Operation Manual

92-0699 Rev. 250204
Model 204B BEVELMASTER™

TRI TOOL TECHNOLOGIES

ABOUT TRI TOOL TECHNOLOGIES

At Tri Tool Technologies, 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.

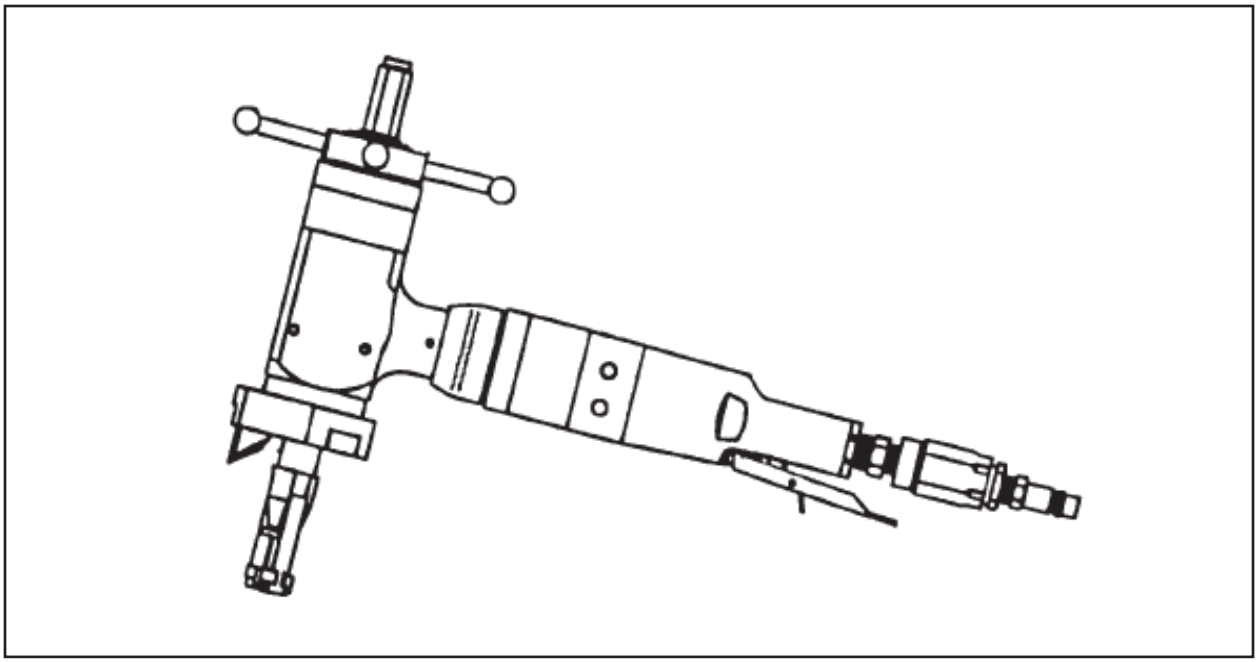


TABLE OF CONTENTS

Tri Tool Technologies 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 Resharpening 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 resharpen badly gouged, chipped, or broken tool bits. Seller will return tool bits that are not suitable for resharpening with the tool bits that were resharpened upon Buyer's request. Buyer is responsible for all shipping charges to and from Seller.

1. ABOUT THE MANUAL

Copyright

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 Technologies 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.

READ MANUAL

READ MANUAL: Read manual before use, refer to manual for Tri Tool Technologies machine being used.

DISCONNECT FROM POWER

DISCONNECT FROM POWER: Disconnect main plug from electrical outlet before performing all maintenance.

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 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.

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 are 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 Technologies 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

The Model 204B BEVELMASTER™ is a Pipe Beveler 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 end preparations that meet all existing conventional codes including the more stringent nuclear codes may be machined.

The various interchangeable Jaw Blocks and Ramps will secure the Model 204B BEVELMASTER™ to pipe and tubing having an inside diameter ranging from 1.25” (31.8mm) through 4.33” (110.0mm).

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

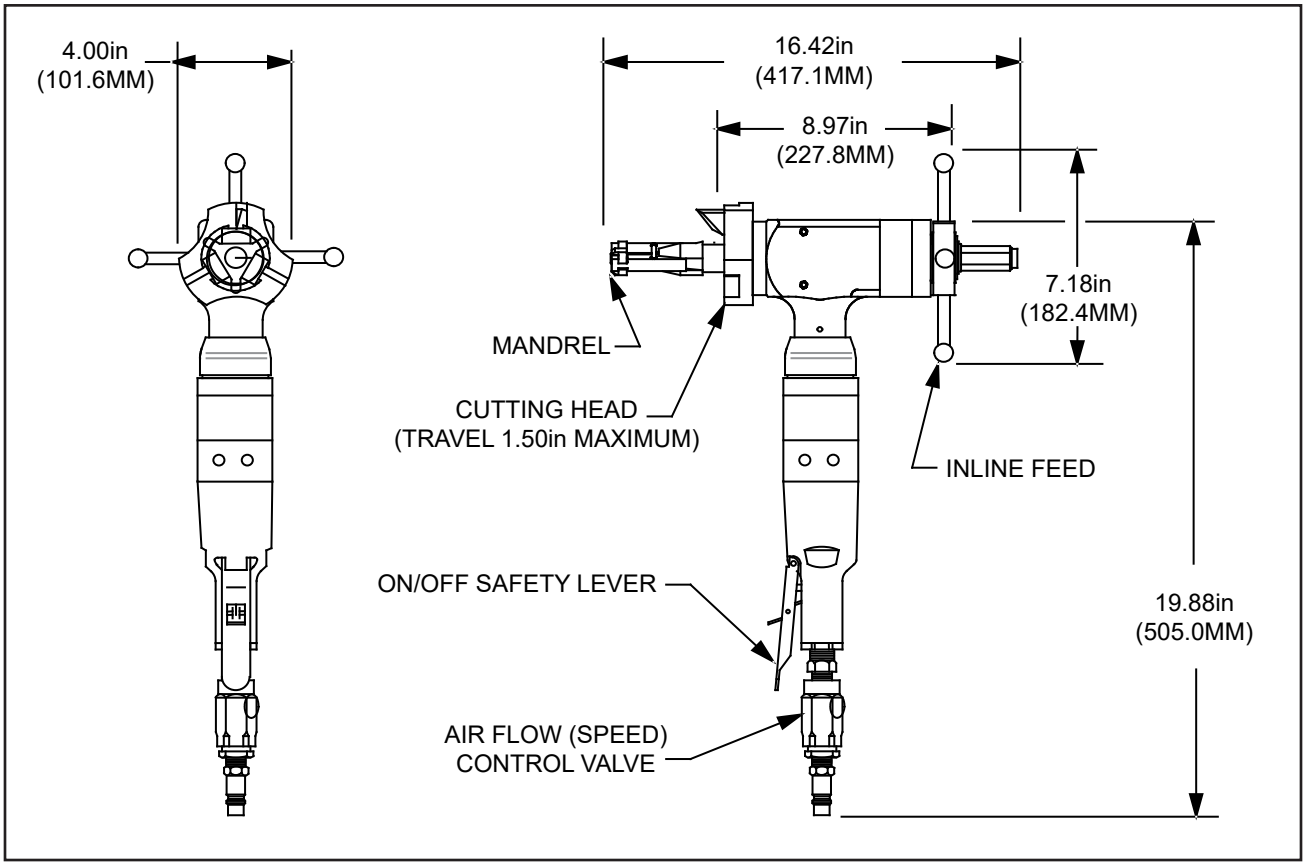
The Model 204B BEVELMASTER™ accepts the reaction torque generated by the machining operations through the Mandrel.

No additional restraining devices are required.

4. SPECIFICATIONS

MODEL 204B BEVELMASTER™ with AIR MOTOR

Weight	18 lbs (8.1 kg)
Power Requirements	55 cfm at 90 psi (26 L/s at 621 kPn)



Pipe Cutting Capacities

Basic Pipe Sizes

All schedules of 1-1/4” through 4” pipe (some schedules may require optional equipment).

Basic Tube Size

Up to .531” (13.5mm) wall tubing with a maximum OD of 4.50” (114.3mm) and a minimum ID of 1.25” (31.7mm) may be beveled with standard Mandrel.

Wall Thickness Capacity (Limitations)

Wall thickness of all standard pipe schedules (.531” [13.5mm] maximum) in the range listed. Contact Tri Tool Technologies for heavier wall procedures.

Counterboring Operations

The tool will counterbore pipe and tubing with an ID range of 1.50” (38.1mm) to 4.33” (110.2mm).

Material Cutting Capabilities

Mild steels, Chrome steels (Rc 35 max), stainless steel, copper-nickel alloys and aluminum without limitations except size and wall thickness as specified.

Inconel and other high temperature alloys may require special procedures as a function of wall thickness and type of end preparation. Contact the Tri Tool Technologies Engineering Department for details.

Clearance and Dimensions

Rotating Head DIA.	4.00” (101.6mm)
Length Over Motor	19.88” (505.0mm)
Length (of machine)	8.97” (227.8mm)
Available Feed Travel	1.50” (38.1mm)

Drive System

Final Drive	Gear Driven
Pneumatic Motor	
Free speed	325 RPM
Max. H.P. speed	162 RPM

Power Supply

Pneumatic motor requires 55 cfm (26 L/s) air supply at 90 psi (621 kPa) for maximum horsepower delivery.

NOTE: Air Supply must have a Filter/Regulator/Lubricator (FRL) system to protect the warranty on the air motor.

Cutting Head Speeds

Maximum Cutting Head Speed	162 RPM
Cutting Head Speed @ Maximum H.P.	82 RPM
Functional Speed Range	20-100 RPM
RPM at 300 Surface Inches Per Minute	
4.50” (114.3mm)	21 RPM
1.25” (31.8mm)	76 RPM

Speed Control

On/off safety lever valve and twist-type air flow control valve.

Mounting

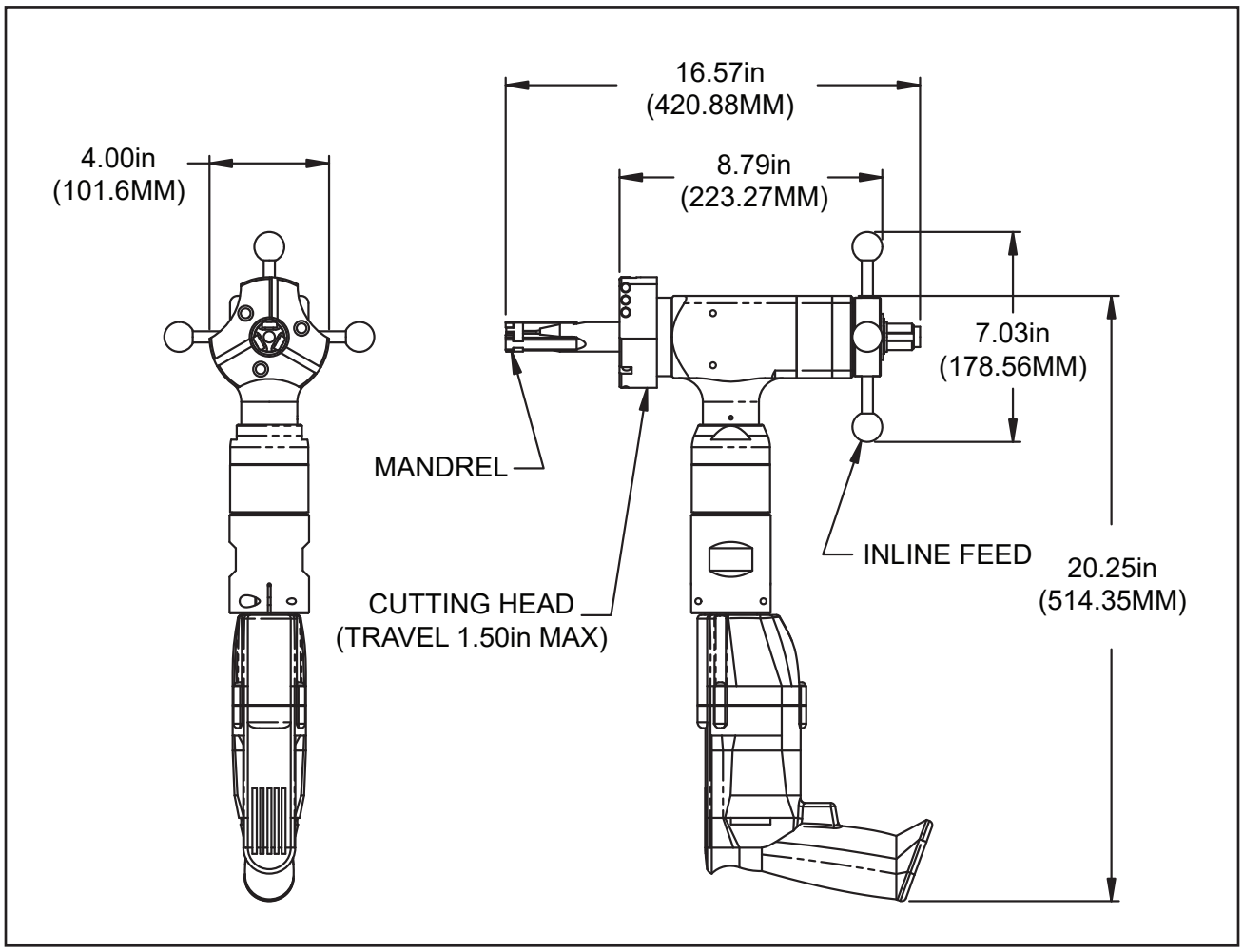
Manually actuated Draw Rod expands Mandrel Ramps and Jaw Blocks.

Feed

Manual Feed Handle is in line at the back of the machine. Feed rate is .100” (2.5mm) per revolution of the Feed Handle.

MODEL 204B BEVELMASTER™ with ELECTRIC MOTOR

Weight	18 lbs (8.1 kg)
Power Requirements	115 VAC, 28 to 60 Hz 9.6 amp



Pipe Cutting Capacities

Basic Pipe Sizes

1” Pipe	Schedule 40 (small Mandrel required to mount in 1” schedule 80 and above.)
1 1/4” through 2 1/2” Pipe	Up to Schedule 160

NOTE: Some Schedules may require optional equipment.

Basic Tube Sizes

Up to .250” (6.4 mm) wall tubing with a maximum OD of 4.50” (114.3mm) and a minimum ID of 1.25” (31.7mm) may be beveled with standard Mandrel.

