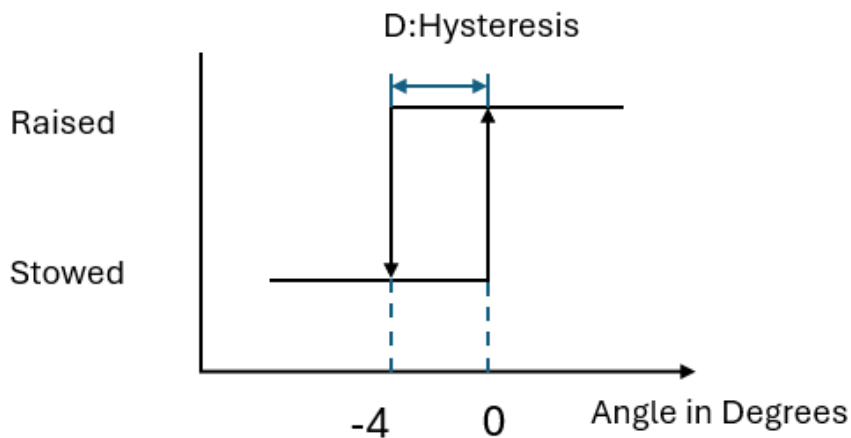
- Ensure the main boom is below 0 degrees horizontal to the chassis and the display shows stowed mode, extend the telescope, after 100mm of telescope, the display should change to raised mode.  
Retract the telescope back in <100mm and the display icon should change back to stowed mode  
If this does not work, first check calibration, look at Main boom angle & length sensor

**Applicable for T65D-T3 machines**

**Applicable for T65D machine which are flashed with software V3.0 or higher**

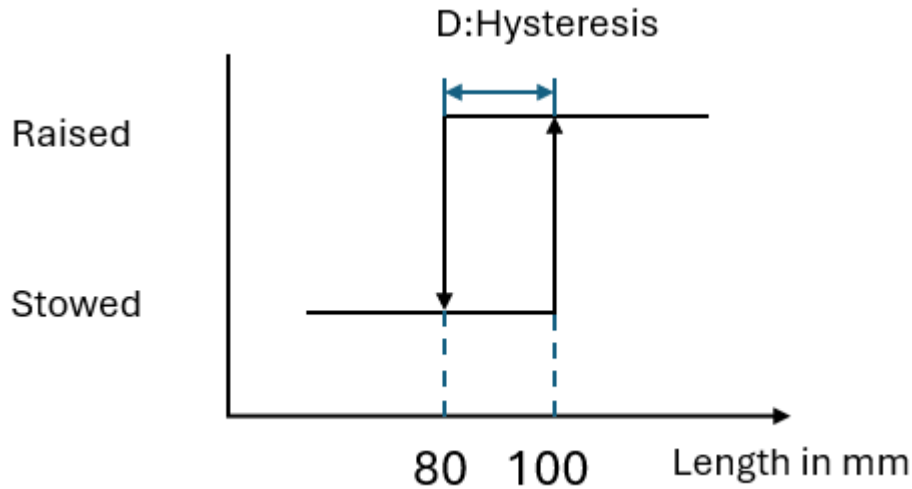
**Test 1**

Ensure telescope is fully retracted, machine working state should change as per below hysteresis diagram. Displays shows the stowed and raised states.



**Test 2**

Ensure the boom is below 0 degrees horizontal to the chassis and the display shows stowed mode, machine working state should change as per below hysteresis diagram. Displays shows the stowed and raised states.



## Calibration

The length sensor can be calibrated in 2 methods:

- Length sensor calibration from the Base Display
- Length sensor calibration from the Service master

## Parts in Circuit

[Wire Reel sensor](#) <sup>196</sup>

[Main Boom Lower Limit Switch](#) <sup>197</sup> (Applicable for machines which has SW <V3.0, T65D-T4F)

[Platform ECU](#) <sup>305</sup>

[Base ECU](#) <sup>169</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1126-17</a> <sup>483</sup>	MAIN BOOM Lower Limit Switch 1 Short Circuit to High

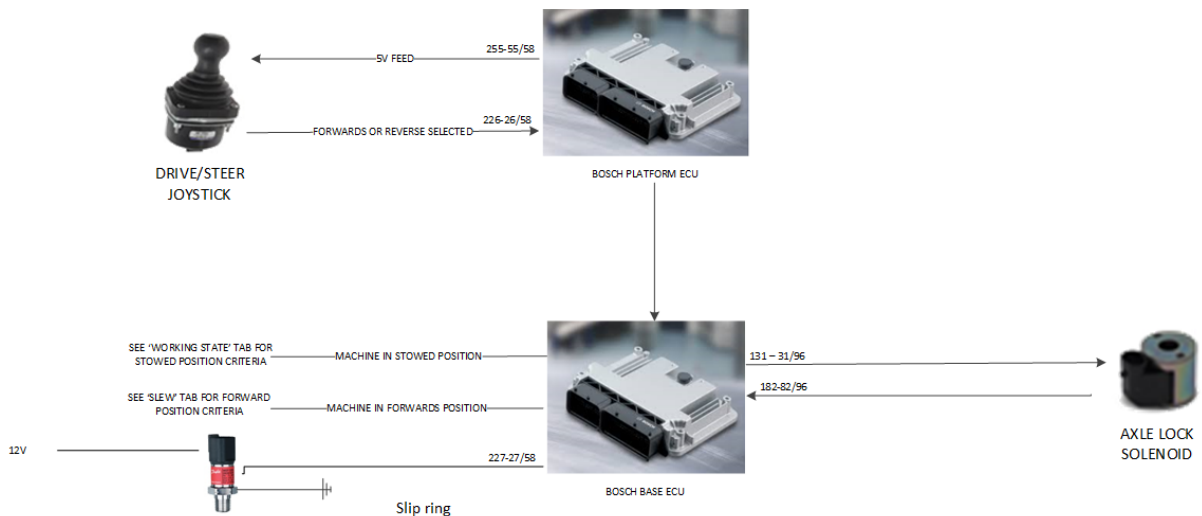
Fault Code	Description
<a href="#">B1127-17</a> <sup>484</sup>	MAIN BOOM Lower Limit Switch 2 Short Circuit to High
<a href="#">B1128-16</a> <sup>485</sup>	MAIN BOOM Lower Limit Switch 1 Short Circuit to Low
<a href="#">B1129-13</a> <sup>486</sup>	MAIN BOOM Lower Limit Switch 1 AND Switch 2 Open Circuit
<a href="#">B1130-16</a> <sup>487</sup>	MAIN BOOM Lower Limit Switch 2 Short Circuit to Low
<a href="#">B1131-2F</a> <sup>488</sup>	MAIN BOOM Lower Limit Switch 1 AND Switch 2 Short Circuit to 10V OR 12V
<a href="#">B1373-87</a> <sup>619</sup>	TELESCOPIC BOOM LENGTH SENSOR Communication fault
<a href="#">B1374-2F</a> <sup>620</sup>	TELESCOPIC BOOM LENGTH SENSOR Channel plausibility fault
<a href="#">B1375-17</a> <sup>621</sup>	TELESCOPIC BOOM LENGTH Range fault

## 3.19 Oscillating Axle

### Function

- The Oscillating axle is a function that allows the front axle to float to allow a better drive control on rough terrain.
- The function is controlled via the software which allows the axle to float in the stowed drive conditions.
- The axle will remain locked in all other conditions.

### System diagram



## Signal

- Platform control
- The drive joystick must be in a drive condition for the unlock to happen
- Base Input
- The pressure sensor is 0.5-5V signal that varies by the pressure and is fed into the base ECU in pin 27/58
- The position control position is also read to understand the stowed or raised position of the machine. See position control
- Outputs from base controller
- The Oscillating Axle solenoid is on the Chassis control valve
- The high side out is from pin 31/96 and return path to pin 82/96
- The solenoid is activated to float the axle, stowed condition and driving.

## Parts in Circuit

- [Pressure Sensor](#) <sup>141</sup>
- [Chassis Control Valve](#) <sup>187</sup>
- [Platform ECU](#) <sup>305</sup>
- [Base ECU](#) <sup>169</sup>
- [Oscillating Axle Solenoid](#) <sup>136</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1043-17</a> <sup>422</sup>	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to High
<a href="#">B1044-16</a> <sup>423</sup>	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to Low
<a href="#">B1045-13</a> <sup>424</sup>	OSCILLATING AXLE Solenoid Valve High Side & Low Side Open Circuit
<a href="#">B1301-2F</a> <sup>574</sup>	OSCILLATING AXLE PRESSURE SENSOR FAILURE
<a href="#">B1347-17</a> <sup>600</sup>	OSCILLATING AXLE Solenoid Valve Low Side Short Circuit to High

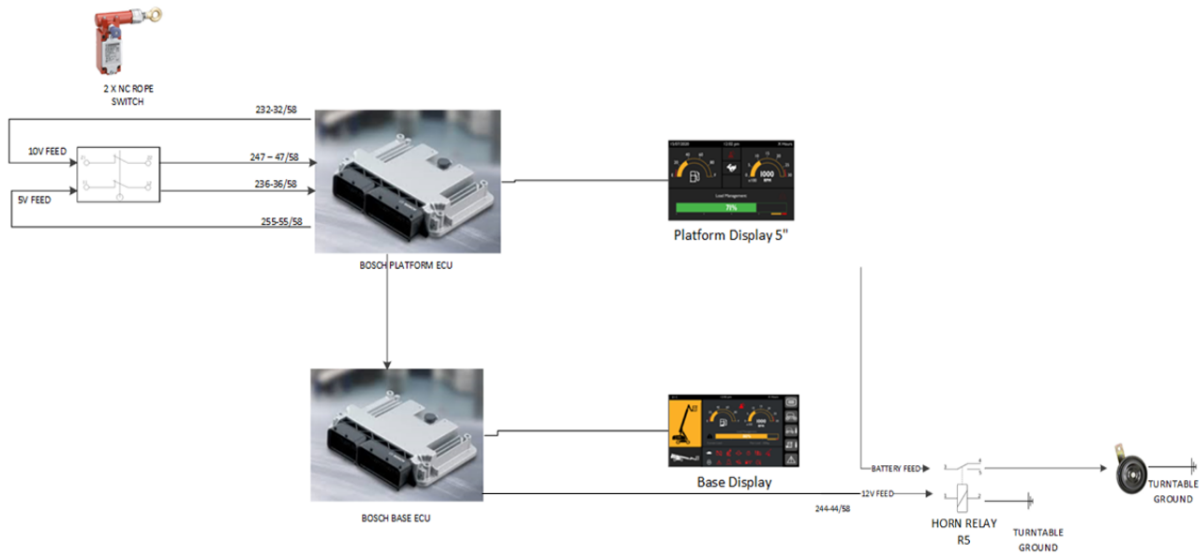
Fault Code	Description
<a href="#">B1348-16</a> <small>601</small>	OSCILLATING AXLE Solenoid Valve Low Side Short Circuit to Low
<a href="#">B1349-13</a> <small>602</small>	OSCILLATING AXLE Solenoid Valve Fault
<a href="#">B1227-17</a> <small>526</small>	AXLE LOCK PRESSURE SENSOR Short Circuit to High
<a href="#">B1228-16</a> <small>527</small>	AXLE LOCK PRESSURE SENSOR Short Circuit to Low or Open Circuit

### 3.20 Crush Protection

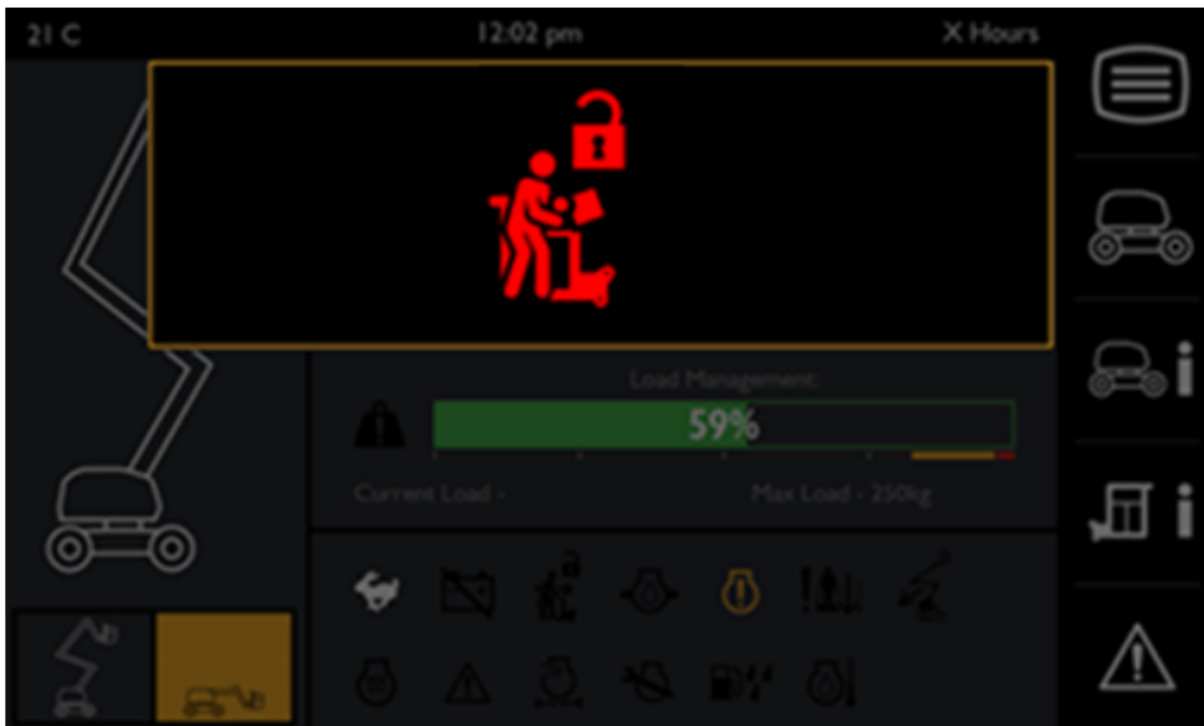
#### Function

- The crush protection system is to provide secondary guarding system to reduce an operator crush situation.
- If an operator is crushed against the control panel the system will stop any further movement of the machine.
- The system used is a wire rope system. When a force is applied to the wire rope then the switch will change position and the control system will stop.
- The switch can be reset by the operator by pulling the switch handle out.
- The switch can only be set if there is enough tension applied to the wire, this means the switch can not be set if the wire is not connected.
- Horn shall activate once the crush protection is active.
  
- Once crush protection is activated, following functions shall be disabled from platform:
  - a. Travel (drive and Steer),
  - b. Main Boom Raise,
  - c. Telescopic Boom Extend,
  - d. Jib Raise,
  - e. Slew,
  - f. Platform Rotate,
  - g. Platform Levelling.
  
- Once crush protection is activated, following functions shall be allowed from platform:
  - a. Main Boom Lower,
  - b. Telescopic Boom Retract,
  - c. Jib Lower
  
- All functions from base control station are allowed when crush protection is activated.

#### System diagram



Pop-up on base and platform display on crush protection activation.



## Signal

- The crush protection switch has 2 different switches inside. Each switch runs on a different voltage.
- Switch 1 is fed from a 5V feed from the Bosch controller. Pin 55/58

- Switch 2 is fed from a 10V feed from the Bosch controller Pin 32/58
- The switch is normally closed and the switch opens when the crush protection wire is pressed.

**With crush protection system set and unpressed**

- Pin 47/58 will be 10V
- Pin 36/58 will be 5V

**When the crush protection system has been pressed**

- Pin 47/58 will be 0V
- Pin 36/58 will be 0V

**Parts in Circuit**

[Crush Protection Switch](#) 265  
[Platform ECU](#) 305  
[Base ECU](#) 169

**Related Fault Codes**

Fault Code	Description
<a href="#">B1025-13</a> <small>412</small>	Crush Protection - Plausibility Check
<a href="#">B1026-17</a> <small>413</small>	Crush Protection - Switch 1 Short Circuit to >5v
<a href="#">B1027-16</a> <small>414</small>	Crush Protection - Switch 1 Short Circuit to Low
<a href="#">B1028-16</a> <small>415</small>	Crush Protection - Switch 2 Short Circuit to Low
<a href="#">B1029-17</a> <small>416</small>	Crush Protection - Switch 2 Short Circuit to >10.5v

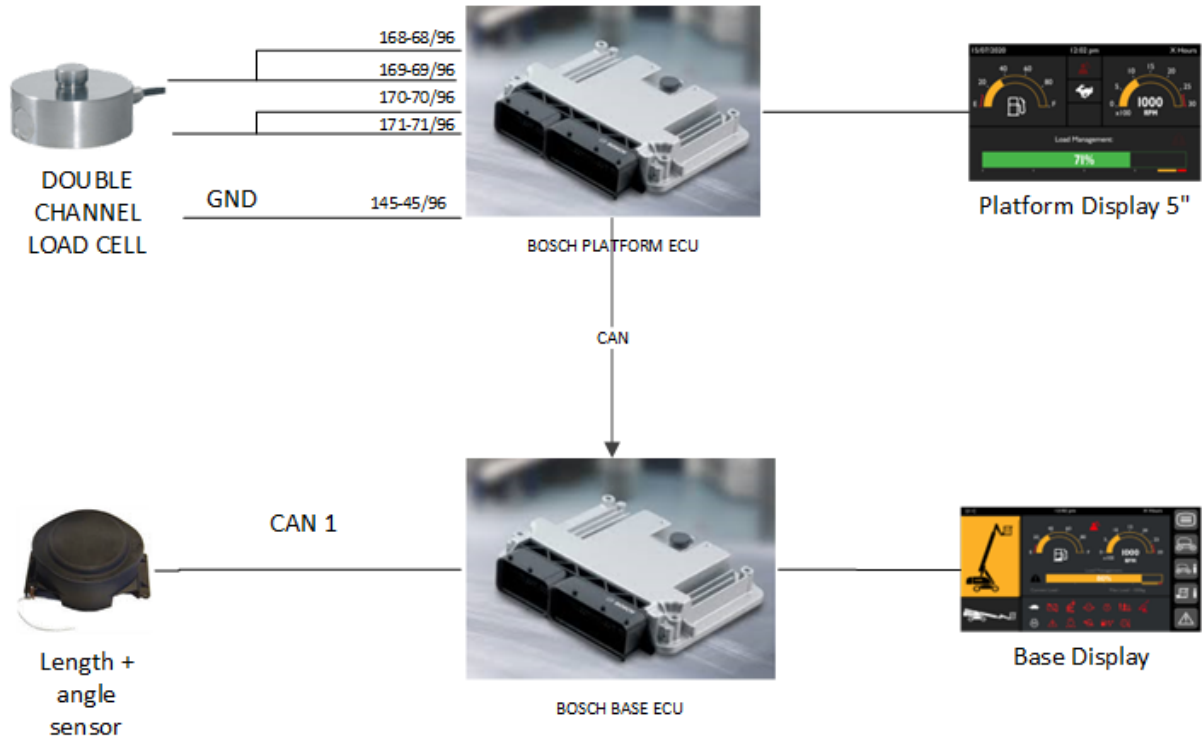
**3.21 Overload Function**

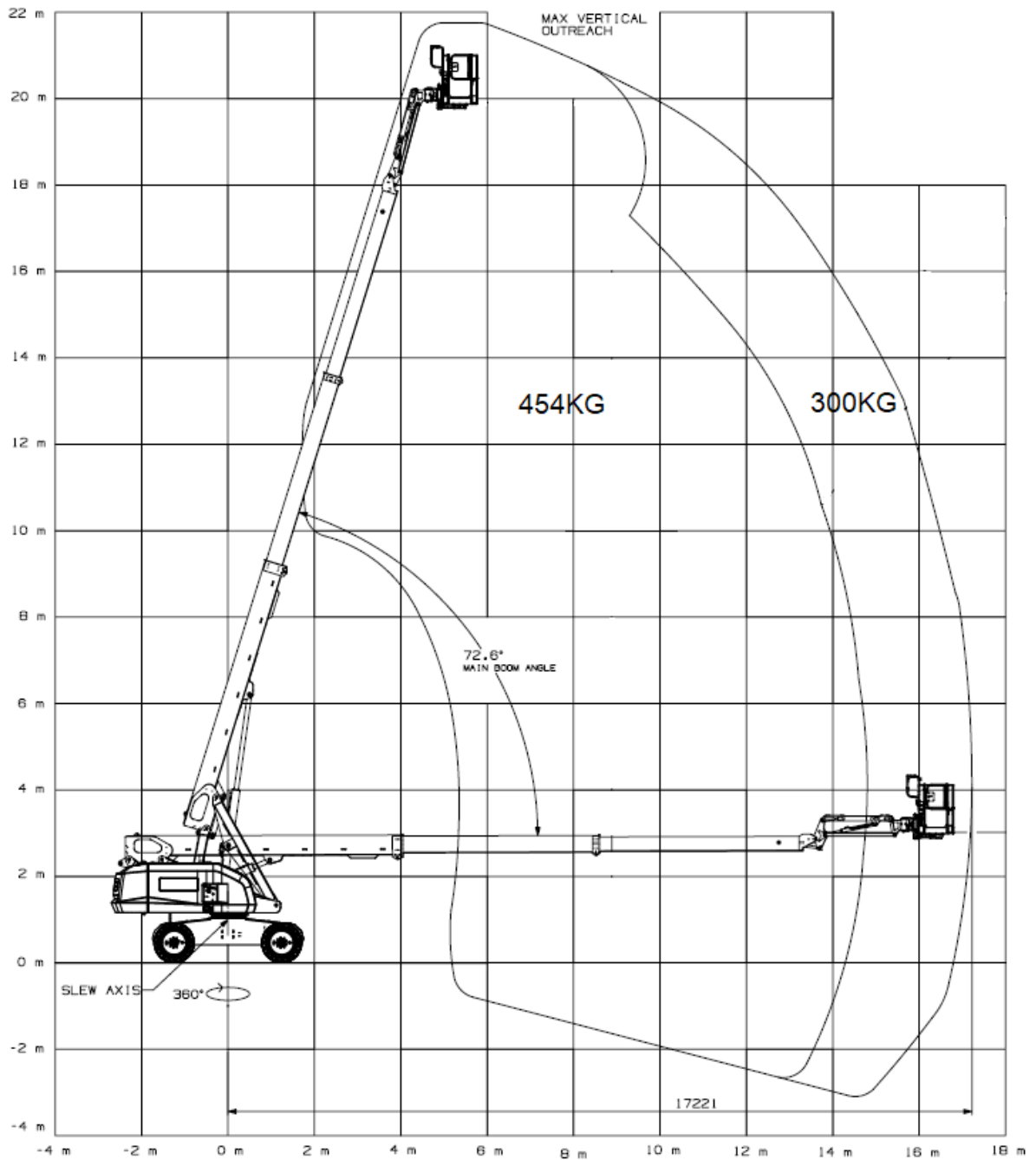
**Function**

- The overload system is to stop an operator from overloading the platform and creating an unsafe movement.
- On the TJ machine there is 2 weight zones. This allows different maximum weights in each area.
- The load cell is located at the top of the boom where the platform is connected.
- The platform presses down onto the cell which has 2 channels and is fed into the platform ecu.

- The length and angle sensor understands the boom position and feeds this into the base ecu over CAN.
- The base ECU will report to the displays the correct weight % is in the platform according to the applicable zone the booms are in.
- The 2 zones are rated as 454Kg and 300KG as shown on the diagram below.

## System diagram





## Signal

The load cell is dual channel and has 2 output feeds.

- Feed 1 is 4-20mA
- Feed 2 is 20-4mA
- So these are X channel

Each feed is split over 2 ecu pins.

- Feed 1 goes to pins 68/96 & 69/96
- Feed 2 goes to pins 70/96 & 71/96

The length and angle sensor is combined in a single part.

This is fed into the base ecu over CAN1. CAN H is 15/58 CAN L is 16/58

## Calibration

### Load cell Calibration

There is 2 different methods for calibrating the load cell.

- Calibration through the display
- Calibration through service master





### Angle & Length Sensor Calibration from display

- Angle Sensor Calibration through the display
- Length Sensor Calibration through the display

### Angle & length Sensor Calibration from service master

- Calibration through service master

## Parts in Circuit

- [Length and Angle Sensor](#)  196
- [Load cell](#)  269
- [Platform ECU](#)  305
- [Base ECU](#)  169

## Load Cell Troubleshooting Flow Chart -

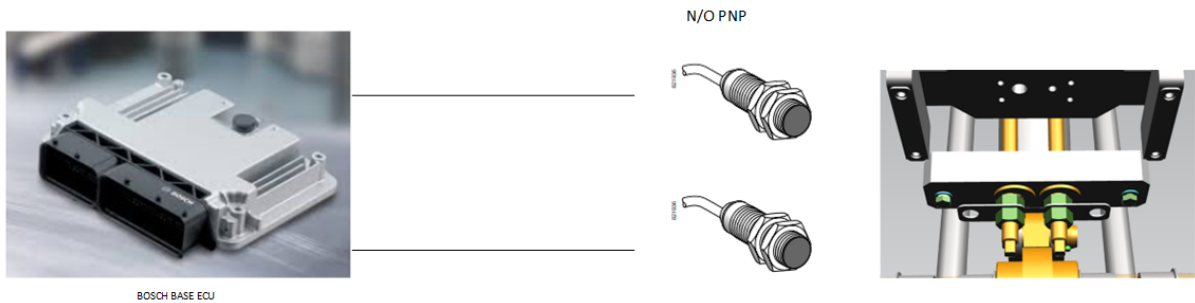
**3.22 Wire rope switches**

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**Function**

- The wire rope switches are to detect a broken ropes in the wire ropes.
- There is 2 switches. 1 for each wire rope and they are connected to the base ecu.

## System diagram



## Parts in Circuit

- [Rope Switches](#) <sup>201</sup>
- [Base ECU](#) <sup>169</sup>

## Related Fault Codes

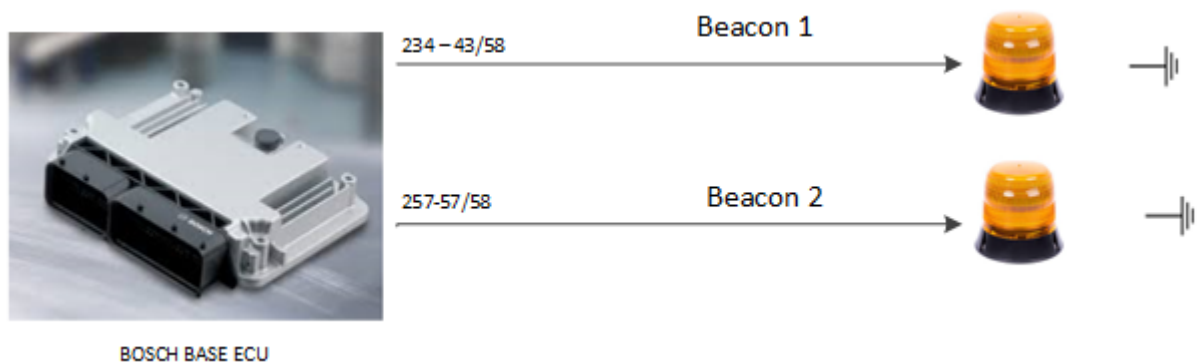
Fault Code	Description
<a href="#">B1379-13</a> <sup>625</sup>	ROPE SWITCH 1 Open Circuit & Short Circuit to Low
<a href="#">B1405-13</a> <sup>651</sup>	ROPE SWITCH 2 Open Circuit & Short Circuit to Low
<a href="#">B1407-17</a> <sup>654</sup>	ROPE SWITCH 2 Short Circuit to High(12v & 10v)
<a href="#">B1409-17</a> <sup>657</sup>	ROPE SWITCH 1 Short Circuit to High(12v & 10v)

### 3.23 Beacon(s)

## Function

- There is a single beacon fitted to a machine with a option of a second beacon that can be added.
- The second beacon will need to be activated in service-master to enable the use.
- The beacon will be active when the machine drive, steer, main boom lower, telescopic retract or slew functions are operated.

## System diagram

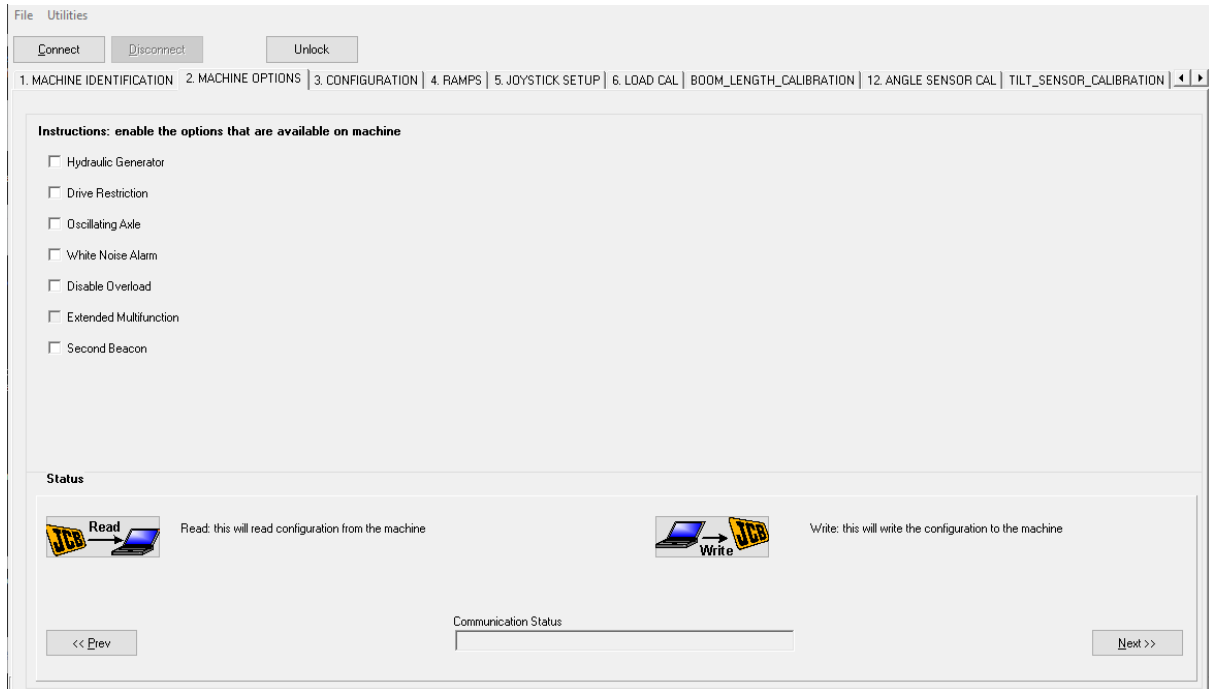


## Signal

- Beacon 1 is connected to the base ecu Pin 43/58 and is 12V
- Beacon 2 is connected to the base ecu Pin 57/58 and is 12V

## Service-master

- To turn on the second beacon, go to service-master setup tool, options tab,
- Read the current configuration, check the second beacon box and then press the write button



## Parts in Circuit

- [Beacon](#) <sup>204</sup>
- [Base ECU](#) <sup>169</sup>

## Related Fault Codes

Fault Code	Description
<a href="#">B1179-13</a> <sup>610</sup>	BEACON 1 Open Circuit OR Short Circuit to HIGH
<a href="#">B1180-16</a> <sup>501</sup>	BEACON 1 Short Circuit to Low
<a href="#">B1362-13</a> <sup>610</sup>	BEACON 2 Open Circuit OR Short Circuit to HIGH
<a href="#">B1363-16</a> <sup>611</sup>	BEACON 2 Short Circuit to Low

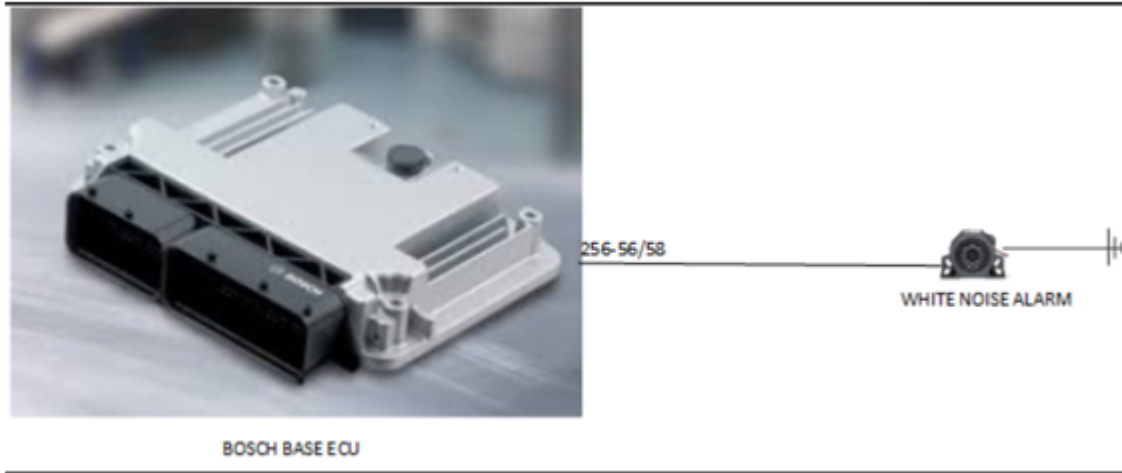
### 3.24 Travel Alarm

#### Function

- The white noise alarm is fitted to every machine to warn of a moving vehicle.

- The white noise alarm will be active when the drive, steer, main boom lower, telescopic retract or slew functions are operated
- The white noise alarm may be enabled or disabled via the display or service-master setup tool.

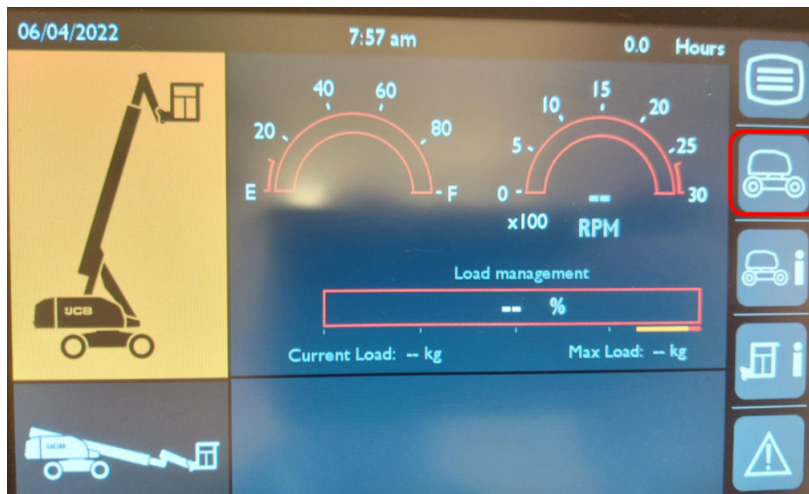
## System diagram



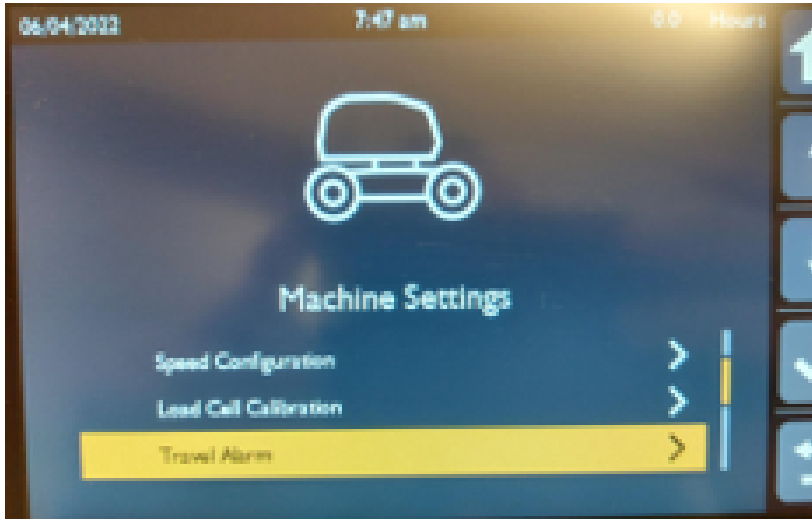
## Signal

- The white noise alarm is connected to the base ecu Pin 56/58 and is 12V when active

## Enable and disable through Display screen



- Enter machine settings and apply the password



- In this menu the travel alarm can be enable or disabled

## Enable and disable through Service-master

- Go to service master setup tool, options tab,
- Read the current configuration, check the white noise alarm box to enable, un-check to disable, press write



## Parts in Circuit

- [White Noise Alarm](#) 200
- [Base ECU](#) 169

## Related Fault Codes

Fault Code	Description
<a href="#">B1183-16</a> <small>504</small>	WHITE NOISE ALARM Short Circuit to Low
<a href="#">B1184-13</a> <small>505</small>	WHITE NOISE ALARM Open Circuit OR Short Circuit to HIGH

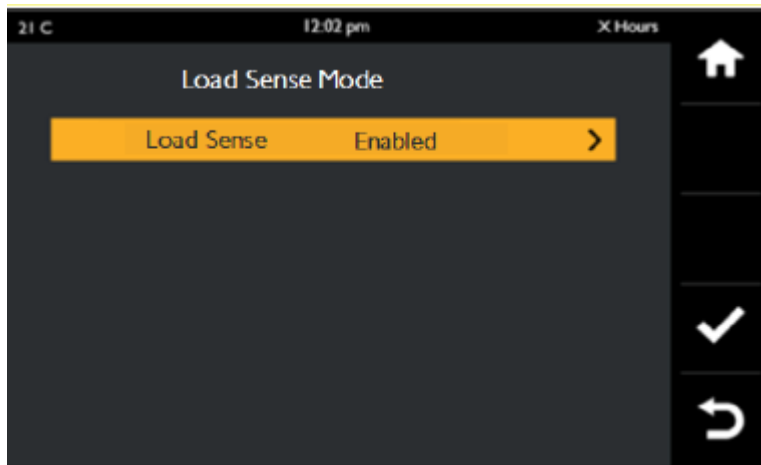
## 3.25 Disable of Overload System

### Function

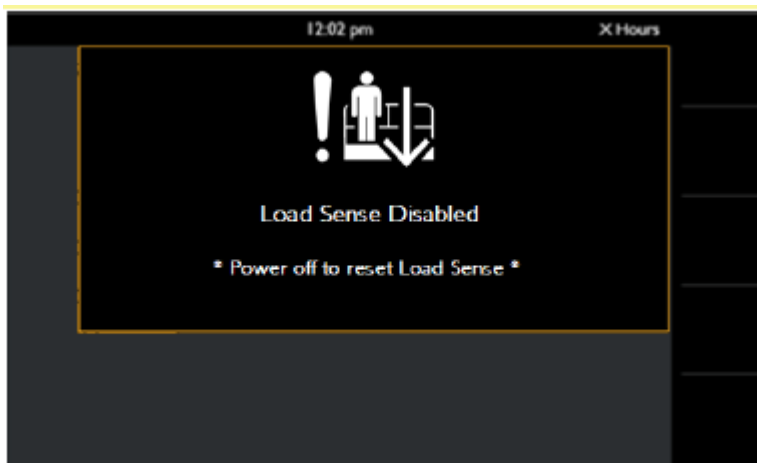
- There is a function to disable to the overload system for 1 key cycle.
- This is used for loler inspections and also for type approval testing for 125% load test.
- Care must be taken when this function is disabled. The overload system will turn back on at next key cycle

### Setting the Load sense mode

1. On the machine home page ,select "Machine control setup" to open machine settings
2. Use up/down scroll icon to choose "Load sense mode" in the menu and click select icon
3. Use up/down scroll icon to enable or disable the load sense mode



4. Use the select icon to confirm and save the desired setting
5. When disabled is selected , Load sense disabled will be displayed on the screen .



## Disabling through Service-master

- Go to service master setup tool, options tab,
- Read the current configuration, check the disable overload box to disable for 1 key cycle.



## 3.26 Drive Restriction

### Function

- There is a function to disable driving in the raised condition.
- This is a requirement for certain countries.
- This function is only available through service-master.
- Go to service-master setup tool, options tab,
- Read the current configuration, check the drive restriction box to disable drive in the raised condition, press write.



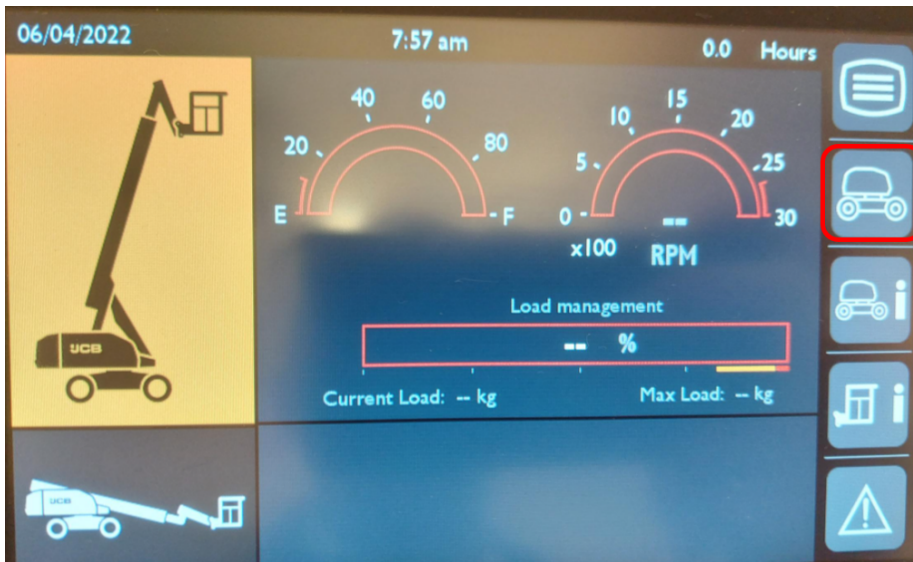
### 3.27 Speed Configuration from Display

#### Function

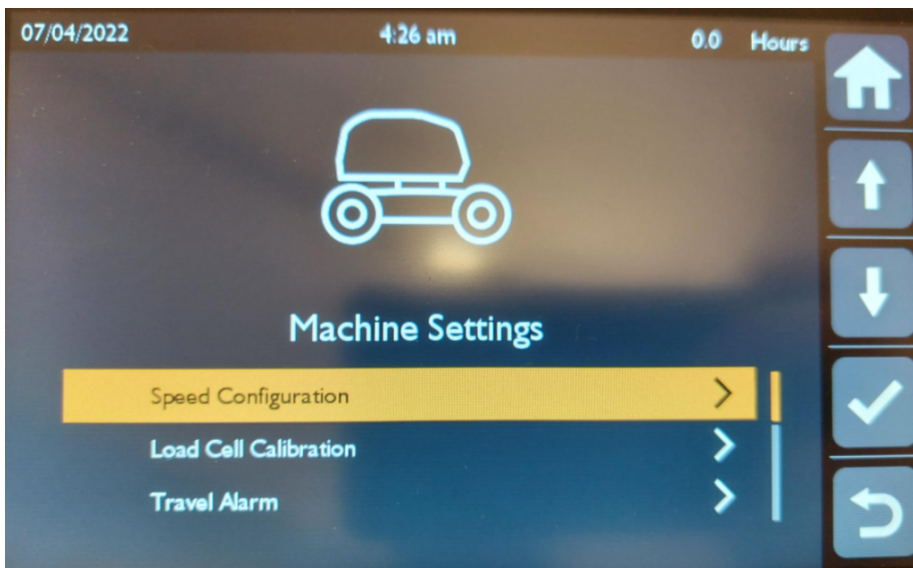
- In the base display it is possible to reduce the speed of functions or even block a function.
- The speed will reduce the maximum speed by a percentage as set by each function.
- The potentiometer will still apply over the top of these settings.

#### Example.

If working next to a road, the slew function may be reduced to 0%, this will block the slew function from operating and allowing operator to swing out into the road.



- Go to the machine settings tab and enter the required password



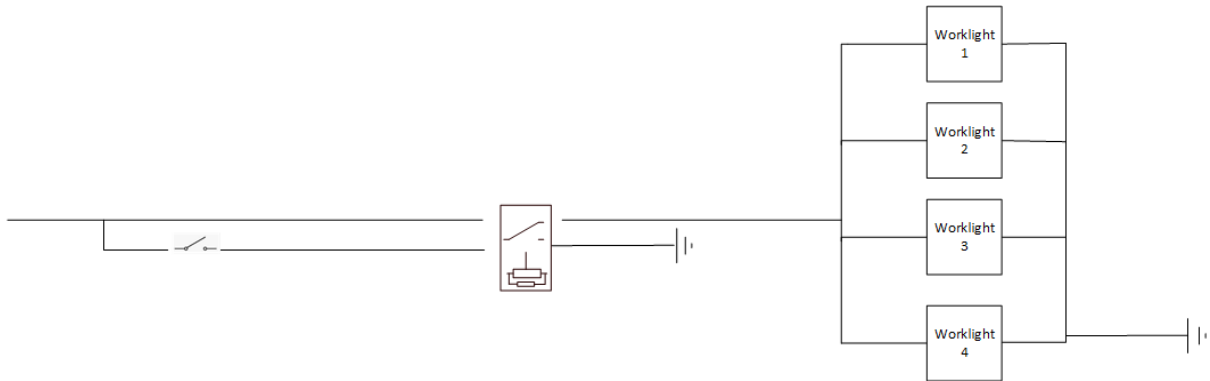
- Speed configuration, select function and edit the % value by function

### 3.28 Work Lights

#### Function

- Worklights is optional fit
- This allows for the fitment of 4 worklights to the machine platform.
- There is an optional cable fitted up the boom to the platform control panel box
- There is an optional switch fitted to the control panel
- There is an optional worklights harness that fits to the platform harness.

System diagram



Signal

- The worklights all work on a 12V feed.

Parts in Circuit

- [Work Light](#) <sup>285</sup>
- [Relay](#) <sup>285</sup>

3.29 Hydraulic Generator (USA)

**(Not Applicable for T65D Tier3 Machine)**

## Function

- This generator is for the USA market only.
- There is a 7.5KW hydraulic generator that can be fitted to the machine.
- This is a 3 phase 208V generator that has a 3phase connection and x2 single phase connections at the platform.
- There is also a spare single phase connection at the generator face plate that can be used.
- The generator has its own circuit protection built into the generator.
- A 25A GFP and MCB to protect the 3 phase circuits.
- A 20A GFCI on the single phase

## System diagram

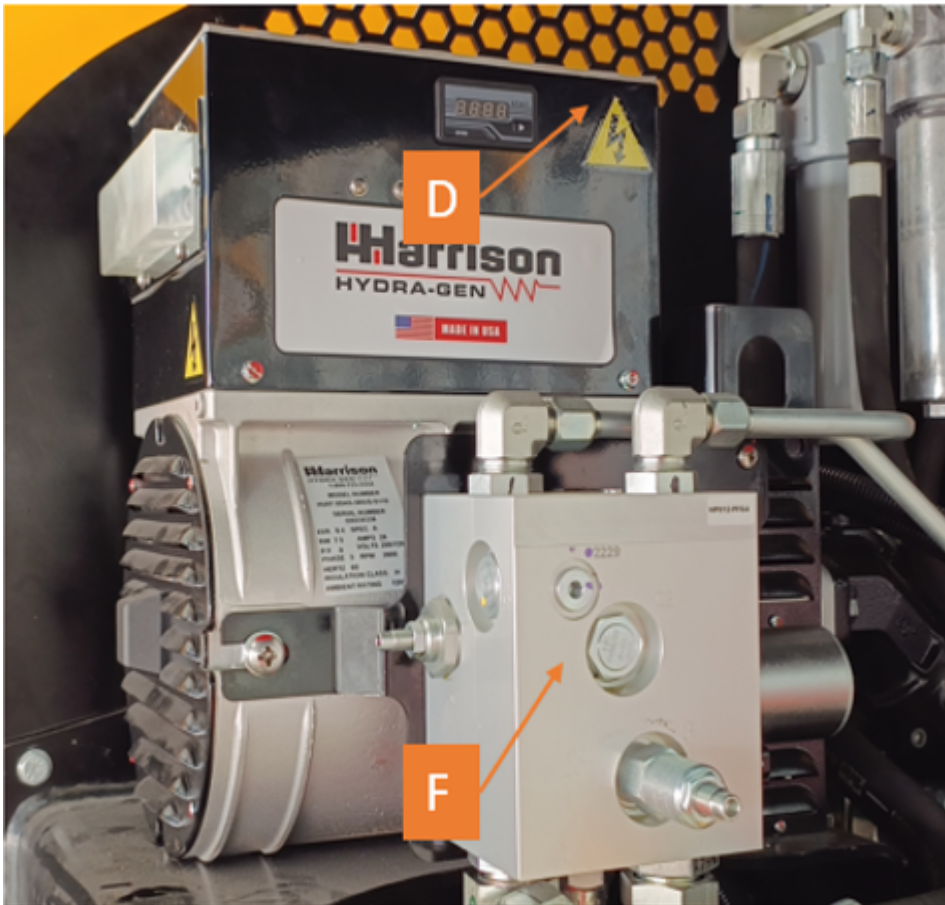
- To turn the generator on the engine must be running and the hydraulic generator button pressed.



- When the Switch is enabled the base ecu will apply 12V on the hydraulic generator solenoid and set the engine RPM to 1800RPM.
- This will provide 208V phase phase and 110V single phase to the platform connectors.
- The cables that run up the booms are extension leads that are plugged into the generator body.
- This equipment should be regularly inspected to local regulatory legislation.
- It should have regular visual inspection and PAT testing to ensure the product is safe.

## Setup

The generator may need adjusting to give the correct frequency setting. This may be due to changes in the hydraulic oil or environmental conditions.



1. Operate the machine until temperature reaches 40 degree C
2. Ensure equipment is connected to read frequency
3. Switch on the generator.
4. Loosen check nut, using an Allen key, adjust the frequency setting (F) until the required frequency is set and tighten nut (Turning the screw CCW to increase the frequency and CW to decrease the frequency)

5. Turn off the generator, re-energize the generator and check frequency is still at the correct value.

## Related Fault Codes

Fault Code	Description
<a href="#">B1215-17</a> <small>517</small>	HYDRAULIC GENERATOR BUTTON Short Circuit to High
<a href="#">B1216-16</a> <small>518</small>	HYDRAULIC GENERATOR BUTTON Short Circuit to Low
<a href="#">B1217-24</a> <small>519</small>	HYDRAULIC GENERATOR BUTTON Stuck for >= 10 seconds
<a href="#">B1355-16</a> <small>606</small>	HYDRAULIC GENERATOR Valve Short Circuit to Low
<a href="#">B1356-13</a> <small>607</small>	HYDRAULIC GENERATOR Valve High Side Short Circuit to High or Open Circuit

## 3.30 Customer Telematics

### Function

There is a connection point on the wiring harnesses for customers to connect to their own Telematics systems.

The connection is a 12 way DTM connector.

### Signal

The pin out for the connector is:

- 1 - CAN Shield
- 2 - CAN L
- 3 - Not used
- 4 - V Batt
- 5 - GND
- 6 - Not used
- 7 - Engine run signal (12V when running)
- 8 - Ignition
- 9 - GND at battery
- 10 - Ground at chassis
- 11 - CAN H

12 - Not used

## 3.31 Livelink

---

### Function

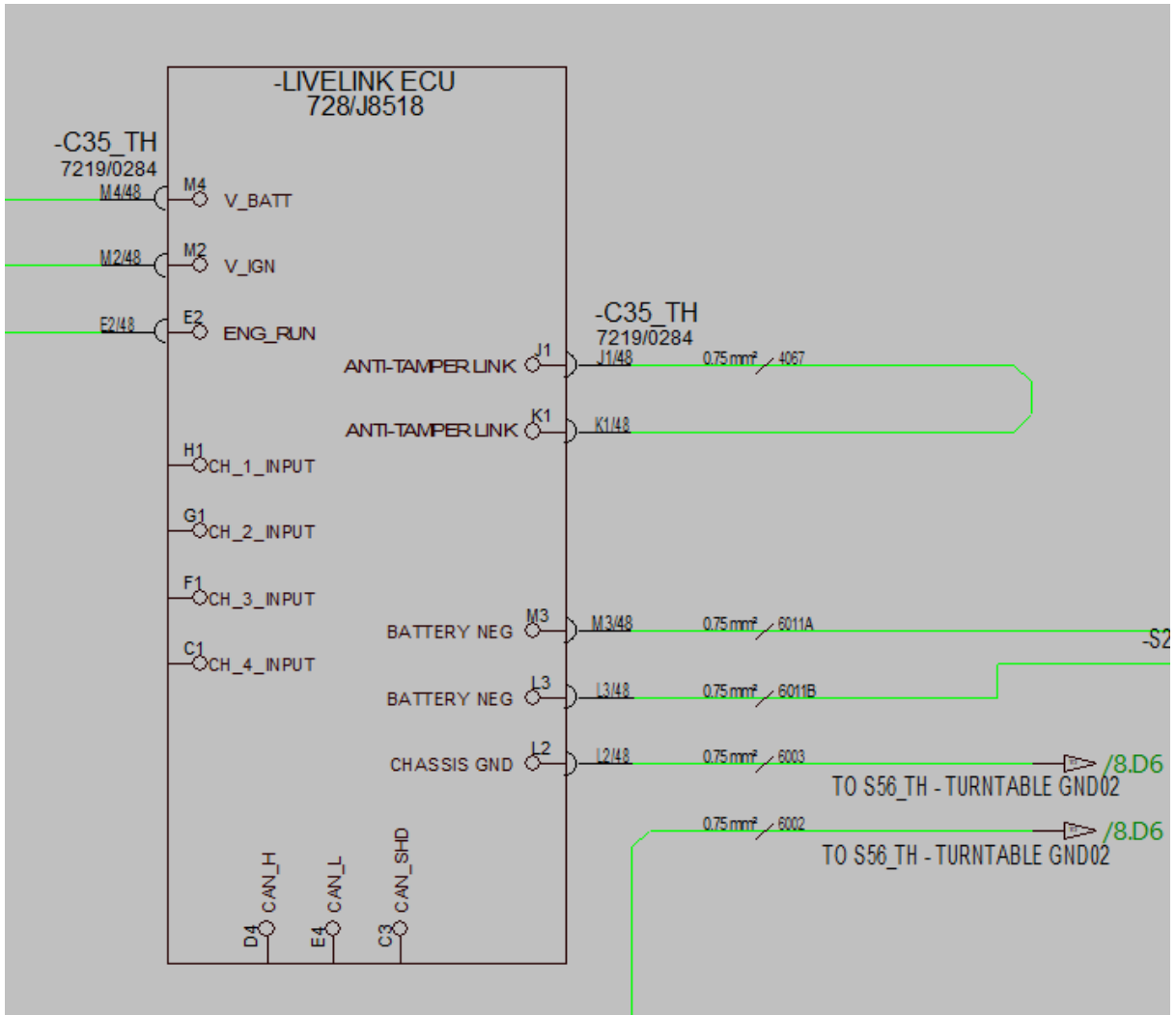
Livelink is a telematic system used by the JCB group and is common on most JCB machines.

The customer can register and view data gathered by the machine.

This is standard fit in all boom machines.

The Livelink has a permanent wire, ignition wire, engine run signal, isolator open/closed. All other data is given over CAN messages.

### Signal



## Parts in Circuit

- [Livelink](#) 223

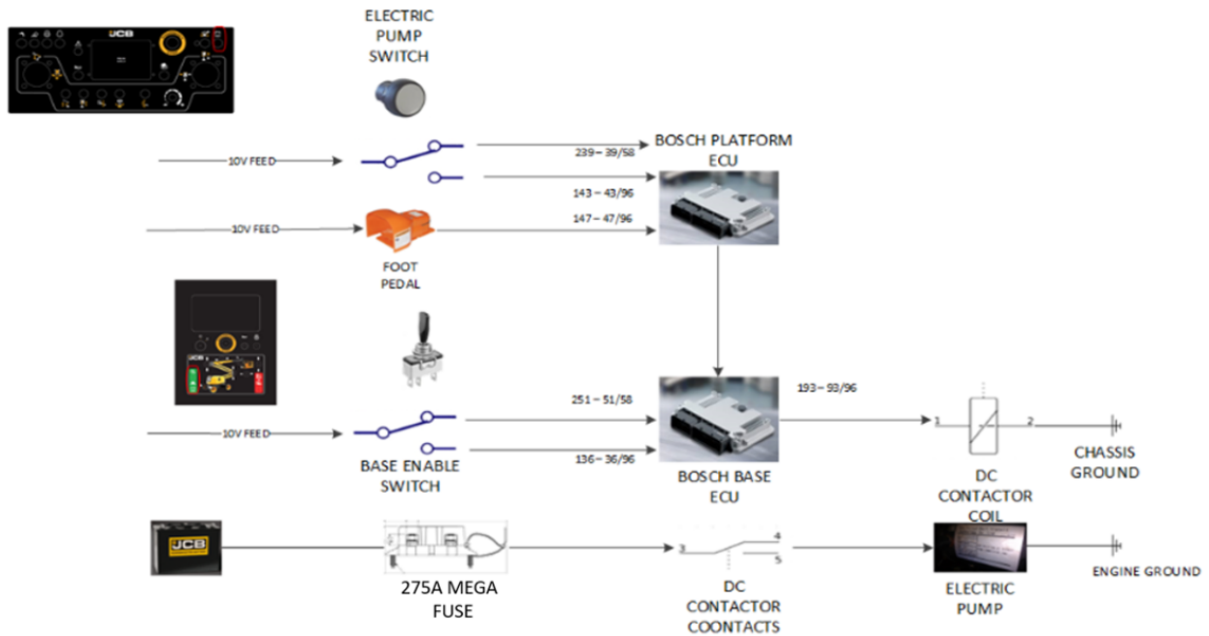
## 3.32 AUX Function

### Function

- The electric pump shall be activated when Base enable switch pressed with engine off
- There shall be an “AUX” icon on the Base and platform display when Base enable is active

- The Aux mode from Platform control panel activates when Auxiliary Pump button and foot pedal is pressed at the Platform control panel.
- Base will turn off Engine ignition when auxiliary mode from platform is active
- All Boom functions shall be operated from the Platform control panel and Base control panel with 12V battery (when Auxiliary/Electric pump is requested)

## System diagram



## Signal

### Base input

- When the AUX/OVERRIDE switch is pressed 10V Supply on Platform ECU at pin no 39/58

### Platform Input

- When the AUX PUMP switch is pressed 10V Supply on Platform ECU at pin no 43/96

### Base output

- 12V to AUX DC contactor when electric pump + function are pressed.

## Parts in Circuit

[AUX Pump](#)  177

- [Base Enable Switch](#) 154
- [Foot Pedal](#) 267
- [AUX DC Contactor](#) 179
- [Base ECU](#) 169
- [Platform ECU](#) 305

## Related Fault Codes

Fault Code	Description
<a href="#">B1697-92</a> <small>690</small>	Electric pump button 1 & 2 Both activated (10-12V)
<a href="#">B1696-13</a> <small>689</small>	Electric pump button 1 & 2 Open Circuit
<a href="#">B1694-17</a> <small>687</small>	Electric pump button -2 Short Circuit to high
<a href="#">B1695-16</a> <small>688</small>	Electric pump button -2 Short Circuit to low
<a href="#">B1414-17</a> <small>663</small>	ELECTRIC PUMP OUTPUT Short Circuit to High OR Open Circuit
<a href="#">B1415-16</a> <small>664</small>	ELECTRIC PUMP OUTPUT Short Circuit to Low

### 3.33 Override from Platform Control Panel

#### Function

The override function from the platform control station is very similar to the AUX function.

The difference is:

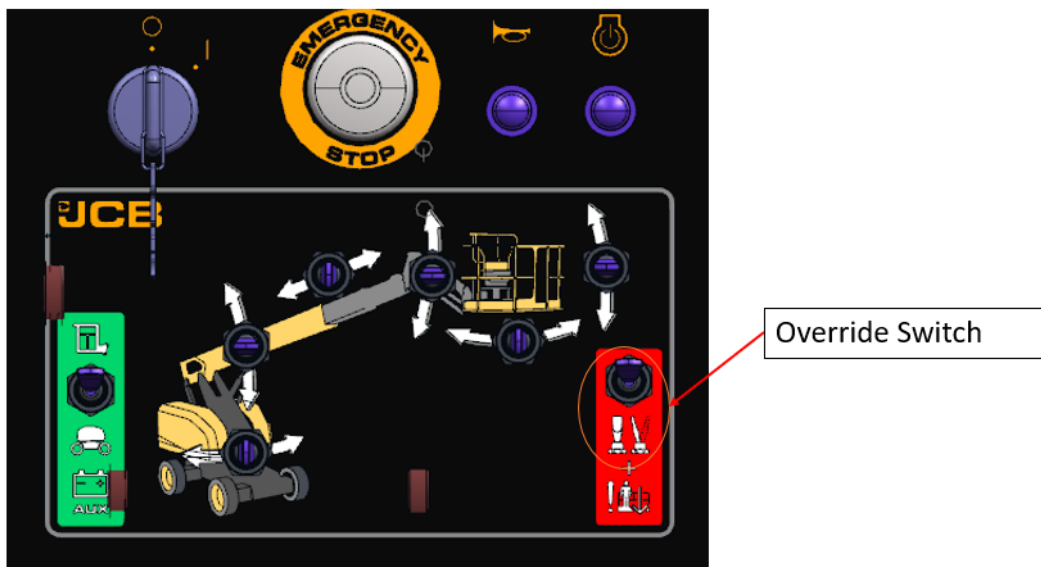
- Functions will only operate one at a time,
- Faults with the weight sensor will be ignored
- Overload Warning will be ignored
- Pop up on display screen



Emergency  
Override Active

### 3.34 Override from Base Controls

#### Function



Override Switch

#### **Machine Override system**

The machine override safety system will allow operator to rescue in case of any fault activated during working from platform (i.e. platform overload, Crush protection fault, Platform start lock fault etc). If this emergency feature is used by operator a fault tell-tale will be displayed at base display which will be reset by JCB service Engineer.

#### **Steps to activate Override system-**

- From Base control Panel, make the IGN switch off then press the override toggle switch.
- With holding override toggle switch in pressed condition, make ignition switch ON.
- Override window will appear at base display.
- Perform the desired boom operations from base control Panel (Boom/jib lowering, retraction operations etc.) to rescue the operator.



### 3.35 Auto Engine Stop

---

#### Function

There is an option in the base display to Enable/Disable engine auto stop. Auto engine stop is by default enable.

The auto engine stop status will not change during the key-off and E-stop cycle

There is an option in the base display to adjust the auto stop time in 30s increments from 60s to 300s. Default value is 90s.

Auto stop timer will reset whenever base enable or foot pedal switch are pressed

The icon and timer for the 30 second countdown shall be displayed at the base and platform display

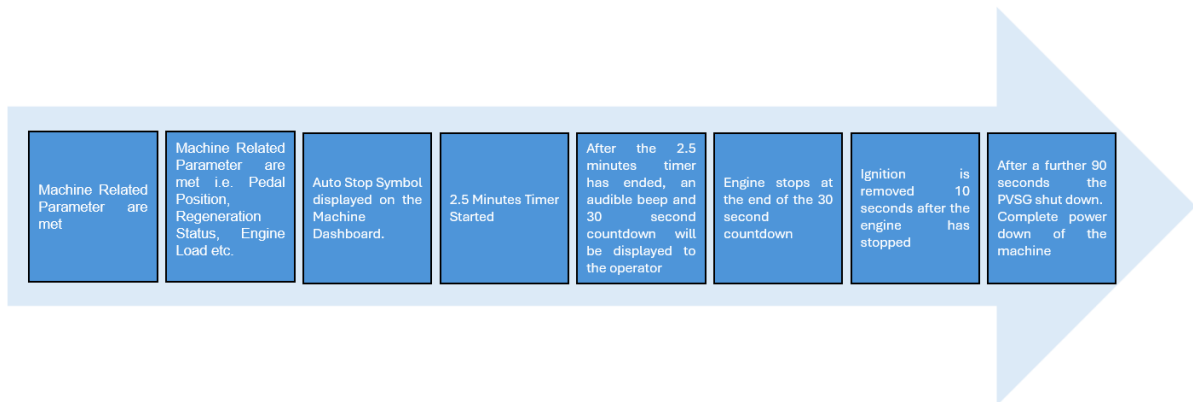


0:25

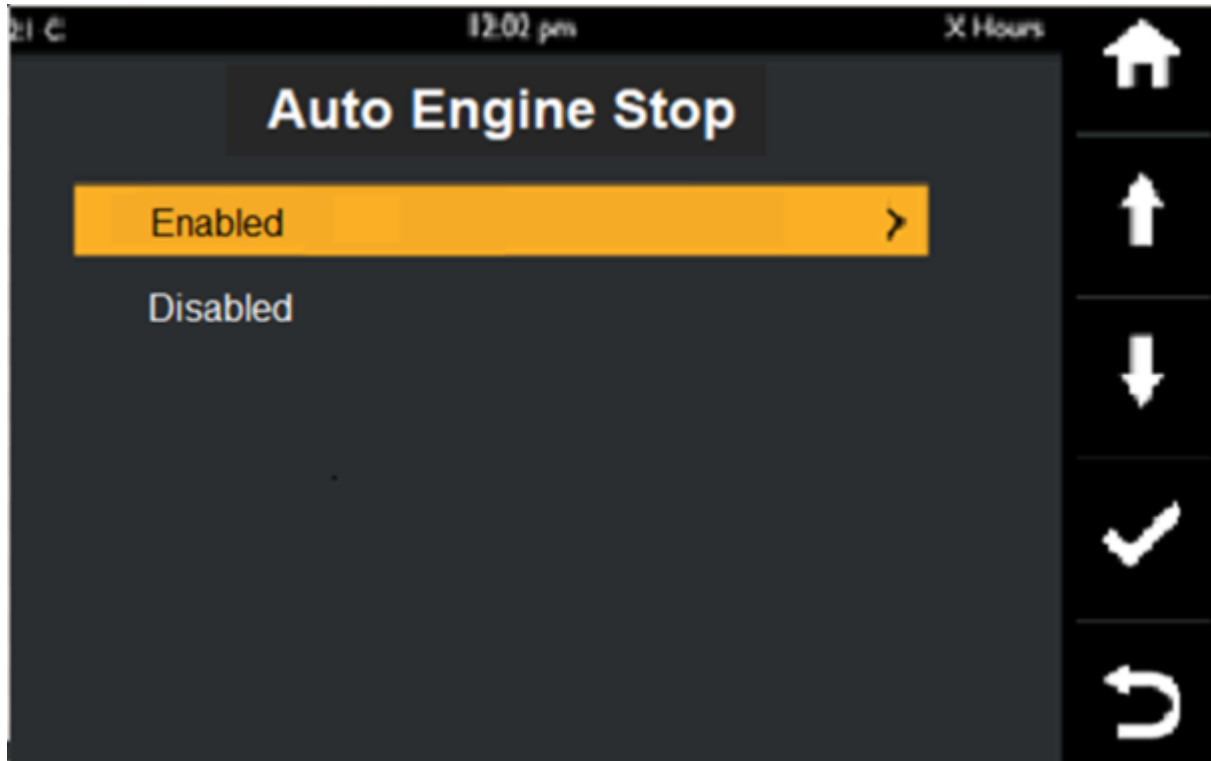
Auto stop will only stop the engine if all of the below conditions are met:  
 Coolant temperature > Default Set Parameter  
 Battery voltage is > Default Set Parameter  
 Alternator is charging  
 Generator not active  
 Work lights not active  
 Auto stop timer > auto stop time + 30s warning time

Once auto stop timer > auto stop time an audible and visual warning should count down from 30s to engine stopped by removing ignition  
 There is no auto start and the engine will remain off until next manual start from either base or platform control station

## Flow Diagram



## Enable / Disable Through Base Display



### 3.36 Power to Platform Function(Only for T65D T3 machine)

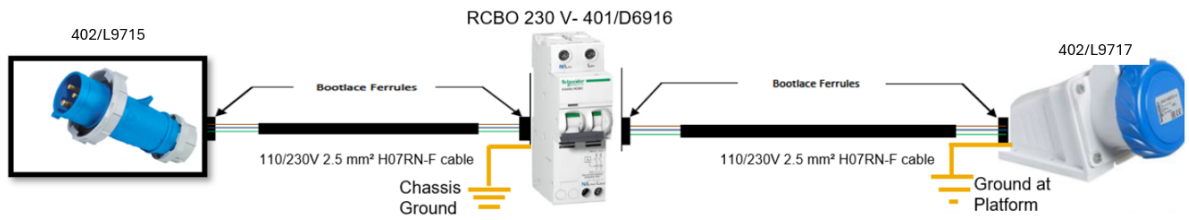
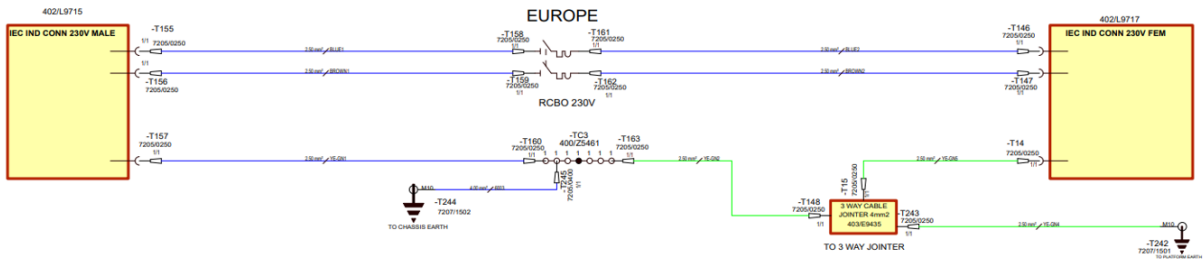
---

#### Function

There is power to platform option available to use external power supply to platform  
The maximum permissible current is 16A.

An integrated RCBO is provided to ensure protection against leakage currents, overload, and over current conditions.

#### System diagram



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template if you want it completely blank.

# Machine Components

## 4 Machine Components

This Section contains list of machine components

List of [Machine Component](#) <sup>134</sup>

Number	Component
1	<a href="#">Chassis</a> <sup>134</sup>
2	<a href="#">Turntable</a> <sup>142</sup>
3	<a href="#">Base ECU</a> <sup>169</sup>
4	<a href="#">Aux Pump</a> <sup>177</sup>
5	<a href="#">Aux DC Contactor</a> <sup>179</sup>
6	<a href="#">Slew Acknowledgment Switch</a> <sup>182</sup>
7	<a href="#">Main Control Valve</a> <sup>187</sup>
8	<a href="#">Main boom Angle &amp; Length Sensor</a> <sup>196</sup>
9	<a href="#">Main boom lowered switch</a> <sup>197</sup>
10	<a href="#">White Noise Alarm</a> <sup>200</sup>
11	<a href="#">Wire rope switches</a> <sup>201</sup>
12	<a href="#">Beacon</a> <sup>204</sup>
13	<a href="#">Batteries 12V</a> <sup>206</sup>
14	<a href="#">Isolator</a> <sup>208</sup>
15	<a href="#">Slip Ring</a> <sup>212</sup>
16	<a href="#">Horn</a> <sup>215</sup>
17	<a href="#">Fuel Sensor</a> <sup>216</sup>
18	<a href="#">Tilt Sensor</a> <sup>219</sup>
19	<a href="#">Livelihood</a> <sup>223</sup>
20	<a href="#">Coolant Level Sensor</a> <sup>225</sup>
21	<a href="#">Air Filter</a> <sup>227</sup>
23	<a href="#">Transmission Pump Control Valve</a> <sup>230</sup>
24	<a href="#">Hydraulic Generator</a> <sup>233</sup>
25	<a href="#">JCB444 Engine T4F</a> <sup>236</sup>
26	<a href="#">JCB444 Engine T3</a> <sup>246</sup>
27	<a href="#">Platform</a> <sup>264</sup>
28	<a href="#">CAN</a> <sup>321</sup>


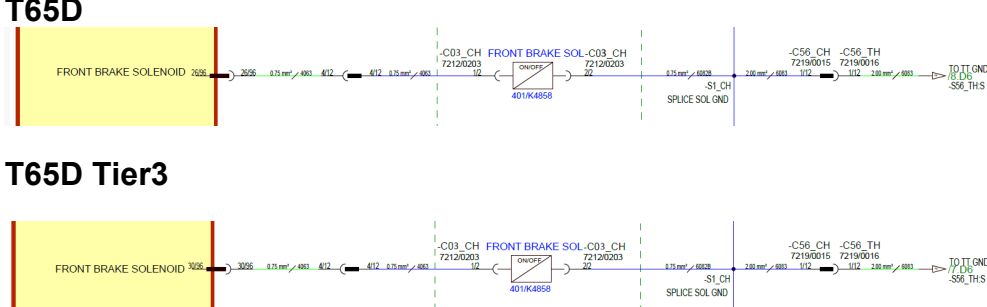
### 4.1 Chassis

List of [Chassis](#) <sup>134</sup>

Number	Component
1	<a href="#">Front Brake</a> <sup>135</sup>
2	<a href="#">Oscillating Axle Solenoid</a> <sup>136</sup>
3	<a href="#">Torque Solenoid</a> <sup>138</sup>
4	<a href="#">Rear Brake</a> <sup>139</sup>
5	<a href="#">Pressure Sensor</a> <sup>141</sup>

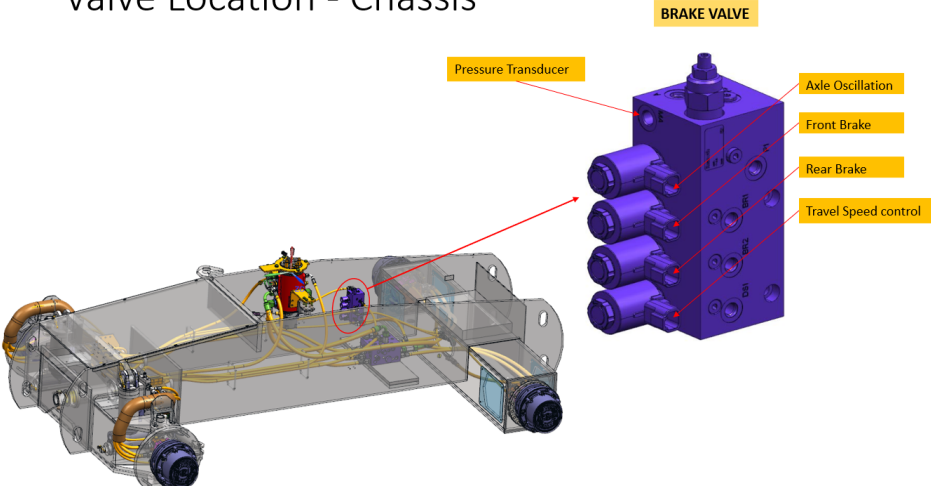
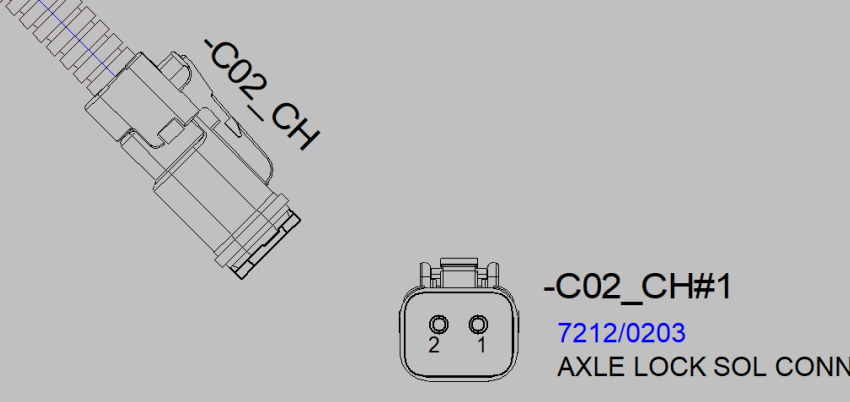
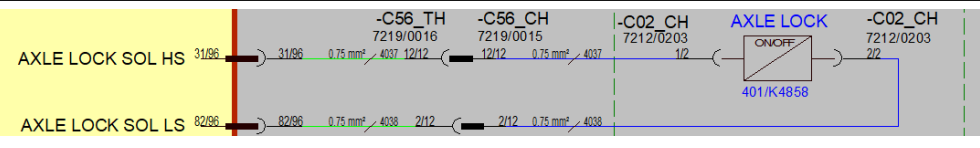
### 4.1.1 Front Brake

<b>Component:</b>	Front Brake																							
<b>Function:</b>	The Front brakes are power off brakes.																							
<b>Location:</b>	The brakes are hydraulic brakes controlled via an electrical solenoid. The electric solenoid is on the chassis value valve as shown below																							
<b>Location IMG:</b>	<p style="text-align: center;">Valve Location - Chassis</p>																							
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Brake Applied</th> <th>Brake released</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Brake +ve from ecu</td> <td>C03_CH</td> <td>4063</td> <td>0V</td> <td>12V</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C03_CH</td> <td>6082B</td> <td>GND</td> <td>GND</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Brake Applied	Brake released	1	Brake +ve from ecu	C03_CH	4063	0V	12V	2	GND	C03_CH	6082B	GND	GND
Pin	Description	Connector Number	Wire Number	Brake Applied	Brake released																			
1	Brake +ve from ecu	C03_CH	4063	0V	12V																			
2	GND	C03_CH	6082B	GND	GND																			

<b>Wires &amp; Connectors IMG:</b>	 <p style="text-align: center;">-C03_CH</p> <p style="text-align: right;">-C03_CH#1 7212/0203 FRONT BRAKE SOL CONN</p>						
<b>Internal Electrical Schematic IMG:</b>	 <p><b>T65D</b></p> <p><b>T65D Tier3</b></p>						
<b>Testing:</b>	<p>From the display base outputs screen it will show if the controller is releasing the brake or not. The front brake should release when steering or drive is commanded</p>						
<b>Expected Values:</b>	<p>During steer or drive the solenoid should receive 12V. When static the machine should be 0V</p>						
<b>Related Fault Codes:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #ffff00;"> <th style="text-align: left;">Fault Code</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1048-17</a> <small>4271</small></td> <td>FRONT BRAKE Solenoid Valve Short Circuit to High or Open Circuit</td> </tr> <tr> <td><a href="#">B1049-16</a> <small>4281</small></td> <td>FRONT BRAKE Solenoid Valve Raise Short Circuit to Low</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1048-17</a> <small>4271</small>	FRONT BRAKE Solenoid Valve Short Circuit to High or Open Circuit	<a href="#">B1049-16</a> <small>4281</small>	FRONT BRAKE Solenoid Valve Raise Short Circuit to Low
Fault Code	Description						
<a href="#">B1048-17</a> <small>4271</small>	FRONT BRAKE Solenoid Valve Short Circuit to High or Open Circuit						
<a href="#">B1049-16</a> <small>4281</small>	FRONT BRAKE Solenoid Valve Raise Short Circuit to Low						

### 4.1.2 Oscillating Axle Solenoid

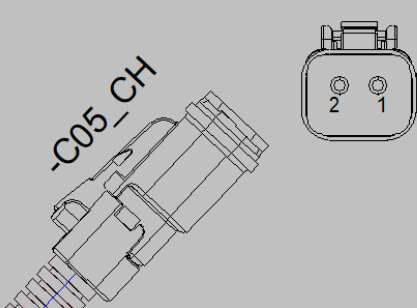
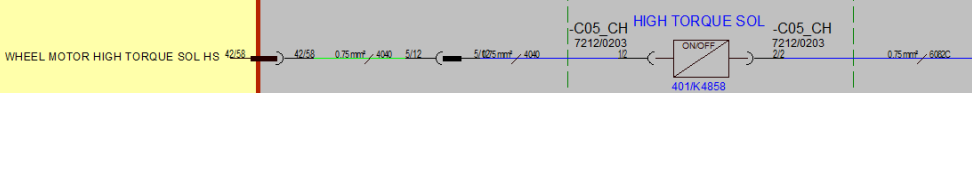
<b>Component:</b>	Oscillating Axle Solenoid
<b>Function:</b>	Oscillating Axle solenoid will be powered to allow the axle to float
<b>Location:</b>	The electric solenoid is on the chassis value valve as shown below

<p><b>Location IMG:</b></p>	<p>Valve Location - Chassis</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>Release d</th> <th>Locked</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Axle +ve from ecu</td> <td>C02_CH</td> <td>4037</td> <td>12V</td> <td>0V</td> </tr> <tr> <td>2</td> <td>GND return to ecu</td> <td>C02_CH</td> <td>4038</td> <td>GND</td> <td>Open Circuit</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Release d	Locked	1	Axle +ve from ecu	C02_CH	4037	12V	0V	2	GND return to ecu	C02_CH	4038	GND	Open Circuit
Pin	Description	Connector Number	Wire Number	Release d	Locked														
1	Axle +ve from ecu	C02_CH	4037	12V	0V														
2	GND return to ecu	C02_CH	4038	GND	Open Circuit														
<p><b>Wires &amp; Connectors IMG:</b></p>	 <p>-C02_CH#1 7212/0203 AXLE LOCK SOL CONN</p>																		
<p><b>Internal Electrical Schematic IMG:</b></p>																			
<p><b>Testing:</b></p>	<p>When the machine is static the axle will be locked. The solenoid will receive 0V          When the axle is floating is should receive 12V</p> <p>This will need to be checked with the solenoid plugged in otherwise it will fault.</p>																		

<b>Expected Values:</b>	12 V when Active	
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1043-17</a> <small>4221</small>	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to High
	<a href="#">B1044-16</a> <small>4231</small>	OSCILLATING AXLE Solenoid Valve High Side Short Circuit to Low
	<a href="#">B1045-13</a> <small>4241</small>	OSCILLATING AXLE Solenoid Valve High Side & Low Side Open Circuit
	<a href="#">B1347-17</a> <small>6001</small>	OSCILLATING AXLE Solenoid Valve Low Side Short Circuit to High
	<a href="#">B1348-16</a> <small>6011</small>	OSCILLATING AXLE Solenoid Valve Low Side Short Circuit to Low
	<a href="#">B1349-13</a> <small>6021</small>	OSCILLATING AXLE Solenoid Valve Fault

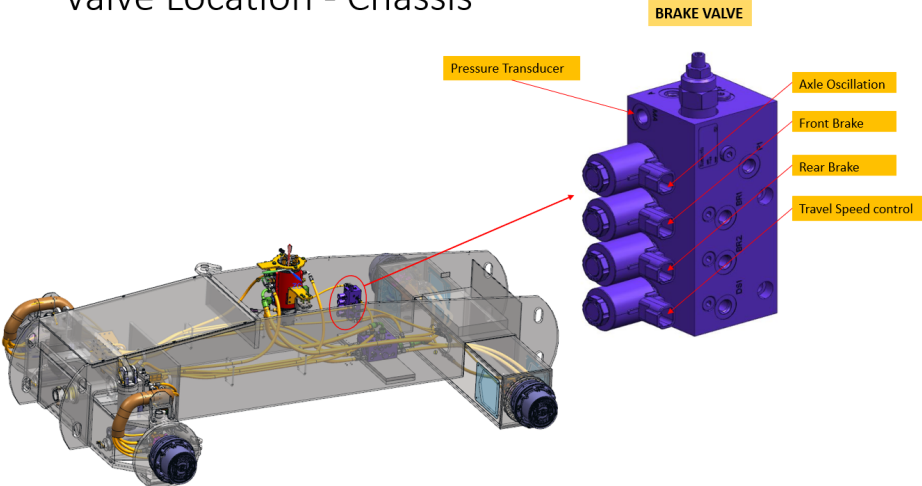
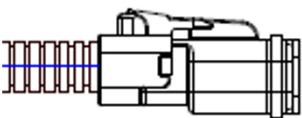

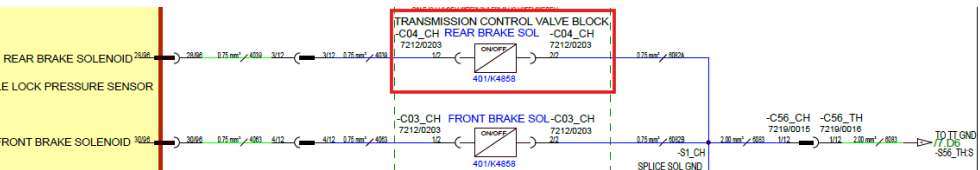
### 4.1.3 Torque Solenoid

<b>Component:</b>	High Torque Solenoid					
<b>Function:</b>	The solenoid is to select high torque mode					
<b>Location:</b>	The electric solenoid is on the chassis valve valve as shown below					
<b>Location IMG:</b>	<p style="text-align: center;">Valve Location - Chassis</p>					
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>High Torque Off</b>	<b>High Torque On</b>
	1	High Torque +ve from ecu	C05_CH	4040	12V	0V
	2	GND	C05_CH	6082C	GND	GND

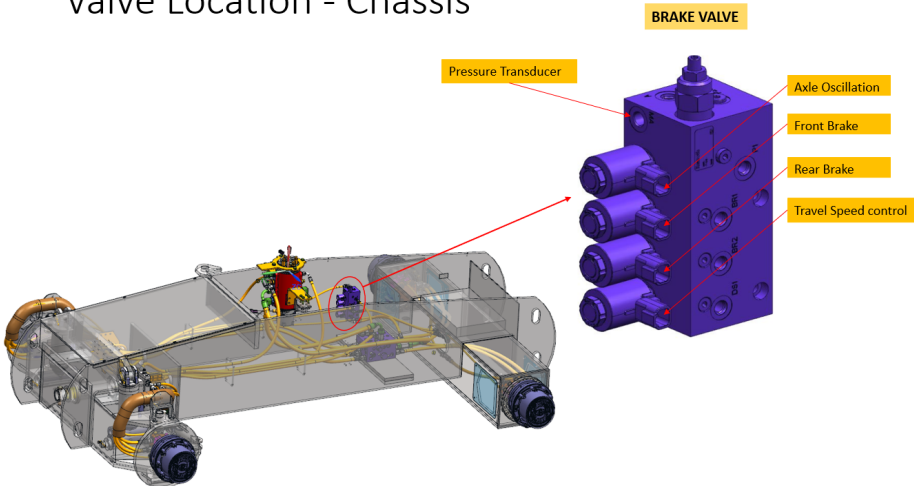
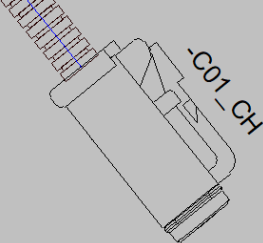
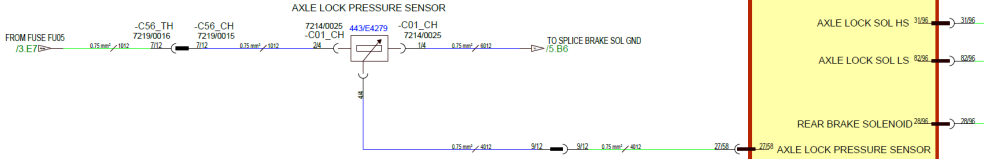
<b>Wires &amp; Connectors</b> <b>IMG:</b>	 <p>-C05_CH#1 7212/0203 HIGHTORQUE SOL CONN</p>						
<b>Internal Electrical Schematic</b> <b>IMG:</b>							
<b>Testing:</b>	<p>High Torque will only activate in the stowed mode.          When the high torque is selected the solenoid should be 0V          When the high torque is deactivated the solenoid should be 12V</p>						
<b>Expected Values:</b>	<p>see above</p>						
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1046-17 <small>425</small></td> <td>HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to High or Open Circuit</td> </tr> <tr> <td>B1047-16 <small>426</small></td> <td>HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to Low</td> </tr> </tbody> </table>	Fault Code	Description	B1046-17 <small>425</small>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to High or Open Circuit	B1047-16 <small>426</small>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to Low
Fault Code	Description						
B1046-17 <small>425</small>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to High or Open Circuit						
B1047-16 <small>426</small>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to Low						

### 4.1.4 Rear Brake

<b>Component:</b>	<b>Rear Brake</b>
<b>Function:</b>	<p>Rear brake is used to reduce the drive speed or stop the machine.</p>
<b>Location:</b>	<p>The brakes are hydraulic brakes controlled via an electrical solenoid. The electric solenoid is on the chassis value valve as shown below</p>

<p><b>Location IMG:</b></p>	<p>Valve Location - Chassis</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>Brake Applied</th> <th>Brake released</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Brake +ve from ecu</td> <td>C04_CH</td> <td>4039</td> <td>0V</td> <td>12V</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C04_CH</td> <td>6082A</td> <td>GND</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Brake Applied	Brake released	1	Brake +ve from ecu	C04_CH	4039	0V	12V	2	GND	C04_CH	6082A	GND	GND
Pin	Description	Connector Number	Wire Number	Brake Applied	Brake released														
1	Brake +ve from ecu	C04_CH	4039	0V	12V														
2	GND	C04_CH	6082A	GND	GND														
<p><b>Wires &amp; Connectors IMG:</b></p>	<p>-C04_CH</p>  <p>-C04_CH#1 7212/0203 REAR BRAKE SOL CONN</p> 																		
<p><b>Internal Electrical Schematic IMG:</b></p>	<p>T65D &amp; T65D Tier3</p> 																		
<p><b>Testing:</b></p>	<p>From the display base outputs screen it will show if the controller is releasing the brake or not. The rear brake should release when the drive function is commanded.</p>																		
<p><b>Expected Values:</b></p>	<p>During steer or drive the solenoid should receive 12V. When static the machine should be 0V</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><a href="#">B1278-17</a> <small>561</small></td> <td>REAR BRAKE Solenoid Valve Short Circuit to High or Open Circuit</td> </tr> <tr> <td><a href="#">B1279-16</a> <small>562</small></td> <td>REAR BRAKE Solenoid Valve Raise Short Circuit to Low</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1278-17</a> <small>561</small>	REAR BRAKE Solenoid Valve Short Circuit to High or Open Circuit	<a href="#">B1279-16</a> <small>562</small>	REAR BRAKE Solenoid Valve Raise Short Circuit to Low												
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<a href="#">B1279-16</a> <small>562</small>	REAR BRAKE Solenoid Valve Raise Short Circuit to Low																		

## 4.1.5 Pressure Sensor

<b>Component:</b>	Pressure Sensor																							
<b>Function:</b>	The pressure sensor gives the ECU feedback on the pressure in the oscillating axle circuit.																							
<b>Location:</b>	The pressure sensor is on the chassis value valve as shown below																							
<b>Location IMG:</b>	<p style="text-align: center;">Valve Location - Chassis</p> 																							
<b>Signal:</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Pin</th> <th style="width: 30%;">Description</th> <th style="width: 20%;">Connector Number</th> <th style="width: 40%;">Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>C01_CH</td> <td>6012</td> </tr> <tr> <td>2</td> <td>12V</td> <td>C01_CH</td> <td>1012</td> </tr> <tr> <td>3</td> <td>NOT USED</td> <td>C01_CH</td> <td>NOT USED</td> </tr> <tr> <td>4</td> <td>Output to ECU 0.5-6V</td> <td>C01_CH</td> <td>4012</td> </tr> </tbody> </table>				Pin	Description	Connector Number	Wire Number	1	GND	C01_CH	6012	2	12V	C01_CH	1012	3	NOT USED	C01_CH	NOT USED	4	Output to ECU 0.5-6V	C01_CH	4012
Pin	Description	Connector Number	Wire Number																					
1	GND	C01_CH	6012																					
2	12V	C01_CH	1012																					
3	NOT USED	C01_CH	NOT USED																					
4	Output to ECU 0.5-6V	C01_CH	4012																					
<b>Wires &amp; Connectors IMG:</b>	 <p style="text-align: center;">-C01_CH#1 7214/0025 AXLE LOCK PRESSURE SENSOR CONN</p>																							
<b>Internal Electrical Schematic IMG:</b>																								

<b>Testing:</b>	There is 12V signal and GND feed to the pressure sensor. The output from the pressure sensor is 0.5V - 5V										
<b>Expected Values:</b>	There is 12V signal and GND feed to the pressure sensor. The output from the pressure sensor is 0.5V - 5V										
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1301-2F</a> <small>574</small></td> <td>OSCILLATING AXLE PRESSURE SENSOR FAILURE</td> </tr> <tr> <td><a href="#">B1227-17</a> <small>526</small></td> <td>AXLE LOCK PRESSURE SENSOR Short Circuit to High</td> </tr> <tr> <td><a href="#">B1228-16</a> <small>527</small></td> <td>AXLE LOCK PRESSURE SENSOR Short Circuit to High</td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1301-2F</a> <small>574</small>	OSCILLATING AXLE PRESSURE SENSOR FAILURE	<a href="#">B1227-17</a> <small>526</small>	AXLE LOCK PRESSURE SENSOR Short Circuit to High	<a href="#">B1228-16</a> <small>527</small>	AXLE LOCK PRESSURE SENSOR Short Circuit to High		
Fault Code	Description										
<a href="#">B1301-2F</a> <small>574</small>	OSCILLATING AXLE PRESSURE SENSOR FAILURE										
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<a href="#">B1228-16</a> <small>527</small>	AXLE LOCK PRESSURE SENSOR Short Circuit to High										

## 4.2 Turntable

List of [Turntable](#) 142

### 4.2.1 Base Control Panel

List of [Base Control Panel](#) 142


Number	Component
1	<a href="#">Base Display</a> <small>144</small>
2	<a href="#">Base E-Stop</a> <small>147</small>
3	<a href="#">Ignition relays</a> <small>149</small>
4	<a href="#">Ignition Switch</a> <small>152</small>
5	<a href="#">Base Enable Switch</a> <small>154</small>
6	<a href="#">Platform Enable Switch</a> <small>156</small>
7	<a href="#">Horn Relay</a> <small>158</small>
8	<a href="#">Toggle Switch ON-OFF-ON</a> <small>159</small>
9	<a href="#">Engine Start Button - Base</a> <small>162</small>
10	<a href="#">Horn Button Base</a> <small>164</small>
11	<a href="#">Buzzer</a> <small>167</small>

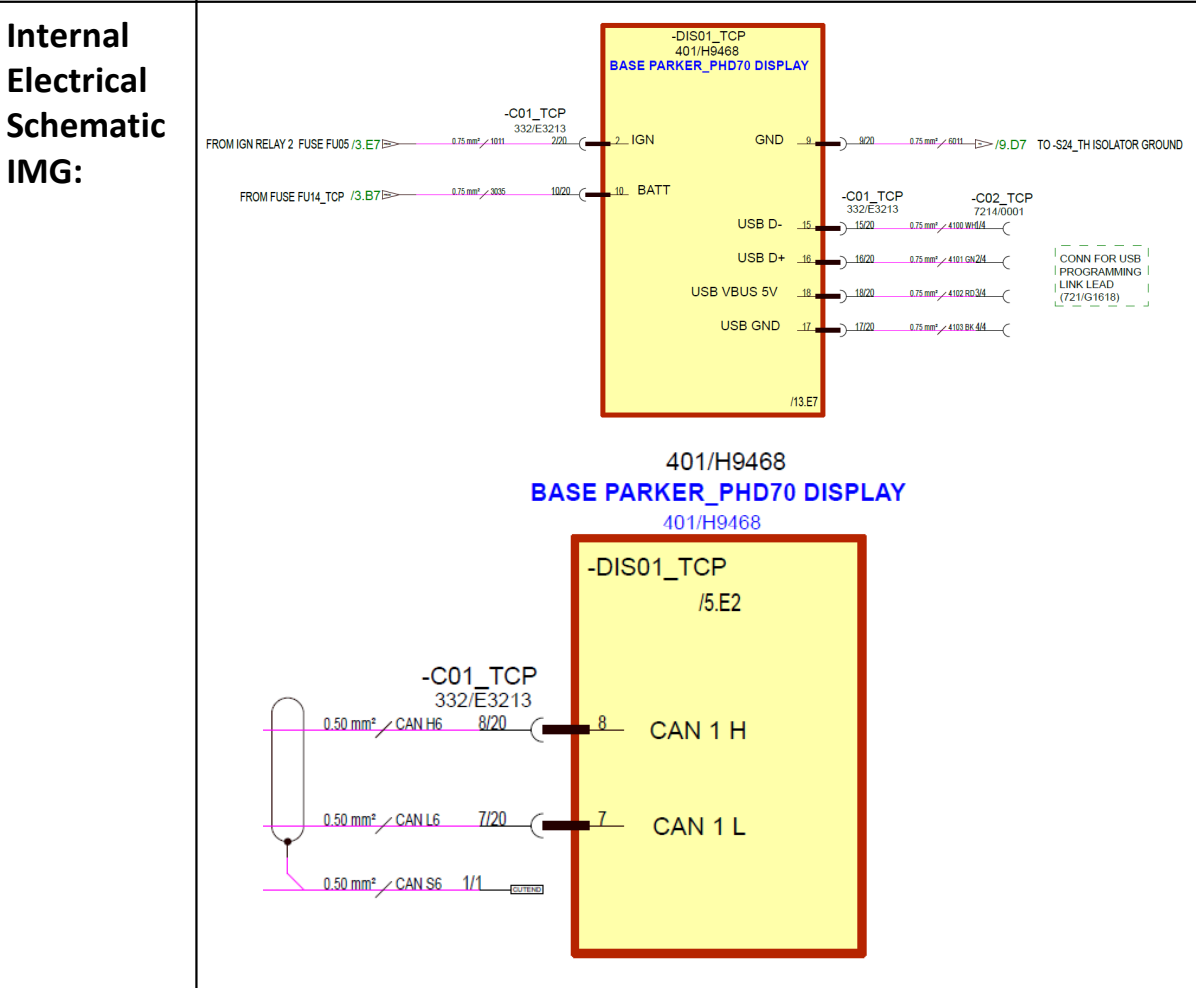
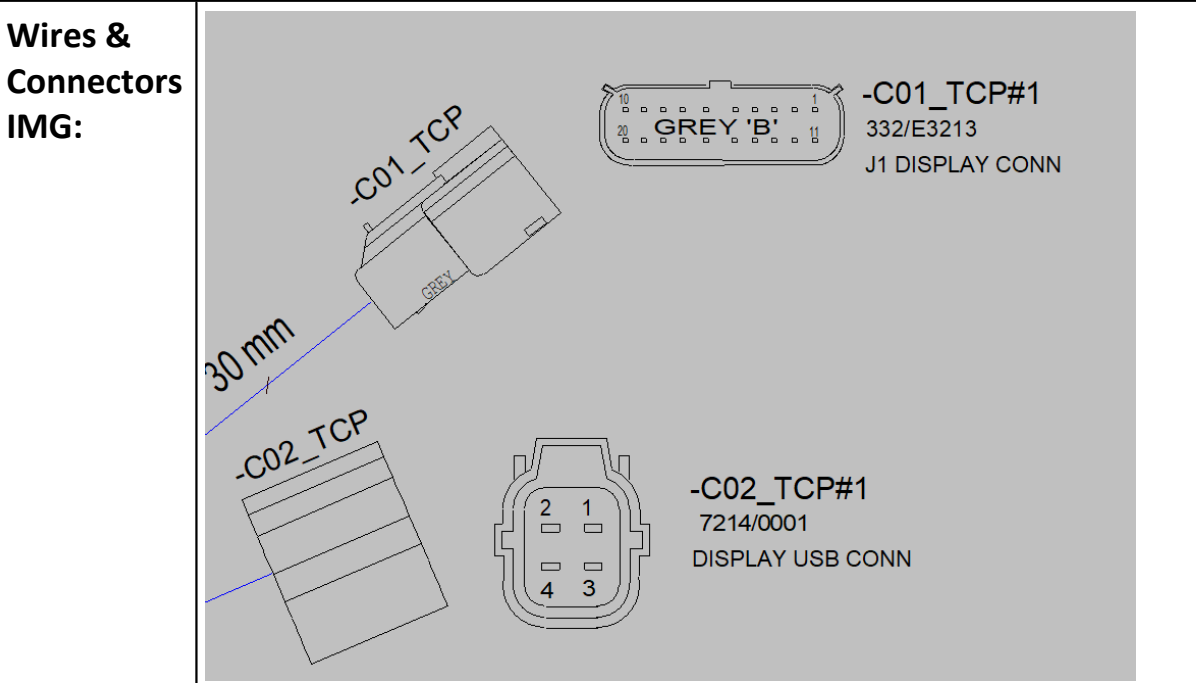


Item Number	Description
1	Ignition Key with 455 key; ON/OFF
2	E-Stop
3	Horn Push Button/Engine Start Push Button
4	Toggle Switches (Slew, Main Boom, Tele Boom, Jib, Platform rotate & levelling operations)
5	Enable/ Override Switches
	ON-ON
6	Base Display

### 4.2.1.1 Base Display


<b>Component:</b>	7" Display Screen
<b>Function:</b>	Base Display
<b>Location:</b>	Turntable control panel.

