

ARMSTRONG



New Products - 2007

Innovative Solution for Heating and Air Conditioning Systems.



The IVS Sensorless pump is designed to meet the need for energy-efficient pumping systems in today's buildings. Traditional smaller pumping systems, up to and including 10 hp, incorporating fixed-speed pumps waste energy through crude throttling valve flow control. Lifetime Cost Analysis shows that the capital cost of a fixed-speed pump is typically only 5% of its lifetime cost.

- ▶ Variable speed technology allows the speed of the pump to be tuned to suit system demand.
- ▶ Technological advancements make variable speed pumps attractive in terms of both capital and lifetime cost.
- ▶ *Pressure transducers/sensors are no longer required*, further reducing capital and installation cost.
- ▶ The IVS Sensorless pump is a new generation pump, completely integrated into a compact package.
- ▶ Applications for this technology include variable volume heating and chilled water applications.
- ▶ Goes beyond ASHRAE 90.1 standards by adding value through varying pump speed with 10 hp and lower motor sizes.

▶ Sensorless Technology

Sensorless control is an innovative concept for circulating pumps. Pump performance and characteristic curves for ten different speeds are embedded in the memory of the speed controller during manufacture. This data includes power, pressure and flow across the flow range of the pump. During operation, the power and speed of the pump are monitored, enabling the controller to establish the hydraulic performance and position in the pumps head-flow characteristic.

These measurements enable the pump to continuously identify the head and flow at any point in time, giving accurate pressure control without the need for external feedback signals. Patented software technology within the controller ensures trouble-free operation under all conditions.

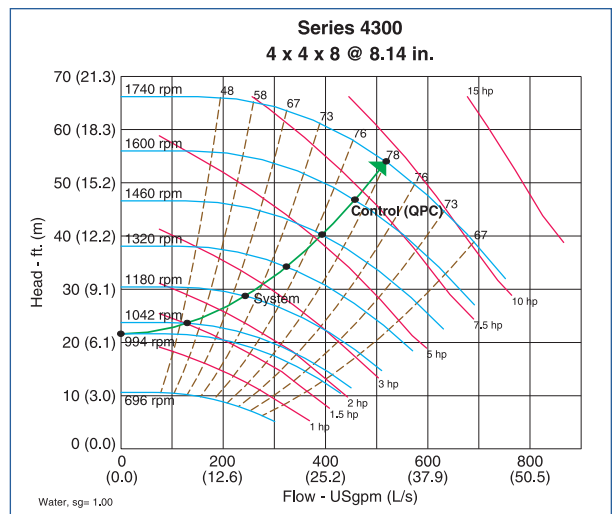


Figure 1. System Control Curve

Incorporating the pump hydraulic data into the controller and removing sensors results in true integration of all components and removes the risk of sensor failure.

Available Pump Models

The IVS Sensorless control is available with the following pumps types:

- ▶ 4300 Split Coupled Vertical In-line
- ▶ 4280 Close Coupled End Suction
- ▶ 4380 Close Coupled Vertical In-line
- ▶ 4030 Base Mounted End Suction

Intelligent Variable Speed Pumps

► The Sensorless Solution

In Figure 2, the pumps and remote variable speed drives have now been replaced by vertical in-line IVS Sensorless pumps. The pressure sensors are no longer required as the IVS Sensorless pump is preprogrammed to follow a control curve (Figure 1) between the head point at design duty and the head required at minimum flow. The control curve is fully site adjustable and gives the installer the flexibility to replicate sensor positions at varying distances from the pump. This feature removes the problems associated with incorrect sensor placement and allows optimum energy savings to be realized.

