

MUELLER®

B-101™ and B-100™ Drilling and Tapping Machine

▲ WARNING:

1. Read and follow instructions carefully. Proper training and periodic review regarding the use of this equipment is essential to prevent possible serious injury and/or property damage. The instructions contained herein were developed for using this equipment on fittings manufactured by Mueller Co. only, and may not be applicable for any other use.
2. Do not exceed the pressure ratings of any components or equipment. Exceeding the rated pressure may result in serious injury and/or property damage.
3. Safety goggles and other appropriate protective gear should be used. Failure to do so could result in serious injury.
4. Pressure test, check for and repair leaks in all fittings and components each time one is installed or any joint or connection is broken. Failure to find and repair a leak from any source in the fittings, bypass lines or equipment could result in an explosion and subsequent serious injury and/or property damage.
5. Mueller® Drilling Machines and Equipment have been carefully designed and engineered to work together as a unit. The use of equipment manufactured by someone other than Mueller Co. may cause excessive wear or a malfunction of the Mueller machines.

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Reliable Connections™

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All warranties, expressed or implied, for Mueller Drilling Machines are rendered null and void if the machines are used with shell cutters or equipment manufactured by someone other than Mueller Co.

MUELLER® B-101™ and B-100™ Drilling and Tapping Machines

General Information

Capacity and Use

The B-101 Drilling and Tapping Machine drills and taps mains, and inserts stops, tees or plugs into the tapped hole in the main under pressure.

The B-101 machine has a special mechanism that permits the boring bar to be locked to the feed nut and yoke to prevent the drill from spiraling into the hole before the hole is completely drilled. It also prevents the drill from dropping to the threaded section of the combined drill and tap. This design eliminates unnecessary tool damage and is recommended for low pressure drillings.

Tools and equipment for the B-101 and earlier B-100 machines are the same.

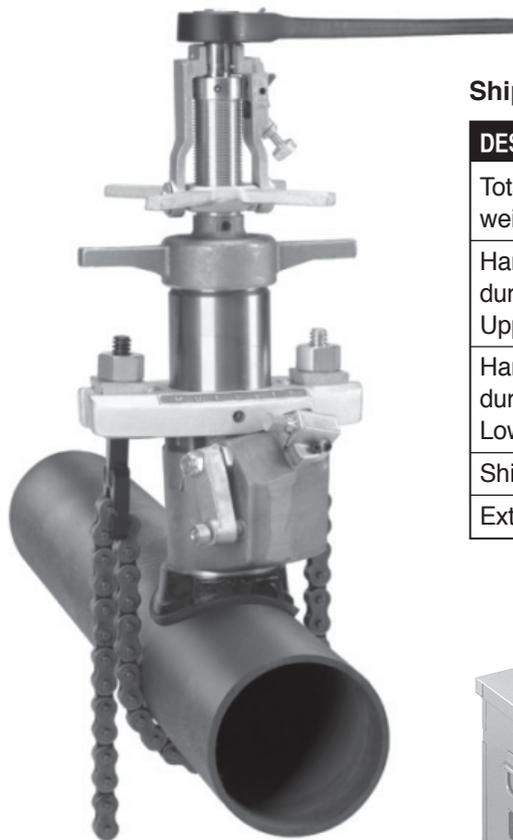
Equipment Furnished with Each Machine

- Metal Carrying Case
- Reversible Ratchet Handle
- Small Saddle Gasket
- Large Saddle Gasket
- Round Link Chain for 12" and Small Pipe
- Chain Hooks/Washers/Nuts
- Open-end Wrench
- Box Wrench
- Body Cleaning Chisel
- Blow-off Valve
- Instruction Manual
- Cutting Grease

Equipment to be selected

- Combined Drills and Taps or Shell Cutters and Taps
- Inserting Tools (used to insert service stop tees or pipe plugs)
- Machine Saddles (adapts machine to specific type and size of main)

NOTE: All tools and equipment used with the B-101 machine can also be used with the B-100 machine.



Shipping Specifications

DESCRIPTION	B-101
Total shipping weight	114 lbs. (52 kg)
Handling weight during operation – Upper section	20 lbs. (9 kg)
Handling weight during operation – Lower section	23 lbs. (10 kg)
Shipping Length	23"
Extended Length	32 1/2"



Optional Equipment

- Extracting Tools (used to remove service stops or plugs from mains)
- Equipment for special uses
- Power Operator

Drilling and Tapping Machine Selection Guide

Machine	Corp. Stop Capacity	Pipe Plug Capacity	Maximum Pressure	Operation	Recommended Use
B-101 Tapping Machine	1/2" – 1"	1/2"–1"–1/2"	90psig (62 kPa/6.20 bar) 250psig (1725 kPa/ 17.25 bar)	Hand or power	Drilling and tapping pressurized mains & inserting corp. stops or plugs w/o water loss

Items Inserted with B-101 Drilling and Tapping Machine

ITEM	SIZE				OPERATION	METHOD
Corp. Stops	1/2"	5/8"	3/4"	1"	Drill and tap main	Hand or power
					Insert corporation stop	Hand
					Extract corporation stop	Hand
Pipe Plugs	1/2"	5/8"	3/4"	1"	Drill and tap main	Hand or power
					Insert pipe plug	Hand
					Extract pipe plug	Hand
	1 1/4"	1 1/2"	2"	2 1/2"	Drill and tap main	Hand* or power**
					Insert pipe plug	Hand
					Extract pipe plug	Hand

*When drilling or tapping above 1" by hand, use extension handle

**When power operating the machine to drill and tap 1 1/2" and larger, only combined shell cutters and taps should be used.

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Tools and saddles are offered for use with cast iron, ductile iron, steel and asbestos-cement pipe in sizes from 2" to 48".

Maximum Working Pressure

90psi without power clevis
250psi with power clevis

Thickness of Pipe Wall

This chart (right) gives the minimum wall thickness of pipe that will provide the recommended four full threads of engagement with the corporation stop inlet thread. For pipe with thinner walls than specified here, use Mueller Service Clamps and Corporation Stops.

