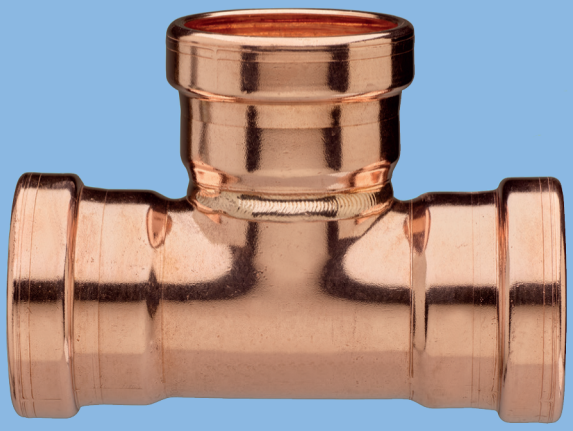
BONOMI

NORTH AMERICA

BONOMI GROUP





BONOMI press

# COPPER AND LEAD FREE BRASS PRESS FITTINGS CATALOG


BONOMI
GROUP

## 1. MAIN FEATURES

| | |
|---|---|
| 1.1 Press solutions | 4 |
| 1.2 Advantages | 4 |
| 1.3 Materials | 4 |
| 1.4 Fitting profiles | 5 |
| 1.5 Fitting markings | 6 |
| 1.6 Listing certifications | 6 |

## FULL RANGE

| | |
|---|---|
| Press fittings | 8 |
| Press valves | 20 |
| Check valves | 21 |

## 2. PRODUCT INSTRUCTIONS

| | |
|---|---|
| 2.1 Pipe selection | 22 |
| 2.2 Press tool selection | 22 |
| 2.3 Other required tools | 23 |
| 2.4 Handling and storage | 23 |
| 2.5 Installation procedure | 23 |
| 2.6 General installation requirements | 26 |
| 2.7 Maintenance | 30 |

## 3. TECHNICAL INFORMATION

| | |
|---|---|
| 3.1 Freeze and anti-freezing | 30 |
| 3.2 Corrosion protection | 30 |
| 3.3 Thermal expansion | 32 |
| 3.4 Pressure drops | 32 |
| 3.5 Electrical bonding | 33 |
| 3.6 Pressure surges | 33 |

## WARRANTY 34

## 1. MAIN FEATURES

BONOMI PRESS is the new press system for copper pipes, designed to meet the main requirements of the plumber and to make his daily work easier, safe and in compliance with the regulations required.
All fittings included in the press assortment shown in this document are manufactured on behalf of Bonomi North America in the Italian sites of Gussago (BS) and Bordolano (CR).
BONOMI PRESS is therefore a completely "made in Italy" solution that perfectly integrates with the other products offered by Bonomi North America, giving the final customer a turnkey solution ideal for any application.

### 1.1 Press solutions

Bonomi North America, a well-known company in the world of valves (including press-fit valves), is now offering the BONOMI PRESS press-fitting solution, available in sizes from 1/2" to 4", which integrates perfectly with the wide range of press-fit and non-press-fit valves.
For a complete view of all available products, please refer to the Bonomi North America catalog.

### 1.2 Advantages

- Easy and quick installation-no time-consuming operation required (brazing, soldering, grooving).
- Safe installation - no flames, no heavy tools required.
- High hydraulic and mechanical seal-pressure rating suitable for all major requirements.
- Noble and bacteriostatic material-high quality and durability.
- Wide assortment, to make every challenge accessible.
- Leak detection device for each fitting to ensure they have pressed!
- Fittings completely made in Italy with high quality level.

### 1.3 Materials

High purity copper Cu-DHP and lead-free CR brass press fittings with high performance EPDM seals, suitable for drinking water applications and many other applications, ranging from 1/2” to 4”.
These materials ensure a solution that complies with the main market standards and is universally recognized for many applications:

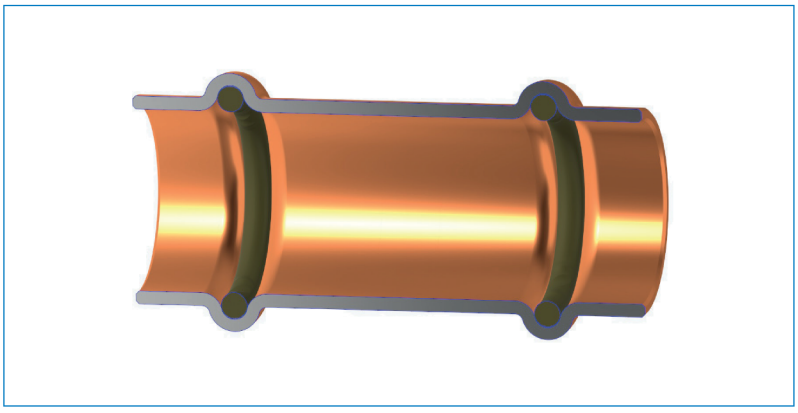
- All BONOMI PRESS products with 2 or more press sides and also thread ends included between 2 1/2” to 4” are made in **high quality copper Cu-DHP** (C12200). Phosphorus-Deoxidized Copper-Cu-DHP, with a nominal composition of 99.9% minimum copper and 0.02% phosphorus, is the most widely used copper for tube and fittings in plumbing applications.

- **Lead free CR brass** (C27453), used for threaded ends through 2”, is compliant with the requirements of the US market with limits placed on lead for materials in contact with potable water. The pliability and the high copper content make the C27453 alloy an excellent material for press fittings, with truly modest dezincification values.

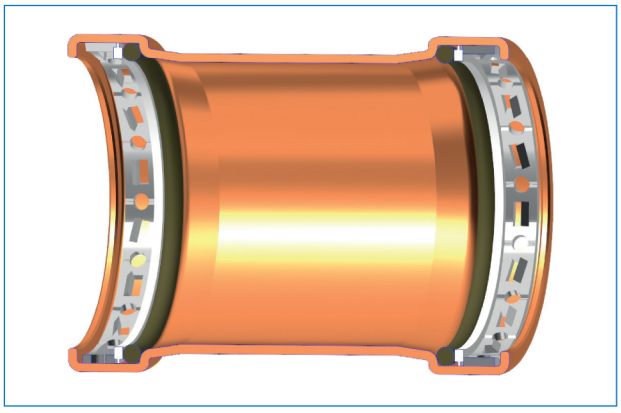
- BONOMI PRESS fittings are equipped with a **high-quality black EPDM sealing element** installed at the factory. EPDM (Ethylene Propylene Diene Monomer) is a synthetically manufactured material. The high performance and excellent behavior of this material against aging allow its safe and durable use in most commercial and industrial applications.
Considering the traditional use with water, the EPDM gasket can be used in a temperature range between -0°F and +250°F; for any other limit condition, please contact the Bonomi North America technical department.

## 1.4 Fitting profiles

The fitting profile adopted by BONOMI PRESS (through 2” size) is a typical **V profile** that allows pressing at 3 points which is optimal for guaranteeing the seal and solidity at the pipe-fitting junction. The larger dimension (from 2 1/2” to 4”) have an **XLC profile** instead which is designed for maximum safety.

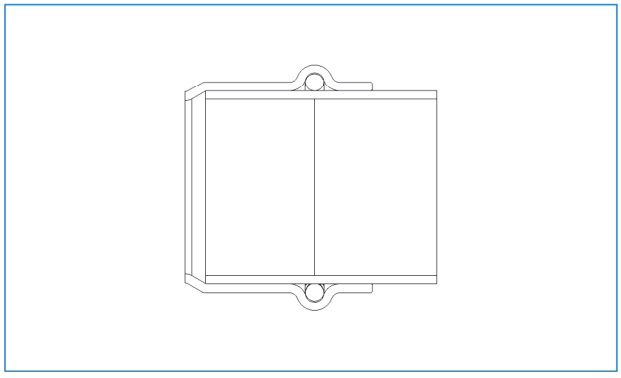


V profile from 1/2” to 2”.

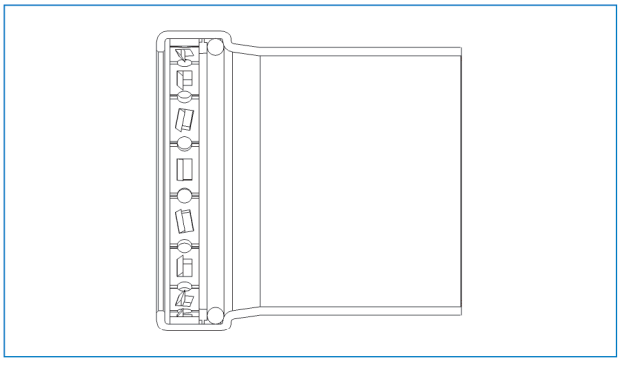


XLC profile from 2 1/2” to 4”.

The V profile, adopted for fittings up through 2”, is recognizable by its safety cylindrical guides that ensure the proper insertion of the tube and protects the sealing element against the possible damage.

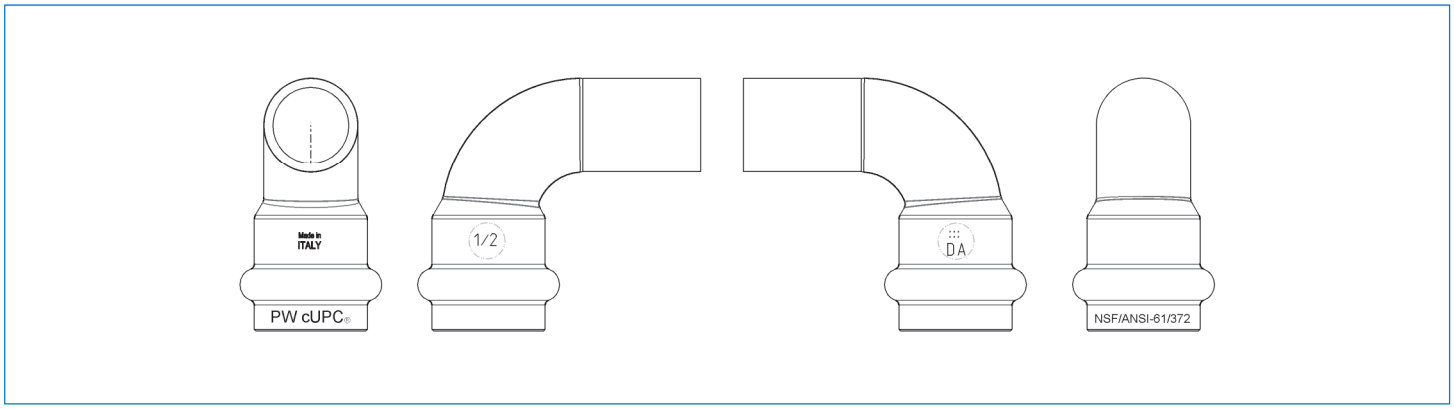


The XLC profile, on the other hand, typical of the dimensions between 2 1/2” and 4”, is immediately recognizable thanks to the presence of an internal steel grip ring nut (placed upstream of the O-ring following the direction of insertion of the pipe) useful for making the pressing operation stronger. A further plastic separation ring, placed between the grip ring nut and the O-ring, protects the sealing element, making the pipe insertion operation safer.



## 1.5 Fitting markings

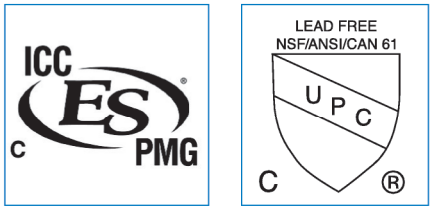
Each BONOMI PRESS fitting is marked with the following:
- Manufacturer name and logo.
- Made in Italy.
- Size of fitting.
- Manufacturing date.
- NSF/ANSI 61 and 372.
- cUPC.
- PW mark (potable water).




## 1.6 Listing and certifications

The fittings have the following listings and certifications:

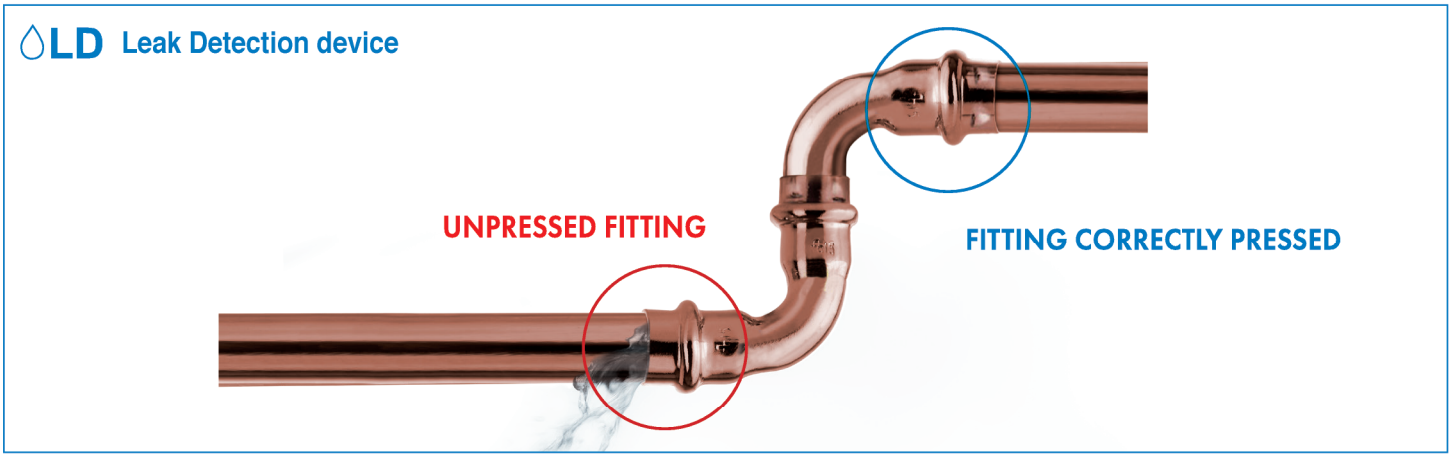
- IAPMO PS-Z1117: press and nail connections.
- NSF/ANSI/CAN 61: drinking water system components-health effects.
- NSF/ANSI/CAN 372: drinking water system components-lead content.
- ICC-ES LC1002 - press-connection fittings for potable water tube and radiant heating systems.




The symbol is placed over the package.

### 1.6.1 Leak Detection device (◊LD)

BONOMI PRESS up to 4” are equipped with a new leak detection safety system, which allows any unpressed fittings to be detected; the device works both when testing with water (in the range between 15 and 85 psi) and when using air (between 1/2 and 45 psi), and it's obtained using an elastomeric gasket whose shape allows liquid to leak out if the junction has not been pressed completely and properly for fittings up to 2"; for fittings between 2 1/2" to 4" the Leakage Detection is obtained thanks to optimized radial space between pipe and fitting.
Thanks to this leak detection device, any unintentional unpressurized joints can be quickly and reliably identified, and by pressurizing the system after installation, time-consuming and annoying future repairs can be avoided.



