

SERIES 3000 FAULT CODES

Sensor Faults

Overview

Series 3000 fault codes are assigned to sensor related faults. The following table shows the fault number, fault description, system severity level (SSL), isolation message, and comment for each fault. The troubleshooting procedure for each message follows the table.

Fault No	Fault Description	SSL	Isolation Message	Comment
3000	TET1 OP	2	Internal Warning	
3001	TET1 SH	2	Internal Warning	
3002	TET2 OP	2	Internal Warning	
3003	TET2 SH	2	Internal Warning	
3004	BOTH TET	3	Internal Fault	
3005	TET DELTA	2	Internal Warning	
3006	TCIN OP	2	Internal Warning	
3007	TCIN SH	2	Internal Warning	
3008	TCIN HI TEMP	2	Hi-Temp Warning	
3009	TCIN LO TEMP	2	Lo-Temp Warning	
3010	FUEL TEMP OP	2	Internal Warning	
3011	SPARE TC 1 SH	2	Internal Warning	Not Used
3012	SPARE TC 2 OP	2	Internal Warning	Not Used
3013	SPARE TC 2 SH	2	Internal Warning	Not Used
3014	BOARD TEMP HI	3	Hi-Temp Fault	
3015	BOARD TEMP LO	2	Lo-Temp Warning	
3016	BOARD TEMP OP	3	Internal Fault	
3017	BOARD TEMP SH	3	Internal Fault	
3018	PWR SUPPLY HI	2	Internal Warning	
3019	PWR SUPPLY LO	2	Internal Warning	
3020	SPEED DELTA	3	Internal Fault	
3021	PAMB FAILED	2	Internal Warning	
3022	PAMB SHORT	2	Internal Warning	Not Used
3023	PAMB LOW	2	HI-ALT Warning	

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Observe Safety Precautions - Refer to *Safety Instructions* for Details

Fault No	Fault Description	SSL	Isolation Message	Comment
3024	LO FUEL PRESS	3	Fuel Fault	
3025	HI FUEL PRESS	2	Fuel Warning	Not Used
3026	LO FUEL AIRPRS	3	Fuel Fault	
3027	HI FUEL AIRPRS	3	Fuel Fault	
3028	AA VLV STUCK	7	Fuel Fault	Not Used
3029	RFC AIR ASSIST	3	Fuel Fault	
3030	AA AIR PRESS HI	3	Fuel Fault	
3031	RFC LOW FL PRS	3	Fuel Fault	

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3000 Internal Warning TET1 OP

Turbine Exit Temperature Sensor 1 Open

System Severity Level 2

Turbine Exit Temperature (TET) thermocouple fault conditions are determined by feedback values outside of normal operating range. The software declares a thermocouple open when the feedback signal reads greater than 815 °C (1500 °F). If one thermocouple fails (open), the system will log a warning and continue operating, as long as the other thermocouple is still valid. If both thermocouples fail, then a 3004 fault is declared.

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	Too much fuel in engine	Troubleshoot other fuel faults if they exist.	Clear Faults (See Note below). Attempt to restart.
	Open/Loose connection	Check to make sure engine harness connections are tight at J1 and DB9.	Tighten engine harness connection.
	Faulty thermocouple sensor	Connect a known good thermocouple to system and verify accurate reading to determine if thermocouple needs replacement.	Replace Thermocouple.
	Damaged engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

NOTE	Faults may be cleared using the Display Panel or RS-232 interface. Rebooting the system is another method of clearing faults.
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Observe Safety Precautions - Refer to *Safety Instructions* for Details

3001 Internal Warning TET1 SH

Turbine Exit Temperature Sensor 1 Short

System Severity Level 2

Turbine Exit Temperature (TET) thermocouple fault conditions are determined by feedback values outside of normal operating range. The software declares a thermocouple shorted when the feedback signal reads less than 93.3 °C (200 °F). If one thermocouple fails (short), the system will log a warning and continue operating, as long as the other thermocouple is still valid. If both thermocouples fail, then a 3004 fault is declared.

