

TABLE OF CONTENTS

CUSTOMER MESSAGE	Inside Front Cover
SAFETY PRECAUTIONS	3
GENERAL DESCRIPTION	6
SPECIFICATIONS	7
MAINTENANCE	10
OPERATION	13
CUTTING SPEEDS	20
STANDARD JAW BLOCKS, RAMPS AND SPACERS	21
EXTENSION KIT JAW BLOCKS, RAMPS AND SPACERS	22
TOOL BITS	23
TROUBLE SHOOTING	24
ACCESSORIES	26
ILLUSTRATED PARTS BREAKDOWN	27
TOOL BIT RESHARPENING POLICY	Inside Back Cover
WARRANTY INFORMATION	Inside Back Cover

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SAFETY PRECAUTIONS

IN GENERAL

When using rotating head cutting equipment, basic safety precautions should always be followed to reduce the risk of personal injury.

Operate this tool only in accordance with specific operating instructions.

WARNING:

Do not override the deadman switch on the power unit. Locking down, obstructing, or in any way defeating the deadman switch on the power drive unit may result in serious injury.

DRESS CONSIDERATIONS

Use standard safety equipment. Hard hats, safety shoes, safety harnesses, protective clothes, and other safety devices should always be used when appropriate.

Use safety glasses. Do not operate cutting tools without eye protection.

Dress properly. Do not wear loose clothing or jewelry. They can be caught in rotating and moving parts. Avoid slippery floors or wear nonskid footwear. If you have long hair, wear protective hair covering to contain it.

WORK AREA

Keep the work area clean. Cluttered work areas and benches invite injuries.

Consider the work area environment. Keep the area well lit. Keep electrical cords, cables, rags, rigging straps, and etc. clear of rotating equipment. Do not use power-cutting tools in the presence of flammable liquids and gasses.

Keep visitors away. Do not let visitors or untrained personnel at or near operating tools. Enforce eye protection requirements for all observers.

Do not over reach. Keep proper footing at all times.

Stay alert. Watch what you are doing. Use common sense. Do not operate tools when you are tired.

TOOL CARE

Maintain tools with care. Keep tools in good operating condition. Sharp tool bits perform better and safer than dull tool bits. Well maintained tools function properly when needed.

Check for damaged parts. If a tool has malfunctioned, been dropped or hit, it must be checked for damage. Run no-load tests and feed function checks. Do a complete visual inspection.

Electric motors. Use only with proper AC voltage power sources and observe all normal electric shock hazard procedures.

Do not abuse power and control cords. Pulling or running over cords and cables can result in electrical shock hazards and malfunctions. Keep control and power cords out of all cutting fluids and water.

Hydraulic drives. Observe proper procedures for electrically driven power sources. Avoid damage to hydraulic lines. Keep quick-disconnects clean. Grit contamination causes malfunctions.

Air tools. Check the exhaust muffler. Broken or damaged mufflers can restrict air flow or cause excessive noise. Use air motors only with a filtered, lubricated and regulated air supply. Dirty air, low-pressure air or over pressure air will cause malfunctions, including delayed starting.

AREA EQUIPMENT

Secure work. Whenever possible use clamps, vises, chains and straps to secure pipe.

Make sure the tool is secured; it is safer to have both hands free to operate the tool.

TOOL USE

Use the right tool and tool bit for the job. Do not use a tool, which is incorrect for the job you are doing.

Keep the tool bits fully engaged in the tool bit holders. Loose bits are a safety hazard.

Disconnect power supply during setup and maintenance. Use all 'Stop' or Shut off' features available when changing or adjusting tool bits, maintaining the tool, or when the tool is not in use.

Remove adjusting keys and wrenches before applying power to the equipment. Develop a habit of checking the tool before turning it on to make sure that all keys and wrenches have been removed.

Do not force tools. Tools and tool bits function better and safer when used at the feed and speed rate for which they were designed.

Do not reach into rotating equipment. Do not reach into the rotating head stock to clear chips, to make adjustments, or to check surface finish. A machine designed to cut steel will not stop for a hand or an arm.

Handle chips with care. Chips have very sharp edges and are hot. Do not try to pull chips apart with are hands; they are very tough.

Avoid unintentional starts. Do not carry or handle tools with your hand on the operating switches or levers. Do not lay the tool down in a manner that will start the drive. Do not allow the tool to flip around or move when adjusting or changing tool bits.

Store idle tools properly. Disconnect tools from the power source and store in a safe place. Remove tool bits for safe handling of the tool.

GENERAL DESCRIPTION

The Model 236B BEVELMASTER™ is a portable I.D. mount machine tool for beveling, facing and/or counterboring 12" through 36" pipe. The tool is configured with an in line feed knob and hydraulic drive motor at a right angle to the lathe head.

SPECIFICATIONS

The Model 236B BEVELMASTER™ is designed for facing, beveling and/or counterboring the ends of pipe or tubing in preparation for welding.

These machining operations may be performed either simultaneously or separately.

Pipe weld preparations that meet all existing conventional codes including the more stringent nuclear codes may be machined using the Model 236B.

The various interchangeable Jaw Blocks, Ramps and Adapter will secure the Model 236B BEVELMASTER™ to pipe and tubing having an inside diameter of 11.43" (290.4 mm) minimum, with a maximum outside diameter of 36.00" (914.4mm).

The expanding Mandrel provides fast, accurate self-centering and alignment to the pipe or tubing to be machined.

The Lathe accepts it's own torque through the Mandrel generated by machining operations. No additional torque restraining devices are required.

The Model 236B is provided with a lathe stand and hoist ring.

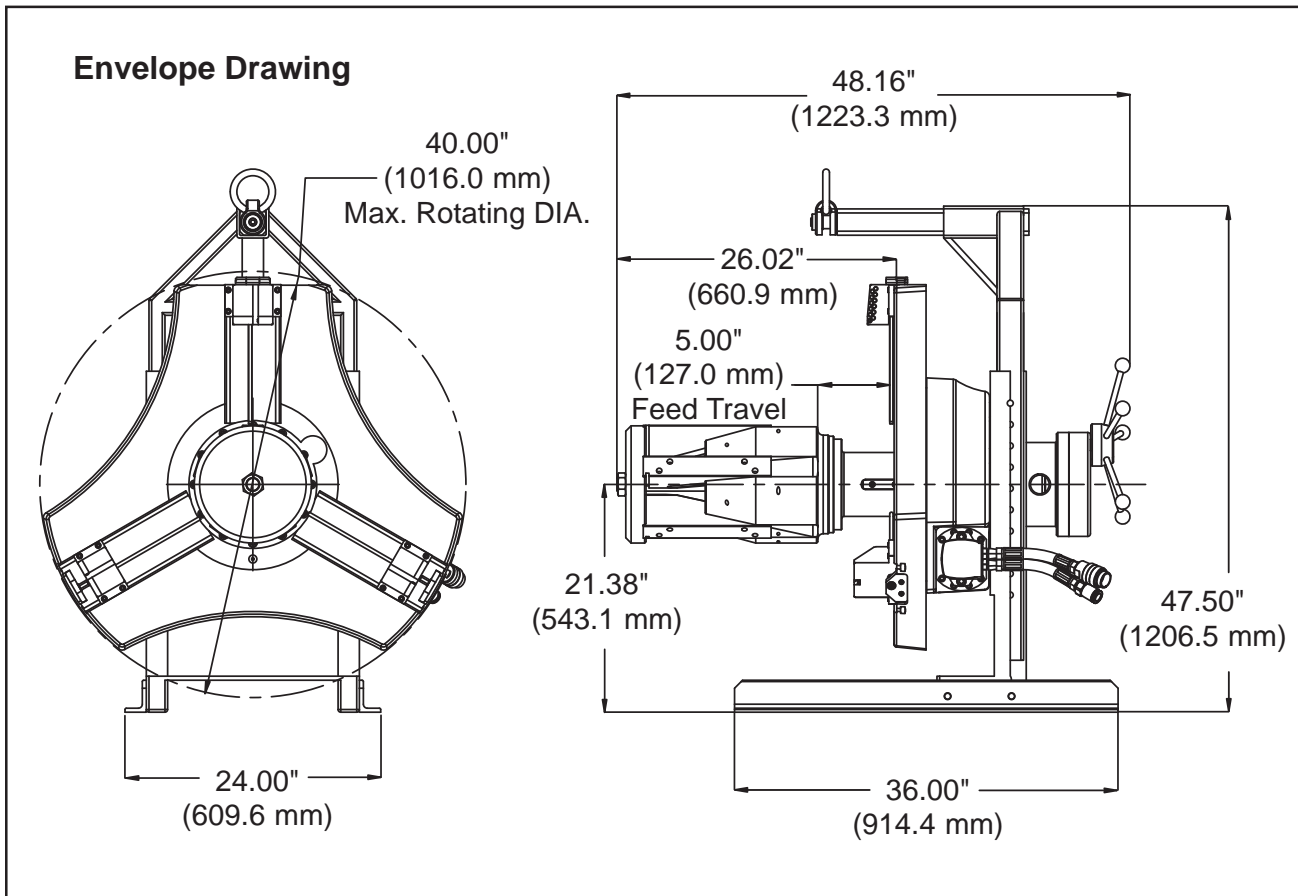
Various attachments are available to further enhance the capabilities of the Machine.

SPECIFICS

Weight	1200 lbs (554 kg) complete with Stand.
Power Requirements	20 GPM at 1250 PSI (1.3 L/s at 8619 kPa)
Feed Rate	.033" (.84 mm) per rev of the Feed Handle
Feed Travel	5.00" (127.0 mm)
Rotating Head Diameter	40.00" (1016.0 mm)

Avoid unintentional starts. Do not carry or handle tools with your hand on the operating switches or levers. Do not lay the tool down in a manner which will start the drive. Do not allow the tool to flip around or move when adjusting or changing tool bits.

Store idle tools. Disconnect tools from the power source and store the tools in a safe place. Remove tool bits for safe handling of the tool.



CUTTING CAPACITIES

Basic Pipe Sizes

Schedule 5 through 60 for 12" pipe, schedules 5 through 140 for 14" pipe, and all schedules of 16" through 36" pipe.

Basic Tube Sizes

Up to 1.312" (33.3 mm) wall tubing with a maximum O.D. of 36.00" (914.4 mm) and a minimum I.D. of 11.43" (290.4 mm) may be beveled with the standard mandrel.

Wall Thickness Capacity

Wall thickness of all standard pipe schedules 1.312" (33.3 mm) maximum in the range listed. Tubing or pipe with a greater wall thickness may be handled provided the I.D. is greater than 11.43" (290.4 mm) and the O.D. is less than 36.00" (914.4 mm). Contact Tri Tool for heavier wall procedures.

Counterboring Operations

The tool will counterbore pipe and tubing with an I.D. range of 11.43" (290.4 mm) to 35.00" (889.0 mm).

MAINTENANCE

All Components should be cleaned and coated with a light film of oil prior to use.

If the Model 236B is operated in the vertical position, Headstock facing up, the chips and/or other debris should be removed after each bevel cut has been completed.

CAUTION: Tool Life may be severely shortened, unless chips and/or other debris that have been deposited on or around the Headstock during the machining operation are removed.

Daily Maintenance should include a visual inspection of all parts for damage due to chips, impact or improper use.

Repair or replace broken or damaged parts as necessary.

Wipe the machine clean of cutting fluids, dirt and grime and then coat it with a light film of oil.

Weekly maintenance should include checking the mandrel and wiping the oil and grime from the surface and then relubricating it with a light film of oil.

Re-lubricate the Main Bearing via a grease fitting on the Headstock.

Re-lubricate the Main Gear via a grease fitting on the Main Housing.