<p><b>Location IMG:</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>Ignition ON Signal</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>12V Ignition Feed</td> <td>C01_TCP</td> <td>1011</td> <td>12V</td> </tr> <tr> <td>9</td> <td>GND via battery not isolated</td> <td>C01_TCP</td> <td>6011</td> <td>0V</td> </tr> <tr> <td>10</td> <td>12V Permanent Feed</td> <td>C01_TCP</td> <td>3035</td> <td>12V</td> </tr> <tr> <td>15</td> <td>USB D-</td> <td>C01_TCP</td> <td>4100WH</td> <td></td> </tr> <tr> <td>16</td> <td>USB D+</td> <td>C01_TCP</td> <td>4101GN</td> <td></td> </tr> <tr> <td>17</td> <td>USB GND</td> <td>C01_TCP</td> <td>4103BK</td> <td>0V</td> </tr> <tr> <td>18</td> <td>USB V BUS 5V</td> <td>C01_TCP</td> <td>4102RD</td> <td>5V</td> </tr> <tr> <td>7</td> <td>CAN 1L</td> <td>C01_TCP</td> <td>CAN L6</td> <td>1.5V - 4.5V</td> </tr> <tr> <td>8</td> <td>CAN 1H</td> <td>C01_TCP</td> <td>CAN H6</td> <td>1.5V - 4.5V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Ignition ON Signal	2	12V Ignition Feed	C01_TCP	1011	12V	9	GND via battery not isolated	C01_TCP	6011	0V	10	12V Permanent Feed	C01_TCP	3035	12V	15	USB D-	C01_TCP	4100WH		16	USB D+	C01_TCP	4101GN		17	USB GND	C01_TCP	4103BK	0V	18	USB V BUS 5V	C01_TCP	4102RD	5V	7	CAN 1L	C01_TCP	CAN L6	1.5V - 4.5V	8	CAN 1H	C01_TCP	CAN H6	1.5V - 4.5V
Pin	Description	Connector Number	Wire Number	Ignition ON Signal																																															
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7	CAN 1L	C01_TCP	CAN L6	1.5V - 4.5V																																															
8	CAN 1H	C01_TCP	CAN H6	1.5V - 4.5V																																															



<b>Testing:</b>	<p>the ignition key should power the display on/off. If time and date is not saving correctly, check GND is on the correct side of isolator.</p> <p>Ensure software is flashed correctly to the latest version. Follow <a href="#">Display Flashing</a> <sup>328</sup> for more info.</p>
<b>Expected Values:</b>	<p>The should be 12V on pin 10 at all times, There should be 12V at pin 2 when the key is in the on position There should be GND at pin 9 regardless of isolator position. All data will be provided via CAN.</p>
<b>Related Fault Codes:</b>	No Fault Codes

### 4.2.1.2 Base E-Stop

<b>Component:</b>	Base E-Stop																	
<b>Function:</b>	Base emergency stop																	
<b>Location:</b>	Turntable control panel																	
<b>Location IMG:</b>																		
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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>12V input from platform E-Stop</td> <td>-T-SW01-1-1 TCP</td> <td>3046</td> <td>12V</td> <td>12V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	12V input from platform E-Stop	-T-SW01-1-1 TCP	3046	12V	12V					
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed													
1	12V input from platform E-Stop	-T-SW01-1-1 TCP	3046	12V	12V													

Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed
2	ECU Feed & ignition relays	-T-SW01-1-2 TCP	3049	12V	Open Circuit
1	ECU Feed	-T-SW01-2-1 TCP	6006	GND	Open Circuit
2	GND	-T-SW01-2-2 TCP	6005	GND	GND

<b>Wires &amp; Connectors IMG:</b>	
------------------------------------	--

<b>Internal Electrical Schematic IMG:</b>	
---	--

<b>Testing:</b>	The base e-stop 12V signal is fed from the platform e-stop. Ensure the platform
-----------------	---

<b>Expected Values:</b>	See Signal
-------------------------	------------

Fault Code	Description
<a href="#">B1235-17</a>   531	E-Stop & Base Override - E-Stop & Base Override - E-Stop Plausibility Check
<a href="#">B1001-17</a>   399	E-Stop & Base Override - E-Stop Plausibility Check
<a href="#">B1008-16</a>   403	E-Stop & Base Override - Base Enable Switch Short Circuit to Low
<a href="#">B1063-92</a>   440	E-Stop & Base Override - Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)

<a href="#">B1060-13</a> <sub>437</sub>	E-Stop & Base Override - Override Switch Pressed and Override Switch Unpressed Open Circuit
<a href="#">B1059-16</a> <sub>435</sub>	E-Stop & Base Override - Override Switch Pressed Short Circuit to Low
<a href="#">B1062-16</a> <sub>438</sub>	E-Stop & Base Override - Override Switch Unpressed Short Circuit to Low

### 4.2.1.3 Ignition relays

<b>Component:</b>	Ignition Relays																		
<b>Function:</b>	Ignition relays turn on the power to the machine.																		
<b>Location:</b>	Turntable control panel																		
<b>Location IMG:</b>																			
<b>Signal:</b>	<b>Ignition Relay 1</b> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Ignition On voltage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Contacts Output</td> <td>RB01_TCP</td> <td>0001</td> <td>12V</td> </tr> <tr> <td>2</td> <td>Coil GND</td> <td>RB01_TCP</td> <td>6001</td> <td>GND</td> </tr> </tbody> </table>				Pin	Description	Connector Number	Wire Number	Ignition On voltage	1	Contacts Output	RB01_TCP	0001	12V	2	Coil GND	RB01_TCP	6001	GND
Pin	Description	Connector Number	Wire Number	Ignition On voltage															
1	Contacts Output	RB01_TCP	0001	12V															
2	Coil GND	RB01_TCP	6001	GND															

Pin	Description	Connector Number	Wire Number	Ignition On voltage
4	Coil Input Voltage	RB01_TCP	3001	12V
5	Contacts Input	RB01_TCP	2001	12V

**Ignition Relay 2**

Pin	Description	Connector Number	Wire Number	Ignition On voltage
1	Contacts Output	RB02_TCP	0007	12V
2	Coil GND	RB02_TCP	6007	GND
4	Coil Input Voltage	RB02_TCP	3007	12V
5	Contacts Input	RB02_TCP	2007	12V

**Ignition Relay 3**

Pin	Description	Connector Number	Wire Number	Ignition On voltage
1	Contacts Output	RB03_TCP	0013	12V
2	Coil GND	RB03_TCP	6013	GND
4	Coil Input Voltage	RB03_TCP	3013	12V
5	Contacts Input	RB03_TCP	2013	12V

**Ignition Relay 4**

Pin	Description	Connector Number	Wire Number	Ignition On voltage
1	Contacts Output	RB04_TCP	0031	12V
2	Coil GND	RB04_TCP	6031	GND
4	Coil Input Voltage	RB04_TCP	3031	12V
5	Contacts Input	RB04_TCP	2031	12V

**Wires & Connectors IMG:**

<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>The key switches send the 12V signal through the platform and Base e-stop before powering the ignition relays. Ensure both E-stop are in the out position to activate the ignition relays.</p> <p>All 4 ignition relays are powered at the same time.</p>
<p><b>Expected Values:</b></p>	<p>If there is an issue with all 4 ignition relays, look at power from ignition key and E-stop signals.</p> <p>For individual relays different functions may not power up.</p> <p>Ignition Relay 1:              Base ECU              Base diagnostic connector              Horn</p> <p>Ignition relay 2:              Rope switches              Angle/Reel sensor              Tilt Sensor              Display              Axle Lock pressure sensor              Worklights Switch</p> <p>Ignition Relay 3:              Platform ECU              Platform control panel supply</p>

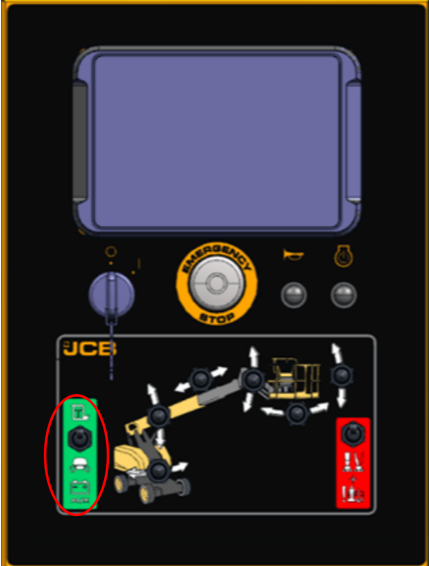
	Ignition Relay 4: Platform control panel supply Tier 3 Engine (Only Applicable for T65D Tier3 Machine)
<b>Related Fault Codes:</b>	

### 4.2.1.4 Ignition Switch

<b>Component:</b>	Ignition Switch					
<b>Function:</b>	The ignition switch is for turning the main power on and off the machine.					
<b>Location:</b>	The ignition key is located at the turntable control panel					
<b>Location IMG:</b>						
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Ignition OFF</b>	<b>Ignition ON</b>
	1	12V input	C102-1	3039	12V	12V
	2	Ignition Output	C102-2	3040	Open Circuit	12V

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	<p>M4 ring terminals of each side of the switch</p>
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>	<p style="text-align: center;"><b>KEY SWITCH</b> <b>-SW100_TCP</b></p> <p style="text-align: center;">-C102-1_TCP                      -C102-2_TCP 7207/2052 401/G8430      7207/2052</p> <p>FROM FUSE FU16_TCP</p> <p style="text-align: center;">/4.B7  1.50 mm² / 3039    M4    M4    1.50 mm² / 3040</p> <p style="text-align: center;"><b>20A</b> <b>HONEYWELL</b></p>
<p><b>Testing:</b></p>	<p>Switch input Ensure 12V feeding into the key switch - If not check fuse 16 in turntable control panel</p> <p>Switch output There should be 0V with the key in the off position There should be 12V with the key in the on position</p>
<p><b>Expected Values:</b></p>	<p>see signal</p>
<p><b>Related Fault Codes:</b></p>	<p>N/A</p>

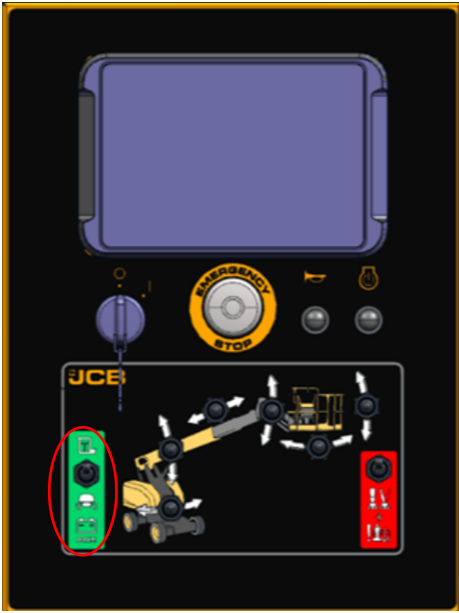
## 4.2.1.5 Base Enable Switch

<b>Component:</b>	Base Enable Switch																													
<b>Function:</b>	The base enable switch is used to allow user to operate the functions from base control panel.																													
<b>Location:</b>	The base enable switch is connected to the Base control panel.																													
<b>Location IMG:</b>																														
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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>Base Enable Active</td> <td>C201-1_TCP</td> <td>0047</td> <td>2.9V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>10V Input to switch</td> <td>C201-2_TCP</td> <td>1046</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>3</td> <td>Platform Enable Active</td> <td>C201-3_TCP</td> <td>0046</td> <td>10V</td> <td>3.6V</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	Base Enable Active	C201-1_TCP	0047	2.9V	10V	2	10V Input to switch	C201-2_TCP	1046	10V	10V	3	Platform Enable Active	C201-3_TCP	0046	10V	3.6V
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed																									
1	Base Enable Active	C201-1_TCP	0047	2.9V	10V																									
2	10V Input to switch	C201-2_TCP	1046	10V	10V																									
3	Platform Enable Active	C201-3_TCP	0046	10V	3.6V																									

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Turn On ignition</li> <li>2. Turn On the Base Enable Switch</li> <li>3. Check the Voltage at the Base Enable switch</li> </ol>
<p><b>Expected Values:</b></p>	<p>See Signal</p>

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1005-17</a> <small>4001</small>	Base Enable Switch Open Circuit AND Platform Enable Switch Open Circuit
	<a href="#">B1007-92</a> <small>4021</small>	Platform Enable Switch AND Base Enable Switch both activated (5 - 10V)
	<a href="#">B1008-16</a> <small>4031</small>	Base Enable Short Circuit to Low
	<a href="#">B1010-13</a> <small>4051</small>	Base Enable Switch Open Circuit AND Platform Enable Switch Open Circuit

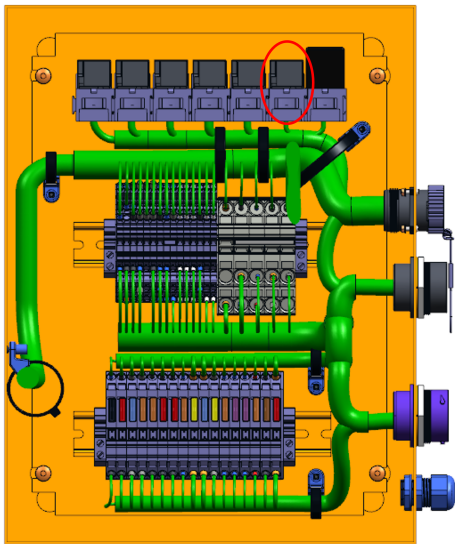
### 4.2.1.6 Platform Enable Switch

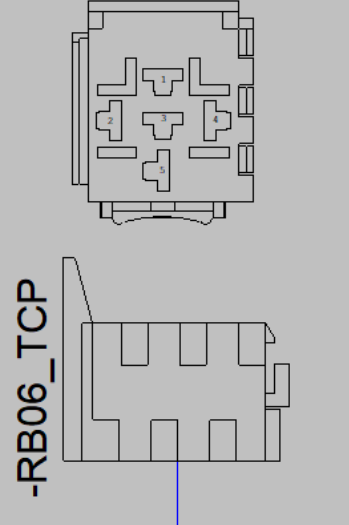
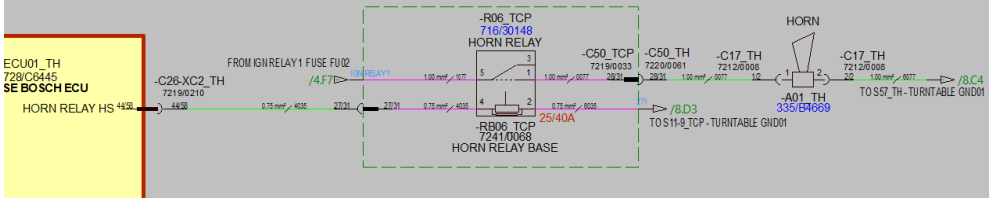
<b>Component:</b>	Platform Enable Switch																													
<b>Function:</b>	The platform enable switch is used to allow user to operate the functions from platform control panel.																													
<b>Location:</b>	The platform enable switch is connected to the Base control panel																													
<b>Location IMG:</b>																														
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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>Base Enable Active</td> <td>C201-1_TCP</td> <td>0047</td> <td>2.9V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>10V Input to switch</td> <td>C201-2_TCP</td> <td>1046</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>3</td> <td>Platform Enable Active</td> <td>C201-3_TCP</td> <td>0046</td> <td>10V</td> <td>3.6V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	Base Enable Active	C201-1_TCP	0047	2.9V	10V	2	10V Input to switch	C201-2_TCP	1046	10V	10V	3	Platform Enable Active	C201-3_TCP	0046	10V	3.6V					
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed																									
1	Base Enable Active	C201-1_TCP	0047	2.9V	10V																									
2	10V Input to switch	C201-2_TCP	1046	10V	10V																									
3	Platform Enable Active	C201-3_TCP	0046	10V	3.6V																									

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Turn On ignition</li> <li>2. Default the Platform Enable Switch is selected</li> <li>3. Check the Voltage at platform Enable switch</li> </ol>
<p><b>Expected Values:</b></p>	<p>See Signal</p>

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1006-17</a> <small>401</small>	Platform Enable Switch Short Circuit to High
	<a href="#">B1007-92</a> <small>402</small>	Platform Enable Switch AND Base Enable Switch both activated (5 - 10V)
	<a href="#">B1009-16</a> <small>404</small>	Platform Enable Short Circuit to Low
	<a href="#">B1010-13</a> <small>405</small>	Base Enable Switch Open Circuit AND Platform Enable Switch Open Circuit

### 4.2.1.7 Horn Relay

<b>Component:</b>	Horn Relay																																			
<b>Function:</b>	This will allow a larger power to the horn from the low power ecu output																																			
<b>Location:</b>	Turntable control panel																																			
<b>Location IMG:</b>																																				
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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>Output to Horn</td> <td>R06_TCP</td> <td>0077</td> <td>0V</td> <td>12V</td> </tr> <tr> <td>2</td> <td>Coil GND</td> <td>R06_TCP</td> <td>6035</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>4</td> <td>Coil Feed from ECU</td> <td>R06_TCP</td> <td>4035</td> <td>0V</td> <td>12V</td> </tr> <tr> <td>5</td> <td>Input to Relay Contact</td> <td>R06_TCP</td> <td>1077</td> <td>12V</td> <td>12V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	Output to Horn	R06_TCP	0077	0V	12V	2	Coil GND	R06_TCP	6035	GND	GND	4	Coil Feed from ECU	R06_TCP	4035	0V	12V	5	Input to Relay Contact	R06_TCP	1077	12V	12V					
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed																															
1	Output to Horn	R06_TCP	0077	0V	12V																															
2	Coil GND	R06_TCP	6035	GND	GND																															
4	Coil Feed from ECU	R06_TCP	4035	0V	12V																															
5	Input to Relay Contact	R06_TCP	1077	12V	12V																															

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	<p style="text-align: center;">-RB06_TCP#1 7241/0068 HORN RELAY BASE</p> 
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>	
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Check relay coil resistance. Should be around 90Ω</li> <li>2. Ensure 12V is getting to pin 5 of the relay. If not check Fuse02 in turntable control panel and ignition relay</li> <li>3. Check connection from Pin 1 to horn connector pin 1.</li> </ol>
<p><b>Expected Values:</b></p>	<ol style="list-style-type: none"> <li>1. Check relay coil resistance. Should be around 90Ω</li> </ol>
<p><b>Related Fault Codes:</b></p>	<p>N/A</p>


### 4.2.1.8 Toggle Switch ON-OFF-ON

<p><b>Component:</b></p>	<p>Toggle Switches</p>
<p><b>Function:</b></p>	<p>The toggle switches are used for the turntable control panel. They are used for multiple functions, Slew, Mainboom, Telescope, Platform Rotate and</p>

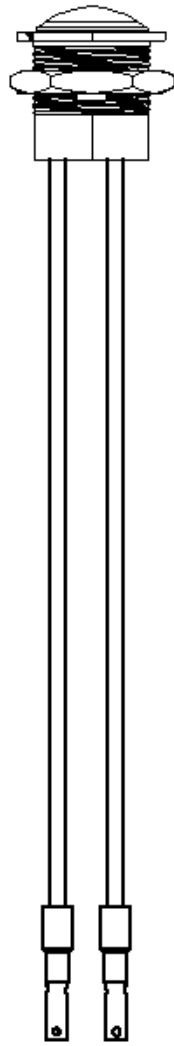
	leveling
<b>Location:</b>	Turntable control panel
<b>Location IMG:</b>	
<b>Signal:</b>	The switches are 10V input. The output of the switches is 10V when pressed
<b>Wires &amp; Connectors IMG:</b>	

<p><b>Internal Electrical Schematic IMG:</b></p>	<p>The schematic diagram shows a series of electrical connections between a central control unit (left) and various machine switches (right). The central unit is labeled 'APEM OFF-ON-OFF MDM 10A' and contains several TCP (Terminal Control Point) components: -C110-2 TCP, -C110-3 TCP, -C109-2 TCP, -C109-1 TCP, -C108-2 TCP, -C108-1 TCP, -C108-3 TCP, -C114-2 TCP, -C114-1 TCP, -C113-2 TCP, -C113-1 TCP, -C112-2 TCP, and -C112-1 TCP. These are connected to switches such as SLEW SWITCH RIGHT, SLEW SWITCH LEFT, MAIN BOOM SWITCH RAISE, MAIN BOOM SWITCH LOWER, MAIN BOOM TELESCOPIIC SWITCH EXTEND, MAIN BOOM TELESCOPIIC SWITCH RETR, PLATFORM ROTATE SWITCH LEFT, PLATFORM ROTATE SWITCH RIGHT, JIB SWITCH RAISE, JIB SWITCH LOWER, PLATFORM LEVELING SWITCH RAISE, and PLATFORM LEVELING SWITCH LOWER. Each connection is labeled with wire numbers and lengths (e.g., 12.0m, 11.0m, 10.0m).</p>
<p><b>Testing:</b></p>	<p>Look at the base display inputs page. Press the function and see if the input is received by the ECU.</p> <p>If not then Check there is 10V getting to the switch. When the switch is pressed the 10V should output from the corresponding pin.</p>
<p><b>Expected Values:</b></p>	<p>These switch should be open circuit when not pressed. There will be between 2.9V - 3.6V present on the wire from the ECU.</p> <p>When the switch is pressed there should be 10V getting through the switch.</p> <p>Display screen, inputs page, will show if the input is received by the ECU</p>
<p><b>Related Fault Codes:</b></p>	

## 4.2.1.9 Engine Start Button - Base

<b>Component:</b>	Engine Start Button																							
<b>Function:</b>	This button is used to start the engine																							
<b>Location:</b>	Turntable control panel																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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 input</td> <td>C105-2</td> <td>1066</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Signal output to ECU</td> <td>C105-1</td> <td>0066</td> <td>2.9V</td> <td>10V</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	10V input	C105-2	1066	10V	10V	2	Signal output to ECU	C105-1	0066	2.9V	10V
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed																			
1	10V input	C105-2	1066	10V	10V																			
2	Signal output to ECU	C105-1	0066	2.9V	10V																			

**Wires &  
Connectors  
IMG:**




2.8mm Push fit terminals

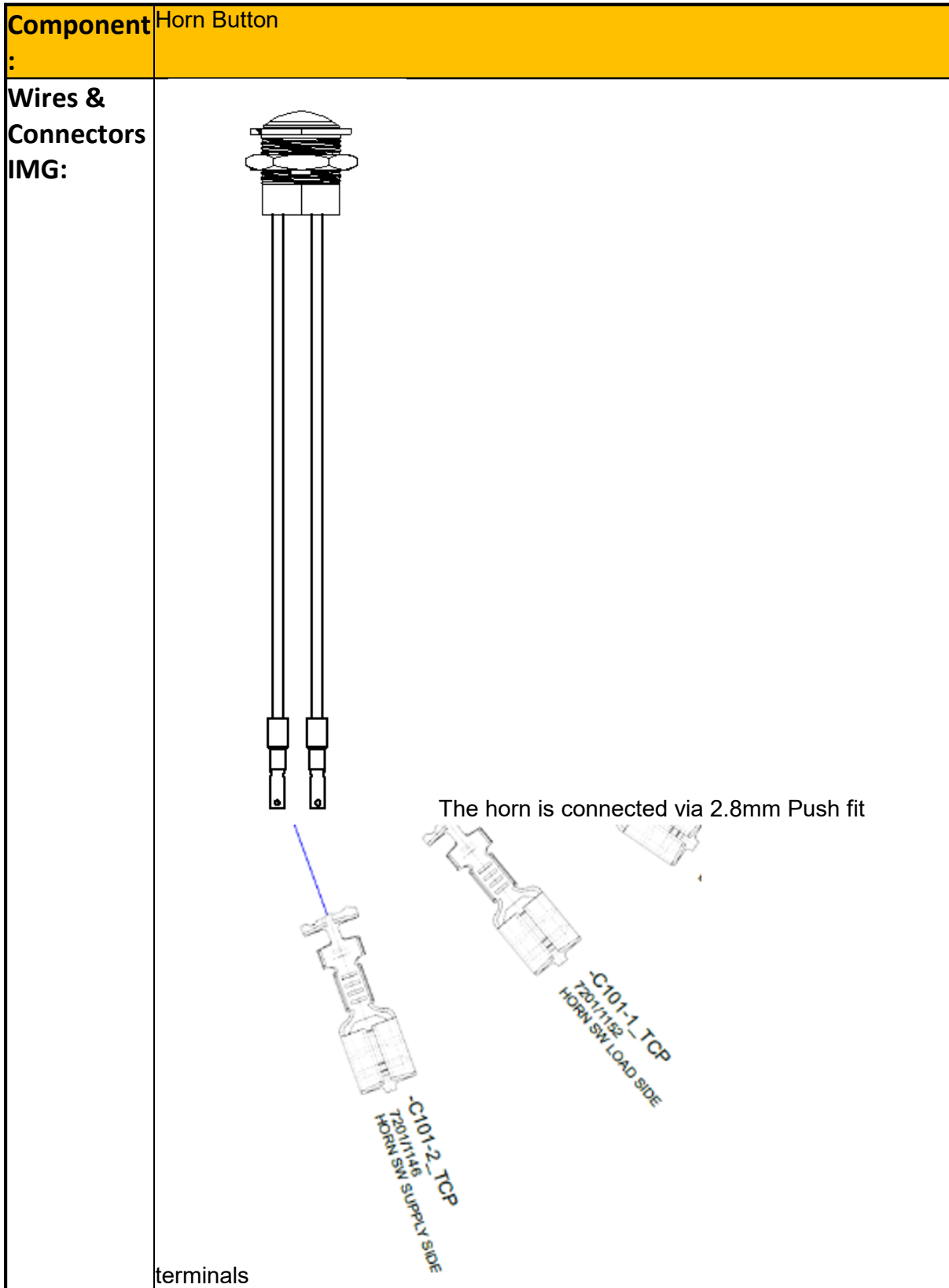
The engine start button is connected via

<p><b>Internal Electrical Schematic IMG:</b></p>									
<p><b>Testing:</b></p>	<p>Need to Check Continuity between Terminals</p>								
<p><b>Expected Values:</b></p>	<p>When the button is connected into the system there should be 10V on the input.          When the button is not pressed there will be 2.9V on the wire coming from the ECU.          When the button is pressed there should be 10V</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><a href="#">B1050-17</a> 429</td> <td>Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to High.</td> </tr> <tr> <td><a href="#">B1051-16</a> 429</td> <td>Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to Low.</td> </tr> <tr> <td><a href="#">B1052-24</a> 430</td> <td>Engine Start/Stop - Base Engine Start/Stop Button Stuck for &gt;10s.</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1050-17</a> 429	Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to High.	<a href="#">B1051-16</a> 429	Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to Low.	<a href="#">B1052-24</a> 430	Engine Start/Stop - Base Engine Start/Stop Button Stuck for >10s.
Fault Code	Description								
<a href="#">B1050-17</a> 429	Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to High.								
<a href="#">B1051-16</a> 429	Engine Start/Stop - Base Engine Start/Stop Button Short Circuit to Low.								
<a href="#">B1052-24</a> 430	Engine Start/Stop - Base Engine Start/Stop Button Stuck for >10s.								

### 4.2.1.10 Horn Button Base

<p><b>Component:</b></p>	<p>Horn Button</p>
<p><b>Function:</b></p>	<p>Horn Push Button</p>
<p><b>Location:</b></p>	<p>There is a horn button at the turntable control panel</p>

<b>Component :</b>	Horn Button																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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 input</td> <td>C101-2_TCP</td> <td>1065, 1066</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Signal output to ECU</td> <td>C101-1_TCP</td> <td>0065</td> <td>2.9V</td> <td>10V</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	10V input	C101-2_TCP	1065, 1066	10V	10V	2	Signal output to ECU	C101-1_TCP	0065	2.9V	10V
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed																			
1	10V input	C101-2_TCP	1065, 1066	10V	10V																			
2	Signal output to ECU	C101-1_TCP	0065	2.9V	10V																			



<b>Component :</b>	Horn Button	
<b>Internal Electrical Schematic IMG:</b>		
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Check input to switch is 10V</li> <li>2. Press horn button and check output from switch is 10V</li> <li>3. Release horn button check voltage</li> <li>4. Check display inputs tab to ensure ECU is receiving input when commanded</li> </ol>	
<b>Expected Values:</b>	see signal above	
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	B1206-17   509	Horn - Base Horn Button Short Circuit to High.
	B1207-16   510	Horn - Base Horn Button Short Circuit to Low.
	B1208-24   511	Horn - Base Horn Button Stuck >10s.

### 4.2.1.11 Buzzer

<b>Component:</b>	Buzzer
<b>Function:</b>	Turntable Buzzer
<b>Location:</b>	Turntable control panel
<b>Location IMG:</b>	

<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V feed from ECU</td> <td>RB07_TCP</td> <td>4024</td> </tr> <tr> <td>4</td> <td>GND</td> <td>RB07_TCP</td> <td>6024</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	1	12V feed from ECU	RB07_TCP	4024	4	GND	RB07_TCP	6024
Pin	Description	Connector Number	Wire Number										
1	12V feed from ECU	RB07_TCP	4024										
4	GND	RB07_TCP	6024										
<b>Wires &amp; Connectors</b> <b>IMG:</b>													
<b>Internal Electrical Schematic</b> <b>IMG:</b>													
<b>Testing:</b>	<p>When turning on the ignition or releasing the E-stop the buzzer should beep 3 times.          The buzzer should then beep when there is a fault condition that is critical error</p>												
<b>Expected Values:</b>	<p>See Signal</p>												

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Schematic</b>
	<a href="#">B1177-16</a> <sup>498</sup>	BUZZER Short Circuit to Low
	<a href="#">B1178-13</a> <sup>499</sup>	BUZZER Open Circuit OR Short Circuit to High


## 4.3 Base ECU

List of [Base ECU](#)<sup>169</sup>

Number	Component
1	<a href="#">Base ECU</a> <sup>169</sup>
2	<a href="#">10V System</a> <sup>175</sup>
3	<a href="#">RC Configs</a> <sup>176</sup>

### 4.3.1 Base ECU

<b>Component:</b>	Base Electronic Control Unit
<b>Function:</b>	<p>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.</p> <p>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.</p> <p>The base Bosch ECU perform all the functions of machine.</p> <p>.</p>
<b>Location:</b>	On Turntable behind the Base Control Panel

<p><b>Location</b> <b>IMG:</b></p>																																															
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th colspan="2">58 Way connector</th> </tr> <tr> <th>Pin Number</th> <th>Description/ Signal</th> </tr> </thead> <tbody> <tr><td>1</td><td>Power Supply - 12V</td></tr> <tr><td>2</td><td>GND</td></tr> <tr><td>3</td><td>Power Supply - 12V</td></tr> <tr><td>4</td><td>Power Supply - 12V</td></tr> <tr><td>5</td><td>Power Supply - 12V</td></tr> <tr><td>6</td><td>Power Supply - 12V</td></tr> <tr><td>7</td><td>GND</td></tr> <tr><td>8</td><td>NOT USED</td></tr> <tr><td>9</td><td>Platform leveling Switch input - Lower (10V when pressed)</td></tr> <tr><td>10</td><td>Platform leveling Switch input - Raised (10V when pressed)</td></tr> <tr><td>11</td><td>Platform rotate switch input - right (10V when pressed)</td></tr> <tr><td>12</td><td>Platform rotate switch input - left (10V when pressed)</td></tr> <tr><td>13</td><td>NOT USED</td></tr> <tr><td>14</td><td>Jib Switch input - Lower (10V when pressed)</td></tr> <tr><td>15</td><td>CAN H1 (yellow)</td></tr> <tr><td>16</td><td>CAN L1 (Green)</td></tr> <tr><td>17</td><td>NOT USED</td></tr> <tr><td>18</td><td>NOT USED</td></tr> <tr><td>19</td><td>NOT USED</td></tr> <tr><td>20</td><td>GND</td></tr> <tr><td>21</td><td>NOT USED</td></tr> </tbody> </table>	58 Way connector		Pin Number	Description/ Signal	1	Power Supply - 12V	2	GND	3	Power Supply - 12V	4	Power Supply - 12V	5	Power Supply - 12V	6	Power Supply - 12V	7	GND	8	NOT USED	9	Platform leveling Switch input - Lower (10V when pressed)	10	Platform leveling Switch input - Raised (10V when pressed)	11	Platform rotate switch input - right (10V when pressed)	12	Platform rotate switch input - left (10V when pressed)	13	NOT USED	14	Jib Switch input - Lower (10V when pressed)	15	CAN H1 (yellow)	16	CAN L1 (Green)	17	NOT USED	18	NOT USED	19	NOT USED	20	GND	21	NOT USED
58 Way connector																																															
Pin Number	Description/ Signal																																														
1	Power Supply - 12V																																														
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6	Power Supply - 12V																																														
7	GND																																														
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18	NOT USED																																														
19	NOT USED																																														
20	GND																																														
21	NOT USED																																														

22	Override switch unpressed (10V when not pressed)
23	MAIN BOOM LOWER LIMIT SW1
24	NOT USED
25	Override switch pressed (10V when pressed)
26	NOT USED
27	Axle lock pressure sensor (0.5-4.5)
28	E-stop positive (12V when unpressed)
29	NOT USED
30	NOT USED
31	NOT USED
32	10V output from ECU
33	GND
34	NOT USED
35	NOT USED
36	LOW OIL PRESS SWITCH I/P
37	MAIN BOOM LOWER LIMIT SW2
38	main boom switch input - lower (10V when pressed)
39	main boom switch input - raise (10V when pressed)
40	Ignition switch input (12V)
41	HYDRAULIC GENERATOR SOL HS
42	WHEEL MOTOR HIGH TORQUE SOL HS
43	beacon output 1 HS (12V)
44	horn relay output (12V)
45	power electronics input (12V)
46	GND
47	slew switch input - left (10V when pressed)
48	HI COOLANT TEMP SW I/P
49	RC Config 2 (GND)
50	Engine start switch input (10V when pressed, momentary)
51	Platform enable switch (10V when switch at platform)
52	Horn input switch (10V when pressed, momentary)
53	NOT USED
54	NOT USED
55	NOT USED
56	White noise alarm output
57	BEACON 2 HS
58	Power supply (12V)
96 Way connector	

Pin Number	Description/ Signal
1	NOT USED
2	NOT USED
3	NOT USED
4	NOT USED
5	NOT USED
6	O/P FOR DRIVING LIGHTS TO RELAY
7	UNLOADER SOLENOID HS
8	NOT USED
9	NOT USED
10	NOT USED
11	NOT USED
12	NOT USED
13	NOT USED
14	E-Stop -ve (GND when unpressed)
15	COOLANT LEVEL SW.
16	COOLANT TEMP SENS I/P
17	NOT USED
18	Blocked air filter signal (GND when blocked)
19	ROPE SWITCH 1
20	ROPE SWITCH 2
21	FUEL SENSOR
22	GND
23	GND
24	GND
25	PLATFORM LEVEL RAISE SOL HS
26	NOT USED
27	NOT USED
28	Rear brake solenoid output
29	PLATFORM LEVEL LOWER SOL HS
30	FRONT BRAKE SOLENOID
31	Axle lock solenoid output Highside
32	Alt W
33	NOT USED
34	Slew switch input - right (10V when pressed)
35	Jib Switch input - raise (10V when pressed)
36	Base enable switch (10V when pressed)
37	NOT USED
38	NOT USED

39	NOT USED
40	WATER IN FUEL
41	NOT USED
42	main boom telescope input switch - retract
43	NOT USED
44	main boom telescope input switch - extend
45	GND
46	GND
47	Slew position switch input switch 1
48	NOT USED
49	Slew right proportional output solenoid
50	Steer right solenoid highside output
51	main boom telescope extend solenoid output
52	FORWARD SOL HS PROP
53	JIB UP / PLATFORM RIGHT SOL HS
54	main boom raise solenoid output
55	NOT USED
56	NOT USED
57	Slew position limit switch input sw2
58	Engine alternator input signal
59	NOT USED
60	NOT USED
61	NOT USED
62	NOT USED
63	NOT USED
64	NOT USED
65	NOT USED
66	NOT USED
67	NOT USED
68	NOT USED
69	NOT USED
70	NOT USED
71	NOT USED
72	NOT USED
73	slew left proportional solenoid highside
74	Steer left highside output
75	main boom telescope retract hs output
76	REVERSE SOL HS PROP
77	JIB DOWN / PLATFORM LEFT SOL HS
78	main boom lower proportional highside output

	<table border="1"> <tr><td>79</td><td>PLATFORM LEVEL SOL LS</td></tr> <tr><td>80</td><td>Steer left/right lowside</td></tr> <tr><td>81</td><td>NOT USED</td></tr> <tr><td>82</td><td>Axle lock solenoid lowside</td></tr> <tr><td>83</td><td>JIB/PLATFORM SOL LS</td></tr> <tr><td>84</td><td>main boom raise/lower lowside</td></tr> <tr><td>85</td><td>Main boom telescope EXTEND / RETRACT output lowside</td></tr> <tr><td>86</td><td>FORWARD /REVERSE SOL LS</td></tr> <tr><td>87</td><td>Slew left/ right output lowside</td></tr> <tr><td>88</td><td>UNLOADER SOLENOID LS</td></tr> <tr><td>89</td><td>Engine ignition output (12V)</td></tr> <tr><td>90</td><td>buzzer highside output</td></tr> <tr><td>91</td><td>NOT USED</td></tr> <tr><td>92</td><td>NOT USED</td></tr> <tr><td>93</td><td>electric pump relay highside output</td></tr> <tr><td>94</td><td>Engine start (crank signal)</td></tr> <tr><td>95</td><td>NOT USED</td></tr> <tr><td>96</td><td>RC CONFIG PIN 1</td></tr> </table>	79	PLATFORM LEVEL SOL LS	80	Steer left/right lowside	81	NOT USED	82	Axle lock solenoid lowside	83	JIB/PLATFORM SOL LS	84	main boom raise/lower lowside	85	Main boom telescope EXTEND / RETRACT output lowside	86	FORWARD /REVERSE SOL LS	87	Slew left/ right output lowside	88	UNLOADER SOLENOID LS	89	Engine ignition output (12V)	90	buzzer highside output	91	NOT USED	92	NOT USED	93	electric pump relay highside output	94	Engine start (crank signal)	95	NOT USED	96	RC CONFIG PIN 1
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<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	<p>The image contains three technical diagrams of connectors. The left diagram shows connector -C27-XC1_TH#1 (BASE BOSCH ECU 96PIN CONN) with a 'WIRE ENTRY SIDE' arrow pointing down. The middle diagram shows connector -C26-XC2_TH with dimensions: 180 mm for the main body height, 7000/3224 for the pin length, and 100 mm for the distance between the main body and the pin base. The right diagram shows connector -C26-XC2_TH#1 (BASE BOSCH ECU 58PIN CONN) with a 'WIRE ENTRY SIDE' arrow pointing down. It includes labels for '30 mm' (pin length), '70 mm' (distance from pin base to main body), and 'CUT END -C52_TH'. A legend indicates '80 CONNECTOR HEAD CUT' and '7219/0210'.</p>																																				
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>	<p><b>Please Refer Electrical Schematic - 404/G5368</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. Connect machine to the Servicemaster diagnostic tool using the DLA Connector.</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>	See Signal
<b>Related Fault Codes:</b>	Refer <a href="#">Machine Fault Code</a> <sup>384</sup> Section

### 4.3.2 10V system

<b>Component:</b>	10V system
<b>Function:</b>	This provides a 10V output from the base ECU to power the switches
<b>Location:</b>	Base Controller - Turntable
<b>Location IMG:</b>	N/A
<b>Signal:</b>	N/A
<b>Wires &amp; Connectors IMG:</b>	N/A
<b>Internal Electrical Schematic IMG:</b>	
<b>Testing:</b>	<p>The 10V system feeds all input switches and also limit switches used at the turntable.</p> <p>If a fault occurs, it should default controls to the platform control station.</p>

	<p>This fault can be difficult to find. If the fault occurs when pressing a switch it may be an output from a switch position that is back fed through the control system. The easiest way to find this fault is to disconnect sections at a time until the system is back running.</p> <p>If a fault on the system occurs it will need a restart to enable the output again.</p>	
<b>Expected Values:</b>	10V	
<b>Related Fault Codes:</b>	<b>Fault Codes</b>	
	<b>Description</b>	
	<a href="#">B1144-17</a> <small>489</small>	Base 10v Output - 10v Input System Short Circuit to High
	<a href="#">B1145-16</a> <small>490</small>	Base 10v Output - 10v Input System Short Circuit to Low
	<a href="#">B1281-16</a> <small>567</small>	VSS2 Low Voltage (<= 9.5V)


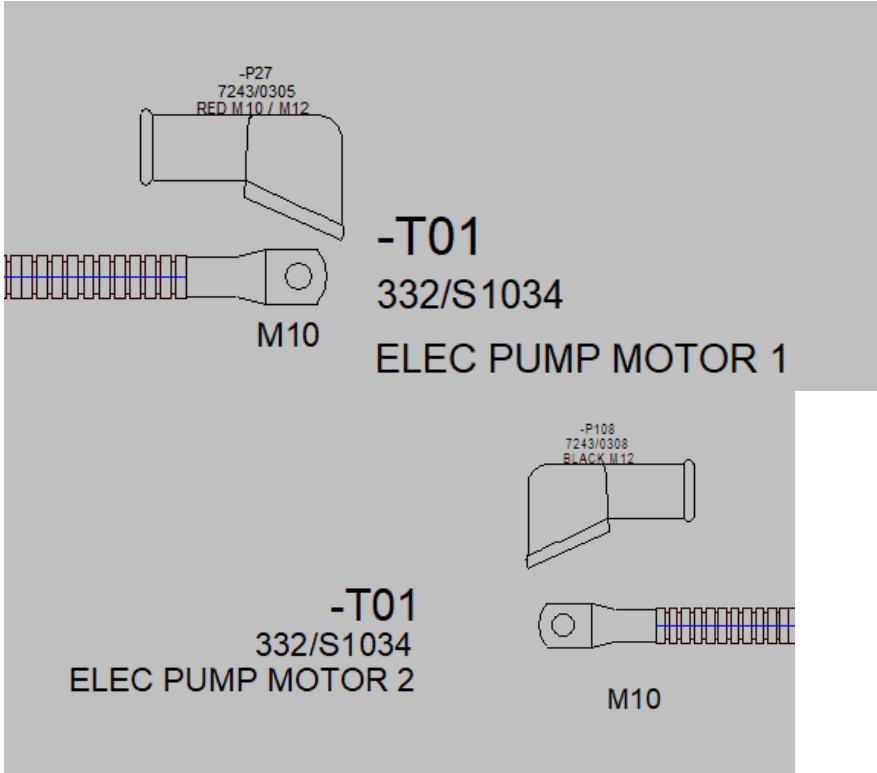
### 4.3.3 RC Configs

<b>Component:</b>	RC Configs		
<b>Function:</b>	The RC config is what allows the software to identify which ECU is the Base or Platform ECU.		
<b>Location:</b>	Base ECU		
<b>Location IMG:</b>	N/A		
<b>Signal:</b>	<b>Pin Number</b>	<b>Base ECU</b>	<b>Platform ECU</b>
	49/58	GND	Open Circuit
	96/96	Open Circuit	GND
<b>Wires &amp; Connectors IMG:</b>	N/A		

<p><b>Internal Electrical Schematic IMG:</b></p>	<p>The schematic illustrates the CAN bus network architecture. Key components include the Base Bosch ECU (7280442) at the top left, the Customer Telematics unit (4213_TH) in the center, the Platform Diagnostic Core (7280442) at the top right, and the Bosch Platform ECU (7280442) at the bottom right. The network is divided into CAN H and CAN L lines. A 'WIRE PEEL / ANGLE BEND' detail shows the physical connection of the CAN bus wires to a diagnostic connector. The diagram also shows various relays and connectors like JMC2_TH1, JMC2_TH2, and JMC2_TH3.</p>						
<p><b>Testing:</b></p>	<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><b>Expected Values:</b></p>	<p>60 Ohm resistance in Pin D &amp; C on Diagnostic Connector</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><a href="#">B1302-2F</a>   575  </td> <td>RC CONFIG SC Plausibility Check</td> </tr> <tr> <td><a href="#">B1303-2F</a>   576  </td> <td>RC CONFIG SC Plausibility Check</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1302-2F</a>   575	RC CONFIG SC Plausibility Check	<a href="#">B1303-2F</a>   576	RC CONFIG SC Plausibility Check
Fault Code	Description						
<a href="#">B1302-2F</a>   575	RC CONFIG SC Plausibility Check						
<a href="#">B1303-2F</a>   576	RC CONFIG SC Plausibility Check						

## 4.4 AUX Pump

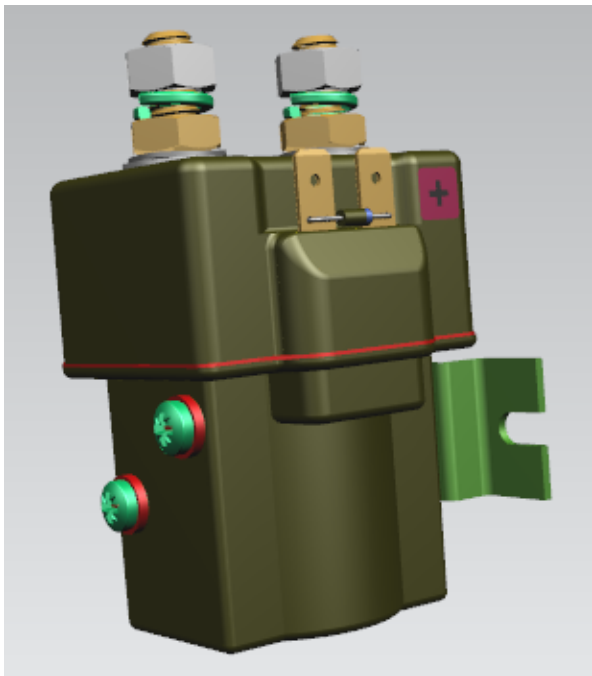
<p><b>Component:</b></p>	<p>AUX Pump</p>
<p><b>Function:</b></p>	<p>In the event of no engine power available a hydraulic gear pump and electrical motor is used to lower the platform safely to the ground.</p>
<p><b>Location:</b></p>	<p>LHS Canopy, near Turntable Slew Motor</p>

<p><b>Location IMG:</b></p>													
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>PIN</th> <th>Cable From</th> <th>Cable To</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>+VE Pin</td> <td>Electric Pump Relay</td> <td>Pump +VE</td> <td>12V when On</td> </tr> <tr> <td>-VE Pin</td> <td>Pump -VE</td> <td>GND</td> <td>GND</td> </tr> </tbody> </table>	PIN	Cable From	Cable To	Signal	+VE Pin	Electric Pump Relay	Pump +VE	12V when On	-VE Pin	Pump -VE	GND	GND
PIN	Cable From	Cable To	Signal										
+VE Pin	Electric Pump Relay	Pump +VE	12V when On										
-VE Pin	Pump -VE	GND	GND										
<p><b>Wires &amp; Connectors IMG:</b></p>	 <p><b>-T01</b> 332/S1034 ELEC PUMP MOTOR 1</p> <p><b>-T01</b> 332/S1034 ELEC PUMP MOTOR 2</p> <p>Labels for connectors: -P27 7243/0305 RED M10 / M12 -P108 7243/0308 BLACK M12</p>												

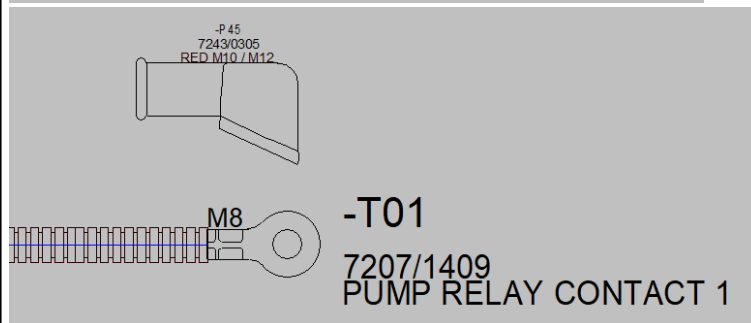
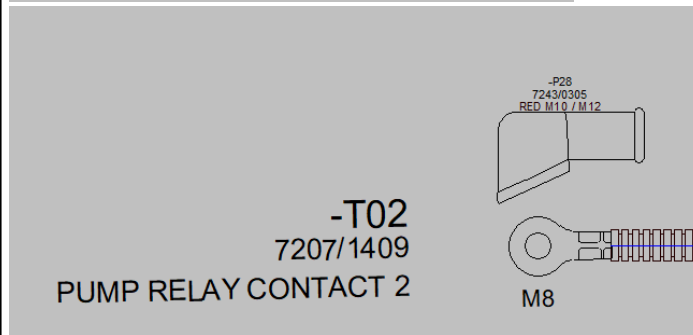
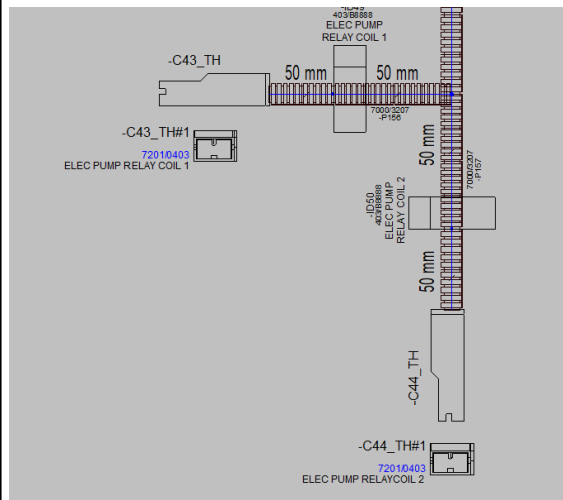
<p><b>Internal Electrical Schematic IMG:</b></p>							
<p><b>Testing:</b></p>	<p>Operate machine with no engine running. inputs and outputs can be seen at display seen inputs and outputs pages.</p> <p>If all input and outputs showing correct, Check contactor and fuse PF01_MCP</p>						
<p><b>Expected Values:</b></p>	<p>See Signal</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><a href="#">B1414-17</a> <small>663</small></td> <td>AUX - Electric Pump Output Short Circuit to High or Open Circuit.</td> </tr> <tr> <td><a href="#">B1415-16</a> <small>664</small></td> <td>AUX - Electric Pump Output Short Circuit to Low.</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1414-17</a> <small>663</small>	AUX - Electric Pump Output Short Circuit to High or Open Circuit.	<a href="#">B1415-16</a> <small>664</small>	AUX - Electric Pump Output Short Circuit to Low.
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## 4.5 AUX DC Contactor

<p><b>Component:</b></p>	<p>AUX DC Contactor</p>
<p><b>Function:</b></p>	<p>This enables the low power from the ECU to switch to the high power required by the Pump motor.</p> <p>Contractors are electromechanical switches that control the flow of high-voltage current, primarily connecting and disconnecting the HV supply from the rest of the electrical system for safety, power transfer to the required components.</p>
<p><b>Location:</b></p>	<p>Turntable</p>

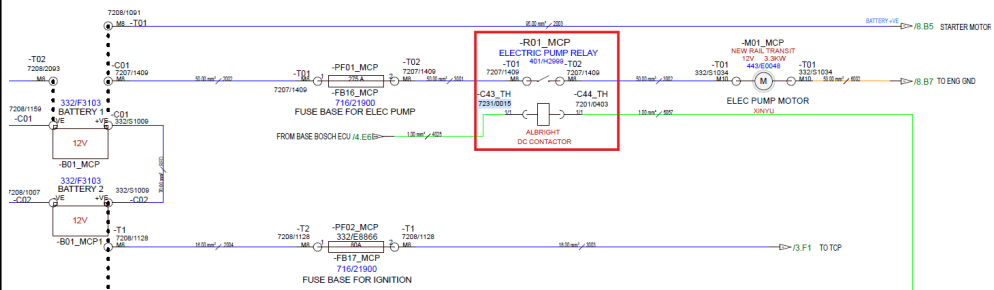
<p><b>Location</b> <b>IMG:</b></p>																																				
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage Un-Active</th> <th>Voltage Activated</th> </tr> </thead> <tbody> <tr> <td>+VE 6.3mm Terminal</td> <td>Coil +VE</td> <td>C43_TH</td> <td>4025</td> <td>0V</td> <td>12V</td> </tr> <tr> <td>-VE 6.3mm Terminal</td> <td>Coil GND</td> <td>C44_TH</td> <td>6067</td> <td>GND</td> <td>GND</td> </tr> <tr> <td>M8 Terminal</td> <td>Power input</td> <td>T01 Battery lead</td> <td>Red battery Lead</td> <td>12V</td> <td>12V</td> </tr> <tr> <td>M8 Terminal</td> <td>Power output</td> <td>T02 Battery Lead</td> <td>Black negative lead</td> <td>0V</td> <td>12V</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Voltage Un-Active	Voltage Activated	+VE 6.3mm Terminal	Coil +VE	C43_TH	4025	0V	12V	-VE 6.3mm Terminal	Coil GND	C44_TH	6067	GND	GND	M8 Terminal	Power input	T01 Battery lead	Red battery Lead	12V	12V	M8 Terminal	Power output	T02 Battery Lead	Black negative lead	0V	12V
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## Wires & Connectors IMG:



Ensure these are fitted the correct way around.  
**Connector** **Output**  
**Input Connector**

## Internal Electrical Schematic IMG:



## Testing:

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. Set a multimeter to continuity</li> <li>2. apply terminals to contact terminals of the contactor</li> <li>3. This should show open circuit.</li> <li>4. Apply 12V to positive coil terminal and 0V to gnd terminal</li> <li>5. Check continuity across the contact terminals. with 12V and GND applied to coil there should be continuity</li> </ol>	
<b>Expected Values:</b>	12 V	
<b>Related Fault Codes:</b>	<b>Fault Codes</b>	<b>Description</b>
	<a href="#">B1414-17</a> <small>663</small>	AUX - Electric Pump Output Short Circuit to High or Oper
	<a href="#">B1415-16</a> <small>664</small>	AUX - Electric Pump Output Short Circuit to Low.

## 4.6 Slew Acknowledgment Limit Switch

<b>Component:</b>	Slew Acknowledgment Limit Switch
<b>Function:</b>	<p>The slew acknowledgment switch is the understand if the machine is in the forward position. This is +/- 25 degrees from center position.</p> <p>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.</p>
<b>Location:</b>	Turntable

**Location  
IMG:**



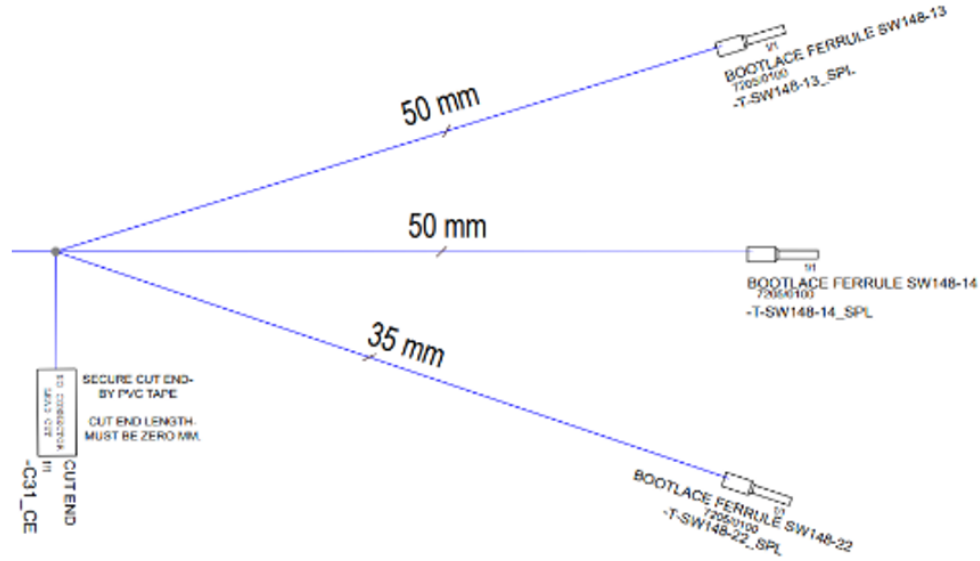
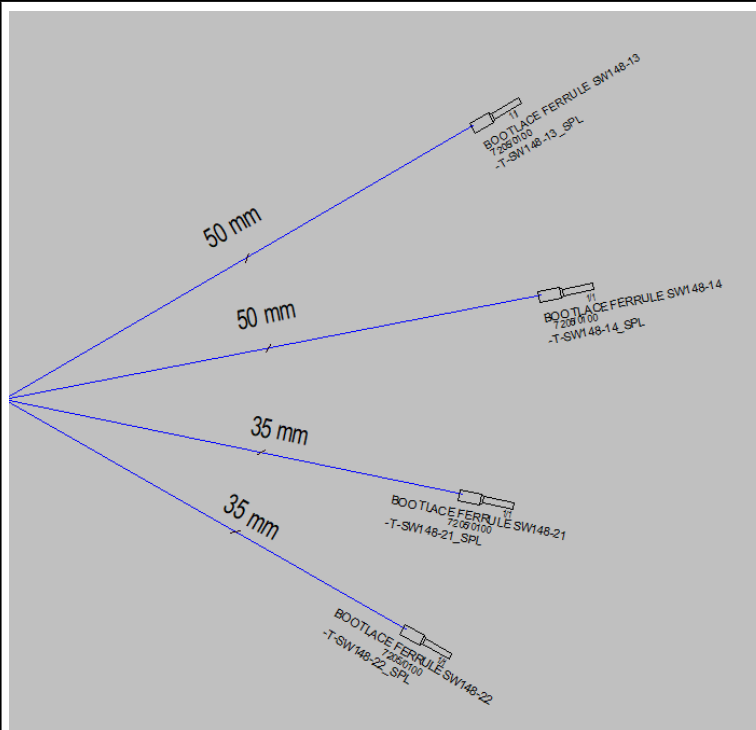
**Signal:**

The switch is pressed in the forward position

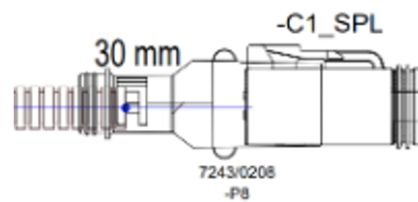
**T65D - Old Machine - Type 1 Harness**

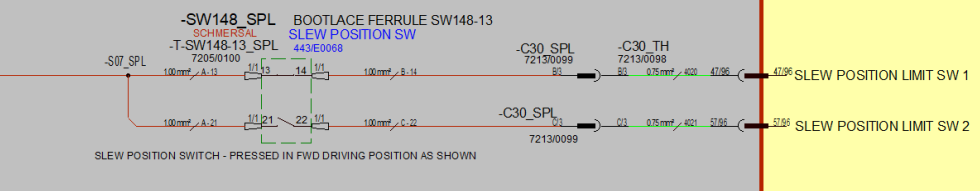
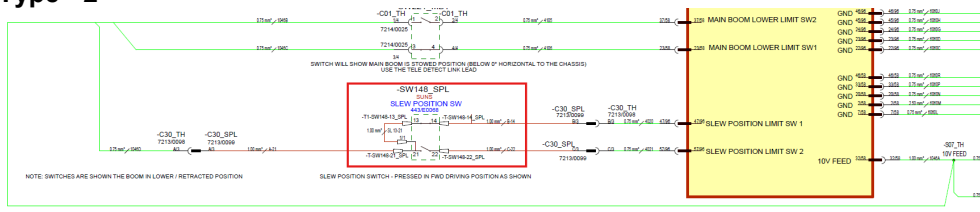
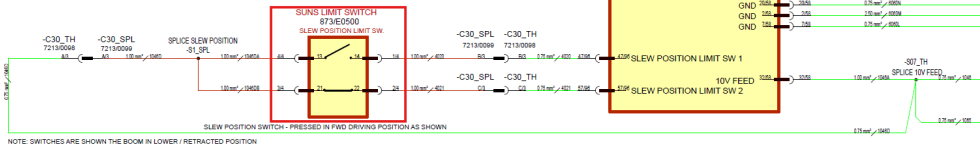
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed
13	10V input	-T-SW148-13_SPL	A-13	10V	10V

	<table border="1"> <tr> <td>14</td> <td>SW1 output to ECU</td> <td>-T-SW148-14 SPL</td> <td>B-14</td> <td>0V</td> <td>10V</td> </tr> <tr> <td>21</td> <td>10V input</td> <td>-T-SW148-21 SPL</td> <td>A-21</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>22</td> <td>SW2 output to ECU</td> <td>-T-SW148-22 SPL</td> <td>C-22</td> <td>10V</td> <td>0V</td> </tr> </table> <p><b>T65D - Old Machine - Type 2 Harness</b></p> <table border="1"> <thead> <tr> <th>Pin</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>13</td> <td>10V input</td> <td>-T-SW148-13 SPL</td> <td>S13-21</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>14</td> <td>SW1 output to ECU</td> <td>-T-SW148-14 SPL</td> <td>B-14</td> <td>0V</td> <td>10V</td> </tr> <tr> <td>21</td> <td>10V input</td> <td>-T-SW148-21 SPL</td> <td>A-21</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>22</td> <td>SW2 output to ECU</td> <td>-T-SW148-22 SPL</td> <td>C-22</td> <td>10V</td> <td>0V</td> </tr> </tbody> </table> <p><b>T65D and T65D Tier3 - Latest Design</b></p> <table border="1"> <thead> <tr> <th>Pin</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>13</td> <td>10V input</td> <td>-C30 SPL</td> <td>1046DA</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>14</td> <td>SW1 output to ECU</td> <td>-C30 SPL</td> <td>4020</td> <td>0V</td> <td>10V</td> </tr> <tr> <td>21</td> <td>10V input</td> <td>-C30 SPL</td> <td>1046DB</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>22</td> <td>SW2 output to ECU</td> <td>-C30 SPL</td> <td>4021</td> <td>10V</td> <td>0V</td> </tr> </tbody> </table>	14	SW1 output to ECU	-T-SW148-14 SPL	B-14	0V	10V	21	10V input	-T-SW148-21 SPL	A-21	10V	10V	22	SW2 output to ECU	-T-SW148-22 SPL	C-22	10V	0V	Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	13	10V input	-T-SW148-13 SPL	S13-21	10V	10V	14	SW1 output to ECU	-T-SW148-14 SPL	B-14	0V	10V	21	10V input	-T-SW148-21 SPL	A-21	10V	10V	22	SW2 output to ECU	-T-SW148-22 SPL	C-22	10V	0V	Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	13	10V input	-C30 SPL	1046DA	10V	10V	14	SW1 output to ECU	-C30 SPL	4020	0V	10V	21	10V input	-C30 SPL	1046DB	10V	10V	22	SW2 output to ECU	-C30 SPL	4021	10V	0V
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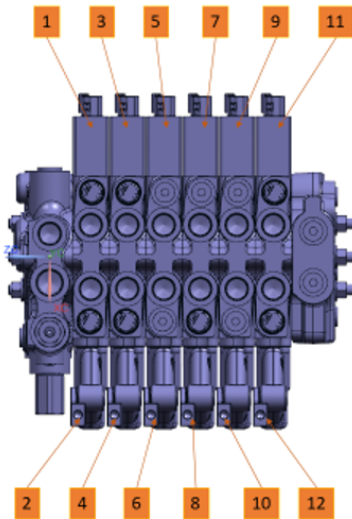
The connections to the switches are from bootlace ferrules.



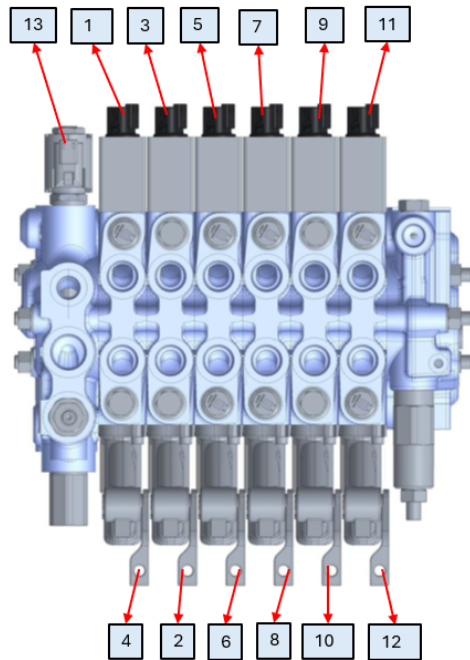
T65D & T65D Tier3 Latest Design	
<p><b>Internal Electrical Schematic IMG:</b></p>	<p><b>T65D - Old Machine</b></p> <p><b>Type - 1</b></p>  <p><b>Type - 2</b></p>  <p><b>T65D and T65D Tier3 - Latest Design</b></p> 
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT</b> 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>

<b>Expected Values:</b>	see signal	
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1019-17</a> <small>406</small>	SLEW POSITION Limit Switch 1 Short Circuit to High
	<a href="#">B1020-17</a> <small>407</small>	SLEW POSITION Limit Switch 2 Short Circuit to High
	<a href="#">B1021-16</a> <small>408</small>	SLEW POSITION Limit Switch 1 Short Circuit to Low
	<a href="#">B1022-13</a> <small>409</small>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 Open Circuit
	<a href="#">B1023-16</a> <small>410</small>	SLEW POSITION Limit Switch 2 Short Circuit to Low
	<a href="#">B1024-92</a> <small>411</small>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 Short Circuit to 10V

## 4.7 Main Control Valve

<b>Component:</b>	Main Control Valve
<b>Function:</b>	The main control valve allows the proportional flow of the hydraulics for: Main boom, telescope, steer, slew, platform leveling, Jib/Platform rotate
<b>Location:</b>	The main valve block is on the Turntable
<b>Location IMG:</b>	<p><b>T65D</b></p> <p><b>Main Control Valve</b></p>  <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p><b>Solenoids and their functions</b></p> <ol style="list-style-type: none"> <li>1. Telescopic boom out</li> <li>2. Telescopic Boom in</li> <li>3. Boom up</li> <li>4. Boom down</li> <li>5. Slew CW</li> <li>6. Slew CCW</li> <li>7. Steering Left</li> <li>8. Steering Right</li> <li>9. Platform control (jib up)/(Platform rotate CW)</li> <li>10. Platform (jib down)/(Platform rotate CCW)</li> <li>11. Levelling Cylinder up</li> <li>12. Levelling cylinder down</li> </ol> </div>

## T65D Tier3



### Solenoids and Their Functions

- | Sr No. | Functions  |
|--------|--|
| 1      | Telescopic Boom Out                              |
| 2      | Telescopic Boom In                               |
| 3      | Boom Up  |
| 4      | Boom Down  |
| 5      | Slew CW  |
| 6      | Slew CCW   |
| 7      | Steering Left                                    |
| 8      | Steering Right                                   |
| 9      | Platform Control(Jib Up)/(Platform rotate CW)    |
| 10     | Platform Control(Jib Down)/(Platform rotate CCW) |
| 11     | Levelling Ram Up                                 |
| 12     | Levelling Ram Down                               |
| 13     | Unloader Solenoid                                |

### Signal:

#### Unloader Solenoid (Only for T65D Tier3 Machine)

Pin	Description	Connector Number	Wire Number	Voltage/ MilliAmps	Solenoid resistance
1	ECU +VE feed	C11_TH	4080	12V	5.7Ω
2	ECU GND feed	C11_TH	6070	GND	5.7Ω

#### Mainboom Raise

Pin	Description	Connector Number	Wire Number	Voltage/ MilliAmps	Solenoid resistance
1	ECU +VE feed	C05_TH	4045	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C05_TH	4047A	GND when activated	

#### Mainboom Lower

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C06_TH	4046	12V - tuned to meet speeds and times sheet	5.7Ω

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
2	ECU Shared GND	C06_TH	4047A	GND when activated	

**Telescopic Extend**

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C04_TH	4048	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C04_TH	4050C/A	GND when activated	

**Telescopic Retract**

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C03_TH	4049	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C03_TH	4050A	GND when activated	

**Steer Left**

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C09_TH	4051	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C09_TH	4053C/A	GND when activated	

**Steer Right**

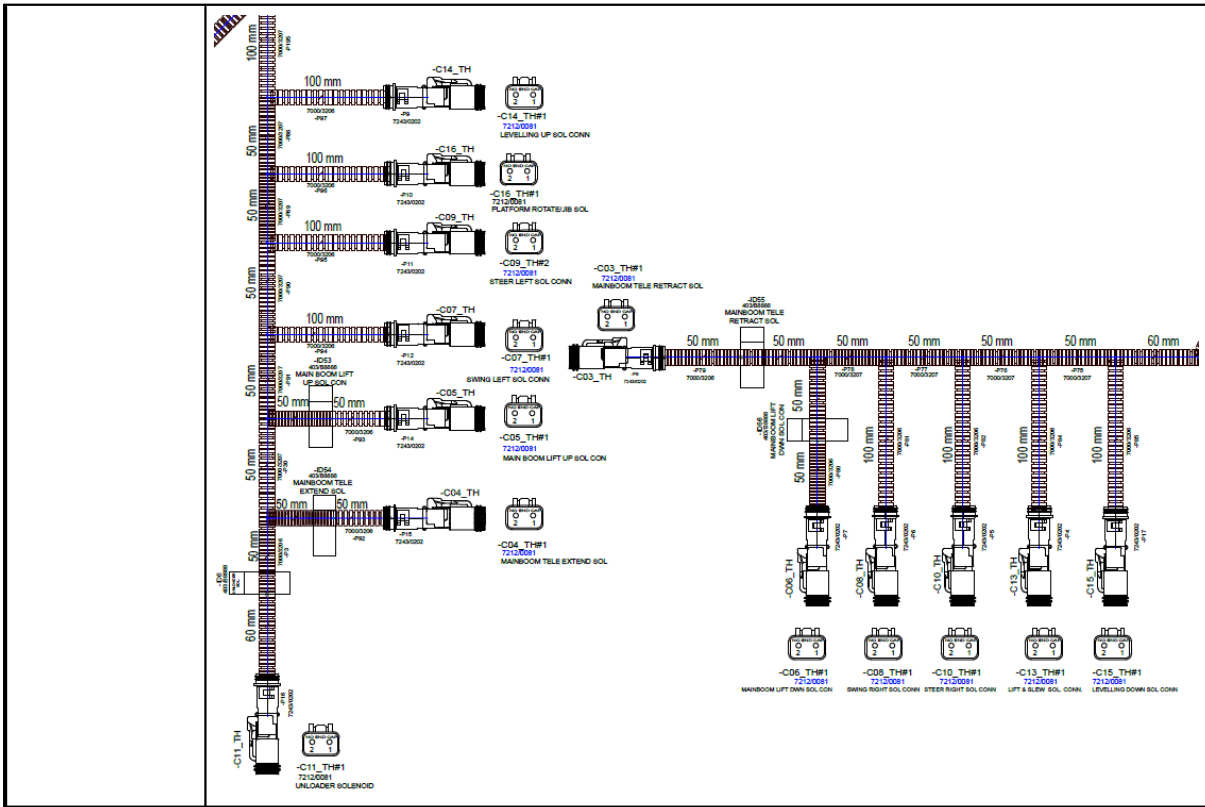
Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C10_TH	4052	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C10_TH	4053A/B	GND when activated	

**Slew Left**

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C07_TH	4054	12V - tuned to meet speeds and times sheet	5.7Ω

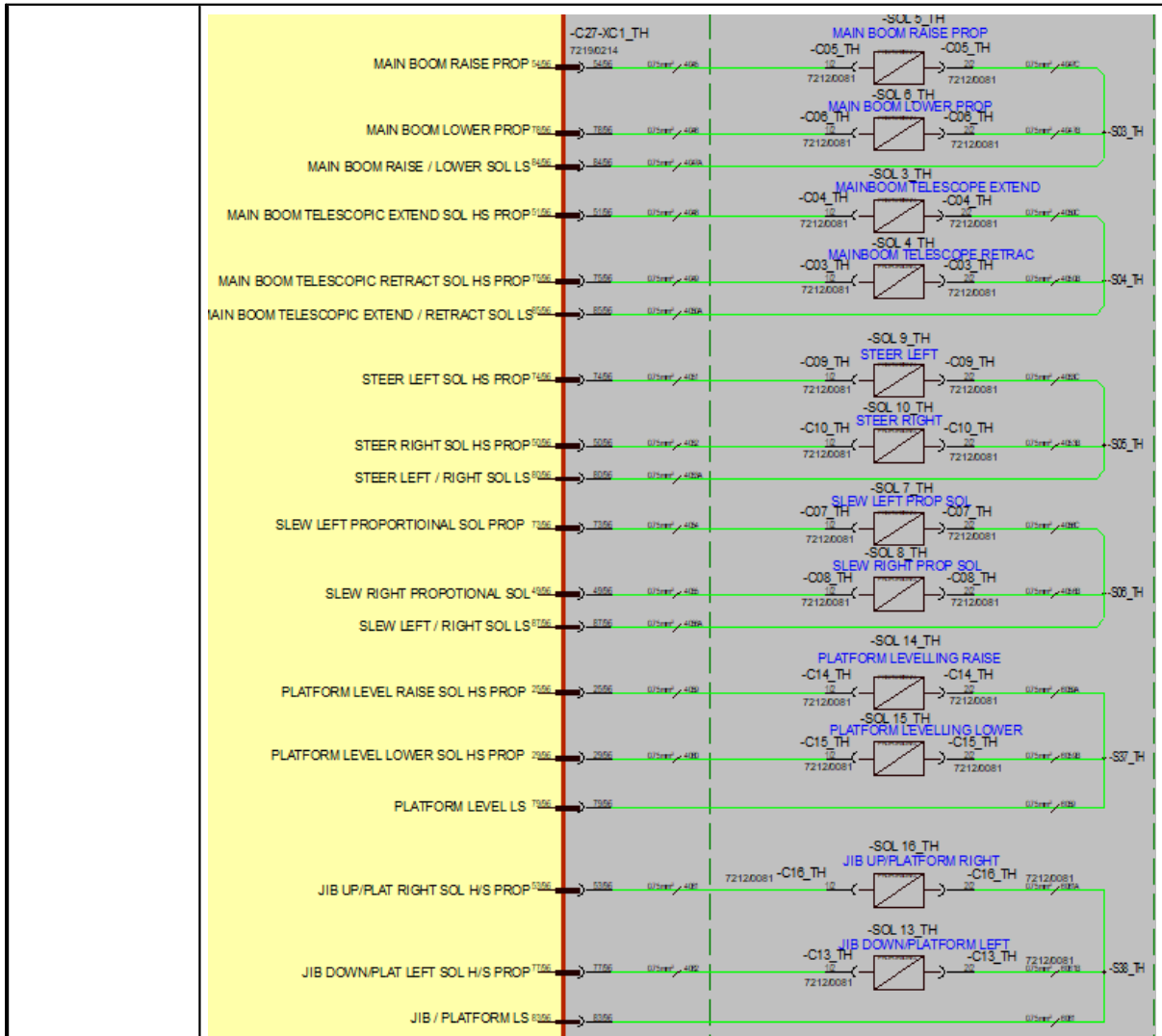
Pi n	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
2	ECU Shared GND	C07_TH	4056A/C	GND when activated	
<b>Slew Right</b>					
Pi n	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C08_TH	4055	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C08_TH	4056A/B	GND when activated	
<b>Platform Level Raise</b>					
Pi n	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C14_TH	4059	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C14_TH	6059-A	GND when activated	
<b>Platform Level Lower</b>					
Pi n	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C15_TH	4060	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C15_TH	6059-B	GND when activated	
<b>Jib Up/Platform Rotate Right</b>					
Pi n	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C16_TH	4061	12V - tuned to meet speeds and times sheet	5.7Ω
2	ECU Shared GND	C16_TH	6061-A	GND when activated	
<b>Jib Down/Platform Rotate Left</b>					
Pi n	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
1	ECU +VE feed	C13_TH	4062	12V - tuned to meet speeds and times sheet	5.7Ω

Pin	Description	Connector Number	Wire Number	Voltage When Active	Solenoid resistance
2	ECU Shared GND	C13_TH	6061-B	GND when activated	
<b>Wires &amp; Connectors IMG:</b>	<p><b>T65D</b></p>				
	<p><b>T65D Tier 3</b></p>				

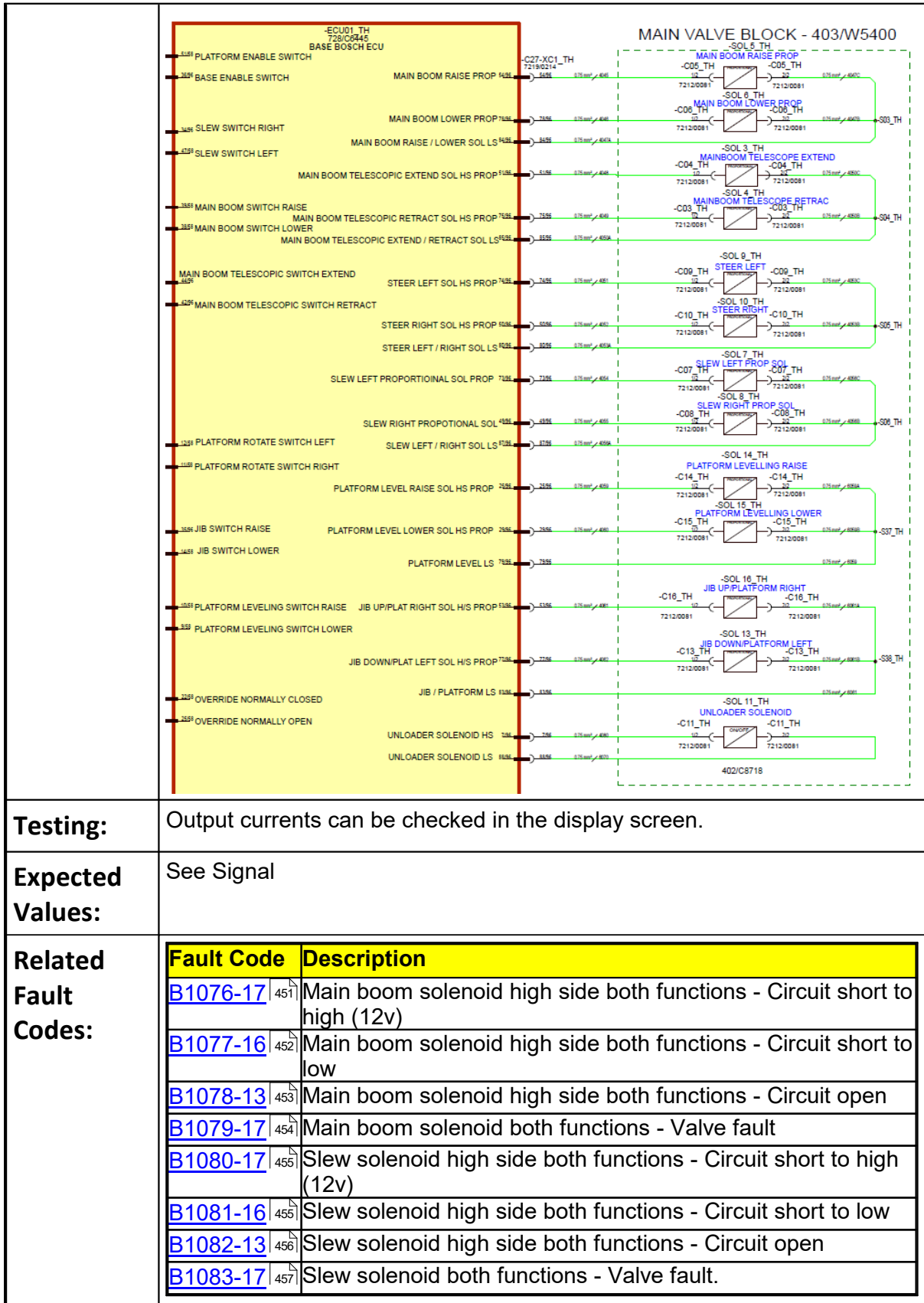


Internal  
Electrical  
Schematic  
IMG:

T65D



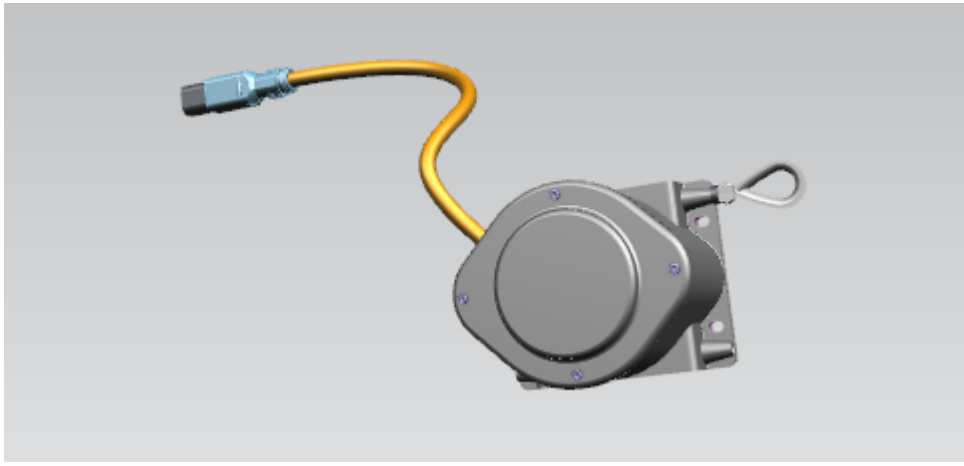
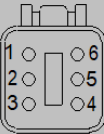
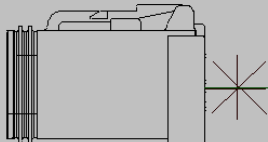
T65D Tier3



<a href="#">B1329-13</a>	590	Jib boom / Platform rotate flow solenoid - Circuit open or short to high (12v)
<a href="#">B1330-16</a>	591	Jib boom / Platform rotate flow solenoid - Circuit short to low
<a href="#">B1335-17</a>	593	Main boom flow solenoid - Circuit open or short to high (12v)
<a href="#">B1336-16</a>	594	Main boom solenoid low side both functions - Circuit short to low
<a href="#">B1337-13</a>	595	Main boom solenoid low side both functions - Circuit open
<a href="#">B1338-17</a>	595	Slew solenoid low side both functions - Circuit short to high (12v)
<a href="#">B1339-16</a>	596	Slew solenoid low side both functions - Circuit short to low
<a href="#">B1340-13</a>	597	Slew solenoid low side both functions - Circuit open
<a href="#">B1381-17</a>	628	TELE BOOM EXTEND\RETRACT PROPORTIONAL HS SC to high
<a href="#">B1382-16</a>	628	TELE BOOM EXTEND\RETRACT PROPORTIONAL HS SC to low
<a href="#">B1383-13</a>	629	TELE BOOM EXTEND\RETRACT PROPORTIONAL HS / LS OC
<a href="#">B1384-17</a>	630	TELE BOOM EXTEND\RETRACT PROPORTIONAL LS SC to high
<a href="#">B1385-16</a>	631	TELE BOOM EXTEND\RETRACT PROPORTIONAL LS SC to low
<a href="#">B1386-13</a>	632	TELE BOOM EXTEND\RETRACT PROPORTIONAL LS OC
<a href="#">B1393-17</a>	639	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL HS SC to high
<a href="#">B1394-16</a>	640	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL HS SC to low
<a href="#">B1395-13</a>	641	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL HS/LS OC
<a href="#">B1396-17</a>	642	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL LS SC to high
<a href="#">B1397-16</a>	643	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL LS SC to low
<a href="#">B1398-13</a>	644	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL LS OC
<a href="#">B1399-17</a>	645	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL HS SC to high
<a href="#">B1400-16</a>	646	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL HS SC to low
<a href="#">B1401-13</a>	647	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL HS/LS OC
<a href="#">B1402-17</a>	648	JIB\PLATFORM PROPORTIONAL LS SC to high
<a href="#">B1403-16</a>	649	JIB\PLATFORM PROPORTIONAL LS SC to low
<a href="#">B1404-13</a>	650	JIB\PLATFORM PROPORTIONAL LS OC
<a href="#">B1411-17</a>	659	JIB/PLATFORM FLOW LS Sol SC to High
<a href="#">B1412-16</a>	661	JIB/PLATFORM FLOW LS Sol SC to Low
<a href="#">B1413-13</a>	662	JIB/PLATFORM FLOW HS & LS Sol OC

<a href="#">B1419-13</a>	668	JIB\PLATFORM ROTATE Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1420-13</a>	669	JIB/PLATFORM FLOW Solenoid Valve Fault

### 4.8 Mainboom Angle & Length Sensor

<b>Component:</b>	Main boom Angle and Length Sensor																						
<b>Function:</b>	This is to measure the main boom angle and telescopic length																						
<b>Location:</b>	Rear side of main-boom																						
<b>Location IMG:</b>																							
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Ignition Feed</td> <td>C02 WRH</td> <td>1008B</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C02 WRH</td> <td>6084C</td> </tr> <tr> <td>3</td> <td>CAN H</td> <td>C02 WRH</td> <td>CAN H22</td> </tr> <tr> <td>4</td> <td>CAN L</td> <td>C02 WRH</td> <td>CAN L22</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	1	Ignition Feed	C02 WRH	1008B	2	GND	C02 WRH	6084C	3	CAN H	C02 WRH	CAN H22	4	CAN L	C02 WRH	CAN L22		
Pin	Description	Connector Number	Wire Number																				
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2	GND	C02 WRH	6084C																				
3	CAN H	C02 WRH	CAN H22																				
4	CAN L	C02 WRH	CAN L22																				
<b>Wires &amp; Connectors IMG:</b>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>-C54_TH#1</p>  <p>7216/0018 WIRE REEL / ANG SENS CONN</p> </div> <div style="text-align: center;"> <p>-C54_TH</p>  </div> </div>																						

<p><b>Internal Electrical Schematic IMG:</b></p>															
<p><b>Testing:</b></p>	<p>The information is sent over CAN. This can be read in display inputs page.</p> <p>Ensure machine is calibrated:  <a href="#">Calibrate from Service-master</a> <sup>359</sup></p> <p><a href="#">Calibrate Angle Sensor from display</a> <sup>371</sup>  <a href="#">Calibrate Length Sensor from display</a> <sup>374</sup></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><a href="#">B1369-87</a> <sup>616</sup></td> <td>MAIN BOOM ANGLE SENSOR Communication fault</td> </tr> <tr> <td><a href="#">B1370-2F</a> <sup>617</sup></td> <td>MAIN BOOM ANGLE SENSOR Channel plausibility fault</td> </tr> <tr> <td><a href="#">B1371-17</a> <sup>618</sup></td> <td>MAIN BOOM ANGLE Working Range fault</td> </tr> <tr> <td><a href="#">B1373-87</a> <sup>619</sup></td> <td>TELESCOPIC BOOM LENGTH SENSOR Communication fault</td> </tr> <tr> <td><a href="#">B1374-2F</a> <sup>620</sup></td> <td>TELESCOPIC BOOM LENGTH SENSOR Channel plausibility fault</td> </tr> <tr> <td><a href="#">B1375-17</a> <sup>621</sup></td> <td>TELESCOPIC BOOM LENGTH Range fault</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1369-87</a> <sup>616</sup>	MAIN BOOM ANGLE SENSOR Communication fault	<a href="#">B1370-2F</a> <sup>617</sup>	MAIN BOOM ANGLE SENSOR Channel plausibility fault	<a href="#">B1371-17</a> <sup>618</sup>	MAIN BOOM ANGLE Working Range fault	<a href="#">B1373-87</a> <sup>619</sup>	TELESCOPIC BOOM LENGTH SENSOR Communication fault	<a href="#">B1374-2F</a> <sup>620</sup>	TELESCOPIC BOOM LENGTH SENSOR Channel plausibility fault	<a href="#">B1375-17</a> <sup>621</sup>	TELESCOPIC BOOM LENGTH Range fault
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<a href="#">B1375-17</a> <sup>621</sup>	TELESCOPIC BOOM LENGTH Range fault														

## 4.9 Mainboom lowered switch

<p><b>Component:</b></p>	<p>Main Boom Lower Switch</p>
<p><b>Function:</b></p>	<p>The main boom lower switch is part of the position control system and allows the machine to know when the boom is below 0 degrees horizontal from the chassis.</p>
<p><b>Location:</b></p>	<p>The bracket is fitted to the boom and the sensor is located on the turntable side panel</p>
<p><b>Location IMG:</b></p>	<p><b>NOTE : - Not Applicable for T65D Tier3 Machines</b></p>

**Not Applicable for T65D Machines from Cut In - 3499611.**

**Only Applicable for T65D Old Machines**



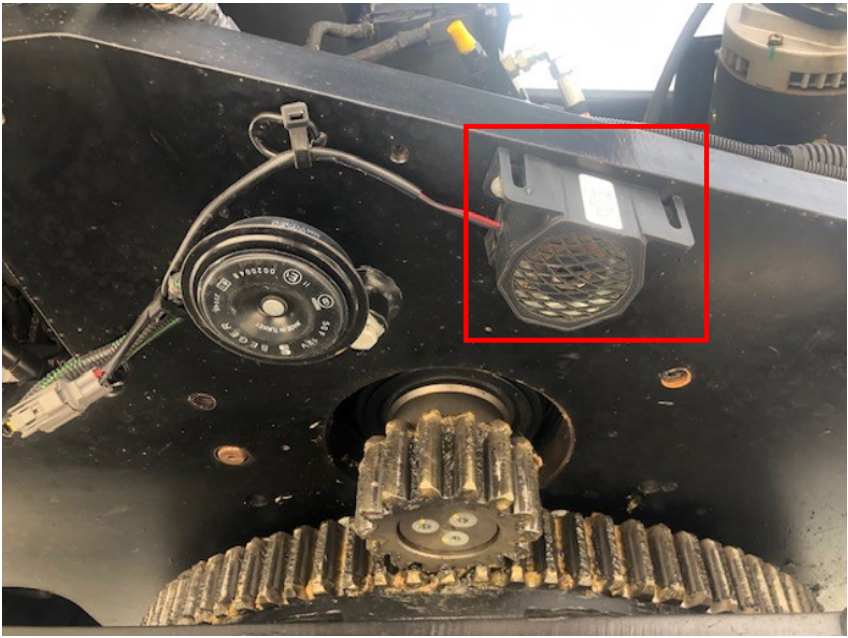
BOOM DOWN LIMIT SWITCH

**Signal:**

Pin	Description	Connector Number	Wire Number	Voltage <0 degrees	Voltage >0Degrees
1	10V input	C01_TH	1046B	10V	10V
2	SW2 output to ecu	C01_TH	4105	0V	10V
3	10V input	C01_TH	1046C	10V	10V
4	SW1 output to ecu	C01_TH	4106	10V	0V

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>															
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>															
<p><b>Testing:</b></p>	<p>When the machine boom is raised above 0 degrees horizontal to the chassis angle the switch should change. When the Boom is lowered below 0 Degrees horizontal to the chassis angle the switch should change. The base display inputs page will show the switch positions.</p>														
<p><b>Expected Values:</b></p>	<p>See Signal</p>														
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1126-17</a> 483</td> <td>Main Boom Lower Limit Switch 1 Short Circuit to H</td> </tr> <tr> <td><a href="#">B1127-17</a> 484</td> <td>Main Boom Lower Limit Switch 2 Short Circuit to H</td> </tr> <tr> <td><a href="#">B1128-16</a> 485</td> <td>Main Boom Lower Limit Switch 1 Short Circuit to L</td> </tr> <tr> <td><a href="#">B1129-13</a> 486</td> <td>Main Boom Lower Limit Switch 1 AND Switch 2 Op</td> </tr> <tr> <td><a href="#">B1130-16</a> 487</td> <td>Main Boom Lower Limit Switch 2 Short Circuit to L</td> </tr> <tr> <td><a href="#">B1131-2F</a> 488</td> <td>Main Boom Lower Limit Switch 1 &amp; 2 Short Circuit</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1126-17</a> 483	Main Boom Lower Limit Switch 1 Short Circuit to H	<a href="#">B1127-17</a> 484	Main Boom Lower Limit Switch 2 Short Circuit to H	<a href="#">B1128-16</a> 485	Main Boom Lower Limit Switch 1 Short Circuit to L	<a href="#">B1129-13</a> 486	Main Boom Lower Limit Switch 1 AND Switch 2 Op	<a href="#">B1130-16</a> 487	Main Boom Lower Limit Switch 2 Short Circuit to L	<a href="#">B1131-2F</a> 488	Main Boom Lower Limit Switch 1 & 2 Short Circuit
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<a href="#">B1126-17</a> 483	Main Boom Lower Limit Switch 1 Short Circuit to H														
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<a href="#">B1131-2F</a> 488	Main Boom Lower Limit Switch 1 & 2 Short Circuit														

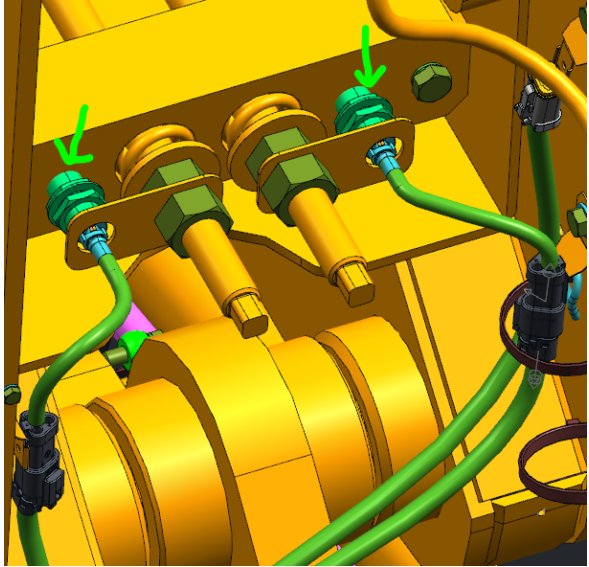
## 4.10 White Noise Alarm

<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>	The white noise alarm is fitted to the bottom of the turntable																			
<b>Location IMG:</b>																				
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage when Active</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C34_TH</td> <td>4036</td> <td>12V</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C34_TH</td> <td>6036</td> <td>0V</td> </tr> </tbody> </table>					Pin	Description	Connector Number	Wire Number	Voltage when Active	1	12V input	C34_TH	4036	12V	2	GND	C34_TH	6036	0V
Pin	Description	Connector Number	Wire Number	Voltage when Active																
1	12V input	C34_TH	4036	12V																
2	GND	C34_TH	6036	0V																

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>							
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>							
<p><b>Testing:</b></p>	<p>The white noise Alarm should be active drive, steer, main boom lower, telescopic retract or slew functions are operated.</p> <p>The output can be viewed from the base display outputs page to ensure the software is tuning this on.</p> <p>Ensure Travel Alarm is enabled in the display panel. See <a href="#">Travel Alarm Function</a><sup>111</sup></p>						
<p><b>Expected Values:</b></p>	<p>12 Volt</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><a href="#">B1183-16</a><sup>504</sup></td> <td>White Noise Alarm - White Noise Alarm Short Circuit to Low.</td> </tr> <tr> <td><a href="#">B1184-13</a><sup>505</sup></td> <td>White Noise Alarm - White Noise Alarm Open Circuit or Short Circuit to High.</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1183-16</a> <sup>504</sup>	White Noise Alarm - White Noise Alarm Short Circuit to Low.	<a href="#">B1184-13</a> <sup>505</sup>	White Noise Alarm - White Noise Alarm Open Circuit or Short Circuit to High.
Fault Code	Description						
<a href="#">B1183-16</a> <sup>504</sup>	White Noise Alarm - White Noise Alarm Short Circuit to Low.						
<a href="#">B1184-13</a> <sup>505</sup>	White Noise Alarm - White Noise Alarm Open Circuit or Short Circuit to High.						

## 4.11 Wire rope switches


<p><b>Component:</b></p>	<p>Wire Rope Switches</p>
<p><b>Function:</b></p>	<p>The wire rope switches are to identify when the wire ropes are broken. There is 2 separate switches 10k Ohm resistance shall be connected between both sensors outputs and ECU inputs. Boom raise and Boom extend movements shall be prevented.</p>

<b>Location:</b>	They are fitted at the back of the main boom																																								
<b>Location IMG:</b>																																									
<b>Signal:</b>	<p><b>Rope Switch 1</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage when Active</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12V input</td> <td>C34_TH</td> <td>1008D</td> <td>12V</td> </tr> <tr> <td>B</td> <td>GND</td> <td>C34_TH</td> <td>6084B</td> <td>0V</td> </tr> <tr> <td>C</td> <td>Signal to ECU</td> <td>C34_TH</td> <td>8001A-8001B</td> <td></td> </tr> </tbody> </table> <p><b>Rope Switch 2</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage when Active</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12V input</td> <td>C34_TH</td> <td>1008C</td> <td>12V</td> </tr> <tr> <td>B</td> <td>GND</td> <td>C34_TH</td> <td>6084A</td> <td>0V</td> </tr> <tr> <td>C</td> <td>Signal to ECU</td> <td>C34_TH</td> <td>8002A-8002B</td> <td></td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage when Active	A	12V input	C34_TH	1008D	12V	B	GND	C34_TH	6084B	0V	C	Signal to ECU	C34_TH	8001A-8001B		Pin	Description	Connector Number	Wire Number	Voltage when Active	A	12V input	C34_TH	1008C	12V	B	GND	C34_TH	6084A	0V	C	Signal to ECU	C34_TH	8002A-8002B	
Pin	Description	Connector Number	Wire Number	Voltage when Active																																					
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B	GND	C34_TH	6084A	0V																																					
C	Signal to ECU	C34_TH	8002A-8002B																																						

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Check display inputs.</p> <p>There will be a fault code when disconnected sensor is disconnected.</p> <p>Check Voltage and GND to sensor connectors</p>
<p><b>Expected Values:</b></p>	<p>See signal</p>

<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1379-13</a> <small>625</small>	ROPE SWITCH 1 Open Circuit & Short Circuit to Low
	<a href="#">B1405-13</a> <small>651</small>	ROPE SWITCH 2 Open Circuit & Short Circuit to Low
	<a href="#">B1407-17</a> <small>654</small>	ROPE SWITCH 2 Short Circuit to High(12v & 10v)
	<a href="#">B1409-17</a> <small>657</small>	ROPE SWITCH 1 Short Circuit to High(12v & 10v)

## 4.12 Beacon


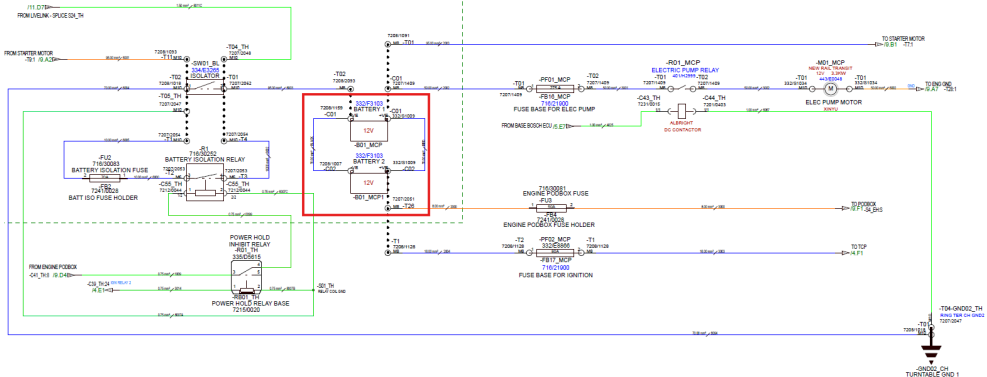
<b>Component:</b>	Beacon (s)				
<b>Function:</b>	The beacon will be active when the machine drive, steer, main boom lower, telescopic retract or slew functions are operated.				
<b>Location:</b>	The top of the counterweight at the front of the machine				
<b>Location IMG:</b>	 <p style="text-align: center; font-size: small;">BEACON</p>				
<b>Signal:</b>	<b>Beacon 1</b>				
	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Voltage when Active</b>
	1	12V input from ECU	C20_TH	4032	12V
	2	GND	C20_TH	6032	0V
	<b>Beacon 2</b>				
	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Voltage when Active</b>
	1	12V input from ECU	C53_TH	4069	12V
	2	GND	C53_TH	6082	0V

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. <b>DO NOT</b> USE the meter on the ECU pins.</p> <ol style="list-style-type: none"> <li>1. Disconnect the electrical connector from the beacon.</li> </ol>

	<p>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).</p> <p>3. If there is 12V present and the earth resistance is within range, replace the beacon/beacon socket.</p> <p>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</p>										
<b>Expected Values:</b>	See Signal										
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1179-13</a> <small>500</small></td> <td>Beacon 1 Open Circuit or Short Circuit to High.</td> </tr> <tr> <td><a href="#">B1180-16</a> <small>501</small></td> <td>Beacon 1 Short Circuit to Low.</td> </tr> <tr> <td><a href="#">B1362-13</a> <small>610</small></td> <td>Beacon 2 Open Circuit or Short Circuit to High.</td> </tr> <tr> <td><a href="#">B1363-16</a> <small>611</small></td> <td>Beacon 2 Short Circuit to Low.</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1179-13</a> <small>500</small>	Beacon 1 Open Circuit or Short Circuit to High.	<a href="#">B1180-16</a> <small>501</small>	Beacon 1 Short Circuit to Low.	<a href="#">B1362-13</a> <small>610</small>	Beacon 2 Open Circuit or Short Circuit to High.	<a href="#">B1363-16</a> <small>611</small>	Beacon 2 Short Circuit to Low.
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<a href="#">B1363-16</a> <small>611</small>	Beacon 2 Short Circuit to Low.										