Symptom	Probable Cause	Analysis	Repair Solution
Low temperature reading	Flameout after lightoff	Troubleshoot other fuel faults if they exist.	Clear Faults (See Note below). Attempt to restart.
	Debris or water in package	Inspect thermocouple and engine harness for any material that could short connections.	Clean engine harness.
	Faulty thermocouple sensor	Connect a known good thermocouple to system and verify accurate reading to determine if thermocouple needs replacement.	Replace Thermocouple.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty DPC Control Board	Circuitry on DPC Control Board has failed.	Replace DPC Control Board (See Work Instr. 513176).

NOTE	Faults may be cleared using the Display Panel or RS-232 interface. Rebooting the system is another method of clearing faults.
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Observe Safety Precautions - Refer to *Safety Instructions* for Details

3002 Internal Warning TET2 OP

Turbine Exit Temperature Sensor 2 Open

System Severity Level 2

Turbine Exit Temperature (TET) thermocouple fault conditions are determined by feedback values outside of normal operating range. The software declares a thermocouple open when the feedback signal reads greater than 815 °C (1500 °F). If one thermocouple fails (open), the system will log a warning and continue operating, as long as the other thermocouple is still valid. If both thermocouples fail, then a 3004 fault is declared.

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	Too much fuel in engine	Troubleshoot other fuel faults if they exist.	Clear Faults (See Note Below). Attempt to restart.
	Open/loose connection	Check to make sure engine harness connections are tight.	Tighten engine harness connection.
	Faulty thermocouple sensor	Connect a known good thermocouple to system and verify accurate reading to determine if thermocouple needs replacement.	Replace Thermocouple.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

NOTE	Faults may be cleared using the Display Panel or RS-232 interface. Rebooting the system is another method of clearing faults.
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Observe Safety Precautions - Refer to *Safety Instructions* for Details

3003 Internal Warning TET2 SH

Turbine Exit Temperature Sensor 2 Short

System Severity Level 2

Turbine Exit Temperature (TET) thermocouple fault conditions are determined by feedback values outside of normal operating range. The software declares a thermocouple shorted when the feedback signal reads less than 93.3 °C (200 °F). If one thermocouple fails (short), the system will log a warning and continue operating, as long as the other thermocouple is still valid. If both thermocouples fail, then a 3004 fault is declared.

Symptom	Probable Cause	Analysis	Repair Solution
Low temperature reading	Flameout after lightoff	Troubleshoot other fuel faults if they exist.	Clear Faults (See Note below). Attempt to restart.
	Debris or water in package	Inspect thermocouple and engine harness for any material that could short connections.	Clean engine harness.
	Faulty thermocouple sensor	Connect a known good thermocouple to system and verify accurate reading to determine if thermocouple needs replacement.	Replace Thermocouple.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

NOTE	Faults may be cleared using the Display Panel or RS-232 interface. Rebooting the system is another method of clearing faults.
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3004 Internal Fault BOTH TET

Both Turbine Exit Temperature Thermocouples Failed

System Severity Level 3

The software declares both thermocouples failed when TET1 and TET2 have failed either open or short circuit.

Symptom	Probable Cause	Analysis	Repair Solution
No thermocouple reading	Both sensors have failed	Other TET faults should be present in the system.	Check Incident Log and troubleshoot other TET faults.

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3005 Internal Warning TET DELTA

Turbine Exit Temperature Delta

System Severity Level 2

A TET Delta fault typically occurs from an unusual flame pattern or control board circuitry has failed. Readings from the redundant TET sensors should normally be close together. The software declares this fault when the difference between TET1 and TET2 exceeds 121 °C (250 °F).

Symptom	Probable Cause	Analysis	Repair Solution
Difference in two thermocouple sensor readings	Hard on load transient	If this is the only fault detected, it can happen with large airflow distribution.	Clear Faults (See Note below). Attempt to restart.
	Flameout after lightoff	Troubleshoot other fuel faults if they exist.	Troubleshoot other faults.
	Open/loose connection	Check to make sure engine harness connections are tight.	Tighten engine harness connection.
	Debris or water in package	Inspect thermocouple and engine harness for any material that could short connections.	Clean engine harness.
	Faulty thermocouple sensor	Connect a known good thermocouple to system and verify accurate reading on both sensors to determine if thermocouple needs replacement.	Replace Thermocouple.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

NOTE	Faults may be cleared using the Display Panel or RS-232 interface. Rebooting the system is another method of clearing faults.
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Observe Safety Precautions - Refer to *Safety Instructions* for Details

3006 Internal Warning TCIN OP

Compressor Inlet Thermistor Open

System Severity Level 2

The thermistor inputs are expected to measure within a specified range. Values outside this range indicate hardware circuitry problems. The software declares a Compressor Inlet Thermistor Open condition when it reads less than -51 °C (-60 °F).

