

HYDRA-STOP

► FROM PENTAIR

4"-12" INSTA-VALVE 250 INSERTION VALVES

INSTALLATION INSTRUCTIONS

hydra-stop.com

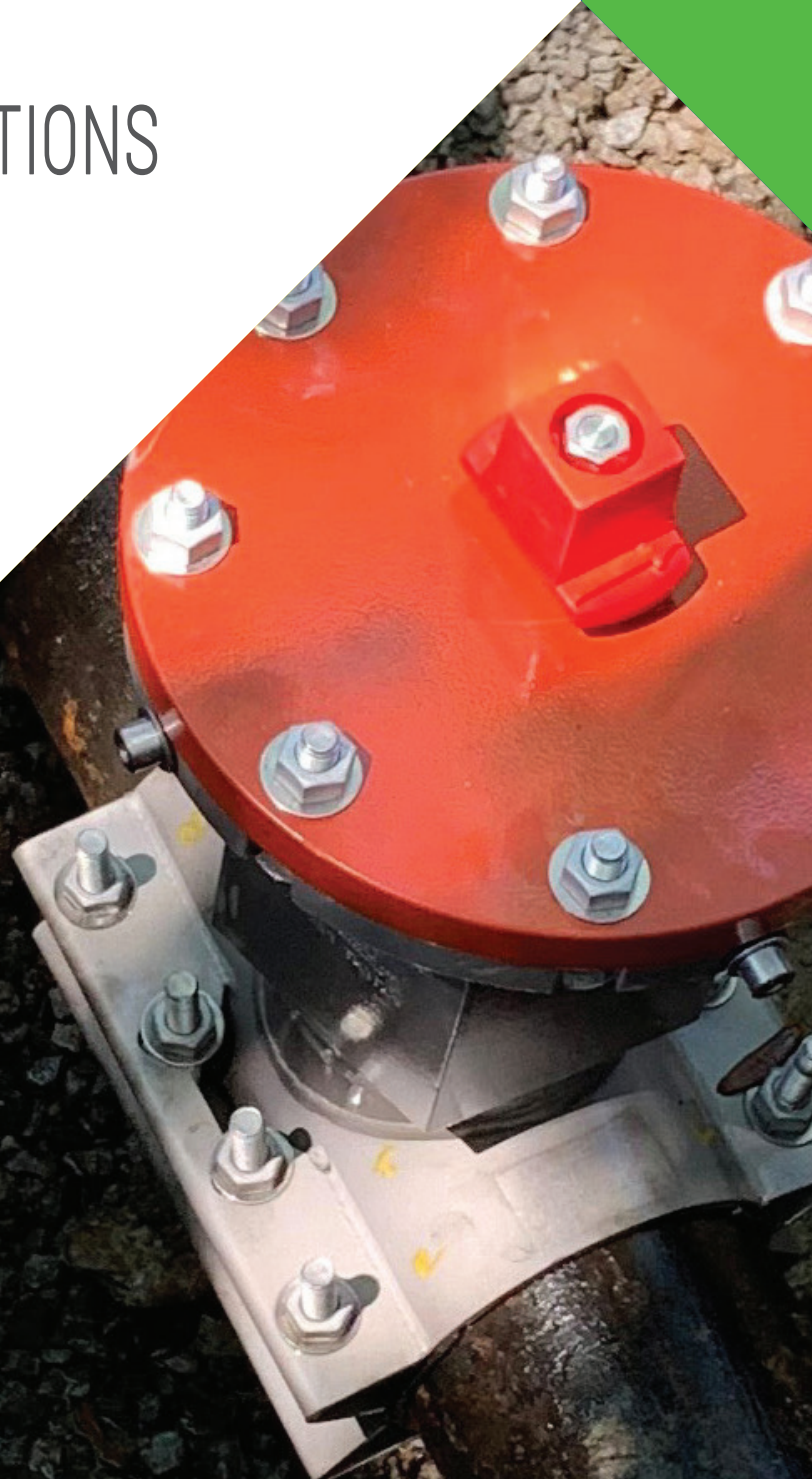


TABLE OF CONTENTS

Section 1 – General Safety Precautions	3
Warning	4
Section 2 – Mounting the Insta-Valve and Tapping the Pipe	5
2.0.0 Mount Valve Body on Pipe.....	5
2.1.0 Pressure Test Valve Body	6
2.2.0 Installing the Temporary Gate Valve.....	6
If the PIPE I.D. IS NOT KNOWN, follow Sections 2.3.0 through 2.10.0 for the Core Sampling Procedure	
2.3.0 Setting up the Hydra-Tapper for Core Sampling	6
2.4.0 Installing the Hydra-Tapper	8
2.5.0 Performing the Core Sample	8
2.6.0 Removing the Hydra-Tapper.....	9
2.7.0 Post-Core Sampling Line Tapping	11
2.8.0 Installing the Hydra-Tapper	11
2.9.0 Performing the Line Tap.....	12
2.10.0 Removing the Hydra-Tapper.....	12
If the PIPE I.D. IS KNOWN, follow Sections 2.11.0 through 2.14.0 for the Standard Line Tap Procedure	
2.11.0 Line Tap Preparation.....	13
2.12.0 Installing the Hydra-Tapper	15
2.13.0 Performing the Line Tap.....	16
2.14.0 Removing the Hydra-Tapper.....	17
Section 3 – Inserting the Valve Cartridge.....	17
3.0.0 Preparing the Hydra-Tapper for Valve Insertion	17
3.1.0 Install Insta-Valve 250 Insertion Equipment	19
3.2.0 Install the Insta-Valve 250 Valve Cartridge.....	19
Section 3 – Appendix	22
Appendix A: Technician Tool List	23

Section 1.0.0 – General Safety Warnings

These instructions depict using the most up-to-date Hydra-Stop insertion valves, installation equipment, and accessories. **Please be sure you are following the instructions for your equipment.**

Section 1.0.1 – General Safety Precautions

Before using the equipment, carefully read and understand all safety messages in this manual and the manual provided with the pressure test kit. Follow prescribed maintenance procedures to keep the equipment in good working condition.

Section 1.0.2 – Personal Protection

Hydra-Stop recommends installers wear proper personal protective equipment including, but not limited to:

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

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

Section 1.0.3 – Keep Spectators Away from the Installation Area

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

Section 1.0.4 – 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 excavation.

Section 1.0.5 – Do Not Work in an Unsupported Trench

Do not work in a trench with unstable sides, which could cave in. Specific shoring or sloping trench wall requirements are available from several sources, including Federal and State offices. Contact suitable authorities for these requirements before working in the trench. We recommend a minimum 5'x 5' excavation.

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

Section 1.0.6 – Check Laws and Regulations

Know and obey all Federal, State, and Local laws and

regulations that apply to your work situation.

Section 1.0.7 – Handling the Equipment

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

Section 1.0.8 – Check Hardware and Equipment

Ensure 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 Insta-Valve 250 you intend to install (please refer to the tool list in Appendix A). Inspect equipment to verify it is in good working condition and free of wear and damage before use. Never start an operation if the equipment is not in proper working order. Contact Hydra-Stop if the equipment is not in working order.

NOTE: Store equipment in a clean and dry environment.

Section 1.0.9 – Do Not Exceed Load Rating on Any Lifting Equipment

This includes but is not limited to lifting magnets or eyebolts and straps. 12" knife gate lifting assists, and 3/4" eye bolts should ONLY be used for lifting 8" and 12" temporary gate valves, respectively.

Section 1.0.10 – Additional Safety Information

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

Only those trained in the procedures stated in this manual and fully aware of the potential hazards of working on pipes containing liquids or gases under pressure should operate this equipment.

The purchaser of this equipment is responsible for its maintenance and use and the operators' training, competence, and safety.

If you encounter any difficulty using this equipment at any time, please contact Hydra-Stop immediately at 708-389-5111.

WARNING!

If you have older installation equipment or are using installation equipment from another manufacturer, check the psi rating for each component before proceeding.

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

For 10" and 12" installations, your P20 must be bored to 13".

If you have questions regarding equipment psi ratings, contact Hydra-Stop at 708-389-5111.

2.0.0 Mount Valve Body on Pipe

IMPORTANT: Read the installation instructions COMPLETELY before installing the Insta-Valve 250 valve body. Failure to follow the instructions will void the product warranty. Also, follow local safety regulations and use personal protection equipment (PPE) as

required by National, State, and Local regulations.



