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Machine DTCs

This section contains a list of trouble codes that can be produced by the Machine.

Fault Codes - Numerical List

Click on the error link to devise specific information and fault finding procedure

Display	Description	Lift Reaction
Failure to Start (No DTC)		
01	System Initialization Fault	Disables All Motion
02	System Communication Fault	Disables All Motion
03	Invalid Option Setting Fault	Disables All Motion
04	Load Sensing Data Fault	Warning Only
12	Chassis Up or Down Switch ON at Power-up Fault	Disable Chassis Control
18	Pothole Guard Fault	Disable Lifting and Driving
31	Pressure Sensor 1 Fault	Disables All Motion
32	Angle Sensor Fault	Disables All Motion
33	Sleep Mode to Prevent Battery Brain	Lift Slow to Elevated Speed
36	Limp Mode	Lift Slow to Elevated Speed
42	Platform Left Turn Switch ON at Power-up Message	Diagnostic Message Only
43	Platform Right Turn Switch ON at Power-up Message	Diagnostic Message Only
46	Platform Joystick Enable Switch ON at Power-up Message	Disable Platform Control
47	Platform Joystick Not in Neutral at Power-up Message	Diagnostic Message Only
52	Drive Forward Coil Fault	Disable Lifting and Driving
53	Drive Reverse Coil Fault	Disable Lifting and Driving
54	Lift Up Coil Fault	Disable Lifting and Driving
55	Lift Down Coil Fault	Disable Lifting and Driving
56	Steer Right Coil Fault	Disable Lifting and Driving
57	Steer Left Coil Fault	Disable Lifting and Driving
58	General Brake Coil Fault	Disable Lifting and Driving
59	Parallel Coil Fault	Disable Lifting and Driving
60	Motor Controller Wiring Broken	Disable Lifting and Driving
61	Internal Memory Fault on Motor Controller	Disable Lifting and Driving
62	Internal Short Fault on Motor Controller (MOSFET)	Disable Lifting and Driving
64	Machine Wiring Harness Fault	Disable Lifting and Driving
68	Battery Low Voltage Fault at Motor Controller	Disables All Motion
69	Motor Controller Throttle Fault	Disable Lifting and Driving
70	Main Contactor Coil Short	Disable Lifting and Driving
71	Main Contactor Weld Fault	Disable Lifting and Driving
72	Motor Controller Main Contactor Driver Fault	Disable Lifting and Driving
77	Motor Controller Over Temperature Cut-Off	Disable Lifting and Driving
80	Over 80% Load Warning	Warning Only

85	Pressure Sensor 2 Fault	Disables All Motion
86	Down Limit Switch Fault	Disables All Motion
87	Up Limit Switch Fault	Warning Only
90	Over 90% Load Warning	Warning Only
99	Over 99% Load Warning	Warning Only
OL	Overloaded Platform Fault	Disables All Motion
LL	Machine Tilted Beyond Safe Limits Fault	Disable Lifting and Driving
LF	Up/Down Control Fault	Warning Only

This topic last edited on 08/08/2017

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Fail to Start

Machine > Errors and DTCs > Machine DTCs > Fail to Start

Description

If the machine fails to start then no error codes will be displayed

Service Procedure

1. Batteries should be fully charged
2. Battery isolator should be connected
3. Machine key switch should be in ON position (select platform or base controls)
4. Cable to PECU should be fully connected (check connection in hydraulic compartment and at platform)
5. Primary fuse should be connected
6. DC contactor should be connected
7. Emergency stop(s) should be pulled out (check platform and base controls)
8. Charger should not be connected to external power supply & plugs should be connected at the charger
9. Harness should be complete, connected and without damage.

This topic last edited on 08/08/2017

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01

Machine > Errors and DTCs > Machine DTCs > 01

Description

System initialization fault

Information

Effect	Disables all motion
Possible Cause	1. Faulty connection 2. MECU Failure
Notes	01 is briefly displayed during start up procedure, this is normal.

Service Procedure

1. Check the harness is properly connected to the MECU & PECU.
2. Restart the machine.
3. If the fault persists, replace the MECU. Refer to the Service Manual.

