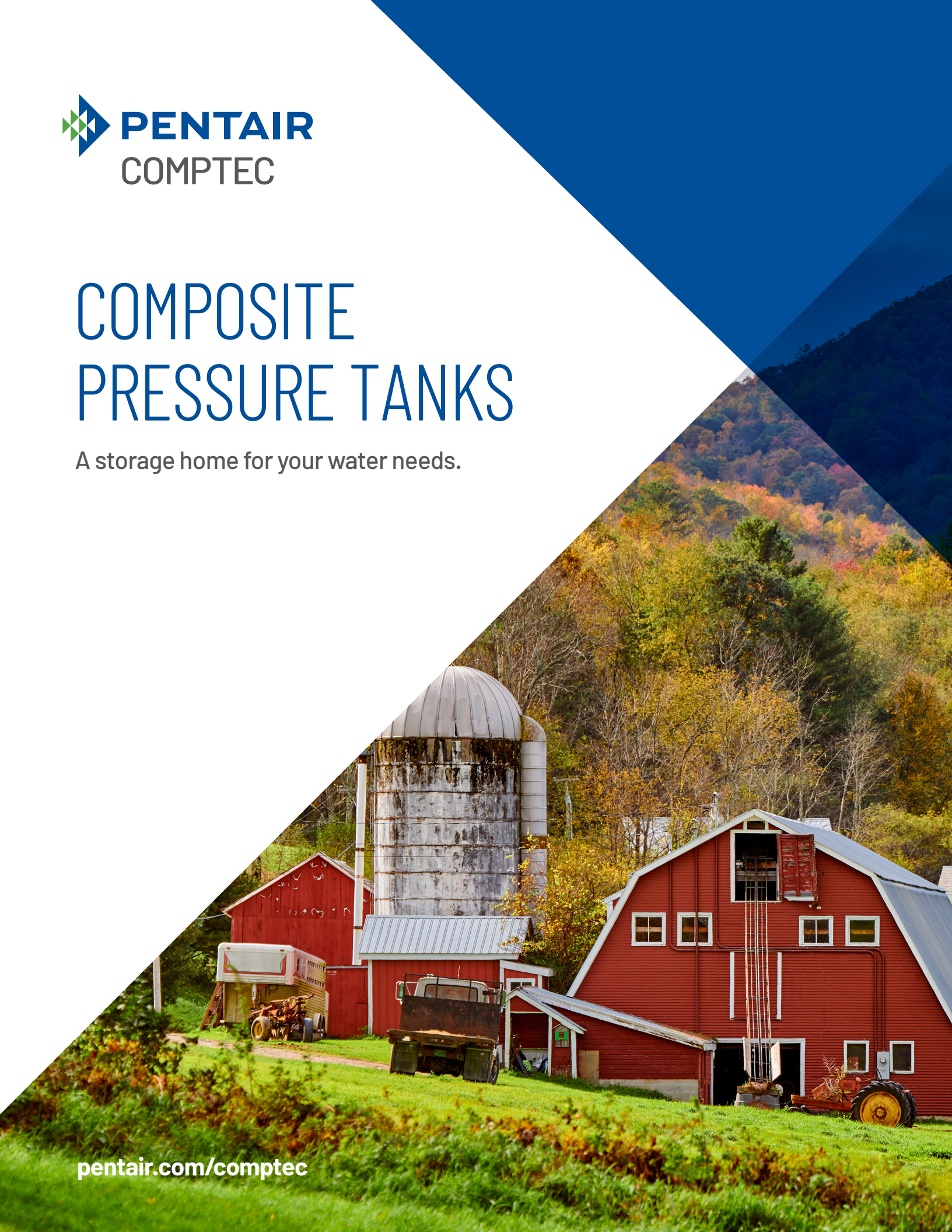
PENTAIR
COMPTEC

COMPOSITE PRESSURE TANKS

A storage home for your water needs.



pentair.com/comptec

Pentair Comptec™ Composite Water System Pressure Tanks

HIGH PERFORMANCE AT THE LOWEST LIFE CYCLE COST FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS

Over forty years of industry-leading experience go into the design and manufacture of Pentair Comptec commercial and industrial pressure tanks. Advanced composite construction and the resulting lower life cycle costs are what make Comptec Tanks superior to steel.

Our line of pressure tanks are engineered to provide maximum performance when high volume water storage or higher system pressures are needed.