Thread Type	Tap Size	Thickness of various pipe diameter (in.)															
		3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	
AWWA Taper Thread	1/2"	.33	.32	.31	.30	.30	.30	.30	.29	.29	.29	.29	.29	.29	.28	.28	
	5/8"	.36	.35	.32	.31	.31	.30	.30	.30	.29	.29	.29	.29	.29	.29	.28	
	3/4"	.37	.36	.35	.34	.33	.33	.32	.32	.32	.32	.31	.31	.31	.31	.31	
	1"	.46	.44	.40	.39	.38	.37	.36	.36	.36	.35	.35	.35	.34	.34	.34	
	1 1/4"	.57	.52	.47	.44	.42	.41	.49	.39	.39	.39	.38	.37	.37	.37	.37	
	1 1/2"	.64	.58	.51	.47	.45	.43	.42	.41	.40	.40	.39	.38	.38	.37	.37	
AWWA I.P. Thread	1/2"	.330	.322	.311	.305	.301	.299	.297	.296	.295	.295	.292	.291	.290	.289	.289	
	3/4"	.356	.343	.325	.316	.310	.306	.304	.301	.300	.298	.296	.294	.293	.292	.291	
	1"	.459	.438	.411	.396	.387	.381	.376	.373	.370	.368	.365	.361	.359	.358	.356	
	1 1/4"	.528	.493	.449	.425	.410	.400	.393	.388	.383	.380	.375	.370	.366	.363	.361	
	1 1/2"	.588	.540	.481	.449	.430	.417	.407	.400	.394	.390	.383	.376	.372	.368	.366	
	2"	.740	.657	.558	.508	.477	.456	.441	.430	.421	.414	.403	.392	.385	.380	.376	
	2 1/2"	—	.968	.812	.736	.689	.658	.636	.620	.607	.596	.580	.565	.554	.546	.541	
3"	—	—	.975	.855	.784	.737	.704	.679	.659	.644	.620	.596	.580	.569	.560		

Maintenance Instructions

NOTICE: The machine used to illustrate this manual may differ somewhat in appearance from currently produced machines. If one of these differences is of significance, it will be referred to in the instructions.

Before Use

Clean and lubricate all wearing and bearing surfaces and threads EXCEPT the boring bar thrust collar which requires no lubrication.

NOTE: If lubricated, service life of boring bar thrust collar may be shortened.

Boring bar is lubricated between upper and lower O-ring seal in feed sleeve and cap by a reservoir containing light machine oil. Remove oil plug in feed sleeve near lower end and occasionally fill with light oil.

Inspect and clean all tools, particularly the shank ends, and remove any burrs or scale, which would prevent proper alignment with the boring bar.

Inspect and clean the socket in the end of the boring bar and remove any burrs or scale which would prevent the tool from seating properly.

After Use

Thoroughly clean the entire machine and all tools, and lubricate all machined surfaces.

Remove all chips from inside the body including the flop valve recess. A special body-cleaning chisel is furnished for this purpose. If chips are permitted to accumulate in the machine, they could rust and become caked and interfere with the operation of the flop valve.

NOTE: DO NOT bump machine on hard surface to shake chips out of body. Saddle gasket surface is damaged by this type of operation.

The machine and all tools and equipment should be stored in the machine chest. Carefully place tools in their individual compartments to prevent damage to the cutting edges.

Boring Bar Packing

Machine is equipped with O-ring packings, which are nonadjustable. When leakage occurs, replacement is necessary.

These packings are replaced in the following manner:

1. Remove ratchet handle and feed nut and yoke from boring bar.
2. Punch out boring bar thrust collar retaining pin. Slide collar off bar.
3. Unscrew feed sleeve and cap from cylinder and slide feed sleeve and cap off bar.
4. Remove wiper ring and O-rings from recess in top and bottom of feed sleeve and cap.
5. Check wiper ring and O-ring packing recesses to be sure they are clean before placing new rings in these grooves. New wiper ring and O-ring packings should be lubricated with machine oil or light grease before they are placed in the feed sleeve and cap.
6. Be sure the top end of boring bar at squared end has no rough edges or burrs that would damage the new wiper ring and O-ring packings as the feed sleeve and cap are replaced on the boring bar. Screw feed sleeve and cap back on cylinder.

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Maintenance Instructions

7. Replace boring bar thrust collar and replace retaining pin.

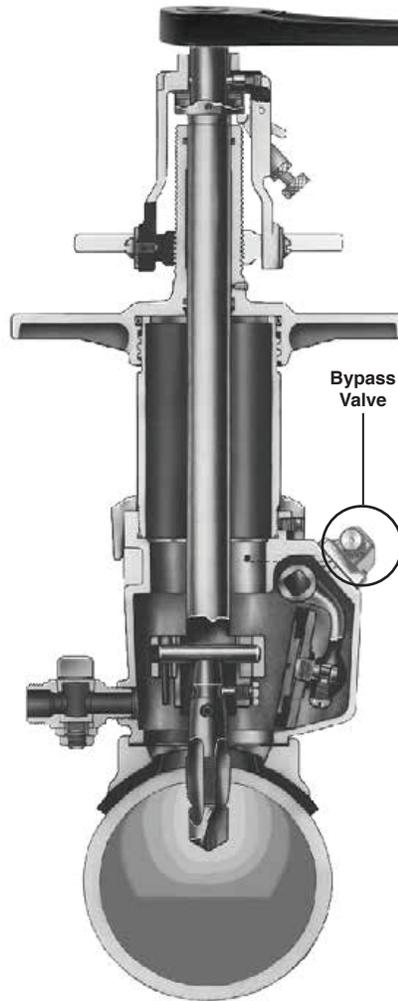
8. Remove oil hole plug in feed sleeve and fill recess between O-rings with light machine oil. Move bar up and down while filling to remove air pockets.

9. Replace oil hole plug.

Automatic Feed Drilling Attachment

The only maintenance required for the automatic drill feed gear case (furnished with the H-603 Electric Power Operator, or H-604 Air Power Operator) is the occasional check to see that it has sufficient lubrication.

The gear case contains one pint or one pound of SAE 90 gear oil (multipurpose grease). The oil level may be checked by removing the small oil plug located on the side of the gear case when the gear case is positioned level with the driving sockets on the bottom. Oil should be level with this plug hole. Oil may be added through the plug located on top of the gear case.



Bypass Valve

A push-pull type valve is used on B-101 Machines for bypassing and relieving pressure. (The valve is available as a separate part to replace the ground-key style valve used on older B-101 and B-100 machines.) The valve is attached to the machine by two screws and can be removed easily for cleaning the valve or machine body passages.

