

# AQUARISE® SOLVENT WELDING INSTRUCTIONS

Always follow the complete AquaRise installation instructions provided in this manual. **Failure to comply with handling, storage and installation instructions may cause piping system failure resulting in damage to property.**

## SAFE HANDLING AND STORAGE OF PIPE, FITTINGS & VALVES

Care must be taken when handling AquaRise products to ensure that pipe, fittings, valves and accessories are not damaged prior to installation. Take the following precautions to ensure AquaRise products remain in top condition prior to installation.

- Store pipe indoors if possible
- Pipe stored outside must be covered with a well-ventilated white tarp
- Always keep pipe clean and covered in its original packaging
- Always store pipe on a flat surface and never store other products on top of pipe
- Do not drop or drag pipe
- Always store fittings and valves indoors in original packaging or repackage to protect from damage, dirt and debris
- Inspect all AquaRise products prior to installation
- Never install AquaRise products that are damaged

## SOLVENT WELDING

### Introduction

Creating optimal solvent welded connections requires attention to detail, proper preparation of components and an understanding of all instructions provided in this manual.

### Safe Handling and Storage of Primers and Solvent Cements

AquaRise primer and solvent cement are made from flammable liquids and must be kept away from all sources of ignition. Good ventilation must be maintained to reduce fire hazard and to minimize the breathing of solvent vapors. Refer to ASTM F402, Standard Practice for Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings. Always adhere to local jobsite and workplace safety regulations. For additional safety information, consult the material safety data sheet for this product which is available at [ipexaquarise.com](http://ipexaquarise.com).

- Always provide proper ventilation when applying primers and cements
- Avoid skin or eye contact with primers and cements
- Wash immediately if contact occurs to avoid prolonged exposure
- Do not solvent weld joints near open flames or soldering torches



## WARNING

During the curing of the solvent weld joints, vapors may accumulate inside the piping system, especially should one end of the line be capped. Nearby sparks from welders or torches may inadvertently ignite these vapors and create a hazardous incident. Attention must be given to removing all vapors using air-blowers or water flushing prior to capping one end of an empty piping system.

- Use personal protection equipment when handling primers and solvent cements
- Always store primer and cement indoors
- For cold weather installation store primer and cement in a warm location above 40°F (5°C)
- For hot weather installation store primer and cement in a cool, shaded location
- Always check bottom of primer and cement cans for date of manufacture
- Never use primer or cement that is older than its recommended shelf life – 2 years from date of manufacture shown on bottom of can
- Properly discard primer and cement that exceeds its recommended shelf life
- Properly discard solvent cement that has hardened or jelled
- Tightly close partially used primer and cement containers

## SOLVENT WELDING BASICS

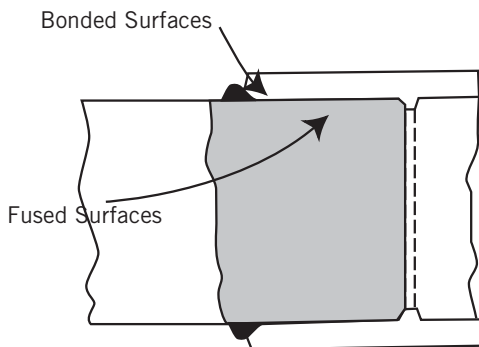
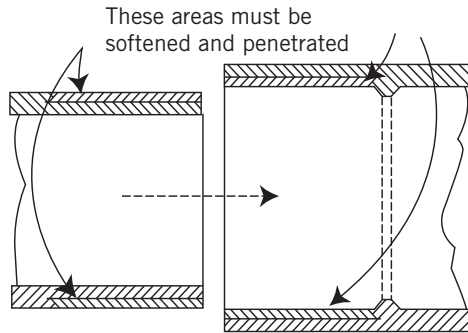
- Dry fit all joints prior to solvent welding to confirm proper interference fit
- Discard fitting joints without proper interference fit
- Do not solvent weld joints that are too loose or too tight
- Always use AquaRise bevelling tools to prepare pipe ends before cementing
- Do not solvent weld joints without first bevelling pipe ends
- Use only AquaRise primer and solvent cements in accordance with IPEX instructions
- Do not use other cements to connect AquaRise pipe, fittings and accessories
- Follow all solvent welding instructions provided with this product
- Follow all AquaRise installation instructions. Visit [ipexaquarise.com](http://ipexaquarise.com) for details

