

Mechanical Pipe Restraint

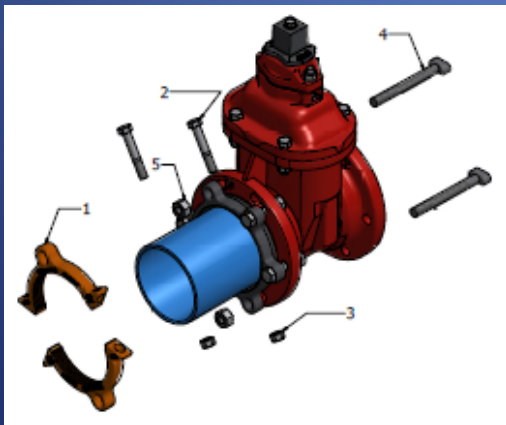
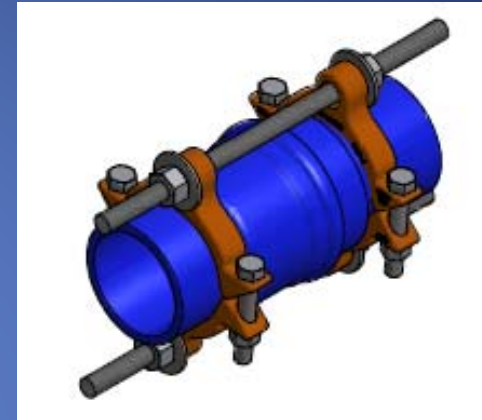
Mike Duguay

Atlantic Sales Representative



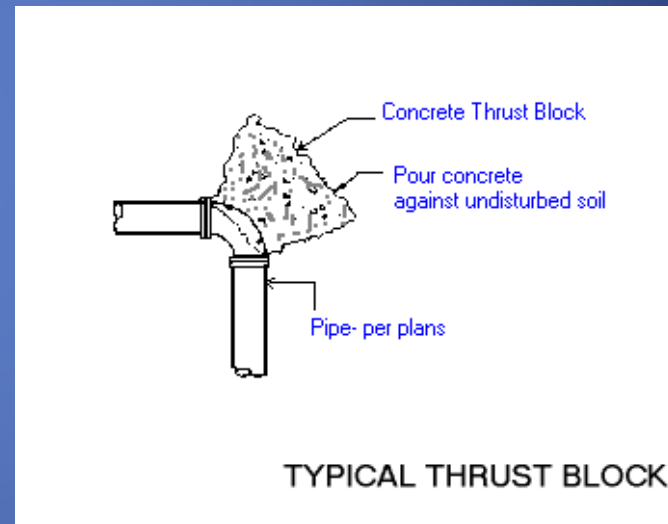
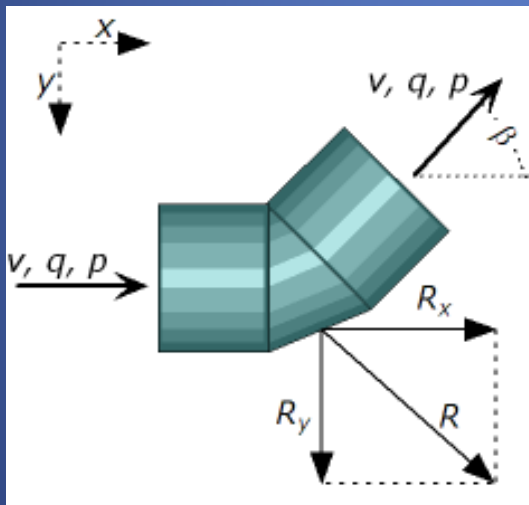
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Half Moon & Wedge Show



