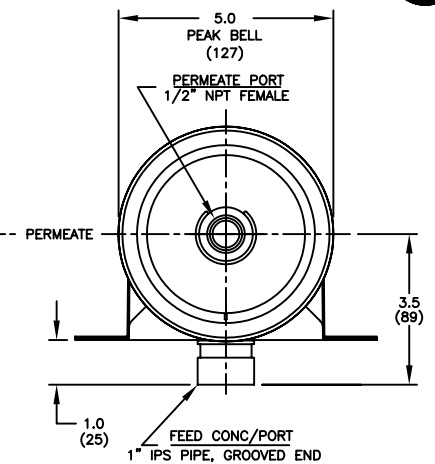
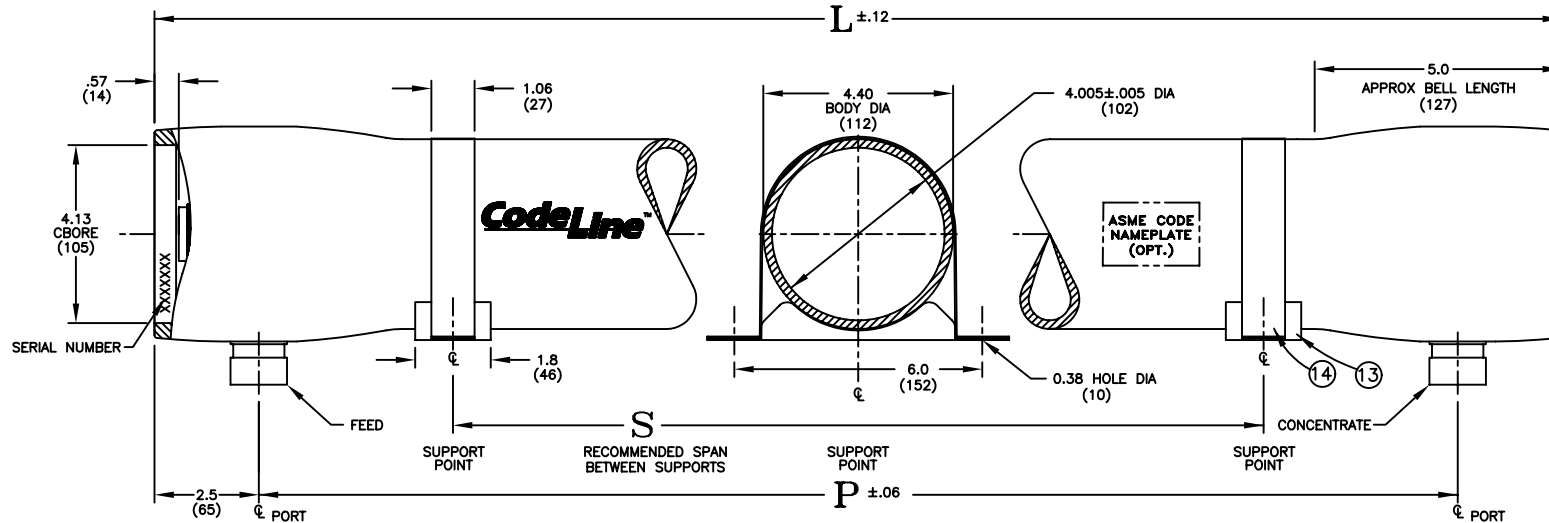
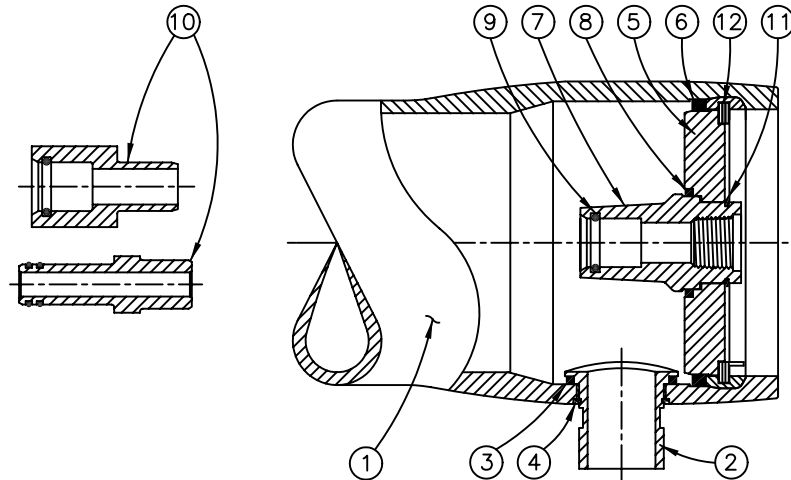


300  
PSI



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



SECTION THROUGH END CLOSURE  
(ENDS ARE IDENTICAL)

• PATENT APPLIED FOR  
• DIMENSIONS IN INCHES (MM APPROX)  
• NOT TO BE USED FOR  
CONSTRUCTION UNLESS CERTIFIED

Dwg. Ref.	Qty. Per	* Part Number	Part Name	Materials/Remarks
* PARTS LISTED ARE STANDARD OPTIONS				
<b>SHELL</b>				
①	1		Shell	Filament wound epoxy/glass composite. S.S. head locking grooves integrally wound in place. Shell exterior coated with white high gloss polyurethane paint.
②	2		Feed/Concentrate Port	316 SST
③	2	ORDER	F/C Port Seal	Ethylene Propylene - Square Cut
④	2	SECTION	F/C Port Retainer	300 Series SST
<b>HEAD</b>				
⑤	2	45140	Bearing Plate	Fiber Reinforced Epoxy Laminate
⑥	2	45352	Plate Seal	Ethylene Propylene - Square Cut
⑦	2	50898	Permeate Port	Engineering Thermoplastic
⑧	2	45335	Permeate Port Seal	Ethylene Propylene - Square Cut
⑨	4	45296	PWT/Adapter Seal	Ethylene Propylene - O-Ring
⑩	2	As Required	Adapter	Engineering Thermoplastic
⑪	2	45242	Port Retainer	300 Series SST
<b>HEAD INTERLOCK</b>				
⑫	2	45260	Retaining Ring	316L SST
<b>VESSEL SUPPORT</b>				
⑬	* 3	45058	Saddle	Cast Urethane Elastomer
⑭	* 3	47459	Strap	Type 304 SST - PVC cushion
* 2 Each furnished with length code 1, 2 & 3.				
<b>FOR REFERENCE ONLY</b>				

Shell Length Code	L L.O.A. IN (MM)	P Port to Port IN (MM)	S Span IN (MM)	APPROX. ASSEMBLY Weight LB (KG)
1	47 (1194)	42 (1067)	28 X 1 (711)	13.25 (6.0)
2	87 (2210)	82 (2083)	56 X 1 (1422)	19.25 (8.8)
3	127 (3226)	122 (3099)	80 X 1 (2032)	26.75 (12.2)
4	167 (4242)	162 (4115)	64 X 2 (1626)	34.25 (15.6)
5	207 (5258)	202 (5131)	78 X 2 (1981)	41.75 (19.0)
6	247 (6274)	242 (6147)	92 X 2 (2337)	49.25 (22.4)



**MODEL 40A30**  
LOW PRESSURE MEMBRANE HOUSING

EON	SHEET	SIZE	NUMBER	REV
575	1 OF 2	A3	518001	M

**RATING:**

DESIGN PRESSURE.....300 PSI at 176°F ※※  
(2.1 MPa at 80°C)  
MIN. OPERATING TEMP.....20°F  
(-7°C)  
FACTORY TEST PRESSURE.....450 PSI  
(3.1 MPa)  
BURST PRESSURE.....1800 PSI  
(12.2 MPa)

**INTENDED USE**

The Model 40A30 Fiberglass RO/UF Pressure Vessel is designed for continuous, long-term use as a housing for reverse osmosis and ultrafiltration elements in typical industrial water treatment systems at pressures up to 300 psi. Any make of 4-inch nominal diameter spiral-wound element is easily accommodated. The appropriate interfacing hardware for the element specified is furnished with the vessel.

The Model 40A30 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 a small additional cost, vessels can be inspected during construction by an ASME Authorized Inspector and ASME Code stamped.

The Model 40A30 must be installed, operated and maintained in accordance with the precautions listed and good industrial practice to assure safe operation over a long service life.

The high performance reinforced plastic 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 closures, incorporating close-fitting, interlocking components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the heads.

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 materials 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.

※※ For Sanitary option (Drg No:- 99129) the operating temperature can be 190° F (88°C)

Specifications 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 shell on horizontal members at central span "S" using compliant vessel supports furnished; 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 75 or equal, at sideports; allow full .125 inch gap between port and piping, and position piping to maximize flexibility of connection
- DO... provide flexibility in, and support for piping manifold 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 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 restricts growth of fiberglass shell under pressure; ▲ DJA = 0.01 in. (0.25 mm) and ▲ L = .140 in. (3.5 mm) 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... operate vessel at pressures and temperatures in excess of its rating
- DO NOT... operate vessel without Permeate Ports internally connected with a complete set of elements and interconnecting hardware
- DO NOT... tighten Permeate Port connection more than one turn past hand tight
- DO NOT... operate vessel with permeate pressure in excess of 125 psi at 176°F (0.9 MPa at 80°C)
- DO NOT... tolerate leaks or allow end closures to be routinely wetted in any way
- DO NOT... pressurize vessel until double checking to verify that the Retaining Rings are in place.
- DO NOT... install Spacer on downstream end of vessel

**NOTE**

Spiral Retaining Ring Removal Tool (1MM007-1) recommended to open and close vessel.

For complete information on proper use of this vessel please refer to the 40A Series USER'S GUIDE, Bulletin 518005

**ORDERING**

Using the chart below, please check the features you require and fax them with your purchase order to our customer service department for expedited processing. For optional materials and or feature not listed below, please consult the factory for pricing and availability.

Please note that we require your membrane brand and model number when ordering. If this information is not initially available, you may provide it at a later date by checking the appropriate box below

**VESSEL LENGTH CODE – please check one**

MODEL 40A30 -1 -2 -3 -4 -5 -6

**EXTERIOR FINISH – please check one**

Standard – white high-gloss polyurethane coating over sanded surface.

**CERTIFICATION – please check one**

- Standard – certified by CodeLine, not code stamped.
- Option – Certified by ASME Authorized Inspector, Code stamped and registered with National Board. Call factory for pricing details.

