Transmate

a division of Romac Industries, Inc.

OPERATING MANUAL

TAPMATE™ XL 424 Pipe Drilling Machine

Thank you for your purchase of the TapMate™ XL 424 Pipe Drilling Machine.
Please read and understand this operation manual. Our goal is to serve you, our customer.
If you have any questions, complaints or improvement suggestions please call us at 1-800-426-9341.

05/05/2022

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TAPMATE™ XL-424 MACHINE SPECIFICATION

- Heavy duty steel construction.
- Hydraulic motor integrated to shaft and machine.
- Weight of the TapMate XL-424 is 285 lbs. (less the Adapter Bell, Pilot Drill and Cutters).
- Maximum length of the TapMate XL-424 only is 87” (less the Adapter Bell, Pilot Drill and Cutters).
- Cutter travel distance is 39".
- For use with 4" - 24" cutters on 4" - 24" dry or hot taps.
- Suitable for use on Cast Iron, Ductile Iron, Asbestos/Cement, Steel, PVC and HDPE pipe.
- 300 psi pressure rating.
- Compatible with TapMate and or QuikValve Adapters, Cutters and Shaft Noses and PVC Pilots.
- External components of the TapMate XL-424 are QPQ heat treated for protection from wear and corrosion.
- Manual feed provides control and feedback during the cut.
- Thrust Tube Thread is a #2 Stub Acme Thread for rapid and controlled travel through the Valve and Tapping Sleeve Neck.
- Thrust Tube features a scale to indicate the amount of travel.
- Indicator Scale on the Lead Tube shows the exact Cutter depth and progress of the cut.
- Input torque limit: Continuous = 3,604 in-lbs., Intermittent = 4,283 in-lbs.
- Input RPM: 33.

MACHINE OVERVIEW

While you may be familiar with the TapMate drilling machine, the TapMate XL-424 is larger and has different operating requirements. These include:

- The TapMate XL-424 has no sliding Tubes or Brakes.
- Fewer turns are required to complete the tap (in most cases).
- TapMate XL-424 feed rates are slower due to the ACME threads.

The TapMate XL-424 drilling machine consists of four distinct sections. These sections are the Shaft, Lead Tube, Thrust Tube and the Brake Tube.

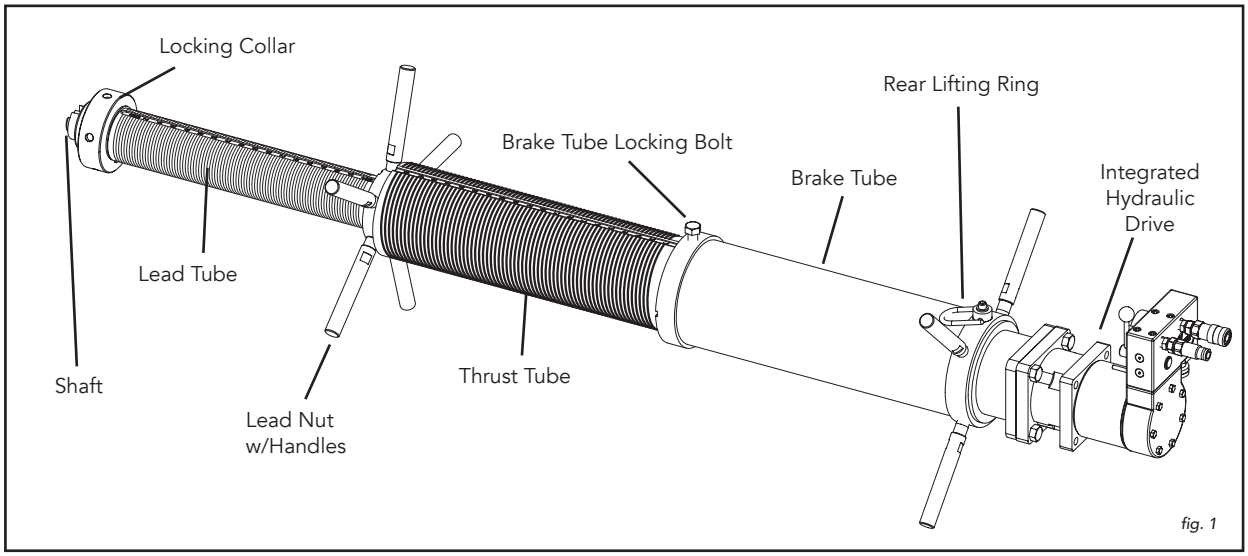


fig. 1

The threaded Thrust Tube is located in the center of the machine and the Brake Tube is positioned toward the back of the machine. Together, they control travel of the Shell Cutter and Pilot Drill. Prior to the cut, the Shell Cutter and Pilot Drill are extended through the valve and tapping sleeve neck to the pipe wall using the Brake Tube Handles. After the cut is complete, the Shell Cutter and Pilot Drill retract through the valve to allow the valve to be operated.

After the tap is completed and you are drawing the Cutter away from the Pipe, the Brake Tube thread prevents water pressure from turning the Brake Tube.

The Lead Tube and Lead Nut are located inside the front end of the Thrust Tube. Together, they provide the forward pressure necessary for the Pilot Drill and Shell Cutter during the cutting operation.

The Shaft is a single piece running through the center of the Machine. It is threaded on the front end to accept the Pilot Drill and Shell Cutter. The other end of the Shaft mates with the Hydraulic Drive Unit.

OPEN THE SHIPPING CRATE/WORKSTATION

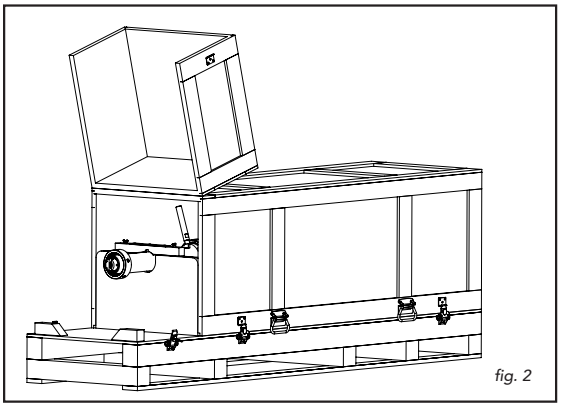


fig. 2

1. Open all (six) of the latches around bottom of the Crate.

2. Swing open the End *(see fig. 2)*.

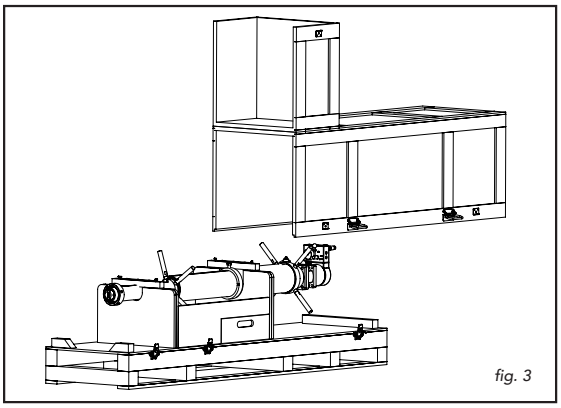


fig. 3

3. Lift and remove Cover *(see fig. 3)*.

CUTTER AND PILOT IDENTIFICATION

1. Select the proper Cutter and Pilot for the pipe you'll be tapping *(see fig. 4 & 5)*.

Cutter and Pilots shown below are for use on Ductile Iron, Cast Iron and Asbestos/Cement pipe.

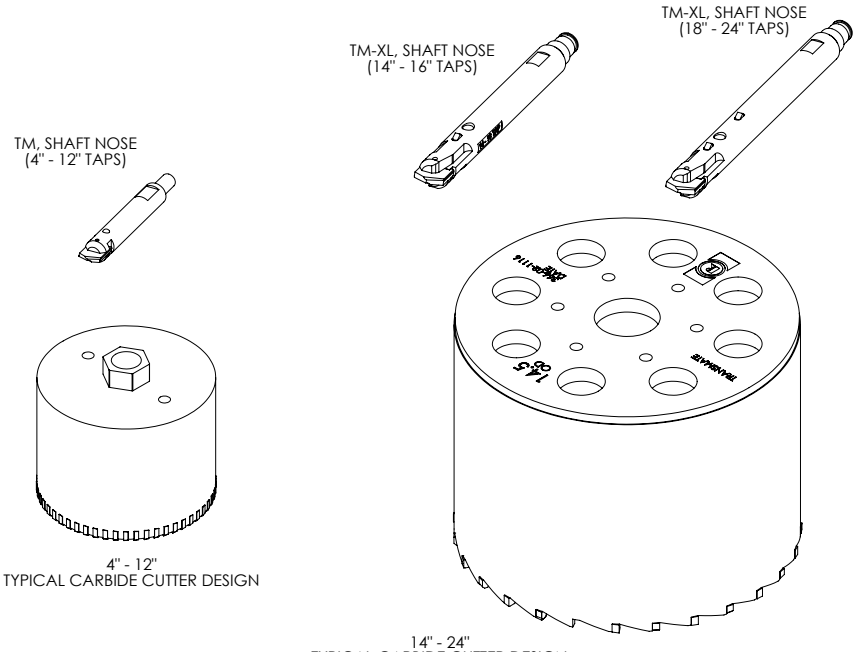
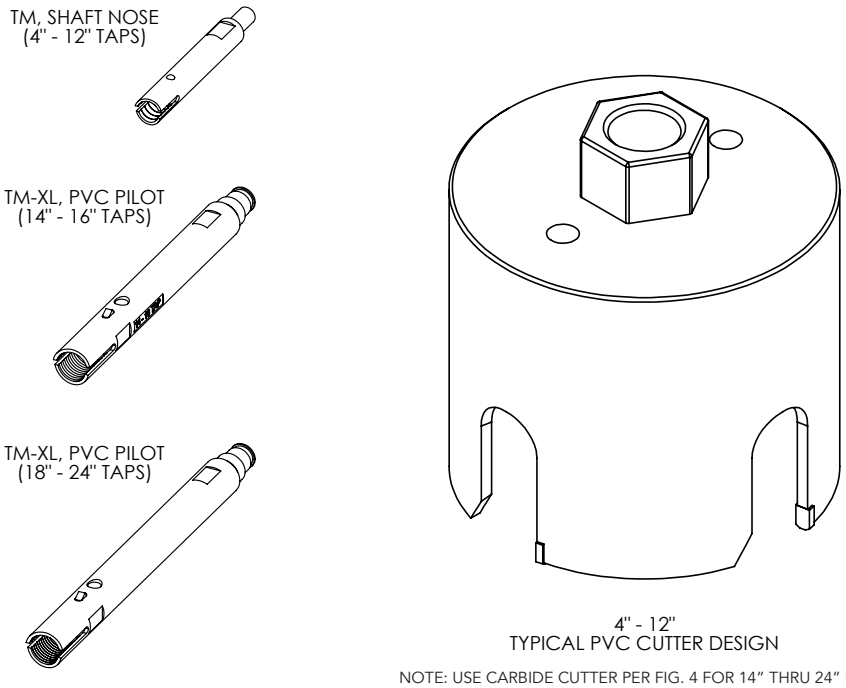


fig. 4

Cutter and Pilots shown here are for use on PVC pipe.

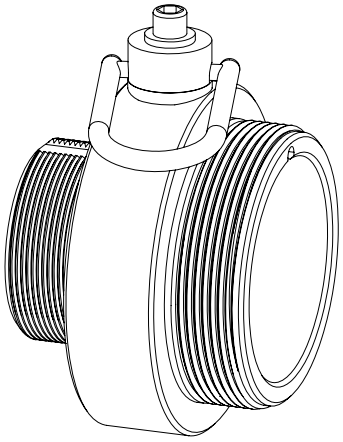


NOTE: USE CARBIDE CUTTER PER FIG. 4 FOR 14" THRU 24" CUTS *fig. 5*

ABOUT ADAPTER HUB SIZES

1. Ensure that the correct Adapter Hub is securely attached to the Lead Tube.
   To determine which Adapter Hub you'll need, see fig. 6 below.

Small Adapter Hub
for use with
4" - 12" TapMate Adapter Bells.



Large Adapter Hub
for use with
14" - 24" TapMate XL-424
Adapter Bells.

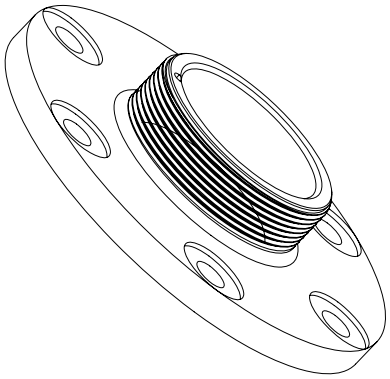


fig. 6

NOTE: The TapMate XL-424 is shipped from the factory without an Adapter Hub installed.

ADAPTER HUB INSTALLATION AND REMOVAL

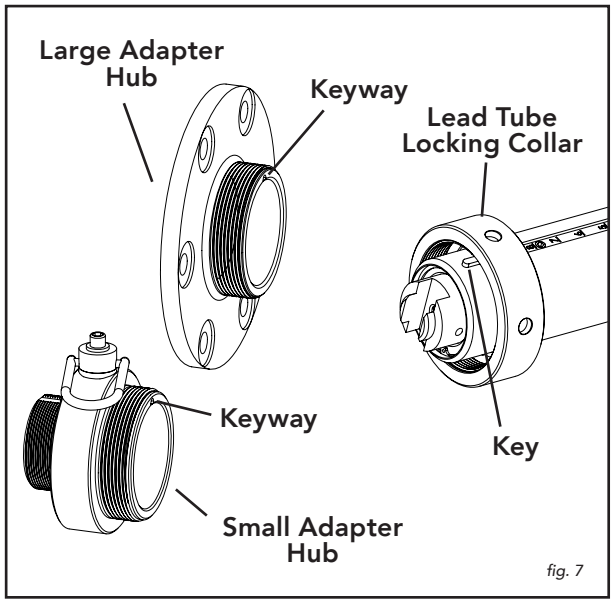


fig. 7

Installation:

1. Select the appropriate Adapter Hub for the size of Adapter Bell to be used (Small Adapter Hub for 4"-12" and Large Adapter Hub for 14"-24").