TIGHTEN THE FRONT BUSHING

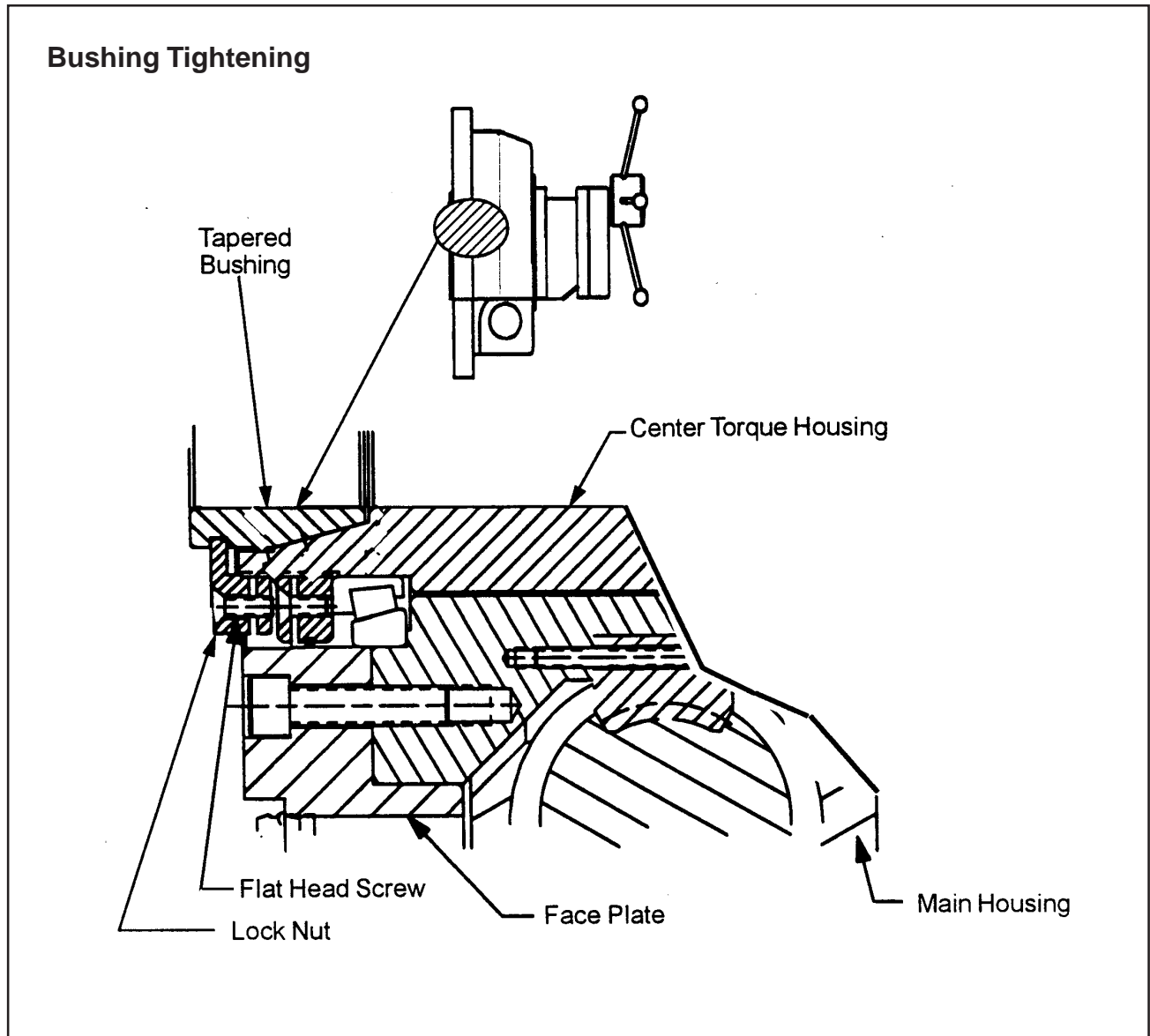
Rotate the feed handle to extend the mandrel outward to the limit line.

Remove the tool modules from the headstock to provide working room for using the spanner wrench during the locknut loosening.

Loosen the two (2) flat head screws in the locknut on the front of the headstock.

Tighten the first lock nut on the front of the center torque housing.

Tighten the two (2) flat head screws in the lock nut.



STORAGE AND TORQUE SPECIFICATIONS

Remove the tool bits from the tool holders before storing the machine.

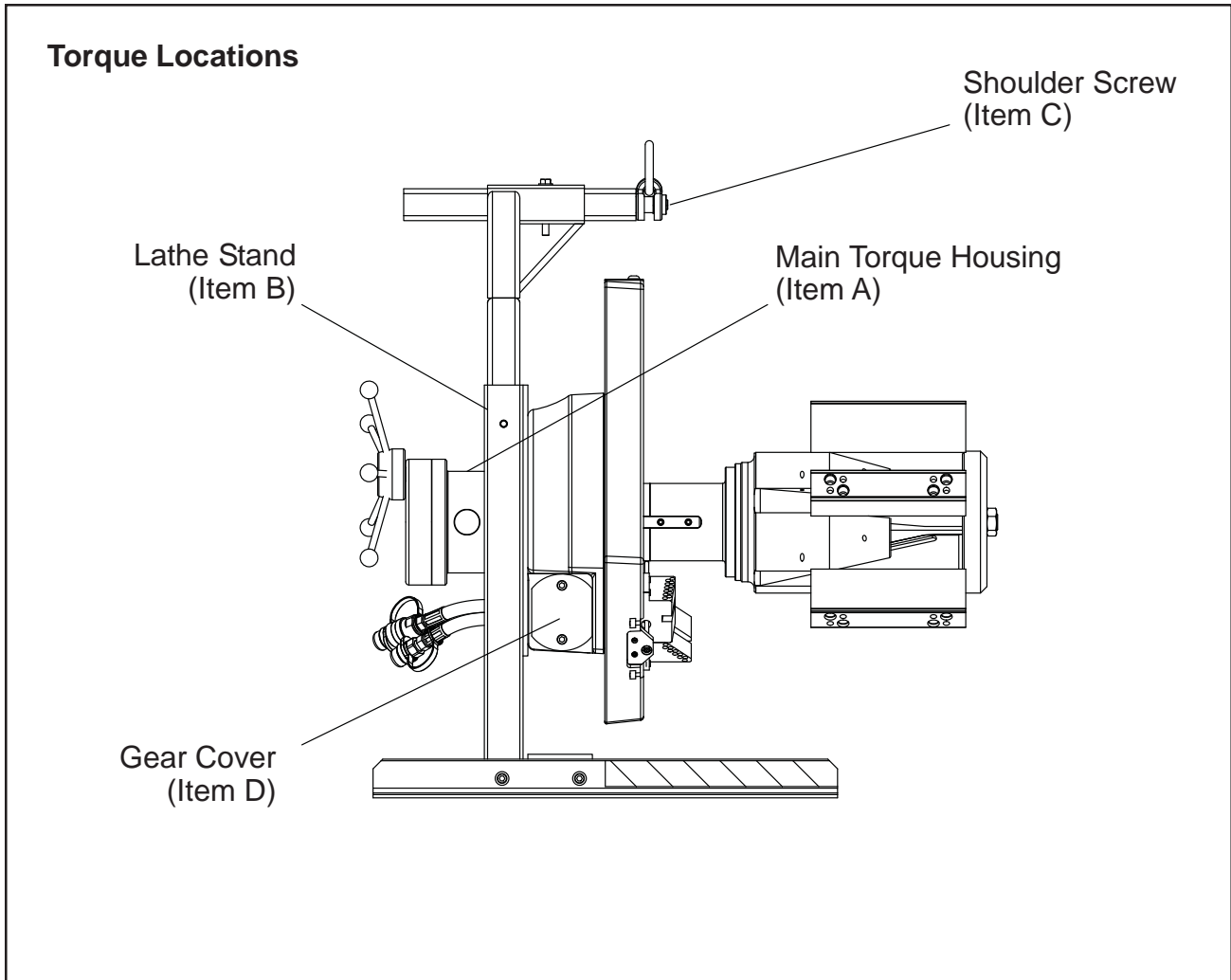
If the Model 236B is to be stored or if it will remain out of service for a significant period of time, 30 days or more, it should be thoroughly cleaned, lubricated and sprayed with a rust preventative prior to storage.

The twelve (12) cap screws that hold the main torque housing (Item A) to the main housing are to be torqued to 80 ft-lbs (108 N m).

The four (4) cap screws that hold the 236B BEVELMASTER™ to the lathe stand (Item B) are to be torqued to 100 ft-lbs (136 N m).

The shoulder screw (Item C) holding the hoist ring to the lifting bracket is to be torqued at 25 ft-lbs (34 N m).

There are eight (8) cap screws that hold each gear cover (Item D) onto the main housing. They are torqued to 50 ft-lbs (68 N m).



LUBRICATION

The drive gears require a grease such as “Chevron Ultra-Duty grease EP NLGI 2” (P/N 68-0024).

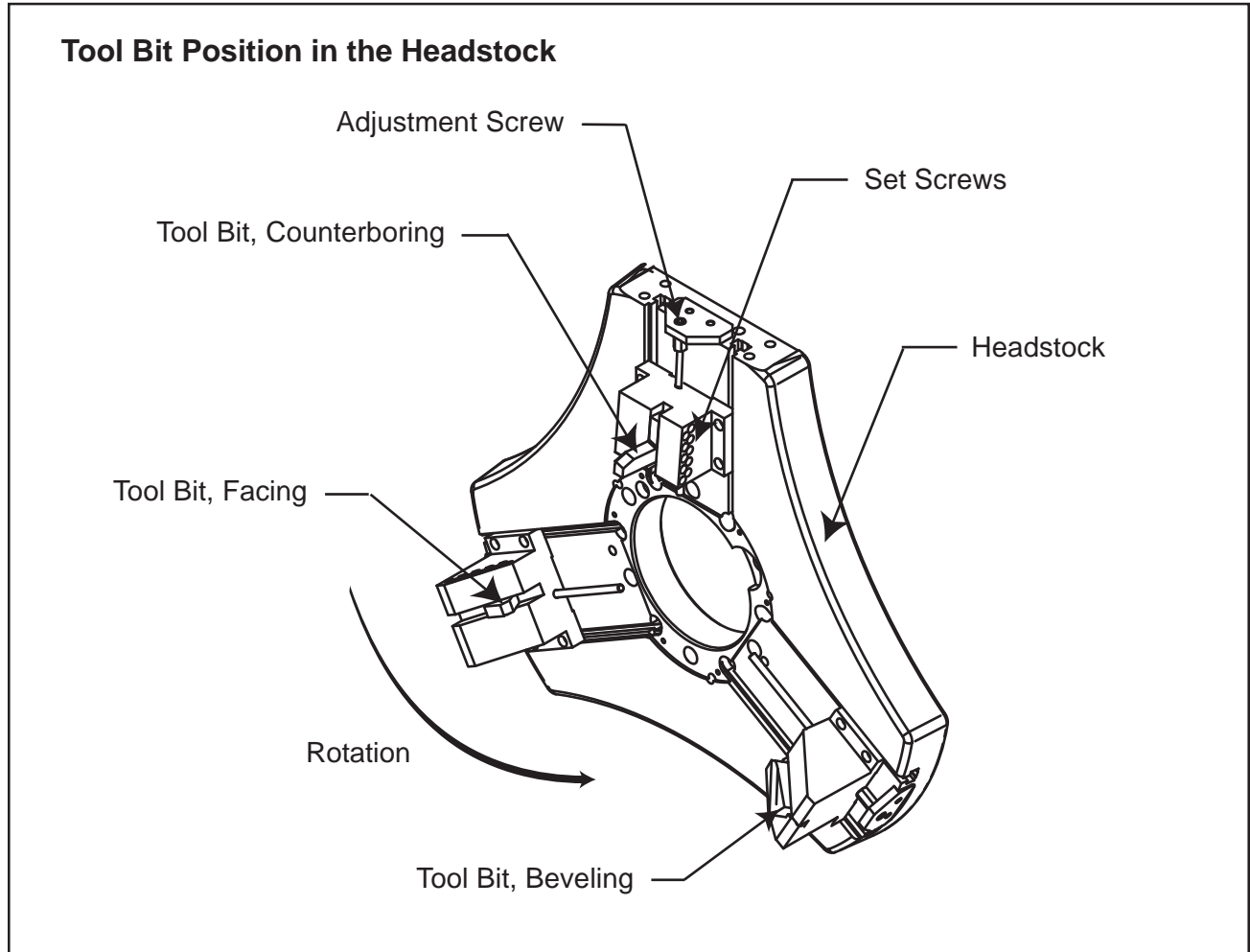
The slide rails and tool blocks require a light oil such as SAE 10 light machine oil.

NOTE:

A light film of all purpose grease may be used, but it must be checked for grit contamination frequently.

The bearings in the hydraulic motor(s) are sealed and do not require any lubrication.

OPERATION



PREPARATION

Read the operating instructions carefully before attempting to operate the Model 236B BEVELMASTER™.

Use eye protection at all times when operating the Model 236B.