**MEMBRANE BRAND AND MODEL – please check one and fill in information**

- Please supply adapters for the following membrane brand and specific model.  
Brand \_\_\_\_\_ Model \_\_\_\_\_
- Membrane brand and model information is not currently available, but will be supplied to CodeLine on or before the following date. \_\_\_\_/\_\_\_\_/\_\_\_\_

- |                          |                          |
|--------------------------|--------------------------|
| Serial number end        | Opposite end             |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

**PERMEATE PORT MATERIAL**

Standard – NORYL  
Option – PVC (120°F maximum)  
Option – 316 Stainless Steel

**PERMEATE PORT CONFIGURATION**

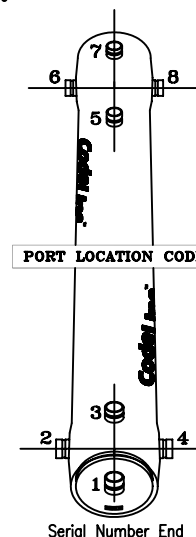
Standard – 1/2" NPT Female (Standard per drawing)  
Option – 1/2" BSP/JIS Female

**FEED PORT CONFIGURATION**

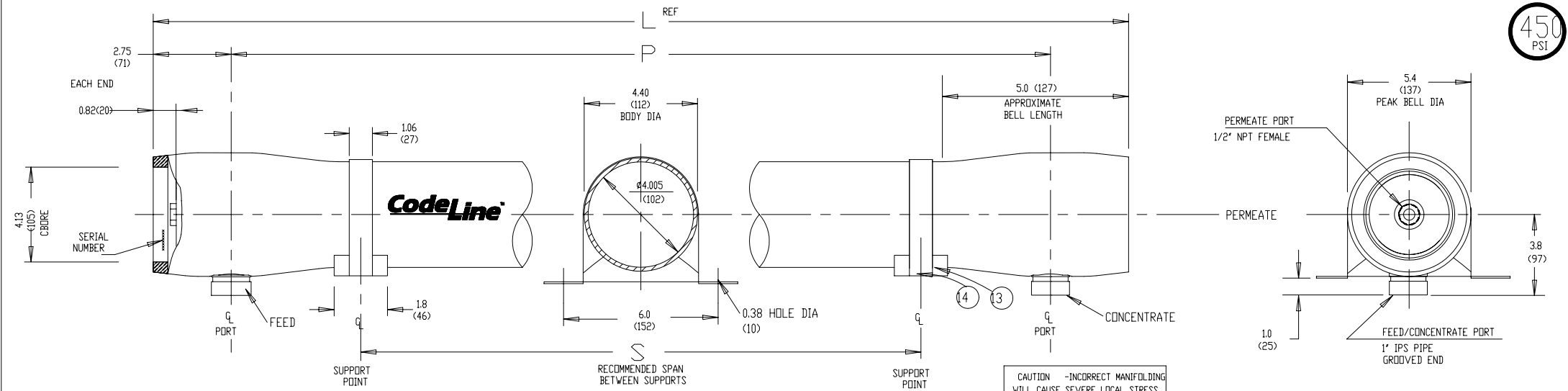
Standard – 1" IPS Victaulic, 316 Stainless Steel (Standard per drawing)  
Optional – Multi-Ports™, increased port diameter or port clocking.  
please fill out your feed port configuration in the space below.  
List port location first followed by port size for each choice.

- |                   |                          |                          |                          |                          |                          |                          |
|-------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Serial number end | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Opposite end      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

PORT SIZE CODE	
A	3/4" NPT FEMALE
B	3/4" BSP/JIS FEMALE
C	1" GROOVED END



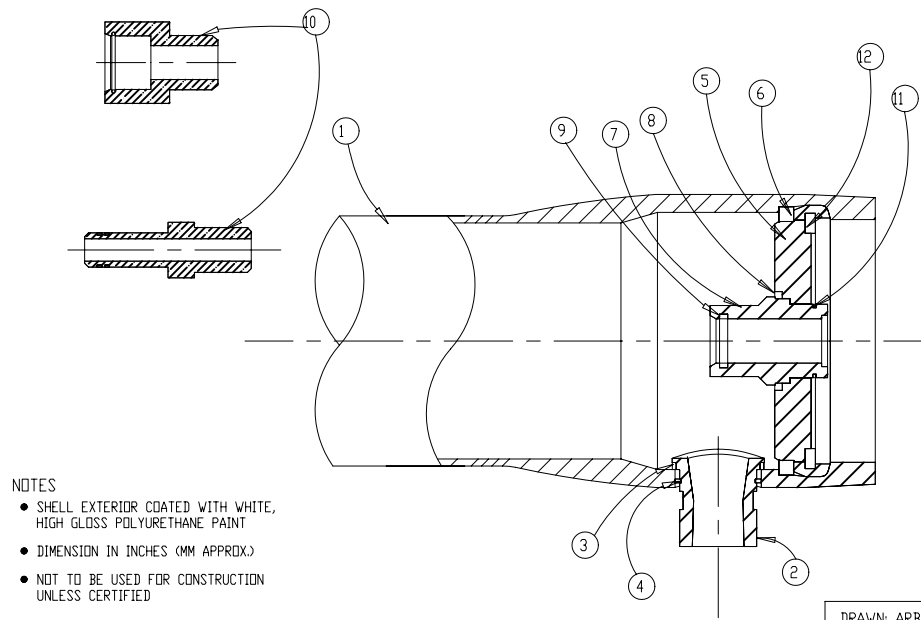
450  
PSI



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

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. Per	Part Number	Description	Materials/Remarks
SHELL				
①	1		Shell	Filament wound epoxy/glass composite- S.S Head locking grooves integrally wound in-place, with white high gloss polyurethane paint
②	2		F/C Port	316 SST
③	2	47135	F/C Port Seal	Ethylene Propylene - square cut
④	2	45251	F/C Port Retainer	300 series SST
HEAD				
⑤	2	45140	Bearing Plate	Fiber Reinforced Epoxy Laminate
⑥	2	45352	Plate Seal	Ethylene Propylene - Square Cut
⑦	2	50898	Permeate Port	Engineering Thermoplastic
⑧	2	45335	Permeate Port Seal	Ethylene Propylene - Square Cut
⑨	4	45296	PWT/Adapter Seal	Ethylene Propylene - O-ring
⑩	2	As required	Adapter	Engineering Thermoplastic
⑪	2	45242	Port Retainer	300 Series SST
HEAD INTERLOCK				
⑫	2	45260	Retaining Ring	316L SST
VESSEL SUPPORT				
⑬	*3	45058	Saddle	Cast Urethane Elastomer
⑭	*3	47459	Strap	304 Stainless Steel - PVC cushion
*2 each furnished with length code 1, 2 & 3				
FOR REFERENCE ONLY				



- NOTES
- SHELL EXTERIOR COATED WITH WHITE, HIGH GLOSS POLYURETHANE PAINT
  - DIMENSION IN INCHES (MM APPROX.)
  - NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED

Shell Length Code	L L.O.A. IN (MM)	P Span IN (MM)	S Span IN (MM)	Approx. Weight LB (KG)
1	47.5 (1206)	42 (1067)	28 X 1 (711)	13.25 (6.0)
2	87.5 (2222)	82 (2083)	56 X 1 (1422)	19.25 (8.8)
3	127.5 (3238)	122 (3099)	80 X 1 (2032)	26.75 (12.2)
4	167.5 (4254)	162 (4115)	64 X 2 (1626)	34.25 (15.6)
5	207.5 (5270)	202 (5131)	78 X 2 (1981)	41.75 (19.0)
6	247.5 (6286)	242 (6147)	92 X 2 (2337)	49.25 (22.4)



SECTION THROUGH END CLOSURE

ENDS ARE IDENTICAL

DRAWN: ARBF	MODEL 40A45			
CHECKED: SM	MEMBRANE HOUSING			
SCALE: NONE	ECN 575	SHEET 1 OF 2	SIZE A3	NUMBER 99127
				REV D

**RATING:**

DESIGN PRESSURE..... 450 PSIG at 176°F ✱ ✱  
(31 MPa at 80°C)

MIN. OPERATING TEMP..... 20°F  
(-7°C)

FACTORY TEST PRESSURE..... 495 PSIG  
(3.45 MPa)

BURST PRESSURE..... 2700 PSIG  
(18.6 MPa)

**INTENDED USE**

The CodeLine Model 40A45 Fiberglass RO Pressure Vessel is designed for continuous, long-term use as a housing for reverse osmosis membrane elements to desalt typical brackish waters at pressures up to 450 psi. Any make of four-inch nominal diameter spiral-wound element is easily accommodated; the appropriate interfacing hardware for the element specified is furnished with the vessel.

The CodeLine Model 40A45 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 Model 40A45 must be installed, operated and maintained in accordance with the precautions listed and good industrial practice to assure safe operation over a long service life.

The high performance reinforced plastic 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 closures, incorporating close-fitting, interlocking metal components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the heads.

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 materials 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.

✱ ✱ For Sanitary option (Drg.No-99129) the operating temperature can be 190°F (88°C).

**PRECAUTIONS**

- DD... read, understand and follow all instructions; failure to take every precaution will void warranty and may result in vessel failure
- DD... mount shell centered on horizontal members spaced at recommended spans (s) " " using compliant mounting hardware furnished; tighten hold down straps just snug
- DD... align and center side ports with the manifold header; correct causes of misalignment in a row of vessels connected to the same header
- DD... use flexible type grooved-end pipe couplings, Victaulic ® Style 75 or equal, at sideports; allow full .125 inch gap between port and piping, and position piping to maximize flexibility of connection
- DD... provide flexibility in, and support for piping manifold so that vessel can grow in length under pressure without undue restraint; provide additional flexible joints in large pipes leading to manifold header
- DD... provide overpressure protection for vessel set at not more than 105% of design pressure
- DD... inspect end closures regularly; replace components that have deteriorated and correct causes of corrosion
- DD NOT... work on any component until first verifying that pressure is relieved from vessel
- DD NOT... make rigid piping connections to ports or clamp vessel in any way that restricts growth of fiberglass shell under pressure; DIA = 0.015 in. (0.4mm) and ΔL = 0.2 in. (6mm) for a length code -8 vessel
- DD NOT... hang piping manifolds from ports or use vessel in any way to support other components
- DD NOT... tighten Permeate Port connection more than one turn past hand tight
- DD NOT... operate vessel without connecting both Permeate Ports internally to a complete set of elements or otherwise plug ports internally so that external piping connection is not subjected to feed pressure
- DD NOT... install Spacer on downstream end of vessel
- DD NOT... operate vessel without Thrust Cone installed downstream
- DD NOT... pressurize vessel until double checking to verify that the Retaining Ring is in place and fully seated.
- DD NOT... operate vessel at pressures and temperatures in excess of its rating
- DD NOT... operate vessel with permeate pressure in excess of 125 psi at 120°F (0.9 MPa at 49°C)
- DD NOT... tolerate leaks or allow end closures to be routinely wetted in any way
- DD NOT... operate at pH levels below 3 or above 10

**ORDERING**

Using the chart below, please check the features you require and fax them with your purchase order to our customer service department for expedited processing. For optional materials and or feature not listed below, please consult the factory for pricing and availability.