Thrust Force

Water under pressure exerts UNBALANCED
Thrust Force in piping systems

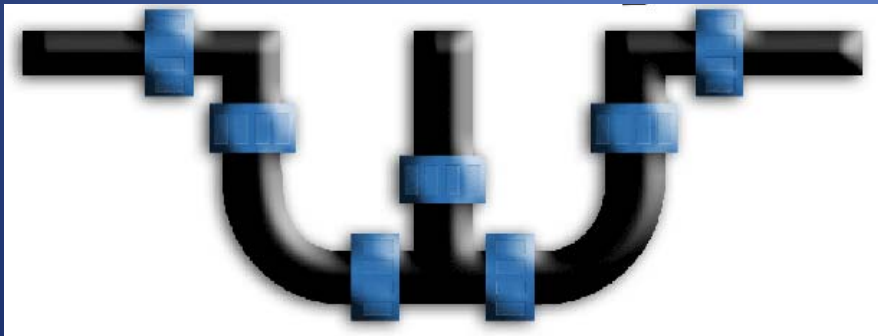


These *Forces* must be BALANCED
to maintain the integrity of the piping system

Thrust Force

Created In Water Mains When The Pipeline

- Changes Direction
- Stops
- Change In Size



Thrust Calculation



Thrust Force Created Per **100 PSI** of Water Pressure

6" Pipe

- 90 Degree Elbow – 5,290 LBS
- 45 Degree Elbow – 2,860
- Dead End/Valve – 3,740

12" Pipe

- 90 – 19,350
- 45 – 10,470
- DE – 13,690

How Can You Restrain Pipe?



Different Pipe Connections

- MJ Fittings
- Push-On or Tyton Fittings
- Flanged Fittings
- PVC Fittings
- Together
- Fire Hydrants
- Valves

Mechanical Restraint Devices

- Lug Style



- Harness Style



Lug Style Installation



Step 1

- Ensure the pipe end and MJ socket are clean
- Slide restrainer onto pipe with lip toward pipe end



Lug Style Installation



Step 2

- Lubricate pipe & inside edge of gasket
- Slide gasket on pipe with narrow edge toward pipe end



Lug Style Installation



Step 3

- Insert pipe and slide gasket firmly into recess
- Joint must be kept straight



Lug Style Installation



Step 4

- Push restrainer evenly against gasket and insert bolts
- Tighten T-Bolts a few turns in an alternating pattern
- Final Torque – Follow Manufactures Spec

DEFLECTION – If needed, do after t-bolts are hand tightened



5.0 Degree Max – 4" to 12"

2.0 Degree Max – 14" to 16"

1.5 Degree Max – 18" to 48"

DI, HDPE and PVC 4" to 24" – 75 to 90 ft.-lbs

PVCO 4" to 8" – 55 to 60

PVCO 10" to 12" - 65 to 75

Lug Style Installation



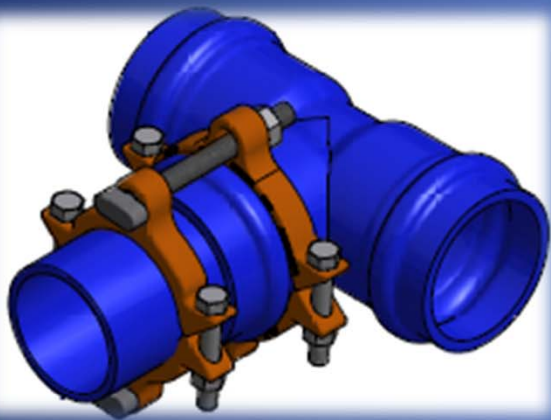
Step 5

- Hand tighten wedges until they contact the pipe
- Turn each bolt NO MORE than one half turn each
- Alternating pattern
- Until bolt heads break off