Less costly to install – Advanced composite materials result in tanks that are as strong as steel while weighing up to one-half as much. So handling and installing Comptec tanks are much simpler. In fact, they don't even require cranes or other heavy equipment to install, reducing labor and costs. You'll even realize substantial freight savings compared to steel tanks.

No maintenance – Comptec Tanks are constructed of fiberglass and engineered polymers so rust does not develop. Unlike steel tanks, they require no painting or relining, and are not subject to pin holes. Less required maintenance over the life of the tank results in lower life cycle costs.

Easy field service – Steel tanks frequently need to be removed from the service location to be repaired; not so with Comptec. The replaceable aircell and fittings can be changed on site, reducing downtime and labor costs.

High performance with a reduced life cycle cost for commercial and industrial applications – In addition to their cost-saving benefits, Comptec Tanks contain no metals that can leach lead or other harmful elements into the water.

Fast and Efficient Delivery – Our state-of-the-art manufacturing facility ensures delivery of the products you need when and where you need them.

It all adds up to the best performance at a reduced life cycle cost – Comptec Tanks are worth more than steel tanks. You get value-added features that make them easier to install, and far less costly to maintain. These benefits add up to an installed product that performs better than steel, at a reduced life cycle cost.

Available in multiple sizes and pressures to best suit your needs.

Experience reduced life cycle cost with our composite construction that eliminates rusting over time.

PENTAIR
COMPTEC

COMPOSITE PRESSURE TANKS

MODELS CPV-47T, CPV-62T, CPV-87T, CPV-119T, CPV-160T, CPV-185T

PENTAIR COMPTEC

THREADED SERIES

PRESSURE TANKS

LIGHTER, TOUGHER, STRONGER

Just as strong as steel at up to half the weight, Pentair Comptec composite hydropneumatic pressure vessels outperform steel in a wide range of performance tests including burst pressure and the ratio of strength-to-weight.

Plus, their replaceable aircell and fittings can be changed on site, reducing downtime and labor costs.

- Available in sizes that range from a 47 to 195-gallon capacity. Our threaded vessels are rated at 150 psig while ASME vessels are rated at 125 psig.
- Maintains system pressure when the pump is not operating.
- Reduces system cycling time
- Increases pump and water system life
- Large drawdown prevents pumps from overcycling - saves energy by reducing frequent pump starts
- Large acceptance volume helps the pump meet peak demands
- Permanent separation of air and water
- Factory pre-charged and field adjustable
- Can be manifolded for additional capacity

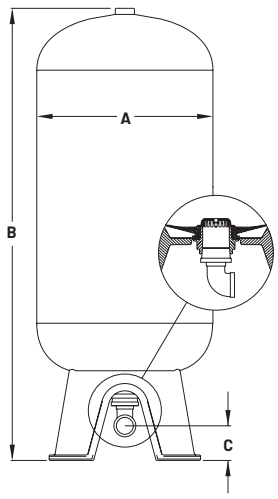
APPLICATIONS

- Pressurized water storage for community wells
- High rise buildings and irrigation systems
- Pressure boosting

FEATURES

1. Aircell provides permanent separation of air and water, and allows maximum drawdown efficiency. Wide pressure switch settings are possible with virtually no maximum acceptance factor limits. Aircell is replaceable at the site of installation.
2. One piece, seamless inner shell molded of premium polyethylene provides impact and corrosion resistance.
3. Outer shell is constructed of continuous fiberglass strands sealed with high grade epoxy resin.
4. Corrosion resistant base allows easy access to bottom connection for installation and field service.
5. Stainless steel connection is both tough and corrosion resistant.

ASME Section X Construction available.



OPERATING SPECIFICATIONS

Maximum operating pressure – 150 psig / 10 bar (non-code)
Maximum operating pressure – 125 psig / 8.6 bar (code)
Maximum operating temperature – 120° F / 50° C (code / non-code)

MODEL	TANK CAPACITY GAL/LITER	DIAMETER A INCH/CM	HEIGHT B INCH/CM	SYSTEM CONNECTION	CONNECTION HEIGHT C INCH/CM	WEIGHT LBS/KG
CPV-47T	47/178	21/53	49/124.5	2" NPT	5/13	78/35.4
CPV-62T	62/235	24/61	49/124.5	2" NPT	5/13	96/43.5
CPV-87T	87/329	24/61	63/160	2" NPT	5/13	134/60.8
CPV-119T	119/450	24/61	82/208.3	2" NPT	5/13	160/72.6
CPV-160T	160/606	30/76	75/190.5	2" NPT	7/18	389/176.4
CPV-185T	185/700	30/76	90/228.6	2" NPT	7/18	453/205.5

Note: All dimensions are ±1".