VESSEL LENGTH CODE - please check one  
MODEL 40A45 -1 -2 -3 -4 -5 -6

EXTERIOR FINISH - please check one  
 Standard - white high-gloss polyurethane coating over sanded surface.  
 Option - optional colors are available for 50 or more vessels per order. Call factory for pricing details.

MEMBRANE BRAND AND MODEL - please check one and fill in information  
 Please supply adapters for the following membrane brand and specific model.  
Brand \_\_\_\_\_ Model \_\_\_\_\_

Membrane brand and model information is not currently available, but will be supplied to CodeLine on or before the following date. \_\_\_/\_\_\_/\_\_\_

MATERIAL AND PORT CONFIGURATIONS OPTIONS - please check one  
 Standard - all materials and port configurations per drawing 99127 on the opposite page.  
NOTE: The options listed below will increase the vessel price. Call factory for pricing details.

Option Customer specified port configurations using the chart below, please indicate the custom options you require for each end of the pressure vessel (many options are required only at one end). Please consult the factory as these options will affect pricing and vessel lead time.

**PERMEATE PORT CONFIGURATION**

- Standard - 1/2" NPTF
- Optional -3/4" SANITARY TRICLOVER

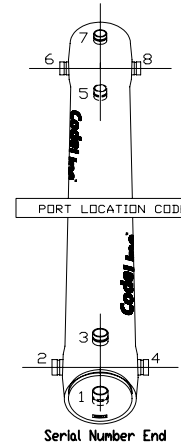
PORT SIZE CODE	
C	1 1/2" GROOVED END

**FEED PORT CONFIGURATION**

- Standard - 1" IPS pipe, grooved ends, with ports in-line
- Optional - Multi-Ports  
Using the Instructions in CodeLine Bulletin #507054 please fill out your feed port configuration in the space below. Ports not available in 90° configurations. List port location first followed by port size for each choice.

Serial number end

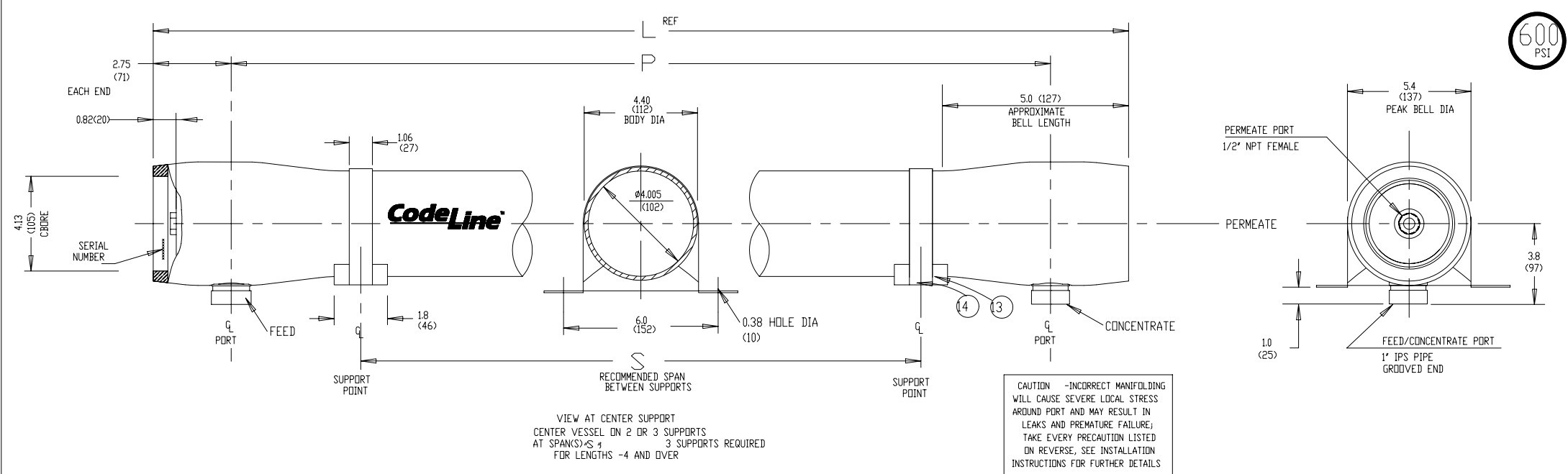
Opposite end



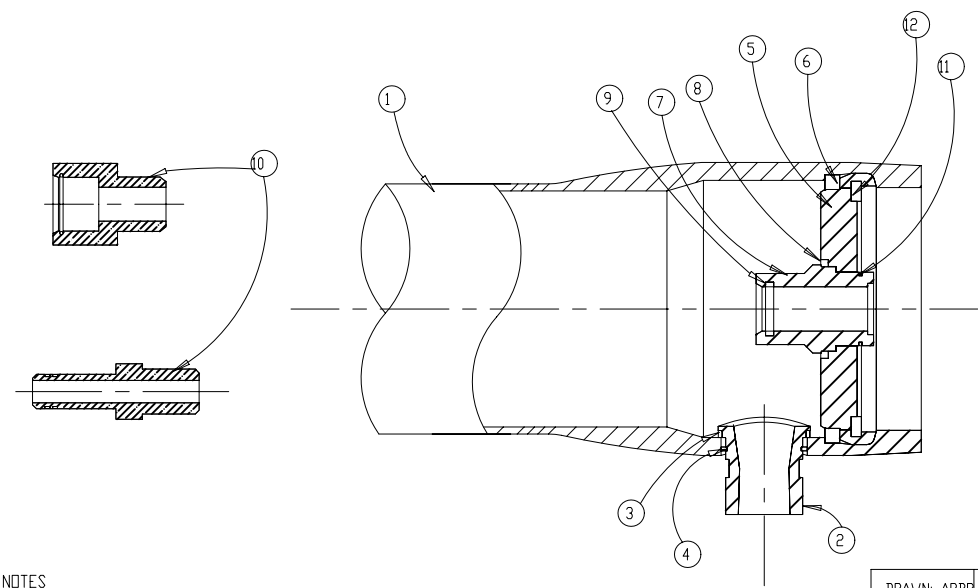
For complete information on proper use of this vessel please refer to the 40A Series USER'S GUIDE,

Specifications subject to change without notice.


600  
PSI



Dwg. Ref.	Qty. Per	Part Number	Description	Materials/Remarks
SHELL				
①	1		Shell	Filament wound epoxy/glass composite-S.S Head locking grooves integrally wound in-place, with white high gloss polyurethane paint
②	2		F/C Port	CF3M ASME SA -351
③	2	47135	F/C Port Seal	Ethylene Propylene - square cut
④	2	45251	F/C Port Retainer	300 series SST
HEAD				
⑤	2	45140	Bearing Plate	Fiber Reinforced Epoxy Laminate
⑥	2	45352	Plate Seal	Ethylene Propylene - Square Cut
⑦	2	50898	Permeate Port	Engineering Thermoplastic
⑧	2	45335	Permeate Port Seal	Ethylene Propylene - Square Cut
⑨	4	45296	PWT/Adapter Seal	Ethylene Propylene - O-ring
⑩	2	As required	Adapter	Engineering Thermoplastic
⑪	2	45242	Port Retainer	300 Series SST
HEAD INTERLOCK				
⑫	2	45260	Retaining Ring	316L SST
VESSEL SUPPORT				
⑬	*3	45058	Saddle	Cast Urethane Elastomer
⑭	*3	47459	Strap	304 Stainless Steel - PVC cushion
*2 each furnished with length code 1, 2 & 3				
FOR REFERENCE ONLY				



Shell Length Code	L L.O.A. IN (MM)	P Span IN (MM)	S Span IN (MM)	Approx. Weight LB (KG)
1	47.5 (1206)	42 (1067)	28 X 1 (711)	13.25 (6.0)
2	87.5 (2222)	82 (2083)	56 X 1 (1422)	19.25 (8.8)
3	127.5 (3238)	122 (3099)	80 X 1 (2032)	26.75 (12.2)
4	167.5 (4254)	162 (4115)	64 X 2 (1626)	34.25 (15.6)
5	207.5 (5270)	202 (5131)	78 X 2 (1981)	41.75 (19.0)
6	247.5 (6286)	242 (6147)	92 X 2 (2337)	49.25 (22.4)

  
**CodeLine™**  
 Pentair Water  
**MODEL 40A60**  
 MEMBRANE HOUSING

DRAWN: ARBP	ECN 575	SHEET 1 OF 2	SIZE A3	NUMBER 99128	REV E
CHECKED: SM					
SCALE: NONE					

- NOTES
- SHELL EXTERIOR COATED WITH WHITE, HIGH GLOSS POLYURETHANE PAINT
  - DIMENSION IN INCHES (MM APPROX.)
  - NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED

SECTION THROUGH END CLOSURE

ENDS ARE IDENTICAL

**RATING:**

DESIGN PRESSURE..... 600 PSIG at 176°F \* \*  
 (4.1 MPa at 80°C)  
 MIN. OPERATING TEMP..... 20°F  
 (-7°C)  
 FACTORY TEST PRESSURE..... 660 PSIG  
 (4.54 MPa)  
 BURST PRESSURE..... 3600 PSIG  
 (24.8 MPa)

**INTENDED USE**

The CodeLine Model 40A60 Fiberglass RO Pressure Vessel is designed for continuous, long-term use as a housing for reverse osmosis membrane elements to desalt typical brackish waters at pressures up to 600 psi. Any make of four-inch nominal diameter spiral-wound element is easily accommodated; the appropriate interfacing hardware for the element specified is furnished with the vessel.

The CodeLine Model 40A60 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 Model 40A60 must be installed, operated and maintained in accordance with the precautions listed and good industrial practice to assure safe operation over a long service life.

The high performance reinforced plastic 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 closures, incorporating close-fitting, interlocking metal components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the heads.

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 materials 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.

\* \* For Sanitary option (Dwg No.- 99129) operating temperature can be 190°F (88°C).

