Operation Manual

92-1930 Rev. 240624
Model 536 Fitting Machine

TRI TOOL TECHNOLOGIES

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.

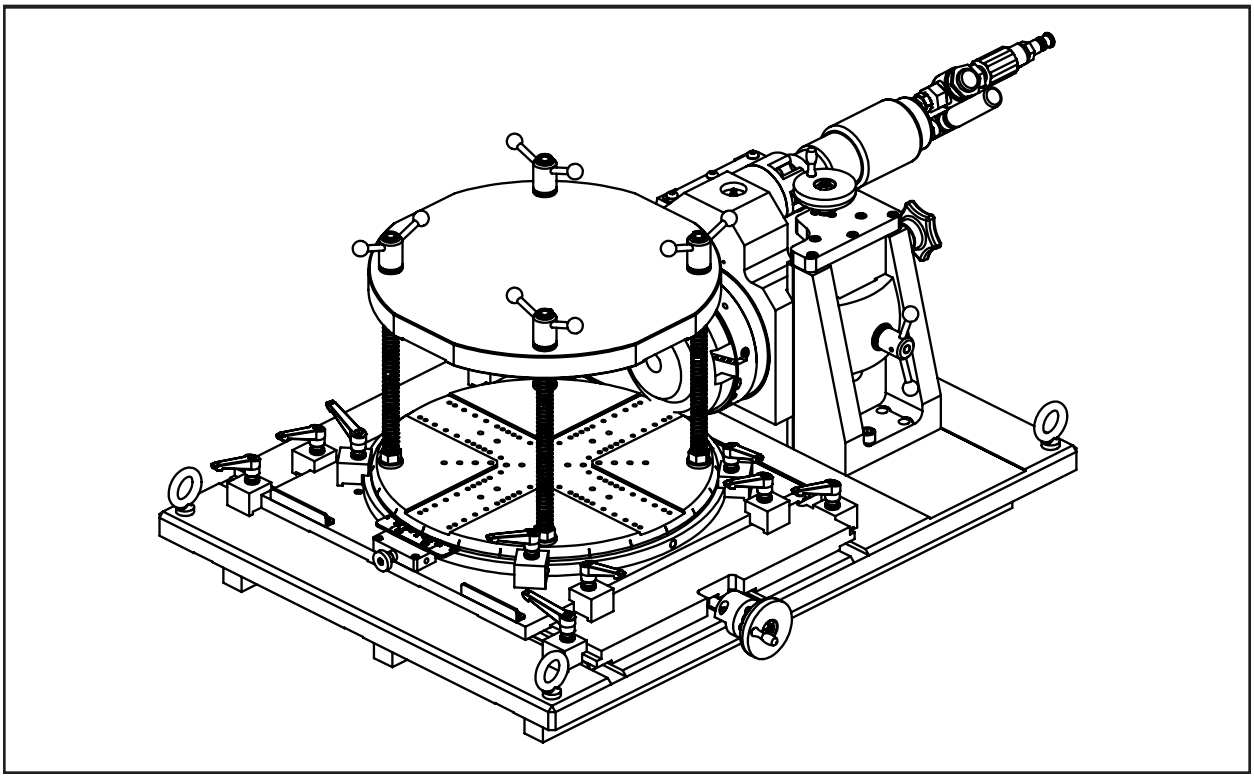


TABLE OF CONTENTS

TRI TOOL INC. Warranty

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 (3) 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, unless Seller is instructed otherwise. Buyer is responsible for all shipping charges to and from Seller.

1. ABOUT THE MANUAL

1.1 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.

1.2 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.

1.3 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 glasses.**
 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 machine being used.**
 DISCONNECT FROM POWER	**DISCONNECT FROM POWER: Disconnect main plug from electrical outlet before performing all maintenance.**

2. SAFETY PRECAUTIONS

2.1 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.

2.2 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.

2.3 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.

2.4 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.

2.5 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.

2.6 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.

2.7 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

The Tri Tool Model 536 Fitting Machine is a bench-mounted beveling machine capable of machining all common weld preparations, on new and used butt-weld fittings in the nominal size range of 1” through 6” (25.4mm through 152.4mm).

A small Turntable is used for most fitting sizes 1” thru 3-1/2”.

A large Turntable is used for fitting sizes 4” thru 6”.

The Turntables, containing universal Work Holding Clamps, are mounted on a lockable, screw-adjusted X-Y Stage.

- The Turntables are indexed for angularity, with positive detents every 45° and 1° marks for ‘odd’ settings.
- The Turntables can be locked in any desired position.

The Cutter Head is powered by a Pneumatic Drive Unit that is adjustable in the Z-axis and is lockable.

- The cutter head features radially adjustable tool holders in two of the positions. They are designed to use 3/8” wide tool bits.
- Using proper procedures, fittings may be beveled, faced, and/or counterbored (or deburred).
- The operations may be done individually or simultaneously.

Also available is an optional miter kit (P/N: 08-1781). With this kit, the cutting head can be tilted in order to perform a miter cut of 0° to 3°.

4. SPECIFICATIONS

Model 536 with an Air Motor.

