

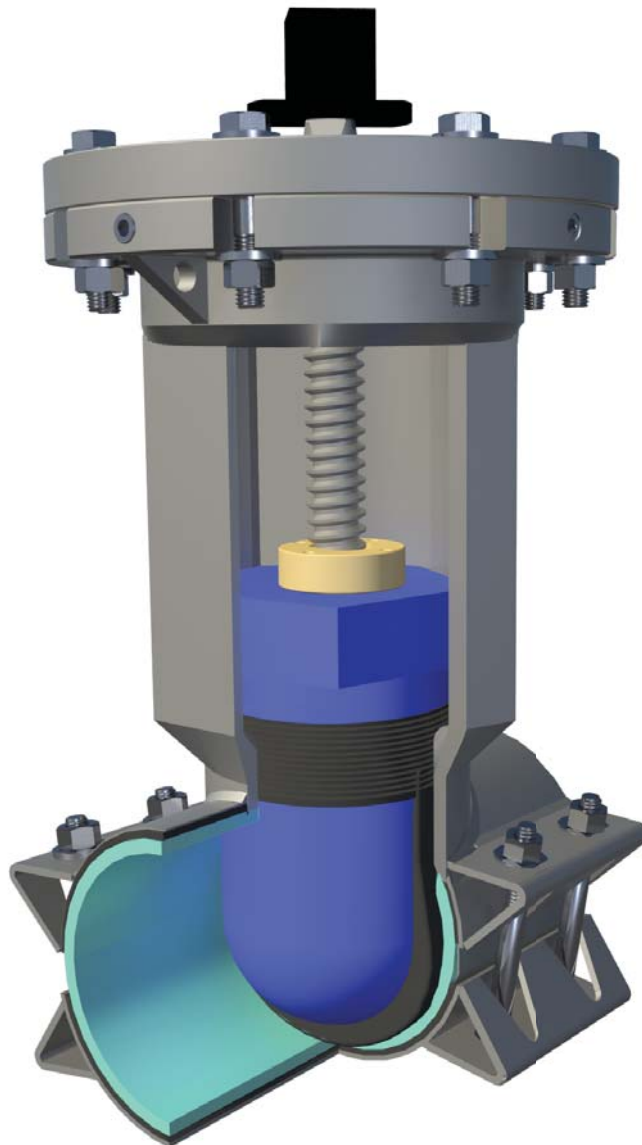
IV 250™

IV 250 Patriot Series™

4"-12" Nominal Size

Installation Instructions

IV250MAN 4"-12" IV 250 v1.90 Revised 01/17/2017



HYDRA-STOP®

Line Stopping • Line Tapping • Valve Insertion • Training and Support

IV 250[™] and IV 250 Patriot Series[™]

4"-12" Insertion Valve Installation Instructions

Table of Contents

SECTION ONE	Page
1.00 General Safety Precautions	3
 SECTION TWO - 4-8" IV 250 Installation	
2.2.0 Mount Valve Body on Pipe	7
2.3.0 Installing the Temporary Gate Valve	7
2.4.0 Setting up the Hydra-Tapper for valve insertion	7
2.5.0 Installing the Hydra-Tapper for 4"-8" IV 250's	8
2.6.0 Performing the Line Tap	9
2.7.0 Removing the Hydra-Tapper	10
2.8.0 Setting up the Hydra-Tapper for Valve Insertion 4"-8"	10
2.9.0 Install IV 250 Insertion Equipment	11
2.10.0 Set up the IV 250 Insertion Equipment for Equalization	12
2.11.0 Install the IV 250 Valve Cartridge	12
 SECTION THREE - 10 - 12" IV 250 Installation	
3.2.0 Mount Valve Body on Pipe	16
3.3.0 Installing the Temporary Gate Valve	16
3.4.0 Setting up the Hydra-Tapper for valve insertion	16
3.5.0 Installing the Hydra-Tapper for 10"-12" IV 250's	17
3.6.0 Performing the Line Tap	18
3.7.0 Removing the Hydra-Tapper	19
3.8.0 Setting up the Hydra-Tapper for Valve Insertion 10"-12"	19
3.9.0 Install IV 250 Insertion Equipment	20
3.10.0 Set up the IV 250 Insertion Equipment for Equalization	21
3.11.0 Install the IV 250 Valve Cartridge	21
 SECTION FOUR - APPENDICES	
Appendix A Technician Tool List	23
Append B Manual Measuring for Valve Cartridge Installation	24
Appendix C IV 250 Valve Body Installation Instructions	26

GENERAL SAFETY WARNINGS

SECTION 1.00

GENERAL SAFETY PRECAUTIONS - READ AND FOLLOW INSTRUCTIONS

Carefully read and understand all safety messages in this manual before using the equipment. The manuals provided with the equalization pump must also be read for safety.

The maintenance procedures are to be followed to keep the equipment in good working condition.

PERSONAL PROTECTION

Hydra-Stop recommends that installers wear required personal protective equipment including but not limited to:

- Hard Hat
- Safety Shoes
- Safety Glasses
- Ear Protection
- Gloves

Avoid wearing jewelry, such as rings, wristwatches, necklaces, or bracelets. If working near traffic, select ear protection that allows you to hear the traffic for safety.

KEEP SPECTATORS AWAY FROM INSTALLATION AREA

Keep all spectators and other workers away from machines and work area(s) while in operation.

CLEAR WORK AREA

Clear the work area of all objects that might interfere with the proper operation of any tools. Avoid placing tools or other objects where they can fall into the pit.

DO NOT WORK IN AN UNSUPPORTED TRENCH

Do not work in trench with unstable sides, which could cave in. Specific requirements for shoring or sloping trench walls are available from several sources including federal and state offices. Be sure to contact suitable authorities for these requirements before working in the trench. A minimum 5' x 5' excavation is recommended.

Locate the existing pipe joints or fittings in the area and use the appropriate restraint methods if necessary.

CHECK LAWS AND REGULATIONS

Know and obey all Federal, State, and local laws and regulations that apply to your work situation.

HANDLING THE EQUIPMENT

To avoid back injury, use proper lifting techniques. Follow all equipment instructions when lifting heavy loads.

CHECK HARDWARE AND EQUIPMENT

Make sure that all air or hydraulic line couplings are tightened and secured to eliminate the chance of accidental uncoupling. Use hose connection retaining devices such as locking rings, clips, pins, chains, or cables. Identify all equipment and tools necessary for the size of IV 250 you intend to install. Please refer to the attached tool list (See Appendix A). Inspect equipment to verify it is in good working condition and free of wear and damage prior to use. Never start an operation if the equipment is not in proper working order. Contact Hydra-Stop if equipment is not in working order.

WARNING: Failure to follow any of the above safety instructions or those that follow in this manual, could result in serious injury. Any operation involving work on pipe containing liquids or gases under pressure is potentially hazardous. It is necessary, therefore, that correct procedures be followed in the use and maintenance of this equipment to maintain a safe working environment.

No person should use this equipment who is not fully trained in the procedures stated in this manual, and who is not fully aware of the potential hazards connected with work on pipe containing liquids or gases under pressure.

The purchaser of this equipment is responsible for the manner in which this equipment is used, maintained and the training, competence and safety of the operators.

Should any difficulty arise at any time in the use of this equipment, please contact HYDRA-STOP at 708-389-5111 immediately.

WARNING!