Specifications 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 shell centered on horizontal members spaced at recommended span(s) ' ' using compliant mounting hardware furnished; 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 75 or equal, at sideports; allow full 1/25 inch gap between port and piping, and position piping to maximize flexibility of connection
- DO... provide flexibility in, and support for piping manifold 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 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 restricts growth of fiberglass shell under pressure; DIA = 0.015 in. (0.4mm) and ΔL = 0.2 in. (6mm) for a length code -6 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 a 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 Retaining Ring is in place and fully seated.
- DO NOT... operate vessel at pressures and temperatures in excess of its rating
- DO NOT... operate vessel with permeate pressure in excess of 125 psi at 120°F (0.9 MPa at 49°C)
- DO NOT... tolerate leaks or allow end closures to be routinely wetted in any way
- DO NOT... operate at pH levels below 3 or above 10

For complete information on proper use of this vessel please refer to the 40A Series USER'S GUIDE.

**ORDERING**

Using the chart below, please check the features you require and fax them with your purchase order to our customer service department for expedited processing. For optional materials and/or feature not listed below, please consult the factory for pricing and availability.

VESEL LENGTH CODE - please check one

MODEL 40A60 -1 -2 -3 -4 -5 -6

EXTERIOR FINISH - please check one

- Standard - white high-gloss polyurethane coating over sanded surface.
- Option - optional colors are available for 50 or more vessels per order. Call factory for pricing details.

MEMBRANE BRAND AND MODEL - please check one and fill in information

Please supply adapters for the following membrane brand and specific model.  
 Brand \_\_\_\_\_ Model \_\_\_\_\_

- Membrane brand and model information is not currently available, but will be supplied to CodeLine on or before the following date. \_\_\_\_/\_\_\_\_/\_\_\_\_

MATERIAL AND PORT CONFIGURATIONS OPTIONS - please check one

- Standard - all materials and port configurations per drawing 99128 on the opposite page.  
 NOTE: The options listed below will increase the vessel price. Call factory for pricing details.

- Option Customer specified port configurations using the chart below, please indicate the custom options you require for each end of the pressure vessel (many options are required only at one end). Please consult the factory as these options will affect pricing and vessel lead time.

**PERMEATE PORT CONFIGURATION**

- Standard - 1/2" NPTF
- Optional -3/4" SANITARY TRICLOVER

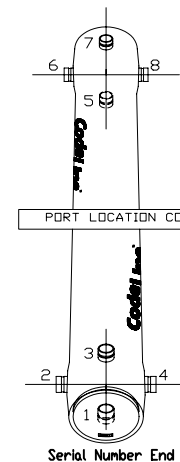
**FEED PORT CONFIGURATION**

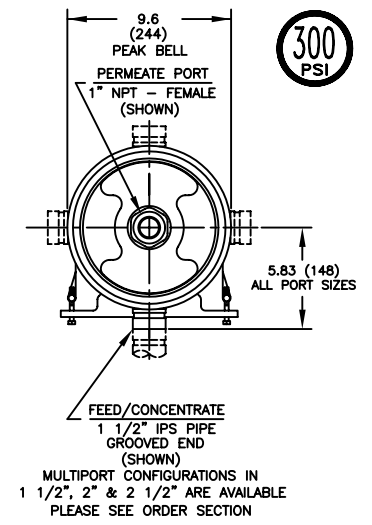
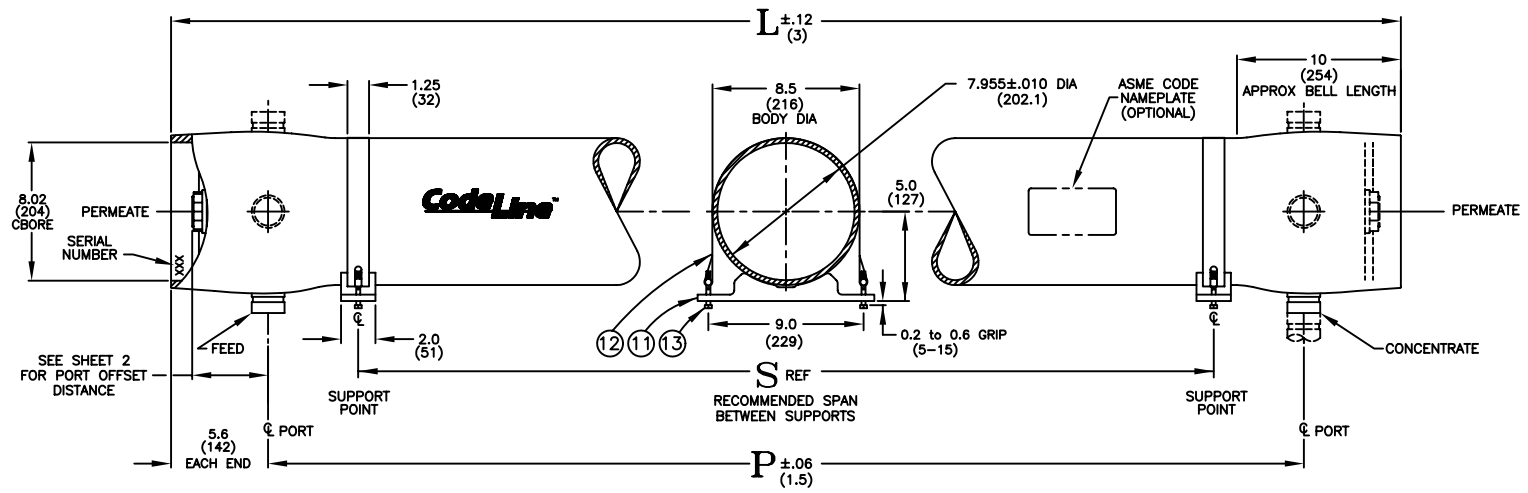
- Standard - 1" IPS pipe, grooved ends, with ports in-line
- Optional - Multiple Ports  
 Using the instructions in CodeLine Bulletin #507054 please fill out your feed port configuration in the space below. Ports not available in 90° configurations. List port location first followed by port size for each choice.

Serial number end

Opposite end

PORT SIZE CODE	
C	1" GROOVED END

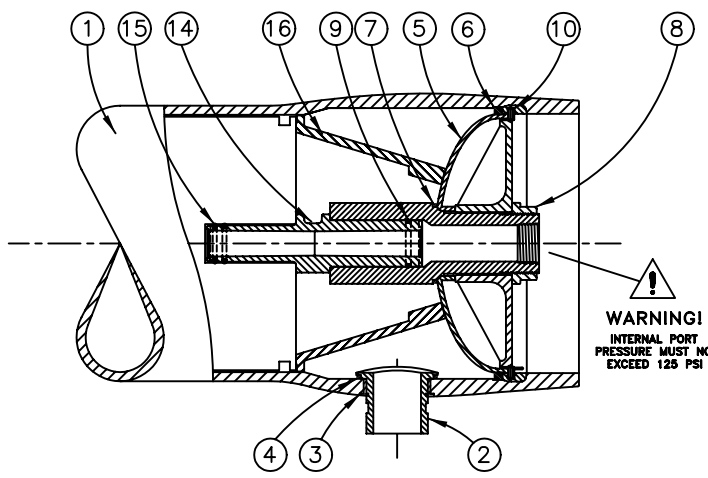




VIEW AT CENTER SUPPORT  
 CENTER VESSEL ON 2 OR 3 SUPPORTS  
 AT SPAN(S) "S" : 3 SUPPORTS REQUIRED  
 FOR LENGTHS -4 AND OVER

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. Per	Item Number	Description	Materials/Remarks
<b>SHELL</b>				
①	1	-	Shell	Filament wound epoxy/glass composite. S.S. head locking grooves integrally wound in place. Shell exterior coated with white high gloss polyurethane paint.
②	A/R	SEE	F/C PORT	316 SST
③	A/R	ORDER	Retaining Ring	302 Series SST
④	A/R	SECTION	F/C Port Seal	Ethylene Propylene - Square Cut
<b>HEAD</b>				
⑤	2	52024-1	Head Ass'y. 80A30	316 S.S.T.
⑥	2	45321	Head Seal	Ethylene Propylene - Quad Seal
⑦	2	45342	Permeate Port Seal	Ethylene Propylene - Square Cut (228)
⑧	2	45066	Port Nut	Engineering Thermoplastic
⑨	2	52245	Adapter, Seal	Ethylene Propylene - O Ring (124)
<b>HEAD INTERLOCK</b>				
⑩	2	47336	Retaining Ring	316L SST
<b>VESSEL SUPPORT</b>				
⑪	* 3	52169	Universal Saddle	Engineering Thermoplastic
⑫	* 3	45042	Strap Assembly	Type 304 SST - PVC cushion
⑬	6	46265	Strap Screw	5/16-18 UNC, 18-8 Stainless Steel
<b>ELEMENT INTERFACE</b>				
⑭	2	As Required	Adapter	Engineering Thermoplastic
⑮	A/R	As Required	PWT Seal	Ethylene Propylene
⑯	1	47337	Thrust Cone	Engineering Thermoplastic - white
* 2 EACH FURNISHED WITH LENGTH CODE 1, 2 & 3				



Shell Length Code	L L.O.A. IN (MM)	P Span IN (MM)	S Span IN (MM)	APPROX. ASSEMBLY Weight LB (KG)
1	58.2 (1478)	47 (1194)	28 X 1 (711)	49 (22)
2	98.2 (2494)	87 (2210)	56 X 1 (1422)	67 (30)
3	138.2 (3510)	127 (3226)	80 X 1 (2032)	85 (39)
4	178.2 (4526)	167 (4242)	64 X 2 (1626)	103 (47)
5	218.2 (5542)	207 (5258)	78 X 2 (1981)	121 (55)
6	258.2 (6558)	247 (6274)	92 X 2 (2337)	139 (63)
7	298.2 (7574)	287 (7290)	106 X 2 (2692)	157 (71)



CODELINE MODEL 80A30 MEMBRANE HOUSING				
ECN	SHEET	SIZE	NUMBER	REV
573	1 OF 2	B	519001	R

NOTES  
 • DIMENSION IN INCHES (MM APPROX.)  
 • FOR REFERENCE ONLY, NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED

SECTION THROUGH END CLOSURE  
 ITEM ⑯ DOWNSTREAM ONLY

**RATING:**

DESIGN PRESSURE.....300 PSI at 120°F  
(2.1 MPa at 49°C)  
MIN. OPERATING TEMP.....20°F  
(-7°C)  
FACTORY TEST PRESSURE.....450 PSI  
(3.1 MPa)  
BURST PRESSURE.....1800 PSI  
(12.4 MPa)

**INTENDED USE**

The CodeLine Model 80A30 Fiberglass RO Pressure Vessel is designed for continuous, long-term use as a 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 Model 80A30 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 Model 80A30 must be installed, operated and maintained in accordance with the precautions listed and good industrial practice to assure safe operation over a long service life.

