



**SPEARS® LOW EXTRACTABLE™ True Union Ball Valves & Diaphragm Valves**

U.S. Patent No. 6,899,127, 6,575,431 & 6,260,819

**Installation Instructions**

LE-3A-0713

These instructions cover general installation for all Spears® Low Extractable™ True Union Ball, Ball Check & True Union Diaphragm Valves. All applicable instructions & procedures should be read thoroughly before starting. Suitability of the intended service application should be determined prior to installation. Plastic piping systems should be engineered, installed, operated & maintained in accordance with accepted standards & procedures.

**SPECIAL INSTALLATION INFORMATION**

True Union ball valves use removable end connectors. To avoid problems, NEVER ASSEMBLE THE JOINT TO THE END CONNECTORS WHILE THEY ARE ATTACHED TO THE VALVE CARTRIDGE.

**Check Valves** may be installed in either horizontal or vertical position with a minimum of 10 pipe diameters from any pump or other source of turbulence. Check valves MUST be installed with the valve's "FLOW" arrow pointing in the direction of flow.

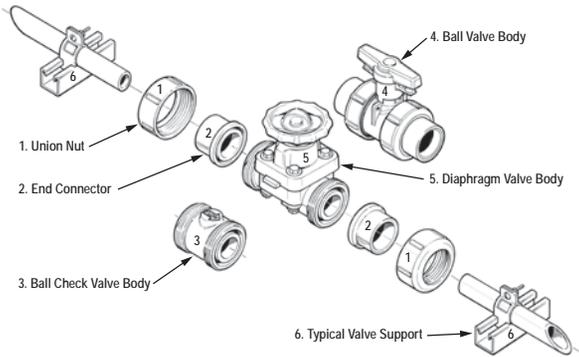


**IMPORTANT:** Read Precautions & Warnings for all Valve Installations at the end of these instructions. It is absolutely necessary that all design, installation, operation and maintenance personnel be trained in proper handling, installation requirements and precautions for installation and use of plastic piping systems before starting.

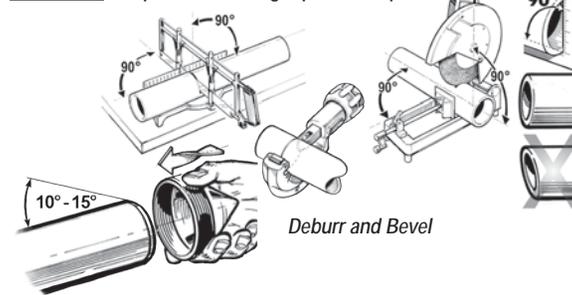
**LUBRICATION WARNING:** Some Lubricants, including vegetable oils, are known to cause stress cracking in thermoplastic materials. Formulation changes by lubricant manufacturers may alter compatibility of previously acceptable materials and are beyond our control. Lubricants are not required for installation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

**PREPARATION FOR SOLVENT WELDING APPLICATIONS**

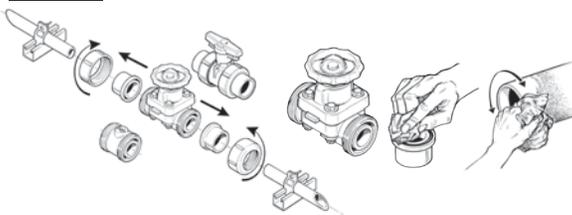
All components should be removed from packaging & exposed to the installation environment for a minimum of 1 hour to thermally balance the components. Wipe clean and match all components to their assigned identification numbers.



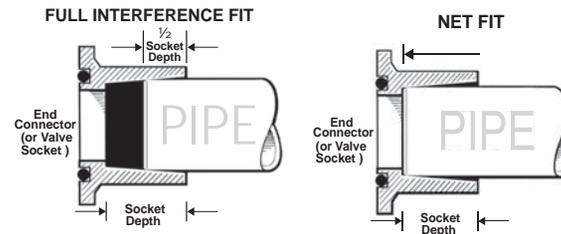
**STEP 1 Prepare Connecting Pipes as Required**



**STEP 2 Remove and Clean**



**STEP 3 Check the Joint Interference Fit**



*Do not use components which do not properly mate.*

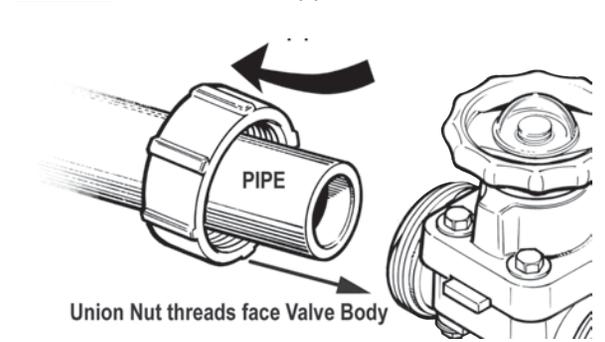
Make sure that the face of each End Connector Socket is at a square 90° angle with the pipe end.