Operation

1. **Bypass:** push the knurled knob in all the way against the bypass valve body.

2. **Relief:** pull the knob out all the way until it stops, away from the valve body.

Maintenance

The spool should be periodically removed and cleaned.

1. Remove retaining ring.

2. Pull spool out of bypass valve body.

3. Clean spool and O-rings of old lubricant and foreign matter.

4. Clean the bore inside the valve body and examine for deep scratches that could cause leakage or abrade the O-rings. Replace the entire valve and its sealing gasket if necessary (Gasket is supplied attached to valve body.)

5. Examine the O-rings for damage and replace if necessary. Lubricate the O-rings with a silicone grease.

6. Reassemble the spool and retaining ring.

NOTE: It is recommended that a spare Repair Kit (part number 682087) be kept available for timely repairs.

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Operating Instructions

Operating Instructions

Select the Equipment Required

1. Select the proper combined drill and tap according to:
 - a). Size and type of inlet thread on stop or plug to be inserted.
 - b). Material from which the pipe to be tapped is made.
 - c). Size and class of pipe to be tapped.
2. Select the proper saddle according to the size and type of pipe to be tapped.
3. Select the proper screw plug.
 - a). For corporation stops according to the size and type of outlet.
 - b). For plugs according to the size.
4. Select proper extracting tool.
 - a). For corporation stops according to the size and type of outlet.
 - b). For plugs according to the size.
5. Select the items of special equipment which may be required because of special operating conditions.

Attach Machine to Pipe

1. Thoroughly clean the pipe at the location for the tap; include an area greater than the large saddle gasket.
2. Place the large saddle gasket on top of the pipe even with the location for the tap, with the raised projection up away from the pipe.
3. Place the saddle on the large saddle gasket.
4. Place the small saddle gasket in the recess in the top of the saddle. **(A.)**



5. Unscrew the feed sleeve and cap containing the boring bar assembly from the cylinder of the machine (2 1/2 turns).

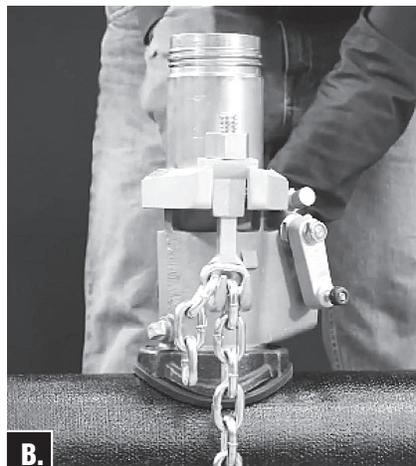
NOTE: This can be done more conveniently if the boring bar is in the retracted position.

6. Place the body and cylinder of the machine on top of the small saddle gasket. Position the machine so that the bypass valve is on the upper side, if the machine is to be operated in any position other than vertical. Flop valve lever handle will be on the lower side of machine.

7. Unscrew nuts on chain hooks until nuts are flush with the end of the threaded stem.

8. Hang chain hook and washer in chain yoke.

9. Attach chain to chain hooks. Hook chain into one hook and bring under the pipe and hook to nearest link. The top chain ring sitting on the hook should be installed horizontally with the lower chain ring vertical between the two forks. **(B.)**



10. Hand tighten chain hook nuts.

11. Slide machine on pipe to desired position or angle.

12. Tighten the chain hook nuts evenly, using wrench furnished with machine. A "cheater" or extension handle should not be used on this wrench. Hammer the chain around the pipe to remove any twist in the chain and continue tightening both chain hook nuts until the machine is bearing solidly against the pipe. New type chain hooks and washers prevent rotation of chain hooks and provide a better grip for round link chain.

IMPORTANT: DO NOT tighten chain hook nuts after starting to drill as it will throw the machine out of alignment.

NOTE: Use chain spreader (Part No. 40321) when tapping pipe 3" in size and smaller to spread the chain so that it will clear the lower edge of the body of the machine.

B-101 and B-100 Machine chain is for use on pipe up to 12" in size.

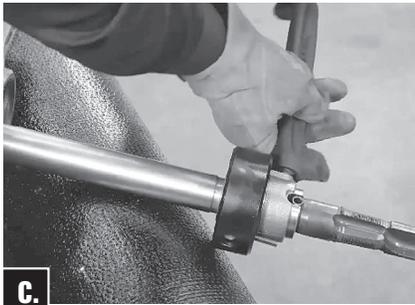
Use the proper length and type of extension chain when tapping pipe in larger sizes.

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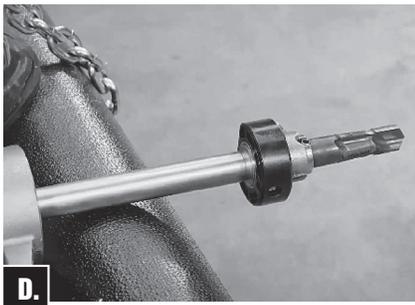
Operating Instructions

Attach Tool to Boring Bar

1. Slide knockout pin in boring bar socket to its outward position using pin extending through bottom of boring bar bearing as a handle
2. Insert shank end of combined drill and tap into boring bar socket aligning driving pins on tool with slots in end of boring bar. (C.)



3. Strike tool on drill end with a block of wood to be sure it fits tightly in socket.
4. Tighten tool-retaining screw in boring bar using small socket end of chain hook nut and tool-retaining screw wrench. (D.)



5. Retract boring bar to its rear most position in feed sleeve and cap.
6. Coat drill end and tap threads with Mueller Cutting Grease. DO NOT use cutting grease when drilling and tapping asbestos-cement or concrete pipe.

Assemble the Machine

1. Open flop valve to its wide open position by pushing lever handle down. If desired, handle screw may be engaged into socket on side of body to retain flop valve in open position during this operation. (E.)



2. Attach boring bar feed sleeve assembly to cylinder of machine and tighten cap securely (2 1/2 turns).

3. Push boring bar down by hand until tool contacts pipe.

4. When using B-100 machine, adjust feed nut and yoke on feed sleeve and cop so that the yoke engages thrust collar on boring bar. When using B-101 machine, adjust feed nut and yoke in the same manner and raise the pivot arm of locking mechanism on side of yoke so that it is positioned under the collar, then lock in place with operating screw and lock nut.

NOTE: Spring loaded detents in yoke will keep yoke from falling away from the bar.

