

O'Neill Walsh Community Builders

Submittal Form

OWCB

AHSC

(Project)

Submittal No. 001

Description: Plumbing Piping and Pumps

Date: 6/5/17 **Return By:** 6/14/17

Division: 22

Section: 22 10 00

Andersen

Subcontract/Supplier:

The review by O'Neill Walsh Community Builders ("OWCB") of the above Submittal shall not relieve Subcontractor/Supplier from any of its obligations under the agreement with OWCB nor give rise to any claim in favor of the Subcontractor/Supplier or third parties against OWCB or Owner.

By: Logan Bright

O'Neill Walsh Community Builders

Notes:

Sump Pump Included in
Plumbing Fixtures submittal

ARCHITECT

Notes:

ENGINEER

Revise and Resubmit.

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: Dimensions, which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.

MFIA, Inc. Consulting Engineers

By: Takako Baker, Date: 6/9/17

Notes:

See submittal review for
detailed comments.



**"Your Green Heating & Cooling Professionals
Dedicated to Serving Your and Your Community"**

Plumbing Submittals

**Asian Health & Service Center
9005 SE Foster Rd.
Portland, OR 97266**

**General Contractor
O'Neill / Walsh Community Builders
2905 SW First Avenue
Portland, OR 97201**

**Submitted By
Andersen Mechanical
16285 SW 85th Ave, Suite 410
Tigard, OR 97224**

*Andersen Mechanical – 16285 SW 85th Ave, Suite 410 – Tigard, OR 97224 (503)992-6664
WA License ANDERH1936QL : OR CCB 168214 : OR Plumbing License PB1464
MBE Certification #8561*



"Your Green Heating & Cooling Professionals
Dedicated to Serving Your and Your Community"

Plumbing Submittal Index

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22_10_00

Plumbing Piping and Pumps

1" and Less Pipe
Above Grade Domestic Water Pipe



Uponor AquaPEX® White, Coils

Submittal Information
Revision K: Dec. 7, 2015

OWCB:
22 10 00 2.1 A:
Copper pipe only

Project Information

| | |
|--------------------------------|-------------------|
| Job Name: | |
| Location: | Part No. Ordered: |
| Engineer: | Date Submitted: |
| Contractor: | Submitted By: |
| Manufacturer's Representative: | Approved By: |

Technical Data

| | |
|---|---|
| Material: | Crosslinked polyethylene PEX-a Engel Method; PEX 5106 |
| Standard Grade Hydrostatic Ratings (PPI): | 200°F (93°C) at 80 psi (551 kPa) 180°F (82°C) at 100 psi (689 kPa) 73.4°F (23°C) at 160 psi (1,103 kPa) ½", ¾", 1", 1¼", 1½" and 2" Uponor AquaPEX® White only: 120°F (49°C) at 130 psi (896 kPa) |
| Linear Expansion Rate: | 1.1"/10°F/100' (27.94mm/5.56°C/30.48m) |



Product Information and Application Use

Uponor AquaPEX White is used for hot and cold domestic potable water distribution and residential fire safety as well as radiant heating/cooling and hydronic piping systems containing no ferrous corrodible components or where ferrous components are isolated from the piping.

| ✓ | Description | Part Number | I.D. | O.D. | Weight |
|--------------------------|---|-------------|--------|--------|------------|
| <input type="checkbox"/> | ¼" Uponor AquaPEX White, 100-ft. coil | F1040250 | 0.241" | 0.375" | 4.0 lbs. |
| <input type="checkbox"/> | ¾" Uponor AquaPEX White, 400-ft. coil | F1090375 | 0.350" | 0.500" | 20.0 lbs. |
| <input type="checkbox"/> | ¾" Uponor AquaPEX White, 1,000-ft. coil | F1120375 | 0.350" | 0.500" | 44.0 lbs. |
| <input type="checkbox"/> | ½" Uponor AquaPEX White, 100-ft. coil | F1040500 | 0.475" | 0.625" | 6.0 lbs. |
| <input type="checkbox"/> | ½" Uponor AquaPEX White, 300-ft. coil | F1060500 | 0.475" | 0.625" | 18.0 lbs. |
| <input type="checkbox"/> | ½" Uponor AquaPEX White, 500-ft. coil | F1100500 | 0.475" | 0.625" | 27.6 lbs. |
| <input type="checkbox"/> | ½" Uponor AquaPEX White, 1,000-ft. coil | F1120500 | 0.475" | 0.625" | 54.0 lbs. |
| <input type="checkbox"/> | ⅝" Uponor AquaPEX White, 300-ft. coil | F1060625 | 0.574" | 0.750" | 28.0 lbs. |
| <input type="checkbox"/> | ⅝" Uponor AquaPEX White, 1000-ft. coil | F1120625 | 0.574" | 0.750" | 86.0 lbs. |
| <input type="checkbox"/> | ¾" Uponor AquaPEX White, 100-ft. coil | F1040750 | 0.671" | 0.875" | 10.0 lbs. |
| <input type="checkbox"/> | ¾" Uponor AquaPEX White, 300-ft. coil | F1060750 | 0.671" | 0.875" | 34.0 lbs. |
| <input type="checkbox"/> | ¾" Uponor AquaPEX White, 500-ft. coil | F1100750 | 0.671" | 0.875" | 54.0 lbs. |
| <input type="checkbox"/> | 1" Uponor AquaPEX White, 100-ft. coil | F1041000 | 0.862" | 1.125" | 20.0 lbs. |
| <input type="checkbox"/> | 1" Uponor AquaPEX White, 300-ft. coil | F1061000 | 0.862" | 1.125" | 56.0 lbs. |
| <input type="checkbox"/> | 1" Uponor AquaPEX White, 500-ft. coil | F1101000 | 0.862" | 1.125" | 93.0 lbs. |
| <input type="checkbox"/> | 1¼" Uponor AquaPEX White, 100-ft. coil | F1061250 | 1.054" | 1.375" | 34.0 lbs. |
| <input type="checkbox"/> | 1¼" Uponor AquaPEX White, 300-ft. coil | F1021250 | 1.054" | 1.375" | 106.0 lbs. |
| <input type="checkbox"/> | 1½" Uponor AquaPEX White, 100-ft. coil | F1061500 | 1.244" | 1.625" | 44.0 lbs. |
| <input type="checkbox"/> | 1½" Uponor AquaPEX White, 300-ft. coil | F1021500 | 1.244" | 1.625" | 133.0 lbs. |
| <input type="checkbox"/> | 2" Uponor AquaPEX White, 100-ft. coil | F1062000 | 1.629" | 2.125" | 68.2 lbs. |
| <input type="checkbox"/> | 2" Uponor AquaPEX White, 200-ft. coil | F1052000 | 1.629" | 2.125" | 136.4 lbs. |
| <input type="checkbox"/> | 2" Uponor AquaPEX White, 300-ft. coil | F1022000 | 1.629" | 2.125" | 204.6 lbs. |
| <input type="checkbox"/> | 2½" Uponor AquaPEX White, 100-ft. coil | F1062500 | 2.011" | 2.625" | 88.0 lbs. |
| <input type="checkbox"/> | 2½" Uponor AquaPEX White, 300-ft. coil | F1022500 | 2.011" | 2.625" | 264.0 lbs. |
| <input type="checkbox"/> | 3" Uponor AquaPEX White, 100-ft. coil | F1063000 | 2.400" | 3.125" | 128.0 lbs. |
| <input type="checkbox"/> | 3" Uponor AquaPEX White, 300-ft. coil | F1023000 | 2.400" | 3.125" | 384.0 lbs. |

Installation

Use ProPEX® fittings for ¾" through 3" pipe.¹ Refer to the Uponor Professional Plumbing Installation Guide, Complete Design Assistance Manual (CDAM), Hydronic Piping Design Assistance Manual (HPDAM) or AquaSAFE™ Residential Fire Sprinkler Installation Guide for more information.

| Listings ² | Codes | Standards |
|---|---|---|
| cNSFus-fs ³ ; cNSFus-pw; cQAIus P321; UL; CSA; ETL; PPI TR-4; ICC-ES; BMEC; CCMC | IAPMO; ICC; IPC; IMC; IRC; UPC; UMC; NSPC; HUD; UFGS; NPC of Canada; NBC of Canada | ANSI/NSF 14; ANSI/NSF 61; ASTM F876; ASTM F877; ASTM F1960; ASTM F2023; ASTM E84; CAN/ULC S102.2; ASTM E119/UL 263; CAN/ULC S101; ASTM E814/ULC S115; CSA B137.5; CSA B214; UL 1821 ³ ; ULC/ORD-C199P ³ ; AWWA C904 ⁴ |

Related Applications

PEX-a Plumbing Systems
AquaSAFE™ Fire Safety Systems
Radiant Heating and Cooling Systems
Hydronic Piping Systems

Contact Information

| | |
|---|--|
| Uponor, Inc. 5925 148 th Street West Apple Valley, MN 55124 USA Phone: 800.321.4739 Fax: 952.891.2008 www.uponorpro.com | Uponor Ltd. 2000 Argentia Rd., Plaza 1, Ste. 200 Mississauga, ON L5N 1W1 CANADA Phone: 888.994.7726 Fax: 800.638.9517 www.uponorpro.com |
|---|--|

¹ProPEX® is a registered trademark of Uponor, Inc. ProPEX™ is a trademark of Uponor Ltd.

²Visit listing agency's website for complete information. ³For ½", ¾", 1", 1¼", 1½" and 2" pipe only. ⁴For ¾" to 3" pipe.

Engineered Plastic (EP) Flow-through Valveless Manifold

Submittal Information
Revision A: Sept. 3, 2010

Project Information

Job Name:

Location:

Part No. Ordered:

Engineer:

Date Submitted:

Contractor:

Submitted By:

Manufacturer's Representative:

Approved By:

Technical Data

| | |
|---------------------------------------|--------------------------------------|
| Material: | Acudel® modified polyphenylsulfone |
| Maximum Temperature (no pressure): | 320°F (160°C) |
| Maximum Working Temperature/Pressure: | 210°F at 150 psi (104°C at 10.3 bar) |
| Flow at 5 fps: | 15.0 gpm |
| Flow at 8 fps: | 31.0 gpm |



Product Information and Application Use

Uponor's Engineered Plastic (EP) Flow-through Valveless Manifold is available in 8, 10 or 12 outlets with ½" ProPEX® connections.¹ The manifold comes with ¾" and 1" ProPEX inlets.

| ✓ | Description | Part Number | Length | Width | Depth | Outlets | Weight |
|--------------------------|--|-------------|--------|-------|-------|-----------|----------|
| <input type="checkbox"/> | EP Flow-through Valveless Manifold, 8 outlets, 1" x ¾" ProPEX | Q2240800 | 14" | 2.75" | 3" | ½" ProPEX | 1.1 lbs. |
| <input type="checkbox"/> | EP Flow-through Valveless Manifold, 10 outlets, 1" x ¾" ProPEX | Q2241000 | 14" | 2.75" | 3" | ½" ProPEX | 1.1 lbs. |
| <input type="checkbox"/> | EP Flow-through Valveless Manifold, 12 outlets, 1" x ¾" ProPEX | Q2241200 | 14" | 2.75" | 3" | ½" ProPEX | 1.1 lbs. |

Installation

Any bend within six inches of the ProPEX connection to the manifold requires the use of a Tube Talon or Bend Support. Refer to the Uponor Professional Plumbing Installation Guide for further instructions.

Standards

CAN/CSA B137.5; ASTM F877; ASTM F1960

Codes

IPC; UPC; NSPC; NPC of Canada

Listings

HUD MR 1269; ICC ESR 1099; ANSI/NSF 14- and 61-certified

Related Applications

PEX-a Plumbing Systems

Contact Information

Uponor, Inc.
5925 148th Street West
Apple Valley, MN 55124 USA
Phone: (800) 321-4739
Fax: (952) 891-2008
www.uponor-usa.com

Uponor Ltd.
2000 Argentia Rd., Plaza 1, Ste. 200
Mississauga, ON L5N 1W1 CANADA
Phone: (888) 994-7726
Fax: (800) 638-9517
www.uponor.ca

¹ProPEX® is a registered trademark of Uponor, Inc. ProPEX™ is a trademark of Uponor Ltd.

Commercial Engineered Polymer (EP) Branch Multi-port Tee

Submittal Information
Revision G: Feb. 1, 2016

Project Information

Job Name:

Location:

Part No. Ordered:

Engineer:

Date Submitted:

Contractor:

Submitted By:

Manufacturer's Representative:

Approved By:

Technical Data

| | |
|---|--|
| Material of ¾" and 1" Multi-port Tee: | Polysulfone GF120 |
| Material of Mounting Clip (¾" and 1" only): | Chevron Phillips Marlex 9018 High-density Polyethylene (HDPE), black |
| Material of Screw (¾" and 1" only): | Black phosphate carbon steel |
| Material of 1¼" Multi-port Tee: | Modified Polyphenylsulfone |
| Maximum Temperature (no pressure): | 320°F (160°C) |
| Maximum Working Temperature/Pressure: | 210°F at 150 psi (99°C at 10.3 bar) |
| Maximum Multi-port Tee Flow for ¾" Inlet: | 8.8 gpm at 8 fps 13.2 gpm at 12 fps |
| Maximum Multi-port Tee Flow for 1" Inlet: | 14.5 gpm at 8 fps 21.8 gpm at 12 fps |
| Maximum Multi-port Tee Flow for 1¼" Inlet: | 21.7 gpm at 8 fps 32.6 gpm at 12 fps |



Product Information and Application Use

Commercial Engineered Polymer (EP) Branch Multi-port Tees feature an integrated ¾" or 1" ProPEX® inlet with ½" ProPEX branch outlets, or a 1¼" ProPEX® inlet with ¾" ProPEX branch outlets.¹ Designed for commercial plumbing applications, they eliminate the need for multiple connections. The ¾" and 1" multi-port tees come with Mounting Clips (F7051250) with Phillips self-tapping screws.

| ✓ Description | Part Number | Length | Height | Width | Weight |
|--|-------------|--------|--------|-------|------------|
| <input type="checkbox"/> ¾" EP Branch Multi-port Tee, 7 outlets with mounting clips | Q2277550 | 8.66" | 2.10" | 1.77" | 0.327 lbs. |
| <input type="checkbox"/> ¾" EP Branch Multi-port Tee, 8 outlets with mounting clips | Q2287550 | 9.50" | 2.10" | 1.77" | 0.362 lbs. |
| <input type="checkbox"/> 1" EP Branch Multi-port Tee, 7 outlets with mounting clips | Q2271051 | 8.90" | 2.10" | 1.77" | 0.330 lbs. |
| <input type="checkbox"/> 1" EP Branch Multi-port Tee, 8 outlets with mounting clips | Q2281051 | 9.80" | 2.10" | 1.77" | 0.365 lbs. |
| <input type="checkbox"/> 1" EP Branch Multi-port Tee, 10 outlets with mounting clips | Q2101051 | 11.60" | 2.10" | 1.77" | 0.437 lbs. |
| <input type="checkbox"/> 1" EP Branch Multi-port Tee, 12 outlets with mounting clips | Q2121051 | 13.40" | 2.10" | 1.77" | 0.505 lbs. |
| <input type="checkbox"/> 1¼" EP Branch Multi-port Tee, 3 (¾") outlets | Q2231375 | 6.85" | 2.34" | 1.75" | 0.220 lbs. |

Installation

The ¾" and 1" multi-port tees feature mounting clips with self-tapping screws, which are appropriate for wood or metal studs. Simply attach the clips to the multi-port tee and fasten the clips to the mounting surface. For the 1¼" multi-port tee, mount the tee by securing all adjoining PEX pipes to the framing or support structure within 6" of each ProPEX connection. For more information, refer to the Udonor Professional Plumbing Installation Guide.

Standards

CAN/CSA B137.5; ASTM F877; ASTM F1960

Codes

IPC; UPC; NSPC; NPC of Canada

Listings

ANSI/NSF 14- and 61-certified; ICC ESR 1099; IAPMO 3946, cQAIUS P321

Related Applications

PEX-a Plumbing Systems

Contact Information

Udonor, Inc.
5925 148th Street West
Apple Valley, MN 55124 USA
Phone: 800.321.4739
Fax: 952.891.2008
www.uponorpro.com

Udonor Ltd.
2000 Argentinia Rd., Plaza 1, Ste. 200
Mississauga, ON L5N 1W1 CANADA
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www.uponorpro.com

¹ProPEX® is a registered trademark of Udonor, Inc. ProPEX™ is a trademark of Udonor Ltd.

ProPEX® Engineered Polymer (EP) Reducing Tee (up to 1½")



Submittal Information

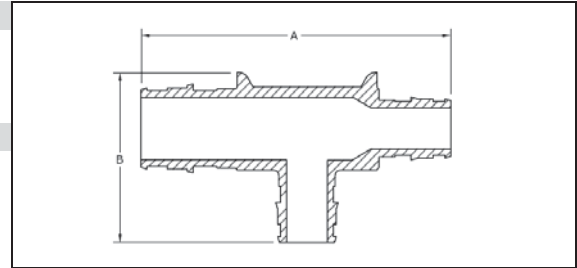
Revision G: Feb. 2, 2016

Project Information

| | |
|--------------------------------|-------------------|
| Job Name: | |
| Location: | Part No. Ordered: |
| Engineer: | Date Submitted: |
| Contractor: | Submitted By: |
| Manufacturer's Representative: | Approved By: |

Technical Data

| | |
|------------------------------------|--|
| Material: | Polysulfone, 20% Glass-reinforced (½ to 1") Modified Polyphenylsulfone (1¼" to 1½") |
| Maximum Temperature (no pressure): | 320°F (160°C) |
| Max. Working Temperature/Pressure: | 210°F (99°C) at 150 psi (1,034 kPa) |



Product Information and Application Use

The ProPEX® Engineered Polymer (EP) Reducing Tee makes diverting connections for Uponor crosslinked polyethylene (PEX-a) tubing for use in hot and cold domestic potable water systems, residential fire sprinkler systems and hydronic radiant heating and cooling systems. Each end of the tee is manufactured with an Uponor ProPEX fitting for connections to Uponor AquaPEX® or Wirsbo hePEX™ tubing. ¹ **Note:** Branch size is listed last in the part descriptions.

| ✓ Description | Part Number | A | B | Weight | Equiv. Length (ft.) Through | Equiv. Length (ft.) Branch | Cv Through | Cv Branch |
|--|-------------|-------|-------|-----------|-----------------------------|----------------------------|------------|-----------|
| <input type="checkbox"/> ProPEX EP Reducing Tee, ½" PEX x ½" PEX x ¾" PEX | Q4755575 | 2.86" | 1.76" | 0.03 lbs. | 1.0 | 15.6 | 7.7 | 5.4 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, ¾" PEX x ½" PEX x ½" PEX | Q4757555 | 3.10" | 1.70" | 0.04 lbs. | 3.5 | 6.4 | 4.6 | 3.4 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, ¾" PEX x ½" PEX x ¾" PEX | Q4757557 | 3.10" | 1.94" | 0.04 lbs. | 2.3 | 16.1 | 5.4 | 5.4 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, ¾" PEX x ¾" PEX x ⅝" PEX | Q4757563 | 3.30" | 1.85" | 0.05 lbs. | N/A | N/A | N/A | N/A |
| <input type="checkbox"/> ProPEX EP Reducing Tee, ¾" PEX x ¾" PEX x ½" PEX | Q4757550 | 3.30" | 1.70" | 0.04 lbs. | 2.0 | 7.6 | 14.2 | 3.1 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, ¾" PEX x ¾" PEX x 1" PEX | Q4757710 | 3.64" | 2.32" | 0.08 lbs. | 1.5 | 5.7 | 15.7 | 8.7 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1" PEX x ¾" PEX x ¾" PEX | Q4751775 | 3.90" | 2.24" | 0.08 lbs. | 2.4 | 16.7 | 12.8 | 5.3 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1" PEX x ¾" PEX x 1" PEX | Q4751751 | 3.90" | 2.47" | 0.08 lbs. | 2.4 | 15.1 | 12.9 | 10.5 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1" PEX x 1" PEX x ½" PEX | Q4751150 | 4.10" | 2.00" | 0.08 lbs. | 1.2 | 6.5 | 32.2 | 3.4 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1" PEX x 1" PEX x ¾" PEX | Q4751175 | 4.10" | 2.24" | 0.09 lbs. | 1.7 | 6.4 | 27.8 | 8.2 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1¼" PEX x 1" PEX x ¾" PEX | Q4751317 | 4.60" | 2.73" | 0.11 lbs. | 3.4 | 5.2 | 21.0 | 9.3 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1¼" PEX x 1" PEX x 1" PEX | Q4751311 | 4.60" | 2.97" | 0.12 lbs. | 11.0 | 23.0 | 11.7 | 8.4 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1¼" PEX x 1¼" PEX x ½" PEX | Q4751350 | 4.40" | 2.15" | 0.10 lbs. | 1.9 | 3.9 | 45.2 | 4.1 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1¼" PEX x 1¼" PEX x ¾" PEX | Q4751337 | 4.80" | 2.73" | 0.13 lbs. | 2.3 | 5.7 | 43.4 | 8.9 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1¼" PEX x 1¼" PEX x 1" PEX | Q4751331 | 4.80" | 2.97" | 0.14 lbs. | 4.2 | 6.3 | 33.0 | 15.8 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1" PEX x ¾" PEX | Q4751517 | 5.25" | 3.06" | 0.17 lbs. | 4.0 | 5.1 | 19.5 | 9.3 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1" PEX x 1" PEX | Q4751511 | 5.25" | 3.30" | 0.18 lbs. | 4.3 | 6.5 | 18.9 | 15.6 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1" PEX x 1½" PEX | Q4751505 | 5.40" | 3.45" | 0.20 lbs. | 4.2 | 14.9 | 19.0 | 26.5 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1¼" PEX x ¾" PEX | Q4751537 | 5.50" | 2.65" | 0.18 lbs. | 4.2 | 11.3 | 33.1 | 6.3 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1¼" PEX x 1" PEX | Q4751531 | 5.50" | 2.85" | 0.19 lbs. | 3.1 | 13.1 | 36.4 | 11.2 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1¼" PEX x 1¼" PEX | Q4751533 | 5.50" | 3.15" | 0.21 lbs. | 2.0 | 17.7 | 45.4 | 17.0 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1½" PEX x ½" PEX | Q4751550 | 4.95" | 2.30" | 0.14 lbs. | 2.4 | 6.3 | 60.5 | 3.4 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1½" PEX x ¾" PEX | Q4751557 | 5.80" | 3.06" | 0.20 lbs. | 2.9 | 5.4 | 56.0 | 9.0 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1½" PEX x 1" PEX | Q4751551 | 5.75" | 3.30" | 0.21 lbs. | 3.1 | 6.9 | 53.8 | 15.3 |
| <input type="checkbox"/> ProPEX EP Reducing Tee, 1½" PEX x 1½" PEX x 1¼" PEX | Q4751553 | 5.80" | 3.56" | 0.22 lbs. | 3.2 | 4.1 | 54.3 | 33.7 |

Installation

Use the appropriate ProPEX Ring for PEX-a tubing. Refer to the Uponor Professional Plumbing Installation Guide, AquaSAFE™ Residential Fire Sprinkler Installation Guide or Uponor Radiant Installation Handbook for additional information.

| Standards | Codes | Listings |
|---|--|--|
| ASTM E84; ASTM E119; ASTM E814; ASTM F877; ASTM F1960; CAN/CSA B137.5; NSF 14; NSF 61 | IBC; IMC; IPC; IRC; NPC of Canada; NSPC; UMC; UPC | cNSFus-pw; cNSFus-rfh; cQAIus P321; HUD MR 1269 (except Q4757563); ICC-ES-PMG-1006; ICC-ES-PMG-1012; UL 1821 (except Q4757563); ULC/ORD-C199P (except Q4757563); U.P. Code |

| Related Applications | Contact Information | | |
|--|---|---|--|
| PEX-a Plumbing Systems Hydronic Radiant Heating and Cooling Systems Snow and Ice Melting Systems Turf Conditioning Systems Permafrost Protection Systems AquaSAFE Fire Safety Systems | <table> <tr> <td>Uponor, Inc. 5925 148th Street West Apple Valley, MN 55124 USA Phone: 800.321.4739 Fax: 952.891.2008 www.uponorpro.com</td> <td>Uponor Ltd. 2000 Argentia Rd., Plaza 1, Ste. 200 Mississauga, ON L5N 1W1 CANADA Phone: 888.994.7726 Fax: 800.638.9517 www.uponorpro.com</td> </tr> </table> | Uponor, Inc. 5925 148 th Street West Apple Valley, MN 55124 USA Phone: 800.321.4739 Fax: 952.891.2008 www.uponorpro.com | Uponor Ltd. 2000 Argentia Rd., Plaza 1, Ste. 200 Mississauga, ON L5N 1W1 CANADA Phone: 888.994.7726 Fax: 800.638.9517 www.uponorpro.com |
| Uponor, Inc. 5925 148 th Street West Apple Valley, MN 55124 USA Phone: 800.321.4739 Fax: 952.891.2008 www.uponorpro.com | Uponor Ltd. 2000 Argentia Rd., Plaza 1, Ste. 200 Mississauga, ON L5N 1W1 CANADA Phone: 888.994.7726 Fax: 800.638.9517 www.uponorpro.com | | |

¹ProPEX® is a registered trademark of Uponor, Inc. ProPEX™ is a trademark of Uponor Ltd.