This topic last edited on 08/08/2017

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02

Machine > Errors and DTCs > Machine DTCs > 02

Description

System communication fault

Information

Effect	Disables All Motion
Possible Cause	1. Faulty Connection 2. PECU Failure 3. CAN Cable Failure

Service Procedure

1. Check the harness is properly connected to the MECU & PECU.
2. Re-start the machine (cycle off-on)
3. Check the CAN cable continuity is correct. If not, replace the cable.
4. If the fault persists, replace the PECU. Refer to the Service Manual.
5. If the fault persists, replace the MECU. Refer to the Service Manual.

This topic last edited on 08/08/2017

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03

Machine > Errors and DTCs > Machine DTCs > 03

Description

Invalid Option Setting Fault

Information

Effect	Disables All Motion
Possible Cause	MECU Failure

Service Procedure

1. Restart the machine (cycle off-on)
2. If the fault persists, replace the MECU. Refer to the Service Manual.

This topic last edited on 31/07/2019

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04

Machine > Errors and DTCs > Machine DTCs > 04

Description

Load Sensing Data Fault

Information

Effect	Warning Only
Possible Cause	MECU Failure

Service Procedure

1. Check the overload calibration curves saved in the MECU at calibration. Refer to the Service Manual.
2. Re-calibrate the no-load and full-load curves. Refer to the Service Manual.
3. If the fault persists, replace the MECU. Refer to the Service Manual.

This topic last edited on 31/07/2019

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12

Machine > Errors and DTCs > Machine DTCs > 12

Description

Chassis Up or Down or Enable Switch ON at Power-up Fault

Information

Effect	Disable Chassis Control
Possible Cause	1. Chassis Up/Down/Enable Switch Pressed During Start-up 2. Chassis Up/Down/Enable Switch Failure (Stuck)
Note	When DTC 12 occurs this takes precedence over DTC 02

Service Procedure

1. Check all the controls are in the neutral position and restart the machine.
2. Ensure that Up, Down or Enable switch is not pressed during Start-up the ignition is turned on
3. If this does not clear the fault replace the base controller

1	Up Switch
2	Down Switch
3	Enable Switch

This topic last edited on 22/10/2019

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18

Description

Pothole Guard Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Pothole protection plate not correctly stowed or deployed; blocked or failed mechanical component in pothole protection system; actuator rods, linkage, gas strut, plate 2. Pothole protection switch failure; switch dis-mounted from chassis, switch unplugged, switch stuck 3. Down limit switch failure 4. Scissor angle sensor failure; angle sensor falsely shows machine fully stowed or raised above down limit switch, angle sensor out of bounds 5. Pothole protection switch calibration error / calibration not completed 6. Overload (full-load) curve calibration error / calibration not completed
Note	To raise platform aboe the error height go to Set Options and disable pothole guard protection.

Service Procedure

1. Check mechanical linkages for blockage or damage. Replace any failed components
2. Connect laptop to MECU, and run the “diagnostics” tool on ServiceMaster.
   a. Raise machine from ground position until fault appears. Compare diagnostics signals with inputs expected. See Figures 1 - 6.
3. Adjust the limit switch positions. Refer to the Service Manual.
   a. If the pothole switches do not change signal when the plate is deployed, adjust the pothole switch positions (mounted on 2 slotted holes). Or replace the pothole switch if the probe position doesn’t cause the signal to change. Adjust the switch when the platform is fully stowed – switch should be pressed when stowed.
   b. If the down limit switch changes before the pothole switch changes, adjust the down limit switch position by rotating the screw on the cam tab. Or replace the down limit switch if the probe position doesn’t cause the signal to change. Adjust the down limit switch with the platform raised and secured by the safety strut.

4. If the angle sensor signal is not changing as the platform raises, replace the angle sensor.
5. Calibrate the angle sensor after replacement. Refer Configure the Angle sensor guidelines in section 10 of Electric Scissor Calibration.
6. Run the No load Calibration procedure
7. Run the full-load calibration procedure for the MECU to identify the polarity of the angle sensor. If this is not correctly completed, the lowest position angles could be in error.

Figure 1. Stowed Pothole Plate.

