All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						U1A Offline	246	INVERTER SGCT FAULT This fault will only occur during the initial contactor closure and the diagnostic sequence after a start command. The inverter monitors the state of the feedback before a gate pulse is given, and monitors the feedback after a gate pulse has been sent. The SGCT has smart diagnostics, so the feedback may indicate short before firing, and if the pulse is received and the device is really shorted, the diagnostic will toggle the feedback to let you know the problem is with the device, or the power supply for that device. The firmware now completes a diagnostics sequence immediately after any drive reset, with the goal of detecting faults before any destructive action is taken from the next action.	• Complete a resistance check per the instructions in the manual. • NOTE: SGCTs may not have completely shorted, and still could read in the kΩ range. Any devices with low suspect readings should be changed. • Check the LED status of the SGCT gate driver card for abnormal readings. • Complete a Gating Test mode check on the devices. • Verify the associated 20V power supply is powered and active, range 19.6. . . 20.4V • Verify all the power connections to the SGCT firing card are seated properly.
X						U1B Offline	252		
X						U1C Offline	258		
X						U4A Offline	249		
X						U4B Offline	255		
X						U4C Offline	261		
X						V3A Offline	248		
X						V3B Offline	254		
X						V3C Offline	260		
X						V6A Offline	251		
X						V6B Offline	257		
X						V6C Offline	263		
X						W2A Offline	247		
X						W2B Offline	253		
X						W2C Offline	259		
X						W5A Offline	250		
X						W5B Offline	256		
X						W5C Offline	262		

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						U1A DiagFbkLoss	210	**INVERTER SGCT FAULT** (Feedback Fiber-Optic Loss) This fault will only occur during the initial contactor closure and the diagnostic sequence after a start command. The inverter monitors the state of the feedback before a gate pulse is given, and monitors the feedback after a gate pulse has been sent. This fault occurs when the feedback was low from the device before gating, and is still low from the device after gating. The drive then assumes the feedback must be the problem. The firmware now completes a diagnostics sequence immediately after any drive reset, with the goal of detecting faults before any destructive action is taken from the next action	• Check that the fiber-optic cables are seated properly in the optical interface board and the SGCT firing card. • Check that the fiber-optic cable is not pinched or damaged. • Complete a resistance check per the instructions in the manual. • NOTE: SGCTs may not have completely shorted, and still could read in the kΩ range. Any devices with low suspect readings should be changed. • Check the LED status of the SGCT gate driver card for abnormal readings. • Complete a Gating Test mode check on the devices. • Verify the associated 20V power supply is powered and active. • Verify all the power connections to the SGCT firing card are seated properly. • This fault code may indicate a non-operational Motor Filter Capacitor (MFC). Refer to the Filter Capacitor section in the PowerFlex 7000 user manual for MFC inspection and testing. Operating a synchronous transfer system (specifically during the 'Transfer to Drive' operation, also known as the de-sync operation) with a non-operational MFC can lead to serious personal injury and/or property damage.
X						U1B DiagFbkLoss	216		
X						U1C DiagFbkLoss	222		
X						U4A DiagFbkLoss	213		
X						U4B DiagFbkLoss	219		
X						U4C DiagFbkLoss	225		
X						V3A DiagFbkLoss	212		
X						V3B DiagFbkLoss	218		
X						V3C DiagFbkLoss	224		
X						V6A DiagFbkLoss	215		
X						V6B DiagFbkLoss	221		
X						V6C DiagFbkLoss	227		
X						W2A DiagFbkLoss	211		
X						W2B DiagFbkLoss	217		
X						W2C DiagFbkLoss	223		
X						W5A DiagFbkLoss	214		
X						W5B DiagFbkLoss	220		
X						W5C DiagFbkLoss	226		