PENTAIR COMPTEC

FLANGED SERIES
PRESSURE TANKS

BUILT FOR A LOW LIFE CYCLE COST

When it comes to vessels for commercial, industrial, and municipal well water and booster applications, don't follow the standards. Set them.

Pentair Comptec composite hydropneumatic pressure vessels require no heavy equipment for installation. No painting or relining. No servicing off site. Constructed so rust does not develop.

Available in sizes that range from a 120 to 460-gallon capacity, our flanged vessels are rated at 150 psig.

- Maintains system pressure when the pump is not operating.
- Reduces system cycling time
- Increases pump and water system life
- Large drawdown prevents pumps from overcycling - saves energy by reducing frequent pump starts
- Large acceptance volume helps the pump meet peak demands

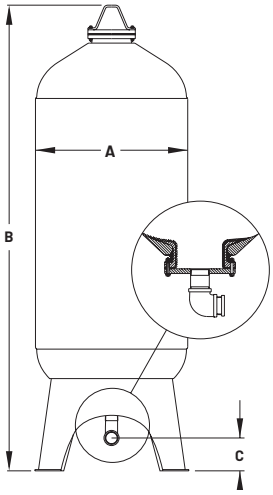
FEATURES

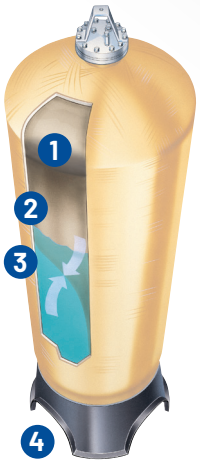
1. Aircell provides permanent separation of air and water, and allows maximum drawdown efficiency. Wide pressure switch settings are possible with virtually no maximum acceptance factor limits. Aircell is replaceable at the site of installation.
2. One piece, seamless inner shell molded of premium polyethylene provides impact and corrosion resistance.
3. Outer shell is constructed of continuous fiberglass strands sealed with high grade epoxy resin.
4. Corrosion resistant base allows easy access to bottom connection for installation and field service.
5. Stainless steel connection is both tough and corrosion resistant.

ASME Section X Construction available.

APPLICATIONS

- Commercial
- Industrial
- Municipal well water
- Booster applications





OPERATING SPECIFICATIONS

Maximum operating pressure – 150 psig / 10 bar
Maximum operating temperature – 120° F / 50° C

MODEL	TANK CAPACITY GAL/LITER	DIAMETER A INCH/CM	HEIGHT B INCH/CM	SYSTEM CONNECTION	CONNECTION HEIGHT C INCH/CM	WEIGHT LBS/KG
CPV-120F	120/454	24/61	94/239	2" NPT	9/23	316/143.3
CPV-185F	185/700	30/76	92/234	2" NPT	6½/17	383/173.7
CPV-245F	245/927	36/91	94/239	3" NPT	8/20	466/211.4
CPV-340F	340/1287	42/107	91/231	3" NPT	8/20	682/309.7
CPV-460F	460/1741	48/122	96/244	3" NPT	8½/22	750/340.2

Note: All dimensions are ±1".

PENTAIR COMPTEC

RT SERIES
RETENTION TANKS

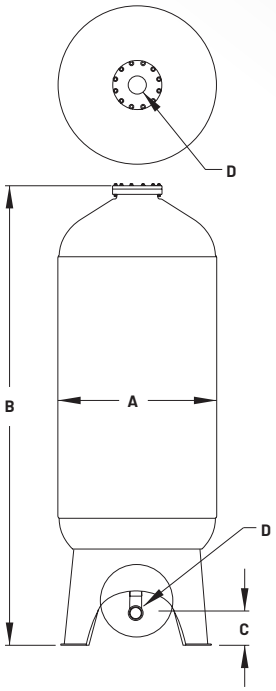
THE VESSEL OF CHOICE FOR CHEMICAL CONTACT

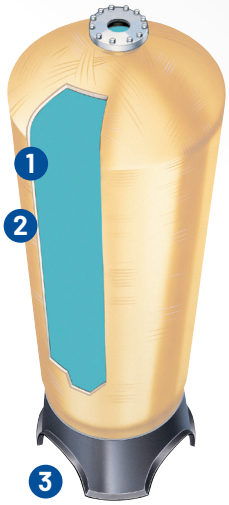
Pentair Comptec Retention Tanks are constructed of fiberglass and engineered polymers – substances which are immune to many corrosive chemicals. This makes them the ideal choice for commercial, industrial and municipal water treatment applications where contact time is required to kill bacteria.

