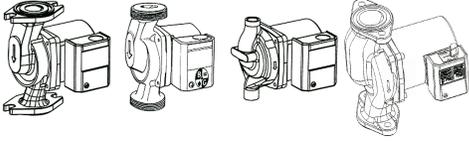


<b>JOB:</b>	<b>REPRESENTATIVE:</b>	
<b>UNIT TAG:</b>	<b>ORDER NO.:</b>	<b>DATE:</b>
<b>ENGINEER:</b>	<b>SUBMITTED BY:</b>	<b>DATE:</b>
<b>CONTRACTOR:</b>	<b>APPROVED BY:</b>	<b>DATE:</b>



## Lead-Free<sup>†</sup> Bronze and Stainless Steel Bodied System Lubricated Circulators



**DESCRIPTION**

A series of in-line wet rotor circulation pumps designed specifically for quiet operation in open (potable) water systems. These pumps have lead-free<sup>†</sup> bronze or stainless steel bodies.

Automatic Timer and Aquastat accessories are available. (See Submittal A-128A for details).

**CONSTRUCTION MATERIALS**

Pump Body: Impeller: Noryl  
Shaft: Ceramic  
NBF: Lead-Free<sup>†</sup> Bronze  
SSF: Stainless Steel  
Bearings: Carbon

**OPERATING DATA**

Maximum Working Pressure: 150 psi (10.3 Bar)  
Minimum Operating Temperature: 40°F (5°C)  
Maximum Operating Temperature  
NBF-25, NBF-33, NBF-36, NBF-45: 225°F (107°C)  
All Others: 230°F (110°C)

<sup>†</sup>Contains less than 0.25% Lead content by weight on wetted surfaces.

MODEL NUMBER	PART NUMBER	CONNECTION	APPROX. SHPG. WT. Lbs. (Kg)	STANDART 60 CYCLE 115 VOLT SINGLE PHASE			TAGGING INFORMATION	QUANTITY
				WATTS	F.L. AMPS	RPM		
NBF-8S/LW	103257LF	1/2" Sweat	9.0 (4.1)	39	0.38	2800		
NBF-9U/LW	103258LF	Union (See Following Page)	9.3 (4.2)	41	0.40	2800		
SSF-9U/LW	103360LF	Union (See Following Page)	9.3 (4.2)	41	0.40	2800		
NBF-10S/LW	103259LF	1/2" Sweat	9.0 (4.1)	52	0.46	2800		
NBF-12U/LW	103261LF	Union (See Following Page)	9.3 (4.2)	55	0.48	2800		
SSF-12U/LW	103361LF	Union (See Following Page)	9.3 (4.2)	55	0.48	2800		
NBF-12F/LW	103260LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	55	0.48	2800		
SSF-12F/LW	103358LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	55	0.48	2800		
NBF-18S	103316LF	1/2" Sweat	9.0 (4.1)	90	0.74	3000		
NBF-22U	103255LF	Union (See Following Page)	9.3 (4.2)	92	0.80	2940		
SSF-22U	103362LF	Union (See Following Page)	9.3 (4.2)	92	0.80	2940		
NBF-22	103252LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	92	0.80	2940		
SSF-22	103357LF	Flange 3/4, 1, 1-1/4, 1-1/2	9.5 (4.3)	92	0.80	2940		
NBF-25 <sup>*</sup>	103418LF	Flange 3/4, 1, 1-1/4, 1-1/2	10.4 (4.7)	125	1.10	2950		
NBF-33	103351LF	Flange 3/4, 1, 1-1/4, 1-1/2	10.4 (4.7)	125	1.10	2950		
NBF-36 <sup>*</sup>	103401LF	Flange 3/4, 1, 1-1/4, 1-1/2	13.1 (6.0)	270	2.30	3300		
NBF-45 <sup>*</sup>	103405LF	Flange 1, 1-1/4, 1-1/2	14.5 (6.6)	270	2.30	3300		

\*3-speed circulators

**TYPICAL SPECIFICATIONS**

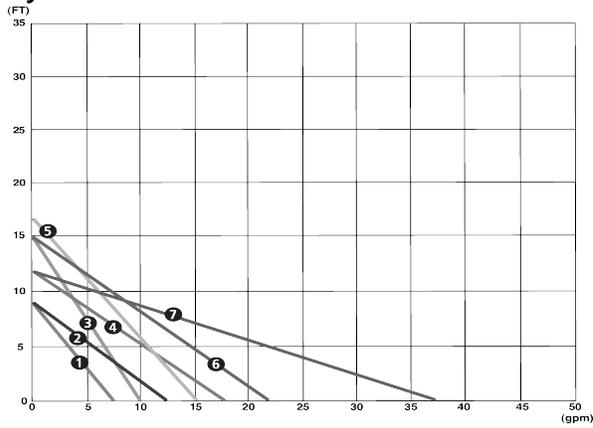
The contractor shall furnish and install in-line circulating pumps as illustrated on the plans and in accordance with the following specifications:

1. The pumps shall be of the horizontal system lubricated type specifically designed and guaranteed for quiet operation.
2. Pump to be suitable for \_\_\_\_°F (\_\_\_\_°C) [choose one: 225°F (107°C) for NBF-25, NBF-33, NBF-36, NBF-45 or 230°F (110°C) for all other circulators] operation at 150 psig (10.3 Bar) working pressure.
3. The pumps shall have a ceramic shaft supported by carbon bearings. Bearings are to be lubricated by the circulating fluid.

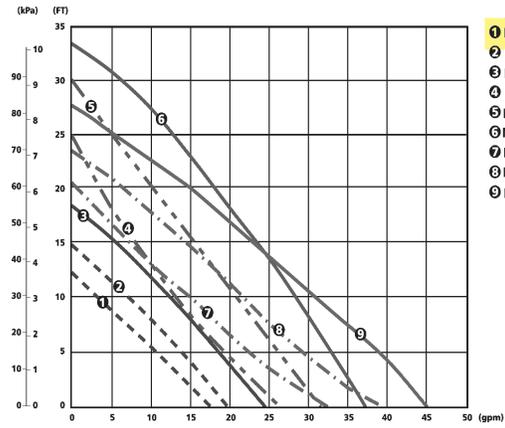
4. Pump body shall be lead-free bronze for NBF circulators or stainless steel for SSF circulators.
5. Motor stator to be isolated from circulating fluid through use of stainless steel can. Rotor to be sheathed in stainless steel.
6. Motors shall be non-overloading at any point on the pump curve. NBF-36 & NBF-45 to have built-in thermal protection. All other motors to have built-in impedance protection.
7. NBF-25 has an optional check valve.

Pumps to have a capacity of \_\_\_\_\_ GPM at \_\_\_\_\_ foot head when powered by 115 volt, 60 cycle single phase electrical supply.

All pumps are to be Xylem - Bell & Gossett Model \_\_\_\_\_.



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

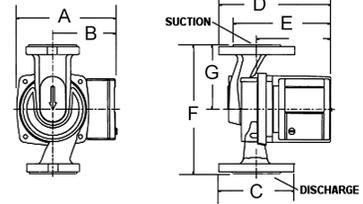
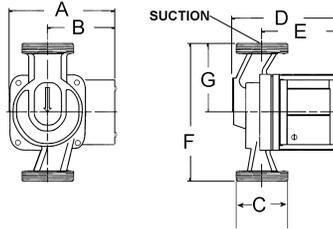
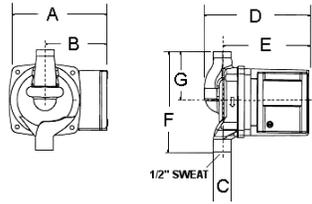
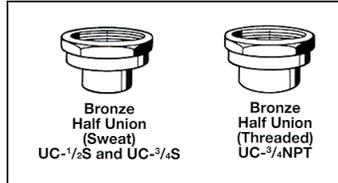


- 1 NBF-25 Speed 1
- 2 NBF-25 Speed 2
- 3 NBF-25 Speed 3
- 4 NBF-36 Speed 1
- 5 NBF-36 Speed 2
- 6 NBF-36 Speed 3
- 7 NBF-45 Speed 1
- 8 NBF-45 Speed 2
- 9 NBF-45 Speed 3

HALF UNION CONNECTIONS

For NBF-9U/LW, NBF-12U/LW, NBF-22U, SSF-9U/LW, SSF-12U/LW, SSF-22U

MODEL NUMBER	PART NUMBER	DESCRIPTION (SETS OF 2)
UC-1/2S	113203LF	1/2" Bronze Union Sweat
UC-3/4S	113201LF	3/4" Bronze Union Sweat
UC-3/4NPT	113202LF	3/4" Bronze Union NPT Female



MODEL	PART NUMBER	A in (mm)	B in (mm)	C in (mm)	D in (mm)	E in (mm)	F in (mm)	G in (mm)
NBF-8S/LW	103257LF	4-7/8 (124)	3-3/16 (81)	1/2 (13)	5-7/32 (132)	4-9/32 (109)	5 (127)	2-1/2 (63)
NBF-9U/LW	103258LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
SSF-9U/LW	103360LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
NBF-10S/LW	103259LF	4-7/8 (124)	3-3/16 (81)	1/2 (13)	5-7/32 (132)	4-9/32 (109)	5 (127)	2-1/2 (63)
NBF-12U/LW	103261LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (81)
SSF-12U/LW	103361LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
NBF-12F/LW	103260LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
SSF-12F/LW	103358LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
NBF-18S	103316LF	4-7/8 (124)	3-3/16 (81)	1/2 (13)	5-7/32 (132)	4-9/32 (109)	5 (127)	2-1/2 (63)
NBF-22U	103255LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
SSF-22U	103362LF	4-7/8 (124)	3-3/16 (81)	1-1/4 (32)	5-1/16 (129)	3-11/16 (93)	6-1/8 (156)	3-1/16 (78)
NBF-22	103252LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
SSF-22	103357LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	5-9/16 (141)	3-11/16 (93)	6-3/8 (162)	3-3/16 (82)
NBF-25*	103418LF	5-1/8 (130)	3-3/16 (81)	3-3/16 (81)	6-3/16 (157)	4-7/8 (124)	6-3/8 (162)	2-1/2 (63)
NBF-33	103351LF	4-7/8 (124)	3-3/16 (81)	3-3/16 (81)	6-3/16 (157)	3-11/16 (94)	6-3/8 (162)	3-3/16 (82)
NBF-36*	103401LF	5-3/4 (146)	3-9/16 (91)	3-3/16 (81)	6-3/16 (157)	5-3/8 (137)	6-3/8 (162)	3-3/16 (82)
NBF-45*	103405LF	5-3/4 (146)	3-9/16 (91)	3-7/16 (87)	7-3/8 (187)	5-1/2 (140)	8-1/2 (216)	4-1/4 (108)

Dimensions are subject to change. Not to be used for construction purposes unless certified.

Companion Flanges Available in Sizes: 3/4", 1", 1-1/4", and 1-1/2"

\* 3-speed circulators

Xylem Inc.  
8200 N. Austin Avenue  
Morton Grove, IL 60053  
Phone: (847)966-3700  
Fax: (847)965-8379  
www.bellgosssett.com





# THERM-X-TROL®

Thermal Expansion Tanks: ST Series Non-ASME

150 PSIG Working Pressure

### Construction

Shell	Steel
Diaphragm	Heavy Duty Butyl NSF/ANSI 61
Liner	Antimicrobial
System Connection	Stainless Steel
Finish	Urethane Topcoat
Water Circulator	Turbulator™
Air Valve	Projection Welded
Factory Precharge	In-line Models 50 PSIG (3.5 bar) Stand Models 40 PSIG (2.8 bar)

### Application

- For use in closed, potable water systems to control pressure build-up.
- Accepts expanded water as system temperature rises and returns hot water to system when demand occurs.
- Stand models designed for large residential and light commercial applications.
- Multiple units can be installed to accommodate larger systems.

### Performance

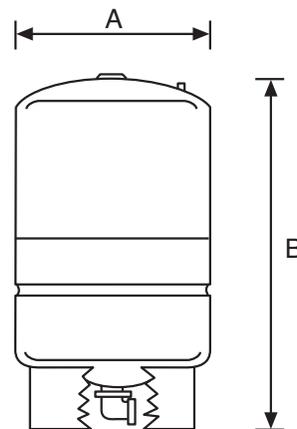
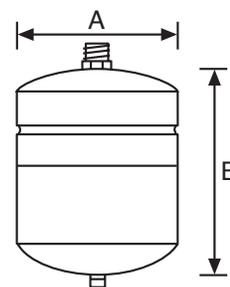
Maximum Operating Temperature	200°F (93°C)
Maximum Working Pressure	150 PSIG (10.3 bar)
Warranty	1 Year - ST-30V through ST-210V 5 Years - ST-5 through ST-25V

### In-Line Models

Model Number	Tank Volume		Max. Acceptance Factor	A Tank Diameter		B Tank Height		System Connection (NPTM)	Shipping Weight	
	Gal	Lit		In	mm	In	mm		Lbs	Kg
ST-5	2.0	8	.45	8	203	13	330	¾	5	2
ST-8	3.2	12	.59	9	229	15	381	¾	7	3
<b>ST-12</b>	4.4	17	.73	11	279	15	381	¾	9	4

### Stand Models

Model Number	Tank Volume		Max. Acceptance Factor	A Tank Diameter		B Tank Height		System Connection (NPTF)	Shipping Weight	
	Gal	Lit		In	mm	In	mm		Lbs	Kg
ST-25V	10.3	39	1.00	15	381	19	483	¾	23	10
ST-30V	14.0	53	0.81	15	381	24	610	¾	25	11
ST-42V	20.0	76	0.57	15	381	32	813	¾	33	15
ST-60V	34.0	129	1.00	22	559	30	762	1¼	61	28
ST-80V	44.0	167	0.77	22	559	36	914	1¼	69	31
ST-180V	62.0	235	0.55	22	559	47	1194	1¼	92	42
ST-200V	81.0	307	0.44	22	559	56	1422	1¼	103	47
ST-210V	86.0	326	0.54	26	660	47	1194	1¼	123	56



All dimensions and weights are approximate.

Job Name _____	Notes _____
Engineer _____	_____
Contractor _____	_____
P.O. No. _____	_____
Sales Rep. _____	_____
Model No. _____	_____



## CYCLONE® Mxi MODULATING

### MODULATING BURNER ADVANCES THE CYCLONE TO HIGHER LEVELS OF EFFICIENCY

The full line of A. O. Smith Cyclone Mxi condensing water heaters has been designed to provide years of dependable service and feature industry leading technology. Models are available from 120,000 to 500,000 Btu/h and all deliver thermal efficiencies of 95% and higher. The unique helical coil heat exchanger limits weld joints for optimal service life while maximizing heat transfer.

Cyclone is the industry leader in high efficiency commercial water heating. The current Mxi modulating models adjust firing rate to the specific demand further increasing efficiency and money savings.

#### INTELLIGENT CONTROL SYSTEM WITH TOUCH SCREEN DISPLAY AND ICOMM CONNECTIVITY ONBOARD\*

- Exclusive A. O. Smith designed color touch display control system
- Provides detailed water heater status information
- Precise temperature control adjustable from 90 to 180 degrees
- Built-in diagnostics
- Run history information
- \*Cyclone Mxi models manufactured March 1, 2018 to present come standard with iCOMM Wi-Fi connectivity onboard. Remotely monitor and adjust the water heater via the A. O. Smith app. No charge connectivity using Wi-Fi or Ethernet connection.
- Intelligent Demand Response (IDR) feature senses large water draws and automatically adjusts the differential setpoint. This feature increases the hot water available when it is needed the most.

#### SUBMERGED COMBUSTION CHAMBER, WITH HELICAL HEAT EXCHANGER COIL

- Positioned in center of tank, surrounded by water to virtually eliminate radiant heat loss from chamber
- Direct spark ignition
- Spiral heat exchanger keeps hot burner gases swirling, uses centrifugal force to maximize efficiency of heat transfer to water in tank
- Spiral heat exchanger reduces lime scale from forming on water-side surfaces, which maintains energy efficiency over time

#### POWERED ANODES STANDARD ON ALL MODELS

- Provides long-lasting tank protection in varying water conditions

- Powered anodes are non-sacrificial
- Automatically adjusts output needed to properly protect the tank

#### PERMAGLAS® ULTRA COAT™ GLASS LINING

- Glass coating is applied using a liquid slush coating technique to ensure uniform coating
- Heat exchanger coil is glassed both externally and internally for optimum protection

#### MECHANICAL VENTING VERSATILITY

- Conventional power venting or direct venting
- Vents vertically or through a sidewall
- Front located exhaust and condensate connections allow for easy install and access
- Vents with low cost PVC Schedule 40 intake and exhaust pipe. Approved for optional CPVC Schedule 40, Polypropylene and AL29-4C stainless steel vent materials
- Direct-vent intake and exhaust pipe can terminate separately outside building or through single opening, using concentric vent assembly
- Canadian installations require ULC S636 PVC/CPVC, ULC S636 Polypropylene and AL29-4C stainless steel pipe for intake and exhaust

#### HIGH EFFICIENCY MODULATING PRE-MIX POWERED BURNER

- Down-fired pre-mix burner provides optimum efficiency and quiet operation
- Top-mounted burner position prevents condensation from affecting burner operation

#### 3-YEAR LIMITED TANK / 1-YEAR LIMITED PARTS WARRANTY

- For complete warranty information, consult written warranty or go to [hotwater.com](http://hotwater.com)



**BTH-120(A) THROUGH BTH-500(A)**  
**MODEL SHOWN:**  
**BTH-199(A) SERIES 300/301**





# Commercial Gas Water Heaters

## OTHER FEATURES:

### SPACE-SAVING DESIGN FOR INSTALLATION FLEXIBILITY

- Easy-to-remove top cover for convenient access to serviceable parts
- 0" installation clearances on sides and rear, 1-1/2" installation clearance on top
- Handhole cleanout allows easy access to tank interior for cleaning
- 0" clearance to combustibles, approved for installation on combustible floors

## CODES AND STANDARDS

- CSA certified and ASME rated T&P relief valve
- Maximum hydrostatic working pressure: 160 psi
- All models are design certified by Underwriters Laboratories (UL), Inc., to ANSI Z21.10.3 - CSA 4.3 Standards
- Meets the thermal efficiency and standby loss requirements of the U.S. Department of Energy and current edition ASHRAE/IES 90.1
- Design Certified by Underwriters Laboratories to NSF standard 5 for 180°F (62°C) water
- Complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with similar requirements for ultra low-NOx emissions
- ASME tank construction optional on 120-500 model sizes

