

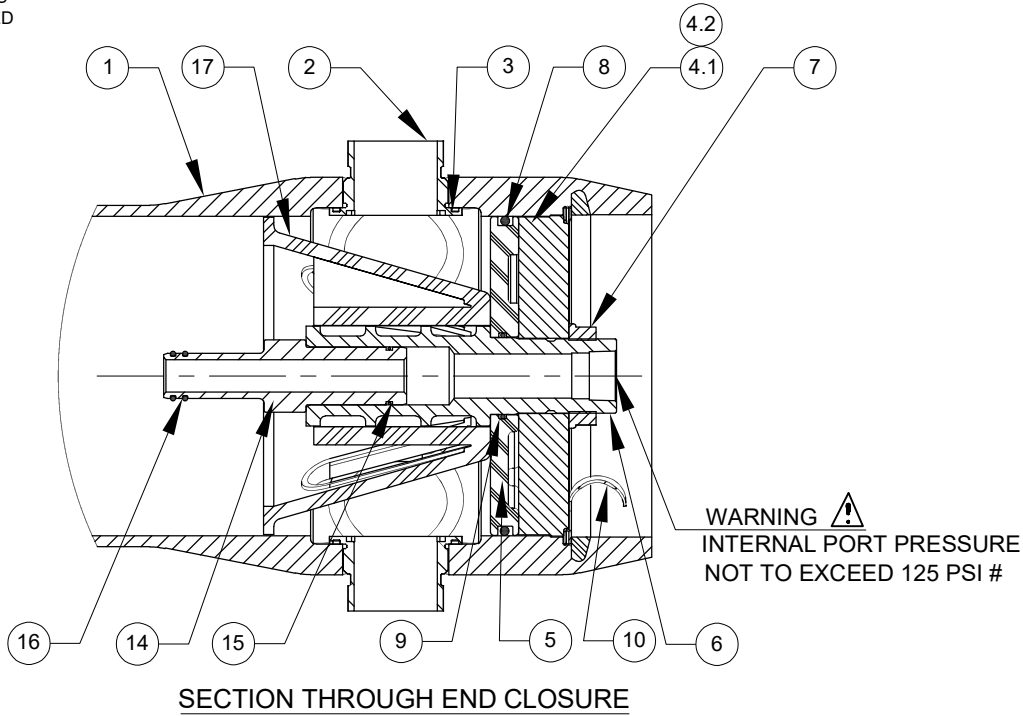
DWG REF	QTY	PART NUMBER	DESCRIPTION	MATERIAL
SHELL				
1*	1	99219	SHELL	Filament Wound Epoxy/Glass composite - Head locking grooves integrally wound in place.
2*	A/R	A/R	F/C Port	SA-351 CF3M
3	A/R	A/R	F/C Port Seal	Ethylene Propylene
HEAD				
4	2	194452	Bearing Plate Assembly	-
4.1*	1	96157	Bearing Plate	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	196223	Head Seal	Ethylene Propylene - O - Ring
9	2	196215	Perm Port Seal	Ethylene Propylene - O - Ring
HEAD INTERLOCK				
10*	2	47336	Quick Release Retaining Ring	SA-479 SS-316
VESSEL SUPPORT				
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, 304 Stainless Steel.
ELEMENT INTERFACE				
14	2	A/R	Adapter	Engineering Thermoplastic.
15	2	196222	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



#### GENERAL NOTES:

1. MAX. ANGULAR VARIATION BETWEEN ANY PORT ±0.5°.
  2. DIMENSION IN INCHES (MM APPROX.).
  3. SHELL EXTERIOR COATED WITH WHITE RAL 9003, HIGH GLOSS POLYURETHANE PAINT.
  4. ITEM 17 DOWNSTREAM ONLY.
  5. 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.  
\* ASME PARTS

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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)	

**PENTAIR**  
CODELINE  
VERNA, GOA  
INDIA

DRAWN BY: PGS	DRAWING DESCRIPTION: MODEL - 80S60 MEMBRANE HOUSING	DRAWING NO.: 99162	REV.: AJ
DATE: 02SEPT08	CUSTOMER NAME: -	VESSEL MODEL: 80S60	
CHECKED BY: MD	PROJECT NAME: -	TOTAL QTY: -	
DATE: 02SEPT08	CUSTOMER P.O.#: -	SIZE: A3	SCALE: NONE
PCO NO.: 547854			PAGE NO.: 01 OF 03
REV. DATE: 13OCT25			

RATING:

DESIGN PRESSURE/MAWP.....	600 PSI (4.14 MPa)
MAX. ALLOWABLE TEMP.....	190°F (88°C)
MIN. ALLOWABLE TEMP.....	20°F (-7°C)
FACTORY TEST PRESSURE.....	660 PSI (4.55 MPa)
QUALIFICATION PRESSURE .....	3600 PSI (24.82 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 2025. F/C port, Bearing plate and Quick release spiral ring are designed as per ASME Section VIII Division I Edition 2025.

