COPPER PRESS SYSTEM

TECHNICAL INFORMATION

TABLE OF CONTENTS

FEATURES

- 1/2"–2" including couplings, elbows, tees, adapters, reducers, caps and unions
- Leak-detection features identify un-crimped connections.
- Compatible with most common pressing tools and jaws on the market
- EPDM (ethylene propylene diene monomer) seals are factory-installed and pre-lubricated.

APPROVED APPLICATIONS

- Potable water
- Heating/cooling (up to 50% ethylene or propylene glycol as additive)
- Rain water/gray water
- Non-potable and treated water
- Compressed air (200 psi max)
- Non-medical gases (125–200 psi max depending on application)
- Low-pressure steam (15 psi/250°F max)
- Vacuum (29.2" mercury max @ 140°F)

SYSTEM SPECIFICATIONS

- Operating pressure: 300 psi max
- Temperature range: 32°F–250°F (potable water), 0°F–250°F (hydronic systems)
- Suitable for ASTM B88 types K, L and M. Hard-drawn copper tube nominal 1/2"–2" and soft copper tube limited to nominal sizes 1/2–1-1/4"

APPROVALS AND CERTIFICATIONS

- NSF/ANSI/CAN 61-2022, Drinking Water Systems Components – Health Effects
- NSF/ANSI/CAN 372-2020, Drinking Water System Components – Lead Content
- ICC-ES LC1002-2013, Press-Connection Fittings for Potable Water Tube and Radiant Heating Systems
- IAPMO/ANSI/CAN Z1117-2022, Press Connection
- Uniform Plumbing Code® (UPC)
- International Plumbing Code® (IPC)
- International Residential Code® (IRC)
- National Plumbing Code of Canada

PROFLO WARRANTY: 50-year limited warranty against defects in material and workmanship.

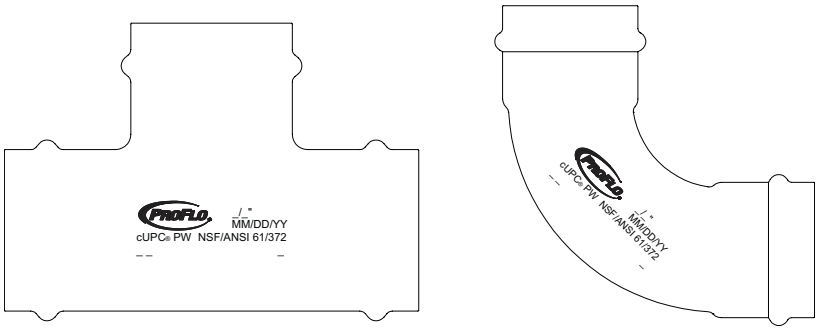
2.1 MATERIALS

- PROFLO Press Fittings without threaded ends are made with high quality copper (C12200), which is the most widely used copper for tube and fittings in plumbing applications.
- PROFLO Press Fittings with threaded ends are made from a lead-free brass which meets the strict lead requirements of the U.S. market for potable water and provides good dezincification resistance.
- PROFLO Press Fittings featuring press sides utilize a high quality, factory installed black EPDM sealing element. EPDM seals can be used in a temperature range of 0 F to +250°F.

2.2 MARKINGS AND TRACEABILITY

Each PROFLO Copper Press Fitting is marked with the following:

- PROFLO
- Fitting size
- Manufacturing date
- cUPC
- PW (potable water)
- NSF/ANSI 61/372
- Country of origin



2.3 APPROVALS AND CERTIFICATIONS

- NSF/ANSI/CAN 61-2022, Drinking Water Systems Components – Health Effects
- NSF/ANSI/CAN 372-2020, Drinking Water System Components – Lead Content
- ICC-ES LC1002-2013, Press-Connection Fittings for Potable Water Tube and Radiant Heating Systems
- IAPMO/ANSI/CAN Z1117-2022, Press Connections
- Uniform Plumbing Code® (UPC)
- International Plumbing Code® (IPC)
- International Residential Code® (IRC)
- National Plumbing Code of Canada

2.4 LEAK DETECTION

Each PROFLO Copper Press press-style joint utilizes a specially designed O-ring with leak paths that only seal with a properly executed press. Any leaks due to unpressed or incorrectly pressed joints can easily be found by pressurizing the system after installation with air or water.

2.5 LEAK TESTING UNDER PRESSURE

After installation, leak testing should be completed to verify that all joints are properly pressed. Below are general procedures to perform leak testing under pressure. Do not cover or insulate any fitting before testing, do not overpressurize the system and always follow all applicable state and local regulations.

Water leak testing:

1. The water pressure test should be done immediately before the start-up phase, at least 7 days before using potable water.
2. Fill the isolated system using clean potable water and slowly pressurize to 50 psi. Appropriate industry-standard venting should be used as required.
3. Stabilize the system for a minimum of 2 hours and monitor with an appropriate pressure gauge.
4. During the pressure test, check for visible water leaks and loss of pressure on the gauge which can indicate potential leaks.
5. After any un-pressed connection has been tested and repaired, repeat the testing process until all joints are verified to be leak free.
6. Once the system has been confirmed to be leak free, water pressure can be increased to the appropriate working pressure to verify the system is working properly (always remember not to exceed the maximum working pressure of the product stated in the technical documentation).

Air leak testing:

1. The air pressure leak test must be conducted using clean, dry, oil free, compressed air or nitrogen.
2. Fill the isolated system and pressurize slowly up to 15 psi. Stabilize for at least 2 hours and monitor with an appropriate pressure gauge.
3. Monitor the pressure during testing to ensure it does not change due to environmental impacts such as temperature variation.
4. During the pressure test, check for visible leaks and any loss of pressure on the gauge which can indicate potential leaks.
5. After any un-pressed connection has been tested and repaired, repeat the testing process until all joints are verified.
6. Once the system has been confirmed to be leak free, 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 stated in the technical documentation).