Wall Thickness Capacity (Limitations)

Wall thickness of schedules listed, .276” (7mm) maximum, in the range listed can be machined without limitations.

Wall thicknesses greater than .276” (7mm) require special procedures and are subject to Duty Cycle limitations to prevent motor damage. Contact Tri Tool Technologies for heavier wall procedures.

Counterboring Operations

The tool will counterbore pipe and tubing with an ID of 1.50” (38.1mm) to 4.33” (110.2mm).

Duty Cycle

The 204B with an electric motor (P/N 58-0147 or equivalent) duty cycle on high cutting load applications (see above), is limited to 50% ‘On’ time with a maximum of five (5) minutes continuous ‘On’ time.

Material Cutting Capabilities

Mild steels, chrome steels, (Rc 35 max), stainless steel, copper-nickel alloys and aluminum without limitations except size and wall thickness as specified.

Inconel and some other high temperature alloys may require special procedures as a function of wall thickness and type of end preparations. Contact the Tri Tool Technologies Engineering Department for details.

Clearance and Dimensions

Rotating Head DIA.	4.00” (101.6mm)
Length	8.97” (227.8mm)
Length Over Motor	20.25” (514.35mm)
Available Feed Travel	1.50” (38.1mm)

Drive System

Final Drive	Gear Driven
Electric Motor - 2 speed Ranges & 6:1 Gear Reduction	
Free speed	
Low Range	168 RPM
High Range	316 RPM
Max. HP Speed	
Low Range	112 RPM
High Range	210 RPM

Power Supply

115 VAC, 9.6 Amps, 28 to 60 Hz.

Cutting Head Speeds

Max. Cutting Head Speed	
Low Range	84 RPM
High Range	156 RPM
Cutting Head Speed @ Max. H.P.	
Low Range	56 RPM
High Range	105 RPM
Functional Speed Range	20 to 100 RPM
Speed Control	
On/Off Trigger control with Variable Speed.	

Mounting

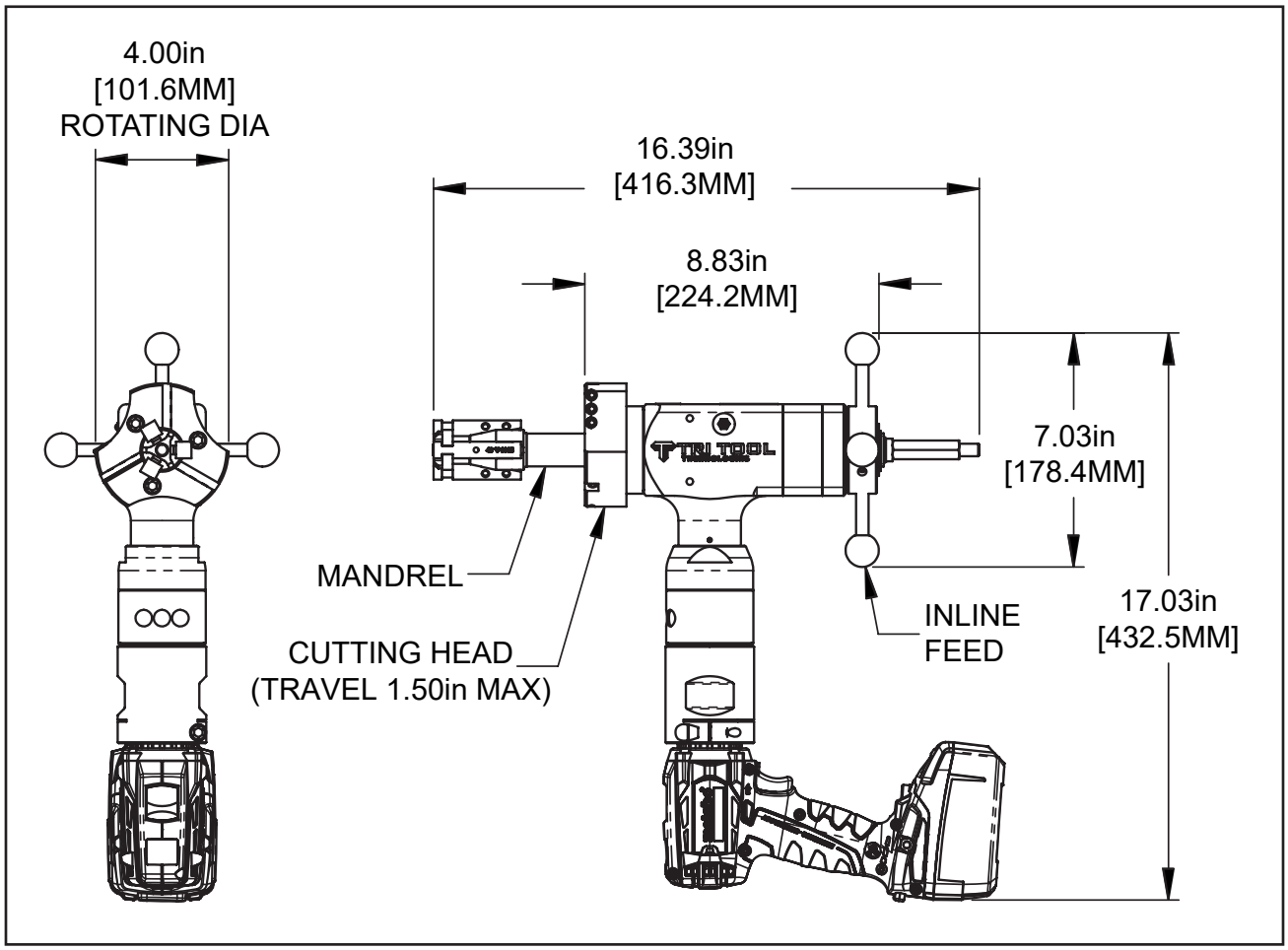
Manually actuated draw rod expands Mandrel Ramps and Jaw Blocks.

Feed

Manual-Feed Handle is in line at the back of the machine. Feed rate is .100” (2.5mm) per revolution of the Feed Handle.

MODEL 204DC with CORDLESS MOTOR

Weight	25 lbs (11.3 kg)
Power Requirements	
204DC 110V	110 VAC, 50/60 Hz
204DC 220C	220 VAC, 50/60 Hz



Pipe Cutting Capacities

Basic Pipe Sizes

1” Pipe	Schedule 40 (Small Mandrel required to mount in 1” schedule 80 and above.)
1 1/4” through 2 1/2” Pipe	Up to Schedule 80
3” through 4” Pipe	Up to Schedule 40

NOTE: Some Schedules may require optional equipment.

Wall Thickness Capacity (Limitations)

Wall thickness of schedules listed, .120” (3mm) maximum, in the range listed can be machined without limitations.

Duty Cycle

The 204DC with an electric motor (P/N 58-0422 or equivalent) duty cycle on high cutting load applications (see above), is limited to 50% ‘On’ time with a maximum of five (5) minutes continuous ‘On’ time.

Material Cutting Capabilities

Mild steels, chrome steels, (Rc 35 max), stainless steel, copper-nickel alloys and aluminum without limitations except size and wall thickness as specified.

Inconel and some other high temperature alloys may require special procedures as a function of wall thickness and type of end preparations. Contact the Tri Tool Technologies Engineering Department for details.

Drive System

Final Drive	
Gear Driven	12:1 Gear Reduction
Cutting Head Speeds	
Low Range	0-45 RPM
High Range	0-167 RPM

Speed Control

Variable Speed Trigger

Mounting

Manually actuated draw rod expands Mandrel Ramps and Jaw Blocks.

Feed

Manual Feed Handle is inline at the back of the machine. Feed rate is .100” (2.5mm) per revolution of the Feed Handle.

Maximum available feed travel is 1.50” (38.1mm)

5. MAINTENANCE

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

Use a clean, non-detergent oil, preferably SAE 10 (90 SSU) or lighter or oil as specified for the Air Motor.

Air supply for the Model 204B BEVELMASTER™ with an Air Motor requires an adequate filter/regulator/lubricator (FRL) to be used.

A maximum of 90 psi (621 kPa) line pressure is recommended.

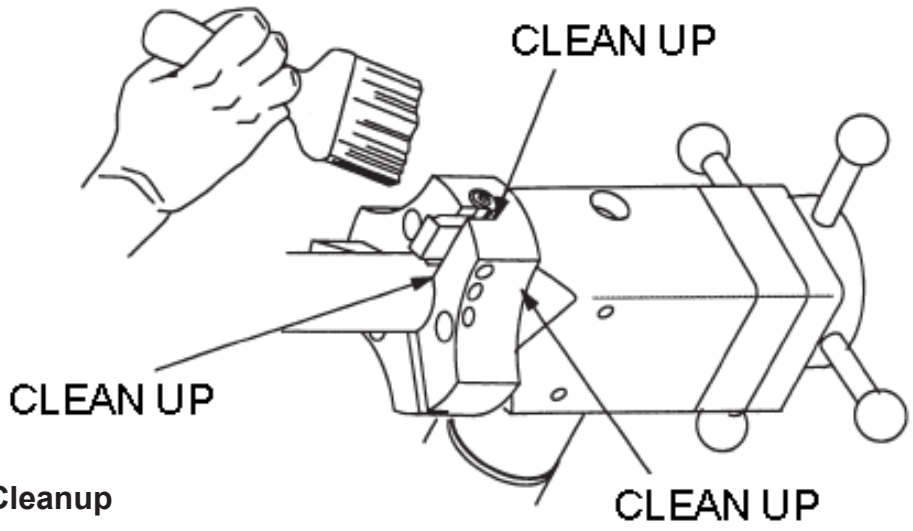


Figure 1: Cleanup

The motor warranty is void if damage occurs from contaminated air or lack of lubrication.

When the Model 204B BEVELMASTER™ is operated in the vertical position, Cutting Head up, it should be turned upside down and the chips and/or other debris removed after each bevel has been completed.

Tool life may be severely shortened, unless chips and/or other debris that have been deposited on the Cutting Head during the machining operations are removed.

Verify that there is adequate grease in the gear box. Gears and bearings are to be lubricated using a lithium-based grease.

Disassembly of a power unit voids warranty, except when performed by a Tri Tool Technologies designated repair technician. A letter of designation is required.

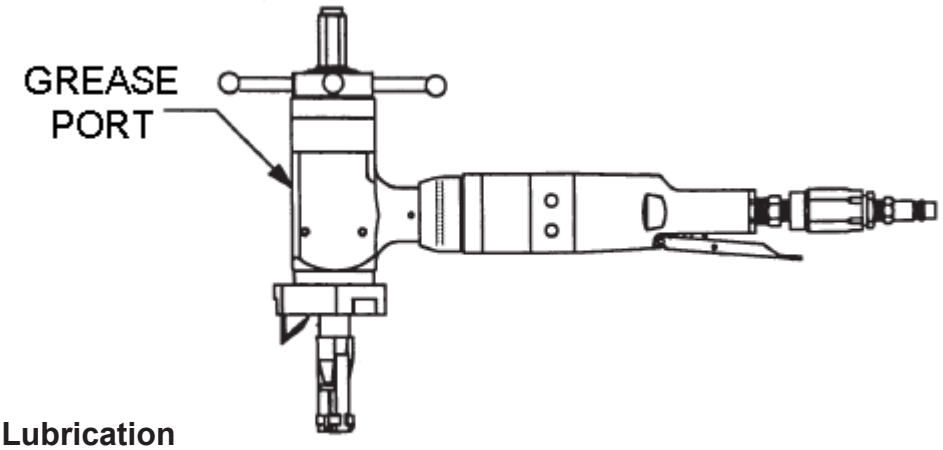


Figure 2: Lubrication

Air Motor Lubrication

No direct maintenance is normally required on the Air Motor.

However, the air supply must flow through a filter/regulator/lubricator (FRL) unit or separate units before arriving at the Air Motor.

The FRL unit must be maintained as required, frequency dependent on the basic air supply, to keep the water trap drained, filter cleaned, and the lubricator oil reservoir filled so that a drop of oil every two (2) to five (5) seconds is flowing.

- If the Model 204B BEVELMASTER™ is to be left idle for 24 hours or more after being run on 'wet' air, it is advisable to squirt oil directly into the Air Motor inlet and run the motor for two (2) to three (3) seconds.

This will prevent rusting and 'freezing' of the rotor vanes.

Lubricant Recommendations

The Air Motor requires a Class 2 lubricant, viscosity of 100 to 200 SSU at 100° F (38° C) minimum aniline point of 200° F (93° C).

- Tri Tool Technologies – Air Tool Lubricant (P/N 68-0022)
- AMOCO – American Industrial Oil No. 32
- Atlantic Richfield – Duro Oil S 150
- Chevron – A. W. Machine Oil 32
- Exxon – Nuto H32
- Shell – Tellus Oil 32

The bearings in the Air and Electric Motor are sealed and do not require any lubrication.

The Drive Gears require a lithium-based grease.

6. OPERATION

Read the operating instructions carefully before attempting to operate the Model 204B BEVELMASTER™.

Use eye protection at all times when operating the Model 204B BEVELMASTER™.

Installation

1. Select the recommended Jaw Blocks for the pipe size to be machined.
2. Gently slide the Mandrel Assembly into the Model 204B BEVELMASTER™ until it comes to a stop against the torque acceptance key.
3. Rotate the Mandrel Assembly as required to engage the torque acceptance key of the Model 204B BEVELMASTER™ with the slot in the Mandrel Shaft.

CAUTION

CAUTION: Since the Mandrel Shaft will contact the torque acceptance key before the Feed Nut engages the Mandrel Shaft threads, do not force or allow the machine to impact the lead threads of the Feed Nut with the lead threads of the Mandrel.

