

OPERATION MANUAL

92-2038 Rev.240118
The Tube Saw



ABOUT TRI TOOL TECHNOLOGIES



At Tri Tool, we are committed to your success through relentless innovation and powerful partnership. We insist on developing tools and equipment that exceed your expectations of performance, precision, safety, and durability. As a full-service engineering firm, we are here to support you every step of the way.

For more information on engineered solutions, products, and trainings, visit tritool.com or contact our engineers at +1(916) 288-6100.

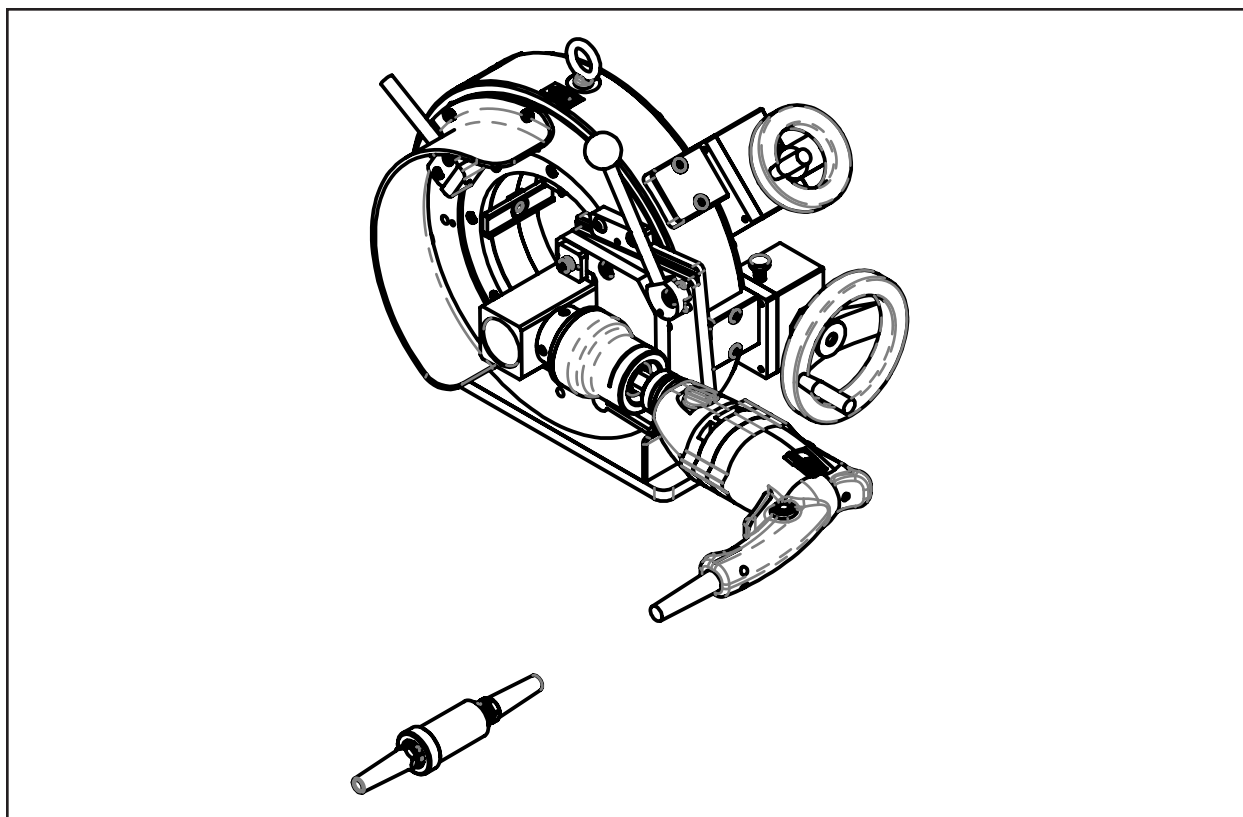


TABLE OF CONTENTS

Tri Tool Inc. Warranty	4
Tool Bit Resharpener Policy	5
About The Manual	6
Safety Precautions	8
General Description	10
Specifications	11
Unboxing and Set Up	13
Controls	19
Maintenance	22
Operation	23
Cutting Speeds and Feeds	25
Jaws and Extensions	26
Saw Blades	29
Troubleshooting	30
Illustrated Parts Breakdown	31

TRI TOOL INC. Warranty

LIMITED WARRANTY: All products manufactured by Seller are warranted to be free from defects in materials and workmanship under normal use. The period of this warranty shall be three years from the date of shipment for all products, except for welding and Non-Standard Products which shall be one year from the date of shipment. The Buyer shall bear all shipping, packing and insurance costs and all other costs to and from a designated repair service center. All return goods must be authorized in advance and communicated upon issuance of a Return Material Authorization (RMA) by Seller. The product will be returned to the Seller accompanied by a RMA number and associated paperwork, freight prepaid and billed to the Buyer. This warranty is not transferable and will not apply to tool bits or other consumables, or to any Goods to have been (i) mishandled, misused, abused or damaged by Buyer or any third party; (ii) altered without the express permission in writing by Seller, (iii) repaired by a party other than Seller without Seller's prior written approval; or (iv) improperly stored, installed, operated, or maintained in a manner inconsistent with Seller's instructions. This warranty does not apply to defects attributed to (i) normal wear and tear or (ii) failure to comply with Seller's safety warnings.

No warranty for any parts or other supplies provided to seller by buyer, whether or not they are incorporated into goods. Goods supplied by seller which are designed or manufactured by a third party are subject strictly to the third party's warranty for those goods. Seller makes no warranty and disclaims all statutory or implied warranties for these goods, including the implied warranties of merchantability, freedom from patent infringement and fitness for a particular purpose.

Neither this warranty nor any other warranty, expressed or implied, including implied warranties of mechanical ability, fitness for a particular use, or merchantability, shall extend beyond the warranty period. No responsibility is assumed for any incidental or consequential damages. Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitations incidental or consequential damages, so the above limitation of exclusion does not apply to all Buyers. This warranty gives the Buyer specific legal rights. Other rights vary from state to state.

Warranty Claims and Remedies

Buyer must promptly notify Seller in writing during the applicable warranty period, of any defective Goods covered by Seller's warranties under the Limited Warranty section herein, and no later than fifteen (15) calendar days after discovery of the defect. Seller has no obligation to honor any warranty claim made after the expiration of the warranty period. However, despite the expiration of the warranty period, Seller, at its reasonable discretion, may accept warranty claims submitted up to fifteen (15) calendar days after the expiration of the warranty period provided that Buyer provides Seller with credible and persuasive documentary evidence that the defect was discovered during the warranty period. No warranty claims submitted after this fifteen (15) day calendar period will be considered by Seller.

Buyer's notice of a defective Goods must identify the specific Goods affected, and the nature of the defect. It is required when returning the defective Goods, that it is suitably packed, fully insured, and transportation and insurance prepaid in accordance with instructions issued by Seller. Seller, at its sole option, will either repair or replace any Goods authorized for return to Seller. Such repair, replacement, or credit shall be Buyer's sole remedy for defective Goods. Buyer must promptly provide Seller with all information requested regarding the identified defect.

If the defect claimed by Buyer cannot be reproduced or otherwise verified by Seller, the Goods will be returned to Buyer unmodified at Buyer's expense.

The warranty period for repaired or replaced Goods shall be (i) ninety (90) days or (ii) the unexpired portion of the original warranty period. Under no circumstances is Seller liable for recall, retrieval, removal, dismantling, re-installation, redeployment, or re-commissioning of any defective Goods or any costs associated therewith.

Tool Bit Resharpener Policy

Buyer is required to check all tool bits prior to returning and ensure they are packaged well for shipment. The price structure is available from the Seller's sales coordinator. Seller cannot sharpen badly gouged, chipped, or broken tool bits. Seller will return tool bits that are not suitable for sharpening with the tool bits that were sharpened upon Buyer's request.

Buyer is responsible for all shipping charges to and from Seller.



1. ABOUT THE MANUAL

Copyright

©Copyright Tri Tool Inc. Proprietary property of Tri Tool Inc. No reproduction, use, or duplication of the information shown hereon is permitted without the express written consent of Tri Tool Inc.

Disclaimer

The instructions and descriptions in this manual were accurate when the manual was written. However, the information in the manual is subject to change without notice. Check for updated information before you start any job. The Tri Tool Inc. web site has the most current information.

Do not operate or work on this equipment unless you have read and understood the instructions in this Manual. Failure to follow the instructions or follow the safety instructions could result in serious injury or death. This manual describes conditions and hazards that are common and anticipated during equipment operation. No manual can address all conditions which may occur.

Safety Symbols

The manual may contain one or more safety symbols. These symbols and the associated text warn you of potentially hazardous conditions. Examples of the safety symbols and the associated text follow:



DANGER

DANGER: Indicates a hazardous situation that, if not avoided, will result in serious injury or death.



WARNING

WARNING: Indicates a hazardous situation that, if not avoided, could result in serious injury or death.



CAUTION

CAUTION: Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury, or cause property damage.



GLASSES

SAFETY GLASSES: Indicates a hazardous situation that requires the use of safety glasses.



HOT SURFACE

HOT SURFACE: Indicates a hazardous situation that hot surfaces may be present.



GLOVES

GLOVES: Indicates a hazardous situation that requires gloves.



SHOCK HAZARD

ARC FLASH & SHOCK HAZARD: High voltage. Entry by authorized personnel only. Appropriate PPE and tools required when working on this equipment.



LASER HAZARD

LASER HAZARD: Indicates the use of lasers. Exposure to eyes can cause temporary visual effects such as flash blinding

2. SAFETY PRECAUTIONS

In General

Use standard safety equipment such as: hard hats, safety shoes, safety harnesses, protective clothes, and other safety devices when appropriate.

Operate this tool only in accordance with specific operating instructions.



WARNING: Do not override the dead-man switch on the power unit. Locking down, obstructing, or in any way defeating the dead-man switch on the power drive unit may result in serious injury.

Personal Protective Equipment

Use standard safety equipment such as: hard hats, safety shoes, safety harnesses, protective clothes, and other safety devices when appropriate.

Wear safety glasses.

Do not wear loose clothing or jewelry.

Wear nonskid footwear.

Put long hair in a cap or a net to make sure hair does not get tangled in equipment.

Personnel

Only personnel who are trained or are being trained may operate the equipment.

Keep the operation manual available where the equipment is used.

The operator must read the operation manual before using the equipment.

The equipment must be operated in accordance with the manual information.

The operator must follow the safety precautions in this manual and good engineering practices to reduce the risk of injury.

Before using the equipment, the operator must ensure that all safety messages on the equipment are legible.

Work Area

Keep the work area clean.

Keep the area well lit.

Keep items such as electrical cords, cables, rags, rigging straps, away from rotating equipment.

Do not use power-cutting tools in the presence of flammable liquids and gases.

Do not let visitors or untrained personnel near tools that are in use.

Ensure all observers wear eye protection.

Keep proper footing at all times.

Area Equipment

Secure the pipe with clamps, vises, chains or straps.

Ensure that both sides of the pipe at the cut site is fully supported so that the pipe will not move after the cut is completed. Long lengths of pipe may be under load and the separation of the pipe can release pressure. This pressure can cause both sides of the pipe to move.

Tool Care

Keep tools in good operating condition. Sharp tool bits perform better and are safer than dull tool bits.

Do not use damaged tools. Always check your tools for damage especially if a tool has malfunctioned, been dropped or hit, check it for damage.

Before you start operating the equipment, do no-load tests and feed function checks.

Tool Use

Use the right tool and tool bit for the job. Contact Tri Tool to help with your application.

Keep the tool bits fully engaged in the tool bit holders. Loose bits are sharp and can cause cuts or punctures.

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. Check 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 recommended speeds.

Do not reach into rotating equipment.

Do not reach into the rotating head stock to remove chips, to make adjustments, or to check the surface finish.

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

Store tools properly. Disconnect tools from the power source, remove the tool bits, and store in a safe place.

3. GENERAL DESCRIPTION

Tri Tool's The Tube Saw is a table mounted OD clamping machine designed to swiftly and easily clamp and sever tube and pipe.

The machine is designed to cut thin wall stainless and carbon steel tubing from 1/4-inch to 6-inch diameter and pipe from 1/8-inch diameter to 6-inch diameter.

It can cut .035" wall up to .150" wall.

This machine uses a rotating sawblade to cut material to length in one pass by travelling around its perimeter.

A variable speed motor provides cutting speed control for blade life.

The slide allows for quick changes for material diameter sizes through the saw's whole range and requires no tools to make the change.

The cam plunge provides smooth consistent cutting force to engage the sawblade into the material.

The jaw handwheel provides smooth fluid pressure on the material and self-locks.

Jaw size options snap in and out providing fast changes and no tools required.

