METROPOLITAN UTILITIES DISTRICT	Construction Standard	No: 5.5.3
	Use and Installation of Retainer Glands for PVC or Ductile Iron Pipe	Page: 1 of 3
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GENERAL

* Retainer glands are used to retain **PVC or ductile iron pipe** to a mechanical joint hub. Retainer glands shall not be used on other pipe materials, such as cast iron, unless approved by Engineering Design.

* Wedge action retainer glands may be used on all thickness and pressure class ductile iron pipe. This is the only style of retainer gland that shall be used on PVC pipe. Wedge action retainer glands are designed to retain specific pipe material. Wedge action retainer glands designed for use on PVC mains shall not be used on ductile iron mains and vice versa. Special attention shall be taken to assure that the proper wedge action retainer gland is used on the specified piping material. See "Precautions" section regarding the use of wedge action retainer glands on PVC.

* **Set screw retainer glands shall only be used on ductile iron pipe with a thickness of Special Thickness Class 52, or greater. Do not use set screw retainer glands on PVC pipe.**

Wedge action retainer glands shall be used only as follows:

- On the mechanical joints of new fire hydrant installations.
- On PVC pipe specified to be retained to a mechanical joint hub.
- On mechanical joints specified to be retained on the construction drawings.
- On Engineering approved situations where ground conditions are such that normal concrete backing blocks would be impossible or ineffective.

Set screw retainer glands shall be used only as follows:

- On the plain end of plain end ductile iron fittings requiring a retainer gland as specified on the construction drawings.
- On chlorine tubes requiring retainer glands as specified on the construction drawings. Final closure piece shall be retained with wedge action retainer glands.
- On the mechanical joints specifically specified to be retained by set screw retainer glands on the construction drawings.

Wedge action or Set screw retainer glands may be used as follows:

* - On ductile iron pipe with mechanical joint fittings used to relocate a main over or under a sewer, box culvert, or other obstacle.

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STEPS FOR INSTALLATION OF WEDGE ACTION RETAINER GLANDS

** 1. Assure that the ends (M.J. hub end and plain end) of the two pipes to be joined are clean. Using appropriate lubricant, place the gland on the plain end with the lip extension of the gland towards the M.J. hub of the other pipe or appurtenance, followed by the gasket with the thick edge toward the gland.

2. Insert the plain end into the M.J. hub. Then, press the gasket firmly and evenly into the hub.

3. Push the gland toward the M.J. hub until it makes contact with the gasket. Install the bolts and hand-tighten the nuts. **NOTE:** Now is the time to make any required joint deflection. Joints shall not be deflected more than 3° for pipe sizes 4" through 12", 2° for 14" and 16" pipe, 1-1/2° for pipe sizes 18" through 24" and 1° for pipe sizes 30" through 48".

4. Tighten the bolts uniformly to a torque range of 75-90 ft-lbs for pipe sizes 4" through 24", 100-120 ft-lbs for pipe sizes 30" and 36", and 120-150 ft-lbs for pipe sizes 42" and 48". Bolts shall be tightened alternately, at 180° apart, to draw the gland evenly towards the M.J. hub.

5. Hand tighten the torque limiting twist off nuts until all the wedges make contact with the pipe. Do not completely tighten at this time.

6. Once all the wedges are in contact with the pipe, tighten the torque limiting twist off nuts until they twist off. The nuts shall be tightened alternately, at 180° apart, until all the nuts are twisted off.

* 7. If removal of the gland is necessary, use the hex head to disengage the wedges. If it is required to reassemble the gland, follow steps 1 through 5 then hand tighten the wedge bolts until all the wedges make contact with the pipe. Once all the wedges are in contact with the pipe, tighten the wedge bolts, at 180° apart, until all the bolts are tightened. Wedge bolts shall be tightened to a torque per manufacturer's recommendation.

STEPS FOR INSTALLATION OF SET SCREW RETAINER GLANDS

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1. Assure that the ends (M.J. hub end and plain end) of the two pipes to be joined are clean. Using appropriate lubricant, place the gland on the plain end with the lip extension of the gland towards the M.J. hub of the other pipe or appurtenance, followed by the gasket with the thick edge toward the gland.

2. Insert the plain end into the M.J. hub. Then, press the gasket firmly and evenly into the hub.

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3. Push the gland toward the M.J. hub until it makes contact with the gasket. Install the bolts and hand-tighten the nuts. **NOTE:** Now is the time to make any joint deflection.

4. Tighten the bolts uniformly to a torque range of 75-90 ft-lbs for pipe sizes 4" through 24", 100-120 ft-lbs for pipe sizes 30" and 36", and 120-150 ft-lbs for pipe sizes 42" and 48". Bolts shall be tightened alternately, at 180° apart, to draw the gland evenly towards the M.J. hub.

* 5. Hand tighten all set screws so that they are snug on the pipe. Torque set screws per manufacturer's recommendation alternating between set screws 180° apart. Once complete, if any tightening needs to be performed, do it immediately. **CAUTION:** Once the set screws have been initially tightened to the specified torque, do not re-torque/retighten the set screws at a later time. Doing so may result in punching through the water pipe or breaking the retainer gland.

PRECAUTIONS

Joint/gland bolts shall not be retightened after tightening the wedges or set screws. If joint/gland bolts must be retightened, wedges or set screws shall be loosened, the joint/gland bolts retightened, and then the wedges or set screws tightened per this specification.

Joints shall not be deflected after tightening the wedges or set screws. Any deflection shall be made before tightening the wedges or set screws.

There are two sizes of PVC pressure pipe, C900 (ductile iron pipe size) and ASTM 2241 (iron pipe size). Approved wedge action retainer glands (MUD 119) accommodate both PVC pipe sizes. However, some glands require the removal of a spacer on the wedge bolts when used on ASTM 2241 PVC pipe. Refer to the manufacturer's instructions before installing wedge action retainer glands on ASTM 2241 PVC pipe.

** **WARNING: Wedge action retainer glands shall not be used on plain end ductile iron fittings. Wedge action retainer glands will not retain plain end ductile iron fittings. Only set screw retainer glands shall be used on plain end ductile iron fittings.**

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