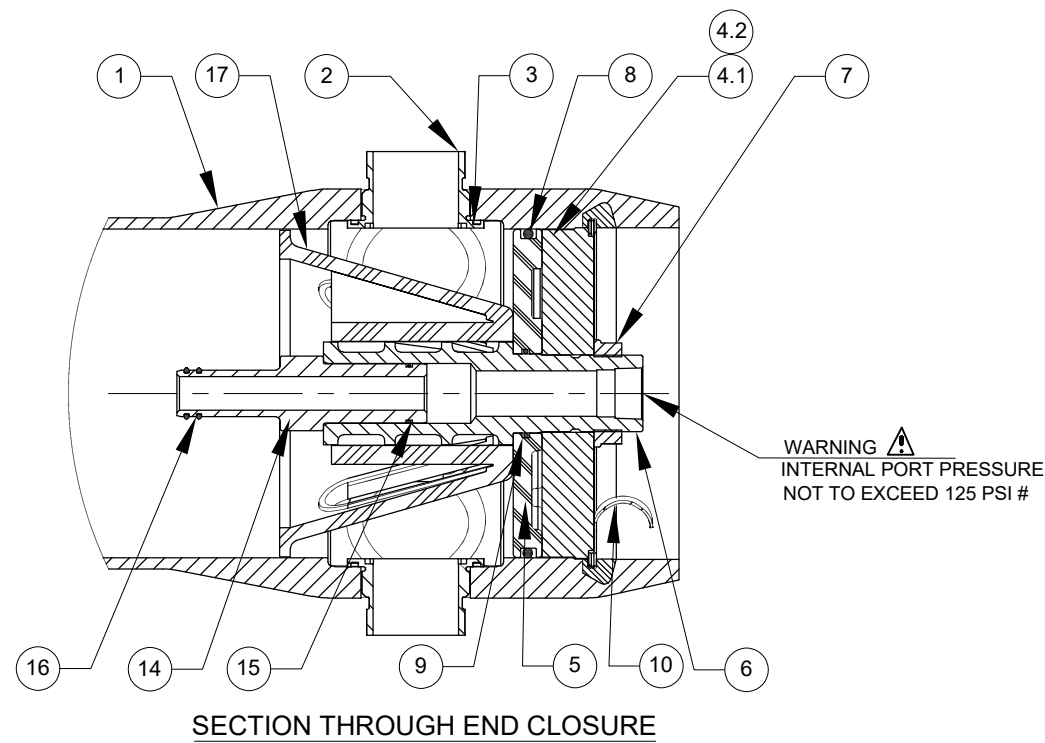


| DWG REF | QTY | PART NUMBER | DESCRIPTION | MATERIAL |
|--------------------------|-----|-------------|------------------------------|--|
| SHELL | | | | |
| 1* | 1 | 99220 | SHELL | Filament Wound Epoxy/Glass composite - Head locking grooves integrally wound in place. |
| 2* | A/R | A/R | F/C Port | SA-995 (UNS J93380) CD3MWCuN |
| 3 | A/R | A/R | F/C Port Seal | Ethylene Propylene |
| HEAD | | | | |
| 4 | 2 | 194454 | Bearing Plate Assembly | - |
| 4.1* | 1 | 96158 | Bearing Plate | SB-221 A96061-T6 |
| 4.2 | 1 | 96168 | 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-479 316 |
| 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. |

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 | 63.15 (1604) | 47 (1194) | 19X1 (483) | 145 (66) |
| -2 | 103.15 (2620) | 87 (2210) | 56X1 (1422) | 167 (76) |
| -3 | 143.15 (3636) | 127 (3226) | 80X1 (2032) | 196 (89) |
| -4 | 183.15 (4652) | 167 (4242) | 64X2 (1626) | 231 (105) |
| -5 | 223.15 (5668) | 207 (5258) | 78X2 (1981) | 258 (117) |
| -6 | 263.15 (6684) | 247 (6274) | 92X2 (2337) | 324 (147) |
| -7 | 303.15 (7700) | 287 (7290) | 106X2 (2692) | 346 (157) |
| -8 | 343.15 (8716) | 327 (8306) | 120X2 (3048) | 370 (168) |

GENERAL NOTES:
 1. MAX. ANGULAR VARIATION BETWEEN ANY PORT $\pm 0.5^\circ$.
 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.
 * ASME PARTS.
 ** WEIGHTS GIVEN IN THE TABLE ARE FOR HIGHEST CONFIGURATION AND WILL VARY WITH CHANGE IN CONFIGURATION.

