

MV POWER HOUSING ASSEMBLY PROCEDURE- MARS

PROGRAM	ASSEMBLY NAME AND NUMBER		REFERENCE
MARS	MV POWER HOUSING ASSEMBLY	110418	

Clean o-ring grooves on penetrator bulkhead

NEXT

With converter on plastic v-block and v-blocks on 2" spacers.

slide o-rings over spacer and chassis. Lay on penetrator bulkhead (do not install in grooves)

Operation #	Operation Description	Initial / Date
100	CHASSIS INSTALLATION SETUP	
110	Clean and prepare penetrator endcap for assembly. Clean, inspect and install large o-rings and backup rings as required. Prepare connector, penetrator and plug for installation into penetrator endcap. Clean, inspect and replace o-rings as required. Torque fasteners per 110418.	
120	Pass wires through cutouts in the G10 chassis support disc. Bolt penetrator endcap to the G10 disc. Torque fasteners per 110418. Connect wires as required per electronics assembly.	
130	Hoist completed electronics chassis assembly onto lift table. Move into position in front of chassis support stand.	
140	Bolt chassis to stand using spacers as required. Use lift table and hoist as required.	
150	Replace lift table with jack stand positioned on small rolling table and support chassis mid-span. Remove hoist.	
160	Clean and re-inspect the large o-rings on the penetrator endcap, as required.	
170	Lift pressure housing out of its shipping crate and onto lift UHMW saddles. Housing should be positioned slightly off to allow load transfer from the small rolling table. Allow for chassis support disk (G10) into the end of the housing past the sealing surface (1.5" both ends). Secure housing to table.	
200	CHASSIS INSTALLATION	
210	Align housing with chassis. Clock housing such that the tapped holes line up with the thru holes on the bulkhead.	
220	Adjust lift table as required while installing electronics chassis. Watch for component interference. Lightly lubricate o-rings with castor oil and install the penetrator endcap into the	
300	BELLOWS PRESET AND INSTALLATION	
310	Clean and prepare bellows endcap for assembly. Clean, inspect and install large o-rings and backup rings as required.	
320	Preset bellows expansion per 110418. Install plug with desiccant as required.	
330	Assemble bellows, mounting flange and bellows endcap per 110418. Slide guide sleeve into housing as shown on 110418.	
340	Lightly lubricate o-rings with castor oil and with the support of an engine hoist, install the bellows endcap into the housing. Torque fasteners per 110418.	

stop with app 8" of converter chassis outside housing

Set standoff screws on spacer to 0.250 in. above spacer.

Clean penetrator side o-ring surface on housing; Install mid-chassis expansion ring. Tighten ring bolts just enough to hold rubber ring.

push housing over converter chassis

Clean and inspect o-rings, backup ring, or-ring grooves and sealing surface on housing

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SERIAL #/LOT #	NEXT HIGHER ASSEMBLY	REVISION
	NODE MODULE ASSEMBLY 110505	DRAFT