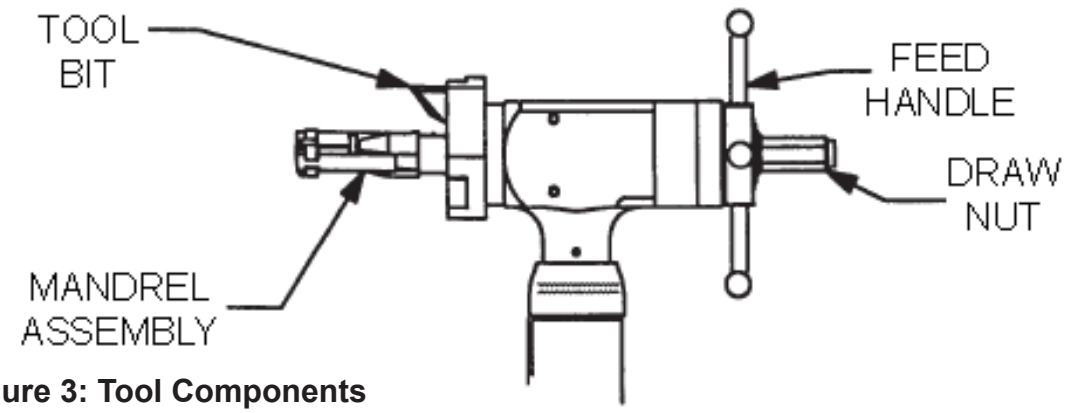


Figure 3: Tool Components

4. Rotate the Feed Handle clockwise to engage the Feed Nut with the thread on the Mandrel Shaft.
5. The Model 204B BEVELMASTER™ with the Mandrel Assembly installed can be mounted into the pipe as one unit.

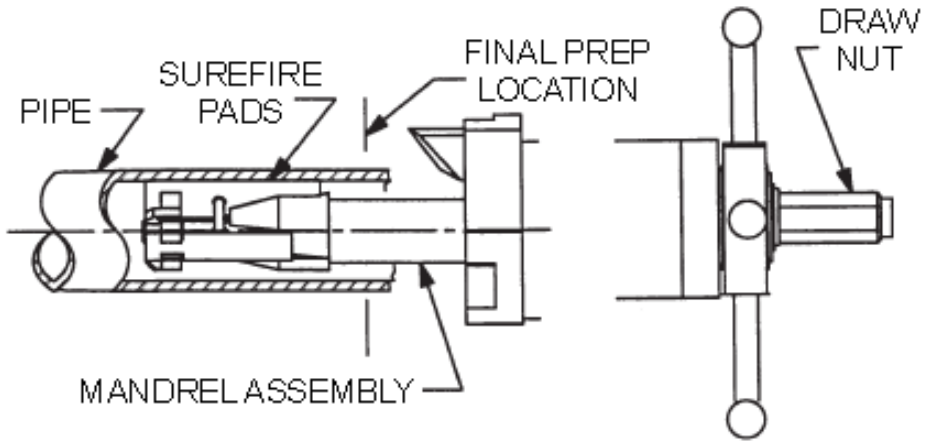


Figure 4: Tool Installation

NOTE: In order to avoid cutting the Ramps and/or Jaw Blocks during the machining operation, the Mandrel must be installed beyond the final preparation location.

6. Tighten the Draw Nut to force the Jaw Blocks out to the inside diameter of the pipe or tube.

7. Verify a clearance of 1/8” (3 mm) minimum between the Tool Bit and the pipe face.

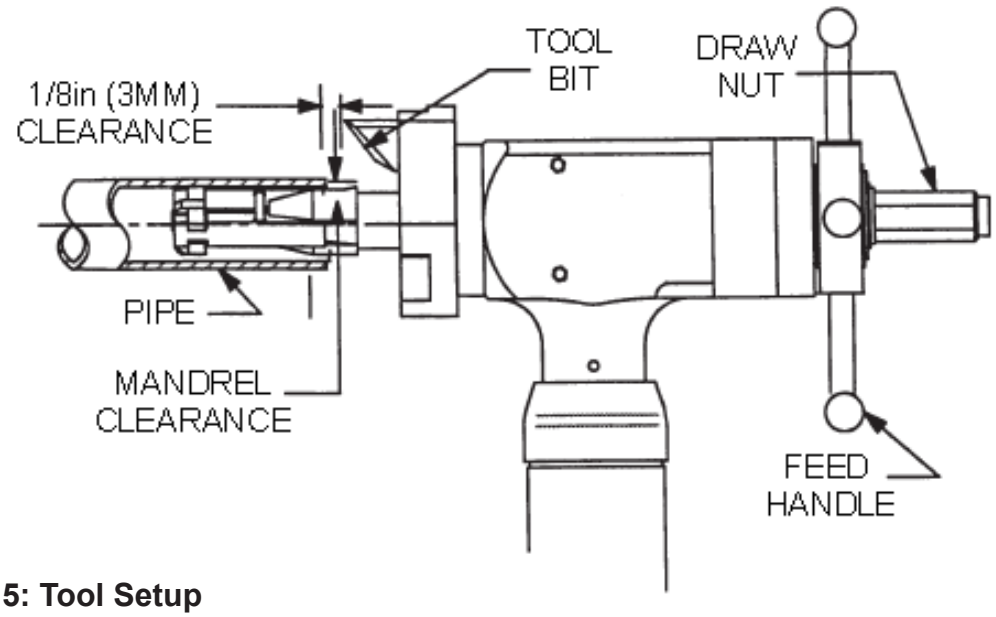


Figure 5: Tool Setup

8. Select the Tool Bit(s) required to machine the pipe to the configuration desired.

WARNING: Use of dull or improperly designed Tool Bits or Tool Bits not manufactured by Tri Tool Technologies may result in poor performance and may constitute abuse of the machine and therefore voids the Tri Tool Technologies factory warranty.

9. When performing any multiple machining operation such as facing and beveling, the facing Tool Bit should be installed as shown.

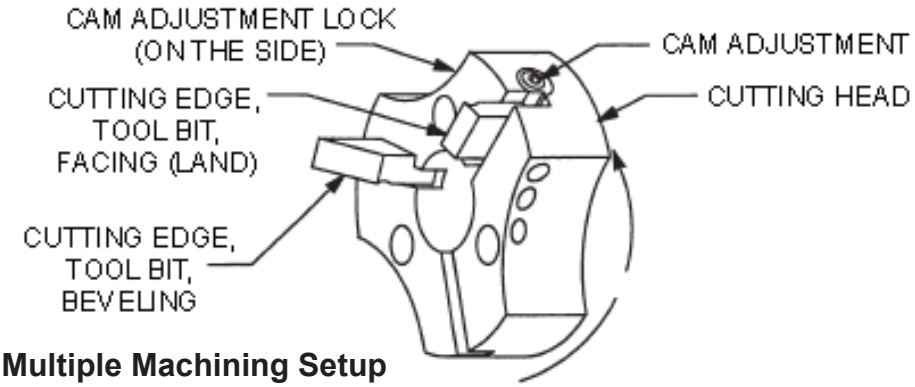


Figure 6: Multiple Machining Setup

10. Insert the Tool Bit(s) into the slot(s) in the Cutting Head.

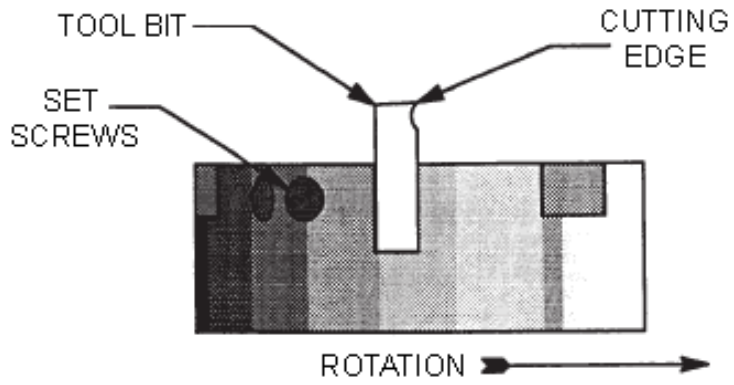
CAUTION: The cutting edge of the Tool Bit(s) must be located on the radial center line.

CAUTION: Ensure that no Tool Bit is installed backwards.

11. Make sure that there is a clearance between the Tool Bit(s) and the Mandrel.
12. Tighten the set screws to secure the Tool Bit in the Tool Bit slot.
13. Adjust the Beveling Tool Bit radially to control the land width.
14. Adjust the cam to alter the width of the land with the Facing Tool Bit.
15. (Electric Motor): Attach the Electric Motor to the Model 204B BEVELMASTER™ by inserting the motor into the adapter, then secure the adapter by tightening the integrated screws.

    (Air Motor): Attach the proper air supply line to the Model 204B BEVELMASTER™. Check that the filter/regulator/lubricator (FRL) is installed and set properly.

7. MACHINING OPERATION



1. Depress the Air Motor trigger. Adjust the cutting speed by rotating the flow valve at the air connection.
2. Rotate the Feed Handle clockwise to bring the Tool Bit(s) and pipe closer together.

NOTE: When the pipe end is not square to the pipe axis, the Tool Bit will contact only a small segment of the pipe during each revolution.

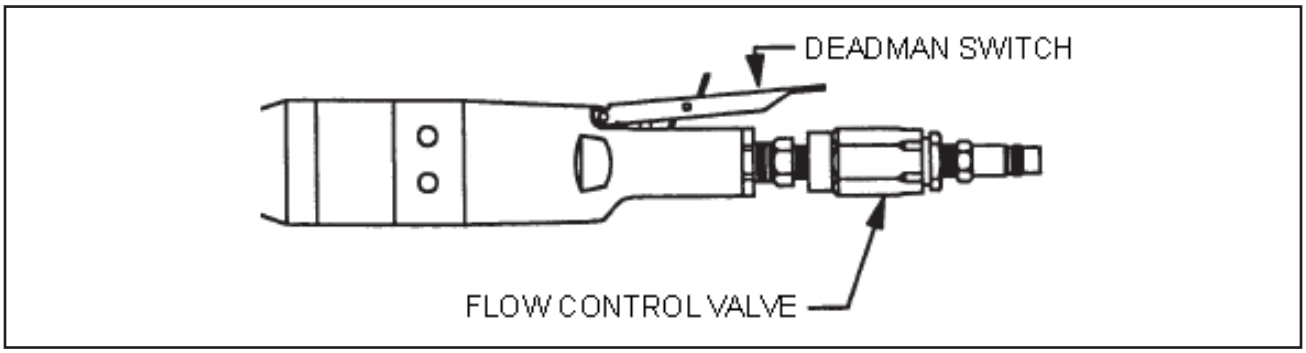
CAUTION: The actual machining operation will begin when the first Tool Bit contacts the pipe.

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

NOTE: To avoid tool bit damage, the feed rate should be very slow until the Tool Bit(s) is in contact with the pipe continually during at least one full revolution.

WARNING

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



4. Discontinue feed and allow the head to rotate one (1) to three (3) revolutions to improve finish of the prep surface.
5. Release the Air Motor trigger to stop the head rotation.
6. Rotate the Feed Handle counterclockwise to separate the Tool Bit(s) from the pipe.
7. Rotate the Feed Handle counterclockwise until the Tool Bit-to-pipe relationship is the same as described.
8. Loosen the Draw Nut on the Mandrel to release the Mandrel from the pipe.
9. The Mandrel Assembly may be left in the Model 204B BEVELMASTER™ and installed as a complete assembly.

8. CUTTING SPEEDS AND FEEDS

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)
1”	1.315”	33.4mm	48	61	73
2”	2.375”	60.3mm	27	34	40
3”	3.500”	88.9mm	18	23	27
3 1/2”	4.000”	101.6mm	16	20	24
4”	4.500”	114.3mm	14	18	21

Cutting Speed (approximate)

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 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.

Basic Feed Recommendation

Use very light feed for initial beveling or until a continuous cut is established.

This is very important for longer Tool Bit life when cutting through flame cut or out-of-square pipe ends.

Use adequate feed, .003” to .006” (.08mm to .15mm) per revolution thereafter, to establish a continuous chip cut.

- If the feed is too light, only light stringer chips will be removed.
- If the feed is too heavy the drive will start to overload, and the chip will start to have a rough or torn appearance.

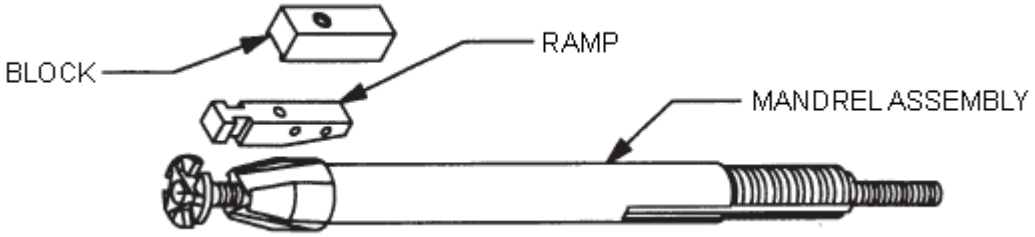
Stainless steel, which work hardens, must be worked with a heavy enough feed to stay under the work-hardened surface .003” (.08mm) to .006” (.15mm).

Never allow the Tool Bit to burnish the surface.

Reduced feeds and speeds will normally minimize chatter problems.