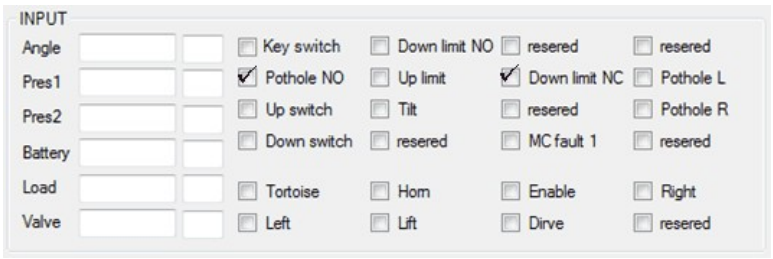

Figure 2. Expected Diagnostic Readings from Figure 1 test.

Figure 3. Pothole Plate Deployed.

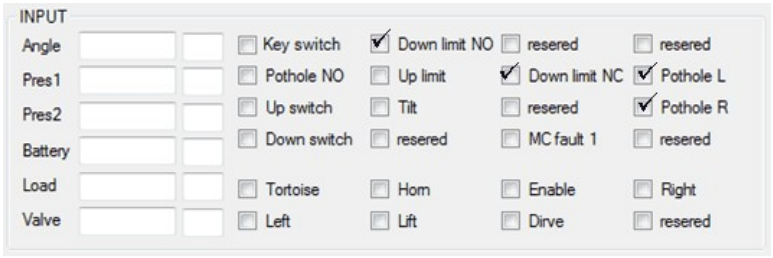

Figure 4. Expected Diagnostic Readings from Figure 3 test.

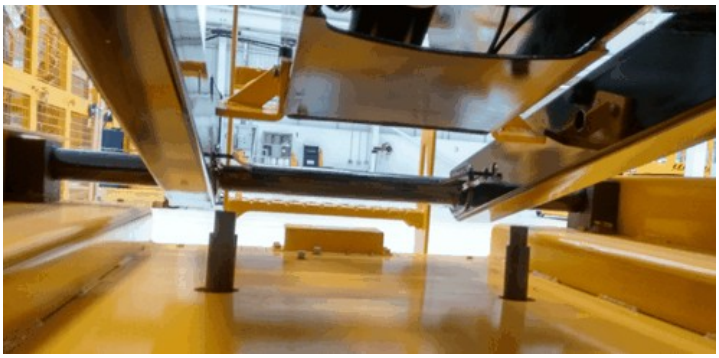

Figure 5. Pothole Protection Actuator Rods.

Figure 6. Expected Diagnostic Reading form Figure 5 test.

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31

Description

Pressure Sensor 1 Fault

Information

Effect	Disables All Motion
Possible Cause	1. Pressure sensor 1 out of range (less than 0.5v or more than 4.5v); pressure sensor loose, disconnected, or faulty

Service Procedure

1. Connect laptop to MECU, and run the “diagnostics” tool on ServiceMaster.
   a. Raise machine from ground position until fault appears. Compare diagnostics signals with inputs expected (see no-load and full-load calibration curves).
   b. To raise the machine wiht fault exiting, go to Set Options and disable the Load Sensing Option
2. If pressure sensor 1 is out of range;
   a. If the signal from pressure sensor 2 is < 0.3v, check the connection by pushing the cable into the pressure sensor, or by connecting the pressure sensor 2 cable to pressure sensor 1. If the connection is faulty, repair/ replace the harness. If the pressure sensor is faulty, replace the pressure sensor.
   b. If the signal from pressure sensor 1 is > 4.6, check the connection by connecting pressure sensor 2 with the cable to pressure sensor 1. If the connection is faulty, repair/ replace the harness. If the pressure sensor is faulty, replace the pressure sensor.
3. Check the load is correct and repeat the calibration a second time. If the fault persists after the second calibration, replace pressure sensor 1.

Figure 1. Pressure sensor position.

Figure 2. Pressure sensor signals.