ProPEX® Engineered Polymer (EP) Tee

Submittal Information
Revision G: Feb. 2, 2016

Project Information

| | |
|--------------------------------|-------------------|
| Job Name: | |
| Location: | Part No. Ordered: |
| Engineer: | Date Submitted: |
| Contractor: | Submitted By: |
| Manufacturer's Representative: | Approved By: |

Technical Data

Material: Polysulfone, 20% Glass-reinforced (½" to 1")
Modified Polyphenylsulfone (1¼" to 1½")
Polyphenylsulfone (2" to 3")

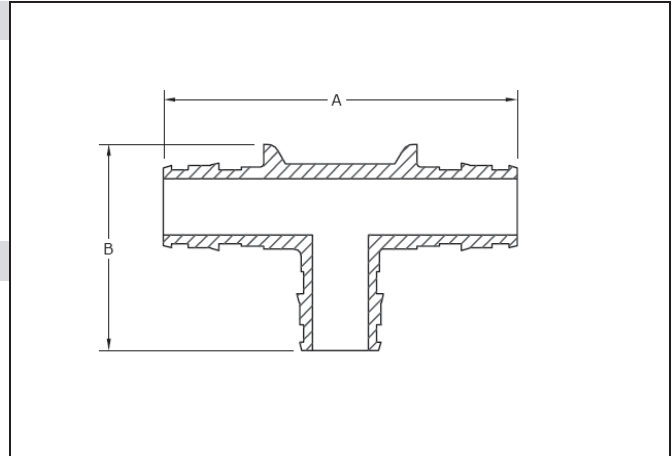
Maximum Temperature (no pressure): 320°F (160°C)

Maximum Working Temperature/Pressure: 210°F (99°C) at 150 psi (1,034 kPa)

Product Information and Application Use

The ProPEX® Engineered Polymer (EP) Tee makes diverting connections for Uponor crosslinked polyethylene (PEX-a) tubing for use in hot and cold domestic potable water systems, residential fire sprinkler systems and hydronic radiant heating and cooling systems. Each end of the tee is manufactured with an Uponor ProPEX fitting for connections to Uponor AquaPEX® or Wirsbo hePEX™ tubing.¹

Note: Branch size is listed last in the part descriptions.



| ✓ Description | Part Number | A | B | Weight | Equivalent Length (ft.) Through | Equivalent Length (ft.) Branch | Cv Through | Cv Branch |
|--|-------------|--------|-------|-----------|---------------------------------|--------------------------------|------------|-----------|
| <input type="checkbox"/> ProPEX EP Tee, ½" PEX x ½" PEX x ½" PEX* | Q4755050 | 2.50" | 1.53" | 0.02 lbs. | 1.0 | 6.3 | 7.7 | 3.4 |
| <input type="checkbox"/> ProPEX EP Tee, ¾" PEX x ¾" PEX x ¾" PEX* | Q4757575 | 3.30" | 1.94" | 0.05 lbs. | 1.5 | 15.6 | 15.7 | 5.4 |
| <input type="checkbox"/> ProPEX EP Tee, 1" PEX x 1" PEX x 1" PEX* | Q4751010 | 4.10" | 2.47" | 0.07 lbs. | 1.3 | 12.7 | 30.5 | 11.3 |
| <input type="checkbox"/> ProPEX EP Tee, 1¼" PEX x 1¼" PEX x 1¼" PEX* | Q4751313 | 4.80" | 3.22" | 0.15 lbs. | 3.8 | 8.6 | 34.0 | 23.9 |
| <input type="checkbox"/> ProPEX EP Tee, 1½" PEX x 1½" PEX x 1½" PEX* | Q4751515 | 5.80" | 3.82" | 0.25 lbs. | 1.8 | 10.6 | 63.7 | 31.0 |
| <input type="checkbox"/> ProPEX EP Tee, 2" PEX x 2" PEX x 2" PEX* | Q4752000 | 7.45" | 4.79" | 0.38 lbs. | 0.8 | 15.5 | 150.7 | 52.5 |
| <input type="checkbox"/> ProPEX EP Tee, 2½" PEX x 2½" PEX x 2½" PEX | Q4752500 | 10.56" | 5.45" | 1.14 lbs. | 2.7 | 22.3 | 197.2 | 81.5 |
| <input type="checkbox"/> ProPEX EP Tee, 3" PEX x 3" PEX x 3" PEX | Q4753000 | 12.26" | 6.37" | 1.86 lbs. | 2.8 | 23.9 | 286.6 | 122.8 |

Installation

Use the appropriate ProPEX Ring for PEX-a tubing. Refer to the Uponor Professional Plumbing Installation Guide, AquaSAFE™ Residential Fire Sprinkler Installation Guide or Uponor Radiant Installation Handbook for additional information.

Standards

ASTM E84; ASTM E119; ASTM E814; ASTM F877; ASTM F1960; CAN/CSA B137.5; NSF 14; NSF 61

Codes

IBC; IMC; IPC; IRC; NPC of Canada; NSPC; UMC; UPC

Listings

cNSFus-pw; cNSFus-rfh; cQALus P321; *HUD MR 1269; ICC-ES-PMG-1006; ICC-ES-PMG-1012; *UL 1821; *ULC/ORD-C199P; U.P. Code

Related Applications

PEX-a Plumbing Systems
Hydronic Radiant Heating and Cooling Systems
Snow Melting Systems
Turf Conditioning Systems
Permafrost Prevention Systems
AquaSAFE Fire Safety Systems

Contact Information

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Fax: 952.891.2008
www.uponorpro.com

Uponor Ltd.
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Fax: 800.638.9517
www.uponorpro.com

¹ProPEX® is a registered trademark of Uponor, Inc. ProPEX™ is a trademark of Uponor Ltd.

ProPEX® Engineered Polymer (EP) Elbow

Submittal Information
Revision I: Feb. 1, 2016

Project Information

Job Name:

Location:

Part No. Ordered:

Engineer:

Date Submitted:

Contractor:

Submitted By:

Manufacturer's Representative:

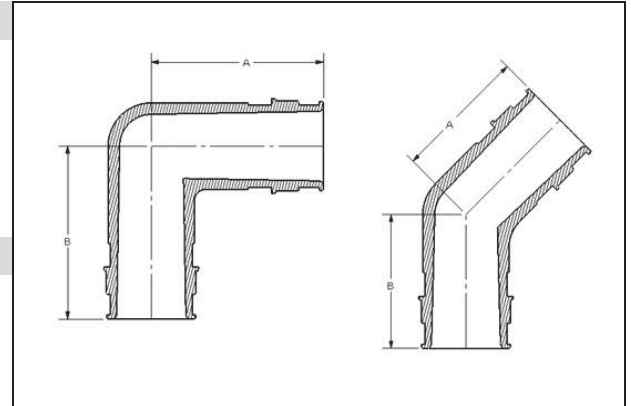
Approved By:

Technical Data

Material: Polysulfone, 20% Glass-reinforced (½ to 1")
Modified Polyphenylsulfone (1¼" to 1½")
Polyphenylsulfone (2" to 3")

Maximum Temperature (no pressure): 320°F (160°C)

Maximum Working Temperature/Pressure: 210°F (99°C) at 150 psi (1,034 kPa)



Product Information and Application Use

The ProPEX® Engineered Polymer (EP) Elbow makes 90-degree connections for Uponor crosslinked polyethylene (PEX-a) tubing for use in hot and cold domestic potable water systems, residential fire safety and hydronic radiant heating and cooling systems. Each end of the elbow is manufactured with an Uponor ProPEX fitting for connections to Uponor AquaPEX® or Wirsbo hePEX™ tubing.¹

| ✓ Description | Part Number | A | B | Weight | Equivalent Length (ft.) | Cv |
|---|-------------|-------|-------|-----------|-------------------------|-------|
| <input type="checkbox"/> ProPEX EP Elbow, ½" PEX x ½" PEX* | Q4760500 | 1.30" | 1.30" | 0.02 lbs. | 10.4 | 2.6 |
| <input type="checkbox"/> ProPEX EP Elbow, ¾" PEX x ¾" PEX* | Q4760750 | 1.60" | 1.60" | 0.03 lbs. | 10.8 | 6.7 |
| <input type="checkbox"/> ProPEX EP Elbow, 1" PEX x 1" PEX* | Q4761000 | 2.10" | 2.10" | 0.07 lbs. | 11.5 | 11.9 |
| <input type="checkbox"/> ProPEX EP Elbow, 1¼" PEX x 1¼" PEX* | Q4761250 | 2.45" | 2.45" | 0.11 lbs. | 10.0 | 22.2 |
| <input type="checkbox"/> ProPEX EP Elbow, 1½" PEX x 1½" PEX* | Q4761500 | 2.77" | 2.77" | 0.18 lbs. | 11.5 | 29.7 |
| <input type="checkbox"/> ProPEX EP Elbow, 2" PEX x 2" PEX* | Q4762000 | 3.76" | 3.76" | 0.30 lbs. | 17.1 | 50.2 |
| <input type="checkbox"/> ProPEX EP Elbow, 2½" PEX x 2½" PEX | Q4762500 | 4.93" | 4.93" | 0.85 lbs. | 20.0 | 86.0 |
| <input type="checkbox"/> ProPEX EP Elbow, 3" PEX x 3" PEX | Q4763000 | 5.88" | 5.88" | 1.44 lbs. | 23.2 | 125.0 |
| <input type="checkbox"/> ProPEX EP 45 Elbow, 1½" PEX x 1½" PEX* | Q4761515 | 2.32" | 2.32" | 0.13 lbs. | 9.3 | 33.1 |
| <input type="checkbox"/> ProPEX EP 45 Elbow, 2" PEX x 2" PEX* | Q4762020 | 2.91" | 2.91" | 0.32 lbs. | 8.8 | 68.9 |
| <input type="checkbox"/> ProPEX EP 45 Elbow, 2½" PEX x 2½" PEX | Q4762525 | 3.83" | 3.83" | 0.65 lbs. | 7.0 | 136.8 |
| <input type="checkbox"/> ProPEX EP 45 Elbow, 3" PEX x 3" PEX | Q4763030 | 4.48" | 4.48" | 1.07 lbs. | 8.3 | 195.5 |

Installation

Use the appropriate ProPEX Ring for PEX-a tubing. Refer to the Uponor Professional Plumbing Installation Guide, AquaSAFE™ Residential Fire Sprinkler Installation Guide or Uponor Radiant Installation Handbook for additional information.

Standards

ASTM E84; ASTM E119; ASTM E814; ASTM F877; ASTM F1960; CAN/CSA B137.5; NSF 14; NSF 61

Codes

IBC; IMC; IPC; IRC; NPC of Canada; NSPC; UMC; UPC

Listings

cNSFus-pw; cNSFus-rfh; cQAIus P321; *HUD MR 1269; ICC-ES-PMG-1006; ICC-ES-PMG-1012; *UL 1821; *ULC/ORD-C199P; U.P. Code

Related Applications

PEX-a Plumbing Systems
Hydronic Radiant Heating and Cooling Systems
Snow Melting Systems
Turf Conditioning Systems
Permafrost Prevention Systems
AquaSAFE Fire Safety Systems

Contact Information

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Uponor Ltd.
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Mississauga, ON L5N 1W1 CANADA
Phone: 888.994.7726
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www.uponorpro.com

¹ProPEX® is a registered trademark of Uponor, Inc. ProPEX™ is a trademark of Uponor Ltd.

ProPEX® Engineered Polymer (EP) Coupling (up to 1½")

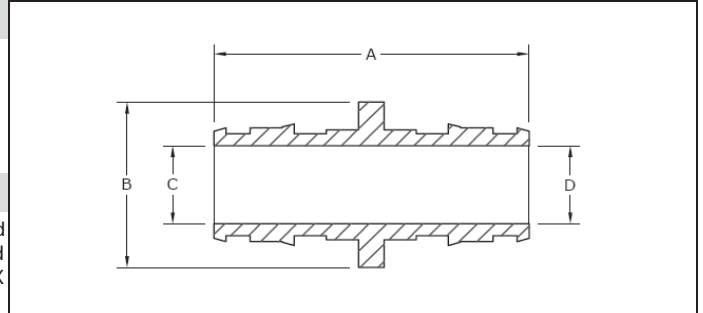
Submittal Information
Revision H: Feb. 1, 2016

Project Information

| | |
|--------------------------------|-------------------|
| Job Name: | |
| Location: | Part No. Ordered: |
| Engineer: | Date Submitted: |
| Contractor: | Submitted By: |
| Manufacturer's Representative: | Approved By: |

Technical Data

| | |
|------------------------------|---|
| Material: | Polysulfone, 20% Glass-reinforced (¾" - 1") Modified Polyphenylsulfone (1¼" - 1½") |
| Max. Temp. (no pressure): | 320°F (160°C) |
| Max. Working Temp./Pressure: | 210°F (99°C) at 150 psi (1,034 kPa) |



Product Information and Application Use

The ProPEX® Engineered Polymer (EP) Coupling is available for use in hot and cold domestic potable water distribution, residential fire safety and radiant heating and cooling systems. Each end of the coupling is manufactured with an Uponor ProPEX fitting for connections to Uponor AquaPEX® or Wirsbo hePEX™ tubing.

| ✓ | Description | Part Number | A | B | C | D | Weight | Equivalent Length (ft.) | Cv |
|--------------------------|--|-------------|--------|-------|--------|--------|-----------|-------------------------|------|
| <input type="checkbox"/> | ProPEX EP Coupling, ⅜" PEX x ⅜" PEX | Q4773838 | 1.300" | 0.70" | 0.280" | 0.280" | 0.01 lbs. | N/A | N/A |
| <input type="checkbox"/> | ProPEX EP Coupling, ½" PEX x ½" PEX* | Q4775050 | 1.600" | 0.85" | 0.405" | 0.405" | 0.01 lbs. | 0.8 | 8.3 |
| <input type="checkbox"/> | ProPEX EP Coupling, ½" PEX x ¾" PEX* | Q4775075 | 1.800" | 1.08" | 0.405" | 0.615" | 0.03 lbs. | 2.6 | 5.2 |
| <input type="checkbox"/> | ProPEX EP Coupling, ⅝" PEX x ⅝" PEX | Q4776363 | 1.860" | 1.00" | 0.538" | 0.538" | 0.01 lbs. | N/A | N/A |
| <input type="checkbox"/> | ProPEX EP Coupling, ¾" PEX x ¾" PEX* | Q4777575 | 2.000" | 1.18" | 0.615" | 0.615" | 0.02 lbs. | 0.9 | 19.0 |
| <input type="checkbox"/> | ProPEX EP Coupling, ¾" PEX x 1" PEX* | Q4777510 | 2.300" | 1.34" | 0.615" | 0.818" | 0.04 lbs. | 2.7 | 12.5 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1" PEX x 1" PEX* | Q4771010 | 2.500" | 1.42" | 0.818" | 0.818" | 0.04 lbs. | 0.9 | 33.8 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1¼" PEX x ¾" PEX* | Q4771307 | 2.625" | 1.75" | 0.989" | 0.615" | 0.05 lbs. | 3.6 | 10.9 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1¼" PEX x 1" PEX* | Q4771310 | 2.875" | 1.75" | 0.989" | 0.818" | 0.06 lbs. | 2.6 | 22.3 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1¼" PEX x 1¼" PEX* | Q4771313 | 3.000" | 1.75" | 0.989" | 0.989" | 0.07 lbs. | 1.1 | 53.3 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1½" PEX x ¾" PEX* | Q4771507 | 2.875" | 2.13" | 1.109" | 0.615" | 0.07 lbs. | 3.5 | 10.8 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1½" PEX x 1" PEX* | Q4771510 | 3.125" | 2.13" | 1.109" | 0.818" | 0.08 lbs. | 4.3 | 19.0 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1½" PEX x 1¼" PEX* | Q4771513 | 3.500" | 2.13" | 1.109" | 0.989" | 0.09 lbs. | 3.7 | 33.9 |
| <input type="checkbox"/> | ProPEX EP Coupling, 1½" PEX x 1½" PEX* | Q4771515 | 3.625" | 2.13" | 1.109" | 1.109" | 0.10 lbs. | 1.4 | 69.5 |

Installation

Use ProPEX Rings to make the fitting. Refer to the Uponor Professional Plumbing Installation Guide, Radiant Floor Heating Installation Handbook or AquaSAFE™ Residential Fire Sprinkler Installation Guide for more information.

| Standards | Codes | Listings |
|---|--|--|
| ASTM E84; ASTM E119; ASTM E814; ASTM F877; ASTM F1960; CAN/CSA B137.5; NSF 14; NSF 61 | IBC; IMC; IPC; IRC; NPC of Canada; NSPC; UMC; UPC | cNSFus-pw; cNSFus-rfh; cQAIus P321; *HUD MR 1269; ICC-ES-PMG-1006; ICC-ES-PMG-1012; *UL 1821; *ULC/ORD-C199P; U.P. Code |

Related Applications

PEX-a Plumbing Systems
Hydronic Radiant Heating and Cooling Systems
Snow and Ice Melting Systems
Permafrost Protection Systems
Turf Conditioning Systems
AquaSAFE Fire Safety Systems

Contact Information

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Phone: 888.994.7726
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ProPEX® Drop Ear Brass Elbow

Submittal Information
Revision A: Feb. 5, 2008

Project Information

Job Name:

Location:

Part No. Ordered:

Engineer:

Date Submitted:

Contractor:

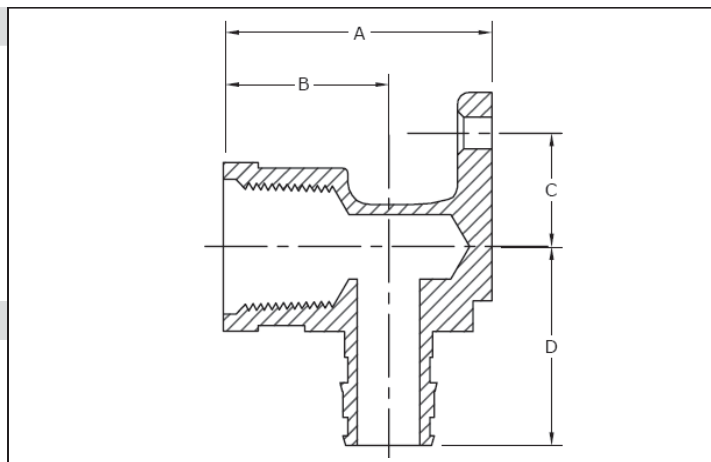
Submitted By:

Manufacturer's Representative:

Approved By:

Technical Data

Material: 360 Brass



Product Information and Application Use

The Brass ProPEX® Drop Ear Elbow is available for use in hot and cold domestic potable water systems.¹ One end of the adapter is manufactured with the Uponor ProPEX fitting for connections to Wirsbo AQUAPEX® tubing.

✓ Description

| ✓ Description | Part Number | A | B | C | D | Weight |
|---|-------------|-------|-------|-------|-------|-----------|
| <input type="checkbox"/> ProPEX Drop Ear Brass Elbow, 3/8" PEX x 1/2" MIP | Q4233850 | 1.70" | 1.04" | 0.71" | 1.12" | 0.20 lbs. |
| <input type="checkbox"/> ProPEX Drop Ear Brass Elbow, 1/2" PEX x 3/8" MIP | Q4235038 | 1.70" | 1.04" | 0.71" | 1.24" | 0.20 lbs. |
| <input type="checkbox"/> ProPEX Drop Ear Brass Elbow, 1/2" PEX x 1/2" MIP | Q4235050 | 1.70" | 1.04" | 0.71" | 1.24" | 0.20 lbs. |

Installation

A ProPEX Ring is required to make a ProPEX connection. Use the appropriate size Uponor ProPEX Ring for tubing connections. For more information, refer to the AQUAPEX Professional Plumbing Installation Handbook.