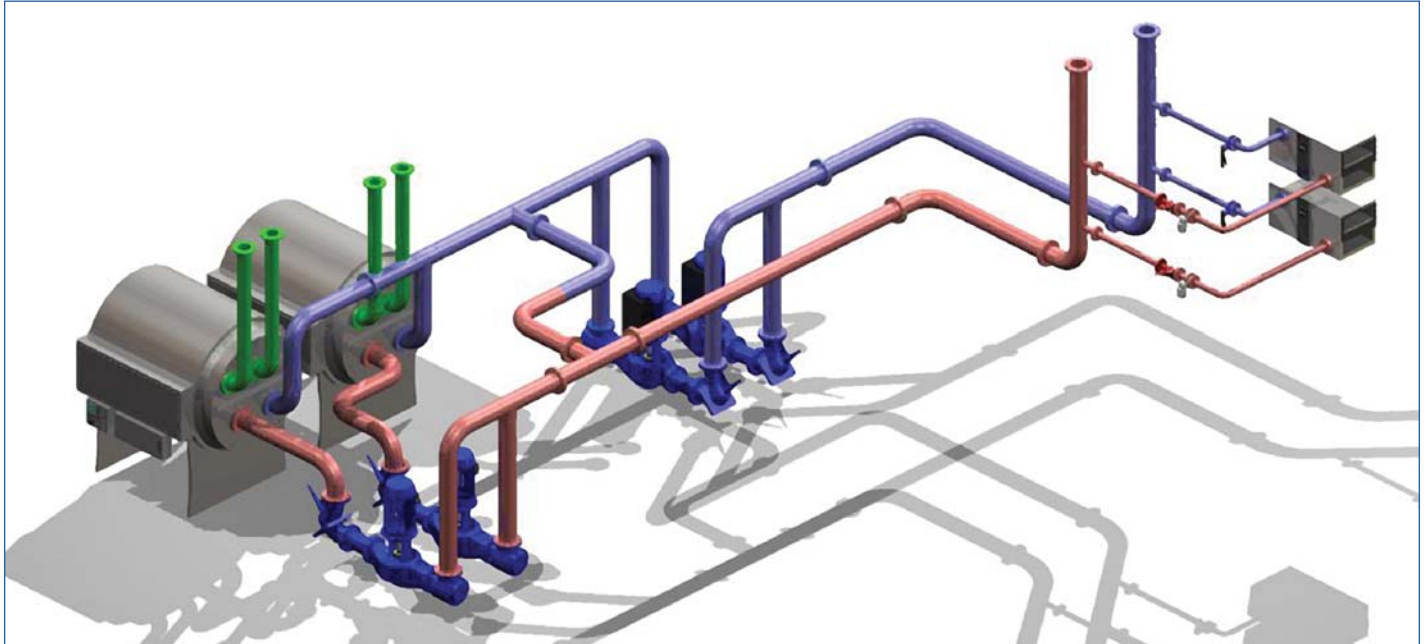


Figure 2. Primary / Secondary Chilled Water System Incorporating IVS Sensorless Pumps

Product Features

- Fast and easy installation - no pressure sensors required
- Supplied with customers' pre-sets
- Compact space-saving design - as compact as a standard pump
- BAS/BMS compatible - analogue/digital input & output and RS485 port
- Interchangeable with standard pumps
- Multiple control modes
- Frequency bypass selection to eliminate system noise problems
- Programmable motor pre-heat function to prevent condensation problems
- Built-in RFI filter
- Built-in DC link chokes to reduce mains borne harmonics

Product Options

- TEFC/IP56 Enclosure ratings
- Quick connection key pad and cable for programming and monitoring - one required per site

1/2" Circulator Isolation Flanges



Armstrong Circulator Isolation Flanges (CIF) are used in pairs to connect circulating pumps in hydronic systems. These devices rapidly isolate a circulator to be serviced, and eliminate the need to drain and refill the entire system. The CIF integrates a 2-bolt flange connection (common to small circulating pumps) with a full-port ball valve. This practical "all-in-one" design reduces the number of plumbing connections and results in a more reliable, economical and easily serviced hydronic system. The new 1/2" models complement our highly successful 3/4", 1", 1-1/4", and 1-1/2" sizes, and are also available with either "NPT" or "sweat" pipe connections.

