

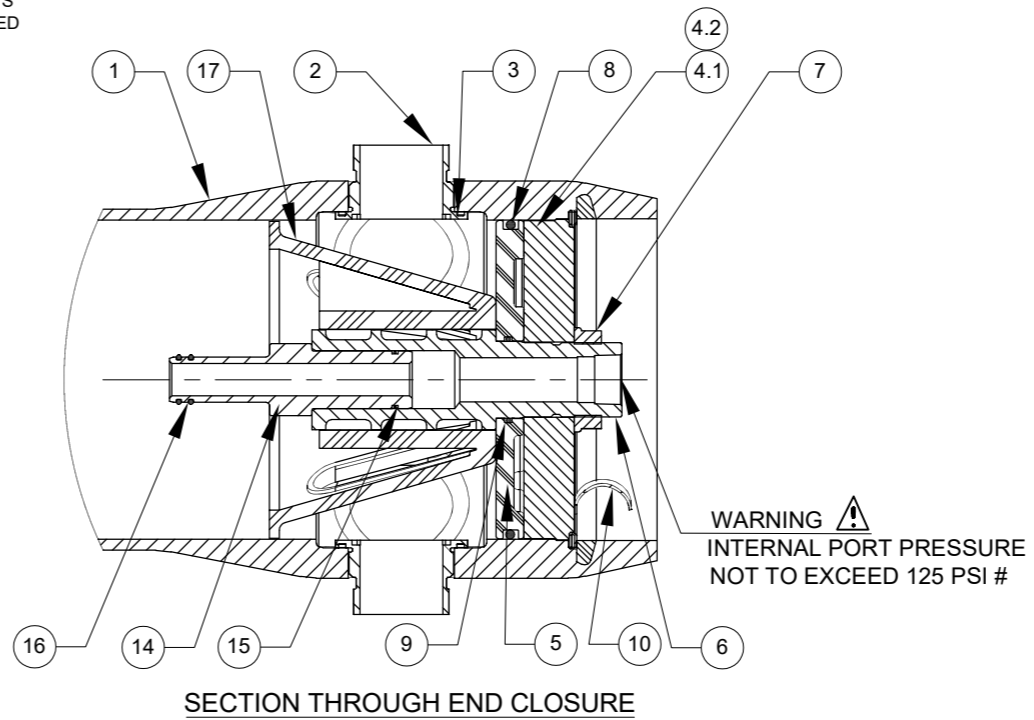
DWG REF	QTY	PART NUMBER	DESCRIPTION	MATERIAL
<b>SHELL</b>				
1	1	99219	SHELL	Filament Wound Epoxy/Glass composite - Head locking grooves integrally wound in place.
2	A/R	A/R	F/C Port	SA-351 CF3M
3	A/R	A/R	F/C Port Seal	Ethylene Propylene
<b>HEAD</b>				
4	2	194452	Bearing Plate Assembly	-
4.1	1	96157	Bearing Plate	SB-221 A96061-T6
4.2	1	97107	Danger Label	-
5	2	96160	Sealing Plate	Engineering Thermoplastic.
6	2	96162	Permeate Port	Engineering Thermoplastic.
7	2	45066	Port Nut	Engineering Thermoplastic.
8	2	96000	Head Seal	Ethylene Propylene - O - Ring
9	2	45312	Perm Port Seal	Ethylene Propylene - O - Ring
<b>HEAD INTERLOCK</b>				
10	2	47336	Quick Release Spiral Ring	SA-479 SS-316
<b>VESSEL SUPPORT</b>				
11	2"	52169	Saddle	Engineering Thermoplastic.
12	2"	45042	Strap Assy.	304 Stainless Steel-PVC Cushion.
13	4**	46265	Strap screw.	5/16-18 UNC, 2.5*L, 18-8 Stainless Steel.
<b>ELEMENT INTERFACE</b>				
14	2	A/R	Adapter	Engineering Thermoplastic.
15	2	52245	Adapter seal	Ethylene Propylene - O - Ring
16	4	A/R	PWT Seal	Ethylene Propylene - O - Ring
17	1	96163	Thrust Cone	Engineering Thermoplastic.

\*3 & \*\*6 each furnished with length code 4,5,6,7 & 8.