Weight: approximately 470 lbs. (213 kg)

Power Requirements: 90 cfm at 90 psi air (a FRL is required) (15 lt/sec at 6.3 kg/cm²)

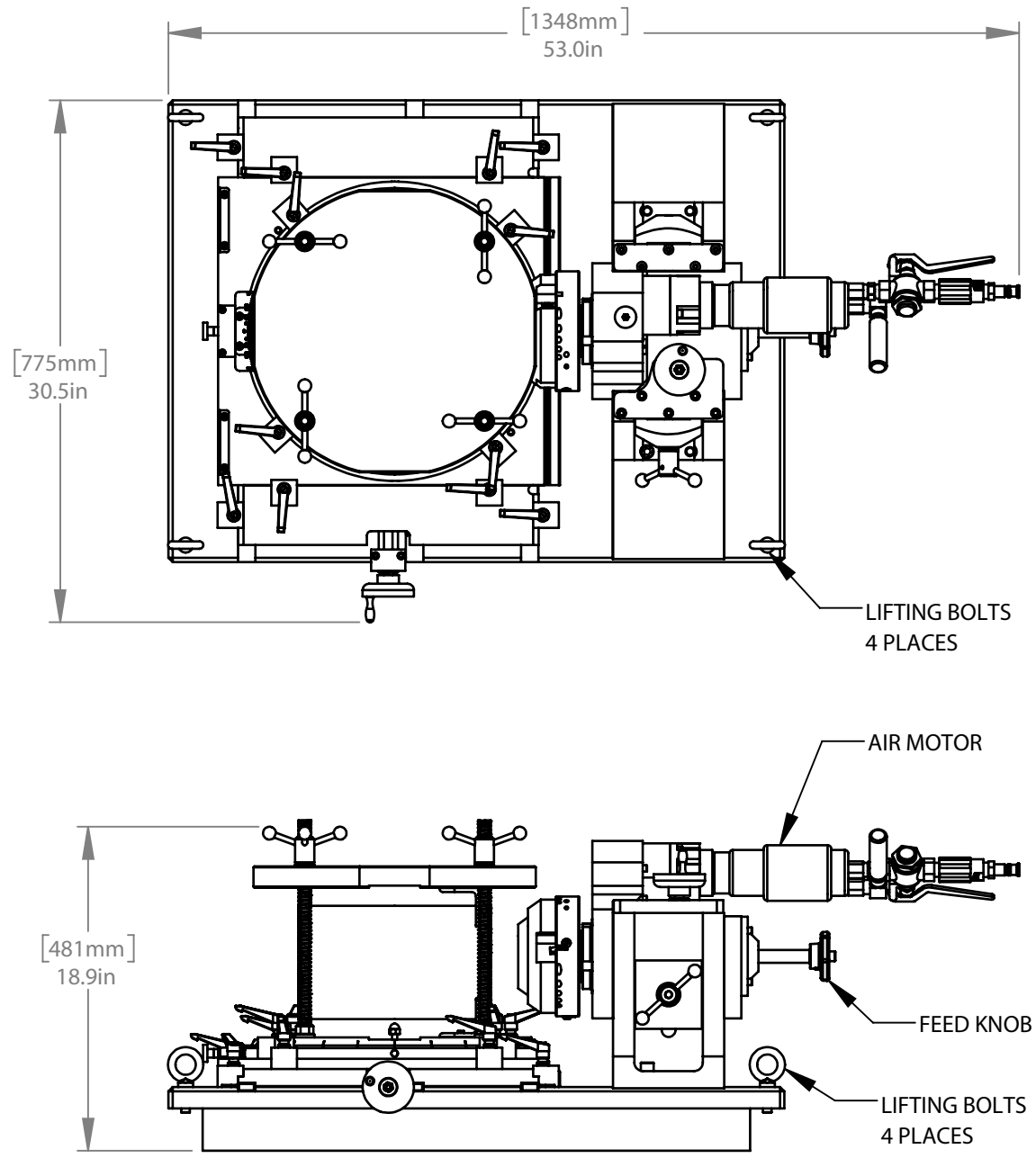


Figure 1: Specifications

5. MAINTENANCE

Apply a thin film of oil (SAE30 or equivalent) to all Slide Rails and turntables as necessary to keep them moving freely.

Apply one or two drops of light oil to all threaded parts.

- Use a clean, non-detergent oil, preferably SAE 10 (90 SSU or lighter) or oil which is specified for the air motor.

In high humidity environments, apply a light film of light oil to prevent rusting of steel parts.

Grease drive unit after every 25 hours of operation. (Use 3 ml Chevron light utility grease)

Use chip brush to remove chips and other debris from the machine after each cut.

- Pay special attention to the slide rails, tapped holes, threaded rods, shafts, etc. If applicable, clean chips from around and under the miter plate.

NOTE: When configured with the Small Turntable, it may be required to plug the tapped holes for the Large Turntable clamps to prevent chips from entering and becoming lodged in the holes.