## VENT REQUIREMENTS FOR BTH 120(A) - 250(A)

Number of 90° Elbows Installed	3 Inch Pipe	4 Inch Pipe
	Maximum Feet (Meters)	Maximum Feet (Meters)
One (1)	45 feet (13.7 meters)	115 feet (35 meters)
Two (2)	40 feet (12.2 meters)	110 feet (33.5 meters)
Three (3)	35 feet (10.7 meters)	105 feet (32 meters)
Four (4)	30 feet (9.1 meters)	100 feet (30.5 meters)
Five (5)	N/A	95 feet (29 meters)
Six (6)	N/A	90 feet (27.4 meters)

## VENT REQUIREMENTS FOR BTH 300(A) - 500(A)

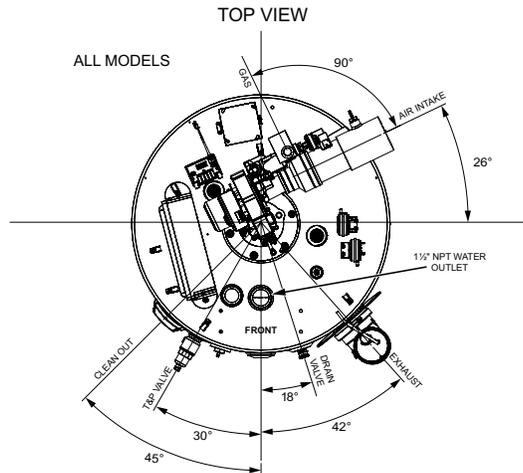
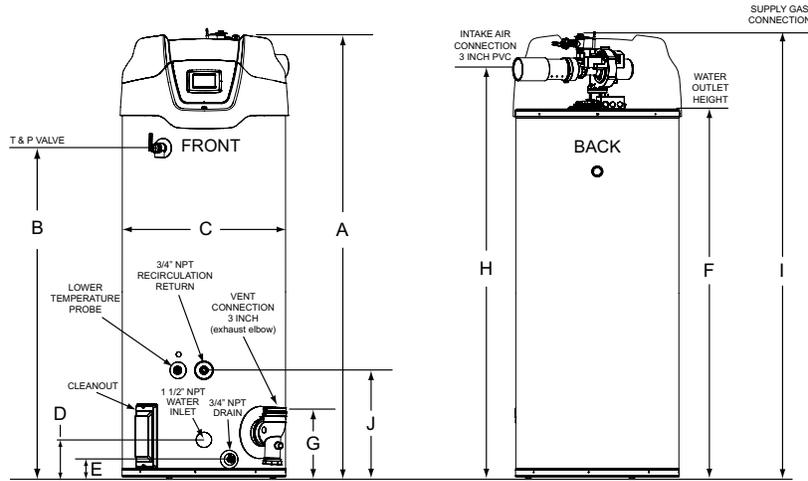
Number of 90° Elbows Installed	4 Inch Pipe	6 Inch Pipe
	Maximum Feet (Meters)	Maximum Feet (Meters)
One (1)	65 feet (19.8 meters)	115 feet (35 meters)
Two (2)	60 feet (18.2 meters)	110 feet (33.5 meters)
Three (3)	55 feet (16.8 meters)	105 feet (32 meters)
Four (4)	50 feet (15.2 meters)	100 feet (30.5 meters)
Five (5)	45 feet (13.7 meters)	95 feet (29 meters)
Six (6)	40 feet (12.2 meters)	90 feet (27.4 meters)

## GAS PRESSURE REQUIREMENTS

Model Number	Manifold Pressure		Minimum Supply Pressure		Maximum Supply Pressure	
	Natural Gas	Propane Gas	Natural Gas	Propane Gas	Natural Gas	Propane Gas
BTH-120(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	3.5"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)
BTH-150(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	3.5"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)
BTH-199(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	3.5"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)
BTH-250(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	3.5"W.C. (1.10 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)
BTH-300(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.8"W.C. (1.19 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)
BTH-400(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.8"W.C. (1.19 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)
BTH-500(A)	0"W.C. (0 kPa)	0"W.C. (0 kPa)	4.8"W.C. (1.19 kPa)	8.5"W.C. (2.12 kPa)	14"W.C. (3.49 kPa)	14"W.C. (3.49 kPa)

Depending on the installed equivalent length, and/or the number of appliances connected, the supply gas line size may need to be increased beyond the minimum required size.

## BTH 120-250



\* Center line of water outlet on top of the water heaters is approximately 7 inches from the front edge of the water heater

Model Number	Approx. Capacity		Dimensions										lb/kg	Approx. Shipping Weight Std	Approx. Shipping Weight ASME
			A	B	C	D	E	F	G	H	I	J			
BTH-120(A)	Gallons	60	55 1/2	35	27 3/4	6 5/16	3	42 1/4	11 1/4	48 1/2	53 1/2	18 1/4	lb	460	490
	Liters	227	141	88.9	70.5	16	7.62	107.32	28.6	123.2	135.9	46.36	kg	208	220
BTH-150(A)	Gallons	100	76 1/2	56 3/8	27 3/4	6 5/16	3	64	11 1/4	70	75 1/2	18 1/4	lb	523	553
	Liters	379	194.9	143.2	70.5	16	7.62	162.6	28.6	177.8	191.8	46.36	kg	237	251
BTH-199(A)	Gallons	100	76 1/2	56 3/8	27 3/4	6 5/16	3	64	11 1/4	70	75 1/2	18 1/4	lb	523	553
	Liters	379	194.9	143.2	70.5	16	7.62	162.6	28.6	177.8	191.8	46.36	kg	237	251
BTH-250(A)	Gallons	100	76 1/2	56 3/8	27 3/4	6 5/16	3	64	11 1/4	70	75 1/2	18 1/4	lb	523	553
	Liters	379	194.9	143.2	70.5	16	7.62	162.6	28.6	177.8	191.8	46.36	kg	237	251

Electrical characteristics-120V-60Hz A.C., 5.0 A

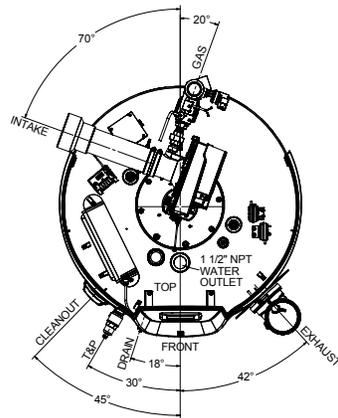
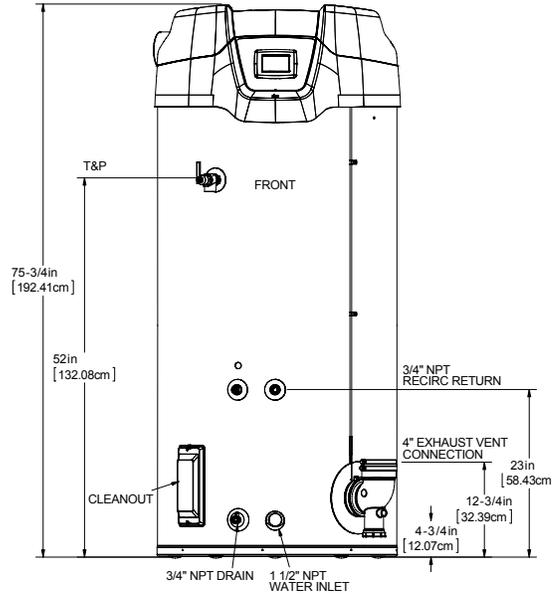
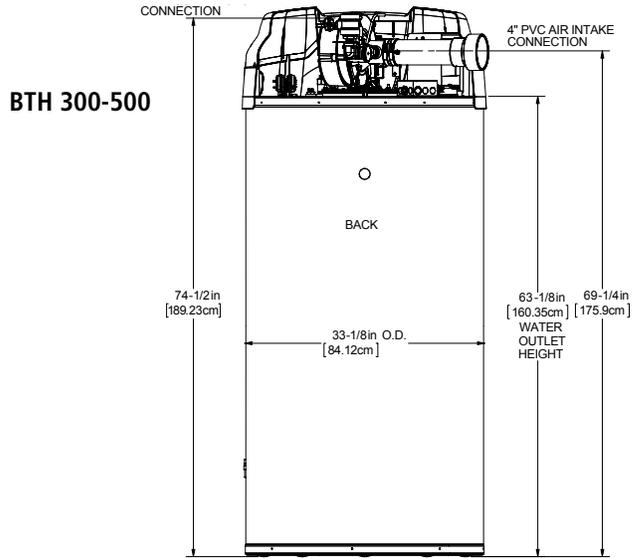
"A" in model represents ASME construction

Propane gas models available

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.



# Commercial Gas Water Heaters



Model Number	Approx. Capacity		Dimensions										lb/kg	Approx. Shipping Weight Std	Approx. Shipping Weight ASME
			A	B	C	D	E	F	G	H	I	J			
BTH-300(A)	Gallons	119	75 3/4	52	33 1/8	4 3/4	4 3/4	63 1/8	12 3/4	69 1/4	74 1/2	23	lb	855	855
	Liters	450.96	192.41	132.08	84.12	12.07	12.07	160.35	32.39	175.9	189.23	58.43	kg	387	387
BTH-400(A)	Gallons	119	75 3/4	52	33 1/8	4 3/4	4 3/4	63 1/8	12 3/4	69 1/4	74 1/2	23	lb	855	855
	Liters	450.96	192.41	132.08	84.12	12.07	12.07	160.35	32.39	175.9	189.23	58.43	kg	387	387
BTH-500(A)	Gallons	119	75 3/4	52	33 1/8	4 3/4	4 3/4	63 1/8	12 3/4	69 1/4	74 1/2	23	lb	855	855
	Liters	450.96	192.41	132.08	84.12	12.07	12.07	160.35	32.39	175.9	189.23	58.43	kg	387	387

Electrical characteristics-120V-60Hz A.C., 5.0 A

"A" in model represents ASME construction

Propane gas models available

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.



# Commercial Gas Water Heaters

## RECOVERY CAPACITY

Model Number	Type of Gas	Input		Thermal Efficiency
		BTU/HR	kW	
BTH-120(A)	Natural/Propane	120,000	35	95%
BTH-150(A)	Natural/Propane	150,000	44	98%
<b>BTH-199(A)</b>	Natural/Propane	<b>199,900</b>	58	<b>97%</b>
BTH-250(A)	Natural/Propane	250,000	73	96%
BTH-300(A)	Natural/Propane	300,000	88	96%
BTH-400(A)	Natural/Propane	399,900	117	95%
BTH-500(A)	Natural/Propane	499,900	146	95%

Model Number	U.S. GALLONS/HR AND LITRES/HR AT TEMPERATURE RISE INDICATED													
	Approx. Capacity	°F	30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F	120°F	130°F	140°F
		°C	17°C	22°C	28°C	33°C	39°C	44°C	50°C	56°C	61°C	67°C	72°C	78°C
BTH-120(A)	60 U.S. Gals.	GPH	461	345	276	230	197	173	154	138	126	115	106	99
	227 Litres	LPH	1743	1308	1046	872	747	654	581	523	475	436	402	374
BTH-150(A)	100 U.S. Gals.	GPH	594	445	356	297	255	223	198	178	162	148	137	127
	379 Litres	LPH	2248	1686	1349	1124	963	843	749	674	613	562	519	482
<b>BTH-199(A)</b>	<b>100 U.S. Gals.</b>	GPH	783	588	470	392	336	294	261	<b>235</b>	214	196	181	168
	379 Litres	LPH	2965	2224	1779	1483	1271	1112	988	890	809	741	684	635
BTH-250(A)	100 U.S. Gals.	GPH	970	727	582	485	416	364	323	291	264	242	224	208
	379 Litres	LPH	3670	2753	2202	1835	1573	1376	1223	1101	1001	918	847	786
BTH-300(A)	119 U.S. Gals.	GPH	1164	873	698	582	499	436	388	349	317	291	269	249
	450.96 Litres	LPH	4405	3304	2643	2202	1888	1652	1468	1321	1201	1101	1017	944
BTH-400(A)	119 U.S. Gals.	GPH	1535	1151	921	767	658	576	512	460	419	384	354	329
	450.96 Litres	LPH	5810	4358	3486	2905	2490	2179	1937	1743	1585	1453	1341	1245
BTH-500(A)	119 U.S. Gals.	GPH	1919	1439	1151	959	822	720	640	576	523	480	443	411
	450.96 Litres	LPH	7263	5448	4358	3632	3113	2724	2421	2179	1981	1816	1676	1556

Recovery capacities are based on AHRI rated thermal efficiencies.  
For ASME Construction add an "A" to the end of the model number ex: BTH-120A.

## STORAGE CAPACITY

Model Number	U.S. Gallons	Liters
BTH 120	60	227
BTH 150	100	379
BTH 199	100	379
BTH 250	100	379
BTH 300	119	450.96
BTH 400	119	450.96
BTH 500	119	450.96

## GAS LINE CONNECTION SIZE

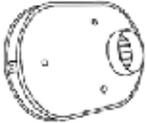
Model	Series	Natural Gas	Propane Gas
BTH 120	300/301	3/4" NPT	3/4" NPT
BTH 150	300/301	3/4" NPT	3/4" NPT
BTH 199	300/301	3/4" NPT	3/4" NPT
BTH 250	300/301	3/4" NPT	3/4" NPT
BTH 300	300/301	1-1/2" NPT	1-1/2" NPT
BTH 400	300/301	1-1/2" NPT	1-1/2" NPT
BTH 500	300/301	1-1/2" NPT	1-1/2" NPT

## OPTIONAL KITS



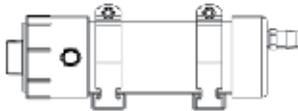
### OPTIONAL CONCENTRIC VENT KITS

- BTH-120 - 250 vent kit p/n 100111100
- BTH-300 - 500 vent kit p/n 100113124



### OPTIONAL LOW PROFILE TERMINATION VENT KITS

- 3" Flush Mount Vent Kit p/n 100187887
- 4" Flush Mount Vent Kit p/n 100187888
- 6" Flush Mount Vent Kit p/n 100187889



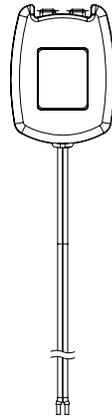
### OPTIONAL CONDENSATE NEUTRALIZATION KITS

- BTH-120-300 kit p/n 100289339
- BTH-400-500 kit p/n 100289340

## COMMON VENTING KITS FOR UP TO 3 WATER HEATERS (ONE KIT PER WATER HEATER REQUIRED)

Kit	Description
100227396	PVC Common Vent Kit, 120 – 250 Models
100223775	PVC Common Vent Kit, 300 – 500 Models
100227395	Polypropylene Common Vent Kit, 120 -250 Models
100223774	Polypropylene Common Vent Kit, 300 - 500 Models

Installations must comply with all national, state and local codes. See kit instructions and corresponding water heater manual for detailed installation instructions and additional information. 50 Feet maximum equivalent length of straight pipe common vent and elbows  
NOTE: Order 1 kit for each water heater.  
See the Common Vent Kit manual or spec sheet for detailed information.



### OPTIONAL LEAK DETECTION KIT

- BTH-120 - 500 kit p/n 100302557

## SPECIFICATION

(Natural or Propane) gas water heater(s) shall be A. O. Smith Cyclone Mxi model # \_\_\_\_\_ or equal, minimum 95% thermal efficiency, a storage capacity of \_\_\_\_\_ gallons, an input rating of \_\_\_\_\_ BTUs per hour, a recovery rating of \_\_\_\_\_ gallons per hour (gph) at 100°F rise and a maximum hydrostatic working pressure of 160 psi. Water heater(s) shall: 1. Modulating gas burner that automatically adjusts the input based on demand. 2. Powered anodes that are non sacrificial and maintenance free. 3. Have seamless glass-lined steel tank construction, with glass lining applied to all water-side surfaces after the tank has been assembled and welded; 4. Meets the thermal efficiency and/or standby loss requirements of the U. S. Department of Energy and current edition of ASHRAE/IES 90.1; 5. Have foam insulation and a CSA Certified and ASME rated T&P relief valve; 6. Have a down-fired power burner designed for precise mixing of air and gas for optimum efficiency, requiring no special calibration on start-up; 7. Be approved for 0" clearance to combustibles.

The control shall be an integrated solid-state temperature and ignition control device with integral diagnostics, graphic user interface, fault history display, and shall have digital temperature readout. No charge connectivity shall be provided allowing for remote viewing and fault notification via app. 1. All models are design certified by Underwriters Laboratories (UL), Inc., according to ANSI Z21.10.3 - CSA 4.3 standards governing storage type water heaters; 2. Meet the thermal efficiency and standby loss requirements of the U. S. Department of Energy and current edition ASHRAE/IES 90.1. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar requirements for low NOx emissions.

120K-250K BTU Input: For Standard Power Venting: Water heater(s) shall be suitable for power venting using a (3" or 4") \_\_\_\_\_ diameter PVC pipe for a total distance of (50 ft or 120 ft.) \_\_\_\_\_ equivalent feet of vent piping. For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (3" or 4") \_\_\_\_\_ diameter PVC pipe for a total distance of (50 ft or 120 ft.) \_\_\_\_\_ equivalent feet of vent piping and (50 ft. or 120 ft.) \_\_\_\_\_ equivalent feet of intake air piping.

300K - 500K BTU Input: For Standard Power Venting: Water heater(s) shall be suitable for standard power venting using a (4" or 6") \_\_\_\_\_ diameter PVC pipe for a total distance of (70 ft. or 120 ft.) \_\_\_\_\_ equivalent feet of vent piping. For Power Direct Venting: Water heater(s) shall be suitable for power direct venting using a (4" or 6") \_\_\_\_\_ diameter PVC pipe for a total distance of (70 ft or 120 ft.) \_\_\_\_\_ equivalent feet of vent piping and (70 ft. or 120 ft.) \_\_\_\_\_ equivalent feet of intake air piping.

Operation of the water heater(s) in a closed system where thermal expansion has not been compensated for (with a properly sized thermal expansion tank) will void the warranty.

For Technical Information, call 800-527-1953. A. O. Smith Corporation reserves the right to make product changes or improvements without prior notice.



## Anti-Siphon Freezeless Wall Hydrants Model 65/B65/RB65

The Model 65, B65 & RB65 are automatic draining, freezeless wall hydrants with hose connection anti-siphon vacuum breakers. Hydrants drain as handle is shut off, *even if hose is attached*. All models are intended for irrigation purposes and blend in with modern architecture for installation on restaurants, schools, office buildings, churches, apartments, motels, stores, shopping centers and industrial buildings.