TOOL HOLDERS

The Tool Holders may be positioned in various locations on the Headstock in order to accommodate any particular pipe size and prep geometry.

TOOL BLOCK SET

In general the Counterbore Tool Block should lead the Bevel Tool Block.

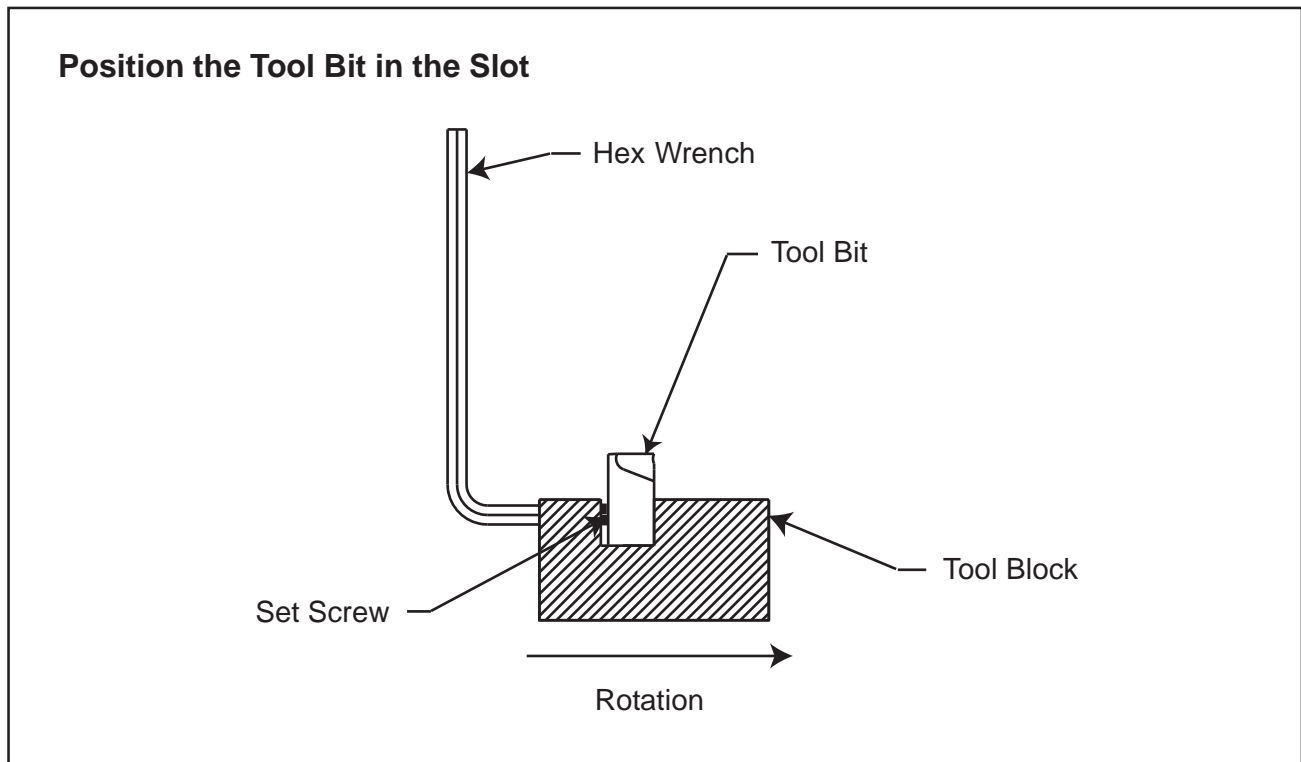
INSTALLATION OF THE TOOL BITS

To select the appropriate Tool Bits refer to the 'Tool Bits' section of this manual to help with your choice.

CAUTION:

Use of a dull Tool Bit(s) or Tool Bit(s) not manufactured by TRI TOOL Inc. may result in poor performance and may constitute abuse of this machine and therefore voids the TRI TOOL Inc. factory warranty.

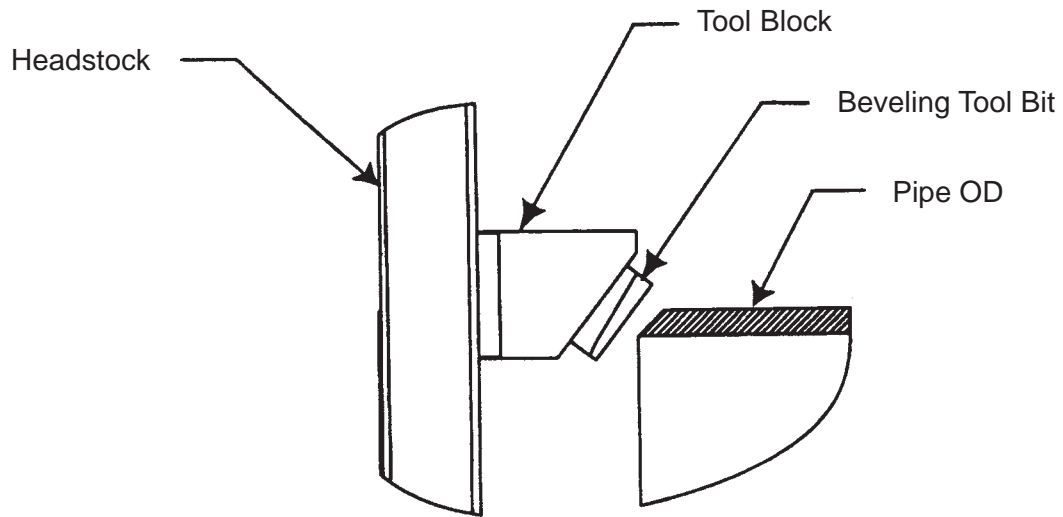
The three (3) Tool Blocks have been optimized for the various operations and to reduce Tool Bit wear, thus the Tool Bit(s) must be installed in the correct Tool Block(s).



Be sure that the Tool Bit(s) sits flush against the Slot and then tighten the Locking Set Screws.

Be sure that the cutting edge of the Beveling Tool Bit is along the Radial Centerline of the Headstock, advance into the cut.

The Bevel/Face Tool Block with a Beveling Tool Bit Installed

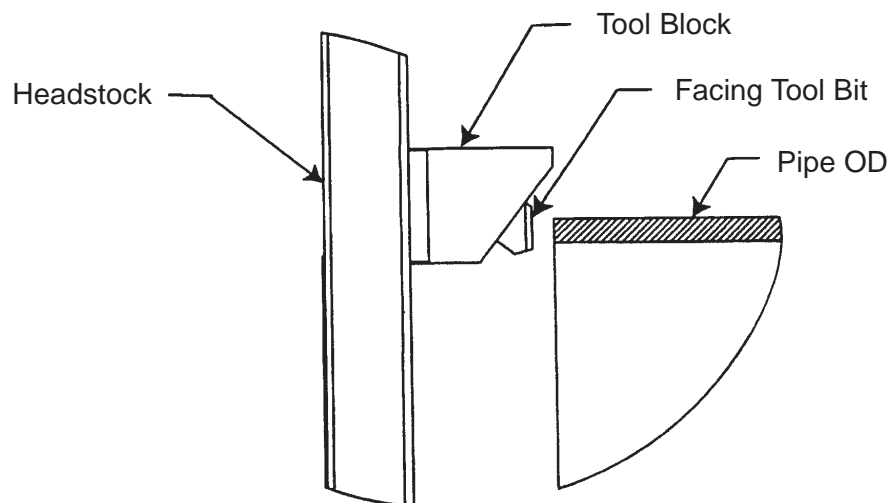


BEVEL/FACE TOOL BLOCK

The Bevel/Face Tool Block is designed with a 37.5° angle so that a Straight Tool Bit may be used for beveling and so that when using the 37.5° Facing Tool Bit, the Tool Bit height is adjustable.

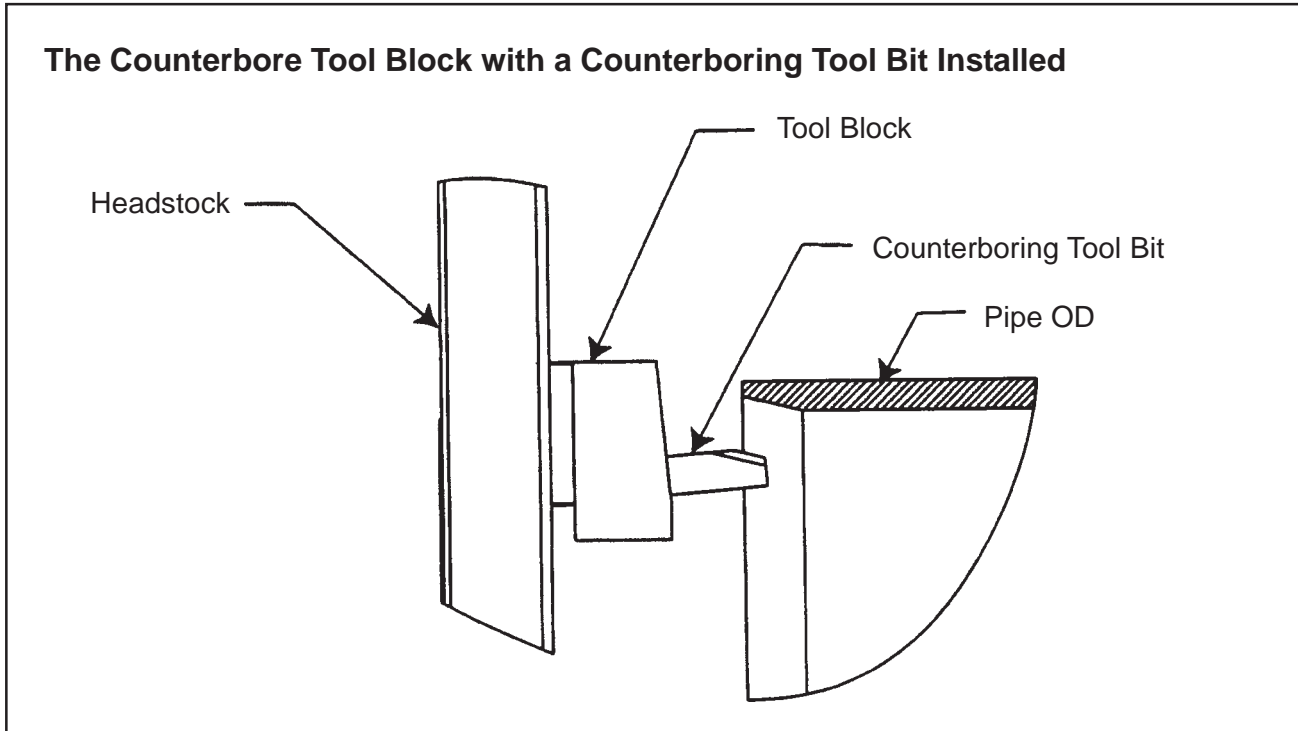
Compound Bevel Tool Bits, or J-Bevel Tool Bits, if used, should also be installed in these Tool Block's.

The Bevel/Face Tool Block with a Facing Tool Bit Installed



COUNTERBORE TOOL BLOCK

The Counterbore Tool Block is designed with a 5° back angle to provide Tool Bit clearance.



INSTALL JAW BLOCKS

To select the proper Jaw Blocks, refer to the 'Jaw Blocks, Ramps and Spacers' section on this manual to help with your choice.

Set the Jaw Blocks into the Ramp Blocks and tighten them.

If the Jaw Blocks do not fit smoothly, check for burrs and remove them with a file.