Available in sizes that range from a 120 to 460-gallon capacity, our RT flanged vessels are rated at 150 psig. They can also be manifolded for additional capacity.

FEATURES

1. One piece, seamless inner shell molded of premium polyethylene provides impact and corrosion resistance.
2. Outer shell is constructed of continuous fiberglass strands sealed with high grade epoxy resin.
3. Corrosion resistant base allows easy access to bottom connection for installation and field service.
4. Stainless steel connection is both tough and corrosion resistant.





OPERATING SPECIFICATIONS

Maximum operating pressure – 150 psig / 10 bar
Maximum operating temperature – 120° F / 50° C

MODEL	TANK CAPACITY GAL/LITER	DIAMETER A INCH/CM	HEIGHT B INCH/CM	SYSTEM CONNECTION	CONNECTION HEIGHT C INCH/CM	WEIGHT LBS/KG
RT-120F	120454	24/61	89/226	2" NPT	9/23	285/129.3
RT-185F	185/700	30/76	87/221	2" NPT	6½/17	383/173.7
RT-245F	245/927	36/91	89/226	3" NPT	8/20	466/211.4
RT-340F	340/1287	42/107	86/218	3" NPT	8/20	682/309.4
RT-460F	460/1741	48/122	91/231	3" NPT	8½/22	750/340.2

Note: All dimensions are ±1".

HYDROPNEUMATIC TANK SIZING

The tank precharge fills the aircell, expanding it to the full volume of the tank liner.

As water enters the tank, it compresses the aircell which folds inward and away from the tank wall. This unique design has essentially no maximum acceptance factor limitations since the aircell equals the full inside dimension of the tank. This permits almost complete filling using wide pressure settings, enabling extended drawdown capabilities.

The stored energy in the compressed air inside the aircell pushes water out of the stainless steel bottom diffuser/outlet to the system connection.

BASIC SIZING AND SELECTION REQUIREMENTS

There are three key factors to consider when sizing the proper Pentair Comptec Tank for your system.

- The actual average delivery rate of the pump in gallons per minute (GPM).
- The recommended minimum or required pump running time.
- The minimum (cut in) and the maximum (cut out) system pressure parameters.

Once these system requirements are known, in most cases, the following calculations can easily determine the correct size and number of Pentair CompTec models needed to meet your application.

CALCULATING REQUIRED DRAWDOWN

1) Average pump delivery rate ___ GPM
2) Required minimum pump running time (Note: 1 minute 45 seconds = 1.75 minutes) ___ Minutes
3) Multiply line #1 by line #2. This is the minimum drawdown or available water storage volume in gallons required. ___ Gallons

CALCULATING REQUIRED TANK SIZE

4) Minimum system pressure ___ PSIG
5) Maximum system pressure ___ PSIG
6) Refer to the drawdown factor chart to find the drawdown percentage applicable to lines #4 and #5 ___ Factor
7) Divide line #3 by line #6 to determine the minimum total Comptec Tank volume required. ___ Gallons
8) The total gallons required equals the minimum total tank volume necessary to provide the required minimum drawdown for the system. Refer to the Comptec model data chart to select the model(s) that have a combined total tank volume that meet or exceed the required minimum volume in line #7.

NOTE

Available drawdown per tank model can be easily calculated by using the drawdown factor chart. By finding the on/off pressure settings and the corresponding drawdown factor, you can multiply the Comptec commercial model number, which equals the total tank volume, by the drawdown factor and arrive at the drawdown for the pressure settings for that model.

Example: CPV-245 at 30 psig on / 50 psig off.

Drawdown factor = .309

245 x .309 = 75.7 gallons of drawdown at 30-50 psig

DRAWDOWN FACTOR CHART

MINIMUM (CUT-IN) TANK PRESSURE (PSIG)

To use the factor chart, locate your cut-in pressure along the top row and read down then across to the left to find your cut-in pressure. The intersection is the drawdown factor. The drawdown factor is the percentage of the total tank volume that can be stored and delivered to service given that pressure range.

