HYDRA-STOP®

SOLUTIONS FOR CONTROL

HYDRA-TAPPER TAPPING MACHINE

Operation and Care Instructions — Revised May 2021

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HYDRA-STOP® SOLUTIONS FOR CONTROL

Section 1.0.0 — General Safety Warnings

These instructions depict the use of the most up to date Hydra-Stop installation equipment and accessories. Please be certain you are following the instructions for your equipment.

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. 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.

Do Not Exceed Load Rating on Any Lifting Equipment

This includes but is not limited to lifting magnets, eyebolts and straps. Lifting magnets provided with Hydra-Stop equipment are labeled with a load rating. 12" knife gate lifting assists and 3/4" eye bolts should ONLY be used for lifting 12" and 8" temporary gate valves respectively.

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 way 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.

HYDRA-STOP®

SOLUTIONS FOR CONTROL

HYDRA-TAPPER TAPPING MACHINE

4”— 12” Insertion Valve Tapping

Section 2 — Tapping for 4”-8” Valve Insertion

2.0.0 Setting up the Hydra-Tapper

2.0.1) Verify that the insertion valve has been properly mounted, pressure tested and the temporary gate valve installed before proceeding to step 2.0.2.

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

2.0.3) 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 4” IV 250 requires 3.8” cutter
- Installation of 6” IV 250 requires 5.8” cutter
- Installation of 8” IV 250 requires 7.9” cutter

NOTE: Ensure you are using the correct shell cutter for your application. See AppendixE — “Valve Cartridge and Cutter Sizing Chart” for pipe I.D. / cutter selection.

2.0.4) Select proper size pilot drill for installation.

- 4” and 6” IV 250s require the 5/8” X 6” long pilot drill.
- 8” IV 250s require the 5/8” X 7-1/4” length pilot drill.

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

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

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

2.0.6) 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 1).

Figure 1

2.0.7) Mark the flat of the taper with a visible marking agent (see Figure 2).

Figure 2

2.0.8) 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 3).

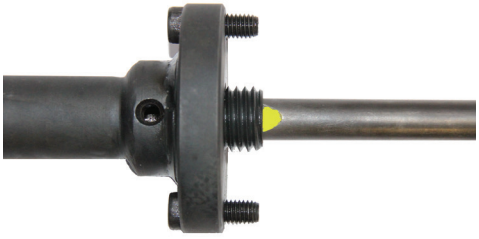

Figure 3

2.0.9) 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 4).

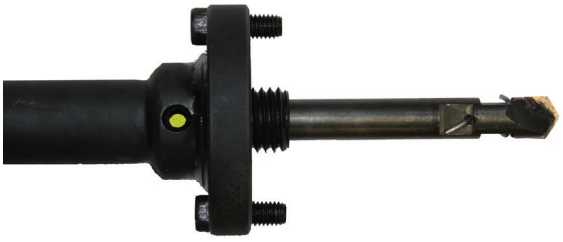

Figure 4

2.0.10) 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 5).

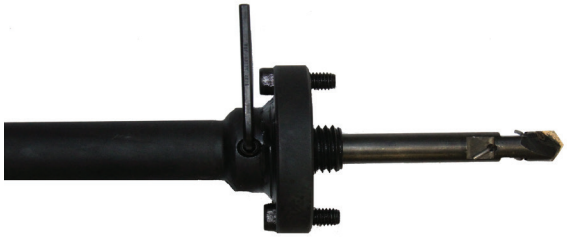

Figure 5

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

2.0.11) 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.

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

2.0.13) 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.

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

2.0.15) 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.

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

2.0.17) 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.

2.1.0 Installing the Hydra-Tapper

2.1.1) Using a strap or sling install the assembled Hydra-Tapper on to 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 positioned on to the temporary valve. **Note the position of the fully retracted cutting assembly.**

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

2.1.3) 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 assembly spins freely in a clockwise direction.

2.1.4) Slide the stop collar over the saw mandrel.

2.1.5) 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

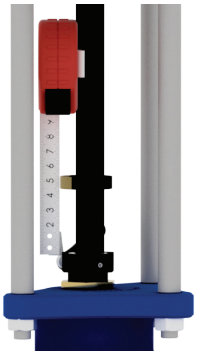

Figure 6 (Measurement for reference only)

2.1.6) Tighten the stop collar to the correct measurement (see Figure 6).

2.1.7) Install the drive unit by lifting it above the saw mandrel and slide it into the 3 guide bars.

2.1.8) 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 7).

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

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

2.1.10) When the feed screw makes contact with the top of the drive unit, back off one full turn. If you do not have the drive motor restraint kit, proceed to step 2.3.1.

Figure 7

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

NOTE: Early models of Hydra-Stop Insta-Valve installation equipment did not include the drive motor restraint kit.

2.2.0 Performing the Line Tap

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

2.2.2) 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.

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

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

2.2.4) 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.

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

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

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

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

2.2.8) 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 2.2.6 and 2.2.7

2.2.9) 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**

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

Figure 8

2.2.11) 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 8).

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

2.2.13) 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.

2.2.14) Close the temporary gate valve.

