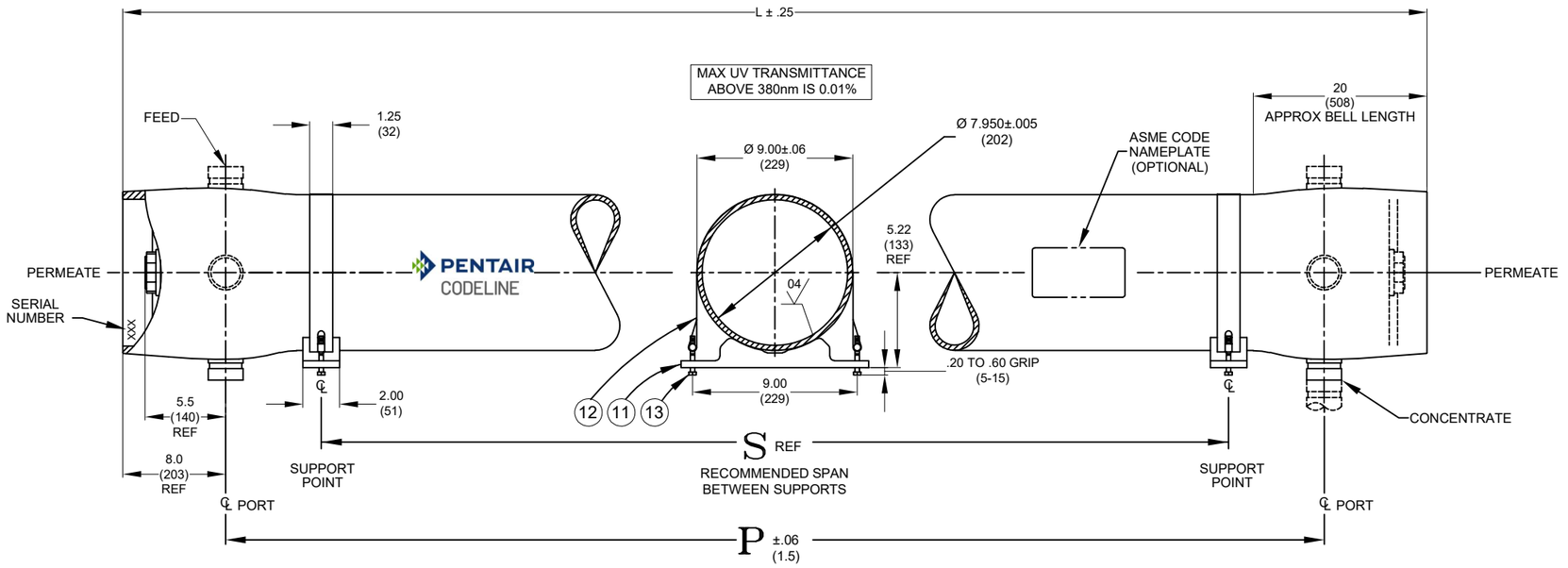
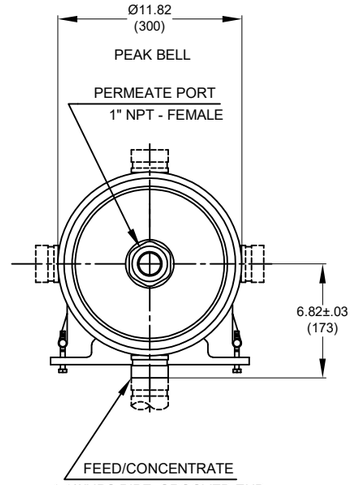