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32

Machine > Errors and DTCs > Machine DTCs > 32

Description

Angle Sensor Fault

Information

Effect	Disables All Motion
Possible Cause	1. Angle sensor out of range (less than 0.5v or more than 4.5v); angle sensor loose, disconnected, or faulty 2. Angle sensor signal jumps by more than 0.25v in one step

Service Procedure

1. Connect laptop to MECU, and run the “diagnostics” tool on ServiceMaster.
   a. Raise machine from ground position until fault appears. Compare diagnostics signals with expected inputs (low voltage = low height, high voltage = high height).
2. If the angle sensor is out of range;

a. If the signal from the sensor is < 0.5v, check the connection by pushing the cable into the angle sensor, or by connecting the angle sensor cable to pressure sensor 1. If the connection is faulty, replace the harness. If the angle sensor is faulty, replace the angle sensor.

b. If the signal from the sensor is > 4.5v, check the connection by connecting the angle sensor with the cable to pressure sensor 1. If the connection is faulty, repair/ replace the harness. If the angle sensor is faulty, replace the angle sensor.

3. Check the load is correct and repeat the calibration a second time. If the fault persists after the second calibration, replace the angle sensor.

Figure 1. Angle sensor position

Figure 2. Angle sensor position

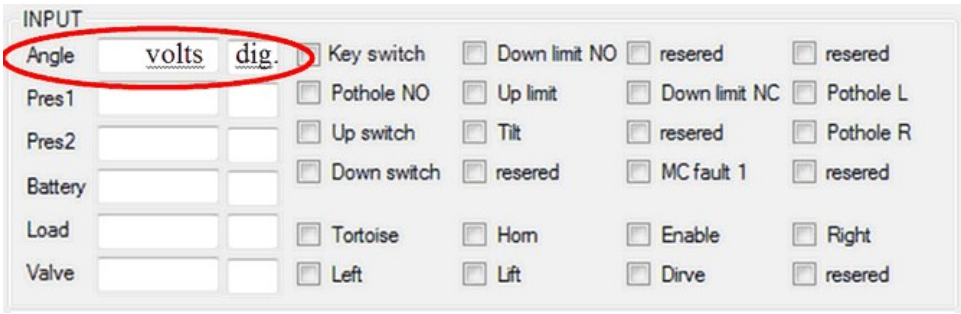

Figure 3. Diagnostic output of the angle sensor.

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33

Machine > Errors and DTCs > Machine DTCs > 33

Description

Sleep Mode to Prevent Battery Drain

Information

Effect	The Machine Goes to Sleep and 33 Error Shows
Possible Cause	1. The machine has been left on with no movement for a period of time, The time period and sleep mode can be altered, see service manual for activating and altering time period.
Note	This function may be deactivated by default

Service Procedure

1. Press the 'Lift' and 'Drive' buttons on the platform controller to awake the machine.

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36

Machine > Errors and DTCs > Machine DTCs > 36

Description

Limp Mode

Information

Effect	Lift Slow to Elevated Speed
Possible Cause	Machine battery is very low, so to conserve battery power, the machine automatically operates at reduced speed, with a slow warning beep.
Note	Leaving the machine turned off for 30 minutes will allow the batteries to recover to give a short burst period to g

Service Procedure

1. Fully charge the battery

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42

Machine > Errors and DTCs > Machine DTCs > 42

Service Procedure

Description

Platform Left Turn Switch ON at Power-up Message

Information

Effect	Diagnostic Message Only
Possible Cause	1. Joystick left switch pressed during start-up 2. Joystick left switch failure (stuck on)

Service Procedure

1. Check all controls are in neutral position and re-start the machine (cycle off-on)
2. Disconnect the joystick connections inside the platform controller and re-start the machine (cycle off-on). If this clears the fault, replace the joystick
3. Check the cable from the joystick to the PECU for short circuit to ON. Replace the cable if the signal is incorrect

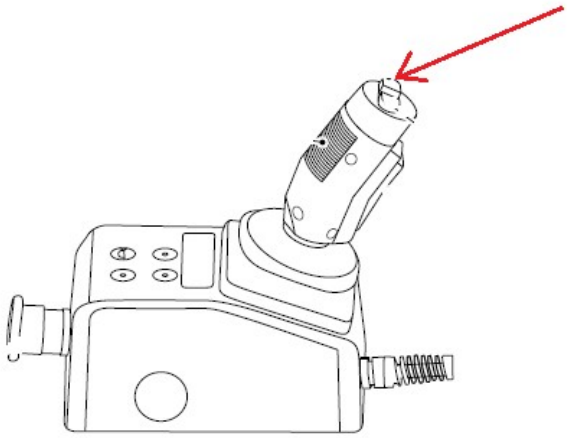

Figure 1 - Showing the location of Joystick left switch

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43

Machine > Errors and DTCs > Machine DTCs > 43

Description

Platform Right Turn Switch ON at Power-up Message

Information

Effect	Diagnostic Message Only
Possible Cause	1. Joystick right switch pressed during start-up 2. Joystick right switch failure (stuck on)