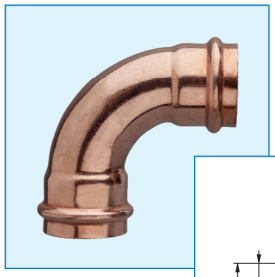

## 1.6.2 Applications

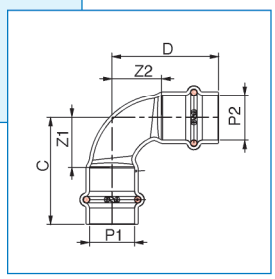
BONOMI PRESS system is approved for numerous applications in commercial and residential markets including potable water. The press fittings meet the requirements of NSF/ANSI/CAN 61 and lead-free specific through testing under NSF/ANSI/CAN 372 (0.25% or less maximum weighted average lead content).

BONOMI PRESS is also suitable for use in many other applications, like heating and cooling, even in case of glycols used as antifreeze in standard percentages, oil-free compressed air (residual oil < 5 mg/m³, according to ISO 8573-1) and also non-potable and treated water.

| BONOMI PRESS main applications-EPDM seals | | | |
|---|---|---|---|
| Application | Comments | Max. pressure (psi) | Operating temperature (°F) |
| Drinking water | - | 300 | +32/+250 |
| Heating/cooling | Up to 50% Ethylene or Propylene Glycol as additive | 300 | 0/+250 |
| Rain water/grey water | - | 300 | +32/+250 |
| Non-potable and treated water | - | 300 | +32/+250 |
| Low-pressure steam | - | Up to 15 psi | Max. 248 |
| Ethanol | - | 200 | Up to 140 |
| Compressed air | Oil residual < 5 mg/m³ | 200 | Up to 140 |
| Oxygen-$O_2$ | Not for medical use | 140 | Up to 140 |
| Nitrogen-$N_2$ | - | 200 | Up to 140 |
| Argon | Welding use | 200 | Up to 140 |
| Hydrogen-$H_2$ | - | 125 | Up to 140 |
| Vacuum | Rough vacuum | 29.2 inch. Hg | Up to 140 |
| Carbon Dioxide-$CO_2$ | Dry | 200 | Up to 140 |

For any other application not indicated in the table, for higher concentration of a substance or for any applications outside listed temperatures and pressure ranges, please consult the Bonomi North America technical department.



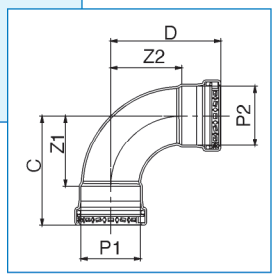



## Series 5V1200

Copper FxF 90° elbow.

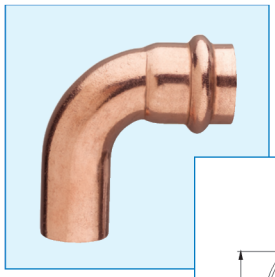
LD

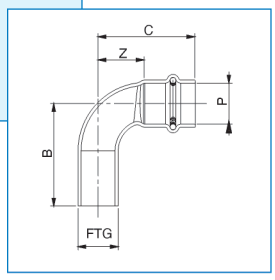
| P1 x P2 | BAG | MASTER BOX | PART NO. | Z1 | C | Z2 | D |
|---|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 10 | 250 | 5V120004 | 0.63 | 1.38 | 0.63 | 1.38 |
| 3/4" x 3/4" | 10 | 120 | 5V120005 | 0.76 | 1.66 | 0.76 | 1.65 |
| 1" x 1" | 5 | 90 | 5V120006 | 0.99 | 1.90 | 0.99 | 1.90 |
| 1 1/4" x 1 1/4" | 5 | 65 | 5V120007 | 1.28 | 2.30 | 1.28 | 2.30 |
| 1 1/2" x 1 1/2" | 1 | 20 | 5V120008 | 1.43 | 2.83 | 1.42 | 2.83 |
| 2" x 2" | 1 | 12 | 5V120010 | 2.01 | 3.58 | 2.01 | 3.58 |




LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | Z1 | C | Z2 | D |
|---|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 8 | 5V120012 | 3.15 | 4.88 | 3.15 | 4.88 |
| 3" x 3" | 1 | 3 | 5V120014 | 3.74 | 5.71 | 3.74 | 5.71 |
| 4" x 4" | 1 | 2 | 5V120018 | 4.84 | 7.24 | 4.84 | 7.24 |



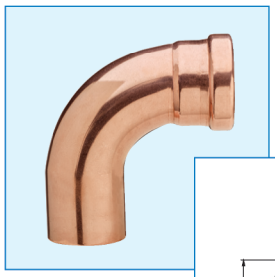


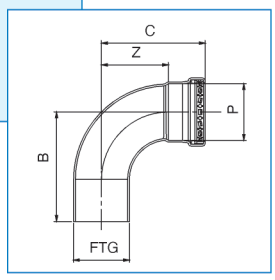

## Series 5V1300

Copper MxF 90° elbow.

LD

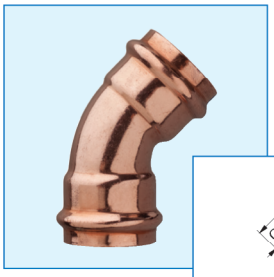
| FTG x P | BAG | MASTER BOX | PART NO. | B | Z | C |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 10 | 250 | 5V130004 | 1.42 | 0.63 | 1.38 |
| 3/4" x 3/4" | 10 | 120 | 5V130005 | 1.85 | 0.79 | 1.69 |
| 1" x 1" | 5 | 90 | 5V130006 | 2.09 | 1.02 | 1.93 |
| 1 1/4" x 1 1/4" | 5 | 65 | 5V130007 | 2.46 | 1.30 | 2.32 |
| 1 1/2" x 1 1/2" | 1 | 20 | 5V130008 | 3.07 | 1.47 | 2.87 |
| 2" x 2" | 1 | 12 | 5V130010 | 3.76 | 2.03 | 3.60 |

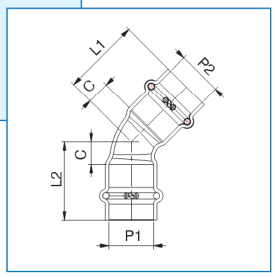





LD

| FTG x P | BAG | MASTER BOX | PART NO. | B | Z | C |
|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 6 | 5V130012 | 5.12 | 3.15 | 4.88 |
| 3" x 3" | 1 | 5 | 5V130014 | 6.02 | 3.74 | 5.71 |
| 4" x 4" | 1 | 2 | 5V130018 | 7.52 | 4.96 | 7.36 |



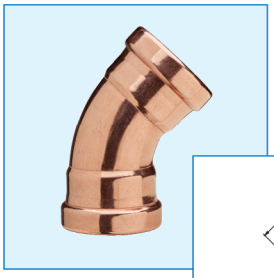


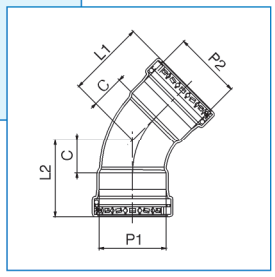

## Series 5V1400

Copper F/F 45° elbow.

LD

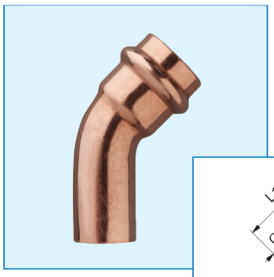
| P1 x P2 | BAG | MASTER BOX | PART NO. | C | L1 | L2 |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 10 | 250 | 5V140004 | 0.31 | 1.06 | 1.06 |
| 3/4" x 3/4" | 10 | 120 | 5V140005 | 0.36 | 1.26 | 1.26 |
| 1" x 1" | 5 | 60 | 5V140006 | 0.46 | 1.36 | 1.36 |
| 1 1/4" x 1 1/4" | 5 | 50 | 5V140007 | 0.57 | 1.59 | 1.59 |
| 1 1/2" x 1 1/2" | 1 | 24 | 5V140008 | 0.67 | 2.09 | 2.09 |
| 2" x 2" | 1 | 16 | 5V140010 | 0.88 | 2.46 | 2.46 |





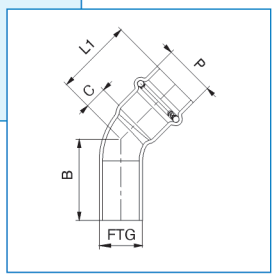

LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | C | L1 | L2 |
|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 8 | 5V140012 | 1.30 | 3.03 | 3.03 |
| 3" x 3" | 1 | 5 | 5V140014 | 1.57 | 3.54 | 3.54 |
| 4" x 4" | 1 | 3 | 5V140018 | 2.05 | 4.45 | 4.45 |



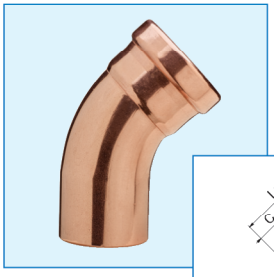
## Series 5V1500

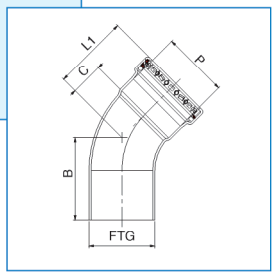
Copper M/F 45° elbow.




LD

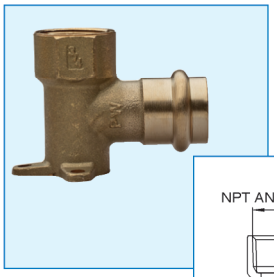
| FTG x P | BAG | MASTER BOX | PART NO. | B | C | L1 |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 10 | 250 | 5V150004 | 1.10 | 0.31 | 1.06 |
| 3/4" x 3/4" | 10 | 120 | 5V150005 | 1.38 | 0.36 | 1.26 |
| 1" x 1" | 5 | 60 | 5V150006 | 1.48 | 0.46 | 1.36 |
| 1 1/4" x 1 1/4" | 5 | 40 | 5V150007 | 1.67 | 0.57 | 1.59 |
| 1 1/2" x 1 1/2" | 1 | 24 | 5V150008 | 2.17 | 0.67 | 2.09 |
| 2" x 2" | 1 | 16 | 5V150010 | 2.54 | 0.88 | 2.46 |

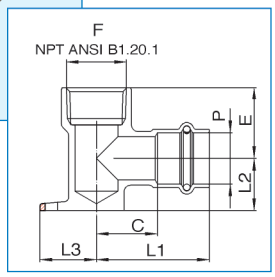





LD

| FTG x P | BAG | MASTER BOX | PART NO. | B | C | L1 |
|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 9 | 5V150012 | 3.30 | 1.30 | 3.00 |
| 3" x 3" | 1 | 5 | 5V150014 | 3.90 | 1.60 | 3.50 |
| 4" x 4" | 1 | 3 | 5V150018 | 4.60 | 2.00 | 4.40 |



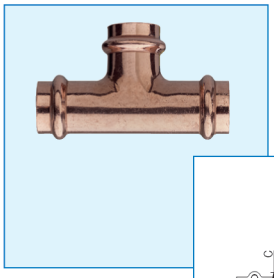


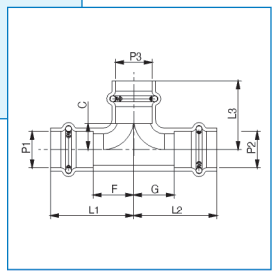

## Series 5V2000

Brass F/female thread 90° elbow with wallplate.

LD

| P x F | BAG | MASTER BOX | PART NO. | L1 | E | L2 | L3 | C |
|---|---|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 5 | 100 | 5V20000404 | 1.57 | 1.00 | 0.79 | 0.98 | 0.87 |
| 3/4" x 3/4" | 5 | 80 | 5V20000505 | 1.97 | 1.24 | 0.91 | 0.98 | 1.06 |



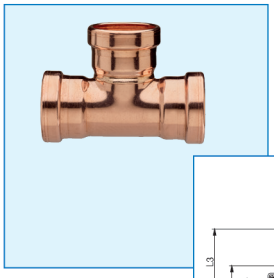


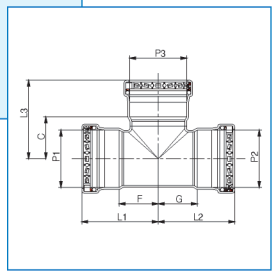

## Series 5V3200

Copper F/F/F tee.

LD

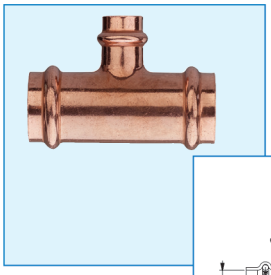
| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 1/2" x 1/2" x 1/2" | 10 | 150 | 5V320004 | 1.46 | 0.71 | 1.46 | 0.71 | 1.20 | 0.46 |
| 3/4" x 3/4" x 3/4" | 5 | 90 | 5V320005 | 1.69 | 0.79 | 1.69 | 0.79 | 1.46 | 0.55 |
| 1" x 1" x 1" | 5 | 50 | 5V320006 | 1.77 | 0.87 | 1.77 | 0.87 | 1.57 | 0.67 |
| 1 1/4" x 1 1/4" x 1 1/4" | 1 | 30 | 5V320007 | 2.01 | 0.98 | 2.01 | 0.98 | 1.85 | 0.83 |
| 1 1/2" x 1 1/2" x 1 1/2" | 1 | 22 | 5V320008 | 2.56 | 1.14 | 2.56 | 1.14 | 2.56 | 1.14 |
| 2" x 2" x 2" | 1 | 10 | 5V320010 | 2.83 | 1.26 | 2.83 | 1.26 | 2.83 | 1.26 |

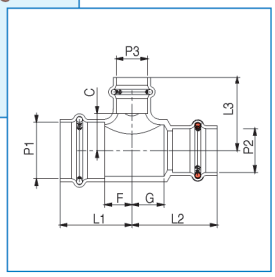





LD

| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" x 2 1/2" | 1 | 8 | 5V320012 | 3.54 | 1.81 | 3.54 | 1.81 | 3.66 | 1.93 |
| 3" x 3" x 3" | 1 | 2 | 5V320014 | 4.06 | 2.09 | 4.06 | 2.09 | 4.21 | 2.24 |
| 4" x 4" x 4" | 1 | 2 | 5V320018 | 4.96 | 2.56 | 4.96 | 2.56 | 5.12 | 2.72 |



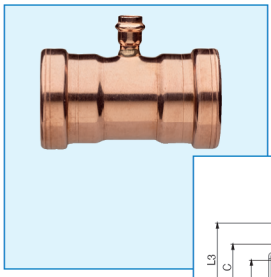


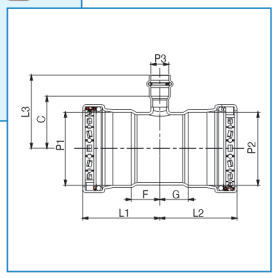

## Series 5V3300

Copper F/F/F reducing tee.