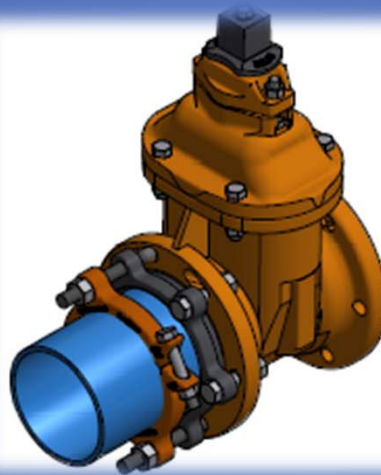


Harness Style

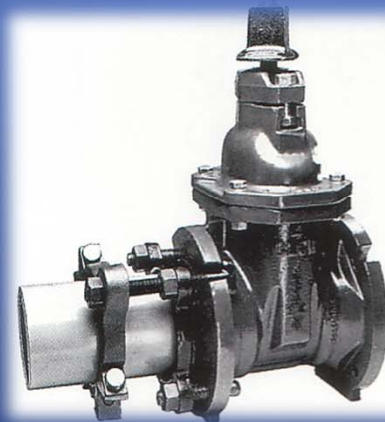
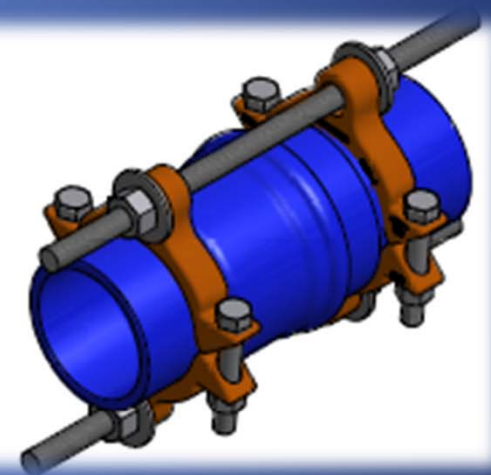
To PVC Fitting



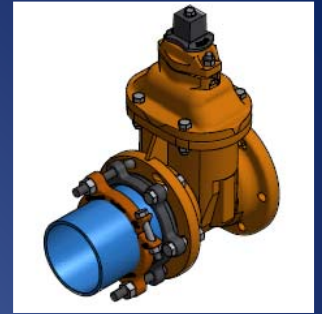
To MJ Fitting



PVC Bell Spigot

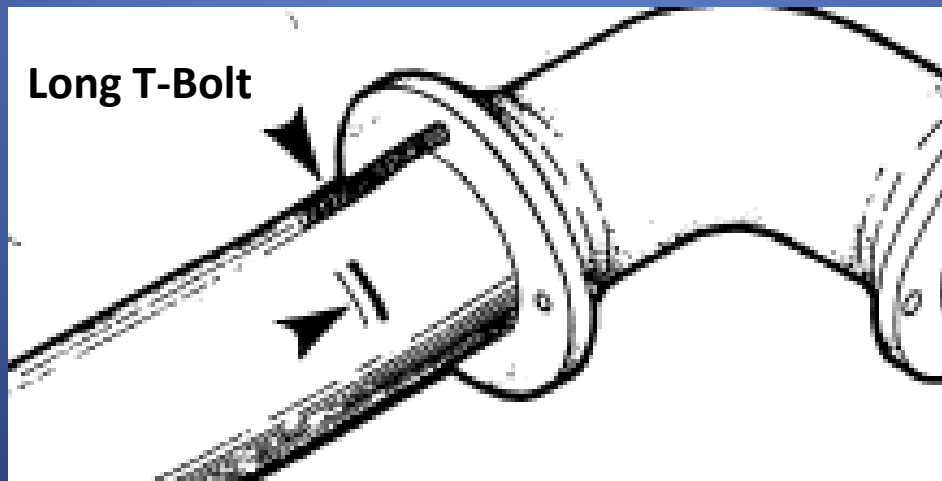


Harness Style Installation to MJ Connection

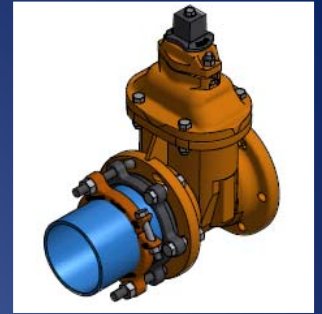


Step 1

- Insert pipe into MJ Connection
- Insert the long T-Bolt into position and mark 1" behind the end
- Remove pipe and bolt