2.6 APPLICATIONS

PROFLO Copper Press Systems are approved for numerous applications in commercial and residential markets, including potable water. The press fittings meet the requirements of NSF/ANSI/CAN 61 and the lead-free specifications through testing under NSF/ANSI/CAN 372 (0.25% or less maximum weighted average lead content).

PROFLO Copper Press Systems are also suitable for use in many other applications, such as heating and cooling, oil-free compressed air (residual oil < 5 mg/m³, according to ISO 8573-1) and non-potable and treated water.

Fluids/Potable Water

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/gray water	As based on the standard definition of gray water (no oils present)	300	+32/+250
Non-potable and treated water	—	300	+32/+250
Low-pressure steam	Domestic/Residential use only. Not for Industrial use	Up to 15 psi	Max 250
Ethanol	Pure grain alcohol	200	Ambient

Non-Medical Gases

Application	Comments	Max pressure (psi)	Operating temperature (°F)
Compressed air	Oil residual < 25 mg/m3	200	Up to 140
Oxygen-O2	Non medical use/oil free	140	Up to 140
Nitrogen-N2	—	200	Up to 140
Argon	Welding use	200	Up to 140
Hydrogen-H2	—	125	Up to 140
Vacuum	Rough vacuum	29.2 inch. Hg	Up to 160
Carbon dioxide-CO2	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 your PROFLO representative.

3.1 FREEZING AND ANTI-FREEZING

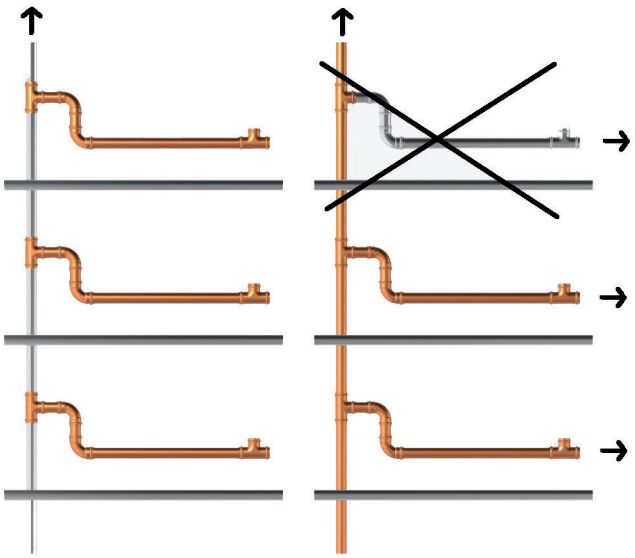
PROFLO Copper Press Fittings may be used in ambient temperatures down to 0°F. However, freezing water increases in volume which can deform pipes, fittings and negatively impact O-ring sealing capabilities. Systems exposed to freezing temperatures must be protected per accepted industry practice and in accordance with state and local code requirements. When using anti-corrosion or antifreeze additives in applicable non-potable water systems, consult your PROFLO representative to verify compatibility with EPDM.

3.2 CORROSION PROTECTION

PROFLO Copper Press Fittings are approved for underground installations as allowed by local or state codes. Systems which are exposed to corrosive action due to moisture or soil conditions must be protected in an approved manner, such as NACE Standard RPO 169-2002, or according to local or state code requirements. Proper sizing of systems is required to minimize the risk of erosion corrosion from excessive velocities.

Water installations containing mixed metal systems are subject to galvanic corrosion. Copper systems should not be installed directly upstream from galvanized pipe, and dielectric unions should be used when connecting copper to steel or galvanized steel pipe. Proper hangar selection is required to ensure compatibility with all pipes. The flow rule should be followed in mixed metal pipe installations as illustrated to the right.

Aboveground usage of fittings does not normally require external corrosion protection unless they will be in contact with aggressive environments, such as building materials containing nitrite or ammonium.



3.3 THERMAL EXPANSION

Thermal expansion and contraction can occur in all installed systems. This induces stress on the pipes and fittings that varies depending upon the specific materials, system fluids, temperature and installation environment. Compensation must be allowed for expansion and contraction that may occur, and expansion joints or mechanical expansion compensators may be used to alleviate these stresses. PROFLO systems do not require any additional protection as compared to a soldered system. The following methods are effective:

- Fixed and sliding hangers
- Expansion equalization joints (expansion bends)
- Expansion compensators

Always follow industry standards and all state or local regulations.

3.4 PRESSURE DROPS

Correct system sizing requires the evaluation of pressure losses due to the movement of fluid through the pipes and fittings. Pressure losses are generated by fluid passing through the pipe (continuous or distributed losses) and any connections (localized or accidental losses).

The below tables can be used in the calculation of pressure losses for PROFLO Copper Press Fittings by using an equivalent length of a straight length tube with the same diameter that would have the same pressure drop. 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. It is the responsibility of the end user to determine if this method meets the specific requirements of the pressure drop calculations needed for the overall system that is being installed.

