



Hot Water Re-circulation Systems

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Problem

Heated water cools rapidly in domestic hot water distribution pipes, even when properly insulated. When hot water is desired, the common practice is to run cooled water down the drain until hot water reaches the tap. A typical family will annually waste up to 91 hours and 12,000 gallons of processed water, waiting for hot water at the tap.

Solution

Armstrong Astro hot water re-circulation systems automatically circulate water through domestic hot water distribution pipes. This helps to ensure that everyone in the household has "instant" hot water at the tap when they need it, while also helping to conserve water and save water heating energy costs. Models equipped with an Aquastat save even more energy.

Benefits

- ▶ **Comfort** - Stable hot water temperature at the tap
- ▶ **Convenience** - Instant hot water access when needed
- ▶ **Conservation** - Saves processed water
- ▶ **Cost** - Metered water
- ▶ **Compliance** - Meets building code requirements (where applicable)



Astro Re-circulation System Advantages: Efficiency Breakthrough

- ▶ System components are compact, rugged, quiet and reliable
- ▶ Typical household can save over 12,000 gallons of water per year

24-hour analog timer

- ▶ Ensures availability of hot water when needed
- ▶ Saves money by re-circulating water only during normal usage hours

Aquastat

- ▶ Signals circulator to operate only when the water has cooled
- ▶ Saves energy by monitoring system temperature and shutting off circulator when water is heated

Complete Astro System

- ▶ Single product to source
- ▶ No electrician required for installation



Armstrong Hot Water Re-circulation Systems.