**WARNING:** Do not use or test AquaRise® with compressed air or other gases. Do not use air-over-water boosters.

## NOTICE

**Do not use excessive amounts of primer or solvent cement. Too much primer or solvent cement can lead to puddling in the pipe and fittings which can result in product failures and property damage. Always follow the instructions provided with each can of AquaRise primer and/or solvent cement.**

Sufficient cement must be applied to fill the gap in the loose part of the joint. Besides filling the gap, adequate solvent cement layers will penetrate the surfaces and also remain wet until the joint is assembled. If the solvent cement coatings on the pipe and fittings are wet and fluid when assembly takes place, they will tend to flow together and become one solvent cement layer. Also, if the solvent cement is wet, the surfaces beneath them will still be soft, and these dissolved surfaces in the tight part of the joint will fuse together.



As the solvent dissipates, the solvent cement layer and the dissolved surfaces will dry and harden with a corresponding increase in joint strength. Completed joints must not be disturbed until they have properly set. See the Joint Set Schedule table on page 31 for details.

Joint strength continues to develop as the solvent cement dries. To determine when solvent cement joints can be pressure tested see the Joint Cure Schedule table on page 31.

Before beginning, assemble proper materials for the job (AquaRise One-Step Solvent Cement (1/2" – 2") / AquaRise Two-Step Solvent Cement and Primer (2-1/2" – 4"), appropriate applicator for the size of pipe and fittings to be assembled, tape measure, pencil and deburring tool).

Assemble proper Personal Protective Equipment (PPE) for the job (respirator, safety glasses, gloves and protective clothing).



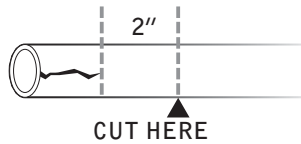
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## SOLVENT WELDING INSTRUCTIONS

**1. Cutting the Pipe.** It is important to cut the pipe squarely. A square cut provides the surface of the pipe with the maximum bonding area. Pipe can be easily cut with a wheel-type plastic tubing cutter, chop saw or fine toothed saw. Do not use reciprocating saws. Tools used to cut pipe must be designed for AquaRise piping and must be in good condition in accordance with the tool manufacturer's recommendations.



If there is any indication of pipe damage or evidence of pipe end cracking, cut off at least 2 inches (50mm) beyond any visible crack. Use of ratchet cutters is not recommended as they may split the pipe if not properly used and maintained.



**2. Preparing Pipe Ends.** Always bevel pipe ends. Use the tools provided by IPEX which have been specifically designed for this purpose. Remove burrs and filings from the inside of the pipe using a knife edge or file.

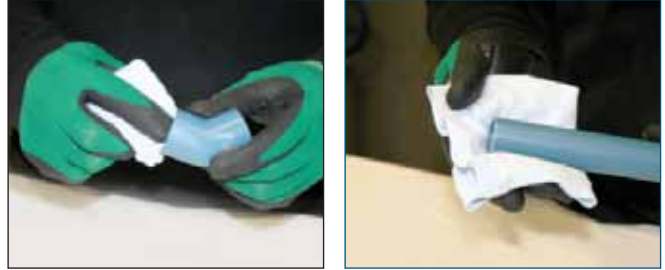
AquaRise beveling tool  
1/2" to 1" diameter



AquaRise beveling tool  
1-1/4" to 4" diameter



**3. Cleaning.** Using a clean dry cloth, wipe any dirt and moisture from the fitting socket and the pipe end.



**4. Dry-Fitting.** Before applying primer or solvent cement, test all connections (pipe, fittings and accessories) to confirm a proper interference fit exists. Dry-fit contact between properly bevelled pipe and fitting sockets is essential in making a good joint. The bevelled pipe should easily enter the fitting socket and make contact with the inner fitting socket wall before bottoming out. A proper interference fit is present when the bevelled pipe can only be inserted 1/3 to 2/3 of the way into the fitting socket.