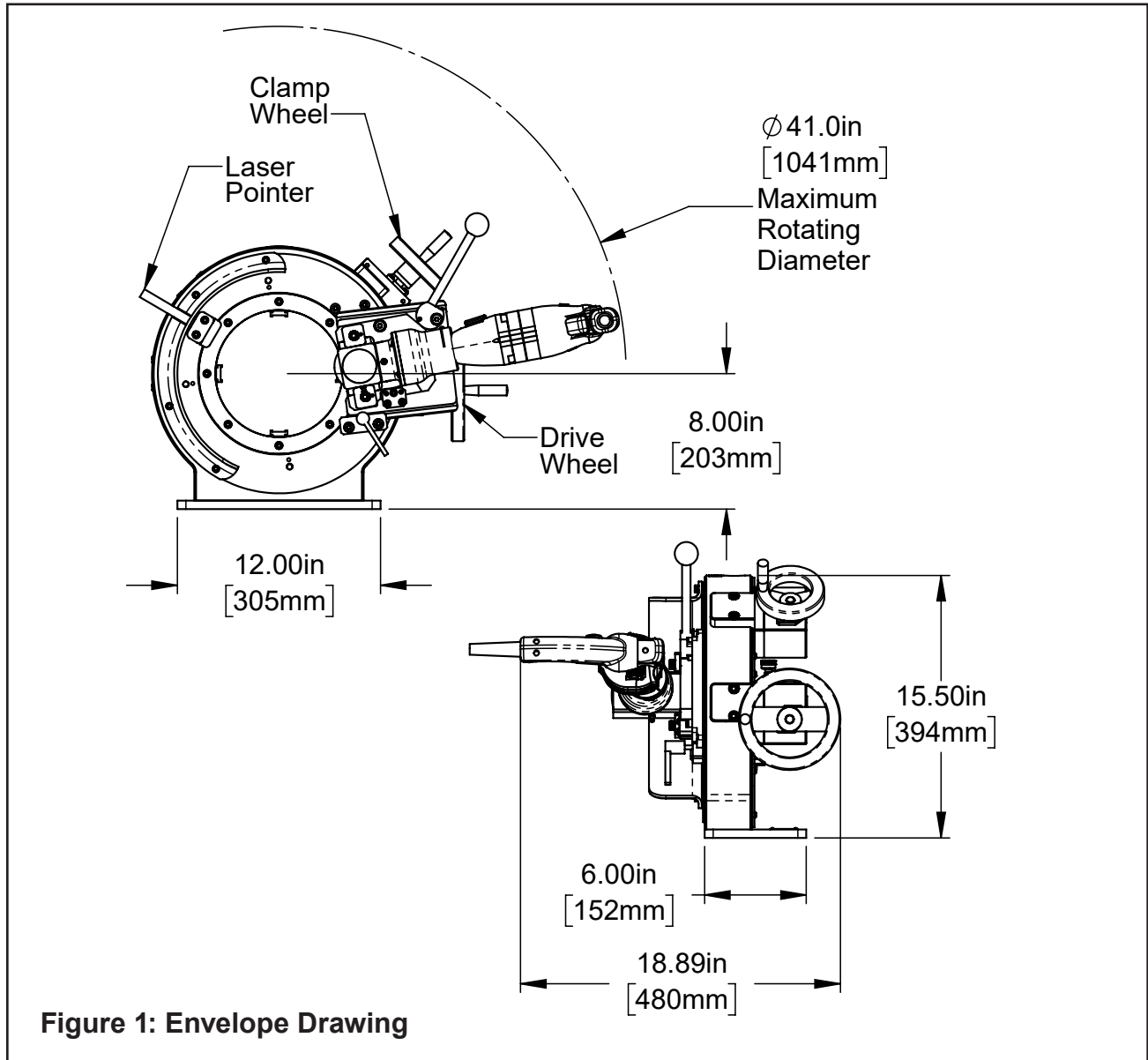
Clamping jaws do not move the material axially, allowing cut lines to be positioned with ease.

Laser line allows for fast and accurate positioning of material on cut line.

Motor variants come in a cordless and corded options.

4. SPECIFICATIONS

Clearance and Dimensions



Pipe and Tube Cutting Capacities

Tube Sizes:

1/4" to 6" tube, .035" to .150" wall thickness

Pipe Sizes:

1/8" to 6" pipe, schedules 5 and 10

Weight

Machine Body: 65 lbs (29.5 kg)

Motor Assembly: Cordless: 15 lbs (6.8 kg)

Corded: 11 lbs (5.0 kg)

Total: Cordless: 80 lbs (36.3 kg)

Corded: 76 lbs (34.5 kg)

Drive System

Cordless motor: 40 VDC

Charger: 110 VAC

Electric motor: 110 VAC, 50/60 Hz, 9.6 Amps

220 VAC, 50/60 Hz, 5.1 Amps

Design and Operating Features

The jaw clamping system self-locks onto the material to be cut, providing accurate axial placement of material to be cut.

Gear ratio provides adequate clamping force with minimal input from operator.

Faceplate rotates on a precision ball bearing for smooth rotation.

Speed

Cordless motor speed range: 100 to 280 RPM

Corded: Low Range: 30 to 180 RPM

High Range: 85 to 515 RPM

Mounting

Manually actuated jaw clamping system with jaw extensions for smaller sizes.

Range from .220" to 6.763"

5. UNBOXING AND SET UP

1. Open the shipping box and examine the contents. Look for any signs of damage during shipping. The machine weighs approximately 80 pounds when assembled.
2. Use the lifting eye and a hoist or crane to lift the main body out of the packaging. If no lifting apparatus is available, use two people to lift the machine out of the box to avoid injury.

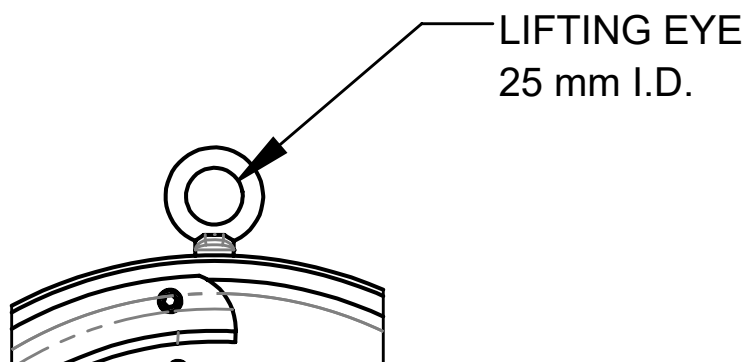


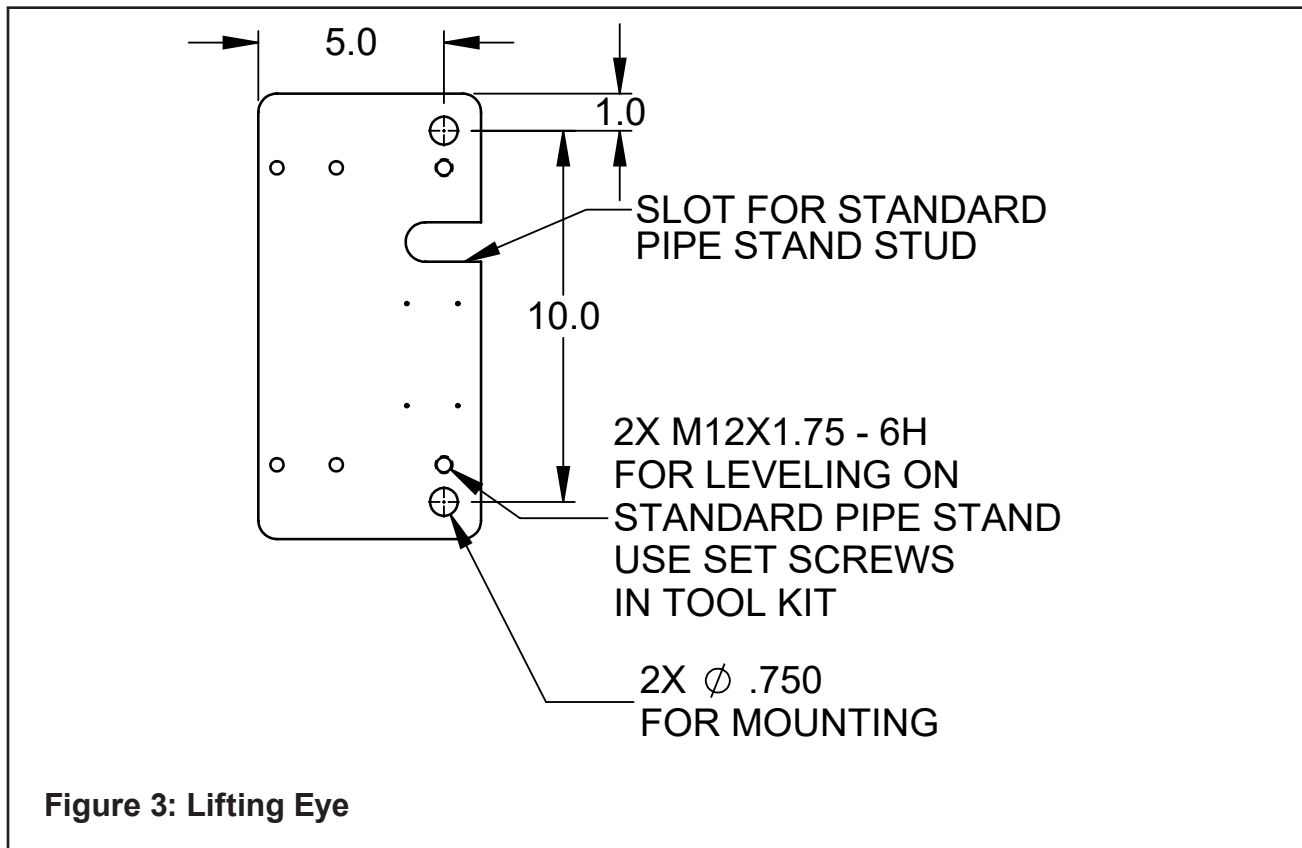
Figure 2: Lifting Eye

3. Set the machine down on a benchtop, table, or pipe stand. Orientate the machine so the rotating face is flush with the edge of the mounting surface. The cutting assembly needs clearance with the mounting surface during its rotation.



CAUTION: When setting the machine down be cautious not to allow it to fall over.

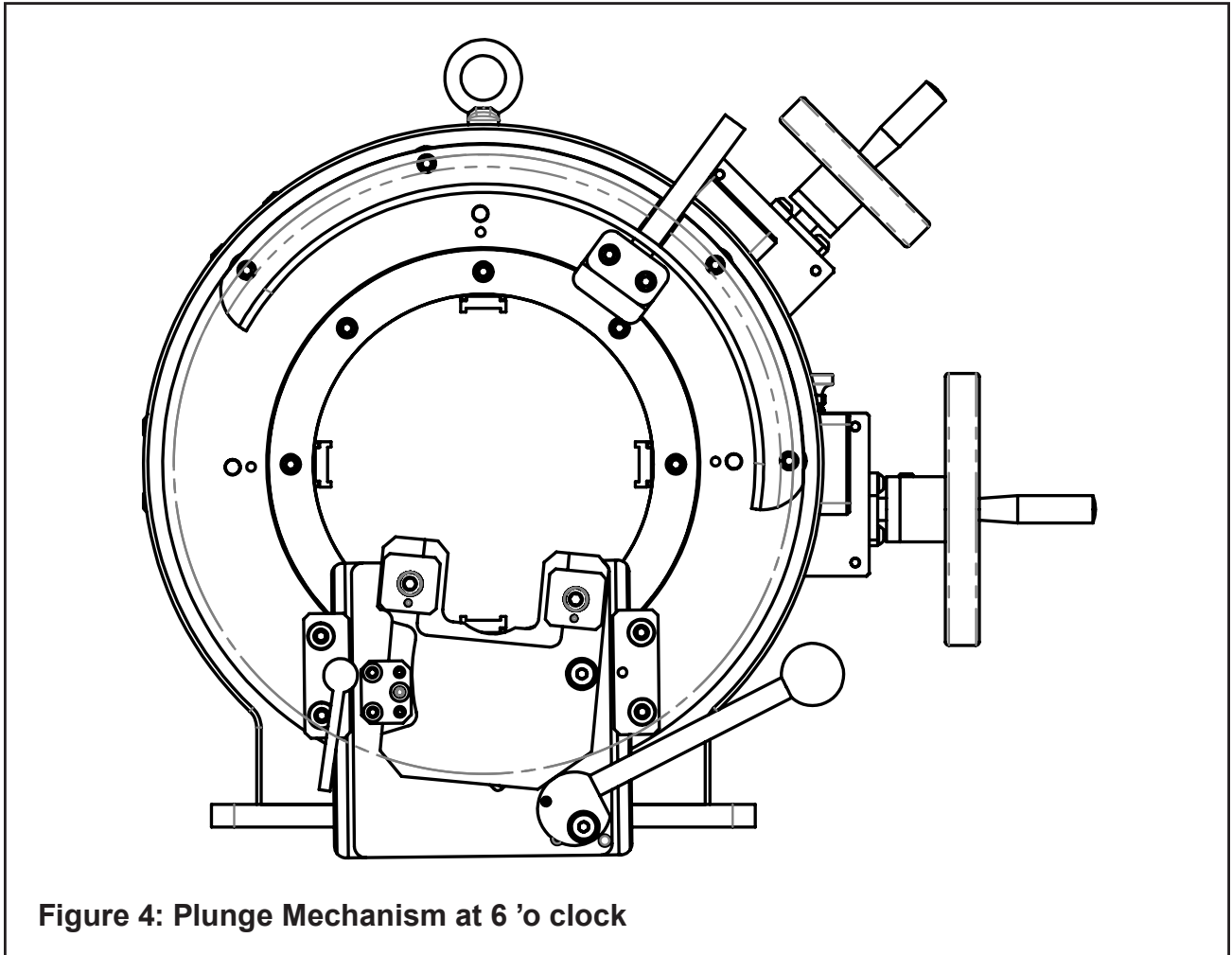
4. The machine baseplate has two 3/4-inch mounting holes for securing to the mounting surface.



NOTE: It also comes with a cutout and leveling screws for mounting to a standard pipe stand. Raise the stud on the pipe stand. Install the provided set screws into the base plate. Mount The Tube Saw over the stand and slide the stud into the slot. Before tightening the stud, use the set screws to level The Tube Saw with the base. (Required where pipe stand has a lip around the perimeter). Tighten the stud.

5. Once the machine is bolted down, turn the rotation handwheel to ensure clearance with the mounting surface. Correct any interferences that are encountered.