► Features and Benefits

Compact Durable Design

- Enables pump isolation for easy servicing
- Fits most flanged circulators
- Corrosion-resistant brass body and flange
- Dual Buna N O-ring seals prevent stem leaks
- 1/4 turn open/close lever-style handle
- Available in 1/2", 3/4", 1", 1 1/4" and 1 1/2" sizes
- NPT and sweat connections

Easy to Install

- Slotted flange bolt holes
- Includes mounting nuts and bolts
- Saves time and money

Full Port Design

- Ensures minimum system resistance contribution
- Provides "bubble-tight" shut-off when closed

► Dimensions and Weights

Model	Size	Type	A	B	C	D	E	F	G	Weight
CIF-050T	1/2" (DN15)	NPT	2.00 (51)	2.70 (69)	3.70 (94)	4.63 (117)	3.18 (81)	3.41 (87)	0.53 (14)	1.35 (0.61)
CIF-075T	3/4" (DN20)	NPT	2.50 (64)	2.70 (69)	3.70 (94)	4.63 (117)	3.18 (81)	3.41 (87)	0.53 (14)	1.55 (0.70)
CIF-100T	1" (DN25)	NPT	3.00 (76)	2.70 (69)	3.70 (94)	4.63 (117)	3.18 (81)	3.41 (87)	0.53 (14)	2.00 (0.91)
CIF-125T	1 1/4" (DN32)	NPT	3.25 (83)	2.70 (69)	5.43 (138)	4.63 (117)	3.18 (81)	3.41 (87)	0.53 (14)	2.50 (1.13)
CIF-150T	1 1/2" (DN40)	NPT	3.50 (89)	2.70 (69)	5.43 (138)	4.63 (117)	3.18 (81)	3.41 (87)	0.53 (14)	3.20 (1.45)
CIF-050S	1/2" (DN15)	Sweat	2.00 (51)	2.70 (69)	3.70 (94)	4.63 (117)	3.18 (81)	3.41 (87)	0.53 (14)	1.35 (0.61)
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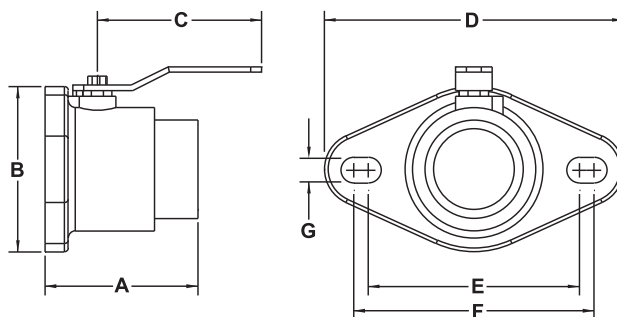
Note: All dimensions are in inches (mm) and weights in lbs. (kg)

► Technical Data

Max. Working Pressure: 150 psig (10.3 bar)
Max. Operating Temperature: 250°F (121°C)

► Materials of Construction

Valve Body and Flange: Brass
Stem: Brass
Ball: Chrome plated brass
Stem O-Rings: Buna N
Seat: PTFE



► Typical Specifications

Furnish and install, as shown on plans and in accordance with manufacturer's installation instructions, Armstrong Series CIF Isolation Flanges. The Circulator Isolation Flange shall be a full-port isolation valve with an integral flanged connection for the circulating pump. The flanged connection shall feature slotted holes. The Circulator Isolation Flange shall be constructed with brass body and flange, chrome plated brass ball, PTFE seat, dual Buna N O-ring seals and a lever-style handle.

4", 5" & 6" Cast Iron Vortex Air Separator



The Cast Iron VA/VAS Air Separators, used to reduce entrained air in a hydronic system, now includes 4", 5" and 6" sizes. We have had a great deal of success with our 2", 2½" and 3" Cast Iron Vortex Air Separators. Armstrong is proud to include the 4", 5" and 6" sizes into this offering.

► The Air Removal Requirement

Air is introduced to a hydronic system:

- During initial fill
- While maintaining system pressure
- During routine equipment maintenance
- In a cooling tower operation

Fill water at 50°F (10°C) can hold up to 9% entrained air at 30 psig (207 kPa). When heated up to 200°F (93°C), the water can hold up to 4.5% entrained air. The remaining 4.5% air is released into the system as air pockets, bubbles, and microbubbles, that can negatively impact the performance of fluid flow or heat transfer equipment.