MAXIMUM (CUT-OUT) TANK PRESSURE (PSIG)	MINIMUM (CUT-IN) PRESSURE																											
	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145
30	.447	.336	.224	.112																								
35	.503	.402	.302	.201	.101																							
40	.548	.457	.366	.274	.183	.091																						
45	.586	.503	.419	.335	.251	.168	.084																					
50	.618	.541	.464	.386	.309	.232	.155	.077																				
55	.646	.574	.502	.430	.359	.287	.215	.143	.072																			
60	.669	.602	.535	.469	.402	.335	.268	.201	.134	.067																		
65	.690	.627	.565	.502	.439	.376	.314	.251	.188	.125	.063																	
70	.708	.649	.590	.531	.472	.413	.354	.295	.236	.177	.118	.059																
75	.725	.669	.613	.557	.502	.446	.390	.334	.279	.223	.167	.111	.056															
80	.739	.686	.634	.581	.528	.475	.422	.370	.317	.264	.211	.158	.106	.053														
85	752	.702	.652	.602	.552	.502	.451	.401	.351	.301	.251	.201	.150	.100	.050													
90	.764	.716	.669	.621	.573	.525	.478	.430	.382	.334	.287	.239	.191	.143	.096	.048												
95	.775	.729	.684	.638	.593	.547	.501	.456	.410	.385	.319	.273	.228	.182	.137	.091	.046											
100	.785	.741	.697	.654	.610	.567	.523	.480	.436	.392	.349	.305	.262	.218	.174	.131	.087	.044										
105	.794	.752	.710	.668	.627	.585	.543	.501	.459	.418	.376	.334	.292	.251	.209	.167	.125	.084	.042									
110	.802	.762	.722	.682	.642	.601	.561	.521	.481	.441	.401	.361	.321	.281	.241	.200	.160	.120	.080	.040								
115	.810	.771	.732	.694	.655	.617	.587	.540	.501	.463	.424	.386	.347	.308	.270	.231	.193	.154	.116	.077	.039							
120	.817	.780	.742	.705	.668	.631	.594	.557	.520	.483	.445	.408	.371	.334	.297	.260	.223	.186	.148	.111	.074	.037						
125	.823	.787	.752	.716	.680	.644	.608	.573	.537	.501	.465	.429	.394	.358	.322	.286	.251	.215	.179	.143	.107	.072	.036					
130	.829	.795	.760	.726	.691	.657	.622	.587	.553	.518	.484	.449	.415	.380	.346	.311	.276	.242	.207	.173	.138	.104	.059	.035				
135	.835	.802	.768	.735	.701	.668	.635	.601	.568	.534	.501	.468	.434	.401	.367	.334	.301	.267	.234	.200	.167	.134	.100	.067	.033			
140	.840	.808	.776	.743	.711	.679	.646	.614	.582	.549	.517	.485	.452	.420	.388	.356	.323	.291	.259	.226	.194	.162	.129	.097	.065	.032		
145	.845	.814	.783	.751	.720	.689	.657	.626	.595	.564	.532	.501	.470	.438	.407	.376	.344	.313	.282	.250	.219	.188	.157	.125	.094	.063	.031	
150	.850	.820	.789	.759	.729	.698	.668	.638	.607	.577	.546	.516	.486	.455	.425	.395	.364	.334	.304	.279	.243	.213	.182	.152	.121	.091	.061	.030