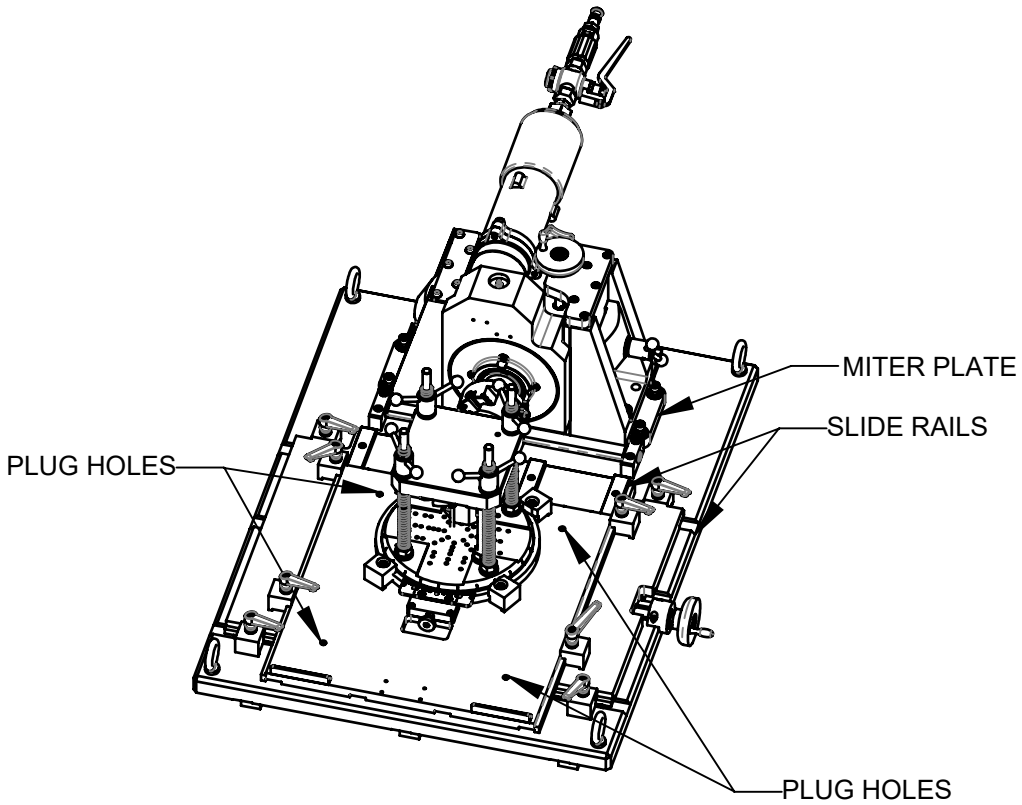


Figure 2: Maintenance Hole Plug

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

No disassembly of the Model 536 is required for preventative maintenance.

Lifting and moving the Model 536 Fitting Machine.

- There are (4) four Eye Bolts provided for lifting and moving the machine.

Note: Do not attempt to lift or move the Model 536 Fitting Machine by hand.

6. CLAMPING

6.1 Short Radius and Long Radius 90° Elbows

NOTE: When mounting elbows without a straight section (mounting on the curved section of the elbow), the centerline of the elbow face is offset relative to the centerline of the saddles (table). When the elbow is rotated, the centerline of the second elbow face is offset in the opposite direction, therefore making the alignment to the cutting head off. Re-centering will be required.

Generally, elbows are held in the Vee-Blocks under and over each ‘leg’ of the elbow.

- The center of the elbow is adjusted to height (squareness) by a Jack Screw before the upper Vee-Blocks are clamped hard.

- A Clamp Screw through the Clamp Plate opposes the Jack Screw and completes the clamping operation.

Set the Turntable to a detent position, engage the Index Shaft, and lock the Turntable down (4) four places.

Attach the upper and lower Vee-Blocks by holding the elbow to be prepped over the Lower Turntable Plate in the approximate position. (Refer to Fig. 3)

- Select the proper set of Vee-Blocks and bolt them in place as near to the ends of the elbow as the estimated projection to the beveling bit will allow without cutting into the Vee-Blocks (Two bolts per Vee-Block).

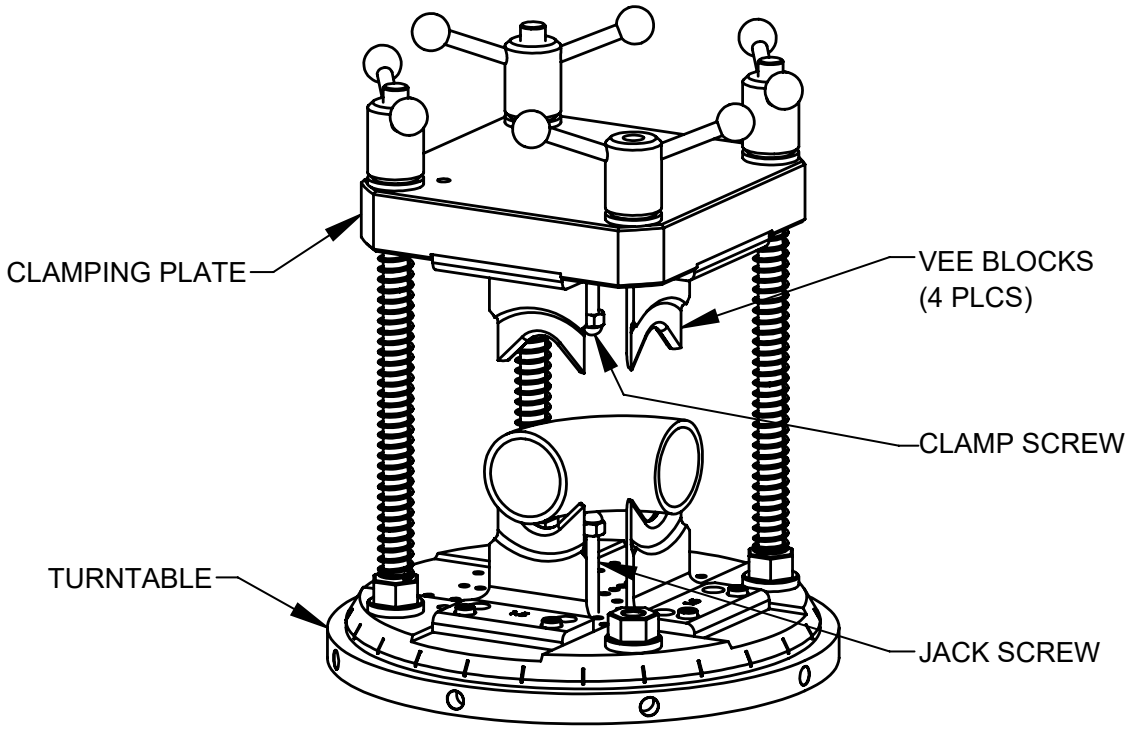


Figure 3: 90° Elbow

CAUTION

CAUTION: 50 to 75 in-lbs (5.6 to 8.4 N m) is sufficient torque on these Screws.

- Overtightening may damage threads in the Turntable Plate.

Lay the elbow in the Vee-Blocks so that each ‘leg’ projects the same amount past the Vee-Blocks.

Select the proper length Jack Screw and position it in the lower Turntable Plate in the tapped hole that best supports the radius of the elbow.