**SOLVENT CEMENT END CONNECTORS**

Use Spears® Low Extractable™ One-Step Solvent Cement. This cement requires no primer. 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.

TAKE EXTRA CARE THAT NO SOLVENT CEMENT IS ALLOWED TO COME IN CONTACT WITH INTERNAL VALVE COMPONENTS.

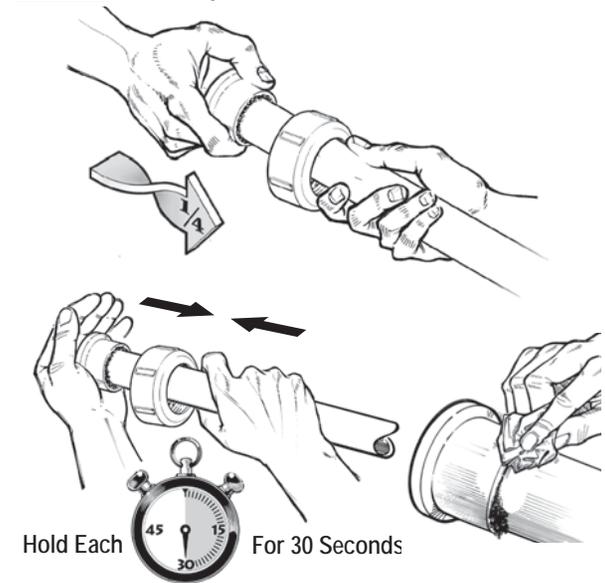
**STEP 1 Slide Union Nut onto pipe FIRST**



**STEP 2 Apply Spears® Low Extractable One-Step Solvent Cement**



**STEP 3 Immediately Assemble Joint**



Hold Each For 30 Seconds

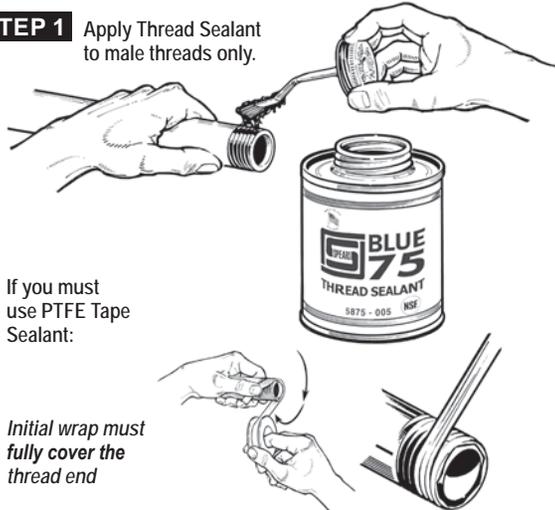
**STEP 4** Repeat STEP 3 to attach opposite end connector to pipe. Hold joint together for approximately 30 seconds to make sure that the End Connector Socket does not back off of pipe. Use a cloth to remove any excess cement from the exterior juncture of the pipe and End Connector.

Allow joint to cure according to solvent cement instructions.

## THREADED END CONNECTORS

Use only quality grade PTFE tape as a thread sealant for Spears® Low-Extractable™ applications. Warning: Some pipe joint compounds or PTFE pastes may contain substances that could cause stress cracking to plastics and increase the potential for system contamination. 1 to 2 full turns beyond finger tight is generally all that is required to make a sound plastic threaded connection. Unnecessary over-tightening will cause damage to both pipe and fitting.

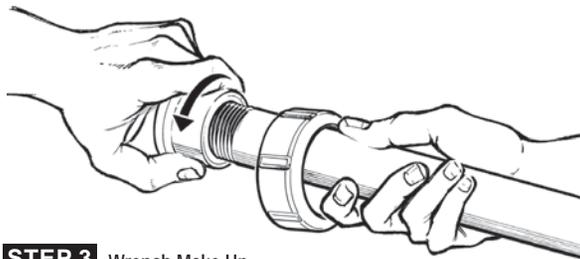
**STEP 1** Apply Thread Sealant to male threads only.