Service Procedure

1. Check all controls are in neutral position and re-start the machine (cycle off-on)
2. Disconnect the joystick inside the platform controller and re-start the machine (cycle off-on). If this clears the fault, replace the joystick
3. Check the cable from the joystick to the PECU for short circuit to ON. Replace the cable if the signal is incorrect

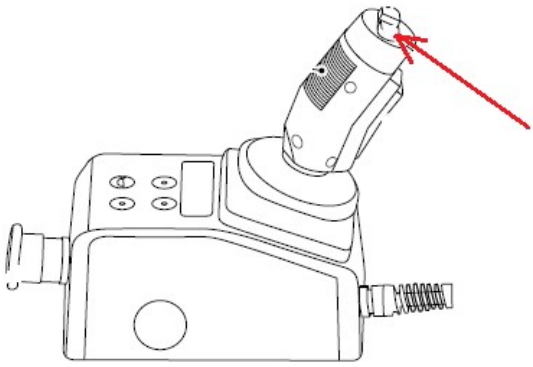

Figure 1. Showing the location of Joystick right switch.

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46

Machine > Errors and DTCs > Machine DTCs > 46

Description

Platform Joystick Enable Switch ON at Power-up Message

Information

Effect	Disable Platform Control
Possible Cause	1. Joystick enable trigger pressed during start-up 2. Joystick enable trigger failure (stuck on)

Service Procedure

1. Check all controls are in neutral position and re-start the machine (cycle off-on)
2. Disconnect the joystick inside the platform controller and re-start the machine (cycle off-on). If this clears the fault, replace the joystick
3. Check the cable from the joystick to the PECU for short circuit to ON. Repair/ replace the cable if the signal is incorrect

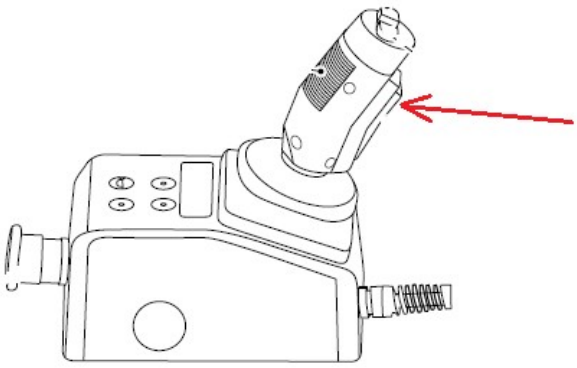

Figure 1. Showing the Joystick enable trigger.

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47

Machine > Errors and DTCs > Machine DTCs > 47

Description

Platform Joystick Not in Neutral at Power-up Message

Information

Effect	Diagnostic Message Only
Possible Cause	1. Joystick pressed forward or backward during start-up 2. Joystick failure (stuck in forward or backward command)

Service Procedure

1. Check all controls are in neutral position and re-start the machine (cycle off-on)
2. Disconnect the joystick inside the platform controller and re-start the machine (cycle off-on). If this clears the fault, replace the joystick
3. Check the cable from the joystick to the PECU for short circuit to ON. Repair/replace the cable if the signal is incorrect

This topic last edited on 31/07/2019

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52

Machine > Errors and DTCs > Machine DTCs > 52

Description

Drive Forward Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Drive forward solenoid open circuit 2. Drive forward solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

This topic last edited on 31/07/2019

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53

Machine > Errors and DTCs > Machine DTCs > 53

Description

Drive Reverse Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Drive reverse solenoid open circuit 2. Drive reverse solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

This topic last edited on 31/07/2019

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54

Machine > Errors and DTCs > Machine DTCs > 54

Description

Lift Up Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Raise solenoid open circuit 2. Raise solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

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55

Machine > Errors and DTCs > Machine DTCs > 55

Description

Lift Down Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Lower solenoid open circuit 2. Lower solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