- Use this Jack Screw to ‘level’ the elbow.

Be sure the Clamp Screw in the Clamp Plate has been backed off, and tighten the Clamp Plate securely by using the (4) four Speed Nuts. Use a support rod (P/N 23-0738, small, or P/N 23-0739, large) to provide support to the upper plate when clamping. This will allow the upper plate to be clamped firmly in place.

Turn the Clamp Screw down until it contacts the elbow and then gently tighten.

Clamping is now complete.

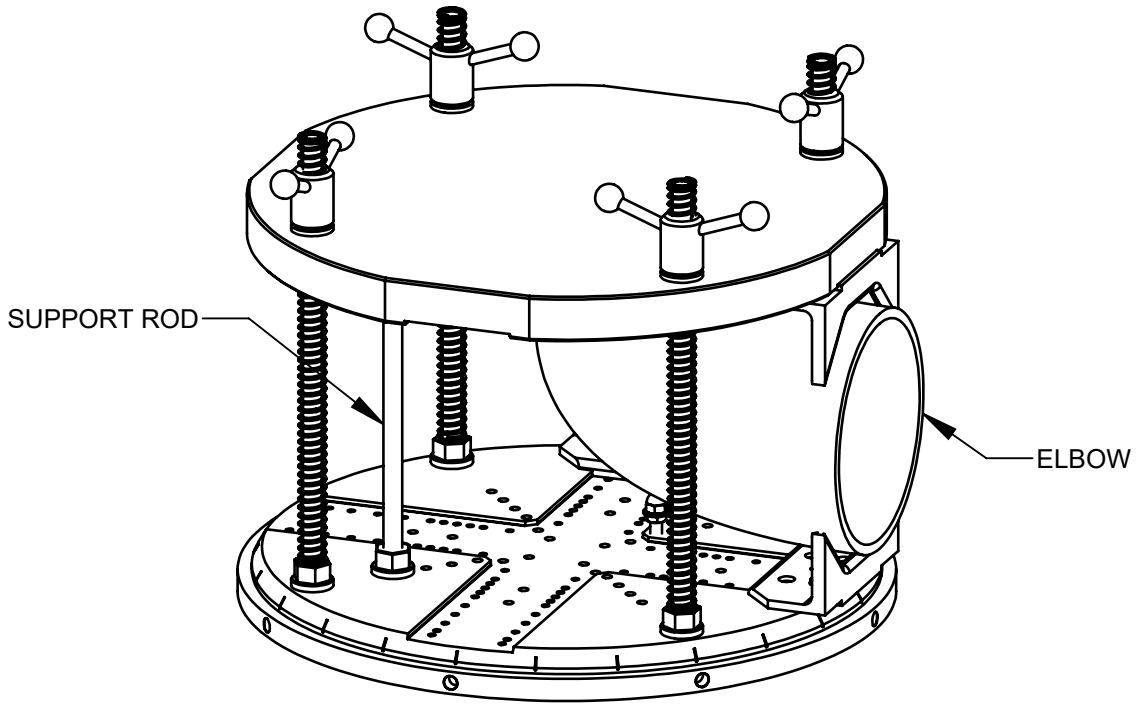


Figure 4: Support Rod

6.2 1” and 1-1/4” Short Radius 90° Elbows

Place the 90° Elbow Support Bracket Base in the center of the Turntable Plate. Secure with four cap screws.

Install the Support Bracket onto the Support Bracket Base.

Place the 90° Elbow to be machined in the groove of the Support Bracket.

Place the 90° Elbow Clamp Bracket on top of the 90° Elbow to be machined.

- Use the pin as a guide.
- Secure the Clamp Bracket with a cap screw.
- The second cap screw will act to apply a retaining pressure to the Elbow.

  Note: The best result will be when the Clamp Bracket remains parallel to the Support Bracket.

Clamping is now complete.

