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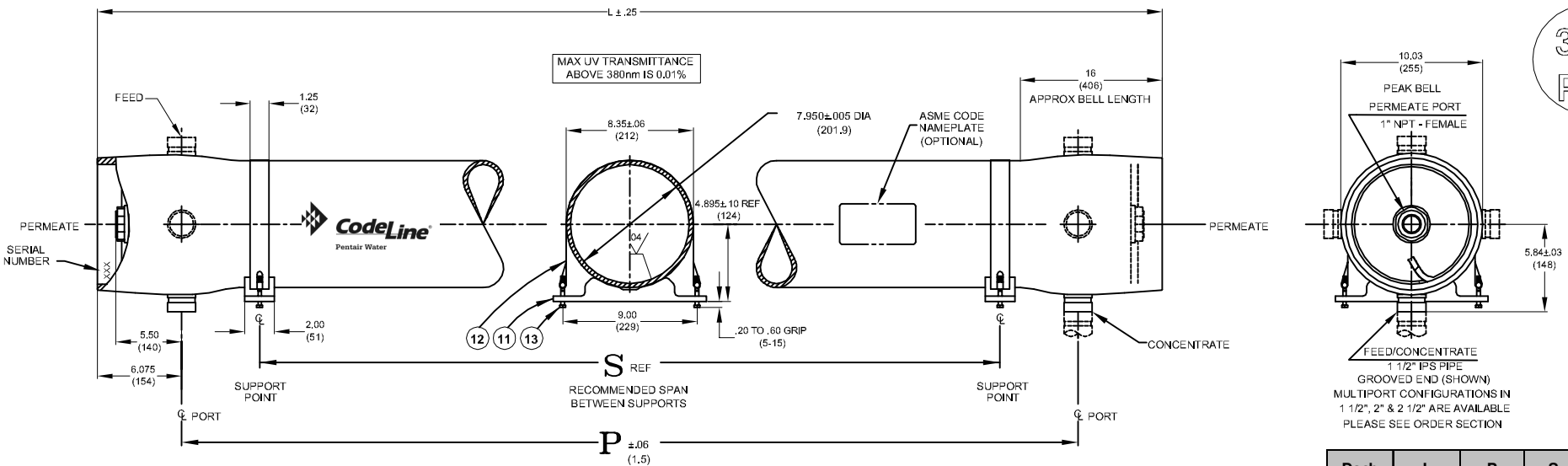
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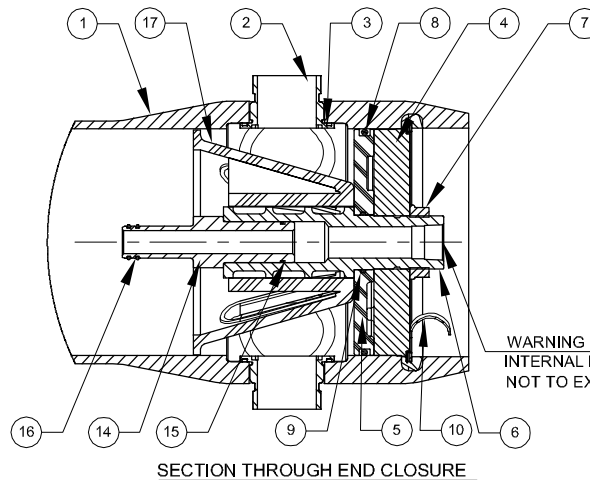
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VIEW AT CENTER SUPPORT  
CENTER VESSEL ON 2 OR 3 SUPPORTS  
AT SPAN(S) "S": 3 SUPPORTS REQUIRED  
FOR LENGTHS 4 AND ABOVE



## NOTES:-

- MAX. ANGULAR VARIATION BETWEEN ANY PORTS  $\pm 0.5^\circ$ .
- DIMENSION IN INCHES (MM APPROX.)
- SHELL EXTERIOR COATED WITH WHITE, HIGH GLOSS POLYURETHANE PAINT.
- ITEM 17 DOWNSTREAM ONLY.
- NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED.
- GRADE CF3M PER ASME SA-351/316L AS PER SA-479
- # 600 PSI FOR METALLIC PERMPORT

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

| DWG REF                                          | QTY | PART NUMBER   | DESCRIPTION               | MATERIAL                                                                               |
|--------------------------------------------------|-----|---------------|---------------------------|----------------------------------------------------------------------------------------|
| SHELL                                            |     |               |                           |                                                                                        |
| 1                                                | 1   | ORDER SECTION | SHELL                     | Filament Wound Epoxy/Glass composite - Head locking grooves integrally wound in place. |
| 2                                                | A/R |               | F/C Port                  | CF3M *                                                                                 |
| 3                                                | A/R |               | F/C Port Seal             | Ethylene Propylene.                                                                    |
| HEAD                                             |     |               |                           |                                                                                        |
| 4                                                | 2   | 96156         | Bearing Plate             | 6061-T6 Aluminium alloy - Hard anodized                                                |
| 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 | 316 Stainless Steel.                                                                   |
| 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, 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 each furnished with length code 4,5,6,7 & 8. |     |               |                           |                                                                                        |