This topic last edited on 31/07/2019

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56

Machine > Errors and DTCs > Machine DTCs > 56

Description

Steer Right Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Steer right solenoid open circuit 2. Steer right solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

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57

Machine > Errors and DTCs > Machine DTCs > 57

Description

Steer Left Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Steer left solenoid open circuit 2. Steer left solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

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58

Machine > Errors and DTCs > Machine DTCs > 58

Description

General Brake Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Brake release solenoid open circuit 2. Brake release solenoid short circuit (incorrect signal)
Note	Only valid for models: S1530E, S1930E

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

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59

Description

Parallel Coil Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. High speed / low speed solenoid open circuit 2. High speed / low speed solenoid short circuit (incorrect signal)

Service Procedure

1. Check the connection to the solenoid.
2. Connect the solenoid connector to an external solenoid and try the function. If there is a faulty connection, repair/ replace the harness. Otherwise, replace the solenoid.

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60

Description

Motor Controller Wiring Broken

Information

Effect	Disable Lifting and Driving

Possible Cause	Wiring Broken

Service Procedure

1. Check connections to motor controller (4 pin Molex)
2. Repair/ replace the harness, or the motor controller

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61

Machine > Errors and DTCs > Machine DTCs > 61

Description

Internal Memory Fault on Motor Controller

Information

Effect	Disable Lifting and Driving
Possible Cause	EEPROM data lost or damaged

Service Procedure

1. Re-start the machine (cycle off-on).
2. If the fault persists, replace the motor controller

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62

Machine > Errors and DTCs > Machine DTCs > 62

Description

Internal Short Fault on Motor Controller (MOSFET)

Information

Effect	Disable Lifting and Driving
Possible Cause	MOSFET shorted

Service Procedure

1. Re-start the machine (cycle off-on).
2. If the fault persists, replace the motor controller

This topic last edited on 31/07/2019

64

Machine > Errors and DTCs > Machine DTCs > 64

Description

Machine wiring harness fault

Information

Effect	Disable Lifting and Driving
Possible Cause	Motor controller throttle fault exists on startup

Service Procedure

1. Re-start the machine (cycle off-on).
2. If the fault persists, replace the motor controller.

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68

Machine > Errors and DTCs > Machine DTCs > 68

Description

Battery Low Voltage Fault at Motor Controller

Information

Effect	Disables All Motion
Possible Cause	1. Battery requires re-charge 2. Battery failure

Service Procedure

1. Charge batteries to full charge
2. Check wiring is correct with no faults
3. Test batteries, replace if failed

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69

Machine > Errors and DTCs > Machine DTCs > 69

Description

Motor Controller Throttle Fault

Information

Effect	Disables All Motion
Possible Cause	1. Throttle input wire open or shorted 2. Defective throttle 3. Wrong Throttle Type selected

Service Procedure

1. Check connection to throttle input
2. Repair/ replace harness, or motor controller

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70

Machine > Errors and DTCs > Machine DTCs > 70

Description

Main Contactor Coil Short

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Main contactor coil is shorted 2. Internal driver transistor is shorted in motor controller or MECU 3. Diode in coil is broken

Service Procedure

1. Check DC contactor functionality
2. Check connections
3. Replace DC contactor, harness or motor controller

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71

Machine > Errors and DTCs > Machine DTCs > 71

Description

Main Contactor Weld Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Timing issue during contactor operation / diagnostics (rapid stop/ start of the machine may cause this) 2. Main contactor is welded

Service Procedure

1. Restart the machine. If the fault is cleared, continue using the machine.
2. Check battery level. Re-charge if low. Refer to the Service Manual.
3. Check DC contactor functionality
4. Check battery lead connections
5. Replace DC contactor, harness or motor controller Refer to the Service Manual.

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72

Machine > Errors and DTCs > Machine DTCs > 72

Description

Motor Controller Main Contactor Driver Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	Main contactor driver is broken

Service Procedure

1. Replace Motor controller. Refer to the Service Manual.

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77

Machine > Errors and DTCs > Machine DTCs > 77

Description

Motor Controller Over Temperature Cut-Off

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Operation in extreme environment 2. Excessive load on motor controller 3. Thermistor damaged 4. Incorrect mounting of controller to the bracket.