VIEW AT CENTER SUPPORT  
 CENTER VESSEL ON 2 OR 3 SUPPORTS  
 AT SPAN(S) "S" : 3 SUPPORTS REQUIRED  
 FOR LENGTHS -4 AND ABOVE

PORT SIZE CODE	
D	1 1/2" GROOVED END
E	2" GROOVED END
F	2 1/2" GROOVED END

CAUTION: INCORRECT MANIFOLDING WILL CAUSE SEVERE LOCAL STRESS AROUND PORT AND MAY RESULT IN LEAKS AND PREMATURE FAILURE; TAKE EVERY PRECAUTION LISTED ON REVERSE, SEE INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS



NO. OF PORTS	PORT LOCATION			VESSEL QTY.
Dash Length	L IN(MM)	P IN(MM)	S IN(MM)	Approx Weight LB(KG)**
-1	59.75 (1518)	47 (1194)	20X1 (508)	88 (40)
-2	99.75 (2534)	87 (2210)	56X1 (1422)	110 (50)
-3	139.75 (3550)	127 (3226)	80X1 (2032)	130 (59)
-4	179.75 (4566)	167 (4242)	64X2 (1626)	156 (71)
-5	219.75 (5582)	207 (5258)	78X2 (1981)	176 (80)
-6	259.75 (6598)	247 (6274)	92X2 (2337)	198 (90)
-7	299.75 (7614)	287 (7290)	106X2 (2692)	216 (98)
-8	339.75 (8630)	327 (8306)	120X2 (3048)	238 (108)

**GENERAL NOTES:**

- MAX. ANGULAR VARIATION BETWEEN ANY PORT ±0.5°.
- DIMENSION IN INCHES (MM APPROX.).
- SHELL EXTERIOR COATED WITH WHITE RAL 9003, HIGH GLOSS POLYURETHANE PAINT.
- ITEM 17 DOWNSTREAM ONLY.
- NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED BY PENTAIR.
- # 600 PSI FOR METALLIC PERMEATE PORT. FOR OPTIONAL PART NUMBERS, REFER PAGE 3.
- \*\* WEIGHTS GIVEN IN THE TABLE ARE FOR HIGHEST CONFIGURATION AND WILL VARY WITH CHANGE IN CONFIGURATION.

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VERNA, GOA INDIA

DRAWN BY: RA	DRAWING DESCRIPTION: MODEL - 80S60 MEMBRANE HOUSING	DRAWING NO.: 99162	REV.: AA
DATE: 15/09/21	CUSTOMER NAME:	VESSEL MODEL: 80S60	
CHECKED BY: KPS	DATE: 15/09/21	PROJECT NAME:	TOTAL QTY: -
APPROVED BY: FF	DATE: 15/09/21	CUSTOMER P.O.#:	SIZE: A3
ECN NO.: 5761	DATE: 09/12/21	SCALE: NONE	PAGE NO.: 01 OF 03

**RATING:**

DESIGN PRESSURE.....600 PSIG  
(4.14 MPa )  
MAX. OPERATING TEMP.....190°F  
(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) as per Section X Edition 2021. F/C port, Bearing plate and Quick release spiral ring are designed as per ASME Section VIII Division I Edition 2021.

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 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 IPS grooved-end pipe couplings, 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. Glycerin or suitable 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;  
\*\*\*ΔDIA = 0.015 in. (0.4mm) and  
\*\*\*ΔL = 0.2 in. (5mm) 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 3-11.

For complete information on proper use of the vessel please refer to the 80S Series USER'S GUIDE 94182

**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**

- Hydro testing at 1.5 times the design pressure.
  - CE Marked.
- Hydro testing at 1.1 times the design pressure.
  - ASME Stamped and National Board Registered.
  - In compliance with the ASME Section X but not Code Stamped.

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  TRI-CLOVER  
Material of Construction  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  TRI-CLOVER  
Material of Construction  Noryl  SS316L  Zeron 100

**Note:**

- Standard offering is 1.0" FNPT in Noryl.
- 1.25" & 1.5" BSPTF, 1.25" & 1.5" FNPT and 1.25" TRI-CLOVER connections cannot be offered.
- TRI-CLOVER permeate port cannot be offered in Noryl.

