TIPS VENDOR AGREEMENT

Between OSLIN NATION CO. **and**

(Company Name)

THE INTERLOCAL PURCHASING SYSTEM (TIPS)
For
RCSP 170303 HVAC (JOC)

General Information

The Vendor Agreement ("Agreement") made and entered into by and between The Interlocal Purchasing System (hereinafter referred to as "TIPS" respectfully) a government cooperative purchasing program authorized by the Region 8 Education Service Center, having its principal place of business at 4845 US Hwy 271 North, Pittsburg, Texas 75686. This Agreement consists of the provisions set forth below, including provisions of all Attachments referenced herein. In the event of a conflict between the provisions set forth below and those contained in any Attachment, the provisions set forth shall control.

The vendor Agreement shall include and incorporate by reference this Agreement, the terms and conditions, special terms and conditions, any agreed upon amendments, as well as all of the sections of the solicitation as posted, including any addenda and the awarded vendor's proposal. Once signed, if an awarded vendor's proposal varies or is unclear in any way from the TIPS Agreement, TIPS, at its sole discretion, will decide which provision will prevail. Other documents to be included are the awarded vendor's proposals, task orders, purchase orders and any adjustments which have been issued. If deviations are submitted to TISP by the proposing vendor as provided by and within the solicitation process, this Agreement may be amended to incorporate any agreed deviations.

The following pages will constitute the Agreement between the successful vendors(s) and TIPS. Bidders shall state, in a separate writing, and include with their proposal response, any required exceptions or deviations from these terms, conditions, and specifications. If agreed to by TIPS, they will be incorporated into the final Agreement.

Definitions

PURCHASE ORDER is the TIPS member's approval providing the authority to proceed with the negotiated delivery order under the Agreement. Special terms and conditions as agreed to between the vendor and TIPS member will be added as addendums to the PO. Items such as certificate of insurance, bonding requirements, small or disadvantaged business goals are some of the addendums possible.

Terms and Conditions

Freight

All quotes to members shall provide a line item for cost for freight or shipping regardless if there is a charge or not. If no charge for freight or shipping, indicate by stating "No Charge" or "$0" or other similar indication.

Warranty Conditions

All supplies equipment and services shall include manufacturer's minimum standard warranty unless otherwise agreed to in writing. Vendor shall be an authorized dealer, distributor or manufacturer for all products. All equipment proposed shall be new unless clearly stated in writing.

Customer Support

The Vendor shall provide timely and accurate customer support to TIPS members. Vendors shall respond to such requests within one (1) working day after receipt of the request. Vendor shall provide training regarding products and services supplied by the Vendor unless otherwise clearly stated in writing at the time of purchase. (Unless training is a line item sold or packaged and must be purchased with product.)

Agreements

All Agreements and agreements between Vendors and TIPS Members shall strictly adhere to the statutes that are set forth in the Uniform Commercial Code as most recently revised.
Agreements for purchase will normally be put into effect by means of a purchase order(s) executed by authorized agents of the participating government entities.
Davis Bacon Act requirements will be met when Federal Funds are used for construction and/or repair of buildings.

Tax exempt status

A taxable item sold, leased, rented to, stored, used, or consumed by any of the following governmental entities is exempted from the taxes imposed by this chapter:(1) the United States; (2) an unincorporated instrumentality of the United States; (3) a corporation that is an agency or instrumentality of the United States and is wholly owned by the United States or by another corporation wholly owned by the United States;(4) the State of Texas; (5) a Texas county, city, special district, or other political subdivision; or (6) a state, or a governmental unit of a state that borders Texas, but only to the extent that the other state or governmental unit exempts or does not impose a tax on similar sales of items to this state or a political subdivision of this state. Texas Tax Code § 151.309.

Assignments of Agreements

No assignment of Agreement may be made without the prior written approval of TIPS. Payment can only be made to the awarded Vendor or vendor assigned dealer.

Disclosures

1. Vendor affirms that he/she has not given, offered to give, nor intends to give at any time hereafter any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor or service to a public servant in connection with this Agreement.
2. Vendor shall attach, in writing, a complete description of any and all relationships that might be considered a conflict of interest in doing business with participants in the TIPS program.
3. The vendor affirms that, to the best of his/her knowledge, the offer has been arrived at independently, and is submitted without collusion with anyone to obtain information or gain any favoritism that would in any way limit competition or give an unfair advantage over other vendors in the award of this Agreement.

Renewal of Agreements

The Agreement with TIPS is for one (1) year with an option for renewal for additional consecutive years as provided in the solicitation. Total term of Agreement can be up to the number of years provided in the solicitation, if sales are reported through the Agreement and both parties agree.

Automatic Renewal Clauses Incorporated in Awarded Vendor Agreements with TIPS Members Resulting from the Solicitation and with the Vendor Named in this Agreement.

No Agreement for goods or services with a TIPS member by the awarded vendor named in this Agreement that results from the solicitation award named in this Agreement, may incorporate an automatic renewal clause with which the TIPS member must comply. All renewal terms incorporated in an Agreement by the vendor with the TIPS member shall only be valid and enforceable when the vendor receives written confirmation by purchase order or executed Agreement issued by the TIPS member for any renewal period. The purpose of this clause is to avoid a TIPS member inadvertently renewing an Agreement during a period in which the governing body of the TIPS member has not properly appropriated and budgeted the funds to satisfy the Agreement renewal. This term is not negotiable and any Agreement between a TIPS member and a TIPS awarded vendor with an automatic renewal clause that conflicts with these terms is rendered void and unenforceable.

Shipments

The Vendor shall ship ordered products within a commercially reasonable time after the receipt of the order. If a product cannot be shipped within that time, the Vendor shall notify TIPS and

the requesting entity as to why the product has not shipped and shall provide an estimated shipping date, if applicable. TIPS or the requesting entity may cancel the order if estimated shipping time is not acceptable.

Invoices

The Vendor or vendor assigned dealer shall submit invoices, to the TIPS participant. Each invoice shall include the TIPS participant's purchase order number. The shipment tracking number or pertinent information for verification of TIPS participant receipt shall be made available upon request. The Vendor or vendor assigned dealer shall not invoice for partial shipments unless agreed to in writing in advance by TIPS and the TIPS participant.

Payments

The TIPS participant will make payments directly to the Vendor or vendor assigned dealer at net 30 days after receiving invoice.

Pricing

The Vendor agrees to provide pricing to TIPS and its participating governmental entities that is at least equal to the lowest pricing available to like cooperative purchasing customers and the pricing shall remain so throughout the duration of the Agreement.

The Vendor agrees to promptly lower the cost of any product purchased through TIPS following a reduction in the manufacturer or publisher's direct cost to the Vendor. Price increases will be honored according to the terms of the solicitation. However, the Vendor shall honor previous prices for thirty (30) days after written notification to TIPS of an increase.

All pricing submitted to TIPS shall include the participation fee, as provided in the solicitation, to be remitted to TIPS by the Vendor. Vendor will not show adding the fee to the invoice presented to customer. Failure to render the participation fee to TIPS shall constitute a breach of this agreement and shall be grounds for termination of this agreement and any other agreement held with TIPS.

Participation Fees

Vendor or vendor assigned dealer Agreements to pay the participation fee for all Agreement sales to TIPS on a monthly scheduled report. Vendor must login to the TIPS database and use the "Submission Report" section to report sales. The Vendor or vendor assigned dealers are responsible for keeping record of all sales that go through the TIPS Agreement. Failure to pay the participation fee will result in termination of Agreement. Please contact TIPS at tips@tips-usa.com or call (866) 839-8477 if you have questions about paying fees.

Indemnity

1. **Indemnity for Personality Agreements.** Vendor agrees to indemnify and hold harmless and defend TIPS, TIPS member(s), officers and employees, from and against all claims and suits for damages, injuries to persons (including death), property damages, losses, and expenses including court costs and attorney's fees, arising out of, or resulting from, Vendor's performance of this Agreement, including all such causes of action based upon common, constitutional, or statutory law, or based in whole or in part, upon allegations of negligent or intentional acts on the part of the Vendor, its officers, employees, agents, subcontractors, licensees, invitees, whether or not such claims are based in whole or in part upon the negligent acts or omissions of the TIPS, TIPS member(s), officers, employees, or agents.

2. **Indemnity for Performance Agreements.** The Vendor agrees to indemnify and hold harmless and defend TIPS, TIPS member(s), officers and employees from and against all claims and suits for damages, injuries to persons (including death), property damages, losses, and expenses including court costs and attorney's fees, arising out of, or resulting from, Vendor's work under this Agreement, including all such causes of action based upon common, constitutional, or statutory law, or based in whole or in part, upon allegations of negligent or intentional acts on the part of the Vendor, its officers, employees, agents, subcontractors, licensees, or invitees. Vendor further agrees to indemnify and hold harmless and defend TIPS, TIPS member(s), officers and employees, from and against all claims and suits for injuries (including death) to an officer, employee, agent, subcontractors, supplier or equipment lessee of the Vendor, arising out of, or resulting from, Vendor's work under this Agreement whether or not such claims are based in whole or in part upon the negligent acts or omissions of the TIPS, TIPS member(s), officers, employees, or agents.

Attorney's Fees--Texas Local Government Code § 271.159 is expressly referenced.
Pursuant to §271.159, TEXAS LOC. GOV'T CODE, in the event that any one of the Parties is required to obtain the services of an attorney to enforce this Agreement, the prevailing party, in addition to other remedies available, shall be entitled to recover reasonable attorney's fees and costs of court.

Multiple Vendor Awards

TIPS reserves the right to award multiple vendor Agreements for categories when deemed in the best interest of the TIPS membership. Bidders scoring the RFP's specified percentage or above will be considered for an award. Categories are established at the discretion of TIPS.

State of Texas Franchise Tax

By signature hereon, the bidder hereby certifies that he/she is not currently delinquent in the payment of any franchise taxes owed the State of Texas under Chapter 171, Tax Code.

Miscellaneous

The Vendor acknowledges and agrees that continued participation in TIPS is subject to TIPS sole discretion and that any Vendor may be removed from the participation in the Program at any time with or without cause. Nothing in the Agreement or in any other communication between TIPS and the Vendor may be construed as a guarantee that TIPS participants will submit any orders at any time. TIPS reserves the right to request additional proposals for items already on Agreement at any time.

Purchase Order Pricing/Product Deviation

If a deviation of pricing/product on a purchase order occurs, TIPS is to be notified within 48 hours of receipt of order.

Termination for Convenience

TIPS has the right to terminate the agreement for cause or no cause for convenience with a thirty-day written notice. Termination for convenience is required under 2 CFR part 200.

TIPS Member Purchasing Procedures

Purchase orders or their equal are issued by participating TIPS member to the awarded vendor indicating on the PO "Agreement Number". Order is emailed to TIPS at tipspo@tips-usa.com.

- Awarded vendor delivers goods/services directly to the participating member.
- Awarded vendor invoices the participating TIPS member directly.
- Awarded vendor receives payment directly from the participating member.
- Awarded vendor reports sales monthly to TIPS (unless prior arrangements have been made with TIPS to report monthly).

Form of Agreement

If a vendor submitting an offer requires TIPS and/or TIPS Member to sign an additional agreement, a copy of the proposed agreement must be included with the proposal.
In response to submitted supplemental Vendor Agreement documents, TIPS will review proposed vendor Agreement documents. Vendor's Agreement document shall not become part of TIPS's Agreement with vendor unless and until an authorized representative of TIPS reviews and approves it.

Licenses

Awarded vendor shall maintain in current status all federal, state and local licenses, bonds and permits required for the operation of the business conducted by awarded vendor. Awarded vendor shall remain fully informed of and in compliance with all ordinances and regulations pertaining to the lawful provision of services under the Agreement. TIPS reserves the right to stop work and/or cancel Agreement of any awarded vendor whose license(s) expire, lapse, are suspended or terminated.

Novation

If awarded vendor sells or transfers all assets or the entire portion of the assets used to perform this Agreement, a successor in interest must guarantee to perform all obligations under this Agreement. TIPS reserves the right to accept or reject any new party. A simple change of name agreement will not change the Agreement obligations of awarded vendor.

Site Requirements (when applicable to service or job)

Cleanup: Awarded vendor shall clean up and remove all debris and rubbish resulting from their work as required or directed by TIPS Member. Upon completion of work, the premises shall be left in good repair and an orderly, neat, clean and unobstructed condition.
Preparation: Awarded vendor shall not begin a project for which TIPS Member has not prepared the site, unless awarded vendor does the preparation work at no cost, or until TIPS Member includes the cost of site preparation in a purchase order.
Site preparation includes, but is not limited to: moving furniture, installing wiring for networks or power, and similar pre-installation requirements.
Registered sex offender restrictions: For work to be performed at schools, awarded vendor agrees that no employee of a sub-contractor who has been adjudicated to be a registered sex offender will perform work at any time when students are or reasonably expected to be present.

Awarded vendor agrees that a violation of this condition shall be considered a material breach and may result in the cancellation of the purchase order at the TIPS Member's discretion. Awarded vendor must identify any additional costs associated with compliance of this term. If no costs are specified, compliance with this term will be provided at no additional charge.
Safety measures: Awarded vendor shall take all reasonable precautions for the safety of employees on the worksite, and shall erect and properly maintain all necessary safeguards for protection of workers and the public. Awarded vendor shall post warning signs against all hazards created by the operation and work in progress. Proper precautions shall be taken pursuant to state law and standard practices to protect workers, general public and existing structures from injury or damage.

Smoking

Persons working under Agreement shall adhere to local smoking policies. Smoking will only be permitted in posted areas or off premises.

Invoices

The awarded vendor shall submit invoices to the participating entity clearly stating "Per TIPS Agreement". The shipment tracking number or pertinent information for verification shall be made available upon request.

Marketing

Awarded vendor agrees to allow TIPS to use their name and logo within website, marketing materials and advertisement. Any use of TIPS name and logo or any form of publicity, inclusive of press release, regarding this Agreement by awarded vendor must have prior approval from TIPS.

Supplemental agreements

The entity participating in the TIPS Agreement and awarded vendor may enter into a separate supplemental agreement to further define the level of service requirements over and above the minimum defined in this Agreement i.e. invoice requirements, ordering requirements, specialized delivery, etc. Any supplemental agreement developed as a result of this Agreement is exclusively between the participating entity and awarded vendor. TIPS, its agents, TIPS members and employees shall not be made party to any claim for breach of such agreement.

Survival Clause

All applicable software license agreements, warranties or service agreements that were entered into between Vendor and Customer under the terms and conditions of the Agreement shall survive the expiration or termination of the Agreement. All Purchase Orders issued and accepted by Order Fulfiller shall survive expiration or termination of the Agreement.

Legal obligations

It is the responding vendor's responsibility to be aware of and comply with all local, state and federal laws governing the sale of products/services identified in this RFP and any awarded Agreement thereof. Applicable laws and regulations must be followed even if not specifically identified herein.

Audit rights

Awarded Vendor shall, at their sole expense, maintain appropriate due diligence of all purchases made by TIPS Member that utilizes this Agreement. TIPS and Region 8 ESC each reserve the right to audit the accounting for a period of three (3) years from the time such purchases are made. This audit right shall survive termination of this Agreement for a period of one (1) year from the effective date of termination. TIPS shall have authority to conduct random audits of Awarded Vendor's pricing that is offered to TIPS Members. Notwithstanding the foregoing, in the event that TIPS is made aware of any pricing being offered to eligible entities that is materially inconsistent with the pricing under this agreement, TIPS shall have the ability to conduct the audit internally or may engage a third-party auditing firm. In the event of an audit, the requested materials shall be provided in the format and at the location designated by Region 8 ESC or TIPS.

Force Majeure

If by reason of Force Majeure, either party hereto shall be rendered unable wholly or in part to carry out its obligations under this Agreement then such party shall give notice and fully particulars of Force Majeure in writing to the other party within a reasonable time after occurrence of the event or cause relied upon, and the obligation of the party giving such notice, so far as it is affected by such Force Majeure, shall be suspended during the continuance of the inability then claimed, except as hereinafter provided, but for no longer period, and such party shall endeavor to remove or overcome such inability with all reasonable dispatch.

Services

When applicable, performance bonds and payment bonds will be required on construction or labor required jobs. Awarded vendor will meet the TIPS member's local and state purchasing requirements. Awarded vendors may need to provide additional capacity as jobs increase. Bonds will not require that a fee be paid to TIPS. The actual cost of the bond will be a pass through to the TIPS member and added to the purchase order or Agreement.

Scope of Services

The specific scope of work for each job shall be determined in advance and in writing between TIPS Member and Awarded vendor. It is okay if the TIPS member provides a general scope, but the awarded vendor should provide a written scope of work to the TIPS member as part of the proposal. Once the scope of the job is agreed to, the TIPS member will issue a PO and/or an Agreement with the estimate referenced as an attachment along with bond and any other special provisions agreed to for the TIPS member. If special terms and conditions other than those covered within this solicitation and awarded Agreements are required, they will be attached to the PO and shall take precedence over those in the base Agreement.

Project Delivery Order Procedures

The TIPS member having approved and signed an interlocal agreement, or other TIPS membership document, may make a request of the awarded vendor under this Agreement when the TIPS member has services that need to be undertaken. Notification may occur via phone, the web, email, fax, or in person.
Upon notification of a pending request, the awarded vendor shall make contact with the TIPS member as soon as possible, but must make contact with the TIPS member within two working days.

Scheduling of Projects

Scheduling of projects (if applicable) will be accomplished when the TIPS member issues a purchase order that will serve as "the notice to proceed". The period for the delivery order will include the mobilization, materials purchase, installation and delivery, design, weather, and site cleanup and inspection. No additional claims may be made for delays as a result of these items. When the tasks have been completed the awarded vendor shall notify the client and have the

TIPS member inspect the work for acceptance under the scope and terms in the PO. The TIPS member will issue in writing any corrective actions that are required. Upon completion of these items, the TIPS member will issue a completion notice and final payment will be issued.

Support Requirements

If there is a dispute between the awarded vendor and TIPS member, TIPS or its representatives will assist in conflict resolution or third party (mandatory mediation), if requested by either party. TIPS, or its representatives, reserves the right to inspect any project and audit the awarded vendors TIPS project files, documentation and correspondence.

Incorporation of Solicitation

The TIPS Request for Proposals or the Request for Competitive Sealed Proposals solicitation and all associated documents and forms made part of the solicitation process, including any addenda, that resulted in the execution of this agreement are hereby incorporated by reference into this agreement as if copied verbatim.

Special Terms and Conditions

It is the intent of TIPS to Agreement with a reliable, high performance vendor to supply products and services to government and educational agencies. It is the experience of TIPS that the following procedures provide TIPS, the Vendor, and the participating agency the necessary support to facilitate a mutually beneficial relationship. The specific procedures will be negotiated with the successful vendor.

- **Agreements:** All vendor purchase orders and/or Agreements/agreements must be emailed to TIPS at tipspo@tips-usa.com. Should an agency send an order direct to vendor, it is the vendor's responsibility to forward the order to TIPS at the email above within 24 business hours and confirm its receipt with TIPS.
- **Promotion of Agreement**: It is agreed that Vendor will encourage all eligible entities to purchase from the TIPS Program. Encouraging entities to purchase directly from the Vendor and not through TIPS Agreement is a violation of the terms and conditions of this Agreement and will result in removal of the Vendor from the TIPS Program.
- **Daily Order Confirmation**: All Agreement purchase orders will be approved daily by TIPS and sent to vendor. The vendor must confirm receipt of orders to the TIPS member (customer) within 24 business hours.
- **Vendor custom website for TIPS**: If Vendor is hosting a custom TIPS website, then updated pricing must be posted by 1st of each month.
- **Back Ordered Products**: If product is not expected to ship within 3 business days, customer is to be notified within 24 hours and appropriate action taken based on customer request.

Term of Agreement is one year with renewal options for up to two additional years as provided in the solicitation.

Page 12 of 12 will be the TIPS Vendor Agreement Signature Page

TIPS Vendor Agreement Signature Form

RCSP 170303 HVAC (JOC)

Company Name OSLIN NATION CO D/B/A BABTEX

Address 7401 RAILHEAD LANE

City HOUSTON State TX Zip 77086

Phone 713-699-3500 Fax 713-699-8213

Email of Authorized Representative saytes@onco-tx.com

Name of Authorized Representative STEVEN AYTES

Title PRINCIPAL

Signature of Authorized Representative

Date 3/14/17

TIPS Authorized Representative Name Meredith Barton

Title Vice-President of Operations

TIPS Authorized Representative Signature Meredith Barton

Approved by ESC Region 8 David Wayne Fitts

Date 5/26/2017

The Interlocal Purchasing System (TIPS Cooperative)
Supplier Response

Bid Information

Bid Creator	Mr. David Mabe Vice-President of Construction
Email	david.mabe@tips-usa.com
Phone	+1 (903) 243-4759
Fax	+1 (866) 749-6674
Bid Number	170303 Addendum 2
Title	HVAC (JOC)
Bid Type	RFP
Issue Date	3/2/2017 08:05 AM (CT)
Close Date	4/28/2017 03:00:00 PM (CT)

Contact Information

Address	Region VIII Education Service Center 4845 US Highway 271 North Pittsburg, TX 75686
Contact	David Mabe, TIPS Vice-President of Construction
Department	
Building	
Floor/Room	
Telephone	+1 (866) 839-8477
Fax	+1 (866) 839-8472
Email	bids@tips-usa.com

Ship to Information

Address	
Contact	
Department	
Building	
Floor/Room	
Telephone	
Fax	
Email	

Supplier Information

Company	OSLIN NATION CO (BABTEX INC)
Address	P.O. Box 95282 GRAPEVINE, TX 76099
Contact	
Department	
Building	
Floor/Room	
Telephone	(214) 631-5650
Fax	(214) 333-2035
Email	
Submitted	4/24/2017 10:24:52 AM (CT)
Total	$0.00

By submitting your response, you certify that you are authorized to represent and bind your company.

Signature NANCY VILLALBA Email nvillalba@onco-tx.com

Supplier Notes

Bid Notes

Bid Activities

Bid Messages

Bid Attributes
Please review the following and respond where necessary

#	Name	Note	Response
1	Yes - No	Disadvantaged/Minority/Women Business Enterprise - D/M/WBE (Required by some participating governmental entities) Vendor certifies that their firm is a D/M/WBE? Vendor must upload proof of certification to the "Response Attachments" D/M/WBE CERTIFICATES section.	No
2	Yes - No	Highly Underutilized Business - HUB (Required by some participating governmental entities) Vendor certifies that their firm is a HUB? Vendor must upload proof of certification to the "Response Attachments" HUB CERTIFICATES section.	No
3	Yes - No	The Vendor can provide services and/or products to all 50 US States?	Yes
4	States Served:	If answer is NO to question #3, please list which states can be served. (Example: AR, OK, TX)	
5	Company and/or Product Description:	This information will appear on the TIPS website in the company profile section, if awarded a TIPS contract. (Limit 750 characters.)	LAARS BOILER /WATER HEATERS, BOCK WATER HEATERS, CEMLINE , VIBRO ACOUSTICS, JOHN WOOD, AMERICAN COOLING TOWER, BELL & GOSSET PUMPS, SPECIALTIES, HEAT EXCHANGER, WEIL PUMPS, GOULDS PUMPS, SUSSMAN ELECTRIC BOILER, RIELLO BURNER, HAMILTON ENGINEERING , RITE BOILER , WESSELS, WHEATLEY
6	Primary Contact Name	Primary Contact Name	NANCY VILLALBA
7	Primary Contact Title	Primary Contact Title	AFTERMARKET SALES
8	Primary Contact Email	Primary Contact Email	nvillalba@onco-tx.com
9	Primary Contact Phone	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-699-3500
10	Primary Contact Fax	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-699-8213
11	Primary Contact Mobile	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	346-907-7570
12	Secondary Contact Name	Secondary Contact Name	CHRIS YOUNG
13	Secondary Contact Title	Secondary Contact Title	AFTERMARKET SALES
14	Secondary Contact Email	Secondary Contact Email	cyoung@onco-tx.com
15	Secondary Contact Phone	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-699-3500
16	Secondary Contact Fax	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-699-8213

17	Secondary Contact Mobile	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-884-5762
18	Admin Fee Contact Name	Admin Fee Contact Name. This person is responsible for paying the admin fee to TIPS.	SUSAN LUNSFORD
19	Admin Fee Contact Email	Admin Fee Contact Email	slunsford@onco-tx.com
20	Admin Fee Contact Phone	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-699-3500
21	Purchase Order Contact Name	Purchase Order Contact Name. This person is responsible for receiving Purchase Orders from TIPS.	NANCY VILLALBA
22	Purchase Order Contact Email	Purchase Order Contact Email	nvillalba@onco-tx.com
23	Purchase Order Contact Phone	Enter 10 digit phone number. (No dashes or extensions) Example: 8668398477	713-699-3500
24	Company Website	Company Website (Format - www.company.com)	www.onco-tx.com
25	Federal ID Number:	Federal ID Number also known as the Employer Identification Number. (Format - 12-3456789)	75-2256270
26	Primary Address	Primary Address	7401 RAILHEAD LANE
27	Primary Address City	Primary Address City	HOUSTON
28	Primary Address State	Primary Address State (2 Digit Abbreviation)	TEXAS
29	Primary Address Zip	Primary Address Zip	77086
30	Search Words:	Please list search words to be posted in the TIPS database about your company that TIPS website users might search. Words may be product names, manufacturers, or other words associated with the category of award. YOU MAY NOT LIST NON-CATEGORY ITEMS. (Limit 500 words) (Format: product, paper, construction, manufacturer name, etc.)	LAARS BOILER /WATER HEATERS, BOCK WATER HEATERS, CEMLINE , VIBRO ACOUSTICS, JOHN WOOD, AMERICAN COOLING TOWER, BELL & GOSSET PUMPS, SPECIALTIES, HEAT EXCHANGER, WEIL PUMPS, GOULDS PUMPS, SUSSMAN ELECTRIC BOILER, RIELLO BURNER, HAMILTON ENGINEERING , RITE BOILER WESSELS, WHEATLY
31	Yes - No	Do you wish to be eligible to participate in a TIPS contract in which a TIPS member utilizes federal funds on contracts exceeding $100,000? (Non-Construction)	Yes
32	Yes - No	Certification of Residency (Required by the State of Texas) Company submitting bid is a Texas resident bidder?	Yes
33	Company Residence (City)	Vendor's principal place of business is in the city of?	Houston TX
34	Company Residence (State)	Vendor's principal place of business is in the state of?	Houston TX
35	Pricing Information:	Pricing information section. (Questions 36 - 38)	(No Response Required)
36	Yes - No	Pricing submitted includes the TIPS administration fee?	No
37	Yes - No	Vendor agrees to remit to TIPS the required administration fee?	Yes
38	Yes - No	Additional discounts to TIPS members for bulk quantities or scope of work?	Yes

39	Years Experience	Company years experience in this category?	74
40	Prices are guaranteed for?	(___Month(s), ___ Year(s), or Term of Contract) (Standard term is "Term of Contract")	30 DAYS
41	Estimating Requirements	Awarded contractor must use Cost Works, JOC Works, RS Means Online, 4 Clicks, or Other Approved estimating software. If the contractor selects "Other Software", please make the request for approval in the next attribute question.	RS Means Online
42	Other Estimating Software	Please list the program name, website address and phone number of the requested estimating software.	
43	Right of Refusal	Does the proposing vendor wish to reserve the right not to perform the awarded agreement with a TIPS member at your discretion?	Yes
44	NON-COLLUSIVE BIDDING CERTIFICATE	By submission of this bid or proposal, the Bidder certifies that: 1) This bid or proposal has been independently arrived at without collusion with any other Bidder or with any Competitor; 2) This bid or proposal has not been knowingly disclosed and will not be knowingly disclosed, prior to the opening of bids, or proposals for this project, to any other Bidder, Competitor or potential competitor: 3) No attempt has been or will be made to induce any other person, partnership or corporation to submit or not to submit a bid or proposal; 4) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties being applicable to the Bidder as well as to the person signing in its behalf. Not a negotiable term. Failure to agree will render your proposal non-responsive and it will not be considered.	(No Response Required)
45	CONFLICT OF INTEREST QUESTIONNAIRE - FORM CIQ	If you have a conflict of interest as described in this form or the Local Government Code Chapter 176, cited therein- you are required to complete and file with TIPS, Richard Powell, 4845 US Highway 271 North, Pittsburg, Texas 75686 You may find the Blank CIQ form on our website at: Copy and Paste the following link into a new browser or tab: https://www.tips-usa.com/assets/documents/docs/CIQ.pdf Do you have any conflicts under this statutory requirement?	Yes
46	Filing of Form CIQ	If yes (above), have you filed a form CIQ as directed here?	Yes

47	Certification Regarding Lobbying	Applicable to Grants, Subgrants, Cooperative Agreements, and Contracts Exceeding $100,000 in Federal Funds. Submission of this certification is a prerequisite for making or entering into this transaction and is imposed by section 1352, Title 31, U.S. Code. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure. The undersigned certifies, to the best of his or her knowledge and belief, that: (1) No Federal appropriated funds have been paid or will be paid by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with the awarding of a Federal contract, the making of a Federal grant, the making of a Federal loan, the entering into a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement. (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “disclosure Form to Report Lobbying,” in accordance with its instructions. (3) The undersigned shall require that the language of this certification be included in the award documents for all covered subawards exceeding $100,000 in Federal funds at all appropriate tiers and that all subrecipients shall certify and disclose accordingly. If you certify the three (3) certification of lobbying statements above, answer YES to this question and move to the next question. No action is needed. If the answer to this question is NO, and you can not certify the three (3) statements above, please download the Certification Regarding Lobbying form, fill out the form, sign the form, scan the form and upload to the Certification Regarding Lobbying section on the ”Response Attachments” tab. You may find the Blank Certification Regarding Lobbying form on our website at: Copy and Paste the following link into a new browser or tab: https://www.tips-usa.com/assets/documents/docs/CRL.pdf	No, I do not certify
48	Regulatory Standing	I certify to TIPS for the proposal attached that my company is in good standing with all governmental agencies Federal or state that regulate any part of our business operations. If not, please explain in the next attribute question.	Yes
49	Regulatory Standing	Regulatory Standing explanation of no answer.	

50	Antitrust Certification Statements (Tex. Government Code § 2155.005)	By submission of this bid or proposal, the Bidder certifies that: I affirm under penalty of perjury of the laws of the State of Texas that: (1) I am duly authorized to execute this contract on my own behalf or on behalf of the company, corporation, firm, partnership or individual (Company) listed below; (2) In connection with this bid, neither I nor any representative of the Company has violated any provision of the Texas Free Enterprise and Antitrust Act, Tex. Bus. & Comm. Code Chapter 15; (3) In connection with this bid, neither I nor any representative of the Company has violated any federal antitrust law; (4) Neither I nor any representative of the Company has directly or indirectly communicated any of the contents of this bid to a competitor of the Company or any other company, corporation, firm, partnership or individual engaged in the same line of business as the Company.	(No Response Required)

51	Suspension or Debarment Instructions	Instructions for Certification: 1. By agreeing to the form, the prospective lower tier participant is providing the certification set out on the form in accordance with these instructions. 2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification in addition to other remedies available to the federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and / or debarment. 3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 4. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “lower tier covered transaction,” “participants,” “person,” “primary covered transaction,” “principal,” “proposal” and “voluntarily excluded,” as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. 5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction” without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions. 7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List. 8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings. 9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible or voluntarily excluded from participation in this transaction, in addition to other remedies available to the federal government, the department or agency with which this transaction originated may pursue available remedies,	(No Response Required)

		including suspension and / or debarment.	
52	Suspension or Debarment Certification	Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. By submitting this offer and certifying this section, this bidder: Certifies that no suspension or disbarment is in place, which would preclude receiving a federally funded contract as described above.	Yes
53	Non-Discrimination Statement and Certification	In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov. (Title VI of the Education Amendments of 1972; Section 504 of the Rehabilitation Act of 1973; the Age Discrimination Act of 1975; Title 7 CFR Parts 15, 15a, and 15b; the Americans with Disabilities Act; and FNS Instruction 113-1, Civil Rights Compliance and Enforcement – Nutrition Programs and Activities) USDA is an equal opportunity provider, employer, and lender. Not a negotiable term. Failure to agree will render your proposal non-responsive and it will not be considered. I	Yes

		certify that in the performance of a contract with TIPS or its members, that our company will conform to the foregoing anti-discrimination statement and comply with the cited law and regulations.	
54	2 CFR PART 200 Contract Provisions Explanation	Required Federal contract provisions of Federal Regulations for Contracts for contracts with ESC Region 8 and TIPS Members: The following provisions are required to be in place and agreed if the procurement is funded in any part with federal funds. The ESC Region 8 and TIPS Members is the subgrantee or Subrecipient by definition. The federal Rule numbering or identification below is only for reference purpose on this form and does not identify an actual Federal designation or location of the rule. The Rules are located in 2 CFR PART 200 - Appendix II to Part 200—Contract Provisions for Non-Federal Entity Contracts Under Federal Awards at 2 CFR PART 200. In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.	(No Response Required)
55	2 CFR PART 200 (A) Contracts	Contracts for more than the simplified acquisition threshold currently set at $150,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate. Notice: Pursuant to Federal Rule (A) above, when federal funds are expended by ESC Region 8 and TIPS Members, ESC Region 8 and TIPS Members reserves all rights and privileges under the applicable laws and regulations with respect to this procurement in the event of breach of contract by either party. Does vendor agree?	Yes
56	2 CFR PART 200 (B) Termination	Termination for cause and for convenience by the grantee or subgrantee including the manner by which it will be effected and the basis for settlement. (All contracts in excess of $10,000) Pursuant to Federal Rule (B) above, when federal funds are expended by ESC Region 8 and TIPS Members, ESC Region 8 and TIPS Members reserves the right to terminate any agreement in excess of $10,000 resulting from this procurement process for cause after giving the vendor an appropriate opportunity and up to 30 days, to cure the causal breach of terms and conditions. ESC Region 8 and TIPS Members reserves the right to terminate any agreement in excess of $10,000 resulting from this procurement process for convenience with 30 days notice in writing to the awarded vendor. The vendor would be compensated for work performed and goods procured as of the termination date if for convenience of the ESC Region 8 and TIPS Members. Any award under this procurement process is not exclusive and the ESC Region 8 and TIPS reserves the right to purchase goods and services from other vendors when it is in the best interest of the ESC Region 8 and TIPS. Does vendor agree?	Yes

57	2 CFR PART 200 (G) Clean Air Act	Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of $150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA). Pursuant to Federal Rule (G) above, when federal funds are expended by ESC Region 8 and TIPS Members, ESC Region 8 and TIPS Members requires that the proposer certify that during the term of an award by the ESC Region 8 and TIPS Members resulting from this procurement process the vendor agrees to the terms listed and referenced therein. Does vendor agree?	Yes
58	2 CFR PART 200 (H) Debarment and Suspension	Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. Pursuant to Federal Rule (H) above, when federal funds are expended by ESC Region 8 and TIPS Members, ESC Region 8 and TIPS Members requires the proposer certify that during the term of an award by the ESC Region 8 and TIPS Members resulting for this procurement process the vendor certifies that they are not debarred from receiving a contract from the federal government as provided therein. Does vendor agree?	Yes
59	2 CFR PART 200 (I) Byrd Anti-Lobbying Amendment	Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding $100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award. Pursuant to Federal Rule (I) above, when federal funds are expended by ESC Region 8 and TIPS Members, ESC Region 8 and TIPS Members requires the proposer certify that during the term and after the awarded term of an award by the ESC Region 8 and TIPS Members resulting for this procurement process the vendor certifies to the terms included or referenced therein. Does vendor agree?	Yes

60	2 CFR PART 200 Federal Rule (12)	Federal Rule (12) Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15). (Contracts, subcontracts, and subgrants of amounts in excess of $100,000) Pursuant to Federal Rule (12) above, when federal funds are expended by ESC Region 8 and TIPS Members, ESC Region 8 and TIPS Members requires the proposer certify that in performance of the contracts, subcontracts, and subgrants of amounts in excess of $100,000, the vendor will be in compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h)), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15). Does vendor certify that it is in compliance with the Clean Air Act?	Yes
61	2 CFR PART 200 Procurement of Recovered Materials	A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines. Does vendor certify that it is in compliance with the Solid Waste Disposal Act as described above?	Yes

62	Indemnification	The ESC Region 8 and TIPS is a Texas Political Subdivision and a local governmental entity; therefore, is prohibited from indemnifying third parties pursuant to the Texas Constitution (Article 3, Section 52) except as specifically provided by law or as ordered by a court of competent jurisdiction. A provision in a contract to indemnify or hold a party harmless is a promise to pay for any expenses the indemnified party incurs, if a specified event occurs, such as breaching the terms of the contract or negligently performing duties under the contract. Article III, Section 49 of the Texas Constitution states that "no debt shall be created by or on behalf of the State ... " The Attorney General has counseled that a contractually imposed obligation of indemnity creates a "debt" in the constitutional sense. Tex. Att'y Gen. Op. No. MW-475 (1982). Contract clauses which require the System or institutions to indemnify must be deleted or qualified with "to the extent permitted by the Constitution and Laws of the State of Texas." Liquidated damages, attorney's fees, waiver of vendor's liability, and waiver of statutes of limitations clauses should also be deleted or qualified with "to the extent permitted by the Constitution and laws of State of Texas." Not a negotiable term. Failure to agree will render your proposal non-responsive and it will not be considered. Do you agree to these terms?	Yes
63	Remedies	The parties shall be entitled to exercise any right or remedy available to it either at law or in equity, subject to the choice of law, venue and service of process clauses limitations agreed herein. Nothing in this agreement shall commit the TIPS to an arbitration resolution of any disagreement under any circumstances. Any Claim arising out of or related to the Contract, except for those specifically waived under the terms of the Contract, may, after denial of the Board of Directors, be subject to mediation at the request of either party. Any issues not resolved hereunder must be referred to non-binding mediation to be conducted by a mutually agreed upon mediator as a prerequisite to the filing of any lawsuit over such issue(s). The parties shall share the mediator's fee and any associated filing fee equally. Mediation shall be held in Camp or Titus County, Texas. Agreements reached in mediation shall be reduced to writing, and will be subject to the approval by the District's Board of Directors, signed by the Parties if approved by the Board of Directors, and, if signed, shall thereafter be enforceable as provided by the laws of the State of Texas. Do you agree to these terms?	Yes, I Agree
64	Remedies Explanation of No Answer		

65	Choice of Law	This agreement and any addenda or other additions and all contracts or awards resulting from this procurement process, however described, shall be governed by, construed and enforced in accordance with the laws of the State of Texas, regardless of any conflict of laws principles. Not a negotiable term. Failure to agree will render your proposal non-responsive and it will not be considered. Do you agree to these terms?	Yes
66	Jurisdiction and Service of Process	Any Proceeding arising out of or relating to this procurement process or any contract issued by TIPS resulting from or any contemplated transaction shall be brought in a court of competent jurisdiction in Camp County, Texas and each of the parties irrevocably submits to the exclusive jurisdiction of said court in any such proceeding, waives any objection it may now or hereafter have to venue or to convenience of forum, agrees that all claims in respect of the Proceeding shall be heard and determined only in any such court, and agrees not to bring any proceeding arising out of or relating to this procurement process or any contract resulting from or any contemplated transaction in any other court. The parties agree that either or both of them may file a copy of this paragraph with any court as written evidence of the knowing, voluntary and freely bargained for agreement between the parties irrevocably to waive any objections to venue or to convenience of forum. Process in any Proceeding referred to in the first sentence of this Section may be served on any party anywhere in the world. Venue clauses in contracts with TIPS members may be determined by the parties. Not a negotiable term. Failure to agree will render your proposal non-responsive and it will not be considered. Do you agree to these terms?	Yes
67	Alternative Dispute Resolution	Prior to filing of litigation, the parties may select non-binding mediation as a method of conflict resolution for issues arising out of or relating to this procurement process or any contract resulting from or any contemplated transaction. The parties agree that if nonbinding mediation is chosen as a resolution process, the parties must agree to the chosen mediator(s) and that all mediation venue shall be at a location in Camp or Titus, County, Texas agreed by the parties. The parties agree to share equally the cost of the mediation process and venue cost. Do you agree to these terms?	Yes, I Agree
68	Alternative Dispute Resolution Explanation of No Answer		
69	Infringement(s)	The successful vendor will be expected to indemnify and hold harmless the TIPS and its employees, officers, agents, representatives, contractors, assignees and designees from any and all third party claims and judgments involving infringement of patent, copyright, trade secrets, trade or service marks, and any other intellectual or intangible property rights in connection with the vendor's proposal or ultimate contracts awarded and approved.	Yes, I Agree

		Do you agree to these terms?	
70	Infringement(s) Explanation of No Answer		
71	Acts or Omissions	The successful vendor will be expected to indemnify and hold harmless the TIPS, its officers, employees, agents, representatives, contractors, assignees and designees from and against any and all liability, actions, claims, demands or suits, and all related costs, attorney's fees and expenses arising out of, or resulting from any acts or omissions of the vendor or its agents, employees, subcontractors, or suppliers in the execution or performance of any agreements ultimately made by TIPS and the vendor. Do you agree to these terms?	Yes, I Agree
72	Acts or Omissions Explanation of No Answer		
73	Contract Governance	Any contract made or entered into by the TIPS is subject to and is to be governed by Section 271.151 et seq, Tex Loc Gov't Code. Otherwise, TIPS does not waive its governmental immunities from suit or liability except to the extent expressly waived by other applicable laws in clear and unambiguous language.	Yes
74	Payment Terms and Funding Out Clause	Payment Terms: TIPS members pay net 30 or at point of sale and complies with the State of Texas payment law, Texas Government Code, Chapter 2251. See statute for specifics or consult your legal counsel. These are minimum terms required of the TIPS member in Texas by law and the parties may negotiate custom payment terms as desired provided they do not violate the statutory requirements. Statutory or binding regulations control TIPS members in this contract. Funding out Clause: Pursuant to Texas Local Government Code Sec. 271.903, any proposal offer accepted by TIPS and its members and all contracts to be approved are subject to the budgeting and appropriation of then currently available funds. See statute for specifics or consult your legal counsel. Not a negotiable term. Failure to agree will render your proposal non-responsive and it will not be considered. Do you agree to these terms?	Yes

75	Insurance and Fingerprint Requirements Information	Insurance If applicable and your staff will be on TIPS member premises for delivery, training or installation etc. and/or with an automobile, you must carry automobile insurance as required by law. You may be asked to provide proof of insurance. Fingerprint It is possible that a vendor may be subject to Chapter 22 of the Texas Education Code. The Texas Education Code, Chapter 22, Section 22.0834. Statutory language may be found at: http://www.statutes.legis.state.tx.us/ If the vendor has staff that meet both of these criterion: (1) will have continuing duties related to the contracted services; and (2) has or will have direct contact with students Then you have "covered" employees for purposes of completing the attached form. TIPS recommends all vendors consult their legal counsel for guidance in compliance with this law. If you have questions on how to comply, see below. If you have questions on compliance with this code section, contact the Texas Department of Public Safety Non-Criminal Justice Unit, Access and Dissemination Bureau, FAST-FACT at NCJU@txdps.state.tx.us and you should send an email identifying you as a contractor to a Texas Independent School District or ESC Region 8 and TIPS. Texas DPS phone number is (512) 424-2474. See form in the next attribute to complete entitled: Texas Education Code Chapter 22 Contractor Certification for Contractor Employees	(No Response Required)

76	Texas Education Code Chapter 22 Contractor Certification for Contractor Employees	Introduction: Texas Education Code Chapter 22 requires entities that contract with school districts to provide services to obtain criminal history record information regarding covered employees. Contractors must certify to the district that they have complied. Covered employees with disqualifying criminal histories are prohibited from serving at a school district. Definitions: Covered employees: Employees of a contractor or subcontractor who have or will have continuing duties related to the service to be performed at the District and have or will have direct contact with students. The District will be the final arbiter of what constitutes direct contact with students. Disqualifying criminal history: Any conviction or other criminal history information designated by the District, or one of the following offenses, if at the time of the offense, the victim was under 18 or enrolled in a public school: (a) a felony offense under Title 5, Texas Penal Code; (b) an offense for which a defendant is required to register as a sex offender under Chapter 62, Texas Code of Criminal Procedure; or (c) an equivalent offense under federal law or the laws of another state. I certify that: NONE (Section A) of the employees of Contractor and any subcontractors are covered employees, as defined above. If this box is checked, I further certify that Contractor has taken precautions or imposed conditions to ensure that the employees of Contractor and any subcontractor will not become covered employees. Contractor will maintain these precautions or conditions throughout the time the contracted services are provided. OR SOME (Section B) or all of the employees of Contractor and any subcontractor are covered employees. If this box is checked, I further certify that: (1) Contractor has obtained all required criminal history record information regarding its covered employees. None of the covered employees has a disqualifying criminal history. (2) If Contractor receives information that a covered employee subsequently has a reported criminal history, Contractor will immediately remove the covered employee from contract duties and notify the District in writing within 3 business days. (3) Upon request, Contractor will provide the District with the name and any other requested information of covered employees so that the District may obtain criminal history record information on the covered employees. (4) If the District objects to the assignment of a covered employee on the basis of the covered employee's criminal history record information, Contractor agrees to discontinue using that covered employee to provide services at the District. Noncompliance or misrepresentation regarding this certification may be grounds for contract termination.	Some
77	Solicitation Deviation/Compliance	Does the vendor agree with the General Conditions Standard Terms and Conditions or Item Specifications listed in this proposal invitation?	Yes

78	Solicitation Exceptions/Deviations Explanation	If the bidder intends to deviate from the General Conditions Standard Terms and Conditions or Item Specifications listed in this proposal invitation, all such deviations must be listed on this attribute, with complete and detailed conditions and information included or attached. TIPS will consider any deviations in its proposal award decisions, and TIPS reserves the right to accept or reject any bid based upon any deviations indicated below or in any attachments or inclusions. In the absence of any deviation entry on this attribute, the proposer assures TIPS of their full compliance with the Standard Terms and Conditions, Item Specifications, and all other information contained in this Solicitation.	
79	Agreement Deviation/Compliance	Does the vendor agree with the language in the Vendor Agreement?	Yes
80	Agreement Exceptions/Deviations Explanation	If the proposing Vendor desires to deviate form the Vendor Agreement language, all such deviations must be listed on this attribute, with complete and detailed conditions and information included. TIPS will consider any deviations in its proposal award decisions, and TIPS reserves the right to accept or reject any proposal based upon any deviations indicated below. In the absence of any deviation entry on this attribute, the proposer assures TIPS of their full compliance with the Vendor Agreement.	

Line Items

Response Total:	$0.00

REFERENCES

Please provide three (3) references, preferably from school districts or other governmental entities who have used your services within the last three years. Additional references may be required. DO NOT INCLUDE TIPS EMPLOYEES AS A REFERENCE.

You may provide more than three (3) references.

Entity Name	Contact Person	Email	Phone
Klein ISD	Steve Cox	scox1@kleinisd.net	281-960-4528
Galena Park ISD	Joseph Fillman	jfillman@galenaparkisd.com	832-386-4986
Humble ISD	Donald Phlegm	dphlegm@humbleisd.net	281-641-8758
HISD	Arnel Alcanta	aalcanta@houstonisd.org	713-845-5687


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A CENTURY OF INNOVATION

A-50R

Service and support from the most trusted name in the industry – Bell & Gossett®.

The Bell & Gossett name has always stood for uncompromising quality and dependability. That's evident in the way our products are built and backed by our outstanding customer service and support team.

Your local Bell & Gossett representative is available any time and is an experienced professional with a wealth of technical expertise. In addition to expert system and product application assistance and a wide product inventory warehoused locally, we offer our award-winning ESP-PLUS® software selection program.

ESP-PLUS is a special set of Bell & Gossett software that helps you design fluid handling systems accurately, effectively and quickly. You get fast, precise equipment selection, pump performance curves, automatic calculations of payback and annual operating costs, equipment schedules, submittals, specifications and more. ESP-PLUS includes:

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- Domestic® Pump condensate transfer equipment
- Hoffman Specialty® steam specialties

The Most Complete Line of Hydronic Heating and Plumbing Products.

All from a Single Source – Bell & Gossett.

Table of Contents **Page Number**

CIRCULATORS ecocirc® auto

Heating/Cooling Circulator

Description

ecocirc 19-14 auto are designed, with highly efficient electronically commutated permanent magnet motor (ECM/PM Technology), specifically for hydronic systems.

Ideal for hydronic systems with zone or thermostatic valves, the ecocirc 19-14 auto can be used as replacements for existing circulators with induction motors as well as new construction as primary or zone circulators.

The ecocirc 19-14 auto has a proportional pressure control logic, which allows the pump to slow down automatically as it approaches shut off condition (as the valve closes) then ramp up when the demand increases (as the valve opens).

It includes a step-less dial to adjust the speed to meet the system requirements.

auto

Materials of Construction

Pump Body: Cast Iron
O-Ring: EPDM
Bearing: Carbon/Alumina Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM/PM
All Other Wetted Parts: Stainless Steel

Operating Data

Maximum Working Pressure: 150 PSI (10 Bar)
Maximum Working Temperature: 203°F (95°C)
Minimum Working Temperature: 40°F (4°C)

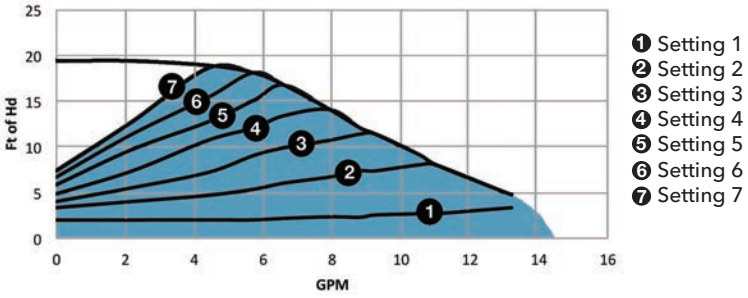
Motor

ECM/PM Spherical Motor
115 Volts, 60 HZ, 1 Phase
60 Watts Max Power Consumption
Automatic Overload Protection
Low in-rush current

Piping Connection

Flanged, 2-Bolt
For use with ¾, 1, 1¼, or 1½ inch pipe

auto pump curves



Built-in Software Protection (for auto and vario)

ecocirc 19-14 has built-in protection to protect from installation errors and improper usage.

There is an overload protection to protect the electronics from over-current or over-voltage input. To further protect the electronics from damage, there is an over-temperature protection. This built-in protection will first slow the speed down to continue operation, but will shut down if the temperature of the electronics continues to rise to high levels.

The circulator is also protected against dry-run condition. Built-in software will recognize a change in performance and determine that the circulator is dry-running. Automatically the circulator will stop operating and will need to be reset to continue operation.

The circulator continually monitors the system for any change in power input or dry-run condition or electronic's temperature. If any error is detected, the circulator will shut down and will need to be reset to continue operation after the error has been fixed.

Model Number	Part Number	Control Mode	Shipping Weight
ecocirc 19-14 auto	6050B2000	auto – Proportional Pressure	9.25 lb

CIRCULATORS ecocirc® vario

Heating/Cooling Circulator

Description

ecocirc 19-14 vario circulators are designed, with highly efficient electronically commutated permanent magnet motor (ECM/PM technology), specially for hydronic systems.

The ecocirc 19-14 vario has a constant curve control, which allows the pump to follow the natural hydraulic curve of a circulator. Basically acts the same as a standard 3-speed pump except with a step-less dial resulting in infinite speed control.

ecocirc 19-14 vario is ideal for replacement for existing circulators with induction motors as well as new construction as primary or zone circulators.

vario

Materials of Construction

Pump Body: Cast Iron
O-Ring: EPDM
Bearing: Carbon/Alumina Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM/PM
All Other Wetted Parts: Stainless Steel

Operating Data

Maximum Working Pressure: 150 PSI (10 Bar)
Maximum Working Temperature: 203°F (95°C)
Minimum Working Temperature: 40°F (4°C)

Motor

ECM/PM Spherical Motor
115 Volts, 60 HZ, 1 Phase
60 Watts Max Power Consumption
Automatic Overload Protection
Low in-rush current

Piping Connection

Flanged, 2-Bolt
For use with ¾, 1, 1¼, or 1½ inch pipe

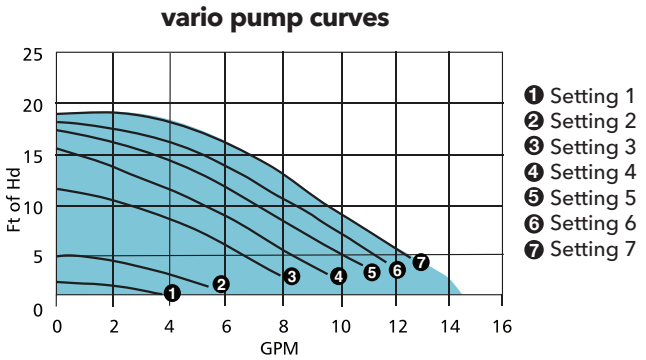
Our design separates the magnetic chamber from the flow (for auto and vario)

Magnetite and sludge, which are both found in the pumped liquid and are both magnetic, can accumulate at the permanent magnetic parts of a high efficiency pump, and therefore block and damage it. The Anti-Block Technology separates the main flow of the pumped media completely from the permanent magnetic parts. It is virtually impossible for the ecocirc auto or vario to block-up even in an old open system.

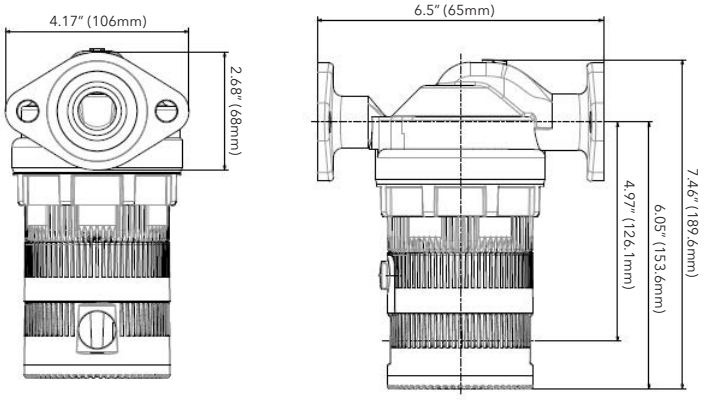
The main flow of the pumped media (blue) and its magnetite and sludge particles (red) flow outside the influence area of the permanent magnet rotor (bottom).

The side flow of the wet running circulators, which is required for lubrication and cooling of the bearing, is separated from the main flow with its magnetite and sludge.

vario pump curves



Dimension (for auto and vario)



Model Number	Part Number	Control Mode	Shipping Weight
ecocirc 19-14 vario	6050B2001	vario – Constant Curve	9.25 lb

CIRCULATORS ecocirc® XL

High efficiency large wet rotor pump for heating, cooling and potable water systems

Description

The ecocirc XL is a high efficiency, variable speed, wet rotor pump with integrated drive. The circulator is available in cast iron or lead-free bronze and has a broad operating temperature range of 14°F to 230°F (-10°C to 110°C). The ecocirc XL is suitable for both hot and chilled water systems.

The ecocirc XL circulator is designed with a highly efficient electronically commutated permanent magnet motor (ECM/PM Technology). This circulator can enhance hydronics systems with superior quality and dependability. State-of-the-art hydraulics, advanced motor design, intelligent controls, and smart communication capabilities highlight expert engineering across a board range of HVAC and plumbing applications.

Materials of Construction

Pump Body: Cast Iron or Lead-Free* Bronze
Impeller: Poly-phenylene Sulfide or Stainless Steel
Shaft: AISI 420 Stainless Steel
Rotor: Permanent Magnet
Bearing: Carbon Sleeve
Gasket/O-Ring: EPDM
All Other Wetted Parts: AISI 304 Stainless Steel
Motor Type: Electronically Commutated Motor /Permanent Magnet
Motor Insulation Class: F

Operating Data

Maximum Working Pressure: 175 PSI (12 Bar)
Minimum Working Temperature: 14°F (-10°C)
Maximum Working Temperature: 230°F (110°C)
Ambient Temperature Range: 32°F - 104°F (0°C - 40°C)

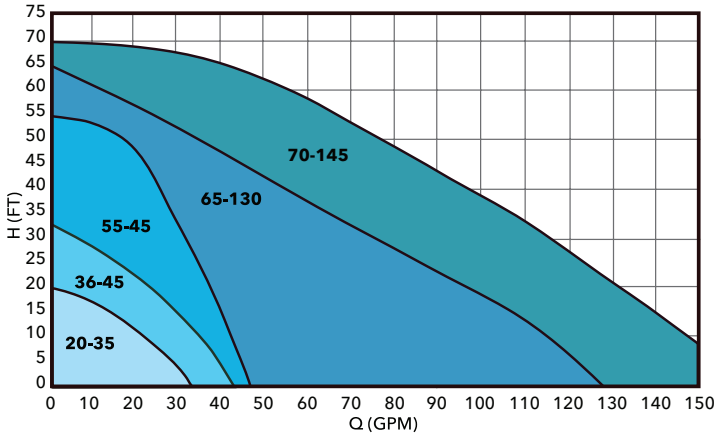
Safety Standards And Protection

- Enclosure: Class 2, IP44 (equivalent to NEMA Type 2)
- UL Listed to UL 778; UL 1004-1, 1004-7; and UL 60730-1
- cUL Listed to C22.2 #108
- Electronically Thermally Protected (Integrated Motor Protection)
- Motor Insulation Class: F
- CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface

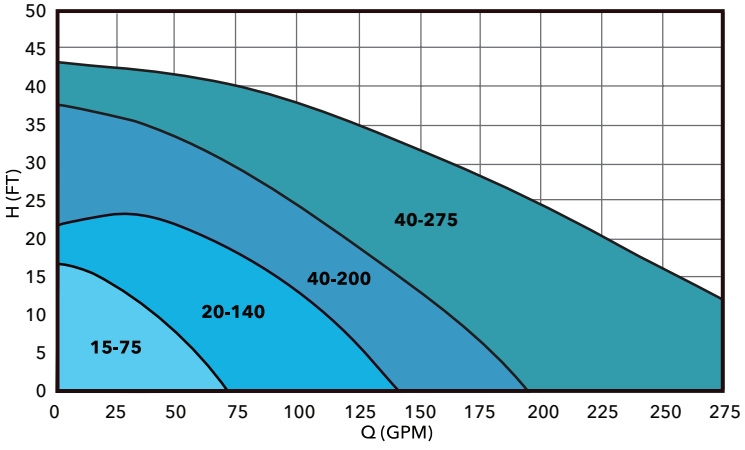
Cast Iron Body		Lead-Free Bronze Body*		Rated Motor Characteristics					
Model Number	Part Number	Model Number	Part Number	HP**	Voltage	Phase	Hz	Watts Range	AMP Range
ecocirc XL 20-35	104300	ecocirc XL B 20-35	104400LF	1/12	115	1	50/60	6-85	0.1 – 1.3
ecocirc XL 36-45	104301	ecocirc XL B 36-45	104401LF	1/6	115	1	50/60	20-200	0.1 – 3.0
ecocirc XL 36-45	104302	ecocirc XL B 36-45	104402LF	1/6	208-230	1	50/60	20-200	0.1 – 1.5
ecocirc XL 15-75	104303	ecocirc XL B 15-75	104403LF	1/6	115	1	50/60	30-150	0.1 – 2.3
ecocirc XL 15-75	104304	ecocirc XL B 15-75	104404LF	1/6	208-230	1	50/60	30-150	0.1 – 1.1
ecocirc XL 55-45	104306	ecocirc XL B 55-45	104406LF	1/2	208-230	1	50/60	30-500	0.2 – 2.0
ecocirc XL 20-140	104308	ecocirc XL B 20-140	104408LF	1/2	208-230	1	50/60	35-470	0.2 – 2.0
ecocirc XL 65-130	104309	ecocirc XL B 65-130	104409LF	1	208-230	1	50/60	45 - 825	0.5 – 3.5
ecocirc XL 40-200	104312	ecocirc XL B 40-200	104412LF	1	208-230	1	50/60	50 - 825	0.5 – 3.5
ecocirc XL 70-145	104315	ecocirc XL B 70-145	104415LF	2	208-230	1	50/60	55 - 1400	0.6 – 6.0
ecocirc XL 40-275	104318	ecocirc XL B 40-275	104418LF	2	208-230	1	50/60	50 - 1400	0.5 – 6.0

Note: Where potable water is pumped, use a lead-free bronze booster. ecocirc XL pumps are recommended for indoor use only.
*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.
** Nominal HP

ecocirc XL High Head Performance Range



ecocirc XL High Flow Performance Range



CIRCULATORS ecocirc® XL

High efficiency large wet rotor pump for heating, cooling and potable water systems

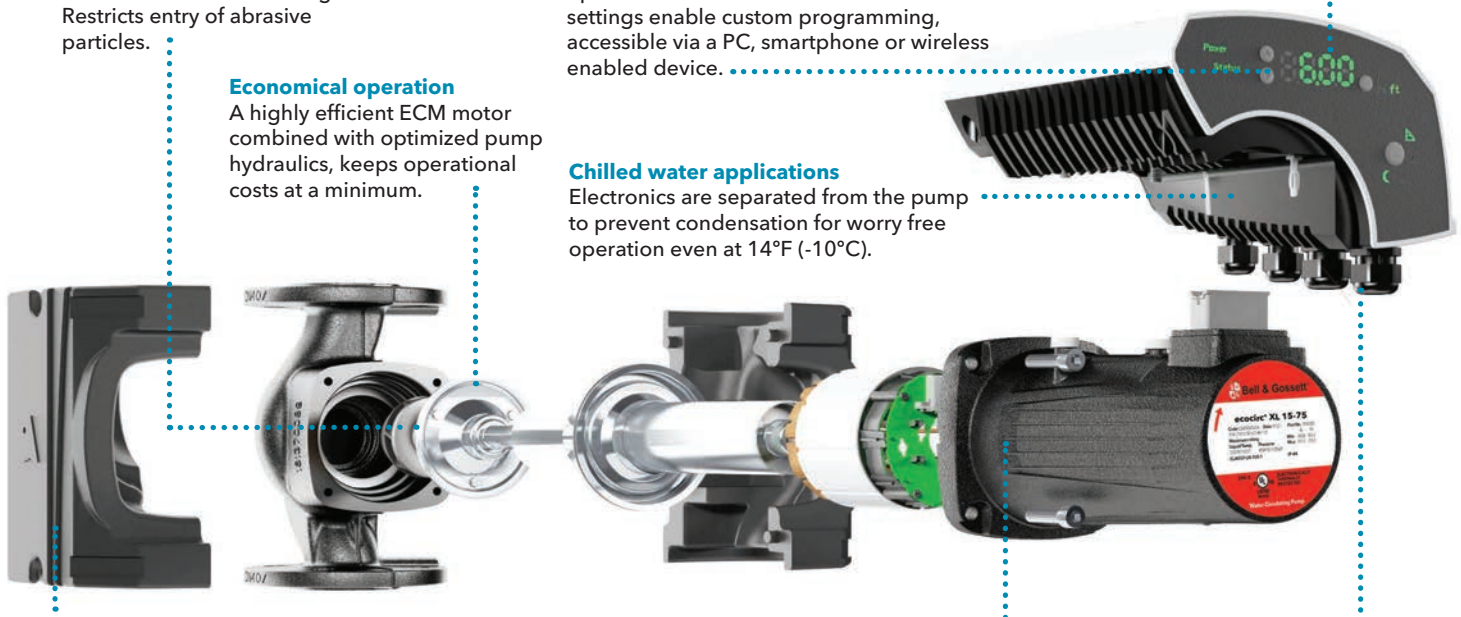
Self-flushing membrane
Allows clean water to cool and lubricate the motor bearing. Restricts entry of abrasive particles.

Economical operation
A highly efficient ECM motor combined with optimized pump hydraulics, keeps operational costs at a minimum.

User-friendly interface
With only four logically placed buttons on an intuitive interface, it's easy to set and operate the new ecocirc XL. Advanced settings enable custom programming, accessible via a PC, smartphone or wireless enabled device.

High visibility
Even in dark mechanical rooms, a bright display with large figures and symbols makes it easy to view pump status.

Chilled water applications
Electronics are separated from the pump to prevent condensation for worry free operation even at 14°F (-10°C).



Keep it hot or cold
A closed, perfectly molded insulation shell preserves a constant temperature of the pumped liquid.

Sensorless technology
The ecocirc XL variable speed drive has the pump's hydraulic performance mapped in memory for multiple RPMs with corresponding electric current values (similar to the ITSC Sensorless VS Drive). The Delta P value associated with the pump's actual operating point is compared to the setpoint Delta P and the controller makes speed adjustments using current to minimize the differences between actual Delta P and setpoint Delta P.

Increase your control options
Multiple inputs including start-stop, temperature control, pressure regulation and advanced Modbus or BACnet control provide dynamic system management.

Product Range Chart

Model Number	Version		Power Supply		Flange Connection				Pump Body		Fluid Temp. Range	Ambient Temp. Range	Max. Pressure Range	Protection Class
	High Head	High Flow	Single Phase 115V	Single Phase 208-230V	Small Booster (2 Bolts)	Large Booster (2 Bolts)	2" Booster (4 Bolts)	3" Booster (4 Bolts)	Cast Iron	Lead-Free Bronze*	14°F - 230°F	32°F - 104°F	175 PSI	IP44
ecocirc XL 20-35	•		•		•				•	•	•	•	•	•
ecocirc XL 36-45	•		•	•	•				•	•	•	•	•	•
ecocirc XL 15-75		•	•	•			•		•	•	•	•	•	•
ecocirc XL 55-45	•			•	•				•	•	•	•	•	•
ecocirc XL 20-140		•		•			•		•	•	•	•	•	•
ecocirc XL 65-130	•			•		•			•	•	•	•	•	•
ecocirc XL 40-200		•		•			•		•	•	•	•	•	•
ecocirc XL 70-145	•			•		•			•	•	•	•	•	•
ecocirc XL 40-275		•		•				•	•	•	•	•	•	•

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

- Small Booster (2 bolts) has a bolt hole to bolt hole dimension of 3-3/16".
- Large Booster (2 bolts) has a bolt hole to bolt hole dimension of 3-7/16".

NSF/ANSI 372

Input Signals

- One 0-10V (Analog): Speed Control by external controller
- One 4-20mA (Analog): Connection with an external differential pressure sensor for the pressure control mode (two different pressure sensor range: 0-15 PSI PN: 104503 and 0-30 PSI PN: 104504
- One external temperature sensor input for either Constant Temperature or Temperature Influenced modes. Sensor PN: 104502
- One built-in temperature sensor for either Constant Temperature or Temperature Influenced modes.

Remote Building Management System Capabilities

- The pump can be monitored or controlled by a signal from a BMS (Building Management System). Built-in protocols are BACnet and Modbus. Direct connection to a PC is available.
- An optional wireless module can be added to create a short range wireless field for remote connection to the pump. An internet browser or an App can be used to program the advanced settings. Module PN: 104500

CIRCULATORS ecocirc® XL

High efficiency large wet rotor pump for heating, cooling and potable water systems

STANDARD OPERATING MODES

Constant Speed

The pump maintains a constant speed at any flow rate. The desired speed is set on the interface panel of the pump.

Constant Pressure (Δp-c)

The pump maintains a constant differential pressure at any flow demand until the maximum speed is reached. The desired head of the pump can be set via user interface. Recommended for use in systems with small or constant pressure losses.

Proportional Pressure (Δp-v)

The differential pressure continuously increases or deceases based on the flow demand. The set point head can be set on the pump user interface. Use for systems with large pressure losses.

Night Mode

The pump will automatically reduce speed when there is an abrupt change in fluid temperature. The change in fluid temperature is from a boiler operating in night time setback mode. The built-in temperature sensor is used. (Fixed Speed, Constant Pressure, Proportional Pressure)

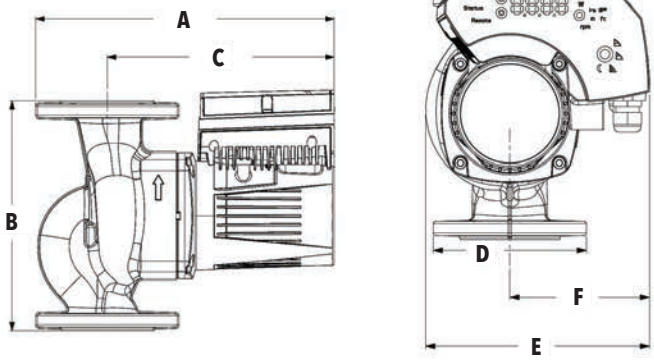
CONSTANT TEMPERATURE SPEED CONTROL

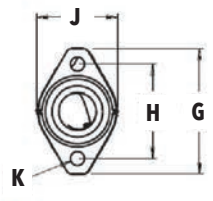
T- Constant Control

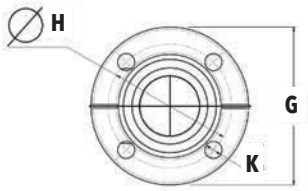
This control mode will use a PI algorithm to vary the speed of the pump in order to maintain a constant temperature of the fluid media.

ΔT-Constant Control

This control mode will use a PI algorithm to vary the speed of the pump in order to maintain a constant differential temperature between the built-in temperature sensor and external temperature sensor.







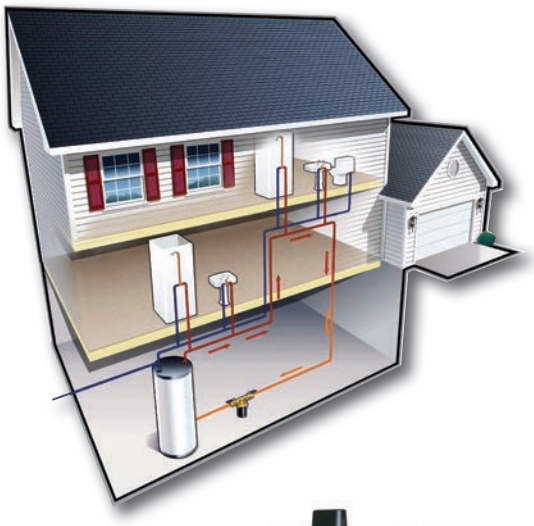
Model Number	Nominal Motor HP	Dimenstions - Inches (mm)						Approx. Shipping Weight Lbs. (kg)	
		A	B	C	D	E	F	Cast Iron	Bronze
ecocirc XL 20-35	1/12	9.94 (252)	6.38 (162)	8.20 (208)	4.19 (106)	7.20 (183)	4.72 (120)	19.8 (9)	22 (10)
ecocirc XL 36-45	1/6	9.94 (252)	6.38 (162)	8.20 (208)	4.19 (106)	7.20 (183)	4.72 (120)	19.8 (9)	22 (10)
ecocirc XL 15-75	1/6	11.04 (280)	8.5 (216)	8.39 (213)	5.19 (132)	7.57 (192)	4.72 (120)	26.4 (12)	28.6 (13)
ecocirc XL 55-45	1/2	11.89 (302)	6.38 (162)	10.18 (258)	4.19 (106)	8.12 (206)	5.02 (127)	26.4 (12)	28.6 (13)
ecocirc XL 20-140	1/2	13.39 (340)	11.5 (292)	10.41 (264)	5.19 (132)	8.20 (208)	5.02 (127)	35.2 (16)	39.6 (18)
ecocirc XL 65-130	1	14.84 (377)	11.5 (292)	11.80 (299)	4.62 (117)	9.53 (242)	5.77 (146)	39.6 (18)	44 (20)
ecocirc XL 40-200	1	15.17 (385)	11.5 (292)	11.80 (299)	5.19 (132)	9.53 (242)	5.77 (146)	41.8 (19)	46.2 (21)
ecocirc XL 70-145	2	14.84 (377)	11.5 (292)	11.80 (299)	4.62 (117)	9.53 (242)	5.77 (146)	38.4 (17)	44 (20)
ecocirc XL 40-275	2	16.04 (407)	12.0 (305)	12.57 (319)	6.00 (152)	10.07 (256)	5.77 (146)	49.6 (23)	55 (25)

Model Number	Flange Size Inches - NPT	# of Bolts	Dimenstions - Inches (mm)				B&G Companion Fange (Set of 2)	
			G	H	J	K	Cast Iron PN	Bronze PN
ecocirc XL 20-35	3/4, 1, 1-1/4, 1-1/2	2	4.19 (106)	3.16 (80)	2.62 (66)	0.47 (12)	101001 - 101004*	101011LF - 101014LF*
ecocirc XL 36-45	3/4, 1, 1-1/4, 1-1/2	2	4.19 (106)	3.16 (80)	2.62 (66)	0.47 (12)	101001 - 101004*	101011LF - 101014LF*
ecocirc XL 15-75	2	4	5.18 (132)	4.06 (103)	-	0.56 (14)	101215	10216LF
ecocirc XL 55-45	3/4, 1, 1-1/4, 1-1/2	2	4.19 (106)	3.16 (80)	2.62 (66)	0.47 (12)	101001 - 101004*	101011LF - 101014LF*
ecocirc XL 20-140	2	4	5.19 (132)	4.06 (103)	-	0.56 (14)	101215	10216LF
ecocirc XL 65-130	1, 1-1/4, 1-1/2	2	4.62 (117)	3.44 (87)	2.86 (73)	0.47 (12)	101005 - 101007*	101015LF - 101017LF*
ecocirc XL 40-200	2	4	5.19 (132)	4.06 (103)	4.06 (103)	0.56 (14)	101215	10216LF
ecocirc XL 70-145	1, 1-1/4, 1-1/2	2	4.62 (117)	3.44 (87)	2.86 (73)	0.47 (12)	101005 - 101007*	101015LF - 101017LF*
ecocirc XL 40-275	3	4	6.00 (152)	5.06 (129)	-	0.53 (13)	101217	10218LF

* Part numbers represent a Master Carton of 12 flanges with fasteners pack.
1-1/2" is the diameter of the suction and discharge for the 2-bolt models.

CIRCULATORS ecocirc® Series

Potable Hot Water Recirculation Pumps - Whole House



Description

e3 circulators are energy efficient circulators using permanent magnet, ECM (electronically commutated motor) technology. The e3 circulators are designed specifically for potable water applications. These circulators are lead-free* and come with a variety of options including a temperature sensor, various body styles, assembled with electrical cord and plug. Timer sold as an accessory (See page 24 for more information).

Materials of Construction

Pump Body: Lead-Free* Brass
O-Ring: EPDM or Viton
Bearing: Carbon/Alumina Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM
All Other Wetted Parts: Type 316 Stainless Steel, Shaft-less and seal-less construction

Operating Data
Pump

Maximum Working Pressure: 150 PSI (10.3 Bar)
Maximum Working Temperature: 203°F (95°C)
Minimum Working Temperature: 50°F (10°C)

Motor

ECM Spherical Motor
10-28 Watts Power Consumption
Automatic Overload Protection
Low in-rush current

Adjustable Speed Switch (Models Without Temp Sensor)

Infinitely variable-speed switch to manually adjust motor speed.

Adjustable Temperature Sensor (Fixed Speed Only)

Adjustable Set Point from 68°F to 158°F (20°C to 70°C)
Turns circulator OFF when water temperature reaches set point
Turns circulator ON when water temperature is 10°F (6°C) below set point

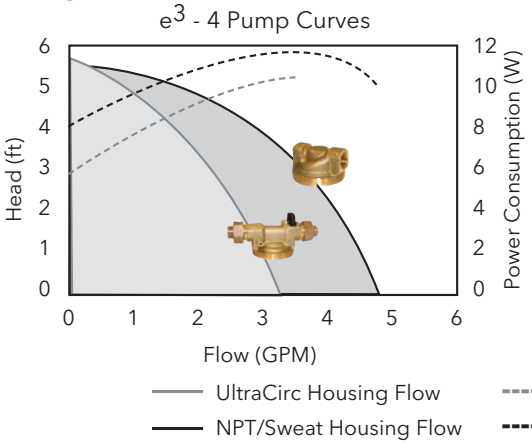
Connections

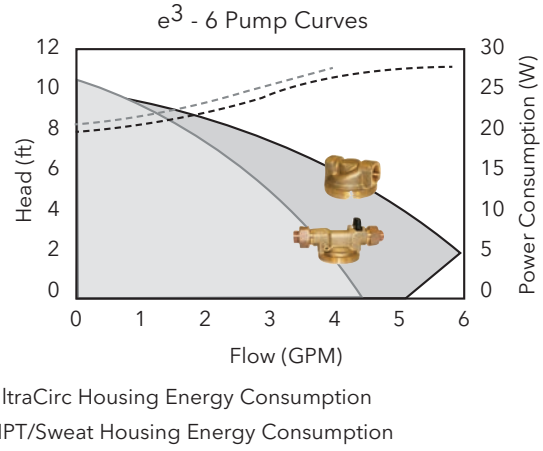
1/2" UltraCirc with Ball & Check Valve
1/2" Sweat
1/2" FNPT Threaded

e3 Timer
(See Page 20)

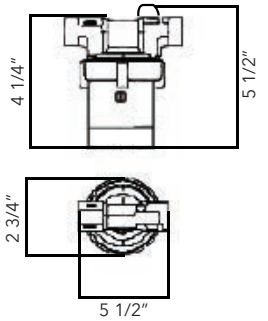
e3 - 4, e3 - 6

Pump Curves



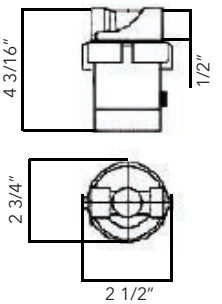


UltraCirc Pump Housing (Union with Ball & Check Valve)



Model Number	Part Number	Materials	Connection		Adjustable Speed	Adjustable Thermostat	Plug
			Size	Type			
e3-4V/BSPYZ	LHB08100101	Lead-Free Brass	1/2"	Sweat	•		•
e3-4_/BSXRZ	LHB08100102	Lead-Free Brass	1/2"	Sweat		•	
e3-4V/BTXYZ	LHB08100104	Lead-Free Brass	1/2"	FNPT	•		
e3-4_/BTPRZ	LHB08100106	Lead-Free Brass	1/2"	FNPT		•	•
e3-6V/BSPYZ	LHB08100109	Lead-Free Brass	1/2"	Sweat	•		•
e3-6V/BTXYZ	LHB08100112	Lead-Free Brass	1/2"	FNPT	•		
e3-6V/BTPYZ	LHB08100110	Lead-Free Brass	1/2"	FNPT	•		•
e3-4V/BUPYZ	6050B5002	Lead-Free Brass	1/2"	Union	•		•
e3-4_/BUPRZ	6050B5003	Lead-Free Brass	1/2"	Union		•	•
e3-6V/BUPYZ	6050B5004	Lead-Free Brass	1/2"	Union	•		•
e3-6_/BSPRZ	6050B5006	Lead-Free Brass	1/2"	Union		•	•
e3-Timer	LHB08260002	-	-	-			

Standard Pump Housing (Sweat & Threaded)



*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

CIRCULATORS ecocirc® wireless

Potable Hot Water Recirculation Kit

Description

The ecocirc wireless is a potable hot water recirculation kit (a pump and valve combination) for instant supply of hot water supply throughout the entire house.

The ecocirc pump is installed on the supply side of the hot water source and the mixing valve under the sink farthest away from the hot water source. The pump and valve are in constant wireless communication.

How it Works

The desired water temperature at the valve is set directly on the pump with the thermostat dial. The water temperature is constantly checked by the valve and the temperature values are sent to the pump. At approximately 5°F below the desired water temperature, the pump will begin to circulate hot water. This circulation will open the valve for hot water to cross into the cold water line, which creates a return loop back to the hot water source. When the desired temperature is reached, the pump will stop circulating. This is to prevent continuous circulation.

An Optional Push Button / Signal Repeater

A wireless device to provide instant hot water with a push of a button. The push button device will override the timer operation and activate the pump to circulate hot water until the desired temperature is met at the valve. This device also functions as a signal repeater when the pump and valve have a weak signal due to distance or interference.

Operating Data

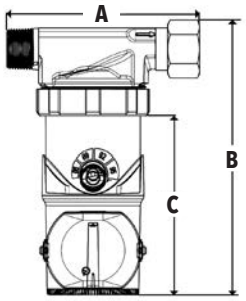
Maximum Operating Temperature: 203°F (95°C)
Maximum Operating Pressure: 145 PSI (10 Bar)
Power Supply: 115 Volts, 60 HZ, 1 Phase
Power Consumption: 20 Watts
Operating Noise Level: 30 dB
Batteries: 2 AA Alkaline
Estimated Battery Life: 2 Years
Maximum Transmitter Range: 150 ft

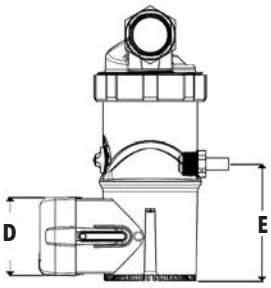
Materials of Construction

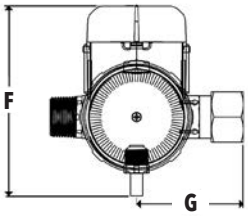
Circulator Pump
Body: Lead-Free* Brass
Seals: EPDM
Impeller: Nylon/PPO
Internals: 316 Stainless Steel

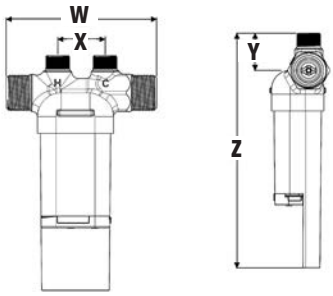
Paired Mixing Valve
Body: Lead-Free* Brass
Springs: Stainless Steel
Valve Insert: Acetal Plastic
Seals: EPDM
Transmitter Housing: ABS Plastic

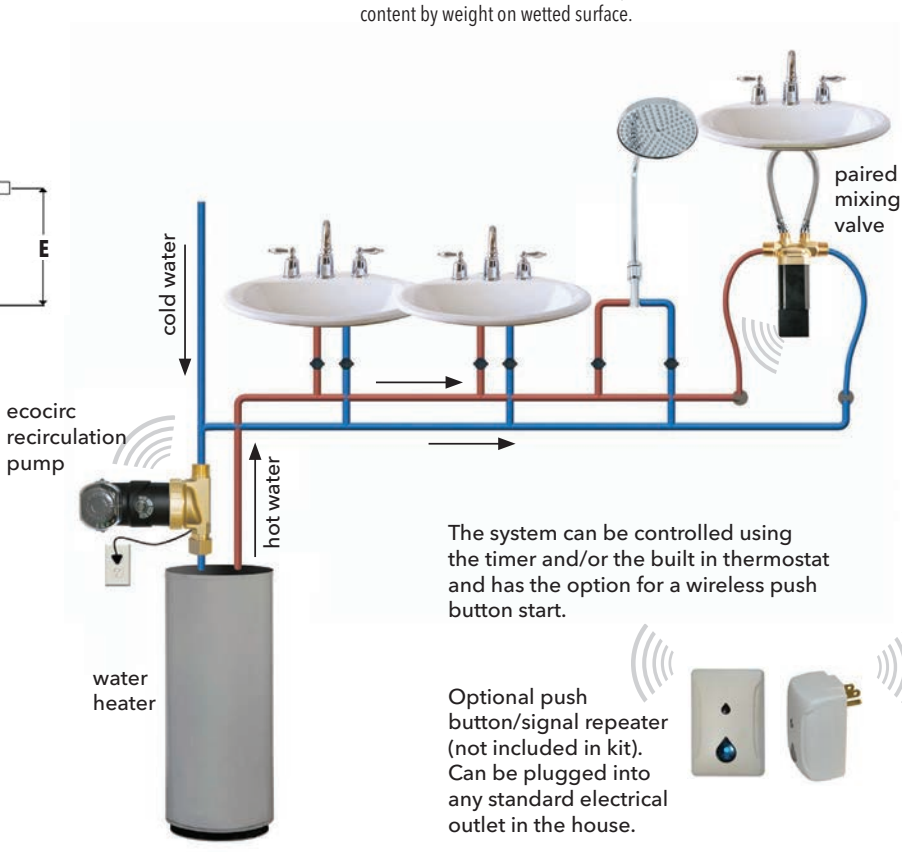
*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.