LD

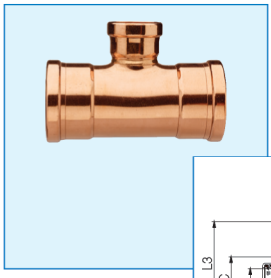
| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 3/4" x 3/4" x 1/2" | 5 | 100 | 5V3300050504 | 1.42 | 0.51 | 1.42 | 0.51 | 1.38 | 0.63 |
| 1" x 1" x 1/2" | 5 | 100 | 5V3300060604 | 1.46 | 0.55 | 1.46 | 0.55 | 1.50 | 0.75 |
| 1" x 1" x 3/4" | 5 | 70 | 5V3300060605 | 1.63 | 0.73 | 1.63 | 0.73 | 1.57 | 0.67 |
| 1 1/4" x 1 1/4" x 1/2" | 1 | 40 | 5V3300070704 | 1.65 | 0.63 | 1.65 | 0.63 | 1.61 | 0.87 |
| 1 1/4" x 1 1/4" x 3/4" | 1 | 35 | 5V3300070705 | 1.65 | 0.63 | 1.65 | 0.63 | 1.73 | 0.83 |
| 1 1/4" x 1 1/4" x 1" | 1 | 35 | 5V3300070706 | 1.85 | 0.81 | 1.85 | 0.81 | 1.73 | 0.83 |
| 1 1/2" x 1 1/2" x 1/2" | 1 | 24 | 5V3300080804 | 2.56 | 1.14 | 2.56 | 1.14 | 2.17 | 1.42 |
| 1 1/2" x 1 1/2" x 3/4" | 1 | 26 | 5V3300080805 | 2.56 | 1.14 | 2.56 | 1.14 | 2.28 | 1.38 |
| 1 1/2" x 1 1/2" x 1" | 1 | 24 | 5V3300080806 | 2.56 | 1.14 | 2.56 | 1.14 | 2.28 | 1.38 |
| 1 1/2" x 1 1/2" x 1 1/4" | 1 | 22 | 5V3300080807 | 2.56 | 1.14 | 2.56 | 1.14 | 2.40 | 1.38 |
| 2" x 2" x 1/2" | 1 | 16 | 5V3300101004 | 2.83 | 1.26 | 2.83 | 1.26 | 2.40 | 1.65 |
| 2" x 2" x 3/4" | 1 | 16 | 5V3300101005 | 2.83 | 1.26 | 2.83 | 1.26 | 2.52 | 1.61 |
| 2" x 2" x 1" | 1 | 15 | 5V3300101006 | 2.83 | 1.26 | 2.83 | 1.26 | 2.52 | 1.61 |
| 2" x 2" x 1 1/4" | 1 | 14 | 5V3300101007 | 2.83 | 1.26 | 2.83 | 1.26 | 2.64 | 1.61 |
| 2" x 2" x 1 1/2" | 1 | 12 | 5V3300101008 | 2.83 | 1.26 | 2.83 | 1.26 | 3.03 | 1.61 |

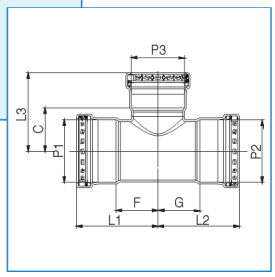





LD

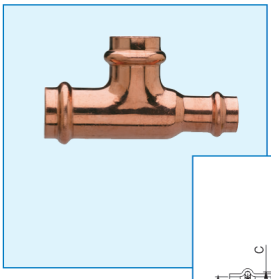
| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" x 1/2" | 1 | 12 | 5V3300121204 | 2.76 | 1.02 | 2.76 | 1.02 | 2.64 | 1.89 |
| 2 1/2" x 2 1/2" x 3/4" | 1 | 12 | 5V3300121205 | 2.76 | 1.02 | 2.76 | 1.02 | 2.80 | 1.89 |
| 2 1/2" x 2 1/2" x 1" | 1 | 12 | 5V3300121206 | 2.76 | 1.02 | 2.76 | 1.02 | 2.80 | 1.89 |
| 2 1/2" x 2 1/2" x 1 1/4" | 1 | 6 | 5V3300121207 | 3.23 | 1.50 | 3.23 | 1.50 | 2.91 | 1.89 |
| 2 1/2" x 2 1/2" x 1 1/2" | 1 | 6 | 5V3300121208 | 3.23 | 1.50 | 3.23 | 1.50 | 3.31 | 1.89 |
| 2 1/2" x 2 1/2" x 2" | 1 | 6 | 5V3300121210 | 3.23 | 1.50 | 3.23 | 1.50 | 3.46 | 1.89 |
| 3" x 3" x 1/2" | 1 | 6 | 5V3300141404 | 3.03 | 1.06 | 3.03 | 1.06 | 2.87 | 2.13 |
| 3" x 3" x 3/4" | 1 | 6 | 5V3300141405 | 3.03 | 1.06 | 3.03 | 1.06 | 3.03 | 2.13 |
| 3" x 3" x 1" | 1 | 6 | 5V3300141406 | 3.03 | 1.06 | 3.03 | 1.06 | 3.03 | 2.13 |
| 3" x 3" x 1 1/4" | 1 | 4 | 5V3300141407 | 3.54 | 1.57 | 3.54 | 1.57 | 3.15 | 2.13 |
| 3" x 3" x 1 1/2" | 1 | 4 | 5V3300141408 | 3.54 | 1.57 | 3.54 | 1.57 | 3.54 | 2.13 |
| 3" x 3" x 2" | 1 | 4 | 5V3300141410 | 3.54 | 1.57 | 3.54 | 1.57 | 3.70 | 2.13 |
| 4" x 4" x 1/2" | 1 | 3 | 5V3300181804 | 3.46 | 1.06 | 3.46 | 1.06 | 3.35 | 2.60 |
| 4" x 4" x 3/4" | 1 | 3 | 5V3300181805 | 3.46 | 1.06 | 3.46 | 1.06 | 3.50 | 2.60 |
| 4" x 4" x 1" | 1 | 3 | 5V3300181806 | 3.46 | 1.06 | 3.46 | 1.06 | 3.50 | 2.60 |
| 4" x 4" x 1 1/2" | 1 | 3 | 5V3300181808 | 3.98 | 1.57 | 3.98 | 1.57 | 4.02 | 2.60 |
| 4" x 4" x 2" | 1 | 2 | 5V3300181810 | 3.98 | 1.57 | 3.98 | 1.57 | 4.17 | 2.60 |

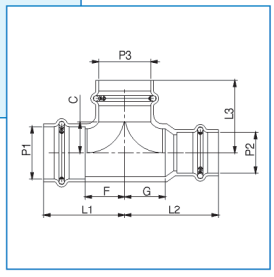





LD

| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 3" x 3" x 2 1/2" | 1 | 3 | 5V3300141412 | 4.06 | 2.09 | 4.06 | 2.09 | 3.90 | 2.17 |
| 4" x 4" x 2 1/2" | 1 | 2 | 5V3300181812 | 4.96 | 2.56 | 4.96 | 2.56 | 4.37 | 2.64 |
| 4" x 4" x 3" | 1 | 2 | 5V3300181814 | 4.96 | 2.56 | 4.96 | 2.56 | 4.69 | 2.72 |



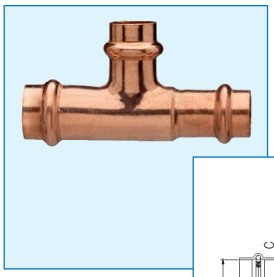


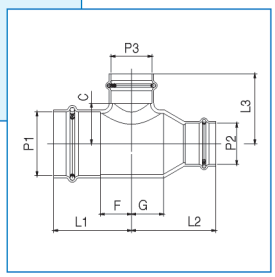

## Series 5V3400

Copper F/F/F reducing T with one of the two lateral ends reduced more than the others.

LD

| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 3/4" x 1/2" x 3/4" | 5 | 100 | 5V3400050405 | 1.69 | 0.79 | 1.69 | 0.94 | 1.46 | 0.55 |
| 1" x 1/2" x 1" | 5 | 65 | 5V3400060406 | 1.77 | 0.87 | 2.05 | 1.30 | 1.57 | 0.67 |
| 1" x 3/4" x 1" | 5 | 60 | 5V3400060506 | 1.77 | 0.87 | 2.05 | 1.14 | 1.57 | 0.67 |
| 1 1/2" x 1" x 1 1/2" | 1 | 24 | 5V3400080608 | 2.56 | 1.14 | 2.60 | 1.69 | 2.56 | 1.14 |



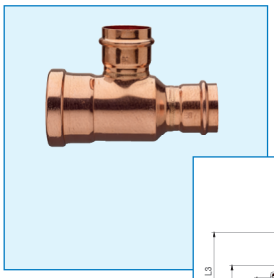


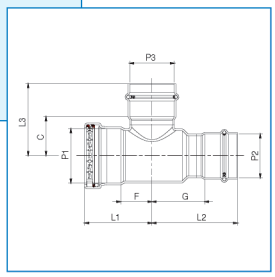

## Series 5V3500

Copper F/F/F reducing T with one of the two lateral ends larger than the others.

LD

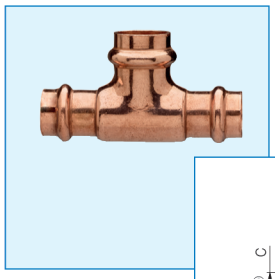
| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 3/4" x 1/2" x 1/2" | 5 | 100 | 5V3500050404 | 1.42 | 0.51 | 1.42 | 0.67 | 1.38 | 0.63 |
| 1" x 3/4" x 3/4" | 5 | 70 | 5V3500060505 | 1.63 | 0.73 | 1.91 | 1.00 | 1.57 | 0.67 |
| 1 1/4" x 1" x 1" | 1 | 35 | 5V3500070606 | 1.85 | 0.83 | 2.01 | 1.08 | 1.73 | 0.83 |
| 1 1/2" x 1" x 1" | 1 | 24 | 5V3500080606 | 2.56 | 1.14 | 2.68 | 1.77 | 2.28 | 1.38 |
| 1 1/2" x 1 1/4" x 1 1/4" | 1 | 24 | 5V3500080707 | 2.56 | 1.14 | 2.68 | 1.65 | 2.40 | 1.38 |
| 2" x 1 1/2" x 1 1/2" | 1 | 14 | 5V3500100808 | 2.83 | 1.26 | 3.35 | 1.93 | 3.11 | 1.69 |

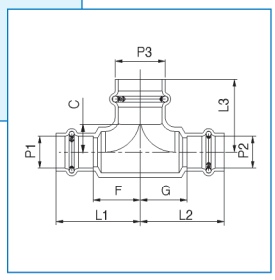





LD

| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 3" x 2" x 2" | 1 | 3 | 5V3500141010 | 3.54 | 1.57 | 4.25 | 2.68 | 4.02 | 2.44 |



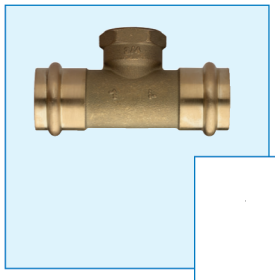


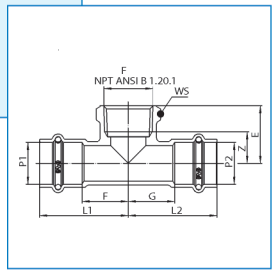

## Series 5V3600

Copper F/F/F reducing T with central end larger than the others.

LD

| P1 x P2 x P3 | BAG | MASTER BOX | PART NO. | L1 | F | L2 | G | L3 | C |
|---|---|---|---|---|---|---|---|---|---|
| 1/2" x 1/2" x 3/4" | 5 | 100 | 5V3600040405 | 1.85 | 1.10 | 1.85 | 1.10 | 1.46 | 0.55 |



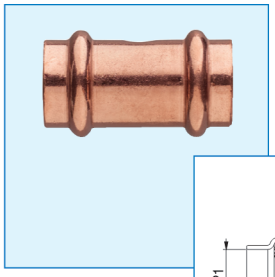


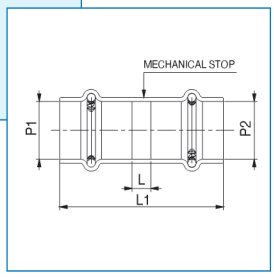

## Series 5V3100

Brass F/female thread/F tee.

LD

| P1 x P2 x F | BAG | MASTER BOX | PART NO. | L1 | L2 | F | G | E | Z | WS |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/2" x 1/2" x 1/2" | 5 | 150 | 5V3100040404 | 1.57 | 1.57 | 0.87 | 0.87 | 1.12 | 0.59 | 1.02 |
| 3/4" x 3/4" x 1/2" | 5 | 100 | 5V3100050504 | 1.76 | 1.76 | 0.86 | 0.86 | 1.20 | 0.65 | 1.02 |
| 3/4" x 3/4" x 3/4" | 5 | 75 | 5V3100050505 | 1.89 | 1.89 | 0.98 | 0.98 | 1.22 | 0.67 | 1.22 |
| 1" x 1" x 1/2" | 5 | 60 | 5V3100060604 | 1.83 | 1.83 | 0.89 | 0.89 | 1.36 | 0.83 | 1.02 |
| 1" x 1" x 3/4" | 5 | 60 | 5V3100060605 | 1.97 | 1.97 | 1.02 | 1.02 | 1.40 | 0.85 | 1.22 |



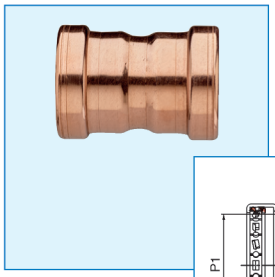


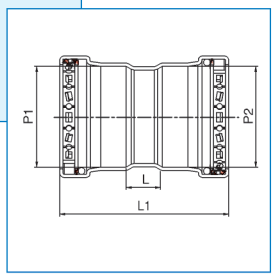

## Series 5V0200

Copper F/F coupling.