2.3.0 Removing the Hydra-Tapper

2.3.1) Relieve the pressure from the Hydra-Tapper by opening the tapping machine ball valve and discharging the pressure. Open the temporary gate valve ball valve to drain the tapping assembly.

2.3.2) 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.

2.3.3) Remove stop collar.

2.3.4) Loosen the packing assembly clamp lever.

2.3.5) Remove cutter and saw mandrel assembly.

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

2.3.7) 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.

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

2.3.8) Inspect the coupon for pipe thickness and condition.

2.3.9) Remove cutter from saw mandrel.

Section 3 — Tapping for 10”-12” Valve Insertion

3.0.0 Setting up the Hydra-Tapper

3.0.1) Verify that the insertion valve has been properly mounted, pressure tested and the temporary gate valve installed before proceeding to step 3.0.2.

3.0.2) Select proper size saw mandrel. Tapping of the 10”-12” IV 250 requires the 55” long saw mandrel.

3.0.3) 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” IV 250 requires 9.8” cutter.
- Installation of 12” IV 250 requires 11.8” cutter.

NOTE: Ensure you are using the correct shell cutter for your application. See Appendix E — “Valve Cartridge and Cutter Sizing Chart” — for pipe I.D. / cutter selection.

3.0.4) Select proper size pilot drill for installation. Installation of 10” and 12” IV 250s requires the 3/4” X 10 5/16” long pilot drill.

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

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

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

3.0.6) 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 9).

Figure 9

3.0.7) Mark the flat of the taper with a visible marking agent (see Figure 10).

Figure 10

3.0.8) 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 11).

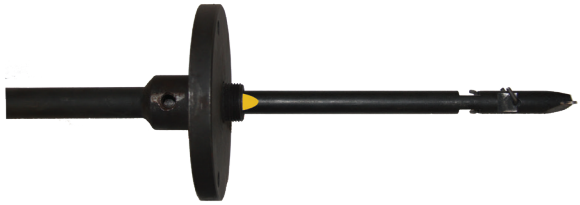

Figure 11

3.0.9) 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 12).

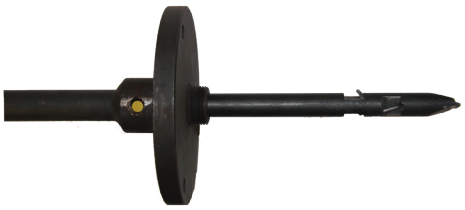

Figure 12

3.0.10) 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 13).

Figure 13

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

3.0.11) Loosen and remove the three Allen-head cap screws on the flange of the saw mandrel.

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

Figure 14

3.0.13) 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 14).

3.0.14) Thread nylon lock nuts onto Allen-head cap screws and tighten (see Figure 15).

Figure 15

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

3.0.16) 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.

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

3.0.18) 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.

3.1.0 Installing the Hydra-Tapper

3.1.1) Using a strap or sling install the assembled Hydra-Tapper on to the 12" 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 positioned on to the temporary valve. Note the position of the fully retracted cutting assembly.

3.1.2) 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.**

3.1.3) 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 clockwise direction.

3.1.4) Slide the stop collar over the saw mandrel.

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

Figure 16

3.1.6) Tighten the stop collar to the correct measurement (see Figure 16).

- **10" pipe = 6" cutting depth**
- **12" pipe = 7" cutting depth**

3.1.7) Install the drive unit by lifting it above the saw mandrel and slide it into the 3 guide bars.

3.1.8) 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 17).

Figure 17

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

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

3.1.10) When the feed screw contacts the top of the drive unit, back off one full turn. If you do not have the drive motor restraint kit, proceed to step 3.2.1.

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

3.2.0 Performing the Line Tap

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

3.2.2) 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.

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

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

3.2.4) 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.

3.2.5) 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.

3.2.6) 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.

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

3.2.8) 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.

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

- **10" pipe = 6" cutting depth**
- **12" pipe = 7" cutting depth**

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

Figure 18

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

3.2.12) Loosen the packing nut assembly clamp lever and allow the pressure to slowly raise the cutter assembly fully into the tapping housing (see Figure 18).

3.2.13) 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.

3.2.14) Close the temporary gate valve.

3.3.0 Removing the Hydra-Tapper

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

3.3.2) 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.

3.3.3) Remove stop collar.

3.3.4) Remove cutter and saw mandrel assembly.

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

3.3.6) 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.

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

3.3.7) Inspect the coupon for pipe thickness and condition.

3.3.8) Remove cutter from saw mandrel.

HYDRA-STOP®

SOLUTIONS FOR CONTROL

HYDRA-TAPPER TAPPING MACHINE

4”— 12” HSF 250 Linestop Fitting Tapping

Section 4 — Tapping for 4”–8” HSF 250 Line Stop Fitting

4.0.1) Verify that the HSF 250 linestop fitting has been properly mounted, pressure tested and the temporary gate valve installed before proceeding to step 4.1.0.

4.1.0 Setting up the Hydra-Tapper

4.1.1) Select proper size saw mandrel. Tapping of the 4”-8” HSF 250 requires the 27” long saw mandrel.