FIGURE 1



FIGURE 2

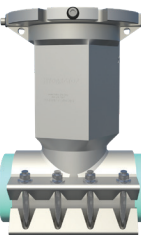


FIGURE 3

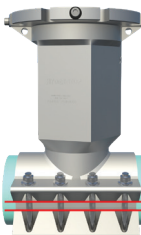


FIGURE 4

RECOMMENDED TORQUE

4"-8" Insta-Valve 250

CI / DI Pipe	115 ft.-lbs.
PVC Pipe	55 ft.-lbs.
AC Pipe	75 ft.-lbs.

10"-12" Insta-Valve 250

CI / DI Pipe	65 ft.-lbs.
PVC Pipe	55 ft.-lbs.
AC Pipe	60 ft.-lbs.

2.0.1) Inspect the valve body to ensure no damage has occurred during shipment or storage (see Figure 1).

2.0.2) Locate the valve cartridge and the container of stainless-steel mounting hardware. Store in a clean, safe location.

2.0.3) Measure the pipe outside diameter where the Insta-Valve 250 is installed to ensure the correct insertion valve is used.

2.0.4) Thoroughly clean the pipe surface to remove all loose debris and material where the valve body will be installed. Inspect for flaws (e.g., gouges, protrusions, excessive corrosion, etc.). Irregular surfaces should be avoided to ensure maximum gasket sealing.

2.0.5) Liberally lubricate the top and bottom of the pipe and mat and throat gaskets with a soap and water solution. Ensure the branch gasket is adequately lubricated.

2.0.6) 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.

2.0.7) 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. Inspect the gasket to ensure tapered ends are not folded or rolled under.

2.0.8) Install stainless steel carriage bolts, washers, and nuts (see Figure 3). Finger-tighten nuts, ensuring gaps between the top and bottom halves of the valve body are the same front-to-back and side-to-side within 1/8" (see Figure 4).

2.0.9) Using a torque wrench,

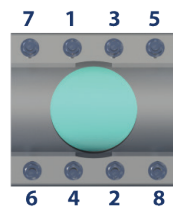


FIGURE 5
4"-6" Bolt
Tightening Pattern

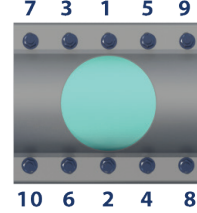


FIGURE 6
8" Bolt
Tightening Pattern

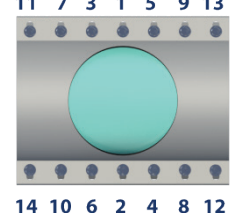


FIGURE 7
10" and 12" Bolt
Tightening Pattern

tighten nuts following the proper pattern (see tightening patterns, Figures 5-7). Repeat the tightening pattern in no more than 25 ft.-lb. increments until the recommended torque is reached.

2.0.10) Wait 10 minutes for the gasket to fully seat, then retighten the bolts to the recommended torque three additional times following the tightening pattern.

2.0.11) Check the inside of the valve body outlet to ensure the gasket is properly seated. The completion pins are shipped in the fully installed position. Back out and flush the completion pins with the flange's ID (see Figures 8 and 9).

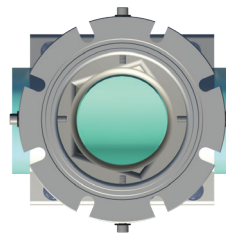


FIGURE 8
Completion pins NOT flush
with inner valve flange.
**DO NOT ATTEMPT VALVE
INSTALLATION WITH PINS
IN THIS POSITION.**

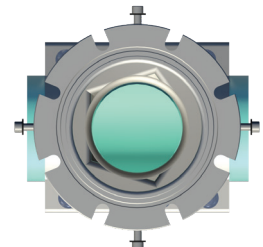


FIGURE 9
Completion pins flush
with I.D. of flange. This is
correct position to begin
pressure test and continue
with installation procedure.

INSTALLATION BEST PRACTICES:

- Keep nuts and bolts clean and free of debris.
- Adequately lubricate pipe, mat, and branch gaskets. Ensure the branch gasket is adequately lubricated. Do not use grease or pipe lubricant.
- Avoid rotating the top half of Insta-Valve 250 once placed on the pipe.
- Do not use an impact wrench to tighten nuts; you will gall the bolts and damage the valve.
- Block and support the pipe before installing the tapping machine.
- Ensure all pipe joints are restrained prior to proceeding to valve insertion operation.
- Label the valve body with a paint pen or permanent marker with the tightening pattern and required torque.

2.1.0 Pressure Test Valve Body



FIGURE 10

2.1.1) Fill the valve body with water (see Figure 10). Approximately 5-10 gallons of water are needed.

2.1.2) Apply food-grade lubricant to pressure test plug O-ring.

2.1.3) Ensure set pins have been backed out and are flush with the I.D. of the flange.

2.1.4) Install the Quick Pressure Test Plug into the top of the valve body (see Figure 11).

NOTE: The Quick Pressure Test Plug is blue for 4"-8" and red for 10"-12" Insta-Valve 250s.

2.1.5) Insert 4 flange bolts into the 4 mounting holes of the pressure test plug assembly. Finger-tighten a washer and nut onto each of the four bolts (see Figure 12).

2.1.6) Connect the Pressure Test Tree to the Quick Pressure Test Plug (see Figure 13).

2.1.7) Connect the Pressure Test Pump to the Pressure Test Tree. You must use a hydrostatic method of pressurizing the valve body. DO NOT use a compressible medium such as air.

2.1.8) Follow local rules for the recommended length of the pressure test.

2.1.9) After completing the pressure test, use the ball valve to blow off pressure before removing the Quick Pressure Test Plug.

NOTE: Do not exceed recommended pressure test specifications.

Minimum Test Pressure: 1.5 times the system working pressure.

Maximum Test Pressure: 375 psi.

2.1.10) Follow the tightening pattern and re-torque carriage bolts to the recommended torque before continuing.

2.2.0 Installing the Temporary Gate Valve

2.2.1) For 4"-8" Insta-Valve 250: Install O-ring into valve body flange O-ring groove.

For 10"-12" Installations: Place the green fiber gasket with the holes onto the valve body flange to ensure a tight seal.

2.2.2) Install the temporary gate valve.

4"-8" Insta-Valve 250

8" temporary gate valve



FIGURE 14

If possible, avoid positioning the valve at the true 3, 6, 9, or 12 o'clock position to allow access to the completion pins (see Figure 14).

NOTE: Temporary gate valves are single-direction valves that must be positioned top-up.

- **The 8" temporary gate valve** must be installed with the O-ring groove facing up.
- **The 12" gate temporary valve** must be installed with the red bar facing up (see Figure 15).

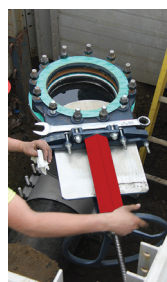


FIGURE 15

2.2.3) Bolt the temporary gate valve to the top of the Insta-Valve 250 flange using the bolts, nuts, and washers provided with the installation equipment, using a cross-tightening pattern.

2.2.4) For 4"-8" Insta-Valve 250: Install the O-ring in the groove of the 8" temporary gate valve (see Figure 14). Install the temporary gate valve bypass

jumper.

For 10"-12" Installations: Install the green fiber gasket (without holes) on the top side of the temporary gate valve (see Figure 15).

2.2.5) Fully open the temporary gate valve and ensure proper alignment with no obstructions.

2.3.0 Setting up the Hydra-Tapper for Core Sampling

NOTES:

- **Hydra-Stop recommends always performing a core sample to ensure the appropriate valve cartridge is used.**
 - **The 4" Insta-Valve 250 does not require core sampling.**
 - **If the pipe I.D. is known, proceed to 2.11.0 Preparing the Hydra-Tapper for Non-Core Sample Valve Insertion Line Tap on page 13.**
- **The P20 Assembly is only used for 10"-12" Insta-Valve 250s. Any mention of the P20 Assembly in the instructions is regarding only the 10" and 12" Insta-Valve 250.**

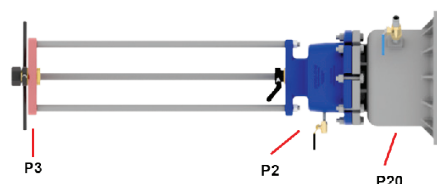


FIGURE 16

2.3.1) For 10"–12" Insta-Valve 250 only, bolt the Hydra-Tapper to the P-20 component using the bolts and nuts included with Hydra-Tapper equipment (see Figure 16).