2. Align the Keyway in the Adapter Hub with the Key in the top of the Lead Tube *(see fig. 7)*.

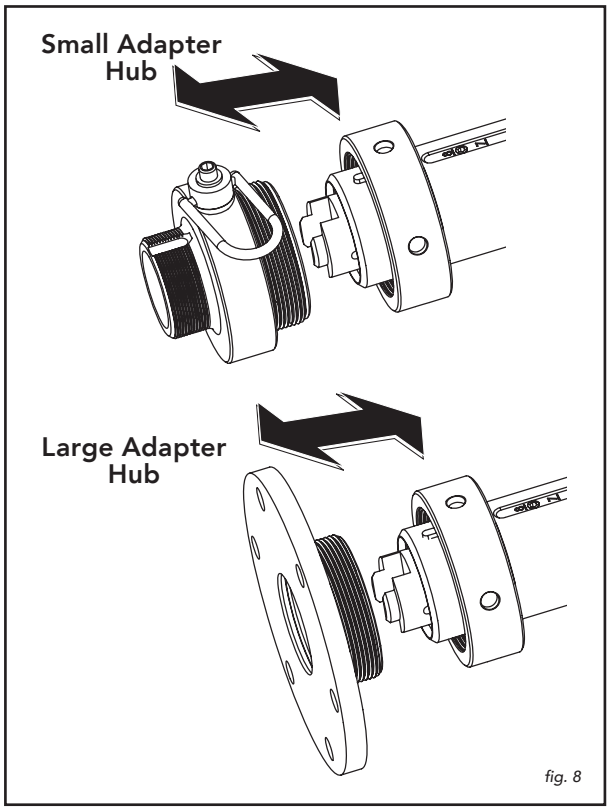
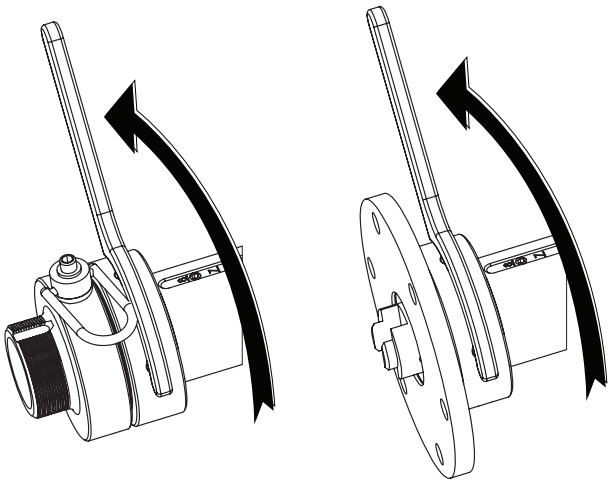


fig. 8

3. Slide Adapter Hub over the end of the Lead Tube and engage the threads of the Lead Tube Locking Hub Collar *(see fig. 8)*.

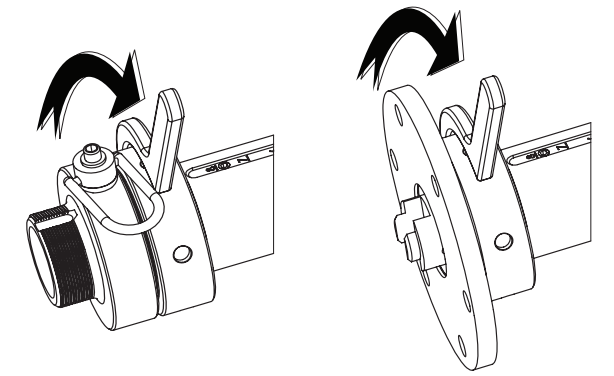
ADAPTER HUB INSTALLATION AND REMOVAL (cont.)



Small Adapter Hub Large Adapter Hub

fig. 9

4. Tighten with a Spanner Wrench.



Small Adapter Hub Large Adapter Hub

fig. 10

Removal:

1. Unscrew the Adapter Hub from the Lead Tube Locking Collar with the Spanner Wrench.

2. Slide the Adapter Hub off the Lead Tube and store in Shipping Crate / Work Station.

TAPMATE XL-424 SET-UP FOR 4"-12" TAPS:

For instructions on attaching the Large Adapter Bell (for 14"-24" taps),
turn to page 14.

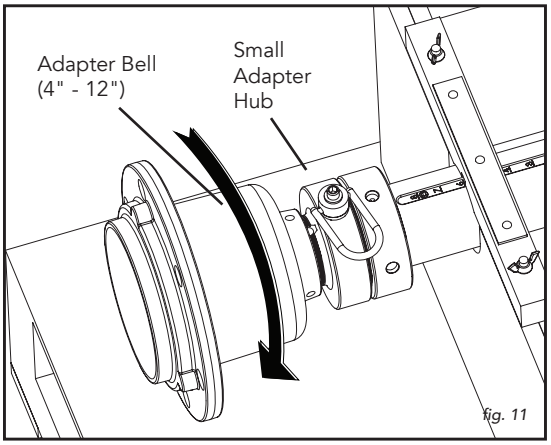


fig. 11

1. After the Small Adapter Hub has been securely attached to the Lead Tube, check the neck of the TapMate Adapter Bell to be sure that the O-ring is present.

2. Screw the appropriate size and style Adapter Bell onto the end of the Adapter Hub. You should feel the O-ring compress as you finish threading it into the Adapter Hub *(see fig. 11)*.

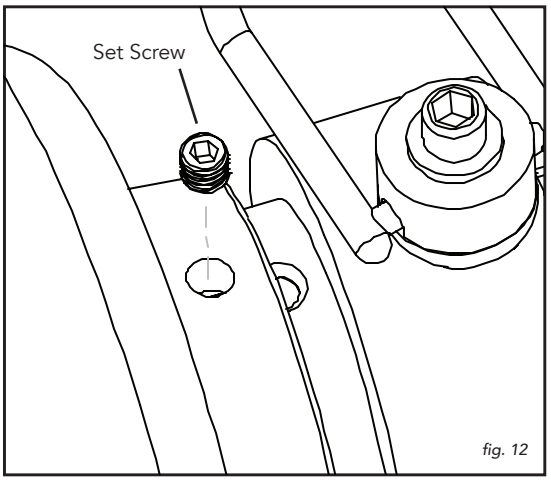


fig. 12

3. There are four Set Screw Holes around the Neck of the Adapter Bell. Continue to thread the Adapter on until the next Hole is over the Flat Slot on the top of the Hub.

4. Insert one Set Screw into the Hole located above the Flat and use a 3/16" Allen Wrench to tighten the Set Screw *(see fig. 12)*.

! NOTE: The Set Screw must bear ENTIRELY on the Flat of the Small Adapter Hub. Otherwise, damage to the threads of the Hub under the Set Screw may occur, which in turn will make the Adapter Bell very difficult to remove. Further damage to the threads of the Adapter Bell may also occur as you unscrew it from the Hub.

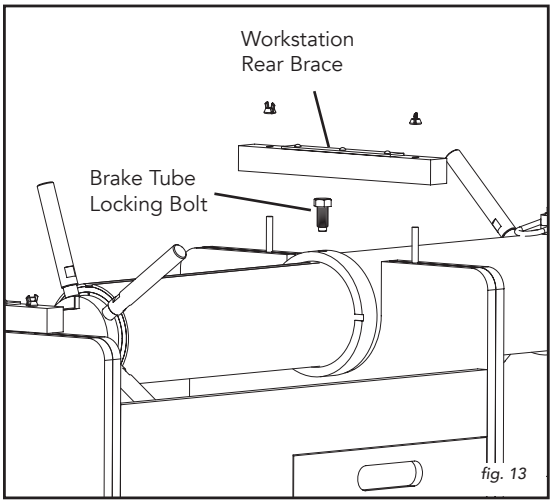


fig. 13

5. Remove the Brake Tube Locking Bolt from the Brake Tube *(see fig. 13)*. This will allow the Brake Tube to rotate separate from the entire machine. Remove the back Workstation Brace. Leave the Front Workstation Brace in place.

TAPMATE XL-424 SET-UP FOR 4"-12" TAPS (CONT.)

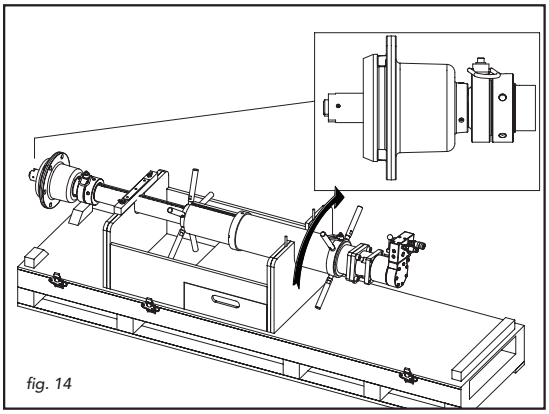


fig. 14

6. Thread the Brake Tube down the Thrust Tube by rotating it in a clockwise direction, as viewed from the back of the Machine ***(see fig. 14)***. Do this until the Shaft extends out of the Adapter Bell. The distance will vary depending on the type and size of Adapter Bell being used.

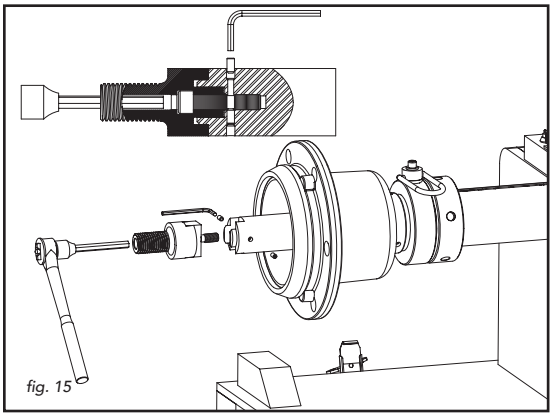


fig. 15

7. Apply Anti-Galling Lubricant to the Shaft Head Bolt and start to thread it into the end of the Shaft with the 3/8" Allen Wrench. Align the key up with the Keyway and finish bolting the Small Shaft Head into place, using a torque wrench to install the Shaft Head Bolt to 95 ft.-lbs. Apply Anti-Galling Lubricant to both Set Screws and thread them into the Shaft using the 1/8" Allen Wrench. The Set Screws lock the Shaft Head Bolt in place, preventing it from loosening during the cutting operations.

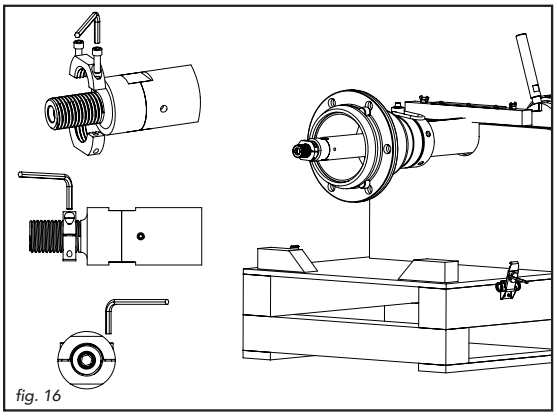


fig. 16

8. The Jam Nut facilitates easy removal the Shell Cutters. Thread the Jam Nut onto the Shaft. Run it to the end of the Threads, and then back off one complete revolution. With a 3/16" Allen Wrench, tighten Jam Nut Halves so that the gap between them is even ***(see fig. 16)***. Secure the Jam Nut halves by torquing the Jam Nut Bolts to approximately 50 in-lbs.

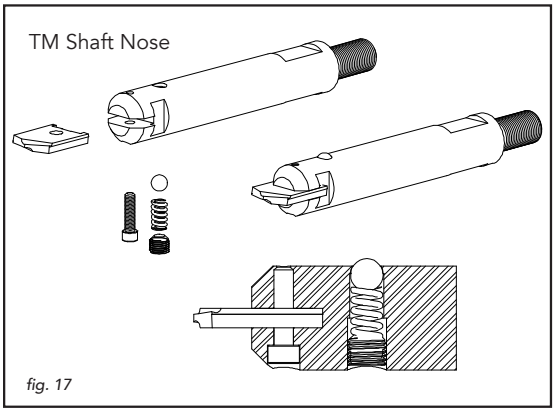


fig. 17

9. Take the TM Shaft Nose (or TM PVC Pilot) and examine the retention ball system. It should require firm-to-hard pressure to depress the Ball. The Ball should snap back into place smoothly. If the Ball is sticking, disassemble, and clean the Hole, Ball and Spring. Reassemble, and re-examine to ensure the Ball is functioning properly.

Check to see that the Spade Bit in the TM Shaft Nose is sharp and that it is held securely in the slot. If the Spade Bit is chipped or damaged, it should be replaced. For PVC Pilots, check that the teeth are sharp. If the teeth are chipped or damaged, it should be replaced.

TAPMATE XL-424 SET-UP FOR 4"-12" TAPS (CONT.)

10. Thread the TM Shaft Nose or TM PVC Pilot (depending on the material of pipe you are tapping) into the end of the Shaft and tighten until the shank of the TM Shaft Nose or the TM PVC Pilot is flush against the face of the Shaft. Due to the longer body length of the 10 and 12 inch shell cutters, a Pilot Drill Extension must be attached between the Shaft and the Shaft Nose (or PVC Pilot) and tightened into place for these size taps. See drawings (below) for Shaft Nose configurations.

Shaft Nose configuration for 4" - 8" cuts

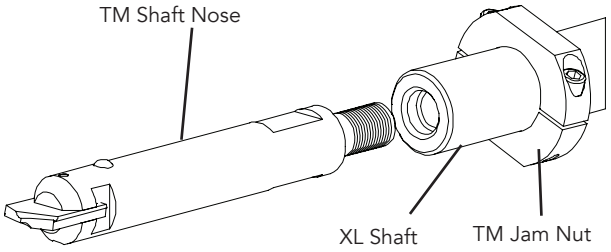


fig. 18

Shaft Nose configuration for 10" - 12" cuts

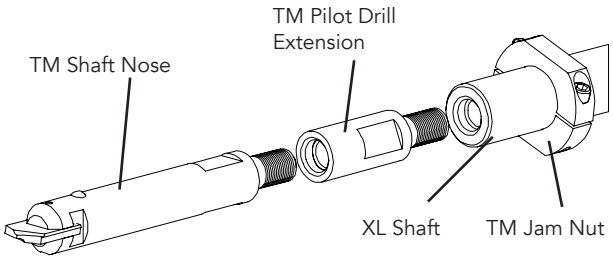


fig. 19

11. Now slip the Shell Cutter over the TM Shaft Nose or TM PVC Pilot and thread it onto the Shaft until it is snug against the Jam Nut .

12. Retract the Shell Cutter into the Adapter Bell by rotating the Brake Tube in a counter-clockwise direction. The Brake Tube will stop rotating when it shows “zero” (or a little beyond) on the Thrust Tube. Then slightly rotate the Brake Tube so the Brake Tube Locking Bolt is positioned directly over the Thrust Tube scale, and tighten. The Brake Tube Locking Bolt will damage the Thrust Tube threads if it isn't located over the scale.

13. Check that the Lead Nut is sitting at “zero” on the Lead Tube.

TAPMATE XL-424 SET-UP FOR 4"-12" TAPS (CONT.)