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

- Installation of 4” HSF 250 requires 3.8” cutter.
- Installation of 6” HSF 250 requires 5.8” cutter.
- Installation of 8” HSF 250 requires 7.9” cutter.

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

4.1.3) Select proper size pilot drill.

- Installation of the 4” and the 6” HSF 250 fittings require the 1/2” X 6” long pilot drill.
- Installation of the 8” HSF 250 fitting requires the 1/2” X 7-1/4” length pilot drill.

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

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

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

4.1.5) Visually locate the tapered relief on the base of the pilot drill. Notice the stop or ledge at the base of the taper (see Figure 19).

Figure 19

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

Figure 20

4.1.7) 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 21).

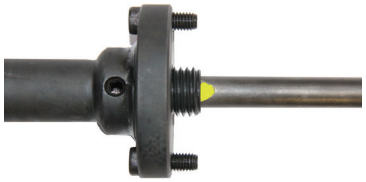

Figure 21

4.1.8) 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 22).

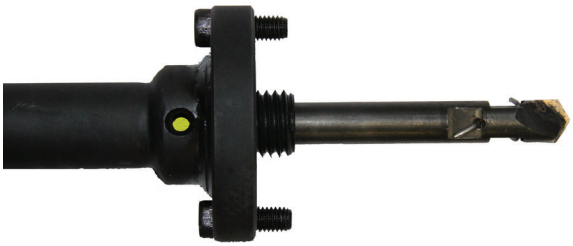

Figure 22

4.1.9) 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 23).

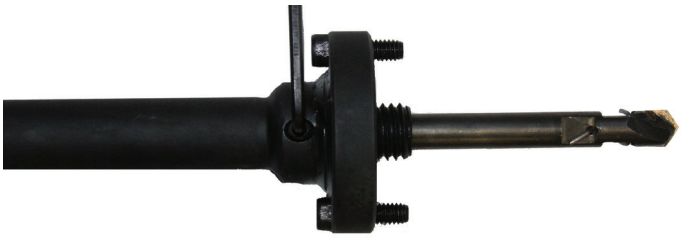

Figure 23

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

4.1.10) 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.

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

4.1.12) 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.

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

4.1.14) 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.

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

4.1.17) 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.

4.2.0 Installing the Hydra-Tapper

4.2.1) 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 positioned on to the temporary valve. **Note the position of the fully retracted cutting assembly.**

4.2.2) 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.**

4.2.3) 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 clockwise direction.

4.2.4) Slide the stop collar over the saw mandrel.

4.2.5) 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

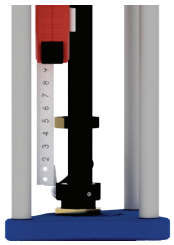

Figure 24
(Measurement shown for reference only)

4.2.6) Tighten the stop collar to the correct measurement (see Figure 24).

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

4.2.8) 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 25).

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

Figure 25

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

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

4.2.11) If using a non-OS&Y tapping machine, assemble the handle assembly and install over the flats at the top of the feed screw and tighten the handles.

4.3.0 Performing the Line Tap

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

4.3.2) 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.

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

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

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

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

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

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

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

4.3.8) 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 4.3.6 and 4.3.7

4.3.9) 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**

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

Figure 26

4.3.11) 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 26).

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

4.3.13) 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.

4.3.14) 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 2.4.2.

4.4.0 Removing the Hydra-Tapper

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

4.4.2) 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.

4.4.3) Remove stop collar.

4.4.4) Remove cutter and saw mandrel assembly.

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

4.4.6) 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.

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

4.4.7) Inspect the coupon for pipe thickness and condition.

4.4.8) Remove cutter from saw mandrel.

Section 5 — Tapping for 10”-12” HSF 250 Line Stop Fitting

5.0.1) Verify that the HSF 250 linestop fitting has been properly mounted, pressure tested and the temporary gate valve installed before proceeding to step 5.1.0.

5.1.0 Setting up the Hydra-Tapper

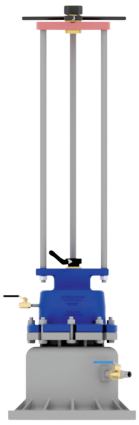

Figure 27

5.1.1) Bolt Hydra-Tapper to the P-20 component using the bolts and nuts included with Hydra-Tapper equipment (see Figure 27).

5.1.2) Select proper size saw mandrel. Tapping of 10” and 12” HSF 250s requires the 40” long saw mandrel.

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

- Installation of 10” HSF 250 requires a 9.8” cutter.
- Installation of 12” HSF 250 requires 11.8” cutter.

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

5.1.4) Select proper size pilot drill. Installation of 10” and 12” HSF 250s requires the 3/4” X 10 5/16” long pilot drill.

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

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

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

5.1.6) 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 28).

Figure 28

5.1.7) Mark the flat of the taper with a visible marking agent (see Figure 29).

Figure 29

5.1.8) 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 30).