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

|                                   |                 |             |                |            |              |                      |
|-----------------------------------|-----------------|-------------|----------------|------------|--------------|----------------------|
| PO NUMBER                         |                 | Dash Length | L IN(MM)       | P IN(MM)   | S IN(MM)     | Approx Weight LB(KG) |
| CUSTOMER NAME                     |                 | -1          | 59.15 (1502)   | 47 (1194)  | 23X1 (588)   | 71 (32)              |
| PROJECT NAME                      |                 | -2          | 99.15 (2518)   | 87 (2210)  | 56X1 (1422)  | 88 (40)              |
| TOTAL QUANTITY                    |                 | -3          | 139.15 (3534)  | 127 (3226) | 80X1 (2032)  | 106 (48)             |
| PORT CONFIGURATION DETAILS        |                 | -4          | 179.15 (4550)  | 167 (4242) | 64X2 (1626)  | 124 (56)             |
|                                   |                 | -5          | 219.15 (5566)  | 207 (5258) | 78X2 (1981)  | 141 (64)             |
| PORT CONFIG                       | VESSEL QUANTITY | -6          | 259.15 (6582)  | 247 (6274) | 92X2 (2337)  | 159 (72)             |
|                                   |                 | -7          | 299.15 (7598)  | 287 (7290) | 106X2 (2692) | 176 (80)             |
|                                   |                 | -8          | 339.15 (8614)  | 327 (8306) | 120X2 (3048) | 193 (88)             |
|                                   |                 |             |                |            |              |                      |
| CodeLine - 80S30 MEMBRANE HOUSING |                 |             |                |            |              |                      |
| DRAWN DATE                        | KR 17 JAN 08    | ECN 2243    | DWG. NO. 99160 |            | REV. L       |                      |
| CHECKED DATE                      | MD 17 JAN 08    |             | SCALE NONE     |            | SHEET 1 OF 3 |                      |
| APPROVED DATE                     | RM 17 JAN 08    |             | DATE 25 JUL 11 |            |              |                      |

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RATING:

DESIGN PRESSURE.....300 PSIG at 190°F  
(2.1 MPa at 88°C)  
MIN. OPERATING TEMP.....20°F  
(-7°C)  
FACTORY TEST PRESSURE..... CE / ASME  
450 PSIG / 330 PSIG  
(3.10 MPa) (2.27 MPa)  
QUALIFICATION PRESSURE .....1800 PSI  
(12.4 MPa)

INTENDED USE:

The CodeLine 80S30 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 300 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 80S30 is designed in accordance with the engineering standards of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME) Code. At small additional cost vessels can be inspected during construction by an ASME Authorized Inspector and ASME Code stamped.

The CodeLine 80S30 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 Water 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 grooved-end pipe couplings, Victaulic® Style 77 or equal, 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 3-10.

ORDERING:

Using the chart below, please check the features you require

VESSEL LENGTH CODE – please check one

MODEL 80S30 ☐ -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

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

| ADAPTER KITS |                |
|--------------|----------------|
| UP<br>STREAM | DOWN<br>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 ☐ PET/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 ☐ PET/Noryl ☐ SS316L ☐ Zeron 100

Note:

- Standard offering is 1.0” FNPT in PET/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 PET/Noryl

STRAP ASSEMBLY

☐ Standard SS304 ☐ Optional SS316 ☐ Optional SS316L

FEED/CONCENTRATE PORT SELECTION

Material of Construction ☐ CF3M ☐ Optional Duplex SS (CD3MN)  
☐ Optional Super Duplex SS (CD3MWCuN)

Configuration ☐ Standard - CF3M 1D5D  
☐ Optional – Multi ports :( Refer SPEC.SHEET/PM/1.5”-3”for Multi port selection)

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.