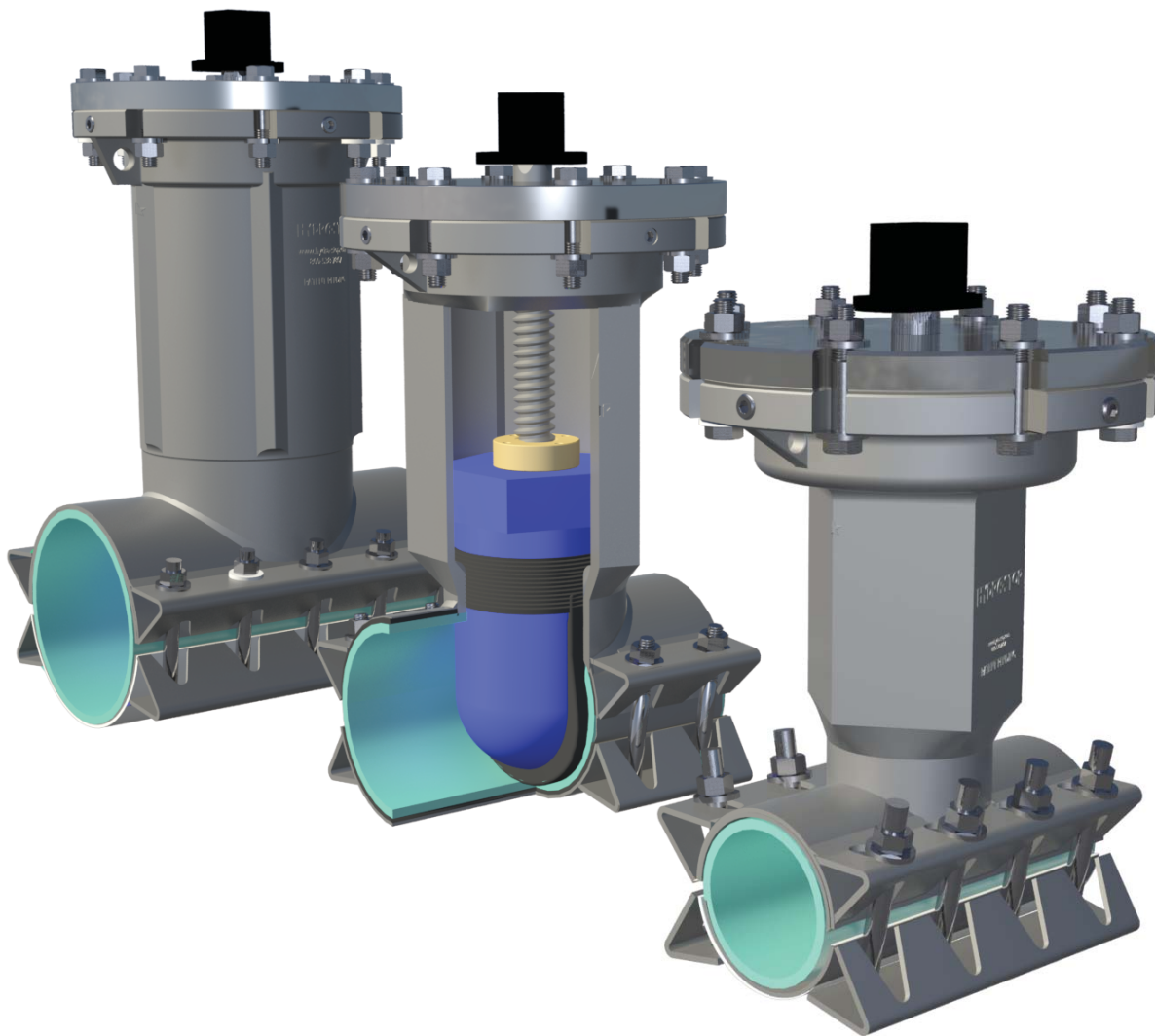
Never attempt to install Insta-Valve 250 insertion valves at pressures greater than 150 psi if equipment is not rated for 250 psi installation.

This includes the temporary gate valve and the Hydra-Tapper.

Contact Hydra-Stop at 708-389-5111 if you have any questions regarding equipment psi ratings.

Section 2

4 - 8" IV 250 Installation Instructions



IV 250 Patriot Series™ and IV 250™

4 - 8" Installation Instructions

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2.2.0 Mount & Pressure Test Valve Body on Pipe

2.2.1) Select the proper IV 250 for installation. Identify the type of pipe the IV 250 will be installed on. Accurately measure the outside diameter of the pipe.

2.2.2) Refer to the attached IV 250 Valve Body Installation Instructions. See Appendix C.

2.3.0 Installing the Temporary Gate Valve

2.3.1) Install the temporary gate valve. 4", 6" and 8" IV 250's use the 8" temporary gate valve. If possible avoid positioning the valve at the true 3, 6, 9 or 12 o'clock position to allow access to the completion plug pins.



Temporary gate valves are single direction valves and must be positioned top up. The 8" gate temporary valve must be installed with the o-ring groove facing up.



Figure 1

2.3.2) Bolt the temporary gate valve to the top of the IV 250 flange using the bolts, nuts and washers provided with the installation equipment. We recommend using a cross-tightening pattern.

2.3.3) Install the o-ring in the groove of the 8" temporary gate valve. (See Figure 1)

2.3.4) Fully open the temporary gate valve.



If you own an Aluminum Temporary Gate Valve: Fully close the temporary gate valve and count the number of turns to open. This is important to know in order

to check clearance issues later.

2.4.0 Setting up the Hydra-Tapper

2.4.1) Select proper size saw mandrel. Tapping of the 4"-8" IV 250 requires the 41" long saw mandrel.

2.4.2) Select proper size shell cutter. Hydra-Stop valve insertion shell cutters are shipped painted black. If you repaint valve insertion shell cutters in the future, Hydra-Stop recommends painting them black.

Installation of 4 inch IV 250 - requires 3.8 inch cutter

Installation of 6 inch IV 250 - requires 5.8 inch cutter

Installation of 8 inch IV 250 - requires 7.9 inch cutter



Do not use red painted shell cutters to install the IV 250. Hydra-Stop side tap shell cutters are shipped painted red. Red painted side tap shell cutters are 1/2" undersized for side tapping.

2.4.3) Select proper size pilot drill.

Installation of 4" & 6" IV 250's require the 5/8" X 6" long pilot drill.

Installation of 8" IV 250's require the 5/8" X 7-1/4" length pilot drill.



Tapping PVC or steel pipe will require a twist style pilot drill.



Failure to use the proper sized or type of pilot drill will result in a failed installation.

2.4.4) Loosen and remove the allen head pilot drill retaining set screw located on the side of the saw mandrel flange base.

2.4.5) Visually locate the tapered relief on the base of the pilot drill. Notice the stop or ledge at the base of the taper. (See Fig. 2)



Figure 2

2.4.6) Mark the flat of the taper with a visible marking agent. (See Figure 3)



Figure 3

2.4.7) Align the pilot drill flat with the allen head set screw and insert the pilot drill through the center of the saw mandrel stud. (See Figure 4)



Figure 4

IV 250 Patriot Series™ and IV 250™

4 - 8" Installation Instructions

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2.4.8) Confirm you have completely inserted the pilot drill and engaged the tapered flat. Look into set screw hole for the marking on the pilot drill. Adjust the pilot drill until you can see the marking. (See Figure 5)



Figure 5

2.4.9) Once aligned, insert and tighten the set screw. Test pull the pilot drill to ensure the set screw is properly locked in place against the pilot drill ledge. Check the coupon retaining clips so they move freely. (See Figure 6)


 Wear gloves when pulling on the pilot drill. Edges may be sharp.



Figure 6

2.4.10) Loosen and back out the 2 allen head cap screws on the flange of the saw mandrel until flush with the face of the flange.

2.4.11) Thread the appropriate shell cutter all the way onto the threaded stud of the saw mandrel flanged end.

2.4.12) Back off to align the holes in the base of the shell cutter with the allen head cap screws and thread them through the holes. Tighten allen head cap screws.


2.4.13) Make sure the saw mandrel is clean and free of rust or grime (steel wool can be used to clean and smooth the surface).

2.4.14) Lubricate the end of the saw mandrel with a dab of the food grade lubricant provided with the equipment to help it slide freely through the packing nut assembly.

2.4.15) Slide the assembled shell cutter and saw mandrel into the Hydra-Tapper until the saw mandrel flange bottoms out in the Hydra-Tapper.


2.4.17) Hand tighten the clamp lever on the packing nut assembly

to keep the assembled shell cutter and saw mandrel in place.

 Do not use tools to tighten the clamp lever.

2.5.0 Installing the Hydra-Tapper for 4"-8" IV 250 Installation

2.5.1) Using a strap or sling install the assembled Hydra-Tapper on to the 8" temporary gate valve and align the bolt slots.

 Use extreme caution not to damage the shell cutter or pilot drill as the unit is raised and positioned on to the temporary valve. Note the position of the fully retracted cutting assembly.

2.5.2) Install and cross tighten the bolts, nuts and washers to secure the assembly. Thread the 1/4" nipple and ball valve into the tap housing and wrench tighten. **Teflon tape or thread sealant can be used.**

2.5.3) Hold and control the exposed saw mandrel, loosen the packing nut assembly clamp lever and slowly lower the saw mandrel down until the pilot drill is resting on the center top of the pipe. Ensure the shell cutter spins freely in a clock-wise direction.

2.5.4) Slide the stop collar over the saw mandrel.

2.5.5) Set the cutting depth by measuring from the top of the packing nut assembly to the lower side of the stop collar.

- 4" pipe = 3" cutting depth
- 6" pipe = 4" cutting depth
- 8" pipe = 5" cutting depth

2.5.6) Tighten the stop collar to the correct measurement. (See Figure 7)

2.5.7) Install the drive unit by lifting it above the saw mandrel and slide it into the three guide bars.



Figure 7

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4 - 8" Installation Instructions

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2.5.8) Lower the drive unit onto the machined hex of the saw mandrel. Confirm the drive unit is fully seated onto the machined hex of the saw mandrel. (See Figure 8)



Figure 8

2.5.9) Install feed screw by threading it through the top plate of the Hydra-Tapper until the opening covers the spindle on the drive unit.



Do not apply downward force as it can damage the pilot drill.

2.5.10) When the feed screw makes contact with the top of the drive unit, back off one full turn.

2.5.11) Assemble the handle assembly and install over the flats at the top of the feed screw and tighten the handles.

2.6.0 Performing the Line Tap

2.6.1) Ensure ball valve on the Hydra-Tapper P2 housing is open.

2.6.2) Connect the drive unit power source to the drive unit. The air drive unit requires 90 CFM at 90 PSI. The hydraulic drive unit requires 9 GPM at 1800 PSI.

2.6.3) Ensure the drive unit lever control is in the neutral position. Always run the power unit in the clockwise direction.



Avoid reversing as this will damage the carbide on the pilot drill and carbide teeth on the shell cutter.