9. JAW BLOCKS AND RAMP SETS

Steel Jaw Blocks and Ramps

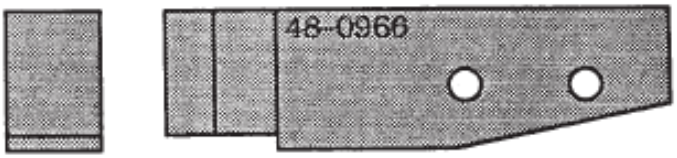
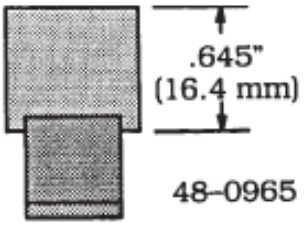
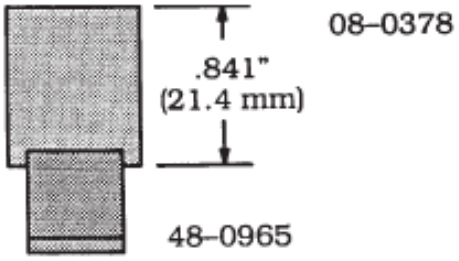


Used with Mandrel Assembly (P/N 06-0419)

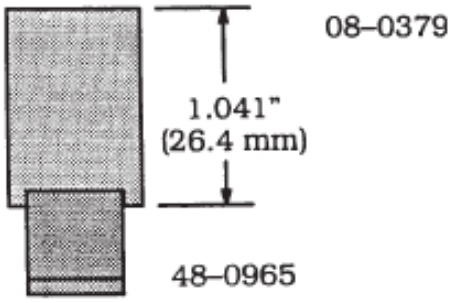
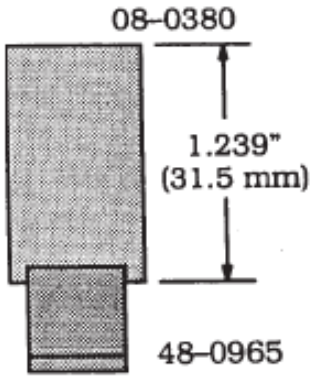
ID Mounting Range	Standard Ramp (3 Req'd)	Jaw Block Assembly (3 Req'd)	Block Height
1.250" to 1.630" (31.8mm to 41.4mm)	48-0964	N/A	N/A
1.560" to 2.000" (39.6mm to 50.8mm)	48-0965	N/A	N/A
1.930" to 2.390" (49.0mm to 60.7mm)	48-0966	N/A	N/A
2.320" to 2.780" (58.9mm to 70.6mm)	48-0965	08-0376	.442" (11.2mm)
2.710" to 3.160" (68.8mm to 80.3mm)	48-0965	08-0377	.645" (16.4mm)
3.090" to 3.550" (78.5mm to 90.2mm)	48-0965	08-0378	.841" (21.4mm)
3.480" to 3.940" (88.4mm to 100.1mm)	48-0965	08-0379	1.041" (26.4mm)
3.870" to 4.330" (98.3mm to 110.0mm)	48-0965	08-0380	1.239" (31.5mm)

NOTE: Blocks can only be mounted on the #2 Ramp (P/N 48-0965)

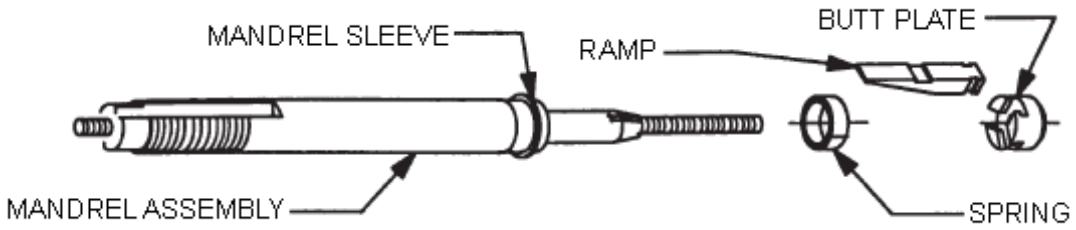
Steel Jaw Block and Ramp Profiles (Standard Mandrel)

Mounting ID	Ramp and Block Combination
1.250” to 1.630” (31.8 mm to 41.4mm)	
1.560” to 2.000” (39.6 mm to 50.8mm)	
1.930” to 2.390” (49.0 mm to 60.7mm)	
2.320” to 2.780” (58.9 mm to 70.6mm)	
2.710” to 3.160” (68.8 mm to 80.3mm)	
3.090” to 3.550” (78.5 mm to 90.2mm)	

Steel Jaw Block and Ramp Profiles (Standard Mandrel)

Mounting ID	Ramp and Block Combination
3.480” to 3.940” (88.4 mm to 100.1mm)	
3.870” to 4.330” (98.3 mm to 110.0mm)	

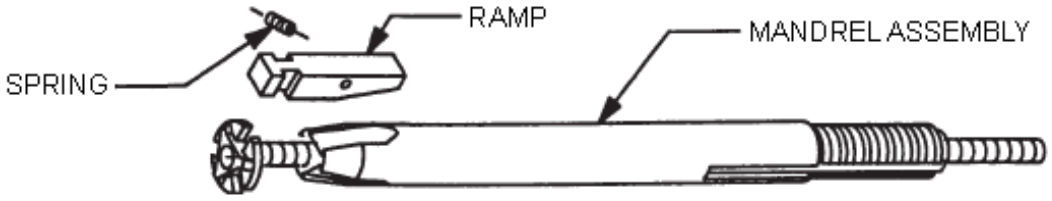
Butt Plate, Spring and Ramp



Used with Mandrel Assembly (P/N 06-0413)

ID Mounting Range	Butt Plate P/N	Spring P/N	Ramp P/N
.610” to .800” (15.5mm to 20.3mm)	24-1463	40-0130	48-0596
.800” to 1.000” (20.3mm to 25.4mm)	24-1464	40-0136	48-0597

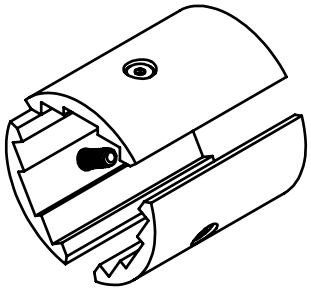
Butt Plate, Spring and Ramp



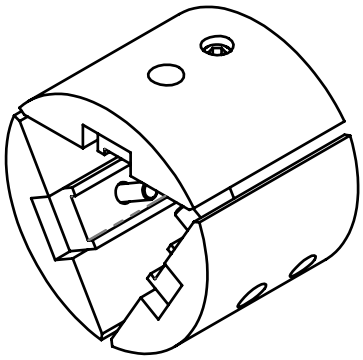
Used with Mandrel Assembly (P/N 06-0414)

ID Mounting Range	Butt Plate P/N	Spring P/N	Ramp P/N
1.000” to 1.250” (25.4mm to 31.8mm)	24-1462	40-0108	48-0976

10. SUREFIRE 4 PAD KITS



2"-2 1/2" PIPE



3"- 4" PIPE

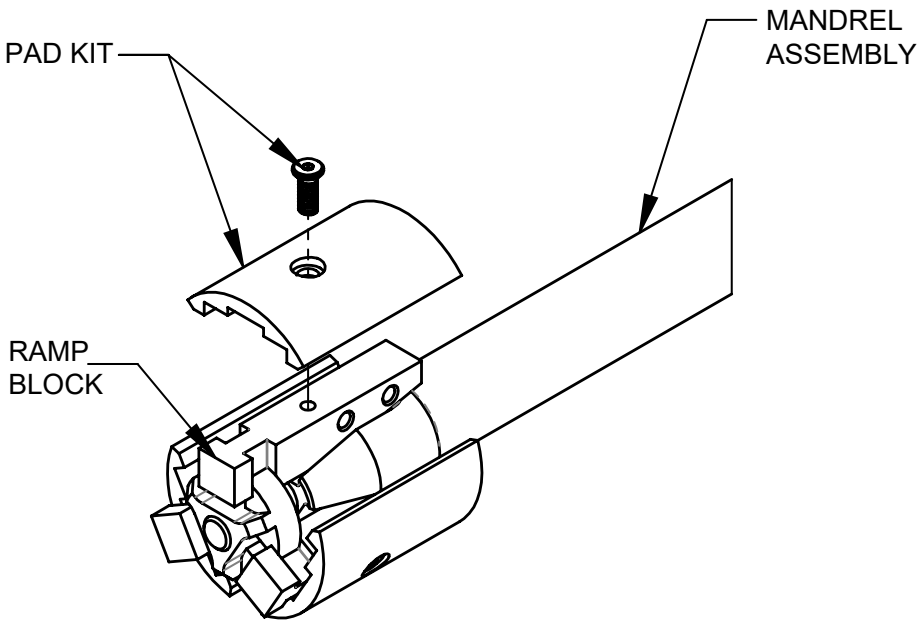
Pipe ID	SUREFIRE Kit P/N
2" SCH 5S	05-1610
2" SCH 10S	05-1611
2 1/2" SCH 5S	05-1612
2 1/2" SCH 10S	05-1613
3" SCH 5S	05-1614
3" SCH 10S	05-1615
4" SCH 5S	05-1616
4" SCH 10S	05-1617

Mounting Instructions for SUREFIRE Pad Kits

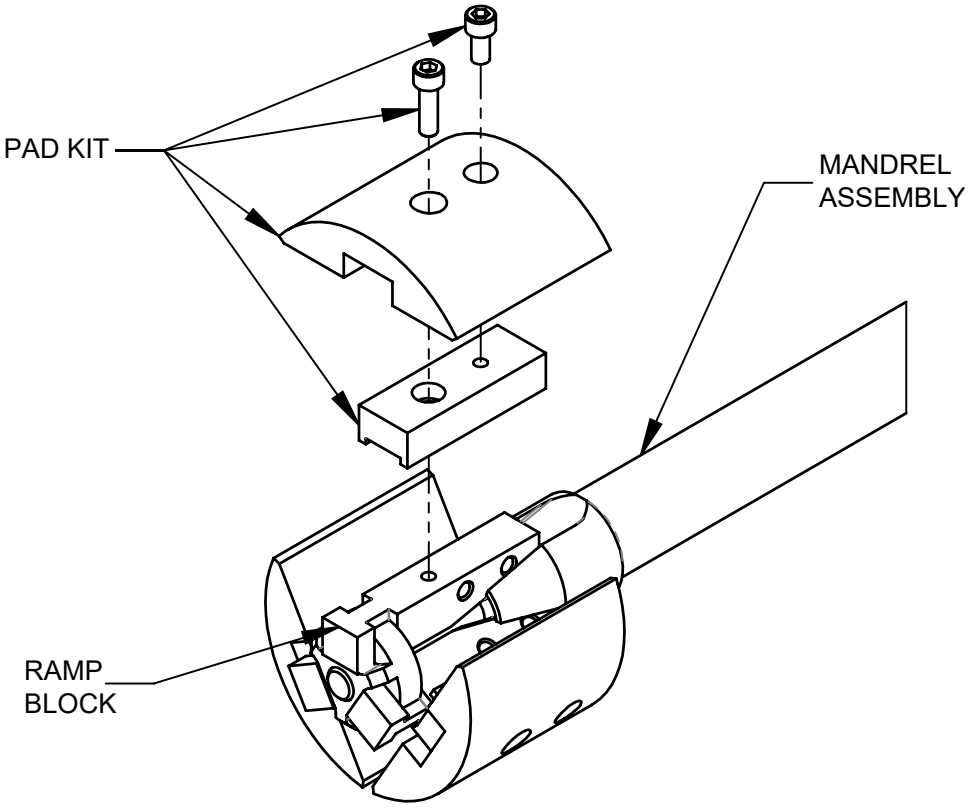
For Pad Assembly Sets 05-1610 through 05-1613, mount the pad directly to the Ramp Block and secure with its designated screw.

For Pad Assembly Sets 05-1614 through 05-1617, attach the pad assembly to the Ramp with its designated screw. Do not adjust the integral screw, holding the pad and extension block together.

Fully retract the SUREFIRE Pad Assembly by turning the Mandrel Feed Nut counterclockwise before mounting inside the pipe.



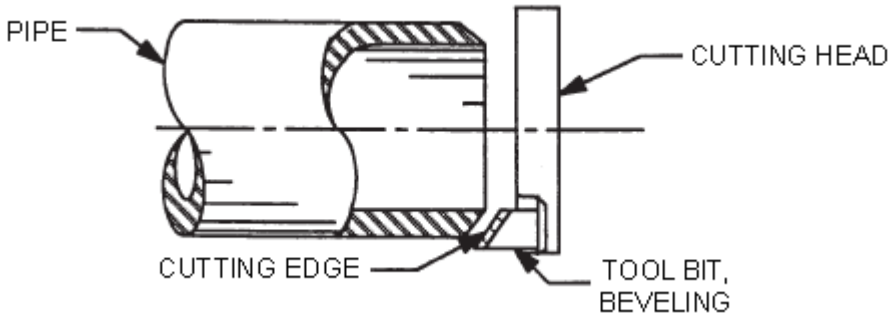
Pad Assembly 05-1610 through 05-1613



Pad Assembly 05-1614 through 05-1617

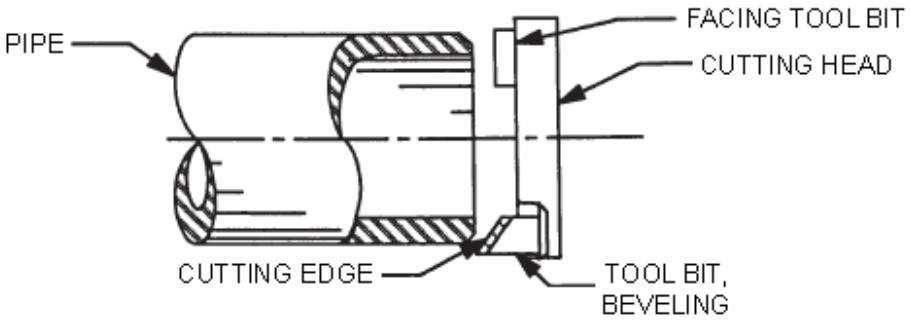
11. TOOL BITS

Tool Bit, 37.5° Beveling



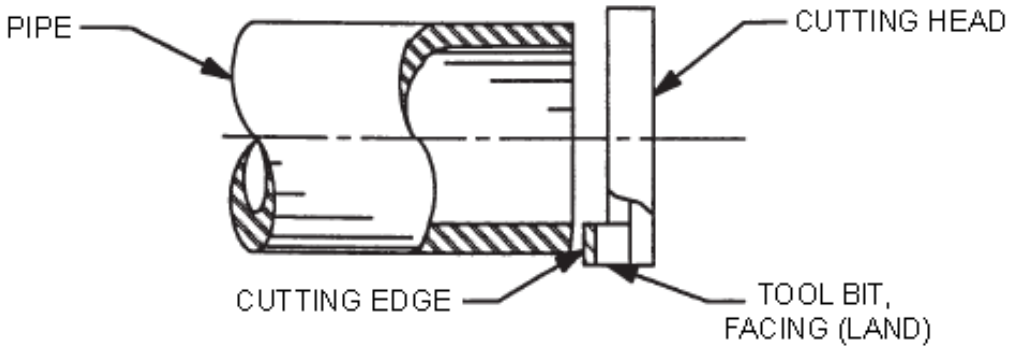
Range	Max. Wall Thickness	Pipe or Tube Material	37.5° Beveling Tool Bit P/N
1 1/4” ID thru 3” pipe (31.8mm ID thru 88.9mm OD)	.531” (13.5mm)	CS	Durabit 7
1 1/4” ID thru 3” pipe (31.8mm ID thru 88.9mm OD)	.531” (13.5mm)	SS	99-3111
3” thru 4” pipe (88.9mm ID thru 114.3mm OD)	.531” (13.5mm)	CS	99-3711
3” thru 4” pipe (88.9mm ID thru 114.3mm OD)	.531” (13.5mm)	SS	99-3712