6. Continue rotating the faceplate until the plunge mechanism is at the 6 'o clock position.



7. Remove the cutting head assembly from the shipping box. Plug it in and make sure the motor functions and was not damaged in shipping. Unplug the motor before installing the sawblade in the next step.

8. Install the saw blade suggested in Section 11 for the material to be cut. Use the supplied wrench to tighten the flange nut making sure the saw blade teeth are pointed in the correct direction. (As shown in Figure 5)

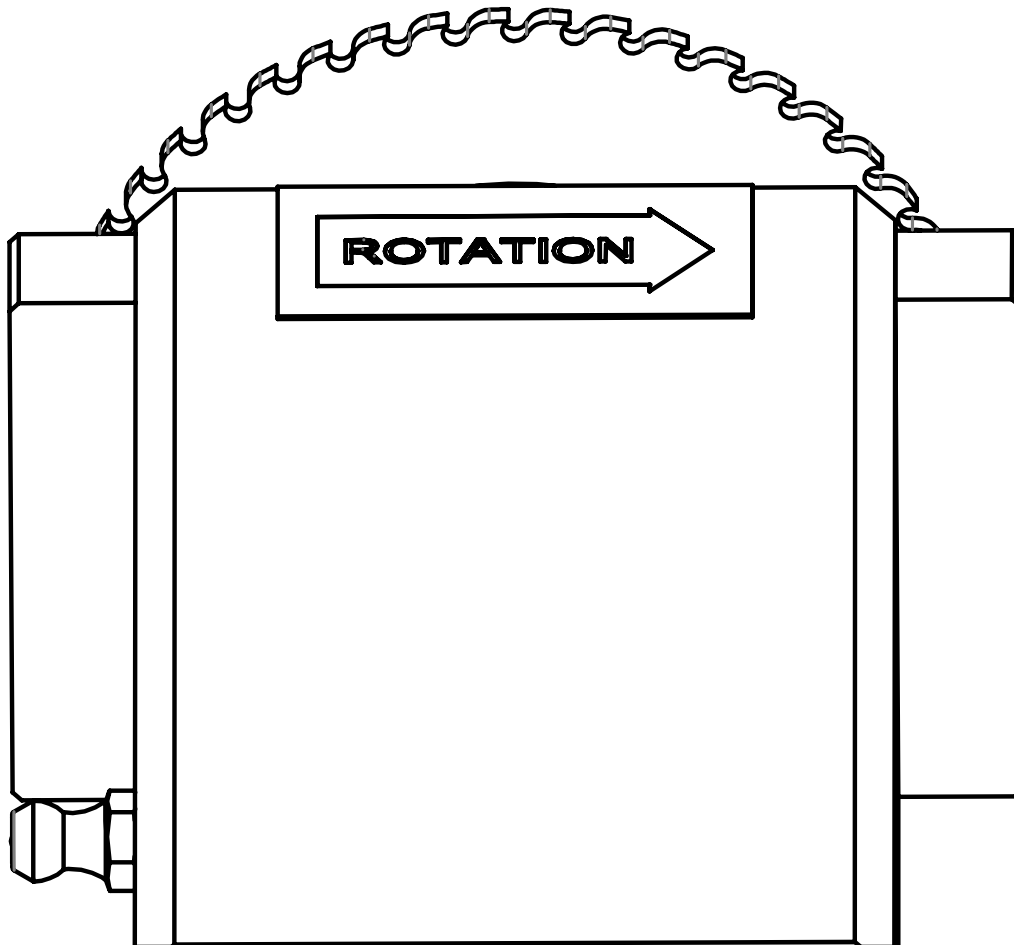


Figure 5: Sawblade Direction

9. Slide the cutting assembly into the plunge mechanism and tighten the two screws using the 6mm Allen wrench provided in the tool kit.

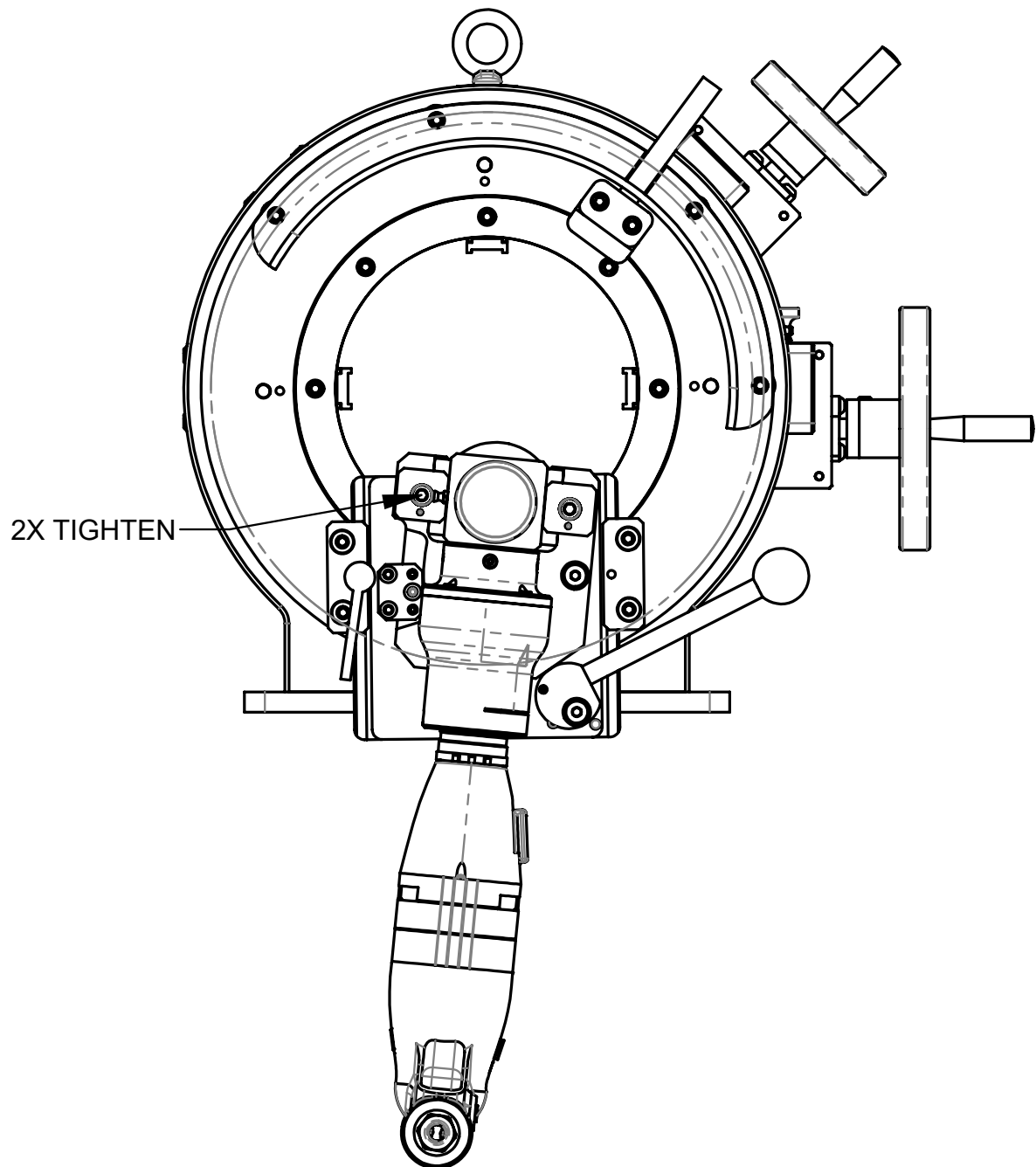


Figure 6: Screw Location

10. Rotate the cutting head around to confirm clearance.
11. Rotate the cutting head until the motor assembly is at the 3 o'clock position. This is the recommended "HOME" position for the cutting head. It allows the operator the most accessibility to all the saw controls and features.

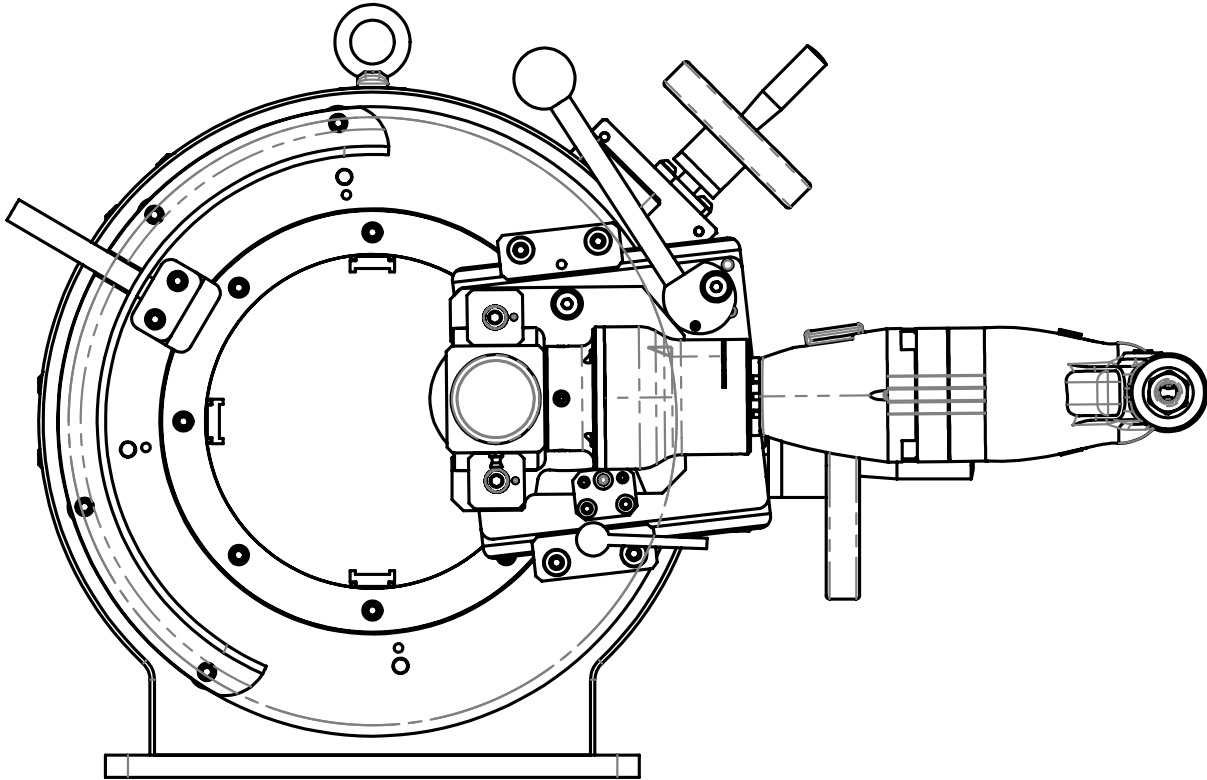


Figure 7: Home Position

12. The machine is now ready for cutting.

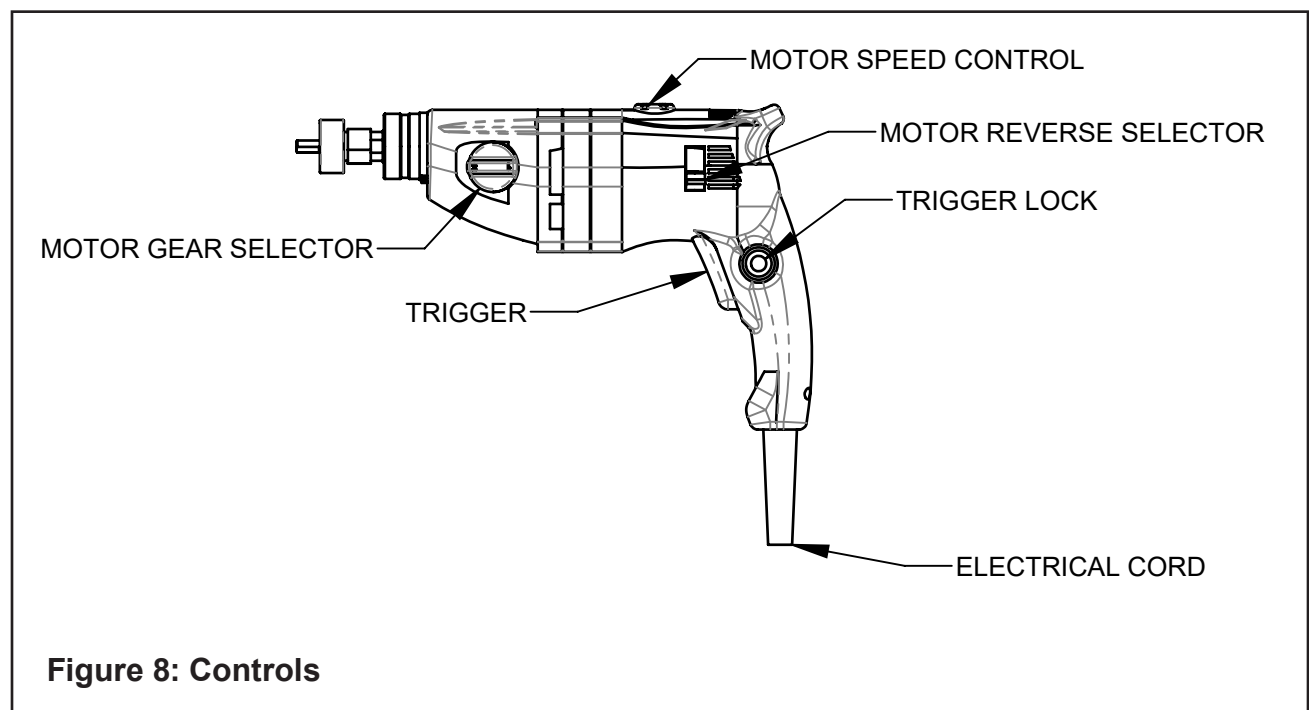
6. CONTROLS

The following is a list of the machine controls:

- Motor, Cordless:

Motor Speed Control (cordless): The motor speed control is a dial with settings 1 thru 5 which allow for speed control.