Standards

CAN/CSA B137.5; ASTM F877; ASTM F1960

Codes

IPC; UPC; NSPC; NPC of Canada

Listings

ANSI/NSF 14- and 61-certified; ICC ESR 1099; HUD MR 1269; IAPMO 3558

Related Applications

PEX-a Plumbing Systems

Contact Information

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www.uponor-usa.com

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Regina, SK S4N 5N1 CANADA
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Fax: (800) 638-9517
www.uponor.ca

¹ProPEX® is a registered trademark of Uponor, Inc. ProPEX™ is a trademark of Uponor Ltd.

1-1/4" and Larger Pipe
 Above Ground Domestic Water Pipe

COPPER TUBE FOR PLUMBING AND MECHANICAL APPLICATIONS

| | |
|---------------------|-----------------------------------|
| Job Name | Contractor |
| Job Location | Wholesaler |
| Engineer | Streamline[®] Rep |

Product Description:

Streamline[®] Copper Tube for use in plumbing and mechanical applications. Available sizes (Type K, L, M, & DWV) ranging from 1/4" to 8" in diameter. All tube shall be manufactured in the United States.

Material:

Streamline[®] Copper Tube is manufactured from UNS C12200 grade of copper.

Key Specifications:

Streamline[®] Copper Tube (Type K, L, M) shall conform to the NSF/ANSI 61 Annex G requirements and is manufactured to meet ASTM B88. Copper drainage tube (DWV) is made to meet ASTM B306. Copper refrigeration coils, ACR/Nitrogenized straight lengths and line sets are made to meet the chemical, mechanical, cleanliness and eddy current testing requirements of the applicable specifications of ASTM B280.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

- | | |
|---------------------|--|
| ASTM B75 | Seamless Copper Tube |
| C12200 | 99.9% Pure Copper (can be used for potable water) |
| NSF/ANSI 61 Annex G | Safe Drinking Water Act (third party certification) |
| ASTM B88 | Seamless Copper Water and Gas Tube (Type K, L, M) |
| ASTM B280 | Seamless Copper Tube for Air Conditioning and Refrigerants |
| ASTM B306 | Seamless Drainage Tube Code (DWV) |

Copper [tube or fitting] UNS C122000 has been evaluated by NSF International to NSF/ANSI 61 for use in drinking water supplies of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may require corrosion control to limit leaching of copper into the drinking water.



COPPER TUBE DATA

Streamline[®] Copper Tube sets the standard for quality, consistency and service in the plumbing industries. With a full line of copper tube products to support most all plumbing supply and DWV applications, Streamline[®] Copper Tube is available in all common types including Type K, Type L, Type M and DWV. Each piece of tube is incised marked and color coded for easy, long lasting identity. Manufactured in accordance with applicable standards, our ongoing commitment to quality continues to make Streamline[®] Copper Tube the preferred and specified brand of industry professionals.

TYPE K RATED WORKING PRESSURE (PSIG)

| NOM. DIA. | WT/FT | FT/BNDL | 150°F | 200°F | 300°F | 400°F |
|-----------|-------|---------|-------|-------|-------|-------|
| 1/4 | 0.145 | 500 | 913 | 860 | 842 | 537 |
| 3/8 | 0.269 | 500 | 960 | 904 | 885 | 565 |
| 1/2 | 0.344 | 500 | 758 | 713 | 698 | 446 |
| 5/8 | 0.418 | 200 | 626 | 589 | 577 | 368 |
| 3/4 | 0.641 | 200 | 724 | 682 | 668 | 426 |
| 1 | 0.839 | 100 | 557 | 524 | 513 | 327 |
| 1 1/4 | 1.04 | 100 | 452 | 425 | 416 | 266 |
| 1 1/2 | 1.36 | 100 | 420 | 396 | 387 | 247 |
| 2 | 2.06 | — | 370 | 348 | 341 | 217 |
| 2 1/2 | 2.93 | — | 338 | 319 | 312 | 199 |
| 3 | 4.00 | — | 328 | 308 | 302 | 193 |
| 3 1/2 | 5.12 | — | 311 | 293 | 286 | 183 |
| 4 | 6.51 | — | 306 | 288 | 282 | 180 |
| 5 | 9.67 | — | 293 | 276 | 270 | 172 |
| 6 | 13.90 | — | 295 | 277 | 271 | 173 |
| 8 | 25.90 | — | 314 | 295 | 289 | 184 |

TYPE L

| | | | | | | |
|-------|-------|-----|-----|-----|-----|-----|
| 1/4 | 0.126 | 500 | 775 | 729 | 714 | 456 |
| 3/8 | 0.198 | 500 | 662 | 623 | 610 | 389 |
| 1/2 | 0.285 | 500 | 613 | 577 | 565 | 361 |
| 5/8 | 0.362 | 200 | 537 | 505 | 495 | 316 |
| 3/4 | 0.455 | 200 | 495 | 466 | 456 | 291 |
| 1 | 0.655 | 100 | 420 | 395 | 387 | 247 |
| 1 1/4 | 0.884 | 100 | 373 | 351 | 344 | 219 |
| 1 1/2 | 1.14 | 100 | 347 | 327 | 320 | 204 |
| 2 | 1.75 | — | 309 | 291 | 285 | 182 |
| 2 1/2 | 2.48 | — | 285 | 269 | 263 | 168 |
| 3 | 3.33 | — | 270 | 254 | 248 | 159 |
| 3 1/2 | 4.29 | — | 258 | 243 | 238 | 152 |
| 4 | 5.38 | — | 249 | 235 | 230 | 147 |
| 5 | 7.61 | — | 229 | 215 | 211 | 135 |
| 6 | 10.2 | — | 213 | 201 | 196 | 125 |
| 8 | 19.3 | — | 230 | 216 | 212 | 135 |

Tables give computed allowable stress for annealed copper tube at indicated temperature.

COPPER TUBE DATA

| TYPE M | | RATED WORKING PRESSURE (PSIG) | | | | |
|-----------|-------|-------------------------------|-------|-------|-------|-------|
| NOM. DIA. | WT/FT | FT/BNDL | 150°F | 200°F | 300°F | 400°F |
| 3/8 | 0.145 | 500 | 485 | 456 | 447 | 285 |
| 1/2 | 0.204 | 500 | 420 | 395 | 387 | 247 |
| 3/4 | 0.328 | 200 | 346 | 326 | 319 | 204 |
| 1 | 0.465 | 100 | 286 | 270 | 264 | 169 |
| 1 1/4 | 0.682 | 100 | 287 | 271 | 265 | 169 |
| 1 1/2 | 0.94 | 100 | 282 | 265 | 259 | 166 |
| 2 | 1.46 | - | 254 | 239 | 234 | 149 |
| 2 1/2 | 2.03 | - | 233 | 219 | 215 | 137 |
| 3 | 2.68 | - | 215 | 203 | 199 | 127 |
| 3 1/2 | 3.58 | - | 214 | 202 | 197 | 126 |
| 4 | 4.66 | - | 213 | 201 | 197 | 126 |
| 5 | 6.66 | - | 198 | 186 | 182 | 116 |
| 6 | 8.92 | - | 186 | 175 | 171 | 109 |
| 8 | 16.5 | - | 195 | 183 | 180 | 115 |

| TYPE DWV | | RATED WORKING PRESSURE (PSIG) | | | | |
|-----------|-------|-------------------------------|-------|-------|-------|-------|
| NOM. DIA. | WT/FT | FT/BNDL | 150°F | 200°F | 300°F | 400°F |
| 1 1/4 | 0.65 | 100 | 280 | 269 | 258 | 165 |
| 1 1/2 | 0.809 | 100 | 249 | 240 | 230 | 147 |
| 2 | 1.07 | - | 185 | 178 | 170 | 109 |
| 3 | 1.69 | - | 135 | 130 | 125 | 80 |
| 4 | 2.87 | - | 127 | 122 | 117 | 75 |
| 5 | 4.43 | - | 129 | 124 | 119 | 76 |
| 6 | 6.1 | - | 126 | 121 | 116 | 74 |
| 8 | 10.6 | - | 124 | 119 | 114 | 73 |

Table give computed allowable stress for annealed copper tube at indicated temperature.

TECHNICAL DATA

Values of allowable internal working pressure for copper tube in service are based on the formula from ANSI B31, Standard Code for Pressure Piping:

$$P = \frac{2 S tm}{D_{max} - 0.8 tm}$$

- P = Allowable Pressure @ 150°F S = 5100 PSIG annealed
 S = Allowable stress @ 200°F S = 4800 PSIG annealed
 T = Wall thickness @ 300°F S = 4700 PSIG annealed
 D Max = Outside Diameter @ 400°F S = 3000 PSIG annealed

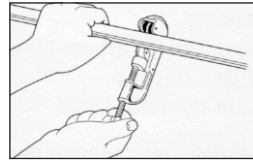
All ratings listed for types K, L, M, DWV and refrigeration service tube in the preceding charts are calculated for tube in the annealed condition. These values should be used when soldering, brazing or welding is employed for joining components in a system. While the ratings for hard drawn tube are substantially higher, they should only be used for systems using properly designed flare or compression mechanical joints, since joining by any heating process might anneal (soften) the tube.

In designing a system, careful consideration should also be given to joint ratings as well as those of the components.

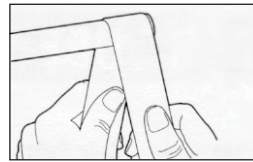
COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.
2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.
3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.
4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.
5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.
6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.

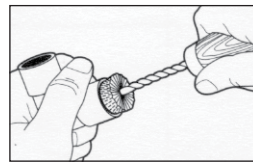
CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.



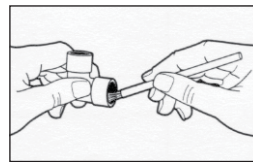
1. Cut tube to length & remove burr with file or scraper.



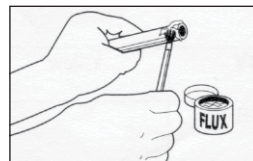
2. Clean outside of tube with sandpaper or sand cloth.



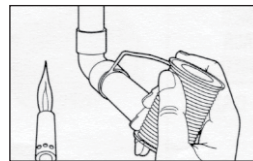
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.



4. Apply flux thoroughly to inside of fitting.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.

1-1/4" and Larger Copper Pipe

COPPER FITTINGS FOR PLUMBING AND MECHANICAL APPLICATIONS

| | |
|---------------------|-----------------------------------|
| Job Name | Contractor |
| Job Location | Wholesaler |
| Engineer | Streamline[®] Rep |

Product Description:

Streamline[®] Wrot Copper Pressure and DWV fittings for use in plumbing or mechanical applications. Available sizes ranging from 1/4" to 8" in diameter; all wrot copper solder joint fittings shall be manufactured in the United States. Product is designed to join ASTM B88 and ASTM B280 Seamless Copper Tube.

Material:

Streamline[®] Wrot Copper fittings shall be made from material in compliance with ASTM B75 and of UNS C12200 grade of copper.

Key Specifications:

Streamline[®] Wrot Copper, solder joint, pressure fittings shall conform to the NSF/ANSI 61 Annex G requirements. Wrot copper pressure fittings shall be manufactured to meet ASME B1.6.22 and MSS SP104. Wrot DWV copper fittings shall be made to meet ASME B1.6.29. All threaded fittings conform to ASME B1.20.1.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

- | | |
|---------------------|---|
| NSF/ANSI 61 Annex G | Safe Drinking Water Act (third party certification) |
| ASTM B75 | Seamless Copper Tube |
| C12200 | 99.9% pure copper |
| ASME B1.6.22 | Wrot Copper and Copper Alloy Solder Joint Pressure Fittings |
| MSS SP104 | Wrot Copper Solder and Joint Pressure Fittings |
| ASME B1.6.29 | Drain, Waste and Vent (DWV) Fittings |
| ASME B1.20.1 | Threaded Fittings |

Other Applicable Standards:

- | | |
|-----------|---|
| ASTM B88 | Seamless Copper Water and Gas Tube (Types K, L, M) |
| ASTM B280 | Seamless Copper Tube for Air Conditioning and Refrigeration |

Copper [tube or fitting] UNS C122000 has been evaluated by NSF International to NSF/ANSI 61 for use in drinking water supplies of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may require corrosion control to limit leaching of copper into the drinking water.




COUPLING (CONT.)

| | | | | |
|---------|---|---|-----|------|
| W 07072 | 2 | — | 100 | 0.13 |
| W 07092 | 3 | — | 50 | 0.47 |
| W 70107 | 4 | — | 25 | 1.03 |


REDUCING

| | | | | |
|---------|-----------|---|-----|------|
| W 07073 | 2 x 1-1/2 | — | 100 | 0.17 |
| W 07074 | x 1-1/4 | — | 100 | 0.18 |
| W 07094 | 3 x 2 | — | 50 | 0.52 |
| W 07095 | x 1-1/2 | — | 50 | 0.52 |
| W 07096 | x 1-1/4 | — | 50 | 0.70 |
| W 70109 | 4 x 3 | — | 25 | 0.93 |
| W 70106 | x 2 | — | 25 | 1.38 |


REPAIR COUPLING

| | | | | |
|----------|-------|-------|-----|---|
| DW-741NS | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07907 | 1-1/4 | 25 | 225 | 0.07 |
| W 07908 | 1-1/2 | 25 | 250 | 0.11 |
| W 07909 | 2 | — | 75 | 0.19 |
| W 07911 | 3 | — | 50 | 0.34 |


45° ELBOW

| | | | | |
|---------|-------|-------|-----|---|
| DW-204 | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07420 | 1-1/4 | 25 | 250 | 0.14 |
| W 07421 | 1-1/2 | 25 | 125 | 0.20 |
| W 07422 | 2 | — | 50 | 0.33 |
| W 07423 | 3 | — | 25 | 0.84 |


45° ELBOW

| | | | | |
|--------------------|-------|---------|-----|--|
| (STREET) DW-205 | | FTG x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07430 | 1-1/4 | 25 | 250 | 0.17 |
| W 07431 | 1-1/2 | 25 | 125 | 0.20 |
| W 07432 | 2 | — | 50 | 0.32 |
| W 07433 | 3 | — | 25 | 0.81 |


90° ELBOW

| | | | | |
|---------|-------|-------|-----|---|
| DW-200 | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07400 | 1-1/4 | 25 | 125 | 0.25 |
| W 07401 | 1-1/2 | 20 | 100 | 0.24 |
| W 07403 | 2 | — | 50 | 0.71 |
| W 07404 | 3 | — | 15 | 1.66 |


90° ELBOW

| | | | | |
|----------------------|-------|-------|-----|---|
| LONG TURN D-700LT | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| A 07209 | 1-1/2 | 5 | 100 | 0.41 |
| A 07202 | 2 | 5 | 40 | 0.62 |


90° ELBOW

| | | | | |
|------------------------------|-------|-------|-----|---|
| EXTRA LONG TURN DW-700XLT | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07451 | 1-1/2 | 10 | 50 | 0.55 |
| W 07452 | 2 | 5 | 25 | 1.11 |
| W 07453 | 3 | 2 | 10 | 2.28 |
| W 07454 | 4 | — | 5 | 5.10 |


90° ELBOW

| | | | | |
|---------|-------|---------|-----|---|
| DW-203 | | FTG x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07410 | 1-1/4 | 25 | 125 | 0.26 |
| W 07411 | 1-1/2 | 20 | 100 | 0.38 |
| W 07412 | 2 | — | 50 | 0.70 |
| W 07413 | 3 | — | 15 | 1.70 |


60° ELBOW

| | | | | |
|---------|-------|-------|-----|---|
| DW-701 | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07064 | 1-1/2 | 25 | 250 | 0.35 |
| W 07066 | 3 | 2 | 20 | 0.95 |

22-1/2° ELBOW

| | | | | |
|---------|-------|-------|-----|---|
| DW-703 | | C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07060 | 1-1/2 | — | 100 | 0.27 |


TEE

| | | | | |
|---------|-------|-----------|-----|---|
| DW-707 | | C x C x C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07500 | 1-1/4 | 20 | 100 | 0.37 |
| W 07511 | 1-1/2 | 20 | 100 | 0.52 |
| W 07522 | 2 | 5 | 25 | 0.85 |
| W 07533 | 3 | — | 10 | 2.10 |


REDUCING

| | | | | |
|---------|---------------|----|-----|------|
| W 07510 | 1-1/2x1-1/4 | 10 | 100 | 0.51 |
| W 07512 | x1-1/4x1-1/4 | 10 | 100 | 0.52 |
| W 07521 | 2 x 2 x 1-1/2 | 5 | 50 | 0.75 |
| W 07520 | x 1-1/4 | 5 | 30 | 0.68 |
| W 07524 | x1-1/2x1-1/2 | 5 | 50 | 0.87 |
| W 07532 | 3 x 3 x 2 | 5 | 25 | 1.69 |
| W 07531 | x 1-1/2 | 5 | 25 | 1.45 |
| W 07530 | x 1-1/4 | 5 | 25 | 0.81 |

TEST CAP

| | | | | |
|---------|-------|-----|-------|---|
| DW-798T | | C | |  |
| Part | Size | Box | Ctn | Wt |
| W 07634 | 1/2 | 500 | 5,000 | — |
| W 07635 | 3/4 | 200 | 4,000 | — |
| W 07636 | 1 | 100 | 2,000 | 0.01 |
| W 07637 | 1-1/4 | 100 | 2,000 | 0.01 |
| W 07638 | 1-1/2 | 100 | 1,000 | 0.01 |
| W 07639 | 2 | 50 | 1,000 | 0.02 |
| W 07640 | 3 | 25 | 250 | 0.04 |

VENT INCREASER

| | | | | |
|---------|------------|----------|-----|---|
| DW-752 | | C x TUBE | |  |
| Part | Size | Box | Ctn | Wt |
| W 70112 | 3 x 4 x 18 | — | 6 | 4.37 |
| W 70111 | 3 x 4 x 24 | — | 5 | 5.90 |

COPPER FITTING DATA

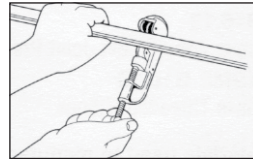
| TEMPERATURE - PRESSURE RATINGS OF SOLDER JOINTS | | | | | |
|--|------------------------|---|------------|------------|--------|
| ALLOYS USED FOR JOINTS | SERVICE TEMPERATURE °F | STANDARD TUBE SIZE, TYPES K, L, AND M | | | |
| | | WATER AND NON-CORROSIVE LIQUIDS & GASES | | | |
| | | 1/4 to 1 | 1-1/4 to 2 | 2-1/2 to 4 | 5 to 8 |
| 50 / 50 Tin Lead Solder Not to be used in potable water systems | 100 | 200 | 175 | 150 | 135 |
| | 150 | 150 | 125 | 100 | 90 |
| | 200 | 100 | 90 | 75 | 70 |
| | 250 | 85 | 75 | 50 | 45 |
| 95 / 5 Tin-Antimony Solder | 100 | 1090 | 850 | 705 | 660 |
| | 150 | 625 | 485 | 405 | 375 |
| | 200 | 505 | 395 | 325 | 305 |
| | 250 | 270 | 210 | 175 | 165 |
| Alloy E Solder | 100 | 710 | 555 | 460 | 430 |
| | 150 | 475 | 370 | 305 | 285 |
| | 200 | 375 | 290 | 240 | 225 |
| | 250 | 320 | 250 | 205 | 195 |
| Alloy HB Solder | 100 | 1035 | 805 | 670 | 625 |
| | 150 | 710 | 555 | 460 | 430 |
| | 200 | 440 | 345 | 285 | 265 |
| | 250 | 430 | 335 | 275 | 260 |
| Brazing Alloys (melting at or above 1000°F) | | Pressure-temperature ratings is that of the tubing being used | | | |

Note: Ratings are those given in ASME B 16.22 "Wrought Copper and Copper Alloy Solder Joint Pressure Fittings." (a) Solder alloys are covered by ASTM Standard Specification B32. The Safe Drinking Water Act Amendment of 1986 prohibits the use of any solder having a lead content in excess of 02% for potable water systems.

| PRESSURE LOSS IN FITTINGS EXPRESSED AS EQUIVALENT LENGTH OF TUBE, FEET | | | | | | |
|---|----------------------|---------------|------------------|-----------------|----------|-----------------|
| Normal or Standard in Inches | Wrot Copper Fittings | | | | | |
| | 90 Degree Ell | 45 Degree Ell | Tee Straight Run | Tee Side Branch | Coupling | 180 Degree Bend |
| 3/8 | 0.5 | 0.5 | 0.5 | 1 | - | 0.5 |
| 1/2 | 0.5 | 0.5 | 0.5 | 1 | - | 1 |
| 5/8 | 0.5 | 0.5 | 0.5 | 2 | - | 1 |
| 3/4 | 1 | 0.5 | 0.5 | 2 | - | 2 |
| 1 | 1 | 1 | 0.5 | 3 | - | 2 |
| 1-1/4 | 2 | 1 | 0.5 | 4 | 0.5 | 3 |
| 1-1/2 | 2 | 2 | 1 | 5 | 0.5 | 4 |
| 2 | 2 | 2 | 1 | 7 | 0.5 | 8 |
| 2-1/2 | 2 | 3 | 2 | 9 | 0.5 | 16 |
| 3 | 3 | 4 | - | - | 1 | 20 |

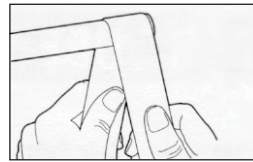
COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.



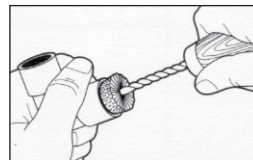
1. Cut tube to length & remove burr with file or scraper.

2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.



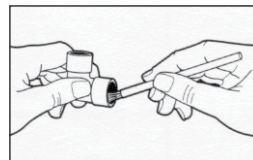
2. Clean outside of tube with sandpaper or sand cloth.

