



XPress fittings are a heat free method for joining copper tube and provides a clean, easy to use joining method designed to save time and money on installations. Installing a joint with XPress is simple, requiring no extra materials beyond the XPress fitting and the pressing tool for XPress. Purchase, preparation, and use of materials and equipment for soldering are eliminated. This lowers costs, reduces labor time, and allows a cleaner, more efficient installation process. XPress is The Faster Fit. XPress fittings provide secure, reliable joints in sizes from ½" through 4". XPress is ideal for use on hot and cold water services, closed loop heating, and chilled water installations.

INSTALLATION

Installing an XPress fitting relies on using a pressing tool together with an approved set of jaws or pressing rings of the appropriate size. Approved sets of jaws or pressing rings are available for each size fitting and only the correct size jaws or pressing rings will ensure that a sound joint is made. Contact Elkhart Products Corporation for a list of approved jaws or rings.

Pressing tools are available with two power options to suit most on-site installation situations, 110 volts and cordless. XPress fittings are designed to work with either type of pressing tool.

XPress fittings should remain in their packaging until immediately prior to installation. This ensures the fitting remains clean, the O-ring seal is protected from damage and on-site debris, and the O-ring seal lubricant does not dry out. Unused fittings should be kept in the original packaging with any openings sealed to insure fitting cleanliness is maintained.

WARRANTY

XPress fittings carry a 50-year warranty against manufacturing defects. Contact an Elkhart Products Corporation representative for details. All warranties are subject to the use of approved pressing tools, jaws, pressing rings, and the application of good installation practices as outlined in this installation manual.



DESIGN FEATURES

XPress fittings offer two unique design features which benefit the installer. First, O-ring seal placement within the fitting allows the installer to easily verify the O-ring seal is in place prior to pressing the joint. Second, XPress fittings are designed to leak in the unpressed condition. This feature provides a sure method to identify unpressed joints at plumbing system startup.

QUALITY SYSTEMS

XPress fittings are designed and manufactured with the highest quality possible and conform to current industry standards and regulations. To ensure our products continue to remain the highest quality, we constantly scrutinize, monitor, and evaluate our manufacturing processes using continuous improvement methods within the Elkhart Production System.

MATERIAL SPECIFICATIONS

All XPress products are designed and manufactured to strict specifications and quality systems. XPress fittings are manufactured from copper or copper alloys (typically red brass) and utilize EPDM O-ring seals. XPress fittings are designed for use with ASTM B88 hand drawn Type K, L, or M water tube in the ½" through 4" size range.

All XPress fittings are designed to operate at temperatures from 0° F to 250° F at a maximum working pressure of 200 psi.

XPRESS FITTING MATERIAL COMPATIBILITY

XPress fittings must not come into contact with household cleaning products, paints, greases, flux, mineral oils, adhesives, ammonia, nitrates, or other solvent base materials that may be used during or after installation. The exterior surface of XPress fittings should not be painted. Use of proprietary chemicals to flush pipes during plumbing system startup should be reviewed with an Elkhart Products Corporation representative.



SAFETY AND PROPER OPERATION

Equipment Service and Safety Considerations

Like any other power tools, pressing tools, jaws, and pressing rings require regular servicing. Failure to follow the pressing tool manufacturer's recommendations may violate guarantee or warranty provisions and the tool's ability to produce press joints with continued efficiency. It is the tool user's responsibility to correctly maintain and calibrate all tools per manufacturer's recommendations. For detailed information on the use and care of pressing tools, refer to the manufacturer's instructions.

SAFETY WARNINGS

Read the Pressing Tool and Jaw Manufacturer's Operation Manual carefully before using any Pressing Tool. Failure to understand and follow contents of the Operator's Manual may result in extensive property damage, severe personal injury or death. Press rings for XPress are only to be used with 32 kiloNewtons rated pressing tools and jaws, and XPress bronze fittings. Read and understand the Operator's Manual provided by the tool manufacturer to prevent property damage and serious injury. Follow instructions on proper inspection and setup of the pressing tool and work area.

Keep fingers and hands away from press rings and ring actuators during pressing cycle. Always wear eye protection to protect eyes from dirt and other foreign objects.

TOOL MAINTENANCE

For proper maintenance of the RIDGID® pressing tool, jaws and rings, please refer to your owner's manual.