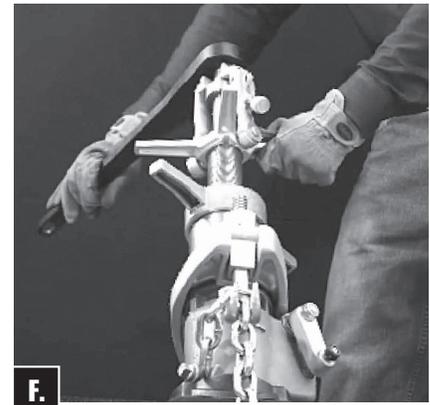
5. Push bypass valve to "bypass" position. Arrow on bypass valve body indicates valve position (See Bypass Valve section on page 4).

DRILL AND TAP – Hand Operated Method

1. Adjust mechanism in handle so that the boring bar will rotate clockwise.

NOTE: The standard ratchet handle length is 18 3/8". When making cuts larger than 1" an optional handle bar is available which increases the length to 30 11/32".

2. Drill the main by operating the ratchet handle **clockwise** and turning the feed yoke **clockwise** a little at a time. Use a light even feed at the start. If possible, pull the ratchet handle in an arc parallel to the axis of the pipe thereby reducing the tendency of the machine to slip on the pipe. Turn the feed yoke as the boring bar is being turned. (F.)



3. Continue the drilling operation until the boring bar feeds easily and rotates easily, indicating the drill portion of the tool is through the pipe.

4. Rotate ratchet handle **clockwise** and rotate feed nut **clockwise** to engage tap part of tool into main. Continue to rotate feed yoke until tap is securely started into main and feed yoke is no longer needed to take thrust of boring bar. At this point, the feed yoke may be removed from contact with the thrust collar and allow the tool to feed itself. When using the B-101 machine, turn the operating screw on locking mechanism **counter-clockwise** to unlock the pivot arm and remove the feed yoke from contact with the thrust collar.

NOTE: Feed yoke should remain in contact with boring bar thrust collar and follow the thrust collar when machine is being used on high pressure mains, thin wall steel pipe, or asbestos-cement pipe.

DO NOT overfeed faster than the tap is cutting because this could strip the threads being tapped in the main.

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5. Continue tapping operation until tapping line on boring bar is flush with the top of the feed sleeve part of the cap. When tapping asbestos-cement pipe, it may be advisable to tap about $\frac{1}{8}$ " beyond the tapping line to provide more engagement of corporation stop threads when using one piece Cem-Res® tools.

DRILL AND TAP – Power Operated Method

Using Mueller® H-603 Electric Power Operator, H-604 Air Power Operator or H-705 Hydraulic Operator

The B-101 and B-100 Drilling and Tapping Machines have been designed to permit the addition of a power operator with no modification of the standard machine. The power operator will drive the combined drill and tap and provide automatic feed during the drilling operation.

Extra precautions are required when using a power operator with the B-100 machine and working on a pipe which is not under pressure. The power operator weighs approximately 35 pounds. Its weight bears directly on the boring bar tending to push the bar downward. Normally, the pressure in the machine counter balances the downward thrust caused by the extra weight and therefore does not adversely affect the operation of the machine.

This precaution is not necessary on the B-101 machine when the special locking mechanism is engaged with the boring bar, as this locking mechanism controls the downward motion of the boring bar.

The power operator consists of a gear case and motor using an electric motor, air motor or hydraulic motor for the power source.

IMPORTANT: When using H-604 air motor power operators, maintain pressure of 90psig. We recommend the use of a gage at the throttle to determine the actual pressure of AIR AT THE AIR MOTOR.

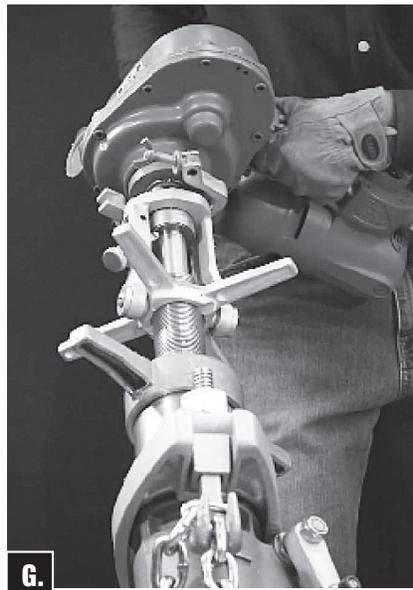
NOTE: All units are suitable for:

- Power drilling with automatic feed $\frac{1}{2}$ " through 1" inclusive with combined drill and tap.
- Power drilling with automatic feed $\frac{1}{4}$ " through $2\frac{1}{2}$ " inclusive with shell cutter and tap.
- Power drilling with hand feed $\frac{1}{4}$ " through $2\frac{1}{2}$ " inclusive with combined drill and tap.

The gear case attaches to the machine by the means of two sockets. The inner or small socket drives the boring bar. The outer or large socket drives the feed yoke through a gear reduction as the boring bar is rotated. The resulting feed on the drill is .010" per revolution of the boring bar.

The operator takes the torque of the motor resulting from the drilling operation, so the motors are equipped with a squeeze type trigger throttle. If for some reason a drill should stick, the motor can be shut off quickly.

1. Place the gear case and motor on the drilling and tapping machine aligning the sockets with the square shanks on the boring bar and feed yoke. Socket which contacts feed yoke should be closed and wing nut tightened securely. **(G.)**



2. Set position of motor switch to give clockwise rotation of boring bar.

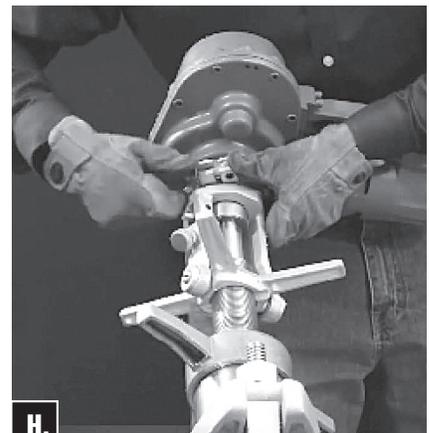
NOTE: See instructions and illustration on page 11 for removing drilling chips from the main while drilling and tapping.

3. Start drilling and continue drilling until the operation is complete. Completion of drilling operation can be easily detected by torque required to resist power unit and sound of power unit.