Service Procedure

1. Check battery voltage is within correct limits. Refer to the Service Manual.
2. Check temperature of motor controller and allow to cool
3. Check for loose power cable connections
4. If the fault persists, replace motor controller. Refer to the Service Manual.

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80

Machine > Errors and DTCs > Machine DTCs > 80

Description

Over 80% Load Warning

Information

Effect	Warning Only
Possible Cause	1. Load in platform is more than 80% rated load 2. No load / full load calibration fault

Service Procedure

1. Check load in platform against rated load
2. If load sensing system is worse than +/- 10%, re-calibrate the no-load and full-load curves. Refer to the Service Manual.

This topic last edited on 31/07/2019

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85

Machine > Errors and DTCs > Machine DTCs > 85

Description

Pressure Sensor 2 Fault

Information

Effect	Disables All Motion
Possible Cause	1. Pressure sensor 2 out of range (less than 0.5v or more than 4.5v); pressure sensor loose, disconnected, or faulty 2. Pressure sensor 1 signal is different to Pressure sensor 2; one of the pressure sensors is loose, disconnected, or faulty

Service Procedure

1. Connect laptop to MECU, and run the “diagnostics” tool on ServiceMaster.
   a. Raise machine from ground position until fault appears. Compare diagnostics signals with inputs expected (see no-load and full-load calibration curves).
   b. To raise the machine with fault existing, go to Set Options and disable the Load Sensing Option
2. If pressure sensor 2 is out of range;
   a. If the signal from pressure sensor 2 is < 0.5v, check the connection by pushing the cable into the pressure sensor, or by connecting the pressure sensor 1 cable to pressure sensor 2. If the connection is faulty, replace the harness. If the pressure sensor is faulty, replace the pressure sensor.
   b. If the signal from pressure sensor 2 is > 4.5, check the connection by connecting pressure sensor 1 with the cable to pressure sensor 2. If the connection is faulty, replace the harness. If the pressure sensor is faulty, replace the pressure sensor.
3. If Pressure sensor 1 signal is different to Pressure sensor 2 (by > 0.25v); replace the faulty pressure sensor.

Figure 1. Pressure sensor position.

Figure 2. Pressure sensor signals.

This topic last edited on 22/10/2019

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86

Machine > Errors and DTCs > Machine DTCs > 86

Description

Down Limit Switch Fault

Information

Effect	Disables All Motion
Possible Cause	1. Down limit switch (Contact to MECU Pin 35) falsely shows platform lowered; contact stuck at 24v, signal SC to 24v, down limit switch pressed when platform is raised 2. Down limit switch falsely shows platform raised; contact stuck at 0v, signal SC to 0v, down limit switch relaxed when platform is raised, down limit switch disconnected 3. Scissor angle sensor failure; angle sensor falsely shows machine fully stowed or raised above down limit switch, angle sensor out of bounds 4. Downward stop calibration error / calibration not completed (during the calibration process the platform must be raised above the down limit switch height so that the angle sensor position is detected at this height)

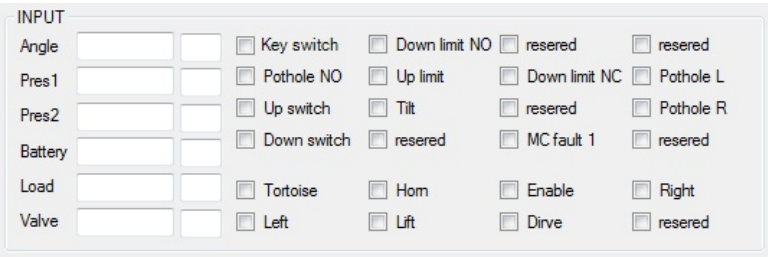
Service Procedure

1. Connect laptop to MECU, and run the “diagnostics” tool on Service Master.
   a. Raise machine from ground position until fault appears. Compare diagnostics signals with inputs expected. See Table 1.
2. Adjust the limit switch positions
   a. If one or both down limit switch contacts don’t changeover to the correct position as the platform moves, adjust the down limit switch position by rotating the screw on the cam tab. Or adjust the position of the mounting bracket to ensure the cam is always pressing on the probe roller, not the probe arm. Or adjust the down limit switch probe arm positon by unscrewing the arm and rotating it one notch – the arm should be horizontal to the switch body in neutral position. Or replace the down limit switch if the probe position doesn’t cause the signal to change. Adjust the down limit switch with the platform raised and secured by the safety strut.
3. If the angle sensor signal is not changing as the platform rises, replace the angle sensor.
4. Run the mode calibration procedure.

