
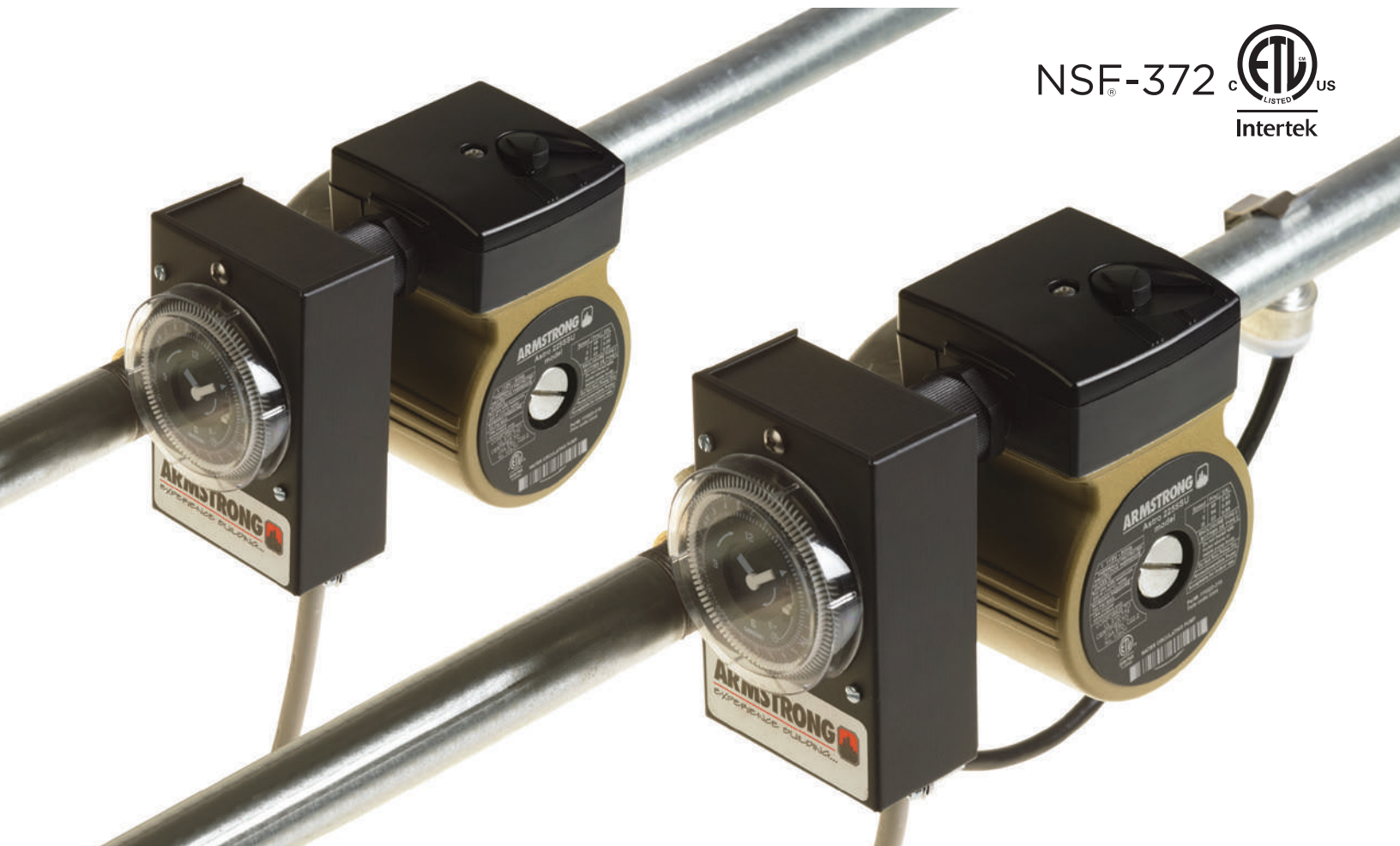


# ARMSTRONG



NSF-372    
 Intertek



## Hot Water Re-circulation Systems

File no.:	10. 13
Date:	MARCH 08, 2013
Supersedes:	10. 13
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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 of four can waste over 90 hours and 12,000 gallons of sanitized water per year while waiting for hot water at the tap.