### SPECIFICATIONS:

#### MODEL 65/B65/RB65 -

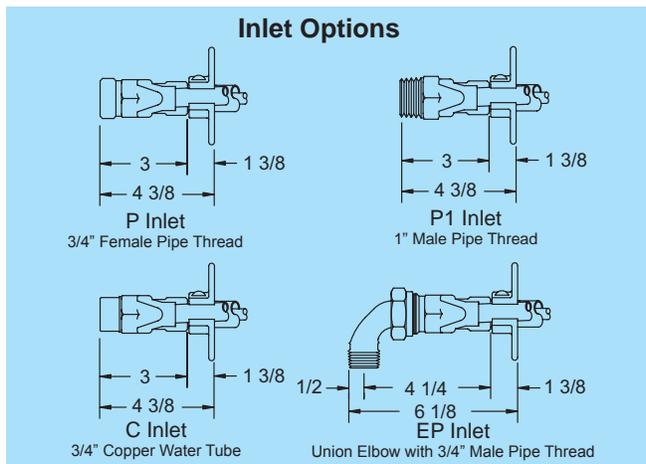
- ASSE Standard 1019-B approved
- IAPMO® listed
- Meets Government Specification WW-P-541b

#### VACUUM BREAKER - ANTI SIPHON -

- NIDEL® Model 34HA with 3/4 inch male hose thread
- ASSE Standard 1011 approved
- IAPMO® listed

### FEATURES:

- Permanent type brass valve body with hemispherical seating surface.
- One piece valve plunger accurately controls both flow and drainage with a minimum number of turns and without need for adjustments.
- Drains under nozzle away from hands of operator and with a lip to divert water away from building.
- Copper casing tubes.
- No Lead Solder on all solder joints.
- Hardened stainless steel stem resists damage.
- Loose key operates hydrant.
- 3/8" solid brass operating rod.
- Four inlet options (See below)
- Wall clamp furnished on all 60 series except close coupled.
- Max Pressure: 125 p.s.i.
- Max Temperature: 120° F



### Specify as follows:

Wall hydrant shall be Woodford Model 65 (exposed type), B65 or RB65 (concealed box type), automatic draining with anti-siphon vacuum breaker. ASSE Standard 1019-B approved. 3/4" inlet and outlet (specify type of inlet). Hardened stainless steel operating stem and one-piece valve plunger to control both flow and drain functions. Exterior finish to be Chrome Plated (options: Polished Brass or Rough Brass). Loose tee key to be furnished with each hydrant. Wall thickness to be \_\_\_\_\_ inches.

**For Installation / Troubleshooting Instructions go to  
[www.woodfordmfg.com](http://www.woodfordmfg.com) or call 1-800-621-6032**

**When ordering, specify model, inlet and wall thickness**



**MODEL 65**

Exterior Finish:  
Standard - Chrome (CH)  
Optional - Brass (BR) Polished Brass (PB)  
Fits one standard modular brick course.



**MODEL B65**

Exterior Finish: Box & Door  
Standard - Chrome (CH)  
Optional - Brass (BR) Polished Brass (PB)  
Anodized Aluminum Box (AL)  
Fits two std. modular brick course or one course of facing tile.

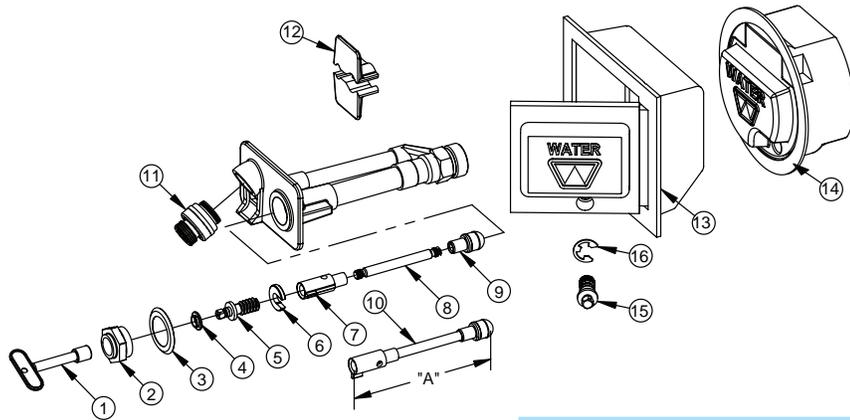


**MODEL RB65**

Exterior Finish: Box & Door - Chrome (CH) Only  
Designed especially for tilt-up wall construction.  
Install through 6" diameter hole.  
Two 3/8"-16 tapped holes for all-thread anchors in back of box. Lift and latch door stays open when hydrant is in use.

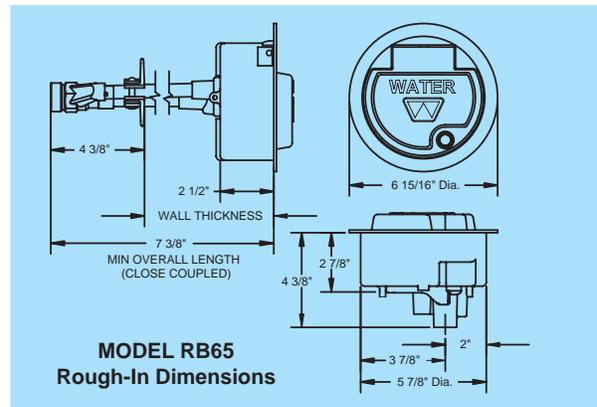
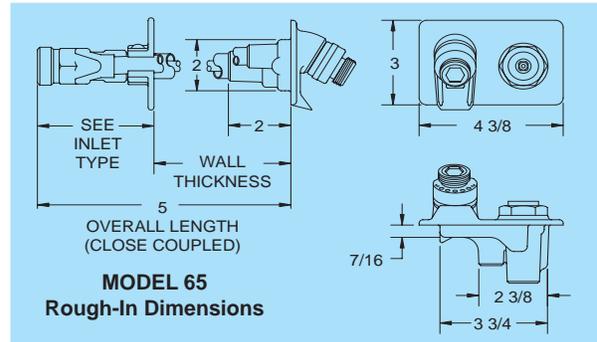


**Woodford**  
*Excellence*  
 Since 1929  
 Proudly Made In The U.S.A.



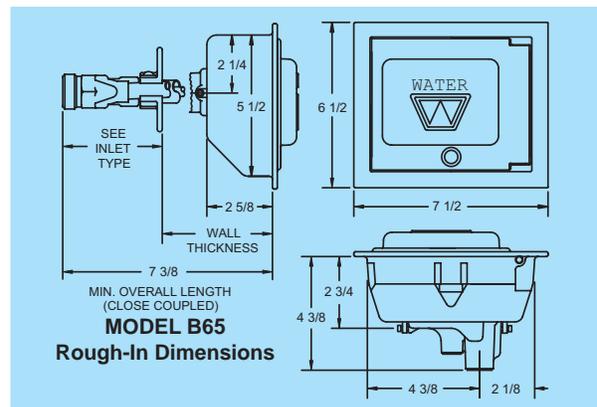
**MODEL 65/B65/RB65 PARTS LIST**

ITEM	PART #	DESCRIPTION
1	50009	Tee Key
	50010	Long Tee Key (Box Models)
2	50264	Head Nut – chrome
	50265	Head Nut – brass
3	50583	I.D. RING
4	50252	Stem Washer
5	55062	Stem Screw
6	50251	“C” washer
7	51014	Yoke Nut
8	Operating Rod (Sold With Item 10 Only)	
9	50250	Plunger
10	554XX	Operating Rod Assembly (Includes Items 7,8,9) (Select required assembled length from table below)
11	34HA-CH	34HA Vacuum Breaker – chrome
	34HA-BR	34HA Vacuum Breaker – brass
12	55063	Wall Clamp Assembly
13	67BX	Box/Door Assembly – Chrome
	65BXF	Box/Flat Door Assembly – Chrome
	67BX-BR	Box/Door Assembly - Brass
	65BXF-BR	Box/Flat Door Assembly - Brass
	67BX-PB	Box/Door Assembly – Polished Brass
	65BXF-PB	Box/Flat Door Assembly – Polished Brass
	67BX-AL	Box/Door Assembly – Aluminum
14	RB67BX	Round Box/Door Assembly - Chrome
	RK-65	Chrome Repair Kit (Includes Items 1-7 & 9)
15	51117	Door Lock Screw - Chrome
	51116	Door Lock Screw - Brass
16	51120	E-Ring



Operating Rod Assy. "A"			
Wall Thickness		Length	Part No.
65	B65/RB65		
CC	CC	3 1/2"	55401
N/A	4	4 1/2"	55402
4	6	6 1/2"	55404
6	8	8 1/2"	55406
8	10	10 1/2"	55408
10	12	12 1/2"	55410
12	14	14 1/2"	55412
14	16	16 1/2"	55414
16	18	18 1/2"	55416
18	20	20 1/2"	55418
20	22	22 1/2"	55420
22	24	24 1/2"	55422
24	N/A	26 1/2"	55424

Manufactured under one or more of the following patents:  
 U.S. Patents:  
 3,414,001  
 4,178,956  
 4,316,481  
 4,532,954  
 D216,790  
 D216,791  
 D277,365  
 D277,366  
 Canada Patents:  
 852,529  
 865,995  
 1,146,438



Wall Thickness (Inch)	CC	4	6	8	10	12	14	16	18	20	22	24
Overall Length - Hydrant	5	8	10	12	14	16	18	20	22	24	26	28
Overall Length - Box Models	7 3/8	8 3/8	10 3/8	12 3/8	14 3/8	16 3/8	18 3/8	20 3/8	22 3/8	24 3/8	26 3/8	28 3/8
Shipping Wt. (Lbs)**	3.8	4.4	4.8	5.2	5.6	6	6.4	6.8	7.2	7.6	8	8.4

\*\* Add 8.3 Lbs. for brass box models.  
 \*\* Add 2.5 Lbs. for aluminum box models.

NOTE: Close Coupled Models are not recommended for use in freezing climates and cannot use wall clamp.

For more information contact...

**WOODFORD MANUFACTURING COMPANY**

2121 Waynoka Road, Colorado Springs, Colorado 80915 • Phone: (800) 621-6032 • Fax: (800) 765-4115  
 To view our complete product line visit: [www.woodfordmfg.com](http://www.woodfordmfg.com) or email: [sales@woodfordmfg.com](mailto:sales@woodfordmfg.com)  
 A Division Of WCM Industries, Inc.

# ICE MAKER OUTLET BOX

» 696 SERIES

OxBox™

ITEM # SUBMITTED	_____
JOB NAME	_____
LOCATION	_____
ENGINEER	_____
CONTRACTOR	_____
PO#	_____ TAG _____

## SPECIFICATION

Sioux Chief 696 series supply OxBox™ shall be used where necessary in residential or commercial plumbing supply systems. Access box can be secured directly to vertical stud or between studs using galvanized bracket. Supply line can be installed from above or below. Arrester variations can be installed with arrester at any angle. Unit shall be available with 1/4-turn valves. Metal support bracket shall install into top/bottom tracks of box. Outlet connection shall be generally 1/4". Outlet connections should generally be provided with a test/tamper-resistant cap. Every unit shall include a debris cover for protection during rough-in. Valves will be plated.

## MATERIALS

- Valve body:** no-lead brass<sup>1</sup>
- Valve shank:** no-lead brass<sup>1</sup>/copper/PPSU/CPVC, 304SS grip ring
- Outlet box/frame:** ABS
- Arrester body:** stainless steel, C69300 NL brass<sup>1</sup>
- Arrester piston:** GFPP with EPDM o-rings
- Bracket:** galvanized steel

## CERTIFICATIONS/APPROVALS

NSF-372 compliant, IAPMO listed box and valve, ASSE 1010 arrester\*  
Valve meets ASME A112.18.1

## VALVE/ARRESTER WORKING LIMITS

- Max working temperature:** 200°F
- Max air/water testing & working pressure:** 150 PSIG

## DIMENSIONS

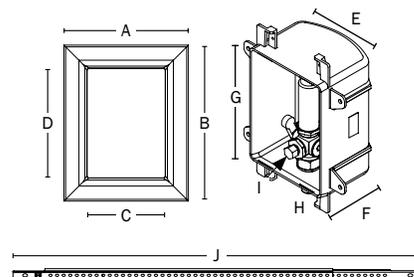
- A:** Frame width 5 3/4"
- B:** Frame height 7 1/4"
- C:** Frame opening width 3 3/8"
- D:** Frame opening height 5 1/8"
- E:** Rough-in box inner width 4"
- F:** Rough-in box overall depth 3 1/2"
- G:** Rough-in box inner height 5 1/2"
- H:** Supply connection 1/2" nominal
- I:** Outlet connection 1/4" compression
- J:** Bracket length 18"



696-G1010XF



696-G1000WR



### Create Item Number

## 696-G10A0B C

e.g. **696-G1010MF:** Ice maker supply box with no lead FSWT valve with arrester and frame

### ARRESTER A

- 0** = No arrester
- 1** = With arrester\*

### SUPPLY CONNECTION B

- C** = 1/2" Male CPVC
- M** = 1/2" MIP/FSWT
- P** = 1/2" Male sweat/press/push
- V** = 1/2" Viega® PureFlow® PEX
- W** = 1/2" PEX F1960 Grip™
- X** = 1/2" PEX F1807/F2159 Crimp™

### FRAME PACKAGING C

- F** = Standard pack (supply box, frame, bracket, debris cover)
- FPK4** = Display box (supply box, frame, bracket, debris cover)
- FS** = Standard pack w/6-ft. braided supply line
- R** = Rough-in pack (supply box, bracket, debris cover)

Available Separately:  
696-1F: frame only  
696-SC1: frame insert w/ hose knockout  
696-EX: frame extension

# American Standard

Style That Works Better

 BARRIER FREE

## AQUALYN™ COUNTERTOP SINK VITREOUS CHINA

### AQUALYN™ COUNTERTOP SINK

- Made from vitreous china
- Self-rimming with cutout template supplied
- Front overflow
- Faucet ledge  
Shown with 4801.862 Amarelis/Heritage faucet with Triune cross handles (not included)

- 0475.020** Faucet holes on 8" (203mm) centers (illustrated)
- 0475.920** Faucet holes on 8" (203mm) centers
  - Less overflow
- 0476.028** Faucet holes on 4" (102mm) centers
- 0476.037** Faucet holes on 4" (102mm) centers
  - Extra right-hand hole
- 0475.035** Faucet holes on 4" (102mm) centers
  - Extra left-hand hole
- 0476.928** Faucet holes on 4" (102mm) centers
  - Less overflow
- 0475.047** Center hole only

#### Nominal Dimensions:

518 x 441mm  
(20-3/8" x 17-3/8")

#### Bowl sizes:

406mm (16") wide  
254mm (10") front to back  
143mm (5-5/8") deep

#### Compliance Certifications - Meets or Exceeds the Following Specifications:

- ASME A112.19.2M for Vitreous China Fixtures

#### To Be Specified:

- Color:  White  Bone
- Linen  Silver
- Fawn Beige  Black
- Faucet\*:
- Faucet Finish:
- Supplies:
- 1-1/4" Trap:

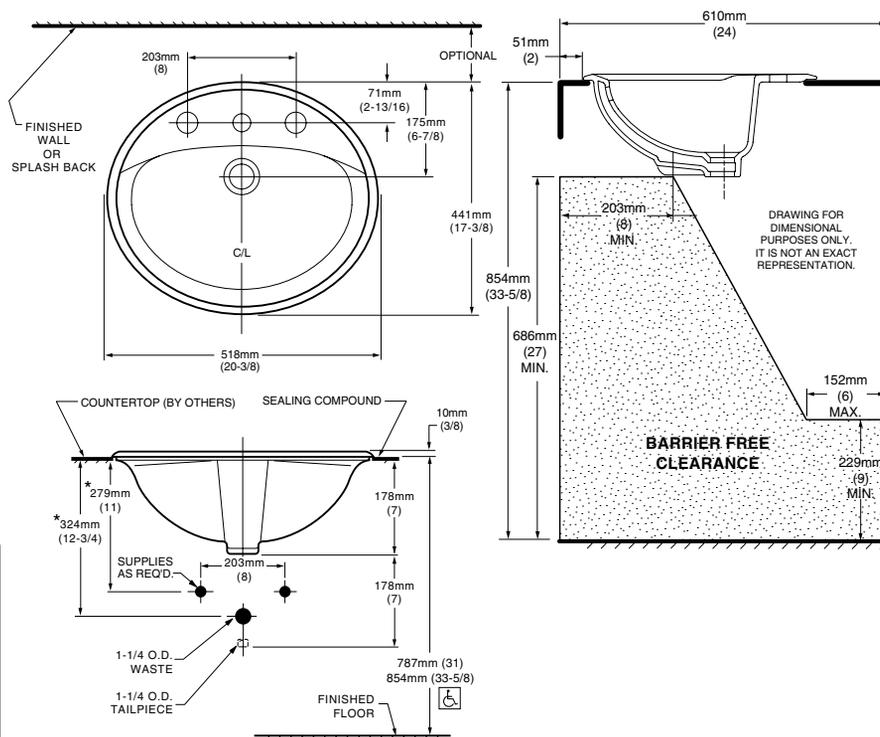
\* See faucet section for additional models available

 **MEETS THE AMERICANS WITH DISABILITIES ACT GUIDELINES AND ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES - CHECK LOCAL CODES.**

Install lavatory 864mm (34") from finished floor.  
Lavatory installed 51mm (2") minimum from front edge of countertop provides 686mm (27") knee clearance area.