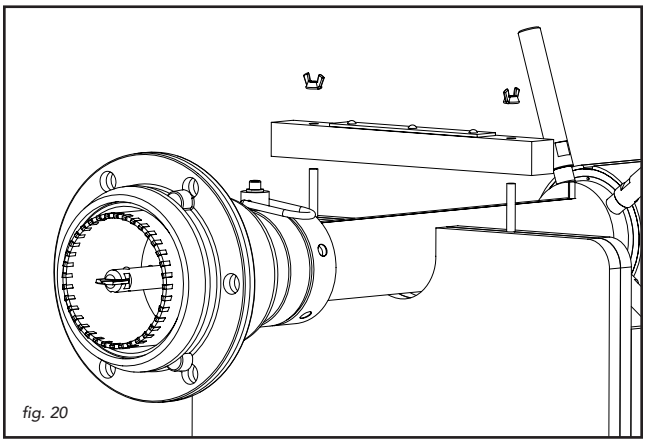


fig. 20

13. Remove the Front Workstation Brace from the Crate.

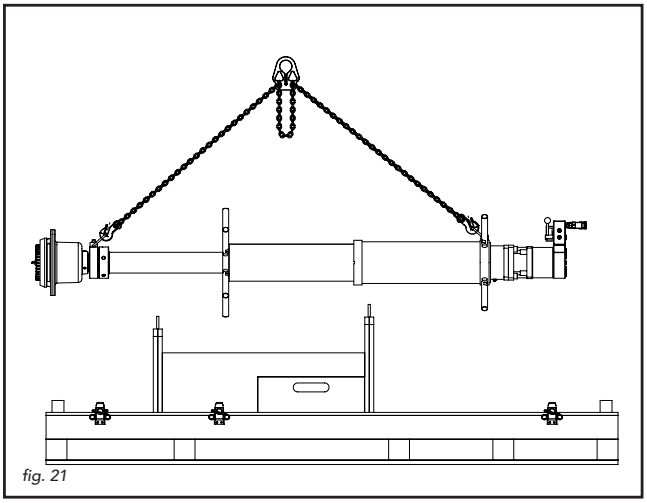


fig. 21

14. The TapMate XL-424 is now ready to be lifted and attached to the gate valve. When lifting the Machine, use the Lifting Rings at the Rear of the Machine and at the Small Adapter Hub as your lift points. Adjust the Chain Choker so that the Machine is as level as possible.

TAPMATE XL-424 SET-UP FOR 14"-24" TAPS

For instructions on attaching the Small Adapter Bell (for 4"-12" taps), go to page 8.

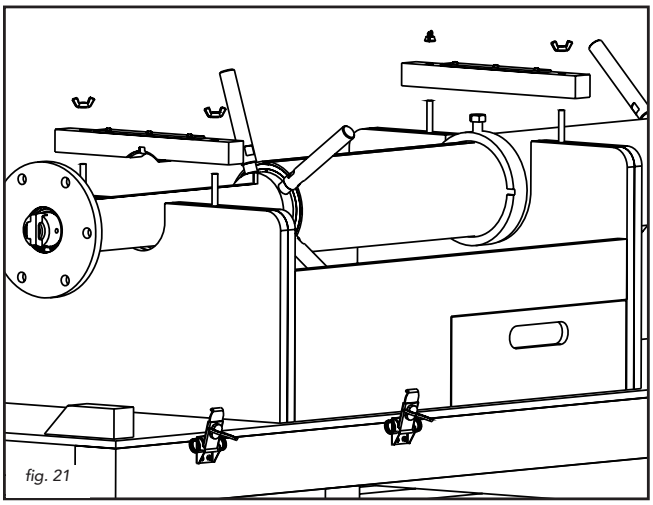


fig. 21

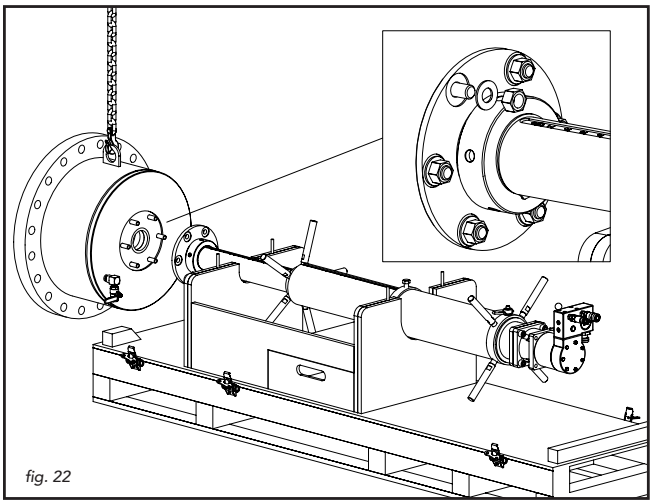


fig. 22

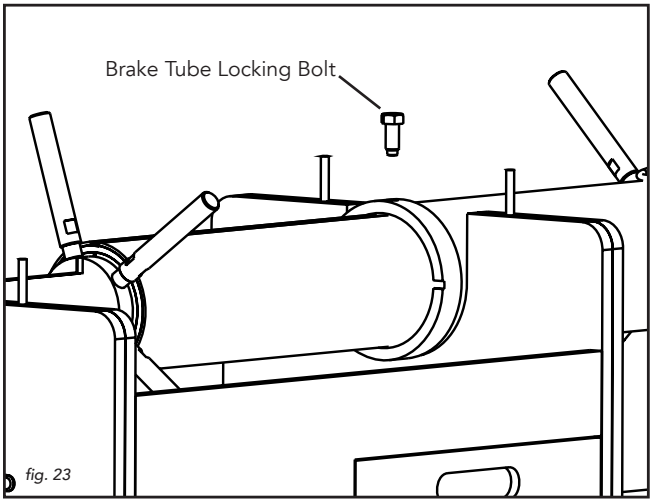


fig. 23

1. Remove Front and Rear Braces from Workstation.

2. With the Large Adapter Hub properly installed on the Lead Tube (see steps on page 8-9), lift and move the appropriate size and style TapMate XL-424 Adapter Bell into place *(see fig. 22)*.

3. Remove the six Nuts and Washers from the outside of the Adapter. Also make sure that the Adapter Bell Gasket is in place.

4. Lift the Adapter Bell by the Lifting Eye, and move it into place. The Shaft goes through the Center Hole in the Adapter. Carefully slide the Adapter Bolts through the Mating Holes in the Large Adapter Hub.

5. Replace the Nuts and Washer back onto the Adapter and tighten Nuts in a star pattern.

6. Remove the Brake Tube Locking Bolt from the Brake Tube *(see fig. 23)*. This will allow the Brake Tube to rotate.

TAPMATE XL-424 SET-UP FOR 14"-24" TAPS (cont.)

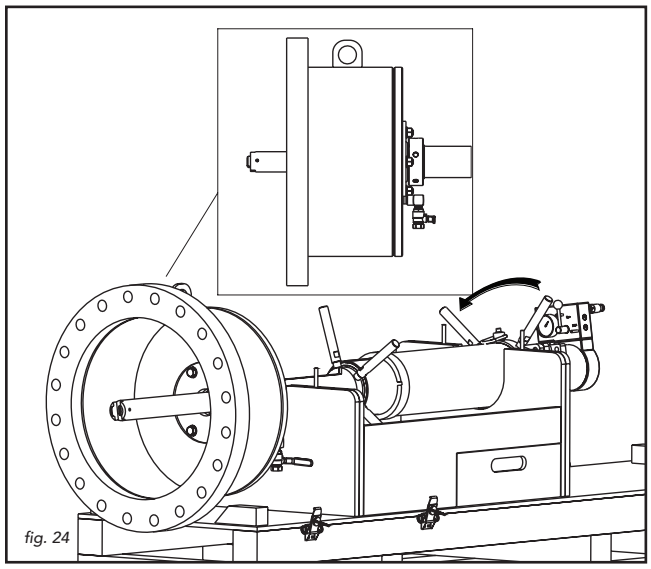


fig. 24

7. Thread the Brake Tube down the Thrust Tube by rotating it in a clockwise direction, as viewed from the back of the Machine ***(see fig. 24)***. Do this until the Shaft extends out of the Adapter Bell. The distance will vary depending on the type and size of the Adapter Bell.

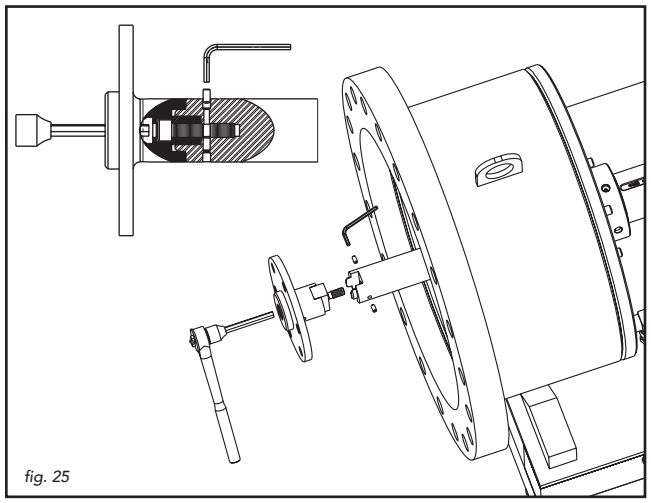


fig. 25

8. Apply Anti-Galling Lubricant to the Shaft Head Bolt and start to thread it into the end of the Shaft with the 3/8" Allen Wrench. Align the Key with the Keyway and finish bolting the Large Shaft Head into place using a torque wrench to install the Shaft Head Bolt to 95 ft.-lbs. Apply Anti-Galling Lubricant to both Set Screws and thread them into the Shaft using the 1/8" Allen Wrench. The Set Screws lock the Shaft Head Bolt in place preventing it from loosening during the cutting operation.

TAPMATE XL-424 SET-UP FOR 14"-24" TAPS (cont.)

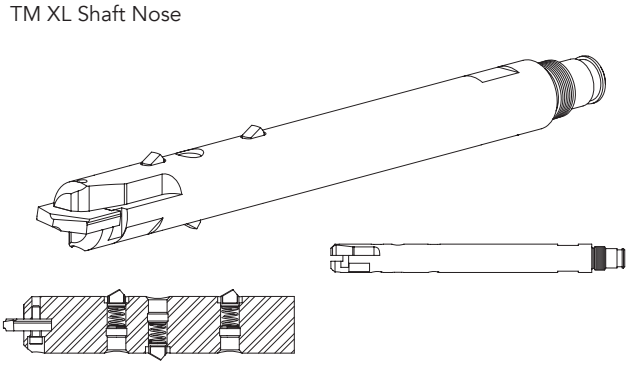


fig. 26

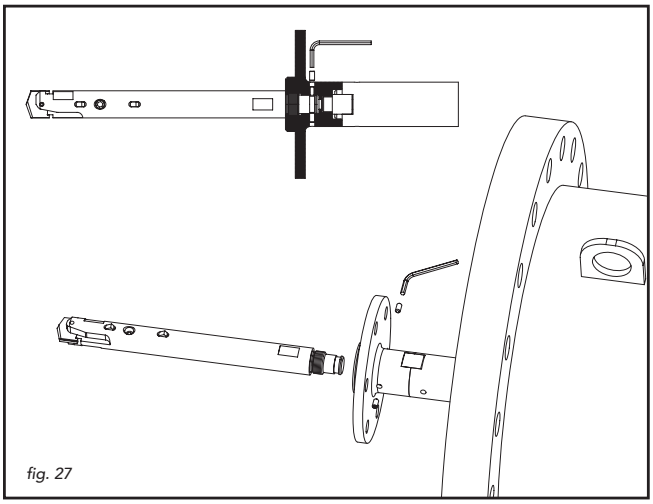


fig. 27

9. Take the TM XL-Shaft Nose (or TM XL-PVC Pilot) and examine the Retention Pin System. It should require firm pressure to depress the Pin, and the Pin should snap back into place smoothly. If the Pin is sticking, disassemble, and clean the Hole, Pin and Spring. Reassemble, and re-examine to ensure the Pin is functioning properly.

   Use 14"-16" or 18"-24" TM XL-Shaft Nose (or TM XL-PVC Pilot) based on tap size.

Check to see that the Spade Bit is sharp and that it is held securely in the slot. If the Spade Bit is chipped or damaged, it should be replaced. For PVC Pilots, check that the teeth are sharp. If the teeth are chipped or damaged, it should be replaced.

10. Notice that the threaded ends on the TM-XL Shaft Nose (and the TM-XL PVC Pilot) are interrupted by a smooth area. When the TM-Shaft Nose (or TM-XL PVC Pilot) is threaded all the way onto the Large Shaft Head, this smooth area will line up with the two Set Screw Holes located in the Large Shaft Head. Thread Set Screw into place and tighten with an 1/8" Allen Wrench *(see fig. 27)* locking the Shaft Nose or PVC Pilot into place.

TAPMATE XL-424 SET-UP FOR 14"-24" TAPS (cont.)

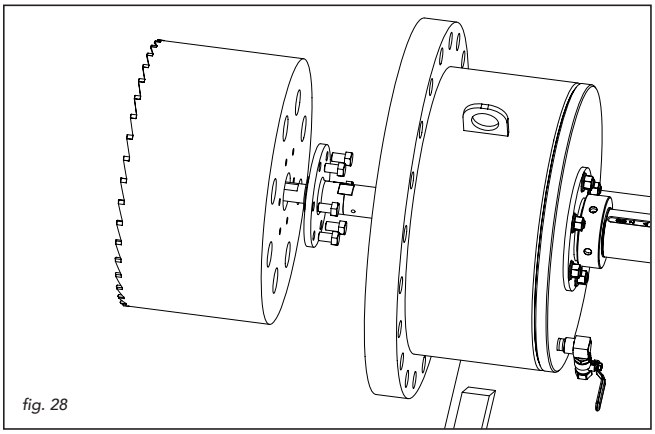


fig. 28

NOTE: Due to the weight of some Shell Cutters, use a suitable strap and lifting mechanism when lifting and installing the Shell Cutter.

11. Move the appropriate size Shell Cutter over the Shaft Nose (or PVC Pilot) and onto the front boss of the Large Shaft Head. Align the through holes of the Large Shaft Head with the tapped holes in the Cutter. Secure with the six Cutter Bolts provided. Tighten to a minimum of 30-40 ft-lbs.

