



**RATING:**

DESIGN PRESSURE.....600 PSIG at 190°F  
 (4.1 MPa at 88°C)  
 MIN. OPERATING TEMP.....20°F  
 (-7°C)  
 FACTORY TEST PRESSURE..... CE / ASME  
 900 PSIG / 660 PSIG  
 (6.20 MPa) (4.55 MPa)  
 QUALIFICATION PRESSURE .....3600 PSI  
 (24.8 MPa)

**INTENDED USE:**

The CodeLine 80S60 Fiberglass RO Pressure Vessel is designed for continuous, long term use as housing for reverse osmosis membrane elements to desalt typical brackish waters at pressures up to 600 psi. Any make of eight-inch nominal diameter spiral-wound element is easily accommodated; the appropriate interfacing hardware for the element specified is furnished with the vessel.

The CodeLine 80S60 is designed in accordance with the engineering standards of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME) Code. At small additional cost vessels can be inspected during construction by an ASME Authorized Inspector and ASME Code stamped.

The CodeLine 80S60 must be installed, operated and maintained in accordance with the listed precautions and good industrial practice to assure safe operation over a long service life.

The high performance Filament wound FRP shell must be allowed to expand under pressure; undue restraint at support points or piping connections can cause leaks to develop in the shell. This side-ported vessel requires special precautions in mounting and connection to piping so that the vessel will not be subjected to excessive stress due to bending moments acting at the side openings in the fiberglass shell. The end closure, incorporating close fitting, interlocking metal components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the head.

Pentair Water will assist the purchaser in determining the suitability of this standard vessel for their specific operating conditions. The final determination however, including evaluation of the standard material of construction for compatibility with the specific corrosive environment, shall be the responsibility of the purchaser. Alternate materials with enhanced corrosion resistance are available on special order.

Specifications are subject to change without notice.

**PRECAUTIONS:**

- DO...read, understand and follow all instructions; failure to take every precaution will void warranty and may result in vessel failure
- DO...mount the shell on horizontal members at span "S" using compliant vessel supports furnished; Shim saddles if required. Tighten hold down straps just snug
- DO...align and center side ports with the manifold header. Correct, causes of misalignment in a row of vessels connected to the same header
- DO...use flexible type grooved-end pipe couplings, Victaulic® Style 77 or equal, at side ports; allow full, 0.125 inch gap between port and piping, and position piping to maximize flexibility of connection.
- DO...provide flexibility in, and support for piping manifolds so that vessel can grow in length under pressure without undue restraint; provide additional flexible joints in large pipes leading to manifold header.
- DO...provide overpressure protection for vessel set at not more than 105% of design pressure
- DO...inspect end closures regularly; replace components that have deteriorated and correct causes of corrosion
- DO... Lubricate seals sparingly, using nonpetroleum Based lubricants, i.e. Parker Super O-lube®, Glycerin or suitable silicone based lubricants.
- DO NOT...work on any component until first verifying that pressure is relieved from vessel
- DO NOT...make rigid piping connections to ports or clamp vessel in any way that resists growth of fiberglass shell under pressure;  
 \*\*\*ADIA = 0.015 in. (0.4mm) and  
 \*\*\*ΔL = 0.2 in. (6mm) for a length code -8 vessel
- DO NOT... hang piping manifolds from ports or use vessel in any way to support other components
- DO NOT...tighten Permeate Port connection more than one turn past hand tight
- DO NOT... operate vessel without connecting both Permeate Ports internally to complete set of elements or otherwise plug ports internally so that external piping connection is not subjected to feed pressure
- DO NOT...install Spacer on downstream end of vessel
- DO NOT...operate vessel without Thrust Cone installed downstream
- DO NOT...pressurize vessel until double-checking to verify that the Locking Ring is in place and fully seated.
- DO NOT...operate vessel at pressure and temperature in excess of its rating.
- DO NOT...operate vessel with permeate pressure in excess of 125 psi at 190°F (0.86 Mpa at 88.°C).
- DO NOT...tolerate leaks or allow end closures to be routinely wetted in any way
- DO NOT...operate outside the pH range 3-10.

