

9819-7400-1.0.1: G70RS, G125RS T4F DC Help Files - English (en_GB)

USER MANUAL

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1.1 Support Files

Click on the relevant support file to link device specific information and fault finding procedure

- [Electrical Schematic](#)
- Manuals Volvo
- [Manuals Alternator](#)

1.1.1 Electrical Schematics

Please note that the drawings are subject to frequent updates; to access the most recent drawing revision, please refer to the Service Manuals on Service Pro.

See below for information detailing what can be found in each of the supporting schematic files.

Drawing Number	Link
401/G9340	AGC150 Schematic G70RS T4F
401/S4355	DSE Schematic 7310MKII G70RS T4F
402/W8039	DSE Schematic 7310MKII G70RS T4F
402/W8040	AGC150 Schematic G70RS T4F
401/G9342	AGC150 Schematic G125RS T4F
401/U5525	DSE Schematic 8610MKII G 125RS T4F
402/W0241	AGC150 Schematic G125RS T4F
401/K4259	DSE Schematic G125RS T4F
402/S3112	DSE Schematic 8610MKII G125RS T4F

1.1.2 Manuals Alternator

Please note that manuals are subject to frequent updates; to access the most recent revision, please refer to the Service Manuals on Service Pro.

See below for information detailing what can be found in each of the supporting schematic files.

Drawing Number	Page title and additional detail
Meccalte ECP32 Manual	TBA
Meccalte ECP34 Manual	TBA

1.1.3 Manuals

Please note that manuals are subject to frequent updates; to access the most recent revision, please refer to the Service Manuals on Service Pro.

See below for information detailing what can be found in each of the supporting schematic files.

Drawing Number	Page title and additional detail
----------------	----------------------------------

1.2 Components

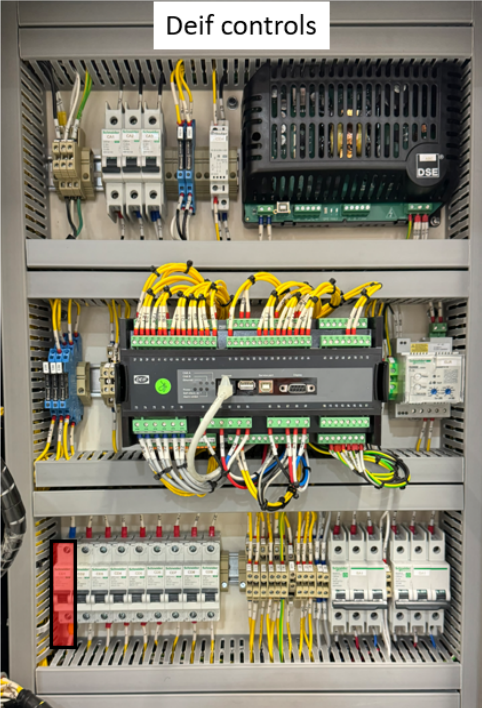
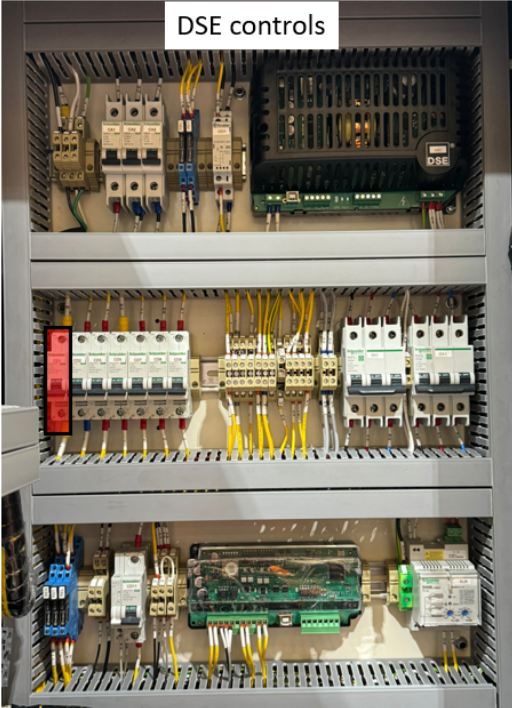
Machine Components:

- [CD1- 2A DC supply 1P MCB](#)
- [CD2 - 6A E-Stop DC supply 1P MCB](#)
- [CD3 - 2A Shunt Trip DC supply 1P MCB](#)
- CD4 - 4A Deif TDU DC Supply 1P MCB
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- [RESISTOR LEADED 120R 0.5W 5%](#)
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- [GREEN INDICATION LAMP 24VDC](#)
- [ON/OFF SWITCH ASSY](#)
- [SELECTOR SWITCH 2 POSITION BLACK](#)
-

1.2.1 CD1- 2A DC supply 1P MCB

Component:	CD1- 2A DC supply 1P MCB
Function:	CD1- 2A Protection/Controls the controller DC supply
Location:	MCB located inside the control panel

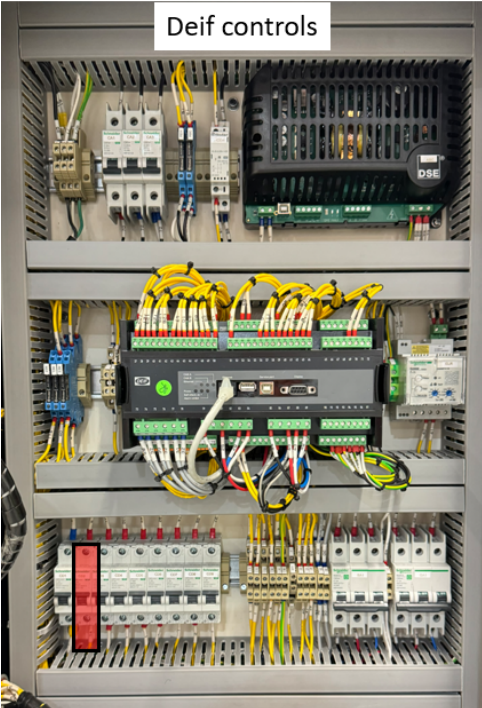
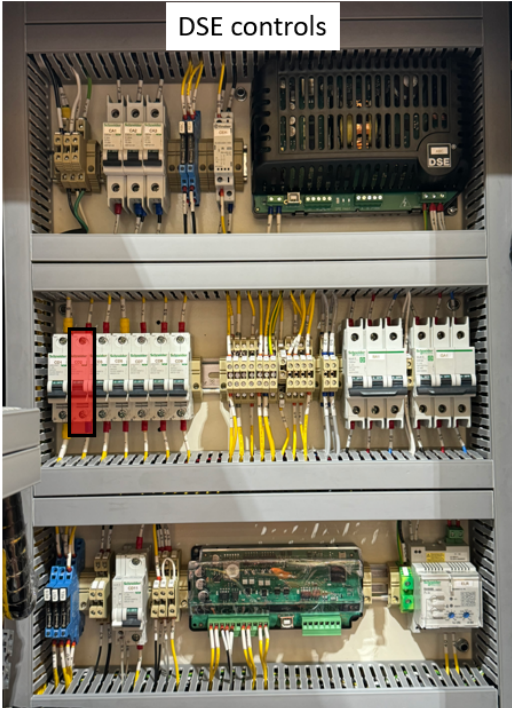
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs
Wires & Connectors IMG:	Wire Numbers - 1 and 6
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the battery isolator, and make sure all MCBs are in off state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check terminals for loose connections at MCB terminals. Tighten the screws if a loose connection is found.

	6. Turn battery isolator back on, and then turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A

JCB

1.2.2 CD2 - 6A E-Stop DC supply 1P MCB

Component:	CD2 - 6A E-Stop DC supply 1P MCB
Function:	CD2 - 6A Protection/Controllers the E-Stop DC supply
Location:	MCB located inside the control panel

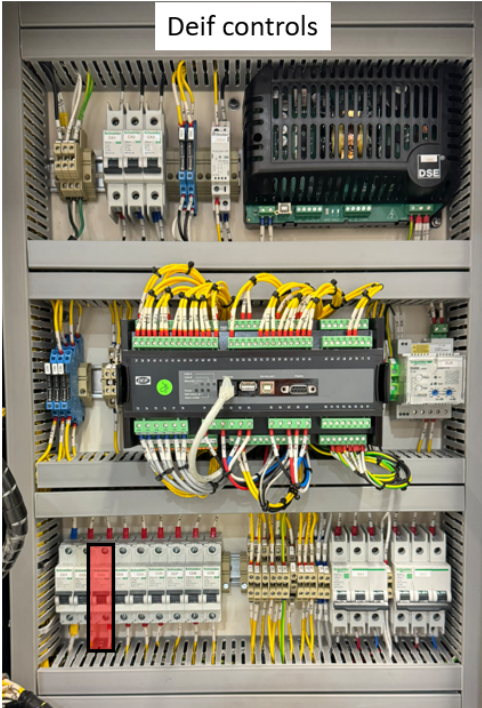
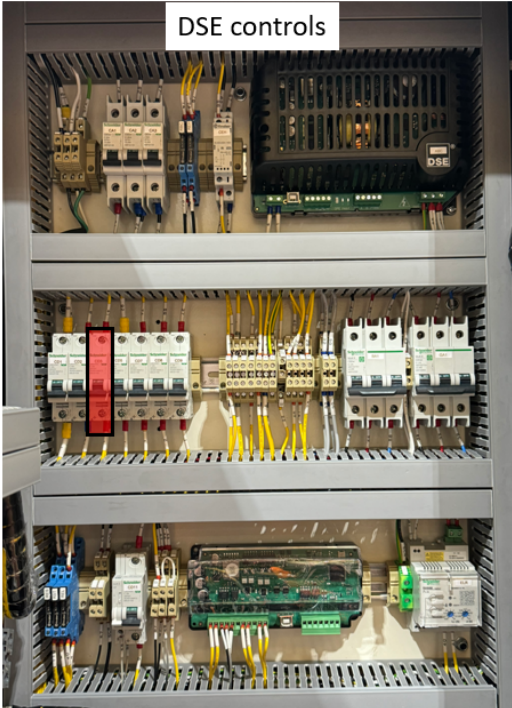
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs
Wires & Connectors IMG:	Wire Numbers - 14 and 8
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the battery isolator, and make sure all MCBs are in off state 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check terminals for loose connections at MCB terminals. Tighten the screws if a loose connection is found. 6. Turn battery isolator back on, and then turn ON the supply to

	control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A

JCB

1.2.3 CD3 - 2A RST/UVR Trip DC supply 1P MCB

Component:	CD3 - 2A Shunt Trip DC supply 1P MCB
Function:	CD3 - 2A Protection/Controls the Shunt Trip DC supply
Location:	MCB located inside the control panel

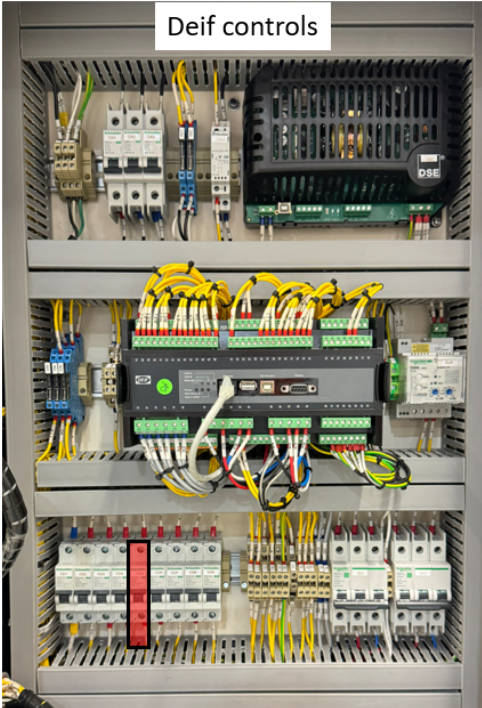
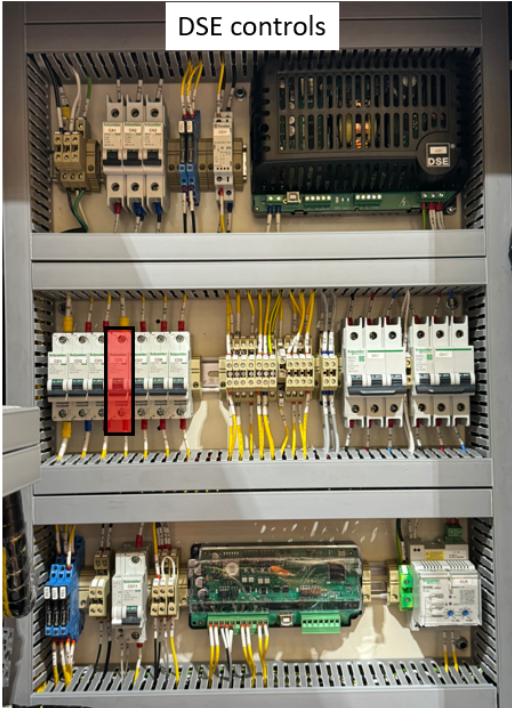
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs
Wires & Connectors IMG:	Wire Numbers - 1 and 41
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the battery isolator, and make sure all MCBs are in off state 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check terminals for loose connections at MCB terminals. Tighten the screws if a loose connection is found. 6. Turn battery isolator back on, and then turn ON the supply to

	control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A

JCB

1.2.4 CD5 - 10A CB Control Circuit 1P MCB

Component:	CD5 - 10A CB DC supply 1P MCB
Function:	CD5 - 10A CB Control Circuit DC Output
Location:	MCB located inside the control panel

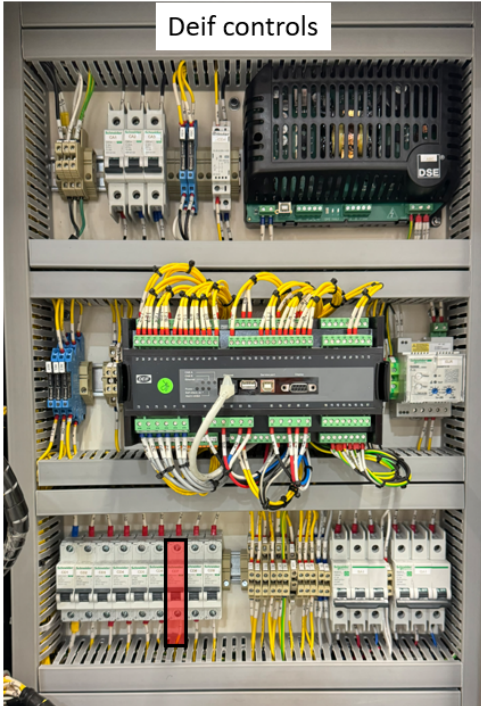
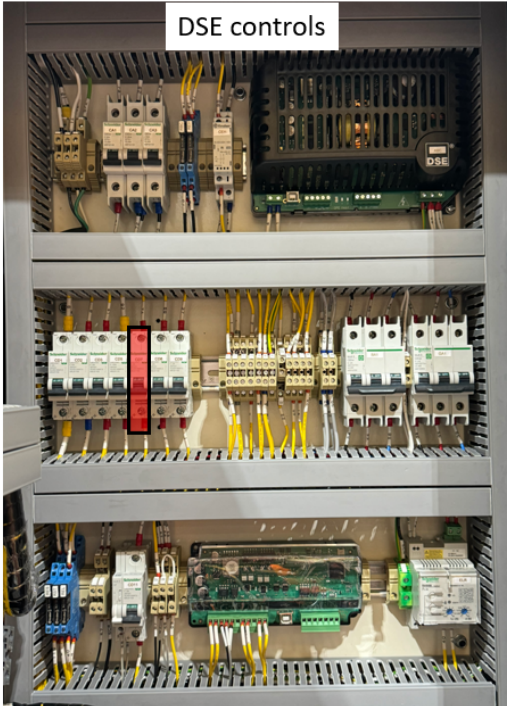
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs
Wires & Connectors IMG:	Wire Numbers - 1 and 92
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the battery isolator, and make sure all MCBs are in off state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check terminals for loose connections at MCB terminals. Tighten the screws if a loose connection is found. 6. Turn battery isolator back on, and then turn ON the supply to

	control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A

JCB

1.2.5 CD7 - AC INDICATION LAMP MCB

Component:	CD7 - AC INDICATION LAMP MCB
Function:	CD7 Controls the supply to the Auxiliary supply LEDs.
Location:	MCB located inside the control panel

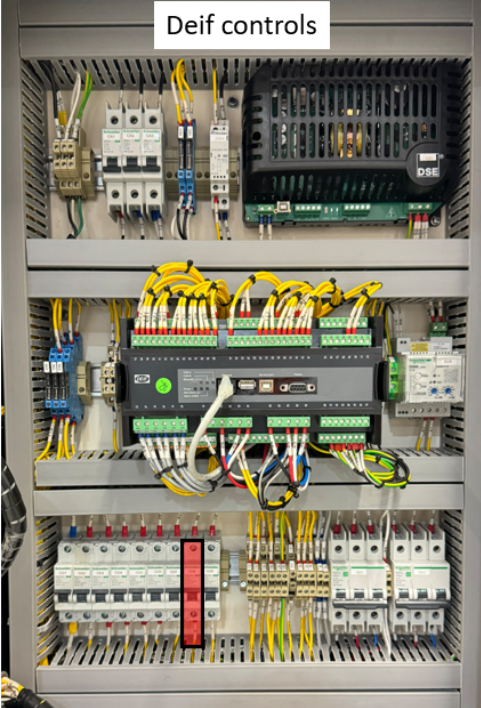
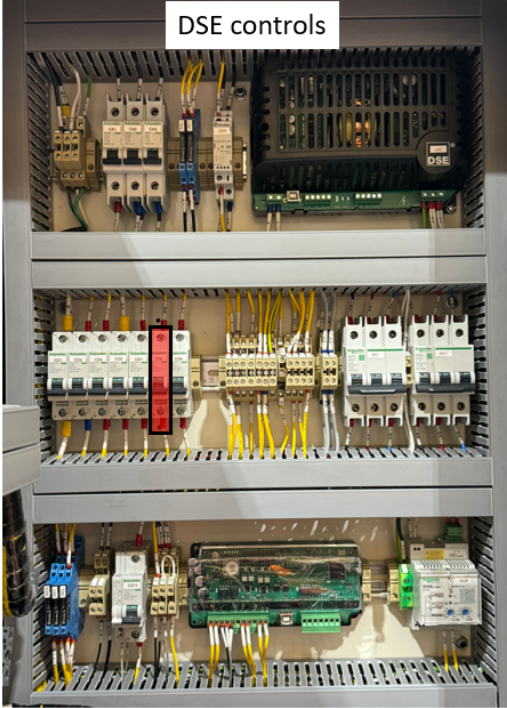
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC
Wires & Connectors IMG:	Wire Numbers - 1 and 74
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loose connections at MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB

	functionality. 7. If MCB still not function properly. Replace the MCB.
Expected Values:	MCB ON with DC supply across terminals
Related Fault Codes:	N/A

JCB

1.2.6 CD8 - 2A CEH DC supply 1P MCB

Component:	CD8 - 2A CHE DC supply 1P MCB
Function:	CD8 - 2A Protection/Controls the CHE DC supply
Location:	MCB located inside the control panel

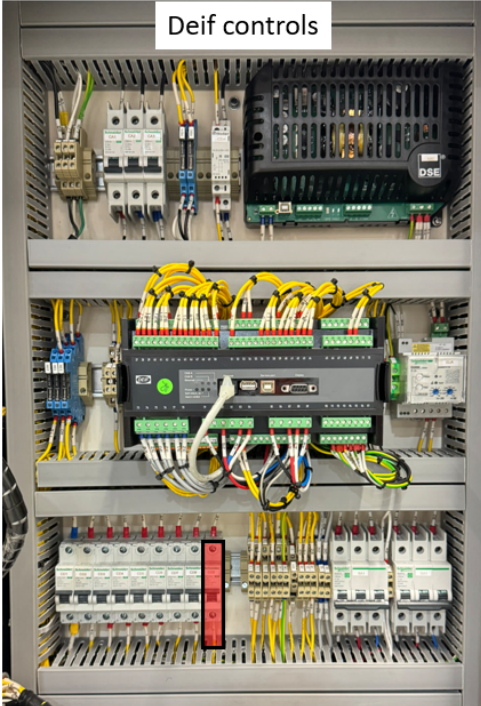
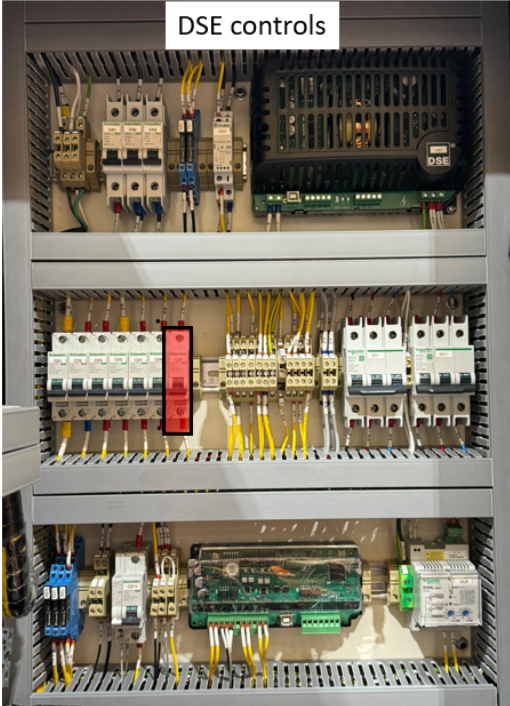
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connect ors IMG:	Wire Numbers - 2 and 66
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found.

	6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to - Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.7 CD9 - 2A ELR DC supply 1P MCB

Component:	CD9 - 2A ELR DC supply 1P MCB
Function:	CD9 - 2A Protection/Controls the ELR DC supply
Location:	MCB located inside the control panel

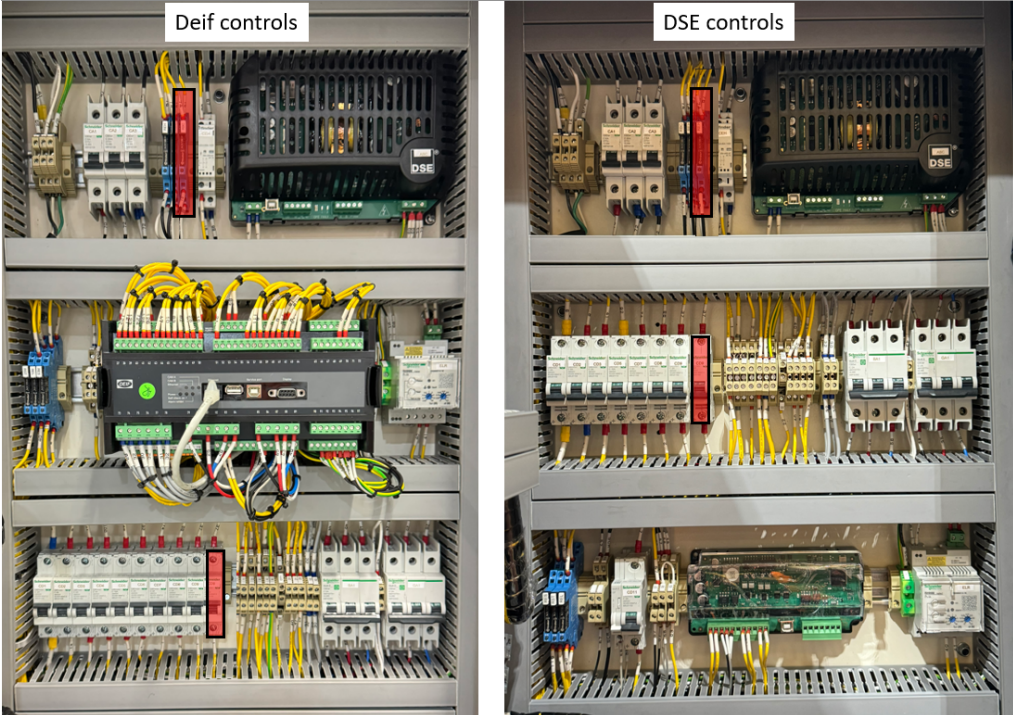
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connect ors IMG:	Wire Numbers - 1 and 37
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work. AGC4
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at

	MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.8 CD10 - 6A RAS DC supply 1P MCB optional

Component:	CD10 - 6A RAS DC supply 1P MCB (optional)
Function:	CD10 - 6A Protection/Controls the RAS Contacts DC supply (Optional)
Location:	MCB located inside the control panel

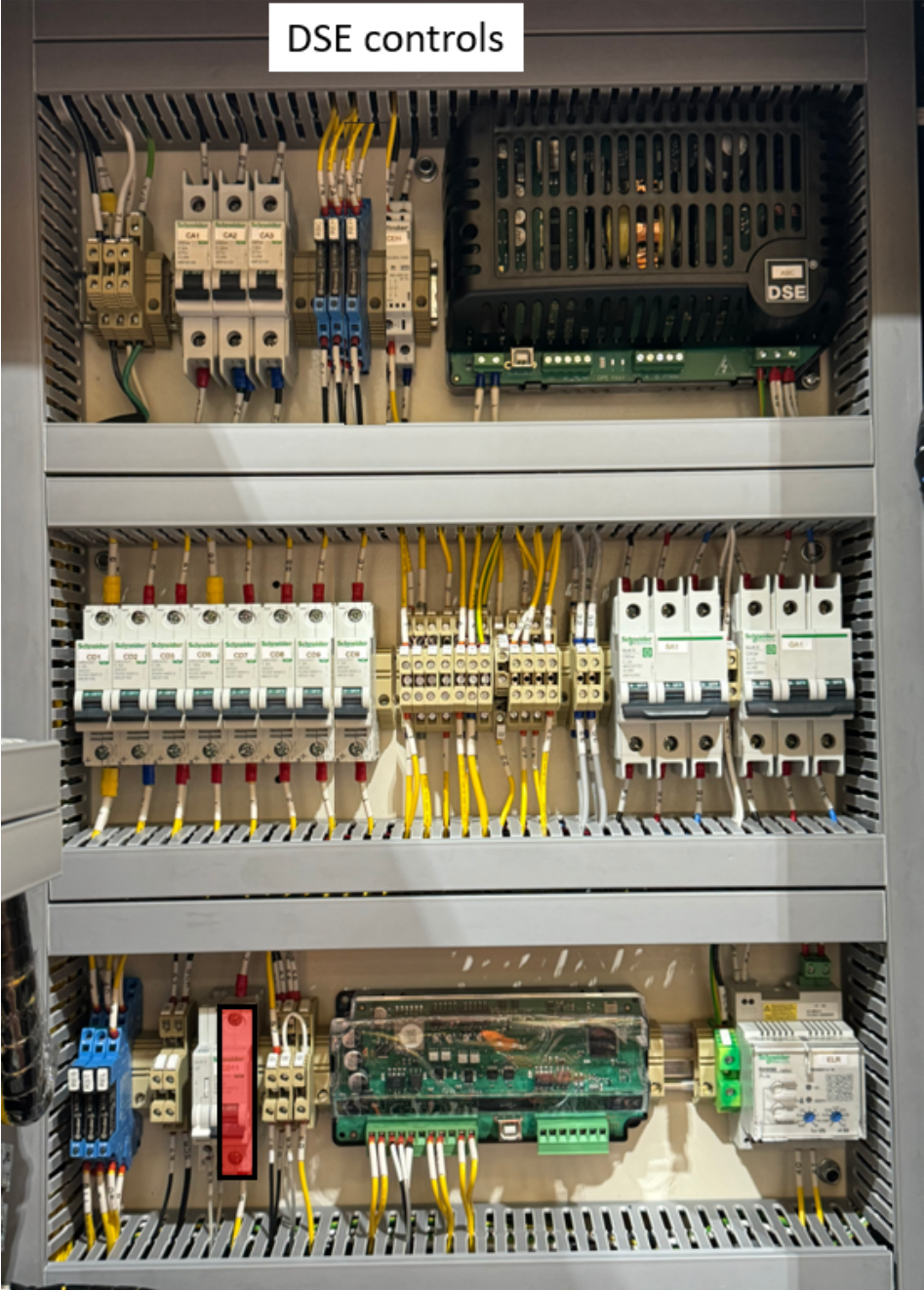
Location IMG:	
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connect ors IMG:	Wire Numbers - 48 and 52
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work. AGC4
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at

	MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.9 CD11 - 2A DSE 123 supply 1P MCB

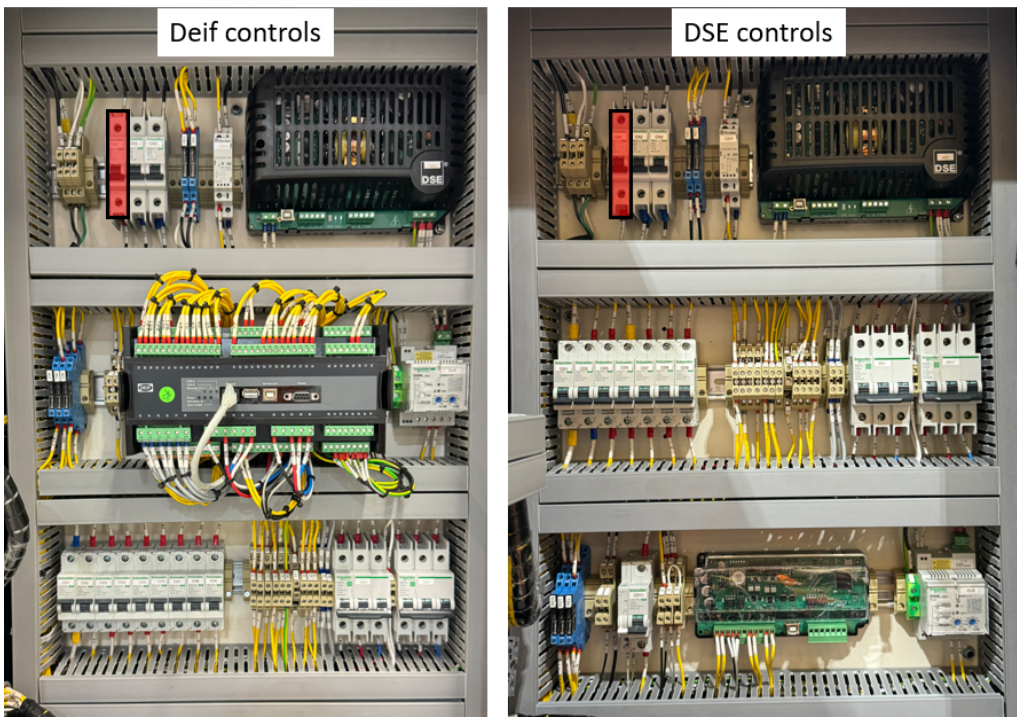
Component:	CD11 - 2A DSE 123 supply 1P MCB
Function:	CD11 - 2A Protection/Controls the DSE 123 DC supply
Location:	MCB located inside the control panel

Location IMG:	 DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connect ors IMG:	Wire Numbers - 6 and 7

Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.10 CA1 - 6A Battery Charger AC supply 1P MCB

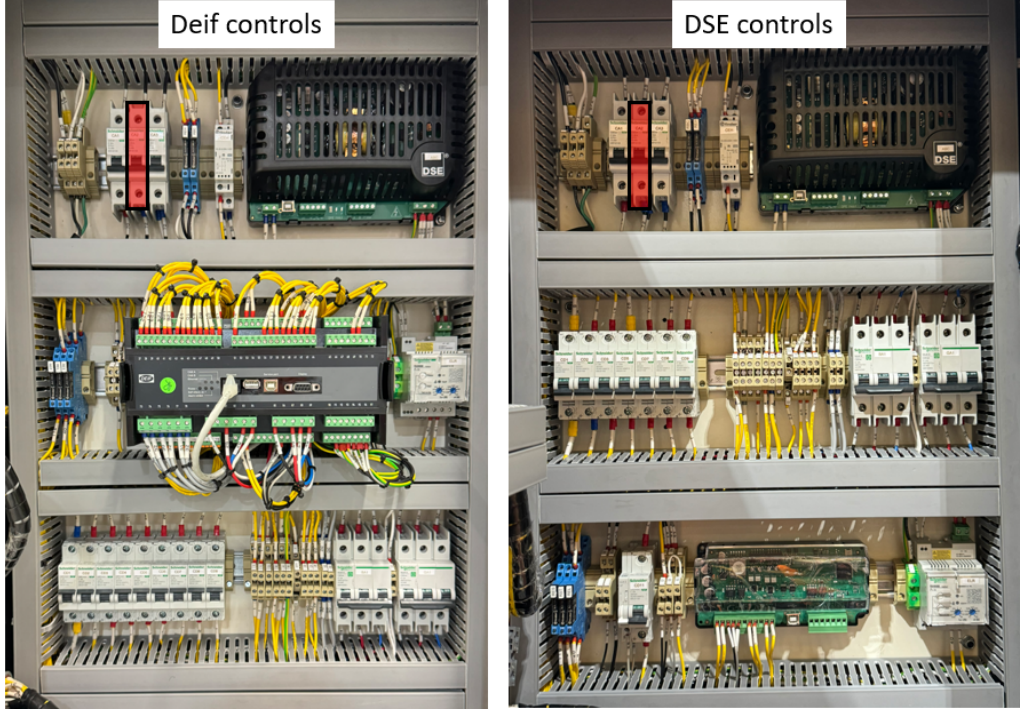
Component:	CA1 - 6A Battery Charger AC supply 1P MCB
Function:	CA1 - 6A Protection/Controls the Battery Charger AC input supply
Location:	MCB located inside the control panel
Location IMG:	
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connectors IMG:	Wire Numbers - 70 and 73
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.

Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.11 CA2 - 20A Engine Heater 1P MCB

Component:	CA2 - 20A Engine Heater 1P MCB
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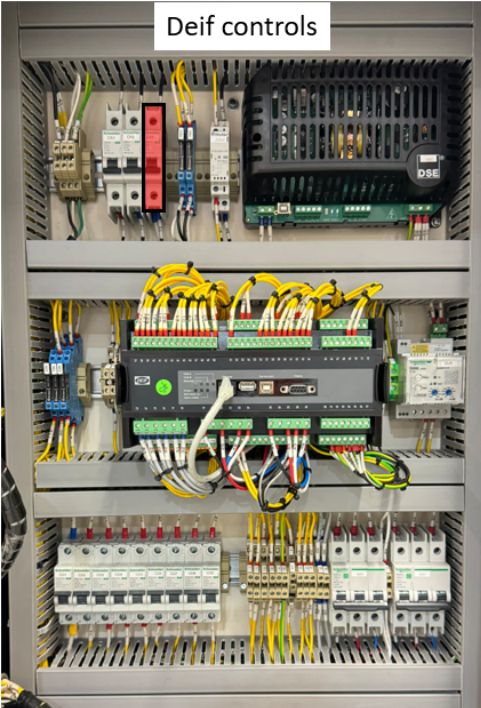
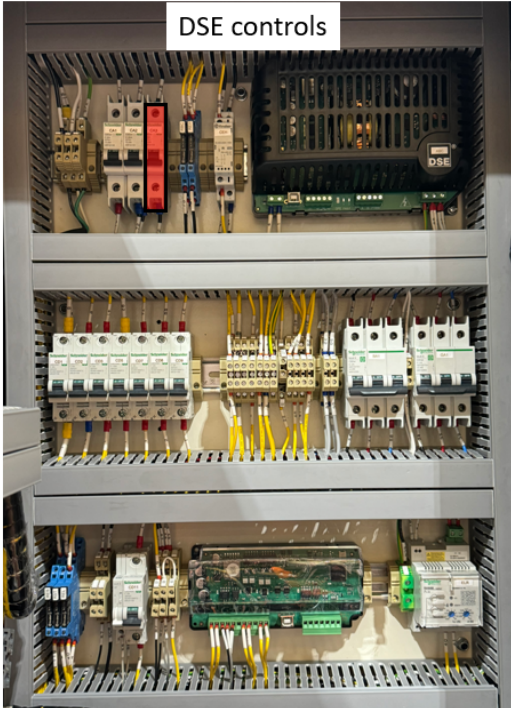
Function:	CA2 - 20A Protection/Controls the Engine Heater AC supply
Location:	MCB located inside the control panel
Location IMG:	
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connectors IMG:	Wire Numbers - 62 and 72
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and

	output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.12 CA3 - 6A Alternator Heater 1P MCB

Component:	CA3 - 6A Alternator Heater 1P MCB
Function:	CA3 - 6A Protection/Controls the Alternator Heater AC supply
Location:	MCB located inside the control panel

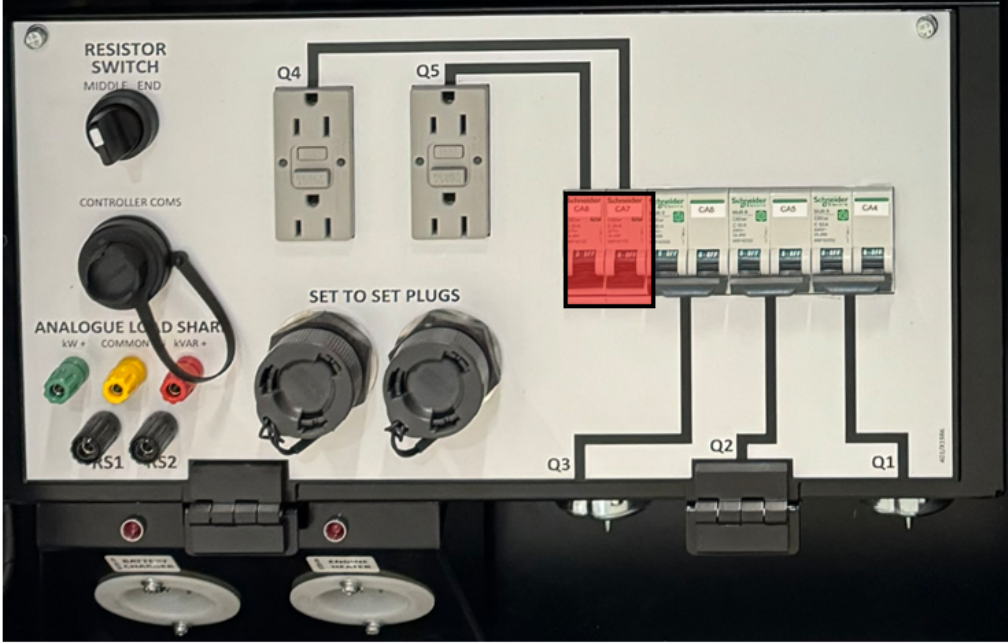
Location IMG:	 Deif controls  DSE controls
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connectors IMG:	Wire Numbers - 67 and 72
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found.

	6. Turn ON the supply to control panel. Check the for MCB functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground (based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.13 CA7&CA8- GFCI socket supply 1P MCB

Component:	CA7&CA8- GFCI socket supply 1P MCB
Function:	CA7&CA8- 15A Protection/Controls the GFCI socket AC supply.
Location:	MCB located inside the control panel.

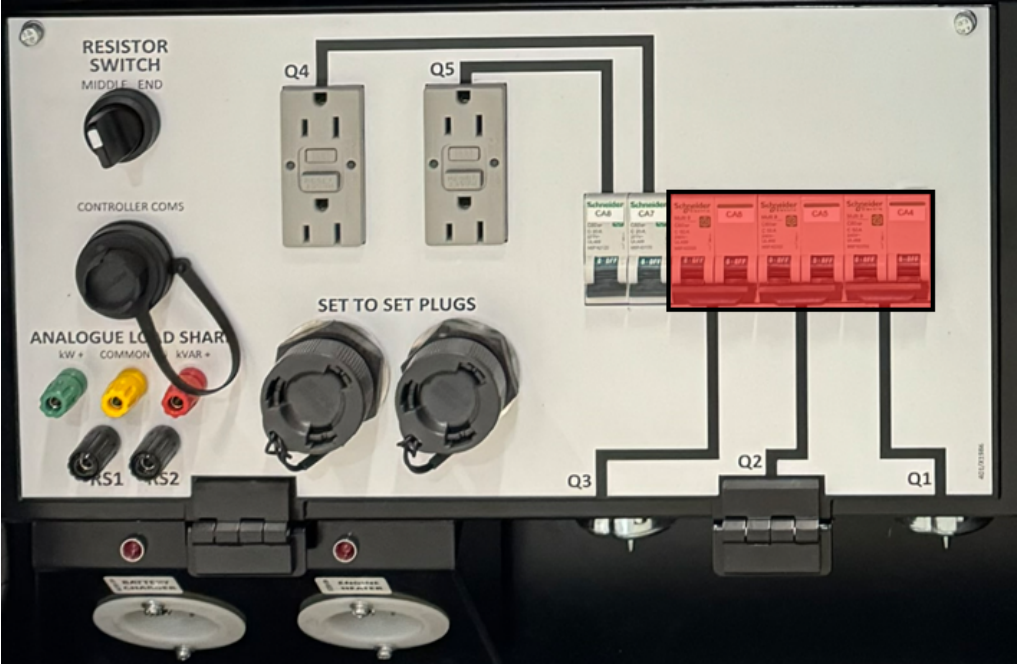
Location IMG:	
Signal:	Battery positive 12V/24V DC for all CD series MCBs 120V AC line for all CA series MCBs
Wires & Connectors IMG:	Wire Numbers - 1L1 and 5L1 Wire Numbers - 1L2 and 5L2
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel. Check the for MCB

	functionality. 7. Check the Voltage at input terminal to -Ve or Ground (based on circuit). If found okay check the voltage at output terminal to negative/Ground (based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.14 CA4, CA5, CA6 - 50A Twist lock Connector supply

Component:	CA4, CA5, CA6 - 50A Twist lock Connector supply
Function:	CA4, CA5, CA6 - 50A Twist lock Connector supply
Location:	MCB located inside the control panel

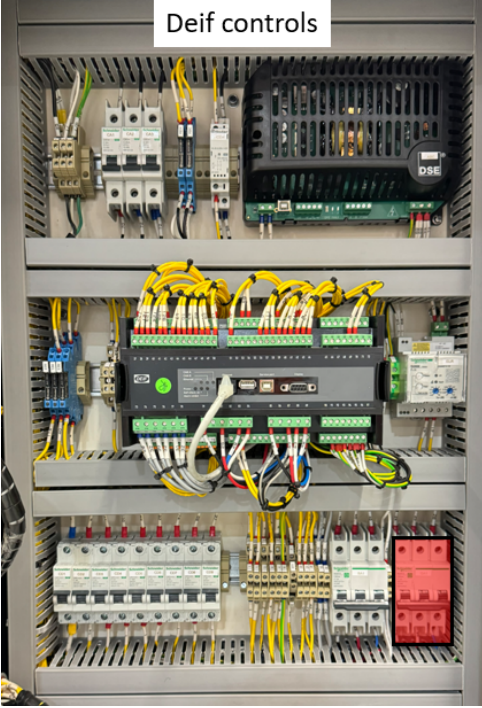
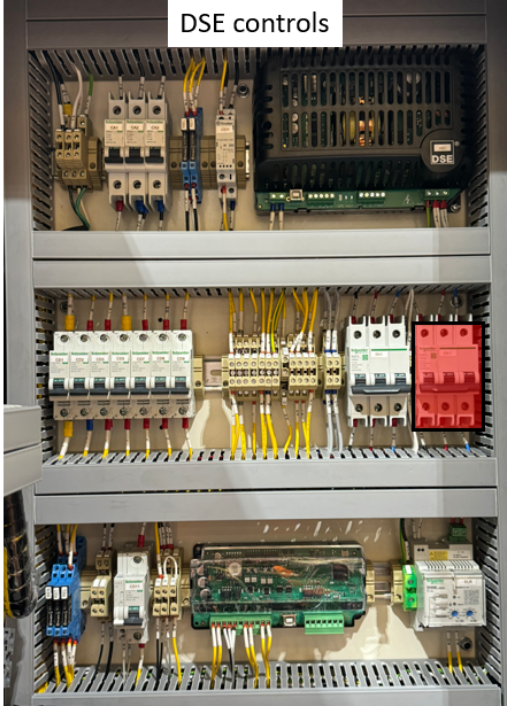
Location IMG:	
Signal:	120VAC line and neutral supply to twist locks sockets
Wires & Connectors IMG:	Wire Numbers CA4 - 1L1 and 2L1 Wire Numbers - 1L2 and 2L2 Wire Numbers CA5 - 1L1 and 3L1 Wire Numbers - 1L2 & 3L2 Wire Numbers CA6 - 1L1 and 4L1 Wire Numbers - 1L2 and 4L2
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and

	output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found. 6. Turn ON the supply to control panel turn ON the generator. Check the for MCB functionality. 7. Check the Voltage at input terminal to Ground (based on circuit). If found okay check the voltage at output terminal to Ground(based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. Conduct same checks for Neatural to line. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A

JCB

1.2.15 GA1 - 2A Gen Voltage sensing 3P MCB

Component:	GA1 - 2A Gen Voltage sensing 3P MCB
Function:	GA1 - 2A Gen Voltage sensing
Location:	MCB located inside the control panel

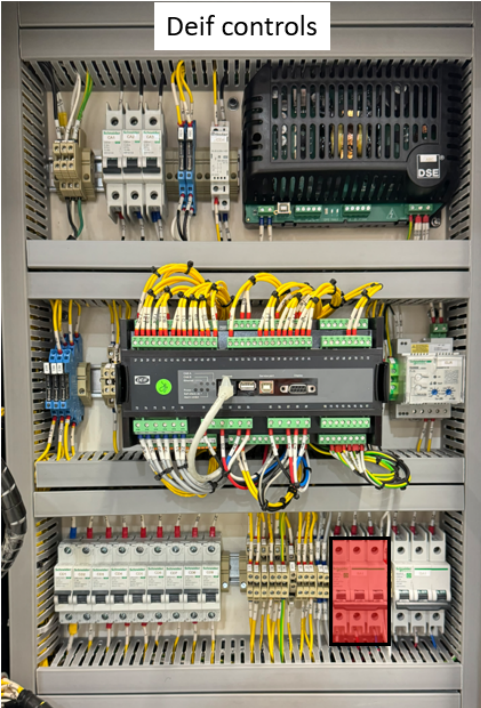
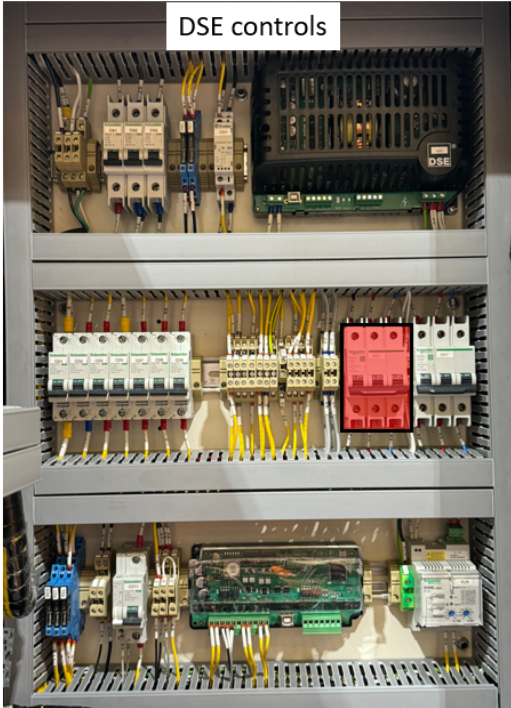
Location IMG:	 Deif controls  DSE controls
Signal:	120 to 277 VAC line to neutral voltage / 208 to 480V line to line voltage
Wires & Connect ors IMG:	Wire Numbers L1 - 24 and 34 Wire Numbers L2 - 25 and 35 Wire Numbers L3 - 26 and 36
Internal Electrical Schematic c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found.

	6. Turn ON the supply to control panel turn ON the generator. Check the for MCB functionality. 7. Check the Voltage at each input terminal to Ground (based on circuit). If found okay check the voltage at each output terminal to Ground (based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. Conduct same checks for Neutral to line. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.16 BA1 - 2A Bus voltage sensing 3P MCB

Component:	BA1 - 2A Bus voltage sensing 3P MCB
Function:	BA1 - Bus Voltage sensing.
Location:	MCB located inside the control panel.

Location IMG:	 Deif controls  DSE controls
Signal:	121 to 277 VAC line to neutral voltage / 208 to 480V line to line voltage
Wires & Connectors IMG:	Wire Numbers L1 - 44 and 54 Wire Numbers L2 - 45 and 55 Wire Numbers L3 - 46 and 56
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Make sure control panel is not powered with any AUX supply. 3. Check for the MCB specifications as per design or schematic. 4. Turn ON the MCB and check the continuity between input and output terminals of MCB, if continuity not found replace the MCB. 5. If Continuity found, check for terminals loss connections at MCB terminals. Tighten the screws if loose connection found.