The system can be controlled using the timer and/or the built in thermostat and has the option for a wireless push button start.

Optional push button/signal repeater (not included in kit). Can be plugged into any standard electrical outlet in the house.

Model Number	Part Number	Connection	Dimension Inches (mm)											Shipping WT. LBS. (kg)
			A	B	C	D	E	F	G	W	X	Y	Z	
ecocirc wireless Recirculation Kit	6050B4000	Pump: 3/4" M/F NPT Valve: 1/2" MNPT x 3/8" compression	4.84 (123)	6.87 (174.6)	4.47 (113.5)	1.97 (50.1)	2.93 (74.4)	4.74 (120.5)	2.68 (68)	3.5 (89)	1.1 (28)	0.87 (22)	5.45 (138.5)	3.9 (1.8)
Push Button/ Signal Repeater	6099B1500													

CIRCULATORS autocirc® Series

Potable Hot Water Recirculation Pumps - Undersink

Description

autocirc® circulators are energy efficient using permanent magnet, ECM (electronically commutated motor) technology. The autocirc circulators are designed specifically for standard water heaters. These circulators are lead-free* and are assembled with a timer, cord and plug.

e3-4_-/BDPRC

e3-4_-/BDPQC

Materials of Construction

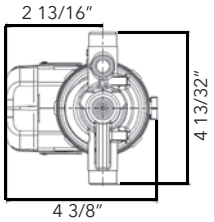
Pump Body: Lead-Free* Brass
O-Ring: EPDM
Bearing: Carbon/Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM
All Other Wetted Parts: Type 316 Stainless Steel, Shaft-less and Seal-less construction.

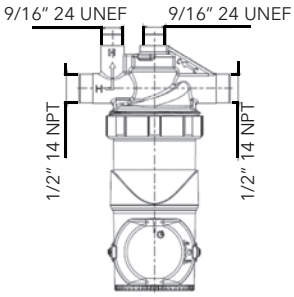
Operating Data Pump

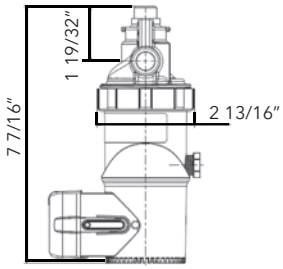
Maximum Working Pressure: 145 PSI (10 Bar)
Maximum Working Temperature: 203°F (95°C)
Minimum Working Temperature: 50°F (10°C)

Motor

ECM Spherical Motor
115 Volt 60 Hz, 1 Phase
14 Watts Power Consumption
Automatic Overload Protection
Low in-rush current







Model Number	Part Number	Description	Weight
e3-4_-/BDPQC	LHB08100098	Lead-Free Brass autocirc 1/2" Fixed Thermostat with Timer	4 lbs.
e3-4_-/BDPRC	LHB08100099	Lead-Free Brass autocirc 1/2" Adjustable "ON" Thermostat with Timer	4 lbs.

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

CIRCULATORS ecocirc® B 23-5 ACT

Potable Hot Water Recirculation Pumps - Undersink

Description

The ecocirc B 23-5 ACT lead-free* pump was designed with highly efficient electronically commutated permanent magnet motor (ECM/PM technology) specifically for potable water systems. This unique design is perfect for retrofits and systems with tankless water heaters. No recirculation pipe is required.

ecocirc B 23-5 ACT

Materials of Construction

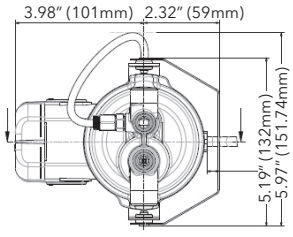
Pump Body: Lead-Free* Brass
O-Ring: EPDM
Bearing: Carbon/Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM
All Other Wetted Parts: Type 316 Stainless Steel, Shaft-less and Seal-less construction

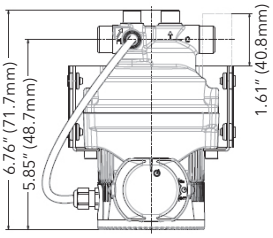
Motor

ECM Spherical Motor
115 Volt 60 Hz, 1 Phase
60 Watts Power Consumption
Automatic Overload Protection
Low in-rush current

Operating Data Pump

Maximum Working Pressure: 145 PSI (10 Bar)
Maximum Working Temperature: 203°F (95°C)
Minimum Working Temperature: 50°F (10°C)





Model Number	Part Number	Description	Weight
ecocirc B 23-5 ACT	6050B7016	Lead-Free Brass autocirc 1/2" Fixed Thermostat with Timer	6.50 lbs.

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

CIRCULATORS LS Condensate Removal Pump

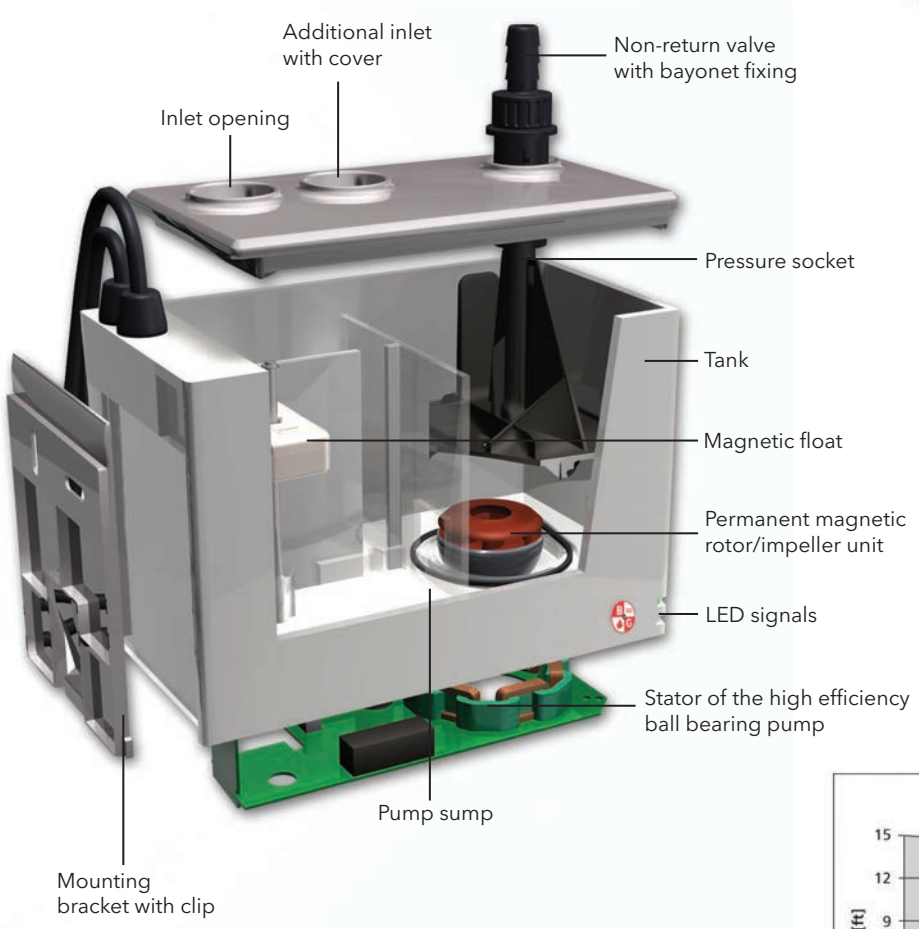
For Condensing Boilers and Air Conditioning /Cooling Systems

Description

The LS condensate removal pumps are energy efficient lifting stations that use permanent magnet, ECM (electronically commutated motor) technology. The LS condensate removal pumps are designed specifically for use in applications where the removal of condensate fluid is not possible by gravity.

Materials of Construction

Pump Housing: ABS Material
O-Ring: EPDM or Viton
Bearing: Carbon/Alumina Ceramic
Impeller: Nylon/PPO
Motor: High Efficiency ECM
All Other Wetted Parts: Type 316 Stainless Steel,
Shaft-less and Seal-less Construction



Standard Features

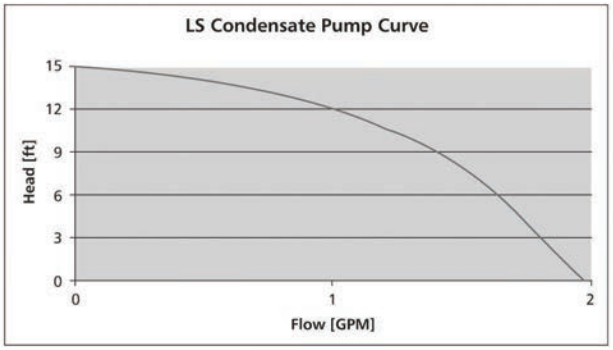
Motors are designed with a shaft-less spherical motor with permanent magnet technology for improved efficiency.

Motor

ECM Spherical Motor
Phase: Single 60 Hz
Voltage: 100-140 volts
Power Consumption: 20 watts
Current draw: 0.1 - 0.2A
Automatic Overload Protection
Low in-rush current

Acid Resistant

All LS condensate removal pumps are made from acid resistant ABS material



Model	Part Number	Housing Material	Motor	Weight
LS Condensate Pump	6098B0000	ABS	ECM	3.5 lbs

CIRCULATORS ecocirc® SC Solar Pump

Spherical Motor Pump

Application

- The ecocirc solar pump can be used for most circulation pump applications without connection to the power grid with direct connection to a photovoltaic panel.
- This pump is perfect for single family home thermal solar systems or any circulation pump application where conventional power is not available, on closed loop systems

Design

- The only moving part is a hemispherical rotor/impeller unit which sits on an ultra-hard, wear-resistant ceramic ball.
- There are no conventional shaft bearings or seals eliminating bearing noise and seal leaks.
- This pump is robust and has an estimated service life in excess of 50,000 hours.
- All parts exposed to the fluid are completely corrosion resistant.

Soft Start-up

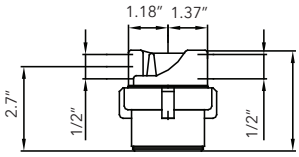
- When the photovoltaic panel provides sufficient power, the pump goes through the alignment phase by turning the rotor into the position required for start-up.
- The processor then waits until the capacitor is sufficiently charged.
- This enables a start-up with minimal power (less than one watt).

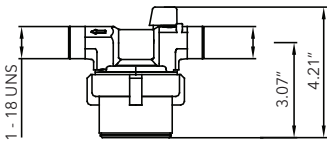
Over-temperature Safety Device

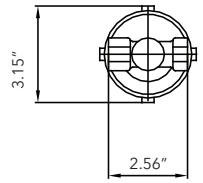
- The ecocirc solar pump comes with an integrated over-temperature safety device which shuts off the pump electronics when reaching temperatures over 230°F.
- After reaching a critical temperature 203°F the pump will lower its speed automatically in order to avoid a total shutdown.

Materials of Construction

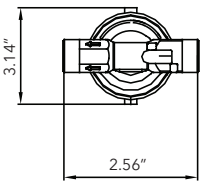
Pump Body: Lead-Free* Brass
O-Ring: EPDM
Bearing: Carbon/Alumina Ceramic
Impeller: PPO
Motor: High Efficiency ECM
All Other Wetted Parts: Type 316 Stainless Steel
Shaft-less, Seal-less Construction



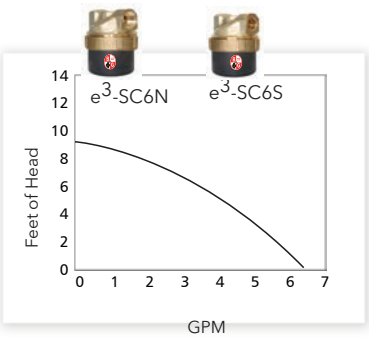


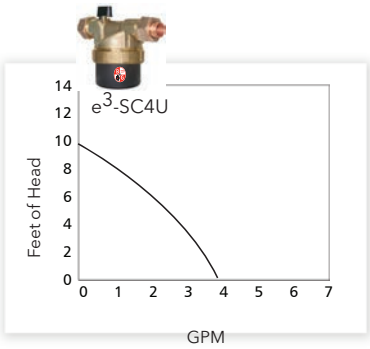


e^3-SC6N and e^3-SC6S



e^3-SC4U





Technical Data

Motor Design:	Electronically commutated spherical motor with permanent magnet rotor/impeller
Voltage:	12 - 24 Volt
Maxium System Temperature:	203°F (95°C)
Maxium Pressure:	150 PSI
Power Consumption*:	Min. start-up power consumption less than 1 Watt, max. power consumption 22 Watts
Current Draw:	0.25 - 1.46 A
Acceptable Media:	Potable hot water recirculation, heating water, water/glycol mixtures, other media on request**
Environment:	IP 42
Insulation Class:	Class F

* Power consumption and start may vary in different installations. **Please check pump performance with more than 20% glycol.

Available Models

Model	Part Number	Description	Weight
e^3-SC6S	6055B2000	Lead-Free Brass* Solar Circulator 1/2″ Sweat	2 lbs.
e^3-SC6N	6055B2001	Lead-Free Brass* Solar Circulator 1/2″ NPT	2 lbs.
e^3-SC4U	6055B2002	Lead-Free Brass* Solar Circulator 1/2″ Union Sweat**	2 lbs.

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.
** Built-in ball check valve and purge valve.

CIRCULATORS Bell & Gossett Cast Iron Wet Rotor Circulators / NRF

Description

A residential or light commercial, maintenance free, axial flanged, in-line, cast iron, wet rotor circulation pump for hydronic heating systems. UL and cUL Listed.

Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature:
NRF-22 & NRF-9F/LW: 240°F (115°C)
NRF-25, NRF-33, NRF-36 & NRF-45: 225°F (107°C)

Materials of Construction

Pump Body: Cast Iron
Impeller: Noryl
Shaft: Ceramic
Bearings: Double-Sintered Carbon

Warranty

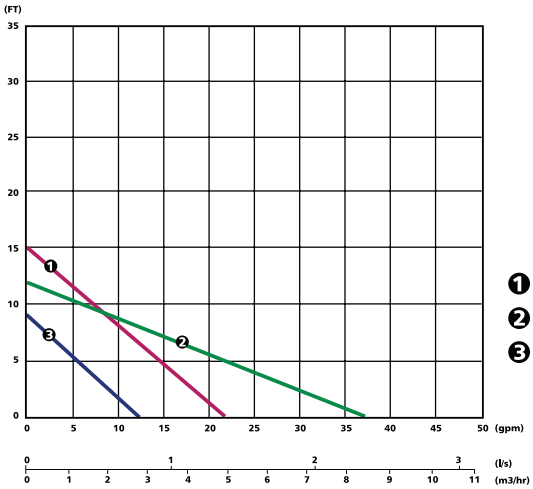
Bell & Gossett offers a warranty of 3 years from date of manufacture or 18 months from date of installation (which ever comes first) against failure as a result of defects in materials and workmanship.

Specifications

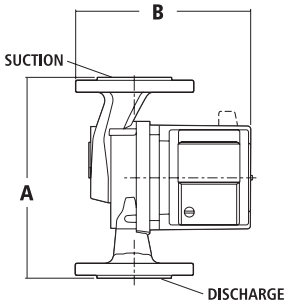
Model Number	Single Speed	Three Speed	Part Number	Flange Sizes Inches - NPT	Dimensions Inches (mm)			Standard 60 Cycle Motor Characteristics*					Shipping Weight lbs. (Kg)
					A	B	C	Watts	ø	Volts	F.L. Amps	RPM	
NRF-9F/LW	●		103267	3/4, 1, 1 1/4, 1 1/2	6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	41	1	115	0.40	2800	9.3 (4.2)
NRF-22	●		103251		6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	92			0.80	2940	9.3 (4.2)
NRF-25		●	103417		6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	125			1.20	2950	10.4 (4.7)
NRF-33	●		103350		6 3/8 (162)	5 9/16 (141)	4 7/8 (124)	125			1.10	2950	10.4 (4.7)
NRF-36		●	103400		6 3/8 (162)	6 7/8 (175)	5 3/4 (146)	270			2.30	3300	13.1 (6.0)
NRF-45		●	103404	1, 1 1/4, 1 1/2	8 1/2 (216)	7 3/8 (187)	5 3/4 (146)	270			2.30	3300	14.5 (6.6)

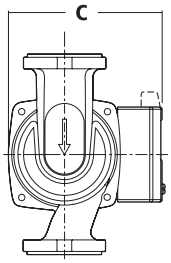
NRF-9F/LW, NRF-22, NRF-25 and NRF-33 are impedance protected.
NRF-36 and NRF-45 are thermally protected.
Dimensions are approximate and subject to change. Contact factory for certified dimensions.

Single Speed NRF Circulator Performance Curves



❶ NRF-22
❷ NRF-33
❸ NRF-9F/LW





Single Speed NRF Circulators

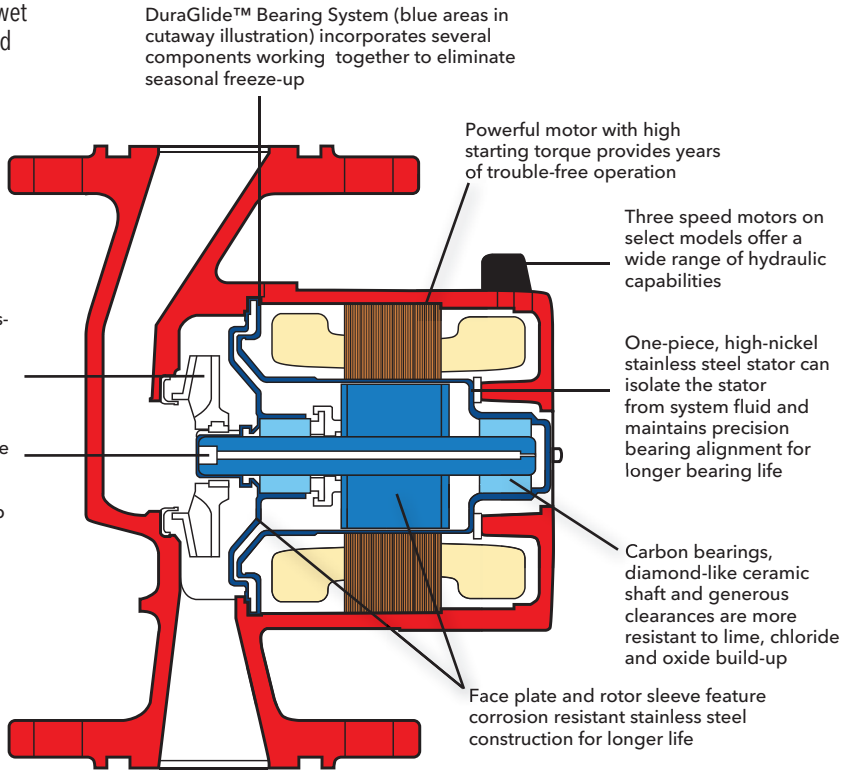
NRF-9F/LW

NRF-22

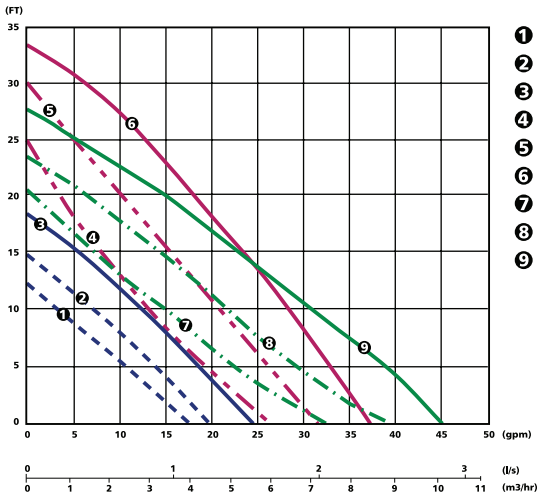
NRF-33

CIRCULATORS Bell & Gossett Cast Iron Wet Rotor Circulators / NRF

Reliable, maintenance-free, whisper quiet wet rotor circulators designed for residential and light commercial heating systems.



Three-Speed NRF Circulator Performance Curves



❶ NRF-25 Speed 1
❷ NRF-25 Speed 2
❸ NRF-25 Speed 3
❹ NRF-36 Speed 1
❺ NRF-36 Speed 2
❻ NRF-36 Speed 3
❼ NRF-45 Speed 1
❽ NRF-45 Speed 2
❾ NRF-45 Speed 3

Optional Zone Pump Relay Control

The ZoneTrol II AZ-1A is a single zone pump relay that turns the pump and boiler on when the thermostat calls for heat. The AZ-1A is ideal when adding a zone to an existing system and can be daisy-chained together to control multiple zones (See page 25.)

Three-Speed NRF Circulators

NRF-25

NRF-36

NRF-45

CIRCULATORS Lead-Free Wet Rotor Circulators for Potable Water / NBF & SSF

Description

A residential or light commercial, maintenance-free, in-line, lead-free* bronze or stainless steel, wet rotor circulator for potable water systems and other applications. Flanged, union or sweat models available. UL and cUL listed.

Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature:
NBF-25, NBF-33, NBF-36, NBF-45: 225°F (107°C)
All Others: 230°F (110°C)

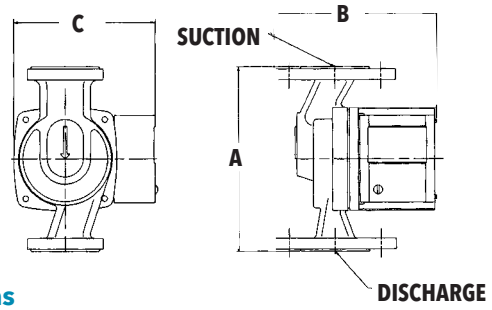
Materials of Construction

Pump Body NBF: 100% Lead-Free* Bronze
SSF: Stainless Steel
Impeller: Noryl
Shaft: Ceramic
Bearings: Double-Sintered Carbon

Warranty

Bell & Gossett offers a warranty of three years from date of manufacture or 18 months from date of installation (which ever comes first) against failure as a result of defects in materials and workmanship.

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.



SSF-9

NBF-9

Cross Reference

BELL & GOSSETT	GRUNDFOS*	TACO**
NBF-8S/LW	UM 15-10B5	003B
NBF-9U/LW	UP 15-18SU	006B
NBF-10S/LW	UP 15-18B5	006B
NBF-12U/LW	UP 15-42SU	005B
NBF-12F/LW	UP 15-42SF	005B
NBF-18S	UP 15-42B5	–
NBF-22U	UP 25-64SU	007B
NBF-22	UP 25-64SF	007B
SSF-22	UP25-64SF	007B
NBF-25	UPS15-58	00R-MS
NBF-33	–	0010B
NBF-36	UP26-96BF	0011B
	UP26-99BF	0013B
	UP26-64SF	0014B
NBF-45	UP43-75BF	–

*Grundfos is a registered trademark of Grundfos Pumps Corp.

**Taco is a registered trademark of Taco, Inc.

Specifications

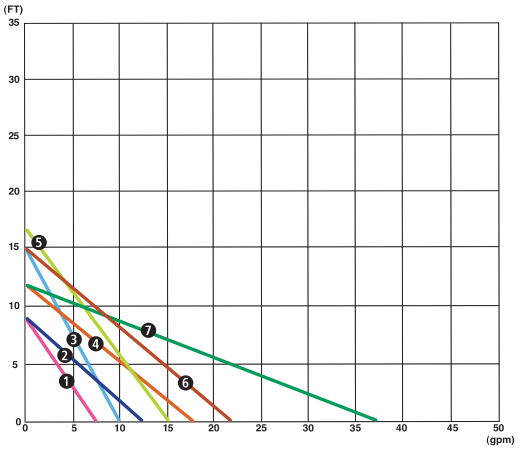
Model Number	Part Number	Connections	Dimensions Inches (mm)			Standard 60 Cycle Motor Characteristics*					Shipping Weight lbs. (Kg)
			A	B	C	Watts	Ø	Volts	F.L. Amps	RPM	
NBF-8S/LW	103257LF	1/2" Sweat	5 (127)	5 7/32 (132)	4 7/8 (124)	39	1	115	0.39	2800	9.0 (4.1)
NBF-9U/LW	103258LF	Union**	6 1/8 (156)	5 1/16 (129)	4 7/8 (124)	41			0.40		9.3 (4.2)
NBF-10S/LW	103259LF	1/2" Sweat	5 (127)	5 7/32 (132)	4 7/8 (124)	55			0.46		9.0 (4.1)
NBF-12F/LW	103260LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	5 9/16 (141)	4 7/8 (124)	55			0.48		9.5 (4.3)
NBF-12U/LW	103261LF	Union**	6 1/8 (156)	5 1/16 (129)	4 7/8 (124)	55			0.48		9.3 (4.2)
NBF-18S	103316LF	1/2" Sweat	5 (127)	5 7/32 (132)	4 7/8 (124)	90			0.74	3000	9.0 (4.1)
NBF-22	103252LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	5 9/16 (141)	4 7/8 (124)	92			0.80	2940	9.5 (4.3)
NBF-22U	103255LF	Union**	6 1/8 (156)	5 1/16 (129)	4 7/8 (124)	92			0.80		9.3 (4.2)
NBF-25	103418LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	125			1.10	2950	10.4 (4.7)
NBF-33	103351LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	6 3/16 (157)	5 1/8 (130)	125			1.10		10.4 (4.7)
NBF-36	103401LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	6 7/8 (175)	5 3/4 (146)	270			2.30	3300	13.1 (6.0)
NBF-45	103405LF	Flange 1, 11/4, 11/2	8 1/2 (216)	7 3/8 (187)	5 3/4 (147)	270					14.5 (6.6)
SSF-9U/LW	103360LF	Union**	6 1/8 (156)	5 1/16 (129)	4 7/8 (124)	41			0.40	2800	9.3 (4.2)
SSF-12F/LW	103358LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	5 9/16 (141)	4 7/8 (124)	55			0.48		9.5 (4.3)
SSF-12U/LW	103361LF	Union**	6 1/8 (156)	5 1/16 (129)	4 7/8 (124)	55					9.3 (4.2)
SSF-22	103357LF	Flange 3/4, 1, 11/4, 11/2	6 3/8 (162)	5 9/16 (141)	4 7/8 (124)	92			0.80	2940	9.5 (4.3)
SSF-22U	103362LF	Union**	6 1/8 (156)	5 1/16 (129)	4 7/8 (124)	92					9.3 (4.2)

* Impedance protected

** Union Connections are available in 3/4" NPT, 1/2" sweat & 3/4" sweat.

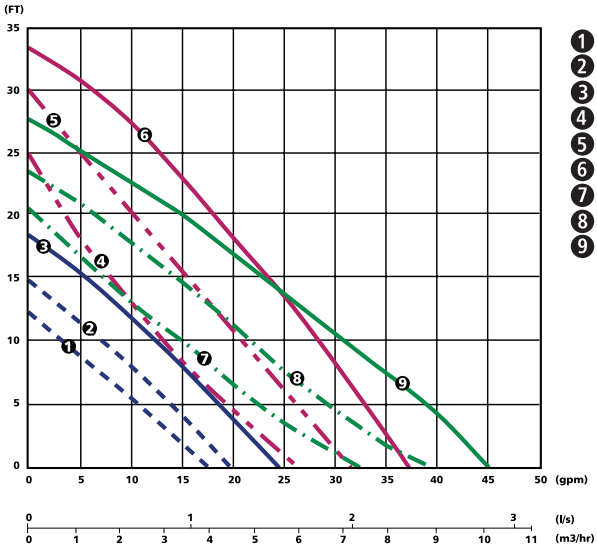
CIRCULATORS Lead-Free Wet Rotor Circulators for Potable Water / NBF & SSF – continued

Single Speed-NBF/SSF 60 HZ Performance Curve



1. NBF-8S/LW
2. NBF-9U/LW
   SSF-9U/LW
3. NBF-10S/LW
4. NBF-12U/LW
   SSF-12U/LW
   NBF-12F/LW
   SSF-12F/LW
5. NBF-18S
6. NBF-22
   SSF-22
   NBF-22U
   SSF-22U
7. NBF-33

Three Speed-NBF 60 HZ Performance Curve



1. NBF-25 Speed 1
2. NBF-25 Speed 2
3. NBF-25 Speed 3
4. NBF-36 Speed 1
5. NBF-36 Speed 2
6. NBF-36 Speed 3
7. NBF-45 Speed 1
8. NBF-45 Speed 2
9. NBF-45 Speed 3

CIRCULATORS Series LR™ Maintenance-Free Circulators

Materials of Construction

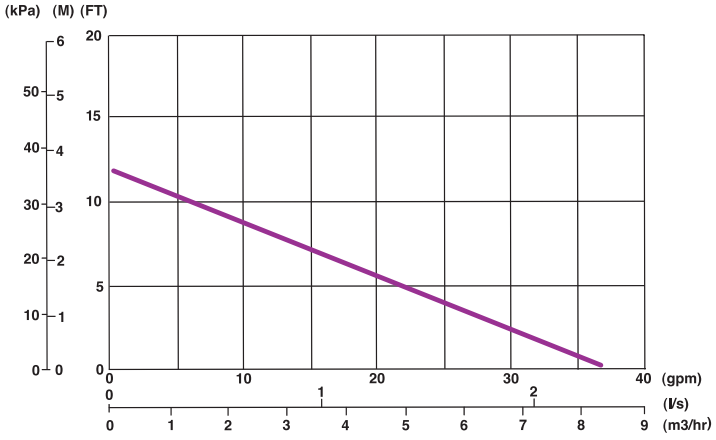
Pump Body: LR-20WR: Cast Iron
LR-15BWR: Lead-Free* Bronze
Impeller: Noryl®
Shaft: Ceramic
Bearings: Carbon

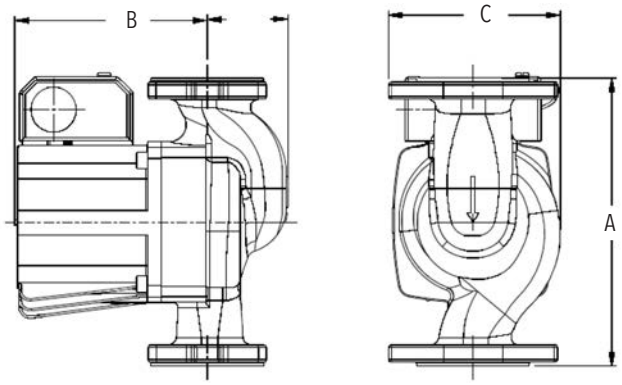
*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature: 225°F (107°C)

LR-15B LR-20





Specifications

Model Number	Part Number	Pump Body Material	Flange Sizes Inches-NPT	Dimension Inches (mm)			Standard 60Hz Motor Characteristics*					Approx. Shpg. Wt. lbs (Kg)
				A	B	C	Watts	Ø	F.L. Amps	FL Amps	RPM	
LR-20WR	106507	Cast Iron	3/4, 1, 1-1/4, 1-1/2	6-3/8 (162)	6 (152)	3-7/8 (98)	125	1	115	1.10	2950	10.4 (4.7)
LR-15BWR	106514LF	Bronze	3/4, 1, 1-1/4, 1-1/2									

CIRCULATORS Maintenance-Free Circulators

SERIES PL™ a superior alternative to large wet rotor pumps

PL-30, 36, 45, 50, 55

PL-75, 130

Operating Data

Maximum Working Pressure: 150 PSI (10.3 bar)
Maximum Operating Temperature: 225°F (107°C)

Materials of Construction

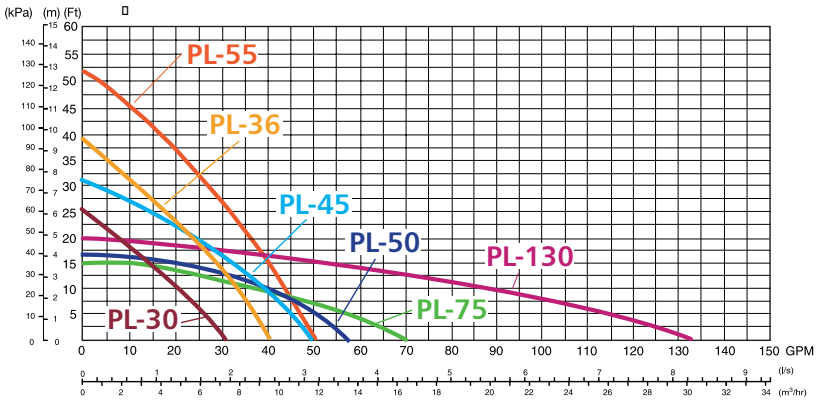
Booster Body: Cast Iron or Lead-Free* Bronze
Face Plate: Stainless Steel
Impeller: 30% Glass Filled Noryl® (PL-55 & PL-130): Glass Filled PPS
Shaft: Carbon Steel (PL-55 & PL-130): Stainless Steel
Shaft Sleeve: Stainless Steel (PL-55 & PL-130): None
Seal: Mechanical, Carbon on Silicon Carbide
Motor Bearings: Sealed Precision Steel Ball Bearing Permanently Lubricated
Motor Type: ODP
Elastomers: EPDM

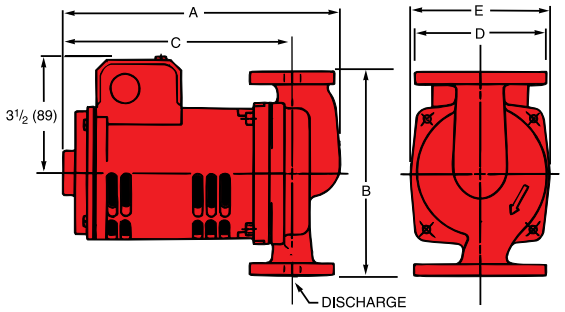
*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

Specifications

Cast Iron		Lead Free		Flange Size	Motor Characteristics*				Dimensions in inches (mm) @ 60 Hz (Open Drip-Proof)					Approx. Shipg. Wt.
Model No.	Part No.	Model No.	Part No.	Inches - NPT	HP	ø	Voltage	RPM	A	B	C	D	E	lbs. (Kg)
PL-30	1BL012	PL-30B	1BL013LF	3/4, 1, 1 1/4, 1 1/2	1/12	1	115	2650	8 5/8 (219)	6 3/8 (162)	7 1/8 (181)	4 3/16 (106)	4 3/8 (111)	11.6 (5.3)
PL-36	1BL001	PL-36B	1BL003LF	3/4, 1, 1 1/4, 1 1/2	1/6			3300	8 5/8 (219)	6 3/8 (162)	7 1/8 (181)	4 3/16 (106)	4 3/8 (111)	13.1 (6.0)
PL-45	1BL002	PL-45B	1BL004LF	1, 1 1/4 1 1/2	1/6			3300	9 1/8 (232)	8 1/2 (216)	7 1/4 (184)	4 5/8 (117)	4 1/2 (114)	14.5 (6.6)
PL-50	1BL016	PL-50B	1BL017LF	1, 1 1/4 1 1/2	1/6			3300	9 1/8 (232)	8 1/2 (216)	7 1/4 (184)	4 5/8 (117)	4 1/2 (114)	14.5 (6.6)
PL-55	1BL032	PL-55B	1BL068LF	3/4, 1, 1 1/4, 1 1/2	2/5			3250	9 9/16 (243)	6 3/8 (162)	7 15/16 (202)	4 3/16 (106)	4 3/4 (121)	13.1 (6.0)
PL-75	1BL034	PL-75B	1BL035LF	2	1/6			3400	9 15/16 (252)	8 1/2 (216)	7 3/8 (187)	5 3/16 (132)	4 5/8 (117)	18.5 (8.4)
PL-130/ 2"	1BL063	PL-130B/ 2"	1BL065LF	2	2/5			3200	10 3/4 (273)	8 1/2 (216)	8 1/4 (210)	5 3/16 (132)	5 1/8 (130)	22 (10)
PL-130/ 3"	1BL070	PL-130B/ 3"	1BL072LF	2 1/2 & 3	2/5			3200	10 3/4 (273)	8 1/2 (216)	8 1/4 (210)	6 (152)	5 1/8 (130)	27 (12.2)

* 230/60/1 motors available upon request. Models PL-75 and PL-130 have four bolt hole flange connection, all others have two bolt hole flange connectors.
Dimensions are approximate and subject to changes. Contact factory for certified dimensions.





1 B&G's powerful, dry-motor design delivers exceptional performance. . . . 25% more efficient than competition.

2 Precision-machined and balanced alloy steel rotor for superior performance.

3 Quick-connect wire nut leads and dual knock-outs make for fast, sure hook-ups.

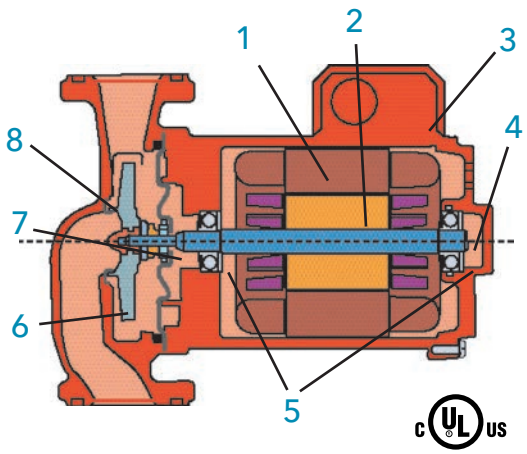
4 Solid "Stiff-Shaft" design is constructed of high-strength alloy steel impervious to cracking caused by thermal stresses.

5 XL-11™ Precision-Crafted Bearing System... is permanently oil lubricated... completely maintenance free...precisely positioned for long-life and isolated for quiet operation.

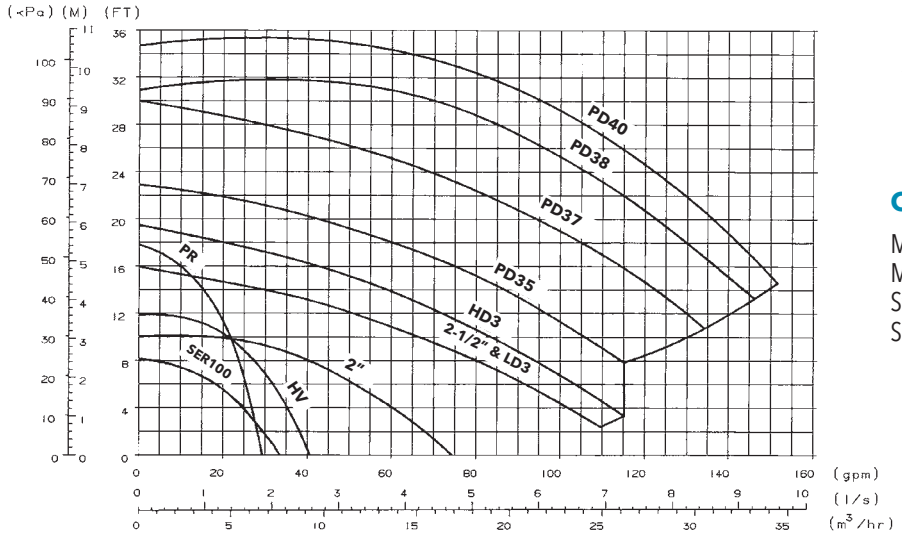
6 Advanced close-coupled design increases pump life and efficiency, assures dependable seasonal start-ups and can easily handle difficult water conditions.

7 Tough, durable seal system features a carbon/silicon carbide seal on a stainless steel shaft sleeve for long life and rugged operation.

8 Double sided I-Seal™ design for optimum efficiency.

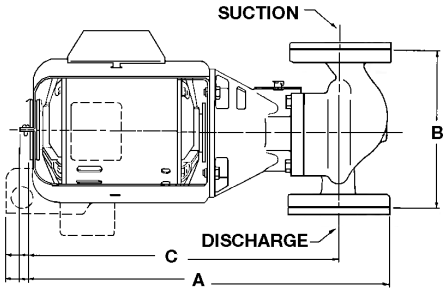


CIRCULATORS Oil Lubricated Circulators Three-Piece



Operating Data

Maximum Working Pressure: 125 PSI (8.6 bar)
Maximum Operating Temperature:
Standard Seal: 225°F (107°C) continuous
Special Seals: 250°F (121°C) continuous



Specifications

Model Number	Cast Iron		Bronze		Flange Size Inches (NPT)	Motor Characteristics* @ 60 Hz			Dimensions in Inches (mm) (Open Drip-Proof)			Approximate Shpg. Wt. lbs. (Kg)	
	Model Number	Part Number	Model Number	Part Number		HP	Ø	Voltage	A	B	C	Cast Iron	Bronze
Series 100	100NFI	106189	100 AB	106192LF	3/4, 1	1/12	1	115 - with built-in overload protection	14-7/8 (378)	6-3/8 (162)	12-3/4 (324)	20 (9)	21 (10)
	100BI	106190	100 BNFI	106197LF	1-1/4, 1-1/2								
Series PR	PR	102206	PR AB	102208LF	3/4, 1	1/6			15-1/4 (387)	8-1/2 (216)	12-3/4 (324)	30 (14)	32 (15)
	PR BI	102207			1-1/4, 1-1/2								
Series HV	HV NFI	102210	HV AB	102231LF	1, 1-1/4,	1/6			15-3/8 (391)	8-1/2 (216)	13 (330)	28 (13)	30 (14)
	HV BI	102230	HV BNFI	102213LF	1-1/2								
2"	2 NFI	102214	2AB	102233LF	2	1/6			16-5/8 (422)	8-1/2 (216)	14 (356)	36 (16)	39 (18)
	2 BI	102232	2 BNFI	102217LF									
2-1/2"	2-1/2	102218	2-1/2 AB	102220LF	2-1/2	1/4			17-1/4 (438)	10 (254)	14 (356)	54 (24)	58 (26)
	2-1/2 BI	102219											
LD3	LD3	102222	LD3 AB	102224LF	3	1/4			17-1/4 (438)	10 (254)	14 (356)	53 (24)	57 (26)
	LD3 BI	102223											
HD3	HD3	102226	HD3 AB	102228LF	3	1/3		115/230	17-1/2 (445)	10 (254)	14-1/4 (362)	55 (25)	59 (27)
	HD3 BI	102227											
PD-35S	PD35S	105089	PDB35S	105092LF	3	1/2	1	115/230	20-1/4 (514)	12 (305)	16-7/8 (429)	75 (34)	80 (36)
	PD35S BI	105090											
PD-35T	PD35T	105093	PDB35T	105096LF	3	1/2	3	208-230/460	20-1/4 (514)	12 (305)	16-7/8 (429)	75 (34)	80 (36)
	PD35T BI	105094											
PD-37S	PD37S	105097	PDB37S	105100LF	3	3/4	1	115/230	20-1/4 (514)	12 (305)	16-7/8 (429)	75 (34)	80 (36)
	PD37S BI	105098											
PD-37T	PD37T	105101	PDB37T	105104LF	3	3/4	3	208-230/460	20-1/4 (514)	12 (305)	16-7/8 (429)	75 (34)	80 (36)
	PD37T BI	105102											
PD-38S	PD38S	105121	PDB38S	105123LF	3	1	1	115/230	22-3/4 (578)	14-1/2 (368)	19 (483)	128 (58)	138 (63)
	PD38S BI	105122											
PD-38T	PD38T	105133	PDB38T	105135LF	3	1	3	208-230/460	24 (610)	14-1/2 (368)	20-1/4 (514)	125 (57)	135 (61)
	PD38T BI	105134											
PD-40S	PD40S	105151	PDB40S	105153LF	3	1-1/2	1	115/230	24-3/4 (629)	14-1/2 (368)	21 (533)	130 (59)	140 (64)
	PD40S BI	105152											
PD-40T	PD40T	105137	PDB40T	105139LF	3	1-1/2	3	208-230/460	21-7/8 (556)	14-1/2 (368)	18-1/8 (460)	127 (58)	137 (62)
	PD40T BI	105138											

PD-38 and PD-40 are ball bearing, maintenance-free design.
*Special motors available upon request. Dimensions are approximate and subject to changes.
Contact factory for certified dimension.

1 B&G Motor – The heart of the booster. The finest circulator motor available. Sleeve bearing, oil lubricated with replaceable resilient motor mounts. B&G motors are designed and manufactured specifically for the B&G boosters.

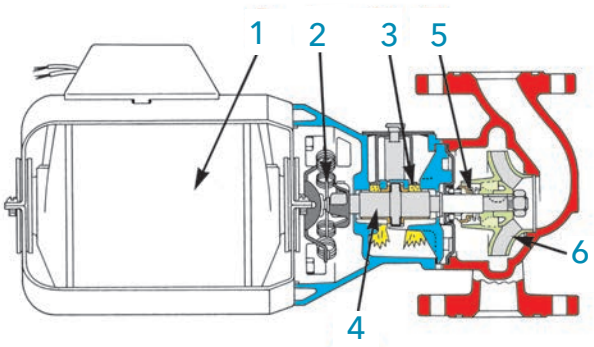
2 Noise dampening coupler. B&G's own flexible spring design adds to quiet operation. Do not accept a substitute.

3 Long bronze sleeve bearings maintain exact shaft alignment. Provides for constant circulation of oil over bearing surfaces.

4 Precision ground pump shaft is oversized to provide large bearing surfaces. Hardened integral thrust collar minimizes end-thrust to ensure long seal and bearing life.

5 The B&G mechanical seal is designed to withstand the wide range of water temperatures, pressures, additives and dissolved solids common in hydronic systems.

6 Centrifugal impeller prevents accumulation of air at seal faces to assure long life. Close impeller/body tolerances minimize water slippage and maximize efficiency.



CIRCULATORS Series 60 In-Line Mounted Centrifugal Pump Now Available with ECM Motor

Description

A maintenance-free, in-line, cast iron centrifugal pump for header pump applications.

Designed for a variety of applications

- Hydronic heating & cooling systems
- Domestic water
- Fluid transfer

Product Features

- Maintenance-free pump and motor design
- Internally self-flushing mechanical seal
- XL11® lubrication system
- Factory tested, Qualtiy Product
- ISO 9001 certified
- Neoprene coupling
- Compact design
- Easy installation
- Wide range of standard sizes
- Backed by B&G three-year warranty

Materials of Construction

Body: Cast Iron (Bronze Fitted)
Cast Bronze (All Bronze)
Impeller: Cast Bronze
Motor Shaft: Alloy Steel
Pump Shaft: Steel
Volute Gasket: Cellulose Fiber
Shaft Sleeve: Copper Alloy
Bracket: Cast Iron with Stainless Steel
Face Plate: 304 Stainless Steel
Mechanical Seal: Buna/Carbon-Ceramic
Standard: -20°F to 225°F

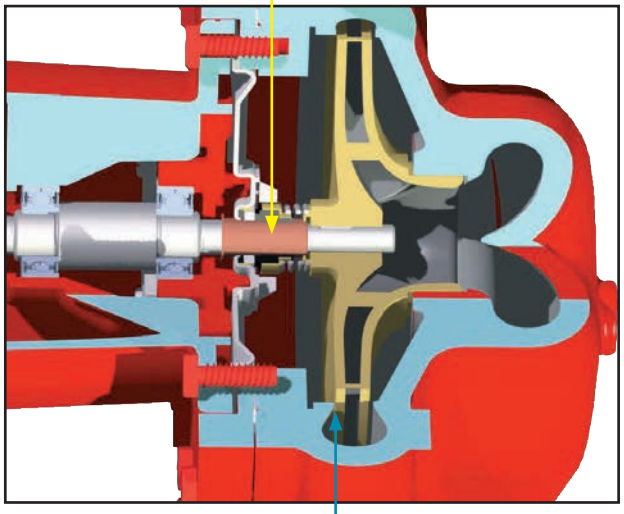
Operating Data

Maximum working pressure: 175 PSI
Operating temperature: 225°F

Shown with optional ECM motor

Internally self-flushing seal

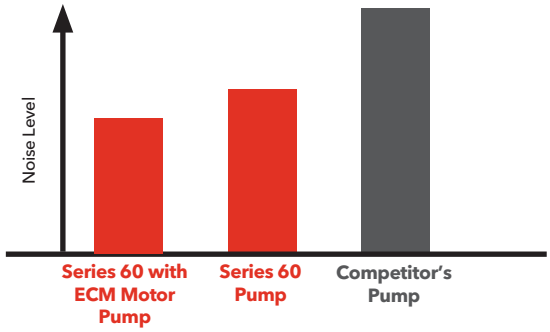
Bell & Gossett's open-seal chamber design provides superior flow circulation around the seal faces, resulting in reduced heat buildup, increased particle removal and superior seal-face flushing. It all adds up to long, trouble-free seal performance.



Impeller

State-of-the-art hydraulically balanced impellers and resilient-mounted motors provide smooth, quiet operation.

Series 60 with ECM Motor Pump is 5% quieter than standard Series 60

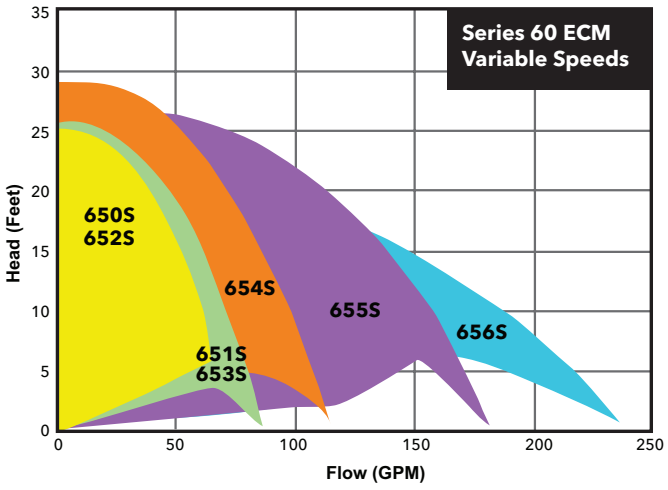


Quiet operation

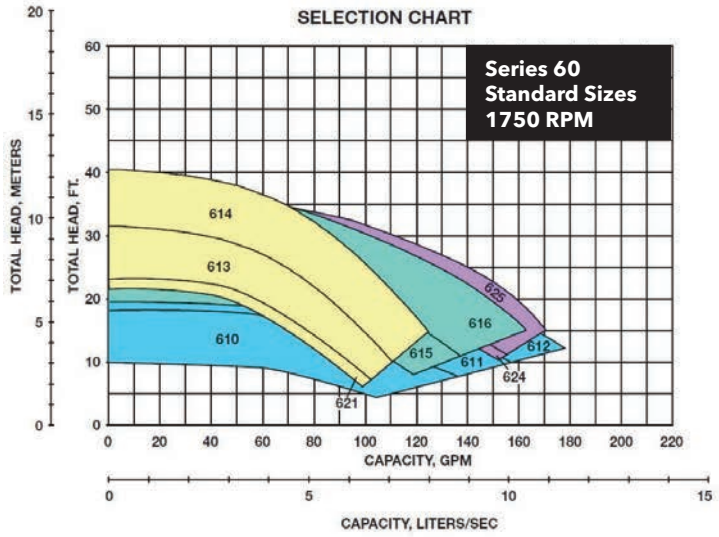
The XL-11® Precision-Crafted Bearing System, advanced fluid passage design and B&G permanently lubricated motor come together to deliver smooth, quiet, maintenance-free performance.

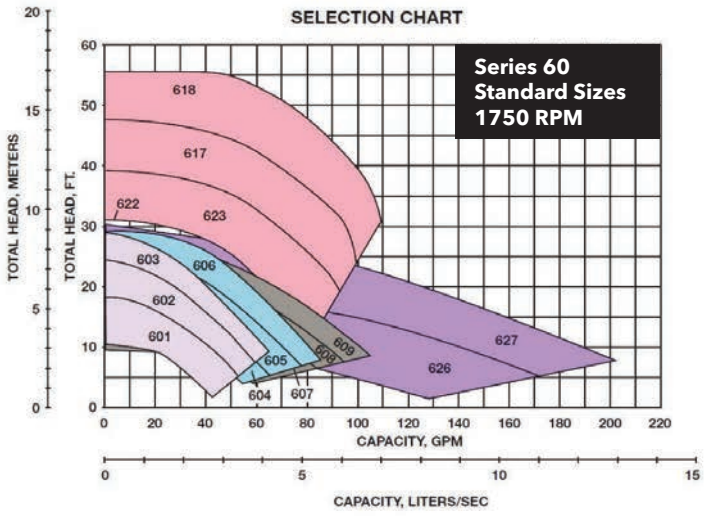
ECM Performance Curves

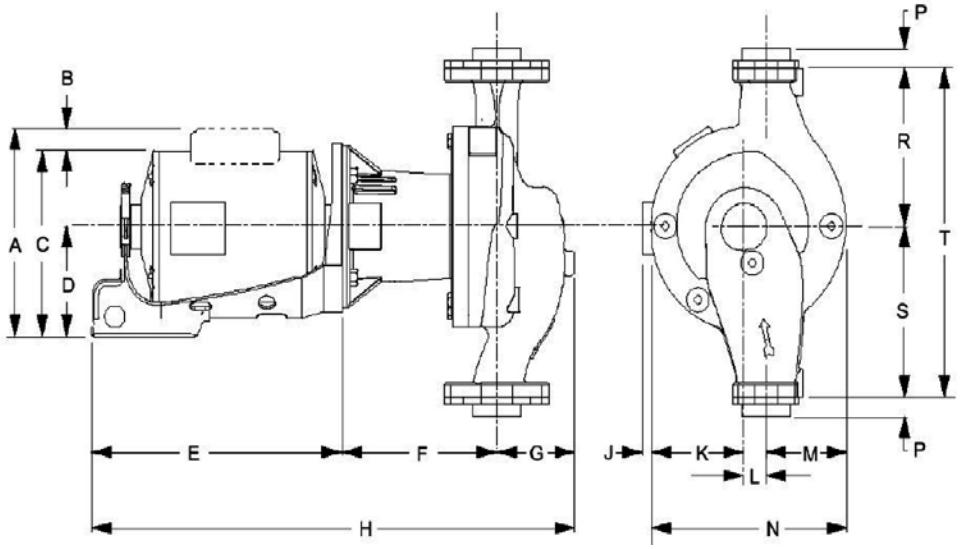
Hydraulic Curve Performance Range Series 60 with ECM



CIRCULATORS Series 60 In-Line Mounted Centrifugal Pump







Specifications

Model	Suction And Discharge Size Inches NPT	Pump Dimension in Inches (mm)									
		F	G	K	L	M	N	P	R	S	T
601,602 & 603	1	6-7/16 (164)	3-7/16 (87)	3-5/8 (92)	1-3/8 (35)	2-1/2 (64)	7-1/2 (190)	3/4 (19)	5 (127)	6 (152)	11 (279)
604,605 & 606	1-1/4	6-7/16 (164)	3-7/16 (87)	3-5/8 (92)	1-3/8 (35)	2-1/2 (64)	7-1/2 (190)	3/4 (19)	5 (127)	6 (152)	11 (279)
607,608 & 609	1-1/2	6-9/16 (167)	3-5/8 (92)	3-3/4 (95)	1-3/8 (35)	2-3/4 (70)	7-7/8 (200)	3/4 (19)	5 (127)	6-1/2 (165)	11-1/2 (292)
613,614 & 621	1-1/2	6-11/16 (170)	3-3/8 (86)	4-1/16 (103)	1 (25)	3-9/16 (90)	8-9/16 (217)	3/4 (19)	6-1/2 (165)	7 (176)	13-1/2 (343)
617,618,622 & 623	1-1/2	9-3/8 (238)	3-1/4 (83)	4-5/8 (117)	1 (25)	3-7/8 (98)	9-1/2 (241)	3/4 (19)	6-1/2 (165)	7 (176)	13-1/2 (343)
610,611 & 612	2	6-11/16 (164)	3-3/4 (95)	3-3/4 (95)	1-3/8 (35)	2-7/8 (73)	8 (203)	13/16 (21)	5 (127)	6-1/2 (165)	11-1/2 (292)
615,616	2	6-15/16 (170)	3-1/2 (89)	4-3/8 (111)	1 (25)	4 (102)	9-3/8 (238)	13/16 (21)	6-1/2 (165)	7 (176)	13-1/2 (343)
619,620 &624	2	9-3/8 (238)	3-1/2 (89)	4-3/4 (121)	1 (25)	4-1/8 (105)	9-7/8 (251)	13/16 (21)	6-1/2 (165)	7-1/2 (165)	14 (356)

Maximium working pressure 175 PSI (12 Bar)

FLANGES Check-Trol™ Isolation Flow Control Flange

Description

The Check-Trol flange is a combination isolation valve, flow control valve, and companion flange for circulators. The ball valve allows the circulator to be removed from the system without draining the system. The internal spring check prevents gravity circulation. Free floating companion flange makes pump installation a snap.

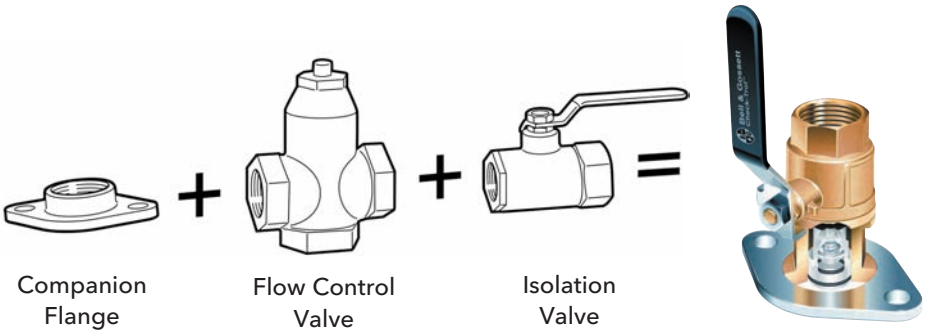
Operating Data

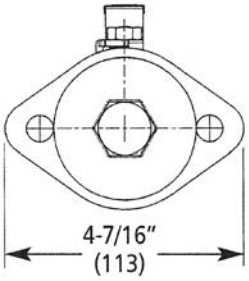
Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature: 200°F (93°C)

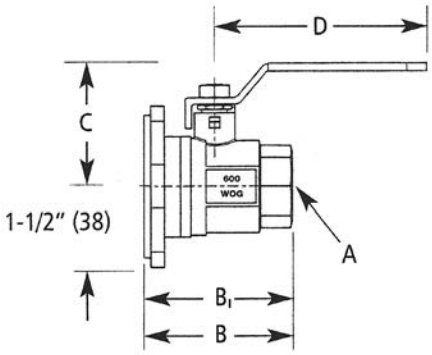
Materials of Construction

Valve Body: Lead-Free* Brass
Flange: Chrome Plated Steel
Ball: Chrome Plated Lead-Free* Brass
Packing: PTFE
Seat Ring: PTFE
Stem: Lead-Free* Brass
Spring Check: Nitrile, Acetal, Stainless Steel

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.







Specifications

Model Number	Size Inches	Use with Following Circulators	Dimensions - Inches (mm) Following Circulators					Approx. Shpg. Wt. lbs. (Kg)
			A	B	B_1**	C	D	
101231LF	3/4" NPT x Flange	ecocirc auto and vario ecocirc XL 20-35, 36-45, 55-45 NRF/NBF/SSF Wet Rotors* Series PL-30, PL-36, PL-55 Series 100, PR and LR	3/4" NPT	3-7/64" (79)	2-27/64" (61.5)	2" (50.5)	4-23/32" (120)	3.4 (1.5))
101232LF	1" NPT x Flange		1" NPT	3-15/16" (100)	2-57/64" (73.3)	2-5/32" (54.7)	4-23/32" (120)	4.4 (2.0)
101233LF	1-1/4" NPTx Flange		1-1/4" NPT	4-25/32" (121.4)	3-19/64" (84)	3" (76.2)	6-7/32" (158)	6.3 (2.8)
101245LF	1-1/2" NPT x Flange		1-1/2" NPT	4-27/32" (122.9)	3-23/64" (85.5)	3" (76.2)	6-7/32" (158)	6.6 (3.0)
101236LF	3/4" SWT x Flange		3/4" SWT	3-21/64" (84.5)	2-41/64" (67)	2" (50.5)	4-23/32" (120)	3.4 (1.5)
101237LF	1" SWT x Flange		1" SWT	4-1/64" (102)	3" (75.3)	2-5/32" (54.7)	4-23/32" (120)	4.2 (1.9)
101238LF	1-1/4" SWT x Flange		1-1/4" SWT	4-55/64" (123.4)	3-25/64" (86)	3" (76.2)	6-7/32" (158)	5.9 (2.7)
101247LF	1-1/2" SWT x Flange		1-1/2" SWT	5-1/64" (127.4)	3-35/64" (90)	3" (76.2)	6-7/32" (158)	6.5 (3.0)

* Not for use with NRF/NBF-45, HV flanges required.

Dimensions and weights are approximate and subject to change. Contact factory for certified dimensions. Check-Trol flange is sold with an isolation flange as a pair.
** B_1 Dimension is overall length of isolation flange. The part numbers and shipping weights are for one Check-Trol flange and one isolation flange, capscrews and nuts.

ISOLATION FLANGES

Description

The isolation flange is a combination of an isolation ball valve and a companion flange for circulators. The isolation flange allows easy service or replacement of the circulator without the need to drain the system. The isolation flange fits the Bell & Gossett NRF/NBF/SSF wet rotors, Series PL, Series 100, HV, PR and LR circulators.

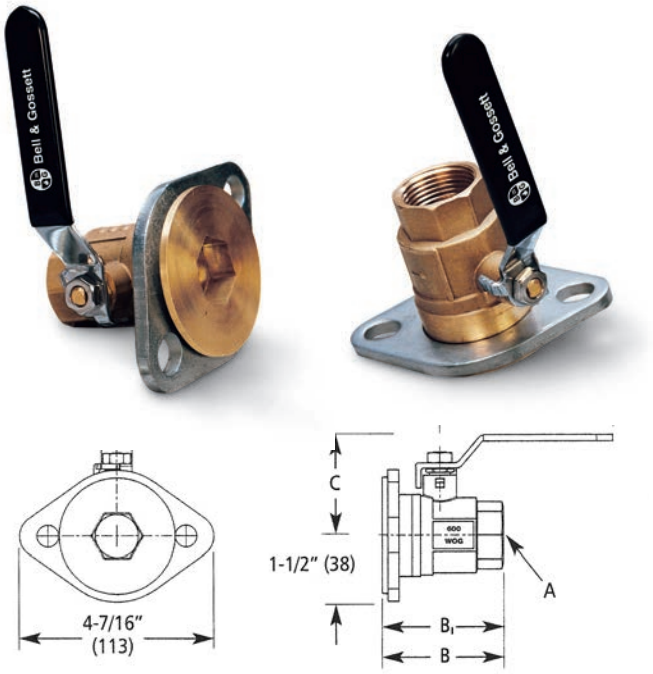
Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature: 250°F (121°C)

Materials of Construction

Valve Body: Lead-Free* Brass
Flange: Chrome Plated Steel
Ball: Chrome Plated Lead-Free* Brass
Packing: PTFE
Seat Ring: PTFE
Stem: Lead-Free*Brass

*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.



Specifications

Model Number	Size Inches	Use with Following Circulators	Dimensions - Inches (mm) Following Circulators				Approx. Shpg. Wt. lbs. (Kg)
			A	B	C	D	
101221LF	3/4" NPTF IF	ecocirc auto and vario ecocirc XL 20-35, 36-45, 55-45 NRF/NBF/SSF wet rotors Series PL-30, PL-36, PL-55 Series 100, PR and LR Does not include NRF/NBF-45	3/4" NPT	2-27/64" (61.5)	2" (50.5)	4-47/64" (120)	3.2 (1.5)
101222LF	1" NPTF IF		1" NPT	2-57/64" (73.3)	2-5/32" (54.7)	4-47/64" (120)	4.1 (1.9)
101223LF	1-1/4" NPTF IF		1-1/4" NPT	3-19/64" (84)	3" (76.2)	6-7/32" (158)	5.8 (26)
101241LF	1-1/2" NPTF IF		1-1/2" NPT	3-23/64" (85.5)	3" (76.2)	6-7/32" (158)	6.1 (28)
101226LF	3/4" SWT IF		3/4" SWT	2-41/64" (67)	2" (50.5)	4-23/32" (120)	3.2 (1.5)
101227LF	1" SWT IF		1" SWT	3" (75.3)	2-5/32" (54.7)	4-23/32" (120)	3.9 (1.8)
101228LF	1-1/4" SWT IF		1-1/4" SWT	3-25/64" (86)	3" (76.2)	6-7/32" (158)	5.4 (25)
101243LF	1-1/2" SWT IF		1-1/2" SWT	3-35/64" (90)	3" (76.2)	6-7/32" (158)	6 (27)

"IF" = "Isolation Flange"
Note: Dimensions and weights are approximate and subject to change. Contact factory for certified dimensions.
The part numbers and shipping weights are for two isolation flanges, capscrews and nuts.

Companion Flanges

Flanges for Cast Iron Circulators

	Size (NPT)	Master Carton of 12 Part No.	Set of 2 Part No.
Series 100, PR NRF-22, NRF-9F/LW, NRF-33, NRF-36 PL-30, PL-36, PL-55 ecocirc XL	3/4"	101001	101201
	1"	101002	101202
	1-1/4"	101003	101203
	1-1/2"	101004	101204
Series HV, PL-45 PL-50, NRF-45 ecocirc XL	1"	101005	101205
	1-1/4"	101006	101206
	1-1/2"	101007	101207

	Size (NPT)	Set of 2 Part No.*
PL-75, PL-130/2" ecocirc XL 15-75	2"	101215
PL-130/3" ecocirc XL 40-275	2-1/2"	101219
	3"	101217

*Includes Fasteners

Flanges for Bronze Circulators

	Size (NPT)	Master Carton of 12 Part No.	Set of 2 Part No.
Series 100B, PRAB, NBF-22, NBF-12F/LW, NBF-33, NBF-36 PL-30B, PL-36B ecocirc XLB	3/4"	101011LF	101208LF
	1"	101012LF	101209LF
	1-1/4"	101013LF	101210LF
	1-1/2"	101014LF	101211LF
Series HV, PL-45B PL-50B, NBF-45 ecocirc XLB	1"	101015LF	101212LF
	1-1/4"	101016LF	101213LF
	1-1/2"	101017LF	101214LF

	Size (NPT)	Set of 2 Part No.*
PL-75B, PL-130B/2" ecocirc XLB 15-75	2"	101216LF
PL-130B/3" ecocirc XLB 40-275	2-1/2"	101220LF
	3"	101218LF

*Includes Fasteners

Union Connection for NBF Circulators

	Union Connection	Set of Two	
		Model No.	Part No.
NBF-22U, NBF-12U/LW NBF-9U/LW	1/2" sweat	UC-1/2S	113203LF
	3/4" sweat	UC-3/4S	113201LF
	3/4" NPT	UC-3/4NPT	113202LF

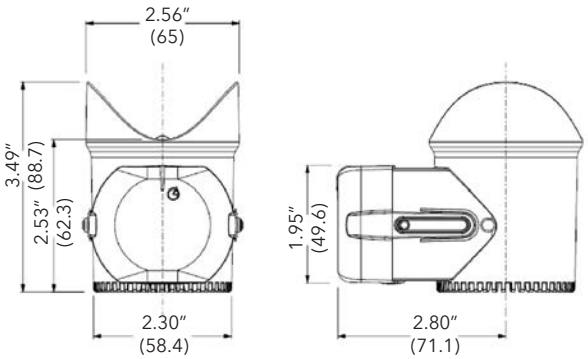
CONTROLS ecocirc® e3 SERIES TIMER

Description

To increase the overall efficiency of a domestic hot water recirculating system and to reduce water wasted while waiting for hot water, the e3 Timer can be installed on all e3 pumps. The timer is easily installed by removing the motor end cap, plugging in the timer and setting the timer schedule without any wiring. The timer can be used in 3-different selections: ON, OFF and TIMER. The ON selection operates the pump continuously, the OFF selection turns the pump OFF and the TIMER selection (depicted by a clock on the timer) turns the pump on when programmed.

Operational Limits

Power Supply: Internally powered by the e3 circulating pump
Minimum Switch Interval: 30 minutes
Run Modes: ON (Continuous), OFF (Off at all times) and TIMER (run at programmed intervals)



e3 Timer (Part No. LHB08260002)

Pump not included

CONTROLS for NBF Circulators

TC-1 Automatic Timer Kit (Part No. 113210)

To increase the overall efficiency of a hot water recirculation system, the TC-1 timer control kit can be installed for use on any B&G NBF circulator. The TC-1 timer control is programmable to turn the circulator ON and OFF automatically at preset times. This permits the user to have the pump circulate hot water only during those times when high usage can be expected throughout the day. Power supply minimum interval switch is 15 minutes. Run modes maximum switch current is 16 amps.

AQS-1/2 (Part No. 113223) and AQS-3/4 (Part No. 113224) Aquastat

Designed to thermostatically turn any B&G NBF circulator ON and OFF. The AQ-1/2 or AQ-3/4 will switch the pump OFF at 120°F (48.9°C) and ON at 100°F (37.8°C). The aquastats are available in separate models that will sense the temperature for either 1/2″ or 3/4″ copper pipe.

AQS-1/2″ clips onto 1/2″ copper pipe or 3/8″ steel pipe

AQS-3/4″ clips onto 3/4″ copper pipe or 1/2″ steel pipe

RELAYS ZONETROL II AZ-1A™ Snap-On Pump Relay

Description

The ZONETROL II AZ-1A snap on relay box is an easy to install single zone pump controller that mounts directly on any Bell & Gossett wet rotor circulator NRF/NBF or Series PL booster. The AZ-1A turns the pump and boiler ON as thermostat calls for heat. Using the wire nuts provided with the package, the AZ-1A is quickly assembled onto any NRF/NBF or 1/12 to 1/6 HP Series PL. The clearly marked TT terminals for the thermostat and the XX isolated end switch terminals make the rest of the hook-up a snap. The AZ-1A can be daisy-chained together to form a maximum of three zones.

The Bell & Gossett AZ-1A is ideal for any single to three zone pump application. Or can be used when adding a zone to an existing system. There's no more need to have a pump controller hanging on the wall, simply install the AZ-1A to our NRF/NBF or Series PL circulators and you are finished.

Features

- Snap-on design allows the AZ-1A to be quickly attached to any B&G wet rotor circulator, reducing your inventory investment (no need to carry "special" circulators with factory mounted controllers)
- Clearly marked terminals make for sure, fast wiring of the system
- Compact design fits in tight locations and presents a clean professional appearence
- 100% factory tested assures reliable operation
- 5 year warranty – the best in the industry
- Daisy-Chain the AZ-1A relays to form up to three zones
- Can be used on any B&G model NRF, NBF or 1/12 to 1/6 HP Series PL pumps

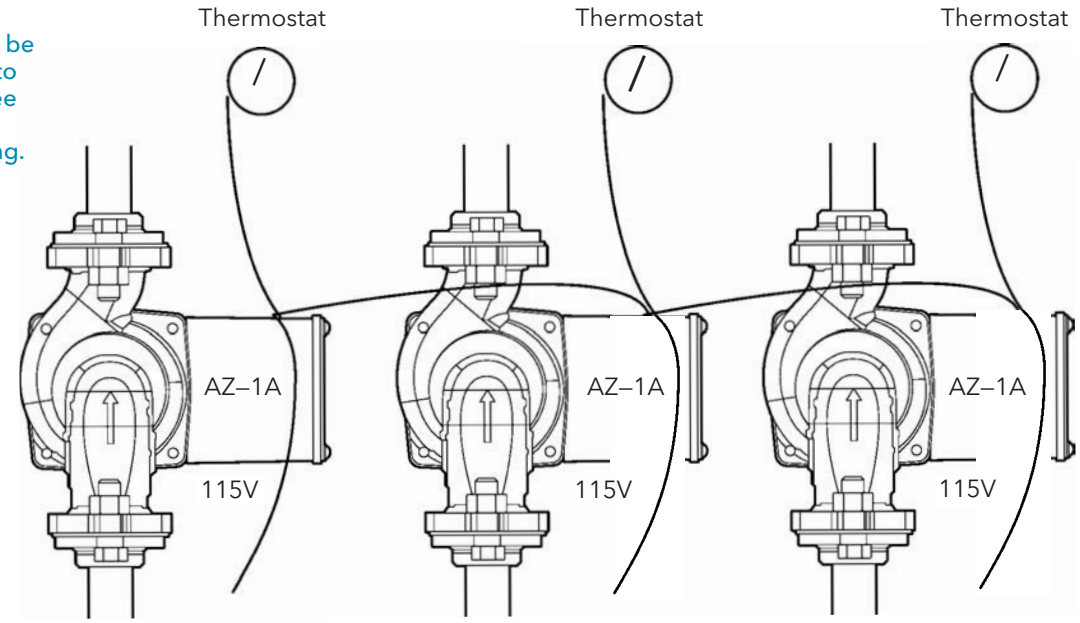
Specifications

Model Number	Part Number	Transformer	Relay	Power Input
AZ-1A	109423	2.5 VA	24 VAC / 5 amps	115 V, 60 Hz, 1ø

Dimensions (L x W x H): 2-7/8" X 3-1/4" X 2-5/8"
Approximate Shipping Weight: 0.75 lbs

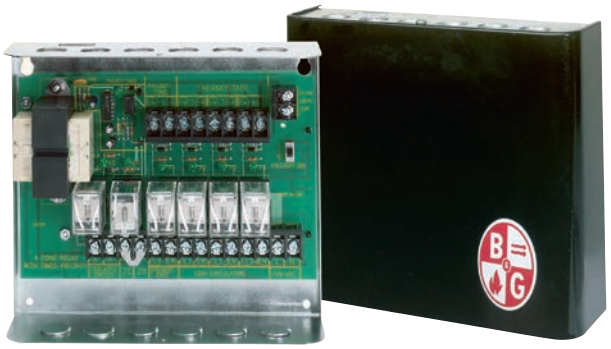
The AZ-1A can be daisy-chained to form up to three zones with simplified wiring.

Low voltage wiring makes multiple relay connections a snap.



RELAYS ZONETROL™ Switching Relays for Zoning with Valves

Features



- 100% factory tested - guarantees operation
- Five year limited warranty - the best in the business
- Replaceable, standard "ice cube" type relays allow up to 10 amps, 1/3 HP per individual zone
- Selectable priority for domestic hot water
- 30 minute built-in priority timer helps prevent house freeze up - no additional plug-in cards required
- Automatically resetable fuse protects controller from overload - eliminates "no heat" call backs due to blown fuse
- Powerful transformers operate up to six zones
- LED diagnostic lights installed internal to the box cover keeps the trouble shooting in the hands of the authorized heating professionals
- Can be used with "tankless coil" or "cold start" applications

Specifications

Model Number	Part Number	Zones	Priority Feature	Transformer Output at 24 Volts	Relay Switching Action	Each End Switch Contact Rating	Dimension W x H x D (inches)	Approx. Shpg. Wt. (lbs.)
ZTV-4	109407	4	yes	40 VA	DPDT	5A, 1/8 HP @ 120VAC	9-1/4 x 7-1/4 x 2-3/4	4.6
ZTV-6	109408	6	yes	75 VA	DPDT		11-3/8 x7-1/4 x 3-3/4	6.9

RELAYS ZONETROL II Switching Relays with Reset Option for Zoning with Pump

Description

Bell & Gossett's ZoneTrol II is a ready-to-install controller for hydronic circulators in residential and light commercial applications. All ZoneTrol II controllers are UL and cUL listed and feature multi-function LEDs that are visible without removing the cover for easy start-up and troubleshooting. All units are compatible with analog and digital 24 VAC thermostats, including "power stealing" designs. The multi-zone controllers feature an advanced microprocessor design that provides domestic hot water (DHW) priority & timer, pump exercise and a post purge timer without the need for add-on circuit boards or modules.

Four and six zone controllers are field expandable for up to 18 pumps.

The next generation of zone controllers from Bell & Gossett brings 21st century technology to residential controls.

Standard Features (multiple zone controllers only)

- Priority: Enables DHW zone to have priority over heating zones for limited period of time. User adjustable settings include OFF (disables priority functionality), 30 minutes and 60 minutes.
- Post Purge Timer: Circulator(s) will continue to run for 90 seconds after thermostat opens and allows additional extraction of BTUs from high mass boilers. User adjustable settings are OFF and ON.
- Exercise: Runs each circulator for 10 seconds after each 72 hours of inactivity. User adjustable settings are ON and OFF.
- Expandability: 4 and 6 zone controllers can easily be connected via a ZC-11 cable to accommodate systems consisting of up to 18 circulators.
- Five-year Warranty

Specifications

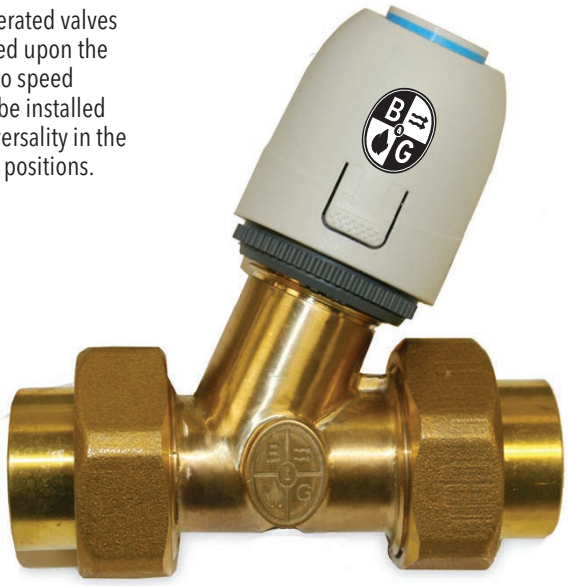
Model Number	Part Number	Zones	Combined Load (max.) @ 120 VAC	Dimensions W x L x D Inches (mm)	Weight Lbs (kg)
Z-1	109424	1	5 amps	6.5 x 5 x 3 (165 x 127 x 76)	2.6 (1.18)
Z-2	109425	2	20 amps	6.5 x 5 x 3 (165 x 127 x 76)	3 (1.36)
Z-3	109426	3	20 amps	6.5 x 5 x 3 (165 x 127 x 76)	3.1 (1.4)
Z-4	109427	4	20 amps	13.5 x 8.25 x 3.25 (343 x 210 x 83)	7.3 (3.3)
Z-6	109430	6	20 amps	13.5 x 8.25 x 3.25 (343 x 210 x 83)	7.5 (3.4)
ZC-11*	109454	Communication cable for connection of multiple controllers			0.1 (0.05)

* fits 4 and 6 zone controllers only – one required for each slave controller.

VALVES Snap Zone™ Valve

Description

Snap Zone valves are precision engineered four wire thermoelectrically operated valves designed for heating and cooling systems. The valve opens and closes based upon the voltages applied to the actuator. Use the Bell & Gossett Snap Zone Valves to speed installation time and reduce callback times to customers. The actuator can be installed or removed at any angle on the adapter ring. The compact design and universality in the actuator mounting position allows for easy installation in the most difficult positions.