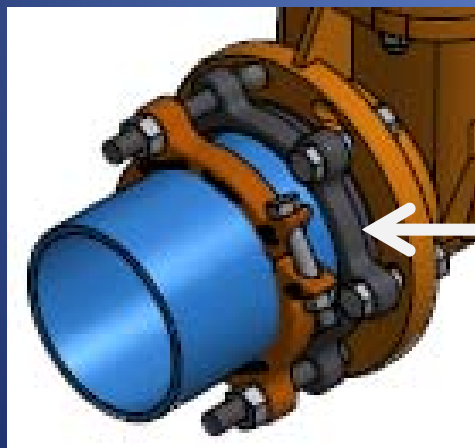


Harness Style Installation to MJ Connection



Step 2

- Clean Pipe End and MJ Bell
- Slide Gland Ring on pipe, lube pipe end & inside the gasket. Slide Gasket on pipe

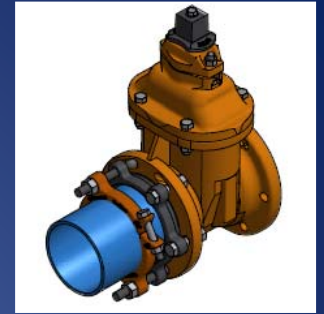


Gland Ring

Lube Inside

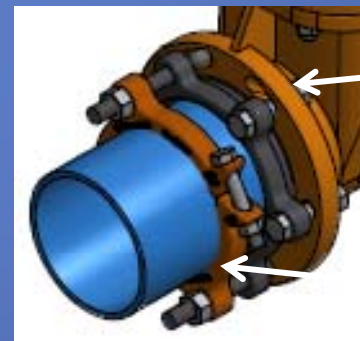
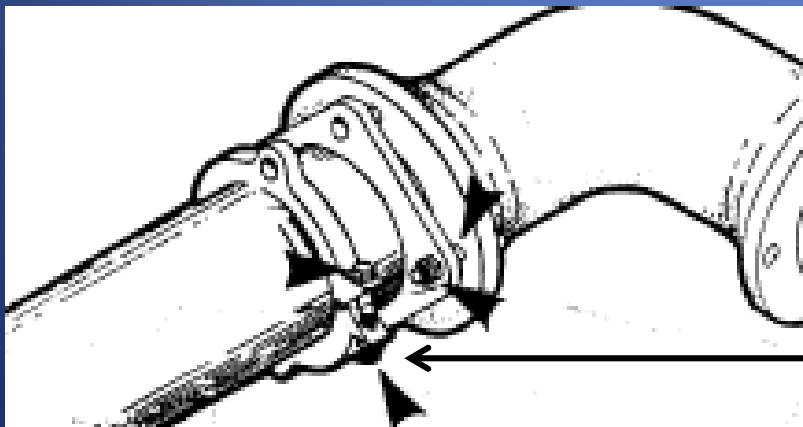


Harness Style Installation to MJ Connection



Step 3

- Assemble Gland Bolts and put Clamping Ring on the spot you marked
- Tighten Gland Bolts and Clamp Bolts to manufacturers recommended torque



Gland Bolts

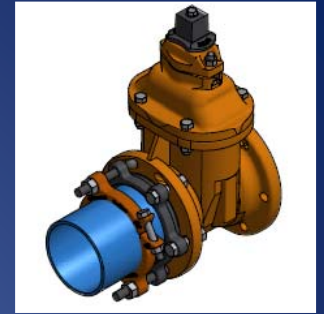
(Short T-Bolts)