### 4.13 Batteries 12V

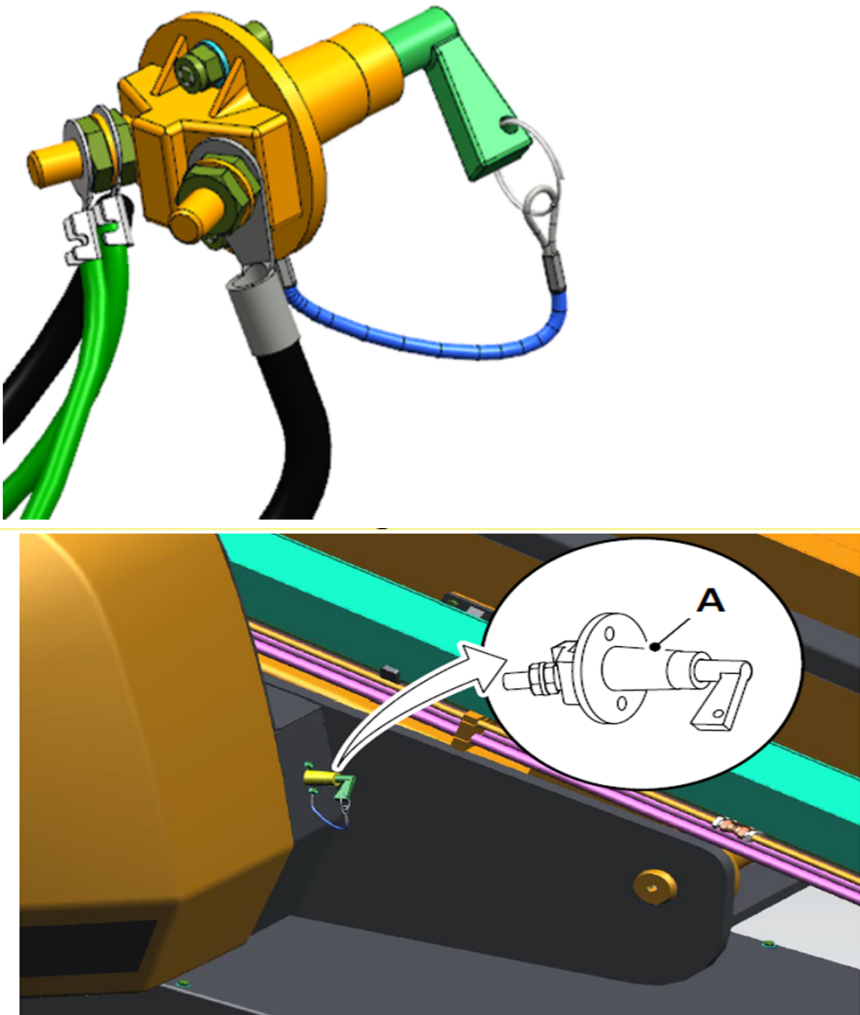
<b>Component:</b>	Batteries
<b>Function:</b>	Power supply to the machine. There is 2 batteries wired in parallel
<b>Location:</b>	Batteries are fitted in the engine side pod.


<p><b>Location</b> <b>IMG:</b></p>	
<p><b>Signal:</b></p>	<p>12V</p>
<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	<p>N/A</p>
<p><b>Internal Electrical Schematic</b> <b>IMG:</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. Battery Discharged-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> </ol>

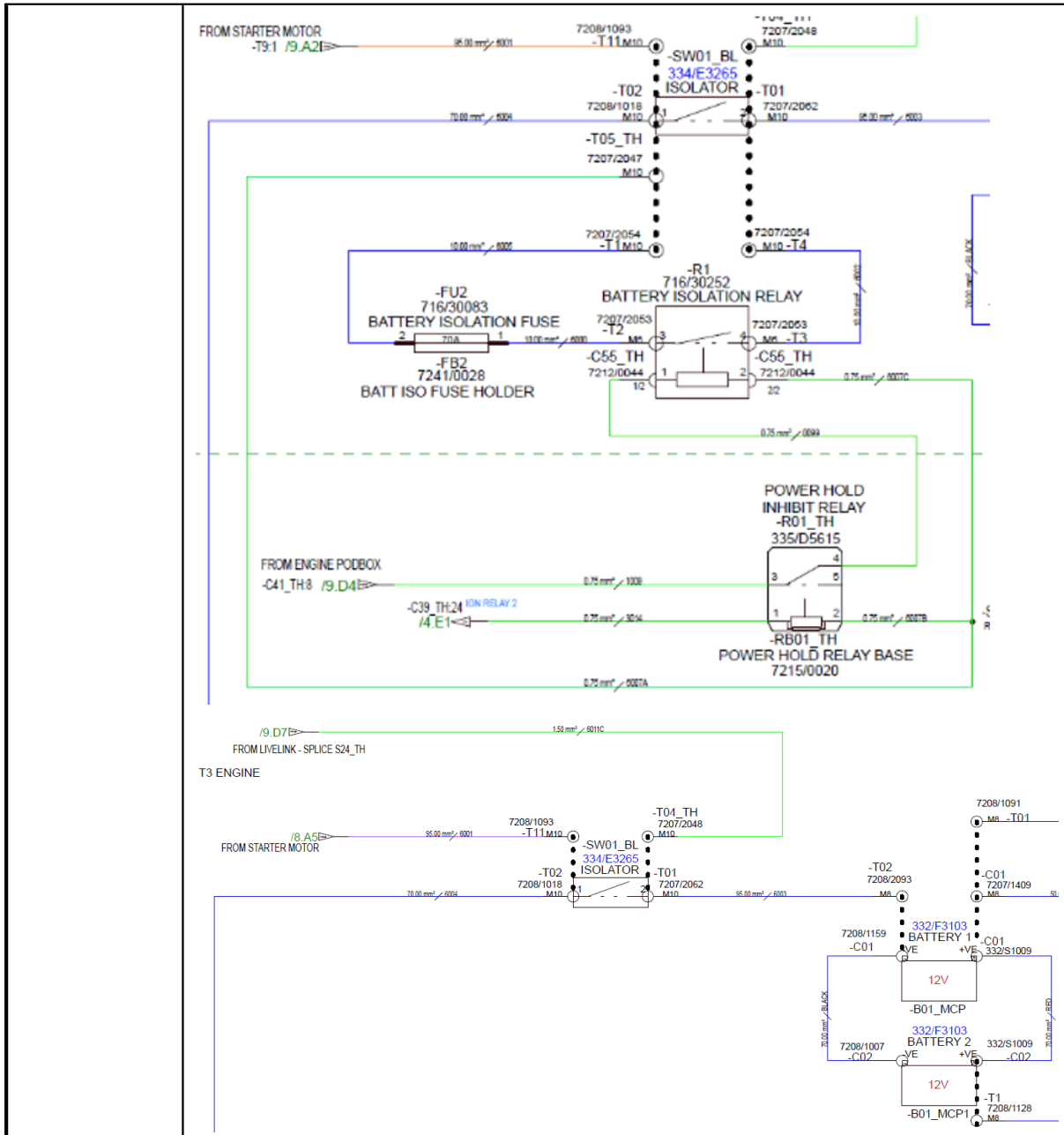
	<p>2. Battery connection fault-Check the electrical connectors from the battery for signs of damage/corrosion, clean the terminals and apply a suitable electrically conductive grease to the connections. Repair/replace battery or connectors as necessary. If the fault remains, proceed to Step 3.</p> <p>3. 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.\</p> <p>4. 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:</p> <p>a. Repair or replace as required.</p> <p>b. With the relay installed, apply 5V across the relay. If the relay does not click, replace the relay.</p> <p>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.</p> <p>Turn on the ignition and check for 5V at the power hold fuse, Pod box connector, inside the Pod box at the power hold relay base power in terminal. Repair or replace as required.</p> <p>If the fault remains, proceed to Step 5.</p> <p>5. Battery charging circuit-Check the battery charge circuit (see engine service manual for alternator diagnosis and repair).Repair/replace as necessary.</p>
<b>Expected Values:</b>	12V
<b>Related Fault Codes:</b>	NA

## 4.14 Isolator

<b>Component:</b>	Isolator
<b>Function:</b>	<ul style="list-style-type: none"> <li>Isolator is a single pole isolator for the negative to the battery.</li> </ul>

	<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>
<p><b>Location:</b></p>	<p>On Turntable near LHS Canopy</p>
<p><b>Location IMG:</b></p>	 <p><b>A</b> Battery isolator</p>
<p><b>Signal:</b></p>	

<p><b>Wires &amp; Connectors</b> <b>IMG:</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> <b>IMG:</b></p>	<p><b>T65D</b> <b>T65D Tier3</b></p>



### Testing:

When testing the isolator be aware of the battery isolation relay. The isolation relay will bypass the isolator for around 18 seconds when the engine is switched off.

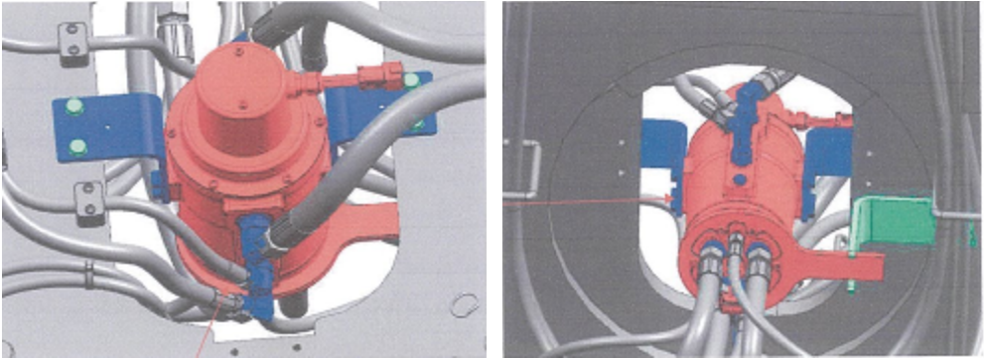
Check continuity between terminal

When the switch is open there should be no continuity.

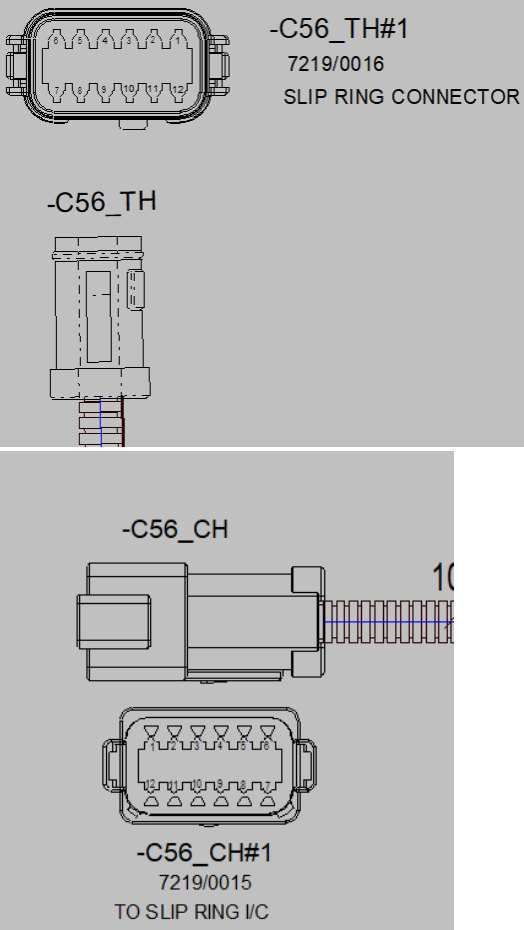
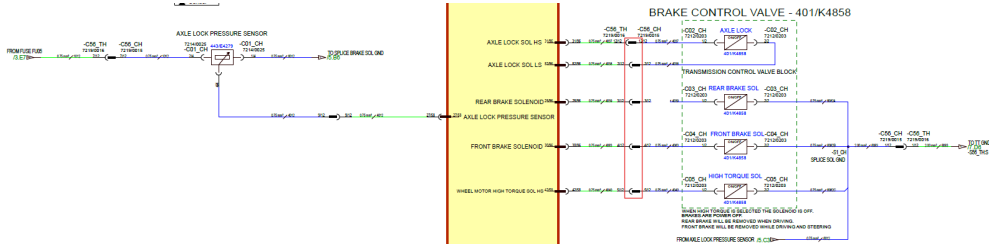
When the switch is closed there should be a continuity across the switch

	<b>NOTE : Battery Isolation is not applicable for T65D-T3 machine. Isolator can't bypassed. Once isolator is open, ground should be instantly cut-off.</b>
<b>Expected Values:</b>	0 volt, when Isolator in Open Condition with respect to +ve 12V volt, when Isolator in Close Condition with respect to +ve
<b>Related Fault Codes:</b>	NA


## 4.15 Slip Ring

<b>Component:</b>	Slip Ring																																														
<b>Function:</b>	The slip ring allows the hydraulics and electrics to pass through the centre joint to allow continuous rotation of the slew joint																																														
<b>Location:</b>	On Center of Turntable under neath of Main Boom																																														
<b>Location IMG:</b>																																															
<b>Signal:</b>	<p><b>Slip Ring Top Side</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>C56-TH</td> <td>6</td> </tr> <tr> <td>2</td> <td>Axle lock sol Lowside</td> <td>C56-TH</td> <td>4</td> </tr> <tr> <td>3</td> <td>Rear Brake +ve from ECU</td> <td>C56-TH</td> <td>4</td> </tr> <tr> <td>4</td> <td>Front Brake +ve from ECU</td> <td>C56-TH</td> <td>4</td> </tr> <tr> <td>5</td> <td>High Torque -ve from ECU</td> <td>C56-TH</td> <td>4</td> </tr> <tr> <td>6</td> <td>NOT USED</td> <td>C56-TH</td> <td>NOT</td> </tr> <tr> <td>7</td> <td>12V to pressure sensor</td> <td>C56-TH</td> <td>1</td> </tr> <tr> <td>8</td> <td>NOT USED</td> <td>C56-TH</td> <td>NOT</td> </tr> <tr> <td>9</td> <td>Pressure sensor signal</td> <td>C56-TH</td> <td>4</td> </tr> <tr> <td>10</td> <td>NOT USED</td> <td>C56-TH</td> <td>NOT</td> </tr> </tbody> </table>			Pin	Description	Connector Number	Wire	1	GND	C56-TH	6	2	Axle lock sol Lowside	C56-TH	4	3	Rear Brake +ve from ECU	C56-TH	4	4	Front Brake +ve from ECU	C56-TH	4	5	High Torque -ve from ECU	C56-TH	4	6	NOT USED	C56-TH	NOT	7	12V to pressure sensor	C56-TH	1	8	NOT USED	C56-TH	NOT	9	Pressure sensor signal	C56-TH	4	10	NOT USED	C56-TH	NOT
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5	High Torque -ve from ECU	C56-TH	4																																												
6	NOT USED	C56-TH	NOT																																												
7	12V to pressure sensor	C56-TH	1																																												
8	NOT USED	C56-TH	NOT																																												
9	Pressure sensor signal	C56-TH	4																																												
10	NOT USED	C56-TH	NOT																																												

Pin	Description	Connector Number	Wire
11	NOT USED	C56-TH	NOT
12	Axle lock +ve feed from ECU	C56-TH	4
<b>Slip Ring Bottom Side</b>			
Pin	Description	Connector Number	Wire
1	GND	C56_CH	6
2	Axle lock sol Lowside	C56_CH	4
3	Rear Brake +ve from ECU	C56_CH	4
4	Front Brake +Ve from ECU	C56_CH	4
5	High Torque _ve from ECU	C56_CH	4
6	NOT USED	C56_CH	NOT
7	12V to pressure sensor	C56_CH	1
8	NOT USED	C56_CH	NOT
9	Pressure sensor signal	C56_CH	4
10	NOT USED	C56_CH	NOT
11	NOT USED	C56_CH	NOT
12	Axle lock +ve feed from ECU	C56_CH	4

<p><b>Wires &amp; Connectors IMG:</b></p>	 <p>-C56_TH#1 7219/0016 SLIP RING CONNECTOR</p> <p>-C56_TH</p> <p>-C56_CH</p> <p>-C56_CH#1 7219/0015 TO SLIP RING I/C</p>
<p><b>Internal Electrical Schematic IMG:</b></p>	 <p>BRAKE CONTROL VALVE - 401/K4858</p> <p>AXLE LOCK SOL HS 18 AXLE LOCK SOL LS 18 REAR BRAKE SOLENOID 18 FRONT BRAKE SOLENOID 18 WHEEL MOTOR HIGH TORQUE SOL HS 18</p> <p>AXLE LOCK PRESSURE SENSOR 18 REAR BRAKE PRESSURE SENSOR 18 FRONT BRAKE PRESSURE SENSOR 18</p> <p>AXLE LOCK 18 TRANSMISSION CONTROL VALVE BLOCK 18 REAR BRAKE SOL 18 FRONT BRAKE SOL 18 HIGH TORQUE SOL 18</p> <p>SLIDE SOL 18</p> <p>FROM AXLE LOCK PRESSURE SENSOR 18</p>
<p><b>Testing:</b></p>	<p>Check Continuity in High Voltage line and Low Voltage Line</p>
<p><b>Expected Values:</b></p>	<p>See Signal</p>
<p><b>Related Fault Codes:</b></p>	<p>NA</p>

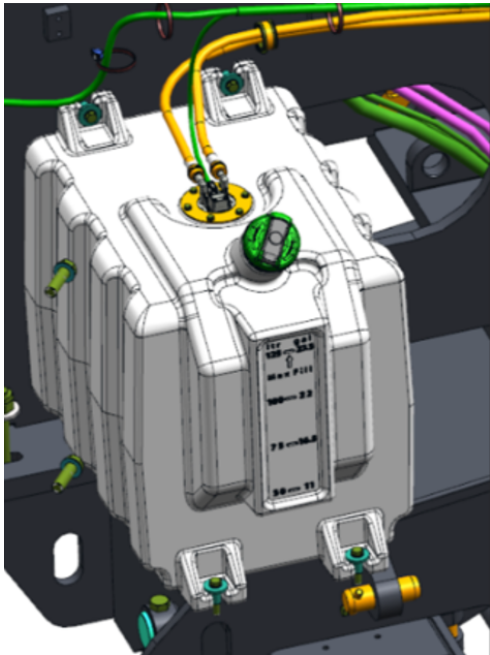
## 4.16 Horn

<b>Component:</b>	<b>Horn</b>														
<b>Function:</b>	<p>The horn is used as an audible warning from the operator</p> <p>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.</p> <p>The horn input buttons are fed from a 10V feed on the Bosch ECU (Pin 32/58).</p> <p>Once the button is pressed the 10V will pass through to the Horn input pin on the ECU (Pin 52/58)</p> <p>The platform ECU will communicate to the base ECU over CAN communication.</p> <p>The output for the Horn is from the base ECU, (Pin 44/58)</p> <p>When an input signal is received the horn output (Pin 44/58) will output 12V's and then enable the Horn relay.</p> <p>As the relay pulls in the horn will sound.</p>														
<b>Location:</b>	On Turntable														
<b>Location IMG:</b>															
<b>Signal:</b>	<table border="1"> <thead> <tr> <th style="background-color: #FFD700;">Pin</th> <th style="background-color: #FFD700;">Description</th> <th style="background-color: #FFD700;">Connector Number</th> <th style="background-color: #FFD700;">Wire Number</th> <th style="background-color: #FFD700;">Voltage when Active</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C17 TH</td> <td>0077</td> <td>12V</td> </tr> </tbody> </table>					Pin	Description	Connector Number	Wire Number	Voltage when Active	1	12V input	C17 TH	0077	12V
Pin	Description	Connector Number	Wire Number	Voltage when Active											
1	12V input	C17 TH	0077	12V											

	Pin	Description	Connector Number	Wire Number	Voltage when Active						
	2	GND	C17_TH	6077	0V						
<b>Wires &amp; Connectors IMG:</b>											
<b>Internal Electrical Schematic IMG:</b>											
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Press horn button from base</li> <li>2. Check display outputs to ensure output is being turned on.</li> <li>3. Check voltage at Horn relay if horn relay is working</li> <li>4. Check input to contact side of relay pin 5 has voltage, if not check the fuse</li> <li>5. Check voltage getting to the horn</li> </ol>										
<b>Expected Values:</b>	Horn output signal - 12V										
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1181-16</a> 502</td> <td>Horn - Horn High Side Short Circuit to Low.</td> </tr> <tr> <td><a href="#">B1182-13</a> 503</td> <td>Horn - Horn High Side Open Circuit.</td> </tr> </tbody> </table>					Fault Code	Description	<a href="#">B1181-16</a> 502	Horn - Horn High Side Short Circuit to Low.	<a href="#">B1182-13</a> 503	Horn - Horn High Side Open Circuit.
Fault Code	Description										
<a href="#">B1181-16</a> 502	Horn - Horn High Side Short Circuit to Low.										
<a href="#">B1182-13</a> 503	Horn - Horn High Side Open Circuit.										

### 4.17 Fuel Sensor

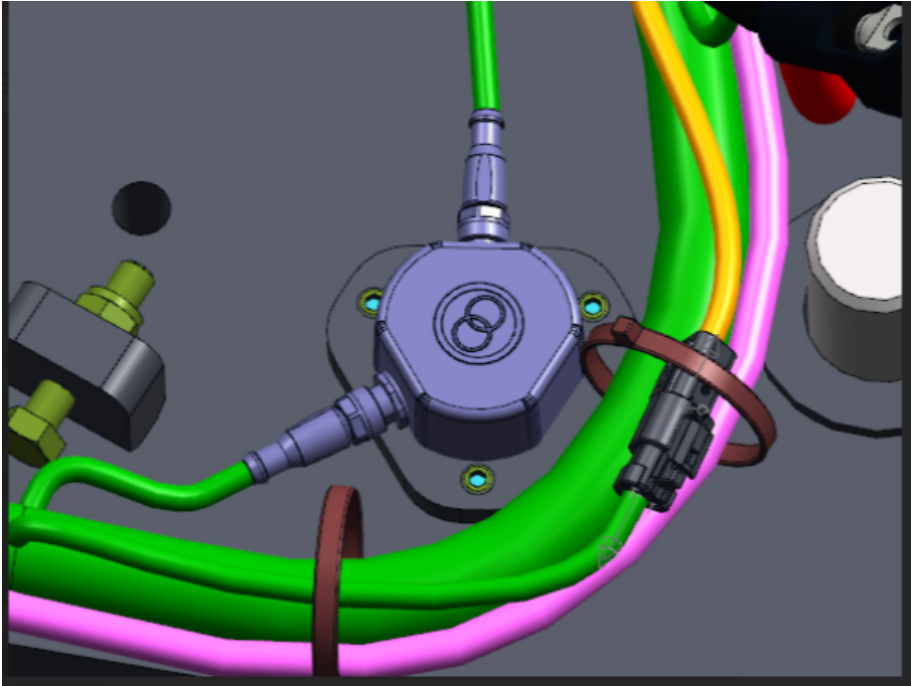
<b>Component</b>	Fuel Sensor
------------------	-------------

<b>t:</b>																		
<b>Function:</b>	<p>The fuel sensor senses the fuel in the tank and warns operator when the fuel level is low.          Fuel level sender input shall be 0V (GND) with pull-up and variable resistance. Connected to the base ECU clean ground.          There should be an out-of-range error for following conditions &gt;175? or &lt;10?</p>																	
<b>Location:</b>	Fuel sensor is connected inside the fuel tank																	
<b>Location IMG:</b>																		
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C28_TH</td> <td>4033</td> <td rowspan="2">Resistance to GND based on the level of fuel</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C28_TH</td> <td>6033</td> </tr> </tbody> </table>				Pin	Description	Connector Number	Wire Number	Signal	1	12V input	C28_TH	4033	Resistance to GND based on the level of fuel	2	GND	C28_TH	6033
Pin	Description	Connector Number	Wire Number	Signal														
1	12V input	C28_TH	4033	Resistance to GND based on the level of fuel														
2	GND	C28_TH	6033															

<p><b>Wires &amp; Connectors IMG:</b></p>	<p>Diagram illustrating the fuel gauge system components and their connections:</p> <ul style="list-style-type: none"> <li><b>DISPLAY</b>: Shows fuel level indicators (75%, 50%, 25%) and a fuel gauge icon.</li> <li><b>PLATFORM ECU</b>: Receives data from the Base ECU.</li> <li><b>BASE ECU</b>: Receives data from the fuel gauge (part 121-21/96) and is connected to the engine.</li> <li><b>FUEL GAUGE</b>: Labeled <b>-C28_TH#1</b> and <b>7212/0052</b>. It has two terminals labeled <b>2</b> and <b>1</b>.</li> <li><b>FUEL LEVEL SENDER</b>: Labeled <b>-C28_TH</b> and <b>7243/0137</b>. It has a terminal labeled <b>NC08</b>.</li> </ul>
<p><b>Internal Electrical Schematic IMG:</b></p>	<p>Internal electrical schematic showing the fuel level sender connection:</p> <ul style="list-style-type: none"> <li><b>Sender</b>: Labeled <b>-C28_TH FUEL LEVEL SENDER -C28_TH</b> and <b>7212/0052</b>. It has terminals <b>22</b> and <b>10</b>.</li> <li><b>FUEL SENSOR</b>: Labeled <b>2106</b> and <b>2106 FUEL SENSOR</b>.</li> <li><b>WHITE NOISE HS</b>: Labeled <b>5655</b>.</li> <li><b>TURNABLE GND02</b>: Labeled <b>/8.DIGTO S56_TH - TURNABLE GND02</b>.</li> <li><b>GROUND</b>: Labeled <b>-L02_TH</b> and <b>4304/0007</b>.</li> </ul>
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Turn the ignition ON.</li> <li>3. Keep the Fuel level between 25% to 10%</li> <li>4. verify the Fuel sensor led on display</li> </ol>

<b>Expected Values:</b>	Fuel sensor Led :- On Fuel sensor Voltage :- 3.3V	
<b>Related Fault Codes:</b>	<b>Fault Code</b>	
	<a href="#">B1232-17</a> <small>530</small>	Fuel Sender - Fuel Sender out of Range (High).
	<a href="#">B1233-16</a> <small>531</small>	Fuel Sender - Fuel Sender out of Range (Low).
	<a href="#">B1287-2F</a> <small>571</small>	Fuel Sender - Fuel Sender Data Erratic.

## 4.18 Tilt Sensor

<b>Component:</b>	Tilt Sensor
<b>Function:</b>	<p>The tilt sensor measures the chassis angle and reports to the base ECU. Tilt Sensor check the levelness of the chassis. This ensures the stability of the machine.</p> <p>Maximum Tilt angle for the machine is +/- 5 degree in the X and Y axis's when in raised condition.</p> <p>When machine is in raised state then monitor the tilt angle, if Tilt angle value is greater than 5 degrees or less than -5 degrees for any X or Y axis respectively for &gt;= 1.5Sec then refer Table below for machine reaction.</p>
<b>Location:</b>	Turntable, Near slew Motor
<b>Location IMG:</b>	

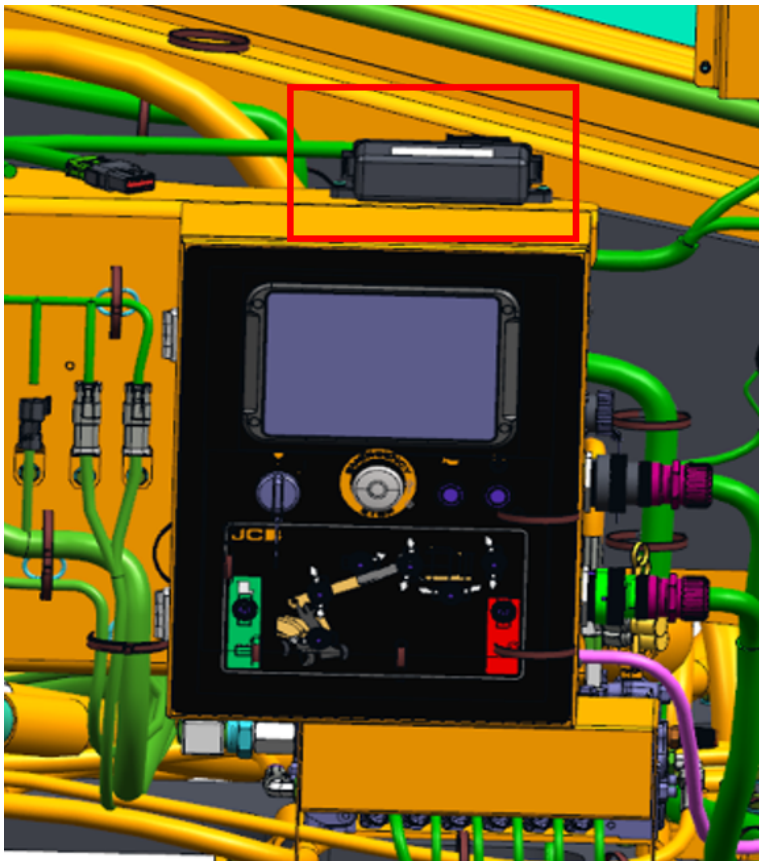
<b>Signal:</b>	<b>Channel 1</b>						
	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Sign</b>		
	1	Shield	C29_TH	Brown			
	2	12V feed	C29_TH	White			
	3	GND	C29_TH	Blue			
	4	CAN H	C29_TH	Black			CAN
	5	CAN L	C29_TH	Grey			CAN
	<b>Channel 2</b>						
	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Sign</b>		
	1	Shield	C31_TH	Brown			
	2	12V feed	C31_TH	White			
	3	GND	C31_TH	Blue			
4	CAN H	C31_TH	Black			CAN	
5	CAN L	C31_TH	Grey			CAN	
<b>Tilt Active in Raised</b>							
<b>Component</b>	<b>Function</b>	<b>X+ or X-</b>	<b>Y+</b>	<b>Y-</b>	<b>X(+ or -) &amp; Y+</b>	<b>X(+ or -) &amp; Y-</b>	
<b>Tele Boom</b>	Extended	Blocked	Blocked	Blocked	Blocked	Blocked	
	Retract	Allow	Block retract until boom angle less than 20 degree	Allow	Block retract until boom angle less than 20 degree	Allow	
<b>Main Boom</b>	Raised	Block raise until boom angle = Main Boom Stowed Angle	Block raise until boom angle = Main Boom Stowed Angle	Block raise until boom angle = Main Boom Stowed Angle	Block raise until boom angle = Main Boom Stowed Angle	Block raise until boom angle = Main Boom Stowed Angle	
	Lower	Allow	Allow	Block Lower until Tele boom length = Telescope Stowed Length	Allow	Block Lower until Tele boom length = Telescope Stowed Length	

<b>Slew</b>	Right	Blocked	Blocked	Blocked	Blocked	Blocked
	Left	Blocked	Blocked	Blocked	Blocked	Blocked
<b>Drive</b>	Forward	Blocked	Blocked	Blocked	Blocked	Blocked
	Reverses	Blocked	Blocked	Blocked	Blocked	Blocked
<b>Steer</b>	Right	Allow	Allow	Allow	Allow	Allow
	Left	Allow	Allow	Allow	Allow	Allow
<b>Jib</b>	Up	Allow	Allow	Allow	Allow	Allow
	Down	Allow	Allow	Allow	Allow	Allow
<b>Platform Rotate</b>	Right	Allow	Allow	Allow	Allow	Allow
	Left	Allow	Allow	Allow	Allow	Allow
<b>Platform Level</b>	Up	Allow	Allow	Allow	Allow	Allow
	Down	Allow	Allow	Allow	Allow	Allow

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Read the value inputted into the display inputs page.</p> <p>There will be 2 channels.</p> <p>Ensure that calibration has been carried out correctly.</p> <p>The tilt sensor should put an icon on in display from screen when over 5 degrees.</p> <p>In raised mode it will block functions as well as icon and only allow lower or retract functions</p>
<p><b>Expected Values:</b></p>	

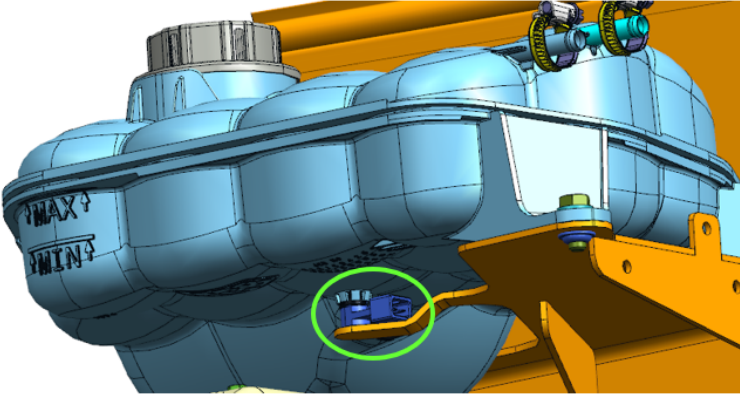
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1376-87</a> <small>622</small>	TILT ANGLE SENSOR Communication fault
	<a href="#">B1377-2F</a> <small>623</small>	TILT ANGLE SENSOR Channel plausibility fault
	<a href="#">B1378-17</a> <small>624</small>	TILT ANGLE SENSOR Range fault

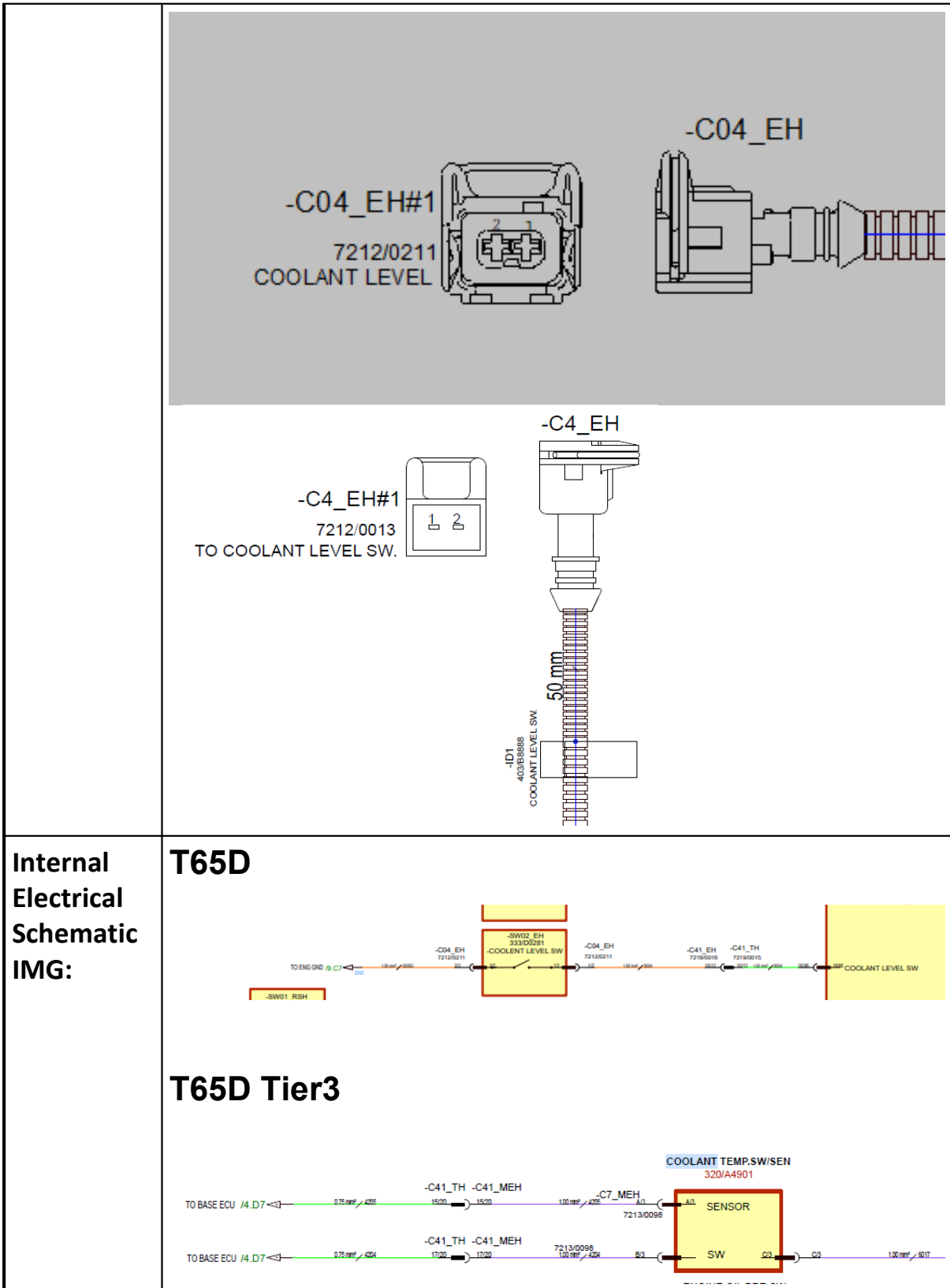
## 4.19 Livelink

<b>Component:</b>	Livelink														
<b>Function:</b>	Livelink functions by providing real-time data and insights for fleet management, optimizing usage, and enhancing safety through features like location tracking, battery health monitoring, and predictive maintenance.														
<b>Location:</b>	Above turntable control panel														
<b>Location IMG:</b>															
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>C3</td> <td>CAN Shield</td> <td>C35_TH</td> <td></td> </tr> <tr> <td>D4</td> <td>CAN H</td> <td>C35_TH</td> <td></td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	C3	CAN Shield	C35_TH		D4	CAN H	C35_TH			
Pin	Description	Connector Number	Wire Number												
C3	CAN Shield	C35_TH													
D4	CAN H	C35_TH													

	Pin	Description	Connector Number	Wire Number
	E2	Engine Run Signal	C35_TH	1036B
	E4	CAN L	C35_TH	
	J1	Anti Tamper Link	C35_TH	4067
	K1	Anti Tamper Link	C35_TH	4067
	L2	Chassis GND	C35_TH	6003
	L3	Battery GND	C35_TH	6011B
	M2	Ignition Signal	C35_TH	1904B
	M3	Battery GND	C35_TH	6011A
	M4	Battery +VE	C35_TH	3033A
<b>Wires &amp; Connectors IMG:</b>				
<b>Internal Electrical Schematic IMG:</b>				
<b>Testing:</b>	Check 12 Volt on pin no. E2/48, M2/48, M4/48			
<b>Expected Values:</b>	See Signal			
<b>Related Fault Codes:</b>	N/A			

## 4.20 Coolant Level Sensor

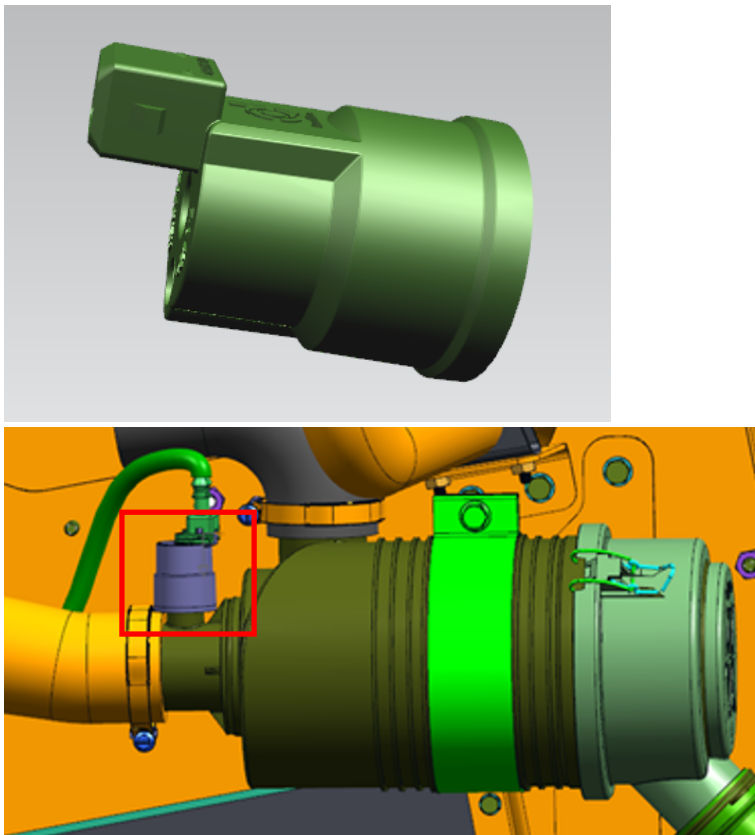
<b>Component:</b>	<b>Coolant Level Sensor</b>																																		
<b>Function:</b>	The Coolant level Sensor is used to monitor the coolant level and warn operator when the level is lower than threshold.																																		
<b>Location:</b>	Coolant level sensor is connected inside the coolant tank.																																		
<b>Location IMG:</b>																																			
<b>Signal:</b>	<p>T65D</p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switch output to ECU</td> <td>C04_TH</td> <td>8004</td> <td>Switched GND</td> </tr> <tr> <td>2</td> <td>GND Feed input</td> <td>C04_TH</td> <td>6000G</td> <td>GND</td> </tr> </tbody> </table> <p>T65D T3</p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switch output to ECU</td> <td>C4_MEH</td> <td>8004</td> <td>Switched GND</td> </tr> <tr> <td>2</td> <td>GND Feed input</td> <td>C4_NEH</td> <td>6013</td> <td>GND</td> </tr> </tbody> </table>					Pin	Description	Connector Number	Wire Number	Signal	1	Switch output to ECU	C04_TH	8004	Switched GND	2	GND Feed input	C04_TH	6000G	GND	Pin	Description	Connector Number	Wire Number	Signal	1	Switch output to ECU	C4_MEH	8004	Switched GND	2	GND Feed input	C4_NEH	6013	GND
Pin	Description	Connector Number	Wire Number	Signal																															
1	Switch output to ECU	C04_TH	8004	Switched GND																															
2	GND Feed input	C04_TH	6000G	GND																															
Pin	Description	Connector Number	Wire Number	Signal																															
1	Switch output to ECU	C4_MEH	8004	Switched GND																															
2	GND Feed input	C4_NEH	6013	GND																															
<b>Wires &amp; Connectors IMG:</b>	<p>T65D T65D T3</p>																																		

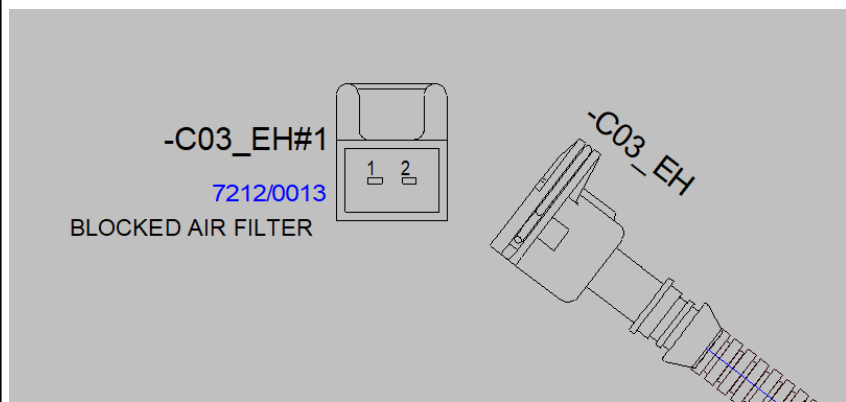


<b>Testing:</b>	1. Turn the Ignition ON 2. Verify the Coolant Level pin voltage.						
<b>Expected Values:</b>	tank is >25% the switch is closed and the wire going to ECU should be 0V tank <25% the switch will be open circuit - there will be 3.3V on the wire from the ecu						
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1421-2F</a> <small>670</small></td> <td>Low Coolant Level warning</td> </tr> <tr> <td><a href="#">B1232-17</a> <small>530</small></td> <td>FUEL SENDER OOR High OR DIRTY AIR FILTER SC to HIGH OR COOLANT LEVEL SWITCH SC to HIGH</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1421-2F</a> <small>670</small>	Low Coolant Level warning	<a href="#">B1232-17</a> <small>530</small>	FUEL SENDER OOR High OR DIRTY AIR FILTER SC to HIGH OR COOLANT LEVEL SWITCH SC to HIGH
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<a href="#">B1421-2F</a> <small>670</small>	Low Coolant Level warning						
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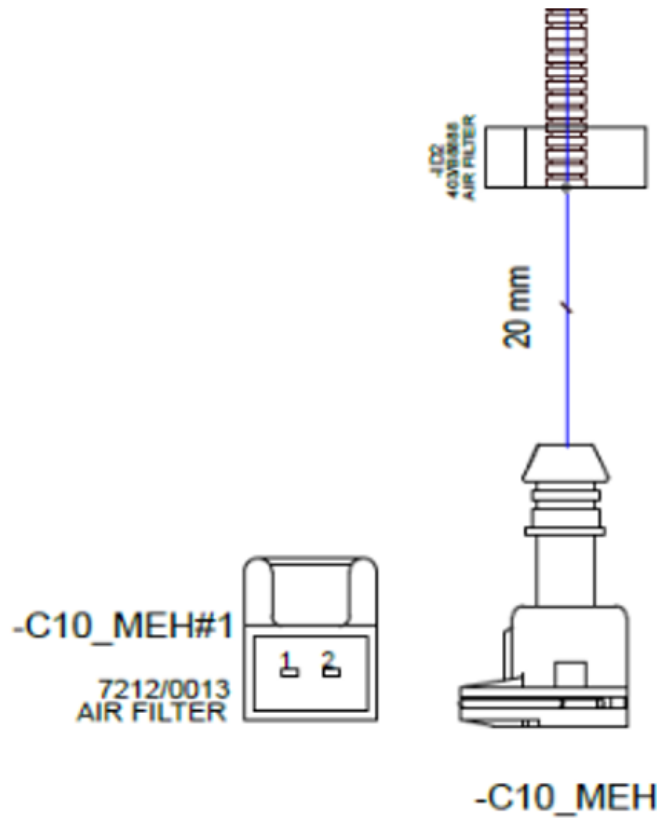
## 4.21 Air Filter Switch

<b>Component:</b>	Air Filter Switch
<b>Function:</b>	The switch is to indicate that the air filter is dirty or blocked
<b>Location:</b>	On Air Filter body

<p><b>Location IMG:</b></p>																															
<p><b>Signal:</b></p>	<p><b>T65D</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switch output to ECU</td> <td>C03_TH</td> <td>8005</td> <td>Switched GND</td> </tr> <tr> <td>2</td> <td>GND Feed input</td> <td>C03_TH</td> <td>6000E</td> <td>GND</td> </tr> </tbody> </table> <p><b>T65D T3</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switch output to ECU</td> <td>C10_MEH</td> <td>8005</td> <td>Switched GND</td> </tr> <tr> <td>2</td> <td>GND Feed input</td> <td>C10_NEH</td> <td>6020</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Signal	1	Switch output to ECU	C03_TH	8005	Switched GND	2	GND Feed input	C03_TH	6000E	GND	Pin	Description	Connector Number	Wire Number	Signal	1	Switch output to ECU	C10_MEH	8005	Switched GND	2	GND Feed input	C10_NEH	6020	GND
Pin	Description	Connector Number	Wire Number	Signal																											
1	Switch output to ECU	C03_TH	8005	Switched GND																											
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1	Switch output to ECU	C10_MEH	8005	Switched GND																											
2	GND Feed input	C10_NEH	6020	GND																											
<p><b>Wires &amp; Connectors IMG:</b></p>	<p><b>T65D</b></p>																														

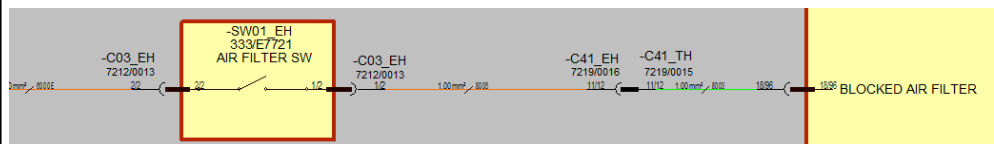


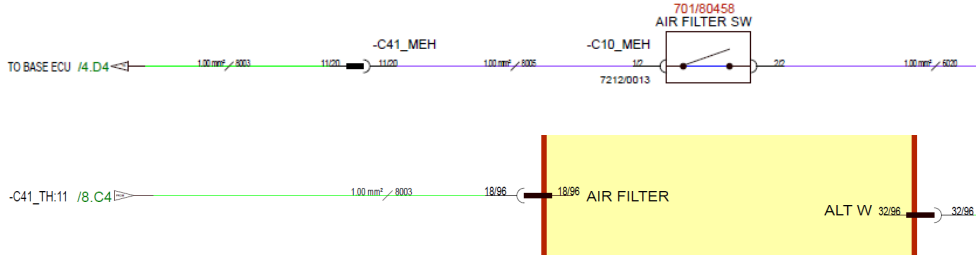
**T65D Tier3**



**Internal  
Electrical  
Schematic  
IMG:**

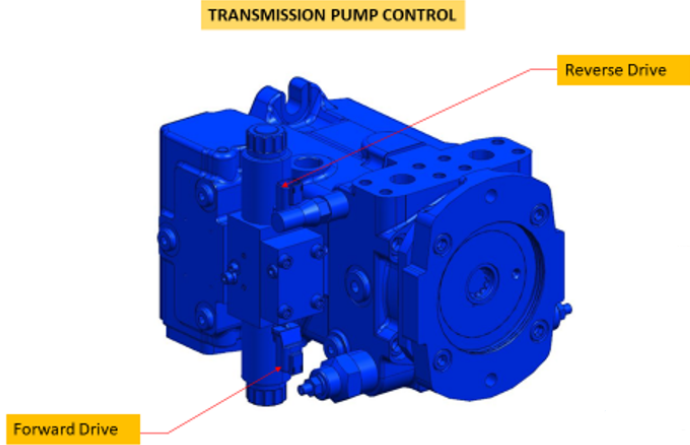
**T65D**



	<p><b>T65D Tier3</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. Turn on the ignition switch the ignition</li> <li>2. Check the filter and ensure if its blocked or not</li> <li>3. if the filter is not blocked but still have this icon there may be wiring issue or broken switch</li> <li>4. Remove air filter restriction indicator switch</li> <li>5. Turn on the ignition switch</li> <li>6. Check continuity on pin 1connector C08 to ground,this will be Open circuit</li> <li>7. If air is blocked the switch will be closed circuit &amp; pin 2 be ground</li> </ol> <p>Note-When the air filter is blocked the air filter vacuum switch will close</p>
<p><b>Expected Values:</b></p>	<p>N/A</p>
<p><b>Related Fault Codes:</b></p>	<p>N/A</p>

**4.22 Transmission Pump Control Valve**

<p><b>Component:</b></p>	<p>Transmission Pump Control Valve</p>
<p><b>Function:</b></p>	<p>The transmission pump controls the flow and direction to the wheels.</p>

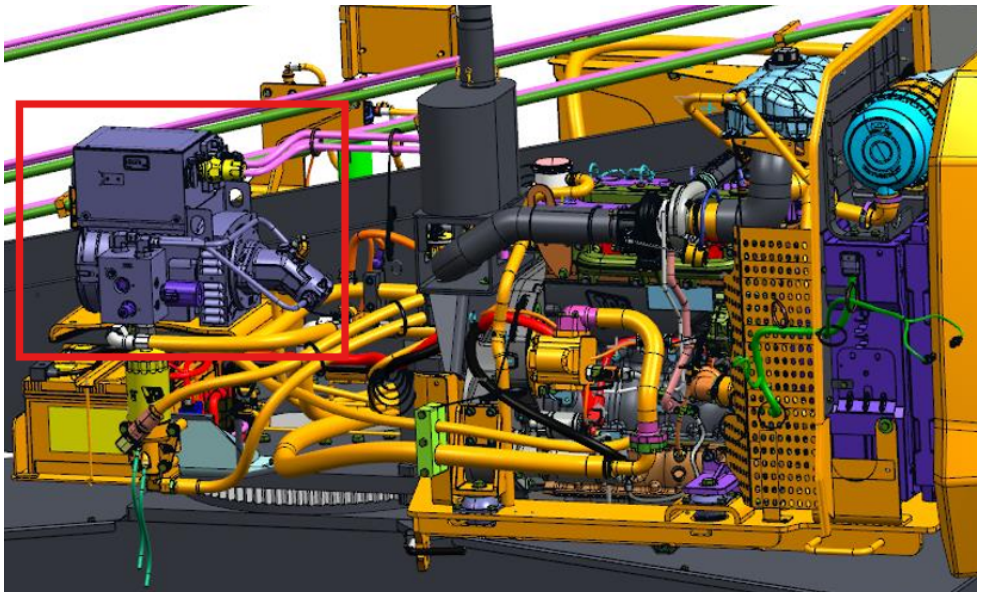
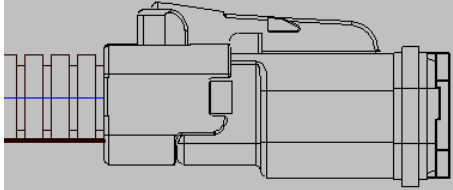
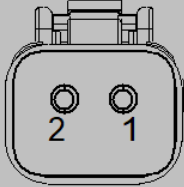
<b>Location:</b>	On Turntable Coupled with Engine																														
<b>Location IMG:</b>																															
<b>Signal:</b>	<p><b>Forward Solenoid</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Forward input from ECU</td> <td>C18_TH</td> <td>4064</td> <td>12V</td> </tr> <tr> <td>2</td> <td>Shared GND to ECU</td> <td>C18_TH</td> <td>6064/6066</td> <td>GND</td> </tr> </tbody> </table> <p><b>Reverse Solenoid</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Reverse input from ECU</td> <td>C19_TH</td> <td>4065</td> <td>12V</td> </tr> <tr> <td>2</td> <td>Shared GND to ECU</td> <td>C19_TH</td> <td>6065/6066</td> <td>GND</td> </tr> </tbody> </table> <p>Solenoid resistance 6.60ohms</p>	Pin	Description	Connector Number	Wire Number	Signal	1	Forward input from ECU	C18_TH	4064	12V	2	Shared GND to ECU	C18_TH	6064/6066	GND	Pin	Description	Connector Number	Wire Number	Signal	1	Reverse input from ECU	C19_TH	4065	12V	2	Shared GND to ECU	C19_TH	6065/6066	GND
Pin	Description	Connector Number	Wire Number	Signal																											
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<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</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. Using a solenoid pen, check to see if the solenoid is powered when the function is in use.</li> <li>2. If the solenoid pen shows no power, disconnect the harness from the solenoid.</li> <li>3. Check the resistance across the solenoid. The reading should as per specification as mentioned in below table</li> </ol>

	<p>4. If readings are incorrect, replace the solenoid. If correct disconnect the harness at the ECU and check harness continuity, repair/replace if necessary</p> <p>5. If the harness continuity is OK, replace the solenoid.</p>																
<b>Expected Values:</b>																	
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1030-17</a> <small>417</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to High</td> </tr> <tr> <td><a href="#">B1031-16</a> <small>418</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1032-13</a> <small>419</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve High Side Open Circuit</td> </tr> <tr> <td><a href="#">B1033-17</a> <small>420</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to High</td> </tr> <tr> <td><a href="#">B1034-16</a> <small>420</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1035-13</a> <small>421</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve Low Side Open Circuit</td> </tr> <tr> <td><a href="#">B1331-13</a> <small>592</small></td> <td>FORWARD OR REVERSE Proportional Solenoid Valve Fault</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1030-17</a> <small>417</small>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to High	<a href="#">B1031-16</a> <small>418</small>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to Low	<a href="#">B1032-13</a> <small>419</small>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Open Circuit	<a href="#">B1033-17</a> <small>420</small>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to High	<a href="#">B1034-16</a> <small>420</small>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to Low	<a href="#">B1035-13</a> <small>421</small>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Open Circuit	<a href="#">B1331-13</a> <small>592</small>	FORWARD OR REVERSE Proportional Solenoid Valve Fault
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<a href="#">B1331-13</a> <small>592</small>	FORWARD OR REVERSE Proportional Solenoid Valve Fault																

## 4.23 Hydraulic Generator

<b>Component:</b>	Hydraulic Generator
<b>Function:</b>	The hydraulic generator is to provide a 3 phase 208V system to the platform also a 110V single phase connector to the platform
<b>Location:</b>	The generator is mounted in the engine pod box above the batteries

<p><b>Location IMG:</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> </tr> </thead> <tbody> <tr> <td>1</td> <td>12 V input from ECU</td> <td>C25-TH</td> <td>4041</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C25-TH</td> <td>6041</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	1	12 V input from ECU	C25-TH	4041	2	GND	C25-TH	6041
Pin	Description	Connector Number	Wire Number										
1	12 V input from ECU	C25-TH	4041										
2	GND	C25-TH	6041										
<p><b>Wires &amp; Connectors IMG:</b></p>	<div style="text-align: center;"> <p>-C25_TH</p>   <p>-C25_TH#1 7212/0203 HYDRAULIC GEN CONN</p> </div>												

<p><b>Internal Electrical Schematic IMG:</b></p>	 <p>The diagram shows a control panel with a red circle around a button. Below it is a circuit diagram for 'HYDRAULIC GENERATOR 1' showing a solenoid valve controlled by a switch and connected to a generator output.</p> <p>The system works from a switch at the platform to turn the system on. The base ECU then turns on a hydraulic solenoid which allows the flow to the generator.</p> <p>Once flow is provided to the generator the generator should start to provide an electrical output.</p> <p>The generator has internal GFP and MCB's for circuit protection before the output connectors.</p> <p>There is then 2 extension leads to the platform connectors, 1 for 3phase 208V connector and other for single phase 110V connector</p>												
<p><b>Testing:</b></p>	<p>The generator should be checked for the correct voltage and frequency. This may need to be adjusted. Adjustment is described in the <a href="#">hydraulic generator system section</a> <sup>119</sup></p>												
<p><b>Expected Values:</b></p>	<p>The solenoid should receive 12V when the hydraulic generator is active</p>												
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1215-17</a> <sup>517</sup></td> <td>HYDRAULIC GENERATOR BUTTON SC to High</td> </tr> <tr> <td><a href="#">B1216-16</a> <sup>518</sup></td> <td>HYDRAULIC GENERATOR BUTTON SC to Low</td> </tr> <tr> <td><a href="#">B1217-24</a> <sup>519</sup></td> <td>HYDRAULIC GENERATOR BUTTON Stuck for &gt;= 10 seconds</td> </tr> <tr> <td><a href="#">B1355-16</a> <sup>606</sup></td> <td>HYDRAULIC GENERATOR Valve SC to Low</td> </tr> <tr> <td><a href="#">B1356-13</a> <sup>607</sup></td> <td>HYDRAULIC GENERATOR Valve HS SC to High or OC</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1215-17</a> <sup>517</sup>	HYDRAULIC GENERATOR BUTTON SC to High	<a href="#">B1216-16</a> <sup>518</sup>	HYDRAULIC GENERATOR BUTTON SC to Low	<a href="#">B1217-24</a> <sup>519</sup>	HYDRAULIC GENERATOR BUTTON Stuck for >= 10 seconds	<a href="#">B1355-16</a> <sup>606</sup>	HYDRAULIC GENERATOR Valve SC to Low	<a href="#">B1356-13</a> <sup>607</sup>	HYDRAULIC GENERATOR Valve HS SC to High or OC
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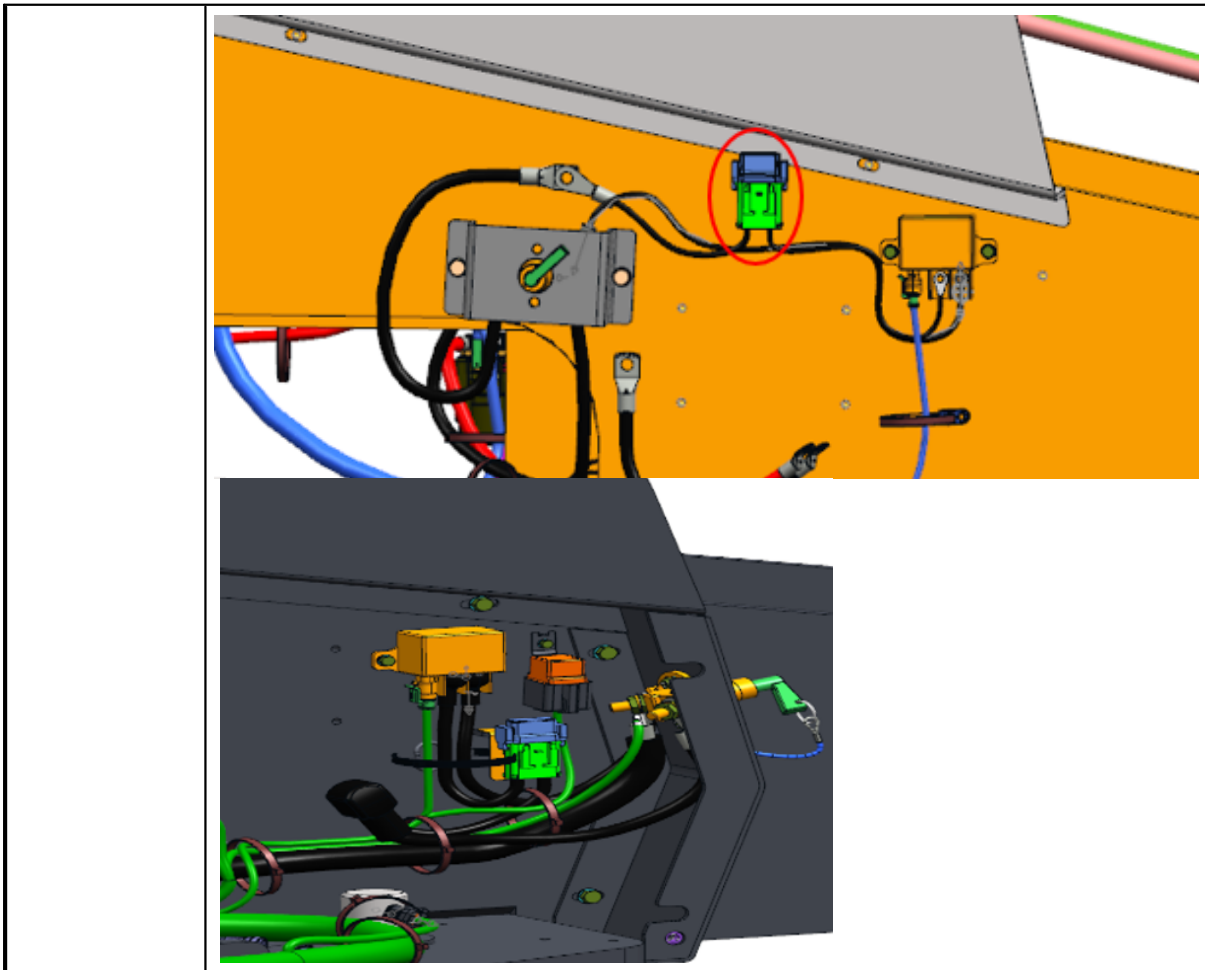
## 4.24 JCB444 Engine T4F

List of [JCB444 Engine T4F](#)

Number	Component
1	<a href="#">Battery Isolation Relay</a>
2	<a href="#">Alternator</a>
3	<a href="#">Engine POD Box</a>

### 4.24.1 Battery Isolation Relay

<b>Component:</b>	Battery Isolation Relay
<b>Function:</b>	The battery isolator relay is to ensure power stays on the machine so the engine controller can shut down correctly.
<b>Location:</b>	On Turntable LHS
<b>Location IMG:</b>	<div style="text-align: center;"> <p>Old Machine</p> <p>New Machine</p> </div>



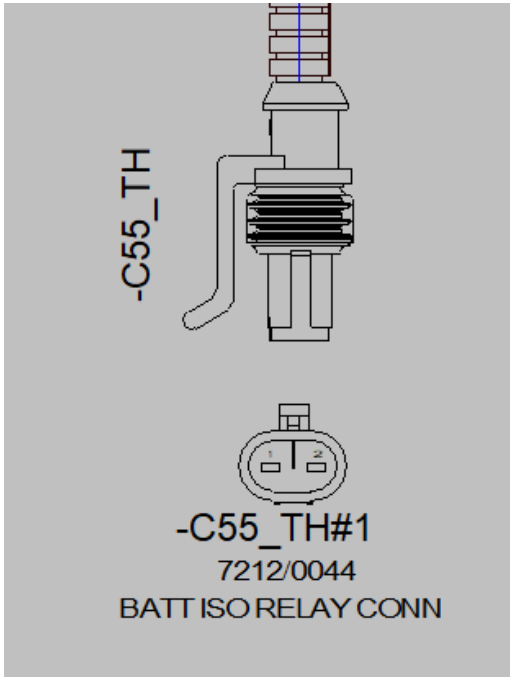
Signal:

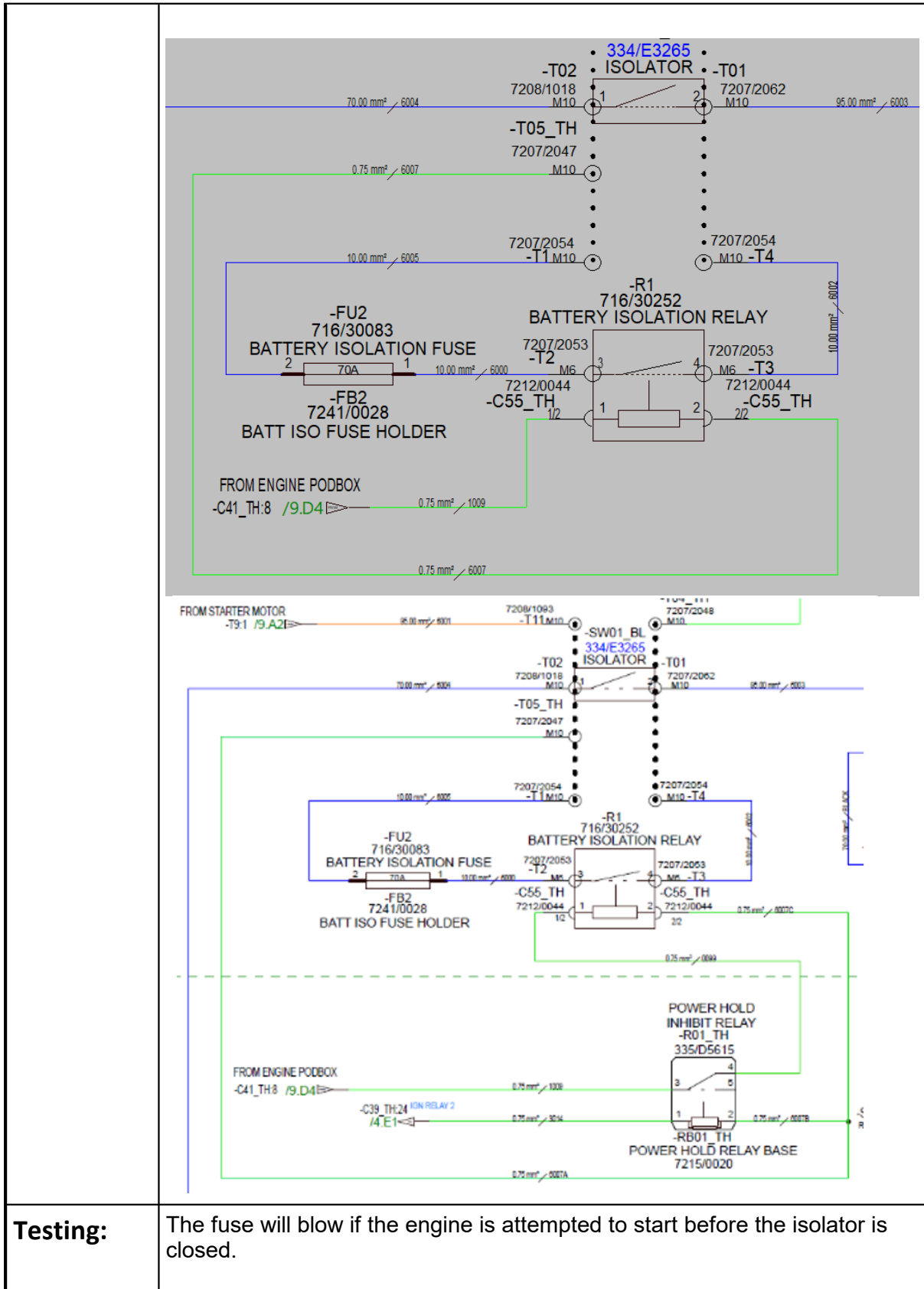
**Old machines**

Pin	Description	Connector Number	Wire Number	Signal
1	From Engine podbox +ve coil feed	C55_TH	1009	12V
2	Chassis side of isolator	C55_TH	6007	GND
3	Chassis side of isolator	T2 Battery Lug	6000	GND
4	Battery side of isolator	T3 Battery Lug	6002	GND

**New Machines >> With power inhibit relay**

Pin	Description	Connector Number	Wire Number	Signal
1	From Engine POD Box +ve Coil Feed	C55_TH	1009, 0099	12V
2	Chassis Side of Isolator	C55_TH	6007A, 6007B, 6007C GND	
3	Chassis Side of Isolator	T2 Battery Lug	6000	GND
4	Battery Side of Isolator	T3 Battery Lug	6002	GND

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	 <p>-C55_TH</p> <p>-C55_TH#1 7212/0044 BATT ISO RELAY CONN</p>
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>	<p><b>Old Machines</b> <b>New Machines</b></p>



**Testing:**

The fuse will blow if the engine is attempted to start before the isolator is closed.

<b>Expected Values:</b>	12 V
<b>Related Fault Codes:</b>	N/A

## 4.24.2 Alternator

<b>Component :</b>	<b>Alternator</b>
<b>Function:</b>	The alternator is a three phase generator having a rotating field winding and static power windings. When the ignition switch is turned on, the current from the battery flows by way of the No Charge warning light to the field winding. This creates a magnetic field which supplements the residual magnetism in the rotor poles. As the engine is started, the fan belt drives the rotor and the alternating current is generated in the power windings as they are cut by the rotating magnetic field. Output is controlled by a solid state regulator which varies the field current in accordance with electrical demand to charge the battery.
<b>Location:</b>	Alternator is connected near to engine

**Location  
IMG:**



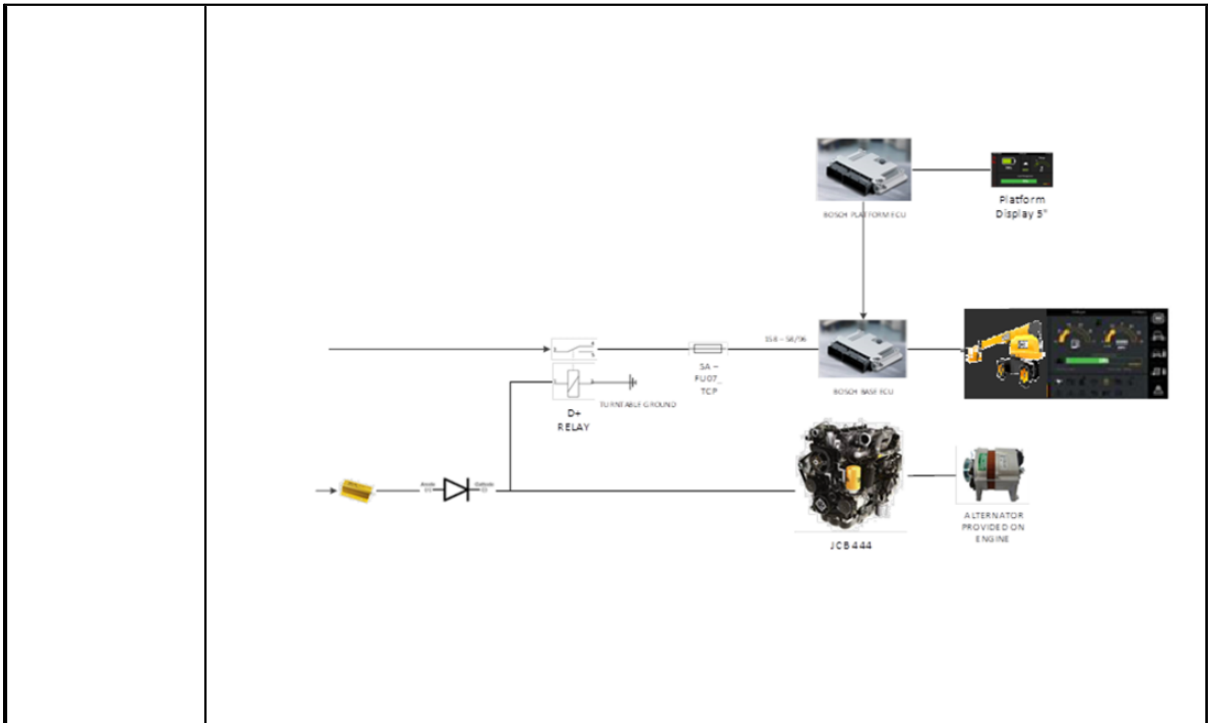
ALTERNATOR



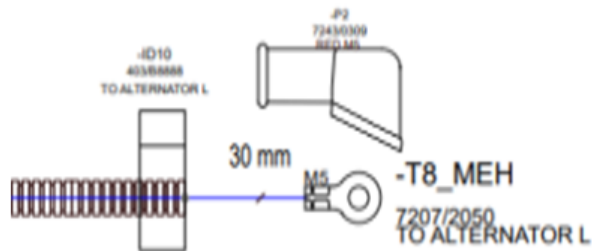
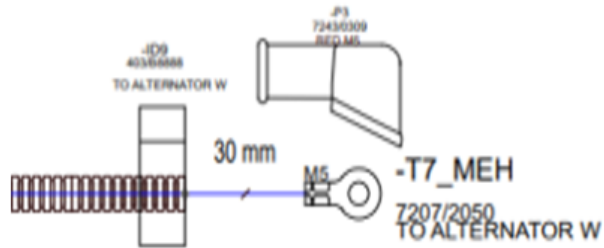
**Signal:**

Digital Input from alternator to base ECU

On = 12V  
OFF = 0V



**Wires & Connectors IMG:**

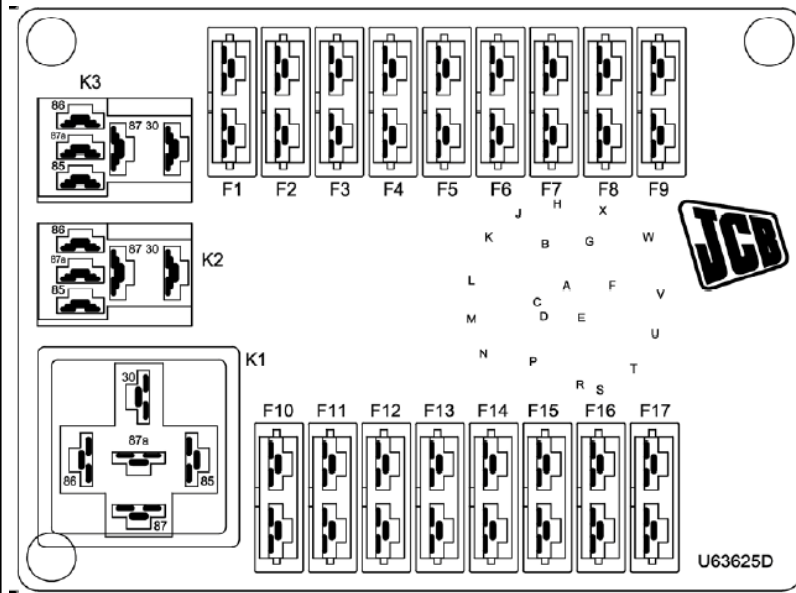
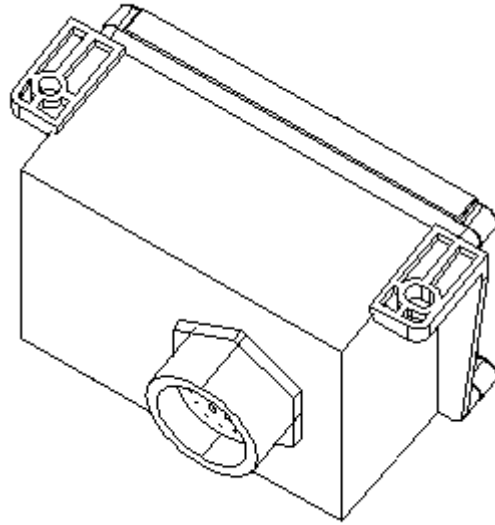


<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Need to Check Output Voltage</p>
<p><b>Expected Values:</b></p>	<p>12 Volt</p>
<p><b>Related Fault Codes:</b></p>	<p>Please refer Engine JCB 444 Helpfile</p>

### 4.24.3 Engine POD Box

<p><b>Component:</b></p>	<p>Engine POD Box</p>
<p><b>Function:</b></p>	<p>This is to contain the fuses and relays for the engine</p>
<p><b>Location:</b></p>	<p></p>

**Location  
IMG:**



**Signal:**

Pin	Description	Connector Number	Wire Number	Signal
B	Start Signal Output	C53_EH	8001	12V
C	power hold output - Battery Isolator Relay	C53_EH	1009	12V
E	12V input	C53_EH	3000B	12V
F	power hold output - Water in fuel sensor	C53_EH	1008	12V
G	12V input	C53_EH	3000A	12V
H	power hold output - Grid Heater Coil	C53_EH	1010	12V

Pin	Description	Connector Number	Wire Number	Signal
L	Fuel Pump Relay output to Fuel Pump	C53_EH	8002	12V
M	Fuel pump relay negative coil - engine controller	C53_EH	4030	GND
N	Start relay negative coil - engine ecu	C53_EH	4029	GND
P	Power hold negative coil - engine ecu	C53_EH	4034	GND
R	power hold output - Alternator resistor	C53_EH	1007	12V
S	power hold output - engine VGT	C53_EH	1006	12V
T	power hold output - engine EGR	C53_EH	1005	12V
U	power hold output - Engine ECU	C53_EH	1004	GND
V	power hold output - Engine ECU	C53_EH	1003	GND
W	power hold output - Engine ECU	C53_EH	1002	GND
X	power hold output - Engine ECU	C53_EH	1001	GND

**Wires & Connectors**

**IMG:**

<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Check Fuses and Voltages as per schematic</p>
<p><b>Expected Values:</b></p>	<p>See the Signal</p>
<p><b>Related Fault Codes:</b></p>	<p>N/A</p>

### 4.25 JCB444 Engine T3

List of JCB444 Engine T3

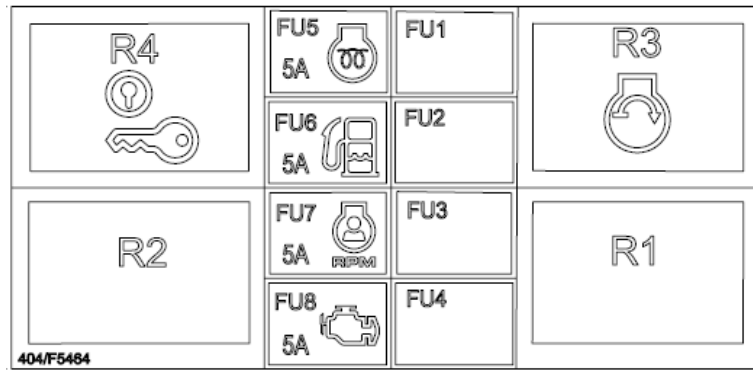
Number	Component
--------	-----------

1	<a href="#">Engine Fuse Relay Holder</a> <small>247</small>
2	<a href="#">Alternator</a> <small>251</small>
3	<a href="#">Throttle Controller</a> <small>255</small>
4	<a href="#">Engine Oil Pressure Switch</a> <small>257</small>
5	<a href="#">Water in Fuel Switch</a> <small>259</small>
6	<a href="#">Coolant Temp Sensor</a> <small>261</small>
7	<a href="#">ESOS</a> <small>263</small>

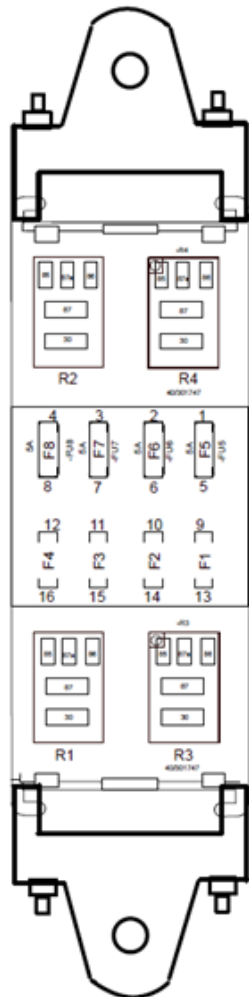
## 4.25.1 Engine Fuse Relay Holder

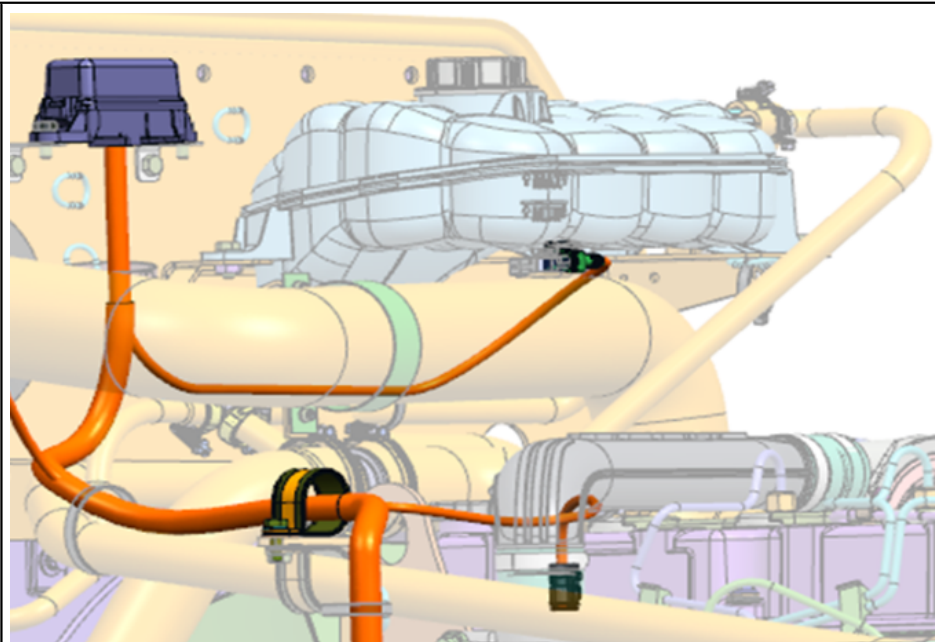
<b>Component:</b>	Engine Fuse Relay Holder
<b>Function:</b>	This is to contain the fuses and relays for the engine.
<b>Location:</b>	Engine relay box is mounted near to the engine radiator side plate top.