Do not solvent weld pipe, fittings or accessories that fit loosely together or where pipe bottoms out. Proper joint strength cannot be developed.

Do not solvent weld pipe, fittings or accessories if a bevelled pipe cannot easily be inserted at least 1/3 of the way into the fitting socket. This may cause excessive stresses during assembly leading to joint failure.

**5. Applicator Size.** Use the applicators (daubers and swabs) provided with AquaRise solvent cements and in accordance with these instructions. Proper applicator size is critical to ensuring the correct amount of AquaRise primer and/or solvent cement is applied to the pipe, fittings and accessories.

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## ONE-STEP SOLVENT WELDING PROCEDURE FOR 1/2" TO 2" DIAMETERS



**IMPORTANT:** For 1/2" to 2" diameters use only AquaRise One-Step (Yellow) solvent cement. Do not use primer with One-Step solvent cement.



■ Measure the fitting socket inner depth and mark the outside of the pipe with this dimension. This will help with application of the proper amount of solvent cement on the pipe and also helps indicate full and proper insertion of the pipe inside the fitting socket.

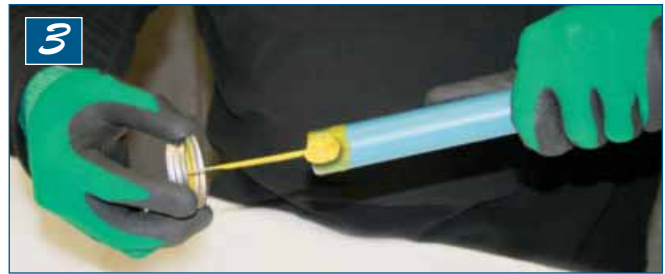


■ AquaRise One-Step cement comes with a small dauber inside the can. Use this small dauber for 1/2" (12mm), 3/4" (19mm) and 1" (25mm) diameter joints. A larger dauber is also provided separately inside this carton. Use the larger dauber for 1-1/4" (32mm), 1-1/2" (38mm) and 2" (50mm) diameter joints.

Do not use the larger dauber for 1/2" (12mm), 3/4" (19mm) and 1" (25mm) joints. Joint failure can occur if excessive amounts of One-Step cement are applied. Do not permit

One-Step cement to pool inside of fittings or accessories.

Do not use the small dauber on 1-1/4" (32mm), 1-1/2" (38mm) and 2" (50mm) joints. Sufficient One-Step cement must be applied in a timely manner and kept wet prior to assembly of the joint.



■ Apply a medium layer of AquaRise One-Step solvent cement to the bevelled pipe end. Apply enough cement to just cover the socket insertion mark on the outside of the pipe. Be aggressive and work One-Step cement onto the pipe surface. Apply enough solvent cement to fill the gap between the pipe and fitting to soften the surfaces.