2.3.2) Select the proper size saw mandrel. Saw mandrel length required for core sampling and tapping:

4"–8" Insta-Valve 250	10"–12" Insta-Valve 250
41" Saw Mandrel	55" Saw Mandrel

2.3.3) For 4"–8" Insta-Valve 250: Thread the 2.5" core cutter to the 41" saw mandrel completely, then unscrew until thru holes in the cutter align with the threaded saw mandrel holes. Insert and thread both 1/4–20 x 3/4" set screws from the inside of the cutter. These set screws prevent the cutter from over-tightening and locking on the saw mandrel (see Figure 17).



FIGURE 17

For 10"–12" Insta-Valve 250: Screw the 4" cutter to the adaptor and lock it in place with cutter hardware (see Figure 18).

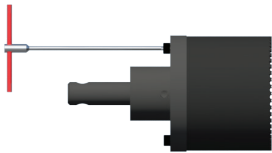


FIGURE 18

2.3.4) Loosen and remove the Allen-head pilot drill retaining set screw located on the side of the saw mandrel flange

base.

2.3.5) Select the proper size pilot drill for installation.

4"–8" Insta-Valve 250	10"–12" Insta-Valve 250
Requires the 5/8" X 6" long pilot drill.	Requires the 6" pilot bit with the 3 3/4" cutter.

NOTE: Tapping PVC or steel pipe will require a twist-



FIGURE 19

style pilot drill.



FIGURE 20

2.3.6) 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 19).



FIGURE 21

2.3.7) Mark the flat of the taper with a visible marking agent (see Figure 20).

2.3.8) For 4"–8" Insta-Valve 250: Align the pilot drill flat with the Allen-head set screw and insert the pilot drill into the 41" saw mandrel (see Figure 21).



FIGURE 22

For 10"–12" Insta-Valve 250: Align the pilot drill flat with the Allen-head set screw and insert the pilot drill through the center of the coring adaptor (see Figure 22).



FIGURE 23

2.3.9) Confirm you have completely inserted the pilot drill and engaged the tapered flat. Look into set screw hole for the marking on the pilot drill. Adjust the pilot drill until you can see the marking (see Figure 23).

2.3.10) 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 and ensure they move freely.

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

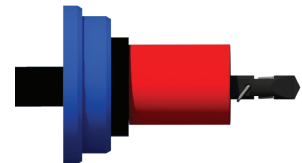


FIGURE 24

2.3.11) For 4"–8" Insta-Valve 250: Attach the corresponding centering ring for the size of the Insta-Valve being installed to the top of the saw mandrel flange using 5/16"–18 x 1.25" bolts through to the top of the centering ring. Ensure a wider portion of the centering ring is positioned away from the mandrel plate and cutter assembly (see Figure 24).



FIGURE 25

For 10"–12" Insta-Valve 250: Thread the adaptor/cutter onto the saw mandrel until tight, then back off until the adaptor through-hole aligns with the saw mandrel through-hole.



FIGURE 26

NOTE: The through hole is a modification made to the saw mandrel to accept the 3/8" set pin included in the kit (see Figure 25).

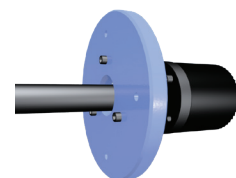


FIGURE 27

Insert set screw and cotter clip to lock adaptor in place (see Figure 26).

Attach the Centering Ring to the Coring Adaptor using 1/2"-13 x 2" Hardware (see Figure 27 on previous page).

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

2.3.13) To help the saw mandrel slide freely through the packing nut assembly, lubricate the end with a dab of the food-grade lubricant provided with the equipment.

2.3.14) Insert the coring assembly completely into the Hydra-Tapper tapping machine.

For the 10"-12" Insta-Valve 250, the saw mandrel flange bottoms out inside the P-20 component.

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

NOTE: Do not use tools to tighten the clamp lever.

2.4.0 Installing the Hydra-Tapper

2.4.1) Using a strap or sling, install the Hydra-Tapper onto the temporary gate valve and align the bolt slots.

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

2.4.2) To secure the assembly, install and cross-tighten the bolts, nuts, and washers. If not already installed, thread the 1/4" nipple and ball valve into the P2 tap housing and wrench tighten. Teflon tape or thread sealant can be used.

2.4.3) Hold and control the exposed saw mandrel, loosen the packing nut assembly clamp lever, and slowly lower the saw mandrel until the pilot drill rests on the pipe's center top. Ensure the shell cutter/centering ring spins freely in a clockwise direction.

NOTE: The centering ring ensures the core sample is centered.

NOTE: If the tap is done on PVC and the material melts, the centering tool in the next section will still function properly to center the tap, but the coupon may be difficult to remove.

2.4.4) Slide a stop collar over the saw mandrel.

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

Size	Core Sample Depth
6" Insta-Valve 250	3.5"
8" Insta-Valve 250	3.5"
10" Insta-Valve 250	4.5"
12" Insta-Valve 250	4.75"

2.4.6) Install the drive unit by lifting it above the saw mandrel and sliding it into the three (3) guide bars.

2.4.7) 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 28).

2.4.8) Install the feed screw by threading it through the OS & Y bearing of the Hydra-Tapper until the feed screw engages the top of the drive unit.

NOTE: Do not apply downward force, which can damage the pilot drill.

2.4.9) When the feed screw contacts the top of the drive unit, back off one full turn.

2.4.10) Install the upper and lower restraint pins and cotter clips to join the saw mandrel, drive motor, and feed screw into a single assembly.

2.5.0 Performing the Core Sample

2.5.1) Ensure the 1/4" ball valve on the Hydra-Tapper P2 housing is open.

For the 10"-12" Insta-Valve 250, also open the ball valve on the P20 housing.

2.5.2) Attach the hoses to connect the drive unit power source to the drive unit. **The hydraulic drive unit requires 9 GPM at 1800 PSI, and the air drive unit requires 90 CFM at 90 PSI.**

2.5.3) Ensure the drive unit lever control is in the neutral position. Always run the drive unit clockwise.

NOTE: Avoid reversing, as this will damage the carbide on the pilot drill and carbide teeth on the sampling cutter.

2.5.4) Engage the drive unit and confirm the saw mandrel is rotating clockwise. Slowly turn the handle assembly clockwise, keeping slight, constant pressure until the tap is complete. The tap is complete when the stop collar contacts the packing nut assembly.

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

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

For the 10"-12" Insta-Valve 250, also close the ball valve on the P20 housing.

2.5.6) Return the drive unit lever control to the neutral position. Disconnect drive unit hoses.

2.5.7) Tighten the packing nut assembly clamp lever to lock the saw mandrel in place. Remove the feed screw, drive unit, and one operating handle.

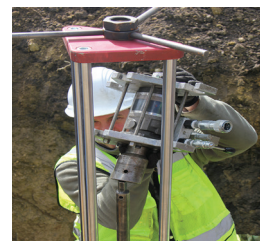


FIGURE 28

2.5.8) Place a 1 1/16" box-end wrench over the hex on the saw mandrel and use the wrench as a lever brake to hold it in place (see Figure 29).

2.5.9) Loosen the packing nut assembly clamp lever and allow the pressure to slowly raise the cutter assembly fully into the tapping/P20 housing.



FIGURE 29

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

2.5.11) Close the temporary gate valve.

2.5.12) Open the 1/4" tapping machine ball valve and discharge the pressure to relieve the pressure on the Hydra-Tapper. Then, open the temporary gate valve ball valve to drain the tapping assembly.

2.6.0 Removing the Hydra-Tapper

2.6.1) Connect the slings or straps to the Hydra-Tapper. Unbolt and remove the Hydra-Tapper/P20 Assembly from the temporary gate valve. Place the Hydra-Tapper in a dry and safe work area in a horizontal position with the point of the red P3 pointing down.

2.6.2) Loosen the packing nut assembly clamp lever.

2.6.3) Remove cutter and saw mandrel assembly.

2.6.4) Remove the coupon by loosening the Allen-head pilot drill retaining set screw. Remove the pilot drill from the saw mandrel stud.

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

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

2.6.6) Measure coupon thickness to calculate the inner diameter.