**Location  
IMG:**



-FRM1\_EH#1  
7239/0059  
FUSE RELAY HOLDER



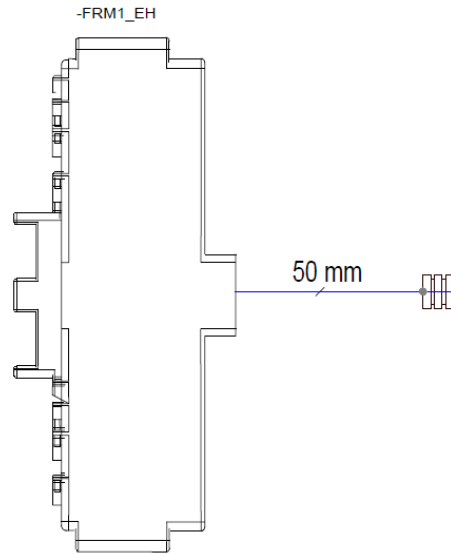
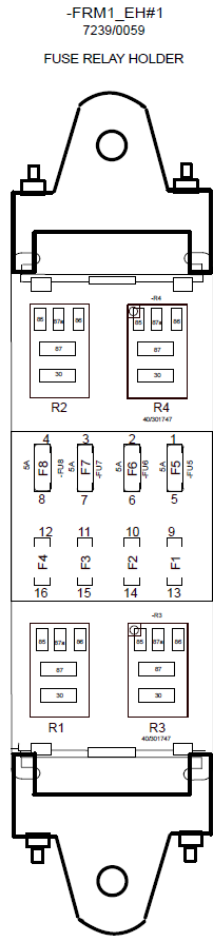


**Signal:**

Pin	Description	Connector Number	Wire Number	Signal
1	ESOS & Cold Start Advance Switch , 12V	FRM1_MEH	1041, 1041A,1041B	Switched IGN
2	WIF Switch, 12V	FRM1_MEH	1043	Switched IGN
3	Throttle Actuator, 12V	FRM1_MEH	1044	Switched IGN
4	Alternator Resistor, 12V	FRM1_MEH	1007	Switched IGN
5	IGN 12VDC From R4 Relay	FRM1_MEH	1040A	Switched IGN
6	IGN 12VDC From R4 Relay	FRM1_MEH	1040A	Switched IGN
7	IGN 12VDC From R4 Relay	FRM1_MEH	1040A	Switched IGN
8	IGN 12VDC From R4 Relay	FRM1_MEH	1040A	Switched IGN
R3-30	Starter Relay R3 12V Battery Input	FRM1_MEH	3000	12V
R3-87	Starter Relay R3 12V Battery Output	FRM1_MEH	8001	Switched 12V
R3-86	Starter Relay R3 12V Supply from ECU	FRM1_MEH	4028	Switched 12V
R3-85	Starter Relay R3 GND coil	FRM1_MEH	6022	GND
R4-30	Engine Relay R4 12V IGN Input	FRM1_MEH	1040	12V
R4-87	Starter Relay R4 12V IGN Output	FRM1_MEH	1040A	Switched 12V

R4-86	Starter Relay R4 12V IGN from ECU	FRM1_MEH	4027	Switched 12V
R4-85	Starter Relay R4 GND coil	FRM1_MEH	6021	GND

**Wires & Connectors IMG:**



<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Check Fuses and Voltages as per schematic</p>
<p><b>Expected Values:</b></p>	<p>See Signal</p>
<p><b>Related Fault Codes:</b></p>	<p>N/A</p>

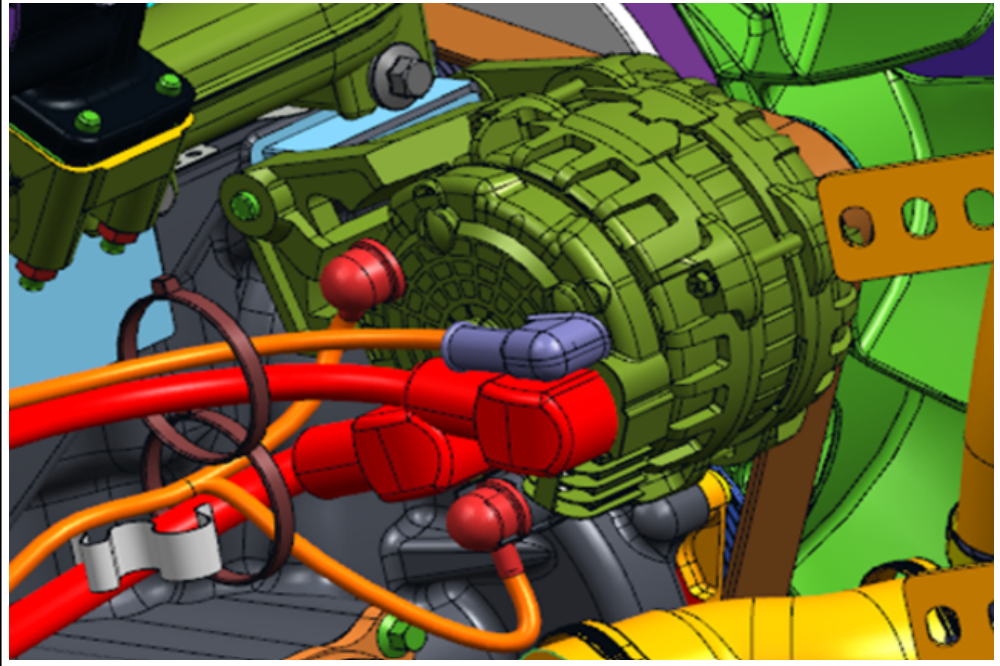
### 4.25.2 Alternator

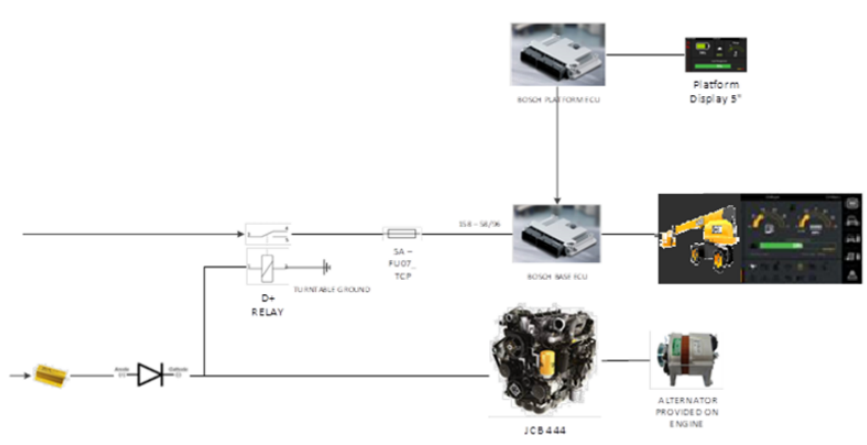
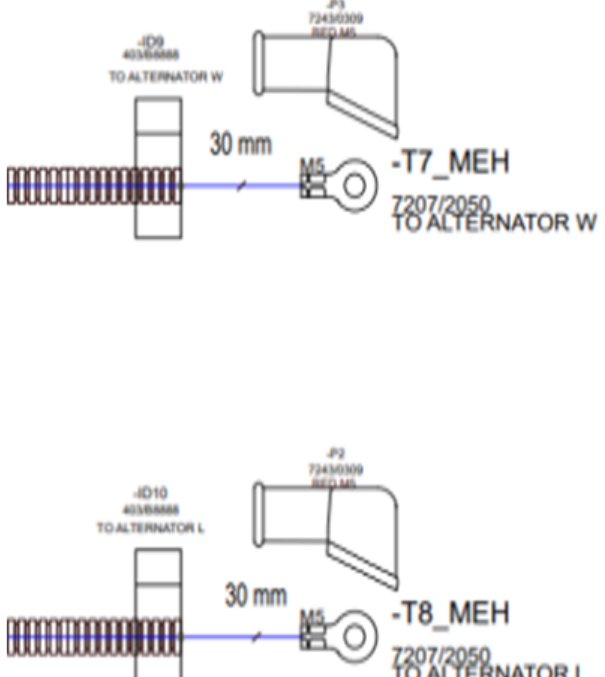
<p><b>Component:</b></p>	<p>Alternator</p>
<p><b>Function:</b></p>	<p>The alternator is a three phase generator having a rotating field winding and static power windings. When the ignition switch is turned on, the current from the battery flows by way of the No Charge warning light to the field winding. This creates a magnetic field which supplements the residual magnetism in the rotor poles. As the engine is started, the fan belt drives the rotor and the alternating current is generated in the power windings as they are cut by the rotating magnetic field. Output is controlled by a solid state regulator which varies the field current in accordance with electrical demand to charge the battery.</p>
<p><b>Location:</b></p>	<p>Alternator is connected near to engine</p>

Location  
IMG:



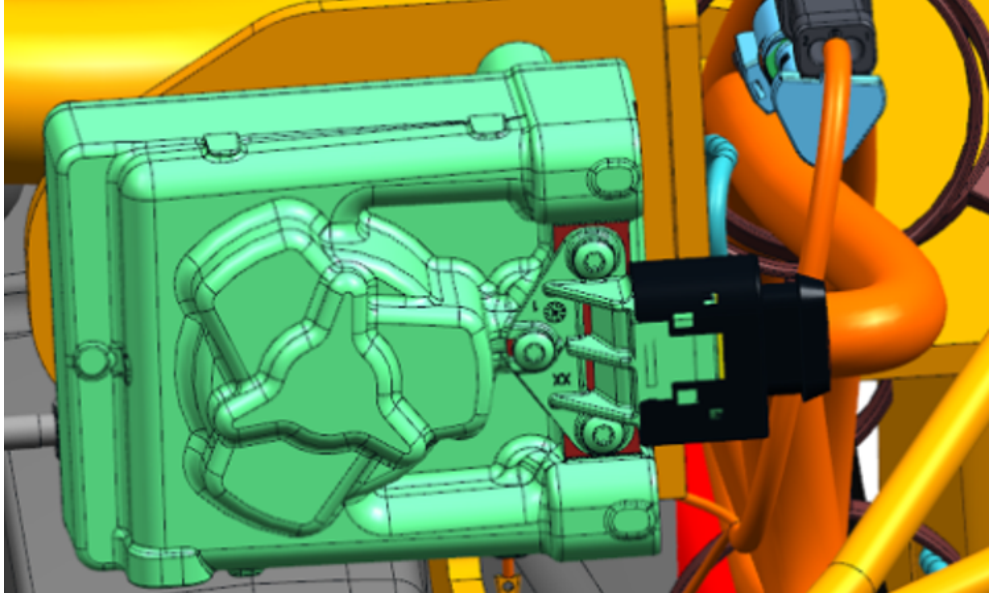
ALTERNATOR

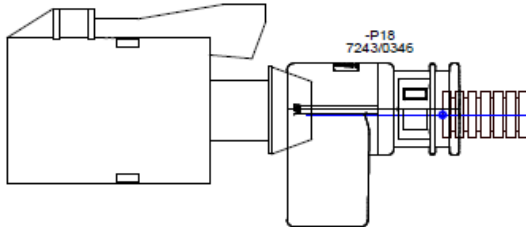
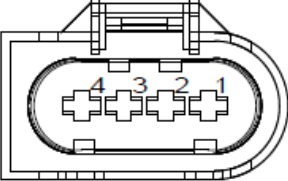
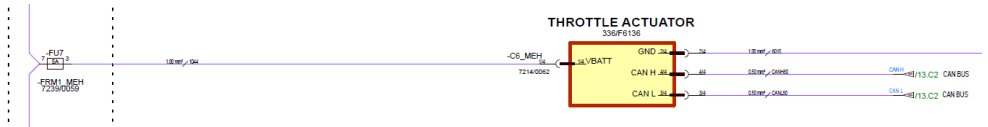


<p><b>Signal:</b></p>	<p>Digital Input from alternator to base ECU</p> <p>On = 12V OFF = 0V</p> 
<p><b>Wires &amp; Connectors IMG:</b></p>	

<p><b>Internal Electrical Schematic IMG:</b></p>									
<p><b>Testing:</b></p>	<p>Need to Check Output Voltage</p>								
<p><b>Expected Values:</b></p>	<p>12 Volt</p>								
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td> <a href="#">B1424-16</a> <small>673</small> </td> <td> <p>A) W terminal OC : When Cranking Alternator freq ip &lt; 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs. B) W terminal OC : When Engine is Running Alternator freq ip &lt; 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs</p> </td> </tr> <tr> <td> <a href="#">B1425-17</a> <small>675</small> </td> <td> <p>A) W- terminal SC to high : When Engine Ignition is OFF : Alternator freq input voltage &gt;= 12v AND ( 12v alter OFF OR low oil OFF ) B) W- terminal SC to high : When Engine is not Running: Alternator freq input voltage &gt;= 12v AND ( 12v alter OFF OR low oil OFF )</p> </td> </tr> <tr> <td> <a href="#">B1300-2F</a> <small>572</small> </td> <td> <p>T65D - ALTERNATOR FAULT T65D T3 - When engine is Running : Alternator freq ip &gt; 850 rpm AND ( 12v alter OFF AND low oil OC ) for 4 secs D+ alt fault : When Engine is not Running : Alternator freq ip &lt; 550 rpm AND ( 12v alter ON AND low oil OFF ) for 4 secs</p> </td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1424-16</a> <small>673</small>	<p>A) W terminal OC : When Cranking Alternator freq ip &lt; 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs. B) W terminal OC : When Engine is Running Alternator freq ip &lt; 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs</p>	<a href="#">B1425-17</a> <small>675</small>	<p>A) W- terminal SC to high : When Engine Ignition is OFF : Alternator freq input voltage &gt;= 12v AND ( 12v alter OFF OR low oil OFF ) B) W- terminal SC to high : When Engine is not Running: Alternator freq input voltage &gt;= 12v AND ( 12v alter OFF OR low oil OFF )</p>	<a href="#">B1300-2F</a> <small>572</small>	<p>T65D - ALTERNATOR FAULT T65D T3 - When engine is Running : Alternator freq ip &gt; 850 rpm AND ( 12v alter OFF AND low oil OC ) for 4 secs D+ alt fault : When Engine is not Running : Alternator freq ip &lt; 550 rpm AND ( 12v alter ON AND low oil OFF ) for 4 secs</p>
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## 4.25.3 Throttle Controller

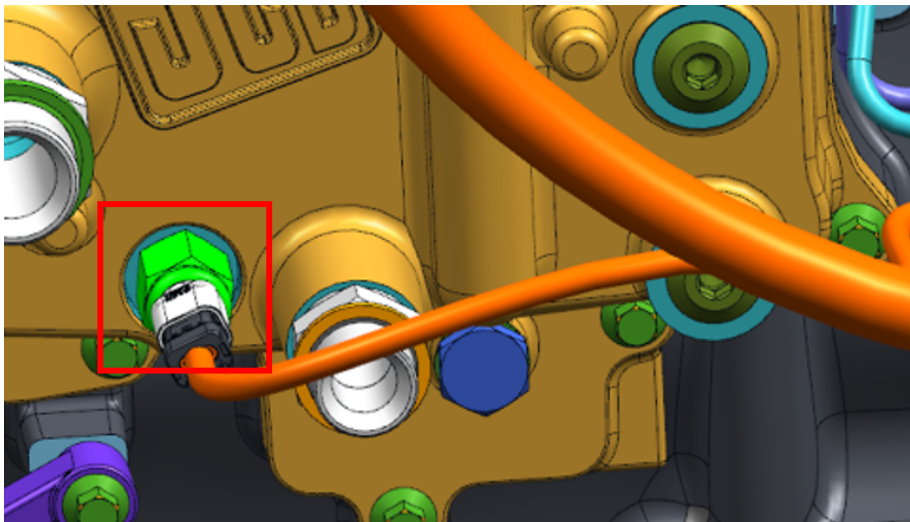

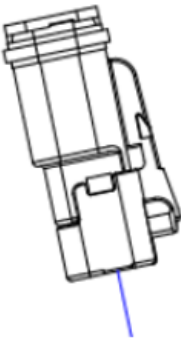
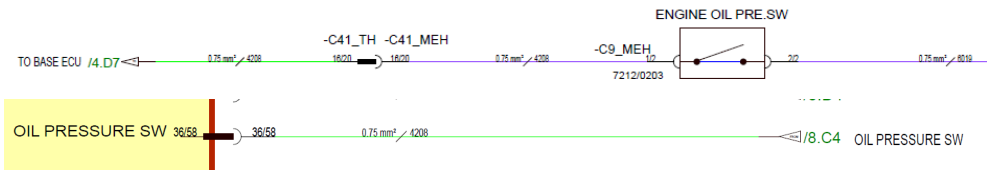
<b>Component:</b>	Throttle Controller																													
<b>Function:</b>	The rotary actuator shall alter throttle position to maintain required engine speed through alternator W feedback loop via CAN1.																													
<b>Location:</b>	Mounted on Engine																													
<b>Location IMG:</b>																														
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switched 12V IGN</td> <td>C6_MEH</td> <td>1044</td> <td>Switched IGN</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C6_MEH</td> <td>6015</td> <td>GND</td> </tr> <tr> <td>3</td> <td>CAN L</td> <td>C6_MEH</td> <td>CANL80</td> <td>CAN L</td> </tr> <tr> <td>4</td> <td>CAN H</td> <td>C6_MEH</td> <td>CANH80</td> <td>CAN H</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Signal	1	Switched 12V IGN	C6_MEH	1044	Switched IGN	2	GND	C6_MEH	6015	GND	3	CAN L	C6_MEH	CANL80	CAN L	4	CAN H	C6_MEH	CANH80	CAN H				
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1	Switched 12V IGN	C6_MEH	1044	Switched IGN																										
2	GND	C6_MEH	6015	GND																										
3	CAN L	C6_MEH	CANL80	CAN L																										
4	CAN H	C6_MEH	CANH80	CAN H																										

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	<p style="text-align: center;">-C6_EH</p>  <p style="text-align: center;">-C6_EH#1 7214/0062 TO THROTTLE ACTUATOR</p> 								
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>									
<p><b>Testing:</b></p>	<p>The rotary actuator shall complete self-learn calibration on first time IGN ON to determine hard stops.</p> <p>On low engine RPM command, It will sweep to abduct the shaft position as per 1500RPM.</p> <p>On high engine RPM command, It will sweep to adjust the shaft position as per 2200RPM.</p>								
<p><b>Expected Values:</b></p>	<p>On Machine Ignition ON, 12V should be there between pin1 and 2.</p>								
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr style="background-color: yellow;"> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">U1289-92</a> <small>692</small></td> <td>Throttle Actuator CAN Communication fault: CAN Command never received CAN Timeout Invalid target position CAN Bus off</td> </tr> <tr> <td><a href="#">B1343-92</a> <small>598</small></td> <td>Throttle Actuator EEPROM Fault : EEPROM Check sum error</td> </tr> <tr> <td><a href="#">B1346-92</a> <small>599</small></td> <td>Throttle Actuator: Over voltage: voltage &gt; 33.5V for &gt;200ms Under-voltage: voltage &lt; 6.5V for &gt;200ms Voltage measurement short to 5V</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">U1289-92</a> <small>692</small>	Throttle Actuator CAN Communication fault: CAN Command never received CAN Timeout Invalid target position CAN Bus off	<a href="#">B1343-92</a> <small>598</small>	Throttle Actuator EEPROM Fault : EEPROM Check sum error	<a href="#">B1346-92</a> <small>599</small>	Throttle Actuator: Over voltage: voltage > 33.5V for >200ms Under-voltage: voltage < 6.5V for >200ms Voltage measurement short to 5V
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<a href="#">U1289-92</a> <small>692</small>	Throttle Actuator CAN Communication fault: CAN Command never received CAN Timeout Invalid target position CAN Bus off								
<a href="#">B1343-92</a> <small>598</small>	Throttle Actuator EEPROM Fault : EEPROM Check sum error								
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	Voltage measurement short to 0V
<a href="#">B1352-13</a>   603	Throttle Actuator: Position deviation of more than 15 steps for more than 2s
<a href="#">B1406-13</a>   653	Throttle Actuator: Temperature > hardware temperature protection (150°C) Temperature measurement short to 5V Temperature measurement short to 0V
<a href="#">B1408-13</a>   656	Throttle Actuator: Commutation sensor fault; Illogical commutation state Wrong hall sensor sequence
<a href="#">B1410-13</a>   659	Throttle Actuator: Initialization fault (learn) End stop not found
<a href="#">B1422-13</a>   671	Throttle Actuator: Motor effort: Circuit short to high Circuit short to low
<a href="#">B1423-13</a>   672	Throttle Actuator: Calibration error      End stop not found Calibration low value not found Calibration high value not found

#### 4.25.4 Engine Oil Pressure Switch

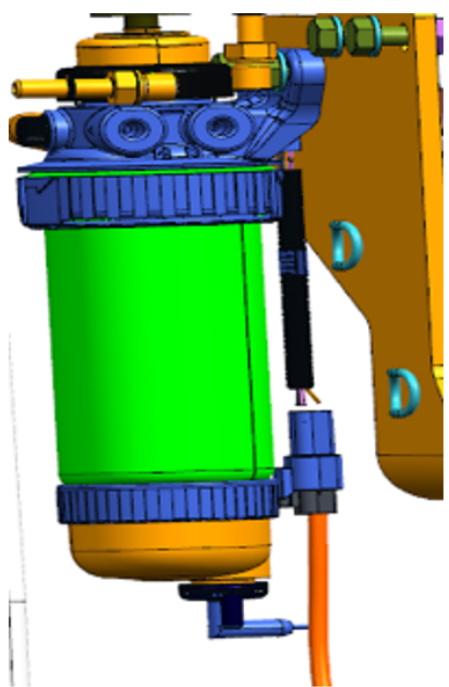
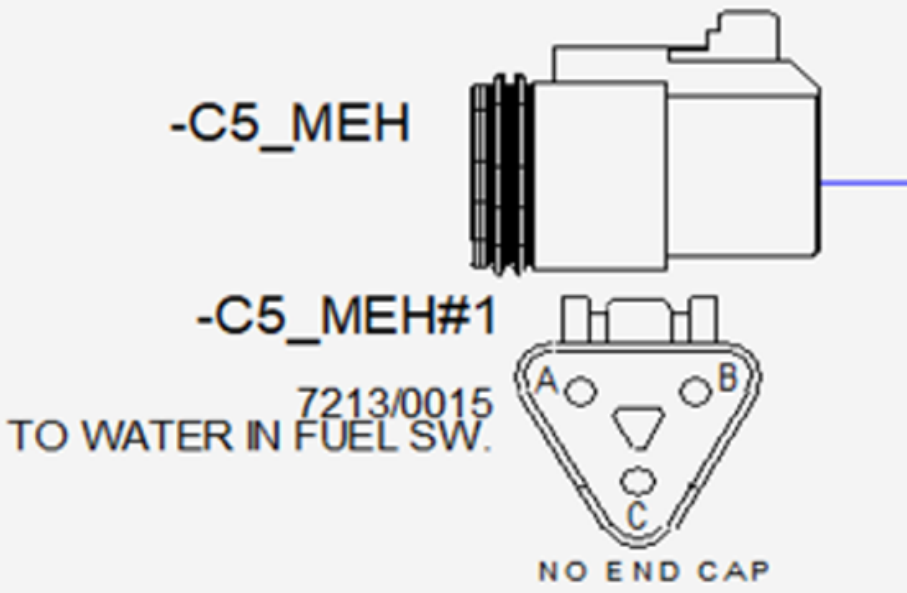
<b>Component:</b>	Engine Oil Pressure Switch
<b>Function:</b>	Oil pressure switch monitors engine oil pressure and activates a warning light and icon on the machine display when the pressure drops below a safe level or when a switch fault is detected.
<b>Location:</b>	Mounted on Engine LHS

<p><b>Location IMG:</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>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switched GND to ECU</td> <td>C9_MEH</td> <td>4208</td> <td>Switched GND</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C9_MEH</td> <td>6019</td> <td>GND</td> </tr> </tbody> </table>					Pin	Description	Connector Number	Wire Number	Signal	1	Switched GND to ECU	C9_MEH	4208	Switched GND	2	GND	C9_MEH	6019	GND
Pin	Description	Connector Number	Wire Number	Signal																
1	Switched GND to ECU	C9_MEH	4208	Switched GND																
2	GND	C9_MEH	6019	GND																
<p><b>Wires &amp; Connectors IMG:</b></p>	<p>-C9_MEH#1 7212/0203 TO OIL PRESSURE SW.</p>  <p>-C9_MEH</p> 																			
<p><b>Internal Electrical</b></p>																				

<b>Schematic IMG:</b>					
<b>Testing:</b>	<p>In Engine ON condition:</p> <p>When engine oil pressure is normal, Base ECU shall see open circuit.</p> <p>When engine oil pressure is low, Base ECU shall see ground input.</p>				
<b>Expected Values:</b>	See Signal				
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1426-13</a> <small>677</small></td> <td> <p>Low oil pressure fault :</p> <p>When Engine is Running: Alternator freq ip &gt; 850 rpm AND D+(12V) ON AND low oil GND ) for 2 secs</p> <p>Low oil pressure fault :</p> <p>When Engine is not Running: Alternator freq ip &lt; 550 rpm AND ( 12v alter OFF AND low oil OC )</p> </td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1426-13</a> <small>677</small>	<p>Low oil pressure fault :</p> <p>When Engine is Running: Alternator freq ip &gt; 850 rpm AND D+(12V) ON AND low oil GND ) for 2 secs</p> <p>Low oil pressure fault :</p> <p>When Engine is not Running: Alternator freq ip &lt; 550 rpm AND ( 12v alter OFF AND low oil OC )</p>
Fault Codes	Description				
<a href="#">B1426-13</a> <small>677</small>	<p>Low oil pressure fault :</p> <p>When Engine is Running: Alternator freq ip &gt; 850 rpm AND D+(12V) ON AND low oil GND ) for 2 secs</p> <p>Low oil pressure fault :</p> <p>When Engine is not Running: Alternator freq ip &lt; 550 rpm AND ( 12v alter OFF AND low oil OC )</p>				

### 4.25.5 Water in Fuel Switch

<b>Component:</b>	Water in Fuel Switch
<b>Function:</b>	The Water-in-Fuel (WIF) switch detects water contamination in the fuel system and signals the base ECU to prevent potential engine damage. Upon detection, it triggers an error code and illuminates the WIF icon on the display.
<b>Location:</b>	Mounted on turntable LHS

<p><b>Location IMG:</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>Signal</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Switched IGN 12V</td> <td>C5_MEH</td> <td>1043</td> <td>Switched IGN</td> </tr> <tr> <td>B</td> <td>Switched GND Output to ECU</td> <td>C5_MEH</td> <td>4209</td> <td>Switched GND</td> </tr> <tr> <td>C</td> <td>GND Feed Input</td> <td>C5_MEH</td> <td>6014</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Signal	A	Switched IGN 12V	C5_MEH	1043	Switched IGN	B	Switched GND Output to ECU	C5_MEH	4209	Switched GND	C	GND Feed Input	C5_MEH	6014	GND
Pin	Description	Connector Number	Wire Number	Signal																	
A	Switched IGN 12V	C5_MEH	1043	Switched IGN																	
B	Switched GND Output to ECU	C5_MEH	4209	Switched GND																	
C	GND Feed Input	C5_MEH	6014	GND																	
<p><b>Wires &amp; Connectors IMG:</b></p>	 <p>-C5_MEH</p> <p>-C5_MEH#1</p> <p>7213/0015 TO WATER IN FUEL SW.</p> <p>NO END CAP</p>																				

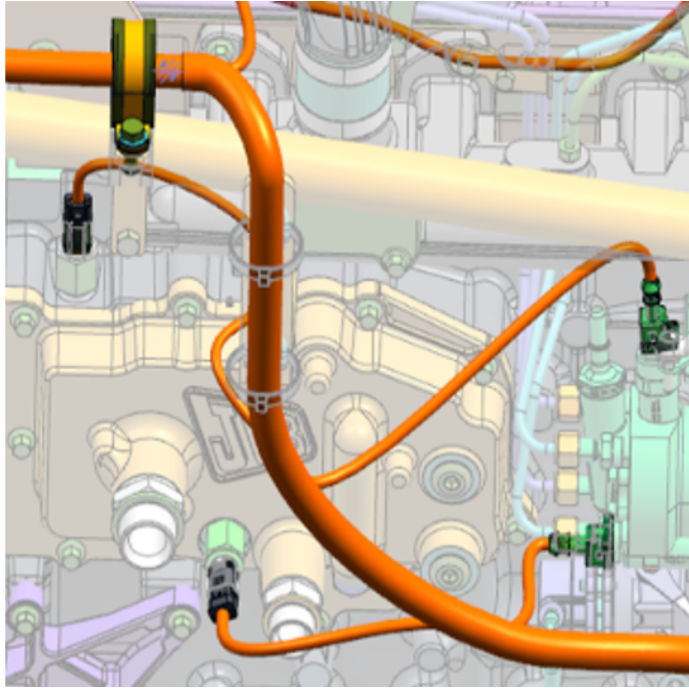
<b>Internal Electrical Schematic IMG:</b>					
<b>Testing:</b>	<p>In Engine ON condition:</p> <p>Open circuit to Bosch Base ECU = no water in fuel.</p> <p>GND input to Bosch Base ECU = water in fuel.</p>				
<b>Expected Values:</b>	<p>See Signal</p>				
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td> <a href="#">B1282-13</a> </td> <td>                     Water in fuel OC during engine startup:                      ( Transition from GND to OC is expected within 2 secs of engine ignition ON )                 </td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1282-13</a>	Water in fuel OC during engine startup: ( Transition from GND to OC is expected within 2 secs of engine ignition ON )
Fault Codes	Description				
<a href="#">B1282-13</a>	Water in fuel OC during engine startup: ( Transition from GND to OC is expected within 2 secs of engine ignition ON )				

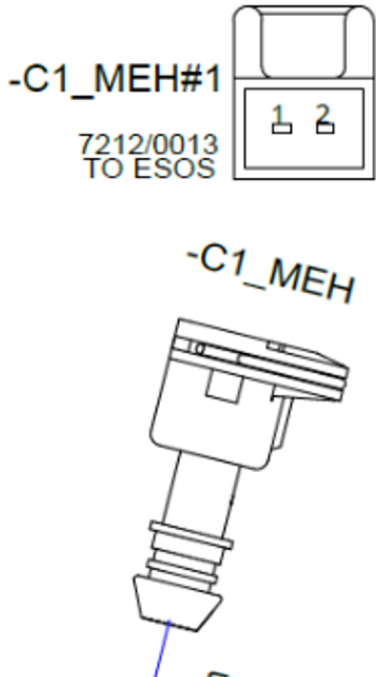
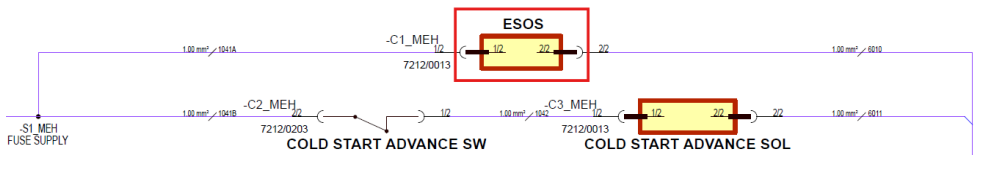
## 4.25.6 Coolant Temp Sensor

<b>Component:</b>	Coolant Temp Sensor														
<b>Function:</b>	Coolant temperature sensor monitors coolant temperature, signals the Base ECU to trigger the alarm. Upon detection, it triggers an error code and illuminates the high coolant temp. icon on the display.														
<b>Location:</b>	Mounted on Engine														
<b>Location IMG:</b>															
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Sensor Output to ECU</td> <td>C7_MEH</td> <td>4205</td> <td>Analog Output</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Signal	A	Sensor Output to ECU	C7_MEH	4205	Analog Output				
Pin	Description	Connector Number	Wire Number	Signal											
A	Sensor Output to ECU	C7_MEH	4205	Analog Output											

	<table border="1"> <tr> <td>B</td> <td>Switch output to ECU</td> <td>C7_MEH</td> <td>4204</td> <td>Switched GND</td> </tr> <tr> <td>C</td> <td>GND feed Input</td> <td>C7_MEH</td> <td>6017</td> <td>GND</td> </tr> </table>	B	Switch output to ECU	C7_MEH	4204	Switched GND	C	GND feed Input	C7_MEH	6017	GND
B	Switch output to ECU	C7_MEH	4204	Switched GND							
C	GND feed Input	C7_MEH	6017	GND							
<b>Wires &amp; Connectors IMG:</b>	<p style="text-align: right;"><b>-C7_MEH</b></p>										
<b>Internal Electrical Schematic IMG:</b>											
<b>Testing:</b>	<p>Open circuit to Bosch ECU = water temperature normal.</p> <p>GND input to Bosch ECU = water temperature HIGH.</p> <p>At 112 ±3°C the switch shall close.</p>										
<b>Expected Values:</b>	<p>When open circuit = no warning icon on either display.</p> <p>GND input into ECU = warning icon on both displays.</p> <p>GND input into ECU = flashing red warning icon on platform.</p> <p>When ECU receives GND input, engine shall not turn off.</p>										
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td>B1360-0</td> <td>COOLANT TEMPERATURE exceeds upper limit</td> </tr> </tbody> </table>	Fault Codes	Description	B1360-0	COOLANT TEMPERATURE exceeds upper limit						
Fault Codes	Description										
B1360-0	COOLANT TEMPERATURE exceeds upper limit										

## 4.25.7 ESOS

<b>Component:</b>	ESOS																			
<b>Function:</b>	ESOS is an electromagnetically actuated valve that regulates or cuts off the engine's fuel supply. When the ignition is ON, the solenoid coil is energized. Turning off the ignition de-energizes the coil.																			
<b>Location:</b>	Mounted on Engine																			
<b>Location IMG:</b>																				
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Switched 12V IGN</td> <td>C1_MEH</td> <td>1041A</td> <td>Switched IGN</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C1_MEH</td> <td>6010</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Signal	1	Switched 12V IGN	C1_MEH	1041A	Switched IGN	2	GND	C1_MEH	6010	GND				
Pin	Description	Connector Number	Wire Number	Signal																
1	Switched 12V IGN	C1_MEH	1041A	Switched IGN																
2	GND	C1_MEH	6010	GND																

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>	 <p>-C1_MEH#1 7212/0013 TO ESOS</p> <p>-C1_MEH</p>
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>	 <p>ESOS</p> <p>-C1_MEH 7212/0013</p> <p>-C2_MEH 7212/0203</p> <p>COLD START ADVANCE SW</p> <p>C3_MEH 7212/0013</p> <p>COLD START ADVANCE SOL</p> <p>-S1_MEH FUSE SUPPLY</p>
<p><b>Testing:</b></p>	<p>On Machine Ignition ON, 12V should be there between pin1 and 2.</p>
<p><b>Expected Values:</b></p>	<p>See Signal</p>
<p><b>Related Fault Codes:</b></p>	<p>N/A</p>

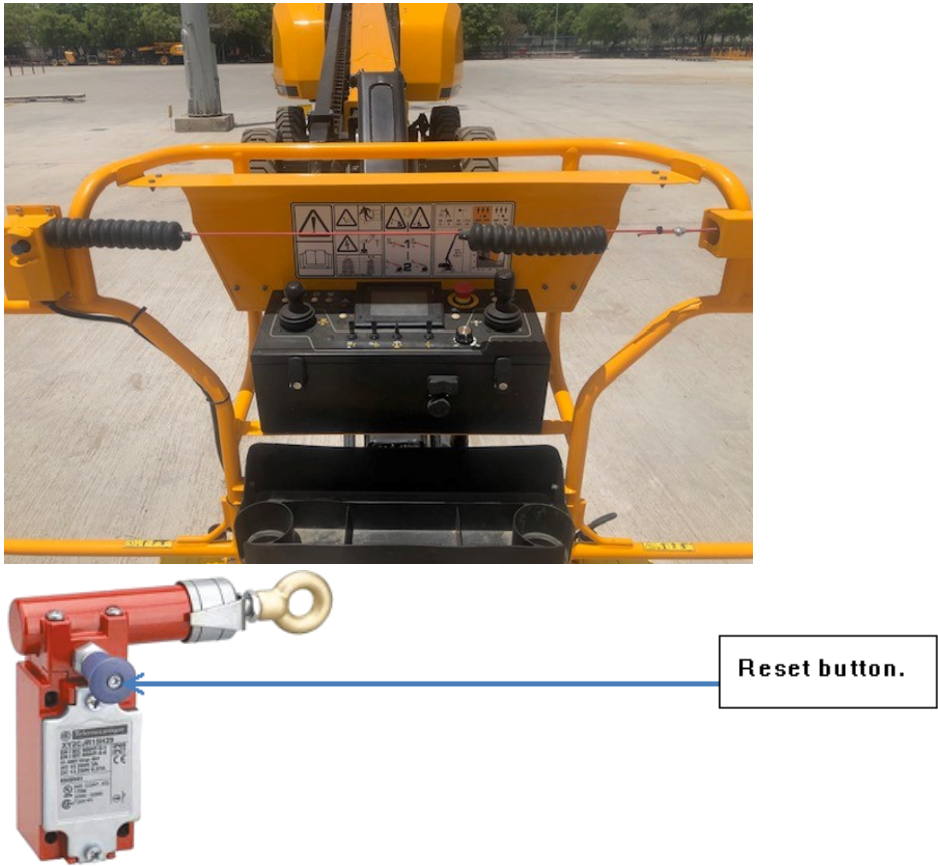
## 4.26 Platform

List of [Platform](#) <sup>264</sup>

Number	Component
1	<a href="#">Crush Protection Switch</a> <sup>265</sup>
2	<a href="#">Foot Pedal</a> <sup>267</sup>
3	<a href="#">Load cell</a> <sup>269</sup>

4	<a href="#">Platform Control Valve</a> <sup>274</sup>
5	<a href="#">Platform Control Panel</a> <sup>276</sup>


## 4.26.1 Crush Protection Switch

<b>Component:</b>	Crush Protection																						
<b>Function:</b>	The crush protect bar is to protect the operator from being crushed between the basket and any object.																						
<b>Location:</b>	The limit rope switch mounted at the platform.																						
<b>Location IMG:</b>																							
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Switch un-pressed - contacts closed</th> <th>Switch Pressed - contacts open</th> </tr> </thead> <tbody> <tr> <td>1 - 21</td> <td>10V Input</td> <td>C01_CPL</td> <td>1070D - 1-21</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2 - 11</td> <td>5V Input</td> <td>C01_CPL</td> <td>4070 - 2-11</td> <td>5V</td> <td>5V</td> </tr> </tbody> </table>					Pin	Description	Connector Number	Wire Number	Switch un-pressed - contacts closed	Switch Pressed - contacts open	1 - 21	10V Input	C01_CPL	1070D - 1-21	10V	10V	2 - 11	5V Input	C01_CPL	4070 - 2-11	5V	5V
Pin	Description	Connector Number	Wire Number	Switch un-pressed - contacts closed	Switch Pressed - contacts open																		
1 - 21	10V Input	C01_CPL	1070D - 1-21	10V	10V																		
2 - 11	5V Input	C01_CPL	4070 - 2-11	5V	5V																		

	Pin	Description	Connector Number	Wire Number	Switch un-pressed - contacts closed	Switch Pressed - contacts open
	3 - 22	Switch 2 output to ecu	C01_CPL	4093 - 3-22	10V	
	4 - 12	Switch 1 output to ecu	C01_CPL	4094 - 4-12	5V	
<b>Wires &amp; Connectors IMG:</b>						
<b>Internal Electrical Schematic IMG:</b>						
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Turn On ignition</li> <li>2. Check the voltage levels on switch 1 &amp;2 when crush protection switch is pressed and unpressed</li> </ol>					
<b>Expected Values:</b>	<ol style="list-style-type: none"> <li>1. Pressed / Active Crush protection Condition switch1:-OC switch2:-OC</li> <li>2.Un-Pressed /Inactive crush protection Condition switch1:-5v</li> </ol>					

	switch2:-10v	
<b>Related Fault Codes:</b>	<b>Fault Code</b>	<b>Description</b>
	<a href="#">B1025-13</a> <small>412</small>	Plausibility Check
	<a href="#">B1026-17</a> <small>413</small>	Switch 1 Short Circuit to >5v
	<a href="#">B1027-16</a> <small>414</small>	Switch 1 Short Circuit to Low
	<a href="#">B1028-16</a> <small>415</small>	Switch 2 Short Circuit to Low
	<a href="#">B1029-17</a> <small>416</small>	Switch 2 Short Circuit to >10.5v

## 4.26.2 Foot Pedal

<b>Component:</b>	Foot Pedal					
<b>Function:</b>	The foot pedal is used to enable any function from the platform control panel.					
<b>Location:</b>	the foot pedal switched is fitted at the platform					
<b>Location IMG:</b>						
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Switch - pressed</b>	<b>Switch - Presed</b>
	1	10V in	C220_FP	1075H	10V	10V

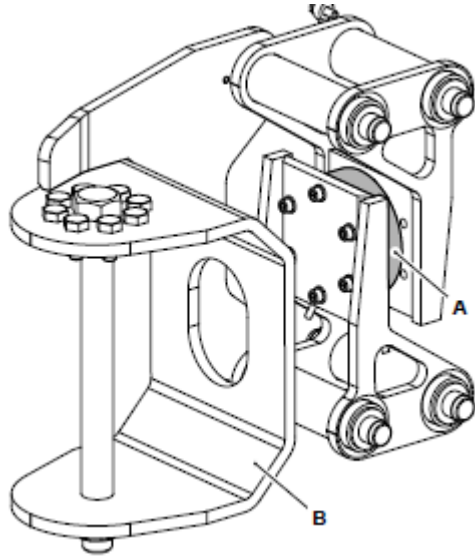
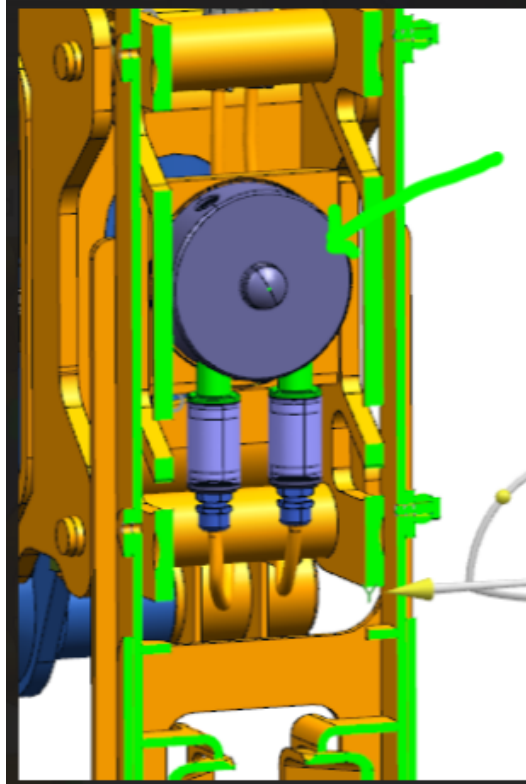
Pin	Description	Connector Number	Wire Number	Switch un-pressed	Switch pressed						
2	Switched output	C220_FP	4096	3V	10V						
When the foot pedal is pressed the contact closes											
<b>Wires &amp; Connectors IMG:</b>											
<b>Internal Electrical Schematic IMG:</b>											
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Turn the Ignition On.</li> <li>2. Press the Foot pedal from platform</li> <li>3. Validate the voltage at foot pedal</li> </ol>										
<b>Expected Values:</b>	Foot pedal pressed:- 10V unpressed:-0V										
<b>Related Fault Codes:</b>	<table border="1" style="width: 100%;"> <thead> <tr> <th style="background-color: yellow;">Fault Code</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1053-17</a> 431</td> <td>Foot Pedal Short Circuit to High</td> </tr> <tr> <td><a href="#">B1054-16</a> 432</td> <td>Foot Pedal Short Circuit to Low</td> </tr> </tbody> </table>					Fault Code	Description	<a href="#">B1053-17</a> 431	Foot Pedal Short Circuit to High	<a href="#">B1054-16</a> 432	Foot Pedal Short Circuit to Low
Fault Code	Description										
<a href="#">B1053-17</a> 431	Foot Pedal Short Circuit to High										
<a href="#">B1054-16</a> 432	Foot Pedal Short Circuit to Low										


Fault Code	Description
<a href="#">B1319-24</a> <small>588</small>	Startlock Failure - Foot Pedal Input enabled During Startup

### 4.26.3 Loadcell

<b>Component:</b>	Load cell
<b>Function:</b>	The load cell is to identify the weight in the platform. This is a 2 channel cell that feeds into the platform controller.
<b>Location:</b>	The load cell is located on Platform KPC

Location  
IMG:



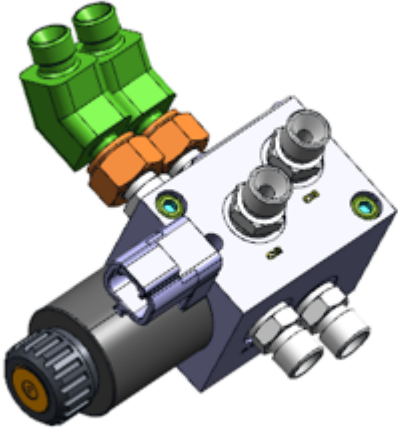
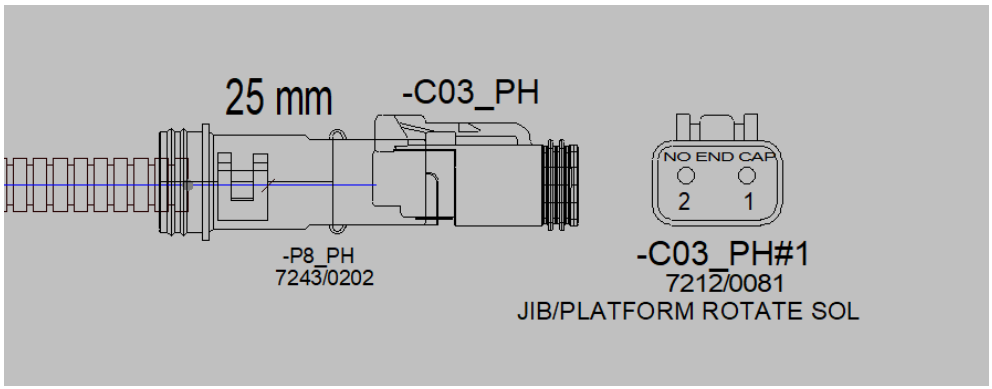
																																									
<b>Signal:</b>	<p><b>Load cell Channel 1</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C05_PH</td> <td>1030A</td> </tr> <tr> <td>2</td> <td>Output to ECU</td> <td>C05_PH</td> <td>4101</td> </tr> <tr> <td>3</td> <td>GND</td> <td>C05_PH</td> <td>6070B</td> </tr> <tr> <td>4</td> <td>Shield</td> <td>C05_PH</td> <td>6072B</td> </tr> </tbody> </table> <p><b>Load cell Channel 2</b></p> <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C06_PH</td> <td>1030B</td> </tr> <tr> <td>2</td> <td>Output to ECU</td> <td>C06_PH</td> <td>4102</td> </tr> <tr> <td>3</td> <td>GND</td> <td>C06_PH</td> <td>6070A</td> </tr> <tr> <td>4</td> <td>Shield</td> <td>C06_PH</td> <td>6072A</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	1	12V input	C05_PH	1030A	2	Output to ECU	C05_PH	4101	3	GND	C05_PH	6070B	4	Shield	C05_PH	6072B	Pin	Description	Connector Number	Wire Number	1	12V input	C06_PH	1030B	2	Output to ECU	C06_PH	4102	3	GND	C06_PH	6070A	4	Shield	C06_PH	6072A
	Pin	Description	Connector Number	Wire Number																																					
1	12V input	C05_PH	1030A																																						
2	Output to ECU	C05_PH	4101																																						
3	GND	C05_PH	6070B																																						
4	Shield	C05_PH	6072B																																						
Pin	Description	Connector Number	Wire Number																																						
1	12V input	C06_PH	1030B																																						
2	Output to ECU	C06_PH	4102																																						
3	GND	C06_PH	6070A																																						
4	Shield	C06_PH	6072A																																						

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Important: Use the multi-meter on the harness connector pins. <b>DO NOT USE</b> the meter on the ECU pins.</li> <li>2. The weight sensor fitted on machine have two channels</li> <li>3. Double channel load cell which is fitted at the point the platform is connected.</li> <li>4. Each channel is connected with 3 Pins A for power supply (12V) Pin C for ground Pin B for output ( analogue)</li> <li>5. Check the current shown at both the channel out put it should be more then 4000 mAmp ( with platform connected)</li> <li>6. If any channel showing less then 4000 mAmp check the assembly tightening of weight cell,</li> </ol>

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 schemetic
9. If voltage is there & no out put then it might be the internal damage to components , replace the load cell

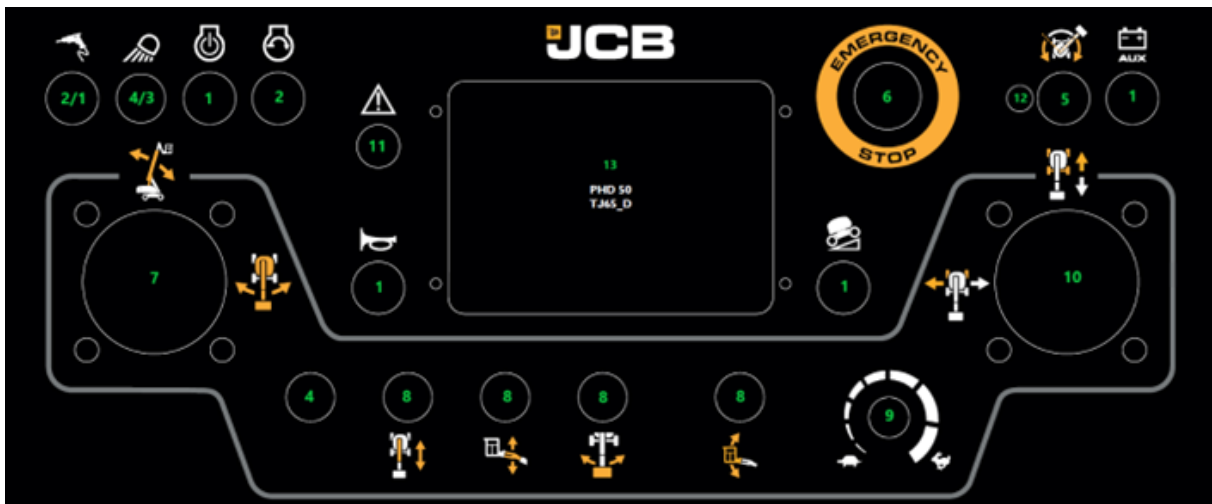
## **Load Cell Troubleshooting Flow Chart**

## 4.26.4 Platform Control Valve

<b>Component:</b>	Platform control Valve																			
<b>Function:</b>	The Valve controls the flow to either the jib or platform rotate. The platform rotate will get flow when the solenoid is powered. If the solenoid is not powered the flow will operate the jib function. This also needs valves at the base to operate in conjunction with this valve.																			
<b>Location:</b>	Near Platform Rotator																			
<b>Location IMG:</b>																				
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V from ECU</td> <td>C03_PH</td> <td>4083</td> <td>Active on platform rotate, de-active for JIB</td> </tr> <tr> <td>2</td> <td>GND return to ECU</td> <td>C03_PH</td> <td>6050</td> <td>Active on platform rotate, de-active for JIB</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Signal	1	12V from ECU	C03_PH	4083	Active on platform rotate, de-active for JIB	2	GND return to ECU	C03_PH	6050	Active on platform rotate, de-active for JIB	Solenoid Resistance 7.6			
Pin	Description	Connector Number	Wire Number	Signal																
1	12V from ECU	C03_PH	4083	Active on platform rotate, de-active for JIB																
2	GND return to ECU	C03_PH	6050	Active on platform rotate, de-active for JIB																
<b>Wires &amp; Connectors IMG:</b>																				

<p><b>Internal Electrical Schematic IMG:</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. Using a solenoid pen, check to see if the solenoid is powered when the function is in use.</li> <li>2. If the solenoid pen shows no power, disconnect the harness from the solenoid.</li> <li>3. Check the resistance across the solenoid. The reading should as per specification as mentioned in below table</li> <li>4. 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>5. If the harness continuity is OK, replace the solenoid</li> </ol>														
<p><b>Expected Values:</b></p>	<p>see Signal</p>														
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1329-13</a> <small>590</small></td> <td>JIB/PLATFORM FLOW High Side Sol Short Circuit to High</td> </tr> <tr> <td><a href="#">B1330-16</a> <small>591</small></td> <td>JIB/PLATFORM FLOW High Side Sol Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1411-17</a> <small>659</small></td> <td>JIB/PLATFORM FLOW Low Side Sol Short Circuit to High</td> </tr> <tr> <td><a href="#">B1412-16</a> <small>661</small></td> <td>JIB/PLATFORM FLOW Low Side Sol Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1413-13</a> <small>662</small></td> <td>JIB/PLATFORM FLOW High Side &amp; Low Side Sol Open C</td> </tr> <tr> <td><a href="#">B1420-13</a> <small>669</small></td> <td>JIB/PLATFORM FLOW Solenoid Valve Fault</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1329-13</a> <small>590</small>	JIB/PLATFORM FLOW High Side Sol Short Circuit to High	<a href="#">B1330-16</a> <small>591</small>	JIB/PLATFORM FLOW High Side Sol Short Circuit to Low	<a href="#">B1411-17</a> <small>659</small>	JIB/PLATFORM FLOW Low Side Sol Short Circuit to High	<a href="#">B1412-16</a> <small>661</small>	JIB/PLATFORM FLOW Low Side Sol Short Circuit to Low	<a href="#">B1413-13</a> <small>662</small>	JIB/PLATFORM FLOW High Side & Low Side Sol Open C	<a href="#">B1420-13</a> <small>669</small>	JIB/PLATFORM FLOW Solenoid Valve Fault
Fault Codes	Description														
<a href="#">B1329-13</a> <small>590</small>	JIB/PLATFORM FLOW High Side Sol Short Circuit to High														
<a href="#">B1330-16</a> <small>591</small>	JIB/PLATFORM FLOW High Side Sol Short Circuit to Low														
<a href="#">B1411-17</a> <small>659</small>	JIB/PLATFORM FLOW Low Side Sol Short Circuit to High														
<a href="#">B1412-16</a> <small>661</small>	JIB/PLATFORM FLOW Low Side Sol Short Circuit to Low														
<a href="#">B1413-13</a> <small>662</small>	JIB/PLATFORM FLOW High Side & Low Side Sol Open C														
<a href="#">B1420-13</a> <small>669</small>	JIB/PLATFORM FLOW Solenoid Valve Fault														


## 4.26.5 Platform Control Panel



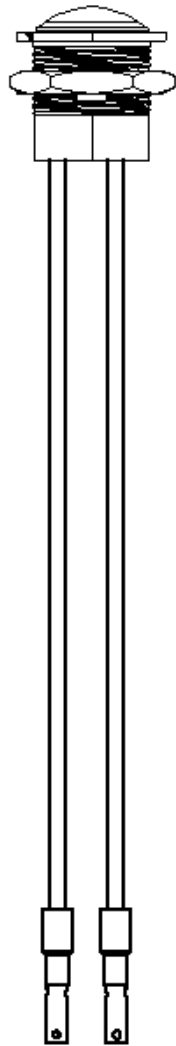
List of [Platform Control Panel](#) <sup>276</sup>

Number	Component
1	<a href="#">Horn Button Platform</a> <sup>277</sup>
2	<a href="#">Joystick - Main boom / Slew</a> <sup>279</sup>
3	<a href="#">Joystick - Driving/ Steer</a> <sup>282</sup>
4	<a href="#">AUX Switch</a> <sup>283</sup>
5	<a href="#">Work light switch</a> <sup>285</sup>
6	<a href="#">Hydraulic Generator Button</a> <sup>286</sup>
7	<a href="#">Toggle Switches ON-OFF-ON</a> <sup>288</sup>
8	<a href="#">Slew Acknowledgment LED</a> <sup>291</sup>
9	<a href="#">Slew Acknowledgment Switch</a> <sup>293</sup>
10	<a href="#">High Torque Switch</a> <sup>295</sup>
11	<a href="#">Buzzer</a> <sup>296</sup>
12	<a href="#">High Engine Speed switch</a> <sup>297</sup>
13	<a href="#">Potentiometer</a> <sup>299</sup>
14	<a href="#">Engine start Button - Platform</a> <sup>300</sup>
15	<a href="#">E-Stop Platform</a> <sup>303</sup>
16	<a href="#">Platform ECU</a> <sup>305</sup>
17	<a href="#">USB Socket</a> <sup>316</sup>
18	<a href="#">Platform Display</a> <sup>318</sup>

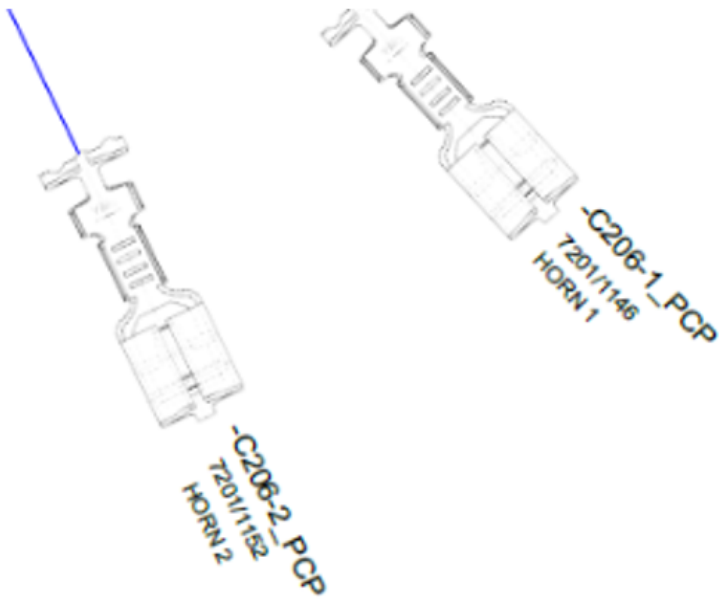
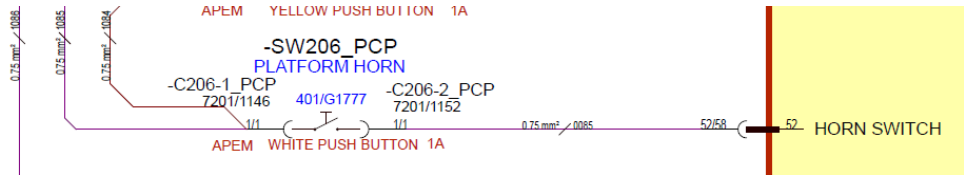
## 4.26.5.1 Horn Button Platform

<b>Component:</b>	Horn Button																							
<b>Function:</b>	Horn Push Button																							
<b>Location:</b>	There is a horn button at the platform control panel																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</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 input</td> <td>C206-1_PCP</td> <td>1085,1084</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>Signal output to ECU</td> <td>C206-2_PCP</td> <td>0085</td> <td></td> <td>10V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed	1	10V input	C206-1_PCP	1085,1084	10V	10V	2	Signal output to ECU	C206-2_PCP	0085		10V					
Pin	Description	Connector Number	Wire Number	Voltage unpressed	Voltage pressed																			
1	10V input	C206-1_PCP	1085,1084	10V	10V																			
2	Signal output to ECU	C206-2_PCP	0085		10V																			

**Wires &  
Connectors  
IMG:**




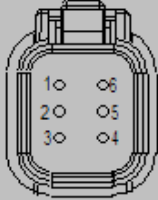
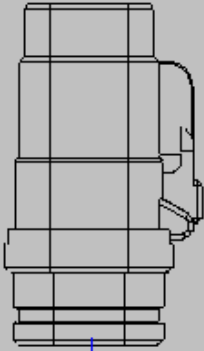
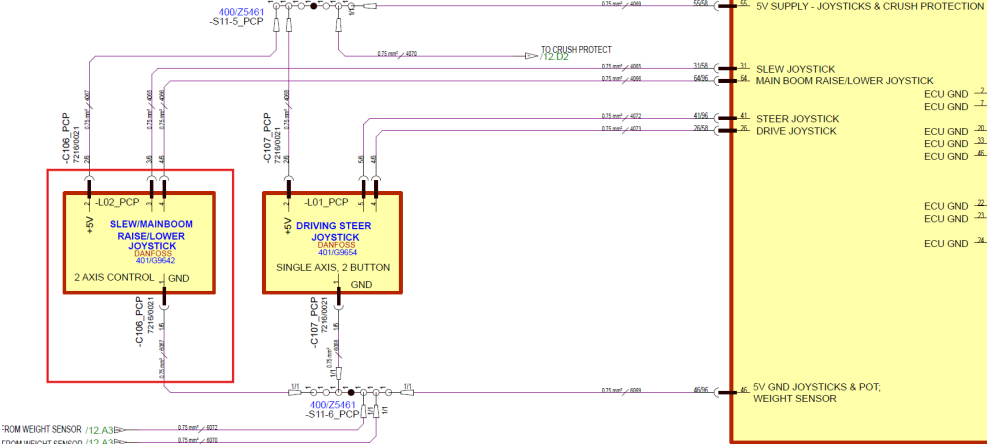
The horn is connected via 2.8mm Push fit

	 <p>terminals</p>								
<p><b>Internal Electrical Schematic IMG:</b></p>	 <p>APEM YELLOW PUSH BUTTON 1A -SW206_PCP PLATFORM HORN -C206-1_PCP 7201/1146 401/G1777 -C206-2_PCP 7201/1152 APEM WHITE PUSH BUTTON 1A 52/58 HORN SWITCH</p>								
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Check input to switch is 10V</li> <li>2. Press horn button and check output from switch is 10V</li> <li>3. Release horn button check voltage</li> <li>4. Check display inputs tab to ensure ECU is receiving input when commanded</li> </ol>								
<p><b>Expected Values:</b></p>	<p>See signal above</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><a href="#">B1273-17</a> <small>557</small></td> <td>Horn - Platform Horn Button Short Circuit to High</td> </tr> <tr> <td><a href="#">B1274-16</a> <small>558</small></td> <td>Horn - Platform Horn Button Short Circuit to Low.</td> </tr> <tr> <td><a href="#">B1275-24</a> <small>559</small></td> <td>Horn - Platform Horn Button Stuck &gt;10s.</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1273-17</a> <small>557</small>	Horn - Platform Horn Button Short Circuit to High	<a href="#">B1274-16</a> <small>558</small>	Horn - Platform Horn Button Short Circuit to Low.	<a href="#">B1275-24</a> <small>559</small>	Horn - Platform Horn Button Stuck >10s.
Fault Code	Description								
<a href="#">B1273-17</a> <small>557</small>	Horn - Platform Horn Button Short Circuit to High								
<a href="#">B1274-16</a> <small>558</small>	Horn - Platform Horn Button Short Circuit to Low.								
<a href="#">B1275-24</a> <small>559</small>	Horn - Platform Horn Button Stuck >10s.								

4.26.5.2 Joystick - Main Boom/ Slew


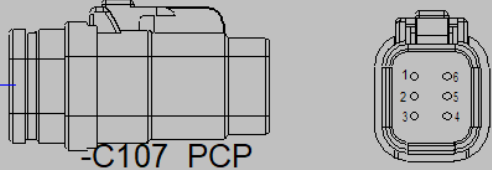
<p><b>Component:</b></p>	<p>Joystick - Main Boom/ Slew Operation</p>
<p><b>Function:</b></p>	<p>The joystick is for the operation of the main boom and slew function</p>
<p><b>Location:</b></p>	<p>At the platform control box</p>

<p><b>Location</b> <b>IMG:</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>Voltage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>C106_PCP</td> <td>6067</td> <td>GND</td> </tr> <tr> <td>2</td> <td>5V Input</td> <td>C106_PCP</td> <td>4067</td> <td>5V (do not not input more than 5V)</td> </tr> <tr> <td>3</td> <td>Slew Function</td> <td>C106_PCP</td> <td>4065</td> <td>0.5-4.5V</td> </tr> <tr> <td>4</td> <td>Main Boom Function</td> <td>C106_PCP</td> <td>4066</td> <td>0.5-4.5V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage	1	GND	C106_PCP	6067	GND	2	5V Input	C106_PCP	4067	5V (do not not input more than 5V)	3	Slew Function	C106_PCP	4065	0.5-4.5V	4	Main Boom Function	C106_PCP	4066	0.5-4.5V
Pin	Description	Connector Number	Wire Number	Voltage																						
1	GND	C106_PCP	6067	GND																						
2	5V Input	C106_PCP	4067	5V (do not not input more than 5V)																						
3	Slew Function	C106_PCP	4065	0.5-4.5V																						
4	Main Boom Function	C106_PCP	4066	0.5-4.5V																						

<p><b>Wires &amp; Connectors IMG:</b></p>	<div style="text-align: center;"> <p><b>-C106_PCP#1</b> 7216/0021 SWING/ LIFT JOYSTICK CONN</p>   <p><b>-C106_PCP</b></p> </div>
<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>The values can be read through the base display screen</p>
<p><b>Expected Values:</b></p>	<p>See signal</p>

<b>Related Fault Codes:</b>	<b>Fault Codes</b>	<b>Description</b>
	<a href="#">B1148-17</a> <small>492</small>	Joystick Boom Raise/Lower Short Circuit to High (>4.75V)
	<a href="#">B1149-16</a> <small>493</small>	Joystick Boom Raise/Lower Short Circuit to Low (<0.25V) or Open Circuit
	<a href="#">B1150-17</a> <small>494</small>	Slew joystick Short Circuit to High (>4.75V)
	<a href="#">B1151-16</a> <small>495</small>	Slew joystick Short Circuit to Low (<0.25V) or Open Circuit


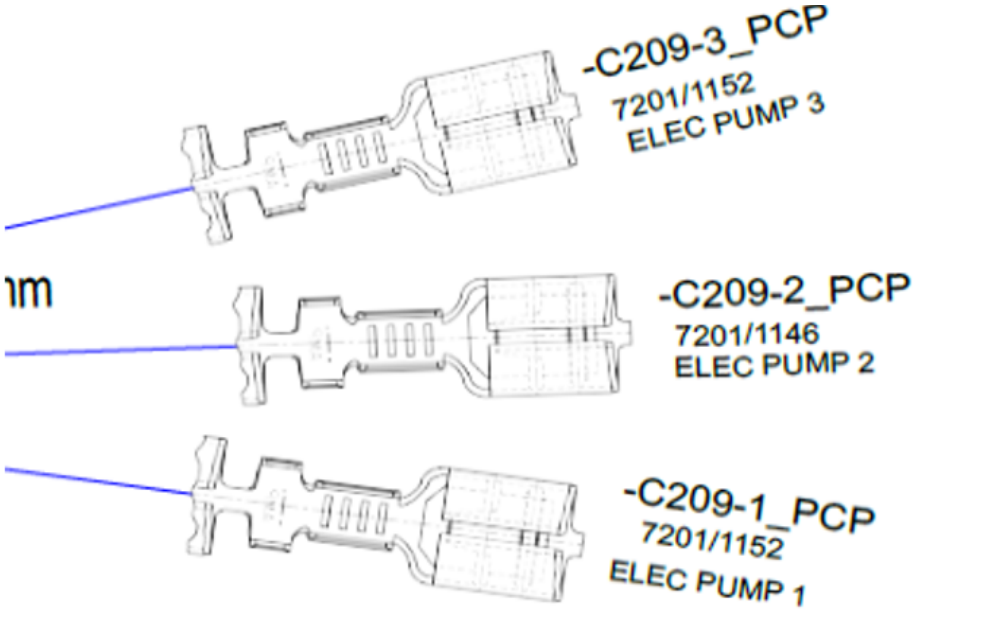
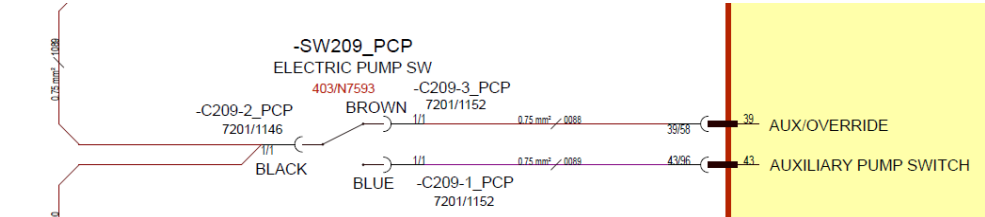
### 4.26.5.3 Joystick - Drive/Steer

<b>Component:</b>	Joystick - Drive/ Steer																													
<b>Function:</b>	The joystick is for the operation of the Drive and steer function																													
<b>Location:</b>	At the platform control box																													
<b>Location IMG:</b>																														
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> <td>C107_PCP</td> <td>6068</td> <td>GND</td> </tr> <tr> <td>2</td> <td>5V Input</td> <td>C107_PCP</td> <td>4068</td> <td>5V (do not not input more than 5V)</td> </tr> <tr> <td>4</td> <td>Drive Function</td> <td>C107_PCP</td> <td>4073</td> <td>0.5-4.5V</td> </tr> <tr> <td>5</td> <td>Steer Function</td> <td>C107_PCP</td> <td>4072</td> <td>0.5-4.5V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage	1	GND	C107_PCP	6068	GND	2	5V Input	C107_PCP	4068	5V (do not not input more than 5V)	4	Drive Function	C107_PCP	4073	0.5-4.5V	5	Steer Function	C107_PCP	4072	0.5-4.5V				
Pin	Description	Connector Number	Wire Number	Voltage																										
1	GND	C107_PCP	6068	GND																										
2	5V Input	C107_PCP	4068	5V (do not not input more than 5V)																										
4	Drive Function	C107_PCP	4073	0.5-4.5V																										
5	Steer Function	C107_PCP	4072	0.5-4.5V																										
<b>Wires &amp; Connectors IMG:</b>	 <p>-C107_PCP#1 7216/0021 DRIVING/ STEER JOYSTICK</p>																													

<p><b>Internal Electrical Schematic IMG:</b></p>											
<p><b>Testing:</b></p>	<p>The values can be read through the base display screen</p>										
<p><b>Expected Values:</b></p>	<p>See signal</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><a href="#">B1146-17</a></td> <td>STEER JOYSTICK Short Circuit to High (&gt;4.75V)</td> </tr> <tr> <td><a href="#">B1147-16</a></td> <td>STEER JOYSTICK Short Circuit to Low (&lt;0.25V) or Open</td> </tr> <tr> <td><a href="#">B1069-17</a></td> <td>Drive JOYSTICK Short Circuit to High (&gt;4.75V)</td> </tr> <tr> <td><a href="#">B1070-16</a></td> <td>Drive JOYSTICK Short Circuit to Low (&lt;0.25V) or Open</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1146-17</a>	STEER JOYSTICK Short Circuit to High (>4.75V)	<a href="#">B1147-16</a>	STEER JOYSTICK Short Circuit to Low (<0.25V) or Open	<a href="#">B1069-17</a>	Drive JOYSTICK Short Circuit to High (>4.75V)	<a href="#">B1070-16</a>	Drive JOYSTICK Short Circuit to Low (<0.25V) or Open
Fault Code	Description										
<a href="#">B1146-17</a>	STEER JOYSTICK Short Circuit to High (>4.75V)										
<a href="#">B1147-16</a>	STEER JOYSTICK Short Circuit to Low (<0.25V) or Open										
<a href="#">B1069-17</a>	Drive JOYSTICK Short Circuit to High (>4.75V)										
<a href="#">B1070-16</a>	Drive JOYSTICK Short Circuit to Low (<0.25V) or Open										

### 4.26.5.4 AUX Switch

<p><b>Component:</b></p>	<p>AUX Switch</p>
<p><b>Function:</b></p>	<p>This is to active the AUX system. Either the electric pump or override of the weight sensor if this is overloaded</p>
<p><b>Location:</b></p>	<p>Platform Control Box</p>

<p><b>Location IMG:</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>Voltage not pressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>AUX Switch pressed</td> <td>C209-1_PCP</td> <td>0089</td> <td>3V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>10V input</td> <td>C209-2_PCP</td> <td>1089, 1090</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>3</td> <td>AUX Switch unpressed</td> <td>C209-3_PCP</td> <td>0088</td> <td>10V</td> <td>3.7V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage not pressed	Voltage pressed	1	AUX Switch pressed	C209-1_PCP	0089	3V	10V	2	10V input	C209-2_PCP	1089, 1090	10V	10V	3	AUX Switch unpressed	C209-3_PCP	0088	10V	3.7V
Pin	Description	Connector Number	Wire Number	Voltage not pressed	Voltage pressed																				
1	AUX Switch pressed	C209-1_PCP	0089	3V	10V																				
2	10V input	C209-2_PCP	1089, 1090	10V	10V																				
3	AUX Switch unpressed	C209-3_PCP	0088	10V	3.7V																				
<p><b>Wires &amp; Connectors IMG:</b></p>																									
<p><b>Internal Electrical Schematic IMG:</b></p>																									

<b>Testing:</b>	1. Check the continuity between terminal 1 & 2 after pressing the push button. It should buzz.  2. Check Wire no. 1089 and 0089.	
<b>Expected Values:</b>	12V	
<b>Related Fault Codes:</b>	<b>Fault Codes</b>	<b>Description</b>
	<a href="#">B1055-17</a> <small>433</small>	Electric pump button - 1 Short Circuit to High
	<a href="#">B1056-16</a> <small>434</small>	Electric pump button - 1 Short Circuit to Low
	<a href="#">B1694-17</a> <small>687</small>	Electric pump button -2 Short Circuit to high
	<a href="#">B1695-16</a> <small>688</small>	Electric pump button -2 Short Circuit to low
	<a href="#">B1696-13</a> <small>689</small>	Electric pump button 1 & 2 Open Circuit
	<a href="#">B1697-92</a> <small>690</small>	Electric pump button 1 & 2 Both activated (10-12V)


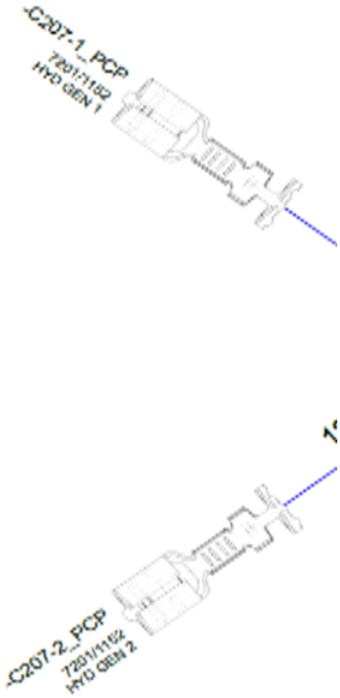
### 4.26.5.5 Worklight Switch

<b>Component:</b>	Work light Switch																							
<b>Function:</b>	This switch is to turn the work lights on and off																							
<b>Location:</b>	Platform control Panel																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage un-active</th> <th>Voltage active</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C216-1_PCP</td> <td>8078B</td> <td>12V</td> <td>12V</td> </tr> <tr> <td>2</td> <td>12V output to relay</td> <td>C216-2_PCP</td> <td>8078D</td> <td>0V</td> <td>12V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage un-active	Voltage active	1	12V input	C216-1_PCP	8078B	12V	12V	2	12V output to relay	C216-2_PCP	8078D	0V	12V					
Pin	Description	Connector Number	Wire Number	Voltage un-active	Voltage active																			
1	12V input	C216-1_PCP	8078B	12V	12V																			
2	12V output to relay	C216-2_PCP	8078D	0V	12V																			

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</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>12 V</p>
<p><b>Related Fault Codes:</b></p>	

### 4.26.5.6 Hydraulic Generator Button

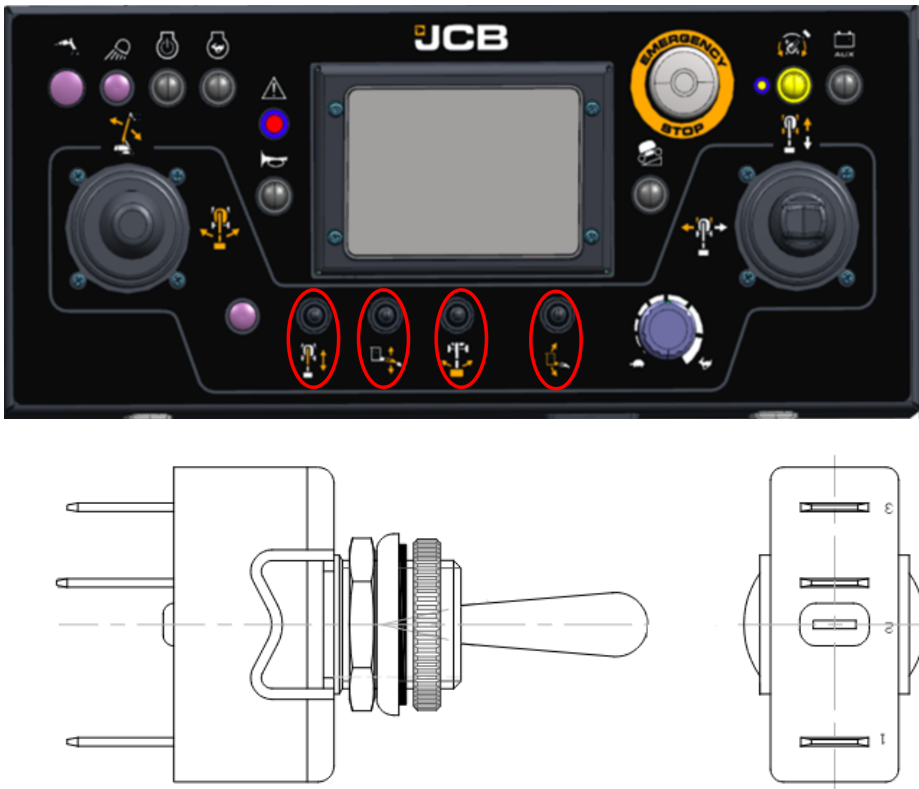
<p><b>Component</b></p>	<p>Hydraulic Generator button</p>
-------------------------	-----------------------------------

<b>t:</b>																								
<b>Function:</b>	This is to turn the hydraulic generator on and off																							
<b>Location:</b>	Platform Control Panel																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage un-active</th> <th>Voltage active</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C207-1_PCP</td> <td>1082</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>10V output to ECU</td> <td>C207-2_PCP</td> <td>0082</td> <td>3.7V</td> <td>10V</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Voltage un-active	Voltage active	1	10V input	C207-1_PCP	1082	10V	10V	2	10V output to ECU	C207-2_PCP	0082	3.7V	10V
Pin	Description	Connector Number	Wire Number	Voltage un-active	Voltage active																			
1	10V input	C207-1_PCP	1082	10V	10V																			
2	10V output to ECU	C207-2_PCP	0082	3.7V	10V																			
<b>Wires &amp; Connectors IMG:</b>																								

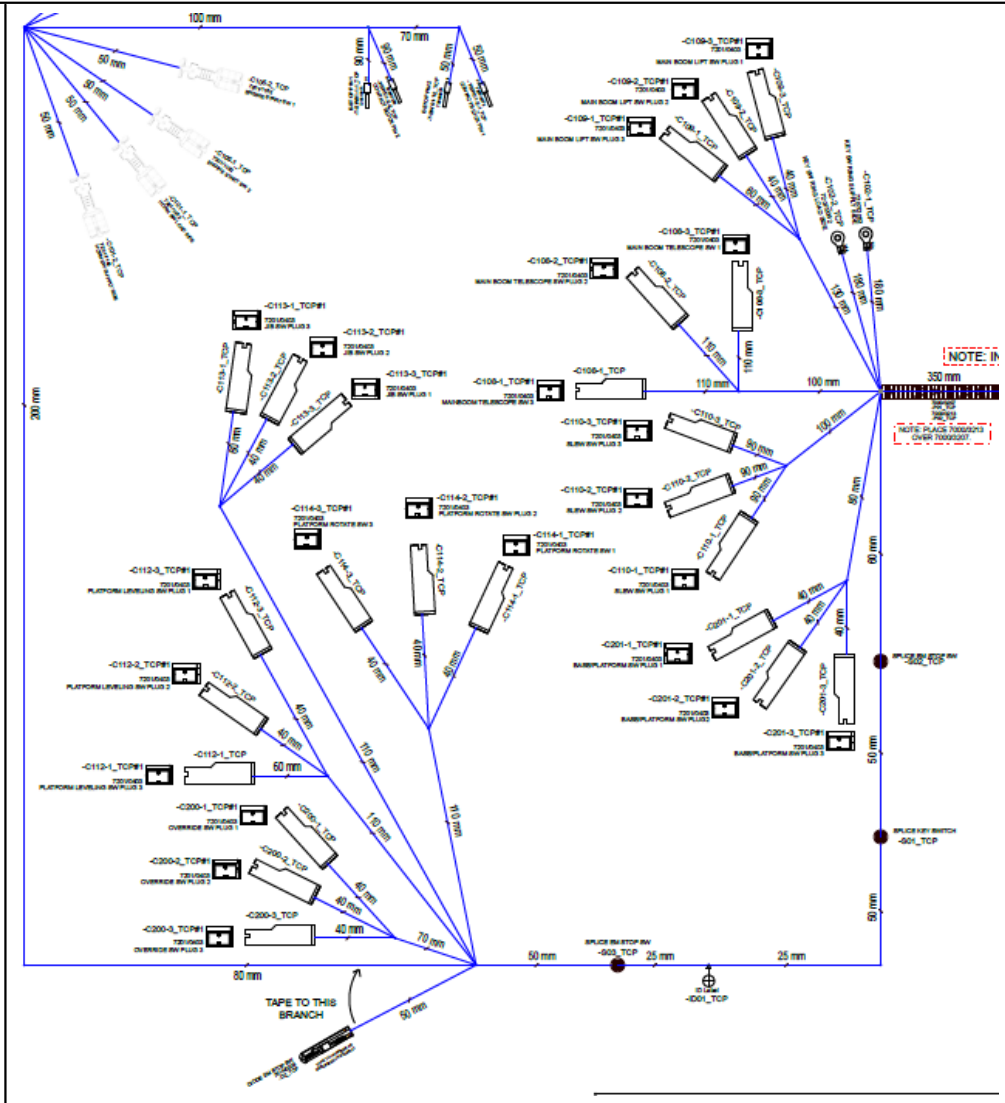
<p><b>Internal Electrical Schematic IMG:</b></p>	<p style="color: red; text-align: center;">OPTIONAL FIT AND ENABLE IN SOFTWARE</p>								
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <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>See Signal</p>								
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1215-17</a> <small>517</small></td> <td>HYDRAULIC GENERATOR BUTTON Short Circuit to Hi</td> </tr> <tr> <td><a href="#">B1216-16</a> <small>518</small></td> <td>HYDRAULIC GENERATOR BUTTON Short Circuit to Lo</td> </tr> <tr> <td><a href="#">B1217-24</a> <small>519</small></td> <td>HYDRAULIC GENERATOR BUTTON Stuck for &gt;= 10 s</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1215-17</a> <small>517</small>	HYDRAULIC GENERATOR BUTTON Short Circuit to Hi	<a href="#">B1216-16</a> <small>518</small>	HYDRAULIC GENERATOR BUTTON Short Circuit to Lo	<a href="#">B1217-24</a> <small>519</small>	HYDRAULIC GENERATOR BUTTON Stuck for >= 10 s
Fault Codes	Description								
<a href="#">B1215-17</a> <small>517</small>	HYDRAULIC GENERATOR BUTTON Short Circuit to Hi								
<a href="#">B1216-16</a> <small>518</small>	HYDRAULIC GENERATOR BUTTON Short Circuit to Lo								
<a href="#">B1217-24</a> <small>519</small>	HYDRAULIC GENERATOR BUTTON Stuck for >= 10 s								

### 4.26.5.7 Toggle Switches ON-OFF-ON

<p><b>Component:</b></p>	<p>Toggle Switches</p>
<p><b>Function:</b></p>	<p>The toggle switches are used for the turntable control panel. They are used for multiple functions, Slew, Telescope, Platform Rotate and leveling</p>
<p><b>Location:</b></p>	<p>Platform control panel</p>

<p><b>Location</b> <b>IMG:</b></p>	
<p><b>Signal:</b></p>	<p>The switches are 10V input. The output of the switches is 10V when pressed</p>


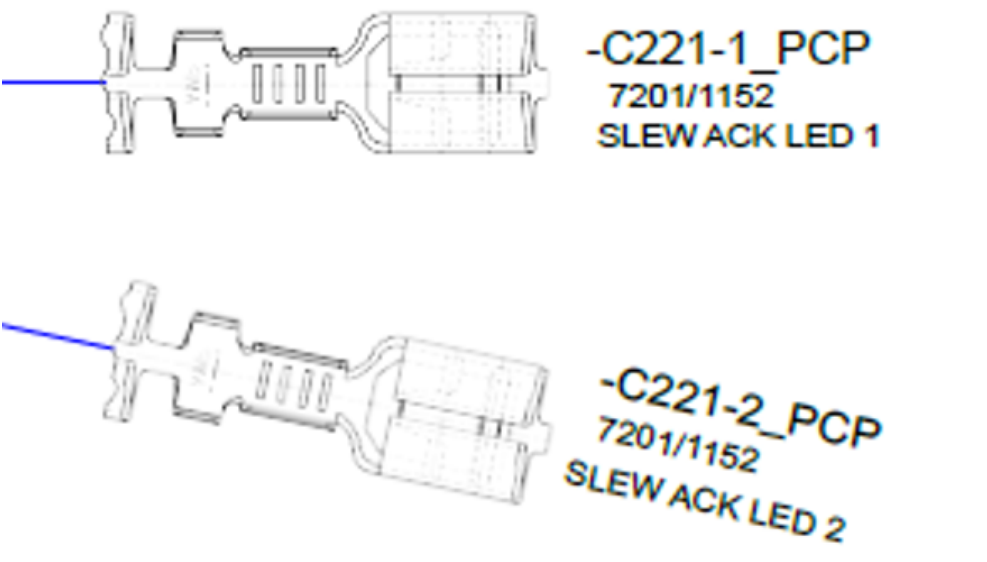
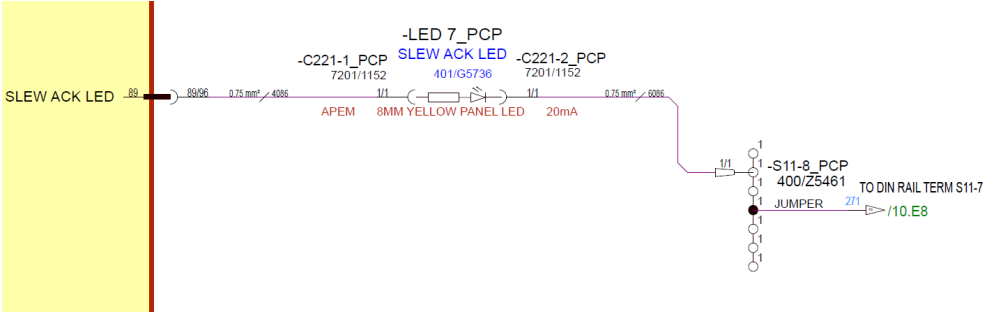
Wires & Connectors  
IMG:



<p><b>Internal Electrical Schematic IMG:</b></p>	
<p><b>Testing:</b></p>	<p>Look at the base display inputs page. Press the function and see if the input is received by the ECU.</p> <p>If not then Check there is 10V getting to the switch. When the switch is pressed the 10V should output from the corresponding pin.</p>
<p><b>Expected Values:</b></p>	<p>These switch should be open circuit when not pressed. There will be between 2.9V - 3.6V present on the wire from the ECU.</p> <p>When the switch is pressed there should be 10V getting through the switch.</p> <p>Display screen, inputs page, will show if the input is received by the ECU</p>
<p><b>Related Fault Codes:</b></p>	<p>Please refer DTC code list</p>

### 4.26.5.8 Slew Acknowledge LED

<p><b>Component:</b></p>	<p>Slew Acknowledge LED</p>
<p><b>Function:</b></p>	<p>When the slew limit fault is active and the operator wants to drive the machine then user can press slew ack button from the platform so as to activate the slew ack LED.</p>
<p><b>Location:</b></p>	<p>Slew ACK LED is connected at platform panel</p>

<p><b>Location</b> <b>IMG:</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>Voltage un-active</th> <th>Voltage active</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>12V input</td> <td>C221-1 PCP</td> <td>4086</td> <td>GND</td> <td>12V</td> </tr> <tr> <td>2</td> <td>GND</td> <td>C221-2 PCP</td> <td>6086</td> <td>GND</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage un-active	Voltage active	1	12V input	C221-1 PCP	4086	GND	12V	2	GND	C221-2 PCP	6086	GND	GND
Pin	Description	Connector Number	Wire Number	Voltage un-active	Voltage active														
1	12V input	C221-1 PCP	4086	GND	12V														
2	GND	C221-2 PCP	6086	GND	GND														
<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>																			
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>																			


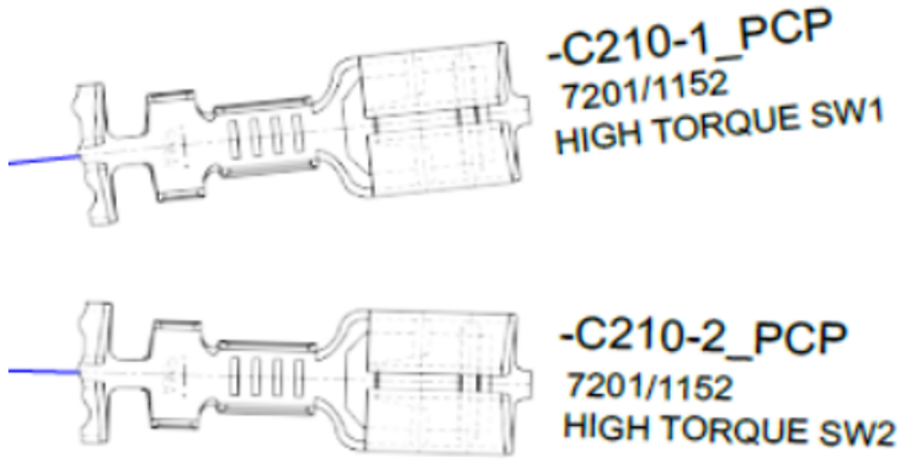
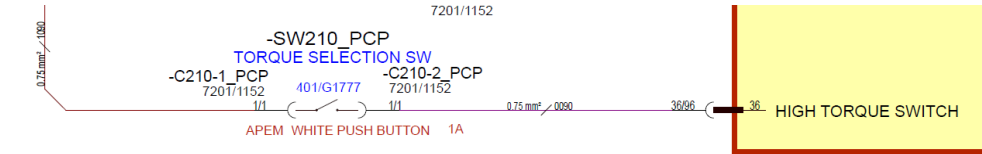
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Check wire for 89/96 for 12V signal when the Slew ACK Button is active.</li> <li>2. Check slew Ack Led Pin on connector for continuity with Ground.</li> <li>3. Check harness &amp; connector for signs of damage</li> </ol>						
<b>Expected Values:</b>	12V - On 0V - Off						
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1198-16</a> <small>507</small></td> <td>SLEW ACK LED Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1199-17</a> <small>508</small></td> <td>SLEW ACK LED Short Circuit to High</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1198-16</a> <small>507</small>	SLEW ACK LED Short Circuit to Low	<a href="#">B1199-17</a> <small>508</small>	SLEW ACK LED Short Circuit to High
Fault Codes	Description						
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<a href="#">B1199-17</a> <small>508</small>	SLEW ACK LED Short Circuit to High						

### 4.26.5.9 Slew Acknowledgment Switch

<b>Component:</b>	Slew Acknowledgment Switch																							
<b>Function:</b>	The slew acknowledgment button is to accept that machine is slewed out of the forward position and the joystick commands may be the opposite was around.																							
<b>Location:</b>	Platform control panel																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage un-pressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C205-1_PCP</td> <td>1084, 1082</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>output to ECU</td> <td>C205-2_PCP</td> <td>0083</td> <td>3.7V</td> <td>10V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed	1	10V input	C205-1_PCP	1084, 1082	10V	10V	2	output to ECU	C205-2_PCP	0083	3.7V	10V					
Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed																			
1	10V input	C205-1_PCP	1084, 1082	10V	10V																			
2	output to ECU	C205-2_PCP	0083	3.7V	10V																			

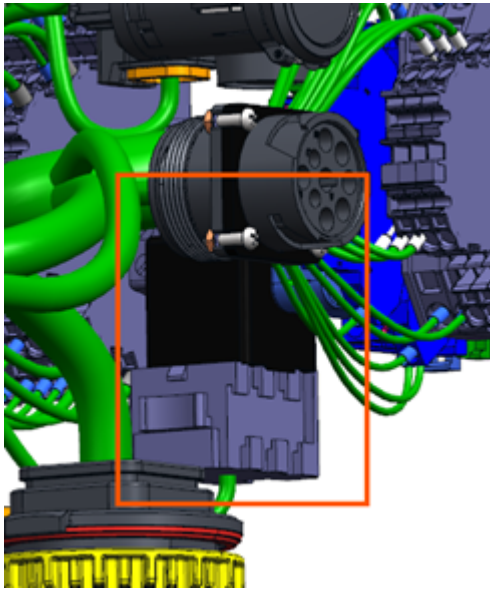
<p><b>Wires &amp; Connectors</b> IMG:</p>									
<p><b>Internal Electrical Schematic</b> IMG:</p>									
<p><b>Testing:</b></p>	<p>Important: Use the multi-meter on the harness connector pins. DO NOT USE the meter on the ECU pins</p> <ol style="list-style-type: none"> <li>Note-All the bush button 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>see signal</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><a href="#">B1064-17</a> <small>441</small></td> <td>Slew acknowledgment switch Short Circuit to High</td> </tr> <tr> <td><a href="#">B1065-16</a> <small>441</small></td> <td>Slew acknowledgment switch Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1066-24</a> <small>442</small></td> <td>Slew acknowledgment switch Short Circuit Stuck for &gt;= 10 seconds</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1064-17</a> <small>441</small>	Slew acknowledgment switch Short Circuit to High	<a href="#">B1065-16</a> <small>441</small>	Slew acknowledgment switch Short Circuit to Low	<a href="#">B1066-24</a> <small>442</small>	Slew acknowledgment switch Short Circuit Stuck for >= 10 seconds
Fault Code	Description								
<a href="#">B1064-17</a> <small>441</small>	Slew acknowledgment switch Short Circuit to High								
<a href="#">B1065-16</a> <small>441</small>	Slew acknowledgment switch Short Circuit to Low								
<a href="#">B1066-24</a> <small>442</small>	Slew acknowledgment switch Short Circuit Stuck for >= 10 seconds								

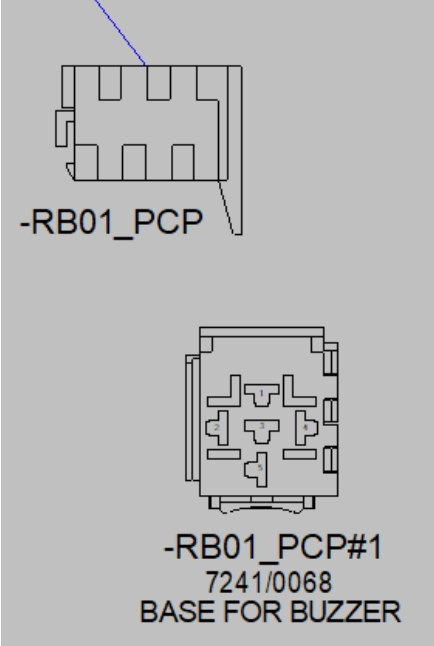
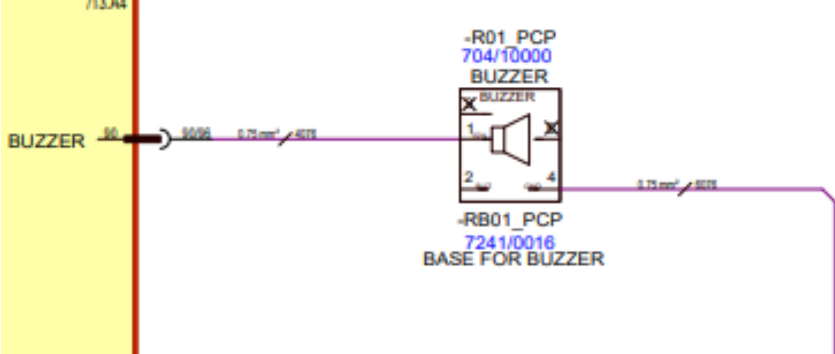
## 4.26.5.10 High torque switch

<b>Component:</b>	High torque switch																						
<b>Function:</b>	The high torque is used to control the torque of drive wheel.																						
<b>Location:</b>	It is a push button mounted on the platform panel																						
<b>Location IMG:</b>																							
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage un-pressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C210-1_PCP</td> <td>1090</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>output to ECU</td> <td>C210-2_PCP</td> <td>0090</td> <td>3.V</td> <td>10V</td> </tr> </tbody> </table>					Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed	1	10V input	C210-1_PCP	1090	10V	10V	2	output to ECU	C210-2_PCP	0090	3.V	10V
Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed																		
1	10V input	C210-1_PCP	1090	10V	10V																		
2	output to ECU	C210-2_PCP	0090	3.V	10V																		
<b>Wires &amp; Connectors IMG:</b>																							
<b>Internal Electrical Schematic IMG:</b>																							

<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Turn the ignition ON.</li> <li>2. Turn the platform enable switch ON</li> <li>3. Drive Forward/Reverse</li> <li>4. Press High Torque Switch from platform</li> <li>5. Verify the High torque icon on display and voltage</li> </ol>		
<b>Expected Values:</b>	<ol style="list-style-type: none"> <li>1.High Torque Switch Input Voltage=10V</li> <li>2.Wheel Motor High Torque sol= On</li> <li>3.Wheel Motor High Torque sol Resistance</li> </ol> Min:-2750 ohms Max:-22000 ohms		
<b>Related Fault Codes:</b>	<b>Fault Codes</b>		<b>Description</b>
	<a href="#">B1212-17</a>	<small>515</small>	HIGH TORQUE SPEED BUTTON Short Circuit to High
	<a href="#">B1213-16</a>	<small>516</small>	HIGH TORQUE SPEED BUTTON Short Circuit to Low
	<a href="#">B1214-24</a>	<small>517</small>	HIGH TORQUE SPEED BUTTON Stuck for >= 10 seco


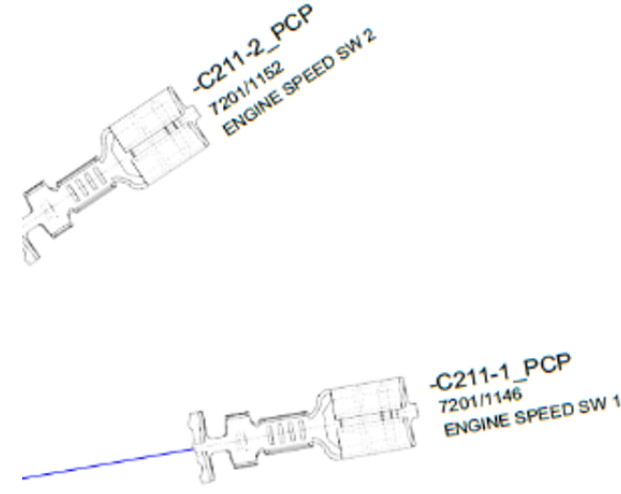
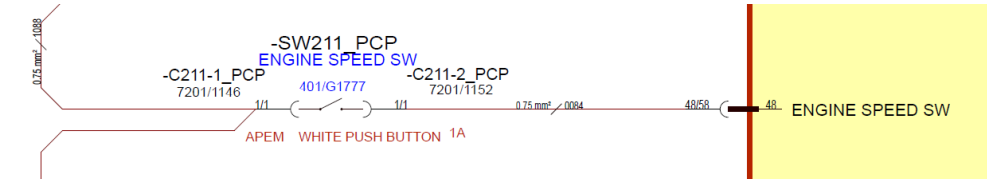
### 4.26.5.11 Buzzer

<b>Component:</b>	Buzzer			
<b>Function:</b>	The warning Buzzer indicates something requires attention of the operator.			
<b>Location:</b>	Buzzer is connected inside the platform panel			
<b>Location IMG:</b>				
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Nu</b>
	1	12V feed from ECU	RB01_PCP	407
	4	GND	RB01_PCP	607

<p><b>Wires &amp; Connectors</b> IMG:</p>							
<p><b>Internal Electrical Schematic</b> IMG:</p>							
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. check wire for 90/96 for 12V signal when the buzzer should sound.</li> <li>2. Check Pin on Buzzer connector for continuity with Ground.</li> <li>3. Check harness &amp; connector for signs of damage.</li> </ol>						
<p><b>Expected Values:</b></p>	<p>12V</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><a href="#">B1269-16</a> <small>555</small></td> <td>BUZZER Short Circuit to Low</td> </tr> <tr> <td><a href="#">B1270-17</a> <small>556</small></td> <td>BUZZER Short Circuit to High</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1269-16</a> <small>555</small>	BUZZER Short Circuit to Low	<a href="#">B1270-17</a> <small>556</small>	BUZZER Short Circuit to High
Fault Code	Description						
<a href="#">B1269-16</a> <small>555</small>	BUZZER Short Circuit to Low						
<a href="#">B1270-17</a> <small>556</small>	BUZZER Short Circuit to High						


### 4.26.5.12 High Engine Speed Switch

<p><b>Component:</b></p>	<p>High Engine Speed Switch</p>
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<b>Function:</b>	High engine speed push button at platform is used to change engine speed between high and low speed or vice-versa.																		
<b>Location:</b>	High engine speed switch is connected at the platform panel.																		
<b>Location IMG:</b>																			
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage un-pressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C211-1_PCP</td> <td>1088, 1089</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>output to ECU</td> <td>C211-2_PCP</td> <td>0084</td> <td>3.7V</td> <td>10V</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed	1	10V input	C211-1_PCP	1088, 1089	10V	10V	2	output to ECU	C211-2_PCP	0084	3.7V	10V
Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed														
1	10V input	C211-1_PCP	1088, 1089	10V	10V														
2	output to ECU	C211-2_PCP	0084	3.7V	10V														
<b>Wires &amp; Connectors IMG:</b>																			
<b>Internal Electrical Schematic IMG:</b>																			
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Turn the Ignition On.</li> <li>2. Check Engine On state</li> </ol>																		

	<p>3. Press High Engine speed button from platform</p> <p>4.turn on any Boom function from platform.</p> <p>5.Check the Engine speed.</p>								
<b>Expected Values:</b>	<p>a. idle speed:-850 RPM</p> <p>b.Low Speed:-1500 RPM</p> <p>c.High Speed:-2200 RPM</p>								
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1209-17</a><sub>512</sub></td> <td>HIGH ENGINE SPEED BUTTON SC to High</td> </tr> <tr> <td><a href="#">B1210-16</a><sub>513</sub></td> <td>HIGH ENGINE SPEED BUTTON SC to Low</td> </tr> <tr> <td><a href="#">B1211-24</a><sub>514</sub></td> <td>HIGH ENGINE SPEED BUTTON Stuck for &gt;= 10 seconds</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1209-17</a> <sub>512</sub>	HIGH ENGINE SPEED BUTTON SC to High	<a href="#">B1210-16</a> <sub>513</sub>	HIGH ENGINE SPEED BUTTON SC to Low	<a href="#">B1211-24</a> <sub>514</sub>	HIGH ENGINE SPEED BUTTON Stuck for >= 10 seconds
Fault Code	Description								
<a href="#">B1209-17</a> <sub>512</sub>	HIGH ENGINE SPEED BUTTON SC to High								
<a href="#">B1210-16</a> <sub>513</sub>	HIGH ENGINE SPEED BUTTON SC to Low								
<a href="#">B1211-24</a> <sub>514</sub>	HIGH ENGINE SPEED BUTTON Stuck for >= 10 seconds								


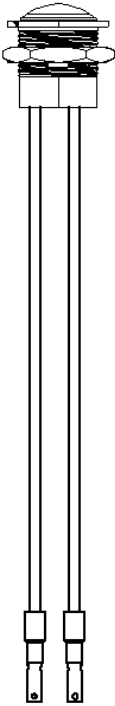
### 4.26.5.13 Potentiometer

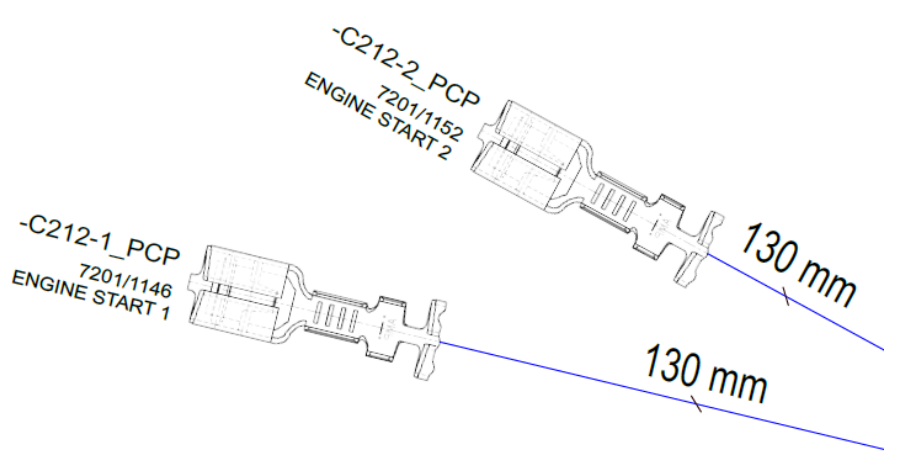
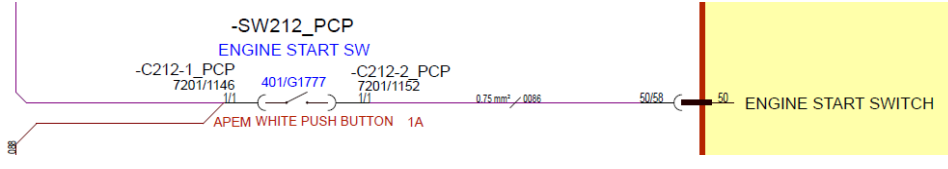
<b>Component:</b>	Potentiometer
<b>Function:</b>	<p>The potentiometer is used to control the speed of each function from the platform control panel. The potentiometer shall only affect the controls at the platform except steer. Below functions are affected with potentiometer:</p> <ol style="list-style-type: none"> <li>1. Jib up/down</li> <li>2. Platform level</li> <li>3. Platform rotate</li> <li>4. Telescope Boom extend/ retract</li> <li>5. Drive forward/ Reverse</li> <li>6. Slew</li> <li>7. Telescopic Boom Up/down</li> </ol>
<b>Location:</b>	Potentiometer is connected at the platform control panel
<b>Location IMG:</b>	
<b>Signal:</b>	<p>Potentiometer input signal</p> <p>Max position 100% = 5.15V</p> <p>Min position 10% = 0V</p>

<p><b>Wires &amp; Connectors IMG:</b></p>					
<p><b>Internal Electrical Schematic IMG:</b></p>					
<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Turn the ignition On</li> <li>2. Keep potentiometer in the minimum position</li> <li>3. verify the potentiometer output</li> <li>4. Keep potentiometer in the Maximum position</li> <li>5. verify the potentiometer output</li> <li>6. Keep potentiometer in between Minimum and Maximum position</li> <li>7. verify the potentiometer output</li> </ol>				
<p><b>Expected Values:</b></p>	<ol style="list-style-type: none"> <li>1. Output of Potentiometer in min position = 10%</li> <li>2. Output of Potentiometer in max position = 100 %</li> <li>3. Output of Potentiometer when kept in between = &gt; 10%</li> </ol>				
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Descriptions</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1067-17</a> <small>443</small></td> <td>Short Circuit to High (&gt;5.5V)</td> </tr> </tbody> </table>	Fault Codes	Descriptions	<a href="#">B1067-17</a> <small>443</small>	Short Circuit to High (>5.5V)
Fault Codes	Descriptions				
<a href="#">B1067-17</a> <small>443</small>	Short Circuit to High (>5.5V)				

### 4.26.5.14 Engine Start Button


<p><b>Component:</b></p>	<p>Engine Start Button</p>
<p><b>Function:</b></p>	<p>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).</p>

<b>Location:</b>	Platform control panel																							
<b>Location IMG:</b>																								
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage un-pressed</th> <th>Voltage pressed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10V input</td> <td>C212-1_PCP</td> <td>1086, 1088</td> <td>10V</td> <td>10V</td> </tr> <tr> <td>2</td> <td>output to ECU</td> <td>C212-2_PCP</td> <td>0086</td> <td>3.7V</td> <td>10V</td> </tr> </tbody> </table>						Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed	1	10V input	C212-1_PCP	1086, 1088	10V	10V	2	output to ECU	C212-2_PCP	0086	3.7V	10V
Pin	Description	Connector Number	Wire Number	Voltage un-pressed	Voltage pressed																			
1	10V input	C212-1_PCP	1086, 1088	10V	10V																			
2	output to ECU	C212-2_PCP	0086	3.7V	10V																			
<b>Wires &amp; Connectors IMG:</b>	 <p>terminals</p> <p>The engine start button is connected via 2.8mm Push fit</p>																							

					
<p><b>Internal Electrical Schematic IMG:</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-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>See Signal</p>				
<p><b>Related Fault</b></p>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>B1239-17 <small>532</small></td> <td>ENGINE START BUTTON SC to High</td> </tr> </tbody> </table>	Fault Codes	Description	B1239-17 <small>532</small>	ENGINE START BUTTON SC to High
Fault Codes	Description				
B1239-17 <small>532</small>	ENGINE START BUTTON SC to High				

<b>Codes:</b>	<b>Fault Codes</b>	<b>Description</b>
	B1240-16 <sup>533</sup>	ENGINE START BUTTON SC to Low
	B1241-24 <sup>534</sup>	ENGINE START BUTTON Stuck for >= 10 seconds

### 4.26.5.15 E-Stop Platform

<b>Component:</b>	E-Stop					
<b>Function:</b>	<p>The E-stop is there for the operator to stop any functioning with immediate action.</p> <p>The will stop all functions at the base and platform controls stations.</p> <p>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.</p> <p>The E-stop uses x2 NC contacts that open when pressed.</p>					
<b>Location:</b>	Platform control panel					
<b>Location IMG:</b>						
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>	<b>Voltage unpressed</b>	<b>Voltage pressed</b>
	1	12V input from platform E-Stop	-T-SW01-1-1_PCP	3041	12V	12V
	2	ECU Feed & ignition relays	-T-SW01-1-2_PCP	3043	12V	Open Circuit
	1	ECU Feed	-T-SW01-2-1_TCP	6048	GND	Open Circuit
	2	GND	-T-SW01-2-2_TCP	6030	GND	GND

<p><b>Wires &amp; Connectors IMG:</b></p>	
<p><b>Internal Electrical Schematic IMG:</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. 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>	See Signal					
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th style="background-color: yellow;">Fault Codes</th> <th style="background-color: yellow;">Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1235-17</a> <small>531</small></td> <td>E-Stop Plausibility Check</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1235-17</a> <small>531</small>	E-Stop Plausibility Check	
Fault Codes	Description					
<a href="#">B1235-17</a> <small>531</small>	E-Stop Plausibility Check					

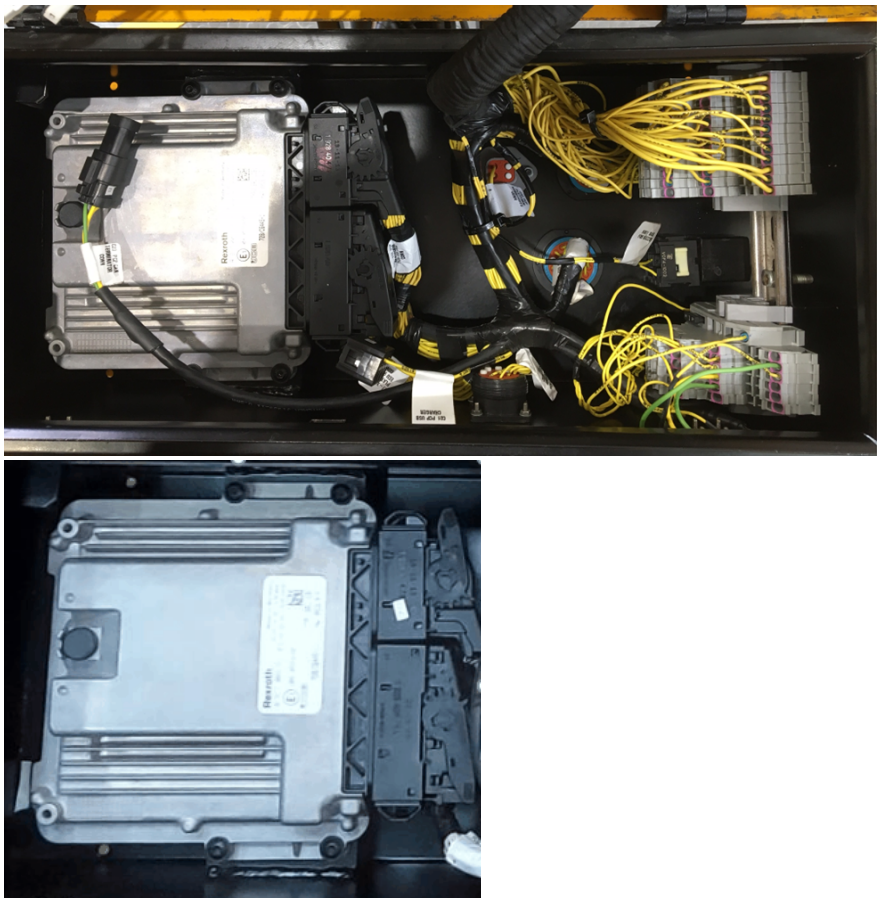
## 4.26.5.16 Platform ECU

### List of Platform ECU

Number	Component
1	<a href="#">10V system</a> <small>312</small>
2	<a href="#">5V system 1</a> <small>313</small>
3	<a href="#">5V system 2</a> <small>314</small>
4	<a href="#">RC Config</a> <small>315</small>

### 4.26.5.16.1 Platform ECU

<b>Component:</b>	Platform ECU
<b>Function:</b>	<p>The Platform ECU Controls all of the electronic controls of the machine from platform control station.</p> <p>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.</p> <p>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.</p>
<b>Location:</b>	The platform ECU is located inside the control box