Symptom	Probable Cause	Analysis	Repair Solution
Low temperature reading	Low ambient temperature	See system specifications.	Increase temperature where system is installed.
	Open or loose connection	Check to make sure engine harness connections are tight at DPC and connector to TCin.	Tighten engine harness connection.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Defective thermistor	Connect a known good thermistor to system and verify accurate ambient reading to determine if thermistor needs replacement.	Replace Thermistor.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3007 Internal Warning TCIN SH

Compressor Inlet Thermistor Short

System Severity Level 2

The thermistor inputs are expected to measure within a specified range. Values outside this range indicate hardware circuitry problems. The software declares a Compressor Inlet Thermistor Short condition when it reads higher than 93.3 °C (200 °F).

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	High ambient temperature	See system specifications.	Reduce temperature where system installed.
	Hot shutdown	Another fault has occurred resulting in a hot shutdown. Hot soak back to compressor section.	Troubleshoot other faults.
	Debris or water in package	Inspect thermistor and engine harness for any material that could short connections.	Clean engine harness.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty thermo-couple sensor	Connect known good thermistor to system and verify accurate ambient reading to determine if thermistor needs replacement.	Replace Thermistor.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3008 Hi-Temp Warning TCIN HI TEMP

Compressor Inlet Thermistor High Temperature

System Severity Level 2

An environmental temperature range exists for the product that should not be exceeded. The software declares this fault when it reads higher than 79.4 °C (175 °F).

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	High ambient temperature	See system specifications.	Reduce temperature where system is installed.
	Hot shutdown	Another fault has occurred resulting in a hot shutdown. Hot soak back to compressor section.	Troubleshoot other faults.
	Debris or water in package	Inspect thermistor and engine harness for any material that could intermittently short connections.	Clean engine harness.

3009 Lo-Temp Warning TCIN LO TEMP

Compressor Inlet Thermistor Low Temperature

System Severity Level 2

An environmental temperature range exists for the product that should not be exceeded. The software declares this fault when it reads less than -20 °C (-4 °F).

Symptom	Probable Cause	Analysis	Repair Solution
Low temperature reading	Low ambient temperature	See system specifications.	Increase temperature where system is installed.
	Open/loose connection	Check to make sure engine harness connections are tight.	Tighten engine harness connection.

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3010 Internal Warning FUEL TEMP OP

RFC Fuel Temperature Sensor Open

System Severity Level 2

Fuel device thermocouple fault conditions are determined by feedback values outside of normal operating range. The software declares the thermocouple open when the feedback signal reads greater than 815 °C (1500 °F).

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	Open/loose connection	Check to make sure engine harness connections are tight.	Tighten engine harness connection.
	Faulty thermocouple sensor	Connect a known good thermocouple to system and verify accurate reading to determine if thermocouple needs replacement.	Replace Thermocouple.
	Faulty engine harness	Inspect harness for intermittent connections.	Attempt to restart.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3014 Hi-Temp Fault BOARD TEMP HI

DPC Control Board Temperature High

System Severity Level 3

An environmental temperature range exists for the product that should not be exceeded. This fault is declared when the board temperature reads greater than 79.4 °C (175 °F).

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	Installed in a hot environment	Read specification and verify temperature of airflow to electronics is as specified for the product.	Provide cooling air at specified temperature.
	Low power supply voltage	Inadequate power supply voltage could cause false readings. Check power supply voltage to be 13.8V.	Investigate low power supply voltage problem. (See Fault Code 3019).
	Debris on DPC Control Board	Debris on board temperature thermistor could cause elevated temperatures with leakage current to ground.	Clean surface of DPC control board of debris.
	DPC heat sink fans failed	Verify heat sink fans are rotating when system is started.	Replace Heat Sink Fans.
	DPC vent fan failed	Verify vent fan is rotating when system is started.	Replace Vent Fan.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3015 Lo-Temp Warning BOARD TEMP LO

DPC Control Board Temperature Low

System Severity Level 2

An environmental temperature range exists for the product that should not be exceeded. The software declares this fault when the board temperature reads less than -20 °C (-4 °F).