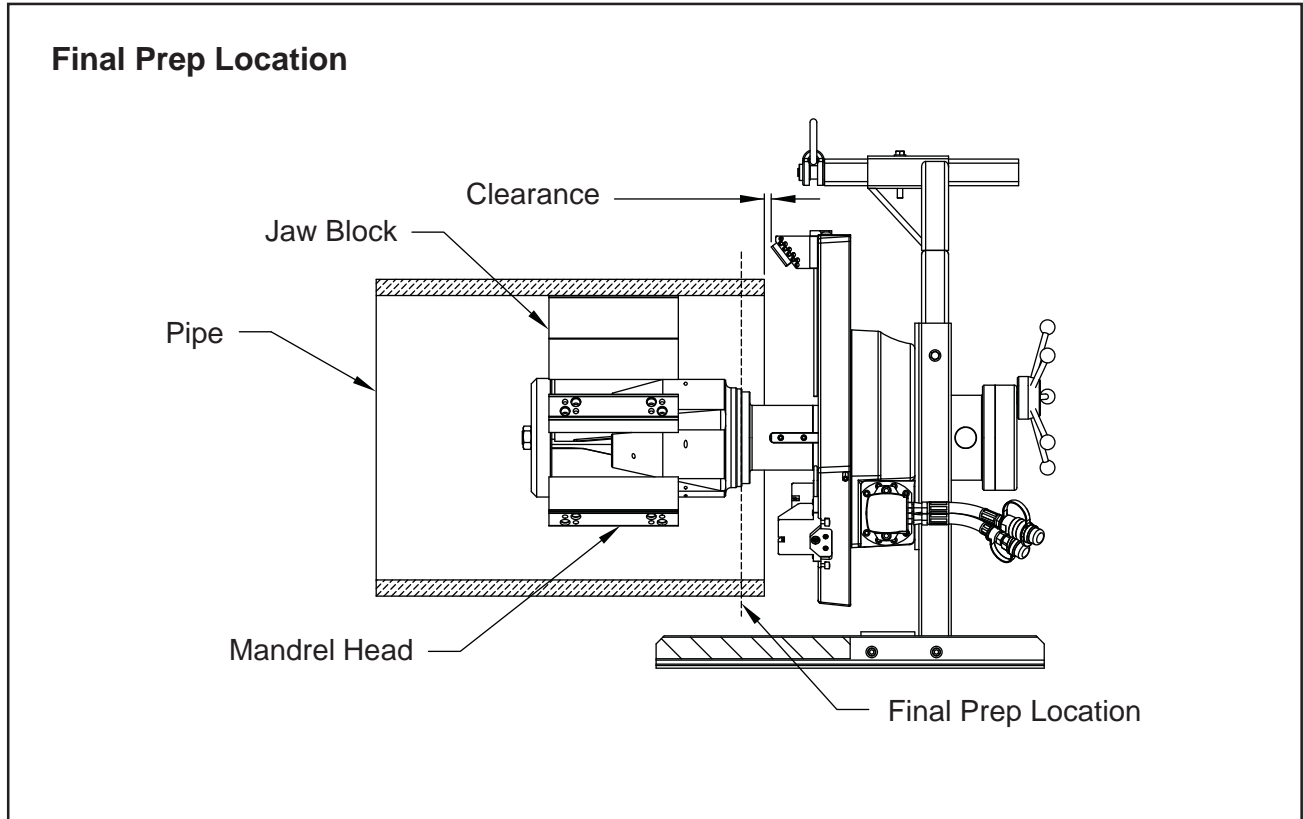
Install the machine into the pipe.

NOTE:

In order to avoid cutting the Jaw Blocks with the tool bits during the machining operation, the Jaw Blocks on the Mandrel Head must be installed beyond the final end preparation location.

Tighten the Draw Rod clockwise to force the Jaw Blocks out against the inside diameter of the pipe.

Verify a minimum clearance of 1/8" (3 mm) between the Tool Bit(s) and the pipe face as held by the Mandrel.



Attach the proper supply line to the Drive Motor.

NOTE:

When using an Air Motor, use an adequate in line Filter, Regulator, Lubricator, (FRL).

Turn the power on.

Adjust the cutting speed by opening the Flow Control Valve at the Power Supply connection.

Rotate the Feed Knob clockwise to bring the Headstock and pipe closer together.

CAUTION:

The actual machining operation will begin when the first Tool Bit makes contact with the pipe.

If the pipe end is not square with the pipe axis, the Tool Bit will contact only a small segment of the pipe during each revolution.

To avoid Tool Bit damage, the feed rate should be very slow until the Tool Bit has contacted the pipe continually for at least one full revolution.

Continue rotating the Feed Knob clockwise until the end of the pipe is completely machined.

Discontinue feed and allow the Headstock to rotate one (1) to three (3) revolutions at low rpm to improve the finish of the prep surface.

Rotate the Feed Knob counterclockwise to separate the Headstock from the pipe.

Turn the Hydraulic Motor off to stop the Headstock rotation.

Loosen the Draw Nut on the Mandrel counter-clockwise to release the pipe.

Remove the machine from the pipe.

Check to see if any of the Tool Bits are dull or broken.

Damage or worn Tool Bits are evidenced by increased feed pressure, visual observations, poor surface finish, etc.

MANDREL STOP

With the Mandrel Stops installed the feed cannot be retracted to the point of disengaging from the threads.

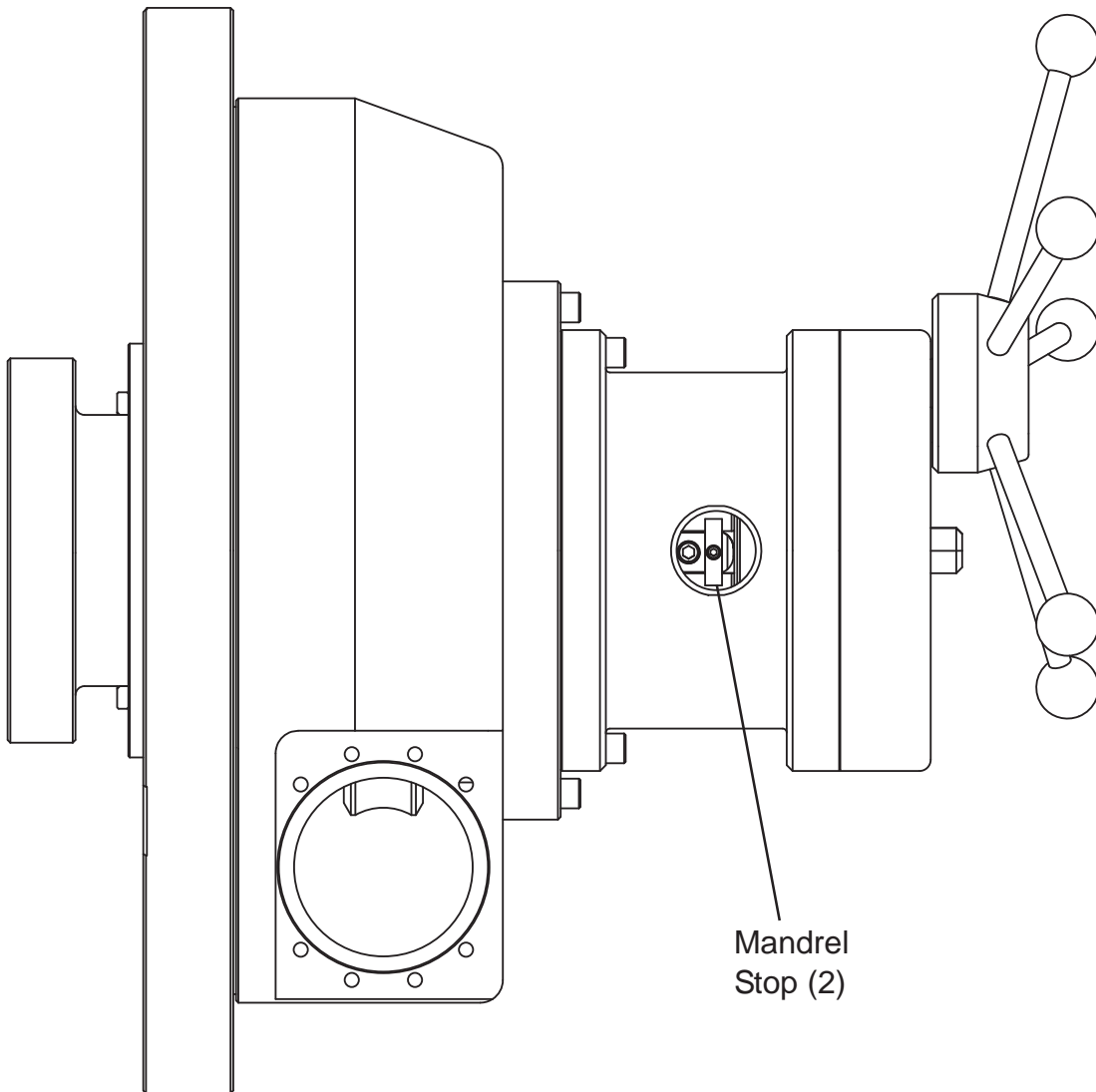
When installing the Machine and the Mandrel as a unit, the Mandrel Stops are installed in the Mandrel before the Mandrel has been secured in the pipe.

CAUTION: Do Not Operate Machine without Mandrel Stops installed.

When the mandrel is to be pre-installed by itself, the Mandrel Stops are installed after the Machine has been fitted over the Mandrel.

The Mandrel feed travel 5.50" (139.7 mm) is not limited by the Mandrel Stops.

Mandrel Stop Location



CUTTING SPEEDS

Pipe Size	True Dia		RPM for 200 in/min (5080 mm/min)	RPM for 250 in/min (6350 mm/min)	RPM for 300 in/min (7620 mm/min)
36"	36.00"	914.4 mm	2	2	3
34"	34.00"	863.6 mm	2	2	3
32"	32.00"	812.8 mm	2	3	3
30"	30.00"	762.0 mm	2	3	3
28"	28.00"	711.2 mm	2	3	3
26"	26.00"	660.4 mm	2	3	4
24"	24.00"	609.6 mm	3	3	4
22"	22.00"	558.8 mm	3	4	4
20"	20.00"	508.0 mm	3	4	5
18"	18.00"	457.2 mm	4	4	5
16"	16.00"	406.4 mm	4	5	6
14"	14.00"	355.6 mm	5	6	7
12"	12.75"	323.9 mm	5	6	7
Cutting Speed (approximately)					

Use 200 surface inches per minute (5080 surface millimeters per minute) for:

Stainless steels in general when no coolant is allowed, all heavy-wall tube and some of the chrome/molybdenum steels.

Use 250 surface inches per minute (6350 surface millimeters per minute) for:

Mild Steels and some thin-wall stainless steels when coolants are permitted and applied.

Use 300 surface inches per minute (7620 surface millimeters per minute) for:

Aluminum and some thin-wall mild steel and tube with coolants.

**STANDARD
JAW BLOCKS, RAMPS AND SPACERS
(12" THROUGH 36" PIPE)**

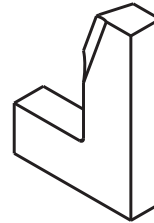
ID Mounting Range	Standard Ramp (5 Req'd)	Adapter (5 Req'd)	Jaw Block (5 Req'd)	Adapter (5 Req'd)
11.433" thru 13.798" (290.4 mm thru 350.5 mm)	48-0973	---	---	---
12.021" thru 14.471" (305.3 mm thru 367.6 mm)	48-0973	---	08-0388	---
14.360" thru 16.823" (364.7 mm thru 427.3 mm)	48-0973	---	08-0389	---
16.712" thru 19.083" (424.5 mm thru 484.7 mm)	48-0973	---	08-0390	---
19.070" thru 21.546" (484.3 mm thru 547.3 mm)	48-0973	---	08-0391	---
21.433" thru 23.913" (544.4 mm thru 607.4 mm)	48-0973	---	08-0392	---
23.800" thru 26.283" (604.5 mm thru 667.6 mm)	48-0973	---	08-0854	---
26.169" thru 28.654" (664.7 mm thru 727.8 mm)	48-0973	08-0393	08-0390	---
28.540 thru 31.026" (724.9 mm thru 788.1 mm)	48-0973	08-0393	08-0391	---
30.912" thru 33.400" (785.2 mm thru 848.3 mm)	48-0973	08-0393	08-0392	---
33.286" thru 35.774" (845.5 mm thru 908.6 mm)	48-0973	08-0393	08-0854	---
Standard Jaw Block Assembly Ranges				

**EXTENSION KIT
JAW BLOCKS, RAMPS AND SPACERS
(36" THROUGH 60" PIPE)**

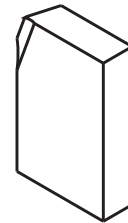
ID Mounting Range	Standard Ramp (5 Req'd)	Adapter (5 Req'd)	Jaw Block (5 Req'd)	Adapter (5 Req'd)
35.650" thru 38.229" (905.5 thru 971.0 mm)	48-0973	08-0552	08-0388	---
38.025" thru 40.514" (965.8 mm thru 1029.1 mm)	48-0973	08-0552	08-0389	---
40.400" thru 42.891" (1026.2 mm thru 1089.4 mm)	48-0973	08-0552	08-0390	---
42.777" thru 45.267" (1086.5 mm thru 1149.8 mm)	48-0973	08-0552	08-0391	---
45.153" thru 47.644" (1146.9 mm thru 1210.2 mm)	48-0973	08-0552	08-0392	---
47.530" thru 50.021" (1207.3 mm thru 1270.5 mm)	48-0973	08-0552	08-0854	---
49.907" thru 52.399" (1267.6 mm thru 1330.9 mm)	48-0973	08-0552	08-0390	08-0393
52.284" thru 54.776" (1328.0 mm thru 1391.3 mm)	48-0973	08-0552	08-0391	08-0393
54.662" thru 57.154" (1388.4 mm thru 1451.7 mm)	48-0973	08-0552	08-0392	08-0393
57.000" thru 59.532" (1447.8 mm thru 1512.1 mm)	48-0973	08-0552	08-0854	08-0393
Extension Kit Jaw Block Assembly Ranges				

TOOL BITS

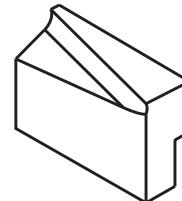
Tool Bit, Counterbore, 4:1
(P/N 99-1939)
8.50" to 24.00"
(216.0mm to 609.6mm) DIA Range



Tool Bit, Counterbore, 4:1
(P/N 99-2090)
24.00" to 42.00"
(609.6mm to 1066.8mm) DIA Range



Tool Bit, Beveling, 37.5°
(P/N 99-0009)



Tool Bit, Facing
(P/N 99-0016)



Tool Bits for special applications are quoted upon request.