## Solution

Armstrong Astro 2 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 sanitized water

**Cost:** One gallon of sanitized water can cost up to 2.5 cents

**Compliance:** NSF 372 certified.

**NSF-372** Meets building code requirements (where applicable). Complies with section 116875 of the California Health and Safety Code and Vermont Act 193. (Lead content of all wetted surfaces is 0.25% or less.)

## Technical data

**Power connection:** 6.0 ft (1.8 m) power cord, molded duplex plug with ground

**Environment:** Indoor use only

**Max. working pressure:** 150 psi (1034 kPa)

**Ambient temperature:** 39°F(4°C) to 104°F(40°C)

**Max. water temperature:** 230°F (110°C)

**Low temperature switchpoint<sup>1</sup>:** 85°F(29°C) ± 10%

**High temperature switchpoint<sup>1</sup>:** 105°F(40°C) ± 10%

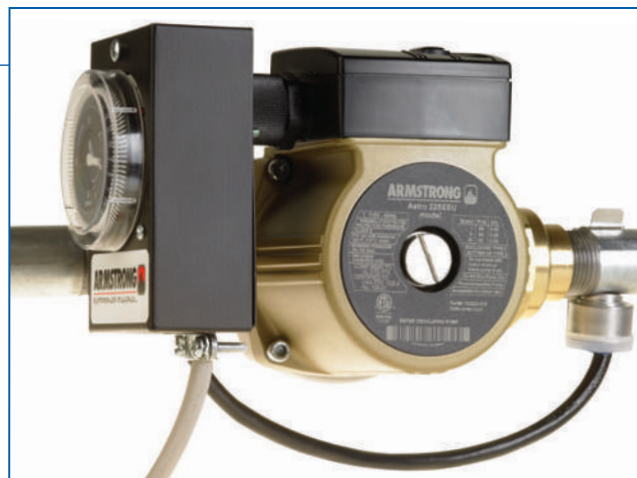
**Clock/timer:** 12 hour analog clock with AM/PM indication

**Timer settings:** Individual mechanical toggle for each 15 minute interval in the 24 hour cycle

**Manual override:** Three position slide switch; ON/AUTO/OFF

### NOTE:

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



## Astro 2 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
- When the water has reached optimal temperature, the circulator is shut off to save energy

### Fits unique system requirement

- Customize flow to meet individual system needs with the 3 speed switch

## Complete Astro 2 system

- Single product to source
- No electrician required for installation

## Model selection\*

MODEL	LENGTH OF PIPE FROM THE DHW TANK TO THE FURTHEST FIXTURE
ASTRO 220SSU TA/T/LC	Up to 60 ft (18.2 m)
ASTRO 225BS/225SSU TA/T/LC	60 to 100 ft (18.2 to 30.5 m)
ASTRO 230SS TA/T/LC	100 to 150 ft (30.5 to 45.7 m)
ASTRO 250SS TA/T/LC	150 to 250 ft (45.7 to 76.2 m)

\*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.