NOTE: The tapping line is located just below the thrust collar on the boring bar. A distance of $\frac{1}{4}$ " below the tapping line is limit for use of automatic feed. Actual drilling is always completed before this distance is reached.

When using the B-100 machine and drilling metal pipe, use extra precaution to control the downward movement of the boring bar just before the drilling operation is completed. This is necessary to prevent the drill point from breaking through into the pipe just before the hole is completely drilled. This is particularly important when drilling pipe with low pressure or no pressure. When using the B-101 machine, the locking mechanism will automatically control this downward movement.

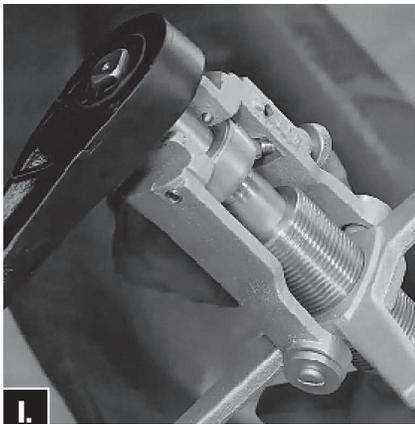
4. Loosen wing nut on feed yoke drive socket and swing socket open. **(H.)**



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5. Start motor and rotate feed nut **clockwise** by hand to engage tap part of tool into main. Continue to rotate feed nut until tap is securely started into the main and feed yoke is no longer needed to take thrust of boring bar. At this point, the feed yoke may be removed from contact with thrust collar (on the B-101, turn the operating screw **counter-clockwise** to unlock the pivot arm and remove the feed yoke) allowing the boring bar to move downward and the tool to feed itself. (I.)

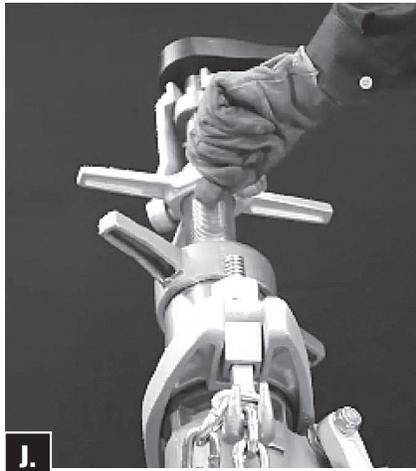


NOTE: Feed yoke should remain in contact with the boring bar thrust collar and follow the thrust collar down when machine is being used on high pressure mains, thin wall steel pipe or asbestos-cement pipe. DO NOT overfeed faster than the tap is cutting as this will strip the threads being tapped in the main.

During the tapping operation with either the B-101 or B-100 machines, extra precaution is required because the additional weight of the power operator tends to cause overfeeding of the tap resulting in stripped threads. This is more serious when tapping asbestos-cement pipe dry.

IMPORTANT: We recommend only hand operation of the B-101 or B-100 machines during the tapping operation of asbestos-cement pipe which is not under pressure.

6. Continue tapping operation until tapping line on boring bar is flush with the top of the feed sleeve part of the cap. (J.)



When tapping asbestos-cement with one piece Cem-Res® combined drills and taps, it is advisable to exceed the tapping line enough to allow corporation stops to be inserted with only one to three threads exposed. The exact amount may be determined by making a “shop-tap” ahead of time. (Use 50 to 80 foot pounds of torque to tighten valve into main after removal of machine.)

Remove The Tool From Main

1. If hand ratchet was used to make tap, reverse ratchet handle by adjusting for **counter-clockwise** rotation. Rotate the ratchet handle **counter-clockwise** carefully and back out the tool. DO NOT force the tool when removing it, as this may cause breakage of the tap teeth.

⚠ CAUTION: When this machine is under pressure, control the piston action of the boring bar to prevent bodily injury or damage to machine.

2. If power operation has been used to make the tap, reverse the motor and back out the tool. Control upward movement of the boring bar by maintaining a firm hold on the gear case and motor as stated in previous caution note.

3. When the tap is entirely free from the pipe, withdraw the boring bar to the uppermost position again applying some downward force to prevent uncontrolled withdrawal of the boring bar.

If the pressure in the main is greater than 90psi, a power clevis (H-10802) may be used to control the upward movement of the boring bar. (K.)



A power clevis is used as follows to allow the upward movement of the boring bar to be done under controlled conditions. If a power drive unit has been used to tap the main, the power unit is removed and a hand ratchet is used to replace the gear case.

- Hook the bent end of the power clevis over the feed cap handles.
- With the ratchet handle in place on the boring bar, bring the center point of the control screw down into contact with the center hole in end of boring bar.
- Rotate the ratchet handle **counter-clockwise** and the control screw on the power clevis at the same rate. As the tap backs out of the pipe, the power clevis controls the upward movement.
- When the tap threads are out of the main, rotation of the ratchet handle can stop while the control screw is rotated to raise the boring bar to its uppermost position.

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4. With the boring bar in its uppermost position, close flop valve by loosening handle screw (if lever handle was locked open) and raising upward on lever handle.

If machine is being operated on low pressure, it is advisable to retain flop valve in closed position by use of handle screw on lever handle. The handle screw in lever handle is tightened against wedge on side of body.

5. With flop valve closed, pull bypass valve to “relieve” position. This relieves the pressure above the flop valve and allows the line pressure to keep the flop valve closed, which is assisted by handle screw if it is used. (L.)



6. Retain boring bar in its uppermost position, while feed sleeve and cap and boring bar assembly is removed from cylinder of machine.

7. Remove combined drill and tap from boring bar by first loosening the tool retaining screw with the socket end of the chain hook nut and tool retaining screw wrench, but DO NOT remove screw.

8. Strike the head of the knockout pin with a light blow to loosen the combined drill (or shell cutter) and tap. (M.)



9. Remove the combined drill and tap from boring bar socket.

Attach Stop Or Plug To Boring Bar

IMPORTANT – Check to be sure the stop to be installed is fully closed.

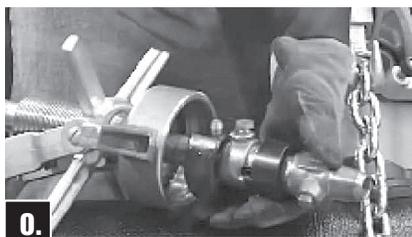
1. Screw together the proper screw plug and the stop or plug to be inserted. Be sure these threads screw together freely without binding.