An undersized cutter and cartridge should be used if the pipe I.D. (Inner Diameter = [Outer diameter minus (2 * wall thickness)]) is:



VALVE CARTRIDGE AND CUTTER SIZING CHART

OPEN LEFT	4"-12" INSTA-VALVE 250 OPEN LEFT VALVE CARTRIDGES (BLACK Operating Nut)				Cutter Selection	
	Nominal Size	Cartridge ID Range	Hydra-Stop Part Number — Description	Side Seal Length	Cutter Size	Cutter Color
	4"	3.75 - 4.35	25CARTLH04-250 — 4" Open Left Cartridge, IV250	N/A	3.8"	BLACK
	6"	5.75 - 6.340	25CARTLH06-250 — 6" Open Left Cartridge, IV250	N/A	5.8"	BLACK
		5.45-5.75	25CARTLH06-250-U5.5 — 6" Open Left Cartridge, IV250 5.5 Undersized	1.75"	5.5"	RED
	8"	7.80 - 8.50	25CARTLH08-250 — 8" Open Left Cartridge, IV250	N/A	7.9"	BLACK
		7.40-7.80	25CARTLH08-250-U7.5 — 8" Open Left Cartridge, IV250 7.5 Undersized	3.00"	7.5"	RED
		7.40-7.80	25CARTLH08-250-U7.5-AC — 8" Open Left Cartridge, IV250 7.5 Undersized AC	3.00"	7.5"	RED
	10"	9.70 - 10.40	25CARTLH10-250 — 10" Open Left Cartridge, IV250	N/A	9.8"	BLACK
		9.40-9.70	25CARTLH10-250-U9.5 — 10" Open Left Cartridge, IV250 9.5 Undersized	4.75"	9.5"	RED
		9.40-9.70	25CARTLH10-250-U9.5-AC — 10" Open Left Cartridge, IV250 9.5 Undersized AC	4.50"	9.5"	RED
	12"	11.70 - 12.40	25CARTLH12-250 — 12" Open Left Cartridge, IV250	N/A	11.8"	BLACK
		11.00-11.40	25CARTLH12-250-U11.1 — 12" Open Left Cartridge, IV250 11.1 Undersized	4.875"	11.1"	BLUE
		11.40-11.70	25CARTLH12-250-U11.5 — 12" Open Left Cartridge, IV250 11.5 Undersized	4.50"	11.5"	RED
		11.40-11.70	25CARTLH12-250-U11.5-AC — 12" Open Left Cartridge, IV250 11.5 Undersized AC	3.50"	11.5"	RED

OPEN RIGHT	4"-12" INSTA-VALVE 250 OPEN RIGHT VALVE CARTRIDGES (RED Operating Nut)				Cutter Selection	
	Nominal Size	Cartridge ID Range	Hydra-Stop Part Number — Description	Side Seal Length	Cutter Size	Cutter Color
	4"	3.75-4.35	25CARTRH04-250 — 4" Open Right Cartridge, IV250	N/A	3.8"	BLACK
	6"	5.75-6.34	25CARTRH06-250 — 6" Open Right Cartridge, IV250	N/A	5.8"	BLACK
		5.45-5.75	25CARTRH06-250-U5.5 — 6" Open Right Cartridge, IV250 5.5 Undersized	1.75"	5.5"	RED
	8"	7.80-8.50	25CARTRH08-250 — 8" Open Right Cartridge, IV250	N/A	7.9"	BLACK
		7.40-7.80	25CARTRH08-250-U7.5 — 8" Open Right Cartridge, IV250 7.5 Undersized	3.00"	7.5"	RED
		7.40-7.80	25CARTRH08-250-U7.5-AC — 8" Open Right Cartridge, IV250 7.5 Undersized AC	3.00"	7.5"	RED
	10"	9.70-10.40	25CARTRH10-250 — 10" Open Right Cartridge, IV250	N/A	9.8"	BLACK
		9.40-9.70	25CARTRH10-250-U9.5 — 10" Open Right Cartridge, IV250 9.5 Undersized	4.75"	9.5"	RED
		9.40-9.70	25CARTRH10-250-U9.5-AC — 10" Open Right Cartridge, IV250 9.5 Undersized AC	4.50"	9.5"	RED
	12"	11.70-12.40	25CARTRH12-250 — 12" Open Right Cartridge, IV250	N/A	11.8"	BLACK
		11.00-11.40	25CARTRH12-250-U11.1 — 12" Open Right Cartridge, IV250 11.1 Undersized	4.875"	11.1"	BLUE
		11.40-11.70	25CARTRH12-250-U11.5 — 12" Open Right Cartridge, IV250 11.5 Undersized	4.50"	11.5"	RED
		11.40-11.70	25CARTRH12-250-U11.5-AC — 12" Open Right Cartridge, IV250 11.5 Undersized AC	3.50"	11.5"	RED

NOTES:

- Valve cartridges include operating nut, operating nut retention nut and friction washer.
- Valve cartridges are available in open left or open right configurations.
- Undersized valve cartridges require the use of undersized cutters. See Hydra-Core Pipe Wall Sampling Kit operating instructions for reference.
- Undersized AC valve cartridges must be used in AC applications.

Nominal Size Pipe	Smaller Than
6"	5.75"
8"	7.80"
10"	9.70"
12"	11.70"

NOTE: Ensure you are using the correct shell cutter for your application. **Please refer to the Valve Cartridge and Cutter Sizing Chart on the next page.**

2.6.7) Remove the cutter from the saw mandrel.

2.6.8) Disassemble core sampling equipment. Be sure to remove the centering ring from the cutter assembly.

NOTE: The coupon must be removed before the cutter set screws and cutter can be removed.

2.7.0) Post-Core Sampling Line Tapping

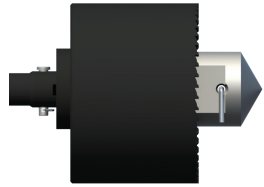


FIGURE 30

2.7.1) Depending on pipe I.D., attach the appropriate cutter – standard or undersized – to the saw mandrel and secure it with the standard cutter hardware as normal. Refer to the Valve Cartridge and Cutter Sizing Chart above.

2.7.2) Insert the centering tool into the pilot bit hole, align the through-hole with the saw mandrel through-hole, and lock it in place with a cotter pin and clip (see Figure 30).

Size	Centering Tool
4"–8" Insta-Valve 250	2.5"
10"–12" Insta-Valve 250	4.5"

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

2.7.4) To help the saw mandrel slide freely through the packing nut assembly, lubricate the end with a dab of the food-grade lubricant provided with the equipment.

2.7.5) Insert tapping assembly completely into Hydra-Tapper/P20 Assembly.

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

NOTE: Do not use tools to tighten the clamp lever.

2.8.0 Installing the Hydra-Tapper

2.8.1) Using a strap or sling, install the Hydra-Tapper onto the temporary gate valve and align the bolt slots.

NOTE: Use extreme caution not to damage the shell cutter or centering tool drill as the unit is raised and placed on the temporary gate valve (**for the 10"–12" Insta-Valve 250**, the cutter will extend past the end of the P20 Assembly). Note the position of the fully retracted cutting assembly.

2.8.2) To secure the assembly, install and cross-tighten the bolts, nuts, and washers. If not already installed, thread the 1/4" nipple and ball valve into the tap housing and wrench tighten. Teflon tape or thread sealant can be used.

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

2.8.4) For 4"–8" Insta-Valve 250, open the valve on the temporary gate valve bypass jumper and allow pressure to equalize.

2.8.5) Slowly open the temporary gate valve and allow time for the assembly to fully equalize.

2.8.6) Close the tapping machine ball valve when fluid flows from the ball valve.

2.8.7) Hold and control the exposed saw mandrel, loosen the packing nut assembly clamp lever, and slowly lower the saw mandrel until the cutter is resting on the top of the pipe. Ensure the shell cutter spins freely in a clockwise direction.

2.8.8) Tighten the packing nut assembly clamp lever.

2.8.9) Slide a stop collar over the saw mandrel.

2.8.10) Set the cutting depth by measuring from the top of the packing nut assembly to the lower side of the stop collar. Tighten the stop collar to the correct measurement, as shown below.

Nominal Size Pipe	Cutting Depth
4"	2.5"
6"	3.5"
8"	4.5"
10"	6"
12"	7"

NOTE: See Figure 31 for a measuring example.

2.8.11) Install the drive unit by lifting it above the saw mandrel and sliding it into the three (3) guide bars.

2.8.12) 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 32 on next page).