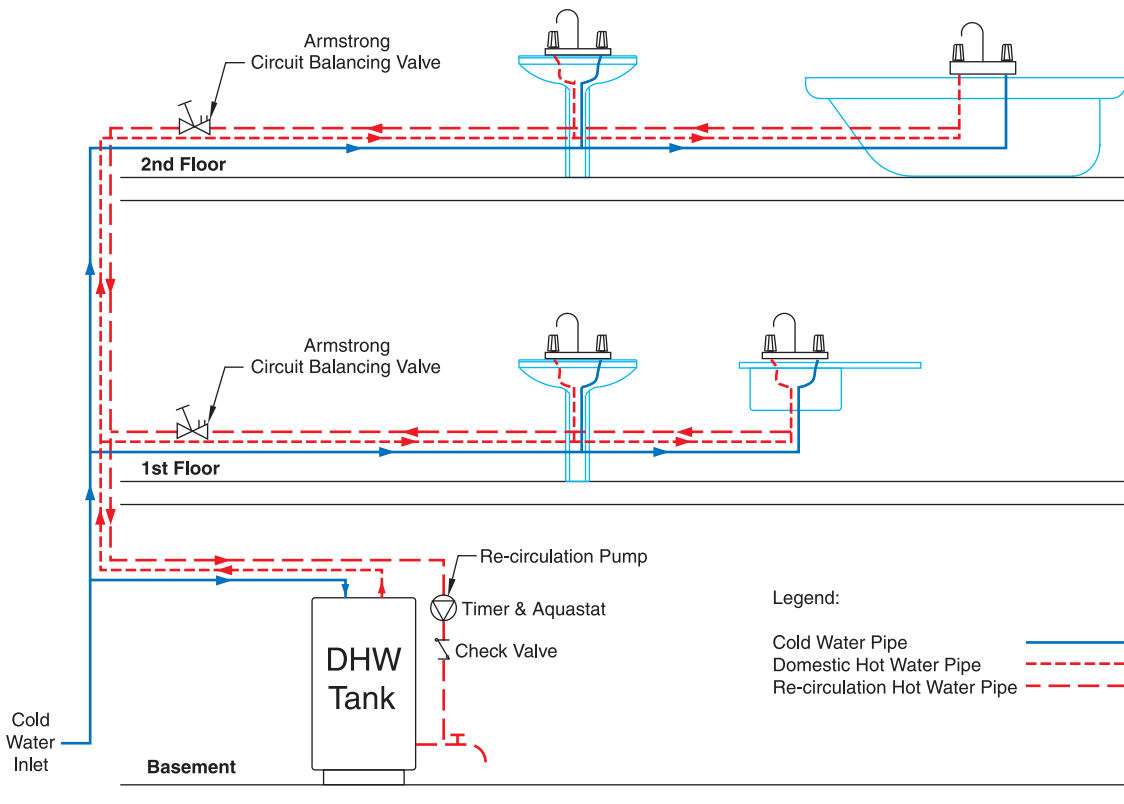
How It Works

In normal operation, the Astro automatically starts re-circulating water throughout the hot water distribution system whenever the timer enables activation. The timer can be set for one or more activation periods per day. An activation period consists of a multiple (up to 96) of 15 minute time intervals. The timer includes manual on and off overrides to normal automatic operation.

Some models are equipped with an Aquastat, intended for use on metallic piping. The Aquastat enables operation (or manual "on" operation) only when the sensed water temperature is below 85°F (25°C). Once activated, the circulator operates until either the water temperature reaches 105°F (41°C), or the current timed activation period ends.



Typical Domestic Hot Water Distribution with Re-circulation



► Model Selection*

Length of pipe from the DHW tank to the furthest fixture	Model
Up to 60 ft (18.2 m)	Astro 20 TA / T / LC
60 to 100 ft (18.2 to 30.5 m)	Astro 25 TA / T / LC
100 to 150 ft (30.5 to 45.7 m)	Astro 30 TA / T / LC
150 to 250 ft (45.7 to 76.2 m)	Astro 50 TA / T / LC
250 to 300 ft (76.2 to 91.4 m)	Astro 70 TA / T / LC

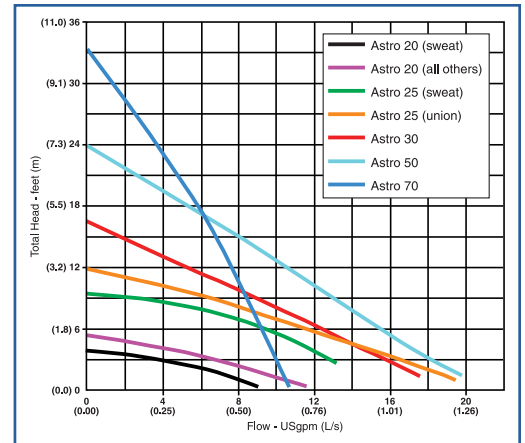
*Above table applies to hot water re-circulation systems in residential buildings with 1 kitchen and 2 bathrooms. For residential applications with more than 2 bathrooms, choose the next largest size of circulator.

► Technical Data

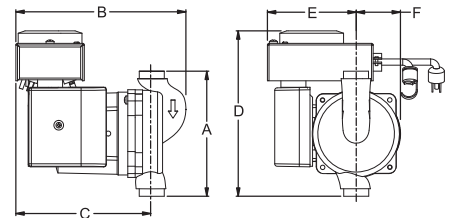
Power Connection:	5.0 ft (1.5 m) power cord, molded duplex plug with ground
Environment:	Indoor use only
Max. Working Pressure:	140 psi (965 kPa)
Ambient Temperature:	-40°F to 180°F (-40°C to 82°C)
Max. Water Temperature:	230°F (110°C)
Low Temperature Switchpoint ¹ :	85°F (29°C) ± 10%
High Temperature Switchpoint ¹ :	105°F (40°C) ± 10%
Clock/Timer:	12-hour analog clock with AM/PM indication
Timer Settings:	Individual mechanical toggle for each 15 minute interval in the 24 hour cycle
Manual Override:	3 position slide switch; on/auto/off

¹High/low temperature switchpoints are as measured on pipe surface with the Aquastat (TA models only).