CAUTION - A press ring or ring actuator component that has been welded, ground, drilled or modified in any manner can shatter during pressing, resulting in sharp flying objects, severe injury or death. Discard and replace damaged press rings or ring actuators.

CAUTION - Do not solder or braze within 12" of an XPress fitting in new or existing plumbing installations.

Heat travels along the tube, annealing the tube and fitting, and degrades the O-ring seal's ability to maintain a leak-free seal. There is no known repair for a heat damaged XPress fitting except complete replacement of the fitting and tube. The use of heat dams or other cooling methods to protect XPress fitting joints is recommended and may reduce the recommended minimum safe distance to prevent overheating. The exact distance to be used is up to the installer. Heat damage voids the XPress fitting warranty.

CAUTION BEFORE PRESSING

The minimum distance between an XPress fitting and a soldered, brazed or other pressed fitting must not be less than three (3) times the diameter of the tube being pressed.

Press-connect fittings joint performance is dependent upon predictable material displacement during the pressing operation. The addition of soldered, brazed or other pressed fittings at a distance less than three (3) tube diameters disrupts proper pressing characteristics of the tube.

Failure to follow this installation guideline voids the XPress fitting warranty.

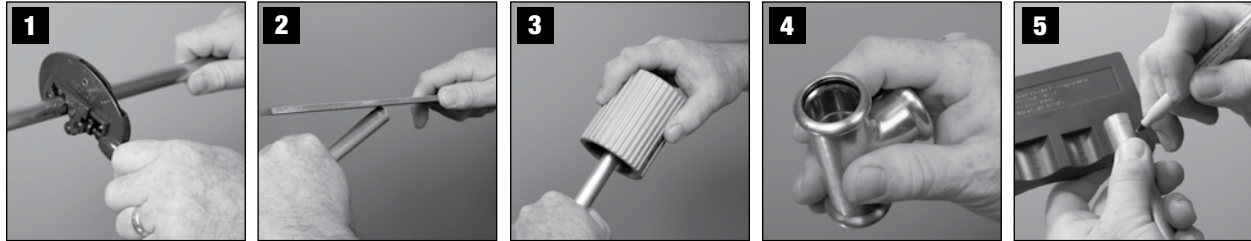
For more information, call EPC technical help line at (800) 284-4851 or for questions concerning the RIDGID press tool, jaws or rings call the Ridge Tool Company technical services department at (800) 519-3456.



PREPARATION FOR ALL TUBE SIZES

Preliminaries

Select the correct size tube and XPress fitting for the job. Ensure that both are clean, in good condition and free from damage and imperfections. Carefully remove tape, labels, or foreign matter. Check that the tube is round, clean, free of burrs, and surface imperfections.



Preparation

1. Cut the tube square. Use a rotary tube cutter whenever possible. If a hacksaw is used to cut the tube, be sure to follow proper tube preparation as outlined in the steps below.
2. Remove burrs at the tube ends before insertion into a fitting. Internal and external tube ends should be deburred by use of a fine tooth file. The tube end should then be wiped clean of all debris to avoid damage to the O-ring seal upon tube insertion.
3. In place of a file, commercially available deburring tools may be used to insure a smooth interior and exterior at the tube end. EPC markets deburring tools particularly well suited to performing this operation.
4. Inspect the XPress fitting to insure the O-ring seal is undamaged and seated correctly within the O-ring seal groove. O-ring seals should be free of cuts, gouges, or missing material at the surface. If the O-ring seal is damaged or missing, do not use the fitting. If the O-ring seal is undamaged and is partially out of the groove, then gently move the O-ring seal back into the groove. If the O-ring seal does not seat in the groove, do not use the fitting.

CAUTION - Tubing that is difficult to insert may have burrs or could be out-of-round. Burrs must be removed and tubing end should not be damaged. Make sure fitting is inserted to proper depth. Failure to do so may result in an improper seal and leakage.

5. Insert the tube fully into the fitting until it meets the tube stop. With the fitting in place, clearly mark the tube outside diameter at the edge of the fitting. Or, use an XPress depth gauge or tape measure. The insertion depth must be clearly marked to ensure that proper insertion is attained. See table for required insertion depth dimensions.