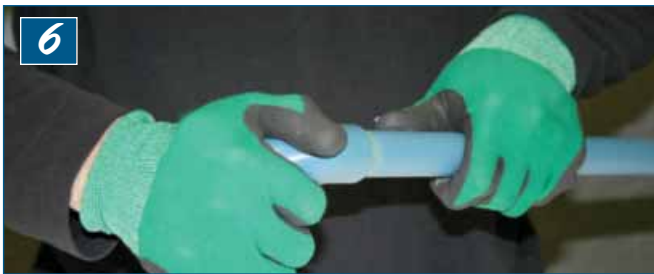


■ Apply a thin, light layer of AquaRise One-Step solvent cement to the inside of the fitting socket and work this thin layer of One-Step cement into the wall of the fitting socket. For smaller diameters it may not be necessary to re-dip the dauber. A thin layer will prevent puddling of the One-Step solvent cement inside of the pipe or fitting. Excessive solvent cement applied to the fitting socket can cause the joint to clog and the wall of the pipe or fitting to weaken due to softening by the trapped solvents.



■ Without delay, while the One-Step solvent cement is still wet, assemble the pipe and fitting, and twist 1/8 to 1/4 turn as the pipe is being inserted. Once the pipe end has reached the bottom of the fitting socket, do not turn any further; doing so could break any fusion that is starting to occur.

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**6**

■ Hold the pipe and fitting together for approximately 30 seconds to avoid “push-out”.



**7**

■ A bead of One-Step solvent cement must be formed around the entire socket fitting entrance. With a clean, dry cloth remove the excess solvent cement from the surface of the pipe and fitting.

## NOTES

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## TWO-STEP SOLVENT WELDING PROCEDURE FOR 2-1/2" TO 4" DIAMETERS



**IMPORTANT:** For 2-1/2" to 4" diameters always use AquaRise (Clear) primer with AquaRise Two-Step (Yellow) solvent cement.



■ Measure the fitting socket depth and mark the outside of the pipe with this dimension. This will help with application of the proper amount of primer and Two-Step solvent cement on the pipe and also helps indicate full and proper insertion of the pipe inside the fitting socket.



■ Apply AquaRise primer to the inside of the fitting socket.



■ Use the dauber supplied in the can of primer. Apply AquaRise primer to the pipe end, equal to the depth of the fitting socket. Be aggressive and work the primer into the pipe.



■ Apply AquaRise primer to the inside of the fitting socket again.



■ While the primer is still wet and the surfaces are soft, use the swab provided to apply a full, even layer of AquaRise Two-Step solvent cement to the pipe end, equal to the depth of the fitting socket. Like the primer, be aggressive. Remember to apply enough Two-Step solvent cement to fill the gap between the pipe and fitting.



■ Apply a thin layer of AquaRise Two-Step solvent cement to the inside of the fitting socket. This will prevent puddling of the solvent cement inside of the pipe or fitting. Excessive solvent cement applied to the fitting socket can cause the joint to clog and the wall of the pipe or fitting to weaken due to softening by the trapped solvents.

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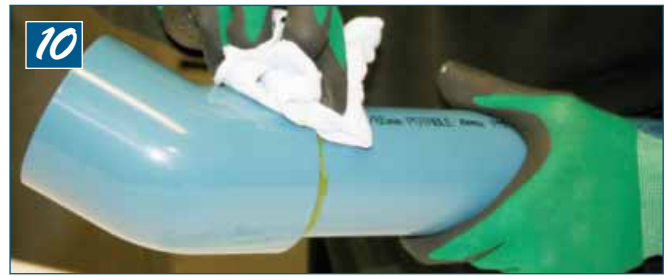
■ Apply a second full, even layer of AquaRise Two-Step solvent cement to the pipe end. Excessive solvent cement on the pipe outer diameter (O.D.) can be wiped away after assembly.



■ Without delay, while the solvent cement is still wet, assemble the pipe and fitting, and twist a 1/8 to 1/4 turn as the pipe is being inserted, if possible. Once the pipe end has reached the fitting socket stop, do not turn any further; doing so could break any fusion that is starting to occur.



■ Hold the pipe and fitting together for approximately 30 seconds to avoid “push-out”.



■ A bead of solvent cement must be formed around the entire socket fitting entrance. With a clean, dry cloth, remove the excess solvent cement from the pipe and fitting socket entrance. This will allow the solvent to evaporate from within the joint.

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