When using an E-Z Release screw plug, also lubricate and check the acme threads between the two parts of the screw plug. (N.)



2. Slide knockout pin in boring bar socket to its outward position using pin extending through bottom of boring bar bearing as a handle.

3. Insert shank end of screw plug into boring bar socket aligning driving pins on tool with slots in end of boring bar and firmly push screw plug and stop assembly to its rear most position. (O.)



4. Tighten tool-retaining screw in boring bar using small socket end of chain hook nut and tool retaining screw wrench.

5. Push the cap down on the boring bar as far as possible.

6. Coat the inlet threads of the corporation stop or with non-hardening pipe thread sealant or Teflon® tape (P.)



7. Replace feed sleeve and cap and boring bar assembly onto the cylinder of machine and tighten cap securely so that a pressure tight joint is formed.

Insert The Stop Or Plug

1. Hold boring bar assembly in uppermost position. Push bypass valve to “bypass” position.

2. Attach ratchet handle and set for **clockwise** rotation.

3. Open flop valve by loosening handle screw, If it was tightened, and pushing lever handle all the way down. Handle screw should be engaged into socket on side of body to retain flop valve in open position during this operation. (Q.)



4. Push the boring bar down until the inlet threads of the stop or plug contact the threads in the pipe. For pressure greater than 90psi use a power clevis to force the boring bar down. See Instructions “F-3”.

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Operating Instructions

5. Adjust the feed yoke over thrust collar on boring bar.

6. Rotate boring bar **clockwise** while feed yoke is also carefully rotated **clockwise**. After the threads on the stop or plug have engaged the tapped hole in the main, rotation of the feed yoke may be stopped and the yoke removed from contact with the thrust collar, while the fitting is screwed into its seat. When the stop or plug is being inserted in thin wall or asbestos-cement pipe or into pipe under high pressure, the feed yoke should be used to follow the collar all the way down.

7. Screw the stop or plug into the tapped hole until it feels solid.

IMPORTANT: DO NOT attempt to force it to its permanent tightness by means of the machine.

Release The Screw Plug

1. Adjust lever on ratchet handle for **clockwise** rotation.

2. Turn the ratchet handle **counter-clockwise** to take out the play and strike the end of the handle a sharp blow **counter-clockwise** with the palm of the other hand. **(P.)** This will release the threaded connection between the screw plug and the stop or plug. If using on E-Z Release screw plug, this will release the threaded connection between the two parts of the screw plug.



3. Rotate ratchet handle **counter-clockwise** until screw plug is completely free.

4. Pull the bypass valve to “relieve” position which will release the pressure from the machine and indicate the tightness of the connection between the stop or plug and the pipe. If there is full pressure flow from the bypass valve, the screw plug has not released and the stop or plug should be screwed in again a little tighter than before and another attempt be made to release the screw plug.

Remove The Machine

1. Loosen the chain hook nuts.

2. Unhook the chain and remove hooks and chain.

3. Remove the machine, saddle and gaskets. **(Q.)**



4. Tighten the stop or plug into the pipe permanently with a flat jaw wrench on the valve body.

5. If using an E-Z Release screw plug, remove the nut part from the stop with the E-Z Release screw plug wrench furnished with machine. **(R.)**



Extracting Stop or Plug Installed in Pipe Under Pressure

1. Shut off the stop.

2. Disconnect service line piping.

3. Slightly loosen the stop or plug using a wrench on the inlet side.

4. Separate the two parts of the extracting tool.

5. When using an extracting tool having inside threads, screw the nut into the outside threads of the stop very securely using the right hand thread. When using an extracting tool having outside threads, screw the plug into the inside threads of stop or plug very securely using the right hand threads.

6. Unscrew the feed cap containing the boring bar assembly from the cylinder of the machine (2½ turns).

7. Open flop valve to its wide open position by pushing lever handle down. If desired, handle screw may be engaged into socket on side of body to retain flop valve in open position during this operation.

8. Assemble large saddle gasket, saddle, small saddle gasket and the body and cylinder of the machine centrally over the installed valve or plug.

9. Place chain hooks and washers into chain yoke and attach chain.

10. Hand tighten chain hook nuts. See instructions “Attach The Machine to The Pipe” section on page 5.

11. Attach the shank part of the extracting tool into the boring bar socket being sure the knockout pin is in its outward position and the drive pins align with slots in the boring bar.

12. Tighten tool retaining screw in boring bar using small socket end of chain hook nut and tool retaining screw wrench.

13. Push the feed sleeve and cap down on the boring bar as far as possible.

14. Attach boring bar, feed sleeve and tool assembly to cylinder of machine and tighten cap securely (2½ turns). Be sure boring bar is held in its upper position while cap is being attached.

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15. Slowly move boring bar downward to engage left hand thread of extracting tool shank with mating thread in nut part attached to corporation stop or plug. Attach ratchet handle to boring bar and adjust ratchet for **counter-clockwise** rotation.

16. As soon as the extracting tool shank contacts the nut part on corporation stop or plug, slowly rotate the ratchet handle **counter-clockwise** to engage the left hand threads. This is a very sensitive operation and extreme caution must be taken to be sure threads

properly engage. It is very likely it will be necessary to slightly shift the machine during this operation to get proper alignment.

17. As soon as boring bar is permanently attached to extracting tool, chain hook nuts can be tightened. Considerable caution is required to bring the machine down evenly on the pipe. If machine is tightened down unevenly a strain will be placed on boring bar and if old corporation stop or plug is removed under these conditions, the new one will not start in the old hole.

18. Push bypass valve to “bypass” position and rotate ratchet handle **counter-clockwise** to extract the stop or plug. Raise boring bar to upper position as soon as old stop or plug becomes disengaged from main.

19. Close flop valve and pull bypass valve to “relieve” position.

20. Proceed with the use of the machine following previous instructions.

Blow-off Valve Operating Instructions

NOTE: The tapping machine body has a boss with 1/2" I.P. tapping and is shipped with a brass plug installed. A blow-off valve is also shipped with each machine. The blow-off valve provides a means to prevent pipe chips and other drilling and tapping residue from entering the main during pressure taps.