Switch: The power switch on the cordless motor is a slide switch that can be locked in the on position by depressing the end after sliding forward. To release the switch slide it back to the "OFF" position.



- Motor, corded:

Motor Trigger: The motor trigger turns the motor on and off.

Trigger Lock: The Trigger Lock locks the motor trigger in the “ON” position for the duration of the cut. (corded only)

Motor Speed Control (corded): The motor speed control is a dial with settings 1 thru 6 which allow for speed control. The dial also has half settings in between each numbered setting for finer speed control. Below 1 is a pulse function that should not be used on this machine.

Motor Gear Selector: The motor gear selector is a half turn lever that shifts the motor from 1st gear to 2nd gear. It is used to achieve higher speeds.

Motor Reverse Selector: Reverse is locked out on this motor. There is no need to run the motor in reverse. This lock out ensures the saw blade will spin in the correct direction when installed properly.

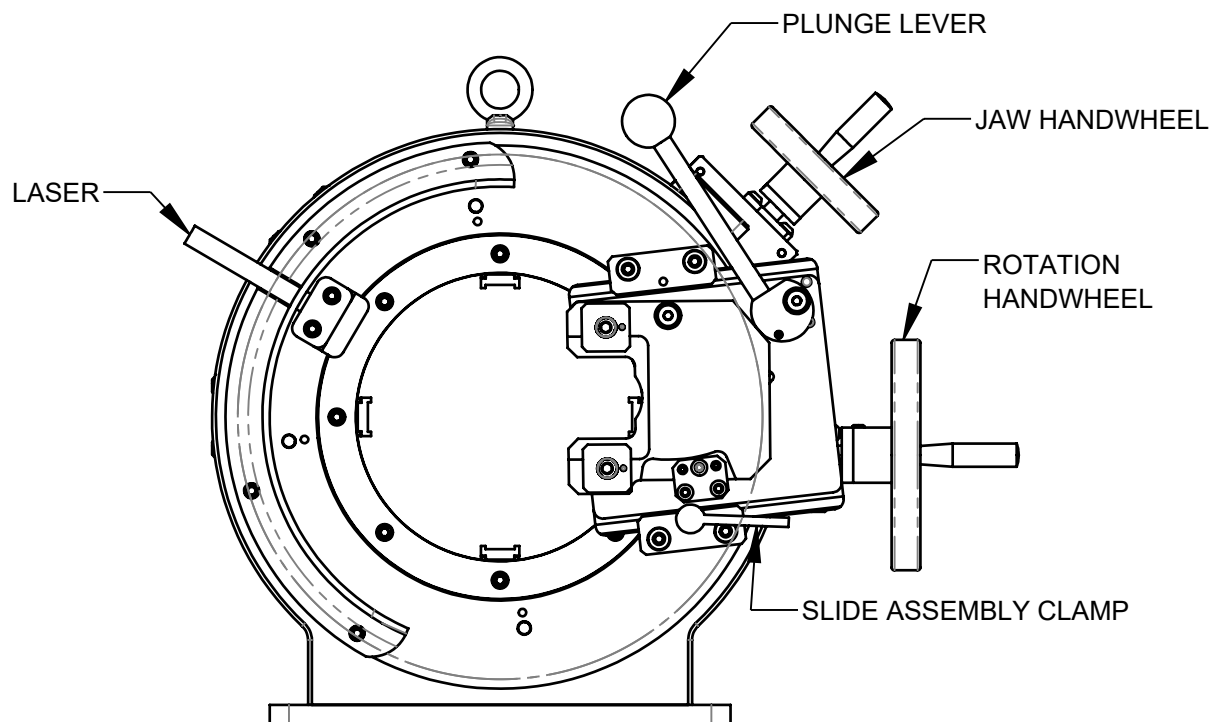


Figure 9: Motor Speed Controls

- Plunge Lever:

The plunge lever pushes the saw blade into the material at the beginning of the cut. The lever has two positions; “in” and “out”. “In” engages the sawblade into the material, “out” removes it from the material. The plunge system is spring assisted to return to the out position when actuated by the lever.

- Slide Assembly Clamp:

The slide handle clamp is used to adjust the position of the slide assembly for different diameters of material to be cut. The handle should function well with half a turn, but if more is needed the handle can be pulled axially and rotated, then reengaged and turned again.

- Jaw Handwheel:

The jaw handwheel opens and closes the clamping jaws. Turn the handle clockwise (right) to close, and counterclockwise (left) to open. This handwheel can be moved to any of the 4 available positions as the user prefers for the most comfortable operation.

- Rotation Handwheel:

The rotation handwheel turns the faceplate around the material to be cut. Turn the handwheel counterclockwise (left) to make the cut. This handwheel is equipped with a one-way clutch and lock to prevent the user from turning the saw the wrong direction or kicking back. To unlock the clutch pull the knob out and the handwheel can be spun in reverse. This handwheel can be moved to any of the 4 available positions as the user prefers for the most comfortable operation.

- Laser:

The laser allows for quick alignment of the cutline with the sawblade. Press the button to turn the laser “on” and press again to turn the laser “off”. The laser beam is blocked by the plunge assembly to protect the user and bystanders from accidental exposure to the beam in the eyes, however the saw should not be operated with the laser on.

7. MAINTENANCE

Keep the saw clean and free from chips when not in use.

During repeated use ensure chip build-up does not occur. Use a chip brush to clear chips.

The saw bearing and gears are greased at the factory and is not a maintenance item. There are no components of The Tube Saw that require user lubricating.

Recommended Maintenance Schedule

The Tube Saw is designed to have minimal maintenance requirements.

Daily

Wipe down unit and clear all chips and debris.

Visually inspect for loose hardware, damage, etc.

Yearly

Add grease to the saw cutting head using the grease fitting and the recommended grease below.

Remove the jaw and rotation handle gearboxes from the main housing and add grease to the gears.

Storage

When The Tube Saw is to be stored or left out of service for a period of time (30 days or more) it should be thoroughly cleaned and wiped down. Use a cloth to rub a rust preventative on the steel surfaces to protect them.

Lubricant Recommendations

68-0042: Chevron NLGI 1 for planetary gears in cutting head.

68-0024: Chevron NLGI 2 for bevel gears and bearings in cutting head and all hand wheel and drive gears.

8. OPERATION

**WARNING**

WARNING: Read these operating instructions carefully before attempting to operate The Tube Saw. Failing to do so could result in damage to the machine or injury to the operator.

**WARNING**

WARNING: Wear safety glasses and ear protection while operating this machine.

Preparing The Material

Select the correct set of jaw extensions required for the material size to cut. (Refer to Table 3). Using the handwheel open the jaws wide enough that the extensions can be inserted. Insert the extensions by aligning the pins with the receptacles and pressing until they snap in place.

Place the material to be cut into the machine.

Use the laser to position the cut line. Turn off the laser once the material is lined up and secured. Do not perform cut with the laser on.

**LASER HAZARD**

LASER HAZARD: Do not look directly into laser. Class IIIa lasers can cause temporary visual effects such as flash blinding, which could distract or startle the person exposed.

Once the material is in the right place turn the jaw handwheel until it holds the material tight.

Note: The handwheel needs to be tight enough to keep the material from spinning to prevent marring the outside surface. However, it does not require excessive torque applied to achieve this.

Preparing The Saw Depth

Engage the plunge lever on the cutting assembly.

Place a piece of material in the jaws as described above, but do not feed it past the saw blade.

Loosen slide assembly clamp.

Slide the cutting assembly in or out until the blade protrudes over the material wall thickness.

Lock the slide assembly in place.

Disengage the plunge lever on the cutting assembly.

Verify that the blade clears the outside diameter of the material to be cut. If it does not the depth needs to be adjusted out further.

Note: This clearance is very close on thicker walled materials.

Feed the material into the saw to the cut line and prepare to make a cut.

Making The Cut

Once the jaws are installed for the material size, and the saw depth is set the machine is ready to cut.

Select the correct cutting speed for the material, diameter and wall thickness using the speed control dial on the motor. (see Tables 1 & 2)

Turn on the motor by engaging the trigger and lock in place.

Engage the plunge lever to begin the cut. To avoid premature blade wear or damage to the machine do not force the cut. Apply firm steady pressure and let the saw do the work.

Spin the feed handle to rotate the saw assembly around the perimeter of the material. The saw faceplate will spin counterclockwise when viewed from the faceplate side of the machine.

When the saw comes completely around the remnant will break free and the cut will be complete.

Turn off the motor by squeezing and releasing the trigger. This will disengage the trigger lock.

Loosen the jaws to remove the material from the saw and prepare for the next cut.

