All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						Input Prot'n #1	32	Standard external fault/warning input included allowing the end-user to install a protective relay (for example, input feed protection relay) auxiliary contact that can activate a drive fault or warning, depending on configuration of InputProt1 Class (P440).	• Check device responsible for the auxiliary contact to this input and investigate the fault indicated by the device's fault message. • Investigate internal and external causes for this fault code. • Check the 120V signal through the external device. • Check the XIO board inputs and parameter status bits. • For firmware revisions 10.002 and earlier: If more than one of the following faults appear with the same time stamp (P32…37), check the externally-supplied 120V UPS is shut off or has voltage sag. • Verify there is voltage to AC input #4 on the ACB board.
X						InputProt'n #2	36	Standard external fault/warning input included allowing the end-user to install a protective relay (for example, input feed protection relay) auxiliary contact that can activate a drive fault or warning, depending on configuration of InputProt2 Class (P444).	• Check device responsible for the auxiliary contact to this input and investigate the fault indicated by the device's fault message. • Investigate internal and external causes for this fault code. • Check the 120V signal through the external device. • Check the XIO board inputs and parameter status bits. • **REVISION 9003 and higher,** this input is dedicated to line filter capacitor protection. An open circuit on this input will trigger the line filter capacitor protection. For additional information, see fault code 135 • For firmware revisions 10.002 and earlier: If more than one of the following faults appear with the same time stamp (P32…37), check the externally-supplied 120V UPS is shut off or has voltage sag. • Verify there is voltage to AC input #4 on the ACB board.
X						Inv A1 Fault	677	Inverter A1 fault: The inverter OIBBS diagnostic subsystem has detected a fault.	• Ensure the OIB2s are installed in the OIBBS. • Cycle the control power. • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare parts for replacement.
X						Inv A1 PwrSupply	678	Inverter A1 power supply out of range: The inverter OIBBS diagnostic subsystem has detected a fault. A1 boost converter output voltage is out of range.	• Ensure OIB2s are installed in the OIBBS. • Cycle the control power. • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare parts for replacement.
X						InvA2D Convrsion	189	This fault indicates that the analog to digital converters on the ACB were not able to completely transmit the data to the slave processor using the DMA within the sampling period.	• Cycle control power to see if the fault remains, and replace the ACB or DPM.
X						Inv A2GateBufFlt	679	Inverter A2 gate buffer fault: The inverter OIBBS diagnostic subsystem has detected a fault. A2, the gate buffer has detected a fault.	• Verify all the connection to the inverter OIBBS. • Cycle the control power. • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare parts for replacement.
X						InvAnlg SelfTest	186	On power up the drive has detected that dc offset on some analog feedback channels is high. The offending channels are indicated by parameters InvAnlg SelfTst1 (P96) and InvAnlg SelfTst2 (P251) in the Diagnostic group.	• Cycle control power to see if the fault remains, and replace the ACB if necessary. • Using a multimeter, check the DC offset on the circuit when this fault is present. The feedbacks that cause this fault can be determined by looking at parameter (P96 and P251) in the Diagnostic group. • See Technical Note PF7000_GEN-12, **Line/Motor ADC/DAC Faults on Initial Power-Up** • See Technical Note PF7000-4th Gen_Gen 34 **Troubleshooting 'InvAnlg SelfTst2' Fault**