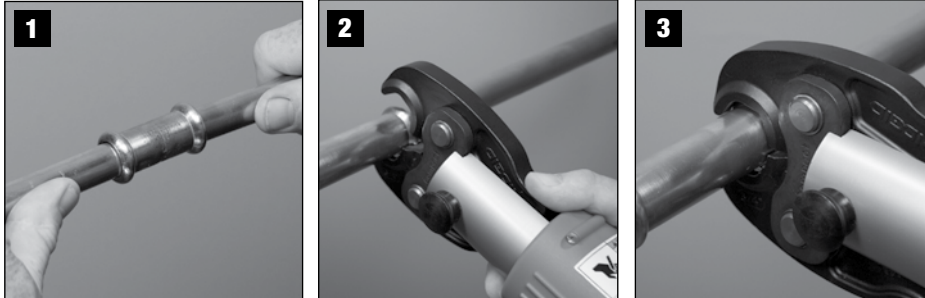
Nominal pipe size (inches)	½	¾	1	1¼	1½	2	2½	3	4
Insertion depth (inches)	13/16	17/32	15/16	11/32	13/16	13/8	2	2	23/8
Insertion depth (mm)	20	21	23	26	30	35	51	51	60

CAUTION - Never apply an additional lubricant other than water. The O-ring seal in the XPress fitting is pre-lubricated for your convenience.

CAUTION - Only XPress O-ring seals are to be used. Use of other seals may result in an improper connection.



INSTALLATION WITH TUBE SIZES ½ INCH - 2 INCH



JOINING

1. Assemble the joint, inserting the tube into the fitting until it meets the tube stop. Check the tube insertion depth using the reference mark on the tube outside diameter. (See Step 4 in the preparation process.) The pressing operation should only be undertaken with the tube fully inserted into the XPress fitting.
2. With the correct size jaw inserted into the pressing tool, place the jaw over the bead on the fitting. Great care should be taken to ensure that the pressing tool and jaws are maintained at a 90° angle to the tube centerline.
3. Depress the pressing tool trigger or actuation button to begin the pressing cycle. The cycle is complete when the jaw fully encloses the fitting. The jaw should then be released from around the fitting. Refer to the tool manufacturer's instructions for more detail. Inspect the pressed joint to ensure the tube has remained fully inserted during the pressing operation.

CAUTION - If the pressing tool or ring malfunctions during a press, be sure to repress the fitting where the problem occurred.





INSTALLATION WITH TUBE SIZES 2-½ INCH - 4 INCH

The photographs used in this section depict RIDGID press tools with a 32 kiloNewton capacity. Please consult the tool manufacturer's instructions to ensure a complete understanding of the pressing ring and pressing tool operating procedures.

INSPECTING THE PRESS

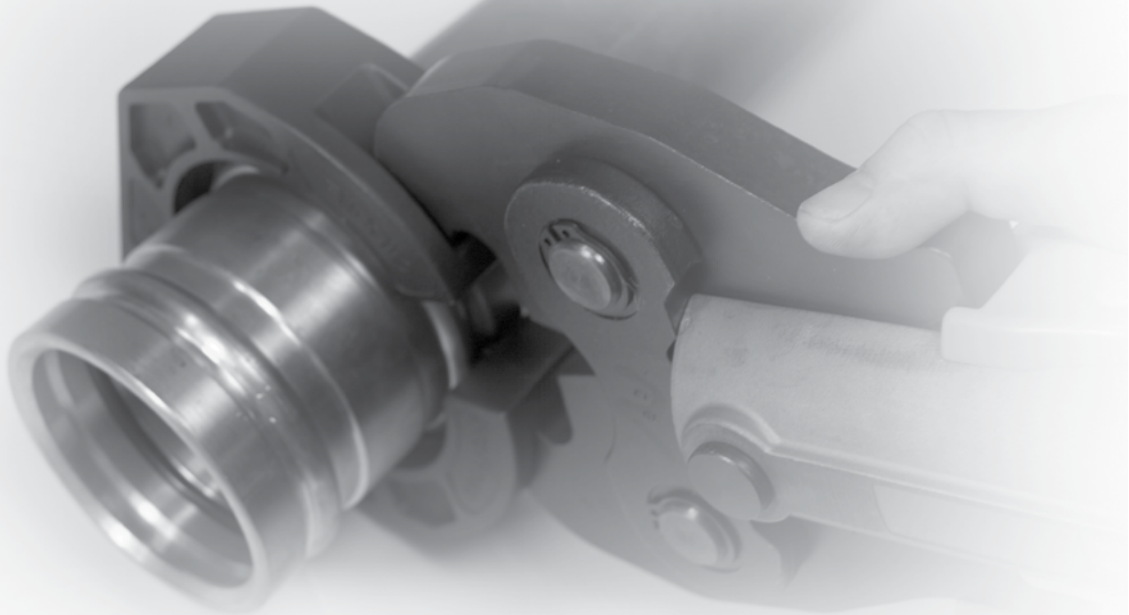
CAUTION - If the pressing tool or ring jaw set malfunctions during a pressing cycle, be sure to repress the fitting where the problem occurred.