TROUBLE SHOOTING

Problem: The Tool Bit Chatters

The tool bit is loose or overextended.
The tool bit is damaged.
The tool holder is too loose in the slides.
The cutting speed is too fast.
The clamping pads are loose on the pipe or tube.
Cutting fluid is required.
The main bearing pre-load is loose.

Problem: There is excessive Tool Bit wear

The pipe or tube material is too hard or abrasive.
The cutting speed is too fast.
Cutting fluid is required.
A dull Tool Bit is causing surface hardening conditions (Stainless pipe or tubing).
There is scale or other foreign matter on the pipe or tube, which is dulling the tool bit at the start of the cut.
The tool bit is incorrect for the material being cut.

Problem: The surface finish is rough

The tool bit is dull, chipped, etc.
Metal build-up on the cutting edge of the tool bit is creating a false cutting edge.
Cutting fluid is required.

Problem: The tool holder is not feeding

The feed pin is broken or out of position.
The feed sprocket shear pin is broken.
The feed screw is stripped.
The feed nut is stripped.
The slide rails are too tight.

Problem: There is a loss of air power

The air supply pressure is too low.
The air filter is plugged.
The air line size is insufficient.
The air line is too long.

Problem: There is a loss of hydraulic power

The hydraulic supply pressure is too low.
The hydraulic filter is plugged.
The hydraulic line size is insufficient.
The hydraulic line is too long.

Problem: The tool bit will not reach the work

Incorrect tool blocks are installed for the size of the pipe or tube being worked on.
Incorrect tool bit is installed.

Problem: The hydraulic motor will not start

The hydraulic power supply is shut off.
The hydraulic motor is damaged and will not run free.

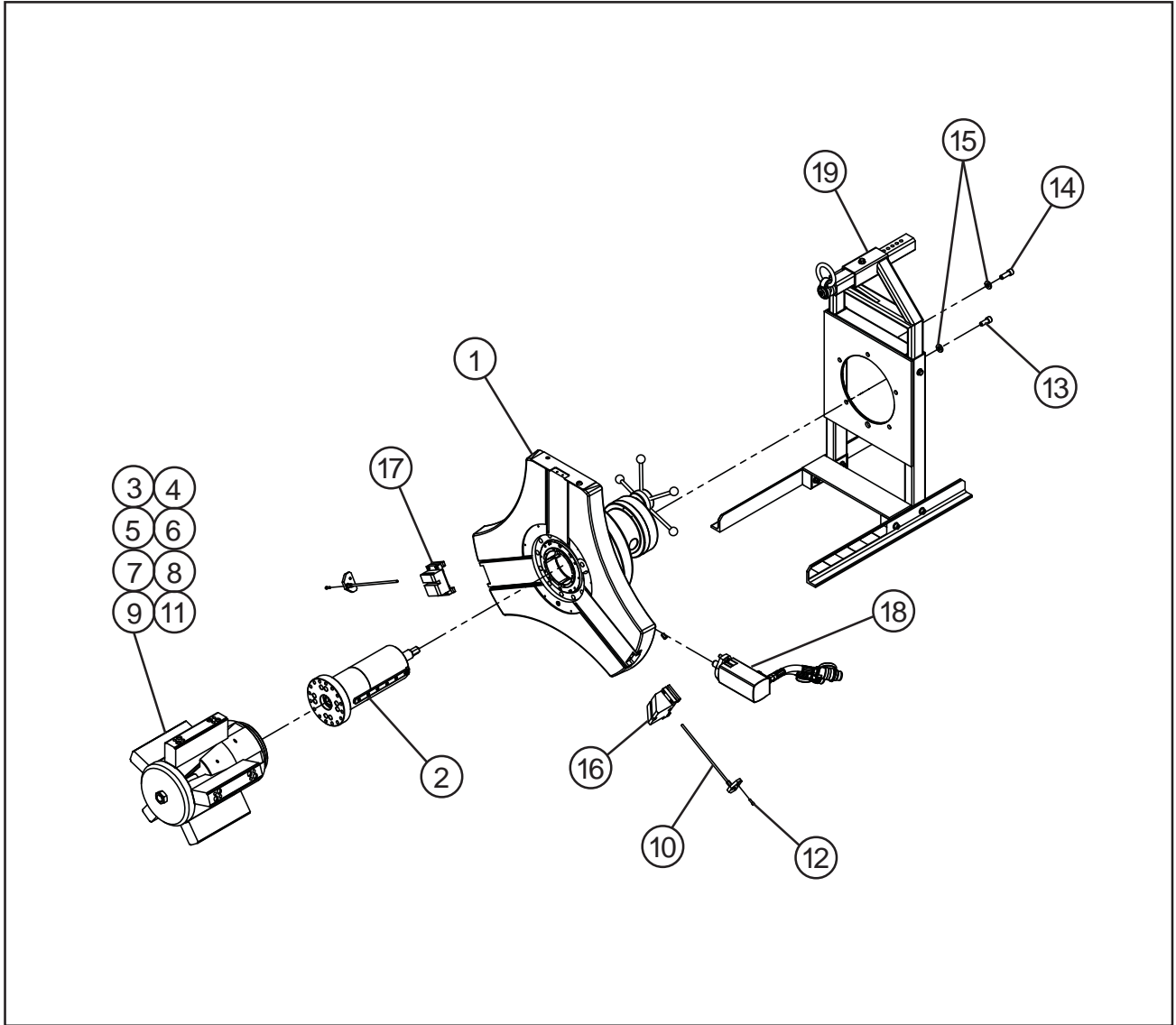
ACCESSORIES

The following accessories are recommended for use with the Model 236B BEVELMASTER™ and are available from TRI TOOL INC.

1. Single Point Module Kit
2. I.D. Tracking Module Kit
3. Miter Mandrel Head Kit
4. Jaw Block Extension Kit (36" - 60")
5. Miter Mandrel Extension Kit (36" - 60")
6. Model 765RVC Hydraulic Power Supply.

ILLUSTRATED PARTS BREAKDOWN

MODEL 236B BEVELMASTER™ (P/N 01-1850)

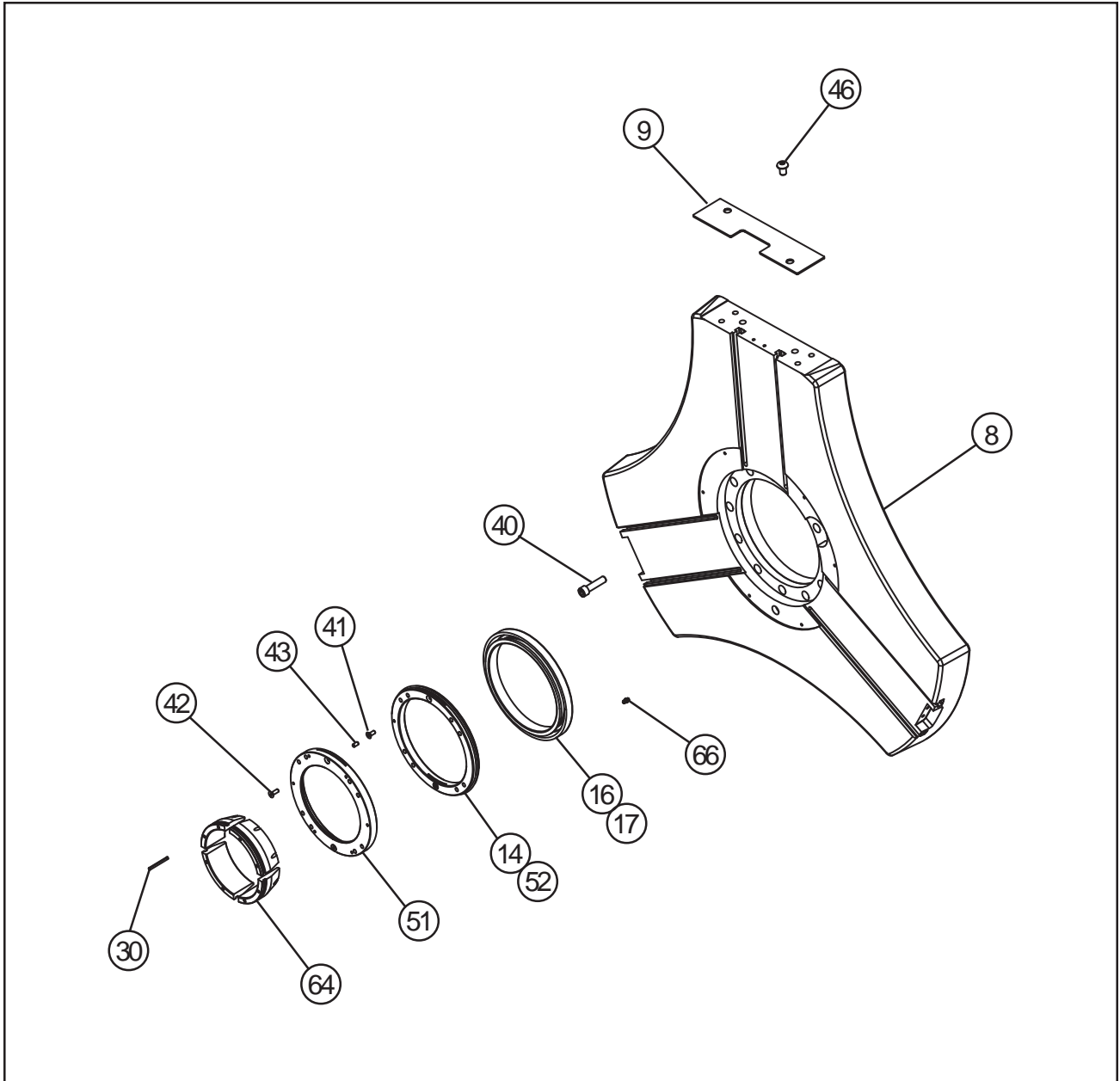


TRI TOOL INC.