1 1/2" IPS PIPE GROOVED END
MULTIPORT CONFIGURATIONS IN
1 1/2", 2" & 2 1/2" ARE AVAILABLE
PLEASE SEE ORDER SECTION

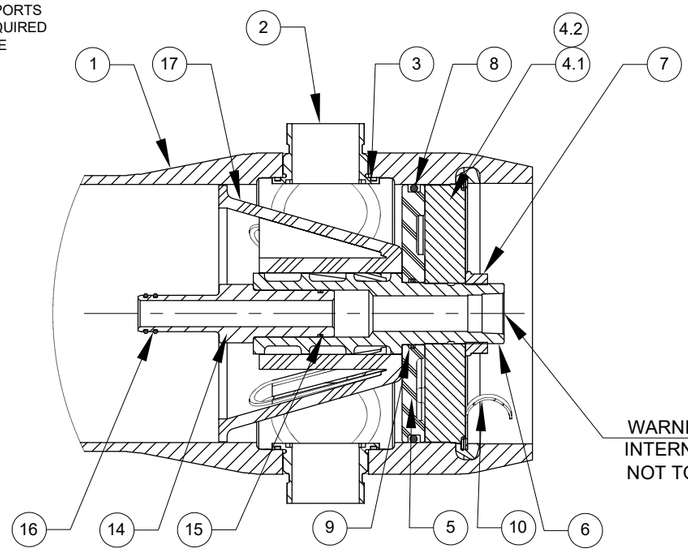
1200 PSI

DWG REF	QTY	PART NUMBER	DESCRIPTION	MATERIAL
SHELL				
1	1	99221	SHELL	Filament Wound Epoxy/Glass composite - Head locking grooves integrally wound in place.
2	A/R	A/R	F/C Port	SA-995 (J93380) CD3MWCuN
3	A/R	A/R	F/C Port Seal	Ethylene Propylene
HEAD				
4	2	194456	Bearing Plate Assembly	-
4.1	1	96158	Bearing Plate	SB-221 A96061-T6
4.2	1	96167	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
HEAD INTERLOCK				
10	2	47336	Quick Release Spiral Ring	SA-479 316
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, 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.

VIEW AT CENTER SUPPORT

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



SECTION THROUGH END CLOSURE

PORT SIZE CODE	
D	1½" GROOVED END
E	2" GROOVED END
F	2 ½" 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

WARNING ⚠
INTERNAL PORT PRESSURE
NOT TO EXCEED 125 PSI #

NO. OF PORTS	PORT LOCATION	VESSEL QTY.

Dash Length	L IN(MM)	P IN(MM)	S IN(MM)	Approx Weight LB(KG)**
-1	63.15 (1604)	47 (1194)	19X1 (483)	167 (76)
-2	103.15 (2620)	87 (2210)	56X1 (1422)	207 (94)
-3	143.15 (3636)	127 (3226)	80X1 (2032)	247 (112)
-4	183.15 (4652)	167 (4242)	64X2 (1626)	293 (133)
-5	223.15 (5668)	207 (5258)	78X2 (1981)	339 (154)
-6	263.15 (6684)	247 (6274)	92X2 (2337)	377 (171)
-7	303.15 (7700)	287 (7290)	106X2 (2692)	428 (194)
-8	343.15 (8716)	327 (8306)	120X2 (3048)	452 (205)

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.

PENTAIR CODELINE
VERNA, GOA
INDIA

DRAWN BY: RA DATE: 15/09/21	DRAWING DESCRIPTION: MODEL - 80S120 MEMBRANE HOUSING		DRAWING NO.: 99164		REV.: AA
CHECKED BY: KPS DATE: 15/09/21	CUSTOMER NAME: -		VESSEL MODEL: 80S120		
APPROVED BY: FF DATE: 15/09/21	PROJECT NAME: -				TOTAL QTY: -
ECN NO. : 5940 DATE: 13/01/22	CUSTOMER P.O.#: -	SIZE: A3	SCALE: NONE		PAGE NO.: 01 OF 03

RATING:

DESIGN PRESSURE……1200 PSIG (8.27 MPa)
MAX. OPERATING TEMP……..…….…150°F (66°C)
MIN. OPERATING TEMP……..…… 20°F (-7°C)
FACTORY TEST PRESSURE…….…..CE / ASME 1800 PSIG / 1320 PSIG (12.41 MPa)/(9.10 MPa)
QUALIFICATION PRESSURE ……..……...7200 PSI (49.64 MPa)

INTENDED USE:

The CodeLine 80S120 Fiberglass RO Pressure Vessel is designed for continuous, long term use as housing for reverse osmosis membrane elements to desalt typical sea waters at pressures up to 1200 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 80S120 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 ASME 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 80S120 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.

Specification are subjected 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 150°F (0.86 Mpa at 66^{0}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 80S120 ☐ -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 ☐ **Super Duplex SS (CD3MWCuN)**
☐ - CE3MN * (Cannot be offered for ASME Stamped vessels)

Configuration ☐ **CD3MWCuN 1D5D**
☐ Multi ports:
1.5", 2", 2.5" Ports not available in 90^0 configurations.