Equivalent lengths 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	0.5'	0.15	2'	0.60	—	—	—	—
3/4"	2'	0.60	0.5'	0.15	3'	0.90	—	—	—	—
1"	2.5'	0.75	1'	0.30	4.5'	1.35	—	—	—	—
1-1/4"	3'	0.90	1'	0.30	5.5'	1.65	0.5'	0.15	0.5'	0.15
1-1/2"	4'	1.20	1.5'	0.45	7'	2.15	0.5'	0.15	0.5'	0.15
2"	5.5'	1.65	2'	0.60	9'	2.75	0.5'	0.15	0.5'	0.15

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

Equivalent lengths for cast copper alloy fittings

Size	90° elbow		Tee run		Tee branch	
	ft	m	ft	m	ft	m
1/2"	1'	0.30	0.5'	0.15	2'	0.60
3/4"	2'	0.60	0.5'	0.15	3'	0.90
1"	4'	1.20	0.5'	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

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

3.5 PIPE SELECTION

PROFLO Press Systems are suitable for installation with copper tube in accordance to ASTM B88 types K, L and M.
Hard-drawn copper tube nominal 1/2"–2" and soft copper tube limited to nominal sizes 1/2"–1-1/4"
The below table represents general ASTM B88 requirements. Please reference the standard for more details:

ASTM B88

	External diameter		Tolerance				Thickness					
			Annealed		Drawn		K		L		M	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
1/2"	0.625	15.875	0.001	0.025	0.003	0.064	0.049	1.2446	0.040	1.016	0.028	0.711
3/4"	0.875	22.225	0.001	0.025	0.003	0.076	0.065	1.651	0.045	1.143	0.032	0.813
1"	1.125	28.575	0.002	0.038	0.004	0.089	0.065	1.651	0.050	1.270	0.035	0.889
1-1/4"	1.375	34.925	0.002	0.038	0.004	0.102	0.065	1.651	0.055	1.397	0.042	1.066
1-1/2"	1.625	41.275	0.002	0.051	0.005	0.114	0.072	1.829	0.060	1.524	0.049	1.245
2"	2.125	53.975	0.002	0.051	0.005	0.127	0.083	2.108	0.070	1.778	0.058	1.474

3.6 PRESS TOOL SELECTION

PROFLO Press Systems are compatible with most standard electric or battery-powered press tools using jaws specific to a V-shaped profile.

Always refer to the tool manufacturer's manual for selection of tools, jaws, tool operating instructions, tool maintenance and additional technical information.

The following best practices should be applied:

- 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 manufacturer's operating instructions. Jaw-cleaning intervals will vary by size, material and engineering design. Jaws may require periodic inspections and/or re-calibration; check the jaw manufacturer's 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; always 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.

3.7 HANDLING AND STORAGE

Care should be taken with PROFLO Press Fittings, materials and any necessary tools that will be used to ensure they are not damaged during handling, storage or during transportation.

- 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.
- 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.

3.8 PIPE HANGERS AND SUPPORTS

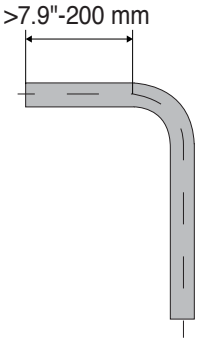
General industry rules of hanging and mounting should be observed:

- Fixed tubing and fittings should not be used as support for other tubing and components.
- Do not use pipe hooks.
- Proper distance between fittings and mounting points should be maintained.
- Observe the expansion direction—plan fixed and sliding mounts to compensate.

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.

3.9 MINIMUM DISTANCE BETWEEN FITTINGS AND BENDS IN PIPE OR TUBING

A minimum distance must be maintained between bends in pipes or tubing and installation of fittings to ensure a correct joint. Refer to the below picture for more details.

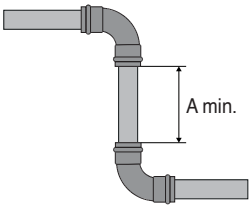


3.10 MINIMUM DISTANCE BETWEEN JOINTS

The below tables represent general minimum installation distances between:

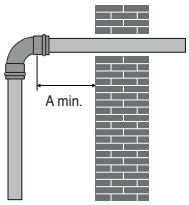
1. Two press ends
2. A press fitting and a wall or other type of pass-through installation

Please refer to your specific press tool manufacturer's manual for additional details.



SIZE		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
A	in.	0	0	0	7/16	5/8	3/4
	mm	0	0	0	10	15	20

Tab. 1 - Minimum distance between two pressed fittings.



SIZE		1/2"-2"
A	in.	1.97
	mm	50

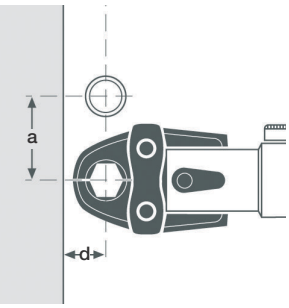
Tab. 2 - Minimum distance from the fitting to the wall for pass-through installations.

3.11 SPACING REQUIREMENTS FOR CORRECT PRESS TOOL OPERATION

Proper clearances must be maintained for correct press tool attachment and operation. The below tables represent the general clearance requirements of standard jaws for:

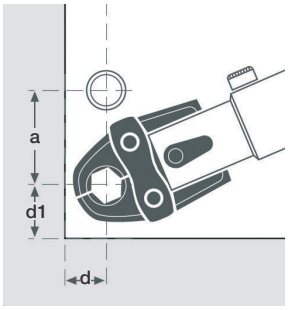
1. Press tools used perpendicular to a wall
2. Press tools used at an angle to a wall and/or near corners

Please refer to your specific press tool manufacturer's manual for additional details.



SIZE		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
d (min.)	in.	3/4	7/8	1	1-1/8	1-3/4	2
	mm	19	22	26	29	45	51
a (min.)	in.	1-5/8	2-1/8	2-1/2	2-7/8	3-1/2	4-3/8
	mm	41	54	64	73	89	111

Tab. 3 - PROFLO standard press jaw clearance requirements



SIZE		1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
d (min.)	in.	7/8	1	1-1/8	1-1/4	1-7/8	2-1/8
	mm	23	26	29	32	48	54
a (min.)	in.	2-1/2	2-1/2	3	3-1/8	3-3/4	5
	mm	64	64	76	80	95	127
d1	in.	1-3/8	1-1/2	1-3/4	2-1/4	2-1/2	3-1/8
	mm	35	38	45	57	64	80

Tab. 4 - PROFLO standard press jaw clearance requirements between tube, wall or floors.

