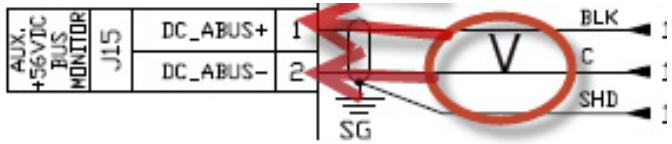
All Drive Types	PF7000A	PF7000B	PF7000C	Marine Drive	Heat pipe Drive	Fault Message	Fault Code	Description	Recommended Action(s)
X						Encoder Loss	163		• Be sure that the encoder is powered and connected properly. • Be sure that all channels are connected properly and not swapped at motor and drive end. For example, swapping A+ and A- will give this fault • Z+ and Z- are not to be used in PF7000 Forge drives, remove any wires, jumpers on the Z+ Z- terminals • Tech notes related to Encoders are PF7000 4th Gen_FMW-11, PF7000 Firmware 9.001 and 9.002 with Encoder Release Notes
X						External 1…16	1…16	These are the optional additional external faults available when there is an additional XIO board installed. This is configured with XIO Ext Faults (P593), and this message will appear if the specific input (1-16) is configured in Fault Config as a Class 1 or Class 2 fault.	• Review XIO board drawing: • Identify source of input from the external fault XIO board print and investigate the cause of the fault. • Verify voltage signals from external sources.
			X			Ext Cooling Loss (C-Frame only)	65	The drive has detected the loss of the ability to provide cooling for the drive. This is detected through feedback from the heat exchanger cooling fans contactors and overloads.	• Review the inputs to the drive liquid cooling XIO and determine the source of the missing signals. • Investigate the heat exchanger fans and control for a cause. • Check the liquid cool XIO card.
X						Fault Code 159	159	Line voltage and/or line frequency loss at the drive input. This fault is active when the drive operates in HPTC mode. This fault is valid for firmware 10.002 and later revisions. Bit 15 of Par#281 ('Drive Fault3') will be set for the fault.	• Investigate power disturbances at the drive input. • Investigate if the fault is caused by starting or stopping the across the line starter or soft starter. • Verify voltage sensing board VSB1 is free of visible damage. Use a multimeter to check resistances against nameplate ratings. • Verify the parameter setting for line loss: Par #698 ('Line Loss Trip') is more or less than the default value • Upload black box data from the drive and contact MV Tech Support
X						Fault Code 648	648	Rectifier A3 Fault: A3 diagnostic test failure on the OIBBS	• Cycle the control power • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare part replacement
X						Fault Code 649	649	Rectifier A4 Fault: A4 diagnostic test failure on the OIBBS	• Cycle the control power • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare part replacement
X						Fault Code 650	650	Rectifier A5 Fault: A5 diagnostic test failure on the OIBBS	• Cycle the control power • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare part replacement
X						Fault Code 680	680	Inverter A3 Fault: A3 diagnostic test failure on the OIBBS	• Cycle the control power • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare part replacement
X						Fault Code 681	681	Inverter A4 Fault: A4 diagnostic test failure on the OIBBS	• Cycle the control power • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare part replacement
X						Fault Code 682	682	Inverter A5 Fault: A5 diagnostic test failure on the OIBBS	• Cycle the control power • If the same fault still trips the drive, contact the manufacturer for the OIBBS spare part replacement

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X						IGDPS 56V Loss	53	The drive has detected a loss of the 56V dc voltage feeding the IGDPS.	• Check connections, the DC output of the AC/DC converter and the input voltage to the IGDPS. • Replace the power supply if required. • Measure the voltage at the ACB connector J15 and compare it to parameter P101. P101 provides the value the drive processor board measures. If the actual value at J15 is 56V and P101 is lower than 56V, then problem is either the ACB or DPM—most likely the ACB. 
		X	X			InputLockOut 5Min	462	This fault is valid for 18-pulse drives and prevents damage to the isolation transformer. The input contactor has been locked out for 5 minutes due to a Line OverCurrent condition.	• Investigate the cause of the over-current condition. Fault can only be reset after 5 minutes. • Check the rectifier SCRs for short across anode to cathode
		X	X			InputLockOut Indef	463	This fault is valid for 18-pulse drives and prevents damage to the isolation transformer. The input contactor has been locked indefinitely due to a Line OverCurrent condition.	• It is likely that there is line to line short condition due to shorted SCR devices. • Investigate the cause of the over-current condition. • If nothing found short, cycle control power to reset the fault.
					X	Inv Airflow Loss	495	The cooling airflow velocity on the specified power stack is below the trip/warn level. This fault is not active starting in Firmware 11.001.	• Ensure that there are no obstructions to the path of the incoming/outgoing air flow. • Check for cooling fan deterioration. • Verify if the trip (P840) and warn setting (P841) matched factory recommended values.
X						InvA2D Seq Error	188	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.
X						InvFbrOpt Config	187	The drive has detected that the number of fiber-optic boards does not match the number of devices in the inverter section.	• Verify the parameter settings and check that the board in plugged properly on the OIBB.
	X	X			X	Inv Hs Over Temp	491	The drive detected high heatsink temperature at the specified location.	• Verify if the warn (rectifier P112, inverter P316) and trip settings (rectifier P111, inverter P315) match factory recommended values.
	X	X			X	InvHSnk FbrOptic	180	While Not Running, the fiber-optic signal from the TFB on the inverter heatsink, connected to Channel A fiber-optic receiver RX7 on FOI-M-A is not present. This is only a fault while not running. If this occurs while running it will appear as a warning.	• Check TFB and FOI board for power. • Check the fiber-optic cables are properly seated in the transmitters and receivers. • Check the fiber-optic cable for kinks, bends, breaks that could be blocking the signal. • This can occur if the sensor is not connected to the TFB.
	X	X			X	InvHSnk LowTemp	179	If the measured temperature IHeatsink Temp C (P252) is less than 2 °C, and the drive is not running, the drive will display this fault.	• Verify that the ambient in the control room is not below 2 °C (35.6 °F). • Verify power to the TFB. • There could be a mechanical problem with the temperature sensor or with the cable feeding the signal back to the TFB. • Swap with the rectifier hardware to identify the bad component.

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		

Item	Description	Part Number
SCR Matched set of two		
350A	Matched set of two 350A SCR	81001-335-72-R
800A	Matched set of two 800A SCR	81003-437-52-R
SCR Matched set of three		
350A	Matched set of three 350A SCR	81001-335-73-R
800A	Matched set of three 800A SCR	81003-437-53-R
Power Supplies		
AC/DC	Single phase input, 56V DC output, AC/DC 1000W	80026-529-01-R
AC/DC	Single phase input, 56V DC output, AC/DC 1500W	80026-524-01-R
AC/DC	Single phase input, 56V DC output, AC/DC 300W	80026-088-01-R
DC/DC	56V DC input, Absopulse	80026-518-01-R
IGDPS	56V DC / 20V DC	80026-044-06-R