3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.



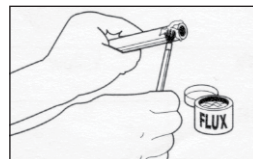
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.

4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.



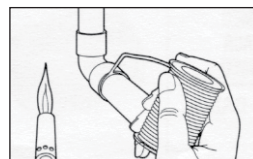
4. Apply flux thoroughly to inside of fitting.

5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.

6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.

CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.

1-1/4" and Larger Pipe

COPPER TUBE FOR PLUMBING AND MECHANICAL APPLICATIONS

| | |
|---------------------|-----------------------------------|
| Job Name | Contractor |
| Job Location | Wholesaler |
| Engineer | Streamline[®] Rep |

Product Description:

Streamline[®] Copper Tube for use in plumbing and mechanical applications. Available sizes (Type K, L, M, & DWV) ranging from 1/4" to 8" in diameter. All tube shall be manufactured in the United States.

Material:

Streamline[®] Copper Tube is manufactured from UNS C12200 grade of copper.

Key Specifications:

Streamline[®] Copper Tube (Type K, L, M) shall conform to the NSF/ANSI 61 Annex G requirements and is manufactured to meet ASTM B88. Copper drainage tube (DWV) is made to meet ASTM B306. Copper refrigeration coils, ACR/Nitrogenized straight lengths and line sets are made to meet the chemical, mechanical, cleanliness and eddy current testing requirements of the applicable specifications of ASTM B280.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

- | | |
|---------------------|--|
| ASTM B75 | Seamless Copper Tube |
| C12200 | 99.9% Pure Copper (can be used for potable water) |
| NSF/ANSI 61 Annex G | Safe Drinking Water Act (third party certification) |
| ASTM B88 | Seamless Copper Water and Gas Tube (Type K, L, M) |
| ASTM B280 | Seamless Copper Tube for Air Conditioning and Refrigerants |
| ASTM B306 | Seamless Drainage Tube Code (DWV) |

Copper [tube or fitting] UNS C122000 has been evaluated by NSF International to NSF/ANSI 61 for use in drinking water supplies of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may require corrosion control to limit leaching of copper into the drinking water.



COPPER TUBE DATA

Streamline[®] Copper Tube sets the standard for quality, consistency and service in the plumbing industries. With a full line of copper tube products to support most all plumbing supply and DWV applications, Streamline[®] Copper Tube is available in all common types including Type K, Type L, Type M and DWV. Each piece of tube is incised marked and color coded for easy, long lasting identity. Manufactured in accordance with applicable standards, our ongoing commitment to quality continues to make Streamline[®] Copper Tube the preferred and specified brand of industry professionals.

TYPE K RATED WORKING PRESSURE (PSIG)

| NOM. DIA. | WT/FT | FT/BN DL | 150°F | 200°F | 300°F | 400°F |
|-----------|-------|----------|-------|-------|-------|-------|
| 1/4 | 0.145 | 500 | 913 | 860 | 842 | 537 |
| 3/8 | 0.269 | 500 | 960 | 904 | 885 | 565 |
| 1/2 | 0.344 | 500 | 758 | 713 | 698 | 446 |
| 5/8 | 0.418 | 200 | 626 | 589 | 577 | 368 |
| 3/4 | 0.641 | 200 | 724 | 682 | 668 | 426 |
| 1 | 0.839 | 100 | 557 | 524 | 513 | 327 |
| 1 1/4 | 1.04 | 100 | 452 | 425 | 416 | 266 |
| 1 1/2 | 1.36 | 100 | 420 | 396 | 387 | 247 |
| 2 | 2.06 | – | 370 | 348 | 341 | 217 |
| 2 1/2 | 2.93 | – | 338 | 319 | 312 | 199 |
| 3 | 4.00 | – | 328 | 308 | 302 | 193 |
| 3 1/2 | 5.12 | – | 311 | 293 | 286 | 183 |
| 4 | 6.51 | – | 306 | 288 | 282 | 180 |
| 5 | 9.67 | – | 293 | 276 | 270 | 172 |
| 6 | 13.90 | – | 295 | 277 | 271 | 173 |
| 8 | 25.90 | – | 314 | 295 | 289 | 184 |

TYPE L

| | | | | | | |
|-------|-------|-----|-----|-----|-----|-----|
| 1/4 | 0.126 | 500 | 775 | 729 | 714 | 456 |
| 3/8 | 0.198 | 500 | 662 | 623 | 610 | 389 |
| 1/2 | 0.285 | 500 | 613 | 577 | 565 | 361 |
| 5/8 | 0.362 | 200 | 537 | 505 | 495 | 316 |
| 3/4 | 0.455 | 200 | 495 | 466 | 456 | 291 |
| 1 | 0.655 | 100 | 420 | 395 | 387 | 247 |
| 1 1/4 | 0.884 | 100 | 373 | 351 | 344 | 219 |
| 1 1/2 | 1.14 | 100 | 347 | 327 | 320 | 204 |
| 2 | 1.75 | – | 309 | 291 | 285 | 182 |
| 2 1/2 | 2.48 | – | 285 | 269 | 263 | 168 |
| 3 | 3.33 | – | 270 | 254 | 248 | 159 |
| 3 1/2 | 4.29 | – | 258 | 243 | 238 | 152 |
| 4 | 5.38 | – | 249 | 235 | 230 | 147 |
| 5 | 7.61 | – | 229 | 215 | 211 | 135 |
| 6 | 10.2 | – | 213 | 201 | 196 | 125 |
| 8 | 19.3 | – | 230 | 216 | 212 | 135 |

Tables give computed allowable stress for annealed copper tube at indicated temperature.

COPPER TUBE DATA

| TYPE M | | RATED WORKING PRESSURE (PSIG) | | | | |
|------------------|--------------|--------------------------------------|--------------|--------------|--------------|--------------|
| NOM. DIA. | WT/FT | FT/BNDL | 150°F | 200°F | 300°F | 400°F |
| 3/8 | 0.145 | 500 | 485 | 456 | 447 | 285 |
| 1/2 | 0.204 | 500 | 420 | 395 | 387 | 247 |
| 3/4 | 0.328 | 200 | 346 | 326 | 319 | 204 |
| 1 | 0.465 | 100 | 286 | 270 | 264 | 169 |
| 1 1/4 | 0.682 | 100 | 287 | 271 | 265 | 169 |
| 1 1/2 | 0.94 | 100 | 282 | 265 | 259 | 166 |
| 2 | 1.46 | - | 254 | 239 | 234 | 149 |
| 2 1/2 | 2.03 | - | 233 | 219 | 215 | 137 |
| 3 | 2.68 | - | 215 | 203 | 199 | 127 |
| 3 1/2 | 3.58 | - | 214 | 202 | 197 | 126 |
| 4 | 4.66 | - | 213 | 201 | 197 | 126 |
| 5 | 6.66 | - | 198 | 186 | 182 | 116 |
| 6 | 8.92 | - | 186 | 175 | 171 | 109 |
| 8 | 16.5 | - | 195 | 183 | 180 | 115 |

| TYPE DWV | | RATED WORKING PRESSURE (PSIG) | | | | |
|------------------|--------------|--------------------------------------|--------------|--------------|--------------|--------------|
| NOM. DIA. | WT/FT | FT/BNDL | 150°F | 200°F | 300°F | 400°F |
| 1 1/4 | 0.65 | 100 | 280 | 269 | 258 | 165 |
| 1 1/2 | 0.809 | 100 | 249 | 240 | 230 | 147 |
| 2 | 1.07 | - | 185 | 178 | 170 | 109 |
| 3 | 1.69 | - | 135 | 130 | 125 | 80 |
| 4 | 2.87 | - | 127 | 122 | 117 | 75 |
| 5 | 4.43 | - | 129 | 124 | 119 | 76 |
| 6 | 6.1 | - | 126 | 121 | 116 | 74 |
| 8 | 10.6 | - | 124 | 119 | 114 | 73 |

Table give computed allowable stress for annealed copper tube at indicated temperature.

TECHNICAL DATA

Values of allowable internal working pressure for copper tube in service are based on the formula from ANSI B31, Standard Code for Pressure Piping:

$$P = \frac{2 S tm}{D_{max} - 0.8 tm}$$

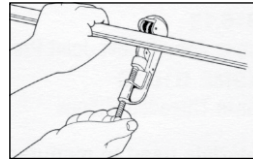
- P = Allowable Pressure
- S = Allowable stress
- T = Wall thickness
- D Max = Outside Diameter
- @ 150°F S = 5100 PSIG annealed
- @ 200°F S = 4800 PSIG annealed
- @ 300°F S = 4700 PSIG annealed
- @ 400°F S = 3000 PSIG annealed

All ratings listed for types K, L, M, DWV and refrigeration service tube in the preceding charts are calculated for tube in the annealed condition. These values should be used when soldering, brazing or welding is employed for joining components in a system. While the ratings for hard drawn tube are substantially higher, they should only be used for systems using properly designed flare or compression mechanical joints, since joining by any heating process might anneal (soften) the tube.

In designing a system, careful consideration should also be given to joint ratings as well as those of the components.

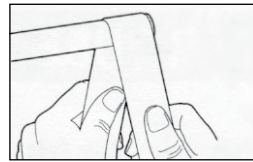
COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.



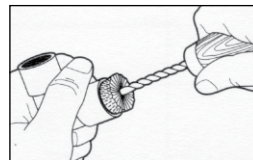
1. Cut tube to length & remove burr with file or scraper.

2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.



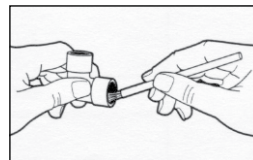
2. Clean outside of tube with sandpaper or sand cloth.

3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.



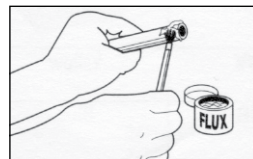
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.

4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.



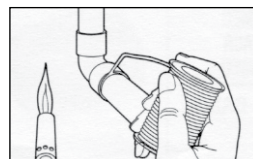
4. Apply flux thoroughly to inside of fitting.

5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.

6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.

CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.

1-1/4" and Larger Copper Pipe

COPPER FITTINGS FOR PLUMBING AND MECHANICAL APPLICATIONS

| | |
|---------------------|-----------------------------------|
| Job Name | Contractor |
| Job Location | Wholesaler |
| Engineer | Streamline[®] Rep |

Product Description:

Streamline[®] Wrot Copper Pressure and DWV fittings for use in plumbing or mechanical applications. Available sizes ranging from 1/4" to 8" in diameter; all wrot copper solder joint fittings shall be manufactured in the United States. Product is designed to join ASTM B88 and ASTM B280 Seamless Copper Tube.

Material:

Streamline[®] Wrot Copper fittings shall be made from material in compliance with ASTM B75 and of UNS C12200 grade of copper.

Key Specifications:

Streamline[®] Wrot Copper, solder joint, pressure fittings shall conform to the NSF/ANSI 61 Annex G requirements. Wrot copper pressure fittings shall be manufactured to meet ASME B1.6.22 and MSS SPI04. Wrot DWV copper fittings shall be made to meet ASME B1.6.29. All threaded fittings conform to ASME B1.20.1.

Installation:

Installations shall comply with the latest applicable building codes for the local jurisdiction. For detailed installation instructions, consult the Copper Development Association at copper.org.

References:

| | |
|---------------------|---|
| NSF/ANSI 61 Annex G | Safe Drinking Water Act (third party certification) |
| ASTM B75 | Seamless Copper Tube |
| C12200 | 99.9% pure copper |
| ASME B1.6.22 | Wrot Copper and Copper Alloy Solder Joint Pressure Fittings |
| MSS SPI04 | Wrot Copper Solder and Joint Pressure Fittings |
| ASME B1.6.29 | Drain, Waste and Vent (DWV) Fittings |
| ASME B1.20.1 | Threaded Fittings |

Other Applicable Standards:

| | |
|-----------|---|
| ASTM B88 | Seamless Copper Water and Gas Tube (Types K, L, M) |
| ASTM B280 | Seamless Copper Tube for Air Conditioning and Refrigeration |

Copper [tube or fitting] UNS C12200 has been evaluated by NSF International to NSF/ANSI 61 for use in drinking water supplies of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may require corrosion control to limit leaching of copper into the drinking water.



COUPLING (CONT.)

| | | | | |
|---------|---|---|-----|------|
| W 07072 | 2 | — | 100 | 0.13 |
| W 07092 | 3 | — | 50 | 0.47 |
| W 70107 | 4 | — | 25 | 1.03 |

REDUCING

| | | | | |
|---------|-----------|---|-----|------|
| W 07073 | 2 x 1-1/2 | — | 100 | 0.17 |
| W 07074 | x 1-1/4 | — | 100 | 0.18 |
| W 07094 | 3 x 2 | — | 50 | 0.52 |
| W 07095 | x 1-1/2 | — | 50 | 0.52 |
| W 07096 | x 1-1/4 | — | 50 | 0.70 |
| W 70109 | 4 x 3 | — | 25 | 0.93 |
| W 70106 | x 2 | — | 25 | 1.38 |

REPAIR COUPLING

| | | | | | |
|----------|-------|-----|-----|------|--|
| DW-741NS | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07907 | 1-1/4 | 25 | 225 | 0.07 | |
| W 07908 | 1-1/2 | 25 | 250 | 0.11 | |
| W 07909 | 2 | — | 75 | 0.19 | |
| W 07911 | 3 | — | 50 | 0.34 | |

45° ELBOW

| | | | | | |
|---------|-------|-----|-----|------|--|
| DW-204 | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07420 | 1-1/4 | 25 | 250 | 0.14 | |
| W 07421 | 1-1/2 | 25 | 125 | 0.20 | |
| W 07422 | 2 | — | 50 | 0.33 | |
| W 07423 | 3 | — | 25 | 0.84 | |

45° ELBOW

| | | | | | |
|--------------------|---------|-----|-----|------|--|
| (STREET) DW-205 | FTG x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07430 | 1-1/4 | 25 | 250 | 0.17 | |
| W 07431 | 1-1/2 | 25 | 125 | 0.20 | |
| W 07432 | 2 | — | 50 | 0.32 | |
| W 07433 | 3 | — | 25 | 0.81 | |

90° ELBOW

| | | | | | |
|---------|-------|-----|-----|------|--|
| DW-200 | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07400 | 1-1/4 | 25 | 125 | 0.25 | |
| W 07401 | 1-1/2 | 20 | 100 | 0.24 | |
| W 07403 | 2 | — | 50 | 0.71 | |
| W 07404 | 3 | — | 15 | 1.66 | |

90° ELBOW

| | | | | | |
|----------------------|-------|-----|-----|------|--|
| LONG TURN D-700LT | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| A 07209 | 1-1/2 | 5 | 100 | 0.41 | |
| A 07202 | 2 | 5 | 40 | 0.62 | |

90° ELBOW

| | | | | | |
|------------------------------|-------|-----|-----|------|--|
| EXTRA LONG TURN DW-700XLT | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07451 | 1-1/2 | 10 | 50 | 0.55 | |
| W 07452 | 2 | 5 | 25 | 1.11 | |
| W 07453 | 3 | 2 | 10 | 2.28 | |
| W 07454 | 4 | — | 5 | 5.10 | |

90° ELBOW

| | | | | | |
|---------|---------|-----|-----|------|--|
| DW-203 | FTG x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07410 | 1-1/4 | 25 | 125 | 0.26 | |
| W 07411 | 1-1/2 | 20 | 100 | 0.38 | |
| W 07412 | 2 | — | 50 | 0.70 | |
| W 07413 | 3 | — | 15 | 1.70 | |

60° ELBOW

| | | | | | |
|---------|-------|-----|-----|------|--|
| DW-701 | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07064 | 1-1/2 | 25 | 250 | 0.35 | |
| W 07066 | 3 | 2 | 20 | 0.95 | |

22-1/2° ELBOW

| | | | | | |
|---------|-------|-----|-----|------|--|
| DW-703 | C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07060 | 1-1/2 | — | 100 | 0.27 | |

TEE

| | | | | | |
|---------|-----------|-----|-----|------|--|
| DW-707 | C x C x C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07500 | 1-1/4 | 20 | 100 | 0.37 | |
| W 07511 | 1-1/2 | 20 | 100 | 0.52 | |
| W 07522 | 2 | 5 | 25 | 0.85 | |
| W 07533 | 3 | — | 10 | 2.10 | |

REDUCING

| | | | | |
|---------|---------------|----|-----|------|
| W 07510 | 1-1/2x1-1/4 | 10 | 100 | 0.51 |
| W 07512 | x1-1/4x1-1/4 | 10 | 100 | 0.52 |
| W 07521 | 2 x 2 x 1-1/2 | 5 | 50 | 0.75 |
| W 07520 | x 1-1/4 | 5 | 30 | 0.68 |
| W 07524 | x1-1/2x1-1/2 | 5 | 50 | 0.87 |
| W 07532 | 3 x 3 x 2 | 5 | 25 | 1.69 |
| W 07531 | x 1-1/2 | 5 | 25 | 1.45 |
| W 07530 | x 1-1/4 | 5 | 25 | 0.81 |

TEST CAP

| | | | | | |
|---------|-------|-----|-------|------|--|
| DW-798T | C | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 07634 | 1/2 | 500 | 5,000 | — | |
| W 07635 | 3/4 | 200 | 4,000 | — | |
| W 07636 | 1 | 100 | 2,000 | 0.01 | |
| W 07637 | 1-1/4 | 100 | 2,000 | 0.01 | |
| W 07638 | 1-1/2 | 100 | 1,000 | 0.01 | |
| W 07639 | 2 | 50 | 1,000 | 0.02 | |
| W 07640 | 3 | 25 | 250 | 0.04 | |

VENT INCREASER

| | | | | | |
|---------|------------|-----|-----|------|--|
| DW-752 | C x TUBE | | | | |
| Part | Size | Box | Ctn | Wt | |
| W 70112 | 3 x 4 x 18 | — | 6 | 4.37 | |
| W 70111 | 3 x 4 x 24 | — | 5 | 5.90 | |

COPPER FITTING DATA

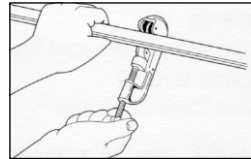
| TEMPERATURE - PRESSURE RATINGS OF SOLDER JOINTS | | | | | |
|--|------------------------------|---|------------|------------|--------|
| ALLOYS USED FOR JOINTS | SERVICE TEMPERATURE °F | STANDARD TUBE SIZE, TYPES K, L, AND M | | | |
| | | WATER AND NON-CORROSIVE LIQUIDS & GASES | | | |
| | | 1/4 to 1 | 1-1/4 to 2 | 2-1/2 to 4 | 5 to 8 |
| 50 / 50 Tin Lead Solder Not to be used in potable water systems | 100 | 200 | 175 | 150 | 135 |
| | 150 | 150 | 125 | 100 | 90 |
| | 200 | 100 | 90 | 75 | 70 |
| | 250 | 85 | 75 | 50 | 45 |
| 95 / 5 Tin-Antimony Solder | 100 | 1090 | 850 | 705 | 660 |
| | 150 | 625 | 485 | 405 | 375 |
| | 200 | 505 | 395 | 325 | 305 |
| | 250 | 270 | 210 | 175 | 165 |
| Alloy E Solder | 100 | 710 | 555 | 460 | 430 |
| | 150 | 475 | 370 | 305 | 285 |
| | 200 | 375 | 290 | 240 | 225 |
| | 250 | 320 | 250 | 205 | 195 |
| Alloy HB Solder | 100 | 1035 | 805 | 670 | 625 |
| | 150 | 710 | 555 | 460 | 430 |
| | 200 | 440 | 345 | 285 | 265 |
| | 250 | 430 | 335 | 275 | 260 |
| Brazing Alloys (melting at or above 1000°F) | | Pressure-temperature ratings is that of the tubing being used | | | |

Note: Ratings are those given in ASME B 16.22 "Wrought Copper and Copper Alloy Solder Joint Pressure Fittings." (a) Solder alloys are covered by ASTM Standard Specification B32. The Safe Drinking Water Act Amendment of 1986 prohibits the use of any solder having a lead content in excess of 02% for potable water systems.

| PRESSURE LOSS IN FITTINGS EXPRESSED AS EQUIVALENT LENGTH OF TUBE, FEET | | | | | | |
|---|----------------------|-----------------|---------------------|--------------------|----------|--------------------|
| Normal or Standard in Inches | Wrot Copper Fittings | | | | | |
| | 90 Degree El | 45 Degree El | Tee Straight Run | Tee Side Branch | Coupling | 180 Degree Bend |
| 3/8 | 0.5 | 0.5 | 0.5 | 1 | - | 0.5 |
| 1/2 | 0.5 | 0.5 | 0.5 | 1 | - | 1 |
| 5/8 | 0.5 | 0.5 | 0.5 | 2 | - | 1 |
| 3/4 | 1 | 0.5 | 0.5 | 2 | - | 2 |
| 1 | 1 | 1 | 0.5 | 3 | - | 2 |
| 1-1/4 | 2 | 1 | 0.5 | 4 | 0.5 | 3 |
| 1-1/2 | 2 | 2 | 1 | 5 | 0.5 | 4 |
| 2 | 2 | 2 | 1 | 7 | 0.5 | 8 |
| 2-1/2 | 2 | 3 | 2 | 9 | 0.5 | 16 |
| 3 | 3 | 4 | - | - | 1 | 20 |

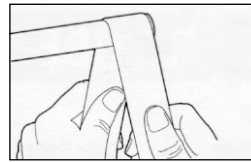
COPPER TUBE AND SOLDER TYPE FITTINGS

1. Cut tube square with the cutter or fine hack saw (32 tooth blade is recommended). Remove Burr.



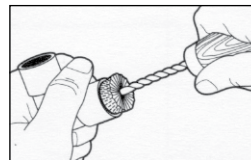
1. Cut tube to length & remove burr with file or scraper.

2. Clean outside end of copper tube thoroughly with sand cloth or sandpaper equal depth of fitting. Leave no dark spots.



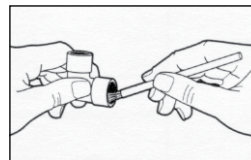
2. Clean outside of tube with sandpaper or sand cloth.

3. Clean inside of fitting carefully to tube stop with wire brush. Note: Sand cloth or sandpaper may also be used.



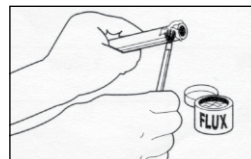
3. Clean inside of fitting with wire brush, sand cloth or sandpaper.