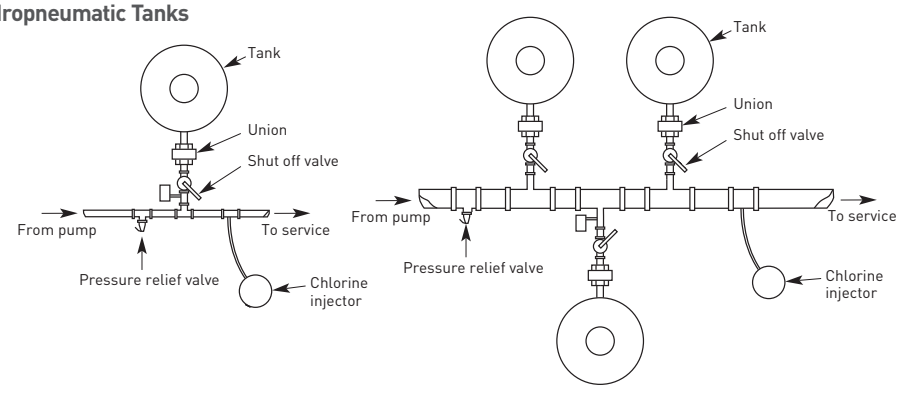
TYPICAL INSTALLATION

CAUTIONS AND CONTRADICTIONS

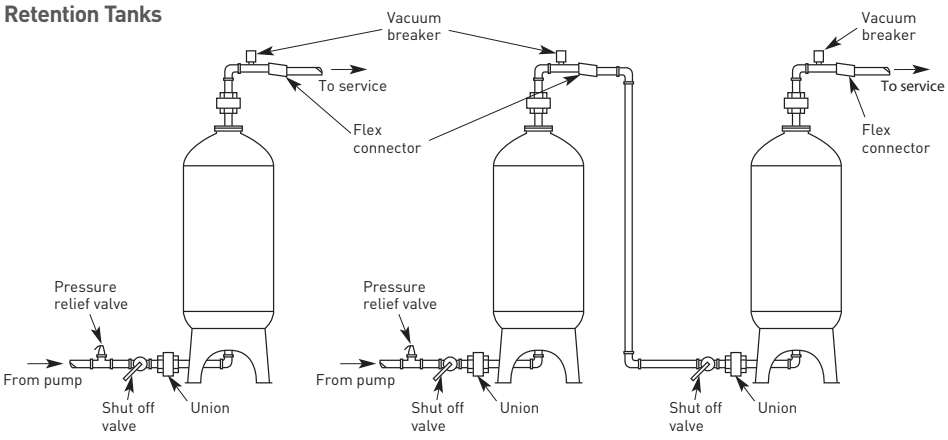
- Never install the tank where it can freeze.
- An adequately sized pressure relief valve must be installed on the inlet line to the tank. The pressure relief valve should be sized so that enough flow can be relieved from the system to ensure that the maximum operating pressure is never exceeded. The pressure relief valve must not be isolated from the tank by a check valve, and must be set so that the maximum operating pressure is never exceeded.
- Tanks subjected to or operated in temperatures in excess of the maximum operating temperature on the label of the tank could fail catastrophically, possibly resulting in fatal injury or property damage. This includes both internal and external temperatures.
- The base should be fully supported on all legs and bolted to the floor to ensure maximum tank stability.
- When using a pump with an air injector, the injector port must be plugged.
- The hydropneumatic tank is pre-pressurized at the factory. The precharge pressure may vary somewhat from tank to tank due to temperature and the length of time in storage. Check and adjust the precharge according to the instruction manual when completing the installation.
- Retention tanks are rated for an internal negative pressure of 5" Hg (17 Pa) vacuum below atmospheric. If negative pressure could ever exceed 5" Hg (17 Pa), an adequate vacuum breaker must be installed.
- Retention tank top system connections must accommodate vertical expansion.

Note: All plumbing should be in compliance with local codes and standards.

Hydropneumatic Tanks



Retention Tanks



GENERAL SPECIFICATION LANGUAGE

The hydropneumatic tank is a pre-pressurized and sealed vessel (the retention tank shall be a sealed vessel) consisting of a composite design of a polyethylene seamless liner, reinforced with continuous strands of fiberglass covered with a two-part epoxy resin system.

SHORT FORM SPECIFICATIONS

The contractor shall provide fiberglass/composite pressure rated water system storage tanks with a diameter of ___" and overall length of ___" constructed of non-corrosive materials according to the features and dimensions shown on the drawings. The total tank capacity shall be ___ gallons/ ___ litres.

The tanks shall have a maximum operating pressure of ____ PSIG and a maximum operating temperature of 120° Fahrenheit. The laminate outer shell shall be an epoxy and continuous strand fiberglass matrix. The liner shall be seamless polyethylene as manufactured by Pentair.

The pressure tanks shall meet a design safety factor of 4 to 1 (5 to 1 for ASME) for minimum burst pressure.

LONG FORM SPECIFICATIONS

Part I. Quality Standards

1.01 Acceptable manufacturers - Pentair

Part II. Performance Standards

2.01 The maximum operating pressure of the tank shall be ___ PSIG and designed with a safety factor of 4 to 1 (5 to 1 for ASME) for minimum burst pressure.