► How the Vortex Air Separator Removes Air

Circulating the water through the Vortex Air Separator creates a vortex or whirlpool action, sending the heavier air-free water to the outer portion of the tank and allowing the lighter air-entrained water mixture to move into the lower velocity center. At the centre of the vortex the air is released from the water forms bubbles and exits through an air vent or compression tank installed above. Instead of relying entirely on low velocity separation, the Vortex Air Separator offers the advantage of efficient separation in a much smaller tank.

► The Benefits & Advantage of an Air Free System

Air-free water flow means improved systems operation and lower operating costs.

The Vortex Air Separators eliminate entrained air from heating and cooling systems providing these benefits:

- Allows quick venting of air at start-up
- Reduces annoying noise caused by air entrained in the system
- Reduces service costs due to air-bound piping
- Extends the life of the system by reducing corrosion and erosion
- Improves heat transfer efficiency in boilers, fan coils, chillers, etc.
- Reduces the overall energy costs of your system
- Optimizes pump performance by reducing incidences of 'air lock'

Astro Express Hot Water Re-Circulation System



► Benefits

Instant hot water at every tap: Your customers need a dependable system that's inexpensive to install, easy to use, and heats their water to just the right temperature - every time.

A quality product that will not have you running back to your customers for adjustments and repairs: The Astro Express Hot Water Re-circulation System offers dependability that keeps your customers satisfied, plus thoughtful design and industry-leading quality that minimize maintenance - and maximize your profitability.

The Astro Express is the solution that is stronger, faster and simply better than anything else on the market today.

► How It Works

The Astro Express System works like a thermostat. The snap-acting valve opens and closes to circulate hot water so it stays at a specific temperature throughout the distribution system. Hot water at each tap stays hot, and cold water stays cold.

The timer can be set for multiple on/off periods per day, reducing operating costs. The Astro Express can be set to circulate water based on the individual homeowners usage patterns, such as; coming on, when they awake, and turning off, when asleep or at work. The simple to use mechanical timer also includes manual on/off overrides and eliminates complicated programming instructions.

Each system comes with one valve, which is installed at the faucet furthest away from the water heater. This ensures that hot water is delivered to all the faucets in between. Large homes that feature a distribution line with multiple branches, will need a valve for the faucet at the end of each branch line. Additional valves are available separately.

► The Astro Express Valve

Ultra-durable and easy-to-install, our valve has a unique design that makes adjusting flow rate and temperature so simple that homeowners could adjust it themselves.

Features

- Sturdy construction: forged brass housing
- Integrated mounting supports for easy, flush installation
- Simple screw adjustment for flow setting preference
- Ratings: 125 psi (862 kPa) / 150°F (66°C)
- Bidirectional hot and cold connections in 3/8" and 1/2" ensure easy installation in a wide variety of applications.
- Large, self-cleaning screen prevents clogging



► The Astro 20 BU-T Circulator

The Astro 20 BU-T circulator is a small pump with twice the capacity of competitive circulators. It can handle flow up to 5 valves so it is perfect for the kind of "branch plumbing" that can make hot water distribution in a large or ranch-style home such a challenge.

Most dedicated return systems are oversized and have a short duty cycle when the aquastat is activated. Our injection system uses lower flow to maintain a more stable water temperature at the hot water faucet and prevent noise and erosion. Plus, higher capacity means several people can turn on taps throughout the house and they will all get hot water instantly.

Features

- 24-hour clock timer
- 15 minute user selectable intervals
- On/Off/Auto switch
- 120Vac, 1/25 HP, .5A
- 5 ft power cord
- Max head: 5.8 ft, Max flow: 11.5 GPM
- Brass full unions with EPDM O-rings
- 1 male and 2 female 3/4" tailpieces
- Wet rotor design ensures virtually silent operation
- Bronze housing for potable water use
- High starting torque overcomes mineral build-up
- Robust construction with stainless steel shaft and graphite bearings

50Hz DZR CBVs

Armstrong ARMflo commissioning valves enable the precise hydronic fluid flow measurement and regulation required for accurate HVAC heating and chiller system balancing. This helps to achieve and maintain accurate HVAC system balance for optimum occupant comfort and building efficiency.

Now, these fast-setting, high precision valves are constructed of dezincification resistant brass to assure long life despite the aggressive water commonly found in some HVAC systems.