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						U1A Gating Loss	228	**INVERTER SGCT FAULT** (Gating Fiber-Optic Loss) This fault will only occur during the initial contactor closure and the diagnostic sequence after a start command. The inverter monitors the state of the feedback before a gate pulse is given, and monitors the feedback after a gate pulse has been sent. This fault occurs when the feedback was high from the device before gating, and is still high from the device after gating. The drive then assumes the gating pulse must not have reached the device. The firmware now completes a diagnostics sequence immediately after any drive reset, with the goal of detecting faults before any destructive action is taken from the next action	• Check that the fiber-optic cables are seated properly in the optical interface board and the SGCT firing card. • Check that the fiber-optic cable is not pinched or damaged. • Verify that the connection between the DPM and OIB is correctly installed. • Complete a resistance check per the instructions in the manual. • NOTE: SGCTs may not have completely shorted, and still could read in the kΩ range. Any devices with low suspect readings should be changed. • Check the LED status of the SGCT gate driver card for abnormal readings. • Complete a Gating Test mode check on the devices. • Verify the associated 20V power supply is powered and active. • Verify all the power connections to the SGCT firing card are seated properly.
X						U1B Gating Loss	234		
X						U1C Gating Loss	240		
X						U4A Gating Loss	231		
X						U4B Gating Loss	237		
X						U4C Gating Loss	243		
X						V3A Gating Loss	230		
X						V3B Gating Loss	236		
X						V3C Gating Loss	242		
X						V6A Gating Loss	233		
X						V6B Gating Loss	239		
X						V6C Gating Loss	245		
X						W2A Gating Loss	229		
X						W2B Gating Loss	235		
X						W2C Gating Loss	241		
X						W5A Gating Loss	232		
X						W5B Gating Loss	238		
X						W5C Gating Loss	244		

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						2U1A Offline	318	**PWM RECTIFIER SGCT FAULT** This fault will occur during the initial contactor closure, the diagnostic sequence after a start command, or the diagnostic sequence after a stop command. The rectifier monitors the state of the feedback before a gate pulse is given, and monitors the feedback after a gate pulse has been sent. The SGCT has smart diagnostics, so the feedback may indicate short before firing, and if the pulse is received and the device is really shorted, the diagnostic will toggle the feedback to let you know the problem is with the device, or the power supply for that device. The firmware now completes a diagnostics sequence immediately after any drive reset, with the goal of detecting faults before any destructive action is taken from the next action. The main example of this is closing the input contactor on a shorted bridge.	• Complete a resistance check per the instructions in the manual. • NOTE: SGCTs may not have completely shorted, and still could read in the kΩ range. Any devices with low suspect readings should be changed. • Check the LED status of the SGCT gate driver card for abnormal readings. • Complete a Gating test mode check on the devices. • Verify the associated 20V power supply is powered and active. • Verify all the power connections to the SGCT firing card are seated properly.
X						2U1B Offline	324		
X						2U1C Offline	330		
X						2U4A Offline	321		
X						2U4B Offline	327		
X						2U4C Offline	333		
X						2V3A Offline	320		
X						2V3B Offline	326		
X						2V3C Offline	332		
X						2V6A Offline	323		
X						2V6B Offline	329		
X						2V6C Offline	335		
X						2W2A Offline	319		
X						2W2B Offline	325		
X						2W2C Offline	331		
X						2W5A Offline	322		
X						2W5B Offline	328		
X						2W5C Offline	334		

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						2U1A DiagFbkLoss	282	**PWM RECTIFIER SGCT FAULT** (Feedback Fiber-Optic Loss) This fault will occur during the initial contactor closure, the diagnostic sequence after a start command, or the diagnostic sequence after a stop command. The rectifier monitors the state of the feedback before a gate pulse is given, and monitors the feedback after a gate pulse has been sent. This fault occurs when the feedback was low from the device before gating, and is still low from the device after gating. The drive then assumes the feedback must be the problem. The firmware now completes a diagnostics sequence immediately after any drive reset, with the goal of detecting faults before any destructive action is taken from the next action	• Verify that the feedback fiber-optic cable from the SGCT to the FOI board is not damaged or disconnected. • Verify that the gate pulse has been received by the SGCT board using Gating test mode. • Complete a resistance check described in Chapter 4, checking the devices, sharing resistors, and snubber circuitry. • Replace all faulty components. • It is likely that the feedback fiber-optic cable is not plugged in or has been damaged.
X						2U1B DiagFbkLoss	288		
X						2U1C DiagFbkLoss	294		
X						2U4A DiagFbkLoss	285		
X						2U4B DiagFbkLoss	291		
X						2U4C DiagFbkLoss	297		
X						2V3A DiagFbkLoss	284		
X						2V3B DiagFbkLoss	290		
X						2V3C DiagFbkLoss	296		
X						2V6A DiagFbkLoss	287		
X						2V6B DiagFbkLoss	293		
X						2V6C DiagFbkLoss	299		
X						2W2A DiagFbkLoss	283		
X						2W2B DiagFbkLoss	289		
X						2W2C DiagFbkLoss	295		
X						2W5A DiagFbkLoss	286		
X						2W5B DiagFbkLoss	292		
X						2W5C DiagFbkLoss	298		