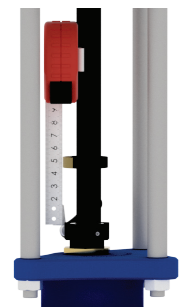


FIGURE 31
(Measurement shown is for reference only)

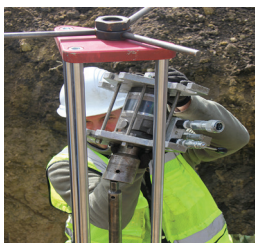


FIGURE 32

2.8.13) Install the feed screw by threading it through the OS & Y bearing of the Hydra-Tapper until the feed screw engages the top of the drive unit.

2.8.14) When the feed screw contacts the top of the drive unit, back off one full turn.

2.8.15) Install the upper and lower restraint pins and cotter clips to join the saw mandrel, drive motor, and feed screw into a single assembly.

2.9.0 Performing the Line Tap

2.9.1) Ensure the ball valve(s) on the Hydra-Tapper P2 and P20 housing is open.

2.9.2) Attach the hoses to connect the drive unit power source to the drive unit. **The hydraulic drive unit requires 9 GPM at 1800 PSI, and the air drive unit requires 90 CFM at 90 PSI.**

2.9.3) Ensure the drive unit lever control is in the neutral position. Always run the drive unit clockwise.

NOTE: Avoid reversing, as this will damage the carbide on the pilot drill and carbide teeth on the sampling cutter.

2.9.4) Engage the drive unit and confirm the saw mandrel is rotating clockwise. Slowly turn the handle assembly clockwise, keeping slight, constant pressure until the tap is complete. The tap is complete when the stop collar contacts the packing nut assembly.

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

2.9.5) Return the drive unit lever control to the neutral position. Disconnect drive unit hoses.

2.9.6) 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 the shell cutter DOES spin freely**, 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 clockwise. Slowly turn the handle assembly clockwise for an additional two (2) complete revolutions and return to step 2.9.4.

2.9.7) Slowly turn the handle assembly counterclockwise until the stop collar has reached the starting measurement.

Nominal Size Pipe

Cutting Depth

4"	2.5"
6"	3.5"
8"	4.5"
10"	6"
12"	7"

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

2.9.9) Place a 1 1/16" box-end wrench over the hex on the saw mandrel and use the wrench as a lever brake to hold it in place (see Figure 33).

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

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

2.9.12) Close the temporary gate valve.

2.10.0 Removing the Hydra-Tapper

2.10.1) Relieve the pressure from the Hydra-Tapper by opening the 1/4" tapping machine ball valve and discharging the pressure. Open the temporary gate valve ball valve to drain the tapping assembly.

2.10.2) Connect the slings or straps to the Hydra-Tapper. Unbolt and remove the Hydra-Tapper/P20 Housing from the temporary gate valve. Place the Hydra-Tapper in a horizontal position with the point of the red P3 pointing down.

2.10.3) Loosen the packing nut assembly clamp lever.

2.10.4) Remove the cutter and saw mandrel assembly.

2.10.5) Remove the coupon by loosening the Allen-head pilot drill retaining set screw. Remove the pilot drill from the saw mandrel stud.

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

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

2.10.7) Proceed to step 3.0.0 – Preparing the Hydra-Tapper for Valve Insertion on page 18.



FIGURE 33

2.11.0 Preparing the Hydra-Tapper for Non-Core Sample Valve Insertion Line Tap

2.11.1) For 10"-12" Insta-Valve 250 only, bolt the Hydra-Tapper to the P-20 component using the bolts and nuts included with Hydra-Tapper equipment (see Figure 34).

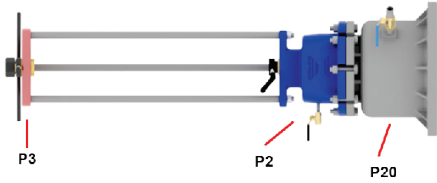


FIGURE 34

2.11.2) Select the proper size saw mandrel. Saw mandrel length required for core sampling and tapping:

4"-8" Insta-Valve 250	10"-12" Insta-Valve 250
41" Saw Mandrel	55" Saw Mandrel

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

Insta-Valve Size	Shell Cutter Size
4" Insta-Valve 250	3.8"
6" Insta-Valve 250	5.8"
8" Insta-Valve 250	7.9"
10" Insta-Valve 250	9.8"
12" Insta-Valve 250	11.8"

NOTE: Ensure you are using the correct shell cutter for your application. **Please refer to the Valve Cartridge and Cutter Sizing Chart on the next page.**



VALVE CARTRIDGE AND CUTTER SIZING CHART

OPEN LEFT	4"-12" INSTA-VALVE 250 OPEN LEFT VALVE CARTRIDGES (BLACK Operating Nut)				Cutter Selection	
	Nominal Size	Cartridge ID Range	Hydra-Stop Part Number — Description	Side Seal Length	Cutter Size	Cutter Color
	4"	3.75 - 4.35	25CARTLH04-250 — 4" Open Left Cartridge, IV250	N/A	3.8"	BLACK
	6"	5.75 - 6.340	25CARTLH06-250 — 6" Open Left Cartridge, IV250	N/A	5.8"	BLACK
		5.45-5.75	25CARTLH06-250-U5.5 — 6" Open Left Cartridge, IV250 5.5 Undersized	1.75"	5.5"	RED
	8"	7.80 - 8.50	25CARTLH08-250 — 8" Open Left Cartridge, IV250	N/A	7.9"	BLACK
		7.40-7.80	25CARTLH08-250-U7.5 — 8" Open Left Cartridge, IV250 7.5 Undersized	3.00"	7.5"	RED
		7.40-7.80	25CARTLH08-250-U7.5-AC — 8" Open Left Cartridge, IV250 7.5 Undersized AC	3.00"	7.5"	RED
	10"	9.70 - 10.40	25CARTLH10-250 — 10" Open Left Cartridge, IV250	N/A	9.8"	BLACK
		9.40-9.70	25CARTLH10-250-U9.5 — 10" Open Left Cartridge, IV250 9.5 Undersized	4.75"	9.5"	RED
		9.40-9.70	25CARTLH10-250-U9.5-AC — 10" Open Left Cartridge, IV250 9.5 Undersized AC	4.50"	9.5"	RED
	12"	11.70 - 12.40	25CARTLH12-250 — 12" Open Left Cartridge, IV250	N/A	11.8"	BLACK
		11.00-11.40	25CARTLH12-250-U11.1 — 12" Open Left Cartridge, IV250 11.1 Undersized	4.875"	11.1"	BLUE
		11.40-11.70	25CARTLH12-250-U11.5 — 12" Open Left Cartridge, IV250 11.5 Undersized	4.50"	11.5"	RED
		11.40-11.70	25CARTLH12-250-U11.5-AC — 12" Open Left Cartridge, IV250 11.5 Undersized AC	3.50"	11.5"	RED

OPEN RIGHT	4"-12" INSTA-VALVE 250 OPEN RIGHT VALVE CARTRIDGES (RED Operating Nut)				Cutter Selection	
	Nominal Size	Cartridge ID Range	Hydra-Stop Part Number — Description	Side Seal Length	Cutter Size	Cutter Color
	4"	3.75-4.35	25CARTRH04-250 — 4" Open Right Cartridge, IV250	N/A	3.8"	BLACK
	6"	5.75-6.34	25CARTRH06-250 — 6" Open Right Cartridge, IV250	N/A	5.8"	BLACK
		5.45-5.75	25CARTRH06-250-U5.5 — 6" Open Right Cartridge, IV250 5.5 Undersized	1.75"	5.5"	RED
	8"	7.80-8.50	25CARTRH08-250 — 8" Open Right Cartridge, IV250	N/A	7.9"	BLACK
		7.40-7.80	25CARTRH08-250-U7.5 — 8" Open Right Cartridge, IV250 7.5 Undersized	3.00"	7.5"	RED
		7.40-7.80	25CARTRH08-250-U7.5-AC — 8" Open Right Cartridge, IV250 7.5 Undersized AC	3.00"	7.5"	RED
	10"	9.70-10.40	25CARTRH10-250 — 10" Open Right Cartridge, IV250	N/A	9.8"	BLACK
		9.40-9.70	25CARTRH10-250-U9.5 — 10" Open Right Cartridge, IV250 9.5 Undersized	4.75"	9.5"	RED
		9.40-9.70	25CARTRH10-250-U9.5-AC — 10" Open Right Cartridge, IV250 9.5 Undersized AC	4.50"	9.5"	RED
	12"	11.70-12.40	25CARTRH12-250 — 12" Open Right Cartridge, IV250	N/A	11.8"	BLACK
		11.00-11.40	25CARTRH12-250-U11.1 — 12" Open Right Cartridge, IV250 11.1 Undersized	4.875"	11.1"	BLUE
		11.40-11.70	25CARTRH12-250-U11.5 — 12" Open Right Cartridge, IV250 11.5 Undersized	4.50"	11.5"	RED
		11.40-11.70	25CARTRH12-250-U11.5-AC — 12" Open Right Cartridge, IV250 11.5 Undersized AC	3.50"	11.5"	RED

NOTES:

- Valve cartridges include operating nut, operating nut retention nut and friction washer.
- Valve cartridges are available in open left or open right configurations.
- Undersized valve cartridges require the use of undersized cutters. See Hydra-Core Pipe Wall Sampling Kit operating instructions for reference.
- Undersized AC valve cartridges must be used in AC applications.