**STRAP ASSEMBLY**

SS304  SS316  SS316L

**FEED/CONCENTRATE PORT SELECTION**

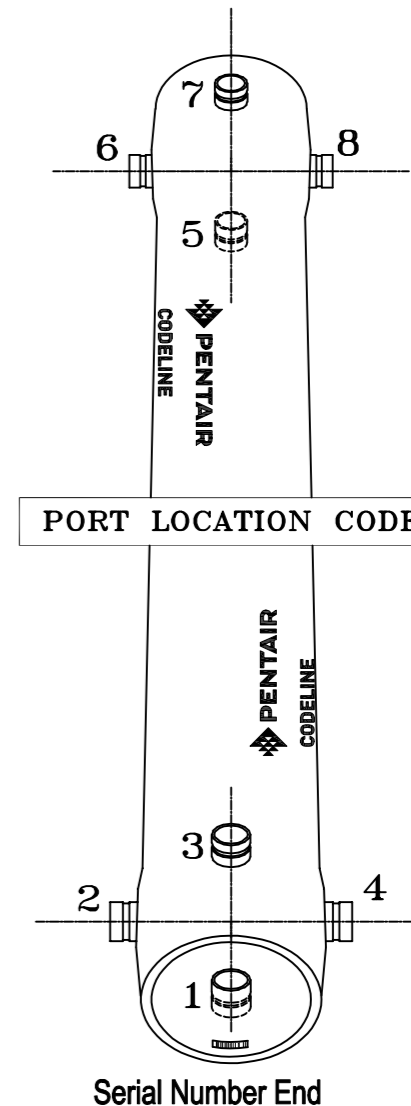
Material of Construction  CF3M  Duplex (CD3MN)  
 Super Duplex (CD3MWCuN)

Configuration  CF3M 1D5D  
 Multi ports:  
2.5" Ports not available in 90° Configuration.

Serial number end          
Opposite end

**BEARING PLATE MATERIAL**

A96061 T6 Aluminum  
 Stainless Steel 316L



CODELINE BODY LABELS ARE PLACED AT 90° ON SERIAL NUMBER END AND AT 270° ON THE OPPOSITE SIDE END

<p><b>GENERAL NOTES:</b> 1. PLEASE REFER TO 99321 FOR TRICLOVER DETAILS AND REFER PAGE-3 FOR OPTIONAL PART NUMBERS.</p>	<p>THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN, ARE THE CONFIDENTIAL AND PROPRIETARY INFORMATION OF PENTAIR INDIA PVT. LTD. PENTAIR INDIA PVT. LTD. IS THE SOLE OWNER OF THE INFORMATION AND PROCESSES DEFINED HEREIN. THIS DOCUMENT, AND THE INFORMATION CONTAINED, MAY NOT BE DISCLOSED, REPRODUCED, DUPLICATED, USED, SOLD, PUBLISHED, COMMUNICATED OR OTHERWISE DISTRIBUTED, IN WHOLE OR IN PART, FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN CONSENT OF PENTAIR INDIA PVT. LTD. THIS DOCUMENT AND ANY COPIES, IN ALL APPLICABLE FORMATS, SHALL BE RETURNED TO PENTAIR INDIA PVT. LTD. UPON REQUEST.</p> <p>ALL INDICATED PENTAIR TRADEMARKS AND LOGOS ARE PROPERTY OF PENTAIR. THIRD PARTY REGISTERED AND UNREGISTERED TRADEMARKS AND LOGOS ARE PROPERTY OF THEIR RESPECTIVE OWNERS. BECAUSE WE ARE CONTINUOUSLY IMPROVING OUR PRODUCTS AND SERVICES, PENTAIR RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT PRIOR NOTICE. PENTAIR IS AN EQUAL OPPORTUNITY EMPLOYER.</p> <p>©2021 Pentair. All Rights Reserved.</p>	<div style="text-align: center;"> <p><b>PENTAIR CODELINE</b></p> </div> <p style="text-align: right;">VERNA, GOA INDIA</p> <table border="1" style="width: 100%; font-size: small;"> <tr> <td>DRAWN BY: RA</td> <td>DRAWING DESCRIPTION: MODEL - 80S60 MEMBRANE HOUSING</td> <td>DRAWING NO.: 99162</td> <td>REV.: AA</td> </tr> <tr> <td>CHECKED BY: KPS</td> <td>CUSTOMER NAME: -</td> <td colspan="2">VESSEL MODEL: 80S60</td> </tr> <tr> <td>DATE: 15/09/21</td> <td>PROJECT NAME: -</td> <td colspan="2">TOTAL QTY: -</td> </tr> <tr> <td>APPROVED BY: FF</td> <td>DATE: 15/09/21</td> <td>CUSTOMER P.O.#: -</td> <td>SCALE: NONE</td> </tr> <tr> <td>ECN NO.: 5761</td> <td>DATE: 09/12/21</td> <td>SIZE: A3</td> <td>PAGE NO.: 02 OF 03</td> </tr> </table>	DRAWN BY: RA	DRAWING DESCRIPTION: MODEL - 80S60 MEMBRANE HOUSING	DRAWING NO.: 99162	REV.: AA	CHECKED BY: KPS	CUSTOMER NAME: -	VESSEL MODEL: 80S60		DATE: 15/09/21	PROJECT NAME: -	TOTAL QTY: -		APPROVED BY: FF	DATE: 15/09/21	CUSTOMER P.O.#: -	SCALE: NONE	ECN NO.: 5761	DATE: 09/12/21	SIZE: A3	PAGE NO.: 02 OF 03
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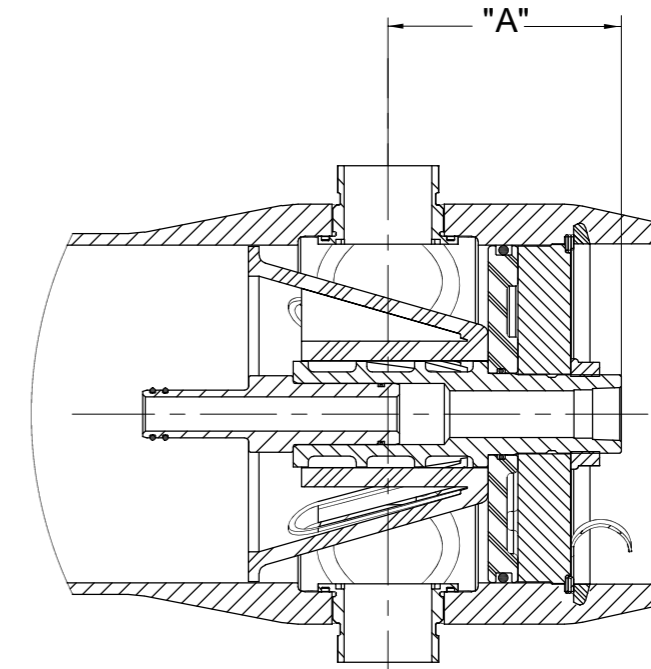
BEARING PLATE PART NUMBERS		
PERMEATE PORT SIZE	ALUMINIUM	SS F316L ###
1.0"/1.25"	194452	194514
1.5"	194483	194545