4. Using a brush, apply light uniform coat of soldering flux to the outside of the tube and inside of the fitting.



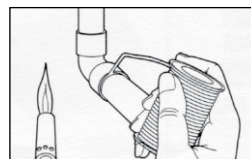
4. Apply flux thoroughly to inside of fitting.

5. Slip tube into fitting to tube stop. Turn tube back and forth once or twice to distribute flux evenly.



5. Apply flux thoroughly to outside of tube - assemble tube and fitting.

6. Apply heat uniformly around the fitting with torch. When solder melts upon contact with heated fitting, the proper soldering temperature has been reached. Remove flame and feed solder slightly off center at the bottom of the joint. Proceed across the bottom of the fitting and up to the top center position. Return to the starting point, and then proceed up the incomplete side to the top, again, overlapping the solder metal. Wipe off surplus solder with a piece of cloth.



6. Apply heat with torch. When solder melts upon contact with heated fitting, the proper temp for soldering has been reached. Remove flame & feed solder to the joint at one or two points until a ring of solder appears at the end of the fitting.

CAUTION: No not overheat the joint or direct the flame into the face of the fitting cup. Overheating could burn the flux, which will destroy its effectiveness and the solder will not enter the joint properly.



PIPE & COUPLING

SUBMITTAL ☿ NO-HUB® CAST IRON SOIL PIPE & FITTINGS

Tyler Pipe/Soil Pipe Division • 11910 CR 492 • Tyler, TX 75706 • (800) 527-8478

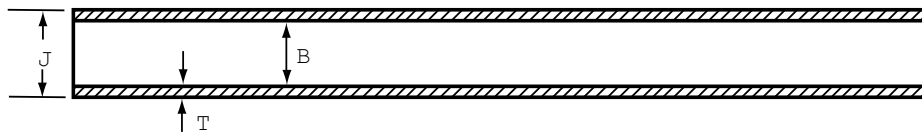
Specifications:

All 1½ inch diameter and larger cast iron soil pipe and fittings for above and below grade soil, waste, vent lines, rain water conductors and storm drainage lines shall bear the registered insignia ☿ or ☿ NO HUB® indicating that these items used in the sanitary system comply with the Cast Iron Soil Pipe Institute Standards 301 or ASTM A888.



Standards:

- CISPI 301: Hubless Cast Iron Soil Pipe & Fittings
- ASTM A 888: Hubless Cast Iron Soil Pipe & Fittings
- ASTM C 564: Rubber Gaskets for Cast Iron Soil Pipe & Fittings



NO-HUB PIPE, TEN-FOOT LAYING LENGTH

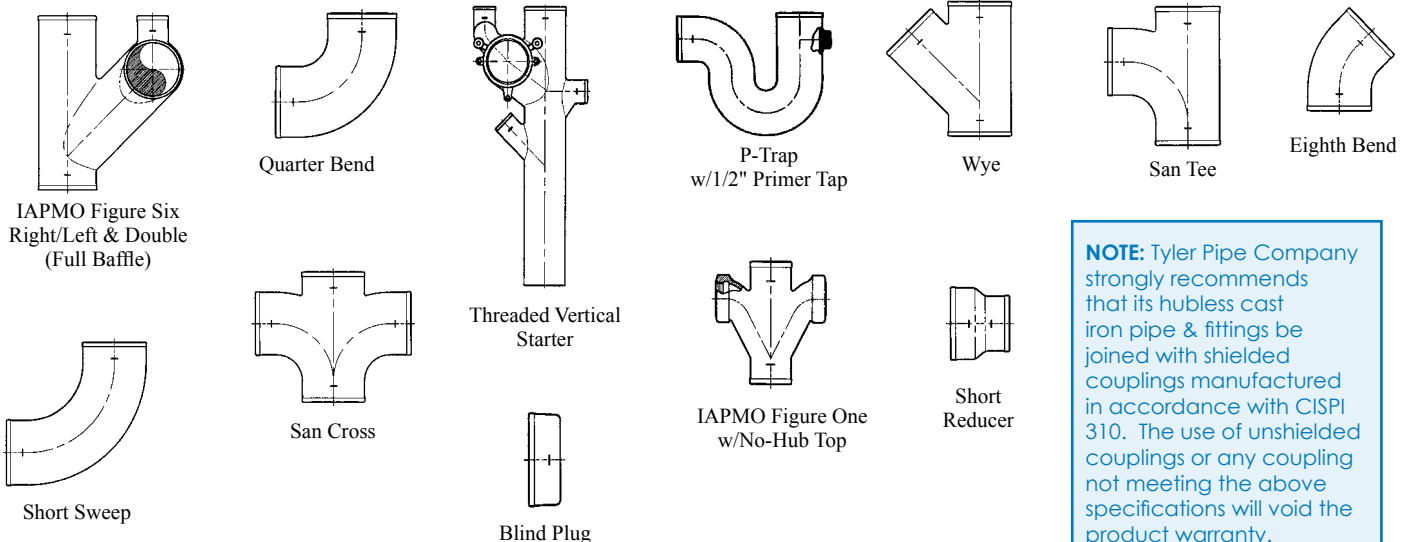
| Size | Wt. per 10'* lbs. | Per Bundle | |
|------|-------------------|------------|----------|
| | | Pieces | Wt. lbs. |
| 1½ | 25 | 54 | 1350 |
| 2 | 36 | 54 | 1955 |
| 3 | 52 | 36 | 1855 |
| 4 | 74 | 27 | 2013 |
| 5 | 94 | 24 | 2256 |
| 6 | 110 | 18 | 1998 |
| 8 | 180 | 15 | 2718 |
| 10 | 258 | 8 | 2084 |
| 12 | 325 | 6 | 2130 |
| 15 | 497 | 4 | 2060 |

*Note: Weights approximate, for shipping purposes only.

NO-HUB, TEN-FOOT LAYING LENGTH DIMENSIONS AND TOLERANCES

| Size | Hubless Pipe Barrels | | T Thickness | |
|------|----------------------|--------------------|-------------|------|
| | B Inside Diameter | J Outside Diameter | Nom. | Min. |
| 1½ | 1.50±.09 | 1.90±.06 | .16 | .13 |
| 2 | 1.96±.06 | 2.35±.09 | .16 | .13 |
| 3 | 2.96±.06 | 3.35±.09 | .16 | .13 |
| 4 | 4.00±.06 | 4.38±.09-.05 | .19 | .15 |
| 5 | 4.94±.09 | 5.30±.09-.05 | .19 | .15 |
| 6 | 5.94±.09 | 6.30±.09-.05 | .19 | .15 |
| 8 | 7.94±.13 | 8.38±.13-.09 | .23 | .17 |
| 10* | 10.00±.13 | 10.56±.09 | .28 | .22 |
| 12 | 11.94±.09 | 12.50±.09 | .28 | .22 |
| 15 | 15.11±.09 | 15.83±.09 | .36 | .30 |

* O.D. Barrel out of round tolerance of ±.04 is permitted.



NOTE: Tyler Pipe Company strongly recommends that its hubless cast iron pipe & fittings be joined with shielded couplings manufactured in accordance with CISPI 310. The use of unshielded couplings or any coupling not meeting the above specifications will void the product warranty.



PIPE & COUPLING

SUBMITTAL TYLER® STANDARD NO-HUB COUPLINGS

Tyler Pipe/Soil Pipe Division • 11910 CR 492 • Tyler, TX 75706 • (800) 527-8478

Description:

Tyler Pipe standard no-hub couplings are manufactured in accordance with CISPI 310 and are designed to join cast-iron pipe and fittings in drain, waste and vent applications. Each coupling includes two components: a molded, one-piece neoprene sealing sleeve and a 300 series AISI stainless steel shield/ clamp assembly featuring compression bands over our trademark diamond-corrugation shield pattern. No-hub couplings are available in sizes from 1½" to 15" in diameter.

Neoprene Sealing Sleeve:

Tyler Pipe standard-coupling sealing sleeves conform to ASTM standard C 564 and are made of high-purity neoprene. This material delivers superior resistance to decay and deterioration from contact with effluents in the pipe, chemicals in the soil, or air around the pipe - including oil and other petroleum products. Also, neoprene can withstand high liquid temperatures up to 212°, is fire resistant and does not support flame. Each sleeve features a double row of raised, sealing rings positioned under each compression band to provide multiple, sealing surfaces on either side of the connection. This ensures a permanent, leak-proof joint that can reliably accommodate minor, pipe-mating diameter variations.

Shield and Clamp Assembly:

Tyler® couplings incorporate a shield and clamp assembly fabricated from 300 series stainless steel for maximum corrosion resistance. Clamping bands are mounted and attached to the shield by a fixed and

Material Specification:

| | |
|----------------|---|
| Bands | 300 Series AISI Stainless Steel |
| Screw Housing | 300 Series AISI Stainless Steel ⅜" hex head slant shoulder |
| Shield | 300 Series AISI Stainless Steel |
| Sealing Sleeve | Neoprene elastomer compound conforms to ASTM C 564 |

floating eyelet system that allows for variable adjustment of each clamp during tightening. Our shield's patented diamond-pattern corrugation design locks the sealing sleeve under the shield and prevents slippage or extrusion - even under elevated internal pressure or external stress. The clamp bands on 1½"-10" diameter couplings require 60 in-lbs of torque. 12"-15" diameter couplings require 80 in-lbs of torque.

Bracing:

Horizontal pipe and fittings 5" and larger should be suitably braced using blocks, rodding or other methods at each branch or change in direction.



Joint Characteristics:

A superior gasket joint is produced with a Tyler Pipe standard no-hub coupling. It is designed not to leak, even when subjected to vibration, seismic tremors, expansion, contraction, deflection by as much as 5 degrees, or external and internal test pressure.

Quality Control and Documentation:

Tyler Pipe's internal quality control processes include daily performance testing to verify conformance of all components to established standards. In addition, NSF periodically tests, inspects and audits Tyler Pipe's manufacturing facility. Certificates and reports validating all claims contained in this Submittal will be supplied upon written request.

Suggested Specification:

No-hub cast-iron soil pipe and fittings shall be joined with Tyler Pipe NSF-certified couplings that conform to the CISPI 310 / ASTM C1277 standard. Couplings will be installed according to the installation instructions of the manufacturer. All pipe and fittings on which couplings are installed shall bear the registered trademark signifying they comply with the Cast Iron Soil Pipe Institute Standard 301.

| PHYSICAL PROPERTIES | | |
|---|-------------------------------|------------------|
| Property | Value | ASTM Test Method |
| Tensile Strength | 1500 psi minimum | D 412 |
| Elongation of Break | 250% minimum | D 412 |
| Hardness, Durometer (A) | 70 ± 5 at 76° ± 5° F | D 2240 |
| Tear Resistance | 150 lbs. per inch, min | D 624 (Die C) |
| Water Absorption (Wt. Change, 20% maximum 7 days at 158° F) | 20% maximum | D 471 |
| Resistance to Heat Aging (Change in original properties after 96 hrs. at 158° F) | | D 573 |
| Hardness | 10 points, maximum | |
| Elongation | 20% maximum | |
| Tensile Strength | 15% maximum | |
| Resistance to Oil Aging (Change in volume after 70 hrs. immersion in ASTM oil IMR903 at 212° F) | 80% maximum | D 471 |
| Resistance to Ozone (Condition after exposure to 1.0 ppm ozone in air for 100° F - Loop-mounted sample approximately or 20% elongation) | No Cracks at 2x Magnification | D 1149 |
| Resistance to Permanent Set (Compression set after 22 hrs. at 158° F) | 25% maximum | D 395 (Method B) |



Plastic Pipe and Fittings Drainage Systems
Suggested Short Form Specifications

ABS Schedule 40 Cellular Core (Foam Core) Pipe and DWV Fitting System:

Pipe and fittings shall be manufactured from ABS compound with a cell class of 42222 for pipe and 32222 for fittings as per ASTM D 3965 and conform with National Sanitation Foundation (NSF) standard 14. Pipe shall be iron pipe size (IPS) conforming to ASTM F 628. Fittings shall conform to ASTM D 2661.

All pipe and fittings to be produced by a single manufacturer and to be installed in accordance with manufacturer's recommendations and local code requirements. **WARNING!** Never test with or transport/store compressed air or gas in ABS pipe or fittings. Solvent cement shall conform to ASTM D 2235. The system to be manufactured by Charlotte Pipe and Foundry Co. and is intended for non-pressure drainage applications where the temperature will not exceed 140°F.

PVC Schedule 40 Cellular Core (Foam Core) Pipe and DWV Fitting System:

Pipe and fittings shall be manufactured from PVC compound with a cell class of 11432 per ASTM D 4396 for pipe and 12454 per ASTM D 1784 for fittings and conform with National Sanitation Foundation (NSF) standard 14. Pipe shall be iron pipe size (IPS) conforming to ASTM F 891. Injection molded fittings shall conform to ASTM D 2665. Fabricated fittings shall conform to ASTM F 1866.

All pipe and fittings to be produced by a single manufacturer and to be installed in accordance with manufacturer's recommendations and local code requirements. **WARNING!** Never test with or transport/store compressed air or gas in PVC pipe or fittings. Solvent cements shall conform to ASTM D 2564. Primer shall conform to ASTM F 656. The system to be manufactured by Charlotte Pipe and Foundry Co. and is intended for non-pressure drainage applications where the temperature will not exceed 140°F.

PVC Schedule 40 Solid Wall Pipe and DWV Fitting System:

Pipe and fittings shall be manufactured from PVC compound with a cell class of 12454 per ASTM D 1784 and conform with National Sanitation Foundation (NSF) standard 14. Pipe shall be iron pipe size (IPS) conforming to ASTM D 1785 and ASTM D 2665. Injection molded fittings shall conform to ASTM D 2665. Fabricated fittings shall conform to ASTM F 1866.

All pipe and fittings to be produced by a single manufacturer and to be installed in accordance with manufacturer's recommendations and local code requirements. **WARNING!** Never test with or transport/store compressed air or gas in PVC pipe or fittings. Solvent cements shall conform to ASTM D 2564. Primer shall conform to ASTM F 656. The system to be manufactured by Charlotte Pipe and Foundry Co. and is intended for non-pressure drainage applications where the temperature will not exceed 140°F.

SPEC-SF-PPFDS (2-10-12)

Product Specification

- System:** **ABS Plus Foam Core DWV Pipe and ABS DWV Fitting System**
- Scope:** This specification covers ABS/PVC composite, cellular core (foam core) pipe and ABS DWV fittings used in sanitary drain, waste, and vent (DWV) and sewer applications. This system is intended for use in non-pressure applications where the operating temperature will not exceed 140°F.
- Specification:** Pipe shall be manufactured from virgin rigid ABS (acrylonitrile-butadiene-styrene) compounds with a minimum cell class of 42222 as identified in ASTM D 3965. Fittings shall be manufactured from virgin rigid ABS compounds with a Cell Class of 32222 as identified in ASTM 3965.

ABS/ PVC/ABS foam core pipe shall be Iron Pipe Size (IPS) conforming to ASTM F1488. ABS DWV fittings shall conform to ASTM D2661. Pipe and fittings shall be manufactured as a system and be the product of one manufacturer. All pipe and fittings shall be manufactured in the United States. All systems shall utilize a separate waste and vent system. Pipe and fittings shall conform to NSF International Standard 14.

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire and building code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent cement joints shall be made with solvent cement conforming to ASTM D 2235. The system shall be protected from chemical agents, fire stopping materials, thread sealant, or other aggressive chemical agents not compatible with ABS compounds. Systems shall be hydrostatically tested after installation. **WARNING!** Never test with or transport/store compressed air or gas in ABS pipe or fittings.

Referenced Standards*:

ASTM D 3965 Rigid ABS Compounds
ASTM F 1488 Co-extruded Composite Pipe
ASTM D 2661 ABS Drain, Waste, and Vent Fittings
ASTM D 2235 Solvent Cements for ABS Pipe and Fittings
ASTM D 2321 Underground Installation of Thermoplastic Pipe (non-pressure applications)
ASTM F 656 Primers for PVC Pipe and Fittings
ASTM F 1668 Procedures for Buried Plastic Pipe
NSF Standard 14 Plastic Piping Components and Related Materials

*Note: Latest revision of each standard applies.

SUBMITTAL FOR CHARLOTTE PIPE® ABS CELLULAR (FOAM CORE) PIPE AND ABS DWV FITTING SYSTEM

Date:

Job Name:

Location:

Engineer:

Contractor:

► Scope:

This specification covers ABS cellular core (foam core) pipe and ABS DWV fittings used in sanitary drain, waste and vent (DWV), sewer, and storm drainage applications. This system is intended for use in non-pressure applications where the operating temperature will not exceed 140° F.

► Specification:

Pipe shall be manufactured from virgin rigid ABS (acrylonitrile-butadiene-styrene) compounds with a cell class of 42222 as identified in ASTM D 3965. Fittings shall be manufactured from virgin rigid ABS compounds with a cell class of 32222 as identified in ASTM D 3965.

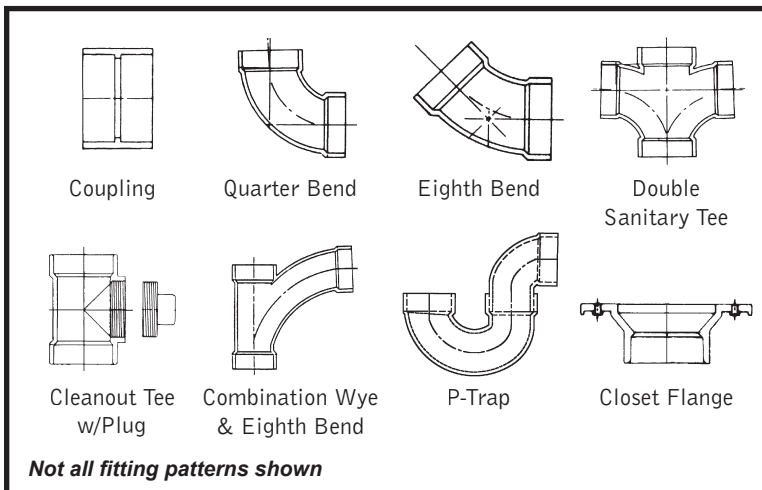
ABS cellular core pipe shall be Iron Pipe Size (IPS) conforming to ASTM F 628. Injection molded ABS DWV fittings shall conform to ASTM D 2661. All systems shall utilize a separate waste and vent system. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to NSF International Standard 14.

► Installation:

Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent cement joints shall be made with a solvent cement conforming to ASTM D 2235. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with ABS compounds. The system shall be hydrostatically tested after installation. **WARNING!** Never test with or transport/store compressed air or gas in ABS pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

► Referenced Standards:

- ASTM D 3965: Rigid ABS Compounds
- ASTM F 628: Co-extruded ABS Pipe with Cellular Core
- ASTM D 2661: ABS Drain, Waste and Vent Fittings
- ASTM D 2235: Solvent Cements for ABS Pipe and Fittings
- ASTM D 2321: Underground Installation of Thermoplastic Pipe (non-pressure applications)
- ASTM F 1668: Procedures for Buried Plastic Pipe
- NSF Standard 14: Plastic Piping Components and Related Materials



| ABS Foam Core Pipe | | | | | | |
|---|--------------|------------------|------------------|------------------|-----------------------|------------------------------|
| ABS Schedule 40 DWV Pipe (For Non-Pressure Applications) | | | | | | |
| ABS SCHEDULE 40 FOAM CORE (BLACK) PLAIN END ASTM F 628 | | | | | | |
| PART NO. | NOM. SIZE | UPC # 611942- | QTY. PER SKID | AVG. OD (IN.) | MIN. WALL (IN.) | WT. PER 100 FT. (LBS.) |
| ABS 3112 | 1 1/2" x 10' | 03132 | 2590 | 1.900 | 0.145 | 27.1 |
| ABS 3112 | 1 1/2" x 20' | 03133 | 5180 | 1.900 | 0.145 | 27.1 |
| ABS 3200 | 2" x 10' | 03134 | 1670 | 2.375 | 0.154 | 37.7 |
| ABS 3200 | 2" x 20' | 03135 | 3340 | 2.375 | 0.154 | 37.7 |
| ABS 3300 | 3" x 10' | 03136 | 750 | 3.500 | 0.216 | 74.5 |
| ABS 3300 | 3" x 20' | 03137 | 1500 | 3.500 | 0.216 | 74.5 |
| ABS 3400 | 4" x 10' | 03138 | 480 | 4.500 | 0.237 | 107.1 |
| ABS 3400 | 4" x 20' | 03139 | 960 | 4.500 | 0.237 | 107.1 |
| ABS 3600 | 6" x 20' | 03141 | 400 | 6.625 | 0.280 | 187.8 |





Medium Black ABS Solvent Cement

Technical Specification

Description

- Medium-bodied black cement for use on all schedules and classes of ABS pipe and fittings up to 6" diameter with interference fit.
- Lo-V.O.C. Solvent Cement meets California South Coast Air Quality Management District (SCAQMD) 1168/316A or BAAQMD Method 40 and various environmental requirements.
- For all non-pressure applications.
- Recommended application temperature 40°F to 110°F / 4°C to 43°C.
- Meets ASTM D2235.



Listings



NSF Standard 61 for DWV and Sewer Waste



IAPMO Listed

Maximum VOC per SCAQMD 1168/316A or BAAQMD Method 40: 325 g/L

INGREDIENTS (CAS Number)

ABS Resin (9003-56-9), Acetone (67-64-1), Black Pigment (N/A), Methyl Ethyl Ketone (78-93-3)

MSDS Number: 1300E

| <u>Product Number</u> | <u>Size</u> | <u>Qty</u> | <u>Wgt</u> | <u>Product Number</u> | <u>Size</u> | <u>Qty</u> | <u>Wgt</u> |
|-----------------------|-------------|------------|------------|-----------------------|-------------|------------|------------|
| 30999 | 4 oz. | 24 | 8 lbs. | 308923 | 16 oz. | 10 | 15 lbs. |
| 309993 | 4 oz. | 48 | 8 lbs. | 30902 | 32 oz. | 12 | 26 lbs. |
| 30889 | 8 oz. | 24 | 15 lbs. | 309023 | 32 oz. | 6 | 26 lbs. |
| 308893 | 8 oz. | 36 | 15 lbs. | 30915 | Gallon | 6 | 51 lbs. |
| 30892 | 16 oz. | 24 | 28 lbs. | | | | |

Oatey Co.
4700 West 160 th St.
Cleveland, OH 44135

Phone: 1-800-321-9532
Phone: 1-800-321-9535
Visit www.oatey.com for Update





Medium Black ABS Solvent Cement

Technical Specification

CHEMICAL PROPERTIES

| | |
|------------|----------------------------|
| Appearance | Black Liquid |
| Viscosity | Min. 500 cps @73° F ± 2° F |
| Density | 7.42 ± 0.2 lbs/gallon |
| Shelf Life | 3 Years from Mfg. Date |

PHYSICAL PROPERTIES

| | |
|--------------------|---------------------------|
| Lap Shear Strength | (min. per ASTM Standards) |
| 48 hours | 800 psi |
| Set Up Time | |
| 30° F to 50° F | 5 – 6 minutes |
| 50° F to 70° F | 3 – 4 minutes |
| 70° F to 90° F | 1 – 2 minutes |

Precautions

Read all information carefully before using this product.