2.6.4) Engage the drive unit and confirm the saw mandrel is rotating in the clockwise direction. Slowly turn the handle assembly in a clockwise direction keeping slight, constant pressure until the tap is complete.

2.6.5) Close the ball valve on the P2 housing of the Hydra-Tapper as water fills the housing and flows from the valve.

2.6.6) The tap is complete when the bottom of the stop collar makes contact with the top of the packing nut assembly.



Do not overfeed the tap. Overfeeding the tap will cause the shell cutter to jam.

2.6.7) Return the drive unit lever control to the neutral position.

2.6.8) Loosen stop collar and continue to advance the feed screw an additional two complete revolutions to ensure the cut is complete. The shell cutter should spin freely. If it does, disconnect the drive unit power source from the drive unit. If the shell cutter does not spin freely pull the drive unit lever control down and confirm the saw mandrel is rotating in a clockwise direction. Slowly turn the handle assembly in a clockwise direction an additional two complete revolutions. Repeat steps 2.6.6 and 2.6.7

2.6.9) Slowly turn the handle assembly in a counterclockwise direction until the stop collar has reached the starting measurement.

- 4" pipe = 3" cutting depth
- 6" pipe = 4" cutting depth
- 8" pipe = 5" cutting depth

2.6.10) Tighten the packing nut assembly clamp lever to lock the saw mandrel in place. Remove feed screw. Remove drive unit.

2.6.11) Place a box end wrench over the hex on the saw mandrel and use the wrench as a lever brake to hold in place. (See Figure 9)



Figure 9

2.6.12) Loosen the packing nut assembly clamp lever and allow the pressure to slowly raise the cutter assembly fully into the tapping housing.

2.6.13) Confirm the shell cutter and saw mandrel assembly is fully retracted and lock the saw mandrel in place by tightening the packing nut assembly clamp lever.

2.6.14) Close the temporary gate valve. If using an aluminum gate valve: make sure you get the same number of turns to close as you counted in step 2.3.4.

IV 250 Patriot Series™ and IV 250™

4 - 8" Installation Instructions

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2.7.0 Removing the Hydra-Tapper

2.7.1) Relieve the pressure from the Hydra-Tapper by opening the ball valve and discharging the pressure.

2.7.2) Connect the slings or straps to the Hydra-Tapper. Unbolt and remove the Hydra-Tapper from the temporary gate valve. Place the Hydra-Tapper in a dry and safe work area.

2.7.3) Remove stop collar.

2.7.4) Remove cutter and saw mandrel assembly.

2.7.5) Remove the coupon by loosening the allen head pilot drill retaining set screw. Remove the pilot drill from the saw mandrel stud.

2.7.6) Flip the pilot drill and insert it point end through the hole in the coupon past the retaining clips and use it to pull the coupon out of the cutter.



Wear gloves when removing the coupon. Coupon edges may be sharp.

2.7.7) Inspect the coupon for pipe thickness and condition.

2.7.8) Remove cutter from saw mandrel.

2.8.0 Setting Up the Hydra-Tapper for 4"-8" Valve Insertion

2.8.1) Locate the proper valve inserting equipment. Installation of 4"-8" IV 250's will require the 4"-8" insertion housing, the 48 1/2" long insertion tool, and guide plate.

2.8.2) Stand the insertion housing on a flat surface with the o-ring grooved flange facing up. Place the o-ring into the insertion housing o-ring groove. Install the 3/4" nipple and ball valve.

2.8.3) Place the Hydra-Tapper on top of the insertion housing with the pointed end of the P3 facing the same direction as the step stand of the housing. Cross tighten with supplied bolts, nuts and washers.

2.8.4) Tip and lay the insertion housing and Hydra-Tapper assembly on its stand. (See Figure 10)

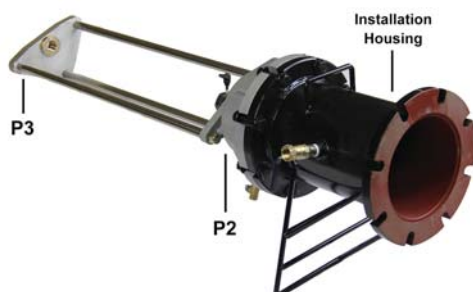


Figure 10

2.8.5) The IV 250 valve cartridge consists of top section and bottom section. The top section and bottom section must be firmly tightened together. Prior to removing operating nut hold the base of the valve cartridge and with a pipe wrench or valve key turn the valve stem firmly in the opening direction. (See Figure 11)



IV 250 Valve Cartridge

Figure 11

2.8.6) Remove the operating nut and the white teflon washer off of the valve stem and place the end of the insertion tool over the valve stem.

2.8.7) Tighten the IV 250 valve cartridge and insertion tool together by turning the knurled end of the insertion tool clockwise until snug. Tighten the 3/4" insertion tool lock nut located at the base of the knurled handle.



Caution: Ensure there are no gaps between the insertion tool, valve cartridge and feed screw. The valve cartridge should remain in tight contact with the insertion tool and act as a single unit.

2.8.8) Make sure the insertion tool is clean and free of rust or grime (steel wool can be used to clean and smooth the surface). Lubricate the end of the insertion tool with a dab of the food grade lubricant provided with the equipment to help it slide freely through the packing nut assembly. Ensure packing nut assembly clamp lever is loose.

2.8.9) Insert the assembled valve cartridge and insertion tool through the insertion housing / tapping assembly until the top of the valve cartridge is approximately 2.5" from the bottom flange of the insertion housing. Make sure the shorter, truncated side of the valve cartridge marked with a star is facing upwards. (See Figure 12)



Figure 12

IV 250 Patriot Series™ and IV 250™

4 - 8" Installation Instructions

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2.8.10) Setup the IV 250 4"-8" alignment gauge for the size being installed (4", 6" or 8"). Refer to alignment gauge instructions shipped with 4"-8" IV 250 Alignment Gauge Kit.

2.8.11) Set the curved portion of the alignment gauge within the lock pin groove of the valve cartridge. Slide the valve cartridge and alignment gauge towards the insertion housing until the alignment gauge touches the insertion housing. The two gauge pins will seat in the top two holes of the insertion housing. (See Figure 14).

2.8.12) Ensure the flat of the alignment gauge arm remains aligned with the truncated side of the valve cartridge. (See Figure 13).



Figure 13



Figure 14

2.8.13) Place the 7.5" IV 250 Insertion Depth Gauge on the insertion tool. Place one end of the insertion gauge against the packing nut assembly. Slide the stop collar towards the insertion gauge until the stop collar makes contact with the insertion gauge. This automatically sets the proper depth for insertion. Lock the stop collar.

2.8.14) Slide and place the guide plate to within 2" of the stop collar and lock the clamp lever. (See Figure 15).



Figure 15

2.8.15) Make a reference mark on the insertion housing aligned with the centerline of the Alignment Gauge. (See Figure 14.)

2.8.16) Remove the 7.5" IV 250 Insertion Depth Gauge.

2.8.17) Slide the valve cartridge back to the original 2.5" measurement away from the insertion housing. Remove the IV 250 Alignment Gauge.

2.8.18) Lubricate the completion plug o-ring with food grade lubricant provided with the equipment.

2.8.19) Slide the valve cartridge assembly fully into the insertion housing.

2.8.21) Tighten the clamp lever on the packing nut assembly to keep the assembled valve cartridge and insertion tool in place.

⚠ Do not use tools to tighten the clamp lever.

2.9.0 Install IV 250 Insertion Equipment

2.9.1) Make sure the o-ring in the temporary gate valve is still properly seated in the o-ring groove and safely lift the insertion equipment on to the temporary valve.

2.9.2) Align the insertion housing reference mark made in step 2.8.15 with the point of the pentagon valve body that is in line with the direction of the pipe. (See Figure 16). You may also utilize the "star" on the valve as an alignment reference.

⚠ Use the pin plug hole that aligns with the valve body star as an additional alignment reference.

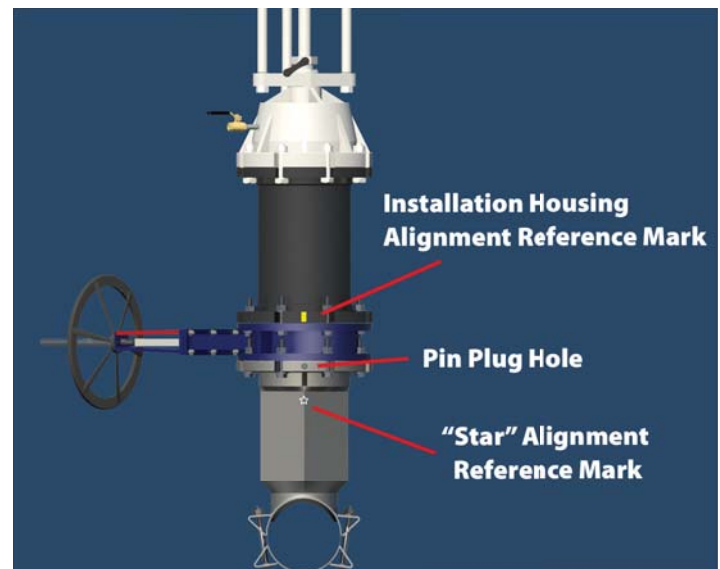


Figure 16


2.9.3) Using the bolts, nuts and washers cross tighten the assembly in place.