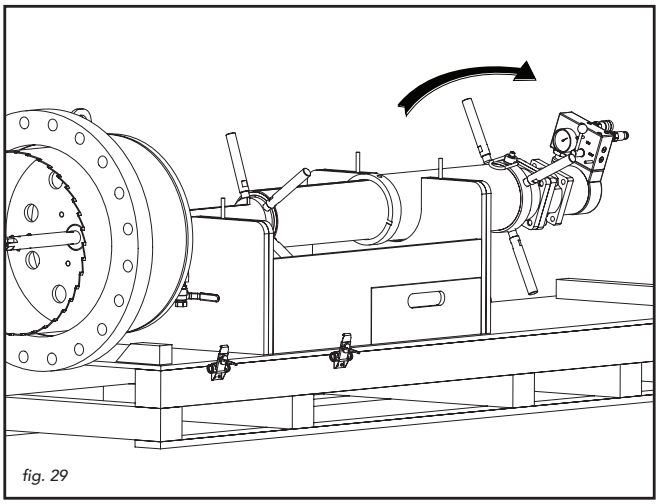


fig. 29

12. Retract the Shell Cutter into the Adapter Bell by rotating the Brake Tube in a counter-clockwise direction. The Brake Tube will stop rotating when it shows "zero" on the Thrust Tube.

Check that the Lead Nut is sitting at "zero" on the Lead Tube.

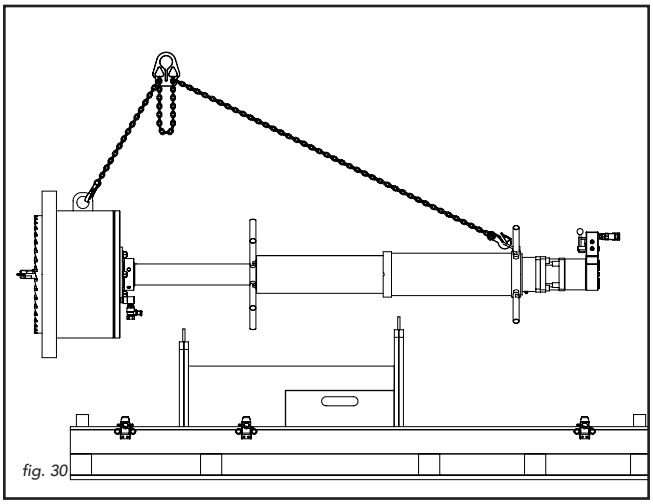


fig. 30

13. The TapMate XL-424 is now ready to be lifted and attached to the Gate Valve. When lifting the Machine, using the Lifting Loop at the end of the Machine and the Loop on the Adapter Bell.

NOTE: Adjust the Chain Choker so that the Machine is lifted as level as possible.

ATTACHING THE TAPMATE XL-424 TO THE VALVE:

The illustrations in this section depict a 6" size-on-size tap using a Romac FTS420 Fabricated Steel Tapping Sleeve, an MJ by Flange Gate Valve and the TapMate XL-424 machine with an MJ Adapter Bell.

Regardless of the size tap you're performing, the steps are the same:

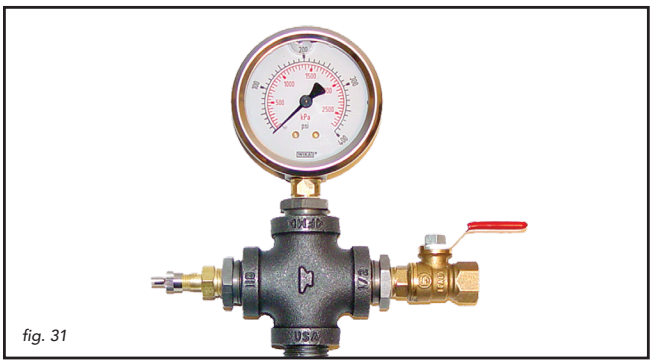


fig. 31

1. Install and assemble Tapping Sleeve and Gate Valve per the manufacturer's instructions. Pressure test the Tapping Sleeve and Gate Valve Assembly before beginning the tap.

NOTE: At this point, you'll take some measurements to determine the necessary depth of your tap. Record these measurements, as you'll use these values in subsequent steps.

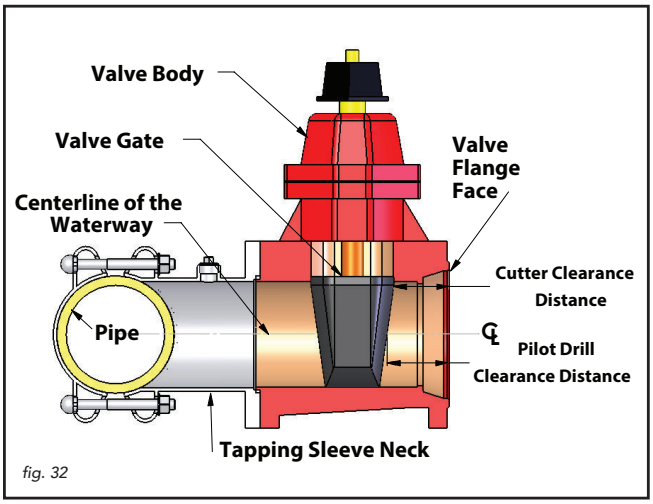


fig. 32

2. With the Valve Gate still closed from the pressure test, measure the distance from the Valve Flange Face to the Gate *(see fig. 32)*.

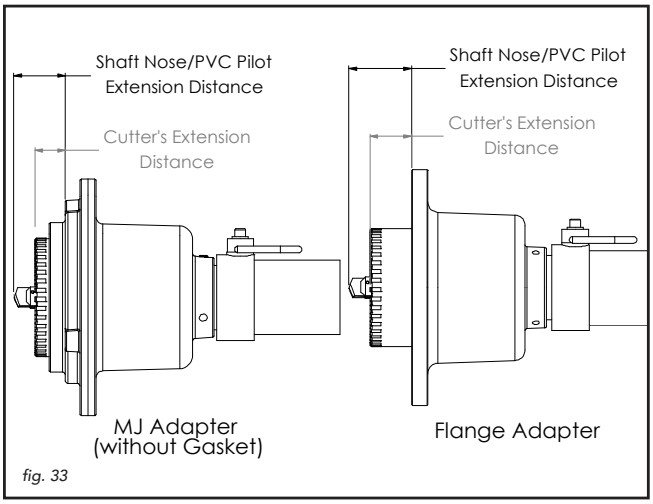


fig. 33

3. With the Shell Cutter fully retracted, take the following measurements *(see fig. 33)*.

   • Measure the distance the Shaft Nose/PVC Pilot extends beyond the Adapter Bell Flange.

   • Measure the distance that the Shell Cutter extends beyond the Adapter Bell Flange.

   NOTE: These distances are often different depending on the tap size and the Adapter Bell.

4. Carefully compare the measurements taken in Steps 2 and 3, to ensure that there will be no interference between the Shaft Nose / PVC Pilot or Shell Cutter, and the Gate Valve when the tap is completed.

ATTACHING THE TAPMATE XL-424 TO THE VALVE (cont.)

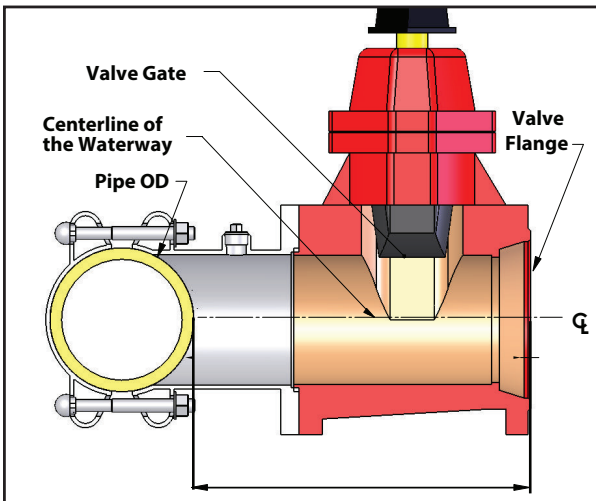


fig. 34

5. Carefully release the pressure in the Sleeve and Valve. OPEN the Valve Gate completely.

6. Measure the distance from the Valve Flange to the Pipe (through the Valve, Sleeve Neck and any Extensions).

   Record this measurement for later use.

BORING SHAFT TRAVEL & DISTANCE OF CUT

7. The TapMate XL-424 Boring Shaft can travel up to 39 inches, which is more than adequate for most taps. Before you begin your tap, make sure the total distance to cut is not more than 39 inches.

To determine the distance necessary for your tap, see the drawing below:

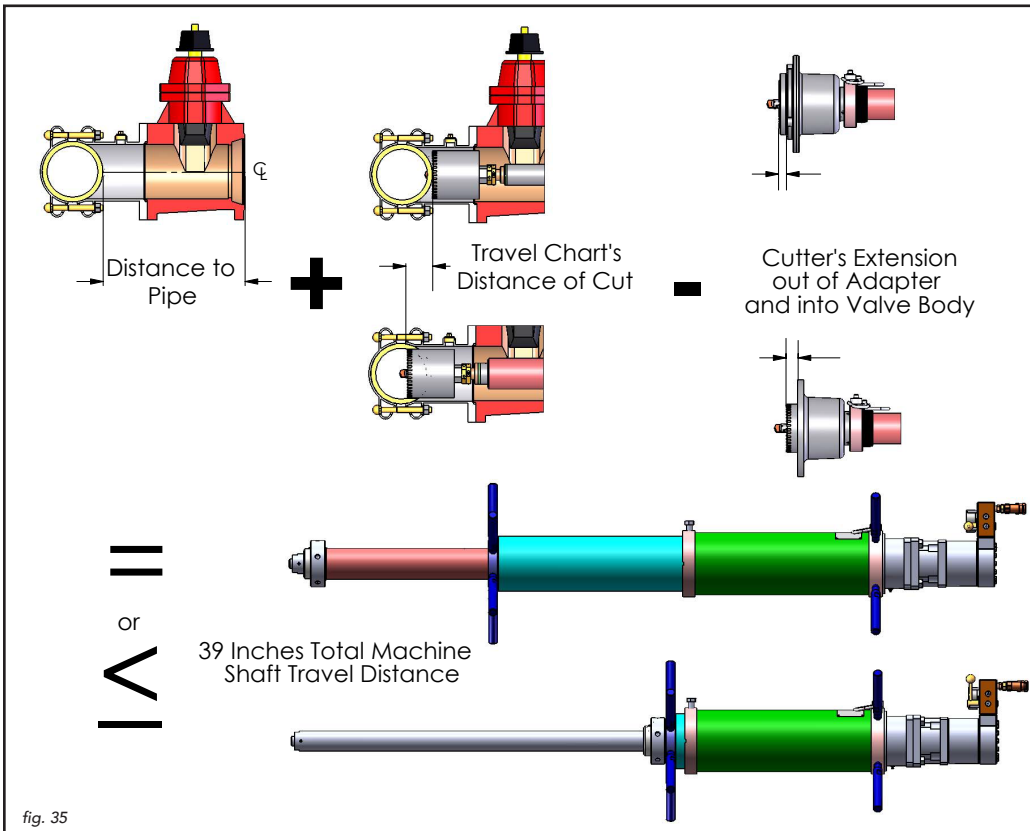


fig. 35

NOTE: Confirm that the ID of the pipe is greater than the Cutter's OD.

ATTACHING THE TAPMATE XL-424 TO THE VALVE (cont.)

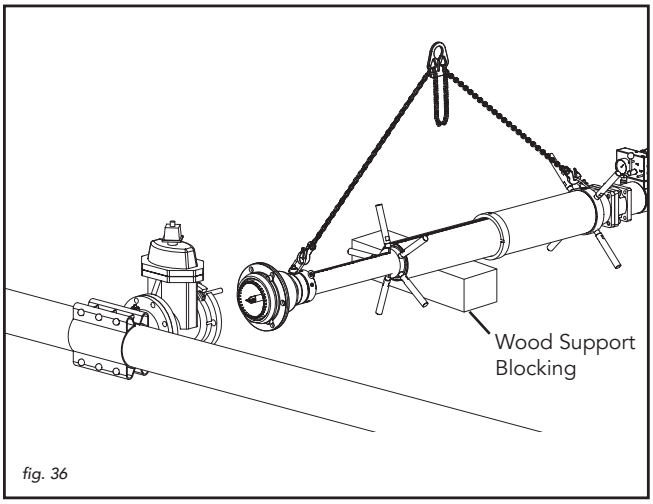


fig. 36

8. Move the TapMate XL-424 into position *(see fig. 36)* and bolt it to the Valve. Care needs to be taken to properly align the TapMate XL-424 Machine to the Valve.

NOTE: Incorrect alignment can result in damage to the Valve, Tapping Sleeve and or Pipe.

Adequately support the TapMate XL-424 so as not to put stress on the Pipe, Valve or Tapping Sleeve. Wood blocking needs to be placed underneath the Thrust Tube ACME threads. Depending on size of tap, this wood blocking may need to be put under the Brake Tube. Also, blocking might need to be re-positioned while threading the Brake Tube or the Lead Tube.

NOTE: Care must be taken when supporting under threads. Use wood blocks.

9. With the TapMate XL-424 secured to the Valve and supported, disconnect and remove the Lifting Chains.

PERFORMING THE TAP:

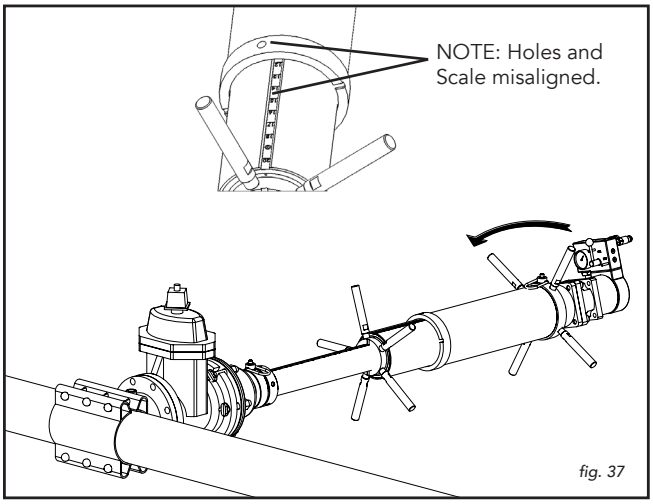


fig. 37

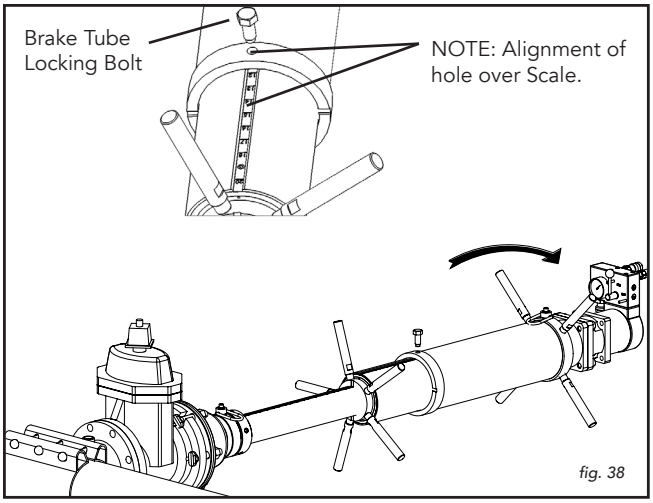


fig. 38

1. Slowly thread the Brake Tube forward on the Thrust Tube by rotating the Brake Tube Handles in a clock-wise direction. This slides the Shaft, Shaft Nose (or PVC Pilot) and Cutter, through the Valve and Neck of the Tapping Sleeve.