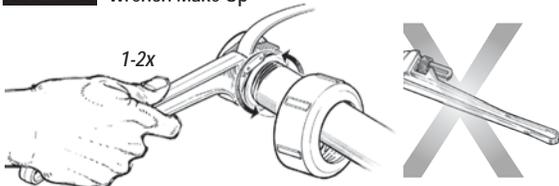
If you must use PTFE Tape Sealant:

Initial wrap must fully cover the thread end

**STEP 2** Assemble Joint "FINGER TIGHT"



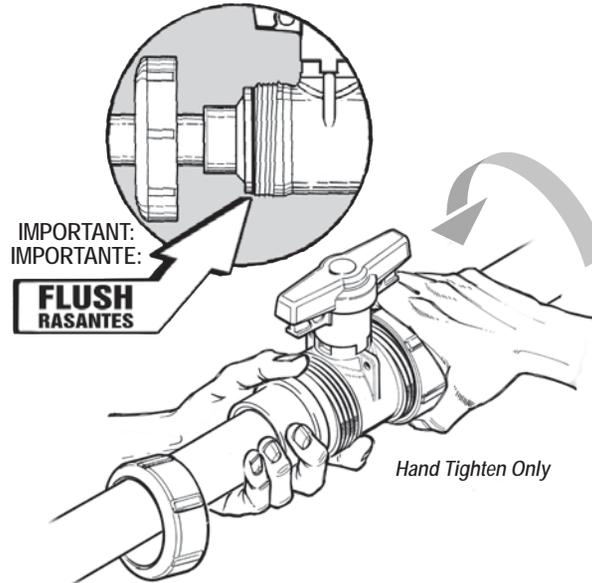
**STEP 3** Wrench Make Up



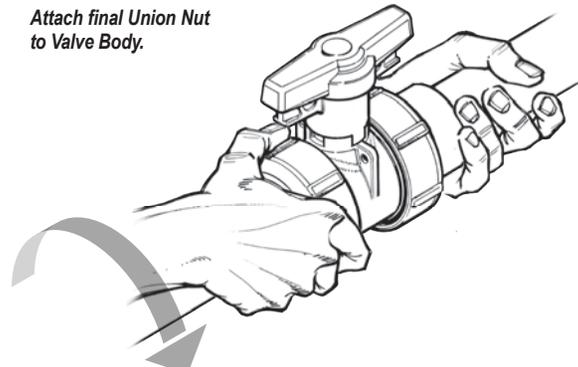
Unnecessary OVERTIGHTENING will cause damage to both pipe and valve.

## COMPLETE VALVE ASSEMBLY

**STEP 1** Attach Valve Body to End Connector

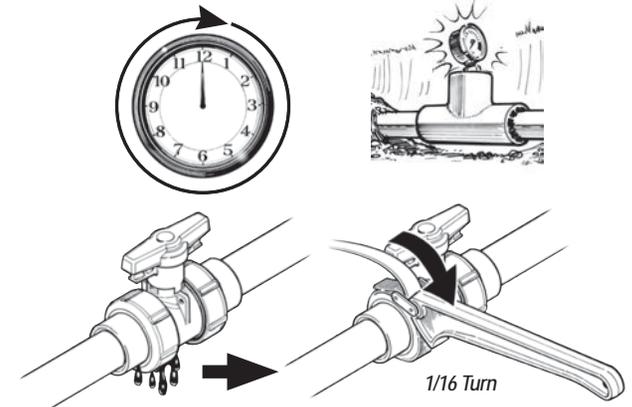


Attach final Union Nut to Valve Body.



BE SURE THAT THE FACE OF THE END CONNECTOR SOCKET IS SQUARELY ALIGNED (FLUSH) WITH THE VALVE BODY AND IS FLUSH AGAINST THE O-RING. DO NOT USE THE REMAINING UNION NUT TO DRAW TOGETHER ANY GAPS BETWEEN THE END CONNECTOR AND THE VALVE BODY.

**STEP 2** Pressure test the system only after all solvent cement joints have fully cured



DO NOT OVER TIGHTEN AS DAMAGE MAY OCCUR

## PRECAUTIONS AND WARNINGS

**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, cup, wedge, seats, etc.

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

**WARNING:** NOT FOR DISTRIBUTION OF COMPRESSED AIR OR GAS

### WARNING:

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.