Operation #	Operation Description	Initial / Date																																																																																
350	Record the weight of the dry MV Housing Assembly: _____ This may be performed anytime prior to filling with FC-77.																																																																																	
	For the following operations, reference SCHEMATIC, FC-77 FILL SYSTEM MV POWER HOUSING ASSEMBLY TF110418 and Table 1. REVIEW AND UNDERSTAND EACH OF THE FOLLOWING OPERATIONS THOROUGHLY BEFORE PROCEEDING. <table><tr><th></th><th>R1</th><th>R2</th><th>Y1</th><th>Y2</th><th>G1</th><th>G2</th><th>B1</th><th>B2</th><th>B3</th></tr><tr><td>PURGE AIR FROM INLET LINES</td><td>O</td><td>O</td><td>X</td><td>X</td><td>X</td><td>O</td><td>O</td><td>X</td><td>X</td></tr><tr><td>PURGE AIR FROM OUTLET LINES</td><td>X</td><td>O</td><td>X</td><td>X</td><td>X</td><td>O</td><td>O</td><td>X</td><td>X</td></tr><tr><td>VACUUM</td><td>X</td><td>O</td><td>X</td><td>X</td><td>X</td><td>O</td><td>O</td><td>X</td><td>X</td></tr><tr><td>He LEAK</td><td>X</td><td>O</td><td>X</td><td>X</td><td>O</td><td>X</td><td>X</td><td>X</td><td>X</td></tr><tr><td>FC-77 FILL (vacuum)</td><td>O</td><td>O</td><td>X</td><td>X</td><td>X</td><td>O</td><td>O</td><td>X</td><td>X</td></tr><tr><td>STOP FILL & INSTALL LOWER FILL PLUG</td><td>X</td><td>X</td><td>O</td><td>O</td><td>X</td><td>O</td><td>X</td><td>X</td><td>X</td></tr><tr><td>RELEASE VACUUM & INSTALL UPPER FILL PLUG</td><td>X</td><td>X</td><td>O</td><td>O</td><td>X</td><td>O</td><td>X</td><td>O</td><td>X</td></tr></table> Table 1 - Valve Positions X = VALVE CLOSED O = VALVE OPEN		R1	R2	Y1	Y2	G1	G2	B1	B2	B3	PURGE AIR FROM INLET LINES	O	O	X	X	X	O	O	X	X	PURGE AIR FROM OUTLET LINES	X	O	X	X	X	O	O	X	X	VACUUM	X	O	X	X	X	O	O	X	X	He LEAK	X	O	X	X	O	X	X	X	X	FC-77 FILL (vacuum)	O	O	X	X	X	O	O	X	X	STOP FILL & INSTALL LOWER FILL PLUG	X	X	O	O	X	O	X	X	X	RELEASE VACUUM & INSTALL UPPER FILL PLUG	X	X	O	O	X	O	X	O	X	
	R1	R2	Y1	Y2	G1	G2	B1	B2	B3																																																																									
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VACUUM	X	O	X	X	X	O	O	X	X																																																																									
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FC-77 FILL (vacuum)	O	O	X	X	X	O	O	X	X																																																																									
STOP FILL & INSTALL LOWER FILL PLUG	X	X	O	O	X	O	X	X	X																																																																									
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400	PURGE SYSTEM OF AIR																																																																																	
410	Purge air from the inlet lines by introducing FC-77 until it just reaches the housing. A small amount of FC-77 is expected to enter the housing. Close R1 to allow the air to complete its purge through the system.																																																																																	
500	VACUUM BAKE																																																																																	
510	Vacuum bake as required per customer procedure.																																																																																	
600	HELIUM LEAK TEST																																																																																	
610	Helium leak test assembly per MP105382. Record He leak reading _____																																																																																	

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	NODE MODULE ASSEMBLY 110505	DRAFT

Operation #	Operation Description	Initial / Date
700	FLUORINERT (FC-77) FILL AND SEAL	
710	Verify that the housing is level. Mark the housing assembly 0.68" from the top. This will be the height of the fluid when the housing is completely full. Adjust the height of the lift table such that this mark is level with the highest mark on the overflow reservoir.	
720	Ensure the valve to the He leak tester is closed prior to introducing FC-77 into the system.	
730	Open R1 to allow FC-77 to fill the housing. Monitor the outlet lines and overflow reservoir to verify the fill process is progressing as planned.	
740	Stop the fill process when the overflow reservoir is nearly full. Install the lower fill plug.	
750	Open valve B2 to release the system vacuum. Fluid level in the overflow chamber will drop as the system pressure equalizes to ambient and the bellows retracts to its preset state.	
760	Adjust the height of the lift table such that the fill mark on the housing is at the same height as the fluid level in the overflow chamber. Install the upper fill plug.	
770	Record the weight of the filled MV Housing Assembly: _____ Weight of FC-77 in MV Housing = Dry weight – Filled weight = _____	
800	PRESSURE vs. TEMPERATURE TEST	
810	Test as required per customer procedure.	
900	DISASSEMBLY & RECOVERY OF FC-77	
910	Lift assembly onto lift table outfitted with UHMW saddles. Orient as shown on 110418, zone C-4.	
920	Install fill adapters and external plumbing used for the fill procedure, above. Drain, filter and recover FC-77.	
930	Mount the penetrator endcap onto the chassis support stand.	
940	Remove bellows endcap with bellows attached. Remove guide sleeve.. Set aside.	
950	Remove the penetrator endcap out of housing until o-rings have cleared. Continue moving housing away until it is clear of the electronics chassis. Support mid-span as required.	
960	Transfer chassis from support stand to workbench for troubleshooting.	