LD

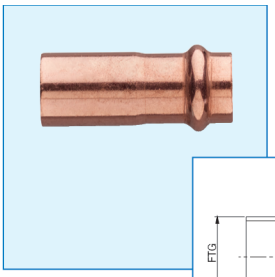
| P1 x P2 | BAG | MASTER BOX | PART NO. | L | L1 |
|---|---|---|---|---|---|
| 1/2" x 1/2" | 10 | 250 | 5V020004 | 0.12 | 1.61 |
| 3/4" x 3/4" | 10 | 200 | 5V020005 | 0.16 | 1.97 |
| 1" x 1" | 5 | 100 | 5V020006 | 0.16 | 1.97 |
| 1 1/4" x 1 1/4" | 5 | 75 | 5V020007 | 0.16 | 2.20 |
| 1 1/2" x 1 1/2" | 1 | 46 | 5V020008 | 0.16 | 2.99 |
| 2" x 2" | 1 | 28 | 5V020010 | 0.16 | 3.31 |

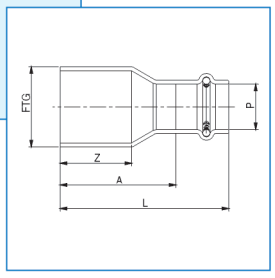





LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | L | L1 |
|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 12 | 5V020012 | 0.87 | 4.33 |
| 3" x 3" | 1 | 6 | 5V020014 | 0.98 | 4.92 |
| 4" x 4" | 1 | 6 | 5V020018 | 1.02 | 5.83 |



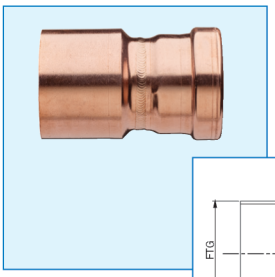


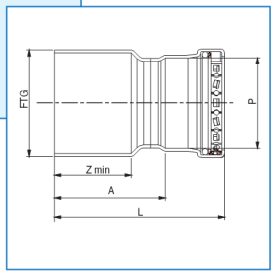

## Series 5V0400

Copper M/F reducer.

LD

| FTG x P | BAG | MASTER BOX | PART NO. | Z | A | L |
|---|---|---|---|---|---|---|
| 3/4" x 1/2" | 10 | 250 | 5V04000504 | 1.02 | 1.42 | 2.17 |
| 1" x 1/2" | 10 | 200 | 5V04000604 | 1.02 | 1.65 | 2.40 |
| 1" x 3/4" | 5 | 150 | 5V04000605 | 1.02 | 1.34 | 2.24 |
| 1 1/4" x 1/2" | 5 | 100 | 5V04000704 | 1.10 | 1.81 | 2.56 |
| 1 1/4" x 3/4" | 5 | 100 | 5V04000705 | 1.10 | 1.63 | 2.54 |
| 1 1/4" x 1" | 5 | 100 | 5V04000706 | 1.10 | 1.42 | 2.32 |
| 1 1/2" x 3/4" | 1 | 80 | 5V04000805 | 1.50 | 2.24 | 3.15 |
| 1 1/2" x 1" | 1 | 80 | 5V04000806 | 1.50 | 2.07 | 2.97 |
| 1 1/2" x 1 1/4" | 1 | 60 | 5V04000807 | 1.50 | 1.85 | 2.87 |
| 2" x 1" | 1 | 40 | 5V04001006 | 1.65 | 2.60 | 3.50 |
| 2" x 1 1/4" | 1 | 40 | 5V04001007 | 1.65 | 2.40 | 3.43 |
| 2" x 1 1/2" | 1 | 30 | 5V04001008 | 1.65 | 2.20 | 3.62 |
| 2 1/2" x 1 1/2" | 1 | 15 | 5V04001208 | 1.97 | 3.15 | 4.57 |
| 2 1/2" x 2" | 1 | 14 | 5V04001210 | 1.97 | 2.87 | 4.45 |
| 3" x 1 1/2" | 1 | 3 | 5V04001408 | 2.28 | 3.70 | 5.12 |
| 3" x 2" | 1 | 12 | 5V04001410 | 2.28 | 3.46 | 5.04 |
| 4" x 2" | 1 | 6 | 5V04001810 | 2.56 | 4.21 | 5.79 |



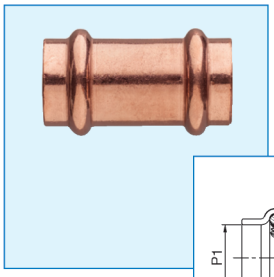


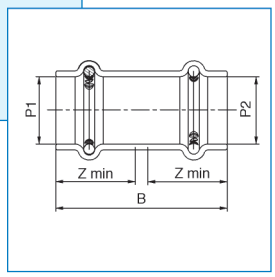

LD

| FTG x P | BAG | MASTER BOX | PART NO. | A | L | Zmin |
|---|---|---|---|---|---|---|
| 3" x 2 1/2" | 1 | 10 | 5V04001412 | 2.28 | 3.23 | 4.96 |
| 4" x 2 1/2" | 1 | 6 | 5V04001812 | 2.56 | 4.02 | 5.75 |
| 4" x 3" | 1 | 6 | 5V04001814 | 2.56 | 3.86 | 5.83 |

# Series 5V0500

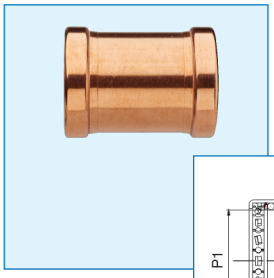
Copper F/F slip coupling.

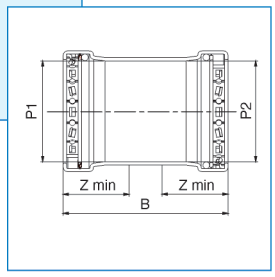





LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | B | Z |
|---|---|---|---|---|---|
| 1/2" x 1/2" | 10 | 250 | 5V050004 | 1.61 | 0.75 |
| 3/4" x 3/4" | 10 | 200 | 5V050005 | 1.97 | 0.91 |
| 1" x 1" | 5 | 100 | 5V050006 | 1.97 | 0.91 |
| 1 1/4" x 1 1/4" | 5 | 75 | 5V050007 | 2.20 | 1.02 |
| 1 1/2" x 1 1/2" | 1 | 46 | 5V050008 | 2.99 | 1.42 |
| 2" x 2" | 1 | 28 | 5V050010 | 3.31 | 1.57 |



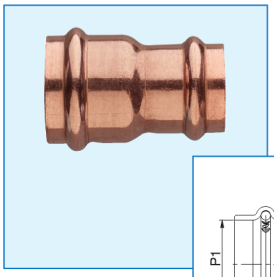


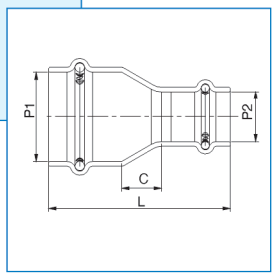

LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | B | Z |
|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 12 | 5V050012 | 4.33 | 1.73 |
| 3" x 3" | 1 | 8 | 5V050014 | 4.92 | 1.97 |
| 4" x 4" | 1 | 6 | 5V050018 | 5.83 | 2.4 |

# Series 5V4900

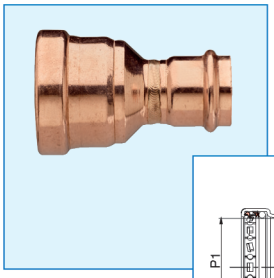
Copper F/F reducing coupling.

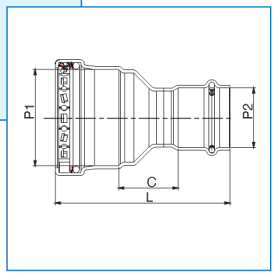





LD

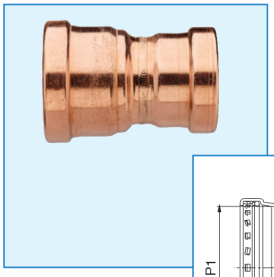
| P1 x P2 | BAG | MASTER BOX | PART NO. | C | L |
|---|---|---|---|---|---|
| 3/4" x 1/2" | 10 | 250 | 5V49000504 | 0.43 | 2.09 |
| 1" x 1/2" | 10 | 200 | 5V49000604 | 0.65 | 2.30 |
| 1" x 3/4" | 5 | 150 | 5V49000605 | 0.47 | 2.28 |
| 1 1/4" x 3/4" | 1 | 70 | 5V49000705 | 0.63 | 2.56 |
| 1 1/4" x 1" | 1 | 70 | 5V49000706 | 0.55 | 2.48 |
| 1 1/2" x 3/4" | 1 | 65 | 5V49000805 | 0.87 | 3.19 |
| 1 1/2" x 1" | 1 | 65 | 5V49000806 | 0.67 | 2.99 |
| 1 1/2" x 1 1/4" | 1 | 60 | 5V49000807 | 0.43 | 2.87 |
| 2" x 3/4" | 1 | 40 | 5V49001005 | 1.30 | 3.78 |
| 2" x 1" | 1 | 40 | 5V49001006 | 1.06 | 3.54 |
| 2" x 1 1/4" | 1 | 40 | 5V49001007 | 0.83 | 3.43 |
| 2" x 1 1/2" | 1 | 30 | 5V49001008 | 0.75 | 3.74 |

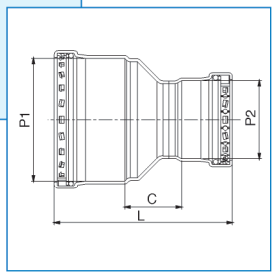





LD

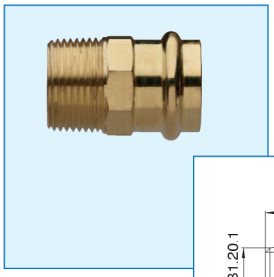
| P1 x P2 | BAG | MASTER BOX | PART NO. | C | L |
|---|---|---|---|---|---|
| 2 1/2" x 1 1/2" | 1 | 15 | 5V49001208 | 1.61 | 4.76 |
| 2 1/2" x 2" | 1 | 14 | 5V49001210 | 1.38 | 4.69 |
| 3" x 1 1/2" | 1 | 10 | 5V49001408 | 1.89 | 5.28 |
| 3" x 2" | 1 | 10 | 5V49001410 | 1.61 | 5.16 |
| 3" x 2 1/2" | 1 | 8 | 5V49001412 | 1.42 | 5.12 |
| 4" x 2" | 1 | 4 | 5V49001810 | 2.13 | 6.10 |

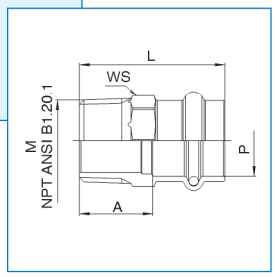





LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | C | L |
|---|---|---|---|---|---|
| 4" x 3" | 1 | 4 | 5V49001814 | 1.77 | 6.14 |



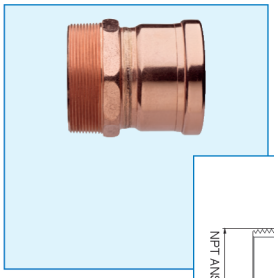


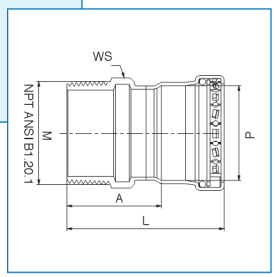

## Series 5V0000

Brass F/male thread adapter.

LD

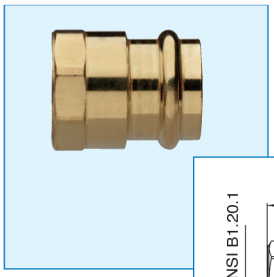
| P x M | BAG | MASTER BOX | PART NO. | L | A | WS |
|---|---|---|---|---|---|---|
| 1/2" x 3/8" | 10 | 300 | 5V00000403 | 1.50 | 0.79 | 0.79 |
| 1/2" x 1/2" | 10 | 300 | 5V00000404 | 1.65 | 0.94 | 0.87 |
| 1/2" x 3/4" | 10 | 200 | 5V00000405 | 1.75 | 1.04 | 1.06 |
| 3/4" x 1/2" | 10 | 150 | 5V00000504 | 1.79 | 0.89 | 1.06 |
| 3/4" x 3/4" | 10 | 150 | 5V00000505 | 1.83 | 0.93 | 1.06 |
| 3/4" x 1" | 10 | 150 | 5V00000506 | 2.07 | 1.16 | 1.34 |
| 1" x 3/4" | 10 | 150 | 5V00000605 | 1.91 | 0.96 | 1.34 |
| 1" x 1" | 10 | 100 | 5V00000606 | 2.09 | 1.14 | 1.34 |
| 1 1/4" x 1 1/4" | 1 | 70 | 5V00000707 | 2.46 | 1.44 | 1.73 |
| 1 1/2" x 1 1/2" | 1 | 40 | 5V00000808 | 2.58 | 1.16 | 1.97 |
| 2" x 2" | 1 | 28 | 5V00001010 | 2.91 | 1.34 | 2.44 |





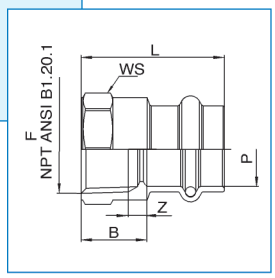

LD

| P x M | BAG | MASTER BOX | PART NO. | A | L | WS |
|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 8 | 5V00001212 | 2.64 | 4.37 | 2.91 |
| 3" x 3" | 1 | 6 | 5V00001414 | 2.78 | 4.74 | 3.54 |
| 4" x 4" | 1 | 6 | 5V00001818 | 3.54 | 5.94 | 4.53 |



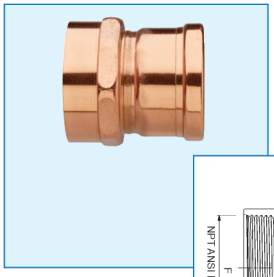
## Series 5V0100

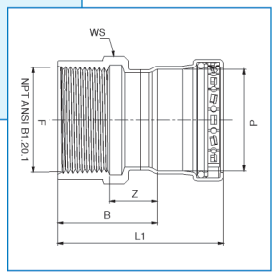
Brass F/female thread adapter.