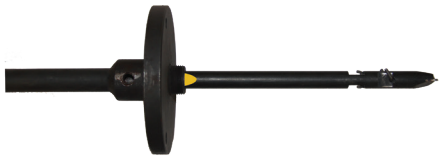

Figure 30

5.1.9) 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 31).

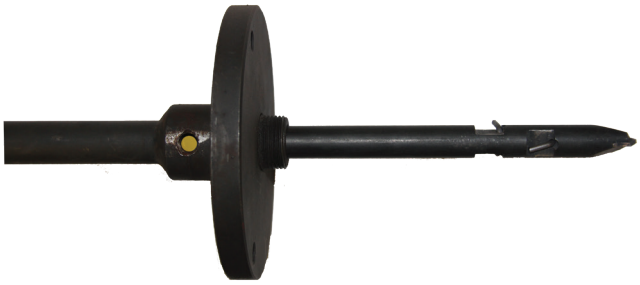

Figure 31

5.1.10) 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 32).

Figure 32

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

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

Figure 33

5.1.12) 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 33).

5.1.13) Thread nylon lock nuts onto Allen-head cap screws and tighten (see Figure 34).

Figure 34

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

5.1.15) Lubricate the end of the saw mandrel with a dab of the

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food-grade lubricant provided with the equipment to help it slide freely through the packing nut assembly.

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

5.1.17) 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.

5.2.0 Installing the Hydra-Tapper

5.2.1) Using a strap or sling install the assembled Hydra-Tapper on to the 12" 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 positioned on to the temporary valve. Note the position of the fully retracted cutting assembly.

5.2.2) 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.**

5.2.3) 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 clockwise direction.

5.2.4) Slide the stop collar over the saw mandrel.

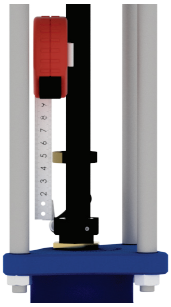

Figure 35
(Measurement shown for reference only)

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

5.2.6) Tighten the stop collar to the correct measurement (see Figure 35).

- **10" pipe = 6" cutting depth**
- **12" pipe = 7" cutting depth**

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

5.2.8) 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 36).

Figure 36

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

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

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

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

5.3.0 Performing the Line Tap

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

5.3.2) 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.

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

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

5.3.4) 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.

5.3.5) 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.

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

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

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

5.3.8) 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 5.3.6 and 5.3.7.

5.3.9) 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**

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

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

Figure 37

5.3.12) Loosen the packing nut assembly clamp lever and allow the pressure to slowly raise the cutter assembly fully into the tapping housing (see Figure 37).

5.3.13) 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.

5.3.14) Close the temporary gate valve.

5.4.0 Removing the Hydra-Tapper

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

5.4.2) 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.

5.4.3) Remove stop collar.

5.4.4) Remove cutter and saw mandrel assembly.

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

5.4.6) 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.

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

5.4.7) Inspect the coupon for pipe thickness and condition.

5.4.8) Remove cutter from saw mandrel.

HYDRA-STOP®

SOLUTIONS FOR CONTROL

HYDRA-TAPPER TAPPING MACHINE

Side Tapping

Section 6 — 4”–8” Side Tapping

6.0.1) To ensure a successful side tap, make sure the tapping sleeve and the tapping valve are installed, tightened to manufacturer recommended torques, leveled and pressure tested. Small out-of-level deviations at the tapping sleeve and valve can be compounded by the additional travel required of the MJ adapter and the tapping machine which could lead to a tap which is not concentric.

Figure 38

6.0.2) Support of the tapping valve and tapping machine is required for side taps (See Figure 38).

6.1.0 Setting up the Hydra-Tapper

NOTE: Hydra-Stop recommends placing the tapping machine in a position where the point of the P3 plate is facing the ground. This allows the best access to install and use the drive mother and access to the stop collar. This applies to the setup of the tapping machine and when installing the tapping machine for tapping operations.

6.1.1) Thread the feed screw into the tapping machine approximately 6 inches.

6.1.2) Select proper size saw mandrel. 4”-8” Side tapping requires the 41” long saw mandrel.

6.1.3) Select proper size shell cutter. Hydra-Stop side tapping shell cutters are shipped painted red. Red painted side tap shell cutters are 1/2” undersized for side tapping. If you repaint shell cutters in the future, Hydra-Stop recommends painting them red.

- 4-inch side tap requires a 3.5” red cutter.
- 6-inch side tap requires 5.5” red cutter.
- 8-inch side tap requires 7.5” red cutter.

6.1.4) 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.

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

6.1.6) 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. These screws keep the cutter from over tightening on the saw mandrel during the tap.

6.1.7) Select proper size pilot drill.

- 4 and 6-inch side tapping requires a 5/8” X 6” long pilot drill.
- 8-inch side tapping requires a 5/8” X 7-1/4” length pilot drill.

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

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

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

6.1.9) 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 39).

Figure 39

6.1.10) Mark the flat of the taper with a visible marking agent (see Figure 40).

Figure 40

6.1.11) 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 41).

