

# PVC PIPE ASSOCIATION TECHNICAL BRIEF

## INSTALLATION OF PVC PIPE INTO A MECHANICAL JOINT (MJ)

ASTM D3139 is the standard for joints for gasketed plastic pipe. The standard defines “mechanical joint” as: “a joint in which a positive seal is achieved when a gasket is compressed by means of a mechanical device.” A mechanical-joint (MJ) connection is the most common method used to join PVC pipe to a valve or an iron fitting. An MJ connection includes a gasket, a follower-gland that compresses the gasket, a mechanical restraint device, and bolting hardware. For some types of MJ, the restraint device is incorporated into the follower gland.

### RECOMMENDATIONS

An MJ installation process will be more successful if the following recommendations are followed:

1. Compare the pipe’s print line to the restraint hardware information.
  - The print on the PVC pipe includes information about:
    - o Pipe material
    - o Pipe size
    - o Pipe outside-diameter type
    - o Product standard
  - This information should be cross-checked against the restraint packaging to ensure that the correct hardware is used with the installed pipe.
  - The use of correct hardware is important to prevent problems with the joint.
2. Prepare the PVC pipe’s spigot end.
  - To ensure proper sealing, the bevel at the end of the PVC pipe spigot should be removed.
  - The end of the pipe should be cut square.
3. Insert the PVC pipe’s spigot end into the appurtenance bell.
  - The squared-off end of the spigot should be bottomed in the appurtenance bell.
  - MJs typically have a shallow insertion depth, so the pipe’s insertion line should be ignored.
4. Install the MJ gland per the AWWA C600 installation standard.
  - The guide provides information on:
    - o Cleaning of the hardware and lubrication of the gasket
    - o Placement of gasket and MJ follower-gland onto the pipe
    - o Pushing of gasket and gland into the valve/fitting socket
    - o Insertion and tightening of bolts (including bolt-torque ranges for different pipe sizes)
    - o Bolt-tightening pattern and guidance
  - Torque recommendations should be followed to provide proper connections.
  - The standard states: “The use of a torque-indicating wrench will facilitate this procedure.”
5. Install the restraint hardware per the manufacturer’s instructions.
  - Some MJ hardware incorporates the gripping mechanism into the design of the mechanical joint gland. After the mechanical joint gland is assembled to the appurtenance, the restraint is actuated by tightening a set of twist-off nuts.
  - When twist-off nuts are not present, torque recommendations should be followed.



*MJ installed on AWWA C900 pipe*

For additional information, see EBAA Iron’s document GI-6 “The Installation of Mechanical Joint Fittings.”

### TORQUE WRENCH – YES

Under-tightening or over-tightening of bolts can result in leaks or other problems, so it is important to conform to published torque recommendations. Some MJ types include torque-limiting twist-off nuts – where these nuts are not present, use of a torque wrench is recommended to provide feedback to the installer about the tightening process.

References: ASTM D3139 “Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals,” 2011; AWWA C600 “Installation of Ductile Iron Water Mains and Their Appurtenances,” 2010; EBAA Iron website [www.ebaa.com](http://www.ebaa.com); “The Installation of Mechanical Joint Fittings,” EBAA Iron