SEE REVERSE FOR ADDITIONAL ROUGHING-IN DIMENSIONS

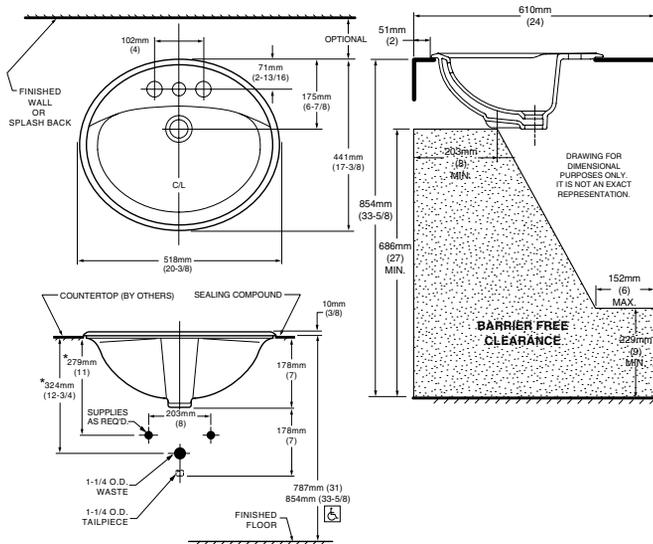


#### NOTES:

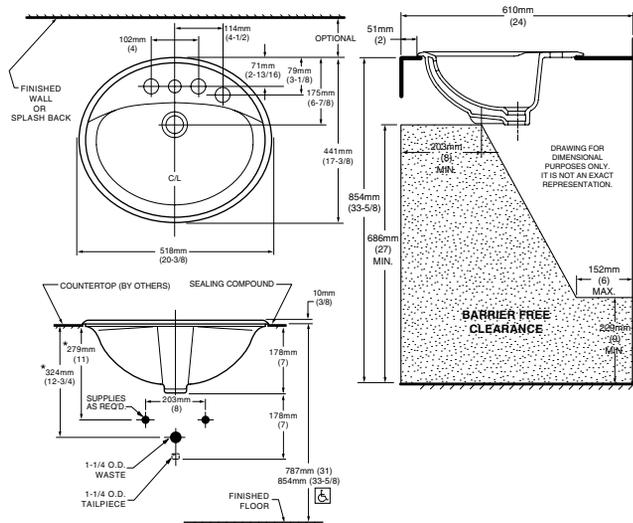
\* DIMENSIONS SHOWN FOR LOCATION OF SUPPLIES AND "P" TRAP ARE SUGGESTED.  
FOR COUNTERTOP CUTOUT AND INSTALLATION INSTRUCTIONS USE TEMPLATE SUPPLIED WITH SINK.  
FITTINGS NOT INCLUDED WITH FIXTURE AND MUST BE ORDERED SEPARATELY.  
SEALING COMPOUND SUPPLIED BY OTHERS.

**IMPORTANT:** Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.2. These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided pages.

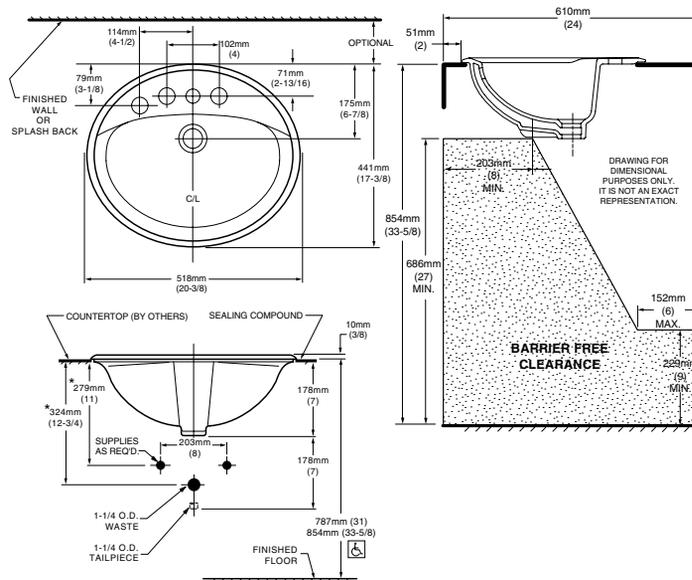
### 0476.028 Faucet holes on 4" (102mm) centers



### 0476.037 Faucet holes on 4" (102mm) centers • Extra right-hand hole



### 0475.035 Faucet holes on 4" (102mm) centers • Extra left-hand hole



**MEETS THE AMERICANS WITH DISABILITIES ACT GUIDELINES AND ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES - CHECK LOCAL CODES.**

Install lavatory 864mm (34") from finished floor.  
Lavatory installed 51mm (2") minimum from front edge of countertop provides 686mm (27") knee clearance area.

**NOTES:**

\* DIMENSIONS SHOWN FOR LOCATION OF SUPPLIES AND "P" TRAP ARE SUGGESTED.  
FOR COUNTERTOP CUTOUT AND INSTALLATION INSTRUCTIONS USE TEMPLATE SUPPLIED WITH SINK.  
FITTINGS NOT INCLUDED WITH FIXTURE AND MUST BE ORDERED SEPARATELY.  
SEALING COMPOUND SUPPLIED BY OTHERS.

**IMPORTANT:** Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.2. These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided pages.

# MECHANICAL FAUCETS

## 420-T45ABCP

### Manual Faucets



### LAV-1 FAUCET

#### Product Type

Deck Mounted 4" Fixed Centers Single Lever Hot and Cold Water  
Thermostatic Mixing Sink Faucet

#### Features & Specifications

- 4" Fixed Centers
- 1.5 GPM (5.7 L/min) Non-Aerating Outlet
- 1/2" NPSM Supply Inlets for 3/8" or 1/2" Flexible Riser
- Ceramic Mixing Cartridge - Includes Thermostatic Scald Protection
- Cartridge includes Integral inlet check valves to protect against cross-flow
- 4-5/8" Center to Center Rigid Cast Brass Spout
- ECAST® design provides durable construction with total lead content equal to or less than 0.25% by weighted average

#### Performance Specification

- Rated Operating Pressure: 20-125 PSI
- Hot Inlet Temperature: 100°F-180°F (38°C-82°C)
- Maximum Temperature Out: 113°F (45°C)
- Minimum Approved Flow Rate for Temp Limiting: 0.35 GPM

#### Warranty

- 5-Year Limited Faucet Warranty
- 1-Year Limited Cartridge Warranty
- 1-Year Limited Finish Warranty

#### Codes & Standards

- ASME A112.18.1/CSA B125.1
- Certified to NSF/ANSI 61, Section 9 by CSA
- California Health and Safety Code 116875 (AB1953-2006)
- Vermont Bill S.152
- NSF/ANSI 372 Low Lead Content
- ADA ANSI/ICC A117.1
- Certified to ASSE 1070 by CSA
- Certified to WaterSense by CSA

Job Name \_\_\_\_\_

Item Number \_\_\_\_\_

Section/Tag \_\_\_\_\_

Model Specified \_\_\_\_\_

Architect \_\_\_\_\_

Engineer \_\_\_\_\_

Contractor \_\_\_\_\_

Submitted as Shown       Submitted with Variations

Date \_\_\_\_\_



#### ECAST

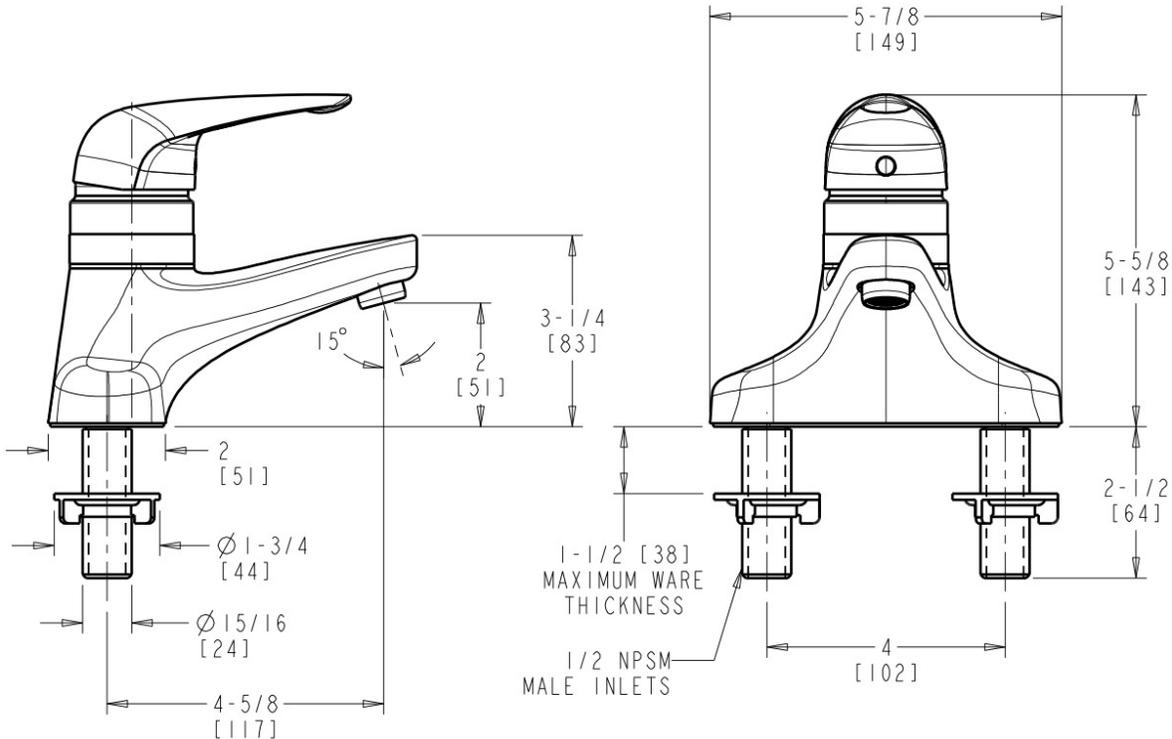
ECAST products are intended for installation where state laws and local codes mandate lead content levels or in any location where lead content is a concern.



2100 South Clearwater Drive  
Des Plaines, IL  
P: 847/803-5000  
F: 847/803-5454  
Technical: 800/TEC-TRUE  
www.chicagofaucets.com

### Architect/Engineer Specification

Chicago Faucets No. 420-T45ABCP, Sink Faucet for hot and cold water, single lever, deck-mounted with 4" fixed centers, chrome plated. Rigid, cast brass spout, 4-5/8" center-to-center. 1.5 GPM (5.7 L/min) pressure compensating, non-aerating, laminar outlet. Ceramic mixing cartridge, includes thermostatic scald protection. Cartridge includes Integral inlet check valves to protect against cross-flow, 1/2" NPSM supply inlets for 3/8" or 1/2" flexible riser. ECAST® construction with less than 0.25% lead content by weighted average. This product meets ADA ANSI/ICC A117.1 requirements and is tested and certified to industry standards: ASME A112.18.1/CSA B125.1, ASSE 1070/ASME A112.1070/CSA B125.70, Certified to NSF/ANSI 61, Section 9, California Health and Safety Code 116875 (AB1953-2006), Vermont Bill S.152, and NSF/ANSI 372 Low Lead Content.



### Operation and Maintenance

Installation should be in accordance with local plumbing codes. Flush all pipes thoroughly before installation. After installation, remove spout outlet or flow control and flush faucet thoroughly to clear any debris. Care should be taken when cleaning the product. Do not use abrasive cleaners, chemicals or solvents as they can result in surface damage. Use mild soap and warm water for cleaning and protecting the life of Chicago Faucet products. For specific operation and maintenance refer to the installation instructions and repair parts documents that are located at [www.chicagofaucets.com](http://www.chicagofaucets.com).

Chicago Faucets, member of the Geberit Group, is the leading brand of commercial faucets and fittings in the United States, offering a complete range of products for schools, laboratories, hospitals, office buildings, food service, airports and sport facilities. Call 1.800.TECTRUE or 1.847.803.5000 Option 1 for installation or other technical assistance.



## Engineering Specification

Job Name \_\_\_\_\_  
 Job Location \_\_\_\_\_  
 Engineer \_\_\_\_\_  
 Approval \_\_\_\_\_

Contractor \_\_\_\_\_  
 Approval \_\_\_\_\_  
 Contractor's P.O. No. \_\_\_\_\_  
 Representative \_\_\_\_\_

# LEAD FREE\*

## Series LF009 Reduced Pressure Zone Assemblies

Sizes: 1/4" – 3"

Series LF009 Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross-connections in piping systems or for containment at the service line entrance. The coating on this backflow assembly uses ArmorTek™ technology to resist corrosion due to microbial induced corrosion (MIC) or exposed metal substrate.\* The LF009 features Lead Free\* construction to comply with Lead Free\* installation requirements.

This series features two in-line, independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes 1/4" – 1" shutoffs have tee handles.

### Features

- Single access cover and modular check construction for ease of maintenance
- Top entry – all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Utilizes advanced ArmorTek™ coating technology to resist corrosion of internals\*
- Lead Free\* cast copper silicon alloy body construction for durability 1/4" – 2"
- Fused epoxy coated cast iron body 2 1/2" and 3"
- Ball valve test cocks — screwdriver slotted 1/4" – 2"
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

### Specifications

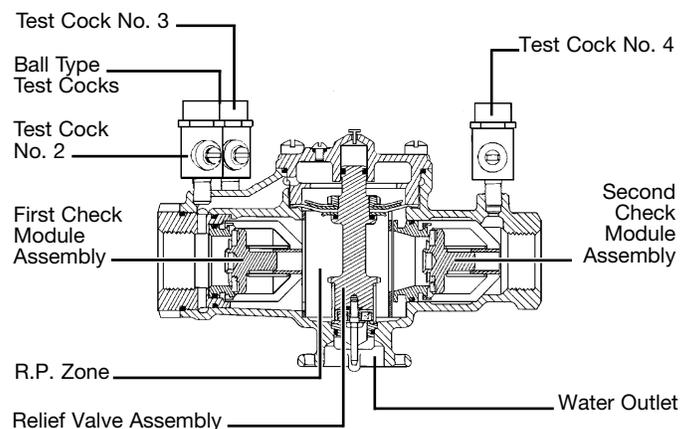
A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to backsiphonage and/or backpressure. The assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access cover secured with stainless steel bolts. Body and shutoffs shall be constructed using Lead Free\* cast copper silicon alloy materials. Lead Free\* reduced pressure zone assembly shall comply with state codes and standards, where applicable, requiring reduced lead content.

The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting. The valve body shall utilize a coating system with built in electrochemical corrosion inhibitor and microbial inhibitor.\* The assembly shall meet the requirements of: USC; ASSE Std. 1013; AWWA Std. C511; CSA B64.4. Shall be a Watts Series LF009.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.



LF009



**Now Available  
WattsBox Insulated Enclosures.**

For more information, send for literature ES-WB.

### NOTICE

Inquire with governing authorities for local installation requirements

### NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

**\*The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

\* Armortek coating applies to the 2 1/2" and 3" models only.

**WATTS®**

## Available Models: 1/4" – 2"

### Suffix:

- QT – quarter-turn ball valves  
 S – strainer  
 LF – without shutoff valves  
 PC – internal polymer coating  
 W/Press\*\* – press inlet x press outlet (1/2" – 2" only)

### Prefix:

- U – union connections

## Available Models: 2 1/2" – 3"

### Suffix:

- NRS – non-rising stem resilient seated gate valves  
 OSY – UL/FM outside stem and yoke resilient seated gate valves  
 S-FDA – FDA epoxy coated strainer  
 LF – without shutoff valves

**Note: The installation of a drain line is recommended. When installing a drain line, an air gap is necessary (see ES-AG).**

## Materials: 1/4" – 2"

Lead Free\* cast copper silicon alloy body construction, silicone rubber disc material in the first and second check plus the relief valve. Replaceable polymer check seats for first and second checks. Removable Relief valve seats. Stainless steel cover bolts.

Standardly furnished with NPT body connections. Model LF009QT furnished with quarter-turn, full port, resilient seated, Lead Free\* cast copper silicon alloy body ball valve shutoffs.

## Materials: 2 1/2" and 3"

- (FDA approved) Epoxy coated cast iron unibody with plastic seats
- Relief valve with stainless steel seat and trim
- Lead Free cast copper silicon alloy body ball valve test cocks

## Pressure / Temperature

**Sizes 1/4" – 2"** Suitable for supply pressure up to 175psi (12.1 bar). Water temperature: 33°F – 180°F (0.5° – 82°C).

**Sizes 2 1/2" and 3"** are suitable for supply pressures up to 175psi (12.1 bar) and water temperature at 110°F (43°C) continuous, 140°F (60°C) intermittent.

## Standards

- USC  
 ASSE No. 1013  
 AWWA C511  
 CSA B64.4  
 IAPMO File No. 1563.



## Approvals

ASSE, AWWA, CSA, IAPMO

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Approval models QT, PC, NRS, OSY.

UL Classified

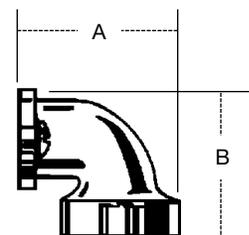
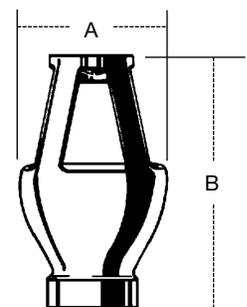
2 1/2" and 3" with OSY gate valves.

3/4" - 2" without shutoff valves (-LF) (except LF009M3LF)

## Air Gaps and Elbows

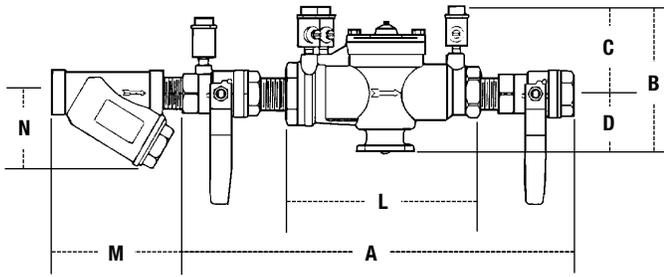
MODEL	DRAIN OUTLET	DIMENSIONS				WEIGHT		
		for 909, 009 and 993 sizes		A		B		lbs.
	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>	<i>in.</i> <i>mm</i>	<i>lbs.</i>	<i>kgs.</i>		
909AGA	1/4"-1/2" 009, 3/4" 009M2/M3	1/2 13	2 3/8 60	3 1/8 79	0.625	0.28		
909AGC	3/4"-1" 009/909, 1"-1 1/2" 009M2	1 25	3 1/4 83	4 7/8 124	1.5	0.68		
909AGF	1 1/4"-2" 009M1, 1 1/4"-3" 009/909, 2" 009M2, 4"-6" 993	2 51	4 3/8 111	6 3/4 171	3.25	1.47		
909AGK	4"-6" 909, 8"-10" 909M1	3 76	6 3/8 162	9 3/8 244	6.25	2.83		
909AGM	8"-10" 909	4 102	7 3/8 187	11 1/4 286	15.5	7.03		
909ELA	1/4"-1/2" 009, 3/4" 009M2/M3	- -	- -	- -	-	-		
909ELC	3/4"-1" 009/909	- -	2 3/8 60	2 3/8 60	0.38	0.17		
* 909ELF	1 1/4"-2" 009M1, 1 1/4"-2" 009/909, 2" 009M2, 4"-6" 993	- -	3 3/8 92	3 3/8 92	2	0.91		
* 909ELH Vertical	2 1/2"-3" 009/909	- -	- -	- -	-	-		

\*\* Viega ProPress® connections are optional factory-installed fitting on each end of the approved/certified assembly.