Symptom	Probable Cause	Analysis	Repair Solution
Low temperature reading	Installed in a cold environment	Read the specification and verify the temperature of airflow to electronics is as specified for the product.	Provide cooling air at specified temperature.
	Low power supply voltage	Inadequate power supply voltage could cause false readings. Check power supply voltage to be 13.8V.	Investigate low power supply voltage problem. (See Fault Code 3019).
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

3016 Internal Fault BOARD TEMP OP

DPC Control Board Temperature Open

System Severity Level 3

Thermistor inputs are expected to measure within a specified range. Values outside this range indicate hardware circuitry problems. The software declares this fault when the board temperature reads less than -51 °C (-60 °F).

Symptom	Probable Cause	Analysis	Repair Solution
Low temperature reading	Installed in cold environment	Read the specification and verify the temperature of air flow to electronics is as specified for product.	Provide cooling air at specified temperature.
	Low power supply voltage	Inadequate power supply voltage could cause false readings. Check power supply voltage to be 13.8V.	Investigate low power supply voltage problem. (See Fault Code 3019).
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to Safety Instructions for Details

3017 Internal Fault BOARD TEMP SH

DPC Control Board Temperature Short

System Severity Level 3

Thermistor inputs are expected to measure within a specified range. Values outside this range indicate hardware circuitry problems. The software declares this fault when the board temperature reads greater than 93.3 °C (200 °F).

Symptom	Probable Cause	Analysis	Repair Solution
High temperature reading	Installed in hot environment	Read the specification and verify the temperature of air flow to electronics is as specified for product.	Provide cooling air at specified temperature.
	Low power supply voltage	Inadequate power supply voltage could cause false readings. Check power supply voltage to be 13.8V.	Investigate low power supply voltage problem. (See Fault Code 3019).
	Debris on DPC Control Board	Debris on the DPC Control Board could cause elevated temperatures with leakage current to ground.	Clean surface of DPC control board of debris.
	DPC heat sink fans failed	Verify heat sink fans are rotating when system is started.	Replace Heat Sink Fans.
	DPC vent fan failed	Verify vent fan is rotating when system is started.	Replace Vent Fan.
	Faulty DPC Control Board	DPC Control Board may need replacing.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3018 Internal Warning PWR SUPPLY HI

DPC Power Supply Voltage High

System Severity Level 2

This checks that the power supply voltage is operating in a range that is not harmful to other system components. The software declares a Power Supply High fault when the feedback signal reads greater than 27.5 Volts.

Symptom	Probable Cause	Analysis	Repair Solution
High Power Supply voltage reading	Measurement circuit failed	Voltage measured at Modem Power in the UCB does not read the same as feedback value reported.	Replace DPC Control Board (See Work Instr. 513176).
	Faulty BCT Power Board (Stand Alone only)	Power is being supplied in a Stand Alone configuration with the system in an idle state.	Replace BCT Power Board (See Work Instr. 513158).
	Faulty DPC Power Board	Power is being supplied from a running Stand Alone or Grid Connect system (BCT is not awake).	Replace DPC Power Board (See Work Instr. 440094).

3019 Internal Warning PWR SUPPLY LO

DPC Power Supply Voltage Low

System Severity Level 2

This checks that the power supply voltage is operating in a range that is not harmful to other system components. The software declares a Power Supply Low fault when the feedback signal reads less than 21.8 Volts.

Analysis	Probable Cause	Analysis	Repair solution
Low Power Supply voltage reading	Measurement circuit failed	Voltage measured at Modem Power in the UCB does not read the same as feedback value reported.	Replace DPC Control Board (See Work Instr. 513176).
	Faulty BCT Power Board (Stand Alone only)	Power is being supplied from the BCT in a Stand Alone configuration with the system in an idle state.	Replace BCT Power Board (See Work Instr. 513158).
	Faulty DPC Power Board	Power is being supplied from a running Stand Alone or Grid Connect system (BCT is not awake).	Replace DPC Power Board (See Work Instr. 440094).