To properly use the blow-off valve, follow these instructions:

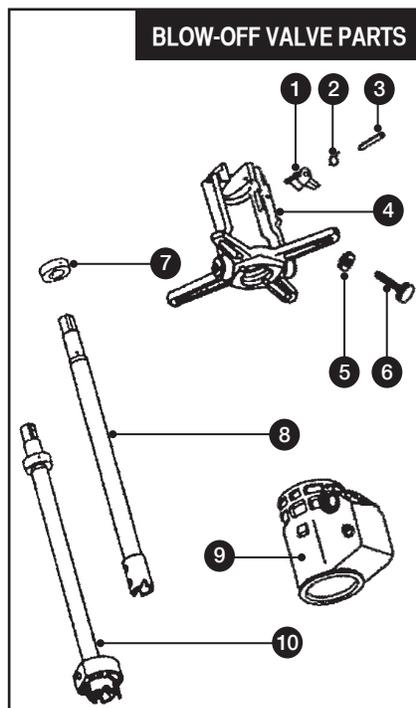
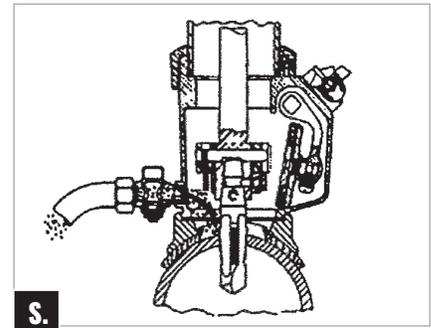
1. Remove the brass plug from the boss of machine body.

2. Apply non-hardening dope to the inlet threads of the blow-off valve and install the valve in the tapped boss of machine body. The valve should be tightened sufficiently to provide a pressure tight joint and then positioned so that the valve key does not interfere with the pipe saddle.

3. Attach a length of hose to the blow-off valve outlet. Valve outlet is 3/4" National Hose Thread (regular garden hose coupling size). (S.)

4. When starting to drill and tap the main, open the valve. Main pressure will flush the chips out through the hose outlet.

5. Close the valve after the tapping operation has been completed.

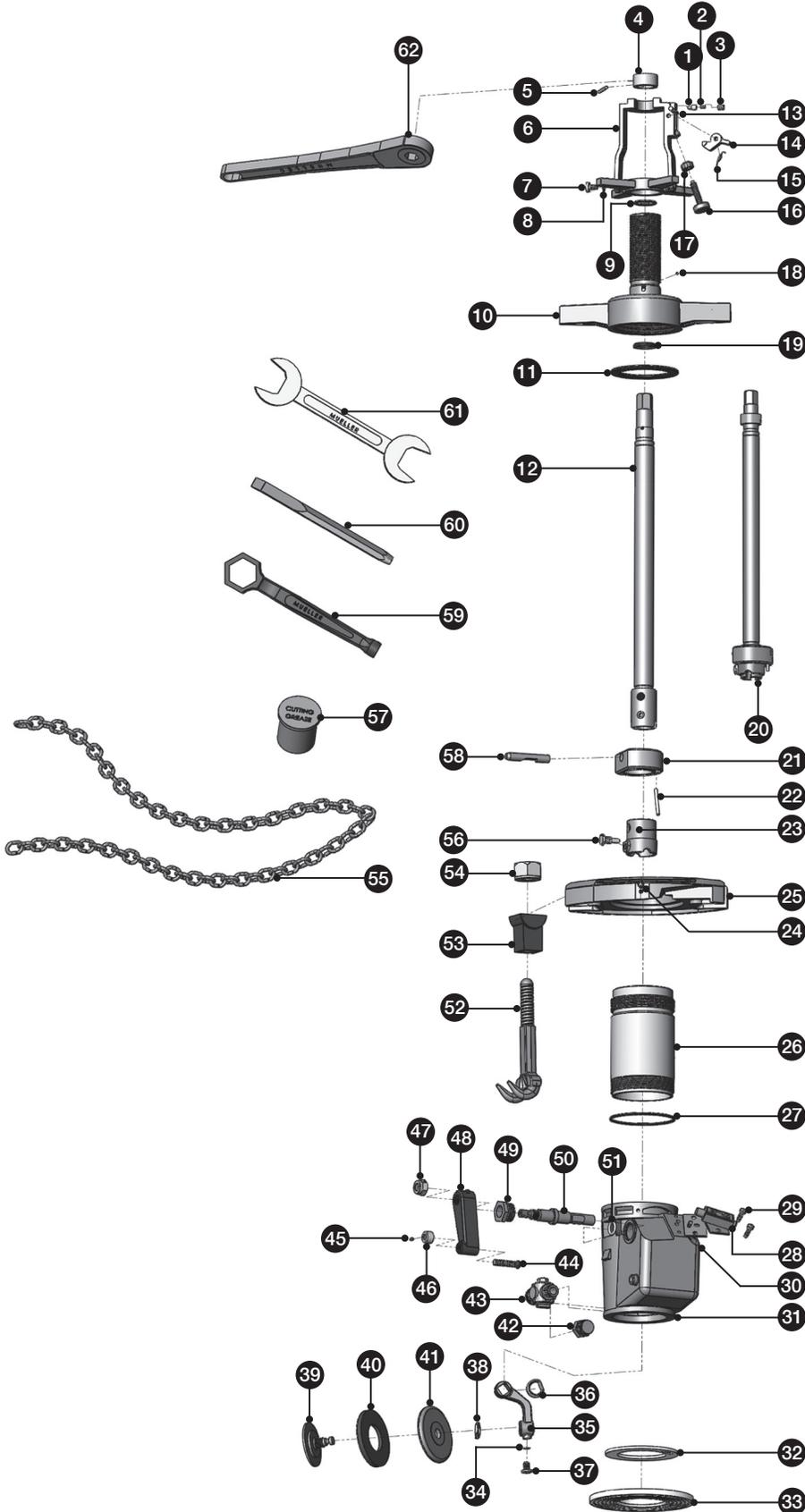


ID	PART #	DESCRIPTION
1	502025	Pivot Arm
2	502026	Pivot Arm Spring
3	502027	Roll Pin
4	580611	Feed Nut & Yoke Complete
5	502029	Lock Nut
6	502028	Operating Screw
7	580610	Friction Collar
8	502022	Boring Bar
9	502046	Valve Body
10	581286	Boring Bar Complete

NOTE: Parts for the B-101 machine are the same as the B-100 machine except for the parts shown here.