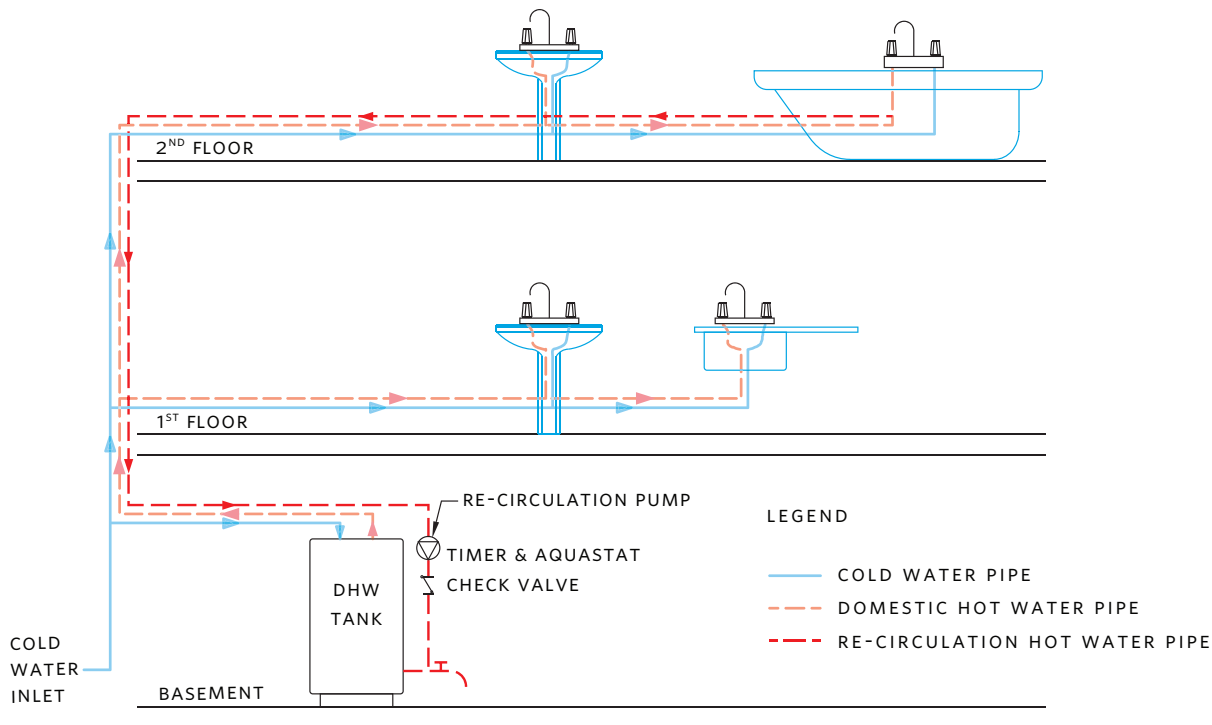
# Armstrong Hot Water Re-circulation Systems

## How It Works

In normal operation, the Astro 2 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 up to 96, 15 minute intervals. The timer includes manual on and off overrides to normal automatic operation.

Astro 2 TA 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

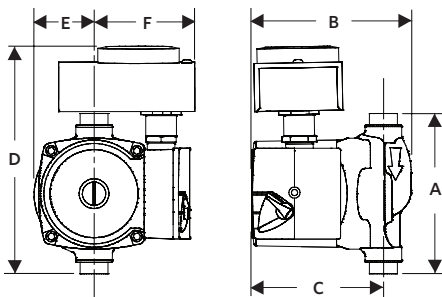


## Dimensions

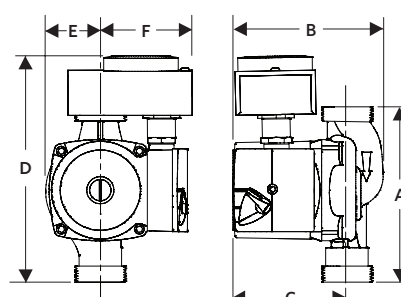
MODEL	A	B	C	D	E	F
Astro 2 sweat models	5.00 (127)	5.00 (127)	4.00 (102)	7.06 (180)	1.75 (45)	3.13 (80)
Astro 2 union models	6.00 (152)	5.00 (127)	4.00 (102)	7.75 (197)	1.75 (45)	3.13 (80)
Astro 2 flanged models	6.38 (162)	8.19 (208)	6.19 (157)	8.19 (208)	1.75 (45)	3.50 (90)

NOTE: All dimensions are in inches (mm)