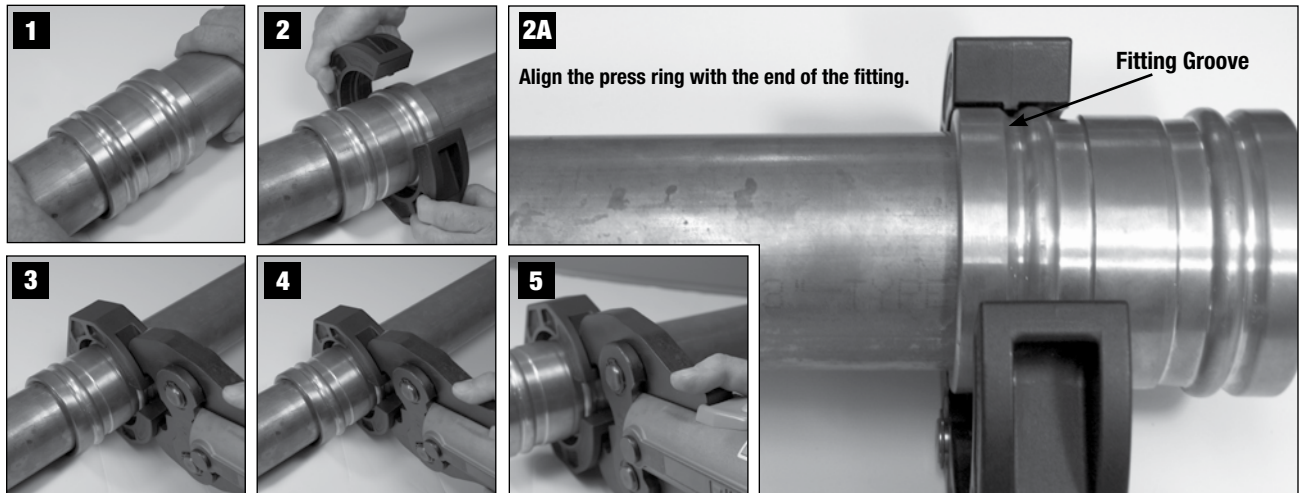
1. Inspect the pressed fitting. Look for the following:
 - Excessive misalignment of the tubes. Note that a slight misalignment of a tube to fitting (up to 1 i) is considered normal.
 - Tubes that are not fully inserted - double check depth marks.
 - Incorrect press ring alignment with the fitting.If one or more of these problems are found, then a new section of tubing and a new fitting will have to be prepared, inserted and pressed.
2. Inspect the pressed fitting parting line where the gap between the two press rings was located. It is normal for the fitting in this vicinity to slightly bulge away from the copper tube.
3. Test system in accordance with normal practice and local codes.

CAUTION - Do not attempt to hang tool and ring actuator from press ring. Tool could unexpectedly drop causing serious injury or death.

CAUTION - To avoid serious personal injuries, keep fingers away from ring actuators and press rings during pressing.

CAUTION - If the pressing tool, actuator or ring malfunctions during a press, be sure to repress the fitting where the problem occurred.