	6. Turn ON the supply to control panel turn ON the generator. Check the for MCB functionality. 7. Check the Voltage at each input terminal to Ground (based on circuit). If found okay check the voltage at each output terminal to Ground (based on circuit). If voltage found at input terminal and not found at output terminal, replace the faulty MCB. Conduct same checks for Neutral to line. 8. MCB tripping continuously, measure the current with clamp meter. If measured current is less than MCB rating then replace the MCB.
Expected Values:	1. For continuity/ resistance test. MCB should show zero ohms 2. For voltage test MCB should show same voltage at input and output terminals. 3. MCB shouldn't trip unless there is over current (more current than its its rated value) flowing through it.
Related Fault Codes:	N/A



1.2.17 LIVELINK 4 2022 ECU 12/24V HW

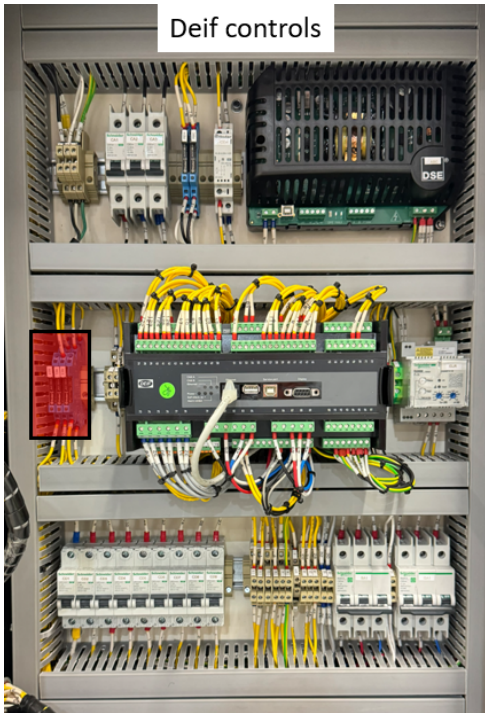
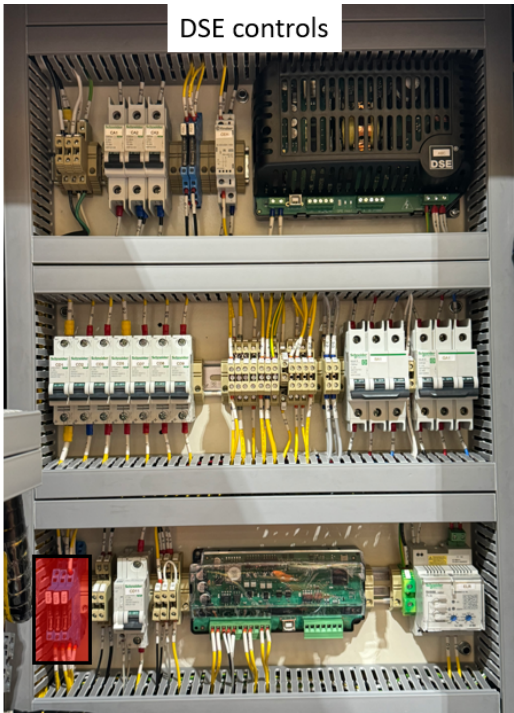
Component:	LIVELINK 4 2022 ECU 12/24V HW
Function:	Telematics Device to transmit machine live data to server
Location:	Canopy door

Location IMG:	  
Signal:	12/24VDC
Wires & Connect ors IMG:	Wire Number - C3 - 6003K Wire Number - D4 - 4007K Wire Number - E4 - 4006K Wire Number - E2 - 3002 Wire Number - J1 - 4008 Wire Number - K1 - 4008 Wire Numbers - L3 - 6005A Wire Numbers - L2 - 6004 Wire Numbers - M2 - 6005B Wire Numbers - M4 - 3003
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Liveline got help file available at service master need to hyperlink this section. Or remove from this list

Expected Values:	
Related Fault Codes:	N/A

JCB

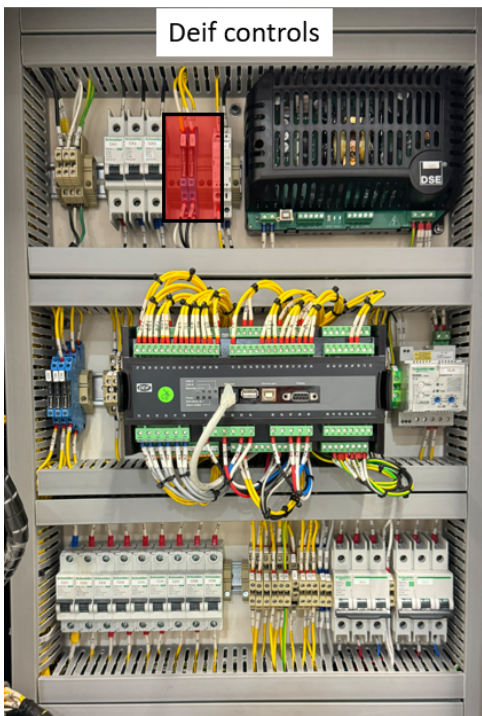
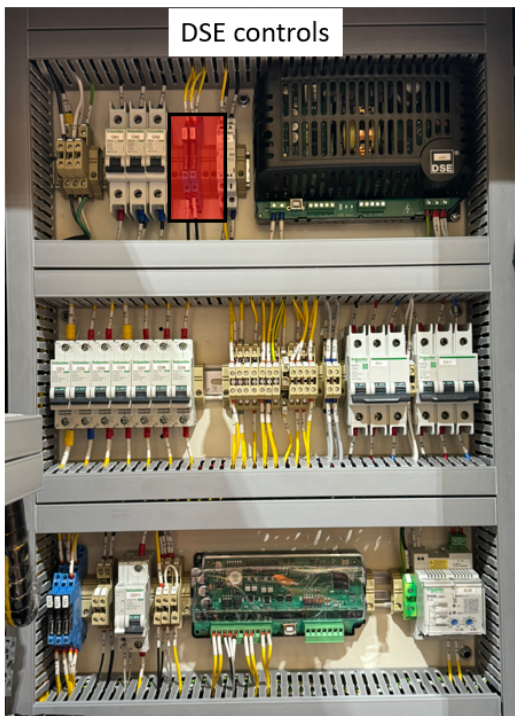
1.2.18 1P RELAY MODULE SLIM 24V 38 SER

Component:	1P RELAY MODULE SLIM 24V 38 SER
Function:	REL - Earth leakage Relay RES - Emergency stop Relay RES - Shunt Trip
Location:	Located inside the control panel.
Location IMG:	Deif controls  DSE controls 

Signal:	12/24VDC
Wires & Connectors IMG:	Wire Numbers - REL - A1 - 40 Wire Numbers - A2 - 4 Wire Numbers - 11 - 4 Wire Numbers - 14 - 28 Wire Numbers - A1 - 9 Wire Numbers - A2 - 4 Wire Numbers - 11 - 6 Wire Numbers - 12 - 3
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel. Check the continuity for NC (terminal 11 and 12) and NO contact (terminal 11 and 14) of the relay. Make sure NC shows continuity and NO doesn't show continuity, if not replace the Relay 2. Measure the resistance between A1 and A2 terminals. 3. Provide external supply to the relay. Check for the relay operation on Turning ON and OFF of the supply. If relay doesn't functions right replace the the relay. 4. Assemble back the relay on control panel. Turn ON supply to the control panel check for the voltage at A1 & A2. If voltage not found diagnose the circuit as per schematic.
Expected Values:	Resistance of coil should be 2 +/- 1kohms.
Related Fault Codes:	N/A



1.2.19 1P RELAY MODULE SLIM 125V 38 SER

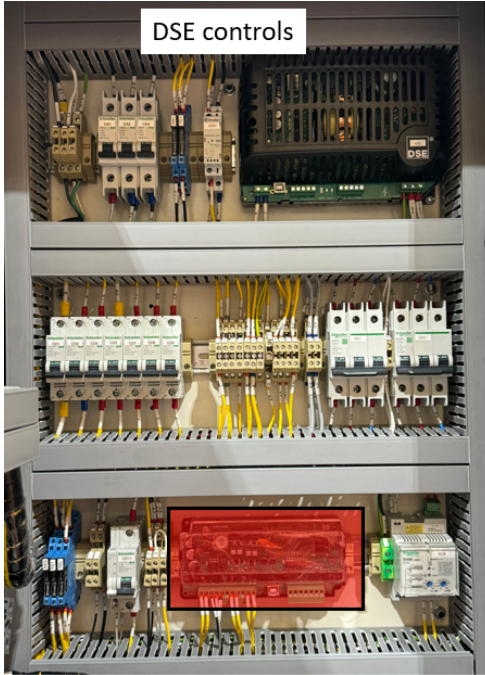
Component:	1P RELAY MODULE SLIM 125V 38 SER	
Function:	RBC - Battery Charger option Relay REH - Engine Heater option Relay	
Location:	Relay is located inside the control panel	
Location IMG:	 Deif controls  DSE controls	
Signal:	VAC 125V	
Wires & Connectors IMG:	Wire Numbers from relay - 73 (L) and 69 (N) - Battery charger. Wire Numbers from relay/filter - 65 (L) and 64 (N) - Battery charger 7310MKII. Wire Numbers from relay - 61 (L) and 71 (N) - Engine Heater.	
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.	

Testing:	1. Turn OFF the supply to panel. Check the continuity for NC (terminal 11 and 12) and NO contact (terminal 11 and 14) of the relay. Make sure NC shows continuity and NO doesn't show continuity, if not replace the Relay 2. Measure the resistance between A1 and A2 terminals. 3. Provide external supply to the relay. Check for the relay operation on Turning ON and OFF of the supply. If relay doesn't functions right replace the the relay. 4. Assemble back the relay on control panel. Turn ON supply to the control panel check for the voltage at A1 & A2. If voltage not found diagnose the circuit as per schematic.
Expected Values:	1. resistance of coil should be 26K ohms.
Related Fault Codes:	N/A

JCB

1.2.20 DSE123 Analogue load share lines interface

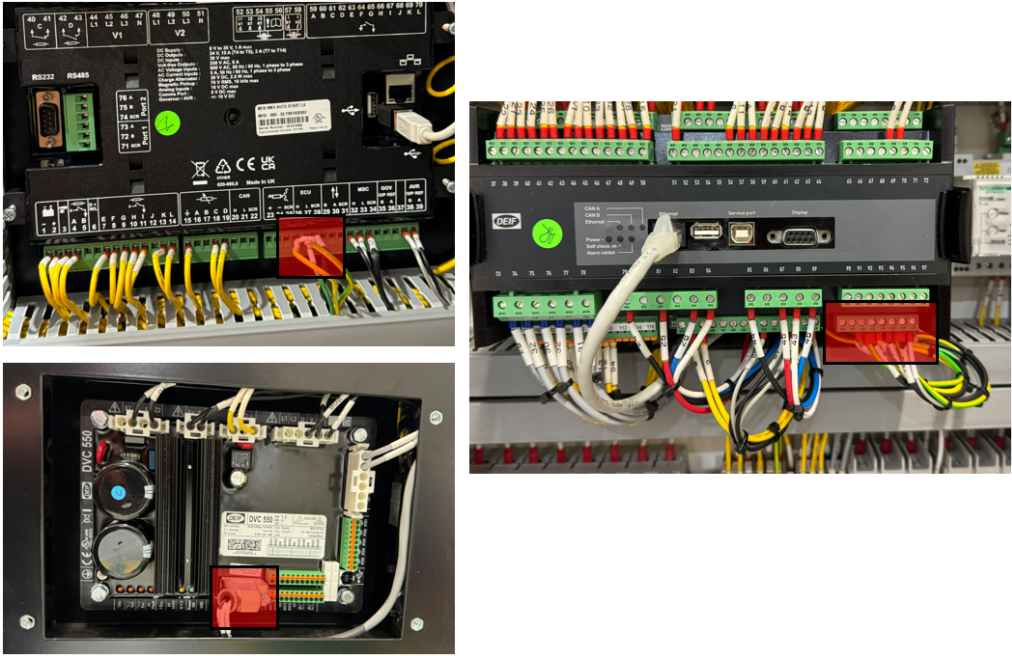
Component:	DSE123 ANALOGUE LOAD SHARE LINES
Function:	The DSE123 is an intelligent device that allows DSE 8610 load share modules to communicate with non-DSE control modules that are communicating over universal analogue load share lines. This means When we Synchronize Generator with DSE8610 with other generator controller having Analog based load share, then we need DSE123 to established communication between these controller for KW & KVAR sharing.

Location:	Inside Panel.
Location IMG:	 
Signal:	12/24V DC
Wires & Connectors IMG:	Wire Numbers - 4 and 7 Wire Numbers - 57 and 58 Wire Numbers -121,122 and 123
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	When DC power is applied to the module, the status LED will illuminate. If the DSE123 cannot communicate to the DSE8610 controller using the M.S.C. link, the status LED begins flashing to indicate "Link Lost".
Expected Values:	

Related Fault Codes:	N/A
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1.2.21 RESISTOR LEADED 120R 0.5W 5%

Component:	RESISTOR LEADED 120R 0.5W 5%
Function:	120 Ohm resistor required at the both end of CAN cable to match the characterstic impedance of the cable where CAN communication required between nos of module.
Location:	Inside Panel - at rear of DSE controller, on bottom right of AGC4 and in plug of DVC550 CAN connector.
Location IMG:	
Signal:	12V DC

Wires & Connectors IMG:	Wire Numbers - 58 and 63 Wire Numbers -161 and 162 Wire Numbers -151 and 152 Wire Numbers - 58A and 63 Wire Numbers - 64 and 59A
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel, make sure all MCBs are in off state, isolator is in OFF state. 2. Remove the Resistor connection and measure the resistance by multimeter. Resistance value should be 120 Ohm.
Expected Values:	Resistance should be 120 Ohm.
Related Fault Codes:	N/A



1.2.22 HOURS COUNTER 10-80VDC

Component:	HOURS COUNTER 10-80VDC
Function:	Hour Counter is a measuring instrument to measure the Generator running hour.
Location:	Panel Door.

Location IMG:		
Signal:	12V/24V DC	
Wires & Connectors IMG:	Wire Numbers - 4 and 116 Wire Numbers - 4 and 114	
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.	
Testing:	1. Turn OFF the supply to panel , make sure all MCB's are in off state, isolator is in OFF state. 2. Remove the running hour Connection and connect 12/24V DC supply directly to check the Hour Counter reading vs time (when 12V/24V DC supply connect directly)	
Expected Values:	Check the Hour Counter reading with respect to Time starting when 12V/24V DC supply given to Hour counter.	
Related Fault Codes:	N/A	

JCB

1.2.23 GREEN INDICATION LAMP 24VDC

Compon ent:	GREEN INDICATION LAMP 24VDC
Function:	Indication for following AC supply Available i. 120V AC Supply ii. 208V AC Supply iii. 480V AC Supply
Location:	Panel Door.
Location IMG:	 DSE controls  

Signal:	24V DC
Wires & Connectors IMG:	Wire Numbers - 113 and 4 Wire Numbers - 110 and 4 Wire Numbers -109 and 4
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Remove the wiring connection from indication lamp and check the resistance by multimeter. Indication Lamp Resistance should be 1500 Ohm.
Expected Values:	Indication Lamp Resistance should be 1500 Ohm.
Related Fault Codes:	#N/A



1.2.24 ON/OFF SWITCH ASSY

Component:	ON/OFF SWITCH ASSY
Function:	On/off switch provided for selecting DSE8610 configuration. Switch On- 240V Selected Switch Off- 208V Selected
Location:	Panel Door

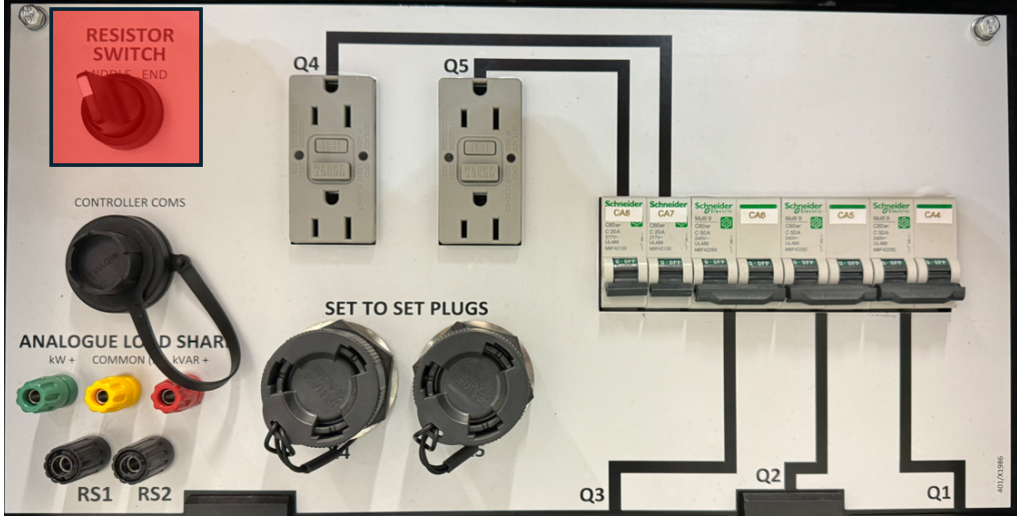
Location IMG:	
Signal:	12V/24V DC
Wires & Connect ors IMG:	Wire Numbers - 4 and 84
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.

Testing:	1. Turn OFF the supply to panel , make sure all MCBs are in off state, isolator is in OFF state. 2. Remove the wire from selector switch and check the continuity in selector switch on position. Change the on/off switch contact block if continuity not found.
Expected Values:	Multimeter should show zero resistance at On/Off selector switch terminal when switch in On Position.
Related Fault Codes:	#N/A



1.2.25 SELECTOR SWITCH 2 POSITION BLACK

Component:	SELECTOR SWITCH 2 POSITION BLACK
Function:	Used to select position of below functions:- 1. Panel with DSE Controller:- a. 208/ 240 Voltage Selector b. Resistor Switch (Middle set or End Set) 2. Panel with Deif Controller:- a. Resistor Switch (Middle set or End Set)
Location:	Location: 1. Panel with DSE Controller:- a. Control panel DC Door b. Customer interface 2. Panel with Deif Controller:- a. Customer interface

Location IMG:	
Signal:	Mechanical Switch with knob. Signals are part of contact block. For signals, refer " 410/A0601 - CONTACT BLOCK N/O MCB-10" section with help file.
Wires & Connectors IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Internal Electrical Schematic IMG:	N/A
Testing:	Testing : 1. Panel with DSE Controller:- a. 208/ 240 Voltage Selector : Switch OFF The DC Supply. Isolate the battery. Disconnect wires from contact block. - aa. Switch the position of selector switch to "208 V". Check continuity between contact block. It should be "OPEN". If yes, then switch is okay. If "continuity" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).

bb. Switch the position of selector switch to "240 V". Check continuity between contact block. It should be "CLOSE / CONTINUITY". If yes, then switch is okay. If "OPEN" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).

b. Resistor Switch (Middle set or End Set): Switch OFF The DC Supply. Isolate the battery. Disconnect wires from contact block.

aa. Switch the position of selector switch to "MIDDLE". Check continuity between contact block. It should be "OPEN". If yes, then switch is okay. If "continuity" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).

bb. Switch the position of selector switch to "END". Check continuity between contact block. It should be "CLOSE / CONTINUITY". If yes, then switch is okay. If "OPEN" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).

2. Panel with Deif Controller:-

a. Resistor Switch (Middle set or End Set): Switch OFF The DC Supply. Isolate the battery. Disconnect wires from contact blocks.

aa. Switch the position of selector switch to "MIDDLE". Check continuity between contact block. It should be "OPEN". If yes, then switch is okay. If "continuity" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).

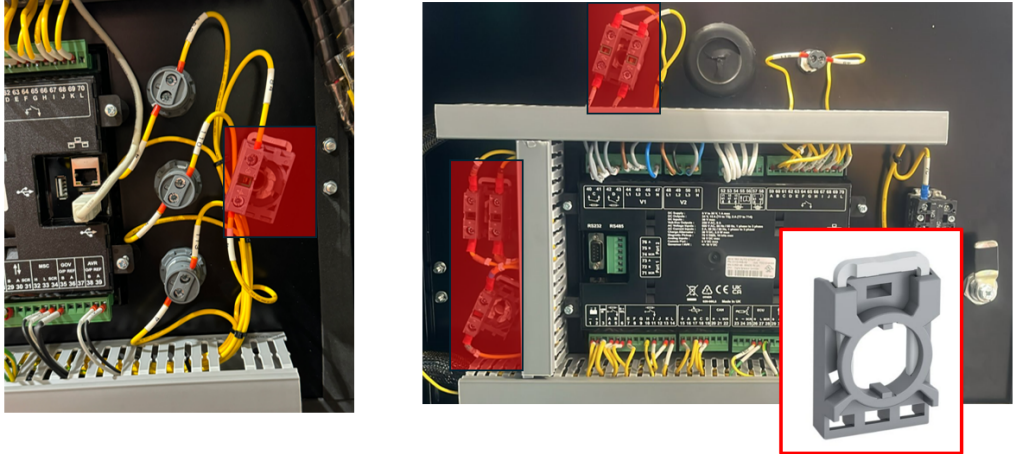
bb. Switch the position of selector switch to "END". Check continuity between contact block. It should be "CLOSE / CONTINUITY". If yes, then switch is okay. If "OPEN" is there,

	switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).
Expected Values:	Refer Pass / fail criteria as per "Testing" Column.
Related Fault Codes:	N/A.

JCB

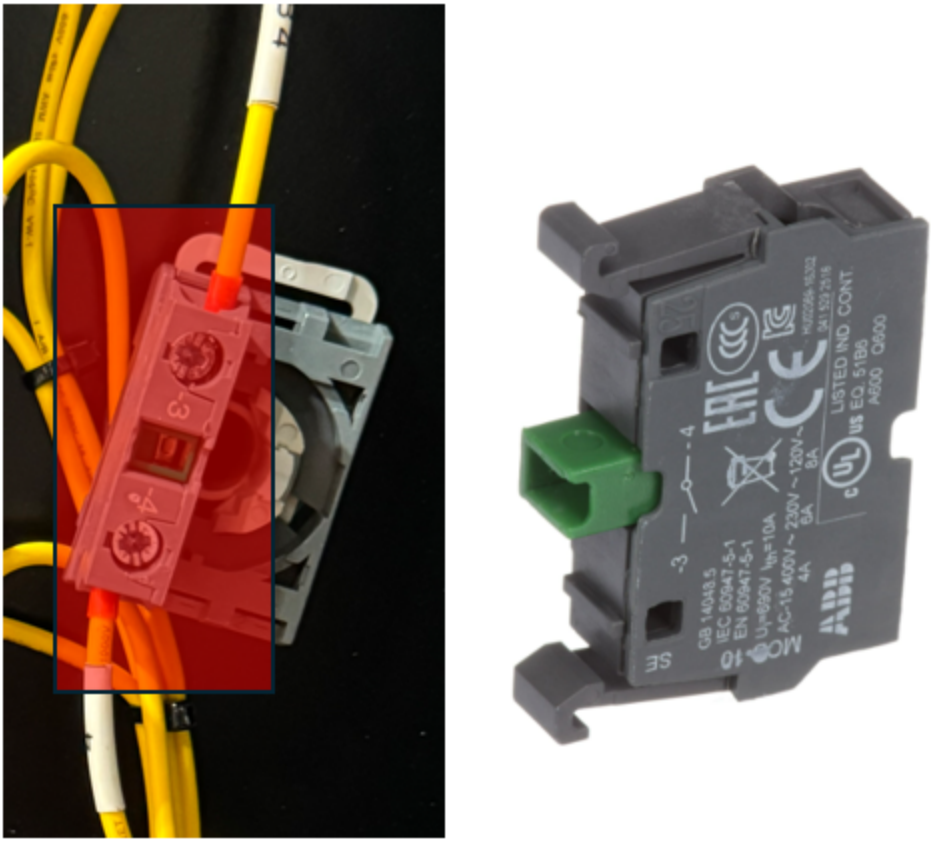
1.2.26 CONTACT BLOCK HOLDER MCBH-00

Component:	CONTACT BLOCK HOLDER MCBH-00
Function:	Used to hold the Selector switch (400/B9258) with control panel with below switches. 1. Panel with DSE Controller:- a. 208/ 240 Voltage Selector b. Resistor Switch (Middle set or End Set) 2. Panel with Deif Controller:- a. Resistor Switch (Middle set or End Set)
Location:	Location: 1. Panel with DSE Controller:- a. Control panel DC Door b. Customer interface 2. Panel with Deif Controller:- a. Customer interface

Location IMG:	
Signal:	Mechanical Part. Signals are part of contact block. For signals, refer " 410/A0601 - CONTACT BLOCK N/O MCB-10" section with help file.
Wires & Connectors IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Internal Electrical Schematic IMG:	N/A
Testing:	Physical fitment verification of switch with holder can be ensure. Ensure proper fitment of switch.
Expected Values:	Physical verification to be perform. Ensure proper fitment of switch.
Related Fault Codes:	N/A

**1.2.27 CONTACT BLOCK N/O MCB-10**

Component:	CONTACT BLOCK N/O MCB-10
Function:	Use to connect circuit wires to perform below functions : 1. Panel with DSE Controller:- a. 208/ 240 Voltage Selector b. Resistor Switch (Middle set or End Set) 2. Panel with Deif Controller:- a. Resistor Switch (Middle set or End Set)
Location:	Location: 1. Panel with DSE Controller:- a. Control panel DC Door b. Customer interface 2. Panel with Deif Controller:- a. Customer interface

Location IMG:	
Signal:	Signal : 1. Panel with DSE Controller:- a. 208/ 240 Voltage Selector : Battery Negative b. Resistor Switch (Middle set or End Set) : Resistance 2. Panel with Deif Controller:- a. Resistor Switch (Middle set or End Set) : Resistance
Wires & Connect ors IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Internal Electrical Schemati c IMG:	N/A

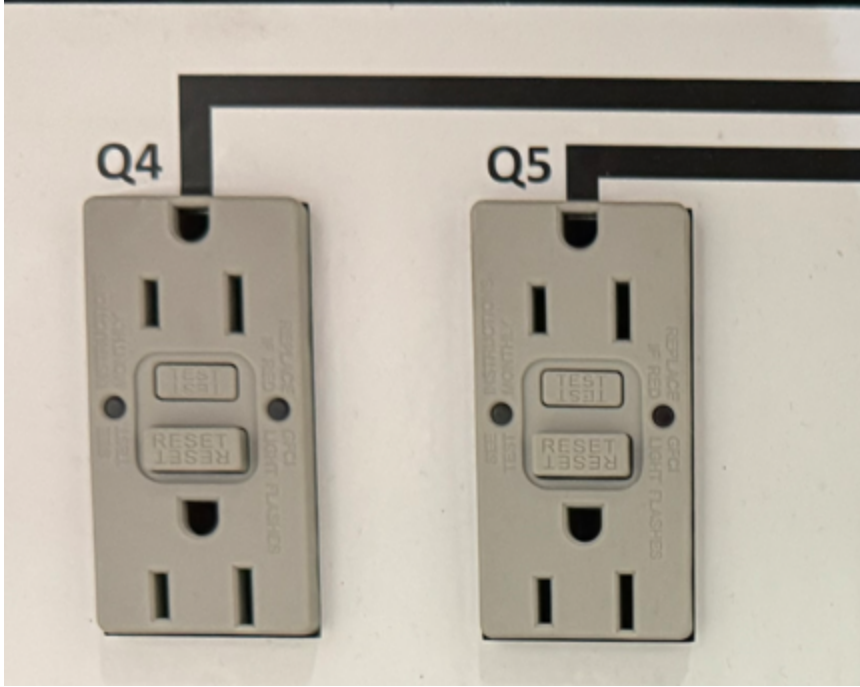
Testing:	Testing : 1. Panel with DSE Controller:- a. 208/ 240 Voltage Selector : Switch OFF The DC Supply. Isolate the battery. Disconnect wires from contact block. aa. Switch the position of selector switch to "208 V". Check continuity between contact block. It should be "OPEN". If yes, then switch is okay. If "continuity" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258). bb. Switch the position of selector switch to "240 V". Check continuity between contact block. It should be "CLOSE / CONTINUITY". If yes, then switch is okay. If "OPEN" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258). b. Resistor Switch (Middle set or End Set): Switch OFF The DC Supply. Isolate the battery. Disconnect wires from contact block. aa. Switch the position of selector switch to "MIDDLE". Check continuity between contact block. It should be "OPEN". If yes, then switch is okay. If "continuity" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258). bb. Switch the position of selector switch to "END". Check continuity between contact block. It should be "CLOSE / CONTINUITY". If yes, then switch is okay. If "OPEN" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258). 2. Panel with Deif Controller:-
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	a. Resistor Switch (Middle set or End Set): Switch OFF The DC Supply. Isolate the battery. Disconnect wires from contact blocks. aa. Switch the position of selector switch to "MIDDLE". Check continuity between contact block. It should be "OPEN". If yes, then switch is okay. If "continuity" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258). bb. Switch the position of selector switch to "END". Check continuity between contact block. It should be "CLOSE / CONTINUITY". If yes, then switch is okay. If "OPEN" is there, switch / contact block is faulty. First replace contact block (410/A0601) with new one & check continuity. If still same issue, replace the Switch (400/B9258).
Expected Values:	Refer Pass / fail criteria as per "Testing" Colum.
Related Fault Codes:	N/A



1.2.28 15A GFCI SOCKET OUTLET

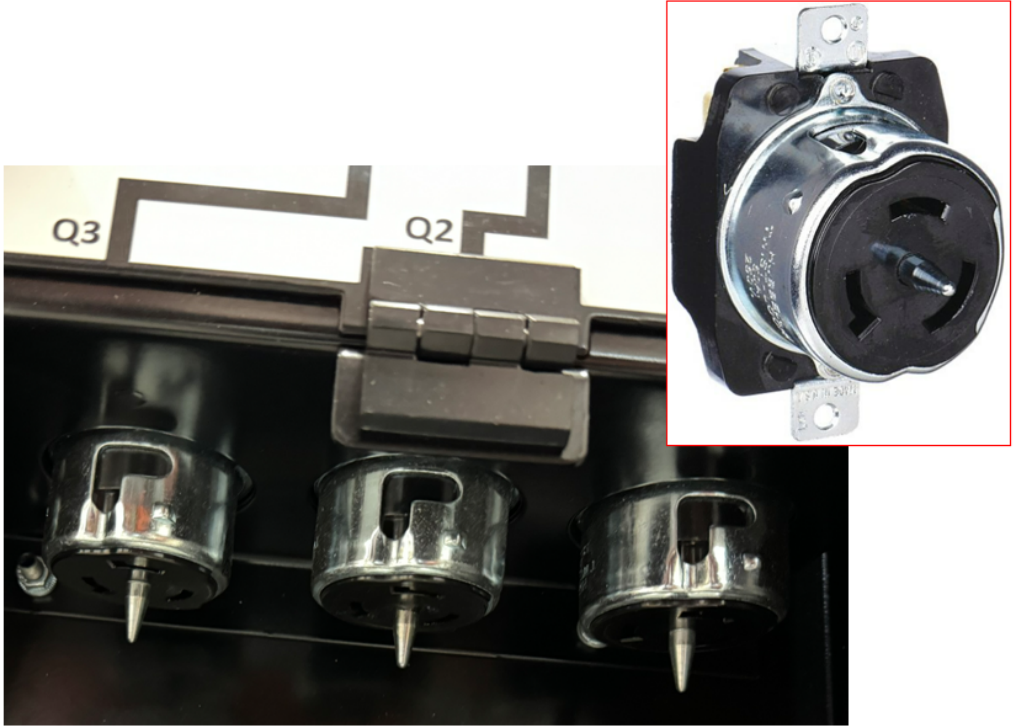
Component:	15A GFCI SOCKET OUTLET
Function:	In case of Ground Fault, the GFCI is used to isolate AC power to customer appliance to protect human from electric shock.
Location:	Location: Customer interface Section.

Location IMG:	
Signal:	110 V AC
Wires & Connect ors IMG:	Q4 - Wire Numbers - 5L2, N, E Q5 - Wire Numbers - 5L1, N, E
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Testing: To test output supply, use a safely connected test meter or plug in a lamp to verify power is on. a. Pushing the "TEST" button should turn off or isolate the power to the GFCI outlet. If not, the GFCI is faulty, replace with new one. b. Pushing the "RESET" button should re-establish the power to the GFCI outlet. If not, the GFCI is faulty, replace with new one.

Expected Values:	Refer Pass / fail criteria as per "Testing" Column.
Related Fault Codes:	N/A

JCB**1.2.29 50Amp Twist lock Outlet Socket**

Component:	50Amp Twist lock Outlet Socket
Function:	Twist lock outlet socket 120VAC A twist lock plug is an locking plug that must be twisted into the Twist Lock Locking Receptacle to make an electrical connection, locking the plug into the receptacle. So that the connection does not become unplugged.
Location:	Twist lock outlet socket located inside the control panel.

Location IMG:	
Signal:	120VAC line and neutral supply
Wires & Connectors IMG:	Q1 - Wire Numbers - 2L1, 2L2, N, E Q2 - Wire Numbers - 3L1, 3L2, N, E Q3 - Wire Numbers - 4L1, 4L2, N, E
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn ON the supply to panel, make sure all MCBs are in ON state and Genset ON. 2. Check voltages across the outlet socket for expected values.
Expected Values:	120VAC line and neutral.

Related Fault Codes:	N/A.
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1.2.30 2 POLE ON OFF SWITCH

Component:	2 POLE ON OFF SWITCH
Function:	ECU Diagnostic switch - Powers up the ECU without having to start the engine.
Location:	ECU diagnostic switch located inside the control panel or below socket box (T4F).

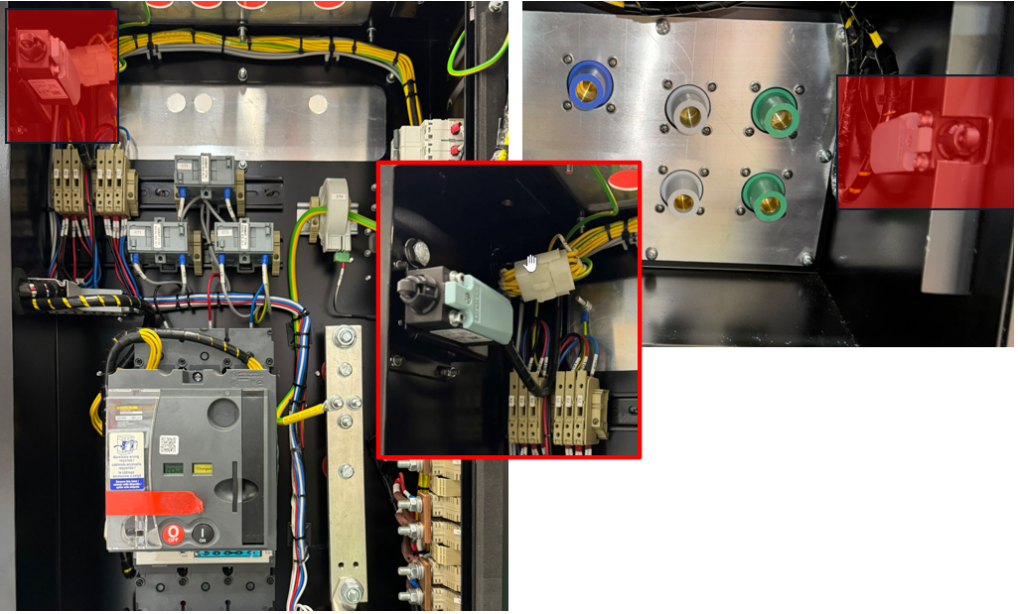
Location IMG:	
Signal:	Permanent live DC. Ignition Live DC. Battery negative DC.
Wires & Connect	SW1 Wire Numbers contact 1 - 15 and 4

Wiring IMG:	Wire Numbers contact 2 - 1 and 2
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn ON the supply to panel and check the connections as per Schematics wiring 2. Switch ON the SW1 diagnostic switch. 3. ECU is powered up and all engine parameters are displayed 4. If problem exists check the Wiring connections of Switch. Check ECU and Controller flashed with right configuration file
Expected Values:	0
Related Fault Codes:	N/A.



1.2.31 GA LIMIT SWITCH C/W PLUNGER

Component:	GA LIMIT SWITCH C/W PLUNGER
Function:	Cable access LIMIT SWITCH C/W PLUNGER The Limit Switch is fitted to detect the opening of compartments that contain live conductors. If a door is opened during generator operation, the generator will shut down to prevent harm.

Location:	Limit switch located inside the control panel
Location IMG:	
Signal:	From ELR Live DC. Battery negative DC.
Wires & Connectors IMG:	Cable access door Wire Numbers - 21, 22, 13, 14 Breaker Door Wire Numbers - 21, 22, 13, 14
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Turn ON the supply to panel and check for Breaker door open alarm on Controller for door Open and Closed condition If its working fine via Open and close condition limit switch is operational. -If not check the wiring ,check controller digital input connection. -Replace Limit switch if found faulty.

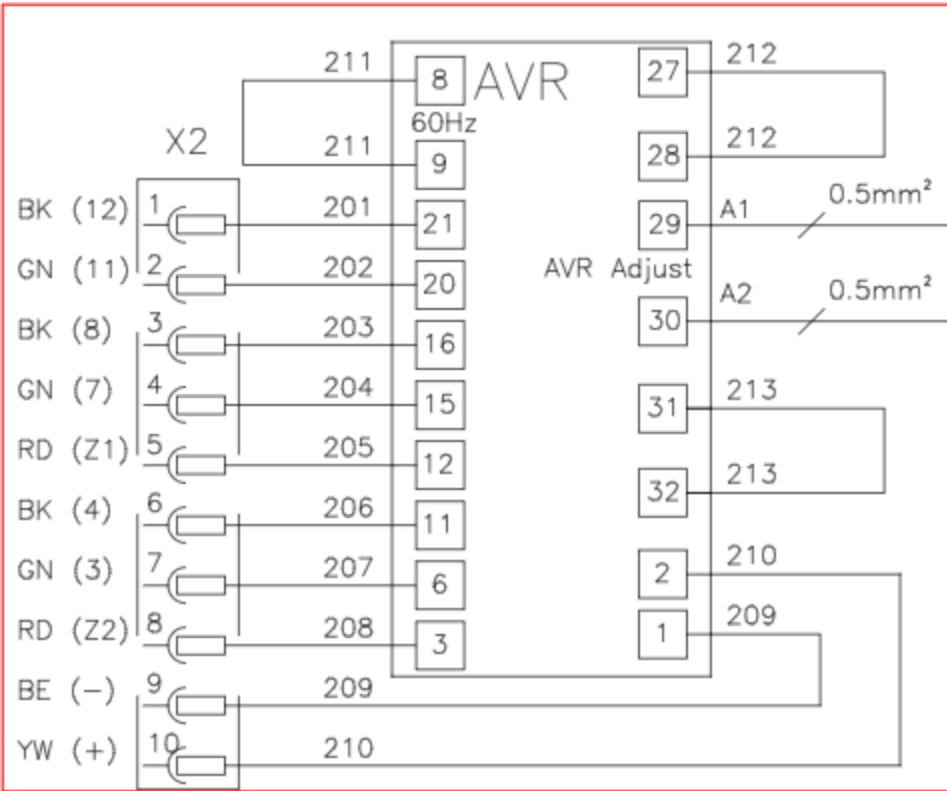
Expected Values:	0
Related Fault Codes:	N/A.

JCB**1.2.32 DER1 MECCALTE AVR**

Component:	DER1 MECCALTE AVR
Function:	DER1 is a 3phase Sensing digital voltage regulator which regulates the voltages.
Location:	Located inside Control panel enclosure, behind a surface mounted panel.

Location IMG:	 The image shows a black metal control cabinet. The left door is open, revealing internal components including a digital display, various switches, and a terminal block. A red arrow points from the main image to a larger, red-bordered inset image on the right. This inset shows a close-up of the internal wiring, specifically a terminal block with multiple colored wires (yellow, green, blue, red) connected to it.																				
Signal:	As per rated voltage Set in controller																				
Wires & Connect ors IMG:	<u>X2 Alternator AVR connector</u> <u>Wire Numbers - Terminal Number</u> <table><tr><td>201</td><td>1</td></tr><tr><td>202</td><td>2</td></tr><tr><td>203</td><td>3</td></tr><tr><td>204</td><td>4</td></tr><tr><td>205</td><td>5</td></tr><tr><td>206</td><td>6</td></tr><tr><td>207</td><td>7</td></tr><tr><td>208</td><td>8</td></tr><tr><td>209</td><td>9</td></tr><tr><td>210</td><td>10</td></tr></table> <u>X9A Breaker connector.</u> <u>Wire Number - Terminal Number</u>	201	1	202	2	203	3	204	4	205	5	206	6	207	7	208	8	209	9	210	10
201	1																				
202	2																				
203	3																				
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210	10																				

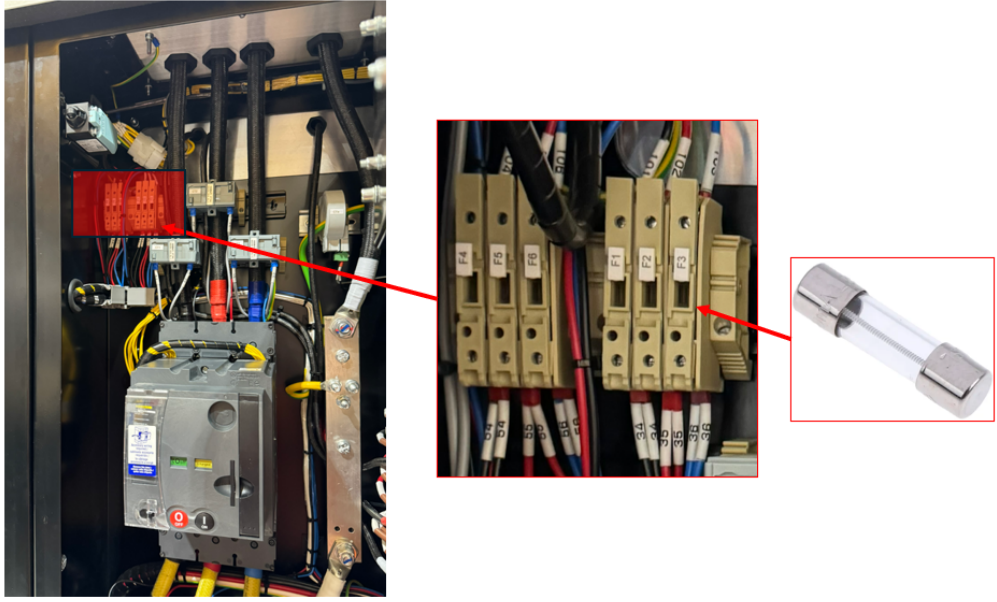
	152 9 151 3 153 12
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	The voltage regulator is usually the first item to test if the voltage of the alternator is either non existent at residual voltage or exceeding its nominal voltage. • If the generator is shutting down on under volts by displaying 0V or a low voltage (residual). • first check the DER fuse, this can blow if current has been exceeded on ecitation. • Check connections are secure on terminals 1 (blue) and 2 (yellow) for the excitation circuit and check wiring for damage. • With connections removed from terminals 1 and 2 of the DER, check resistance of the excitor field which should measure 10-15ohms, if there is no reading, the excitor circuit is open. • Check Aux circuit wiring on terminal 3 (Z2) and 12 (Z1) (both red), check connections and damage. A good AUX circuit should be 1ohm on testing. • If excitor and auxiliary circuits have tested good and are visually ok, reconnect the auxiliary Z1 and Z2. The blue and yellow wires from terminal 1 and 2 will need to be prepared ready for seperatly exciting the alternator with a 9V battery. • Start the generator, make sure you have "Gen Volts" on display and then place the blue on negative and the yellow on positive. If the volts increase to near nominal, the regulator has failed and will need replacing. For over voltage shutdowns/eratic voltages.

	Check all connections for the voltage input sensing on terminals 6, 11, 15, 16, 20 and 21. 
Expected Values:	Rated voltage Defined for genset
Related Fault Codes:	N/A

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1.2.33 FUSE 20MM GLASS 2A SLOW

Component:	FUSE 20MM GLASS 2A SLOW
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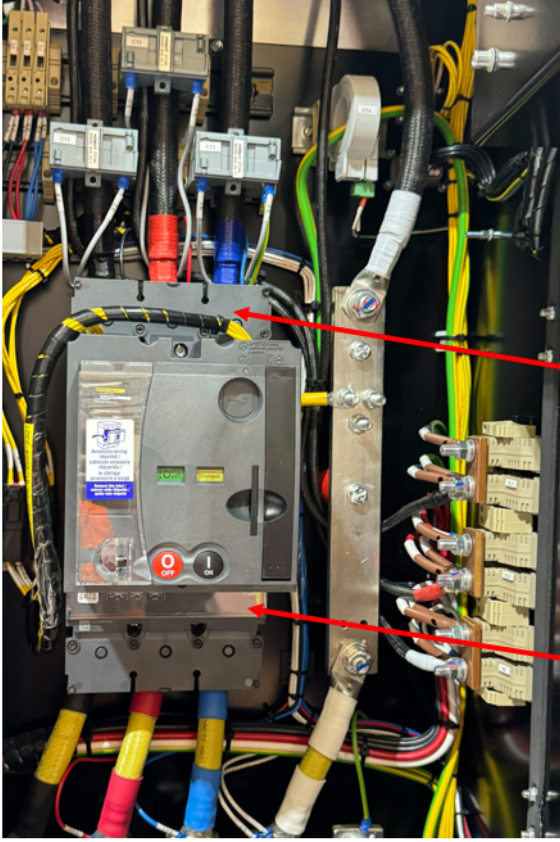
Function:	Fuse Is used for protection of controller against tranisent voltage /short for the wires tapped for generator votlage sensing and bus voltage Sensing. F1- 2A L1 Generator Voltage Sense F2- 2A L2 Generator Voltage Sense F3- 2A L3 Generator Voltage Sense F4-2A L1 Bus Voltage Sense F5-2A L2 Bus Voltage Sense F6-2A L3 Bus Voltage Sense
Location:	Located inside Control panel breaker box top end.
Location IMG:	
Signal:	Rated voltage signal from Alternator and Bus.
Wires & Connect ors IMG:	<u>Fuse Number - Wire Number</u> F1 - 101 and 34 F2 -102 and 35 F3 -103 and 36 F4 -104 and 54 F5 -105 and 55 F6 -106 and 56
Internal Electrical	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the

Schematic IMG:	latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check the continuity of the fuse if there is no continuity than replace the fuse. 2. Check continuity on fuse carrier with a good fuse from terminal to terminal. This will prove wiring connection and mechanical hold of fuse.
Expected Values:	Desired rated voltage to display on controller
Related Fault Codes:	N/A



1.2.34 MCCB ASSEMBLY

Component:	G220RST4F MCCB 600A ASS
Function:	MCCB is used inline in between Alternator and load which interrupts during any power fault like over load and shortcircuit or any Generator faults
Location:	Located inside Control panel breaker box mid Section

Location IMG:	  
Signal:	Voltage/Current
Wires & Connectors IMG:	<u>Cable Numbers</u> L1 - Black L2 - Red L3 - Blue Phase power cable 120 Sq mm
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	With breaker in closed position (on), check the continuity of breaker at the top and bottom. There should not be any resistance on the test.

	Check closing and opening and the trip function
Expected Values:	No resistance on continuity checks. Fully operational function of opening and closing. Trip test to middle position.
Related Fault Codes:	N/A

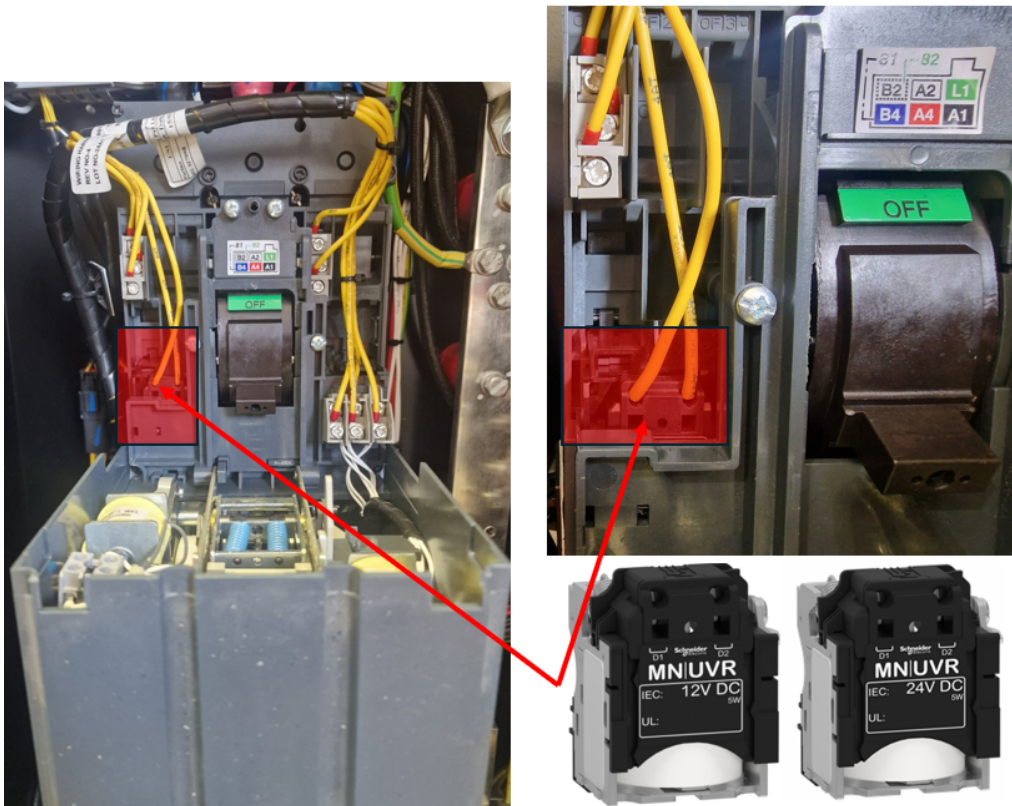


1.2.35 MOTOR OPERATOR

Component:	G220RST4F Motor Operator
Function:	Motor operator (Motor Mech) is fitted to the MCCB to fully automate the opening and closing of the breaker
Location:	Located inside Control panel breaker and mounted to the main MCCB.
Location IMG:	
Signal:	Voltage/Current

Wires & Connectors IMG:	Wire Numbers - 92, 4, 93, 94.
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Testing for operation - check that the unit functions by using controller to open and close. If there is no control through the controller, check that the motor operator is in the "auto" position. Check power to the motor operator circuit. MCB in correct position? Check voltage to Motor terminals. DC supply fed from CD5. Check the "close" command path/wiring. Close activation from GB close output on controller DSE terminal 42, 43 and AGC terminal 17, 18.
Expected Values:	Electrical and continuity checks of supply path to motor operator.
Related Fault Codes:	N/A

1.2.36 Under Voltage Coil

Component:	G220RST4F Under Voltage Coil
Function:	Under voltage coil is used as a safety feature to open the MCCB on fault.
Location:	Located inside Control panel and inside main MCCB. Motor operator mounted over coil.
Location IMG:	 The images show the physical location of the under voltage coil. The left image shows the coil (red box) inside the control panel, with yellow wiring connected to it. The right image shows the coil (red box) inside the main MCCB, with a motor operator mounted over it. Red arrows point from the coil in both images to the two MNIVR coils shown below. Below the images are two MNIVR coils. The left coil is labeled 'MNIUVR IEC: 12V DC SW UL'. The right coil is labeled 'MNIUVR IEC: 24V DC SW UL'.
Signal:	Voltage
Wires & Connectors IMG:	Wire Numbers - 47 and 4
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.