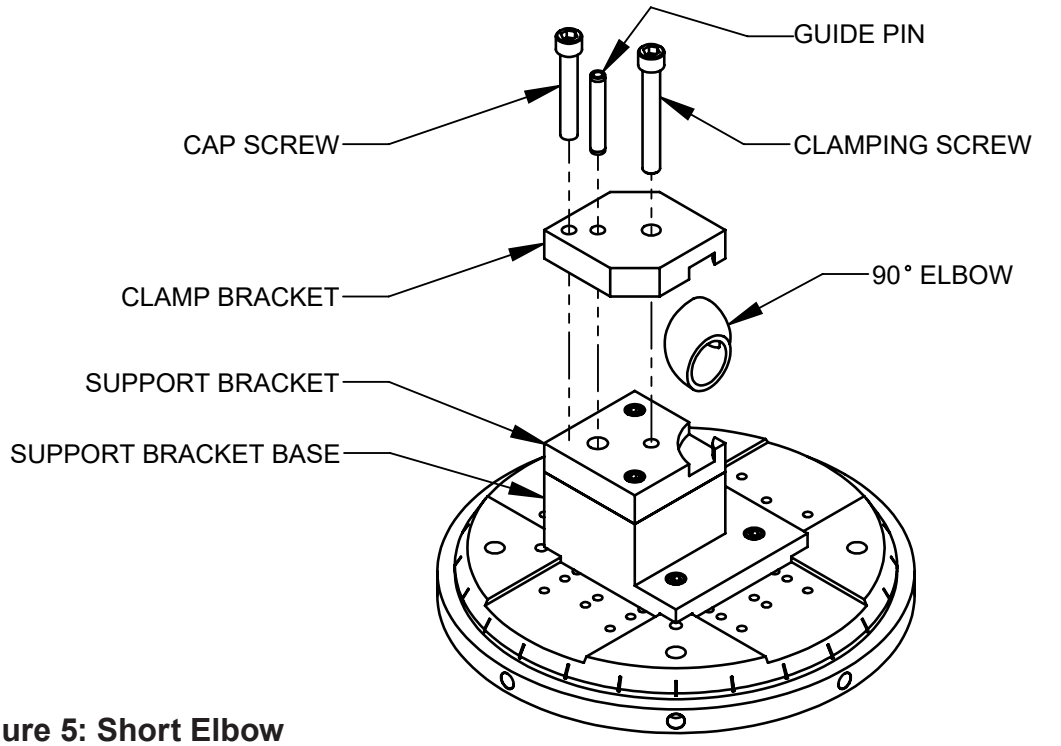


Figure 5: Short Elbow

6.3 Straight Tees and Reducing Outlet Tees

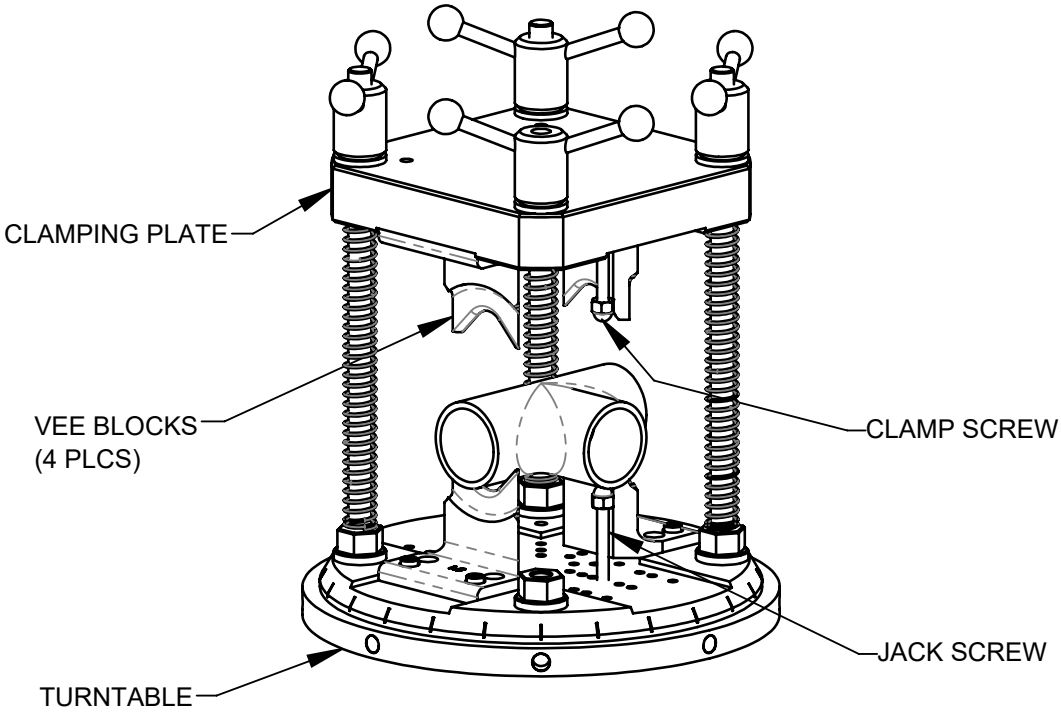


Figure 6: Tees

Tees are clamped with the Vee-Blocks over and under the ‘run’ of the tee, a Jack Screw under the ‘outlet’ and an opposing Clamp Screw over the ‘outlet’.

Attack the upper and lower Vee-Blocks by holding the elbow to be prepped over the Lower Turntable Plate in the approximate position. (Refer to Fig. 6)

- Select the proper set of Vee-Blocks and bolt them in place as near to the ends of the elbow as the estimated projection of the Beveling Tool Bit will allow without cutting into the Vee-Blocks (two Bolts per block)

CAUTION: 50 to 75 in-lbs (5.6 to 8.4 N m) is sufficient torque on these Screws.

- Over tightening may damage threads in the Turntable Plate.

Lay the tee in the Lower Blocks so that the ‘run’ over-hangs each block the same amount.

Select the proper length Jack Screw for the nominal ‘outlet’ size and install in the Lower Turntable Plate as close to the end of the ‘outlet’ as possible and still clear the Beveling Tool Bit.

Back-off the Clamp Screw in the Clamp Plate. Lower the Plate using the (4) four Speed Nuts.

Gently tighten the Clamp Screws.

Clamping is complete.

6.4 Straight Crosses and Reducing Outlet Crosses

Generally, crosses are held in the Vee-Blocks under and over the ‘run’ of the cross, a Jack Screw is located under the ‘outlets’, with a clamping screw located above the ‘outlets’.

Attach the upper and lower Vee-Blocks by holding the cross to be prepped over the Lower Turntable Plate in the approximate position. (Refer to Fig. 7)

- Select the proper set of Vee-Blocks and bolt them in place as near to the ends of the crosses ‘run’ as the estimated projection of the Beveling Tool Bit will allow without cutting into the Vee-Blocks. (two Bolts per block)