The high performance reinforced plastic 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 closures, incorporating close-fitting, interlocking metal components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the heads.

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 materials 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 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 shell centered on horizontal members spaced at recommended span(s) "S" using compliant mounting hardware furnished; 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 75 or equal, at sideports; allow full .125 inch gap between port and piping, and position piping to maximize flexibility of connection
- DO... provide flexibility in, and support for piping manifold 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 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 restricts growth of fiberglass shell under pressure; ▲DIA = 0.015 in. (0.4mm) and ▲L = 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 a 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 Retaining Ring is in place and fully seated.
- DO NOT... operate vessel at pressures and temperatures in excess of its rating
- DO NOT... operate vessel with permeate pressure in excess of 125 psi at 120°F (0.9 MPa at 49°C)
- DO NOT... tolerate leaks or allow end closures to be routinely wetted in any way
- DO NOT... operate at pH levels below 3 or above 10

**NOTE**

Spiral Retaining Ring Removal Tool (50303) recommended to open and close vessel.

For complete information on proper use of this vessel please refer to the 80A Series USER'S GUIDE, Bulletin 519014

**ORDERING**

Using the chart below, please check the features you require and fax them with your purchase order to our customer service department for expedited processing. For optional materials and or feature not listed below, please consult the factory for pricing and availability.

Please note that we require your membrane brand and model number when ordering. If this information is not initially available, you may provide it at a later date by checking the appropriate box below

**VESSEL LENGTH CODE - please check one**

MODEL 80A30 -1 -2 -3 -4 -5 -6 -7

**EXTERIOR FINISH - please check one**

- Standard - white high-gloss polyurethane coating over sanded surface.
- Option - optional colors are available for 50 or more vessels per order. Call factory for pricing details.

**CERTIFICATION - please check one**

- Standard - certified by CodeLine, not code stamped.
- Option - Certified by ASME Authorized Inspector, Code stamped and registered with National Board. Call factory for pricing details.

**MEMBRANE BRAND AND MODEL - please check one and fill in information**

- Please supply adapters for the following membrane brand and specific model.  
Brand \_\_\_\_\_ Model \_\_\_\_\_
- Membrane brand and model information is not currently available, but will be supplied to CodeLine on or before the following date. \_\_\_\_/\_\_\_\_/\_\_\_\_

**MATERIAL AND PORT CONFIGURATIONS OPTIONS - please check one**

- Standard - all materials and port configurations per drawing 519001 on the opposite page.  
NOTE: The options listed below will increase the vessel price. Call factory for pricing details.
- Option Ultrapure package for ultrapure / high temperature operation. Includes:  
One 316 SS 1 1/2" permeate port with a type 3A sanitary connection. (6.3" Port Offset)  
One PET permeate port with 1" NPT threads.  
One standard PET adapter and one solid adapter (to plug the PET permeate port).
- Option Sanitary package for sanitary / high temperature operation.  
Same as the ultrapure package but also includes  
Two each feed / concentrate ports with 2" type 3A sanitary connections.
- Option High Temperature package for high temperature operation only.  
Includes two PET permeate ports instead of the standard PVC material.
- Option Customer specified port configuration. Using the chart below, please indicate the custom options you require for each end of the pressure vessel (many options are required only at one end). Please consult the factory as these options will affect pricing and vessel lead time.

Serial number end	Opposite end
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

Serial number end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Opposite end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**PERMEATE PORT MATERIAL**

Standard - PVC Thermoplastic (for applications up to 120° F)  
Option - PET Thermoplastic (for up to 176° and high back pressure operation)  
Option - 316L Stainless Steel (for up to 176° and high back pressure operation)

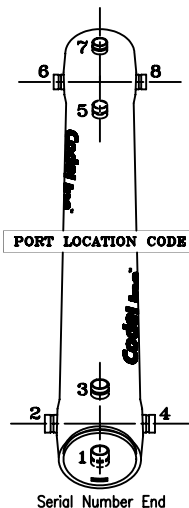
**PERMEATE PORT CONFIGURATION**

Standard - 1" NPT Female Threads; 4.5" Port Offset  
Option - 3/4" NPT Female Threads; 4.5" Port Offset  
Option - 1/2" NPT Female Threads; 4.5" Port Offset  
Option - 1 1/2" IPS Grooved End; 6.3" Port Offset  
Option - 1 1/4" IPS Grooved End; 6.3" Port Offset

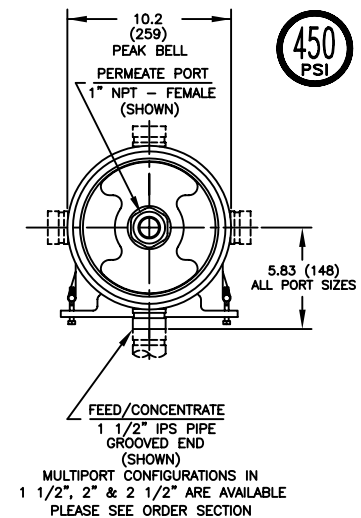
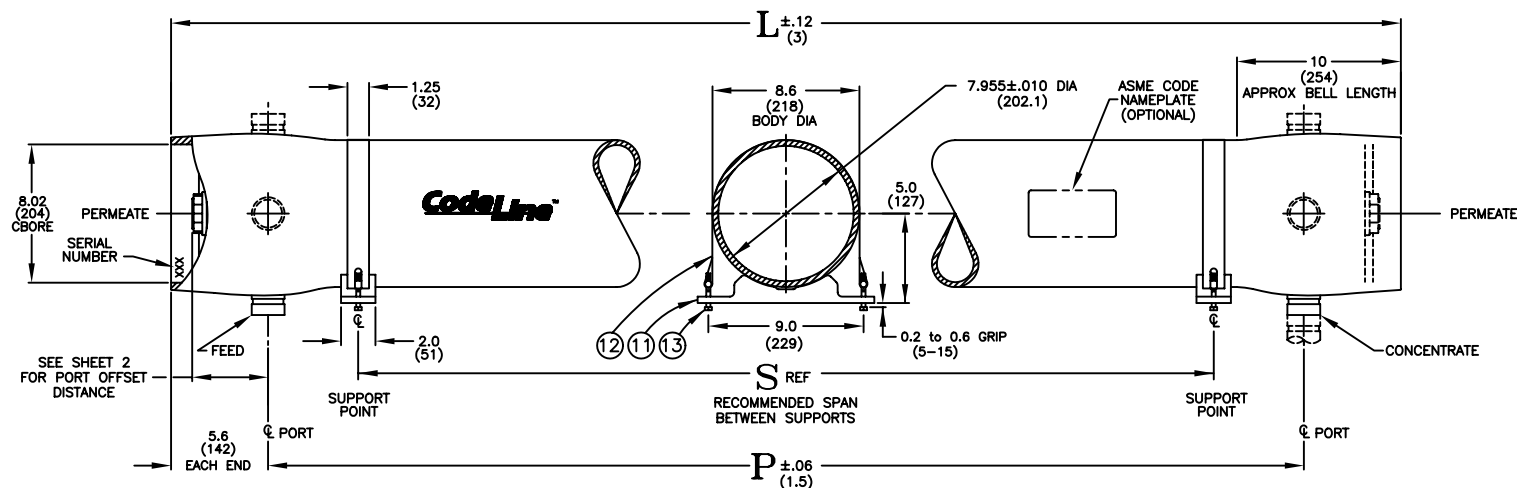
PORT SIZE CODE	
D	1 1/2" GROOVED END
E	2" GROOVED END
F	2 1/2" GROOVED END
S	2" SANITARY

**FEED PORT CONFIGURATION**

Standard - 1 1/2" IPS pipe, grooved ends, with ports in-line  
Optional - Multi-Ports™, increased port diameter or port clocking  
Using the instructions in CodeLine Bulletin #507054 please fill out your feed port configuration in the space below.  
List port location first followed by port size for each choice.  
2 1/2" ports & 2" Sanitary ports are not allowed 90° from any other port size.



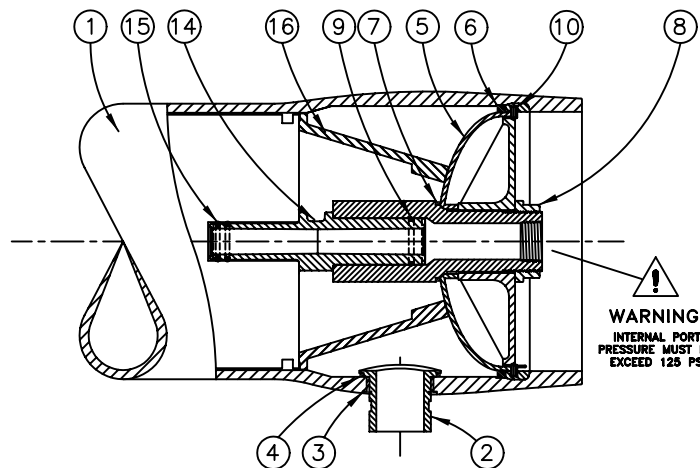




VIEW AT CENTER SUPPORT  
 CENTER VESSEL ON 2 OR 3 SUPPORTS  
 AT SPAN(S) "S" : 3 SUPPORTS REQUIRED  
 FOR LENGTHS -4 AND OVER

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. Per	Item Number	Description	Materials/Remarks
<b>SHELL</b>				
①	1	-	Shell	Filament wound epoxy/glass composite. S.S. head locking grooves integrally wound in place. Shell exterior coated with white high gloss polyurethane paint.
②	A/R	SEE	F/C PORT	316 SST
③	A/R	ORDER	Retaining Ring	302 Series SST
④	A/R	SECTION	F/C Port Seal	Ethylene Propylene - Square Cut
<b>HEAD</b>				
⑤	2	52024-3	Head Ass'y. 80A45	316 S.S.T.
⑥	2	45321	Head Seal	Ethylene Propylene - Quad Seal
⑦	2	45342	Permeate Port Seal	Ethylene Propylene - Square Cut (228)
⑧	2	45066	Port Nut	Engineering Thermoplastic
⑨	2	52245	Adapter, Seal	Ethylene Propylene - O Ring (124)
<b>HEAD INTERLOCK</b>				
⑩	2	47336	Retaining Ring	316L SST
<b>VESSEL SUPPORT</b>				
⑪	* 3	52169	Universal Saddle	Engineering Thermoplastic
⑫	* 3	45042	Strap Assembly	Type 304 SST - PVC cushion
⑬	6	46265	Strap Screw	5/16-18 UNC, 18-8 Stainless Steel
<b>ELEMENT INTERFACE</b>				
⑭	2	As Required	Adapter	Engineering Thermoplastic
⑮	A/R	As Required	PWT Seal	Ethylene Propylene
⑯	1	47337	Thrust Cone	Engineering Thermoplastic - white
* 2 EACH FURNISHED WITH LENGTH CODE 1, 2 & 3				