2.10.0 Set up the IV 250 Insertion Equipment for Equalization

2.10.1) Install the proper fitting on to the insertion housing $\frac{3}{4}$ " ball valve. The equalization source will determine the proper fitting.

2.11.0 Install the IV 250 Valve Cartridge

2.11.1) Loosen the packing nut clamp lever. Lower the valve cartridge / insertion tool assembly until it touches the temporary gate valve. Re-tighten the packing nut assembly clamp lever. It is critical to install the 30" feed screw over the knurled spindle of the insertion tool until the feed screw bottoms out on the locking nut washer.

 Failure to follow step 2.11.1 could result in damaged equipment and failed installation.

2.11.2) Open the tapping housing and insertion housing ball valves and slowly open the temporary gate valve until the insertion housing begins to fill. Stop opening the temporary gate valve.

2.11.3) Close the insertion housing ball valve once fluid reaches the ball valve. Wait for fluid to reach the tapping housing ball valve and close ball valve. Allow the insertion / tap housings to fully pressurize.

2.11.4) Fully open the temporary gate valve. Count your turns to be sure it is fully open on aluminum gate valves (You do not need to count turns on steel gate valves).

2.11.5) Install the handle assembly over the flats at the top of the feed screw and tighten.

2.11.6) Loosen the packing nut assembly clamp lever and begin advancing the valve cartridge insertion assembly. Advancement will stop when the completion plug o-ring makes contact with the valve body flange. The stop collar will be approximately 2" from the top of the packing nut assembly. Confirm this measurement.


 Do not start the next step until the 2 inch measurement has been confirmed. (See Figure 17)



Figure 17

2.11.7) Connect the equalization source and open the insertion housing ball valve.

2.11.8) Pressurize the insertion housing until the pressure in the insertion housing is 5 psi greater than the line pressure. If properly aligned, valve cartridge should seat itself.

2.11.9) Continue advancing the feed screw until the valve cartridge assembly is completely seated. The valve cartridge assembly is completely seated when the bottom of the stop collar makes contact with the top of the packing nut assembly.

NOTE: Measuring errors may prevent the bottom of the stop collar from reaching the top of the packing nut assembly. Do not proceed to step 11 if the distance between the stop collar and the packing nut assembly is greater than $\frac{1}{8}$ " of an inch. Fully retract the valve cartridge from the installation housing. Close temporary gate valve. Return to 8.0 *Setting Up the Hydra-Tapper for Valve Insertion 4"-8"* Step 2.8.11 and repeat all installation steps.

2.11.10) Remove pin plugs. Store in a clean and safe location.

2.11.11) Lock the valve cartridge assembly in place by cross tightening the four allen head locking pins. Tighten until the allen head locking pin makes **SLIGHT CONTACT** with the completion plug - approximately 8-1/4 full turns. **Back off $\frac{1}{4}$ turn on each pin.** Figure 18 below shows a cross tightening pattern which starts with Locking Pin #1 followed by Locking Pin #2, #3 and #4. You may start with any of the locking pins as #1, however, be sure to follow a cross tightening pattern with remaining pins.

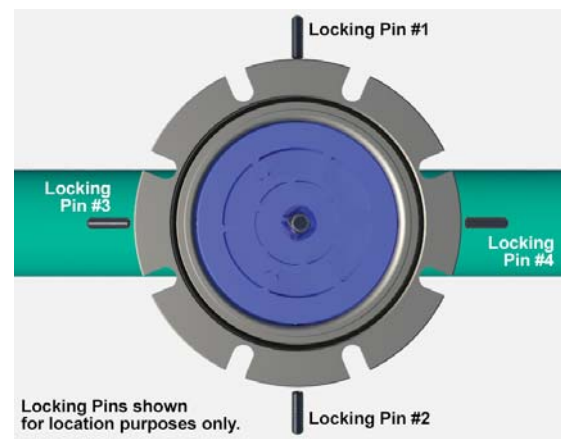



Figure 18

* Note: Temporary Gate Valve removed for clarity. Locking Pins are shown for location purposes only.

 NOTE: If you experience excessive leakage from the locking pin ports you can immediately re-install the pin plugs (removed in step 2.11.10) after properly setting the completion plug pins.

IV 250 Patriot Series™ and IV 250™

4 - 8" Installation Instructions

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Do not start the next step until all completion pins have been properly set. Failure to properly set completion pins could result in hard operation and impact valve performance. (See Figure 19 below).




Figure 19

2.11.12) Tighten the packing nut assembly clamp lever and retract the feed screw three full turns.

2.11.13) Remove the equalization source. Slowly open the 3/4" ball valve on the insertion housing to relieve the pressure in the insertion / tap housings.

2.11.14) Remove the feed screw.

2.11.15) Loosen the insertion tool lock nut three full turns. Turn the knurled handle of the insertion tool counterclockwise until the insertion tool is disengaged from the valve stem.

 Ensure the insertion tool does not rotate when turning the knurled handle of the insertion tool.

2.11.16) Loosen the packing nut assembly clamp lever and fully retract the insertion tool. Re-tighten the packing nut assembly clamp lever.

2.11.17) Remove the IV 250 insertion equipment & temporary gate valve. Confirm o-ring is placed on top of IV 250 flange.

2.11.18) Place white teflon washer onto the valve stem.

2.11.19) Lubricate the o-ring in the bore of the IV 250 bonnet and install over the valve stem.

2.11.20) Align bolt holes.

2.11.21) Cross tighten the bolts, nuts and washers that came with the IV 250.

2.11.22) Set the 2" operating nut on the valve stem. Thread the operating locking nut on to the valve stem.

2.11.23) Locate and install allen head pipe plugs removed during IV 250 valve body installation. Use teflon tape or thread sealant to ensure a seal.

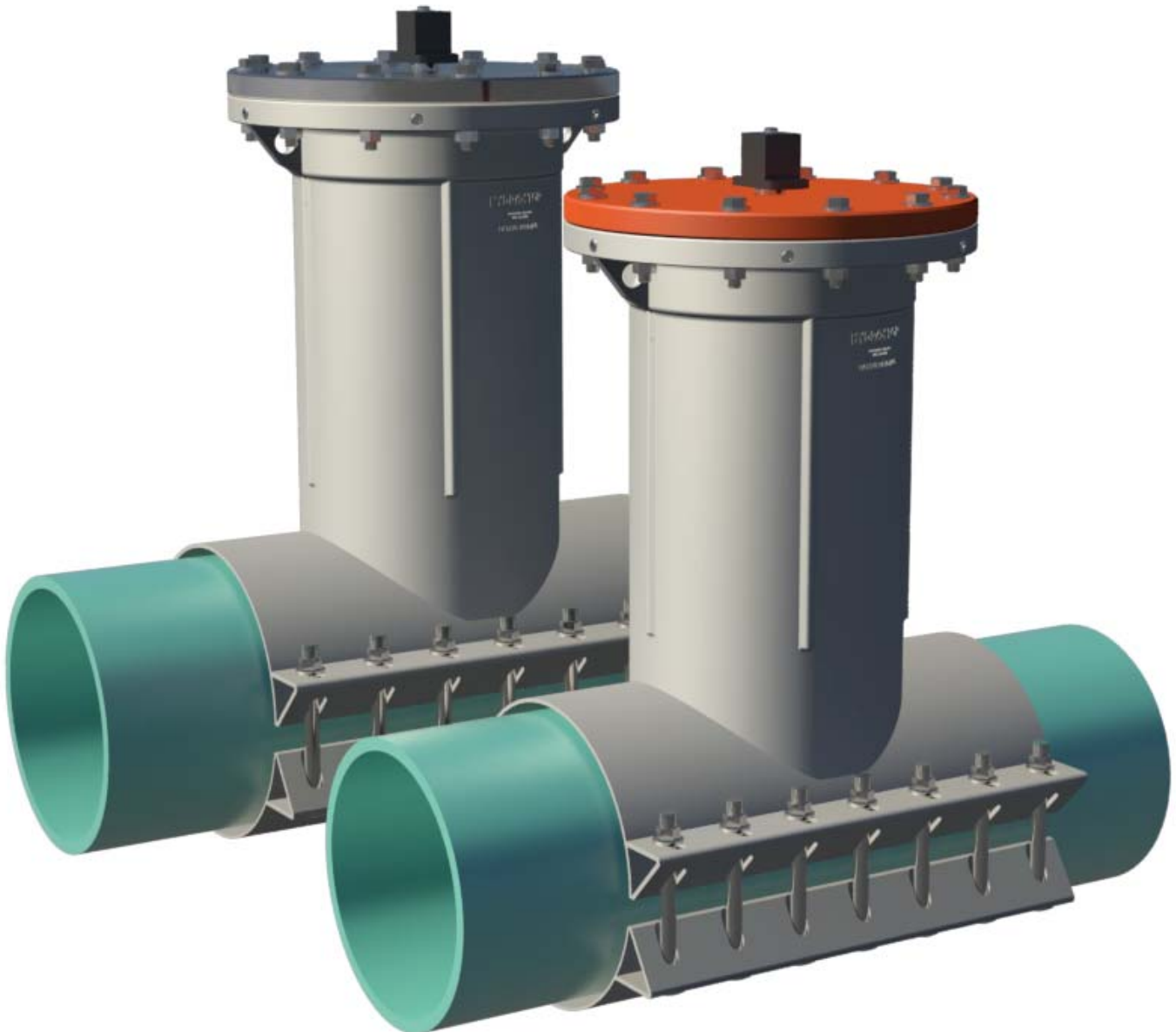
2.11.24) Full open/close IV 250 to confirm a successful installation. IV 250 is three turns per inch plus/minus three turns depending on the type and condition of the inside diameter of the pipe.