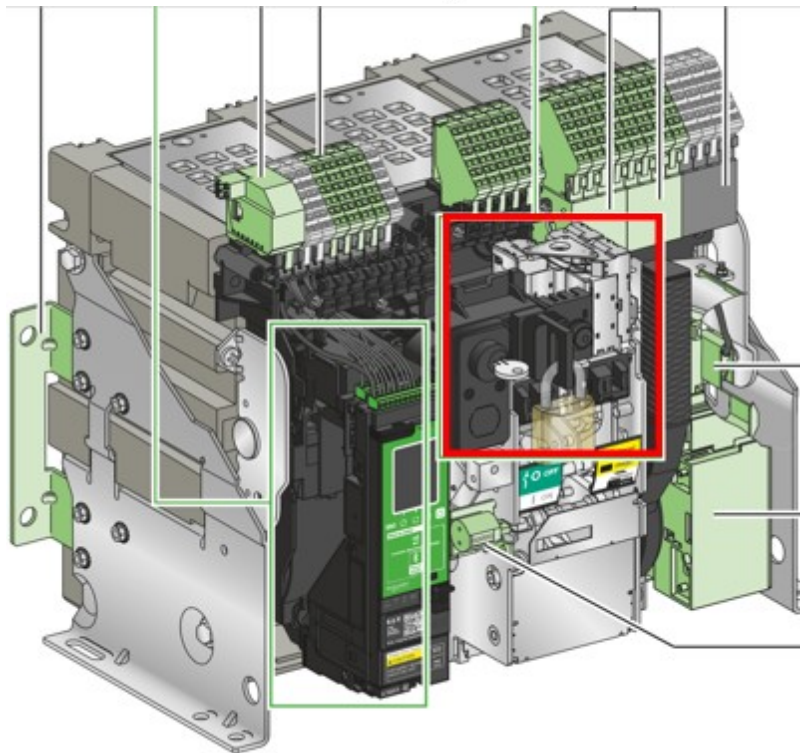
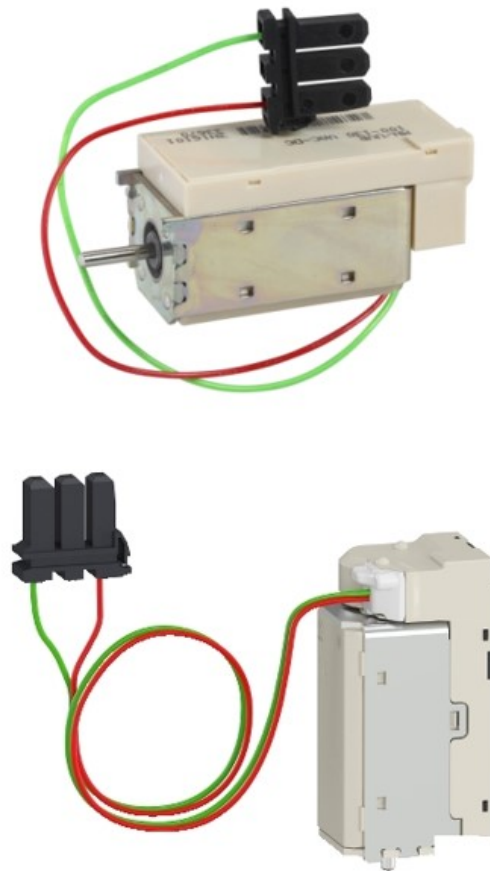
Testing:	Common issue to look at with UV coils is that the breaker may trip instantly on closing, this will happen on motor operated breakers and manual breakers. Test for DC voltage at the under voltage coil, the circuit should be functional when generator is not running, but with battery isolator on. The circuit for MN coil is also part of the emergency stop circuit and the door switches. which should be a normally closed circuit. Supply is from CD3, through fault contact on ELR that supplies the REL relay but also goes through the contact side of the RST relay, then through the door switches and then e.stop contact 2's. DC positive circuit to be measured.
Expected Values:	DC Voltages.
Related Fault Codes:	N/A

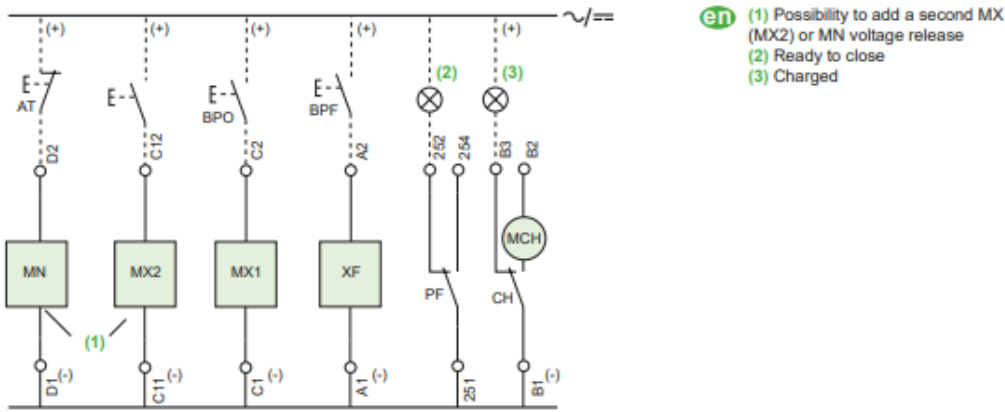
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1.2.37 Under Voltage Coil

Component:	G400RST4F Under Voltage Coil
Function:	Under voltage release coil is used as a safety feature to open the ACB on fault.
Location:	Located inside main ACB.

Location
IMG:

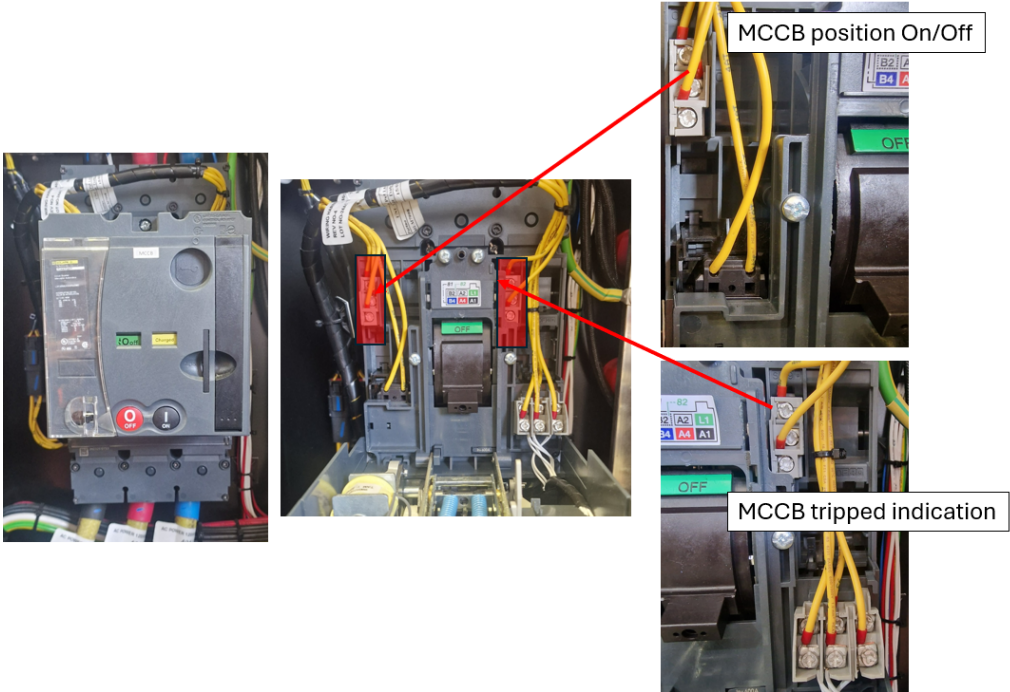


Signal:	Voltage
Wires & Connectors IMG:	Wire Numbers - 94 and 4 MX Wire Numbers - 47 and 4 MN
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Common issue to look at with UV/shunt coils is that the breaker may trip instantly on closing, this will happen on motor operated breakers and manual breakers. Test for DC voltage at the under voltage coil, the circuit should be functional when generator is not running, but with battery isolator on. The circuit for MN coil is also part of the emergency stop circuit and the door switches. which should be a normally closed circuit. Supply is from CD3, through fault contact on ELR that supplies the REL relay but also goes through the contact side of the RST relay, then through the door switches and then e.stop contact 2's. DC positive circuit to be measured. 

Expected Values:	DC Voltages.
Related Fault Codes:	N/A

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1.2.38 CONTACTS (MCCB)

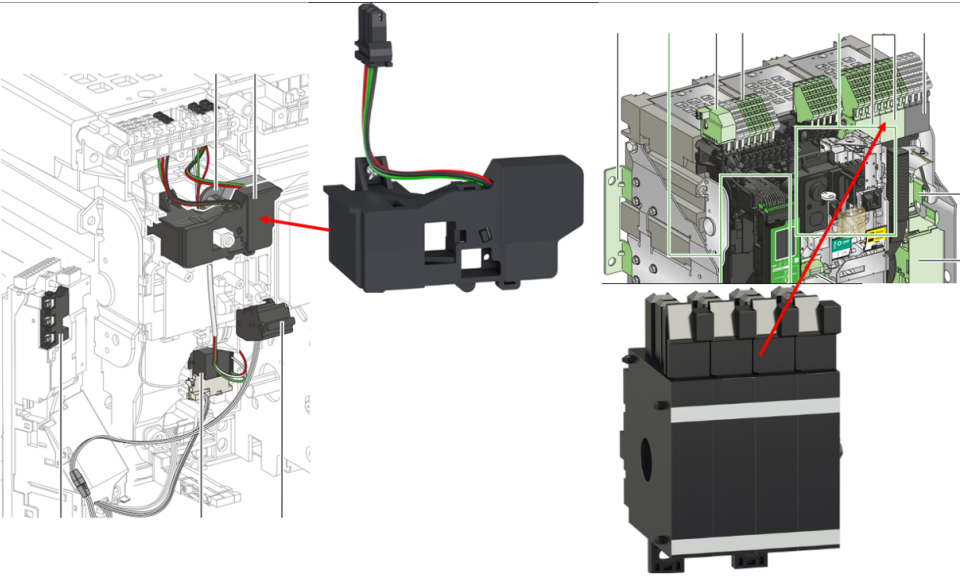
Component:	G220RST4F Auxiliary Contacts "OF" & "SD" (MCCB)
Function:	Contacts send feedback to the controller on the status of the breaker.
Location:	Located inside Control panel and inside main MCCB. Motor operator mounted over contacts.
Location IMG:	

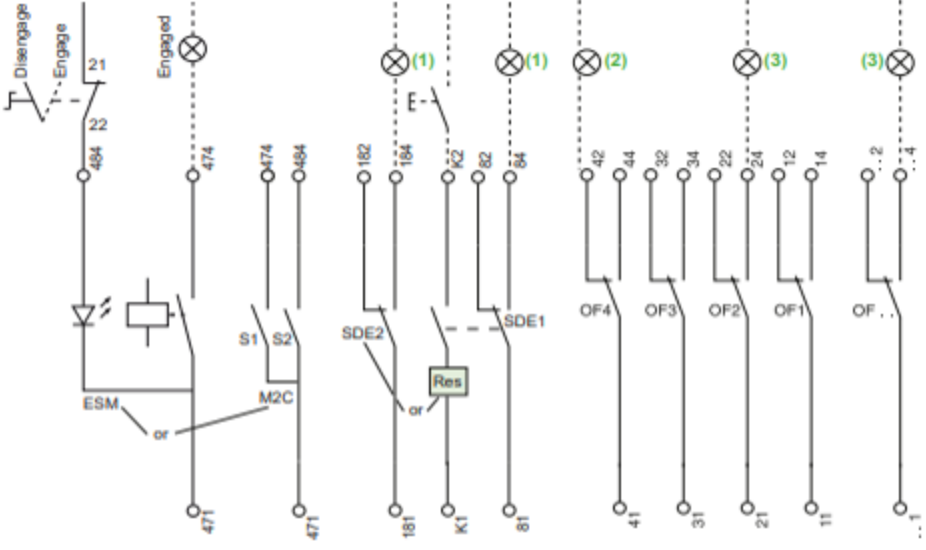
Signal:	Voltage/signals						
Wires & Connectors IMG:	Wire Numbers - 90, 19, 18 and 4.						
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.						
Testing:	Removal of the contacts from the MCCB and carrying out continuity checks. If they do not operate as shown, please replace.  Standard and Low-Level Contacts Standard and low-level contacts are the common point changeover type.  NC Normally Closed contact NO Normally Open contact The following table describes the operation of standard and low-level volt-free contacts: <table border="1"> <thead> <tr> <th>Name</th><th>Definition</th></tr> </thead> <tbody> <tr> <td>OF auxiliary contact</td><td>Changeover: The NO contact is normally open when the circuit breaker is in the O (OFF) position.</td></tr> <tr> <td>SD auxiliary contact</td><td>Trip indication: The SD contact indicates that the circuit breaker has tripped due to: - Long-time protection - Short-time protection - Ground-fault protection - Earth-leakage protection (trip by Micrologic 4 or 7 trip unit, or by Vigi module) - Operation of the MX or MN voltage releases - Operation of the push-to-trip button - Connecting/Disconnecting the circuit breaker - Manually opening the motor mechanism </td></tr> </tbody> </table>	Name	Definition	OF auxiliary contact	Changeover: The NO contact is normally open when the circuit breaker is in the O (OFF) position.	SD auxiliary contact	Trip indication: The SD contact indicates that the circuit breaker has tripped due to: - Long-time protection - Short-time protection - Ground-fault protection - Earth-leakage protection (trip by Micrologic 4 or 7 trip unit, or by Vigi module) - Operation of the MX or MN voltage releases - Operation of the push-to-trip button - Connecting/Disconnecting the circuit breaker - Manually opening the motor mechanism
Name	Definition						
OF auxiliary contact	Changeover: The NO contact is normally open when the circuit breaker is in the O (OFF) position.						
SD auxiliary contact	Trip indication: The SD contact indicates that the circuit breaker has tripped due to: - Long-time protection - Short-time protection - Ground-fault protection - Earth-leakage protection (trip by Micrologic 4 or 7 trip unit, or by Vigi module) - Operation of the MX or MN voltage releases - Operation of the push-to-trip button - Connecting/Disconnecting the circuit breaker - Manually opening the motor mechanism						
Expected Values:	Continuity test only.						

Related Fault Codes:	N/A
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1.2.39 CONTACTS (MCCB)

Component:	G400RST4F Auxiliary Contacts "OF" & "SDE" (ACB)
Function:	Contacts send feedback to the controller on the status of the breaker.
Location:	Located inside Control panel and inside main ACB. Motor operator mounted over contacts.
Location IMG:	
Signal:	Voltage/signals
Wires & Connectors IMG:	Wire Numbers - 90, 19, 18 and 4.

Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Removal of the contacts from the ACB and carrying out continuity checks. If they do not operate as shown, please replace.  en (1) Fault (2) Open (3) Closed
Expected Values:	Continuity test only.
Related Fault Codes:	N/A



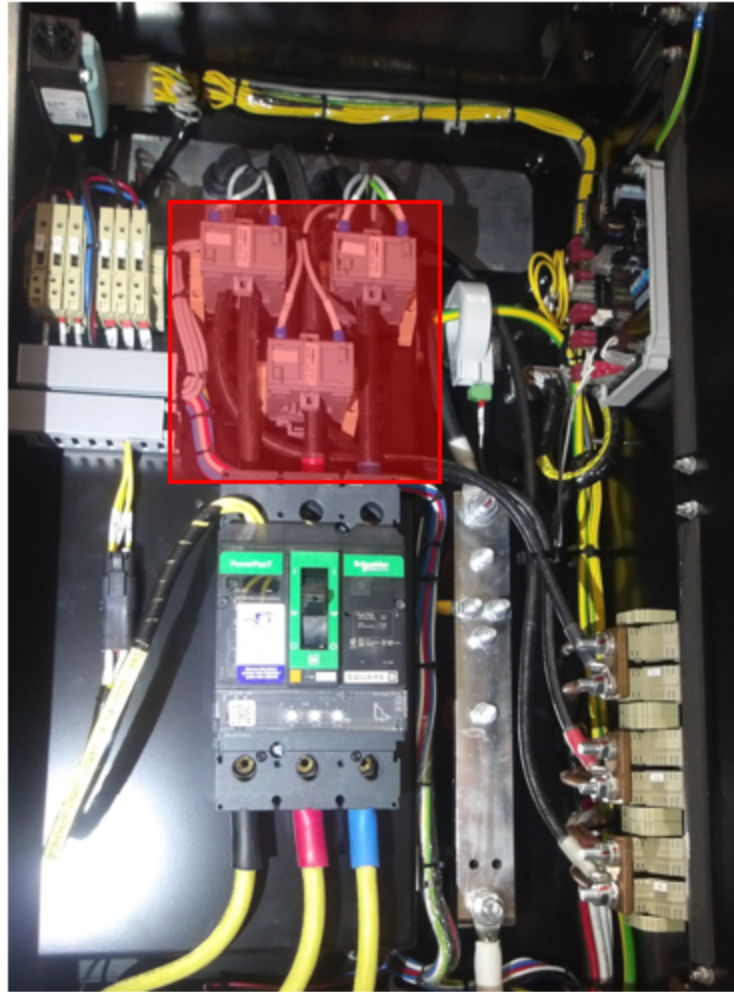
1.2.40 Current Transformers

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1.2.40.1 CT300/5A - 2.5VA G70RST4F

Component:	CT140D-600/5-2.5/1-31 (600A) - G220RS Only
Function:	The CT (Current Transformer) transforms the primary current being measured into a 5A secondary current for safe controller measurement of amps/power.
Location:	Mounted inside the AC section of the controls enclosure above the MCCB.

Location
IMG:



	
Signal:	Current consumed by end user
Wires & Connectors IMG:	Wire Numbers - 29,30,31 and 32
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	For non function of one or all. 1. Check connections on the CT's and Controller. Check for physical damage to casing and cable that passes through. Check continuity of each wire 29, 30, 31 from CT to controller and check the common ground wire 32 from CT to controller and ground (earth). Testing resistance on CT terminals S1 and S2 will only test the Secondary circuit which measure at 0.3 Ohm.

Expected Values:	Checks by continuity and visual inspection Check results against clamp meter.
Related Fault Codes:	N/A



1.2.40.2 CT400/5A - 2.5VA G125RST4F

Component:	CT1600/5A - 15VA (1600A) - G400RS Only
Function:	The CT (Current Transformer) transforms the primary current being measured into a 5A secondary current for safe controller measurement of amps/power.
Location:	Mounted inside the AC section of the controls enclosure above the ACB.

Location
IMG:



	
Signal:	Current consumed by end user
Wires & Connectors IMG:	Wire Numbers - 29,30,31 and 32
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	For non function of one or all. 1. Check connections on the CT's and Controller. Check for physical damage to casing and cable that passes through. Check continuity of each wire 29, 30, 31 from CT to controller and check the common ground wire 32 from CT to controller and ground (earth). Testing resistance on CT terminals S1 and S2 will only test the Secondary circuit which measure at 0.3 Ohm.

Expected Values:	Checks by continuity and visual inspection Check results against clamp meter.
Related Fault Codes:	N/A

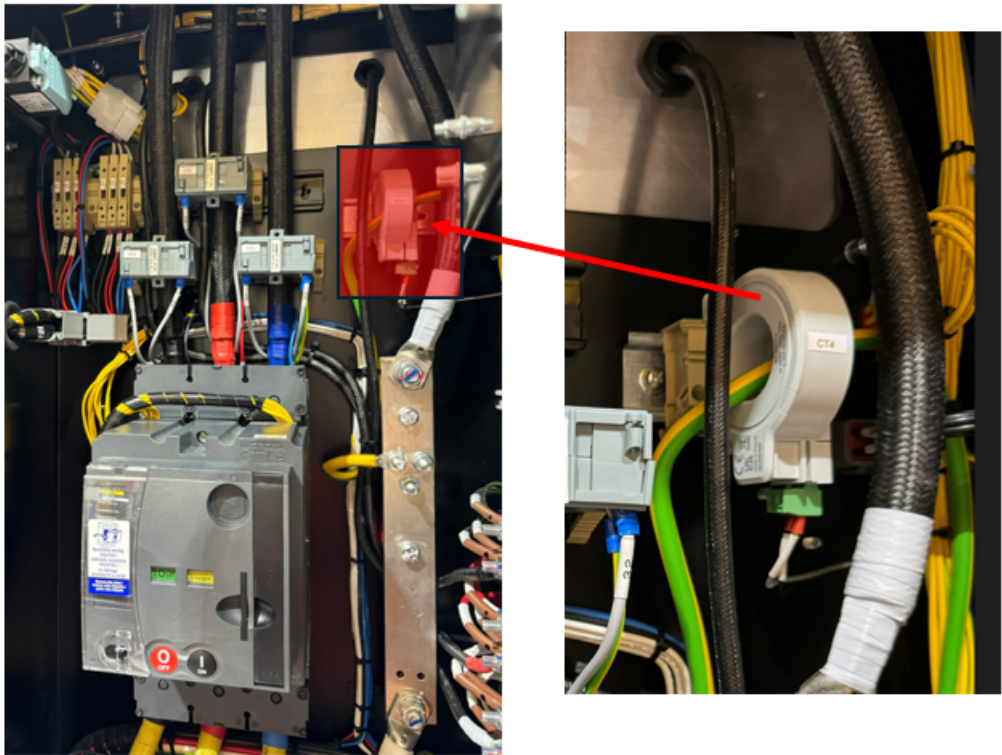


1.2.41 4mm TEST POINTS

Component:	4mm TEST POINTS
Function:	Test plug are used to test the voltages of Genset voltage and Bus bar voltage without direct contact with bus bars
Location:	Located on controls enclosure AC section. Black, Red, Blue and White.
Location IMG:	
Signal:	Measures rated voltages available at bus bar
Wires & Connectors IMG:	Generator Voltage Sensing <u>Fuse Number - Wire Number</u>

	F1 - 101 and 34 F2 -102 and 35 F3 -103 and 36 WE - 33 Generator Bus Voltage sensing F4 -104 and 54 F5 -105 and 55 F6 -106 and 56 WE - 43
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Check voltages on the controller display and then check the voltages at the test points for comparison.
Expected Values:	Rated voltage to be observed while tested.
Related Fault Codes:	#N/A

1.2.42 CLOSED TOROID SENSOR - TA30

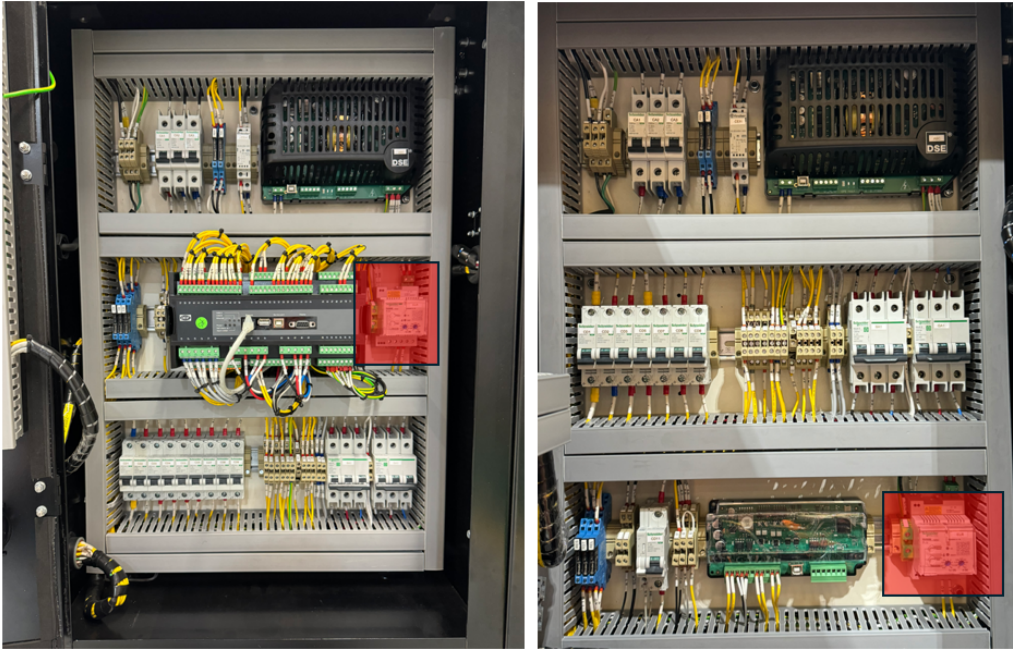
Component:	CLOSED TOROID SENSOR - TA30
Function:	To measure the earth leakage current
Location:	CT Toroid is located inside the Breaker box
Location IMG:	
Signal:	mA
Wires & Connectors IMG:	Wire Numbers - P1 and P2 Toroid Terminals - S1 and S2
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.

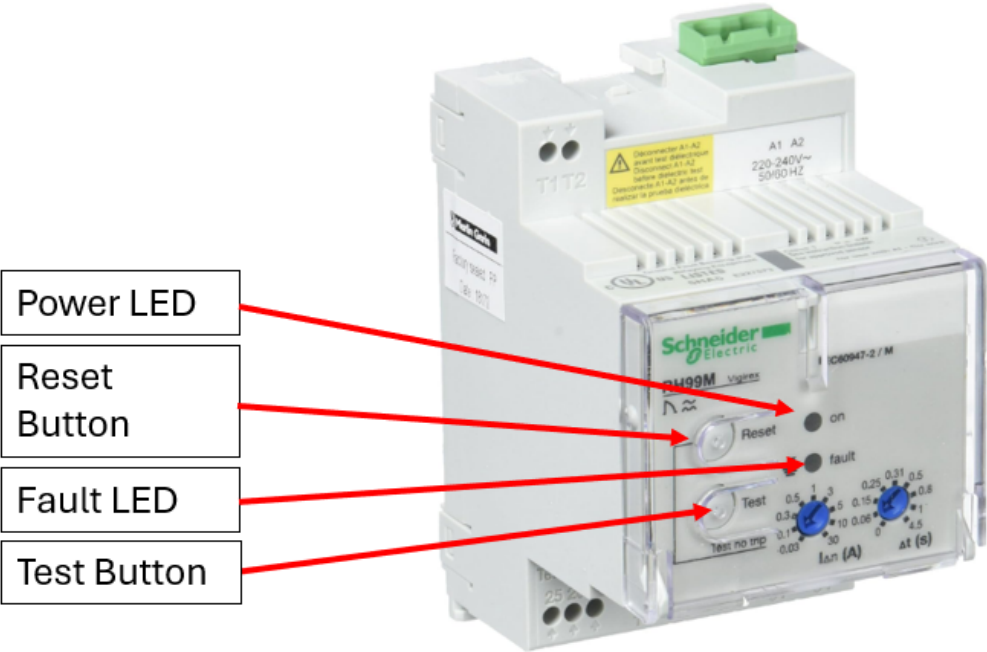
Testing:	Test Set Up For Equipment Test the ELR circuit using a calibrated RCD tester. Set up for 30mA and X1 and trip within 300mS. Toroid can also cause nuisance tripping if not connected correctly or loose connections on wiring.
Expected Values:	Trip within 300 ms Leakage current 30mA
Related Fault Codes:	N/A



1.2.43 EARTH LEAKAGE RELAY RH99M

Component:	MONITORING RELAY (RH99M) - 56170
Function:	To measure the earth leakage current & operate the shunt in case of fault
Location:	Relay is located inside the control panel

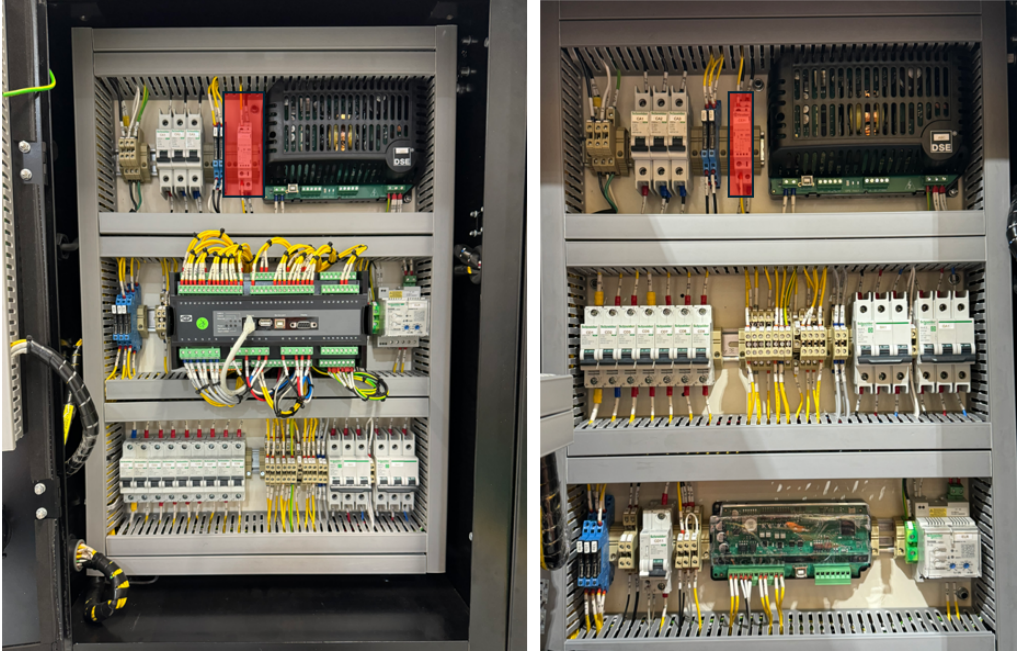
Location IMG:	
Signal:	VDC 24V
Wires & Connectors IMG:	Wire Numbers P1 and P2 - Sensing 37 and 4 - Relay coil 40 and 41 - Output
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check for power on the ELR (Earth Leakage Relay). 2. Test the ELR by closing the MCCB and pressing the test button on the ELR. 3. Test the ELR circuit using a calibrated RCD tester. Set up for 30mA and X1 and trip within 300mS.

	4. Toroid can also cause nuisance tripping if not connected correctly or loose connections on wiring. 5. Replace if not functioning.  The image shows a Schneider Electric AU99M residual current device (RCD) with a transparent front panel. Four red arrows point from labels to specific features: 'Power LED' points to a small green LED, 'Reset Button' points to a circular button with a right-pointing arrow, 'Fault LED' points to a small red LED, and 'Test Button' points to a circular button with a left-pointing arrow. The device has a green terminal block on top and various technical markings on its face, including 'Schneider Electric', 'AU99M', 'Vigiress', and 'IC6947-2/M'.
Expected Values:	Trip within 300 ms Leakage current 30mA
Related Fault Codes:	#N/A

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1.2.44 CONTACTOR 25A 24V 2P N/C

Component:	CONTACTOR 25A 24V 2P N/C
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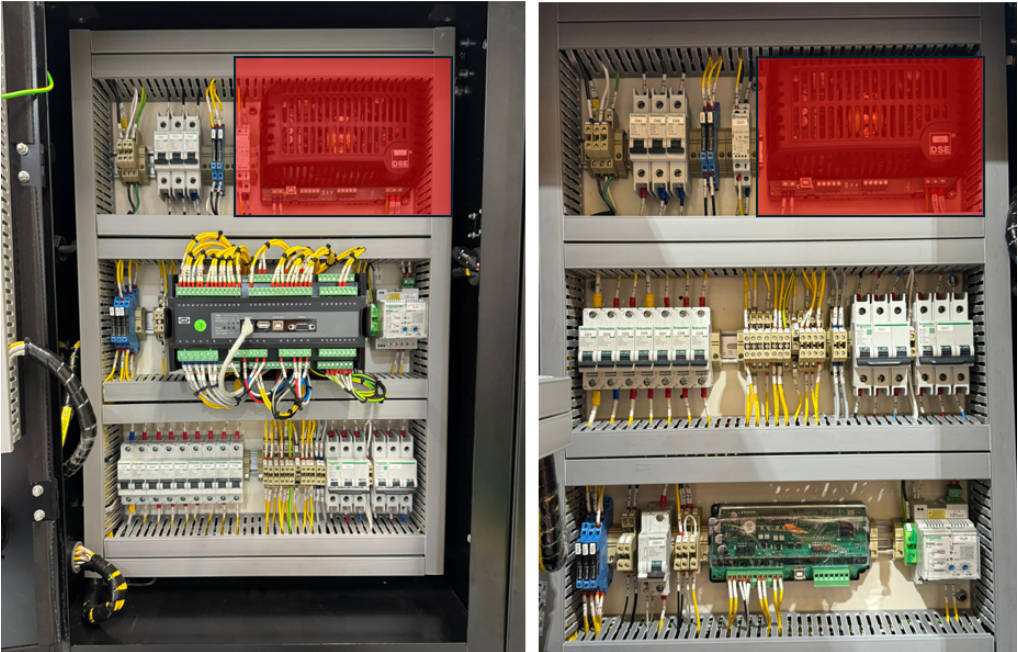
Function:	CEH - Contactor Engine Heater
Location:	Relay is located inside the control panel
Location IMG:	
Signal:	VDC 24V
Wires & Connectors IMG:	Wire numbers 4 and 66 - Relay Coil 61 and 62 - NC Contact 67 and 68 - NC Contact
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Turn OFF the supply to panel. Check the continuity of first NC (terminal 1 and 2) and second NC contact (terminal 3 and 4) of the

	contactor. Make sure NC shows continuity, if not replace the Relay. 2. Provide external supply to the contactor. Check for the contactor operation with Turning ON and OFF of the supply. If contactor doesn't functions right replace it. 3. Assemble back the contactor on control panel. Turn ON supply to the control panel check for the voltage at A1 & A2. If voltage not found diagnose the circuit as per schematic.
Expected Values:	0
Related Fault Codes:	N/A



1.2.45 BATTERY CHARGER 24V 10A DSE9470

Component:	BATTERY CHARGER 24V 10A DSE9470
Function:	DC charging supply for battery.
Location:	Battery charger is located inside the control panel.

Location IMG:	
Signal:	12V/24V DC for battery
Wires & Connectors IMG:	Wire Numbers 73, 69 and YG - AC Supply 1 and 4 - DC supply
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check the availability of 1Ph AC supply in the input side of battery charger using a multimeter.AC 230V should be available. 2. Check the DC output voltage using a multimeter. It should be either 12V or 24V. 3. Check the LED status as mentioned in Expected Values. 4. Replace, if the battery charger is not providing the required DC output.

Expected Values:	
Related Fault Codes:	N/A



1.2.46 AUXILIARY SUPPLY INLET PLUG

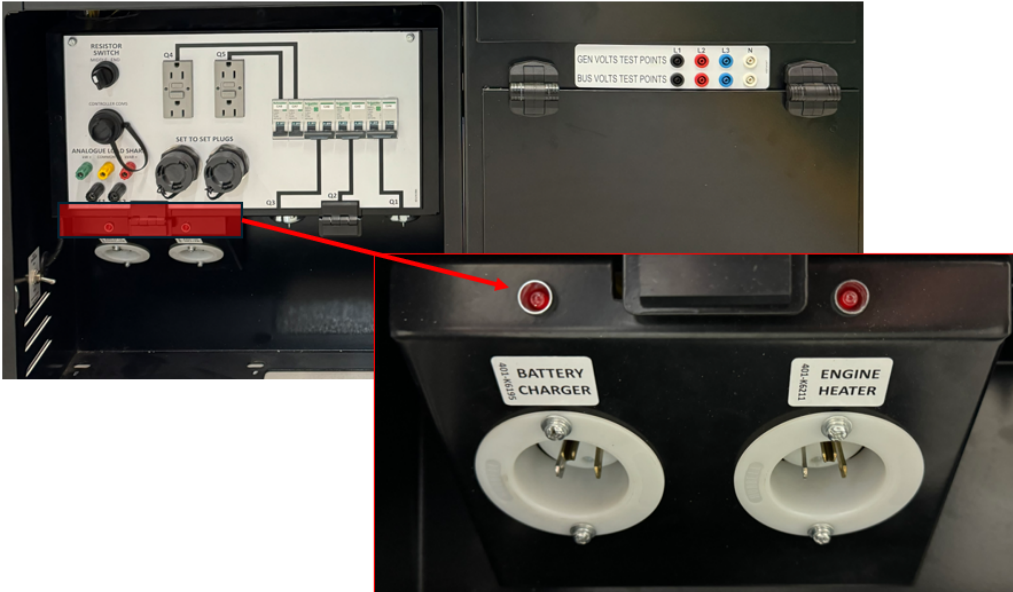
Component:	AUXILIARY SUPPLY INLET PLUG
Function:	To allow for quick connection to external auxiliary supply, for battery charger or engine/alternator heater options.
Location:	Located on customer socket box inside control panel.
Location IMG:	
Signal:	Single phase AC supply voltage

Wires & Connectors IMG:	Wire Numbers IS1 - 65, 64 and G/Y IS2 - 72, 71 and G/Y
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check continuity between both sides of contacts 2. Check for any loose connections 3. Check incoming Aux supply is ON. 4. Follow the schematic in fault finding and troubleshooting 5. If any visible damage, replace item.
Expected Values:	~110V AC supply
Related Fault Codes:	N/A



1.2.47 AUXILIARY SUPPLY INDICATOR LED

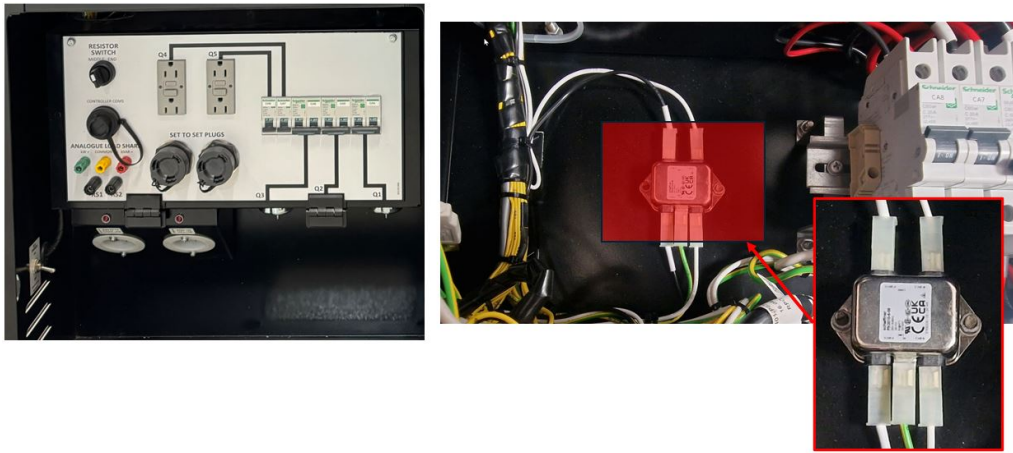
Component:	AUXILIARY SUPPLY INDICATOR LED
Function:	24VDC LED for indication of Inlet plug is live (power on)
Location:	Located above Aux inlet plug

Location IMG:	
Signal:	Battery positive 12V/24V DC
Wires & Connectors IMG:	Wire Numbers 4 and 75 4 and 76
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check for any loose connections. 2. Check incoming Aux inlet supply. 3. Check correct operation of relays Relay Battery Charger (RBC) and Relay Engine Heater (REH). 4. Follow the schematic in fault finding and troubleshooting. 5. If any visible damage replace item.
Expected Values:	ON if Aux inlet plug supply is on. OFF if no supply to Aux inlet plug.

Related Fault Codes:	N/A
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1.2.48 BATTERY CHARGER EMC FILTER

Component:	BATTERY CHARGER EMC FILTER
Function:	To Reduce electro-magnetic disturbances (AC side)
Location:	Located behind Socket box front plate, inside control panel.
Location IMG:	
Signal:	Single phase AC supply voltage
Wires & Connectors IMG:	Wire Numbers 64, 65, 70 and 69
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.

Testing:	1. Check continuity between both sides of contacts. 2. Check for any loose connections. 3. Follow the schematic in fault finding and troubleshooting. 4. If any visible damage replace item.
Expected Values:	AC single phase supply on both sides of unit (line/load) ~110V AC same as incoming supply
Related Fault Codes:	N/A



1.2.49 DSE 7310MKII GENERATOR CONTROLLER

Component:	DSE 7310MKII GENERATOR CONTROLLER
Function:	Main generator control unit

	
Location:	Located on Control panel door.

Location IMG:	 A black electrical control cabinet is shown. The left door is open, revealing internal components. On the left door, there is a white label with a circuit diagram and text. Below the label are two green push buttons and a small digital display. The right door is closed and has a small rectangular panel with a switch and indicator lights. At the bottom of the cabinet, there is a terminal block with various colored wires connected to it. The cabinet is mounted on a wall.
Signal:	Battery positive 12V/24V DC USB communication

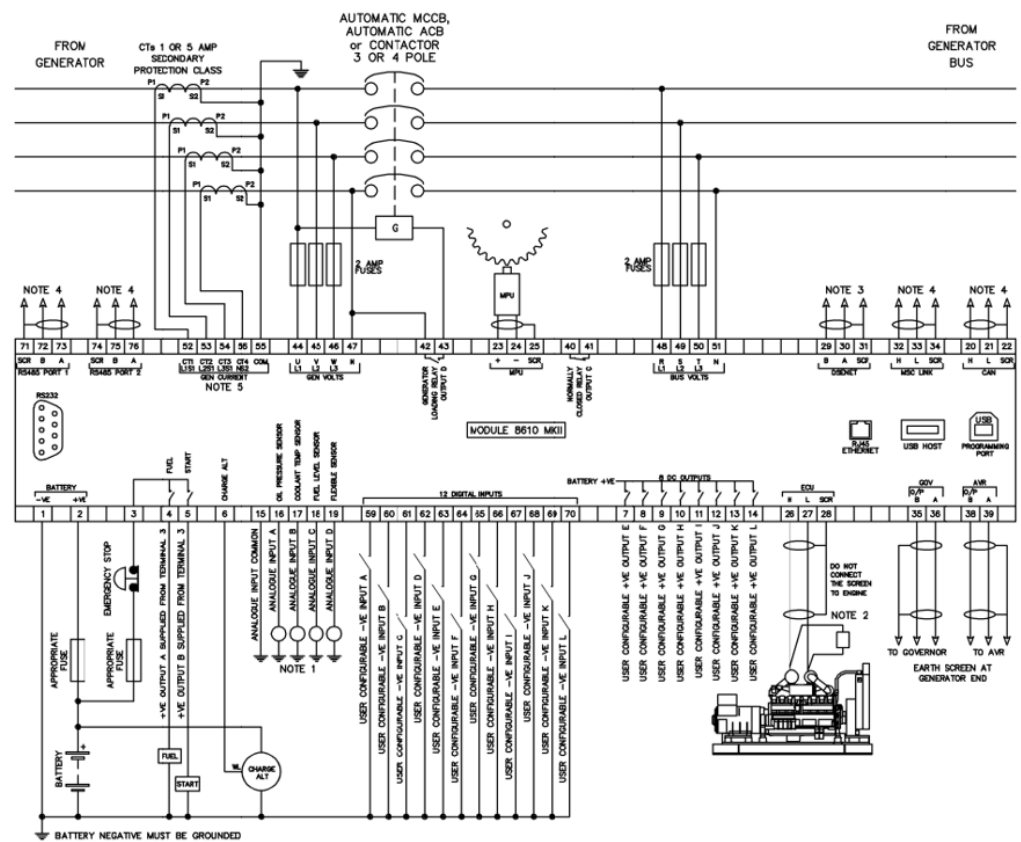
**Wires &
Connect
ors IMG:**

DSE7310MKII



DSE8610MKII





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Codes:	
--------	--

JCB

1.2.50 DSE 8610MKII GENERATOR CONTROLLER

Component:	DSE 8610MKII GENERATOR CONTROLLER
Function:	Main generator control unit 
Location:	Located on Control panel door.

Location IMG:	 A black electrical control cabinet is shown. The left door is open, revealing internal components. At the top left, there is a white label with a circuit diagram and text. Below it, a digital display with a screen and several buttons is visible. To the right of the display, there are three green buttons and a red button. At the bottom left, there is a terminal block with various colored wires connected to it. The right door is closed and has a small label near the bottom.
Signal:	Battery positive 12V/24V DC USB communication.

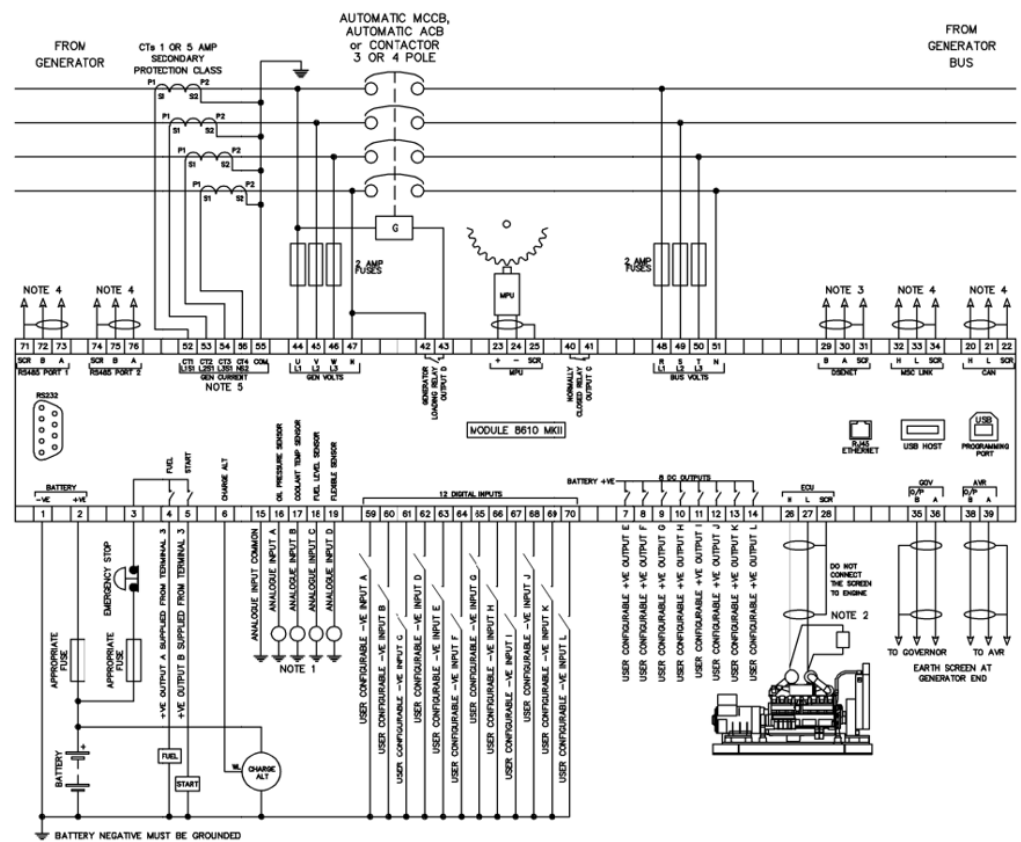
**Wires &
Connect
ors IMG:**

DSE7310MKII



DSE8610MKII



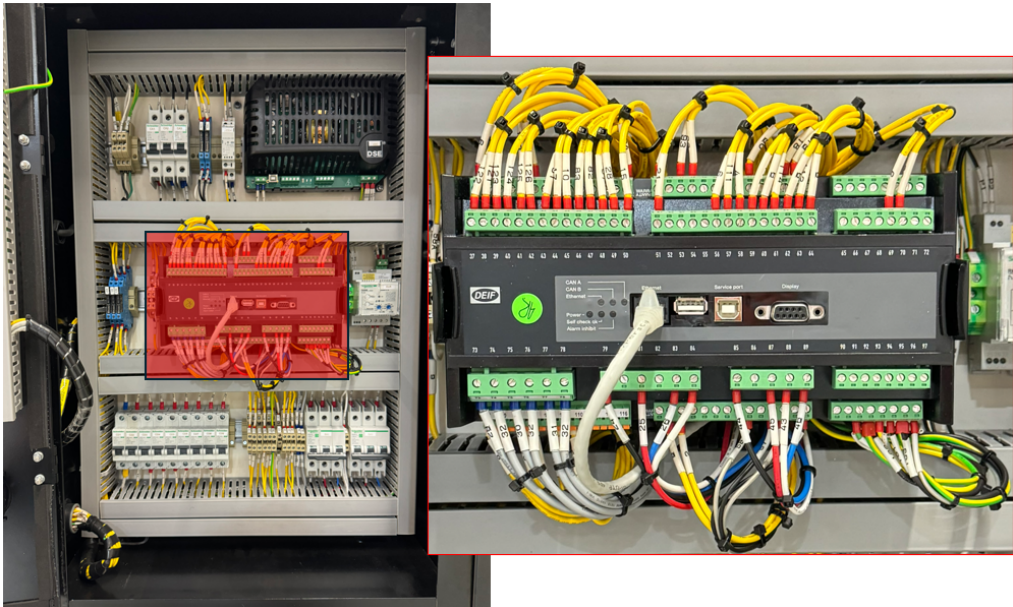


Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check DC supply on terminals 1 & 2. 2. If problem still exists refer to DSE 7310/8610 manual for further troubleshooting. 3. If any visible damage replace item.
Expected Values:	Controller in ready state and no alarms present.
Related Fault	N/A

Codes:	
--------	--

JCB

1.2.51 DEIF AGC150 CONTROLLER

Compon ent:	DEIF 150 CONTROLLER
Function:	Main controller for generator
Location:	Behind door.
Location IMG:	
Signal:	Battery supply 12V / Ethernet Connection/USB connection

Wires & Connectors IMG:

Reserved for options, see <i>Data sheet</i> .	36			97	Reserved for options, see <i>Data sheet</i> .
	35				
	34				
	33				
	32				
	31				
	30				
	29				
Common for 23-27	28	Slot #2 Slot #1	Slot #6 Slot #5		
GB Closed	27				
GB Open	26				
MB Closed/Configurable	25				
MB Open/Configurable	24				
Configurable	23				
Common for 20/21	22				
kVarh pulse/Relay 21	21				
kWh pulse/Relay 20	20				
Close Generator Breaker (sync.)	19				
	18				
	17	Relay 17			
Open Generator Breaker	16				
	15				
	14	Relay 14			
Close Mains Breaker/Configurable	13				
	12				
	11	Relay 11			
Open Mains Breaker/Configurable	10				
	9				
	8	Relay 08			
Alarm horn/Configurable	7				
	6				
	5	Relay 05			
Status relay	4				
	3	Status relay			
DC power supply	2				
8-36 V DC	1				

Internal Electrical Schematic IMG:

Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work

AGC

Testing:

1. - Check DC supply from M/L
2. - Check ethernet connection

	3. - Refer to DEIF manual for further trouble shooting 4. - Any visible damage - replace item
Expected Values:	Screen on, communicating with base unit
Related Fault Codes:	N/A



1.2.52 PANEL MOUNT 400A CAMLOK

Component:	PANEL MOUNT 400A CAMLOKS	
Function:	Allows quick main power output connection	
Location:	Camlock Box	
Location IMG:		
Signal:	Main Generator Power.	
Wires & Connectors IMG:	<u>Cables</u> Black - L1 Red - L2	

	Blue - L3 White - N Green - E
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. - Check for loose connections. 2. - Any visible damage - replace item.
Expected Values:	Main power output connection will be quick
Related Fault Codes:	N/A



1.2.53 BUS HOT INDICATOR

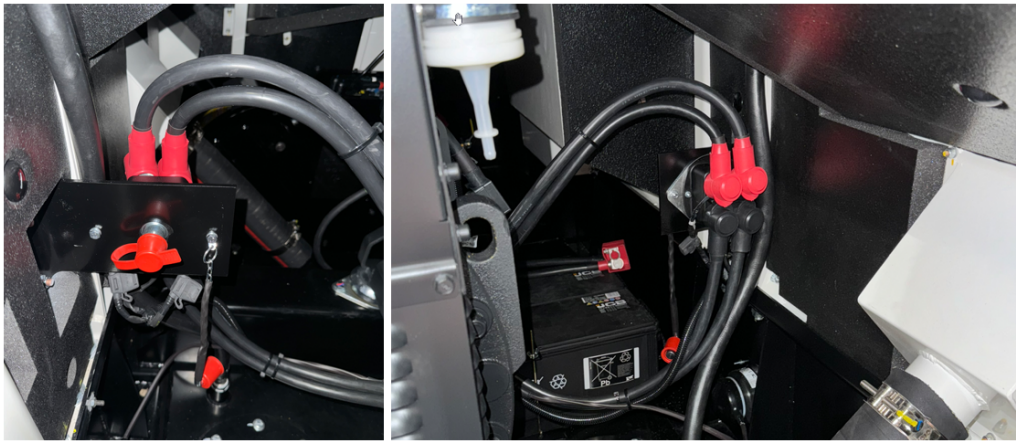
Component:	BUS HOT INDICATOR
Function:	Shows output terminal state
Location:	Camlock Box

Location IMG:	
Signal:	Battery supply 12V/24V
Wires & Connect ors IMG:	Wire Numbers 4 and 112
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	1. Check supply. 2. Check loose connections. 3. Any visible damage - replace item.
Expected Values:	Will illuminate when output terminals are live.
Related Fault	N/A

Codes:	
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1.2.54 DOUBLE POLE BATTERY ISOLATOR

Component:	DOUBLE POLE BATTERY ISOLATOR	
Function:	Electrically Isolates circuits from current passing.	
Location:	Near Batteries in Canopy .	
Location IMG:		
Signal:	Battery supply 12V/24V	
Wires & Connectors IMG:	<u>Cables</u> RED (+) BLACK (-)	
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.	