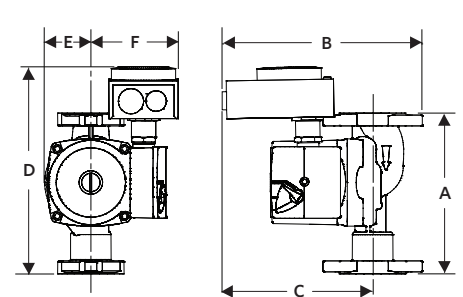
Astro 225BS sweat models



Astro 220SSU/225SSU union models

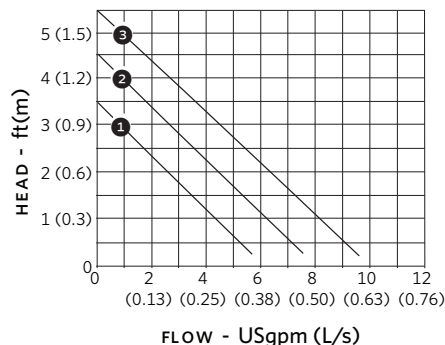


Astro 230SS/250SS flanged models

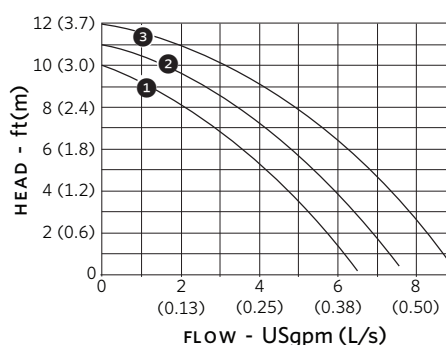


## Performance curves

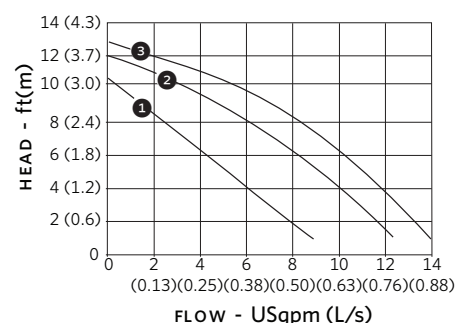
ASTRO 220SSU



ASTRO 225BS SWEAT



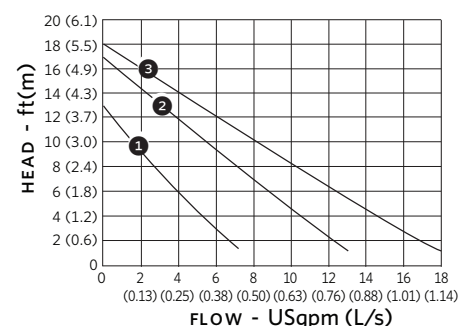
ASTRO 225SSU



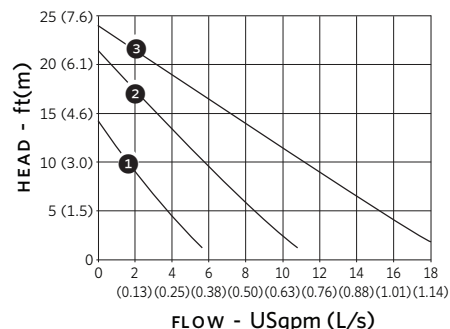
MODEL	PART NO.	CONNECTION	SIZE
Pump with 24 hour timer, aquastat and line cord			
ASTRO 220SSU050S-TA*	110223-140	Sweat	1/2"
ASTRO 220SSU075S-TA*	110223-141	Sweat	3/4"
ASTRO 225BS050S-TA	110223-142	Sweat	1/2"
ASTRO 225BS075S-TA	110223-143	Sweat	3/4"
ASTRO 220SSU-TA	110223-144	NPSM union	1 1/4"
ASTRO 225SSU-TA	110223-145	NPSM union	1 1/4"
ASTRO 230SS-TA	110223-148	2 bolt flange	
ASTRO 250SS-TA	110223-149	2 bolt flange	
Pump with 24 hour timer and line cord			
ASTRO 220SSU050S-T*	110223-240	Sweat	1/2"
ASTRO 220SSU075S-T*	110223-241	Sweat	3/4"
ASTRO 225BS050S-T	110223-242	Sweat	1/2"
ASTRO 225BS075S-T	110223-243	Sweat	3/4"
ASTRO 220SSU-T	110223-244	NPSM union	1 1/4"
ASTRO 225SSU-T	110223-245	NPSM union	1 1/4"
ASTRO 230SS-T	110223-248	2 bolt flange	
ASTRO 250SS-T	110223-249	2 bolt flange	
Pump with line cord			
ASTRO 220SSU050S-LC*	110223-340	Sweat	1/2"
ASTRO 220SSU075S-LC*	110223-341	Sweat	3/4"
ASTRO 225BS050S-LC	110223-342	Sweat	1/2"
ASTRO 225BS075S-LC	110223-343	Sweat	3/4"
ASTRO 220SSU-LC	110223-344	NPSM union	1 1/4"
ASTRO 225SSU-LC	110223-345	NPSM union	1 1/4"
ASTRO 230SS-LC	110223-348	2 bolt flange	
ASTRO 250SS-LC	110223-349	2 bolt flange	

\*Union pump with sweat hardware kit.

ASTRO 230SS FLANGED



ASTRO 250SS FLANGED



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