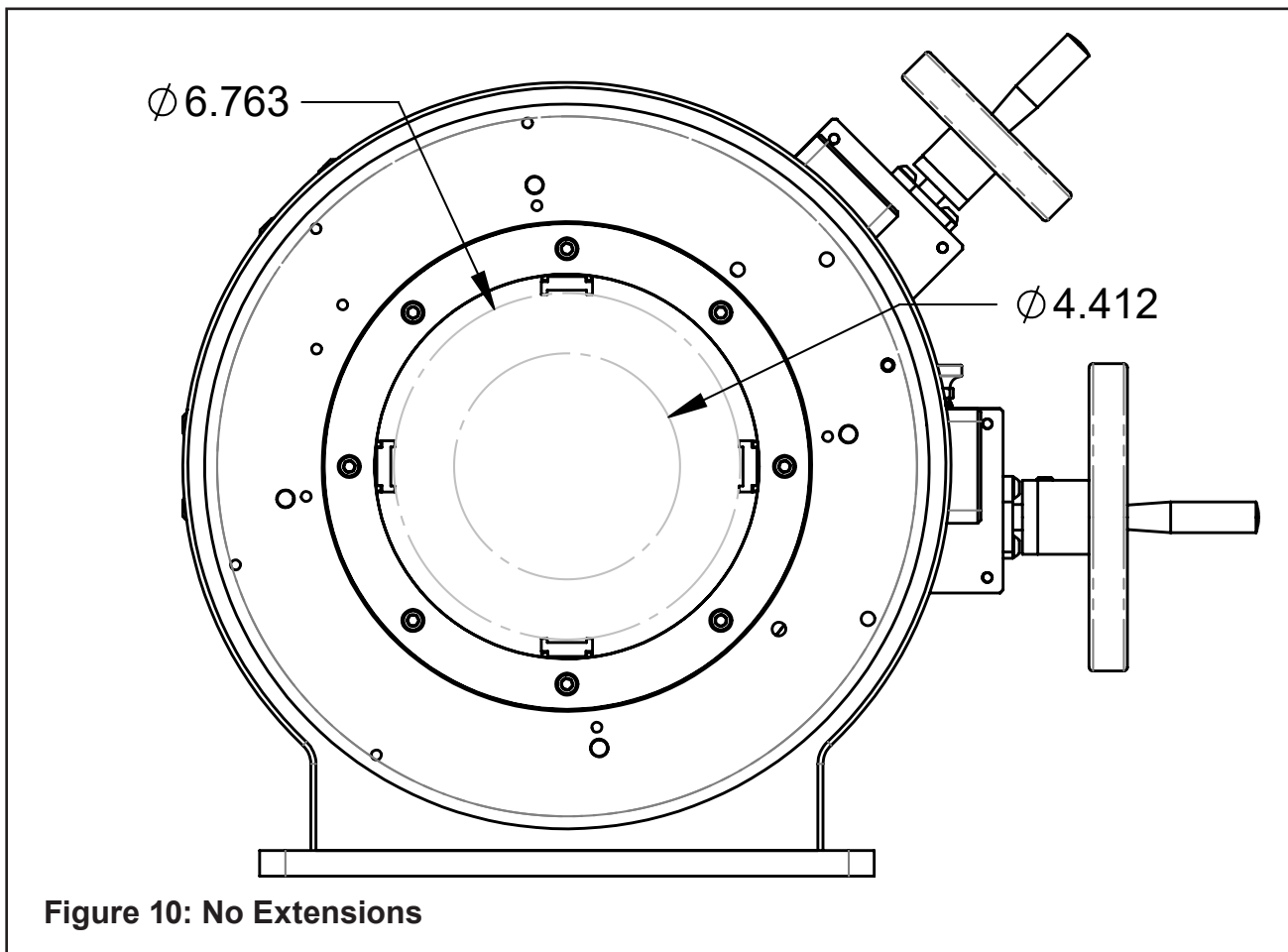
9. CUTTING SPEEDS AND FEEDS

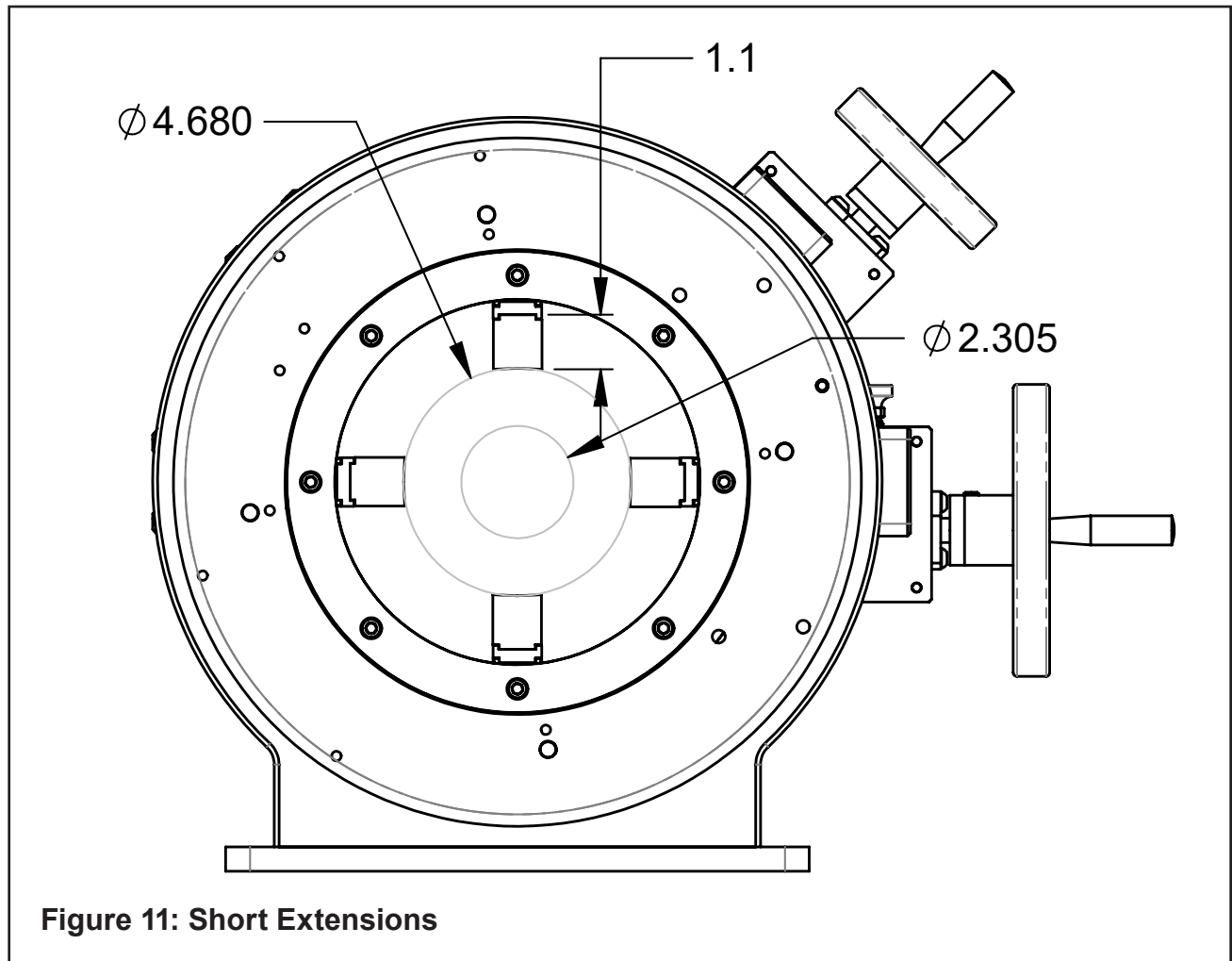
CORDLESS MOTOR BLADE SPEED				
MOTOR SETTING				
1	2	3	4	5
100	150	200	250	280

CORDED MOTOR BLADE SPEED						
GEAR	MOTOR SETTING					
	1	2	3	4	5	6
1	30	65	90	120	150	180
2	85	180	260	340	430	515

10. JAWS AND EXTENSIONS

JAW EXTENSIONS FOR MATERIAL SIZES			
	RANGE	PIPE SIZE	TUBE SIZE
No Extension	4.412 - 6.763 inches (112.06-171.78 mm)	4 (4.50" O.D.) - 6 (6.625" O.D.)	4.5 to 6.5 inch
Short Extension (08-1879)	2.305 - 4.680 inches (58.55-118.87 mm)	2 (2.375" O.D.) - 4 (4.50" O.D.)	2.375 to 4.5 inch
Long Extension (08-1880)	.220 - 2.380 inches (5.59-60.45 mm)	1/8 (.405" O.D.) - 2 (2.375" O.D.)	.250 to 2.375 inch





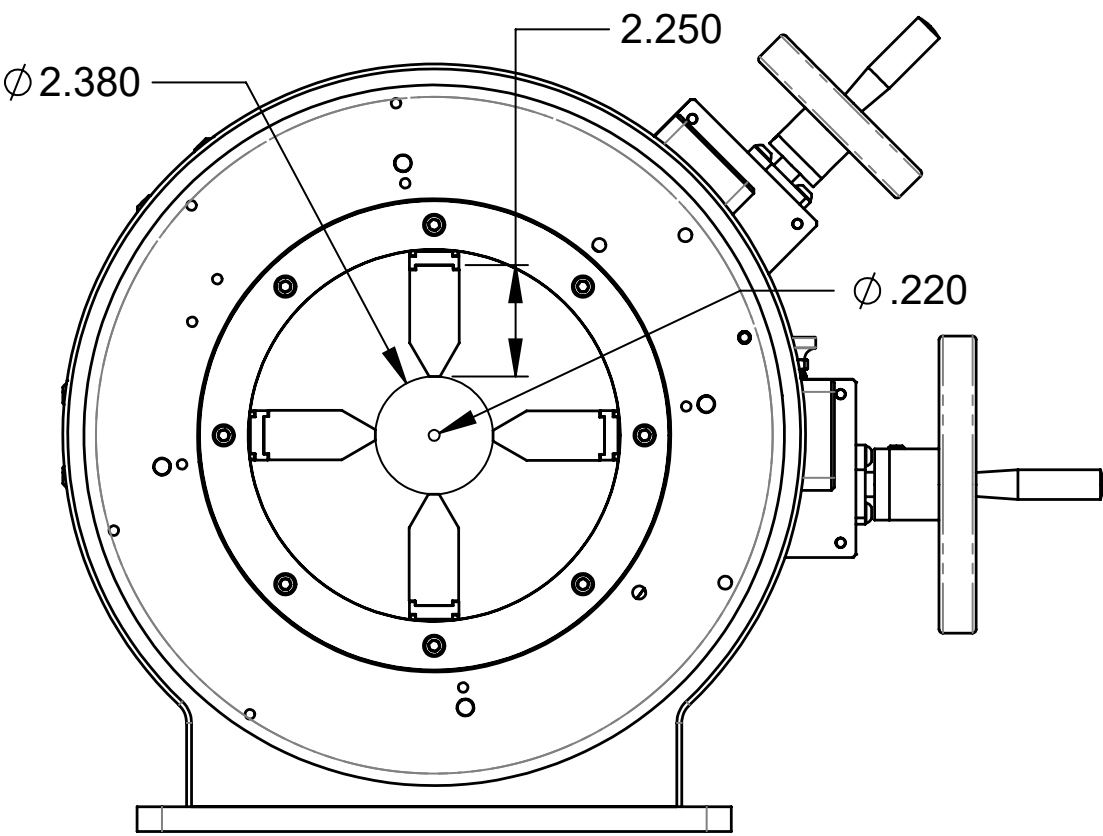


Figure 12: Long Extensions

11. SAW BLADES

Use only premium Tri Tool saw blades in The Tube Saw

Part Number	Diameter	Tooth Count	Material Wall Thickness
30-7417	75 mm	48 tooth	.098-.150"
30-7418	75 mm	78 tooth	.035-.098

12. TROUBLESHOOTING

Problem: Material Rolls In Jaws

The jaws are not tight enough.

Problem: Cut Not Square

The jaws are not tight enough.

The slide or plunge assembly has become loose.

The cutting head is not mounted straight.

The sawblade not mounted straight.

Problem: Rough Surface Finish

The blade is dull.

The motor speed is incorrect.

Wrong tooth count on blade.

Problem: Burrs On Entirety Of Cut

The blade is dull.

Problem: Cut Does Not Break Through Material

The cut depth not set properly.

The material too thick.

Problem: Loss of Power

The battery is dead (cordless).

The battery is not properly seated (cordless).

The motor not plugged in (corded).

The slip ring is damaged (corded).

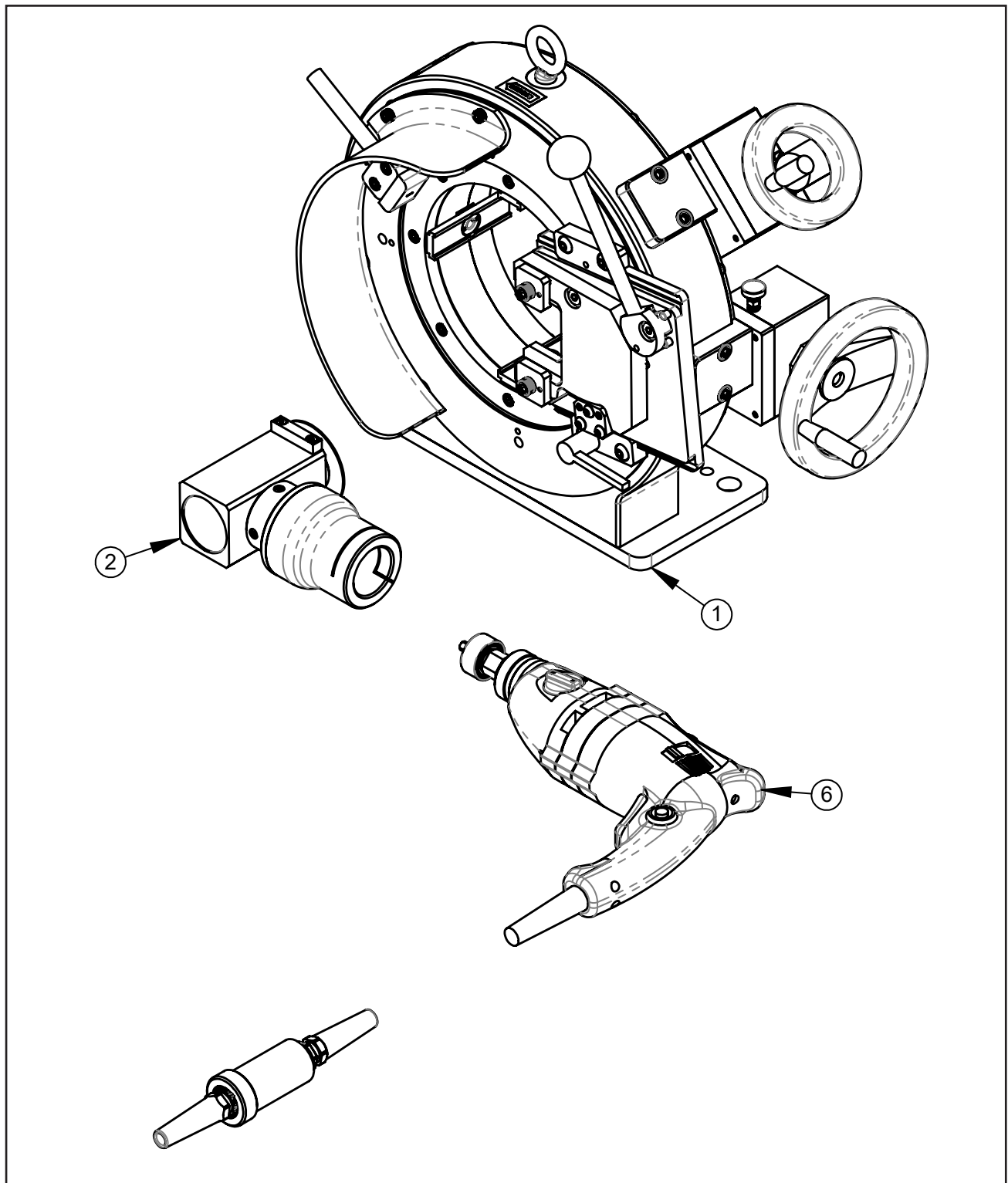
The cord is damaged (corded).

The motor has overload has tripped (corded).

The motor is between 1st and 2nd gear (corded).

13. ILLUSTRATED PARTS BREAKDOWN

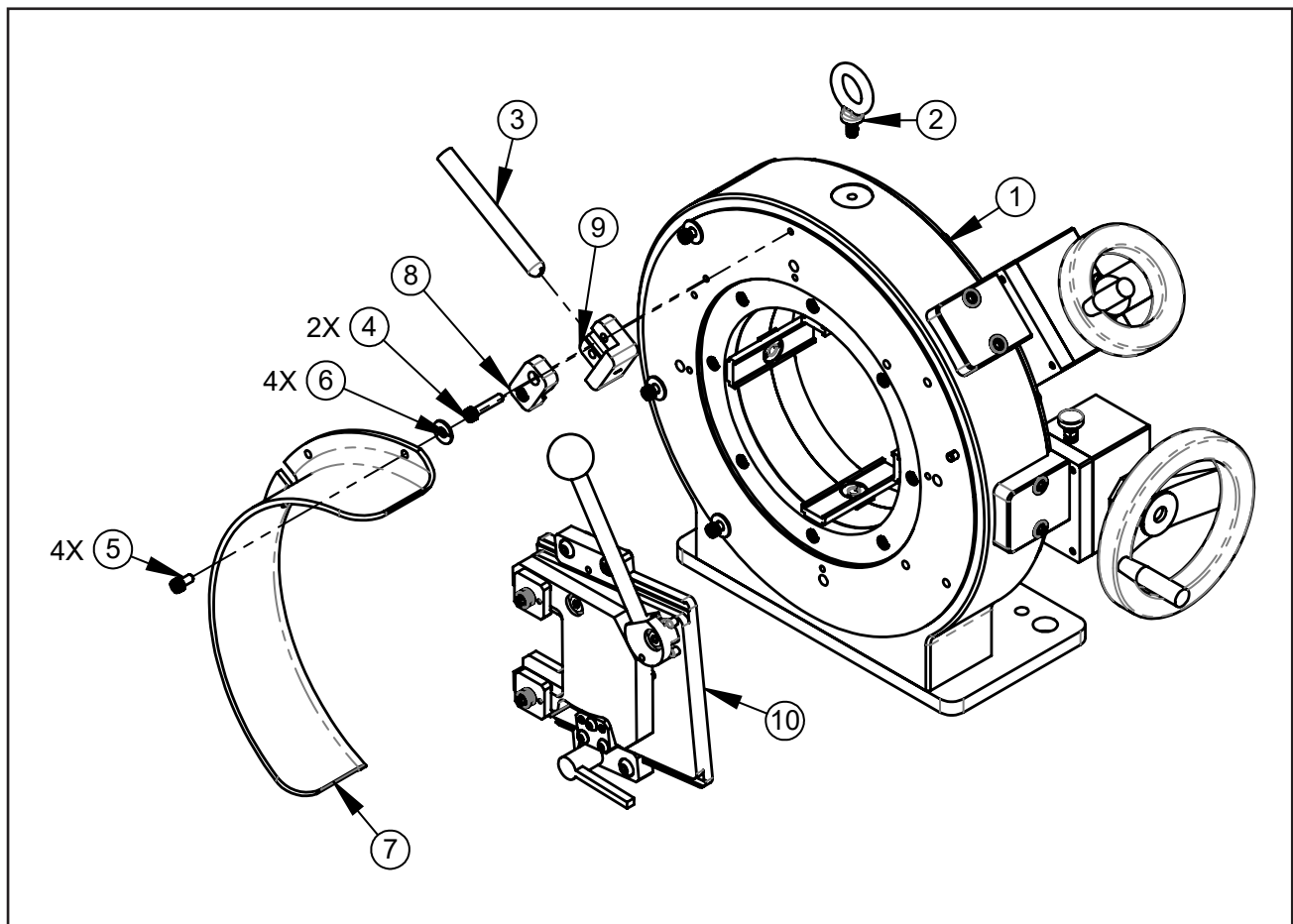
THE TUBE SAW, 110VAC (P/N 01-2635), 220VAC (P/N 01-2642)