LD

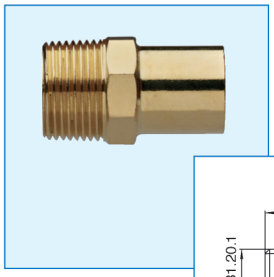
| P x F | BAG | MASTER BOX | PART NO. | L | B | Z | WS |
|---|---|---|---|---|---|---|---|
| 1/2" x 3/8" | 10 | 200 | 5V01000403 | 1.30 | 0.59 | 0.19 | 0.79 |
| 1/2" x 1/2" | 10 | 200 | 5V01000404 | 1.48 | 0.77 | 0.23 | 0.98 |
| 1/2" x 3/4" | 10 | 200 | 5V01000405 | 1.54 | 0.83 | 0.28 | 1.22 |
| 3/4" x 1/2" | 10 | 150 | 5V01000504 | 1.75 | 0.85 | 0.31 | 0.98 |
| 3/4" x 3/4" | 10 | 150 | 5V01000505 | 1.67 | 0.77 | 0.22 | 1.22 |
| 1" x 1/2" | 10 | 100 | 5V01000604 | 1.85 | 0.91 | 0.37 | 0.98 |
| 1" x 3/4" | 10 | 100 | 5V01000605 | 1.81 | 0.87 | 0.31 | 1.22 |
| 1" x 1" | 10 | 100 | 5V01000606 | 1.87 | 0.93 | 0.26 | 1.50 |
| 1 1/4" x 1 1/4" | 1 | 75 | 5V01000707 | 2.07 | 1.04 | 0.36 | 1.89 |
| 1 1/2" x 1 1/2" | 1 | 30 | 5V01000808 | 2.41 | 1.00 | 0.28 | 2.13 |
| 2" x 2" | 1 | 30 | 5V01001010 | 2.56 | 0.98 | 0.29 | 2.64 |

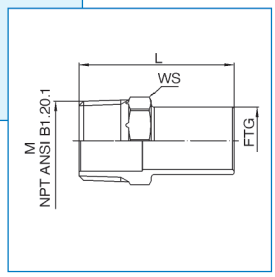





LD

| P x F | BAG | MASTER BOX | PART NO. | L | B | Z | WS |
|---|---|---|---|---|---|---|---|
| 2 1/2" x 2 1/2" | 1 | 8 | 5V01001212 | 4.33 | 2.60 | 1.24 | 3.19 |
| 3" x 3" | 1 | 6 | 5V01001414 | 4.76 | 2.80 | 1.40 | 3.94 |
| 4" x 4" | 1 | 6 | 5V01001818 | 5.33 | 2.93 | 1.40 | 4.92 |

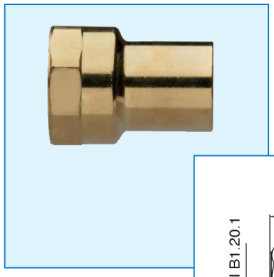


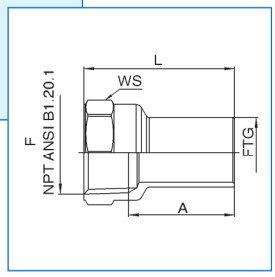



## Series 5V0800

Brass M/male thread adapter.

| FTG X M | DN | BAG | MASTER BOX | PART NO. | L | WS |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 15 | 5 | 300 | 5V08000404 | 1.83 | 0.87 |
| 3/4" x 3/4" | 20 | 5 | 150 | 5V08000505 | 2.03 | 1.06 |
| 1" x 1" | 25 | 5 | 150 | 5V08000606 | 2.28 | 1.34 |
| 1 1/4" x 1 1/4" | 32 | 1 | 60 | 5V08000707 | 2.60 | 1.89 |
| 1 1/2" x 1 1/2" | 40 | 1 | 40 | 5V08000808 | 3.05 | 2.13 |
| 2" x 2" | 50 | 1 | 20 | 5V08001010 | 3.37 | 2.64 |

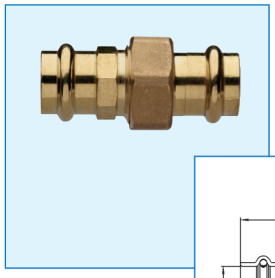


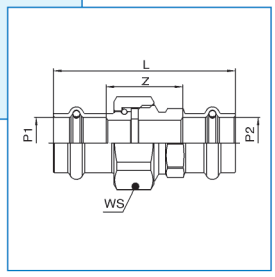



## Series 5V0900

Brass M/female thread adapter.

| FTG x F | BAG | MASTER BOX | PART NO. | L | A | WS |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 5 | 200 | 5V09000404 | 1.71 | 1.18 | 0.98 |
| 3/4" x 1/2" | 5 | 150 | 5V09000504 | 1.82 | 1.28 | 0.98 |
| 3/4" x 3/4" | 5 | 150 | 5V09000505 | 1.87 | 1.32 | 1.22 |
| 1" x 1" | 1 | 75 | 5V09000606 | 2.03 | 1.37 | 1.50 |
| 1 1/4" x 1 1/4" | 1 | 50 | 5V09000707 | 2.34 | 1.66 | 1.89 |
| 1 1/2" x 1 1/2" | 1 | 30 | 5V09000808 | 2.68 | 2.00 | 2.13 |
| 2" x 2" | 1 | 25 | 5V09001010 | 2.87 | 2.18 | 2.64 |



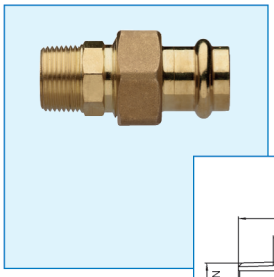


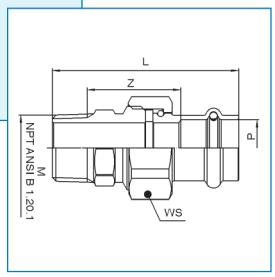

## Series 5V7400

Brass F/F flat seat union.

LD

| P1 x P2 | BAG | MASTER BOX | PART NO. | L | Z | WS |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 1 | 150 | 5V74000404 | 2.74 | 1.32 | 1.18 |
| 3/4" x 3/4" | 1 | 100 | 5V74000505 | 3.13 | 1.32 | 1.46 |
| 1" x 1" | 1 | 60 | 5V74000606 | 3.39 | 1.50 | 1.85 |
| 1 1/4" x 1 1/4" | 1 | 40 | 5V74000707 | 3.79 | 1.74 | 2.05 |
| 1 1/2" x 1 1/2" | 1 | 30 | 5V74000808 | 4.17 | 1.46 | 2.36 |
| 2" x 2" | 1 | 15 | 5V74001010 | 4.84 | 1.69 | 2.95 |



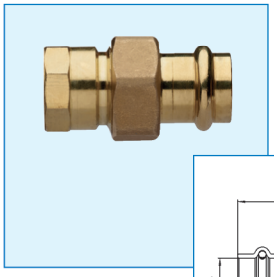


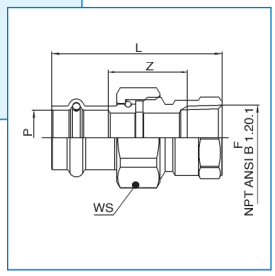

## Series 5V5400

Brass F/male thread flat seat union.

LD

| P x M | BAG | MASTER BOX | PART NO. | L | Z | WS |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 1 | 150 | 5V54000404 | 2.62 | 1.36 | 1.18 |
| 3/4" x 3/4" | 1 | 100 | 5V54000505 | 2.91 | 1.46 | 1.46 |
| 1" x 1" | 1 | 60 | 5V54000606 | 3.37 | 1.74 | 1.85 |
| 1 1/4" x 1 1/4" | 1 | 40 | 5V54000707 | 3.50 | 1.77 | 2.05 |
| 1 1/2" x 1 1/2" | 1 | 30 | 5V54000808 | 3.82 | 1.79 | 2.36 |
| 2" x 2" | 1 | 15 | 5V54001010 | 4.35 | 2.03 | 2.95 |



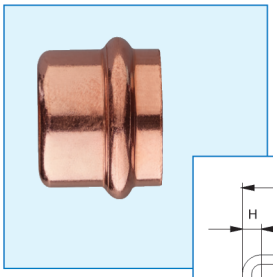


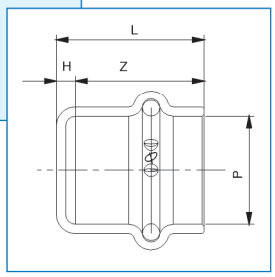

## Series 5V5500

Brass F/female thread flat seat union.

LD

| P x F | BAG | MASTER BOX | PART NO. | L | Z | WS |
|---|---|---|---|---|---|---|
| 1/2" x 1/2" | 1 | 150 | 5V55000404 | 2.36 | 1.12 | 1.18 |
| 3/4" x 3/4" | 1 | 100 | 5V55000505 | 2.72 | 1.26 | 1.46 |
| 1" x 1" | 1 | 60 | 5V55000606 | 2.72 | 1.11 | 1.85 |
| 1 1/4" x 1 1/4" | 1 | 40 | 5V55000707 | 3.25 | 1.54 | 2.05 |
| 1 1/2" x 1 1/2" | 1 | 30 | 5V55000808 | 3.40 | 1.42 | 2.36 |
| 2" x 2" | 1 | 15 | 5V55001010 | 3.76 | 1.49 | 2.95 |

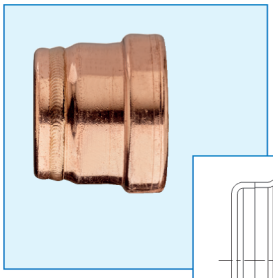


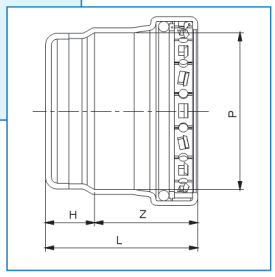



## Series 5V5300 Copper F plug.

LD

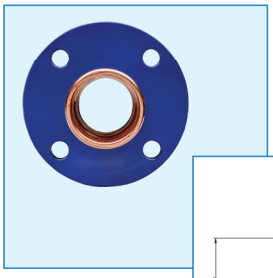
| P | BAG | MASTER BOX | PART NO. | L | Z | H |
|---|---|---|---|---|---|---|
| 1/2” | 10 | 250 | 5V530004 | 0.87 | 0.75 | 0.12 |
| 3/4” | 10 | 200 | 5V530005 | 1.02 | 0.91 | 0.12 |
| 1” | 5 | 200 | 5V530006 | 1.02 | 0.91 | 0.12 |
| 1 1/4” | 1 | 100 | 5V530007 | 1.14 | 1.02 | 0.12 |
| 1 1/2” | 1 | 70 | 5V530008 | 1.57 | 1.42 | 0.16 |
| 2” | 1 | 40 | 5V530010 | 1.73 | 1.57 | 0.16 |

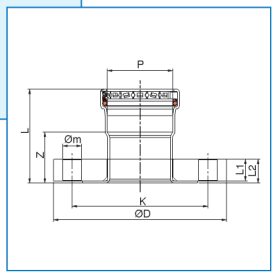





LD

| P | BAG | MASTER BOX | PART NO. | L | Z | H |
|---|---|---|---|---|---|---|
| 2 1/2” | 1 | 24 | 5V530012 | 2.56 | 1.73 | 0.83 |
| 3” | 1 | 14 | 5V530014 | 2.95 | 1.97 | 0.98 |
| 4” | 1 | 6 | 5V530018 | 3.39 | 2.40 | 0.98 |

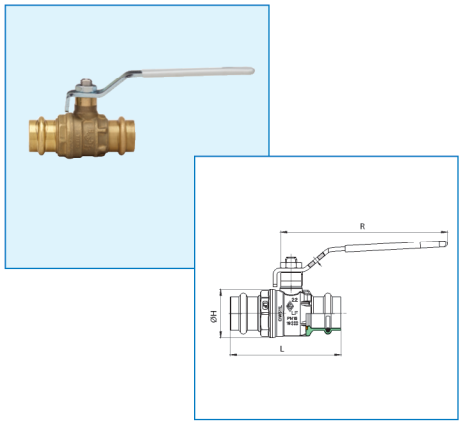





## Series 5V5600 Copper flanged joint.

LD

| P | BAG | MASTER BOX | PART NO. | L | Z | L1 | L2 | ØD | Øm | K |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 1/2” | 1 | 2 | 5V560012 | 2.83 | 1.10 | 0.63 | 0.71 | 7.00 | 0.75 | 5.50 |
| 3” | 1 | 1 | 5V560014 | 3.19 | 1.22 | 0.75 | 0.83 | 7.50 | 0.75 | 4.94 |
| 4” | 1 | 1 | 5V560018 | 3.70 | 1.30 | 0.75 | 0.83 | 9.00 | 0.75 | 7.50 |

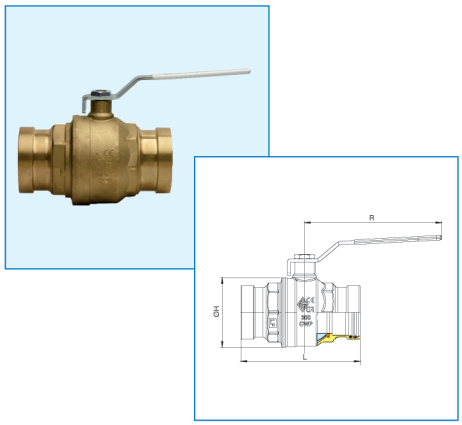


## Series 1570 LF

Lead free brass ball valve.

HEALTH EFFECTS US-CA NSF 372 NSF 61

| SIZE | BOX | MASTER BOX | PART NO. | L | Z | ØH |
|---|---|---|---|---|---|---|
| 1/2” | 40 | 80 | 1570LF-1/2” | 2.93 | 1.52 | 1.22 |
| 3/4” | 20 | 40 | 1570LF-3/4” | 3.37 | 1.56 | 1.46 |
| 1” | 20 | 40 | 1570LF-1” | 3.81 | 1.92 | 1.76 |
| 1 1/4” | 10 | 20 | 1570LF-1-1/4” | 4.17 | 2.13 | 2.11 |
| 1 1/2” | 4 | 8 | 1570LF-1-1/2” | 5.23 | 2.39 | 2.64 |
| 2” | 2 | 4 | 1570LF-2” | 6.27 | 3.12 | 3.39 |

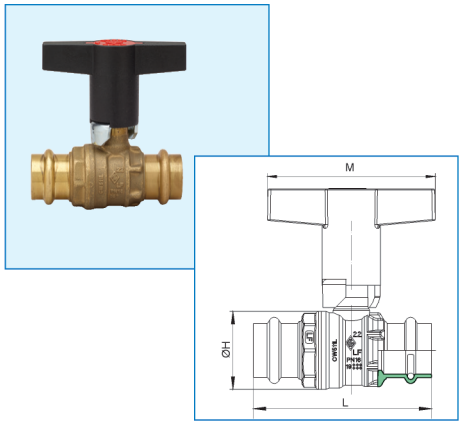


## Series 1670 LFXLC

Lead free brass ball valve.