Parts List, Model 236B BEVELMASTER™ (P/N 01-1850)

Item No.	Part No.	Description	Qty
1.	02-2395	MODEL 236B SUB-ASSEMBLY	1
2.	06-0432	MANDREL ASSEMBLY	1
3.	08-0388	BLOCK SET, JAW, .400"/10.2 mm	5
4.	08-0389	BLOCK ASSEMBLY, JAW, 1.590"/40.4 mm	5
5.	08-0390	BLOCK ASSEMBLY, JAW, 2.780"/70.6 mm	5
6.	08-0391	BLOCK ASSEMBLY, JAW 3.970"/100.8 mm	5
7.	08-0392	BLOCK ASSEMBLY, JAW, 5.160"/131.1 mm	5
8.	08-0393	BLOCK ASSEMBLY, ADAPTER	5
9.	08-0854	BLOCK ASSEMBLY, JAW, 6.350/161.3 mm	5
10.	14-0108	ROD ASSEMBLY, ADJUST	3
11.	21-0518	HEAD ASSEMBLY, MANDREL, 5 JAW	1
12.	33-0040	SCREW, CAP, 1/4-20 X 3/4"	6
13.	33-0126	SCREW, CAP, 5/8-11 X 1 1/2"	2
14.	33-0127	SCREW, CAP, 5/8-11 X 1 3/4"	3
15.	34-0320	WASHER, HRDND, 5/8" I.D.	5
16.	49-0394	TOOL HOLDER ASSEMBLY, BEVEL/FACE	2
17.	49-0395	TOOL HOLDER ASSEMBLY, C'BORE	1
18.	56-0061	MOTOR ASSEMBLY, HYDRAULIC	1
19.	60-0099	LATHE STAND, ASSEMBLY	1
NOT SHOWN			
	05-1316	WRENCH KIT	1

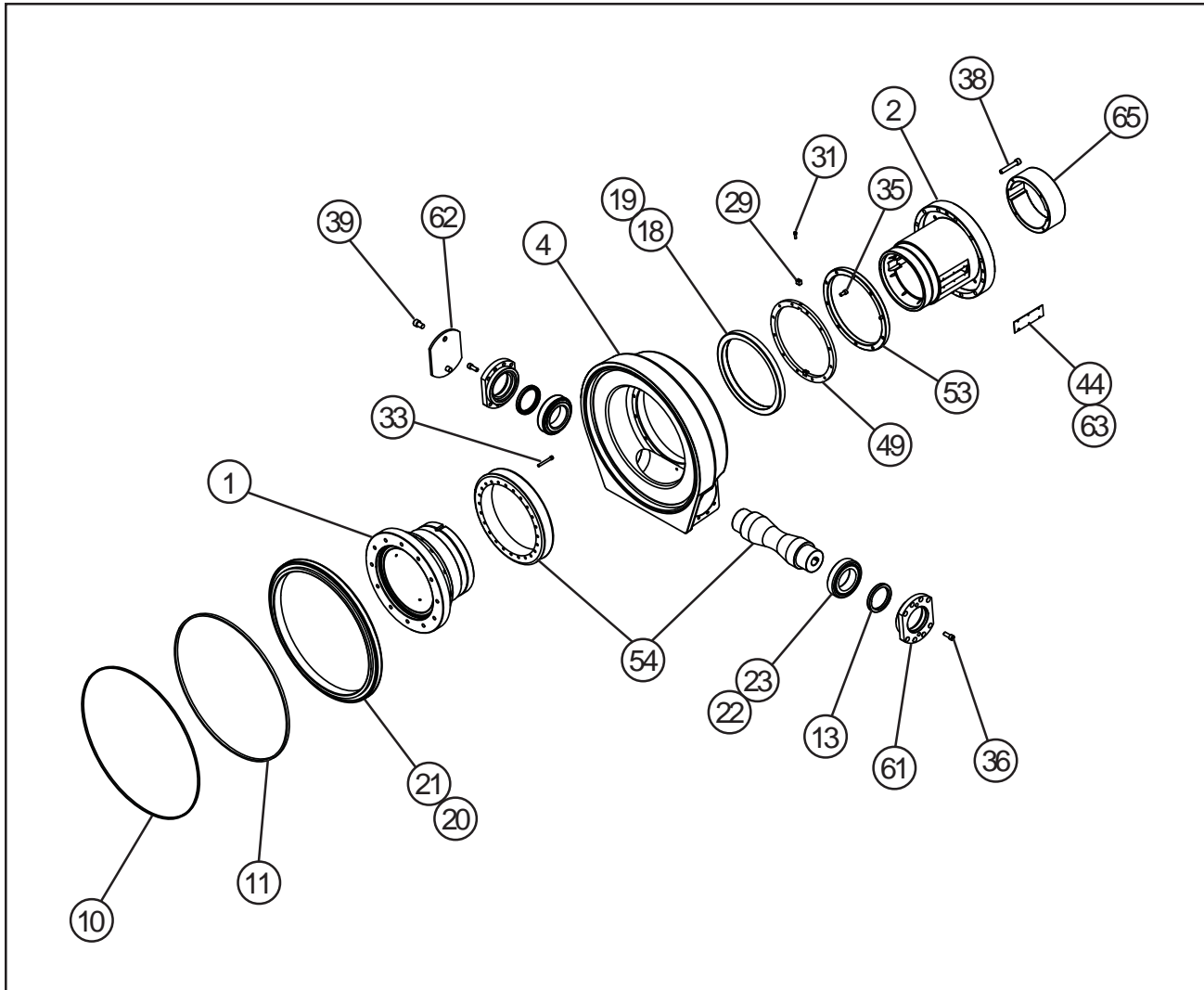
MODEL 236B SUB-ASSEMBLY 1 of 3 (P/N 02-2395)



Parts List, Model 236B Sub-Assembly (P/N 02-2395)

Item No.	Part No.	Description	Qty
1.	19-0843	HOUSING, SHAFT	1
2.	19-0844	HOUSING, MAIN TORQUE	1
3.	19-0845	HOUSING, FEED 230B	1
4.	19-1193	HOUSING, MAIN, 236B	1

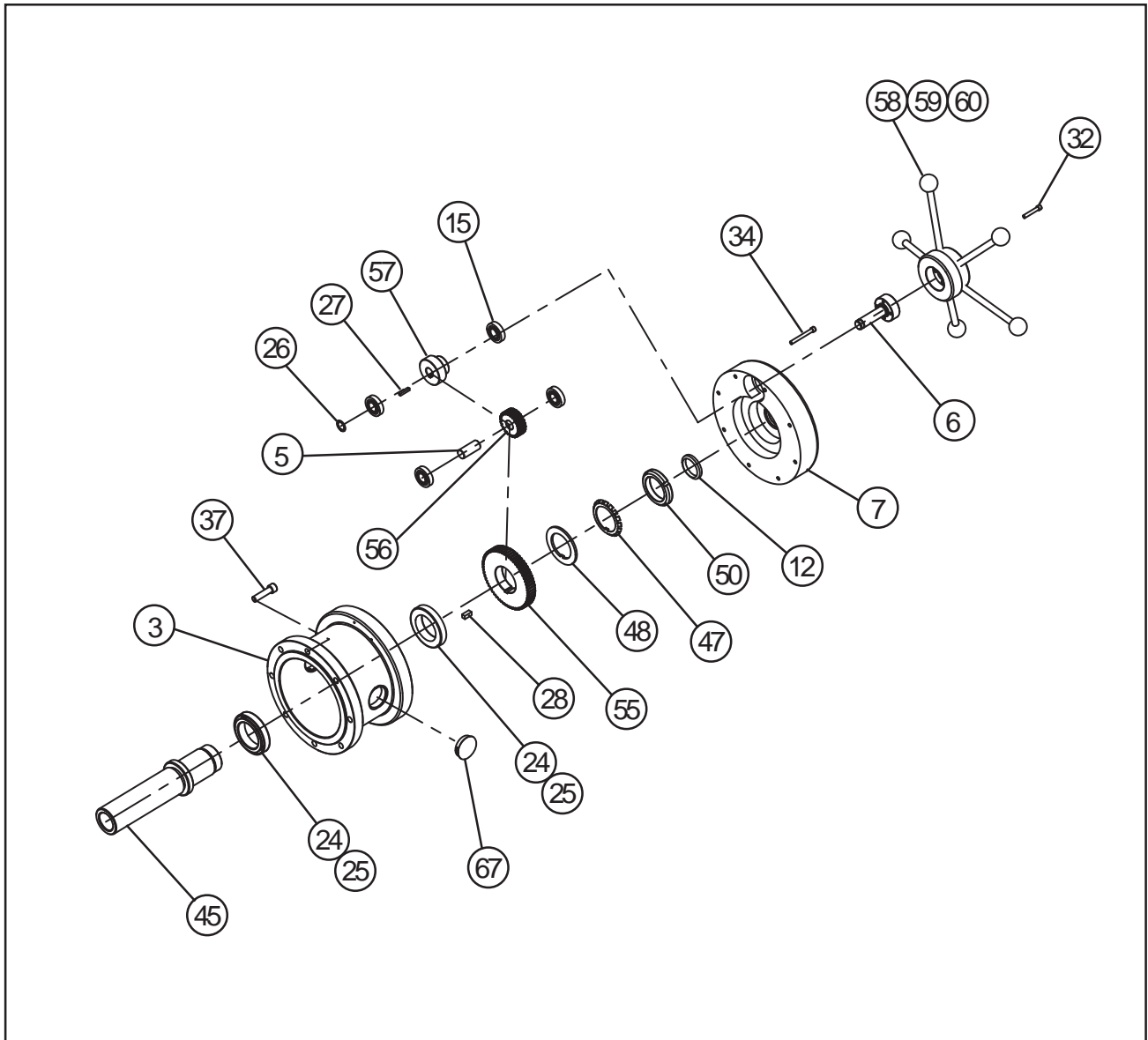
MODEL 236B SUB-ASSEMBLY 2 of 3 (P/N 02-2395)



Parts List, Model 236B Sub-Assembly (P/N 02-2395) Continued

Item No.	Part No.	Description	Qty
5.	20-0628	SHAFT	1
6.	20-0720	SHAFT, FEED	1
7.	24-1468	PLATE, COVER	1
8.	24-2692	PLATE, MAIN, 236B	1
9.	24-2702	PLATE, COVER	1
10.	28-0057	SEAL, FELT, 1/8" X 3/16" X BULK	62
11.	28-0176	SEAL, EXTRUDED 3/16" X BULK	62
12.	28-0176	SEAL, EXTRUDED 3/16" X BULK	7

MODEL 236B SUB-ASSEMBLY 3 of 3 (P/N 02-2395)



Parts List, Model 236B Sub-Assembly (P/N 02-2395) Continued

Item No.	Part No.	Description	Qty
13.	28-0254	SEAL, 2.750" ID X 3.500" OD X .375"	2
14.	28-0262	O-RING, 7.734" ID X .139" W	1
15.	29-0020	BRG, BALL, 3/4 X 1 5/8 X 7/16	4
16.	29-0337	RG, TAPERED CONE, 7.75" ID X .906	1
17.	29-0338	RG, TAPERED CUP, 9.50" OD X .688"	1
18.	29-0339	RG, TAPER CONE, 9.125" ID X .847"	1

TRI TOOL INC.

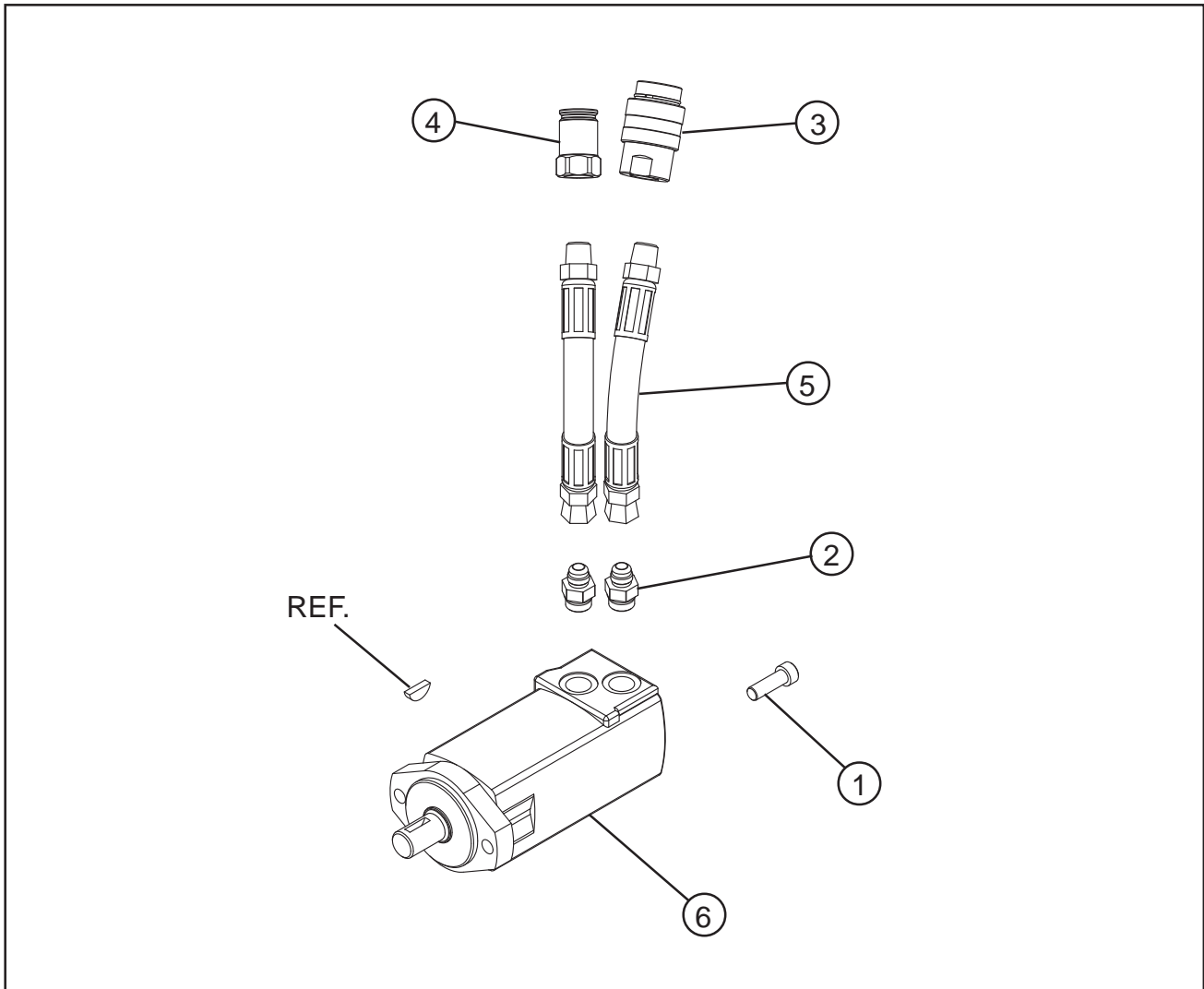
Parts List, Model 236B Sub-Assembly (P/N 02-2395) Continued

