

## ASME FRP Membrane Vessels



- 3/4" NPT Feed/Conc. And Permeate ports
- Single piece ABS head
- Direct connect for standard 40" membrane
- Integrated locking segments/screws
- Straps and saddles included
- ASME certified manufacturing facility
- 300 psi maxium operating pressure

Part No.	Size	Ports	Size
MV-R40300E1	4" x 40"	End	3/4" NPT
MV-R40300S1	4" x 40"	Side	1" Grooved



### Full Range of Diameters and Pressure Ratings Available on Request

Permeate and feed/concentrate port options available for most vessel models - including connection types, sizes, and materials. When required, membrane/vessel interface adapters for all major membrane manufacturers included with vessels.

	Part No. +Length	Max PSI	Lengths	Perm Port*	F/C Port*
2.5" - End Port	MV-R251000E-	1000PSI	21", -1	1/4" NPTF	1/4" NPTF
4" - End Port	MV-R40300E-	300PSI	21", -1 to -3	1/2" NPTF	3/4" NPTF
	MV-R40600E-	600PSI	-1 to -6	1/2" NPTF	3/4" NPTF
	MV-R40100E-	1000PSI	-1 to -6	1/2" NPTF	3/4" NPTF
4" - Side Port	MV-40300S-	300PSI	-1 to -6	1/2" NPTF	1" Grooved
8" - End Port	MV-R80150E-	150PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R80300E-	300PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R80450E-	450PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-80600E-	600PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R801000E-	1000PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R801200E-	1200PSI	-1 to -7	1" NPTF	1.5" Grooved
8" - Side Port	MV-R8075S-	75PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R80150S-	150PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R80300S-	300PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R80450S-	450PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R80600S-	600PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R801000S-	1000PSI	-1 to -7	1" NPTF	1.5" Grooved
	MV-R801200S-	1200PSI	-1 to -7	1" NPTF	1.5" Grooved

■ Standard port configuration shown. Call for information on optional configurations

**General Product Description – Model FRPR4040-30E**  
**300PSI – End Port Membrane Housing**  
**Rev. 2**

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Design Pressure:	300PSI / 2.1Mpa / 20.7Bar (at 120°F / 49°C)
Min. Operating Temp.:	20°F / -6°C
Max. Operating Temp.:	120°F / 49°C
Factory Test Pressure:	330PSI / 2.3Mpa / 22.8Bar
Operating pH Range:	3 – 11
Cleaning pH Range:	2 – 12 (less than 30 minutes)

**General Warning – High Pressure Membrane Housing**

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ROPV vessels are designed to provide safe operation over a long service life if properly installed, operated, and maintained. The vessel may cause loss of life, severe bodily harm, or property damage if not correctly installed, operated, or maintained. Read and understand all guidelines provided in the vessel User Guide. Observe every precaution contained therein. Failure to do so may result in malfunction and potential catastrophic failure. Qualified technicians experienced in servicing hydraulic systems should be used to work with this vessel. Misuse, incorrect assembly, or use of damaged/corroded components may result in catastrophic failure.

**Vessel Use**

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- Positive pressure up to 300PSI
  - Four-inch nominal diameter
  - Accommodates standard 40" / 1016mm element with 3/4" / 19mm OD male product water tube
  - Vessel expands under pressure and careful consideration taken when specifying straps/saddles and connection piping
  - Installation with the straps/saddles provided is recommended
  - Periodic inspection of the vessel end closure is recommended to ensure all parts are dry and free of corrosion
  - Failure to understand and follow all precautions may void warranty and result in catastrophic failure of the vessel
  - These guidelines are subject to change. P

**Precautions**

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- Failure to follow all instructions contained herein may void warranty and cause vessel failure.
  - Mount vessel using strap/saddle hardware provided and span recommended in the engineering drawing.
  - Do not over tighten the straps.
  - Maximize the connection flexibility to allow for vessel length and diameter expansion under pressure.

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- Provide overpressure protection in the system safety devices.
- Inspect end closures regularly for signs of corrosion. Immediate inspection and/or replacement is suggested in case of corrosion.
- Relieve system pressure before working on the vessel.
- Do not support other components with the vessel. Connections should be non-load bearing.
- Do not attempt to over-tighten the Permeate Port connections as this may damage the end closure. One turn past hand tight should be sufficient.
- Double check end closure installation.
- Never operate the vessel in excess of its ratings. This may void the warranty and cause bodily or property damage.
- Do not operate the vessel permeate port over 125PSI.
- Operate the vessel in positive pressure applications only.
- Flush the vessel with permeate before system shutdown to reduce the chance of corrosion.
- Operate the vessel within the recommended pH range - Operating pH Range: 3 – 11, Cleaning pH Range: 2 – 12 (less than 30 minutes).

### **End Plug Installation**

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1. Ensure That All Parts are Available  
In addition to the vessel shell and end plugs, there is a plastic bag with two end plug seals and two permeate port seals, two straps and two saddles.
2. General Inspection  
Inspect inside of vessel, checking for surface imperfections or any outside material. Surface imperfections can be removed by lightly sanding the area with 600-grit sandpaper. Rinse the vessel completely after any repairs.
3. Prepare End Plug for Installation  
Apply a thin layer of glycerin to the two pieces of end plug seals and two pieces of permeate port seals. Inspect the seals for any signs of damage, splitting or cracking. Install the permeate port seals into the grooved area in the inside diameter of the permeate port of each end plug – the groove should be clear of any sharp edges and foreign matter. Take care to ensure that the seals are properly seated in the groove and are not pinched. Install the end plug seals in the grooved area on the outside diameter of the end plug - the groove should be clear of any sharp edges and foreign matter. Take care to ensure that the seals are properly seated in the groove and are not pinched. Do not use sharp implements when installing the seals.
4. Install the End Plug  
Carefully align the end plug at the end of the vessel, ensuring that the end plug is parallel with the sidewall of the vessel. Slowly insert the end plug until the retaining groove is visible.
5. Install Locking Crescents (End Plug Retention System)  
Inspect and dry the retaining groove. Place one of the locking crescents into the retaining groove, while aligning the screw that is pre-threaded into the crescent over the threaded hole in the end plug. Ensure that the edge of the crescent is seated in the retaining groove before you begin threading the screw into the threaded opening. Once hand tight, the screw can be threaded using a #5 Hex key. Do not over tighten the screws.
6. Reconnect System Piping
7. Pressurize System
8. Check for Leaks  
Periodically inspect all connections and the end plug retention system for corrosion. All components should be dry and corrosion free during vessel use.

## End Plug Removal

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1. Shut Down and De-pressurize the System
2. Disconnect System Piping from Vessel
3. Remove Locking Crescents  
Use a #5 Hex key to loose the locking crescent screw. Once screw is completely un-threaded, the crescent should be easily removed from the retaining groove. Both locking crescents must be removed in order to open the end plug.
4. Remove the End Plug  
A threaded 3/4" pipe nipple is recommended for use when opening the end plug. Thread the pipe nipple into the permeate port of the end plug, gently motion the nipple in various directions, and then gently pull the nipple from the vessel.

## End Plug Inspection

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1. Remove and Inspect Seals  
Remove the seals using a dull and on-metallic tool. Inspect the seals for any signs of damage, splitting or cracking.
2. Inspect End Plug  
Clean and inspect the end plug for any sign of damage or stress, including the port threads.
3. Inspect all Other Components  
Clean and inspect all other components for signs of corrosion or stress.
4. Replace Damaged Components  
Do not reuse any damaged components. Consult the factory for ordering replacement parts.