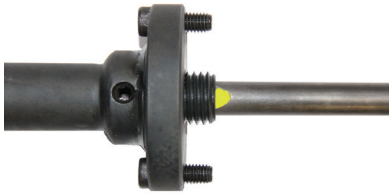

Figure 41

6.1.12) 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 42).

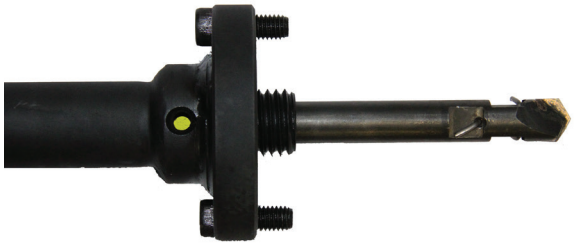

Figure 42

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6.1.13) 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 43).

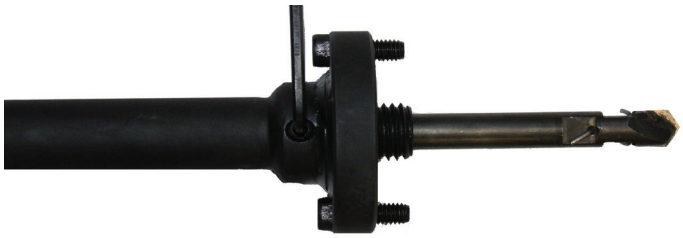

Figure 43

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

6.1.14) Select the proper tapping adapter to connect the tapping machine to the tapping valve.

6.1.15) Install the O-Ring into the slot on the tapping adapter.

6.1.16) Place the tapping machine on to the adapter. There is a mechanical register for alignment.

6.1.17) Bolt the tapping machine to the adapter using the provided bolts.

6.1.18) Tighten the bolts in a cross tightening pattern. Snug the bolts, do not over tighten.

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

6.1.20) 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.

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

6.1.22) If using a MJ tapping adapter, lubricate the MJ Gasket on the adapter to assist in insertion into the tapping valve.

6.2.0 Installing the Hydra-Tapper

6.2.1) Using a strap or sling install the assembled Hydra-Tapper onto the already installed tapping 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 positioned on to the tapping valve.

NOTE: Note the position of the hex end of the saw mandel in the fully retracted position. This position is critical to note because the cutting assembly must return to this position before closing the tapping valve. You can make a temporary mark with a marker or a paint pen on a guide bar to indicate this fully retracted position.

6.2.2) Install and cross tighten the bolts, nuts, and washers to secure the assembly. Use a cross tightening pattern so the adapter slides into the tapping valve in an equal fashion – much like tightening the nuts on a tire. NOTE: The faces of the tapping adapter and the face of the tapping valve must be parallel and the gap between the flanges should be equal-distant all the way around.

6.2.3) Loosen the packing nut assembly clamp lever, and slowly slide the saw mandrel through the tapping valve and tapping sleeve until the pilot drill is asgainst the center of the pipe. Rotate the saw mandrel to ensure it spins freely in a clockwise direction.

6.2.4) Slide the stop collar over the saw mandrel.

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

- 4” taps = 3” cutting depth
- 6” taps = 4” cutting depth
- 8” taps = 5” cutting depth

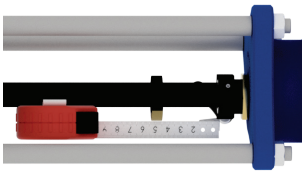

Figure 44

6.2.6) Tighten the stop collar to the correct measurement (see Figure 44).

6.2.7) Install the drive unit by placing it above the saw mandrel and lower it into the three guide bars (see Figure 45).

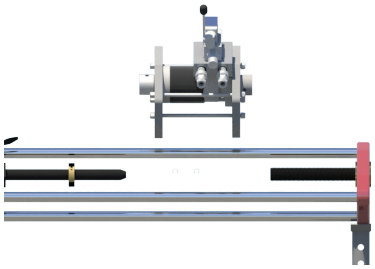

Figure 45

6.2.8) Slide 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.

6.2.9) Align the pin holes on the drive motor and the saw mandrel.

6.2.10) Insert the pin and clip in the pin hole connecting the saw mandrel to the drive motor.

6.2.11) Thread the feed screw until it engages the drive motor.

6.2.12) Visually align the pin holes on the drive motor and feed screw.

6.2.13) Insert the pin and clip in the pin hole connecting the feed screw to the drive motor.

NOTE: The feed screw, drive motor and saw mandrel are now one complete unit.

6.3.0 Performing the Line Tap

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

6.3.2) 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.

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

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

6.3.4) Ensure the clamp lever is loose to allow the saw mandrel to turn freely. **Backoff 1 turn in a counter clockwise direction to assure the pilot drill is not bound.** Engage the drive unit and confirm the saw mandrel is rotating in the clockwise direction. Slowly turn the feed screw handle assembly in a clockwise direction keeping slight, constant pressure.

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

6.3.6) Continue to turn the feed screw handle asembly until the tap is complete. The tap is complete when the bottom of the stop collar makes contact with the top of the packing nut assembly.