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;  
\*\*\*ΔIA = 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.

DO NOT...operate outside the pH range 2-12 for cleaning.

DO NOT...exceed 43.2 hours in a year for cleaning with above mentioned pH range.

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 1.1 times the design pressure.  
☐ CE Marked – MODULE-D1, CATEGORY-2  
☐ ASME Stamped and National Board Registered.

PERMEATE PORT SELECTION

Serial Number End

Size of the Permeate Port ☐ 1” ☐ 1.25” ☐ 1.5”

Type of Connection ☐ FNPT ☐ MNPT ☐ BSPTM ☐ BSPTF ☐ IPSG ☐ TRI-CLOVER ☐ BSPPF ☐ BSPPM

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 ☐ IPSG ☐ TRI-CLOVER ☐ BSPPF ☐ BSPPM

Material of Construction ☐ Noryl ☐ SS316L ☐ Zeron 100

Note:

- Refer to Page 3 for available permeate port options.

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.

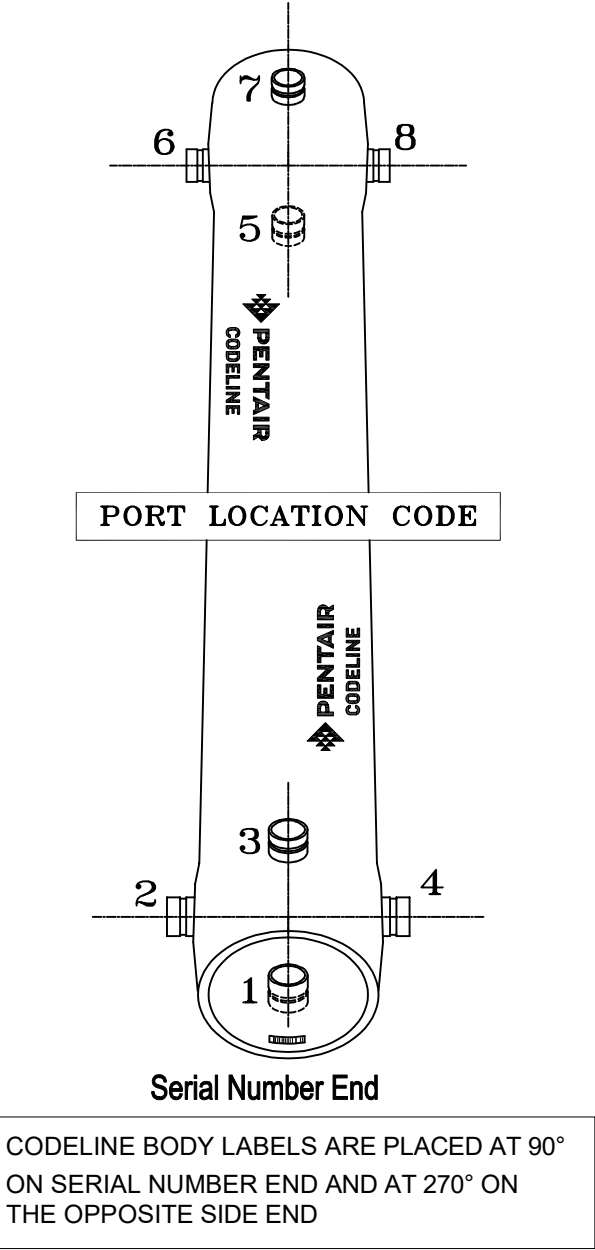
Serial number end ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Opposite end ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

BEARING PLATE MATERIAL

☐ A96061 T6 Aluminum  
☐ Stainless Steel 316L

ADAPTER KITS	
UP STREAM	DOWN STREAM




GENERAL NOTES:

- PLEASE REFER TO 99321 FOR TRICLOVER DETAILS AND REFER PAGE-3 FOR OPTIONAL PART NUMBERS.