Parts List, THE TUBE SAW, 110VAC (P/N 01-2635), 220VAC (P/N 01-2642)

Item No	Part No.	Description	Qty
1.	02-3218	SUBASSEMBLY, TUBESAW	1
2.	04-0225	SPINDLE ASSEMBLY, TUBE SAW,CORDED,110V	1
3.	05-1708	KIT, TOOL, TUBESAW	1
4.	30-7453	PLATE, DATA, THE TUBESAW	1
5.	33-0995	SCREW,DRIVE,#2 X 3/16	4
6.	58-0428	MOTOR ASSY, ELEC METABO, 110V	1
	58-0432	MOTOR ASS'Y, ELECTRIC, METABO, 220V	1
7.	30-7489	LABEL,ROTATING BLADE,1.25 X 1.25	3
8.	30-0508	LABEL,"WARNING,DISCONNECT"	1
9.	30-7490	LABEL,EYE PROTECTION,1.25 X 1.25	3
10.	30-0105	LABEL,"ROTATION"	2

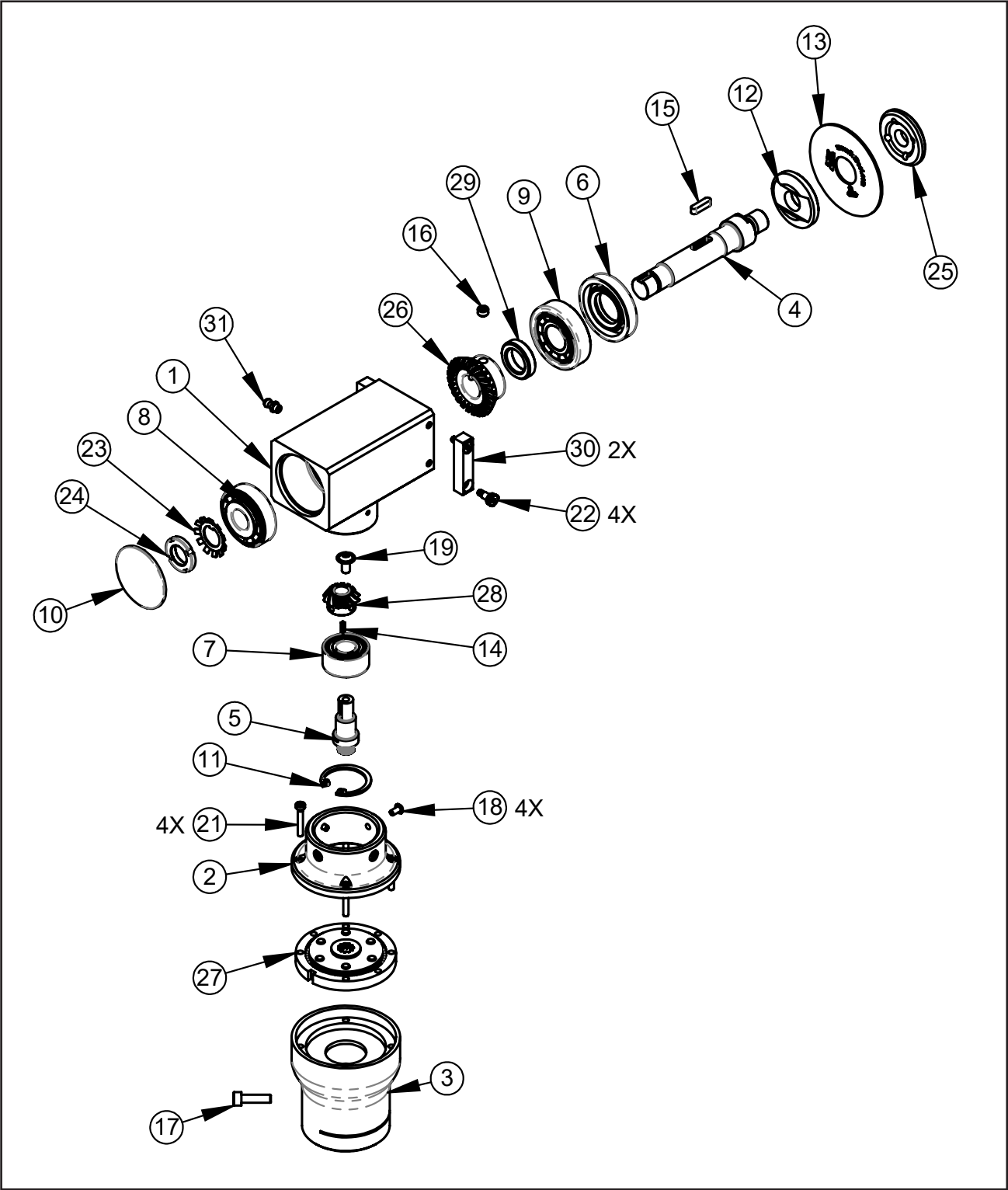
SUBASSEMBLY, TUBESAW (P/N 02-3218)



Parts List, Subassembly, Tubesaw (P/N 02-3218)

Item No	Part No.	Description	Qty
1.	04-0239	DRIVE-CLAMP ASSEMBLY, SAW	1
2.	30-7451	LIFTING EYE, M8-1.25	1
3.	30-7452	LASER, LINE POINTER	1
4.	33-4502	SCREW, CAP, M6X1-30MM	2
5.	33-4594	SCREW, CAP, M6 X 1 X 12MM	4
6.	34-0002	WASHER,FLAT,USS,1/4"NOMINAL	4
7.	43-1400	COVER, CHIPGUARD, TUBESAW	1
8.	48-4841	BLOCK,CLAMP,LINE LASER	1
9.	48-4862	BLOCK, LASER POINTER WITH FILTER	1
10.	49-2058	HOLDER, SAW PLUNGE ASSEMBLY	1

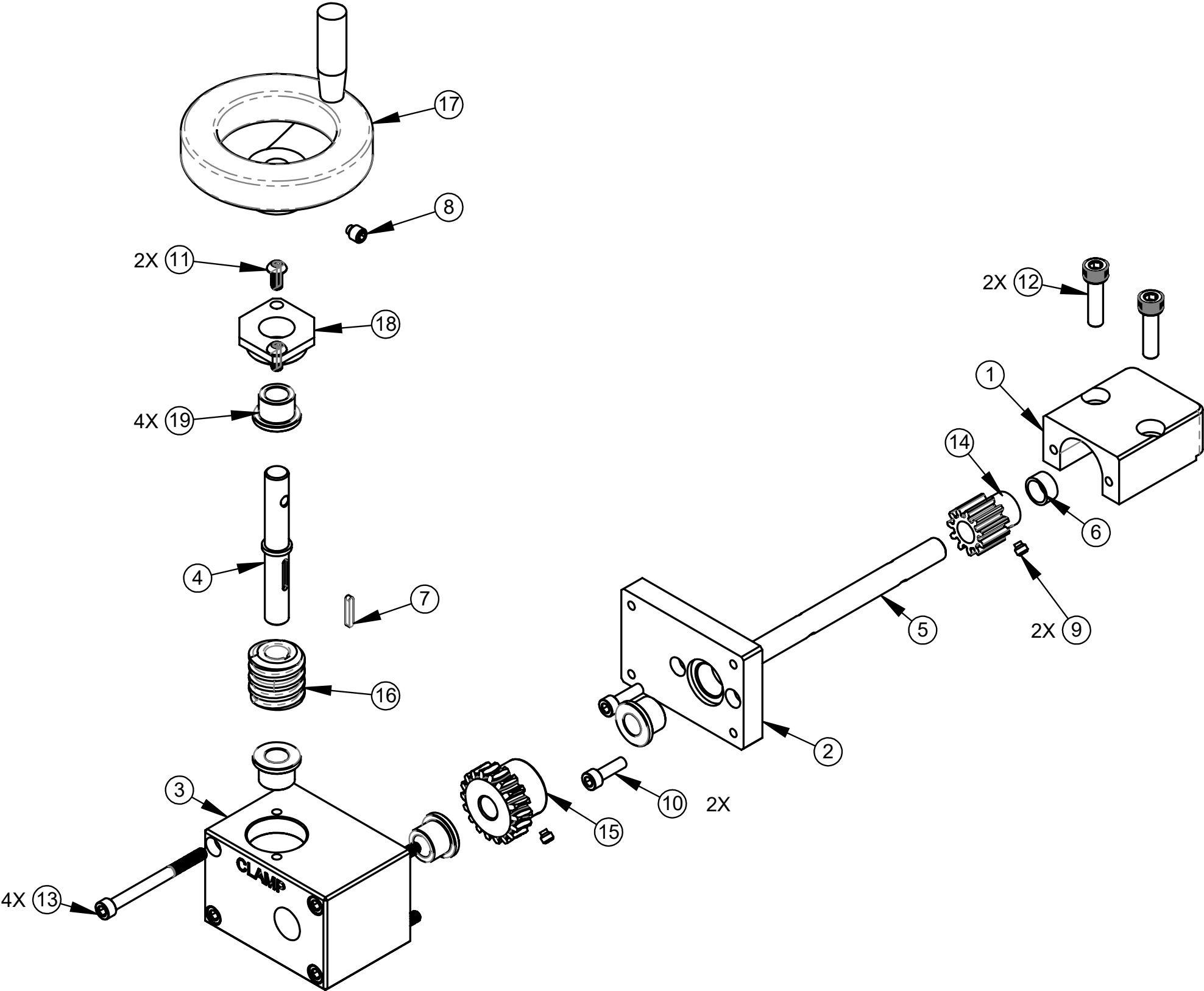
SPINDLE ASSEMBLY, TUBE SAW,CORDED, (P/N 04-0225)



Parts List, Spindle Assembly, Tube Saw,Corded, (P/N 04-0225)

Item No	Part No.	Description	Qty
1.	19-1987	HOUSING,BEVEL,GEARBOX	1
2.	19-1990	HOUSING,LID,PLANETARY GEARBOX	1
3.	19-2018	HOUSING, PLANETARY, 3:1	1
4.	20-1850	SHAFT,DRIVE,SAW	1
5.	20-1863	SHAFT ASSY,OUTPUT,PLANETARY	1
6.	28-0721	SEAL,RADIAL SHAFT,25X52X10MM,NBR	1
7.	29-0927	BEARING,DOUBL,ANGULAR CONTACT,15X35X15MM	1
8.	29-0938	BEARING,ROLLER,TAPERED,17MM BORE,47MM OD	1
9.	29-0939	BEARING,ROLLER,TAPERED,20MM BORE,52MM OD	1
10.	30-7388	EXPANSION PLUG, 2"	1
11.	30-7412	RETAINING RING,INETERNAL,35MM,HD	1
12.	30-7416	FLANGE,INNER,ARBOR,5/8-11	1
13.	30-7417	BLADE,SAW,75MM OD, 48 TH	1
	30-7418	BLADE,SAW,75MM OD, 78 TH	1
14.	31-0071	KEY,3/32 SQ X 1/2	1
15.	31-0456	KEY,ROUNDED,3/16"X3/4"	1
16.	33-0512	SCREW,SET,5/16-18 X 1/4,CUP PT	2
17.	33-4516	SCREW,CAP,M6X1-22MM	1
18.	33-5180	SCREW,BUTTON,M4X0.7-8MM	4
19.	33-5183	SCREW,BUTTON,FLANGED,M6X1-12MM	1
20.	33-5184	SCREW,SET,#10-32X1/8",CUP PT	1
21.	33-5190	SCREW,SHOULDER,D4 h7,L16.5,M4X0.7-5mm	4
22.	33-5226	BOLT, SHOULDER, M4X.07X 5MMX7MM	4
23.	34-0832	WASHER,LOCK,BEARING,17MM BORE	1
24.	35-1218	NUT,LOCK,BEARING,17MM BORE	1
25.	35-1226	NUT,LOCK,ARBOR,5/8-11	1
26.	39-1453	GEAR,SPIRAL BEVEL,14 DP,20 PA,2:1	1
27.	39-1470	GEAR,PLANETARY,3:1,D-PROFILE,SERRATION	1
28.	39-1456	PINION,SPIRAL BEVEL,14 DP,20 PA,2:1	1
29.	44-1781	SPACER,BEVEL GEAR	1
30.	48-4814	CLAMP BLOCK, GEARBOX MOUNT	2
31.	54-1792	FITTING,GREASE,M6X1,BRASS	1