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

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

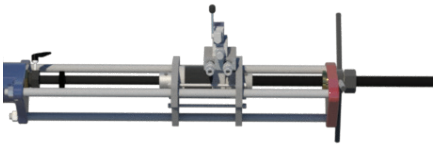

Figure 46

6.3.8) Retract the tapping assembly. Slowly turn the feed-screw handle assembly in a counterclockwise direction until the top of the drive motor is approximately 6 inches from the P3 assembly (see Figure 46).

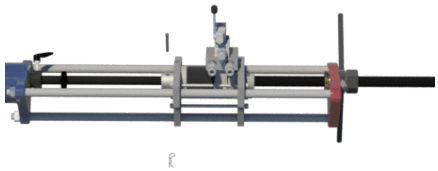

Figure 47

6.3.9) Lock the packing nut clamp lever.

6.3.10) Remove the pin from the drive motor — saw mandrel connection (see Figure 47).

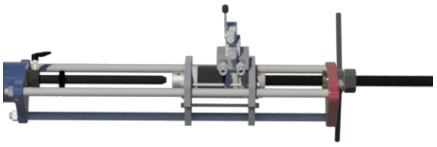

Figure 48

6.3.11) Retract the drive motor with the feed screw assembly until the connector completely clears the saw mandrel plus one additional inch (see Figure 48).

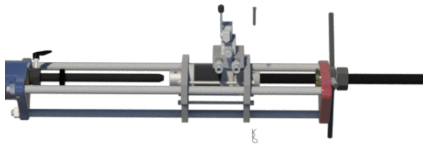

Figure 49

6.3.12) Remove the pin on the feed screw drive — motor connection (see Figure 49).

6.3.13) Retract and remove the feed screw (see Figure 50).

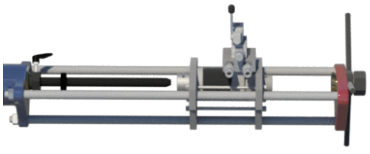

Figure 50

6.3.14) Remove the drive motor (see Figure 51).

Figure 51

Figure 52

Figure 53

6.3.15) Place a box-end wrench over the hex of the saw mandrel and use the wrench as a lever brake to hold in place (see Figure 52).

6.3.16) Slowly loosen the packing nut assembly clamp lever and allow the pressure to slowly retract the cutter assembly into the MJ adapter. Use the wrench as a lever brake to control the saw mandrel and cutter assembly. You can also use the clamp lever in combination with the box-end wrench to control the saw mandrel assembly (see Figure 53).

6.3.17) 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.

6.3.18) Close the tapping valve.

6.4.0 Removing the Hydra-Tapper

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

6.4.2) Connect the slings or straps to the Hydra-Tapper. Unbolt and slide the Hydra-Tapper from the tapping valve. Be careful to not damage the cutter and pilot bit during Hydra-tapper removal. Place the Hydra-Tapper in a dry and safe work area.

6.4.3) Remove stop collar.

6.4.4) Remove cutter and saw mandrel assembly.

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

6.4.6) 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.

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

6.4.7) Inspect the coupon for pipe thickness and condition.

6.4.8) Remove cutter from saw mandrel.

Section 7 — 10”–12” Side Tapping

7.0.1) To ensure a successful side tap, make sure the tapping sleeve and the tapping valve are installed, tightened to manufacturer recommended torques, leveled and pressure tested. Small out-of-level deviations at the tapping sleeve and valve can be compounded by the additional travel required of the MJ adapter and the tapping machine which could lead to a tap which is not concentric.

Figure 54

7.0.2) Support of the tapping valve and tapping machine is required for side taps (see Figure 54).

7.1.0 Setting up the Hydra-Tapper

NOTE: Hydra-Stop recommends placing the tapping machine in a position where the point of the P2 plate is facing the ground. This allows the best access to install and use the drive mother and access to the stop collar. This applies to the setup of the tapping machine and when installing the tapping machine for tapping operations.

7.1.1) Thread the feed screw into the tapping machine approximately 6 inches.

7.1.2) Select proper size saw mandrel. 10”-12” side tapping requires the 44” long saw mandrel.

7.1.3) Select proper size shell cutter. Hydra-Stop side tapping shell cutters are shipped painted red. Red painted side tap shell cutters are 1/2” undersized for side tapping. If you repaint shell cutters in the future, Hydra-Stop recommends painting them red.

- 10-inch side tap requires 9.5” cutter.
- 12-inch side tap requires 11.5” cutter.

7.1.4) 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.

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

7.1.6) 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. These screws keep the cutter from over tightening on the saw mandrel during the tap.

7.1.7) Select proper size pilot drill.

- 10 and 12-inch side tapping requires a 3/4” X 10” long pilot drill.

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

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

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

7.1.9) 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 55).

Figure 55

7.1.10) Mark the flat of the taper with a visible marking agent (see Figure 56).

Figure 56

7.1.11) 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 57).

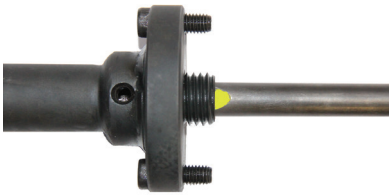

Figure 57

7.1.12) 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 58).