SECTION THROUGH END CLOSURE

ITEM ⑯ DOWNSTREAM ONLY

NOTES  
 • DIMENSION IN INCHES (MM APPROX.)  
 • FOR REFERENCE ONLY, NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED

Shell Length Code	L L.O.A. IN (MM)	P Span IN (MM)	S Span IN (MM)	APPROX. ASSEMBLY Weight LB (KG)
1	58.2 (1478)	47 (1194)	28 X 1 (711)	67 (30)
2	98.2 (2494)	87 (2210)	56 X 1 (1422)	89 (40)
3	138.2 (3510)	127 (3226)	80 X 1 (2032)	114 (51)
4	178.2 (4526)	167 (4242)	64 X 2 (1626)	137 (62)
5	218.2 (5542)	207 (5258)	78 X 2 (1981)	160 (73)
6	258.2 (6558)	247 (6274)	92 X 2 (2337)	184 (83)
7	298.2 (7574)	287 (7290)	106 X 2 (2692)	207 (94)



**CODELINE MODEL 80A45**  
 MEMBRANE HOUSING

ECN	SHEET	SIZE	NUMBER	REV
573	1 OF 2	B	519002	N

**RATING:**

DESIGN PRESSURE.....450 PSI at 120°F  
(3.2 MPa at 49°C)  
 MIN. OPERATING TEMP.....20°F  
(-7°C)  
 FACTORY TEST PRESSURE.....675 PSI  
(4.7 MPa)  
 BURST PRESSURE.....2700 PSI  
(19 MPa)

**INTENDED USE**

The CodeLine Model 80A45 Fiberglass RO Pressure Vessel is designed for continuous, long-term use as a housing for reverse osmosis membrane elements to desalt typical brackish waters at pressures up to 450 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 Model 80A45 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 Model 80A45 must be installed, operated and maintained in accordance with the precautions listed and good industrial practice to assure safe operation over a long service life.

The high performance reinforced plastic 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 closures, incorporating close-fitting, interlocking metal components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the heads.

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 materials 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 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 shell centered on horizontal members spaced at recommended span(s) "S" using compliant mounting hardware furnished; 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 75 or equal, at sideports; allow full .125 inch gap between port and piping, and position piping to maximize flexibility of connection
- DO... provide flexibility in, and support for piping manifold 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 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 restricts growth of fiberglass shell under pressure; ▲DIA = 0.015 in. (0.4mm) and ▲L = 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 a 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 Retaining Ring is in place and fully seated.
- DO NOT... operate vessel at pressures and temperatures in excess of its rating
- DO NOT... operate vessel with permeate pressure in excess of 125 psi at 120°F (0.9 MPa at 49°C)
- DO NOT... tolerate leaks or allow end closures to be routinely wetted in any way
- DO NOT... operate at pH levels below 3 or above 10

**NOTE**

Spiral Retaining Ring Removal Tool (50303) recommended to open and close vessel.

For complete information on proper use of this vessel please refer to the 80A Series USER'S GUIDE, Bulletin 519014

**ORDERING**

Using the chart below, please check the features you require and fax them with your purchase order to our customer service department for expedited processing. For optional materials and or feature not listed below, please consult the factory for pricing and availability.

Please note that we require your membrane brand and model number when ordering. If this information is not initially available, you may provide it at a later date by checking the appropriate box below

**VESSEL LENGTH CODE - please check one**

MODEL 80A45 -1 -2 -3 -4 -5 -6 -7

**EXTERIOR FINISH - please check one**

- Standard - white high-gloss polyurethane coating over sanded surface.
- Option - optional colors are available for 50 or more vessels per order. Call factory for pricing details.

**CERTIFICATION - please check one**

- Standard - certified by CodeLine, not code stamped.
- Option - Certified by ASME Authorized Inspector, Code stamped and registered with National Board. Call factory for pricing details.

**MEMBRANE BRAND AND MODEL - please check one and fill in information**

- Please supply adapters for the following membrane brand and specific model.  
Brand \_\_\_\_\_ Model \_\_\_\_\_
- Membrane brand and model information is not currently available, but will be supplied to CodeLine on or before the following date. \_\_\_\_/\_\_\_\_/\_\_\_\_

**MATERIAL AND PORT CONFIGURATIONS OPTIONS - please check one**

- Standard - all materials and port configurations per drawing 519002 on the opposite page.  
NOTE: The options listed below will increase the vessel price. Call factory for pricing details.
- Option Ultrapure package for ultrapure / high temperature operation. Includes:  
One 316 SS 1 1/2" permeate port with a type 3A sanitary connection. (6.3" Port Offset)  
One PET permeate port with 1" NPT threads.  
One standard PET adapter and one solid adapter (to plug the PET permeate port).
- Option Sanitary package for sanitary / high temperature operation.  
Same as the ultrapure package but also includes  
Two each feed / concentrate ports with 2" type 3A sanitary connections.
- Option High Temperature package for high temperature operation only.  
Includes two PET permeate ports instead of the standard PVC material.
- Option Customer specified port configuration. Using the chart below, please indicate the custom options you require for each end of the pressure vessel (many options are required only at one end). Please consult the factory as these options will affect pricing and vessel lead time.

Serial number end	Opposite end
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

**PERMEATE PORT MATERIAL**

Standard - PVC Thermoplastic (for applications up to 120° F)  
 Option - PET Thermoplastic (for up to 176° and high back pressure operation)  
 Option - 316L Stainless Steel (for up to 176° and high back pressure operation)

**PERMEATE PORT CONFIGURATION**

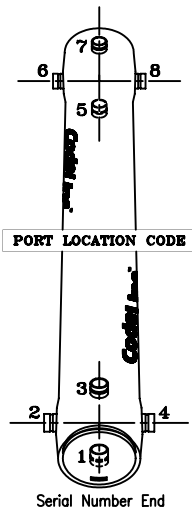
Standard - 1" NPT Female Threads; 4.5" Port Offset  
 Option - 3/4" NPT Female Threads; 4.5" Port Offset  
 Option - 1/2" NPT Female Threads; 4.5" Port Offset  
 Option - 1 1/2" IPS Grooved End; 6.3" Port Offset  
 Option - 1 1/4" IPS Grooved End; 6.3" Port Offset

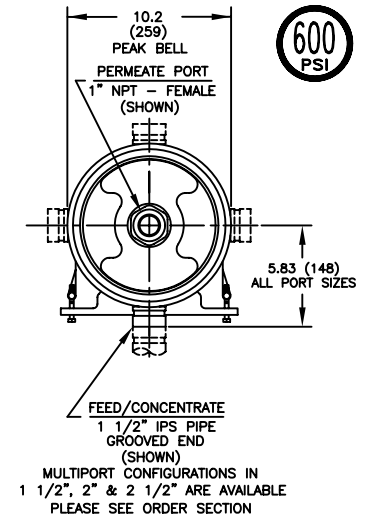
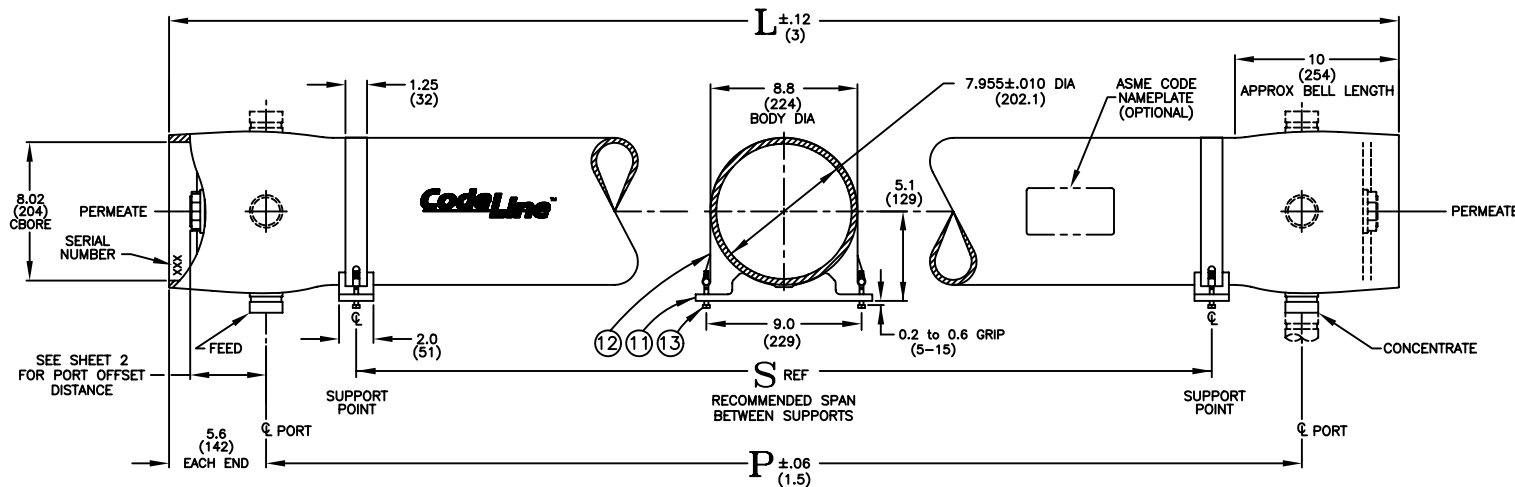
PORT SIZE CODE	
D	1 1/2" GROOVED END
E	2" GROOVED END
F	2 1/2" GROOVED END
S	2" SANITARY

**FEED PORT CONFIGURATION**

Standard - 1 1/2" IPS pipe, grooved ends, with ports in-line  
 Optional - Multi-Ports™, increased port diameter or port clocking  
 Using the instructions in CodeLine Bulletin #507054 please fill out your feed port configuration in the space below.  
 List port location first followed by port size for each choice.  
 2 1/2" ports & 2" Sanitary ports are not allowed 90° from any other port size.