**Dimensions – Weight**

**Size: 1/4" – 2" LF009**

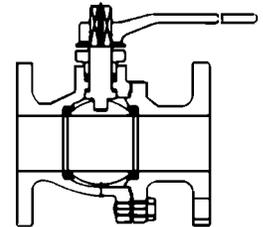
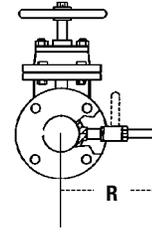
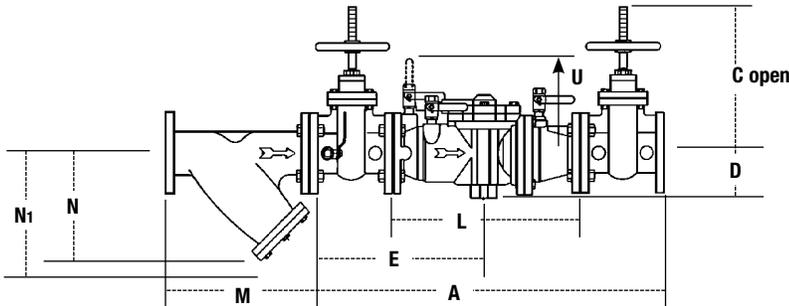


**LF009 1/4" – 2"**

SIZE		DIMENSIONS (APPROX.)								WEIGHT						
	A		B		C		D		L		M		N		lbs.	kgs.
in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm		
1/4	10	250	4 5/8	117	3 3/8	86	1 1/4	32	5 1/2	140	2 3/8	60	2 1/2	64	5	2
3/8	10	250	4 5/8	117	3 3/8	86	1 1/4	32	5 1/2	140	2 3/8	60	2 1/2	64	5	2
1/2	10	250	4 5/8	117	3 3/8	86	1 1/4	32	5 1/2	140	2 3/4	70	2 1/4	57	5	2
3/4	10 3/4	273	5	127	3 1/2	89	1 1/2	38	6 3/4	171	3 3/16	81	2 3/4	70	6	3
1	14 1/2	368	5 1/2	140	3	76	2 1/2	64	9 1/2	241	3 3/4	95	3	76	12	5
1 1/4	17 3/8	441	6	150	3 1/2	89	2 1/2	64	11 3/8	289	4 7/16	113	3 1/2	89	15	6
1 1/2	17 1/8	454	6	150	3 1/2	89	2 1/2	64	11 1/8	283	4 7/8	124	4	102	16	7
2	21 3/8	543	7 3/4	197	4 1/2	114	3 1/4	83	13 1/2	343	5 5/16	151	5	127	30	13

**Dimensions – Weight**

**Size: 2 1/2" and 3" LF009**



**Watts G-4000 Series  
QT – Ball Valves**

STRAINER SIZE		DIMENSIONS (APPROX.)				WEIGHT			
in.	mm	M		N		N1†		lbs.	kgs.
		in.	mm	in.	mm	in.	mm		
2 1/2	65	10	254	6 1/2	165	9 3/4	248	28	12.7
3	80	10 1/8	257	7	178	10	254	34	15.4

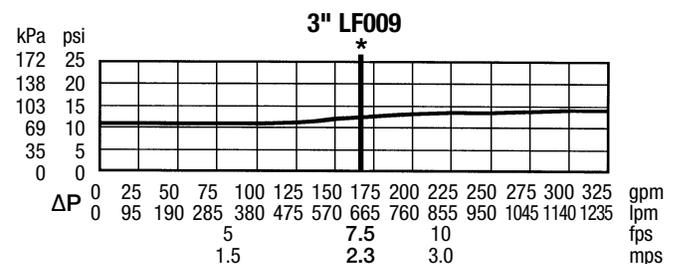
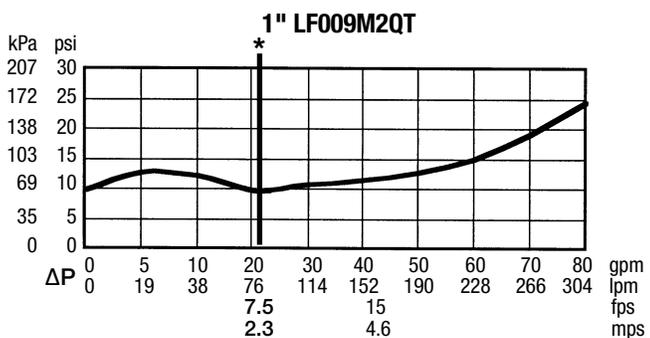
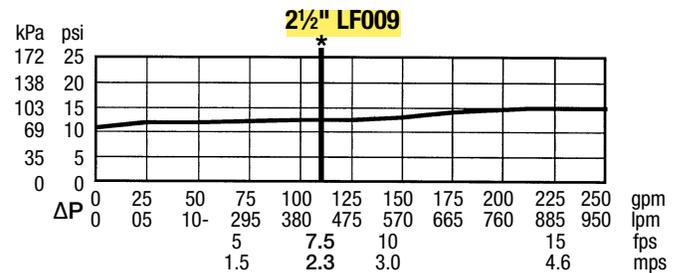
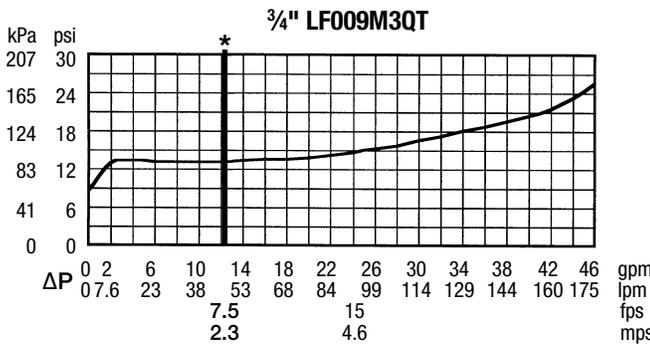
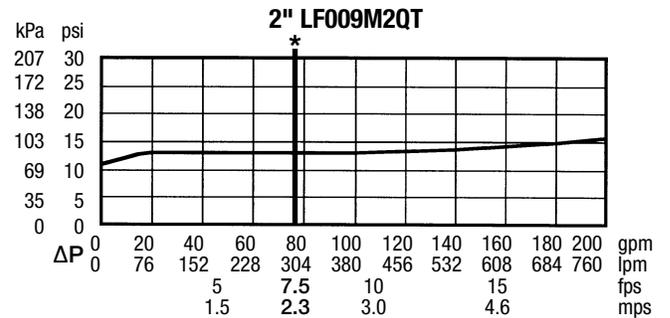
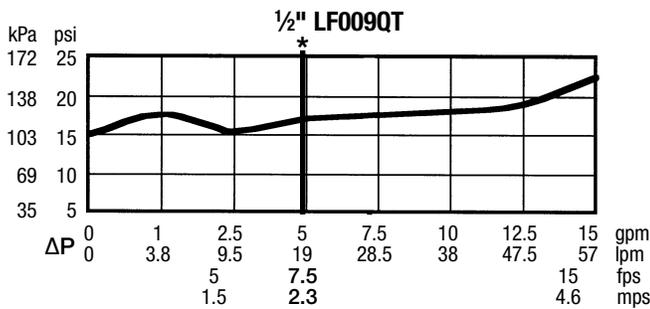
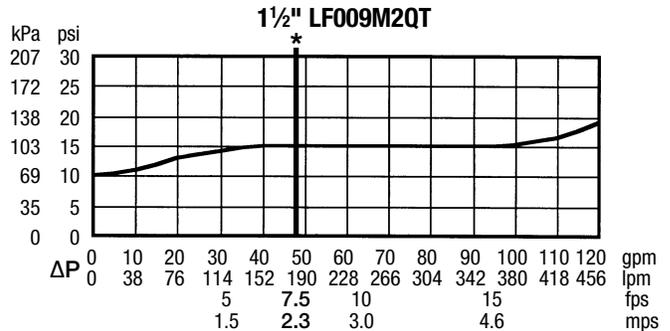
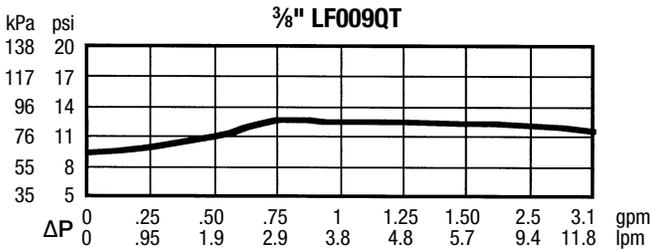
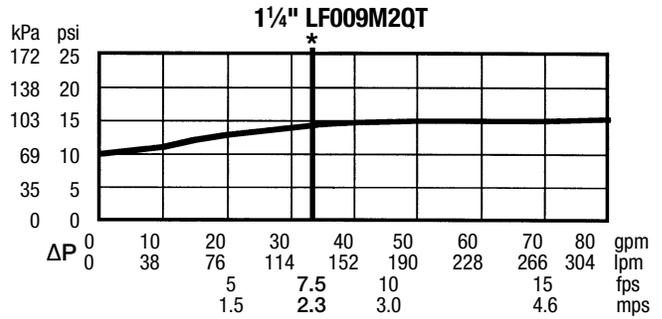
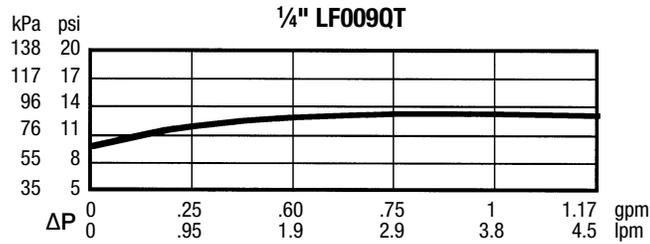
†Clearance for servicing

MODEL	SIZE	DIMENSIONS (APPROX.)								WEIGHT							
		A		C		D		E		L		R		U			
	in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LF009LF	2 1/2	—	—	—	—	4 1/2	114	—	—	18 1/8	460	—	—	10 5/8	270	76	34.5
LF0090SY	2 1/2	33 3/4	845	15 5/8	403	4 1/2	114	16 3/8	416	18 1/8	460	7 3/4	197	10 5/8	270	166	75.3
LF009NRS	2 1/2	33 3/4	845	11 3/8	289	4 1/2	114	16 3/8	416	18 1/8	460	7 3/4	197	10 5/8	270	161	73.0
LF009LF	3	—	—	—	—	4 1/2	114	—	—	18 1/8	460	—	—	10 5/8	270	76	34.5
LF0090SY	3	34 1/4	870	18 1/2	470	4 1/2	114	16 5/8	422	18 1/8	460	8 3/4	222	10 5/8	270	198	89.8
LF009NRS	3	34 1/4	870	12 3/4	324	4 1/2	114	16 5/8	422	18 1/8	460	8 3/4	222	10 5/8	270	191	86.6

# Capacity

Performance as established by an independent testing laboratory.

\*Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)



**PRODUCT SPECIFICATIONS**

Elkay Avado Single Hole Kitchen Faucet with Pull-down Spray and Forward Only Lever Handle. Faucet has a flow rate of 1.8 GPM, and is made of Brass material, with a Ceramic Disc valve. Faucet requires 1 faucet holes.

<b>Mounting Type:</b>	Deck Mount
<b>Special Features:</b>	Solid Brass Construction
<b>Spray Type:</b>	Pull Down
<b>Finish:</b>	Black Stainless (BK), Chrome (CR), Lustrous Steel (LS), Matte Black (MB)
<b>Handle Type:</b>	Forward Only Lever Handle
<b>Deck Clearance:</b>	8-1/8"
<b>Spout Reach:</b>	9-1/8"
<b>Spout Height:</b>	15-11/16"
<b>Hole Drillings:</b>	1
<b>Material:</b>	Brass
<b>Valve Type:</b>	Ceramic Disc
<b>Valve Connection:</b>	3/8" Female Compression Hose Assembly
<b>Flow Rate:</b>	1.8 GPM
<b>Faucet Hole Size (min):</b>	1-1/2"
<b>Countertop Thickness:</b>	3
<b>Spout Swing Rotation:</b>	360°
<b>Spout Type:</b>	Pull-down Spray
<b>Spray Functions:</b>	Aerated, Nylon Hand Spray Hose, Spray



**S-1 FAUCET**

**Included with Product:**      **Optional Deck Plate/Escutcheon included**

AMERICAN PRIDE. A LIFETIME TRADITION.  
Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.

**Product Compliance:**      ADA & ICC A117.1  
ASME A112.18.1/CSA B125.1  
CEC  
NSF 372 (lead free)  
NSF 61

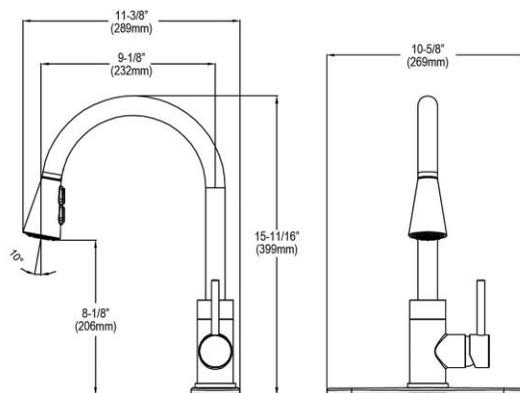


Complies with ADA & ICC A117.1 accessibility requirements when installed according to the requirements outlined in these standards.

[Clean and Care Manual \(PDF\)](#)  
[Installation Instructions \(PDF\)](#)  
[Warranty \(PDF\)](#)

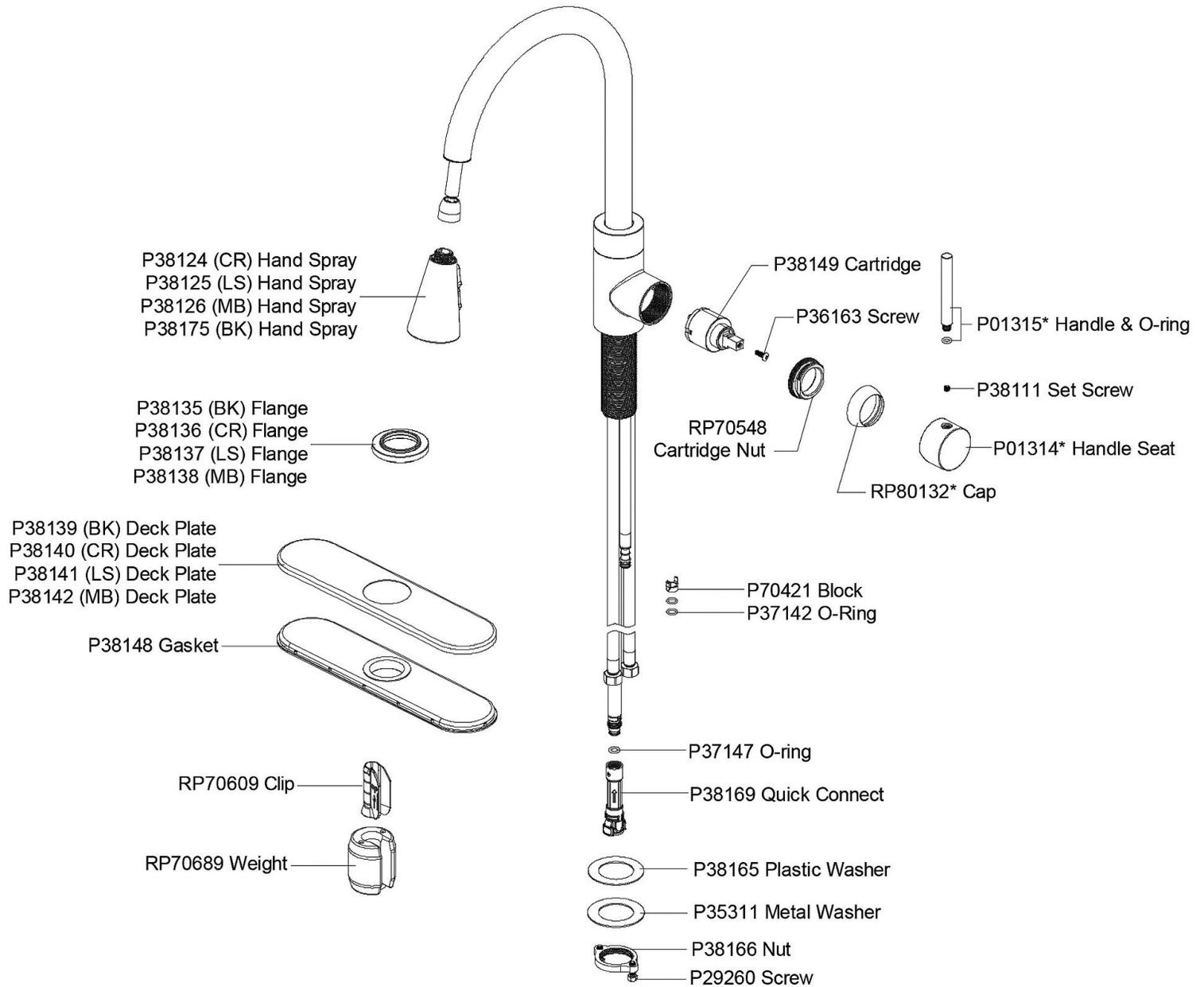
**OPTIONAL ACCESSORIES**

LK134  
LK321



PART: \_\_\_\_\_ QTY: \_\_\_\_\_  
PROJECT: \_\_\_\_\_  
CONTACT: \_\_\_\_\_  
DATE: \_\_\_\_\_  
NOTES: \_\_\_\_\_  
APPROVAL: \_\_\_\_\_

*In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit [elkay.com](http://elkay.com) for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.*



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**PRODUCT SPECIFICATIONS**

Elkay Lustertone™ Classic Stainless Steel 15" x 17-1/2" x 6-1/2", Single Bowl Drop-in ADA Sink. Sink is manufactured from 18 gauge 304 Stainless Steel with a Lustrous Satin finish, Center drain placement, and Bottom only pads.