DANGER!: CAUSES SERIOUS EYE IRRITATION. HARMFUL IF INHALED. MAY CAUSE DROWSINESS OR DIZZINESS. MAY CAUSE RESPIRATORY IRRITATION. REPEATED EXPOSURE MAY CAUSE SKIN DRYNESS OR CRACKING. Long term overexposure to solvents may cause damage to the brain, nervous system, reproductive system, respiratory system, mucous membranes, liver and kidneys. KEEP OUT OF REACH OF CHILDREN.

PRECAUTIONS: Avoid breathing vapors. Use only outdoors or in a well-ventilated area. Use explosion-proof electrical/ventilating equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear a NIOSH-approved respirator for organic solvents. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Vapors may accumulate in low places and may ignite explosively. Keep container tightly closed and cool. Wear protective gloves and eye protection. Wash thoroughly after handling. Do not eat or drink while using this product.

EMERGENCY/FIRST AID: CALL 1-877-740-5015 FOR INSTRUCTIONS.

IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. Rinse mouth. This product may be aspirated into the lungs and cause chemical pneumonitis, a potentially fatal condition. **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention. **IF ON SKIN:** Rinse skin with water/shower. Take off immediately all contaminated clothing. **IF INHALED:** Remove person to fresh air and keep comfortable for breathing. Call POISON CENTER/doctor if you feel unwell. If medical advice is needed, have product container or label at hand. **FIRE:** Use dry chemical, foam, or carbon dioxide extinguisher. Water spray may be applied to reduce potential vapors or for cooling. Burning liquid extinguished with water will float and may re-ignite on surface of water. **SPILLS:** Remove all sources of ignition and ventilate area. Personnel cleaning up the spill should wear appropriate personal protective equipment, including respirators if vapor concentrations are high. Soak up spill with absorbent material. Put absorbent material in covered, labeled metal containers. Dispose of contents/ container in accordance with local regulations. Store in a well-ventilated space. Store locked up.





Directions for Use

Store and use at temperatures between 40°F and 110°F. At temperatures outside of this range, special care must be taken to prepare good joints and prevent exposure to solvents. Stir or shake before using; if jelly-like, don't use. Do not thin.

1. Cut pipe ends square, chamfer and clean pipe ends.
2. Check dry fit of pipe and fitting. Pipe should easily go 1/3 of the way into the fitting. If pipe bottoms, it should be snug.
3. Use a suitable applicator at least 1/2 the size of the pipe diameter. For larger size pipe systems use a natural bristle brush or roller.
4. Apply liberal coat of cement to pipe to the depth of the socket, leave no uncoated surface.
5. Apply a thin coat of cement to inside of fitting, avoid puddling of cement. Puddling can cause weakening and premature failure of pipe or fitting. Apply a second coat of cement to the pipe.
6. Assemble parts QUICKLY. Cement must be fluid. If cement surface has dried, recoat both parts.
7. Push pipe FULLY into fitting using a ¼ turning motion until pipe bottoms.
8. Hold pipe and fitting together for 30 seconds to prevent pipe push-out - longer at low temperatures. Wipe off excess.
9. Allow 15 minutes for good handling strength and 2 hours cure time at temperatures above 60°F before pressure testing up to 180 psi. Longer cure times may be required at temperatures below 60°F or with pipe above 3".

DO NOT TEST WITH AIR.

Revision Date: 3/15/2013

ADJUSTABLE ON-GRADE CLEANOUT

» 834 SERIES

FinishLine™

SPECIFICATION

Sioux Chief 834 series FinishLine™ adjustable on-grade cleanout shall be used where necessary in drainage systems. Cleanout shall allow adjustment before and AFTER the concrete pour. Scoriated cleanout cover shall meet applicable load requirements for intended use. Cleanout shall include a slotted, polypropylene or brass cleanout plug, situated in base adapter. Designed in accordance with ASME A112.36.2M-2002.

MATERIALS

- Ring/cover:** Nickel-bronze, stainless steel, tenzalloy
- Coring plug:** High-impact polymer
- Head adapter/coring sleeve:** Gray ABS
- Base adapter:** ABS, PVC
- Cleanout plug:** Polypropylene, brass

STRAINER LOAD RATING

Nickel-bronze: 4,000 lbs. (Medium duty)

Stainless steel: 4,000 lbs. (Medium duty)

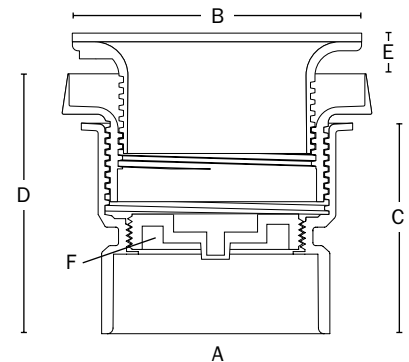
Tenzalloy: 1,250 lbs. (Light duty)

DIMENSIONS

| | |
|----------------------------------|----------------------|
| A: Connection | 3×4", 4" Sch. 40 hub |
| B: Ring/strainer diameter | |
| Round | 6½" |
| Square | 6⅝" |
| C: Base adapter height | 4½" |
| D: Pre-pour height | 5⅜" – 6⅝" |
| E: After-pour height | |
| Round | 0" – 1¼" |
| Square | ⅝" – 1¼" |
| F: Cleanout plug | 3½" male thread |



834-4PNQ



Create Item Number

834-ABCD

e.g. **834-4PNRV**: FinishLine™ cleanout with 4" PVC hub connection and vandal-resistant nickel-bronze cover

CONNECTION **A**

- 3** = 3×4" Sch. 40 hub
- 4** = 4" Sch. 40 hub

CONNECTION TYPE **B**

- A** = ABS base adapter
- P** = PVC base adapter

RING/COVER **C**

- NR** = Round nickel-bronze
- NQ** = Square nickel-bronze
- SR** = Round stainless steel
- SQ** = Square stainless steel
- TR** = Round tenzalloy

INSTALLED OPTIONS **D**

- V** = Vandal-resistant cover screws
- S** = Stamping: specify letters
- C** = Carpet marker
- Z** = Complies with Buy American Act¹

ACCESSORIES (ordered separately)

- 832-S4** = Leveling shim kit
- 832-EX4** = Ductile extension adapter
- 832-W** = Flexible locating bristle kit

OWCB: Square at tile

¹ Available for round nickel-bronze covers only

CLEANOUT COVER KIT

873 series

SPECIFICATION

Sioux Chief 873 series cleanout cover kit shall be used where necessary in drainage systems. Kit shall include a 20 gauge, stainless steel cleanout cover, which shall fasten via a 2 1/4" stainless steel bolt with 1/4"-20 threads to a cast brass MIP plug with countersunk square head. Plug shall be tapped to accept bolt. Kits shall be available for large, medium or small applications.

MATERIALS

cleanout cover: 20 gauge 430 stainless steel
bolt: stainless steel, 1/4"-20 thread
plug: cast brass, 1/4"-20 tapped for bolt, countersunk square head, machined threads

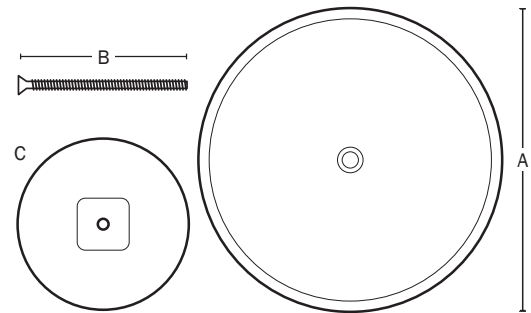
DIMENSIONS

- A: cover diameter
 small kit: 4"
 medium kit: 5"
 large kit: 6"
- B: bolt
 2 1/4" long, 1/4" x 20 thread
- C: cleanout plug
 small kit: 2" MIP thread, 3/8" thick, 1/4" x 20 tapped
 medium kit: 3" MIP thread, 1/2" thick, 1/4" x 20 tapped
 large kit: 4" MIP thread, 1/2" thick, 1/4" x 20 tapped

| |
|------------------------|
| Item # Submitted _____ |
| Job Name _____ |
| Location _____ |
| Engineer _____ |
| Contractor _____ |
| PO# _____ TAG _____ |



873-350



Create Item Number

873-AB

e.g. 873-350 = Cleanout cover kit including: 5" diameter cover, 3" MIP brass plug and 2 1/4" bolt

A OPTIONAL KIT SIZE

- 240 4" cover, 2" MIP plug, 2 1/4" bolt
- 350 5" cover, 3" MIP plug, 2 1/4" bolt
- 460 6" cover, 4" MIP plug, 2 1/4" bolt

B OPTIONS

- P polypropylene plug in lieu of brass plug

ADJUSTABLE CLEANOUT

Manufacturer Substitution

851 series

SPECIFICATION

Sioux Chief 851 Series adjustable cleanout shall be used where necessary in drainage systems. Cleanout shall have a Sch. 40 hub connection, which conforms to ASTM D2665 (PVC) or D2661 (ABS). Connection to drainage system shall be made with a solvent weld joint to ABS/PVC pipe. Cleanout cover shall meet applicable load requirements for intended use. Cleanout shall include a slotted, polypropylene cleanout plug, with threaded brass insert to accept cover screw.

MATERIALS

- adapter body: ABS or PVC
- ring/cover: nickel-bronze, tenzallo, or cast iron
- set screws: square head, 1/4-20
- cover screw: stainless steel, Phillips head, 1/4-20
- cleanout plug: slotted polypropylene with threaded brass insert

COVER LOAD RATING

- nickel-bronze: 2,500 lbs. (medium duty)
- tenzallo: 1,250 lbs. (light duty)
- cast iron: 7,500 lbs. (heavy duty)

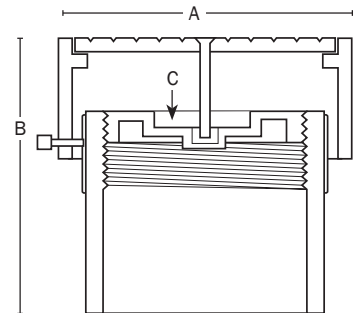
DIMENSIONS

| | | | |
|------------------------|---------------------------|----------------------|--------------------------------|
| A: connection size | 3", 4", or 6" Sch. 40 hub | | |
| | <i>nickel/ tenz</i> | <i>cast iron</i> | <i>laminated cast iron</i> |
| B: ring/cover diameter | | | |
| 3" cleanout | 4 3/8" | --- | --- |
| 4" cleanout | 6" | 6" | 7 1/8" |
| 6" cleanout | 8 3/8" | 8 1/2" | 7 1/8" |
| C: height | | | |
| 3" cleanout | 3 1/2"-4 1/2" | --- | --- |
| 4" cleanout | 3 3/4"-4 3/4" | 4 1/2"-6 1/4" | 4 3/4"-6 1/2" |
| 6" cleanout | 5 1/2"-6 3/4" | 6"-7 3/4" | 6 1/4"-8" |
| D: plug | | | |
| 3" cleanout | 3" MIP | --- | --- |
| 4" cleanout | 4" MIP | 4" MIP | 4" MIP |
| 6" cleanout | 6" MIP | 6" MIP | 6" MIP |

Item # Submitted _____
 Job Name _____
 Location _____
 Engineer _____
 Contractor _____
 PO# _____ TAG _____



851-44N



Create Item Number

851-ABC

e.g. 851-44NV = 4" PVC cleanout with nickel-bronze ring & cover with vandal-resistant cover screw

- | | | |
|--|--|---|
| <p>A CONNECTION TYPE</p> <ul style="list-style-type: none"> <input type="checkbox"/> 3 ABS adapter <input type="checkbox"/> 4 PVC adapter <p>B CONNECTION SIZE</p> <ul style="list-style-type: none"> <input type="checkbox"/> 3 3" Sch. 40 hub <input type="checkbox"/> 4 4" Sch. 40 hub <input type="checkbox"/> 6 6" Sch. 40 hub | <p>C RING & COVER</p> <ul style="list-style-type: none"> <input type="checkbox"/> N nickel-bronze <input type="checkbox"/> T tenzallo <input type="checkbox"/> i cast iron¹ <input type="checkbox"/> iN nickel-bronze laminated cast iron¹ <p><small>1 NOT available with 3" connection</small></p> | <p>D OPTIONS (FACTORY INSTALLED)</p> <ul style="list-style-type: none"> <input type="checkbox"/> V vandal-resistant cover screws <input type="checkbox"/> S stamped cover, specify letters² <input type="checkbox"/> C carpet marker <p><small>2 NOT available with cast iron ring & cover</small></p> |
|--|--|---|

PVC SQUARE FLOOR SINK

» 861 SERIES

SquareMax™

SPECIFICATION

Sioux Chief 861 Series SquareMax™ floor sink shall be used where necessary in drainage systems. Floor sink shall be molded from impact-modified PVC with Sch. 40 hub connection which conforms to ASTM D2665. Floor sink shall show no significant distortion at water temperatures up to 180°F. Strainer shall be heel-proof and shall meet all applicable load requirements for intended use. Floor sink shall be designed with a concrete anchor flange for solid installations. Sump area shall have smooth, pitched inner surfaces for quick and complete drainage. Designed in accordance with ASME A112.6.7-01.

MATERIALS

Strainer: PVC, nickel-bronze, stainless steel, ductile iron

Body: PVC

STRAINER LOAD RATING

PVC: 1,000 lbs. (Light duty)

Nickel-bronze: 2,400 lbs. (Medium duty)

Stainless steel: 3,500 lbs. (Medium duty)

Ductile iron: 7,500 lbs. (Heavy duty)

STRAINER FREE AREA

PVC: 44 in²

Nickel-bronze: 35 in²

Stainless steel: 35 in²

Ductile iron: 40 in²

DIMENSIONS

| | 2" | 3" | 4" | 6" |
|------------------------------------|-----------------------------------|----------------------------------|----------------------------------|---------------------------------|
| A: Connection (Sch. 40 hub) | 2" | 3" | 4" | 6" |
| B: Overall height* | 7 ⁷ / ₁₆ " | 8 ⁵ / ₁₆ " | 8 ⁷ / ₁₆ " | 9 ¹ / ₂ " |
| C: Sump depth | 6 ³ / ₈ " | | | |
| D: Top-to-flange | 1 ¹ / ₂ " | | | |
| E: Flange diameter | 14 ¹ / ₈ " | | | |
| F: Top diameter** | 11 ³ / ₁₆ " | | | |

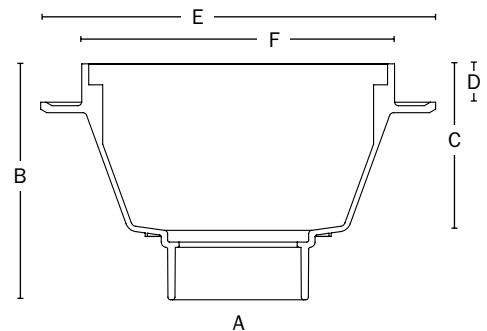
* Add 7/16" for nickel-bronze or stainless ring/strainer. Add 9/16" for ductile ring/strainer

** Add 9/16" for nickel-bronze, stainless or ductile ring/strainer

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



861-3P2



Create Item Number

861-ABC

e.g. **861-3PZ2:** SquareMax™ floor sink with 3" hub connection and open-half, stainless strainer

CONNECTION A

- 2 = 2" Sch. 40 hub
- 3 = 3" Sch. 40 hub
- 4 = 4" Sch. 40 hub
- 6 = 6" Sch. 40 hub

STRAINER B

- PX = No strainer - sink only
- P = PVC strainer
- PN = Nickel-bronze ring/strainer
- PZ = Stainless steel ring/strainer
- Pi = Ductile iron ring/strainer

INSTALLED OPTIONS C

- D = PVC dome bottom strainer¹
- U = Aluminum dome bottom strainer²
- C = PVC clamping collar
- W = Stainless steel mesh debris basket
- 2 = Open-half strainer²
- 2S = Open-half strainer - Split³
- 3 = Open-quarter strainer
- V = Vandal-resistant strainer screws
- T = Tapped trap primer port - 1/2" FIP
- F = Round nickel-bronze condensate funnel
- FA = Round aluminum condensate funnel
- FO = Oval nickel-bronze condensate funnel
- 6 = PVC flat bottom strainer¹

ACCESSORIES (ordered separately)

- 861-D = PVC dome bottom strainer¹
- 863-U = Aluminum dome bottom strainer¹
- 861-C = PVC clamping collar with screws
- 861-UM = Stainless mesh debris basket
- 861-6 = PVC flat bottom strainer¹
- 863-F = Round nickel-bronze condensate funnel
- 863-FA = Round aluminum condensate funnel
- 863-FNO = Oval nickel-bronze condensate funnel

¹ Not available for sinks with 6" connection

² Not available for sinks with ductile iron strainer

³ Available for PVC strainer only

WATER HAMMER ARRESTERS

» 650 SERIES

HydraRester™

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

SPECIFICATION

Sioux Chief 650 Series piston-type water hammer arresters shall be required in piping systems. Water hammer arresters shall have sufficient volume of air to dissipate the calculated kinetic energy generated in the piping system. Arresters shall be effective when installed at any angle. Arresters shall be approved for installation with no access panel required. Water hammer arresters shall be ANSI/ASSE 1010 2004 certified. Arresters shall be sized and placed per manufacturer's instructions.

MATERIALS

- Arrester body:** type L copper tube
- Piston:** poly piston with two EPDM o-rings
- Male thread fitting:** copper MIP thread
- Piston lubrication:** Dow-Corning, 111 FDA approved silicone compound
- PEX F1960 fitting:** No Lead EcoBrass 69300

WORKING LIMITS*

- Max working temperature:** 250°F
- Max working pressure:** 350 PSIG
- Burst tested:** to 2,900 PSIG

* PEX and CPVC connection specifications are limited to those called out in their respective ASTM Standards for Fittings (CPVC D2846, PEX F1807, PEX F1960).

INSTALLATION

- Angle:** May be installed at any angle
- Access panels:** No access panels required
- Sweat connection:** Compatible with Press Fittings or Push Fittings

SIZING & PLACEMENT

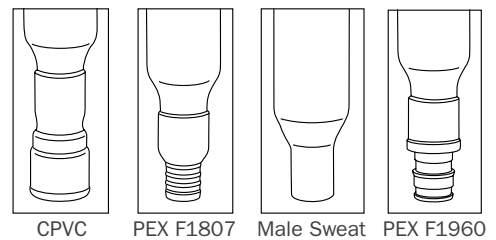
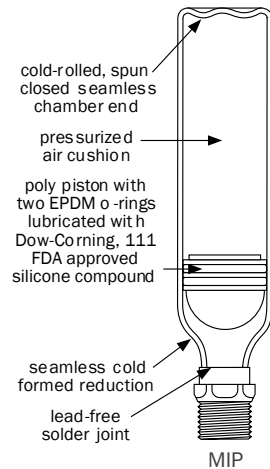
Refer to instructions on product package, catalog or website.

CERTIFICATIONS/APPROVALS

Certified by ASSE to the ANSI/ASSE 1010-2004 standard

DIMENSIONS

| Arrester size | A | B | C | D | E | F |
|------------------|------|-------|-------|--------|---------|---------|
| Overall height | | | | | | |
| male thread | 6½" | 8¾" | 11" | 10¼" | 12⅝" | 15½" |
| male sweat | 8¼" | 10" | 12½" | 11" | 13½" | 16" |
| CPVC | 7½" | 9½" | 12" | — | — | — |
| PEX F1807 | 6½" | 8¾" | 11" | — | — | — |
| PEX F1960 | 6½" | 8¾" | 11" | — | — | — |
| Chamber width | 1⅜" | 1⅜" | 1⅜" | 2⅛" | 2⅛" | 2⅛" |
| Connection size | ½" | ¾" | 1" | 1" | 1" | 1" |
| Volume (cu. in.) | 5 | 7 | 11 | 20 | 29 | 36 |
| Fixture units | 1–11 | 12–32 | 33–60 | 61–113 | 114–154 | 155–330 |



Choose Item Number

- | | | | |
|---|--|------------------------------------|-------------------------------------|
| <input type="checkbox"/> 652-A = A size, MIP | <input type="checkbox"/> 652-AS = A size, sweat | 652-AX = A size, PEX F1807 | 652-AC = A size, CPVC socket |
| <input type="checkbox"/> 653-B = B size, MIP | <input type="checkbox"/> 653-BS = B size, sweat | 653-BX = B size, PEX F1807 | 653-BC = B size, CPVC socket |
| <input type="checkbox"/> 654-C = C size, MIP | <input type="checkbox"/> 654-CS = C size, sweat | 654-CX = C size, PEX F1807 | 654-CC = C size, CPVC socket |
| <input type="checkbox"/> 655-D = D size, MIP | <input type="checkbox"/> 655-DS = D size, sweat | 652-AWG = A size, PEX F1960 | |
| <input type="checkbox"/> 656-E = E size, MIP | <input type="checkbox"/> 656-ES = E size, sweat | 653-BWG = B size, PEX F1960 | |
| <input type="checkbox"/> 657-F = F size, MIP | <input type="checkbox"/> 657-FS = F size, sweat | 654-CWG = C size, PEX F1960 | |



Precision Plumbing Products

"Specify with Confidence - Install with Pride"

P1-500 AND P2-500 PRESSURE DROP ACTIVATED SUBMITTAL TRAP PRIMER

www.pppinc.net

The P1-500 and P2-500 are adjustable to the static line pressure by use of the adjusting screw. System operating range is 20 psi minimum to 80 psi (138 to 552 kpa) maximum.