2. Continue until you feel resistance, or run out of travel on the Thrust Tube (which may occur with some 20 and 24" taps). Stop rotating the Brake Tube Handles. Notice that the Holes in the Brake Tube Collar may not be aligned over the Scale on the Thrust Tube ***(see fig. 37)***.

   Rotate the Brake Tube back (counter-clock-wise) until the next Hole in the Front Collar of the Brake Tube lines up with the Scale in the Thrust Tube.

   Thread the Brake Tube Locking Bolt into the collar of the Brake Tube, and securely tighten. It needs to bear down directly onto the Scale and NOT the threads of the Thrust Tube ***(see fig. 38)***.

3. If you have run out of travel on the Brake Tube / Thrust Tube assembly:

   Rotate the Lead Nut Handles (clock-wise) to feed the Cutter. Stop when resistance is felt.

PERFORMING THE TAP (cont.)

4. Check the distance that the Brake Tube has moved on the scale of the Thrust Tube. This is the distance that the Shaft Nose (or PVC Pilot) and Cutter has traveled.

This travel distance, including the distance that the Shaft Nose (or PVC Pilot) extended out from the Adapter Bell (see Step 3 on page 18), should be approximately equal to the distance that was measured in Step 6 on page 19.

NOTE: If you had to use the Lead Nut, be sure to include its travel distance in calculating Cutter Travel.

If this distance differs from your earlier measurement, several things could be causing the discrepancy. Check for the most common problems:

- Is the Cutter hitting the Valve's Seat Ring?
- Is the Valve completely open?
- Is there misalignment between the Valve and the Tapping Sleeve Neck?
- Is the TapMate XL-424 in alignment with the Valve?

NOTE: You need to identify and correct any problems prior to proceeding with the tap.

5. Check that the Adapter Bell (on 14"-24" Adapters) Exhaust Valve is in the Closed Position. If using this Valve to flush out chips, connect a suitable Hose and position it where desired (Hose not included).

PERFORMING THE TAP (cont.)

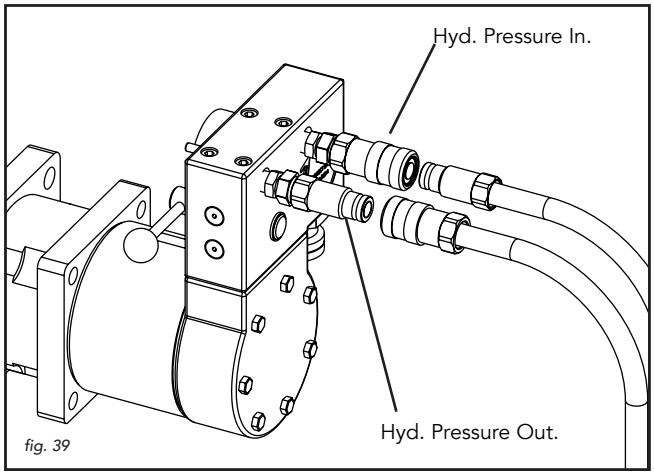


fig. 39

6. Attach the Hoses from the power supply to the Hydraulic Drive Unit *(see fig. 39)*.

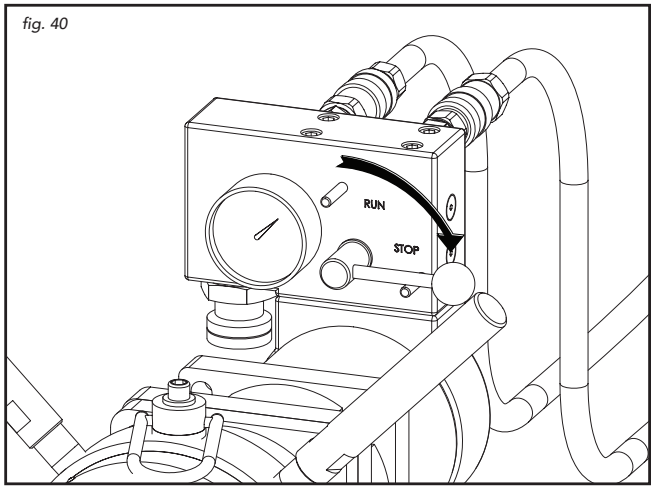


fig. 40

7. Move the Lever on the Hydraulic Drive Unit to the STOP position *(see fig. 40)*. Start your Hydraulic Power Unit per the HPU manufacturer's instructions.

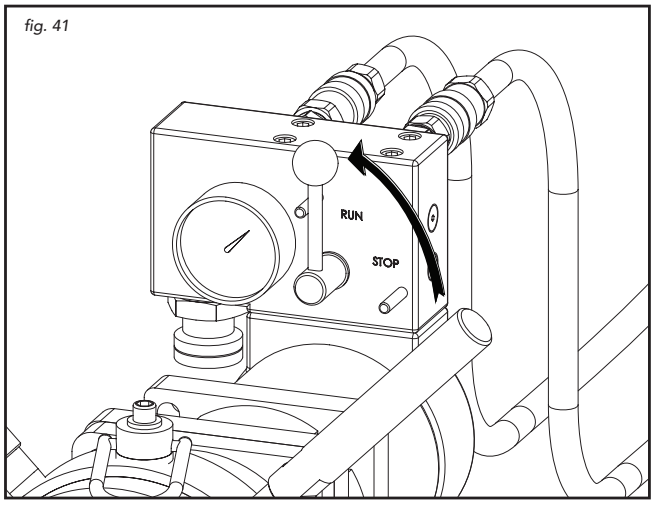


fig. 41

8. Slowly move the Lever on the Hydraulic Drive towards the RUN position to start the rotation of the Shaft and the Cutter *(see fig. 41)*.

NOTE: The Shaft MUST BE TURNING IN THE CLOCKWISE DIRECTION as viewed from the back of the machine facing the pipe. Damage will occur to the cutting equipment if the rotation is incorrect.

9. Move lever to full open RUN position.

PERFORMING THE TAP (cont.)

10. Start feeding the Cutter into the Pipe wall by slowly rotating the Lead Nut Handles; these should rotate without much force, typically two fingers to an open hand. The Cutter will travel about 3/16" for each revolution of the Lead Nut. DO NOT OVER-FEED. Over-feeding can result in stalling the motor and / or damage to the Cutter.

    The Shaft Nose can be fed into the Pipe wall firmly until the Shell Cutter begins to cut. Once the Shell Cutter starts to cut, feed slowly and listen to the hydraulics and Cutter for indications of over-feeding, such as chatter, skipping or lurching of the Machine.

11. The Travel Chart provides distances necessary to cut for each tap size. The distances are measured from when the Cutter hits the Pipe (not the Shaft Nose or PVC Pilot). You will feel and hear the difference of when the Shaft Nose is cutting and when the Shell Cutter starts cutting.

    The operator will feel resistance when feeding the cutting tools. This resistance provides the operator feedback as to progress of the cut.

Resistance is greatest when cutting is occurring and virtually absent once the tap is completed.

NOTE: Cutter travel exceeding the calculated distance of cut may result in cutting through the back-side of the Pipe. This is more critical on size-on-size taps.

12. Use the following rules to determine completion of the tap:

    • **On All Taps Except Size-on-Size Taps** (see next paragraph for information on size-on-size taps) The Maximum Required Travel distance is ½ the outside diameter of the pipe, even if you still feel resistance while feeding the cutting tools. At the completion of the cut, you will feel the feed resistance and Cutter noise diminish. When this happens, turn the lever on the hydraulics to the STOP position.

    Continue to feed the Cutter into the Pipe, for another one or two complete revolutions of the Lead Nut. You should feel no increase in resistance. In this case, the tap is finished. If you continue to feel resistance, move the Cutter back to where you stopped the Hydraulics. Turn the hydraulic unit lever back to RUN and finish the cut.

    • **Size-on-Size Taps**
    The Maximum Required Travel distance is ½ the outside diameter of the Pipe, even if you still feel resistance while feeding the cutting tools. Do not exceed this travel distance.

13. When it's been established that the tap has been completed, move the Lever on the Hydraulic Drive unit to the Stop position and disconnect the hoses from the Hydraulic Drive Unit.

14. Retract the Shaft and Cutter out of the Pipe, Sleeve and Valve by unthreading the Lead Nut all the way back to "zero".

15. Remove the Brake Tube Locking Bolt from the Brake Tube.

16. Continue retracting the Shaft and Cutter by unthreading the Brake Tube all the way back to "zero".

NOTE: The Drilling Machine will now be in it's fully retracted position.

17. Close the Gate Valve.

PERFORMING THE TAP (cont.)

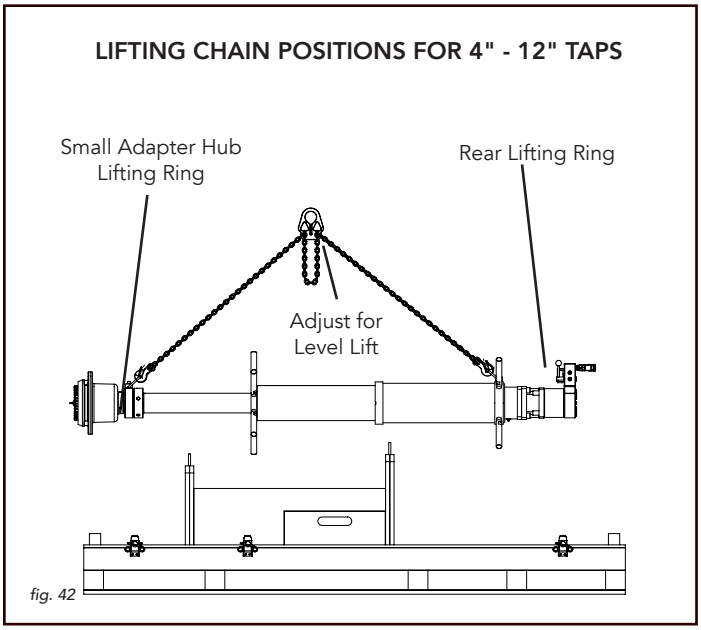


fig. 42

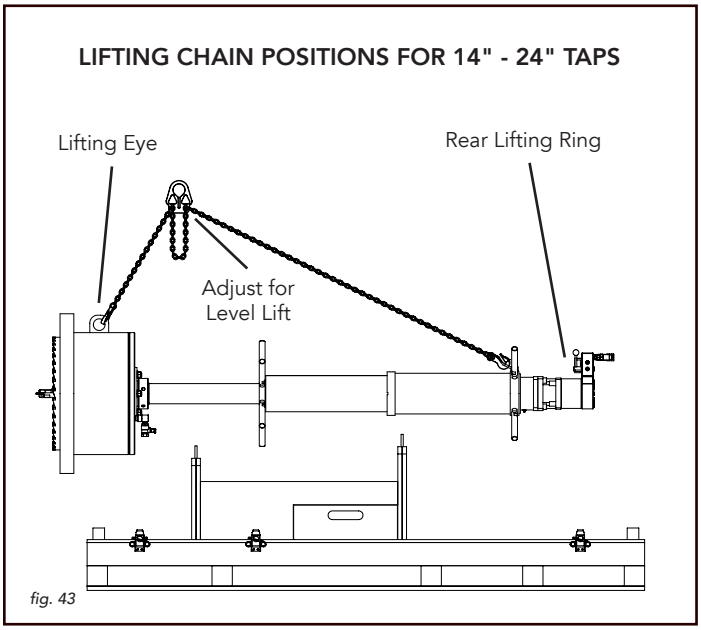


fig. 43

18. Release the water pressure in the Adapter Bell by opening the Exhaust Valve on the back of the Adapter Bell (14-24" adapters).

19. Reattach the Lifting Chains *(see figs. 42 & 43)*.

DISASSEMBLY AND REMOVAL OF THE COUPON

For 4"–12" Taps

1. With the Machine resting on the Work Station, remove the Lifting Chains.
2. Secure the Lead Tube into the Work Station with the Front Brace and the Wing Nuts provided. This will prevent the Machine from rotating in the next step and also when the Adapter Bell is unscrewed from it.
3. Extend the Shaft until you have access to the Jam Nut located on the Small Shaft Head behind the Shell Cutter. This is done by rotating the Brake Tube Handles in a clockwise direction.
4. Loosen the two Jam Nut Set Screws with a 3/16" Allen Wrench. The two Halves of the Jam Nut will separate, allowing the Jam Nut to thread up the Shaft and away from the Shell Cutter.
5. Unthread the Shell Cutter from the Small Shaft Head and then pull it down the shaft of the Pilot to expose the wrench flats.
6. Use a Wrench on the Shaft Nose (or PVC Pilot) and a larger one on the Flats of the Small Shaft Head to break loose the Shaft Nose. Then unthread it completely off.
7. The Shaft Nose (or PVC Pilot) can then be pulled out of the Coupon and the Coupon can then be driven out of the Shell Cutter. Holes are provided in the Back Plate of the Shell Cutter to assist in the Coupons removal.
8. Check the Shell Cutter for wear and broken or chipped Teeth. Also check the Retention Pin system on the Shaft Nose or PVC pilot to see that it's functioning properly. If the Shaft Nose was used, check the Spade Bit for wear, chips and that it is not loose. Check the PVC Pilot Cutter teeth for wear if used.
9. Draw the Shaft back into the Machine by rotating the Brake Tube Handles in a counter-clockwise direction until you reached "zero" again. Reinsert the Brake Tube Bolt into the Brake Tube Collar.
10. Secure the back of the Machine with the Rear Brace and Wing Nuts provided into the Work Station.
11. Remove the Adapter Bell by unscrewing the Set Screw and then unthreading the Adapter Bell from the Small Hub.
12. Clean the Machine as outlined in the section "Care and Maintenance of the Machine".