2.11.25) Fully disassemble, clean and store equipment.

2.11.26) Order replacement parts, if necessary, to replace lost, damaged or worn components.

Section 3

10 - 12" IV 250 Installation Instructions



WARNING!

Never attempt to install Insta-Valve 250 insertion valves at pressures greater than 150 psi if equipment is not rated for 250 psi installation.

This includes the temporary gate valve and the Hydra-Tapper.

For 10 and 12" installations, your P-20 must also be bored to 13.00 inches.

Contact Hydra-Stop at 708-389-5111 if you have any questions regarding equipment psi ratings.

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions

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3.2.0 Mount & Pressure Test Valve Body on Pipe

3.2.1) Select the proper IV 250 for installation. Identify the type of pipe the IV 250 will be installed on. Accurately measure the outside diameter of the pipe.

3.2.2) Refer to the attached IV 250 Valve Body Installation Instructions in Appendix C.

3.3.0 Installing the Temporary Gate Valve

3.3.1) Install the temporary gate valve. 10" and 12" IV 250's use the 12" temporary gate valve. If possible avoid positioning the temporary valve over one of the pin plug ports.

 Temporary gate valves are single direction valves and must be positioned top up. The 12" gate temporary valve must be installed with the red bar facing up. (See Figure 1)

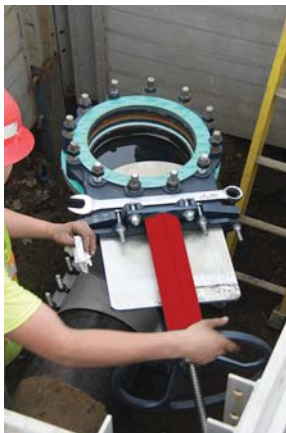



Figure 1

3.3.2) Install the flange o-ring in the o-ring channel on the IV 250. Carefully lower the 12" temporary gate valve into position. Ensure the temporary gate valve is centered on the valve flange.

 Failure to center temporary valve could cause mis-alignment resulting in a failed installation.

3.3.3) Bolt the temporary gate valve to the top of the IV 250 flange using the nuts and washers provided with the installation equipment.

3.3.4) Install green fiber gasket on the top side of temporary gate valve. (See Figure 1)

3.3.5) Fully open the temporary valve.

3.4.0 Setting up the Hydra-Tapper

3.4.1) Bolt Hydra-Tapper to the P-20 component using the bolts / nuts included with Hydra-Tapper equipment. (See Figure 2)

3.4.2) Select proper size saw mandrel. Tapping of 10" and 12" IV 250's require the 55" long saw mandrel.




Figure 2

3.4.3) Select proper size shell cutter. Hydra-Stop valve insertion shell cutters are shipped painted black. If you repaint valve insertion shell cutters in the future, Hydra-Stop recommends painting them black.


Installation of 10 inch IV 250 - requires 9.8 inch cutter.


Installation of 12 inch IV 250 - requires 11.8 inch cutter.

 Do not use red painted shell cutters to install IV 250. Hydra-Stop side tap shell cutters are shipped painted red. Red painted side tap shell cutters are 1/2" undersized for side tapping.

3.4.4) Select proper size pilot drill.

Installation of 10" and 12" IV 250's require the 3/4" X 10 5/16" long pilot drill.

 Tapping PVC or steel pipe will require a twist style pilot drill.

 Failure to use the proper sized or type of pilot drill will result in a failed installation.

3.4.5) Loosen and remove the allen head pilot drill retaining set screw located on the side of the saw mandrel flange base.

3.4.6) Visually locate the tapered relief on the base of the pilot drill. Notice the stop or ledge at the base of the taper. (See Figure 3)



Figure 3

3.4.7) Mark the flat of the taper with a visible marking agent. (See Figure 4)



Figure 4

3.4.8) Align the pilot drill flat with the allen head set screw and insert the pilot drill through the center of saw mandrel stud. (See Figure 5)



Figure 5

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions

HYDRA-STOP®

3.4.9) Confirm you have completely inserted the pilot drill and engaged the tapered flat. Look into set screw hole for the marking on the pilot bit. Adjust the pilot drill until you can see the marking. (See Figure 6)



Figure 6

3.4.10) Once aligned, insert and tighten the set screw. Test pull the pilot drill to ensure the set screw is properly locked in place against the pilot drill ledge. Check the coupon retaining clips so they move freely. (See Figure 7)



Figure 7

 Wear gloves when pulling on the pilot bit. Edges may be sharp.



Figure 8

3.4.11) Thread the appropriate shell cutter all the way onto the threaded stud of the saw mandrel flanged end.

3.4.12) Back off cutter to align the holes in the base of the shell cutter with the allen head cap screw holes in the saw mandrel. Thread screws from inside the shell cutters and then into the saw mandrel holes. (See Figure 8).

3.4.13) Thread nylon lock nuts onto allen head cap screws and tighten. (See Figure 9)




Figure 9

3.4.14) Make sure the saw mandrel is clean and free of rust or grime (steel wool can be used to clean and smooth the surface).

3.4.15) Lubricate the end of the saw mandrel with a dab of the food grade lubricant provided with the equipment to help it slide freely through the packing nut assembly.


3.4.16) Slide the assembled shell cutter and saw mandrel into the Hydra-Tapper until the saw mandrel flange bottoms out in the P-20 component.

3.4.17) Hand tighten the clamp lever on the packing nut assembly to keep the assembled shell cutter and saw mandrel in place.

 Do not use tools to tighten the clamp lever.

3.5.0 Installing the Hydra-Tapper for 10" - 12" IV 250 Installation

3.5.1) Using a strap or sling install the assembled Hydra-Tapper on to the 12" temporary gate valve and align the bolt slots.

 Use extreme caution not to damage the shell cutter or pilot drill as the unit is raised and positioned on to the temporary valve. Note the position of the fully retracted cutting assembly.

3.5.2) Cross tighten the bolts, nuts and washers to secure the assembly. Thread the 1/4" nipple and ball valve into the tap housing and wrench tighten. **Teflon tape or thread sealant can be used.**

3.5.3) Hold and control the exposed saw mandrel, loosen the clamp lever and slowly lower the saw mandrel until the pilot drill is resting on the top of the pipe. Ensure the shell cutter spins freely in a clock-wise direction.

3.5.4) Slide the stop collar over the saw mandrel.

3.5.5) Set the cutting depth by measuring from the top of the packing nut assembly to the lower side of the stop collar.

3.5.6) Tighten the stop collar to the correct measurement. (See Figure 10)

• 10" pipe = 6" cutting depth

• 12" pipe = 7" cutting depth



Figure 10

3.5.7) Install the drive unit by lifting it above the saw mandrel and slide it into the three guide bars.

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions


HYDRA-STOP®

3.5.8) Lower the drive unit onto the machined hex of the saw mandrel. Confirm the drive unit is fully seated onto the machined hex of the saw mandrel. (See Figure 11)



Figure 11

3.5.9) Install feed screw by threading it through the top plate of the Hydra-Tapper until the opening covers the spindle on the drive unit.

 Do not apply downward force as it can damage the pilot drill.

3.5.10) When the feed screw makes contact with the top of the drive unit, back off one full turn.


3.5.11) Assemble the handle assembly and install over the flats at the top of the feed screw and tighten the handles.

3.6.0 Performing the Line Tap

3.6.1) Ensure ball valves on the Hydra-Tapper P2 housing and the P20 housing are open.

3.6.2) Connect the drive unit power source to the drive unit. The air drive unit requires 90 CFM at 90 PSI. The hydraulic drive unit requires 9 GPM at 1800 PSI.


3.6.3) Ensure the drive unit lever control is in the neutral position. Always run the power unit in the clockwise direction.

 Avoid reversing as this will damage the carbide on the pilot drill and carbide teeth on the shell cutter.

3.6.4) Engage the drive unit and confirm the saw mandrel is rotating in the clockwise direction. Slowly turn the handle assembly in a clockwise direction keeping slight, constant pressure until the tap is complete.

3.6.5) Close the ball valves on the P20 housing and the P2 housing of the Hydra-Tapper as water fills the housings and flows from the valves.

3.6.6) The tap is complete when the bottom of the stop collar makes contact with the top of the packing nut assembly.

 Do not overfeed the tap. Overfeeding the tap will cause the shell cutter to jam.

3.6.7) Return the drive unit lever control to the neutral position.