Item No.	Part No.	Description	Qty
19.	29-0340	RG, TAPER CUP, 10.563" OD X .728"	1
20.	29-0341	RG, TAPER CONE, 15.875" ID X 1.125"	1
21.	29-0342	RG, TAPER CUP, 18.125" OD X .813"	1
22.	29-0343	BRG, TAPERED CONE, 2.75" ID X 1.188"	2
23.	29-0344	BRG, TAPERED CUP, 4.625" OD X .938	2
24.	29-0346	BRG, TAPERED CONE, 2.25" ID X .719"	2
25.	29-0347	BRG, TAPERED CUP, 3.438" OD X .563"	2
26.	30-0060	RING, RETAIN, EXT, 3/4" OD	1
27.	31-0054	KEY, 3/16" SQ X .985", BES	1
28.	31-0161	KEY, 5/16" SQ X .725"	1
29.	31-0183	KEY	2
30.	32-0046	PIN, ROLL, 3/16" DIA X 2"	8
31.	33-0029	SCREW, CAP, #10-24 X 5/8"	2
32.	33-0044	SCREW, CAP, 1/4-20 X 1 1/2"	4
33.	33-0046	SCREW, CAP, 1/4-20 X 2"	24
34.	33-0047	SCREW, CAP, 1/4-20 X 2 1/4"	8
35.	33-0053	SCREW, CAP, 5/16-18 X 5/8"	2
36.	33-0071	SCREW, CAP, 3/8-16 X 1"	16
37.	33-0092	SCREW, CAP, 7/16-14 X 1 3/4"	8
38.	33-0095	SCREW, CAP, 7/16-14 X 2 1/2"	12
39.	33-0103	SCREW, CAP 1/2-13 X 3/4"	2
40.	33-0109	SCREW, CAP, 1/2-13 X 2"	12
41.	33-0360	SCREW, FLAT, 1/4-20 X 5/8"	2
42.	33-0361	SCREW, FLAT, 1/4-20 X 3/4"	2
43.	33-0503	SCREW, SET, 1/4-20 X 1/2" CUP PT	1
44.	33-1448	SCREW, BUTTON, #5-40 X 1/4"	12
45.	33-2124	SCREW, FEED, 2 1/4-12UN	1
46.	33-2191	SCREW, BUTTON, 1/2-13 X 3/4"	2
47.	34-0312	LOCKWASHER	1
48.	34-0313	WASHER, TONGUED	1
49.	34-0349	WASHER, LOCK	1
50.	35-0449	NUT, LOCK	1
51.	35-0501	NUT, LOCK	1

Parts List, Model 236B Sub-Assembly (P/N 02-2395) Continued

Item No.	Part No.	Description	Qty
52.	35-0502	NUT, LOCK	1
53.	35-0550	NUT, LOCK	1
54.	39-0795	WORM GEAR SET, 230B	1
55.	39-0796	GEAR, FEED, 60T	1
56.	39-0798	GEAR, IDLER, 24T	1
57.	39-0867	GEAR, PINION, 24T	1
58.	41-0131	HANDLE, FEED	5
59.	42-0017	KNOB, SPHERICAL, #1-3/8 DIA	5
60.	42-0185	KNOB, FEED	1
61.	43-0481	COVER, WORM GEAR	2
62.	43-0482	COVER, DUST	1
63.	43-0746	COVER, MAIN TORQUE HOUSING	2
64.	45-0257	BUSHING	1
65.	45-0303	BUSHING, REAR	1
66.	54-0375	FITTING, GREASE	2
67.	54-0554	PLUG, HOLD, #1-3/4 DIA	2

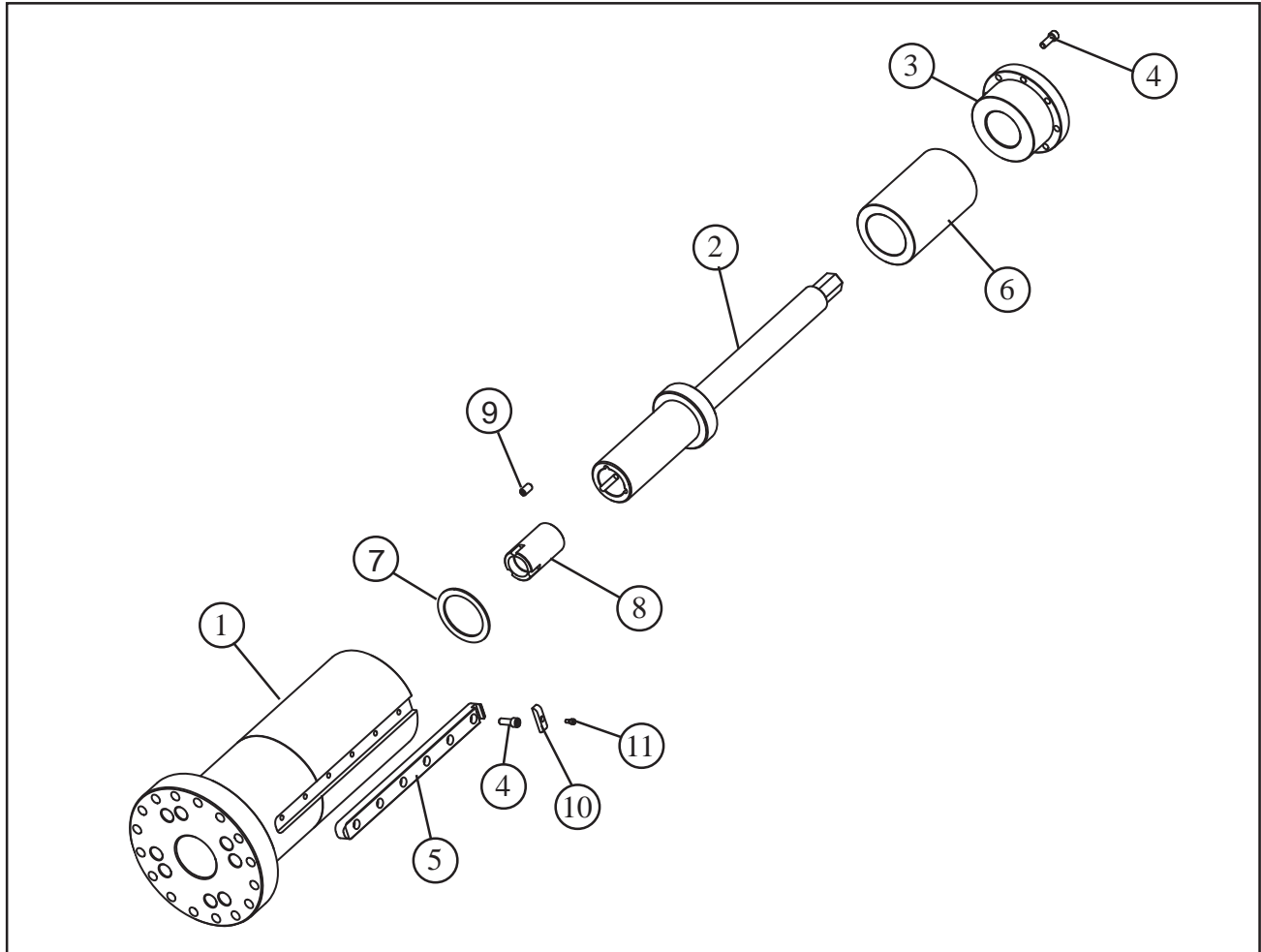
HYDRAULIC MOTOR ASSEMBLY (P/N 56-0061)



Parts List, Hydraulic Motor Assembly (P/N 56-0061)

Item No.	Part No.	Description	Qty
1.	33-0106	SCREW, CAP, 1/2-13 X 1 1/4"	2
2.	54-0002	ADAPTER	2
3.	54-0333	COUPLER, QD, HYD., DRIPLESS, FEMALE	1
4.	54-0334	COUPLER, QD, HYD., DRIPLESS, MALE	1
5.	55-0156	HOSE ASSEMBLY, HYDRAULIC	2
6.	56-0002	MOTOR, HYDRAULIC	1
REF.	31-0001	KEY, WOODRUFF, 1/4" X 1" DIA	1
NOT SHOWN			
	54-0335	DUST PLUG, DRIPLESS	2

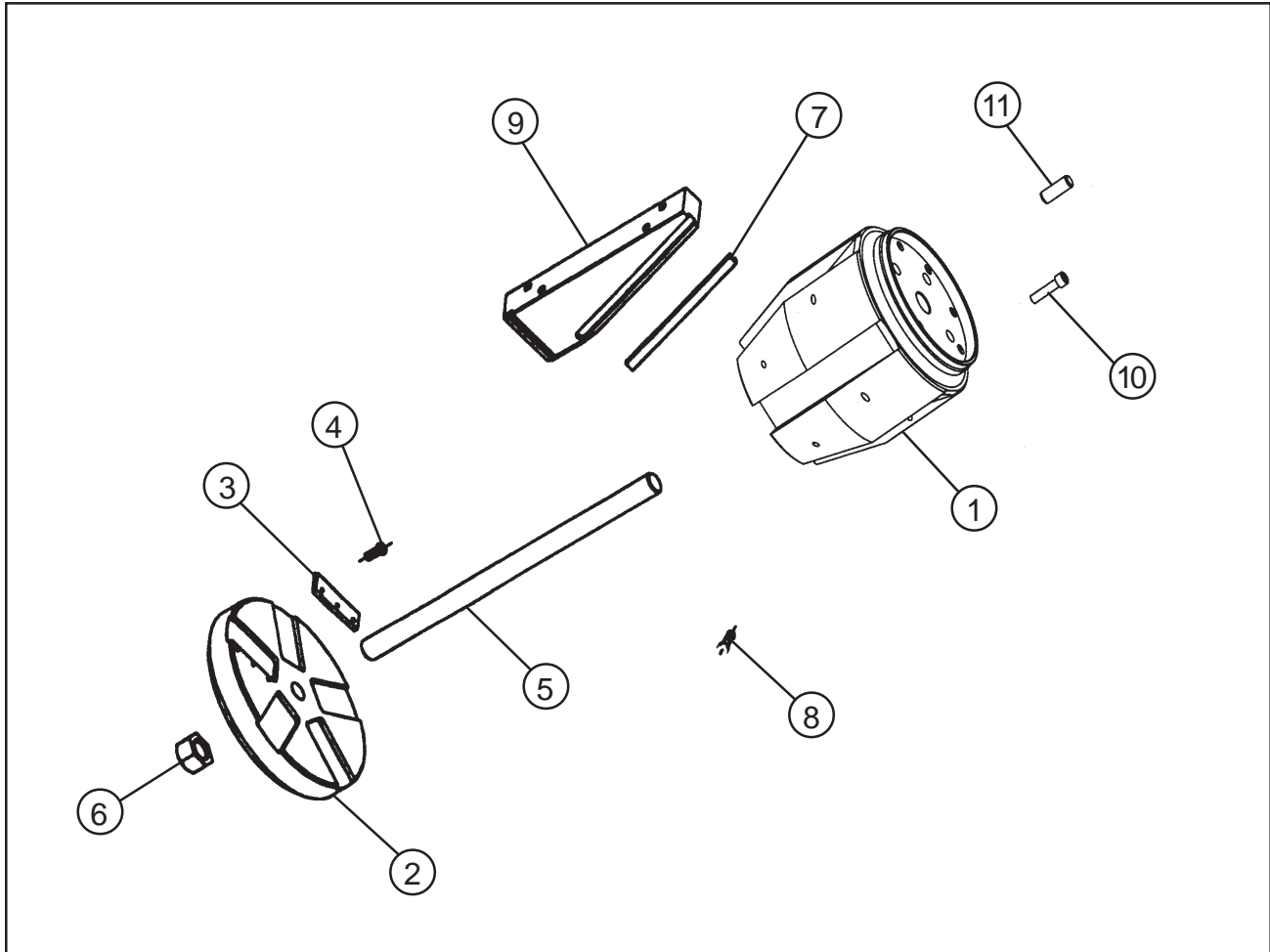
MANDREL ASSEMBLY (P/N 06-0432)