S-1

<b>Installation Type:</b>	Drop-in
<b>Material:</b>	304 Stainless Steel
<b>Finish:</b>	Lustrous Satin
<b>Gauge:</b>	18
<b>Sound Deadening:</b>	Bottom only pads
<b>Number of Bowls:</b>	1
<b>Sink Dimensions:</b>	15" x 17-1/2" x 6-1/2"
<b>Bowl 1 Dimensions:</b>	12" x 12" x 6-3/8"
<b>Drain Size:</b>	3-1/2" (89mm)
<b>Drain Location:</b>	Center
<b>Minimum Cabinet Size:</b>	18"
<b>Mounting Hardware:</b>	Part # 64090010 included for countertops up to 3/4" (19mm) thick
<b>Template Included:</b>	No
<b>Cutout Template #:</b>	<a href="#">1000001273</a>

Template is available for download at [elkay.com](http://elkay.com). CAD software will be required to open the template.

**Cutout Dimensions for Drop-in Installation:**

14-3/8" x 16-7/8" (365mm x 429mm) with 1-1/2" (38mm) corner radius

<b>Custom Options</b>	
<input type="checkbox"/> Type 316 Stainless Steel	
<b>Drain Location</b>	
<input type="checkbox"/> Right Rear	<input type="checkbox"/> Left Rear
<input type="checkbox"/> Center	<input type="checkbox"/> Center Rear
<b>Overflow Location</b>	
<input type="checkbox"/> Front	<input type="checkbox"/> Rear
<b>Alternate Punching</b>	
<input type="checkbox"/> Faucet Model:	<input type="checkbox"/> Punch Required:
<b>Sink Size</b>	
<input type="checkbox"/> Bowl Depth:	<input type="checkbox"/> Drainboard Width:

**AMERICAN PRIDE. A LIFETIME TRADITION.**

Like your family, the Elkay family has values and traditions that endure. For almost a century, Elkay has been a family-owned and operated company, providing thousands of jobs that support our families and communities.



**Product Compliance:** ADA & ICC A117.1  
ASME A112.19.3/CSA B45.4  
Buy American Act



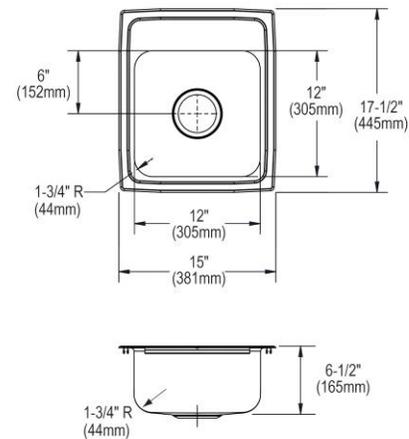
Sinks are listed by IAPMO® as meeting the applicable requirements of the Uniform Plumbing Code®, International Plumbing Code®, and National Plumbing Code of Canada.



Complies with ADA & ICC A117.1 accessibility requirements when installed according to the requirements outlined in these standards.

[Clean and Care Manual \(PDF\)](#)  
[Installation Instructions \(PDF\)](#)  
[Warranty \(PDF\)](#)

**Similar models are available with:** additional ADA depths



PART: \_\_\_\_\_ QTY: \_\_\_\_\_

PROJECT: \_\_\_\_\_

CONTACT: \_\_\_\_\_

DATE: \_\_\_\_\_

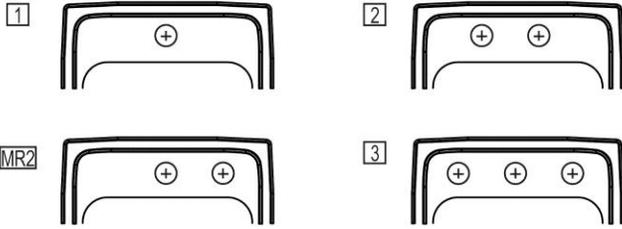
NOTES: \_\_\_\_\_

APPROVAL: \_\_\_\_\_

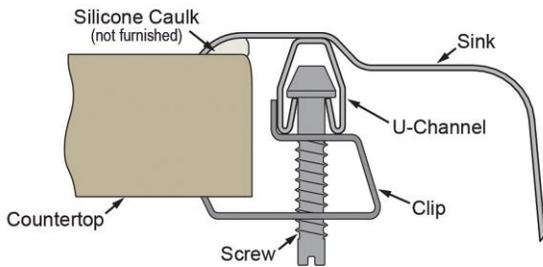
*In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit [elkay.com](http://elkay.com) for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.*

**Hole Drilling Configurations:**

1-1/2" (38mm) Diameter Faucet Holes on 4" (102mm) Centers



**Installation Profile:**



Optional Accessories		
<a href="#">CB912</a>	Elkay Hardwood 12-7/8" x 10-1/8" x 1" Cutting Board <a href="#">Spec Sheet (PDF)</a>	
<a href="#">LK99</a>	Elkay Deluxe 3-1/2" Drain Type 304 Stainless Steel Body Strainer Basket Rubber Seal and Tailpiece <a href="#">Spec Sheet (PDF)</a>	
<a href="#">LKAD35</a>	Elkay 3-1/2" Drain Fitting" Stainless Steel Body Strainer Basket and Offset Tailpiece <a href="#">Spec Sheet (PDF)</a>	
<a href="#">LKWRB1209SS</a>	Elkay Stainless Steel 8" x 11" x 7" Rinsing Basket <a href="#">Spec Sheet (PDF)</a>	

*In keeping with our policy of continuing product improvement, Elkay reserves the right to change product specifications without notice. Please visit [elkay.com](http://elkay.com) for the most current version of Elkay product specification sheets. This specification describes an Elkay product with design, quality, and functional benefits to the user. When making a comparison of other producers' offerings, be certain these features are not overlooked.*



# Submittal Sheet

Aquatic products may be specified as Lasco Bathware.

## 1363BFRF

ADA Compliant

CUSTOMER: \_\_\_\_\_

JOB NAME: \_\_\_\_\_

PO #: \_\_\_\_\_

QUOTE #: \_\_\_\_\_ QUANTITY: \_\_\_\_\_

SHIP TO: \_\_\_\_\_

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
PLUMBING CONTRACTOR APPROVAL DATE

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
GENERAL CONTRACTOR APPROVAL DATE

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
ENGINEER APPROVAL DATE

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
ARCHITECT APPROVAL DATE

### STANDARD FEATURES

- Code compliant when fully equipped and installed according to guidelines
- Barrier-free design
- Center drain location
- Slip resistant, textured bottom [ASTM F-462]

### CONFIGURATION

- Fully equipped with seat-ADA  
 Seat location  LH  RH  
 Includes 1¼" diameter stainless steel L-shaped grab bar;  
 white-cushioned, L-shaped fold-up seat; pressure balancing mixing valve  
 and hand-held shower assembly, (installed opposite side of seat) per ADA guidelines

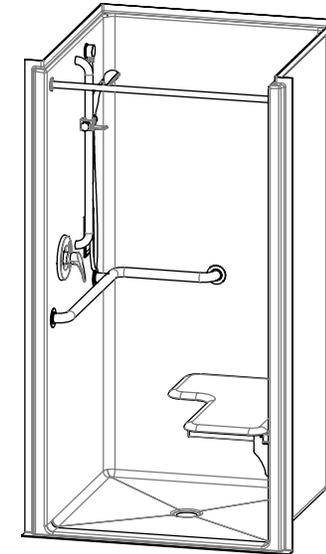
### CUSTOM OPTIONS (not available if ADA configuration is selected)

- Fixture Wall  LH  RH  Back wall  
 Horizontal L-shaped grab bar  
 Stainless steel (1¼" dia.)  LH  RH  
 Powder-coated white (1¼" dia.)  LH  RH  
 Hand-held shower assembly with 30" slide bar and 60" hose  
 Pressure balancing mixing valve

### OPTIONAL ACCESSORIES (available for all models)

- Soap dish  
 Curtain rod (Not ADA compliant)  
 Shower curtain  
 Vinyl flexible dam  
 Removable threshold  
 Brass drain  
 Colors:  
 Standard  White  
 Upgraded  Almond  Biscuit  Bone  
 Other (contact customer service for custom color options)  
 Additional accessories:

For pricing of units and additional options, reference the Aquatic Price Book.



**IMPORTANT:** ADA compliant showers with NO interior threshold will have water escape onto the bathroom floor. Aquatic highly recommends you take the following precautions:

1. Install only the minimum number of ADA units without an interior threshold required for each job. If possible install Aquatic's accessible models that have a ½" interior threshold to reduce the amount of water that escapes from the shower.
2. When installing units with NO interior threshold, install a FLOOR DRAIN to control the water that escapes onto the bathroom floor.
3. Depending on your application, you may choose to install Aquatic's vinyl flexible dam or removable threshold, which helps better retain water within the shower. However, these items may not necessarily meet ADA or other code requirements. Always confirm code compliance with your local building authority.

Int. Dim. 36 W x 36 D x 75 H  
 Ext. Dim. 43 ½ W x 38 D x 77 H  
 Skirt Ht. ¾ skirt, No interior threshold  
 Packaged Wt. 182 lbs. gross  
 Material AcrylX™ applied acrylic  
 Warranty AcrylX™ Finished Products — Lifetime Limited (30 year commercial)

inches

To complete your order, this document must be signed and faxed to the Aquatic Centralized Customer Service Center.

**Fax (866) 544-5353 • Phone (800) 945-2726**

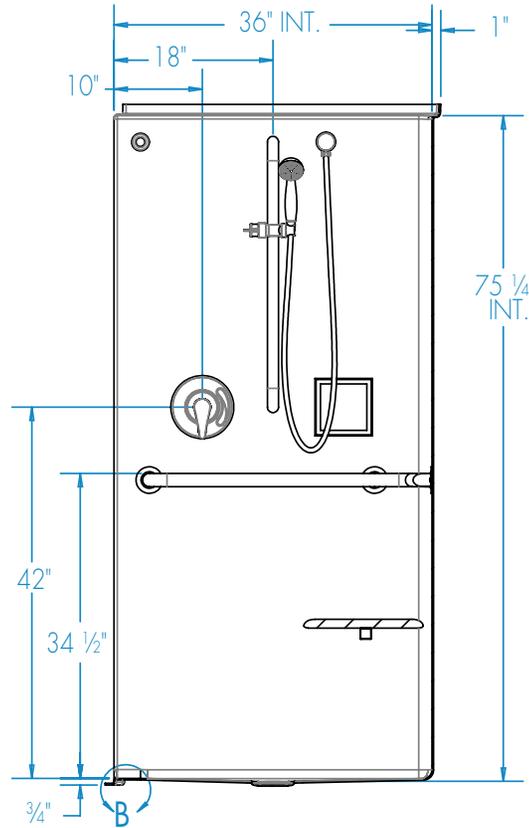
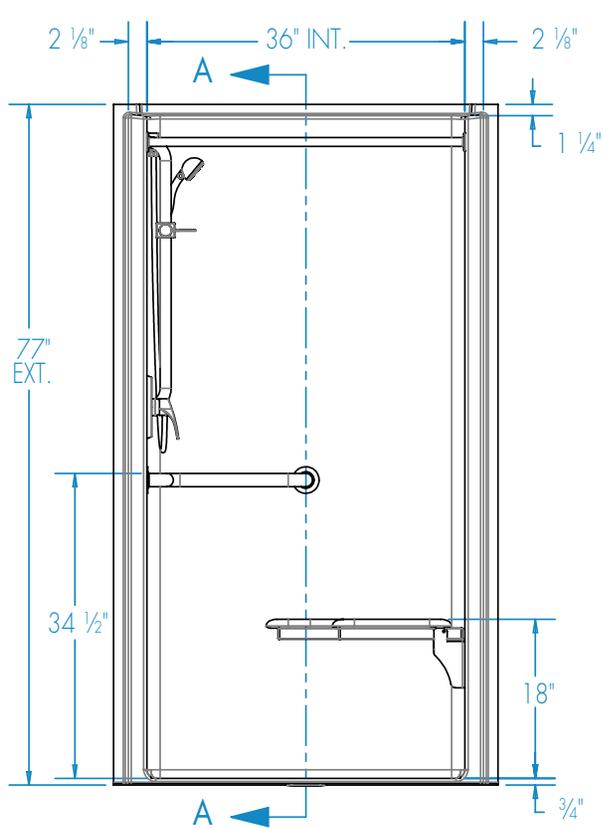


# Submittal Sheet

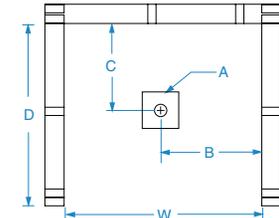
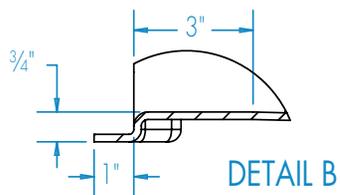
Aquatic products may be specified as Lasco Bathware.

## 1363BFRF ADA Compliant

Please indicate changes needed.



SECTION A-A

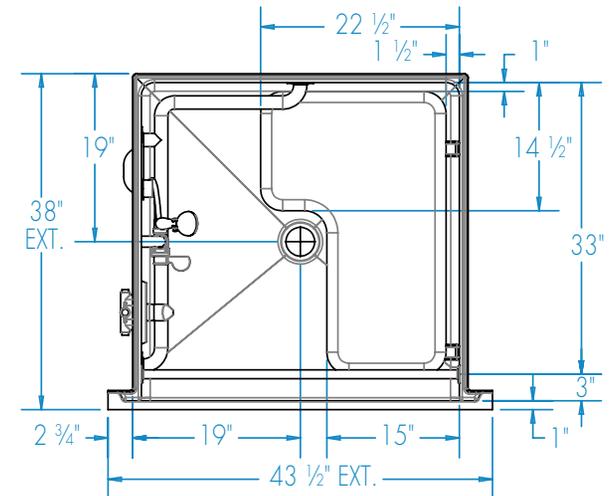


FRAMING DIMENSIONS inches

Type	D Depth	W Width	A	B	C
Alcove	36 1/8"	38 1/8"	Box Out	19"	19"

**Installation Options:**

1. Install in a recessed pit for rough-in floor installation.
2. Build sub-floor to level finished floor with top of shower threshold.



Shell tolerance: +0, -3/8" All other tolerances: ±1"



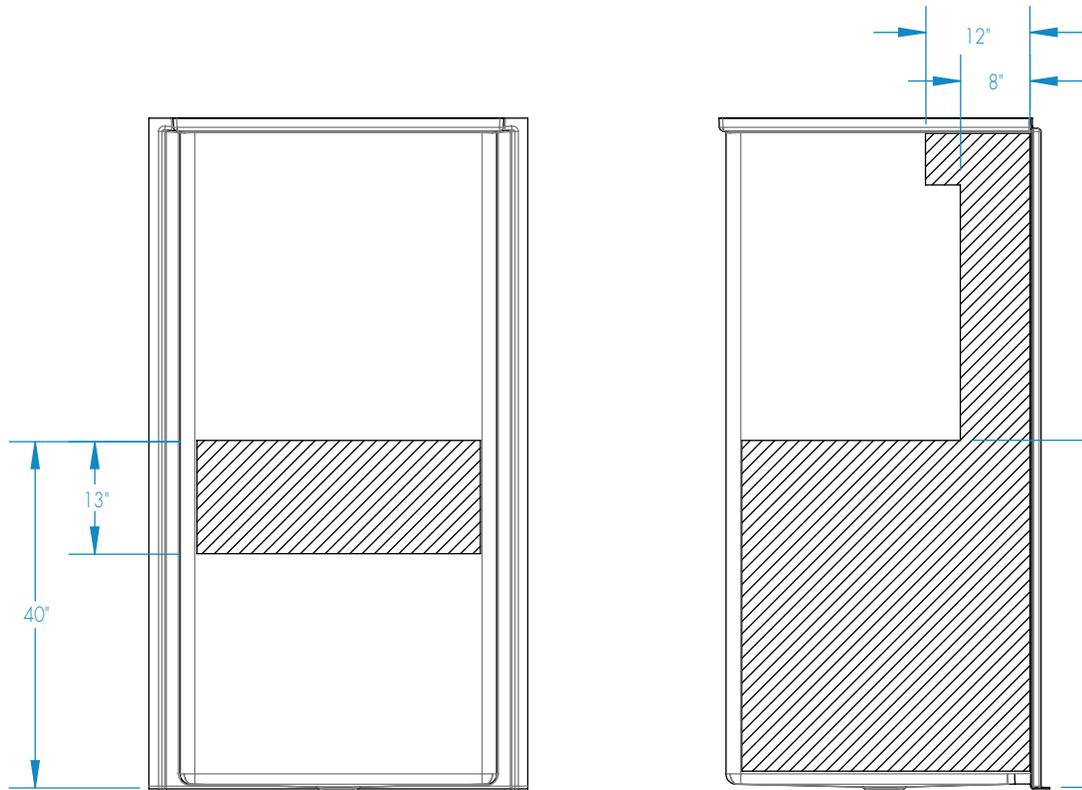
# Submittal Sheet

Aquatic products may be specified as Lasco Bathware.

**1363BFRF** ADA Compliant

Please indicate changes needed.

## Reinforcement Locations (Standard)



BACK VIEW

SIDE VIEW (typ.)