HEALTH EFFECTS US-CA NSF 372 NSF 61

| SIZE | BOX | MASTER BOX | PART NO. | L | Z | ØH |
|---|---|---|---|---|---|---|
| 2 1/2” | 4 | 4 | 1670LFXLC-2-1/2” | 7.05 | 3.74 | 4.09 |
| 3” | 2 | 2 | 1670LFXLC-3” | 8.27 | 4.45 | 4.96 |
| 4” | 1 | 1 | 1670LFXLC-4” | 10.26 | 5.41 | 6.54 |

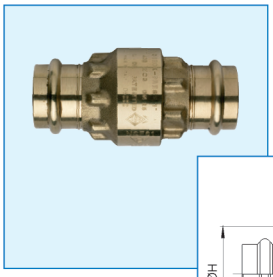


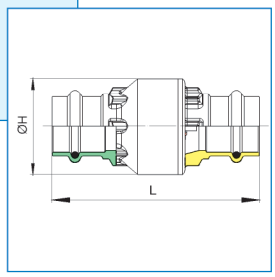
## Series 1570 LFPT

Lead free brass ball valve with thermal plastic extension handle.

HEALTH EFFECTS US-CA NSF 372 NSF 61

| SIZE | BOX | MASTER BOX | PART NO. | L | Z | ØH |
|---|---|---|---|---|---|---|
| 1/2” | 40 | 80 | 1570LFPT-1/2” | 2.93 | 1.52 | 1.22 |
| 3/4” | 20 | 40 | 1570LFPT-3/4” | 3.37 | 1.56 | 1.46 |
| 1” | 20 | 40 | 1570LFPT-1” | 3.81 | 1.92 | 1.76 |
| 1 1/4” | 10 | 20 | 1570LFPT-1-1/4” | 4.17 | 2.13 | 2.11 |
| 1 1/2” | 4 | 8 | 1570LFPT-1-1/2” | 5.23 | 2.39 | 2.64 |
| 2” | 2 | 4 | 1570LFPT-2” | 6.27 | 3.12 | 3.39 |



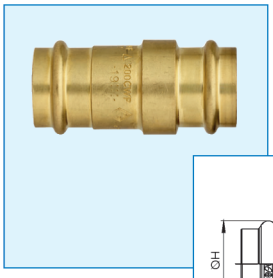


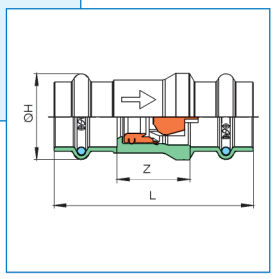

## Series 100612 LF

High flow rate, lead free brass.

HEALTH EFFECTS US-CA NSF 372 NSF 61

| SIZE | BOX | MASTER BOX | PART NO. | L | Z | ØH |
|---|---|---|---|---|---|---|
| 1/2” | 60 | 60 | 100612LF-1/2” | 2.99 | 1.50 | 1.36 |
| 3/4” | 48 | 48 | 100612LF-3/4” | 3.56 | 1.67 | 1.65 |
| 1” | 36 | 36 | 100612LF-1” | 3.94 | 1.93 | 1.93 |
| 1 1/4” | 24 | 24 | 100612LF-1-1/4” | 4.09 | 1.95 | 2.40 |
| 1 1/2” | 16 | 16 | 100612LF-1-1/2” | 4.96 | 1.95 | 2.87 |
| 2” | 8 | 8 | 100612LF-2” | 5.57 | 2.38 | 3.44 |






## Series 100622 LF

Unibody check valve, high flow rate, lead free brass.

HEALTH EFFECTS US-CA NSF 372 NSF 61

| SIZE | BOX | MASTER BOX | PART NO. | L | Z | ØH |
|---|---|---|---|---|---|---|
| 1/2” | 100 | 100 | 100622LF-1/2” | 2.22 | 0.81 | 0.96 |
| 3/4” | 60 | 60 | 100622LF-3/4” | 2.87 | 1.06 | 1.24 |
| 1” | 50 | 50 | 100622LF-1” | 3.17 | 1.28 | 1.50 |
| 1 1/4” | 25 | 25 | 100622LF-1-1/4” | 3.64 | 1.59 | - |
| 1 1/2” | 16 | 16 | 100622LF-1-1/2” | 4.43 | 1.59 | - |
| 2” | 8 | 8 | 100622LF-2” | 5.35 | 2.20 | - |

## 2. PRODUCT INSTRUCTIONS

The steps involved in making a leak-proof press connection are simple and intuitive, but they should never be underestimated. Following each of the steps below does not imply any time-consuming expenditure and ensures a long-term durability of the fitting.

### 2.1 Pipe selection

BONOMI PRESS may only be pressed onto copper tube in accordance with ASTM B88, types K, L and M may be used; soft copper are limited to nominal sizes from 1/2" to 1 1/4", hard copper may be used with nominal sizes from 1/2" to 4".

| ASTM B88 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | External diameter | | Diameter tolerance | | | | Thickness | | | | | |
| | | | Annealed | | Drawn | | K | | L | | M | |
| | Inches | mm | Inches | mm | Inches | mm | Inches | mm | Inches | mm | Inches | mm |
| 1/2" | 0.625 | 15.875 | 0.0025 | 0.0635 | 0.001 | 0.0254 | 0.049 | 1.2446 | 0.040 | 1.016 | 0.028 | 0.711 |
| 3/4" | 0.875 | 22.225 | 0.003 | 0.0762 | 0.001 | 0.0254 | 0.065 | 1.651 | 0.045 | 1.143 | 0.032 | 0.813 |
| 1" | 1.125 | 28.575 | 0.0035 | 0.0889 | 0.001 | 0.0381 | 0.065 | 1.651 | 0.050 | 1.270 | 0.035 | 0.889 |
| 1 1/4" | 1.375 | 34.925 | 0.004 | 0.1016 | 0.0015 | 0.0381 | 0.065 | 1.651 | 0.055 | 1.397 | 0.042 | 1.066 |
| 1 1/2" | 1.625 | 41.275 | 0.0045 | 0.1143 | 0.0015 | 0.0508 | 0.072 | 1.829 | 0.060 | 1.524 | 0.049 | 1.245 |
| 2" | 2.125 | 53.975 | 0.005 | 0.127 | 0.002 | 0.0508 | 0.083 | 2.108 | 0.070 | 1.778 | 0.058 | 1.474 |
| 2 1/2" | 2.625 | 66.675 | 0.005 | 0.127 | 0.002 | 0.0508 | 0.095 | 2.413 | 0.080 | 2.032 | 0.065 | 1.651 |
| 3" | 3.125 | 79.375 | 0.005 | 0.127 | 0.002 | 0.0508 | 0.109 | 2.769 | 0.090 | 2.286 | 0.072 | 1.829 |
| 4" | 4.125 | 104.775 | 0.005 | 0.127 | 0.002 | 0.0508 | 0.134 | 3.404 | 0.110 | 2.279 | 0.095 | 2.413 |

### 2.2 Pressing tool selection

BONOMI PRESS press fittings must be joined with an electro-hydraulic or electro-mechanical machine with electric or battery power supply using a press jaw with V-shaped profile. The choice of the tool is the responsibility of the installer, according to the instructions in this document; in any case, refer to the manufacturer's instructions for the correct use of the tools, the regular maintenance to be carried out and the authorized service centers.
The list of approved tools, declared as suitable for combination with BONOMI PRESS fittings, has been prepared as a result of internal compatibility tests of the tools according to the best performance and quality, following the instructions for use of the jaws, actuators and pressing tools.
This list of compatible tools is available and can be requested by contacting Bonomi North America technical staff.

In any case the following best practices apply as a requirement of all approvals.

• Jaws require cleaning to remove copper buildup or chips. Typically, cleaning is performed dry with an abrasive pad; however, specific jaw cleaning instructions are included in the jaw manufacturers operating instructions. Jaw cleaning intervals will vary by size, material, and engineering design. Moreover, jaws may require periodic inspections and or re-calibration; check the jaw manufacturers operating instructions for details.

• Pressing tools (sometimes called press tools or guns) require periodic inspection and re-calibration. Specific recommendations vary by manufacturer and model number; consult the operating instructions provided with the pressing tool.

• Jaw cleanliness, jaw inspection/re-calibration (if required) and periodic pressing tool re-calibration/inspection are the responsibility of the installer. Failure to maintain the pressing tool, jaw or actuator may void the manufacturer's warranty.

## 2.3 Other required tools

To complete a press connection the following tools are required:
• Pipe cutter or a fine-toothed hacksaw.
• Deburring tool (internal and external side).

## 2.4 Handling and storage

### Transport

• Do not pull or drag the fittings or system components along other surfaces.
• Secure fittings, tubing, and system components during transportation to keep them from shifting.
• Don't remove the fittings from the package until immediately before installing.

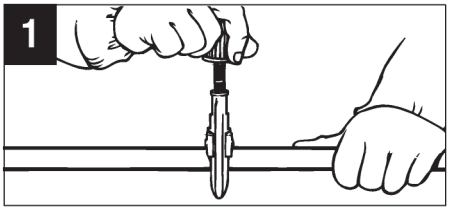
### Storage

• Store fittings and system components in a clean and dry place.
• Do not store components directly on the floor.
• Where possible, store different sizes separately (store small sizes on top of larger sizes if separate storage is not possible).
• Store fittings and system components of different materials separately to prevent contact corrosion.
• Do not store components unpacked and/or exposed to direct sunlight.

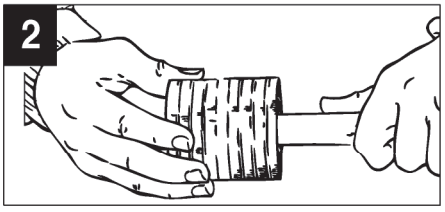
## 2.5 Installation procedure

**Preliminary checks:** system components can, in some cases, be damaged by transport and/or storage. It is therefore advisable to check the condition of all components (fittings, pipes, tools) beforehand, taking care to use undamaged elements and not to carry out repairs yourself.

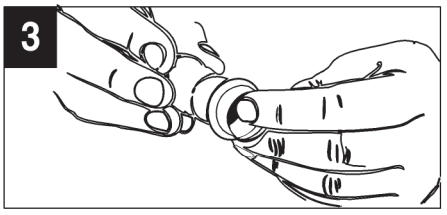
## Dimensions 1/2”- 2”



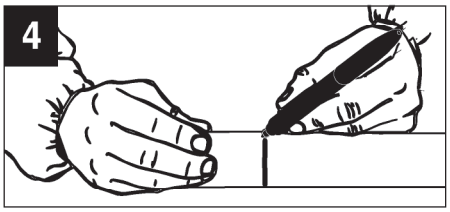

1. The copper pipes must be cut by using a pipe cutting tool, the effectiveness of which has previously been verified and declared by the producer. The pipe must be cut using a pipe cutter or a fine-toothed saw and must be perpendicular to the axis of the pipe.



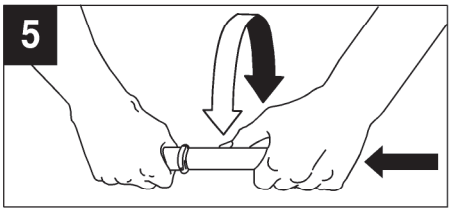

2. Once the pipe has been cut, it is always necessary to carefully deburr its internal and external extremities. This operation is absolutely essential whenever the adopted cutting system can create burrs; for example, with manual and electric saws. The removal of any residual chips prevents the possible damage of the O-ring gasket once the pipe is introduced into the fitting.



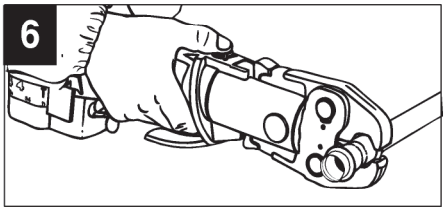

3. Before proceeding, it is necessary to check the correct O-ring position, its integrity and cleanliness, and, at the same time, check also if the internal seat of the fitting is free of residues that could hinder the proper functioning of the gasket.




4. To be absolutely sure of the correct depth of the connection of the pipe inside the fitting, it is sufficient to mark the depth of the connection beforehand. As indicated by the tube insertion depth chart.




5. Insert the tube by applying a slight rotation. To make easier the insertion of the pipe, water can be applied to the internal seat of the gasket (avoid using lubricants that can damage it).

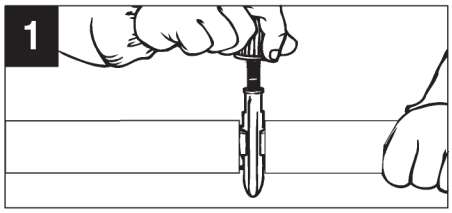



6. To perform a proper pressing, the appropriate equipment must be used; put the fitting inside the jaw and keep the tool positioned at right angles to the pipe.

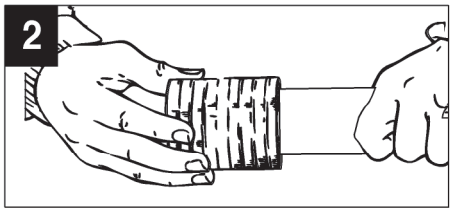
| | | 1/2” | 3/4” | 1” | 1 1/4” | 1 1/2” | 2” |
|---|---|---|---|---|---|---|---|
| Insertion* | Inches | 3/4” | 15/16” | 15/16” | 1 1/16” | 1 7/16” | 1 9/16” |
| | mm | 18 | 23 | 24 | 26 | 36 | 40 |

* Tube insertion depth chart.

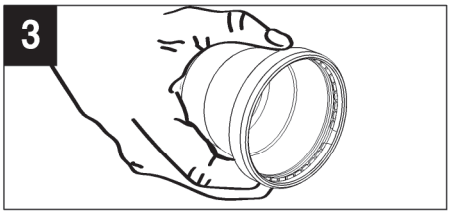
## Dimensions 2 1/2”- 4”



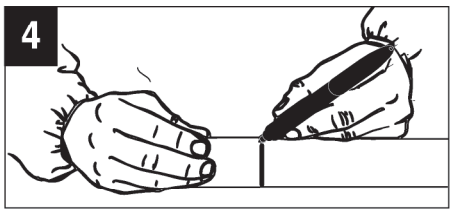

1. The copper pipes must be cut by using a pipe cutting tool, the effectiveness of which has previously been verified and declared by the producer. The pipe must be cut using a pipe cutter or a fine-toothed saw and must be perpendicular to the axis of the pipe.



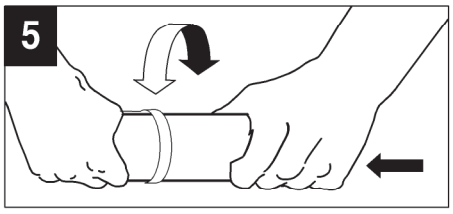

2. Once the pipe has been cut, it is always necessary to carefully deburr its internal and external extremities. This operation is absolutely essential whenever the adopted cutting system can create burrs; for example, with manual and electric saws. The removal of any residual chips prevents the possible damage of the O-ring gasket once the pipe is introduced into the fitting.