3.12 MINIMUM DISTANCE BETWEEN PRESS AND SOLDERED OR BRAZED JOINTS

Proper precautions are required to prevent damage to a press connection when soldering or brazing in the vicinity. If possible, these types of processes should be completed prior to press installation and/or the press fitting should be protected from the heat effects using industry standard methods.

The minimum clearance requirements between a press fitting and an existing soldered/brazed joint are shown in the below table:

SIZE	Soldering minimum distance (in.)	Soldering minimum distance (mm)	Brazing minimum distance (in.)	Brazing minimum distance (mm)
1/2"	1/4	7	1	26
3/4"	1/4	7	1-1/2	38
1"	7/16	11	2	51
1-1/4"	7/16	11	2-1/2	64
1-1/2"	5/8	16	3	76
2	3/4	19	4	102

The minimum distance between a press fitting and soldering/brazing installation is shown in the below table:

SIZE	Soldering minimum distance (in.)	Soldering minimum distance (mm)	Brazing minimum distance (in.)	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

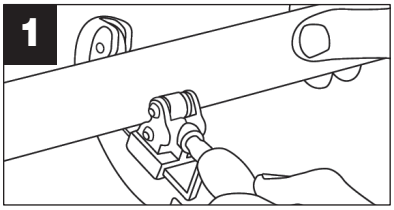
3.13 MAINTENANCE

Before performing any maintenance, care must be taken to prevent injury and property damage. The following steps are recommended:

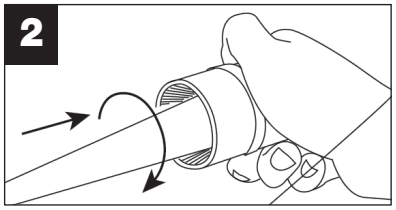
1. Shut off all operating lines.
2. Isolate the fitting from the system.
3. Release system pressure.
4. Drain the fluid in the isolated area.

Under normal conditions, properly installed press fittings do not require specific scheduled maintenance. However, a visual inspection should always be part of any regular system maintenance, especially in systems operating under more extreme conditions.

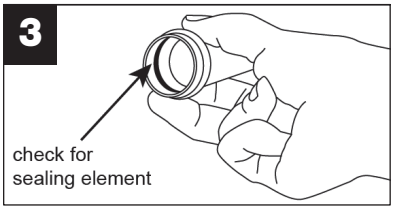
3.14 INSTALLATION INSTRUCTIONS FOR 1/2"–2" PRESS FITTINGS



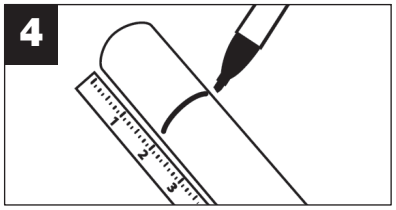
1. Cut the tube square with an appropriate industry-standard tool, such as a tube cutter or fine tooth saw.



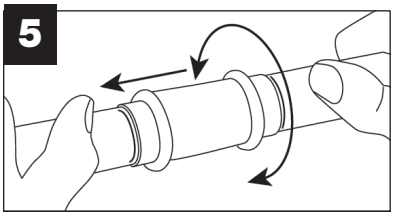
2. Carefully deburr the ID and OD with appropriate deburring tools. Ensure the tube surfaces are free of defects and debris as these can cause damage to the O-ring or prevent a correct seal.



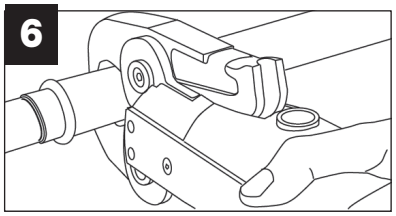
3. Verify presence, cleanliness and correct seating of the internal O-ring. Do not add lubricates. If necessary, clean water can be applied to the O-ring to aide insertion.



4. Mark the tube to the appropriate insertion depth per the below chart.



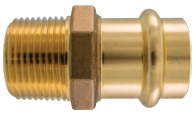
5. Rotate the tube slightly while sliding the fitting onto the tube. Make sure the tube is installed to the insertion mark and/or mechanical stop if applicable.

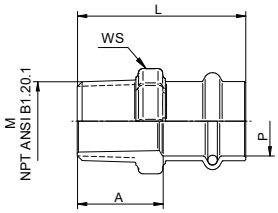


6. Place the press tool at a right angle over the fitting bead with the fitting inside the jaw in the correct position as indicated by the tool manufacturer. Follow the press tool manufacturer's instructions to complete the press.

* Tube insertion depth chart.

Nominal Pipe Size	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
Insertion* (in.)	3/4	7/8	7/8	1	1-7/16	1-9/16

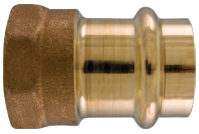


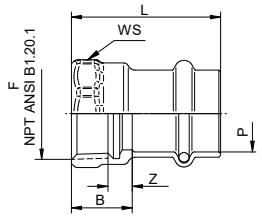


PFXPPMA

Brass Male Thread Adapter

Size	Item #	Bag Qty.	Weight (lbs) Each	A	L	WS
1/2"	PFXPPMAD	10	0.14	1.04	1.92	1.00
1/2" x 3/4"	PFXPPMADF	10	0.16	1.11	1.86	0.98
3/4"	PFXPPMAF	10	0.22	1.09	2.15	1.25
3/4" x 1/2"	PFXPPMAFD	10	0.20	1.30	2.21	1.13
1"	PFXPPMAG	10	0.29	1.39	2.39	1.41
1-1/4"	PFXPPMAH	1	0.38	1.33	2.39	1.70
1-1/2"	PFXPPMAJ	1	0.58	1.24	2.68	2.00
2"	PFXPPMAK	1	0.82	1.35	2.97	2.46