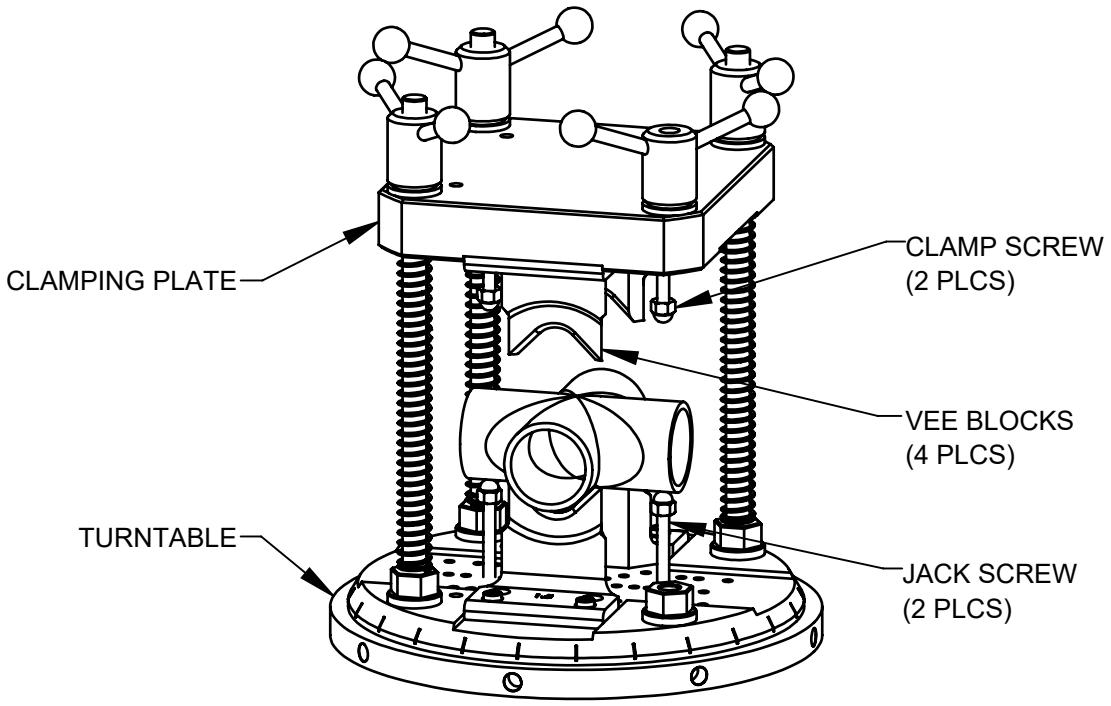


Figure 7: Crosses

CAUTION

CAUTION: 50 to 75 in-lbs (5.6 to 8.4 N m) is sufficient torque on these Screws.

- Over tightening may damage threads in the Turntable Plate.

Lay the cross in the Lower Blocks so that the ‘run’ overhangs each block the same amount.

Select the proper length Jack Screws for the nominal ‘outlet’ size and install the Turntable Plate as close to the end of the outlets as possible and still clear the Beveling Tool Bit.

Back-off the Clamp Screws in the Clamp Plate. Lower the Plate using the (4) four Speed Nuts.

Gently tighten the Clamp Screws.

Clamping is now complete.

7. CENTERING CONE

Center the fitting using the Centering Cone.

- For normal operation, insure that the Turntable is engaged in a detent position and locked in place.

NOTE: The Turntable has detents every 45° and marks every 15°. The scale shows the Turntable position in 1° increments. (Refer to Fig. 8)

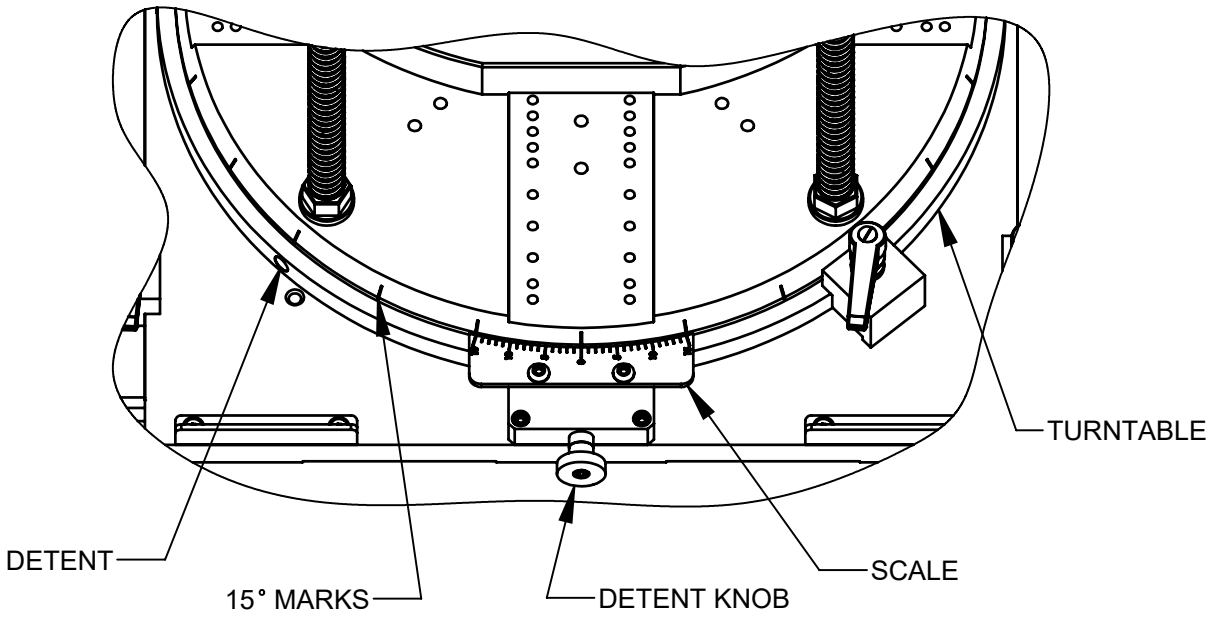


Figure 8: Turntable Position

- Loosen the X, Y, and Z Axis Locks. (Refer to Fig. 9)
- Slowly slide the Y-Table forward while visually aligning the X and Z axis for center.