Operating Data

Maximum Operating Temperature: 212°F (100°C)
Minimum Operating Temperature: 32°F (0°C)
Maximum Operating Pressure: 240 PSI
Maximum Differential Closeoff: 60 PSI
Open/Close Speed: 3 min.
Electrical Rating: 24V 60Hz
Power Consumption: 1.8W, 75mA (6 per 40VA)
End Switch Rating: 1.0A @ 24VAC

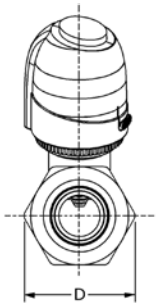
Materials of Construction

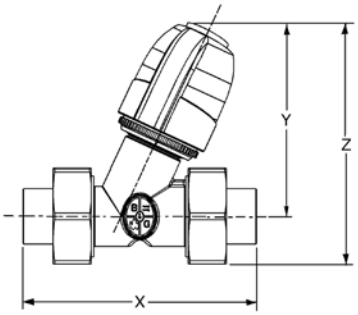
Body: Forged Brass
Bonnet/Packing Box: Brass
Plunger Assembly: Brass, EPDM Seals
Stem: Stainless Steel
Union Nuts: Brass
Tailpieces: Brass
O-Rings: EPDM
Actuator: Polyamide Housing
Cable: PVC

Cv Ratings

Snap Zone Size	1/2"	3/4"	1"
Cv	1.8	2.8	2.8

Model Number Naming Convention	
SZV	Snap Zone Valve
050	Body Size 050 = 0.500" 075 = 0.750" 100 – 1.000"
N	Connection Type S = Sweat Body N = FNPT Threaded
4W	Actuator Type 4W = 4 Wire
E	End Switch E = Endswitch





Specifications

Model Number	Part Number	Description	Dimensions, in inches (mm)				Shipping Weight, lbs (kg)
			D	X	Y	Z	
SZV-050S-4WE	109500	½" SWT Zone Valve, 4 Wire	1.59 (40.3)	3.48 (88.5)	3.55 (90.2)	4.24 (107.7)	1.4 (0.6)
SZV-075S-4WE	109501	¾" SWT Zone Valve, 4 Wire	2.02 (51.3)	4.28 (108.7)	3.55 (90.2)	4.42 (112.5)	1.4 (0.6)
SZV-100S-4WE	109502	1" SWT Zone Valve, 4 Wire	2.24 (56.9)	4.28 (108.7)	3.55 (90.2)	4.52 (114.9)	1.4 (0.6)
SZV-050N-4WE	109506	½" NPT Zone Valve, 4 Wire	1.59 (40.3)	3.58 (91.0)	3.55 (90.2)	4.24 (107.7)	1.4 (0.6)
SZV-075N-4WE	109507	¾" NPT Zone Valve, 4 Wire	2.02 (51.3)	4.18 (106.1)	3.55 (90.2)	4.42 (112.5)	1.4 (0.6)
SZV-100N-4WE	109508	1" NPT Zone Valve, 4 Wire	2.24 (56.9)	4.44 (112.7)	3.55 (90.2)	4.52 (114.9)	1.4 (0.6)
SZV-050S-000	109512	½" Sweat Body	1.59 (40.3)	3.48 (88.5)	–	–	1.0 (0.4)
SZV-075S-000	109513	¾" Sweat Body	2.02 (51.3)	4.28 (108.7)	–	–	1.0 (0.4)
SZV-100S-000	109514	1" Sweat Body	2.24 (56.9)	4.28 (108.7)	–	–	1.0 (0.4)
SZV-050N-000	109515	½" NPT Body	1.59 (40.3)	3.58 (91.0)	–	–	1.0 (0.4)
SZV-075N-000	109516	¾" NPT Body	2.02 (51.3)	4.18 (106.1)	–	–	1.0 (0.4)
SZV-100N-000	109517	1" NPT Body	2.24 (56.9)	4.44 (112.7)	–	–	1.0 (0.4)
SZV-000-4WE	109518	4 Wire Actuator w/ES	–				0.4 (0.2)

BALANCE VALVES Lead-Free* Circuit Setter® Plus

Description

The Circuit Setter Plus and Circuit Setter Plus RF provide the perfect balance of adjustability and efficiency for potable water and HVAC systems. They are precisely calibrated for use as a presettable balance valve, variable orifice flow meter and positive shut-off service valve. They are also designed for optimal system efficiency and water conservation. The Circuit Setter Plus and Circuit Setter Plus RF can provide the perfect balancing solutions for your potable water and HVAC system.

Save time, energy and water with the lead-free Circuit Setter Plus and Circuit Setter Plus RF.

- Designed for all plumbing and HVAC systems.
- Provides equal flow throughout all circuits to conserve water and optimize system efficiency.
- Calibrated accurate flow control and measurement.
- Bi-directional design allows any installation configuration.
- Externally adjustable manual balance valve for easy adjustment.
- Reduces pump energy requirements.
- Meets or exceeds stringent codes for potable water.
- Includes memory stop indicator.
- Provides drain option.
- Provides positive shut off and isolation.
- Includes pressure/temperature ports.

Materials of Construction

Body: Brass ASTM B283-C69300*
Ball: 304 Stainless Steel
Seat Rings: Glass and Carbon filled TFE
Readout Valves: Brass with EPT check valves
Stem "O" Ring: EPDM

Maximum Working Pressure

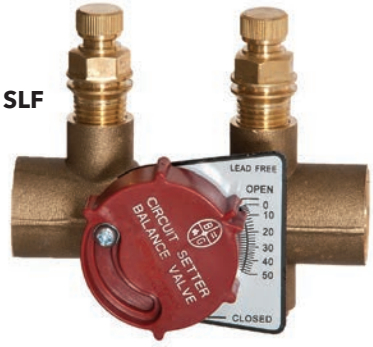
NPT Models: 400 PSIG (2758 kPa)
Sweat Models: See table below

Maximum Operating Temperature

-4°F (-20°C) to 250°F (121°C)

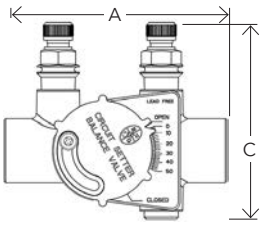
*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.

CB-1SLF

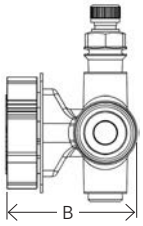


CB-1LF

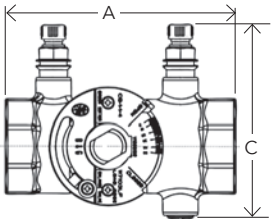
Type Solder	Maximum Pressure Limitations for 1/2" - 1" with Solder Connections	
	Pressure PSI kPa	Temp °F (°C)
95-5 Tin-Antimony	300 (2068)	200 (93)
	250 (1724)	225 (107)
	200 (1379)	250 (121)



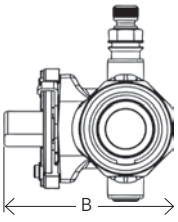
TOP VIEW 1/2"-1"



END VIEW 1/2"-1"



TOP VIEW 1 1/4"-3"



END VIEW 1 1/4"-3"

Specifications

Model Number	Part Number	Size	Connection Type	Dimensions** in Inches (mm)			Weight in lbs. (kg)
				A	B	C	
RF-1/2S LF	117410LF	1/2"	Sweat	2.91 (73.9)	1.82 (46.2)	2.85 (72.4)	0.6 (0.27)
RF-3/4S LF	117411LF	3/4"	Sweat	3.51 (89.2)	2.05 (52.1)	3.10 (78.7)	0.75 (0.34)
CB-1/2S LF	117412LF	1/2"	Sweat	2.91 (73.9)	1.82 (46.2)	2.85 (72.4)	1 (0.45)
CB-3/4S LF	117413LF	3/4"	Sweat	3.51 (89.1)	2.05 (52.1)	3.10 (78.7)	1.25 (0.6)
CB-1S LF	117401LF	1"	Sweat	4.29 (109)	2.33 (59.2)	3.33 (84.6)	2 (0.91)
CB-1 1/4S LF	117402LF	1 1/4"	Sweat	4.91 (124.7)	3.08 (78.2)	3.69 (93.7)	3.5 (1.6)
CB-1 1/2S LF	117403LF	1 1/2"	Sweat	5.21 (132.3)	3.27 (83)	3.95 (100.3)	3.8 (1.7)
CB-2S LF	117404LF	2"	Sweat	6.31 (160.3)	3.83 (97.3)	4.44 (112.8)	6.2 (2.8)
CB-1/2 LF	117414LF	1/2"	NPT	2.94 (74.7)	1.98 (50.3)	3.02 (76.7)	1.25 (0.6)
CB-3/4 LF	117415LF	3/4"	NPT	3.06 (77.7)	2.17 (55.1)	3.12 (79.2)	1.5 (0.7)
CB-1 LF	117416LF	1"	NPT	3.81 (96.8)	2.47 (62.7)	3.42 (86.9)	2 (0.9)
CB-1 1/4 LF	117103LF	1 1/4"	NPT	4.41 (112)	3.19 (81)	3.69 (93.7)	3.5 (1.6)
CB-1 1/2 LF	117104LF	1 1/2"	NPT	4.42 (112.3)	3.37 (85.6)	3.95 (100.3)	3.8 (1.7)
CB-2 LF	117105LF	2"	NPT	5.13 (130.3)	3.98 (101.1)	4.44 (112.8)	6.2 (2.8)
CB-2 1/2 LF	117106LF	2 1/2"	NPT	6.00 (152.4)	4.51 (114.6)	4.83 (122.7)	9 (4.1)
CB-3 LF	117107LF	3"	NPT	6.50 (165.1)	5.12 (130.0)	5.44 (138.2)	12 (5.4)

** All dimensions +/-0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

BALANCE VALVES Circuit Sentry™ Flo-Setter™

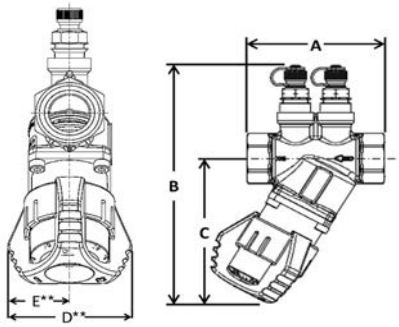
Description

The Circuit Sentry Flo-Setter valve is a field adjustable pressure independent flow limiter that maintains set flow rates regardless of pressure fluctuations in the system; eliminates overflow.

- The unique **GPM dial** is easy to set. Requires no instruments, charts or wheels
- Saves pump energy and improves coil efficiency
- No minimum straight pipe lengths required
- Integrated pressure /temperature ports included
- Large open flow paths for clog-free operation
- Integrated isolation/shut-off capability

New GPM dial

Circuit Sentry Flo-Setter



Materials of Construction

Body: DZR Brass
Flow Setting: PA6 20% Glass
Spring: Stainless Steel
Diaphragm: HNBR
O-Rings: EPDM

Maximum Working Pressure

375 PSIG (2585 kPa)

Maximum Operating Temperature

14°F (-10°C) to 248°F (110°C)

Control Range

Maximum 58 PSI (399 kPa) Delta P

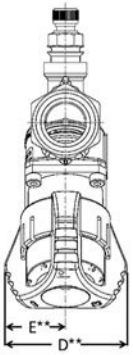
Accuracy

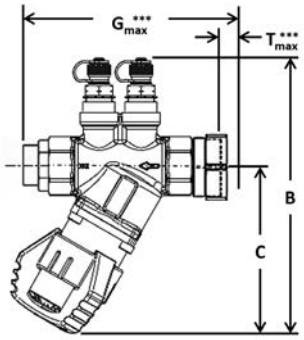
+/ - 5%

Circuit Sentry Flo-Setter Specifications

Model Number	Part Number	Size	Connection Type	DIMENSIONS* IN INCHES (mm)					Flow Capacity in GPM (L/hr)		Approx. Weight lbs. (kg)
				A	B	C	D**	E**	Min.	Max.	
FS-1/2	117630	1/2"	NPT Female	2.9 (75)	5.6 (144)	3.4 (87)	2.24 (57)	1.12 (28)	0.26 (60)	4.75 (1,080)	1.1 (0.5)
FS-3/4	117632	3/4"	NPT Female	3.1 (79)	5.6 (144)	3.4 (87)	2.24 (57)	1.12 (28)	0.45 (102)	8.50 (1,930)	1.3 (0.6)
FS-1	117643	1"	NPT Female	3.9 (100)	6.8 (173)	4.3 (110)	2.54 (65)	1.27 (33)	060 (136)	10.56 (2,400)	2.8 (1.3)
FS-1-1/4	117636	1 1/4"	NPT Female	4.0 (104)	7.0 (178)	4.3 (110)	2.54 (65)	1.27 (33)	0.88 (200)	22.01 (5,000)	3.1 (1.4)
FS-1-1/2	117637	1 1/2"	NPT Female	5.4 (138)	7.9 (201)	5.1 (131)	3.60 (92)	1.80 (46)	3.17 (719)	32.58 (7,400)	6.6 (3.0)
FS-2	117638	2"	NPT Female	5.4 (138)	8.1 (207)	5.1 (131)	3.60 (92)	1.8 (46)	3.96 (900)	45.57 (10,350)	7.5 (3.4)

Model AF





Model AF Specifications (includes union tailpiece)

Model Number	Valve Size Fixed End	Connection Fixed End	DIMENSIONS* IN INCHES (mm)						Flow Capacity in GPM (L/hr)		Approx. Weight lbs. (kg)
			B	C	D**	E**	G Max***	T Max***	Min.	Max.	
AF-1/2	1/2"	Sweat Female	5.6 (144)	3.4 (87)	2.24 (57)	1.12 (28)	5.6 (142)	1.55 (39)	0.26 (60)	4.75 (1,080)	1.2 (0.5)
		NPT Female	5.6 (144)	3.4 (87)	2.24 (57)	1.12 (28)	5.0 (127)	1.55 (39)	0.26 (60)	4.75 (1,080)	1.2 (0.5)
AF-3/4	3/4"	Sweat Female	5.6 (144)	3.4 (87)	2.24 (57)	1.12 (28)	6.3 (160)	1.55 (39)	0.45 (102)	8.50 (1,930)	1.5 (0.7)
		NPT Female	5.6 (144)	3.4 (87))	2.24 (57)	1.12 (28)	5.3 (135)	1.55 (39)	0.45 (102)	8.50 (1,930))	1.5 (0.7)
AF-1	1"	Sweat Female	6.8 (173)	4.3 (110)	2.54 (65)	1.27 (33)	7.6 (193)	2.00 (51)	0.60 (136)	10.56 (2,400)	3.1 (1.4)
		NPT Female	6.8 (173)	4.3 (110)	2.54 (65)	1.27 (33)	6.4 (163)	2.00 (51)	0.60 (136)	10.56 (2,400)	3.1 (1.4)
AF-1-1/4	1 1/4"	Sweat Female	7.0 (178)	4.3 (110)	2.54 (65)	1.27 (33)	7.9 (201)	2.00 (51)	0.88 (200)	22.01 (5,000)	3.6 (1.6)
		NPT Female	7.0 (178)	4.3 (110)	2.54 (65)	1.27 (33)	6.7 (170)	2.00 (51)	0.88 (200)	22.01 (5,000)	3.6 (1.6)
AF-1-1/2	1 1/2"	Sweat Female	7.9 (201)	5.1 (131)	3.60 (92)	1.8 (46)	10.6 (269)	2.52 (64)	3.17 (719)	32.58 (7,400)	7.6 (3.4)
		NPT Female	7.9 (201)	5.1 (131)	3.60 (92)	1.8 (46)	9.2 (234)	2.52 (64)	3.17 (719)	32.58 (7,400)	7.6 (3.4)
AF-2	2"	Sweat Female	8.1 (207)	5.1 (131)	3.6 (92)	1.80 (46)	11.7 (297)	3.14 (80)	3.96 (900)	45.57 (10,350)	8.7 (3.9)
		NPT Female	8.1 (207)	5.1 (131)	3.6 (92)	1.80 (46)	9.7 (246)	3.14 (80)	3.96 (900)	45.57 (10,350)	8.7 (3.9)

*All dimensions +/- 0.125" (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.
**Dimension is of maximum width of the handle or body, whichever is greater.
***Includes tailpiece. Measurement of maximum length tailpiece available.
For minimum differential requirements please refer to submittal A-611 on our website. Maximum differential pressure is 58 PSID.
Minimum temperature is 14°F (-10°C) to 248°F (120°C). Maximum operating pressure is 375 PSI.

NOTE: Model AF valves are configured valves and therefore have no part numbers. They include union tail pieces and can be selected to include optional ball isolation/shut-off valve.

VALVES Flo-Control™ Valves

Description

Flo-Control valves prevent gravity flow in forced hot water systems, and permit summer/winter operation of indirect water heaters.

Features

- Combination straight/angle configurations in sizes 3/4" to 2" for ease of installation.
- Removable cap allows easy cleaning and service without removing pipe connections.
- Manual operating position for vertical lift disc to permit gravity circulation.

Operating Data

Maximum Working Pressure: 125 PSIG (862 kPa)
Maximum Operating Temperature: 250°F (121°C)

Angle Pattern
2-1/2", 3"

Straight-Angle Pattern
3/4", 1", 1-1/4", 1-1/2", 2"

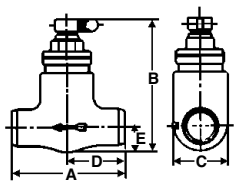
Bronze Straight
Pattern 3/4"

Straight Pattern
2-1/2", 3", 4"

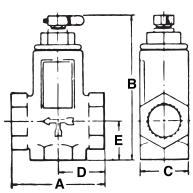
Specifications

Model Number	Part Number	Dimension in Inches (mm)					Approx Shpg. Wt. lbs. (Kg)
		A	B	C	D	E	
SA 3/4	107034	3 1/8 (79)	4 15/16 (125)	1 5/8 (41)	1 9/16 (40)	1 7/16 (37)	2 (0.9)
SA 1	107018	3 1/2 (89)	5 1/2 (140)	1 7/8 (48)	1 3/4 (44)	1 1/2 (38)	3 (1.4)
SA 1 1/4	107019	4 (102)	6 1/2 (165)	2 1/4 (57)	1 31/32 (50)	1 7/8 (48)	4 (1.8)
SA 1 1/2	107020	5 (127)	7 1/4 (184)	3 (76)	2 1/2 (64)	2 1/4 (57)	8 (3.6)
SA 2	107021	6 7/8 (175)	7 1/2 (191)	4 5/8 (117)	4 (102)	2 5/8 (67)	12 (5.5)
A 2 1/2	107006	7 1/4 (184)	7 5/8 (194)	5 3/8 (137)	4 1/2 (114)	4 1/8 (105)	20 (9.1)
A 3	107007	7 1/2 (191)	7 3/4 (197)	6 (152)	4 1/2 (114)	4 1/4 (108)	23 (10.5)
S 2 1/2	107014	9 5/16 (237)	8 11/16 (221)	5 3/8 (137)	4 3/4 (121)	2 11/16 (68)	22 (10.0)
S 3	107015	9 15/16 (252)	9 (229)	6 (152)	5 1/4 (133)	3 (76)	24 (10.9)
S 4	107004	13 (330)	12 1/2 (318)	7 3/4 (197)	7 (178)	3 7/8 (98)	58 (26.4)
SB 3/4	107024	3 1/4 (83)	3 7/8 (98)	1 7/16 (37)	1 5/8 (41)	23/32 (18)	1.2 (0.6)

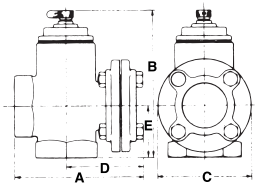
Dimensions are approximate and subject to change. Contact factory for certified dimensions.



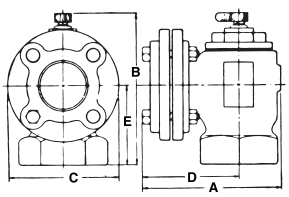
Sizes 3/4"
Bronze Straight Valve



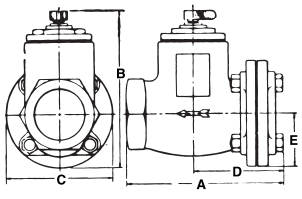
Sizes 3/4", 1", 1-1/4", 1-1/2"
Straight Angle Valves



Sizes 2"
Straight Angle Valves



Sizes 2-1/2", 3"
Angle Valves

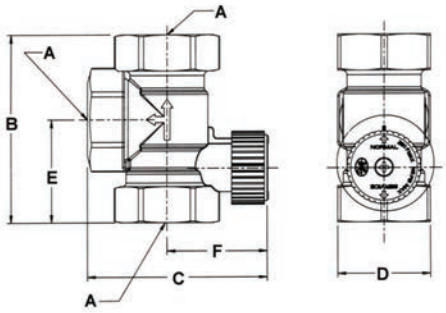


Sizes 2-1/2", 3", 4"
Straight Valves

VALVES Hydrotrol™ Flow Control Valves

Description

The Hydrotrol (HT) flow control valve is used to prevent overheating of zones due to gravity flow in hydronic heating systems and will permit summer-winter operation of indirect water heater. The HT valve allows fluid to pass when the system or zone pumps start. When the system or zone pumps are not operating, the HT valve remains closed, preventing gravity circulation. The HT valves are designed with a 1/2 turn knob that can be manually opened when draining the system or for bypass purposes. The HT valve can be installed in either the horizontal or vertical orientation.



Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature: 250°F (121°C)

Materials of Construction

Body: Brass
Internal Components: Non-Ferrous

Specifications

Model Number	Part Number	Dimensions — Inches (mm)						Approx. Shpg. Wt. lbs. (Kg)
		A	B	C	D	E	F	
HT-3/4	107035	3/4" NPTF	3-3/16" (82)	3" (76)	1-9/16" (40)	1-3/4" (44)	1-11/16" (43)	1.3 lbs. (0.6)
HT-1	107037	1" NPTF	3-5/8" (93)	3-3/16" (82)	1-9/16" (40)	1-15/16" (50)	1-11/16" (43)	1.2 lbs. (0.5)
HT - 1-1/4	107038	1-1/4" NPTF	4" (101)	3-11/16" (93)	1-11/16" (43)	2-1/4" (57)	1-7/8" (48)	1.8 lbs. (0.8)

Do not use for construction. Dimensions are approximate and subject to change. Contact factory for certified dimensions.

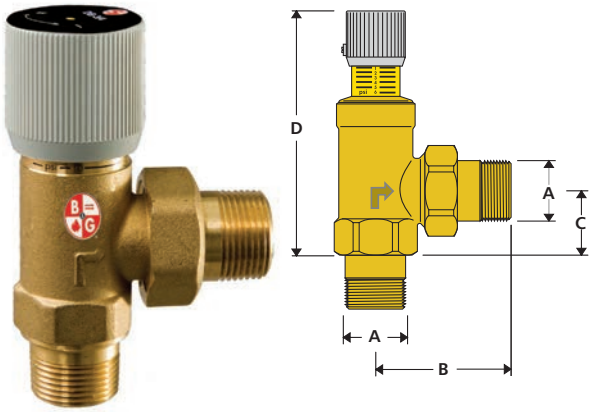
VALVES DB–Differential Bypass Valve

Description

The differential bypass valve is used in systems where heating loads may be excluded from the circuit as zone valves close. It controls the excess flow in the system by acting as a bypass while ensuring adequate flow to the remaining open circuits. The differential bypass valve helps reduce velocity noise caused by excess flow through the circuits while maintaining the pump head at a constant value.

For hydronic systems utilizing zone valve

- Controls excess flow in the system when there is reduction in demand
- Available in 3/4" connection
- All brass body with non-ferrous internals



Operating Data

Maximum Working Pressure: 150 PSIG (1,034 kPa)
Maximum Operating Temperature: 230°F (110 °C)
Adjustment Range: 2 to 10 PSI

Materials of Construction

Valve Body: Brass
Seals: EPDM
Spring: Stainless Steel
Knob: ABS

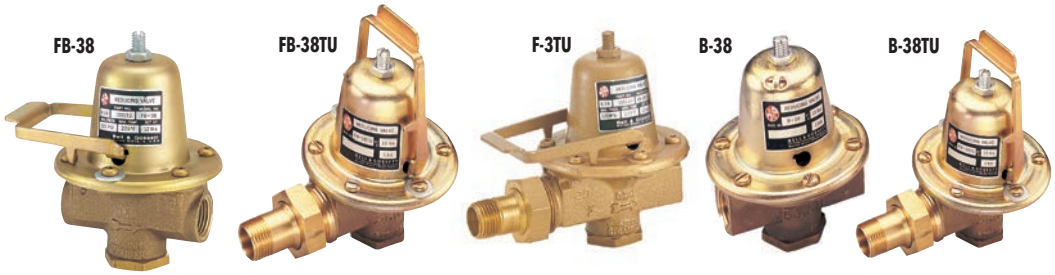
Specifications

Model Number	Part Number	A (mm)	B (mm)	C (mm)	D (mm)	Connection Type	Weight (LB)
DB-3/4	113247	3/4" (19)	2-5/16" (59)	1" (26)	4" (104)	M NPT	1

VALVES Pressure Reducing Valves

Description

Reducing valves fill the system to a preset pressure for optimum performance.



Features

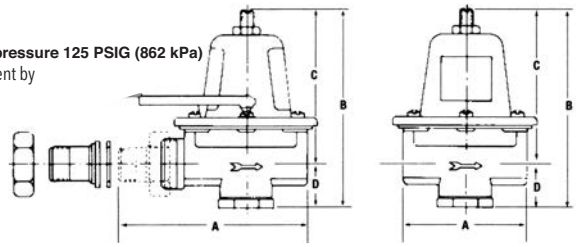
- Fast fill feature reduces start-up time and labor.
- Low inlet pressure check valve helps prevent loss of system pressure if the supply water drops below system pressure.
- Convenient cleanable strainer is designed to prevent dirt and sediment from entering the system.
- Union connection available with 1/2" male NPT thread and 1/2" female sweat tail-piece for fast, flexible system connection.
- Lead-Free brass body construction is ideal for potable water systems.

Specifications for Combination "Dual Units"

Model Number	Part Number	Component Valves	Body Material	Connection in Inches		Dimensions in Inches (mm)		Approx. Shpg. Wt. lbs. (Kg)
				Boiler	Fill	Between Connections	Overall Height	
8	110199LF	Relief B-38	Lead-Free Brass	1/2 NPT	1/2 NPT	6 7/16 (164)	5 3/8 (137)	4 (1.8)
F-3	110197LF	Relief FB-38			1/2 NPT	6 7/16 (164)	6 (152)	3 3/4 (1.7)
F-3TU	110198LF	Relief FB-38TU			1/2 Union NPT/Sweat	8 5/8 (219)		4 (1.8)

PRESSURE SETTING:
Relief 30 PSI
Reducing 12 PSI standard; field adjustable range: 10 - 25 PSI
Maximum operating temperature 225°F (107°C) - Maximum operating pressure 125 PSIG (862 kPa)
*CSA certified to NSF/ANSI 372 that product contains less than 0.25% lead content by weight on wetted surface.
Models ending in TU feature 1/2" sweat/NPT union connection.

NSF/ANSI 372



Specifications for Pressure Reducing Valve

Model Number	Part Number	Body Material	Conncection Size - Inches		Factory Setting (PSIG)	Adjustable Range (PSIG)	Dimensions in Inches (mm)				Approx. Shpg. Wt. lbs. (Kg)
							A	B	C	D	
B-38	110190LF	Lead-Free Brass	1/2	NPT	12	10 - 25	3 1/16 (78)	4 13/16 (122)	3 11/16 (94)	1 1/8 (29)	1 3/4 (0.8)
B7-12	110196LF		3/4				3 (76)	4 31/32 (126)	3 21/32 (93)	1 5/16 (33)	2 1/4 (1.0)
B-38TU	110191LF		1/2	Union*			4 31/32 (126)	4 13/16 (122)	3 11/16 (94)	1 1/8 (29)	2 (0.9)
FB-38	110192LF		1/2	NPT			3 1/16 (78)				1 3/4 (0.8)
FB-38TU	110193LF		1/2	Union*			4 31/32 (126)				2 (0.9)
6	110194LF		1/2	NPT	45	25 - 60	3 1/16 (78)				1 3/4 (0.8)
7	110195LF		3/4				3 (76)	4 31/32 (126)	3 21/32 (93)	1 5/16 (33)	2 1/4 (1.0)

* Models ending in "TU" feature 1/2" sweat/NPT union connection

ASME Safety Relief Valves

Description

ASME Safety Relief Valves protect fired and unfired hot water vessels against hazardous operating pressures.

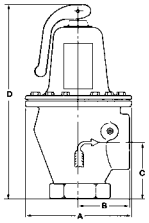
Features

- Engineered in accordance with Section IV of the ASME boiler and pressure code for heating boilers with capacities certified by the National Board of Boiler and Pressure Vessel Inspectors.
- Offer the highest BTUH ratings available on the market today for valves in their class (790,000 to 5,999,000 BTUH)
- EPDM diaphragm operated (cast iron models) and diaphragm assisted (bronze models) have an effective area approximately 5 times greater than conventional "pop-type" relief valves to help overcome the effects of fouling.
- Low differential between opening and closing pressures helps to prevent conditions under which system water might flash to steam and cause hammering.

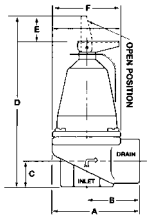
Nos. 3301 & 4100

Nos. 790 & 1170

Models 3301 & 4100 Iron Body Valves



Models 790 & 1170 Bronze Body Valves



Size, Capacity & Relief Setting for B&G ASME Safety Relief Valves[1]				
Relief Setting PSIG	Model Number Capacity in BTU Per Hour			
	Iron Body		Bronze Body	
30	3301-30 3,300,000	4100-30 4,100,000	790-30 790,000	1170-30 1,170,000
36	3301-36 3,800,000	4100-36 4,600,000	790-36 900,000	1170-36 1,330,000
45	3301-45 4,500,000	4100-45 5,515,000	790-45 1,065,000	1170-45 1,575,000
50	3301-50 4,900,000	4100-50 5,990,000	790-50 1,160,000	1170-50 1,710,000
75	NOT AVAILABLE		790-75 1,615,000	1170-75 2,385,000
100			790-100 2,075,000	1170-100 3,060,000
125			790-125 2,535,000	1170-125 3,735,000

[1] Contact your local wholsaler or Bell & Gossett representative for availability of ASME Safety Relief Valves with special pressure settings.

Specifications

Model Number	Body	NPT Connections in Inches		Dimension in Inches (mm)						Approx Shpg. Wt. lbs. (Kg)
		Inlet	Outlet	A	B	C	D	E	F	
790	Bronze	3/4	3/4	2 9/16 (65)	1 1/2 (38)	3/4 (19)	4 9/16 (116)	1 1/32 (26)	2 3/32 (53)	1.2 (0.5)
1170		1	1	2 7/8 (73)	1 3/4 (44)	7/8 (22)	4 15/16 (125)		2 1/4 (57)	1.5 (0.7)
3301	Iron	1 1/2								
4100		2	2	6 (152)	2 7/8 (73)	3 1/4 (83)	11 (279)	N/A		17 (7.7)

Actual unit model numbers include individual valve pressure settings as a suffix to the basic valve model number noted.
Dimensions are approximate and subject to change. Contact factory for certified dimensions.
Maximum Operating Temperature: 250°F (121°C) - Maximum Working Pressure: Model 790 & 1170: 125PSIG (862KPa); Model 3301 & 4100: 50 PSIG (345 KPa).

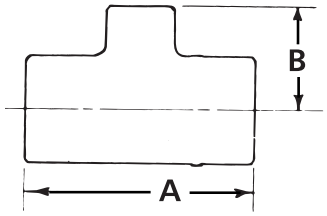
ACCESSORIES Copper Red Ring Monoflo® Fittings

Description

Copper Red Ring Monoflo Fittings let you use a single pipe to serve as both supply and return main.

Features

- Connect risers to the main, assuring proper diversion of water to each heating unit regardless of type and its position in the system.
- Recommended for most installations including cast iron non-ferrous base boards, free-standing radiation or convectors.
- Only one fitting is needed for most installations for adequate diversion for upfeed radiation. For most applications, a second fitting can be used if higher resistance is required.



Operating Data

Maximum Working Pressure: 150 PSIG (1,034 kPa)
Maximum Operating Temperature: 300°F (149°C)

Specifications

Part Number	Size Inches	Dimensions-Inches (mm)*		Cv Ratings**		Approx. Shpg. Wt. lbs. (Kg)
		A	B	1 FTG	2 FTG	
108119	3/4 x 1/2***	2-7/32 (56)	1 (25)	4.2	–	1/4 (0.1)
108120	1 x 1/2	2-9/16 (65)	1-5/32 (30)	14.5	8.7	1/2 (0.2)
108121	1 x 3/4	2-3/4 (70)	1-3/8 (35)			
108122	1-1/4 x 1/2	2-3/4 (70)	1-7/32 (31)	24.0	15.5	
108123	1-1/4 x 3/4	2-27/32 (72)	1-3/8 (35)			
108124	1-1/2 x 3/4	3-3/32 (78)	1-11/16 (42)	39.0	25.0	1-1/4 (0.6)
108125	1-1/2 x 1	3-3/8 (86)	1-11/16 (42)			
108126	2 x 3/4	3-1/2 (89)	1-27/32 (47)	80.0	55.0	1-3/4 (0.8)
108127	2 x 1	3-13/16 (97)	2-1/32 (52)			

* Do not use for construction. Dimensions are approximate and subject to change. Contact factory for certified dimesions.
** With Side Branch plugged.
*** Return only.

AIR SEPARATORS Inline Air Separator

Description

The B&G In-Line Air Separator is specificaly designed to efficiently separate air from circulating water in hydronic heating and cooling systems to assure a quiet operation.

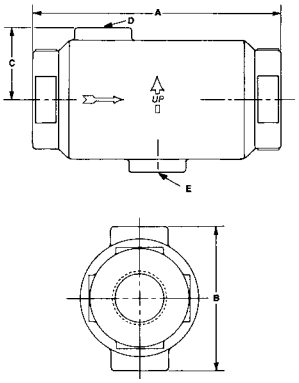
Operating Data

Maximum Working Pressure: 175 PSIG (1,207 kPa)
Maximum Operating Temperature: 300°F (149°C)

Materials of Construction

One Piece Cast Iron

Specifications



Model Number	Part Number	Size NPT	Max Flow (GPM)	Dimensions – Inches (mm)					Approx. Shpg. Wt. (Lbs)
				A	B	C	D	E	
IAS -1	112118	1"	15	6-1/8	3-1/2	1-3/4	1/8 NPT	1/2 NPT	3-3/4
IAS - 1-1/4	112119	1-1/4"	25	(156)	(89)	(45)			3-1/2
IAS- 1-1/2	112097	1-1/2"	35	8-1/8	4-1/2	2-1/4	3/4 NPT		8-1/2
IAS- 2	112098	2"	50	(207)	(114)	(57)			7-1/2
IAS- 2-1/2	112099	2-1/2"	75	10-1/8	6-3/8	3-3/16			23
IAS- 3	112100	3"	125	(257)	(257)	(81)			21-1/2

Dimensions are approximate and subject to change. Contact factory for certified dimensions.

AIR SEPARATORS EASB-Jr Enhanced Air Separator

Description

Bell & Gossett's Model EASB-JR Enhanced Air Separator automatically removes entrained air bubbles in hydronic systems. As fluid enters the EASB-JR, the velocity is decreased creating a low pressure area. The small bubbles are released from fluid and then collected on the coalescing medium. As the bubbles coalesce, they rise to the top of the air separator where they are released to atmosphere through the built-in automatic air vent. The air separator has a bottom 1/2" NPT connection to accommodate a B&G diaphragm expansion tank. The compact design and brass body construction make the EASB-JR ideal for residential and commercial hydronic heating systems.

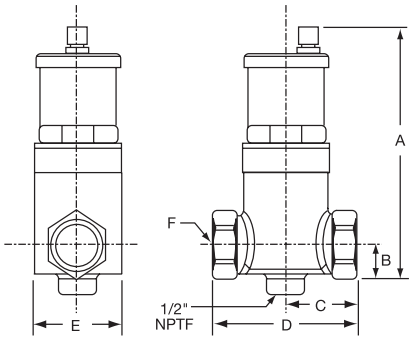
Operating Data

Maximum Working Pressure: 150 PSI (10 bar)
Maximum Operating Temperature: 250°F (121°C)

Materials of Construction

Body & Cap: Brass
Coalescing Medium: Stainless Steel
Venting Mechanism: Non-Ferrous

Dimensions & Weights



Specifications

Model Number	Part Number	Size	Dimension in Inches (mm)						Approx. Shpg. Wt. Lbs. (Kg)
			A	B	C	D	E	F	
EASB-3/4 JR	112111	3/4" NPT	6 7/8 (175)	1 5/8 (41)	1 13/16 (46)	3 5/8 (92)	2 1/4 (57)	3/4" NPTF	2.5 (1)
EASB-3/4S JR	112114	3/4" Sweat	6 7/8 (175)	1 5/8 (41)	1 13/16 (46)	3 5/8 (92)	2 1/4 (57)	3/4" Sweat	2.5 (1)
EASB-1 JR	112112	1" NPT	6 7/8 (175)	1 5/8 (41)	1 13/16 (46)	3 5/8 (92)	2 1/4 (57)	1" NPTF	2.5 (1)
EASB-1S JR	112115	1" Sweat	6 7/8 (175)	1 5/8 (41)	1 13/16 (46)	3 5/8 (92)	2 1/4 (57)	1" Sweat	2.5 (1)
EASB-1 1/4 JR	112113	1 1/4" NPT	7 1/2 (191)	1 7/8 (48)	2 5/16 (59)	4 5/8 (117)	3 1/8 (79)	1 1/4" NPTF	4 (1.8)
EASB-1 1/4S JR	112116	1 1/4" Sweat	7 1/2 (191)	1 7/8 (48)	2 5/16 (59)	4 5/8 (117)	3 1/8 (79)	1 1/4" Sweat	4 (1.8)
EASB-1 1/2 JR	112117	1 1/2" NPT	7 1/2 (191)	1 7/8 (48)	2 5/16 (59)	4 5/8 (117)	3 1/8 (79)	1 1/2" NPTF	4 (1.8)
EASB-2 JR	112464	2" NPT	7 1/2 (191)	2 (51)	2 1/2 (64)	5 (127)	3 1/8 (79)	2" NPTF	5 (2.3)

Dimensions are approximate and subject to change. Contact factory for certified dimensions.

Enhanced Air Separator

Description

Bell & Gossett's Model EAS Enhanced Air Separator is a patented, innovative design in air separators. It has been engineered to remove entrained air from hydronic heating and cooling systems providing far superior air removal compared with other devices available today. The EAS is ideal for residential, institutional and light commercial applications.

Specifications

Model Number	Part Number	Max. Flow (GPM)	Size Inches NPT	Dimensions — inches (mm)					Approx. Shpg. Wt. lbs. (Kg)
				A	B	C	D	E	
EAS-1	112105	35	1	12-3/16 (310)	6-7/8 (175)	6-7/16 (164)	3-15/16 (100)	3 (76)	8.8 (4)
EAS-1	112106	35	1-1/4	12-3/16 (310)	6-7/8 (175)	6-7/16 (164)	3-15/16 (100)	3 (76)	8.4 (3.8)
EAS-1	112107	45	1-1/2	15-3/4 (400)	11-3/8 (289)	8-5/8 (219)	4-7/8 (124)	4-1/4 (108)	15.5 (7)
EAS-2	112108	70	2	17-1/2 (445)	11-3/8 (289)	8-5/8 (219)	4-7/8 (124)	4-1/4 (108)	15.25 (6.9)

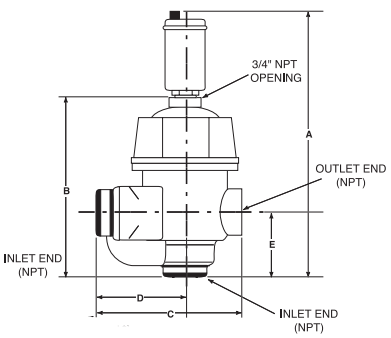
EAS-1 or EAS- 1-1/4 Max. Width 4-1/16" (103mm)
EAS- 1-1/2 or EAS-2 Max. Width 5-3/4" (146mm)

Operating Data

Maximum Working Pressure: 150 PSI (10.3 bar)
Maximum Operating Temperature: 250°F (121°C)

Materials of Construction

Body & Cap: Cast Iron
Internals: Stainless Steel
3/4" Large Capacity Air Vent: Brass Body Nonferrous Internals



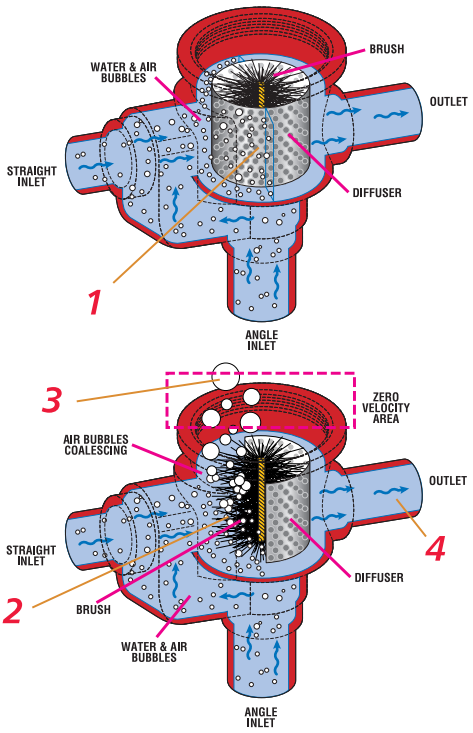
How It Works

1 As system fluid enters through the inlet, (either straight or angle) the diffuser distributes flow evenly across the stainless steel, wire brush-like medium.

2 Air bubbles, even micro air bubbles, stick to the brush filaments.

3 Trapped air rises above the diffuser through a baffle (not pictured), where the air is then released through an opening on top.

4 Deaerated water then goes back into the system.



HYDRONIC SPECIALTIES

RV-125A Readout Valve and RP-250B Readout Probe

The RV-125A is designed for use wherever pressure tappings are required to monitor flow or pressures. The Readout Valve is fitted with an EPT insert which incorporates a unique check valve feature designed to check flow when the Readout Valve is not being used to monitor flow. Use companion RP-250B Readout Probes with the RV-125A Readout Valve. **300 PSIG Working Pressure – 250°F Maximum Operating Temperature**

TB- Thermoflo® Balancer

A device for instant visual balancing of hot or cold water flows. With a B&G Thermoflo balancer installed in each circuit or zone, the entire system can be quickly balanced to meet original design calculation. No. TB-3/4"- Capacity 1 to 5 GPM. No. TB-1"- Capacity 2 to 10 GPM. **125 PSIG Working Pressure – 250°F Maximum Operating Temperature**

DT-2 Drain-O-Tank® Air Charger

The Drain-O-Tank Air Charger offers a sure, quick way to recharge a water-logged compression tank. **125 PSIG Working Pressure – 240°F Maximum Operating Temperature**

AIR VENTS

Model No. 107A High Capacity Air Vent

A rugged High Capacity Air Vent designed to purge free air from liquid systems at **operating pressures up to 150 PSIG.** The Model 107A Air Vent has a cast iron body and bonnet, with stainless steel, brass and EPDM internal components and is suitable for a **maximum operating temperature of 250°F.** The Air Vent has a 3/4" NPT inlet and 3/8" NPT outlet.

No. 98

A high capacity automatic air vent that is designed to remove air in closed loop systems. Materials of construction: Brass body with non-ferrous internals. **Maximum Working Pressure: 150 PSI. Maximum Operating Temperature: 250°F**

No. 97 Automatic Air Vent

A float type vent designed to vent troublesome air from hydronic heating systems. The brass body and the non-ferous internals provide years of reliable service. The compact design (3-1/8" x 1-7/8") and high operating pressure/temperature **(240°F @ 150 PSIG)** limitations make the No. 97 a must in any hydronic heating system.

No. 87, 67 and 7 Automatic Air Vents

Designed to vent the accumulation of troublesome air wherever it can be trapped. These non-ferrous automatic air vents are 4-3/4" x 2-1/4", 3-3/16" x 1-1/2" and 4-1/16" x 2-3/16" (height and width), respectively, and are rated for a **maximum operating temperature of 240°F at pressures of 150, 35 and 75 PSI, respectively.** The No. 87 has a combination of 1/2" FPT/3/4" MPT connection, whereas No's. 67 and 7 have 1/8" MPT, and FPT connections.

No. 26 Vacuum Breaker

Designed to protect closed vessels and piping systems against collapse when the induced vacuum exceeds design conditions. When used on steam heating systems, the No. 26 Vacuum Breaker controls induced vacuum, permitting normal return of condensate to the boiler. Adjustable range 1/4" to 20" (mercury) vacuum. Factory set to 4" – **240 PSIG Maximum Working Pressure – 300°F Maximum Operating Temperature**

No. 4V "Coin-Operated" Air Vent

Specially designed for the new types of radiators. An important feature is that it projects only slightly, being almost flush with the radiator. **150 PSIG Working Pressure – 250°F Maximum Operating Temperature**

Specifications

Model Number	Part Number	Description	System Connection	Dimensions (W x H)	Maximum		Approx. Shpg. Wt. (Lbs) Carton Of	
					Pressure	Temperature		
98	113246	Automatic Air Vent	3/4" NPTM	4-1/2" x 9-5/8"	150 PSIG	250°F	1	.8
97	113222		1/8" NPTM	1-7/8" x 3-1/8"		240°F	1	.8
87	113021		Combination 3/4" NPTM 1/2" NPTF	2-1/4" x 4-3/4"			1	.61
67	113020		1/8" NPTM	1-1/2" x 3-3/16"	35 PSIG			.25
7	113001		1/8" NPTF	2-3/16" x 4-1/16"	75 PSIG			.5
107A	113076	High Capacity Air Vent	3/4" NPTF	4-1/2" x 9-5/8"	150 PSIG	250°F	1	10
4V	113055	Manual Air Vent	1/8" NPTM	5/8" x 5/8"	150 PSIG	250°F	48	2
26	113075	Vacuum Breaker	3/4" NPTM	1-1/4" x 3"	240 PSIG	300°F	6	3
RV-125A	113100	Readout Valve	1/8" NPTM	1-1/8" x 9/16"	300 PSIG	250°F	50 pairs	4
1/4" P/T	V58050PK	Readout Valve	1/4" NPTM	1-1/4" x 1-1/4"	300 PSIG	250°F	1	.1
1/8" P/T	G97030	Readout Valve	1/8" NPTM	1-1/8" x 1-1/4"	300 PSIG	240°F	1	.5
RP-250B	113102	Readout Probe	N/A	2" x 5/8"	300 PSIG	250°F	6 pairs	1
DT-2	113041	Drain-O-Tank	1/2" NPTM	2-1/4" x 6-5/16"	125 PSIG	240°F	1	.67
TB-3/4	127001	Balance Valve	3/4" NPTF	2" x 9-1/4"	125 PSIG	250°F	6	26
TB-1	127002	Balance Valve	1" NPTF	2" x 9-1/4"	125 PSIG	250°F	6	26

ACCESSORIES PSH - Primary/Secondary Header

Description

The B&G low-loss header, Model PSH, is a combination air separator and manifold that creates independent primary and secondary circuits. The B&G Model PSH is equipped with a purge valve allowing the user to remove any debris deposited on the bottom of the vessel and an air vent releasing trapped air in the system. The insulation, which is provided as standard, prevents water vapors entering from the outside and eliminates the formation of condensate on the PSH body.

Operating Data

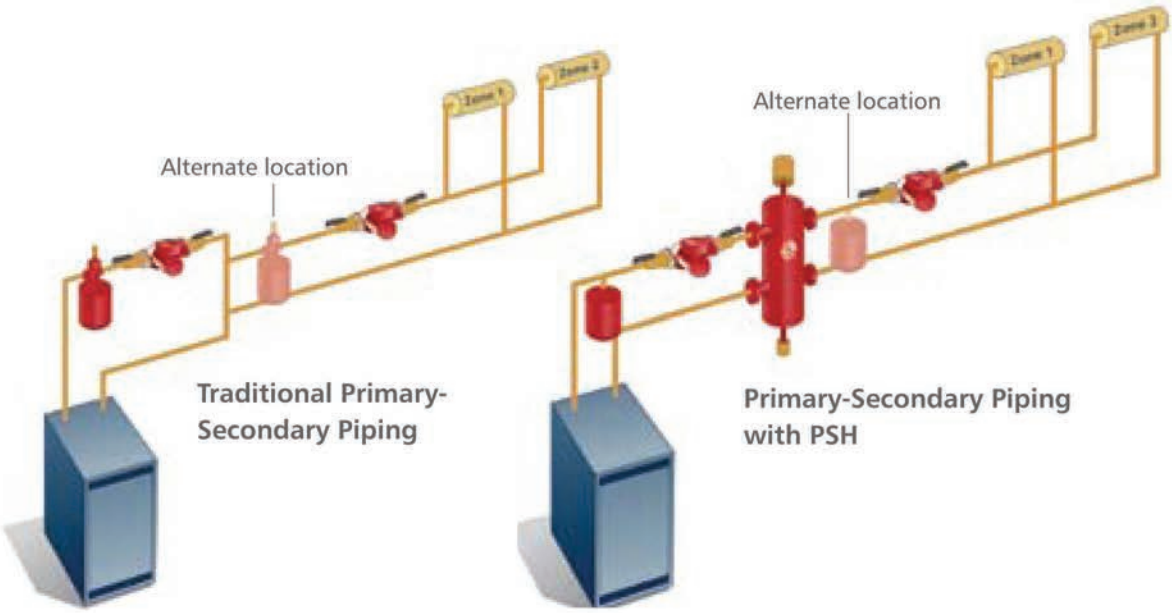
With Insulation:
Working Pressure: 150 PSI
Operating Temperature Threaded: 32°- 210°F
Operating Temperature Flanged: 32°- 220°F
Without Insulation:
Working Pressure: 150 PSI
Operating Temperature Threaded & Flanged: 32°-230°F

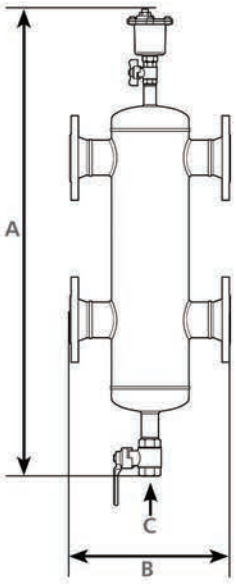
Materials of Construction

Body: Steel
Air Vent: Brass
Drain Valve: Brass
Insulation-Threaded: PEX
Insulation-Flanged: Polyurethane Foam

Connection

1", 1-1/4" and 1-1/2" Female NPT
2", 2-1/2", 3" and 4" ANSI 150 CLASS Flange





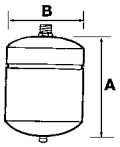
Specifications

Model Number	Part Number	Connection Size Inches (mm)	Max Flow GPM (m3/h)	A Inches (mm)	B Inches (mm)	C - Drain Connection Size Inches (mm) NPT	Weight LBS (Kg)
PSH-1	112465	1 (25.4)	11 (2.5)	24-3/8 (619)	8-7/8 (225)	1/2 (12.7)	6.0 (2.7)
PSH-1.25	112466	1-1/4 (31.75)	18 (4)	26-3/4 (679)	9-3/4 (248)	1/2 (12.7)	8.3 (3.8)
PSH-1.5	112467	1-1/2 (38.1)	26 (6)	28-1/3 (719)	11-1/8 (282)	1/2 (12.7)	12.6 (5 .7)
PSH-2	112468	2 (50.8)	40 (9)	42 (1069)	13-13/16 (350)	1-1/4(31.7)	78.7 (35.7)
PSH-2.5	112469	2-1/2 (63.5)	80 (18)	42 (1069)	13-13/16 (350)	1-1/4(31.7)	87.7 (39.8)
PSH-3	112470	3 (76.2)	124 (28)	50-3/8 (1279)	18-3/8 (466)	1-1/4(31.7)	108.0 (49)
PSH-4	112471	4 (101.6)	247 (56)	50-3/8 (1279)	18-1/2 (470)	1-1/4(31.7)	116.8 (53)

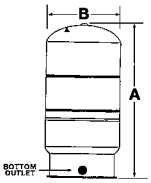
TANKS HFT Diaphragm Tanks • Expansion Tanks for Hydronic Heating

Description

Bell & Gossett HFT expansion tanks are designed to absorb the force of thermal expansion in hydronic heating systems. Series HFT tanks for hydronic heating systems are available in sizes from 2–86 gallons. The Series HFT tank is designed to absorb the force of thermal expansion of heating water to maintain proper pressurization in a closed hydronic system. The heavy duty butyl diaphragm separates system water from the air in the tank preventing water logging problems.



HFT-15 thru HFT-90



HFT-30V thru HFT-160V

Specifications

Model Number	Part Number	Volume Gallons (Liters)		Height (A) Inches (mm)	Diameter (B) Inches (mm)	System Connection	Approx. Shpg. Wt. lbs. (Kg)
		Tank	Acceptance				
HFT-15	1BN326	2 (7.5)	1.0 (3.7)	12-5/8 (321)	8 (203)	1/2" NPTM	5 (2.3)
HFT-30	1BN327	4.4 (16.6)	2.5 (9.4)	14 (355)	11 (279)		9 (4.1)
HFT-60	1BN328	7.6 (28.7)	2.5 (9.4)	17-1/4 (438)	11 (279)		14 (6.4)
HFT-90	1BN329	14 (53)	11.3 (42.8)	21 (533)	15-3/8 (390)	1" NPTF	23 (10.4)
HFT-30V	1BN330	14 (53)	11.3 (42.8)	24-3/4 (629)	15-3/8 (390)		24 (11)
HFT-40V	1BN331	20 (75.7)	11.3 (42.8)	32-1/2 (826)	15-5/8 (390)		34 (15.5)
HFT-60V	1BN332	32 (121.1)	11.3 (42.8)	47-1/2 (1207)	15-5/8 (390)		52 (23.6)
HFT-90V	1BN333	44 (166.5)	34 (128.7)	36-1/2 (927)	22 (559)	1-1/4" NPTF	64 (29)
HFT-110V	1BN334	62 (234.6)	34 (128.7)	48-1/2 (1232)	22 (559)		89 (40.5)
HFT-160V	1BN335	86 (325.5)	46 (174.1)	46 (1168)	22 (559)		116 (53)

Operating Data

Maximum Working Pressure: 100 PSI (689 kPa)
Maximum Operating Temperature: 240°F (115°C)
Standard Factory Pre-charge: 12 PSI (83 kPa)

Materials of Construction

Shell: Carbon Steel
Diaphragm: Heavy Duty Butyl Rubber
Connection: Steel

Sizing Guideline

Boiler Size	Type of Radiation			
Net Output	Finned Tube Baseboard or Radiant Panel	Convectors or Unit Heaters	Radiators Cast Iron	Baseboard Cast Iron
BTU/HR	Use Tank Model			
25,000	HFT-15	HFT-15	HFT-15	HFT-15
50,000	HFT-15	HFT-15	HFT-30	HFT-30
75,000	HFT-30	HFT-30	HFT-30	HFT-60
100,000	HFT-30	HFT-60	HFT-60	HFT-60
125,000	HFT-30	HFT-60	HFT-60	HFT-90
150,000	HFT-30	HFT-60	HFT-90	HFT-90
200,000	HFT-60	HFT-60	HFT-30V	HFT-30V
250,000	HFT-60	HFT-90	HFT-30V	HFT-40V
300,000	HFT-90	HFT-30V	HFT-30V	HFT-40V
350,000	HFT-30V	HFT-30V	HFT-40V	HFT-60V
400,000	HFT-30V	HFT-40V	HFT-40V	HFT-60V

Assumptions: fill pressure 12 PSI, relief pressure 30 PSI, avg. system temp. 200°F, system fluid is water, consult factory with requirements not shown

Compression Tanks

Air-tight, ASME constructed. Available in painted steel. Sizes 15 to 505 gallons. Gauge glass tappings are standard. Always use with B&G Airtrol Tank Fittings.

Specifications

Model Number	Part Number	Capcity Gallons	Required Airtrol Fitting	Tank Dia. Inches	Tank Length Inches	Approx. Shpg. Wt. (Lbs)
15	116029	15	ATF-12	12	33	50
24	116030	24			51	72
30	116031	30		14	48	80
40	116032	40			63	104
60	116033	60	ATF-16	16	72	134
80	116034	80	ATF-20	20	62	160
100	116035	100	ATF-20		78	186
120	116036	120	ATF-24	24	65	217
135	116037	135			72	230
175	116038	175	ATFL	30	62-1/4	320
220	116039	220			77	370
240	116040	240			84	420
305	116041	305			105-3/4	482
400	116042	400			93	656
505	116840	505		36	116	745

Dimensions are approximate and subject to change. Consult factory for certified dimensions.
Part numbers in table above are for paint steel tanks.

Airtrol® Tank Fittings

Directs free air to the compression tank. Restricts thermal circulation to boiler. Establishes initial tank air level. Allows compression tank size reduction.

ATFL

ATF

Specifications

Model Number	Part Number	Tank Dia. Inches	Connection (NPT)		Approx. Shpg. Wt. (Lbs)
			Tank	Boiler	
ATF-9	112008	9	1/2" M	3/4" M	2-1/4
ATF-12	112010	12 - 14			2-1/2
ATF-16	112011	16 - 18			2-3/4
ATF-20	112026	20 - 22			
ATF-24	112013	24			
ATFL*	112014	>100 gal	1" F	1" F	14

* DT-2 Drain-O-Tank Air Charger comes with ATFL model

TANKS PT Diaphragm Tanks
Expansion Tanks for Potable Water Systems

Description

Bell & Gossett PT expansion tanks are designed to absorb the force of thermal expansion in domestic potable water systems. Tanks for potable water systems, Series PT and PTA (ASME construction) are available in sizes from 2–528 gallons.

Residential/Light Commercial Non-ASME Diaphragm Tanks

Operating Data

Maximum Working Pressure:
PT-5 & PT-12: 150 PSI (1035 kPa)
PT-25V thru PT-210V: 100 PSI (689 kPa)
Maximum Operating Temperature: 200°F (93°C)

Materials of Construction

Shell: Carbon Steel
Liner: Polypropylene
Diaphragm: Heavy Duty Butyl Rubber
System Connection: PT-25V thru PT-210V are stainless steel. All others are brass
Factory Pre-charge: 40 PSI (276 kPa)

Commercial Non-ASME Bladder Tanks

Maximum Working Pressure: 150 PSI (1035 kPa)
Maximum Operating Temperature: 240°F (116°C)

Materials of Construction

Shell: Carbon Steel
Liner: Polypropylene
Diaphragm: Heavy Duty Butyl Rubber
System Connection: Bronze
Factory Pre-charge: 55 PSI (379 kPa)

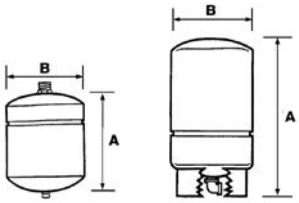
Specifications

Model Number	Part Number	Volume Gallons (Liters)		Height (A) Inches (mm)	Diameter (B) Inches (mm)	System Connection	Approx. Shpg. Wt. lbs. (Kg)
		Tank	Acceptance				
PT-5	1BN317LF	2 (8)	1.0 (4)	12-5/8 (321)	8 (203)	3/4" NPTM	5 (2.3)
PT-12	1BN318LF	4.4 (17)	3.2 (12)	15 (381)	11 (279)	3/4" NPTF	9 (4.1)
PT-25V	1BN319LF	10.3 (39)	10.3 (39)	19-1/4 (489)	15-3/8 (391)	1" NPTF	23 (10.4)
PT-30V	1BN320LF	14 (53)	11.3 (43)	23-7/8 (605)	15-3/8 (391)		25 (11.3)
PT-42V	1BN321LF	20 (76)	11.3 (43)	31-5/8 (802)	15-3/8 (391)		33 (15)
PT-60V	1BN322LF	34 (129)	34 (129)	29-5/8 (752)	22 (559)	1-1/4" NPTF	69 (31.2)
PT-80V	1BN323LF	44 (167)	34 (129)	36 (914)	22 (559)		69 (31.2)
PT-180V	1BN324LF	62 (235)	34 (129)	46-3/4 (1187)	22 (559)		92 (41.7)
PT-210V	1BN325LF	86 (326)	46.4 (176)	47-1/4 (1200)	26 (660)		123 (55.8)

Larger sizes and ASME constructed models are available.

Code approvals: PT-5, PT-12 ANSI/NSF 61

PT-25V thru PT-210 ANSI/NSF 61



PT-5 thru PT-12 PT-25V thru PT-210V

WTX Diaphragm Tanks

Description

The Series WTX tanks will help protect the pump and pressure switches against short cycling. The potable well tank delivers adequate water under pressure between pump cycles to meet the required demand. It will provide economical system operation by minimizing pump starts, extending pump motor life, and saving energy. The WTX tank will also assist the pump in meeting peak demands.

Specifications

Model Number	Part Number	Volume Gallons (Liters)		System Drawdown in Gallons PSIG			Height (A) Inches (mm)	Diameter (B) Inches (mm)	System Connection	Approx. Shpg. Wt. lbs. (Kg)
		Tank	Acceptance Factor	20/40	30/50	40/60				
WTX-2	1BN300	2 (8)	0.45	0.8	0.7	0.6	12-5/8 (321)	8 (203)	3/4" NPTM	5 (2.3)
WTX-5	1BN301	4.4 (17)	0.55	1.8	1.5	1.3	15 (381)	11 (279)		9 (4)
WTX-8	1BN302	7.6 (33)	0.42	3.1	2.6	2.2	22-1/4 (629)	11 (279)		15 (7)
WTX-10	1BN303	10.3 (39)	1.00	4.1	3.5	3.0	17-3/4 (451)	15-3/8 (390)	1" NPTM	20 (9)
WTX-14	1BN304	14 (53)	0.81	5.6	4.8	4.1	22 (559)	15-3/8 (390)		22(10)
WTX-10S	1BN305	10.3 (39)	1.00	4.1	3.5	3.0	19-1/4 (489)	15-3/8 (390)	1" NPTF	23 (10)
WTX-14S	1BN306	14 (53)	0.81	5.6	4.8	4.1	23-7/8 (605)	15-5/8 (390)		25 (11)
WTX-20S	1BN307	20 (76)	0.57	8.0	6.8	5.9	31-5/8 (802)	15-3/8 (390)		33 (15)
WTX-26S	1BN308	26 (98)	0.44	10.5	8.8	7.6	38-1/4 (972)	15-3/8 (390)		36 (16)
WTX-32S	1BN309	32 (121)	0.35	–	10.9	9.4	46-1/2 (1181)	15-5/8 (390)		43 (20)
WTX-34S	1BN310	34 (129)	1.00	13.7	11.6	10.0	29-5/8 (752)	22 (559)	1-1/4" NPTM	61 (28)
WTX-44S	1BN311	44 (167)	0.77	17.7	15	12.9	36 (914)	22 (559)		69 (31)
WTX-62S	1BN312	62 (235)	0.55	24.9	21.1	18.2	46-3/4 (1187)	22 (559)		92 (41)
WTX-81S	1BN313	81 (307)	0.41	32.6	27.5	23.8	56-3/8 (1432)	22 (559)		103 (47)
WTX-86S	1BN315	86 (326)	0.54	34.6	29.2	25.3	47-1/4 (1200)	26 (660)		123 (56)
WTX-119S	1BN316	119 (450)	0.39	47.8	40.5	35.0	61-7/8 (1572)	26 (660)		166 (75)

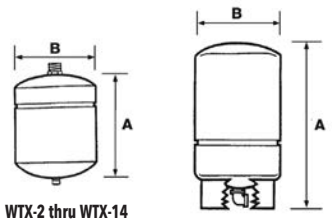
System Connection: WTX-2 thru WTX-14 = Copper Lined Steel Fitting; All others = Steel with Stainless Steel Elbow
Factory Pre-Charge: WTX-2. WTX-5 = 18PSI (124kPa); WTX-8 = 28 PSI (193 kPa); All other WTX tanks = 38 PSI (262 kPa)

Operating Data

Maximum Operating Temperature:
200°F (93°C)
Maximum Working Pressure:
100 PSI (689 kPa)

Materials of Construction

Shell: Carbon Steel
Liner: Polypropylene
Diaphragm: Heavy Duty Butyl Rubber
System Connection: WTX-2 thru WTX-14 = Copper Lined Steel Fitting; all others are Steel with Stainless Steel Elbow
Factory Pre-charge:
WTX-2, WTX.5 = 18 PSI (124 kPa);
WXT-8 = 28 PSI (193 kPa);
All other WTX tanks = 38 PSI (262 kPa)



WTX-2 thru WTX-14 WTX-10S thru WTX-119S

VALVES TPV – Tank Purge Valves

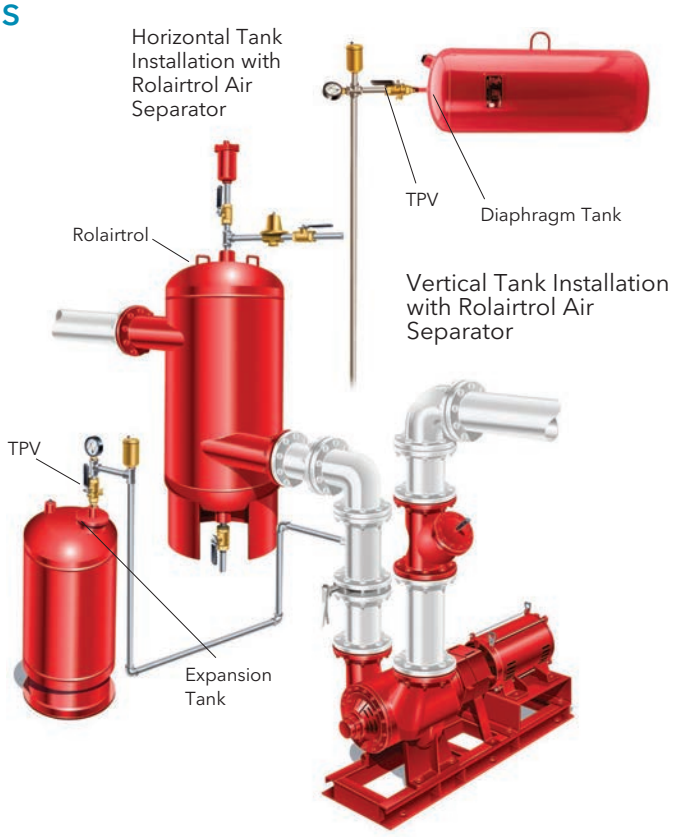
Description

Combination full port shut-off valve and drain valve used to connect an expansion tank to the system. It is important that the pre-charge in an expansion tank be maintained at the proper pressure at all times. This pressure is the lowest system operating pressure. When the tank's pressure is adjusted, there should be no system liquid in it. This pre-charge should be checked and adjusted when:

- Tank is first installed
- If system is started or operating with the incorrect tank pre-charge
- Annually to assure proper pre-charge pressure at all times

The TPV (Tank Purge Valve) is ideal for this as the tank can be isolated from the system, drained and the pre-charge checked and adjusted without draining or shutting down the system.

The TPV also serves as a service valve should the tank need to be removed or have the bladder changed. These valves are furnished standard with a drain valve with a standard 5/8" hose connection.

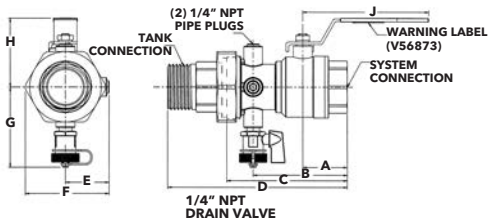


Operating Data

Maximum Working Pressure:
400 PSIG (2,758 kPa)
Maximum Operating Temperature:
-4°F (-20°C) to 250°F (121°C)

Materials of Construction

Valve Body: Brass
Ball: Chrome Plated
Ball Seal: PTFE
Stem: Explosion Proof
O-Ring: EPDM



These valves are not recommended to be used on potable water tanks.

Specifications

Model Number	Part Number	System Connection	Tank Connection	Dimensions* Inch (mm)									Approx. Weight Lbs.
				A	B	C	D	E	F	G	H	J	
TPV-1/2SF	113226	1/2" Female SWT	1/2" Female NPT	1.67 (42.4)	2.25 (57.2)	3.15 (80.0)	3.82 (97.0)	0.84 (21.3)	1.60 (40.6)	2.36 (59.9)	1.75 (44.5)	3.34 (84.8)	1.0 (0.5)
TPV-1/2FF	113227	1/2" Female NPT	1/2" Female NPT	1.19 (30.2)	2.00 (50.8)	2.90 (73.7)	3.55 (90.4)	0.84 (21.3)	1.60 (40.6)	2.36 (59.9)	1.75 (44.5)	3.34 (84.8)	1.0 (0.5)
TPV-1/2SM	113228	1/2" Female SWT	1/2" Male NPT	1.29 (32.2)	2.25 (57.2)	3.15 (80.0)	4.73 (120.1)	0.84 (21.3)	1.60 (40.6)	2.36 (59.9)	1.75 (44.5)	3.34 (84.8)	1.0 (0.5)
TPV-1/2FM	113229	1/2" Female NPT	1/2" Male NPT	1.06 (26.9)	2.00 (50.6)	2.90 (73.7)	4.47 (113.6)	0.84 (21.3)	1.60 (40.6)	2.36 (59.9)	1.75 (44.5)	3.34 (84.8)	1.0 (0.5)
TPV-3/4SF	113230	3/4" Female SWT	3/4" Female NPT	1.67 (42.2)	2.85 (72.4)	3.72 (94.5)	4.53 (115.1)	1.06 (26.9)	1.95 (49.5)	2.66 (67.6)	1.89 (48.0)	3.50 (88.9)	1.24 (0.6)
TPV-3/4FF	113231	3/4" Female NPT	3/4" Female NPT	1.19 (30.2)	2.50 (63.5)	3.26 (82.8)	4.06 (103.1)	1.06 (26.9)	1.95 (49.5)	2.66 (67.6)	1.69 (48.0)	3.50 (68.9)	1.24 (0.6)
TPV-3/4SM	113232	3/4" Female SWT	3/4" Male NPT	1.67 (42.4)	2.85 (72.4)	3.72 (94.5)	5.50 (14.0)	1.06 (26.9)	1.95 (49.5)	2.66 (67.6)	1.69 (48.0)	3.50 (68.9)	1.25 (0.6)
TPV-3/4FM	113233	3/4" Female NPT	3/4" Male NPT	1.19 (30.2)	2.50 (63.5)	3.26 (82.8)	5.03 (127.6)	1.06 (26.9)	1.95 (49.5)	2.66 (67.6)	1.69 (48.0)	3.50 (68.9)	1.25 (0.6)
TPV-1SF	113234	1" Female SWT	1" Female NPT	1.95 (49.5)	3.18 (80.6)	4.14 (105.2)	5.05 (126.3)	1.23 (31.2)	2.06 (52.3)	2.71 (68.6)	2.00 (50.8)	4.00 (101.6)	1.71 (0.8)
TPV-1FF	113235	1" Female NPT	1" Female NPT	1.46 (36.8)	2.63 (66.5)	3.60 (91.4)	4.50 (114.3)	1.23 (31.2)	2.06 (52.3)	2.71 (68.6)	2.00 (50.8)	4.00 (101.6)	1.71 (0.8)
TPV-1SM	113236	1" Female SWT	1" Male NPT	1.95 (49.5)	3.18 (80.6)	4.14 (105.2)	6.16 (156.5)	1.23 (31.2)	2.06 (52.3)	2.71 (68.6)	2.00 (50.8)	4.00 (101.6)	1.75 (0.8)
TPV-1FM	113237	1" Female NPT	1" Male NPT	1.45 (36.8)	2.53 (60.8)	3.60 (91.4)	5.60 (142.2)	1.23 (31.2)	2.06 (52.3)	2.71 (68.6)	2.00 (50.8)	4.00 (101.6)	1.75 (0.8)
TPV-1 1/4SF	113238	1 1/4" Female SWT	1 1/4" Female NPT	2.13 (54.1)	3.94 (100.1)	5.14 (130.6)	6.10 (154.9)	1.34 (34.0)	2.71 (68.8)	2.96 (75.2)	2.45 (62.2)	4.50 (114.3)	3.15 (1.5)
TPV-1 1/4FF	113239	1 1/4" Female NPT	1 1/4" Female NPT	1.55 (39.4)	3.37 (85.6)	4.56 (115.6)	5.50 (139.7)	1.34 (34.0)	2.71 (68.8)	2.96 (75.2)	2.45 (62.2)	4.50 (114.3)	3.15 (1.5)
TPV-1 1/4SM	113240	1 1/4" Female SWT	1 1/4" Male NPT	2.13 (54.1)	3.94 (100.1)	5.14 (130.6)	7.11 (180.6)	1.34 (34.0)	2.71 (68.8)	2.96 (75.2)	2.45 (62.2)	4.50 (114.3)	3.19 (1.5)
TPV-1 1/4FM	113241	1 1/4" Female NPT	1 1/4" Male NPT	1.55 (39.4)	3.37 (85.6)	4.55 (115.6)	6.52 (165.6)	1.34 (34.0)	2.71 (68.8)	2.96 (75.2)	2.45 (62.2)	4.50 (114.3)	3.19 (1.5)
TPV-1 1/2SM	113242	1 1/2" Female SWT	1 1/2" Male NPT	2.54 (84.5)	4.66 (118.4)	5.90 (149.9)	8.32 (211.3)	1.85 (47.0)	3.25 (82.6)	3.38 (85.9)	3.00 (76.2)	5.30 (134.5)	5.50 (2.5)
TPV-1 1/2FM	113243	1 1/2" Female NPT	1 1/2" Male NPT	1.91 (48.5)	3.97 (100.8)	5.12 (130.1)	7.64 (194.1)	1.85 (47.0)	3.25 (82.6)	3.38 (85.9)	3.00 (76.2)	5.30 (134.5)	5.50 (2.5)
TPV-2SM	113244	2" Female SWT	2" Male NPT	2.89 (72.4)	4.57 (116.1)	6.80 (172.7)	9.80 (248.9)	2.00 (50.8)	4.00 (101.6)	3.52 (89.4)	3.33 (84.6)	6.12 (155.5)	8.00 (3.63)
TPV-2FM	113245	2" Female NPT	2" Male NPT	2.06 (62.3)	4.65 (118.1)	5.85 (148.6)	8.87 (225.3)	2.00 (50.8)	4.00 (101.6)	3.52 (89.4)	3.33 (84.6)	6.12 (155.5)	8.00 (3.63)

*All dimensions +/– 0.125 (3.2 mm) tolerance. Dimensions are subject to change. Not to be used for construction purposes unless certified.

HEAT EXCHANGERS Brazed Plate Heat Exchangers

Description

Model BPX brazed plate heat exchangers offer the highest level of thermal efficiency and durability in a compact, low cost unit. The corrugated plate design provides very high heat transfer coefficients, resulting in a more compact design. The unit's stainless steel plates are vacuum brazed together to form a durable, integral piece that can withstand high pressure and temperature.

The BPX heat exchangers offer a compact design compared to shell and tube exchangers

- 1/6 the size of shell and tube
- 1/5 the weight of shell and tube
- 1/8 the liquid required of shell and tube
- 1/3 to 1/5 of the surface area required

BPX units are ideal for a wide variety of hydronic applications such as:

- Radiant Floor Heating
- Domestic Water Heating
- Snow MELT Systems
- Swimming Pool Heating

Operating Data

Design Pressure: 435 PSI (30 bar)
Design Temperature: 450°F (232°C)
Plates: Stainless Steel
Braze Material: Copper
Connections: From 1/2 inch to 4 inch
Capacity: Up to 800 GPM
Construction Codes : UL, CRN, ASME Code Stamp Option

Also available in double-wall design.

Designed for dependability – Small size. Big impact.

Mechanical Design:
Design pressures up to 435 PSIG. Maximum design temperature up to 450˚F. Minimum design temperature to -310˚F.

Construction Codes:
Available codes include UL, CRN, and ASME code stamp.

Materials:
Stainless steel 316L plates. Copper brazed material.

Capacity:
Up to 800 GPM and 350 sq.ft. of surface area.

Connections:
From 1/2-inch to 4-inch. Standard connection options include NPT, SAE flanged and sweat. Custom connections available.

Mounting:
Reduce mounting costs with optional threaded studs or integral mounting bracket.

HEAT EXCHANGERS Brazed Plate Heat Exchangers

Quick Selection Tables

Domestic Water Heating

Boiler Side: Water 180° F supply, 130° F return
Domestic Water Side: Water 50° F supply, 140° F return

Model	Heat Exchanged BTU/Hr	Boiler Side		Domestic Water Side		B&G Pump Selection†	Pipe Size††
		Flow	Pressure Drop	Flow	Pressure Drop		
		GPM	PSI	GPM	PSI		
BP400-10 (¾" MPT)	60,000	2.5	1.6	1.3	0.3	NBF-9U	⅝"
BP400-20 (¾" MPT)	150,000	6.2	2.1	3.3	0.6	NBF-9U	¾"
BP400-30 (¾" MPT)	225,000	9.3	2.2	5.0	0.7	NBF-9U	1"
BP400-40 (¾" MPT)	350,000	14.4	3.4	7.8	1.0	NBF-12	1¼"
BP410-30 (1" MPT)	450,000	18.6	6.2	10.0	1.8	NBF-25	1¼"
BP410-40 (1" MPT)	600,000	24.8	6.2	13.3	2.0	NBF-25	1½"
BP410-50 (1" MPT)	800,000	33.0	6.9	17.8	2.4	NBF-25	1½"
BP410-60 (1" MPT)	900,000	37.1	6.9	20.0	2.2	NBF-25	2"
BP410-80 (1" MPT)	1,100,000	45.4	6.8	24.4	2.2	NBF-36	2"
BP423-30 (2" MPT)	1,500,000	61.9	4.6	33.3	1.4	NBF-45	2"
BP423-40 (2" MPT)	2,000,000	82.5	4.6	44.4	1.4	PL-45B	2½"
BP423-50 (2" MPT)	2,500,000	103.1	4.8	55.5	1.5	PL-75B	2½"

Larger models are available upon request. † Assumptions: 200 ft. TEL of copper pipe with (6) 90 degree elbows. †† Pipe size shown is not the connection size of the heat exchanger.

Domestic Water Heating - Double Wall

Boiler Side: Water 180° F supply, 130° F return
Domestic Water Side: Water 50° F supply, 140° F return

Model	Heat Exchanged BTU/Hr	Boiler Side		Domestic Water Side		B&G Pump Selection†	Pipe Size††
		Flow	Pressure Drop	Flow	Pressure Drop		
		GPM	PSI	GPM	PSI		
BPDW410-20 (1" MPT)	60,000	2.5	0.2	1.3	0.1	NBF-9U	5/8"
BPDW410-34 (1" MPT)	150,000	6.2	0.4	3.3	0.1	NBF-9U	3/4"
BPDW415-24 (1" MPT)	225,000	9.3	3.8	5.0	0.9	NBF-9U	1"
BPDW415-34 (1" MPT)	350,000	14.4	4.5	7.8	1.1	NBF-12	1-1/4"
BPDW415-40 (1" MPT)	450,000	18.6	5.4	10.0	1.4	NBF-25	1-1/4"
BPDW415-60 (1" MPT)	600,000	24.8	4.6	13.3	1.2	NBF-25	1-1/2"
BPDW415-80 (1" MPT)	800,000	33.0	5.1	17.8	1.4	NBF-25	1-1/2"
BPDW415-100 (1" MPT)	900,000	37.1	4.8	20.0	1.8	NBF-25	2"
BPDW415-110 (1" MPT)	1,100,000	45.4	6.3	24.4	3.1	NBF-36	2"
(2) BPDW415-80 (1" MPT)	1,500,000†††	61.9	4.5	33.3	1.3	NBF-45	2"
(2) BPDW415-100 (1" MPT)	2,000,000†††	82.5	5.9	44.4	1.7	NBF-45B	2-1/2"

† Assumptions: 20 ft. of copper pipe with (6) 90 degree elbows.
†† Pipe size shown isn't the connection size of the heat exchanger.
††† Two units are required in parallel.

Snow Melt Applications

Boiler Side: Water 180° F supply, 160° F return
Snow Side: Water 40% P.G. 100° F supply, 130° F return

Model	Heat Exchanged BTU/Hr	Boiler Side		Snow Melt Side		B&G Pump Selection†	Pipe Size††
		Flow	Pressure Drop	Flow	Pressure Drop		
		GPM	PSI	GPM	PSI		
BP400-10 (¾" MPT)	30,000	3.1	2.4	2.1	0.9	NRF-25	¾"
BP400-10 (¾" MPT)	45,000	4.6	5.1	3.2	2.1	NRF-35	¾"
BP400-14 (¾" MPT)	60,000	6.2	4.2	4.3	1.9	NRF-25	1"
BP400-20 (¾" MPT)	100,000	10.3	5.4	7.1	2.7	NRF-36	1"
BP400-40 (¾" MPT)	175,000	18.0	5.2	12.5	2.8	NRF-36	1½"
BP412-30 (1" MPT)	250,000	25.8	4.1	17.9	2.1	PL-36	1½"
BP412-30 (1" MPT)	300,000	30.9	5.8	21.4	2.9	PL-55	2"
BP412-50 (1" MPT)	450,000	46.4	6.2	32.1	3.3	613	2"
BP424-20 (2" MPT)	600,000	61.8	4.8	42.9	2.8	609	2"
BP424-30 (2" MPT)	900,000	92.7	4.8	64.3	3.0	614	2½"
BP424-40 (2" MPT)	1,200,000	123.6	5.1	85.7	3.2	625	3"
BP424-50 (2" MPT)	1,350,000	139.1	4.7	96.4	2.9	625	3"

Larger models are available upon request.
† Assumptions: Longest radiant loop is 250 ft. PEX.
†† Pipe size shown isn't the connection size of the heat exchanger.

Outdoor Wood Boiler

Boiler Side: Water 180° F supply, 155° F return
House Side: Water 140° F supply, 165° F return

Model	Heat Exchanged BTU/Hr	Boiler Side		House Side	
		Flow	Pressure Drop	Flow	Pressure Drop
		GPM	PSI	GPM	PSI
BP400-20LP (¾" MPT)	30,500	2.52	0.4	2.5	0.3
BP400-30LP (¾" MPT)	50,000	4.12	0.5	4.1	0.4
BP400-40LP (¾" MPT)	70,000	5.77	0.6	5.7	0.6
BP410-20LP (1" MPT)	80,000	6.60	1.9	6.5	1.6
BP410-30LP (1" MPT)	130,000	10.72	2.2	10.6	1.92
BP410-40LP (1" MPT)	179,500	14.80	2.3	14.6	2.2
BP410-50LP (1" MPT)	229,500	18.92	2.5	18.7	2.4
BP410-60LP (1" MPT)	279,000	23.00	2.8	22.8	2.6
BP410-70LP (1" MPT)	329,000	27.13	3.0	26.8	2.9
BP410-80LP (1" MPT)	378,500	31.21	3.3	30.9	3.2
BP410-90LP (1" MPT)	428,500	35.33	3.7	34.9	3.6
BP410-100LP (1" MPT)	478,000	39.41	4.0	39.0	4.0

Larger models are available upon request.