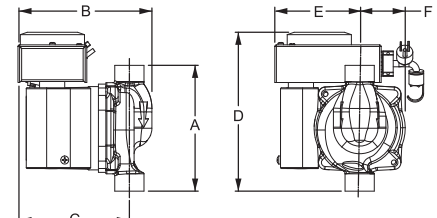
► Performance Curves



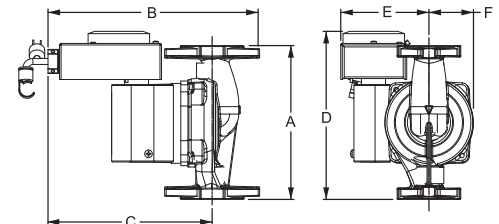
Model	Part No.	Connection	Size
Pump with 24-Hour Timer, Aquastat and Line Cord			
Astro 20B050S-TA	110123-140	Sweat	1/2"
Astro 20B075S-TA	110123-141	Sweat	3/4"
Astro 25B050S-TA	110123-142	Sweat	1/2"
Astro 25B075S-TA	110123-143	Sweat	3/4"
Astro 20BU-TA	110123-144	NPSM Union	1 1/4"
Astro 25BU-TA	110123-145	NPSM Union	1 1/4"
Astro 20BF-TA	110123-146	2-bolt Flange	
Astro 30B-TA	110123-148	2-bolt Flange	
Astro 50B-TA	110123-149	2-bolt Flange	
Astro 70B-TA	110123-150	2-bolt Flange	
Pump with 24-Hour Timer and Line Cord			
Astro 20B050S-T	110123-240	Sweat	1/2"
Astro 20B075S-T	110123-241	Sweat	3/4"
Astro 25B050S-T	110123-242	Sweat	1/2"
Astro 25B075S-T	110123-243	Sweat	3/4"
Astro 20BU-T	110123-244	NPSM Union	1 1/4"
Astro 25BU-T	110123-245	NPSM Union	1 1/4"
Astro 20BF-T	110123-246	2-bolt Flange	
Astro 30B-T	110123-248	2-bolt Flange	
Astro 50B-T	110123-249	2-bolt Flange	
Astro 70B-T	110123-250	2-bolt Flange	
Pump with Line Cord			
Astro 20B050S-LC	110123-340	Sweat	1/2"
Astro 20B075S-LC	110123-341	Sweat	3/4"
Astro 25B050S-LC	110123-342	Sweat	1/2"
Astro 25B075S-LC	110123-343	Sweat	3/4"
Astro 20BU-LC	110123-344	NPSM Union	1 1/4"
Astro 25BU-LC	110123-345	NPSM Union	1 1/4"
Astro 20BF-LC	110123-346	2-bolt Flange	
Astro 30B-LC	110123-348	2-bolt Flange	
Astro 50B-LC	110123-349	2-bolt Flange	
Astro 70B-LC	110123-350	2-bolt Flange	



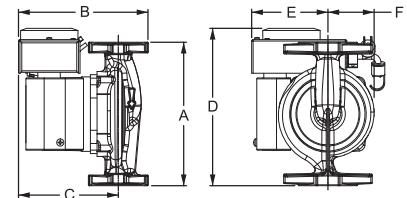
All Astro Sweat Models



All Astro Union Models



Astro 20/30/50 Flanged



Astro 70 Flanged

► Dimensions

Model	A	B	C	D	E	F
All Astro Sweat Models	5.0 (127)	6.5 (165)	5.6 (142)	7.1 (180)	4.3 (110)	1.8 (46)
All Astro Union Models	5.0 (127)	5.3 (134)	4.4 (112)	6.3 (160)	3.4 (86)	1.8 (46)
Astro 20/30/50 Flanged	6.4 (162)	8.7 (221)	6.8 (173)	7.0 (178)	3.7 (93)	1.8 (46)
Astro 70 Flanged	6.4 (162)	5.8 (146)	4.4 (112)	7.0 (178)	3.4 (86)	2.1 (52)

Note: All dimensions are in inches (mm)

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