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PENTAIR
CODELINE
 VERNA, GOA
 INDIA

| | | | |
|-----------------|--|----------------------|-------------|
| DRAWN BY: PGS | DRAWING DESCRIPTION: MODEL - 80S100 MEMBRANE HOUSING | DRAWING NO.: 99163 | REV.: AG |
| DATE: 02SEPT05 | CUSTOMER NAME: - | VESSEL MODEL: 80S100 | |
| CHECKED BY: MD | PROJECT NAME: - | TOTAL QTY: - | |
| DATE: 02SEPT05 | CUSTOMER P.O.#: - | SIZE: A3 | SCALE: NONE |
| APPROVED BY: RM | DATE: 02SEPT05 | PAGE NO.: 01 OF 03 | |
| ECN NO.: 6867 | REV. DATE: 09AUG24 | | |

RATING:

DESIGN PRESSURE/MAWP.....1000 PSIG
(6.89 MPa)
MAX. ALLOWABLE TEMP.....150°F
(66°C)
MIN. ALLOWABLE TEMP.....20°F
(-7°C)
FACTORY TEST PRESSURE.....1100 PSIG
(7.58 MPa)
QUALIFICATION PRESSURE6000 PSI
(41.37 MPa)

INTENDED USE:

The CodeLine 80S100 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 1000 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 80S100 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 2023. F/C Port, Bearing Plate, and Quick release spiral ring are Designed as per ASME Section VIII Division I Edition 2023.

At small additional cost vessels can be inspected during construction by an ASME Authorized Inspector and ASME Code stamped.

The CodeLine 80S100 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 150°F (0.86 Mpa at 66°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 43.5 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 80S100 -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.
 - In compliance with the ASME Section X but not Code Stamped.
 - ASME Stamped and National Board Registered.
 - CE Marked – MODULE-D1, CATEGORY-2

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 TRICLOVER

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 TRICLOVER

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 port:
1.5", 2", 2.5" Ports not available in 90° configurations.

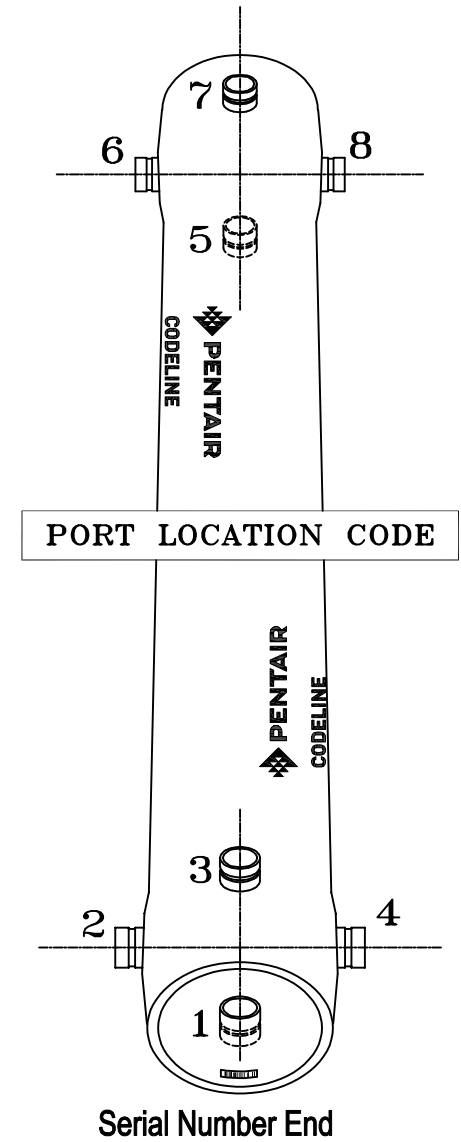
Serial number end

Opposite end

BEARING PLATE MATERIAL

A96061 -T6 Aluminum
 Stainless Steel 316L

| ADAPTER KITS | |
|--------------|-------------|
| UP STREAM | DOWN STREAM |
| | |



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-3 FOR OPTIONAL PART NUMBERS.