Swimming Pool Heating

Boiler Side: Water 180° F supply, 130° F return
Pool Side: Water 70° F supply, 107° F return

Model[3]	Pool Size Gallons[1]	Heat Exchanged BTU/Hr	Boiler Side		Pool Side	
			Flow	Pressure Drop	Flow[2]	Pressure Drop
			GPM	PSI	GPM	PSI
BP400-10 (¾" MPT)	2,000	33,300	1.37	0.5	1.8	0.6
BP400-10 (¾" MPT)	6,000	99,900	4.10	4.1	5.4	5.0
BP400-20 (¾" MPT)	8,000	133,200	5.50	1.7	7.3	2.5
BP400-30 (¾" MPT)	15,000	250,234	10.00	2.7	14.0	4.5
BP412-20 (1" MPT)	20,000	333,645	13.00	2.5	18.0	3.4
BP412-20 (1" MPT)	30,000	500,467	20.70	5.6	27.2	7.7
BP412-30 (1" MPT)	40,000	667,290	27.00	3.9	36.0	6.9
BP424-20 (2" MPT)	60,000	1,000,936	40.00	2.3	54.0	3.6
BP424-30 (2" MPT)	80,000	1,334,581	53.00	1.9	72.0	3.1
BP424-30 (2" MPT)	100,000	1,668,226	67.00	2.8	90.0	4.7
BP424-40 (2" MPT)	120,000	2,001,871	82.50	2.5	108.0	4.2
BP424-50 (2" MPT)	150,000	2,502,000	103.20	2.7	135.6	4.7

Larger models are available upon request.
1) Provides approx. 2° F per hour heating with 180° F boiler to achieve 80° F pool temperature.
2) Pool water flow rate usually requires flow by pass from main pool circulation.
3) Chlorinated pool water can be corrosive to SS316L and Copper. Proper control of chlorine levels is required or alternate materials of construction should be considered.

Radiant Floor Heating

Boiler Side: Water 180° F supply, 160° F return
Radiant Floor Side: Water 100° F supply, 120° F return

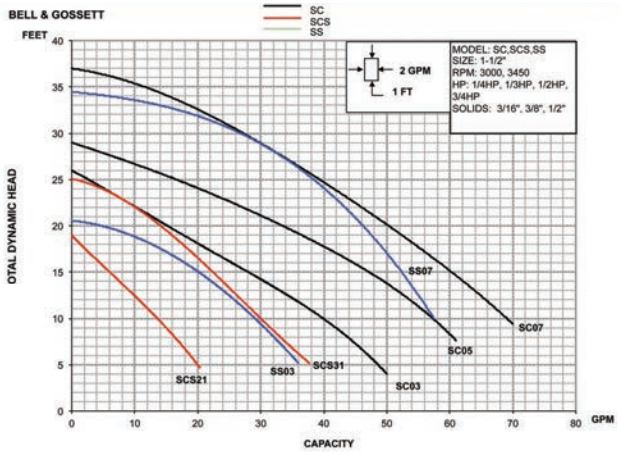
Model	Heat Exchanged BTU/Hr	Boiler Side		Radiant Floor Side		B&G Pump Selection†	Pipe Size††
		Flow	Pressure Drop	Flow	Pressure Drop		
		GPM	PSI	GPM	PSI		
BP400-10 (¾" MPT)	30,000	3.1	2.4	3.0	1.6	NRF-25	¾"
BP400-10 (¾" MPT)	50,000	5.2	6.1	5.0	4.2	NRF-36	1"
BP400-20 (¾" MPT)	100,000	10.3	5.2	10.1	4.4	NRF-36	1¼"
BP400-30 (¾" MPT)	150,000	15.5	5.3	15.2	4.9	NRF-36	1½"
BP400-40 (¾" MPT)	200,000	20.6	5.8	20.2	5.5	NRF-36	1½"
BP411-20 (1" MPT)	250,000	25.8	3.3	25.2	3.0	PL-36	2"
BP411-20 (1" MPT)	350,000	36.1	6.3	35.3	5.6	PL-55	2"
BP411-30 (1" MPT)	450,000	46.4	6.1	45.4	5.8	607	2"
BP424-20 (2" MPT)	600,000	61.8	4.8	60.6	4.2	609	2½"
BP424-30 (2" MPT)	900,000	92.7	4.8	90.9	4.5	611	3"
BP424-40 (2" MPT)	1,200,000	123.6	5.1	121.2	5.0	625	3"
BP424-50 (2" MPT)	1,350,000	139.1	4.7	136.3	4.6	619	3"

Larger models are available upon request.
† Assumptions: Longest radiant loop is 200 ft. PEX.
†† Pipe size shown isn't the connection size of the heat exchanger.

WASTEWATER Submersible Sump Pumps

Description

Sump pumps are specifically designed for basement draining, dewatering and water transfer. It has a range of capacities up to 70 GPM and maximum heads of 37 TDH ranging from 1/4 HP to 3/4 HP. The stainless steel or cast iron construction is available with 1-1/2" discharge connections. Battery back-up sump pumps also available for emergency back up service in the event of a power outage.

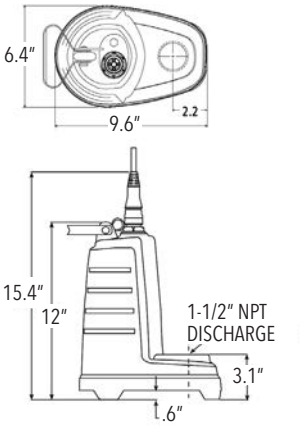


SC

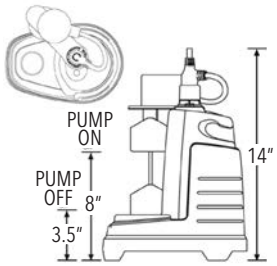
Specifications

- Maximum solids 1/2"

Part Number
SC0311AV
SC0511AV
SC0711AV



SC05 and SC07



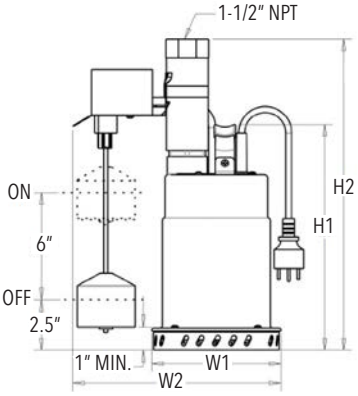
SC03

SCS

Specifications

- Maximum solids: 3/16" spherical
- Manual operation available

Part Number	W1 (in.)	W2 (in.)	H1 (in.)	H3 (in.)
SCS31V	5.9	9.6	10.4	15.1

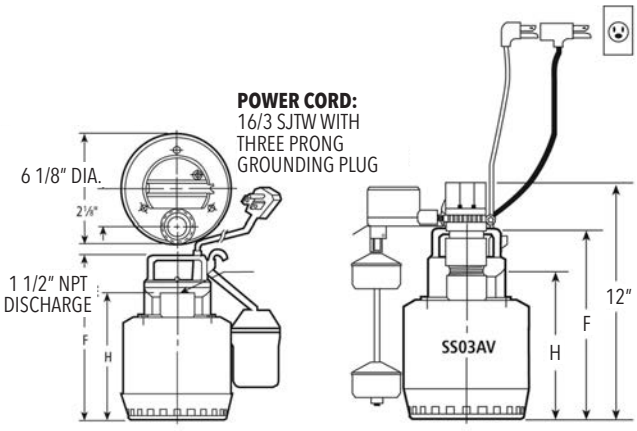


SS

Specifications

- Maximum solids: 3/8" spherical

Part Number	F	H
SS0311AT	9-3/4	7-5/8
SS0711ATF	11-1/4	9-1/8
SS0311AV	9-3/4	7-5/8



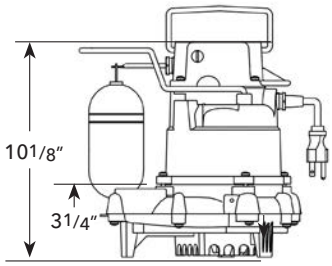
Performance Chart

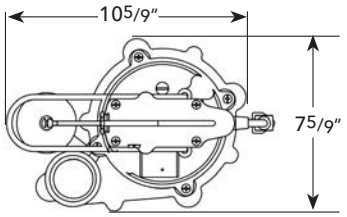
Submersible Sump Pumps	NPT Discharge	Solids Handling	Capacities	Maximum Head	Housing Material Construction
SC	1-1/2"	1/2"	70 GPM	37 feet TDH	Cast Iron
SCS	1-1/2"	3/8"	38 GPM	25 feet TDH	Stainless Steel
SS	1-1/2"	3/8"	55 GPM	34 feet TDH	Stainless Steel

WASTEWATER Submersible Sump Pumps

GSP0311
From Goulds Water Technology

Cast Iron Sump Pump





Specifications

Model Number	Part Number	HP	Volts	Amps	Min. Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Min. On Level	Min. Off Level	Min. Basin Diameter	Max. Solids Size	Shipping Weight
GSP	GSP0311	1/3	115	10	15A	1	Vertical	9′	1-1/2″	7-1/4″	3-1/2″	1′	1/2″	27 lbs
GSP	GSP0311M	1/3	115	10	15A	1	Not Supplied	9′	1-1/2″	–	–	1′	1/2″	27 lbs

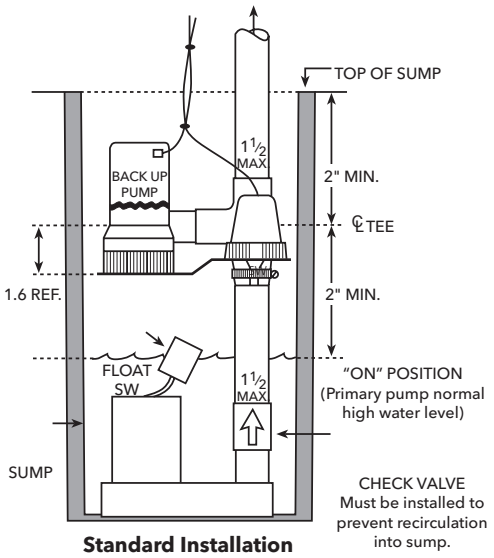
BBSP Battery Back-up Sump Pump

BBSP Performance Chart

Discharge Heights	GPH	Battery Life
5′	1380	9 hours
10′	900	9 hours
13′	480	11 hours

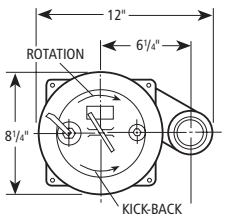
BBSP2 Performance Chart

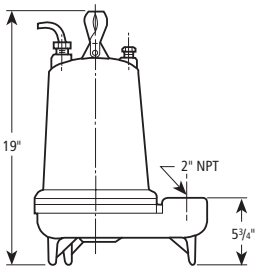
Discharge Heights	GPH	Battery Life
5′	2250	7 hours
10′	1500	8 hours
13′	1000	9 hours



Standard Installation

2WT Sewage Effluent Pump





Specifications

Part Number	HP	Phase	Volts	RPM	Impeller Dia. (in.)	Max. Amps	LRA	KVA Code	Full Load Motor Eff.	Resistance		Wt. (lbs.)
										Start	Line-Line	
2WT0311	0.33	1	115	1750	4.69	10.7	30.0	M	54	11.9	1.7	63
2WT0318			208			6.8	19.5	K	51	9.1	4.2	
2WT0312			230			4.9	14.1	L	53	14.5	8.0	
2WT0511	0.5		115		5.00	14.5	31.1	J	55	9.3	1.4	65
2WT0518			208			8.0	19.5	K	51	9.1	4.2	
2WT0512			230			7.3	16.5	J	54	11.7	5.6	
2WT0538		3	200			3.8	12.3	K	75	NA	6.7	
2WT0532			230			3.3	9.7	K	75	NA	9.9	
2WT0534			460			1.7	4.9	K	75	NA	39.4	
2WT0537			575			1.4	4.3	K	68	NA	47.8	
2WT0718	0.75	1	208		5.38	11.0	39.0	K	65	2.6	1.4	85
2WT0712			230			9.4	24.8	J	57	4.8	2.3	
2WT0738		3	200			4.1	21.2	H	74	NA	4.3	
2WT0732			230			3.6	17.3	J	76	NA	5.6	
2WT0734			460			1.8	8.9	J	76	NA	22.4	
2WT0737			575			1.5	7.3	J	71	NA	29.2	
2WT1018	1	1	208		5.75	14.0	39.0	K	65	2.6	1.4	
2WT1012			230			12.3	30.5	H	60	4.3	1.8	
2WT1038		3	200			6.0	21.2	H	74	NA	4.3	
2WT1032			230			5.8	17.3	J	76	NA	5.6	
2WT1034			460			2.9	8.9	J	76	NA	22.4	
2WT1037			575			2.4	7.3	J	71	NA	29.2	

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- Large Chilled Water System Design*
- Pump Service & Maintenance School
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- Steam System Operation & Maintenance
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* The USGBC has approved the technical and instructional quality of the Modern Hydronic Heating Systems - Basic Seminar (15 GBCI CE Hours) and the Large Chilled Water Design Seminar (11 GBCI CE Hours). These courses are approved for GBCI Continuing Education Hours towards LEED Credential Maintenance Programs.

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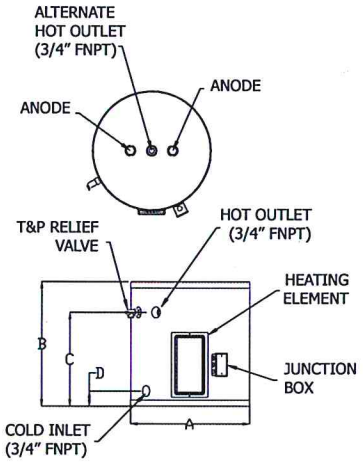
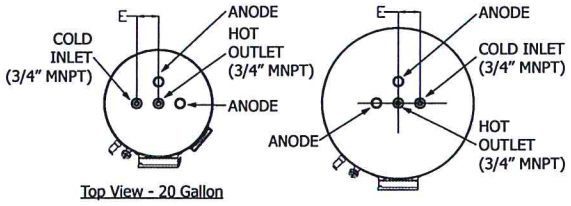
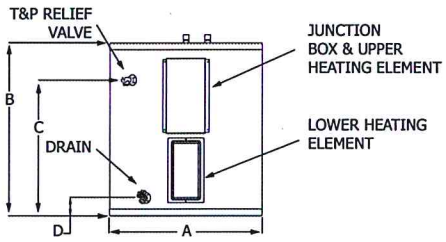


Single Element 6/12/20 Gallon





Dual Element 20/30/40/50 Gallon

Dimensions and Capacities

Model	Rated Storage GAL (L)	kW Input	Dimensions in Inches (cm)					Shipping Weight LBS (kg)
			A	B	C	D	E	
LCE6-1	6 (23)	**	16.00 (40.6)	16.5 (41.9)	11.25 (28.6)	3.5 (8.9)	n/a (n/a)	56 (25.4)
LCE12-1	12 (45)	**	20.00 (50.8)	16.44 (41.8)	10.75 (27.3)	2.75 (7.0)	n/a (n/a)	76 (34.5)
LCE20-1	19 (72)	**	22.00 (55.9)	23.00 (58.4)	17.25 (43.8)	2.75 (7.0)	n/a (n/a)	111 (50.3)
LCE20-2	19 (72)	**	20.00 (50.8)	24.68 (62.7)	18.75 (47.65)	2.75 (7.0)	4.00 (10.2)	103 (46.7)
LCE30-2	30 (114)	**	22.00 (55.9)	34.50 (82.6)	26.50 (67.3)	2.75 (7.0)	4.00 (10.2)	143 (64.9)
LCE40-2	40 (151)	**	24.00 (61.0)	36.88 (88.86)	28.75 (73.0)	2.75 (7.0)	4.00 (10.2)	175 (79.4)
LCE50-2	50 (189)	**	28.00 (71.1)	33.94 (81.1)	25.00 (63.5)	3.25 (8.3)	4.00 (10.2)	222 (100.7)

Approved Element Ratings

Input Rating (KW)	Voltage Rating (V)				
	120	208	240	277	480
1.5	YES	YES	YES	YES	YES
2.0	YES	YES	YES	YES	YES
2.5	YES	YES	YES	YES	YES
3.0	YES	YES	YES	YES	YES
3.5	-	-	YES	-	-
4.0	-	YES	YES	YES	YES
4.5	-	YES	YES	YES	YES
5.0	-	YES	YES	YES	YES
5.5	-	YES	YES	-	YES
6.0	-	YES	YES	YES	YES

c UL US

MADE IN U.S.A.

Pressures (all): Working Pressure, 150 psi; Testing Pressure, 300 psi

Note: Single element models wired for single-phase circuits. Dual element models wired for non-simultaneous operation on a three-phase circuit (unbalanced; delta).

Warning: Installation should be in accordance with all national and/or local codes. In the absence of local codes, refer to NFPA 70 or CSA C22.1.

Caution: Bock recommends a tempering valve or anti-scald valve be installed and used according to the manufacturer's directions to prevent scalding.

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SC

SUBMERSIBLE SUMP/ EFFLUENT PUMPS

1½" NPT Discharge
½" Solids Handling

APPLICATIONS

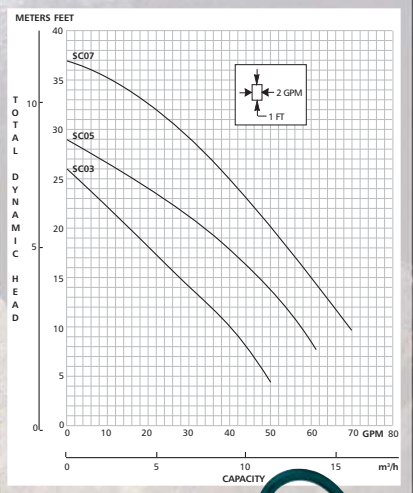
Specially designed for the following uses:

- Basement draining
- Water transfer
- Dewatering
- Effluent transfer

SPECIFICATIONS

Pump:

- Capacities: to 70 GPM.
- Maximum head: to 37 feet.
- Temperature: 104° F (40° C) maximum, continuous when completely submerged.
- Automatic models include a float switch.
- Manual model also available.
- Pumping range: see performance chart or curve.



ONCO Stocks

SP

SUBMERSIBLE SUMP PUMPS

1½" NPT Discharge
⅜" Solids Handling

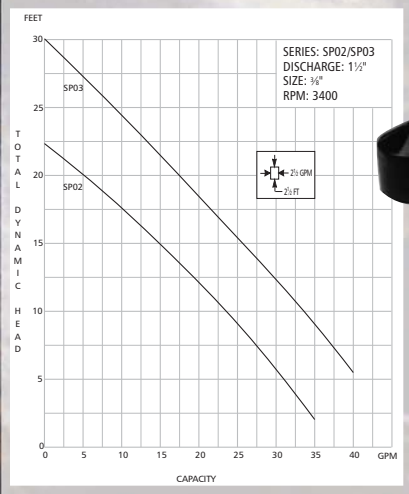
APPLICATIONS

Specially designed for the following uses:

- Basement draining
- Water transfer
- Dewatering

SPECIFICATIONS

- Capacities: to 40 GPM
- Maximum head: to 30 feet.
- Temperature: 104° F (40° C) maximum, continuous when completely submerged.
- Float switch: built-in non-mercury vertical; SP0211V, SP0311V.
- Manual model also available – SP0311M.
- Pumping range: 3.0".
- Maximum pump down - 1¼" from base.



SS

SUBMERSIBLE SUMP PUMPS

1½" NPT Discharge
⅜" Solids Handling

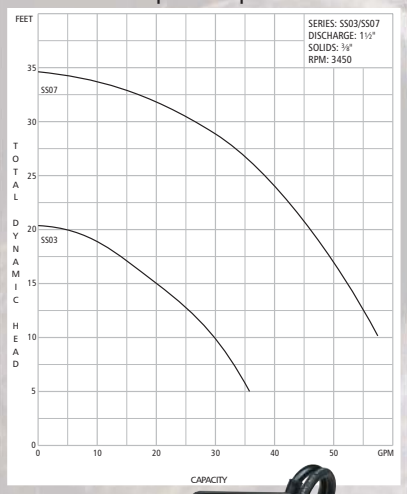
APPLICATIONS

Specially designed for the following uses:

- Basement draining
- Water transfer
- Dewatering

SPECIFICATIONS

- Capacities: to 55 GPM.
- Maximum head: 34 feet TDH.
- Max. solids: ⅜" spherical.
- Temperature: 104° F (40° C) maximum liquid temperature.



1CVP

VERTICAL SUMP PUMPS

1¼" NPT Discharge

APPLICATIONS

Specifically designed for the following uses:

- Basement draining
- Water transfer
- Dewatering

SPECIFICATIONS

- Discharge: 1¼" NPT, will accept adapter for 1½" discharge pipe.
- Power cord: heavy duty 8 foot, 3-wire cord.
- Temperature: 160º F (71º C) maximum.
- Sump diameter: 12 inches or larger.

BBSP

BATTERY BACK-UP SUMP PUMP

APPLICATIONS

Designed to provide emergency backup service for primary pump in the event of a power outage. Will also operate if main pump can't keep up with inflow.

SPECIFICATIONS

- 12 volt pump.
- Float switch.
- 10 amp battery charger.
- Check valve.
- Pipe fittings.
- Battery box.
- System requires minimum 105 amp deep cycle marine battery (not included).

Don't be caught with a wet basement when your power goes out…

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GASOLINE ENGINE-DRIVEN SELF-PRIMING CENTRIFUGAL PUMPS

FEATURES

- Portable, Lightweight, Compact Design.
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  - Multi-Position Discharge Connection.
- Heavy-Duty, Cage Mounted.
- Standard Strainer Basket Included.
- Water and Trash Models Available.

OPTIONS

- Skid Mounts.
- Wheel Kit.
- Hard Faced Mechanical Seals.

1EC

SUBMERSIBLE EFFLUENT PUMPS

1½" NPT Discharge
½" Solids Handling

APPLICATIONS

Specially designed for the following uses:

- Mound Systems
- Effluent/Dosing Systems
- Low Pressure Pipe Systems
- Basement Draining
- Heavy Duty Sump/Dewatering

SPECIFICATIONS

- Discharge: 1½" NPT.
- Temperature: 104ºF (40º C) maximum, continuous when fully submerged.
- Solids handling: ½" maximum sphere.
- Automatic models include a float switch.
- Manual models available.

1EC03 Pump:

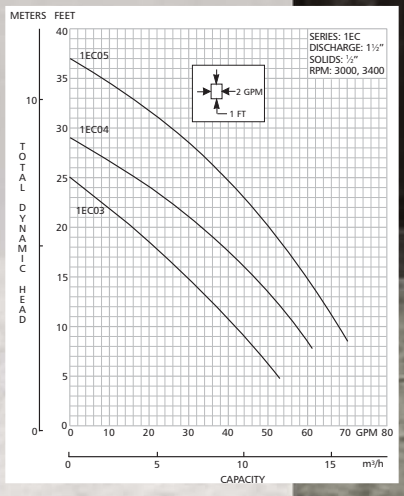
- Maximum capacity: 50 GPM
- Maximum head: 25' TDH

1EC04 Pump:

- Maximum capacity: 60 GPM
- Maximum head: 29' TDH

1EC05 Pump:

- Maximum capacity: 70 GPM
- Maximum head: 37' TDH



1ES

SUBMERSIBLE EFFLUENT PUMPS

1½" NPT Discharge
¾" Solids Handling

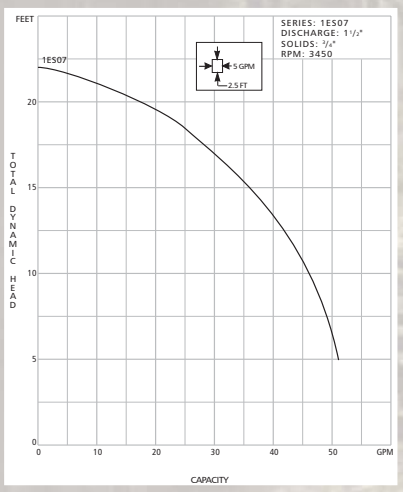
APPLICATIONS

Specially designed for the following uses:

- Effluent systems
- Water transfer
- Dewatering
- Heavy duty sump

SPECIFICATIONS

- Capacities: to 52 GPM.
- Maximum head: 22 feet TDH.
- Max. solids: ¾" spherical.
- Temperature: 104° F (40° C) maximum liquid temperature.



1EP

SUBMERSIBLE EFFLUENT PUMPS

1½" NPT Discharge
¾" Solids Handling

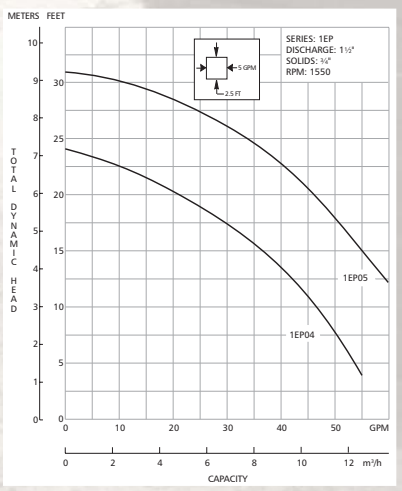
APPLICATIONS

Specifically designed for the following uses:

- Effluent systems
- Homes
- Farms
- Heavy duty sump
- Water transfer
- Dewatering

SPECIFICATIONS

- Capacities: up to 60 GPM.
- Total heads: up to 31 feet.
- Mechanical seal: carbon-rotary/ceramic stationary, BUNA-N elastomers.
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.



2EC

SUBMERSIBLE EFFLUENT PUMPS

2" NPT Discharge
¾" Solids Handling

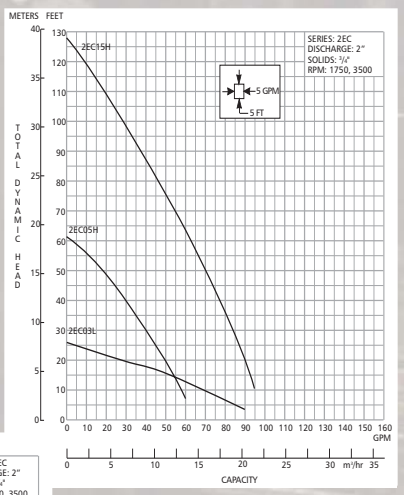
APPLICATIONS

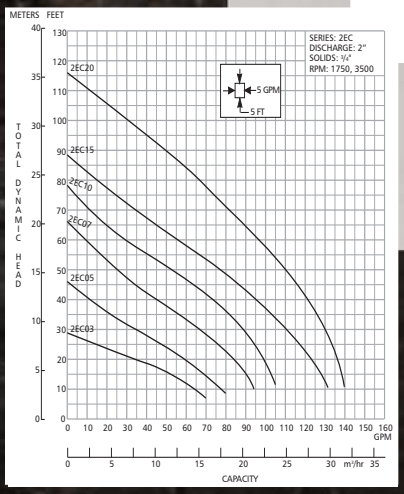
Specifically designed for the following uses:

- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent.
- See Model Information for specific HP, voltage, phase and RPM's available.





ONCO Stocks

2WC

SUBMERSIBLE SEWAGE PUMPS

2" NPT Discharge
2" Solids Handling

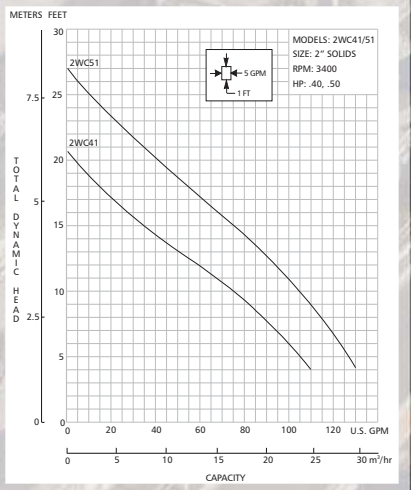
APPLICATIONS

Specifically designed for the following uses:

- Homes
- Sewage systems
- Dewatering/Effluent
- Water transfer

SPECIFICATIONS

- Capacities: up to 130 GPM.
- Total heads: up to 27 feet TDH.
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent.
- See Model Information for specific HP, voltage, phase and RPM's available.



2VW

SUBMERSIBLE VORTEX SEWAGE PUMPS

2" NPT Discharge
2" Solids Handling

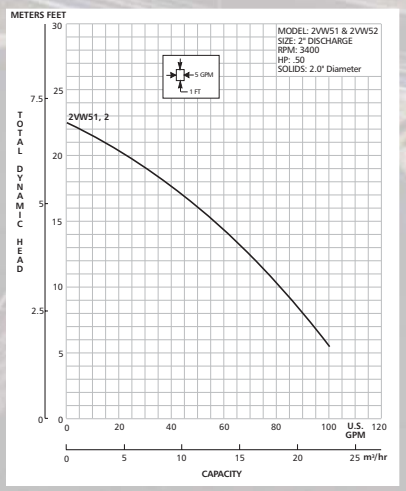
APPLICATIONS

Specifically designed for the following uses:

- Homes
- Sewage systems
- Dewatering/Effluent
- Water transfer

SPECIFICATIONS

- Capacities: up to 100 GPM.
- Total heads: up to 22 feet TDH.
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent.
- See Model Information for specific HP, voltage, phase and RPM's available.



ONCO Stocks

1WS/2WS

SUBMERSIBLE SEWAGE PUMPS

1½" and 2" NPT Discharge
1⅜" and 2" Solids Handling

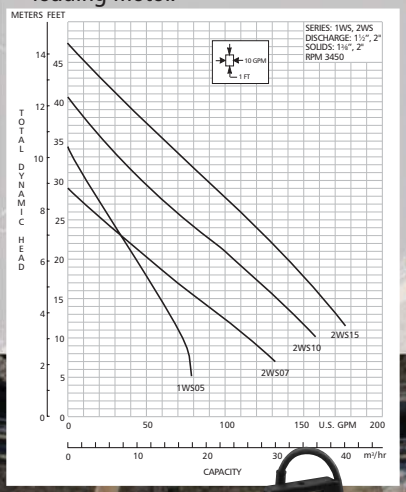
APPLICATIONS

Non-clog submersible sewage pumps for simplex and duplex installations in small lift stations, drainage systems or raw water applications requiring solids handling capability of 1⅜" and 2" diameter made specifically for:

- Homes and farms
- Municipal package systems
- Schools and hospitals
- Dewatering applications
- Mobile home parks and motels
- Industrial treatment systems

SPECIFICATIONS

- 1½" discharge on ½ HP.
- 2" discharge on ¾ HP and larger.
- Solid size: 1⅜" solids on ½ HP; 2" solids on ¾ HP and larger.
- Capacities: to 175 GPM.
- Total heads: to 47 feet TDH.
- Temperature: 104° F (40° C) continuous, 140°F (60° C) intermittent.
- AISI 304 SS casing, AISI 304 SS impeller.
- Continuous duty rated, non-overloading motor.



ONCO Stocks

12GS

SUBMERSIBLE GRINDER PUMP

1¼" NPT Discharge

APPLICATIONS

Designed for high head residential sewage applications where a gravity system is not practical. Ideal for pressure sewage systems.

SPECIFICATIONS

- Capacities: to 41 GPM.
- Total heads: to 95' TDH.
- Discharge: 1¼" NPT.
- Single mechanical seal: Silicon carbide rotary/silicon carbide stationary, 300 series stainless steel metal parts, BUNA-N elastomers.
- Fasteners: 300 series stainless steel.
- Rotating cutter and cutter ring: 440 C hardened stainless steel.

Motor:

- Single phase: 2 HP, 60 Hz, 3450 RPM, 208/230V, capacitor start with on winding thermal protector.
- **No external capacitor kits required.**
- Class F insulation.
- Shaft: 300 series stainless steel threaded design.
- Bearings: ball bearings upper and lower.
- Power cord: 20 feet standard 14/3 STOW with bare leads. Optional lengths available.

2WT/2WF

SUBMERSIBLE SEWAGE PUMPS

2WT - 2" NPT Discharge
2WF - 2" NPT Flanged Discharge
2" Solids Handling

APPLICATIONS

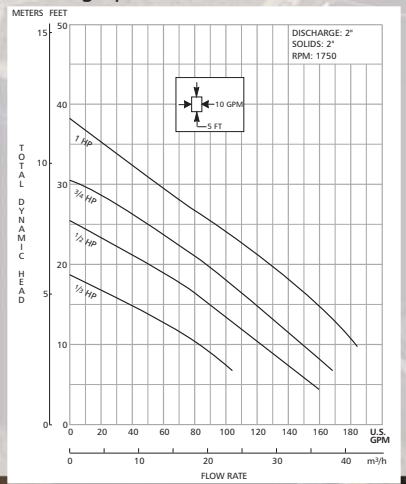
Specifically designed for the following uses:

- Homes
- Sewage systems
- Dewatering/Effluent
- Water transfer
- Light industrial
- Commercial applications

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

- Capacities: up to 183 GPM.
- Total heads: up to 38 feet TDH.
- Discharge size: 2" NPT. Threaded casing or threaded companion flange as standard.
- Temperature: 104° F (40° C) continuous, 140° F (60° C) intermittent.
- See Model Information for specific HP, voltage, phase and RPMs available.



2WF_H

SUBMERSIBLE SEWAGE PUMPS

2" NPT Flanged Discharge
2" Solids Handling

APPLICATIONS

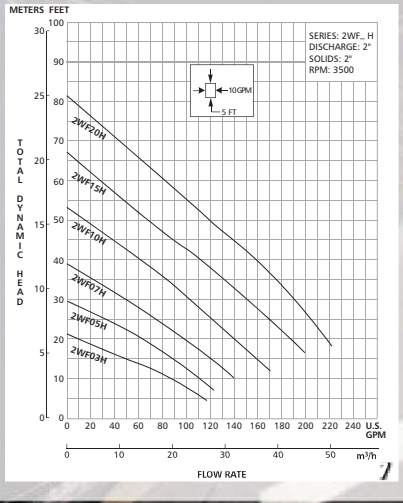
Specifically designed for the following uses:

- Homes
- Sewage systems
- Dewatering/Effluent
- Water transfer
- Light industrial
- Commercial applications

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

- Capacities: up to 220 GPM.
- Total heads: up to 81 feet TDH.
- Discharge size: 2" NPT threaded companion flange as standard. 3" option available but must be ordered separately. (Order no. A1-3)
- Temperature: 104° F (40° C) continuous, 140° F (60° C) intermittent.
- See Model Information for specific HP, voltage, phase and RPMs available.



3WDA

SUBMERSIBLE SEWAGE PUMPS

3" Flanged Discharge
2½" Solids Handling

APPLICATIONS

Used in a variety of residential, commercial and industrial applications such as:

- Sewage systems
- Dewatering/Effluent
- Flood and pollution control
- Farms
- Motels
- Hospitals
- Trailer courts

SPECIFICATIONS

Pump:

- Maximum solid size: 2.5".
- Discharge Size: 3", 125# ANSI flange.
- Maximum capacity: 470 GPM.
- Maximum Total Head: 65 feet.
- 300 Series stainless steel fasteners.
- 20' Power cord.
- Standard silicon carbide/silicon carbide outer (lower) seals.

Motor:

- Maximum ambient temperature: 104° F (40° C) continuous duty, 140° F (60° C) intermittent duty.
- Rated for continuous duty when fully submerged.
- Insulation: Class B
- RPM: 1750; 60 Hz
- Single row ball bearings
- 300 Series stainless steel keyed shaft

Single Phase:

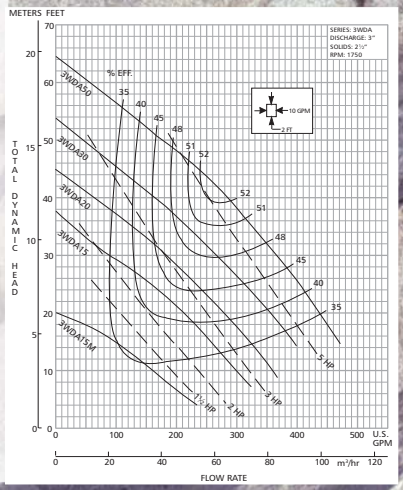
- 1.5 – 5 HP. 208 and 230 volts.
- On-winding, built-in thermal overloads.
- Built-in capacitors.

Three Phase:

- 1.5 – 5 HP. 200, 230, 460 and 575 volts.
- Overload protection must be provided in control panel.

Pump/Motor Options:

- Silicon bronze impeller.
- Tungsten carbide outer seals.
- Longer power cords: 30', 50' and 100'.



4WDA

SUBMERSIBLE SEWAGE PUMPS

4" Flanged Discharge
3" Solids Handling

APPLICATIONS

Used in a variety of residential, commercial and industrial applications such as:

- Sewage systems
- Dewatering/Effluent
- Trailer courts
- Flood and pollution control
- Farms
- Hospitals
- Motels

SPECIFICATIONS

Pump:

- Maximum solid size: 3".
- Discharge Size: 4", 125# ANSI flange.
- Maximum capacity: 620 GPM.
- Maximum Total Head: 60 feet.
- 300 Series stainless steel fasteners.
- 20' Power cord.
- Standard silicon carbide/silicon carbide outer (lower) seals.

Motor:

- Maximum ambient temperature: 104° F (40° C) continuous duty, 140° F (60° C) intermittent duty.
- Rated for continuous duty when fully submerged.
- Insulation: Class B
- RPM: 1750; 60 Hertz
- Single row ball bearings
- 300 Series stainless steel keyed shaft

Single Phase:

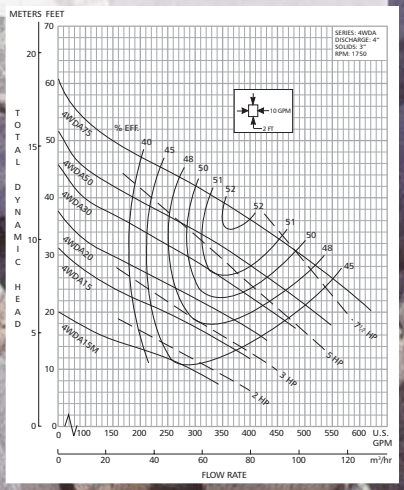
- 1.5 – 5 HP. 208 and 230 volts.
- On-winding, built-in thermal overloads.
- Built-in capacitors.

Three Phase:

- 1.5 – 7.5 HP. 200, 230, 460 and 575 volts.
- Overload protection must be provided in control panel.

Pump/Motor Options:

- Silicon bronze impeller.
- Tungsten carbide outer seals.
- Longer power cords: 30', 50' and 100'.



2WP

SUBMERSIBLE VORTEX SEWAGE PUMPS

2" NPT Discharge
2" Solids Handling

APPLICATIONS

Specifically designed for the following uses:

- Residential sewage systems
- Dewatering
- Water transfer

Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

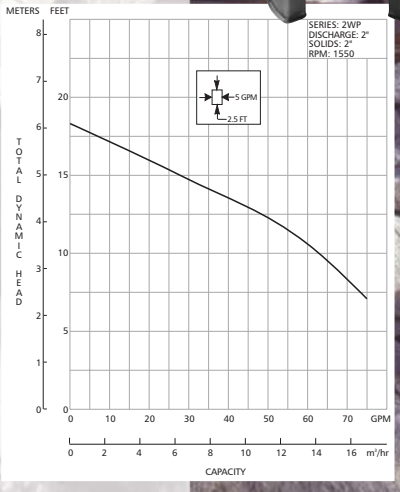
Pump:

- Capacities: up to 75 GPM.
- Total heads: up to 18 feet.
- Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers.
- Temperature:
  104° F (40° C) continuous
  140° F (60° C) intermittent.
- Fasteners: 300 series stainless steel.

Motor:

- Single phase: ½ HP, 115 V or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with molded NEMA three prong grounding plug. Optional 20 foot length.
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

Available for automatic and manual operation. Automatic models include Mechanical Float Switch assembled and preset at the factory.



1WV/2WV

SUBMERSIBLE VORTEX SEWAGE PUMPS

1½" and 2" NPT Discharge
1⅜" and 2" Solids Handling

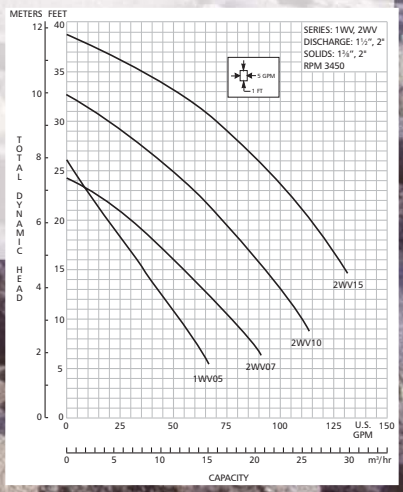
APPLICATIONS

Vortex submersible sewage pumps for simplex and duplex installations in small lift stations, drainage systems or raw water applications requiring solids handling capability of 1⅜" and 2" diameter made specifically for:

- Homes and farms
- Mobile home parks and motels
- Schools and hospitals
- Municipal package systems
- Industrial treatment systems
- Dewatering applications

SPECIFICATIONS

- 1½" discharge on ½ HP.
- 2" discharge on ¾ HP and larger.
- Solid size: 1⅜" solids on ½ HP; 2" solids on ¾ HP and larger.
- Capacities: to 130 GPM.
- Total heads: to 39 feet TDH.
- Temperature:
  104°F (40°C) continuous
  140°F (60°C) intermittent.
- Maximum submergence to 17 feet.
- AISI 304 SS casing.
- AISI 304 SS impeller.
- Continuous duty rated, non-overloading motor.



ONCO Stocks

1DS

SUBMERSIBLE DEWATERING PUMP

1½" NPT Discharge
⅜" Solids Handling

APPLICATIONS

Specifically designed for the following uses:

- Handling dirty waters
- Excavating in the building trades
- Water transfer
- Industrial water drainage or transfer

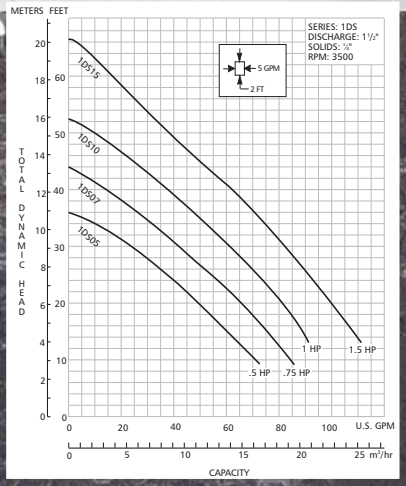
SPECIFICATIONS

Pump:

- Capacities: up to 110 GPM.
- Total heads: up to 66 feet TDH.
- Temperature limit: 120° F (50° C) maximum.
- Fasteners: 300 series stainless steel.
- Maximum submergence: 23'

Motor:

- Single phase: 60 Hz, 3500 RPM, ½ HP, 115 V and 230 V; ¾ and 1 HP, 230 V only.
- Three phase: 60 Hz, 3500 RPM, ½ to 1½ HP, 230 V or 460 V.
- Built-in thermal overload protection with automatic reset on single phase models.
- Three phase: Overload protection must be provided in starter unit with three phase pumps.
- Power cord: 20 feet long. Single phase 115 V and 230 V models are supplied with molded NEMA three prong grounding plugs. ½ HP 115V and 1 HP 230V single phase models include a capacitor box built into the cord assembly. Three phase models are supplied with bare leads.
- Class F insulation.



2DS

SUBMERSIBLE DEWATERING PUMP

2" NPT Discharge
⅜" Solids Handling

APPLICATIONS

Specifically designed to remove water from:

- Drainage ditches
- Trenches
- Basements
- Manholes
- Excavating drainage in the building trades

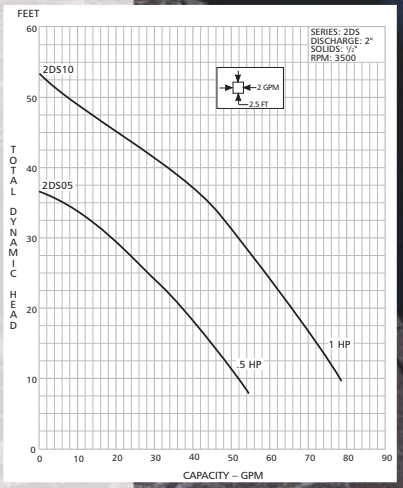
SPECIFICATIONS

Pump:

- Discharge size: 2" threaded hose coupling design.
- Capacities: up to 80 GPM.
- Total heads: up to 52 feet.
- Max. solids: any particles passing through strainer.
- Mechanical seals: outer seal – silicon carbide, inner seal – carbon ceramic.
- Temperature limit: 95° F (35° C) maximum.

Motor:

- Single phase: 3500 RPM, ½ HP and 1 HP, 115 V and 230 V, 60 Hz.
- Built-in starter with full overload and temperature protection.
- Class F insulation.
- Air filled design.
- Upper and lower heavy duty ball bearing construction.
- Power cord: 50 feet.



1SF/1SH

SUBMERSIBLE WATER PUMP

1¼" NPT Discharge
⅛" Solids Handling

APPLICATIONS

Submersible water pumps designed for pumping out of reservoirs and storage tanks:

- Homes and farms
- Mobile home parks and motels
- Schools and hospitals
- Municipal applications
- Industrial applications
- Commercial applications

SPECIFICATIONS

Pump:

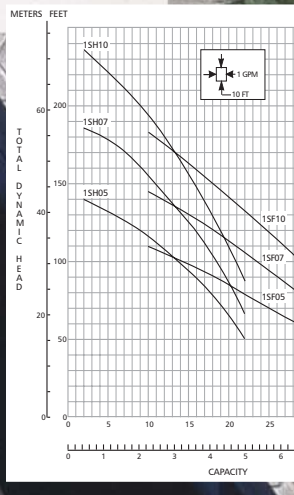
- 1¼" NPT discharge, bottom suction.
- Maximum suspended solids ⅛".
- Capacities: to 35 GPM.
- Total heads: to 240 feet TDH.
- Temperature: 104° F (40° C) continuous,140° F (60° C) intermittent.
- Continuous duty rated, non-overloading motor.

Motor:

- Single phase: 3450 RPM, 115 and 230 V, 60 Hz.
- Three phase: 3450 RPM, 230 V, 60 Hz.
- Non-overloading, Class F insulation.
- Thermal overload protection: built-in with automatic reset on single phase.
- Three phase models require external overloads in panel.
- Power cord: 30' long with BARE leads for control panel connection. Single phase – 16/4 SJTO, Three phase – 16/4 STO

NOTE: See accessory section for separate control panels.

- Single phase models supplied with capacitor box and molded NEMA three prong grounding plug.



ONCO Stocks

ONCO Stocks

MSDS

SINK DRAIN SYSTEM

1½" NPT Discharge

APPLICATIONS

Specially designed for the following uses:

- Laundry tray
- Wet bar sink
- Air conditioning or dehumidifier condensate
- Residential dishwashers
- Beautician sink

SPECIFICATIONS

Completely assembled and ready to pipe.

Pump:

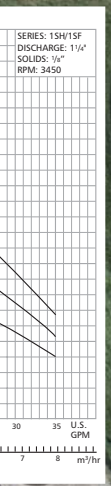
- Maximum solid size: ½".
- Discharge Size: 1½" NPT Thread.
- Maximum capacity: 50 GPM.
- Maximum Total Head: 26 feet.
- Stainless steel fasteners.
- Power cord: 10' long with NEMA three prong grounding plug.

Motor:

- HP: .33, Volts: 115, 1Ø.
- Hertz: 60.
- RPM: 3000.
- Maximum amps: 12.0.
- Maximum ambient temperature: 104º F (40º C) continuous duty.
- Rated for continuous duty when fully submerged.
- Insulation: Class B.
- Overload Protection: On-winding, automatic reset, thermal overloads.

Basin:

- 10 gallon structural foam basin.
- Dimensions: 17" diameter x 13⅞" high.
- 1½" NPT threaded vent, discharge and inlet connections.



ONCO Stocks

MWP

PACKAGED SEWAGE SYSTEMS

APPLICATIONS

- For home, rural water districts, parks and dewatering.
- Wastewater.
- Sewage lift station.
- Anywhere waste or drainage must be disposed of quickly, quietly and efficiently.

SPECIFICATIONS

Completely assembled and ready to pipe.

Pump:

- Maximum solid size: 2".
- Discharge Size: 2" NPT Thread.
- Maximum capacity: 75 GPM.
- Maximum Total Head: 18 feet.
- Stainless steel fasteners.
- 20' Power cord.
- Field installed 2" flapper check valve included.

Motor:

- HP: .5, Volts: 115, 1Ø.
- Hertz: 60.
- RPM: 1550.
- Maximum amps: 13.0.
- Maximum ambient temperature: 104º F (40º C) continuous duty 140º F (60º C) intermittent duty.
- Rated for continuous duty when fully submerged.
- Insulation: Class B.
- Overload Protection: On-winding, automatic reset, thermal overloads.

Basin:

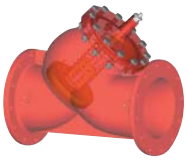
- Polyethylene roll-top design.
- Maximum Capacity: 30 gallons.
- Dimensions: 18" diameter x 30" high.
- Inlet: Field installed 4" pipe grommet.
- Inlet hole is pre-drilled.

CentriPro™ ACCESSORIES

- PANELS
- FLOAT SWITCHES
- BASINS/ COVERS
- PUMP REMOVAL SYSTEM
- FITTINGS

ITT

Bell & Gossett also manufactures Centrifugal Pumps, Residential Circulators, Hydronic Accessories, Valves and Packaged Systems.



Triple Duty® Valve

Technologic® 5500 Pump Package

1510® Centrifugal Pump

Maintenance-Free Circulators

Domestic Pump manufactures condensate transfer equipment for steam systems.

www.domesticpump.com

Domestic Pump Condensate Transfer Package

McDonnell & Miller manufactures boiler controls, flow switches and liquid level controls.

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Hoffman Steam Traps

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Engineered for life

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ISO 9001 Certified

MAGNATHERM®

COMMERCIAL HIGH EFFICIENCY

Condensing Boiler and Volume Water Heater

with VARI-PRIME™ Pump Control On-Board

MADE IN AMERICA

2.0, 2.5, 3.0, 3.5 and 4.0 MILLION BTU/HR

95% Certified Thermal Efficiency

Indoor and Outdoor Installation

Laars Heat Exchanger Design

LAARS® Heating Systems Company

A subsidiary of BRADFORD WHITE® Corporation

THE MAGNATHERM

CONDENSING BOILER & VOLUME WATER HEATER

A Perfect Balance of Size, Form and Function

Every commercial heating system is unique and as such requires a boiler that can respond to system fluctuations, while maintaining the energy conservation standards held by today's building owners. Such a boiler now exists in the innovative Laars MagnaTherm.

On board every boiler is MagnaTherm's unique VARI-PRIME™ control that allows building owners to save thousands of dollars over the life of the boiler due to dramatically reduced energy costs versus a typical on/off pump arrangement. Only the Laars MagnaTherm includes the VARI-PRIME™ control that balances combustion, air flow and water flow on every boiler!

The MagnaTherm's small footprint, slim vertical design and removable top section help it to fit into tight mechanical rooms. It's optional electrical packages allow for easy pairing with various field supply voltages. And the large easy-to-navigate color touch screen display results in quick setup and diagnostics and allows up to 8 MagnaTherms to be controlled in a cascading boiler bank.

Features:

- Laars designed and built heat exchanger
- Stylish, modern cabinet design
- Up to 99% thermal efficiency, condensing operation
- Reliable, smooth starting hot surface ignition
- Optimized gas usage for lower energy bills via a 5:1 (20% to 100% input) modulating gas valve
- Quiet, variable speed blower
- VARI-PRIME™, variable speed pump control matches system pump with boiler modulation to optimize efficiency
- Small footprint compared to others in class
- Forward mounted low voltage panel for easy wiring and trouble shooting
- Unique, sealed condensate trap does not need to be primed at startup
- Single or up to 8 boilers in a cascade installation
- Up to 100 feet of vent
- Meets the most stringent NOx emission requirements
- 439 Stainless Steel Heat Exchanger for increased corrosion resistance
- Advanced control system with temperature control, diagnostics, outdoor reset capability, and easy access for field wiring
- 10-year heat exchanger warranty

LAARS®
Heating Systems Company
A subsidiary of BRADFORD WHITE® Corporation

Getting to know the MAGNATHERM

Large Color Touch Screen

A multi-color, simple to use smart touch screen display allows you to fully control and setup the MagnaTherm.

Removable Top Section

An easy-to-remove top blower section makes getting into tight spaces and elevators a smooth operation!

Full Access

Two full-swing removable doors allow complete access to electrical, controls, gas valves and accessories from the front of the MagnaTherm for quick setup.

Electrical Flexibility

The MagnaTherm comes with a centralized electrical load center that allows for various voltage packages (single and three phase), to better match job site requirements.

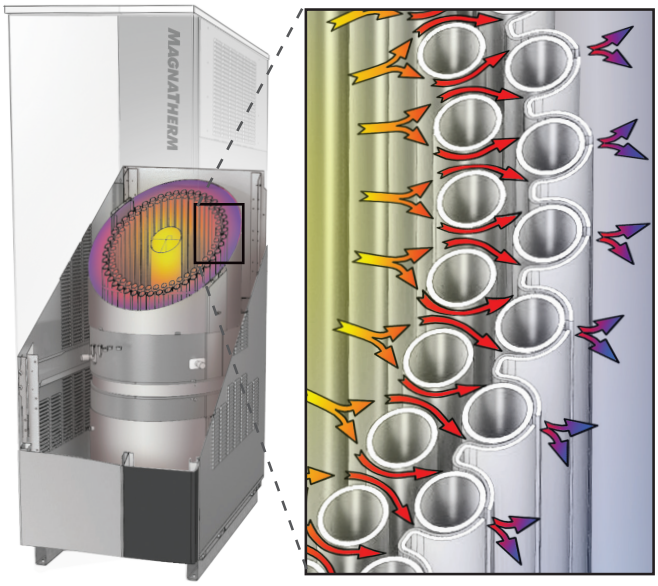
Superior Heat Exchanger Materials

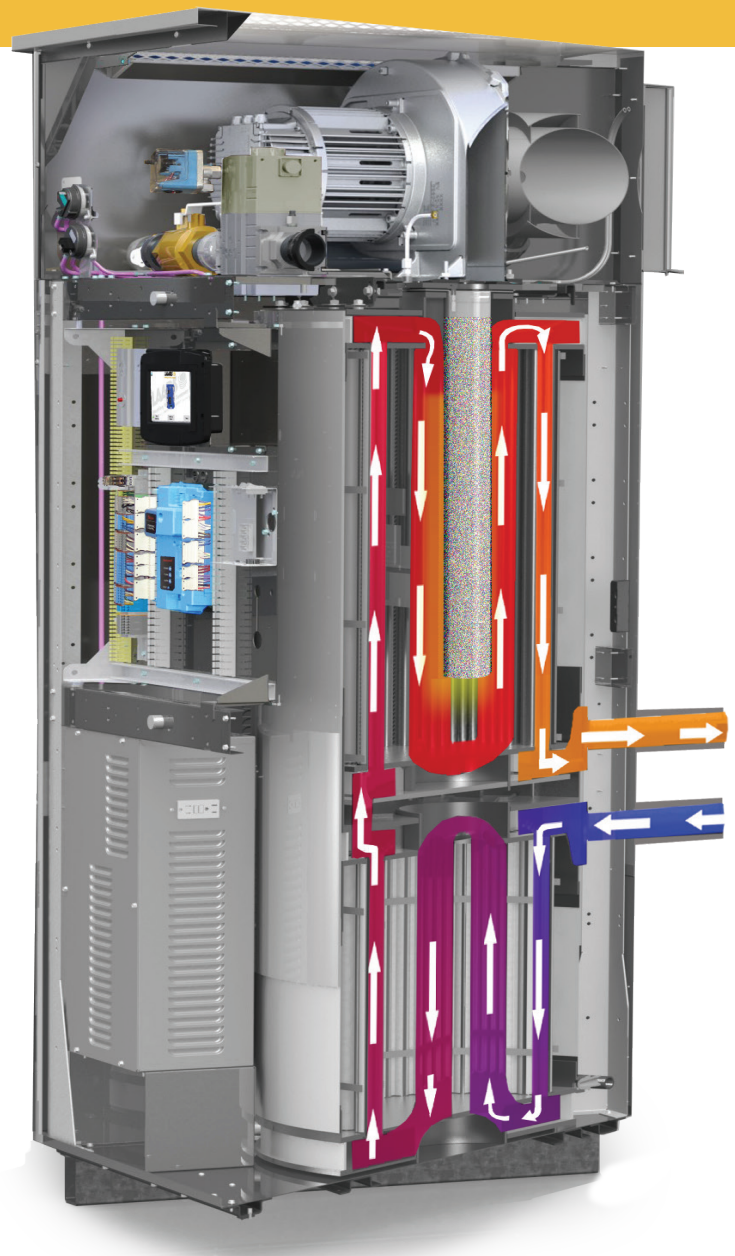
The MagnaTherm uses American produced 439 and 316 SS heat exchanger materials to withstand the extreme temperatures and caustic conditions found in high efficiency combustion chambers.

Indoor / Outdoor Installation

Slim Design, Small Footprint

The MagnaTherm's width allows it to fit through standard doorways.





Designed and Made in America

The MagnaTherm's heat exchanger design is the latest from Laars engineering. You can rely on years of worry free service knowing that the heart of the MagnaTherm was designed and built at the Laars manufacturing headquarters in Rochester, NH USA.

Optimized Heat Transfer Technology and Extended Life

The MagnaTherm's efficiency secret lies in its precise alignment of micro-finned heating tubes combined with highly engineered flue gas channels. This arrangement optimizes the flow of flue gases in order to transfer maximum heat to the water inside the heating tubes and extending heat exchanger life.

Boasting an AHRI certified 95% or higher Thermal Efficiency, indoor or outdoor certification, a 5:1 turndown and the Laars boiler VARI-PRIME™ control package, the Laars MagnaTherm is the clear choice when selecting a high efficiency boiler or volume water heater.

VARI-PRIME™ Control Technology

Laars VARI-PRIME™ flow control matches the modulation rate of a MagnaTherm's combustion system to the rate of a variable speed boiler pump. This unique on board control allows the MagnaTherm boiler to mirror the heating system's profile during varying load conditions and optimize overall efficiency.

Boiler pumps are typically sized for the maximum flow that a boiler needs, but boilers rarely operate at maximum capacity. A pump's power consumption can drop by as much as 50% with only a 20% reduction in speed. By replacing a boiler's typical on/off pump with a VARI-PRIME™ equipped MagnaTherm control and variable speed pump, over a thousand dollars in boiler pump watt usage can be saved per year. The payback for the variable speed pump setup can be realized in as little as one year!

The combined potential energy savings of the MagnaTherm's high efficiency combustion coupled with the VARI-PRIME™ control system is huge. Only the Laars MagnaTherm with built in VARI-PRIME™ controls can offer such savings in one package!

VARI-PRIME™ Pump Control Energy Savings Example

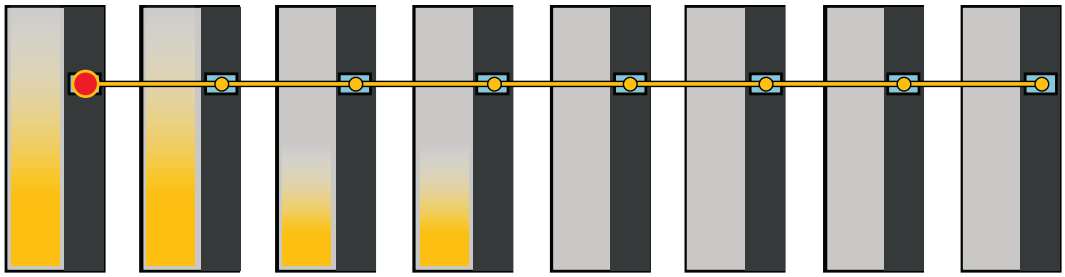
Typical boiler pump energy use seen over a full heating season located in upstate New York (September through April).

When an On/Off Boiler Pump is used - kWH consumed	18,773
When the Laars VARI-PRIME is used - kWH consumed	5,540
Annual VARI-PRIME™ kWH savings	**13,233**
Annual Percent Pump Electrical Savings	**70%**
Annual Dollar Savings*	**$1,417**

A Three Million BTU/hr MagnaTherm using VARI-PRIME™ pump control and a Goulds 22SH variable speed boiler pump were used in this example.
*2013 US Average of 11 cents per kWH used, source US Energy Information Administration.
See Laars VARI-PRIME™ white paper 9185 for complete details.

Lead Lag Cascading of up to 8 MagnaTherms

The advanced MagnaTherm control system also includes a cascading feature that allows for up to eight units to be lead lagged together. This results in a modulating heating cell of up to 32 million BTU/hr with a combined 40:1 turndown. Also included is an auto rotation function that periodically changes lead boiler to evenly spread service between all boilers. Communication with Building Automation Systems happens seamlessly via a built-in Modbus protocol included with all MagnaTherm boilers. The Laars Gateway is available for use with BacNET and LON networks.



Sizing Data, for the MAGNATHERM

Dimensional Data

Size	A		B		C		D		E 'Knock-down' Height		Water Connection	Gas Connection	Condensate Trap
	Inches	cm	Inches	cm	Inches	cm	Inches	cm	Inches	cm	Groove Lock	(NPT)	Line
2000	29.3	75	79	201	38.0	96	57.5	147	60.8	154	3"	2"	1"
2500	30.8	78	87	221	41.5	105	60.5	154	71.0	180	3"	2"	1"
3000	30.8	78	87	221	41.5	105	60.5	178	71.0	180	3"	2"	1"
3500	34.5	88	97	246	52.0	132	70.0	178	80.8	205	4"	2"	1"
4000	34.5	88	97	246	52.0	132	70.0	178	80.8	205	4"	2"	1"

Sizing Data

Size	Input Rate		Output Rate		Boiler Thermal Efficiency	Water Heater Thermal Efficiency	Product Weight		Operating Weight		Shipping Weight		Minimum Gas Supply		Vent Diameter	Vent Length
	MBH	KW	MBH	KW	%	%	Lbs	Kg	Lbs	Kg	Lbs	Kg	" w.c.	Pa	in (cm)	ft (m)
2000	1999	586	1883	552	95.0	96	1390	630	1562	709	1590	721	4	996	8 (20)	100 (30.5)
2500	2499	732	2374	696	95.0	96	1785	810	2039	925	1985	900	4	996	8 (20)	100 (30.5)
3000	3000	879	2814	825	95.0	95	1785	810	2039	925	1985	900	4	996	10 (25)	100 (30.5)
3500	3500	1025	3317	972	95.0	96	2278	1033	2742	1244	2478	1124	4	996	10 (25)	100 (30.5)
4000	4000	1172	3724	1091	95.0	96	2278	1033	2742	1244	2478	1124	4	996	12 (30)	100 (30.5)

Venting and piping locations on Back of MagnaTherm do vary from size to size.

For further details of MagnaTherm specifications, please see the MagnaTherm Submittal Data Sheets which are available online at www.laars.com

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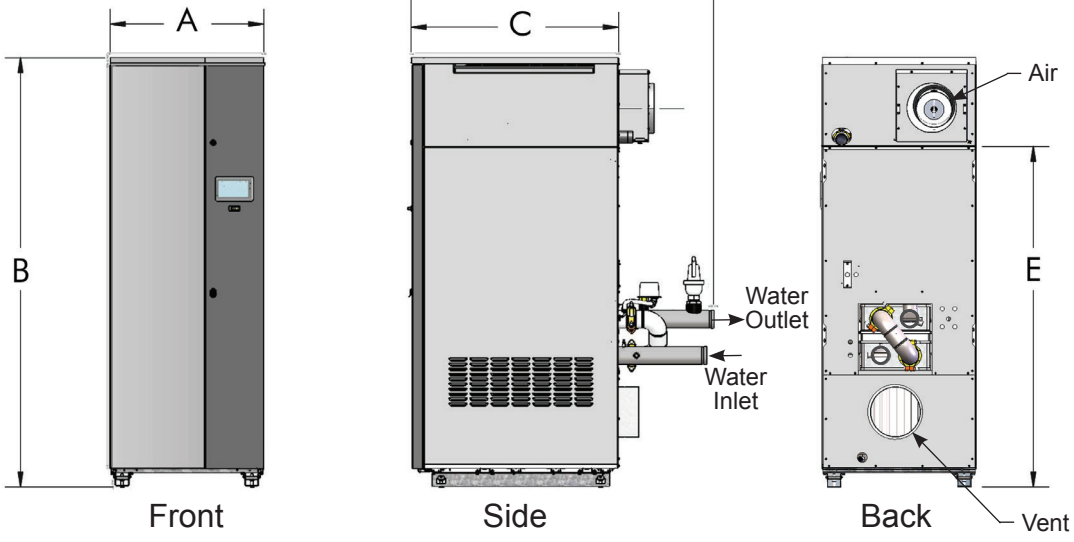

Boiler, Water Flow Requirements

Size	Temperature Rise in °F					
	30°F		35°F		40°F	
	Flow	Head Loss*	Flow	Head Loss*	Flow	Head Loss*
	GPM	Feet	GPM	Feet	GPM	Feet
2000	128	23.5	109	17.1	95	13.6
2500	158	23.6	136	17.6	119	13.6
3000	190	34.2	164	25.8	142	18.9
3500	222	30.6	190	23.6	166	18.6
4000	255	38.2	218	28.5	190	22.5

Size	Temperature Rise in °C					
	17°C		19°C		22°C	
	Flow	Head Loss*	Flow	Head Loss*	Flow	Head Loss*
	LPM	m	LPM	m	LPM	m
2000	485	7.2	413	5.2	360	4.2
2500	599	7.0	514	5.0	449	4.1
3000	719	10.4	621	7.9	538	5.8
3500	839	9.0	719	7.0	629	6.0
4000	965	11.6	825	8.7	719	6.9

Volume Water Heater, Flow Requirements

Size	Flow Rate	Temp Rise	Headloss*	Flow Rate	Temp Rise	Headloss*
	GPM	°F	Ft	LPM	°C	m
2000	152	25	33.0	575	14	10.1
2500	190	25	33.7	719	13.9	10.0
3000	190	30	36.0	719	17	11
3500	222	30	30.6	839	17	9.0
4000	224	34	30.0	848	19	9.1

Water Hardness of 1-10 grains per gallon. Allowable pH: 6.5 to 9.5
*Headloss is for the heater only (no piping).

MagnaTherm Electrical Options

Voltage	Current (FLA)				
	2000	3500	3000	3500	4000
120V Single Phase	22.6	N/A	N/A	N/A	N/A
220V Single Phase	11.3	N/A	N/A	N/A	N/A
208V Three Phase	12.7	19.4	19.4	19.4	19.4
480V Three Phase	6.2	8.7	8.7	8.7	8.7
600V Three Phase	4.5	5.9	5.9	5.9	5.9

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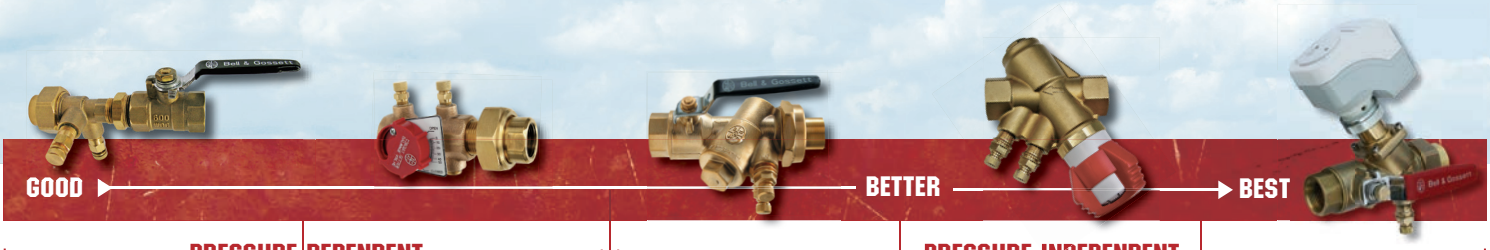
- **Complete coil hook-up kits** available for ease of installation and serviceability.



PRESSURE DEPENDENT

VENTURI BALL OR BUTTERFLY VALVE COMBINATION
Provides venturi flow accuracy with a standard valve for flow control.

CIRCUIT SETTER PLUS CALIBRATED BALANCE VALVE
Externally field adjustable manual balance valve – the industry standard.

PRESSURE INDEPENDENT

CIRCUIT SENTRY FLOW LIMITING VALVE
Automatically maintains set flow rate for improved system efficiency.

CIRCUIT SENTRY FLO-SETTER LIMITING VALVE
Externally field adjustable automatic valve for specific flow requirements. Set to the desired GPM on the handle.

ULTRA SETTER (PICV)
Field adjustable control valve with 100% authority – the ultimate in system balance and efficiency.

BALANCE VALVES	FEATURES	PRESSURE DEPENDENT	FIELD ADJUSTABLE	CONSTANT FLOW	PRESSURE INDEPENDENT	AUTOMATIC TEMPERATURE CONTROL
ULTRA SETTER AND ULTRA SETTER COMPACT (PICV) Field adjustable control valve with 100% authority – the ultimate in system balance and efficiency.  Size Range: ½" – 6" Flow Range: 0.13 GPM – 880 GPM Sweat (female) NPT (male and female) ANSI Class 150/250# Flange	• Full modulating, on-off, or tri-state control valve with 100% authority • Automatically maintains a constant required flow rate despite changes in system pressure • Eliminates valve hunting, improving system efficiency • Auto-adjust, pressure independent control valve • Maintains desired flow rate +/-5% • Reduces design, installation and commissioning time • Lowers energy costs and ensures better comfort • Brass models ½" – 2" available with and without isolation valve		✓	✓	✓	✓
CIRCUIT SENTRY FLO-SETTER Externally field adjustable automatic valve for specific flow requirements.  Size Range: ½" – 2" Flow Range: 0.18 GPM – 45.46 GPM NPT (female)	• GPM scale on the handle • Keeps constant fluid flow, automatically adjusting for fluctuating pressure conditions • External locking handle allows for easy on-site flow adjustment without additional tools • Quick and easy selection as only flow data is required • Flexibility if the system is modified after installation • Isolation valve option available		✓	✓	✓	

Bell & Gossett offers a complete array of balancing solutions to fulfill all your needs.

BALANCE VALVES	FEATURES	PRESSURE DEPENDENT	FIELD ADJUSTABLE	CONSTANT FLOW	PRESSURE INDEPENDENT	AUTOMATIC TEMPERATURE CONTROL
CIRCUIT SENTRY Automatically maintains set flow rate for improved system efficiency.  Size Range: ½" – 2½" Flow Range: 0.33 GPM – 150 GPM  Size Range: 2½" – 20" Flow Range: 15 GPM – 7,200 GPM	• Keeps constant fluid flow, automatically adjusting for fluctuating pressure conditions • Unique diaphragm pressure control element allows one cartridge for most systems • Large open flow path for clog free operation • Multiple Connections: - Union – upstream (½" – 2") - Sweat and NPT (male and female) (½" – 2") - Flanged (2½" – 20") • No requirement on pipe length before and after the valve for easier application and piping • Integral isolation valve			✓	✓	
CIRCUIT SETTER PLUS Externally field adjustable manual balance valve – the industry standard.  Size Range: ½" – 3" Flow Range: 0 GPM – 375 GPM  Size Range: 2½" – 12" Flow Range: 8 GPM – 7,200 GPM	• Calibrated accurate flow control and measurement • Pre-balance design capability • Memory stop indicator • Integrated valved readout ports • Optional drain valve available • Positive shut-off • Multiple Connections: - Union – upstream (½" – 2") - Sweat (female) and NPT (male and female) (½" – 2") - Flanged and Grooved (2½" – 12") • Bi-directional (½" – 3")	✓	✓			
MODEL MV VENTURI VALVES Provides venturi flow accuracy with a standard valve for flow control.  Size Range: 1/2" – 2" Flow Range: 0.3 GPM – 68 GPM  Size Range: 2½" – 12" Flow Range: 30 GPM – 9,700 GPM	• Efficient venturi design provides for accurate flow measurement • Balances flow with minimal pressure loss • Standard port ball or butterfly valve with memory stop indicator • Multiple Connections: - Union – upstream (½" – 2") - Sweat and NPT (male and female) (½" – 2") - Flanged, Grooved and Weld (2½" – 12")	✓	✓			

Trust the name that set the standard in the HVAC industry – Bell & Gossett.

For over 90 years Bell & Gossett has brought you the most reliable and innovative products for hydronic, HVAC and plumbing systems. From pumps and heat exchangers, to air management systems and valves, Bell & Gossett knows what you need to get the job done right the first time and provide lasting value.

Your local Bell & Gossett representative is an experienced professional with a wealth of technical expertise. Because they know systems from design to operation, they can give you the advice and support you need to successfully install, operate and maintain your hydronic systems.

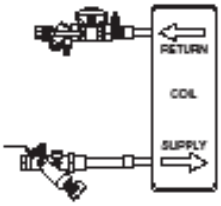
For more information, visit www.bellgossett.com

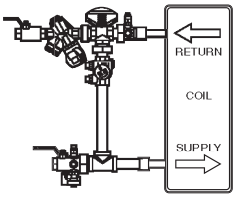
Coil Kits

Bell & Gossett coil kits and balancing solutions make selection, ordering, and installation a breeze for the engineer, customer, installer, and help reduce field problems during and after system commissioning. We offer a number of ways of controlling flow to optimize the efficiency of the circuits and total HVAC system and a solution to your balancing problem.

B&G Coil Kit Benefits

- Optimizes the coil's heat transfer efficiency
- Quick installation
- Easy commissioning
- Easy serviceability
- Flexibility
- Customizable
- Trusted quality
- Quick lead times

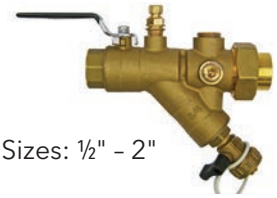




Coil supply line options

Union Ended Ball Valve / Y-Strainer (Model UBY)

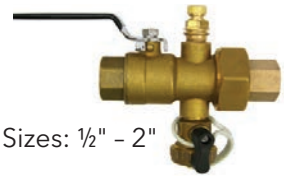
- Helps remove the sediment in the water that can settle inside the coil which affect heat transfer and efficiency
- Built-in isolation valve allows for easy serviceability
- Ability to accommodate a 3-way control valve
- Drain valve included (½" – 2")
- Includes a pressure/temperature port (with integrated T-Handle for UBYL)
- Customizable
- Y-Strainer with or without butterfly valve available up to 8" with optional accessories



Sizes: ½" – 2"

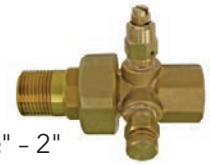
Union Ended Ball Valve (Model UBV)

- Built-in isolation valve allows for easy serviceability
- Drain valve included
- Includes a pressure/temperature port
- Customizable



Sizes: ½" – 2"

Sizes: 2½" – 8"



Sizes: ½" – 2"

Coil return line options

Union Accessory (Model UA)

- Union Ended for easy serviceability
- Includes an air vent to help remove trapped air in the coil
- Includes a pressure/temperature port
- Customizable

Temperature Control Valves (Provided by others)

- Can be implemented into the coil kit prior to shipment
- Kits can accommodate 2-way or 3-way valves
- Union tailpiece connections to control valve for easy serviceability
- Customizable

Bypass control valve options

When required, any of our balance/flow limiting valves or kit components can be utilized as your bypass control valve. The chosen bypass valve will be packaged and shipped with your other valves to help ease installation and commissioning.

Hose kit assemblies

We can assemble your hoses to the supply and return side valves prior to shipment. **Custom kit configurations available on request.**

Flow limiter, balancing valve, and accessory options

- Extended handles for valves (all except Circuit Setter Plus)
- Extended pressure/temperature ports
- Extended drain valves
- Extended air vents
- 12", 18", 24" and 36" stainless steel hoses (custom sizes available also – 6" length minimum)

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LAARS NEOTHERM LC

COMMERCIAL MODULATING CONDENSING BOILERS AND VOLUME WATER HEATERS

Innovative technology and user-friendly features are at the heart the NeoTherm LC. The compact workhorse is available in sizes of 1.0 or 1.7 million BTU/hr and is powered by a dual fired ASME stainless steel water tube heat exchanger resulting in 10:1 turndown and thermal efficiencies as high as 99%. Setup, operation and diagnostics are made easy with the NeoTherm LC's large color touch screen display.

Large, easy to use touch screen

Powering the NeoTherm LC is a dual fired heat exchanger that has two equally sized burners surrounded by coiled water tubes. These burners can modulate independently of each other to maximize fuel utilization. An added redundancy feature of the dual burner design is if for some reason one of the two burners were to fail the other will still be available to provide heat.

The advanced NeoTherm LC control system includes a cascading feature that allows for up to four boilers to be lead lagged with onboard controls. Up to eight NeoTherm LC boilers can be lead lagged when coupled with M4 and M4EXT controllers. This results in a modulating heating cell of up to 8 million BTU/hr with a combined 80:1 turndown. Also included with the onboard controls is an auto rotation function that periodically changes lead boiler to evenly spread service between all boilers. Communication with Building Automation Systems happens easily via a built-in Modbus protocol included with all NeoTherm LC boilers.


Color screen and gas valves can be adjusted (via access ports) at the same time when outer jacket is removed, making for fast and easy combustion setup.


Access to color display, internal components and pull out controls result in easy diagnostics and adjustments when sealed jacket is removed.

Contractor friendly design allows for faster setup and easier diagnostics.

LAARS® NEOTHERM LC FEATURES

- Full fire thermal efficiencies as high as 96%
- 10% to 100% modulation (10:1 turndown)
- Low 10ppm NOx
- Sealed combustion
- Pre-mix stainless steel burner
- Horizontal or vertical direct vent
- Built in condensate trap
- Indirect water heater priority
- Large color touch screen display
- Compact footprint
- Direct spark ignition system
- Stainless steel, heat exchanger with welded construction (no gaskets)
- 160 psi maximum working pressure
- Boiler: 75 psi (517kPa) ASME rated pressure relief valve
- Volume Water Heater: 125 psi (861 kPa) ASME rated pressure relief valve
- Water Flow Switch
- Temperature and Pressure gauge
- Drain Valve
- Multiple pump control for boiler pump, system pump and indirect domestic water pump, each with delay
- Cascading PID modulating feature for up to 4 boilers to be lead lagged, 8 with M4 controller
- Alarm output
- Outdoor reset
- PVC, CPVC, Polypropylene or Stainless steel venting
- Direct vent up to 100ft, Vertical or Horizontal
- Outdoor air temperature sensor
- On/off toggle switch
- Manual reset high limit
- Burner site glass
- All piping and wiring from the back of the boiler
- Modbus Communications
- Indoor/Outdoor installations
- ASME H-Stamp

Warranty:

- 10 year limited Boiler warranty
- 5 year limited Volume Water Heater warranty

LAARS® NEOTHERM LC SPECIFICATIONS

Size	Boiler Combustion Efficiency	Water Heater Thermal Efficiency	Input MBH (kw)	Output MBH (kw)		Air Inlet in (cm)	Vent in (cm)	Connection Size (NPT)		Amp Draw (no pump)		Shipping Weight lbs (kg)
				Boiler	VWH			Water	Gas	Nominal	FLA	
1000	94.2%	95.0%	1000 (293)	942 (276)	950 (278)	6 (15)	6 (15)	2	1.5	5	12	620 (281)
1700	94.7%	96.0%	1700 (497)	1,609 (471)	1,632 (478)	8 (20)	8 (20)	2½	2	15	30	885 (401)

Boiler Temperature Rises in Degrees

Size	Temperature Rise in °F											
	20°F		25°F		30°F		35°F		40°F		45°F	
	Flow (gpm)	H/L (ft)	Flow (gpm)	H/L (ft)	Flow (gpm)	H/L (ft)	Flow (gpm)	H/L (ft)	Flow (gpm)	H/L (ft)	Flow (gpm)	H/L (ft)
1700	162	41	129	27	107	19	92	14	81	11	72	9

Recovery Data Volume Water Heater

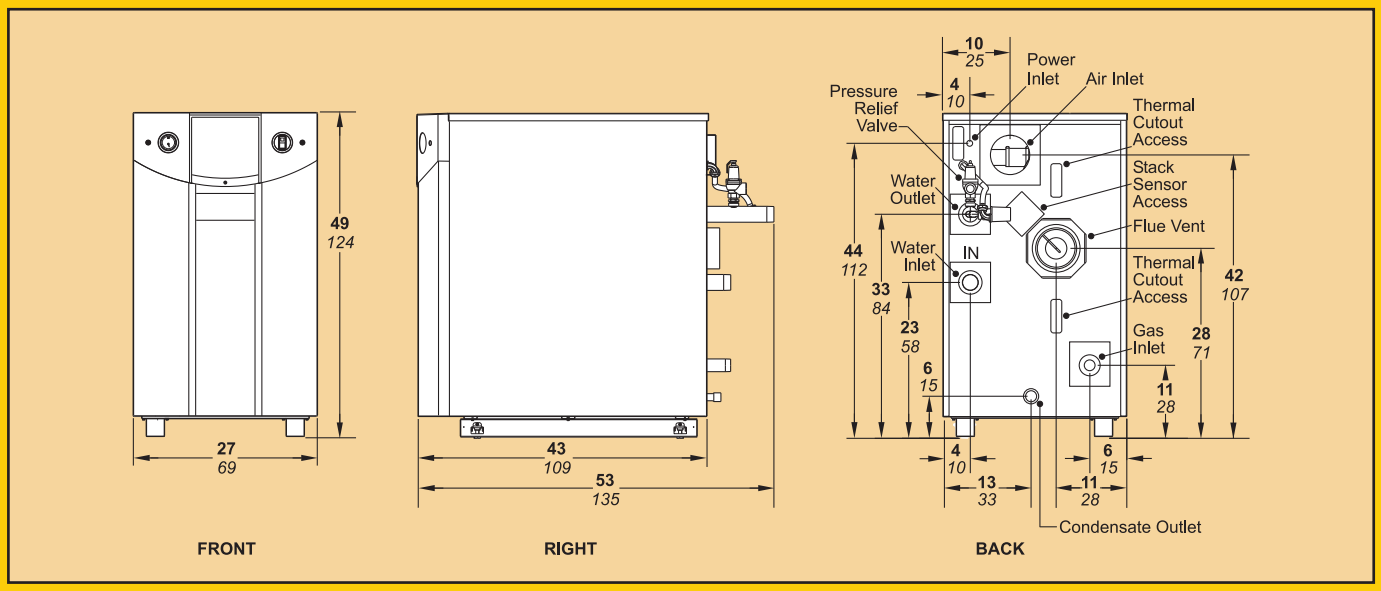
Size	Design Temperature Rise Across Water Heater (gph)								
	40°F	50°F	60°F	70°F	80°F	90°F	100°F	120°F	140°F
1000	2857	2286	1905	1633	1429	1270	1143	952	816
1700	4145	3876	3230	2768	2422	2153	1938	1615	1384

Size	Design Temperature Rise Across Water Heater (lph)								
	40°F	50°F	60°F	70°F	80°F	90°F	100°F	120°F	140°F
1000	10799	8641	7201	6173	5402	4801	4321	3599	3084
1700	15614	14672	12226	10478	9168	8149	7336	6113	5239

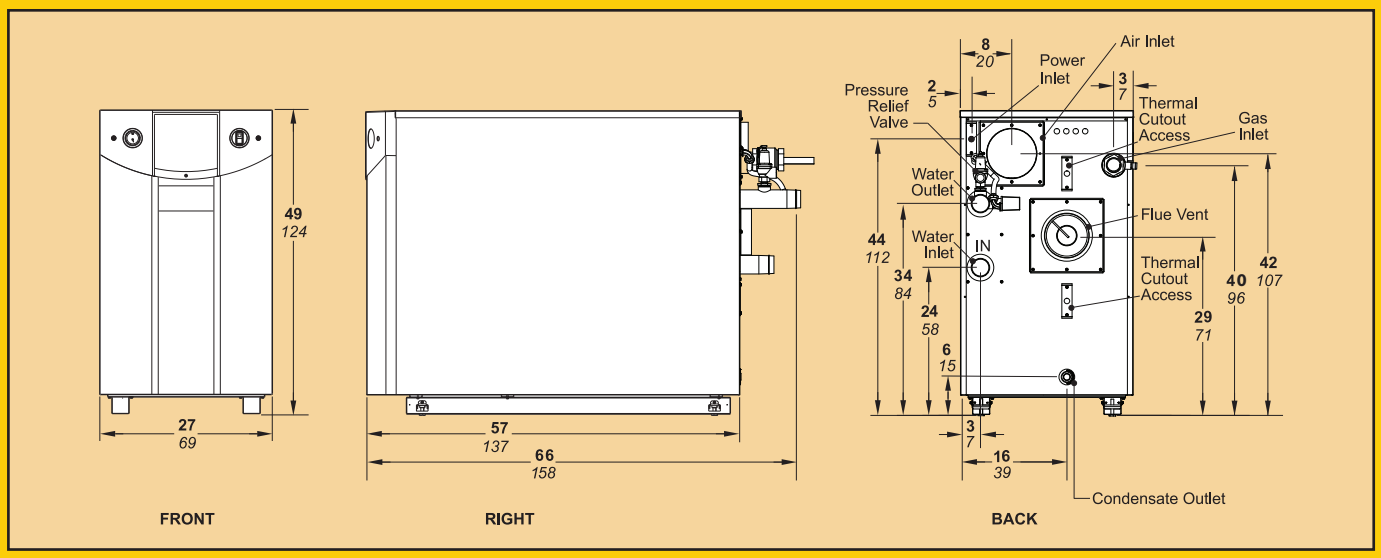
Compact in size, with minimal clearance needed and up to 100 feet of vent length (both vertical and horizontal), the NeoTherm LC brings up to 1.7 million BTU/hr into tight spaces but can also be installed outdoors giving ultimate flexibility to installers. Up to eight NeoTherm LC boilers can be lead lagged as a fully modulating 8 million BTU/hr heating cell.