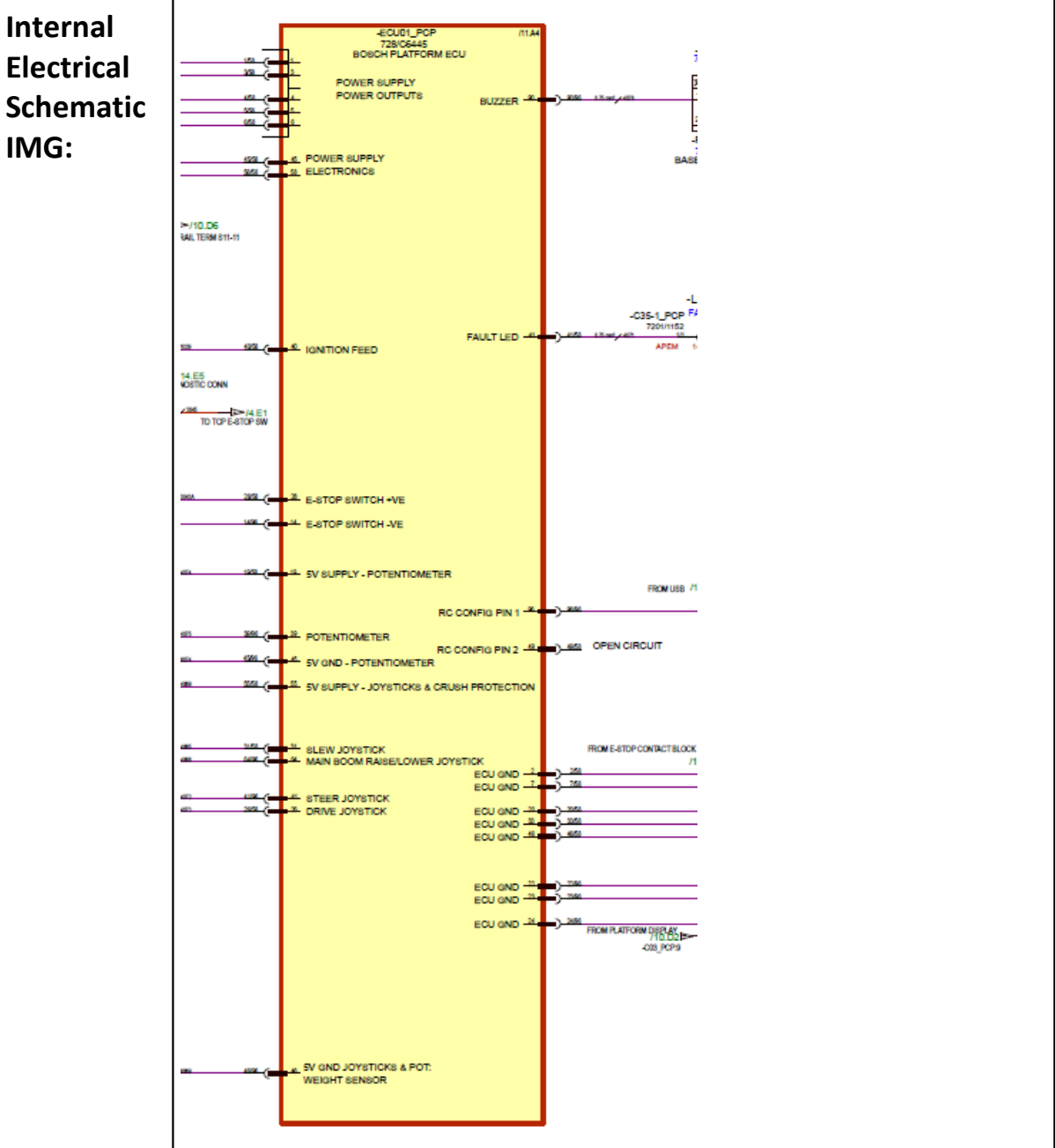
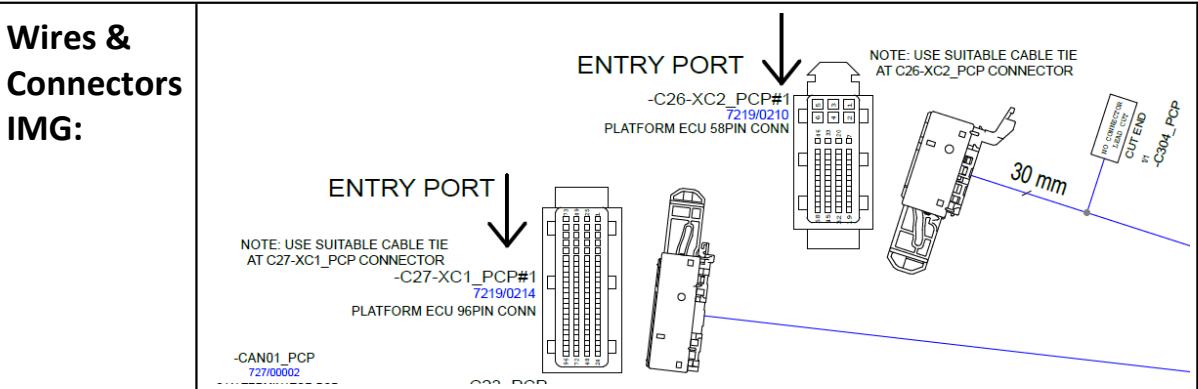
<p><b>Location IMG:</b></p>																																																
<p><b>Signal:</b></p>	<table border="1"> <thead> <tr> <th colspan="3">58 Way Connector</th> </tr> <tr> <th>Pin Number</th> <th>Description/Signal</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Power Supply 12V input</td> <td>1017</td> </tr> <tr> <td>2</td> <td>GND Signal</td> <td>6031</td> </tr> <tr> <td>3</td> <td>Power Supply 12V input</td> <td>1018</td> </tr> <tr> <td>4</td> <td>Power Supply 12V input</td> <td>1019</td> </tr> <tr> <td>5</td> <td>Power Supply 12V input</td> <td>1020</td> </tr> <tr> <td>6</td> <td>Power Supply 12V input</td> <td>1021</td> </tr> <tr> <td>7</td> <td>GND Signal</td> <td>6032</td> </tr> <tr> <td>8</td> <td>NOT USED</td> <td>NOT USED</td> </tr> <tr> <td>9</td> <td>Platform level lower switch input (10V when pressed)</td> <td>81</td> </tr> <tr> <td>10</td> <td>Platform level raise switch input (10V when pressed)</td> <td>80</td> </tr> <tr> <td>11</td> <td>Platform rotate right switch input (10V when pressed)</td> <td>79</td> </tr> <tr> <td>12</td> <td>platform rotate left switch input (10V when pressed)</td> <td>78</td> </tr> <tr> <td>13</td> <td>NOT USED</td> <td>NOT USED</td> </tr> </tbody> </table>			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
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	NOT USED	NOT USED
24	NOT USED	NOT USED
25	Hydraulic generator 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)	3043A
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	NOT USED	NOT USED
35	NOT USED	NOT USED
36	CRUSH PROTECTION SWITCH 1 (5V when not pressed and reset)	4094
37	NOT USED	NOT USED
38	NOT USED	NOT USED
39	AUX/OVERRIDE	88
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 SWITCH 2	4093
48	Engine high speed switch input	84
49	RC Config 2 open circuit	Open Circuit
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 SUPPLY - JOYSTICKS & CRUSH PROTECTION	4069
56	NOT USED	NOT USED
57	NOT USED	NOT USED
58	power supply electronics (12V)	1023
<b>96 Way connector</b>		
<b>Pin Number</b>	<b>Description/Signal</b>	<b>Wire Number</b>
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, WEIGHT SENSOR	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	JIB/PLATFORM ROTATE SOL HS (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	LOAD SENSOR 1 (WEIGHT) 0 TO 20mA	4101C
69	LOAD SENSOR 1 (WEIGHT) 0 TO 20mA	4101A
70	LOAD SENSOR 2 (WEIGHT) 0 TO 20mA	4102A
71	LOAD SENSOR 2 (WEIGHT) 0 TO 20mA	4102C
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	JIB/PLATFORM ROTATE SOL LS	6050
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
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>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. Connect machine to the Servicemaster diagnostic tool using the DLA Connector.</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>	See The Signal				
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">U1299-87</a> <small>701</small></td> <td>CAN Signal pairing failure</td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">U1299-87</a> <small>701</small>	CAN Signal pairing failure
Fault Code	Description				
<a href="#">U1299-87</a> <small>701</small>	CAN Signal pairing failure				

#### 4.26.5.16.2 10V system

<b>Component:</b>	10V system											
<b>Function:</b>	This provides a 10V output from the platform ECU to power the switches..											
<b>Location:</b>	Platform Controller - Platform Control Panel											
<b>Location IMG:</b>	N/A											
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> </tr> </thead> <tbody> <tr> <td>32/58</td> <td>10V output</td> <td>C26-XC2_PCP</td> <td>1068</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	32/58	10V output	C26-XC2_PCP	1068			
Pin	Description	Connector Number	Wire Number									
32/58	10V output	C26-XC2_PCP	1068									

<p><b>Wires &amp; Connectors</b> <b>IMG:</b></p>									
<p><b>Internal Electrical Schematic</b> <b>IMG:</b></p>	<p>Please refer electrical schematic</p>								
<p><b>Testing:</b></p>	<p>The 10V system feeds all input switches and also limit switches used at the Platform. If a fault occurs, it should default controls to the platform control station.</p> <p>This fault can be difficult to find. If the fault occurs when pressing a switch it may be an output from a switch position that is back fed through the control system. The easiest way to find this fault is to disconnect sections at a time until the system is back running.</p> <p>If a fault on the system occurs it will need a restart to enable the output again.</p>								
<p><b>Expected Values:</b></p>	<p>10V</p>								
<p><b>Related Fault Codes:</b></p>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1284-16</a><sup>569</sup></td> <td>VSS2 Low Voltage (&lt;= 9.5V)</td> </tr> <tr> <td><a href="#">B1267-17</a><sup>553</sup></td> <td>10V INPUT System SC to High - Platform</td> </tr> <tr> <td><a href="#">B1268-16</a><sup>554</sup></td> <td>10V INPUT System SC to Low - Platform</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1284-16</a> <sup>569</sup>	VSS2 Low Voltage (<= 9.5V)	<a href="#">B1267-17</a> <sup>553</sup>	10V INPUT System SC to High - Platform	<a href="#">B1268-16</a> <sup>554</sup>	10V INPUT System SC to Low - Platform
Fault Codes	Description								
<a href="#">B1284-16</a> <sup>569</sup>	VSS2 Low Voltage (<= 9.5V)								
<a href="#">B1267-17</a> <sup>553</sup>	10V INPUT System SC to High - Platform								
<a href="#">B1268-16</a> <sup>554</sup>	10V INPUT System SC to Low - Platform								

### 4.26.5.16.3 5V System 1

<p><b>Component:</b></p>	<p>5V System - Potentiometer</p>
<p><b>Function:</b></p>	<p>This 5V system is used to power the potentiometer. The negative also feeds to a dedicated pin.</p>

<b>Location:</b>	Platform control panel box wiring harness			
<b>Location IMG:</b>	N/A			
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>
	19/58	5V output	C-L11-3_PCP	4074
	45/96	5V Ground to ECU	C-L11-1_PCP	6074
<b>Wires &amp; Connectors IMG:</b>	N/A			
<b>Internal Electrical Schematic IMG:</b>				
<b>Testing:</b>	Check 5 Volt on Pin 19/58 and 45/96			
<b>Expected Values:</b>	5 volt			
<b>Related Fault Codes:</b>	<b>Fault Codes</b>	<b>Description</b>		
	<a href="#">B1283-16</a> <small>568</small>	VSS1 Low Voltage (<= 4.5V)		

### 4.26.5.16.4 5V System 2

<b>Component:</b>	5V System - Joysticks and crush protection feed			
<b>Function:</b>	This 5V system is used to power the joysticks and crush protection system. The negative also feeds to a dedicated pin.			
<b>Location:</b>	Platform control panel box wiring harness			
<b>Location IMG:</b>	N/A			
<b>Signal:</b>	<b>Pin</b>	<b>Description</b>	<b>Connector Number</b>	<b>Wire Number</b>
	55/58	5V output	S11-5_PCP	4069
	46/96	5V Ground to ECU	S11-6_PCP	6069

<b>Wires &amp; Connectors IMG:</b>	N/A				
<b>Internal Electrical Schematic IMG:</b>					
<b>Testing:</b>	Check 5 Volt on Pin 55/58 and 46/96				
<b>Expected Values:</b>	5V				
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Codes</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1285-16</a> 5701</td> <td>VSS3 Low Voltage (&lt;= 4.5V)</td> </tr> </tbody> </table>	Fault Codes	Description	<a href="#">B1285-16</a> 5701	VSS3 Low Voltage (<= 4.5V)
Fault Codes	Description				
<a href="#">B1285-16</a> 5701	VSS3 Low Voltage (<= 4.5V)				


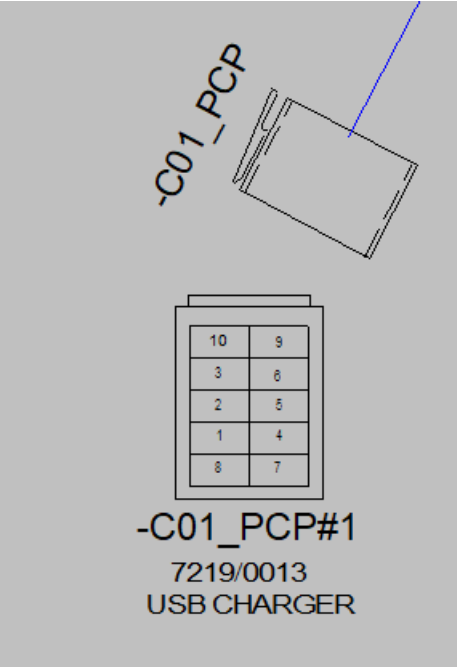
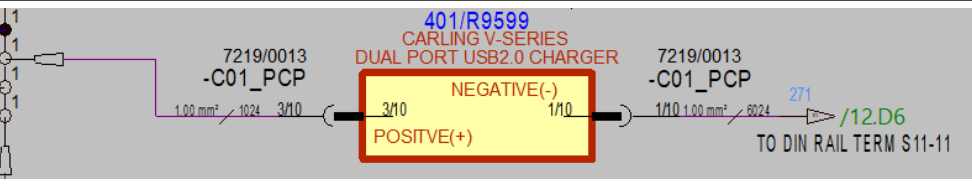
### 4.26.5.16.5 RC Config

<b>Component:</b>	RC Config											
<b>Function:</b>	The RC config is what allows the software to identify which ECU is the Base or Platform ECU.											
<b>Location:</b>	Base ECU											
<b>Location IMG:</b>	N/A											
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin Number</th> <th>Base ECU</th> <th>Platform ECU</th> </tr> </thead> <tbody> <tr> <td>49/58</td> <td>GND</td> <td>Open Circuit</td> </tr> <tr> <td>96/96</td> <td>Open Circuit</td> <td>GND</td> </tr> </tbody> </table>	Pin Number	Base ECU	Platform ECU	49/58	GND	Open Circuit	96/96	Open Circuit	GND		
Pin Number	Base ECU	Platform ECU										
49/58	GND	Open Circuit										
96/96	Open Circuit	GND										
<b>Wires &amp; Connectors</b>	N/A											

<b>IMG:</b>							
<b>Internal Electrical Schematic IMG:</b>	N/A						
<b>Testing:</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>						
<b>Expected Values:</b>	60 Ohm resistance in Pin D and C on Diagnostic connector						
<b>Related Fault Codes:</b>	<table border="1"> <thead> <tr> <th>Fault Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><a href="#">B1303-2F</a> <small>576</small></td> <td>RC CONFIG SC Plausibility Check</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	Fault Code	Description	<a href="#">B1303-2F</a> <small>576</small>	RC CONFIG SC Plausibility Check		
Fault Code	Description						
<a href="#">B1303-2F</a> <small>576</small>	RC CONFIG SC Plausibility Check						


### 4.26.5.17 USB Socket

<b>Component:</b>	USB Socket
<b>Function:</b>	The USB socket provides x2 USB outlets to the operator
<b>Location:</b>	Platform control box

<p><b>Location IMG:</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> </tr> </thead> <tbody> <tr> <td>1/10</td> <td>GND</td> <td>C01_PCP</td> <td>6024</td> </tr> <tr> <td>3/10</td> <td>12V input</td> <td>C01_PCP</td> <td>1024</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	1/10	GND	C01_PCP	6024	3/10	12V input	C01_PCP	1024
Pin	Description	Connector Number	Wire Number										
1/10	GND	C01_PCP	6024										
3/10	12V input	C01_PCP	1024										
<p><b>Wires &amp; Connectors IMG:</b></p>													
<p><b>Internal Electrical Schematic IMG:</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>	12 Volt
<b>Related Fault Codes:</b>	NA

### 4.26.5.18 Platform Display

<b>Component:</b>	Platform Display																			
<b>Function:</b>	The platform display is to give the operator information at the platform control station																			
<b>Location:</b>	Platform control box																			
<b>Location IMG:</b>																				
<b>Signal:</b>	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Connector Number</th> <th>Wire Number</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>Ignition Feed 12V</td> <td>C03_PCP</td> <td>1099</td> <td>12V</td> </tr> <tr> <td>9</td> <td>GND</td> <td>C03_PCP</td> <td>6075</td> <td>GND</td> </tr> </tbody> </table>	Pin	Description	Connector Number	Wire Number	Voltage	2	Ignition Feed 12V	C03_PCP	1099	12V	9	GND	C03_PCP	6075	GND				
Pin	Description	Connector Number	Wire Number	Voltage																
2	Ignition Feed 12V	C03_PCP	1099	12V																
9	GND	C03_PCP	6075	GND																

Pin	Description	Connector Number	Wire Number	Voltage
10	12V	C03_PCP	1100	12V
15	USB D-	C03_PCP	4103WH	
16	USB D+	C03_PCP	4104GN	
17	USB GND	C03_PCP	4106BK	0 V
18	USB V Bus 5V	C03_PCP	4105RD	5 V
7	CAN1 L	C03_PCP	CAN L19	1.5 - 4.5V
8	CAN1 H	C03_PCP	CAN H19	1.5 - 4.5V

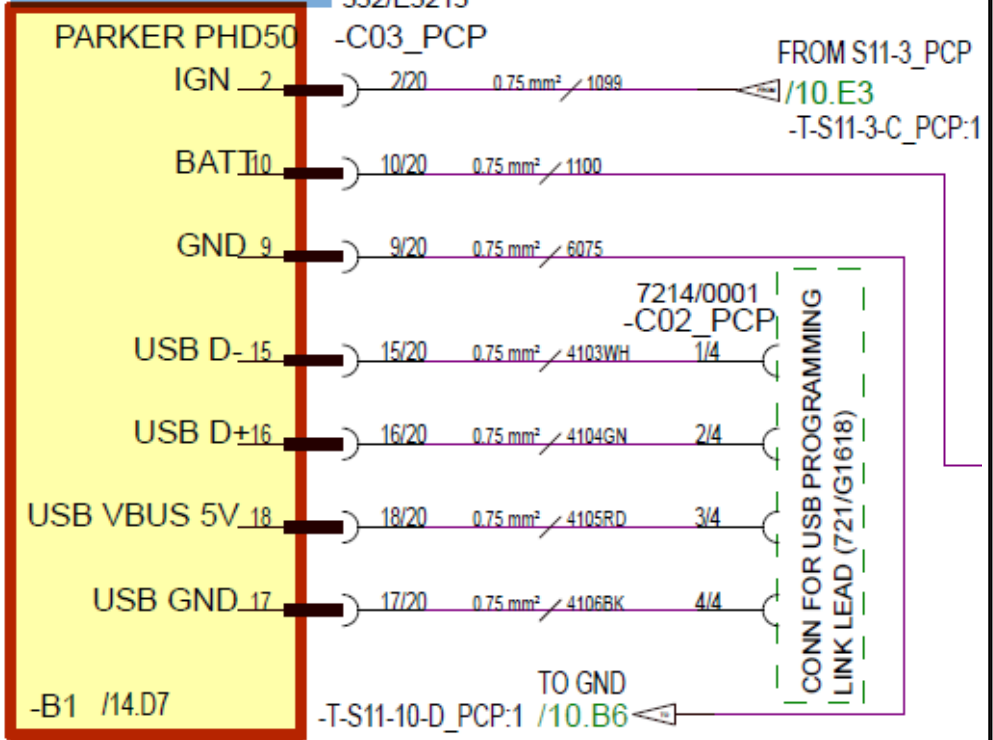
  

**Wires & Connectors IMG:**

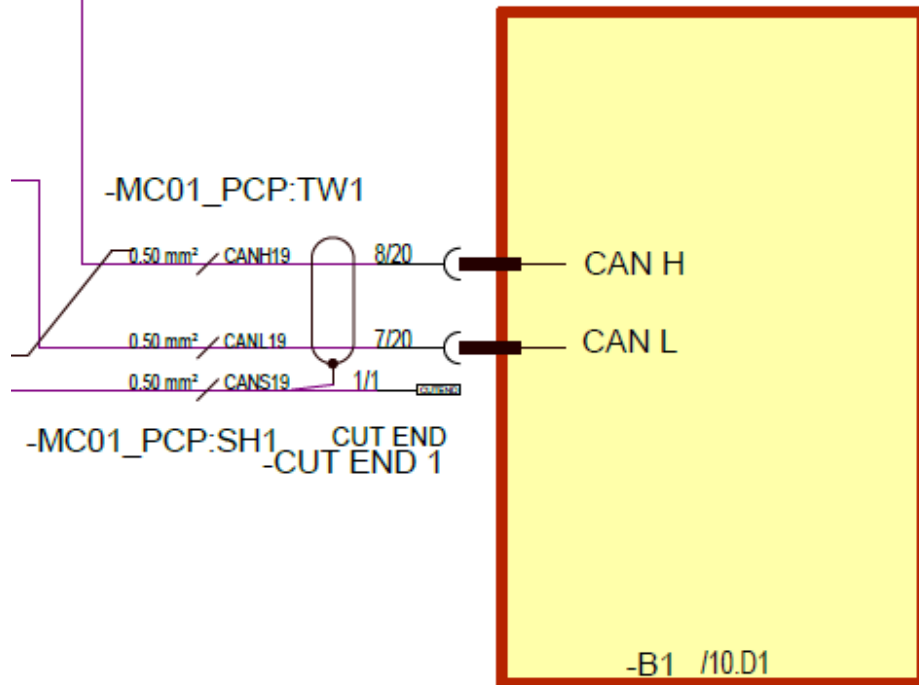
The diagram shows two connector types. The top one is labeled '-C03\_PCP#1' with part number '332/E3213' and description 'PCP DISPLAY'. It is a 20-pin connector with a 'GREY 'B'' label. The bottom one is labeled '-C02\_PCP#1' with part number '7214/0001' and description 'USB CONNECTOR'. It is a 4-pin connector with pins numbered 1, 2, 3, and 4. A blue line indicates a wire connection to the bottom connector.

Internal  
Electrical  
Schematic  
IMG:

**PLATFORM DISPLAY**



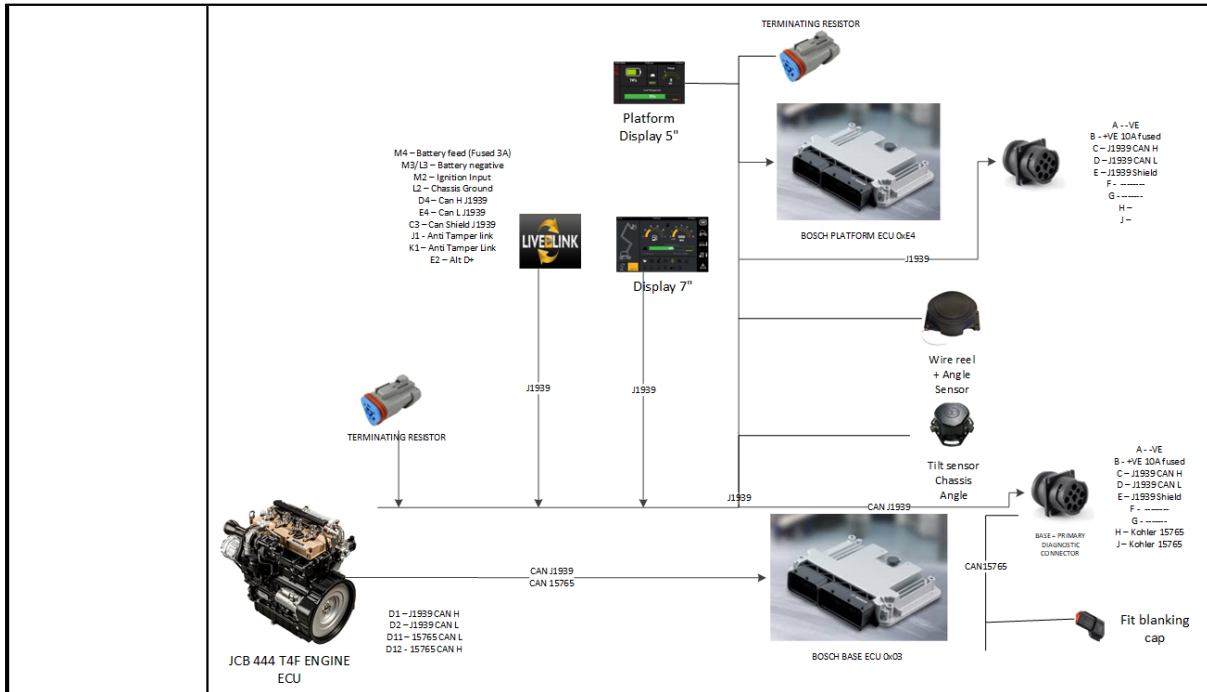
**PLATFORM DISPLAY**  
PARKER PHD50



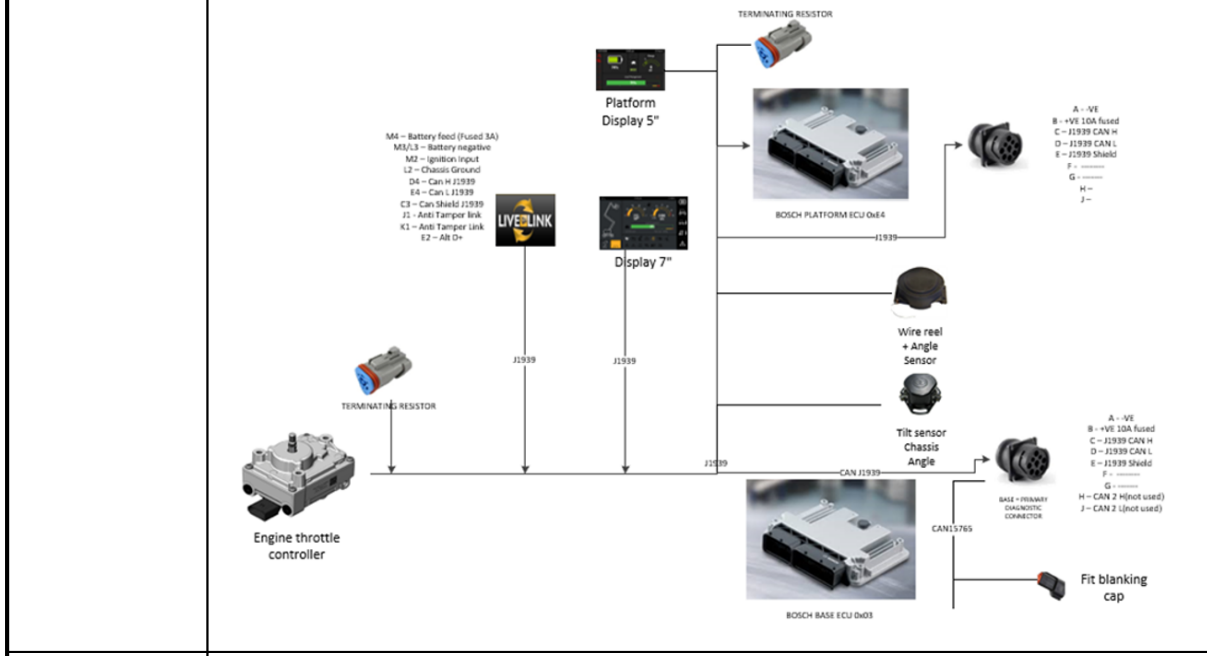
<b>Testing:</b>	<ol style="list-style-type: none"> <li>1. Check IGN feed wire 1099.</li> <li>2. Check wire 1100.</li> <li>3. Check Ground cable 6075.</li> <li>4. Check connector and wire for any damage or loose connection.</li> </ol>
<b>Expected Values:</b>	See Signal
<b>Related Fault Codes:</b>	NA

## 4.27 CAN

<b>Component:</b>	<b>CAN</b>
<b>Function:</b>	CAN allows the communication between the multiple controllers
<b>Location:</b>	N/A
<b>Location IMG:</b>	N/A
<b>Signal:</b>	<p><b>T65D</b></p> <p>CAN H <span style="margin-left: 200px;">CAN L</span></p>



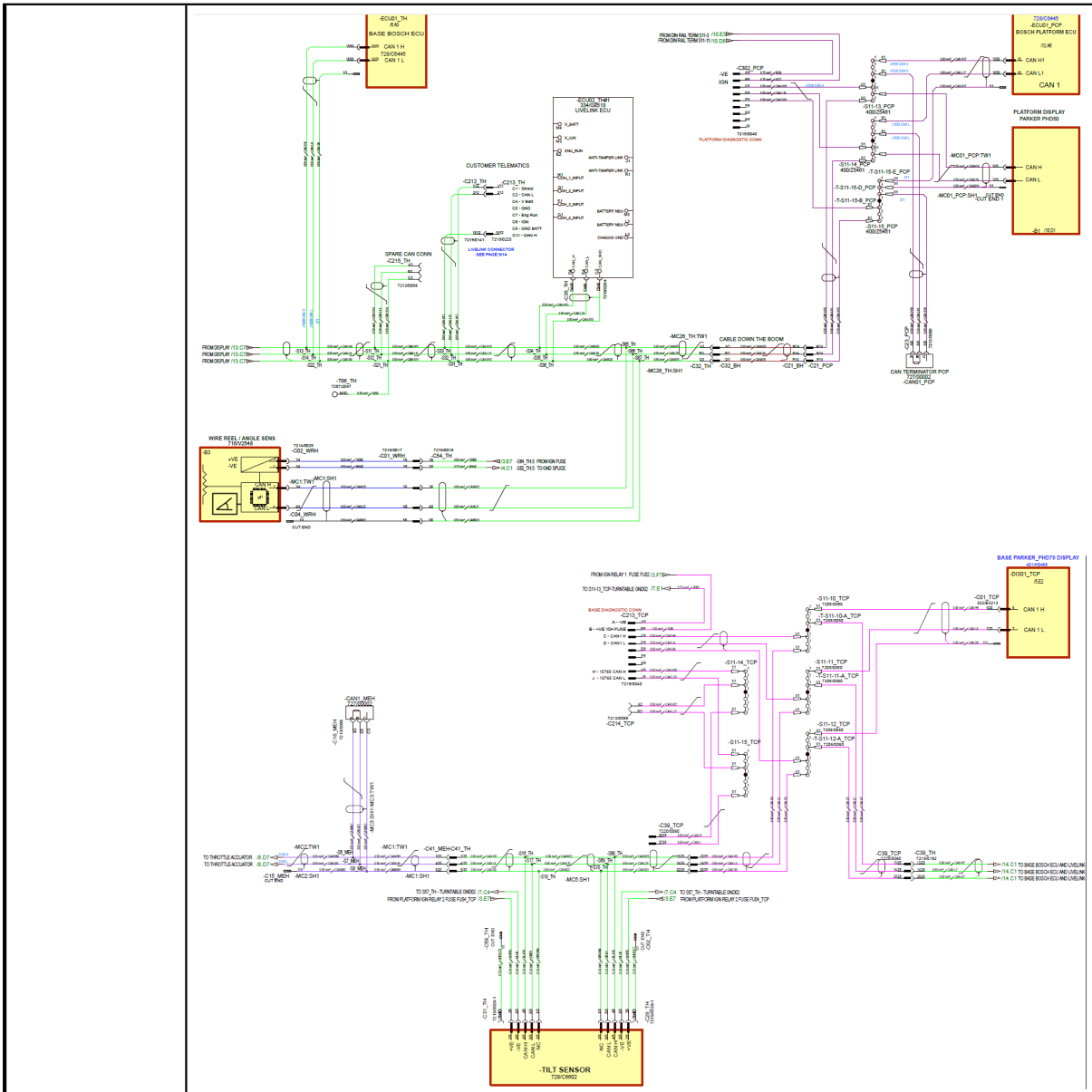
## T65D Tier3



**Wires & Connectors IMG:**

N/A





<p><b>Testing:</b></p>	<ol style="list-style-type: none"> <li>1. Turn the Ignition ON</li> <li>2. check the connection of CAN H &amp; CAN L</li> <li>3. Check the 120 Ohm terminator resistor are connected</li> <li>4. Operate any Function from platform or Base</li> <li>5. check the operation</li> </ol> <p>Turn ignition off - also ensure live link is removed or asleep. There should be 60 Ohms measured at any point on the network between CAN High and CAN L</p>
<p><b>Expected Values:</b></p>	<p>No CAN communication Fault</p>

<b>Related Fault Codes:</b>	<b>Fault Codes</b>	<b>Description</b>
	U1293-87	Base ECU CAN TIME OUT ERROR
	U1294-56	Base ECU CAN RC ERROR
	U1295-41	Base ECU CAN CHECK SUM ERROR
	U1296-87	Platform ECU CAN TIME OUT ERROR
	U1297-56	Platform ECU CAN RC ERROR
	U1298-41	Platform ECU CAN CHECK SUM ERROR
	U1299-87	Base ECU CAN PAIRING FAILED ERROR
	U1323-56	Base ECU CAN RC ERROR
	U1324-56	Base ECU CAN RC ERROR
	U1325-56	Base ECU CAN RC ERROR
	U1326-41	Base ECU CAN CHECK SUM ERROR
	U1327-41	Base ECU CAN CHECK SUM ERROR
	U1328-41	Base ECU CAN CHECK SUM ERROR

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# Flashing of controllers

## 5 Flashing of controllers

List of [Flashing of Controllers](#) <sup>328</sup>

Number	Components
1	<a href="#">Display Flashing</a> <sup>328</sup>
2	<a href="#">Flashing Base &amp; Platform Controllers</a> <sup>330</sup>
3	<a href="#">Flashing of Engine</a> <sup>337</sup>

### 5.1 Display Flashing

---

#### Overview (Procedure is same for T65D and T65D Tier3 machine)

The display can be flashed and updated through USB. It is the same process to follow for the Base and Platform Display.

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.
6. Use the yellow button first to remove any old parameters and software that is saved to the display
7. Select the software required to be flashed so it appears in the top file box (multiple software can be on the memory stick)
8. Press the green download button to update new software



9. wait for the software to complete its update and then remove memory stick and the display will reset.

10. The machine VIN number will need to be updated through service-master tool.

## 5.2 Flashing Base & Platform Controllers

### Flashing on the Bosch ecu's (Procedure is same for T65D and T65D Tier3 machine)

Use the JCB Flashloader.

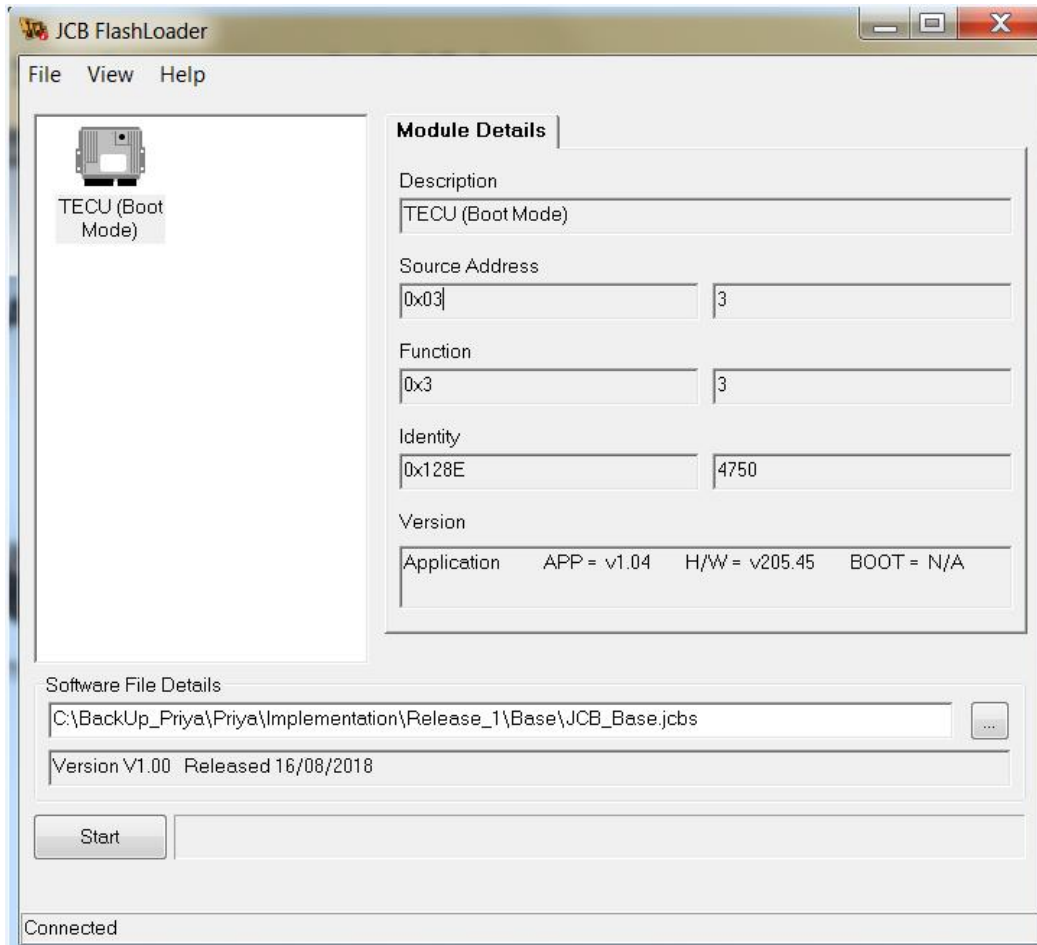
For information on the Flashloader tool, see JCB Servicemaster tools section

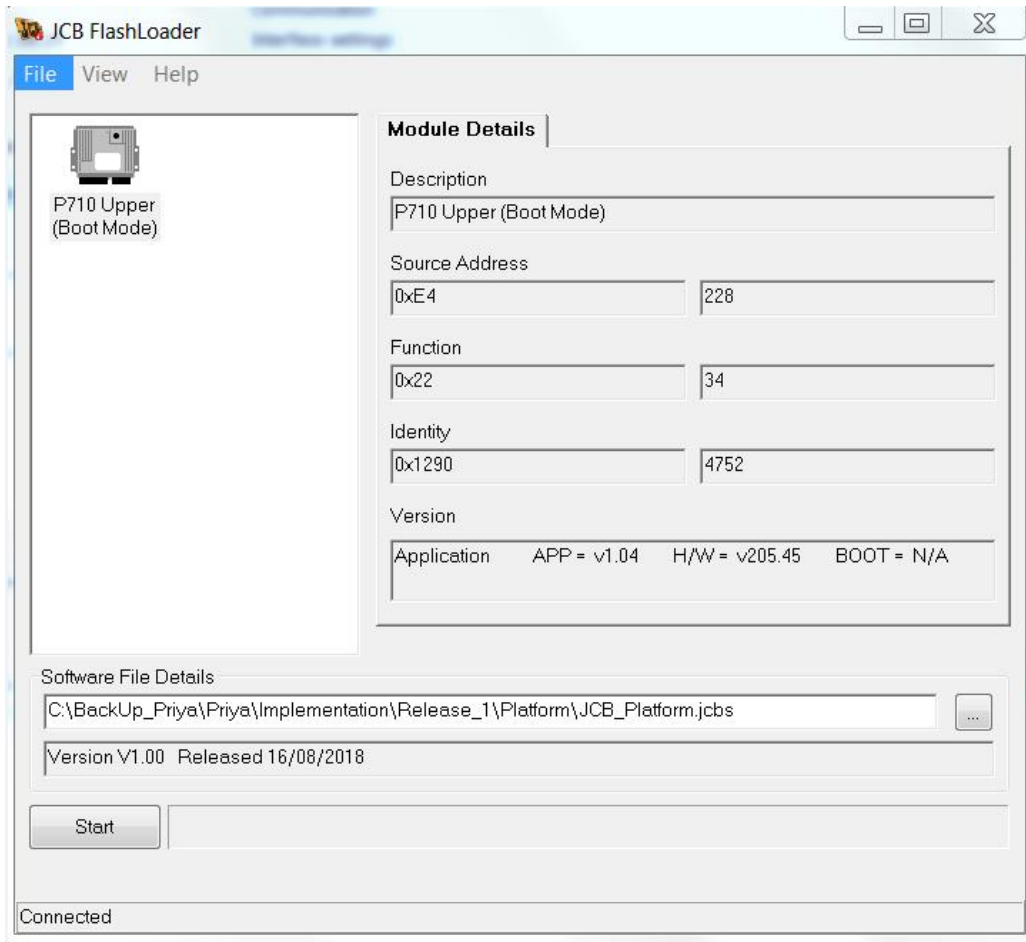
This instruction begins with the tool connected to the machine

#### Available ECU's on the machine

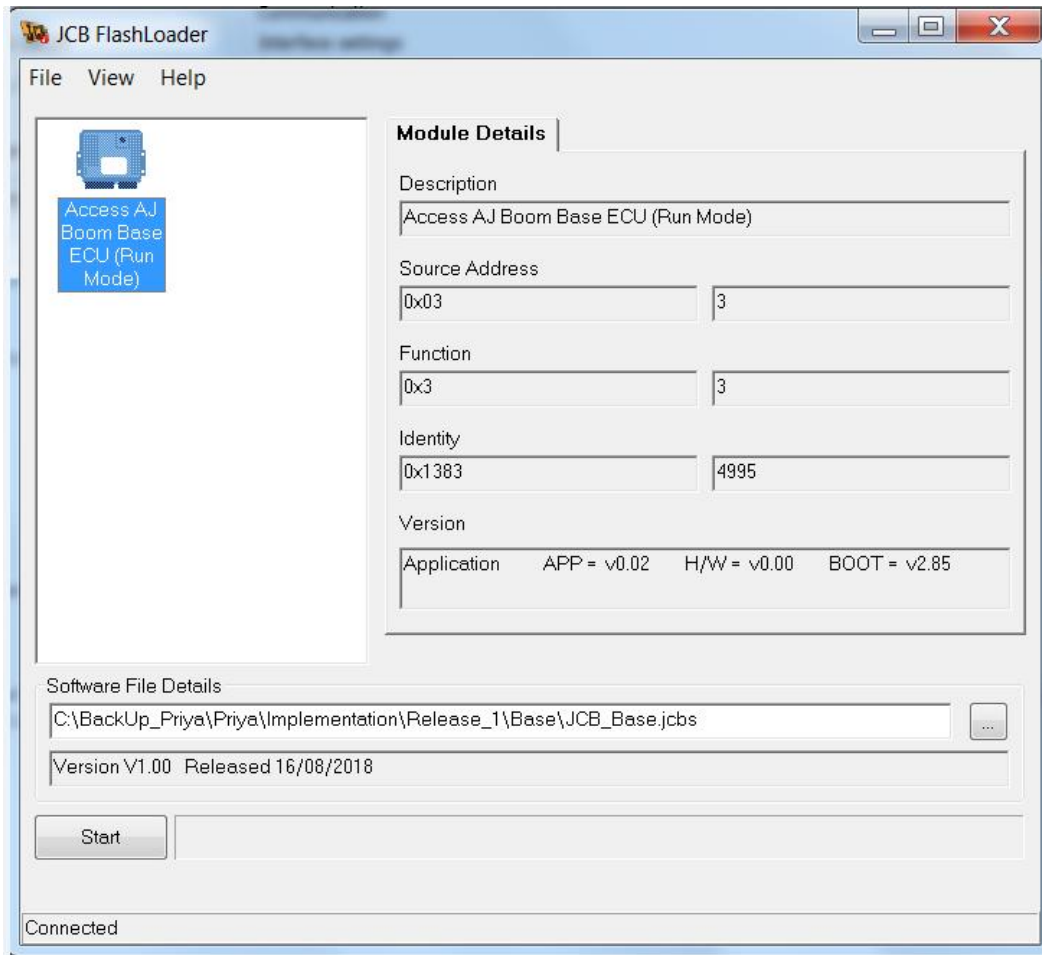
Available ECUs are displayed (Base ECU at boot and run mode shown).

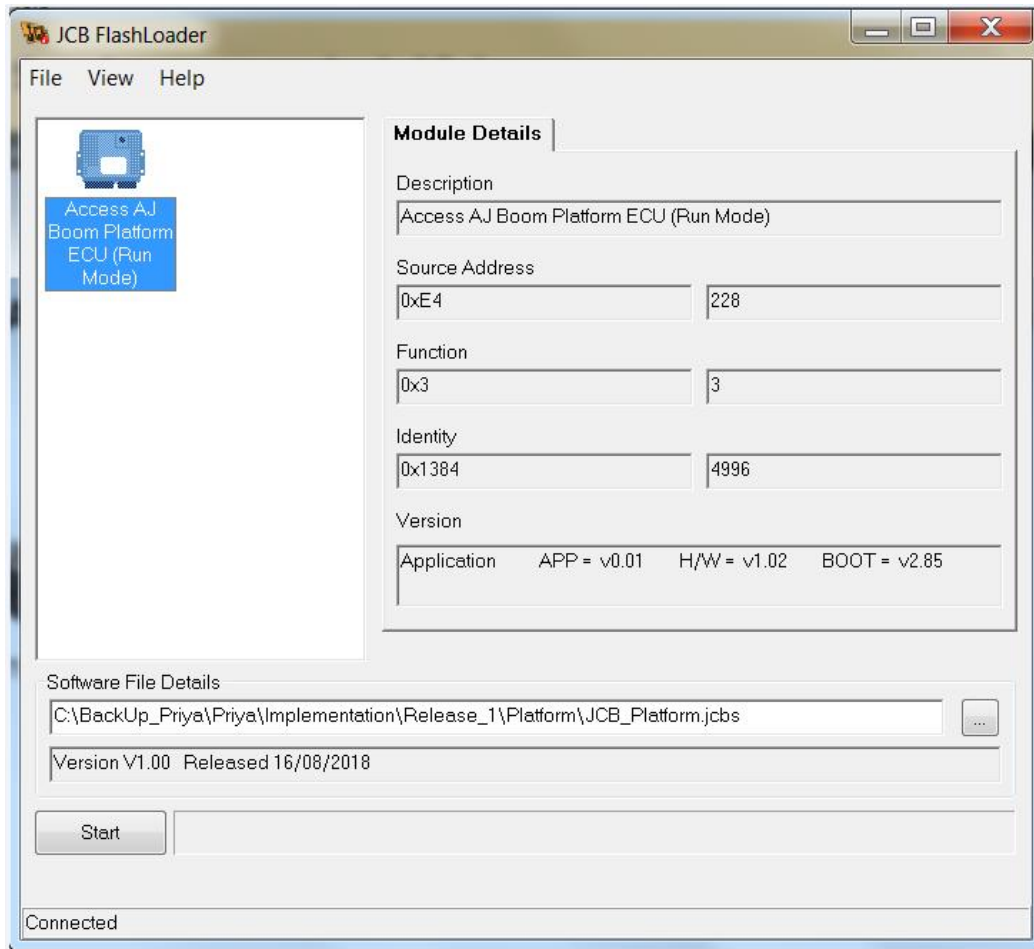
While flashing the new ECU,





While flashing the Pre-programmed ECU,





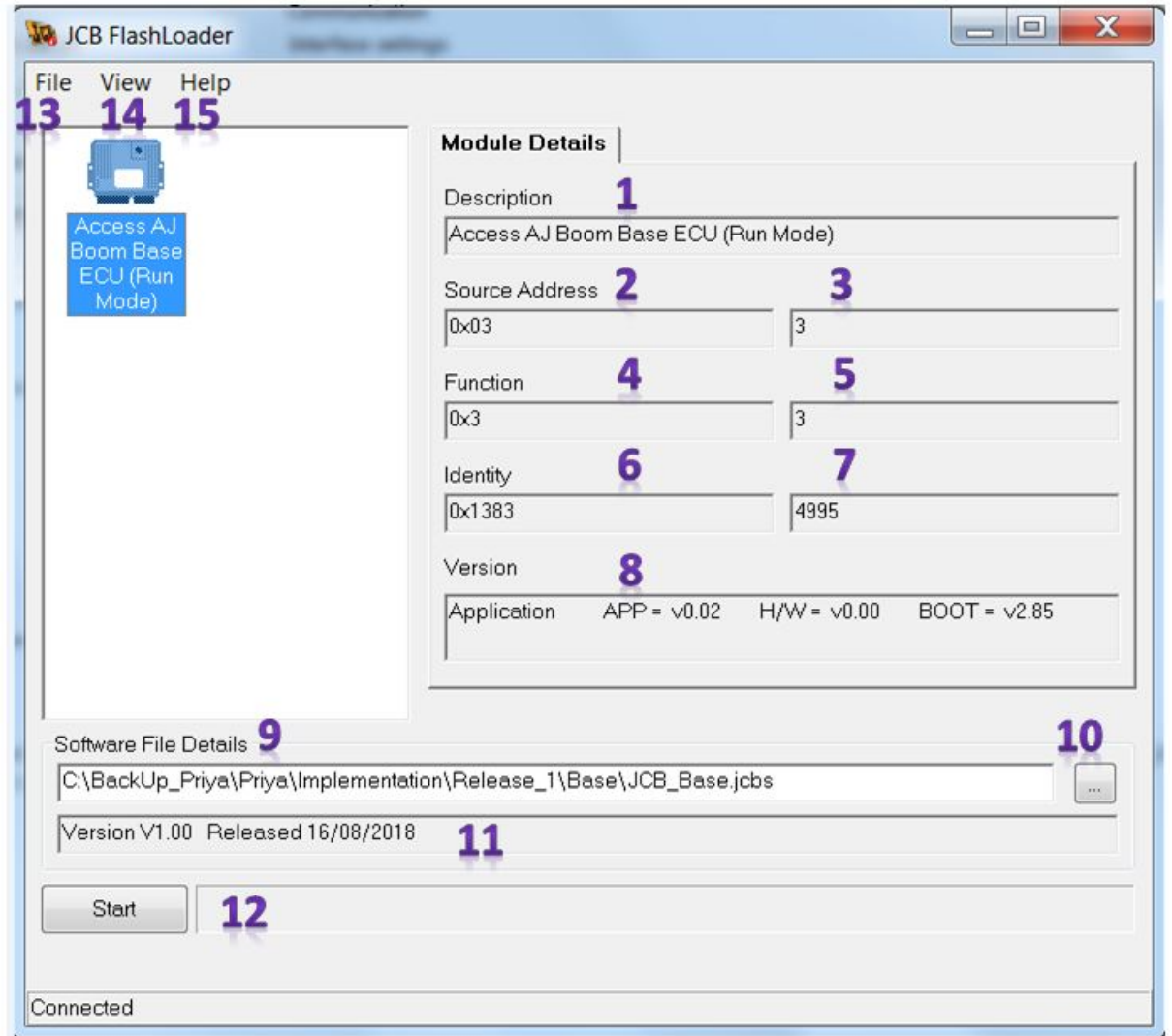
The Flashloader tool relies on the source address (or hardware identity) to display ECUs as thumbnail images. An ECU not recognized by the Flashloader Tool is displayed as ? - Unknown.

In this case take care to check the ECU source address before attempting to program it with new software.

---

## 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/ Servicemaster

Both Turntable and platform software should be updated in pairs.

Ensure the correct software is flashed to the correct hardware revision

---

## Flashing the ECU Software

Select the required ECU and choose the required software file name FOR THE CORRECT VEHICLE YOU ARE CURRENTLY UPDATING.

To reprogram the ECU with the file specified, press Start and confirm your selection. The software file is sent over the CAN-Bus to the ECU.

---

## Reprogramming ECU Software - Progress Bar

Once the software is being loaded a progress bar is shown.

Some ECUs 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 ECUs 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.

Setup will be required on flashing new ECU's

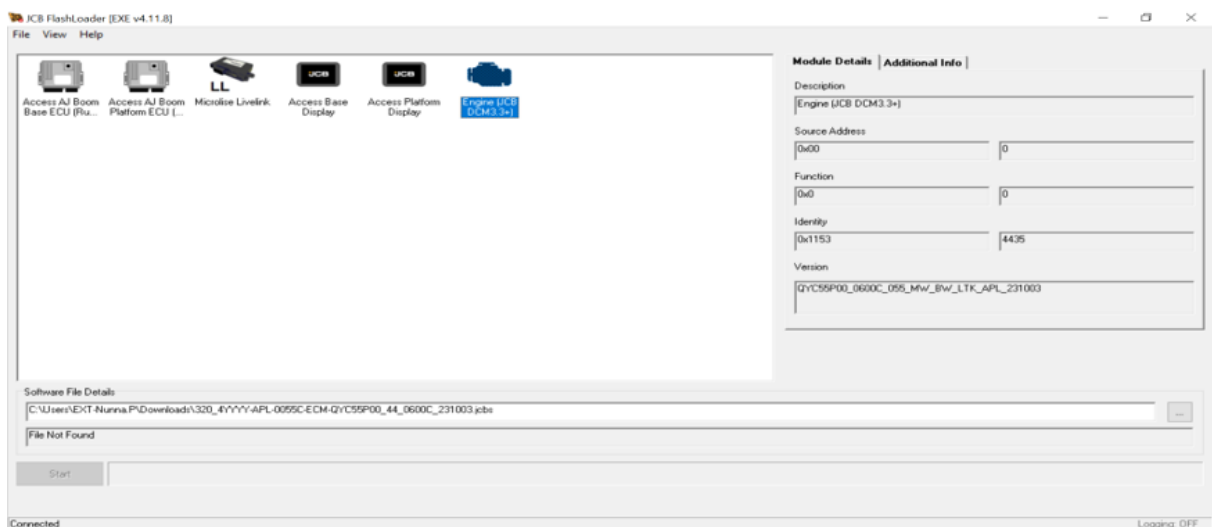
It is not normally necessary to recalibrate sensors as this is not overwritten by these software files.

## 5.3 Flashing of Engine

### Overview (Applicable Only For T65D machine)

JCB Service-master, Use the JCB flash-loader application under the applicable product.

Connect to the machine via the DLA.

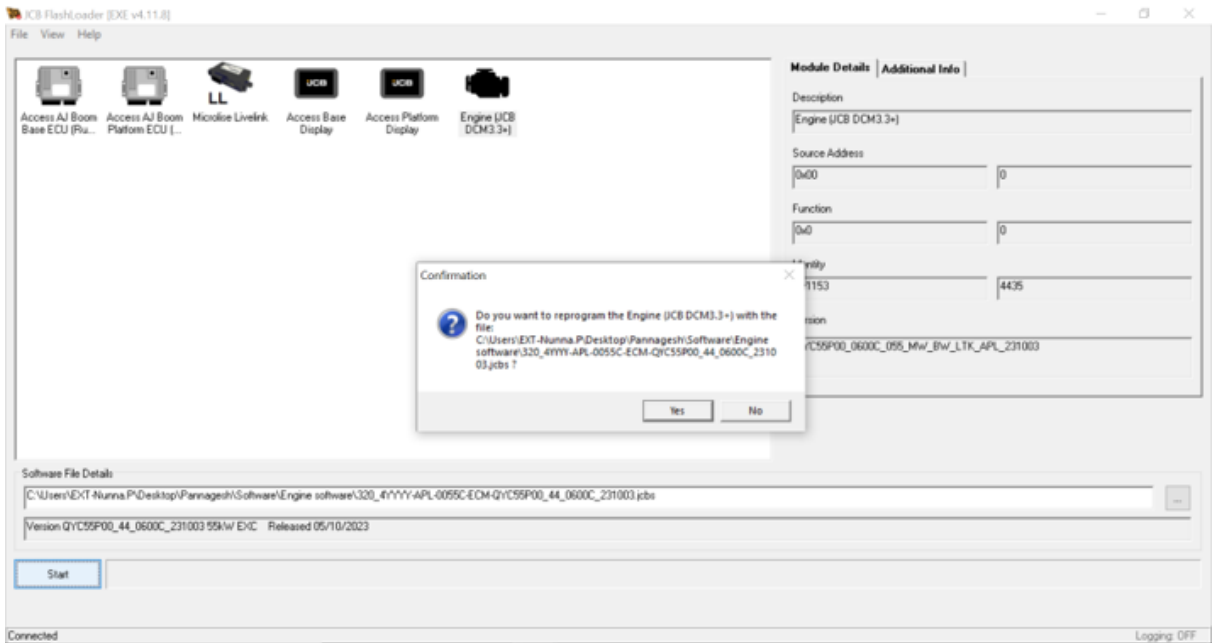


Select the engine ECU.

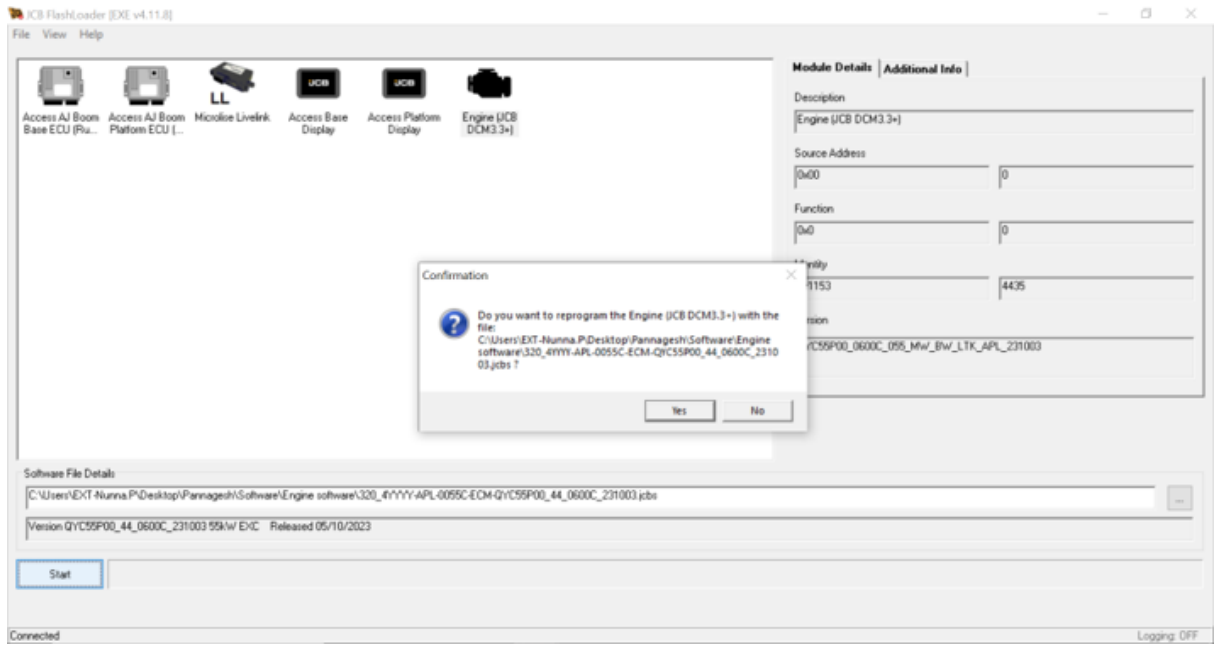


Click the '...' button and load the Engine Software for the machine

« JCB\_Servicemaster\_2 » Machine SW » Access » Booms » T65D » Engine Software



Click 'Start' button, followed by 'Yes' on the pop up message



Click OK when flash is complete.

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# Machine Setup & Calibration

## 6 Machine Setup & Calibration

List of [Machine Setup & Calibration](#) <sup>342</sup>

Number	Components
1	<a href="#">Machine Setup</a> <sup>342</sup>
2	<a href="#">Throttle Calibration - T65D Tier3</a> <sup>344</sup>
3	<a href="#">Machine Calibration from Service Master</a> <sup>350</sup>
4	<a href="#">Machine Calibration from Display</a> <sup>361</sup>

### 6.1 Machine Setup

List of [Machine Setup](#) <sup>342</sup>

Number	Components
1	<a href="#">Vin Number</a> <sup>342</sup>

#### 6.1.1 Vin Number

---

#### Overview (Procedure is same for T65D and T65D Tier3 machine)

The VIN number of the machine is required to be entered into the machine ECU's.

This number is a 17 Digit number that is on the side of the machine.

The ECU's will require this number so the correct software can be configured correctly to the machine.

The ECU's from base & platform will also use this number to pair, this will ensure they are both from the same machine.

The VIN may only be entered through the USE of service-master.

---

#### Entering the VIN Number

Open JCB Servicemaster,  
Open applicable product group and open the vehicle setup tool

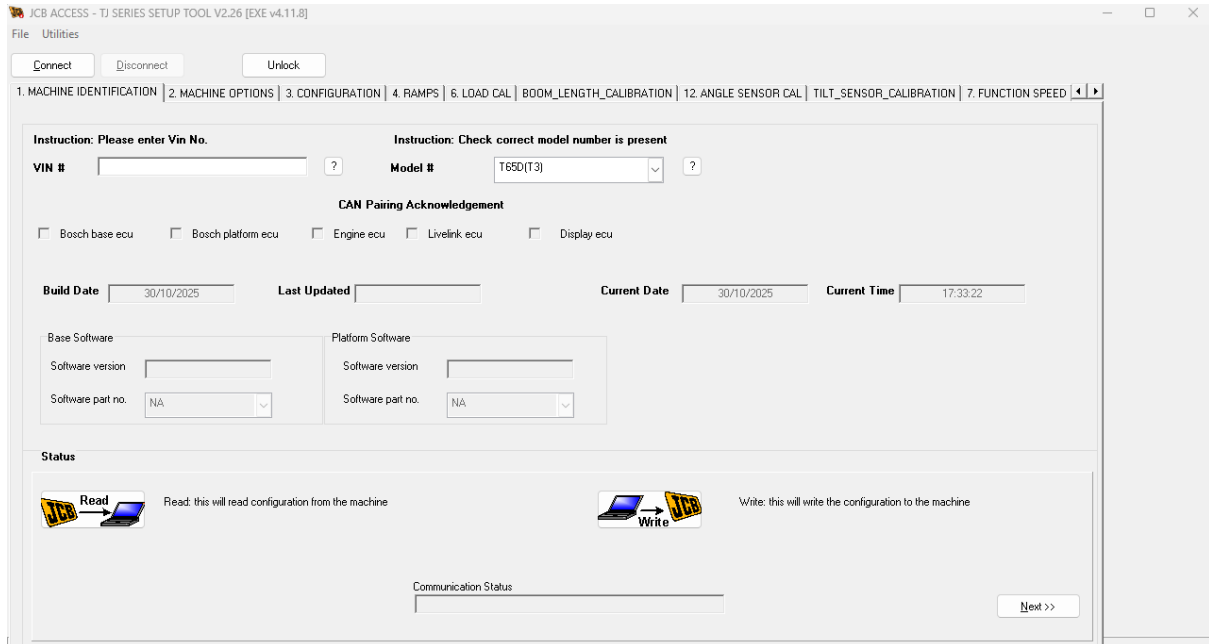


## Vehicle Setup

Enter the Vehicle VIN into the box and then press the write button.  
Check the communication status and ensure the write process is complete before progressing or closing the tool.

### T65D

### T65D Tier3



## 6.2 Throttle Calibration - T65D Tier3

List of [Throttle Calibration - T65D Tier3](#) <sup>344</sup>

Number	Components
1	<a href="#">Throttle Calibration</a> <sup>344</sup>

### 6.2.1 Throttle Calibration

#### Throttle Calibration Steps -

Machine ignition key switch will be only turned ON once the throttle controller is properly fixed into the machine.

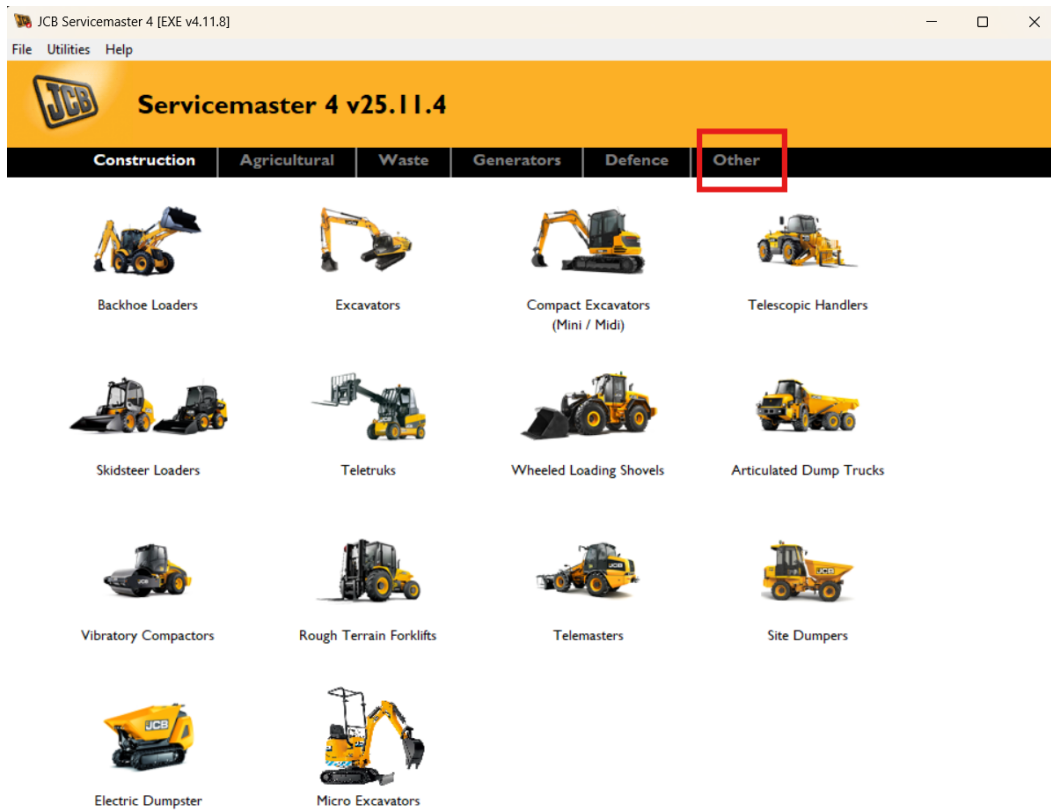
Once the IGN switch is turned ON first time, throttle actuator performs the self calibration.

If anyone do the any fitment related changes after the first IGN switch ON, Throttle controller must be re-calibrated to get the accurate engine RPM.

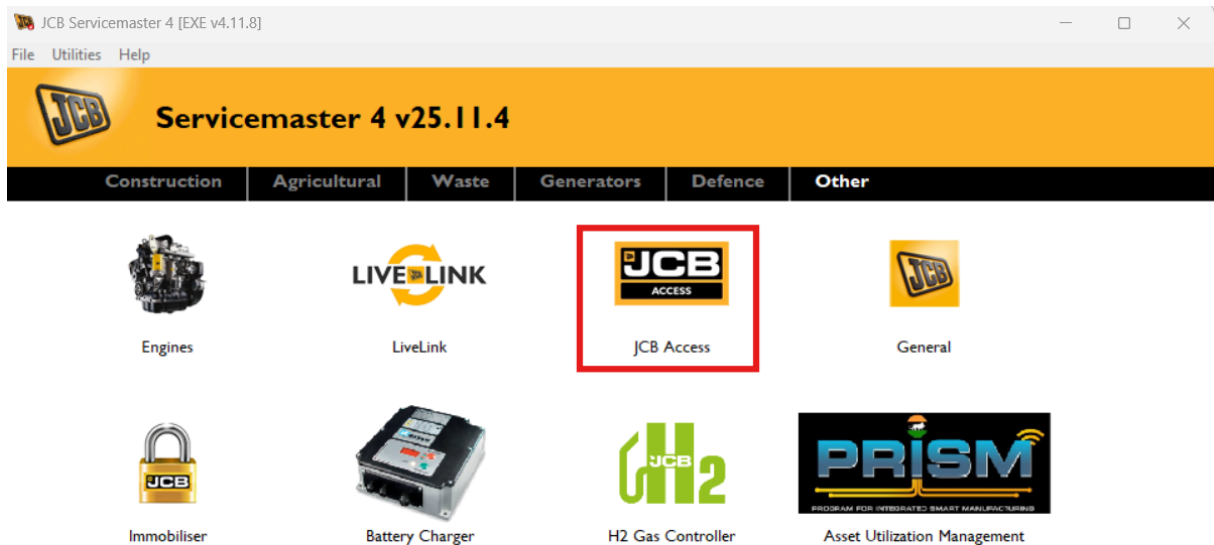
#### STEPS TO CALIBRATE THROTTLE CONTROLLER CALIBRATION

Open Servicemaster on tough-book or Laptop and connect the DLA with connector

Click on '**Other**' icon from service master window.



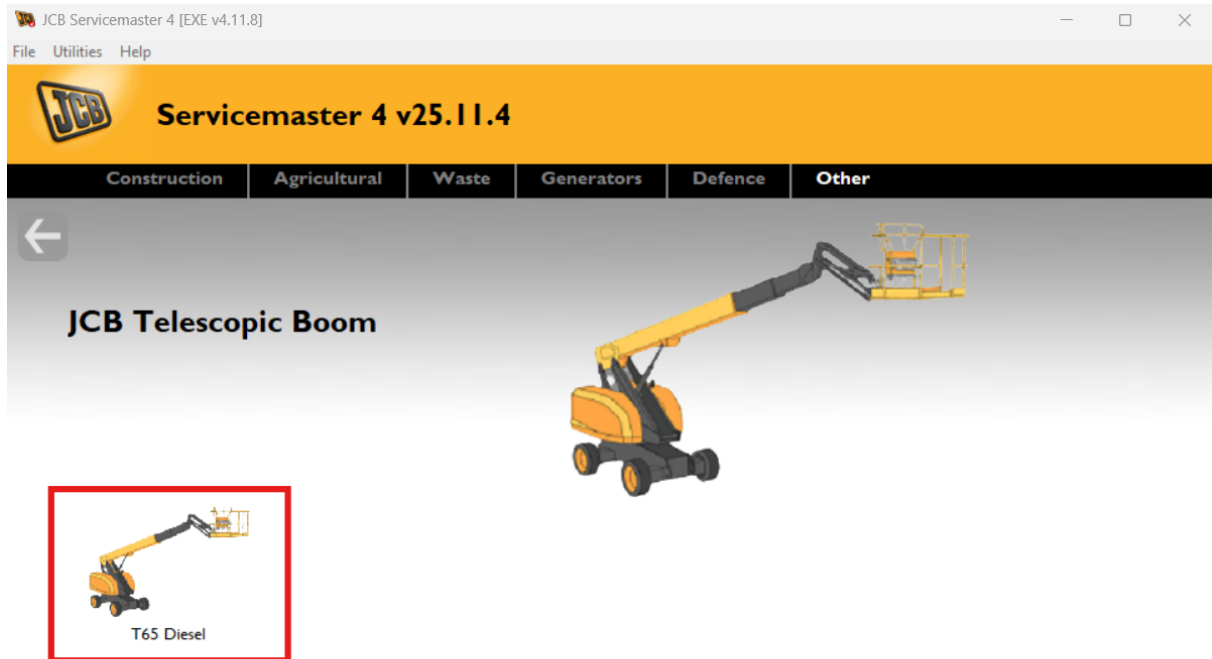
Then Click on JCB Access



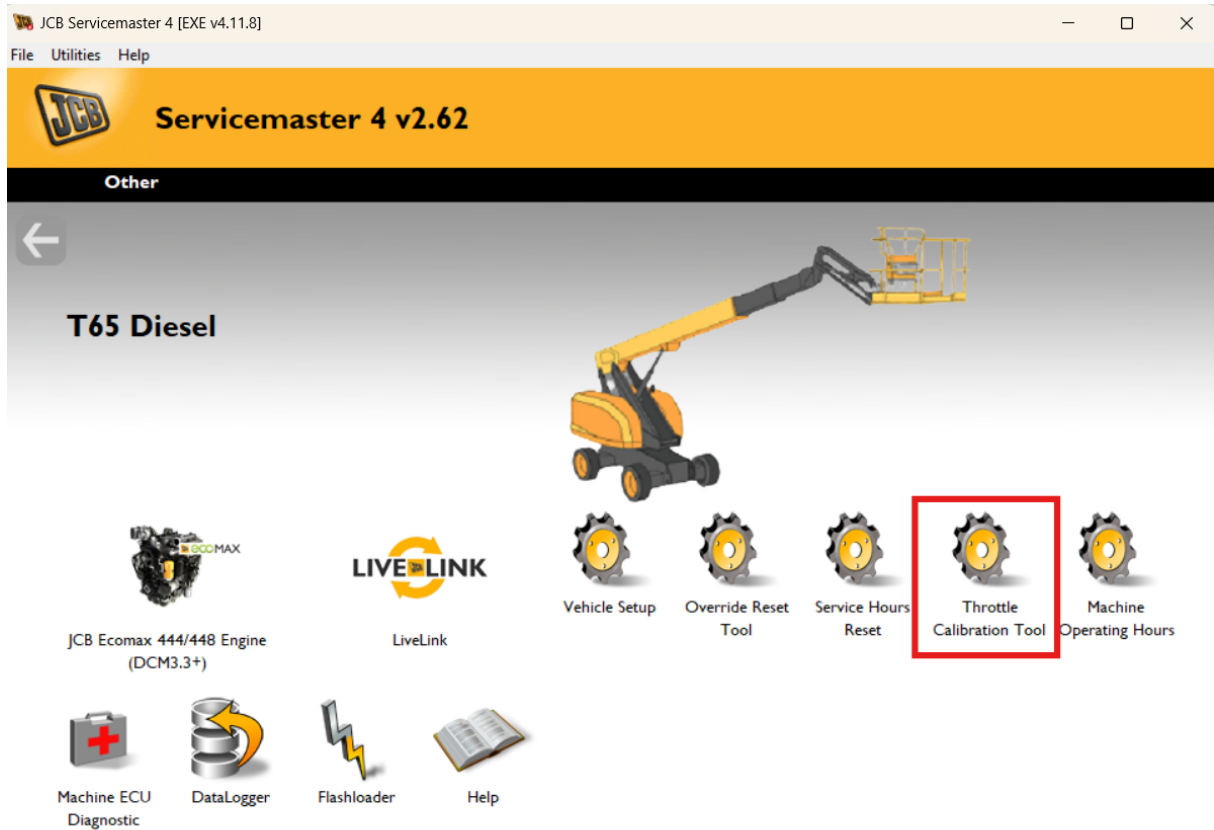
Click on JCB Telescopic Boom



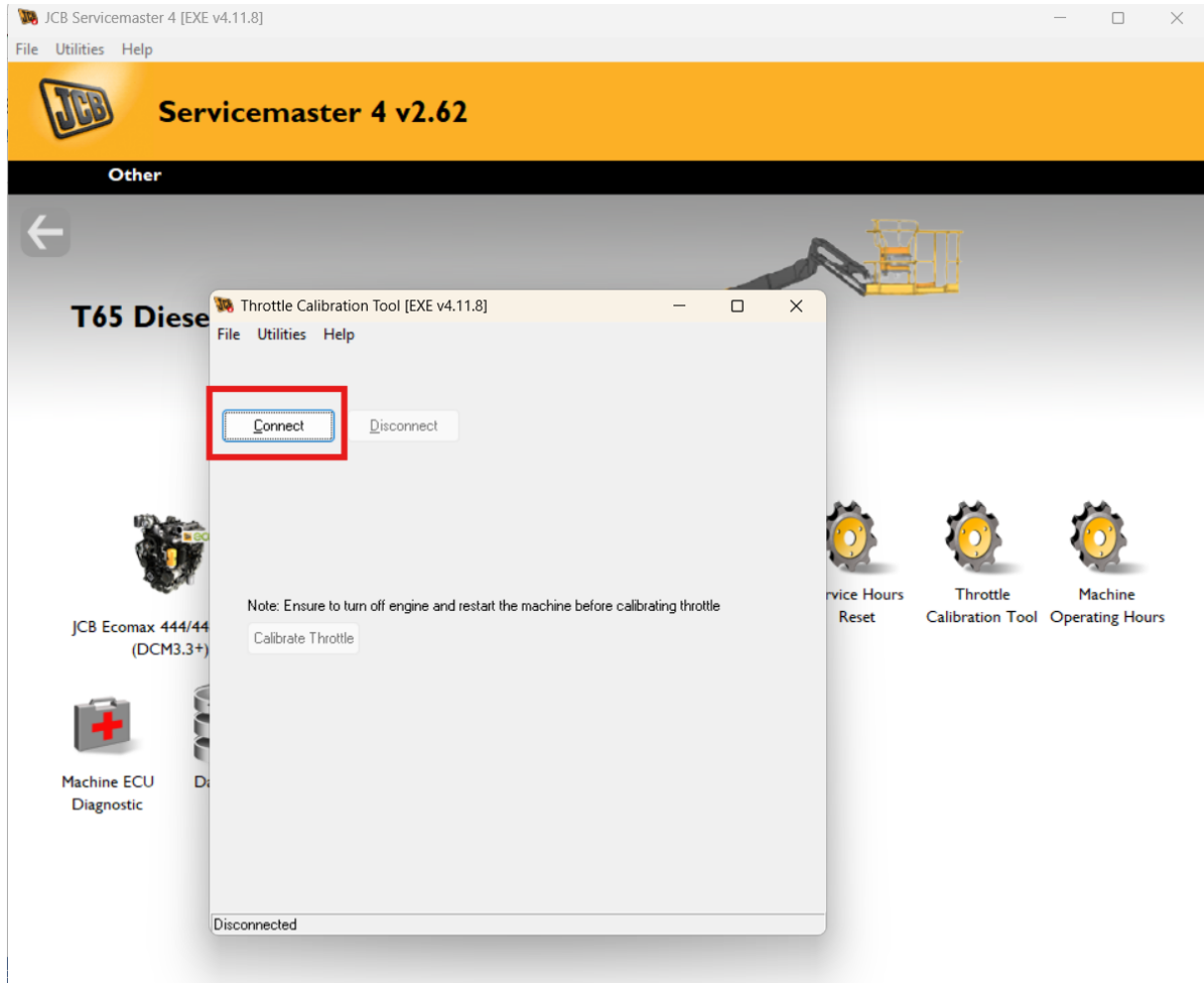
Click on **T65 Diesel**



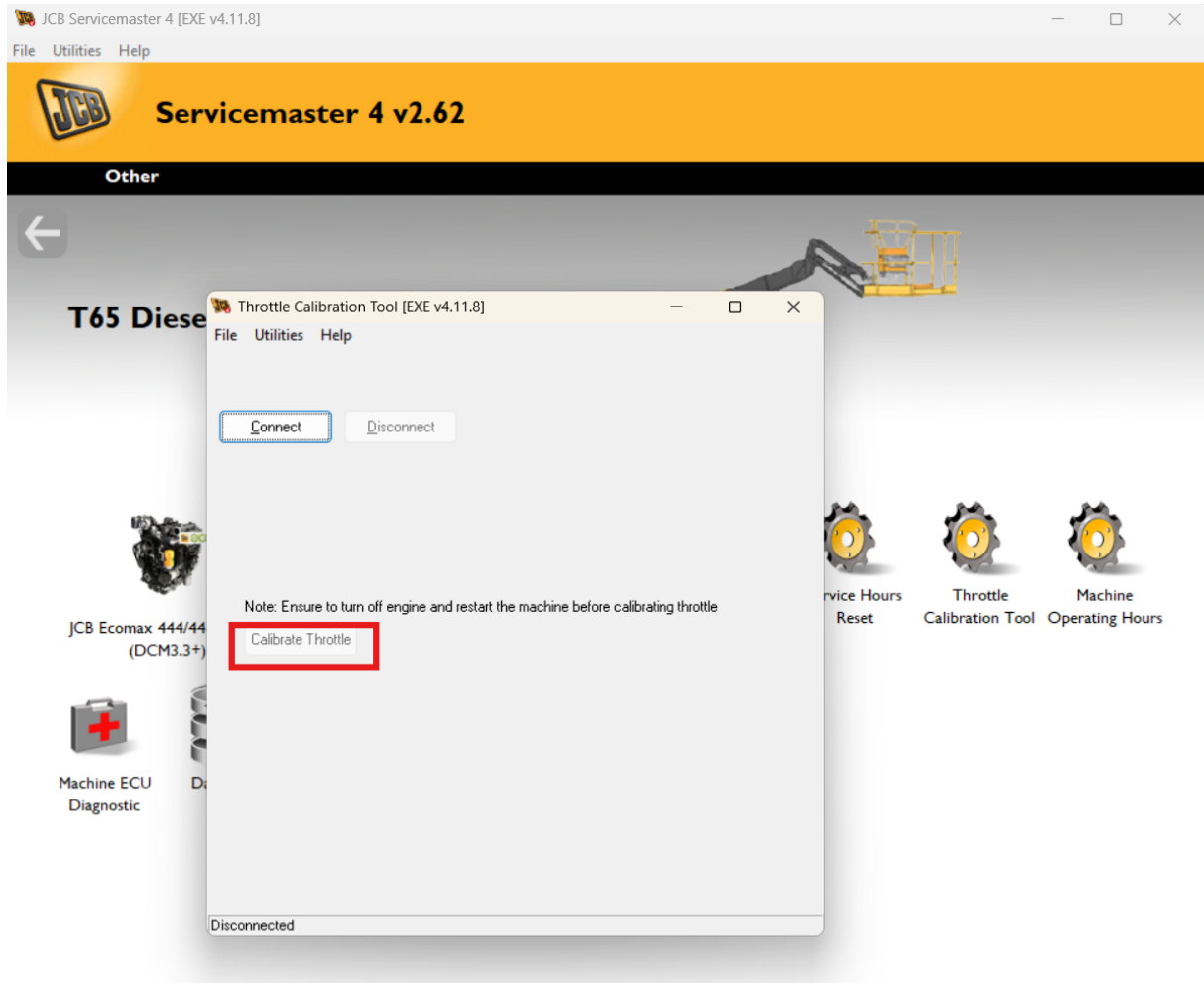
Click on **Throttle Calibration**



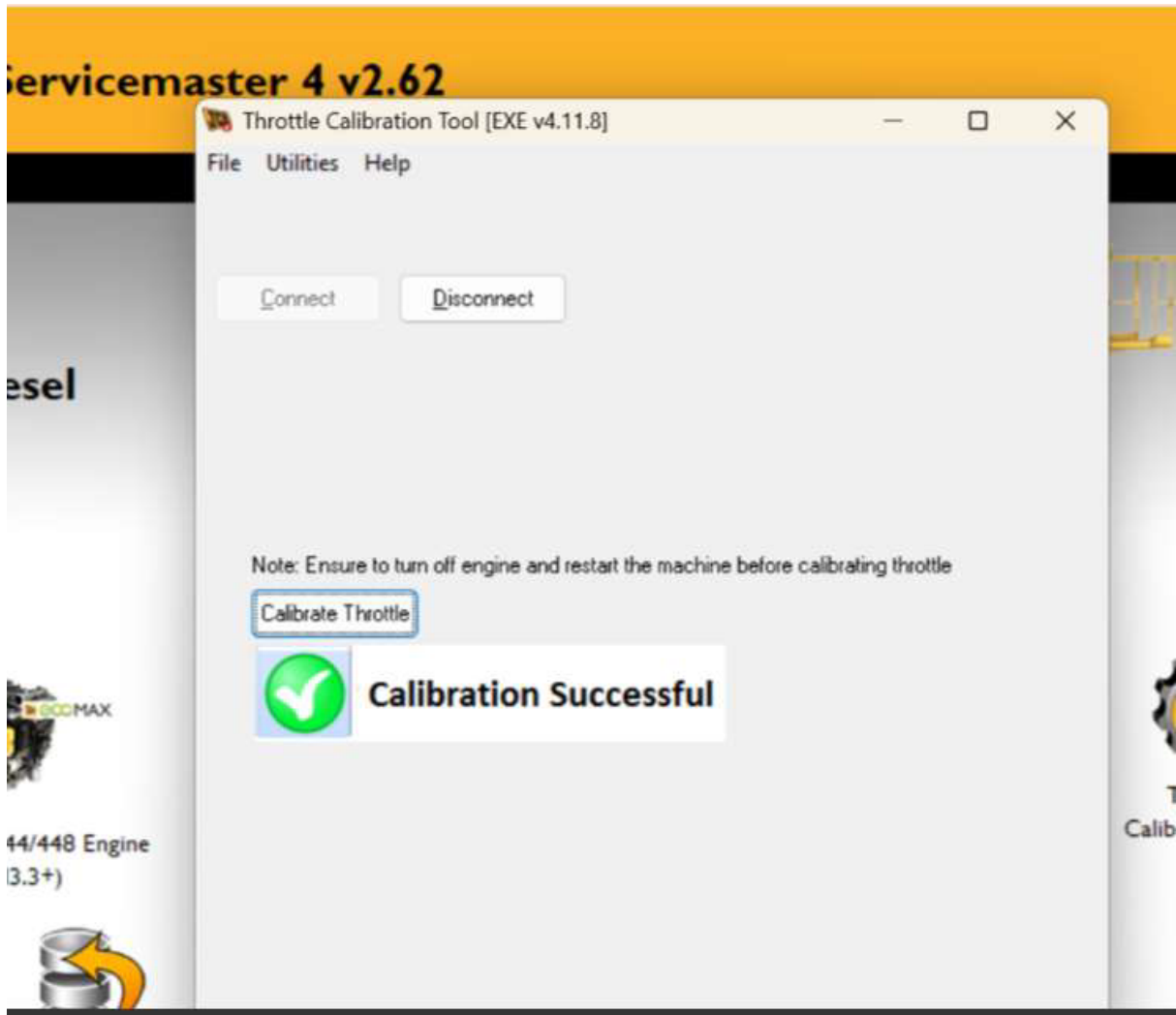
"Now turn off engine and restart the machine  
Before calibrating throttle " **Press 'Connect'**"



Now , click"**Calibrate Throttle**" and calibrate process started



Once calibration done 100% its show **"CALIBRATION SUCCESSFUL"**



### 6.3 Machine Calibration from Service Master

List of [Machine Calibration from Service Master](#) <sup>350</sup>

Number	Components
1	<a href="#">Tilt Sensor Calibration</a> <sup>350</sup>
2	<a href="#">Load Cell Calibration</a> <sup>352</sup>
3	<a href="#">Known Load Cell Calibration</a> <sup>353</sup>
4	<a href="#">Main Boom Angle &amp; Length sensor Calibration</a> <sup>359</sup>

#### 6.3.1 Tilt Sensor Calibration

**Tilt angle sensor Calibration through Servicemaster (Procedure is same for T65D and T65D Tier3 machine)**

1. Park the machine on flat , level ground
2. Make the machine safe
3. Connect the vehicle setup tool
- 4 . Click on Tilt Sensor Calibration

1. MACHINE IDENTIFICATION | 2. MACHINE OPTIONS | 3. CONFIGURATION | 4. RAMPS | 5. LOAD CAL | BOOM\_LENGTH\_CALIBRATION | 12. ANGLE SENSOR CAL | **TILT\_SENSOR\_CALIBRATION** | 7. FUNCTION SPEED

Save Tilt Angle

Filtered values

Tilt Angle X

Tilt Angle Y

Calibrated Values

Tilt Angle X

Tilt Angle Y

Status

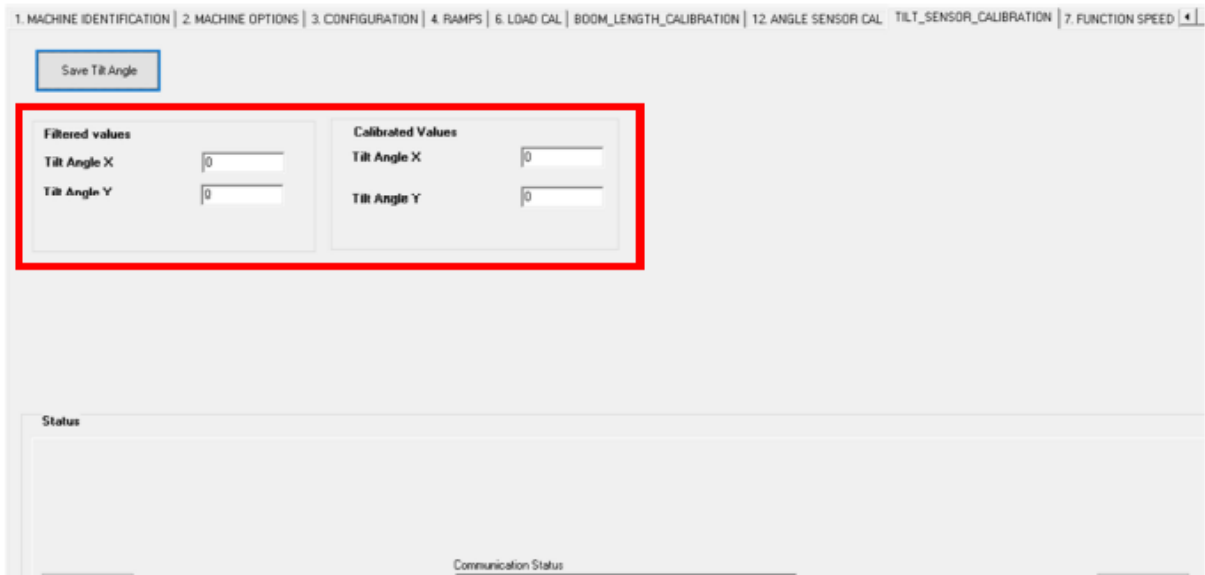
Communication Status  
Heading Process Completed

<< Prev

Next >>

5. Make sure that the telescopic boom is fully retracted and main boom is fully lowered

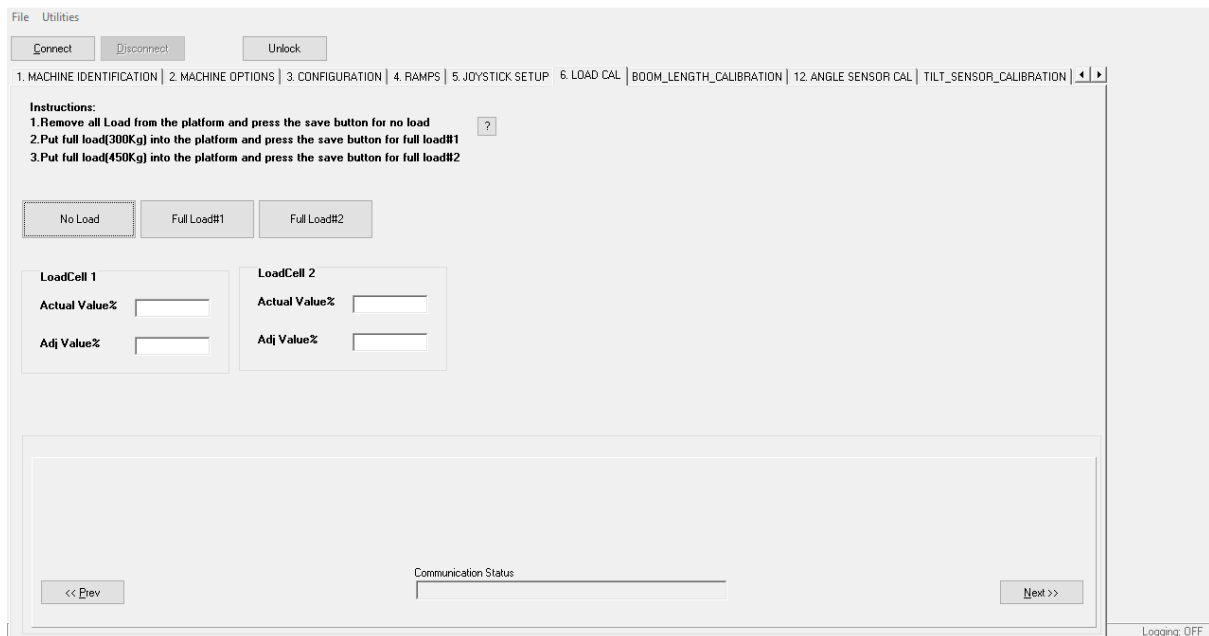
6 . Press 'Save Tilt Angle' button to Set the 'Tilt Angle X' and 'Tilt Angle Y' values to zero position



## 6.3.2 Load Cell Calibration

**(Only Applicable for T65D T4 machine up to Software Version V5.0)**

Go to Service-master, Vehicle setup tool  
Connect to the machine and go to the load calibration tab



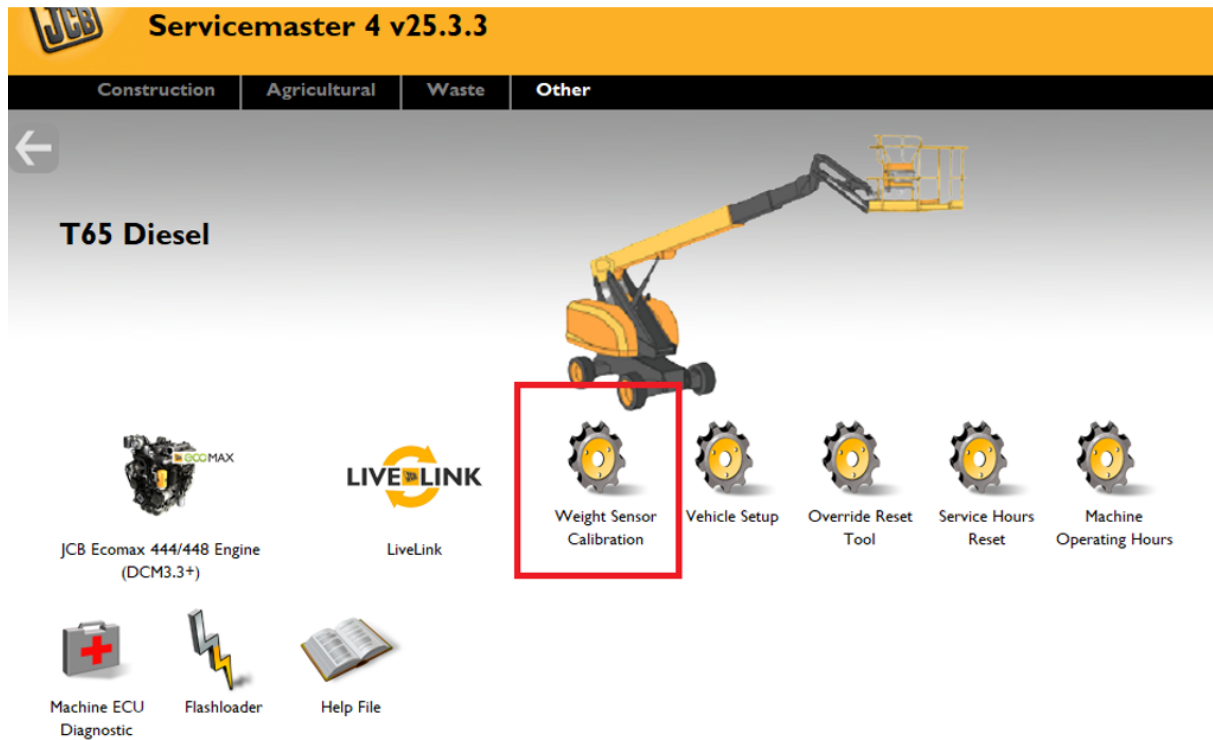
Ensure there is no weight in the platform and click the No load button, await for communication status to complete  
 Add 300Kg (660lbs) to the platform and click the Full load 1 button, await for communication status to complete  
 Add 454Kg(1000lbs) to the platform and click the Full load 2 button, await for communication status to complete

### 6.3.3 Known Load Cell Calibration

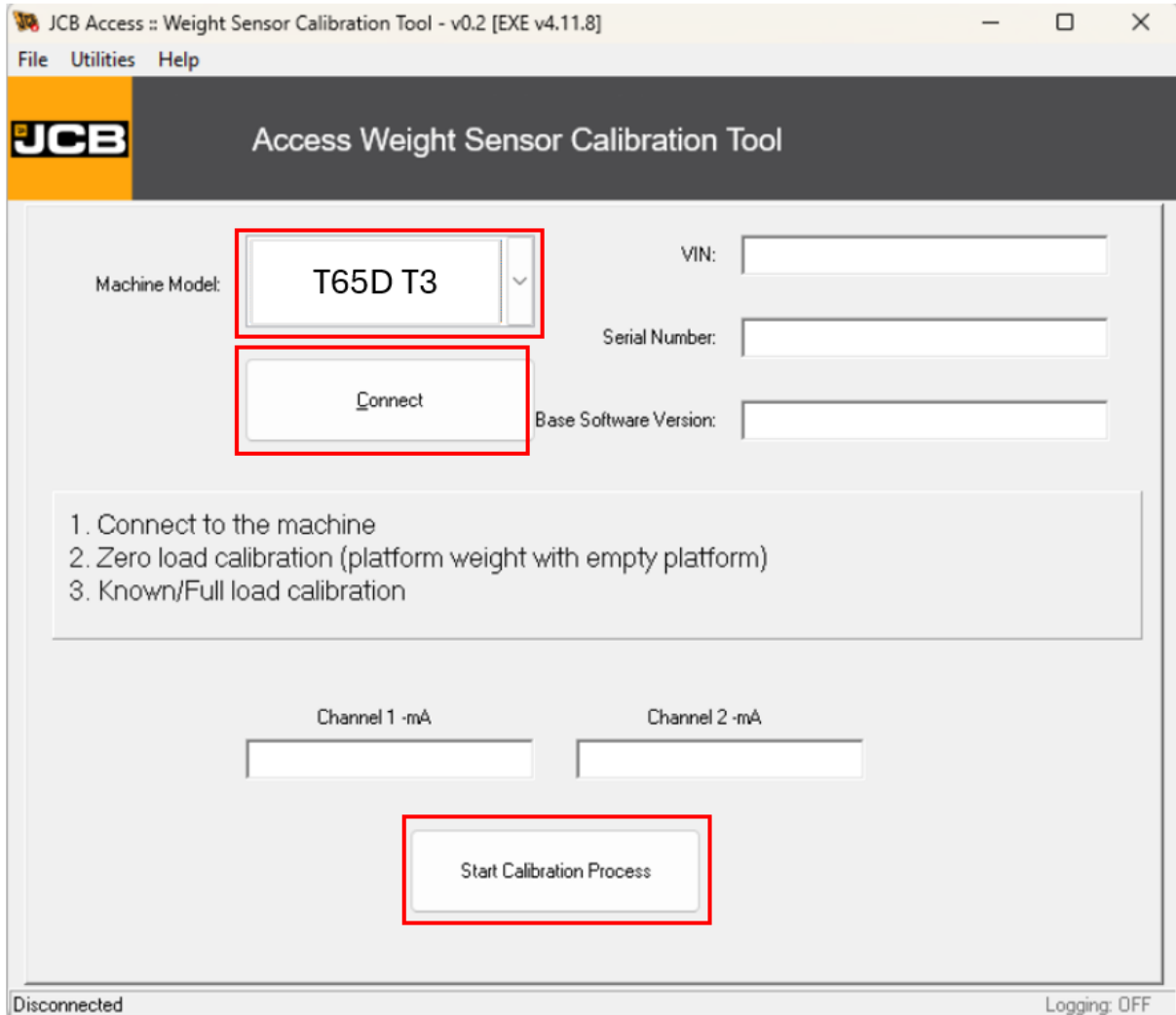
**(Procedure is same for T65D(Applicable from Software Version V10.3) and T65D Tier3 machine)**

Connect to the machine With Service Master through DLA 2.0

Go to Service-master, Weight Sensor Calibration tab

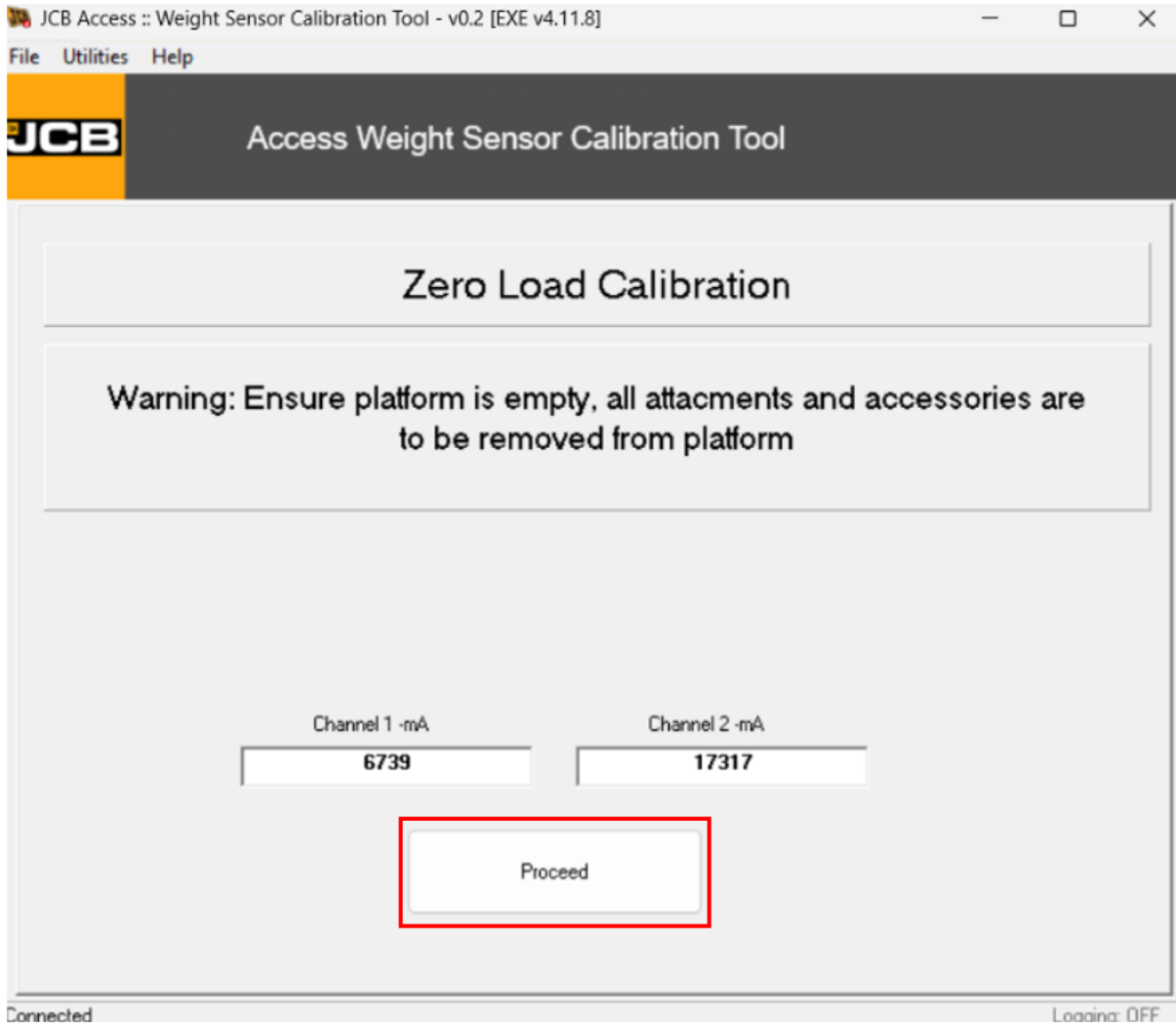


Select Machine Model, Click on Connect then Click on Start Calibration Process.( On below scree VIN, Serial NO. and Base Software Version will be populate automatically )



After Clicking the Start calibration process Tab, No Load or Zero Load Calibration page will Open. Before clicking the Proceed tab make sure No Load will be available on Platform.