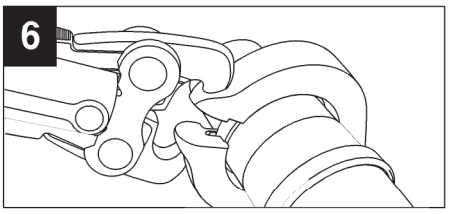

3. Before proceeding, it is necessary to check the correct position of O-ring and other internal components, their integrity and cleanliness, and at the same time check also if the internal seat of the fitting is free of residues that could hinder the right functioning of the gasket.




4. To be absolutely sure of the correct depth of the connection of the pipe inside the fitting, it is sufficient to mark the depth of the connection beforehand. As indicated by the tube insertion depth chart.




5. Insert the tube by applying a slight rotation. To make easier the insertion of the pipe, water can be applied to the internal seat of the gasket (avoid using lubricants that can damage it).




6. To perform a proper pressing, the appropriate equipment must be used; place the fitting in the inner seat of the pressing chain and keep the tool positioned at right angles to the pipe.

| | | 2 1/2” | 3” | 4” |
|---|---|---|---|---|
| Insertion* | Inches | 1 3/4" | 2" | 2 1/2” |
| | mm | 44 | 50 | 61 |

* Tube insertion depth chart.

**Pressure testing once:** the installation has been completed, it is necessary to pressurize the system in accordance with the local regulations and in compliance with the maximum performances indicated for the BONOMI PRESS system.If no local regulations currently exist for system pressure testing, please follow the procedures described below; in any case it's always recommended to not cover or insulate any fitting before testing.

**Water leak testing:**

- The water pressure test should be done immediately before the start-up phase, at least 7 days before using potable water.
- Fill the system and, at the same time, vent it from appropriate points.
- Pressurize slowly up to 50 psi and stabilize for at least 2 hours.
- During the pressure test, check for visible pressure leaks.
- Once the system has been confirmed to be leak free, water pressure can be increased to the working pressure to verify the system is working properly (always remember not to exceed the maximum working pressure of the product - see par. 1.6.1).

**Air leak testing**:
•The test must be conducted using dry, oil free compressed air or nitrogen.
• Pressurize slowly up to 15 psi and stabilize for at least 2 hours.
• Check that the pressure does not change during testing (e.g. due to temperature variation).
• During the pressure test, check for visible pressure leaks.
• Once the system has been confirmed to be leak free, pressure can be increased to the working pressure to verify is working properly (always remember not to exceed the maximum working pressure of the product - see par. 1.6.1).

Please have in mind that all BONOMI PRESS fittings are equipped with a device which allows the user to immediately identify any unpressurized joints; the device works both when testing with water (in the range between 15 and 85 psi) and when using air (between 1/2 and 45 psi).

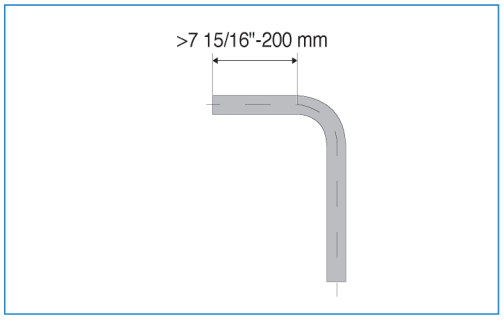
Disposal: separate the product and packaging materials (e.g. paper, metal, plastic, non-ferrous metals) and dispose in accordance with all national, state and regional requirements.

## 2.6 General installation requirements

For a successful installation, it is also necessary and advisable to evaluate some collateral aspects that may affect the quality of the work.

### 2.6.1 Pipe bending

The range of BONOMI PRESS includes 45° and 90° bends and elbows that allow changes to be made in the route without the need to bend the pipe directly. However, sometimes, the cold shaping of the pipes is necessary. To carry out this type of operation, please give priority to the information placed in the user instruction given by the pipe supplier. In any case it is always necessary to respect a minimum distance from the bend made on the pipe to the installation of fittings (see picture below).




### 2.6.2 Pipe hangers and support

Tubing supports perform two functions, to provide support for the tubing and to guide the tube during thermal expansion and contraction. Fittings must not be used as support.
Industry standard practices and guidelines shall be used for tube layout and support. BONOMI PRESS requires no special consideration for support.
Hangers and supports must conform to the local code requirements. In the absence of local code requirements, hangers and supports should conform to ANSI/MSS SP 58 (pipe hangers and supports-materials, design, manufacture, selection, application and Installation).
As a general rule, for BONOMI PRESS systems use copper collars or, if steel, use those with rubber seals: this type of support allows the acoustic isolation and dampening of any rustling and vibration, and it also prevent undesirable corrosive elements due to contact between different metals.

Some relevant additional tricks about hangers:
• Never place a fixed hangers near a fitting (Fig. 1).
• The sliding hangers are not positioned to ensure that they behave as if they were fixed points (Fig. 2).
• When there are sections of straight pipe without expansion compensators, only one fixed point can be installed in order to prevent possible deformations. All the remaining points must be sliding points. It is a good practice to position this point in the intermediate position with respect to the length of the straight section (Fig. 3) as much as possible; by doing this, the elongation due to expansion in the two directions is shared, thus halving the length of the necessary expansion arm.

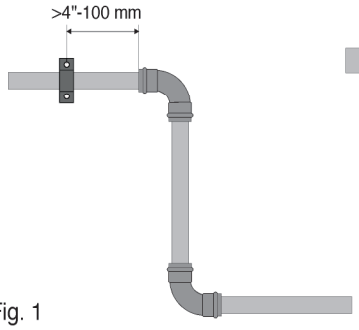


Fig. 1

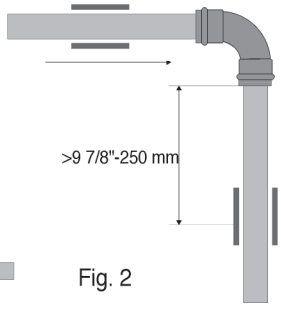


Fig. 2

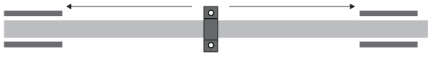
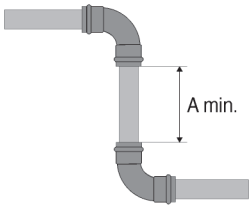


Fig. 3

## 2.6.3 Distance and maneuvering space

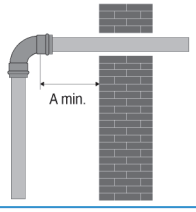
Before preparing the installation, it is advisable to consult the technical information provided by the manufacturers of press tools in order to check beforehand the minimum distances that can be achieved between two different press ends and the distances that can be applied between press ends and surrounding obstacles (walls, floors, other pipes).

The following are the maneuvering distances and the minimum distances that can be considered as a general indication, obtained from experimental laboratory tests using tools available among those approved. **It is in any case necessary to refer to the indications of the selected tool supplier**.



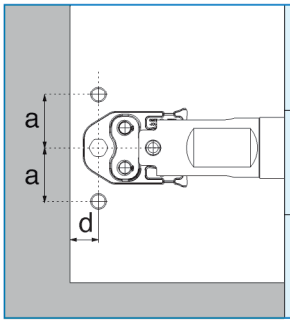

| SIZE | | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | 2 1/2" | 3" | 4" |
|---|---|---|---|---|---|---|---|---|---|---|
| A | Inches | 5/8" | 5/8" | 13/16" | 1" | 1 1/4" | 1 7/16" | 5/8" | 5/8" | 5/8" |
| | mm | 15 | 20 | 20 | 25 | 30 | 35 | 15 | 15 | 15 |

Tab. 1 - Minimum distance between two pressed fittings.



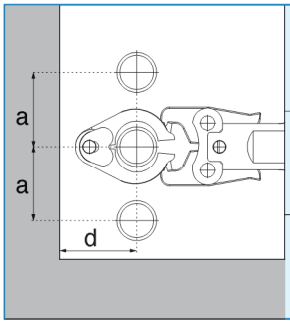

| SIZE | | 1/2"-4" |
|---|---|---|
| A | Inches | 2" |
| | mm | 50 |

Tab. 2 - Minimum distance from the fitting to the wall for pass-through installations.



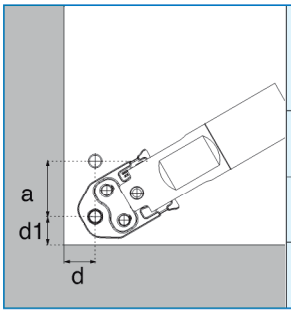

| SIZE | | 1/2” | 3/4” | 1” | 1 1/4” | 1 1/2” | 2” |
|---|---|---|---|---|---|---|---|
| d | Inches | 15/16" | 1” | 1” | 1 1/4" | 3” | 3 7/16" |
| | mm | 22 | 25 | 25 | 30 | 75 | 85 |
| a | Inches | 2 7/16" | 2 5/8" | 3” | 3 5/16" | 4 1/2" | 4 3/4" |
| | mm | 60 | 65 | 75 | 83 | 115 | 120 |

Tab. 3 - Minimum depths of the pipelines installed in-wall.



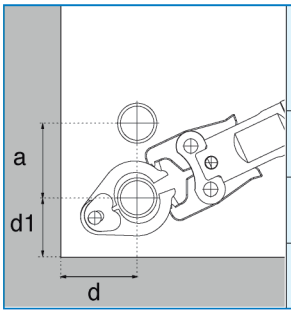

| SIZE | | 2 1/2” | 3” | 4” |
|---|---|---|---|---|
| d | Inches | 4 3/8" | 4 3/4" | 5 1/2" |
| | mm | 110 | 120 | 140 |
| a | Inches | 5 1/2" | 5 15/16" | 6 3/4" |
| | mm | 140 | 150 | 170 |

Tab. 3 - Minimum depths of the pipelines installed in-wall.




| SIZE | | 1/2” | 3/4” | 1” | 1 1/4” | 1 1/2” | 2” |
|---|---|---|---|---|---|---|---|
| d | Inches | 1/2” | 1/2” | 1/2” | 1/2” | 3” | 3 7/16" |
| | mm | 31 | 31 | 31 | 31 | 75 | 85 |
| a | Inches | 3 1/4" | 3 1/4" | 3 1/4" | 3 7/16" | 3” | 3 7/16" |
| | mm | 80 | 80 | 80 | 84 | 75 | 85 |
| d1 | Inches | 1 1/8" | 1 7/16" | 1 7/16" | 1 3/4" | 4 1/2" | 4 3/4" |
| | mm | 28 | 35 | 35 | 44 | 115 | 120 |

Tab. 4 - Minimum depths of pipelines installed near corners.




| SIZE | | 2 1/2” | 3” | 4” |
|---|---|---|---|---|
| d | Inches | 4 5/16 | 4 3/4" | 5 1/2" |
| | mm | 110 | 120 | 140 |
| a | Inches | 4 5/16" | 4 3/4" | 5 1/2" |
| | mm | 110 | 120 | 140 |
| d1 | Inches | 5 1/2" | 5 15/16 | 6 3/4" |
| | mm | 140 | 150 | 170 |

Tab. 4 - Minimum depths of pipelines installed near corners.

### 2.6.4 Distance between soldering/brazing from press end

Please take care to respect a minimum clearance requirement when pressing connections near an existing brazed connection; to ensure proper sealing of both the soldered and press connections, a minimum distance when pressing connections near an existing soldered fitting must be maintained:

| SIZE | Soldering minimum distance (inches) | Soldering minimum distance (mm) | Brazing minimum distance (inches) | Brazing minimum distance (mm) |
|---|---|---|---|---|
| 1/2” | 1/4" | 7 | 1” | 26 |
| 3/4” | 1/4" | 7 | 1 1/2" | 38 |
| 1” | 1/2" | 11 | 2” | 51 |
| 1 1/4” | 1/2" | 11 | 2 1/2" | 64 |
| 1 1/2” | 11/16" | 16 | 3” | 76 |
| 2” | 3/4" | 19 | 4” | 102 |
| 2 1/2” | 1/4" | 7 | 5” | 127 |
| 3” | 1/4" | 7 | 6” | 153 |
| 4” | 1/4" | 7 | 8” | 204 |

The same care should be considered to prevent damage to the sealing element and ensure proper sealing of the soldered/brazed joint and the press connection, maintaining proper soldering/brazing distances from the fitting:

| SIZE | Soldering minimum distance (inches) | Soldering minimum distance (mm) | Brazing minimum distance (inches) | Brazing minimum distance (mm) |
|---|---|---|---|---|
| 1/2” | 1 1/2" | 38 | 4 1/2" | 114 |
| 3/4” | 2 1/4" | 57 | 6 3/4" | 172 |
| 1” | 3” | 76 | 9 | 229 |
| 1 1/4” | 3 3/4" | 95 | 11 1/4" | 286 |
| 1 1/2” | 4 1/2" | 114 | 13 1/2" | 343 |
| 2” | 6” | 153 | 18 | 457 |
| 2 1/2” | 7 1/2" | 191 | 22 1/2" | 572 |
| 3” | 9” | 229 | 27” | 686 |
| 4” | 12” | 305 | 36” | 915 |

The installer should take precautions to keep the fitting cool:
- Wrap the connection with a cold wet rag.
- Protect the connection with a weld blanket.
- Prefabricate solder connections/welded fittings prior to installing the press fitting. (Ensure tube has cooled before installing the fitting).

### 2.7 Maintenance

To avoid personal injury to yourself, fellow workers or damage to property from release of process fluids, before performing any maintenance:
a. Shut off all operating lines.
b. Isolate the fitting completely from the process.
c. Release process pressure.
d. Drain the process fluid.
Under normal conditions, scheduled maintenance should not be required.

Press fittings are not designed for rebuilding, nor is it economical to do so. If over time the fitting leaks, complete replacement is recommended.
Press fittings, if properly used, do not require regular maintenance. However, a visual inspection should be part of a regular maintenance program. A higher frequency of inspection is recommended for fittings operating under extreme conditions.