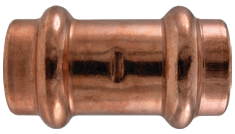


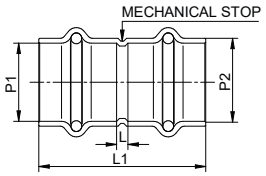
PFXPPFA

Brass Female Thread Adapter

Size	Item #	Bag Qty.	Weight (lbs) Each	L	B	Z	WS
1/2"	PFXPPFAD	10	0.10	1.52	0.65	0.44	0.96
1/2" x 3/4"	PFXPPFADF	10	0.15	1.62	0.87	0.45	1.20
3/4"	PFXPPFAF	10	0.16	1.73	0.73	0.54	1.20
3/4" x 1/2"	PFXPPFAFD	10	0.10	1.50	0.59	0.19	0.96
1"	PFXPPFAG	10	0.19	1.76	0.85	0.41	1.47
1-1/4"	PFXPPFAH	1	0.30	1.90	0.78	0.63	1.93
1-1/2"	PFXPPFAJ	1	0.47	2.43	1.00	0.69	2.08
2"	PFXPPFAK	1	0.65	2.61	0.99	0.89	2.57

DIMENSIONAL INFORMATION

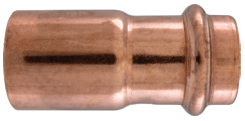


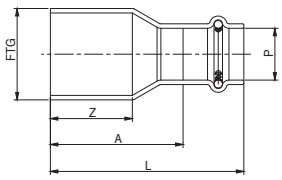


PFXPPC

PXP COUPLING W/ST

Size	Item #	Bag Qty.	Weight (lbs) Each	L	L1
1/2"	PFXPPCD	10	0.08	0.16	1.62
3/4"	PFXPPCF	10	0.12	0.14	1.85
1"	PFXPPCG	5	0.17	0.23	2.05
1-1/4"	PFXPPCH	1	0.24	0.14	2.20
1-1/2"	PFXPPCJ	1	0.48	0.14	3.00
2"	PFXPPCK	1	0.62	0.14	3.30

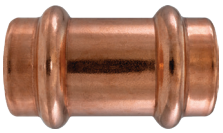


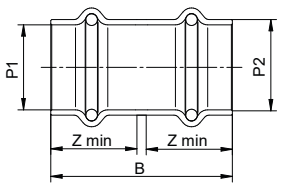


PFXPPFR

FTG x P Reducer

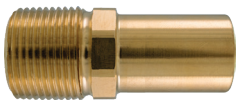
Size FTG x P	Item #	Bag Qty.	Weight (lbs) Each	Z	A	L
3/4" x 1/2"	PFXPPFRFD	10	0.09	0.98	1.52	2.14
1" x 1/2"	PFXPPFRGD	10	0.12	1.1	1.89	2.41
1" x 3/4"	PFXPPFRGF	10	0.14	1.1	1.81	2.4
1-1/4" x 3/4"	PFXPPFRHF	5	0.18	1.23	2.12	2.73
1-1/4" x 1"	PFXPPFRHG	5	0.21	1.19	1.92	2.55
1-1/2" x 3/4"	PFXPPFRJF	1	0.27	1.55	2.7	3.33
1-1/2" x 1"	PFXPPFRJG	1	0.29	1.53	2.17	3.16
1-1/2" x 1-1/4"	PFXPPFRJH	1	0.28	1.31	2.16	2.78
2" x 3/4"	PFXPPFRKF	1	0.49	1.8	3.3	3.9
2" x 1"	PFXPPFRKG	1	0.49	1.83	3.13	3.74
2" x 1-1/4"	PFXPPFRKH	1	0.45	1.7	2.9	3.52
2" x 1-1/2"	PFXPPFRKJ	1	0.53	1.5	2.64	3.49

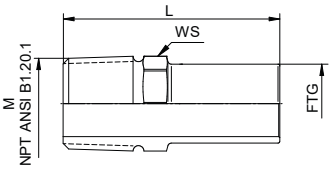




PFXPPSC
Coupling L/ST

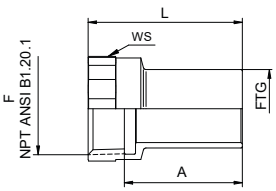
Size	Item #	Bag Qty.	Weight (lbs) Each	B	Z min.
1/2"	PFXPPSCD	10	0.08	1.62	0.75
3/4"	PFXPPSCF	10	0.13	1.95	0.91
1"	PFXPPSCG	5	0.16	1.95	0.91
1-1/4"	PFXPPSCH	1	0.24	2.20	1.03
1-1/2"	PFXPPSCJ	1	0.48	3.00	1.43
2"	PFXPPSCK	1	0.63	3.31	1.58





PFXPPFMA
FTG x M Adaptor

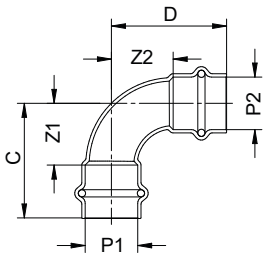
Size	Item #	Bag Qty.	Weight (lbs) Each	L	WS
1/2"	PFXPPFMAD	10	0.14	2.38	0.78
3/4"	PFXPPFMAF	10	0.20	2.40	0.98