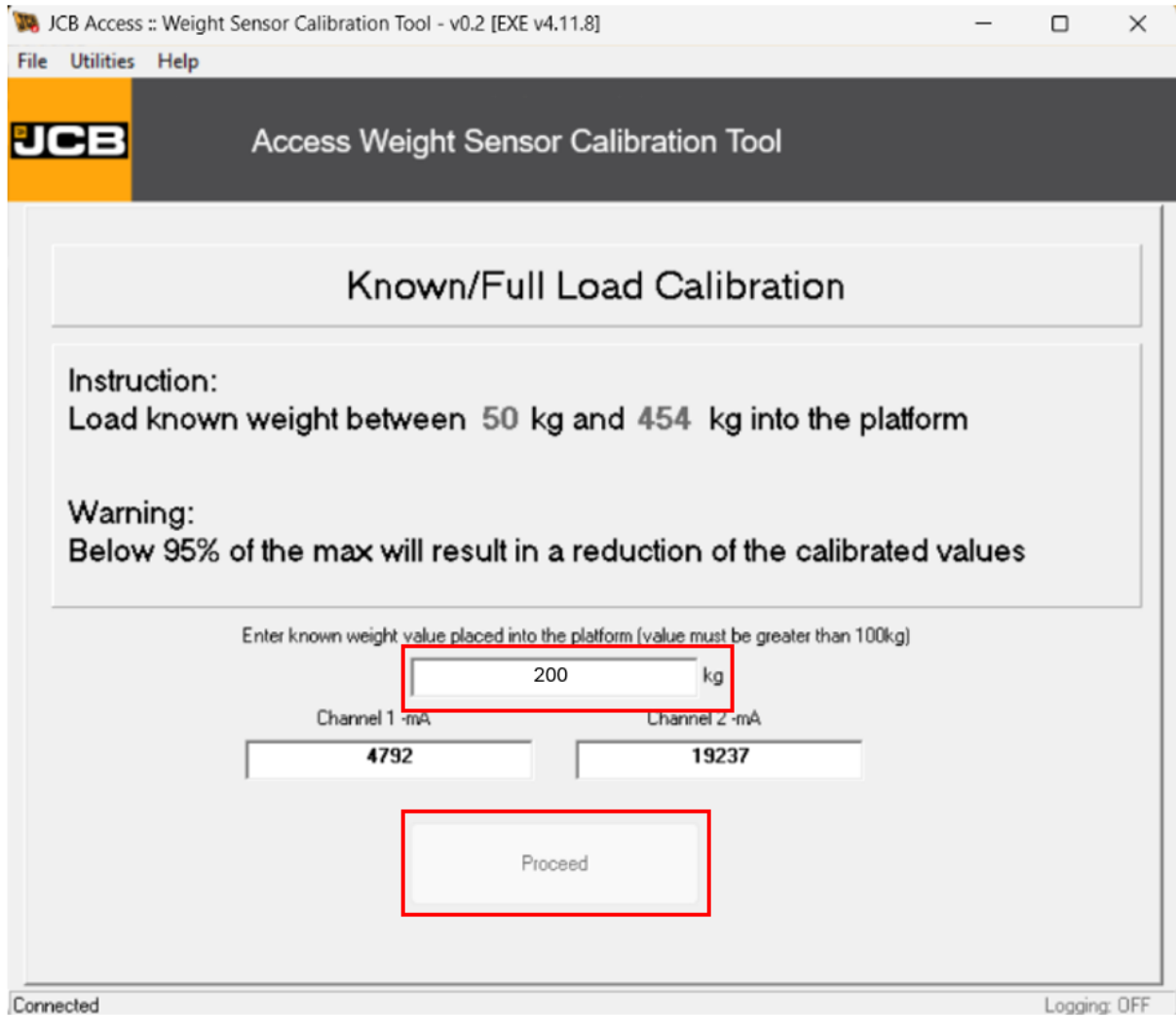
Click on Proceed Tab



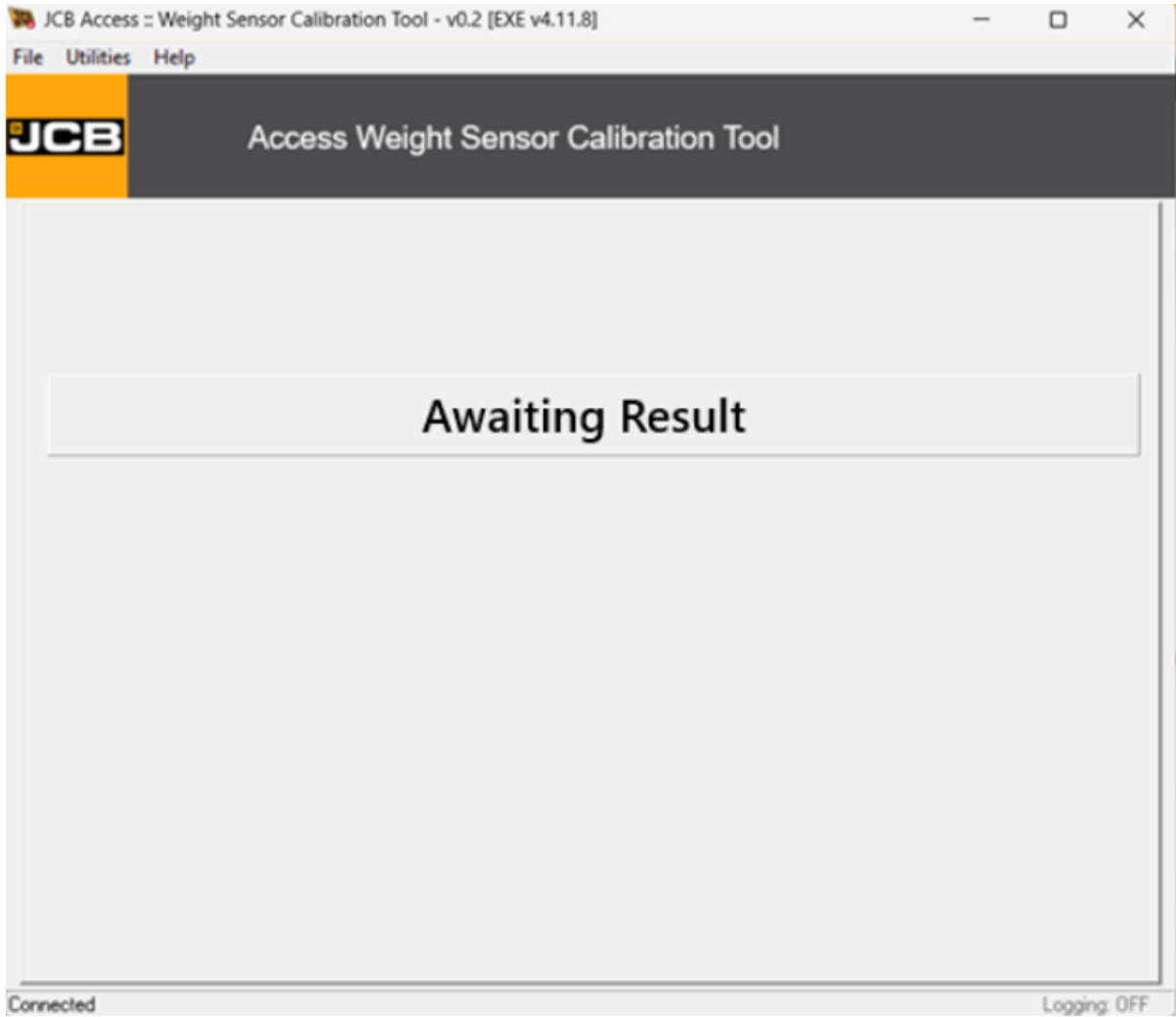
After No Load Calibration, Known/Full Load calibration page will Open.

put the load in the platform between 50 kg and 454 kg.

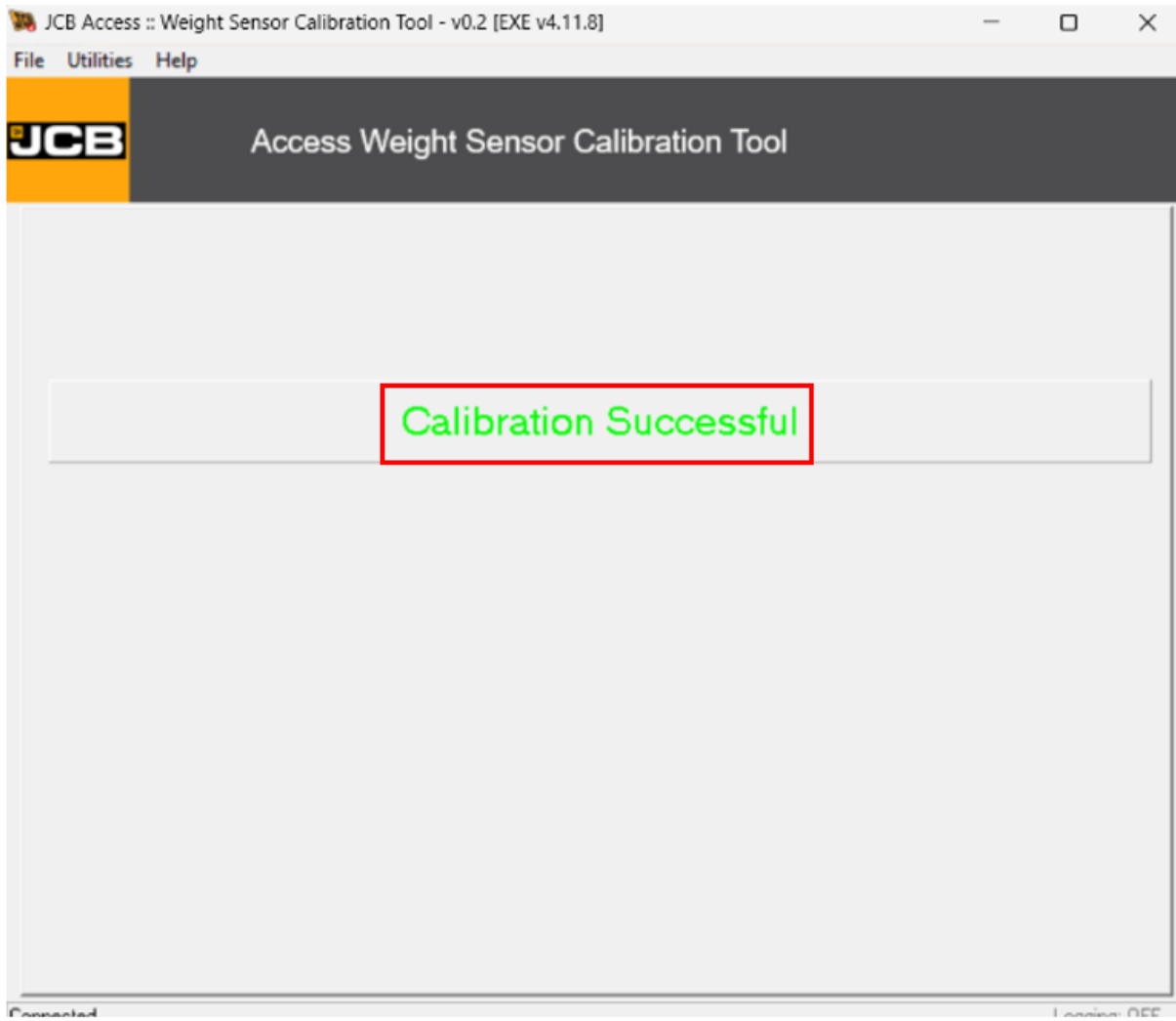
Enter the value of Known Load and Click on Proceed Tab.



After clicking the Proceed Tab, below screen will appear.

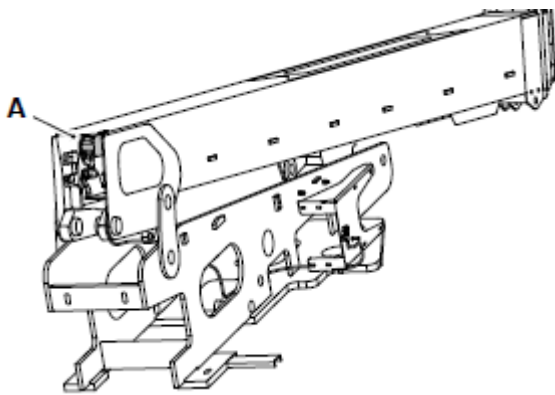


Once calibration are completed, Load calibration done Successfully message page will pop up.



### 6.3.4 Main Boom Angle & Length Sensor Calibration

#### Main Boom Angle Sensor Calibration - Service Master (Procedure is same for T65D and T65D Tier3 machine)



#### A Boom Length & Angle Sensor

1. Park the machine on flat, level ground.
2. Make the machine safe
3. Connect the service-master vehicle setup tool
4. Click on Angle Sensor Calibration

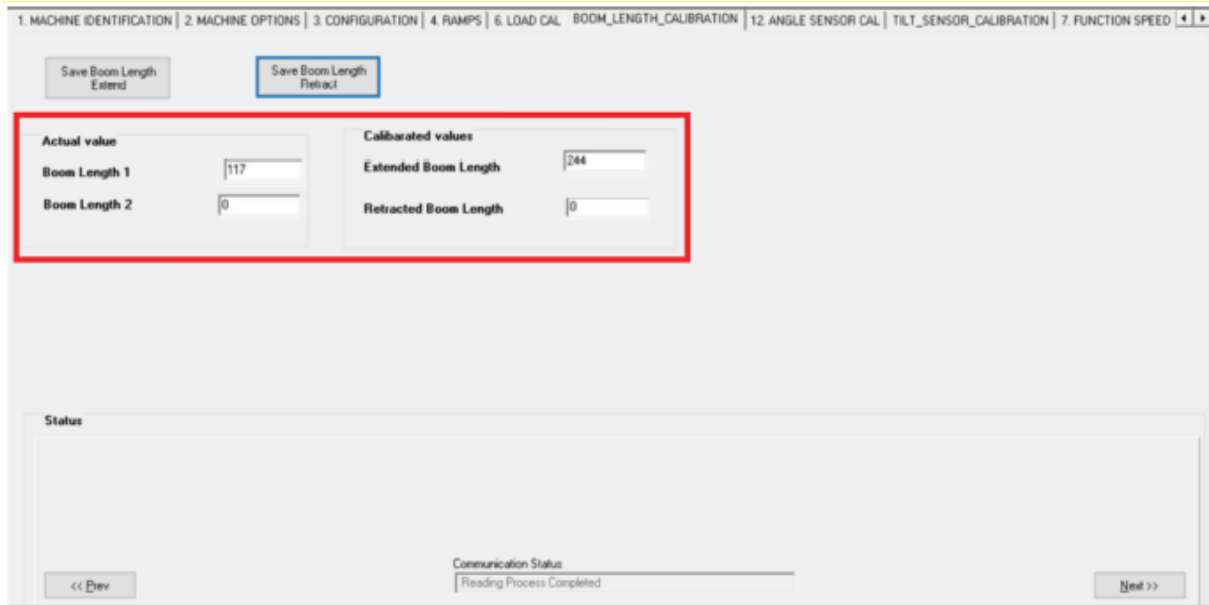
1. MACHINE IDENTIFICATION		2. MACHINE OPTIONS		3. CONFIGURATION		4. RAMPS		6. LOAD CAL		BOOM_LENGTH_CALIBRATION		12. ANGLE SENSOR CAL		TILT_SENSOR_CALIBRATION		7. FUNCTION SPEED	
Save Boom Angle																	
Actual Values									Calibrated Values								
Boom Angle 1									Boom Angle 1								
29									29								
Boom Angle 2									Boom Angle 2								
31									31								

5. Make sure the telescopic boom is fully retracted and main boom is fully lowered. Set the main boom to 0 degrees in relation to the chassis angle.

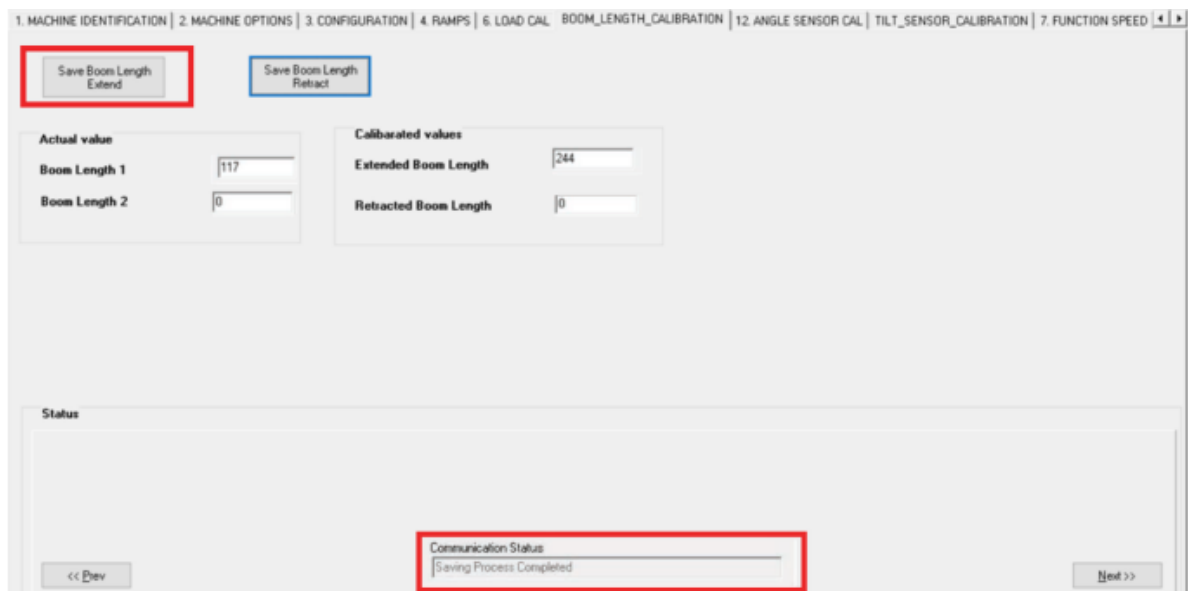
6. Click ' Save Boom Angle' to set the 'Boom Angle 1' and 'Boom Angle 2'

7. Make sure the telescopic boom is fully retracted, Click 'Save boom length retract' Button

8. Make sure the boom is at fully extended position and then click on 'Save Boom Length Extend' to calibrate.



9. In the communication status field, 'Saving Process Completed' appears.



## 6.4 Machine Calibration from Display

List of [Machine Calibration from Display](#) <sup>361</sup>

Number	Components
1	<a href="#">Load Cell Calibration</a> <sup>361</sup>
2	<a href="#">Known Load Cell Calibration</a> <sup>363</sup>
3	<a href="#">Main Boom Angle Sensor</a> <sup>371</sup>
4	<a href="#">Main Boom Length Sensor</a> <sup>374</sup>
5	<a href="#">Tilt Sensor Calibration</a> <sup>379</sup>

### 6.4.1 Loadcell Calibration

#### Setting the Load Cell Calibration (Only Applicable for T65D T4 machine up to Software Version V5.0 )

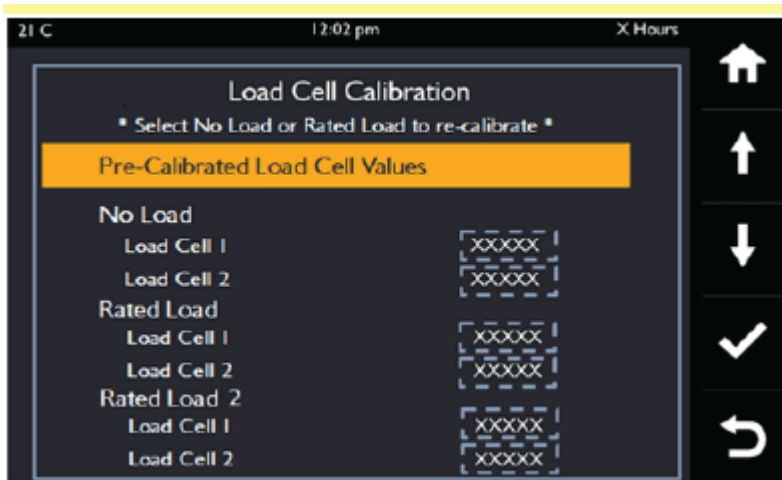
1. On the machine home page , select Machine control Set up to open machine settings .



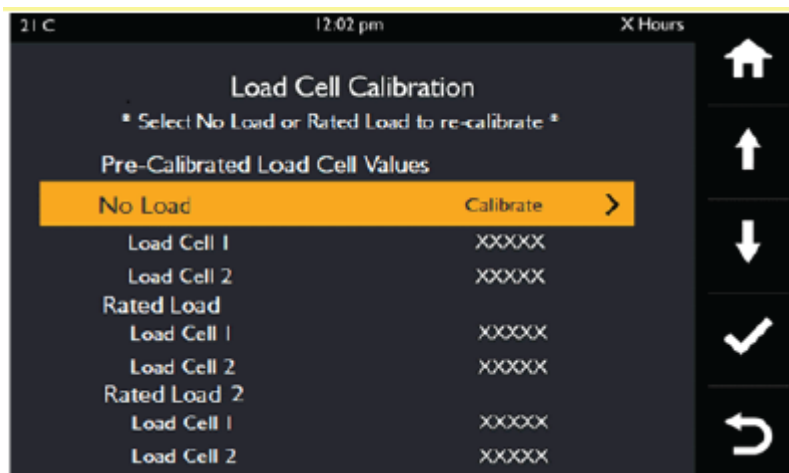
2. Use Up/ Down scroll icon to choose "Load cell calibration in the menu , and click select icon .

- B Home page icon
- C Up scroll icon
- D Down scroll icon
- E Select icon
- F Return icon
- G Machine settings

3. Use the up/down scroll icon and select the "No Load" or "Rated Load" depending on the calibration to be carried out .

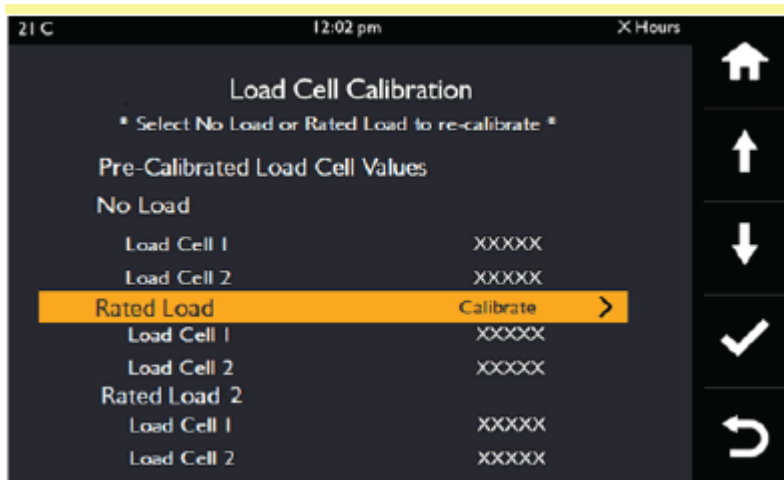


3.1 Make sure there is no load at the platform when you select "No Load" calibration .



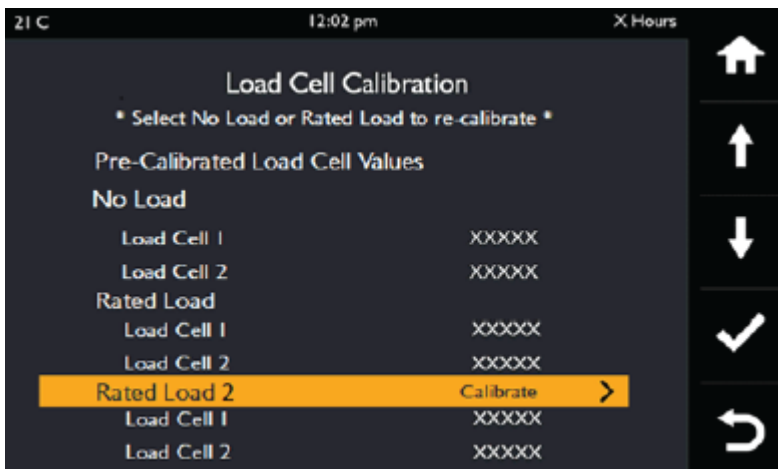
3.2 Make sure the load of specified weight is placed on the platform when you select "Rated Load" calibration .

Weight : 300Kgs (660lbs)



3.3 Make sure that load of specified weight is placed on the platform when you select "Rated Load2" calibration .

Weight 454Kgs (1000lbs)



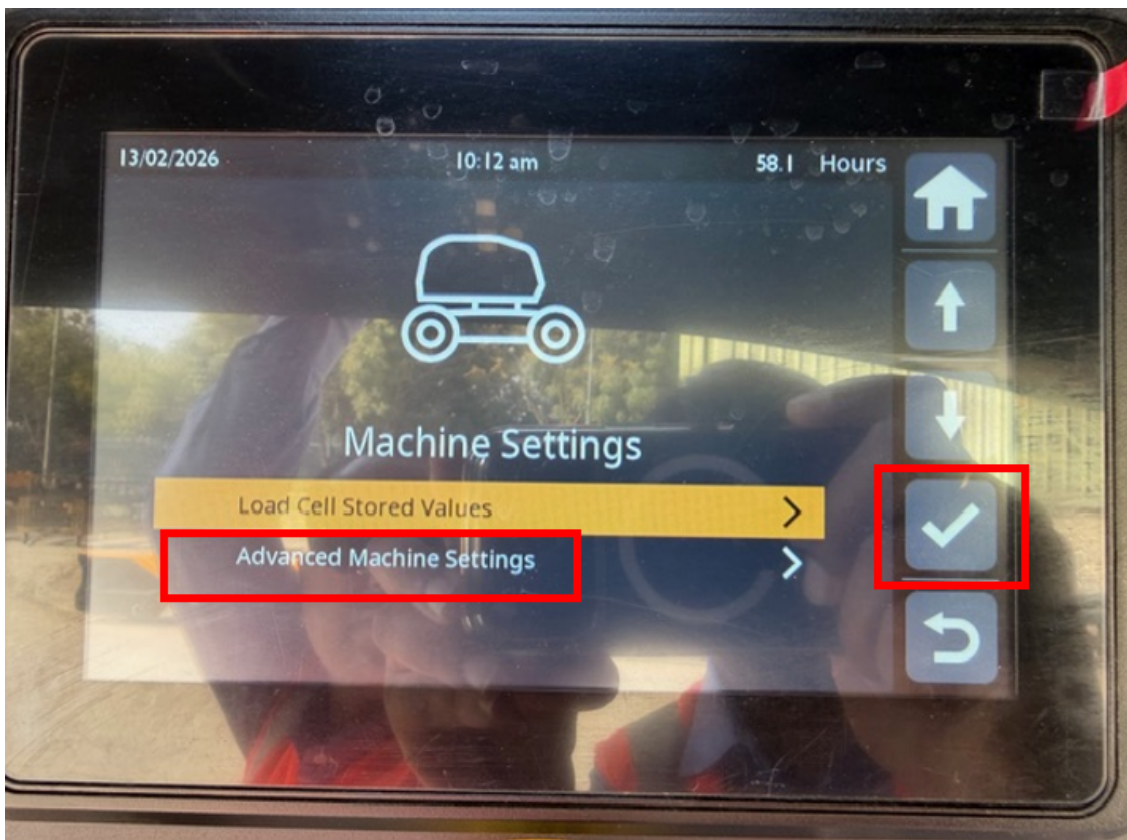
#### 6.4.2 Known Loadcell Calibration

**Setting the Known Load Cell Calibration (Procedure is same for T65D(Applicable from Software Version V10.3) and T65D Tier3 machine)**

1. On the machine home page , select Machine control Set up to open machine settings .



2. Use Up/ Down scroll icon to choose "Advance Machine Setting" in the menu , and click Ok Key .



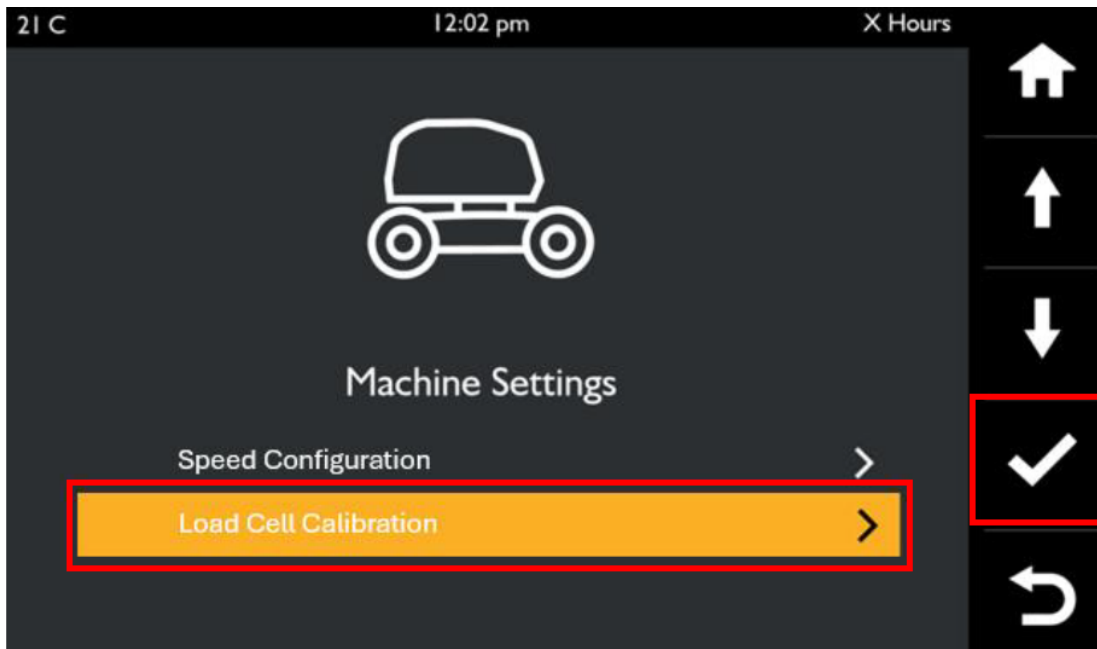
- B Home page icon
- C Up scroll icon
- D Down scroll icon
- E Select icon
- F Return icon

## G Machine settings

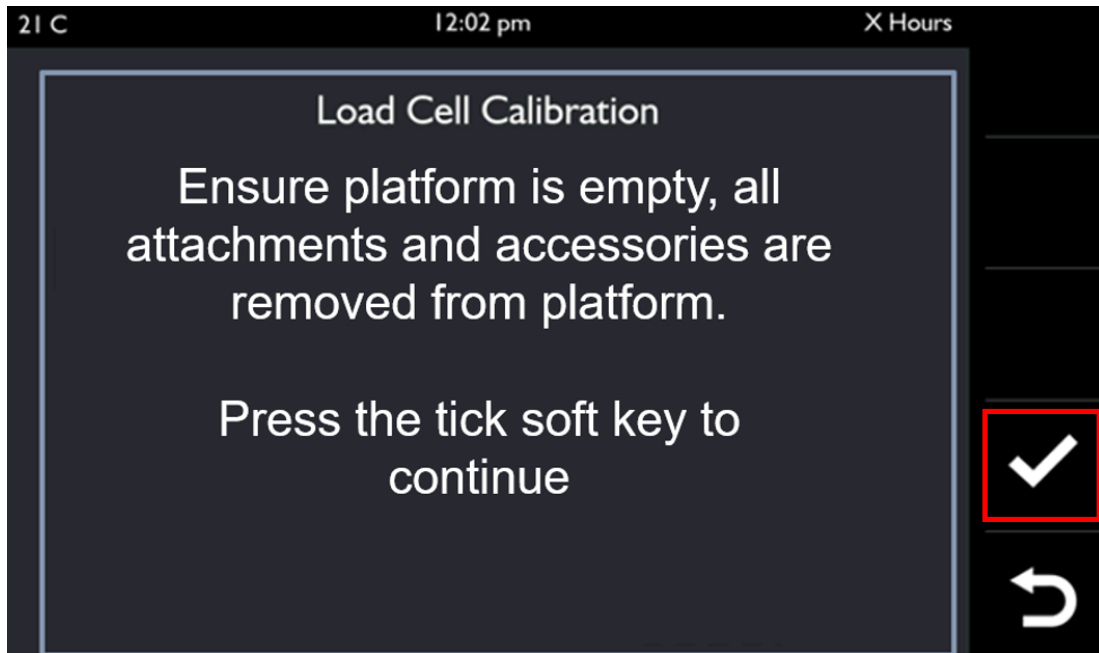
3. Enter Password and click Ok Key.



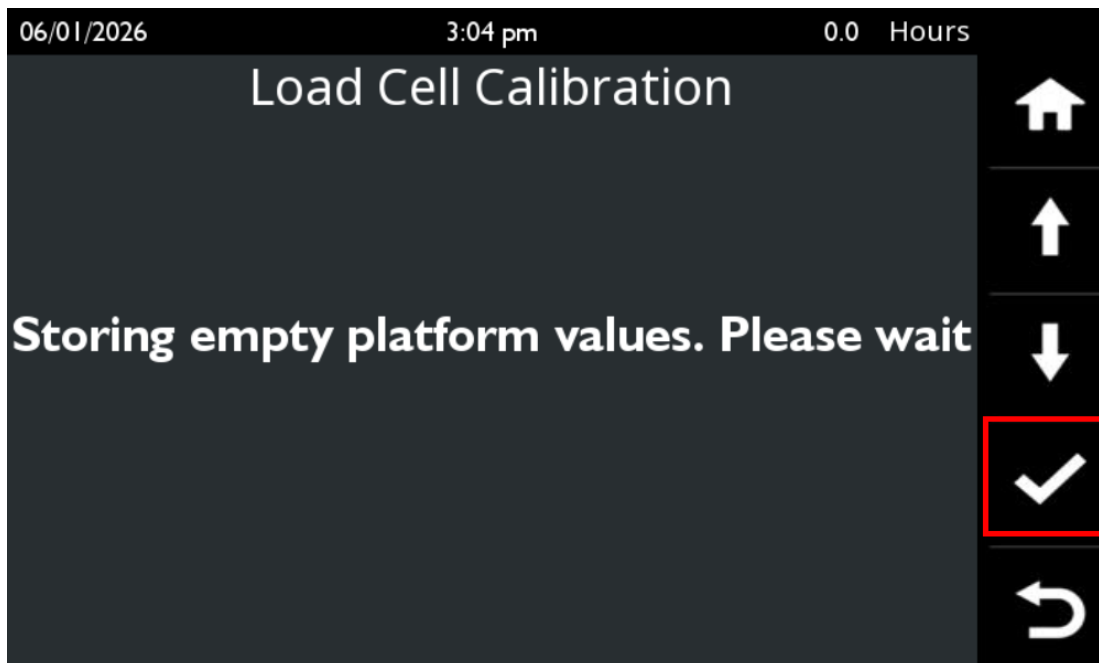
4. Select Load Cell calibration and click Ok Key.



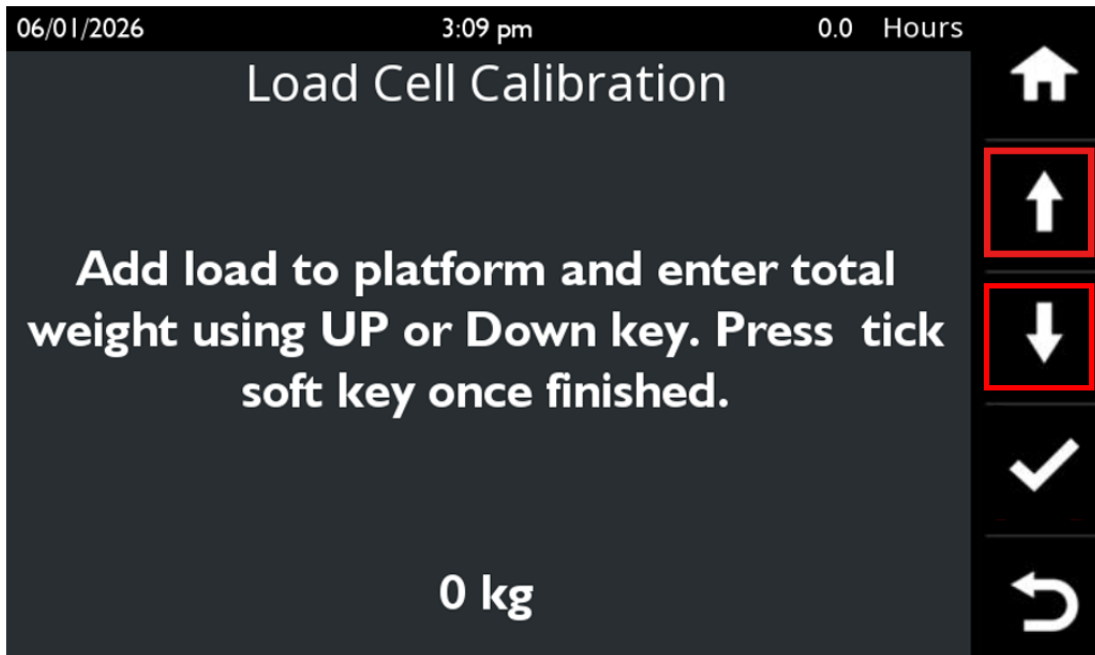
5. Load Cell Calibration requires the operator to ensure there is no weight in the basket, then proceed to next step by pressing OK. Refer below Pic.



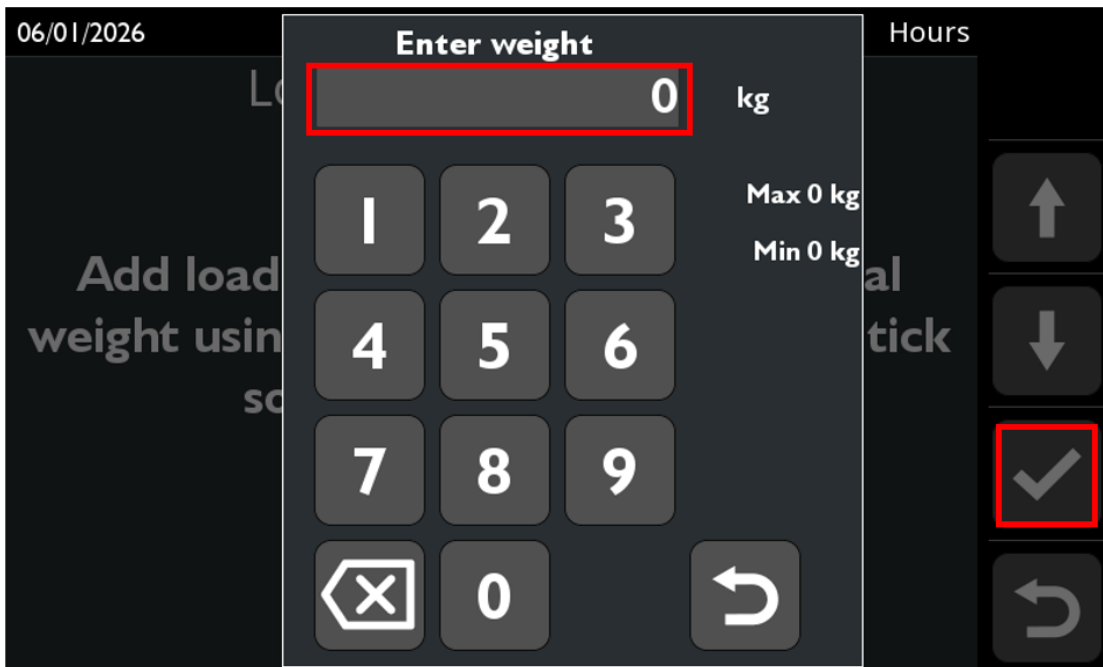
6. After click on OK key, No Load Calibration Process will run.



7. After No Load Calibration below screen for Load Calibration will appear, to put the load in basket 50 - 454 kg and click Up/Down Key



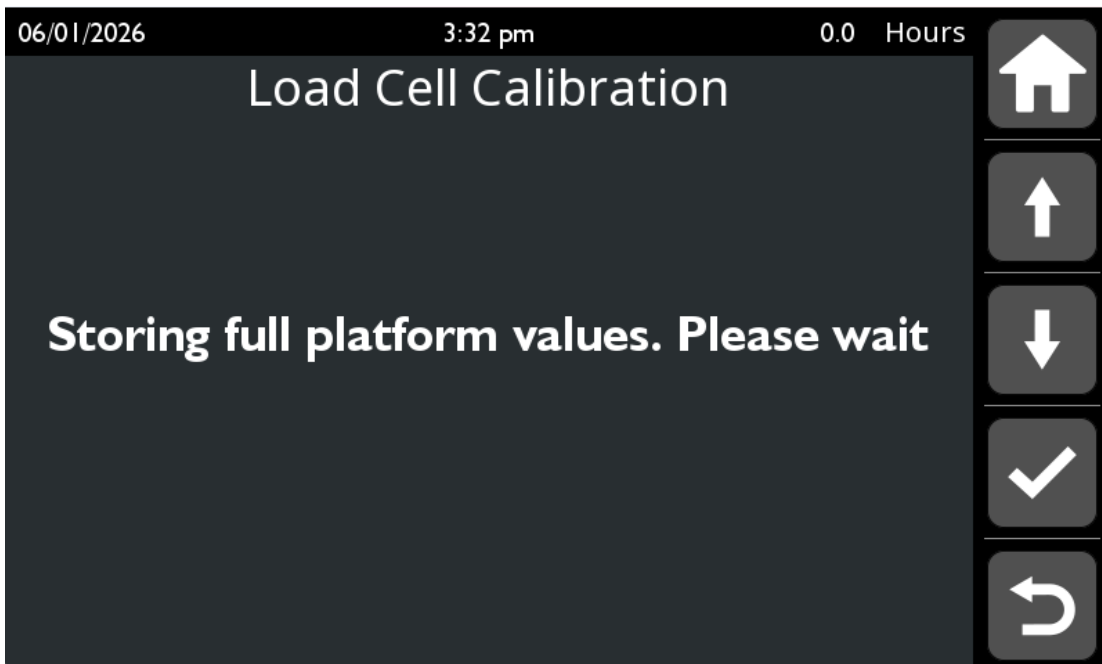
8. Enter the value of weight available in the platform for Load calibration and click Ok Key (**Note - Enter the accurate weight for load calibration in the display**)



9. click Ok Key



10. After click on OK key, Load Calibration Process will run.



11. Once calibration steps are completed, Load calibration done Successfully message will pop up on the Display.



12. To check the calibration details, select Machine control Set up to open machine settings .



13. Select "Load Cell Stored Value" and Click on Ok Key.



14. After Clicking the Ok key, below screen will appear with Load calibration details.

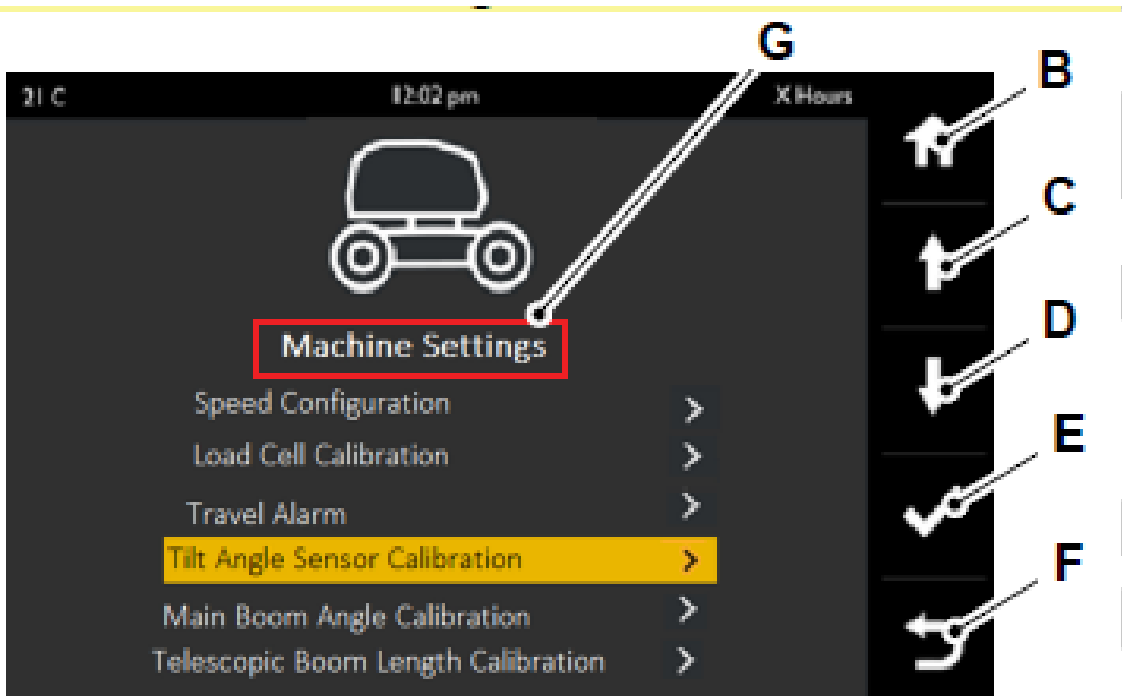


## 6.4.3 Mainboom Angle Sensor

1. On the machine home page , select "Machine control setup' to open 'Machine Settings' .

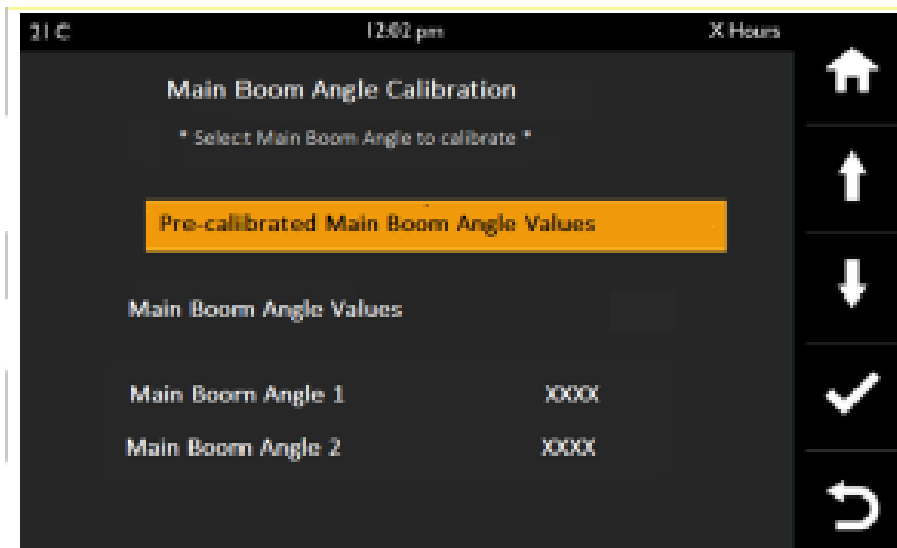


2. Use the Up/Down scroll icon to choose 'Main Boom Angle Calibration' in the menu, and click select icon.



- B** Home page icon
- C** Up scroll icon
- D** Down scroll icon
- E** Select icon
- F** Return icon
- G** Machine settings

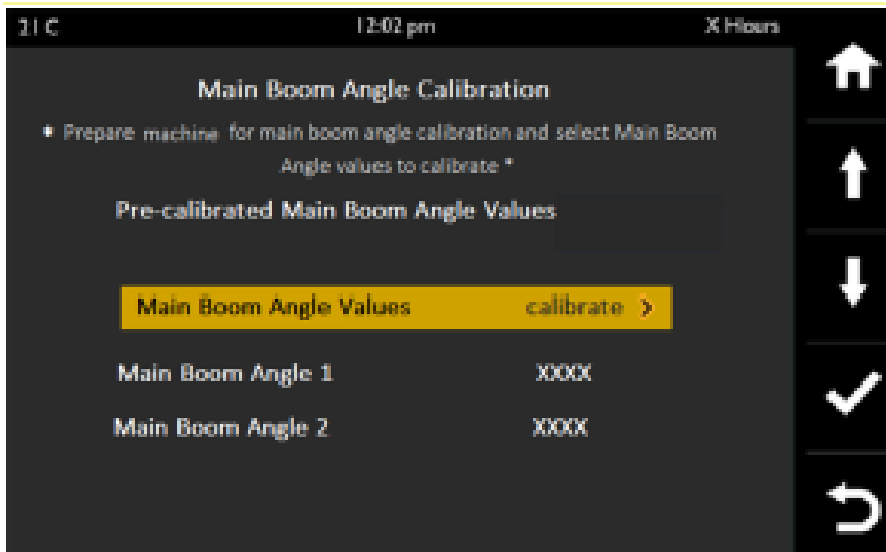
3. The 'Main Boom Angle Sensor Calibration' screen appears which displays the 'Pre-calibrated Main Boom Angle Values'.



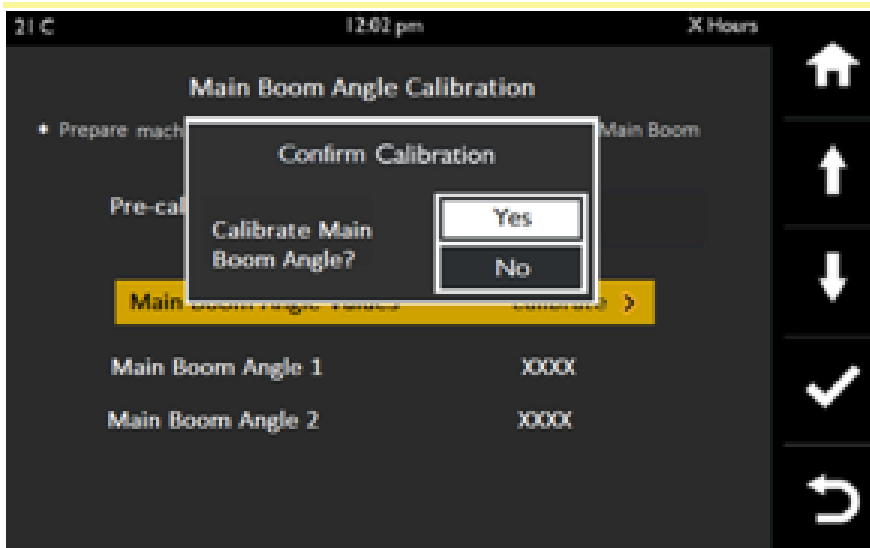
3.1 The specified preset values for Main boom angle 1 and Main boom angle 2 will appear on the screen

Angle :0°

4. Select Calibrate from the drop -down menu of the Main Boom Angle values field .



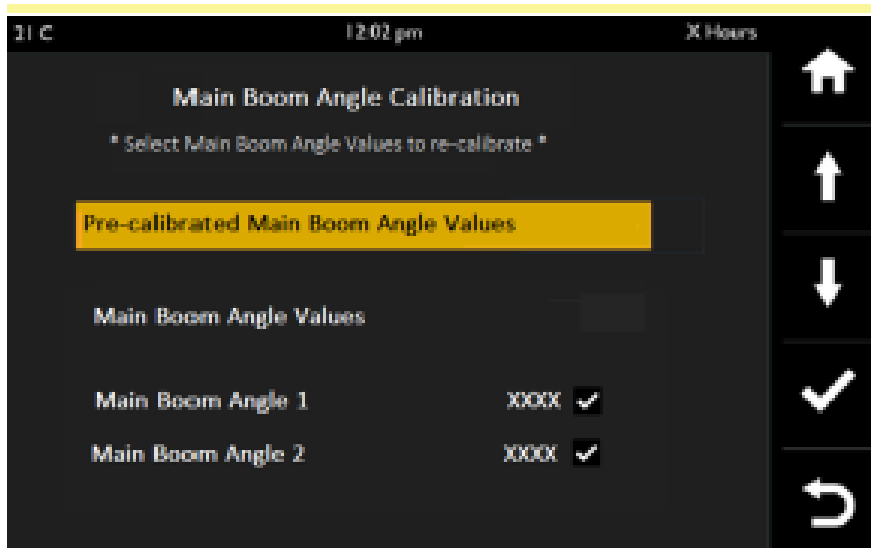
5. The confirm Calibration screen appears



5.1 If the operator selects 'Yes' for 'Calibrate Main Boom Angle?' field, it will save the live values of the 'Main Boom Angle 1' and 'Main Boom Angle 2' in order to proceed with the calibration and go to step 6

5.2 If the operator selects 'No' for 'Calibrate Main Boom Angle?' field, the screen will return to 'Pre-calibrated Main Boom Angle Values'. Refer to step 3.

6. The newly set 'Main Boom Angle 1' and 'Main Boom Angle 2' values will appear on the screen with the 'Tick' mark.



7. If the main boom angle calibrated set acknowledge message is not received within the specified duration, then the display shows 'Cross' mark.  
Duration: 4s

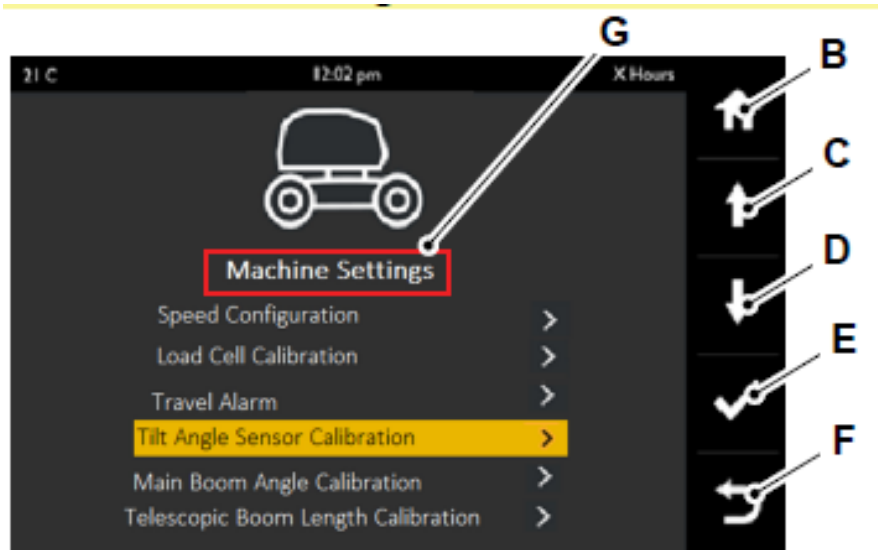
## 6.4.4 Mainboom length Sensor

### Telescopic Boom Length Calibration - Retract (Procedure is same for T65D and T65D Tier3 machine)

1. On the machine home page, select 'Machine control setup' to open 'Machine Settings'.

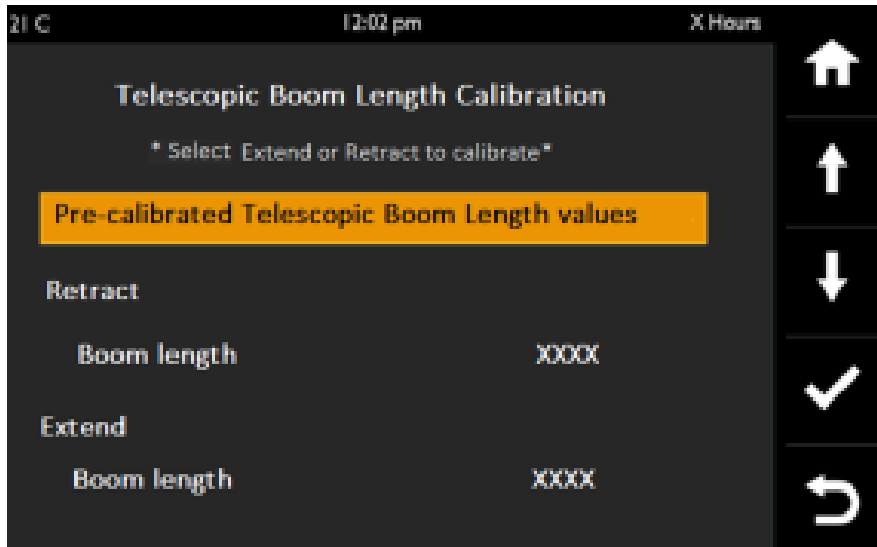


2. Use the Up/Down scroll icon to choose 'Telescopic Boom Length Calibration' in the menu, and click select icon



- B** Home page icon
- C** Up scroll icon
- D** Down scroll icon
- E** Select icon
- F** Return icon
- G** Machine settings

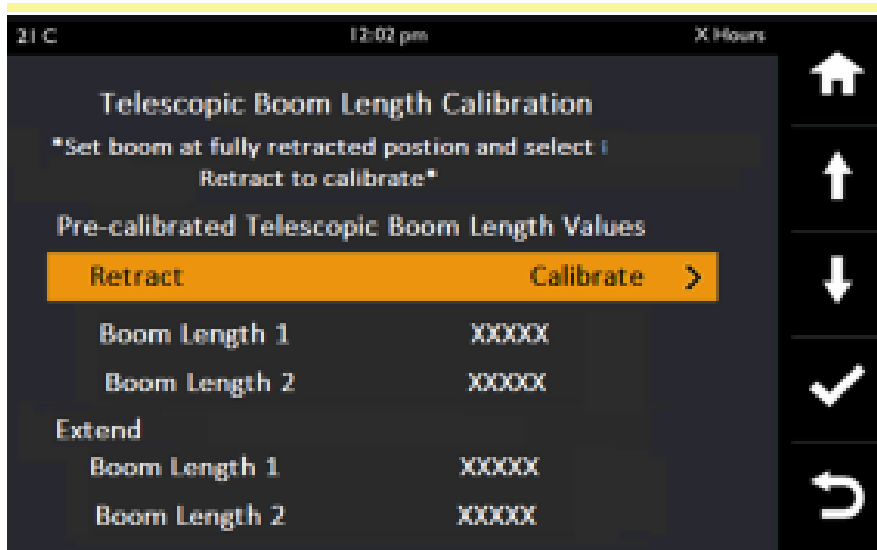
3. The 'Telescopic Boom Length Calibration' screen appears which displays the 'Pre-calibrated telescopic boom length Values'.



3.1. The specified preset values for 'Telescopic Boom Length Retracted' and 'Telescopic Boom Length Extended' will appear on the screen.  
 Angle: 0°

4. Select 'Calibrate' from the drop-down menu of the 'Retract' field.

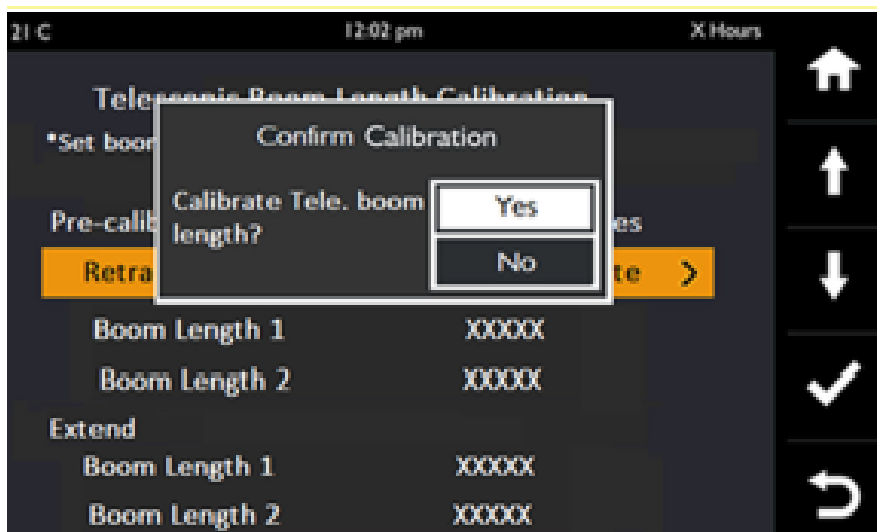
5. The 'Confirm Calibration' screen appears.



5.1. If the operator selects 'Yes' for 'Calibrate Tele. boom length?' field, it will save the live values of the 'Tele. boom length 1' and 'Tele boom length 2' in order to proceed with the calibration and go to step 6.

5.2. If the operator selects 'No' for 'Calibrate Tele. boom length?' field, the screen will return to 'Pre-calibrated Telescopic Boom Length Values'. Refer to step 3.

6 The newly set 'Tele. boom length 1' and 'Tele. boom length 2' values for telescopic boom length retract will appear on the screen with the Tick mark.



7. If the telescopic boom length calibrated set acknowledge message is not received within the specified duration, then the display shows 'Cross' mark.

Duration: 4s

## Telescopic Boom Length Calibration - Extend

1. On the machine home page, select 'Machine control setup' to open 'Machine Settings'.

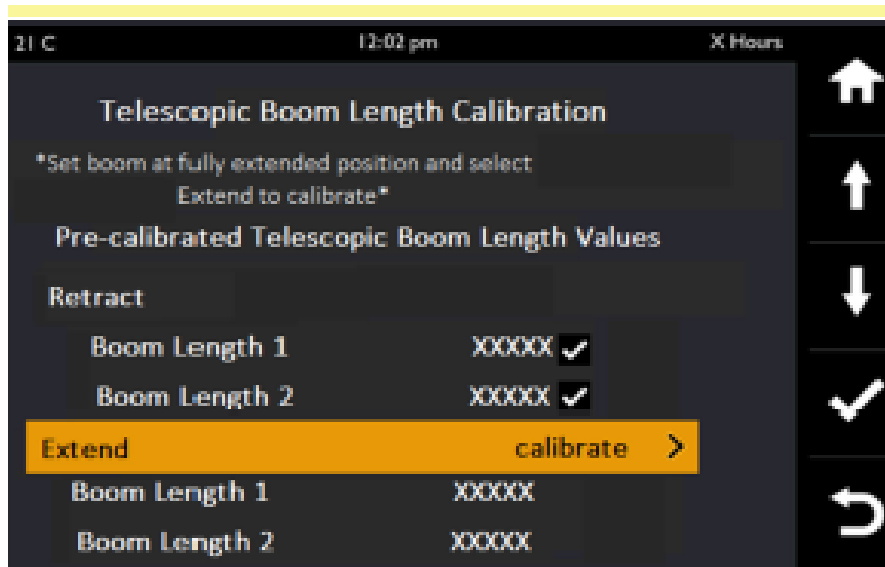
2. Use the Up/Down scroll icon to choose 'Telescopic Boom Length Calibration' in the menu, and click select icon.

3. The 'Telescopic Boom Length Calibration' screen appears which displays the 'Pre-calibrated telescopic boom length Values'.

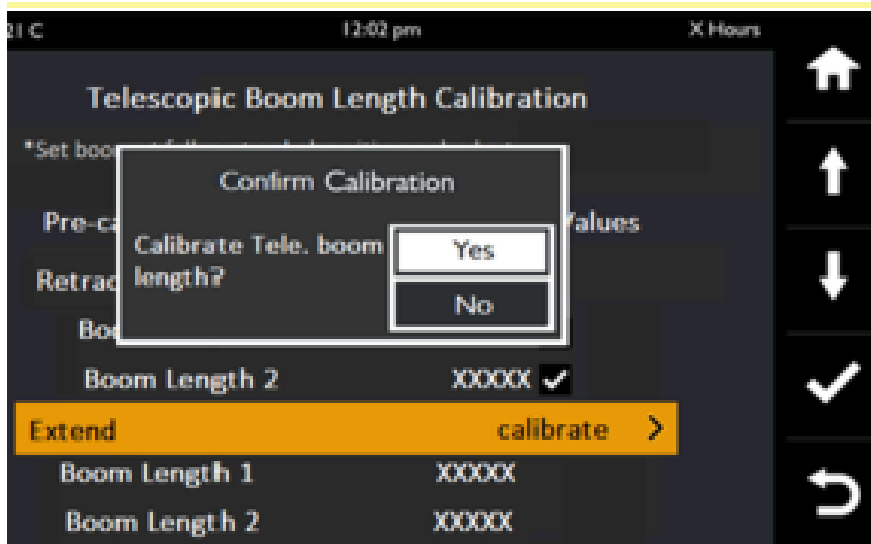
3.1. The specified preset values for 'Telescopic Boom Length Retracted' and 'Telescopic Boom Length Extended' will appear on the screen.

Angle: 0°

4. Select 'Calibrate' from the drop-down menu of the 'Extend' field.



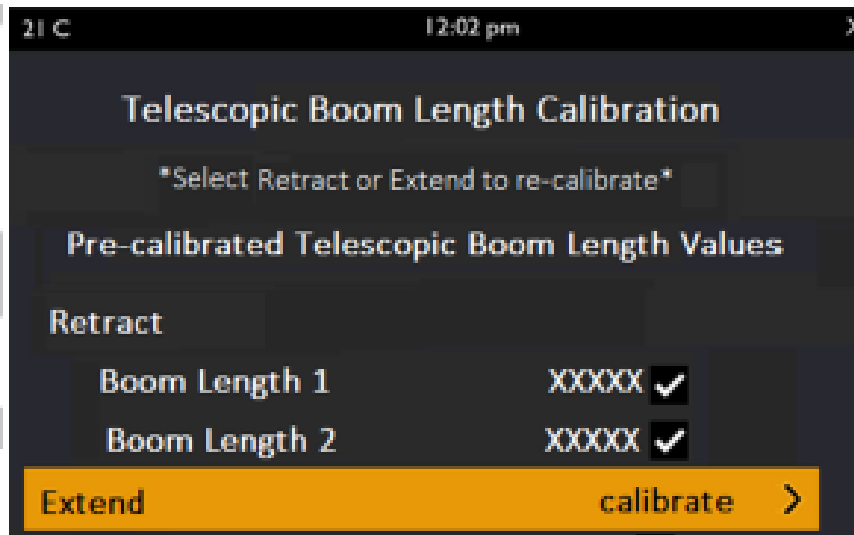
5 The 'Confirm Calibration' screen appears



5.1 If the operator selects 'Yes' for 'Calibrate Teleboom length' field, it will save the live values of the 'Tele. boom length 1' and 'Tele.boom length 2' in order to proceed with the calibration and go to step 6.

5.2. If the operator selects 'No' for 'Calibrate Teleboom length' field, the screen will return to 'Pre-calibrated Telescopic Boom Length Values'. Refer to step 3

6. The newly set 'Tele. boom length 1' and 'Teleboom length 2' values for telescopic boom length extend will appear on the screen with the 'Tick' mark.



7. If the telescopic boom length calibrated set acknowledge message is not received within the specified duration, then the display shows 'Cross' mark.  
Duration: 4s

## 6.4.5 Tilt Sensor Calibration

### Calibration through Machine display (Procedure is same for T65D and T65D Tier3 machine)

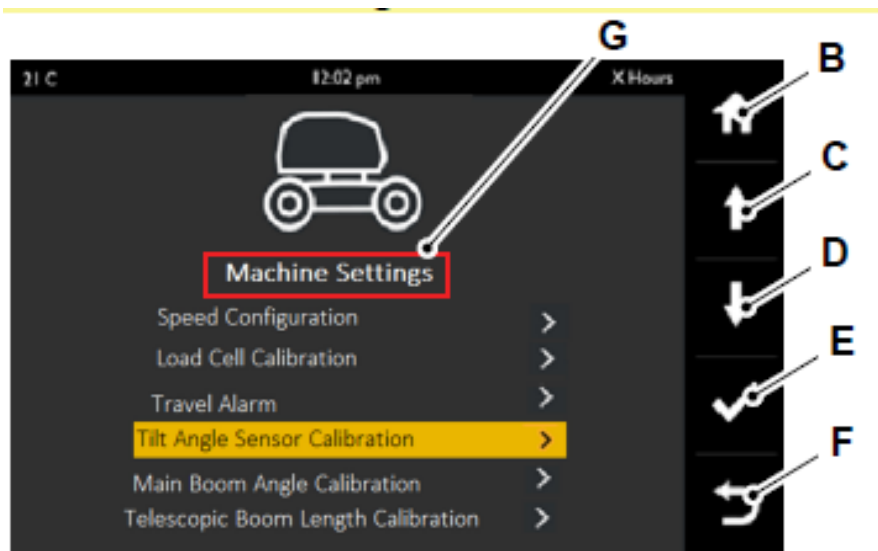
1. Park the machine on firm, level ground in specified angle for each required direction.  
Angle: 0°



2. On the machine home page, select 'Machine control setup' to open 'Machine Settings'.



3. Use the Up/Down scroll icon to choose 'Tilt Angle Sensor Calibration' in the menu, and click select icon.

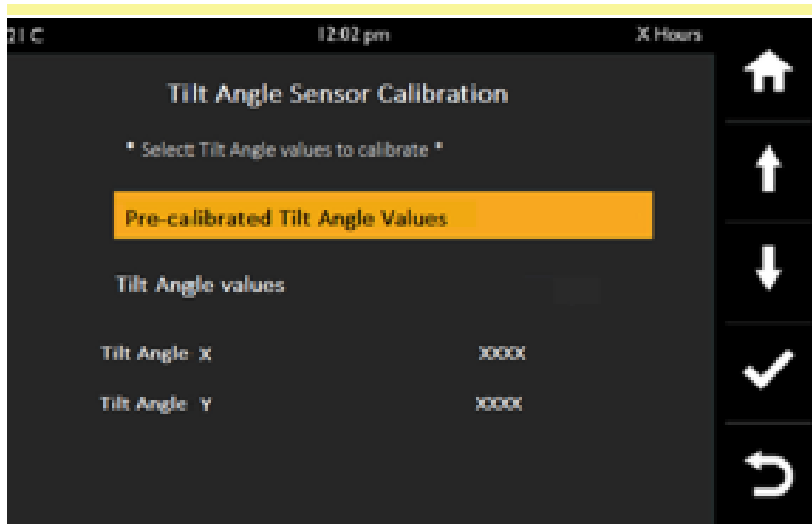


- B - Home Page**
- C - Up Scroll icon
- D - Down Scroll Icon
- E - Select Icon
- F - Return Icon
- G- Machine Settings

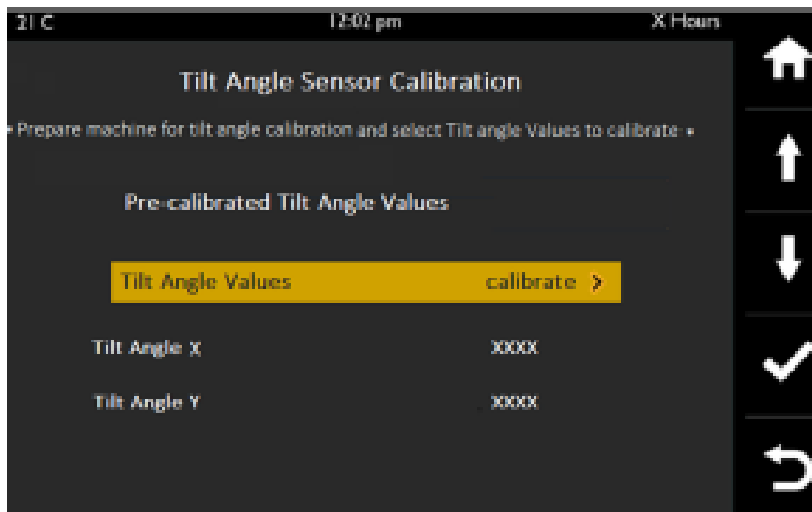
4. The 'Tilt Angle Sensor Calibration' screen appears which displays the 'Pre-calibrated Tilt Angle Values'.

4.1 The specified preset values for Tilt angle X and Tilt angle Y will appear on the screen .

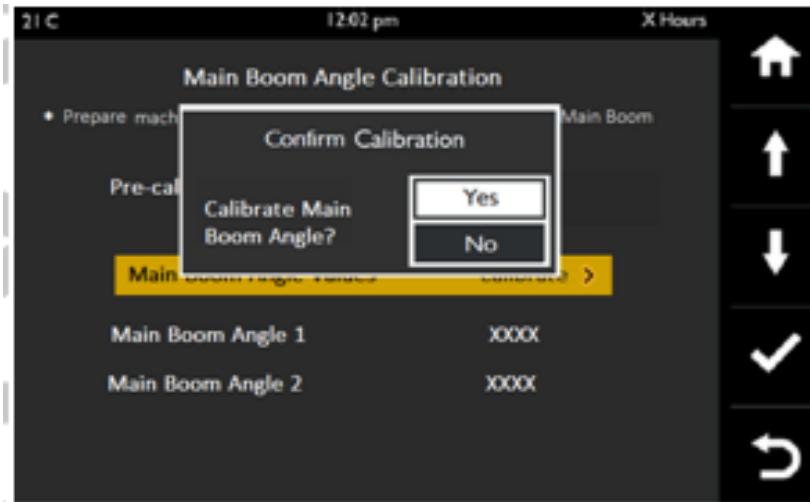
Angle:0



5. Select 'Calibrate' from the drop-down menu of the 'Tilt Angle values' field.

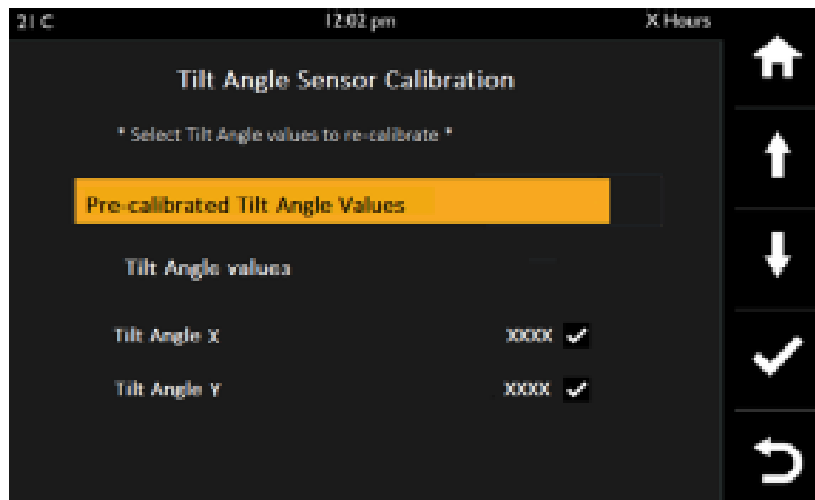


6. The 'Confirm Calibration' screen appears.



6.1 If the operator selects 'Yes' for 'Calibrate Tilt Angle?' field, it will save the live values of the 'Tilt Angle X' and 'Tilt Angle Y' in order to proceed with the calibration and go to step 7

7. The newly set 'Tilt Angle X' and 'Tilt Angle Y' values will appear on the screen with the 'Tick' mark.



8. If the tilt angle calibrated set acknowledge message is not received within the specified duration, then the display shows 'Cross' mark.  
Duration: 4s

# Machine Fault Codes

## 7 Machine Fault Codes

Access Diagnostic Codes (AC00001178\_V66)

Diagnostic Trouble Code (DTC) (MA90000008\_V11.1)

List of [Machine Fault Code](#) <sup>384</sup>

Number	Components
1	<a href="#">Fault Codes</a> <sup>384</sup>
2	<a href="#">Diagnostic Fault Tables</a> <sup>714</sup>

### 7.1 Fault Codes

Access Diagnostic Codes (AC00001178\_V66)

Diagnostic Trouble Code (DTC) (MA90000008\_V11.1)

List of [Fault Codes](#) <sup>384</sup>

Fault Codes	Description
<a href="#">B1001-17</a> <sup>399</sup>	E-Stop Plausibility Check
<a href="#">B1005-17</a> <sup>400</sup>	Base Enable Switch SC to High
<a href="#">B1006-17</a> <sup>401</sup>	Platform Enable Switch SC to High
<a href="#">B1007-92</a> <sup>402</sup>	Platform Enable Switch AND Base Enable Switch both activated (5 - 10V)
<a href="#">B1008-16</a> <sup>403</sup>	Base Enable SC to Low
<a href="#">B1009-16</a> <sup>404</sup>	Platform Enable SC to Low
<a href="#">B1010-13</a> <sup>405</sup>	Base Enable Switch OC AND Platform Enable Switch OC
<a href="#">B1019-17</a> <sup>406</sup>	SLEW POSITION Limit Switch 1 SC to High
<a href="#">B1020-17</a> <sup>407</sup>	SLEW POSITION Limit Switch 2 SC to High
<a href="#">B1021-16</a> <sup>408</sup>	SLEW POSITION Limit Switch 1 SC to Low

<a href="#">B1022-13</a> <small>409</small>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 OC
<a href="#">B1023-16</a> <small>410</small>	SLEW POSITION Limit Switch 2 SC to Low
<a href="#">B1024-92</a> <small>411</small>	SLEW POSITION Limit Switch 1 and SLEW POSITION Limit Switch 2 short to 10V
<a href="#">B1025-13</a> <small>412</small>	CRUSH Protection Switch 1 and 2 Plausibility Check
<a href="#">B1026-17</a> <small>413</small>	CRUSH Protection Switch 1 SC to >5V
<a href="#">B1027-16</a> <small>414</small>	CRUSH Protection Switch 1 SC to Low
<a href="#">B1028-16</a> <small>415</small>	CRUSH Protection Switch 2 SC to Low
<a href="#">B1029-17</a> <small>416</small>	CRUSH Protection Switch 2 SC to >10.5V
<a href="#">B1030-17</a> <small>417</small>	FORWARD OR REVERSE Proportional Solenoid Valve HS SC to High
<a href="#">B1031-16</a> <small>418</small>	FORWARD OR REVERSE Proportional Solenoid Valve HS SC to Low
<a href="#">B1032-13</a> <small>419</small>	FORWARD OR REVERSE Proportional Solenoid Valve HS/LS OC
<a href="#">B1033-17</a> <small>420</small>	FORWARD OR REVERSE Proportional Solenoid Valve LS SC to High
<a href="#">B1034-16</a> <small>420</small>	FORWARD OR REVERSE Proportional Solenoid Valve LS SC to Low
<a href="#">B1035-13</a> <small>421</small>	FORWARD OR REVERSE Proportional Solenoid Valve LS OC
<a href="#">B1043-17</a> <small>422</small>	OSCILLATING AXLE Solenoid Valve HS SC to High
<a href="#">B1044-16</a> <small>423</small>	OSCILLATING AXLE Solenoid Valve HS SC to Low
<a href="#">B1045-13</a> <small>424</small>	OSCILLATING AXLE Solenoid Valve HS & LS OC
<a href="#">B1046-17</a> <small>425</small>	HIGH TORQUE/LOW SPEED Solenoid Valve SC to High or OC
<a href="#">B1047-16</a> <small>426</small>	HIGH TORQUE/LOW SPEED Solenoid Valve SC to Low
<a href="#">B1048-17</a> <small>427</small>	FRONT BRAKE Solenoid Valve SC to High or OC
<a href="#">B1049-16</a> <small>428</small>	FRONT BRAKE Solenoid Valve Raise SC to Low
<a href="#">B1050-17</a> <small>429</small>	ENGINE START BUTTON SC to High
<a href="#">B1051-16</a> <small>429</small>	ENGINE START BUTTON SC to Low

<a href="#">B1052-24</a> 430	ENGINE START BUTTON Stuck for $\geq 10$ seconds
<a href="#">B1053-17</a> 431	FOOT PEDAL SC to High
<a href="#">B1054-16</a> 432	FOOT PEDAL SC to Low
<a href="#">B1055-17</a> 433	ELECTRIC PUMP BUTTON - 1 SC to High
<a href="#">B1056-16</a> 434	ELECTRIC PUMP BUTTON - 1 SC to Low
<a href="#">B1058-17</a> 435	Override Switch Pressed SC to High
<a href="#">B1059-16</a> 436	Override Switch Pressed SC to Low
<a href="#">B1060-13</a> 437	Override Switch Pressed and Override Switch Unpressed OC
<a href="#">B1061-17</a> 438	Override Switch Unpressed SC to High
<a href="#">B1062-16</a> 439	Override Switch Unpressed SC to Low
<a href="#">B1063-92</a> 440	Override Switch Pressed and Override Switch Unpressed Both activated (5-10V)
<a href="#">B1064-17</a> 441	SLEW ACK SWITCH SC to High
<a href="#">B1065-16</a> 441	SLEW ACK SWITCH SC to Low
<a href="#">B1066-24</a> 442	SLEW ACK SWITCH SC Stuck for $\geq 10$ seconds
<a href="#">B1067-17</a> 443	POTENTIOMETER SC to High ( $>5.5V$ )
<a href="#">B1069-17</a> 444	Drive JOYSTICK SC to High ( $>4.75V$ )
<a href="#">B1070-16</a> 445	Drive JOYSTICK SC to Low ( $<0.25V$ ) or OC
<a href="#">B1071-17</a> 446	PLATFORM LEVELLING RAISE Switch SC to High
<a href="#">B1072-17</a> 447	PLATFORM LEVELLING LOWER Switch SC to High
<a href="#">B1073-92</a> 448	PLATFORM LEVELLING RAISE and LOWER Switches both activated (5 - 10V)
<a href="#">B1074-16</a> 449	PLATFORM LEVELLING RAISE Switch SC to Low
<a href="#">B1075-16</a> 450	PLATFORM LEVELLING LOWER Switch SC to Low
<a href="#">B1076-17</a> 451	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve HS SC to High

<a href="#">B1077-16</a> <sub>452</sub>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve HS SC to Low
<a href="#">B1078-13</a> <sub>453</sub>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve HS / LS OC
<a href="#">B1079-17</a> <sub>454</sub>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1080-17</a> <sub>455</sub>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve HS SC to High
<a href="#">B1081-16</a> <sub>455</sub>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve HS SC to Low
<a href="#">B1082-13</a> <sub>456</sub>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve HS/LS OC
<a href="#">B1083-17</a> <sub>457</sub>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1101-17</a> <sub>458</sub>	MAIN BOOM EXTEND Switch SC to High
<a href="#">B1102-17</a> <sub>459</sub>	MAIN BOOM RETRACT Switch SC to High
<a href="#">B1103-92</a> <sub>460</sub>	MAIN BOOM EXTEND & RETRACT Switches both activated (5 - 10V)
<a href="#">B1104-16</a> <sub>461</sub>	MAIN BOOM EXTEND Switch SC to Low
<a href="#">B1105-16</a> <sub>462</sub>	MAIN BOOM RETRACT Switch SC to Low
<a href="#">B1106-17</a> <sub>463</sub>	PLATFORM ROTATE RIGHT Switch SC to High
<a href="#">B1107-17</a> <sub>464</sub>	PLATFORM ROTATE LEFT Switch SC to High
<a href="#">B1108-92</a> <sub>465</sub>	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)
<a href="#">B1109-16</a> <sub>466</sub>	PLATFORM ROTATE RIGHT Switch SC to Low
<a href="#">B1110-16</a> <sub>467</sub>	PLATFORM ROTATE LEFT Switch SC to Low
<a href="#">B1111-17</a> <sub>468</sub>	JIB RAISE Switch SC to High
<a href="#">B1112-17</a> <sub>469</sub>	JIB LOWER Switch SC to High
<a href="#">B1113-92</a> <sub>470</sub>	JIB RAISE & LOWER Switches both activated (5 - 10V)
<a href="#">B1114-16</a> <sub>471</sub>	JIB RAISE Switch SC to Low
<a href="#">B1115-16</a> <sub>472</sub>	JIB LOWER Switch SC to Low

<a href="#">B1116-17</a> 473	MAIN BOOM RAISE (BASE) Switch SC to High
<a href="#">B1117-17</a> 474	MAIN BOOM LOWER (BASE) Switch SC to High
<a href="#">B1118-92</a> 475	MAIN BOOM RAISE & LOWER (BASE) Switches both activated (5 - 10V)
<a href="#">B1119-16</a> 476	MAIN BOOM RAISE (BASE) Switch SC to Low
<a href="#">B1120-16</a> 477	MAIN BOOM LOWER (BASE) Switch SC to Low
<a href="#">B1121-17</a> 478	SLEW RIGHT (BASE) Switch SC to High
<a href="#">B1122-17</a> 479	SLEW LEFT (BASE) Switch SC to High
<a href="#">B1123-92</a> 480	SLEW RIGHT & LEFT (BASE) Switches both activated (5 - 10V)
<a href="#">B1124-16</a> 481	SLEW RIGHT (BASE) Switch SC to Low
<a href="#">B1125-16</a> 482	SLEW LEFT (BASE) Switch SC to Low
<a href="#">B1126-17</a> 483	MAIN BOOM Lower Limit Switch 1 SC to High
<a href="#">B1127-17</a> 484	MAIN BOOM Lower Limit Switch 2 SC to High
<a href="#">B1128-16</a> 485	MAIN BOOM Lower Limit Switch 1 SC to Low
<a href="#">B1129-13</a> 486	MAIN BOOM Lower Limit Switch 1 AND Switch 2 OC
<a href="#">B1130-16</a> 487	MAIN BOOM Lower Limit Switch 2 SC to Low
<a href="#">B1131-2F</a> 488	MAIN BOOM Lower Limit Switch 1 AND Switch 2 Short to 10V OR 12V
<a href="#">B1144-17</a> 489	10V INPUT System SC to High
<a href="#">B1145-16</a> 490	10V INPUT System SC to Low
<a href="#">B1146-17</a> 491	STEER JOYSTICK SC to High (>4.75V)
<a href="#">B1147-16</a> 491	STEER JOYSTICK SC to Low (<0.25V) or OC
<a href="#">B1148-17</a> 492	LIFT JOYSTICK SC to High (>4.75V)
<a href="#">B1149-16</a> 493	LIFT JOYSTICK SC to Low (<0.25V) or OC
<a href="#">B1150-17</a> 494	SLEW JOYSTICK SC to High (>4.75V)

<a href="#">B1151-16</a> <small>495</small>	SLEW JOYSTICK SC to Low (<0.25V) or OC
<a href="#">B1158-16</a> <small>496</small>	Platform Worklights SCL
<a href="#">B1159-17</a> <small>497</small>	Platform Worklights OC OR SCH
<a href="#">B1177-16</a> <small>498</small>	BUZZER SC to Low
<a href="#">B1178-13</a> <small>499</small>	BUZZER OC OR SC to High
<a href="#">B1179-13</a> <small>500</small>	BEACON 1 OC OR SHORT TO HIGH
<a href="#">B1180-16</a> <small>501</small>	BEACON 1 SC to Low
<a href="#">B1181-16</a> <small>502</small>	HORN HS SC to Low
<a href="#">B1182-13</a> <small>503</small>	HORN HS OC
<a href="#">B1183-16</a> <small>504</small>	WHITE NOISE ALARM SC to Low
<a href="#">B1184-13</a> <small>505</small>	WHITE NOISE ALARM OC OR SHORT TO HIGH
<a href="#">B1190-16</a> <small>506</small>	FAULT LED SC to Low
<a href="#">B1191-17</a> <small>507</small>	FAULT LED SC to High
<a href="#">B1198-16</a> <small>507</small>	SLEW ACK LED SC to Low
<a href="#">B1199-17</a> <small>508</small>	SLEW ACK LED SC to High
<a href="#">B1206-17</a> <small>509</small>	HORN BUTTON SC to High
<a href="#">B1207-16</a> <small>510</small>	HORN BUTTON SC to Low
<a href="#">B1208-24</a> <small>511</small>	HORN BUTTON Stuck for >= 10 seconds
<a href="#">B1209-17</a> <small>512</small>	HIGH ENGINE SPEED BUTTON SC to High
<a href="#">B1210-16</a> <small>513</small>	HIGH ENGINE SPEED BUTTON SC to Low
<a href="#">B1211-24</a> <small>514</small>	HIGH ENGINE SPEED BUTTON Stuck for >= 10 seconds
<a href="#">B1212-17</a> <small>515</small>	HIGH TORQUE SPEED BUTTON SC to High
<a href="#">B1213-16</a> <small>516</small>	HIGH TORQUE SPEED BUTTON SC to Low

<a href="#">B1214-24</a> <small>517</small>	HIGH TORQUE SPEED BUTTON Stuck for >= 10 seconds
<a href="#">B1215-17</a> <small>517</small>	HYDRAULIC GENERATOR BUTTON SC to High
<a href="#">B1216-16</a> <small>518</small>	HYDRAULIC GENERATOR BUTTON SC to Low
<a href="#">B1217-24</a> <small>519</small>	HYDRAULIC GENERATOR BUTTON Stuck for >= 10 seconds
<a href="#">B1221-17</a> <small>520</small>	LOAD SENSOR 1 OOR High
<a href="#">B1222-16</a> <small>521</small>	LOAD SENSOR 1 OOR Low OR OC
<a href="#">B1223-17</a> <small>522</small>	LOAD SENSOR 2 OOR High
<a href="#">B1224-16</a> <small>524</small>	LOAD SENSOR 2 OOR Low OR OC
<a href="#">B1225-2F</a> <small>524</small>	LOAD SENSOR Data Erratic (Difference > 20%)
<a href="#">B1227-17</a> <small>526</small>	AXLE LOCK PRESSURE SENSOR SC to High
<a href="#">B1228-16</a> <small>527</small>	AXLE LOCK PRESSURE SENSOR SC to Low or OC
<a href="#">B1229-17</a> <small>528</small>	Platform work light input SCH
<a href="#">B1230-16</a> <small>529</small>	Platform work light input SC
<a href="#">B1232-17</a> <small>530</small>	FUEL SENDER OOR High OR DIRTY AIR FILTER SC to HIGH OR COOLANT LEVEL SWITCH SC to HIGH
<a href="#">B1233-16</a> <small>531</small>	FUEL SENDER OOR Low
<a href="#">B1235-17</a> <small>531</small>	E-Stop Plausibility Check
<a href="#">B1239-17</a> <small>532</small>	ENGINE START BUTTON SC to High
<a href="#">B1240-16</a> <small>533</small>	ENGINE START BUTTON SC to Low
<a href="#">B1241-24</a> <small>534</small>	ENGINE START BUTTON Stuck for >= 10 seconds
<a href="#">B1242-17</a> <small>535</small>	PLATFORM LEVELLING RAISE Switch SC to High
<a href="#">B1243-17</a> <small>536</small>	PLATFORM LEVELLING LOWER Switch SC to High
<a href="#">B1244-92</a> <small>537</small>	PLATFORM LEVELLING RAISE and LOWER Switches both activated (5 - 10V)
<a href="#">B1245-16</a> <small>538</small>	PLATFORM LEVELLING RAISE Switch SC to Low

<a href="#">B1246-16</a> <small>539</small>	PLATFORM LEVELLING LOWER Switch SC to Low
<a href="#">B1252-17</a> <small>540</small>	MAIN BOOM TELESCOPE EXTEND Switch SC to High
<a href="#">B1253-17</a> <small>540</small>	MAIN BOOM TELESCOPE RETRACT Switch SC to High
<a href="#">B1254-92</a> <small>541</small>	MAIN BOOM TELESCOPE EXTEND & RETRACT Switches both activated (5 - 10V)
<a href="#">B1255-16</a> <small>542</small>	MAIN BOOM TELESCOPE EXTEND Switch SC to Low
<a href="#">B1256-16</a> <small>543</small>	MAIN BOOM TELESCOPE RETRACT Switch SC to Low
<a href="#">B1257-17</a> <small>544</small>	PLATFORM ROTATE RIGHT Switch SC to High
<a href="#">B1258-17</a> <small>545</small>	PLATFORM ROTATE LEFT Switch SC to High
<a href="#">B1259-92</a> <small>546</small>	PLATFORM ROTATE RIGHT & LEFT Switches both activated (5 - 10V)
<a href="#">B1260-16</a> <small>547</small>	PLATFORM ROTATE RIGHT Switch SC to Low
<a href="#">B1261-16</a> <small>548</small>	PLATFORM ROTATE LEFT Switch SC to Low
<a href="#">B1262-17</a> <small>549</small>	JIB RAISE Switch SC to High
<a href="#">B1263-17</a> <small>550</small>	JIB LOWER Switch SC to High
<a href="#">B1264-92</a> <small>551</small>	JIB RAISE & LOWER Switches both activated (5 - 10V)
<a href="#">B1265-16</a> <small>551</small>	JIB RAISE Switch SC to Low
<a href="#">B1266-16</a> <small>552</small>	JIB LOWER Switch SC to Low
<a href="#">B1267-17</a> <small>553</small>	10V INPUT System SC to High - Platform
<a href="#">B1268-16</a> <small>554</small>	10V INPUT System SC to Low - Platform
<a href="#">B1269-16</a> <small>555</small>	BUZZER SC to Low
<a href="#">B1270-17</a> <small>556</small>	BUZZER SC to High
<a href="#">B1273-17</a> <small>557</small>	HORN BUTTON SC to High
<a href="#">B1274-16</a> <small>558</small>	HORN BUTTON SC to Low
<a href="#">B1275-24</a> <small>559</small>	HORN BUTTON Stuck for >= 10 seconds

<a href="#">B1276-24</a> <small>560</small>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1277-24</a> <small>560</small>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1278-17</a> <small>561</small>	REAR BRAKE Solenoid Valve SC to High or OC
<a href="#">B1279-16</a> <small>562</small>	REAR BRAKE Solenoid Valve Raise SC to Low
<a href="#">B1280-64</a> <small>563</small>	Wire rope plausibility fault
<a href="#">B1281-16</a> <small>567</small>	VSS2 Low Voltage ( $\leq 9.5V$ )
<a href="#">B1282-13</a> <small>567</small>	Water in fuel OC during engine startup: ( Transition from GND to OC is expected within 2 secs of engine ignition ON )
<a href="#">B1283-16</a> <small>568</small>	VSS1 Low Voltage ( $\leq 4.5V$ )
<a href="#">B1284-16</a> <small>569</small>	VSS2 Low Voltage ( $\leq 9.5V$ )
<a href="#">B1285-16</a> <small>570</small>	VSS3 Low Voltage ( $\leq 4.5V$ )
<a href="#">B1286-16</a> <small>571</small>	Water in fuel short to ground
<a href="#">B1287-2F</a> <small>571</small>	FUEL SENDER Data Erratic
<a href="#">B1300-2F</a> <small>572</small>	T65D - ALTERNATOR FAULT T65D T3 - When engine is Running : Alternator freq ip $> 850$ rpm AND ( 12v alter OFF AND low oil OC ) for 4 secs D+ alt fault : When Engine is not Running : Alternator freq ip $< 550$ rpm AND ( 12v alter ON AND low oil OFF ) for 4 secs
<a href="#">B1301-2F</a> <small>574</small>	OSCILLATING AXLE PRESSURE SENSOR FAILURE
<a href="#">B1302-2F</a> <small>575</small>	RC CONFIG SC Plausibility Check
<a href="#">B1303-2F</a> <small>576</small>	RC CONFIG SC Plausibility Check
<a href="#">B1304-24</a> <small>576</small>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1305-24</a> <small>577</small>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1306-24</a> <small>578</small>	Base Startlock Stuck (Generic o/p fault)

<a href="#">B1307-24</a> <sub>579</sub>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1308-24</a> <sub>579</sub>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1309-24</a> <sub>580</sub>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1310-24</a> <sub>581</sub>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1311-24</a> <sub>582</sub>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1312-24</a> <sub>582</sub>	Base Startlock Stuck (Generic o/p fault)
<a href="#">B1313-24</a> <sub>583</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1314-24</a> <sub>584</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1315-24</a> <sub>585</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1316-24</a> <sub>585</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1317-24</a> <sub>586</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1318-24</a> <sub>587</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1319-24</a> <sub>588</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1320-24</a> <sub>588</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1321-24</a> <sub>589</sub>	Platform Startlock Stuck (Generic o/p fault)
<a href="#">B1329-13</a> <sub>590</sub>	JIB/PLATFORM FLOW HS Sol SC to High
<a href="#">B1330-16</a> <sub>591</sub>	JIB/PLATFORM FLOW HS Sol SC to Low
<a href="#">B1331-13</a> <sub>592</sub>	FORWARD OR REVERSE Proportional Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1335-17</a> <sub>593</sub>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve LS SC to High
<a href="#">B1336-16</a> <sub>594</sub>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve LS SC to Low
<a href="#">B1337-13</a> <sub>595</sub>	MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve LS OC
<a href="#">B1338-17</a> <sub>595</sub>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve LS SC to High
<a href="#">B1339-16</a> <sub>596</sub>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve LS SC to Low