**ORDERING:**

Using the chart below, please check the features you require

**VESSEL LENGTH CODE – please check one**

MODEL 80S60  -1  -2  -3  -4  -5  -6  -7  -8

**MEMBRANE BRAND AND MODEL**

Please supply adapters for the following membrane brand and specific model  
 Brand \_\_\_\_\_ Model \_\_\_\_\_

**CERTIFICATION REQUIRED**

- ASME Stamped and National Board Registered.
- CE Marked Standard.
- Certified by Pentair water.
- In compliance with the ASME Sec X but not Code Stamped.
  - Hydro testing at 1.1 times the design pressure
  - Hydro testing at 1.5 times the design pressure

ADAPTER KITS	
UP STREAM	DOWN STREAM

**PERMEATE PORT SELECTION**

Serial Number End

Size of the Permeate Port  1"  1.25"  1.5"  
 Type of Connection  FNPT  MNPT  BSPTM  BSPTF  IPS GROOVED  SANITARY  
 Material of Construction  PET/Noryl  SS316L  Zeron 100

Non Serial Number End

Size of the Permeate Port  1"  1.25"  1.5"  
 Type of Connection  FNPT  MNPT  BSPTM  BSPTF  IPS GROOVED  SANITARY  
 Material of Construction  PET/Noryl  SS316L  Zeron 100

**Note:**

- Standard offering is 1.0" FNPT in PET/Noryl.
- 1.25" & 1.5" BSPTF, 1.25" & 1.5 FNPT and 1.25" SANITARY connections cannot be offered
- Sanitary permeate port cannot be offered in PET/Noryl

**STRAP ASSEMBLY**

Standard SS304  Optional SS316  Optional SS316L

**FEED/CONCENTRATE PORT SELECTION**

Material of Construction  CF3M  Optional Duplex SS (CD3MN)  
 Optional Super Duplex SS (CD3MWCuN)

Configuration  Standard - CF3M 1D5D  
 Optional -Multi port: (Refer SPEC.SHEET/PM/1.5"-3" for Multi ports selection).  
 2.5" Ports not available in 90° Configuration.

Serial number end          
 Opposite end

PORT SIZE CODE	
D	1½" GROOVED END
E	2" GROOVED END
F	2½" GROOVED END

**BEARING PLATE MATERIAL**

Standard – 6061 T6 Aluminium  
 Optional – Stainless Steel 316L

**Note:** Please refer to 99321 for sanitary details and refer page-3 for optional Part numbers.

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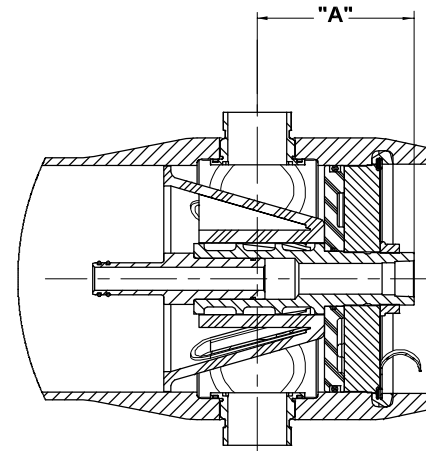
BEARING PLATE PART NUMBERS		
PERMEATE PORT SIZE	ALUMINIUM	SS316L
1.0"/1.25"	96157	96476
1.5"	96411	97373

SEALING PLATE PART NUMBERS	
Standard used for Aluminium BP	96160
Optional used for SS316L BP	96477