PFXPPFFA
FTG x F Adaptor

Size	Item #	Bag Qty.	Weight (lbs) Each	A	L	WS
1/2"	PFXPPFFAD	10	0.10	1.32	1.85	0.96
3/4"	PFXPPFFAF	10	0.16	1.45	2.00	1.20

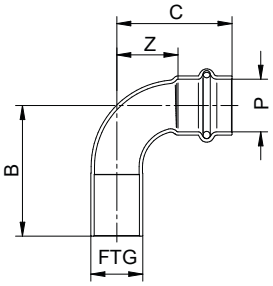
DIMENSIONAL INFORMATION



PFXPP9

P x P 90 DEG Elbow

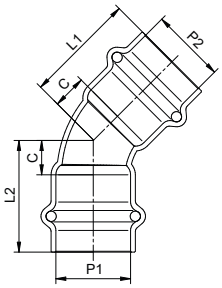
Size	Item #	Bag Qty.	Weight (lbs) Each	Z1	C	Z2	D
1/2"	PFXPP9D	10	0.11	0.75	1.50	0.75	1.50
3/4"	PFXPP9F	10	0.19	1.02	1.96	1.02	1.96
1"	PFXPP9G	10	0.26	1.32	2.23	1.32	2.23
1-1/4"	PFXPP9H	1	0.44	1.69	2.68	1.69	2.68
1-1/2"	PFXPP9J	1	0.78	2.03	3.43	1.97	3.43
2"	PFXPP9K	1	1.14	2.56	4.18	2.56	4.20



PFXPPS9

FTG x P ST 90 DEG Elbow

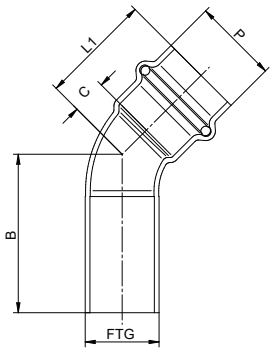
Size	Item #	Bag Qty.	Weight (lbs) Each	B	C	Z
1/2"	PFXPPS9D	10	0.11	1.91	1.50	0.99
3/4"	PFXPPS9F	10	0.19	2.20	1.94	1.03
1"	PFXPPS9G	5	0.28	2.94	2.23	1.79
1-1/4"	PFXPPS9H	1	0.47	2.97	2.96	1.87
1-1/2"	PFXPPS9J	1	0.73	3.41	3.39	1.78
2"	PFXPPS9K	1	1.08	4.21	4.11	2.52



PFXPP4

P x P 45 DEG Elbow

Size	Item #	Bag Qty.	Weight (lbs) Each	C	L1	L2
1/2"	PFXPP4D	10	0.10	0.34	1.09	1.09
3/4"	PFXPP4F	10	0.17	0.38	1.32	1.32
1"	PFXPP4G	5	0.21	0.53	1.45	1.45
1-1/4"	PFXPP4H	1	0.34	0.72	1.81	1.81
1-1/2"	PFXPP4J	1	0.59	0.73	2.13	2.13
2"	PFXPP4K	1	0.82	1.06	2.65	2.65

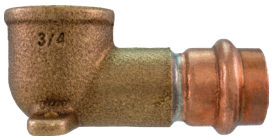


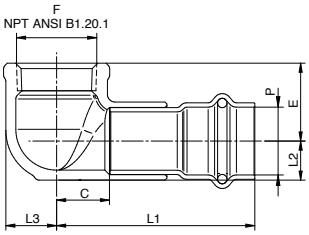
PFXPPS4

FTG x P ST 45 DEG Elbow

Size	Item #	Bag Qty.	Weight (lbs) Each	B	C	L1
1/2"	PFXPPS4D	10	0.09	1.60	0.34	1.08
3/4"	PFXPPS4F	10	0.17	1.88	0.49	1.41
1"	PFXPPS4G	5	0.22	1.73	0.59	1.57
1-1/4"	PFXPPS4H	1	0.34	1.94	0.96	1.81
1-1/2"	PFXPPS4J	1	0.57	2.24	0.78	2.09
2"	PFXPPS4K	1	0.77	2.72	1.06	2.65

DIMENSIONAL INFORMATION

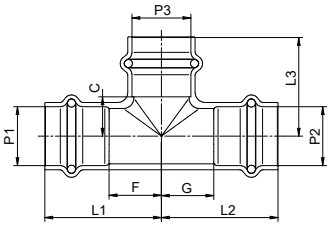




PFXPPDE9

P x F Brass 90 DEG Elbow w/ wall plate

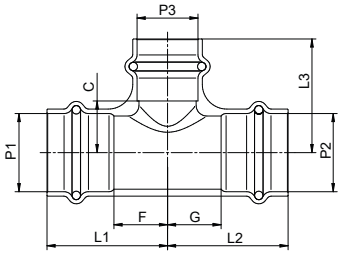
Size	Item #	Bag Qty.	Weight (lbs) Each	C	E	L1	L2	L3
1/2"	PFXPPDE9D	10	0.32	1.34	0.88	2.18	0.39	0.55
3/4"	PFXPPDE9F	5	0.44	1.70	1.02	2.58	0.51	0.69



PFXPPT

P x P x P Tee

Size	Item #	Bag Qty.	Weight (lbs) Each	L1	F	L2	G	L3	C
1/2"	PFXPPTD	10	0.22	1.47	0.72	1.47	0.72	1.37	0.61
3/4"	PFXPPTF	10	0.38	1.75	0.80	1.75	0.80	1.62	0.68
1"	PFXPPTG	5	0.50	1.80	0.89	1.80	0.92	1.76	0.85
1-1/4"	PFXPPTH	1	0.58	2.05	1.02	2.05	0.95	1.95	0.92
1-1/2"	PFXPPTJ	1	1.17	2.56	1.19	2.56	1.19	2.56	1.26
2"	PFXPPTK	1	1.67	2.95	1.29	2.95	1.37	2.95	1.32