<a href="#">B1340-13</a> <sup>597</sup>	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve LS OC
<a href="#">B1343-92</a> <sup>598</sup>	Throttle Actuator EEPROM Fault : EEPROM Check sum error
<a href="#">B1346-92</a> <sup>599</sup>	Throttle Actuator: Over voltage: voltage > 33.5V for >200ms Under-voltage: voltage < 6.5V for >200ms Voltage measurement short to 5V Voltage measurement short to 0V
<a href="#">B1347-17</a> <sup>600</sup>	OSCILLATING AXLE Solenoid Valve LS SC to High
<a href="#">B1348-16</a> <sup>601</sup>	OSCILLATING AXLE Solenoid Valve LS SC to Low
<a href="#">B1349-13</a> <sup>602</sup>	OSCILLATING AXLE Solenoid Valve Fault
<a href="#">B1352-13</a> <sup>603</sup>	Throttle Actuator: Position deviation of more than 15 steps for more than 2s
<a href="#">B1353-16</a> <sup>604</sup>	ENGINE IGNITION SC to Low
<a href="#">B1354-13</a> <sup>605</sup>	ENGINE IGNITION OC OR SC to High
<a href="#">B1355-16</a> <sup>606</sup>	HYDRAULIC GENERATOR Valve SC to Low
<a href="#">B1356-13</a> <sup>607</sup>	HYDRAULIC GENERATOR Valve HS SC to High or OC
<a href="#">B1357-16</a> <sup>607</sup>	ENGINE CRANK SC to Low
<a href="#">B1358-13</a> <sup>608</sup>	ENGINE CRANK SC to High or OC
<a href="#">B1360-00</a> <sup>609</sup>	COOLANT TEMPERATURE exceeds upper limit
<a href="#">B1362-13</a> <sup>610</sup>	BEACON 2 OC OR SHORT TO HIGH
<a href="#">B1363-16</a> <sup>611</sup>	BEACON 2 SC to Low
<a href="#">B1365-17</a> <sup>612</sup>	LOAD SENSOR 1 OOR High
<a href="#">B1366-16</a> <sup>613</sup>	LOAD SENSOR 1 OOR Low OR OC
<a href="#">B1367-17</a> <sup>614</sup>	LOAD SENSOR 2 OOR High
<a href="#">B1368-16</a> <sup>615</sup>	LOAD SENSOR 2 OOR Low OR OC

<a href="#">B1369-87</a> <small>616</small>	MAIN BOOM ANGLE SENSOR Communication fault
<a href="#">B1370-2F</a> <small>617</small>	MAIN BOOM ANGLE SENSOR Channel plausibility fault
<a href="#">B1371-17</a> <small>618</small>	MAIN BOOM ANGLE Working Range fault
<a href="#">B1373-87</a> <small>619</small>	TELESCOPIC BOOM LENGTH SENSOR Communication fault
<a href="#">B1374-2F</a> <small>620</small>	TELESCOPIC BOOM LENGTH SENSOR Channel plausibility fault
<a href="#">B1375-17</a> <small>621</small>	TELESCOPIC BOOM LENGTH Range fault
<a href="#">B1376-87</a> <small>622</small>	TILT ANGLE SENSOR Communication fault
<a href="#">B1377-2F</a> <small>623</small>	TILT ANGLE SENSOR Channel plausibility fault
<a href="#">B1378-17</a> <small>624</small>	TILT ANGLE SENSOR Range fault
<a href="#">B1379-13</a> <small>625</small>	Wire ROPE SWITCH 1 OC & SC to Low
<a href="#">B1381-17</a> <small>628</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL HS SC to high
<a href="#">B1382-16</a> <small>628</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL HS SC to low
<a href="#">B1383-13</a> <small>629</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL HS / LS OC
<a href="#">B1384-17</a> <small>630</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL LS SC to high
<a href="#">B1385-16</a> <small>631</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL LS SC to low
<a href="#">B1386-13</a> <small>632</small>	TELE BOOM EXTEND\RETRACT PROPORTIONAL LS OC
<a href="#">B1387-17</a> <small>633</small>	STEER LEFT\RIGHT PROPORTIONAL HS SC to high
<a href="#">B1388-16</a> <small>634</small>	STEER LEFT\RIGHT PROPORTIONAL HS SC to low
<a href="#">B1389-13</a> <small>635</small>	STEER LEFT\RIGHT PROPORTIONAL HS/LS OC
<a href="#">B1390-17</a> <small>636</small>	STEER LEFT\RIGHT PROPORTIONAL LS SC to high
<a href="#">B1391-16</a> <small>637</small>	STEER LEFT\RIGHT PROPORTIONAL LS SC to low
<a href="#">B1392-13</a> <small>638</small>	STEER LEFT\RIGHT PROPORTIONAL LS OC
<a href="#">B1393-17</a> <small>639</small>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL HS SC to high

<a href="#">B1394-16</a> <small>640</small>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL HS SC to low
<a href="#">B1395-13</a> <small>641</small>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL HS/LS OC
<a href="#">B1396-17</a> <small>642</small>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL LS SC to high
<a href="#">B1397-16</a> <small>643</small>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL LS SC to low
<a href="#">B1398-13</a> <small>644</small>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL LS OC
<a href="#">B1399-17</a> <small>645</small>	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL HS SC to high
<a href="#">B1400-16</a> <small>646</small>	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL HS SC to low
<a href="#">B1401-13</a> <small>647</small>	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL HS/LS OC
<a href="#">B1402-17</a> <small>648</small>	JIB\PLATFORM PROPORTIONAL LS SC to high
<a href="#">B1403-16</a> <small>649</small>	JIB\PLATFORM PROPORTIONAL LS SC to low
<a href="#">B1404-13</a> <small>650</small>	JIB\PLATFORM PROPORTIONAL LS OC
<a href="#">B1405-13</a> <small>651</small>	Wire ROPE SWITCH 2 OC & SC to Low
<a href="#">B1406-13</a> <small>653</small>	Throttle Actuator: Temperature > hardware temperature protection (150°C) Temperature measurement short to 5V Temperature measurement short to 0V
<a href="#">B1407-17</a> <small>654</small>	Wire ROPE SWITCH 2 SC to High(12v & 10v)
<a href="#">B1408-13</a> <small>656</small>	Throttle Actuator: Commutation sensor fault; Illogical commutation state Wrong hall sensor sequence
<a href="#">B1409-17</a> <small>657</small>	Wire ROPE SWITCH 1 SC to High(12v & 10v)
<a href="#">B1410-13</a> <small>659</small>	Throttle Actuator: Initialization fault (learn) End stop not found
<a href="#">B1411-17</a> <small>659</small>	JIB/PLATFORM FLOW LS Sol SC to High
<a href="#">B1412-16</a> <small>661</small>	JIB/PLATFORM FLOW LS Sol SC to Low
<a href="#">B1413-13</a> <small>662</small>	JIB/PLATFORM FLOW HS & LS Sol OC

<a href="#">B1414-17</a> <small>663</small>	ELECTRIC PUMP OUTPUT SC to High OR OC
<a href="#">B1415-16</a> <small>664</small>	ELECTRIC PUMP OUTPUT SC to Low
<a href="#">B1416-13</a> <small>665</small>	TELE BOOM EXTEND\RETRACT Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1417-13</a> <small>666</small>	STEER LEFT\RIGHT Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1418-13</a> <small>667</small>	PLATFORM LEVEL RAISE\LOWER Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1419-13</a> <small>668</small>	JIB\PLATFORM ROTATE Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<a href="#">B1420-13</a> <small>669</small>	JIB/PLATFORM FLOW Solenoid Valve Fault
<a href="#">B1421-2F</a> <small>670</small>	Low Coolant Level warning
<a href="#">B1422-13</a> <small>671</small>	Throttle Actuator: Motor effort: Circuit short to high Circuit short to low
<a href="#">B1423-13</a> <small>672</small>	Throttle Actuator: Calibration error End stop not found Calibration low value not found Calibration high value not found
<a href="#">B1424-16</a> <small>673</small>	A) W terminal OC : When Cranking Alternator freq ip < 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs. B) W terminal OC : When Engine is Running Alternator freq ip < 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs
<a href="#">B1425-17</a> <small>675</small>	A) W- terminal SC to high : When Engine Ignition is OFF : Alternator freq input voltage >= 12v AND ( 12v alter OFF OR low oil OFF ) B) W- terminal SC to high : When Engine is not Running: Alternator freq input voltage >= 12v AND ( 12v alter OFF OR low oil OFF )

<a href="#">B1426-13</a> <sup>677</sup>	Low oil pressure fault : When Engine is Running: Alternator freq ip > 850 rpm AND D+(12V) ON AND low oil GND ) for 2 secs Low oil pressure fault : When Engine is not Running: Alternator freq ip < 550 rpm AND ( 12v alter OFF AND low oil OC )
<a href="#">B1427-2F</a> <sup>676</sup>	Relative boom angle difference fault
<a href="#">B1685-13</a> <sup>678</sup>	TILT Angle sensor OOR fault for X-axis ( X1 & X2 )
<a href="#">B1686-13</a> <sup>679</sup>	TILT Angle sensor OOR fault for Y-axis ( Y1 & Y2 )
<a href="#">B1687-13</a> <sup>681</sup>	TILT angle sensor temperature too high
<a href="#">B1688-14</a> <sup>682</sup>	TILT angle sensor temperature too low
<a href="#">B1689-15</a> <sup>683</sup>	TILT angle sensor internal EEPROM error
<a href="#">B1690-15</a> <sup>685</sup>	TILT angle sensor watchdog alarm
<a href="#">B1691-92</a> <sup>686</sup>	TILT ANGLE SENSOR channel 1 & channel 2 comparison fault
<a href="#">B1694-17</a> <sup>687</sup>	Electric pump button -2 SC to high
<a href="#">B1695-16</a> <sup>688</sup>	Electric pump button -2 SC to low
<a href="#">B1696-13</a> <sup>689</sup>	Electric pump button 1 & 2 OC
<a href="#">B1697-92</a> <sup>690</sup>	Electric pump button 1 & 2 Both activated (10-12V)
<a href="#">U1289-92</a> <sup>692</sup>	Throttle Actuator CAN Communication fault: CAN Command never received, CAN Timeout Invalid target position, CAN Bus off
<a href="#">U1293-87</a> <sup>693</sup>	CAN TIME OUT ERROR
<a href="#">U1294-56</a> <sup>694</sup>	CAN RC ERROR
<a href="#">U1295-41</a> <sup>695</sup>	CAN CHECK SUM ERROR
<a href="#">U1296-87</a> <sup>697</sup>	CAN TIME OUT ERROR
<a href="#">U1297-56</a> <sup>698</sup>	CAN RC ERROR
<a href="#">U1298-41</a> <sup>700</sup>	CAN CHECK SUM ERROR

<a href="#">U1299-87</a> <sub>701</sub>	CAN PAIRING FAILED ERROR
<a href="#">U1323-56</a> <sub>703</sub>	CAN RC ERROR
<a href="#">U1324-56</a> <sub>704</sub>	CAN RC ERROR
<a href="#">U1325-56</a> <sub>705</sub>	CAN RC ERROR
<a href="#">U1326-41</a> <sub>707</sub>	CAN CHECK SUM ERROR
<a href="#">U1327-41</a> <sub>708</sub>	CAN CHECK SUM ERROR
<a href="#">U1328-41</a> <sub>710</sub>	CAN CHECK SUM ERROR
<a href="#">U1683-56</a> <sub>711</sub>	TILT ANGLE SENSOR Channel 1 communication fault
<a href="#">U1684-56</a> <sub>712</sub>	TILT ANGLE SENSOR Channel 2 communication fault

## 7.1.1 B1001-17

<b>Error Code:</b>	<b>B1001-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop & Base Override - 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>	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, -C50_TCP(terminals 24/31 and 25/31), -C50_TH(terminals 24/31

	<p>and 25/31) and on Base Bosch ECU Connector (-C27-XC1_TH, Pin 14/96 and -C27-XC2_TH, Pin 28/58).</p> <p>3) Check Continuity of wire #4005-#3049 and #6006 between Bosch Base ECU and E-Stop terminals.</p> <p>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.</p>
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**JCB**

7.1.2 B1005-17

<b>Error Code:</b>	<b>B1005-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop & Base Override - Base Enable Switch Short Circuit to High
<b>Component</b> :	Base Enable Switch
<b>Vehicle reaction:</b>	<p>Before operation:</p> <ul style="list-style-type: none"> <li>- Default to platform controls</li> <li>- allow base override</li> </ul> <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>

<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>
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### 7.1.3 B1006-17

<b>Error Code:</b>	<b>B1006-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Platform AUX/Override - Platform AUX/Override Button Short Circuit to High
<b>Component :</b>	Platform AUX/Override Button
<b>Vehicle reaction:</b>	<p>Before operation:</p> <ul style="list-style-type: none"> <li>- disable engine and default to platform controls</li> <li>- allow base override</li> </ul> <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>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check wiring between Platform Override Switch and Platform Bosch ECU.</li> <li>2) Disconnect connector to Bosch ECU, check continuity between override switch terminals -C209-3 &amp; -C209-1. This</li> </ol>

	<p>should be 'Open Circuit'. Investigate if testing does not concur.</p> <p>3) Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</p> <p>4) Check operation of Override Switch.</p>
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**JCB**

7.1.4 B1007-92

<b>Error Code:</b>	<b>B1007-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Platform Enable & Base Enable Selector both activated (5 - 10V)
<b>Component</b> :	Base Enable Switch
<b>Vehicle reaction:</b>	<ul style="list-style-type: none"> <li>- disable engine and default to platform controls</li> <li>- allow base override</li> </ul>
<b>Possible Cause:</b>	<ul 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> </ul>
<b>Service Action:</b>	<ul style="list-style-type: none"> <li>1) Check wiring between Platform Electric Pump Switch and Platform Bosch ECU.</li> <li>2) Disconnect connector to Bosch ECU, check continuity between Electric Pump Switch terminals -C209-3 &amp; -C209-1. 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 Electric Pump Switch.</li> </ul>



## 7.1.5 B1008-16

<b>Error Code:</b>	<b>B1008-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop & Base Override - Base Enable Switch Short Circuit to Low
<b>Component</b> :	Base Enable Switch
<b>Vehicle reaction:</b>	<p>Before operation:</p> <ul style="list-style-type: none"> <li>- disable engine and default to platform controls</li> <li>- allow base override</li> </ul> <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 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>



## 7.1.6 B1009-16

<b>Error Code:</b>	<b>B1009-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Platform AUX/Override - Platform AUX/Override Switch Short Circuit to Low
<b>Component</b> :	Platform AUX/Override Button
<b>Vehicle reaction:</b>	<p>Before operation:</p> <ul style="list-style-type: none"> <li>- disable engine and default to platform controls</li> <li>- allow base override</li> </ul> <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 Platform Electric Pump 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 Electric Pump switch terminals -C209-3 &amp; -C209-1. 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 Electric Pump Switch. Check for any physical damage to the switch, connectors or harness components.</li> </ol>



## 7.1.7 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>	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) 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. 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 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.
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## 7.1.8 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>	<ul style="list-style-type: none"> <li>- default to Slew position</li> <li>- Implement slew acknowledge safety function (SF#10) in all positions</li> <li>- Implement axle lock in all positions (axle is locked)</li> </ul>
<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> </ol>

	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.
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7.1.9 B1020-17

<b>Error Code:</b>	<b>B1020-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW POSITION Limit Switch 2 Short Circuit to High
<b>Component</b> :	Slew Limit Switch 2
<b>Vehicle reaction:</b>	<ul style="list-style-type: none"> <li>- default to Slew position</li> <li>- Implement slew acknowledge safety function (SF#10) in all positions</li> <li>- Implement axle lock in all positions (axle is locked)</li> </ul>
<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 22. 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. Inspect harness, check for any pinching / damage.</li> <li>2) Disconnect terminal from Pin 22, 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</li> </ol>

	interconnects and at the Base Bosch ECU connectors. 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.
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7.1.10 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>	<ul style="list-style-type: none"> <li>- default to Slew position</li> <li>- Implement slew acknowledge safety function (SF#10) in all positions</li> <li>- Implement axle lock in all positions (axle is locked)</li> </ul>
<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 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</li> </ol>

	<p>actuated then there is a short circuit to ground within the switch or the input to the switch.</p> <p>3) Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</p> <p>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.</p>
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### 7.1.11 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>	<ul style="list-style-type: none"> <li>- default to Slew position</li> <li>- Implement slew acknowledge safety function (SF#10) in all positions</li> <li>- Implement axle lock in all positions (axle is locked)</li> </ul>
<b>Possible Cause:</b>	<ul 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> </ul>
<b>Service Action:</b>	<ul style="list-style-type: none"> <li>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.</li> <li>2) Check continuity with resistance meter between -C30_TH to Slew Position Switch -SW148_SPL terminals. Check from -</li> </ul>

	<p>C30_TH Pins B and C to Base Bosch ECU Connector Pins 47/96 and 57/96 respectively.</p> <p>3) Check Operation of Slew Position Switch. Observe all parts for damage. Check terminals not backed out in Base Bosch ECU Connector. Check Terminals within -C30_TH and -C30_SPL,</p>
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7.1.12 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>	<ul style="list-style-type: none"> <li>- default to Slew position</li> <li>- Implement slew acknowledge safety function (SF#10) in all positions</li> <li>- Implement axle lock in all positions (axle is locked)</li> </ul>
<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</li> </ol>

	<p>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.</p> <p>3) Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</p> <p>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.</p>
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### 7.1.13 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>	<ul style="list-style-type: none"> <li>- default to Slew position</li> <li>- Implement slew acknowledge safety function (SF#10) in all positions</li> <li>- Implement axle lock in all positions (axle is locked)</li> </ul>
<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 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

	<p>terminals at Slew Position Switch -SW148_SPL and check wiring from Switch to connector.</p> <p>2) With Interconnects disconnected from each other, Check wires 4020 and 4021 are not shorted together.</p> <p>3) Check Bosch Base ECU Connectors for Damage, Bent pins and water ingress.</p> <p>4) Check Switch or harness for damage.</p>
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**JCB**

7.1.14 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 faults
<b>Possible Cause:</b>	<p>1) A short or open circuit within the wiring harness</p> <p>2) A short to the Chassis or other signal</p> <p>3) Water damage to the component, connectors or harness</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>1) Check voltages at Crush Protection Switch. Pin 21 and 22 should measure 10V. Pin 11 and 12 should measure 5V.</p> <p>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.</p> <p>3) Check for water damage at Crush Protection Connector,</p>

	<p>Interconnects -C22_PH / -C22_PHP and Platform Bosch ECU connectors</p> <p>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.</p>
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7.1.15 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>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> </ol>

	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.
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7.1.16 B1027-16

<b>Error Code:</b>	<b>B1027-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Crush Protection - Switch 1 Short Circuit to Low
<b>Component</b> :	Crush Protection Switch 1
<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 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 voltages at Crush Protection Switch. Pin 21 and 22 should measure 10V. Pin 11 and 12 should measure 5V. If 0V detected, disconnect switch outputs to determine if fault is from input.</li> <li>2) Disconnect Crush Protection Connector -C01_CPL from -C10_PH. Measure voltages at terminals of -C10_PH. Pin 1 should be 10V, Pin 2 should be 5V. If 0V Measured on Pin 1, check back to DIN Rail terminal S11-4 (10v Supply). If 0V measured on Pin 2, Check back to S11-5 (5v Supply). Check wiring from -C10_PH pins 3 and 4 - through the interconnects -C22_PH/-C22_PCP back to the Platform Bosch ECU pins 47/58 and 36/58.</li> </ol>

	<p>3) Check for water damage at Crush Protection Connector, Interconnects -C22_PH / -C22_PHP and Platform Bosch ECU connectors</p> <p>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.</p>
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**JCB**

7.1.17 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Check voltages at Crush Protection Switch. Pin 21 and 22 should measure 10V. Pin 11 and 12 should measure 5V. If 0V detected, disconnect switch outputs to determine if fault is from input.</p> <p>2) Disconnect Crush Protection Connector -C01_CPL from -C10_PH. Measure voltages at terminals of -C10_PH. Pin 1 should be 10V, Pin 2 should be 5V. If 0V Measured on Pin 1, check back to DIN Rail terminal S11-4 (10v Supply). If 0V measured on Pin</p>

	<p>2, Check back to S11-5 (5v Supply). Check wiring from -C10_PH pins 3 and 4 - through the interconnects -C22_PH/-C22_PCP back to the Platform Bosch ECU pins 47/58 and 36/58.</p> <p>3) Check for water damage at Crush Protection Connector, Interconnects -C22_PH / -C22_PHP and Platform Bosch ECU connectors</p> <p>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.</p>
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**7.1.18 B1029-17**

<b>Error Code:</b>	<b>B1029-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Crush Protection - Switch 2 Short Circuit to >10.5v
<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</li> </ol>

	<p>Platform Bosch ECU connector, Terminals 47/58 and 36/58.</p> <p>3) Check for water damage at Crush Protection Connector, Interconnects -C22_PH / -C22_PHP and Platform Bosch ECU connectors</p> <p>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.</p>
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**JCB**

7.1.19 B1030-17

<b>Error Code:</b>	<b>B1030-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to High
<b>Component :</b>	Drive Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically)</p> <p>Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault.</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>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH. Disconnect connectors and test for short circuits with multi-meter.</li> <li>2) Check condition of connectors at Base Bosch ECU and Transmission pump connectors</li> </ol>

	<p>3) Check for water ingress at connectors including within ECU mounted connector and Solenoid mounted connectors.</p> <p>4) Check harness for any visible damage such as abrasions and pinching.</p>
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**JCB**

## 7.1.20 B1031-16

<b>Error Code:</b>	<b>B1031-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	FORWARD OR REVERSE Proportional Solenoid Valve High Side Short Circuit to Low
<b>Component</b> :	Drive Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically)
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Check harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH.</p> <p>2) Disconnect connectors and test for short circuits to GND with multi-meter.</p> <p>3) Check condition of connectors at Base Bosch ECU and Transmission pump connectors</p> <p>4) Check for water ingress at connectors including within ECU mounted connector and Solenoid mounted connectors.</p> <p>5) Check harness for any visible damage such as abrasions and pinching.</p>



## 7.1.21 B1032-13

<b>Error Code:</b>	<b>B1032-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	FORWARD OR REVERSE Proportional Solenoid Valve High Side Open Circuit
<b>Component</b> :	Drive Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically) Note:During operation , refer to FORWARD OR REVERSE Proportional Solenoid Valve Low Side Open Circuit Fault code
<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 harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH. 2) Ensure connectors are fully seated. Check all terminals are present and not backed out inside connectors. Ensure wire is correctly terminated at terminals. Perform continuity tests on the harness. 3) check no damage to Base Bosch ECU connectors, Pump connectors or and visible damage to harness including abrasion and pinching



## 7.1.22 B1033-17

<b>Error Code:</b>	<b>B1033-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to High
<b>Component :</b>	Drive Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically) Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault.
<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
<b>Service Action:</b>	1) Check harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH. Disconnect connectors and test for short circuits with multi-meter. 2) Check condition of connectors at Base Bosch ECU and Transmission pump connectors 3) Check for water ingress at connectors including within ECU mounted connector and Solenoid mounted connectors. 4) Check harness for any visible damage such as abrasions and pinching.



## 7.1.23 B1034-16

<b>Error Code:</b>	<b>B1034-16</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Short Circuit to Low
<b>Component</b> :	Drive Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically)
<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 to Transmission Pump connectors -C18_TH and -C19_TH. Disconnect connectors and test for short circuits with multi-meter.</li> <li>2) Check condition of connectors at Base Bosch ECU and Transmission pump connectors</li> <li>3) Check for water ingress at connectors including within ECU mounted connector and Solenoid mounted connectors.</li> <li>4) Check harness for any visible damage such as abrasions and pinching.</li> </ol>



7.1.24 B1035-13

<b>Error Code:</b>	<b>B1035-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	FORWARD OR REVERSE Proportional Solenoid Valve Low Side Open Circuit
<b>Component</b> :	Drive Solenoid

<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically)
<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 harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH.</li> <li>2) Ensure connectors are fully seated. Check all terminals are present and not backed out inside connectors. Ensure wire is correctly terminated at terminals. Perform continuity tests on the harness.</li> <li>3) check no damage to Base Bosch ECU connectors, Pump connectors or and visible damage to harness including abrasion and pinching</li> </ol>

**JCB**

7.1.25 **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>	<p>Detect failure mode with Safout method - Switch Axle Lock o/p to off;</p> <p>Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault</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>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check harness from Base Bosch ECU through interconnect - C56_TH / -C56_CH and through to -C02_CH (Axel 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>



7.1.26 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 o/p 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> </ol>

	<p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Check harness from Base Bosch ECU through interconnect - C56_TH / -C56_CH and through to -C02_CH (Axle Lock Solenoid connector).</p> <p>2) Disconnect connectors and check for short circuit to GND</p> <p>3) Check condition of all connectors, especially for bent pins and shorts within the connectors.</p> <p>4) Check for any water ingress inside the connector housings, ECU built in connector and Solenoid connector.</p> <p>5) check harness for damage, especially abrasions and pinching and check all connectors, solenoid valve and ECU for any visual defects.</p>



7.1.27 B1045-13

<b>Error Code:</b>	<b>B1045-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	OSCILLATING AXLE Solenoid Valve High Side & Low Side Open Circuit
<b>Component :</b>	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock o/p to off;
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	1) Check harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH.

	<p>2) Ensure connectors are fully seated. Check all terminals are present and not backed out inside connectors. Ensure wire is correctly terminated at terminals. Perform continuity tests on the harness.</p> <p>3) check no damage to Base Bosch ECU connectors, Pump connectors or and visible damage to harness including abrasion and pinching</p>
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7.1.28 B1046-17

<b>Error Code:</b>	<b>B1046-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to High or Open Circuit
<b>Component :</b>	High Torque Solenoid
<b>Vehicle reaction:</b>	Detect failure mode. Disable High torque sol
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>1) Check connector -C05_CH at High Torque Solenoid, Ensure it is seated firmly. Check Interconnect -C56_TH / -C56_CH, terminal 5/12. Check Terminal at Base Bosch ECU Connector, terminal 42/58.</p> <p>2) Inspect wiring from ECU to High Torque Solenoid connector. Check Continuity from -C05_CH pin 1 to ECU Connector 42/58. Check continuity from -C05_CH Pin 2 to GND.</p> <p>3) Check all connectors for water ingress</p>

	4) Check harness especially for abrasions and pinching. Check condition of Connectors, checking especially for backed out or bent pins.
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7.1.29 B1047-16

<b>Error Code:</b>	<b>B1047-16</b>
<b>ECU</b>	Base ECU
<b>Description</b>	HIGH TORQUE/LOW SPEED Solenoid Valve Short Circuit to Low
<b>Component</b>	High Torque Solenoid
<b>Vehicle reaction:</b>	Detect failure mode. Disable High torque sol
<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 connector -C05_CH at High Torque Solenoid, Ensure it is seated firmly. Check Interconnect -C56_TH / -C56_CH, terminal 5/12. Check Terminal at Base Bosch ECU Connector, terminal 42/58.</li> <li>2) With Solenoid connector disconnected, Measure resistance from -C05_CH Pin 1 to Pin 2. This should be open circuit.</li> <li>3) Inspect wiring from ECU to High Torque Solenoid connector. Check Continuity from -C05_CH pin 1 to ECU Connector 42/58. Check continuity from -C05_CH Pin 2 to GND.</li> <li>4) Check all connectors for water ingress</li> <li>5) Check harness especially for abrasions and pinching. Check</li> </ol>

	condition of Connectors, checking especially for backed out or bent pins.
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7.1.30 B1048-17

<b>Error Code:</b>	<b>B1048-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	FRONT BRAKE Solenoid Valve Short Circuit to High or Open Circuit
<b>Component :</b>	Front Brakes Solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any o/ps and don't ignore any i/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>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connector -C04_CH at Front Brake Solenoid, Ensure it is seated firmly. Check Interconnect -C56_TH / -C56_CH, terminal 4/12. Check Terminal at Base Bosch ECU Connector, terminal 26/58.</li> <li>2) Inspect wiring from ECU to Front Brake Solenoid connector. Check Continuity from -C04_CH pin 1 to ECU Connector 26/58. Check continuity from -C04_CH Pin 2 to GND.</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>



## 7.1.31 B1049-16

<b>Error Code:</b>	<b>B1049-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	FRONT BRAKE Solenoid Valve Raise Short Circuit to Low
<b>Component</b> :	Front Brakes Solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any o/ps and don't ignore any i/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 connector -C04_CH at Front Brake Solenoid, Ensure it is seated firmly. Check Interconnect -C56_TH / -C56_CH, terminal 4/12. Check Terminal at Base Bosch ECU Connector, terminal 26/58.</li> <li>2) With Solenoid connector disconnected, Measure resistance from -C04_CH Pin 1 to Pin 2. This should be open circuit.</li> <li>3) Inspect wiring from ECU to Front Brake Solenoid connector. Check Continuity from -C04_CH pin 1 to ECU Connector 26/58. Check continuity from -C04_CH Pin 2 to GND.</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>



## 7.1.32 B1050-17

<b>Error Code:</b>	<b>B1050-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Engine Start/Stop - Base 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> <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) 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 21/31 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>



## 7.1.33 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 21/31 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> <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>



7.1.34 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 21/31, -C50_TH Pin 21/31 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>



7.1.35 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>	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
<b>Service Action:</b>	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. 2) Check no shorts exist within the Footswitch connector, Interconnects and Platform ECU Connector. Check ECU for bent pins. 3) Check no water ingress in any of the connectors. 4) check operation of the switch pedal. Check all connectors and harness for visible damage, especially abrasions and pinching.



7.1.36 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 Footswitch 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, ensuring no short exists between the foot switch connector terminals and GND. Check all connectors and harness for visible damage, especially abrasions and pinching.</li> </ol>



7.1.37 B1055-17

<b>Error Code:</b>	<b>B1055-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Aux Pump Switch - Unpressed - 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 -C209-3_PCP to Platform Bosch ECU Pin 39/58. 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>



7.1.38 B1056-16

<b>Error Code:</b>	<b>B1056-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Aux Pump Switch - Unpressed - 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> </ol>

	<p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Check switch Aux Pump Switch -SW209_PCP. Check Wire #0088 from Aux Switch connector -C209-3_PCP to Platform Bosch ECU Pin 39/58. Voltage should be +0V</p> <p>2) Check Voltage a Aux Pump Switch Pin 2 at -C209-2_PCP. This should be +10V</p> <p>3) Check Operation of switch</p> <p>4) Check all connectors for water ingress.</p> <p>5) Check harness especially for abrasions and pinching. Check condition of connectors, checking especially for backed out or bent pins</p>



7.1.39 B1058-17

<b>Error Code:</b>	<b>B1058-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	E-Stop & Base Override - Override Switch Pressed Short Circuit to High
<b>Component :</b>	Base Override Switch
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input Default to Override unpressed state
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	1) Check wiring between Override Switch and Base Bosch ECU. Check interconnect connector. Check wiring and diode between

	<p>override switch and e-stop switch.</p> <p>2) Check the wiring has not been shorted to the chassis of the vehicle (caused perhaps by pinching or abrasion).</p> <p>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.</p> <p>4) Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</p> <p>5) Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.</p>
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7.1.40 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</li> </ol>

	<p>vehicle (caused perhaps by pinching or abrasion).</p> <p>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.</p> <p>4) Check connectors are dry and free of any debris. Check for damaged pins on the Bosch connectors.</p> <p>5) Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.</p>
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7.1.41 **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>	Detect failure mode; Ignore input Default to Override unpressed state
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>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.</p> <p>2) Check continuity from Override switch to interconnect and from interconnect to Bosch ECU.</p>

	3) Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.
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7.1.42 B1061-17

<b>Error Code:</b>	<b>B1061-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	E-Stop & Base Override - Override Switch Unpressed Short Circuit to High
<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> </ol>

	5) Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.
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7.1.43 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> </ol>

	5) Check operation of Override Switch. Check for any physical damage to the switch, connectors or harness components.
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7.1.44 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>



## 7.1.45 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>



## 7.1.46 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>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>

**JCB**

7.1.47 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>



7.1.48 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> </ol>

	<p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>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.</p> <p>2) Check wire #4075 from Potentiometer to Platform Bosch ECU pin 39/96.</p> <p>3) Check for water ingress at Platform Bosch ECU Connectors.</p> <p>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.</p>



7.1.49 B1069-17

<b>Error Code:</b>	<b>B1069-17</b>
<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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>

<b>Service Action:</b>	<p>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.</p> <p>2) Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</p> <p>3) Check Connectors at joystick and Platform Bosch ECU for water ingress.</p> <p>4) Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</p>
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7.1.50 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p> <p>6) A damaged or broken wire within the wiring harness</p>
<b>Service Action:</b>	1) Measure voltage between pin 1/6 (GND) and pin 4/6 (Drive) on joystick connector. Voltage should measure between 0.25 -

	<p>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.</p> <p>2) Check Connectors at joystick and Platform Bosch ECU, check for bent pins or stray wires potentially causing a short circuit.</p> <p>3) Check Connectors at joystick and Platform Bosch ECU for water ingress.</p> <p>4) Check joystick for damage. Check all wiring for potential damage, especially abrasions and pinching.</p>
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7.1.51 B1071-17

<b>Error Code:</b>	<b>B1071-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELLING RAISE Switch Short Circuit to High
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p as it can be operated from where there is no fault)</p> <p>After operation (in case of STto12V): 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>
<b>Service Action:</b>	1) Measure voltage at Platform Levelling Raise terminal, -C204-1_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

	<p>is a short to high either at the switch, wiring harness or at the Platform Bosch ECU connectors. If voltage is high, remove -C204-2_PCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check Platform Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.52 B1072-17

<b>Error Code:</b>	<b>B1072-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELLING LOWER Switch Short Circuit to High
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>
<b>Service Action:</b>	<p>1) Measure voltage at Platform Levelling Lower terminal, -C204-3_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</p>

	<p>Platform Bosch ECU connectors. If voltage is high, remove -C204-2_PCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check Platform Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.53 B1073-92

<b>Error Code:</b>	<b>B1073-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELLING RAISE and LOWER Switches both activated (5 - 10V)
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	Ignore the input (but not o/p 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 Levelling Raise & Lower terminals, -C204-1_PCP & -C204-3_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 9/58 & 10/58). If voltage is high, remove -C204-

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

7.1.54 B1074-16

<b>Error Code:</b>	<b>B1074-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELLING RAISE Switch Short Circuit to Low
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Measure voltage at Platform Levelling Raise terminal, -C204-1_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 constantly &lt;2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Platform Bosch ECU connectors. If voltage is Low, remove -</p>

	<p>C204-2_PCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Platform Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.55 B1075-16

<b>Error Code:</b>	<b>B1075-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVELLING LOWER Switch Short Circuit to Low
<b>Component</b> :	Platform Level Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>	1) Measure voltage at Platform Levelling Lower terminal, -C204-3_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 constantly <2.4V or lower, then

	<p>there is a short to GND either at the switch, wiring harness or at the Platform Bosch ECU connectors. If voltage is Low, remove - C204-2_PCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Platform Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.56 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 Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch Main Boom o/p to off</p> <p>Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault</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>

<b>Service Action:</b>	<p>1) Disconnect the solenoid connectors -C05_TH and -C06_TH. Measure voltages at terminals of removed connectors to ascertain which wire is held high. Trace wire back in harness back to the Base Bosch ECU.</p> <p>2) Check the harness from the solenoids back to the Base Bosch ECU looking especially for abrasions and pinching.</p> <p>3) Check the solenoid connectors and Base Bosch ECU connectors for water ingress.</p> <p>4) Check all connectors, including Base Bosch ECU pins for bent pins, stray wires or any other visible damage.</p>
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7.1.57 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 Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Main Boom o/ps to off
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>

<b>Service Action:</b>	<p>1) Disconnect the solenoid connectors -C05_TH and -C06_TH. Measure continuity at Pin 1 to GND of both connectors to determine which wire is shorted to GND.</p> <p>2) Check no shorts to GND, check for abrasions and pinching in harness and stray wires</p> <p>3) Check the harness from the solenoids back to the Base Bosch ECU looking especially for abrasions and pinching.</p> <p>4) Check the solenoid connectors and Base Bosch ECU connectors for water ingress.</p> <p>5) Check all connectors, including Base Bosch ECU pins for bent pins, stray wires or any other visible damage.</p>
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7.1.58 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 Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch Main Boom o/ps to off</p> <p>Note: During operation , refer to MAIN BOOM RAISE OR LOWER PROPORTIONAL Solenoid Valve Low Side Open Circuit Fault code</p>
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	1) Check solenoid connectors are fully inserted. Check wiring at -C05_TH and -C06_TH. Perform continuity checks back to Base

	<p>Bosch ECU</p> <p>2) Check no damage to the wiring harness between Solenoids and Base Bosch ECU.</p> <p>3) Check connectors (harness and device side) are not damaged. Check wiring to all terminals.</p>
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7.1.59 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 Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Main Boom o/ps to off
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Disconnected connector</li> <li>2) Short circuit wiring</li> <li>3) Damaged component</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 no debris or stray wires within connectors</li> <li>3) Check no damage to wiring, especially abrasions and pinching. Consider damage to Solenoid Valve.</li> </ol>



## 7.1.60 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 Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew o/p to off Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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 the solenoid connectors -C07_TH and -C08_TH. Measure voltages at terminals of removed connectors to ascertain which wire is held high. Trace wire back in harness back to the Base Bosch ECU.</li> <li>2) Check the harness from the solenoids back to the Base Bosch ECU looking especially for abrasions and pinching.</li> <li>3) Check the solenoid connectors and Base Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors, including Base Bosch ECU pins for bent pins, stray wires or any other visible damage.</li> </ol>



## 7.1.61 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 Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew o/ps 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) Disconnect the solenoid connectors -C07_TH and -C08_TH. Measure continuity at Pin 1 to GND of both connectors to determine which wire is shorted to GND.</li> <li>2) Check no shorts to GND, check for abrasions and pinching in harness and stray wires</li> <li>3) Check the harness from the solenoids back to the Base Bosch ECU looking especially for abrasions and pinching.</li> <li>4) Check the solenoid connectors and Base Bosch ECU connectors for water ingress.</li> <li>5) Check all connectors, including Base Bosch ECU pins for bent pins, stray wires or any other visible damage.</li> </ol>

**JCB**

7.1.62 B1082-13

<b>Error Code:</b>	<b>B1082-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve High Side Open Circuit

<b>Component :</b>	Slew Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew o/ps to off Note:During operation , refer to SLEW RIGHT OR LEFT PROPORTIONAL Solenoid Valve Low Side Open Circuit Fault code
<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 solenoid connectors are fully inserted. Check wiring at - C07_TH and -C08_TH. Perform continuity checks back to Base Bosch ECU 2) Check no damage to the wiring harness between Solenoids and Base Bosch ECU. 3) Check connectors (harness and device side) are not damaged. Check wiring to all terminals.



7.1.63 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 Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew o/ps to off

<b>Possible Cause:</b>	1) Disconnected connector 2) Short circuit wiring Damaged Component
<b>Service Action:</b>	1) Check harness connector is fully inserted into solenoid connector 2) Check no debris or stray wires within connectors 3) Check no damage to wiring, especially abrasions and pinching. Consider damage to Solenoid Valve.



7.1.64 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
<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: 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
<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 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,

	<p>remove -C108-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.65 B1102-17

<b>Error Code:</b>	<b>B1102-17</b>
<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>	<p>Before operation: Ignore the input (but not o/p 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>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,</p>

	<p>else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.66 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 o/p 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 9/58 &amp; 10/58). 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> </ol>

	<p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.67 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 o/p 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.

	<p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.68 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>	<p>Before operation: Ignore the input (but not o/p 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>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,</p>

	<p>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.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.69 B1106-17

<b>Error Code:</b>	<b>B1106-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE RIGHT Switch SC to High
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>
<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</li> </ol>

	<p>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.</p> <p>2) Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.70 B1107-17

<b>Error Code:</b>	<b>B1107-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE LEFT Switch SC to High
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>
<b>Service Action:</b>	<p>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-</p>

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

7.1.71 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 o/p as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>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 9/58 &amp; 10/58). If voltage is high, remove -C114-2_TCP, if voltage now drops, then switch is faulty, else, the fault is at the harness to</p>

	<p>the Bosch ECU.</p> <p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.72 B1109-16

<b>Error Code:</b>	<b>B1109-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE RIGHT Switch SC to Low
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>	<p>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,</p>

	<p>the fault is at the harness to the Bosch ECU.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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### 7.1.73 B1110-16

<b>Error Code:</b>	<b>B1110-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM ROTATE LEFT Switch SC to Low
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>	<p>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</p>

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

	<p>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.</p> <p>2) Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.75 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>	<p>Before operation: Ignore the input (but not o/p 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>
<b>Service Action:</b>	<p>1) Measure voltage at Base Jib Lower 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</p>

	<p>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.</p> <p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.76 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 o/p 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>	<p>1) Measure voltage at Base Jib Switch terminals, -C113-1_TCP &amp; -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 9/58 &amp; 10/58). If voltage is high, remove -C113-2_TCP, if voltage now drops, then switch is</p>

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

7.1.77 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>	<p>Before operation: Ignore the input (but not o/p 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>	<p>1) Measure voltage at Base Jib Raise 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</p>

	<p>at the harness to the Bosch ECU.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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**7.1.78 B1115-16**

<b>Error Code:</b>	<b>B1115-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Jib Lower Switch Short Circuit to Low
<b>Component</b> :	Jib Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Measure voltage at Base Jib Lower 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</p>

	<p>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.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.79 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 o/p 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 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 constant 10V or higher, then there

	<p>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.</p> <p>2) Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.80 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>	<p>Before operation: Ignore the input (but not o/p 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>
<b>Service Action:</b>	<p>1) Measure voltage at Base Main Boom Lower 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</p>

	<p>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.</p> <p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.81 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 o/p 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 9/58 &amp; 10/58). If voltage is high, remove -C109-2_TCP, if</li> </ol>

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

7.1.82 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 o/p 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 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-

	<p>2_TCP, if voltage now rises to ~2.5V, then switch is faulty, else, the fault is at the harness to the Bosch ECU.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.83 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 Lower
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>	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

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

7.1.84 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 o/p 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 within the harness connectors 3) Water damage/ingress within the harness connectors 4) Damaged component
<b>Service Action:</b>	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

	<p>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.</p> <p>2) Check Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.85 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 o/p 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 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

	<p>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.</p> <p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.86 B1123-92

<b>Error Code:</b>	<b>B1123-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	SLEW RIGHT & LEFT (BASE) Switches both activated (5 - 10V)
<b>Component</b> :	Slew Switch
<b>Vehicle reaction:</b>	Ignore the input (but not o/p 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 Base Slew Right/Left Switch terminals, - C110-1_TCP & -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 (Pins 9/58 &

	<p>10/58). 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.</p> <p>2) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>3) Check connectors for any sign of water ingress.</p> <p>4) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.87 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 o/p 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 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 <2.4V or lower, then there is a short to GND either at the switch, wiring harness or at the Base Bosch

	<p>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.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.88 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>	<p>Before operation: Ignore the input (but not o/p 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) 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</li> </ol>

	<p>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.</p> <p>2) Check there are no visible defects in the wiring causing a short circuit to chassis / GND</p> <p>3) Check Base Base Bosch ECU Connectors for bent pins or stray wires that are potentially causing a short circuit.</p> <p>4) Check connectors for any sign of water ingress.</p> <p>5) Check function of switch, check wiring from switch to ECU, checking for abrasions and pinching or any form of damage.</p>
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7.1.89 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>	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
<b>Service Action:</b>	1) Measure voltage of Boom Down 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

	<p>of switch. Check pins at Base Bosch ECU connector. Observe harness, Check for any pinching / damage.</p> <p>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.</p> <p>3) Check for water ingress at the switch terminals, The interconnects and at the Base Bosch ECU connectors.</p> <p>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>
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7.1.90 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>	<ul style="list-style-type: none"> <li>- default to raised position</li> <li>- prevent main boom raise &amp; extend</li> </ul>
<b>Possible Cause:</b>	<ul 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> </ul>
<b>Service Action:</b>	1) Measure voltage of Boom Down 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.

	<p>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.</p> <p>3) Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.</p> <p>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>
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7.1.91 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>	<ul style="list-style-type: none"> <li>- default to raised position</li> <li>- prevent main boom raise &amp; extend</li> </ul>
<b>Possible Cause:</b>	<ul 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> </ul>
<b>Service Action:</b>	<p>1) Measure voltage of Boom Down Limit Switch -SW221_MBT 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.</p> <p>2) Disconnect terminal from Pin 2, measure voltage of switch</p>

	<p>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.</p> <p>3) Check for water ingress at the switch terminals and at the Base Bosch ECU connectors.</p> <p>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>
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7.1.92 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>	<ul style="list-style-type: none"> <li>- default to raised position</li> <li>- prevent main boom raise &amp; extend</li> </ul>
<b>Possible Cause:</b>	<ul 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> </ul>
<b>Service Action:</b>	<ul style="list-style-type: none"> <li>1) Check Terminals at Boom Down Limit Switch -SW221_MBT. Check terminals at Base Bosch ECU Connectors. Ensure all connectors are fully seated.</li> <li>2) Check continuity with resistance meter between ECU to Boom Down Limit Switch -SW221_MBT terminals.</li> <li>3) Check Operation of Main Boom Limit Switch. Observe all</li> </ul>

	parts for damage. Check terminals not backed out in Base Bosch ECU Connector.
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7.1.93 B1130-16

<b>Error Code:</b>	<b>B1130-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	MAIN BOOM Lower Limit Switch 2 Short Circuit to Low
<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>	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>	1) Measure voltage of Boom Down Limit Switch -SW221_MBT 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.
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7.1.94 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 1 & 2 Short Circuit to High
<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>	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
<b>Service Action:</b>	1) Check wiring terminals at Boom Down Limit Switch - SW221_MBT and check wiring from Switch to connector. 2) Check none of the wires to the switch connector are not shorted together 3) Check Bosch Base ECU Connectors for Damage, Bent pins and water ingress. 4) Check Switch or harness for damage.



7.1.95 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>



7.1.96 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>



## 7.1.97 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> <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>



## 7.1.98 B1147-16

<b>Error Code:</b>	<b>B1147-16</b>
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<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>
<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 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.</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>



7.1.99 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> <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 (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>

**JCB**

**7.1.100 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
<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 (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>



### 7.1.101 B1150-17

<b>Error Code:</b>	<b>B1150-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	SLEW JOYSTICK Short Circuit to High (>4.75V)

<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>



7.1.102 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>



### 7.1.103 B1158-16

<b>Error Code:</b>	<b>B1158-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Worklights Short Circuit to Low
<b>Component</b> :	Work Light
<b>Vehicle reaction:</b>	Work light Inoperative

<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 -C02_LWH, -C03_LWH, -C10_LWH or -C011_LWH(As per Faulty Light) and Measure Voltage on wire no. #8079B, #8079C, #8079D and #8079E Terminal to GND.</li> <li>2. Check Work Light Relay -R01_PCP on Base Control.</li> <li>3. Check D+ relay fuse FU11_TCP for blow.</li> <li>4. Check continuity on work light switch terminal and wire no. #8078B, #8078D &amp; GND wire #6080.</li> <li>5. Check Wire #8078 and #8079 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>6. Check condition of pins in work light and connector. Check for Bent pins, debris or stray wires causing a short.</li> <li>7. Check for water ingress in the work light and Connectors.</li> <li>8. Check work light for Physical damage.</li> </ol>



### 7.1.104 B1159-17

<b>Error Code:</b>	<b>B1159-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Worklights Open Circuit or Short Circuit to High
<b>Component</b> :	Work Light

<b>Vehicle reaction:</b>	Work light Inoperative
<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 -C02_LWH, -C03_LWH, -C10_LWH or -C011_LWH(As per Faulty Light) and Measure Voltage on wire no. #8079B, #8079C, #8079D and #8079E Terminal to GND.</li> <li>2. Check Work Light Relay -R01_PCP on Base Control.</li> <li>3. Check D+ relay fuse FU11_TCP for blow.</li> <li>4. Check continuity on work light switch terminal and wire no. #8078B, #8078D &amp; GND wire #6080.</li> <li>5. Check Wire #8078 and #8079 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>6. Check condition of pins in work light and connector. Check for Bent pins, debris or stray wires causing a short.</li> <li>7. Check for water ingress in the work light and Connectors.</li> <li>8. Check work light for Physical damage.</li> </ol>



7.1.105 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>

**JCB**

7.1.106 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>



### 7.1.107 B1179-13

<b>Error Code:</b>	<b>B1179-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon 1 Open Circuit or Short Circuit to High.
<b>Component</b> :	Beacon 1
<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 1 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>

**JCB**

7.1.108 B1180-16

<b>Error Code:</b>	<b>B1180-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon 1 Short Circuit to Low.
<b>Component</b> :	Beacon 1
<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>	<p>1) Check continuity between Beacon 1 connector -C20_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 43/58 (Wire #4032).</p> <p>2) Check Wire #4032 not short circuit to GND. Check for abrasions and pinching of the harness.</p> <p>2) Check Beacon connector and ECU Connectors. Ensure no bent pins or stray wire causing short circuit. Ensure wires correctly terminated.</p> <p>3) Check Beacon connector and ECU Connectors for any water ingress.</p> <p>4) Check Beacon for any damage.</p>
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## 7.1.109 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Check wiring between 'C26-XC2_TH Pin 44/58 on the Bosch Base ECU Connector' and 'Pin 4 on the Horn Relay Base'.</p> <p>2) Check the wiring has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</p>

	<p>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.</p> <p>4) Check connectors are dry and free of debris. Check for damaged pins on the 'C26-XC2_TH Bosch Base ECU Connector'.</p> <p>5) Check operation of the system. Check for physical damage to the Horn Relay, connectors and other harness components.</p>
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### 7.1.110 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>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>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'.</p> <p>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'.</p> <p>3) Check operation of the system. Check for physical damage to</p>

	the Horn Relay, connectors and other harness components.
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## 7.1.111 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.
<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 (#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 nothin 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</li> </ol>

	the White Noise Alarm, connectors and other harness components.
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### 7.1.112 B1184-13

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



## 7.1.113 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 'C26-XC2_PCP Pin 41/58 on the Bosch Platform ECU Connector' and 'C35-1_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 'C26-XC2_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 'C26-XC2_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>



## 7.1.114 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 'C26-XC2_PCP Pin 41/58 on the Bosch Platform ECU Connector' and 'C35-1_PCP on the Fault LED'.</li> <li>2) Disconnect 'C26-XC2_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 'C26-XC2_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>



## 7.1.115 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>



### 7.1.116 B1199-17

<b>Error Code:</b>	<b>B1199-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Slew Acknowledgment - Slew Acknowledgment LED Short Circuit to High.

<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 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 -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>



### 7.1.117 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>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check wiring between 'C26-XC2_TH Pin 52/58 on the Bosch Base ECU Connector' and 'C101-1_TH on the Base Horn Button'.</li> <li>2) Disconnect 'C26-XC2_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'.</li> <li>3) Check connectors are dry and free of debris. Check for damaged terminals on the 'C26-XC2_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>



## 7.1.118 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
<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</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Check wiring between 'C26-XC2_TH Pin 52/58 on the Bosch Base ECU Connector' and 'C101-1_TCP on the Base Horn Button'.</p> <p>2) Check the wiring has not shorted to the chassis of the machine (caused perhaps by pinching or abrasion).</p> <p>3) Disconnect 'C26-XC2_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'.</p> <p>4) Check connectors are dry and free of debris. Check for damaged terminals on the 'C26-XC2_TH Bosch Base ECU Connector'.</p> <p>5) Check operation of the Base Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</p>



## 7.1.119 B1208-24

<b>Error Code:</b>	<b>B1208-24</b>
<b>ECU</b>	Base ECU
<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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p>

	<p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>1) Check wiring between 'C26-XC2_TH Pin 52/58 on the Bosch Base ECU Connector' and 'C101-1_TCP on the Base Horn Button'.</p> <p>2) Disconnect 'C26-XC2_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'.</p> <p>3) Check connectors are dry and free of debris. Check for damaged terminals on the 'C26-XC2_TH Bosch Base ECU Connector'.</p> <p>4) Check operation of the Base Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</p>

**JCB**

7.1.120 B1209-17

<b>Error Code:</b>	<b>B1209-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Engine Speed - Engine Speed Button Short Circuit to High.
<b>Component</b> :	High Engine Speed Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>

<b>Service Action:</b>	<p>1) Disconnect connector -C211-2_PCP from the rear of the Engine Speed Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0084 to Platform Bosch ECU pin 48/58.</p> <p>2) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>3) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>4) Check Switch for damage or any loose wiring in the control panel.</p>
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### 7.1.121 B1210-16

<b>Error Code:</b>	<b>B1210-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Engine Speed - Engine Speed Button Short Circuit to Low.
<b>Component</b> :	High Engine Speed Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	1) Disconnect connector -C211-2_PCP from the rear of the Engine Speed Switch on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0084 to Platform Bosch ECU pin 48/58.

	<p>2) Check Wire #0084 is not shorted to GND / Chassis. Check for abrasions and pinching.</p> <p>3) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>4) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>5) Check Switch for damage or shorting to connector -C211-2_PCP.</p>
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## 7.1.122 B1211-24

<b>Error Code:</b>	<b>B1211-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Engine Speed - Engine Speed Button Stuck >10s.
<b>Component</b> :	High Engine Speed Button
<b>Vehicle reaction:</b>	Detect failure mode; Ignore input
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	<p>1) Disconnect connector -C211-2_PCP from the rear of the Engine Speed Switch on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0084 to Platform Bosch ECU pin 48/58.</p> <p>2) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>3) Check for water ingress in the Platform Bosch ECU</p>

	<p>Connectors.</p> <p>4) Check operation of the system. Check for physical damage to the Engine Speed Switch, connectors and other harness components.</p>
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**JCB**

7.1.123 B1212-17

<b>Error Code:</b>	<b>B1212-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	High Torque - High Torque Button Short Circuit to High.
<b>Component</b> :	High Torque 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 -C210-2_PCP from the rear of the High Torque Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0090 to Platform Bosch ECU pin 36/96.</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 button for damage or any loose wiring in the control panel.</li> </ol>

**JCB**

## 7.1.124 B1213-16

<b>Error Code:</b>	<b>B1213-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	High Torque - High Torque Button Short Circuit to Low.
<b>Component</b> :	High Torque 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 -C210-2_PCP from the rear of the High Torque Button on the Platform Control Panel. Measure resistance from Terminal to GND. If a short exists, check wire #0090 to Platform Bosch ECU pin 36/96.</li> <li>2) Check Wire #0090 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 -C210-2_PCP.</li> </ol>

**JCB**

7.1.125 B1214-24

<b>Error Code:</b>	<b>B1214-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	High Torque - High Torque Button Stuck >10s.
<b>Component</b> :	High Torque 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 -C210-2_PCP from the rear of the High Torque Button on the Platform Control Panel. Measure voltage at terminal. If voltage is high &gt;12V, check wire #0090 to Platform Bosch ECU pin 36/96.</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 operation of the system. Check for physical damage to the High Torque Button, connectors and other harness components.</li> </ol>



7.1.126 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>



### 7.1.127 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>



7.1.128 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>



## 7.1.129 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> </ol>

	<p>3) Short Circuit to High 4) Water ingress</p>
<b>Service Action:</b>	<p>1) Perform weight sensor calibration from display screen. 2) Check condition of weight sensor and connectors, replace if faulty 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. 4) Check all connectors for water ingress.</p> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>



### 7.1.130 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>	<p>Detect failure mode; Implement Overload alarm and switch on Fault LED</p> <p>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</p>
<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> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>




## 7.1.131 B1223-17

<b>Error Code:</b>	B1223-17
<b>ECU</b>	Base ECU

<b>Description</b> :	Overload - Overload 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 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> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>


7.1.132 B1224-16

<b>Error Code:</b>	B1224-16
<b>ECU</b>	Base ECU
<b>Description</b> :	Overload - Overload 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:- 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>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> <p><a href="#">Load Cell Troubleshooting Flow Chart</a>  269</p>



## 7.1.133 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
<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 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</li> </ol>

	<p>inserted. Check DIN rail terminal -S11-6. Check wiring inserted correctly. Check FU07_TCP.</p> <p>4) Check all connectors for water ingress.</p> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>
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**7.1.134 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>	<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 -C56_CH and -C56_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 -C56_CH and -C56_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> </ol>

	4) Check the pressure sensor for damage or malfunction. Replace component.
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7.1.135 B1228-16

<b>Error Code:</b>	<b>B1228-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillating Axle - Axle Lock Pressure Sensor Short Circuit to Low or Open Circuit.
<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 3) Water damage/ingress within the harness connectors 4) Damaged component
<b>Service Action:</b>	1) Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C56_CH and -C56_TH. Measure voltage at pin 9/12 (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. 2) Check interconnects -C56_CH and -C56_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.
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### 7.1.136 B1229-17

<b>Error Code:</b>	<b>B1229-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Worklights Open Circuit or Short Circuit to High
<b>Component</b> :	Work Light
<b>Vehicle reaction:</b>	Work light Inoperative
<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 -C02_LWH, -C03_LWH, -C10_LWH or -C011_LWH(As per Faulty Light) and Measure Voltage on wire no. #8079B, #8079C, #8079D and #8079E Terminal to GND.</li> <li>2. Check Work Light Relay -R01_PCP on Base Control.</li> <li>3. Check D+ relay fuse FU11_TCP for blow.</li> <li>4. Check continuity on work light switch terminal and wire no. #8078B, #8078D &amp; GND wire #6080.</li> <li>5. Check Wire #8078 and #8079 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> </ol>

	<ol style="list-style-type: none"> <li>6. Check condition of pins in work light and connector. Check for Bent pins, debris or stray wires causing a short.</li> <li>7. Check for water ingress in the work light and Connectors.</li> <li>8. Check work light for Physical damage.</li> </ol>
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### 7.1.137 B1230-16

<b>Error Code:</b>	<b>B1230-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Worklights Open Circuit or Short Circuit to High
<b>Component</b> :	Work Light
<b>Vehicle reaction:</b>	Work light Inoperative
<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 -C02_LWH, -C03_LWH, -C10_LWH or -C011_LWH(As per Faulty Light) and Measure Voltage on wire no. #8079B, #8079C, #8079D and #8079E Terminal to GND.</li> <li>2. Check Work Light Relay -R01_PCP on Base Control.</li> <li>3. Check D+ relay fuse FU11_TCP for blow.</li> <li>4. Check continuity on work light switch terminal and wire no. #8078B, #8078D &amp; GND wire #6080.</li> </ol>

	<ol style="list-style-type: none"> <li>5. Check Wire #8078 and #8079 is not shorted to GND / Chassis. Check for abrasions and pinching.</li> <li>6. Check condition of pins in work light and connector. Check for Bent pins, debris or stray wires causing a short.</li> <li>7. Check for water ingress in the work light and Connectors.</li> <li>8. Check work light for Physical damage.</li> </ol>
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### 7.1.138 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>	<ol style="list-style-type: none"> <li>1) Open Circuit</li> <li>2) Faulty Component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Resistance reads above 183 Ohms to GND. Check for open Circuit between Fuel Level Sensor connector -C01_CH Pin 1/2 and Base Bosch ECU pin 21/96.</li> <li>2) Check resistance across Fuel Level Sender, replace if value reads above 183 Ohms.</li> </ol>



## 7.1.139 B1233-16

<b>Error Code:</b>	<b>B1233-16</b>
<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>	1) Resistance reads below 5 Ohms to GND. Check for Short Circuit between Fuel Level Sensor connector -C01_CH Pin 1/2 (Wire #4033) and GND. 2) Check resistance across Fuel Level Sender, replace if value reads below 0 Ohms.



## 7.1.140 B1235-17

<b>Error Code:</b>	<b>B1235-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	E-Stop & Base Override - E-Stop & Base Override - 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>	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.



### 7.1.141 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> <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 -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>



## 7.1.142 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</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<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.</p> <p>2) Check Wire #0086 is not shorted to GND / Chassis. Check for abrasions and pinching.</p> <p>3) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>4) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>5) Check Switch for damage or shorting to connector -C212-2_PCP.</p>



### 7.1.143 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</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>

<b>Service Action:</b>	<p>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.</p> <p>2) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>3) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>4) Check operation of the system. Check for physical damage to the Engine Start/Stop Button, connectors and other harness components.</p>
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7.1.144 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 o/p 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>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	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

	<p>Platform Bosch ECU pin 10/58.</p> <p>2) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>3) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>4) Check Switch for damage or any loose wiring in the control panel.</p>
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### 7.1.145 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>	<p>Before operation: Ignore the input (but not o/p 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>
<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 voltage at terminal. If voltage is high &gt;12V, check wire #0081 to Platform Bosch ECU 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> <li>3) Check for water ingress in the Platform Bosch ECU</li> </ol>

	Connectors. 4) Check Switch for damage or any loose wiring in the control panel.
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7.1.146 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 o/p as it can be operated from where there is no fault)
<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
<b>Service Action:</b>	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 >12V, check wires #0080 & #0081 to Platform Bosch ECU pin 10/58 & 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.



## 7.1.147 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 o/p 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> <li>4) Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5) Check Switch for damage or shorting to connector -C204-1_PCP</li> </ol>



## 7.1.148 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 o/p 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> <li>4) Check for water ingress in the Platform Bosch ECU Connectors.</li> <li>5) Check Switch for damage or shorting to connector -C204-3_PCP</li> </ol>



## 7.1.149 B1252-17

<b>Error Code:</b>	<b>B1252-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Telescope - Platform Rotate Switch Extend Short Circuit to High.
<b>Component</b> :	Platform Rotate 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: 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
<b>Service Action:</b>	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 >12V, check wire #0079 to Platform Bosch ECU pin 11/58. 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.



## 7.1.150 B1253-17

<b>Error Code:</b>	<b>B1253-17</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Telescope - Platform Rotate Switch Retract Short Circuit to High.
<b>Component</b> :	Platform Rotate 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: 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
<b>Service Action:</b>	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 >12V, check wire #0078 to Platform Bosch ECU pin 12/58. 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.



7.1.151 B1254-92

<b>Error Code:</b>	<b>B1254-92</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Telescope - Platform Rotate Switch Extend & Retract Both Activated (5 - 10v).
<b>Component</b> :	Telescopic Switch

<b>Vehicle reaction:</b>	Ignore the input (but not o/p 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 -C202-1_PCP and -C202-1_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 #0079 &amp; #0078 to Platform Bosch ECU pin 11/58 &amp; 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>



## 7.1.152 B1255-16

<b>Error Code:</b>	<b>B1255-16</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Telescope - Platform Rotate Switch Extend Switch Short Circuit to Low.
<b>Component :</b>	Telescopic Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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 -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> <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>



### 7.1.153 B1256-16

<b>Error Code:</b>	<b>B1256-16</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Telescope - Platform Rotate Switch Retract Switch Short Circuit to Low.
<b>Component :</b>	Telescopic Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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 -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 #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> <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>



### 7.1.154 B1257-17

<b>Error Code:</b>	<b>B1257-17</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Platform Rotate - Platform Rotate Switch Right Short Circuit to High.
<b>Component :</b>	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>
<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>



7.1.155 B1258-17

<b>Error Code:</b>	<b>B1258-17</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Platform Rotate - Platform Rotate Switch Left Short Circuit to High.
<b>Component :</b>	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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>

<b>Service Action:</b>	<p>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 #0078 to Platform Bosch ECU pin 12/58.</p> <p>2) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>3) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>4) Check Switch for damage or any loose wiring in the control panel.</p>
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7.1.156 B1259-92

<b>Error Code:</b>	<b>B1259-92</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Platform Rotate - Platform Rotate Switch Right & Left Both Activated (5 - 10v).
<b>Component :</b>	Platform Rotate Switch
<b>Vehicle reaction:</b>	Ignore the input (but not o/p as it can be operated from where there is no fault)
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit within the harness connectors</p> <p>3) Water damage/ingress within the harness connectors</p> <p>4) Damaged component</p>
<b>Service Action:</b>	1) Disconnect connector -C202-1_PCP and -C202-1_PCP from the rear of the Platform Rotate Switch on the Platform Control Panel. Measure voltage at both terminals. If voltage is high

	<p>&gt;12V, check wires #0079 &amp; #0078 to Platform Bosch ECU pin 11/58 &amp; pin 12/58.</p> <p>2) Check condition of pins in Platform Bosch ECU. Check for Bent pins, debris or stray wires causing a short.</p> <p>3) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>4) Check Switch for damage or any loose wiring in the control panel.</p>
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### 7.1.157 B1260-16

<b>Error Code:</b>	<b>B1260-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Rotate - Platform Rotate Switch Right Short Circuit to Low.
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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 -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>

	<p>4) Check for water ingress in the Platform Bosch ECU Connectors.</p> <p>5) Check Switch for damage or shorting to connector -C202-1_PCP</p>
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7.1.158 B1261-16

<b>Error Code:</b>	<b>B1261-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Rotate - Platform Rotate Switch Left Short Circuit to Low.
<b>Component</b> :	Platform Rotate Switch
<b>Vehicle reaction:</b>	<p>Before operation: Ignore the input (but not o/p 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 -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 #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> <li>4) Check for water ingress in the Platform Bosch ECU</li> </ol>

	Connectors. 5) Check Switch for damage or shorting to connector -C202-1_PCP
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### 7.1.159 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 o/p 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 within the harness connectors 3) Water damage/ingress within the harness connectors 4) Damaged component
<b>Service Action:</b>	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 >12V, check wire #0076 to Platform Bosch ECU pin 35/96. 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.



## 7.1.160 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 o/p 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 within the harness connectors 3) Water damage/ingress within the harness connectors 4) Damaged component
<b>Service Action:</b>	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 >12V, check wire #0077 to Platform Bosch ECU pin 14/58. 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.



## 7.1.161 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 o/p 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>



## 7.1.162 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 o/p 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>



7.1.163 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 o/p 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 3) A short circuit within the harness connectors 4) Water damage/ingress within the harness connectors 5) Damaged component
<b>Service Action:</b>	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. 2) Check Wire #0077 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 -C203-3_PCP



7.1.164 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.refer IO list for 10v feed.
<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 my 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>

**JCB**

7.1.165 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.refer IO list for 10v feed.
<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 my 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 to other wires or chassis.</li> </ol>

**JCB**

7.1.166 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.
<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) In platform Control Panel, Check wire #4076 to Buzzer base - RB01_PCP Pin 1.</li> <li>2) Check for short circuit to GND / Chassis.</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>

**JCB**

7.1.167 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 o/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> </ol>

	<ul style="list-style-type: none"> <li>3) Water damage/ingress within the harness connectors</li> <li>4) Damaged component</li> </ul>
<b>Service Action:</b>	<ul 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> </ul>

**JCB**

7.1.168 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>	<ul 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> </ul>
<b>Service Action:</b>	<ul 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</li> </ul>

	<p>damaged terminals on the 'C26-XC2_PCP Bosch Platform ECU Connector'.</p> <p>4) Check operation of the Platform Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</p>
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7.1.169 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</li> </ol>

	<p>damaged terminals on the 'C26-XC2_PCP Bosch Platform ECU Connector'.</p> <p>5) Check operation of the Platform Horn Button. Check for physical damage to the Horn Button, connectors and other harness components.</p>
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7.1.170 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</li> </ol>

	physical damage to the Horn Button, connectors and other harness components.
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7.1.171 B1276-24

<b>Error Code:</b>	<b>B1276-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Startlock Stuck (VBATT <8.5VDC)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<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>



7.1.172 B1277-24

<b>Error Code:</b>	<b>B1277-24</b>
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<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) A open circuit within the harness connectors 2) Water damage/ingress within the harness connectors 3) Damaged component
<b>Service Action:</b>	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. 2) Check interconnect -C21_BH / -C21_PCP. Ensure wires not damaged, pins not backed out or no water ingress. 3) Check interconnect -C37_TH / -C37_BH. Ensure wires not damaged, pins not backed out or no water ingress. 4) Check interconnect -C39_TCP / -C39_TH. Ensure wires not damaged, pins not backed out or no water ingress. 5) Check voltage at fuse -FU06_TCP 6) Check Relay output of IGN RELAY 3 (Wire #0013) to DIN Rail terminal -S11-3_TCP 7) Check voltage at DIN Rail Terminal -S11-19_TCP (Wire #2013) 8) Check continuity of GND pin 2/58 to Turntable Ground. 9) Check connectors for water ingress, bent or backed out pins, debris or any damage to the wiring harness. 10) If no fault found, replace ECU



## 7.1.173 B1278-17

<b>Error Code:</b>	<b>B1278-17</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	REAR BRAKE Solenoid Valve Short Circuit to High or Open Circuit
<b>Component</b> :	Rear Brakes Solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any o/ps and don't ignore any i/p
<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) Fault indicates short to high or open circuit to Rear Brake Solenoid. Check voltage at solenoid connector -C03_CH pin 1/2.</li> <li>2) Check continuity of GND path from Solenoid connector - C03_CH pin 2/2 to Turntable GND.</li> <li>3) Check Interconnect -C56_TH / -C56_CH pin 3/12. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4) Check Base Bosch ECU terminal 28/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5) Check wire #4039 for continuity from Base Bosch ECU pin 38/96 to Rear Brake Solenoid connector -C03_CH pin 1/2.</li> <li>6) Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> </ol>



7.1.174 B1279-16

<b>Error Code:</b>	<b>B1279-16</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	REAR BRAKE Solenoid Valve Short Circuit to Low
<b>Component</b> :	Rear Brakes Solenoid
<b>Vehicle reaction:</b>	Detect failure modes. Don't disable any o/ps and don't ignore any i/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) Fault indicates short to GND to Rear Brake Solenoid. Check voltage at solenoid connector -C03_CH pin 1/2. Check no short to GND at same pin.</li> <li>2) Check continuity of GND path from Solenoid connector - C03_CH pin 2/2 to Turntable GND.</li> <li>3) Check Interconnect -C56_TH / -C56_CH pin 3/12. Check bent / backed out pins, debris, shorts or water ingress.</li> <li>4) Check Base Bosch ECU terminal 28/96. Check Connector for bent / backed out pins, debris, shorts or water ingress.</li> <li>5) Check wire #4039 for continuity from Base Bosch ECU pin 38/96 to Rear Brake Solenoid connector -C03_CH pin 1/2.</li> <li>6) Check the harness for any abrasions, pinching or any other damage that may lead to a fault.</li> </ol>



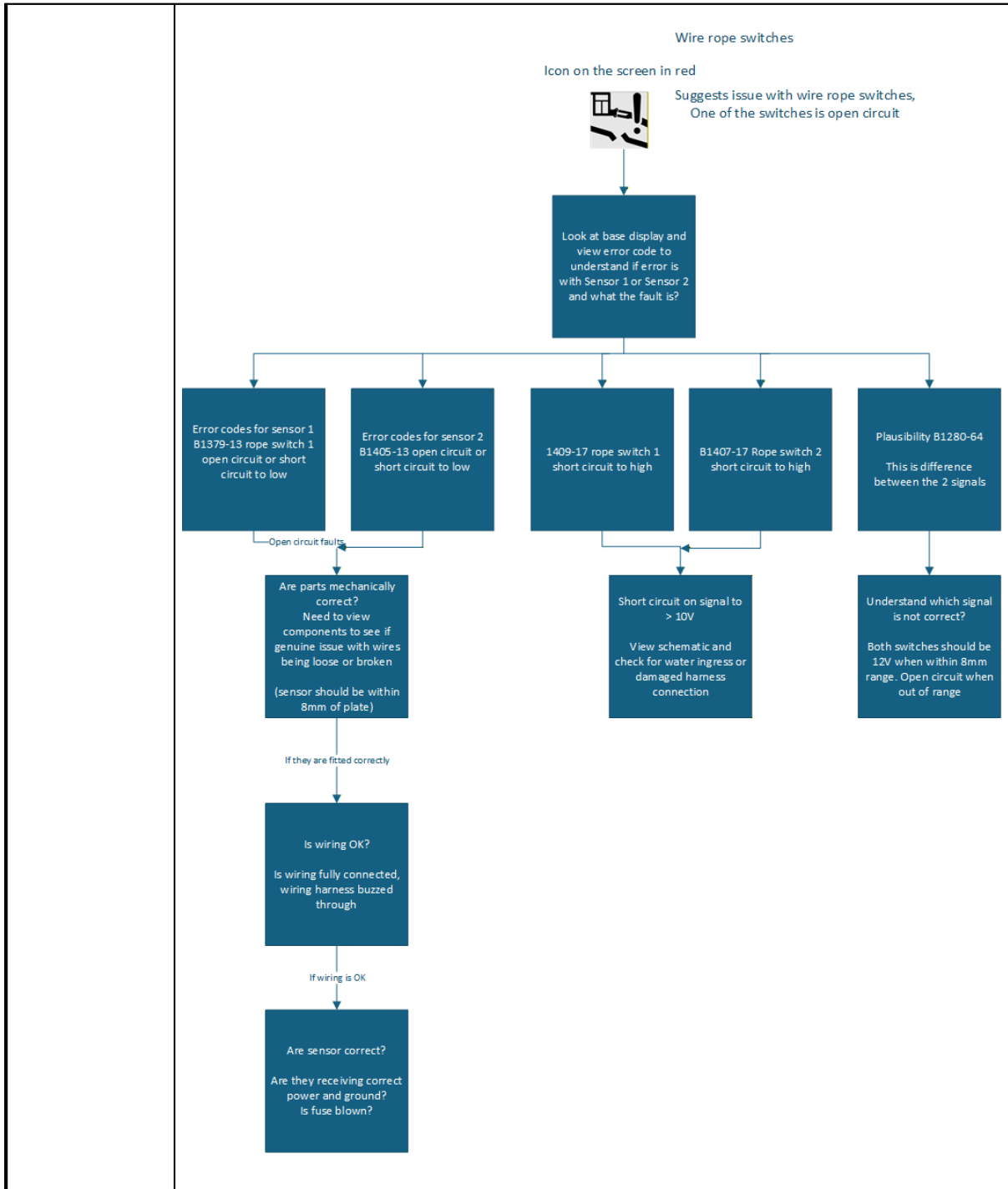
7.1.175 B1280-64

<b>Error Code:</b>	<b>B1280-64</b>
<b>ECU</b>	Base ECU

<b>Description</b> :	Wire rope plausibility fault
<b>Component</b> :	Rope Switch 1
<b>Vehicle reaction:</b>	Boom raise and Boom extend movements shall be prevented.
<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 Wire Rope Tension, if loosen Re torque the wire rope nut to 20Nm.</li> <li>2) Check Wire rope switch Position, Mounting plate should be parallel with the Broken wire rope detection plate and maintain a gap of 5mm.</li> <li>3) Disconnect Rope Switch 1 interconnect -C60_RSH from - C60_TH and Rope Switch 2 interconnect -C61_RSH from - C61_TH.</li> <li>4) Measure resistance from pin 3 of each connector to GND. Trace the fault on the connector which measures closest to 0 ohms.</li> <li>5) Check Rope Switch 1 wire #8001 and wire #8001B &amp; Rope Switch 2 wire #8002 and wire #8002B for abrasions, pinching and any other damage which may cause short to GND or Chassis.</li> <li>6) Check Resistance RES1 and RES2 connected on Signal wire #8001A and #8002A</li> <li>7) Check Ignition Fuse (5A) FU04_TCP and Ignition relay R02_TCP.</li> </ol>

- 8) Check the Harness connectors and Base Bosch ECU connectors for bent pins, stray wires or any damage that may cause short to GND or Chassis.
- 9) Check the Harness connectors and Base Bosch ECU connectors for any water ingress.
- 10) Check Rope Switch 1 -SW01\_RSH & Rope Switch 2 - SW02\_RSH for any damage. Measure voltage between pins B and C to ensure there is no short within the switch.

Troubleshooting Flow Chart -



7.1.176 B1281-16

<b>Error Code:</b>	<b>B1281-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	VSS2 Low Voltage (<= 9.5V)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all o/ps and ignore i/ps
<b>Possible Cause:</b>	1) Short Circuit 2) Excessive load 3) Water Ingress
<b>Service Action:</b>	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.  2) Check System voltage

**JCB**

7.1.177 B1282-13

<b>Error Code:</b>	<b>B1282-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Water in fuel OC during engine startup: ( Transition from GND to OC is expected within 2 secs of engine ignition ON )
<b>Component</b> :	Water In Fuel

<b>Vehicle reaction:</b>	General Fault Alarm
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A short 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) Drain water from the fuel filter or separator.</li> <li>2) Check sensor Connector C5_MEH and C41_TH for loose connection or any damage.</li> <li>3) Check Ground wire #6014 for any cut, pinching or damage.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1043 and wire #4209</li> <li>6) Clean electrodes if contaminated.</li> <li>7) Replace the sensor if faulty.</li> </ol>



## 7.1.178 B1283-16

<b>Error Code:</b>	<b>B1283-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	VSS1 Low Voltage (<= 4.5V)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all o/ps and ignore i/ps of Platform Panel

<b>Possible Cause:</b>	1) Short Circuit 2) Excessive load 3) Water Ingress
<b>Service Action:</b>	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. 2) Check System voltage



### 7.1.179 B1284-16

<b>Error Code:</b>	<b>B1284-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	VSS2 Low Voltage (<= 9.5V)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all o/ps and ignore i/ps of Platform Panel
<b>Possible Cause:</b>	1) Short Circuit 2) Excessive load 3) Water Ingress
<b>Service Action:</b>	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.
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7.1.180 B1285-16

<b>Error Code:</b>	<b>B1285-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	VSS3 Low Voltage (<= 4.5V)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Detect failure mode; Disable all o/ps and ignore i/ps of Platform Panel
<b>Possible Cause:</b>	1) Short Circuit 2) Excessive load 3) Water Ingress
<b>Service Action:</b>	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 ECUConnector 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



7.1.181 B1286-16

<b>Error Code:</b>	<b>B1286-16 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Water in fuel OC during engine startup: ( Transition from GND to OC is expected within 2 secs of engine ignition ON )
<b>Component</b> :	Water In Fuel
<b>Vehicle reaction:</b>	General Fault Alarm
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) A short 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) Drain water from the fuel filter or separator.</li> <li>2) Check sensor Connector C5_MEH and C41_TH for loose connection or any damage.</li> <li>3) Check Ground wire #6014 for any cut, pinching or damage.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1043 and wire #4209</li> <li>6) Clean electrodes if contaminated.</li> <li>7) Replace the sensor if faulty.</li> </ol>



7.1.182 B1287-2F

<b>Error Code:</b>	<b>B1287-2F</b>
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<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>	<ul 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) Damage Component</li> </ul>
<b>Service Action:</b>	<ul 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 ECU pin 21/96 (Wire #4033)</li> <li>4) Check condition of Base Bosch ECU connector, check for bent or backed out pins, water ingress, debris or any other fault.</li> <li>5) Check condition of wiring harness between fuel level sender and ECU</li> <li>6) Replace fuel level sender.</li> </ul>



7.1.183 B1300-2F

<b>Error Code:</b>	<b>B1300-2F</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	ALTERNATOR FAULT
<b>Component</b> :	Alternator
<b>Vehicle reaction:</b>	<p>Engine off - Alternator switch On - Alternator icon on constant, fault icon flashes, Fault LED at platform flashes. Both buzzers beep.</p> <p>Engine on - Alternator switch Off - Alternator icon on constant, fault icon flashes, Fault LED at platform flashes. Both buzzers beep.</p>
<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) Damage Component</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check D+ Relay -R05_TCP.</li> <li>2) At relay, check pin 5 (Wire #2034). Should be +12VDC</li> <li>3) At relay, check D+ input on Pin 4 (Wire #1034A). Should be high when engine is running. If not - Check interconnect - C39_TH / -C39_TCP for fault. If ok, check interconnect -C41_EH / -C41_TH for fault. If ok, Check continuity from -C41_EH (Wire #4040) to Alternator terminal -T2 (Wire #4033)</li> <li>4) At D+ Relay -R05_TCP, check ground connection from pin 2 (Wire #6034) to Turntable Ground.</li> <li>5) At Relay, Check Continuity from Pin 1 (Wire #0034) to -S11-4_TCP. Voltage should also be +12VDC when engine is running.</li> <li>6) Check Fuse -FU12_TCP (5A)</li> <li>7) Check Continuity from -S11-4_TCP to Interconnect -C39_TCP pin 19/29. If Ok, Check Continuity from -C39_TH pin 19/29 to Base Bosch ECU Pin 58/96. Check voltage at this pin also, should be +12VDC when engine running.</li> <li>8) Check Base Bosch Connector for any damage, water ingress, debris etc.</li> <li>9) Check all harness runs in this circuit for any damage.</li> </ol>



## 7.1.184 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>	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
<b>Service Action:</b>	1) Output voltage of pressure sensor is 0.5 - 4.5VDC. Disconnect interconnect connectors -C56_CH and -C56_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. 2) Check interconnects -C56_CH and -C56_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.



## 7.1.185 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 functionalists of respective controller; Before ignition: check in startlock logic and control will be stuck in startlock mode; Detect failure mode.
<b>Possible Cause:</b>	1) Short or Open Circuit on CAN Bus network 2) Water ingress on CAN Bus connector / device 3) Harness damage
<b>Service Action:</b>	1) Check CAN Bus terminators at both ends of CAN Network (Platform and Base Control Panels) 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) 3) Check for water ingress, short or open circuits in all connectors of devices attached to CAN Bus. 4) Connect Service Master via diagnostic connector, User CAN diagnostics to check which devices are connected and operating correctly.



## 7.1.186 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 functionalities of respective controller; Before ignition: check in startlock logic and control will be stuck in startlock mode; Detect failure mode.
<b>Possible Cause:</b>	1) Short or Open Circuit on CAN Bus network 2) Water ingress on CAN Bus connector / device 3) Harness damage
<b>Service Action:</b>	1) Check CAN Bus terminators at both ends of CAN Network (Platform and Base Control Panels) 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) 3) Check for water ingress, short or open circuits in all connectors of devices attached to CAN Bus. 4) Connect Service Master via diagnostic connector, User CAN diagnostics to check which devices are connected and operating correctly.



## 7.1.187 B1304-24

<b>Error Code:</b>	<b>B1304-24</b>
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<b>ECU</b>	Base 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 Base Bosch ECU is equal to or below +4.5V.</li> <li>2) There is no circuitry attached to this pin.</li> <li>3) Check Connector for bent pins, debris, water ingress or any other reason a short to ground may exist.</li> <li>4) Check System voltage</li> <li>5) If fault remains, change the ECU.</li> </ol>



7.1.188 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>	<ul style="list-style-type: none"> <li>1) Short Circuit</li> <li>2) Excessive load</li> <li>3) Water Ingress</li> </ul>
<b>Service Action:</b>	<ul 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> </ul>



7.1.189 B1306-24

<b>Error Code:</b>	<b>B1306-24</b>
<b>ECU</b>	Base ECU
<b>Description:</b>	Base ECU - VSS3 Low Voltage ( $\leq 4.5V$ )
<b>Component:</b>	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	<ul style="list-style-type: none"> <li>1) Short Circuit</li> <li>2) Excessive load</li> <li>3) Water Ingress</li> </ul>
<b>Service Action:</b>	<ul 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> </ul>



## 7.1.190 B1307-24

<b>Error Code:</b>	<b>B1307-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Startlock Stuck (Internal ECU fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<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



## 7.1.191 B1308-24

<b>Error Code:</b>	<b>B1308-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Startlock Stuck (Proportional output short to high)
<b>Component</b> :	ECU

<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) Short Circuit to high 2) Water Ingress 3) Faulty ECU
<b>Service Action:</b>	1) A short-circuit to high fault exists on the proportional outputs (Solenoids) from the Base Bosch ECU. 2) The following pins are potential causes: VP_1 (All on 96 way connector) Pins 1, 2, 3, 4, 5, 25*, 26*, 27, 28*, 29*, 30, 31*, 49*, 50*, 51*, 52*, 53*, 54*, 73*, 74*, 75*, 76*, 77*, 78* (Only marked pins are connected) 3) Disconnect 96-way connector from Base Bosch ECU and check pins for damage, debris or water ingress. 4) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found.



7.1.192 B1309-24

<b>Error Code:</b>	<b>B1309-24</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Base Startlock Stuck (Switch output short to high)
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Tx DM1
<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) The following are potential causes: VP_2 (96 way Connector) Pins: 6, 7, 89*, 90*, 94*. (Only marked pins are connected) or (58 way Connector) Pins: 41, 42, 43, 44, 56, 57 (All pins are connected).</p> <p>3) Disconnect 58-way and 96-way connector from Base Bosch ECU and check pins for damage, debris or water ingress.</p> <p>4) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found.</p>
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7.1.193 B1310-24

<b>Error Code:</b>	<b>B1310-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Startlock Stuck (Input enabled during startup))
<b>Component</b> :	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>	1) Base Enable Switch set to active during start-up
<b>Service Action:</b>	<p>1) The Base Enable switch on the Turntable Control Panel is enabled during startup.</p> <p>2) Check switch not held active during startup.</p> <p>3) Check for short circuit at rear of switch.</p> <p>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</p>

	unpressed at startup and value is 10V or higher, check Wire #0047 for short to 10V or High. 5) Check function of switch.
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### 7.1.194 B1311-24

<b>Error Code:</b>	<b>B1311-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Startlock Stuck (Internal VSS fault detected)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) Internal EVU Fault.
<b>Service Action:</b>	1) Hardware monitor detected fault in internally VSS supplies. Replace ECU



### 7.1.195 B1312-24

<b>Error Code:</b>	<b>B1312-24</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Base Startlock Stuck (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>	1) Base input enabled at startup.
<b>Service Action:</b>	1) An input to the Base ECU has been enabled during startup. 2) Check no switches physically held on during startup. 3) Check inputs on Display to see which input is held high 4) Visually Check wiring to all switches in base control panel.



## 7.1.196 B1313-24

<b>Error Code:</b>	<b>B1313-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) Short Circuit 2) Excessive load 3) Water Ingress
<b>Service Action:</b>	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

	<p>exist. If fault remains, change the ECU. 2) Check System voltage</p>
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7.1.197 B1314-24

<b>Error Code:</b>	<b>B1314-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	<ul style="list-style-type: none"> <li>1) Short Circuit</li> <li>2) Excessive load</li> <li>3) Water Ingress</li> </ul>
<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>



## 7.1.198 B1315-24

<b>Error Code:</b>	<b>B1315-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) Short Circuit 2) Excessive load 3) Water Ingress
<b>Service Action:</b>	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. 2) Check System voltage



## 7.1.199 B1316-24

<b>Error Code:</b>	<b>B1316-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)

<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Tx DM1
<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



## 7.1.200 B1317-24

<b>Error Code:</b>	<b>B1317-24</b>
<b>ECU</b>	Platform ECU
<b>Description :</b>	Platform Startlock Stuck (Generic o/p fault)
<b>Component :</b>	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) Short Circuit to high 2) Water Ingress 3) Faulty ECU
<b>Service Action:</b>	1) A short-circuit to high fault exists on the proportional outputs (Solenoids) from the Platform Bosch ECU. 2) The following pins are potential causes: VP_1 (All on 96 way connector) Pins 1, 2, 3, 4, 5, 25, 26, 27, 28, 29, 30, 31, 49, 50, 51, 52, 53*, 54, 73, 74, 75, 76, 77, 78 (Only pin 53 is connected) 3) Check Platform Interconnect -C22_PCP pin R, Check Jib/Platform Rotate Solenoid connector -C03_PH. Check

	<p>Solenoid -SOL 22_PH.</p> <p>3) Disconnect 96-way connector from Platform Bosch ECU and check pins for damage, debris or water ingress.</p> <p>4) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found.</p>
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7.1.201 B1318-24

<b>Error Code:</b>	<b>B1318-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	<p>1) Short Circuit to high</p> <p>2) Water Ingress</p> <p>3) Faulty ECU</p>
<b>Service Action:</b>	<p>1) A short-Circuit to high fault exists on the switch outputs</p> <p>2) The following are potential causes: VP_2 (96 way Connector) Pins: 6, 7, 89*, 90*, 94. (Only marked pins are connected - Slew Ack LED and Buzzer ) or (58 way Connector) Pins: 41*, 42, 43, 44, 56, 57 (only Pin 41 connected - Fault LED). Check all connected components for damage or wiring faults.</p> <p>3) Disconnect 58-way and 96-way connector from Platform Bosch ECU and check pins for damage, debris or water ingress.</p> <p>4) Measure voltage at the pins shown above, looking for a high voltage. Trace fault back along path when found.</p>



## 7.1.202 B1319-24

<b>Error Code:</b>	<b>B1319-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	All Platform Control Panel controls disabled. Foot switch must be reset before base controls can be used
<b>Possible Cause:</b>	1) Base input enabled at startup.
<b>Service Action:</b>	<p>1) The Foot switch at the Platform is pressed during start up.</p> <p>2) Check switch not held active during start up.</p> <p>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.</p> <p>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.</p> <p>5) Check function of switch. Check for water ingress or damage to Harness.</p>



## 7.1.203 B1320-24

<b>Error Code:</b>	<b>B1320-24</b>
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<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	Tx DM1
<b>Possible Cause:</b>	1) Internal EVU Fault.
<b>Service Action:</b>	1) Hardware monitor detected fault in internally VSS supplies. Replace ECU

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#### 7.1.204 B1321-24

<b>Error Code:</b>	<b>B1321-24</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Platform Startlock Stuck (Generic o/p fault)
<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>	1) Base input enabled at startup.
<b>Service Action:</b>	1) An input to the Platform ECU has been enabled during startup. 2) Check no switches physically held on during startup.

	<p>3) Check inputs on Display to see which input is held high</p> <p>4) Visually Check wiring to all switches in base control panel..</p>
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7.1.205 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>	<p>Detect failure mode for Short Circuit to High and disable platform rotate and allow Jib functions</p> <p>Note: Before Ignition ON, POST Fail (stuck in startup logic for Short Circuit to High only) and Generic o/p fault.</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>
<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 53/96 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>



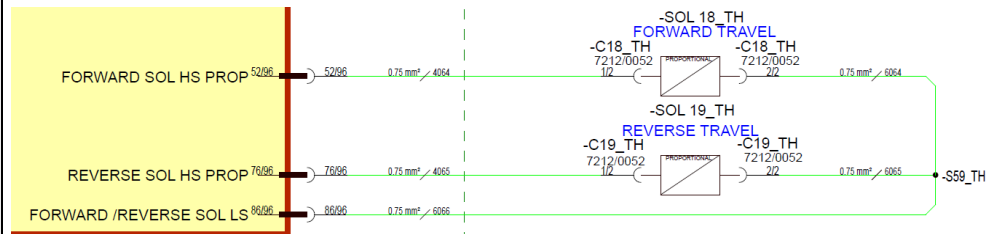
## 7.1.206 B1330-16

<b>Error Code:</b>	<b>B1330-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB/PLATFORM FLOW High Side Sol Short Circuit to Low
<b>Component</b> :	Jib/Platform 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 -C16_TH. Disconnect connector and test pin 1/2 for short to GND. Check harness and Base Bosch ECU Connector terminal 53/96 for short to GND.</li> <li>2) Test for short to GND at -C16_TH pin 2/2. Check return path for short to GND.</li> <li>2) Check -C16_TH and Base Bosch ECU Connector for water ingress, damage, debris or stray wires that may cause short circuit.</li> <li>3) Check for any damage to the harness or components that may cause short circuit.</li> </ol>



7.1.207 B1331-13

<b>Error Code:</b>	<b>B1331-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	FORWARD OR REVERSE Proportional Solenoid Valve Fault ( HS / LS - SC to High, Sc to Low )
<b>Component</b> :	Drive Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch drive o/ps (but not steer) to off (Brake comes ON automatically)</p> <p>Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault.</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>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check harness from Base Bosch ECU through to Transmission Pump connectors -C18_TH and -C19_TH. Disconnect connectors and test for short circuits with multi-meter.</li> <li>2) Check condition of connectors at Base Bosch ECU and Transmission pump connectors</li> <li>3) Check for water ingress at connectors including within ECU mounted connector and Solenoid mounted connectors.</li> <li>4) Check harness for any visible damage such as abrasions and pinching.</li> </ol>





## 7.1.208 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 o/p to off  Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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 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>



7.1.209 B1336-16

<b>Error Code:</b>	<b>B1336-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Main Boom - Main Boom Solenoid Valve Low Side Short Circuit to Low. High.
<b>Component</b> :	Main Boom Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Main Boom o/ps 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) Base Bosch ECU terminal 84/96 measuring short circuit to GND. Locate and disconnect Main Boom Lower Solenoid Connector -C06_TH and measure resistance at Pin 2/2 to GND. If short circuit, Locate and disconnect the Main Boom Raise Connector -C05_TH and measure resistance again at -C06_TH Pin 2/2. If short remains, inspect return path back to ECU terminal 84/96 (Wire #4047A). If short to GND disappears 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>



## 7.1.210 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 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) 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>



## 7.1.211 B1338-17

<b>Error Code:</b>	<b>B1338-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Slew - Slew Solenoid Valve Low Side Short Circuit to High.

<b>Component</b> :	Slew Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Slew o/p to off Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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 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).</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 mau cause a short.</li> <li>4) Check solenoid connector for any damage.</li> </ol>



7.1.212 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 o/ps 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) 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>



7.1.213 B1340-13

<b>Error Code:</b>	<b>B1340-13</b>
<b>ECU</b>	Base ECU
<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 o/ps to off
<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) Locate Slew Left/Right Solenoid Connectors -C07_TH and -C08_TH. Ensure both connectors are fully seated. 2) Check wiring and terminations at both connectors 3) Check continuity from both connectors pin 2/2 back to the Base Bosch ECU terminal 87/96. 4) Check ECU terminal is not backed out or damaged.