Testing:	1. - Check supply. 2. - Check continuity when closed. 3. - Check loose connections. 4. - Any visible damage - replace item.
Expected Values:	Current will/won't pass depending on state
Related Fault Codes:	N/A

JCB

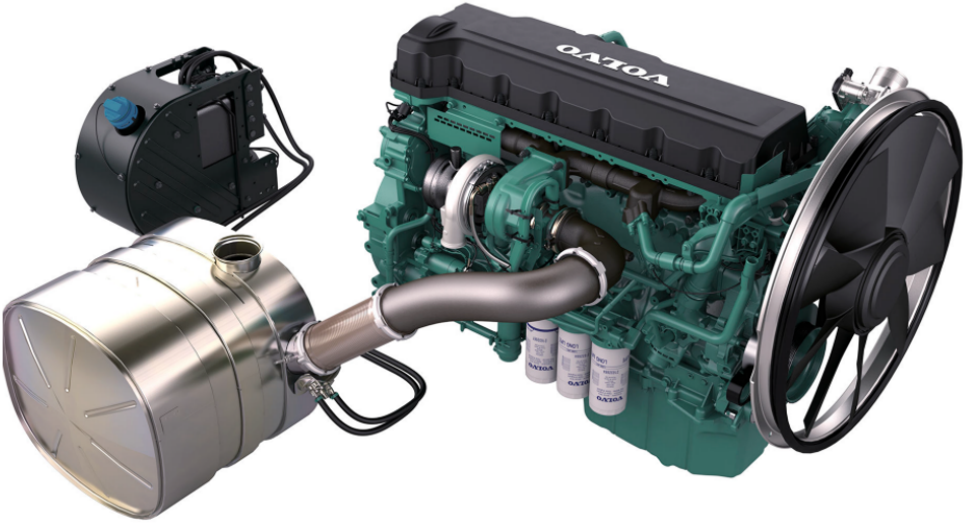
1.2.55 JCB - G70RS Only

Component:	JCB
Function:	Utilised as the Prime mover in a Genset. Other common names: Engine / Combustion engine Used as the source of torque or rotational kinetic energy that spins the rotating assembly within the coupled alternator.
Location:	Inside genset canopy, between the cooling pack and alternator.

Location IMG:	
Signal:	Prime Mover electronic control = 12Vdc Prime Mover combustion fuel = EN590 Diesel or Alternative Fuels Prime Mover communication = SAE J1939
Wires & Connect ors IMG:	
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	.
Expected Values:	Genset ON with ZERO load - Engine to idle at 1800 rpm steady with no alarms or engine parameter DTC's.
Related Fault Codes:	N/A



1.2.56 JCB - G125RS Only

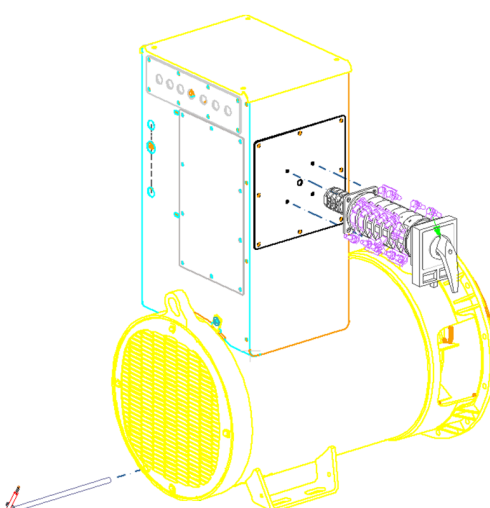
Component:	JCB
Function:	Utilised as the Prime mover in a Genset. Other common names: Engine / Combustion engine Used as the source of torque or rotational kinetic energy that spins the rotating assembly within the coupled alternator.
Location:	Inside genset canopy, between the cooling pack and alternator.
Location IMG:	
Signal:	Prime Mover electronic control = 12Vdc Prime Mover combustion fuel = EN590 Diesel or Alternative Fuels Prime Mover communication = SAE J1939

Wires & Connect ors IMG:	
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	
Expected Values:	Genset ON with ZERO load - Engine to idle at 1800 rpm steady with no alarms or engine parameter DTC's.
Related Fault Codes:	N/A



1.2.57 ECP32 1L4C V Alternator - G70RS Only

Component:	ECO38 2S4C Alternator - G220RS Only
Function:	Provide 3 phase power to the genset main buzz bar / common
Location:	Beneath Genset canopy, coupled at the rear of the engine.

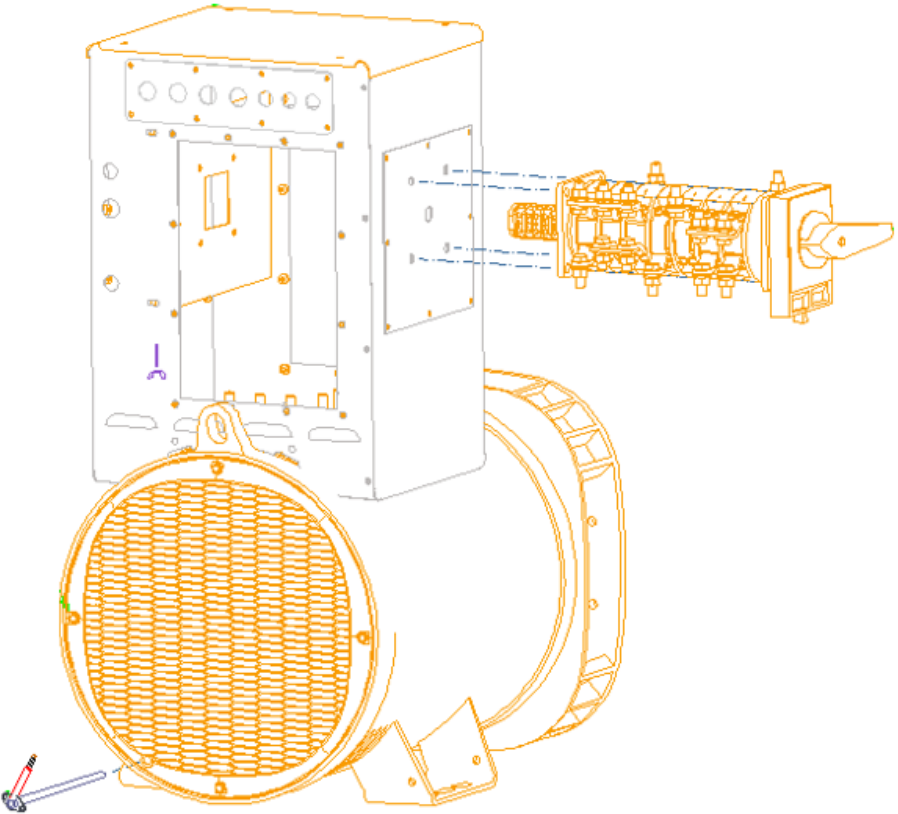
Location IMG:	
Signal:	60Hz : 277Vac to 480Vac 3 phase 120Vac to 208Vac 3 phase 120Vac to 240Vac 1 phase
Wires & Connect ors IMG:	<u>CABLES</u> 3 phase Vac L1 - ALT Stud 1 - Select Sw terminal 1 L2 - ALT Stud 5 - Select Sw terminal 11 L3 - ALT Stud 9 - Select Sw terminal 19 N -ALT Stud 4 - Select Sw terminal 26 Single phase (3 wire) Vac 1L1 - ALT Stud 3 - Select Sw terminal 2 1L2 - ALT Stud 7 - Select Sw terminal 10 N - ALT stud 8 - Select Sw terminal 26
Internal Electrical Schemati c IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.

Testing:	Alternator Testing Procedure.
Expected Values:	Varies depending on the setting - 60Hz : 277Vac to 480Vac 3 phase 120Vac to 208Vac 3 phase 120Vac to 240Vac 1 phase.
Related Fault Codes:	N/A



1.2.58 ECP34 2M/4C V Alternator - G125RS Only

Component:	ECP34 2M/4C V Alternator - G125RS Only
Function:	Provide 3 phase power to the genset main buzz bar / common
Location:	Beneath Genset canopy, coupled at the rear of the engine.

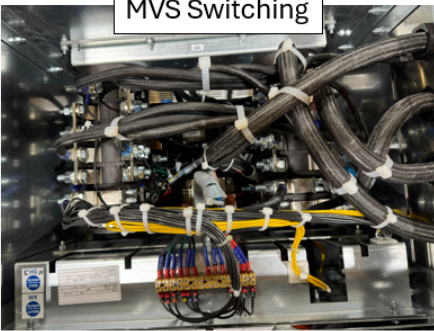
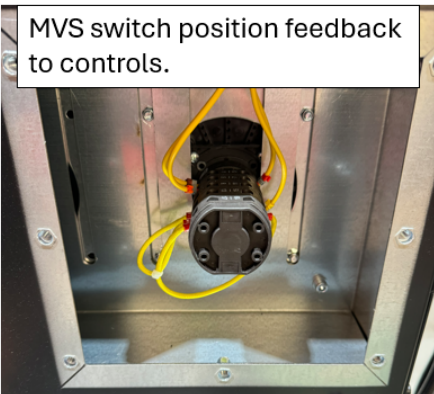
Location IMG:	
Signal:	60Hz : 277Vac to 480Vac 3 phase 120Vac to 208Vac 3 phase 120Vac to 240Vac 1 phase
Wires & Connect ors IMG:	<u>CABLES</u> 3 phase Vac L1 - ALT Stud 1 - Select Sw terminal 1 L2 - ALT Stud 5 - Select Sw terminal 11 L3 - ALT Stud 9 - Select Sw terminal 19 N -ALT Stud 4 - Select Sw terminal 26 Single phase (3 wire) Vac 1L1 - ALT Stud 3 - Select Sw terminal 2 1L2 - ALT Stud 7 - Select Sw terminal 10 N - ALT stud 8 - Select Sw terminal 26

Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.
Testing:	Alternator Testing Procedure.
Expected Values:	Varies depending on the setting - 60Hz : 277Vac to 480Vac 3 phase 120Vac to 208Vac 3 phase 120Vac to 240Vac 1 phase.
Related Fault Codes:	N/A



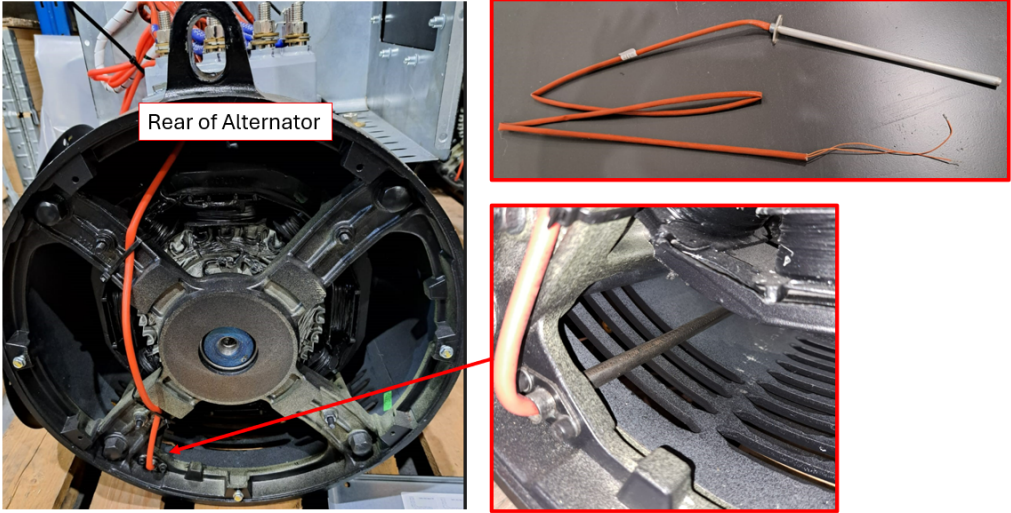
1.2.59 ChangeOver Switch

Component:	ChangeOver Switch
Function:	To change output voltage or phase types from the genset alternator.
Location:	Inside generator canopy, located at the rear of the alternators control box which is directly mounted to the alternators top side. Also accessible from the genset rear door.

Location IMG:	MVS Switch handle  MVS Switching  MVS switch position feedback to controls. 
Signal:	60Hz : 277Vac to 480Vac 3 phase 120Vac to 208Vac 3 phase 120Vac to 240Vac 1 phase
Wires & Connect ors IMG:	<u>Cables</u> Main contacts: 3 phase Vac L1 - ALT Stud 1 - Select Sw terminal 1 L2 - ALT Stud 5 - Select Sw terminal 11 L3 - ALT Stud 9 - Select Sw terminal 19 N -ALT Stud 4 - Select Sw terminal 26 Single phase (3 wire) Vac 1L1 - ALT Stud 3 - Select Sw terminal 2 1L2 - ALT Stud 7 - Select Sw terminal 10 N - ALT stud 8 - Select Sw terminal 26

	Control low side Feedback: Connector X3A/B Cavity 1 - 24vdc Batt -ve Cavity 2 - 120Vac feedback to control - wire 83 Cavity 3 - 208Vac feedback to control - wire 82 Cavity 4 - 480Vac feedback to control - wire 81
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing
Testing:	When the genset is disconnected from any load sources. 1. At the test ports on the breaker panel for L1,L2 and L3, using the appropriate meter, start the genset and test for the expected and consistent voltage at each phase based on the alternator switch setting. 2. If Required, using the same location and a scope, analyse the wave form of each phase for wave / phase angle consistency. 3. Perform Earth / bonding continuity test.
Expected Values:	Varies depending on the setting - 60Hz : 277Vac to 480Vac 3 phase 120Vac to 208Vac 3 phase 120Vac to 240Vac 1 phase.
Related Fault Codes:	N/A

1.2.60 Anti Condensation Heater

Component:	Anti Condensation Heater	
Function:	Anti condensate heater is installed to prevent condensation building up within the main alternator.	
Location:	Located at the rear of the alternator behind air intake panel.	
Location IMG:	 The main image shows the rear of the alternator with a red arrow pointing to the heater. The top right inset shows the heater component, a long orange cable with a metal rod. The bottom right inset shows the heater connected to the alternator's internal wiring.	
Signal:	115Vac 1 phase	
Wires & Connectors IMG:	Wire Numbers L1 - 67 to 68 via CEH contactor N - 71 E - G/Y earth/ground	
Internal Electrical Schematic IMG:	Due to the presence of both AC and DC voltages, partial schematics are not provided in this help file. Please refer to the latest machine schematics on Service Pro and ensure you are fully aware of all system voltages prior to commencing work.	
Testing:	1. Disconnect from an isolated machine and test component resistance.	

	2. Alternative method - Remove component from an isolated machine, connect and bench test @ 115Vac 3. If device tests OK - perform fault find investigation along power wire L1 through contactor CEH and MCB CA3 along with Neutral wire and ground bond continuity testing.
Expected Values:	
Related Fault Codes:	N/A



1.3 Fault Codes

Application specific devices: Data is for general guidance only. Refer to the relevant machine service documentation for machine specific data such as location, connecting wire numbers, device testing, removal and installation procedures ect. (SN0002)

Click on the relevant Fault Code file link to view Fault Code information.

1	Generator Controller Fault Codes
2	DTC Fault Codes

1.3.1 Generator Controller Fault codes

This section contains a list of fault codes that can be produced by the MECU.

Fault Codes - Numerical List

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

Fault Code	Description
G0100	AVR Fault (Red Lamp) Warning
G0101	AVR Fault (Red Lamp) Electrical Trip Or Shutdown
G0102	AVR Data Fail Warning
G0103	AVR Data Fail Electrical Trip Or Shutdown
G0104	AVR Max Trim Limit Electrical Trip Or Shutdown
G0105	AVR Max Trim Limit Warning
G0201	Air Flap Closed Electrical Trip Or Shutdown
G0202	Air Filter Switch Activation Shutdown
G0202	Air Filter Switch Activation Shutdown
G0300	Auto Voltage Sense Fail Warning
G0301	Auto Voltage Sense Fail Electrical Trip Or Shutdown
G0403	Bus Not Live Electrical Trip Or Shutdown
G0500	Calibration Fault Warning
G0501	Calibration Fault Electrical Trip Or Shutdown
G0600	Charge Alternator Failure Electrical Trip Or Shutdown
G0601	Charge Alternator Failure Warning
G0901	DEF Level Low Warning
G1000	Digital Input A Warning
G1001	Digital Input A Electrical Trip Or Shutdown
G1002	Digital Input B Warning

G1003	Digital Input B Electrical Trip Or Shutdown
G1004	Digital Input C Warning
G1005	Digital Input C Electrical Trip Or Shutdown
G1006	Digital Input D Warning
G1007	Digital Input D Electrical Trip Or Shutdown
G1008	Digital Input E Warning
G1009	Digital Input E Electrical Trip Or Shutdown
G1010	Digital Input F Warning
G1011	Digital Input F Electrical Trip Or Shutdown
G1012	Digital Input G Warning
G1013	Digital Input G Electrical Trip Or Shutdown
G1014	Digital Input H Warning
G1015	Digital Input H Electrical Trip Or Shutdown
G1016	Digital Input I Warning
G1017	Digital Input I Electrical Trip Or Shutdown
G1018	Digital Input J Warning
G1019	Digital Input J Electrical Trip Or Shutdown
G1020	Digital Input K Warning
G1021	Digital Input K Electrical Trip Or Shutdown
G1022	Digital Input L Warning
G1023	Digital Input L Electrical Trip Or Shutdown
G1100	DPTC Filter Warning
G1200	ECU Red Warning
G1201	ECU Red Electrical Trip Or Shutdown
G1202	ECU Amber Warning

G1205	ECU Data Fail Electrical Trip Or Shutdown
G1206	ECU Protect Warning
G1208	ECU Malfunction Warning
G1400	Engine Over Speed Electrical Trip Or Shutdown
G1401	Engine Under Speed Electrical Trip Or Shutdown
G1402	Engine Over Speed Warning
G1403	Engine Under Speed Warning
G1406	Generator Over Frequency Electrical Trip Or Shutdown
G1407	Generator Under Frequency Shutdown
G1408	Generator Over Frequency Warning
G1409	Generator Under Frequency Warning
G1501	Emergency Stop
G1801	Fail to Synchronise Electrical Trip
G1804	Out Of Sync Warning
G1805	Out Of Sync Electrical Trip
G1901	Fuel Level Low Shutdown
G1905	Fuel Level Low Warning
G1907	Water In Fuel Electrical Trip Or Shutdown
G1911	Water In Fuel Shutdown
G2002	Plant Battery Over Voltage Warning
G2003	Plant Battery Under Voltage Warning
G2004	Generator Over Voltage Electrical Trip Or Shutdown
G2005	Generator Under Voltage Electrical Trip Or Shutdown
G2006	Generator Over Voltage Warning
G2006	Generator Over Voltage Warning

G2007	Generator Under Voltage Warning
G2100	Generator Over Current Electrical Trip Or Shutdown
G2101	Generator Over Current Warning
G2104	Negative Phase Sequence Current Electrical Trip Or Shutdown
G2105	Negative Phase Sequence Current Warning
G2200	MSC Old Version Units Warning
G2201	MSC Old Version Units Electrical Trip Or Shutdown
G2202	MSC Failure Warning
G2203	MSC ID Error Warning
G2204	MSC Failure Electrical Trip Or Shutdown
G2205	MSC ID Error Electrical Trip Or Shutdown
G2206	MSC Too Few Sets Electrical Trip Or Shutdown
G2207	MSC Data Error Warning
G2208	MSC Alarms Inhibited Warning
G2209	MSC Too Few Sets Warning
G2210	MSC Data Error Electrical Trip Or Shutdown
G2211	MSC Alarms Inhibited Electrical Trip Or Shutdown
G2212	MSC 2 Data Error Warning
G2213	MSC 2 Data Error Electrical Trip Or Shutdown
G2214	MSC 2 Too Few Sets Electrical Trip Or Shutdown
G2215	MSC 2 Link Failure Warning
G2216	MSC 2 Too Few Sets Warning
G2217	MSC 2 Link Failure Electrical Trip Or Shutdown
G2218	MSC 1 and 2 Failure Warning
G2219	MSC 1 and 2 Failure Electrical Trip Or Shutdown

G2220	Priority Selection Error Warning
G2221	Priority Selection Error Electrical Trip Or Shutdown
G2300	Generator Failed To Open Warning
G2301	Generator Failed To Open Electrical Trip Or Shutdown
G2302	Generator Failed To Close Warning
G2303	Generator Failed To Close Electrical Trip Or Shutdown
G2600	Generator Short Circuit Electrical Trip Or Shutdown
G2700	Generator Reverse Power Electrical Trip Or Shutdown
G2701	Generator Reverse Power Warning
G2704	kW Overload Electrical Trip Or Shutdown
G2705	kW Overload Warning
G2800	Generator Phase Sequence Wrong Warning
G2801	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
G3000	Failed to Start Warning
G3001	Failed to Start Electrical Trip Or Shutdown
G3002	Failed to Stop Warning
G3003	Failed to Stop Electrical Trip Or Shutdown
G3004	Fault Ride Through Event Warning
G3005	Fault Ride Through Event Electrical Trip Or Shutdown
G3100	Inlet Temperature Electrical Trip Or Shutdown
G3101	Inlet Temperature Warning
G3102	Low Coolant Level Warning
G3103	Low Coolant Temperature Electrical Trip Or Shutdown
G3104	Coolant Temperature High Electrical Trip Or Shutdown
G3105	Coolant Temperature High Warning

G3108	HEST Active Electrical Trip Or Shutdown
G3109	HEST Active Warning
G3109	Oil Pressure Low Electrical Trip Or Shutdown
G3201	Oil Pressure Sensor Fault Warning
G3201	Oil Pressure Sensor Fault Electrical Trip Or Shutdown
G3203	Oil Pressure Low Warning
G3300	Low Coolant Level Electrical Trip Or Shutdown
G3301	Low Coolant Level Warning
G3500	SCR Inducement Warning
G3501	SCR Inducement Electrical Trip Or Shutdown
G3600	Bund Level High Shutdown
G3601	Earth Leakage Detected
G3602	Breaker Door Open
G3604	Dummy Load bank Faulty Or Circuit Open

This topic was last edited on 4/10/2026

1.3.1.1 G0100 - AVR Fault (Red Lamp) Warning

Error Code:	G0100
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	AVR Fault (Red Lamp) Warning
Component:	AVR
Vehicle reaction:	Controller Under /Over voltage Warning or shutdown

Possible Cause:	1) AVR unable to excite. 2) AVR loose wiring (Check wiring connection) 3) AVR Phase sensing failure 4) Software not installed in AVR
Service Action:	1. Check the connection of AVR as per Drawing 2. Check the residual voltage development and excitation resistance 3. Replace New AVR
Other:	DER1 MECCALTE AVR DEIF DVC550 AVR



1.3.1.2 G0101- AVR Fault (Red Lamp) Electrical Trip Or Shutdown

Error Code:	G0102
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	AVR Data Fail Warning
Component:	AVR
Vehicle reaction:	Controller Under /Over voltage Warning or shutdown
Possible Cause:	1) AVR unable to excite. 2) AVR loose wiring (Check wiring connection) 3) AVR Phase sensing failure 4) Software not installed in AVR

Service Action:	1. Check the connection of AVR as per Drawing 2. Check the residual voltage development and excitation resistance 3. Replace New AVR
Other:	DER1 MECCALTE AVR DEIF DVC550 AVR



1.3.1.3 G0102- AVR Data Fail Warning

Error Code:	G0104
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	AVR Max Trim Limit Electrical Trip Or Shutdown
Component:	AVR
Vehicle reaction:	Controller Under /Over voltage Warning or shutdown
Possible Cause:	1) AVR unable to excite. 2) AVR loose wiring (Check wiring connection) 3) AVR Phase sensing failure 4) Software not installed in AVR
Service Action:	1. Check the connection of AVR as per Drawing 2. Check the residual voltage development and excitation resistance 3. Replace New AVR
Other:	DER1 MECCALTE AVR DEIF DVC550 AVR

**1.3.1.4 G0103 - AVR Data Fail Electrical Trip Or Shutdown**

Error Code:	G0201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Air Flap Closed Electrical Trip Or Shutdown (Optional Item)
Component:	Controller
Vehicle reaction:	Controller commands for electrical trip or shutdown When digital input configured for Air-Flap Closed Auxiliary became active.
Possible Cause:	1. Controller Digital Input.(DSE configuration) 2. Air flap Relay connection 3. Solenoid operation of Air flap

Service Action:	1. DSE Controller Check for digital Input For DSE controller (8610)- Used in T4F and RS stage V Pin no 70 Digital input and Digital output Pin no 14. For DSE controller (7310)- Used in T4F and Rs stage V Pin no 20 Digital input and Digital output Pin no 13 For DIEF controller used in T4F -DIEF AG150 Pin no 10 Digital input and Digital output Pin no 17 For DIEF controller used in T4F -DIEF AGC4 Pin no 51 Digital input and Digital output Pin no 70. 2. Check RAS Relay Coil Check TB49 and TB115 3. Check the Loose connection in DSE terminals and right wiring as per schematics. 4. Check for faulty RAS coil and ASOV solenoid operation if found faulty replaced
Other:	1. Panel Wiring Issue 2. Wire loose 3. Wirng harness of Fuel solenoid issue 4. ASOV issue



1.3.1.5 G0104 - AVR Max Trim Limit Electrical Trip Or Shutdown

Error Code:	G0403
--------------------	--------------

ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Bus Not Live - Electrical Trip Or Shutdown
Component:	Controller
Vehicle reaction:	The module did not detect bus voltage or frequency when the generator's load switch closed on to a dead bus.
Possible Cause:	1. Wrong wiring 2. Voltage unable to generate 3. Faulty Controller
Service Action:	1. Check the Electrical Schematic Note: Terminal 48, 49, 50 and 51 are used for Voltage detection of bus -check the voltage at terminal , if in case you get bus not live alarm for DSE controller For DEIF controller Pin no 66, 67, 68 and 69 is assigned for the same.
Other:	NA



1.3.1.6 G0105 - AVR Max Trim Limit Warning

Error Code:	G1907
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Water In Fuel Electrical Trip Or Shutdown
Component:	Water Separator Water in fuel switch
Vehicle reaction:	DG set will be unable to generate electrical output.
Possible Cause:	a. Water availability with water separator. b. Wiring issue. c. Water level switch faulty.
Service Action:	a. Check water availability with water separator. Drain water through drain plug with water separator. Reset fault. b. Even after removing water from water separator & after fault reset, still fault is coming than check wiring connections. Refer respective schematic part code applicable for Stage V DG set Model. c. If wiring is OK. Replace water level switch & reset fault.
Other:	0



1.3.1.7 G0201 - Air Flap Closed Electrical Trip Or Shutdown

Error Code:	G1000
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input A Warning

Component:	Controller
Vehicle reaction:	Controller displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	Refer to the Schematic diagram for concern Generator model as mentioned in Schematic Matrix to identify which Sensor/Switch wired with Digital Input cause warning/shutdown.

1.3.1.8 G0202 - Air Filter Switch Activation Shutdown

Error Code:	G1002
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Warning
Component:	Controller
Vehicle reaction:	Controller Displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	Refer to the Schematic diagram for concern Generator model as mentioned in Schematic Matrix to identify which Sensor/Switch wired with Digital Input cause warning/shutdown.



1.3.1.9 G0403 - Bus Not Live Electrical Trip Or Shutdown

Error Code:	G1004
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input C Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.

Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.1.10 G0600 - Charge Alternator Failure Electrical Trip Or Shutdown

Error Code:	G1006
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input D Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown

	iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.11 G0601 - Charge Alternator Failure Warning

Error Code:	G1008
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input E Warning
Component:	Generator Set Controller

Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection. /shutdown.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.

1.3.1.12 G0901 - DEF Level Low Warning

Error Code:	G1010
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input F Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service

	action. Check the wiring connection.
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1.3.1.13 G1000 - Digital Input A Warning

Error Code:	G1012
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown.

	x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection. .
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.14 G1001 - Digital Input A Electrical Trip Or Shutdown

Error Code:	G1014
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input H Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.15 G1002 - Digital Input B Warning

Error Code:	G1016
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input I Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.1.16 G1003 - Digital Input B Electrical Trip Or Shutdown

Error Code:	G1018
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input J Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.

Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.17 G1004 - Digital Input C Warning

Error Code:	G1020
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input K Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown

	iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.18 G1005 - Digital Input C Electrical Trip Or Shutdown

Error Code:	G1022
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input L Warning
Component:	Generator Set Controller

Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.

1.3.1.19 G1006 - Digital Input D Warning

Error Code:	G1100
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	DPTC Filter Warning
Component:	Generator Set Controller
Vehicle reaction:	The Controller received a fault condition from the engine ECU alerting that the DPF/DPTC warning activated.
Possible Cause:	The DPF/DPTC filter Generate a warning Fault.
Service Action:	Check the Fault Message on the display and follow the recommended Service action as mention in relevant Engine Help File.
Other:	0



1.3.1.20 G1007 - Digital Input D Electrical Trip Or Shutdown

Error Code:	G1201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	ECU Red Electrical Trip Or Shutdown
Component:	Generator Set Controller

Vehicle reaction:	The controller received a fault condition from the engine ECU alerting that the ECU Red Trip or Shutdown had activated.
Possible Cause:	This is Engine related fault and Generator will shutdown or Trip due to fault/issue in Engine
Service Action:	Check the Fault Message on the display and follow the recommended Service action as mention in Engine Help File..
Other:	0



1.3.1.21 G1008 - Digital Input E Warning

Error Code:	G1205
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	ECU Data Fail Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	The module is configured for CAN operation but has not detected data being sent from the engine's ECU.
Possible Cause:	1. CAN connection not established between Engine & controller. 2. Resistor is not connected on CAN Cable. 3. Loose wiring or Socket CAN connection. 4. Issue in controller or ECM.

Service Action:	1. Check the correct CAN wiring connection and terminal at the Generator Controller . 2. Check the CAN cable loose connection. 3. Check the 120 Ohm resistor shall be connected at both end. 4. If both 120 Ohm resistor healthy & connected correctly, then check the resistance CAN Cable terminal by multi-meter it should be 60 Ohm.
Other:	0



1.3.1.22 G1009 - Digital Input E Electrical Trip Or Shutdown

Error Code:	G1208
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	ECU Malfunction Warning
Component:	Generator Set Controller
Vehicle reaction:	The module received a malfunction fault condition from the engine ECU.
Possible Cause:	There is fault/issue in Engine creating ECU Malfunction warning.
Service Action:	Check the Fault Message on the display and follow the recommended Service action as mention in Engine Help File.
Other:	0



1.3.1.23 G1010 - Digital Input F Warning

Error Code:	G1401
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Engine speed fall below 10% of rated speed. Machine may Trip on Underfrequency Fault.
Possible Cause:	1. Engine RPM goes below the 90% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. Controller incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. Controller incorrect setting.
Service Action:	1. Check the Controller setting is correct or not. 2. Check the speed Governor setting. 3. Block Loading shall be avoided. 4. Check the speed biasing setting & wiring connection if under RPM warning comes with controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Underspeed in controller
Other:	



1.3.1.24 G1011 - Digital Input F Electrical Trip Or Shutdown

Error Code:	G1403
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Warning
Component:	Generator Set Controller
Vehicle reaction:	Engine speed fall below 95% of rated speed.
Possible Cause:	1. Engine RPM goes below the 95% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. DSE8610 incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. DSE Controller incorrect setting.
Service Action:	1. Check the Controller Trip setting is correct or not. 2. Check the speed Governor setting and FIP. 3. Block Loading shall be avoided. 4. Check the speed biasing setting if under RPM warning comes with Controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Overspeed in the Controller.
Other:	



1.3.1.25 G1012 - Digital Input G Warning

Error Code:	G1407
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Frequency Shutdown
Component:	a) Customer Load b) Alternator c) Controller / Software configuration d) Engine fuel system
Vehicle reaction:	Controller Displays as 'Generator Under Frequency Electrical Trip Or Shutdown'. Generator will be unable to generate electrical output.
Possible Cause:	a) Customer load could be more than generator capacity. In case of excessive customer load than generator capacity may drop down the generator frequency. b) Loose connections of AC sensing wires. c) Faulty Alternator or AVR may result in non-production of AC voltage & frequency. d) Faulty controller as not sensing Generator AC frequency. e) Faulty Engine's fuel system.

Service Action:	a) Check customer load & ensure applied load is within DG set capacity. If still problem exists, check next step. b) During generator running condition, Check Alternator frequency with multimeter at respective AC voltage sensing terminal's at DG controller. Refer respective schematic part code applicable for Stage V DG set Model. If frequency reading is within under frequency trip limit with controller configuration, it reflects controller has issue. If frequency reading is less than frequency trip limit with controller configuration, it reflects Alternator / AVR or Engine fuel system is having issue. c) Check engine's fuel system i.e. blockage of fuel filter / fuel Stainer as it may lead less fuel supply to fuel pump resulting engine RPM drop.
Other:	0



1.3.1.26 G1013 - Digital Input G Electrical Trip Or Shutdow

Error Code:	G1409
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Frequency Warning
Component:	a) Customer Load b) Alternator

	c) DG Controller / Software configuration d) Engine fuel system
Vehicle reaction:	Controller Displays as 'Generator Under Frequency Warning'. Generator will be able to generate electrical output with warning.
Possible Cause:	a) Customer load could be more than Generator capacity. In case of excessive customer load than generator capacity may drop down the DG set frequency. b) Faulty Engine's fuel system.
Service Action:	a) Check customer load & ensure applied load is within generator capacity. If still problem exists, check next step. b) Check engine's fuel system i.e. blockage of fuel filter / fuel Stainer as it may lead less fuel supply to fuel pump resulting engine RPM drop.
Other:	0



1.3.1.27 G1014 - Digital Input H Warning

Error Code:	G1801
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Fail to Synchronise Electrical Trip
Component:	a) Customer load b) Governor Control c) AVR Control

Vehicle reaction:	The set is stopped. In a Load Demand scheme, other generators start if available
Possible Cause:	a) Changes in the customer's load are making the set control difficult due to changes in voltage and frequency b) MSC cable / connections. c) MSC Resistance d) ECU CAN Resistance e) Loose connections of Governor's control wires or Engine CAN wires. f) Loose connections of AVR's control wires. g) Wrong swing settings of Gov Control & AVR Control.

Service Action:	a) Check load variation. If variation is High it may difficult to control. If any specific site requires more load settlement time, then the fail to Sync timer limit can be set accordingly to suit site conditions. b) Check MSC cable connections between sets. MSC connections polarity should correct between sets i.e. MSC High to MSC High & MSC low to MSC Low. Refer respective schematic part code applicable for Stage V DG set Model. c) Check resistance between MSC High & MSC Low lines connected with sets. There should be independent 120 ohms resistance with first & last generator sets. Total MSC resistance required approx. 60 ohms. d) Check ECU CAN Resistance. The total resistance required approx. 60 ohms between CAN High & CAN Low. e) Connect SCADA. Check Governor swings. The Governor analogue should be within 80% for $\pm 5\%$ range of nominal frequency. If Swing control is within 80% , Swing setting is OK. If Swing control is out of 80% : i) Adjust SW2 values. ii) Check Governor control connections & polarity. Refer respective DG set schematic. f) Connect SCADA. Check AVR swings. The Governor analogue should be within 80% for $\pm 10\%$ range of nominal voltage. If Swing control is within 80% , Swing setting is OK. If Swing control is out of 80% : i) Adjust SW2 values.
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	ii) Check AVR control connections & polarity. Refer respective generator schematic.
Other:	0



1.3.1.28 G1015 - Digital Input H Electrical Trip Or Shutdown

Error Code:	G1805
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Out Of Sync Electrical Trip

Component:	The module did not detect that the generator and bus voltage have drifted out of sync. This is caused by some form of external logic tripping open the generator load switch without it informing the Controller module.
Vehicle reaction:	Generator will be unable to generate electrical output.
Possible Cause:	An Out of Sync alarm means that the DG module has detected that the supplies either side of the breaker are not in sync when the breaker is closed. The DG Controller module uses a fixed 15° window to assess this.
Service Action:	a. The Bus Sensing connections have not been made between the common generator bus and the DG controller, or the bus sensing fuses have blown or have been removed. Refer respective schematic part code applicable for Stage V generator Model. b. The load switching device does not close quickly enough. Ensure the breaker closes within 100mS of receiving the close signal. c. The Out of Sync timer is set too low. If it required to raise this timer away from the factory setting of 200mS (0.2s), its customer responsibility to ensure to understand why it is required to raise! d. Something external has caused the breaker to open, or has prevented it from closing. e. The breaker wiring may not be correct, causing the breaker to open where it triggers the close mechanism, but the breaker doesn't actually mechanically close, it re-opens again.
Other:	0



1.3.1.29 G1016 - Digital Input I Warning

Error Code:	G1905
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Fuel Level Low Warning
Component:	Fuel Fuel Sensor Controller / Config
Vehicle reaction:	Generator will be able to generate electrical output with Warning.
Possible Cause:	a. Fuel level low (Less than 20%) in fuel tank. b. Fuel sensor faulty. c. Incorrect Controller configuration setting for fuel sensor graph calibration.
Service Action:	a. Check the fuel level inside DG fuel tank. Ensure fuel level should be more than 25% to avoid low level warning. b. Disconnect the fuel sensor from wire harness & take it out from tank. Check movement of sensor float & check sensor resistance. The resistance values should be gradually increase from ~ 10 ohms to 180 ohms with change in sensor float position change from bottom to top position. If resistance values are not inline with regard to float position, replace the fuel gauge. c. Check Controller configuration's fuel graph calibration. Ensure liner calibration of sensor resistance (10 ohms to 180 ohms) for fuel levels (0% to 100%).

Other:	0
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1.3.1.30 G1017 - Digital Input I Electrical Trip Or Shutdown

Error Code:	G1401
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Engine speed fall below 10% of rated speed. Machine may Trip on Underfrequency Fault.
Possible Cause:	1. Engine RPM goes below the 90% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. Controller incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. Controller incorrect setting.
Service Action:	1. Check the Controller setting is correct or not. 2. Check the speed Governor setting. 3. Block Loading shall be avoided. 4. Check the speed biasing setting & wiring connection if under RPM warning comes with controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Underspeed in controller
Other:	



1.3.1.31 G1018 - Digital Input J Warning

Error Code:	G2003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Plant Battery Under Voltage Warning
Component:	Engine's Battery charging Alternator Static Battery Charger Controller / config
Vehicle reaction:	Generator will be able to generate electrical output with Warning.
Possible Cause:	a. Incorrect Controller configuration setting for over voltage warning set points. b. Battery charging alternator's voltage regulator failure. c. Static battery charger's failure. d. Controller failure

Service Action:	a. Check & ensure correct controller config set points based on 12V & 24V DC systems. Over Battery Warning Voltage set point- i. For 12V System : 14.5 volts ii For 24V System : 30.0 volts b. Check DC voltage with multimeter while running of engine. If DC voltage is more than set point defined with configuration, the issue with engine's charging alternator. Replace the charging alternator & check. c. If the fault is coming with engine rest condition, check the static battery charger voltage with multimeter. If DC voltage is more than set point defined with configuration, the issue with static battery charger. Replace the static battery charger & check. d. If the actual DC voltage with multimeter is within set points as defined with controller configuration & still fault is persist, it could be controller internal failure. Replace the controller with required config & check. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.32 G1019 - Digital Input J Electrical Trip Or Shutdown

Error Code:	G2005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Generator Under Voltage Electrical Trip Or Shutdown
Component:	Generator Set Controller AVR ECU
Vehicle reaction:	Controller displays an under voltage Electrical Trip Or Shutdown
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the DSE configuration file
Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for the generator Model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER

JCB**1.3.1.33 G1020 - Digital Input K Warning**

Error Code:	G2007
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Generator Under Voltage Warning
Component:	Generator Set Controller AVR ECU
Vehicle reaction:	Controller displays an under voltage warning
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the configuration file
Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for the generator model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER



1.3.1.34 G1021 - Digital Input K Electrical Trip Or Shutdown

Error Code:	G2101
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Generator Over Current Warning
Component:	Controller External demand
Vehicle reaction:	Controller displays an over current warning
Possible Cause:	The module detected that the generator output current had risen above the Generator Over Current Trip for the duration of the IDMT function.
Service Action:	Check the controller configuration file Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.35 G1022 - Digital Input L Warning

Error Code:	G2105
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Negative Phase Sequence Current Warning
Component:	AVR
Vehicle reaction:	Controller displays an Negative Phase Sequence Current warning

Possible Cause:	The module detected that there was an imbalance of current across the generator phases greater than the Negative Phase Sequence Trip Level percentage setting. -Unbalance Loads -Unbalanced system faults (line to ground faults, two phase faults, triple line to ground faults, double line to ground faults) - Open phases (open circuit faults)
Service Action:	Check for the DSE setting Check for Alternator AVR - Temperature and Rotor condition Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.36 G1023 - Digital Input L Electrical Trip Or Shutdown

Error Code:	G2201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Old Version Units Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays an MSC Old Version Units Electrical trip or Shutdown

Possible Cause:	The module detected that another module on the MSC link was incompatible.
Service Action:	1) Check all the module firmware version numbers (under About Application Number on the modules' displays) and ensure all are the latest version firmware. 2) Use the DSE Configuration Suite Software to upgrade the firmware (Tools Update Firmware) of the older modules. Refer respective schematic part code applicable for the generator model.
Other:	0

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1.3.1.37 G1100 - DPTC Filter Warning

Error Code:	G2203
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC ID Error Warning
Component:	Generator Set Controller Configuration file
Vehicle reaction:	MSC ID Error alarm activating.
Possible Cause:	The module detected that another module on the MSC link had the same Generator Set MSC ID configured. When the Disable Auto ID Allocation option is not enabled in the DSE module's configuration, the MSC ID is automatically set when all the modules are powered up one at a time. If all the

	modules are powered up together, this may result in the MSC ID Error alarm activating.
Service Action:	1)Disable Auto ID Allocation option should be enabled in the DSE module's configuration, the MSC ID is assigned to the configured MSC ID value when the module is powered up. Take note to enable this option in all the DSE modules if to be used, ensuring that each DSE module has a unique MSC ID. 2)Manually setting the MSC ID using the DSE Configuration Suite PC Software's SCADA allows this alarm to be reset and prevents this from occurring. It also has the benefit of being able to determine which module on the MSC link has a communication issue. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.38 G1200 - ECU Red Warning

Error Code:	G2205
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC ID Error Electrical Trip Or Shutdown
Component:	Generator Set Controller Configuration file
Vehicle reaction:	Controller displays MSC ID Error Electric Trip or Shutdown

Possible Cause:	The module detected that another module on the MSC link had the same Generator Set MSC ID configured. When the Disable Auto ID Allocation option is not enabled in the DSE module's configuration, the MSC ID is automatically set when all the modules are powered up one at a time. If all the modules are powered up together, this may result in the MSC ID Error alarm activating.
Service Action:	1) Disable Auto ID Allocation option should be enabled in the DSE module's configuration, the MSC ID is assigned to the configured MSC ID value when the module is powered up. Take note to enable this option in all the DSE modules if to be used, ensuring that each DSE module has a unique MSC ID. 2) Manually setting the MSC ID using the DSE Configuration Suite PC Software's SCADA allows this alarm to be reset and prevents this from occurring. It also has the benefit of being able to determine which module on the MSC link has a communication issue. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.39 G1201 - ECU Red Electrical Trip Or Shutdown

Error Code:	G2207
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	MSC Data Error Warning
Component:	Wiring End termination Resistor MSC Plugs
Vehicle reaction:	Controller displays MSC data error Warning
Possible Cause:	The module detected that data on the MSC link had become corrupt, possibly caused by incorrect wiring or faulty cabling. 1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness
Service Action:	1) Correct Wiring 2) Correct Faulty cabling Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.40 G1202 - ECU Amber Warning

Error Code:	G2209
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Too Few Sets Warning

Component:	Generator Set Controller
Vehicle reaction:	Controller displays MSC Too Few Sets Warning
Possible Cause:	That module detected that the number of modules on the MSC was less than the configured Minimum Modules on MSC Link setting.
Service Action:	Correct configuration for number of modules on MSC Link setting Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.41 G1205 - ECU Data Fail Electrical Trip Or Shutdown

Error Code:	G2211
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Alarms Inhibited Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller Displays MSC Alarms Inhibited Electrical trip or shutdown
Possible Cause:	The module detected that an input configured for MSC Alarms Inhibit had become active disabling all the MSC alarms

Service Action:	Deactivate an input that has been configured as MSC Alarms Inhibit Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.42 G1206 - ECU Protect Warning

Error Code:	G2213
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 2 Data Error Electrical Trip Or Shutdown
Component:	Wiring End termination Resistor MSC Plugs
Vehicle reaction:	Controller displays MSC 2 Data Error Electrical Trip or Shutdown
Possible Cause:	The module detected that data on the Redundant MSC link had become corrupt, possibly caused by incorrect wiring or faulty cabling. 1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness

Service Action:	1) Correct Wiring 2) Correct Faulty cabling
Other:	0



1.3.1.43 G1208 - ECU Malfunction Warning

Error Code:	G2215
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 2 Link Failure Warning
Component:	Wiring End termination Resistor MSC Plugs
Vehicle reaction:	Controller displays MSC 2 Link Failure Warning
Possible Cause:	That module detected that the Redundant MSC communication failed, most likely caused by it being disconnected. 1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness

Service Action:	1) Correct Wiring 2) Correct Faulty cabling 4) Check the connections at Resister switch(if fitted) 3) Check the connections at TB where 120 ohm resister(if fitted). 4) Check the set-set extensions harness electrically and mechanically
Other:	0



1.3.1.44 G1400 - Engine Over Speed Electrical Trip Or Shutdown

Error Code:	G2219
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 1 and 2 Failure Electrical Trip Or Shutdown
Component:	Wiring End of line resistor MSC Plugs
Vehicle reaction:	MSC 1 and 2 Failure Electrical Trip Or Shutdown displayed on controller and generator
Possible Cause:	1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness

Service Action:	1) Check the MSC connections For DSE - 32(H), 33(L), 34(SHLD) 2) Check the connections at Terminal blocks (if fitted). Refer appropriate schematic 3) Check the connections at MSC sockets 4) Check for loose connections at controller and TB 5) Check for mechanical damage of Set to set extension harness 6) Check for the connections at MSC sockets and Plugs , replace the pins if damage
Other:	1) Panel wiring issue 2) TB / Resistor switch issue 3) Set to Set extension harness issue



1.3.1.45 G1401 - Engine Under Speed Electrical Trip Or Shutdown

Error Code:	G2214
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 2 Too Few Sets Electrical Trip Or Shutdown
Component:	Wiring End termination Resistor MSC Plugs
Vehicle reaction:	Controller displays MSC Too Few Sets Electrical Trip or Shutdown

Possible Cause:	That module detected that the number of modules on the Redundant MSC was less than the configured Minimum Modules on MSC Link setting.
Service Action:	Correct configuration for number of modules on MSC Link setting
Other:	0



1.3.1.46 G1402 - Engine Over Speed Warning

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown

	vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.47 G1403 - Engine Under Speed Warning

Error Code:	G2219
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 1 and 2 Failure Electrical Trip Or Shutdown
Component:	Wiring End of line resistor MSC Plugs
Vehicle reaction:	MSC 1 and 2 Failure Electrical Trip Or Shutdown displayed on controller and generator
Possible Cause:	1) MSC plugs / sockets connection 2) Wiring 3) End of line resistor 4) MSC connections at controller 5) Set to set extension harness

Service Action:	1) Check the MSC connections For DSE - 32(H), 33(L), 34(SHLD) 2) Check the connections at Terminal blocks (if fitted). Refer appropriate schematic 3) Check the connections at MSC sockets 4) Check for loose connections at controller and TB 5) Check for mechanical damage of Set to set extension harness 6) Check for the connections at MSC sockets and Plugs , replace the pins if damage
Other:	1) Panel wiring issue 2) TB / Resistor switch issue 3) Set to Set extension harness issue



1.3.1.48 G1406 - Generator Over Frequency Electrical Trip Or Shutdown

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.49 G1407 - Generator Under Frequency Shutdown

Error Code:	G2700
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Reverse Power Electrical Trip Or Shutdown
Component:	Generator Set Controller

Vehicle reaction:	Generator will shutdown/electrically trip the circuit breaker with a message "Generator Reverse Power Electrical Trip Or Shutdown" on the DSE screen.
Possible Cause:	Synchronisation failure or improper synchronisation. MSC connection failure
Service Action:	For synchronisation failure or improper synchronisation. Please follow the synchronisation process including swing setting verification. For MSC connection failure, check if the wires connected to the MSC terminals are connected securely. If yes then the MSC connection may have failed and may need to replace the controller. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.50 G1408 - Generator Over Frequency Warning

Error Code:	G2219
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 1 and 2 Failure Electrical Trip Or Shutdown
Component:	Wiring End of line resistor MSC Plugs

Vehicle reaction:	MSC 1 and 2 Failure Electrical Trip Or Shutdown displayed on controller and generator
Possible Cause:	1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness
Service Action:	1) Check the MSC connections For DSE - 32(H), 33(L), 34(SHLD) 2) Check the connections at Terminal blocks (if fitted). Refer appropriate schematic 3) Check the connections at MSC sockets 4) Check for loose connections at controller and TB 5) Check for mechanical damage of Set to set extension harness 6) Check for the connections at MSC sockets and Plugs , replace the pins if damage
Other:	1) Panel wiring issue 2) TB / Resistor switch issue 3) Set to Set extension harness issue



1.3.1.51 G1409 - Generator Under Frequency Warning

Error Code:	G2800
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Warning

Component:	Generator Power Cables
Vehicle reaction:	DSE controller displays Phase Sequence Wrong Warning
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.
Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for Stage V DG set Model. Refer
Other:	0



1.3.1.52 G1501 - Emergency Stop

Error Code:	G2801
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Component:	Generator Power Cables
Vehicle reaction:	Controller displays Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.

Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.53 G1801 - Fail to Synchronise Electrical Trip

Error Code:	G2801
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Component:	Generator Power Cables
Vehicle reaction:	Controller displays Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.
Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.54 G1804 - Out Of Sync Warning

Error Code:	G3300
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Low Coolant Level Electrical Trip Or Shutdown
Components:	Generator Set Controller Coolant Level Sensor Engine ECU
Vehicle reaction:	The coolant level reading from the ECU has dropped below pre-alarm set level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown' The coolant level reading on the DSE controller from the Coolant Level Sensor has dropped below pre-alarm set level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown'
Possible Cause:	1) Coolant Level is actually low. 2) Coolant Level sensor is faulty, or wiring is faulty. 3) Coolant Level sensor configuration is incorrect. 4) Engine ECU is faulty, or wiring is faulty.

Service Action:	Coolant Level is actually Low. Check the coolant level and refill if required. Ensure that there are no leak through the radiator or coolant hoses. Once the coolant is topped up again and checks are done, then try again. Coolant level sensor is faulty/wiring loose. If the coolant level is OK and still there is an alarm then check the coolant level sensor wiring when it is safe to do so. If all the connections and wiring is found to be ok, then please replace the inlet temperature sensor and try again. Refer respective schematic part code applicable for Stage V DG set Model.PLM. Coolant level sensor configuration is incorrect. Check the configuration setting on the DSE configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU/DSE controller is sensing the correct coolant level, and the wiring to the ECU/DSE are ok and not loose. If the wiring is found to be ok, then replace the ECU/DSE controller and try again. Refer respective schematic part code applicable for Stage V DG set Model.
Other:	0

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Error Code:	G3100
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Inlet Temperature - Electrical Trip Or Shutdown
Component:	Generator Set Controller Inlet Temperature Sensor Engine ECU
Vehicle reaction:	The inlet temperature reading from the ECU has risen above pre-alarm set level. This causes a warning message to appear on the controller screen and causes the controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown'
Possible Cause:	1) Inlet temperature is actually high. 2) Inlet temperature sensor is faulty, or wiring is faulty. 3) Inlet temperature sensor configuration is incorrect. 4) Engine ECU is faulty, or wiring is faulty.
Service Action:	Inlet temperature is actually high. Wait for the temperature to drop below the alarming level, and then try again. Inlet temperature sensor is faulty. Check the inlet temperature sensor wiring when it is safe to do so. If wiring is found to be ok, please replace the inlet temperature sensor and try again. Refer respective schematic part code applicable for the generator model. Inlet temperature sensor configuration is incorrect. Check the configuration setting on the DSE configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU is sensing the correct temperature, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and

	try again. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.56 G1901 - Fuel Level Low Shutdown

Error Code:	G1011
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input F Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.57 G1905 - Fuel Level Low Warning

Error Code:	G3200
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Oil Pressure Low Electrical Trip Or Shutdown
Component:	Generator Set Controller Oil Pressure Sensor Engine ECU
Vehicle reaction:	The oil pressure reading from the ECU has dropped below pre-set trip level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown'
Possible Cause:	1) Oil pressure is actually low. 2) Oil Pump is faulty. 3) Oil pressure sensor is faulty, or wiring is faulty. 4) Oil pressure sensor configuration is incorrect. 5) Engine ECU is faulty, or wiring is faulty.

Service Action:	Oil pressure is actually low. check the oil level, if the oil level is low then refill oil and then try again. If the oil level is OK then check the viscosity of the oil, if the viscosity is too thick then change the engine oil and try again. Oil pressure pump is faulty. Check the wiring to the oil pump is correct and the oil pressure pump is working fine. If not then replace the oil pressure pump and try again. Refer respective schematic part code applicable for Stage V DG set Model. Oil pressure sensor is faulty. Check the oil pressure sensor wiring when it is safe to do so. If wiring is found to be ok, the check if the sensor is working correctly. If not please replace the oil pressure sensor and try again. Refer respective schematic part code applicable for Stage V DG set Model. Oil pressure sensor configuration is incorrect in the DSE configuration file. Check the configuration setting on the DSE configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU is sensing the oil pressure, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and try again. Refer respective schematic part code applicable for Stage V DG set Model.
Other:	0



1.3.1.58 G1907 - Water In Fuel Electrical Trip Or Shutdown

Error Code:	G2801
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Component:	Generator Power Cables
Vehicle reaction:	Controller displays Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.
Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.59 G1911 - Water In Fuel Shutdown

Error Code:	G3200
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Oil Pressure Low Electrical Trip Or Shutdown
Component:	Generator Set Controller Oil Pressure Sensor Engine ECU

Vehicle reaction:	The oil pressure reading from the ECU has dropped below pre-set trip level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown'
Possible Cause:	1) Oil pressure is actually low. 2) Oil Pump is faulty. 3) Oil pressure sensor is faulty, or wiring is faulty. 4) Oil pressure sensor configuration is incorrect. 5) Engine ECU is faulty, or wiring is faulty.
Service Action:	Oil pressure is actually low. check the oil level, if the oil level is low then refill oil and then try again. If the oil level is OK then check the viscosity of the oil, if the viscosity is too thick then change the engine oil and try again. Oil pressure pump is faulty. Check the wiring to the oil pump is correct and the oil pressure pump is working fine. If not then replace the oil pressure pump and try again. Refer respective schematic part code applicable for Stage V DG set Model. Oil pressure sensor is faulty. Check the oil pressure sensor wiring when it is safe to do so. If wiring is found to be ok, the check if the sensor is working correctly. If not please replace the oil pressure sensor and try again. Refer respective schematic part code applicable for Stage V DG set Model. Oil pressure sensor configuration is incorrect in the DSE configuration file. Check the configuration setting on the DSE configuration file. If the set level are as desired then do not change the setting, else update as required and try again.

	Engine ECU is faulty. Check if the Engine ECU is sensing the oil pressure, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and try again. Refer respective schematic part code applicable for Stage V DG set Model.
Other:	0



1.3.1.60 G2002 - Plant Battery Over Voltage Warning

Error Code:	G3101
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Inlet Temperature - Warning
Component:	Generator Set Controller Inlet Temperature Sensor

	Engine ECU
Vehicle reaction:	The inlet temperature reading from the ECU has risen above pre-alarm set level. This causes a warning message to appear on the controller screen and causes the controller to display 'Inlet Temperature High Warning'
Possible Cause:	1) Inlet temperature is actually high. 2) Inlet temperature sensor is faulty, or wiring is faulty. 3) Inlet temperature sensor configuration is incorrect. 4) Engine ECU is faulty, or wiring is faulty.
Service Action:	Inlet temperature is actually high. Wait for the temperature to drop below the alarming level, and then try again. Inlet temperature sensor is faulty. Check the inlet temperature sensor wiring when it is safe to do so. If wiring is found to be ok, please replace the inlet temperature sensor and try again. Refer respective schematic part code applicable for the generator. Inlet temperature sensor configuration is incorrect. Check the configuration setting on the controller configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU is sensing the correct temperature, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and try again. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.61 G2003 - Plant Battery Under Voltage Warning

Error Code:	G3200
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Oil Pressure Low Electrical Trip Or Shutdown
Component:	Generator Set Controller Oil Pressure Sensor Engine ECU
Vehicle reaction:	The oil pressure reading from the ECU has dropped below pre-set trip level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown'
Possible Cause:	1) Oil pressure is actually low. 2) Oil Pump is faulty. 3) Oil pressure sensor is faulty, or wiring is faulty. 4) Oil pressure sensor configuration is incorrect. 5) Engine ECU is faulty, or wiring is faulty.

Service Action:	Oil pressure is actually low. check the oil level, if the oil level is low then refill oil and then try again. If the oil level is OK then check the viscosity of the oil, if the viscosity is too thick then change the engine oil and try again. Oil pressure pump is faulty. Check the wiring to the oil pump is correct and the oil pressure pump is working fine. If not then replace the oil pressure pump and try again. Refer respective schematic part code applicable for Stage V DG set Model. Oil pressure sensor is faulty. Check the oil pressure sensor wiring when it is safe to do so. If wiring is found to be ok, the check if the sensor is working correctly. If not please replace the oil pressure sensor and try again. Refer respective schematic part code applicable for Stage V DG set Model. Oil pressure sensor configuration is incorrect in the DSE configuration file. Check the configuration setting on the DSE configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU is sensing the oil pressure, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and try again. Refer respective schematic part code applicable for Stage V DG set Model.
Other:	0



1.3.1.62 G2004 - Generator Over Voltage Electrical Trip Or Shutdown

Error Code:	G1003
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	

1.3.1.63 G2005 - Generator Under Voltage Electrical Trip Or Shutdown

Error Code:	G3005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Fault Ride Through Event - Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Fault Ride Through warning appears when the generator is in parallel with the mains and/or when in parallel with other generators. The Fault Ride Through function prevents the generator disconnecting from the bus if the voltage momentarily decreases due to faults on the distribution network. This is achieved by using a curve that is formed from a sequence of Connection Point Voltages which increase at consecutive time intervals. This is done to enable the network voltage to recover over time after a fault has occurred and been cleared. If the generator (and others) were to trip during a momentary fault, after the fault cleared the amount of available power may not be enough to supply the demand. When the Fault Ride Through function is enabled and the generator voltage falls below the 'Urec3' level, the FRT Event alarm activates to indicate a Fault Ride Through event is active. During a Fault Ride Through event the Gen Low Voltage Shutdown or Electrical Trip alarm conditions are ignored as long as the voltage level stays above the Fault Ride Through curve (within the Acceptable Voltage Region). If the voltage falls below the curve, the module activates the Gen Low Voltage alarm after the Generator Transient Delay time has expired. The Fault Ride Through event is cleared when the 'Trec4' timer expires and the voltage rises above the 'Urec3'

	level. If the voltage does not rise above 'Urec3' when the 'Trec4' time expires, the FRT Event alarm remains active and does not clear. During this period all the alarms are no longer ignored until the voltage raises above the Urec3 and another FRT event condition occurs.
Possible Cause:	When the Fault Ride Through function is enabled and the generator voltage falls below the 'Urec3' level, the FRT Event alarm activates to indicate a Fault Ride Through event is active. During a Fault Ride Through event the Gen Low Voltage Shutdown or Electrical Trip alarm conditions are ignored as long as the voltage level stays above the Fault Ride Through curve (within the Acceptable Voltage Region). If the voltage falls below the curve, the module activates the Gen Low Voltage alarm after the Generator Transient Delay time has expired. The Fault Ride Through event is cleared when the 'Trec4' timer expires and the voltage rises above the 'Urec3' level. If the voltage does not rise above 'Urec3' when the 'Trec4' time expires, the FRT Event alarm remains active and does not clear. During this period all the alarms are no longer ignored until the voltage raises above the Urec3 and another FRT event condition occurs.

	The Connection Point Voltages (Uret, Uclear, Urec1, Urec2, Urec3) and time intervals (Tclear, Trec1, Trec2, Trec3, Trec4) are configured in the Fault Ride Through section of the module's configuration. For guidance on how to configure these settings, refer to the relevant standards for Fault Ride Through protection which are normally governed by mains parallel standards.
Service Action:	Clear the fault and check if all the Generator Sets on the bus are healthy and there is no existing fault.
Other:	0



1.3.1.64 G2006 - Generator Over Voltage Warning

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.1.65 G2007 - Generator Under Voltage Warning

Error Code:	G0102
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	AVR Data Fail Warning
Component:	AVR
Vehicle reaction:	Controller Under /Over voltage Warning or shutdown
Possible Cause:	1) AVR unable to excite. 2) AVR loose wiring (Check wiring connection) 3) AVR Phase sensing failure 4) Software not installed in AVR
Service Action:	1. Check the connection of AVR as per Drawing 2. Check the residual voltage development and excitation resistance 3. Replace New AVR
Other:	DER1 MECCALTE AVR DEIF DVC550 AVR



1.3.1.66 G2100 - Generator Over Current Electrical Trip Or Shutdown

Error Code:	G0201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Air Flap Closed Electrical Trip Or Shutdown (Optional Item)
Component:	Controller

Vehicle reaction:	Controller commands for electrical trip or shutdown When digital input configured for Air-Flap Closed Auxiliary became active.
Possible Cause:	1. Controller Digital Input.(DSE configuration) 2. Air flap Relay connection 3. Solenoid operation of Air flap
Service Action:	1. DSE Controller Check for digital Input For DSE controller (8610)- Used in T4F and RS stage V Pin no 70 Digital input and Digital output Pin no 14. For DSE controller (7310)- Used in T4F and Rs stage V Pin no 20 Digital input and Digital output Pin no 13 For DIEF controller used in T4F -DIEF AG150 Pin no 10 Digital input and Digital output Pin no 17 For DIEF controller used in T4F -DIEF AGC4 Pin no 51 Digital input and Digital output Pin no 70. 2. Check RAS Relay Coil Check TB49 and TB115 3. Check the Loose connection in DSE terminals and right wiring as per schematics. 4.Check for faulty RAS coil and ASOV solenoid operation if found faulty replaced
Other:	1. Panel Wiring Issue 2. Wire loose 3. Wirng harness of Fuel solenoid issue 4. ASOV issue



1.3.1.67 G2101 - Generator Over Current Warning

Error Code:	G1907
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Water In Fuel Electrical Trip Or Shutdown
Component:	Water Separator Water in fuel switch
Vehicle reaction:	DG set will be unable to generate electrical output.
Possible Cause:	a. Water availability with water separator. b. Wiring issue. c. Water level switch faulty.
Service Action:	a. Check water availability with water separator. Drain water through drain plug with water separator. Reset fault. b. Even after removing water from water separator & after fault reset, still fault is coming than check wiring connections. Refer respective schematic part code applicable for Stage V DG set Model. c. If wiring is OK. Replace water level switch & reset fault.
Other:	0



1.3.1.68 G2104 - Negative Phase Sequence Current Electrical Trip Or Shutdown

Error Code:	G1002
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Warning
Component:	Controller
Vehicle reaction:	Controller Displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	Refer to the Schematic diagram for concern Generator model as mentioned in Schematic Matrix to identify which Sensor/Switch wired with Digital Input cause warning/shutdown.



1.3.1.69 G2105 - Negative Phase Sequence Current Warning

Error Code:	G1006
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input D Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.

Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.
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1.3.1.70 G2200 - MSC Old Version Units Warning

Error Code:	G1010
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input F Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning

	ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.71 G2201 - MSC Old Version Units Electrical Trip Or Shutdown

Error Code:	G1014
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input H Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.72 G2202 - MSC Failure Warning

Error Code:	G1018
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input J Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.73 G2203 - MSC ID Error Warning

Error Code:	G1022
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input L Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.

Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.74 G2204 - MSC Failure Electrical Trip Or Shutdown

Error Code:	G1201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	ECU Red Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	The controller received a fault condition from the engine ECU alerting that the ECU Red Trip or Shutdown had activated.
Possible Cause:	This is Engine related fault and Generator will shutdown or Trip due to fault/issue in Engine
Service Action:	Check the Fault Message on the display and follow the recommended Service action as mention in Engine Help File..

Other:	0
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1.3.1.75 G2205 - MSC ID Error Electrical Trip Or Shutdown

Error Code:	G1208
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	ECU Malfunction Warning
Component:	Generator Set Controller
Vehicle reaction:	The module received a malfunction fault condition from the engine ECU.
Possible Cause:	There is fault/issue in Engine creating ECU Malfunction warning.
Service Action:	Check the Fault Message on the display and follow the recommended Service action as mention in Engine Help File.
Other:	0



1.3.1.76 G2206 - MSC Too Few Sets Electrical Trip Or Shutdown

Error Code:	G1403
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Warning
Component:	Generator Set Controller
Vehicle reaction:	Engine speed fall below 95% of rated speed.
Possible Cause:	1. Engine RPM goes below the 95% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. DSE8610 incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. DSE Controller incorrect setting.
Service Action:	1. Check the Controller Trip setting is correct or not. 2. Check the speed Governor setting and FIP. 3. Block Loading shall be avoided. 4. Check the speed biasing setting if under RPM warning comes with DSE8610 Controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Overspeed in the Controller.
Other:	



1.3.1.77 G2207 - MSC Data Error Warning

Error Code:	G1409
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Frequency Warning
Component:	a) Customer Load b) Alternator c) DG Controller / Software configuration d) Engine fuel system
Vehicle reaction:	Controller Displays as 'Generator Under Frequency Warning'. Generator will be able to generate electrical output with warning.
Possible Cause:	a) Customer load could be more than Generator capacity. In case of excessive customer load than generator capacity may drop down the DG set frequency. b) Faulty Engine's fuel system.
Service Action:	a) Check customer load & ensure applied load is within generator capacity. If still problem exists, check next step. b) Check engine's fuel system i.e. blockage of fuel filter / fuel Stainer as it may lead less fuel supply to fuel pump resulting engine RPM drop.
Other:	0



1.3.1.78 G2208 - MSC Alarms Inhibited Warning

Error Code:	G1805
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Out Of Sync Electrical Trip
Component:	The module did not detect that the generator and bus voltage have drifted out of sync. This is caused by some form of external logic tripping open the generator load switch without it informing the Controller module.
Vehicle reaction:	Generator will be unable to generate electrical output.
Possible Cause:	An Out of Sync alarm means that the DG module has detected that the supplies either side of the breaker are not in sync when the breaker is closed. The DG Controller module uses a fixed 15° window to assess this.
Service Action:	a. The Bus Sensing connections have not been made between the common generator bus and the DG controller, or the bus sensing fuses have blown or have been removed. Refer respective schematic part code applicable for Stage V generator Model. b. The load switching device does not close quickly enough. Ensure the breaker closes within 100mS of receiving the close signal. c. The Out of Sync timer is set too low. If it required to raise this timer away from the factory setting of 200mS (0.2s), its customer responsibility to ensure to understand why it is required to raise! d. Something external has caused the breaker to open, or has prevented it from closing. e. The breaker wiring may not be correct, causing the breaker to open where it triggers the close mechanism, but the breaker doesn't actually mechanically close, it re-opens again.
Other:	0



1.3.1.79 G2209 - MSC Too Few Sets Warning

Error Code:	G1401
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Engine speed fall below 10% of rated speed. Machine may Trip on Underfrequency Fault.
Possible Cause:	1. Engine RPM goes below the 90% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. Controller incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. Controller incorrect setting.
Service Action:	1. Check the Controller setting is correct or not. 2. Check the speed Governor setting. 3. Block Loading shall be avoided. 4. Check the speed biasing setting & wiring connection if under RPM warning comes with controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Underspeed in controller
Other:	



1.3.1.80 G2210 - MSC Data Error Electrical Trip Or Shutdown

Error Code:	G2005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Voltage Electrical Trip Or Shutdown
Component:	Generator Set Controller AVR ECU
Vehicle reaction:	Controller displays an under voltage Electrical Trip Or Shutdown
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the DSE configuration file
Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for the generator Model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER



1.3.1.81 G2211 - MSC Alarms Inhibited Electrical Trip Or Shutdown

Error Code:	G2101
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Over Current Warning
Component:	Controller External demand
Vehicle reaction:	Controller displays an over current warning
Possible Cause:	The module detected that the generator output current had risen above the Generator Over Current Trip for the duration of the IDMT function.
Service Action:	Check the controller configuration file Refer respective schematic part code applicable for the generator model.
Other:	0

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1.3.1.82 G2212 - MSC 2 Data Error Warning

Error Code:	G2201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	MSC Old Version Units Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays an MSC Old Version Units Electrical trip or Shutdown
Possible Cause:	The module detected that another module on the MSC link was incompatible.
Service Action:	1) Check all the module firmware version numbers (under About Application Number on the modules' displays) and ensure all are the latest version firmware. 2) Use the DSE Configuration Suite Software to upgrade the firmware (Tools Update Firmware) of the older modules. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.83 G2213 - MSC 2 Data Error Electrical Trip Or Shutdown

Error Code:	G2205
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC ID Error Electrical Trip Or Shutdown
Component:	Generator Set Controller Configuration file

Vehicle reaction:	Controller displays MSC ID Error Electric Trip or Shutdown
Possible Cause:	The module detected that another module on the MSC link had the same Generator Set MSC ID configured. When the Disable Auto ID Allocation option is not enabled in the DSE module's configuration, the MSC ID is automatically set when all the modules are powered up one at a time. If all the modules are powered up together, this may result in the MSC ID Error alarm activating.
Service Action:	1) Disable Auto ID Allocation option should be enabled in the DSE module's configuration, the MSC ID is assigned to the configured MSC ID value when the module is powered up. Take note to enable this option in all the DSE modules if to be used, ensuring that each DSE module has a unique MSC ID. 2) Manually setting the MSC ID using the DSE Configuration Suite PC Software's SCADA allows this alarm to be reset and prevents this from occurring. It also has the benefit of being able to determine which module on the MSC link has a communication issue. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.84 G2214 - MSC 2 Too Few Sets Electrical Trip Or Shutdown

Error Code:	G2209
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Too Few Sets Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays MSC Too Few Sets Warning
Possible Cause:	That module detected that the number of modules on the MSC was less than the configured Minimum Modules on MSC Link setting.
Service Action:	Correct configuration for number of modules on MSC Link setting Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.85 G2215 - MSC 2 Link Failure Warning

Error Code:	G2213
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 2 Data Error Electrical Trip Or Shutdown
Component:	Wiring End termination Resistor MSC Plugs

Vehicle reaction:	Controller displays MSC 2 Data Error Electrical Trip or Shutdown
Possible Cause:	The module detected that data on the Redundant MSC link had become corrupt, possibly caused by incorrect wiring or faulty cabling. 1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness
Service Action:	1) Correct Wiring 2) Correct Faulty cabling
Other:	0



1.3.1.86 G2216 - MSC 2 Too Few Sets Warning

Error Code:	G2219
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 1 and 2 Failure Electrical Trip Or Shutdown
Component:	Wiring End of line resistor MSC Plugs

Vehicle reaction:	MSC 1 and 2 Failure Electrical Trip Or Shutdown displayed on controller and generator
Possible Cause:	1) MSC plugs / sockets connection 2) Wiring 3) End of line resister 4) MSC connections at controller 5) Set to set extension harness
Service Action:	1) Check the MSC connections For DSE - 32(H), 33(L), 34(SHLD) 2) Check the connections at Terminal blocks (if fitted). Refer appropriate schematic 3) Check the connections at MSC sockets 4) Check for loose connections at controller and TB 5) Check for mechanical damage of Set to set extension harness 6) Check for the connections at MSC sockets and Plugs , replace the pins if damage
Other:	1) Panel wiring issue 2) TB / Resistor switch issue 3) Set to Set extension harness issue



1.3.1.87 G2217 - MSC 2 Link Failure Electrical Trip Or Shutdown

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown

Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.88 G2218 - MSC 1 and 2 Failure Warning

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.89 G2219 - MSC 1 and 2 Failure Electrical Trip Or Shutdown

Error Code:	G2219
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 1 and 2 Failure Electrical Trip Or Shutdown
Component:	Wiring End of line resistor MSC Plugs
Vehicle reaction:	MSC 1 and 2 Failure Electrical Trip Or Shutdown displayed on controller and generator
Possible Cause:	1) MSC plugs / sockets connection 2) Wiring 3) End of line resistor 4) MSC connections at controller 5) Set to set extension harness
Service Action:	1) Check the MSC connections For DSE - 32(H), 33(L), 34(SHLD) 2) Check the connections at Terminal blocks (if fitted). Refer appropriate schematic 3) Check the connections at MSC sockets 4) Check for loose connections at controller and TB 5) Check for mechanical damage of Set to set extension harness 6) Check for the connections at MSC sockets and Plugs , replace the pins if damage
Other:	1) Panel wiring issue 2) TB / Resistor switch issue 3) Set to Set extension harness issue

1.3.1.90 G2220 - Priority Selection Error Warning

Error Code:	G2801
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Component:	Generator Power Cables
Vehicle reaction:	Controller displays Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.
Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.91 G2221 - Priority Selection Error Electrical Trip Or Shutdown

Error Code:	G3300
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Low Coolant Level Electrical Trip Or Shutdown

Component:	Generator Set Controller Coolant Level Sensor Engine ECU
Vehicle reaction:	The coolant level reading from the ECU has dropped below pre-alarm set level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown' The coolant level reading on the DSE controller from the Coolant Level Sensor has dropped below pre-alarm set level. This causes a warning message to appear on the DSE controller screen and causes the DSE controller to take action as per the configuration setup which could either be 'Electrical Trip' or 'Shutdown'
Possible Cause:	1) Coolant Level is actually low. 2) Coolant Level sensor is faulty, or wiring is faulty. 3) Coolant Level sensor configuration is incorrect. 4) Engine ECU is faulty, or wiring is faulty.

Service Action:	Coolant Level is actually Low. Check the coolant level and refill if required. Ensure that there are no leak through the radiator or coolant hoses. Once the coolant is topped up again and checks are done, then try again. Coolant level sensor is faulty/wiring loose. If the coolant level is OK and still there is an alarm then check the coolant level sensor wiring when it is safe to do so. If all the connections and wiring is found to be ok, then please replace the inlet temperature sensor and try again. Refer respective schematic part code applicable for Stage V DG set Model.PLM. Coolant level sensor configuration is incorrect. Check the configuration setting on the DSE configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU/DSE controller is sensing the correct coolant level, and the wiring to the ECU/DSE are ok and not loose. If the wiring is found to be ok, then replace the ECU/DSE controller and try again. Refer respective schematic part code applicable for Stage V DG set Model.
Other:	0

JCB**1.3.1.92 G2300 - Generator Failed To Open Warning**

Error Code:	G1011
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Digital Input F Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.93 G2301 - Generator Failed To Open Electrical Trip Or Shutdown

Error Code:	G2801
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Component:	Generator Power Cables
Vehicle reaction:	Controller displays Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.
Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.94 G2302 - Generator Failed To Close Warning

Error Code:	G3101
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Inlet Temperature - Warning
Component:	Generator Set Controller Inlet Temperature Sensor Engine ECU
Vehicle reaction:	The inlet temperature reading from the ECU has risen above pre-alarm set level. This causes a warning message to appear on the controller screen and causes the controller to display 'Inlet Temperature High Warning'
Possible Cause:	1) Inlet temperature is actually high. 2) Inlet temperature sensor is faulty, or wiring is faulty. 3) Inlet temperature sensor configuration is incorrect. 4) Engine ECU is faulty, or wiring is faulty.
Service Action:	Inlet temperature is actually high. Wait for the temperature to drop below the alarming level, and then try again. Inlet temperature sensor is faulty. Check the inlet temperature sensor wiring when it is safe to do so. If wiring is found to be ok, please replace the inlet temperature sensor and try again. Refer respective schematic part code applicable for the generator. Inlet temperature sensor configuration is incorrect. Check the configuration setting on the controller configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU is sensing the correct temperature, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and

	try again. Refer respective schematic part code applicable for the generator model.
Other:	0

JCB
1.3.1.95 G2303 - Generator Failed To Close Electrical Trip Or Shutdown

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.96 G2600 - Generator Short Circuit Electrical Trip Or Shutdown

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller

Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.1.97 G2700 - Generator Reverse Power Electrical Trip Or Shutdown

Error Code:	G0201
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Air Flap Closed Electrical Trip Or Shutdown (Optional Item)
Component:	Controller
Vehicle reaction:	Controller commands for electrical trip or shutdown When digital input configured for Air-Flap Closed Auxiliary became active.
Possible Cause:	1. Controller Digital Input.(DSE configuration) 2. Air flap Relay connection 3. Solenoid operation of Air flap
Service Action:	1. DSE Controller Check for digital Input For DSE controller (8610)- Used in T4F and RS stage V Pin no 70 Digital input and Digital output Pin no 14. For DSE controller (7310)- Used in T4F and Rs stage V Pin no 20 Digital input and Digital output Pin no 13 For DIEF controller used in T4F -DIEF AG150 Pin no 10 Digital input and Digital output Pin no 17 For DIEF controller used in T4F -DIEF AGC4 Pin no 51 Digital input and Digital output Pin no 70. 2. Check RAS Relay Coil Check TB49 and TB115 3. Check the Loose connection in DSE terminals and right wiring as per schematics.

	4. Check for faulty RAS coil and ASOV solenoid operation if found faulty replaced
Other:	1. Panel Wiring Issue 2. Wire loose 3. Wirng harness of Fuel solenoid issue 4. ASOV issue



1.3.1.98 G2701 - Generator Reverse Power Warning

Error Code:	G1002
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Warning
Component:	Controller

Vehicle reaction:	Controller Displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	Refer to the Schematic diagram for concern Generator model as mentioned in Schematic Matrix to identify which Sensor/Switch wired with Digital Input cause warning/shutdown.



1.3.1.99 G2704 - kW Overload Electrical Trip Or Shutdown

Error Code:	G1010
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal

Description:	Digital Input F Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.100 G2705 - kW Overload Warning

Error Code:	G1018
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input J Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.

Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.101 G2800 - Generator Phase Sequence Wrong Warning

Error Code:	G1201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	ECU Red Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	The controller received a fault condition from the engine ECU alerting that the ECU Red Trip or Shutdown had activated.
Possible Cause:	This is Engine related fault and Generator will shutdown or Trip due to fault/issue in Engine
Service Action:	Check the Fault Message on the display and follow the recommended Service action as mention in Engine Help File..

Other:	0
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1.3.1.102 G2801 - Generator Phase Sequence Wrong Electrical Trip Or Shutdown

Error Code:	G1403
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Warning
Component:	Generator Set Controller
Vehicle reaction:	Engine speed fall below 95% of rated speed.
Possible Cause:	1. Engine RPM goes below the 95% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. DSE8610 incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. DSE Controller incorrect setting.
Service Action:	1. Check the Controller Trip setting is correct or not. 2. Check the speed Governor setting and FIP. 3. Block Loading shall be avoided. 4. Check the speed biasing setting if under RPM warning comes with DSE8610 Controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Overspeed in the Controller.
Other:	

**1.3.1.103 G3000 - Failed to Start Warning**

Error Code:	G1805
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Out Of Sync Electrical Trip
Component:	The module did not detect that the generator and bus voltage have drifted out of sync. This is caused by some form of external logic tripping open the generator load switch without it informing the Controller module.
Vehicle reaction:	Generator will be unable to generate electrical output.
Possible Cause:	An Out of Sync alarm means that the DG module has detected that the supplies either side of the breaker are not in sync when the breaker is closed. The DG Controller module uses a fixed 15° window to assess this.

Service Action:	a. The Bus Sensing connections have not been made between the common generator bus and the DG controller, or the bus sensing fuses have blown or have been removed. Refer respective schematic part code applicable for Stage V generator Model. b. The load switching device does not close quickly enough. Ensure the breaker closes within 100mS of receiving the close signal. c. The Out of Sync timer is set too low. If it required to raise this timer away from the factory setting of 200mS (0.2s), its customer responsibility to ensure to understand why it is required to raise! d. Something external has caused the breaker to open, or has prevented it from closing. e. The breaker wiring may not be correct, causing the breaker to open where it triggers the close mechanism, but the breaker doesn't actually mechanically close, it re-opens again.
Other:	0



1.3.1.104 G3001 - Failed to Start - Electrical Trip Or Shutdown

Error Code:	G2005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Voltage Electrical Trip Or Shutdown

Component:	Generator Set Controller AVR ECU
Vehicle reaction:	Controller displays an under voltage Electrical Trip Or Shutdown
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the DSE configuration file
Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for th generator Model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER



1.3.1.105 G3002 - Failed to Stop - Warning

Error Code:	G2201
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Old Version Units Electrical Trip Or Shutdown

Component:	Generator Set Controller
Vehicle reaction:	Controller displays an MSC Old Version Units Electrical trip or Shutdown
Possible Cause:	The module detected that another module on the MSC link was incompatible.
Service Action:	1) Check all the module firmware version numbers (under About Application Number on the modules' displays) and ensure all are the latest version firmware. 2) Use the DSE Configuration Suite Software to upgrade the firmware (Tools Update Firmware) of the older modules. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.106 G3003 - Failed to Stop - Electrical Trip Or Shutdown

Error Code:	G2209
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Too Few Sets Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays MSC Too Few Sets Warning

Possible Cause:	That module detected that the number of modules on the MSC was less than the configured Minimum Modules on MSC Link setting.
Service Action:	Correct configuration for number of modules on MSC Link setting Refer respective schematic part code applicable for the generator model.
Other:	0

JCB**1.3.1.107 G3004 - Fault Ride Through Event - Warning**

Error Code:	G2219
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC 1 and 2 Failure Electrical Trip Or Shutdown
Component:	Wiring End of line resistor MSC Plugs
Vehicle reaction:	MSC 1 and 2 Failure Electrical Trip Or Shutdown displayed on controller and generator
Possible Cause:	1) MSC plugs / sockets connection 2) Wiring 3) End of line resistor 4) MSC connections at controller 5) Set to set extension harness

Service Action:	1) Check the MSC connections For DSE - 32(H), 33(L), 34(SHLD) 2) Check the connections at Terminal blocks (if fitted). Refer appropriate schematic 3) Check the connections at MSC sockets 4) Check for loose connections at controller and TB 5) Check for mechanical damage of Set to set extension harness 6) Check for the connections at MSC sockets and Plugs , replace the pins if damage
Other:	1) Panel wiring issue 2) TB / Resistor switch issue 3) Set to Set extension harness issue



1.3.1.108 G3005 - Fault Ride Through Event - Electrical Trip Or Shutdown

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.109 G3100 - Inlet Temperature - Electrical Trip Or Shutdown

Error Code:	G2801
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Component:	Generator Power Cables

Vehicle reaction:	Controller displays Generator Phase Sequence Wrong Electrical Trip Or Shutdown
Possible Cause:	The module detected that the phase rotation of the generator was different to the configured Generator Phase Rotation Alarm setting.
Service Action:	Correct the wiring as per Phase rotation set Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.110 G3101 - Inlet Temperature - Warning

Error Code:	G1011
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input F Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown

	iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. viii. Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.111 G3102 - Low Coolant Level Warning

Error Code:	G3101
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Inlet Temperature - Warning
Component:	Generator Set Controller Inlet Temperature Sensor Engine ECU

Vehicle reaction:	The inlet temperature reading from the ECU has risen above pre-alarm set level. This causes a warning message to appear on the controller screen and causes the controller to display 'Inlet Temperature High Warning'
Possible Cause:	1) Inlet temperature is actually high. 2) Inlet temperature sensor is faulty, or wiring is faulty. 3) Inlet temperature sensor configuration is incorrect. 4) Engine ECU is faulty, or wiring is faulty.
Service Action:	Inlet temperature is actually high. Wait for the temperature to drop below the alarming level, and then try again. Inlet temperature sensor is faulty. Check the inlet temperature sensor wiring when it is safe to do so. If wiring is found to be ok, please replace the inlet temperature sensor and try again. Refer respective schematic part code applicable for the generator. Inlet temperature sensor configuration is incorrect. Check the configuration setting on the controller configuration file. If the set level are as desired then do not change the setting, else update as required and try again. Engine ECU is faulty. Check if the Engine ECU is sensing the correct temperature, and the wiring to the ECU are ok and not loose. If the wiring is found to be ok, then replace the ECU and try again. Refer respective schematic part code applicable for the generator model.
Other:	0



1.3.1.112 G3103 - Low Coolant Temperature Electrical Trip Or Shutdown

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.

Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .
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JCB
1.3.1.113 G3104 - Coolant Temperature High Electrical Trip Or Shutdown

Error Code:	G1002
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Warning
Component:	Controller
Vehicle reaction:	Controller Displays a Fault message of warning and Generator run & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown.

	x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	Refer to the Schematic diagram for concern Generator model as mentioned in Schematic Matrix to identify which Sensor/Switch wired with Digital Input cause warning/shutdown.



1.3.1.114 G3105 - Coolant Temperature High Warning

Error Code:	G1018
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input J Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown

	iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.115 G3108 - HEST Active Electrical Trip Or Shutdown

Error Code:	G1403
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Engine Under Speed Warning
Component:	Generator Set Controller

Vehicle reaction:	Engine speed fall below 95% of rated speed.
Possible Cause:	1. Engine RPM goes below the 95% of rated RPM. 2. Low Fuel supply or issue in speed Governor. 3. High Block Loading on Generator 4. DSE8610 incorrect speed bias setting or wiring connection. 5. ECM malfunction. 6. DSE Controller incorrect setting.
Service Action:	1. Check the Controller Trip setting is correct or not. 2. Check the speed Governor setting and FIP. 3. Block Loading shall be avoided. 4. Check the speed biasing setting if under RPM warning comes with DSE8610 Controller. 5. If above function found OK and fault remain continue check the ECM help file. 6. Check the setting of Overspeed in the Controller.
Other:	



1.3.1.116 G3109 - HEST Active Warning

Error Code:	G2005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Voltage Electrical Trip Or Shutdown
Component:	Generator Set Controller AVR ECU

Vehicle reaction:	Controller displays an under voltage Electrical Trip Or Shutdown
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the DSE configuration file
Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for th generator Model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER



1.3.1.117 G3200 - Oil Pressure Low Electrical Trip Or Shutdown

Error Code:	G2209
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	MSC Too Few Sets Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays MSC Too Few Sets Warning

Possible Cause:	That module detected that the number of modules on the MSC was less than the configured Minimum Modules on MSC Link setting.
Service Action:	Correct configuration for number of modules on MSC Link setting Refer respective schematic part code applicable for the generator model.
Other:	0

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1.3.1.118 G3201 - Oil Pressure Sensor Fault Electrical Trip Or Shutdown

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown

	vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. viii. Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.119 G3202 - Oil Pressure Sensor Fault Warning

Error Code:	G1011
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input F Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown

	iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. viii. Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.120 G3203 - Oil Pressure Low Warning

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller

Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.1.121 G3300 - Low Coolant Level Electrical Trip Or Shutdown

Error Code:	G1018
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ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input J Warning
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message of warning. Generator running & give output until the fault reached a limit to shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - viii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection.



1.3.1.122 G3301 - Low Coolant Level Warning

Error Code:	G2005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Voltage Electrical Trip Or Shutdown
Component:	Generator Set Controller AVR ECU
Vehicle reaction:	Controller displays an under voltage Electrical Trip Or Shutdown
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the DSE configuration file
Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for th generator Model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER



1.3.1.123 G3500 - SCR Inducement - Warning

Error Code:	G1003
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input B Electrical Trip Or Shutdown
Component:	NA
Vehicle reaction:	Controller Displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action.
Other:	



1.3.1.124 G3501 - SCR Inducement - Electrical Trip Or Shutdown

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.

Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .
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1.3.1.125 G3601 - Earth Leakage Detected

Error Code:	G2005
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Generator Under Voltage Electrical Trip Or Shutdown
Component:	Generator Set Controller AVR ECU
Vehicle reaction:	Controller displays an under voltage Electrical Trip Or Shutdown
Possible Cause:	The module detected that the generator output voltage had fallen below the Under Voltage Pre-Alarm Trip level for the configured delay timer after the Safety On Delay timer had expired 1) Voltage regulation failed 2) Speed regulation failed 3) Voltage setting incorrect on the DSE configuration file

Service Action:	1) Check the connections on the AVR & Replace AVR 2) Check the connections on the ECU Refer respective schematic part code applicable for th generator Model.
Other:	DEIF TDU107 TOUCH DISPLAY UNIT DEIF AGC4 CONTROLLER DSE 8610MKII GENERATOR CONTROLLER



1.3.1.126 G3602 - Breaker Door Open

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.
Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown

	vii. Breaker Door Open Shutdown. vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.1.127 G3604 - Dummy Load bank Faulty Or Circuit Open

Error Code:	G1013
ECU	Controller Deif/DSE (SA:44) SA-Source Address Decimal
Description:	Digital Input G Electrical Trip Or Shutdown
Component:	Generator Set Controller
Vehicle reaction:	Controller displays a Fault message and Generator will be shutdown.

Possible Cause:	The module detected that a digital input configured to create a fault condition became active and the appropriate message is displayed on LCD. Some are the following cause. i. Bund Level High Shutdown ii. High Coolant Temperature Electrical Trip Or Shutdown iii. Low Coolant Level Shutdown iv. Water In Fuel Electrical Shutdown v. Air Filter Switch Activation Shutdown vi. Earth Leakage Detected Shutdown vii. Breaker Door Open Shutdown. - vii Breaker Trip Status Warning ix. Air shut off Valve activated shutdown. x. Oil pressure switch Shutdown xi. Diagnostic Request switch Warning.
Service Action:	Check the Fault Message on Generator Controller display and Find the same fault description in this sheet to follow the recommended Service action. Further, Check the wiring connection.
Other:	Check the Fault Message on DSE display and Find the same fault description in this sheet to follow the recommended Service action. Check the wiring connection. .



1.3.2 DTC Codes

This section contains a list of fault codes that can be produced by the MECU.

Fault Codes - Numerical List

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

DTC	SPN	FMI	Description
1	0	1	LiveLink - Hardwired Input 1 Active - Engine Oil Pressure Low
2	0	2	LiveLink - Hardwired Input 2 Active - Engine Coolant Temperature High
3	0	3	LiveLink - Hardwired Input 3 Active - Air Filter Blocked
4	0	4	LiveLink - Hardwired Input 4 Active - Transmission Oil Temp High
3026	94	18	Fuel Pump Delivery Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
3073	96	1	Fuel Level Low Electrical Trip Or Shutdown
3089	96	17	Fuel Level Low Warning
3120	97	16	Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Moderately Severe Level
3135	97	31	Water in fuel
3553	111	1	Coolant Level - Data Valid but Below Normal Operational Range - Most Severe Level
5034	157	10	Rail pressure too low, the system is unable to achieve the target when the fuel tank level is low
5040	157	16	Fuel Rail Pressure too Low
5376	168	0	Plant Battery Over Voltage Electrical Trip Or Shutdown
5380	168	4	Battery Voltage input is detected as below the threshold
5391	168	15	Battery over voltage warning
5393	168	17	Battery under voltage warning
5507	172	3	Inlet Air Temperature (IAT) sensor signal high fault detected
5571	174	3	Fuel Temp Sensor: SRC high for fuel temperature sensor
6080	190	0	Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Most Severe Level
6081	190	1	Engine Under Speed Electrical Trip Or Shutdown
6095	190	15	Engine Over Speed Warning
6097	190	17	Engine Under Speed Warning
6099	190	19	CAN bus message error for engine speed from engine ECU
14212	444	4	LiveLink - Internal Voltage Below Normal
19967	623	31	ECU Red Electrical Trip Or Shutdown
19979	624	11	ECU Amber Warning
23335	729	7	Intake Air Heater "A" Control
31051	970	11	Engine Stop Switch
34450	1076	18	Rail under pressure control trim fault, this occurred at low fuel demand. To increase pressure the IMV has opened but exceeded trim limits and the pressure is still too low
38704	1209	16	Exhaust manifold pressure (P3) signal drifted high

47534	1485	14	Main ECU Power hold relay unexpected low state
56369	1761	17	SCR reagent tank level below first warning level, DFC for triggering warning action dependent on filling level of reducing agent
64009	2000	9	Can message EEC1 timeout (message from engine controller)
64553	2017	9	Lost Communication With Body Control Module "A"
77953	2436	1	Generator Under Frequency Electrical Trip Or Shutdown
77969	2436	17	Generator Under Frequency Warning
78080	2440	0	Over phase voltage shutdown
78081	2440	1	Under phase voltage shutdown
78095	2440	15	Over phase voltage warning
78097	2440	17	Under phase voltage warning
78208	2444	0	Generator Over Voltage Electrical Trip Or Shutdown
78209	2444	1	Generator Under Voltage Electrical Trip Or Shutdown
78223	2444	15	Generator Over Voltage Warning
78225	2444	17	Generator Under Voltage Warning
78351	2448	15	Generator Over Current Warning
78481	2452	17	Low Load - less than 30% load for 1 hour
85119	2659	31	EGR flow reached its limit
102921	3216	9	Lost Communication With NOx Sensor "A"
107529	3360	9	Lost Communication with Reductant Quality Module
107564	3361	12	SCR System Performance Dosing Failure
107621	3363	5	Open load error of DEF tank heater actuator powerstage
107667	3364	19	DEF quality message error from head unit
114279	3571	7	Generator Failed To Open Warning
115455	3607	31	Emergency Stop
118259	3695	19	Aftertreatment Refresh Inhibit/Force Switch message missing
139332	4354	4	Error for short to ground of DEF backflowline heater actuator powerstage
139333	4354	5	Open load error of DEF backflowline heater actuator powerstage
139364	4355	4	Error for short to ground of DEF pressureline heater actuator powerstage
139365	4355	5	Error for open load on heater relay of pressure line
139396	4356	4	Error for short to ground of DEF suctionline heater actuator powerstage
139397	4356	5	Open load error of DEF suctionline heater actuator powerstage

139429	4357	5	Error for open load of supply module heater actuator powerstage
139679	4364	31	Nox Catalyst Efficiency Inducement, Selective Catalytic Reduction (SCR) Unit
139714	4366	2	Error on pressure line to perform afterrun
167883	5246	11	SCR Inducement Warning
175717	5491	5	Error for open load of DEF heater relay actuator powerstage
176996	5531	4	Fault due to low or high battery voltage supply to DCU
16646921	520216	9	MSC Failure Warning
16649951	520310	31	Digital Input F Electrical Trip Or Shutdown
16650079	520314	31	Digital Input J Electrical Trip Or Shutdown
16653225	520413	9	Lost communication with ecm on engine subnet
16667935	520872	31	LiveLink - SIM Card Failure
16672735	521022	31	Low Oil Pressure During Engine Running
16673762	521055	2	Camshaft Position Sensor A Circuit Range / Performance
16674067	521064	19	Invalid Data Received From Exhaust Gas Recirculation Control Module "A"
16674099	521065	19	CAN communication error: EGR learn process time out
16674579	521080	19	CAN communication error: VGT hardware
16674707	521084	19	CAN communication error: VGT spanlearn
16682414	521325	14	Interruption Level2 Requested
16682643	521332	19	CAN bus - PROSCR14 message - Time out or EGR Impeded fault data
16683251	521351	19	Peripheral monitoring error on DCU
16683758	521367	14	EGR Level1 Requested
16683759	521367	15	EGR Level1 Enacted
16683822	521369	14	EGR Warning Requested
16683854	521370	14	Interruption Level1 Requested
16683855	521370	15	Interruption Level1 Enacted
16683918	521372	14	Inducement Status - Interruption Warning Requested
16683950	521373	14	Inducement Status - Tank Level Warning Requested
16684078	521377	14	Inducement Status - Quality Level 1 Requested
16684079	521377	15	Inducement Status - Quality Level 1 Enacted
16684142	521379	14	Inducement Status - Quality Warning Requested
16684174	521380	14	Inducement Status - System Tampering Level 1 Requested
16684175	521380	15	Inducement Status - System Tampering Level 1 Enacted
16684580	521393	4	Error for short to ground of backflow pump actuator powerstage
16686446	521451	14	Inducement Status - Tank Level Level 1 Requested

16686447	521451	15	Inducement Status - Tank Level Level 1 Enacted
16686478	521452	14	Inducement Status - Tank Level Level 2 Requested
16686656	521458	0	Inducement Repeat Offence Active
16686688	521459	0	SCR partially blocked (overloaded)
16686720	521460	0	SCR fully blocked (plugged)

This topic was last edited on 7/7/2026

1.3.2.1 SPN 0 FMI 1 - LiveLink - Hardwired Input 1 Active - Engine Oil Pressure Low

Error Code:	1
Description:	1 - LiveLink - Hardwired Input 1 Active - Engine Oil Pressure Low
Possible Cause:	The control system has detected that Hardwired Input 1 is active, indicating a low engine oil pressure condition. This input is typically driven by an oil pressure switch or external protection circuit. Possible causes include actual low engine oil pressure, low oil level, oil pump fault, restricted oil flow, faulty oil pressure switch, or wiring or configuration issues affecting the input signal.