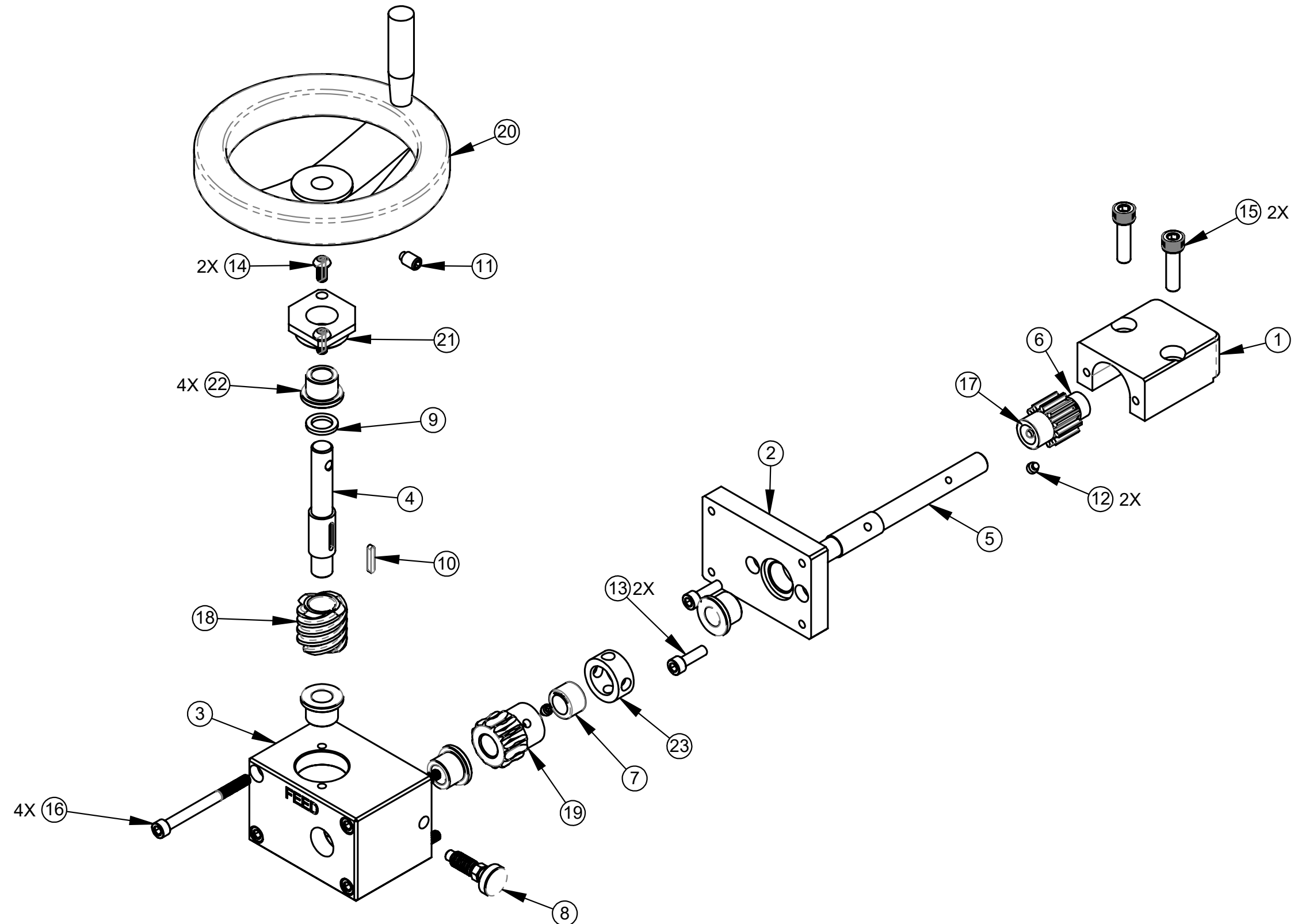
DRIVE ASSY, JAW CLAMP (P/N 04-0234)



Parts List, Drive Assy, Jaw Clamp (P/N 04-0234)

Item No	Part No.	Description	Qty
1.	19-1985	HOUSING, SPUR GEAR	1
2.	19-2008	HOUSING, COVER	1
3.	19-2009	HOUSING, WORM GEAR 18:1	1
4.	20-1870	SHAFT,WORM,CLAMP 18:1	1
5.	20-1871	SHAFT, WORM GEAR TO SPUR GEAR 18:1	1
6.	29-0931	BEARING,PLAIN,1/2"ID,5/8"OD	1
7.	31-0458	KEY,1/8 SQ X 3/4, ROUNDED	1
8.	33-1301	SCREW,SET,5/16-18 X 3/8,HDOG	1
9.	33-1527	SCREW,SET,1/4-20 X 1/4,HDOG	2
10.	33-4597	SCREW,CAP,M6 X 1.00 X 20 MM	2
11.	33-4967	SCREW, BUTTON, M6 X1.0 X 12MM	2
12.	33-5218	SCREW, CAP, M8 X 1.25 X 30MM	2
13.	33-5246	SCREW, CAP, M6-1 X 70MM	4
14.	39-1458	GEAR,SPUR,12 DP,14 1/2 PA,11 TEETH	1
15.	39-1460	GEAR, WORM GEAR, 12 DP, 18T, 1PD	1
16.	39-1465	WORM,12DP,14.5PA,1PD,RH	1
17.	41-1200	HANDLE, 4" OD, 1/2" SHAFT	1
18.	43-1389	COVER, WORM GEAR	1
19.	45-0666	BUSHING,FLANGED,0.5ID	4

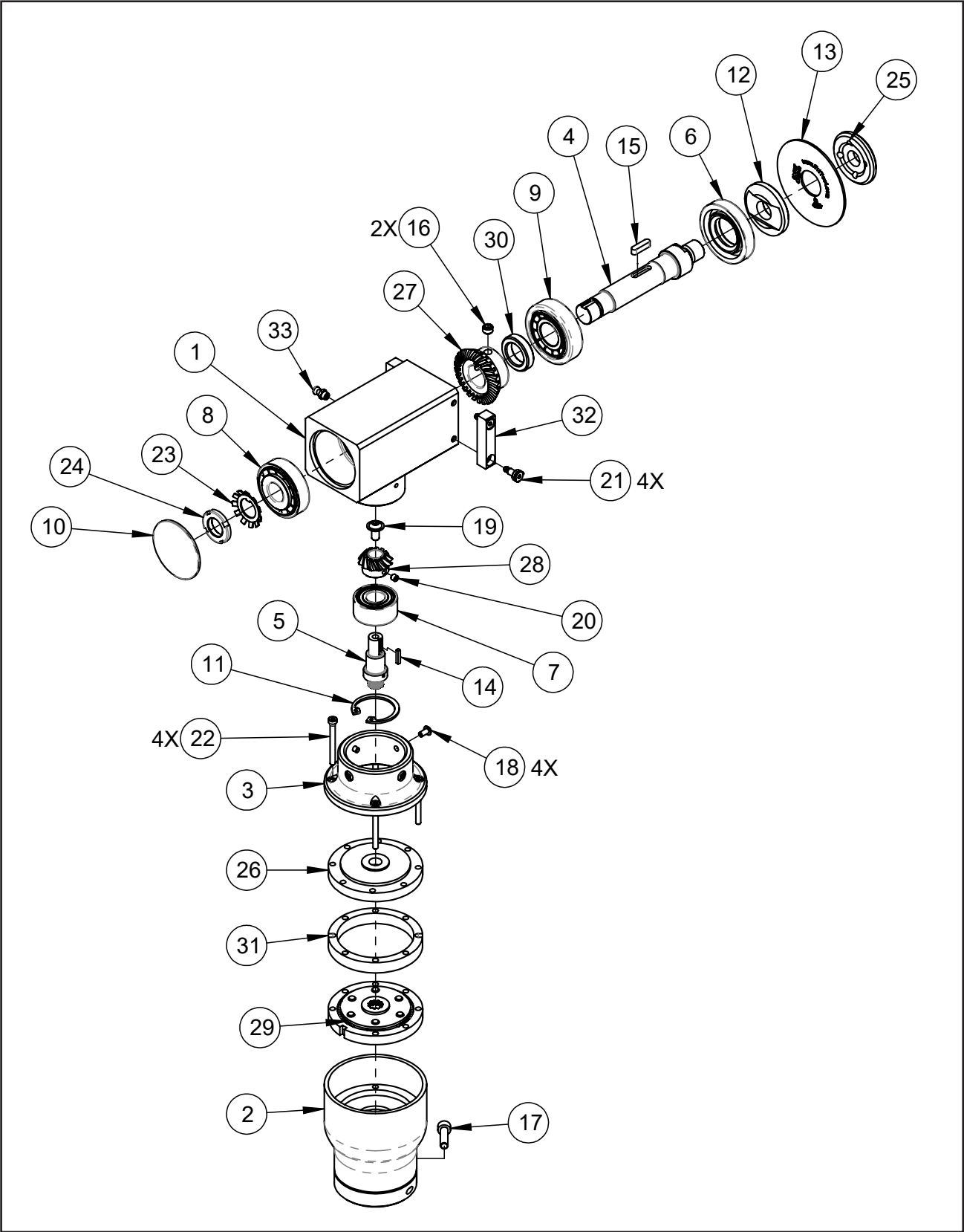
DRIVE ASSY, FEED DRIVE 3:1 RATIO (P/N 04-0236)



Parts List, Drive Assy, Feed Drive 3:1 Ratio (P/N 04-0236)

Item No	Part No.	Description	Qty
1.	19-1985	HOUSING, SPUR GEAR	1
2.	19-2008	HOUSING, COVER	1
3.	19-2023	HOUSING, WORM GEAR, 3:1	1
4.	20-1881	SHAFT, WORM AND HANDWHEEL 3:1	1
5.	20-1891	SHAFT, WITH CLUTCH	1
6.	29-0931	BEARING,PLAIN,1/2"ID,5/8"OD	1
7.	30-2490	CLUTCH,ROLLER,1/2"ID	1
8.	30-7439	SHIM, .750 OD X .500 ID X .090THK	1
9.	30-7378	PLUNGER, RETRACTABLE	1
10.	31-0458	KEY,1/8 SQ X 3/4, ROUNDED	1
11.	33-0996	SCREW,SET,5/16-18 X 1/2,HDOG	1
12.	33-1527	SCREW,SET,1/4-20 X 1/4,HDOG	2
13.	33-4597	SCREW,CAP,M6 X 1.00 X 20 MM	2
14.	33-4967	SCREW, BUTTON, M6 X1.0 X 12MM	2
15.	33-5218	SCREW, CAP, M8 X 1.25 X 30MM	2
16.	33-5246	SCREW, CAP, M6-1 X 70MM	4
17.	39-1458	GEAR,SPUR,12 DP,14 1/2 PA,11 TEETH	1
18.	39-1471	GEAR, WORM, 4 THREAD, 12 DP	1
19.	39-1472	GEAR, WORM GEAR, 4 START	1
20.	41-1199	HANDWHEEL, 6" DIA, 1/2" SHAFT	1
21.	43-1389	COVER, WORM GEAR	1
22.	45-0666	BUSHING,FLANGED,0.5ID	4
23.	62-0208	CAM, RING, 4 HOLES	1

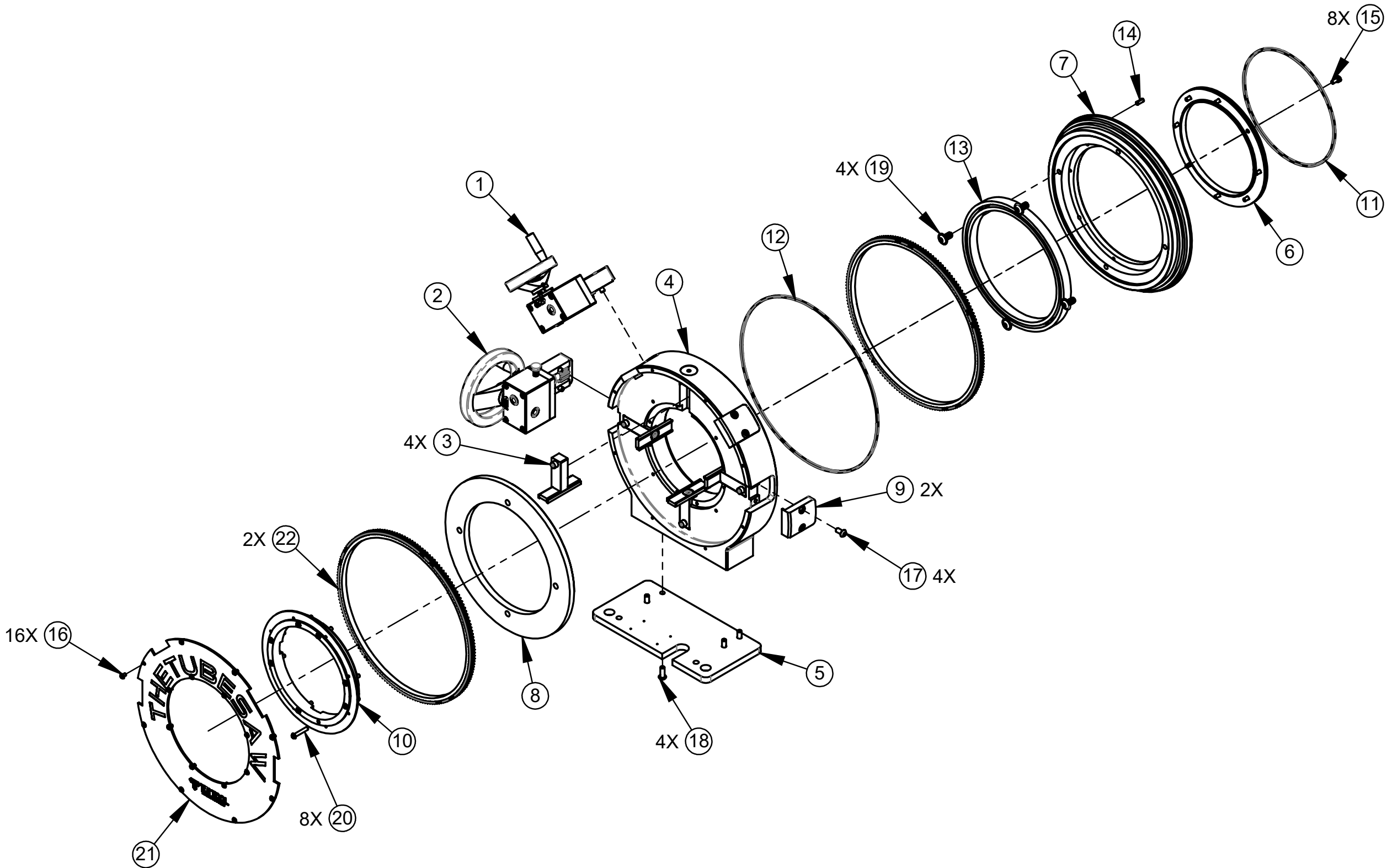
SPINDLE ASSEMBLY, TUBE SAW,CORLESS (P/N 04-0238)