LAARS® NEOTHERM LC DIMENSIONS

NeoTherm 1000 Dimensions



NeoTherm 1700 Dimensions



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FOX Thermal Instruments, Inc.

Fox Thermal
foxthermalinstruments.com
Gas Flow Meters

Norgas

Norgas
norgas.com
Water & Gas Meters

Metraflex
for pipes in motion

Metraflex
metraflex.com
Metraloops, Strainers (Wye & Basket), Flexible Pump Connectors, Expansion Joints, Seals

VALVES & OTHER EQUIPMENT *(cont.)*

American Cooling Tower, Inc.

American Cooling Tower *
americancoolingtower.com
Cooling Tower Construction & Service

MTA
Cooling, conditioning, purifying.

MTA Cooling
mta-it.com/eng
Cooling, conditioning, purifying

amiad Water Systems

Amiad Water Systems
amiad.com
Water Filtration Systems

CoolBLUE Inductive Absorbers

Cool Blue
coolblue-mhw.com
Inductive Absorbers

RIELLO BURNERS

Riello *
riello-burners.com
Commercial & Industrial, Process Burners & Controls

VIBRO-ACOUSTICS

Vibro-Acoustics
vibro-acoustics.com
Noise Control, Vibration Isolation, Restraint Systems, Air Handling, Air Distribution

HERRMIDIFIER

Herrmidifier
herrmidifier.com
Indoor Air Humidification

SEE WATER Inc.

See Water
seewaterinc.com
Pump controllers, panels, and sensors; Liquid level alarms for water and oil

MILJOCO Corporation

Miljoco
miljoco.com
Thermometers & Gauges

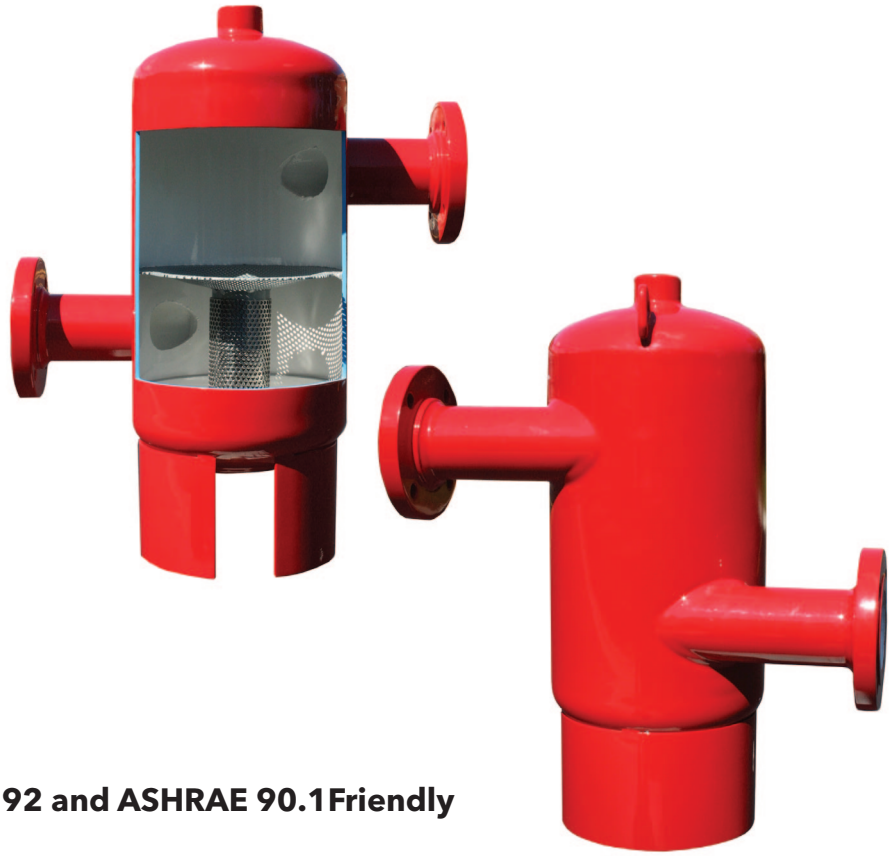
* *Some territory limitations apply*

REMOVES ENTRAINED AIR
- To protect the system against damage
- To eliminate system noise

TANGENTIAL FLOW PATTERN
- Increases air separation efficiency
- Allows use of smaller sizes than required with straight flow separators

MODELS UP TO 36" PIPE SIZE
- NPT, flanged or grooved connections are available, with and without strainers
- Stainless steel construction available

CONSTRUCTED IN ACCORDANCE WITH ASME CODE
- Stamped 125 psig, higher design pressures are available



EPACT 92 and ASHRAE 90.1Friendly

Rolairtrol® Air Separator

For Hot and Chilled Water Systems

A-305G

Bell & Gossett
a xylem brand

THE BELL & GOSSETT ROLAIRTROL, SUPREME AIR SEPARATION FOR COMMERCIAL SYSTEMS

DESCRIPTION

The Bell & Gossett Rolairtrol is a patented air separator with significant advantages. The Rolairtrol is capable of removing the air that commonly causes problems in commercial hot and chilled water systems. The Rolairtrol provides air free flow, improving efficiency and performance of the HVAC system.

Every aspect of the Rolairtrol design maximizes air separation and simplifies installation and maintenance. The air separation efficiency of the Rolairtrol is significantly higher than any other commercial air separator on the market.

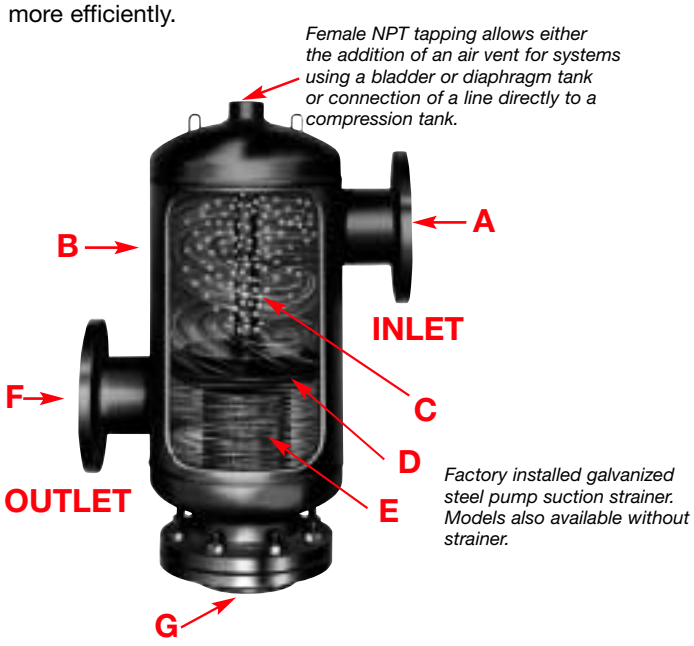
The standard Rolairtrol air separator is constructed to meet ASME code and is stamped for design pressure and temperature ratings of 125 psig (862 kPa) and 350°F (177°C). Higher pressure and temperature models are available.

EPACT 92 IMPACT

As part of the Federal Energy Policy Act of 1992 (known as EPACT 92), effective October 25, 1997, the U.S. Dept. of Energy has established ASHRAE/IESNA Standard 90.1-1989 as the Energy efficiency benchmark for HVAC systems in all new buildings (except low rise residential).

ASHRAE 90.1 has a provision in the form of a clause on building energy transport systems. It states that "energy should be transported by the most efficient means possible and that distribution systems should be selected to complement other system parameters such as control strategies, storage capabilities, conversion, and utilization efficiencies."

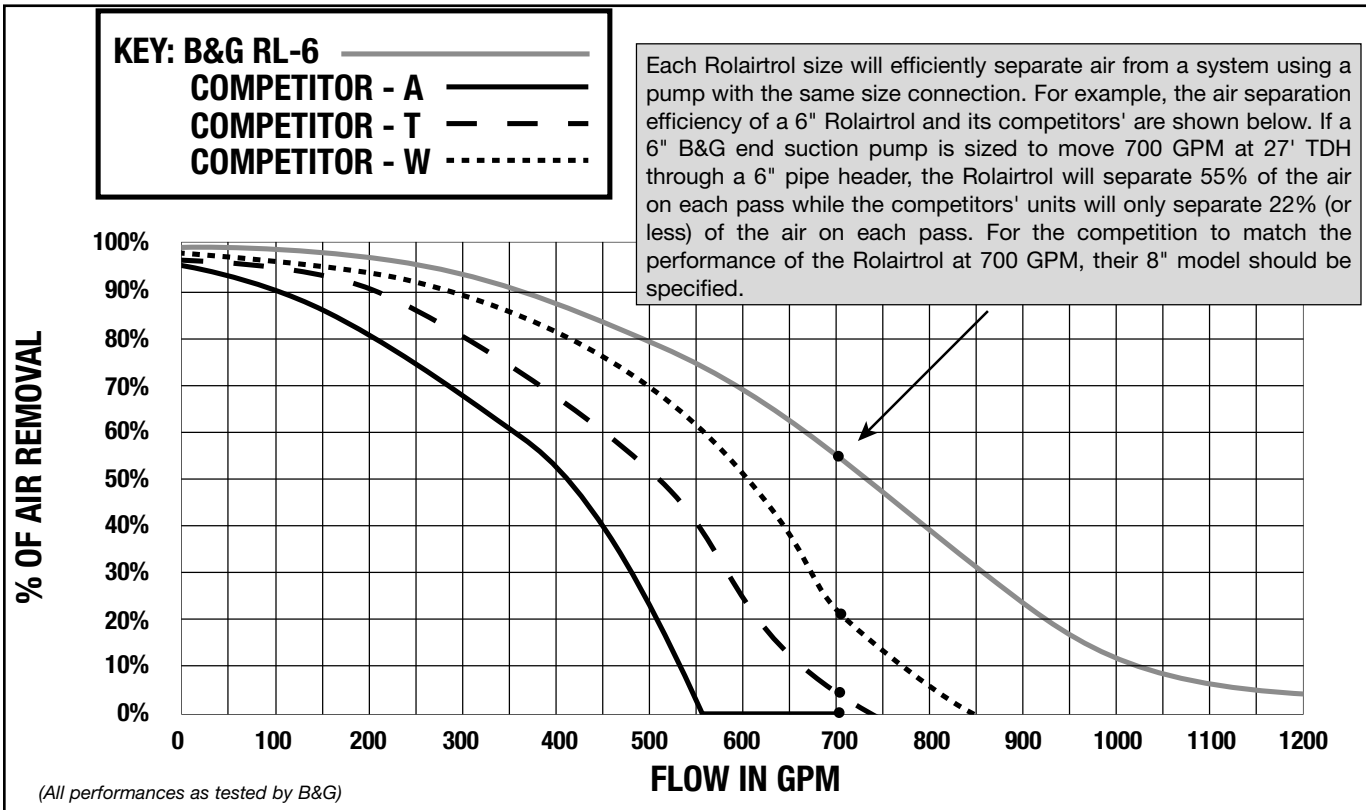
How will a B&G Rolairtrol assist a commercial HVAC system meet EPACT 92 requirements? An air bound system is an inefficient energy transfer system. When the B&G Rolaitrol removes entrained air from a commercial HVAC system, it allows the pumps and valves to operate and transport energy more efficiently.



ROLAIRTROL FEATURES	ROLAIRTROL BENEFITS
A Tangential Flow Through Design	**Original B&G Design...Perfected by B&G –** The Rolairtrol provides maximum air separation efficiency due to a combination of centrifugal force and velocity reduction. The Rolairtrol's tangential design creates a whirlpool inside the vessel. This vortex action sends heavier, air-free water to the outer portion of the vessel shell while forcing the separated air into the center where it is drawn to the air collector tube. The tangential design has been proven to have greater air separation efficiency when compared to less effective, straight flow air separators.
B Vessel Shell is 3 Times the Nominal Inlet/Outlet Pipe Diameter	**Original B&G Design...Perfected by B&G –** The vessel shell is at least 3 times the inlet and outlet pipe diameter. This assures maximum velocity reduction in order to develop the highest possible air separation efficiency.
C Stainless Steel Air Collector Tube	**Exclusive B&G Design –** An air collector tube is provided to efficiently gather and centralize the separated air. The separated air is easily directed upwards through the tube and vented in air elimination systems or returned to the compression tank in air control systems.
D Baffle	**Exclusive B&G Design –** The baffle is a barrier between the air-free water and the separated air. It assures that only air-free water is tranferred to the outlet connection while separated air is directed to the collector tube.
E Vertical Strainer with Bottom Access	**Exclusive B&G Design –** Unlike the upper, horizontal strainer location in competitive air separators, the Rolairtrol's lower, vertical strainer does not interfere with the vortex action necessary for proper air removal…maximizing efficiency. In addition, the Rolairtrol's strainer is accessible from the bottom of the unit, reducing floor space while simplifying maintenance and clean out of accumulated system debris.
F NPT, Grooved and Flanged Connections	**Exclusive B&G Product Offering –** 3 connection options offer installation flexibility. 2"-3" models are NPT, 3"-12" models are grooved or flanged, and 14"-36" models are flanged.
F Up to 36" Pipe Size Connections	**Exclusive B&G Product Offering –** Models up to 36" in pipe diameter will meet the air separation requirements in the largest HVAC systems.
G Optional B&G Manual Blowdown Valve	**Exclusive B&G Product Offering –** A 1" NPTF manual blowdown valve is available to simplify installation, general maintenance, and remove start-up debris.

BELL & GOSSETT ROLAIRTROL FEATURES VERSUS THE COMPETITION

AIR SEPARATION EFFICIENCY COMPARISON (6" MODEL)



Cv COMPARISON (WITHOUT STRAINER)

MANUFACTURER:	B&G RL-6	COMPETITOR-A	COMPETITOR-T	COMPETITOR-W
6" Separators:	850	720	750	410

3 TIMES PIPE DIAMETER

MANUFACTURER:	B&G	COMPETITOR-A	COMPETITOR-T	COMPETITOR-W
	All Models	Only 2" Size	Only 2"-6" Sizes	Only 2"-4", 6", 10" Sizes

COLLECTOR TUBE

MANUFACTURER:	B&G	COMPETITOR-A	COMPETITOR-T	COMPETITOR-W
	All Models	Not Available	Not Available	Not Available

BAFFLE

MANUFACTURER:	B&G	COMPETITOR-A	COMPETITOR-T	COMPETITOR-W
	All Models	Not Available	Not Available	Not Available

STRAINER ACCESS

MANUFACTURER:	B&G “R” TYPE	COMPETITOR-A	COMPETITOR-T	COMPETITOR-W
	Vertical/Bottom	Horizontal/Side	Horizontal/Side	Horizontal/Side

ROLAIRTROL MATERIALS, OPERATING DATA & AIR ELIMINATION EFF.

CONSTRUCTION MATERIALS

Body – Models R-2, RL-2, R-2½, and RL-2½: Cast iron

Shell – All other models: Steel

System Strainer ("R" Models only): Have galvanized steel strainers with 3/16" (4.8mm) diameter perforations with 51% open area.

Air Collector Tube: Stainless steel with 5/32" (4mm) diameter perforations and 63% open area.

Baffle/Collector Tube Support Assembly: Steel

OPERATING DATA*

Maximum working pressure . . . . . 125 PSIG (862 kPa)
Maximum operating temperature . . . . . 350°F (177°C)

*Higher pressure and temperature ratings are available upon request.

PERFORMANCE DATA*

Model No.	Design Capacity** GPM (m^3/hr)	Size of Tangential Openings		Cv	Strainer Free Area in Sq. Inches (mm^2)
R-2	56 (12.7)	2	NPT	44	32 (20,645.1)
R-2½	90 (20.4)	2½	NPT	64	45 (29,032.2)
R-3***	190 (43.2)	3	NPT	80	66 (42,580.6)
R-4(G)	300 (68.1)	4	Flanged or Grooved	135	140 (90,322.4)
R-5(G)	500 (120.4)	5	Flanged or Grooved	215	140 (90,322.4)
R-6(G)	700 (159.0)	6	Flanged or Grooved	305	220 (141,935.2)
R-8(G)	1,300 (295.2)	8	Flanged or Grooved	532	310 (199,999.6)
R-10(G)	2,000 (454.2)	10	Flanged or Grooved	850	435 (280,644.6)
R-12(G)	2,750 (624.5)	12	Flanged or Grooved	1,180	590 (380,644.4)
R-14	3,400 (772.1)	14	Flanged	1,445	715 (461,289.4)
R-16	4,400 (999.2)	16	Flanged	1,885	919 (592,902.0)
R-18	5,200 (1,180.9)	18	Flanged	2,340	1,521 (981,288.4)
R-20	6,300 (1,430.7)	20	Flanged	2,945	1,989 (1,282,223.2)
R-22	7,400 (1,680.5)	22	Flanged	3,725	2,322 (1,498,061.5)
R-24	8,500 (1,930.4)	24	Flanged	4,325	2,841 (1,832,899.6)
RL-2	56 (12.7)	2	NPT	55	N/A
RL-2½	90 (20.4)	2½	NPT	80	N/A
RL-3***	190 (43.2)	3	NPT	215	N/A
RL-4(G)	300 (68.1)	4	Flanged or Grooved	370	N/A
RL-5(G)	530 (120.4)	5	Flanged or Grooved	580	N/A
RL-6(G)	850 (193.0)	6	Flanged or Grooved	850	N/A
RL-8(G)	1,900 (431.5)	8	Flanged or Grooved	1,445	N/A
RL-10(G)	3,600 (817.6)	10	Flanged or Grooved	2,340	N/A
RL-12(G)	4,800 (1,090.1)	12	Flanged or Grooved	3,300	N/A
RL-14	6,100 (1,385.3)	14	Flanged	3,900	N/A
RL-16	8,000 (1,861.8)	16	Flanged	5,100	N/A
RL-18	9,700 (2,202.9)	18	Flanged	6,410	N/A
RL-20	12,000 (2,725.2)	20	Flanged	8,000	N/A
RL-22	15,000 (3,406.5)	22	Flanged	10,000	N/A
RL-24	17,000 (3,860.7)	24	Flanged	11,700	N/A

*For 26"-36" sizes, performance data is available upon request.
**Recommended design capacity at 40% first pass, air elimination efficiency.
***Flanged and grooved connections are also available for the 3" Rolairtrol.
For approximate dimensions, see B&G Rolairtrol Submittal A-326G.

AIR ELIMINATION EFFICIENCY

To find the first pass air elimination percentage of any Rolairtrol size, perform the following steps:

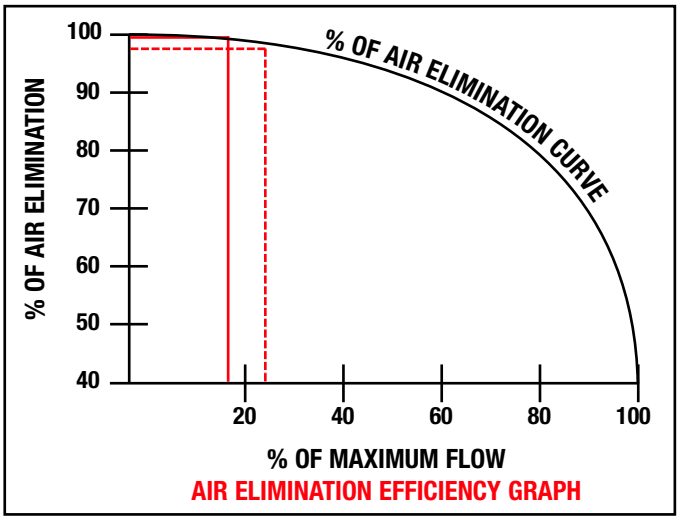
A. Determine actual system flow rate.

B. Find the maximum capacity of the Rolairtrol model (see Performance Data, below, left)

C. Use A & B in the following formula –

$$\frac{A}{B} \times 100 = \%\ \text{OF MAXIMUM FLOW}$$

D. Draw a vertical line from the x-axis on the Air Elimination Efficiency Graph to the % air elimination curve line and find the percentage of air elimination.



AIR ELIMINATION EFFICIENCY GRAPH

Example No. 1: For an R-8 (with strainer) with 350 GPM passing through it, the percentage of maximum flow would be *(BROKEN RED LINE ABOVE)*:

$$\frac{350}{1{,}300} \times 100 = 26.92\%$$

At this % of maximum flow the R-8 will separate **97.5%** of the entrained air on each pass through the unit. The pressure drop through the unit with a clean strainer would be 1.0 feet (see page 5).

Example No. 2: For an RL-8 (less strainer) with 350 GPM passing through it, the percentage of maximum flow would be *(SOLID RED LINE ABOVE)*:

$$\frac{350}{1{,}900} \times 100 = 18.42\%$$

At this % of maximum flow the R-8 will separate **98.5%** of the entrained air on each pass through the unit. The pressure drop through the unit with a clean strainer would be 0.14 feet (see page 5).

ROLAIRTROL MANUAL BLOWDOWN VALVE ACCESSORY MODEL MBV-1

The MBV-1 facilitates routine manual purging of system debris collected at the bottom of the separator. See B&G MBV-1 Submittal A-329 for more details.

MBV-1 CONSTRUCTION MATERIAL

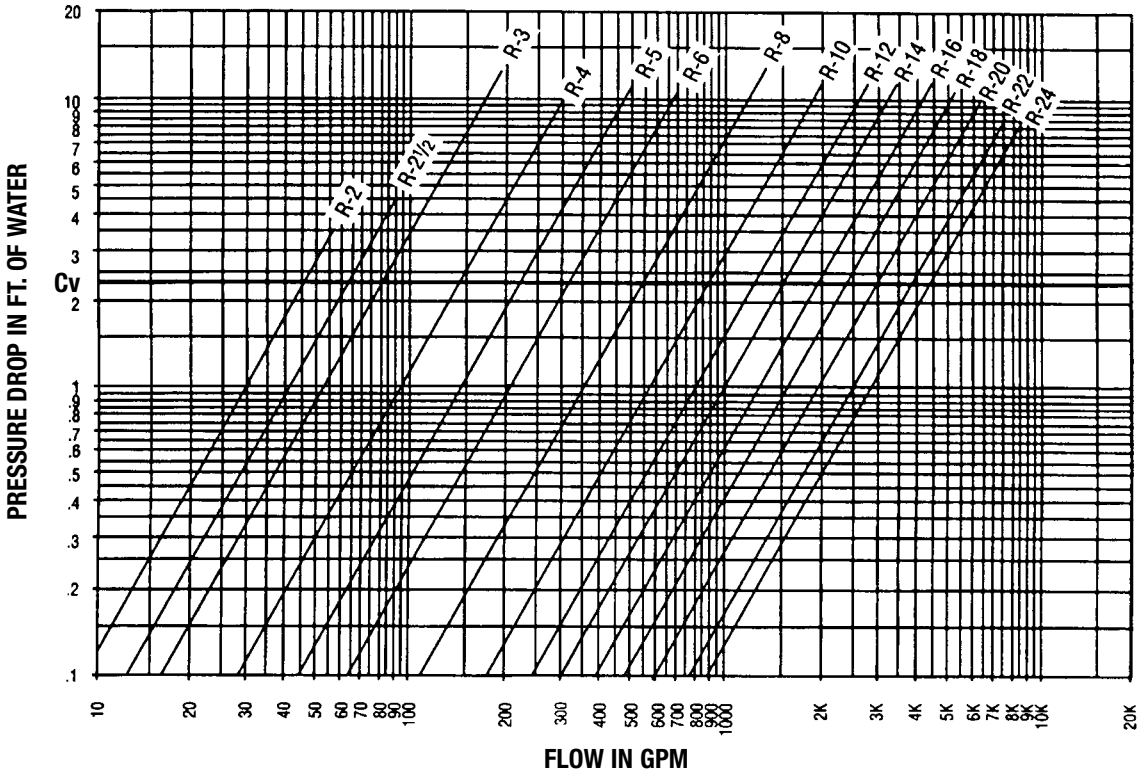
Body: NPTF Bronze
Ball: Chrome Plated Brass
Seal: Reinforced PTFE
Packing: PTFE

MBV-1 OPERATING DATA

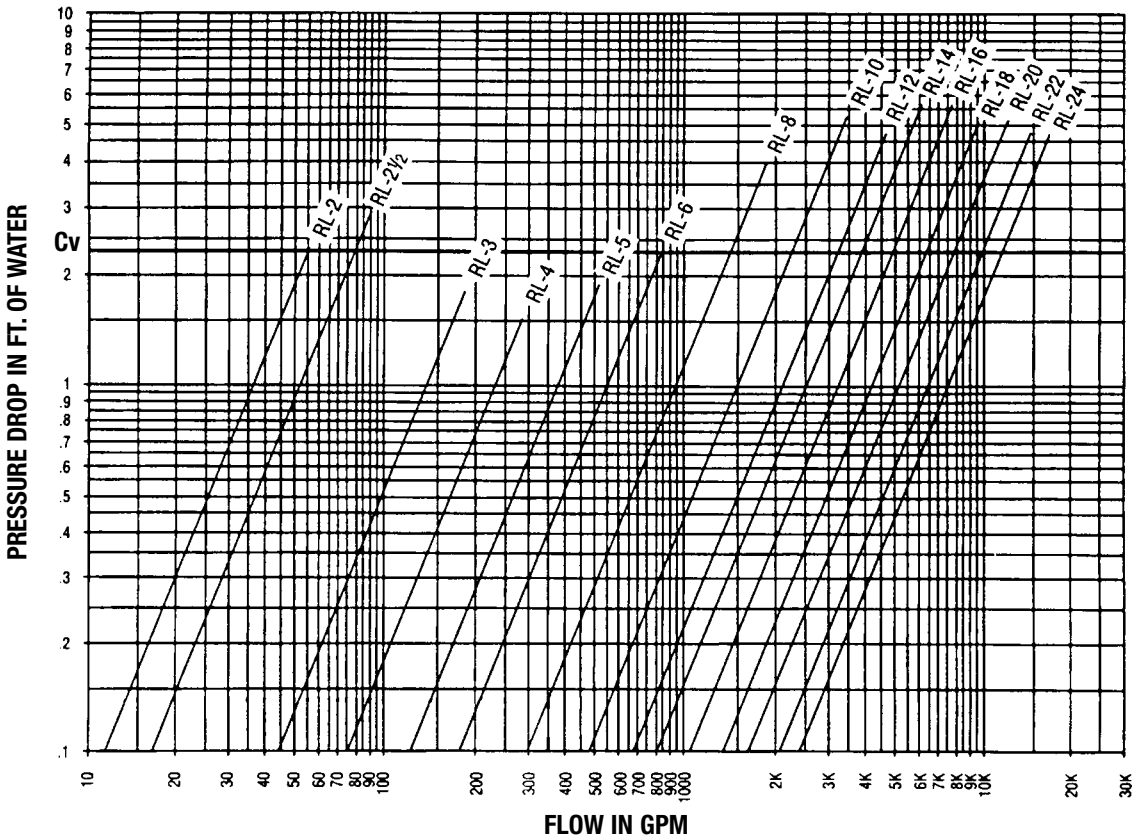
Maximum working pressure . . . . . 300 PSIG (2069 kPa)
Maximum operating temperature. . . . . 250°F (121°C)

ROLAIRTROL® AIR SEPARATOR PERFORMANCE COVERAGE CHART

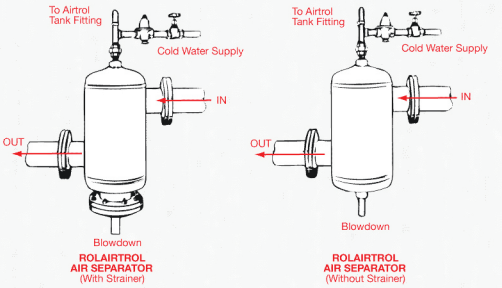
R MODELS (WITH STRAINER)



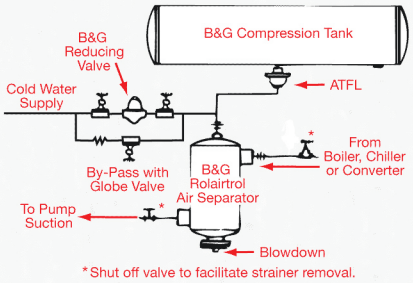
RL MODELS (WITHOUT STRAINER)



TYPICAL PIPING ARRANGEMENTS



TYPICAL INSTALLATION



TYPICAL HYDRONIC HEATING/COOLING APPLICATIONS

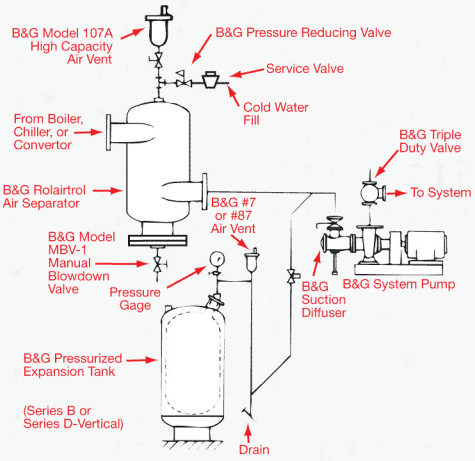


Figure A
B&G Rolairtrol with Series "B" or "D" Vertical Pressurized Expansion Tank

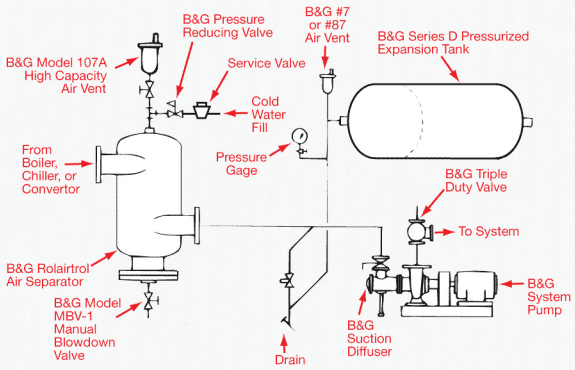


Figure B
B&G Rolairtrol with Series "D" Horizontal Pressurized Expansion Tank

TYPICAL SPECIFICATIONS

Furnish and install, as shown on plans, a centrifugal type air separator. The unit shall have _____" (NPT/flanged/grooved) inlet and outlet connections tangential to the vessel shell. The unit shall have an internal stainless steel air collector tube with $^{5}/_{32}$" (4mm) diameter perforations and 63% open area designed to direct accumulated air to the compression tank on an air control system or an air vent on an air elimination system via an NPT vent connection at top of unit.

(NOTE: If a system strainer is not specified, disregard the following underlined statements.) The unit shall have a removable galavanized system strainer with $^{3}/_{16}$" (4.8mm) diameter perforations and a free area of not less than five times the cross-sectional area of the connecting pipe. The strainer shall be located at the bottom of the vessel to reduce floor space required for strainer removal.

A blowdown connection shall be provided to facilitate routine cleaning of the strainer and the separator. *Specifiy B&G Model MBV-1 Rolairtrol accessory for manual blowdown.* Manufacturer to furnish data sheet specifying air collection efficiency and pressure drop at rated flow.

Vessel shell diameter is to be three times the nominal inlet/outlet pipe diameter, with a minimum vessel volume for sufficient velocity reduction. The air separator must be designed, constructed and stamped for 125 psig @ 350°F (862 kPa @ 177°C) in accordance with Section VIII, Division I of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors. The air separator(s) shall be painted with one shop coat of light gray air dry enamel.

A manufacturer's Data Report for Pressure Vessels, Form U-1 as required by the provisions of the ASME Boiler and Pressure Vessel Code, shall be furnished for each air separator upon request.

Each air separator shall be Bell & Gossett Model No. R-_____ (with system strainer) or RL-_____ (less system strainer) Rolairtrol Air Separator for _____ GPM.

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Let's Solve Water

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Morton Grove, Illinois 60053
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Fax: (847) 965-8379
www.xyleminc.com/brands/bellgossett

TECHNOFORCE™

PUMP STATIONS

EXACTLY WHAT YOU NEED.

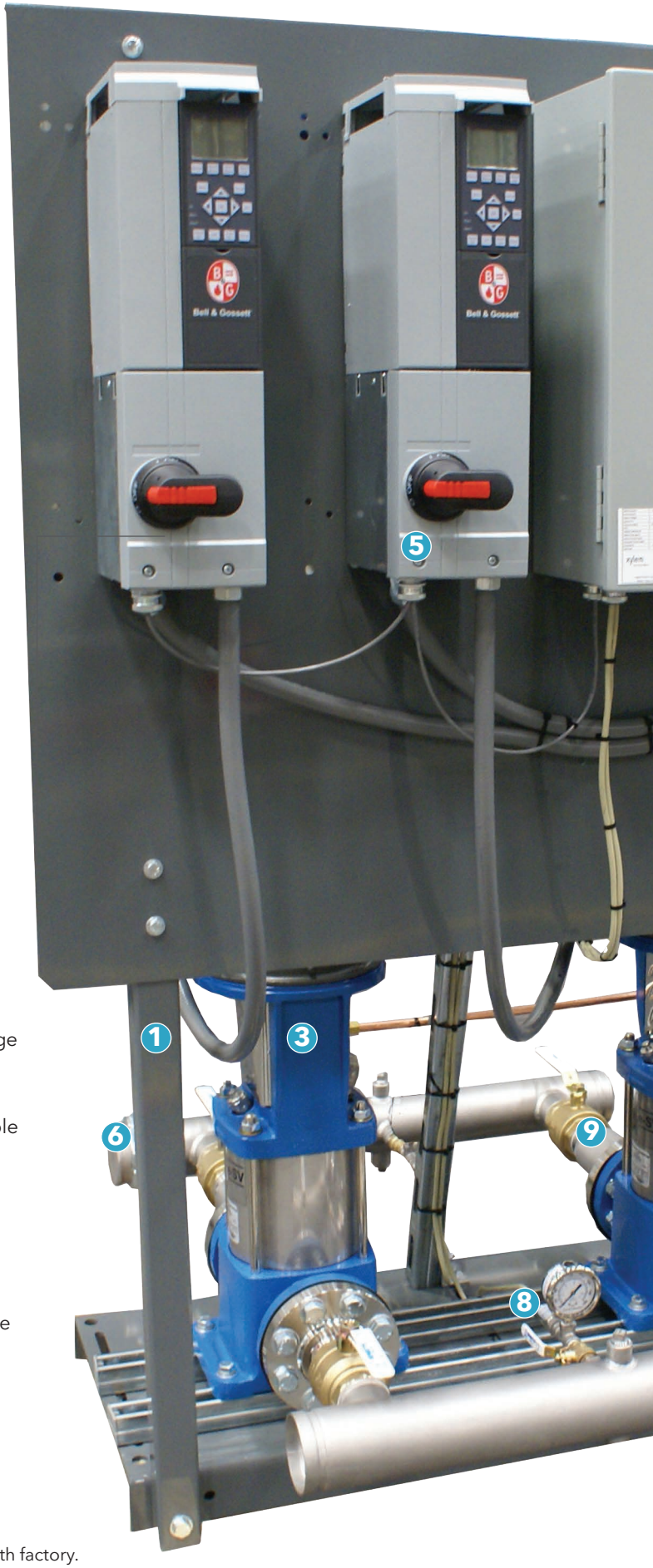
D-603E

Bell & Gossett
a xylem brand

TECHNOFORCE
Pump Stations

TECHNOFORCE Pump Packages are designed around your exact needs. They allow building owners, contractors and engineers to easily select the booster package with precisely the right performance. They are easy to install, set up and are designed to communicate and work seamlessly in both new and retrofit applications. Best of all, with Xylem's single-source responsibility and technical expertise, it's easy to work with us to provide you with exactly the pump station you need.

The **TECHNO**FORCE provides potable pressure boosting through 1600 gpm and up to 300 PSI for a variety of applications including high rise buildings, educational institutions, hospitals and light industrial use.



GENERAL INFORMATION

- ANSI/NSF 61/NSF 61, Annex G Certified, File No. 249380 CSA International (Canadian Standards Association)
- Full flow/pressure and electrical testing
- Pre-programmed for easy installation and start-up
- Rugged mechanical design with simple layout
- 304 SS manifolds with grooved connections
- Stainless steel vertical multi-stage or end suction pumps

MAJOR COMPONENTS

1. Steel Frame and Base
2. Pump - Stainless steel construction, end suction or vertical multi-stage
3. Motor - Standard NEMA design, 56C, JM or TC frame
4. System Main Disconnect - NEMA 1 enclosure - TechnoForce variable speed pump controller
5. Technologic VFD's with Individual Fused Disconnects
6. Grooved Suction Manifold - 304 stainless steel
7. Grooved Discharge Manifold - 304 stainless steel
8. Pressure Gauges - Liquid filled 2-1/2" diameter, bourdon tube type
9. Check Valves - Non-slam, silent type; (VS Systems), Pressure Reducing Valves (CS Systems)
10. Isolation Valves - Ball or wafer type, low loss

NOTE: Specifications/equipment are subject to change without notice. Verify with factory.

Variable Speed and Constant Speed Pump Controllers

The **TECHNOLOGIC** controller provides pump specific algorithms and an easy to navigate interface to simplify startup and maintenance of your system. Bell & Gosset's unique pump control logic provides maximum value, proven reliability and superior energy efficiency and system protection.

TECHNOLOGIC
Constant Speed Panel

TECHNOFORCE
Variable Speed Panel

FEATURES

- Industry-leading QuickStart setup feature
- Choice of variable speed or constant speed operation
- Standard NEMA 1 enclosure
- Door interlocked disconnect
- UL/cUL
- Local-remote selection
- Motor overload protection
- Diagnostic display
- Manual and automatic pump alternation
- Auto start of lag pump upon pump failure
- Integral curve limiting protection
- High/low system pressure cutout
- No flow shutdown
- Modbus, BACnet MS/TP or Johnson N2 serial communication
- Optional redundant pressure sensor or low suction sensor
- Optional multiple pressure zones

New Xyline Online system selection software.

Xylem Online is the only comprehensive sizing/selection software available in the industry. Easily determine the correct flow and head for every pumping application and for every area of the building to make sizing and selection as quick and simple as possible.

Xylem Online software quickly generates accurate specifications, job specific schematics and drawings that meet the needs of your project. This drastically cuts the approval process time, allowing you to meet your job deadlines.

Trust the name that set the standard in the industry – Xylem Bell & Gossett.

By choosing Xylem as your single-source provider for all your pumps and pumping system needs, you'll have the tools and resources you need to select the most efficient, high-performing system for your project. With more than 99 years of pump, HVAC and plumbing systems experience, Bell & Gossett delivers the knowledge you need to design a complete system that fits your application. And because we're part of Xylem, the largest pump manufacturer in the world, you can feel confident you'll get tough, high performing products you can depend on.

Your local Bell & Gossett Representative is an experienced professional with a wealth of technical expertise. Because they know systems from design to operation, they can give you the advice and support you need to successfully install, operate and maintain your systems.

For more information visit www.bellgossett.com

QUALITY SYSTEM CERTIFICATION ISO 9001:2008 DNV

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Let's Solve Water

Xylem Inc.
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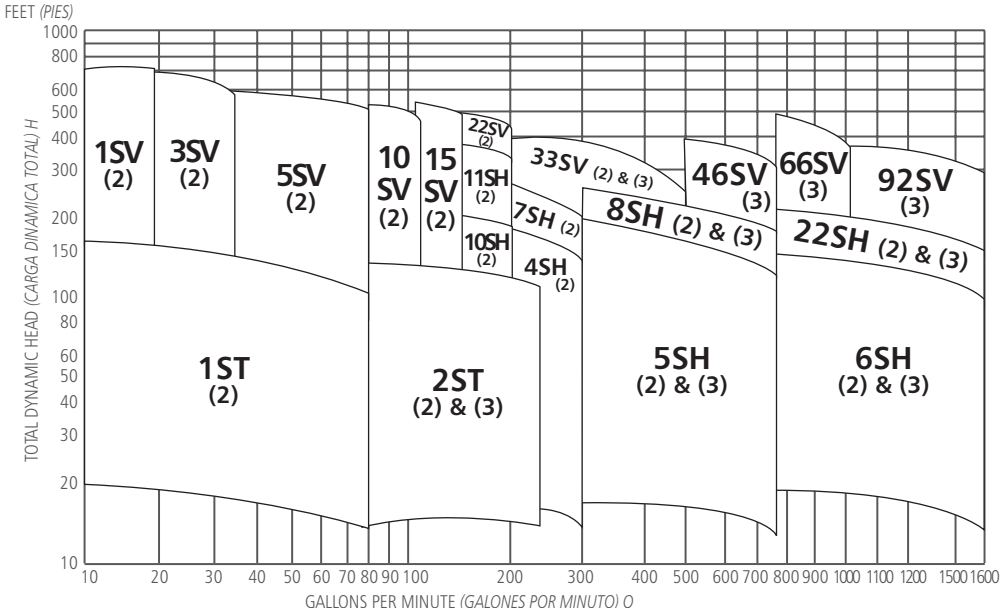
Fax: (214) 357-5861
www.bellgossett.com

PERFORMANCE



DESIGNATIONS:

(2) = Duplex *SV = e-SV vertical multi-stage *ST = End suction NPE

(3) = Triplex *SH = End suction SSH

NOTE: The curves shown are intended to provide information on the wide selection of pumps/ configurations available. System losses are not included in the curve data and must be considered for system design. For formal selection, please utilize the ESP DESIGN PLUS web based selection tool.

FEATURES AND SPECIFICATIONS

- All systems are UL/cUL listed as packaged pumping systems
- Compact Footprint – Most systems will fit through a standard 36" x 80" doorway. Ideal for retrofit installations
- 200 – 230 Volt three phase up to 75 HP, 380 – 460 Volt up to 75 HP, 575 Volt up to 75 HP
- Systems with up to four pumps
- Each system is fabricated with Xylem stainless steel centrifugal pumps
- Premium Efficient ODP motors; TEFC optional.
- System protection:
  - overvoltage
  - undervoltage
  - NPSHa
  - pump run-out protection
  - transducer failure
  - cavitation
  - blocked suction
  - motor current overload
  - short circuit
  - dry run protection
  - fault detection and alarm relay
- Ambient temperatures up to 104°F
- Maximum operating pressures up to 300 psi
- Programmable lead/lag alternation, system pressure starting, and soft start
- Motor run relay
- Log menu for historical data
- Patented i-Alert™ continually monitor and measure vibration to support optimum performance. Available on packages with e-SV pumps (10HP and above)

For complete system capabilities and detailed specifications go to www.bellgossett.com

TECHNOFORCE™ e-HV

PUMP STATIONS

D-607A

Bell & Gossett
a xylem brand

TECHNOFORCE e-HV
Pump Stations

Introducing the **TECHNO**FORCE e-HV packaged booster system from Bell & Gossett. The 40% more compact **TECHNO**FORCE e-HV booster systems utilize our standard e-SV mutli-stage pumps in two to four pump arrangements up to 780 GPM and 600 feet. Every e-HV station is provided with rugged 304SS base and framing, common 304SS grooved suction and discharge manifolds with required pump fittings and is fully NSF/ANSI 61 & 372 certified for potable drinking water. Each pump is outfitted with a master Hydrovar Variable Speed Pump Control/Drive with individual pump disconnects ensuring full redundancy for systems that require no downtime. Each station is fully tested for flow and pressure and comes programmed ready to install.

GENERAL
- •ASHRAE 90.1 Compliant
- • NSF/ANSI 61 & 372 Certified
- • UL CQCZJ
- • cUL
- • UL508A
- • NEC

TYPICAL APPLICATIONS
- • Schools
- • Hospitals
- • Data Centers
- • Commercial Office Buildings
- • HVAC
- • Industrial Processes
- • Irrigation

NOTE: Specifications / equipment are subject to change without notice. Verify with factory.

Features that make a difference

1. HydroVar Variable Speed Pump Control
The e-HV comes standard with Xylem's proven HydroVar Pump Control/VFD for pressure boosting applications. Standard NEMA 1, mutli-master configuration make the e-HV the obvious choice for your critical applications.

2. Individual Pump Disconnects
With integrated through the door pump circuit breakers located in a NEMA 12 station disconnect enclosure, the e-HV allows for ease of service without the need to shut down the entire Booster package.

3. Premium Efficient
The e-HV utilizes off the shelf TEFC Premium Efficient NEMA Frame motors, eliminating the need for special order motor/drive combination units.

4. Stainless Steel
Corrosion? Not with e-HV. With a standard 304SS base and framing you can feel confident in placing the e-HV in any location. And as always the 304SS grooved suction and discharge manifolds allow for simple installation into any piping system.

5. Compact
By utilizing items such as our HydroVar with molded wiring harnesses, eSV pumps with minimal spacing and optimized pump trim, we have been able to deliver the same performance in a package that takes up 40% less space.

For complete system capabilities and detailed specifications go to www.bellgossett

Trust the name that set the standard in the industry – Xylem Bell & Gossett.

By choosing Xylem as your single-source provider for all your pumps and pumping system needs, you'll have the tools and resources you need to select the most efficient, high-performing system for your project. With more than 90 years of pump, HVAC and plumbing systems experience, Bell & Gossett delivers the knowledge you need to design a complete system that fits your application. And because we're part of Xylem, the largest pump manufacturer in the world, you can feel confident you'll get tough, high performing products you can depend on.

Your local Bell & Gossett Representative is an experienced professional with a wealth of technical expertise. Because they know systems from design to operation, they can give you the advice and support you need to successfully install, operate and maintain your systems.

For more information visit www.bellgossett.com

xylem
Let's Solve Water

Xylem Inc.
10661 Newkirk Street
Dallas, TX 75220
Phone: (800) 786-7480
Fax: (214) 357-5861
www.bellgossett.com

2017 PRICING

WEIL

Elevator Pump System

System Includes: Pump, Switch, and Alarm

1412-OSS

Price List

Submersible Wastewater Pump Association SWPA MEMBER

Heavy duty pump, control, and alarm system for commercial and industrial elevator sump applications. Pump clear and grey water with solids to 3/4 Inch. Will not pump oil.

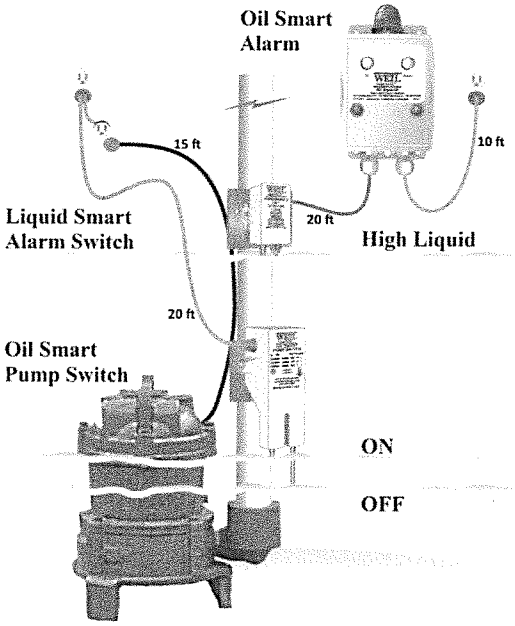
Disch. Size	1-1/2
Disch. Type	NPT
Solids Max.	3/4 Inch
Mounting Style	Floor

Pump

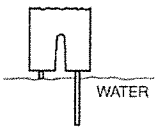
- Case – Cast Iron
- Impeller – Cast Iron
- Strainer – 304 Stainless Steel
- Stainless Steel Hardware

Motor

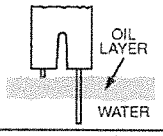
- Single Seal
  - Carbon against Ceramic
- **Air-Filled Hermetically Sealed Shaft – Stainless Steel Series 300**
- Motor Shell – Cast Iron
- Insulation – Class F
- Ball Bearings – 2 – Double Sealed
- Power Cord Length – 15 ft with 3 conductor grounded plug
- Single-Phase Motor:
  - 1750 RPM, 60 Hz, 115 Volts
  - Automatic reset thermal and overload protection
  - Capacitors and start relay in motor



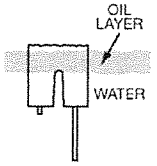
Normal Condition (Water Only)
The short sensor probe turns the pump "on" and the long sensor probe turns the pump "off". When the short sensor is in contact with water, the pump will continue to cycle "on and off" until the short sensor detects oil



Oil Present Condition
The pump will not cycle if oil is in contact with the short sensor.



High Water (Oil Present Condition)
If additional water enters the basin it will cause the oil layer to rise above the short sensor, resulting in the pump cycling



Oil Smart Pump Switch

The Oil Smart Switch pumps water, not hydrocarbons. The switch provides a 4-1/2 inch on/off differential range, and identifies whether oil or water is present. 20 ft cord and plug. Use in applications including:

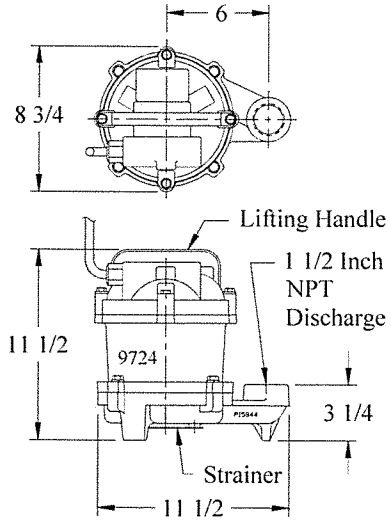
- Elevators
- Transformer oil contaminant areas
- Underground utility vaults
- Marine

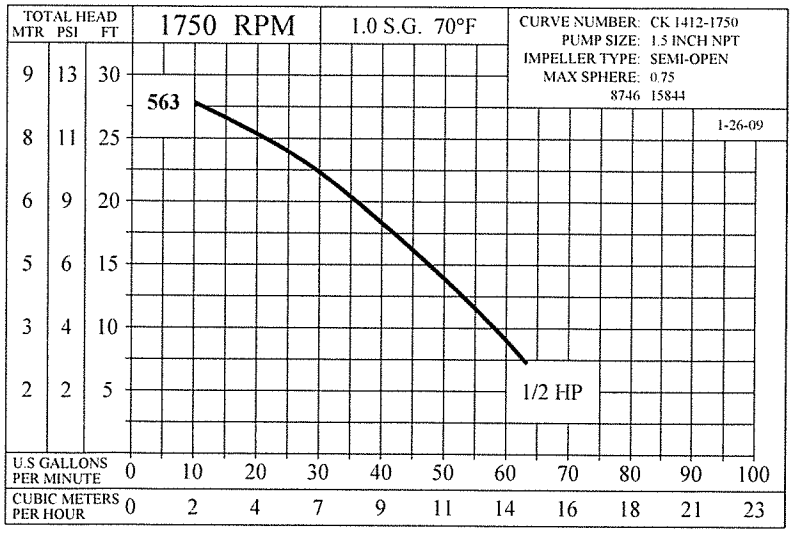
Oil Smart Alarm & Switch

The Oil Smart Alarm differentiates and indicates whether oil or water is present at high level.
Includes:

- Alarm dome light
- 85db Horn
- Silence and test buttons
- Isolated contacts for all conditions
- 10ft cord and plug – 115 Volt
- Differentiating switch with 20ft cord

Model Order No.	List Price
W-1412-OSS	$2170





WEIL

Elevator Pump System

System Includes: Pump, Switch, and Alarm

1411-OSS

Price List

Submersible Wastewater Pump Association SWPA MEMBER

Heavy duty pump, control, and alarm system for commercial and industrial elevator sump applications. Pump clear and grey water with solids to 1/2 Inch. Will not pump oil.

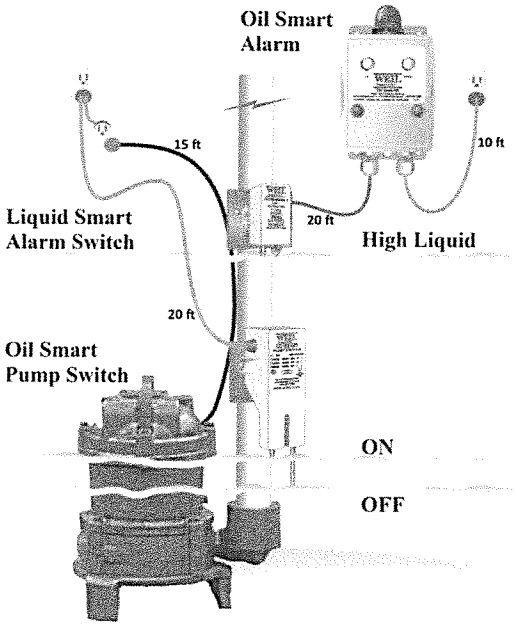
Disch. Size	2
Disch. Type	NPT
Solids Max.	1/2 Inch
Mounting Style	Floor

Pump

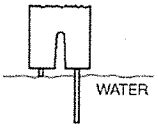
- Case – Cast Iron
- Impeller – Cast Iron
- Strainer – 304 Stainless Steel
- Stainless Steel Hardware

Motor

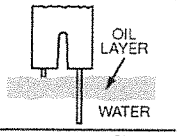
- Single Seal
  - Carbon against Ceramic
- **Air-Filled Hermetically Sealed Shaft – Stainless Steel Series 300**
- Motor Shell – Cast Iron
- Insulation – Class F
- Ball Bearings – 2 – Double Sealed
- Power Cord Length – 15 ft with 3 conductor grounded plug
- Single-Phase Motor:
  - 1750 RPM, 60 Hz, 115 Volts
  - Automatic reset thermal and overload protection
  - Capacitors and start relay in motor



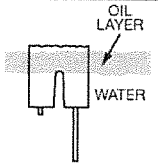
Normal Condition (Water Only)
The short sensor probe turns the pump "on" and the long sensor probe turns the pump "off". When the short sensor is in contact with water, the pump will continue to cycle "on and off" until the short sensor detects oil



Oil Present Condition
The pump will not cycle if oil is in contact with the short sensor.



High Water (Oil Present Condition)
If additional water enters the basin it will cause the oil layer to rise above the short sensor, resulting in the pump cycling



Model Order No.	List Price
W-1411-OSS	$2194

Oil Smart Pump Switch

The Oil Smart Switch pumps water, not hydrocarbons. The switch provides a 4-1/2 inch on/off differential range, and identifies whether oil or water is present. 20 ft cord and plug. Use in applications including:

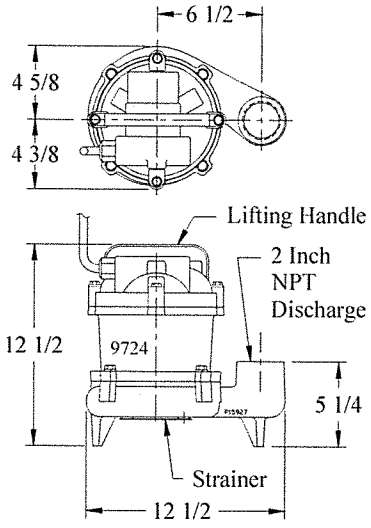
- Elevators
- Transformer oil contaminant areas
- Underground utility vaults
- Marine

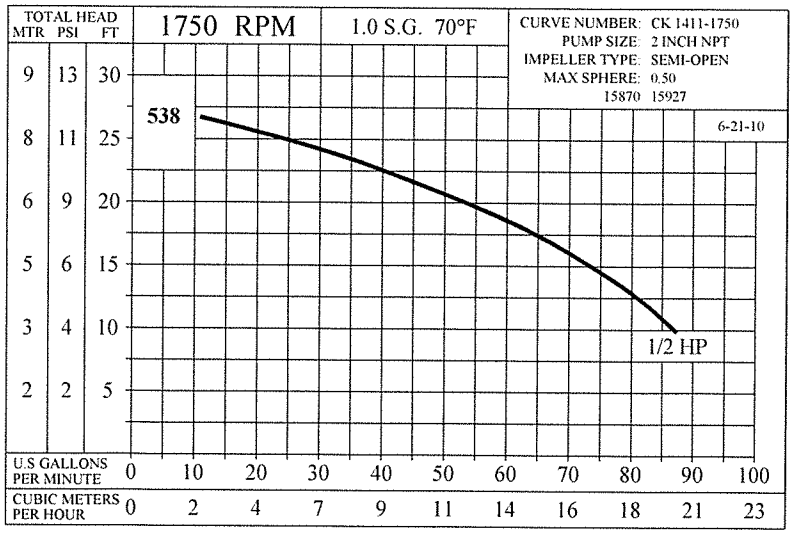
Oil Smart Alarm & Switch

The Oil Smart Alarm differentiates and indicates whether oil or water is present at high level.

Includes:

- Alarm dome light
- 85db Horn
- Silence and test buttons
- Isolated contacts for all conditions
- 10ft cord and plug – 115 Volt
- Differentiating switch with 20ft cord





WEIL

Elevator Pump System

System Includes: Pump, Switch, and Alarm

1408-OSS

Price List

Heavy duty pump, control, and alarm system for commercial and industrial elevator sump applications. Pump clear and grey water with solids to 1/2 Inch. Will not pump oil.

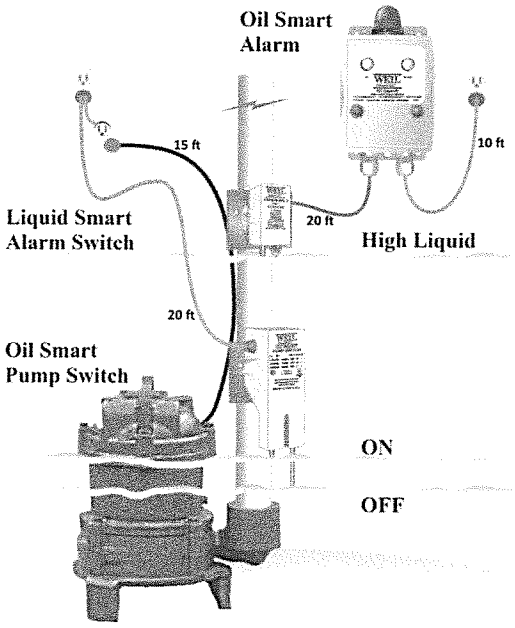
Disch. Size	1-1/4
Disch. Type	NPT
Solids Max.	1/2 Inch
Mounting Style	Floor

Pump

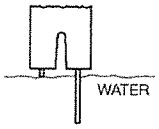
- Case – Cast Iron
- Impeller – Cast Iron
- Strainer – 304 Stainless Steel
- Stainless Steel Hardware

Motor

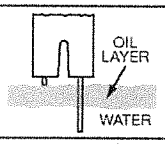
- Single Seal
  - Carbon against Ceramic
- **Air-Filled Hermetically Sealed Shaft – Stainless Steel Series 300**
- Motor Shell – Cast Iron
- Insulation – Class F
- Ball Bearings – 2 – Double Sealed
- Power Cord Length – 15 ft with 3 conductor grounded plug
- Single-Phase Motor:
  - 1750 RPM, 60 Hz, 115 Volts
  - Automatic reset thermal and overload protection
  - Capacitors and start relay in motor



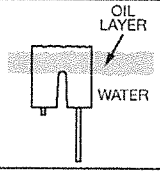
Normal Condition (Water Only)
The short sensor probe turns the pump "on" and the long sensor probe turns the pump "off". When the short sensor is in contact with water, the pump will continue to cycle "on and off" until the short sensor detects oil



Oil Present Condition
The pump will not cycle if oil is in contact with the short sensor.



High Water (Oil Present Condition)
If additional water enters the basin it will cause the oil layer to rise above the short sensor, resulting in the pump cycling



Oil Smart Pump Switch

The Oil Smart Switch pumps water, not hydrocarbons. The switch provides a 4-1/2 inch on/off differential range, and identifies whether oil or water is present. 20 ft cord and plug. Use in applications including:

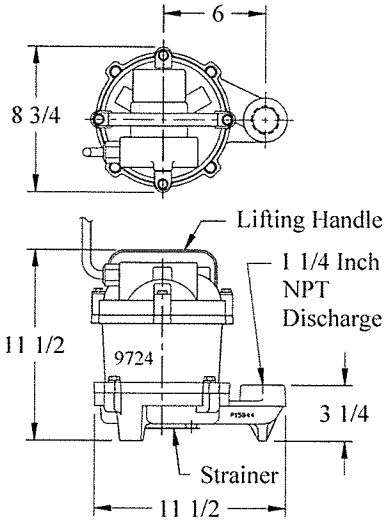
- Elevators
- Transformer oil contaminant areas
- Underground utility vaults
- Marine

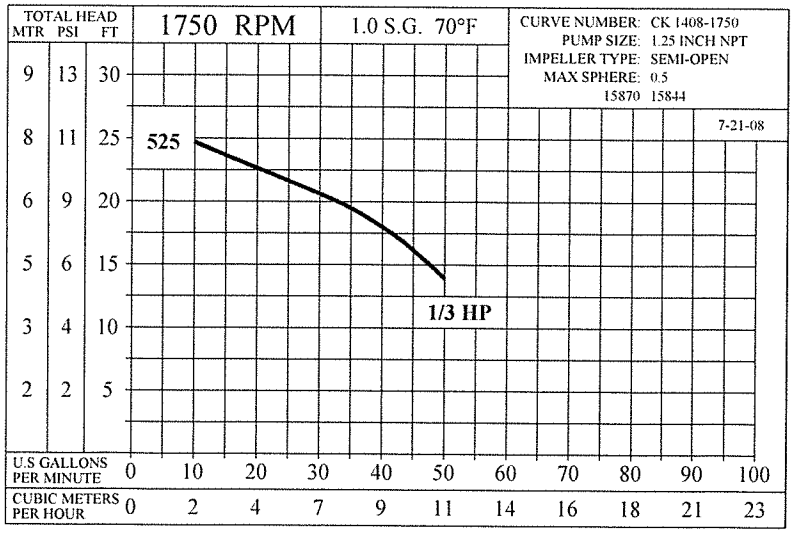
Oil Smart Alarm & Switch

The Oil Smart Alarm differentiates and indicates whether oil or water is present at high level.
Includes:

- Alarm dome light
- 85db Horn
- Silence and test buttons
- Isolated contacts for all conditions
- 10ft cord and plug – 115 Volt
- Differentiating switch with 20ft cord

Model Order No.	List Price
W-1408-OSS	$2074





WEIL

Elevator Pump System

System Includes: Pump, Switch, and Alarm

1456-OSS

Price List

Heavy duty pump, control, and alarm system for commercial and industrial elevator sump applications. Pump clear and grey water with solids to 3/4 Inch. Will not pump oil.

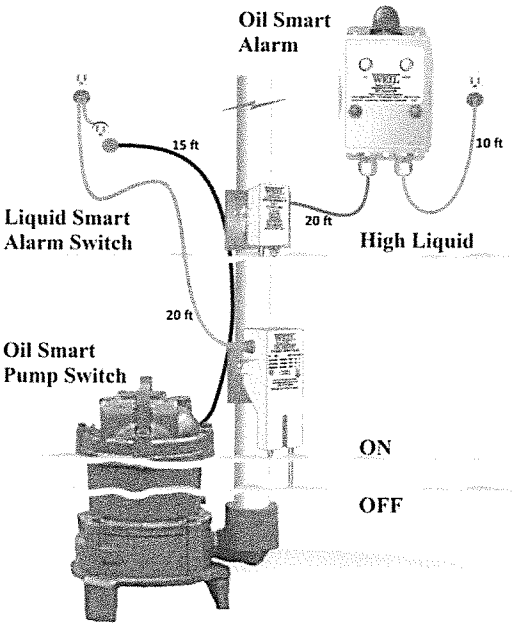
Disch. Size	2
Disch. Type	NPT
Solids Max.	3/4 Inch
Mounting Style	Floor

Pump

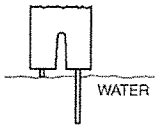
- Case – Cast Iron
- Impeller – Cast Iron
- Strainer – 304 Stainless Steel
- Stainless Steel Hardware

Motor

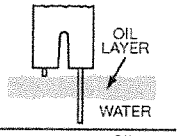
- Single Seal
  - Carbon against Ceramic
- **Air-Filled Hermetically Sealed Shaft – Stainless Steel Series 300**
- Motor Shell – Cast Iron
- Insulation – Class F
- Ball Bearings – 2 – Double Sealed
- Power Cord Length – 15 ft with 3 conductor grounded plug
- Single-Phase Motor:
  - 3450 RPM, 60 Hz, 115 Volts
  - Automatic reset thermal and overload protection
  - Capacitors and start relay in motor



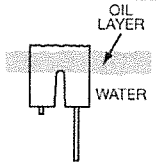
Normal Condition (Water Only)
The short sensor probe turns the pump "on" and the long sensor probe turns the pump "off". When the short sensor is in contact with water, the pump will continue to cycle "on and off" until the short sensor detects oil



Oil Present Condition
The pump will not cycle if oil is in contact with the short sensor.



High Water (Oil Present Condition)
If additional water enters the basin it will cause the oil layer to rise above the short sensor, resulting in the pump cycling



Model Order No.	List Price
W-1456-OSS	$2408

Oil Smart Pump Switch

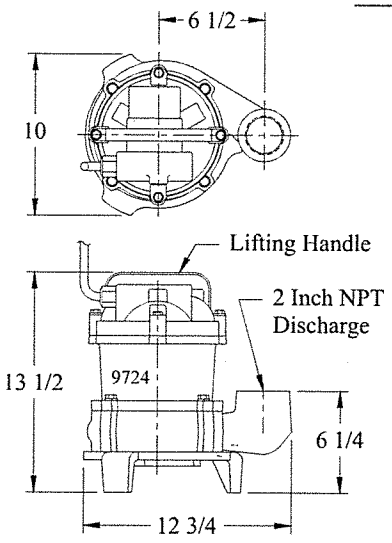
The Oil Smart Switch pumps water, not hydrocarbons. The switch provides a 4-1/2 inch on/off differential range, and identifies whether oil or water is present. 20 ft cord and plug. Use in applications including:

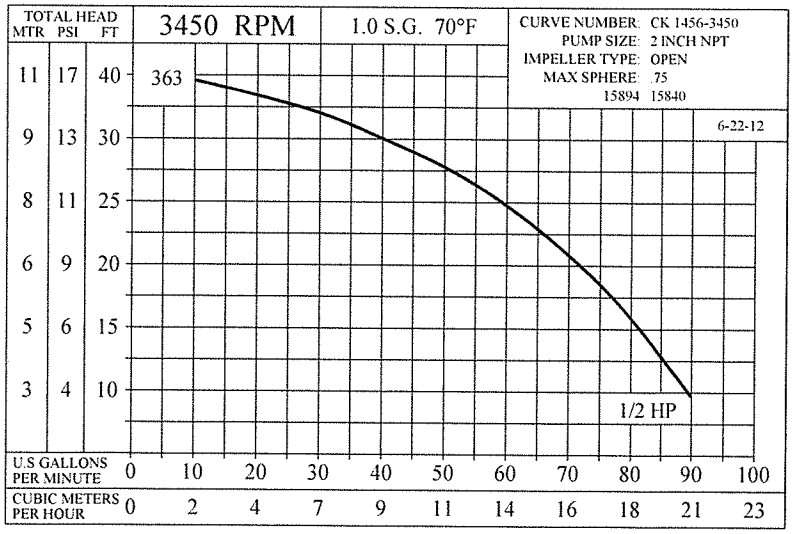
- Elevators
- Transformer oil contaminant areas
- Underground utility vaults
- Marine

Oil Smart Alarm & Switch

The Oil Smart Alarm differentiates and indicates whether oil or water is present at high level.
Includes:

- Alarm dome light
- 85db Horn
- Silence and test buttons
- Isolated contacts for all conditions
- 10ft cord and plug – 115 Volt
- Differentiating switch with 20ft cord





SINCE 1908

wessels company

REFERENCE CATALOG

FORM: LPC-2017

2017

101 TANK STREET, GREENWOOD, IN 46143 p:317-888-9800 f:317-888-9988 www.wesselscompany.com

PRODUCT INDEX

PRODUCT INDEX

PRODUCT INDEX

PRODUCT INDEX

TERMS AND CONDITIONS

MINIMUM ORDER: $ 50 net shipped to one location.

PRICES: Prices and terms are subject to change without notice.

Expedite fees may be applicable – Consult factory

TAXES: Applicable taxes apply separately.

FREIGHT TERMS: All orders are F.O.B. Factory.

PAYMENT TERMS: Terms are Net 30 Days to pre-approved accounts. New accounts must be pre-paid or by credit card until credit is approved. Any accounts over 45 days past due will be placed on credit hold until account is current.

CREDIT APPROVAL: Purchases are subject to credit investigation and approval.

LIMITED WARRANTY: Wessels Co. warrants that its products are of the kind and quality quoted and warrants these products to be free of defective material and/or workmanship only. This warranty is not applicable to operational failures, gasket leaks or malfunctions caused by improper application, installation and/or maintenance. Warranty not applicable if electrolysis condition or abnormal water condition exists. Anode inspection of glass lined storage tanks is required every 6 months. Wessels Co. requires paid receipts to show maintenance of anodes on glass lined tank claims.

Any claim for adjustment under this Limited Warranty must be made within the Warranty period (see below). Wessels Co. shall replace or repair at its option, all parts which upon examination by Wessels Co. prove to be defective material and/or workmanship within the above Limited Warranty. If required by Wessels Co., parts that are claimed defective must be promptly delivered to the Wessels Co. manufacturing facility, transportation charges prepaid. **Wessels Co. will not however, accept any claims for labor costs incurred by the user in removing or reinstalling a product and/or part thereof.** This warranty does not apply if the defect is due to failure to use the product for its intended purpose, the result of an accident, abuse, misuse or unauthorized alteration, or because the product was not installed and maintained in accordance with standard plumbing practices. However, any and all costs required to ship, disassemble, remove, reassemble, reinstall a bladder and/or tank, shall not be borne by the Wessels Co. and **IS NOT COVERED** under this warranty. **IN NO EVENT SHALL WESSELS CO. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES**. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Any implied warranties which the user may have including merchantability and fitness for a particular purpose, shall not extend beyond the period (see below) from date of manufacture of any product. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

WARRANTY PERIODS: **1 YEAR FROM DATE OF SHIPMENT:** All Wessels Co. products (except N-style, T-style and glass-lined storage tanks) when used on applications for which they are intended.

5 YEARS FROM DATE OF SHIPMENT: Non-code T-style Thermal Expansion Tanks, non-code N-style expansion tanks, Glass-lined Storage Tanks for potable water without coils, heating devices or burners and temperatures not exceeding 180 degrees Fahrenheit.

WARRANTY RETURN: A return authorization number is required on all material returned for warranty. All freight charges are the responsibility of the shipper.

PRODUCT RETURN: A return authorization number is required on all material returned. A 25% re-stocking charge will apply (minimum of $50 restocking charge).

PRODUCT CHANGES: We reserve the right to change or modify product design or construction without prior notice and without incurring any obligation to make such changes and modifications of products previously or subsequently sold.

WESSELS TANKS *At a Glance!*

		HVAC Boiler Chiller Closed-loop	THERMAL Water Heaters Hot Potable Open System	HYDRO-PNEUMATIC Pressure Booster Cold Potable Open System
NON-ASME	Compression	CUSTOM ORDER (pg 11.3)	CUSTOM ORDER (pg 11.3)	CUSTOM ORDER (pg 11.3)
	Diaphragm	**N** (pg 8.2)	**T** (pg 14.2)	CUSTOM ORDER (pg 11.3)
	Removable Bladder	**NL** (pg 8.2)	**TX** (pg 14.2)	**FX** (pg 4.2)
ASME	Compression	**NA** (pg 8.3)	CUSTOM ORDER (pg 11.3)	**NAG** (pg 8.3)
	Diaphragm	**NTA** (pg 8.4)	**TTA** (pg 14.4)	**FXT** (pg 4.2)
	Removable Bladder	**NLAP** (pg 8.4) **NLA** (pg 8.6 - 8.7)	**TXA** (pg 14.4)	**FXA** (pg 4.4 - 4 .5)

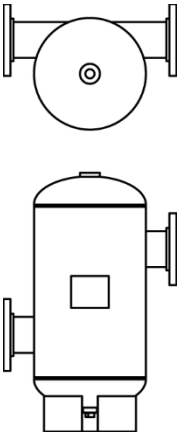
AIR & DIRT ELIMINATION EQUIPMENT 1

Air elimination equipment is used to separate entrained air in water through forced flow patterns. Air is collected and eliminated through an air vent connection located at the separator top. Typically used in **HVAC hydronic heating** and **chilled water** systems.

SPA TANGENTIAL AIR SEPARATORS - ASME

FOR STAINLESS STEEL VERSIONS GO TO PAGE 10.1

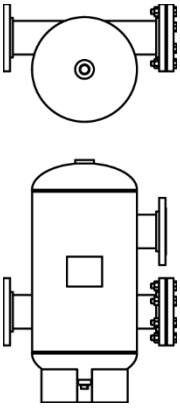
LESS STRAINER



ASME

Model	Part No.	List ($)	Size	Type	Height	Width	Max GPM	Ship Wt. (lbs.)
SPA 2	72006019	$ 715.00	2	NPT	22 1/2	16 5/8	56	50
SPA 2.5	72006025	$ 735.00	2 1/2	NPT	22 1/2	16 5/8	90	55
SPA 3	72006030	$ 1,115.00	3	FLNG	22 1/2	19 3/4	190	60
SPA 4	72006035	$ 1,575.00	4	FLNG	32	21 3/4	300	90
SPA 5	72016036	$ 1,928.00	5	FLNG	32	21 3/4	530	148
SPA 6	72016060	$ 2,701.00	6	FLNG	44	28	850	191
SPA 8	72016080	$ 3,758.00	8	FLNG	44	28	1900	379
SPA 10	72030010	$ 6,021.00	10	FLNG	60 1/2	41	3600	598
SPA 12	72030012	$ 9,236.00	12	FLNG	60 1/2	41	4800	947
SPA 14	72072014	$12,088.00	14	FLNG	78	46 3/8	6100	1680
SPA 16	72072016	$18,671.00	16	FLNG	108	60	8000	2300
SPA 18	72072018	$27,017.00	18	FLNG	124	66	9700	3235
SPA 20	72072020	$33,322.00	20	FLNG	138	72	12000	5100
SPA 22	72072022	$38,115.00	22	FLNG	150	78	15000	6150
SPA 24	72072024	$50,810.00	24	FLNG	160	84	17000	7210

WITH STRAINER



ASME

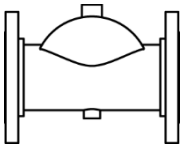
Model	Part No.	List ($)	Size	Type	Height	Width	Max GPM	Ship Wt. (lbs.)
SPA 2S	72072101	$ 846.00	2	NPT	22 1/2	16 5/8	56	55
SPA 2.5S	72072102	$ 877.00	2 1/2	NPT	22 1/2	16 5/8	90	61
SPA 3S	72072103	$ 1,397.00	3	FLNG	22 1/2	19 3/4	190	66
SPA 4S	72072104	$ 1,854.00	4	FLNG	32	21 3/4	300	99
SPA 5S	72072105	$ 2,608.00	5	FLNG	32	21 3/4	530	163
SPA 6S	72072106	$ 3,179.00	6	FLNG	44	28	850	210
SPA 8S	72072108	$ 4,353.00	8	FLNG	44	28	1900	417
SPA 10S	72072110	$ 7,184.00	10	FLNG	60 1/2	41	3600	658
SPA 12S	72072112	$10,918.00	12	FLNG	60 1/2	41	4800	1042
SPA 14S	72072114	$15,578.00	14	FLNG	78	46 3/8	6100	1848
SPA 16S	72072116	$26,163.00	16	FLNG	108	60	8000	2530
SPA 18S	72072118	$35,658.00	18	FLNG	124	66	9700	3559
SPA 20S	72072120	$44,064.00	20	FLNG	138	72	12000	5610
SPA 22S	72072122	$46,802.00	22	FLNG	150	78	15000	6765
SPA 24S	72072124	$58,466.00	24	FLNG	160	84	17000	7931

Materials = Steel; Maximum Pressure = 125 PSIG; Maximum Temperature = 450ºF
Finish = Primer Painted Exterior

AP INLINE AIR PURGERS – Non-ASME

FOR STAINLESS STEEL VERSIONS GO TO PAGE 10.1

AIR PURGERS – FABRICATED STEEL

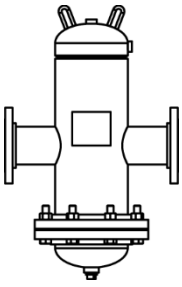


NON-ASME

Model	Part No.	List ($)	Line Size	Height	Length	Tappings Top	Tappings Btm.	Ship Wt (lbs.)
AP-104	75010449	$ 495.00	4	5	12	3/4	1/2	50
AP-105	37620050	$ 1,359.00	5	7 1/2	20	1 1/4	1 1/2	60
AP-106	37620060	$ 1,658.00	6	8 1/2	24	1 1/4	1 1/2	65
AP-108	37620080	$ 2,231.00	8	11 1/4	32	1 1/4	1 1/2	110
AP-110	37620100	$ 2,998.00	10	14	40	1 1/4	1 1/2	165
AP-112	37620120	$ 4,119.00	12	16 3/4	48	1 1/4	1 1/2	315
AP-114	37620140	$ 7,001.00	14	22	56	1 1/4	1 1/2	475
AP-116	37620160	$ 8,867.00	16	24	48	1 1/4	1 1/2	515
AP-118	37620180	$ 11,035.00	18	28	72	1 1/4	1 1/2	545

Materials = Cast Iron for AP-104, all Others Fabricated Steel;
Maximum Pressure = 150 PSIG; Maximum Temperature = 450°F;
Finish = Primer Painted Exterior; Conforms to ASME requirements.