3.6.8) Loosen the stop collar and continue to advance the feed screw an additional two complete revolutions to ensure the cut is complete. The shell cutter should spin freely. If it does, disconnect the drive unit power source from the drive unit. If the shell cutter does not spin freely engage the drive unit and confirm the saw mandrel is rotating in a clockwise direction. Slowly turn the handle assembly in a clockwise direction an additional two complete revolutions. Repeat steps 3.6.6 and 3.6.7.

3.6.9) Slowly turn the handle assembly in a counter-clockwise direction until the stop collar has reached the starting measurement.

• 10" pipe = 6" cutting depth

• 12" pipe = 7" cutting depth

3.6.10) Tighten the packing nut assembly clamp lever to lock the saw mandrel in place. Remove feed screw. Remove drive unit.

3.6.11) Place a box end wrench over the hex on the saw mandrel and use the wrench as a lever brake to hold in place.

3.6.12) Loosen the packing nut assembly clamp lever and allow the pressure to slowly raise the cutter assembly fully into the tapping housing. (See Figure 12)



Figure 12

3.6.13) Confirm the shell cutter and saw mandrel is fully retracted and lock the saw mandrel in place by tightening the packing nut assembly clamp lever.

3.6.14) Close the temporary gate valve.

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions

HYDRA-STOP®

3.7.0 Removing the Hydra-Tapper

3.7.1) Relieve the pressure from the Hydra-Tapper by opening the ball valve and discharging the pressure.

3.7.2) Connect the slings or straps to the Hydra-Tapper. Unbolt and remove the Hydra-Tapper / P-20 assembly from the temporary gate valve. Place the assembly in a dry and safe work area.

3.7.3) Remove stop collar.

3.7.4) Remove cutter and saw mandrel assembly.

3.7.5) Remove the coupon by loosening the allen head pilot drill retaining set screw. Remove the pilot drill from the saw mandrel stud.

3.7.6) Flip the pilot drill and insert it point end through the hole in the coupon past the retaining clips and use it to pull the coupon out of the cutter.



Wear gloves when removing the coupon. Coupon edges may be sharp.

3.7.7) Inspect the coupon for pipe thickness and condition.

3.7.8) Remove cutter from saw mandrel.

3.8.0 Setting Up the Hydra-Tapper for 10" - 12" Valve Insertion

3.8.1) Locate the proper valve inserting equipment. Installation of 10"-12" IV 250's will require the 10"-12" insertion housing, the 59" long insertion tool, the guide plate and a stop collar.

3.8.2) Stand the insertion housing on a flat surface. Place a green fiber gasket (included with equipment) between the insertion

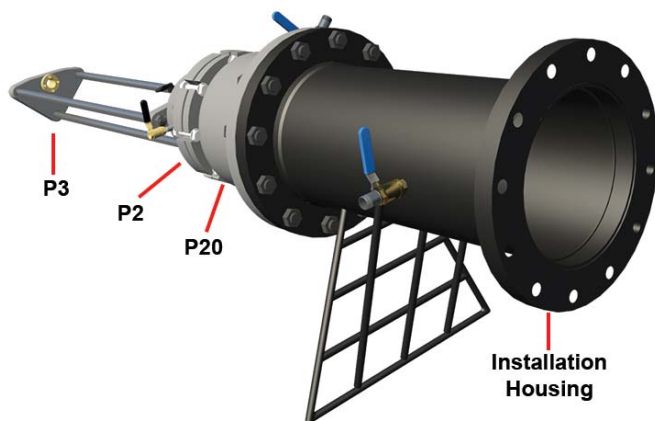


Figure 13

housing and the tapping machine / P 20 assembly. Install the 3/4" nipple and ball valve.

3.8.3) Place the Hydra-Tapper / P-20 assembly on top of the insertion housing with the pointed end of the P3 facing the same direction as the step stand of the housing. Cross tighten with supplied bolts, nuts and washers.

3.8.4) Tip and lay the insertion housing and Hydra-Tapper / P20 assembly on its stand. (See Figure 13)

3.8.5) The IV 250 valve cartridge consists of top section and bottom section. The top section and bottom section must be firmly tightened together. Prior to removing operating nut hold the base of the valve cartridge and with a pipe wrench or valve key turn the valve stem firmly in the opening direction. (See Figure 14)

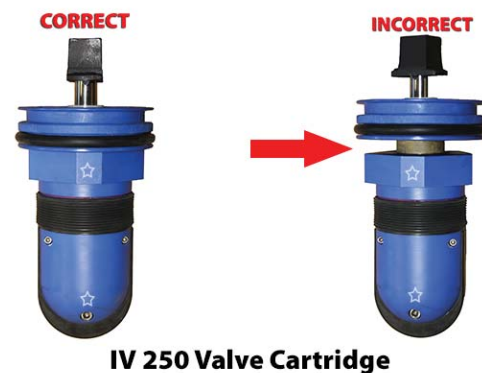


Figure 14

3.8.6) Remove the operating nut and the white thrust washer off of the valve stem and place the end of the insertion tool over the valve stem.

3.8.7) Tighten the IV 250 valve cartridge and insertion tool together by turning the knurled end of the insertion tool clockwise until snug. Tighten the 3/4" insertion tool lock nut located at the base of the knurled handle.

Caution: Ensure there are no gaps between the insertion tool, valve cartridge and feed screw. The valve cartridge should remain in tight contact with the insertion tool and act as a single unit.

3.8.8) Make sure the insertion tool is clean and free of rust or grime (steel wool can be used to clean and smooth the surface). Lubricate the end of the insertion tool with a dab of the food grade lubricant provided with the equipment to help it slide freely through the packing nut assembly. Ensure packing nut assembly clamp lever is loose.

3.8.9) Insert the assembled valve cartridge and insertion tool through the insertion housing / tapping assembly until the top of the valve cartridge is approximately 2.5" from the bottom flange of the insertion housing. Make sure the shorter, truncated side of the valve cartridge is facing upwards. (See figure 15 on next page.)

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions

HYDRA-STOP®



Figure 15

3.8.10) Slide the stop collar over the knurled end of the insertion tool. Align the 3 slots of the triangular shaped guide plate with the 3 guide bars and slide it over the knurled end of the insertion tool.

3.8.11) Setup the IV 250 10"-12" Alignment Gauge for the size being installed (10" or 12"). Refer to Alignment Gauge instructions shipped with 10"-12" IV 250 Alignment Gauge Kit.

3.8.12) Set the curved portion of the alignment gauge within the lock pin groove of the valve cartridge. Slide the valve cartridge and alignment gauge towards the insertion housing until the alignment gauge touches the insertion housing. The two gauge pins will seat in the top two holes of the insertion housing. (See Figure 17).

3.8.13) Ensure the flat of the alignment gauge arm remains



Figure 16



Figure 17

aligned with the truncated side of the valve cartridge. (See Figure 16).

3.8.14) Place the 4.25" IV 250 Insertion Gauge on the insertion tool. Place one end of the insertion gauge against the packing nut assembly. Slide the stop collar towards the insertion gauge until the stop collar makes contact with the insertion gauge. This automatically sets the proper depth for insertion. Lock the stop collar.

3.8.15) Make a reference mark on the insertion housing inline

with the alignment gauge centerline. (See Figure 17)

3.8.16) Slide and place the guide plate to within two inches of the stop collar and lock the clamp lever. (See Figure 18).

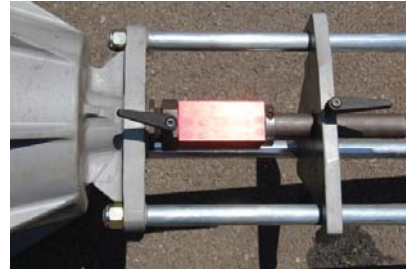


Figure 18


3.8.17) Remove the 4.25" IV 250 Insertion Gauge.

3.8.18) Slide the valve cartridge back to the original 2.5" measurement away from the insertion housing. Remove the IV 250 Alignment Gauge.

3.8.19) Lubricate the completion plug o-ring with food grade lubricant provided with the equipment.

3.8.20) Slide the valve cartridge assembly fully into the insertion housing.

3.8.21) Tighten the clamp lever.

 Do not use tools to tighten the clamp lever.

3.9.0 Install IV 250 Insertion Equipment

3.9.1) Place a green fiber gasket (included with equipment) between the insertion housing and the temporary gate valve. Safely lift the insertion equipment and place on to the temporary valve.

3.9.2) Align the insertion housing reference mark made in step 3.8.15 with the point of the pentagon valve body that is in line with the direction of the pipe. (See Figure 19)

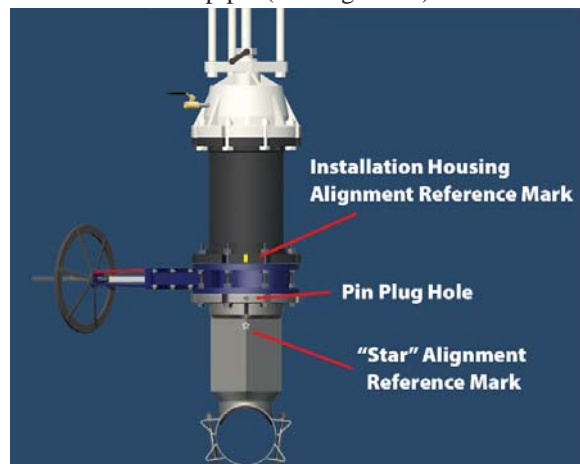


Figure 19

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions

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NOTE: Use the pin plug hole that aligns with the valve body pentagon point as an additional alignment reference.