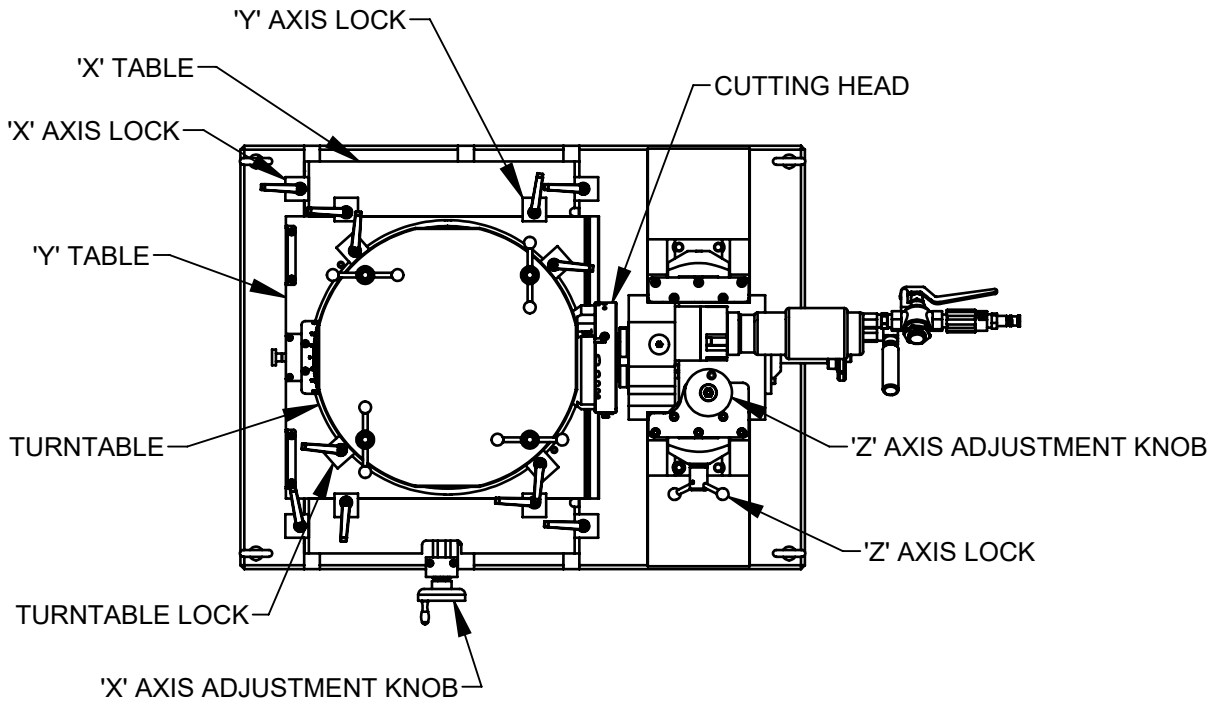


Figure 9: Setting the X & Y Table

- Retract the Y-Table and position the ‘centering cone’ over the cutting head.
- Again move the Y-Table in slowly until the Centering Cone is fully seated in the bore of the fitting and flat, but probably slightly off-center, against the head.
- Adjust the X and Z axis until the outside diameter of the Centering Cone is smooth (concentric) with the Cutter Head.
- Tighten the X and Z Locks.
- Withdraw the Y-Table and remove the Centering Cone.
- Move the Y-Table forward again to position the fitting about 1/4” (6 mm) from the Tool Bit(s).
- Lock the Y-Table (4) four places.

Check that all Positioners are locked.

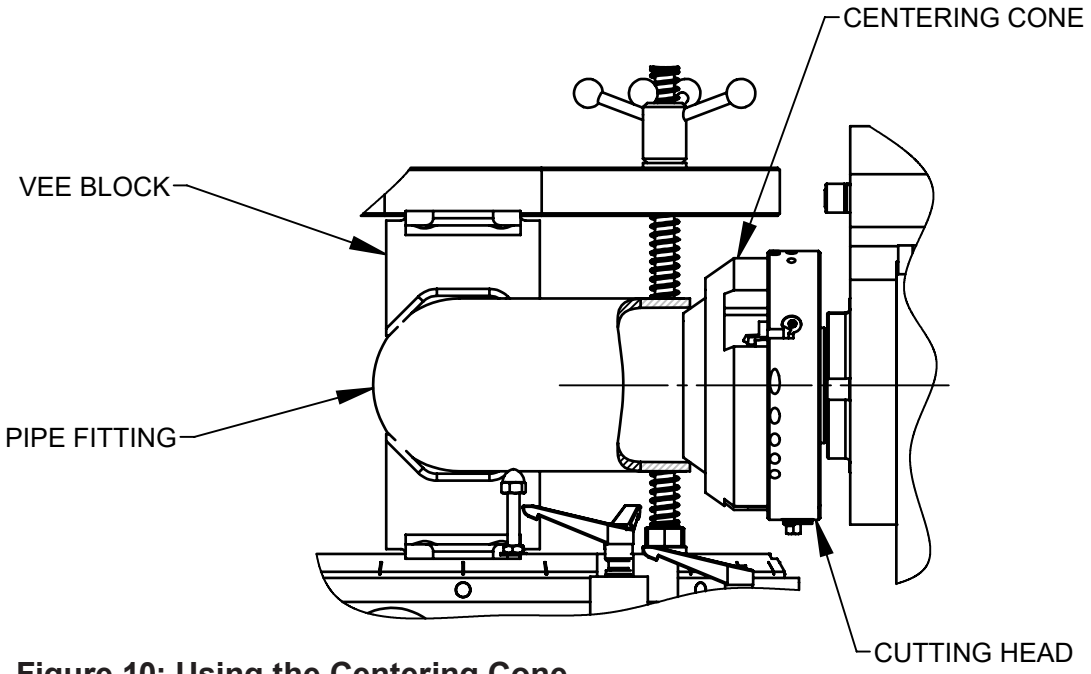


Figure 10: Using the Centering Cone

8. TOOL BIT SETUP

Read the operating instructions carefully before attempting to operate the Model 536.