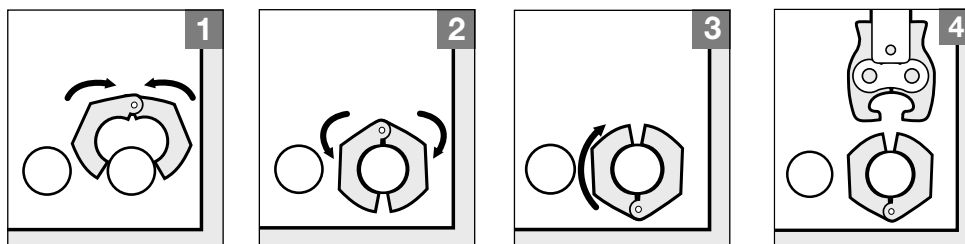


Joining

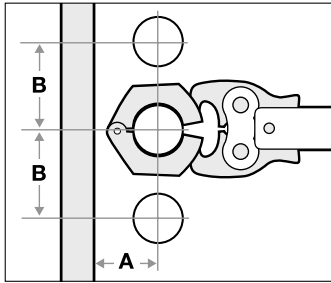
1. Slide fitting onto tube until it is fully inserted. The mark from Step 5 of the preparation instructions should be used as a reference line to assure proper tube insertion into the fitting prior to pressing.
2. Open the press ring and place at right angles onto the fitting. The raised center portion of the press ring must properly engage into the forward fitting groove. If the ring is properly inserted into the groove, the edge of the press ring will closely align with the end of the fitting (See Fig. 2A). Recheck insertion depth before completing the pressing process.
3. Attach ring actuator into the pressing tool according to your pressing tool operator's manual. Squeeze ring actuator arms to open actuator assembly and engage ring actuator ends into actuator pockets in the press rings. Make sure actuator ends are fully engaged in pockets.
4. Make sure the tool is square to the tubing and press ring. Depress the tool trigger switch. Refer to your pressing tool operator's manual for information on your tool's press process.
5. After cycle is complete, squeeze actuator arms to open and separate actuator from press ring. Remove press ring from fitting by manually grasping ring halves and opening assembly.

PRESSING IN TIGHT QUARTERS

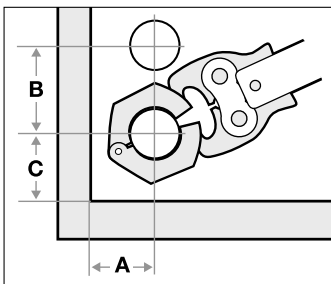
The following figures illustrate the clearance requirements for XPress fittings and the procedure for pressing in tight quarters.



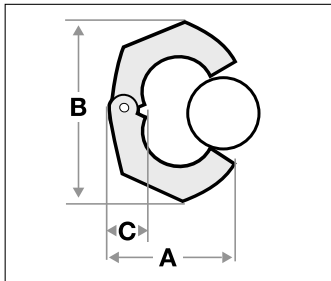
1. Place the pipe ring around the coupling from the front.
2. Rest the press ring in the groove in the fitting.
3. Keep the press ring closed and rotate about the fitting until the opening is toward the front.
4. Insert the press ring actuator and start the press cycle.



Pipe Diameter - Inches		2-1/2	3	4
A (Minimum)	inches	3 ^{-3/8}	3 ^{-5/8}	4 ^{-1/4}
	mm	86	92	102
B (Minimum)	inches	5 ^{-3/8}	6	7 ^{-3/8}
	mm	137	152	188



Pipe Diameter - Inches		2-1/2	3	4
A (Minimum)	inches	3 ^{-3/8}	3 ^{-5/8}	4 ^{-1/4}
	mm	86	92	102
B (Minimum)	inches	5 ^{-3/8}	6	7 ^{-3/8}
	mm	137	152	188
C (Minimum)	inches	3 ^{-3/4}	4 ^{-1/8}	7
	mm	95	105	127



Pipe Diameter - Inches		2-1/2	3	4
A (Minimum)	inches	5 ^{-9/16}	6 ^{-1/8}	7 ^{-5/16}
	mm	141	156	186
B (Minimum)	inches	7 ^{-1/8}	7 ^{-15/16}	9 ^{-5/8}
	mm	188	202	244
C (Minimum)	inches	1 ^{-5/8}	1 ^{-11/16}	1 ^{-3/4}
	mm	41	43	44



Q What is the procedure for soldering near an XPress connection?

- A Stay at least 12 inches away from the pressed connection. If 12 inches is not possible, installer should take proper precautions to keep the XPress joint cool while soldering.
- Wrap the joint with a cold wet rag
 - Fabricate solder joint prior to installing the pressed fitting, making sure pipe is cooled before installing fitting.
 - Use "spray type" spot freezing product.

Q As an inspector, how do I know if I am looking at a good joint?

- A Pressure test – same as a solder joint.

Q With what are the sealing elements in XPress fittings lubricated?

- A The seals are lubricated with an NSF 61 approved silicone oil. If it is necessary to lubricate the seals in the field, **use water only. Do not** use other lubricants. In particular, **do not** use any petroleum-based lubricants (petroleum and EPDM are incompatible).

Q How long will the EPDM seal last?