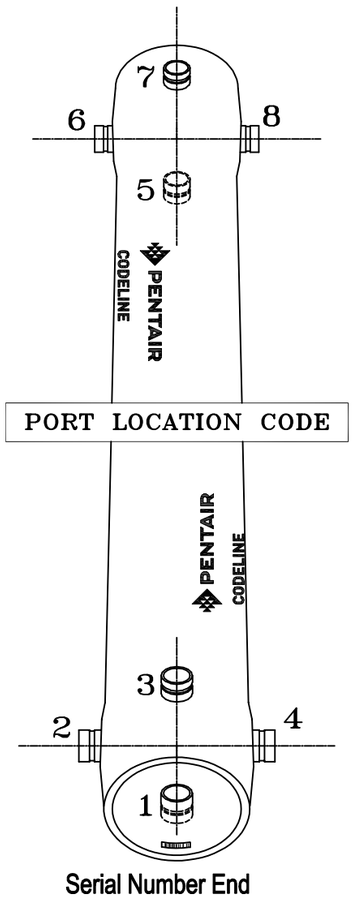
Serial number end ☐☐☐☐☐☐☐☐

Opposite end ☐☐☐☐☐☐☐☐

BEARING PLATE MATERIAL

☐ **A96061 T6 Aluminum**

☐ Stainless Steel 316L



Serial Number End

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

GENERAL NOTES:

1. PLEASE REFER TO 99376 FOR TRICLOVER DETAILS AND REFER PAGE 03 FOR OPTIONAL PART NUMBERS.

PENTAIR CODELINE VERNA, GOA INDIA

DRAWN BY: / DATE:	RA / 15/09/21	DRAWING DESCRIPTION: MODEL - 80S120 MEMBRANE HOUSING		DRAWING NO.: 99164	REV.: AA
CHECKED BY: / DATE:	KPS / 15/09/21	CUSTOMER NAME: -		VESSEL MODEL: 80S120	
APPROVED BY: / DATE:	FF / 15/09/21	PROJECT NAME: -			TOTAL QTY: -
ECN NO. : / DATE:	5940 / 13/01/22	CUSTOMER P.O.#: -	SIZE: A3	SCALE: NONE	PAGE NO.: 02 OF 03

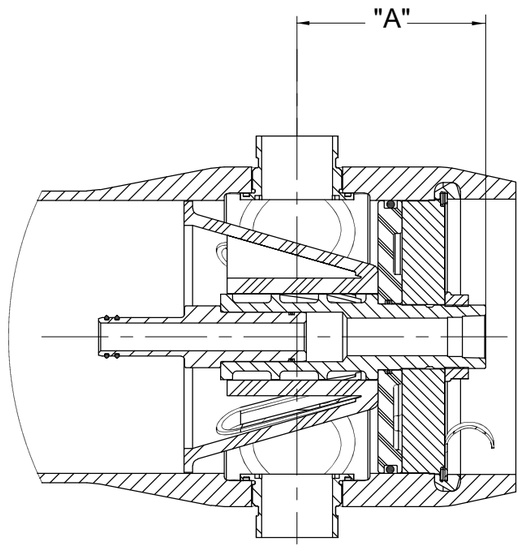
BEARING PLATE PART NUMBERS		
PERMEATE PORT SIZE	ALUMINIUM	SS F316L ###
1.0"/1.25"	**194456**	194518
1.5"	194487	194549

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

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

STRAP ASSEMBLY PART NUMBERS		
SS304	**SS316**	**SS316L**
45042	46926+	94371+

F/C PORT & SEAL PART NUMBER			
SIZE	***CD3MWCuN	**CE3MN	**SEAL**
1.5"	**96469**	96725	**96077**
2.0"	96645	96907	96078
2.5"	96385	96954	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-995 CE3MN (UNS J93404).
CE3MN CANNOT BE OFFERED FOR ASME STAMPED VESSELS.
*** 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.

PENTAIR CODELINE
VERNA, GOA INDIA

DRAWN BY: / DATE:	RA / 15/09/21	DRAWING DESCRIPTION:	MODEL - 80S120 MEMBRANE HOUSING	DRAWING NO.:	99164 / REV.: AA
CHECKED BY: / DATE:	KPS / 15/09/21	CUSTOMER NAME:	-	VESSEL MODEL:	80S120
APPROVED BY: / DATE:	FF / 15/09/21	PROJECT NAME:	-	TOTAL QTY:	-
ECN NO. : / DATE:	5940 / 13/01/22	CUSTOMER P.O.#:	-	SIZE: A3 / SCALE: NONE	PAGE NO.: 03 OF 03