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| DATE: | 02SEPT05 | MODEL - 80S100 MEMBRANE HOUSING | 99163 | AG |
| CHECKED BY: | MD | CUSTOMER NAME: | VESSEL MODEL: | |
| DATE: | 02SEPT05 | - | 80S100 | |
| APPROVED BY: | RM | PROJECT NAME: | TOTAL QTY: | |
| DATE: | 02SEPT05 | - | - | |
| ECN NO.: | 6867 | CUSTOMER P.O.#: | SIZE: | SCALE: |
| REV. DATE: | 09AUG24 | - | A3 | NONE |
| | | | | PAGE NO.: |
| | | | | 02 OF 03 |

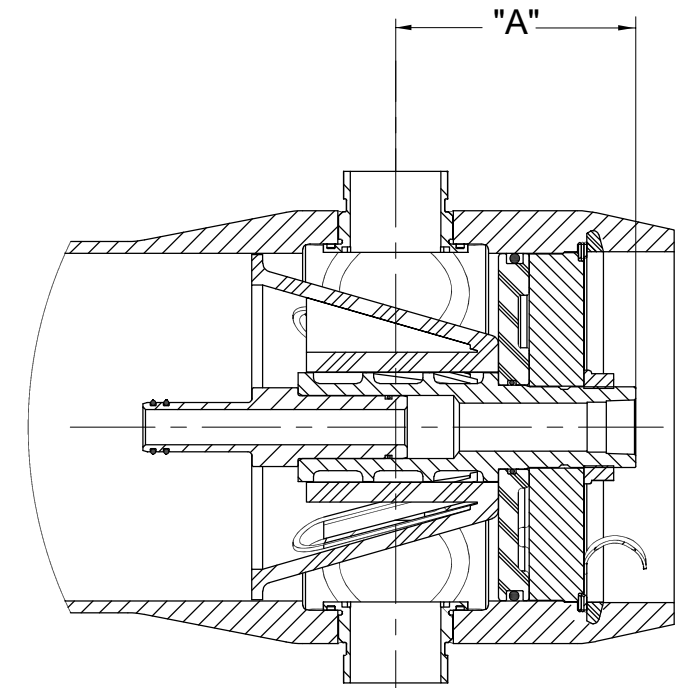
| ** BEARING PLATE PART NUMBERS | | |
|-------------------------------|-----------|--------------|
| PERMEATE PORT SIZE | ALUMINIUM | SS F316L ### |
| 1.0"/1.25" | 194454 | 194516 |
| 1.5" | 194485 | 194547 |

| 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 ⁺ | 94371 ⁺ |

| F/C PORT ^{**} & SEAL PART NUMBER | | | |
|---|-------------|---------|--------|
| SIZE | ***CD3MWCuN | **CE3MN | SEAL |
| 1.5" | 96469 | 96725 | 196224 |
| 2.0" | 96645 | 96907 | 196225 |
| 2.5" | 96385 | 96954 | 196226 |



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 (UNS-J93404) CE3MN.
CE3MN cannot be offered for ASME Stamped vessels.
- ***GRADE SA-995 CD3MWCuN (J 93380)
- # 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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| CHECKED BY: | MD | CUSTOMER NAME: | VESSEL MODEL: | |
| DATE: | 02SEPT05 | - | 80S100 | |
| APPROVED BY: | RM | PROJECT NAME: | TOTAL QTY: | |
| DATE: | 02SEPT05 | - | - | |
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| | | | | PAGE NO.: |
| | | | | 03 OF 03 |