Observe Safety Precautions - Refer to Safety Instructions for Details

3020 Internal Fault SPEED DELTA

Engine Speed Delta Exceeded

System Severity Level 3

The Speed Delta conditions detect when the shaft accelerates at speeds not physically possible by mechanical parts. This usually occurs when the shaft breaks or speed sensor fails. The software declares a Speed Delta Exceeded fault when the current speed sample is greater than the last recorded speed by more than 10,000 RPM.

Symptom	Probable Cause	Analysis	Repair Solution
Erratic zero cross circuit speed readings	Grounding	An improperly grounded system will create noise on this zero cross circuit.	Configure system according to grounding specifications.
	Loose internal cable connection in DPC	Loose internal cable connection will prevent signal from reaching control board.	Tighten harness between J12 on DPC Control Board and J8 on DPC Power Board.
	Loose generator leads	Loose generator leads will create an intermittent signal.	Tighten generator leads at generator and DPC inductors.
	DPC Control Board Circuit or DPC Power Board Circuit	Measurement circuitry in the DPC has failed.	Contact Capstone Technical Support.

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3021 Internal Warning PAMB FAILED

Ambient Pressure Sensor Failed

System Severity Level 2

Ambient Pressure inputs are expected to measure within a specified range. Values outside this range indicate hardware circuitry problems. A value greater than 117.24 kPa (17.0 psia) or less than 27.59 kPa (4.0 psia) causes an ambient pressure open condition to be declared. The system will continue operating using the default value of 101.33 kPa (14.696 psia).

Recommended Spare Parts

- DPC Control Board
- UCB
- Option Harness

Symptom	Probable Cause	Analysis	Repair Solution
High pressure reading	Installed at low altitude	See system specifications for ambient pressure range.	Reduce pressure where system installed.
Low pressure reading	Installed at high altitude	See system specifications for ambient pressure range.	Increase pressure where system installed.
No power to sensor	E-Stop jumper not installed	Sensor power is provided through switched power where both Global and Local E-Stop must have contact closure.	Make sure contact is made on both Global and Local E-stop connections on the UCB.
	Engine not rotating at start-up, or engine over/under speed.	Check for other faults - For example, 10039.	Troubleshoot other faults.
	Option Cable not connected	Power to the sensor is provided through the Option cable that connects between the DPC (J6) and UCB (J8). Verify continuity between DPC (J6) and UCB (J8).	Secure connections of Option Cable at UCB and DPC Option Port.
	Option Cable failure	Use a DMM and verify that a voltage of greater than 10 volts is present across pins A3 (PWR) and A6 (GND) of J8 on the Option Cable. Ensure the DPC is communicating with the UCB by toggling the Output Relays and verifying the relays are opening and closing (monitor the LED or measure the resistance of the relay).	Replace Option Cable.

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Observe Safety Precautions - Refer to *Safety Instructions* for Details

3021 Internal Warning PAMB FAILED (Cont'd)

Symptom	Probable Cause	Analysis	Repair Solution
No power to sensor (Continued)	No power from DPC	Check diode D20 on DPC Control Board to see if not lit.	Replace DPC Control Board (See Work Instr. 513176).
	Failed sensor	Power is reaching the board, but either the voltage supply or sensor has failed on the board. Ensure the DPC is communicating with the UCB by toggling the Output Relays and verifying the relays are opening and closing (monitor the LED or measure the resistance of the relay).	Replace UCB (See Work Instr. 440012).
	Input diode shorted in DPC	Diode is either pulling up or pulling down signal from sensor.	Replace DPC Control Board (See Work Instr. 513176).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3023 Hi-Alt Warning PAMB LOW

Ambient Pressure Low

System Severity Level 2

This checks that the ambient pressure is sufficient for system components to operate normally. The software declares an Ambient Pressure Low fault when the feedback signal reads less than 55 kPa (8.0 psia).