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Parts



ID	PART #	DESCRIPTION
1	500851	Detent Pin - 2
2	59810	Spring - 2
3	305006	Screw - 2
4	580610	Friction Collar
5	48130	Retaining Pin
6	580611	Feed Nut & Yoke Complete
7	312443	Yoke Retaining Screw - 2
8	537126	Washer - 2
9	79269	Boring Bar O-ring - 2
10	500685	Feed Sleeve & Cap
11	500687	Cap Packing
12	502022	Boring Bar
13	502027	Roll Pin
14	502025	Pivot Arm
15	502026	Pivot Arm Spring
16	502028	Operating Screw
17	502029	Lock Nut
18	41435	Oil Plug
19	500887	Wiper Ring
20	581286	Boring Bar Complete
21	500692	Bearing
22	48130	Retaining Pin
23	500691	Bearing Sleeve
24	97795	Chain Yoke Retaining Screw
25	500683	Chain Yoke
26	500682	Cylinder
27	500670	Valve Body O-ring
28	682053	Bypass Valve Sub Assembly
29	501373	Bypass Valve Screw - 2
30	311812	Bypass Valve Gasket
31	502046	Valve Body
32	40066	Small Saddle Gasket
33	40067	Large Saddle Gasket
34	52165	Lock Washer
35	500672	Valve Gate Arm
36	72627	Spring
37	500675	Lock Screw
38	500676	Lock Nut
39	500674	Valve Washer and Stem
40	500673	Gate Washer
41	500671	Valve Gate
42	50369	Pipe Plug
43	581646	LLB Blow-off Valve Assembly
44	501061	Handle Screw
45	302575	Lock Screw
46	46280	Handle Knob
47	500669	Handle Nut
48	500668	Lever Handle
49	500667	Valve Stem Retaining Nut
50	500666	Valve Stem
51	41301	Valve Stem O-ring
52	500709	Chain Hook - 2
53	500707	Chain Hook Washer - 2
54	500706	Chain Hook Nut - 2
55	500780	Chain
56	500694	Tool Retaining Screw
57	88366	Cutting Grease
58	500693	Knock Out Pin
59	500708	Chain Hook Wrench
60	40050	Body Cleaning Chisel
61	501579	Inserting Tool Wrench
62	528273	Ratchet Handle Complete
-	682078	Bypass Valve Key Repair Kit
-	306991	Bypass Valve Spare Retaining Ring
-	682087	Bypass Valve Repair Kit

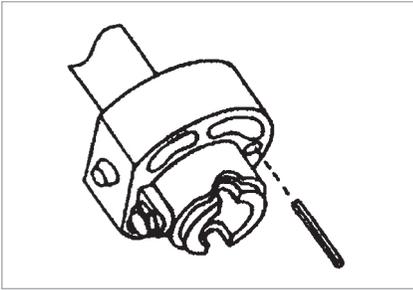
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Removal and Replacement of Boring Bar Bearing

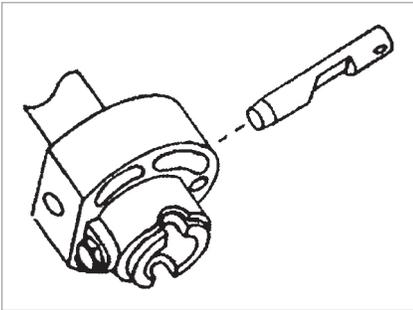
To Remove The Bearing

NOTE: It is not necessary to remove the Boring Bar from the Feed Sleeve .

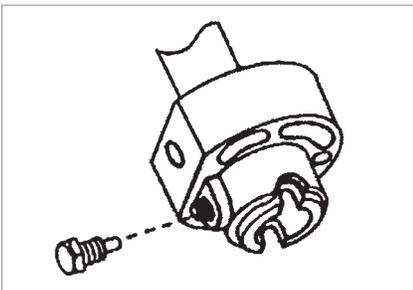
1. Punch or pull out the Retaining Pin (part no. 48130) from the Knockout Pin (part no. 500693).



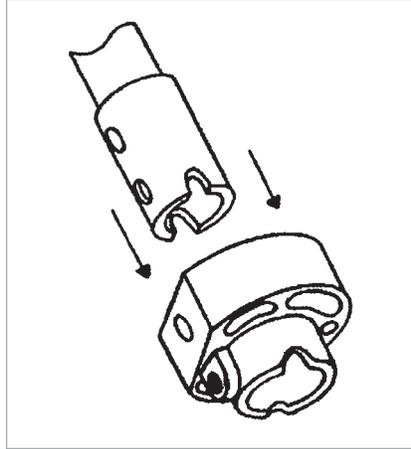
2. Remove the Knockout Pin.



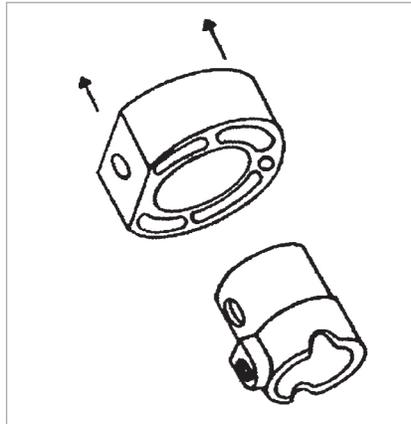
3. Remove the Tool Retaining Screw (part no. 500694) from the Boring Sleeve (part no. 500691).



4. Slide the Bearing and Bearing Sleeve off the lower end of the Boring Bar.



5. Slide Bearing (part no. 500692) off the Bearing Sleeve (part no. 500691) with a twisting motion.



To Replace The Bearing

1. Place Bearing on Bearing Sleeve. When the Bearing is placed on the Bearing Sleeve the bottom of the Bearing should rest on Bearing Sleeve Shoulder and the top of the Bearing should be flush with the top of the Bearing Sleeve. Knockout Pin holes in both Bearing and Bearing Sleeve will then be easily aligned.

2. Slide Bearing and Bearing Sleeve on Boring Bar, align holes and replace Tool Retaining Screw.

3. Align Knockout Pin holes in Bearing with holes in Bearing Sleeve and replace Knockout Pin. Keep the flattened portion in the middle of the Knockout Pin facing the lower end of the Boring Bar.

4. Replace Retaining Pin through bottom hole in Bearing and into hole in the Knockout Pin.

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Notes

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Notes



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