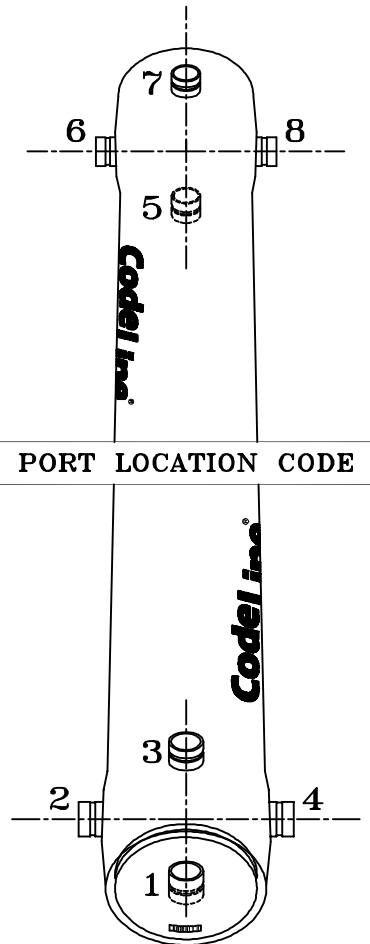
PERM PORT RETAINER RING & PORT NUT PART NUMBERS		
1.0" / 1.25"	Standard Port nut	45066
1.5"	Port Retainer Ring	45247

STRAP ASSEMBLY PART NUMBERS		
SS304	SS316	SS316L
45042	46926	94371

F/C PORT & SEAL PART NUMBER				
SIZE	*CF3M	**CD3MN	***CD3MWCuN	SEAL
1.5"	96236	97258	96601	96077
2.0"	96237	97367	96644	96078
2.5"	96238	97361	96646	96079



SECTION THROUGH END CLOSURE



PORT LOCATION CODE

Serial Number End

PERMEATE PORT PART NUMBERS & PERMPORT TO F/C PORT OFFSET DISTANCE											
SIZE	MATERIAL	FNPT		MNPT		BSPTF		BSPTM		IPS GROOVED	
		PART NUMBER	DIM "A"	PART NUMBER	DIM "A"	PART NUMBER	DIM "A"	PART NUMBER	DIM "A"	PART NUMBER	DIM "A"
1.0"	PET/NORYL	96162	5.508	97316	6.508	96301	5.508	97354	6.508	97323	6.808
	SS316L	96752	5.508	97347	6.508	97351	5.508	97355	6.508	97322	6.808
	#ZERON 100	97349	5.508	97348	6.508	97352	5.508	97356	6.508	97293	6.808
1.25"	PET/NORYL	NA	NA	96345	6.508	NA	NA	97360	6.508	97246	6.808
	SS316L	NA	NA	96487	6.508	NA	NA	97362	6.508	97311	6.808
	#ZERON 100	NA	NA	97359	6.508	NA	NA	97363	6.508	97365	6.808
1.5"	PET/NORYL	NA	NA	97366	6.108	NA	NA	97369	6.108	97469	6.738
	SS316L	NA	NA	97368	6.108	NA	NA	97371	6.108	97449	6.738
	#ZERON 100	NA	NA	97292	6.108	NA	NA	97372	6.108	97374	6.738

## NOTES

DIMENSION IN INCHES (MM APPROX.)

- \* GRADE CF3M PER ASME SA-351/316L AS PER SA-479
- \*\* GRADE CD3MN AS PER ASME SPEC SA-995 (UNS-J92205)
- \*\*\* GRADE CD3MWCuN AS PER ASME SPEC SA-995 (J 93380)
- # GRADE ZERON 100 AS PER ASTM-479

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Pentair Water

CodeLine - 80S60

MEMBRANE HOUSING

DRAWN	PDM 27 JUN 11	DATE	25 JUL 11	DWG. NO.	99162	REV.	J
CHECKED	RD 27 JUN 11	ECN	2243	SCALE	NONE	SIZE	A3
APPROVED	RM 27 JUN 11					SHEET	3 OF 3

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