



RS.80 Series

Installation, Operation & Maintenance Manual



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ROShell Resilience & Reliability Framework™

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1. General

The ROShell RS80 Series membrane housing is designed for use with standard 8-inch reverse osmosis membrane elements in industrial and municipal water treatment systems.

The housing is manufactured using filament-wound fiberglass reinforced epoxy (FRP), ensuring high mechanical strength, corrosion resistance, and long-term operational reliability under high-pressure operating conditions.

2. Safety Instructions



WARNING

Failure to follow the instructions in this manual may result in equipment damage, system failure, or personal injury.

2.1 General Safety

- Installation and maintenance must be performed by qualified personnel only
- Always ensure the system is fully depressurized before disassembly
- Use appropriate personal protective equipment (PPE)

2.2 Pressure Safety

- Do not exceed maximum operating pressure
- Avoid sudden pressure fluctuations
- Ensure all connections are secure before operation

2.3 Handling Safety

- Do not drop or impact the vessel
- Use proper lifting methods
- Avoid mechanical stress during installation

3. Technical Limits

PARAMETER	VALUE
Maximum Operating Pressure	Up to 1200 PSI
Test Pressure	Up to 7200 PSI
Maximum Operating Temperature	49°C
Membrane Capacity	1-8 elements
Port Sizes	1.5" – 4"

4. Product Description

The ROShell RS80 is a side-port membrane housing designed for reverse osmosis systems.

The housing consists of the following main components:

1. Filament-wound FRP pressure vessel shell
2. End closure assemblies
3. Spiral retaining ring (quick-lock system)
4. Adapters and thrust cone
5. Permeate ports
6. O-ring sealing system (EPDM)
7. Side ports (feed and concentrate connections)

The design ensures secure sealing, structural integrity, and simplified maintenance.

5. Transport & Storage

5.1 Storage Conditions

- Store in a dry, well-ventilated environment
- Protect from direct sunlight and UV exposure

5.2 Handling

- Avoid mechanical impact
 - Do not stack heavy objects on the vessel
 - Keep all ports protected and sealed
-

6. Installation

6.1 General Installation

- Install the vessel in horizontal position
- Use appropriate support saddles
- Ensure correct alignment
- Provide sufficient space for maintenance

6.2 Piping Connections

- Use flexible connections to prevent stress transfer
- Ensure proper sealing of all connections
- Avoid external loads on side ports

6.3 Mounting

- Do not rigidly fix the vessel
 - Allow for thermal expansion
 - Ensure uniform support distribution
-

7. Membrane Installation

1. Flush the vessel with clean water
 2. Insert membrane elements from the feed side
 3. Connect elements using interconnectors
 4. Lubricate O-rings prior to installation
 5. Align elements carefully to prevent damage
 6. Install end closure assemblies
 7. Secure retaining ring properly
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8. Start-Up & Operation

8.1 Pre-Start Checks

- Verify correct installation
- Check all connections
- Ensure system cleanliness

8.2 Start-Up Procedure

- Start system gradually
- Increase pressure step-by-step

8.3 Operation

- Operate within specified limits
 - Monitor for leakage
 - Maintain stable operating conditions
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9. Maintenance

9.1 Routine Inspection

- Inspect O-rings and seals
- Check for leakage
- Verify structural condition

9.2 Disassembly

- Depressurize system completely
- Remove retaining ring
- Carefully remove end closure

9.3 Reassembly

- Replace damaged components
- Lubricate sealing elements
- Reinstall components correctly

10. Troubleshooting

ISSUE	CAUSE	ACTION
Leakage	Damaged O-ring	Replace seal
Pressure drop	Membrane fouling	Clean membranes
Vibration	Misalignment	Adjust supports
Difficult disassembly	Residual pressure	Depressurize system

11. Warranty

ROShell products are covered under standard warranty conditions.

Warranty is void in the event of:

1. Improper installation
2. Operation outside specified limits
3. Unauthorized modification

12. Components

ITEM	COMPONENT	MATERIAL
1	Vessel Shell	FRP
2	End Closure	Composite / Metal
3	Retaining Ring	Stainless Steel
4	Adapter	Engineering Thermoplastic
5	O-ring	EPDM
6	Side Port	SS316 / Super Duplex

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