Service Action:	1. Review fault history to determine when the low oil pressure input became active. 2. Immediately verify actual engine oil pressure using a calibrated mechanical gauge. 3. Check engine oil level and ensure the correct oil grade and viscosity are used. 4. Inspect the engine for external oil leaks and rectify any leaks found. 5. Inspect and replace the oil filter if blocked or contaminated. 6. Inspect the oil pressure switch associated with Hardwired Input 1 for correct operation. 7. Verify wiring from the oil pressure switch to Hardwired Input 1 for damage, loose connections, or short/open circuits. 8. Confirm correct input configuration (normally open or normally closed) matches the installed switch type. 9. If actual oil pressure is low, investigate internal engine issues such as oil pump wear, blocked pickup, or bearing wear. After corrective action, clear fault codes and operate the engine to confirm oil pressure remains within safe limits and input remains inactive. 10. After corrective action, clear fault codes and operate the engine to confirm oil pressure remains within safe limits and input remains inactive.
Other:	Refer to Engine Help files for support.



1.3.2.2 SPN 0 FMI 2 - LiveLink - Hardwired Input 2 Active - Engine Coolant Temperature High

Error Code:	2

Description:	2 - LiveLink - Hardwired Input 2 Active - Engine Coolant Temperature High
Possible Cause:	The control system has detected that Hardwired Input 2 is active, indicating a high engine coolant temperature condition. This input is typically driven by a coolant temperature switch or external protection circuit. Possible causes include actual engine overheating, low coolant level, cooling system restriction, radiator blockage, faulty thermostat or water pump, defective temperature switch, or wiring and configuration issues affecting the input signal.
Service Action:	1. Review fault history to determine when the high coolant temperature input became active. 2. Verify actual coolant temperature using a diagnostic tool or independent temperature measurement device. 3. Check coolant level and refill with the correct coolant mixture if low. 4. Inspect cooling system for leaks, including hoses, radiator, and water pump. 5. Inspect radiator and cooling fins for blockage, dirt, or restricted airflow. 6. Verify correct operation of the cooling fan(s) and fan drive system. 7. Inspect thermostat for correct operation and replace if stuck closed or faulty. 8. Check water pump operation and coolant circulation within the system. 9. Inspect coolant temperature switch associated with Hardwired Input 2 for correct operation. 10. Verify wiring from the temperature switch to Hardwired Input 2 for damage, loose connections, or short/open circuits.

	11. Confirm correct input configuration (normally open or normally closed) matches the installed switch. 12. After corrective action, clear fault codes and operate the engine to confirm temperature remains within limits and input remains inactive.
Other:	Refer to Engine Help files for support.



1.3.2.3 SPN 0 FMI 3 - LiveLink - Hardwired Input 3 Active - Air Filter Blocked

Error Code:	3
Description:	3 - LiveLink - Hardwired Input 3 Active - Air Filter Blocked
Possible Cause:	The control system has detected that Hardwired Input 3 is active, indicating an air filter restriction condition. This input is typically driven by an air filter restriction switch or differential pressure sensor. Possible causes include a blocked or heavily restricted air filter, excessive dust or debris ingestion, faulty

	restriction switch, damaged or obstructed intake system, or wiring or configuration issues affecting the input signal.
Service Action:	1. Review fault history to determine when the air filter restriction input was activated. 2. Inspect the air filter element for blockage, contamination, or excessive dust buildup. 3. Replace the air filter element if it is dirty, clogged, or beyond service limits. 4. Inspect the air intake system including ducting, housings, and pre-cleaners for obstruction or restriction. 5. Check the air filter restriction switch or differential pressure sensor for correct operation. 6. Verify that the restriction switch actuates at the correct pressure threshold. 7. Inspect wiring from the switch or sensor to Hardwired Input 3 for damage, corrosion, or loose connections. 8. Confirm correct digital input configuration (normally open or normally closed) matches the installed device. 9. After replacing or cleaning the filter, confirm the input returns to the normal (inactive) state. 10. Clear fault codes and operate the machine to ensure the restriction warning does not reoccur.
Other:	Refer to Engine Help files for support.

1.3.2.4 SPN 94 FMI 18 - Fuel Pump Delivery Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level

Error Code:	3026
Description:	3026 - Fuel Pump Delivery Pressure - Data Valid but Below Normal Operational Range - Moderately Severe Level
Possible Cause:	The engine control system has detected that fuel pump delivery pressure is below the normal operating range while the pressure signal remains valid. This indicates a real fuel supply issue rather than a sensor fault. Possible causes include restricted fuel supply, clogged fuel filters, air ingress into the fuel system, fuel lift pump wear or malfunction, restricted fuel lines, low fuel level, incorrect fuel specification, or excessive fuel demand under load.
Service Action:	1. Review fault history and operating conditions to determine when the low fuel pump delivery pressure condition occurs. 2. Verify fuel level is adequate and confirm the correct fuel specification is being used. 3. Inspect fuel supply lines for restrictions, kinks, leaks, or signs of air ingress. 4. Inspect and replace primary and secondary fuel filters if blocked or contaminated. 5. Check operation of the fuel lift (transfer) pump and verify delivery pressure meets manufacturer specification. 6. Inspect fuel pump inlet strainer or pre-filter for blockage if fitted. 7. Check for excessive fuel return flow that may indicate internal pump or injector leakage. 8. Compare measured fuel delivery pressure with commanded or reference values using diagnostic tools.

	9. Inspect wiring and connectors related to fuel pressure sensing for damage, corrosion, or poor connection. 10. After corrective action, clear fault codes and operate the engine under load to confirm fuel delivery pressure is within normal range.
Other:	



1.3.2.5 SPN 96 FMI 1 - Fuel Level Low Electrical Trip Or Shutdown

Error Code:	3073
Description:	MSC Failure Electrical Trip Or Shutdown
Possible Cause:	The control system has detected that the fuel level has fallen below the configured shutdown threshold, resulting in an electrical trip or shutdown. This condition is typically caused by low fuel level in the tank, failure to refuel following earlier warnings, inaccurate fuel level measurement, faulty fuel level sender, or wiring or connector issues affecting the fuel level signal.

Service Action:	1. Review fault history to determine when the low fuel level shutdown occurred and whether earlier warning events were present. 2. Check the actual fuel level in the tank and refill with the correct fuel if the level is low. 3. Compare the fuel level displayed on the control panel with the physical tank level. 4. Inspect the fuel level sender for correct operation, including float movement or sensor integrity. 5. Check wiring and connectors between the fuel level sender and the control system for damage, corrosion, or loose connections. 6. Verify fuel tank calibration and controller configuration match the installed tank size and sender type. 7. Confirm correct sender resistance range configuration (e.g. 0–190 Ω or 10–180 Ω). 8. Inspect the tank for internal issues such as debris, sludge, or geometry effects that may cause incorrect readings. 9. Repair or replace any faulty sender or wiring before clearing the shutdown condition. 10. After corrective action, clear fault codes and operate the system to confirm normal fuel level indication and no recurrence of shutdown.
Other:	



1.3.2.6 SPN 96 FMI 17 - Fuel Level Low Warning

Error Code:	3089

Description:	3089 - Fuel Level Low Warning
Possible Cause:	• Fuel Level Actually Low / Incorrect Tank Calibration • Fuel level is physically low • Tank sender float stuck at low position • Incorrect tank calibration in controller (common after service or tank replacement) • Tank slopes or baffles causing false low readings at certain angles • Fuel Level Sender or Wiring Fault • Open-circuit or short-circuit in sender wiring • Corroded connector at fuel tank • Damaged sender tube or float • Incorrect sender resistance range (e.g., 0–190 Ω vs 10–180 Ω) • Moisture ingress in harness • Control Panel / ECU Misreading the Signal • Ground reference issue causing incorrect analog sensor reading • Control panel analog input fault • ECU/software glitch • Electrical noise affecting the sender signal • Battery voltage instability causing sensor scaling errors
Service Action:	1. Fuel Level Actually Low / Incorrect Tank Calibration 2. Fuel level is physically low 3. Tank sender float stuck at low position 4. Incorrect tank calibration in controller (common after service or tank replacement) 5. Tank slopes or baffles causing false low readings at certain angles ▪ Visually inspect the tank and confirm actual fuel level

	▪ Check for stuck float by moving the sender manually (if accessible) ▪ Verify tank geometry, sender length, and controller calibration settings ▪ Inspect for debris or sludge preventing float from moving freely ▪ Recalibrate the tank level input using the controller's setup menu if required 1. Fuel Level Sender or Wiring Fault 2. Open-circuit or short-circuit in sender wiring 3. Corroded connector at fuel tank 4. Damaged sender tube or float 5. Incorrect sender resistance range (e.g., 0–190 Ω vs 10–180 Ω) 6. Moisture ingress in harness ▪ Measure sender resistance at the connector and compare to spec ▪ Perform a wiggle test on the harness while monitoring fuel level % ▪ Inspect connectors for corrosion, bent pins, or water ingress ▪ Check continuity between sender and controller terminals ▪ If sender values are erratic or dead, replace the fuel level sender 1. Control Panel / ECU Misreading the Signal 2. Ground reference issue causing incorrect analog sensor reading 3. Control panel analog input fault 4. ECU/software glitch 5. Electrical noise affecting the sender signal 6. Battery voltage instability causing sensor scaling errors ▪ Measure sender resistance at the connector and compare to spec
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	▪ Perform a wiggle test on the harness while monitoring fuel level % ▪ Inspect connectors for corrosion, bent pins, or water ingress ▪ Check continuity between sender and controller terminals ▪ If sender values are erratic or dead, replace the fuel level sender
Other:	

JCB

1.3.2.7 SPN 97 FMI 16 - Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Moderately Severe Level

Error Code:	3120
Description:	3120 Water in Fuel Indicator - Data Valid but Above Normal Operational Range - Moderately Severe Level
Possible Cause:	The control system has detected that the water-in-fuel indicator signal is above the normal operating range while the signal remains valid. This indicates actual presence of water within the fuel system rather than a sensor fault. Possible causes include contaminated fuel supply, water accumulation in the fuel tank, ineffective water separator operation, failure to drain water traps, or degraded fuel filter performance.

Service Action:	1. Review fault history to determine when the water in fuel condition developed and under what operating conditions. 2. Inspect and drain the fuel water separator to remove any accumulated water. 3. Check fuel filters for contamination and replace if water or debris is present. 4. Inspect the fuel tank for signs of water contamination and drain or flush if necessary. 5. Verify fuel supply quality and ensure fuel is sourced from a clean, approved supplier. 6. Check for condensation buildup in the fuel tank, especially in high humidity or temperature variation conditions. 7. Inspect the water-in-fuel sensor for correct operation and confirm it is not contaminated or damaged. 8. Inspect wiring and connectors associated with the water-in-fuel sensor for corrosion or poor connections. 9. Refill the system with clean fuel and bleed air from the fuel system if required. 10. After corrective action, clear fault codes and operate the engine to confirm the water in fuel condition does not reoccur.
Other:	Refer to Engine Help files for support



1.3.2.8 SPN 97 FMI 31 - Water in fuel

Error Code:	3135
Description:	3135 - Water in fuel

Possible Cause:	The engine control system has detected the presence of water in the fuel system. This condition is typically caused by contaminated fuel supply, condensation buildup in the fuel tank, ineffective fuel water separator operation, failure to drain the water trap, damaged or saturated fuel filter, or a faulty water-in-fuel sensor or wiring issue.
Service Action:	1. Review fault history to determine when the water in fuel condition was detected and under what operating conditions. 2. Inspect the fuel water separator and drain any accumulated water according to manufacturer procedures. 3. Check fuel filters for signs of water contamination and replace filters if necessary. 4. Inspect the fuel tank for water contamination and drain or flush the tank if water presence is confirmed. 5. Verify fuel is sourced from a clean, approved supply and confirm correct fuel specification. 6. Inspect the water-in-fuel sensor for contamination, damage, or incorrect installation. 7. Check wiring and connectors associated with the water-in-fuel sensor for corrosion, moisture ingress, or loose connections. 8. Verify correct operation of the water-in-fuel sensor using diagnostic tools or manufacturer test procedures. 9. After corrective action, refill the system with clean fuel and bleed air from the fuel system if required. 10. Clear fault codes and operate the engine to confirm the water in fuel DTC does not reoccur.
Other:	Refer to Engine Help files for support



1.3.2.9 SPN 111 FMI 1 - Coolant Level - Data Valid but Below Normal Operational Range - Most Severe Level

Error Code:	3553
Description:	3553 - Coolant Level - Data Valid but Below Normal Operational Range - Most Severe Level
Possible Cause:	The control system has detected that engine coolant level is critically low while the signal remains valid. This indicates an actual low coolant condition rather than a sensor fault. Possible causes include coolant loss due to leaks, insufficient coolant maintenance, air trapped in the system, faulty radiator or expansion tank, or failure of hoses, clamps, or cooling system components.
Service Action:	1. Review fault history to determine when the low coolant level condition occurred and whether it developed gradually or suddenly. 2. Immediately verify coolant level in the radiator or expansion tank and top up with the correct coolant mixture if low. 3. Inspect the cooling system for visible leaks, including hoses, radiator, water pump, and connections. 4. Check for signs of internal coolant loss such as white exhaust smoke, oil contamination, or coolant in cylinders. 5. Inspect coolant level sensor for correct installation and operation. 6. Verify the coolant level sensor reading matches the actual coolant level.

	7. Check wiring and connectors between the coolant level sensor and control system for damage, corrosion, or poor connections. 8. Inspect expansion tank and cap for damage or incorrect pressure retention. 9. Bleed the cooling system to remove any trapped air if required. 10. After corrective action, refill coolant to the correct level and recheck for leaks under operating conditions. 11. Clear fault codes and operate the engine to confirm coolant level remains stable and fault does not reoccur.
	Refer to Engine Help files for support



1.3.2.10 SPN 157 FMI 10 - "Rail pressure too low, the system is unable to achieve the target when the fuel tank level is low"

Error Code:	5034
Description:	5034 - "Rail pressure too low, the system is unable to achieve the target when the fuel tank level is low"
Possible Cause:	• Fuel Starvation Due to Low Tank Level (Pickup Tube, Tank Design, or Air Ingress) • Fuel pickup pipe positioned too high or damaged • Air being sucked into the system when fuel drops below a certain level • Sediment blocking the pickup strainer at low levels

	• Tank outlet positioned on a slope or unlevel base causing early starvation • Blocked Fuel Filters or Weak Lift Pump (Low Suction Pressure) • Clogged primary or secondary fuel filters • Lift pump worn, weak, or producing low pressure • Suction line partially blocked • Water contamination increasing restriction • Excessive Return Flow From Injectors or HP Pump (Only becomes critical at low supply conditions) • Injectors worn → high leak-off • IMV over-compensating because supply side is weak • High-pressure pump internal leakage • Rail pressure control valve leaking
Service Action:	1. Fuel Starvation Due to Low Tank Level (Pickup Tube, Tank Design, or Air Ingress) 2. Fuel pickup pipe positioned too high or damaged 3. Air being sucked into the system when fuel drops below a certain level 4. Sediment blocking the pickup strainer at low levels 5. Tank outlet positioned on a slope or unlevel base causing early starvation ▪ Fill tank to 50% or higher and confirm if rail pressure improves. ▪ Inspect pickup pipe for cracks, pinholes, or missing strainer. ▪ Check tank for dirt, sludge, or microbial growth restricting flow. ▪ Confirm tank is level—tilting can expose pickup at low levels. ▪ Pressure-test suction line for leaks (common cause of air ingress). 1. Blocked Fuel Filters or Weak Lift Pump (Low Suction Pressure)

	2. Clogged primary or secondary fuel filters 3. Lift pump worn, weak, or producing low pressure 4. Suction line partially blocked 5. Water contamination increasing restriction ▪ Replace both primary and secondary fuel filters. ▪ Measure lift pump supply pressure (typically 3–6 bar depending on engine). ▪ Inspect suction lines for internal collapse or blockage. ▪ Drain water separators and check for contamination. ▪ Run the engine from an external clean fuel source (drum test): ▪ If pressure stabilises → problem is in tank, filters, or suction side. 1. Excessive Return Flow From Injectors or HP Pump (Only becomes critical at low supply conditions) 2. Injectors worn → high leak-off 3. IMV over-compensating because supply side is weak 4. High-pressure pump internal leakage 5. Rail pressure control valve leaking ▪ Perform injector leak-off test; compare flow rates between cylinders. ▪ Check HP pump for excess return flow (indicates internal wear). ▪ Monitor rail pressure vs commanded pressure at idle and low load. ▪ Inspect IMV operation and connector condition. ▪ If leak-off excessive → replace faulty injector(s) or pump as required.
Other:	

**1.3.2.11 SPN 157 FMI 16 - Fuel Rail Pressure too Low**

Error Code:	5040
Description:	5040 - Fuel Rail Pressure too Low
Possible Cause:	The engine control system has detected that fuel rail pressure is below the required or commanded value. This may be caused by insufficient fuel supply, restricted or leaking fuel lines, clogged fuel filters, low fuel level, air ingress into the fuel system, fuel lift pump or high-pressure pump malfunction, faulty fuel pressure sensor, or excessive fuel leakage through injectors.
Service Action:	1. Review active and logged fault codes to determine operating conditions when low fuel rail pressure was detected. 2. Verify fuel level is adequate and that the correct fuel type is being used. 3. Inspect fuel supply lines for leaks, restrictions, kinks, or air ingress. 4. Check fuel filters for blockage or contamination and replace if necessary. 5. Verify operation of the fuel lift (transfer) pump and confirm adequate supply pressure to the high-pressure pump. 6. Inspect the high-pressure fuel pump for correct operation and commanded output.

	7. Check fuel rail pressure sensor readings for plausibility and compare against mechanical or reference measurements where possible. 8. Inspect injector return flow for excessive leakage that could cause pressure drop. 9. Inspect wiring and connectors to the fuel pressure sensor and fuel system components for damage or poor connections. 10. After corrective action, clear fault codes and operate the engine under load to confirm fuel rail pressure remains within specification.
Other:	



1.3.2.12 SPN 168 FMI 0 - Plant Battery Over Voltage Electrical Trip Or Shutdown

Error Code:	5376
Description:	5376 - Plant Battery Over Voltage Electrical Trip Or Shutdown

Possible Cause:	The control system has detected that the plant battery voltage has exceeded the allowable upper limit, resulting in an electrical trip or shutdown. This condition may be caused by a faulty alternator voltage regulator, overcharging from an external battery charger, incorrect voltage sensing, poor battery connections affecting regulation, wiring faults, or a defective alternator or charging system component.
Service Action:	1. Review fault history to determine when the overvoltage condition occurred and whether it is continuous or intermittent. 2. Measure battery voltage with the engine running and compare it to specification (typically 13.8–14.4 V for 12 V systems or 27.6–28.8 V for 24 V systems). 3. If voltage exceeds specification (e.g. above ~14.6 V or ~29 V), suspect a faulty alternator voltage regulator. 4. Inspect alternator wiring and sensing circuits for loose connections, poor grounding, or high resistance causing incorrect regulation. 5. Check battery terminals and ground connections for tightness, corrosion, or damage that could affect voltage sensing. 6. If an external battery charger is fitted, isolate or turn it off and recheck system voltage. 7. Inspect wiring between the alternator, battery, and control system for damage or incorrect connections. 8. Measure AC ripple voltage across the battery using a multimeter set to AC volts. 9. Ripple voltage above approximately 0.5 VAC may indicate a failed alternator rectifier causing unstable voltage. 10. If excessive ripple or overvoltage is confirmed, repair or replace the alternator or regulator as required. 11. After corrective action, clear fault codes and operate the system to confirm battery voltage remains within specification.

Other:	



1.3.2.13 SPN 168 FMI 4 - Battery Voltage input is detected as below the threshold

Error Code:	5380
Description:	5380 - Battery Voltage input is detected as below the threshold
Possible Cause:	• Weak Battery or Poor Battery Condition • Battery state of charge too low • Battery sulfation from long idle periods • Battery unable to maintain voltage during cranking • End-of-life battery (typically 3–5 years) • Poor Connections or High Resistance in Battery Cables / Grounds • Corroded battery terminals • Loose positive or ground leads • Poor chassis ground • Damaged or undersized cables • Internal break in battery isolator switch cables

	• Charging System Not Maintaining Proper Voltage • Faulty engine alternator (charging alternator) • Failed voltage regulator • Loose or broken alternator belt • Wiring fault between alternator and battery • Control panel not receiving correct charge voltage feedback
Service Action:	1. Weak Battery or Poor Battery Condition 2. Battery state of charge too low 3. Battery sulfation from long idle periods 4. Battery unable to maintain voltage during cranking 5. End-of-life battery (typically 3–5 years) • Measure battery voltage at rest – should be: ☐ 12.6 V+ (12 V system) ☐ 25.2 V+ (24 V system) ☐ Check voltage drop during cranking – must stay above: ☐ 9.6 V for 12 V systems ☐ 19.2 V for 24 V systems ☐ Load-test the battery ☐ Check electrolyte levels (if serviceable) ☐ Replace battery if below spec or failing load test 1. Poor Connections or High Resistance in Battery Cables / Grounds

	2. Corroded battery terminals 3. Loose positive or ground leads 4. Poor chassis ground 5. Damaged or undersized cables 6. Internal break in battery isolator switch cables • Inspect and clean battery terminals; apply dielectric grease • Torque check battery bolts, starter motor terminals, ECU feed points • Check engine and frame grounds for rust, paint, or looseness • Perform a voltage drop test between: • Battery + → ECU + • Battery – → ECU – • Repair/replace any cables with high resistance or heat damage 1. Charging System Not Maintaining Proper Voltage 2. Faulty engine alternator (charging alternator) 3. Failed voltage regulator 4. Loose or broken alternator belt 5. Wiring fault between alternator and battery 6. Control panel not receiving correct charge voltage feedback ▪ Measure charging voltage with engine running: ▪ Should be 13.8–14.4 V (12 V) ▪ Or 27.6–28.8 V (24 V) ▪ Inspect alternator drive belt for tension and wear ▪ Check alternator output cable for continuity and tightness ▪ Verify correct grounding of alternator body ▪ If charging voltage low → test/replace alternator or regulator ▪ Confirm controller reading matches multimeter reading
Other:	



1.3.2.14 SPN 168 FMI 15 - Battery over voltage warning

Error Code:	5391
Description:	5391 - Battery over voltage warning
Possible Cause:	The control system has detected that battery voltage has exceeded the configured warning threshold. This condition may be caused by a faulty alternator voltage regulator, overcharging from an external battery charger, incorrect voltage sensing, poor battery or ground connections affecting regulation, wiring faults, or a defective alternator or charging system component.
Service Action:	1. Review fault history to determine when the overvoltage warning occurred and whether it is intermittent or constant. 2. Measure battery voltage with the engine running and compare against specification (typically 13.8–14.4 V for 12 V systems or 27.6–28.8 V for 24 V systems). 3. If voltage exceeds specification (e.g. above ~14.6 V or ~29 V), suspect a faulty alternator voltage regulator. 4. Inspect alternator wiring and sensing circuits for loose connections, poor grounding, or high resistance causing incorrect regulation. 5. Check battery terminals and ground connections for tightness, corrosion, or damage that may affect voltage sensing. 6. If an external battery charger is fitted, isolate or switch it off and recheck system voltage.

	7. Inspect wiring between the alternator, battery, and control system for damage or incorrect routing. 8. Measure AC ripple voltage across the battery using a multimeter set to AC volts. 9. Ripple voltage above approximately 0.5 VAC may indicate a failed alternator rectifier causing unstable voltage. 10.If excessive ripple or overvoltage is confirmed, repair or replace the alternator or voltage regulator as required. 11.After corrective action, clear fault codes and confirm battery voltage remains stable within specification during operation.
Other:	0



1.3.2.15 SPN 168 FMI 17 - Battery under voltage warning

Error Code:	5393
Description:	5393 - Battery under voltage warning
Possible Cause:	The control system has detected that battery voltage has fallen below the configured warning threshold. This condition may be caused by low battery state of charge, weak or failing battery, poor electrical connections, high resistance in cables or grounds, excessive load on the system, or a charging system fault such as a failing alternator or voltage regulator.

Service Action:	1. Review fault history to determine when the undervoltage warning occurred and whether it is intermittent or constant. 2. Measure battery voltage at rest and confirm it meets specification (typically ≥ 12.6 V for 12 V systems or ≥ 25.2 V for 24 V systems). 3. Measure battery voltage during engine cranking and ensure it does not drop below acceptable limits (approximately 9.6 V for 12 V or 19.2 V for 24 V systems). 4. Inspect battery terminals and ground connections for looseness, corrosion, or damage. 5. Check battery condition and perform a load test to identify weak or sulphated batteries. 6. Verify correct operation of the charging system by measuring voltage with the engine running (typically 13.8–14.4 V or 27.6–28.8 V). 7. Inspect alternator, drive belt, and charging circuit wiring for faults or poor connections. 8. Check for excessive electrical loads that may be causing voltage drop. 9. Perform voltage drop tests across battery cables and ground paths to identify high resistance. 10. After corrective action, clear fault codes and confirm battery voltage remains stable within specification during operation.
Other:	



1.3.2.16 SPN 172 FMI 3 - Inlet Air Temperature (IAT) sensor signal high fault detected

Error Code:	5507
Description:	5507 - Inlet Air Temperature (IAT) sensor signal high fault detected
Possible Cause:	The engine control system has detected that the inlet air temperature (IAT) sensor signal is higher than the allowable range. This may be caused by an open circuit in the IAT sensor wiring, disconnected sensor, faulty IAT sensor, poor ground reference, or electrical interference causing the signal to default high. In some cases, actual excessively high intake air temperature or incorrect sensor installation may also contribute.

Service Action:	1. Review fault history and operating conditions to determine when the IAT signal high fault was detected. 2. Compare the reported IAT value with ambient temperature when the engine is cold to check for plausibility. 3. Inspect the inlet air temperature sensor for physical damage, contamination, or improper installation. 4. Check wiring and connectors between the IAT sensor and ECU for disconnection, open circuits, damaged insulation, or corrosion. 5. Verify sensor reference voltage and ground continuity at the IAT connector. 6. Measure IAT sensor resistance or signal voltage and compare values against manufacturer specification. 7. Inspect intake tract routing to ensure the sensor is not exposed to unrealistic heat sources. 8. Substitute a known-good IAT sensor if wiring and supply checks are within specification. 9. After corrective action, clear fault codes and operate the engine to confirm normal inlet air temperature readings.
Other:	



1.3.2.17 SPN 174 FMI 3 - Fuel Temp Sensor: SRC high for fuel temperature sensor

Error Code:	5571
Description:	5571 - Fuel Temp Sensor: SRC high for fuel temperature sensor

Possible Cause:	The engine control system has detected that the fuel temperature sensor signal is above the expected range. This may be caused by an open circuit in the sensor wiring, disconnected sensor, faulty fuel temperature sensor, poor ground reference, electrical interference, or in some cases actual excessively high fuel temperature due to fuel recirculation or high ambient conditions.
Service Action:	1. Review fault history and operating conditions to determine when the fuel temperature signal high fault was detected. 2. Compare the reported fuel temperature with ambient temperature when the engine is cold to check for plausibility. 3. Inspect the fuel temperature sensor for physical damage, contamination, or incorrect installation. 4. Check wiring and connectors between the sensor and ECU for disconnection, open circuits, damaged insulation, or corrosion. 5. Verify sensor reference voltage and ground integrity at the connector. 6. Measure sensor resistance or output voltage and compare values to manufacturer specification. 7. Inspect fuel return lines for excessive recirculation that may cause elevated fuel temperature. 8. Check for heat sources affecting the fuel system, such as proximity to engine or exhaust components. 9. Substitute a known-good fuel temperature sensor if wiring and supply checks are within specification. 10. After corrective action, clear fault codes and operate the engine to confirm normal fuel temperature readings.
Other:	



1.3.2.18 SPN 190 FMI 0 - Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Most Severe Level

Error Code:	6080
Description:	6080 - Engine Crankshaft Speed/Position - Data Valid but Above Normal Operational Range - Most Severe Level
Possible Cause:	Electronic actuator stuck open (over-fueling) Governor PID tuning too aggressive → overshoot Failed actuator feedback loop Mechanical linkage sticking (if applicable) ECU losing control of fueling momentarily Large load suddenly removed (motors, compressors, heaters) Breaker opening under load Poor load management/sequencing Parallel systems losing load share unexpectedly Magnetic pickup (MPU) generating incorrect high RPM signal Incorrect air gap between sensor and flywheel Wiring faults or electrical interference Debris on sensor tip causing false readings Rare: ECU misinterpreting signal

Service Action:	1. Electronic actuator stuck open (over-fueling) 2. Governor PID tuning too aggressive → overshoot 3. Failed actuator feedback loop 4. Mechanical linkage sticking (if applicable) 5. ECU losing control of fueling momentarily ▪ Check frequency / RPM during event: ▪ Normal: 50 Hz (1500 RPM) ▪ Fault: rising above 52–55 Hz equivalent ▪ Observe actuator behaviour: ▪ Smooth vs erratic vs sticking ▪ Perform step load test: ▪ Look for overshoot and poor recovery ▪ Inspect actuator: ▪ Wiring condition ▪ Connector pins ▪ Check and adjust governor PID tuning (reduce gain if overshooting) ▪ Replace actuator if it sticks or does not respond correctly 1. Large load suddenly removed (motors, compressors, heaters) 2. Breaker opening under load

	3. Poor load management/sequencing 4. Parallel systems losing load share unexpectedly ▪ Review event log for load loss coinciding with fault ▪ Monitor frequency during event: ▪ ▪ Sharp spike immediately after load loss = confirmed ▪ ▪ Identify large intermittent loads on site ▪ Improve application setup: ▪ ▪ Add load sequencing or soft stop systems ▪ ▪ If in parallel operation: ▪ ▪ Verify load sharing and breaker sync operation ▪ ▪ Simulate controlled load removal and observe behaviour 1. Magnetic pickup (MPU) generating incorrect high RPM signal 2. Incorrect air gap between sensor and flywheel 3. Wiring faults or electrical interference 4. Debris on sensor tip causing false readings 5. Rare: ECU misinterpreting signal ▪ Compare ECU RPM with handheld tachometer: ▪ If ECU reads high but actual RPM normal → sensor issue ▪ Inspect MPU: ▪ Clean metal debris from tip ▪ Check mounting and tightness ▪ Verify air gap: ▪ Typically 0.5–1.0 mm
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	▪ Inspect wiring: ▪ Check shielding, continuity, and routing ▪ Monitor RPM signal for spikes or instability ▪ Replace MPU sensor if reading is erratic
Other:	



1.3.2.19 SPN 190 FMI 1 - Engine Under Speed Electrical Trip Or Shutdown

Error Code:	6081
Description:	6081 - Engine Under Speed Electrical Trip Or Shutdown

Possible Cause:	The control system has detected that engine speed has dropped below the configured shutdown threshold, resulting in an electrical trip or shutdown. This condition is typically caused by excessive load demand, sudden load application, fuel supply issues, air intake or exhaust restriction, governor or actuator malfunction, incorrect speed settings, or severe engine performance degradation.
Service Action:	1. Review fault history to determine when the under speed shutdown occurred and under what operating conditions. 2. Measure engine speed using the controller and confirm with a handheld tachometer. 3. Verify engine speed is set correctly (typically 1800 RPM for 60 Hz systems). 4. Check for excessive load or sudden load application that may have caused engine speed to drop. 5. Inspect the fuel system for blocked filters, air ingress, restricted lines, or poor fuel quality. 6. Verify correct operation of the governor or actuator and check for slow or unstable response. 7. Inspect air intake system for restriction and exhaust system for blockage. 8. Check for engine protection or derate conditions such as temperature, SCR/EGR faults, or other limiting factors. 9. Verify controller configuration and governor parameters (speed setpoint, droop, PID settings) are correct. 10. Test engine and generator operation under controlled load to confirm ability to maintain rated speed. 11. After corrective action, clear fault codes and confirm stable engine speed during all operating conditions.

1.3.2.20 SPN 190 FMI 15 - Engine Over Speed Warning

Error Code:	139397
Description:	139397 - Open load error of DEF suctionline heater actuator powerstage
Possible Cause:	Broken wire in DEF suction line heater circuit Connector not fully seated or corroded (DEF crystallisation common) Damaged harness from vibration or chafing Heat damage near exhaust routing Pin pushed out of connector housing Heater element burnt out internally Break in heating wire within suction line Freeze/thaw damage to heater element Internal thermal fuse failure ECU driver transistor failure No output from ECU to heater circuit Poor ECU ground affecting current detection Prior short circuit damaging output stage
Service Action:	Broken wire in DEF suction line heater circuit Connector not fully seated or corroded (DEF crystallisation common) Damaged harness from vibration or chafing Heat damage near exhaust routing Pin pushed out of connector housing ▪ Visually inspect wiring from ECU → DEF suction line heater. ▪ Disconnect connector and check for: ▪ White crystals (dried DEF contamination)

- Corrosion or moisture ingress
- Perform continuity test from ECU pin to heater connector.
- Check for supply voltage (12V / 24V) at connector when heater is commanded ON.
- Perform a wiggle test to identify intermittent faults.
- Repair damaged wiring and secure loom away from heat/vibration.

Heater element burnt out internally

Break in heating wire within suction line

Freeze/thaw damage to heater element

Internal thermal fuse failure

- Disconnect heater connector.
- Measure resistance across heater terminals:
 - Normal: low resistance (few ohms)
 - Fault: open circuit (OL / infinite resistance)
- Inspect suction line assembly for physical damage.
- If available, install a known-good heater line to confirm.
- Replace suction line heater assembly if faulty.

ECU driver transistor failure

No output from ECU to heater circuit

Poor ECU ground affecting current detection

Prior short circuit damaging output stage.

- With heater disconnected, measure ECU output when heater is commanded ON:
 - If no voltage present → potential ECU issue
 - Apply a test load (resistor/test lamp) to ECU output:
 - If ECU still reports open load → confirms ECU fault
 - Check ECU power supply and grounds

	▪ Inspect ECU connector pins for corrosion or damage ▪ If confirmed → repair or replace ECU
Other:	



1.3.2.21 SPN 190 FMI 17 - Engine Under Speed Warning

Error Code:	6097
Description:	6097 - Engine Under Speed Warning
Possible Cause:	The control system has detected that engine speed has fallen below the configured warning threshold. This condition is typically caused by increased load demand, sudden load application, fuel system restrictions, governor or actuator malfunction, incorrect speed settings, or early signs of engine performance issues.
Service Action:	1. Review fault history to determine when the under speed warning occurred and under what operating conditions. 2. Measure engine speed using the controller and confirm using a handheld tachometer. 3. Verify engine speed matches the rated value (typically 1500 RPM for 50 Hz applications). 4. Check for excessive or sudden load being applied that may cause engine speed to drop.

	5. Inspect fuel system for blocked filters, air ingress, restricted lines, or poor fuel quality. 6. Verify correct operation of the governor or actuator and check for stable and responsive speed control. 7. Inspect air intake system for restriction and exhaust system for blockage affecting engine performance. 8. Check for engine derate conditions such as overheating, SCR/EGR faults, or protection limits reducing engine output. 9. Verify controller and governor settings (speed setpoint, droop, PID parameters) are correctly configured. 10. Test engine and generator operation under controlled load to confirm speed stability and recovery. 11. After corrective action, clear fault codes and confirm engine speed remains within specification during operation.
Other:	

JCB**1.3.2.22 SPN 190 FMI 19 - CAN bus message error for engine speed from engine ECU**

Error Code:	6099
Description:	6099 - CAN bus message error for engine speed from engine ECU
Possible Cause:	The control system has detected an error or invalid CAN bus message related to engine speed information from the engine ECU. This may be caused by intermittent or corrupted CAN communication, loss of engine ECU power or ground, CAN

	wiring faults, incorrect CAN termination, excessive bus noise, or the engine ECU failing to transmit valid engine speed data.
Service Action:	1. Review fault history to determine when the engine speed CAN message error occurred and under what operating conditions. 2. Verify the engine ECU is powered and grounded correctly by checking supply voltage and ground integrity. 3. Inspect CAN high and CAN low wiring between the engine ECU and receiving controller for damage, looseness, corrosion, or disconnection. 4. Check CAN bus termination resistance to confirm approximately 60 ohms with system power removed. 5. Inspect engine ECU connectors for bent pins, corrosion, moisture ingress, or poor terminal contact. 6. Check for additional CAN communication or missing message faults that may indicate a wider network issue. 7. Monitor CAN bus voltages and signals to confirm correct data levels and absence of excessive noise or dropouts. 8. Verify engine speed is being correctly detected by the engine ECU using service tools or direct RPM measurement. 9. Check for ECU resets or reboots caused by unstable power supply during cranking or load changes. 10. After corrective action, clear fault codes and operate the engine to confirm stable engine speed communication over the CAN bus.
Other:	

1.3.2.23 SPN 444 FMI 4 - LiveLink - Internal Voltage Below Normal

Error Code:	14212
Description:	14212 - LiveLink - Internal Voltage Below Normal
Possible Cause:	The LiveLink telematics control unit has detected that its internal supply voltage is below the normal operating range. This condition may be caused by low battery voltage, poor power or ground connections, high resistance in wiring, faulty fuses or relays, excessive voltage drop during cranking, or an internal fault within the telematics control unit.
Service Action:	1. Review fault history to determine when the low internal voltage condition occurred and whether it is intermittent or constant. 2. Measure battery voltage at rest and with the system operating and compare to specification. 3. Check battery condition and state of charge, and replace if weak or defective. 4. Inspect power supply wiring to the LiveLink unit for damage, loose connections, or high resistance joints. 5. Inspect ground connections to the telematics unit for tightness, corrosion, or poor contact. 6. Check associated fuses, relays, and power distribution components supplying the LiveLink module. 7. Monitor voltage during engine cranking to identify excessive voltage drop affecting the module. 8. Perform voltage drop tests across supply and ground circuits to identify wiring issues. 9. Verify charging system operation to ensure correct alternator output and voltage regulation.

	10.If external power supply is stable, suspect an internal fault within the LiveLink control unit. 11.After corrective action, clear fault codes and confirm stable telematics operation and communication.
Other:	



1.3.2.24 SPN 970 FMI 11 - Engine Stop Switch

Error Code:	31051
Description:	31051 - Engine Stop Switch
Possible Cause:	The control system has detected activation of the engine stop switch input. This indicates that the stop switch has been pressed or the stop circuit has been opened. Possible causes include intentional operation of the stop switch, faulty or stuck switch, wiring or connector faults, open circuit in the stop signal wiring, or incorrect input configuration.
Service Action:	1. Verify whether the engine stop switch has been intentionally activated. 2. Inspect the engine stop switch and confirm it is released and operating correctly.

	3. Check operation of the switch by actuating it and verifying signal change at the controller. 4. Inspect wiring from the stop switch to the control system for damage, loose connections, or open circuit. 5. Check connectors for corrosion, moisture ingress, or poor terminal contact. 6. Verify correct configuration of the stop input (normally open or normally closed) in the controller. 7. Check for additional external stop inputs or interlocks tied into the same circuit. 8. Perform continuity test of the stop switch circuit to confirm correct function. 9. Repair or replace faulty switch or wiring as required. 10. After corrective action, clear fault codes and verify normal engine start and operation.
Other:	



1.3.2.25 SPN 729 FMI 7 - "Intake Air Heater ""A"" Control"

Error Code:	23335
Description:	23335 - "Intake Air Heater ""A"" Control"

Possible Cause:	The control system has detected a fault in the Intake Air Heater “A” control circuit. This may be caused by a failure of the intake air heater element, open or short circuit in the wiring, faulty relay or control device, insufficient power supply, poor ground connection, or an internal control module fault preventing proper heater operation.
Service Action:	1. Review fault history to determine when the intake air heater control fault occurred and whether it is intermittent or constant. 2. Verify battery voltage and power supply are adequate for heater operation, especially during cold start conditions. 3. Inspect the intake air heater element for damage or signs of overheating. 4. Measure resistance of the intake air heater element and compare against manufacturer specification. 5. Check wiring between the controller, relay, and heater for damage, loose connections, or short/open circuits. 6. Inspect heater relay and control devices for correct operation and switching when commanded. 7. Verify power supply and ground integrity at the heater and relay. 8. Use diagnostic tools to command the intake air heater ON and confirm activation. 9. Check associated fuses and circuit protection devices for correct rating and condition. 10. If wiring and heater are confirmed serviceable, suspect a control module or driver circuit fault. 11. After corrective action, clear fault codes and verify correct intake air heater operation during cold start.
Other:	



1.3.2.26 SPN 624 FMI 11 - ECU Amber Warning

Error Code:	19979
Description:	19979 - ECU Amber Warning
Possible Cause:	The control system has issued an ECU Amber Warning indicating a non-critical fault condition is present. This warning is triggered by one or more underlying diagnostic trouble codes affecting engine, electrical, or emissions systems. The condition does not require immediate shutdown but indicates that corrective action is required to prevent escalation to derate or shutdown.
Service Action:	1. Review fault history and active DTCs to identify the primary fault that triggered the ECU Amber warning. 2. Do not diagnose the ECU Amber warning itself – focus on the initiating diagnostic trouble code. 3. Identify the system affected by the initiating fault (engine, electrical, fuel, SCR/DEF, or communication). 4. Inspect associated components, sensors, wiring, and connectors relevant to the initiating fault. Verify sensor readings and system parameters using diagnostic tools and compare against expected values. 5. Check for intermittent conditions such as vibration, heat-related faults, or poor electrical connections. 6. Rectify all underlying faults before attempting to clear the warning. 7. Clear diagnostic trouble codes and monitor system operation for recurrence. 8. Operate the engine under normal and load conditions to confirm stable operation without warning.



1.3.2.27 SPN 623 FMI 31 - ECU Red Electrical Trip Or Shutdown

Error Code:	19967
Description:	19967 - ECU Red Electrical Trip Or Shutdown
Possible Cause:	The ECU Red electrical trip or shutdown has been activated, indicating a critical ECU-related protection has occurred. This condition may be caused by loss of ECU supply voltage, poor ground connection, internal ECU fault, critical engine protection activation, or an external shutdown request routed through the ECU Red circuit.

Service Action:	1. Review fault history to identify the event or fault that immediately preceded the ECU Red electrical trip or shutdown. 2. Verify ECU power supply voltage and ground integrity at the ECU terminals. 3. Inspect ECU power and ground wiring for loose connections, corrosion, damage, or high resistance joints. 4. Check associated fuses, relays, and ECU power supply circuits for correct operation. 5. Inspect ECU connectors for bent pins, moisture ingress, or poor terminal contact. 6. Confirm no external shutdown or protection signal is being routed through the ECU Red circuit. 7. Monitor ECU supply voltage during engine cranking and operation to identify voltage drop or intermittent loss. 8. If wiring and supply conditions are correct, suspect an internal ECU fault or ECU-triggered protection event. 9. After corrective action, clear fault codes and test engine or genset operation to confirm normal ECU function.
Other:	



- 1.3.2.28 SPN 1076 FMI 18 - "Rail under pressure control trim fault, this occurred at low fuel demand. To increase pressure the IMV has opened but exceeded trim limits and the pressure is still too low"**

Error Code:	34450
Description:	34450 - "Rail under pressure control trim fault, this occurred at low fuel demand. To increase pressure the IMV has opened but exceeded trim limits and the pressure is still too low"

Possible Cause:	• Low Fuel Supply Pressure (Lift Pump / Blocked Filters / Fuel Restriction) • Blocked primary or secondary fuel filters • Weak or failing lift pump • Air ingress in suction line • Collapsed fuel hoses • Blocked tank breather • Fuel contamination or water • High-Pressure Pump Wear or Failure • High-pressure pump internal wear (common after poor fuel quality) • Scored pump plungers or cam • Stuck IMV or IMV not responding • Rail pressure limiter valve leaking back to tank • Injector Internal Leakage (High Return Fuel Flow) • One or more injectors leaking internally • Injector needle not sealing • Worn or damaged internal components • Fuel contamination leading to injector scoring

Service Action:	1. Low Fuel Supply Pressure (Lift Pump / Blocked Filters / Fuel Restriction) 2. Blocked primary or secondary fuel filters 3. Weak or failing lift pump 4. Air ingress in suction line 5. Collapsed fuel hoses 6. Blocked tank breather 7. Fuel contamination or water ▪ Check lift pump delivery pressure (typically 3–6 bar depending on engine model) ▪ Replace primary + secondary fuel filters ▪ Inspect suction lines for air leaks (clear line test if available) ▪ Crack bleed screw and check for air in system ▪ Confirm tank breather is open ▪ Drain water separator and check for contamination ▪ Run engine with an external clean diesel supply to eliminate tank issues 1. High-Pressure Pump Wear or Failure 2. High-pressure pump internal wear (common after poor fuel quality) 3. Scored pump plungers or cam 4. Stuck IMV or IMV not responding 5. Rail pressure limiter valve leaking back to tank ▪ Monitor commanded vs actual rail pressure during idle and snap test ▪ Check IMV duty cycle — if at or near 100%, pump cannot build pressure ▪ Inspect return flow from the high-pressure pump (excessive flow = internal leak) ▪ Perform a rail leakage test (if supported) ▪ Replace IMV and retest — if no improvement, suspect pump wear ▪ If pump contamination suspected, inspect fuel system for metal debris
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	1. Injector Internal Leakage (High Return Fuel Flow) 2. One or more injectors leaking internally 3. Injector needle not sealing 4. Worn or damaged internal components 5. Fuel contamination leading to injector scoring ▪ Perform an injector leak-off (return flow) test ▪ Compare return amounts for all injectors — one high cylinder will drag down rail pressure ▪ Inspect for metal or debris in injector return lines ▪ If leak-off excessive, replace the faulty injector(s) ▪ After replacement, clear codes and re-run rail pressure test ▪ Confirm rail pressure stabilises at idle and low load
Other:	



1.3.2.29 SPN 1485 FMI 14 - Main ECU Power hold relay unexpected low state

Error Code:	47534
Description:	47534 - Main ECU Power hold relay unexpected low state
Possible Cause:	• Power-Hold Relay Fault (Relay Failed, Sticking, or Coil Voltage Low) • Relay contacts burnt or worn • Coil not energising fully • Relay intermittently dropping out due to vibration or heat • Incorrect relay type fitted after maintenance • Wiring / Connector Issue in ECU Power-Hold Circuit • Loose or corroded terminals in the power-hold relay socket • Damaged wiring between relay → ECU → control panel • Harness rubbing on engine block or alternator • Moisture ingress (very common on canopy gensets) • Control Panel / ECU Logic Not Sending Hold Signal

	• Control panel not issuing the “keep alive” signal • CAN communication or logic timing error • Internal ECU fault preventing it from latching the relay • Low system battery voltage causing ECU to reboot
Service Action:	1. Power-Hold Relay Fault (Relay Failed, Sticking, or Coil Voltage Low) 2. Relay contacts burnt or worn 3. Coil not energising fully 4. Relay intermittently dropping out due to vibration or heat 5. Incorrect relay type fitted after maintenance ▪ Locate the ECU Power-Hold Relay (usually in the engine harness relay block). ▪ With ignition ON, verify 12/24 V at the relay coil using a multimeter. ▪ Check relay output terminal — should remain high while the control system is running. ▪ Swap relay with a known-good identical relay. ▪ Inspect relay socket for heat damage or loose terminals. 1. Wiring / Connector Issue in ECU Power-Hold Circuit 2. Loose or corroded terminals in the power-hold relay socket 3. Damaged wiring between relay → ECU → control panel 4. Harness rubbing on engine block or alternator 5. Moisture ingress (very common on canopy gensets) ▪ Perform a pull-test on the relay socket pins (look for loose crimps). ▪ Check continuity from relay output to ECU power-hold input pin (refer to wiring diagram). ▪ Inspect harness for abrasion, crushed sections, or water inside conduit. ▪ Clean connectors with electrical contact cleaner, reseal firmly. ▪ Measure voltage at the ECU pin during start/stop cycles to spot drops.

	1. Control Panel / ECU Logic Not Sending Hold Signal 2. Control panel not issuing the “keep alive” signal 3. CAN communication or logic timing error 4. Internal ECU fault preventing it from latching the relay 5. Low system battery voltage causing ECU to reboot ▪ Check battery voltage both static and during cranking (must not sag below ECU limits). ▪ Verify control panel output signal (if it sends the hold command). ▪ Ensure CAN bus is stable — no dropout events. ▪ Perform ECU power reset: disconnect battery for 2 minutes. ▪ If available, update ECU/control panel firmware. ▪ If issue intermittent, review event log for CAN or voltage warnings leading up to the trip.
Other:	



1.3.2.30 SPN 1209 FMI 16 - Exhaust manifold pressure (P3) signal drifted high

Error Code:	38704
Description:	38704 - Exhaust manifold pressure (P3) signal drifted high

Possible Cause:	Sensor internal drift (common over time with heat exposure) Contamination from soot or condensation inside sensor port Sensor output voltage offset/high bias Water ingress into sensor body or connector Partially blocked DPF (Diesel Particulate Filter) Soot loading from prolonged low load operation Failed or incomplete regeneration cycles Exhaust restriction downstream (collapsed pipe, blocked catalyst) Signal wire partially shorted to 5V reference Poor sensor ground causing elevated signal Corroded connectors creating resistance shift Electrical noise affecting sensor voltage
Service Action:	1. Sensor internal drift (common over time with heat exposure) 2. Contamination from soot or condensation inside sensor port 3. Sensor output voltage offset/high bias 4. Water ingress into sensor body or connector ▪ Read live data for P3 pressure at key conditions: ▪ ▪ Engine OFF → should read ≈ ambient pressure (~100 kPa) ▪ If reading is significantly higher → sensor drift confirmed ▪ ▪ Compare P3 reading with: ▪ ▪ Atmospheric pressure value (if available in ECU data) ▪

	▪ Remove sensor and inspect for soot blockage or contamination ▪ Clean port carefully (do not damage sensor diaphragm) ▪ Substitute with a known-good sensor to confirm ▪ Replace sensor if reading remains offset 1. Partially blocked DPF (Diesel Particulate Filter) 2. Soot loading from prolonged low load operation 3. Failed or incomplete regeneration cycles 4. Exhaust restriction downstream (collapsed pipe, blocked catalyst) ▪ Check for additional DTCs: ▪ ▪ DPF soot load / regen-related faults ▪ ▪ Monitor P3 pressure at different loads: ▪ ▪ High pressure at low load = restriction ▪ ▪ Perform forced DPF regeneration (if system allows) ▪ Inspect exhaust system for: ▪ ▪ Physical blockage or damage ▪ ▪ Measure differential pressure (if sensor available) ▪ If excessive backpressure persists → clean or replace DPF 1. Signal wire partially shorted to 5V reference 2. Poor sensor ground causing elevated signal 3. Corroded connectors creating resistance shift
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	4. Electrical noise affecting sensor voltage ▪ Back-probe sensor: ▪ ▪ Check 5V supply, ground, and signal voltage ▪ ▪ Expected signal: ▪ ▪ Typically ~0.5–1.0 V at low pressure ▪ If high (>4V) at rest → wiring/sensor issue ▪ ▪ Perform continuity and insulation test on wiring ▪ Inspect connectors for corrosion, moisture, or bent pins ▪ Check ECU ground quality ▪ Repair wiring or replace connector as needed
Other:	Refer to Engine Help files for further support.