2.11.4) Select the proper size pilot drill for installation.

Insta-Valve Size	Pilot Drill Size
4" Insta-Valve 250	5/8" x 6"
6" Insta-Valve 250	5/8" x 6"
8" Insta-Valve 250	5/8" x 7 1/4"
10" Insta-Valve 250	3/4" x 10 5/16"
12" Insta-Valve 250	3/4" x 10 5/16"

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

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

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

2.11.6) 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 35).



FIGURE 35

2.11.7) Mark the flat of the taper with a visible marking agent (see Figure 36).



FIGURE 36

2.11.8) 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 37).

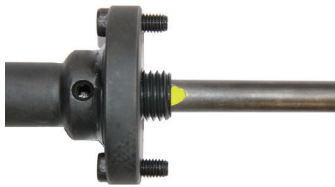


FIGURE 37

2.11.9) Confirm you have completely inserted the pilot drill and engaged the tapered flat. Look into the set screw hole for the marking on the pilot drill. Adjust the pilot drill until you can see the marking (see Figure 38).

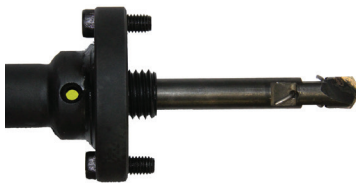


FIGURE 38

2.11.10) 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 39).



FIGURE 39

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

2.11.11) Loosen and back out the two Allen-head cap screws on the flange of the saw mandrel until flush with the face of the flange.

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

2.11.13) Back off the cutter to align the holes in the base of the shell cutter with the Allen-head cap screws and thread them through the holes.

- **For the 4"-8" Insta-Valve 250:** Tighten Allen-head cap screws.
- **For the 10"-12" Insta-Valve 250:** Thread screws from inside the shell cutters and then into the saw mandrel holes (see Figure 40). Then thread the nylon lock nuts onto Allen-head cap screws and tighten (see Figure 41).



FIGURE 40



FIGURE 41

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

2.11.15) To help the saw mandrel slide freely through the packing nut assembly, lubricate the end with a dab of the food-grade lubricant provided with the equipment.

2.11.16) Insert the assembled shell cutter and saw mandrel into the Hydra-Tapper until the saw mandrel flange bottoms out inside the Hydra-Tapper. **For the 10"-12" Insta-Valve 250,** the saw mandrel flange bottoms out inside the P-20 component.

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

NOTE: Do not use tools to tighten the clamp lever.

2.12.0 Installing the Hydra-Tapper

2.12.1) Using a strap or sling, install the assembled Hydra-Tapper onto the 8" temporary gate valve and align the bolt slots.

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

2.12.2) To secure the assembly, install and cross-tighten the bolts, nuts, and washers. If not already installed, thread the 1/4" nipple and ball valve into the P2 tap housing and wrench tighten. Teflon tape or thread sealant can be used.

2.12.3) Hold and control the exposed saw mandrel, loosen the packing nut assembly clamp lever, and slowly lower the saw mandrel until the pilot drill rests on the pipe's center top. Ensure the shell cutter/centering ring spins freely in a clockwise direction.

2.12.4) Slide the stop collar over the saw mandrel.

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

Nominal Size Pipe	Cutting Depth
4"	3"
6"	4"
8"	5"
10"	6"
12"	7"

NOTE: See Figure 42 for a measuring example.

2.12.6) Install the drive unit by lifting it above the saw mandrel and sliding it into the three (3) guide bars.

2.12.7) 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 43).

2.12.8) Install the feed screw by threading it through the OS & Y bearing of the Hydra-Tapper until the feed screw engages the top of the drive unit.

NOTE: Do not apply downward force, which can damage the pilot drill.

2.12.9) When the feed screw contacts the top of the drive unit, back off one full turn.

2.12.10) Install the upper and lower restraint pins and cotter clips to join the saw mandrel, drive motor, and feed screw into a single assembly.

2.13.0 Performing the Line Tap

2.13.1) Ensure the ball valve on the Hydra-Tapper P2 and P20 housing is open.

2.13.2) Attach the hoses to connect the drive unit power source to the drive unit. **The hydraulic drive**

unit requires 9 GPM at 1800 PSI, and the air drive unit requires 90 CFM at 90 PSI.

2.13.3) Ensure the drive unit lever control is in the neutral position. Always run the drive unit clockwise.

NOTE: Avoid reversing, as this will damage the carbide on the pilot drill and carbide teeth on the sampling cutter.

2.13.4) Engage the drive unit and confirm that the saw mandrel is rotating clockwise. Slowly turn the handle assembly clockwise, keeping slight, constant pressure until the tap is complete. Close the ball valve on the Hydra-Tapper's P2/P20 housing as water fills the housing and flows from the valve. The tap is complete when the bottom of the stop collar contacts the top of the packing nut assembly.

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

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

2.13.6) 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 the shell cutter does spin freely, 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 clockwise. Slowly turn the handle assembly clockwise for an additional two (2) complete revolutions and return to step 2.13.4.

2.13.7) Slowly turn the handle assembly counterclockwise until the stop collar has reached the starting measurement.

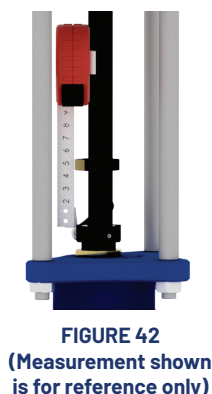


FIGURE 42
(Measurement shown is for reference only)



FIGURE 43

Nominal Size Pipe	Cutting Depth
4"	3"
6"	4"
8"	5"
10"	6"
12"	7"

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

2.13.9) Place a 1 1/16" box-end wrench over the hex on the saw mandrel and use the wrench as a lever brake to hold it in place (see Figure 44).

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



FIGURE 44

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

2.13.12) Close the temporary gate valve.

2.14.0 Removing the Hydra-Tapper

2.14.1) Relieve the pressure from the Hydra-Tapper by opening the 1/4" tapping machine ball valve and discharging the pressure. Open the temporary gate valve ball valve to drain the tapping assembly.

2.14.2) Connect the slings or straps to the Hydra-Tapper. Unbolt and remove the Hydra-Tapper/P20 Housing from the temporary gate valve. Place the Hydra-Tapper in a dry and safe work area.

2.14.3) Remove stop collar.

2.14.4) Loosen the packing assembly clamp lever.

2.14.5) Remove cutter and saw mandrel assembly.

2.14.6) Remove the coupon by loosening the Allen-head pilot drill retaining set screw. Remove the pilot drill from the saw mandrel stud.

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

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

2.14.8) Inspect the coupon for pipe thickness and condition.

2.14.9) Remove cutter from saw mandrel.

2.14.10) Proceed to step 3.0.0 – Preparing the Hydra-Tapper for Valve Insertion

3.0.0 Preparing the Hydra-Tapper for Valve Insertion

3.0.1) Locate the proper valve-inserting equipment.

4"–8" Insta-Valve 250	10"–12" Insta-Valve 250
4"–8" Insertion Housing	10"–12" Insertion Housing
48 1/2" Insertion Tool	59" Insertion Tool
Guide Plate	Guide Plate
Stop Collar	Stop Collar
Auto Equalization Adapter	Auto Equalization Adapter

3.0.2) For the 4"–8" Insta-Valve 250, 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. If not already installed, thread the 3/4" nipple and ball valve into the insertion housing and wrench tighten. Teflon tape or thread sealant can be used.

For the 10"–12" Insta-Valve 250, stand the insertion housing on a flat surface. Place a green fiber gasket (included with equipment) between the insertion housing and the tapping machine / P 20 assembly. Install the 3/4" nipple and ball valve.