Parts List, Mandrel Assembly (P/N 06-0432)

Item No.	Part No.	Description	Qty
1.	13-0443	MANDREL	1
2.	20-0719	SHAFT, WRENCH	1
3.	35-0448	NUT, FEED	1
4.	33-0055	SCREW, CAP, 5/16-18 X 7/8"	20
5.	31-0160	KEY, MANDREL	2
6.	44-0502	SPACER	1
7.	34-0148	WASHER	1
8.	30-2935	INSERT, THREADED	1
9.	33-0531	SCREW, SET, 3/8-16 X 3/4"	3
10.	31-0219	KEY, MANDREL STOP	2
11.	33-2392	SCREW, MOD	2

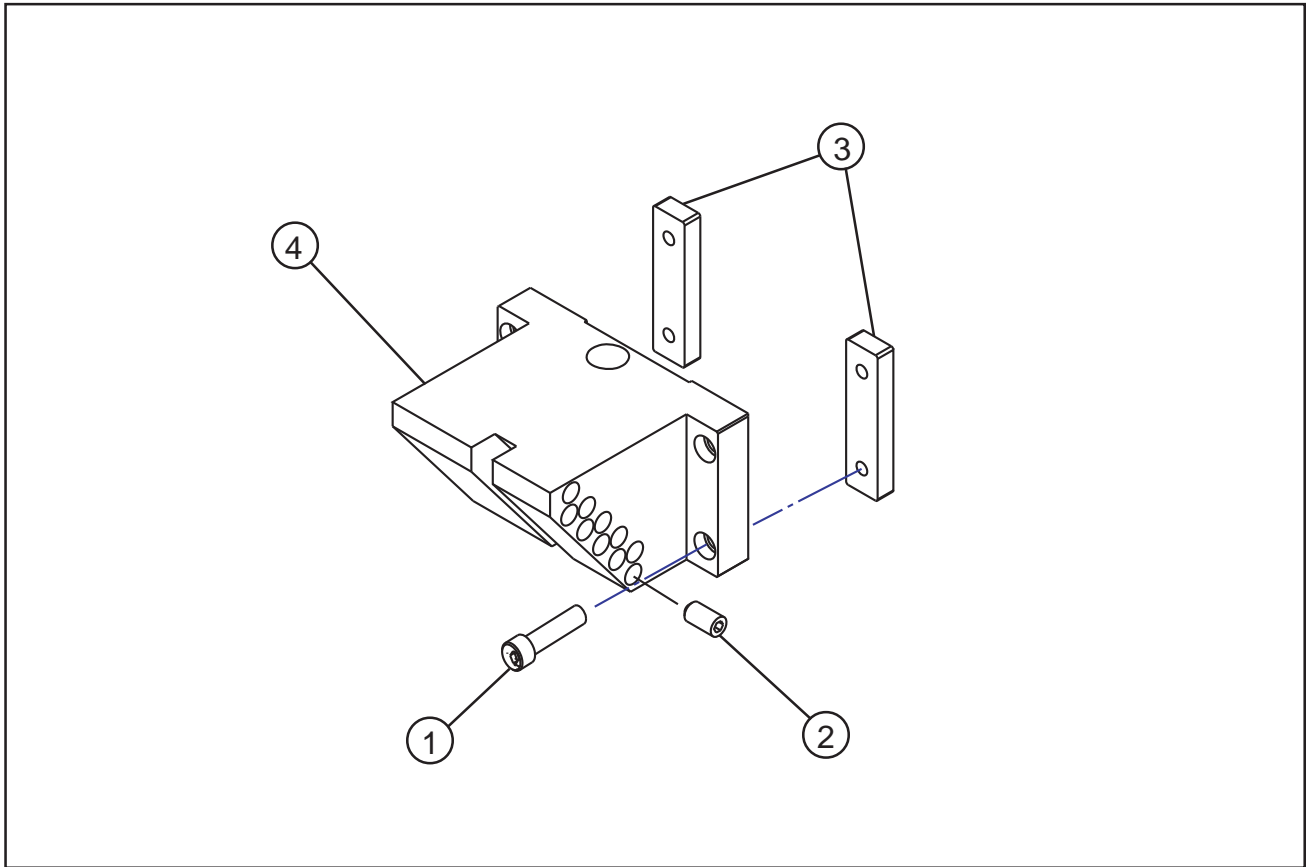
MANDREL HEAD ASSEMBLY (P/N 21-0518)



Parts List, Mandrel Head Assembly (P/N 21-0518)

Item No.	Part No.	Description	Qty
1.	21-0520	HEAD, MANDREL	1
2.	24-1621	PLATE, BUTT	1
3.	24-1465	PLATE, RETAINING	5
4.	33-0287	SCREW, BUTTON HEAD, 1/4-20 X 3/4"	15
5.	23-0319	DRAW ROD	1
6.	35-0538	NUT, HEX	1
7.	31-0144	KEY, RAMP	5
8.	33-0040	SCREW, CAP, 1/4-20 X 3/4"	10
9.	48-0973	BLOCK, RAMP	5
10.	33-0109	SCREW, CAP, 1/2-13 X 2"	8
11.	32-0533	PIN, DOWEL, PULL	4

TOOL HOLDER ASSEMBLY (P/N 49-XXXX)



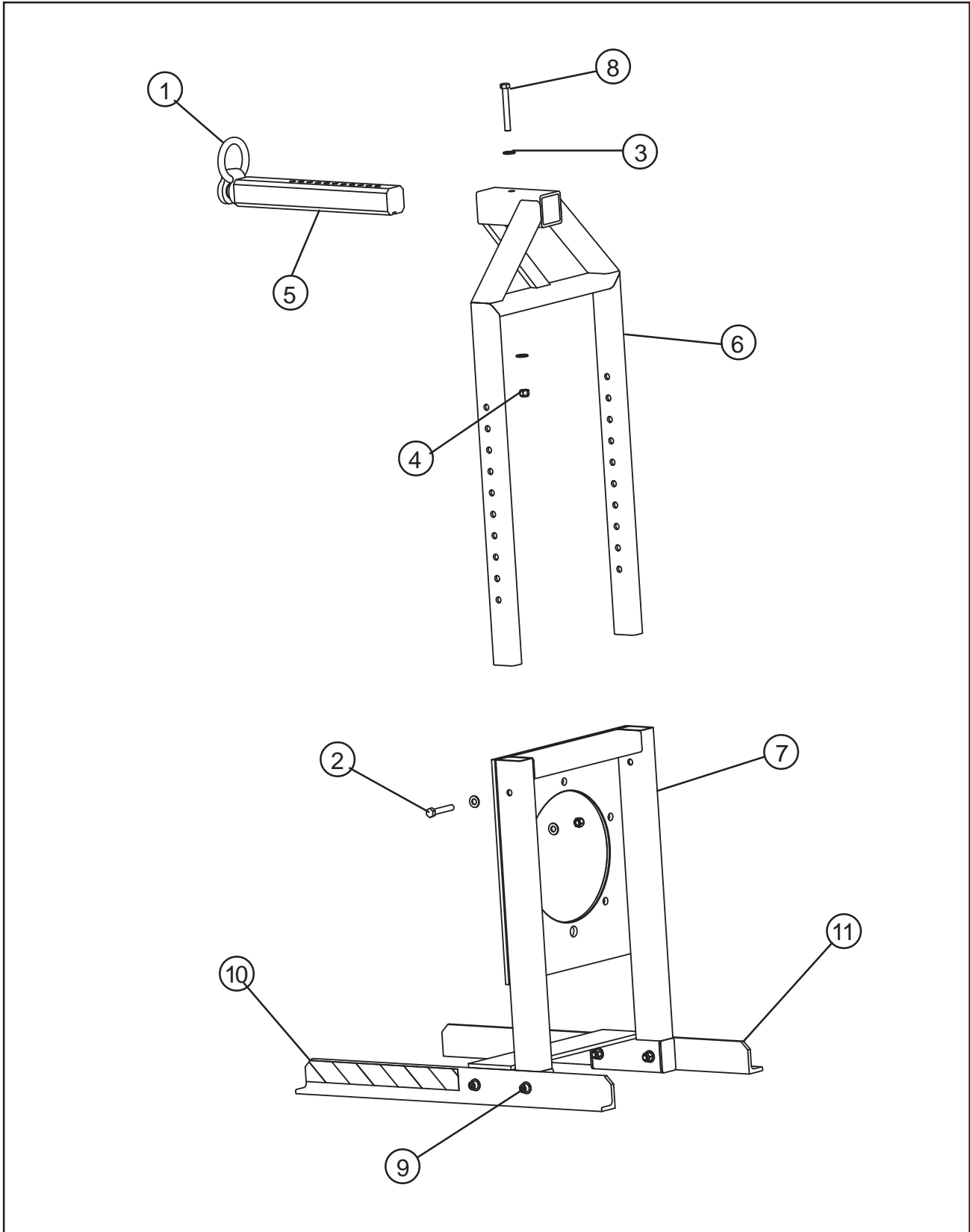
Parts List, Bevel/Face Tool Holder Assembly (P/N 49-0394)

Item No.	Part No.	Description	Qty
1.	33-0057	SCREW, CAP, 5/16-18 X 1 1/4"	4
2.	33-0530	SCREW, SET, CUP POINT, 3/8-16 X 5/8"	10
3.	35-0551	NUT, T-SLOT PLATE	2
4.	49-0365	HOLDER, TOOL, BEVEL/FACE	1

Parts List, C'Bore Tool Holder Assembly (P/N 49-0395)

Item No.	Part No.	Description	Qty
1.	33-0057	SCREW, CAP, 5/16-18 X 1 1/4"	4
2.	33-0530	SCREW, SET, CUP POINT, 3/8-16 X 5/8"	10
3.	35-0551	NUT, T-SLOT PLATE	2
4.	49-0366	HOLDER, TOOL, C'BORE	1

LATHE STAND ASSEMBLY (P/N 60-0099)



Parts List, Lathe Stand Assembly (P/N 60-0099)

Item No.	Part No.	Description	Qty
1.	30-0304	RING, HOIST, 1/2-13	1
2.	33-1972	SCREW, HEX HD CAP, 1/2-13 X 3"	2
3.	34-0020	WASHER, FLAT, SAE, 1/2" NOMINAL	14
4.	35-0254	NUT, LK, 1/2-13	7
5.	47-1222	BRACKET, LIFTING	1
6.	60-0100	LATHE STAND, UPPER, 236B	1
7.	60-0098	LATHE STAND, LOWER, 236B	1
8.	33-2132	SCREW, HEX HD CAP, 1/2-13 X 4"	1
9.	33-0114	SCREW, CAP, 1/2-13 X 3 1/4"	4
10.	63-0248	ARM, SUPPORT, LEFT	1
11.	63-0249	ARM, SUPPORT, RIGHT	1
NOT SHOWN			
	30-3093	TAPE, HAZARD, YELLOW/BLACK 3"	36