The valve requires a 10 psi (70 kpa) pressure drop across the valve to activate and will deliver a metered amount of water to the floor drain. The trap Primer is to be connected to a cold water supply only.

Constructed of 360 brass, EPDM E70 O-rings, Dow #7 Silicone, #60 stainless steel mesh screen, stainless steel adjustment screw.

Model P1-500 will prime 1-4 floor drains using our patented DU-U Distribution unit.

Model P2-500 will prime 1-2 floor drains using our patented DU-U Distribution unit.

Model P-1

Model P-2



PROJECT SUBMITTAL

Project: _____

Contractor: _____

Engineer: _____

Date Submitted: _____

Prepared By: _____

**FLOOR DRAIN TRAP PRIMER VALVE
MODELS: P1-500 & P2-500**

INSTALLATION REQUIREMENTS

This valve is designed to be installed on 1/2" to 1 1/2" cold water line, feeding a flush valve or other open and closing valve supply line that is frequently used.

Trap Primer valve makeup line to floor drain is recommended to be a minimum of 12" off the finished floor before a 90° elbow can be installed.

The furthest recommended distance of makeup line is 20' to the floor drain.

Trap primer makeup up line must have continuous slope to the floor drain (consult local code requirements).

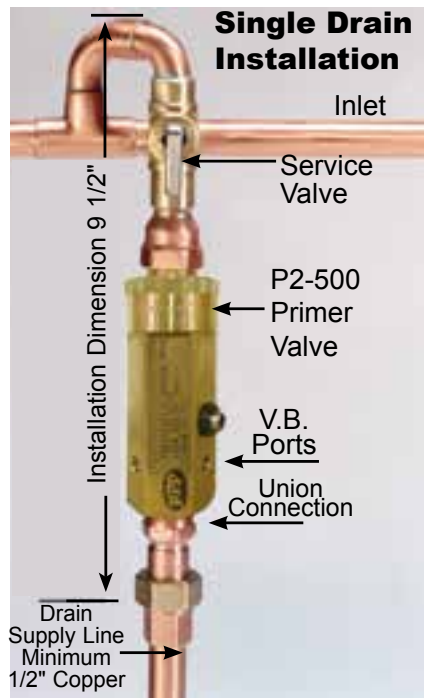
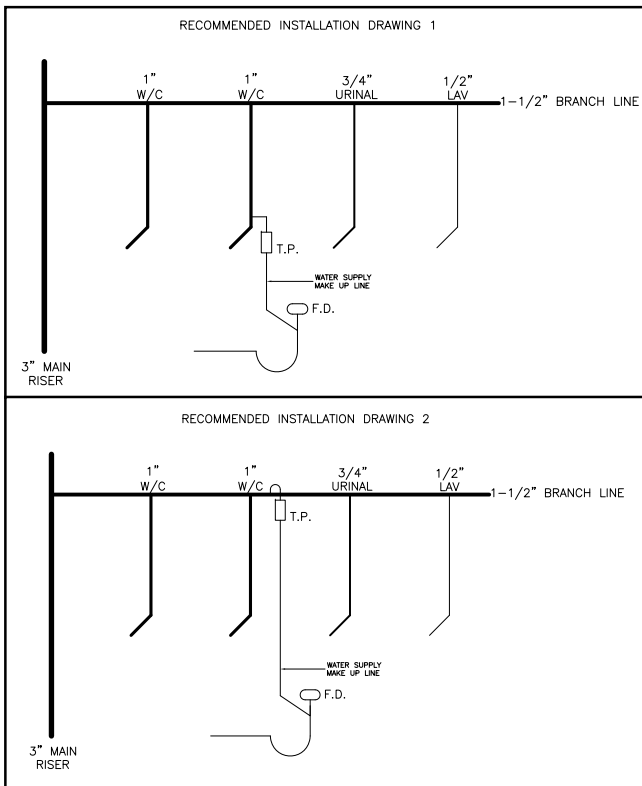
Install with a shut off valve for servicing on the inlet side and a union connection on the outlet side.

The valve must be installed level.

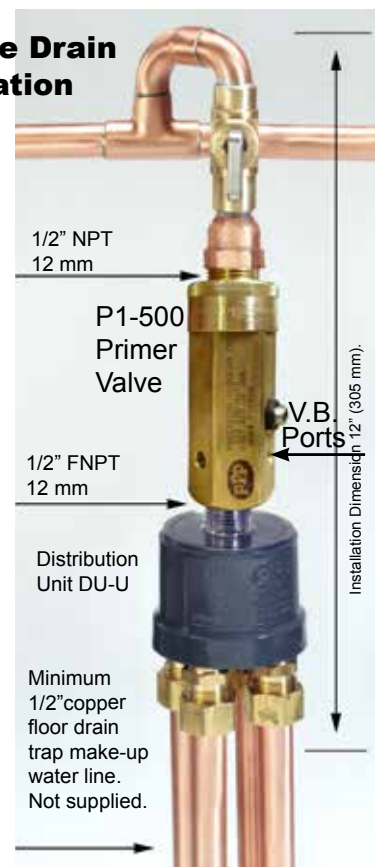
If using the distribution unit the clear plastic cover must be used.

Do not subject the valve to rough in pressure test.

| FLOOR DRAIN TRAP PRIMER DISTRIBUTION CHART | | |
|--|-------------|--------------------|
| Primer Model | # of Drains | Distribution Units |
| P2-500 | 1 | N/A |
| P2-500 | 2 | DU-4/DU-U |
| P1-500 | 3 | DU-4/DU-U |
| P1-500 | 4 | DU-4/DU-U |



Multiple Drain Installation



Precision Plumbing Products

Division of JL Industries, Inc.

802 SE 199th Ave
Portland, Oregon 97233

T (503) 256-4010

F (503) 253-8165

www.pppinc.net



JL Industries, Inc.



For Residential and Commercial Applications

Job Name _____

Contractor _____

Job Location _____

Approval _____

Engineer _____

Contractor's P.O. No. _____

Approval _____

Representative _____

LEAD FREE*

Series LF25AUB-Z3 Water Pressure Reducing Valves**

Sizes: ½" – 2"

Series LF25AUB-Z3 Water Pressure Reducing Valves are designed to reduce incoming water pressure to a sensible level to protect plumbing system components and reduce water consumption. This series is suitable for water supply pressures up to 300psi (20.7 bar) and may be adjusted from 25 – 75psi (172 – 517 kPa). The LF25AUB-Z3 features Lead Free* construction to comply with Lead Free* installation requirements. The standard setting is 50psi (345 kPa). All parts are quickly and easily serviceable without removing the valve from the line. The standard bypass feature permits the flow of water back through the valve into the main when pressures, due to thermal expansion on the outlet side of the valve, exceed the pressure in the main supply.

Features

- Standard construction includes Z3 sealed spring cage and stainless steel corrosion resistant adjusting & cage screws for accessible outdoor or pit installations
- Union inlet connection
- Integral stainless steel strainer
- Replaceable seat module
- Lead Free* cast copper silicon alloy construction
- Serviceable in line
- Bypass feature controls thermal expansion pressure***
- High temperature resistant reinforced diaphragm for hot water

Specifications

A Water Pressure Reducing Valve with integral strainer shall be installed in the water service pipe near its entrance to the building where supply main pressure exceeds 60psi (413 kPa) to reduce it to 50psi (345 kPa) or lower. The water pressure reducing valve shall be constructed using Lead Free* materials. Lead Free* regulators shall comply with state codes and standards, where applicable, requiring reduced lead content. The valve shall feature a Lead Free* cast copper silicon alloy suitable for water supply pressures up to 300psi (20.7 bar). Provision shall be made to permit the bypass flow of water back through the valve into the main when pressures, due to thermal expansion on the outlet side of the valve, exceed the pressure in the main supply. Water Pressure Reducing Valve with built-in bypass check valves will be acceptable. Approved valve shall be listed to ASSE 1003 and IAPMO and certified to CSA B356. Valve shall be a Watts Series LF25AUB-Z3.

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.

LF25AUB-Z3



Bypass valve assembly for 1¼" – 2" (32 – 50mm) sizes

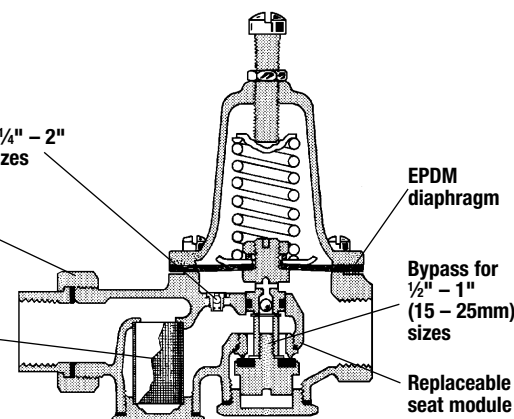
Union inlet connection

Integral stainless steel strainer

EPDM diaphragm

Bypass for ½" – 1" (15 – 25mm) sizes

Replaceable seat module



Materials

| | |
|--------------------|--|
| Body: | Lead Free* copper silicon alloy |
| Seat: | ½"–1" (15–25mm) Replaceable engineered polymer (10% glass filled Noryl®) |
| | 1¼"–2" (32–50mm) Replaceable stainless steel |
| Integral Strainer: | Stainless steel |
| Diaphragm: | Reinforced EPDM with PTFE wetted surface |
| Valve Disc: | EPDM |

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

**A water saving test program concluded that reducing the supply pressure from 80-50psi (551-345 kPa) resulted in a water savings of 30%.

***The bypass feature will not prevent the pressure relief valve from opening on the hot water supply system with pressure above 150psi (10.3 bar).

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.

Pressure – Temperature

Temperature Range: 33°F – 160°F (0.5°C – 71°C)

Maximum Working Pressure: 300psi (20.7 bar)

Adjustable Reduced Pressure Range: 25–75psi (172 – 517 kPa)

Standard Reduced Pressure Setting: 50psi (345 kPa)

Options

Add Suffix

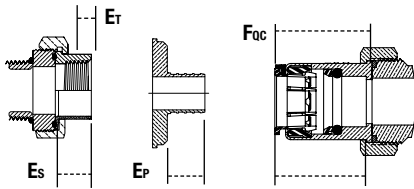
- “ ” Threaded female union inlet x NPT female outlet
- S Solder union inlet x NPT female outlet
- QC Quick-Connect union inlet (1/2", 3/4", 1")
- LF Double union body less fittings (3/4", 1", 1 1/4")
- w/press**** Press inlet x press outlet (non union)
- DU Double Union – NPT threaded union female inlet and outlet
- S-DU Double Union –Solder union inlet and outlet
- DU-PEX Double Union –PEX union inlet and outlet
- DU-QC Double Union – Quick-Connect inlet and outlet (1/2", 3/4", 1")
- G Gauge tapping, 1/8"
- GG Gauge tapping and 160psi (11 bar) gauge
- HP High pressure range 75–125psi (5.2 – 8.6 bar) †
- LP Low pressure range 10–35psi (69 – 241 kPa) †
- Z7 400psi (27.6 bar) initial pressure, 1/2" models only
- Z6 Water meter threaded connections and 7 1/2" (190mm) lay length for new or existing meter box installations, For 5/8", 5/8" x 3/4" or 3/4" meter setters or resetters

† Not available on G or GG models

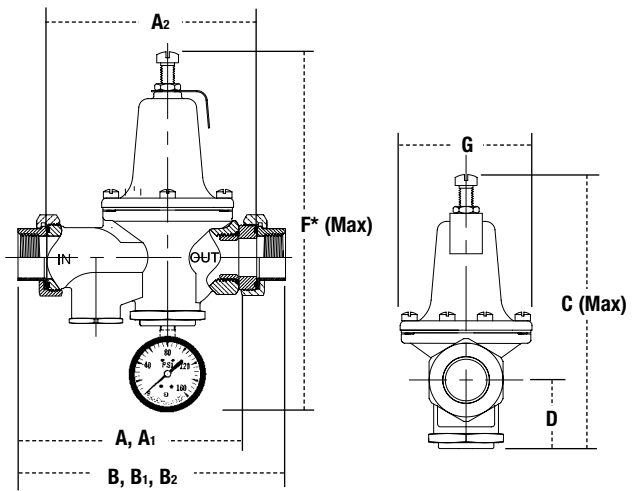
Noryl® is a registered trademark of SABIC Innovative Plastics™

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

Dimensions – Weights



- A - LF25AUB-Z3
- A₁ - LF25AUB-S-Z3
- A₂ - LF25AUB-DU-LF-Z3
- B - LF25AUB-DU-Z3
- B₁ - LF25AUB-S-DU-Z3
- B₂ - LF25AUB-DU-THDxPEX-Z3
- Et - NPT Engagement for tight joint
- Es - Female sweat socket depth
- Ep - PEX end connection
- Foc - Quick-Connect union



| SIZE | DIMENSIONS | | | | | | | | | | | | | |
|-------|------------|-----|----------------|-----|----------------|-----|---------|-----|----------------|-----|----------------|-----|--------|-----|
| | A | | A ₁ | | A ₂ | | B | | B ₁ | | B ₂ | | C | |
| in. | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm |
| 1/2 | 5 5/8 | 137 | 5 5/8 | 135 | 5 5/8 | 132 | 6 7/16 | 164 | 6 3/8 | 162 | – | – | 7 | 178 |
| 3/4 | 5 5/8 | 135 | 5 1/2 | 140 | 5 1/4 | 133 | 6 1/2 | 165 | 6 3/8 | 175 | 6 3/4 | 171 | 7 | 178 |
| 1 | 6 | 152 | 6 1/4 | 159 | 5 7/8 | 149 | 7 3/8 | 187 | 7 13/16 | 198 | 7 11/16 | 195 | 8 | 203 |
| 1 1/4 | 8 3/4 | 222 | 8 15/16 | 227 | 8 3/4 | 210 | 10 3/4 | 273 | 11 | 279 | – | – | 9 | 229 |
| 1 1/2 | 8 3/4 | 222 | 9 | 229 | 8 3/4 | 210 | 10 3/4 | 273 | 11 3/16 | 284 | – | – | 9 1/2 | 241 |
| 2 | 9 1/4 | 235 | 10 | 254 | 8 3/4 | 222 | 11 1/16 | 287 | 12 11/16 | 322 | – | – | 11 1/4 | 286 |

| SIZE | DIMENSIONS | | | | | | | | | | WEIGHT | | | | | |
|-------|------------|----|----------------|-----|--------|-----|-----|----|--------|----|--------|----|---------|----|------|------|
| | D | | F ^Δ | | G | | Et | | Es | | Ep | | Foc | | lbs. | kgs. |
| in. | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | | |
| 1/2 | 1 1/2 | 38 | 9 7/16 | 240 | 3 1/8 | 79 | 1/2 | 13 | 1/2 | 13 | – | – | 1 1/2 | 38 | 3.5 | 1.6 |
| 3/4 | 1 1/2 | 38 | 9 7/16 | 240 | 3 1/8 | 79 | 1/2 | 13 | 3/4 | 19 | 5/8 | 16 | 1 11/16 | 42 | 3.5 | 1.6 |
| 1 | 1 3/4 | 44 | 10 7/16 | 266 | 3 3/8 | 92 | 5/8 | 16 | 1 1/16 | 23 | 1 3/16 | 21 | 1 3/4 | 45 | 6.5 | 3.0 |
| 1 1/4 | 2 1/8 | 54 | 11 7/16 | 291 | 3 5/8 | 92 | 5/8 | 16 | 1 | 25 | – | – | – | – | 10 | 4.5 |
| 1 1/2 | 2 3/8 | 60 | 11 15/16 | 304 | 4 1/16 | 103 | 5/8 | 16 | 1 1/16 | 28 | – | – | – | – | 10 | 4.5 |
| 2 | 3 1/4 | 83 | 13 11/16 | 348 | 4 3/4 | 121 | 5/8 | 16 | 1 5/16 | 34 | – | – | – | – | 15 | 6.8 |

^Δ Dimension includes optional gauge

Consult factory for dimensions with press connections.

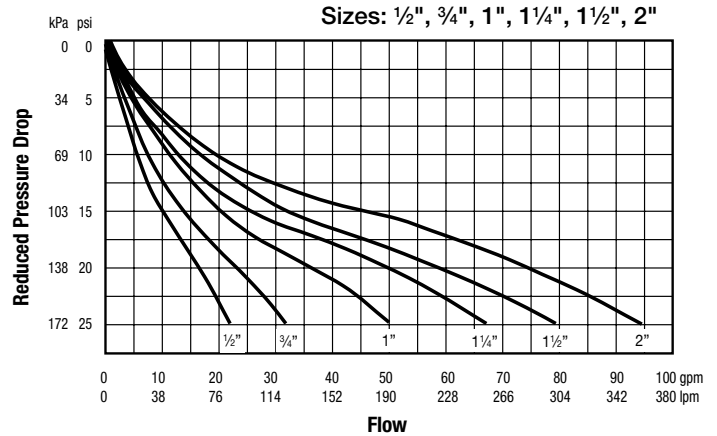


Standards



Meets requirements of ASSE Standard 1003; ANSI A112.26.2; CSA Standard B356; Southern Standard Plumbing Code and listed by IAPMO. Military Standard MIL-V-18146B Type I.

Capacity



For Health Hazard Applications

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" (8 – 80mm)

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 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" (8 – 25mm) 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
- Lead Free* cast copper silicon alloy body construction for durability 1/4" – 2" (8 – 50mm)
- Fused epoxy coated cast iron body 2 1/2" and 3" (65 and 80mm)
- Ball valve test cocks — screwdriver slotted 1/4" – 2" (8 – 50mm)
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

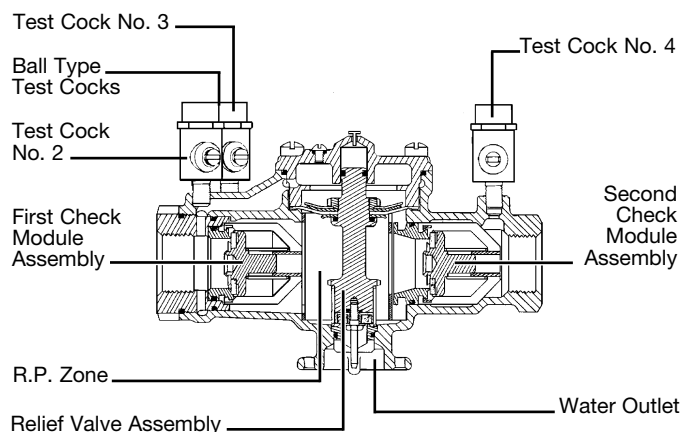
Specifications

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 assembly shall meet the requirements of: USC; ASSE Std. 1013; AWWA Std. C511; CSA B64.4. Shall be a Watts Series LF009.



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.

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.

Available Models: 1/4" – 2" (8 – 50mm)

Suffix:

- QT – quarter-turn ball valves
- S – strainer
- LF – without shutoff valves
- PC – internal polymer coating

Prefix:

- U – union connections

Available Models: 2 1/2" – 3" (65 – 80mm)

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
- QT-FDA – FDA epoxy coated quarter-turn ball valves
- 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" (8 – 50mm)

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 stainless steel relief valve seat. 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" (65 – 80mm)

- (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" (8 – 50mm) Suitable for supply pressure up to 175psi (12 bar). Water temperature: 33°F – 180°F (0.5° – 75°C).

Sizes 2 1/2" and 3" (65 and 80mm) 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.

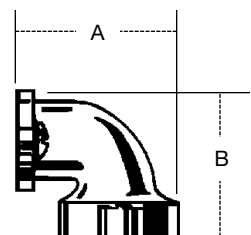
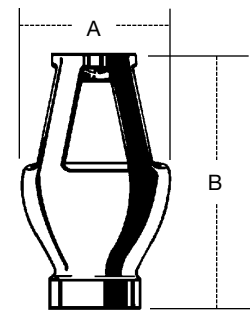
UL Classified

2 1/2" and 3" (65 and 80mm) with OSY gate valves.