ARMflo DN15 to DN50 valves enable convenient "line-size" selection for applications engineered to BSRIA standards (with flow velocities of 0.7 to 1.3 m/s). "Low Flow" DN15 and DN20 models are ideally suited for applications below 0.7 m/s, assuring minimum throttling, reduced turbulence, and maximum accuracy.

Thanks to their fixed orifice design, ARMflo DN15 to DN50 valves provide +/- 5% or better accuracy from 1/2 turn to 5 full turns, as compared to variable orifice valves that can only achieve this level of accuracy when wide open.



AST Expansion Tanks

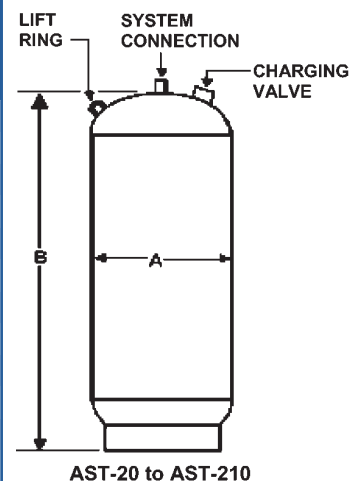
Armstrong recently announced the release of three additional sizes under the AST expansion tank product line, the AST 80, 100, and 160. These new sizes increase the number of models available within the existing size range. The new models represent "intermediate sizes" and will provide a more cost-effective selection for a given system design.

Armstrong AST expansion tanks are designed for use with potable water systems, or as draw-down tanks for pressure booster systems. All Armstrong AST tanks are designed and constructed per ASME, VIII, Division 1 standards.



► Dimensions and Weights

Model	Tank Volume gal (L)	Acceptance Volume gal (L)	A in (mm)	B in (mm)	System Connection in (mm)	Shipping Weight lbs (kg)
AST-5	3.5 (13)	2.1 (8.0)	10 (254)	14 (356)	0.75 (19)	22 (10)
AST-12	5.0 (19)	3.1 (11.7)	12 (305)	14 (356)	0.75 (19)	28 (13)
AST-20	8.0 (30)	3.1 (11.7)	12 (305)	20 (508)	0.75 (19)	34 (15)
AST-30	15.0 (57)	10.5 (39.7)	14 (356)	27 (686)	1.00 (25)	64 (29)
AST-42	22.0 (83)	15.5 (58.7)	16 (406)	32 (813)	1.00 (25)	88 (40)
AST-60	26.0 (98)	15.5 (58.7)	16 (406)	34 (864)	1.00 (25)	93 (42)
AST-80	35.0 (132.5)	15.5 (58.7)	16 (406)	45 (1143)	1.00 (25)	109 (49.4)
AST-100	45.0 (170)	21.0 (79.5)	20 (508)	38 (965)	1.00 (25)	148 (67.1)
AST-125	60.0 (227)	21.0 (79.5)	20 (508)	49 (1245)	1.00 (25)	175 (79.4)
AST-160	70.0 (265)	52.5 (198.7)	24 (610)	46 (1168)	1.50 (38)	259 (118)
AST-180	80.0 (303)	52.5 (198.7)	24 (610)	49 (1245)	1.50 (38)	268 (122)
AST-210	90.0 (341)	52.5 (198.7)	24 (610)	52 (1321)	1.50 (38)	283 (129)



Flex Flanges

Armstrong Flex Flanges leap-frog existing circulator isolation flange technology, allowing you to configure your circulator installation exactly as desired. This innovative product integrates numerous components to reduce the number of connections and potential leak points per installation.

All models combine a common companion flange (with flats for easy wrench application) with an isolation ball valve. They are also equipped with integral dielectric couplings to minimize electrolytic corrosion and swivelling flanges that ease installation, especially for sweat applications.

Additional options include:

- ▶ An integral check valve to prevent reverse flow through any standard circulator.
- ▶ PT Ports to allow total head measurement of any standard circulator for troubleshooting ease
- ▶ An integral drain valve for system fluid removal

Armstrong Flex Flanges help make new installations easier, faster, and provide trouble-shooting and servicing benefits for the life of the system they are installed in.

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