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						2U1A Gating Loss	300	**PWM RECTIFIER SGCT FAULT** (Gating Fiber-Optic Loss) This fault will occur during the initial contactor closure, the diagnostic sequence after a start command, or the diagnostic sequence after a stop command. The rectifier monitors the state of the feedback before a gate pulse is given, and monitors the feedback after a gate pulse has been sent. This fault occurs when the feedback was high from the device before gating, and is still high from the device after gating. The drive then assumes the gating pulse must not have reached the device. The firmware now completes a diagnostics sequence immediately after any drive reset, with the goal of detecting faults before any destructive action is taken from the next action	• Check that the fiber-optic cables are seated properly in the optical interface board and the SGCT firing card. • Check that the fiber-optic cable is not pinched or damaged. • Complete a resistance check per the instructions in the manual. • NOTE: SGCTs may not have completely shorted, and still could read in the kΩ range. Any devices with low suspect readings should be changed. • Check the LED status of the SGCT gate driver card for abnormal readings. • Complete a Gating test mode check on the devices. • Verify all the power connections to the SGCT firing card are seated properly.
X						2U1B Gating Loss	306		
X						2U1C Gating Loss	312		
X						2U4A Gating Loss	303		
X						2U4B Gating Loss	309		
X						2U4C Gating Loss	315		
X						2V3A Gating Loss	302		
X						2V3B Gating Loss	308		
X						2V3C Gating Loss	314		
X						2V6A Gating Loss	305		
X						2V6B Gating Loss	311		
X						2V6C Gating Loss	317		
X						2W2A Gating Loss	301		
X						2W2B Gating Loss	307		
X						2W2C Gating Loss	313		
X						2W5A Gating Loss	304		
X						2W5B Gating Loss	310		
X						2W5C Gating Loss	316		

Spare Parts

This appendix lists the available spare parts for the PowerFlex® 7000 medium voltage drive.

Components and Related Part Numbers

Item	Description	Part Number
Batteries	DPM Battery	346567-Q01
Control Boards		
ACB	Analog Control Board for 18 Pulse Drive	80190-560-01-R
ACB	Analog Control Board for NON 18 Pulse Drive	80190-560-02-R
DPM	Drive Processor Board	80190-580-01-R
XIO	External Input / Output board (120…240V AC)	80190-300-01-R
XIO	External Input / Output board (12…24V AC)	80190-300-02-R
Power Electronics		
SGCT single device		
400A	Single 400A SGCT	81004-286-51-R
800A	Single 800A SGCT	81001-450-51-R
1500A	Single 1500A SGCT	81001-451-61-R
1750A	Single 1750A SGCT	81001-451-71-R
SGCT Matched set of two		
400A	Matched set of two 400A SGCT	81004-286-52-R
800A	Matched set of two 800A SGCT	81001-450-52-R
1500A	Matched set of two 1500A SGCT	81001-451-62-R
1750A	Matched set of two 1750A SGCT	81001-451-72-R
SGCT Matched set of three		
400A	Matched set of three 400A SGCT	81004-286-53-R
800A	Matched set of three 800A SGCT	81001-450-53-R
1500A	Matched set of three 1500A SGCT	81001-451-63-R
1750A	Matched set of three 1750A SGCT	81001-451-73-R
SGCT Matched set of four		
1750A	Matched set of four 1750A SGCT, marine drive Dynamic Brake	81001-451-74-R
SCR single device		
350A	Single 350A SCR	81001-335-71-R
800A	Single 800A SCR	81003-437-51-R