For 14"–24" Taps

1. With the Machine resting on the Work Station, remove the Lifting Chains.
2. Extend the Shaft until you have access to the back of the Shell Cutter and the Set Screws in the Large Shaft Head. This is done by rotating the Brake Tube Handles in a clockwise direction.
3. Loosen the two Set Screws in the Large Shaft Head with a 1/8" Allen Wrench.
4. Use a Wrench on the Flats of the TM-XL Shaft Nose (or TM-XL PVC Pilot) and a larger one on the Flats of the Large Shaft Head to break loose the Shaft Nose. Then unthread it completely and pull it out of the Coupon and Cutter.
5. Unthread the Bolts on the back of the Shell Cutter. Note– a strap may be required to support the combined weight of the Shell Cutter and Coupon, which can weigh up to 175 lbs. depending on tap size and pipe material.
6. The Coupon can then be driven out of the Shell Cutter. Holes are provided in the Back Plate of the Shell Cutter to assist in the Coupon's removal.
7. Check the Shell Cutter for wear and broken or chipped Teeth. Also check the Retention Pin system on the Shaft Nose or PVC Pilot to see that it's functioning properly. If the Shaft Nose was used, check the Spade Bit for wear, chips, and that it is not loose. Check the PVC Pilot Cutter teeth for wear if used.
8. Loosen the two Set Screws in the Shaft with a 1/8" Allen Wrench. Using a 3/8" Allen Wrench unscrew the Large Shaft Head from the Shaft.
9. Draw the Shaft back into the Machine by rotating the Brake Tube Handles in a counter-clockwise direction until you reached "zero" again. Reinsert the Brake Tube Bolt into the Brake Tube Collar.
10. Remove the Adapter Bell by unscrewing the six Nuts around the Large Hub and lifting it away from the Machine.
11. Secure the Machine with the Front and Rear Braces and Wing Nuts provided into the Work Station.
12. Clean the Machine as outlined in the section "Care and Maintenance of the Machine".

CARE AND MAINTENANCE

The TapMate XL-424, will provide a long life if it is properly cleaned and maintained between uses.

With many external moving parts, it is necessary to keep the Machine as clean as possible, particularly the threaded sections of the Machine. These areas should be cleaned, lubricated and inspected for damage before and after each use. Damaged threads are very rare if kept clean, and the Machine is properly handled. If threads become damaged, they are easily repaired with a File if the damage is caught before becoming wedged in its mating part.

ROUTINE MAINTENANCE: The following steps should be performed after each use.

It's important to lubricate the external threads with penetrating type oil (WD40 is an example). This will allow the Brake Tube and Lead Nut to smoothly rotate.

When assembling to do a tap, inspect the Hub Adapter O-Ring and the Adapter Bell Flat Gasket. Replace as needed.

Examine the Retention Ball System. It should require firm pressure to depress the balls, and they should snap back into place smoothly. If the balls are sticking, disassemble and clean the Hole, Ball and Spring. Reassemble and re-examine to ensure that the Retention Balls are functioning properly.

Check to see that the Spade Bit is sharp and that it is held securely in the slot. If the Spade Bit is chipped or damaged, it should be replaced or repaired. For PVC Pilots, check that the teeth are sharp and not damaged; repair or replace if so.

It is important to keep the Jam Nuts tight. Keeping them tight will hold the Cutter securely in place, and will also simplify their removal. Use only sharp Hex Wrenches to tighten Set Screws when securing Jam Nuts.

ANNUAL MAINTENANCE: The following steps should be performed yearly.

Lubricate the Shaft as it moves through the inside of the Lead Tube:
To do this, remove both 1/8”- 27 NPTF Set Screws located in the scale of the Lead Tube. In one hole, install the provided 1/8”-27 NPTF Zirc fitting. Use the other Set Screw hole as a vent for the incoming Grease. Attach a Grease Gun to the Zirc fitting and pump in non-water soluble Grease, (such as water pump Grease*), until the Grease begins to come out the Vent Hole. If at any time the Grease appears white, this indicated that water has gotten inside, and in this case, the grease should be removed and replaced. When finished, remove the Zirc fitting, and replace both Set Screws. Once tightened, make sure the Set Screws are below the surface of the Scale.

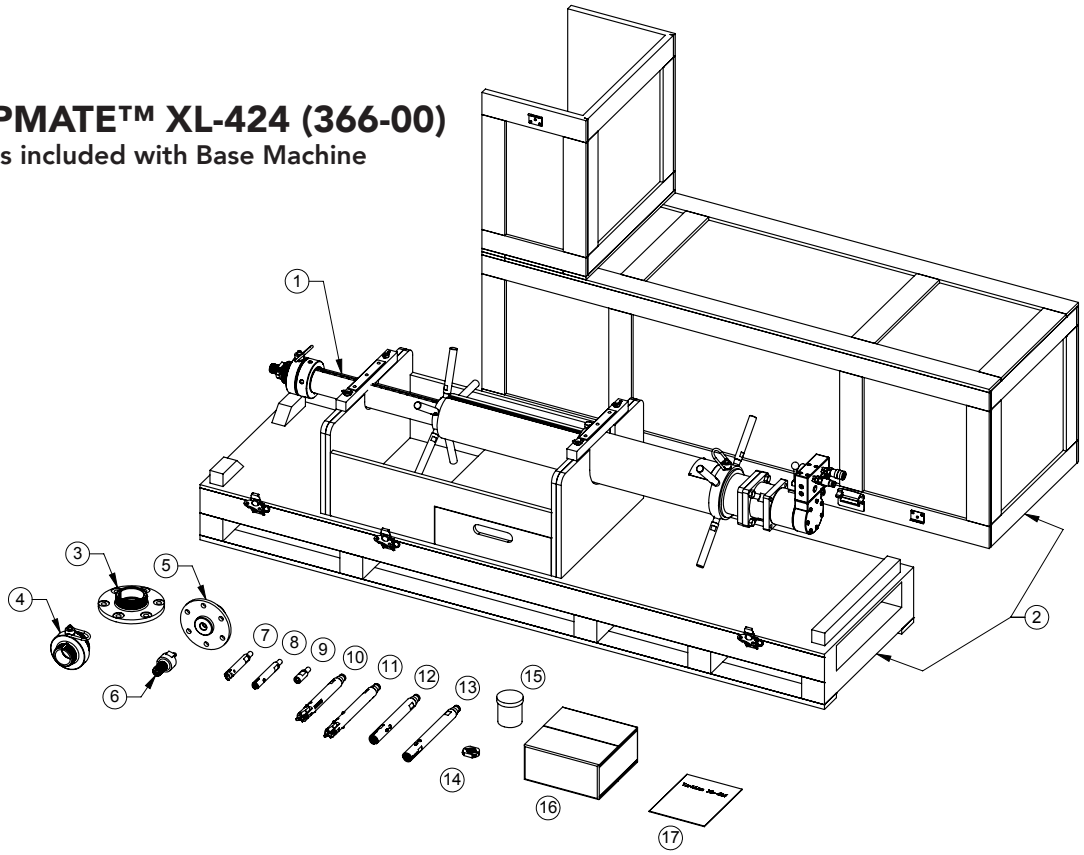
Lubricate the Lead Nut bearings:
To do this, remove the 1/8”-27 NPTF Set Screw that is located in the scale of the Thrust Tube near the Lead Nut Handles. Replace with the same 1/8” -27 NPTF Zirc Fitting. Pump 5 shots of Grease into the Lead Nut Bearings. When done take out the Zirc Fitting and replace the Set Screw, making sure that it is below the surface of the Scale.

Lubricate the Back Bearings:
To do this, remove the Set Screw located in the Back Plate of the Machine (where the square end of the Shaft extends out of the Machine). With the 1/8”-27 NPTF Zirc Fitting in place, pump five (5) shots of Grease into the Back Bearings.

**Note: Romac uses Fuchs Lubricants "FM 2", any equivalent food-grade grease conforming to NSF-H1 may be used.*

TAPMATE™ XL-424 (366-00)

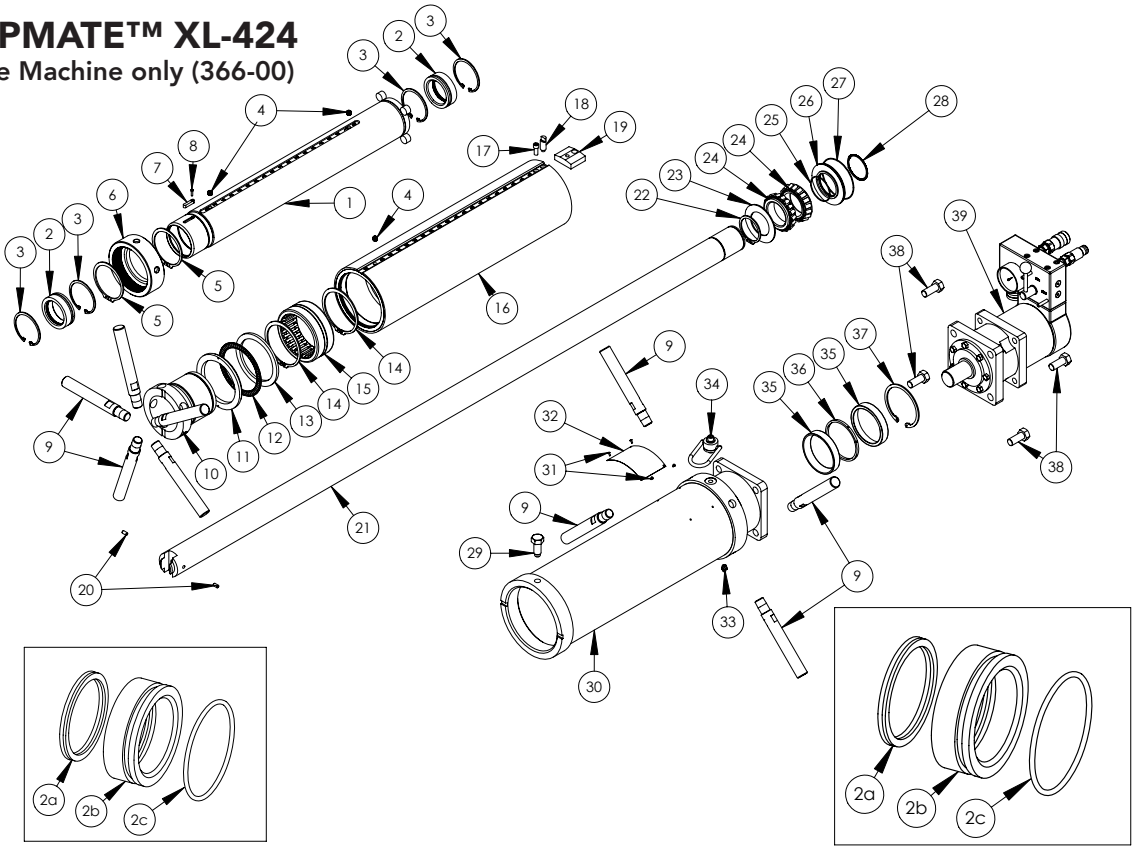
Items included with Base Machine



REF NO.	ITEM NUMBER	DESCRIPTION
1	366-00	Base Machine (see following page for parts list)
2	366-61	TM-XL, STORAGE-WORK STATION CRATE
3	366-43	TM-XL, LARGE ADAPTER HUB
4	366-42	TM-XL, SMALL ADAPTER HUB
5	366-10	TM-XL, LARGE SHAFT HEAD ASSEMBLY
6	366-11	TM-XL, SMALL SHAFT HEAD ASSEMBLY
7	350-21-A	TM,SHAFT NOSE COMPLETE
8	350-04	TM,PVC PILOT
9	350-14	TM,PILOT DRILL EXTENSION REQUIRED FOR 10 & 12 TAPS
10	366-38-2	TM-XL, SHAFT NOSE, COMPLETE (14" - 16")
11	366-38	TM-XL, SHAFT NOSE, COMPLETE (18" - 24")
12	366-39-2	TM-XL, PVC PILOT, COMPLETE (14" - 16")
13	366-39	TM-XL, PVC PILOT, COMPLETE (18" - 24")
14	350-52	TM, JAM NUT (FOR CUTTERS)
15	353-10-1	B1, LUBRICANT, TECH-LUBE TAPPING COMPOUND
16	366-66-10	TM-XL, TOOL KIT & SPARE PARTS (items listed below, not pictured)
	8FW-410	WASHER,304SS, 5/8 IN.(4)
	350-05-80.96-52	TM,HUB ADAPTER NUTS (4)
	350-23-512	TM,LEAD TUBE PRESSURE PLUG (3)
	350-05-571	TM,ADAPTER BELL O-RING
	355-60-3	35,ALLEN WRENCH,1/8 IN.
	353-60-31	B1,ALLEN WRENCH 3/16 IN
	355-60-4	35, 12 IN. SPUD WRENCH
	356-01-03	BT SLIDE GATE PIPE NIPPLE 1/2 IN. x,1-1/2 IN.
	360-19	QVIM,ZIRC FITTING,1/8 IN.NPT STRAIGHT, PN 5000
	935-00090	PIPE PLUG,1/2-14 NPT W/SQ HEAD
	366-66-12	TM-XL, ADJUSTABLE LIFTING CHAIN
	366-44	TM-XL, ADAPTER HUB O-RING, 2-237, NITRILE
	372-08	HD HYDRAULIC COUPLING SET SCREW SHSS,1/4-20 X 1/2 IN. (3)
	366-02-10	TM-XL, CUTTER BOLT, 5/8"-11 X 1" HEX HEAD, ZINC (4)
	366-66-09	TM-XL, PIN STYLE ADJUSTABLE SPANNER WRENCH, 4-1/2" - 6-1/4"
	366-66-08	TM-XL, 3/8 HEX BIT SOCKET X 6 IN LONG - 1/2 SQ DRIVE
	366-66-14	TM-XL, ALLEN WRENCH, 5/32 IN.
	366-68	TM-XL, ANTI-SEIZE LUBRICATING COMPOUND SAMPLE, FASTORQ A/G
17		Operating Manual

TAPMATE™ XL-424

Base Machine only (366-00)