- A When properly installed, the EPDM seal and connection will last as long as the copper pipe with which it is joined (50+ years). This is confirmed in the NSF 61 tests.

Q How do I fabricate a system in tight places when using XPress?

- A If necessary, pre-fabricate connections that are in tight places, then install.

ANSWERS TO USING XPRESS FITTINGS WITH CERTAIN CHEMICALS AND APPLICATIONS:

- Yes:** Water (32° F to 200° F)
Yes: Water Glycol Mixture (approved glycols: ethylene, propylene, butylene, glycol - up to 100% concentration)
Yes: Air (cleaned, dried, filtered)
Yes: Window Washer Fluid
Yes: Oxygen (note: Oxygen for medical gas applications – NO)
Yes: Nitrogen (max. working pressure 140 psi)
Yes: Argon (max. working pressure 140 psi)
- No:** Steam (Being developed)
No: Vacuum
No: Chlorine
No: Medical gas (Being developed)
No: All Petroleum Products (e.g., oil, grease, diesel fuel, gasoline)
No: DWV Pipe (pipe wall too thin)
No: Natural Gas (not supported at this time but may be in the future)
No: Refrigerants (not supported at this time but may be in the future)
No: Fire Protection Systems (not supported at this time but may be in the future)
No: Paint Lines like those found in car manufacturing plants (The XPress fittings and seals currently offered are not compatible because of the silicone lubricant used on the seal)



Q Does the XPress system require the use of special valves?

A No. Users can continue with their favorite valve line by using the threaded adapters or by stubbing-out the valves and then pressing on from there.

Q What is the warranty for XPress?

A XPress fittings carry a 50-year warranty against defects in material and workmanship from the manufacturer. To our knowledge, this 50-year warranty is essentially the same as, or better than, all warranties offered on copper tubing sold in the U.S.

Q Can you turn a pressed fitting on the tube without damaging the integrity of the joint?

A Yes. The fitting can be turned (not by hand) after pressing and will not affect the integrity of the joint. As a general rule of thumb, if the fitting is turned more than 5°, it should be re-pressed to restore the resistance to rotational movement.

Q What level of turbulence is caused by XPress fittings and will it cause premature wear in copper tubing?

A The long radius of XPress elbows reduces the turbulence typically experienced with traditional short radius fittings. Not reaming the ID of the pipe is the largest contributing factor to turbulence and premature wear of any piping system.

Q Is XPress approved for underground use?

A Yes. XPress can be used underground, **but users must obtain approval from the local plumbing inspector.** Do not assume that just because XPress has been approved for use in one local area that it is approved for other areas. Contractors should check with the local inspector before installing.

Note: The model codes only allow brazed or compression joints underground. Several code officials approached to date have said they would approve XPress for underground installation.

Note: 1/2" to 1 1/4" soft (annealed) copper is ok to press, but we do not approve pressing soft copper larger than 1 1/4".

Q To what degree does the temperature rating go up or down as pressure in the XPress fitting changes?

A None. The pressure rating is 200 psi working pressure and 600 psi test pressure at all temperatures from 0° F to 250° F

Q What are the flow rates through XPress fittings?

A Because of the long radius, the flow rate is better than standard and short radius solder fittings. Flow rates and flow rate calculations are the same as those used for solder fitting installations.

Q How do XPress joints hold up to freezing temperatures?

A Copper water systems, both soldered and pressed, should not be allowed to freeze. When water freezes, it expands and will damage the pipe or the system.



Q What should a user do if an XPress fitting leaks?

A In general, XPress fittings only leak due to one of three reasons:

- 1) The fitting was never pressed (XPress fittings are specifically designed to leak in the un-pressed condition)
- 2) The copper tubing was not properly inserted
- 3) Pressing jaws were not properly aligned during the pressing operation

With the first situation, confirm pipe is properly installed into the fitting and pressed. It is not necessary to drain the system prior to performing a second pressing operation; however, proper insertion depth should be confirmed prior to pressing. In the second and third situation, the user must cut out the fitting and reinstall properly.

Under all other circumstances, if a fitting leaks, contact your pressing tool manufacturer and or EPC.

Q Is XPress compatible with the cleaning agents used to disinfect a new plumbing system?

A Yes.

Q What should be done if a user accidentally cuts the seal with the copper tubing?

A If the seal is damaged by inserting the copper pipe, the seal has to be replaced. Replacement seals may be ordered from EPC or an EPC distributor, do not use substitute seals.