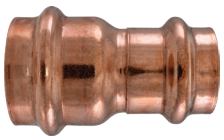


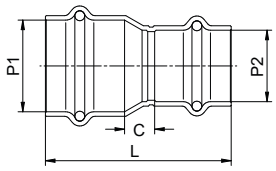
PFXPPT

P x P x P Reducing Tee

Size	Item #	Bag Qty.	Weight (lbs) Each	L1	F	L2	G	L3	C
1/2" x 1/2" x 3/4"	PFXPPTDDF	5	0.38	1.71	0.96	1.71	0.96	1.50	0.43
3/4" x 1/2" x 1/2"	PFXPPTFDD	5	0.35	1.59	0.65	1.73	0.95	1.39	0.62
3/4" x 1/2" x 3/4"	PFXPPTFDF	5	0.39	1.75	0.85	1.89	1.14	2.49	0.59
3/4" x 3/4" x 1/2"	PFXPPTFFD	10	0.33	1.59	0.65	1.59	0.65	1.50	0.72
1" x 1/2" x 1"	PFXPPTGDG	2	0.51	1.87	0.97	2.27	1.52	1.75	0.81
1" x 3/4" x 1/2"	PFXPPTGFD	2	0.42	1.59	0.69	1.85	0.95	1.68	0.90
1" x 3/4" x 3/4"	PFXPPTGFF	5	0.51	1.75	0.82	2.00	1.10	1.62	0.76
1" x 3/4" x 1"	PFXPPTGFG	2	0.48	1.87	0.97	2.08	1.18	1.68	0.69
1" x 1" x 1/2"	PFXPPTGGD	5	0.40	1.59	0.68	1.59	0.68	1.73	0.95
1" x 1" x 3/4"	PFXPPTGGF	5	0.48	1.75	0.84	1.75	0.78	1.85	0.91
1-1/4" x 1" x 3/4"	PFXPPTHGF	1	0.52	1.79	0.76	2.04	1.14	2.04	0.89
1-1/4" x 1" x 1"	PFXPPTHGG	1	0.57	1.91	0.88	2.18	1.28	1.79	0.84
1-1/4" x 1-1/4" x 1/2"	PFXPPTHHD	1	0.53	1.68	0.65	1.68	0.65	1.68	0.93
1-1/4" x 1-1/4" x 3/4"	PFXPPTHHF	1	0.59	1.80	0.77	1.80	0.77	1.80	0.89
1-1/4" x 1-1/4" x 1"	PFXPPTHHG	1	0.63	1.91	0.88	1.91	0.88	1.79	0.90
1-1/2" x 1-1/2" x 1/2"	PFXPPTJJD	1	0.81	1.90	0.43	1.90	0.42	1.90	1.10
1-1/2" x 1-1/2" x 3/4"	PFXPPTJJF	1	0.91	2.09	0.66	2.09	0.66	2.09	1.08
1-1/2" x 1-1/2" x 1"	PFXPPTJJG	1	0.96	2.17	0.70	2.17	0.74	2.17	1.16
1-1/2" x 1-1/2" x 1-1/4"	PFXPPTJJH	1	1.04	2.29	0.86	2.29	0.92	2.19	1.13
2" x 2" x 1/2"	PFXPPTKKD	1	1.05	2.13	0.55	2.13	0.55	2.13	1.29
2" x 2" x 3/4"	PFXPPTKKF	1	1.19	2.37	0.79	2.37	0.70	2.19	1.37
2" x 2" x 1"	PFXPPTKKG	1	1.33	2.49	0.91	2.49	0.91	2.23	1.27
2" x 2" x 1-1/4"	PFXPPTKKH	1	1.47	2.62	1.04	2.62	1.04	2.43	1.33
2" x 2" x 1-1/2"	PFXPPTKKJ	1	1.62	2.72	1.14	2.72	1.14	2.79	1.33

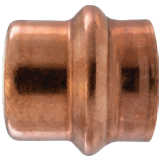
DIMENSIONAL INFORMATION

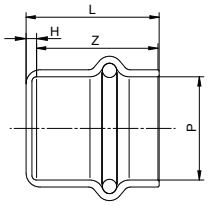




PFXPPRC
P x P Reducer

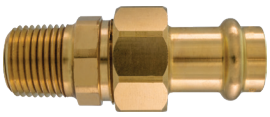
Size P1 x P2	Item #	Bag Qty.	Weight (lbs) Each	C	L
3/4" x 1/2"	PFXPPRCFD	10	0.13	0.44	2.14
1" x 1/2"	PFXPPRCGD	10	0.18	0.54	2.35
1" x 3/4"	PFXPPRCGF	10	0.17	0.39	2.30
1-1/4" x 1"	PFXPPRCHG	1	0.22	0.38	2.40
1-1/2" x 1-1/4"	PFXPPRCJH	1	0.40	0.59	2.95
2" x 1-1/2"	PFXPPRCKJ	1	0.62	0.91	3.72

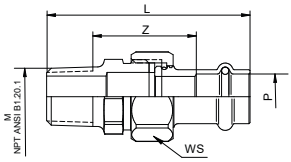




PFXPPCAP
End Cap

Size	Item #	Bag Qty.	Weight (lbs) Each	L	Z	H
1/2"	PFXPPCAPD	10	0.05	0.91	0.80	0.10
3/4"	PFXPPCAPF	10	0.08	1.14	1.05	0.10
1"	PFXPPCAPG	5	0.10	1.19	1.10	0.09
1-1/4"	PFXPPCAPH	1	0.14	1.38	1.22	0.12
1-1/2"	PFXPPCAPJ	1	0.34	1.95	1.65	0.29
2"	PFXPPCAPK	1	0.49	2.60	1.92	0.71

