

STEP 7 Join Components

IMMEDIATELY following application of cement and before it starts to set, insert the pipe into the valve socket with a 1/4 - turn, twisting motion to evenly distribute cement within the joint. A full bead of cement must form around the circumference of the joint. Hold joint together for approximately 30 seconds to make sure the pipe does not move or back out of the socket.

STEP 8 Remove Excess Cement

Using a cloth, wipe clean all excess cement from the exterior juncture of the pipe and valve.



STEP 9 Initial Set & Cure Time

Initial Set & Cure Time must be followed in accordance with the solvent cement manufacturer's instructions.

THREADED CONNECTIONS

WARNING: SOME PIPE JOINT COMPOUNDS OR PTFE PASTES MAY CONTAIN SUBSTANCES THAT COULD CAUSE STRESS CRACKING TO PLASTIC. TRANSITIONS TO METAL PIPE REQUIRE THOROUGH CLEANING AND DEGREASING TO REMOVE ANY PIPE THREAD CUTTING OIL.

RECOMMENDED SEALANT:



Spears® Manufacturing Company highly recommends the use of Spears® BLUE 75™ thread sealant, which has been tested for compatibility with Spears® products. Please follow the sealant Manufacturers' Application/ Installation instructions. Choice of another appropriate thread sealant is at the discretion of the installer.



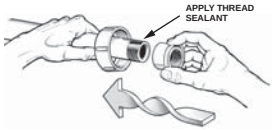
IF A TAPE SEALANT IS USED:

1. Use TFE tape no less than 25 mil thick.
2. Initial wrap must fully cover the thread end.
3. Wrap clockwise with standard pipe threads.
4. Use <u>only</u> 2-3 wraps of tape.

STEP 1 Apply Joint Sealant

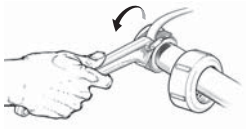
Threaded connections require application of a quality grade thread sealant to seal and lubricate joint assembly. Sealant must be applied to male pipe threads.

STEP 2 Assemble Joint by Hand



Threaded pipe and valves or fittings must be initially assembled "finger tight" (just enough to fully engage thread clearance).

STEP 3 Wrench Make-Up



Threaded plastic pipe and valve components must always be installed using commercially available strap wrenches. Do not use conventional pipe wrenches which can damage plastic piping materials.

Apply wrench make-up of no more than one to two turns beyond finger tight thread engagement. Care must be taken in final positioning so as to avoid the need to "back-up" the wrenched assembly.



WARNING: SINGLE ENTRY BALL VALVES DO NOT USE A BLOCKED SEAL CARRIER ON THE UNION END AND CARRIER MAY BLOW OUT UNDER PRESSURE. DO NOT REMOVE OR LOOSEN THE UNION NUT WHILE THE VALVE IS UNDER PRESSURE.

Precautions And Warnings For All Valve Installations

CAUTION: The system must be designed and installed so as not to pull the valve in any direction. Pipe must be cut and installed in such a manner as to avoid all stress loads associated with bending, pulling, or shifting. Valve must be supported.

CAUTION: BEFORE THE VALVE IS CYCLED, all dirt, sand, grit or other material must be flushed from the system. This is to prevent scarring of internal components; e.g., ball, stem, end connector, seats, etc.

LUBRICATION WARNING: Some Lubricants, including vegetable oils, are known to cause stress cracking in thermoplastic materials. Formulation changes by lubricant manufacturers may alter compatibility of previously acceptable materials and are beyond our control. Lubricants are not required for installation of Spears® Valves.

WARNING: Systems must not be operated or flushed out at flow velocities greater than 5 feet per second.

NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GAS.

All air must be bled from the system during initial fluid fill. Pressure testing of the system must not be made until all solvent cement joints have properly cured. Initial pressure testing must be made at approximately 10% of the system hydrostatic pressure rating to identify potential problems, prior to testing at higher pressures.

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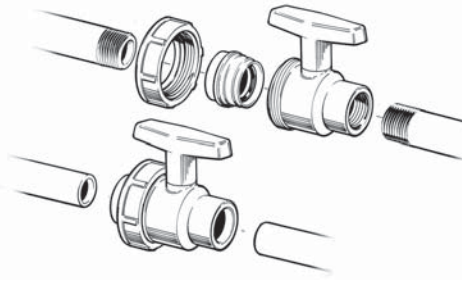
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Single Entry Ball Valve Installation Instructions

SE-3A-0406



Read all applicable instructions and procedures thoroughly before starting. Suitability of the intended service application must be determined prior to installation. Please review "Material Considerations in Application and System Design", in the Materials section of Spears® THERMOPLASTIC VALVES & TECHNICAL INFORMATION, SSB-1, for important additional considerations related to valve installations. Plastic piping systems must be engineered, installed, operated and maintained in accordance with accepted standards and procedures for plastic piping systems. It is absolutely necessary that all design, installation, operation and maintenance personnel be trained in proper handling, installation requirements and precautions for installation and use of plastic piping systems before starting. (See "Precautions & Warnings For All Valve Installations" on the back page.)