Parts List, Spindle Assembly, Tube Saw, Cordless (P/N 04-0238)

Item No	Part No.	Description	Qty
1.	19-1987	HOUSING,BEVEL,GEARBOX	1
2.	19-1989	HOUSING,PLANETARY GEARBOX	1
3.	19-1990	HOUSING,LID,PLANETARY GEARBOX	1
4.	20-1850	SHAFT,DRIVE,SAW	1
5.	20-1863	SHAFT ASSY,OUTPUT,PLANETARY	1
6.	28-0721	SEAL,RADIAL SHAFT,25X52X10MM,NBR	1
7.	29-0927	BEARING,DOUBL,ANGULAR CONTACT,15X35X15MM	1
8.	29-0938	BEARING,ROLLER,TAPERED,17MM BORE,47MM OD	1
9.	29-0939	BEARING,ROLLER,TAPERED,20MM BORE,52MM OD	1
10.	30-7388	EXPANSION PLUG, 2"	1
11.	30-7412	RETAINING RING,INETERNAL,35MM,HD	1
12.	30-7416	FLANGE,INNER,ARBOR,5/8-11	1
13.	30-7417	BLADE,SAW,75MM OD, 48 TH	1
	30-7418	BLADE,SAW,75MM OD, 78 TH	1
14.	31-0071	KEY,3/32 SQ X 1/2	1
15.	31-0456	KEY,ROUNDED,3/16"X3/4"	1
16.	33-0512	SCREW,SET,5/16-18 X 1/4,CUP PT	2
17.	33-4516	SCREW,CAP,M6X1-22MM	1
18.	33-5180	SCREW,BUTTON,M4X0.7-8MM	4
19.	33-5183	SCREW,BUTTON,FLANGED,M6X1-12MM	1
20.	33-5184	SCREW,SET,#10-32X1/8",CUP PT	1
21.	33-5226	BOLT, SHOULDER, M4X.07X 5MMX7MM	4
22.	33-5264	SCREW,SHOULDER,D4 h7,L32,M4X0.7-9mm	4
23.	34-0832	WASHER,LOCK,BEARING,17MM BORE	1
24.	35-1218	NUT,LOCK,BEARING,17MM BORE	1
25.	35-1226	NUT,LOCK,ARBOR,5/8-11	1
26.	39-0373	GEAR ASSY,PLANETARY 5:1	1
27.	39-1453	GEAR,SPIRAL BEVEL,14 DP,20 PA,2:1	1
28.	39-1456	PINION,SPIRAL BEVEL,14 DP,20 PA,2:1	1
29.	39-1470	GEAR,PLANETARY,3:1,D-PROFILE,SERRATION	1
30.	44-1781	SPACER,BEVEL GEAR	1
31.	44-1783	SPACER,PLANETARY GEARS	1
32.	48-4814	CLAMP BLOCK, GEARBOX MOUNT	2
33.	54-1792	FITTING,GREASE,M6X1,BRASS	1

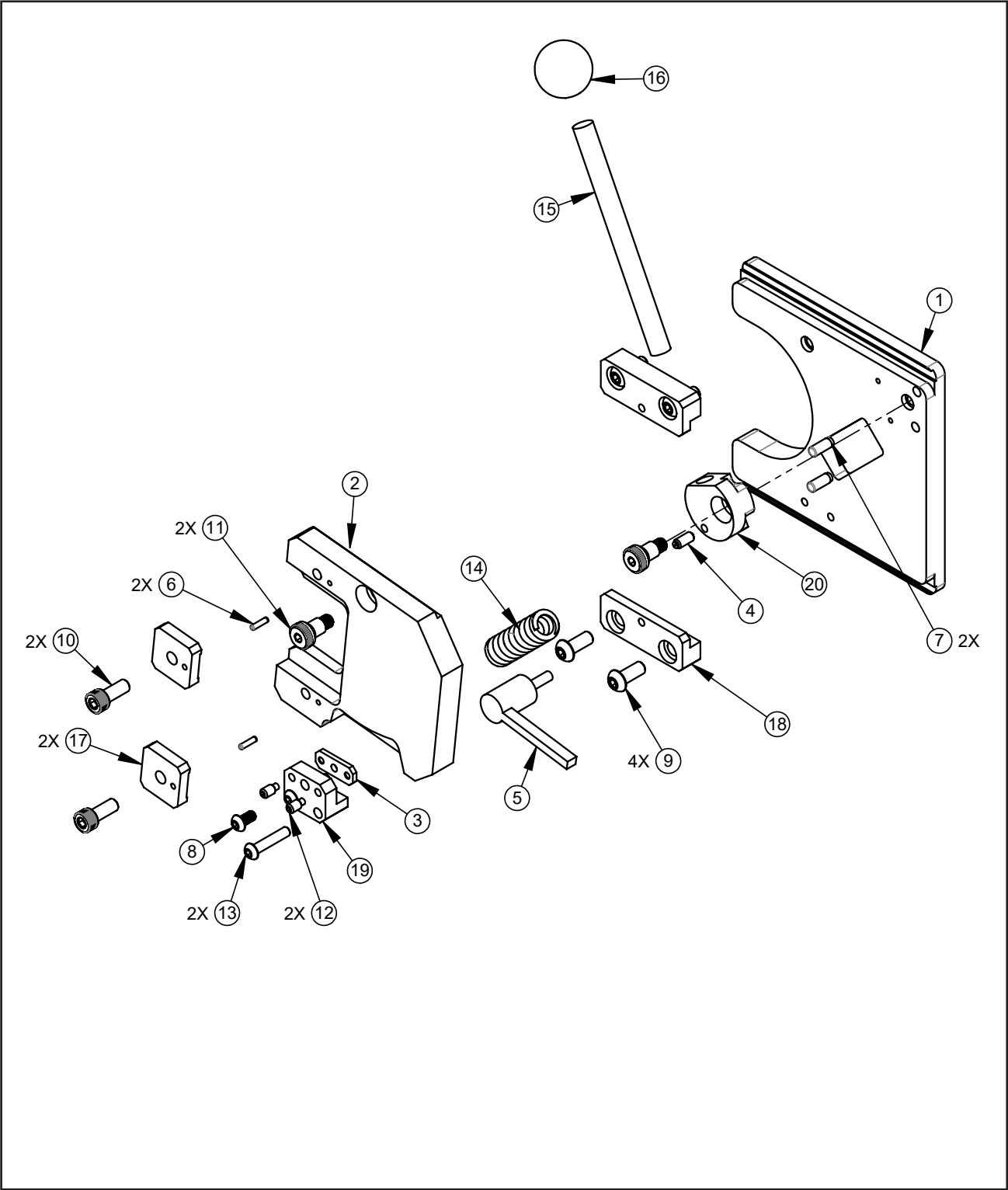
DRIVE-CLAMP ASSEMBLY, SAW (P/N 04-0239)



Parts List, Drive-Clamp Assembly, Saw (P/N 04-0239)

Item No	Part No.	Description	Qty
1.	04-0234	DRIVE ASSY, JAW CLAMP	1
2.	04-0236	DRIVE ASSY, FEED DRIVE 3:1 RATIO	1
3.	08-1873	BLOCK ASSY, JAW	4
4.	19-2007	HOUSING, MAIN TUBESAW	1
5.	24-5290	PLATE, FOOT, STAND	1
6.	24-5299	PLATE, FRONT BEARING RETAINING	1
7.	24-5312	PLATE, FRONT FACE PLATE	1
8.	24-5313	PLATE, SCROLL PLATE, JAW ACTUATION	1
9.	24-5319	PLATE, COVER	2
10.	24-5344	PLATE, SCROLLPLATE RETAINER	1
11.	28-0729	SEAL, QUAD RING -271	1
12.	28-0730	SEAL QUAD -280	1
13.	29-0934	BEARING, ROLLER, 9.0 ID, 10.5 OD X 3/4	1
14.	32-0050	PIN,ROLL,1/4 X 5/8	1
15.	33-4594	SCREW, CAP, M6 X 1 X 12MM	8
16.	33-5199	SCREW, BUTTON, M5X.8 8MM	16
17.	33-5200	SCREW,BUTTON M8X1.25 16MM	4
18.	33-5201	SCREW,BUTTON M8X1.25 22MM	4
19.	33-5203	SCREW, FLANGE M10X1.5 20MM	4
20.	33-5248	SCREW,BUTTON, M6 X 1 X 35MM	8
21.	43-1382	COVER, SCROLL PLATE	1
22.	59-0050	GEAR, RING, 164T, FLYWHEEL	2

HOLDER, SAW PLUNGE ASSEMBLY (P/N 49-2058)



Parts List, Holder, Saw Plunge Assembly (P/N 49-2058)

Item No	Part No.	Description	Qty
1.	24-5314	PLATE, SLIDE, TUBESAW	1
2.	24-5315	PLATE, PIVOT, TUBESAW	1
3.	24-5316	PLATE, WEAR	1
4.	30-7387	PLUNGER, BALL, M6X1X14, 9LBS	1
5.	30-7410	HANDLE, ADJUSTABLE, M6	1
6.	32-0177	PIN,DOWEL,1/8 DIA X 1/2	2
7.	32-0206	PIN,DOWEL,1/4 DIA X 5/8	2
8.	33-4967	SCREW, BUTTON, M6 X1.0 X 12MM	1
9.	33-5309	BOLT, BUTTON HD. M8X1.25 X 20 MM LG	4
10.	33-5222	SCREW, CAP, M8X1.25 X 20MM	2
11.	33-5223	BOLT, SHOULDER, M8X1.25X12MM	2
12.	33-5224	SCREW, SET, M6X1X12MM DOG POINT	2
13.	33-5259	SCREW, BUTTON, M6 X 1.0 X 30 MM	2
14.	40-0563	SPRING, COMPRESSION, .75 OD 2.25 LG	1
15.	41-0131	HANDLE, FEED	1
16.	42-0017	KNOB,SPHERICAL,1-3/8 DIA	1
17.	48-4811	BLOCK, TOE CLAMP	2
18.	48-4812	BLOCK, HOLDDOWN	2
19.	48-4813	BLOCK, HOLDDOWN, PIVOT	1
20.	62-0209	CAM, FEED TUBESAW	1

Kit, Tool, Tubesaw (P/N 05-1708)

Item No	Part No.	Description	Qty
1.	30-7456	TOOLBOX 19-3/4 X 6 X 4 BLACK	1
2.	33-5288	SCREW, SET, M12X1.75 X 40	2
3.	35-0752	NUT, HEX, M12X1.75	2
4.	36-0063	WRENCH, COMBINATION, 3/4	1
5.	36-0185	WRENCH, L, HEX, 6MM, 5-1/2" LG	1
7.	08-1879	BLOCK ASSY, JAW, 1.1"	4
8.	08-1880	BLOCK ASSY, JAW, 2.25"	4



WARNING



Read the manual and be familiar with all safety precautions before operating equipment. The following are general warnings for industrial equipment with moving parts. Refer to the manual for specific warnings applicable to your equipment.



EYE HAZARD - Always wear appropriate eye protection while operating the equipment.



PINCH HAZARD - Keep your hands and clothing away from moving parts.



CRUSH HAZARD - The machinery, pipe, or work piece can shift, separate, lurch, or fall.



CHIP HAZARD - Metal chips may be hot and sharp. Be careful when you clear the tooling path or clean up chips.



TIE DOWN HAZARD - Deliberate overriding of safety triggers can result in serious injury. Never lock or tie down any safety triggers.



SHOCK HAZARD - Ensure that the equipment is properly installed and grounded. Ensure that the equipment is not damaged and that the power cord is intact.

OTHER HAZARDS

- Tool bits are sharp and can cause serious injury.
- Do not defeat or modify safety features.
- Disconnect power sources before servicing or moving the equipment.
- Remove all loose articles of clothing and jewelry before operating the equipment.

Be Safety Conscious!



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