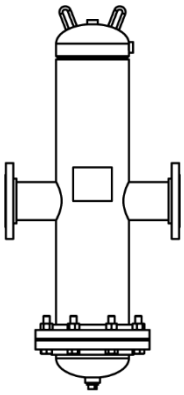
WVA WESS-VENT AIR & DIRT SEPARATORS – ASME



ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVA-2	72302001	$ 3,875.00	2	23	15 1/4	69	100
WVA-2.5	72302035	$ 4,268.00	2 1/2	23	15 3/4	108	125
WVA-3	72302069	$ 5,195.00	3	29	20 1/4	144	150
WVA-4	72302103	$ 6,441.00	4	29	20 5/8	255	250
WVA-5	72302137	$ 9,616.00	5	39	27 3/4	398	310
WVA-6	72302160	$ 13,695.00	6	39	27 3/4	570	375
WVA-8	72302183	$ 21,637.00	8	49	33 5/8	945	700
WVA-10	72302206	$ 33,510.00	10	65	37 1/2	1440	1000
WVA-12	72302229	$ 42,888.00	12	76	42 1/2	2100	1500

HIGH VELOCITY MODELS



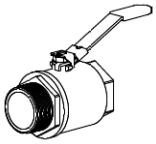
ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVA-2HV	72303001	$ 6,178.00	2	33	15 1/4	105	110
WVA-2.5HV	72303035	$ 6,784.00	2 1/2	33	15 3/4	155	140
WVA-3HV	72303070	$ 8,311.00	3	42	20 1/4	225	175
WVA-4HV	72303104	$ 10,410.00	4	42	20 5/8	405	275
WVA-5HV	72303138	$ 14,712.00	5	59	27 3/4	630	475
WVA-6HV	72303161	$ 16,381.00	6	59	27 3/4	910	525
WVA-8HV	72303184	$ 34,884.00	8	75	33 5/8	1610	825
WVA-10HV	72303207	$ 48,819.00	10	92	37 1/2	2450	1275
WVA-12HV	72303230	$ 62,247.00	12	110	42 1/2	3500	2050

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

Sizes available up to 36" – Consult Factory for Pricing

WVA WESS-VENT TRIM PACKAGES

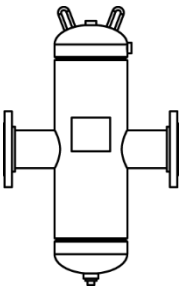


Model WVA-2 Thru WVA-36

Model	Part No.	List ($)	Vent Size	Blow Down Valve Size	Skim Valve Size	Ship Wt. (lbs.)
WVA 2-14	74099993	$529.00	3/4"	1"	1/2"	9
WVA 16-36	74099995	$846.00	3/4"	2"	1"	10

Includes: Air Vent, Skim Valve, and Blow Down Valve.

WVN-N WESS-VENT NON-REMOVABLE– Non-ASME



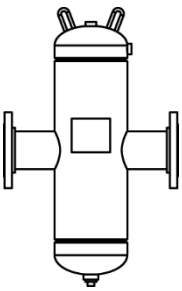
NON-ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVN-2N	74080020	$ 2,799.00	2	23	15 1/4	69	76
WVN-2.5N	74080025	$ 3,085.00	2 1/2	23	15 3/4	108	99
WVN-3N	74080030	$ 3,753.00	3	29	20 1/4	144	114
WVN-4N	74080040	$ 4,654.00	4	29	20 5/8	255	194
WVN-5N	74080050	$ 6,948.00	5	39	27 3/4	398	230
WVN-6N	74080060	$ 9,896.00	6	39	27 3/4	570	255
WVN-8N	74080080	$ 15,632.00	8	49	33 5/8	945	514
WVN-10N	74080100	$ 24,211.00	10	65	37 1/2	1440	770
WVN-12N	74080120	$ 30,988.00	12	76	42 1/2	2100	1080

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

High Velocity Models Available up to 36" – Consult Factory for Pricing

WVAN WESS-VENT NON-REMOVABLE – ASME



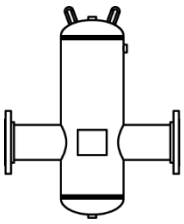
ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVAN-2	72308001	$ 3,294.00	2	23	15 1/4	69	76
WVAN-2.5	72308034	$ 3,629.00	2 1/2	23	15 3/4	108	99
WVAN-3	72308067	$ 4,414.00	3	29	20 1/4	144	114
WVAN-4	72308100	$ 5,474.00	4	29	20 5/8	255	194
WVAN-5	72308133	$ 8,174.00	5	39	27 3/4	398	230
WVAN-6	72308155	$ 11,642.00	6	39	27 3/4	570	255
WVAN-8	72308177	$ 18,391.00	8	49	33 5/8	945	514
WVAN-10	72308199	$ 28,483.00	10	65	37 1/2	1440	770
WVAN-12	72308221	$ 36,455.00	12	76	42 1/2	2100	1080

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

High Velocity Models Available up to 36" – Consult Factory for Pricing

WVNA WESS-VENT AIR ELIMINATOR – Non-ASME

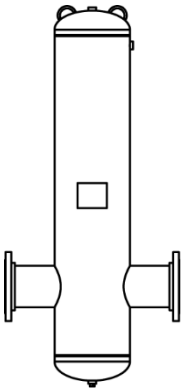


NON-ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVNA-2	72314002	$ 2,380.00	2	18.5	15 1/4	69	35
WVNA-2.5	72314026	$ 2,622.00	2 1/2	18.5	15 3/4	108	61
WVNA-3	72314050	$ 3,189.00	3	23	20 1/4	144	71
WVNA-4	72314074	$ 3,955.00	4	23	20 5/8	255	105
WVNA-5	72314098	$ 5,906.00	5	31	27 3/4	398	92
WVNA-6	72314110	$ 8,412.00	6	31	27 3/4	570	129
WVNA-8	72314122	$ 13,287.00	8	36	33 5/8	945	225
WVNA-10	72314134	$ 20,579.00	10	46	37 1/2	1440	375
WVNA-12	72314146	$ 26,339.00	12	54	42 1/2	2100	564

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

HIGH VELOCITY MODELS



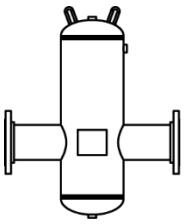
NON-ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVNA-2HV	72315002	$ 3,808.00	2	23	15 1/4	105	40
WVNA-2.5HV	72315026	$ 4,196.00	2 1/2	23	15 3/4	155	68
WVNA-3HV	72315050	$ 5,103.00	3	30	20 1/4	225	82
WVNA-4HV	72315074	$ 6,328.00	4	30	20 5/8	405	122
WVNA-5HV	72315098	$ 9,449.00	5	41	27 3/4	630	128
WVNA-6HV	72315110	$ 13,459.00	6	41	27 3/4	910	140
WVNA-8HV	72315122	$ 21,259.00	8	49	33 5/8	1610	245
WVNA-10HV	72315134	$ 32,927.00	10	60	37 1/2	2450	407
WVNA-12HV	72315146	$ 42,142.00	12	71	42 1/2	3500	612

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

Models Available up to 36" – Consult Factory for Pricing

WVAA WESS-VENT AIR ELIMINATOR – ASME

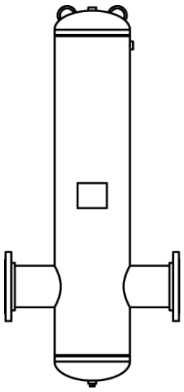


ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVAA-2	72304002	$ 2,800.00	2	18 1/2	15 1/4	69	35
WVAA-2.5	72304038	$ 3,085.00	2 1/2	18 1/2	15 3/4	108	61
WVAA-3	72304074	$ 3,752.00	3	23	20 1/4	144	71
WVAA-4	72304110	$ 4,653.00	4	23	20 5/8	255	105
WVAA-5	72304146	$ 6,948.00	5	31	27 3/4	398	92
WVAA-6	72304170	$ 9,896.00	6	31	27 3/4	570	129
WVAA-8	72304194	$ 15,632.00	8	36	33 5/8	945	225
WVAA-10	72304218	$ 24,211.00	10	46	37 1/2	1440	375
WVAA-12	72304242	$ 30,987.00	12	54	42 1/2	2100	564

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

HIGH VELOCITY MODELS



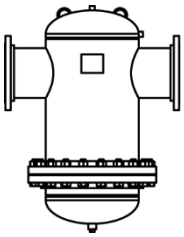
ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVAA-2HV	72305002	$ 4,480.00	2	23	15 1/4	105	40
WVAA-2.5HV	72305038	$ 4,936.00	2 1/2	23	15 3/4	155	68
WVAA-3HV	72305074	$ 6,003.00	3	30	20 1/4	225	82
WVAA-4HV	72305110	$ 7,445.00	4	30	20 5/8	405	122
WVAA-5HV	72305146	$ 11,117.00	5	41	27 3/4	630	128
WVAA-6HV	72305170	$ 15,834.00	6	41	27 3/4	910	140
WVAA-8HV	72305194	$ 25,011.00	8	49	33 5/8	1610	245
WVAA-10HV	72305218	$ 38,738.00	10	60	37 1/2	2450	407
WVAA-12HV	72305242	$ 49,579.00	12	71	42 1/2	3500	612

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

Models Available up to 36" – Consult Factory for Pricing

WVAD WESS-VENT DIRT ELIMINATOR – ASME

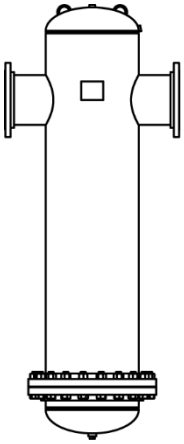


ASME

Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVAD-2	72306002	$ 3,139.00	2	18.5	15 1/4	69	64
WVAD-2.5	72306038	$ 3,457.00	2 1/2	18.5	15 3/4	108	82
WVAD-3	72306074	$ 4,208.00	3	23	20 1/4	144	113
WVAD-4	72306110	$ 5,217.00	4	23	20 5/8	255	168
WVAD-5	72306146	$ 7,789.00	5	31	27 3/4	398	245
WVAD-6	72306170	$ 11,093.00	6	31	27 3/4	570	347
WVAD-8	72306194	$ 17,526.00	8	36	33 5/8	945	451
WVAD-10	72306218	$ 27,143.00	10	46	37 1/2	1440	711
WVAD-12	72306242	$ 34,739.00	12	54	42 1/2	2100	1121

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

HIGH VELOCITY MODELS



ASME

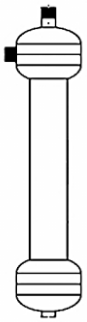
Model	Part No.	List ($)	Flange Size	Height	Width	GPM	Ship Wt. (lbs.)
WVAD-2HV	72307002	$ 5,004.00	2	23	15 1/4	105	69
WVAD-2.5HV	72307038	$ 5,495.00	2 1/2	23	15 3/4	155	89
WVAD-3HV	72307074	$ 6,732.00	3	30	20 1/4	225	125
WVAD-4HV	72307110	$ 8,432.00	4	30	20 5/8	405	185
WVAD-5HV	72307146	$ 11,917.00	5	41	27 3/4	630	280
WVAD-6HV	72307170	$ 13,269.00	6	41	27 3/4	910	390
WVAD-8HV	72307194	$ 28,256.00	8	49	33 5/8	1610	472
WVAD-10HV	72307218	$ 39,543.00	10	60	37 1/2	2450	744
WVAD-12HV	72307242	$ 50,420.00	12	71	42 1/2	3500	1169

Materials = Steel; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG
Maximum Temperature = 250°F; Finish = Primer Painted Exterior; Trim not included.

Models Available up to 36" – Consult Factory for Pricing

CFS CENTRIFUGAL SOLIDS SEPARATOR

FOR STAINLESS STEEL VERSIONS GO TO PAGE 10.3



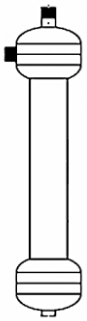
NON-ASME

CARBON STEEL – LOW FLOW DESIGN – 150 PSI

Model	Part No.	List ($)	Ht.	Dia.	Syst. Conn.	Flow Range (GPM)	W t. (Lbs.)
CFS-50	69000050	$ 957.00	19	6	1/2	5 - 10	11
CFS-75	69000075	$ 1,036.00	19	6	3/4	10 - 20	14
CFS-100	69000100	$ 1,161.00	29	6	1	17 - 32	21
CFS-125	69000125	$ 1,253.00	29	6	1 1/4	28 - 50	21
CFS-150	69000150	$ 1,321.00	29	6	1 1/2	45 - 70	22
CFS-200	69000200	$ 1,867.00	32	8 5/8	2	70 - 110	41
CFS-250	69000250	$ 2,267.00	35 1/2	8 5/8	2 1/2	100 - 160	45
CFS-300	69000300	$ 4,065.00	39	10 3/4	3	150 - 250	78

Materials = Carbon Steel Shell, Carbon Steel System Connection
Maximum Pressure = 150 PSIG; Maximum Temperature = 450ºF
Also available in 200 & 250 psi rated models

CFA CENTRIFUGAL SOLIDS SEPERATOR – ASME



ASME

CARBON STEEL – LOW FLOW DESIGN – 150 PSI

Model	Part No.	List ($)	Ht.	Dia.	Syst. Conn.	Flow Range (GPM)	W t. (Lbs.)
CFA-50	69001050	$ 1,125.00	19	6	1/2	5 - 10	11
CFA-75	69001075	$ 1,219.00	19	6	3/4	10 - 20	14
CFA-100	69001100	$ 1,366.00	29	6	1	17 - 32	21
CFA-125	69001125	$ 1,473.00	29	6	1 1/4	28 - 50	21
CFA-150	69001150	$ 1,554.00	29	6	1 1/2	45 - 70	22
CFA-200	69001200	$ 2,197.00	32	8 5/8	2	70 - 110	41
CFA-250	69001250	$ 2,667.00	35 1/2	8 5/8	2 1/2	100 - 160	45
CFA-300	69001300	$ 4,782.00	39	10 3/4	3	150 - 250	78

Materials = Carbon Steel Shell, Carbon Steel System Connection
Maximum Pressure = 150 PSIG; Maximum Temperature = 450ºF
Also available in 200 & 250 psi rated models

SIZING CHILLED-WATER BUFFER TANKS

To properly size a chilled-water buffer tank, three critical pieces of information are required:

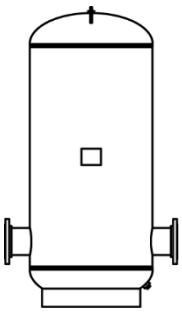
- Total Chiller Capacity (Tons)
- Chiller Manufacturer's Recommended System Volume per Ton of Capacity (in gal. per ton)
- Actual System Volume (in gallons)

Use the following form to calculate tank size:

Total Chiller Capacity		Manufacturer's Recommended System Volume Per Ton		Critical System Volume
	TIMES		EQUALS	
Tons		Gal./Ton		Gallons

Critical System Volume		Actual System Volume		Total Buffer Tank Size
	MINUS		EQUALS	
Gallons		Gallons		Gallons

CBT CHILLED WATER BUFFER TANKS – ASME



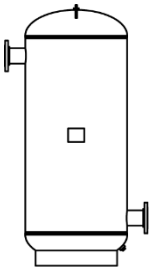
ASME

CHILLED WATER BUFFER TANKS

Model	Part No.	Gal.	Dia.	Ht.	Connection Size 3" FLG	4" FLG	6" FLG	8" FLG	10" FLG	12" FLG	Max. Ship Wt.	Insulation Jacket
CBT-120	55240120	120	24	60	$ 6,767	$ 6,935	$ 7,897	$ 8,887	$ 9,879	$ 10,295	410	$ 2,663
CBT-200	55300200	200	30	72	$ 8,161	$ 8,328	$ 9,290	$ 10,282	$ 11,273	$ 11,625	555	$ 3,483
CBT-300	55360300	300	36	72	$ 9,917	$ 10,085	$ 11,174	$ 12,297	$ 13,419	$ 13,785	690	$ 4,174
CBT-500	55420500	500	42	90	$ 13,726	$ 13,895	$ 14,856	$ 15,849	$ 16,840	$ 17,345	1150	$ 5,731
CBT-850	55540850	850	54	96	$ 20,651	$ 20,821	$ 21,816	$ 22,842	$ 23,866	$ 24,348	1945	$ 7,280
CBT-1040	55601040	1040	60	96	$ 25,096	$ 25,265	$ 26,228	$ 27,218	$ 28,209	$ 28,718	2138	$ 9,409

Materials = Steel; Maximum Pressure = 125 PSIG; Maximum Temperature = 450°F; Finish = Red Oxide Primer; ¾" NPT Top Vent Connection; 1" NPT Bottom Drain Connection; Also Available With 1" to 2-1/2" NPT System Connections, Up To 20" Flange System Connections, and Higher Working Pressures – Consult Factory.

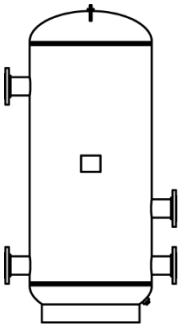
HBT HOT WATER BUFFER TANKS – ASME



ASME

HOT WATER BUFFER TANKS – 2 Ports

Model	Part No.	Gal.	Dia.	Ht.	Connection Size				Max. Ship Wt.
					2" NPT	3" NPT	3" FLG	4" FLG	
HBT-120	55621200	120	24	60	$ 4,983.00	$ 5,158.00	$ 5,723.00	$ 5,916.00	248
HBT-210	55622100	210	30	75	$ 6,093.00	$ 6,274.00	$ 6,856.00	$ 7,054.00	458
HBT-300	55623000	300	36	72	$ 7,594.00	$ 7,774.00	$ 8,356.00	$ 8,555.00	781



ASME

HOT WATER BUFFER TANKS – 4 Ports

Model	Part No.	Gal.	Dia.	Ht.	Connection Sizes		List ($)	Ship Wt.
					Primary	Secondary		
HBT-120-22	55641222	120	24	60			$ 5,397.00	206
HBT-210-22	55642122	210	30	75	2" NPT	2" NPT	$ 6,520.00	408
HBT-300-22	55643022	300	36	72			$ 8,020.00	739
HBT-120-23	55641223	120	24	60			$ 5,570.00	228
HBT-210-23	55642123	210	30	75	2" NPT	3" FLG	$ 6,700.00	426
HBT-300-23	55643023	300	36	72			$ 8,195.00	759
HBT-120-24	55641224	120	24	60			$ 6,270.00	235
HBT-210-24	55642124	210	30	75	2" NPT	4" FLG	$ 7,420.00	435
HBT-300-24	55643024	300	36	72			$ 8,979.00	768
HBT-120-26	55641226	120	24	60			$ 6,705.00	254
HBT-210-26	55642126	210	30	75	2" NPT	6" FLG	$ 7,867.00	454
HBT-300-26	55643026	300	36	72			$ 9,428.00	787
HBT-120-34	55641234	120	24	60			$ 6,443.00	255
HBT-210-34	55642134	210	30	75	3" FLG	4" FLG	$ 7,600.00	455
HBT-300-34	55643034	300	36	72			$ 9,154.00	788
HBT-120-36	55641236	120	24	60			$ 6,880.00	274
HBT-210-36	55642136	210	30	75	3" FLG	6" FLG	$ 8,046.00	574
HBT-300-36	55643036	300	36	72			$ 9,601.00	807
HBT-120-33	55641233	120	24	60			$ 6,888.00	246
HBT-210-33	55642133	210	30	75	3" FLG	3" FLG	$ 8,056.00	546
HBT-300-33	55643033	300	36	72			$ 9,557.00	779
HBT-120-44	55641244	120	24	60			$ 7,272.00	264
HBT-210-44	55642144	210	30	75	4" FLG	4" FLG	$ 8,452.00	564
HBT-300-44	55643044	300	36	72			$ 9,953.00	797
HBT-120-46	55641246	120	24	60			$ 7,704.00	283
HBT-210-46	55642146	210	30	75	4" FLG	6" FLG	$ 8,899.00	583
HBT-300-46	55643046	300	36	72			$10,399.00	816

Materials = Steel; Maximum Pressure = 125 PSIG; Maximum Temperature = 450°F; Finish = Red Oxide Primer; ¾" NPT Top Vent Connection; 1" NPT Bottom Drain Connection; Also Available With 1" to 2-1/2" NPT System Connections, Up To 20" Flange System Connections, and Higher Working Pressures – Consult Factory.

FILTRATION 3

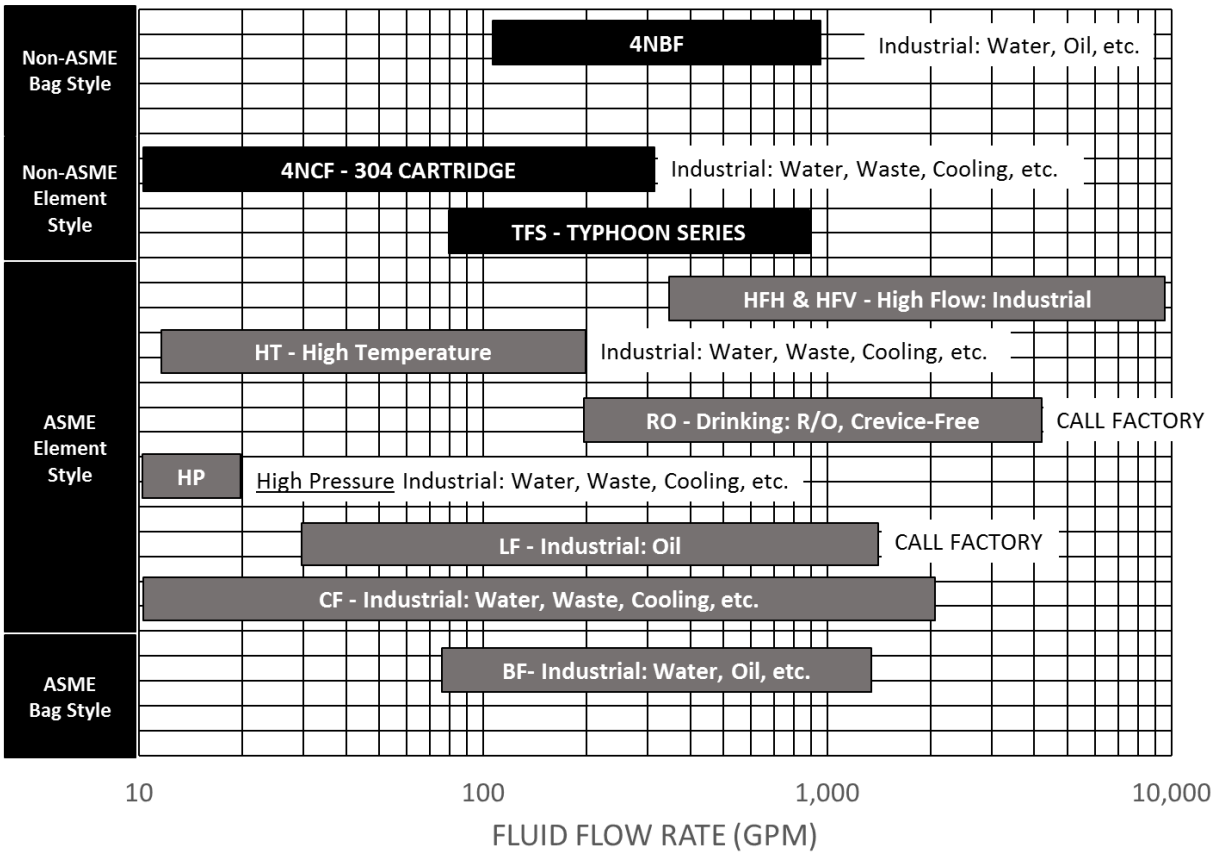
Filtration vessels and filter media enable the physical or mechanical process of separating insoluble particulate matter from a fluid, such as air or liquid, by passing the fluid through a filter medium that will not let the particulates through.

Typical Markets & Applications:

Amine	Process Water
Boiler Feed Systems	Agri-Water
Microelectronics	Brine
Mining & Minerals	Car Wash
Oil & Gas	Cooling Towers
Potable Water	Packaging Rinse Water
Pulp & Paper	Power Generation
Quench Water	Wastewater Treatment
RO Pre-filtration	Water Reclamation

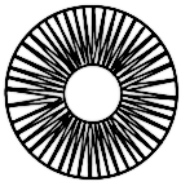
SIZING FILTRATION VESSELS

Wessels offers a vast array of filtration vessels designed for use in various markets such as HVAC, Industrial, Oil & Gas, Petrochemical, Water (potable, RO, process), etc. Please use the following sizing chart to assist in selecting the proper vessel series based on your system flow rate.



AB SERIES CARTRIDGE FILTER

2.5 INCH OD, 40 INCH LONG, 222 O-RING STYLE



Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
AB-1/2-P42	9A001P42	$ 121.00	0.5	Polypropylene	16.4	2.3
AB-1/2-G42	9A001G42	$ 171.00	0.5	Glass	16.4	2.3
AB-02-P42	9A002P42	$ 105.00	2	Polypropylene	20.5	2.9
AB-02-G42	9A002G42	$ 126.00	2	Glass	16.4	2.3
AB-05-P42	9A005P42	$ 88.00	5	Polypropylene	20.5	2.9
AB-05-R42	9A005R42	$ 134.00	5	Polyester	16.4	2.3
AB-05-G42	9A005G42	$ 126.00	5	Glass	16.4	2.3
AB-05-C42	9A005C42	$ 70.00	5	Cellulose	16.4	2.3
AB-10-P42	9A010P42	$ 88.00	10	Polypropylene	20.5	2.9
AB-10-R42	9A010R42	$ 134.00	10	Polyester	16.4	2.3
AB-10-G42	9A010G42	$ 127.00	10	Glass	16.4	2.3
AB-10-C42	9A010C42	$ 70.00	10	Cellulose	16.4	2.3
AB-20-P42	9A020P42	$ 87.00	20	Polypropylene	20.5	2.9
AB-20-R42	9A020R42	$ 134.00	20	Polyester	16.4	2.3
AB-20-G42	9A020G42	$ 124.00	20	Glass	16.4	2.3
AB-20-C42	9A020C42	$ 68.00	20	Cellulose	16.4	2.3
AB-40-P42	9A040P42	$ 97.00	40	Polypropylene	16.4	2.3
AB-40-R42	9A040R42	$ 103.00	40	Polyester	16.4	2.3
AB-40-G42	9A040G42	$ 116.00	40	Glass	16.4	2.3
AB-40-C42	9A040C42	$ 69.00	40	Cellulose	16.4	2.3
AB-70-P42	9A070P42	$ 91.00	70	Polypropylene	20.5	2.9
AB-70-R42	9A070R42	$ 87.00	70	Polyester	16.4	2.3
AB-70-G42	9A070G42	$ 116.00	70	Glass	16.4	2.3
AB-70-C42	9A070C42	$ 72.00	70	Cellulose	16.4	2.3

FILTER MODIFIER GUIDE :

CARTRIDGE SERIES
AB = CONVENTIONAL

DIAMETER CODE
BLANK = 2.5" OD
P = 3.0" OD
X = 3.75" OD (222 O-RING)
Y = 3.75" OD (139 O-RING)
Z = 3.75" OD (134 O-RING)

LENGTH
1 = 10"
2 = 29.75"
3 = 36"
4 = 40"
9 = 20"
X = CUSTOM

END CAP
1 = DOE
2 = O-RING
3 = SPRING
7 = FIN

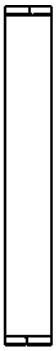
MICRON RATING @ BETA 5000
1/2 = 0.5 MICRON
02 = 2 MICRON
05 = 5 MICRON
10 = 10 MICRON
20 = 20 MICRON
40 = 40 MICRON
70 = 70 MICRON

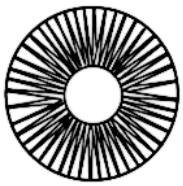
A	B		1	0	P	2	2

MEDIA
C = CELLULOSE
G = GLASS
P = POLYPROPYLENE
R = POLYESTER

AB SERIES CARTRIDGE FILTER (CONT'D)

2.5 INCH OD, 40 INCH LONG, DOE STYLE





Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
AB-1/2-P41	9A001P41	$ 127.00	0.5	Polypropylene	16.4	2.3
AB-1/2-G41	9A001G41	$ 177.00	0.5	Glass	16.4	2.3
AB-02-P41	9A002P41	$ 112.00	2	Polypropylene	20.5	2.9
AB-02-G41	9A002G41	$ 132.00	2	Glass	16.4	2.3
AB-05-P41	9A005P41	$ 94.00	5	Polypropylene	20.5	2.9
AB-05-R41	9A005R41	$ 141.00	5	Polyester	16.4	2.3
AB-05-G41	9A005G41	$ 132.00	5	Glass	16.4	2.3
AB-05-C41	9A005C41	$ 77.00	5	Cellulose	16.4	2.3
AB-10-P41	9A010P41	$ 94.00	10	Polypropylene	20.5	2.9
AB-10-R41	9A010R41	$ 141.00	10	Polyester	16.4	2.3
AB-10-G41	9A010G41	$ 133.00	10	Glass	16.4	2.3
AB-10-C41	9A010C41	$ 77.00	10	Cellulose	16.4	2.3
AB-20-P41	9A020P41	$ 94.00	20	Polypropylene	20.5	2.9
AB-20-R41	9A020R41	$ 141.00	20	Polyester	16.4	2.3
AB-20-G41	9A020G41	$ 131.00	20	Glass	16.4	2.3
AB-20-C41	9A020C41	$ 74.00	20	Cellulose	16.4	2.3
AB-40-P41	9A040P41	$ 103.00	40	Polypropylene	16.4	2.3
AB-40-R41	9A040R41	$ 109.00	40	Polyester	16.4	2.3
AB-40-G41	9A040G41	$ 123.00	40	Glass	16.4	2.3
AB-40-C41	9A040C41	$ 75.00	40	Cellulose	16.4	2.3
AB-70-P41	9A070P41	$ 98.00	70	Polypropylene	20.5	2.9
AB-70-R41	9A070R41	$ 93.00	70	Polyester	16.4	2.3
AB-70-G41	9A070G41	$ 123.00	70	Glass	16.4	2.3
AB-70-C41	9A070C41	$ 78.00	70	Cellulose	16.4	2.3

FILTER MODIFIER GUIDE :

CARTRIDGE SERIES
AB = CONVENTIONAL

DIAMETER CODE
BLANK = 2.5" OD
P = 3.0" OD
X = 3.75" OD (222 O-RING)
Y = 3.75" OD (139 O-RING)
Z = 3.75" OD (134 O-RING)

LENGTH
1 = 10"
2 = 29.75"
3 = 36"
4 = 40"
9 = 20"
X = CUSTOM

END CAP
1 = DOE
2 = O-RING
3 = SPRING
7 = FIN

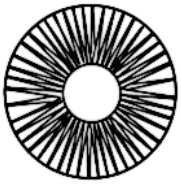
MICRON RATING @ BETA 5000
1/2 = 0.5 MICRON
02 = 2 MICRON
05 = 5 MICRON
10 = 10 MICRON
20 = 20 MICRON
40 = 40 MICRON
70 = 70 MICRON

A	B		1	0	P	2	1

MEDIA
C = CELLULOSE
G = GLASS
P = POLYPROPYLENE
R = POLYESTER

AB SERIES CARTRIDGE FILTER (CONT'D)

3 INCH OD, 36 INCH LONG, SPRING STYLE



Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
ABP-1/2-P33	9AP01P33	$ 150.00	0.5	Polypropylene	15.0	2.3
ABP-1/2-G33	9AP01G33	$ 199.00	0.5	Glass	15.0	2.3
ABP-02-P33	9AP02P33	$ 134.00	2	Polypropylene	18.8	2.9
ABP-02-G33	9AP02G33	$ 172.00	2	Glass	18.8	2.3
ABP-05-P33	9AP05P33	$ 116.00	5	Polypropylene	18.8	2.9
ABP-05-R33	9AP05R33	$ 183.00	5	Polyester	18.8	2.3
ABP-05-G33	9AP05G33	$ 172.00	5	Glass	18.8	2.3
ABP-05-C33	9AP05C33	$ 99.00	5	Cellulose	15.0	2.3
ABP-10-P33	9AP10P33	$ 116.00	10	Polypropylene	18.8	2.9
ABP-10-R33	9AP10R33	$ 183.00	10	Polyester	18.8	2.3
ABP-10-G33	9AP10G33	$ 173.00	10	Glass	18.8	2.3
ABP-10-C33	9AP10C33	$ 99.00	10	Cellulose	15.0	2.3
ABP-20-P33	9AP20P33	$ 116.00	20	Polypropylene	18.8	2.9
ABP-20-R33	9AP20R33	$ 183.00	20	Polyester	18.8	2.3
ABP-20-G33	9AP20G33	$ 170.00	20	Glass	18.8	2.3
ABP-20-C33	9AP20C33	$ 97.00	20	Cellulose	15.0	2.3
ABP-40-P33	9AP40P33	$ 125.00	40	Polypropylene	15.0	2.3
ABP-40-R33	9AP40R33	$ 131.00	40	Polyester	15.0	2.3
ABP-40-G33	9AP40G33	$ 160.00	40	Glass	18.8	2.3
ABP-40-C33	9AP40C33	$ 98.00	40	Cellulose	15.0	2.3
ABP-70-P33	9AP70P33	$ 119.00	70	Polypropylene	18.8	2.9
ABP-70-R33	9AP70R33	$ 124.00	70	Polyester	18.8	2.3
ABP-70-G33	9AP70G33	$ 160.00	70	Glass	18.8	2.3
ABP-70-C33	9AP70C33	$ 100.00	70	Cellulose	15.0	2.3

FILTER MODIFIER GUIDE :

CARTRIDGE SERIES
AB = CONVENTIONAL

DIAMETER CODE
BLANK = 2.5" OD
P = 3.0" OD
X = 3.75" OD (222 O-RING)
Y = 3.75" OD (139 O-RING)
Z = 3.75" OD (134 O-RING)

LENGTH
1 = 10"
2 = 29.75"
3 = 36"
4 = 40"
9 = 20"
X = CUSTOM

END CAP
1 = DOE
2 = O-RING
3 = SPRING
7 = FIN

MICRON RATING @ BETA 5000
1/2 = 0.5 MICRON
02 = 2 MICRON
05 = 5 MICRON
10 = 10 MICRON
20 = 20 MICRON
40 = 40 MICRON
70 = 70 MICRON

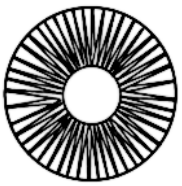
A	B	P	1	0	P	3	3

MEDIA
C = CELLULOSE
G = GLASS
P = POLYPROPYLENE
R = POLYESTER

AB SERIES CARTRIDGE FILTER (CONT'D)

3.75 INCH OD, 40 INCH LONG, 222 O-RING STYLE

Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
ABY-1/2-P42	9AY01P42	$ 285.00	0.5	Polypropylene	34.0	3.8
ABY-1/2-G42	9AY01G42	$ 390.00	0.5	Glass	34.0	3.8
ABY-02-P42	9AY02P42	$ 251.00	2	Polypropylene	42.5	4.7
ABY-02-G42	9AY02G42	$ 329.00	2	Glass	42.5	4.7
ABY-05-P42	9AY05P42	$ 212.00	5	Polypropylene	42.5	4.7
ABY-05-R42	9AP05R42	$ 356.00	5	Polyester	42.5	4.7
ABY-05-G42	9AY05G42	$ 329.00	5	Glass	42.5	4.7
ABY-05-C42	9AP05C42	$ 173.00	5	Cellulose	34.0	3.8
ABY-10-P42	9AY10P42	$ 212.00	10	Polypropylene	42.5	4.7
ABY-10-R42	9AP10R42	$ 356.00	10	Polyester	42.5	4.7
ABY-10-G42	9AY10G42	$ 332.00	10	Glass	42.5	4.7
ABY-10-C42	9AP10C42	$ 173.00	10	Cellulose	34.0	3.8
ABY-20-P42	9AY20P42	$ 212.00	20	Polypropylene	42.5	4.7
ABY-20-R42	9AP20R42	$ 356.00	20	Polyester	42.5	4.7
ABY-20-G42	9AY20G42	$ 326.00	20	Glass	42.5	4.7
ABY-20-C42	9AP20C42	$ 167.00	20	Cellulose	34.0	3.8
ABY-40-P42	9AY40P42	$ 232.00	40	Polypropylene	34.0	3.8
ABY-40-R42	9AP40R42	$ 245.00	40	Polyester	34.0	3.8
ABY-40-G42	9AY40G42	$ 305.00	40	Glass	42.5	4.7
ABY-40-C42	9AP40C42	$ 170.00	40	Cellulose	34.0	3.8
ABY-70-P42	9AY70P42	$ 220.00	70	Polypropylene	42.5	4.7
ABY-70-R42	9AP70R42	$ 228.00	70	Polyester	42.5	4.7
ABY-70-G42	9AY70G42	$ 305.00	70	Glass	42.5	4.7
ABY-70-C42	9AP70C42	$ 175.00	70	Cellulose	34.0	3.8



FILTER MODIFIER GUIDE :

CARTRIDGE SERIES
AB = CONVENTIONAL

DIAMETER CODE
BLANK = 2.5" OD
P = 3.0" OD
X = 3.75" OD (222 O-RING)
Y = 3.75" OD (139 O-RING)
Z = 3.75" OD (134 O-RING)

LENGTH
1 = 10"
2 = 29.75"
3 = 36"
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END CAP
1 = DOE
2 = O-RING
3 = SPRING
7 = FIN

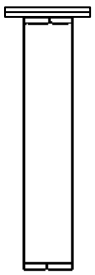
MICRON RATING @ BETA 5000
1/2 = 0.5 MICRON
02 = 2 MICRON
05 = 5 MICRON
10 = 10 MICRON
20 = 20 MICRON
40 = 40 MICRON
70 = 70 MICRON

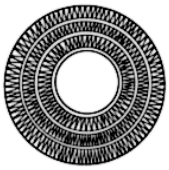
A B Y 1 0 P 4 2

MEDIA
C = CELLULOSE
G = GLASS
P = POLYPROPYLENE
R = POLYESTER

PLATINUM SERIES BAG FILTER

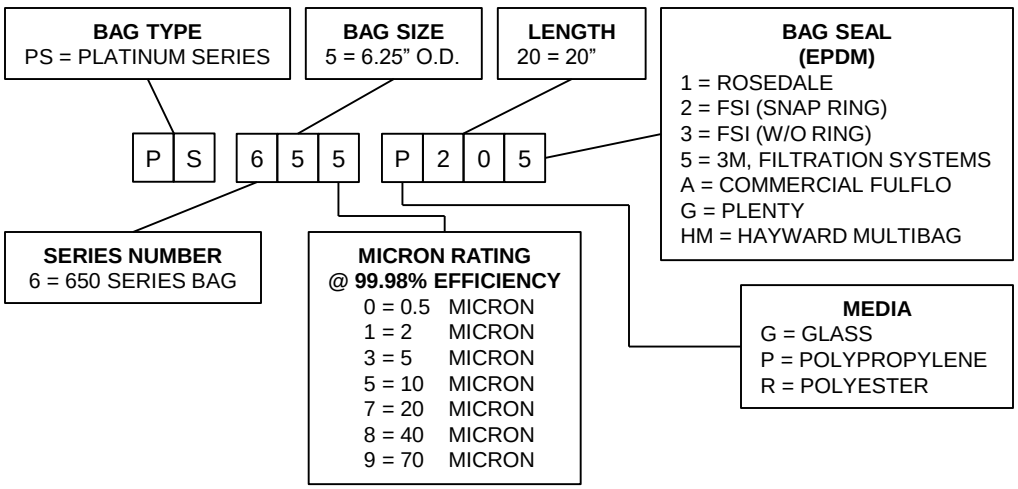
6.25 INCH OD, 20 INCH LONG, 650 SERIES





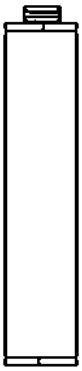
Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
PS-650-P205	9P601P25	$ 429.00	0.5	Polypropylene	49	6.7
PS-650-G205	9P601G25	$ 473.00	0.5	Glass	35	4.8
PS-651-P205	9AY02P42	$ 379.00	2	Polypropylene	59	8.1
PS-651-G205	9AY02G42	$ 437.00	2	Glass	49	6.7
PS-653-P205	9AY05P42	$ 329.00	5	Polypropylene	59	8.1
PS-653-R205	9AP05R42	$ 456.00	5	Polyester	59	8.1
PS-653-G205	9AY05G42	$ 437.00	5	Glass	49	6.7
PS-655-P205	9AY10P42	$ 329.00	10	Polypropylene	59	8.1
PS-655-R205	9AP10R42	$ 456.00	10	Polyester	59	8.1
PS-655-G205	9AY10G42	$ 440.00	10	Glass	49	6.7
PS-657-P205	9AY20P42	$ 329.00	20	Polypropylene	59	8.1
PS-657-R205	9AP20R42	$ 456.00	20	Polyester	59	8.1
PS-657-G205	9AY20G42	$ 434.00	20	Glass	49	6.7
PS-658-P205	9AY40P42	$ 358.00	40	Polypropylene	49	6.7
PS-658-R205	9AP40R42	$ 375.00	40	Polyester	49	6.7
PS-658-G205	9AY40G42	$ 411.00	40	Glass	49	6.7
PS-659-P205	9AY70P42	$ 338.00	70	Polypropylene	59	8.1
PS-659-R205	9AP70R42	$ 350.00	70	Polyester	59	8.1
PS-659-G205	9AY70G42	$ 364.00	70	Glass	49	6.7

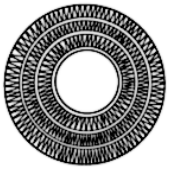
FILTER MODIFIER GUIDE :



740 PLATINUM SERIES CARTRIDGE FILTER

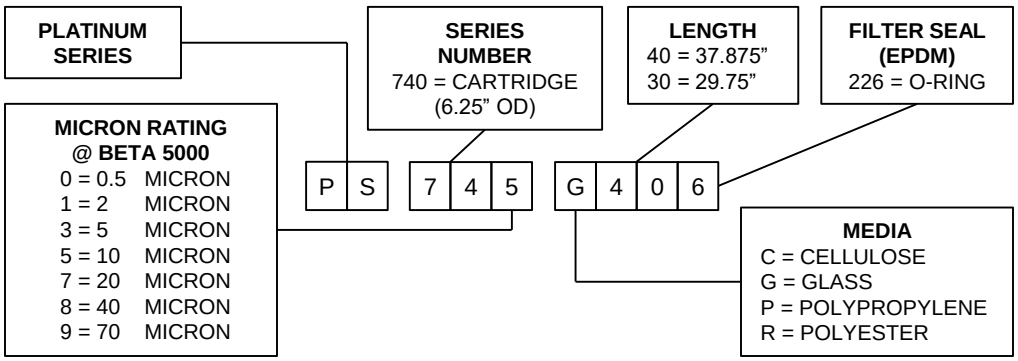
6.25 INCH OD, 38 INCH LONG, 226 O-RING STYLE





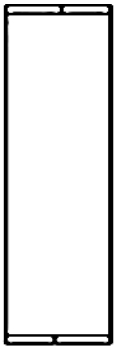
Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
PS-740-P406	9P701P42	$ 771.00	0.5	Polypropylene	90	10.6
PS-740-G406	9P701G42	$ 860.00	0.5	Glass	77	9.1
PS-741-P406	9P702P42	$ 671.00	2	Polypropylene	110	13.0
PS-741-G406	9P702G42	$ 788.00	2	Glass	90	10.6
PS-743-P406	9P705P42	$ 571.00	5	Polypropylene	110	13.0
PS-743-R406	9P705R42	$ 949.00	5	Polyester	110	13.0
PS-743-G406	9P705G42	$ 788.00	5	Glass	90	10.6
PS-743-C406	9P705C42	$ 466.00	5	Cellulose	90	10.6
PS-745-P406	9P710P42	$ 571.00	10	Polypropylene	110	13.0
PS-745-R406	9P710R42	$ 949.00	10	Polyester	110	13.0
PS-745-G406	9P710G42	$ 794.00	10	Glass	90	10.6
PS-745-C406	9P710C42	$ 466.00	10	Cellulose	90	10.6
PS-747-P406	9P720P42	$ 570.00	20	Polypropylene	110	13.0
PS-747-R406	9P720R42	$ 949.00	20	Polyester	110	13.0
PS-747-G406	9P720G42	$ 781.00	20	Glass	90	10.6
PS-747-C406	9P720C42	$ 451.00	20	Cellulose	90	10.6
PS-748-P406	9P740P42	$ 628.00	40	Polypropylene	90	10.6
PS-748-R406	9P740R42	$ 664.00	40	Polyester	90	10.6
PS-748-G406	9P740G42	$ 734.00	40	Glass	90	10.6
PS-748-C406	9P740C42	$ 457.00	40	Cellulose	90	10.6
PS-749-P406	9P770P42	$ 591.00	70	Polypropylene	110	13.0
PS-749-R406	9P770R42	$ 613.00	70	Polyester	110	13.0
PS-749-G406	9P770G42	$ 734.00	70	Glass	90	10.6
PS-749-C406	9P770C42	$ 473.00	70	Cellulose	90	10.6

FILTER MODIFIER GUIDE :



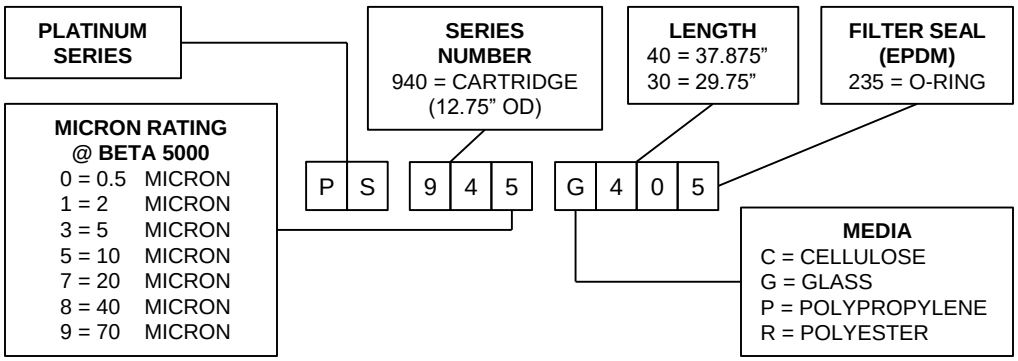
940 PLATINUM SERIES CARTRIDGE FILTER

12.75 INCH OD, 38 INCH LONG, 235 O-RING STYLE



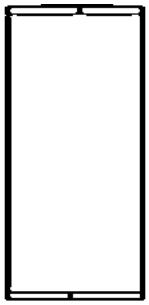
Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
PS-940-P405	9PN01P42	$ 2,898.00	0.5	Polypropylene	325	45.2
PS-940-G405	9PN01G42	$ 3,652.00	0.5	Glass	272	37.9
PS-941-P405	9PN02P42	$ 2,509.00	2	Polypropylene	390	54.3
PS-941-G405	9PN02G42	$ 3,133.00	2	Glass	325	45.2
PS-943-P405	9PN05P42	$ 2,160.00	5	Polypropylene	390	54.3
PS-943-R405	9PN05R42	$ 3,474.00	5	Polyester	390	54.3
PS-943-G405	9PN05G42	$ 3,133.00	5	Glass	325	45.2
PS-943-C405	9PN05C42	$ 1,806.00	5	Cellulose	325	45.2
PS-945-P405	9PN10P42	$ 2,160.00	10	Polypropylene	390	54.3
PS-945-R405	9PN10R42	$ 3,474.00	10	Polyester	390	54.3
PS-945-G405	9PN10G42	$ 3,154.00	10	Glass	325	45.2
PS-945-C405	9PN10C42	$ 1,806.00	10	Cellulose	325	45.2
PS-947-P405	9PN20P42	$ 2,159.00	20	Polypropylene	390	54.3
PS-947-R405	9PN20R42	$ 3,474.00	20	Polyester	390	54.3
PS-947-G405	9PN20G42	$ 3,107.00	20	Glass	325	45.2
PS-947-C405	9PN20C42	$ 1,752.00	20	Cellulose	325	45.2
PS-948-P405	9PN40P42	$ 2,565.00	40	Polypropylene	325	45.2
PS-948-R405	9PN40R42	$ 2,693.00	40	Polyester	325	45.2
PS-948-G405	9PN40G42	$ 2,940.00	40	Glass	325	45.2
PS-948-C405	9PN40C42	$ 1,773.00	40	Cellulose	325	45.2
PS-949-P405	9PN70P42	$ 2,228.00	70	Polypropylene	390	54.3
PS-949-R405	9PN70R42	$ 2,304.00	70	Polyester	390	54.3
PS-949-G405	9PN70G42	$ 2,940.00	70	Glass	325	45.2
PS-949-C405	9PN70C42	$ 1,831.00	70	Cellulose	325	45.2

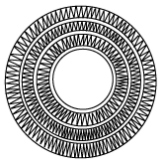
FILTER MODIFIER GUIDE :



2040 PLATINUM SERIES CARTRIDGE FILTER

20 INCH OD, 38 INCH LONG, 235 O-RING STYLE





Model	Part No.	List ($)	Micron	Media	Area (Sq. Ft.)	Wt. (lbs)
PS-2040-P405	9PT01P42	$ 9,401.00	0.5	Polypropylene	920	93.2
PS-2040-G405	9PT01G42	$ 12,683.00	0.5	Glass	920	93.2
PS-2041-P405	9PT02P42	$ 8,482.00	2	Polypropylene	1150	116.5
PS-2041-G405	9PT02G42	$ 10,042.00	2	Glass	920	93.2
PS-2043-P405	9PT05P42	$ 7,444.00	5	Polypropylene	1150	116.5
PS-2043-R405	9PT05R42	$ 11,353.00	5	Polyester	1150	116.5
PS-2043-G405	9PT05G42	$ 10,042.00	5	Glass	920	93.2
PS-2043-C405	9PT05C42	$ 7,145.00	5	Cellulose	720	72.9
PS-2045-P405	9PT10P42	$ 7,444.00	10	Polypropylene	1150	116.5
PS-2045-R405	9PT10R42	$ 11,353.00	10	Polyester	1150	116.5
PS-2045-G405	9PT10G42	$ 10,100.00	10	Glass	920	93.2
PS-2045-C405	9PT10C42	$ 7,145.00	10	Cellulose	720	72.9
PS-2047-P405	9PT20P42	$ 7,439.00	20	Polypropylene	1150	116.5
PS-2047-R405	9PT20R42	$ 11,353.00	20	Polyester	1150	116.5
PS-2047-G405	9PT20G42	$ 8,551.00	20	Glass	920	93.2
PS-2047-C405	9PT20C42	$ 7,026.00	20	Cellulose	720	72.9
PS-2048-P405	9PT40P42	$ 8,452.00	40	Polypropylene	920	93.2
PS-2048-R405	9PT40R42	$ 8,814.00	40	Polyester	920	93.2
PS-2048-G405	9PT40G42	$ 9,500.00	40	Glass	920	93.2
PS-2048-C405	9PT40C42	$ 7,072.00	40	Cellulose	720	72.9
PS-2049-P405	9PT70P42	$ 7,646.00	70	Polypropylene	1150	116.5
PS-2049-R405	9PT70R42	$ 7,873.00	70	Polyester	1150	116.5
PS-2049-G405	9PT70G42	$ 9,500.00	70	Glass	1150	116.5
PS-2049-C405	9PT70C42	$ 7,200.00	70	Cellulose	720	72.9

FILTER MODIFIER GUIDE :

PLATINUM SERIES

SERIES NUMBER
2040 = CARTRIDGE (20.00" OD)

LENGTH
40 = 37.875"
30 = 29.75"

FILTER SEAL (EPDM)
235 = O-RING

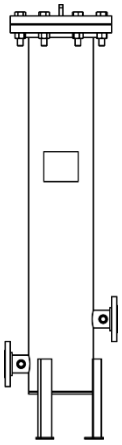
MICRON RATING @ BETA 5000
0 = 0.5 MICRON
1 = 2 MICRON
3 = 5 MICRON
5 = 10 MICRON
7 = 20 MICRON
8 = 40 MICRON
9 = 70 MICRON

P	S	2	0	4	5	G	4	0	5

MEDIA
C = CELLULOSE
G = GLASS
P = POLYPROPYLENE
R = POLYESTER

TFS TYPHOON FILTRATION SYSTEM – Non-ASME

304 STAINLESS STEEL HOUSING WITH FILTER – 150 PSI



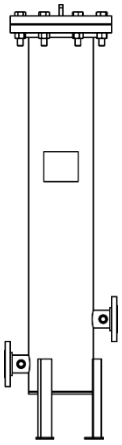
NON-ASME

Model	Part No.	List ($)	Ht.	Width	Line Size	# of Filters	Rec. Flow (GPM)	Shp Wt.
TFS-8-4S$_1$	67510801	$ 3,143.00	56 1/2	8 5/8	2	4	80	120
TFS-8-1S$_2$	67510802	$ 3,275.00	56 1/2	8 5/8		1	80	120
TFS-8-1P$_1$	67510803	$ 3,435.00	56 1/2	8 5/8		1	80	120
TFS-14-16S$_1$	67511401	$14,599.00	60 1/4	14	4	16	320	175
TFS-14-3S$_2$	67511402	$14,530.00	60 1/4	14		3	240	175
TFS-14-3P$_1$	67511403	$13,489.00	60 1/4	14		3	240	175
TFS-14-1P$_2$	67511404	$15,610.00	60 1/4	14		1	300	175
TFS-22-42S$_1$	67512201	$22,133.00	65 1/2	22	8	42	840	255
TFS-22-8S$_2$	67512202	$22,024.00	65 1/2	22		8	640	255
TFS-22-8P$_1$	67512203	$23,304.00	65 1/2	22		8	640	255
TFS-22-1P$_3$	67512204	$27,149.00	65 1/2	22		1	900	255

Carbon and 316L Stainless Available; Includes 38" long10µ Polypro filter(s); Filter Types: **Standard Pleated: S$_1$=**2 1/2" Dia; **S$_2$=**6 1/4" Dia; **Platinum: P$_1$=**6 1/4" Dia**; P$_2$=**12 3/4" Dia; **P$_3$=**20" Dia; Specify if other material or micron size is required (see pages 2.1-2.8); Maximum Temperature = Filter Dependent; Maximum Pressure = 150 PSIG

TFA TYPHOON FILTRATION SYSTEM – ASME

304 STAINLESS STEEL HOUSING WITH FILTER – 125 PSI



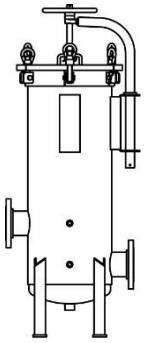
ASME

Model	Part No.	List ($)	Ht.	Width	Line Size	# of Filters	Rec. Flow (GPM)	Shp Wt.
TFA-8-4S$_1$	68510801	$ 3,697.00	56 1/2	8 5/8	2	4	80	120
TFA-8-1S$_2$	68510802	$ 3,852.00	56 1/2	8 5/8		1	80	120
TFA-8-1P$_1$	68510803	$ 4,040.00	56 1/2	8 5/8		1	80	120
TFA-14-16S$_1$	68511401	$17,176.00	60 1/4	14	4	16	320	175
TFA-14-3S$_2$	68511402	$17,094.00	60 1/4	14		3	240	175
TFA-14-3P$_1$	68511403	$15,870.00	60 1/4	14		3	240	175
TFA-14-1P$_2$	68511404	$18,366.00	60 1/4	14		1	300	175
TFA-22-42S$_1$	68512201	$26,039.00	65 1/2	22	8	42	840	255
TFA-22-8S$_2$	68512202	$25,911.00	65 1/2	22		8	640	255
TFA-22-8P$_1$	68512203	$27,416.00	65 1/2	22		8	640	255
TFA-22-1P$_3$	68512204	$31,940.00	65 1/2	22		1	900	255

Carbon and 316L Stainless Available; Includes 38" long10µ Polypro filter(s); Filter Types: **Standard Pleated: S$_1$=**2 1/2" Dia; **S$_2$=**6 1/4" Dia; **Platinum: P$_1$=**6 1/4" Dia**; P$_2$=**12 3/4" Dia; **P$_3$=**20" Dia; Specify if other material or micron size is required (see pages 2.1-2.8); Maximum Temperature = Filter Dependent; Maximum Pressure = 125 PSIG

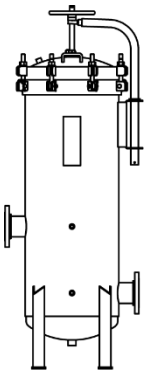
CF CARTRIDGE FILTER VESSELS – ASME

CARBON STEEL HOUSING – 150 PSI



ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
CF3-1-2	CF3-1-2	$ 4,382.00	2-FLG	(3)-10"	26 3/4	12 3/4	15	125
CF6-1-2	CF6-1-2	$ 4,973.00	2-FLG	(6)-10"	27	14 7/8	30	180
CF6-2-2	CF6-2-2	$ 5,155.00	2-FLG	(6)-20"	37	14 7/8	60	185
CF6-3-2	CF6-3-2	$ 5,363.00	2-FLG	(6)-30"	47	14 7/8	90	200
CF6-4-3	CF6-4-3	$ 5,610.00	3-FLG	(6)-40"	58 1/2	14 7/8	120	220
CF12-3-3	CF12-3-3	$ 6,615.00	3-FLG	(12)-30"	64 3/4	20 1/2	180	310
CF12-3-4	CF12-3-4	$ 6,707.00	4-FLG	(12)-30"	64 3/4	20 1/2	180	315
CF12-4-4	CF12-4-4	$ 6,752.00	4-FLG	(12)-40"	71 1/4	20 1/2	240	330
CF19-3-4	CF19-3-4	$ 7,915.00	4-FLG	(19)-30"	61 1/4	23 1/2	285	420
CF19-4-4	CF19-4-4	$ 8,195.00	4-FLG	(19)-40"	71 1/4	23 1/2	380	440

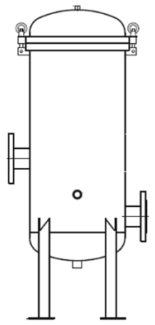


ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
CF25-3-4	CF25-3-4	$ 9,031.00	4-FLG	(25) - 30"	67	26	375	515
CF25-4-6	CF25-4-6	$ 9,542.00	6-FLG	(25) - 40"	80 3/4	26	500	540
CF35-3-6	CF35-3-6	$ 11,091.00	6-FLG	(35) - 30"	69 1/4	29 1/4	525	645
CF35-4-6	CF35-4-6	$ 11,282.00	6-FLG	(35) - 40"	79 1/4	29 1/4	700	695
CF40-3-6	CF40-3-6	$ 12,705.00	6-FLG	(40) - 30"	71 1/4	30 3/4	600	810
CF40-4-6	CF40-4-6	$ 13,421.00	6-FLG	(40) - 40"	81 1/4	30 3/4	800	820
CF52-3-6	CF52-3-6	$ 14,852.00	6-FLG	(52) - 30"	74 3/4	33 1/2	780	865
CF52-4-8	CF52-4-8	$ 15,741.00	8-FLG	(52) - 40"	84 3/4	33 1/2	1040	900
CF85-3-8	CF85-3-8	$ 20,175.00	8-FLG	(85) - 30"	78 1/4	39 3/4	1275	1170
CF85-4-8	CF85-4-8	$ 21,398.00	8-FLG	(85) - 40"	84 5/8	39 3/4	1700	1200
CF102-3-8	CF102-3-8	$ 23,252.00	8-FLG	(102) - 30"	79 5/8	42 1/4	1530	1450
CF102-4-8	CF102-4-8	$ 24,351.00	8-FLG	(102) - 40"	91	42 1/4	2040	1600

Materials = Carbon Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 500° F; Finish = Primer Painted Exterior; Elements NOT included; Lift arm provided on CF12 and larger

4NCF CARTRIDGE FILTER VESSELS – Non-ASME



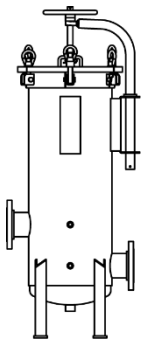
NON-ASME

304 STAINLESS STEEL HOUSING – 150 PSI

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
4NCF11-1N	4NCF11-1N	$ 354.00	1-NPT	(1)-10"	16	4 1/2	5	9
4NCF12-1N	4NCF12-1N	$ 419.00	1-NPT	(1)-20"	26	4 1/2	10	11
4NCF51-2N	4NCF51-2N	$ 676.00	2-NPT	(5)-10"	29 3/8	12	25	41
4NCF52-2N	4NCF52-2N	$ 731.00	2-NPT	(5)-20"	39 1/8	12	50	48
4NCF53-2N	4NCF53-2N	$ 795.00	2-NPT	(5)-30"	49	12	75	55
4NCF54-2N	4NCF54-2N	$ 860.00	2-NPT	(5)-40"	59 1/4	12	100	62
4NCF73-2N	4NCF73-2N	$ 1,331.00	2-NPT	(7)-30"	51 3/4	14	105	75
4NCF74-2N	4NCF74-2N	$ 1,396.00	2-NPT	(7)-40"	62	14	140	84
4NCF113-3	4NCF113-3	$ 1,932.00	3-FLG	(11)-30"	55 3/4	18 1/4	165	115
4NCF114-3	4NCF114-3	$ 2,148.00	3-FLG	(11)-40"	65 1/8	18 1/4	220	123
4NCF193-4	4NCF193-4	$ 2,576.00	4-FLG	(19)-30"	58 1/2	23 3/4	285	161
4NCF194-4	4NCF194-4	$ 2,684.00	4-FLG	(19)-40"	67 1/2	23 3/4	380	175

Materials = 304 Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 300° F; Finish = Bead Blast Exterior; Elements NOT included

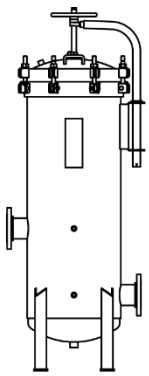
4CF CARTRIDGE FILTER VESSELS – ASME



ASME

304 STAINLESS STEEL HOUSING – 150 PSI

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
4CF3-1-2	4CF3-1-2	$ 6,539.00	2-FLG	(3)-10"	26 3/4	12 3/4	15	125
4CF6-1-2	4CF6-1-2	$ 6,954.00	2-FLG	(6)-10"	27	14 7/8	30	180
4CF6-2-2	4CF6-2-2	$ 7,579.00	2-FLG	(6)-20"	37	14 7/8	60	185
4CF6-3-2	4CF6-3-2	$ 7,937.00	2-FLG	(6)-30"	47	14 7/8	90	200
4CF6-4-3	4CF6-4-3	$ 8,384.00	3-FLG	(6)-40"	58 1/2	14 7/8	120	220
4CF12-3-3	4CF12-3-3	$ 12,090.00	3-FLG	(12)-30"	64 3/4	20 1/2	180	310
4CF12-3-4	4CF12-3-4	$ 12,716.00	4-FLG	(12)-30"	64 3/4	20 1/2	180	315
4CF12-4-4	4CF12-4-4	$ 13,164.00	4-FLG	(12)-40"	71 1/4	20 1/2	240	330
4CF19-3-4	4CF19-3-4	$ 16,058.00	4-FLG	(19)-30"	61 1/4	23 1/2	285	420
4CF19-4-4	4CF19-4-4	$ 16,751.00	4-FLG	(19)-40"	71 1/4	23 1/2	380	440



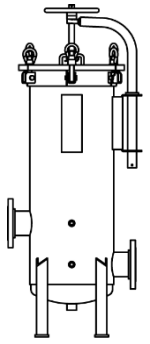
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
4CF25-3-4	4CF25-3-4	$ 17,703.00	4-FLG	(25) - 30"	67	26	375	515
4CF25-4-6	4CF25-4-6	$ 18,845.00	6-FLG	(25) - 40"	80 3/4	26	500	540
4CF35-3-6	4CF35-3-6	$ 23,143.00	6-FLG	(35) - 30"	69 1/4	29 1/4	525	645
4CF35-4-6	4CF35-4-6	$ 23,836.00	6-FLG	(35) - 40"	79 1/4	29 1/4	700	695
4CF40-3-6	4CF40-3-6	$ 24,928.00	6-FLG	(40) - 30"	71 1/4	30 3/4	600	810
4CF40-4-6	4CF40-4-6	$ 25,513.00	6-FLG	(40) - 40"	81 1/4	30 3/4	800	820
4CF52-3-6	4CF52-3-6	$ 29,182.00	6-FLG	(52) - 30"	74 3/4	33 1/2	780	865
4CF52-4-8	4CF52-4-8	$ 30,271.00	8-FLG	(52) - 40"	84 3/4	33 1/2	1040	900
4CF85-3-8	4CF85-3-8	$ 40,370.00	8-FLG	(85) - 30"	78 1/4	39 3/4	1275	1170
4CF85-4-8	4CF85-4-8	$ 42,802.00	8-FLG	(85) - 40"	84 5/8	39 3/4	1700	1200
4CF102-3-8	4CF102-3-8	$ 46,771.00	8-FLG	(102) - 30"	79 5/8	42 1/4	1530	1450
4CF102-4-8	4CF102-4-8	$ 49,008.00	8-FLG	(102) - 40"	91	42 1/4	2040	1600

Materials = 304 Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 300° F; Finish = Bead Blast Exterior; Elements NOT included; Lift arm provided on CF12 and larger

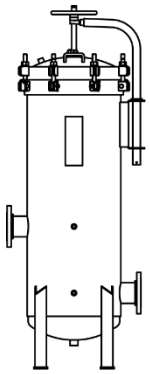
6CF CARTRIDGE FILTER VESSELS – ASME

316L STAINLESS STEEL HOUSING – 150 PSI



ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
6CF3-1-2	6CF3-1-2	$ 7,887.00	2-FLG	(3)-10"	26 3/4	12 3/4	15	125
6CF6-1-2	6CF6-1-2	$ 8,517.00	2-FLG	(6)-10"	27	14 7/8	30	180
6CF6-2-2	6CF6-2-2	$ 9,220.00	2-FLG	(6)-20"	37	14 7/8	60	185
6CF6-3-2	6CF6-3-2	$ 9,657.00	2-FLG	(6)-30"	47	14 7/8	90	200
6CF6-4-3	6CF6-4-3	$ 10,097.00	3-FLG	(6)-40"	58 1/2	14 7/8	120	220
6CF12-3-3	6CF12-3-3	$ 14,544.00	3-FLG	(12)-30"	64 3/4	20 1/2	180	310
6CF12-3-4	6CF12-3-4	$ 15,460.00	4-FLG	(12)-30"	64 3/4	20 1/2	180	315
6CF12-4-4	6CF12-4-4	$ 15,908.00	4-FLG	(12)-40"	71 1/4	20 1/2	240	330
6CF19-3-4	6CF19-3-4	$ 19,029.00	4-FLG	(19)-30"	61 1/4	23 1/2	285	420
6CF19-4-4	6CF19-4-4	$ 20,177.00	4-FLG	(19)-40"	71 1/4	23 1/2	380	440



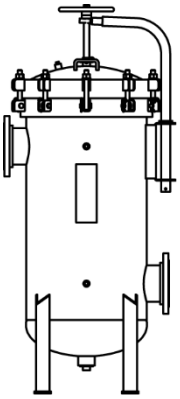
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
6CF25-3-4	6CF25-3-4	$ 21,863.00	4-FLG	(25) - 30"	67	26	375	515
6CF25-4-6	6CF25-4-6	$ 22,550.00	6-FLG	(25) - 40"	80 3/4	26	500	540
6CF35-3-6	6CF35-3-6	$ 27,310.00	6-FLG	(35) - 30"	69 1/4	29 1/4	525	645
6CF35-4-6	6CF35-4-6	$ 28,508.00	6-FLG	(35) - 40"	79 1/4	29 1/4	700	695
6CF40-3-6	6CF40-3-6	$ 29,542.00	6-FLG	(40) - 30"	71 1/4	30 3/4	600	810
6CF40-4-6	6CF40-4-6	$ 30,127.00	6-FLG	(40) - 40"	81 1/4	30 3/4	800	820
6CF52-3-6	6CF52-3-6	$ 34,866.00	6-FLG	(52) - 30"	74 3/4	33 1/2	780	865
6CF52-4-8	6CF52-4-8	$ 37,100.00	8-FLG	(52) - 40"	84 3/4	33 1/2	1040	900
6CF85-3-8	6CF85-3-8	$ 42,955.00	8-FLG	(85) - 30"	78 1/4	39 3/4	1275	1170
6CF85-4-8	6CF85-4-8	$ 46,202.00	8-FLG	(85) - 40"	84 5/8	39 3/4	1700	1200
6CF102-3-8	6CF102-3-8	$ 55,137.00	8-FLG	(102) - 30"	79 5/8	42 1/4	1530	1450
6CF102-4-8	6CF102-4-8	$ 60,502.00	8-FLG	(102) - 40"	91	42 1/4	2040	1600

Materials = 316L Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 400° F; Finish = Bead Blast Exterior; Elements NOT included; Lift arm provided on CF12 and larger

BF BAG FILTER VESSELS – ASME

CARBON STEEL HOUSING – 150 PSI



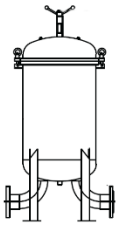
ASME

Model	Part No.	List ($)	Conn. Size	# Bags	Height	Width	Max GPM	Ship Wt. (lbs.)
BF11-2	BF11-2	$ 5,141.00	2-FLG	(1) #1	34 7/8	14 7/8	80	180
BF12-3	BF12-3	$ 6,051.00	3-FLG	(1) #2	48 3/4	16	160	200
BF31-3	BF31-3	$ 9,004.00	3-FLG	(3) #1	54	26	240	600
BF32-4	BF32-4	$ 9,857.00	4-FLG	(3) #2	67	26	480	650
BF41-4	BF41-4	$ 12,302.00	4-FLG	(4) #1	54 1/2	28	320	670
BF42-6	BF42-6	$ 14,346.00	6-FLG	(4) #2	71 1/4	30	640	740
BF52-6	BF52-6	$ 15,122.00	6-FLG	(5) #2	71 1/2	30	800	700
BF62-8	BF62-8	$ 18,412.00	8-FLG	(6) #2	75	36	960	1105
BF72-8	BF72-8	$ 20,867.00	8-FLG	(7) #2	75	36	1120	1105
BF82-8	BF82-8	$ 21,186.00	8-FLG	(8) #2	75 1/2	38	1280	1180
BF92-8	BF92-8	$ 23,575.00	8-FLG	(9) #2	77 3/4	40	1440	1290

Materials = Carbon Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 500˚ F; Finish = Primer Exterior; Bag Filters NOT included; Lift arm provided on BF31 and larger

4NBF BAG FILTER VESSELS – Non-ASME

304 STAINLESS STEEL HOUSING – 150 PSI



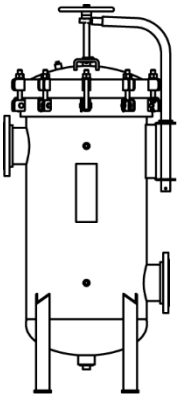
NON-ASME

Model	Part No.	List ($)	Conn. Size	# Bags	Height	Width	Max GPM	Ship Wt. (lbs.)
4NBF12-2N	4NBF12-2N	$ 1,373.00	2-NPT	(1) #2	43	12	160	82
4NBF12-2	4NBF12-2	$ 1,473.00	2-FLG	(1) #2	44	13	160	88
4NBF42-4	4NBF42-4	$ 9,551.00	4-FLG	(4) #2	62	32	640	419
4NBF62-6	4NBF62-6	$ 14,321.00	6-FLG	(6) #2	71	35	960	660

Materials = 304 Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 300˚ F; Finish = Bead Blast Exterior; Bag Filters NOT included; Lift arm provided on 4BF31 and larger

4BF BAG FILTER VESSELS – ASME

304 STAINLESS STEEL HOUSING – 150 PSI



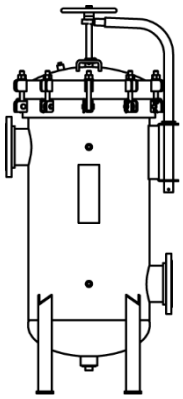
ASME

Model	Part No.	List ($)	Conn. Size	# Bags	Height	Width	Max GPM	Ship Wt. (lbs.)
4BF11-2	4BF11-2	$ 7,069.00	2-FLG	(1) #1	34 7/8	14 7/8	80	180
4BF12-3	4BF12-3	$ 8,356.00	3-FLG	(1) #2	48 3/4	16	160	200
4BF31-3	4BF31-3	$ 18,908.00	3-FLG	(3) #1	54	26	240	600
4BF32-4	4BF32-4	$ 19,420.00	4-FLG	(3) #2	67	26	480	650
4BF41-4	4BF41-4	$ 20,578.00	4-FLG	(4) #1	54 1/2	28	320	670
4BF42-6	4BF42-6	$ 21,577.00	6-FLG	(4) #2	71 1/4	30	640	740
4BF52-6	4BF52-6	$ 25,708.00	6-FLG	(5) #2	71 1/2	30	800	700
4BF62-8	4BF62-8	$ 28,783.00	8-FLG	(6) #2	75	36	960	1105
4BF72-8	4BF72-8	$ 32,845.00	8-FLG	(7) #2	75	36	1120	1105
4BF82-8	4BF82-8	$ 37,205.00	8-FLG	(8) #2	75 1/2	38	1280	1180
4BF92-8	4BF92-8	$ 38,617.00	8-FLG	(9) #2	77 3/4	40	1440	1290

Materials = 304 Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 300° F; Finish = Bead Blast Exterior; Bag Filters NOT included

6BF BAG FILTER VESSELS – ASME

316L STAINLESS STEEL HOUSING – 150 PSI



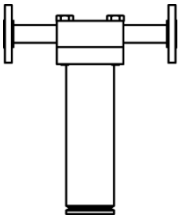
ASME

Model	Part No.	List ($)	Conn. Size	# Bags	Height	Width	Max GPM	Ship Wt. (lbs.)
6BF11-2	6BF11-2	$ 8,467.00	2-FLG	(1) #1	34 7/8	14 7/8	80	180
6BF12-3	6BF12-3	$ 10,026.00	3-FLG	(1) #2	48 3/4	16	160	200
6BF31-3	6BF31-3	$ 23,164.00	3-FLG	(3) #1	54	26	240	600
6BF32-4	6BF32-4	$ 23,703.00	4-FLG	(3) #2	67	26	480	650
6BF41-4	6BF41-4	$ 24,537.00	4-FLG	(4) #1	54 1/2	28	320	670
6BF42-6	6BF42-6	$ 25,801.00	6-FLG	(4) #2	71 1/4	30	640	740
6BF52-6	6BF52-6	$ 27,366.00	6-FLG	(5) #2	71 1/2	30	800	700
6BF62-8	6BF62-8	$ 33,392.00	8-FLG	(6) #2	75	36	960	1105
6BF72-8	6BF72-8	$ 35,814.00	8-FLG	(7) #2	75	36	1120	1105
6BF82-8	6BF82-8	$ 39,489.00	8-FLG	(8) #2	75 1/2	38	1280	1180
6BF92-8	6BF92-8	$ 44,009.00	8-FLG	(9) #2	77 3/4	40	1440	1290

Materials = 316L Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 400° F; Finish = Bead Blast Exterior; Bag Filters NOT included; Lift arm provided on 6BF31 and larger

HP HIGH PRESSURE CARTRIDGE FILTER VESSELS – ASME

CARBON STEEL HOUSING



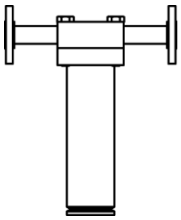
ASME

Model/Part#	Pressure Rating (psi)	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
HP-11-1N	1610	$ 2,567.00	1-NPT	(1)-10"	14 1/2	4 5/8	6	37
HP-11-1-150	245	$ 3,059.00	1-FLG-150#	(1)-10"	14 1/2	12 5/8	6	45
HP-11-1-300	665	$ 3,109.00	1-FLG-300#	(1)-10"	14 1/2	12 5/8	6	47
HP-11-1-600	1332	$ 3,175.00	1-FLG-600#	(1)-10"	14 1/2	12 5/8	6	47
HP-12-1N	1610	$ 2,689.00	1-NPT	(1)-20"	24 1/2	4 5/8	12	46
HP-12-1-150	245	$ 3,181.00	1-FLG-150#	(1)-20"	24 1/2	12 5/8	12	54
HP-12-1-300	665	$ 3,231.00	1-FLG-300#	(1)-20"	24 1/2	12 5/8	12	56
HP-12-1-600	1332	$ 3,297.00	1-FLG-600#	(1)-20"	24 1/2	12 5/8	12	56
HP-13-1N	1610	$ 2,791.00	1-NPT	(1)-30"	34 1/2	4 5/8	18	55
HP-13-1-150	245	$ 3,283.00	1-FLG-150#	(1)-30"	34 1/2	12 5/8	18	63
HP-13-1-300	665	$ 3,333.00	1-FLG-300#	(1)-30"	34 1/2	12 5/8	18	65
HP-13-1-600	1332	$ 3,399.00	1-FLG-600#	(1)-30"	34 1/2	12 5/8	18	65

Materials = Carbon Steel; Maximum Pressure based on rating of flanges; Maximum Temperature = 300˚ F; Finish = Primer Exterior; Filters NOT included

6HP HIGH PRESSURE CARTRIDGE FILTER VESSELS – ASME

316L STAINLESS STEEL HOUSING



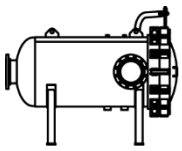
ASME

Model/Part#	Pressure Rating (psi)	List ($)	Conn. Size	# Elm.	Height	Width	Max GPM	Ship Wt. (lbs.)
6HP-11-1N	1610	$ 3,303.00	1-NPT	(1)-10"	14 1/2	4 5/8	6	37
6HP-11-1-150	225	$ 3,922.00	1-FLG-150#	(1)-10"	14 1/2	12 5/8	6	45
6HP-11-1-300	590	$ 4,062.00	1-FLG-300#	(1)-10"	14 1/2	12 5/8	6	47
6HP-11-1-600	1180	$ 4,398.00	1-FLG-600#	(1)-10"	14 1/2	12 5/8	6	47
6HP-12-1N	1610	$ 3,587.00	1-NPT	(1)-20"	24 1/2	4 5/8	12	46
6HP-12-1-150	225	$ 4,207.00	1-FLG-150#	(1)-20"	24 1/2	12 5/8	12	54
6HP-12-1-300	590	$ 4,346.00	1-FLG-300#	(1)-20"	24 1/2	12 5/8	12	56
6HP-12-1-600	1180	$ 4,683.00	1-FLG-600#	(1)-20"	24 1/2	12 5/8	12	56
6HP-13-1N	1610	$ 3,748.00	1-NPT	(1)-30"	34 1/2	4 5/8	18	55
6HP-13-1-150	225	$ 4,368.00	1-FLG-150#	(1)-30"	34 1/2	12 5/8	18	63
6HP-13-1-300	590	$ 4,507.00	1-FLG-300#	(1)-30"	34 1/2	12 5/8	18	65
6HP-13-1-600	1180	$ 4,844.00	1-FLG-600#	(1)-30"	34 1/2	12 5/8	18	65

Materials = 316L Stainless Steel; Maximum based on rating of flanges; Maximum Temperature = 300˚ F; Finish = Bead Blast Exterior; Filters NOT included

HFH HIGH FLOW CARTRIDGE FILTER VESSELS – ASME

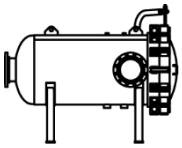
40" CARTRIDGE FILTER – CARBON HOUSING – 150 PSI



ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Length	Max GPM	Ship Wt. (lbs.)
HFH14-3	HFH14-3	$ 7,051.00	3-FLG	(1)-40"	43	60 1/4	350	250
HFH34-6	HFH34-6	$ 14,478.00	6-FLG	(3)-40"	58 3/8	69 3/4	1050	694
HFH54-8	HFH54-8	$ 22,980.00	8-FLG	(5)-40"	59	77	1750	935
HFH74-10	HFH74-10	$ 26,247.00	10-FLG	(7)-40"	60	79 3/4	2450	1106
HFH84-10	HFH84-10	$ 27,910.00	10-FLG	(8)-40"	61	79 7/8	2800	1248
HFH124-12	HFH124-12	$ 36,983.00	12-FLG	(12)-40"	64	88 3/8	4200	1672
HFH154-14	HFH154-14	$ 42,598.00	14-FLG	(15)-40"	65	90 3/4	5250	1938
HFH194-16	HFH194-16	$ 50,990.00	16-FLG	(19)-40"	67 1/2	94 1/2	6650	2593

60" CARTRIDGE FILTER – CARBON HOUSING – 150 PSI



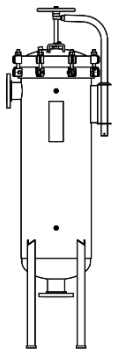
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Length	Max GPM	Ship Wt. (lbs.)
HFH16-4	HFH16-4	$ 7,411.00	4-FLG	(1)-60"	43	81 1/4	500	325
HFH36-8	HFH36-8	$ 15,689.00	8-FLG	(3)-60"	58 3/8	91 3/4	1500	756
HFH56-10	HFH56-10	$ 24,636.00	10-FLG	(5)-60"	59	99	2500	1070
HFH76-10	HFH76-10	$ 27,263.00	10-FLG	(7)-60"	60	99 3/4	3500	1181
HFH86-12	HFH86-12	$ 30,034.00	12-FLG	(8)-60"	61	101 7/8	4000	1389
HFH126-14	HFH126-14	$ 39,122.00	14-FLG	(12)-60"	64	109 3/4	6000	1834
HFH156-16	HFH156-16	$ 45,427.00	16-FLG	(15)-60"	65	112 7/8	7500	2113
HFH196-18	HFH196-18	$ 53,840.00	18-FLG	(19)-60"	67 1/2	116 1/2	9500	2828

Materials = Carbon Steel; Maximum Pressure 150 psi; Maximum Temperature = 250° F; Finish = Primer Exterior; Filters NOT included

HFV HIGH FLOW CARTRIDGE FILTER VESSELS – ASME

40" CARTRIDGE FILTER – CARBON HOUSING – 150 PSI



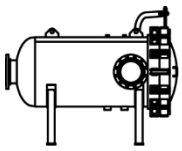
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Vessel Diameter	Max GPM	Ship Wt. (lbs.)
HFV14-3	HFV14-3	$ 3,893.00	3-FLG	(1)-40"	69 3/8	8	350	250
HFV34-6	HFV34-6	$ 14,052.00	6-FLG	(3)-40"	94 1/4	16	1050	694
HFV54-8	HFV54-8	$ 22,300.00	8-FLG	(5)-40"	106 1/4	20	1750	935
HFV74-10	HFV74-10	$ 25,468.00	10-FLG	(7)-40"	115 1/4	22	2450	1106
HFV84-10	HFV84-10	$ 27,083.00	10-FLG	(8)-40"	115 1/2	24	2800	1248
HFV124-12	HFV124-12	$ 35,884.00	12-FLG	(12)-40"	129	30	4200	1672
HFV154-14	HFV154-14	$ 41,329.00	14-FLG	(15)-40"	135	32	5250	1938
HFV194-16	HFV194-16	$ 49,468.00	16-FLG	(19)-40"	143 5/8	36	6650	2593

Materials = Carbon Steel; Maximum Pressure 150 psi; Maximum Temperature = 250° F; Finish = Primer Exterior; Filters NOT included

4HFH HIGH FLOW CARTRIDGE FILTER VESSELS – ASME

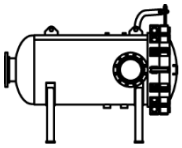
40" CARTRIDGE FILTER – 304 STAINLESS HOUSING – 150 PSI



ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Length	Max GPM	Ship Wt. (lbs.)
4HFH14-3	4HFH14-3	$ 10,164.00	3-FLG	(1)-40"	43	60 1/4	350	250
4HFH34-6	4HFH34-6	$ 21,938.00	6-FLG	(3)-40"	58 3/8	69 3/4	1050	694
4HFH54-8	4HFH54-8	$ 35,354.00	8-FLG	(5)-40"	59	77	1750	935
4HFH74-10	4HFH74-10	$ 41,168.00	10-FLG	(7)-40"	60	79 3/4	2450	1106
4HFH84-10	4HFH84-10	$ 43,945.00	10-FLG	(8)-40"	61	79 7/8	2800	1248
4HFH124-12	4HFH124-12	$ 59,301.00	12-FLG	(12)-40"	64	88 3/8	4200	1672
4HFH154-14	4HFH154-14	$ 69,198.00	14-FLG	(15)-40"	65	90 3/4	5250	1938
4HFH194-16	4HFH194-16	$ 82,490.00	16-FLG	(19)-40"	67 1/2	94 1/2	6650	2593

60" CARTRIDGE FILTER – 304 STAINLESS HOUSING – 150 PSI



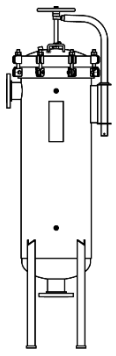
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Length	Max GPM	Ship Wt. (lbs.)
4HFH16-4	4HFH16-4	$ 10,658.00	4-FLG	(1)-60"	43	81 1/4	500	325
4HFH36-8	4HFH36-8	$ 24,176.00	8-FLG	(3)-60"	58 3/8	91 3/4	1500	756
4HFH56-10	4HFH56-10	$ 38,906.00	10-FLG	(5)-60"	59	99	2500	1070
4HFH76-10	4HFH76-10	$ 43,046.00	10-FLG	(7)-60"	60	99 3/4	3500	1181
4HFH86-12	4HFH86-12	$ 46,936.00	12-FLG	(8)-60"	61	101 7/8	4000	1389
4HFH126-14	4HFH126-14	$ 64,537.00	14-FLG	(12)-60"	64	109 3/4	6000	1834
4HFH156-16	4HFH156-16	$ 74,867.00	16-FLG	(15)-60"	65	112 7/8	7500	2113
4HFH196-18	4HFH196-18	$ 88,302.00	18-FLG	(19)-60"	67 1/2	116 1/2	9500	2828

Materials = Carbon Steel; Maximum Pressure 150 psi; Maximum Temperature = 250° F; Finish = Primer Exterior; Filters NOT included

4HFV HIGH FLOW CARTRIDGE FILTER VESSELS – ASME

40" CARTRIDGE FILTER – 304 STAINLESS HOUSING – 150 PSI



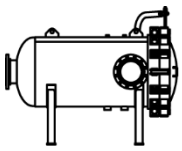
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Vessel Diameter	Max GPM	Ship Wt. (lbs.)
HFV14-3	HFV14-3	$ 3,893.00	3-FLG	(1)-40"	69 3/8	8	350	250
HFV34-6	HFV34-6	$ 14,052.00	6-FLG	(3)-40"	94 1/4	16	1050	694
HFV54-8	HFV54-8	$ 22,300.00	8-FLG	(5)-40"	106 1/4	20	1750	935
HFV74-10	HFV74-10	$ 25,468.00	10-FLG	(7)-40"	115 1/4	22	2450	1106
HFV84-10	HFV84-10	$ 27,083.00	10-FLG	(8)-40"	115 1/2	24	2800	1248
HFV124-12	HFV124-12	$ 35,884.00	12-FLG	(12)-40"	129	30	4200	1672
HFV154-14	HFV154-14	$ 41,329.00	14-FLG	(15)-40"	135	32	5250	1938
HFV194-16	HFV194-16	$ 49,468.00	16-FLG	(19)-40"	143 5/8	36	6650	2593

Materials = Carbon Steel; Maximum Pressure 150 psi; Maximum Temperature = 250° F; Finish = Primer Exterior; Filters NOT included

6HFH HIGH FLOW CARTRIDGE FILTER VESSELS – ASME

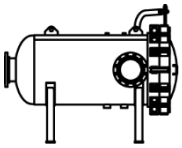
40" CARTRIDGE FILTER – 316 STAINLESS HOUSING – 150 PSI



ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Length	Max GPM	Ship Wt. (lbs.)
6HFH14-3	6HFH14-3	$ 10,801.00	3-FLG	(1)-40"	43	60 1/4	350	250
6HFH34-6	6HFH34-6	$ 24,050.00	6-FLG	(3)-40"	58 3/8	69 3/4	1050	694
6HFH54-8	6HFH54-8	$ 38,387.00	8-FLG	(5)-40"	59	77	1750	935
6HFH74-10	6HFH74-10	$ 44,999.00	10-FLG	(7)-40"	60	79 3/4	2450	1106
6HFH84-10	6HFH84-10	$ 48,224.00	10-FLG	(8)-40"	61	79 7/8	2800	1248
6HFH124-12	6HFH124-12	$ 66,821.00	12-FLG	(12)-40"	64	88 3/8	4200	1672
6HFH154-14	6HFH154-14	$ 78,475.00	14-FLG	(15)-40"	65	90 3/4	5250	1938
6HFH194-16	6HFH194-16	$ 94,988.00	16-FLG	(19)-40"	67 1/2	94 1/2	6650	2593

60" CARTRIDGE FILTER – 316 STAINLESS HOUSING – 150 PSI



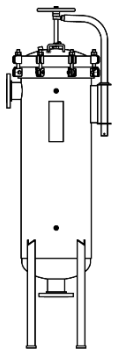
ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Length	Max GPM	Ship Wt. (lbs.)
6HFH16-4	6HFH16-4	$ 11,461.00	4-FLG	(1)-60"	43	81 1/4	500	325
6HFH36-8	6HFH36-8	$ 26,712.00	8-FLG	(3)-60"	58 3/8	91 3/4	1500	756
6HFH56-10	6HFH56-10	$ 42,908.00	10-FLG	(5)-60"	59	99	2500	1070
6HFH76-10	6HFH76-10	$ 48,022.00	10-FLG	(7)-60"	60	99 3/4	3500	1181
6HFH86-12	6HFH86-12	$ 53,460.00	12-FLG	(8)-60"	61	101 7/8	4000	1389
6HFH126-14	6HFH126-14	$ 73,914.00	14-FLG	(12)-60"	64	109 3/4	6000	1834
6HFH156-16	6HFH156-16	$ 88,048.00	16-FLG	(15)-60"	65	112 7/8	7500	2113
6HFH196-18	6HFH196-18	$ 103,698.00	18-FLG	(19)-60"	67 1/2	116 1/2	9500	2828

Materials = Carbon Steel; Maximum Pressure 150 psi; Maximum Temperature = 250° F; Finish = Primer Exterior; Filters NOT included

6HFV HIGH FLOW CARTRIDGE FILTER VESSELS – ASME

40" CARTRIDGE FILTER – 316 STAINLESS HOUSING – 150 PSI



ASME

Model	Part No.	List ($)	Conn. Size	# Elm.	Height	Vessel Diameter	Max GPM	Ship Wt. (lbs.)
6HFV14-3	6HFV14-3	$ 6,444.00	3-FLG	(1)-40"	69 3/8	8	350	250
6HFV34-6	6HFV34-6	$ 23,338.00	6-FLG	(3)-40"	94 1/4	16	1050	694
6HFV54-8	6HFV54-8	$ 37,245.00	8-FLG	(5)-40"	106 1/4	20	1750	935
6HFV74-10	6HFV74-10	$ 43,658.00	10-FLG	(7)-40"	115 1/4	22	2450	1106
6HFV84-10	6HFV84-10	$ 46,787.00	10-FLG	(8)-40"	115 1/2	24	2800	1248
6HFV124-12	6HFV124-12	$ 64,825.00	12-FLG	(12)-40"	129	30	4200	1672
6HFV154-14	6HFV154-14	$ 76,130.00	14-FLG	(15)-40"	135	32	5250	1938
6HFV194-16	6HFV194-16	$ 92,149.00	16-FLG	(19)-40"	143 5/8	36	6650	2593

Materials = Carbon Steel; Maximum Pressure 150 psi; Maximum Temperature = 250° F; Finish = Primer Exterior; Filters NOT included

FX HYDRO-PNEUMATIC TANKS

Hydro-pneumatic tanks are used to store potable water. When properly sized, these tanks are designed to maintain a potable water system within a specified pressure range. Typically used in **water well systems, pressure booster packages**, and **industrial water accumulation** applications.