Symptom	Probable Cause	Analysis	Repair Solution
Low pressure reading	Installed at high altitude	See system specifications for ambient pressure range.	Increase pressure where system installed.
	Failed sensor	Power is reaching the board, but either voltage supply or sensor has failed on board.	Replace UCB (See Work Instr. 440012).
	Input diode shorted in DPC	Diode is either pulling up or pulling down signal from sensor.	Replace DPC Control Board (See Work Instr. 513176).

3024 Fuel Fault LO FUEL PRESS

Low Fuel Pressure Fault

System Severity Level 3

This fault is only detected when a Rotary Flow Compressor (RFC) fuel system is installed and the engine is operating in the run or load states. The software declares a Low Fuel Pressure Fault when the RFC inlet fuel pressure signal reads less than 6.895 kPag (1 psig).

Symptom	Probable Cause	Analysis	Repair Solution
Low fuel inlet pressure reading	Low fuel supply pressure	Some software versions may report this fault when the RFC systems are not provided with the specified fuel pressure.	Increase Fuel Supply Pressure to meet product specification.

Observe Safety Precautions - Refer to Safety Instructions for Details

3026 Fuel Fault LO FUEL AIRPRS

Low Fuel Air Assist Pressure

System Severity Level 3

The Low Fuel Air Assist Pressure fault is reported when the air pressure does not exceed 55 kPag (8.0 psig) after 10 seconds while in the liquid fuel open loop light state.

Symptom	Probable Cause	Analysis	Repair Solution
RFC Device not locked	Intra cable connection	Software expects external air pressure to be supplied when no RFC assist is found.	Secure RFC Intra cable.
Low Air Assist pressure reading	Failed pressure transducer	Pressure transducer does not supply RFC with correct pressure reading.	Replace pressure transducer.
	RFC Controller	Pressure sensor reading circuitry on RFC has failed.	Replace RFC Controller (See Work Instr. 440018).
RFC does not rotate	Loose RFC power connection	Connection in the DPC at terminals E13 (RFC+) and E12 (RFC-) are not tight, or connector at J5 on RFC is not secure.	Tighten and secure high power cable connections.
	Loose motor drive cable	Make sure connection from RFC controller to RFC pump is secure.	Secure motor drive cable connections.
	DPC fuses failed	Check fuses F1 and F2 and DPC Power Board to make sure high voltage is supplied to RFC.	Replace DPC fuses.
	RFC Pump seized	Remove plate covering RFC shaft and attempt to rotate by hand. Seized if shaft does not rotate easily.	Replace RFC Pump (See Work Instr. 440017).
	RFC Controller	Pressure sensor reading circuitry on RFC has failed.	Replace RFC Controller (See Work Instr. 440018).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3027 Fuel Fault HI FUEL AIRPRS

High Fuel Air Assist Pressure

System Severity Level 3

The high air assist pressure fault is reported when the air pressure exceeds 138 kPag (20 psig) for 10 seconds while in the liquid fuel open loop light state.

Symptom	Probable Cause	Analysis	Repair Solution
High Air Assist pressure reading	Loose RFC pressure cable	When cable connection is not made, RFC pressure reading will be high.	Secure RFC pressure cable.
	Failed pressure transducer	Pressure transducer does not supply RFC with correct pressure reading.	Replace pressure transducer.
	Failed RFC pressure cable	Connections are secure, but signals are not transmitted correctly.	Replace RFC pressure cable.
	RFC Controller	Pressure sensor reading circuitry on RFC has failed.	Replace RFC Controller (See Work Instr. 440018).

Observe Safety Precautions - Refer to *Safety Instructions* for Details

3029 Fuel Fault RFC AIR ASSIST

Rotary Flow Compressor Air Assist Failure

System Severity Level 3

This fault is only detected when a Rotary Flow Compressor (RFC) fuel system is installed. The software declares this fault when the RFC can not reach a commanded pressure ± 13.8 kPag (± 2.0 psig) within 10 seconds.