Tool Bit, Beveling and Facing



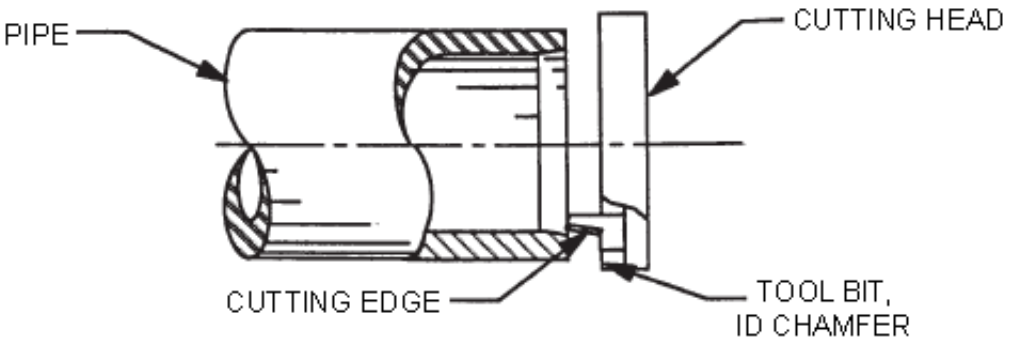
Range	Max. Wall Thickness	Pipe or Tube Material	37.5° Beveling Tool Bit P/N	Facing Tool Bit P/N
1 1/4” pipe – sch 10 thru 40 up to 2 1/2” pipe – all schs	.531” (13.5mm)	CS	99-0333	99-0257
1 1/4” pipe – sch 10 thru 40 up to 2 1/2” pipe – all schs	.531” (13.5mm)	SS	99-3111	99-0789
3 and 3 1/2” pipe – all schs	.531” (13.5mm)	CS	99-3711	99-3571
3 and 3 1/2” pipe – all schs	.531” (13.5mm)	SS	99-3712	99-0714
4” pipe – sch 40 thru 160	.531” (13.5mm)	CS	99-3711	99-3571
4” pipe – sch 40 thru 160	.531” (13.5mm)	SS	99-3712	99-0714

Tool Bit, Facing (Land)



Range	Max. Wall Thickness	Pipe or Tube Material	Facing Tool Bit P/N
1 1/4” ID thru 4” pipe (31.8mm ID thru 114.3mm OD)	.531” (13.5mm)	CS	99-0485
1 1/4” ID thru 4” pipe (31.8mm ID thru 114.3mm OD)	.531” (13.5mm)	SS	99-0277

Tool Bit, ID Chamfer



Range	Pipe or Tube Material	ID Chamfer Tool Bit P/N
1.60” ID thru 2.66” ID (40.6mm thru 67.6mm)	CS	99-0168
1.60” ID thru 2.66” ID (40.6mm thru 67.6mm)	SS	99-3713
2.14” ID thru 3.32” ID (54.4mm thru 84.3mm)	CS	99-0833
2.14” ID thru 3.32” ID (54.4mm thru 84.3mm)	SS	99-3714
2.90” ID thru 4.19” ID (73.7mm thru 106.4mm)	CS	99-0320
2.90” ID thru 4.19” ID (73.7mm thru 106.4mm)	SS	99-0288

12. TROUBLESHOOTING

Problem: 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: 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: Rough Surface Finish

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.

The cutting speed is incorrect.

Problem: 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: 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: Air Motor Does Not Start

The air power supply is shut off.

The air motor is damaged and will not run free.

The air motor needs lubrication. Add lubrication and do not run the air motor for a few minutes, then try running the motor.

Sand or other foreign material may be in the vanes of the air motor. Tap on the side of the air motor casing lightly with a piece of wood or with a soft rubber mallet just in case the vanes may be sticking.

Problem: Hydraulic Motor Does Not Start

The hydraulic power supply is shut off.

The hydraulic motor is damaged and will not run free.

13. ACCESSORIES

The following accessories are recommended for use with the Model 204B BEVELMASTER™ and are available from Tri Tool Technologies.

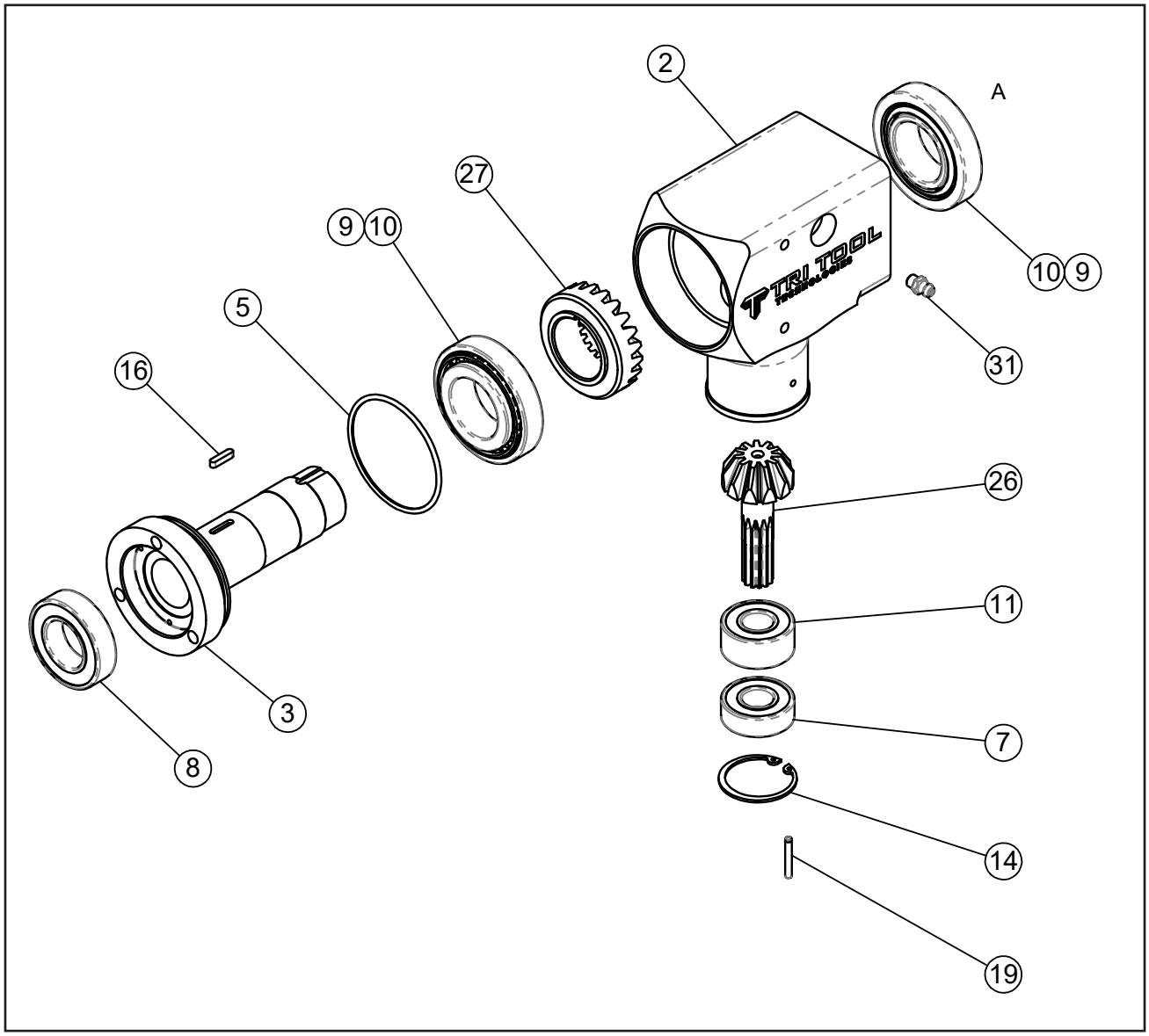
- Portable Air Caddy (P/N 75-0115)*
- Tool Bits
- Mandrel Assembly (P/N 06-0413) .610” to 1.00” Range
- Mandrel Assembly (P/N 06-0414) 1.00” to 1.25” Range
- Mandrel Kit, Elbow (P/N 05-0293)
- Squaring Plate Kit, Elbow Mandrel (P/N 05-1330)
- Flange Facer Kit (P/N 05-0292)
- Pointer Kit, Elbow Mandrel 204B (P/N 05-0316)
- Indicator Kit, Dial (P/N 05-0317)
- Adjustable Pin Kit, Elbow Mandrel (P/N 05-0355)
- Kit, SUREFIRE 4 Pads (P/N 05-1610 - 05-1617)
- Pipe Wrench, 12 In, Smooth Jaw, 2-5/8 (P/N 36-0755)**

*Wrench is recommended for removal of pneumatic motor

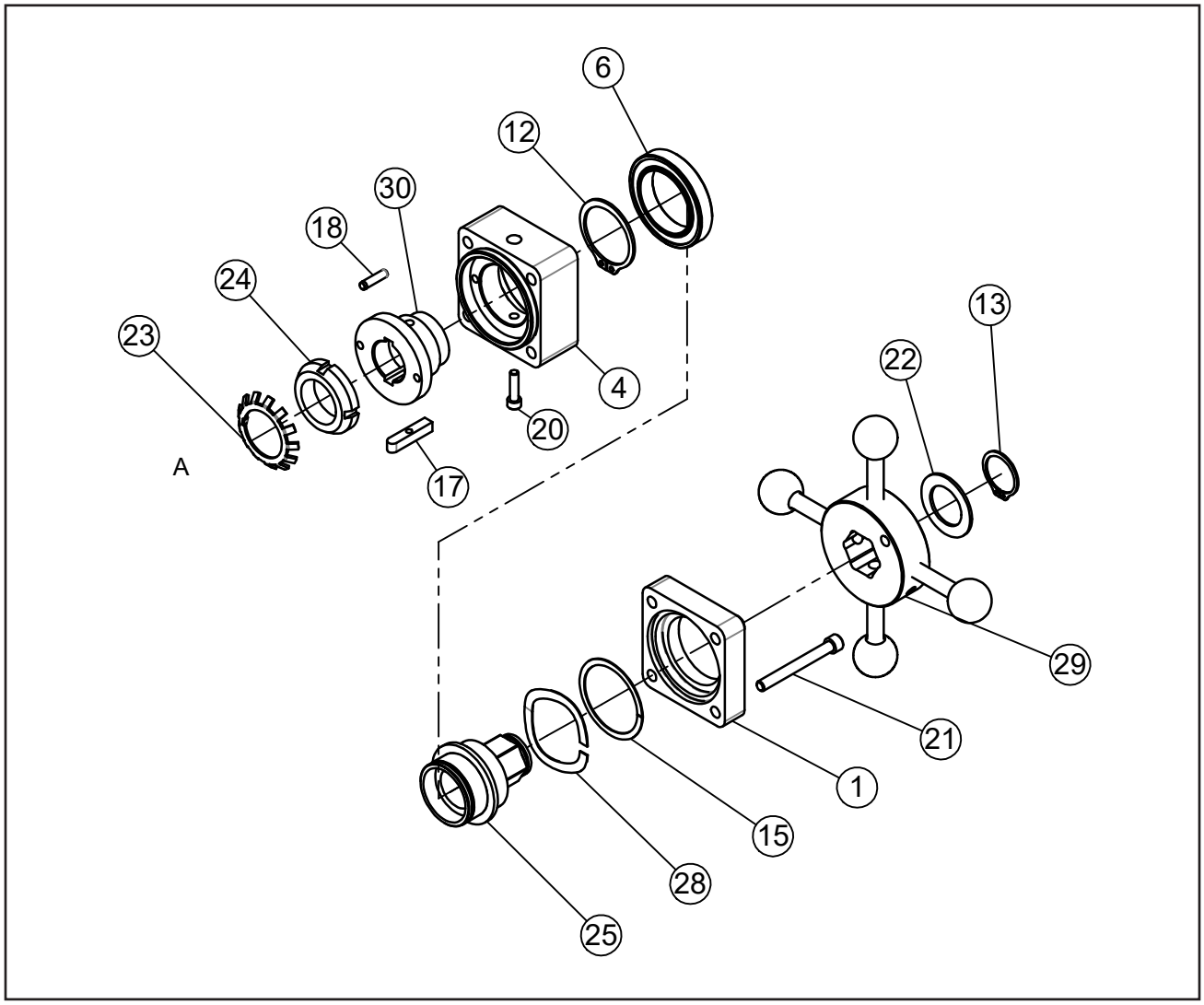
**A portable Air Caddy (FRL) is required to protect the warranty on all Tri Tool Technologies air-driven tools.

14. ILLUSTRATED PARTS BREAKDOWN

MODEL 204B BEVELMASTER™ SUB-ASSEMBLY (P/N 02-3173) *1 of 2*



MODEL 204B BEVELMASTER™ SUB-ASSEMBLY (P/N 02-3173) *2 of 2*



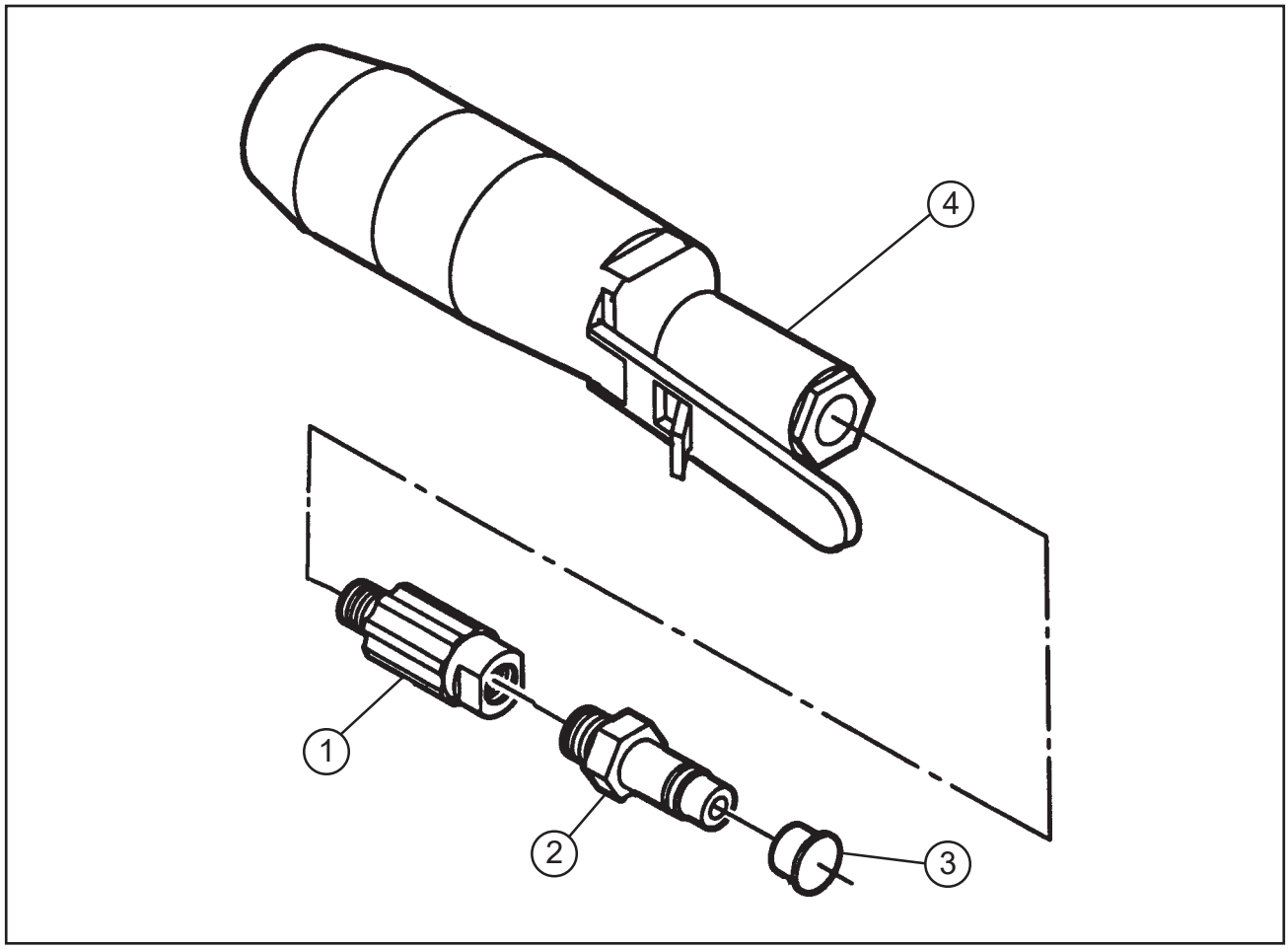
Parts List, Model 204B BEVELMASTER™ Sub-Assembly (P/N 02-3173)