SIZING HYDRO-PNEUMATIC TANKS

To properly size a hydro-pneumatic tank, four critical pieces of information are required:

- Pump Capacity (in gallons per minute)
- Minimum Required Pump Run-time (in minutes)
- Pump Cut-in Pressure (in psig)
- Pump Cut-out Pressure (in psig)

Use the following form and acceptance factor table to calculate tank sizing by hand or visit **www.westank.com/calculator** to automatically calculate the size and model. Download our **Wessels Company App** to your iOS or Android device for mobile sizing on the go.

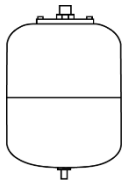
PUMP CAPACITY		**GPM**
MINIMUM RUN TIME		**MIN.**
CALCULATE REQUIRED STORAGE (ACCEPTANCE VOLUME) **(PUMP CAP. X RUN TIME)**		**GAL.**
ACCEPTANCE FACTOR (AF)		
CALCULATE TANK VOLUME **(ACCEPTANCE VOLUME/AF)**		**GAL**
SELECT MODEL		

ACCEPTANCE FACTOR FOR PRE-CHARGED TANKS
(FX, FXT, & FXA MODELS – ONLY)

PUMP CUT-OUT PRESSURE (PSIG)

PUMP CUT-IN PRESSURE (PSIG)	20	30	40	50	60	70	80	90	100	110	120
10	0.288	0.447	0.548	0.618	0.669	0.708	0.739	0.764	0.785	0.802	0.817
20		0.224	0.366	0.464	0.535	0.590	0.634	0.669	0.697	0.722	0.742
30			0.183	0.309	0.402	0.472	0.528	0.573	0.610	0.642	0.668
40				0.155	0.268	0.354	0.422	0.478	0.523	0.561	0.594
50					0.134	0.236	0.317	0.382	0.436	0.481	0.520
60						0.118	0.211	0.287	0.349	0.401	0.445
70							0.106	0.191	0.262	0.321	0.371
80								0.096	0.174	0.241	0.297
90									0.087	0.160	0.223
100										0.080	0.148
110											0.074

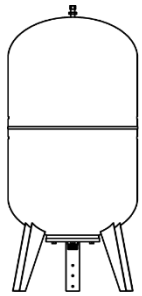
FX HYDRO-PNEUMATIC TANKS – Non-ASME



NON-ASME

REMOVABLE BLADDER TANK

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
FX 8	30011008	$ 134.00	2.1	2.1	8	13	3/4	7
FX 19	30011019	$ 194.00	5.0	5.0	11	16	3/4	13
FX 24	30011024	$ 299.00	6.3	6.3	14	13	3/4	15

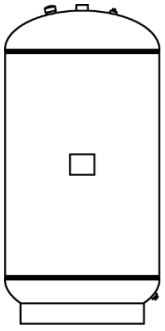


NON-ASME

FX 60V	30011060	$ 458.00	16.0	16.0	15	34	1	39
FX 80V	30011080	$ 575.00	21.0	21.0	18	34	1	49
FX 100V	30011100	$ 768.00	26.0	26.0	18	38	1	61
FX 200V	30011200	$ 1,187.00	52.0	52.0	22	49	1 1/2	112
FX 300V	30011300	$ 1,486.00	80.0	80.0	25	55	1 1/2	141
FX 500V	30011500	$ 2,814.00	132.0	132.0	31	61	1 1/2	265
FX 750V	30011700	$ 3,537.00	198.0	198.0	31	79	1 1/2	330
FX 1000V	30011000	$ 5,148.00	264.0	264.0	37	77	2	398
FX 2000V	30012000	$ 10,329.00	528.0	528.0	50	84	2	835

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG;
Maximum Temperature = 200ºF; Finish = Blue Powder Coat Exterior;
Factory Pre-charge = 30 PSIG

FXT HYDRO-PNEUMATIC TANKS – ASME



ASME

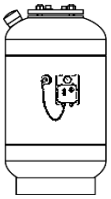
FIXED DIAPHRAGM TANK

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
FXT 400	21009999	$ 1,187.00	8.0	6.3	12	20	3/4	34
FXT 401	21010000	$ 1,656.00	15.0	11.9	16	23	1	64
FXT 402	21010005	$ 2,102.00	25.0	19.8	16	33	1	84
FXT 403	21010010	$ 2,192.00	35.0	27.5	16	45	1	97
FXT 404	21010015	$ 3,094.00	70.0	55.5	24	46	1 1/2	259
FXT 405	21010020	$ 3,306.00	90.0	71.0	24	52	1 1/2	283
FXT 415	21010025	$ 3,417.00	115.0	91.0	24	66	1 1/2	325
FXT 440	21010030	$ 3,946.00	140.0	111.0	24	78	1 1/2	362
FXT 460	21010032	$ 4,730.00	160.0	127.0	30	61	1 1/2	591
FXT 480	21010034	$ 5,667.00	210.0	166.0	30	79	1 1/2	752

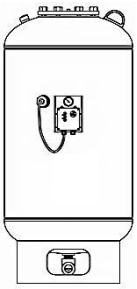
Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 200 PSIG;
Maximum Temperature = 240ºF; Finish = Primer Painted Exterior;
Factory Pre-charge = 30 PSIG

Smart Tank Series: FXA with WessGuard®

Smart Tank Series FXA-WG are ASME removable bladder type pre-charged hydro-pneumatic tanks with **WessGuard®** bladder monitor. They are designed to accept water between two set pressures, typically controlled by a pump switch, in pressure booster, water well, shock & surge, or other commercial & industrial systems where water must be stored in a corrosion protected reservoir. If the system creates a condition to extend the bladder beyond the normal movement, **WessGuard®** monitor will activate an audible and LED alarm to notify maintenance staff of a potential system issue. In the case of compromised bladder integrity, water level will rise to activate the alarm.



ASME



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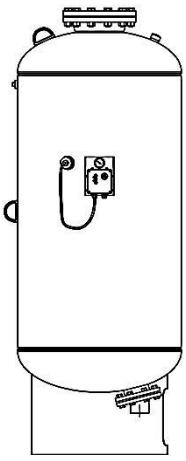


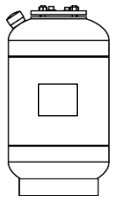
ASME

REMOVABLE BLADDER TANK – 125 PSI

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
FXA-35-WG	61010035	$ 3,037.00	10	10	12	23 1/2	3/4	40
FXA-50-WG	61010050	$ 3,253.00	13	13	14	24	3/4	50
FXA-85-WG	61010085	$ 3,348.00	23	23	16	37	1	90
FXA-130-WG	61010130	$ 3,699.00	35	35	20	37	1	125
FXA-200-WG	61010200	$ 5,729.00	53	53	24	43	1 1/2	210
FXA-300-WG	61010300	$ 5,991.00	79	79	24	55	1 1/2	225
FXA-400-WG	61010400	$ 6,146.00	106	106	30	49	1 1/2	300
FXA-500-WG	61010500	$ 6,358.00	132	132	30	57	2	335
FXA-600-WG	61010600	$ 8,258.00	158	158	30	65	2	360
FXA-700-WG	61010700	$ 8,381.00	185	185	30	80	1 1/2	600
FXA-800L-WG	61010805	$ 9,391.00	211	211	32	76	2	475
FXA-1000-WG	61011000	$ 11,564.00	264	264	36	74	3	735
FXA-1200-WG	61011200	$ 12,225.00	317	317	36	86	3	745
FXA-1400-WG	61011400	$ 12,891.00	370	370	36	99	3	900
FXA-1600-WG	61011600	$ 16,124.00	422	422	48	72	3	1210
FXA-2000-WG	61012000	$ 17,446.00	528	528	48	85	3	1305
FXA-2500-WG	61012500	$ 19,685.00	660	660	48	102	4	1430
FXA-3000L-WG	61013000	$ 21,705.00	792	792	48	122	4	1575
FXA-3000S-WG	61013001	$ 28,239.00	792	792	60	80	4	2169
FXA-4000-WG	61014000	$ 32,944.00	1056	1056	60	102	4	2638
FXA-5000-WG	61015000	$ 42,095.00	1320	1320	60	125	4	3246
FXA-7500-WG	61017500	$ 60,720.00	1980	1980	72	127	4	4080
FXA-10000-WG	61019999	$ 75,847.00	2640	2640	72	159	4	4920
FXA-15000-WG	61010000	$ 115,794.00	3963	3963	72	233	4	6000

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG;
Maximum Temperature = 240ºF; Finish = Primer Painted Exterior;
Factory Pre-charge = 30 PSIG; Also available in 200 & 250 psi rated models

Specify Standard or WessGuard-2® with Phone Texting Alerts



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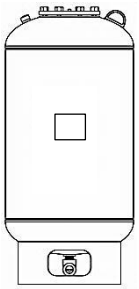
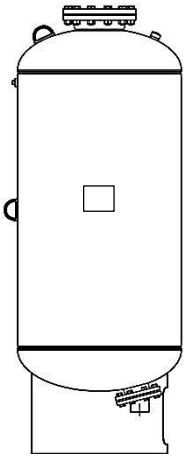


ASME



ASME

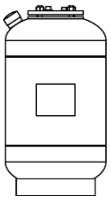
REMOVABLE BLADDER – 125 PSI

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
FXA 35	21010035	$ 2,392.00	10	10	12	23 1/2	3/4	40
FXA 50	21010050	$ 2,606.00	13	13	14	24	3/4	50
FXA 85	21010085	$ 2,701.00	23	23	16	37	1	90
FXA 130	21010130	$ 2,896.00	35	35	20	37	1	125
FXA 200	21010200	$ 4,906.00	53	53	24	43	1 1/2	210
FXA 300	21010300	$ 5,012.00	79	79	24	55	1 1/2	225
FXA 400	21010400	$ 5,164.00	106	106	30	49	1 1/2	300
FXA 500	21010500	$ 5,375.00	132	132	30	57	2	330
FXA 600	21010600	$ 7,254.00	158	158	30	65	2	360
FXA 700[1]	21040715	$ 7,630.00	185	185	30	80	1 1/2	600
FXA 800L	21010805	$ 8,070.00	211	211	32	76	2	475
FXA 1000	21011000	$ 10,224.00	264	264	36	87	3	735
FXA 1200	21011200	$ 10,879.00	317	317	36	98 1/2	3	745
FXA 1400	21011400	$ 11,536.00	370	370	36	110 1/2	3	900
FXA 1600	21011600	$ 14,740.00	422	422	48	84	3	1210
FXA 2000	21012000	$ 16,047.00	528	528	48	96	3	1305
FXA 2500	21012500	$ 18,265.00	660	660	48	110	4	1430
FXA 3000L	21013000	$ 19,961.00	792	792	48	133	4	1575
FXA 3000S	21013001	$ 26,015.00	792	792	60	93	4	2169
FXA 4000	21014000	$ 30,474.00	1056	1056	60	115	4	2638
FXA 5000	21015000	$ 39,900.00	1320	1320	60	138	4	3246
FXA 7500	21017500	$ 59,085.00	1980	1980	72	140	4	4080
FXA 10000	21019999	$ 74,664.00	2640	2640	72	172	4	4920
FXA 15000	21500000	$ 115,235.00	3963	3963	72	243	4	6000

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 30 PSIG

[1] – In stock at 200 psi rating

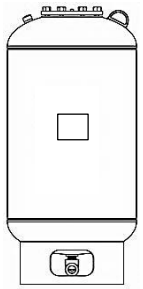
FXA-HP HYDRO-PNEUMATIC TANKS – ASME



ASME

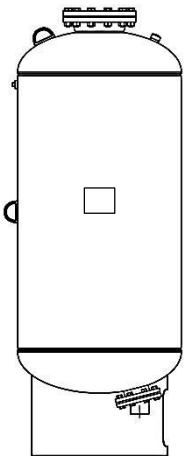
REMOVABLE BLADDER – 200 PSI & 250 PSI

Model	Gal.	200 PSI Part No.	200 PSI List ($)	200 PSI Wt.(#)	250 PSI Part No.	250 PSI List ($)	250 PSI Wt.(#)
FXA-HP 35	10	21040035	$ 3,347.00	52	21050035	$ 3,870.00	53
FXA-HP 50	13	21040050	$ 3,574.00	59	21050050	$ 4,136.00	65



ASME

FXA-HP 85	23	21040085	$ 3,720.00	95	21050085	$ 4,291.00	105
FXA-HP 130	35	21040130	$ 4,024.00	127	21050130	$ 4,617.00	141
FXA-HP 200	53	21040200	$ 6,875.00	194	21050200	$ 7,983.00	220
FXA-HP 300	79	21040300	$ 7,057.00	252	21050300	$ 8,199.00	282
FXA-HP 400	106	21040400	$ 7,271.00	336	21050400	$ 8,446.00	410
FXA-HP 500	132	21040500	$ 7,443.00	400	21050500	$ 8,650.00	512
FXA-HP 600	158	21040600	$ 7,704.00	419	21050600	$ 9,017.00	569
FXA-HP 700[1]	185	21040715	$ 7,630.00	600	21050710	$ 9,919.00	797
FXA-HP 800L	211	21040805	$ 10,064.00	680	21050805	$ 11,763.00	711



ASME

FXA-HP 1000	264	21041000	$ 11,853.00	698	21051000	$ 13,847.00	830
FXA-HP 1200	317	21041200	$ 14,405.00	905	21051200	$ 16,816.00	1118
FXA-HP 1400	370	21041400	$ 15,373.00	1107	21051400	$ 17,956.00	1330
FXA-HP 1600	422	21041600	$ 18,193.00	1413	21051600	$ 21,266.00	1713
FXA-HP 2000	528	21042000	$ 20,936.00	1643	21052000	$ 24,470.00	2026
FXA-HP 2500	660	21042500	$ 22,877.00	1935	21052500	$ 26,758.00	2352
FXA-HP 3000L	792	21043000	$ 25,983.00	2198	21053000	$ 30,404.00	2782
FXA-HP 3000S	792	21043001	$ 31,579.00	2694	21053001	$ 36,689.00	2965
FXA-HP 4000	1056	21044000	$ 37,783.00	3291	21054000	$ 44,168.00	3736
FXA-HP 5000	1320	21045000	$ 49,471.00	3858	21055000	$ 57,294.00	4485
FXA-HP 7500	1980	21047500	$ 72,546.00	5491	21057500	$ 84,343.00	6583
FXA-HP 10000	2640	21049999	$ 92,520.00	6796	21059999	$ 107,271.00	8068
FXA-HP 15000	3963	21040000	$ 142,376.00	9814	21050000	$ 165,811.00	12030

Materials = Steel shell, Heavy Duty Butyl Bladder; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 30 PSIG; For vessel dimensions (diameter, height and system connection) refer to FXA price sheet or Submittal Data.

ASME

[1] – In stock at 200 psi rating

WESSGUARD® RETROFIT FOR FXA

The bladder-style hydro-pneumatic tank function is to store fluid, typically water in a water-well, shock/surge or pressure booster system. The properly sized hydro-pneumatic tank will store this water while limiting pressures based on the captured compressible air chamber size within the tank to the designer's acceptable limits.

The tank critical size is engineered to store the proper volume of water to minimize the daily pump starts/stops, lengthening the life expectancy of the system pumps and pump motors.

Factors that can affect the pump cycling in the system:
Properly sized hydro-pneumatic tank
Properly installed and pre-charge adjusted hydro-pneumatic tank
Pump switch pressure range (in conjunction to the pre-charge pressure)
Pump switch pressure range drift (over time)

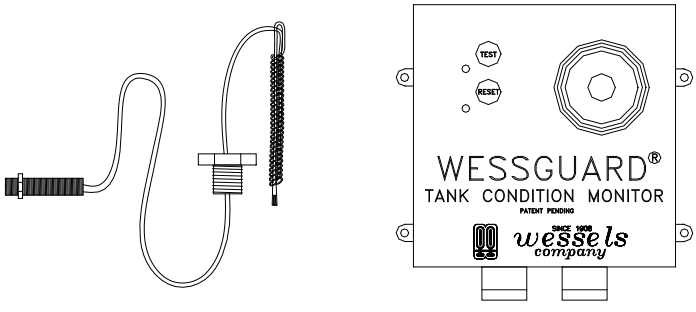
Until now the diagnosis of the critical component interaction arises only after expensive damages have been caused by this excessive pressure cycling. **WessGuard**® was developed to monitor the fluid within the hydro-pneumatic tank by determining excessive movement of the vessel bladder. **WessGuard**® incorporates a capacitive proximity sensor that determines if fluid levels in the hydro-pneumatic tank exceed "normal" operating conditions. Furthermore, if an expansion tank bladder is compromised, **WessGuard**® monitors the rising fluid level in the tank.

WessGuard® is designed to monitor these tank conditions and alert the installer or maintenance staff to a potentially unsafe condition by activating a visual and audible alarm. The **WessGuard**® monitor also has normally open contact to tie directly to an energy management system.

WESSGUARD® RETROFIT - FXA

Model	Part No.	List ($)	Sensor Lead	Monitor Lead	Sensor Diameter	Monitor Dimensions	Connection To Tank	Wt. (Lbs.)
WG-RETRO	61110001	$ 1,075.00	38"	46"	3/4"	5 1/4" X 5 1/4"	1" NPT	3

FIELD RETROFIT UNIT DESIGNED FOR VESSELS WITH 1" TAPPING LOCATED IN THE TOP HALF OF A BLADDER STYLE TANK – TYPICALLY 1000 LITERS AND LARGER



Specify Standard or WessGuard-2® with Phone Texting Alerts

FX REPLACEMENT BLADDERS & COVERS

Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
FX 8	0300008	$ 55.00	NA	NA	0550008	$126.00
FX 19	0300019	$ 82.00	NA	NA	0550019	$135.00
FX 24	0300024	$ 86.00	NA	NA	0550024	$142.00
FX 60V	0300060	$ 239.00	0555060	$170.00	0550060	$142.00
FX 80V	0300080	$ 255.00	0555080	$170.00	0550080	$142.00
FX 100V	0300100	$ 427.00	0555100	$170.00	0550100	$142.00
FX 200V	0300200	$ 649.00	0555200	$202.00	0550200	$180.00
FX 300V	0300300	$ 814.00	0555300	$202.00	0550300	$180.00
FX 500V	0300500	$ 1,544.00	0555500	$236.00	0550500	$198.00
FX 750V**	0300750	$ 1,944.00	0555750	$321.00	0550750	$224.00
FX 1000V	0301000	$ 2,153.00	0556000	$321.00	0551000	$224.00
FX 2000V	0302000	$ 2,868.00	0557060	$321.00	0552000	$224.00

** FX-750V Replaces Model FX-700V Effective 5/98

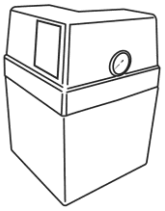
FXA REPLACEMENT BLADDERS & COVERS

Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
FXA 35	02210035	$ 358.00	NA	NA	0521035	$ 261.00
FXA 50	02210050	$ 587.00	NA	NA	0521050	$ 261.00
FXA 85	02210085	$ 840.00	0421085	$ 318.00	0521085	$ 387.00
FXA 130	02210130	$ 1,069.00	0421130	$ 318.00	0521130	$ 387.00
FXA 200	02210200	$ 1,244.00	0421200	$ 320.00	0521200	$ 434.00
FXA 300	02210300	$ 1,503.00	0421300	$ 320.00	0521300	$ 567.00
FXA 400	02210400	$ 1,758.00	0421400	$ 320.00	0521400	$ 567.00
FXA 500	02210500	$ 2,277.00	0421500	$ 422.00	0521500	$ 571.00
FXA 600	02210600	$ 2,919.00	0421600	$ 422.00	0521600	$ 571.00
FXA 700	02210700	$ 3,612.00	0421700	$ 719.00	0521700	$ 117.00
FXA 700T*	02210705	$ 2,042.00	0421800	$ 422.00	0521800	$ 571.00
FXA 800L	02210805	$ 3,740.00	0421805	$ 422.00	0521805	$ 571.00
FXA 1000	02211000	$ 3,817.00	0422000	$ 854.00	0521810	$ 812.00
FXA 1200	02211200	$ 4,064.00	0422200	$ 981.00	0521815	$ 812.00
FXA 1400	02211400	$ 4,344.00	0422400	$ 981.00	0521820	$ 812.00
FXA 1600	02211600	$ 4,658.00	0422600	$1,044.00	0521825	$ 870.00
FXA 2000	02212000	$ 4,852.00	0423000	$1,044.00	0521830	$ 870.00
FXA 2500	02212500	$ 4,996.00	0423000	$1,044.00	0521830	$ 870.00
FXA 3000L	02213000	$ 5,319.00	0423000	$1,044.00	0521830	$ 870.00
FXA 3000S	02213006	$ 6,906.00	0423000	$1,044.00	0521830	$ 870.00
FXA 4000	02214000	$ 8,067.00	0423000	$1,044.00	0521830	$ 870.00
FXA 5000	02215000	$ 8,490.00	0423000	$1,044.00	0521830	$ 870.00
FXA 7500	02217500	$ 12,710.00	0423000	$1,044.00	0521830	$ 870.00
FXA 10000	02219999	$ 16,106.00	0423000	$1,044.00	0521830	$ 870.00

* FXA-700T Bladder is made of Heavy Duty Urethane

GLYMATIC & GMP GLYCOL MAKE-UP PACKAGES

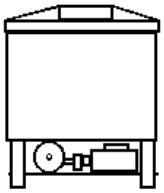
GLYMATIC – SINGLE SYSTEM PACKAGE



Model	Part No.	List ($)	Solution Volume (gal)	Dimensions Height (in)	Dimensions Width (in)	Dimensions Depth (in)	Approx. Weight (lbs)
GMP-6	07001006	$ 1,317.00	6	17 1/2	12	12	16
GMP-18	07001018	$ 1,487.00	18	39 1/4	12	12	25

Materials = Polyethylene solution tank, 110V, 60HZ Motor; Maximum Pressure = 60 PSIG discharge pressure; Maximum Temperature = 160ºF; Factory Discharge Pressure Setting = 12 PSIG; Low level alarm available – Consult Factory

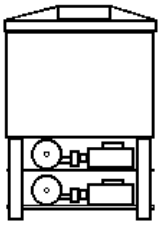
GMP – SINGLE SYSTEM PACKAGE



Model	Part No.	List ($)	Pump hp	Solution Volume (gal)	Dimensions Height (in)	Dimensions Width (in)	Approx. Weight (lbs)
GMP-13050	07101052	$ 5,870.00	1/3	50	42	28	90
GMP-13100	07101102	$ 6,093.00	1/3	100	67	28	105
GMP-15050	07102052	$ 6,376.00	1/2	50	42	28	95
GMP-15100	07102102	$ 6,601.00	1/2	100	67	28	110

Materials = Polyethylene solution tank, bronze pump, 110V, 60HZ Motor, steel base; Maximum Pressure = 70 PSIG discharge pressure; Maximum Temperature = 160ºF; Finish = Gray Steel Base Exterior; Factory Discharge Pressure Setting = 12 PSIG

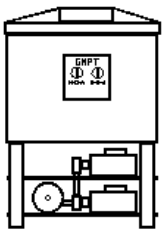
GMPD – TWO SEPARATE SYSTEMS/ ONE PACKAGE



Model	Part No.	List ($)	Pump hp	Solution Volume (gal)	Dimensions Height (in)	Dimensions Width (in)	Approx. Weight (lbs)
GMPD-23050	07103152	$ 9,629.00	1/3	50	55	28	153
GMPD-23100	07103155	$ 9,861.00	1/3	100	78	28	166
GMPD-25050	07103160	$ 10,550.00	1/2	50	55	28	153
GMPD-25100	07103165	$ 10,781.00	1/2	100	78	28	166

Materials = Polyethylene solution tank, bronze pump, 110V, 60HZ Motor, steel base; Maximum Pressure = 70 PSIG discharge pressure; Maximum Temperature = 160ºF; Finish = Gray Steel Base Exterior; Factory Discharge Pressure Setting = 12 PSIG

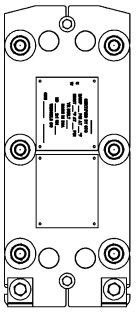
GMPT – SINGLE SYSTEM/ TWIN PUMPS W/ALTERNATOR



Model	Part No.	List ($)	Pump hp	Solution Volume (gal)	Dimensions Height (in)	Dimensions Width (in)	Approx. Weight (lbs)
GMPT-33050	07103170	$ 10,784.00	1/3	50	55	28	153
GMPT-33100	07103175	$ 11,045.00	1/3	100	78	28	166
GMPT-35050	07103180	$ 11,816.00	1/2	50	55	28	153
GMPT-35100	07103185	$ 12,078.00	1/2	100	78	28	166

Materials = Polyethylene solution tank, bronze pump, 110V, 60HZ Motor, steel base; Maximum Pressure = 70 PSIG discharge pressure; Maximum Temperature = 160ºF; Finish = Gray Steel Base Exterior; Factory Discharge Pressure Setting = 12 PSIG

WP WESPLATE AND FRAME – ASME – AHRI CERTIFIED



ASME

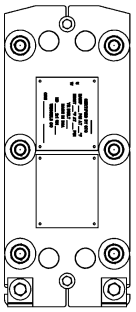
PLATE AND FRAME HEAT EXCHANGER – WITH GASKETS

Description	Model Base Frame: 150 psi design / Single Pass / Steel connections							
Length	WP11	WP12	WP22	WP23	WP24	WP30	WP42	WP43
6	$1,920.00	$2,305.00						
12	$1,970.00	$2,360.00	$2,600.00	$3,255.00	$3,905.00	$4,295.00		
18	$2,210.00	$2,650.00	$2,670.00	$3,340.00	$4,010.00	$4,405.00	$6,130.00	$6,130.00
24		$2,940.00	$2,855.00	$3,570.00	$4,280.00	$4,710.00	$6,320.00	$6,320.00
36		$3,225.00	$3,225.00	$4,030.00	$4,840.00	$5,320.00	$6,515.00	$6,515.00
48			$4,535.00	$5,675.00	$6,810.00	$7,490.00	$6,765.00	$6,765.00
60			$4,860.00	$6,075.00	$7,290.00	$8,015.00	$6,985.00	$6,985.00
72							$7,200.00	$7,200.00
84							$7,840.00	$7,840.00
96								
108								
120								
144								
168								
192								
216								
240								
SS Conn Add / ea	$240.00	$240.00	$240.00	$240.00	$240.00	$840.00	$840.00	$840.00
Ti Conn Add / ea	$720.00	$720.00	$720.00	$720.00	$720.00	$2,590.00	$2,590.00	$2,590.00
300 psi Add	$1,030.00	$1,656.00	$1,680.00	$1,704.00	$1,800.00	$1,990.00	$3,430.00	$3,430.00
Plate / Thk / Gask	Plates w/ gasket							
304.4.Epdm						$40.00		$56.00
304.5.Epdm						$44.00	$79.00	$64.00
304.6.Epdm							$87.00	$72.00
316.4.Epdm			$30.00	$40.00	$50.00	$45.00		$61.00
316.5.Epdm	$21.00	$30.00	$34.00	$47.00	$57.00	$51.00	$92.00	$72.00
316.6.Epdm			$39.00	$56.00	$68.00		$103.00	$88.00
Ti.5.Epdm	$44.00	$66.00	$75.00	$112.00	$139.00	$111.00	$206.00	$190.00
304DW.8.Epdm								
316DW.8.Epdm	$45.00	$58.00	$67.00	$90.00	$107.00	$88.00		$144.00

Pricing is for Base Unit with Standard Construction. For other options consult factory. Prices are FOB Tiffin, Ohio and subject to change. Shaded areas indicate stock components.

Net Price = ((Base Frame Price + Connection or 300 psi Adder) + (#plates X Plates w/ gasket Price)) X Multiplier

WP WESPLATE AND FRAME – ASME – AHRI (CONT'D)



ASME

PLATE AND FRAME HEAT EXCHANGER – WITH GASKETS

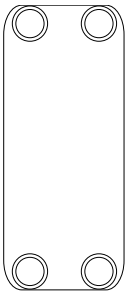
Description	Model Base Frame: 150 psi design / Single Pass / Steel connections							
Length	WP47	WP62	WP63	WP65	WP82	WP83	WP122	WP123
6								
12								
18	$10,295.00							
24	$10,435.00	$10,885.00	$13,610.00	$15,650.00	$22,085.00	$25,990.00		
36	$10,600.00	$11,280.00	$14,100.00	$16,215.00	$23,085.00	$27,160.00	$23,930.00	$29,920.00
48	$10,900.00	$11,880.00	$14,850.00	$17,080.00	$24,115.00	$28,370.00	$24,660.00	$30,830.00
60	$11,180.00	$12,475.00	$15,595.00	$17,930.00	$25,125.00	$29,560.00	$25,390.00	$31,740.00
72	$14,765.00	$12,760.00	$15,950.00	$18,340.00	$26,155.00	$30,770.00	$26,190.00	$32,735.00
84	$15,095.00	$13,045.00	$16,310.00	$18,755.00		$31,295.00	$27,005.00	$33,760.00
96	$15,870.00	$15,590.00	$19,480.00	$22,410.00		$31,795.00	$27,865.00	$34,835.00
108	$16,640.00	$16,695.00	$20,865.00	$23,995.00		$32,480.00	$29,740.00	$37,175.00
120	$0.00	$17,240.00	$21,550.00	$24,790.00		$33,145.00	$30,780.00	$38,470.00
144			$22,030.00	$25,335.00		$34,280.00	$31,795.00	$39,745.00
168			$22,770.00	$26,185.00		$35,410.00	$33,560.00	$41,950.00
192			$24,535.00	$28,215.00		$37,675.00	$35,305.00	$44,130.00
216			$27,240.00	$31,325.00		$38,810.00	$36,585.00	$45,735.00
240			$29,940.00	$34,435.00		$39,935.00	$37,860.00	$47,335.00
SS Conn Add / ea	$840.00		$1,390.00			$1,535.00	$2,090.00	$2,090.00
Ti Conn Add / ea	$2,590.00		$4,175.00			$4,610.00	$6,265.00	$6,265.00
300 psi Add	$5,855.00		$8,590.00			$14,450.00	$20,230.00	$20,230.00
Plate / Thk / Gask	Plates w/ gasket							
304.4.Epdm	$79.00	$93.00	$108.00		$132.00			
304.5.Epdm	$91.00	$95.00	$123.00	$153.00	$135.00	$172.00	$260.00	$335.00
304.6.Epdm	$117.00	$120.00	$156.00	$195.00	$175.00	$224.00	$333.00	$433.00
316.4.Epdm	$95.00	$99.00	$128.00		$141.00			
316.5.Epdm	$111.00	$114.00	$148.00	$185.00	$166.00	$211.00	$299.00	$387.00
316.6.Epdm	$145.00	$186.00	$193.00	$241.00	$219.00	$280.00	$339.00	$441.00
Ti.5.Epdm	$322.00	$316.00	$423.00	$533.00	$493.00	$634.00	$850.00	$1,120.00
304DW.8.Epdm								
316DW.8.Epdm	$225.00							

Pricing is for Base Unit with Standard Construction. For other options consult factory. Prices are FOB Tiffin, Ohio and subject to change. Shaded areas indicate stock components.

Net Price = ((Base Frame Price + Connection or 300 psi Adder) + (#plates X Plates w/ gasket Price)) X Multiplier

Request access to WesPlate Sizing at wesplatesizing.westank.com for more precise quotation.

WB WESPAC BRAZED PLATE – Non-ASME



NON-ASME

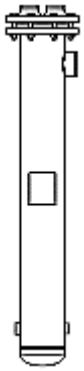
BRAZED PLATE HEAT EXCHANGER

Model		WB01			WB10		
	# plates	Price	Part Number	Lbs.	Price	Part Number	Lbs.
Standard	10	$190.00	52801010	3	$320.00	52810010	8
Construction;	20	$280.00	52801020	4	$480.00	52810020	11
Plate Material:	30	$365.00	52801030	5	$645.00	52810030	14
316SS	40	$430.00	52801040	6	$775.00	52810040	17
Connections:	50	$490.00	52801050	8	$900.00	52810050	20
304SS NPT	60	$550.00	52801060	9	$1,025.00	52810060	23
Braze Material:	70				$1,140.00	52810070	26
Copper	80				$1,260.00	52810080	29
Design Pressure:	90				$1,380.00	52810090	32
450 psi	100				$1,495.00	52810100	35
Design Temp:		**WB11**			**WB15D (Double Wall)**		
385°F	10	$500.00	52811010	12	$670.00	52815010	8
Certification:	20	$745.00	52811020	17	$940.00	52815020	11
Non-ASME	30	$995.00	52811030	22	$1,215.00	52815030	14
Connection Sizes;	40	$1,190.00	52811040	27	$1,485.00	52815040	17
WB01: 3/4"	50	$1,400.00	52811050	32	$1,755.00	52815050	20
WB10: 1"	60	$1,590.00	52811060	37	$2,045.00	52815060	23
WB11: 1"	70	$1,775.00	52811070	42	$2,300.00	52815070	26
WB15D: 1"	80	$1,995.00	52811080	47	$2,560.00	52815080	29
WB20: 2"	90	$2,175.00	52811090	52	$2,820.00	52815090	32
	100	$2,360.00	52811100	57	$3,080.00	52815100	35
	110	$2,540.00	52811110	62			
	120	$2,720.00	52811120	67			
		WB20					
	10	$910.00	52820010	33			
	20	$1,330.00	52820020	43			
	30	$1,760.00	52820030	55			
	40	$2,135.00	52820040	65			
	50	$2,560.00	52820050	76			
	60	$2,935.00	52820060	87			
	70	$3,300.00	52820070	99			
	80	$3,755.00	52820080	110			
	90	$4,120.00	52820090	122			
	100	$4,480.00	52820100	133			
	110	$4,845.00	52820110	145			
	120	$5,205.00	52820120	156			
	130	$5,570.00	52820130	168			
	140	$5,930.00	52820140	179			

Consult factory for more options.

WST WESTUBE - ASME

U-TUBE HEAT EXCHANGER – STEAM IN SHELL



ASME

Base Price	Tube	Unit Diameter						
Description	Length	4	6	8	10	12	14	16
Standard	2	$1,850.00	$2,545.00	$4,065.00				
Construction;	3	$2,045.00	$3,010.00	$4,780.00	$6,300.00	$8,400.00	$11,425.00	$13,870.00
Tubes 3/4" OD	4	$2,245.00	$3,380.00	$5,575.00	$7,455.00	$9,535.00	$14,090.00	$16,340.00
Copper 20 BWG	5	$2,445.00	$3,645.00	$6,185.00	$8,610.00	$11,240.00	$16,325.00	$18,705.00
Cast iron heads	6	$2,645.00	$4,230.00	$6,970.00	$9,705.00	$13,365.00	$18,225.00	$21,175.00
Steel tubesheets	7	$2,845.00	$4,630.00	$7,865.00	$11,125.00	$14,440.00	$19,585.00	$23,645.00
Steel shell	8	$3,030.00	$4,985.00	$8,640.00	$12,525.00	$16,140.00	$21,885.00	$26,005.00
Steel baffles	9	$3,230.00	$5,500.00	$9,095.00	$13,635.00	$17,760.00	$24,070.00	$28,585.00
Two(2) gaskets	10	$3,560.00	$5,780.00	$9,750.00	$14,855.00	$19,300.00	$26,155.00	$31,055.00
2 or 4 pass only	11		$6,025.00	$10,360.00	$16,165.00	$20,775.00	$28,140.00	$33,525.00
ASME stamped	12		$6,795.00	$11,140.00	$16,815.00	$22,425.00	$29,945.00	$35,995.00
150 psi design	13			$11,670.00	$17,810.00	$23,780.00	$31,990.00	$38,465.00
	14			$13,145.00	$18,760.00	$25,075.00	$33,970.00	$40,830.00
	15				$19,750.00	$26,380.00	$36,080.00	$43,300.00
Support Feet	Steel	$375.00	$440.00	$520.00	$615.00	$730.00	$855.00	$1,010.00
Weight Base	Lbs	30	80	140	220	280	335	450
Add Weight / FT	Lbs / Ft	15	30	40	60	105	120	150

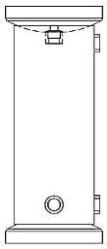
WWT WESTUBE - ASME

U-TUBE HEAT EXCHANGER – WATER TO WATER

ASME

Standard	2	$1,890.00	$2,595.00	$4,145.00				
Construction;	3	$2,085.00	$3,070.20	$4,875.00	$6,425.00	$8,570.00	$11,655.00	$14,145.00
Tubes 3/4" OD	4	$2,289.90	$3,450.00	$5,690.00	$7,605.00	$9,725.00	$14,370.00	$16,665.00
Copper 20 BWG	5	$2,495.00	$3,720.00	$6,310.00	$8,780.00	$11,464.80	$16,650.00	$19,080.00
Cast iron heads	6	$2,700.00	$4,314.60	$7,110.00	$9,900.00	$13,630.00	$18,589.50	$21,600.00
Steel tubesheets	7	$2,900.00	$4,725.00	$8,020.00	$11,350.00	$14,730.00	$19,975.00	$24,120.00
Steel shell	8	$3,090.00	$5,084.70	$8,815.00	$12,775.00	$16,465.00	$22,325.00	$26,525.10
Steel baffles	9	$3,294.60	$5,610.00	$9,275.00	$13,910.00	$18,115.20	$24,550.00	$29,155.00
Two(2) gaskets	10	$3,630.00	$5,895.00	$9,945.00	$15,150.00	$19,685.00	$26,680.00	$31,675.00
2 or 4 pass only	11		$6,145.00	$10,570.00	$16,490.00	$21,190.00	$28,705.00	$34,195.00
ASME stamped	12		$6,930.00	$11,365.00	$17,150.00	$22,875.00	$30,545.00	$36,714.90
150 psi design	13			$11,905.00	$18,165.00	$24,255.00	$32,629.80	$39,235.00
	14			$13,410.00	$19,135.20	$25,575.00	$34,650.00	$41,645.00
	15				$20,145.00	$26,910.00	$36,800.00	$44,165.00
Support Feet	Steel	$375.00	$440.00	$520.00	$615.00	$730.00	$855.00	$1,010.00
Weight Base	Lbs	30	80	140	220	280	335	450
Add Weight / FT	Lbs	15	30	40	60	105	120	150
Baffle Spacing	Inches	4	3	4	5	6	7	8

CPFT CHEMICAL POT FEEDER TANKS – Non-ASME



NON-ASME

CHEMICAL FEED TANKS

Model	Part No.	List ($)	Gal.	Dia.	Ht.	Funnel Size	System Tappings	Wt. (Lbs.)
CPFT-2	78880002	$ 644.00	2	6	19-7/8	8	3/4	30
CPFT-5	78880005	$ 837.00	5	10	19-3/4	12	3/4	37

Materials = Steel; Maximum Pressure = 200 PSIG; Maximum Temperature = 450ºF; Finish = Red Oxide Primer

CPFTA CHEMICAL POT FEEDER TANKS – ASME

ASME

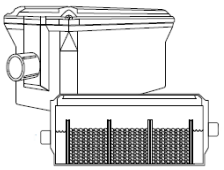
CHEMICAL FEED TANKS - ASME

Model	Part No.	List ($)	Gal.	Dia.	Ht.	Funnel Size	System Tappings	Wt. (Lbs.)
CPFTA-2	78880022	$ 775.00	2	6	19	6	3/4	30
CPFTA-5	78880055	$1,009.00	5	10	19-3/4	10	3/4	49

Materials = Steel; Maximum Pressure = 200 PSIG; Maximum Temperature = 450ºF; Finish = Red Oxide Primer

WCN CONDENSATE NEUTRALIZERS

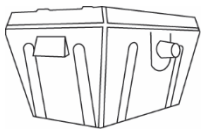
WCN CONDENSATE NEUTRALIZER



Model	Part No.	List ($)	Dimensions (in.)			Ship Wt. (lbs.)
			Length	Width	Height	
WCN1	33030000	$ 118.00	12	4 3/4	5 1/2	4
MEDIA BAG	33030100	$ 39.00	4	3	4	1.4
FLEX HOSE	33030200	$ 21.00	120	1/2 DIA	1/2 DIA	0.5
WALL BRKT.	33030300	$ 16.00	4 1/2	1	4	0.1

WCN includes MEDIA BAGS for up to 50,000 BTU/hr. Includes two compartments for two (2) additional media bags for up to 1.5 million BTU/hr.
FLEXHOSE includes barb fittings.
WALL BRACKETS includes two (2) for wall mounting (if required)

WCN-2 CONDENSATE NEUTRALIZER



Model	Part No.	List ($)	Dimensions (in.)			Ship Wt. (lbs.)
			Length	Width	Height	
WCN2	33030101	$ 525.00	16.25	10 1/2	7 1/2	17
WCN1 MEDIA	33032100	$ 191.00	5	10	6	10

WCN2 includes MEDIA for up to 3,500,000 btu/hr. The WCN2 has two additional compartments for two (2) additional MEDIA bags for up to 10.5 million btu/hr.

N EXPANSION TANKS

8

Expansion tanks are used to absorb the additional volume of water created during thermal expansion of system fluid, maintaining critical system pressures below safety relief valve settings. Wessels carries industry's broadest line of ASME and non-ASME tanks. Typically used in **closed-loop hydronic heating, chilled water** and **industrial process** piping systems.

SIZING EXPANSION TANKS

To properly size an expansion tank, five critical pieces of information are required:

- Total System Volume (in gallons)
- Minimum System Temperature (in degrees F)
- Maximum System Temperature (in degrees F)
- Minimum System Pressure (in psig)
- Maximum System Pressure (in psig)

Use the following form and acceptance factor table to calculate tank sizing by hand or visit **www.westank.com/calculator** to automatically calculate the size and model. Download our **Wessels Company App** to your iOS or Android device for mobile sizing on the go.

SYSTEM VOLUME		GAL.
EXPANSION FACTOR		
CALCULATE ACCEPTANCE VOLUME (SYS. VOL. X EXP. FACTOR)		GAL.
ACCEPTANCE FACTOR (AF)		
CALCULATE TANK VOLUME (ACC. VOL./AF)		GAL
SELECT MODEL		

EXPANSION FACTOR TABLE – WATER ONLY

MAX. SYSTEM TEMPERATURE (DEG. F)	MIN. SYSTEM TEMPERATURE (DEG. F) 40	50	60	70	80	90	100
50	0.00006						
60	0.00055	0.00049					
70	0.00149	0.00143	0.00094				
80	0.00260	0.00254	0.00205	0.00111			
90	0.00405	0.00399	0.00350	0.00256	0.00145		
100	0.00575	0.00569	0.00520	0.00426	0.00315	0.00170	
110	0.00771	0.00765	0.00716	0.00622	0.00511	0.00366	0.00196
120	0.01004	0.00998	0.00949	0.00855	0.00744	0.00596	0.00429
130	0.01236	0.01230	0.01181	0.01087	0.00976	0.00831	0.00661
140	0.01501	0.01495	0.01446	0.01352	0.01241	0.01096	0.00926
150	0.01787	0.01779	0.01730	0.01636	0.01525	0.01377	0.01210
160	0.02092	0.02086	0.02037	0.01943	0.01814	0.01667	0.01508
170	0.02418	0.02412	0.02363	0.02269	0.02158	0.02013	0.01843
180	0.02763	0.02757	0.02708	0.02614	0.02503	0.02358	0.02188
190	0.03127	0.03121	0.03072	0.02978	0.02867	0.02722	0.02552
200	0.03510	0.03504	0.03455	0.03361	0.03250	0.03105	0.02935
210	0.03911	0.03905	0.03856	0.03762	0.03651	0.03506	0.03336
220	0.04335	0.04329	0.04280	0.04186	0.04075	0.03930	0.03760
230	0.04762	0.04756	0.04707	0.04613	0.04502	0.04357	0.04187
240	0.05220	0.05214	0.05165	0.05071	0.04960	0.04815	0.04645

ACCEPTANCE FACTOR FOR PRE-CHARGED TANKS (N-SERIES,NL, NTA, NLA, NLAP & NVA MODELS – ONLY)

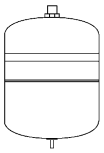
MIN. SYS. PRESSURE (PSIG)	MAX. SYS. PRESSURE (PSIG) 30	40	50	60	70	80	90	100
10	0.447	0.548	0.618	0.669	0.708	0.739	0.764	0.785
12	0.403	0.512	0.587	0.643	0.685	0.718	0.745	0.767
20	0.224	0.366	0.464	0.535	0.590	0.634	0.669	0.697
30		0.183	0.309	0.402	0.472	0.528	0.573	0.610
40			0.155	0.268	0.354	0.422	0.478	0.523
50				0.134	0.236	0.317	0.382	0.436
60					0.118	0.211	0.287	0.349
70						0.106	0.191	0.262
80							0.096	0.174
90								0.087

ACCEPTANCE FACTOR FOR ATMOSPHERIC TANKS (NA-SERIES & NAG-SERIES – ONLY)

MIN. SYS. PRESSURE (PSIG)	MAX. SYS. PRESSURE (PSIG) 30	40	50	60	70	80	90	100
10	0.266	0.326	0.368	0.398	0.422	0.440	0.455	0.467
12	0.222	0.282	0.323	0.354	0.377	0.395	0.410	0.422
20	0.095	0.155	0.196	0.227	0.250	0.268	0.283	0.295
30		0.060	0.102	0.132	0.155	0.174	0.188	0.201
40			0.042	0.072	0.095	0.114	0.128	0.141
50				0.030	0.054	0.072	0.087	0.099
60					0.023	0.042	0.056	0.069
70						0.018	0.033	0.045
80							0.015	0.027
90								0.012

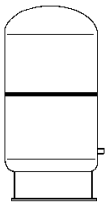
N EXPANSION TANKS – Non-ASME

FIXED DIAPHRAGM TANK



NON-ASME

Model	Part No.	List ($)	Gal.	Dia.	Height	Syst. Conn.	Wt. (Lbs.)
N-15	33010015	$ 64.00	2.1	7.9	10.8	1/2	5
N-30	33010030	$ 82.00	4.8	10.6	13.7	1/2	9
N-60	33010060	$ 161.00	6.3	11.8	15.4	1/2	14
N-90	33010090	$ 223.00	13.2	15.0	21.1	1/2	23



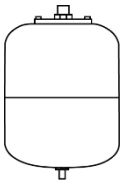
NON-ASME

N-40V	33010140	$ 309.00	21.2	17.7	23.6	1	33
N-60V	33010160	$ 507.00	39.7	19.7	35.2	1	60
N-90V	33010190	$ 772.00	52.9	23.6	33.9	1	81
N-110V	33011110	$ 932.00	66.1	24.8	38.2	1	90
N-160V	33011260	$ 994.00	79.4	24.8	44.7	1	106

Materials = Steel Shell, Heavy Duty Butyl Diaphragm; Maximum Pressure = 150 PSIG; Maximum Temperature = 240ºF;
Finish = Silver Powder Coat Exterior; Factory Pre-charge = 12 PSIG

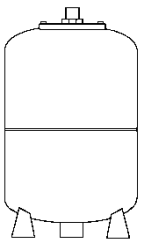
NL EXPANSION TANKS – Non-ASME

REMOVABLE BLADDER TANK



NON-ASME

Model	Part No.	List ($)	Gal.	Dia.	Height	Syst. Conn.	Wt. (Lbs.)
NL-15	32051008	$ 84.00	2.1	7.9	12.9	3/4	6
NL-20	32051012	$ 91.00	3.2	10.6	11.8	3/4	7
NL-30	32051018	$ 103.00	4.8	10.6	16.2	3/4	9
NL-60	32051025	$ 202.00	6.6	11.4	19.7	3/4	12

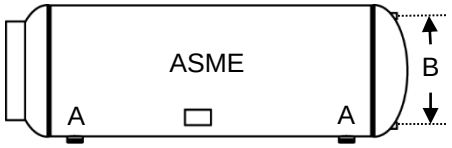


NON-ASME

NL-80L	32051035	$ 245.00	10.6	12.6	22.5	1	22
NL-90L	32051050	$ 314.00	15.8	15.0	28.7	1	31
NL-40VL	32051080	$ 385.00	21.1	17.7	28.9	1	35
NL-60VL	32051105	$ 464.00	26.4	17.7	31.1	1	45
NL-90VL	32051200	$ 851.00	52.8	21.6	42.5	1 1/2	84
NL-110VL	32051300	$ 1,012.00	79.2	24.8	46.3	1 1/2	111
NL-160VL	32051500	$ 1,809.00	132.1	30.7	50.5	1 1/2	217

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG;
Maximum Temperature = 240ºF; Finish = Red Powder Coat Exterior;
Factory Pre-charge = 12 PSIG

NON-ASME



PAINTED PLAIN STEEL

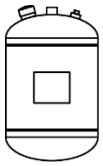
Model	Part No.	List ($)	Gal.	Dia	Length	Conn. A	Dist. B	Ship Wt. (lbs.)	Saddle Price (Pair)	Saddle Wt. (lbs.)
12NA33	23012033	$ 497.00	15	12	33	1"	8	44	$ 301.00	12
12NA51	23012051	$ 507.00	24	12	51	1"	8	62	$ 301.00	12
14NA48	23014048	$ 580.00	30	14	48	1"	10	72	$ 308.00	15
14NA63	23014063	$ 649.00	40	14	63	1"	10	92	$ 308.00	15
16NA72	23016072	$ 733.00	60	16	72	1"	12	120	$ 321.00	21
20NA62	23020062	$ 803.00	80	20	62 1/2	1"	16	136	$ 328.00	29
20NA78	23020078	$ 1,042.00	100	20	78	1"	16	168	$ 328.00	29
24NA65	23024065	$ 1,116.00	120	24	65	1"	20	218	$ 361.00	35
24NA72	23024072	$ 1,161.00	135	24	72	1"	20	238	$ 361.00	35
30NA62	23030062	$ 1,718.00	175	30	62 1/2	1-1/2"	22	338	$ 486.00	49
30NA77	23030077	$ 1,932.00	220	30	77	1-1/2"	22	368	$ 486.00	49
30NA84	23030084	$ 2,201.00	240	30	84	1-1/2"	22	394	$ 486.00	49
30NA105	23030105	$ 3,203.00	305	30	105 3/4	1-1/2"	22	486	$ 486.00	49
36NA72	23036072	$ 3,805.00	295	36	72	1-1/2"	28	502	$ 541.00	57
36NA93	23036093	$ 3,870.00	400	36	92 1/2	1-1/2"	28	645	$ 541.00	57
36NA120	23036120	$ 4,752.00	505	36	120	1-1/2"	28	810	$ 541.00	57
42NA96	23042096	$ 6,843.00	525	42	96	1-1/2"	28	895	$ 1,046.00	88

GALVANIZED STEEL

Model	Part No.	List ($)	Gal.	Dia	Length	Conn. A	Dist. B	Ship Wt. (lbs.)	Saddle Price (Pair)	Saddle Wt. (lbs.)
12NAG33	16012033	$ 1,191.00	15	12	33	1"	8	49	$ 301.00	12
12NAG51	16012051	$ 1,283.00	24	12	51	1"	8	69	$ 301.00	12
14NAG48	16014048	$ 1,505.00	30	14	48	1"	10	80	$ 308.00	15
14NAG63	16014063	$ 1,761.00	40	14	63	1"	10	102	$ 308.00	15
16NAG72	16016072	$ 1,993.00	60	16	72	1"	12	134	$ 321.00	21
20NAG62	16020062	$ 2,270.00	80	20	62 1/2	1"	16	151	$ 328.00	29
20NAG78	16020078	$ 2,787.00	100	20	78	1"	16	187	$ 328.00	29
24NAG65	16024065	$ 3,254.00	120	24	65	1"	20	238	$ 361.00	35
24NAG72	16024072	$ 3,465.00	135	24	72	1"	20	258	$ 361.00	35
30NAG62	16030062	$ 4,516.00	175	30	62 1/2	1-1/2"	22	361	$ 486.00	49
30NAG77	16030077	$ 5,184.00	220	30	77	1-1/2"	22	396	$ 486.00	49
30NAG84	16030084	$ 5,410.00	240	30	84	1-1/2"	22	424	$ 486.00	49
30NAG105	16030105	$ 7,300.00	305	30	105 3/4	1-1/2"	22	523	$ 486.00	49
36NAG72	16036072	$ 7,585.00	295	36	72	1-1/2"	28	540	$ 541.00	57
36NAG93	16036093	$ 8,753.00	400	36	92 1/2	1-1/2"	28	686	$ 541.00	57
36NAG120	16036120	$ 10,515.00	505	36	120	1-1/2"	28	844	$ 541.00	57
42NAG96	16042096	$ 13,140.00	525	42	96	1-1/2"	28	928	$ 1,046.00	88

Materials = Steel; Maximum Pressure = 150 PSIG for 12NA33(12NAG33) to 20NA78(16NAG72) and 125 PSIG for all other models; Maximum Temperature = 450ºF; Finish = Primer for NA & Galvanized Steel Interior & Exterior for NAG; Gauge glass tappings are ½" NPT; Base stands included on all models except 36NA120 & 42NA96.

NTA EXPANSION TANKS – ASME



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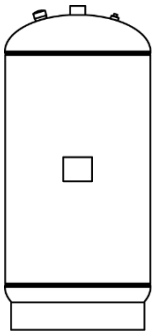


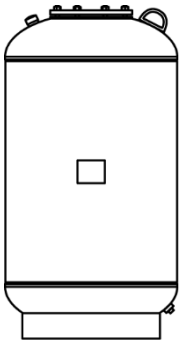
ASME

FIXED DIAPHRAGM TANK

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
NTA-15	19010015	$ 778.00	7.8	6.3	12	19	3/4	42
NTA-20	19010020	$ 802.00	11.0	8.8	12	25	3/4	52
NTA-40	19010040	$ 1,250.00	25.0	20.2	16	33	1	84
NTA-60	19010060	$ 1,403.00	35.0	28.0	16	44	1	97
NTA-80	19010080	$ 1,862.00	45.0	36.0	20	38	1	148
NTA-100	19010100	$ 1,948.00	60.0	48.5	20	49	1	175
NTA-120	19010120	$ 2,369.00	70.0	56.5	24	46	1 1/2	259
NTA-144	19010144	$ 2,538.00	80.0	65.0	24	49	1 1/2	268
NTA-180	19010180	$ 2,910.00	90.0	73.0	24	52	1 1/2	283
NTA-200	19010200	$ 2,989.00	115.0	93.0	24	66	1 1/2	325
NTA-240	19010240	$ 3,479.00	140.0	113.5	24	78	1 1/2	362
NTA-260	19010260	$ 4,169.00	158.0	128.0	30	63	1 1/2	591
NTA-280	19010280	$ 4,805.00	211.0	171.0	30	81	1 1/2	752

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG for NTA-15 through NTA-60; All Others 125 PSIG; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 12 PSIG

NLAP EXPANSION TANKS: TOP CONNECTION – ASME



ASME

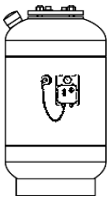
REMOVABLE BLADDER TANK

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
NLAP-40	22510040	$ 2,078.00	11.0	11.0	12	27	3/4	42
NLAP-60	22510060	$ 2,269.00	15.0	15.0	14	26	3/4	52
NLAP-100	22510100	$ 2,455.00	25.0	25.0	16	32	1	77
NLAP-150	22510150	$ 2,551.00	39.0	34.0	16	48 1/2	1	115
NLAP-220	22510220	$ 3,111.00	58.0	53.0	20	48 1/2	1 1/2	170
NLAP-325	22510325	$ 3,459.00	85.0	85.0	24	50 1/2	1 1/2	225
NLAP-400	22510400	$ 3,493.00	104.0	104.0	24	57 1/2	1 1/2	250
NLAP-560	22510560	$ 3,753.00	147.0	147.0	30	53	1 1/2	325
NLAP-600	22510600	$ 5,241.00	158.0	158.0	30	58	1 1/2	350
NLAP-700	22510700	$ 5,675.00	185.0	185.0	30	66	1 1/2	400
NLAP-815	22510815	$ 6,199.00	215.0	215.0	36	58	1 1/2	475
NLAP-950	22510950	$ 7,447.00	250.0	250.0	36	66	1 1/2	540
NLAP-1100	22511100	$ 7,784.00	290.0	290.0	36	75	1 1/2	625

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 12 PSIG

Smart Tank Series: NLA with WessGuard®

Smart Tank Series NLA-WG are ASME removable bladder type pre-charged expansion tanks with **WessGuard**® bladder monitor. They are designed to absorb the expansion forces and control the pressure in heating/cooling systems. The system's expanded water (fully compatible with water/glycol mixtures) is contained in a heavy-duty bladder preventing tank corrosion and water logging problems. If the system creates a condition to extend the bladder beyond the normal movement, **WessGuard**® monitor will activate an audible and LED alarm to notify maintenance staff of this potential system issue. In the case of compromised bladder integrity, water level will rise to activate the alarm.



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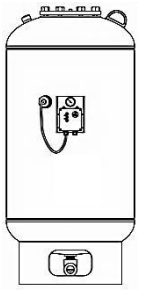

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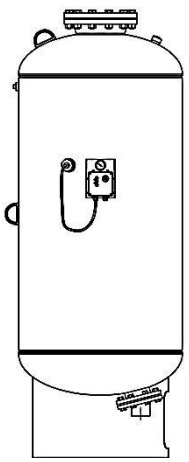


ASME

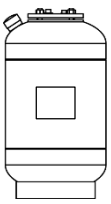
REMOVABLE BLADDER TANK – 125 PSI

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
NLA-35-WG	62010035	$ 3,047.00	10	10	12	23 1/2	3/4	40
NLA-50-WG	62010050	$ 3,212.00	13	13	14	24	3/4	50
NLA-85-WG	62010085	$ 3,317.00	23	23	16	37	1	90
NLA-130-WG	62010130	$ 3,669.00	35	35	20	37	1	125
NLA-200-WG	62010200	$ 4,144.00	53	53	24	43	1 1/2	210
NLA-300-WG	62010300	$ 4,619.00	79	79	24	55	1 1/2	225
NLA-400-WG	62010400	$ 4,702.00	106	106	30	49	1 1/2	300
NLA-500-WG	62010500	$ 5,008.00	132	132	30	57	1 1/2	335
NLA-600-WG	62010600	$ 6,820.00	158	158	30	65	1 1/2	360
NLA-800L-WG	62010805	$ 7,912.00	211	211	32	76	1 1/2	475
NLA-1000-WG	62011000	$ 9,263.00	264	264	36	75	1 1/2	710
NLA-1200-WG	62011200	$ 9,655.00	317	317	36	87	1 1/2	720
NLA-1400-WG	62011400	$ 10,389.00	370	370	36	99	1 1/2	875
NLA-1600-WG	62011600	$ 13,840.00	422	422	48	74	1 1/2	1100
NLA-2000-WG	62012000	$ 15,054.00	528	528	48	87	1 1/2	1280
NLA-2500-WG	62012500	$ 17,255.00	660	660	48	102	2	1435
NLA-3000L-WG	62013000	$ 21,417.00	792	792	48	122	2	1550
NLA-3000S-WG	62013001	$ 27,096.00	792	792	60	80	2	2169
NLA-4000-WG	62014000	$ 32,611.00	1056	1056	60	102	2	2638
NLA-5000-WG	62015000	$ 41,232.00	1320	1320	60	125	2	3246
NLA-7500-WG	62017500	$ 59,708.00	1980	1980	72	127	3	4005
NLA-10000-WG	62019999	$ 76,183.00	2640	2640	72	163	3	4845
NLA-15000-WG	62010000	$ 115,126.00	3963	3963	72	233	3	5925

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG;
Maximum Temperature = 240ºF; Finish = Primer Painted Exterior;
Factory Pre-charge = 12 PSIG; Also available in 200 & 250 psi rated models

Specify Standard or WessGuard-2® with Phone Texting Alerts

NLA EXPANSION TANKS – ASME



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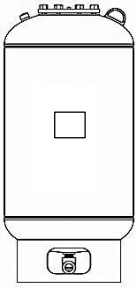

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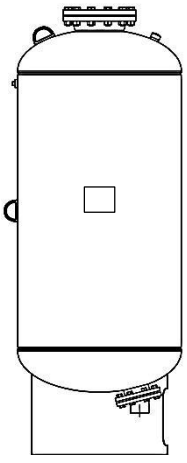


ASME

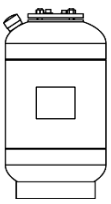
REMOVABLE BLADDER TANK – 125 PSI

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
NLA-35	22010035	$ 2,346.00	10	10	12	25	3/4	40
NLA-50	22010050	$ 2,508.00	13	13	14	25	3/4	50
NLA-85	22010085	$ 2,607.00	23	23	16	37	1	90
NLA-130	22010130	$ 2,797.00	35	35	20	37	1	125
NLA-200	22010200	$ 3,259.00	53	53	24	43	1 1/2	210
NLA-300	22010300	$ 3,566.00	79	79	24	55	1 1/2	225
NLA-400	22010400	$ 3,648.00	106	106	30	49	1 1/2	300
NLA-500	22010500	$ 3,945.00	132	132	30	57	1 1/2	335
NLA-600	22010600	$ 5,705.00	158	158	30	65	1 1/2	360
NLA-800L	22010805	$ 6,459.00	211	211	32	76	1 1/2	475
NLA-1000	22011000	$ 7,773.00	264	264	36	74	1 1/2	710
NLA-1200	22011200	$ 8,152.00	317	317	36	86	1 1/2	720
NLA-1400	22011400	$ 8,866.00	370	370	36	99	1 1/2	875
NLA-1600	22011600	$ 12,221.00	422	422	48	72	1 1/2	1100
NLA-2000	22012000	$ 13,400.00	528	528	48	85	1 1/2	1280
NLA-2500	22012500	$ 15,539.00	660	660	48	102	2	1435
NLA-3000L	22013000	$ 19,343.00	792	792	48	122	2	1550
NLA-3000S	22013001	$ 25,081.00	792	792	60	80	2	2169
NLA-4000	22014000	$ 30,079.00	1056	1056	60	102	2	2638
NLA-5000	22015000	$ 38,794.00	1320	1320	60	125	2	3246
NLA-7500	22017500	$ 57,469.00	1980	1980	72	127	3	4005
NLA-10000	22019999	$ 73,544.00	2640	2640	72	159	3	4845
NLA-15000	22019998	$ 112,904.00	3963	3963	72	233	3	5925

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG;
Maximum Temperature = 240ºF; Finish = Primer Painted Exterior;
Factory Pre-charge = 12 PSIG

For Sight Glass - Add $145.00 to List ($)

NLA-HP EXPANSION TANKS – ASME



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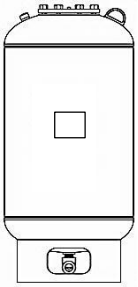

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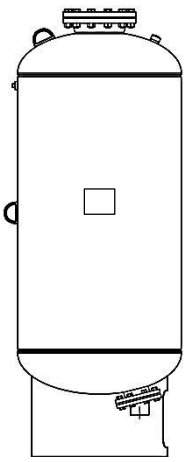


ASME

HIGH PRESSURE REMOVABLE BLADDER TANK

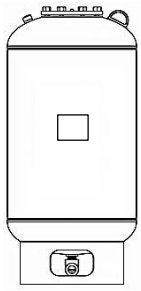
Model	Gal.	200 PSI Part No.	200 PSI List ($)	200 PSI Wt.(lbs.)	250 PSI Part No.	250 PSI List ($)	250 PSI Wt.(lbs.)
NLA-HP-35	10	22040035	$ 3,499	52	22050035	$ 3,770	53
NLA-HP-50	13	22040050	$ 3,741	59	22050050	$ 4,024	65
NLA-HP-85	23	22040085	$ 3,903	95	22050085	$ 4,185	105
NLA-HP-130	35	22040130	$ 4,176	127	22050130	$ 4,482	141
NLA-HP-200	53	22040200	$ 4,850	194	22050200	$ 5,243	220
NLA-HP-300	79	22040300	$ 5,352	252	22050300	$ 5,789	282
NLA-HP-400	106	22040400	$ 5,546	336	22050400	$ 5,998	410
NLA-HP-500	132	22040500	$ 5,986	400	22050500	$ 6,534	512
NLA-HP-600	158	22040600	$ 8,786	419	22050600	$ 9,648	569
NLA-HP-800L	211	22040805	$ 9,757	592	22050805	$ 10,706	711
NLA-HP-1000	264	22041000	$ 11,706	698	22051000	$ 12,846	830
NLA-HP-1200	317	22041200	$ 12,318	905	22051200	$ 13,523	1118
NLA-HP-1400	370	22041400	$ 13,432	1107	22051400	$ 14,748	1330
NLA-HP-1600	422	22041600	$ 18,454	1413	22051600	$ 20,250	1713
NLA-HP-2000	528	22042000	$ 20,354	1643	22052000	$ 22,348	2026
NLA-HP-2500	660	22042500	$ 23,412	1935	22052500	$ 25,704	2352
NLA-HP-3000L	792	22043000	$ 26,157	2198	22053000	$ 28,735	2782
NLA-HP-3000S	792	22043001	$ 33,159	2694	22053001	$ 35,990	2965
NLA-HP-4000	1056	22044000	$ 39,288	3291	22054000	$ 42,596	3736
NLA-HP-5000	1320	22045000	$ 51,392	3858	22055000	$ 55,847	4485
NLA-HP-7500	1980	22047500	$ 76,294	5491	22057500	$ 83,281	6583
NLA-HP-10000	2640	22049999	$ 96,540	6796	22059999	$ 105,383	8068
NLA-HP-15000	3963	22040000	$ 150,207	9814	22050000	$ 163,944	12030

Materials = Steel shell, Heavy Duty Butyl Bladder; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 12 PSIG; For vessel dimensions (diameter, height and system connection) refer to NLA price sheet or Submittal data.

For Sight Glass - Add $145.00 to List ($)

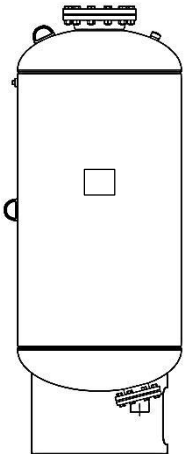
NVA EXPANSION TANKS – ASME

BOTTOM SYSTEM CONNECTION/REMOVABLE BLADDER TANK



ASME

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
NVA-85	22000085	$ 2,939.00	23	23	16	37	1	90
NVA-130	22000130	$ 3,150.00	35	35	20	37	1	125
NVA-200	22000200	$ 3,700.00	53	53	24	43	1 1/2	210
NVA-300	22000300	$ 4,053.00	79	79	24	55	1 1/2	225
NVA-400	22000400	$ 4,201.00	106	106	30	49	1 1/2	300
NVA-500	22000500	$ 4,442.00	132	132	30	57	1 1/2	335
NVA-600	22000600	$ 6,442.00	158	158	30	65	1 1/2	360
NVA-800L	22000805	$ 7,181.00	211	211	32	76	1 1/2	475



ASME

NVA-1000	22001000	$ 10,406.00	264	264	36	87	1 1/4	735
NVA-1200	22001200	$ 10,794.00	317	317	36	98 1/2	1 1/4	745
NVA-1400	22001400	$ 11,701.00	370	370	36	110 1/2	1 1/4	900
NVA-1600	22001600	$ 15,565.00	422	422	48	84	1 1/2	1210
NVA-2000	22002000	$ 16,927.00	528	528	48	96	1 1/2	1305
NVA-2500	22002500	$ 18,881.00	660	660	48	110	2	1430
NVA-3000L	22003000	$ 23,113.00	792	792	48	133	2	1575
NVA-3000S	22003001	$ 29,516.00	792	792	60	93	2	2169
NVA-4000	22004000	$ 35,116.00	1056	1056	60	115	2 1/2	2638
NVA-5000	22005000	$ 44,904.00	1320	1320	60	138	2 1/2	3246
NVA-7500	22007500	$ 64,607.00	1980	1980	72	140	3	4080
NVA-10000	22009999	$ 82,683.00	2640	2640	72	172	3	4920
NVA-15000	22000000	$ 127,056.00	3963	3963	72	243	3	6000

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG;
Maximum Temperature = 240°F; Finish = Primer Painted Exterior;
Factory Pre-charge = 12 PSIG

For Sight Glass - Add $145.00 to List ($)

WESSGUARD® RETROFIT FOR NLA

The bladder-style expansion tank function is to accept expanded water created during the thermal expansion process that occurs as heat energy increases the system water volume. The properly sized expansion tank will control pressure increases in the piping system based on the captured compressible air chamber within the tank to the designer's acceptable limits.

The system in its as-built state can differ from engineer design and functionality. Unwarranted pressure increases can severely affect the critical components of the heating or cooling system.

Factors that can affect the excessive pressure swings in the system:
Properly sized expansion tank
Properly installed and pre-charge adjusted expansion tank
Automatic fill station pressure set point
Automatic fill station pressure range drift (over time)
Free air (pockets and entrained) in the piping system
System pump location relative to the expansion tank
System fluid (water, glycol/water, etc.) temperature range

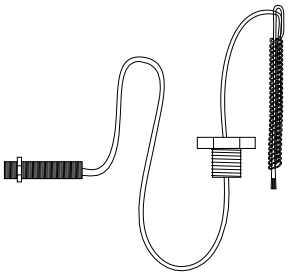
Until now the diagnosis of the critical component interaction arises only after expensive damages have been caused by this excessive pressure. **WessGuard**® was developed to monitor the fluid within the expansion tank by determining excessive movement of the vessel bladder. **WessGuard**® incorporates a capacitive proximity sensor that determines if fluid levels in the expansion tank exceed "normal" operating conditions. Furthermore, if an expansion tank bladder is compromised, **WessGuard**® monitors the rising fluid level in the tank.

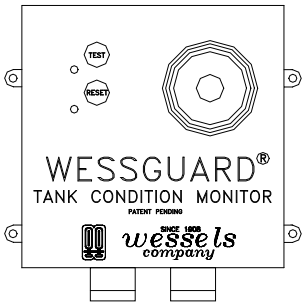
WessGuard® is designed to monitor these tank conditions and alert the installer or maintenance staff to a potentially unsafe condition by activating a visual LED and audible alarm. The **WessGuard**® monitor also has normally open contact to tie directly to an energy management system.