Serial number end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Opposite end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

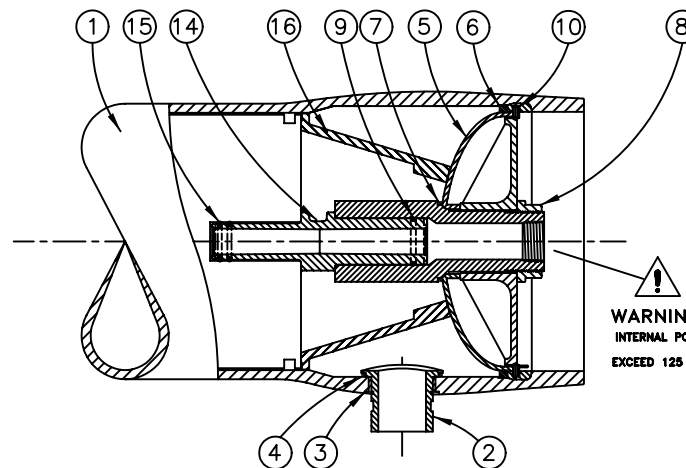




VIEW AT CENTER SUPPORT  
 CENTER VESSEL ON 2 OR 3 SUPPORTS  
 AT SPAN(S) "S": 3 SUPPORTS REQUIRED  
 FOR LENGTHS - 4 AND OVER

CAUTION—INCORRECT MANIPULATING  
 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. Per	Item Number	Description	Materials/Remarks
<b>SHELL</b>				
①	1	-	Shell	Filament wound epoxy/glass composite. S.S. head locking grooves integrally wound in place. Shell exterior coated with white high gloss polyurethane paint.
②	A/R	SEE	F/C PORT	316 SST
③	A/R	ORDER	Retaining Ring	302 Series SST
④	A/R	SECTION	F/C Port Seal	Ethylene Propylene - Square Cut
<b>HEAD</b>				
⑤	2	52024-4	Head Ass'y. 80A60	316 S.S.T.
⑥	2	45321	Head Seal	Ethylene Propylene - Quad Seal
⑦	2	45342	Permeate Port Seal	Ethylene Propylene - Square Cut (228)
⑧	2	45066	Port Nut	Engineering Thermoplastic
⑨	2	52245	Adapter, Seal	Ethylene Propylene - O Ring (124)
<b>HEAD INTERLOCK</b>				
⑩	2	47336	Retaining Ring	316L SST
<b>VESSEL SUPPORT</b>				
⑪	* 3	52169	Universal Saddle	Engineering Thermoplastic
⑫	* 3	45042	Strap Assembly	Type 304 SST - PVC cushion
⑬	6	46265	Strap Screw	5/16-18 UNC, 18-8 Stainless Steel
<b>ELEMENT INTERFACE</b>				
⑭	2	As Required	Adapter	Engineering Thermoplastic
⑮	A/R	As Required	PWT Seal	Ethylene Propylene
⑯	1	47337	Thrust Cone	Engineering Thermoplastic - white
* 2 EACH FURNISHED WITH LENGTH CODE 1, 2 & 3				



SECTION THROUGH END CLOSURE

ITEM ⑯ DOWNSTREAM ONLY

NOTES  
 • DIMENSION IN INCHES (MM APPROX.)  
 • FOR REFERENCE ONLY, NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED

Shell Length Code	L L.O.A. IN (MM)	P Span IN (MM)	S Span IN (MM)	APPROX. ASSEMBLY Weight LB (KG)
1	58.2 (1478)	47 (1194)	28 X 1 (711)	76 (35)
2	98.2 (2494)	87 (2210)	56 X 1 (1422)	103 (47)
3	138.2 (3510)	127 (3226)	80 X 1 (2032)	129 (58)
4	178.2 (4526)	167 (4242)	64 X 2 (1626)	155 (70)
5	218.2 (5542)	207 (5258)	78 X 2 (1981)	181 (82)
6	258.2 (6558)	247 (6274)	92 X 2 (2337)	207 (94)
7	298.2 (7574)	287 (7290)	106 X 2 (2692)	234 (106)



**CODELINE MODEL 80A60**  
 MEMBRANE HOUSING

ECN	SHEET	SIZE	NUMBER	REV
573	1 OF 2	B	519013	N

**RATING:**

DESIGN PRESSURE.....600 PSI at 120°F  
(4.3 MPa at 49°C)  
MIN. OPERATING TEMP.....20°F  
(-7°C)  
FACTORY TEST PRESSURE.....900 PSI  
(6.4 MPa)  
BURST PRESSURE.....3600 PSI  
(25 MPa)

**INTENDED USE**

The CodeLine Model 80A60 Fiberglass RO Pressure Vessel is designed for continuous, long-term use as a 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 Model 80A60 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 Model 80A60 must be installed, operated and maintained in accordance with the precautions listed and good industrial practice to assure safe operation over a long service life.

The high performance reinforced plastic 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 closures, incorporating close-fitting, interlocking metal components, must be kept dry and free of corrosion; deterioration can lead to catastrophic mechanical failure of the heads.

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 materials 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 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 shell centered on horizontal members spaced at recommended span(s) "S" using compliant mounting hardware furnished; 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 75 or equal, at sideports; allow full .125 inch gap between port and piping, and position piping to maximize flexibility of connection
- DO... provide flexibility in, and support for piping manifold 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 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 restricts growth of fiberglass shell under pressure; ▲DIA = 0.015 in. (0.4mm) and ▲L = 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 a 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 Retaining Ring is in place and fully seated.
- DO NOT... operate vessel at pressures and temperatures in excess of its rating
- DO NOT... operate vessel with permeate pressure in excess of 125 psi at 120°F (0.9 MPa at 49°C)
- DO NOT... tolerate leaks or allow end closures to be routinely wetted in any way
- DO NOT... operate at pH levels below 3 or above 10

**NOTE**

Spiral Retaining Ring Removal Tool (50303) recommended to open and close vessel.

For complete information on proper use of this vessel please refer to the 80A Series USER'S GUIDE, Bulletin 519014

**ORDERING**

Using the chart below, please check the features you require and fax them with your purchase order to our customer service department for expedited processing. For optional materials and or feature not listed below, please consult the factory for pricing and availability.

Please note that we require your membrane brand and model number when ordering. If this information is not initially available, you may provide it at a later date by checking the appropriate box below

**VESSEL LENGTH CODE – please check one**

MODEL 80A60 -1 -2 -3 -4 -5 -6 -7

**EXTERIOR FINISH – please check one**

- Standard – white high-gloss polyurethane coating over sanded surface.
- Option – optional colors are available for 50 or more vessels per order. Call factory for pricing details.

**CERTIFICATION – please check one**

- Standard – certified by CodeLine, not code stamped.
- Option – Certified by ASME Authorized Inspector, Code stamped and registered with National Board. Call factory for pricing details.

**MEMBRANE BRAND AND MODEL – please check one and fill in information**

- Please supply adapters for the following membrane brand and specific model.  
Brand \_\_\_\_\_ Model \_\_\_\_\_
- Membrane brand and model information is not currently available, but will be supplied to CodeLine on or before the following date. \_\_\_\_/\_\_\_\_/\_\_\_\_

**MATERIAL AND PORT CONFIGURATIONS OPTIONS – please check one**

- Standard – all materials and port configurations per drawing 519013 on the opposite page.  
NOTE: The options listed below will increase the vessel price. Call factory for pricing details.
- Option Ultrapure package for ultrapure / high temperature operation. Includes:  
One 316 SS 1 1/2" permeate port with a type 3A sanitary connection. (6.3" Port Offset)  
One PET permeate port with 1" NPT threads.  
One standard PET adapter and one solid adapter (to plug the PET permeate port).
- Option Sanitary package for sanitary / high temperature operation.  
Same as the ultrapure package but also includes  
Two each feed / concentrate ports with 2" type 3A sanitary connections.
- Option High Temperature package for high temperature operation only.  
Includes two PET permeate ports instead of the standard PVC material.
- Option Customer specified port configuration. Using the chart below, please indicate the custom options you require for each end of the pressure vessel (many options are required only at one end). Please consult the factory as these options will affect pricing and vessel lead time.

Serial number end	Opposite end
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

**PERMEATE PORT MATERIAL**

Standard – PVC Thermoplastic (for applications up to 120° F)  
Option – PET Thermoplastic (for up to 176° and high back pressure operation)  
Option – 316L Stainless Steel (for up to 176° and high back pressure operation)

**PERMEATE PORT CONFIGURATION**

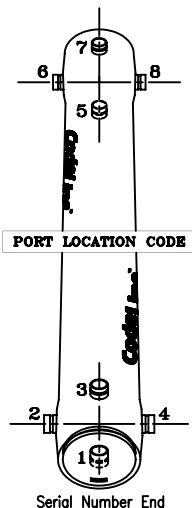
Standard – 1" NPT Female Threads; 4.5" Port Offset  
Option – 3/4" NPT Female Threads; 4.5" Port Offset  
Option – 1/2" NPT Female Threads; 4.5" Port Offset  
Option – 1 1/2" IPS Grooved End; 6.3" Port Offset  
Option – 1 1/4" IPS Grooved End; 6.3" Port Offset