SEALING PLATE PART NUMBERS	
Standard used for Aluminium BP	96160
Optional used for SS F316L BP	96477

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

STRAP ASSEMBLY PART NUMBERS		
SS304	SS316	SS316L
45042	46926 <sup>+</sup>	94371 <sup>+</sup>

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

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"	NORYL	96162	5.5	97659	6.5	96301	5.5	97660	6.5	97661	6.8
	SS 316L # #	96752	5.5	97347	6.5	97351	5.5	97355	6.5	97322	6.8
	#ZERON 100	97349	5.5	97348	6.5	97352	5.5	97356	6.5	97293	6.8
1.25"	NORYL	NA	NA	97655	6.5	NA	NA	97360	6.5	97662	6.8
	SS 316L # #	NA	NA	96487	6.5	NA	NA	97362	6.5	97311	6.8
	#ZERON 100	NA	NA	97359	6.5	NA	NA	97363	6.5	97365	6.8
1.5"	NORYL	NA	NA	97663	6.1	NA	NA	97369	6.1	97656	6.7
	SS 316L # #	NA	NA	97368	6.1	NA	NA	97371	6.1	97449	6.7
	#ZERON 100	NA	NA	97292	6.1	NA	NA	97372	6.1	97374	6.7

**GENERAL NOTES:**

- DIMENSIONS IN INCHES (MM APPROX.).
- \* GRADE SA-351 CF3M.
- \*\* GRADE SA-995 CD3MN (UNS J92205).
- \*\*\* GRADE SA-995 CD3MWCuN (UNS J93380)
- # GRADE SA-479 UNS S32760/S32750
- ## GRADE SA-479 316L
- ### GRADE SA-182 F316L
- + OPTIONAL STRAP ASSEMBLY WITH SS-316 & 316L SHALL BE SUPPLIED AS PER METRIC STANDARDS.

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