1.3.2.31 SPN 1761 FMI 17 - "SCR reagent tank level below first warning level, DFC for triggering warning action dependent on filling level of reducing agent"

Error Code:	56369

Description:	56369 - "SCR reagent tank level below first warning level, DFC for triggering warning action dependent on filling level of reducing agent"
Possible Cause:	The engine control system has detected that the DEF (SCR reagent) tank level has fallen below the first warning threshold. This is an early-stage condition indicating low DEF level. Possible causes include low DEF fluid level due to normal consumption, failure to refill the tank, inaccurate DEF level sensing, DEF level sensor fault, or wiring or connector issues affecting level measurement.
Service Action:	1. Review fault history to confirm when the DEF tank level dropped below the first warning threshold. 2. Check the actual DEF tank level and refill with ISO 22241 compliant DEF if required. 3. Compare the DEF level shown in the controller or diagnostic tool with the actual tank level. 4. Inspect the DEF tank level sensor for correct installation, contamination, or damage. 5. Inspect wiring and connectors between the DEF level sensor and the control system for loose connections, corrosion, or damage. 6. Check for DEF crystallisation, contamination, or frozen DEF affecting level measurement. 7. Verify DEF tank size, calibration, and configuration settings match the installed tank. 8. Rectify any sensor or wiring faults before clearing the warning. 9. After corrective action, clear fault codes and confirm the warning does not reappear during operation.
Other:	

**1.3.2.32 SPN 2000 FMI 9 - Can message EEC1 timeout (message from engine controller)**

Error Code:	64009
Description:	Engine Under Speed Electrical Trip Or Shutdown
Possible Cause:	The CAN communication message EEC1 from the engine control unit (ECU) has not been received within the expected timeout period. This may be caused by loss of CAN communication, engine ECU power or ground issue, CAN wiring fault, incorrect CAN termination, data bus overload, or a failure or reset of the engine controller.
Service Action:	1. Confirm whether the engine ECU is powered and active by checking ECU supply voltage and ground integrity. 2. Review fault history to determine if the EEC1 timeout occurred during engine start, shutdown, or normal operation. 3. Inspect CAN high and CAN low wiring between the engine ECU and generator/controller for damage, loose connections, or corrosion. 4. Verify CAN bus termination resistance is approximately 60 ohms with power removed from the system.

	5. Check for additional CAN-related fault codes that may indicate a network-wide communication issue. 6. Inspect ECM and controller connectors for bent pins, moisture ingress, or poor terminal fit. 7. Monitor CAN bus voltage levels to confirm correct signal levels and absence of excessive noise or dropout. 8. If communication is lost intermittently, check for ECU resets caused by unstable power supply or faulty grounds. 9. After corrective action, clear fault codes and run the genset to confirm stable CAN communication and normal message reception.
Other:	



1.3.2.33 SPN 2017 FMI 9 - Lost Communication With Body Control Module "A"

Error Code:	64553
Description:	64553 - Lost Communication With Body Control Module "A"
Possible Cause:	The control system has detected a loss of CAN communication with Body Control Module (BCM) "A". This may be caused by a CAN network communication fault, loss of power or ground to the BCM, damaged or disconnected CAN wiring, incorrect CAN termination, BCM reset or failure, or a configuration mismatch between communicating controllers.

Service Action:	1. Review fault history to determine when communication with Body Control Module “A” was lost and under what operating conditions. 2. Verify Body Control Module “A” is powered and grounded correctly by checking supply voltage and ground continuity at the BCM connector. 3. Inspect CAN high and CAN low wiring between the BCM and other controllers for damage, looseness, corrosion, or disconnection. 4. Check CAN bus termination resistance to confirm approximately 60 ohms with system power removed. 5. Inspect BCM connectors for bent pins, moisture ingress, corrosion, or poor terminal retention. 6. Check for additional CAN communication or missing message fault codes that may indicate a wider network issue. 7. Monitor CAN bus voltages to verify correct signal levels and absence of excessive noise or dropouts. 8. Determine whether the BCM is resetting or rebooting due to unstable power supply or internal faults. 9. Verify system configuration and ensure Body Control Module “A” is correctly assigned and enabled for CAN communication. 10. After corrective action, clear fault codes and operate the system to confirm stable communication with the BCM.
Other:	



1.3.2.34 SPN 2436 FMI 1 - Generator Under Frequency Electrical Trip Or Shutdown

Error Code:	77969

Description:	77969 - Generator Under Frequency Warning
Possible Cause:	The control system has detected that generator frequency has dropped below the configured warning threshold. This is typically caused by the engine running below rated speed due to increased load demand, sudden load application, fuel system restrictions, governor or actuator issues, incorrect speed settings, or early signs of engine performance degradation.
Service Action:	1. Review fault history to determine when the under frequency warning occurred and under what load conditions. 2. Measure generator frequency and compare with nominal value (typically 50 Hz). 3. Verify engine speed is correct (approximately 1500 RPM for 50 Hz systems) using a tachometer. 4. Check for high load demand or sudden load application that may cause temporary frequency dip. 5. Inspect fuel system for restrictions, blocked filters, air ingress, or poor fuel quality. 6. Verify correct operation of the governor or actuator and check for stable speed control. 7. Inspect air intake and exhaust systems for restriction affecting engine performance. 8. Check for engine derate conditions (temperature, emissions faults, protection limits). 9. Confirm correct controller and governor settings (speed setpoint, droop, PID tuning). 10. Test generator under controlled load conditions to verify frequency stability and recovery. 11. After corrective action, clear fault codes and confirm frequency remains within limits during operation.
Other:	



1.3.2.35 SPN 2436 FMI 17 - Generator Under Frequency Warning

Error Code:	77969
Description:	77969 - Generator Under Frequency Warning
Possible Cause:	The control system has detected that generator frequency has dropped below the configured warning threshold. This is typically caused by the engine running below rated speed due to increased load demand, sudden load application, fuel system restrictions, governor or actuator issues, incorrect speed settings, or early signs of engine performance degradation.
Service Action:	1. Review fault history to determine when the under frequency warning occurred and under what load conditions. 2. Measure generator frequency and compare with nominal value (typically 50 Hz). 3. Verify engine speed is correct (approximately 1500 RPM for 50 Hz systems) using a tachometer. 4. Check for high load demand or sudden load application that may cause temporary frequency dip. 5. Inspect fuel system for restrictions, blocked filters, air ingress, or poor fuel quality. 6. Verify correct operation of the governor or actuator and check for stable speed control. 7. Inspect air intake and exhaust systems for restriction affecting engine performance.

	8. Check for engine derate conditions (temperature, emissions faults, protection limits). 9. Confirm correct controller and governor settings (speed setpoint, droop, PID tuning). 10. Test generator under controlled load conditions to verify frequency stability and recovery. 11. After corrective action, clear fault codes and confirm frequency remains within limits during operation.
Other:	



1.3.2.36 SPN 2440 FMI 0 - Over phase voltage shutdown

Error Code:	78080
Description:	Charge Alternator Failure Electrical Trip Or Shutdown
Possible Cause:	• AVR (Automatic Voltage Regulator) Over-Excitation or Fault • Voltage setpoint adjusted too high • Faulty AVR causing unstable or runaway excitation • Loose or incorrect sensing wires to AVR • Failed AVR components (diodes, capacitors, power transistor) • Incorrect AVR fitted after repairs • Engine Overspeed (Governor or Actuator Fault) • Faulty actuator sticking and causing excessive fueling • Governor tuning incorrect (PID too aggressive) • Sudden load drop causing RPM overshoot • Mechanical binding in linkage (if mechanical governor) • ECU control loop instability • Voltage-Sensing / CT/PT Wiring Fault (False Over-Voltage Reading) • Loose PT (voltage sense) wires • Damaged or corroded control panel terminals

	• Wrong voltage configuration (e.g., system set to 480 V mode) • Phase inversion or mis-wired sensing leads • Water ingress in control enclosure influencing measurement
Service Action:	1. AVR (Automatic Voltage Regulator) Over-Excitation or Fault 2. Voltage setpoint adjusted too high 3. Faulty AVR causing unstable or runaway excitation 4. Loose or incorrect sensing wires to AVR 5. Failed AVR components (diodes, capacitors, power transistor) 6. Incorrect AVR fitted after repairs ▪ Measure voltage at generator terminals (L1-L2, L2-L3, L3-L1) with a multimeter ▪ Inspect AVR for loose terminals, burned marks, or melted insulation ▪ Verify voltage-sensing wiring is correct and tight ▪ Reduce AVR voltage pot slightly and retest ▪ Check exciter field voltage—if unusually high, AVR is overdriving ▪ Swap AVR with a known-good unit if available 1. Engine Overspeed (Governor or Actuator Fault) 2. Faulty actuator sticking and causing excessive fueling 3. Governor tuning incorrect (PID too aggressive) 4. Sudden load drop causing RPM overshoot 5. Mechanical binding in linkage (if mechanical governor) 6. ECU control loop instability ▪ Check generator frequency during fault: ▪ ▪ Normal = 50.0 Hz ▪ Over-voltage with 52–55 Hz = overspeed cause ▪ ▪ Inspect actuator for smooth movement and proper control signal ▪ Check for any overspeed DTCs in event history ▪ Test engine at no-load and observe RPM stability ▪ Verify governor calibration after recent service ▪ Confirm no load-dump event occurred (large motor switching off suddenly) 1. Voltage-Sensing / CT/PT Wiring Fault (False Over-Voltage Reading) 2. Loose PT (voltage sense) wires 3. Damaged or corroded control panel terminals 4. Wrong voltage configuration (e.g., system set to 480 V mode) 5. Phase inversion or mis-wired sensing leads 6. Water ingress in control enclosure influencing measurement ▪ Compare panel voltage reading to an external multimeter at bus bars ▪ Inspect PT wiring blocks and tighten all terminals ▪ Check controller configuration: set to 400V / 3-phase / 4-wire ▪ Inspect control panel for moisture or corrosion ▪ Replace PT fuses (if applicable) ▪ If voltage differs between controller and actual → controller input circuit fault

Other:	



1.3.2.37 SPN 2440 FMI 1 - Under phase voltage shutdown

Error Code:	78081
Description:	78081 - Under phase voltage shutdown
Possible Cause:	• Alternator AVR Fault or Sensing Issue • AVR not regulating correctly • Incorrect or unstable voltage sensing • Loose or damaged AVR sense wires • Excitation voltage drop • Incorrect AVR settings (voltage pot, stability, gain) • Engine Unable to Maintain Rated Speed (Low RPM) • Fuel restriction (blocked filters, lift pump weak) • Governor/actuator hunting or sluggish • Load too high for rated power • Air intake restriction • Engine derating from aftertreatment or temperature faults

	• Output Phase Imbalance, Loose Connections, or Site Wiring Fault • Loose output lugs on generator terminals • Loose neutral or earth bonding • Phase-to-phase imbalance caused by uneven loads • External wiring fault on customer side • Damaged output breaker or contacts
Service Action:	1. Alternator AVR Fault or Sensing Issue 2. AVR not regulating correctly 3. Incorrect or unstable voltage sensing 4. Loose or damaged AVR sense wires 5. Excitation voltage drop 6. Incorrect AVR settings (voltage pot, stability, gain) ▪ Measure alternator phase-phase voltage at terminals (L1-L2, L2-L3, L3-L1) ▪ Inspect AVR for burnt smell, discoloration, or loose terminals ▪ Verify AVR sensing connections — often thin wires running to phases or CT/PT points ▪ Check excitation voltage to rotor and confirm stable field supply ▪ If available, swap in a known-good AVR to confirm failure ▪ Check control panel voltage reading vs a multimeter 1. Engine Unable to Maintain Rated Speed (Low RPM) 2. Fuel restriction (blocked filters, lift pump weak) 3. Governor/actuator hunting or sluggish 4. Load too high for rated power 5. Air intake restriction 6. Engine derating from aftertreatment or temperature faults ▪ Check engine speed with a handheld tachometer (should be 1500 RPM for 50 Hz) ▪ Inspect fuel filters, lines, tank supply, and lift pump pressure ▪ Verify actuator/governor movement for smooth operation

	▪ Review for any derate-related DTCs (EGR, DEF, NOx, coolant temp) ▪ Confirm load isn't exceeding generator capability 1. Output Phase Imbalance, Loose Connections, or Site Wiring Fault 2. Loose output lugs on generator terminals 3. Loose neutral or earth bonding 4. Phase-to-phase imbalance caused by uneven loads 5. External wiring fault on customer side 6. Damaged output breaker or contacts ▪ Inspect and torque-check all output lugs at generator terminals ▪ Perform a phase-balancing measurement with a true-RMS meter ▪ Check load distribution across L1 / L2 / L3 ▪ Test generator output breaker for worn or pitted contacts ▪ Disconnect site load and test generator alone — if voltage stabilizes, fault is downstream
Other:	



1.3.2.38 SPN 2440 FMI 15 - Over phase voltage warning

Error Code:	78095
Description:	78095 - Over phase voltage warning
Possible Cause:	1. AVR voltage setpoint adjusted too high 2. Unstable AVR causing voltage creep (especially at low load) 3. Poor or intermittent sensing feedback to AVR 4. Incorrect AVR type or configuration 5. Engine running slightly above rated speed (e.g., 51–52 Hz)

	6. Governor over-compensating, especially at low or fluctuating loads 7. Sudden load drop causing temporary voltage/frequency rise 8. Actuator beginning to stick or misbehave 9. Loose or corroded voltage sensing wiring 10. Incorrect controller voltage configuration (e.g., 415V vs 400V scaling) 11. Faulty PT (potential transformer) or internal measurement circuit 12. Electrical noise affecting measurement signals
Service Action:	1. Measure phase-phase voltage with a calibrated multimeter: Normal = ~400 V Warning typically begins >420–430 V 2. Check AVR voltage adjustment pot — reduce slightly and observe change 3. Inspect AVR sensing wires (usually thin wires from alternator output): Ensure tight connections and correct phase reference 4. Look for voltage instability (hunting up/down) 5. If voltage drifts upward with no load → suspect AVR fault → swap with known-good unit Check frequency reading: Normal = 50.0 Hz If elevated (>51 Hz), overspeed is contributing to over-voltage Observe RPM stability at no-load and varying load Inspect actuator/governor for smooth operation Review event log for load dump or transient events Check if issue occurs mainly at low load — adjust governor tuning if needed Compare controller voltage reading vs external multimeter: If mismatch → sensing issue Inspect sensing wiring from alternator → controller

	Tighten all terminals in AVR, terminal box, and control panel Check controller settings (voltage scaling, nominal voltage) Inspect control panel for moisture or corrosion If readings unstable → investigate PT or controller input circuit
Other:	



1.3.2.39 SPN 2444 FMI 0 - Generator Over Voltage Electrical Trip Or Shutdown

Error Code:	78208
Description:	78208 - Generator Over Voltage Electrical Trip Or Shutdown
Possible Cause:	• AVR (Automatic Voltage Regulator) Fault or Incorrect Sensing • AVR voltage pot set too high • Faulty AVR (unstable regulation) • Incorrect or reversed sensing wires • Loose phase-sense connection causing AVR to over-correct • Failed or shorted AVR components • Engine Overspeed (Usually Governor or Actuator Issue) • Faulty electronic actuator (sticking open) • Incorrect governor tuning • Fuel rack/actuator stepper binding • Load suddenly removed causing RPM overshoot

	• Incorrect PID parameters after service • PT / Voltage-Sensing Wiring Fault (Control Panel Misreading High Voltage) • Loose or corroded PT (potential transformer) or sensing wires • Bad terminal block connections in the control panel • Phase imbalance causing incorrect calculated voltage • Electrical noise in sensing circuit • Wrong scaling or configuration in controller settings
Service Action:	1. AVR (Automatic Voltage Regulator) Fault or Incorrect Sensing 2. AVR voltage pot set too high 3. Faulty AVR (unstable regulation) 4. Incorrect or reversed sensing wires 5. Loose phase-sense connection causing AVR to over-correct 6. Failed or shorted AVR components ▪ Measure phase-phase voltage (L1-L2, L2-L3, L3-L1) with a calibrated multimeter ▪ Inspect AVR: check terminals, look for smell/burn marks ▪ Verify AVR sensing wires are tight and on the correct phases ▪ Confirm AVR settings (voltage, stability, gain) per alternator manual ▪ If voltage drifts high with no load → swap in a known-good AVR to confirm ▪ Check exciter output—excess excitation = over-voltage 1. Engine Overspeed (Usually Governor or Actuator Issue) 2. Faulty electronic actuator (sticking open) 3. Incorrect governor tuning 4. Fuel rack/actuator stepper binding 5. Load suddenly removed causing RPM overshoot 6. Incorrect PID parameters after service ▪ Check generator frequency: ▪

	▪ Normal: 50.0 Hz ($\pm 1\%$) ▪ If frequency is high (52–55 Hz), overspeed is the cause ▪ ▪ Inspect actuator/governor movement for sticking or hunting ▪ Review event log for overspeed warnings preceding the trip ▪ Ensure no load-dump events occurred (large motors stopping suddenly) ▪ Update governor/ECU calibration if recently serviced ▪ Correct mechanical binding or replace faulty actuator 1. PT / Voltage-Sensing Wiring Fault (Control Panel Misreading High Voltage) 2. Loose or corroded PT (potential transformer) or sensing wires 3. Bad terminal block connections in the control panel 4. Phase imbalance causing incorrect calculated voltage 5. Electrical noise in sensing circuit 6. Wrong scaling or configuration in controller settings ▪ Compare panel voltage reading vs multimeter reading at terminals ▪ Inspect all voltage-sense wiring from alternator → AVR → controller ▪ Verify correct configuration (400 V, 3-phase, 4-wire) ▪ Tighten terminal screws in control panel, AVR area, CT/PT block ▪ Check for water ingress or corrosion in control panel ▪ If reading is stable on multimeter but high on controller → controller input fault
Other:	



1.3.2.40 SPN 2444 FMI 1 - Generator Under Voltage Electrical Trip Or Shutdown

Error Code:	78209
Description:	78209 - Generator Under Voltage Electrical Trip Or Shutdown
Possible Cause:	• Load Too High or Sudden Load Increase • Alternator AVR Fault (Automatic Voltage Regulator) • Alternator AVR Fault (Automatic Voltage Regulator) • Poor Engine Performance → Low RPM • Weak or Failing Excitation System • Wiring, Connections, or Sensor Problems
Service Action:	<u>Load Too High or Sudden Load Increase</u> 1. Genset undersized for the load- check max site load • – Sudden motor starts (compressors, pumps, HVAC)- genset should be 2 x size of max single load step • – Load imbalance across phases- check load on each phase and reconnect single phase loads to balance <u>Alternator AVR Fault (Automatic Voltage Regulator)</u> 1. Defective AVR power components- change AVR for new • – Loose AVR sensing wires- check connections against schematics • – Incorrect voltage or stability settings- ensure latest controller and AVR files are loaded into the genset • – Failed excitation supply-measure excitation voltage on AVR as per alternator manufacturers guide <u>Poor Engine Performance → Low RPM</u>

	1. Fuel restriction- check fuel pipework for leaks and kinks • – Blocked filters- • – Air intake restriction • – Faulty governor or actuator • – Incorrect PID tuning- ensure latest engine and controller files are installed <u>Weak or Failing Excitation System</u> 1. Faulty exciter stator/rotor- check for visual damage and measure insulation resistance of stator coils, • – Loose excitation wiring- visual check of connections • – Failed diodes in the exciter bridge- measure diodes in accordance with manufacturers instructions <u>Wiring, Connections, or Sensor Problems</u> 1. Loose phase output connections • – Loose neutral-earth links • – Incorrect CT/PT sensing to control panel • – Corroded terminals causing voltage drop • – Faulty control panel measurement input
Other:	DER1 MECCALTE AVR DEIF DVC550 AVR



1.3.2.41 SPN 2444 FMI 15 - Generator Over Voltage Warning

Error Code:	78223
Description:	78223 - Generator Over Voltage Warning
Possible Cause:	The generator output voltage has exceeded the configured warning threshold. This may be caused by incorrect AVR settings, faulty voltage regulation, incorrect voltage sensing or feedback wiring, excessive engine speed, or sudden load rejection leading to voltage overshoot.
Service Action:	1. Confirm actual generator output voltage using a calibrated multimeter and compare it to the controller displayed voltage. 2. Verify nominal voltage and frequency settings are correctly configured for a 400V, 50Hz system. 3. Inspect AVR voltage setpoint, stability, and gain settings for misadjustment or instability. 4. Check voltage sensing and feedback wiring between the alternator, AVR, and controller for loose connections, incorrect phase selection, or open circuits. 5. Inspect AVR, alternator terminals, and connectors for signs of overheating, corrosion, or damage. 6. Monitor engine speed and frequency to ensure the engine is not running above nominal speed.

	7. Review recent operating conditions to determine if the warning occurs during sudden load rejection or rapid load changes. 8. If voltage remains unstable or exceeds limits under steady conditions, substitute the AVR or test per manufacturer procedures. 9. After corrective action, clear warnings and test the generator across no-load and load conditions to confirm stable voltage regulation.
Other:	



1.3.2.42 SPN 2444 FMI 17 - Generator Under Voltage Warning

Error Code:	78225
Description:	78225 - Generator Under Voltage Warning
Possible Cause:	The control system has detected that generator output voltage has fallen below the configured warning threshold. This may be caused by excessive load, sudden load application, faulty or misadjusted AVR (Automatic Voltage Regulator), incorrect voltage sensing, poor excitation supply, engine running below rated speed, or wiring, connection, or measurement faults.

Service Action:	1. Review fault history to determine when the under voltage warning occurred and under what load conditions. 2. Measure generator output voltage at the terminals using a calibrated multimeter and compare with controller readings. 3. Check generator load conditions and ensure the load does not exceed generator capacity. 4. Inspect for sudden or large load application such as motor starting causing voltage dip. 5. Verify engine speed and frequency (typically 50 Hz / 1500 RPM) to ensure the engine is not running below rated speed. 6. Inspect the AVR for correct operation, including voltage setpoint, stability, and gain settings. 7. Check AVR sensing and excitation wiring for loose connections, incorrect phase reference, or damage. 8. Inspect alternator excitation system including rotor, stator, and diode bridge for faults. 9. Verify voltage sensing circuits, CT/PT wiring (if fitted), and controller input accuracy. 10. Inspect output terminals, breaker connections, and load cabling for loose or corroded connections causing voltage drop. 11. After corrective action, clear fault codes and test generator operation under no-load and load conditions to confirm stable voltage.
Other:	0



1.3.2.43 SPN 2448 FMI 15 - Generator Over Current Warning

Error Code:	78351

Description:	78351 - Generator Over Current Warning
Possible Cause:	The control system has detected that generator current has exceeded the configured warning threshold. This condition may be caused by excessive load demand, load imbalance across phases, short-circuit or fault on the load side, incorrect current transformer (CT) configuration, faulty current sensing, or generator overload conditions.
Service Action:	1. Review fault history to determine when the over current warning occurred and under what load conditions. 2. Measure generator current on all phases using a clamp meter and compare readings to rated values. 3. Check total load connected to the generator and verify it does not exceed generator capacity. 4. Inspect for phase imbalance by comparing current across L1, L2, and L3. 5. Identify and isolate large loads or equipment that may be causing excessive current draw. 6. Inspect for short circuits or electrical faults on the load side or downstream distribution. 7. Verify correct CT ratios, polarity, and configuration within the control system. 8. Inspect CT wiring and connections for looseness, damage, or incorrect installation. 9. Compare controller current readings with an external measurement device to confirm accuracy. 10. Check generator cooling and ventilation to ensure it is not operating in overload conditions for extended periods. 11. After corrective action, clear fault codes and operate the generator under controlled load to confirm current remains within limits.

Other:	
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1.3.2.44 SPN 2452 FMI 17 - Low Load - less than 30% load for 1 hour

Error Code:	78481
Description:	78481 - Low Load - less than 30% load for 1 hour
Possible Cause:	• The Connected Load Is Too Low for the Generator Size • The generator is oversized for the site's actual electrical demand • Only small auxiliary loads are running (chargers, lighting, pumps, control gear) • Load drops off after startup (e.g., process equipment cycling off) • Aftertreatment System Requires Higher Exhaust Temperatures • Long periods of light load prevent the engine from reaching required exhaust temperature • Soot accumulation in the DPF due to low combustion temperatures • Engine derating strategy may trigger to protect aftertreatment components • Faulty or Incorrect Load Measurement (CT/PT / Control System Issue) • Current transformers (CTs) incorrectly sized, reversed, or wired incorrectly

	• Loose CT terminals causing intermittent or low reading • Control panel firmware glitch causing incorrect percentage load display • PT (voltage sensing) issues leading to wrong kW calculations
Service Action:	1. The Connected Load Is Too Low for the Generator Size 2. The generator is oversized for the site's actual electrical demand 3. Only small auxiliary loads are running (chargers, lighting, pumps, control gear) 4. Load drops off after startup (e.g., process equipment cycling off) ▪ Measure actual site load using the control panel or a clamp meter ▪ Confirm if the load regularly falls below 30% (e.g., <12 kW on a 40 kVA set) ▪ If possible, add base-load or enable automatic load bank connection ▪ Review whether a smaller generator would be more appropriate ▪ If intermittent: adjust load-management or sequencing timers on site 1. Aftertreatment System Requires Higher Exhaust Temperatures 2. Long periods of light load prevent the engine from reaching required exhaust temperature 3. Soot accumulation in the DPF due to low combustion temperatures 4. Engine derating strategy may trigger to protect aftertreatment components ▪ Increase load to 50–70% for at least 1 hour to achieve a proper burn-off ▪ Perform a DPF regeneration if the control system allows it ▪ Check for other aftertreatment-related DTCs (NOx, DEF, EGR, DPF)

	▪ Inspect exhaust for signs of wet-stacking (fuel residue, white/grey smoke) ▪ Verify that the load profile meets manufacturer recommendations for T4F operation 1. Faulty or Incorrect Load Measurement (CT/PT / Control System Issue) 2. Current transformers (CTs) incorrectly sized, reversed, or wired incorrectly 3. Loose CT terminals causing intermittent or low reading 4. Control panel firmware glitch causing incorrect percentage load display 5. PT (voltage sensing) issues leading to wrong kW calculations ▪ Inspect CT wiring: polarity, tightness, and phase orientation ▪ Check CT ratios in the controller settings (e.g., 100/5, 200/5) ▪ Compare panel kW reading with an external meter ▪ Ensure controller firmware is up to date ▪ Inspect control panel connectors for corrosion or moisture ingress
Other:	



1.3.2.45 SPN 2659 FMI 31 - EGR flow reached its limit

Error Code:	85119
Description:	85119 - EGR flow reached its limit

Possible Cause:	The engine control system has detected that the exhaust gas recirculation (EGR) system has reached its control limit without achieving the commanded EGR flow. This indicates that the EGR system can no longer increase or decrease flow as required. Possible causes include restricted or blocked EGR passages, carbon buildup, EGR valve sticking or failure, EGR cooler blockage, leaks in EGR piping, faulty differential pressure or flow sensors, or operating conditions preventing correct EGR flow.
Service Action:	1. Review fault history and operating conditions to determine when the EGR flow limit was reached. 2. Check for any active or logged EGR-related fault codes that may support this condition. 3. Inspect the EGR valve for sticking, carbon buildup, or mechanical failure. 4. Inspect EGR pipes and passages for carbon blockage, restriction, or leakage. 5. Inspect the EGR cooler for blockage, restriction, or internal leakage if fitted. 6. Verify EGR valve commanded position versus actual position using diagnostic tools. 7. Check EGR differential pressure, flow, or temperature sensors for plausible readings. 8. Inspect wiring and connectors associated with EGR components for damage, corrosion, or loose connections. 9. Confirm engine operating conditions (load, speed, temperature) allow EGR operation. 10. After corrective action, clear fault codes and operate the engine through a full run cycle to confirm normal EGR flow control.
Other:	



1.3.2.46 SPN 3216 FMI 9 - Lost Communication With NOx Sensor "A"

Error Code:	102921
Description:	102921 - Lost Communication With NOx Sensor "A"
Possible Cause:	The control system has detected a loss of communication with NOx Sensor "A". This indicates that valid data is no longer being received from the sensor. Possible causes include CAN or LIN communication fault (depending on system design), loss of power or ground to the NOx sensor module, damaged or disconnected wiring, poor connector condition, sensor internal electronic failure, or excessive heat or contamination affecting sensor operation.
Service Action:	1. Review fault history to determine when communication with NOx Sensor "A" was lost and under what operating conditions. 2. Verify power supply and ground integrity at the NOx sensor connector. 3. Inspect communication wiring (CAN or LIN) between the NOx sensor and ECU for damage, chafing, or disconnection. 4. Check connectors at the NOx sensor and ECU for corrosion, moisture ingress, bent pins, or poor terminal contact. 5. Measure network termination resistance (for CAN systems) and confirm approximately 60 ohms with system power removed. 6. Check for additional communication or aftertreatment-related DTCs indicating a wider network issue.

	7. Monitor communication signals and verify the sensor is transmitting valid data using diagnostic tools. 8. Inspect the NOx sensor and control module for signs of overheating, contamination, or physical damage within the exhaust system environment. 9. If wiring and power supply are confirmed correct, suspect internal failure of the NOx sensor module. 10. After corrective action, clear fault codes and operate the engine to confirm normal NOx sensor communication and system function.
Other:	



1.3.2.47 SPN 3360 FMI 9 - Lost Communication with Reductant Quality Module

Error Code:	107529
Description:	107529 - Lost Communication with Reductant Quality Module
Possible Cause:	The control system has detected a loss of communication with the reductant quality module. This module is typically integrated within the DEF tank head unit and is responsible for measuring DEF quality. Possible causes include loss of power or ground to the module, CAN or LIN communication fault, damaged or disconnected wiring, poor connector condition, moisture ingress or DEF crystallisation at connectors, or internal failure of the reductant quality module.

Service Action:	1. Review fault history to determine when the under speed warning occurred and under what operating conditions. 2. Measure engine speed using the controller and confirm using a handheld tachometer. 3. Verify engine speed matches the rated value (typically 1500 RPM for 50 Hz applications). 4. Check for excessive or sudden load being applied that may cause engine speed to drop. 5. Inspect fuel system for blocked filters, air ingress, restricted lines, or poor fuel quality. 6. Verify correct operation of the governor or actuator and check for stable and responsive speed control. 7. Inspect air intake system for restriction and exhaust system for blockage affecting engine performance. 8. Check for engine derate conditions such as overheating, SCR/EGR faults, or protection limits reducing engine output. 9. Verify controller and governor settings (speed setpoint, droop, PID parameters) are correctly configured. 10. Test engine and generator operation under controlled load to confirm speed stability and recovery. 11. After corrective action, clear fault codes and confirm engine speed remains within specification during operation.

JCB

1.3.2.48 SPN 3361 FMI 12 - SCR System Performance Dosing Failure

Error Code:	107564
ECU	
Description:	107564 - SCR System Performance Dosing Failure

Possible Cause:	The SCR system has detected insufficient or incorrect DEF dosing to achieve the required NOx reduction. This may be caused by incorrect DEF dosing quantity, DEF injector malfunction, blocked or leaking DEF lines, low DEF pressure, DEF crystallisation, SCR catalyst inefficiency, incorrect exhaust temperature conditions, or persistent DEF quality-related issues.
Service Action:	1. Review active and logged SCR- and DEF-related fault codes to identify supporting diagnostics linked to the dosing failure. 2. Verify DEF level is sufficient and that the fluid meets ISO 22241 specification. 3. Inspect DEF dosing system components including pump, dosing valve/injector, supply lines, and return lines for leaks, blockage, or crystallisation. 4. Check DEF pressure and flow during commanded dosing events and compare readings to manufacturer specifications. 5. Inspect DEF injector for clogging, restricted spray pattern, or electrical faults. 6. Verify SCR exhaust gas temperatures are within the required operating range for effective DEF dosing and NOx conversion. 7. Check SCR inlet and outlet NOx sensor readings for plausibility and correct operation. 8. Inspect DEF dosing control wiring and connectors for damage, corrosion, or poor terminal contact. 9. Rectify all DEF, SCR, or emissions-related faults before clearing the DTC and inducement status.

	10. After corrective action, clear fault codes and operate the engine through a complete run cycle to confirm normal SCR dosing performance.
Other:	



1.3.2.49 SPN 3363 FMI 5 - Open load error of DEF tank heater actuator powerstage

Error Code:	107621
Description:	107621 - Open load error of DEF tank heater actuator powerstage
Possible Cause:	The control system has detected an open-load condition on the DEF tank heater actuator powerstage circuit. This indicates that no current is flowing when the heater is commanded ON. Possible causes include an open circuit in the DEF tank heater element, damaged or disconnected wiring, poor connector contact, blown fuse, or a fault within the heater powerstage output.

Service Action:	1. Review fault history to determine when the open load condition occurred and whether it is intermittent or constant. 2. Visually inspect the DEF tank heater wiring harness for damage, disconnection, or broken wires. 3. Inspect connectors at the DEF tank heater and control unit for corrosion, moisture ingress, or loose terminals. 4. Disconnect the DEF tank heater and inspect terminals for push-back pins or poor contact. 5. Measure resistance of the DEF tank heater element and compare against manufacturer specification. 6. An infinite or very high resistance reading indicates an open circuit heater element. 7. Check wiring continuity between the controller powerstage output and the heater for open circuit. 8. Inspect associated fuses, relays, and power supply circuits for failure or poor connections. 9. If wiring and heater are confirmed serviceable, suspect an internal powerstage or controller output fault. 10. After corrective action, clear fault codes and verify correct heater operation during cold-start conditions.
Other:	



1.3.2.50 SPN 3364 FMI 19 - DEF quality message error from head unit

Error Code:	107667
Description:	107667 - DEF quality message error from head unit

Possible Cause:	The control system has detected a fault or missing/invalid message related to DEF quality from the DEF tank head unit. This may be caused by inaccurate DEF quality sensing, communication failure between the head unit and the controller, wiring or connector issues, contamination or incorrect DEF fluid, or a failure of the DEF tank head unit or integrated sensor.
Service Action:	1. Review fault history to determine when the DEF quality message error occurred and whether it is intermittent or constant. 2. Verify DEF level is adequate and confirm correct ISO 22241 compliant DEF is used. 3. Inspect DEF for contamination, incorrect fluid type, or dilution with water. 4. Compare DEF quality readings from the head unit with expected values using diagnostic tools. 5. Inspect wiring harness between the DEF head unit and control system for damage, corrosion, or loose connections. 6. Check connectors at the DEF tank head unit for moisture ingress, crystallisation, or poor terminal contact. 7. Verify communication signals between the DEF head unit and ECU using diagnostic tools (e.g., CAN or LIN depending on system). 8. Check for related DTCs (quality, level, temperature, or communication faults) indicating a broader DEF system issue. 9. If wiring and DEF quality are confirmed correct, suspect failure of the DEF tank head unit or integrated quality sensor. 10. After corrective action, clear fault codes and operate the engine to confirm normal DEF quality signal and system operation.
Other:	0



1.3.2.51 SPN 3571 FMI 7 - Generator Failed To Open Warning

Error Code:	114279
Description:	114279 - Generator Failed To Open Warning
Possible Cause:	The control system commanded the generator output breaker or contactor to open but did not receive the required open confirmation signal. Possible causes include a mechanically stuck or failed breaker/contact, faulty auxiliary feedback contacts, incorrect feedback wiring or configuration, insufficient control voltage to the opening coil, or external interlocks or protection logic preventing the breaker from opening.
Service Action:	1. Review fault history to confirm when the generator open command was issued and under what operating conditions. 2. Verify whether the generator output breaker or contactor physically opened when the open command was given. 3. Inspect the generator breaker or contactor for mechanical sticking, wear, or damage. 4. Check auxiliary open/closed feedback contacts for correct operation and alignment. 5. Inspect wiring between the breaker auxiliary contacts and the controller for loose connections, damage, or incorrect terminations. 6. Verify correct control voltage is present at the breaker or contactor opening coil during the open command. 7. Check for any interlocks, protection relays, or external signals that may be inhibiting the breaker from opening.

	8. Confirm controller configuration matches the installed breaker feedback logic (normally open / normally closed). 9. Manually operate the breaker or contactor (where permitted) to confirm smooth mechanical operation. 10. After corrective action, clear the warning and test multiple open/close commands to confirm correct operation.
Other:	

JCB**1.3.2.52 SPN 3607 - FMI 31 - Emergency Stop**

Error Code:	115455
Description:	11545 Emergency Stop
Possible Cause:	The control system has detected activation of the Emergency Stop circuit. This indicates that the emergency stop switch has been pressed or the safety circuit has been opened. Possible causes include manual activation of the emergency stop button, faulty or stuck E-Stop switch, open circuit in the safety loop, wiring or connector fault, or an external safety system triggering the shutdown.

Service Action:	1. Verify whether the emergency stop button has been intentionally activated. 2. Inspect the emergency stop switch and confirm it is fully reset and mechanically released. 3. Check all emergency stop switches in the circuit if multiple are fitted. 4. Inspect the safety loop circuit for open circuits, including wiring, connectors, and terminal blocks. 5. Measure continuity of the emergency stop circuit (normally closed loop) to confirm it is complete. 6. Inspect wiring for damage, loose connections, or corrosion that could interrupt the circuit. 7. Check for external safety systems (fire suppression, remote E-Stop, interlocks) that may be triggering the shutdown. 8. Verify correct configuration of the E-Stop input in the controller (normally closed / normally open logic). 9. Reset the emergency stop circuit and confirm the input returns to the normal (inactive) state. 10. Clear fault codes and attempt to restart the system to confirm normal operation.
Other:	



1.3.2.53 SPN 3695 FMI 19 - Aftertreatment Refresh Inhibit/Force Switch message missing

Error Code:	118259
Description:	118259 - Aftertreatment Refresh Inhibit/Force Switch message missing

Possible Cause:	The engine control system is not receiving the expected CAN message related to the Aftertreatment Refresh Inhibit or Force Switch. This may be caused by a missing or non-communicating external switch, CAN communication fault, incorrect system configuration, wiring or connector issues, or a controller that is not transmitting the required message.
Service Action:	1. Review fault history to determine when the missing message was detected and under what operating conditions. 2. Verify whether an aftertreatment Refresh Inhibit or Force Switch is installed on the machine or application. 3. Check system configuration and parameters to confirm whether the inhibit or force switch feature is enabled or expected. 4. Inspect CAN communication wiring related to the aftertreatment control and external switch interface for damage, disconnection, or poor termination. 5. Check connectors for bent pins, corrosion, moisture ingress, or loose terminals. 6. Inspect operation of the external inhibit or force switch (if fitted) and verify correct signal output when actuated. 7. Check for additional CAN communication or missing message faults that may indicate a broader network issue. 8. Verify correct operation and power supply of any controller responsible for sending the refresh inhibit or force message. 9. Rectify wiring, configuration, or communication issues before clearing the fault. 10. After corrective action, clear fault codes and operate the engine to confirm the message is being received correctly.
Other:	



1.3.2.54 SPN 4354 FMI 4 - Error for short to ground of DEF backflowline heater actuator powerstage

Error Code:	139322
Description:	139332 - Error for short to ground of DEF backflowline heater actuator powerstage
Possible Cause:	The control system has detected a short-to-ground condition on the DEF backflow line heater actuator powerstage circuit. This indicates excessive current draw due to an electrical short. Possible causes include damaged or chafed wiring contacting ground, moisture ingress into connectors, an internally shorted DEF backflow line heater element, pinched harness sections, or a failed heater powerstage output within the controller.
Service Action:	1. Review fault history to determine when the short to ground condition was detected and whether it was intermittent or permanent. 2. Switch off system power and visually inspect the DEF backflow line heater wiring harness for chafing, pinching, or contact with chassis ground. 3. Inspect heater and controller connectors for moisture ingress, corrosion, or shorted terminals. 4. Disconnect the DEF backflow line heater and check whether the short to ground fault clears. 5. Measure resistance of the DEF backflow line heater element and compare the value with manufacturer specification.

	6. A very low resistance reading indicates an internally shorted heater element. 7. Check wiring continuity from the controller powerstage output to the heater for a short to ground. 8. Inspect associated fuses and circuit protection devices for correct rating and evidence of overcurrent. 9. If wiring and heater are confirmed serviceable, suspect an internal failure of the heater powerstage or controller output. 10. After corrective action, clear fault codes and verify proper heater operation during cold ambient start conditions.
Other:	



1.3.2.55 SPN 4354 FMI 5 - Open load error of DEF backflowline heater actuator powerstage

Error Code:	139333
Description:	139333 - Open load error of DEF backflowline heater actuator powerstage
Possible Cause:	The DEF backflow line heater actuator powerstage has detected an open load condition. This indicates that no electrical load is present when the heater is commanded ON. Possible causes include an open circuit DEF backflow line heater element, damaged or disconnected wiring, poor connector contact,

	blown fuse, or an internal fault in the heater powerstage output.
Service Action:	1. Visually inspect the DEF backflow line heater wiring harness for damage, abrasion, or disconnection. 2. Check all connectors at the heater and controller for bent pins, corrosion, moisture ingress, or loose terminals. 3. Measure resistance of the DEF backflow line heater element and compare the value to manufacturer specification. 4. An infinite or excessively high resistance value indicates an open heater element. 5. Verify supply voltage and ground are present at the heater circuit when heater operation is commanded. 6. Inspect associated fuses, relays, or solid-state powerstage outputs for correct operation. 7. Check wiring continuity between the controller powerstage output and the heater element. 8. If wiring and heater resistance are within specification, suspect an internal powerstage or controller output fault. 9. After corrective action, clear fault codes and confirm proper DEF line heater operation during cold-start conditions.
Other:	

1.3.2.56 SPN 4355 FMI 4 - Error for short to ground of DEF pressureline heater actuator powerstage

Error Code:	139364

Description:	139364 - Error for short to ground of DEF pressureline heater actuator powerstage
Possible Cause:	The control system has detected a short-to-ground condition in the DEF pressure line heater actuator powerstage circuit. This indicates excessive current draw or direct grounding of the heater circuit. Possible causes include damaged or chafed wiring, moisture ingress into connectors, internal short circuit of the DEF pressure line heater element, wiring pinched against chassis ground, or a fault within the heater powerstage output.
Service Action:	1. Review fault history to confirm under what conditions the short to ground fault was detected. 2. Switch off power and visually inspect the DEF pressure line heater wiring harness for damage, chafing, or pinched sections contacting ground. 3. Inspect connectors at the heater and controller for moisture ingress, corrosion, or shorted pins. 4. Disconnect the DEF pressure line heater and check if the fault clears to help isolate the heater from the wiring. 5. Measure resistance of the DEF pressure line heater element and compare against manufacturer specification. 6. A very low resistance reading indicates an internally shorted heater element. 7. Check wiring continuity from the controller powerstage output to the heater for short to ground. 8. Inspect associated fuses and protection devices for correct operation and rating. 9. If wiring and heater are confirmed serviceable, suspect an internal fault in the powerstage or control unit output. 10. After corrective action, clear fault codes and verify normal heater operation during cold-start conditions.

Other:	



1.3.2.57 SPN 4355 FMI 5 - Error for open load on heater relay of pressure line

Error Code:	139365
Description:	139365 - Error for open load on heater relay of pressure line
Possible Cause:	1. Broken or disconnected wire between ECU and heater relay 2. Corroded or contaminated relay socket (DEF crystallisation common) 3. Loose terminals or pushed-out pins 4. Harness damage due to vibration, heat, or routing 5. Relay coil internally open circuit 6. Incorrect relay type fitted (wrong resistance/spec) 7. Coil failure due to overheating or age 8. Frequent switching causing internal break 9. ECU output driver not energising relay coil 10. Internal transistor failure from previous short 11. Poor ECU ground affecting output detection

	12.ECU unable to detect load current
Service Action:	Broken or disconnected wire between ECU and heater relay Corroded or contaminated relay socket (DEF crystallisation common) Loose terminals or pushed-out pins Harness damage due to vibration, heat, or routing ▪ Locate the pressure line heater relay (usually in control panel or harness relay block). ▪ Remove relay and inspect socket terminals: ▪ Corrosion (white/green residue) ▪ Burnt or recessed pins ▪ Perform continuity check: ▪ ECU output → relay coil terminal ▪ Check for 12V / 24V supply at relay coil when commanded ON ▪ Perform wiggle test on harness to detect intermittent open circuits ▪ Repair or replace damaged wiring and ensure correct routing Relay coil internally open circuit Incorrect relay type fitted (wrong resistance/spec) Coil failure due to overheating or age Frequent switching causing internal break ▪ Remove relay and measure coil resistance across control pins: ▪ Normal: finite resistance (typically 50–300 Ω depending on system) ▪ Fault: open circuit / infinite resistance ▪ Swap relay with a known-good identical relay ▪ Verify relay specification matches OEM requirements (voltage, pin layout) ▪ If fault clears after swap → replace relay permanently

	ECU output driver not energising relay coil Internal transistor failure from previous short Poor ECU ground affecting output detection ECU unable to detect load current ▪ With relay removed, measure ECU output when heater command is active: ▪ Should see voltage or switching signal ▪ Apply a test load (resistor or test lamp) across ECU output: ▪ If ECU still reports open load → driver fault likely ▪ Check ECU power and ground integrity ▪ Inspect ECU connector for corrosion or pin damage ▪ If confirmed → ECU repair or replacement required
Other:	



1.3.2.58 SPN 4356 FMI 4 - Error for short to ground of DEF suctionline heater actuator powerstage

Error Code:	139396
Description:	139396 - Error for short to ground of DEF suctionline heater actuator powerstag

Possible Cause:	The control system has detected a communication error during the Variable Geometry Turbocharger (VGT) span learn process. This may be caused by CAN communication faults, loss of communication between the ECU and VGT actuator, unstable power or ground supply to the actuator, wiring or connector issues, mechanical binding of the VGT vanes, or a faulty VGT actuator preventing successful calibration.
Service Action:	1. Review fault history to determine when the VGT span learn error occurred and whether it happened during a commanded calibration. 2. Verify battery voltage and power supply are stable during the span learn process. 3. Inspect CAN communication wiring between the ECU and VGT actuator for damage, chafing, or poor connections. 4. Check connectors at the ECU and VGT actuator for corrosion, moisture ingress, or loose pins. 5. Check for additional CAN communication or actuator-related fault codes that may indicate a broader issue. 6. Use diagnostic tools to attempt a VGT span learn or calibration procedure and monitor actuator response. 7. Inspect the VGT actuator for correct operation and ensure it moves smoothly through its full range. 8. Check for mechanical binding or carbon buildup in the turbocharger vane mechanism. 9. Verify actuator power supply, ground, and control signals are within specification. 10. If wiring and mechanical operation are correct, suspect a faulty VGT actuator or internal actuator position feedback issue. 11. After corrective action, clear fault codes and perform a successful VGT span learn procedure to confirm repair.
Other:	



1.3.2.59 SPN 4356 FMI 5 - Open load error of DEF suctionline heater actuator powerstage

Error Code:	38704
Description:	139397 - Open load error of DEF suctionline heater actuator powerstage
Possible Cause:	Broken wire in DEF suction line heater circuit Connector not fully seated or corroded (DEF crystallisation common) Damaged harness from vibration or chafing Heat damage near exhaust routing Pin pushed out of connector housing Heater element burnt out internally Break in heating wire within suction line Freeze/thaw damage to heater element Internal thermal fuse failure ECU driver transistor failure No output from ECU to heater circuit Poor ECU ground affecting current detection Prior short circuit damaging output stage

Service Action:	1. Broken wire in DEF suction line heater circuit 2. Connector not fully seated or corroded (DEF crystallisation common) 3. Damaged harness from vibration or chafing 4. Heat damage near exhaust routing 5. Pin pushed out of connector housing ▪ Visually inspect wiring from ECU → DEF suction line heater. ▪ Disconnect connector and check for: ▪ White crystals (dried DEF contamination) ▪ Corrosion or moisture ingress ▪ Perform continuity test from ECU pin to heater connector. ▪ Check for supply voltage (12V / 24V) at connector when heater is commanded ON. ▪ Perform a wiggle test to identify intermittent faults. ▪ Repair damaged wiring and secure loom away from heat/vibration. 1. Heater element burnt out internally 2. Break in heating wire within suction line 3. Freeze/thaw damage to heater element 4. Internal thermal fuse failure ▪ Disconnect heater connector. ▪ Measure resistance across heater terminals: ▪ ▪ Normal: low resistance (few ohms) ▪ Fault: open circuit (OL / infinite resistance) ▪ ▪ Inspect suction line assembly for physical damage. ▪ If available, install a known-good heater line to confirm.