Item No.	Part No.	Description	Qty
1	19-0729	HOUSING, FEED	1
2	19-1962	HOUSING, MAIN BLACK	1
3	20-1025	SHAFT, MAIN	1
4	27-1686	ADAPTER, FEED BLACK	1
5	28-0248	O-RING, 2-1/4” ID X 3/32”	1
6	29-0005	BRG, BALL, 1-9/16” X 2-5/16” X 7/16”	1
7	29-0326	BRG, BALL, .5906” X 1.378” X .433”	1
8	29-0327	BRG, BALL, .9843” X 1.850” X .4724”	1
9	29-0328	BRG, TAPER CONE, 1-1/4” ID X .660”	2
10	29-0329	BRG, TAPER CUP, 2.44” OD X .465”	2
11	29-0345	BRG, DBL ROW, .591” X 1.378” X .615”	1
12	30-0309	RING, RETAINING, EXT, 1-9/16” OD	1
13	30-0411	RING, RETAINING, EXT, 1” OD	1
14	30-2358	RING, RETAINING, INT, 1-3/8” ID	1
15	30-2359	SHIM, 2.0” OD X 1.7” ID X .024”	1
16	31-0103	KEY, 1/8” SQ X 9/16”, ROUND ENDS	1
17	31-0155	KEY, 1/4” SQ X 1.28” OER, TAP HOLE	2
18	32-0081	PIN, DOWEL, 3/16” DIA X 3/4”	2
19	32-0493	PIN, DOWEL, 1/8” DIA X 7/8”	1
20	33-0030	SCREW, CAP, 10-24 X 3/4”	1
21	33-0047	SCREW, CAP, 1/4-20 X 2-1/4”	4
22	34-0236	WASHER, THRUST, 1” X 1-9/16” X 1/16”	1
23	34-0310	WASHER, LOCK	1
24	35-0443	NUT, LOCK	1
25	35-0444	NUT, FEED	1
26	39-0754	GEAR, BEVEL,10DP, 11T, 1.10 PD	1
27	39-0755	GEAR, BEVEL, 10DP, 22T, 2.20 DP	1
28	40-0227	SPRING, WAVE	1
29	41-0136	HANDLE ASSEMBLY, INLINE FEED, 204B	1
30	45-0248	BUSHING, FEED ADAPTER	1
31	54-0375	FITTING, GREASE	1

Parts List, Model 204B BEVELMASTER™ Sub-Assembly (P/N 02-3173) *continued*

Item No.	Part No.	Description	Qty
	NOT SHOWN		
	05-1327	WRENCH KIT, 204B	
	36-0004	WRENCH, L, 7/64" HEX	1
	36-0006	WRENCH, L, 9/64" HEX	1
	36-0007	WRENCH, L, 5/32" HEX	1
	36-0010	WRENCH, L, 1/4" HEX	1
	36-0018	WRENCH, T, 1/8" HEX	1
	36-0020	WRENCH, T, 5/32" HEX	1
	36-0076	WRENCH, COMBINATION, 9/16"	1
	86-0214	CARRYING CASE	1

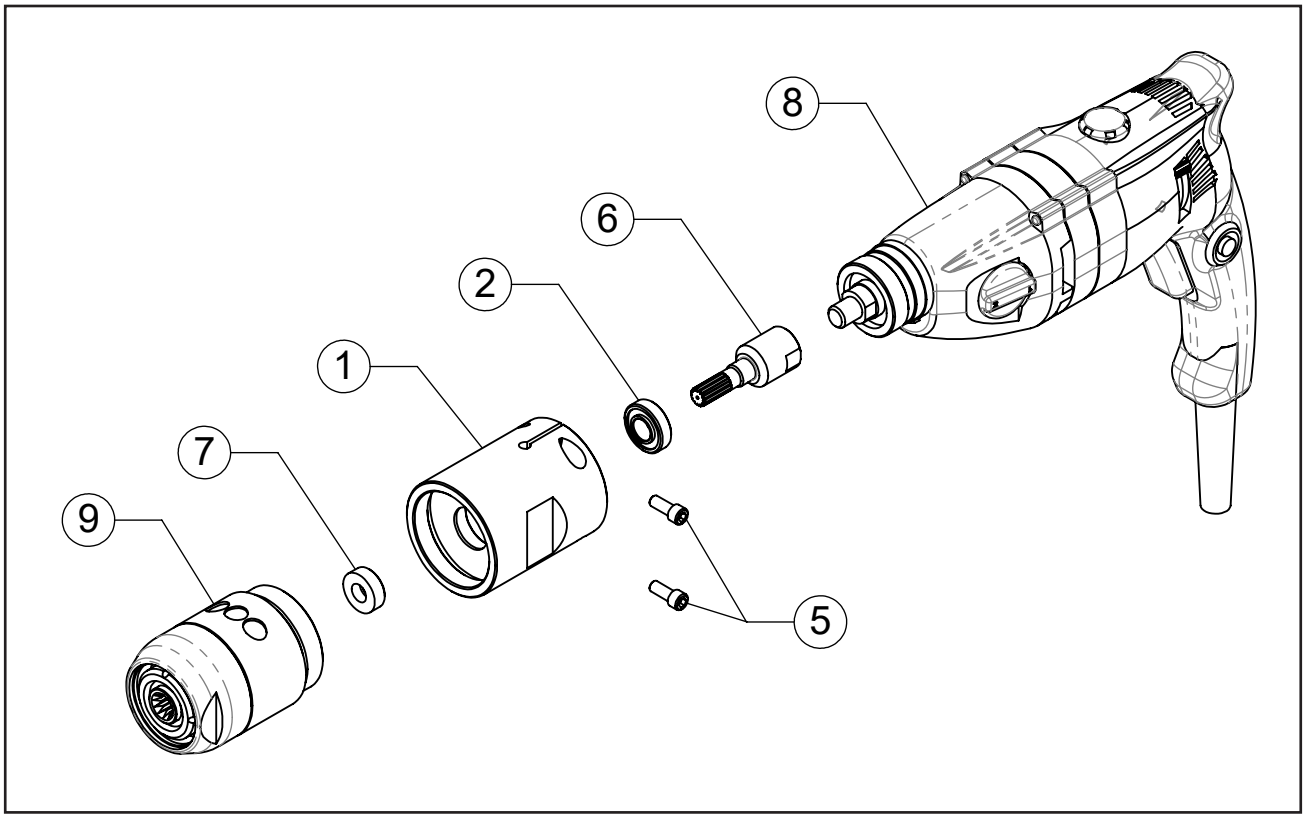
MOTOR ASSEMBLY, AIR (P/N 57-0224)



Parts List, Motor Assembly, Air (P/N 57-0224)

Item No.	Part No.	Description	Qty
1	53-0046	VALVE, FLOW CONTROL	1
2	54-0126	COUPLING, MALE QD	1
3	54-0201	CAP, YELLOW	1
4	57-0223	MOTOR, INLINE AIR	1

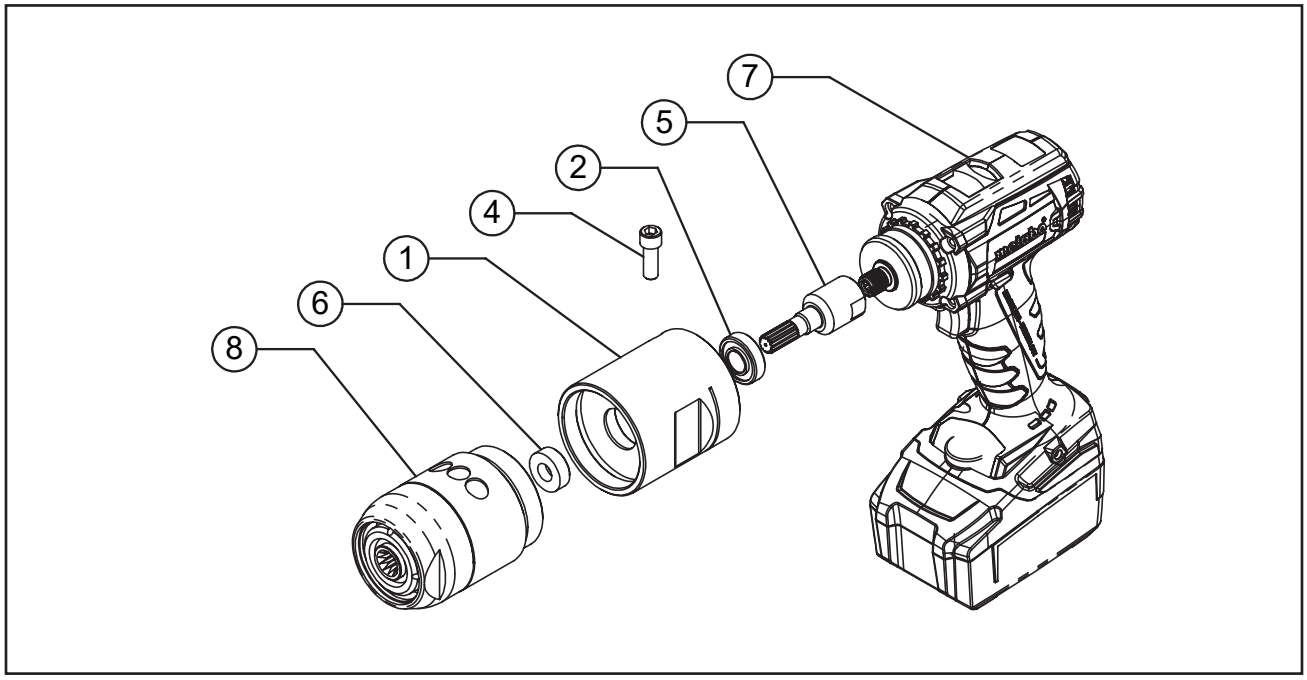
MOTOR ASSEMBLY, ELECTRIC, 110V, 220V (P/N 58-0133, 58-0147)



Parts List, Motor Assembly, Electric, 110V, 220V (P/N 58-0133, 58-0147)

Item No.	Part No.	Description	Qty
1	27-0357	ADAPTER, MOTOR	1
2	29-0182	BRG, BALL, 1/2” X 1-1/8” X 3/8”	1
3	30-0508	LABEL, “WARNING, DISCONNECT”	1
4	30-0961	LABEL, WARNING, SAFETY SWITCH	1
5	33-0039	SCREW, CAP, 1/4-20 X 5/8”	2
6	39-0568	GEAR, DRIVE	1
7	44-0411	SPACER	1
8	58-0277	MOTOR, C.W. ELEC, METABO, 110V (58-0147)	1
	58-0323	MOTOR, MOD., ELECTRIC, 220V (58-0133)	1
9	91-0545	GEAR ASSEMBLY	1

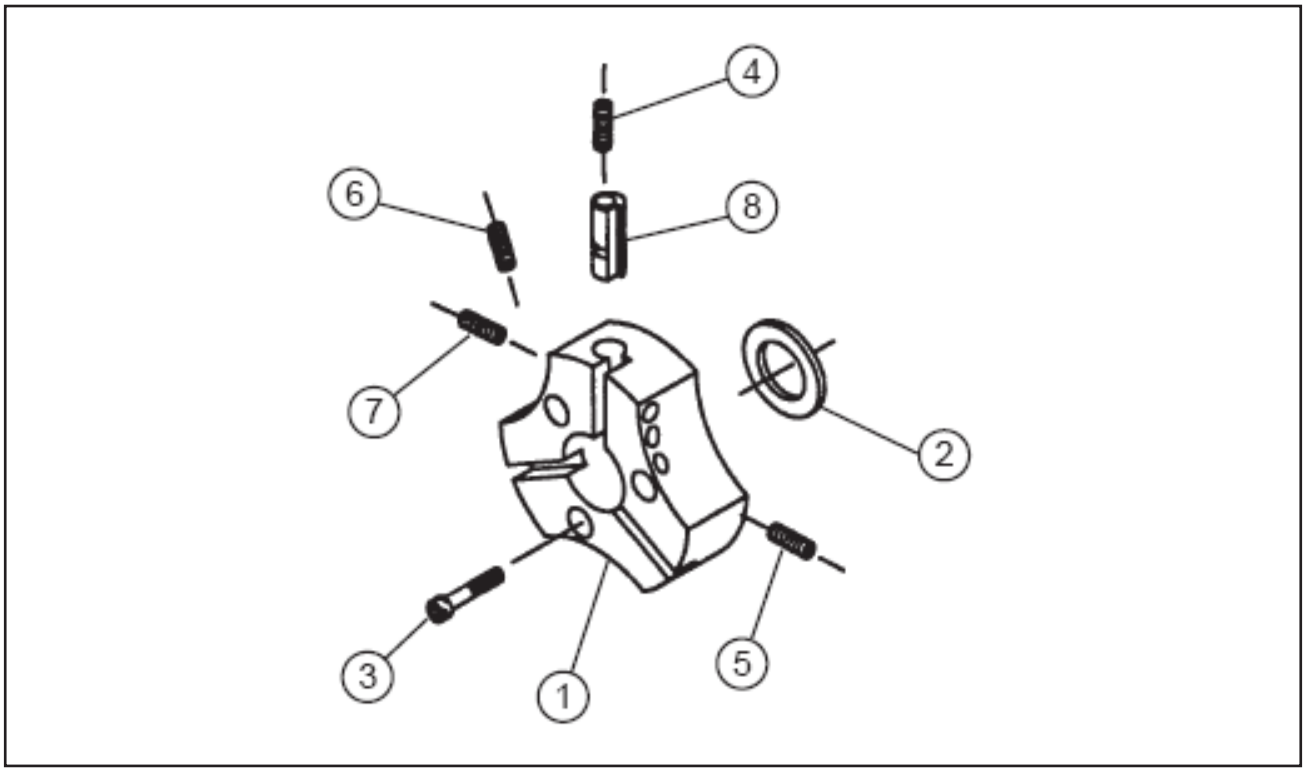
MOTOR ASSEMBLY, CORDLESS, 18V, METABO, 110V, 220V (P/N 58-0422, 58-0436)