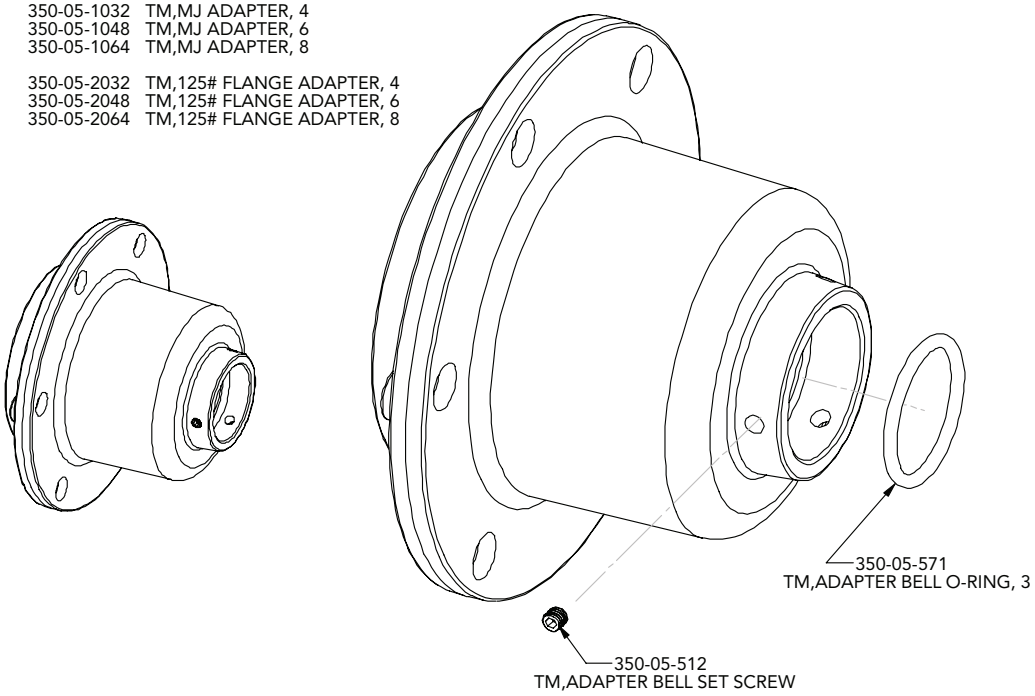


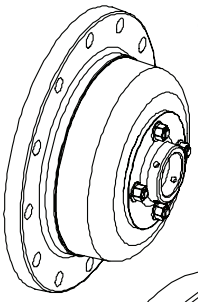
REF NO.	ITEM NUMBER	DESCRIPTION
1	366-23	TM-XL, LEAD TUBE
2	366-22-2A	TM-XL, BRONZE BUSHING COMPLETE
2a	366-57-3	TM-XL, POLY PAK, 2-1/4 ID X 2-3/4 OD X 3/16, #1870-2250
2b	366-22-2	TM-XL, BRONZE BUSHING
2c	366-57-2	TM-XL, 2-232 O-RING, 2-3/4 ID X 3 OD
3	366-23-54	TM-XL, LEAD TUBE RETAINING RING, HO-300ST(3.325 OD X .093)
4	350-23-512	TM,LEAD TUBE 1/8-27 X 5/16 IN.,HEX SOCKET PRESSURE PLUG
5	366-23-20	TM-XL, LEAD TUBE LOCKING COLLAR SNAP RING, SH334
6	366-23-10	TM-XL, LEAD TUBE LOCKING COLLAR
7	366-23-12	TM-XL, LEAD TUBE LOCKING COLLAR KEY
8	366-23-15	TM-XL, LEAD TUBE LOCKING COLLAR KEY SCREW, #5-40
9	366-29	TM-XL, FEED HANDLE
10	366-24	TM-XL, LEAD NUT
11	366-25	TM-XL, THRUST TUBE END CAP
12	366-26	TM-XL, ROLLER BEARINGS, TIMKEN # NTA-6681
13	366-31	TM-XL, LEAD NUT SUPPORT WASHER
14	366-27	TM-XL, LEAD NUT RETAINING RING, ROTOR CLIP - SH-400ST PA
15	366-28	TM-XL, NEEDLE ROLLER BEARINGS, TIMKEN #HJ648032
16	366-32	TM-XL, THRUST TUBE COMPLETE
17	366-37	TM-XL, THRUST TUBE STOP BLOCK BOLT, SHCS 5/16-18 X 3/4"
18	366-36	TM-XL, THRUST TUBE STOP PIN
19	366-35	TM-XL, THRUST TUBE STOP BLOCK
20	372-08	COUPLING SET SCREW SHSS,1/4-20 X 1/2 IN.
21	366-20	TM-XL, SHAFT
22	366-20-10	TM-XL, SHAFT END INTERNAL SNAP RING, SH225
23	366-20-12	TM-XL, INTERNAL BEARING COVER PLATE
24	366-20-15	TM-XL, BACK BEARING CONE, #387
25	366-20-16	TM-XL, O-RING EXTERNAL BEARING COVER PLATE ID, 2-035
26	366-20-18	TM-XL, EXTERNAL BEARING COVER PLATE
27	366-20-17	TM-XL, O-RING EXTERNAL BEARING COVER PLATE OD, 2-044
28	366-20-20	TM-XL, SHAFT END EXTERNAL RETAINING RING, AE225
29	366-30-10	TM-XL, BRAKE TUBE LOCKING BOLT
30	366-30	TM-XL, BRAKE TUBE, COMPLETE
31	375-46	VE WARNING PLATE SCREWS 4-40 X 1/4 SBHCS
32	366-58-01	TM-XL, SERIAL PLATE, AP25607-1
33	360-19	QVIM,ZIRC FITTING,1/8 IN.NPT STRAIGHT, PN 5000
34	366-34	TM-XL, HOIST RINGS
35	366-30-15	TM-XL, BACK BEARING RACE, #382
36	366-30-16	TM-XL, BEARING SPACER W- OIL PORTS
37	366-30-20	TM-XL, BACK BEARING RACE RETAINING RING, AI387
38	366-72-11	TM-XL, HYD MOTOR BOLTS
39	366-72-10	TM-XL, HYD MOTOR ASSEMBLY

TM, ADAPTER BELL 4 – 8 INCH
350-05-XXXX

350-05-1032 TM,MJ ADAPTER, 4
350-05-1048 TM,MJ ADAPTER, 6
350-05-1064 TM,MJ ADAPTER, 8

350-05-2032 TM,125# FLANGE ADAPTER, 4
350-05-2048 TM,125# FLANGE ADAPTER, 6
350-05-2064 TM,125# FLANGE ADAPTER, 8



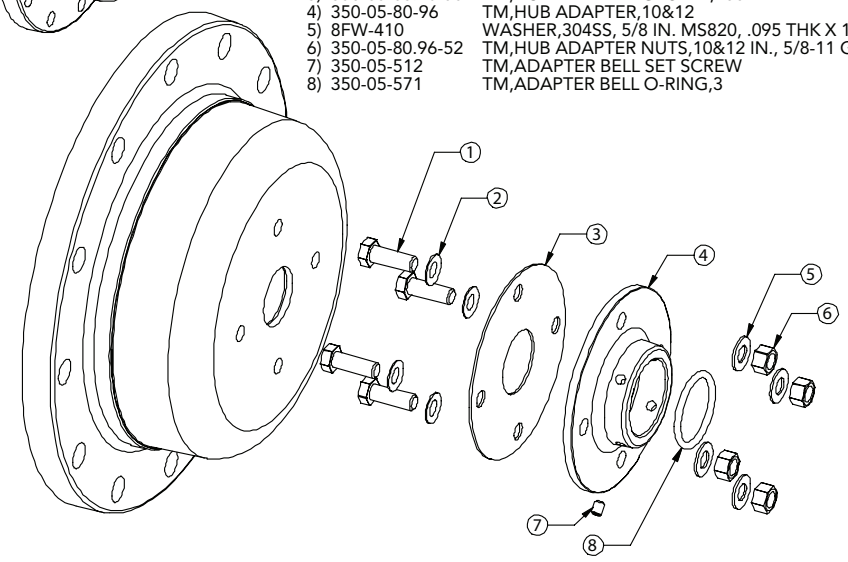


TM, ADAPTER BELL 10 & 12 INCH
350-05-XXXX

350-05-1080 TM, MJ ADAPTER, 10
350-05-1096 TM, MJ ADAPTER, 12

350-05-2080 TM, 125# FLANGE ADAPTER, 10
350-05-2096 TM, 125# FLANGE ADAPTER, 12

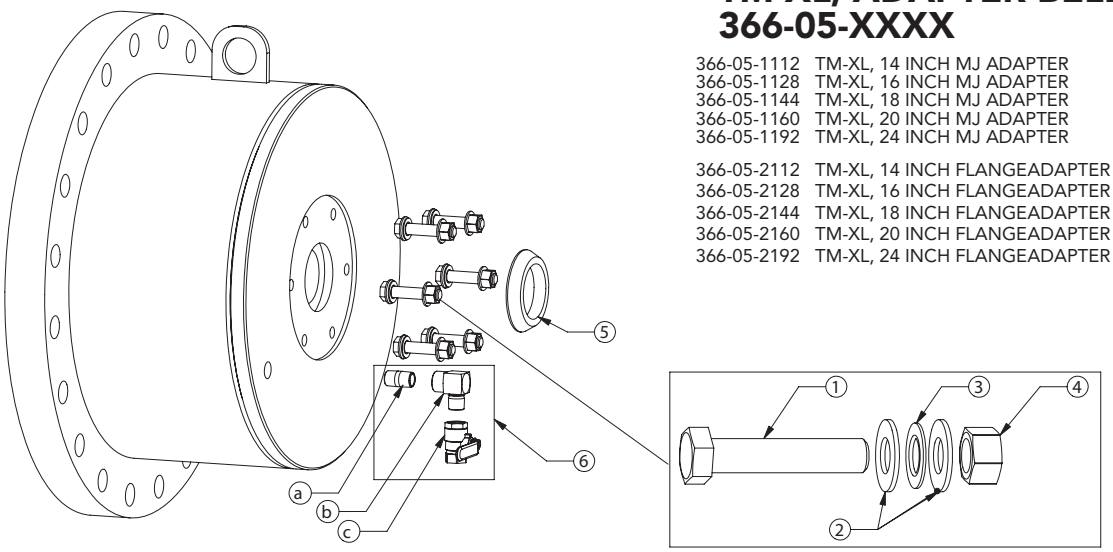
1)	350-05-80.96-51	TM,FLG ADAPTER BOLTS,10&12 IN. HHCS,5/8-11 X 1-3/4 IN	QTY 4
2)	350-05-80.96-57	TM,HUB ADAPTER SEALS,10&12 IN., 5/8,	QTY 4
3)	350-05-80.96-58	TM,HUB ADAPTER GASKET,10&12	QTY 1
4)	350-05-80-96	TM,HUB ADAPTER,10&12	QTY 1
5)	8FW-410	WASHER,304SS, 5/8 IN. MS820, .095 THK X 1-5/16 OD	QTY 4
6)	350-05-80.96-52	TM,HUB ADAPTER NUTS,10&12 IN., 5/8-11 GR. 8 HEX NUT	QTY 4
7)	350-05-512	TM,ADAPTER BELL SET SCREW	QTY 1
8)	350-05-571	TM,ADAPTER BELL O-RING,3	QTY 1



TM-XL, ADAPTER BELL
366-05-XXXX

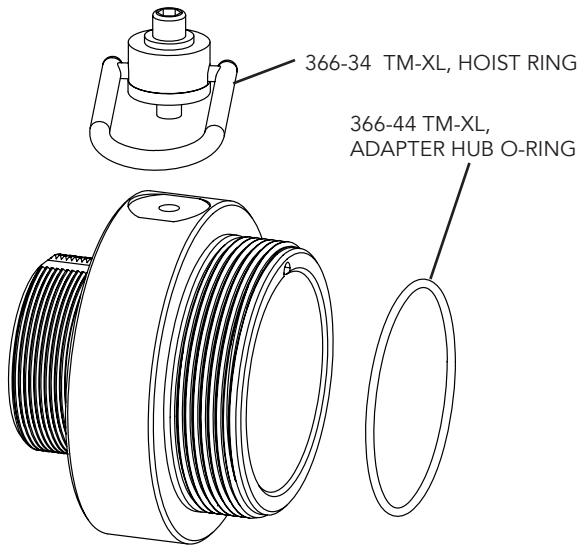
366-05-1112 TM-XL, 14 INCH MJ ADAPTER
366-05-1128 TM-XL, 16 INCH MJ ADAPTER
366-05-1144 TM-XL, 18 INCH MJ ADAPTER
366-05-1160 TM-XL, 20 INCH MJ ADAPTER
366-05-1192 TM-XL, 24 INCH MJ ADAPTER

366-05-2112 TM-XL, 14 INCH FLANGEADAPTER
366-05-2128 TM-XL, 16 INCH FLANGEADAPTER
366-05-2144 TM-XL, 18 INCH FLANGEADAPTER
366-05-2160 TM-XL, 20 INCH FLANGEADAPTER
366-05-2192 TM-XL, 24 INCH FLANGEADAPTER

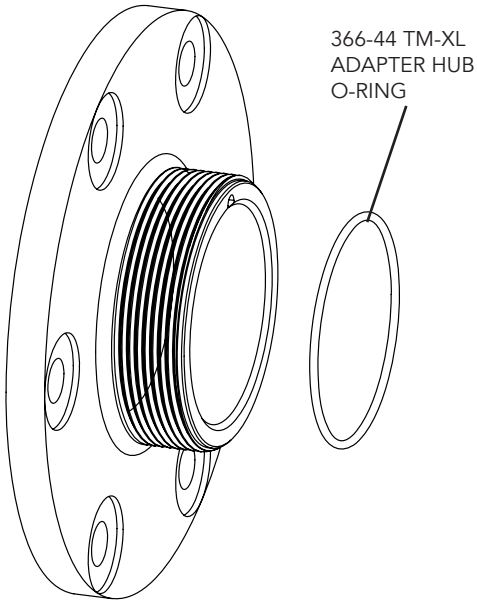


1)	361-06-05	QVIV,VALVE FLANGE BOLT,LONG 5/8-11 X 3 IN. H.H.B.TAP BOLT	QTY 6
2)	8FW-410	WASHER,304SS, 5/8 IN. MS820, .095 THK X 1-5/16 OD,	QTY 12
3)	350-05-80.96-57	TM,HUB ADAPTER SEALS,10&12 IN., 5/8, PARKER #600-0002- 5/8	QTY 6
4)	350-05-80.96-52	TM,HUB ADAPTER NUTS,10&12 IN., 5/8-11 GR. 8 HEX NUT	QTY 6
5)	8R211S0300	GASKET,511- 3.00,SBR	QTY 1
6)	366-05-01	TM-XL, ADAPTER EXHAUST VALVE	QTY 1
A)	356-01-03	BT SLIDE GATE PIPE NIPPLE 1/2 IN. NPT DBL ENDED,1-1/2 IN. LONG,STANDARD	QTY 1
B)	356-03-04	BT,EXHAUST ELBOW.	QTY 1
C)	371-02	AD AIR DRIVE VALVE 1/2 IN. BALL VALVE	QTY 1

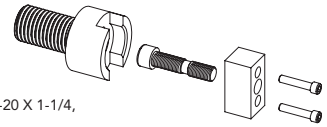
TM-XL
SMALL ADAPTER HUB
(366-42)



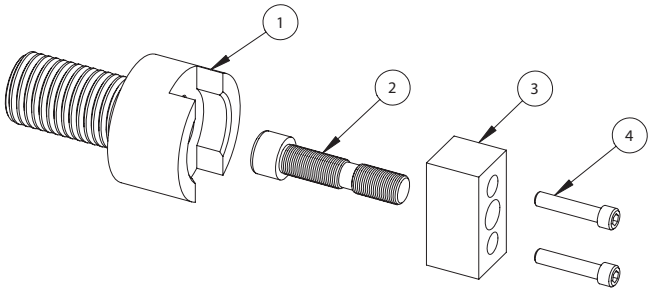
TM-XL
LARGE ADAPTER HUB
(366-43)