Clamping Ring

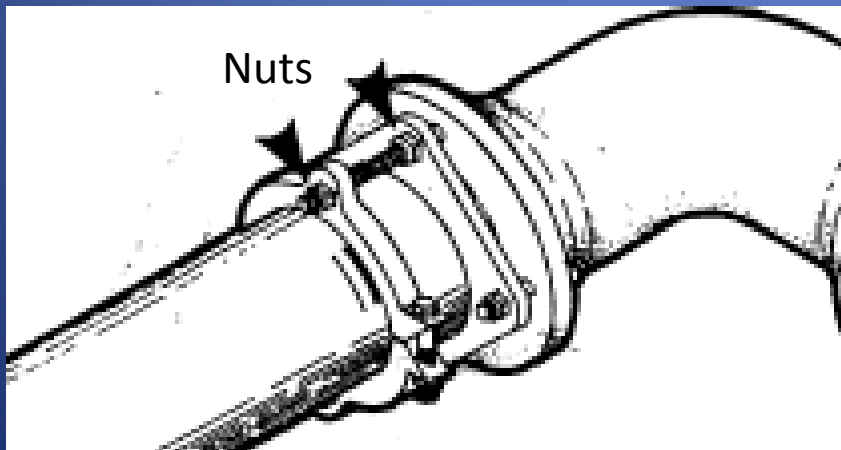
Clamp Bolts

Harness Style Installation to MJ Connection



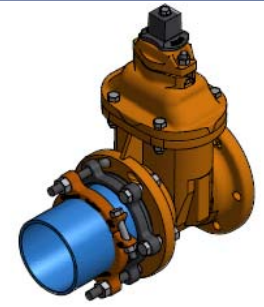
Step 4

- Insert long T-Bolts, putting one Retaining Nut between Gland Ring and Clamp Ring



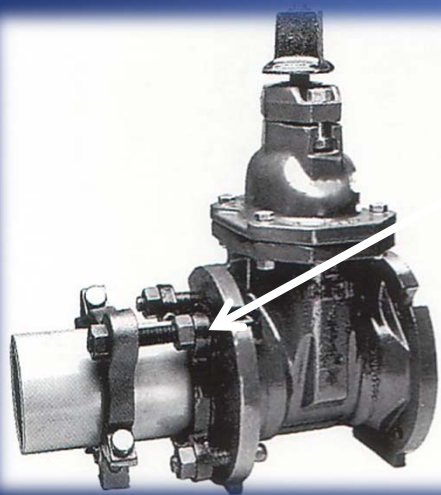
$\frac{3}{4}$ " x 7" T-Bolt
used on 4" Pipe

Harness Style Installation to MJ Connection

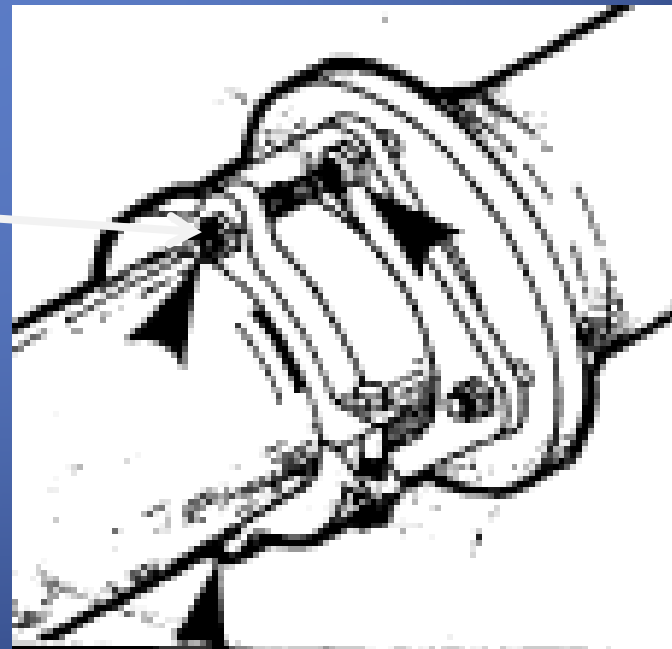


Step 5

- Tighten Retaining Nuts



Retaining Nuts





THANK YOU !