3.9.3) Thread nuts and washers provided and cross tighten the insertion assembly in place.

3.10.0 Set up the IV 250 Insertion Equipment for Equalization

3.10.1) Install the proper fitting on to the insertion housing 3/4" ball valve. The equalization source will determine the proper fitting size and type.

3.11.0 Install the IV 250 Valve Cartridge

3.11.1) Loosen the packing nut clamp lever. Lower the valve cartridge until it touches the temporary gate valve. It is critical to install the 30" feed screw over the knurled spindle of the insertion tool until the feed screw bottoms out on the locking nut washer.

 Failure to follow step 3.11.1 could result in damaged equipment and failed installation.

3.11.2) Open the tapping housing and insertion housing ball valves and slowly open the temporary gate valve until the insertion housing begins to fill. Stop opening the temporary gate valve.

3.11.3) Close the insertion housing ball valve once fluid reaches the ball valve. Wait for fluid to reach the tapping housing ball valve and close ball valve. Allow the insertion / tap housings to fully pressurize.

3.11.4) Fully open the temporary gate valve.

3.11.5) Install the handle assembly over the flats at the top of the feed screw and tighten.

3.11.6) Loosen the packing nut assembly clamp lever and begin advancing the valve cartridge insertion assembly. Advancement will stop when the completion plug o-ring makes contact with the valve body flange. The stop collar will be approximately 2" from the top of the packing nut assembly. Confirm this measurement.



Figure 20



Do not start the next step until the 2 inch measurement has been confirmed. (See Figure 20)

3.11.7) Connect the equalization source and open the insertion housing ball valve.

3.11.8) Pressurize the insertion housing until the pressure in the insertion housing is 5 psi greater than the line pressure.

3.11.9) Continue advancing the feed screw until the valve cartridge assembly is completely seated. The valve cartridge assembly is completely seated when the bottom of the stop collar makes contact with the top of the packing nut assembly (within 1/8 of an inch.).

CAUTION: The feedscrew should advance easily during the valve cartridge install process. If excessive effort is required to advance feedscrew the valve cartridge is mis-aligned. Immediately stop the valve cartridge installation process, retract the valve cartridge into the installation housing and close the temporary gate valve. Remove equipment and return to step 3.8.1 and repeat all installation steps.

NOTE: Measuring errors may prevent the bottom of the stop collar from reaching the top of the packing nut assembly. Do not proceed to step 11 if the distance between the stop collar and the packing nut assembly is greater than 1/8" of an inch. Fully retract the valve cartridge from the installation housing. Close temporary gate valve. Return to 3.8.0 *Setting Up the Hydra-Tap-per for Valve Insertion 10"-12"* Step 3.8.11 and repeat all installation steps.

3.11.10) Remove Pin Plugs. Store in a clean and safe location.

3.11.11) Lock the valve cartridge assembly in place by cross tightening the six allen head completion plug pins. Tighten until the allen head locking pin makes **SLIGHT CONTACT** with the completion plug - approximately 10-1/2 full turns. **Back off 1/4 turn on each pin.** Figure 21 below shows a cross tightening pattern which starts with Locking Pin #1 followed by Locking Pin #2, #3, #4, #5 and #6.

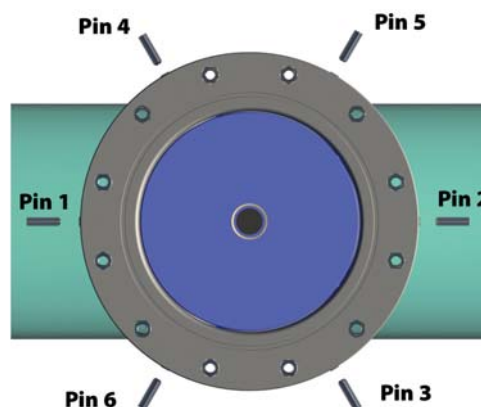


Figure 21


* Note: Temporary Gate Valve removed for clarity. Locking Pins are shown for location purposes only.

IV 250 Patriot Series™ and IV 250™

10 - 12" Installation Instructions

HYDRA-STOP®

You may start with any of the locking pins as #1, however, be sure to follow a cross tightening pattern with remaining pins.

 **NOTE:** If you experience excessive leakage from the locking pin ports you can immediately re-install the pin plugs (removed in step 3.11.10) after properly setting the completion plug pins.

Do not start the next step until all completion pins have been properly set. Failure to properly set completion pins could result in hard operation and impact valve performance. (See Figure 22)



Figure 22

3.11.12) Retract the feed screw until the feed screw is just clear of the knurled end of the insertion tool.

3.11.13) Loosen the insertion tool lock nut and turn the knurled handle of the insertion tool counterclockwise 3 full turns.

3.11.14) Remove the equalization source. Slowly open the 3/4" ball valve on the insertion housing to relieve the pressure in the insertion / tap housings.

3.11.15) Remove the feed screw.

3.11.16) Turn the knurled handle of the insertion tool counterclockwise until the insertion tool is disengaged from the valve stem.

3.11.17) Fully retract the insertion tool and tighten the packing nut assembly clamp lever.

3.11.18) Remove the IV 250 insertion equipment & temporary gate valve. Confirm o-ring is placed on top of IV 250 flange.

3.11.19) Place white thrust washer onto the valve stem.

3.11.20) Lubricate the o-ring in the bore of the IV 250 bonnet and install over the valve stem.

3.11.21) Install flange with recess facing down. Align bolt holes.

3.11.22) Cross tighten the bolts, nuts and washers that came with the IV 250.

3.11.23) Set the 2" operating nut on the valve stem. Thread the operating locking nut on to the valve stem.

3.11.24) Locate and install allen head pipe plugs removed during IV 250 valve body installation. Use teflon tape or thread sealant to ensure a seal.

3.11.25) Fully open and close IV 250 to confirm a successful installation. IV 250 is three turns per inch plus / minus three turns depending on the type and condition of the inside diameter of the pipe.

3.11.26) Fully disassemble, clean and store equipment.

3.11.27) Order replacement parts, if necessary, to replace lost, damaged or worn components.

Appendix A - Technician Tool List

Miscellaneous Supplies

Tape Measure
Torpedo Level
Channel Lock Pliers
Waterproof or Paint Marker
Teflon Tape
WD-40
Chlorine Sprayer
Spray bottle with soap & water
Food Grade Grease (such as Primo-Lube)
Pressure Test Kit including nipple assembly

Safety Equipment

Hard Hat
Safety Glasses
Safety Shoes
Fall Protection
Hearing Protection
Work Gloves
Small Slings

Wrenches and Ratchets

1/2 or 3/4 drive Ratchet Wrench
15/16" Socket
1-1/16" Extra Deep Socket
1-1/4" Extra Deep Socket
1-5/16" Extra Deep Socket
1-7/16" Extra Deep Socket

Allen Wrenches

9 / 16" Allen Wrench
5 / 8" Allen Wrench
5 / 32" T Handle Allen Wrench
3 / 16" T Handle Allen Wrench
1 / 4" T Handle Allen Wrench
5 / 16" T Handle Allen Wrench
3 / 8" T Handle Allen Wrench

Crescent Wrench

Torque Wrench (150 lbs)
1/2" Impact Wrench
3/4" Open End Wrench
15/16" Open End Wrench
1-1/16" Open End Wrench
1-1/4" Open End Wrench
1-5/16" Open End Wrench
1-7/16" Open End Wrench

(NOTE: Have two sets of open end wrenches on hand to allow multiple people to assist in installation)

18" Pipe Wrench

Appendix B - Manual Measuring for Valve Cartridge Alignment

B.1) Locate the proper valve inserting equipment. Installation of 4"-8" IV 250's will require the 4"-8" insertion housing, the 47 1/2" long insertion tool, and guide plate. Installation of 10"-12" IV 250's will require the 10"-12" insertion housing, the 59" long insertion tool and guide plate.

B.2) Stand the insertion housing on a flat surface with the o-ring grooved flange facing up. Place the o-ring into the insertion housing o-ring groove. Install the 3/4" nipple and ball valve.

B.3) Place the Hydra-Tapper on top of the insertion housing with the pointed end of the P3 facing the same direction as the step stand of the housing. Cross tighten with supplied bolts, nuts and washers.