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						No Output Ctctr	169	This fault is specifically used for Open Circuit test mode, which demands that an output contactor be specified in Output Ctctr Cfg (P5). If the contactor is not specified, you will get this fault in Open Circuit test mode. This is to help avoid inexperienced people putting the drive in open circuit test mode without actually open circuiting the output with either a contactor or by disconnecting the motor cables.	• If there truly is no output contactor in the system, then you can mask the fault. Then there will be a No DO/OP Ctctr warning, and you can continue with the open circuit test after disconnecting the motor cables.
X						Op Mode Conflict	609	Operating mode of the Follower drive and of the Master drive do not match.	• Change the operating mode.
X						OVH Overspeed	471	The motor speed feedback exceeds 80 Hz and the drive is experiencing an overhauling load without an output contactor.	• Verify that parameter Overhauling Load (P1160) and bit 8 (Output Ctctr) of parameter HardwareOptions1 (P141) are properly set. • Check recommendations for Fault Code 102, Motor Ovrspeed.
		X	X	X	X	PD Capcity Low	458	This fault is for parallel drives only and indicates that the available drive capacity is less than 50% of the motor rated current. The drive cannot run.	• The available drive capacity is less than 50% of the motor rated current. The drive cannot run.
X						Process Var Loss	464	Feedback from the process is not valid.	• Check the process sensor, 4. . . 20 mA or 0...10V input to the drive at IFM board. • Check the wiring at IFM board and connection between IFM and ACB.
			X	X		Pressure Loss (C-Frame Only)	64	The measured system pressure has dropped below a preset trip level. The standard operating pressure is around 50 psi. The pressure switch is not designed to be an accurate measure of pressure, but is designed as a Pressure/No Pressure indication. Typically anything less than 20 psi will activate this switch.	• Check that the pumps are operating. • Verify that there are no leaks in the system. • Verify that there is no blockage in the system.
			X	X		Pump/Fan Pwr Off (C-Frame Only)	71	The control power to the pumping system and the heat exchanger fans is not present. The drive detected that the Pump/Fan power is off.	• Verify the disconnect switch is closed and that there are no blown fuses. • Measure the voltage at the pump and fan inputs to ensure voltage is present. • Trace the feedback to the drive from the circuit, looking for loose wiring or incorrect auxiliaries.
X						RecAnlg SelfTest	128	On power up the drive has detected that dc offset on some analog feedback channels is high. The offending channels are indicated by parameters RecAnlg SelfTst1 (473), RecAnlg SelfTst2 (474) and RecAnlg SelfTst3 (494) in the Diagnostics group.	• Using a multimeter, check the DC offset on the circuit when this fault is present. The feedbacks that cause this fault can be determined by looking at parameter (P473, P474 and P494) under Diagnostics group. • Cycle control power, to see if the Fault condition remains and replace ACB if necessary.
X						RecA2D Convrsion	131	This fault indicates that the analog to digital converters on the ACB were not able to completely transmit the data to the master processor using the DMA within the sampling period.	• Cycle power to the drive. • If the problem persists replace DPM or ACB.
X						RecA2D SeqError	133	An error has been detected in A2D conversion.	• Cycle control power. • If the fault does not clear after cycling the control power, then replace ACB board. If this does not resolve the issue, then replace DPM board.

All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Warning Message	Warning Code	Description	Recommended Action(s)
						NVRAM Cleared	96	The drive parameters are corrupt and have been initialized to default values. This happened either during a firmware upgrade or if the battery was low. Reload the parameters into the drive	• Reload the parameters from terminal memory, DriveTools, Flashcard, or from a hardcopy.
						Output CtctrOpen	186	The output contactor is open even though it has been commanded to close.	• Verify the contactor feedback and the 120V wiring to the ACB. • The drive may be in auto-restart mode following loss of medium voltage. • Be sure the associated starter unit is set to Normal mode. • Verify the feedback from the contactor status (normally control relay auxiliary and contactor mechanical auxiliary) is wired properly and powered. • Verify that there is control power to the contactor. • Verify the associated ACB I/O. • Verify that the holding coil or closing coil is not shorted. • Review the contactor control wiring. • These warnings may also occur during the auto restart feature, as the loss of power may also result in the inability to hold in the contactor during the outage.
						Output CtctrClsd	187	The output contactor is closed even though it has been commanded to open. Verify normal mode of starter the contactor feedback and the 120V wiring to the ACB.	
						Output IsoSwClsd	194	The input isolation switch is closed when it is expected to be open. The switch should be open in System, Gate and Open Circuit test.	• In DC Current test modes, the isolation switches are expected to be closed for DC Current test; although only the input contactor is required the test will run with warnings if the switches are open. • Be sure the isolation switches are in the proper position for the specific operating mode (Refer to the description of parameter 141 – **Hardware Option1** in the parameters manual). • Verify the feedback wiring. • Verify isolation switch mechanical auxiliary setup.
						Output IsoSwOpen	191	The output isolation switch is open when it is expected to be closed. The switch should be closed in Normal, DC Current test and Open Loop modes.	
						Parameter Range	97	The parameter value loaded from the NVRAM or the DIM is outside the valid range and has been set to default value. The offending parameter number has been stored in Parameter Error (P597). Enter the correct value.	• If this was a result of an INIT operation, contact the factory. • If this was a result of a LOAD operation, correct the parameter value and perform a SAVE operation. • Check the settings on the DIM to determine whether it is limiting the parameter's max or min values.

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