Symptom	Probable Cause	Analysis	Repair Solution
RFC device not locked	Intra cable connection	Software expects external air pressure to be supplied when no RFC assist is found.	Secure RFC Intra cable.
	Communication failure	After start is in progress, the device loses communication with system controller (DPC).	Unplugging the Display device may be a work around for a temporary problem.
RFC Controller failure	RFC Controller PM not programmed properly	RFC not programmed as a liquid controller.	Reprogram RFC Controller PM.
	Incorrect RFC Controller	Check RFC Controller for correct Part Number: -1XX for Ball Bearing RFC -2XX for Liquid Fuel RFC -3XX for Foil Bearing RFC	Replace RFC Controller (See Work Instr. 440018).
Incorrect Air Assist pressure reading	Loose RFC pressure cable	When cable connection is not made RFC pressure reading will be high.	Secure RFC pressure cable.
	Check Valve installed backwards	Inspect the Check Valve to pump installation. If it is installed backwards, it will block any air assist to the turbine.	Reinstall Check Valve correctly.
	Failed pressure transducer	Pressure transducer does not supply RFC with correct pressure reading.	Replace pressure transducer.
	Failed RFC pressure cable	Connections are secure, but signals are not transmitted correctly.	Replace RFC pressure cable.
	RFC Controller	Pressure sensor reading circuitry on RFC has failed.	Replace RFC Controller (See Work Instr. 440018).

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Observe Safety Precautions - Refer to Safety Instructions for Details

3029 Fuel Fault RFC AIR ASSIST (Continued)

Symptom	Probable Cause	Analysis	Repair Solution
RFC does not rotate	Loose RFC power connection	Connection in the DPC at terminals E13 (RFC+) and E12 (RFC-) are not tight, or connector at J5 on RFC is not secure.	Tighten and secure high power cable connections.
	Loose Motor drive cable	Make sure connection from RFC controller to RFC pump is secure.	Secure motor drive cable connections.
	DPC fuses failed	Check fuses F1 and F2 and DPC Power Board to make sure high voltage is supplied to RFC.	Replace DPC fuses.
	RFC Pump seized	Remove plate covering RFC shaft and attempt to rotate by hand. Seized if shaft does not rotate easily.	Replace RFC Pump (See Work Instr. 440017).
	RFC Controller	Pressure sensor reading circuitry on RFC has failed.	Replace RFC Controller (See Work Instr. 440018).

3030 Fuel Fault AA AIR PRESS HI

Air Assist Air Pressure High

System Severity Level 3

This fault applies to HEV systems. The fault is declared when the inlet air pressure exceeds 414 kPag (60 psig).

Symptom	Probable Cause	Analysis	Repair Solution
Unstable system performance	Air supply malfunction	Check air supply.	Fix air supply problem.
	Pressure transducer malfunction	Check the pressure transducer.	Replace pressure transducer.

Observe Safety Precautions - Refer to Safety Instructions for Details

3031 Fuel Fault RFC LOW FL PRS

Rotary Flow Compressor Low Fuel Pressure

System Severity Level 3

This fault is only detected when a Rotary Flow Compressor (RFC) fuel system is installed. The software declares this fault when the inlet fuel pressure falls below the low pressure fault limit of 1.72 kPag (0.25 psig).

Symptom	Probable Cause	Analysis	Repair Solution
RFC device not locked	Communication failure	After start is in progress, the device loses communication with system controller (DPC)	Unplugging the Display Panel may be a work-around for a temporary problem.
Fuel controller not configured for application	RFC Controller PM not programmed properly	Check RFC Controller Dash Number on Display Panel/CRMS against Dash Number on RFC Controller label: -1XX for Ball Bearing RFC -2XX for Liquid Fuel RFC -3XX for Foil Bearing RFC	Re-program RFC Controller PM.
Incorrect fuel pressure reading	Low fuel supply	Low inlet fuel supply.	Increase fuel supply.
		Fuel not turned on.	Open external fuel shutoff.
	Failed pressure switch	Pressure switch does not supply RFC with correct reading.	Replace pressure switch.
	Failed RFC pressure cable	Connections are secure, but signals are not transmitted correctly.	Replace RFC pressure cable.
RFC Controller	Pressure sensor reading circuitry on RFC has failed.	Replace RFC Controller (See Work Instr. 440018).	

Observe Safety Precautions - Refer to Safety Instructions for Details