Table 1.

Position	Service Master Ticked. Refer to Figure 1.
Platform Stowed	Down Switch Down Limit NC
Down Limit Switch Transition as Platform Rises	Down Switch Down Limit NO Down Limit NC
Platform Raised Above Down Limit Switch	Down Limit NO

Figure 1.



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87

Machine > Errors and DTCs > Machine DTCs > 87

Description

Up Limit Switch Fault

Information

Effect	Warning Only
Possible Cause	1. Up limit switch (Contact to MECU Pin 23) falsely shows platform reached full height; contact stuck open(0v), signal short circuit to 0v, down limit switch pressed when platform is below full height

Service Procedure

1. Check position of up limit switch
2. Check connection for short circuit
3. Check wiring connections inside switch
4. Replace up limit switch if failed

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90

Machine > Errors and DTCs > Machine DTCs > 90

Description

Over 90% Load Warning

Information

Effect	Warning Only
Possible Cause	1. Load in platform is more than 90% rated load 2. No load / full load calibration fault

Service Procedure

1. Check load in platform against rated load
2. If load sensing system is worse than +/- 10%, re-calibrate the no-load and full-load curves. Refer to the Service Manual.

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99

Machine > Errors and DTCs > Machine DTCs > 99

Description

Over 99% Load Warning

Information

Effect	Warning Only
Possible Cause	1. Load in platform is more than 99% rated load 2. No load / full load calibration fault

Service Procedure

1. Check load in platform against rated load
2. If load sensing system is worse than +/- 10%, re-calibrate the no-load and full-load curves. Refer to the Service Manual.

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OL

Machine > Errors and DTCs > Machine DTCs > OL

Service Procedure

Description

Overloaded Platform Fault

Information

Effect	Disable All Motion
Possible Cause	1. Load in platform is more than 100% rated load 2. No load / full load calibration fault

Service Procedure

1. Check load in platform against rated load
2. If load sensing system is worse than +/- 5%, re-calibrate the no-load and full-load curves. Refer to the Service Manual

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LL

Machine > Errors and DTCs > Machine DTCs > LL

Description

Machine Tilted Beyond Safe Limits Fault

Information

Effect	Disable Lifting and Driving
Possible Cause	1. Tilt switch detects chassis angle is greater than 1.5° sideways, or 3° lengthways, whilst down limit switch indicates platform is raised 2. Tilt switch fault; signal stuck at 0v, tilt sensor disconnected, signal to MECU Pin 11 is open circuit, signal to MECU Pin 11 is short circuit to 0v 3. Tilt switch calibration fault

Service Procedure

1. Check the tilt angle of the chassis with a level gauge
2. Re-set tilt sensor at zero degree position. Refer to the Service Manual.
   WARNING! IT IS SAFETY CRITICAL THAT THE LEVEL OF THE GROUND IS CONFIRMED AS FLAT DURING THIS CALIBRATION!
3. Replace tilt sensor. Refer to the Service Manual.

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LF

Machine > Errors and DTCs > Machine DTCs > LF

Description

Up/Down Control Fault

Information

Effect	Warning Only
Possible Cause	1. Platform raises or lowers without command from electronic controls (alarm sounds after 10s delay); lowering by emergency descent lever, raise or lower solenoid signal is short circuit to 24v 2. Up/Down command is given, but there is no resulting platform movement (alarm sounds after 10s delay); MECU output fault, raise or lower solenoid signal is short circuit to 0v, raise or lower solenoid signal is open circuit, raise or lower solenoid is disconnected, emergency descent cable is stuck with lower solenoid in open position, raise command at joystick is extremely slow

Service Procedure

1. Restart machine (cycle off-on)
2. Connect laptop to MECU, and run the “diagnostics” tool on ServiceMaster. Compare angle sensor signals with operator inputs
3. Replace angle sensor if failed. Refer to the Service Manual.

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