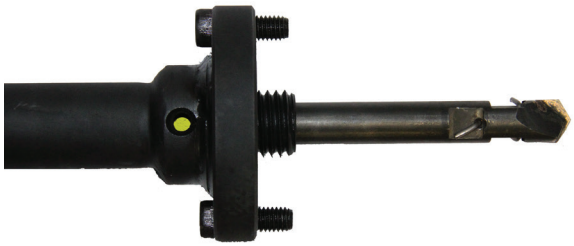

Figure 58

7.1.13) 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 59).

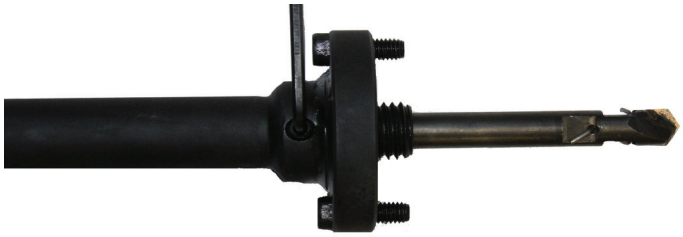

Figure 59

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

7.1.14) Select the proper tapping adapter to connect the tapping machine to the tapping valve.

7.1.15) Install the O-Ring into the slot on the tapping adapter.

7.1.16) Place the tapping machine on to the adapter. There is a mechanical register for alignment.

7.1.17) Bolt the tapping machine to the adapter using the provided bolts.

7.1.18) Tighten the bolts in a cross tightening pattern. Snug the bolts, do not over tighten.

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

7.1.20) 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.

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

7.1.22) 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.

7.1.23) If using a MJ tapping adapter, lubricate the MJ Gasket on the adapter to assist in insertion into the tapping valve.

7.2.0 Installing the Hydra-Tapper

7.2.1) Using a strap or sling install the assembled Hydra-Tapper onto the already installed tapping 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 positioned on to the tapping valve.

NOTE: Note the position of the hex end of the saw mandel in the fully retracted position. This position is critical to note because the cutting assembly must return to this position before closing the tapping valve. You can make a temporary mark with a marker or a paint pen on a guide bar to indicate this fully retracted position.

7.2.2) Install and cross tighten the bolts, nuts, and washers to secure the assembly. Use a cross tightening pattern so the adapter slides into the tapping valve in an equal fashion – much like tightening the nuts on a tire.

NOTE: The faces of the tapping adapter and the face of the tapping valve must be parallel and the gap between the flanges should be equal-distant all the way around.

7.2.3) Hold and control the exposed saw mandrel, loosen the packing nut assembly clamp lever, and slowly slide the saw mandrel through the tapping valve and tapping sleeve until the pilot drill is resting on the center of the pipe. Ensure the shell cutter spins freely in a clockwise direction.

7.2.4) Slide the stop collar over the saw mandrel.

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

- 10” pipe = 6” cutting depth
- 12” pipe = 7” cutting depth

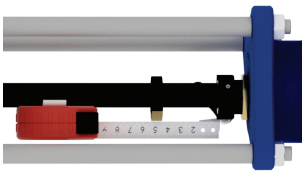

Figure 60

7.2.6) Tighten the stop collar to the correct measurement (see Figure 60).

7.2.7) Install the drive unit by placing it above the saw mandrel and slide it into the three guide bars (see Figure 61).

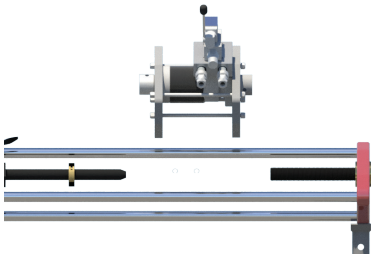

Figure 61

7.2.8) Slide 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.

7.2.9) Align the pin holes on the drive motor and the saw mandrel.

7.2.10) Insert the pin and clip in the pin hole connecting the saw mandrel to the drive motor.

7.2.11) Thread the feed screw until it engages the drive motor.

7.2.12) Visually align the pin holes on the drive motor and feed screw.

7.2.13) Insert the pin and clip in the pin hole connecting the feed screw to the drive motor.

NOTE: The feed screw, drive motor and saw mandrel are now one complete unit.

7.3.0 Performing the Line Tap

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

7.3.2) 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.

7.3.3) Ensure the drive unit lever control is in the neutral

position. Always run the power unit in the clockwise direction.

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

7.3.4) Ensure the clamp lever is loose to allow the saw mandrel to turn freely. Backoff 1 turn in a counter clockwise direction to assure the pilot drill is not bound. Engage the drive unit and confirm the saw mandrel is rotating in the clockwise direction. Slowly turn the feed screw handle assembly in a clockwise direction keeping slight, constant pressure until the tap is complete.

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

7.3.6) Continue to turn the feed screw handle asembly until the tap is complete. The tap is complete when the bottom of the stop collar makes contact with the top of the packing nut assembly.