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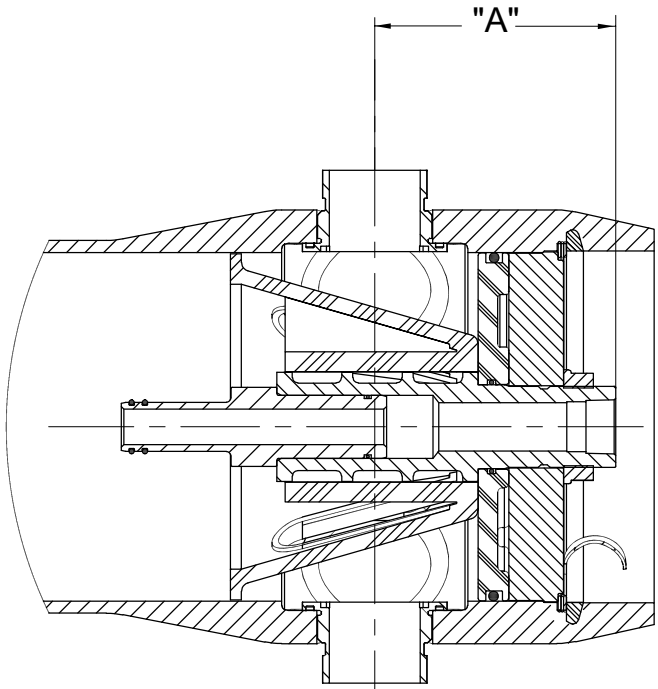
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		<b>CODELINE</b>		INDIA	
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DATE:	02SEPT08	MODEL - 80S60 MEMBRANE HOUSING	99162	AJ	
CHECKED BY:	MD	CUSTOMER NAME:	VESSEL MODEL:		
DATE:	02SEPT08	-	80S60		
APPROVED BY:	RM	PROJECT NAME:	TOTAL QTY:		
DATE:	02SEPT08	-	-		
PCO NO. :	547854	CUSTOMER P.O.#:	SIZE:	SCALE:	PAGE NO.:
REV. DATE:	13OCT25	-	A3	NONE	02 OF 03

++ BEARING PLATE PART NUMBERS		
PERMEATE PORT SIZE	ALUMINIUM	SS F316L ###
1.0"/1.25"	194452	PWG195103
1.5	194483	PWG195104

STRAP ASSEMBLY PART NUMBERS		
SS304	SS-316	SS-316L
45042	46926 <sup>+</sup>	94371 <sup>+</sup>

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

F/C PORT <sup>++</sup> & SEAL PART NUMBER				
SIZE	*CF3M	**CD3MN	***CD3MWCuN	SEAL
1.5"	96236	97258	96601	196224
2.0"	96237	97367	96644	196225
2.5"	96238	97361	96646	196226



SECTION THROUGH END CLOSURE

PERMEATE PORT PART NUMBERS & PERMPORT TO F/C PORT OFFSET DISTANCE															
SIZE	MATERIAL	FNPT		MNPT		BSPTF		BSPTM		IPS GROOVED		BSPPF		BSPPM	
		PART NUMBER	DIM "A"	PART NUMBER	DIM "A"	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	96379	5.5	NA	NA
	SS 316L # #	96752	5.5	97347	6.5	97351	5.5	97355	6.5	97322	6.8	NA	NA	NA	NA
	#ZERON 100	97349	5.5	97348	6.5	97352	5.5	97356	6.5	97293	6.8	NA	NA	NA	NA
1.25"	NORYL	NA	NA	97655	6.5	NA	NA	97360	6.5	97662	6.8	NA	NA	97710	6.5
	SS 316L # #	NA	NA	96487	6.5	NA	NA	97362	6.5	97311	6.8	NA	NA	NA	NA
	#ZERON 100	NA	NA	97359	6.5	NA	NA	97363	6.5	97365	6.8	NA	NA	NA	NA
1.5"	NORYL	NA	NA	97663	6.1	NA	NA	97369	6.1	97656	6.7	NA	NA	97326	6.0
	SS 316L # #	NA	NA	97368	6.1	NA	NA	97371	6.1	97449	6.7	NA	NA	NA	NA
	#ZERON 100	NA	NA	97292	6.1	NA	NA	97372	6.1	97374	6.7	NA	NA	NA	NA

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.

++ ASME PARTS.

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APPROVED BY:	RM	PROJECT NAME:	TOTAL QTY:	
DATE:	02SEPT08	-	-	
PCO NO. :	547854	CUSTOMER P.O.#:	SIZE:	SCALE:
REV. DATE:	13OCT25	-	A3	NONE
				PAGE NO.: 03 OF 03