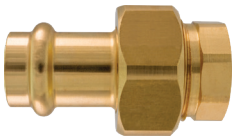


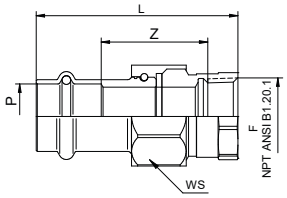


PFXPPMU

Brass P x M Union

Size	Item #	Bag Qty.	Weight (lbs) Each	L	Z	WS
1/2"	PFXPPMUD	5	0.28	2.90	2.15	1.19
3/4"	PFXPPMUF	5	0.51	3.42	2.51	1.42

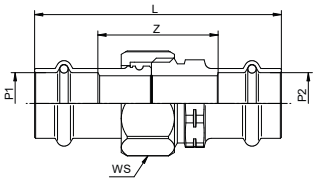




PFXPPFU

Brass P x F Union

Size	Item #	Bag Qty.	Weight (lbs) Each	L	Z	WS
1/2"	PFXPPFUD	5	0.23	2.14	0.98	1.19
3/4"	PFXPPFUF	5	0.42	2.88	1.52	1.42
1"	PFXPPFUG	5	0.65	2.88	1.40	1.81



PFXPPU

Brass P x P Union

Size	Item #	Bag Qty.	Weight (lbs) Each	L	Z	WS
1/2"	PFXPPUD	5	0.32	2.99	1.48	1.19
3/4"	PFXPPUF	5	0.53	3.69	1.86	1.42
1"	PFXPPUG	5	0.95	3.83	2.00	1.98
1-1/4"	PFXPPUH	1	0.92	3.83	1.74	2.04
1-1/2"	PFXPPUJ	1	1.16	3.95	1.04	2.28
2"	PFXPPUK	1	1.94	4.65	1.48	3.00

LIMITED WARRANTY

50-YEAR LIMITED WARRANTY FOR RESIDENTIAL AND COMMERCIAL APPLICATIONS

PROFLO Press-Joint Copper & Press-Joint Brass Fittings for Plumbing/Mechanical Applications

Effective: December 2023

Subject to the terms and conditions of this Limited Warranty ("Warranty"),Press-Joint Copper and Brass press fittings for plumbing and mechanical applications (the "Product" or "Products"), are warranted to be free from defects in material and workmanship, under normal conditions of use and service, for a period of FIFTY (50) years when installed by a professional in accordance with applicable building codes and conventional commercial or residential building plumbing/mechanical systems and equipment.

Scope

The Term of Warranty begins on the date of delivery to the initial purchaser ("Commencement Date"). This Warranty is transferable during the warranty period to subsequent owners of the real property in which the Products are installed.

Claim Process

To file a claim under the terms of this Warranty, a claimant must promptly notify PROFLO that a Product may be defective within 30 days of the suspected failure or defect via the contact information listed below.

- Telephone: 1-800-221-3379
- Website: ferguson.com/proflo

To determine coverage under this Warranty, PROFLO may request that Products be returned for inspection and testing.

Exclusive Remedies

If PROFLO determines that a product identified above has failed or is defective within the scope of this Warranty, PROFLO's liability hereunder is limited, at the option of PROFLO, to a refund of the purchase price or to repair or replace the product which is proved to be other than as warranted.

Conditions and Exclusions

In order for this Warranty to be in effect, the applicable PROFLO Products must be:

- Installed in accordance with the installation instructions provided by PROFLO;
- Installed by a professional in accordance with applicable building, mechanical, plumbing or other appliable code requirements and standard industry practice; and
- Installed in an end-use environment as intended for the Product.

In addition to the conditions above, this Warranty does not extend to product failure or resulting damages caused by:

1. Products, parts or systems not manufactured or sold by PROFLO;
2. Components, parts or systems used in conjunction with the Product;
3. Improper installation, inspection or testing of the Product in accordance with PROFLO's written instructions or standard industry practice;
4. Natural disasters, including but not limited to flooding, fire, earthquake, windstorm and lightening;
5. Misuse, tampering, mishandling or neglect of the Product;
6. Improper selection, application or other unauthorized use of the Product;
7. Modifications or unauthorized repairs to the Product;
8. Improper handling and storage of the Product prior to and during installation, including but not limited to inadequate freeze protection, exposure to water pressures or temperatures that exceed the limitations for the Product, or in applications outside acceptable operating conditions indicated in the installation manual;
9. Exposure to abnormal external, physical or chemical conditions or abnormal operating conditions;
10. Any other cause beyond the control of the manufacturer.

DISCLAIMER OF WARRANTIES & LIMITATION OF LIABILITY

THIS LIMITED WARRANTY IS THE FULL EXTENT OF EXPRESS WARRANTIES PROVIDED BY PROFLO, AND PROFLO HEREBY DISCLAIMS ANY WARRANTY NOT EXPRESSLY PROVIDED HEREIN, AND LIMITS THE DURATION AND REMEDIES OF ALL IMPLIED WARRANTIES INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE TO THE DURATION OF THIS EXPRESS WARRANTY.

PROFLO SHALL NOT BE LIABLE FOR PERSONAL INJURY OR PROPERTY DAMAGE OR ANY SPECIAL, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS LIMITED WARRANTY GIVES CLAIMANT SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

LIABILITY UNDER THIS LIMITED WARRANTY IS SOLELY LIMITED TO THE REPAIR AND/OR REPLACEMENT OF THE PRESSFITTING THAT HAS BEEN DETERMINED BY PROFLO TO CONTAIN A DEFECT IN MATERIAL OR WORKMANSHIP.

Contact PROFLO Customer Service at 800-221-3379

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FERGUSON.COM/PROFLO