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

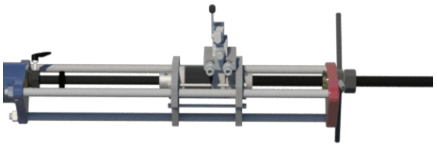

Figure 62

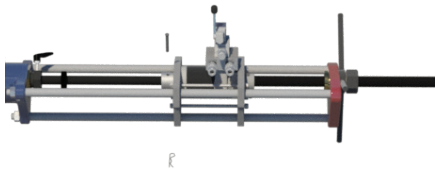

Figure 63

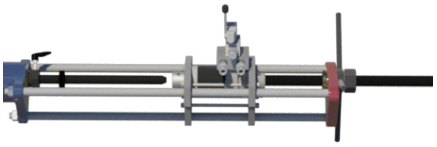

Figure 64

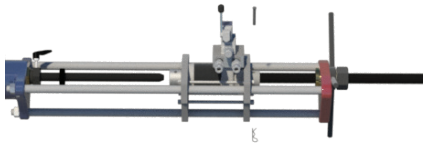

Figure 65

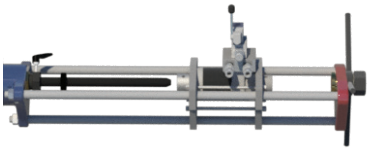

Figure 66

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

7.3.8) Retract the tapping assembly. Slowly turn the feed-screw handle assembly in a counterclockwise direction until the top of the drive motor is approximately 6 inches from the P3 assembly (see Figure 62).

7.3.9) Lock the packing nut clamp lever.

7.3.10) Remove the pin from the drive motor saw mandrel connection (see Figure 63).

7.3.11) Retract the drive motor with the feed screw assembly until the connector completely clears the saw mandrel plus one additional inch (see Figure 64).

7.3.12) Remove the pin on the feed screw drive motor connection (see Figure 65).

7.3.13) Retract and remove the feed screw (see Figure 66).

Figure 67

Figure 68

Figure 69

7.3.14) Remove the drive motor (see Figure 67).

7.3.15) Place a box-end wrench over the hex of the saw mandrel and use the wrench as a lever brake to hold in place (see Figure 68).

7.3.16) Slowly loosen the packing nut assembly clamp lever and allow the pressure to slowly retract the cutter assembly into the MJ adapter. Use the wrench as a lever brake to control the saw mandrel and cutter assembly. You can also use the clamp lever in combination with the box-end wrench to control the saw mandrel assembly (see Figure 69).

7.3.17) 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.

7.3.18) Close the tapping valve.

7.4.0 Removing the Hydra-Tapper

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

7.4.2) Connect the slings or straps to the Hydra-Tapper. Unbolt and slide the Hydra-Tapper from the tapping valve. Be careful to not damage the cutter and pilot bit during Hydra-tapper removal. Place the Hydra-Tapper in a dry and safe work area.

7.4.3) Remove stop collar.

7.4.4) Remove cutter and saw mandrel assembly.

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

7.4.6) 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.

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

7.4.7) Inspect the coupon for pipe thickness and condition.

7.4.8) Remove cutter from saw mandrel.

Section 8 — Care and storage of the Hydra-Tapper

8.0.1) If used during tap, remove Tapping Adapter housing.

8.0.2) Remove cutter and pilot drill from saw mandrel, remove screws from saw mandrel flange, and clean out threads and lubricate. Wipe and dry saw mandrel. A small amount of wax may be used on the saw mandrel to keep the saw mandrel from premature rusting and in proper operating condition.

8.0.3) Wipe and dry Hydra-Tapper.

8.0.4) Remove Feed Screw and lubricate.

8.0.5) Check condition of Cutters.

8.0.6) Check condition of the Pilot Drill. Replace coupon retention wire after every five (5) taps.

Section 9 — Cutter Care

9.0.1) Hydra-Stop® carbide-tipped cutters can be used on a wide range of pipe materials, including: Iron (Cast and Ductile, Carbon Steel, Asbestos Cement and PVC. Hydra-Stop cutters can easily be re-sharpened. The high-quality carbide inserts are replaceable, allowing for complete rebuilding of the cutter. Contact Hydra-Stop Inside Sales at 708-389-5111 for more information on the re-sharpening or rebuilding of your cutter.

9.0.2) Please observe the following care and use instructions to achieve the longest life out of your Hydra-Stop cutter:

- Thread the cutter onto the Saw Mandrel and tightly, back off until the first set of drive holes line up. Thread the drive screws into the drive holes in the cutter and tighten. If the cutter is not tightly in place, vibration may damage the cutter.
- Apply adequate, steady & equal pressure when advancing the drive unit through the tap. Allowing the cutter points to contact the work without applying adequate pressure or by applying too much pressure may cause the cutter points to dull earlier than normal.
- Always wear safety glasses and use ear protection while making a tap. Keep fingers and hands away from the Saw Mandrel and drive unit chuck while it is in operation. Do not wear loose clothing while operating the tap machine.
- Always clean and dry cutters after use. Store cutters in a humidity-free environment to ensure against premature rusting. Never lay cutter down on the carbide tips as this can damage the teeth. When transporting, make sure cutter is secure and stable.