3.0.3) Place the Hydra-Tapper/P20 Assembly on top of the insertion housing, with the pointed end of the P3 facing the same direction as the housing's step stand. Cross-tighten with the supplied 5/8-11 x 3 1/4 Square Head Black Oxide Bolts, Nuts, and Washers.

3.0.4) Tip and lay the insertion housing and Hydra-Tapper/P20 Assembly on its stand (see Figure 45).

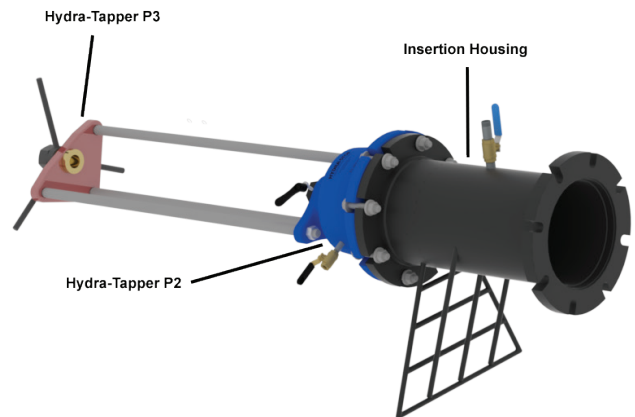


FIGURE 45

NOTE: Unthread and remove one handle from the tapping machine to avoid damage when laying the assembly on the side.

3.0.5) The Insta-Valve 250 valve cartridge consists of top and bottom sections. The top and bottom sections must be firmly tightened together. Prior to removing the operating nut, hold the base of the valve cartridge and turn the valve stem firmly in the opening direction with a pipe wrench or valve key (see Figure 46).

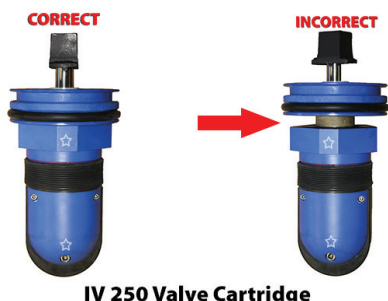


FIGURE 46

3.0.6) Remove the operating nut and the white Teflon friction washer from the valve stem. Remove the Auto Equalization Valve NPT plug. Set aside in a safe place.

3.0.7) Hand-tighten the Auto-E pin into the check valve. Push down the pin to ensure it can actuate (see Figures 47 and 48).

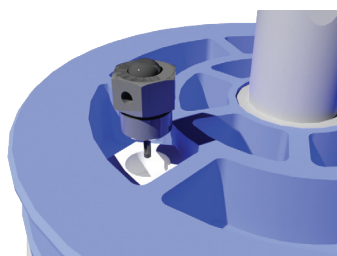


FIGURE 47



FIGURE 48

3.0.8) Place the end of the insertion tool over the valve stem. Tighten the Insta-Valve 250 valve cartridge and insertion tool together by turning the knurled handle of the insertion tool clockwise until snug. Tighten the 3/4" insertion tool lock nut at the knurled handle's base. The raised face at the end of the insertion tool must sit flush against the valve cartridge (see Figures 49 and 50).



FIGURE 49
Insertion tool making contact with the auto equalization pin.



FIGURE 50
Raised Face of Insertion tool installed flush to cartridge.

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.

3.0.9) 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.

3.0.10) Insert the assembled valve cartridge and insertion tool through the insertion housing and tapping assembly until the top of the valve cartridge is approximately 2.5" from the bottom flange of the insertion housing. Ensure the shorter, truncated side

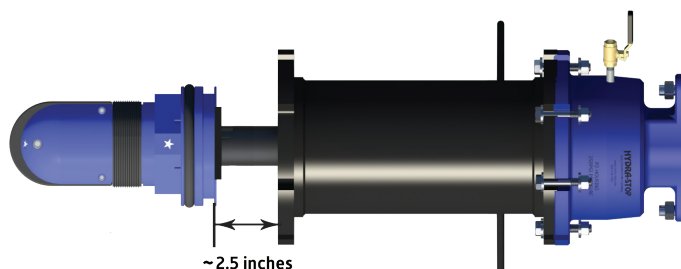


FIGURE 51

of the valve cartridge marked with a star faces upwards (see Figure 51).

3.0.11) Slide the stop collar over the knurled handle of the insertion tool. Align the three (3) slots of the triangular-shaped guide plate with the three (3) guide bars and slide it over the knurled handle of the insertion tool.

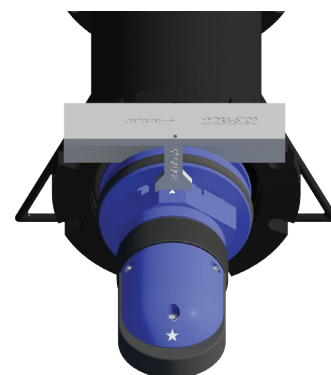


FIGURE 52

3.0.12) Set up the corresponding Insta-Valve 250 alignment gauge (4"-8" or 10"-12") for the appropriate size being installed (4", 6", 8", 10", or 12").

NOTE: Refer to the alignment gauge instructions shipped with the Insta-Valve 250 Alignment Gauge Kit.

3.0.13) Set the curved portion of the alignment gauge within the lock pin groove of the valve cartridge. Slide the valve cartridge towards the insertion housing until the alignment gauge touches the insertion housing. The two (2) gauge pins will seat in the top two holes of the insertion housing (see Figure 52).

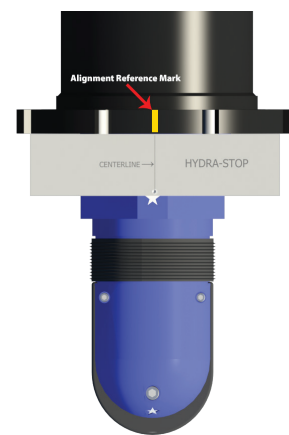


FIGURE 53

3.0.14) Ensure the flat of the alignment gauge arm remains aligned with the truncated side of the valve cartridge (see Figure 53).

3.0.15) Place the Insta-Valve 250 Insertion Depth Gauge on the insertion tool.

Insta-Valve Size	Depth Gauge
4"-8" Insta-Valve 250	7.5"
10"-12" Insta-Valve 250	4.25"

Place one end of the insertion gauge against the packing nut assembly. Slide the stop collar towards the insertion gauge until it contacts the insertion gauge. This automatically sets the proper depth for insertion. Lock the stop collar.

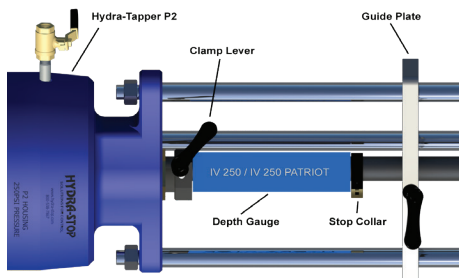


FIGURE 54

3.0.16) Slide and place the corresponding guide plate within 2" of the stop collar, then lock the clamp lever (see Figure 54).

3.0.17) Make a reference mark on the insertion housing aligned with the centerline of the Alignment Gauge (see Figure 55).

3.0.18) Remove the Insta-Valve 250 Insertion Depth Gauge.

3.0.19) Slide the valve cartridge back to the original 2.5" measurement away from the insertion housing. Remove the Insta-Valve 250 Alignment Gauge.

3.0.20) Lubricate the completion plug O-ring with food-grade lubricant provided with the equipment. DO NOT lubricate the cartridge wipe seal or resilient wedge.

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

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

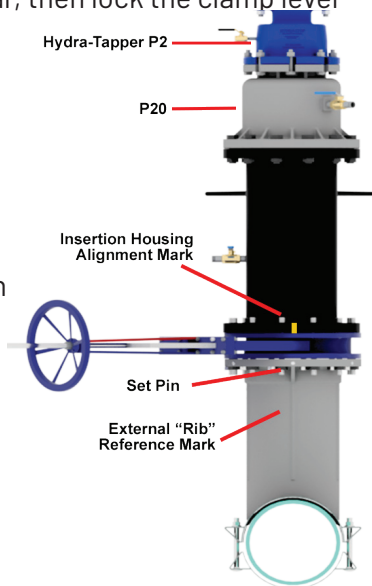


FIGURE 55

NOTE: Do not use tools to tighten the clamp lever.

3.1.0 Install Insta-Valve 250 Insertion Equipment

3.1.1) For the 4"-8" Insta-Valve 250, 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 onto the temporary gate valve.