PORT SIZE CODE	
D	1 1/2" GROOVED END
E	2" GROOVED END
F	2 1/2" GROOVED END
S	2" SANITARY

**FEED PORT CONFIGURATION**

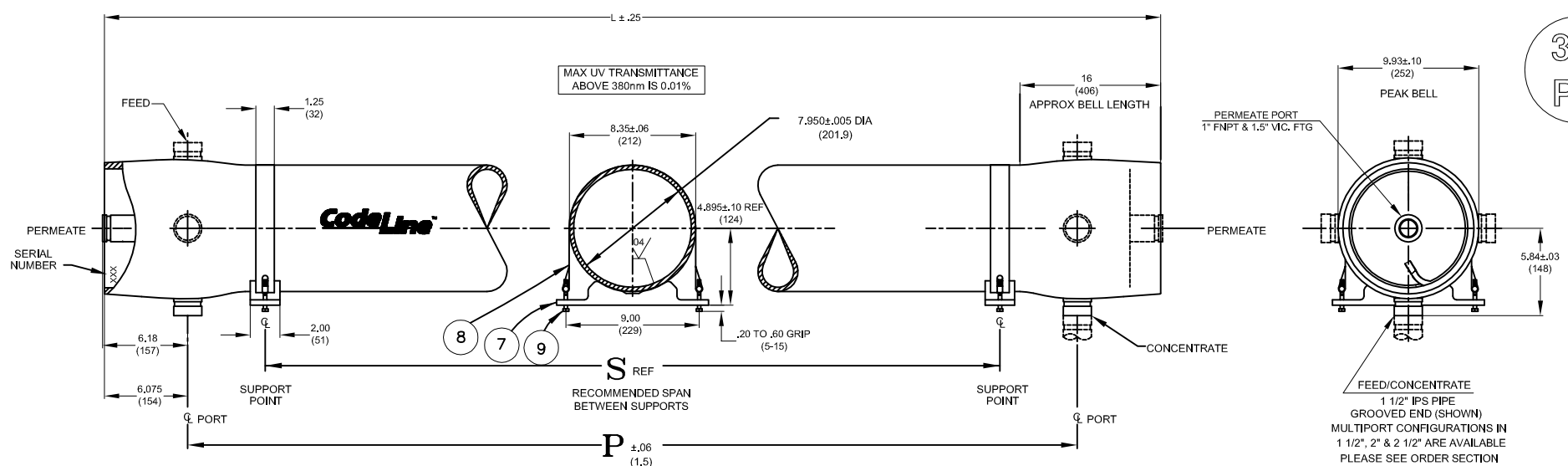
Standard – 1 1/2" IPS pipe, grooved ends, with ports in-line  
Optional – Multi-Ports™, increased port diameter or port clocking  
Using the instructions in CodeLine Bulletin #507054 please fill out your feed port configuration in the space below.  
List port location first followed by port size for each choice.  
2 1/2" ports & 2" Sanitary ports are not allowed 90° from any other port size.

Serial number end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Opposite end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



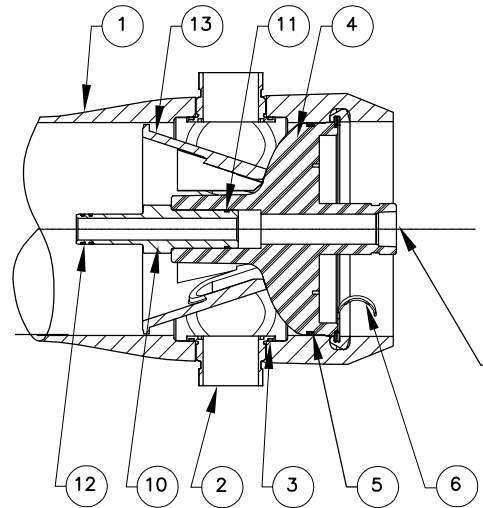
4 3 2 1

300  
PSI



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

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.

Dash Length	L IN(MM)	P IN(MM)	S IN(MM)	Approx Weight LB(KG)
-1	59.15 (1502)	47 (1194)	28X1 (711)	82 (37)
-1.5	79.15 (2010)	67 (1702)	42X1 (1066)	90.5 (41)
-2	99.15 (2518)	87 (2210)	56X1 (1422)	99 (45)
-3	139.15 (3534)	127 (3226)	80X1 (2032)	117 (53)
-4	179.15 (4550)	167 (4242)	64X2 (1626)	135 (61)
-4.5	199.15 (5058)	187 (4750)	71X2 (1803)	143.5 (65)
-5	219.15 (5566)	207 (5258)	78X2 (1981)	152 (69)
-6	259.15 (6582)	247 (6274)	92X2 (2337)	170 (77)
-7	299.15 (7598)	287 (7290)	106X2 (2692)	187 (85)
-7.5	319.15 (8106)	307 (7798)	113X2 (2870)	195.5 (87)
-8	339.15 (8614)	327 (8306)	120X2 (3048)	204 (93)

DWG REF	QTY	PART NUMBER	DESCRIPTION	MATERIAL
<b>SHELL</b>				
1	1	ORDER SECTION	SHELL	Filament Wound Epoxy/Glass composites - Head locking grooves integrally wound in place.
2	A/R		F/C Port	CF3M *
3	A/R		F/C Port Seal	Ethylene Propylene .
<b>HEAD - NON CODED</b>				
4	2	96243	Elliptical Head Assy.	Engineering Thermoplastic.
5	2	96000	Head Seal	Ethylene Propylene - O - Ring
<b>HEAD INTERLOCK</b>				
6	2	47336	Quik Release Spiral Ring	316 Stainless Steel.
<b>VESSEL SUPPORT</b>				
7	* 2	52169	Saddle	Engineering Thermoplastic.
8	* 2	45042	Strap Assy.	304 Stainless Steel-PVC Cushion.
9	4	46265	Strap screw.	5/16-18 UNC, 18-8 Stainless Steel.
<b>ELEMENT INTERFACE</b>				
10	2	A/R	Adapter	Engineering Thermoplastic.
11	2	52245	Adapter seal	Ethylene Propylene - O - Ring
12	4	A/R	PWT Seal	Ethylene Propylene - O - Ring
13	1	52609	Thrust Cone	Engineering Thermoplastic.

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

NOTES:-

- MAX. ANGULAR VARIATION BETWEEN ANY PORTS ±0.5°.
- DIMENSION IN INCHES (MM APPROX.)
- SHELL EXTERIOR COATED WITH WHITE, HIGH GLOSS POLYURETHANE PAINT.
- NOT TO BE USED FOR CONSTRUCTION UNLESS CERTIFIED.
- ITEM 13 DOWNSTREAM ONLY.
- GRADE CF3M PER ASME SA-351/316L AS PER SA-479.

SECTION THROUGH END CLOSURE

DRAWN DATE	KR 05 NOV 07	ECN 1383	DWG. NO. 99172	REV. E
CHECKED DATE	MD 05 NOV 07			
APPROVED DATE	RM 05 NOV 07			
DATE 17 OCT 08		SCALE NONE	SIZE A3	SHEET 1 OF 2

4 3 2 1

**RATING:**

DESIGN PRESSURE.....300 PSIG at 120°F  
 (2.1 MPa at 49°C)  
 MIN. OPERATING TEMP.....20°F  
 (-7°C)  
 FACTORY TEST PRESSURE.....450 PSIG  
 (3.1 MPa)

QUALIFICATION PRESSURE .....1800 PSI  
 (12.4 MPa)

**INTENDED USE:**

The CodeLine 80S30 Non Coded Fiberglass RO Pressure Vessel is designed for continuous, long term use as a 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 Shell of CodeLine 80S30 Non Coded is designed in accordance with the engineering standards of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers (ASME) Code.

The CodeLine 80S30 Non Coded 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 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 120°F (0.86 Mpa at 49°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 and fax them with your purchase order to our customer service department for further processing.  
 For optional materials and / or feature not listed below, please consult the factory for pricing and availability

**VESSEL LENGTH CODE – please check one**

MODEL 80S30 Non Coded  -1  -1.5  -2  -3  -4  -4.5  -5  -6  -7  -7.5  -8  
 # Consult Sales Manager for Eight Element Housings.

**MEMBRANE BRAND AND MODEL – please check one and fill in information**

- Please supply adapters for the following membrane brand and specific model  
 Brand \_\_\_\_\_ Model \_\_\_\_\_
- Membrane brand and model information is not currently available, but will be supplied to Pentair Water on or before the following date. \_\_\_ / \_\_\_ / \_\_\_

**CERTIFICATION REQUIRED**

- CE Marked
- Standard, Certified by Pentair water.

**MATERIAL AND PORT CONFIGURATIONS OPTIONS – please check one**

- Standard: all materials and port configurations as per drawing 99172 on the previous page  
 NOTE: The options listed below will increase the vessel price. Call factory for pricing details.
- Option: Customer specified port configuration. Using the chart below, please indicate the customized options you require for each end of the pressure vessel (multiple options are available at each end).  
 (Please consult factory as these options will affect pricing and vessel lead time)

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

**FEED PORT CONFIGURATION**

- Standard – 1½" IPS pipe, grooved ends, with ports in-line
- Optional – Multi-Ports™

Using the instructions in Order Specification Sheet #99007 please fill out your feed port configuration in the space below.  
 List port location first, followed by port size for each choice.

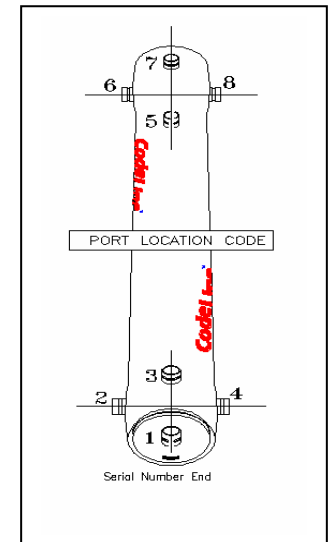
Serial number end

Opposite end

**PERMEATE PORT CONFIGURATION:**

- Standard. 1" FNPT & 1.5" VICTUALIC.
- Optional. 1" BIS F/JIS F-Parallel Thread & 1.5"VIC.

For complete information on proper use of the vessel  
 Please refer to the 80S Series USER'S GUIDE 94182.



Certificate Registration Number 410

**HSB REGISTRATION SERVICES**  
King of Prussia, Pennsylvania

Hereby certifies that

**Pentair Water India Pvt Ltd.**  
L/52-55 Verna Industrial Estate,  
Verna, Goa-403722, India

has established and applied a quality system for

**Design and Manufacturing of Fibre Glass Reinforced  
Plastic Pressure Vessels**


**Excluding 7.5.2 Validation of Processes for Production & Service Provision and  
7.5.4 Customer Property**

An audit was performed on February 6-8, 2002.

Proof has been furnished that the requirements  
according to

**ISO 9001:2000**  
are fulfilled.

This Certificate is valid through  
**February 28, 2005**

  
Dennis R. Palmer, Managing Director

3-5-2002  
Approval Date

Revision Date



**THE NATIONAL BOARD  
OF  
BOILER & PRESSURE VESSEL INSPECTORS**

*Certificate of Authorization*



*This is to certify that*

**Pentair Water India  
Codeline Division  
L-52/55, Verna Industrial Estate  
Verna, Phase II  
Salcette, Goa, 403722  
INDIA**

*is authorized to apply the "NB" mark and register boilers, pressure vessels, or other pressure retaining items with the National Board in accordance with its provisions.*

*The scope of Authorization is limited to items manufactured in accordance with:*

*ASME            Stamp(s): RP*

**ISSUE DATE:            December 10, 2001**

**EXPIRATION DATE:        September 20, 2004**

**Executive Director**

A handwritten signature in black ink, appearing to read 'R. S. T. T. T.', written over a horizontal line.