	▪ Replace suction line heater assembly if faulty. 1. ECU driver transistor failure 2. No output from ECU to heater circuit 3. Poor ECU ground affecting current detection 4. Prior short circuit damaging output stage ▪ With heater disconnected, measure ECU output when heater is commanded ON: ▪ If no voltage present → potential ECU issue ▪ Apply a test load (resistor/test lamp) to ECU output: ▪ If ECU still reports open load → confirms ECU fault ▪ Check ECU power supply and grounds ▪ Inspect ECU connector pins for corrosion or damage ▪ If confirmed → repair or replace ECU
Other:	



1.3.2.60 SPN 4357 FMI 5 - Error for open load of supply module heater actuator powerstage

Error Code:	139429
Description:	139429 - Error for open load of supply module heater actuator powerstage

Possible Cause:	• Broken wire in DEF system harness • Connector not fully seated • Corroded terminals • Harness damaged by heat, vibration, or DEF contamination • Pin pushed back in connector housing • DEF Supply Module Heater Element Open-Circuit (Failed Heater) • Heater element burned out from overheat • Internal open circuit in the DEF supply module • Thermal fuse inside module opened • Water ingress damaging heater element • ECU/Powerstage Driver Not Detecting Load (Least Common) • ECU powerstage transistor damaged • Open internal ground reference • ECU previously exposed to short-circuits • Water ingress into ECU housing
Service Action:	1. Broken wire in DEF system harness 2. Connector not fully seated 3. Corroded terminals 4. Harness damaged by heat, vibration, or DEF contamination 5. Pin pushed back in connector housing ▪ Disconnect the heater connector and check for 12/24 V output when commanded ON. ▪ Perform continuity test between ECU output pin and heater connector. ▪ Inspect connectors for corrosion (white crystals = dried DEF). ▪ Reseat connectors and ensure terminal tension is good. ▪ Repair/replace damaged sections of harness. 1. DEF Supply Module Heater Element Open-Circuit (Failed Heater)

	2. Heater element burned out from overheat 3. Internal open circuit in the DEF supply module 4. Thermal fuse inside module opened 5. Water ingress damaging heater element ▪ Disconnect the supply module connector. ▪ Measure resistance across heater pins: ▪ ▪ If infinite/OL → heater element is open circuit. ▪ ▪ Inspect module housing for cracks, water ingress, or damage. ▪ If available, swap in a known-good DEF supply module. ▪ Replace the supply module if heater resistance is out of specification. 1. ECU/Powerstage Driver Not Detecting Load (Least Common) 2. ECU powerstage transistor damaged 3. Open internal ground reference 4. ECU previously exposed to short-circuits 5. Water ingress into ECU housing ▪ Disconnect heater and measure ECU output with a test load (e.g., a 20–30 Ω resistor). ▪ ▪ If ECU still reports open load → driver fault likely. ▪ ▪ Check ECU supply voltage and ground integrity. ▪ Inspect ECU connector pins for corrosion or bent pins. ▪ If output never drives a load → ECU repair or replacement required.
Other:	



1.3.2.61 SPN 4364 FMI 31 - "Nox Catalyst Efficiency Inducement, Selective Catalytic Reduction (SCR) Unit"

Error Code:	
Description:	139679 - "Nox Catalyst Efficiency Inducement, Selective Catalytic Reduction (SCR) Unit"
Possible Cause:	The control system has detected that NOx conversion efficiency of the SCR (Selective Catalytic Reduction) system is below acceptable limits and has initiated an inducement condition. This may be caused by poor DEF dosing, incorrect or contaminated DEF fluid, degraded or blocked SCR catalyst, faulty NOx sensors, insufficient exhaust temperature, exhaust leaks, or prolonged operation under conditions preventing effective NOx reduction.
Service Action:	1. Review fault history to identify related SCR, DEF, or NOx sensor DTCs that may have triggered the inducement. 2. Verify DEF level and confirm DEF meets ISO 22241 specification and is not contaminated. 3. Inspect DEF dosing system including pump, injector, supply lines, and filters for correct operation. 4. Check DEF injector for blockage, crystallisation, or incorrect spray pattern. 5. Verify SCR exhaust temperatures are within the required operating range for effective NOx reduction. 6. Compare upstream and downstream NOx sensor readings for plausibility and correct SCR efficiency performance. 7. Inspect NOx sensors and wiring for damage, contamination, or communication faults. 8. Check for exhaust leaks between turbo, DOC, and SCR that may affect sensor readings.

	9. Inspect SCR catalyst for signs of blockage, poisoning, or physical damage. 10. Perform a forced regeneration or system test (if supported) to restore aftertreatment efficiency. 11. Rectify all underlying SCR and DEF system faults before clearing inducement status. 12. After corrective action, clear fault codes and operate the engine through a full load cycle to confirm SCR efficiency is restored.



1.3.2.62 SPN 4366 FMI 2 - Error on pressure line to perform afterrun

Error Code:	139714
Description:	139714 - Error on pressure line to perform afterrun

Possible Cause:	The control system has detected an issue with the DEF pressure line that is preventing proper afterrun operation of the aftertreatment system. Afterrun is required to purge and stabilise DEF lines after engine shutdown. Possible causes include blockage or restriction in the DEF pressure line, crystallisation within the line, faulty pressure line heater, air leaks in the DEF system, dosing module malfunction, or incorrect DEF quality affecting system operation.
Service Action:	1. Review fault history to determine when the afterrun pressure line error occurred and whether it is intermittent or constant. 2. Inspect DEF pressure lines for kinks, restrictions, or physical damage. 3. Check for DEF crystallisation within the pressure line and clean or replace affected components. 4. Verify correct operation of the DEF pressure line heater, especially in cold ambient conditions. 5. Inspect DEF system for air leaks on the suction and pressure sides of the pump. 6. Check operation of the DEF dosing module, including valves and pressure build/bleed functions. 7. Verify DEF quality meets ISO 22241 specification and is not contaminated. 8. Inspect wiring and connectors associated with the pressure line heater and dosing system for damage or poor connections. 9. Perform a DEF system afterrun or purge test using diagnostic tools if available. 10. If pressure cannot be maintained or released correctly, replace the affected DEF line or dosing components. 11. After corrective action, clear fault codes and confirm correct afterrun operation during engine shutdown.
Other:	

**1.3.2.63 SPN 5246 FMI 11 - SCR Inducement Warning**

Error Code:	167883
Description:	167883 - SCR Inducement Warning
Possible Cause:	The SCR control system has detected conditions that may lead to emissions non-compliance and has issued an SCR Inducement Warning. This warning indicates early detection of SCR system performance issues such as DEF quality concerns, improper DEF dosing, SCR temperature conditions not being met, sensor plausibility issues, or unresolved SCR-related fault codes that may escalate if not corrected.
Service Action:	1. Review active and logged fault codes to identify SCR, DEF, or emissions-related diagnostics associated with the inducement warning. 2. Verify DEF level is adequate and confirm DEF meets ISO 22241 specification. 3. Inspect DEF for contamination, dilution, crystallisation, or incorrect fluid type. 4. Check DEF dosing system operation including pump, injector, supply and return lines for correct function. 5. Verify SCR exhaust temperatures are within the required operating range to support effective DEF dosing and NOx reduction.

	6. Inspect SCR-related sensors, including NOx and temperature sensors, for plausible readings and correct wiring connections. 7. Inspect wiring harnesses and connectors for SCR and DEF components for damage, corrosion, or loose connections. 8. Rectify all SCR- and DEF-related faults before clearing inducement or warning status. 9. After corrective action, clear fault codes and operate the engine through a complete run cycle to confirm the inducement warning does not return.
Other:	



1.3.2.64 SPN 5491 FMI 5 - Error for open load of DEF heater relay actuator powerstage

Error Code:	175717
Description:	175717 - Error for open load of DEF heater relay actuator powerstage
Possible Cause:	Harness damage (vibration, heat, DEF contamination) Locate the DEF heater relay (usually in control panel or engine harness relay block). Remove relay and inspect socket terminals: Relay coil internally open circuit Incorrect or non-OEM relay fitted

	Overheating causing coil failure Internal contact damage after repeated switching cycles ECU output transistor damaged ECU not sourcing/sinking current to relay coil Previous short circuit causing driver failure Poor ECU grounding affecting output detection
Service Action:	1. Harness damage (vibration, heat, DEF contamination) ▪ Locate the DEF heater relay (usually in control panel or engine harness relay block). ▪ Remove relay and inspect socket terminals: ▪ Corrosion (green/white deposits) ▪ Loose or burnt pins ▪ Perform continuity test between ECU control pin and relay coil terminals. ▪ With ignition ON, check for 12 V / 24 V at relay coil feed. ▪ Perform a wiggle test on harness while monitoring continuity. ▪ Repair or replace any damaged wiring or connectors. 1. Relay coil internally open circuit 2. Incorrect or non-OEM relay fitted 3. Overheating causing coil failure 4. Internal contact damage after repeated switching cycles ▪ Remove relay and measure coil resistance across control pins: ▪ Normal: low resistance (tens to hundreds of ohms depending on system) ▪ Fault: open circuit / infinite resistance

	▪ Swap relay with a known-good identical relay. ▪ Confirm correct relay specification (voltage and pin configuration). ▪ If fault clears after swap → replace relay. 1. ECU output transistor damaged 2. ECU not sourcing/sinking current to relay coil 3. Previous short circuit causing driver failure 4. Poor ECU grounding affecting output detection ▪ With relay removed, measure ECU output when command is active: ▪ Should see switching voltage (12/24 V or ground switching depending on design) ▪ Use a test load (resistor or test lamp) across relay output: ▪ If ECU still reports open load → suspect ECU driver ▪ Check ECU power and ground integrity ▪ Inspect ECU connector pins for corrosion or damage ▪ If output is inactive or fault persists →
Other:	



1.3.2.65 SPN 5531 FMI 9 - Fault due to low or high battery voltage supply to DCU

Error Code:	176996
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Description:	176996 - Fault due to low or high battery voltage supply to DCU
Possible Cause:	The control system has detected that the battery voltage supplied to the DCU is outside the allowable operating range. This condition may be caused by low battery state of charge, high charging voltage, faulty alternator or voltage regulator, poor battery connections, damaged wiring, blown or high-resistance fuses, or an intermittent power supply issue to the DCU.
Service Action:	1. Review fault history and operating conditions to determine whether the fault was caused by low voltage, high voltage, or voltage fluctuation. 2. Measure battery voltage at rest and with the engine running and compare readings to manufacturer specifications. 3. Inspect battery terminals and ground connections for looseness, corrosion, or damage. 4. Check battery condition and state of charge and replace the battery if weak or defective. 5. Verify correct operation of the charging system, including alternator output and voltage regulator function. Check ripple voltage measure AC volt across battery terminals with engine running 0.2 to 0.3VAC or less = ok 6. Inspect DCU power supply wiring for damaged insulation, loose connections, or high resistance joints.

	7. Check fuses, relays, and power distribution components supplying the DCU for correct rating and condition. 8. Monitor battery voltage during engine cranking and load changes to identify voltage drop or overvoltage events. 9. Verify DCU voltage limits and configuration parameters are correctly set for the application. 10. After corrective action, clear fault codes and operate the system to confirm stable battery voltage supply to the DCU. 11.
Other:	



1.3.2.66 SPN 520216 FMI 9 - MSC Failure Warning

Error Code:	16646921
Description:	16646921 - MSC Failure Warning
Possible Cause:	CAN wiring damage (twisted pair broken or shorted) Loose or corroded connectors CAN bus termination issue (missing/incorrect resistors) Electrical noise or intermittent connection Power supply instability causing module dropout Low or unstable battery voltage

	Poor ground connection at MSC module Fuse or relay feeding MSC intermittently failing Voltage drop under cranking or load Internal electronic failure (common after voltage spikes or short circuits) Water ingress into module housing Overheating or vibration damage Firmware/software corruption
Service Action:	1. CAN wiring damage (twisted pair broken or shorted) 2. Loose or corroded connectors 3. CAN bus termination issue (missing/incorrect resistors) 4. Electrical noise or intermittent connection 5. Power supply instability causing module dropout ▪ Check for additional CAN-related DTCs (loss of comms, timeout errors). ▪ Inspect CAN wiring: ▪ Twisted pair integrity (CAN H / CAN L) ▪ No damage, chafing, or crushing ▪ Check connectors: ▪ Clean, dry, fully seated, no corrosion ▪ Measure CAN bus resistance (system powered OFF):

	▪ Expected $\approx 60 \Omega$ across CAN H–L ▪ Monitor CAN signals with diagnostic tool if available ▪ Repair wiring faults and secure harness away from interference sources 1. Low or unstable battery voltage 2. Poor ground connection at MSC module 3. Fuse or relay feeding MSC intermittently failing 4. Voltage drop under cranking or load ▪ Verify battery voltage: ▪ Stable (12V $\rightarrow \geq 12.6V$, 24V $\rightarrow \geq 25V$ standing) ▪ Check voltage supply directly at MSC module: ▪ Must remain stable during operation and cranking ▪ Inspect: ▪ Fuses supplying MSC ▪ Relays associated with control power ▪ Check ground points: ▪ Clean, tight, free of corrosion/paint ▪ Perform voltage drop test on supply and ground circuits ▪ Repair any loose or high-resistance connections 1. Internal electronic failure (common after voltage spikes or short circuits) 2. Water ingress into module housing 3. Overheating or vibration damage 4. Firmware/software corruption ▪ Power cycle the system: ▪ Disconnect battery for 2–5 minutes, then reconnect ▪ Check for software/firmware updates (if supported) ▪ Inspect module housing:
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	▪ Cracks, moisture, corrosion ▪ Check connector pins for: ▪ Bent or pushed-out pins ▪ Signs of overheating ▪ Substitute with a known-good MSC module if available ▪ If fault persists with correct power and CAN →
Other:	

JCB**1.3.2.67 SPN 520310 FMI 31 - Digital Input F Electrical Trip Or Shutdown**

Error Code:	16649951
Description:	16649951 - Digital Input F Electrical Trip Or Shutdown
Possible Cause:	Digital Input F has been activated by the generator breaker door safety interlock. This indicates that the breaker door is open, the door interlock switch is not made, or the interlock circuit wiring or switch is faulty. The controller has issued an electrical trip or shutdown to prevent unsafe operation with the breaker compartment unsecured.

Service Action:	1. Verify that the generator breaker door is fully closed and mechanically latched. 2. Inspect the breaker door interlock switch for correct alignment and operation when the door is closed. 3. Check that the interlock actuator (plunger, cam, or magnet) properly engages the switch when the door is closed. 4. Inspect wiring from the breaker door interlock switch to Digital Input F for damage, loose connections, or open circuits. 5. Check interlock switch continuity and confirm it changes state correctly when the door is opened and closed. 6. Verify Digital Input F logic configuration (normally open / normally closed) matches the installed breaker door switch. 7. Inspect terminals and connectors for corrosion, moisture ingress, or poor terminal retention. 8. Secure the breaker door fully and confirm the interlock signal returns to the normal (inactive) state. 9. Clear fault codes and test genset operation to confirm the shutdown does not reoccur with the door closed.
Other:	



1.3.2.68 SPN 520314 FMI 31 - Digital Input J Electrical Trip Or Shutdown

Error Code:	1660079
Description:	16650079 - Digital Input J Electrical Trip Or Shutdown

Possible Cause:	The control system has detected that Digital Input J has been activated and configured as an electrical trip or shutdown input. This indicates an external or internal shutdown signal has been received, potentially caused by an external trip device, protection relay, safety interlock, wiring fault, or incorrect digital input configuration.
Service Action:	1. Review controller configuration to confirm the assigned function of Digital Input J. 2. Check fault history to determine when Digital Input J was activated in relation to the shutdown event. 3. Identify and inspect the external device or circuit connected to Digital Input J, such as protection relays, emergency stop circuits, breaker auxiliary contacts, or external safety systems. 4. Check wiring to Digital Input J for shorts to ground, open circuits, loose connections, or mechanical damage. 5. Verify correct operating state of the connected device (normally open / normally closed) matches controller configuration. 6. Inspect digital input terminals and connectors for corrosion, moisture ingress, or poor terminal retention. 7. Temporarily isolate or simulate the input (where permitted) to confirm whether the shutdown is caused by the external signal or internal controller logic. 8. Rectify wiring, configuration, or external device faults before clearing the shutdown. 9. After corrective action, clear fault codes and test genset operation to confirm Digital Input J remains inactive during normal running.
Other:	

**1.3.2.69 SPN 520413 FMI 9 - lost communication with ecm on engine subnet**

Error Code:	16653225
Description:	16653225 lost communication with ecm on engine subnet
Possible Cause:	The control system has detected a loss of communication with the Engine Control Module (ECM) on the engine subnet. This may be caused by loss of ECM power or ground, engine subnet CAN wiring faults, incorrect termination, connector or harness damage, ECM reset or failure, or a wider engine subnet communication issue.
Service Action:	1. Review fault history to determine when communication with the ECM on the engine subnet was lost and under what operating conditions. 2. Verify the ECM is powered and grounded correctly by checking supply voltage and ground integrity at the ECM connector. 3. Inspect engine subnet CAN high and CAN low wiring for damage, looseness, corrosion, or disconnection.

	4. Check engine subnet CAN termination resistance to confirm approximately 60 ohms with system power removed. 5. Inspect ECM connectors for bent pins, corrosion, moisture ingress, or poor terminal contact. 6. Check for additional engine subnet CAN faults or missing message DTCs that may indicate a broader communication issue. 7. Monitor engine subnet CAN voltages to verify correct signal levels and absence of excessive noise or dropouts. 8. Check for ECM resets or reboots caused by unstable power supply, poor grounding, or cranking voltage drop. 9. Verify system configuration to ensure the ECM is correctly assigned and enabled on the engine subnet. 10. After corrective action, clear fault codes and operate the engine to confirm stable communication with the ECM.
Other:	



1.3.2.70 SPN 520872 FMI 31 - LiveLink - SIM Card Failure

Error Code:	16667935
Description:	16667935 - LiveLink - SIM Card Failure

Possible Cause:	The LiveLink telematics system has detected a fault associated with the SIM card used for cellular communication. This may be caused by a missing or incorrectly installed SIM card, SIM card damage or expiry, deactivation or suspension by the service provider, incorrect APN or network configuration, poor cellular signal coverage, or an internal fault within the telematics control unit (TCU) SIM interface.
Service Action:	1. Review fault history to determine when the SIM card failure occurred and whether the condition is intermittent or permanent. 2. Verify that a SIM card is installed in the LiveLink or telematics module and that it is correctly seated. 3. Inspect the SIM card for physical damage, contamination, or corrosion. 4. Confirm with the service provider that the SIM card is active, valid, and not suspended or expired. 5. Verify correct APN, network, and telematics configuration parameters are programmed in the system. 6. Inspect the telematics control unit power supply, wiring, and connectors for damage or poor connections. 7. Check antenna connections and confirm adequate cellular signal strength at the installation location. 8. Substitute a known-good SIM card if available to determine whether the fault follows the SIM or remains with the module. 9. If the SIM card and configuration are confirmed correct, suspect a telematics control unit or SIM interface fault. 10. After corrective action, clear fault codes and confirm normal LiveLink communication is restored.
Other:	



1.3.2.71 SPN 521022 FMI 31 - Low Oil Pressure During Engine Running

Error Code:	16672735
Description:	16672735 - Low Oil Pressure During Engine Running
Possible Cause:	The engine control system has detected that engine oil pressure is below the minimum allowable limit while the engine is running. Possible causes include low engine oil level, incorrect oil grade or viscosity, oil leaks, restricted or blocked oil filter or pickup, oil pump malfunction, pressure relief valve fault, excessive internal engine wear, faulty oil pressure sensor, or wiring and connector issues affecting the oil pressure signal.
Service Action:	1. Review fault history and operating conditions to determine when low oil pressure was detected. 2. Immediately verify actual engine oil pressure using a mechanical gauge where possible. 3. Check engine oil level and ensure the correct oil grade and viscosity are being used. 4. Inspect the engine for external oil leaks and repair any leaks found. 5. Inspect the engine oil filter for blockage or restriction and replace if necessary. 6. Check the oil pickup strainer and oil galleries for blockage if accessible. 7. Verify correct operation of the oil pressure sensor and compare sensor readings with mechanical measurements. 8. Inspect wiring and connectors between the oil pressure sensor and ECU for damage, corrosion, or loose connections.

	9. Investigate internal engine components such as the oil pump, pressure relief valve, or bearing wear if oil pressure remains low. 10. After corrective action, clear fault codes and operate the engine to confirm oil pressure remains within specification during operation.
Other:	

JCB**1.3.2.72 SPN 521055 FMI 2 - Camshaft Position Sensor A Circuit Range / Performance**

Error Code:	16673762
Description:	16673762 - Camshaft Position Sensor A Circuit Range / Performance
Possible Cause:	The engine control system has detected that the Camshaft Position Sensor A signal is outside the expected range or does not correlate correctly with crankshaft position. This may be caused by a faulty camshaft position sensor, incorrect sensor installation, damaged or misaligned trigger wheel, wiring or connector faults, electrical interference, or mechanical timing deviation such as a stretched timing chain or incorrect valve timing.

Service Action:	1. Review fault history and operating conditions to determine when the camshaft position range or performance fault was detected. 2. Inspect the camshaft position sensor for physical damage, contamination, or incorrect installation depth. 3. Check wiring and connectors between Camshaft Position Sensor A and the ECU for damage, corrosion, loose connections, or intermittent opens. 4. Verify sensor supply voltage, signal voltage, and ground integrity at the sensor connector. 5. Inspect the camshaft trigger wheel (reluctor) for damage, looseness, contamination, or misalignment. 6. Compare camshaft position signal with crankshaft position signal using diagnostic tools to confirm correct correlation. 7. Check for mechanical timing issues such as timing chain stretch, slipped timing, or incorrect cam timing. 8. Monitor the camshaft position signal during cranking and engine operation for dropouts or implausible values. 9. Substitute a known-good camshaft position sensor if wiring and mechanical checks are within specification. 10. After corrective action, clear fault codes and operate the engine to confirm stable camshaft position signal and normal performance.
Other:	



1.3.2.73 SPN 521080 FMI 19 - CAN communication error: VGT Hardware

Error Code:	16674759

Description:	16674579 - CAN communication error: VGT hardware
Possible Cause:	The control system has detected a CAN communication error related to the Variable Geometry Turbocharger (VGT) hardware. This indicates loss of communication or invalid data between the engine ECU and the VGT actuator. Possible causes include CAN wiring faults, poor connector condition, loss of power or ground to the VGT actuator.
Service Action:	1. Review fault history to determine when the VGT communication error occurred and under what operating conditions. 2. Verify the VGT actuator is powered correctly by checking supply voltage and ground integrity at the actuator connector. 3. Inspect CAN high and CAN low wiring between the ECU and VGT actuator for damage, chafing, or loose connections. 4. Check connectors at the VGT actuator and ECU for bent pins, corrosion, moisture ingress, or poor terminal fit. 5. Measure CAN bus termination resistance to confirm approximately 60 ohms with system power removed. 6. Check for additional CAN communication or actuator-related DTCs indicating a wider network issue. 7. Monitor CAN bus voltages and signal quality to confirm stable communication without excessive noise or dropouts. 8. Confirm the VGT actuator responds to commands using diagnostic tools and check for missing or delayed feedback signals. 9. Inspect the actuator for physical damage or signs of overheating or water ingress. 10. If wiring, power supply, and CAN communication are correct, suspect an internal VGT actuator hardware failure. 11. After corrective action, clear fault codes and verify stable VGT operation and communication during engine operation.

Other:	



1.3.2.74 SPN 521084 FMI 19 - CAN communication error: VGT Spanlearn

Error Code:	16674707
Description:	16674707 - CAN communication error: VGT spanlearn
Possible Cause:	The control system has detected a communication error during the Variable Geometry Turbocharger (VGT) span learn process. This may be caused by CAN communication faults, loss of communication between the ECU and VGT actuator, unstable power or ground supply to the actuator, wiring or connector issues, mechanical binding of the VGT vanes, or a faulty VGT actuator preventing successful calibration.

Service Action:	1. Review fault history to determine when the VGT span learn error occurred and whether it happened during a commanded calibration. 2. Verify battery voltage and power supply are stable during the span learn process. 3. Inspect CAN communication wiring between the ECU and VGT actuator for damage, chafing, or poor connections. 4. Check connectors at the ECU and VGT actuator for corrosion, moisture ingress, or loose pins. 5. Check for additional CAN communication or actuator-related fault codes that may indicate a broader issue. 6. Use diagnostic tools to attempt a VGT span learn or calibration procedure and monitor actuator response. 7. Inspect the VGT actuator for correct operation and ensure it moves smoothly through its full range. 8. Check for mechanical binding or carbon buildup in the turbocharger vane mechanism. 9. Verify actuator power supply, ground, and control signals are within specification. 10. If wiring and mechanical operation are correct, suspect a faulty VGT actuator or internal actuator position feedback issue. 11. After corrective action, clear fault codes and perform a successful VGT span learn procedure to confirm repair.
Other:	



1.3.2.75 SPN 521325 FMI 14 - Interruption Level 2 Requested

Error Code:	16682414
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Description:	16682414 - Interruption Level2 Requested
Possible Cause:	Active engine fault Interruption Level 2 is not a root fault. It is a shutdown request issued by the controller when a critical engine, safety, or electrical protection fault has been detected. This DTC is always triggered by another active or logged fault that requires immediate controlled shutdown to protect the engine or alternator.
Service Action:	1. Do NOT treat Interruption Level 2 as the primary fault – it is a result of another initiating fault. 2. Access the controller fault/event history and identify the FIRST fault that occurred before Interruption Level 2 was requested. 3. Investigate the initiating fault based on its category: – Engine protection faults: low oil pressure, high coolant temperature, overspeed, engine speed signal loss. – Safety circuit faults: emergency stop activated, fire suppression interface, low coolant level switch, safety loop open. – Electrical protection faults: severe under/over voltage, frequency out of limits, CT or PT sensing failure. 4. Verify sensor readings using mechanical gauges where available (oil pressure, coolant temperature, RPM). 5. Inspect wiring and connectors related to shutdown and safety circuits for looseness, corrosion, damage, or moisture ingress. 6. After correcting the root cause fault, clear the fault history and retest the genset under controlled conditions.

Other:	
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1.3.2.76 SPN 521367 FMI 14 - EGR Level 1 Requested

Error Code:	16683758
Description:	16683758 - EGR Level1 Requested
Possible Cause:	1. EGR valve sticking due to soot/carbon buildup 2. Valve not opening/closing correctly 3. Actuator motor weak or jammed 4. Slow response compared to ECU command 5. EGR cooler partially blocked with soot 6. EGR piping restricted or leaking 7. Exhaust or intake restriction affecting flow 8. DPF backpressure influencing EGR performance 9. Intake or exhaust pressure sensor drift (MAP / P2 / P3 sensors) 10. Exhaust temperature sensor reading incorrectly 11. Sensor wiring faults causing incorrect feedback 12. Sensor mismatch leading ECU to think EGR is not working

Service Action:	EGR valve sticking due to soot/carbon buildup Valve not opening/closing correctly Actuator motor weak or jammed Slow response compared to ECU command ▪ Use diagnostics to monitor: ▪ EGR commanded position vs actual position ▪ Listen/observe valve operation during test cycle ▪ Remove and inspect EGR valve for: ▪ Heavy carbon deposits ▪ Mechanical sticking ▪ Clean valve carefully (if serviceable) ▪ If movement is restricted or inconsistent → replace EGR valve ▪ Re-run engine and confirm EGR response is stable EGR cooler partially blocked with soot EGR piping restricted or leaking Exhaust or intake restriction affecting flow DPF backpressure influencing EGR performance ▪ Check for related DTCs (DPF, boost pressure, intake pressure) ▪ Monitor: ▪ Intake manifold pressure vs expected values ▪ Inspect EGR pipework and cooler: ▪ Look for soot accumulation or restriction ▪ Check for exhaust leaks upstream/downstream of EGR ▪ Perform EGR flow test (if diagnostic tool supports it) ▪ Clean or replace blocked EGR cooler or pipes
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	Intake or exhaust pressure sensor drift (MAP / P2 / P3 sensors) Exhaust temperature sensor reading incorrectly Sensor wiring faults causing incorrect feedback Sensor mismatch leading ECU to think EGR is not working ▪ Check live sensor data: Intake pressure (MAP) Exhaust pressure (P2/P3) EGT sensors ▪ Compare readings with expected values: ▪ Engine OFF → pressures should match atmospheric ▪ Inspect and clean sensor ports (common soot blockage) ▪ Back-probe sensors: ▪ Verify 5V supply, ground, and signal ▪ Swap suspect sensors with known-good units if need Repair wiring or replace faulty sensors
Other:	0

1.3.2.77 SPN 521367 FMI 15 - EGR Level 1 Enacted

Error Code:	16683758
Description:	16683758 - EGR Level 1 Requested
Possible Cause:	1. EGR valve sticking due to soot/carbon buildup 2. Valve not opening/closing correctly 3. Actuator motor weak or jammed 4. Slow response compared to ECU command 5. EGR cooler partially blocked with soot 6. EGR piping restricted or leaking 7. Exhaust or intake restriction affecting flow 8. DPF backpressure influencing EGR performance 9. Intake or exhaust pressure sensor drift (MAP / P2 / P3 sensors) 10. Exhaust temperature sensor reading incorrectly 11. Sensor wiring faults causing incorrect feedback 12. Sensor mismatch leading ECU to think EGR is not working

Service Action:	EGR valve sticking due to soot/carbon buildup Valve not opening/closing correctly Actuator motor weak or jammed Slow response compared to ECU command ▪ Use diagnostics to monitor: ▪ EGR commanded position vs actual position ▪ Listen/observe valve operation during test cycle ▪ Remove and inspect EGR valve for: ▪ Heavy carbon deposits ▪ Mechanical sticking ▪ Clean valve carefully (if serviceable) ▪ If movement is restricted or inconsistent → replace EGR valve ▪ Re-run engine and confirm EGR response is stable EGR cooler partially blocked with soot EGR piping restricted or leaking Exhaust or intake restriction affecting flow DPF backpressure influencing EGR performance ▪ Check for related DTCs (DPF, boost pressure, intake pressure) ▪ Monitor: ▪ Intake manifold pressure vs expected values ▪ Inspect EGR pipework and cooler: ▪ Look for soot accumulation or restriction ▪ Check for exhaust leaks upstream/downstream of EGR ▪ Perform EGR flow test (if diagnostic tool supports it) ▪ Clean or replace blocked EGR cooler or pipes
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	Intake or exhaust pressure sensor drift (MAP / P2 / P3 sensors) Exhaust temperature sensor reading incorrectly Sensor wiring faults causing incorrect feedback Sensor mismatch leading ECU to think EGR is not working ▪ Check live sensor data: Intake pressure (MAP) Exhaust pressure (P2/P3) EGT sensors ▪ Compare readings with expected values: ▪ Engine OFF → pressures should match atmospheric ▪ Inspect and clean sensor ports (common soot blockage) ▪ Back-probe sensors: ▪ Verify 5V supply, ground, and signal ▪ Swap suspect sensors with known-good units if need Repair wiring or replace faulty sensors
Other:	0



1.3.2.78 SPN 521370 FMI 14 - Interruption Level 1 Requested

Error Code:	16683854
Description:	16683854 - Interruption Level1 Requested

Possible Cause:	• DEF Quality / DEF Dosing System Issue (Most Common Cause) • DEF quality sensor detecting low concentration • Blocked DEF injector / crystallisation in dosing line • Frozen or insufficiently heated DEF components • Low DEF flow due to pump issues • Air in DEF lines • NOx Sensor or SCR System Efficiency Problem • Failed upstream or downstream NOx sensor • SCR catalyst degraded or partially blocked • Exhaust leaks before SCR • DEF not being dosed correctly (leading to poor NOx reduction) • DEF Tank Level / Temperature / Sensor Fault • DEF tank level sensor faulty or reading low • DEF tank temperature sensor failure • Wiring harness damage or corrosion • Low tank level (depending on calibration threshold)
Service Action:	1. DEF Quality / DEF Dosing System Issue (Most Common Cause) 2. DEF quality sensor detecting low concentration 3. Blocked DEF injector / crystallisation in dosing line 4. Frozen or insufficiently heated DEF components 5. Low DEF flow due to pump issues 6. Air in DEF lines ▪ Inspect DEF tank for correct fluid (32.5% Urea ISO 22241). ▪ Use the controller to perform a DEF dosing pump priming cycle. ▪ Check DEF injector for white crystal build-up—clean if required. ▪ Verify DEF pump pressure meets spec during dosing test. ▪ Inspect DEF filter for blockage; replace if required. ▪ Confirm DEF is not frozen / heater circuits OK (look for related heater DTCs).

	1. NOx Sensor or SCR System Efficiency Problem 2. Failed upstream or downstream NOx sensor 3. SCR catalyst degraded or partially blocked 4. Exhaust leaks before SCR 5. DEF not being dosed correctly (leading to poor NOx reduction) ▪ Check for active DTCs related to NOx Sensor A/B. ▪ Inspect exhaust for leaks between turbo → DOC → SCR. ▪ Monitor NOx sensor readings at idle and at 50% load: ▪ ▪ Upstream NOx should be significantly higher than downstream. ▪ ▪ Perform SCR efficiency test (if supported by controller). ▪ If readings are erratic or flat-lined → suspect NOx sensor failure. 1. DEF Tank Level / Temperature / Sensor Fault 2. DEF tank level sensor faulty or reading low 3. DEF tank temperature sensor failure 4. Wiring harness damage or corrosion 5. Low tank level (depending on calibration threshold) ▪ Physically confirm DEF tank level. ▪ Check wiring to DEF tank head unit for corrosion (common at connectors). ▪ Read tank level + temperature values through the controller: ▪ ▪ If values are erratic or impossible, suspect sensor/harness. ▪ ▪ Inspect tank head unit for water ingress or cracks. ▪ Reset fault and monitor live data with engine running.
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Other:	
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1.3.2.79 SPN 521370 FMI 15 - Interruption Level 1 Enacted

Error Code:	16683855
Description:	16683855 - Interruption Level1 Enacted
Possible Cause:	The control system has enacted an Interruption Level 1 condition, indicating that a non-critical but actionable fault has been detected. This interruption is triggered when a monitored system parameter exceeds defined limits but does not yet require immediate shutdown. Common initiating causes include engine protection warnings, electrical parameter deviations, emissions-related faults, or external input conditions that persist beyond allowable thresholds.
Service Action:	1. Review fault and event history to identify the initial diagnostic trouble code that triggered the Interruption Level 1 enactment. 2. Do not treat Interruption Level 1 as the root cause; identify and diagnose the initiating fault. 3. Determine the fault category of the initiating DTC (engine, electrical, emissions, safety input, or communication).

	4. Inspect related sensors, wiring, and connectors associated with the initiating fault for damage, looseness, or contamination. 5. Verify sensor values and system parameters against manufacturer specifications. 6. Check whether the condition has been active continuously or intermittently under specific operating conditions. 7. Rectify the initiating fault before attempting to clear the interruption status. 8. Clear fault codes and monitor system operation to verify that the initiating fault does not reoccur. 9. Operate the engine or genset through normal load and operating conditions to confirm Interruption Level 1 does not re-enact.
Other:	



1.3.2.80 SPN 521377 FMI 14 - Inducement Status - Quality Level 1 Requested

Error Code:	16684078
Description:	16684078 - Inducement Status - Quality Level 1 Requested

Possible Cause:	The engine control system has determined that DEF quality or SCR system performance is below acceptable limits and has requested Inducement Quality Level 1. This is typically caused by incorrect or contaminated DEF, DEF concentration out of specification, DEF quality sensor fault, or SCR system operating conditions not meeting emissions requirements.
Service Action:	1. Check fault history to confirm which SCR or DEF-related diagnostic triggered the Quality Level 1 inducement request. 2. Verify DEF level is sufficient and that the correct ISO 22241 compliant DEF has been used. 3. Inspect DEF for contamination, dilution with water, crystallisation, or incorrect fluid type. 4. Check DEF quality sensor readings and compare values to manufacturer specification. 5. Inspect DEF quality sensor wiring and connectors for damage, corrosion, or moisture ingress. 6. Confirm DEF dosing system operation, including pump, lines, and injector, for blockage or leakage. 7. Verify exhaust temperature and SCR operating conditions are within normal operating range. 8. Rectify any active SCR or DEF system faults before clearing inducement-related codes. 9. After corrective action, clear faults and operate the engine through a complete drive or run cycle to confirm inducement level is removed.

Other:	



1.3.2.81 SPN 521377 FMI 15 - Inducement Status - Quality Level 1 Enacted

Error Code:	16684079
Description:	Generator Under Frequency Shutdown
Possible Cause:	The engine control system has enacted Inducement Quality Level 1 due to confirmed DEF quality or SCR system performance not meeting emissions requirements. This condition follows a previously requested inducement and is typically caused by incorrect, contaminated, or diluted DEF, repeated DEF quality faults, DEF quality sensor issues, or unresolved SCR system performance faults.

Service Action:	1. Review fault history to identify the SCR or DEF-related diagnostics that resulted in Quality Level 1 being enacted. 2. Verify DEF level is sufficient and confirm the fluid meets ISO 22241 specification. 3. Inspect DEF for contamination, dilution with water, crystallisation, or the presence of incorrect fluid. 4. Check DEF quality sensor readings for plausibility and compare values against manufacturer specification. 5. Inspect DEF quality sensor wiring and connectors for damage, corrosion, or moisture ingress. 6. Verify correct operation of the DEF dosing system including pump, lines, injector, and heaters. 7. Confirm SCR exhaust temperatures are within operating range to support proper DEF dosing and NOx reduction. 8. Rectify all active DEF, SCR, or emissions-related faults before attempting to clear the inducement status. 9. After corrective action, clear fault codes and operate the engine through a full run cycle to allow the system to confirm acceptable DEF quality and SCR performance.
Other:	



1.3.2.82 SPN 521379 FMI 14 - Inducement Status - Quality Warning Requested

Error Code:	16684142
Description:	16684142 - Inducement Status - Quality Warning Requested

Possible Cause:	The engine control system has detected a potential DEF quality or SCR system performance concern and has requested a Quality Warning inducement. This is an early-stage notification indicating that emissions-related parameters are trending out of specification, commonly caused by DEF concentration deviation, marginal DEF quality, sensor plausibility issues, or early SCR performance degradation
Service Action:	1. Review active and logged fault codes to identify SCR or DEF-related diagnostics associated with the quality warning request. 2. Verify DEF level is adequate and confirm the DEF used meets ISO 22241 specification. 3. Inspect DEF for signs of contamination, dilution with water, crystallisation, or incorrect fluid type. 4. Check DEF quality sensor readings and compare values against manufacturer specification. 5. Inspect DEF quality sensor wiring and connectors for damage, corrosion, or moisture ingress. 6. Verify correct operation of the DEF dosing system, including pump, injector, and dosing lines. 7. Confirm SCR exhaust temperatures are within the required operating range for effective NOx reduction. 8. Investigate and rectify any SCR or DEF-related faults before clearing the quality warning request. 9. After corrective actions, clear fault codes and operate the engine through a complete run cycle to confirm the quality warning does not progress to an enacted inducement level.
Other:	0

**1.3.2.83 SPN 521380 FMI 14 - Inducement Status - System Tampering Level 1 Requested**

Error Code:	16683758
Description:	16683758 - EGR Level1 Requested
Possible Cause:	1. EGR valve sticking due to soot/carbon buildup 2. Valve not opening/closing correctly 3. Actuator motor weak or jammed 4. Slow response compared to ECU command 5. EGR cooler partially blocked with soot 6. EGR piping restricted or leaking 7. Exhaust or intake restriction affecting flow 8. DPF backpressure influencing EGR performance 9. Intake or exhaust pressure sensor drift (MAP / P2 / P3 sensors) 10. Exhaust temperature sensor reading incorrectly 11. Sensor wiring faults causing incorrect feedback 12. Sensor mismatch leading ECU to think EGR is not working

Service Action:	EGR valve sticking due to soot/carbon buildup Valve not opening/closing correctly Actuator motor weak or jammed Slow response compared to ECU command ▪ Use diagnostics to monitor: ▪ EGR commanded position vs actual position ▪ Listen/observe valve operation during test cycle ▪ Remove and inspect EGR valve for: ▪ Heavy carbon deposits ▪ Mechanical sticking ▪ Clean valve carefully (if serviceable) ▪ If movement is restricted or inconsistent → replace EGR valve ▪ Re-run engine and confirm EGR response is stable EGR cooler partially blocked with soot EGR piping restricted or leaking Exhaust or intake restriction affecting flow DPF backpressure influencing EGR performance ▪ Check for related DTCs (DPF, boost pressure, intake pressure) ▪ Monitor: ▪ Intake manifold pressure vs expected values ▪ Inspect EGR pipework and cooler: ▪ Look for soot accumulation or restriction ▪ Check for exhaust leaks upstream/downstream of EGR ▪ Perform EGR flow test (if diagnostic tool supports it) ▪ Clean or replace blocked EGR cooler or pipes
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	Intake or exhaust pressure sensor drift (MAP / P2 / P3 sensors) Exhaust temperature sensor reading incorrectly Sensor wiring faults causing incorrect feedback Sensor mismatch leading ECU to think EGR is not working ▪ Check live sensor data: Intake pressure (MAP) Exhaust pressure (P2/P3) EGT sensors ▪ Compare readings with expected values: ▪ Engine OFF → pressures should match atmospheric ▪ Inspect and clean sensor ports (common soot blockage) ▪ Back-probe sensors: ▪ Verify 5V supply, ground, and signal ▪ Swap suspect sensors with known-good units if need Repair wiring or replace faulty sensors
Other:	0



1.3.2.84 SPN 521380 FMI 15 - Inducement Status - System Tampering Level 1 Enacted

Error Code:	16684175
Description:	16684175 - Inducement Status - System Tampering Level 1 Enacted

Possible Cause:	The engine control system has confirmed a system tampering condition and has enacted System Tampering Inducement Level 1. This indicates ongoing or unresolved emissions system integrity issues, such as missing, disconnected, bypassed, or manipulated SCR or DEF components, implausible emissions sensor data, repeated clearing of emissions faults without repair, or unauthorized hardware or software modifications.
Service Action:	1. Review active and logged fault codes to identify which emissions or SCR-related diagnostics resulted in the System Tampering Level 1 enactment. 2. Inspect all SCR and DEF system components for signs of removal, disconnection, bypassing, or physical modification. 3. Verify that all emissions-related sensors are present, connected, and reporting plausible values. 4. Inspect wiring harnesses and connectors for evidence of jumpers, bypass wiring, damage, or non-OEM modifications. 5. Confirm no unauthorized software changes, parameter edits, or non-approved calibrations have been applied to the engine or after treatment controller. 6. Verify DEF system operation including tank level, DEF quality, dosing function, and heater operation. 7. Rectify all active SCR, DEF, or emissions-related faults before attempting to clear the inducement status. 8. Clear fault codes and operate the engine through a complete run cycle to allow the control system to revalidate emissions system integrity. 9. If the inducement remains enacted with all faults corrected, follow OEM-required validation or reset procedures.
Other:	



1.3.2.85 SPN 521393 FMI 4 - Error for short to ground of backflow pump actuator powerstage

Error Code:	16684580
Description:	16684580 - Error for short to ground of backflow pump actuator powerstage
Possible Cause:	• Wiring Harness Short to Ground (Most Common) • Wiring rubbed through against engine block or chassis • DEF system harness exposed to heat or vibration • Melted insulation near exhaust components • Moisture ingress inside connectors leading to conductive paths • Pinched wiring in the DEF pump mounting area • Backflow Pump Actuator Shorted Internally • Actuator coil shorted and drawing too much current • Water or DEF fluid ingress inside the pump body • Corrosion at the actuator terminal pins • Internal connector failure • ECU Powerstage Fault (Rare but Possible) • Previous short circuit that overloaded ECU output • Water ingress into ECU casing • Poor ground reference causing powerstage stress • Overcurrent from defective actuator
Service Action:	1. Wiring Harness Short to Ground (Most Common) 2. Wiring rubbed through against engine block or chassis 3. DEF system harness exposed to heat or vibration

	4. Melted insulation near exhaust components 5. Moisture ingress inside connectors leading to conductive paths 6. Pinched wiring in the DEF pump mounting area ▪ Visually inspect the DEF pump harness from ECU → pump for rubbing, cuts, melted areas. ▪ Disconnect the backflow pump connector; turn ignition ON: ▪ If the fault clears, the wiring/actuator is the issue. ▪ Perform a continuity test to ground on each actuator wire (should be open circuit). ▪ Repair or replace damaged wiring and reseal with loom tape/heat-shrink. ▪ Ensure harness is clipped away from the exhaust and moving parts. 1. Backflow Pump Actuator Shorted Internally 2. Actuator coil shorted and drawing too much current 3. Water or DEF fluid ingress inside the pump body 4. Corrosion at the actuator terminal pins 5. Internal connector failure ▪ Disconnect the backflow pump. ▪ Measure coil resistance across the actuator pins: ▪ ▪ If value is significantly low (near 0Ω), the actuator is shorted internally. ▪ ▪ Inspect connector pins for white crystals (dried DEF), corrosion, or deformation. ▪ Swap in a known-good pump unit if available to confirm the diagnosis. ▪ Replace the DEF backflow pump if resistance is out of spec. 1. ECU Powerstage Fault (Rare but Possible) 2. Previous short circuit that overloaded ECU output 3. Water ingress into ECU casing
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	4. Poor ground reference causing powerstage stress 5. Overcurrent from defective actuator ▪ With pump disconnected, measure voltage at ECU control pins: ▪ If the fault still appears immediately, suspect ECU. ▪ Check ECU grounds — loose grounds can mimic short-to-ground faults. ▪ Inspect ECU connector for bent pins, corrosion, or water. ▪ If signal output is stuck low with connector removed → ▪ ☒ ECU powerstage failure is confirmed. ▪ Replace or repair ECU (depending on manufacturer policy).
Other:	



1.3.2.86 SPN 521451 FMI 15 - Inducement Status - Tank Level Level 1 Enacted

Error Code:	16686447
Description:	16686447 - Inducement Status - Tank Level Level 1 Enacted
Possible Cause:	The engine control system has confirmed that the DEF tank level has fallen below the configured Level 1 threshold and has enacted the corresponding inducement. This condition typically follows a prior tank level warning and is caused by low DEF level, failure to refill the DEF tank in a timely manner, inaccurate DEF level sensing, or a fault in the DEF level sensor or associated wiring.

Service Action:	1. Review fault and inducement history to confirm the progression to Tank Level Level 1 Enacted. 2. Check the actual DEF tank level and refill with ISO 22241 compliant DEF if the level is low. 3. Inspect the DEF tank level sensor for correct installation, contamination, or mechanical damage. 4. Compare the DEF level sensor reading shown in diagnostics with the known physical tank level. 5. Inspect wiring and connectors between the DEF level sensor and control system for damage, corrosion, or loose connections. 6. Check for DEF crystallisation, trapped air, or frozen DEF that may affect level measurement accuracy. 7. Verify DEF tank size, calibration, and configuration parameters are correct for the installed hardware. 8. Rectify any DEF level sensor or wiring faults before attempting to clear the inducement status. 9. After corrective action, clear fault codes and operate the engine to confirm the inducement status is removed.
Other:	



1.3.2.87 SPN 521452 FMI 14 - Inducement Status - Tank Level Level 2 Requested

Error Code:	16686478

Description:	16686478 - Inducement Status - Tank Level Level 2 Requested
Possible Cause:	The engine control system has detected that the DEF tank level has fallen below the configured Level 2 threshold and has requested a Tank Level Level 2 inducement. This condition is typically caused by low DEF level in the tank, failure to refill after prior warnings, inaccurate DEF level sensing, DEF level sensor fault, or wiring or connector issues associated with the DEF level measurement circuit.
Service Action:	1. Review fault and inducement history to confirm progression from Tank Level Warning or Level 1 to Level 2 requested. 2. Check the actual DEF tank level and refill with ISO 22241 compliant DEF if the level is low. 3. Inspect the DEF tank level sensor for correct installation, contamination, or mechanical damage. 4. Compare the DEF level sensor reading displayed by diagnostics with the known physical tank level. 5. Inspect wiring and connectors between the DEF level sensor and the control system for damage, corrosion, or poor terminal contact. 6. Check for DEF crystallisation, trapped air, or frozen DEF that may prevent accurate level detection. 7. Verify DEF tank size, calibration, and configuration parameters match the installed hardware. 8. Repair or replace any faulty DEF level sensor or wiring before attempting to clear the inducement request. 9. After corrective action, clear fault codes and operate the engine to confirm the inducement level clears or does not escalate.
Other:	



1.3.2.88 SPN 521460 FMI 0 - SCR fully blocked (plugged)

Error Code:	16686720
Description:	16686720 - SCR fully blocked (plugged)
Possible Cause:	The control system has detected that the SCR (Selective Catalytic Reduction) system is fully restricted or blocked, preventing effective exhaust gas flow and NOx reduction. This is typically caused by severe DEF crystallisation, excessive soot or ash loading within the catalyst, failed or incomplete regeneration events, long-term low load operation, dosing system faults, incorrect DEF quality, or physical blockage within the exhaust aftertreatment system
Service Action:	1. Review fault history to determine when the SCR blockage condition developed and check for related DTCs (DPF, NOx, DEF dosing). 2. Inspect exhaust system for visible damage, restriction, or collapsed sections downstream of the SCR catalyst. 3. Check for excessive DEF crystallisation within the dosing injector, mixing pipe, or SCR inlet. 4. Verify correct operation of the DEF dosing system including pump, injector, and supply lines. 5. Confirm DEF quality meets ISO 22241 specification and is not contaminated or incorrect fluid type. 6. Check SCR and exhaust temperatures to ensure they have been sufficient for proper operation and self-cleaning.

	7. Inspect NOx sensor readings upstream and downstream of the SCR for plausibility. 8. Check for soot or ash accumulation caused by prolonged low-load operation or failed regeneration events. 9. Perform a forced regeneration or SCR cleaning procedure if supported by the system. 10. If blockage persists, inspect the SCR catalyst internally and replace if severely restricted or damaged. 11. After corrective action, clear fault codes and operate the engine to confirm proper exhaust flow and SCR system performance.
Other:	