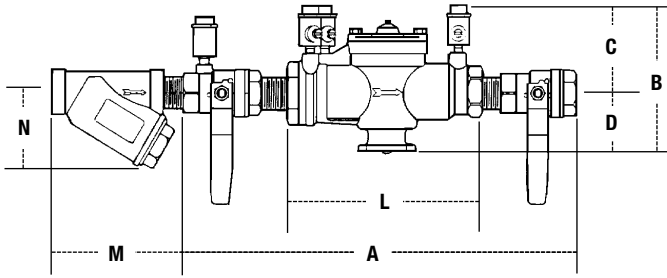
3/4" - 2" (20-50mm) without shutoff valves (-LF) (except LF009M3LF)

Air Gaps and Elbows

| MODEL | DRAIN OUTLET | DIMENSIONS | | | | WEIGHT | |
|----------------------|---|----------------------------|----------------------|----------------------|----------------------|--------|--|
| | | for 909, 009 and 993 sizes | | A | | B | |
| | <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>in.</i> <i>mm</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 3/4 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 | - - | - - | - - | - - | | |



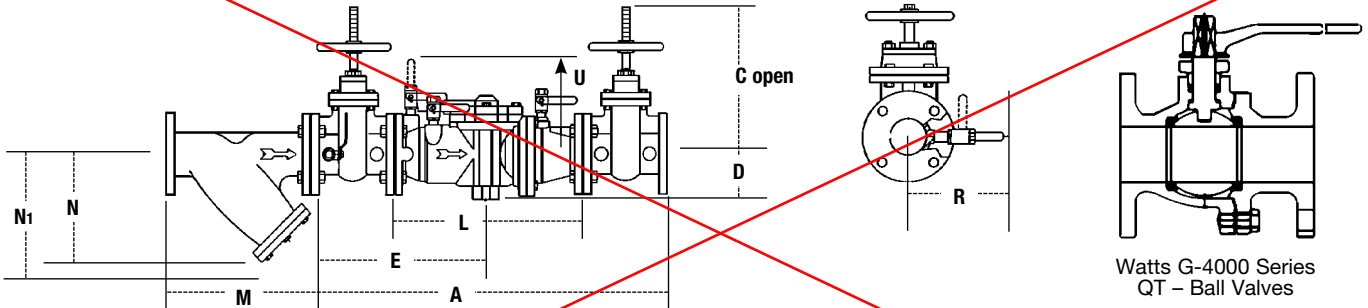
Dimensions and Weight: 1/4" – 2" (8 – 50mm) LF009



LF009 1/4" – 2"

| SIZE (DN) | | DIMENSIONS (APPROX.) | | | | | | | | | | | | WEIGHT | | | |
|-----------|----|----------------------|-----|-------|-----|-------|-----|-------|----|--------|-----|--------|-----|--------|-----|------|------|
| in. | mm | A | | B | | C | | D | | L | | M | | N | | lbs. | kgs. |
| | | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | | |
| 1/4 | 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 |
| 3/8 | 10 | 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 | 15 | 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 | 20 | 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 | 25 | 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 | 32 | 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 | 40 | 17 7/8 | 454 | 6 | 150 | 3 1/2 | 89 | 2 1/2 | 64 | 11 1/8 | 283 | 4 7/8 | 124 | 4 | 102 | 16 | 7 |
| 2 | 50 | 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 and Weight: 2 1/2" and 3" (65 and 80mm) 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 |

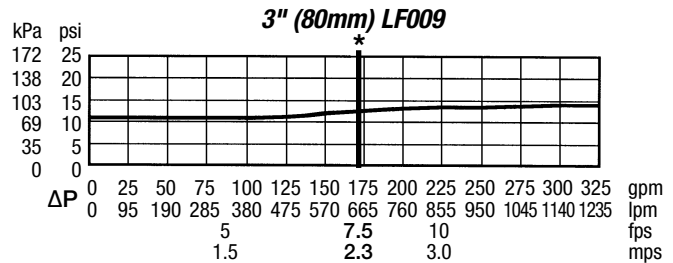
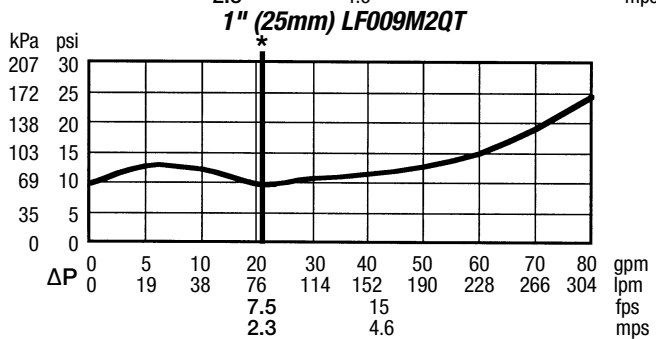
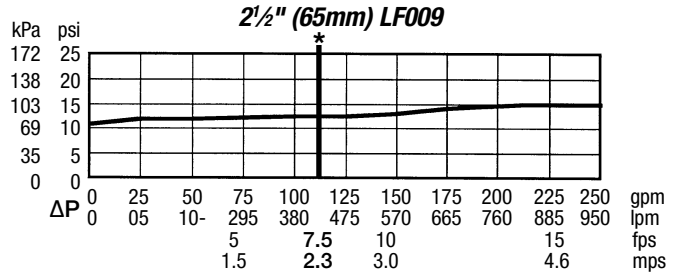
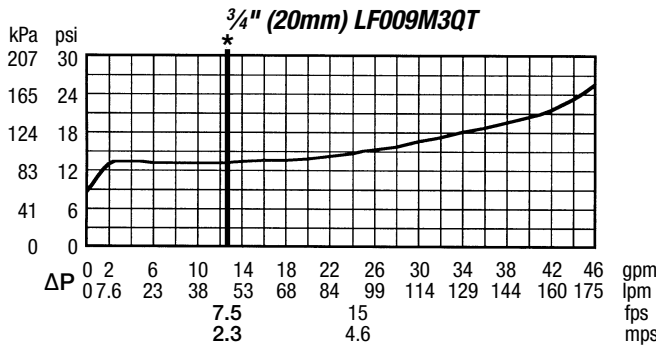
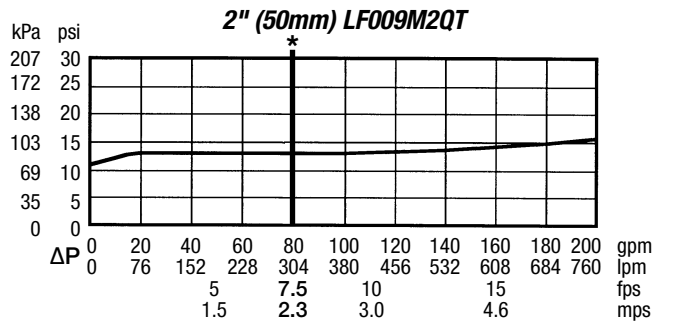
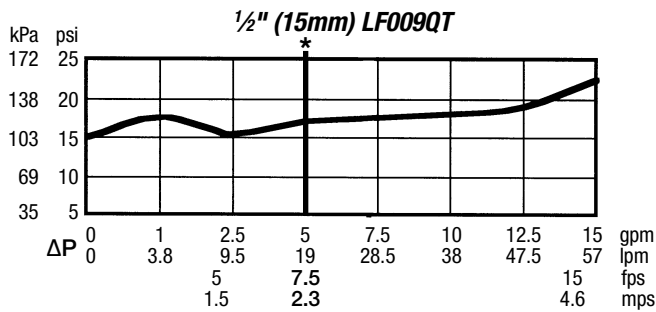
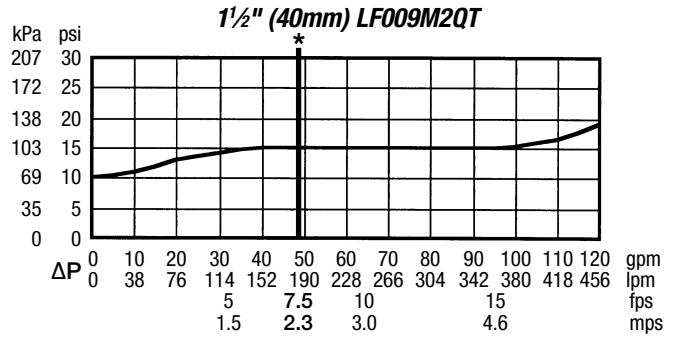
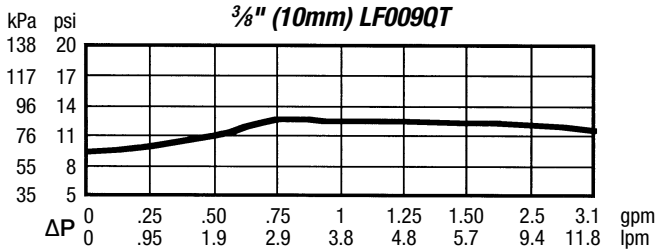
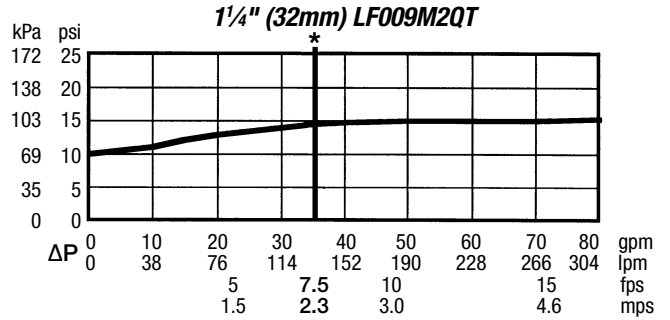
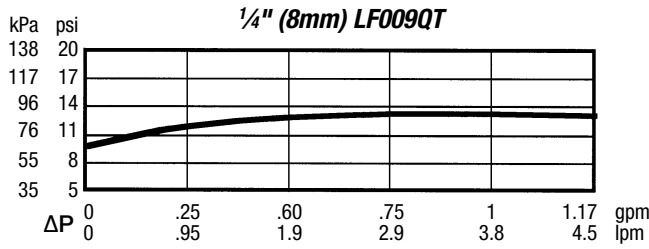
†Clearance for servicing

| MODEL | SIZE DN | | DIMENSIONS (APPROX.) | | | | | | | | | | | | WEIGHT | | | |
|------------|---------|----|----------------------|-----|--------|-----|-------|-----|--------|-----|--------|-----|-------|-----|--------|-----|------|------|
| | in. | mm | A | | C | | D | | E | | L | | R | | U | | lbs. | kgs. |
| | | | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | | |
| LF009LF | 2 1/2 | 65 | — | — | — | — | 4 1/2 | 114 | — | — | 18 1/8 | 460 | — | — | 10 5/8 | 270 | 76 | 34.5 |
| LF0090SY | 2 1/2 | 65 | 3 3/4 | 845 | 15 3/8 | 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 | 65 | 3 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 |
| LF009QTFDA | 2 1/2 | 65 | 3 3/4 | 845 | 6 | 152 | 4 1/2 | 114 | 16 3/8 | 416 | 18 1/8 | 460 | 7 3/4 | 197 | 10 5/8 | 270 | 150 | 68.0 |
| LF009LF | 3 | 80 | — | — | — | — | 4 1/2 | 114 | — | — | 18 1/8 | 460 | — | — | 10 5/8 | 270 | 76 | 34.5 |
| LF0090SY | 3 | 80 | 3 1/4 | 870 | 18 1/2 | 470 | 4 1/2 | 114 | 16 3/8 | 422 | 18 1/8 | 460 | 8 3/4 | 222 | 10 5/8 | 270 | 198 | 89.8 |
| LF009NRS | 3 | 80 | 3 1/4 | 870 | 12 3/4 | 324 | 4 1/2 | 114 | 16 3/8 | 422 | 18 1/8 | 460 | 8 3/4 | 222 | 10 5/8 | 270 | 191 | 86.6 |
| LF009QTFDA | 3 | 80 | 3 1/4 | 870 | 7 | 178 | 4 1/2 | 114 | 16 3/8 | 422 | 18 1/8 | 460 | 8 3/4 | 222 | 10 5/8 | 270 | 158 | 71.7 |

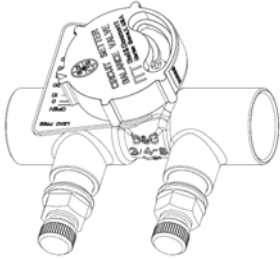
Capacity

Performance as established by an independent testing laboratory.

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

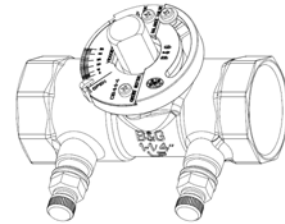


| | | |
|--------------------|------------------------|--------------|
| JOB: | REPRESENTATIVE: | |
| UNIT TAG: | ORDER NO. | DATE: |
| ENGINEER: | SUBMITTED BY: | DATE: |
| CONTRACTOR: | APPROVED BY: | DATE: |



Circuit Setter[®] Plus

Calibrated Balance Valves
with NPT and Solder Connections
LEAD FREE*



DESCRIPTION

The Bell & Gossett CIRCUIT SETTER PLUS and CIRCUIT SETTER PLUS "RF" calibrated balance valves are a precision machined ball type triple purpose balancing instrument. They are precisely calibrated for use as a presettable balance valve, variable orifice flow meter and positive shut-off service valve.

Valves are furnished with a calibrated nameplate and memory stop indicator which permits a preset to a fixed open position and then closed for service without disturbing valve setting.

Valves are equipped with capped readout valves fitted with internal check valves and 1/4" NPT tapped and plugged drain port.

CONSTRUCTION

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

MAXIMUM WORKING PRESSURE

NPT Models: 400 psig (2069 kPa)
Sweat Models: See table below

MAXIMUM OPERATING TEMPERATURE

-4°F(-20°C) to 250°F(121°C)

*Contains less than 0.25% lead content by weight on wetted surfaces.

CSA CERTIFIED: AB1953; Vermont S152.

Maryland House Bill 372 [statute 12-605].

ANSI/NSF-61 Annex G Compliant.

| Type Solder | Maximum Pressure Limitations for 1/2"-1" With Solder Connections | |
|----------------------|---|--------------|
| | Pressure PSI (KPa) | Temp °F (°C) |
| 95-5 Tin-Antimony | 300 (2069) | 200 (93) |
| | 250 (1724) | 225 (107) |
| | 200 (1379) | 250(121) |

LEAD-FREE CIRCUIT SETTER PLUS Calibrated Balance Valves
SCHEDULE

A-549LFP(C)

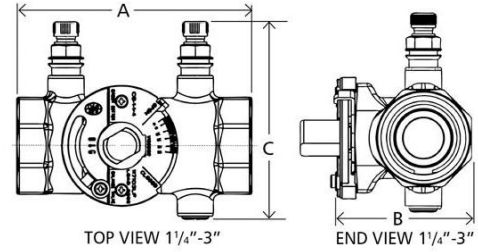
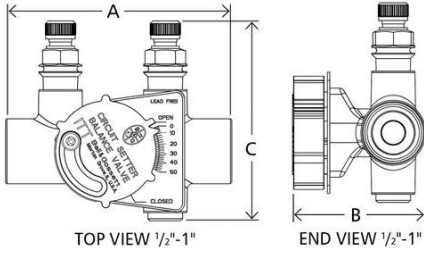
| MODEL NO. | PART NUMBER | TAGGING INFORMATION | QUANTITY |
|--------------|-------------|---------------------|----------|
| RF-1/2S LF | 117410LF | | |
| RF-3/4S LF | 117411LF | | |
| CB-1/2S LF | 117412LF | | |
| CB-3/4S LF | 117413LF | | |
| CB-1S LF | 117401LF | | |
| CB-1-1/4S LF | 117402LF | | |
| CB-1-1/2S LF | 117403LF | | |
| CB-2S LF | 117404LF | | |
| CB-1/2 LF | 117414LF | | |
| CB-3/4 LF | 117415LF | | |
| CB-1 LF | 117416LF | | |
| CB-1-1/4 LF | 117103LF | | |
| CB-1-1/2 LF | 117104LF | | |
| CB-2 LF | 117105LF | | |
| CB-2-1/2 LF | 117106LF | | |
| CB-3 LF | 117107LF | | |

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



LEAD-FREE CIRCUIT SETTER PLUS Calibrated Balance Valves

A-549LFP(C)



DIMENSIONS AND WEIGHTS *

| MODEL NUMBER | A | SIZE | B | CONNECTION TYPE | C | DIMENSIONS IN INCHES (MM) | | | WEIGHT IN |
|--------------|---|--------|---|-----------------|---|---------------------------|-----------------|-----------------|----------------|
| | | | | | | LBS. (KG) | | | |
| RF-1/2S LF | | 1/2" | | SWEAT | | 2.91 (73.9) | 1.82 (46.2) | 2.85 (72.4) | 0.6 (0.27) |
| RF-3/4S LF | | 3/4" | | SWEAT | | 3.51 (89.2) | 2.05 (52.1) | 3.10 (78.7) | 0.75 (0.34) |
| CB-1/2S LF | | 1/2" | | SWEAT | | 2.91 (73.9) | 1.82 (46.2) | 2.85 (72.4) | 1 (0.5) |
| CB-3/4S LF | | 3/4" | | SWEAT | | 3.51 (89.1) | 2.05 (52.1) | 3.10 (78.7) | 1.25 (0.6) |
| CB-1S LF | | 1" | | SWEAT | | 4.29 (109) | 2.33 (59.2) | 3.33 (84.6) | 2 (0.9) |
| CB-1-1/4S LF | | 1-1/4" | | SWEAT | | 4.91 (124.7) | 3.08 (78.2) | 3.69 (93.7) | 3.5 (1.6) |
| CB-1-1/2S LF | | 1-1/2" | | SWEAT | | 5.21 (132.2) | 3.27 (83) | 3.95 (100.2) | 3.8 (1.7) |
| CB-2S LF | | 2" | | SWEAT | | 6.31 (160.3) | 3.83 (97.4) | 4.44 (112.8) | 6.2 (2.8) |
| CB-1/2 LF | | 1/2" | | NPT | | 2.94 (74.6) | 1.98 (50.3) | 3.02 (76.7) | 1.25 (0.6) |
| CB-3/4 LF | | 3/4" | | NPT | | 3.06 (77.7) | 2.17 (55.1) | 3.12 (79.2) | 1.5 (0.7) |
| CB-1 LF | | 1" | | NPT | | 3.81 (96.8) | 2.47 (62.7) | 3.42 (86.9) | 2 (0.9) |
| CB-1-1/4 LF | | 1-1/4" | | NPT | | 4.41 (112) | 3.19 (81) | 3.69 (93.7) | 3.8 (1.7) |
| CB-1-1/2 LF | | 1-1/2" | | NPT | | 4.42 (112.1) | 3.37 (85.7) | 3.95 (100.2) | 3.5 (1.6) |
| CB-2 LF | | 2" | | NPT | | 5.13 (130.2) | 3.98 (101.1) | 4.44 (112.8) | 6.2 (2.8) |
| CB-2-1/2 LF | | 2-1/2" | | NPT | | 6.00 (152.4) | 4.51 (114.7) | 4.83 (122.6) | 9 (4.1) |
| CB-3 LF | | 3" | | NPT | | 6.50 (165.1) | 5.12 (130.1) | 5.44 (138.2) | 12 (5.4) |

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

TYPICAL SPECIFICATION

Furnish and install as shown on plans with manufacturer recommendations Model CB or "RF" calibrated balance valves.

PRE-SET BALANCE FEATURE

Valves to be designed to allow installing contractor to pre-set balance points for proportional system balance prior to system start-up in accordance with pre-set balance schedule.

VALVE DESIGN AND CONSTRUCTION

All valves 1/2" to 3" pipe size to consist of Lead Free Brass** body/SS ball construction with glass and carbon filled TFE seat rings. Valves to have differential pressure read-out ports across valve seat area. Read-out ports to be fitted with internal EPT inserts/check valves. Valve bodies to have 1/4" NPT tapped drain/purge port. Valves to have memory stop feature to allow valve to be closed for service and then reopened to set point without disturbing balance position. All valves to have calibrated nameplates to assure specific valve settings. Valves shall be designed for positive shut-off.

wetted surfaces.

CSA CERTIFIED: AB1953; Vermont S152; Maryland House Bill 372 [statute 12-605]. ANSI/NSF-61 Annex G Compliant.

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DESIGN PRESSURE/TEMPERATURE

A. 1/2" - 3" NPT connections 400 psig (2069 kPa) at 250°F (121°C)

B. 1/2" - 2" Sweat connections (see table page1)

All balance valves to be ITT Bell & Gossett Model No. CB-_____LF or Model No. RF-_____LF (note sizes).

IMPORTANT:

When monitoring system flow, care must be exercised to avoid direct skin or eye contact with liquids that may escape. Liquids with temperatures in excess of 120°F (49°C) may cause burns.

Bell & Gossett Circuit Setter Balance Valves are not recommended for use with meter connections pointing downward.



Submittal Data Information

101-169

00e™ Series VT2218

Effective: September 16, 2015

Supersedes: August 12, 2015

Job: _____ Engineer: _____ Contractor: _____ Rep: _____

| | | |
|----------|-----------|--|
| ITEM NO. | MODEL NO. | |
| | | |

Specifications

- Maximum Shut-off Head: 22 feet
- Maximum Flow: 18 gpm
- Maximum Operating Pressure: 125 psi (862 kPa)
- Maximum Water Temp: 230°F (110°C)
- Minimum Water Temp: 36°F (2°C)
- Electrical specifications:
 - Voltage: 110-120V, 50/60 Hz, Single phase
 - Operating Power Range: 9W to 58W
 - Maximum AMP Rating: 0.67
- Equipped with a cast iron casing and should be used for closed loop systems only.
- Taco circulator pumps are for indoor use only
- Acceptable for use with water or maximum of 50% water/glycol solution.

Applications

The VT2218 is a temperature sensing, variable speed, high-efficiency wet rotor circulator with an ECM permanent magnet motor. It's ideal for Delta-T or setpoint temperature applications. Typical uses include hydronic systems zoned with zone valves, radiant loops, injection pumping, snowmelt or hydro-air fan coils. Can also be used in constant speed mode for zoning with circulators, indirect water heaters or primary boiler loops.



Materials of Construction:

- Casing:Cast Iron
- Stator Housing:Aluminum/Composite
- Cartridge:Stainless Steel
- Impeller:Non-Metallic
- Shaft:Ceramic
- Bearings:Ceramic
- O-Ring & Gaskets:EPDM
- Integral Flow Check (IFC®):
 - Body, PlungerAcetal
 - O-ring SealEPDM
 - SpringStainless Steel

Pump Dimensions & Weights

| Model | Flange Code | A | | B | | C | | D | | F | | G | | Ship Wt. | |
|-----------|-------------|-------|-----|-----|-----|-------|----|-----|----|-------|-----|-------|-----|----------|------|
| | | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | lbs. | Kg |
| VT2218F | S | 8-1/8 | 207 | 6 | 153 | 3-1/4 | 82 | 2 | 54 | 4-1/4 | 107 | 6-3/8 | 161 | 7-3/4 | 3.52 |
| VT2218F/4 | U | 8-1/8 | 207 | 6 | 153 | 3-1/4 | 82 | 2 | 54 | 4-1/4 | 107 | 6-3/8 | 161 | 7-3/4 | 3.52 |

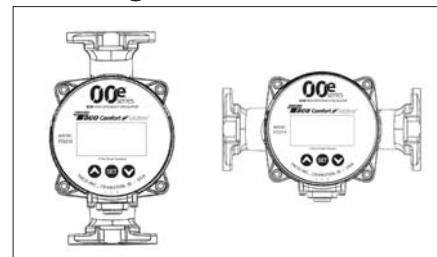
Electrical Data

| Model | Volts | Hz | Ph | Max.Amps | RPM |
|------------|---|-------|----|----------|-------------|
| All Models | 110/120 | 50/60 | 1 | .67 | 1650 - 4200 |
| Motor Type | ECM, Permanent Magnet, Electronically Protected | | | | |

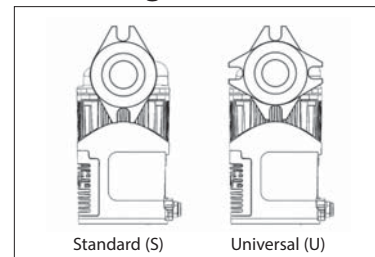
Maximum Watts

| Speed 1 | Speed 2 | Speed 3 | Speed 4 |
|---------|---------|---------|---------|
| 9 | 24 | 40 | 58 |

Mounting Positions



Flange Orientation



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