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#### 7.1.214 B1343-92

<b>Error Code:</b>	<b>B1343-92 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator EEPROM Fault:EEPROM Check sum error
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<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

<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</li> <li>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1044</li> <li>6) Check CAN High wire CANH80 and CAN Low wire CANL80</li> <li>7) Check the calibration of the component.</li> <li>8) Replace the Throttle Actuator if faulty.</li> </ol>
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### 7.1.215 B1346-92

<b>Error Code:</b>	<b>B1346-92 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b>	<p>Throttle Actuator:</p> <ul style="list-style-type: none"> <li>Over voltage: voltage &gt; 33.5V for &gt;200ms</li> <li>Under-voltage: voltage &lt; 6.5V for &gt;200ms</li> <li>Voltage measurement short to 5V</li> <li>Voltage measurement short to 0V</li> </ul>
<b>Component</b>	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<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>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</li> <li>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1044</li> <li>6) Check CAN High wire CANH80 and CAN Low wire CANL80</li> <li>7) Check the calibration of the component.</li> <li>8) Replace the Throttle Actuator if faulty.</li> </ol>
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7.1.216 B1347-17

<b>Error Code:</b>	<b>B1347-17</b>
<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>	<p>Detect failure mode with Safout method - Switch Axle Lock o/p to off;</p> <p>Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault</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>

<b>Service Action:</b>	<p>1) Locate Axle Lock Solenoid connector -C02_CH and disconnect from the valve block. Measure voltage at pin 2/2. If voltage is high, disconnect interconnect -C56_TH / -C56_CH and measure pin 2/12 on both connectors. Trace the fault back to high from the connector measuring high.</p> <p>2) Check Base Bosch CU connector. Examine Pin 82/96 - check for bent pins, debris, stray wires, water ingress.</p> <p>3) Check all connectors for water ingress</p> <p>4) Check harness for damage, especially abrasions, pinching. Check all connectors for damage. Check solenoid valve connector for any water ingress, debris etc.</p>
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7.1.217 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 o/p to off;
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	1) Locate Axle Lock Solenoid connector -C02_CH and disconnect from the valve block. Measure resistance to GND / Chassis at pin 2/2. If resistance is low, disconnect interconnect -C56_TH / -

	<p>C56_CH and measure pin 2/12 on both connectors. Trace the fault back to GND Short from the connector measuring Low.</p> <p>2) Check Base Bosch CU connector. Examine Pin 82/96 - check for bent pins, debris, stray wires, water ingress.</p> <p>3) Check all connectors for water ingress</p> <p>4) Check harness for damage, especially abrasions, pinching. Check all connectors for damage. Check solenoid valve connector for any water ingress, debris etc.</p>
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7.1.218 B1349-13

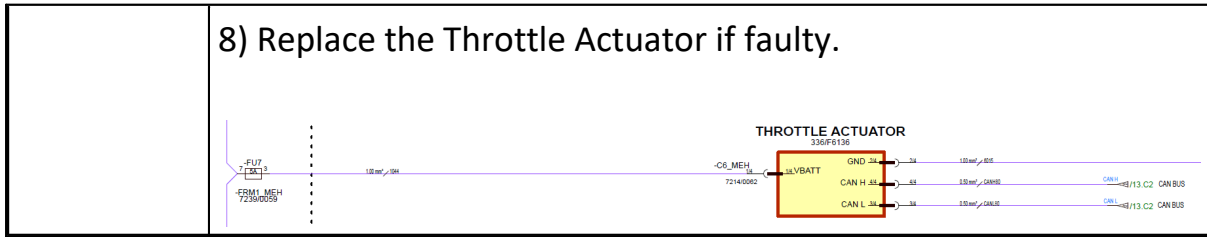
<b>Error Code:</b>	<b>B1349-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Oscillating Axle - Oscillating Axle Solenoid Value Fault.
<b>Component</b> :	Oscillating Axle Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Axle Lock o/p to off;
<b>Possible Cause:</b>	<ol 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 -C02_CH. 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</li> </ol>

	<p>terminal 82/96 (Wire #4038).</p> <p>3) Check Interconnects -C56_TH / -C56_CH. ensure seated correctly. Check for damage, backed out pins, water ingress, damaged wires etc.</p> <p>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.</p>
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### 7.1.219 B1352-13

<b>Error Code:</b>	<b>B1352-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator: Position deviation of more than 15 steps for more than 2s
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</p> <p>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</p> <p>4) Check 5A fuse</p> <p>5) Check voltage on wire #1044</p> <p>6) Check CAN High wire CANH80 and CAN Low wire CANL80</p> <p>7) Check the calibration of the component.</p>



## 7.1.220 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 o/p 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 #4027 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 #4027 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</li> </ol>

	wires. 4) Check harness between Base Bosch ECU to Interconnects and Engine ECU Connectors for any damage
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### 7.1.221 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 o/p 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 #4027 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 #4027 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> <li>4) Check harness between Base Bosch ECU to Interconnects and Engine ECU Connectors for any damage.</li> </ol>



## 7.1.222 B1355-16

<b>Error Code:</b>	<b>B1355-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	HYDRAULIC GENERATOR Valve Short Circuit to Low
<b>Component</b> :	Hydraulic Generator Valve
<b>Vehicle reaction:</b>	Detect failure mode. Switch o/p 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 #4041 from Base Bosch ECU to Hydraulic Generator Solenoid connector -C25_TH. Disconnect -C25_TH and measure resistance to GND on Pin 1/2. If value low then check wire back to Base Bosch ECU.</li> <li>2) Check Bosch ECU pin 41/58 for any damage, bent pins, debris, water ingress.</li> <li>3) Check Wire #4041 for abrasions, pinching or any other reason to create short to GND / Chassis</li> </ol>



## 7.1.223 B1356-13

<b>Error Code:</b>	<b>B1356-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	HYDRAULIC GENERATOR Valve High Side Short Circuit to High or Open Circuit
<b>Component</b> :	Hydraulic Generator Valve
<b>Vehicle reaction:</b>	Detect failure mode. Switch o/p to off
<b>Possible Cause:</b>	"1) A short or pen circuit within the wiring harness 2) A short or open circuit within the harness connectors 3) Water damage/ingress within the harness connectors 4) Damaged component"
<b>Service Action:</b>	1) Locate wire #4041 from Base Bosch ECU to Hydraulic Generator Solenoid connector -C25_TH. Disconnect -C25_TH and measure voltage at Pin 1/2. If value high (>10.7V) then check wire back to Base Bosch ECU. 2) Check Bosch ECU pin 41/58 for any damage, bent pins, debris, water ingress. 3) Check Wire #4041 for abrasions, pinching or any other reason to create short to GND / Chassis



## 7.1.224 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 o/p 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 #4028 from Base Bosch ECU pin 94/96 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.</li> <li>2) Check continuity from interconnect pins 2/12 back to Base Bosch ECU pin 94/96 and to engine ECU on connector -C05_EH pin 39/62.</li> <li>3) Check all connectors mentioned above for damage, backed out pins, short circuits and water ingress</li> <li>4) Check wire #4028 back through the harness, checking for breaks, abrasions, pinching or any other damage.</li> </ol>



### 7.1.225 B1358-13

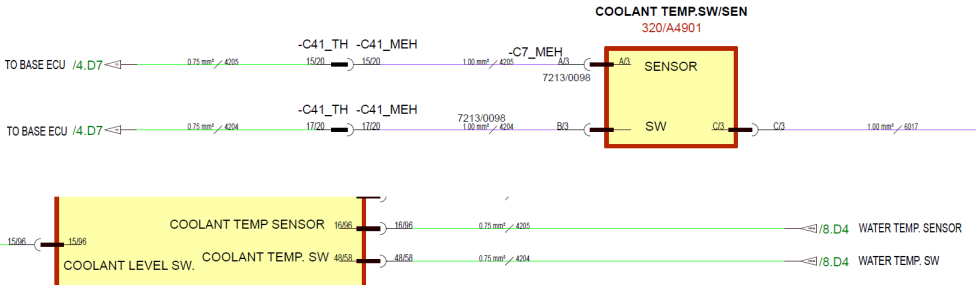
<b>Error Code:</b>	<b>B1358-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Engine Start (Crank) High Side Signal (Base ECU to Engine ECU) Short Circuit to High or Open Circuit
<b>Component :</b>	Engine Crank

<b>Vehicle reaction:</b>	Detect failure mode. Switch o/p 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> <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 Base Bosch ECU Pin 94/96 and Engine ECU Pin 39/92 (Wire #408). Check Wire #4028 is not short circuit to high.</li> <li>2) Check ECU Connectors and interconnector -C41. Ensure no bent pins or stray wires causing short circuit. Ensure wires are correctly terminated.</li> <li>3) Check ECU Connectors and interconnector -C41 for any water damage or water ingress.</li> <li>4) Check connectors and harness between Base ECU pin 94/96 and Engine ECU pin 39/92 for any damage.</li> </ol>



7.1.226 B1360-00

<b>Error Code:</b>	<b>B1360-00</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	COOLANT TEMPERATURE exceeds upper limit
<b>Component</b> :	Coolant Temp. Sensor
<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> </ol>

	<p>3) Water damage/ingress within the harness connectors                  4) Damaged component</p>
<p><b>Service Action:</b></p>	<p>1) Check the engine temperature if engine is too hot, troubleshoot as per .                  2) Check Radiator air blockage and coolant level                  3) Check connections of Coolant Temp. Sensor -C41_TH. Ensure connections are well made, free of contaminant. Check terminals are seated correctly. Check Coolant Temp. Sensor connector is undamaged.                  4) Check continuity of GND from Coolant Temp. Sensor pin C/3 to Engine Ground (Wire #6017).                  5) Check continuity of Coolant Temp. Sensor Signal from -C41_MEH pin A/3 to Base Bosch ECU pin 16/96 (Wire #4205)                  5) Check continuity of Coolant Temp. Switch Signal from -C41_MEH pin B/3 to Base Bosch ECU pin 48/58 (Wire #4204)                  7) Check condition of Base Bosch ECU connector, check for bent or backed out pins, water ingress, debris or any other fault.                  8) Check condition of wiring harness between Coolant Temp. Sensor and ECU                  9) Replace Coolant Temp. Sensor.</p> 

**7.1.227 B1362-13**

<p><b>Error Code:</b></p>	<p><b>B1362-13</b></p>
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<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon 2 Open Circuit or Short Circuit to High.
<b>Component</b> :	Beacon 2
<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 2 connector -C53_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 57/58 (Wire #4069). Check Wire #4069 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>



## 7.1.228 B1363-16


<b>Error Code:</b>	<b>B1363-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Beacon(s) - Beacon 2 Short Circuit to Low.
<b>Component</b> :	Beacon 2

<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 1 connector -C253_TH pin 1/2 and Base Bosch ECU -C26-XC2_TH Pin 57/58 (Wire #4069).</li> <li>2) Check Wire #4069 not short circuit to GND. Check for abrasions and pinching of the harness.</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>



## 7.1.229 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
<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> </ol>

	<p>3) Short Circuit to High 4) Water ingress</p>
<b>Service Action:</b>	<p>1) Perform weight sensor calibration from display screen. 2) Check condition of weight sensor and connectors, replace if faulty 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. 4) Check all connectors for water ingress.</p> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>




### 7.1.230 B1366-16

<b>Error Code:</b>	<b>B1366-16</b>
<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>	<p>Detect failure mode; Implement Overload alarm and switch on Fault LED</p> <p>NOTE:- In case of Open Circuit, the above machine reaction is applicable only when fault is detected on both pins of load sensor 1</p>
<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> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>


**7.1.231 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 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> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>

### 7.1.232 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 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>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> <p><a href="#">Load Cell Troubleshooting Flow Chart</a> </p>

### 7.1.233 B1369-87

<b>Error Code:</b>	<b>B1369-87</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Angle Sensor - Angle Sensor Main Boom Communication Fault.
<b>Component</b> :	Main Boom Angle Sensor
<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1)Limit to 454 kg load reaction</li> <li>2)Stop Main Boom Raise and lower</li> </ol>

<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Connector not fully inserted.</li> <li>2) Sensor is faulty/damaged.</li> <li>3) Water ingress.</li> <li>4) Sensor may not be calibrated correctly.</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check condition of Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnected connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.</li> <li>2) If faulty, replace sensor.</li> <li>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</li> <li>4) Ensure the machine chassis &amp; main boom are both perfectly level and at 0degrees using a calibrated spirit level. From here connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on tab (12) which should be named 'Angle Sensor Cal'. Observe the 'Actual Values' are zero if not close enough and press the 'Calibrate Boom Angle' button. Calibrated values should be provided afterwards.</li> </ol>



## 7.1.234 B1370-2F

<b>Error Code:</b>	<b>B1370-2F</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	Angle Sensor - Angle Sensor Main Boom Channel Plausibility Fault.
<b>Component :</b>	Main Boom Angle Sensor
<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1)Limit to 454 kg load reaction</li> <li>2)Stop Main Boom Raise and lower</li> </ol>

<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Connector not fully inserted.</li> <li>2) Sensor is faulty/damaged.</li> <li>3) Water ingress.</li> <li>4) Sensor may not be calibrated correctly.</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check condition of Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnected connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.</li> <li>2) If faulty, replace sensor.</li> <li>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</li> <li>4) Ensure the machine chassis &amp; main boom are both perfectly level and at 0degrees using a calibrated spirit level. From here connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on tab (12) which should be named 'Angle Sensor Cal'. Observe the 'Actual Values' are zero if not close enough and press the 'Calibrate Boom Angle' button. Calibrated values should be provided afterward's.</li> </ol>



### 7.1.235 B1371-17

<b>Error Code:</b>	<b>B1371-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Angle Sensor - Angle Sensor Main Boom Working Range Fault.
<b>Component</b> :	Main Boom Angle Sensor
<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1) Stop Main Boom Raise if angle &gt;76</li> <li>2) Stop MB lower if angle &lt;-18</li> </ol>

<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Connector not fully inserted.</li> <li>2) Sensor is faulty/damaged.</li> <li>3) Water ingress.</li> <li>4) Sensor may not be calibrated correctly.</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check condition of Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnected connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.</li> <li>2) If faulty, replace sensor.</li> <li>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</li> <li>4) Ensure the machine chassis &amp; main boom are both perfectly level and at 0degrees using a calibrated spirit level. From here connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on tab (12) which should be named 'Angle Sensor Cal'. Observe the 'Actual Values' are zero if not close enough and press the 'Calibrate Boom Angle' button. Calibrated values should be provided afterwards.</li> </ol>



7.1.236 B1373-87

<b>Error Code:</b>	<b>B1373-87</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	TELESCOPIC BOOM LENGTH SENSOR Communication fault
<b>Component :</b>	Telescopic Length Sensor
<b>Vehicle reaction:</b>	Stop Boom extend & Main boom lower

<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Connector not fully inserted.</li> <li>2) Sensor is faulty/damaged.</li> <li>3) Water ingress.</li> <li>4) Sensor may not be calibrated correctly.</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check condition of Length Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnect connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.</li> <li>2) If faulty, replace sensor.</li> <li>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</li> <li>4) Connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on BOOM_LENGTH_CALIBRATION tab. Calibrate Boom Length Sensor id required.</li> </ol>



### 7.1.237 B1374-2F

<b>Error Code:</b>	<b>B1374-2F</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	TELESCOPIC BOOM LENGTH SENSOR Channel plausibility fault
<b>Component :</b>	Telescopic Length Sensor
<b>Vehicle reaction:</b>	Stop Boom extend & Main boom lower
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Connector not fully inserted.</li> <li>2) Sensor is faulty/damaged.</li> <li>3) Water ingress.</li> <li>4) Sensor may not be calibrated correctly.</li> </ol>

<b>Service Action:</b>	<p>1) Check condition of Length Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnect connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.</p> <p>2) If faulty, replace sensor.</p> <p>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</p> <p>4) Connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on BOOM_LENGTH_CALIBRATION tab. Calibrate Boom Length Sensor id required.</p>
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### 7.1.238 B1375-17

<b>Error Code:</b>	<b>B1375-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TELESCOPIC BOOM LENGTH Range fault
<b>Component</b> :	Telescopic Length Sensor
<b>Vehicle reaction:</b>	Stop Boom extend
<b>Possible Cause:</b>	<p>1) Connector not fully inserted.</p> <p>2) Sensor is faulty/damaged.</p> <p>3) Water ingress.</p> <p>4) Sensor may not be calibrated correctly.</p>
<b>Service Action:</b>	<p>1) Check condition of Length Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnect connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.</p> <p>2) If faulty, replace sensor.</p>

	<p>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</p> <p>4) Connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on BOOM_LENGTH_CALIBRATION tab. Calibrate Boom Length Sensor id required.</p>
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### 7.1.239 B1376-87

<b>Error Code:</b>	<b>B1376-87</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT ANGLE SENSOR Communication fault
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>1) Default to Raised mode.</p> <p>2) Disable Main Boom raise, Telescopic boom extend and Slew.</p> <p>3) Block Drive and Steer</p> <p>4) First allow retract function until boom length= MIN retract boom length (i.e.0%) then allow main boom lower function.</p>
<b>Possible Cause:</b>	<p>1) Tilt Sensor not connected correctly</p> <p>2) poor wiring connections at tilt sensor</p> <p>3) Faulty Tilt Sensor</p>
<b>Service Action:</b>	<p>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</p> <p>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</p> <p>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</p>

	<ol style="list-style-type: none"> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>
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## 7.1.240 B1377-2F

<b>Error Code:</b>	<b>B1377-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT ANGLE SENSOR Channel plausibility fault
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1) Default to Raised mode.</li> <li>2) Disable Main Boom raise, Telescopic boom extend and Slew.</li> <li>3) Block Drive and Steer</li> <li>4) First allow retract function until boom length= MIN retract boom length (i.e.0%) then allow main boom lower function.</li> </ol>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>

<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>
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7.1.241 B1378-17

<b>Error Code:</b>	<b>B1378-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT ANGLE SENSOR Range fault
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<ol style="list-style-type: none"> <li>1) Default to Raised mode.</li> <li>2)Disable Main Boom raise, Telescopic boom extend and Slew.</li> <li>3) Block Drive and Steer</li> </ol>

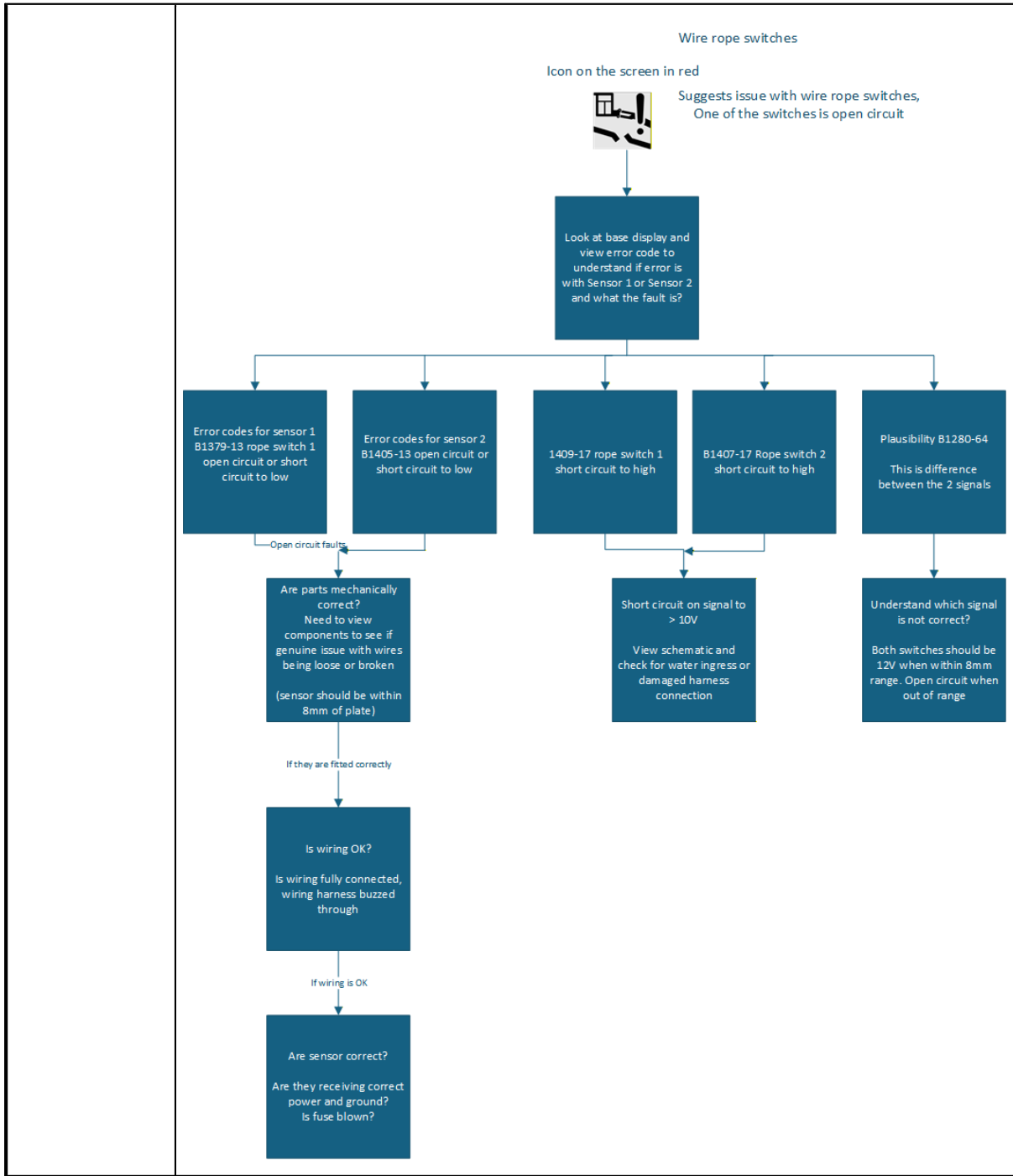
	4) First allow retract function until boom length= MIN retract boom length (i.e.0%) then allow main boom lower function.
<b>Possible Cause:</b>	1) Tilt Sensor not calibrated 2) Tilt Sensor Faulty
<b>Service Action:</b>	1) Check connections to tilt sensor and Connector C29_TH and C31_TH 2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic 3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH 4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP 5) Check -ve Blue wire Turntable Ground GND02 6) Check CAN H Black wire for any cut, damage or pinching 7) Check CAN L Gray wire for any cut, damage or pinching 8) On level ground, calibrate the tilt sensor via the display or service master 9) Replace the tilt sensor if damage or Faulty



7.1.242 B1379-13

<b>Error Code:</b>	<b>B1379-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Rope Switch - Rope Switch 1 Open Circuit & Short Circuit to Low.
<b>Component</b> :	Rope Switch 1

<b>Vehicle reaction:</b>	Boom raise and Boom extend movements shall be prevented.
<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 Rope Switch 1 interconnect -C60_RSH from -C60_TH. Measure resistance from pin 3 of each connector to GND. Trace the fault on the connector which measures closest to 0 ohms.</li> <li>2) Check wire #8001 and wire #8001B for abrasions, pinching and any other damage which may cause short to GND or Chassis.</li> <li>3) Check the Harness connectors and Base Bosch ECU connectors for bent pins, stray wires or any damage that may cause short to GND or Chassis.</li> <li>4) Check the Harness connectors and Base Bosch ECU connectors for any water ingress.</li> <li>5) Check Rope Switch 1 -SW01_RSH for any damage. Measure between pins B and C to ensure there is no short within the switch.</li> </ol> <p><b>Troubleshooting Flow Chart -</b></p>



## 7.1.243 B1381-17

<b>Error Code:</b>	<b>B1381-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TELE BOOM EXTEND\RETRACT PROPORTIONAL High Side Short Circuit to high
<b>Component</b> :	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Telescopic Boom o/ps to off "Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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 the Main Boom Telescope connectors -C04_TH and -C03_TH from the solenoid connector. Measure voltage at pin 1 on either connector. If value is high (&gt;10V) then there is likely a short circuit to +12V on the high side input. Check the wiring for damage, abrasions and pinching.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</li> </ol>



## 7.1.244 B1382-16

<b>Error Code:</b>	<b>B1382-16</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	TELE BOOM EXTEND\RETRACT PROPORTIONAL High Side Short Circuit to low
<b>Component</b> :	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Telescopic Boom o/ps 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) Disconnect the Main Boom Telescope connectors -C04_TH and -C03_TH from the solenoid connector. Measure voltage at pin 1 on either connector. If value is 0V then there is likely a short circuit to GND on the high side input. Check the wiring for damage, abrasions and pinching.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</li> </ol>
<b>Other:</b>	N/A



### 7.1.245 B1383-13

<b>Error Code:</b>	<b>B1383-13</b>
<b>ECU</b>	Base ECU

<b>Description :</b>	TELE BOOM EXTEND\RETRACT PROPORTIONAL High Side Open Circuit
<b>Component :</b>	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Telescopic Boom o/ps to off Note:During operation , refer to TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Open Circuit Fault code
<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 continuity from Base Bosch ECU pin 51/96 to Main Boom Extend solenoid connector -C04_TH pin 1. Check continuity from Base Bosch ECU pin 75/96 to Main Boom Retract solenoid connector -C03_TH pin 1. Check continuity from Base Bosch ECU pin 85/96 to Main Boom Extend solenoid connector -C04_TH pin 2 and Main Boom Retract solenoid connector -C03_TH pin 2. All values should read 0 ohms. Check for open circuit wires or connections if values read high. 2) Check wiring between solenoids and Bosch ECU. Check for breaks, abrasions and pinching. 3) Check resistance of solenoid coil, resistance value should be approximately 5 - 15 ohms. If value is significantly higher than this, then consider faulty solenoid coil.



7.1.246 B1384-17

<b>Error Code:</b>	<b>B1384-17</b>
<b>ECU</b>	Base ECU

<b>Description :</b>	TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Short Circuit to high
<b>Component :</b>	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Telescopic Boom o/ps to off "Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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 the Main Boom Telescope connectors -C04_TH and -C03_TH from the solenoid connector. Measure voltage at pin 2 on either connector. If value is high (&gt;10V) then there is likely a short circuit to +12V in the ground path. Check the wiring for damage, abrasions and pinching. If measured value is 0V, check pin 1 on both connectors to locate the short to high.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</li> </ol>



7.1.247 B1385-16

<b>Error Code:</b>	<b>B1385-16</b>
<b>ECU</b>	Base ECU

<b>Description :</b>	TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Short Circuit to low
<b>Component :</b>	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Telescopic Boom o/ps 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) Disconnect the Main Boom Telescope connectors -C04_TH and -C03_TH from the solenoid connector. Measure voltage at pin 2 on either connector. If value is 0V then there is likely a short circuit to GND in the return path. Check the wiring for damage, abrasions and pinching. If measured value is 0V, check pin 1 on both connectors to locate the short to GND.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</li> </ol>



7.1.248 B1386-13

<b>Error Code:</b>	<b>B1386-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	TELE BOOM EXTEND\RETRACT PROPORTIONAL Low Side Open Circuit

<b>Component :</b>	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Telescopic Boom 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) Disconnect the Main Boom Telescope connectors -C04_TH and -C03_TH from the solenoid connector. Test continuity from Pin 2 of either connector to Pin 85/96 of the Bosch ECU. Repeat for other solenoid connector. Test continuity from pin of -C04_TH to pin 2 of -C03_TH. These results will determine location of fault. If both connectors have continuity from pin 2 - pin 2, then the fault lies on wire #4050A or the Bosch ECU pin 85/96. If wire #4050A is not faulty, test the inputs (continuity) to both solenoids from the Bosch ECU.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for any bent or backed-out pins, debris or cut wires that may be causing an open circuit.</li> </ol>



7.1.249 B1387-17

<b>Error Code:</b>	<b>B1387-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER LEFT\RIGHT PROPORTIONAL High Side Short Circuit to high
<b>Component :</b>	Steer Solenoid

<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer and Drive o/ps to off Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault
<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
<b>Service Action:</b>	1) Disconnect the Steer Left/Right connectors -C09_TH and -C10_TH from the solenoid connector. Measure voltage at pin 1 on either connector. If value is high (>10V) then there is likely a short circuit to +12V on the high side input. Check the wiring for damage, abrasions and pinching. 2) Check the wiring harness for damage, abrasions or pinching. 3) Check all connectors including the Bosch ECU connectors for water ingress. 4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.



## 7.1.250 B1388-16

<b>Error Code:</b>	<b>B1388-16</b>
<b>ECU</b>	Base ECU
<b>Description</b>	STEER LEFT\RIGHT PROPORTIONAL High Side Short Circuit to low :
<b>Component</b>	Steer Solenoid :
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer and Drive o/ps 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) Disconnect the Steer Left/Right connectors -C09_TH and -C10_TH from the solenoid connector. Measure voltage at pin 1 on either connector. If value is 0V then there is likely a short circuit to GND on the high side input. Check the wiring for damage, abrasions and pinching.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</li> </ol>



## 7.1.251 B1389-13

<b>Error Code:</b>	<b>B1389-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER LEFT\RIGHT PROPORTIONAL High Side Open Circuit
<b>Component :</b>	Steer Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch Steer and Drive o/ps to off</p> <p>Note:During operation , refer to STEER LEFT\RIGHT PROPORTIONAL Low Side Open Circuit Fault code</p>

<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 continuity from Base Bosch ECU pin 74/96 to Steer Left solenoid connector -C09_TH pin 1. Check continuity from Base Bosch ECU pin 50/96 to Steer Right solenoid connector -C10_TH pin 1. Check continuity from Base Bosch ECU pin 80/96 to Steer Left solenoid connector -C09_TH pin 2 and Steer Right solenoid connector -C10_TH pin 2. All values should read 0 ohms. Check for open circuit wires or connections if values read high.</li> <li>2) Check wiring between solenoids and Bosch ECU. Check for breaks, abrasions and pinching.</li> <li>3) Check resistance of solenoid coil, resistance value should be approximately 5 - 15 ohms. If value is significantly higher than this, then consider faulty solenoid coil.</li> </ol>



## 7.1.252 B1390-17

<b>Error Code:</b>	<b>B1390-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	STEER LEFT\RIGHT PROPORTIONAL Low Side Short Circuit to high
<b>Component :</b>	Steer Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch Steer and Drive o/ps to off</p> <p>Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault</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>

<b>Service Action:</b>	<p>1) Disconnect the Steer Left/Right connectors -C09_TH and -C10_TH from the solenoid connector. Measure voltage at pin 2 on either connector. If value is high (&gt;10V) then there is likely a short circuit to +12V in the ground path. Check the wiring for damage, abrasions and pinching. If measured value is 0V, check pin 1 on both connectors to locate the short to high.</p> <p>2) Check the wiring harness for damage, abrasions or pinching.</p> <p>3) Check all connectors including the Bosch ECU connectors for water ingress.</p> <p>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</p>
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7.1.253 B1391-16

<b>Error Code:</b>	<b>B1391-16</b>
<b>ECU</b>	Base ECU
<b>Description</b>	STEER LEFT\RIGHT PROPORTIONAL Low Side Short Circuit to low :
<b>Component</b>	Steer Solenoid :
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer and Drive o/ps to off
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	1) Disconnect the Steer Left/Right connectors -C09_TH and -C10_TH from the solenoid connector. Measure voltage at pin 2

	<p>on either connector. If value is 0V then there is likely a short circuit to GND in the return path. Check the wiring for damage, abrasions and pinching. If measured value is 0V, check pin 1 on both connectors to locate the short to GND.</p> <p>2) Check the wiring harness for damage, abrasions or pinching.</p> <p>3) Check all connectors including the Bosch ECU connectors for water ingress.</p> <p>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</p>
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### 7.1.254 B1392-13

<b>Error Code:</b>	<b>B1392-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	STEER LEFT\RIGHT PROPORTIONAL Low Side Open Circuit
<b>Component</b> :	Steer Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Steer and Drive o/ps to off
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	1) Disconnect the Steer Left/Right connectors -C09_TH and -C10_TH from the solenoid connector. Test continuity from Pin 2 of either connector to Pin 80/96 of the Bosch ECU. Repeat for other solenoid connector. Test continuity from pin of -C09_TH to pin 2 of -C10_TH. These results will determine location of

	<p>fault. If both connectors have continuity from pin 2 - pin 2, then the fault lies on wire #4053A or the Bosch ECU pin 80/96. If wire #4053A is not faulty, test the inputs (continuity) to both solenoids from the Bosch ECU.</p> <p>2) Check the wiring harness for damage, abrasions or pinching.</p> <p>3) Check all connectors including the Bosch ECU connectors for any bent or backed-out pins, debris or cut wires that may be causing an open circuit.</p>
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## 7.1.255 B1393-17

<b>Error Code:</b>	<b>B1393-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL High Side Short Circuit to high
<b>Component</b> :	Platform Level Solenoid
<b>Vehicle reaction:</b>	<p>Detect failure mode with Safout method - Switch Platform Level o/ps to off</p> <p>"Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p fault"</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>
<b>Service Action:</b>	<p>1) Disconnect the Platform Level Raise/Lower connectors - C14_TH and -C15_TH from the solenoid connector. Measure voltage at pin 1 on either connector. If value is high (&gt;10V) then there is likely a short circuit to +12V on the high side input. Check the wiring for damage, abrasions and pinching.</p>

	<p>2) Check the wiring harness for damage, abrasions or pinching.</p> <p>3) Check all connectors including the Bosch ECU connectors for water ingress.</p> <p>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</p>
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7.1.256 B1394-16

<b>Error Code:</b>	<b>B1394-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL High Side Short Circuit to low
<b>Component :</b>	Platform Level Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Platform Level o/ps to off
<b>Possible Cause:</b>	<p>1) A short circuit within the wiring harness</p> <p>2) A short circuit to the chassis</p> <p>3) A short circuit within the harness connectors</p> <p>4) Water damage/ingress within the harness connectors</p> <p>5) Damaged component</p>
<b>Service Action:</b>	<p>1) Disconnect the Platform Level Raise/Lower connectors - C14_TH and -C15_TH from the solenoid connector. Measure voltage at pin 1 on either connector. If value is 0V then there is likely a short circuit to GND on the high side input. Check the wiring for damage, abrasions and pinching.</p> <p>2) Check the wiring harness for damage, abrasions or pinching.</p> <p>3) Check all connectors including the Bosch ECU connectors for water ingress.</p>

	4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.
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### 7.1.257 B1395-13

<b>Error Code:</b>	<b>B1395-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL High Side Open Circuit
<b>Component</b> :	Platform Level Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Platform Level o/ps to off Note:During operation , refer to PLATFORM LEVEL RAISE\LOWER PROPORTIONAL Low Side Open Circuit Fault code
<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 continuity from Base Bosch ECU pin 25/96 to Steer Left solenoid connector -C14_TH pin 1. Check continuity from Base Bosch ECU pin 29/96 to Steer Right solenoid connector -C15_TH pin 1. Check continuity from Base Bosch ECU pin 79/96 to Steer Left solenoid connector -C14_TH pin 2 and Steer Right solenoid connector -C15_TH pin 2. All values should read 0 ohms. Check for open circuit wires or connections if values read high. 2) Check wiring between solenoids and Bosch ECU. Check for breaks, abrasions and pinching. 3) Check resistance of solenoid coil, resistance value should be

	approximately 5 - 15 ohms. If value is significantly higher than this, then consider faulty solenoid coil.
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7.1.258 B1396-17

<b>Error Code:</b>	<b>B1396-17</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL Low Side Short Circuit to high
<b>Component :</b>	Platform Level Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Platform Level o/ps to off "Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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 the Platform Level Raise/Lower connectors - C14_TH and -C15_TH from the solenoid connector. Measure voltage at pin 2 on either connector. If value is high (&gt;10V) then there is likely a short circuit to +12V in the ground path. Check the wiring for damage, abrasions and pinching. If measured value is 0V, check pin 1 on both connectors to locate the short to high.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for</li> </ol>

	any bent pins, debris or stray wires that may be causing a short circuit.
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7.1.259 B1397-16

<b>Error Code:</b>	<b>B1397-16</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL Low Side Short Circuit to low
<b>Component :</b>	Platform Level Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Platform Level o/ps 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) Disconnect the Platform Level Raise/Lower connectors - C14_TH and -C15_TH from the solenoid connector. Measure voltage at pin 2 on either connector. If value is 0V then there is likely a short circuit to GND in the return path. Check the wiring for damage, abrasions and pinching. If measured value is 0V, check pin 1 on both connectors to locate the short to GND.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for water ingress.</li> <li>4) Check all connectors including the Bosch ECU connectors for any bent pins, debris or stray wires that may be causing a short circuit.</li> </ol>



## 7.1.260 B1398-13

<b>Error Code:</b>	<b>B1398-13</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	PLATFORM LEVEL RAISE\LOWER PROPORTIONAL Low Side Open Circuit
<b>Component :</b>	Platform Level Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Platform Level 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) Disconnect the Platform Level Raise/Lower connectors - C14_TH and -C15_TH from the solenoid connector. Test continuity from Pin 2 of either connector to Pin 79/96 of the Bosch ECU. Repeat for other solenoid connector. Test continuity from pin of -C14_TH to pin 2 of -C15_TH. These results will determine location of fault. If both connectors have continuity from pin 2 - pin 2, then the fault lies on wire #6059 or the Bosch ECU pin 79/96. If wire #6059 is not faulty, test the inputs (continuity) to both solenoids from the Bosch ECU.</li> <li>2) Check the wiring harness for damage, abrasions or pinching.</li> <li>3) Check all connectors including the Bosch ECU connectors for any bent or backed-out pins, debris or cut wires that may be causing an open circuit.</li> </ol>



## 7.1.261 B1399-17

<b>Error Code:</b>	<b>B1399-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL High Side Short Circuit to high
<b>Component</b> :	Main Valve Block
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Jib\Platform Rotate o/ps to off "Note: Before Ignition ON, POST Fail (stuck in startup logic) and Generic o/p 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/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>



## 7.1.262 B1400-16

<b>Error Code:</b>	<b>B1400-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL High Side Short Circuit to low
<b>Component</b> :	Main Valve Block
<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 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/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>



## 7.1.263 B1401-13

<b>Error Code:</b>	<b>B1401-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB RAISE\LOWER PLATFORM RIGHT\LEFT PROPORTIONAL High Side Open Circuit
<b>Component</b> :	Main Valve Block
<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>	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) 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.



## 7.1.264 B1402-17

<b>Error Code:</b>	<b>B1402-17</b>
<b>ECU</b>	Base ECU
<b>Description</b>	JIB\PLATFORM PROPORTIONAL Low Side Short Circuit to high
<b>Component</b>	Main Valve Block
<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 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/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>



7.1.265 B1403-16

<b>Error Code:</b>	<b>B1403-16</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB\PLATFORM PROPORTIONAL Low Side Short Circuit to low
<b>Component</b> :	Main Valve Block
<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 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/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>



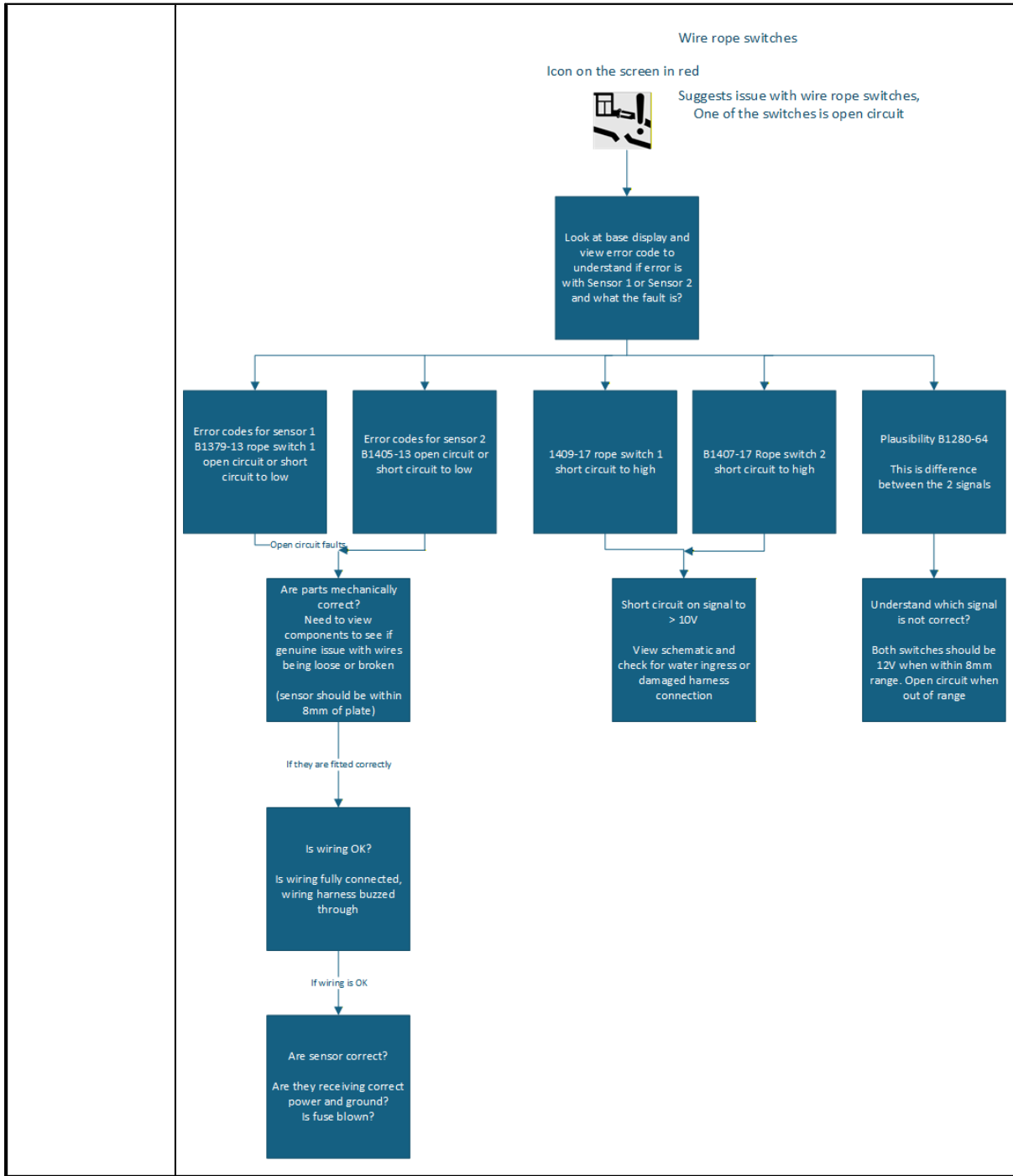
## 7.1.266 B1404-13

<b>Error Code:</b>	<b>B1404-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	JIB\PLATFORM PROPORTIONAL Low Side Open Circuit
<b>Component</b> :	Main Valve Block
<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) 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>



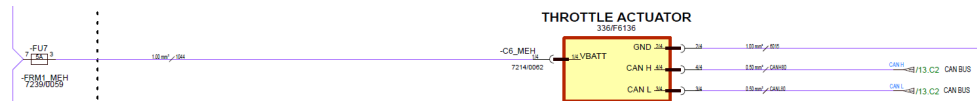
7.1.267 B1405-13

<b>Error Code:</b>	<b>B1405-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ROPE SWITCH 2 Open Circuit & Short Circuit to Low
<b>Component</b> :	Rope Switch 2
<b>Vehicle reaction:</b>	Boom raise and Boom extend movements shall be prevented.
<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 Rope Switch 2 interconnect -C61_RSH from -C61_TH. Measure resistance from pin 3 of each connector to GND. Trace the fault on the connector which measures closest to 0 ohms.</li> <li>2) Check wire #8002 and wire #8002B for abrasions, pinching and any other damage which may cause short to GND or Chassis.</li> <li>3) Check the Harness connectors and Base Bosch ECU connectors for bent pins, stray wires or any damage that may cause short to GND or Chassis.</li> <li>4) Check the Harness connectors and Base Bosch ECU connectors for any water ingress.</li> <li>5) Check Rope Switch 2 -SW02_RSH for any damage. Measure between pins B and C to ensure there is no short within the switch.</li> </ol> <p><b>Troubleshooting Flow Chart -</b></p>



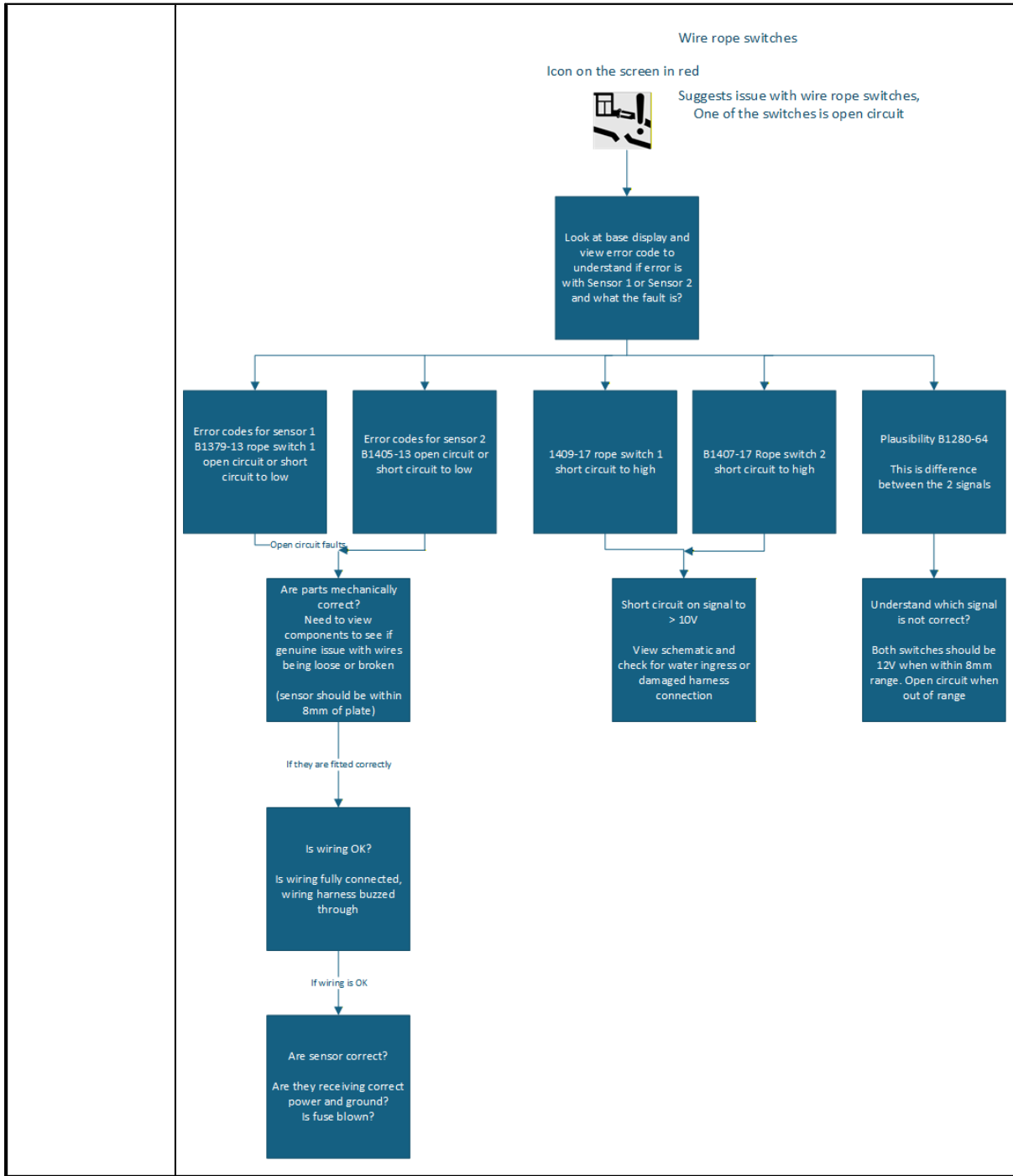
7.1.268 B1406-13

<b>Error Code:</b>	<b>B1406-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator: Temperature > hardware temperature protection (150°C) Temperature measurement short to 5V Temperature measurement short to 0V
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<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>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</li> <li>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1044</li> <li>6) Check CAN High wire CANH80 and CAN Low wire CANL80</li> <li>7) Check the calibration of the component.</li> <li>8) Replace the Throttle Actuator if faulty.</li> </ol>



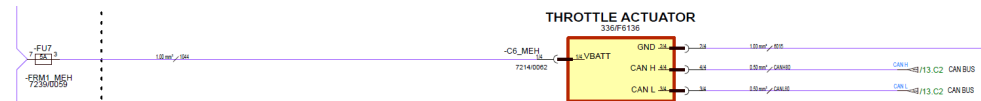
7.1.269 B1407-17

<b>Error Code:</b>	<b>B1407-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ROPE SWITCH 2 Short Circuit to High(12v & 10v)
<b>Component</b> :	Rope Switch 2
<b>Vehicle reaction:</b>	Boom raise and Boom extend movements shall be prevented.
<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 Rope Switch 1 connector -C63_RSH. Disconnect connector and test voltage at pin C/3 (Wire #8001A). Test connection through interconnects -C60_RSH / -C60_TH pin 3/4. Test wire #8001 back to the base Bosch ECU pin 19/96</li> <li>2) Check all above connectors for damage, bent pins, shorts, water damage or damaged terminals</li> <li>3) Check all above wires and harness for any abrasions, pinching or any other damage</li> <li>4) Check operation of Rope Switch for fault.</li> </ol> <p><b>Troubleshooting Flow Chart -</b></p>



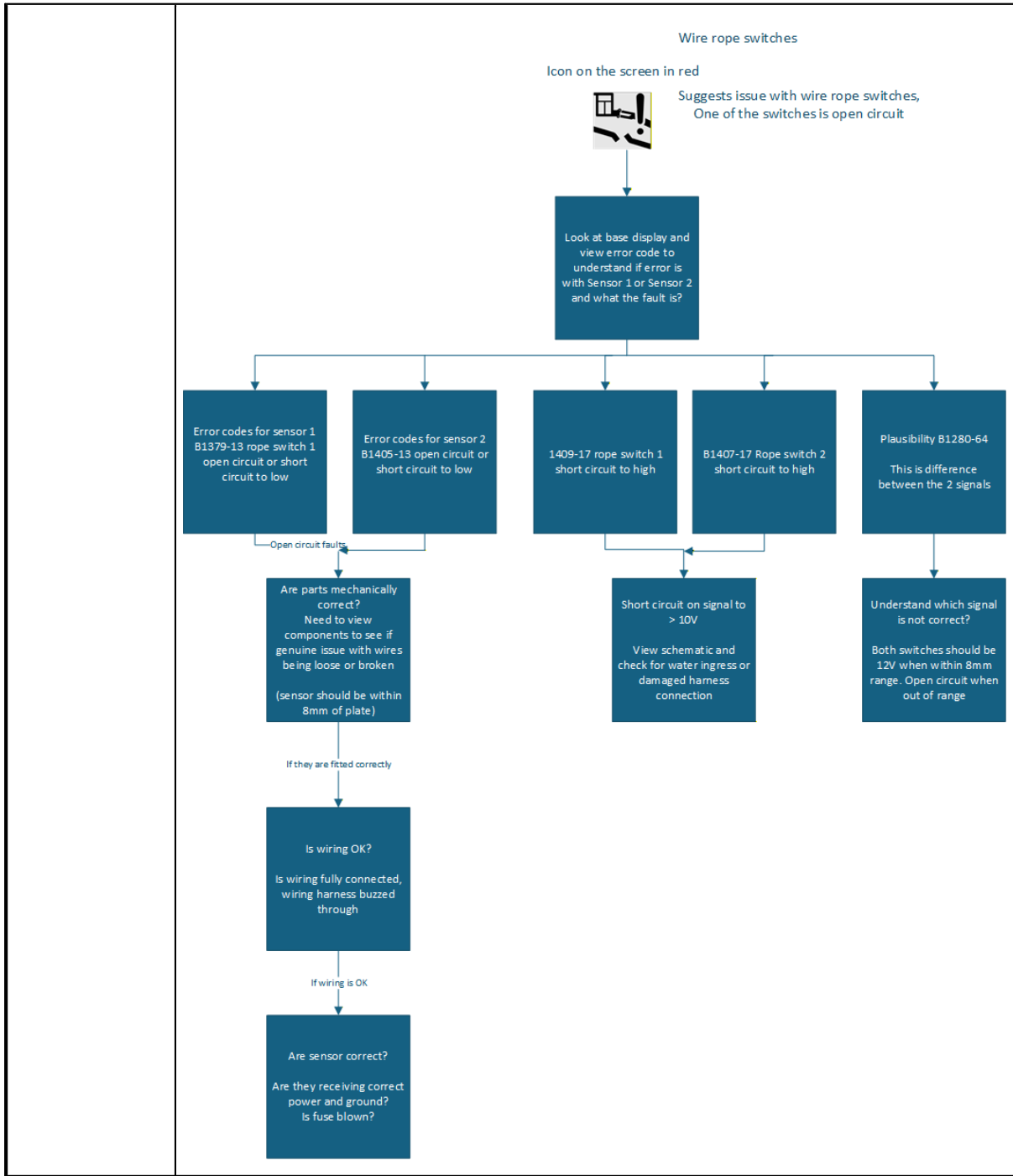
## 7.1.270 B1408-13

<b>Error Code:</b>	<b>B1408-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator: Commutation sensor fault; Illogical commutation state Wrong hall sensor sequence
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<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>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</li> <li>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1044</li> <li>6) Check CAN High wire CANH80 and CAN Low wire CANL80</li> <li>7) Check the calibration of the component.</li> <li>8) Replace the Throttle Actuator if faulty.</li> </ol>



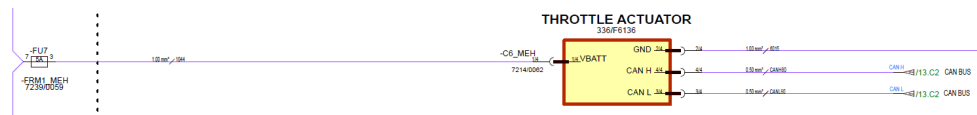
7.1.271 B1409-17

<b>Error Code:</b>	<b>B1409-17</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	ROPE SWITCH 1 Short Circuit to High(12v & 10v)
<b>Component</b> :	Rope Switch 1
<b>Vehicle reaction:</b>	Boom raise and Boom extend movements shall be prevented.
<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 Rope Switch 1 connector -C64_RSH. Disconnect connector and test voltage at pin C/3 (Wire #8002A). Test connection through interconnects -C61_RSH / -C61_TH pin 3/4. Test wire #8002 back to the base Bosch ECU pin 20/96</li> <li>2) Check all above connectors for damage, bent pins, shorts, water damage or damaged terminals</li> <li>3) Check all above wires and harness for any abrasions, pinching or any other damage</li> <li>4) Check operation of Rope Switch for fault.</li> </ol> <p><b>Troubleshooting Flow Chart -</b></p>



## 7.1.272 B1410-13

<b>Error Code:</b>	<b>B1410-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator: Initialization fault (learn) End stop not found
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<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>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</li> <li>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1044</li> <li>6) Check CAN High wire CANH80 and CAN Low wire CANL80</li> <li>7) Check the calibration of the component.</li> <li>8) Replace the Throttle Actuator if faulty.</li> </ol>



## 7.1.273 B1411-17

<b>Error Code:</b>	<b>B1411-17</b>
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<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Low Side Sol Short Circuit to High
<b>Component</b> :	Main Valve Block
<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 o/p 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 connector -C03_PH at the Platform Control Valve. Disconnect the connector and test the connection at pin 1/2 for shorts to high or open circuit to platform Bosch ECU pin 53/96. If open circuit, check interconnect -C22_PCP / -C22_PH.</li> <li>2) Check all connectors for backed out pins, bent pins, water ingress or any other form of damage. Check Platform Bosch ECU 96 way connector for any backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check Platform Control Valve solenoid connector for any backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check Low Side wire #6050 at solenoid connector pin 2/2 for short to high or open circuit.</li> <li>5) Perform continuity tests between Solenoid connector, interconnects and back to Platform Bosch ECU</li> <li>6) Check the wire harness for any abrasions, pinching or any other form of damage.</li> </ol>

## 7.1.274 B1412-16

<b>Error Code:</b>	<b>B1412-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW Low Side Sol SC to Low
<b>Component</b> :	Main Valve Block
<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 connector -C03_PH at the Platform Control Valve. Disconnect the connector and test the connection at pin 1/2 for shorts to GND or open circuit to platform Bosch ECU pin 53/96. If open circuit, check interconnect -C22_PCP / -C22_PH.</li> <li>2) Check all connectors for backed out pins, bent pins, water ingress or any other form of damage. Check Platform Bosch ECU 96 way connector for any backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check Platform Control Valve solenoid connector for any backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check Low Side wire #6050 at solenoid connector pin 2/2 for short to high or open circuit.</li> <li>5) Perform continuity tests between Solenoid connector, interconnects and back to Platform Bosch ECU</li> <li>6) Check the wire harness for any abrasions, pinching or any other form of damage.</li> </ol>



## 7.1.275 B1413-13

<b>Error Code:</b>	<b>B1413-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	JIB/PLATFORM FLOW High Side & Low Side Sol Open Circuit
<b>Component</b> :	Main Valve Block
<b>Vehicle reaction:</b>	Detect failure mode for Open Circuit and 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) Locate connector -C03_PH at the Platform Control Valve. Disconnect the connector and test the connection at pin 1/2 for shorts to high or open circuit to platform Bosch ECU pin 53/96. If open circuit, check interconnect -C22_PCP / -C22_PH.</li> <li>2) Check all connectors for backed out pins, bent pins, water ingress or any other form of damage. Check Platform Bosch ECU 96 way connector for any backed out pins, bent pins, water ingress or any other form of damage.</li> <li>3) Check Platform Control Valve solenoid connector for any backed out pins, bent pins, water ingress or any other form of damage.</li> <li>4) Check Low Side wire #6050 at solenoid connector pin 2/2 for short to high or open circuit.</li> <li>5) Perform continuity tests between Solenoid connector, interconnects and back to Platform Bosch ECU</li> <li>6) Check the wire harness for any abrasions, pinching or any other form of damage.</li> </ol>

**JCB**

## 7.1.276 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>

**JCB**

7.1.277 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>
<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 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>



## 7.1.278 B1416-13

<b>Error Code:</b>	<b>B1416-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TELE BOOM EXTEND\RETRACT Solenoid Valve Fault
<b>Component</b> :	Telescopic Solenoid
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch Teleboom 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>

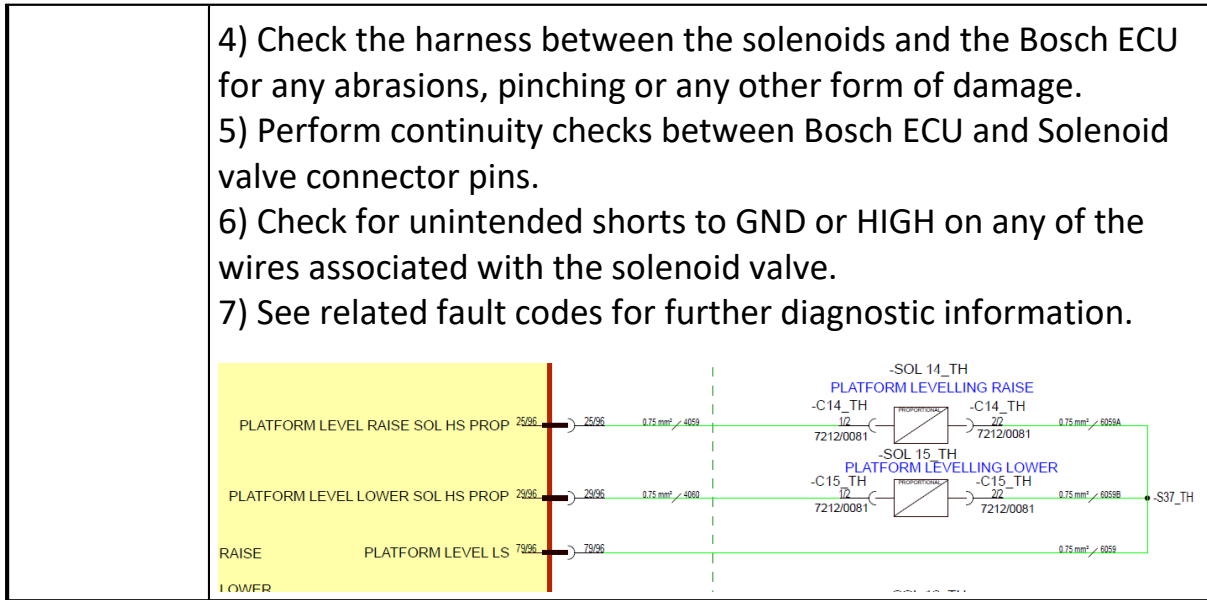
7.1.279 B1417-13

<b>Error Code:</b>	<b>B1417-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	STEER LEFT\RIGHT Solenoid Valve Fault
<b>Component</b> :	STEER LEFT\RIGHT Solenoid Valve
<b>Vehicle reaction:</b>	Detect failure mode with Safout method - Switch steer o/p/s to off (Steer Function Disable)
<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 solenoid valves connectors C09_TH &amp; C10_TH, 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 Wire #4051, #4052, #4053A, #4053B &amp; #4053C.</li> <li>6) Check Voltage on Base ECU pin 74/96, 50/96 &amp; 80/96</li> <li>7) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</li> </ol>



## 7.1.280 B1418-13

<b>Error Code:</b>	<b>B1418-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	PLATFORM LEVEL RAISE\LOWER Solenoid Valve Fault
<b>Component</b> :	PLATFORM LEVEL RAISE\LOWER Solenoid Valve
<b>Vehicle reaction:</b>	<p>When PLATFORM LEVEL RAISE\LOWER Solenoid Valve Fault is detected:</p> <ol style="list-style-type: none"> <li>1. It detect failure mode with Safout method - The SAFE OUT module delivers with the interconnection from high side output channels (HS. and a low side output channel (LS. the safety channel for critical applications. Monitoring of the current flow in both connection paths is possible and the error detection is improved with the interconnection.</li> <li>2. Switch Platform Level o/ps to off.</li> <li>3. log error code &amp; set fault indicators.</li> </ol>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1. The short between any two conductors.</li> <li>2. The short circuit of any conductor to an exposed conductive part or to earth or to the protective bonding.</li> <li>3. Does not de-energize.</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> </ol>



### 7.1.281 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>	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) Indicates a fault with the solenoid valve. The failure mode is undetermined.

	<p>2) Check the connectors to the solenoid valves, checking for backed out pins, bent pins, water ingress or any other form of damage.</p> <p>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</p> <p>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</p> <p>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</p> <p>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</p> <p>7) See related fault codes for further diagnostic information.</p>
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**JCB**

7.1.282 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>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>1) Indicates a fault with the solenoid valve. The failure mode is undetermined.</p> <p>2) Check the connectors to the solenoid valves, checking for</p>

	<p>backed out pins, bent pins, water ingress or any other form of damage.</p> <p>3) Check the connectors to the Bosch ECU, checking for backed out pins, bent pins, water ingress or any other form of damage.</p> <p>4) Check the harness between the solenoids and the Bosch ECU for any abrasions, pinching or any other form of damage.</p> <p>5) Perform continuity checks between Bosch ECU and Solenoid valve connector pins.</p> <p>6) Check for unintended shorts to GND or HIGH on any of the wires associated with the solenoid valve.</p> <p>7) See related fault codes for further diagnostic information.</p>
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## 7.1.283 B1421-2F

<b>Error Code:</b>	<b>B1421-2F</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Low Coolant Level warning
<b>Component</b> :	Engine
<b>Vehicle reaction:</b>	Detect failure mode; Report Fault code on Display
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Low coolant fluid level.</li> <li>2) A short circuit within the wiring harness.</li> <li>3) A short circuit to the chassis.</li> <li>4) A short circuit within the harness connectors.</li> <li>5) Water damage/ingress within the harness connectors.</li> <li>6) Damaged component.</li> </ol>
<b>Service Action:</b>	1) Fill coolant tank with the correct coolant fluid as per operators manual. Check to see fault code has cleared once the

	<p>correct level has been reached.</p> <p>2) Disconnect the coolant level switch and measure the resistance to Earth from -C04_EH. If 0 or close to, there is likely a Short to Low on the harness.</p> <p>3) Check wire #8004, either side of connector -C41, for any abrasions, pinching and any other damage which may cause a short to Earth or chassis.</p> <p>4) Check the harness connectors and the Base Bosch ECU connector for bent pins, stray wires or any damage that may cause a short to Earth or chassis.</p> <p>5) Check the harness connectors and Base Bosch ECU connector for any water ingress or condensation.</p> <p>6) Check the Coolant Level Switch for any damage. Measure across the switch between pins 1 and 2 to ensure there is no short within the switch.</p>
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7.1.284 B1422-13

<b>Error Code:</b>	<b>B1422-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator: Motor effort: Circuit short to high Circuit short to low
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<b>Possible Cause:</b>	1) A poor connection or damaged terminal within the connector(s)

	<p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</p> <p>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</p> <p>4) Check 5A fuse</p> <p>5) Check voltage on wire #1044</p> <p>6) Check CAN High wire CANH80 and CAN Low wire CANL80</p> <p>7) Check the calibration of the component.</p> <p>8) Replace the Throttle Actuator if faulty.</p>



### 7.1.285 B1423-13

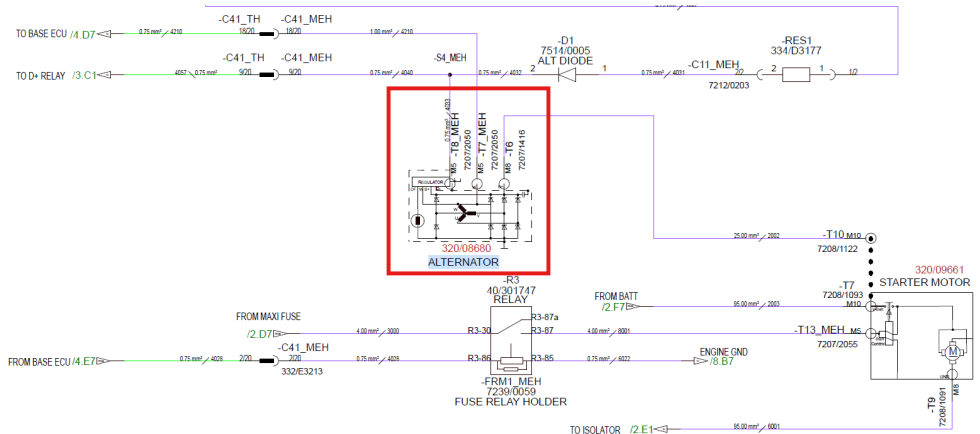
<b>Error Code:</b>	<b>B1423-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description :</b>	<p>Throttle Actuator:</p> <p>Motor effort:</p> <p style="padding-left: 40px;">Circuit short to high</p> <p style="padding-left: 40px;">Circuit short to low</p>
<b>Component :</b>	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<b>Possible Cause:</b>	1) A poor connection or damaged terminal within the connector(s)

	<p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</p> <p>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</p> <p>4) Check 5A fuse</p> <p>5) Check voltage on wire #1044</p> <p>6) Check CAN High wire CANH80 and CAN Low wire CANL80</p> <p>7) Check the calibration of the component.</p> <p>8) Replace the Throttle Actuator if faulty.</p>



## 7.1.286 B1424-16

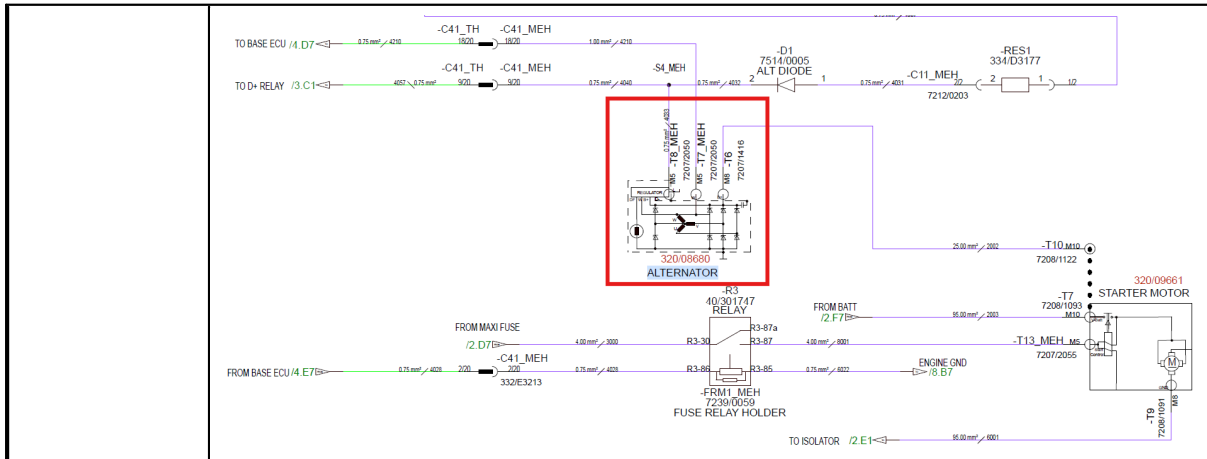
<b>Error Code:</b>	<b>B1424-16 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b>	<p>A) W terminal OC : When Cranking - Alternator freq ip &lt; 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs.</p> <p>B) W terminal OC : When Engine is Running - Alternator freq ip &lt; 550 rpm AND D+(12V)-ON OR low oil pressure is OC ) for 4 secs</p>
<b>Component</b>	W-Terminal, Alternator
<b>Vehicle reaction:</b>	<p>When Cranking:</p> <ol style="list-style-type: none"> <li>1) Throttle controller to be set to 0%.</li> <li>2) Stop Cranking.</li> <li>3) Change engine run status as ON.</li> </ol>

	<p>4) Ignore the engine speed command</p> <p>When Engine Running:</p> <ol style="list-style-type: none"> <li>1) Throttle controller to be set to 0%.</li> <li>2) Ignore the engine speed command</li> <li>3) Engine speed shall be -- on display</li> </ol>
<p><b>Possible Cause:</b></p>	<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>
<p><b>Service Action:</b></p>	<ol style="list-style-type: none"> <li>1.) Inspect the component and the wiring, and ensure there is no damage to any cables or the component itself.</li> <li>2.) Identify when the Fault code is being raised, i.e when cranking or when switching off the machine.</li> <li>3.) Inspect the oil pressure switch and measure the signal for the when the engine is OFF and when the engine is ON.</li> <li>4.) Check Connector C41_TH and Base ECU Pin 32/96 (Wire #4210)</li> <li>5.) Replace if component is faulty.</li> </ol> 



7.1.287 B1425-17

<b>Error Code:</b>	<b>B1425-17 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	<p>A) W- terminal SC to high : When Engine Ignition is OFF : Alternator freq input voltage <math>\geq 12v</math> AND ( 12v alter OFF OR low oil OFF )</p> <p>B) W- terminal SC to high : When Engine is not Running: Alternator freq input voltage <math>\geq 12v</math> AND ( 12v alter OFF OR low oil OFF )</p>
<b>Component</b> :	W-Terminal, Alternator
<b>Vehicle reaction:</b>	Throttle controller to be set to 0%. Ignore the engine speed command. Engine speed shall be on Display.
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>
<b>Service Action:</b>	<p>1.) Inspect the component and the wiring, and ensure there is no damage to any cables or the component itself.</p> <p>2.) Identify when the Fault code is being raised, i.e when cranking or when switching off the machine.</p> <p>3.) Inspect the oil pressure switch and measure the signal for the when the engine is OFF and when the engine is ON.</p> <p>4.) Check Connector C41_TH and Base ECU Pin 32/96 (Wire #4210)</p> <p>5.) Replace if component is faulty.</p>



## 7.1.288 B1427-2F

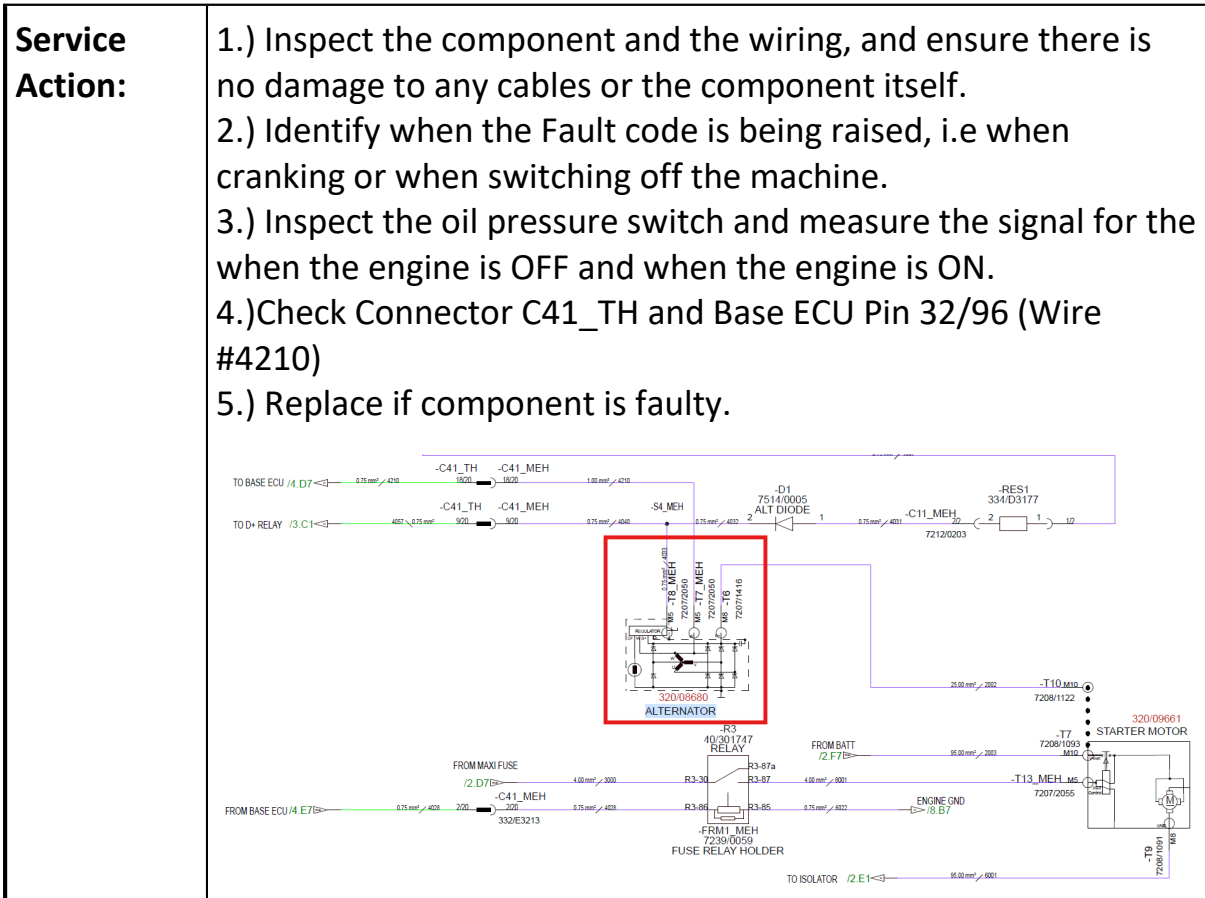
<b>Error Code:</b>	<b>B1427-2F (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b>	Relative boom angle difference fault
<b>Component</b>	Main Boom Angle Sensor
<b>Vehicle reaction:</b>	Main Boom Function disable, If relative boom angle changes by >15deg without main boom being operated.
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Connector not fully inserted.</li> <li>2) Sensor is faulty/damaged.</li> <li>3) Water ingress.</li> <li>4) Sensor may not be calibrated correctly.</li> </ol>
<b>Service Action:</b>	1) Check condition of Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH. Disconnected connectors and ensure there are no backed out terminals. Reinsert both connectors. Check values displayed on machine info page on base display.

	<p>2) If faulty, replace sensor.</p> <p>3) Check Angle Sensor Connector -C02_WRH and Interconnector -C01_WRH for any water damage ingress.</p> <p>4) Ensure the machine chassis &amp; main boom are both perfectly level and at 0degrees using a calibrated spirit level. From here connect to Service Master via a DLA and on your laptop open up 'Vehicle Setup'. Click on tab (12) which should be named 'Angle Sensor Cal'. Observe the 'Actual Values' are zero if not close enough and press the 'Calibrate Boom Angle' button. Calibrated values should be provided afterward's.</p>
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7.1.289 B1426-13

<b>Error Code:</b>	<b>B1426-13 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b>	<p>Low oil pressure fault : When Engine is Running: Alternator freq ip &gt; 850 rpm and D+(12V) ON and low oil GND ) for 2 secs</p> <p>Low oil pressure fault : When Engine is not Running: Alternator freq ip &lt; 550 rpm and ( 12v alternator OFF and low oil Open Circuit )</p>
<b>Component</b>	W-Terminal, Alternator
<b>Vehicle reaction:</b>	<p>Throttle controller to be set to 0%.</p> <p>Ignore the engine speed command.</p> <p>Engine speed shall be on Display.</p>
<b>Possible Cause:</b>	<p>1) A poor connection or damaged terminal within the connector(s)</p> <p>2) A damaged or broken wire within the wiring harness</p> <p>3) Component is damaged</p>



7.1.290 B1685-13

<b>Error Code:</b>	<b>B1685-13</b>
<b>ECU</b>	Base ECU
<b>Description</b>	TILT Angle sensor Out Of Range fault for X-axis ( X1 & X2 )
<b>Component</b>	Tilt Angle Sensor
<b>Vehicle reaction:</b>	Raise Mode: 1. Prevent Drive & Steer

	<p>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</p> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol> <p>In Display : final tilt angle value for X shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schematic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>



7.1.291 B1686-13

<b>Error Code:</b>	<b>B1686-13</b>
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<b>ECU</b>	Base ECU
<b>Description</b> :	TILT Angle sensor Out Of Range fault for Y-axis ( Y1 & Y2 )
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>1 Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol> <p>In Display : final tilt angle value for X &amp; Y shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>

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7.1.292 B1687-13

<b>Error Code:</b>	<b>B1687-13</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT angle sensor temperature too high
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>1 Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol> <p>In Display : final tilt angle value for X &amp; Y shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> </ol>

	<p>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</p> <p>5) Check -ve Blue wire Turntable Ground GND02</p> <p>6) Check CAN H Black wire for any cut, damage or pinching</p> <p>7) Check CAN L Gray wire for any cut, damage or pinching</p> <p>8) Recalibrate Til Sensor</p> <p>9) Replace the tilt sensor if damage or Faulty</p>
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7.1.293 B1688-14

<b>Error Code:</b>	<b>B1688-14</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT angle sensor temperature too Low
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>1Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol> <p>In Display : final tilt angle value for X &amp; Y shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> </ol>

	3) Faulty Tilt Sensor
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>



7.1.294 B1689-15

<b>Error Code:</b>	<b>B1689-15</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT angle sensor internal EEPROM error
<b>Component</b> :	Tilt Angle Sensor

<b>Vehicle reaction:</b>	<p>1 Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol> <p>In Display : final tilt angle value for X &amp; Y shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>

7.1.295 B1690-15

<b>Error Code:</b>	<b>B1690-15</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT angle sensor watchdog alarm
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>1 Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol> <p>In Display : final tilt angle value for X &amp; Y shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> </ol>

	<p>8) Recalibrate Til Sensor</p> <p>9) Replace the tilt sensor if damage or Faulty</p>
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7.1.296 B1691-92

<b>Error Code:</b>	<b>B1691-92</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT ANGLE SENSOR channel 1 & channel 2 comparison fault
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>1 Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. All all functions</li> </ol> <p>In Display : final tilt angle value for X &amp; Y shall show</p>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> <li>3) Faulty Tilt Sensor</li> </ol>
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> </ol>

	<ol style="list-style-type: none"> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>
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## 7.1.297 B1694-17

<b>Error Code:</b>	<b>B1694-17</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Electric pump button -2 Short Circuit to high
<b>Component</b> :	Electric Pump
<b>Vehicle reaction:</b>	Ignore the input Platform override / platform aux not allowed
<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>	<p>1) Check Electric Pump Switch -SW209_PCP. Terminal 2 (input) should measure +10V. In an unpressed state, Terminal 3 should measure +10V and Terminal 1 should measure low. In a pressed state, Terminal 3 should measure low and terminal 1 should measure +10V.</p> <p>2) Check Wire #0088 from -C209-3_PCP to Platform Bosch ECU pin 39/58.</p> <p>3) Check Wire #0089 from -C209-1_PCP to Platform Bosch ECU pin 43/96.</p> <p>4) Check Wire #1089 from -C209-2_PCP to Din Rail Terminal - S11-4_PCP (10V Rail).</p> <p>4) Check Wire #1090 from -C209-2_PCP to -SW210_PCP. Check for damage or shorts.</p> <p>5) Check the harness connectors and the Base Bosch ECU connector for bent pins, stray wires or any damage that may cause a short to Earth or chassis.</p> <p>6) Check the harness connectors and Base Bosch ECU connector for any water ingress or condensation.</p>
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## 7.1.298 B1695-16

<b>Error Code:</b>	<b>B1695-16</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Electric pump button -2 Short Circuit to low
<b>Component</b> :	Electric Pump
<b>Vehicle reaction:</b>	Ignore the input Platform override / platform aux not allowed

<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 Electric Pump Switch -SW209_PCP. Terminal 2 (input) should measure +10V. In an unpressed state, Terminal 3 should measure +10V and Terminal 1 should measure low. In a pressed state, Terminal 3 should measure low and terminal 1 should measure +10V.</li> <li>2) Check Wire #0088 from -C209-3_PCP to Platform Bosch ECU pin 39/58.</li> <li>3) Check Wire #0089 from -C209-1_PCP to Platform Bosch ECU pin 43/96.</li> <li>4) Check Wire #1089 from -C209-2_PCP to Din Rail Terminal - S11-4_PCP (10V Rail).</li> <li>4) Check Wire #1090 from -C209-2_PCP to -SW210_PCP. Check for damage or shorts.</li> <li>5) Check the harness connectors and the Base Bosch ECU connector for bent pins, stray wires or any damage that may cause a short to Earth or chassis.</li> <li>6) Check the harness connectors and Base Bosch ECU connector for any water ingress or condensation.</li> </ol>



## 7.1.299 B1696-13

<b>Error Code:</b>	<b>B1696-13</b>
<b>ECU</b>	Platform ECU
<b>Description</b> :	Electric pump button 1 & 2 Open Circuit

<b>Component :</b>	Electric Pump
<b>Vehicle reaction:</b>	Ignore the input Platform override / platform aux not allowed
<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 Electric Pump Switch -SW209_PCP. Terminal 2 (input) should measure +10V. In an unpressed state, Terminal 3 should measure +10V and Terminal 1 should measure low. In a pressed state, Terminal 3 should measure low and terminal 1 should measure +10V. 2) Check Wire #0088 from -C209-3_PCP to Platform Bosch ECU pin 39/58. 3) Check Wire #0089 from -C209-1_PCP to Platform Bosch ECU pin 43/96. 4) Check Wire #1089 from -C209-2_PCP to Din Rail Terminal - S11-4_PCP (10V Rail). 4) Check Wire #1090 from -C209-2_PCP to -SW210_PCP. Check for damage or shorts. 5) Check the harness connectors and the Base Bosch ECU connector for bent pins, stray wires or any damage that may cause a short to Earth or chassis. 6) Check the harness connectors and Base Bosch ECU connector for any water ingress or condensation.



### 7.1.300 B1697-92

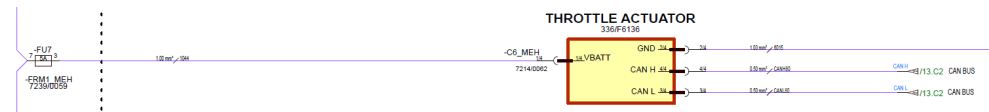
<b>Error Code:</b>	<b>B1697-92</b>
<b>ECU</b>	Platform ECU

<b>Description</b> :	Electric pump button 1 & 2 Both activated (10-12V)
<b>Component</b> :	Electric Pump
<b>Vehicle reaction:</b>	Ignore the input Platform override / platform aux not allowed
<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 Electric Pump Switch -SW209_PCP. Terminal 2 (input) should measure +10V. In an unpressed state, Terminal 3 should measure +10V and Terminal 1 should measure low. In a pressed state, Terminal 3 should measure low and terminal 1 should measure +10V.</li> <li>2) Check Wire #0088 from -C209-3_PCP to Platform Bosch ECU pin 39/58.</li> <li>3) Check Wire #0089 from -C209-1_PCP to Platform Bosch ECU pin 43/96.</li> <li>4) Check Wire #1089 from -C209-2_PCP to Din Rail Terminal - S11-4_PCP (10V Rail).</li> <li>4) Check Wire #1090 from -C209-2_PCP to -SW210_PCP. Check for damage or shorts.</li> <li>5) Check the harness connectors and the Base Bosch ECU connector for bent pins, stray wires or any damage that may cause a short to Earth or chassis.</li> <li>6) Check the harness connectors and Base Bosch ECU connector for any water ingress or condensation.</li> </ol>



## 7.1.301 U1289-92

<b>Error Code:</b>	<b>U1289-92 (Only Applicable on T65D Tier3 Machine)</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	Throttle Actuator CAN Communication fault: CAN Command never received CAN Timeout Invalid target position CAN Bus off
<b>Component</b> :	Throttle Actuator
<b>Vehicle reaction:</b>	Detect failure mode -Engine Starting Issue
<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>2) Check Throttle Actuator Connector C6_MEH and Pin1/4, 2/4, 3/4, 4/4 for bent or damage.</li> <li>3) Check Ground wire #6015 for any cut, pinching or damage or short Circuit.</li> <li>4) Check 5A fuse</li> <li>5) Check voltage on wire #1044</li> <li>6) Check CAN High wire CANH80 and CAN Low wire CANL80</li> <li>7) Check the calibration of the component.</li> <li>8) Replace the Throttle Actuator if faulty.</li> </ol>



## 7.1.302 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>	<ul style="list-style-type: none"> <li>- Recipient transmits DM1 with SPN field = PGN of missing CAN message and FMI = 9</li> <li>- Recipient resets RC (rolling counter) to 0</li> <li>- Recipient disables all outputs</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) Incorrect software or misconfigured 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,</li> </ol>

	<p>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>
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### 7.1.303 U1294-56

<b>Error Code:</b>	<b>U1294-56</b>
<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>	<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) Incorrect software or misconfigured 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>	<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>
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7.1.304 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>	<ul style="list-style-type: none"> <li>- Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</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>	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 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</p>

	<p>inserted.</p> <p>5) Ensure all interconnects and device connectors have no water ingress issues.</p>
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### 7.1.305 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>	<ul style="list-style-type: none"> <li>- Recipient transmits DM1 with SPN field = PGN of missing CAN message and FMI = 9</li> <li>- Recipient resets RC (rolling counter) to 0</li> <li>- Recipient disables all outputs</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 unprogrammed 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</li> </ol>

	<p>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.</p> <p>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>
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### 7.1.306 U1297-56

<b>Error Code:</b>	<b>U1297-56</b>
<b>ECU</b>	Platform 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

	<ul style="list-style-type: none"> <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>
<p><b>Possible Cause:</b></p>	<ol style="list-style-type: none"> <li>1) Mismatched or unprogrammed 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>



## 7.1.307 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>	<ul style="list-style-type: none"> <li>- Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</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>	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 resistance of the CAN bus on each connector, the one that reads low will be the section</p>

	<p>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>
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### 7.1.308 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> :	ECU
<b>Vehicle reaction:</b>	<ul style="list-style-type: none"> <li>- Recipient transmits DM1 with SPN field = PGN of missing CAN message and FMI = 1</li> <li>- Recipient resets RC (rolling counter) to 0</li> <li>- Recipient disables all outputs</li> <li>- Transmitter re-transmits CAN message requested by Recipient with RC set to 0.</li> </ul>
<b>Possible Cause:</b>	<ul style="list-style-type: none"> <li>1) Mismatched or unprogrammed VIN number in either Bosch ECU</li> <li>2) Unterminated CAN network</li> </ul>

	<ul style="list-style-type: none"> <li>3) Damaged CAN network</li> <li>4) Poorly connected CAN network</li> <li>5) Water Ingress</li> </ul>
<p><b>Service Action:</b></p>	<ul 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> </ul>



## 7.1.309 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>	<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 unprogrammed 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</li> </ol>

	<p>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>
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### 7.1.310 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>	<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 unprogrammed VIN number in either Bosch ECU</li> <li>2) Unterminated CAN network</li> <li>3) Damaged CAN network</li> </ol>

	<p>4) Poorly connected CAN network</p> <p>5) Water Ingress</p>
<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 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>



7.1.311 U1325-56

<b>Error Code:</b>	<b>U1325-56</b>
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<b>ECU</b>	Base ECU
<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 unprogrammed 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> </ol>

	<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>
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### 7.1.312 U1326-41

<b>Error Code:</b>	<b>U1326-41</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN CHECK SUM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Block All Function</p> <ul style="list-style-type: none"> <li>- Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</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>	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</p>

	<p>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>
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### 7.1.313 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>Block All Function</p> <ul style="list-style-type: none"> <li>- Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</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>	<p>1) Mismatch between transmitting and receiving message between ECU's</p>
<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 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>



## 7.1.314 U1328-41

<b>Error Code:</b>	<b>U1328-41</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	CAN CHECK UM ERROR
<b>Component</b> :	ECU
<b>Vehicle reaction:</b>	<p>Block All Function</p> <ul style="list-style-type: none"> <li>- Recipient ignores received CAN message and transmits DM1 with SPN field = PGN of CAN message and FMI = 2</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>	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 resistance of the CAN bus on each connector, the one that reads low will be the section</p>

	<p>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>
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**JCB**

7.1.315 U1683-56

<b>Error Code:</b>	<b>U1683-56</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT ANGLE SENSOR Channel 1 communication fault
<b>Component</b> :	Tilt Angle Sensor
<b>Vehicle reaction:</b>	<p>Raise Mode:</p> <ol style="list-style-type: none"> <li>1. Prevent Drive &amp; Steer</li> <li>2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew)</li> </ol> <p>Sowed Mode:</p> <ol style="list-style-type: none"> <li>1. Allow travel</li> <li>2. Allow all functions</li> </ol>
<b>Possible Cause:</b>	<ol style="list-style-type: none"> <li>1) Tilt Sensor not connected correctly</li> <li>2) poor wiring connections at tilt sensor</li> </ol>

	3) Faulty Tilt Sensor
<b>Service Action:</b>	<ol style="list-style-type: none"> <li>1) Check connections to tilt sensor and Connector C29_TH and C31_TH</li> <li>2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic</li> <li>3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH</li> <li>4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP</li> <li>5) Check -ve Blue wire Turntable Ground GND02</li> <li>6) Check CAN H Black wire for any cut, damage or pinching</li> <li>7) Check CAN L Gray wire for any cut, damage or pinching</li> <li>8) Recalibrate Til Sensor</li> <li>9) Replace the tilt sensor if damage or Faulty</li> </ol>



7.1.316 U1684-56

<b>Error Code:</b>	<b>U1684-56</b>
<b>ECU</b>	Base ECU
<b>Description</b> :	TILT ANGLE SENSOR Channel 2 communication fault
<b>Component</b> :	Tilt Angle Sensor

<b>Vehicle reaction:</b>	Raise Mode: 1. Prevent Drive & Steer 2. Prevent raise functions ( Main boom / Artic Boom / Main tele boom / Slew) Sowed Mode: 1. Allow travel 2. Allow all functions
<b>Possible Cause:</b>	1) Tilt Sensor not connected correctly 2) poor wiring connections at tilt sensor 3) Faulty Tilt Sensor
<b>Service Action:</b>	1) Check connections to tilt sensor and Connector C29_TH and C31_TH 2) Check the voltage at Pin 2/5 ( should read 12V) if no voltage need to investigate as per schemetic 3) Check wiring at tilt sensor connector Connector C29_TH and C31_TH 4) Check +ve white wire FROM PLATFORM IGN RELAY 2 FUSE FU04_TCP 5) Check -ve Blue wire Turntable Ground GND02 6) Check CAN H Black wire for any cut, damage or pinching 7) Check CAN L Gray wire for any cut, damage or pinching 8) Recalibrate Til Sensor 9) Replace the tilt sensor if damage or Faulty

U1683-56



## 7.2 Diagnostic Fault Tables

List of [Diagnostic Fault Tables](#) <sup>714</sup>

Number	Components
1	<a href="#">General Sensor Fault Table</a> <sup>714</sup>

### 7.2.1 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 Techweb Help desk Call.

# Support File

## 8 Support File

List of [Support File](#) <sup>384</sup>

Number	Components
1	<a href="#">Generic CAN Troubleshooting</a> <sup>716</sup>
2	<a href="#">Relay Testing</a> <sup>716</sup>
3	<a href="#">Electrical Connection</a> <sup>718</sup>
4	<a href="#">General Circuit Troubleshooting</a> <sup>720</sup>

### 8.1 Generic CAN Troubleshooting

#### Generic CAN troubleshooting

The CAN H wire is solid yellow.  
 The CAN L wire is solid green.  
 The combined voltage of both wires should be 5 volts.  
 CAN H will be closer to 3 volts.  
 CAN L will be closer to 2 volts.

**Typical CAN Network**  
 Keep in mind that many machines have more than one CAN network. Some machines have separate diagnostic plugs for connecting to each CAN.

A convenient place to check resistance is on pins C and D of the DLA port.

The network has two 120ohm resistors. If you measure resistance between the CANH (CAN High) and CANL (CAN Low) wires, you should get approximately 60ohms. Make sure you're checking resistance with the key off.  
 If you unplug one resistor, you should read approximately 120ohms on the CAN.  
 If you're getting 40ohms of resistance on the CAN with everything plugged in, someone has probably plugged an extra resistor into the circuit.

If the resistance on the CAN is far out of spec and/or the ECUs are not showing up on the CAN, try unplugging each ECU one at a time. A faulty ECU can cause interference on the CAN.

The CAN H and CAN L wires should have continuity from each component (ECUs, resistors, and the DLA port) to every other component on the CAN.

The CANSHD (CAN Shield) wire should have continuity to ground. It should not have continuity to the CANH and CANL wires. If it does, the CAN harness is probably damaged.

727/00002  
CAN terminating resistor

### 8.2 Relay Testing

This is a basic guide on how to test relays.

PLEASE keep in mind that not every relay will operate like the example below. This example is just one type commonly used in JCB machines.

Always check the machine schematic to verify that you are testing the correct wires associated with the relay. Also, please be aware that the orientation of the pins may be different than the example shown.

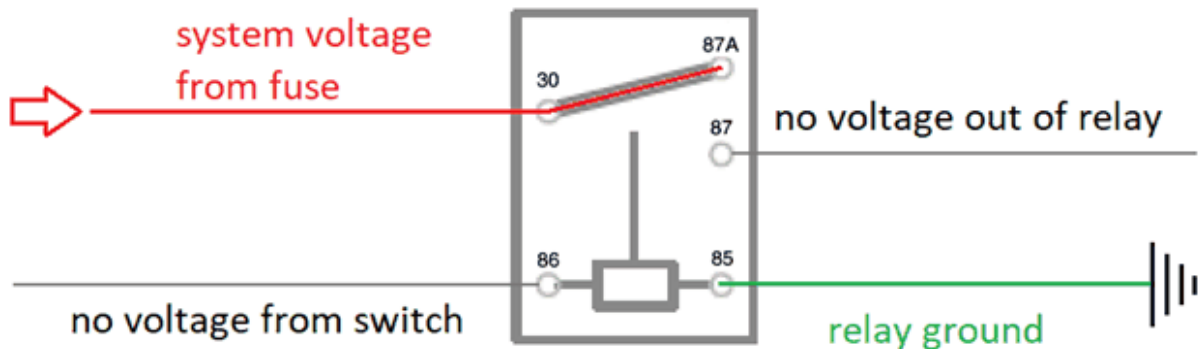
## Relay Operation

Relays control one electrical circuit by opening and closing contacts in another circuit. A relay uses an electromagnet to move a contact inside the relay. This contact sends voltage to a component (the contact can also complete a ground).

This is a typical relay when de-energized.

Voltage is waiting at the common feed but is not going through the relay because the contact is open.

Your voltage and ground should read like this:

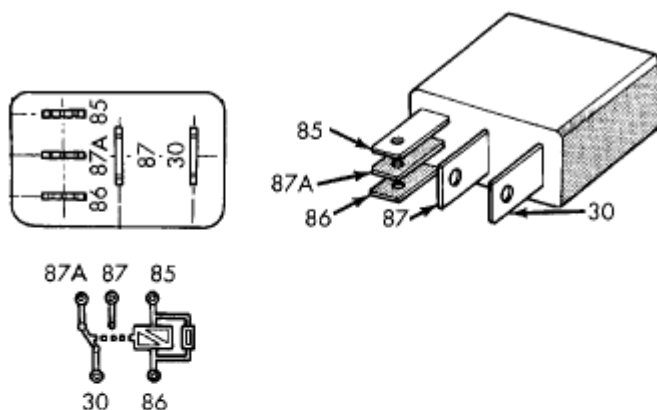


This is a typical relay when energized.

When system voltage (12v or 24v) is applied to the coil, the electromagnet energizes and pulls the contact from the open position to the closed position.

This allows the voltage from the common feed to go through the relay and power up whatever component the relay controls.

Relay terminal ID for the example above:



TERMINAL LEGEND	
NUMBER	IDENTIFICATION
30	COMMON FEED
85	COIL GROUND
86	COIL BATTERY
87	NORMALLY OPEN
87A	NORMALLY CLOSED

What you're looking for is battery voltage and ground at the appropriate pins. You should see a difference between an energized and de-energized relay.

Instead of blindly swapping relays as a test, use the electrical schematics to verify that you're on the correct relay. The schematics will provide wire numbers so you can accurately test for voltage and a ground with your multimeter.

Commercial relay testers don't always work.

Other things to look for are:

Signs of moisture/ corrosion on relay and relay box

Correct voltage relay being used (12v relay vs. 24v relay)

Correct amperage relay being used (relay voltage and amp rating should be on the relay itself)

Make sure the relay has the correct number of pins – for example: 4 pin relay vs 5 pin relay

## 8.3 Electrical Connection

### Integrity

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. Possibly caused by contact with turbocharger or exhaust systems.

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 exhausts or turbochargers. Uncouple the connectors and inspect the pins for damage such as corroded, bent or broken pins. **DO NOT TOUCH** the connector pins on the engine 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, Diesel Exhaust Fluid (DEF) or hydraulic fluid. If necessary clean the connector pins and receptacle using a cotton bud or similar. **DO NOT TOUCH** the connector pins on the engine electronic control unit (ECU). 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 a instance of contamination is found.

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

## 8.4 General Circuit Troubleshooting

### Integrity

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, or remove the battery isolator key. See the applicable

machine documentation for the correct procedure.

<b>1</b>	<b>WIRING HARNESS</b> - Visually inspect the interconnecting wires and connectors for signs of damage. Check the following:
<b>a</b>	<b>Chaffed wires</b> – intermittent short circuits.
<b>b</b>	<b>Cut wires</b> – open circuits. Possibly caused by wires becoming trapped in machine mechanical mechanisms.
<b>c</b>	<b>Broken wires</b> – open circuits. Possibly caused by incorrect routing or tying of wires allowing insufficient length for machine movements.
<b>d</b>	<b>Melted wires</b> – intermittent short circuits. Possibly caused by contact with turbocharger or exhaust system.
<b>2</b>	<b>CONNECTORS</b> - Visually inspect the applicable connectors. Check the following:
<b>a</b>	<b>Coupling</b> - intermittent open circuits. Ensure that connectors are coupled correctly with the locking mechanisms properly latched.
<b>b</b>	<b>Damage</b> – 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 exhausts or turbochargers. Uncouple the connectors and inspect the pins for damage such as corroded, bent or broken pins. DO NOT TOUCH the connector pins on the engine electronic control unit (ECU). Broken connectors must be renewed.
<b>c</b>	<b>Contamination</b> – 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. DO NOT TOUCH the connector pins on the engine electronic control unit (ECU). 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.
<b>3</b>	<b>Earth Points</b> – Locate the electrical earth points on the engine and machine. Make sure that the wire terminals are correctly fitted. Make sure that the earth point is free from contamination and corrosion.

<b>4</b>	<b>Relays</b> - If a relay is an active part of a circuit check the following:
<b>a</b>	<b>Welded Contacts</b> - Relay contacts can be "Welded" together so they are permanently closed. This can be caused by Overload, Inrush current larger than rating, Switching Frequency in excess of the permitted operating frequency and usage in a location subject to continuous vibration.

### Use of Multimeter

In order to obtain the maximum benefit from the fault finding information contained in the Electrical Section, it is important that the technician fully understands the approach to fault finding and the use of the recommended test equipment, in this case a FLUKE 85 or AVO 2003 digital multimeter, or a moving pointer analogue multimeter. The approach is based on a fault finding check list. In tracing the fault from the symptoms displayed you will be directed to make measurements using a multimeter. These instructions are intended to cover the use of the recommended meters.

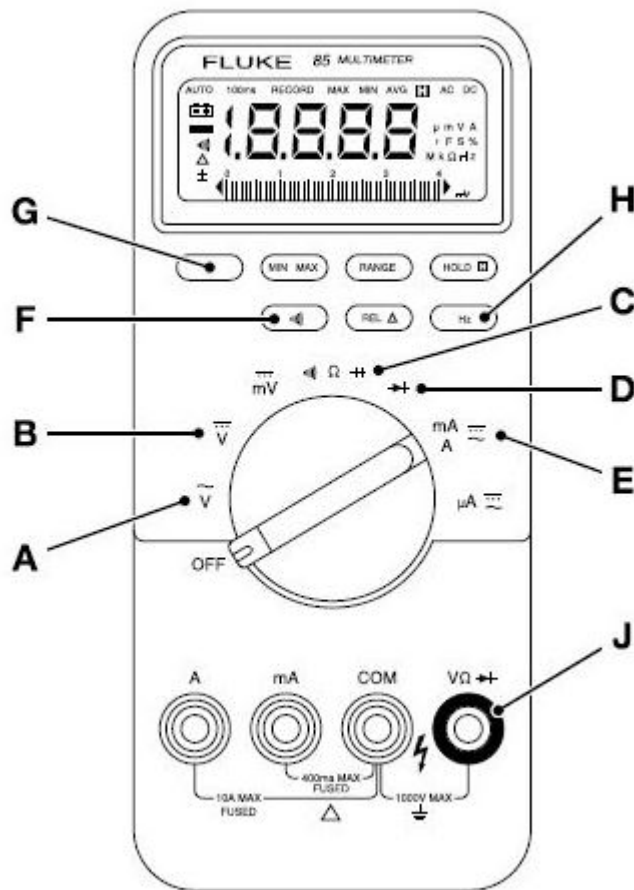
1. Make sure that the test leads are plugged into the correct sockets. The black test lead should be plugged into the black socket (sometimes, this socket is also marked by a-, or E or marked as COMMON or COM). The red test lead should be plugged into the red socket marked with +, V or ?
2. When you make a measurement, make sure that the test probes have a good clean contact with bare metal, free from grease, dirt, and corrosion as these can cause a false reading.
3. When you measure a voltage, make sure that the correct range is selected, that it is set to the selector value equal to or greater than that you are about to measure. e.g. If asked to measure 12 Volts, set the selector to the 12V range. If there is no 12V range, set the selector to the next range higher, 20V for instance. If the meter is set to a range that is too low, it may be damaged. e.g. setting to the 2V range to measure 12V.

### Measuring DC Voltage

1. Select the correct range on the multimeter

On the digital multimeter, turn the switch to position B.

Figure 1. Fluke 85 Multimeter



### Measuring Resistance

1. Make sure that there is no power to the part of the circuit you are about to measure.
2. Connect one probe at one end of the component or wire to be checked and the other probe at the other end. It does not matter which way round the two probes are placed.
3. Select the correct range on the multimeter.
  - 3.1 on the digital multimeter. Turn the switch to position C and check that the W sign at the right hand side of the display window is on. If the F sign is on instead, press the blue button G to change the reading to ?. Touch the meter lead probes together and press the REL3 key on the meter to eliminate the lead resistance from the meter reading.

### Measuring Continuity

1. Make sure that there is no power to the part of the circuit you are checking for continuity.
2. Connect one probe to one end of the component or wire to be checked and the other probe to the other end. It does not matter which way round the two probes are placed.
3. Select the correct range on the multimeter.
  - 3.1. On the digital multimeter, turn the switch to position C and check that the beeper symbol appears at the left hand side of the display window. If the F sign is on instead, press the button labeled F. If there is continuity in the circuit, the beeper will sound. If there is no continuity (open circuit), the beeper will not sound.

### Testing a Diode

A diode wire is a diode with a male connector fitted on one end and a female connector fitted on the other end. The diode is sealed in the heatshrink sleeving. To test a Diode.

1. On the digital multimeter:
  - 1.1. Turn the switch position to D.
  - 1.2. Press the HOLD button and check that the H sign appears at the top right hand side of the display window.
  - 1.3. Connect the black probe to the end of the diode with a band or to the male connector of the diode wire. Connect the red probe to the other end of the diode wire. If the beeper does not sound the diode or diode wire faulty.
  - 1.4. Connect the red probe to the end of the diode marked with a band, or to the male connector of the diode wire, the black probe should be connected to the other end of the diode wire. If the beeper sound or the meter does not read O.L., the diode or diode wire is faulty.
  - 1.5. Press the HOLD button and check that the H sign disappears from the right hand side of the display window.

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## - C -

Components 18

## - E -

Engine Fault Codes 18

## - L -

Livelink Fault Codes 18

## - M -

Machine ECU Fault Codes 18

## - S -

Support Files 18