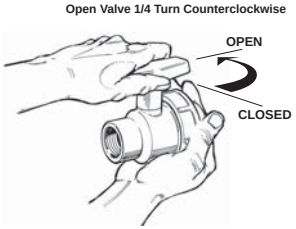


Valves are equipped with a union nut for valve seat adjustment and internal component servicing or replacement. Valves are factory pre-adjusted and removal of the single union nut and end connector is not required for general installation. However, these may be removed if needed for specific installation needs or convenience.

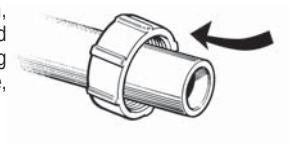
General Installation Procedures

STEP 1 Prepare connecting pipe as required for solvent cement, thread, or flanged connections. See following section.

STEP 2 Open the valve completely and support valve body to hold its weight. Solvent cement or thread valve body to pipe, making sure valve is at a square 90° angle to the pipe, according to the Solvent Cementing or Threading procedures on the following pages. Attach the valve end connector to the opposite pipe in the same manner.



STEP 3 If union nut and end connector are removed for installation, slide union nut over pipe to which end connector socket is to be connected, being sure nut threads are facing toward valve, before making the joint.

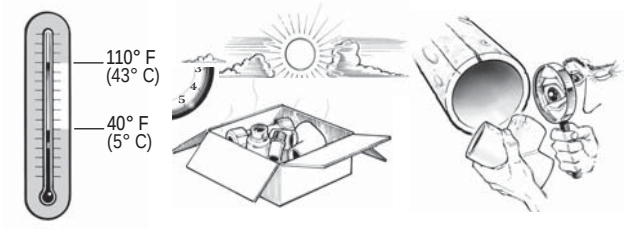


STEP 4 Attach end connector to pipe, according to the Solvent Cementing or Threading procedures on the following pages. Align end connector and fully insert into body. Close valve completely and attach union nut hand tight only (do not use thread sealant). DO NOT use union nut to draw end connector to body. Valve operation should be smooth with increased resistance at closed position. Adjust nut as necessary, avoid over tightening.

STEP 5 Pressure test system only after all solvent cement joints have fully cured. If any leaks are found at valve in either an open or closed position during pressure test, use a strap wrench to tighten union nut 1/16 turn to stop leak. DO NOT OVER TIGHTEN. Where threaded end connectors have been installed, a second strap-wrench must be used on the end connector to prevent it from turning on the pipe threads and breaking the seal. Flanged connections may require additional tightening after initial pressure testing. If problems persist, see "BALL VALVE TROUBLESHOOTING GUIDE" in Spears® THERMOPLASTIC VALVES & TECHNICAL INFORMATION, SSB-1.

SOLVENT CEMENT WELDED JOINTS

For best results, installation must be made at temperatures between 40°F and 110°F. All joint components must be inspected for any breaking, chipping, gouging or other visible damage before proceeding. All pipe, fittings and valves must be removed from their packaging or containers and exposed to the installation environment for a minimum of one hour in order to thermally balance all components. All joining components must be clean and dry.

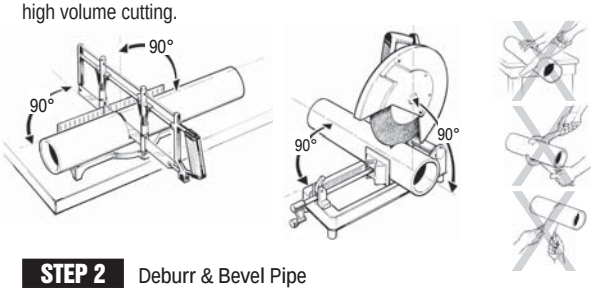


Temperature Acclimate Inspect

Be sure the valve is in the open position to aid in evaporation of solvent vapors which can attack internal components. TAKE EXTRA CARE THAT NO PRIMER OR SOLVENT CEMENT IS ALLOWED TO COME IN CONTACT WITH THE BALL OR OTHER INTERNAL VALVE COMPONENTS.