Shell tolerance: +0, - 3/8" All other tolerances: ±1"



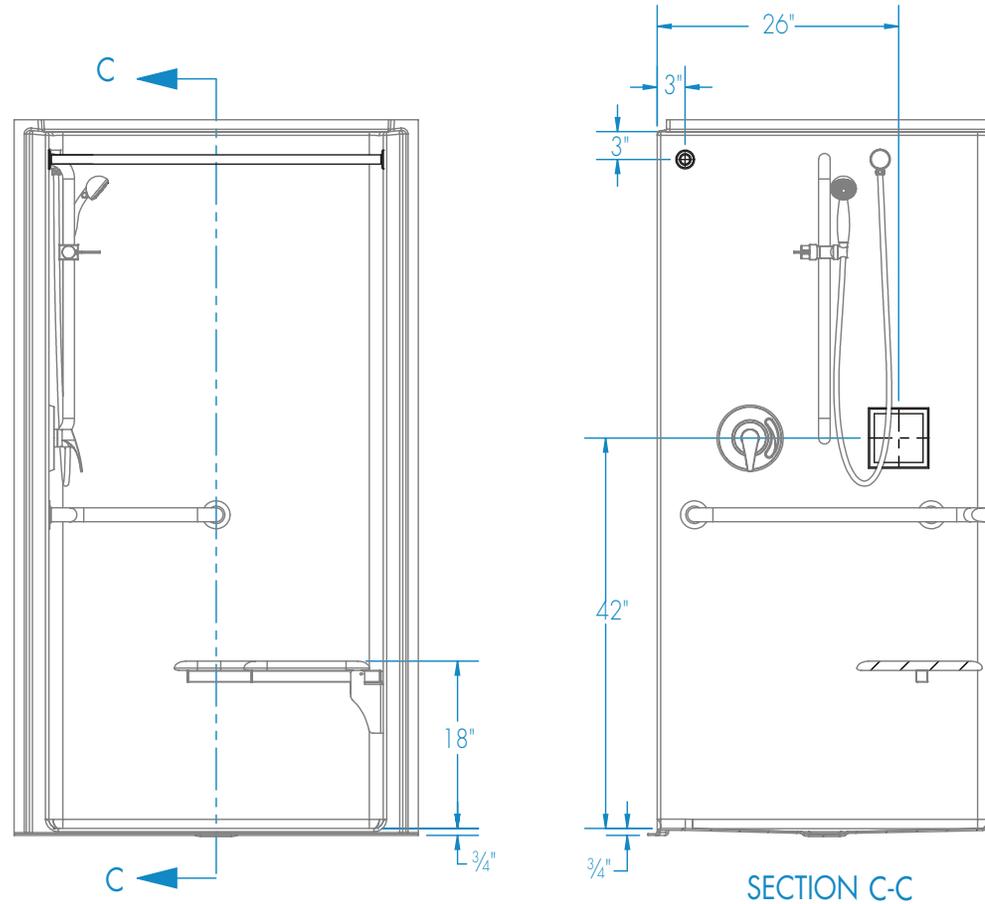
# Submittal Sheet

Aquatic products may be specified as Lasco Bathware.

**1363BFRF** ADA Compliant

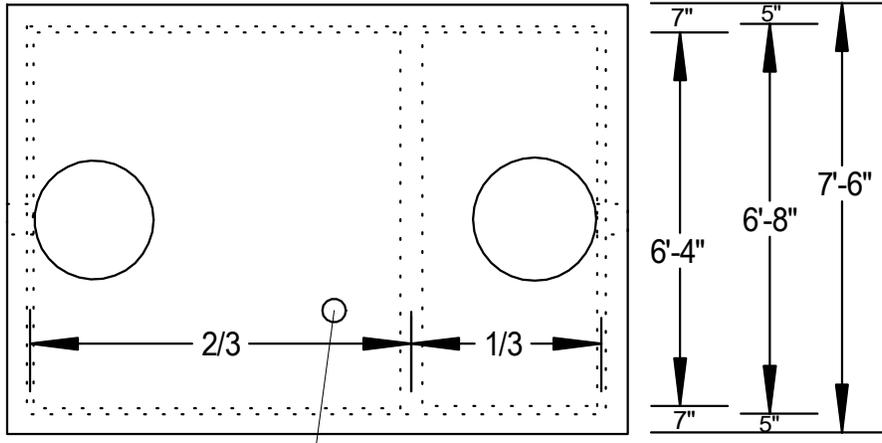
Please indicate changes needed.

## Curtain Rod and Soap Dish Locations (Standard Valve Configuration)

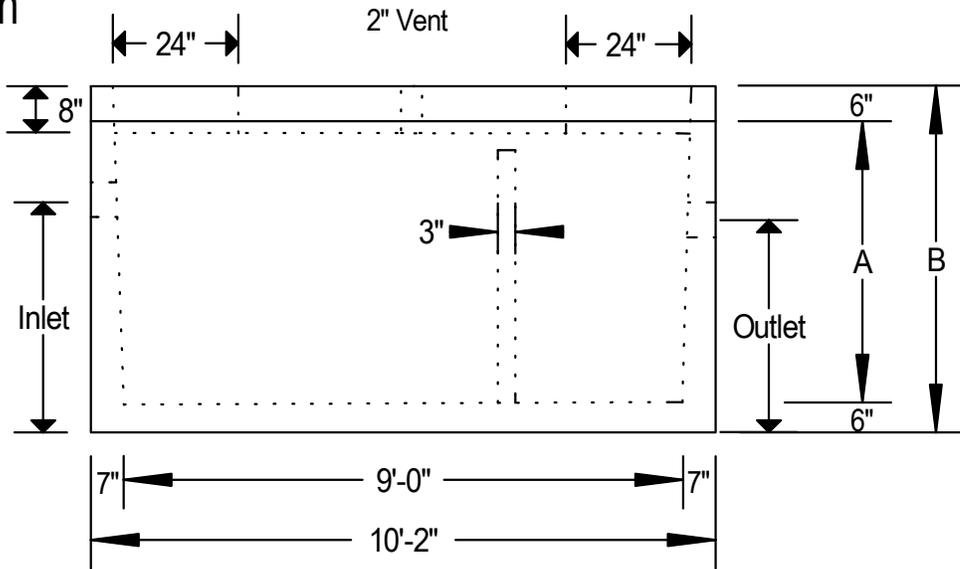


Shell tolerance: +0, - 3/8" All other tolerances: ± 1"

Plan



Elevation



Gallons	Inlet	Outlet	A	B	Weight-Box	Weight-Cover	Model #
<b>1060</b>	40"	38"	48"	60"	12,500 lbs	7,300 lbs	11040
<b>1145</b>	44"	42"	50"	62"	13,000 lbs	7,300 lbs	11050
<b>1250</b>	45 3/4"	43 3/4"	52"	64"	13,500 lbs	7,300 lbs	11060
<b>1500</b>	54"	52"	62"	74"	16,000 lbs	7,300 lbs	11070

Notes:  
 Reinforcing: Box 6 x 6 10/10 Wire Mesh.  
 & Insert Cover #5 Rebar @ 12" O.C.E.W. & #5 Rebar Around Holes.  
 Lifting Plan: Box Uses Lifting Anchors (6CA67)  
 & Insert Cover Uses Wire Rope Anchors (WRA020)  
 Monolithic Poured Floor. H-20 Loading.  
 2- 4" / 3" High Pressure Boots On Standard Inlet & Outlet  
 And 1- 2" High Pressure Boot On Vent.  
 Baffle Height & Location Are Per Local Code.  
 Installation Of Pipe Should Also Be According To Local Code.  
 Secondary Compartment Has A Volume Equal To 1/3 Of The Total Capacity.  
 5,000 P.S.I. Minimum Strength Envirocore Concrete.  
 We Produce A Green And Environmentally Friendly Product.

<p><b>Copeland Enterprises Inc.</b>                  904 South Lipan                  Denver, CO 80223</p>	<p>1060, 1145, 1250 &amp; 1500 Gallon                  Grease Or Sand &amp; Oil Interceptor                  No Scale</p> <p style="text-align: right;">Page 65</p>
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**JAY R. SMITH MFG. CO.®**  
 MEMBER OF MORRIS GROUP INTERNATIONAL  
 POST OFFICE BOX 3237  
 MONTGOMERY, ALABAMA 36109-0237 (USA)  
 TEL: 334-277-8520 FAX: 334-272-7396 www.jrsmith.com



MEMBER OF:

LOCATION

# 10" WIDE 9878 POWERDRAIN® DRAIN SYSTEM w/INTEGRAL DUCTILE IRON EDGE RAIL

## DEEP END DEPTHS 9878 SYSTEM

Channel Number	Deep End Invert Inch	Deep End Invert mm	Slope	Slotted Weight Lbs.	ADA Weight Lbs.
9878-00	7.87	200	0.0%	141.2	133.7
9878-1	8.07	205	0.5%	141.2	133.7
9878-2	8.27	210	0.5%	142.3	134.8
9878-3	8.46	215	0.5%	143.4	135.9
9878-4	8.66	220	0.5%	144.5	137.0
9878-5	8.86	225	0.5%	145.6	138.1
9878-6	9.06	230	0.5%	146.7	139.2
9878-7	9.25	235	0.5%	147.8	140.3
9878-8	9.45	240	0.5%	148.9	141.4
9878-9	9.65	245	0.5%	150.0	142.5
9878-10	9.84	250	0.5%	151.1	143.6
9878-010	9.84	250	0.0%	151.2	143.7
9878-103	9.84	250	0.0%	89.2	85.45
9878-11	10.04	255	0.5%	152.2	144.7
9878-12	10.24	260	0.5%	153.3	145.8
9878-13	10.43	265	0.5%	154.4	146.9
9878-14	10.63	270	0.5%	155.6	148.1
9878-16	10.83	275	0.5%	156.7	149.2
9878-16	11.02	280	0.5%	157.8	150.3
9878-17	11.22	285	0.5%	158.9	151.4
9878-18	11.42	290	0.5%	160.0	152.5
9878-19	11.61	295	0.5%	161.1	153.6
9878-20	11.81	300	0.5%	162.2	154.7
9878-020	11.81	300	0.0%	162.2	154.7
9878-203	11.81	300	0.0%	96.8	93.05
9878-21	12.01	305	0.5%	163.3	155.8
9878-22	12.20	310	0.5%	164.4	156.9
9878-23	12.40	315	0.5%	165.5	158.0
9878-24	12.60	320	0.5%	166.6	159.1
9878-25	12.80	325	0.5%	167.7	160.2
9878-26	12.99	330	0.5%	168.8	161.3
9878-27	13.19	335	0.5%	169.9	162.4
9878-28	13.39	340	0.5%	171.0	163.5
9878-29	13.58	345	0.5%	172.1	164.6
9878-30	13.78	350	0.5%	173.2	165.7
9878-030	13.78	350	0.0%	173.2	165.7
9878-303	13.78	350	0.0%	101.3	97.55
9878-31	13.98	355	0.5%	174.4	166.9
9878-32	14.17	360	0.5%	175.5	168.0
9878-33	14.37	365	0.5%	176.6	169.1
9878-34	14.57	370	0.5%	177.7	170.2
9878-35	14.76	375	0.5%	178.8	171.3
9878-36	14.96	380	0.5%	179.9	172.4
9878-37	15.16	385	0.5%	181.0	173.5
9878-38	15.35	390	0.5%	182.1	174.6
9878-39	15.55	395	0.5%	183.2	175.7
9878-40	15.75	400	0.5%	184.3	176.8
9878-040	15.75	400	0.0%	184.3	176.8
9878-403	15.75	400	0.0%	110.1	106.4

Extra Heavy Duty, DIN 19580/EN 1433 Load Class E: 135,00 lbs - 2323 psi. For commercial solid tire forklift traffic patterns, forklifts and impacts from steel struts or metal wheels.

\*  **Powerlok ADA** - 1 3/8 x 7/16 longitudinal ductile iron slotted grate (56.00 sq in.)

Extra Heavy Duty, DIN 19580/EN 1433 Load Class F: 202,320 lbs - 4182 psi. For aircraft runways, docks, heavy fork trucks, and heavy wheel loads.

\*  **Powerlok Slotted** - 3 13/16 x 7/16 ductile iron slotted grate (71.00 sq. in.)

\*Available With Powerlok Locking Devices Only



Note: For overall depth of channel add 1.00" to invert depth shown.

DRAWING NUMBER: S9878  
 SIZE: A  
 SCALE: NONE  
 DATE: 4-3-15  
 APPROVED BY: PJ  
 CHECKED BY: PJ  
 DRAWN BY: TBW  
 9878BS  
 FIGURE NUMBER

WE CAN ASSUME NO RESPONSIBILITY FOR USE OF SUPERSEDED OR VOID DATA  
 DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCE AND CHANGE WITHOUT NOTICE

REV.	DATE	DESCRIPTION	BY	CKD. BY

WEIGHT POUNDS	VOLUME CUBIC FEET

FIGURE NUMBER  
**9878BS**

TMV-1

# Series N170 Master Tempering Valves for Hot Water Distribution Systems



ASSE 1017 Listed  
Retrofit and New Installations  
Commercial, Institutional, Industrial

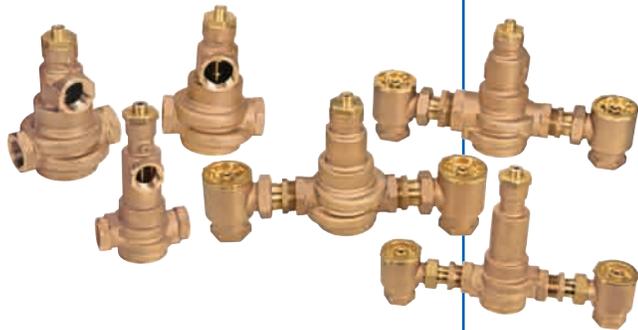


watts.com

**WATTS**<sup>®</sup>



# Introducing Watts' New Generation of Master Tempering Valves



Watts, the most respected name in commercial plumbing and leading innovator in water tempering technology has dramatically improved the performance of its large capacity thermostatic valve line, the Series N170. The new N170-M3 now carries the ASSE 1017 seal, boasts a new compact exterior and features re-engineered internals for enhanced safety, superior performance and extended reliability.

The Series N170 thermostatically blends hot and cold water ensuring safe delivery throughout domestic hot water distribution systems in commercial, institutional and industrial facilities. Five brand new models meet a broad range of capacity and budget requirements.

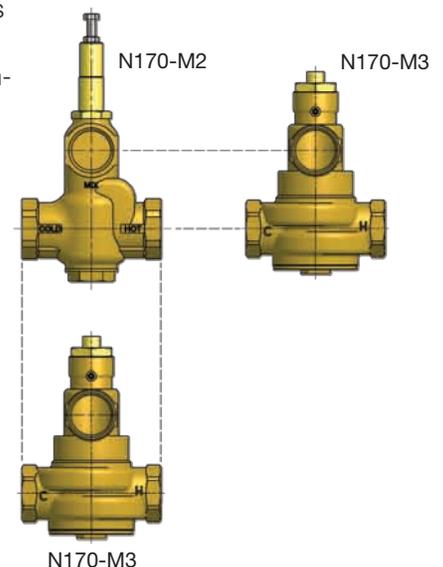


## We've Improved the N170's All Around Performance....

- ASSE 1017 listing and CSA B125.3 compliance ensure safe, consistent performance over time.
- Broader temperature range eliminates the need for low temperature models. The M3 model operates safely over a range of 90–180°F (32°-82°C)
- Vastly improved low flow control (as low as 3.0 gpm, 11 lpm) for applications where minimum flow performance is critical
- Approach temperature (hot water inlet – mixed outlet) of 5°F (3°C) provides maximum mixed outlet temperature for installations where hot water is generated at lower temperatures
- Now offered with checkstops and integrated filters for new installations as well as without for retrofit installations

## .... While Maintaining These Critical Features

- Rough-in dimensions are identical for direct replacement with M2 model installed base
- Solid bronze construction provides years of dependable service
- Paraffin thermostat provides precise temperature control and powerful response to temperature changes
- Five valve sizes and capacities handle a broad range of tempering requirements



## ASSE 1017

Entitled "Performance Requirements for Temperature Actuated Mixing Valves for Hot Water Distribution Systems", the American Society of Sanitary Engineering's 2003 revision is intended for mixing valves that are installed at the hot water source. More specifically:

- ASSE 1017 does not require valves to compensate for pressure changes, only temperature
- Temperature control is determined by valve capacity at a 10psi differential. The lower the flow, the tighter the control required
- Low flow control is critical when determining the proper valve size. Understand the minimum flow requirements of a project prior to final valve selection
- ASSE 1017 valves are to be used in conjunction with tempering valves that are listed to any of the ASSE point-of-use standards including to ASSE 1016 (Watts USG/MMV/L111), ASSE 1069 (MMV/L111) or ASSE 1070 (USG/MMV/L111).

## Engineered from the Inside for Superior Performance and Reliability

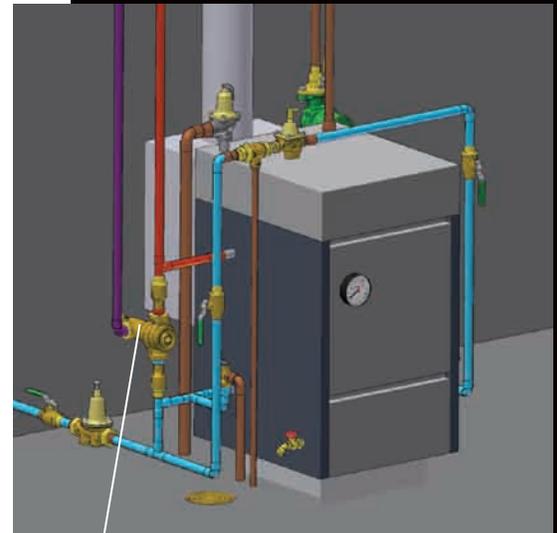
- 1 Lockable, vandal-resistant temperature adjustment for increased safety.
- 2 Powerful paraffin-based thermostat for precise temperature control.
- 3 Solid bronze casting for durability
- 4 Polysulfone internals resist excessive heat, liming and corrosion
- 5 Single seat design ensures tight shutoff if cold water supply pressure is lost.

## Multi-Directional Mounting

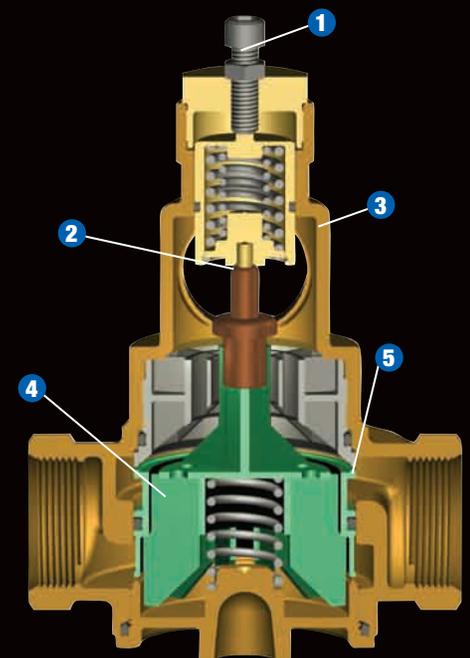
The new N170-M3 features multi-directional mounting which allows the M3 model to be mounted as shown without effecting performance. This provides greater installation options for new projects. Rotatable, union checkstops (optional) can be rotated 360° as well.