2.02 The maximum operating temperature of the tank shall be rated at 120° Fahrenheit.

2.03 The tank shall be designed to pass a pressure cycle test of 250,000 cycles without failure. The test will cycle from 0 psi to the maximum operating pressure for that vessel.

2.04 The tank shall be capable of withstanding negative pressure up to 5" Hg.

Part III. Inner Shell

3.01 The tank inner shell shall be constructed of seamless polyethylene material.

3.02 The tank inner shell will isolate the fluid contents of the tank to eliminate corrosion, intrusion or reaction.

Part IV. Outer Fiberglass Shell

4.01 The outer tank shell shall be constructed of continuous fiberglass roving.

4.02 The laminate matrix shall be epoxy with a glass transition temperature of 30° Fahrenheit higher than maximum use temperature. Laminate glass volume shall be no less than 70%.

Part V. Capacity and Dimensions

5.01 The holding capacity of the tank inner shell shall be ___ gallons or ___ litres.

5.02 The tank shall have a diameter of ___" and an overall length of ___".

Part IV. Tank Openings

6.01 Threaded tank openings shall be an NPT thread specification.

Part VII. Tank Support Base

7.01 The tank support base shall allow accessibility to the bottom of the tank if required for servicing and maintenance.

7.02 Minimum tank clearance at the bottom of the tank shall be ___" as shown in the drawings provided.

ASME SECTION X FOR FRP

SECTION X OF THE ASME PRESSURE VESSEL CODE PERTAINS TO FRP PRESSURE VESSELS. THE CODE REQUIREMENTS FOR THE DESIGN AND MANUFACTURE OF THESE COMPOSITE PRESSURE VESSELS ARE AS COMPLEX AS THOSE FOR METAL, BUT VASTLY DIFFERENT.

Section X of the ASME Pressure Vessel Code pertains to fiberglass reinforced plastic (FRP) pressure vessels. The code requirements for the design and manufacture of these composite pressure vessels are as complex as those for metal, but vastly different. A Class 1 ASME pressure vessel is one which is qualified through destructive testing of a prototype.

Section X requires that a Class 1 design be qualified with a test of a prototype vessel. This prototype vessel is carefully reviewed and inspected by a third-party certified inspector. The vessel must be cycled 100,000 times over a pressure range of atmosphere-to-design pressure.

Following this, the prototype vessel must withstand a hydrostatic burst test of not less than six times design pressure. An exception to the 100,000-cycle requirement is made for vessels constructed of uncut filaments. For these vessels, the classification is designed for a 5-to-1 safety factor, requiring 33,000 atmosphere-to-design pressure cycles. These uncut filament vessels must then withstand a hydrostatic burst test of not less than five times design pressure. The code also requires the burst test pressure be applied very slowly, making for a very rigorous stress/rupture-type test.

DIFFERENT FOR METAL VESSELS

Because buyers or specifiers are familiar with the requirements of the ASME code for metal vessels, it is not uncommon to receive requests for design calculations. However, the Class 1 pressure vessels are not subject to the same design criteria as metal vessels, because of the prototype destructive qualification. Thus, design calculations alone are not meaningful.

What is meaningful to specifiers and buyers is that the prototype vessel is designed to the strict requirements of Section X; it complies with exhaustive qualification testing; and each vessel is made to the exact standards of the prototype and passes proof testing before shipment.

The proof test for an ASME composite pressure vessel requires pressurization to one and one-tenth times the design pressure. Also, the vessel cannot vary more than 5 parts per 100 in volume during expansion under pressure and it meets the exact weight limitations set by the prototype vessel.

Certified producers of composite pressure vessels under ASME Section X must develop and submit pressure vessel fabrication technologies to the Pressure Vessel Committee of the ASME. Fabricators must submit a design basis of each size of a pressure vessel, indicating diameter or length, to the ASME committee. A prototype vessel of each size is produced and proven to meet all requirements of the code by a certified third party.

Each subsequent composite pressure vessel is then produced as an exact replica of the prototype, again certified by third-party inspection. The result of this testing and inspection is a composite pressure vessel that complies completely with the ASME Pressure Vessel Code and carries the "RP" stamp.

ASSEMBLED IN THE USA

Office
293 Wright Street | Delavan, WI 53115 | United States | 262.728.5552 | pentair.com

Manufacturing
220 Park Drive | Chardon, OH 44024 | United States | 888.782.7483 | pentair.com