For the 10"-12" Insta-Valve 250, place a green fiber gasket without holes (included with equipment) between the insertion housing and the temporary gate valve. Safely lift the insertion equipment and place it onto the temporary valve.

3.1.2) Align the insertion housing reference mark made in step 3.0.18 with

- The point of the pentagon valve body that is in line with the direction of the pipe or the "star" on the valve **for 4" and 6" valves**.
- The external "rib" of the valve body that ribs align with a set pin hole and is in line with the direction of the pipe **for 8"-12" valves**.

(See Figure 55)

3.1.3) Cross-tighten the insertion assembly in place using the bolts, nuts, and washers provided.

3.2.0 Install the Insta-Valve 250 Valve Cartridge

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

NOTE: Failure to follow step 3.2.1 could result in damaged equipment and failed installation.

3.2.2) Install the feed screw by threading it through the top plate of the Hydra-Tapper until 2-3 inches are exposed under the top plate of the Hydra-Tapper.

3.2.3) Slide and place a second guide plate over the end of the feed screw to keep the feed screw from spinning as you turn the Hydra-Tapper OS&Y handles (see Figure 56).

3.2.4) Continue advancing the feed screw until the feed screw bottoms out on the locking nut washer.

3.2.5) For the 4"-8" Insta-Valve 250, open the ball valves on the tapping machine's P2, the insertion housing, and the temporary gate valve bypass jumper. Allow pressure to equalize.

For the 10"-12" Insta-Valve 250, open the ball valves on the tapping machine's P2 and the insertion housing. Slowly open the temporary gate valve until the insertion



FIGURE 56

housing begins to fill. Then, stop opening the temporary gate valve.

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

3.2.7) Fully open the temporary gate valve.

3.2.8) Loosen the packing nut assembly clamp lever and begin advancing the valve cartridge insertion assembly.

3.2.9) 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 is flush to 1/8" from the top of the packing nut assembly.

CAUTION: Do not advance the feed screw quickly. Advancing the feed screw slowly allows for re-pressurization above the cartridge, allowing it to advance easily during the valve cartridge installation process.

NOTE: If the distance exceeds 1/8 of an inch, fully retract the valve cartridge from the installation housing. Close the temporary gate valve, return to 3.0.0 Preparing the Hydra-Tapper for Valve Insertion, and repeat all installation steps.

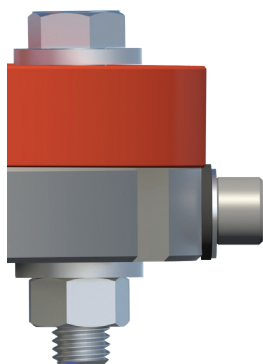


FIGURE 57

3.2.10) Lock the valve cartridge assembly in place by cross-tightening the Allen-head completion pins (**4 pins for 4"-8" installations, 6 pins for 10"-12" installations**). Tighten each until the head of the completion pin bottoms out against the flange, as seen in Figure 57. Do not over-tighten.

Figure 58 shows a cross-tightening pattern that starts with Completion Pin #1 and so on. You may start with any of the pins as #1; however, be sure to follow a cross-

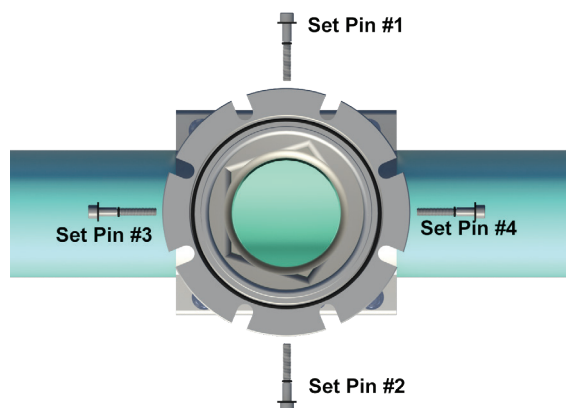


FIGURE 58

NOTE: Temporary Gate Valve removed for clarity. Completion Pins are shown removed for location purposes only.

tightening pattern with the remaining pins.

NOTE: Do not start the next step until all completion pins have been properly set.

3.2.11) Raise the feed screw 1" to expose the insertion tool lock nut.

3.2.12) Attach a 10' hose to the 3/4" ball valve on the insertion housing, then run the opposite end to a discharge location outside of the excavation.

3.2.13) Use a 3/4" open-ended wrench to loosen the lock nut until the outer shaft of the insertion tool can be raised to allow the auto-equalizing check valve to close.

3.2.14) Slowly open the ball valve. A light stream of water will begin to flow from the hose.

3.2.15) Continue to turn the insertion tool lock nut, raising the feed screw 1" at a time, as needed, to fully disengage the insertion tool from the valve cartridge.

3.2.16) The light stream of water (4 gallons per minute) out of the 3/4" ball valve should begin to decrease and stop as the insertion tool is disengaged from the valve cartridge.

3.2.17) Lock the clamp lever.

3.2.18) Remove the feed screw.

3.2.19) Loosen the clamp lever.

3.2.20) Raise the insertion tool to the start position, where the knurled handle extends past the tapping machine's P3 and secure it in place by tightening the clamp lever.

3.2.21) Remove the Insta-Valve 250 insertion equipment and temporary gate valve. Confirm that the O-ring is placed on top of the Insta-Valve 250 flange.

3.2.22) Unthread and remove the Auto-Equalization Pin Assembly.

3.2.23) Place the white Teflon washer onto the valve stem.

3.2.24) Teflon tape the threads and replace the 3/8" Auto-Equalization NPT Plug into the stainless-steel check valve.

3.2.25) Lubricate the O-ring in the bore of the Insta-Valve 250 bonnet and install it over the valve stem, with the recess facing down.

3.2.26) Align bolt holes.

3.2.27) Cross-tighten the bolts, nuts, and washers that came with the Insta-Valve 250.

3.2.28) Set the 2" operating nut on the valve stem and thread the operating locking nut on it.

3.2.29) Install the Valve Box Adapter by placing it on the Insta-Valve valve bonnet, centering the Valve Box Adaptor around the operating nut between the valve bonnet mounting bolts (see Figure 59).

3.2.30) Install the valve box of your choice.

3.2.31) Fully close and open the Insta-Valve 250 to confirm a successful installation. The Insta-Valve 250 operates at three (3) turns-per-inch plus/minus three (3) turns depending on the type and condition of the inside diameter of the pipe. Count your turns when opening or closing the Insta-Valve 250 to ensure the valve is fully in the desired position (open or closed).

3.2.32) Fully disassemble, clean, and store equipment.

3.2.33) Be sure to put away your tools in a clean and dry area.

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

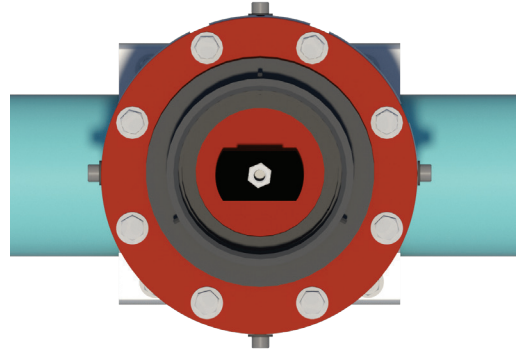


FIGURE 59



INSTA-VALVE 250 INSERTION VALVES

Appendix A — Technician Tool List

Appendix A – Technician Tool List

MISCELLANEOUS SUPPLIES

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

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
- Crescent Wrench
- Torque Wrench (150 lbs.)
- 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
- 2 1/4" Tight Clearance Wrench
- 18" Pipe Wrench

ALLEN AND HEX WRENCHES

- 9/16" Allen Wrench
- 5/8" Allen Wrench
- 5/32" T-Handle Allen Wrench
- 3/16" T-Handle Allen Wrench
- 1/8" T-Handle Hex Wrench
- 1/4" T-Handle Allen Wrench
- 1/4" Extra Long T-Handle Hex Wrench
- 5/16" T-Handle Allen Wrench
- 5/16" Extra Long T-Handle Hex Wrench
- 3/8" T-Handle Allen Wrench

USER SUPPLIED EQUIPMENT

- Safety Equipment
- Hard Hat
- Safety Glasses
- Safety Shoes
- Fall Protection
- Hearing Protection
- Work Gloves
- Small Slings
- 10' Garden Hose

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

HYDRA-STOP

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