366-11 TM-XL, SMALL SHAFT HEAD ASSEMBLY

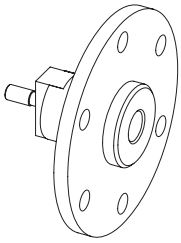


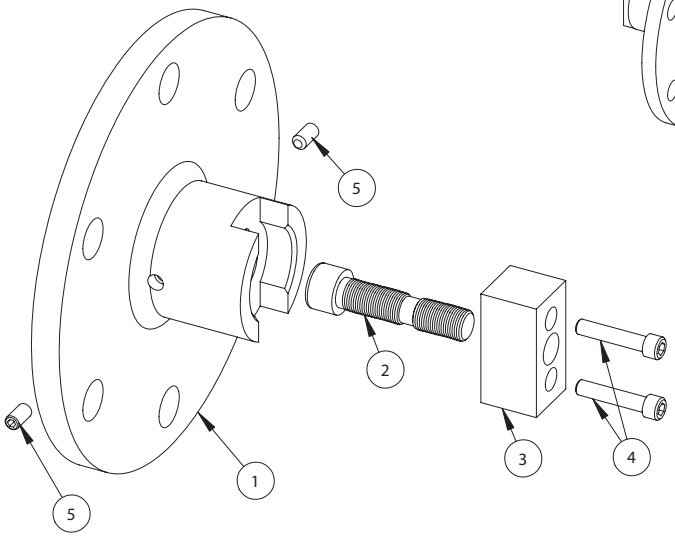
1) 366-11-01 TM-XL, SMALL SHAFT HEAD
2) 366-09-01 TM-XL, SHAFT HEAD BOLT
3) 366-09-02 TM-XL, SHAFT HEAD KEY
4) 366-09-03 TM-XL, SHAFT HEAD KEY SCREW, SHCS 1/4-20 X 1-1/4,



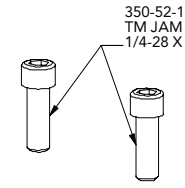
366-10 TM-XL, LARGE SHAFT HEAD ASSEMBLY

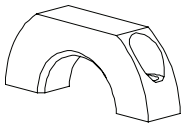
1) 366-10-01 TM-XL, LARGE SHAFT HEAD
2) 366-09-01 TM-XL, SHAFT HEAD BOLT
3) 366-09-02 TM-XL, SHAFT HEAD KEY
4) 366-09-03 TM-XL, SHAFT HEAD KEY SCREW, SHCS 1/4-20 X 1-1/4,
5) 372-08 HD HYDRAULIC COUPLNG SET SCREW SHSS,1/4-20 X 1/2 IN.

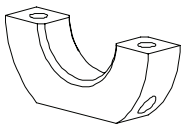


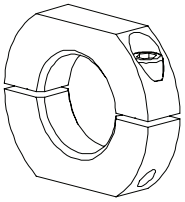


TM, JAM NUT
350-52



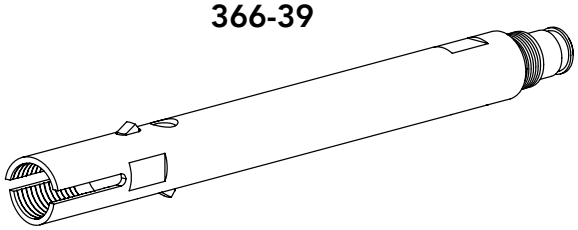




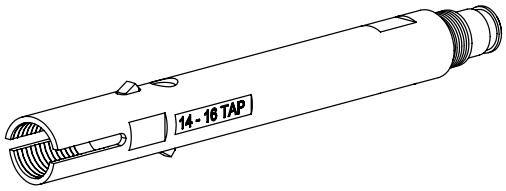


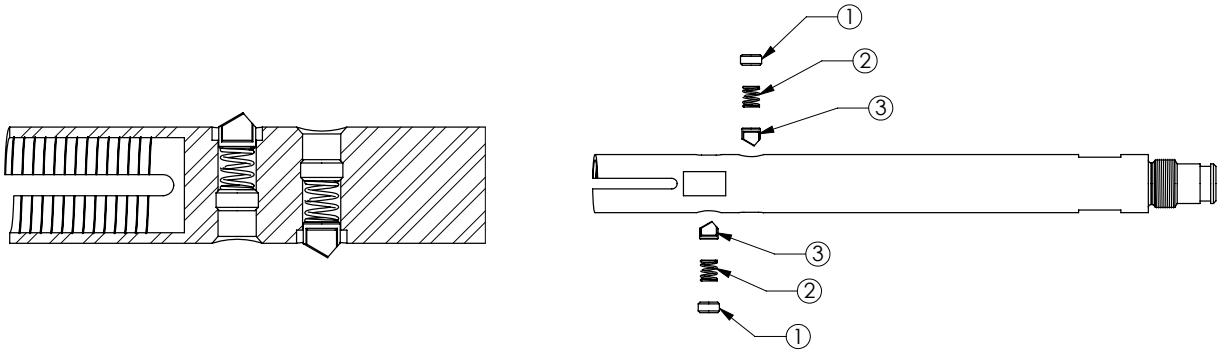
JAM NUT SOLD AS A COMPLETE UNIT
ADDITIONAL SCREWS SOLD SEPARATELY

TM-XL,PVC PILOT,COMPLETE (18" - 24") 366-39



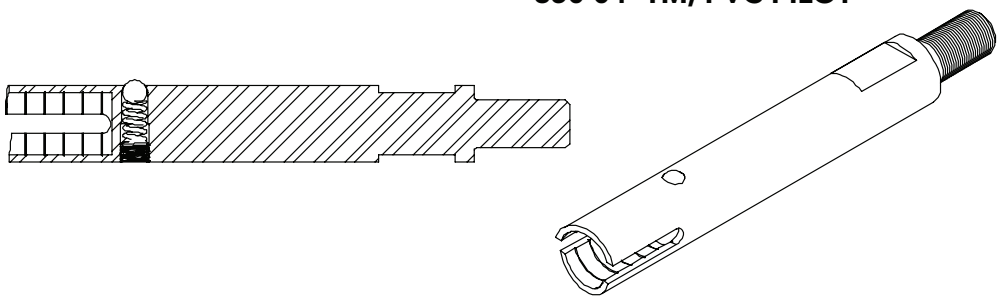
TM-XL,PVC PILOT, COMPLETE (14" - 16") 366-39-2

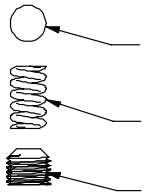




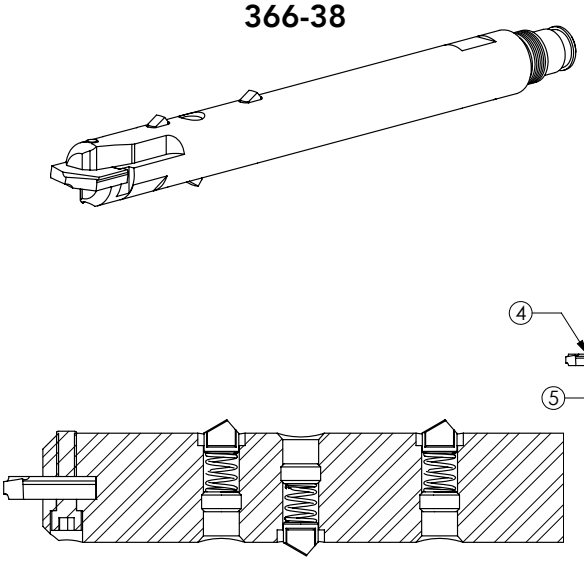
1) 360-22-03 QVIM,SHAFT NOSE RETAINING PIN SET SCREW QTY 2
2) 360-22-04 QVIM,SHAFT NOSE RETAINING PIN SPRING QTY 2
3) 360-22-02 QVIM,SHAFT NOSE RETAINING PIN QTY 2

350-04 TM, PVC PILOT

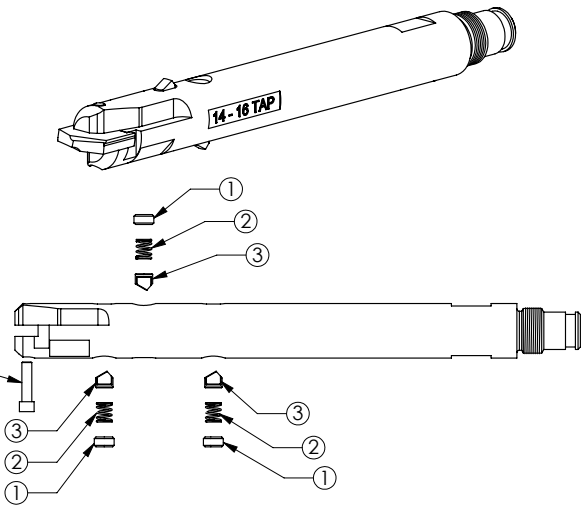




TM-XL,SHAFT NOSE,COMPLETE (18" - 24") 366-38

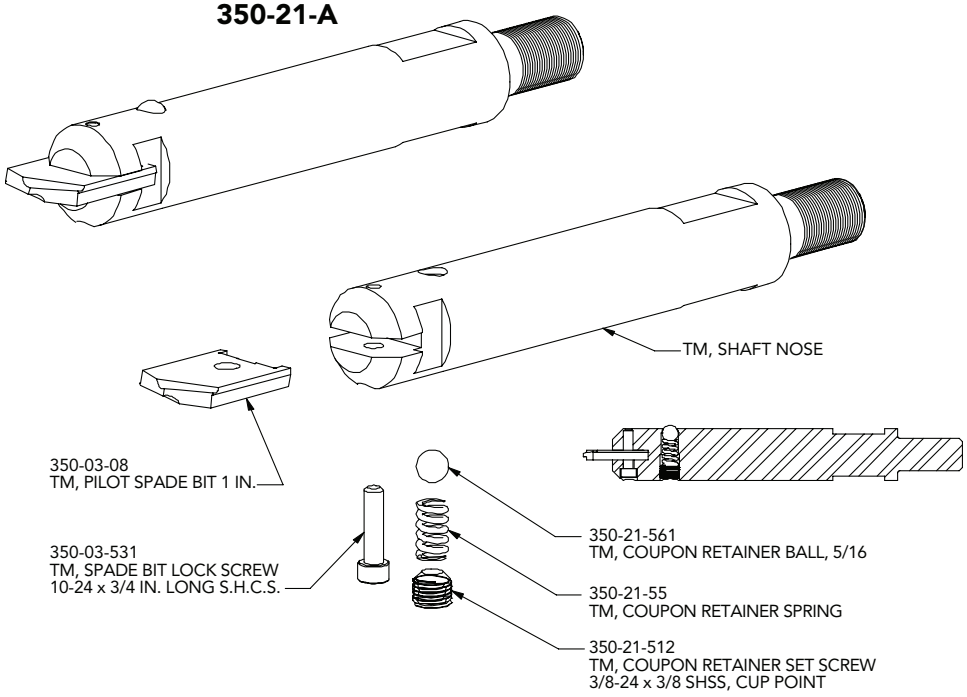


TM-XL,SHAFT NOSE, COMPLETE (14" - 16") 366-38-2

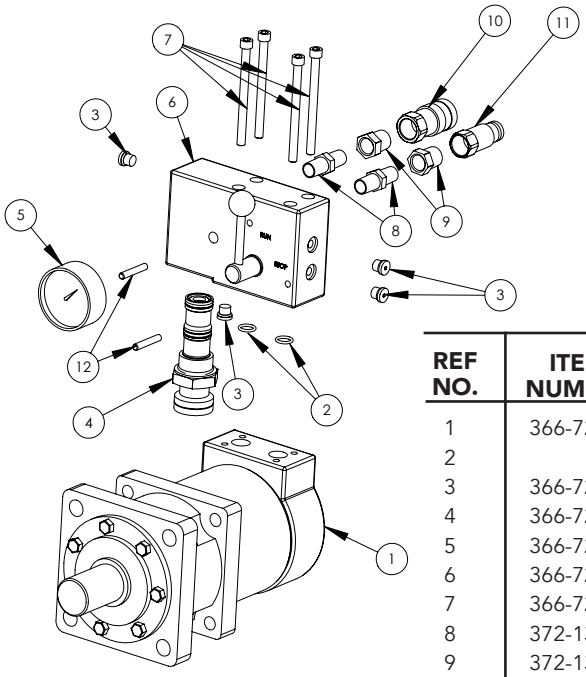


			366-38	366-38-2
1)	360-22-03	QVIM,SHAFT NOSE RETAINING PIN SET SCREW	QTY 3	QTY 2
2)	360-22-04	QVIM,SHAFT NOSE RETAINING PIN SPRING	QTY 3	QTY 2
3)	360-22-02	QVIM,SHAFT NOSE RETAINING PIN	QTY 3	QTY 2
4)	358-88-01	IVS, SPADE BIT 1 3/8 IN. FOR SHAFT NOSE	QTY 1	QTY 1
5)	362-06-03	QVR,6 REAMER CLAMP SCREW,	QTY 1	QTY 1

TM,SHAFT NOSE COMPLETE 350-21-A



HYDRAULIC MOTOR ASSEMBLY (366-72-10)



REF NO.	ITEM NUMBER	DESCRIPTION
1	366-72-700	TM-XL, HYD MOTOR, WT700930C8330AAAAB
2		TM-XL, HYD MOTOR/MANIFOLD O-RING
3	366-72-07	TM-XL, HYD HOLLOW HEX PLUG, 4 HP5ON
4	366-72-05	TM-XL, HYD MOTOR FLOW CONTROL
5	366-72-06	TM-XL, HYD PRESSURE GAUGE, 0-3,000 PSI
6	366-72-04	TM-XL, HYD MOTOR MANIFOLD
7	366-72-09	TM-XL, HYD MOTOR MANIFOLD BOLTS, 5/16"-18 X 4-1/2"
8	372-13-11	HD 3/8 IN. X 3/8 IN. NPT HYD. NIPPLE WEATHERHEAD
9	372-13-10	HD 1/2 IN. X 3/8 IN. NPT BUSHING WEATHERHEAD
10	372-13-7	HD QUICK DISCONNECT,FEMALE 1/2 IN. FLUSH FACE
11	372-13-6	HD QUICK DISCONNECT,MALE 1/2 IN. FLUSH FACE
12	375-50-15	VE VALVE KEY DOWEL PIN 1/4 DIA. X 1-1/2 IN. LONG

TM-XL SHIPPING CRATE WORKSTATION (366-61)