WESSGUARD® RETROFIT - NLA

Model	Part No.	List ($)	Sensor Lead	Monitor Lead	Sensor Diameter	Monitor Dimensions	Connection To Tank	Wt. (Lbs.)
WG-RETRO	61110001	$ 1,095.00	38"	46"	3/4"	5 1/4" X 5 1/4"	1" NPT	3

FIELD RETROFIT UNIT DESIGNED FOR VESSELS WITH 1" TAPPING LOCATED IN THE TOP HALF OF A BLADDER STYLE TANK – TYPICALLY 1000 LITERS AND LARGER





Specify Standard or WessGuard-2® with Phone Texting Alerts

NL REPLACEMENT BLADDERS & COVERS

Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
NL 15	03200015	$ 56.00	NA	NA	05200015	$ 76.00
NL 20	03200020	$ 63.00	NA	NA	05200020	$ 76.00
NL 30	03200030	$ 79.00	NA	NA	05200030	$ 76.00
NL 60	03200090	$ 81.00	NA	NA	05200060	$ 76.00
NL 80L	03200080	$ 97.00	NA	NA	05200080	$ 97.00
NL 90L	03200090	$ 224.00	NA	NA	05200090	$ 97.00
NL 40VL	03200140	$ 260.00	NA	NA	05200140	$123.00
NL 60VL	03200160	$ 364.00	NA	NA	05200160	$123.00
NL 90VL	03200190	$ 670.00	NA	NA	05200190	$123.00
NL 110VL	03200210	$ 785.00	NA	NA	05201110	$179.00
NL 160VL	03200260	$ 1,388.00	NA	NA	05201160	$179.00

NLA REPLACEMENT BLADDERS & COVERS

Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
NLA 35	02220035	$ 334.00	NA	NA	05220035	$269.00
NLA 50	02220050	$ 548.00	NA	NA	05220050	$269.00
NLA 85	02220085	$ 759.00	04220085	$ 158.00	05220085	$399.00
NLA 130	02220130	$ 949.00	04220130	$ 158.00	05220130	$399.00
NLA 200	02220200	$ 1,099.00	04220200	$ 164.00	05220200	$446.00
NLA 300	02220300	$ 1,381.00	04220300	$ 164.00	05220300	$504.00
NLA 400	02220400	$ 1,547.00	04220400	$ 164.00	05220400	$504.00
NLA 500	02220500	$ 2,230.00	04220500	$ 164.00	05220500	$543.00
NLA 600	02220600	$ 2,822.00	04220600	$ 164.00	05220600	$543.00
NLA 800L	02220805	$ 3,577.00	04220805	$ 164.00	05220805	$ 571.00
NLA 1000	9800220	$ 3,583.00	NA	NA	05221000	$ 983.00
NLA 1200	9800240	$ 4,027.00	NA	NA	05221200	$ 983.00
NLA 1400	9800260	$ 4,284.00	NA	NA	05221400	$ 983.00
NLA 1600	9800280	$ 4,621.00	NA	NA	05221600	$ 1,147.00
NLA 2000	9800300	$ 4,955.00	NA	NA	05222000	$ 1,147.00
NLA 2500	9800305	$ 5,306.00	NA	NA	05222500	$ 1,147.00
NLA 3000L	9800320	$ 5,800.00	NA	NA	05223000	$ 1,147.00
NLA 3000S	9800325	$ 7,475.00	NA	NA	05223001	$ 1,147.00
NLA 4000	9800340	$ 8,956.00	NA	NA	05224000	$ 1,193.00
NLA 5000	9800360	$ 9,272.00	NA	NA	05225000	$ 1,193.00
NLA 7500	9800380	$ 13,908.00	NA	NA	05227500	$ 1,193.00
NLA 10000	9800390	$ 17,857.00	NA	NA	05220000	$ 1,193.00

NLAP REPLACEMENT BLADDERS & COVERS

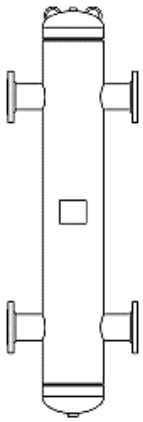
Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
NLAP-40	02250040	$ 364.00	NA	NA	05220035	$ 253.00
NLAP-60	02250060	$ 625.00	NA	NA	05220050	$ 253.00
NLAP-100	02250100	$ 849.00	NA	NA	05220085	$ 402.00
NLAP-150	02250150	$ 1,039.00	NA	NA	05220150	$ 402.00
NLAP-220	02250220	$ 1,148.00	NA	NA	05220220	$ 577.00
NLAP-325	02250325	$ 1,420.00	NA	NA	05220325	$ 593.00
NLAP-400	02250400	$ 1,472.00	NA	NA	05220401	$ 593.00
NLAP-560	02250560	$ 2,374.00	NA	NA	05220560	$ 718.00
NLAP-600	02250600	$ 2,681.00	NA	NA	05220601	$ 718.00
NLAP-700	02250700	$ 3,129.00	NA	NA	05220700	$ 718.00
NLAP-815	02250815	$ 3,464.00	NA	NA	05220815	$ 718.00
NLAP-950	02250950	$ 3,234.00	NA	NA	05220950	$ 1,131.00
NLAP-1100	02251100	$ 3,508.00	NA	NA	05221100	$ 1,047.00

NVA REPLACEMENT BLADDERS & COVERS

Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
NVA 85	02210085	$ 793.00	04310085	$ 327.00	05310085	$269.00
NVA 130	02210130	$ 1,008.00	04310130	$ 327.00	05310130	$269.00
NVA 200	02210200	$ 1,176.00	04310200	$ 329.00	05310200	$399.00
NVA 300	02210300	$ 1,417.00	04310300	$ 329.00	05310300	$399.00
NVA 400	02210400	$ 1,660.00	04310400	$ 329.00	05310400	$446.00
NVA 500	02210500	$ 2,149.00	04310500	$ 434.00	05310500	$583.00
NVA 600	02210600	$ 2,753.00	04310600	$ 434.00	05310600	$583.00
NVA 800L	02210805	$ 3,529.00	04310805	$ 434.00	05310805	$588.00
NVA 1000	02211000	$ 3,603.00	04311000	$ 752.00	05311000	$588.00
NVA 1200	02211200	$ 3,831.00	04311200	$ 752.00	05311200	$ 718.00
NVA 1400	02211400	$ 4,099.00	04311400	$ 752.00	05311400	$ 718.00
NVA 1600	02211600	$ 4,398.00	04311600	$ 891.00	05311600	$ 802.00
NVA 2000	02212000	$ 4,717.00	04312000	$ 891.00	05312000	$ 802.00
NVA 2500	02212500	$ 4,991.00	04312500	$ 891.00	05312500	$ 802.00
NVA 3000L	02213000	$ 5,471.00	04313000	$ 891.00	05313000	$ 802.00
NVA 3000S	02213005	$ 7,103.00	04313001	$ 891.00	05313001	$ 802.00
NVA 4000	02214000	$ 8,298.00	04314000	$ 1,007.00	05314000	$ 876.00
NVA 5000	02215000	$ 8,733.00	04315000	$ 1,007.00	05315000	$ 876.00
NVA 7500	02217500	$ 13,073.00	04317500	$ 1,007.00	05317500	$ 876.00
NVA 10000	02219999	$ 16,566.00	04310000	$ 1,302.00	05310000	$1,012.00

PSA PRIMARY/SECONDARY HEADER – ASME

WITH INTERNAL BAFFLE – 150 PSI



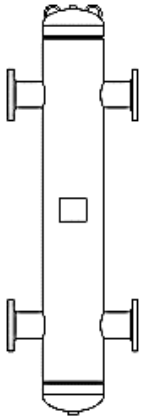
ASME

Model	Part No.	List ($)	Conn.	Dia.	Height	Width	Flow (GPM)	Wt. (Lbs.)
PSA-2	71002020	$ 2,148.00	2	6 5/8	34 1/4	14 3/4	69	90
PSA-2.5	71002025	$ 2,528.00	2 1/2	6 5/8	39 1/4	14 3/4	108	115
PSA-3	71002030	$ 4,014.00	3	10 3/4	49 1/2	18 3/4	144	225
PSA-4	71002040	$ 4,699.00	4	10 3/4	70 1/4	22 3/4	255	330
PSA-5	71002050	$ 6,347.00	5	14	80 1/2	26	398	215
PSA-6	71002060	$ 6,808.00	6	18	93 3/4	30	570	320
PSA-8	71002080	$ 8,809.00	8	24	122 3/4	36	945	575
PSA-10	71002100	$ 14,375.00	10	30	149 1/4	42	1440	935
PSA-12	71002120	$ 19,599.00	12	30	179 1/2	42	2100	1165
PSA-14	71002140	$ 38,413.00	14	42	199 1/4	54	2550	2430
PSA-16	71002160	$ 50,031.00	16	48	224 1/4	60	3300	3260

Materials = Steel Shell;
Maximum Pressure = 150 psig; Maximum Temperature = 450ºF;
Finish = Primer Painted Exterior;
Support Legs Standard on Models PSA-6 and Up.

PSAV PRIMARY/SECONDARY HEADER – ASME

WITH WESSVENT AIR/DIRT SEPARATION – 150 PSI



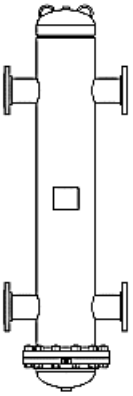
ASME

Model	Part No.	List ($)	Conn.	Dia.	Height	Width	Flow (GPM)	Wt. (Lbs.)
PSAV-2	71102020	$ 3,387.00	2	6 5/8	34 1/4	14 3/4	69	120
PSAV-2.5	71102025	$ 3,812.00	2 1/2	6 5/8	39 1/4	14 3/4	108	145
PSAV-3	71102030	$ 5,293.00	3	10 3/4	49 1/2	18 3/4	144	270
PSAV-4	71102040	$ 6,184.00	4	10 3/4	70 1/4	22 3/4	255	380
PSAV-5	71102050	$ 8,339.00	5	14	80 1/2	26	398	280
PSAV-6	71102060	$ 9,375.00	6	18	93 3/4	30	570	375
PSAV-8	71102080	$ 13,114.00	8	24	122 3/4	36	945	635
PSAV-10	71102100	$ 21,328.00	10	30	149 1/4	42	1440	995
PSAV-12	71102120	$ 26,383.00	12	30	179 1/2	42	2100	1250
PSAV-14	71102140	$ 51,710.00	14	42	199 1/4	54	2550	2480
PSAV-16	71102160	$ 67,348.00	16	48	224 1/4	60	3300	3310

Materials = Steel Shell; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 psig; Maximum Temperature = 450ºF;
Finish = Primer Painted Exterior;
Support Legs Standard on Models PSAV-6 and Up.

PSAVR PRIMARY/SECONDARY HEADER – ASME

WITH REMOVABLE WESSVENT AIR/DIRT SEPARATOR – 150 PSI



ASME

Model	Part No.	List ($)	Conn.	Dia.	Height	Width	Flow (GPM)	Wt. (Lbs.)
PSAVR-2	71302020	$ 3,933.00	2	6 5/8	34 1/4	14 3/4	69	162
PSAVR-2.5	71302025	$ 4,426.00	2 1/2	6 5/8	39 1/4	14 3/4	108	187
PSAVR-3	71302030	$ 6,145.00	3	10 3/4	49 1/2	18 3/4	144	354
PSAVR-4	71302040	$ 7,180.00	4	10 3/4	70 1/4	22 3/4	255	464
PSAVR-5	71302050	$ 9,682.00	5	14	80 1/2	26	398	444
PSAVR-6	71302060	$ 10,884.00	6	18	93 3/4	30	570	625
PSAVR-8	71302080	$ 15,229.00	8	24	122 3/4	36	945	1075
PSAVR-10	71302100	$ 24,763.00	10	30	149 1/4	42	1440	1733
PSAVR-12	71302120	$ 30,632.00	12	30	179 1/2	42	2100	1988
PSAVR-14	71302140	$ 60,038.00	14	42	199 1/4	54	2550	4138
PSAVR-16	71302160	$ 78,196.00	16	48	224 1/4	60	3300	5142

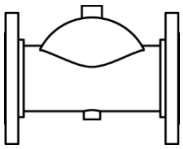
Materials = Steel Shell; Coalescing Medium = Stainless Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 450ºF;
Finish = Primer Painted Exterior.
Support Legs Standard on Models PSAR-6 and Up.

SEVERE SERVICE PRODUCTS 10

Severe Service Products are designed for applications for commercial and industrial systems that require internal and external protection more robust than traditional fabricated steel designs. These products include stainless Air Purgers & ASME Separators, stainless ASME Plain Steel Tanks, and stainless & epoxy lined (interior & exterior) ASME bladder tanks.

SS-AP INLINE AIR PURGERS – ASME

FABRICATED STAINLESS STEEL



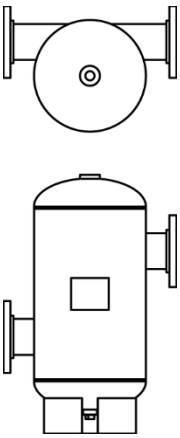
ASME

Model	Part No.	304 List ($)	316 List ($)	Line Size	Ht.	Lng.	Ship Wt (lbs.)
SS-AP-104	37630040	$ 7,368	$ 8,421	4	5	16	55
SS-AP-105	37630050	$ 9,218	$ 10,500	5	7 1/2	20	60
SS-AP-106	37630060	$ 10,448	$ 11,916	6	8 1/2	24	65
SS-AP-108	37630080	$ 14,159	$ 17,551	8	11 1/4	32	110
SS-AP-110	37630100	$ 21,328	$ 27,067	10	14	40	165
SS-AP-112	37630120	$ 25,790	$ 32,794	12	16 3/4	48	315
SS-AP-114	37630140	$ 33,201	$ 41,501	14	22	56	475
SS-AP-116	37630160	$ 41,075	$ 51,344	16	24	48	315
SS-AP-118	37630180	$ 49,848	$ 62,310	18	28	72	545

Materials = Fabricated Stainless Steel; Maximum Pressure = 150 PSIG;
Maximum Temperature = 450ºF; Finish = Primer Painted Exterior
Conforms to ASME requirements.

SS-SPA TANGENTIAL AIR SEPARATORS – ASME

STAINLESS STEEL SEPARATOR LESS STRAINER

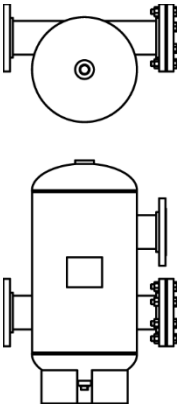


ASME

Model	Part No.	304 List ($)	316 List ($)	Size	Type	Ht.	Wdth.	Wt. (lbs.)
SS-SPA 2	72050020	$ 4,034.00	$ 4,518.00	2	NPT	22 1/2	16 5/8	73
SS-SPA 2.5	72050025	$ 4,385.00	$ 4,925.00	2 1/2	NPT	24 1/8	16 5/8	75
SS-SPA 3	72050030	$ 5,720.00	$ 6,393.00	3	FLNG	23 1/2	19 3/4	95
SS-SPA 4	72050040	$ 8,690.00	$ 9,704.00	4	FLNG	32	21 3/4	122
SS-SPA 5	72050050	$ 11,795.00	$ 13,098.00	5	FLNG	32	21 3/4	138
SS-SPA 6	72050060	$ 16,589.00	$ 18,498.00	6	FLNG	44	28	222
SS-SPA 8	72050080	$ 22,085.00	$ 24,735.00	8	FLNG	44	28	259
SS-SPA 10	72050100	$ 35,423.00	$ 39,672.00	10	FLNG	60 1/2	41	556
SS-SPA 12	72050120	$ 54,173.00	$ 60,674.00	12	FLNG	60 1/2	41	627
SS-SPA 14	72050140	$ 68,442.00	$ 76,656.00	14	FLNG	78	46 3/8	882
SS-SPA 16	72050160	$ 107,377.00	$ 120,265.00	16	FLNG	108	60	1906
SS-SPA 18	72050180	$ 155,886.00	$ 174,594.00	18	FLNG	124	66	2555
SS-SPA 20	72050200	$ 186,075.00	$ 208,403.00	20	FLNG	138	72	2633
SS-SPA 22	72050220	$ 211,065.00	$ 236,391.00	22	FLNG	150	78	3831
SS-SPA 24	72050240	$ 253,478.00	$ 283,895.00	24	FLNG	150	80	4130

Materials = Stainless Steel; Maximum Pressure = 125 PSIG;
Maximum Temperature = 450ºF; Finish = Primer Painted Exterior

SS-SPA-S STAINLESS STEEL SEPARATOR WITH STRAINER

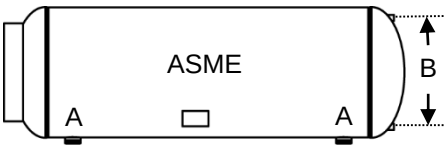


ASME

Model	Part No.	304 List ($)	316 List ($)	Size	Type	Ht.	Wdth.	Wt. (lbs.)
SS-SPA 2S	72060020	$ 5,657.00	$ 6,336.00	2	NPT	24 1/2	16 5/8	72
SS-SPA 2.5S	72060025	$ 6,396.00	$ 7,162.00	2 1/2	NPT	24 1/2	16 5/8	100
SS-SPA 3S	72060030	$ 9,099.00	$ 10,192.00	3	FLNG	25	19 3/4	108
SS-SPA 4S	72060040	$ 15,020.00	$ 16,824.00	4	FLNG	32	21 3/4	159
SS-SPA 5S	72060050	$ 25,140.00	$ 28,156.00	5	FLNG	32	21 3/4	180
SS-SPA 6S	72060060	$ 22,512.00	$ 25,213.00	6	FLNG	44	28	298
SS-SPA 8S	72060080	$ 30,679.00	$ 34,363.00	8	FLNG	44	28	372
SS-SPA 10S	72060100	$ 50,522.00	$ 56,582.00	10	FLNG	60 1/2	41	840
SS-SPA 12S	72060120	$ 65,654.00	$ 73,533.00	12	FLNG	60 1/2	41	868
SS-SPA 14S	72060140	$ 89,936.00	$ 100,727.00	14	FLNG	78	46 3/8	1160
SS-SPA 16S	72060160	$ 162,063.00	$ 181,510.00	16	FLNG	108	60	2308
SS-SPA 18S	72060180	$ 220,225.00	$ 246,651.00	18	FLNG	124	66	3039
SS-SPA 20S	72060200	$ 265,022.00	$ 296,823.00	20	FLNG	138	72	3980
SS-SPA 22S	72060220	$ 340,614.00	$ 381,488.00	22	FLNG	150	78	4261
SS-SPA 24S	72060240	$ 417,862.00	$ 468,004.00	24	FLNG	160	78	4932

Materials = Stainless Steel; Maximum Pressure = 125 PSIG;
Maximum Temperature = 450ºF; Finish = Primer Painted Exterior

SSNA COMPRESSION TANKS – ASME



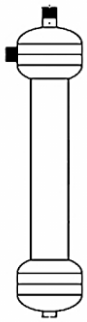
STAINLESS PLAIN STEEL

Model	Part No.	304 List ($)	316 List ($)	Gal.	Dia	Length	Conn. A	Dist. B	Ship Wt. (lbs.)
SS12NA33	28012033	$ 3,514.00	$ 4,111.00	15	12	33	1"	8	86
SS12NA51	28012051	$ 3,970.00	$ 4,755.00	24	12	51	1"	8	108
SS14NA48	28014048	$ 4,346.00	$ 5,207.00	30	14	48	1"	10	121
SS14NA63	28014063	$ 4,800.00	$ 5,798.00	40	14	63	1"	10	166
SS16NA72	28016072	$ 6,523.00	$ 7,326.00	60	16	72	1"	12	214
SS20NA62	28020062	$ 8,794.00	$ 9,898.00	80	20	62 1/2	1"	16	228
SS20NA78	28020078	$ 10,120.00	$ 11,438.00	100	20	78	1"	16	283
SS24NA65	28024065	$ 10,807.00	$ 12,185.00	120	24	65	1"	20	290
SS24NA72	28024072	$ 11,597.00	$ 13,058.00	135	24	72	1"	20	318
SS30NA62	28030062	$ 12,560.00	$ 14,159.00	175	30	62 1/4	1-1/2"	22	362
SS30NA77	28030077	$ 13,567.00	$ 15,297.00	220	30	77	1-1/2"	22	438
SS30NA84	28030084	$ 14,157.00	$ 15,989.00	240	30	84	1-1/2"	22	474
SS36NA72	28036072	$ 14,932.00	$ 17,920.00	295	36	72	1-1/2"	28	624
SS36NA93	28036093	$ 16,251.00	$ 19,500.00	400	36	92 1/2	1-1/2"	28	770

Materials = Stainless Steel; Maximum Pressure = 125 PSIG; Maximum Temperature = 450ºF;
Finish = Primer; Sight glass tappings are ½" NPT; Base stands included on all models

SS-CFS CENTRIFUGAL SOLIDS SEPARATOR – Non-ASME

STAINLESS STEEL SEPARATOR - LOW FLOW DESIGN



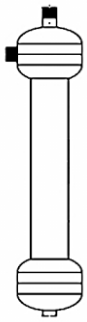
Model	Part No.	304 List ($)	316 List ($)	Ht.	Dia.	Syst. Conn.	Flow Range (GPM)	W t. (Lbs.)
SS-CFS-50	69010050	$2,370.00	$ 2,988.00	19	6	1/2	5 - 10	11
SS-CFS-75	69010075	$2,461.00	$ 3,104.00	19	6	3/4	10 - 20	14
SS-CFS-100	69010100	$2,608.00	$ 3,289.00	29	6	1	17 - 32	21
SS-CFS-125	69010125	$2,960.00	$ 3,733.00	29	6	1 1/4	28 - 50	21
SS-CFS-150	69010150	$3,017.00	$ 3,804.00	29	6	1 1/2	45 - 70	22
SS-CFS-200	69010200	$4,910.00	$ 6,270.00	32	8 5/8	2	70 - 110	41
SS-CFS-250	69010250	$5,693.00	$ 7,271.00	35 1/2	8 5/8	2 1/2	100 - 160	45
SS-CFS-300	69010300	$10,421.00	$13,076.00	39	10 3/4	3	150 - 250	78

NON-ASME

Materials = Stainless Steel Shell, Stainless Steel System Connection
Maximum Pressure = 150 PSIG; Maximum Temperature = 450ºF
Also available in 200 & 250 psi rated models

SS-CFA CENTRIFUGAL SOLIDS SEPERATOR – ASME

STAINLESS STEEL SEPARATOR - LOW FLOW DESIGN

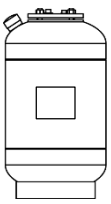


Model	Part No.	304 List ($)	316 List ($)	Ht.	Dia.	Syst. Conn.	Flow Range (GPM)	W t. (Lbs.)
SS-CFA-50	69011050	$ 2,687.00	$ 3,432.00	19	6	1/2	5 - 10	11
SS-CFA-75	69011075	$ 2,790.00	$ 3,563.00	19	6	3/4	10 - 20	14
SS-CFA-100	69011100	$ 2,957.00	$ 3,776.00	29	6	1	17 - 32	21
SS-CFA-125	69011125	$ 3,356.00	$ 4,286.00	29	6	1 1/4	28 - 50	21
SS-CFA-150	69011150	$ 3,420.00	$ 4,368.00	29	6	1 1/2	45 - 70	22
SS-CFA-200	69011200	$ 5,567.00	$ 7,183.00	32	8 5/8	2	70 - 110	41
SS-CFA-250	69011250	$ 6,454.00	$ 8,328.00	35 1/2	8 5/8	2 1/2	100 - 160	45
SS-CFA-300	69011300	$11,816.00	$15,168.00	39	10 3/4	3	150 - 250	78

ASME

Materials = Stainless Steel Shell, Stainless Steel System Connection
Maximum Pressure = 150 PSIG; Maximum Temperature = 450ºF
Also available in 200 & 250 psi rated models

SSFXA REMOVABLE BLADDER TANKS – ASME



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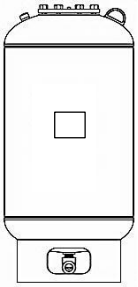

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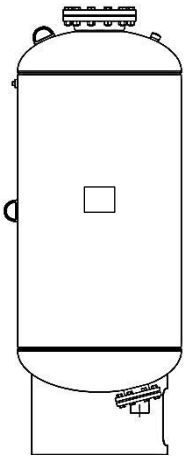


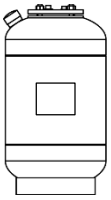
ASME

STAINLESS STEEL REMOVABLE BLADDER

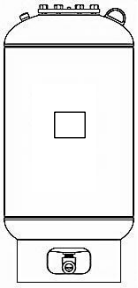
Model	Part No.	304 List ($)	316 List ($)	Gal.	Dia.	Ht.	Syst. Con.	Wt. (Lbs.)
SSFXA 35	26010035	$ 7,156	$ 8,491	10	12	23 1/2	3/4	63
SSFXA 50	26010050	$ 7,660	$ 9,237	13	14	24	3/4	76
SSFXA 85	26010085	$ 10,532	$ 12,277	23	16	37	1	141
SSFXA 130	26010130	$ 11,307	$ 12,714	35	20	37	1	151
SSFXA 200	26010200	$ 14,176	$ 17,096	53	24	43	1 1/2	243
SSFXA 300	26010300	$ 15,397	$ 18,697	79	24	55	1 1/2	279
SSFXA 400	26010400	$ 19,118	$ 23,591	106	30	49	1 1/2	333
SSFXA 500	26010500	$ 21,948	$ 27,067	132	30	57	2	398
SSFXA 600	26010600	$ 24,671	$ 30,340	158	30	65	2	440
SSFXA 700	26010700	$ 28,429	$ 34,909	185	30	80	2	401
SSFXA 800L	26010805	$ 30,661	$ 37,975	211	32	76	2	404
SSFXA 1000	26011000	$ 57,073	$ 71,341	264	36	87	3	735
SSFXA 1200	26011200	$ 58,545	$ 73,180	317	36	98	3	745
SSFXA 1400	26011400	$ 60,395	$ 75,491	370	36	111	3	900
SSFXA 1600	26011600	$ 93,800	$ 117,251	422	48	84	3	1210
SSFXA 2000	26012000	$ 93,059	$ 116,326	528	48	96	3	1305
SSFXA 2500	26012500	$ 105,688	$ 132,109	660	48	114	4	1430
SSFXA 3000L	26013000	$ 111,631	$ 139,538	792	48	134	4	1575
SSFXA 4000	26014000	$ 152,622	$ 190,779	1056	60	115	4	2638
SSFXA 5000	26015000	$ 187,151	$ 233,940	1320	60	138	4	3246

Materials = Stainless Steel Shell, Heavy Duty Butyl Bladder;
Maximum Pressure = 125 PSIG; Maximum Temperature = 240°F;
Finish = Bead blast Exterior; Factory Pre-charge = 30 PSIG

EPFXA EPOXY-LINED BLADDER TANKS – ASME



ASME



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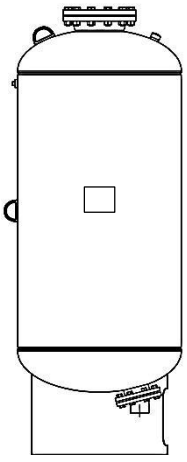


ASME

EPOXY REMOVABLE BLADDER

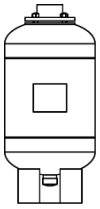
Model	Part No.	List ($)	Gal.	Dia.	Ht.	Syst. Con.	Wt. (Lbs.)
EPFXA 35	27010035	$ 3,540	10	12	23 1/2	3/4	40
EPFXA 50	27010050	$ 3,795	13	14	24	3/4	50
EPFXA 85	27010085	$ 3,920	23	16	37	1	90
EPFXA 130	27010130	$ 4,158	35	20	37	1	125
EPFXA 200	27010200	$ 6,384	53	24	43	1 1/2	210
EPFXA 300	27010300	$ 6,466	79	24	55	1 1/2	225
EPFXA 400	27010400	$ 6,840	106	30	49	1 1/2	300
EPFXA 500	27010500	$ 7,550	132	30	57	2	330
EPFXA 600	27010600	$ 9,449	158	30	65	2	360
EPFXA 700	27010700	$ 10,092	185	30	80	2	401
EPFXA 800L	27010805	$ 10,843	211	32	76	2	475
EPFXA 1000	27011000	$ 15,691	264	36	87	3	735
EPFXA 1200	27011200	$ 17,478	317	36	98	3	745
EPFXA 1400	27011400	$ 19,961	370	36	111	3	900
EPFXA 1600	27011600	$ 22,232	422	48	84	3	1210
EPFXA 2000	27012000	$ 24,686	528	48	96	3	1305
EPFXA 2500	27012500	$ 30,167	660	48	114	4	1430
EPFXA 3000L	27013000	$ 32,463	792	48	134	4	1575
EPFXA 4000	27014000	$ 42,858	1056	60	115	4	2638
EPFXA 5000	27015000	$ 52,145	1320	60	138	4	3246

Materials = Carbon Steel Shell, Internally NSF Epoxy Lined, Heavy Duty Butyl Bladder; Maximum Pressure = 125 PSIG; Maximum Temperature = 180ºF; Finish = Epoxy Lined Exterior; Factory Pre-charge = 30 PSIG

SHOCK & SURGE TANKS 11

Shock & Surge Tanks are specially designed hydro-pneumatic tanks used to absorb the harmful water hammer pressure wave in a piping system. When properly sized, these tanks are designed to capture the kinetic energy wave of a quick-closing valve (or other offending fixture) and limit the pressure spike that is otherwise created. Typically used in water well systems, municipal water distribution lines, pressure booster systems, and industrial water distribution systems.

SSA SHOCK & SURGE TANKS – ASME



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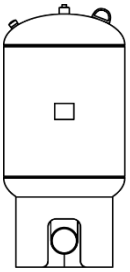

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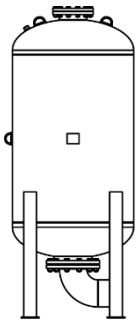


ASME

REMOVABLE BLADDER TANK

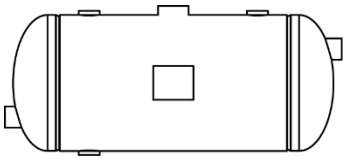
Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
SSA 35	26050035	$ 6,724.00	10	10	12	26	2 1/2	63
SSA 50	26050050	$ 7,176.00	13	13	14	26	2 1/2	74
SSA 85	26050085	$ 7,408.00	23	23	16	30 1/2	3G	116
SSA 130	26050130	$ 7,952.00	35	35	20	30 1/2	3G	135
SSA 200	26050200	$ 10,014.00	53	53	24	46 1/2	4G	250
SSA 300	26050300	$ 10,289.00	79	79	24	58 1/2	4G	360
SSA 400	26050400	$ 10,564.00	106	106	30	52 1/2	4G	430
SSA 500	26050500	$ 10,794.00	132	132	30	63	6G	525
SSA 600	26050600	$ 14,454.00	158	158	30	71	6G	640
SSA 700	26050700	$ 15,929.00	185	185	30	81 1/2	6G	749
SSA 800L	26050800	$ 18,926.00	211	211	32	84	6G	760
SSA 1000	26051000	$ 22,364.00	264	264	36	85	10F	830
SSA 1200	26051200	$ 27,177.00	317	317	36	107	10F	1118
SSA 1400	26051400	$ 28,966.00	370	370	36	119	10F	1330
SSA 1600	26051600	$ 34,171.00	422	422	48	92	10F	1713
SSA 2000	26052000	$ 39,213.00	528	528	48	105	10F	2026
SSA 2500	26052500	$ 42,823.00	660	660	48	122	10F	2352

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 250 PSIG; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 30 PSIG

G = Grooved Pipe Connection

F = Flanged Connection

SIZING FTA STEAM CONDENSATE FLASH TANKS



ASME

FLASH TANK SIZING

INFORMATION REQUIRED

TOTAL FLOW (LIQ. & VAPOR)		LBS/HR
INLET PRESSURE		PSIG
OUTLET PRESSURE		PSIG

SIZING

FROM CHART (BELOW)

AREA FACTOR		AF
TOTAL DISENGAGING AREA (AF X TOTAL FLOW)/1000		SQ.FT.

SELECTION

MODEL	DISENG. AREA (SQ. FT.)
FTA 13	2.71
FTA 18	3.25
FTA 24	3.79
FTA 30	4.22
FTA 48	6.00
FTA 80	7.67
FTA 125	10.00
FTA 180	12.00

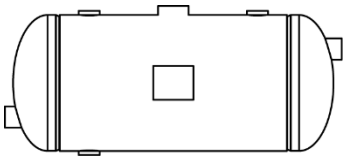
MODEL:

AREA FACTOR CHART (AF)

INLET PRESSURE (PSIG)	OUTLET PRESSURE (PSIG) 0	2	5	10	15	20	30	40	60	80	100
400	5.41	4.70	3.89	3.01	2.44	2.03	1.49	1.15	0.77	0.56	0.42
350	5.14	4.45	3.66	2.84	2.28	1.91	1.38	1.07	0.70	0.51	0.37
300	4.86	4.15	3.42	2.62	2.11	1.75	1.26	0.96	0.62	0.44	0.31
250	4.41	3.82	3.12	2.39	1.91	1.56	1.11	0.85	0.52	0.37	0.25
200	3.98	3.40	2.80	2.12	1.68	1.37	0.97	0.72	0.43	0.28	0.18
175	3.75	3.20	2.61	1.95	1.57	1.26	0.87	0.64	0.38	0.23	0.15
160	3.60	3.08	2.50	1.86	1.46	1.19	0.80	0.59	0.34	0.21	0.12
150	3.48	2.98	2.41	1.80	1.40	1.14	0.77	0.56	0.31	0.19	0.10
140	3.36	2.86	2.31	1.72	1.35	1.08	0.72	0.52	0.29	0.16	0.08
130	3.24	2.76	2.23	1.65	1.29	1.02	0.67	0.49	0.26	0.14	0.07
120	3.12	2.65	2.15	1.57	1.22	0.97	0.64	0.44	0.23	0.12	0.04
110	2.99	2.52	2.05	1.50	1.15	0.91	0.58	0.40	0.20	0.09	0.02
100	2.85	2.41	1.92	1.40	1.07	0.85	0.53	0.36	0.16	0.06	
90	2.68	2.26	1.81	1.30	0.99	0.77	0.48	0.31	0.13	0.05	
80	2.52	2.12	1.67	1.18	0.90	0.68	0.42	0.25	0.09		
70	2.34	1.95	1.55	1.08	0.81	0.61	0.35	0.20	0.04		
60	2.14	1.77	1.39	0.96	0.70	0.52	0.27	0.14			
50	1.94	1.59	1.22	0.81	0.58	0.41	0.20	0.08			
40	1.68	1.36	1.02	0.67	0.44	0.30	0.11				
30	1.40	1.10	0.81	0.50	0.29	0.16					
20	1.06	0.81	0.55	0.28	0.12						
12	0.75	0.48	0.28								
10	0.62	0.42	0.23								

FTA STEAM CONDENSATE FLASH TANKS - ASME

HORIZONTAL FLASH TANKS

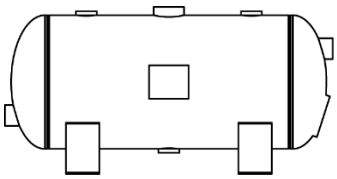


ASME

Model	Part No.	List ($)	Gal.	Dia.	Ht.	Ship Wt. (lbs.)
FTA-13	17010039	$ 2,157.00	13	10	39	79
FTA-18	17012039	$ 2,407.00	18	12	39	94
FTA-24	17014039	$ 2,686.00	24	14	39	108
FTA-30	17016010	$ 2,948.00	30	16	38	121
FTA-48	17018010	$ 3,112.00	48	18	48	168
FTA-80	17024010	$ 3,994.00	80	24	46	214
FTA-125	17030010	$ 5,621.00	125	30	48	285
FTA-180	17036010	$ 6,444.00	180	36	48	339

Materials = Steel; Maximum Pressure = 150 PSIG for FTA-13 to FTA-30 and 125 PSIG for all other models; Maximum Temperature = 450ºF; Finish = Primer Painted Exterior

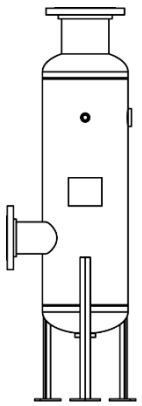
CONFIGURATION ADDERS



ASME

Model	ADDER TO LIST PRICE			
	Sparge	Drop Pipe	Saddles	Handhole
FTA 13	$ 547.00	$ 210.00	$ 276.00	$ 742.00
FTA 18	$ 547.00	$ 210.00	$ 295.00	$ 742.00
FTA 24	$ 547.00	$ 210.00	$ 301.00	$ 742.00
FTA 30	$ 547.00	$ 210.00	$ 313.00	$ 742.00
FTA 48	$ 547.00	$ 210.00	$ 320.00	$ 742.00
FTA 80	$ 614.00	$ 272.00	$ 354.00	$ 742.00
FTA 125	$ 614.00	$ 272.00	$ 476.00	$ 742.00
FTA 180	$ 614.00	$ 272.00	$ 528.00	$ 742.00

For saddles welded to the tank, refer to custom tank pricing (page 10.4).
Sparge for FTA-13 through FTA-48 furnished with 20 – 3/8" holes;
Sparge for FTA-80 through FTA-180 furnished with 32 – 3/8" holes;
Handhole limits Max. Temperature to 400ºF



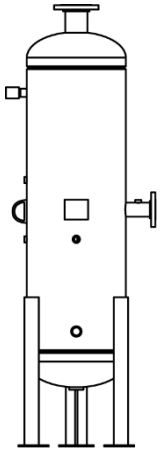
ASME

VERTICAL FLASH TANKS

Model	Part No.	List ($)	Gal.	Dia.	Ht.	Inlet	Vent	Wt. (Lbs.)
FTA-6V	17010006	$ 2,859.00	4	6	50	2	2 1/2	82
FTA-8V	17010008	$ 3,540.00	7	8	52	3	4	64
FTA-12V	17010012	$ 5,061.00	17	12	55 1/2	4	6	104
FTA-16V	17010016	$ 6,257.00	37	16	63 1/2	6	6	170

Materials = Steel; Maximum Pressure = 150 PSIG; Maximum Temperature = 450ºF; Finish = Primer Painted Exterior

BDT STEAM BLOWDOWN TANKS



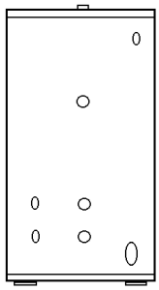
ASME

Model	Part no.	List ($)	Dia.	Ht.	Boiler Design Press.	Steam Vent Size "A"	Blow-down Size "B"	Water Outlet Size "C"	Water Inlet Size "D"	Ship Wt. (lbs.)
BDT 21	52010021	$ 7,451.00	14	66		2	3/4	1 1/2	3/4	411
BDT 22	52010022	$ 7,470.00	14	66	1	2	1	1 1/2	1	411
BDT 23	52010023	$ 7,774.00	14	66	to	2	1 1/4	2 1/2	1 1/4	411
BDT 24	52010024	$ 7,856.00	14	66	50	2 1/2	1 1/2	2 1/2	1 1/2	411
BDT 25	52010025	$ 9,979.00	18	72	psig	3	2	4	2	583
BDT 26	52010026	$ 11,316.00	20	72		4	2 1/2	4	2	635
BDT 51	52010051	$ 7,451.00	14	66		2	3/4	1 1/2	1	411
BDT 52	52010052	$ 7,620.00	14	66	51	2 1/2	1	2	1 1/4	411
BDT 53	52010053	$ 8,885.00	18	72	to	3	1 1/4	3	1 1/2	583
BDT 54	52010054	$ 10,647.00	18	72	100	4	1 1/2	4	2	583
BDT 55	52010055	$ 13,202.00	24	72	psig	5	2	4	2 1/2	775
BDT 56	52010056	$ 17,512.00	30	78		6	2 1/2	5	2 1/2	1007
BDT 101	52010101	$ 7,617.00	14	66	101	2 1/2	3/4	2	1	411
BDT 102	52010102	$ 8,083.00	14	66	to	3	1	3	1 1/4	411
BDT 103	52010103	$ 10,169.00	20	72	150	4	1 1/4	3	1 1/2	635
BDT 104	52010104	$ 13,090.00	24	72	psig	5	1 1/2	4	2	775
BDT 151	52010151	$ 7,667.00	14	66		3	3/4	2	1	411
BDT 152	52010152	$ 9,456.00	18	72	151	4	1	2 1/2	1 1/4	583
BDT 153	52010153	$ 12,109.00	24	72	to	5	1 1/4	3	2	775
BDT 154	52010154	$ 16,860.00	30	78	200	6	1 1/2	4	2	1007
BDT 156	52010156	$ 29,862.00	48	78	psig	8	2 1/2	5	3	1685
BDT 201	52010201	$ 9,245.00	18	72		4	1 1/4	2	1 1/4	583
BDT 202	52010202	$ 11,910.00	24	72	201	5	1 1/2	2 1/2	1 1/2	775
BDT 203	52010203	$ 16,836.00	30	78	to	6	2	4	2	1007
BDT 204	52010204	$ 19,429.00	36	78	300	6	2 1/2	4	2 1/2	1148
BDT 205	52010205	$ 29,801.00	48	78	psig	8	3	5	3	1685
BDT 206	52010206	$ 40,836.00	54	84		10	3	6	3	1955
BDT 301	52010301	$ 9,965.00	20	72		4	1 1/4	2 1/2	1 1/4	635
BDT 302	52010302	$ 12,109.00	24	72	301	5	1 1/2	3	1 1/2	775
BDT 304	52010304	$ 25,771.00	42	78	to	8	2 1/2	4	2 1/2	1486
BDT 305	52010305	$ 40,103.00	54	84	400	10	3	5	3	1955
BDT 306	52010306	$ 53,827.00	66	84	psig	10	4	6	4	2417
BDT 401	52010401	$ 9,969.00	20	72	401	4	1 1/4	2 1/2	1 1/4	635
BDT 404	52010404	$ 29,202.00	48	78	to	8	2 1/2	4	2 1/2	1685
BDT 405	52010405	$ 46,016.00	60	84	500	10	3	5	3	2233
BDT 406	52010406	$ 61,448.00	72	84	psig	12	4	8	4	2715
BDT 501	52010501	$ 11,910.00	24	72		5	1 1/4	2 1/2	1 1/4	775
BDT 502	52010502	$ 15,876.00	30	78	501	6	1 1/2	3	1.5	1007
BDT 503	52010503	$ 25,171.00	42	78	to	8	2 1/2	4	2 1/2	1486
BDT 504	52010504	$ 40,073.00	54	84	600	10	2 1/2	5	2 1/2	1955
BDT 505	52010505	$ 54,326.00	66	84	psig	12	3	6	3	2417
BDT 506	52010506	$ 61,448.00	72	84		12	4	8	4	2715
BDT 602	52010602	$ 18,446.00	36	78		6	1 1/4	3	1 1/2	1148
BDT 603	52010603	$ 29,185.00	48	78	601	8	2	4	2	1685
BDT 604	52010604	$ 45,908.00	60	84	to	10	2 1/2	5	2 1/2	2233
BDT 605	52010605	$ 57,843.00	72	84	800	12	3	6	3	2715
BDT 606	52010606	$ 58,941.00	72	84	psig	12	4	8	4	2715

Materials = Steel; Maximum Pressure = 125 PSIG; Maximum Temperature = 450°F;
Finish = Primer Painted Exterior

STORAGE TANKS: GLASSLINED

Glasslined storage tanks are used to store cold or hot potable water. Typically used in **domestic hot water storage** systems.

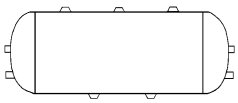


ASME &
Non-ASME

JACKETED AND INSULATED TANKS – ASME & Non-ASME

Model	Part No.	List Price	Gal.	Dia.	Height	Max. Oper. Pressure	Weight (Lbs.)
GN 120VJ	34024069	$ 4,019.00	120	29 1/2	62	150	320
GA 120VJ	34028062	$ 7,281.00	120	28	61 3/4	160	400
GA 200VJC	34029077	$ 7,420.00	200	32	77	125	560
GA 200VJ	34030077	$ 8,689.00	175	36	83	125	615
GA 250VJ	34020078	$ 13,962.00	250	36	93	125	900
GA 350VJ	34036087	$ 16,278.00	350	42	97	125	940
GA 400VJ	34036098	$ 18,467.00	400	42	105	125	1,012
GA 500VJ	34044088	$ 25,413.00	500	54	84	125	1,658
GA 750VJ	34048106	$ 27,694.00	750	54	116	125	2,094
GA 1000VJ	34049138	$ 33,443.00	1000	54	150	125	3,328

Materials = Glass-lined steel vessel; Maximum Temperature = 180ºF;
Finish = Urethane Paint Exterior; Furnished with Magnesium Anode Rods.
Horizontal Models available – Consult Factory



ASME

NON-JACKETED TANKS - ASME

Model	Part No.	List Price	Gal.	Dia.	Height	Max. Oper. Pressure	Weight (Lbs.)
GA 200V	34028077	$ 5,627.00	200	28	77	125	415
GA 200M	34032077	$ 6,999.00	200	30	72	125	460
GA 350M	34036086	$ 10,409.00	350	36	88	125	670
GA 400M	34036097	$ 12,226.00	400	36	97	125	775
GA 500M	34042088	$ 14,674.00	500	42	89	125	815
GA 750M	34048105	$ 20,337.00	750	48	106	125	1,290
GA 1000M	34048138	$ 24,238.00	1000	48	138	125	1,655
GA 1250M	44054129	$ 27,577.00	1250	54	129	125	2,451
GA 1500M	34054153	$ 29,970.00	1500	54	153	125	2,810

Materials = Glass-lined steel vessel; Maximum Temperature = 180ºF;
Finish = Red Oxide Primer Exterior; Furnished with Magnesium Anode Rods;
"M" Models have Threaded Leg Sockets to Equip Pipe Legs (Not Included) for Vertical Mounting.

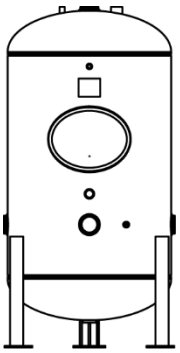
Code	Description
A	ASME
C	Compact
G	Glass Lined
J	Jacketed & Insulated
M	Horizontal or Vertical Mounting
N	Non-ASME
V	Vertical Mounting

SADDLES

Diameter	Wt. Per Pair	List Price Per Pair
30"	50 lbs.	$ 486.00
36"	56 lbs.	$ 541.00
42"	93 lbs.	$ 1,046.00
48"	115 lbs.	$ 1,239.00
54"	148 lbs.	$ 1,461.00

Epoxy lined storage tanks are used to store cold or hot potable water. Typically used **in domestic hot water storage** systems.

NON-JACKETED TANKS - ASME



ASME

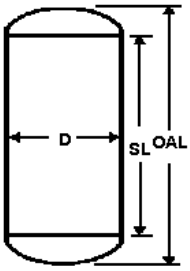
Model	Part No.	List Price	Gal.	Dia.	Height	Max. Oper. Pressure	Weight (Lbs.)
EA-140	35000140	$ 6,254.00	140	24	81	150	350
EA-190	35000190	$ 7,026.00	190	30	72	150	460
EA-225	35000225	$ 7,540.00	225	30	84	150	510
EA-268	35000268	$ 8,750.00	268	36	74	150	810
EA-320	35000320	$ 9,594.00	320	36	86	150	890
EA-388	35000388	$ 10,611.00	388	36	99	150	900
EA-375	35000375	$ 10,489.00	375	42	76 3/4	150	980
EA-450	35000450	$ 12,396.00	450	42	89 3/4	150	1,110
EA-535	35000535	$ 13,888.00	535	42	102	150	1,225

Materials = NSF Listed Epoxy-Lined steel vessel;
Maximum Temperature = 180ºF; Finish = Primer Paint Exterior

STORAGE TANKS: CUSTOM

Custom tanks are used for the storage of fluids and can have commercial and industrial applications. Specific linings are available for the protection of the tank inner steel walls. Custom tanks are available in 16" to 72" diameter and up to 216" over head dimensions. 125 psi rated tanks.

PLAIN STORAGE TANK WITH STANDARD FITTINGS



ASME

Dia (in.)	OAL (in.)	Shell Length	Cap. (gal.)	Black Wt.	LIST PRICES				
					Black	Glass	Epoxy	Cement	Ins. Jacket
16	**48**	39	40	87	$2,259				$1,329
	60	61	50	102	$2,375				$1,383
	48	37	65	131	$2,306				$1,922
20	**60**	49	80	160	$2,466				$1,974
	72	61	100	189	$2,621				$2,023
	48	35	95	157	$3,027		$5,492		$2,606
	60	47	115	190	$3,182		$5,966		$2,663
24	**72**	59	140	222	$3,445		$6,301		$3,189
	84	71	165	290	$3,797		$6,681		$3,932
	96	83	185	356	$4,123		$7,392		$4,786
	48	31	145	230	$3,708	$7,139	$8,237	$9,486	$2,699
	60	43	180	276	$3,887	$7,368	$9,234	$10,056	$3,017
30	**72**	55	220	323	$4,209	$8,166	$9,638	$10,722	$3,483
	84	67	250	370	$4,385	$8,678	$10,058	$11,408	$3,946
	96	79	290	418	$4,738	$9,341	$10,410	$12,174	$4,325
	120	103	365	511	$5,704	$10,068	$11,291	$13,600	$5,108
	60	40	265	411	$5,136	$10,722	$11,114	$11,753	$3,946
	72	52	315	479	$5,376	$11,323	$11,430	$12,087	$4,174
36	**84**	64	370	547	$5,622	$12,002	$12,433	$13,146	$4,371
	96	76	400	615	$5,738	$13,119	$13,272	$14,032	$5,161
	120	100	525	752	$6,010	$14,260	$14,821	$15,689	$6,264
	72	49	430	712	$9,806	$12,277	$12,176	$14,304	$5,338
	84	61	500	804	$10,935	$13,264	$13,272	$14,932	$5,485
	96	73	575	895	$11,219	$16,039	$16,498	$17,457	$6,039
42	**120**	97	720	1077	$12,494	$18,781	$19,241	$20,330	$7,201
	144	121	860	1259	$13,353	$19,763	$21,287	$22,493	$8,353
	168	145	1000	1441	$13,957	$21,698	$23,733	$25,076	$9,474
	192	169	1150	1624	$14,712	$24,182	$27,049	$28,578	$11,293
	84	57	650	1118	$13,047	$18,057	$19,521	$20,628	$6,021
	96	69	750	1236	$13,873	$21,119	$22,277	$23,544	$6,461
48	**120**	93	940	1470	$15,972	$22,359	$24,232	$25,602	$7,743
	144	117	1125	1705	$16,118	$26,442	$27,660	$29,220	$8,816
	168	141	1315	1938	$17,190	$27,576	$27,999	$29,575	$11,462
	192	165	1500	2174	$17,565	$30,595	$30,874	$32,608	$12,056
	96	65	950	1782	$17,207	$23,958	$24,165	$27,090	$7,280
	120	89	1190	2110	$20,167	$29,034	$28,930	$29,863	$8,957
54	**144**	113	1425	2440	$21,584	$31,780	$31,755	$32,724	$10,641
	168	137	1665	2765	$23,134	$35,627	$35,352	$36,515	$12,312
	192	161	1900	3092	$24,364	$39,435	$39,383	$41,384	$13,777
	216	185	2140	3420	$27,406	$46,519	$47,795	$51,466	$14,344
	120	86	1465	3045	$19,545	$35,204	$43,087	$45,508	$10,280
	144	110	1760	3443	$23,924	$39,560	$48,482	$51,205	$11,152
60	**168**	134	2055	3841	$26,950	$44,717	$54,018	$57,050	$12,706
	192	158	2350	4239	$27,708	$50,005	$59,604	$62,952	$13,986
	216	182	2640	4637	$31,617	$54,224	$65,177	$68,835	$15,934
	120	84	2115	4523	$29,906	$52,950	$55,133	$58,419	$11,163
	144	108	2560	5096	$32,807	$59,647	$61,488	$65,200	$13,238
72	**168**	132	2960	5669	$35,052	$63,412	$65,365	$69,551	$15,722
	192	156	3385	6242	$37,754	$67,271	$69,343	$73,905	$17,175
	216	180	3800	6815	$41,031	$73,262	$75,519	$80,501	$18,614

STANDARD FITTINGS

ALL CUSTOM TANK PRICES INCLUDE A QUANTITY OF UP TO SIX THREADED OPENINGS PER THE TABLE BELOW. THERE IS NO DEDUCTION ON ANY TANK REQUIRING LESS THAN SIX TAPPINGS.

Tank Diameter (in.)	16-20	24-30	36-42	48-54	60-72
Size Tapping (in.)	1	1 1/2	2	2 1/2	3

Pipe Size (In.)	Forged Steel Threaded	Stainless Steel Threaded	150# Slip-On Flange	150# Slip-On w/Blind Flange
to 1-1/2	$211.00	$384.00	$389.00	$599.00
2	$236.00	$457.00	$517.00	$741.00
2 1/2	$285.00	$550.00	$655.00	$909.00
3	$331.00	$635.00	$792.00	$1086.00
4	$411.00	$792.00	$1035.00	$1446.00
5	$466.00	$903.00	$1302.00	$1856.00
6	$519.00		$1565.00	$2146.00
8			$2081.00	$2946.00
10			$2607.00	$4289.00
12			$3121.00	$5274.00
14			$3732.00	$6469.00

INSPECTION OPENINGS

Black Steel – 12 x 16" manhole standard on 42" dia. and larger

Epoxy lined – 11" x 15" manhole standard on 30" dia. and larger

Glass-lined – manhole or handhole is available as optional feature

HANDHOLES & MANHOLES	
Size (in.)	List Price
4 x 6 Handhole	$757.00
6 x 8 Handhole	$1282.00
11 x 15 Manhole	$2646.00
12 x 16 Manhole	$3334.00
14 x 18 Manhole	$3856.00

Cement lined – 11" x 15" manhole standard on 30" dia. and larger

OTHER FITTINGS

Hold Down Clips – 16" to 36" Dia - $115 List Adder Each
– 42" to 60" Dia - $169 List Adder Ea.
– 72" Dia - $235 List Adder Each
Lift Lug – $110 List Adder Each

BASE OPTIONS

SADDLES

Tank Dia. (in.)	Weight Per Pair (lbs.)	List Price Per Pair	Extra To Weld Saddles
10	10	$282.00	$237.00
12	12	$301.00	$248.00
14	15	$308.00	$260.00
16	21	$321.00	$272.00
20	29	$328.00	$285.00
24	35	$361.00	$302.00
30	49	$486.00	$330.00
36	57	$541.00	$397.00
42	88	$1,046.00	$458.00
48	115	$1,239.00	$495.00
54	148	$1,461.00	$565.00
60	171	$2167.00	$623.00
66	214	$2409.00	$688.00
72	257	$2651.00	$749.00

FOR ADDITIONAL CLEARANCE, SADDLES CAN BE PROVIDED WITH THREADED FITTINGS FOR PIPE LEGS (NOT INCLUDED).

Tank Diameter	List Adder For Saddle Taps
16" thru 36"	$460.00
42" thru 72"	$579.00

BASE RING

Tank Dia. (in.)	Wt. (lbs.)	List Price
16	11	$502.00
20	20	$511.00
24	23	$520.00
30	31	$533.00
36	52	$560.00
42	78	$1172.00
48	139	$1264.00
54	145	$1457.00
60	275	$1592.00
72	480	$2029.00

BASE CLEARANCE
16" TO 42" DIA. - 7"
48" TO 72" DIA. - 9"

ANGLE LEGS

Tank Dia. (in.)	Wt. (lbs.)	List Price
16	36	$858.00
20	36	$865.00
24	36	$887.00
30	70	$1020.00
36	70	$1329.00
42	120	$2114.00
48	120	$2732.00
54	305	$3213.00
60	305	$3628.00
72	305	$4044.00

LEG CLEARANCE - 12"

*ANGLE LEGS INCLUDE FOOT PADS.

Add TUBE BUNDLE OPTION

"A" List Price

- Includes collar and heating bundle installed in vessel
- Standard units are furnished with cast iron heads, ¾" O.D. copper tubes, steel tube sheets, steel collars, brass tube supports, gaskets, nuts and bolts
- When ordering, specify "TWC" for water in tubes or "TCS" for steam in tubes
- Standard units are ASME construction

"B" List Price

- Includes only installation price for collars and bundles supplied by customer
- A customer supplied tube bundle/collar must be provided to Wessels freight prepaid with ASME partial data reports prior to fabrication

4" SERIES Model Number	Length of Bundle	Sq. Ft. Heating Surface	Approx. Weight (lbs.)	"A" List Price	"B" List Price
TCW-TCS-412	12	2.1	29	$ 3,602.00	$ 1,496.00
TCW-TCS-418	18	3.3	30	$ 3,695.00	$ 1,496.00
TCW-TCS-424	24	4.5	32	$ 3,768.00	$ 1,496.00
TCW-TCS-430	30	5.6	33	$ 3,899.00	$ 1,496.00
TCW-TCS-436	36	6.8	35	$ 4,033.00	$ 1,536.00
TCW-TCS-442	42	8	36	$ 4,152.00	$ 1,578.00
TCW-TCS-448	48	9.2	38	$ 7,114.00	$ 1,617.00
TCW-TCS-454	54	10.4	39	$ 7,293.00	$ 1,654.00
TCW-TCS-460	60	11.5	41	$ 7,430.00	$ 1,694.00
TCW-TCS-466	66	12.7	42	$ 7,690.00	$ 1,883.00
TCW-TCS-472	72	13.9	44	$ 7,785.00	$ 1,883.00
TCW-TCS-484	84	16.3	47	$ 8,003.00	$ 1,883.00
TCW-TCS-496	96	18.6	50	$ 8,197.00	$ 1,883.00

6" SERIES Model Number	Length of Bundle	Sq. Ft. Heating Surface	Approx. Weight (lbs.)	"A" List Price	"B" List Price
TCW-TCS-612	12	3.3	51	$ 4,811.00	$ 1,801.00
TCW-TCS-618	18	5.6	56	$ 5,011.00	$ 1,801.00
TCW-TCS-624	24	8	61	$ 5,184.00	$ 1,801.00
TCW-TCS-630	30	10.3	66	$ 5,341.00	$ 1,801.00
TCW-TCS-636	36	12.7	71	$ 5,714.00	$ 1,960.00
TCW-TCS-642	42	15	76	$ 5,896.00	$ 1,992.00
TCW-TCS-648	48	17.4	81	$ 8,898.00	$ 1,992.00
TCW-TCS-654	54	19.7	86	$ 9,276.00	$ 2,182.00
TCW-TCS-660	60	22.1	91	$ 9,620.00	$ 2,378.00
TCW-TCS-666	66	24.4	96	$ 9,839.00	$ 2,378.00
TCW-TCS-672	72	26.8	101	$ 9,986.00	$ 2,378.00
TCW-TCS-684	84	31.5	111	$ 10,354.00	$ 2,378.00
TCW-TCS-696	96	36.2	121	$ 10,706.00	$ 2,378.00

8" SERIES Model Number	Length of Bundle	Sq. Ft. Heating Surface	Approx. Weight (lbs.)	"A" List Price	"B" List Price
TCW-TCS-818	18	11	97	$ 7,099.00	$ 2,456.00
TCW-TCS-824	24	15	107	$ 7,464.00	$ 2,456.00
TCW-TCS-830	30	19	117	$ 7,840.00	$ 2,456.00
TCW-TCS-836	36	23	127	$ 8,450.00	$ 2,645.00
TCW-TCS-842	42	27	137	$ 8,982.00	$ 2,762.00
TCW-TCS-848	48	32	147	$ 12,315.00	$ 2,868.00
TCW-TCS-854	54	36.5	157	$ 12,766.00	$ 2,953.00
TCW-TCS-860	60	41	167	$ 13,247.00	$ 3,029.00
TCW-TCS-866	66	45	177	$ 13,674.00	$ 3,029.00
TCW-TCS-872	72	49	187	$ 14,057.00	$ 3,029.00
TCW-TCS-884	84	58	207	$ 14,871.00	$ 3,029.00
TCW-TCS-890	96	67	227	$ 15,673.00	$ 3,029.00

10" SERIES Model Number	Length of Bundle	Sq. Ft. Heating Surface	Approx. Weight (lbs.)	"A" List Price	"B" List Price
TCW-TCS-1024	24	27	198	$ 10,304.00	$ 3,170.00
TCW-TCS-1030	30	34.5	209	$ 10,940.00	$ 3,170.00
TCW-TCS-1036	36	42	220	$ 11,562.00	$ 3,170.00
TCW-TCS-1042	42	49.5	231	$ 12,172.00	$ 3,199.00
TCW-TCS-1048	48	56	242	$ 15,706.00	$ 3,251.00
TCW-TCS-1054	54	63.5	243	$ 16,381.00	$ 3,319.00
TCW-TCS-1060	60	71	264	$ 17,131.00	$ 3,442.00
TCW-TCS-1066	66	78.5	275	$ 17,866.00	$ 3,555.00
TCW-TCS-1072	72	86	286	$ 18,594.00	$ 3,668.00
TCW-TCS-1084	84	101	308	$ 20,070.00	$ 3,786.00
TCW-TCS-1096	96	116	330	$ 21,336.00	$ 3,786.00

12" SERIES Model Number	Length of Bundle	Sq. Ft. Heating Surface	Approx. Weight (lbs.)	"A" List Price	"B" List Price
TCW-TCS-1236	36	61	297	$ 15,420.00	$ 3,883.00
TCW-TCS-1242	42	72	321	$ 16,310.00	$ 3,956.00
TCW-TCS-1248	48	83	345	$ 19,952.00	$ 3,996.00
TCW-TCS-1254	54	94	369	$ 20,858.00	$ 4,072.00
TCW-TCS-1260	60	104	393	$ 21,769.00	$ 4,183.00
TCW-TCS-1266	66	115	417	$ 22,683.00	$ 4,301.00
TCW-TCS-1272	72	126	441	$ 23,622.00	$ 4,419.00
TCW-TCS-1278	78	137	465	$ 24,676.00	$ 4,647.00
TCW-TCS-1284	84	147	489	$ 25,459.00	$ 4,647.00
TCW-TCS-1296	96	169	537	$ 27,091.00	$ 4,647.00

COIL DATA		WATER IN TUBES		STEAM IN TUBES	
Unit Diameter (in.)	Working Pressure (psi)	Inlet NPT (in.)	Outlet NPT (in.)	Inlet NPT (in.)	Outlet NPT (in.)
4	150	1 1/4	1 1/4	1 1/4	3/4
6	150	2	2	2	1
8	150	3	3	3	1 1/4
10	125	4	4	4	2
12	125	4	4	4	2

MAXIMUM OPERATING TEMPERATURE: 375°F

NOTES: 1. For vertical installation, select coil with required square foot area but with tube bundle not to exceed tank diameter.
2. Larger tube bundle diameters, 1 ¼" bundles and double wall bundles available on request.

THERMAL EXPANSION TANKS 14

Thermal tanks are used to absorb the additional volume of potable water created by a domestic water heater. Properly sized, the tank will maintain system pressures below relief valve settings. Typically used in **domestic water heating** systems or other systems where **corrosive system fluid requires stainless or corrosive resistant wetted parts.**

SIZING THERMAL EXPANSION TANKS

To properly size a thermal expansion tank, five critical pieces of information are required:

- Total System Volume (in gallons) – Includes water heater(s) and re-circ. line volume
- Minimum In-coming Water Temperature (in degrees F)
- Maximum Water Heater Set-point Temperature (in degrees F)
- Maximum Static Water Pressure (in psig)
- Maximum Safe Pressure (in psig) – Typically relief valve less 10%

Use the following form and acceptance factor table to calculate tank sizing by hand or visit **www.westank.com/calculator** to automatically calculate the size and model. Download our **Wessels Company App** to your iOS or Android device for mobile sizing on the go.

SYS. VOL. = WATER HEATER & RECIRC. VOL.		**GAL.**
EXPANSION FACTOR		
CALCULATE ACCEPTANCE VOLUME (SYS. VOL. X EXP. FACTOR)		**GAL.**
ACCEPTANCE FACTOR (AF)		
CALCULATE TANK VOLUME (ACCECPTANCE VOLUME/AF)		**GAL**
SELECT MODEL		

EXPANSION FACTOR TABLE

MIN. SYSTEM TEMPERATURE (DEG. F)

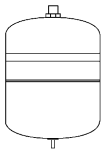
MAX. SYSTEM TEMPERATURE (DEG. F)	40	50	60	70	80
50	0.00006				
60	0.00055	0.00049			
70	0.00149	0.00143	0.00094		
80	0.00260	0.00254	0.00205	0.00111	
90	0.00405	0.00399	0.00350	0.00256	0.00145
100	0.00575	0.00569	0.00520	0.00426	0.00315
110	0.00771	0.00765	0.00716	0.00622	0.00511
120	0.01004	0.00998	0.00949	0.00855	0.00744
130	0.01236	0.01230	0.01181	0.01087	0.00976
140	0.01501	0.01495	0.01446	0.01352	0.01241
150	0.01787	0.01779	0.01730	0.01636	0.01525
160	0.02092	0.02086	0.02037	0.01943	0.01814
170	0.02418	0.02412	0.02363	0.02269	0.02158
180	0.02763	0.02757	0.02708	0.02614	0.02503
190	0.03127	0.03121	0.03072	0.02978	0.02867

ACCEPTANCE FACTOR

MAX. PRESSURE (PSIG)

MIN. PRESSURE (PSIG)	70	80	90	100	110	120	130	140	150
20	0.590	0.634	0.669	0.697	0.722	0.742	0.760	0.776	0.789
30	0.472	0.528	0.573	0.610	0.642	0.668	0.691	0.711	0.729
40	0.354	0.422	0.478	0.523	0.561	0.594	0.622	0.646	0.668
50	0.236	0.317	0.382	0.436	0.481	0.520	0.553	0.582	0.607
60	0.118	0.211	0.287	0.349	0.401	0.445	0.484	0.517	0.546
70		0.106	0.191	0.262	0.321	0.371	0.415	0.452	0.486
80			0.096	0.174	0.241	0.297	0.346	0.388	0.425
90				0.087	0.160	0.223	0.276	0.323	0.364

T THERMAL EXPANSION TANKS – Non-ASME



NON-ASME

LISTED MATERIALS

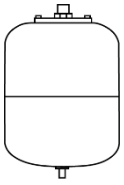
MODELS LISTED
T-5 T-12
T-25 T-30

FIXED DIAPHRAGM

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
T-5	32010005	$ 86.00	2.1	1.3	7.9	10.8	3/4	5
T-12	32010012	$ 121.00	4.8	2.9	10.6	13.7	3/4	9
T-25	32010025	$ 268.00	9.3	5.5	15.0	15.7	1	18
T-30	32010030	$ 369.00	13.2	7.8	15.0	21.1	1	23
T-42V	32010042	$ 446.00	21	12.5	17.7	23.6	1	33
T-60V	32010060	$ 677.00	40	23.8	19.7	35.2	1 1/4	60
T-80V	32010080	$ 854.00	53	31.5	23.6	33.9	1 1/4	81
T-180V	32010180	$ 1,036.00	79	46.9	24.8	44.7	1 1/4	105
T-260V	32010260	$ 1,431.00	106	63	24.8	57.1	1 1/4	145
T-325V	32010325	$ 1,802.00	132	78.4	29.5	53.1	1 1/4	190

Materials = Steel with Epitaxial® Inner Liner, Heavy Duty Butyl Diaphragm;
Maximum Pressure = 150 PSIG; Maximum Temperature = 200ºF;
Finish = Blue Powder Coat Exterior; Factory Pre-charge = 30 PSIG

TX THERMAL EXPANSION TANKS – Non-ASME

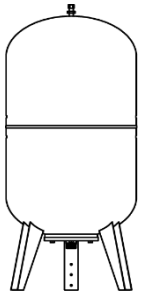


NON-ASME

REMOVABLE BLADDER

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
5TX	33022050	$ 111.00	2.1	2.1	7.9	12.9	3/4	6
12TX	33022120	$ 152.00	4.8	4.8	10.6	16.2	3/4	9
25TX	33022250	$ 302.00	10.6	10.6	12.6	22.5	1	22
30TX	33022300	$ 375.00	15.8	15.8	15	28.7	1	31
42TX	33022420	$ 441.00	21.1	21.1	17.7	28.9	1	35
60TX	33022600	$ 570.00	26.4	26.4	17.7	31.1	1	45
80TX	33022800	$ 807.00	52.8	52.8	21.6	42.5	1 1/2	84
180TX	33022900	$ 975.00	79.2	79.2	24.8	46.3	1 1/2	111

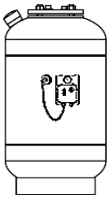
Materials = Steel, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG;
Maximum Temperature = 240ºF; Finish = Red Powder Coat Exterior;
Factory Pre-charge = 30 PSIG



NON-ASME

Smart Tank Series: TXA with WessGuard®

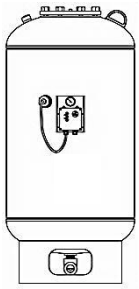
Smart Tank Series TXA-WG are ASME removable bladder type pre-charged thermal expansion tanks with **WessGuard**® bladder monitor. They are designed to absorb the expansion forces and control the pressure in domestic water heating systems. The system's expanded water is contained in a heavy-duty bladder preventing tank corrosion and waterlogging problems. If the system creates a condition that extends the bladder beyond the normal movement, **WessGuard**® monitor will activate an audible and LED alarm to notify maintenance staff of a potential system issue. In the case of compromised bladder integrity, water level will rise to activate the alarm.



ASME

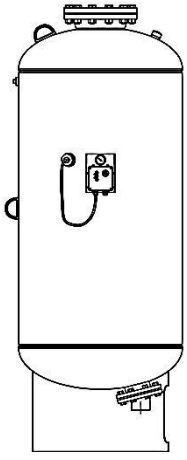
REMOVABLE BLADDER TANK – ASME – 150 PSI

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
TXA-35-WG	60010035	$ 3,416.00	10	10	12	25	3/4	40
TXA-50-WG	60010050	$ 3,610.00	13	13	14	25	3/4	50



ASME

TXA-85-WG	60010085	$ 3,724.00	23	23	16	37	1	90
TXA-130-WG	60010130	$ 4,108.00	35	35	20	37	1	132
TXA-200-WG	60010200	$ 5,269.00	53	53	24	43	1 1/2	220
TXA-300-WG	60010300	$ 7,058.00	79	79	24	55	1 1/2	236
TXA-400-WG	60010400	$ 8,083.00	106	106	30	49	1 1/2	315
TXA-500-WG	60010500	$ 8,416.00	132	132	30	57	2	347
TXA-600-WG	60010600	$ 9,401.00	158	158	30	65	2	378
TXA-800L-WG	60010805	$ 10,586.00	211	211	32	76	2	503



ASME

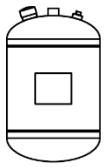
TXA-1000-WG	60011000	$ 12,282.00	264	264	36	74	3	795
TXA-1200-WG	60011200	$ 12,641.00	317	317	36	86	3	820
TXA-1400-WG	60011400	$ 13,751.00	370	370	36	99	3	980
TXA-1600-WG	60011600	$ 17,693.00	422	422	48	72	3	1395
TXA-2000-WG	60012000	$ 18,846.00	528	528	48	85	3	1525

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG;
Maximum Temperature = 240ºF; Finish = Primer Painted Exterior;
Factory Pre-charge = 30 PSIG; Also available in 200 & 250 psi rated models

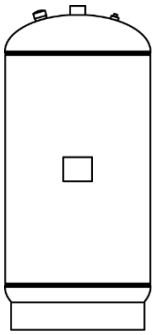
Specify Standard or WessGuard-2® with Phone Texting Alerts

ASME

TTA THERMAL EXPANSION TANKS – ASME



ASME



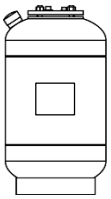
ASME

FIXED DIAPHRAGM

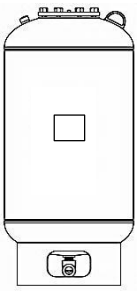
Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
TTA-5	18020005	$ 1,116.00	3.5	2.3	10	14	3/4	22
TTA-12	18020012	$ 1,288.00	5.0	3.3	12	14	3/4	28
TTA-20	18020020	$ 1,435.00	8.0	5.3	12	20	3/4	34
TTA-30	18020030	$ 1,639.00	15.0	10.0	16	24	1	64
TTA-42	18020042	$ 1,770.00	22.0	14.5	16	31	1	88
TTA-60	18020060	$ 2,143.00	26.0	17.5	16	34	1	93
TTA-80	18020080	$ 2,283.00	35.0	23.5	16	45	1	109
TTA-100	18020100	$ 2,607.00	45.0	30.0	20	39	1	148
TTA-125	18020125	$ 2,917.00	60.0	40.0	20	50	1	175
TTA-160	18020160	$ 3,276.00	70.0	47.0	24	47	1 1/2	259
TTA-180	18020180	$ 3,571.00	80.0	53.0	24	50	1 1/2	268
TTA-210	18020210	$ 3,750.00	90.0	60	24	53	1 1/2	283

Materials = Steel Shell, Stainless Steel System Connection, Heavy Duty Butyl Diaphragm; Maximum Pressure = 150 PSIG; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 30 PSIG

TXA THERMAL EXPANSION TANKS – ASME



ASME



ASME

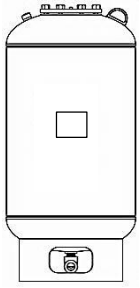
REMOVABLE BLADDER

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
TXA 35	20010035	$ 2,784.00	10	10	12	23 1/2	3/4	40
TXA 50	20010050	$ 2,976.00	13	13	14	24	3/4	50
TXA 85	20010085	$ 3,088.00	23	23	16	37	1	90
TXA 130	20010130	$ 3,317.00	35	35	20	37	1	132
TXA 200	20010200	$ 4,432.00	53	53	24	43	1 1/2	220
TXA 300	20010300	$ 6,111.00	79	79	24	55	1 1/2	236
TXA 400	20010400	$ 7,160.00	106	106	30	49	1 1/2	315
TXA 500	20010500	$ 7,494.00	132	132	30	57	2	347
TXA 600	20010600	$ 8,434.00	158	158	30	65	2	378
TXA 800	20010805	$ 9,302.00	211	211	32	76	2	503
TXA 1000	20011000	$ 10,963.00	264	264	36	86 1/2	3	795
TXA 1200	20011200	$ 11,307.00	317	317	36	98 1/2	3	820
TXA 1400	20011400	$ 12,424.00	370	370	36	110 1/2	3	980
TXA 1600	20011600	$ 16,356.00	422	422	48	84	3	1395
TXA 2000	20012000	$ 17,489.00	528	528	48	96	3	1525

Materials = Steel Shell, Stainless Steel System Connection, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG; Maximum Temperature = 240ºF; Finish = Primer Painted Exterior; Factory Pre-charge = 30 PSIG

TXA-FF Full Flow (Flow-Through) – ASME

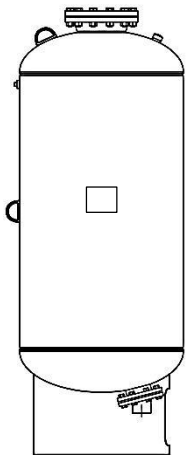
Wessels type TXA-FF tanks are ASME removable bladder type pre-charged tanks designed as a multifunctional bladder for controlling system pressures in Thermal Expansion, Hydronic Expansion, and Hydro-Pneumatic applications. The TXA-FF design incorporates a unique flow-through design that promotes fluid mixing. Mixing of the fluid inside the bladder tank disrupts stagnant water, preventing growth of potentially harmful bacteria colonies. The water is contained in a heavy-duty butyl bladder, preventing tank corrosion and waterlogging.



ASME

REMOVABLE BLADDER TANK – 150 PSI

Model	Part No.	List ($)	Gal.	Accept.	Dia.	Ht.	Syst. Conn.	Wt. (Lbs.)
TXA-85-FF	20110085	$ 3,724.00	23	23	16	37	1	90
TXA-130-FF	20110130	$ 4,108.00	35	35	20	37	1	132
TXA-200-FF	20110200	$ 5,269.00	53	53	24	43	1 1/2	220
TXA-300-FF	20110300	$ 7,058.00	79	79	24	55	1 1/2	236
TXA-400-FF	20110400	$ 8,083.00	106	106	30	49	1 1/2	315
TXA-500-FF	20110500	$ 8,416.00	132	132	30	57	2	347
TXA-600-FF	20110600	$ 9,401.00	158	158	30	65	2	378
TXA-800L-FF	20110805	$ 10,586.00	211	211	32	76	2	503



ASME

TXA-1000-FF	20111000	$ 12,282.00	264	264	36	74	3	710
TXA-1200-FF	20111200	$ 12,641.00	317	317	36	86	3	720
TXA-1400-FF	20111400	$ 13,751.00	370	370	36	99	3	875
TXA-1600-FF	20111600	$ 17,693.00	422	422	48	72	3	1100
TXA-2000-FF	20112000	$ 18,846.00	528	528	48	85	3	1280

Materials = Steel Shell, Heavy Duty Butyl Bladder; Maximum Pressure = 150 PSIG;
Maximum Temperature = 240ºF; Finish = Primer Painted Exterior;
Factory Pre-charge = 30 PSIG; Also available in 200 & 250 psi rated models

WESSGUARD® RETROFIT FOR TXA

The bladder-style thermal expansion tank function is to accept expanded water created during the heating process that occurs in a domestic water heating system. The properly sized thermal expansion tank will control pressure increases in the water heating system based on the captured compressible air chamber within the tank to the designer's acceptable limits.

Factors that can affect the pressures in the water heating system:
Properly sized thermal expansion tank
Properly installed and pre-charge adjusted thermal expansion tank
Fluctuations in line pressure
Water heater temperature range fluctuations

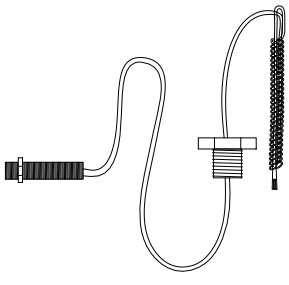
Until now the diagnosis of the critical component interaction arises only after expensive damages have been caused by this excessive pressure. **WessGuard**® was developed to monitor the fluid within the thermal expansion tank by determining excessive movement of the vessel bladder. **WessGuard**® incorporates a capacitive proximity sensor that determines if fluid levels in the thermal expansion tank exceed "normal" operating conditions. Furthermore, if a thermal expansion tank bladder is compromised, **WessGuard**® monitors the rising fluid level in the tank.

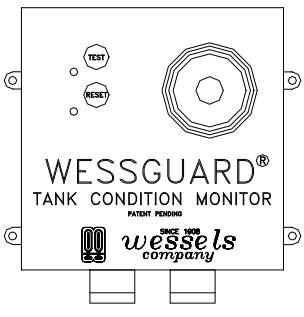
WessGuard® is designed to monitor these tank conditions and alert the installer or maintenance staff to a potentially unsafe condition by activating a visual and audible alarm. The **WessGuard**® monitor also has normally open contact to tie directly to an energy management system.

WESSGUARD® RETROFIT - TXA

Model	Part No.	List ($)	Sensor Lead	Monitor Lead	Sensor Diameter	Monitor Dimensions	Connection To Tank	Wt. (Lbs.)
WG-RETRO	61110001	$ 1,095.00	38"	46"	3/4"	5 1/4" X 5 1/4"	1" NPT	3

FIELD RETROFIT UNIT DESIGNED FOR VESSELS WITH 1" TAPPING LOCATED IN THE TOP HALF OF A BLADDER STYLE TANK – TYPICALLY 1000 LITERS AND LARGER





Specify Standard or WessGuard-2® with Phone Texting Alerts

TX REPLACEMENT BLADDERS & COVERS

Model	Bladder		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
5TX	0330005	$ 56.00	NA	NA	0550005	$ 48.00
12TX	0330012	$ 81.00	NA	NA	0550012	$ 52.00
25TX	0330025	$ 111.00	NA	NA	0550025	$ 54.00
30TX	0330030	$ 227.00	NA	NA	0550030	$ 54.00
42TX	0330042	$ 269.00	NA	NA	0550042	$ 68.00
60TX	0330060	$ 417.00	NA	NA	0550060	$ 68.00
80TX	0330080	$ 633.00	NA	NA	0550080	$ 79.00
180TX	0330180	$ 805.00	NA	NA	0550180	$ 79.00

TXA REPLACEMENT BLADDERS & COVERS

Model	BLADDER		Bottom Assembly		Top Assembly	
	Part No.	List ($)	Part No.	List ($)	Part No.	List ($)
TXA 35	02200035	$ 395.00	0420035	NA	0520035	$ 336.00
TXA 50	02200050	$ 635.00	0420050	NA	0520050	$ 336.00
TXA 85	02200085	$ 1,142.00	0420085	$ 350.00	0520085	$ 336.00
TXA 130	02200130	$ 1,648.00	0420130	$ 350.00	0520130	$ 336.00
TXA 200	02200200	$ 2,077.00	0420200	$ 502.00	0520200	$ 447.00
TXA 300	02200300	$ 3,057.00	0420300	$ 502.00	0520300	$ 447.00
TXA 400	02200400	$ 3,596.00	0420400	$ 502.00	0520400	$ 447.00
TXA 500	02200500	$ 3,732.00	0420500	$ 630.00	0520500	$ 590.00
TXA 600	02200600	$ 3,205.00	0420600	$ 630.00	0520600	$ 590.00
TXA 800L	02200805	$ 3,636.00	0420800	$ 630.00	0520800	$ 590.00
TXA 1000	02201000	$ 3,711.00	0421000	$ 923.00	0521000	$ 889.00
TXA 1200	02201200	$ 3,950.00	0421200	$ 923.00	0521200	$ 889.00
TXA 1400	02201400	$ 4,224.00	0421400	$ 923.00	0521400	$ 889.00
TXA 1600	02201600	$ 4,528.00	0421600	$ 1,062.00	0521600	$ 974.00
TXA 2000	02202000	$ 4,626.00	0422000	$ 1,062.00	0522000	$ 974.00

FELONY CONVICTION NOTICE

Statutory citation covering notification of criminal history of contractor is found in the Texas Education Code #44.034. Following is an example of a felony conviction notice:

State of Texas Legislative Senate Bill No. 1, Section 44.034, Notification of Criminal History, Subsection (a), states "a person or business entity that enters into a contract with a school district or ESC 8/TIPS must give advance notice to the district or ESC 8/TIPS if the person or an owner or operator of the business entity has been convicted of a felony. The notice must include a general description of the conduct resulting in the conviction of a felony."

Subsection (b) states "a school district may terminate a contract with a person or business entity if the district determines that the person or business entity failed to give notice as required by Subsection (a) or misrepresented the conduct resulting in the conviction. The district must compensate the person or business entity for services performed before the termination of the contract."

THIS NOTICE IS NOT REQUIRED OF A PUBLICLY-HELD CORPORATION

Complete only one of the three below: A *or* B *or* C.

I, the undersigned agent for the firm named below, certify that the information concerning notification of felony convictions has been reviewed by me and the following information furnished is true to the best of my knowledge.

Official: Oslin Nation Co.
Print Authorized Company Official's Name

A. My firm is a publicly held corporation; therefore, this reporting requirement is not applicable.

Signature of Authorized Company Official: _____

B. My firm is not owned nor operated by anyone who has been convicted of a felony:

Signature of Authorized Company Official: _____

C. My firm is owned or operated by the following individual(s) who has/have been convicted of a felony:

Name of Felon(s): _____

Details of Conviction(s): _____

_____

Signature of Authorized Company Official: _____

Federal Requirements for Procurement and Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms.

The Education Service Center Region 8 and TIPS anticipate possibly using federal funds for procurement under this potential award and is required to obtain the following compliance assurance.

1. **Will you be subcontracting any of your work under this award if you are successful?** (Circle one)

☐ **YES or NO** ☑

2. **If yes, do you agree to comply with the following federal requirements?** (Circle one)

☐ **YES or NO** ☐

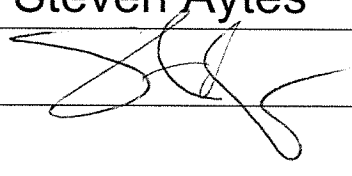
2 CFR §200.321 Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms.

(a) The non-Federal entity must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.

(b) Affirmative steps must include:
(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
(2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
(4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
(5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce ; and
(6) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (1) through (5) of this section.

Company Name Oslin Nation Co D/B/A Babtex

Print name of authorized representative Steven Aytes

Signature of authorized representative 

Date 3/14/17

CERTIFICATION BY CORPORATE OFFERER

IF OFFERER IS A CORPORATION,
THE FOLLOWING CERTIFICATE SHOULD BE EXECUTED AND INCLUDED AS PART OF PROPOSAL FORM/PROPOSAL FORM.

OFFERER: Oslin Nation Co.
(Name of Corporation)

I, Heidi Plumley **certify that I am the Secretary of the Corporation**
(Name of Corporate Secretary)

named as OFFERER herein above; that
steven Aytes
(Name of person who completed proposal document)

who signed the foregoing proposal on behalf of the corporation offerer is the authorized person that is acting as
Principal
(Title/Position of person signing proposal/offer document within the corporation)

of the said Corporation; that said proposal/offer was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

HEIDI ANN MARIE PLUMLEY
Notary Public, State of Texas
Comm. Expires 05-18-2020
Notary ID 124930138

CORPORATE SEAL

Heidi A Plumley
SIGNATURE

2-24-17
DATE

HVAC Supplier; no bonding (no labor)