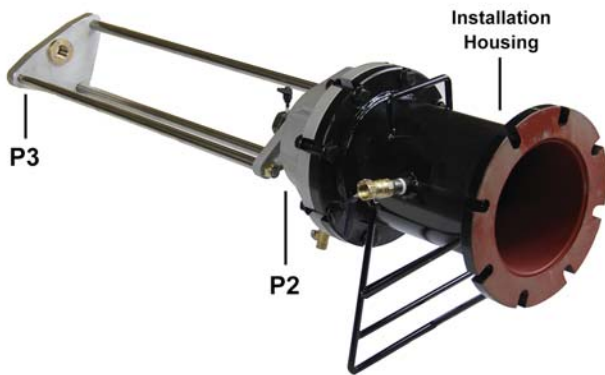


Figure B-1 4-8" Hydra-Tapper and Insertion Housing

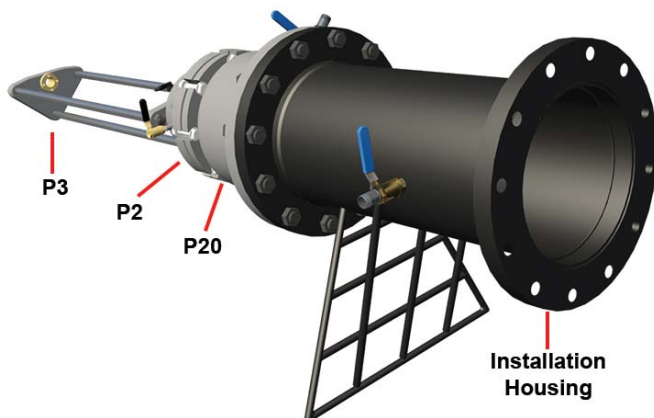


Figure B-1 10-12" Hydra-Tapper, P-20 and Insertion Housing

B.4) Tip and lay the insertion housing and Hydra-Tapper assembly on its stand. (See Figure B-1)



Figure B-2

B.5) The IV 250 valve cartridge consists of a top section and bottom section. The top section and bottom section must be firmly tightened together. Prior to removing operating nut hold the base of the valve cartridge and with a pipe wrench or valve key turn the valve stem firmly in the opening direction. (See Figure B-2).

B.6) Remove the operating nut and the white teflon washer from the valve stem and place the end of the insertion tool over the valve stem.

B.7) Tighten the IV 250 valve gate and insertion tool together by turning the knurled end of the insertion tool clockwise until snug. Tighten the 3/4" insertion tool lock nut located at the base of the knurled handle.

B.8) Make sure the insertion tool is clean and free of rust or grime (steel wool can be used to clean and smooth the surface). Lubricate the end of the insertion tool with a dab of the food grade lubricant provided with the equipment to help it slide freely through the packing nut assembly. Ensure the packing nut assembly clamp lever is loose.

B.9) Insert the assembled valve cartridge and insertion tool through the insertion housing / tapping assembly until the top of the valve gate is approximately 2.5" from the bottom flange of the insertion housing. Make sure the shorter, truncated side of the valve cartridge, marked with a star, is facing upwards.

B.10) Slide the stop collar over the knurled end of the insertion tool. Align the 3 slots of the triangular shaped guide plate with the 3 guide bars and slide it over the knurled end of the insertion tool.

B.11) Measure the distance from the center of one of the four set pin caps to the face of the top flange of the temporary gate valve. **RECORD THIS MEASUREMENT.** (See Figure B-3 on next page).

B.12) Adjust the valve cartridge so the lock pin groove is centered half in and half out of the insertion housing flange. (See Figure B-5 on next page)



Figure B-3

Set the distance from the top of the packing nut assembly to the bottom of the stop collar equal to the measurement recorded in step 8.11. (See Figure B-4 below).



Figure B-4

In most cases, this measurement will be 7.5 inches for 4-8" installations and 4.25" for 10-12" installations.

B.13) Confirm the valve cartridge lock pin groove is still centered.



Figure B-5

B.14) Adjust and align the shorter side of the valve cartridge, which is marked with a star, between between (2) bolt holes accordingly. Make a reference mark on the insertion housing, between the two bolt holes. Slide the guide plate to the stop collar and lock the guide plate clamp lever. (See Figure B-6 below)

B.15) Lubricate the completion plug o-ring with food grade lubricant provided with the equipment. **DO NOT LUBRICATE WIPE SEALS OR PADDLE.**

B.16) Slide valve cartridge and insertion tool assembly into the insertion housing until it seats against the top of the insertion housing.

B.17) Tighten the clamp lever on the packing nut assembly to keep the assembled valve gate and insertion tool in place. Do not use tools to tighten the clamp lever.

B.18) After completion of the "Manual Measuring for Valve Cartridge Alignment" section, refer to Section 8, "Install IV 20 Insertion Equipment" to continue the valve insertion procedure.



Figure B-6

Appendix C IV 250 Valve Body Installation Instructions

HYDRA-STOP®

4" - 12" Insta-Valve 250 Patriot Series Valve Body Installation Instructions



Figure 1



Figure 2



Figure 3

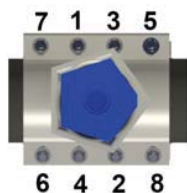


Figure 4
4" - 6" Bolt Tightening Pattern



Figure 5

IMPORTANT: Read installation instructions before installing the IV 250 valve body. Failure to follow installation instructions will void product warranty.

INSTALLATION INSTRUCTION STEPS

1. Inspect the valve body to ensure no damage has occurred during shipment or storage (See Figure 1).
2. Locate valve cartridge and box containing stainless steel mounting hardware. Store in a clean, safe location.
3. Measure pipe outside diameter where the IV 250 is being installed to ensure the correct insertion valve is being used.
4. Thoroughly clean the pipe surface where the valve body will be installed and inspect for flaws, i.e., gouges, protrusions, excessive corrosion, etc. Irregular surfaces should be avoided to assure maximum gasket sealing.
5. Liberally lubricate top and bottom of pipe and mat and throat gaskets with a soap/water solution. Ensure branch gasket is adequately lubricated.
6. Mount the top half of the valve body on the pipe in the position required for permanent installation (See Figure 2). Do not rotate the top half of the valve body after it is positioned on the pipe.
7. Install the bottom half of the valve body over the tapered ends of the mat gasket ensuring they are flat and smooth against the pipe surface. Visually inspect gasket to ensure tapered ends are not folded or rolled under themselves. Install stainless steel bolts, washers and nuts (See Figure 3). Finger tighten, ensuring gaps between top half and bottom half of the valve body are the same front to back and side to side (within 1/8").
8. Using a ratchet or open end wrench, tighten nuts in proper sequence (See Figure 4). Repeat sequence 3 times. Ensure gaps between top half and bottom half of the valve body are the same front to back and side to side (within 1/8") (See Figure 5). Using a torque wrench tighten to recommended torque. Wait 10 minutes to allow the gasket to fully seat and re-tighten bolts to recommended torque.

RECOMMENDED TORQUE:

4" - 8" IV 250

CI / DI Pipe: 115 ft-lbs.

PVC Pipe: 55 ft-lbs.

AC Pipe: 75 ft-lbs.

10" - 12" IV 250

CI / DI Pipe: 65 ft-lbs.

PVC Pipe: 55 ft-lbs.

AC Pipe: 60 ft-lbs.

NOTE: 8" valve has 10 total bolts. 10" and 12" valve has 14 total bolts. Please see figure 6 and figure 7 on reverse for bolt torque sequence.

Installation Instructions and Best Practices continued on reverse

Appendix C IV 250 Valve Body Installation Instructions

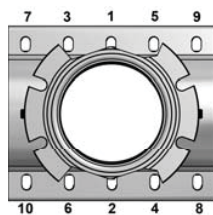


Figure 6
8" Bolt Tightening Pattern

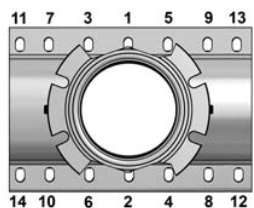


Figure 7
10" and 12" Bolt Tightening Pattern



Figure 8

9. Check inside of valve body outlet to ensure gasket is properly seated. Ensure completion plug set pins are flush with I.D. of the flange (See Figure 8).

10. Fill valve with water. Install test flange. Perform pressure test to ensure a complete seal between the valve body and pipe (do not use a compressable medium such as air).

Minimum Test Pressure: 1.5 times the system working pressure

Maximum Test Pressure: 375 psi

10. Remove the test flange.

12. Properly block (support) IV 250 valve body and ensure pipe joints are properly restrained. Proceed with valve insertion operation.

INSTALLATION BEST PRACTICE:

- Keep nuts and bolts clean and free of debris.
- Adequately lubricate pipe and IV 250 gaskets with soap/ water solution paying special attention to AC pipe. Ensure branch gasket is adequately lubricated. Do not use grease or pipe lubricant.
- Avoid rotating top half of IV 250 once placed on pipe.
- Tighten nuts equally in no more than 25 ft-lb increments after finger tightening.
- Ensure gaps between top half and bottom half of the IV 250 are the same front to back and side to side (within 1/8").

- Check final torque with a torque wrench to ensure IV 250 has been torqued to installation specifications.
- Do not use a powered wrench to tighten bolts. You will gall the bolts and damage the valve.
- Pressure test a minimum of 1.5 times the system working pressure or a maximum of 1.5 times the rated working pressure of the IV 250.
- After bolts have been tightened to recommended torque wait 10 minutes to allow the gasket to fully seat and re-tighten bolts to recommended torque.
- Block / support the pipe before installing the tapping machine.
- Ensure all pipe joints are restrained prior to proceeding to valve insertion operation.

HYDRA-STOP®

Line Stopping • Line Tapping • Valve Insertion • Training and Support
144 Tower Drive, Burr Ridge, IL 60527
Phone: 708-389-5111 / Fax: 708-389-5125
Toll Free: 1-800-538-7867

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Specifications subject to change without notice.