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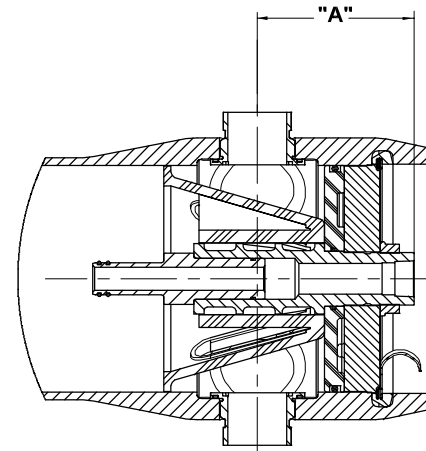
| BEARING PLATE PART NUMBERS |           |        |
|----------------------------|-----------|--------|
| PERMEATE PORT SIZE         | ALUMINIUM | SS316L |
| 1.0"/1.25"                 | 96156     | 97346  |
| 1.5"                       | 96879     | 97350  |

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

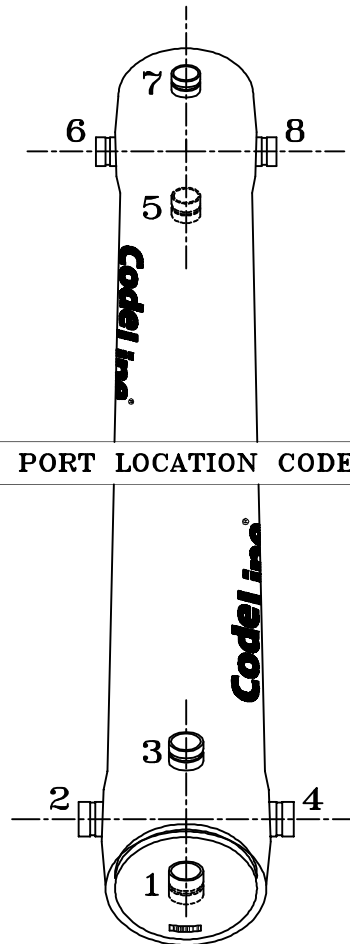
| PERM PORT RETAINER RING & PORT NUT PART NUMBERS |                    |       |
|-------------------------------------------------|--------------------|-------|
| 1.0" / 1.25"                                    | Standard Port nut  | 45066 |
| 1.5"                                            | Port Retainer 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"                        | 98024 | 97353   | 96507       | 96077 |
| 2.0"                        | 98025 | 97357   | 96643       | 96078 |
| 2.5"                        | 98026 | 97364   | 96556       | 96079 |



SECTION THROUGH END CLOSURE



PORT LOCATION CODE

Serial Number 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"                                                              | PET/NORYL  | 96162       | 5.508   | 97316       | 6.508   | 96301       | 5.508   | 97354       | 6.508   | 97323       | 6.808   |
|                                                                   | SS316L     | 96752       | 5.508   | 97347       | 6.508   | 97351       | 5.508   | 97355       | 6.508   | 97322       | 6.808   |
|                                                                   | #ZERON 100 | 97349       | 5.508   | 97348       | 6.508   | 97352       | 5.508   | 97356       | 6.508   | 97293       | 6.808   |
| 1.25"                                                             | PET/NORYL  | NA          | NA      | 96345       | 6.508   | NA          | NA      | 97360       | 6.508   | 97246       | 6.808   |
|                                                                   | SS316L     | NA          | NA      | 96487       | 6.508   | NA          | NA      | 97362       | 6.508   | 97311       | 6.808   |
|                                                                   | #ZERON 100 | NA          | NA      | 97359       | 6.508   | NA          | NA      | 97363       | 6.508   | 97365       | 6.808   |
| 1.5"                                                              | PET/NORYL  | NA          | NA      | 97366       | 6.108   | NA          | NA      | 97369       | 6.108   | 97469       | 6.738   |
|                                                                   | SS316L     | NA          | NA      | 97368       | 6.108   | NA          | NA      | 97371       | 6.108   | 97449       | 6.738   |
|                                                                   | #ZERON 100 | NA          | NA      | 97292       | 6.108   | NA          | NA      | 97372       | 6.108   | 97374       | 6.738   |

## NOTES

" DIMENSION IN INCHES (MM APPROX.)

\* GRADE CF3M PER ASME SA-351/316L AS PER SA-479

\*\* GRADE CD3MN AS PER ASME SPEC SA-995 (UNS-J92205)

\*\*\* GRADE CD3MWCuN AS PER ASME SPEC SA-995 (J 93380)

# GRADE ZERON 100 AS PER ASTM-479

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|--|--|--------------------------------------------------------------|----------------------------|----------------------------------|---------------------------------------------------------------------|
|  |  | <b>Pentair Water</b><br>CodeLine - 80S30<br>MEMBRANE HOUSING |                            |                                  |                                                                     |
|  |  | DRAWN<br>PDM<br>27 JUN 11                                    | CHECKED<br>RD<br>27 JUN 11 | DATE<br>25 JUL 11<br>ECN<br>2243 | DWG. NO.<br>99160<br>SCALE<br>NONE<br>SIZE<br>A3<br>SHEET<br>3 OF 3 |