Parts List, Motor Assembly, Cordless, 18V, Metabo, 110V, 220V (P/N 58-0422, 58-0436)

Item No.	Part No.	Description	Qty
1	27-1707	ADAPTER, MOTOR	1
2	29-0182	BRG, BALL, 1/2” X 1-1/8” X 3/8”	1
3	30-6136	LABEL, POWER DISCONNECT & SAFETY SWITCH	1
4	33-0055	SCREW, CAP, 5/16-18 X .88”	1
5	39-0568	GEAR, DRIVE	1
6	44-0441	SPACER	1
7	58-0317	MOTOR, CORDLESS, 18V, METABO, 110V MOD CW (58-0422)	1
	58-0320	MOTOR, CORDLESS, 18V, METABO, 220V MOD CW (58-0436)	1
8	91-0545	GEAR ASSEMBLY	1

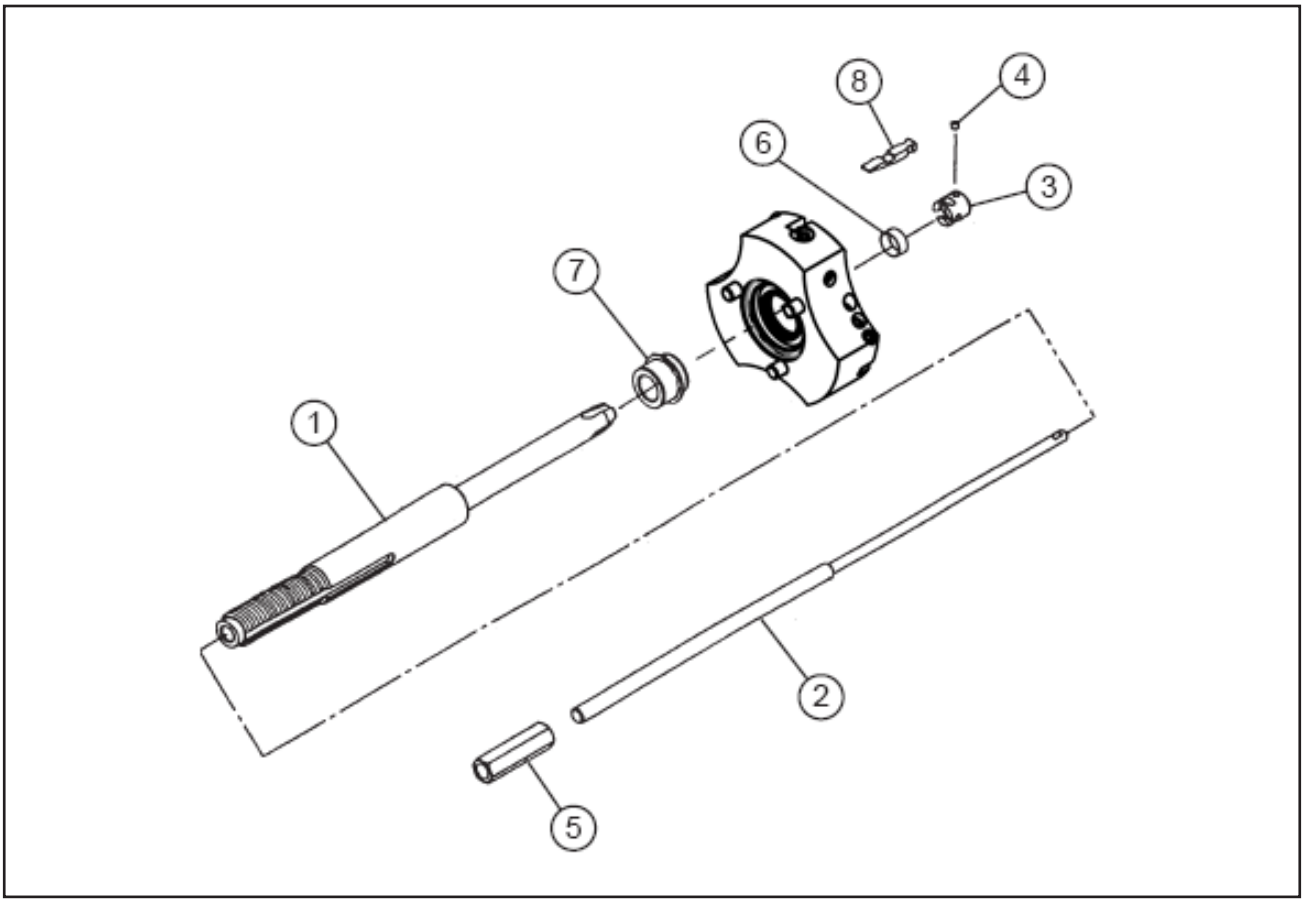
CUTTING HEAD KIT, 4” DIA (P/N 03-0049)



Parts List, Cutting Head Kit, 4” DIA (P/N 03-0049)

Item No.	Part No.	Description	Qty
1	21-0475	HEAD, 4.0" DIA	1
2	28-0249	SEAL, OIL	1
3	33-0057	SCREW, CAP, 5/16-18 X 1 1/4"	3
4	33-0514	SCREW, SET, 5/16-18 X 3/8", CUP PT	1
5	33-0517	SCREW, SET, 5/16-18 X 5/8", CUP PT	6
6	33-0518	SCREW, SET, 5/16-18 X 3/4", CUP PT	3
7	33-0996	SCREW, SET, 5/16-18 X 1/2", HDOG	1
8	62-0104	CAM, FACING BIT	1

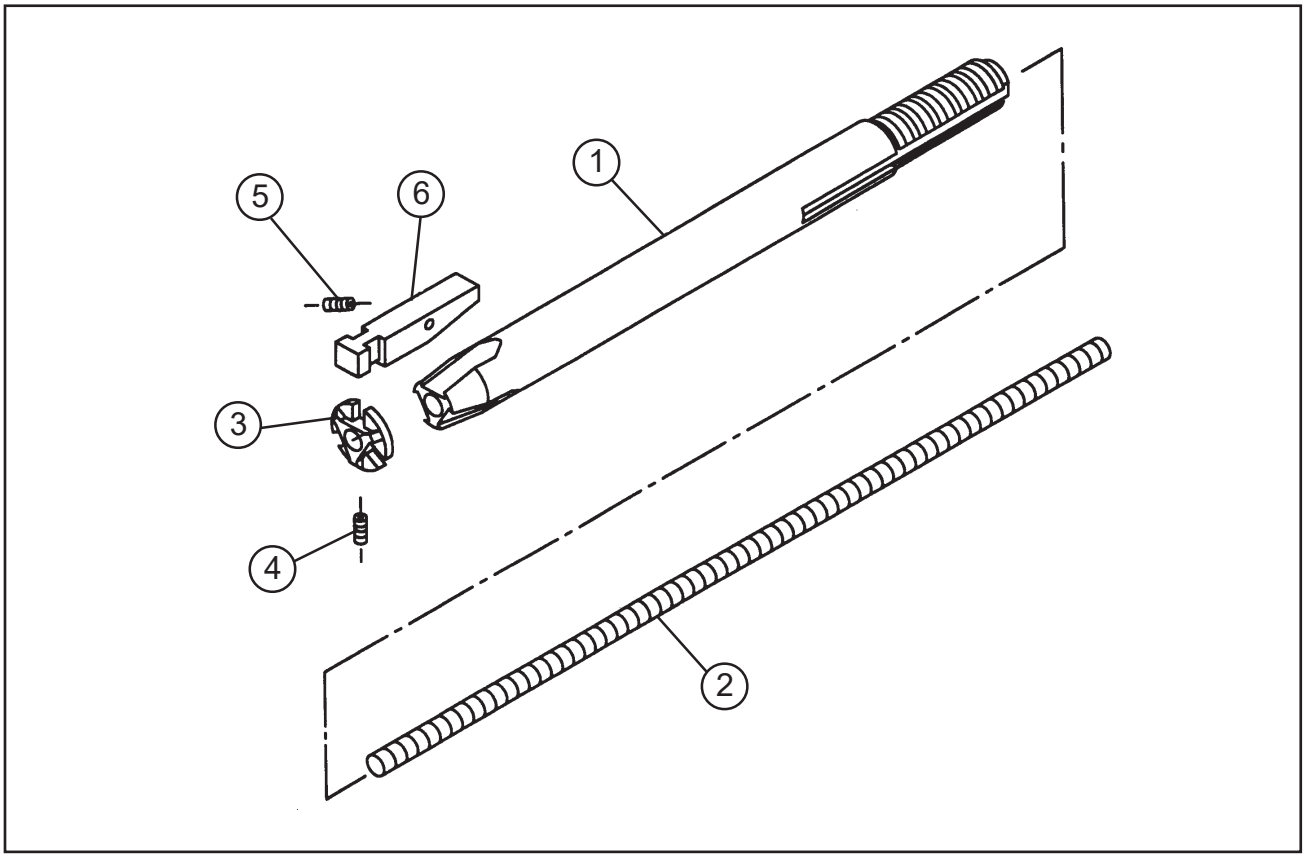
MANDREL ASSEMBLY (P/N 06-0413)



Parts List, Mandrel Assembly (P/N 06-0413)

Item No.	Part No.	Description	Qty
1	13-0429	MANDREL	1
2	23-0298	ROD, DRAW	1
3	24-1463	PLATE, BUTT #1	1
	24-1464	PLATE, BUTT #2	1
4	33-0477	SCREW, SET, #8-32 X 3/16", CUP PT	1
	33-0478	SCREW, SET, #8-32 X 1/4", CUP PT	1
5	35-0523	NUT, DRAW ROD, 3/8-16	1
6	40-0130	SPRING, FLAT	1
	40-0136	SPRING, FLAT	1
7	46-0437	SLEEVE, MANDREL	1
8	48-0596	BLOCK, RAMP #1	3
	48-0597	BLOCK, RAMP #2	3

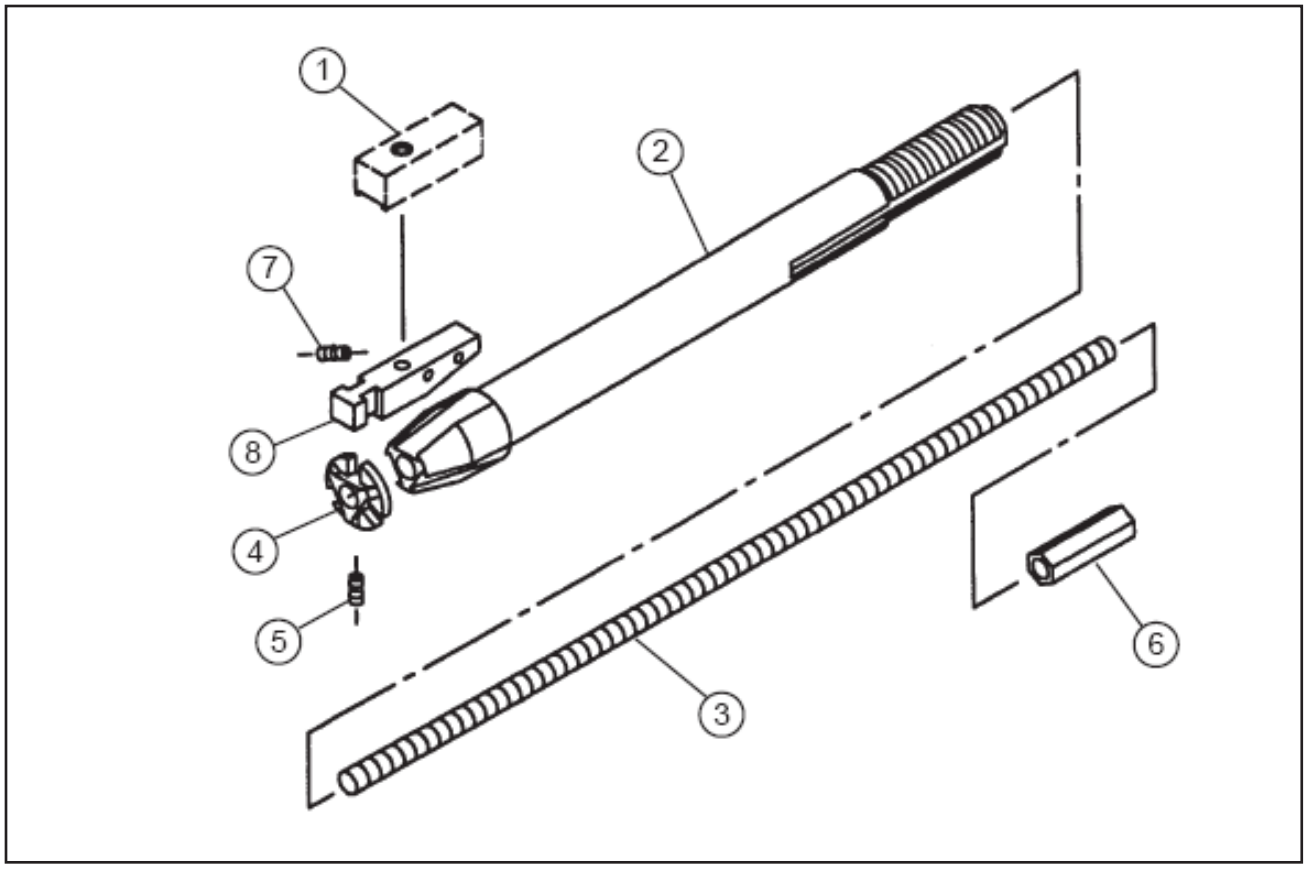
MANDREL ASSEMBLY (P/N 06-0414)