## Typical Installation



N170-M3



# Performance You Can Count On

Flow Capacity at 50-50 Mixed with Checkstops									
Model	Inlet / Outlet (NPT)	Min. Flow to ASSE 1017	C <sub>v</sub>	Pressure Drop					
				5psi (34 kPa)	10psi (69 kPa)	20psi (138 kPa)	30psi (207 kPa)	45psi (310 kPa)	60psi (414 kPa)
3/4" N170-M3 CSUT	3/4 x 3/4"	3 gpm 11 lpm	6.26	14 gpm 53 lpm	20 gpm 76 lpm	28 gpm 106 lpm	34 gpm 129 lpm	42 gpm 159 lpm	48 gpm 182 lpm
1" N170-M3 CSUT	3/4 x 1"	4 gpm 15 lpm	9.54	21 gpm 79 lpm	30 gpm 114 lpm	43 gpm 163 lpm	52 gpm 197 lpm	64 gpm 242 lpm	74 gpm 280 lpm
1 1/4" N170-M3 CSUT	1-1/4 x 1-1/4"	4 gpm 15 lpm	13.42	30 gpm 114 lpm	42 gpm 159 lpm	60 gpm 227 lpm	74 gpm 280 lpm	90 gpm 341 lpm	104 gpm 394 lpm
1 1/2" N170-M3 CSUT	1-1/4 x 1-1/2"	5 gpm 19 lpm	14.90	33 gpm 125 lpm	47 gpm 128 lpm	67 gpm 254 lpm	82 gpm 310 lpm	100 gpm 379 lpm	115 gpm 435 lpm
2" N170-M3 CSUT	1-1/4 x 2"	7 gpm 26 lpm	17.89	40 gpm 151 lpm	57 gpm 216 lpm	80 gpm 303 lpm	98 gpm 371 lpm	120 gpm 454 lpm	139 gpm 526 lpm

## N170-M2 to M3 Cross Reference Guide



M2		M3	
Model	Temp. Range	Model	Temp. Range
3/4" N 170 M2	130 - 180°F	3/4" N170-M3	90 - 180°F
3/4" N 170L-M2	100 - 130°F		
3/4" N 170M2-HT	130 - 180°F		
3/4" N 170L M2-HT	100 - 130°F		
1" N 170L-M2	130 - 180°F	1" N170-M3	90 - 180°F
1" N 170-M2	100 - 130°F		
1" N 170M2-HT	130 - 180°F		
1" N 170L M2-HT	100 - 130°F		
1 1/4" N 170L-M2	130 - 180°F	1 1/4" N170-M3	90 - 180°F
1 1/4" N 170-M2	100 - 130°F		
1 1/4" N 170M2-HT	130 - 180°F		
1 1/4" N 170L M2-HT	100 - 130°F		
1 1/2" N 170L-M2	130 - 180°F	1 1/2" N170-M3	90 - 180°F
1 1/2" N 170-M2	100 - 130°F		
1 1/2" N 170M2-HT	130 - 180°F		
1 1/2" N 170L M2-HT	100 - 130°F		
2" N 170-M2	130 - 180°F	2" N170-M3	90 - 180°F
2" N 170L-M2	100 - 130°F		
2" N 170M2-HT	130 - 180°F		
2" N 170L M2-HT	100 - 130°F		

## Specifications

Maximum Operating Pressure	125psig (861 kPa)
Maximum Hot Water Temperature	200°F (93°C)
Minimum Hot Water Supply Temperature	5°F (3°C) Above Set Point*
Temperature Adjustment Range**	90 - 180°F (32 - 82°C)
Hot Water Inlet Temperature Range	120 - 180°F (42 - 82°C)
Cold Water Inlet Temperature Range	40 - 80°F (4 - 27°C)
Listing	ASSE 1017, IAPMO cUPC
Approval Standards	ASSE 1017, B125.3

\*With Equal Pressure

\*\*Low Limit cannot be less than the cold water temperature. For best operation, hot water should be at least 5°F (3°C) above desired set point.

## From Four To One

By significantly improving performance and materials, Watts has consolidated the number of models per size from four to one. The M3's single temperature range replaces the M2's high and low temperature models. Polysulfone internal components, with a heat deflection temperature of 345°F (174°C), maintain their properties over a wide temperature range and eliminate the need for the special Teflon® disc found on the M2's HT series.

Teflon® is a registered trademark of the E.I. DuPont de Nemours & Company.



A Watts Water Technologies Company



USA: 815 Chestnut St., No. Andover, MA 01845-6098; www.watts.com

Canada: 5435 North Service Rd., Burlington, ONT. L7L 5H7; www.wattscanada.ca



**Precision Plumbing Products**

*"Specify with Confidence - Install with Pride"*

**LEAD FREE**

## PRIME-TIME ELECTRONIC TRAP PRIMING ASSEMBLY SURFACE MOUNT

www.pppinc.net

TP-1

It's PRIME-TIME to meet your floor drain trap priming needs. This unique trap priming assembly automatically maintains a constant water seal in floor drain traps and is available in 4 to 30 opening configurations and all the contractor needs to do is simply supply the potable water and power, Precision supplies the rest...

### Features:

- ATMOSPHERIC VACUUM BREAKER
- PRE-SET 24 HOUR ADJUSTABLE TIMER
- MANUAL OVER RIDE SWITCH/TEST BUTTON
- 120v or 220v SOLENOID VALVE
- 3/WIRE SINGLE POINT CONNECTION
- 3/4" FNPT CONNECTION
- CALIBRATED MANIFOLD FOR EQUAL WATER DISTRIBUTION
- 5/8" OR 1/2" OUTLET COMPRESSION OR 1/2" PEX AND PROPEX FITTINGS FOUR OPENING
- MANIFOLD TO THIRTY OPENING MANIFOLD



### PART NUMBERS:

PTS-4, PTS-6, PTS-8, PTS-10, PTS-12,  
PTS-1320, PTS-2130.

### SURFACE MOUNT CABINET

The PRIME-TIME PRIMING ASSEMBLY will supply a minimum of 2 oz. of potable water at 20 PSIG at a preset factory setting of 6 seconds every 24 hours. The entire unit is pre-assembled in a steel cabinet ready to be surface wall mounted. The Priming assembly must be mounted above the finished floor.



PATENT NO. 5,253,670

**SURFACE MOUNT CABINET**

**METAL CABINET:**

12" x 12" x 4" NEMA-1 with cover plate.

**INLET:**

3/4" inch NPT female. ANSI/ASME BI.20.1.

**OUTLET:**

5/8" or 1/2" inch compression fitting. SAEJ512.

**MANIFOLD:**

3/4" Type "L" copper tubing. ASTM B88.

**SOLDERED JOINTS:**

95-5 lead free containing lead not in excess of 0.2%.

**ELECTRICAL COMPONENTS:**

2 Amp Circuit Breaker, Manual Over Ride Switch/Test Button, Timer, Solenoid Valve marked as UL listed.

**BACKFLOW PREVENTION:**

Anti-Siphon atmospheric vacuum breaker meets Los Angeles code, IAPMO, New York Board of Standards, ASSE 1001 and CSA.

**TEMPERATURE/PRESSURE:**

32°F - 125°F, 20 PSI - 150 PSI.

**ELECTRICAL SPECIFICATIONS:**

**120 VOLT PT**

120/60 6. Watts  
110/50 16 VA Holding  
34 VA In Rush

**240 VOLT PT**

240/60 6. Watts  
220/50 16 VA Holding  
34 VA In Rush

MODEL # PTS- \_\_\_\_\_

PTS-1320 - # of Drains Served: \_\_\_\_\_

PTS-2130 - # of Drains Served: \_\_\_\_\_

**PLEASE NOTE :**

Unit must be installed plumb and must be installed with access. The priming valve makeup line to floor drain is recommended to be a minimum 12" (305mm) off the finished floor before a 90° elbow can be installed.

**PROJECT SUBMITTAL**

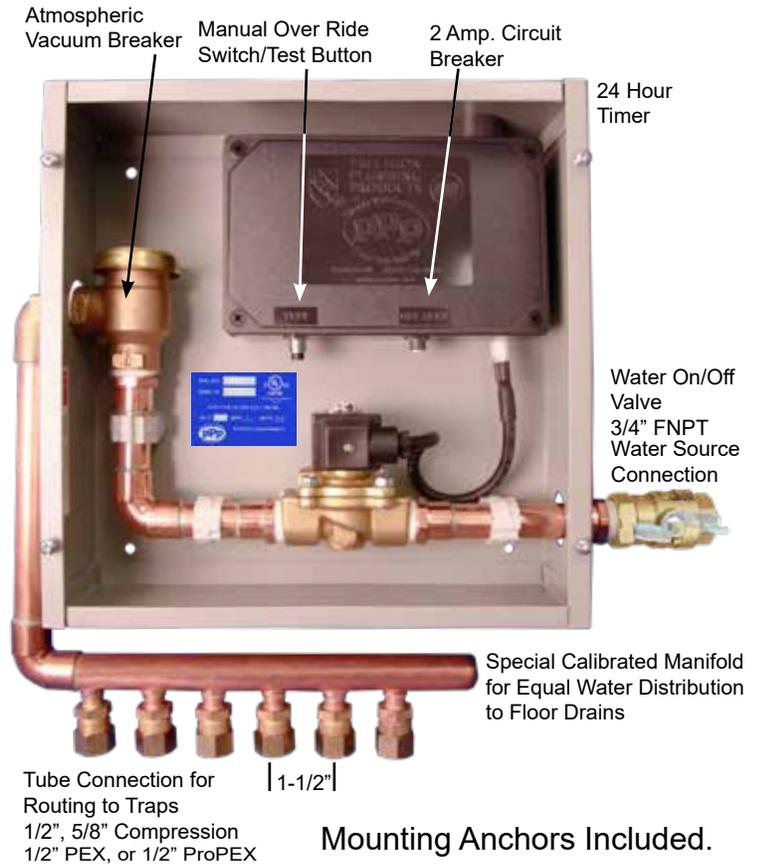
Project: \_\_\_\_\_

Contractor: \_\_\_\_\_

Engineer: \_\_\_\_\_

Date Submitted: \_\_\_\_\_

Prepared By: \_\_\_\_\_



<b>COMPRESSION FITTINGS:</b>		(CHECK ONLY ONE)
<input type="checkbox"/>	1/2" Comp. for 3/8" ID Copper Line	
<input type="checkbox"/>	5/8" Comp. for 1/2" ID Copper Line. This line is the floor drain trap make-up water line.	
<input type="checkbox"/>	1/2" PEX	
<input type="checkbox"/>	1/2" ProPEX	
<b>VOLTAGE:</b>		(CHECK ONLY ONE)
<input type="checkbox"/>	120 Volt 60 Hz./110 Volt 50 Hz.	
<input type="checkbox"/>	240 Volts 60 Hz./220 Volts 50 Hz.	



**Precision Plumbing Products**

Division of JL Industries, Inc.

802 SE 199th Avenue  
Portland, Oregon 97233

T (503) 256-4010  
F (503) 253-8165

www.pppinc.net

*American Standard*

Style That Works Better

 BARRIER FREE**MADERA™ FloWise® 16-1/2" HEIGHT 1.28 GPF  
FLUSHOMETER TOILET SYSTEM****LESS EVERCLEAN®  
SELECTRONIC® FLUSH VALVE****MADERA™ FloWise® 16-1/2" HEIGHT 1.28 GPF  
FLUSHOMETER TOILET SYSTEM LESS EVERCLEAN®****3043.528** 1.28 gpf 16-1/2" Height Top Spud Bowl and  
Selectronic® Flush Valve**BOWL:**

- Floor mount elongated flushometer valve toilet
- Vitreous china
- High Efficiency, Low Consumption. Operates in the range of 1.1 gpf to 1.6 gpf (4.2 Lpf to 6.0 Lpf)
- Meets definition of HET (High Efficiency Toilet) when used with a high efficiency flush valve (1.28 gpf or 1.6 / 1.1 gpf Dual Flush)
- Conventional glaze
- 10" or 12" rough-in
- 16-1/2" rim height for accessible application
- Condensation channel
- Powerful direct-fed siphon jet action
- Fully glazed 2-1/8" trapway
- 10" x 12" water surface area
- 1-1/2" inlet spud
- 100% factory flush tested
- Less toilet seat
- Model 3043.001

**SELECTRONIC® FLUSH VALVE:**

- Electronic flush valve with Selectronic® proximity system for "Hands Free" operation
- Self-Cleaning Piston operation helps prevent clogging and reduces maintenance
- Positive seal ensures leak-free performance
- Fully mechanical Manual Override Button can flush toilet during a power outage
- Range can be adjusted manually or by remote control
- Sensor & electronic controls are fully enclosed and water resistant
- Automatically flushes after 24 hours of non-use to maintain trap seal
- 3-second Flush Delay
- Battery life up to 4 years (approx. 200,000 cycles)
- Low Battery indicator
- Battery can be changed without turning off the water
- Factory-installed 6V lithium battery included
- Adjustable tailpiece for rough-in flexibility
- Can be installed left or right hand
- Model 6065.121.002

**Includes:**

- 047007-0070A Inlet Spud (furnished with bowl)
- 481310-100 2 Bolt caps with retainers (furnished with bowl)
- Inlet includes 1" I.P.S. angle stop with back-flow protection, and vandal-resistant cap, sweat solder kit, cover tube and wall flange
- Outlet includes 1-1/2" vacuum breaker with adjustable tailpiece, spud coupling & flange

**To Be Specified:**

- Color:  White
- Seat:
  - American Standard #5901.100  
Heavy duty open front less cover
  - American Standard #5905.100  
Extra heavy duty open front less cover



SEE REVERSE FOR ROUGHING-IN DIMENSIONS

**System MaP\* Score:**

- 1,000 grams of miso @ 1.28 gpf

\* Maximum Performance (MaP) testing performed by IAPMO R&T Lab. MaP Report conducted by Veritec Consulting, Inc. and Koeller and Company.

**Operating Pressure:**

Overall Range: 20-125 psi\*\*

Recommended: 25 psi (flowing)-80 psi (static)

\*\* Water pressure over 80 psi is not recommended for most plumbing fixtures.

**Flow Requirement:**

25gpm (94.6 L/min.)

**Nominal Fixture Dimensions:**

718 x 356 x 419mm (28-1/4" x 14" x 16-1/2")

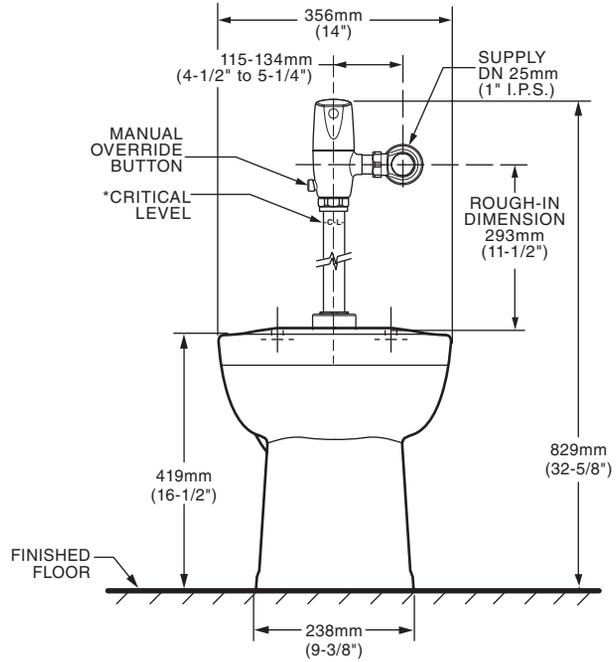
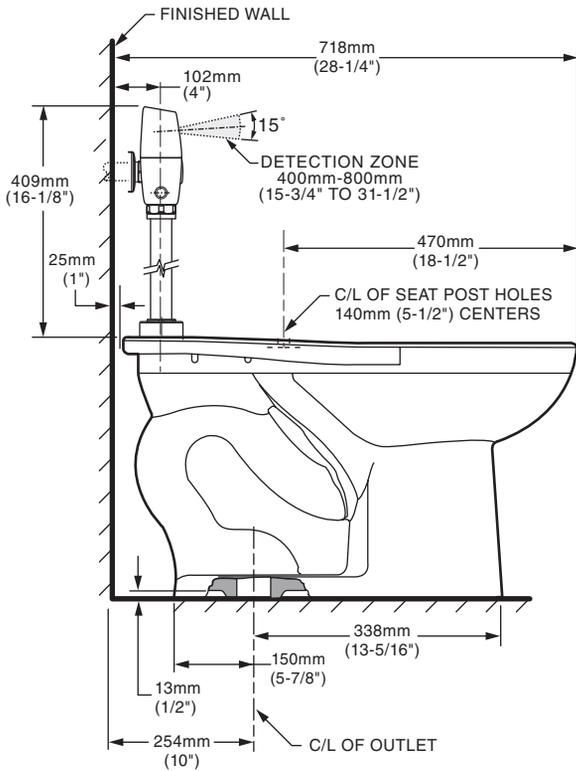
**Fixture Compliance Certifications -****Meets or Exceeds the Following Specifications:**

- ASME A112.19.2-2008 / CSA B45.1-08 for Vitreous China Fixtures

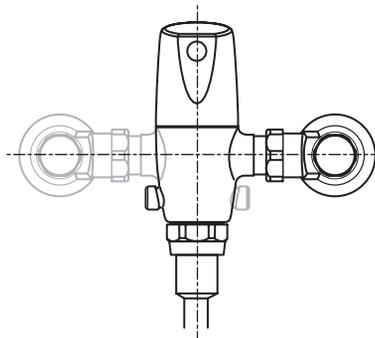
**Valve Listings:**

- ASSE 1037
- ANSI/ASME A112.19.2
- ADA Compliant





\*Note: The Critical Line (-C-L-) on Vacuum Breaker must typically be a minimum of 6" (152mm) above fixture. Consult Codes for details.



VALVE LEFT or RIGHT HAND INSTALLATION



MEETS THE AMERICANS WITH DISABILITIES ACT GUIDELINES AND ANSI A117.1 REQUIREMENTS FOR ACCESSIBLE AND USABLE BUILDING FACILITIES - CHECK LOCAL CODES.

**NOTES:**

TO COMPLY WITH AREA CODE GOVERNING THE HEIGHT OF VACUUM BREAKER ON THE FLUSHOMETER VALVE, THE PLUMBER MUST VERIFY DIMENSIONS SHOWN FOR SUPPLY ROUGHING. THIS TOILET DESIGNED TO ROUGH-IN AT A MINIMUM DIMENSION OF 254MM (10") AND A MAXIMUM DIMENSION OF 305MM (12") FROM FINISHED WALL TO C/L OF OUTLET.

**IMPORTANT:** Dimensions of fixtures are nominal and may vary within the range of tolerances established by ANSI Standard A112.19.2. These measurements are subject to change or cancellation. No responsibility is assumed for use of superseded or voided pages.