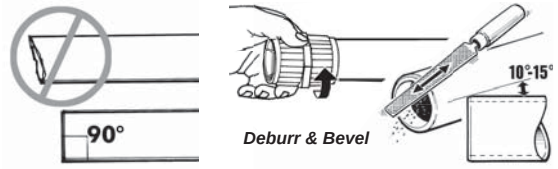
STEP 1 Cut Pipe Square

Pipe ends must be cut square, using a wheel-type cutter or saw & miter box. A fine-toothed hand saw (16-18 teeth/inch) with little or no set is recommended. A power cut-off saw with carbide blade is recommended for high volume cutting.



STEP 2 Deburr & Bevel Pipe

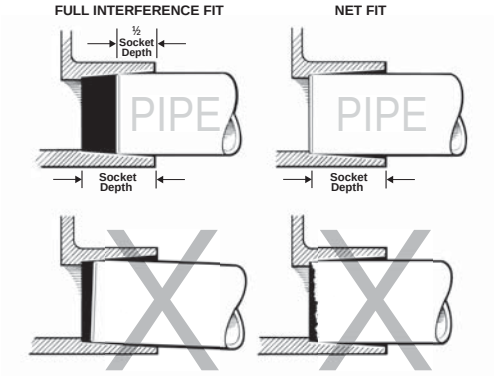
Regardless of cutting method used in Step 1, burrs are created which must be removed from both the pipe I.D. and O.D before joining. All pipe ends must be beveled 10° to 15°. Commercially available deburring & beveling tool is recommended, or a mill file may be used.





STEP 3 Clean Joint Components Wipe away all loose dirt and moisture from the pipe O.D. and fitting I.D. with a clean, dry cotton rag. DO NOT ATTEMPT TO JOIN WET SURFACES.

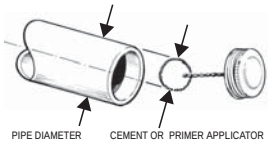
STEP 4 Check Joint Interference An interference between pipe and valve socket is necessary for proper fusion of the joint. To check, lightly insert pipe into valve socket. DO NOT FORCE. Interference between pipe and valve must occur between 1/2 of the socket depth (*full interference fit)* and the socket bottom (*net fit*). Do not use components which improperly mate.

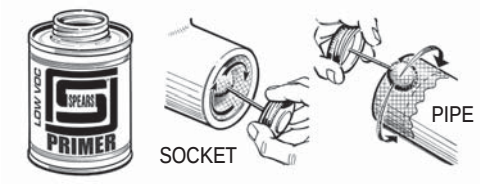


STEP 5 Apply Primer

Primer is necessary to penetrate and soften both pipe and valve socket surfaces in order for the solvent cement to properly bond. THE MOST FREQUENT CAUSE OF JOINT FAILURE IS INADEQUATE SOLVENT PENETRATION AND SOFTENING OF BONDING SURFACES DURING THE WELDING OPERATION.

1. Using a brush or applicator size no less than 1/2 the pipe diameter, apply a liberal coat of primer with a scrubbing motion to the valve socket until the surface is softened and semi-fluid. This may take 5 to 15 seconds depending on size and temperature (larger diameters and lower temperatures will increase required time).

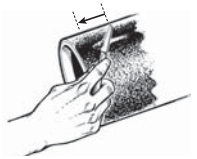




2. Apply primer to pipe in the same manner, extending application area to slightly more than the insertion depth into the valve socket.

3. Apply a second coat to both the valve socket and the pipe.

4. Check penetration and softening by scraping the primed surfaces. A few thousandths of the semi-fluid surface must be easily removed. Repeat primer application if necessary.



STEP 6 Apply Solvent Cement

Solvent cement must be applied IMMEDIATELY to primed surfaces before the primer dries, in an alternating 3-coat application. Using a brush or applicator size no less than 1/2 the pipe diameter, apply a liberal coat of solvent cement to the primed pipe surface, then apply a light to medium coat to the primed valve socket. If a "net fit" was experienced during dry fit check (Step 4), apply an additional coat again to the pipe surface. BE SURE TO USE A VERY LIBERAL AMOUNT OF SOLVENT CEMENT ON PIPE.



VALVE INSTALLATION CAUTION: TAKE EXTRA CARE THAT NO PRIMER OR SOLVENT CEMENT IS ALLOWED TO CONTACT THE BALL OR OTHER INTERNAL VALVE COMPONENTS.