Parts List, Mandrel Assembly (P/N 06-0414)

Item No.	Part No.	Description	Qty
1	13-0426	MANDREL	1
2	23-0297	ROD, DRAW	1
3	24-1462	PLATE, BUTT	1
4	33-0489	SCREW, SET, #10-24 X 5/16", CUP PT	1
5	35-0523	NUT, DRAW ROD, 3/8-16	1
6	40-0108	SPRING, EXTENSION	1
7	48-0976	BLOCK, RAMP	3

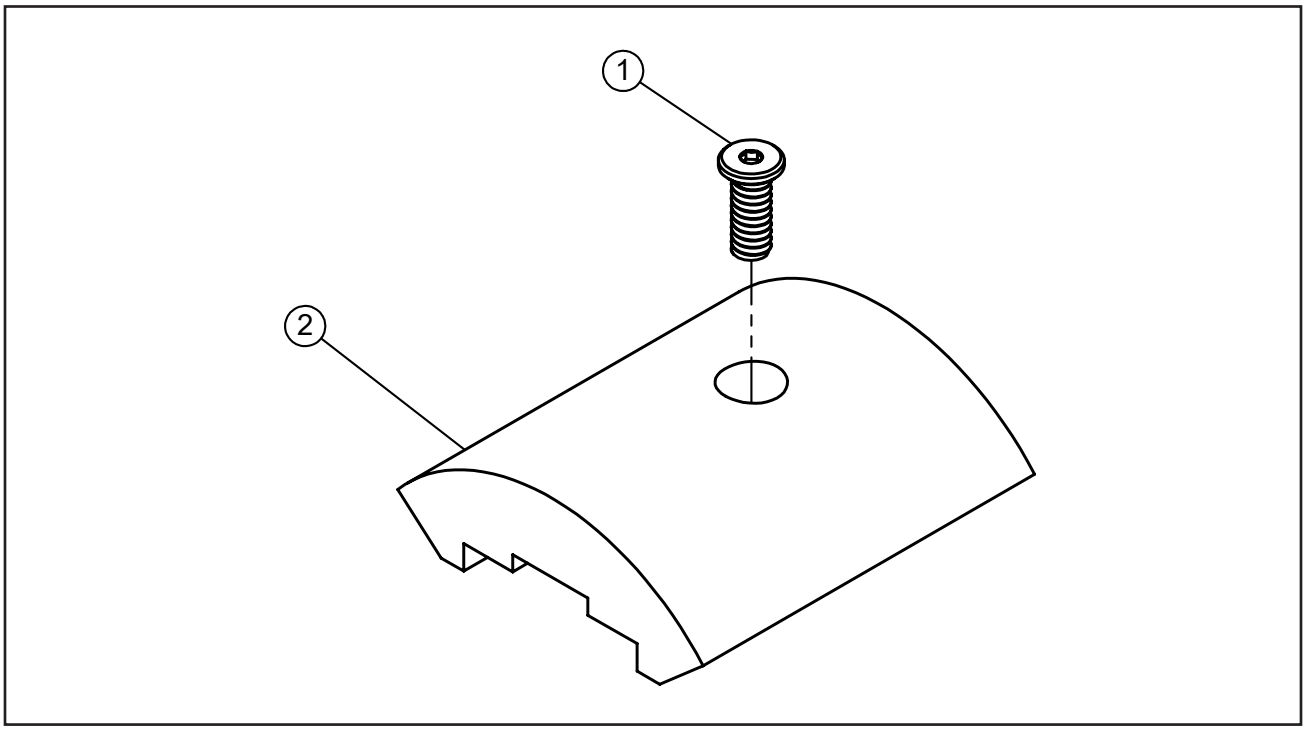
MANDREL ASSEMBLY (P/N 06-0419)



Parts List, Mandrel Assembly (P/N 06-0419)

Item No.	Part No.	Description	Qty
1	08-XXXX	BLOCK, JAW (SEE “JAW BLOCKS” SECTION)	REF
2	13-0424	MANDREL	1
3	23-0295	ROD, DRAW	1
4	24-1384	PLATE, BUTT	1
5	33-0490	SCREW, SET, #10-24 X 3/8", CUP PT	1
6	35-0523	NUT, DRAW ROD, 3/8-16	1
7	40-0001	SPRING, EXTENSION	5
8	48-0964	BLOCK, RAMP, #1	3
	48-0965	BLOCK, RAMP, #2	3
	48-0966	BLOCK, RAMP, #3	3

KIT, SUREFIRE 4 PADS (P/N 05-1610 - 05-1613)



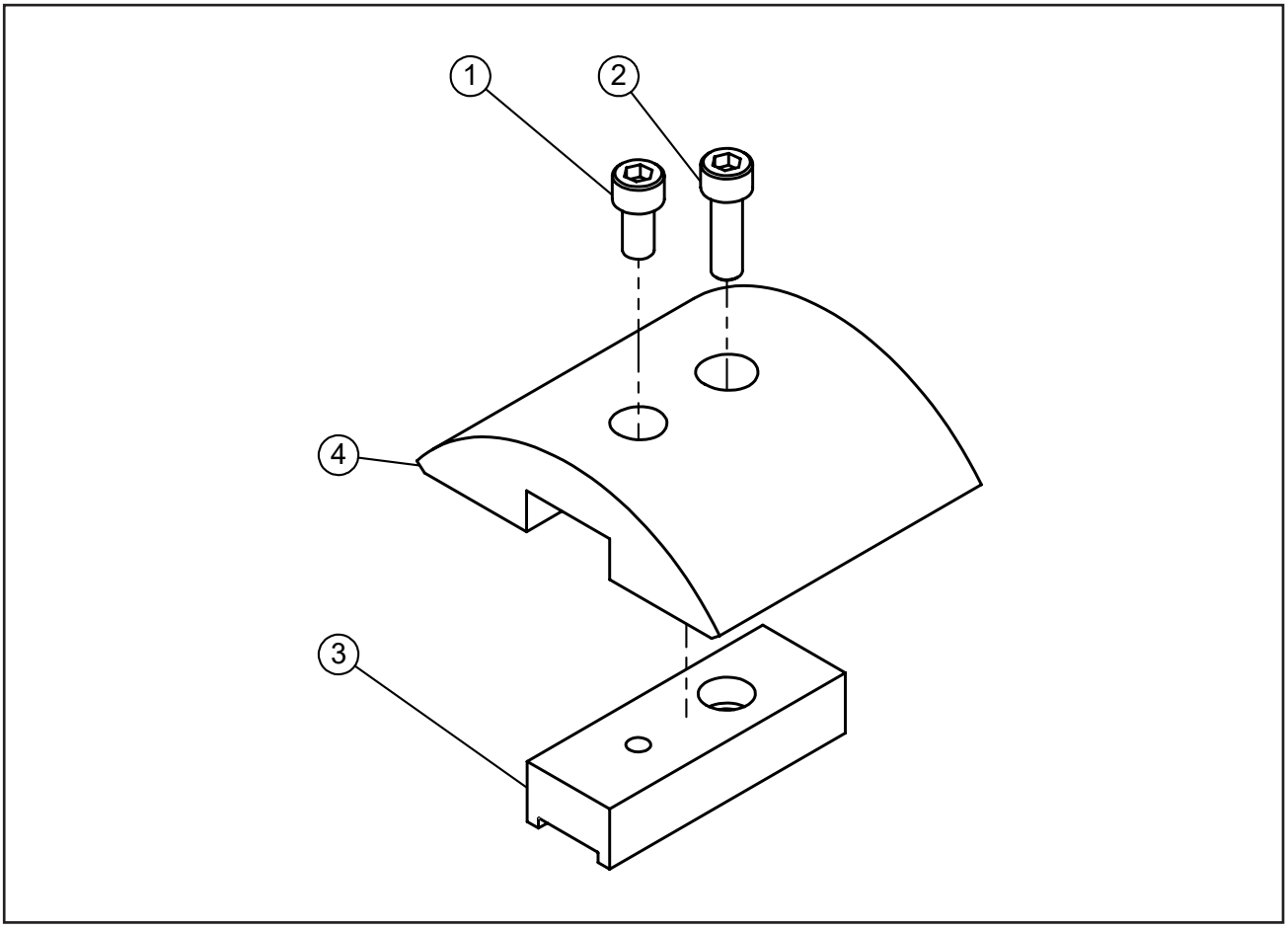
Parts List, Kit, SUREFIRE 4 Pads (P/N 05-1610 & 05-1611)

Item No.	Part No.	Description	Qty
1	33-5056	SCREW, ULTRA LOW, 10-24 X 1/2”	3
2	67-5757	PAD, FULL SUPPORT, SUREFIRE 4, 2” SCH 5S (05-1610)	3
	67-5758	PAD, FULL SUPPORT, SUREFIRE 4, 2” SCH 10S (05-1611)	3

Parts List, Kit, SUREFIRE 4 Pads (P/N 05-1612 & 05-1613)

Item No.	Part No.	Description	Qty
1	33-0028	SCREW, ULTRA LOW, 10-24 X 1/2”	3
2	67-5759	PAD, FULL SUPPORT, SUREFIRE 4, 2-1/2” SCH 5S (05-1612)	3
	67-5760	PAD, FULL SUPPORT, SUREFIRE 4, 2-1/2” SCH 10S (05-1613)	3

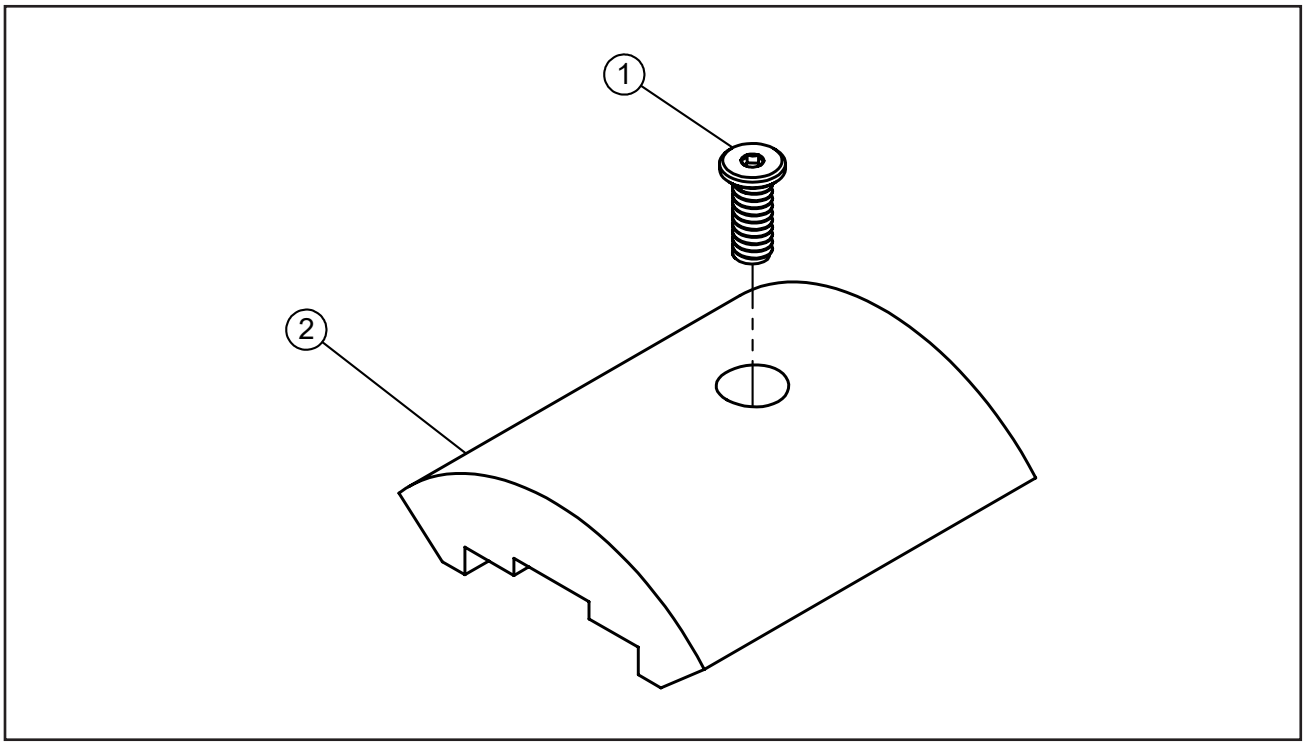
KIT, SUREFIRE 4 PADS (P/N 05-1614 & 05-1615)



Parts List, Kit, SUREFIRE 4 Pads (P/N 05-1614 & 05-1615)

Item No.	Part No.	Description	Qty
1	33-0027	SCREW, CAP, 10-24 X 3/8”	3
2	33-0029	SCREW, CAP, 10-24 X 5/8”	3
3	48-4686	BLOCK, EXTENSION, SUREFIRE 4	3
4	67-5761	PAD, FULL SUPPORT, SUREFIRE 4, 3” SCH 5S (05-1614)	6
	67-5762	PAD, FULL SUPPORT, SUREFIRE 4, 3” SCH 10S (05-1615)	6

KIT, SUREFIRE 4 PADS (P/N 05-1616 & 05-1617)



Parts List, Kit, SUREFIRE 4 Pads (P/N 05-1616 & 05-1617)

Item No.	Part No.	Description	Qty
1	33-0027	SCREW, CAP, 10-24 X 3/8”	3
2	33-0029	SCREW, CAP, 10-24 X 5/8”	3
3	34-0252	WASHER, NYLON, .370” OD X .192” ID	3
4	48-4686	BLOCK, EXTENSION, SUREFIRE 4	3
5	67-5763	PAD, FULL SUPPORT, SUREFIRE 4, 4” SCH 5S (05-1616)	6
	67-5764	PAD, FULL SUPPORT, SUREFIRE 4, 3” SCH 10S (05-1617)	6

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 defate 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!

TRI TOOL TECHNOLOGIES

3041 Sunrise Blvd.
Rancho Cordova, CA 95742
+1(916) 288-6100 • +1(800) 345-5015
www.tritool.com