# 3. TECHNICAL INFORMATION

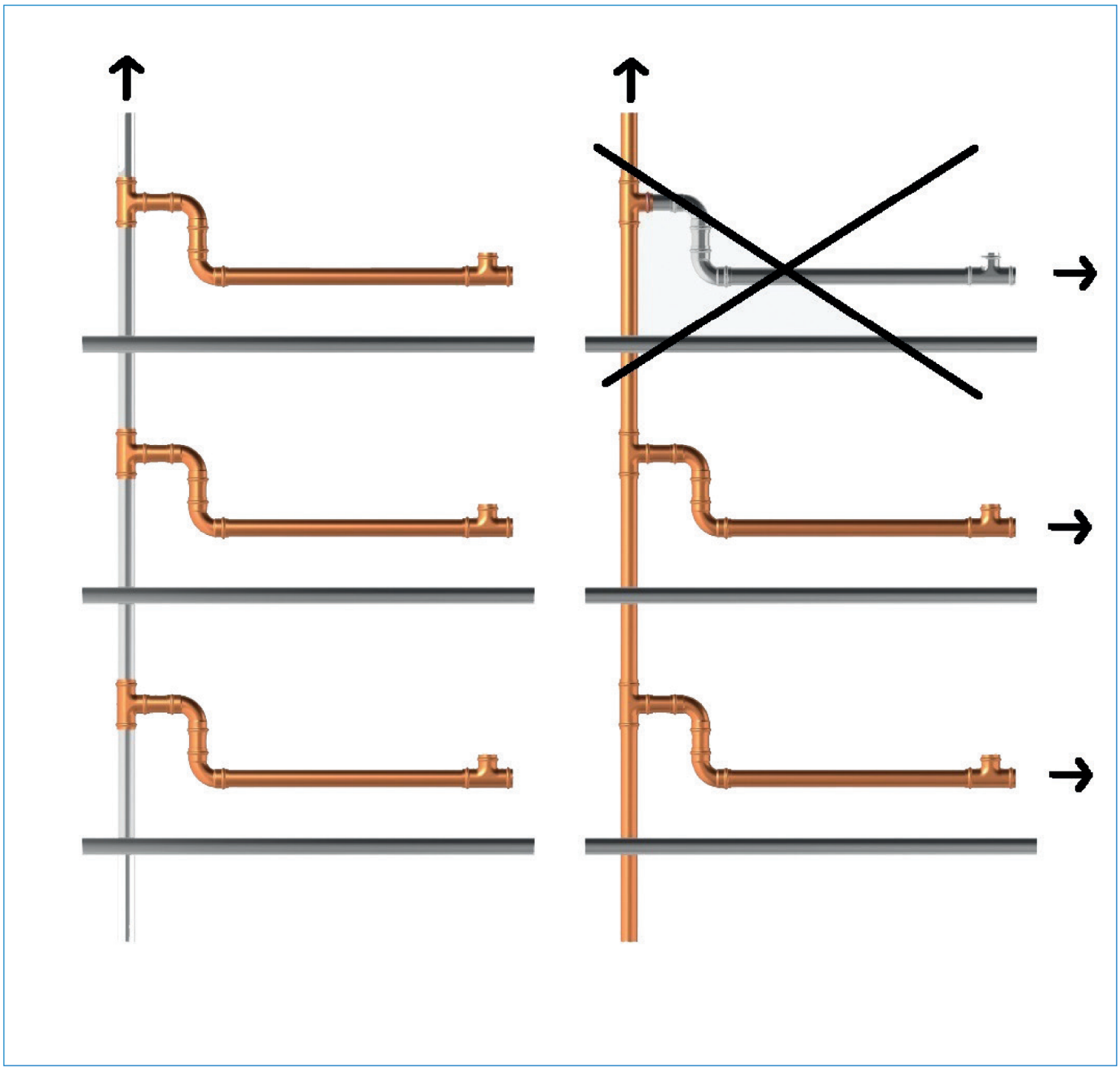
## 3.1 Freeze and anti-freezing

It is known that freezing water increases in volume. This can cause breakage of tanks and deformations in the sections of the system where the increase in the volume of the water is hindered.
When using BONOMI PRESS in systems that can be found at temperatures close to 32°F with the consequent formation of ice, the drainage of the system is recommended, and in case of a pressure test during the cold period, the use of compressed air or inert gas.
The strong stresses that any frost could give to the pipeline could also negatively affect the seal of the fitting, reducing performance and causing undesired leaks. In many cases, the use of antifreeze systems that are designed to ensure circulation within the system even at low temperatures is recommended.
In case of the use of anti-corrosion or antifreeze additives, it is recommended to consult the Bonomi North America technical department to verify their suitability. The chemical composition of the additive could damage the sealing gasket over time, compromising durability and reliability.

## 3.2 Corrosion protection

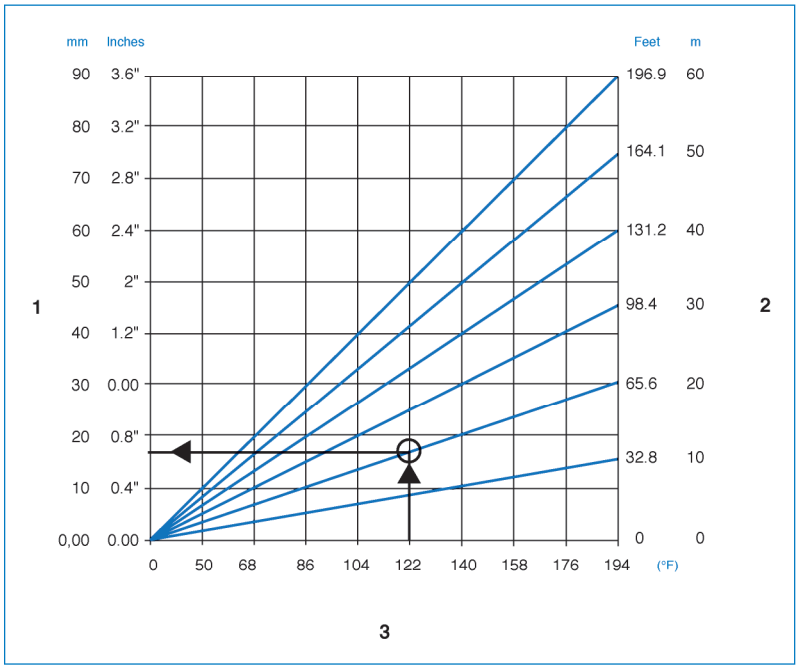
BONOMI PRESS fittings can also be installed under the floor, however, some caution should be taken when installing in the following environments:
• Contact with materials containing ammonium or nitrite, such as construction materials.
• Environments with aggressive substances suspended in air.
It is always necessary to contact the appropriate authorities prior to installation to verify that the installation criteria defined by state and local codes have been met.
Also in the case of underground installations (i.e. in contact with soil or a particularly humid environment) PurePro Press fittings may be subject to corrosion, and therefore reference according to NACE RP0169-2002 or any local codes.
Finally, do not underestimate the effects of excessive fluid velocity within the piping, which typically represents the primary cause of erosion corrosion.

Please keep in mind that in water installations mixed metal systems can have a detrimental effect on each other and cause corrosion. Usually, copper tubing should not be installed directly upstream from galvanized steel pipe; dielectric unions should be used when connecting copper to steel or galvanized steel pipe. The flow rule must be observed in all mixed installations with tubing made of copper and pipes made of galvanized steel.



## 3.3 Thermal expansion

As for all the types of pipes constituting a distribution network, even with BONOMI PRESS fittings, the elongations or contractions due to thermal expansions as a result of the increase or decrease of temperature of the conveyed fluid must be evaluated.
To compensate for these effects, the necessary space for the expansions, the proper placement of fixed or sliding support points and the realization of any line compensators must therefore be provided for.
The table below gives an overview about the thermal expansion of a copper system, considering several thermal changes (ΔT) and different lengths:




1: Length expansion ΔI (inches/mm))
2: Pipe length (ft)
3: Temperature difference (°F)

It is advisable to refer to a specialist to select the best option technically for the specific installation, which will take into account the available space, the installation context, the thermal expansion to be compensated for and the available resources.

## 3.4 Pressure drops

When sizing the system, it is important to take into account the pressure losses generated by the fluid passing through the pipe (continuous or distributed losses) and the connections (localized or accidental losses).
The correct sizing of the distribution network, which ensures that the system operates in accordance with the customer's requirements, depends primarily on the correct quantification of the pressure losses.

For this purpose, it is essential to have information on friction losses, which can be obtained from the manufacturer of the pipe used, and the losses resulting from the crossing of fittings along the distribution system.

**Equivalent method**: this is a calculation method that solves the calculation problem as a function of a particular local resistance and gives the equivalent length of a straight piece of tube with the same diameter that would have the same pressure drop. In order to use this method of calculation all length-equivalent values for each fitting type in the table are to be added to the actual length of the supply network. This method is not as accurate as the direct analytical method but has the advantage that the calculation can be carried out faster.

| Equivalent lenghts for wrought copper fittings | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size | 90° elbow | | 45° elbow | | Tee branch | | Tee run | | Coupling | |
| | Ft. | m | Ft. | m | Ft. | m | Ft. | m | Ft. | m |
| 1/2” | 1' | 0.30 | 1/2' | 0.15 | 2' | 0.60 | - | - | - | - |
| 3/4” | 2' | 0.60 | 1/2' | 0.15 | 3' | 0.90 | - | - | - | - |
| 1” | 2 1/2' | 0.75 | 1' | 0.30 | 4 1/2' | 1.35 | - | - | - | - |
| 1 1/4” | 3' | 0.90 | 1' | 0.30 | 5 1/2' | 1.65 | 1/2' | 0.15 | 1/2' | 0.15 |
| 1 1/2” | 4' | 1.20 | 1 1/2" | 0.45 | 7' | 2.15 | 1/2' | 0.15 | 1/2' | 0.15 |
| 2” | 2 1/2' | 1.65 | 2' | 0.60 | 9' | 2.75 | 1/2' | 0.15 | 1/2' | 0.15 |
| 2 1/2” | 7' | 2.15 | 2 1/2" | 0.75 | 12' | 3.65 | 1/2' | 0.15 | 1/2' | 0.15 |
| 3” | 9' | 2.75 | 3 1/2' | 1.00 | 15' | 4.50 | 1' | 0.30 | 1' | 0.30 |
| 4” | 12 1/2' | 3.75 | 5' | 1.50 | 21' | 6.40 | 1' | 0.30 | 1' | 0.30 |

Tab.5 - Values are purely indicative and may be subject to change due to production requirements.

| Equivalent lenghts for cast copper alloy fittings | | | | | | |
|---|---|---|---|---|---|---|
| Size | 90° elbow | | Tee run | | Tee branch | |
| | Ft. | m | Ft. | m | Ft. | m |
| 1/2” | 1' | 0.30 | 1/2' | 0.15 | 2' | 0.60 |
| 3/4” | 2' | 0.60 | 1/2' | 0.15 | 3' | 0.90 |
| 1” | 4' | 1.20 | 1/2' | 0.15 | 5' | 1.50 |
| 1 1/4” | 5' | 1.50 | 1' | 0.30 | 7' | 2.15 |
| 1 1/2” | 8' | 2.50 | 1' | 0.30 | 9' | 2.75 |
| 2” | 11' | 3.35 | 2' | 0.60 | 12' | 3.65 |

Tab.6 - Values are purely indicative and may be subject to change due to production requirements.

## 3.5 Electrical bonding

PurePro Press fittings, when properly installed, comply with section 1211.15 (Electrical Connection and Grounding of the Uniform Plumbing Code). It is necessary to keep in mind that the pressing tool creates a metallic continuity between the fitting and the pipe.

## 3.6 Pressure surges

It is advisable to check in advance for pressure surges caused, for example, by the operation of quick-opening/closing valves or other sources that can cause water hammer damaging to the system. Designers and installers should take measures to absorb such surges without causing damage to network components.

# WARRANTY, LIMITATIONS OF LIABILITY, RETURNS

Bonomi North America, Inc. warrants that its products shipped to its initial purchaser will be free of all defects in material and workmanship for a period of one year from the date of delivery.

Should any failure to conform to this warranty appear before the one year delivery period, and the product[s] are stored, installed, and maintained in accordance with the published Bonomi North America literature recommendations and standard industry practice, Bonomi North America, Inc. will repair or replace the product at its own expense.

The correction of non-conformities in the time period mentioned above shall constitute fulfillment of all Bonomi North America, Inc. liabilities to its initial purchaser.
Bonomi North America, Inc. shall not be liable for consequential damages to loss of other equipment or property, loss profits or revenue, except the price of the Bonomi North America goods to which this liability is referred.

The customer is expected to check the received goods upon arrival at its premises. Any evident damage to the product or severe damage to its packaging that could affect the functionality of the received item should be reported immediately and no later than 10 days after delivery, preferably with pictures, to sales@bonominorthamerica.com. This includes reporting any incorrect product and/or incorrect quantities.

The customer must obtain an RMA (return of materials authorization) from the Inside Sales Department prior to returning any items. The request for RMA should include part number, quantity, and customer's purchase order or invoice number with which the product was originally shipped.

The purchase of interim replacement item(s) does not relieve the customer of financial responsibility of the returned items. All returned items will be inspected, tested, and evaluated. The results of this process will always dictate the follow-up action. All returns must come from the initial purchaser and should not ship directly from the contractor or end-user to Bonomi North America.

If a returned product is confirmed defective, with the above mentioned warranty conditions, Bonomi North America, Inc. has a first duty of repairing the product, if possible. Should a repair not be possible then the next option should be a replacement or a credit.

No credit will be issued for returned products that have been clearly misused, installed incorrectly, manipulated, modified, damaged at the customer's premises or during the return shipment. However, if the product can be properly repaired at a reasonable cost, Bonomi North America, Inc. will offer the repair option to the customer.

If the purpose of the RMA is to return items ordered in error or items that were not able to be utilized, then these returns will be subject to a restock fee. The standard restock fee for manually operated valves and fittings is 20% while automated packages and items requiring partial/full disassembly and testing when returning will be subject to a 30% restocking fee.

These items must return in new/unused and in resellable condition in order to qualify for credit. Preventing damage to returning merchandise during the shipping process will be the sole responsibility of the customer. It is recommended that new packing materials be used when returning goods as the packing materials used to ship from our business is intended for single use only.

If the returning merchandise comprises all or the majority of the cost of the original PO under which it was ordered and where there was free freight granted, then Bonomi North America, Inc. may ask to recoup some or all of the original freight cost, deducting this amount from the final credit.

Likewise, if the returning merchandise comprises all of a PO that originally shipped via a prepay-and-add method then Bonomi North America, Inc. will deduct this freight amount from the final credit, should the invoice be open at the time of crediting.

Even in the above mentioned cases, the return of non-defective customized products such as assembled packages of valves and actuators and/or of orders supplied more than 2 months before and/or exceeding the value of $1,500, will be at the discretion of Bonomi North America and, if accepted, may result in significantly higher restocking fees, depending on the amount of labor involved in disassembling, refurbishing, testing, and restocking the individual components.

BONOMI

NORTH AMERICA

**BONOMI NORTH AMERICA, Inc.**
**306 Forsyth Hall Drive - Charlotte, NC 28273 - U.S.A.**
**Phone 704-412-9031 - Fax 704-412-9032**
**www.bonominorthamerica.com**
**sales@bonominorthamerica.com**

CAT245103