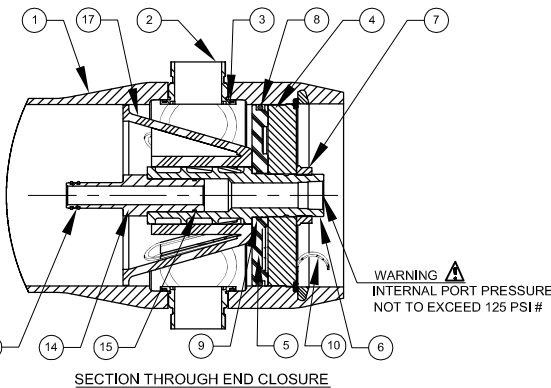


VIEW AT CENTER SUPPORT
 CENTER VESSEL ON 2 OR 3 SUPPORTS
 AT SPAN(S) *S*: 3 SUPPORTS REQUIRED
 FOR LENGTHS -4 AND ABOVE

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		F/C Port	CF3M as per SA-351
3	A/R		F/C Port Seal	Ethylene Propylene
HEAD				
4	2	96157	Bearing Plate	6061-T6 as per SB-221
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
HEAD INTERLOCK				
10	2	47336	Quick Release Spiral Ring	SS-316 as per SA-479
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, 18-8 Stainless Steel.
ELEMENT INTERFACE				
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.



- NOTES:-
- MAX. ANGULAR VARIATION BETWEEN ANY PORTS $\pm 0.5^\circ$.
 - 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.
 - F/C PORT, BEARING PLATE, PERMPORT & QUICK RELEASE SPIRAL RING MATERIALS ARE AS PER STAMPED APPLICABLE ASME EDITION.
 - # 600 PSI FOR METALLIC PERMPORT
 - FOR OPTIONAL PART NUMBERS REFER PAGE 3
 - ** WEIGHTS GIVEN IN THE TABLE ARE FOR HIGHEST CONFIGURATION AND WILL VARY WITH CHANGE IN CONFIGURATION.

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

PO NUMBER	
CUSTOMER NAME	
PROJECT NAME	
TOTAL QUANTITY	

PORT CONFIGURATION DETAILS

PORT CONFIG	VESSEL QUANTITY
-------------	-----------------

DRAWN DATE	PGS 02 SEP 08
CHECKED DATE	MD 02 SEP 08
APPROVED DATE	RM 02 SEP 08

Dash Length	L IN(MM)	P IN(MM)	S IN(MM)	Approx Weight LB(KG)**
-1	59.75 (1518)	47 (1194)	20X1 (508)	86 (39)
-2	99.75 (2534)	87 (2210)	56X1 (1422)	110 (50)
-3	139.75 (3550)	127 (3226)	80X1 (2032)	135 (61)
-4	179.75 (4566)	167 (4242)	64X2 (1626)	160 (73)
-5	219.75 (5582)	207 (5258)	78X2 (1981)	183 (83)
-6	259.75 (6598)	247 (6274)	92X2 (2337)	208 (94)
-7	299.75 (7614)	287 (7290)	106X2 (2692)	230 (104)
-8	339.75 (8630)	327 (8306)	120X2 (3048)	255 (116)



MODEL - 80S60
 MEMBRANE HOUSING

ECN 4624	DWG. NO. 99162	REV. S
DATE 14DEC17	SCALE NONE	SIZE A3
		SHEET 1 OF 3

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. 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. 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;
***ΔDIA = 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 3-11.

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

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 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 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" SANITARY connections cannot be offered
- Sanitary permeate port cannot be offered in Noryl

STRAP ASSEMBLY

- Standard SS304 Optional SS316 Optional SS316L

FEED/CONCENTRATE PORT SELECTION

- Material of Construction Standard 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

BEARING PLATE MATERIAL

- Standard – 6061 T6 Aluminium
- Optional – Stainless Steel 316L

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

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

4

3

2

1

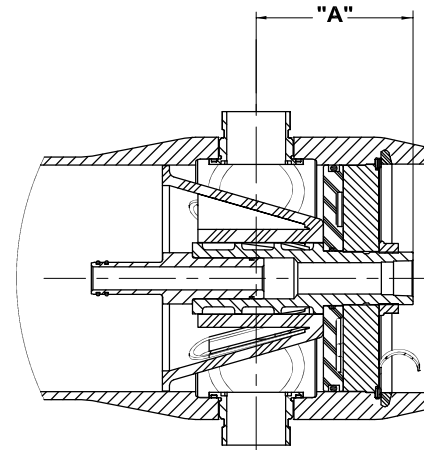
BEARING PLATE PART NUMBERS		
PERMEATE PORT SIZE	ALUMINIUM	SS F316L ###
1.0"/1.25"	96157	96476
1.5"	96411	97373

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

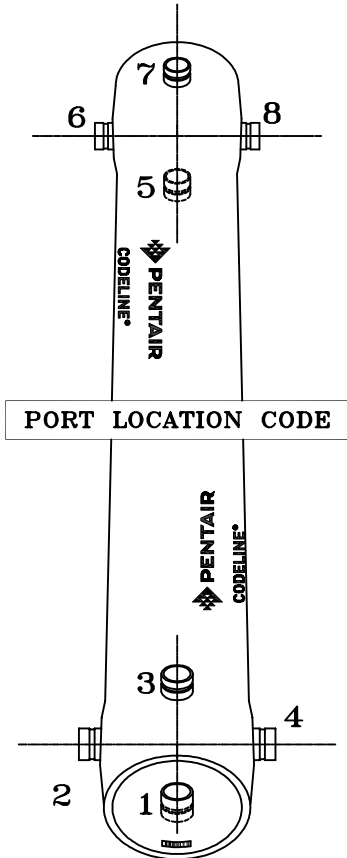
PERM PORT RETAINER RING & PORT NUT PART NUMBERS		
1.0" / 1.25"	Standard Port nut	45066
1.5"	Port Retainer Ring	45247

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

CODELINE BODY LABELS ARE PLACED AT 90° TO SERIAL NUMBER END AND AT 270° ON THE OPPOSITE SIDE 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"	NORYL	96162	5.5	97659	6.5	96301	5.5	97660	6.5	97661	6.8
	SS316L # #	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
	SS316L # #	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
	SS316L # #	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

NOTES

- DIMENSION IN INCHES (MM APPROX.)
 * GRADE CF3M AS PER SA-351
 ** GRADE CD3MN AS PER SA-995 (UNS-J92205)
 *** GRADE CD3MWCuN AS PER SA-995 (J 93380)
 # GRADE ZERON 100 AS PER SA-479
 ## GRADE SS-316L AS PER SA-479
 ### GRADE SS-F316L AS PER SA-182
 + OPTIONAL STRAP ASSEMBLY WITH SS-316 & 316L SHALL BE SUPPLIED AS PER METRIC STANDARDS

DRAWN	PDM	MODEL - 80S60 MEMBRANE HOUSING			
	27 JUN 11	ECN	DWG. NO.	REV.	
CHECKED	RD	4624	99162	S	
	27 JUN 11	DATE	SCALE	SIZE	SHEET
APPROVED	RM	14DEC17	NONE	A3	3 OF 3
	27 JUN 11				

4

3

2

1