Be sure to use proper eye protection at all times when operating the Model 536.

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

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

WARNING

WARNING: Be sure that the power source is disconnected before installing or removing any Tool Bits.

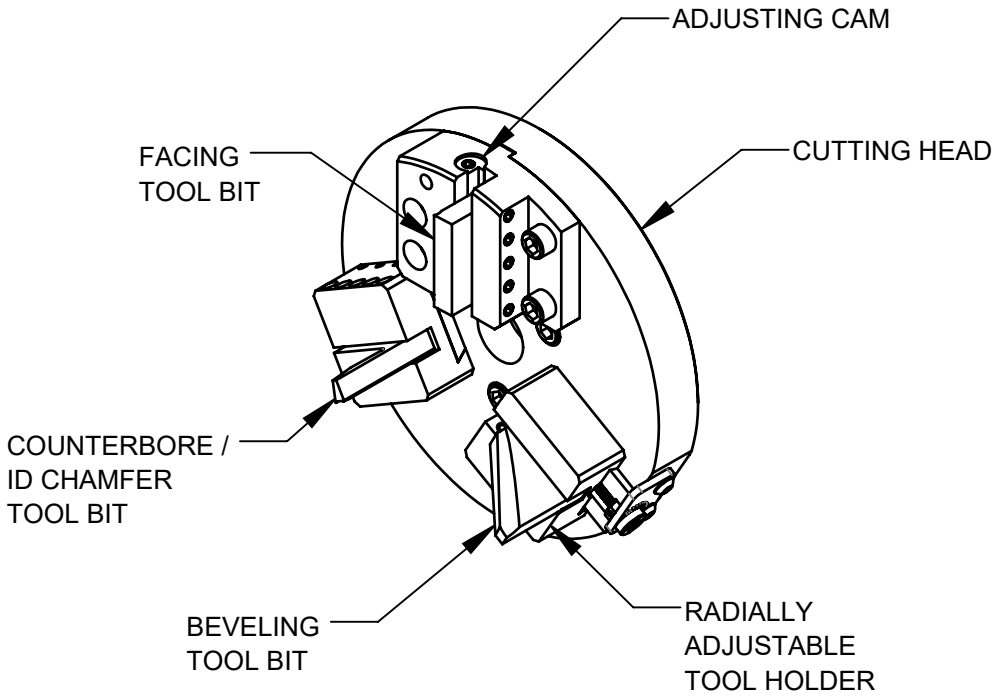


Figure 11: Tool Bit Locations

- When performing any separate machining operation such as facing, beveling, or counterboring, the Tool Bit(s) may be installed in any one of the (3) three Cutting Head slots. (Refer to Fig. 11)
- When performing any multiple machining operations such as facing, beveling, and/or counterboring, the Tool Bit(s) should be installed with one in each slot.
- The Facing Tool Bit should be in the slot with the Adjusting Cam.

CAUTION

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

Do NOT install Tool Bit(s) backwards.

Tighten the Set Screws to secure the Tool Bit(s) to the Cutting Head. (Refer to Fig. 12)

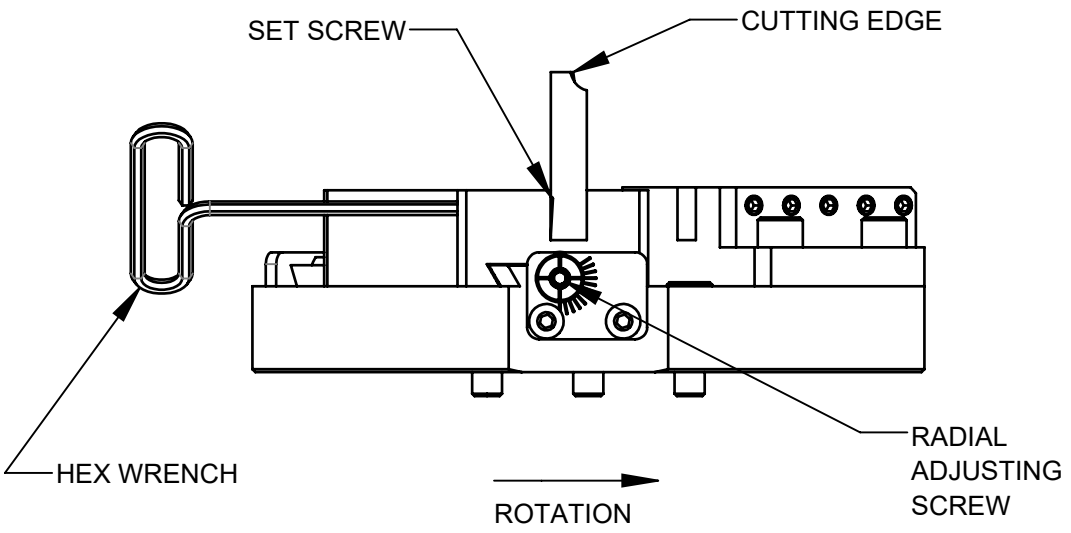


Figure 12: Tool Bit Tightening

- Adjust the Tool Bits radially in order to achieve the desired end prep (i.e.: counterbore, diameter, land thickness, bevel, etc.).
- The cam adjustment of the Facing Tool Bit allows for an axial adjustment to increase or decrease the land width relative to the other Tool Bits.
    1. The Cam only acts as a base for the Tool Bit.
- The Radially Adjustable Tool Holder allows radial adjustment of the tool bit. One (1) revolution of the adjusting screw equals .036” (0.91mm) of radial travel. Each tic mark equates to approximately .001” (.03mm) of radial travel.

WARNING

WARNING: These adjustments are NOT to be made with the machine running, or attached to the power source.

CAUTION: If the Radial Adjusting Screw is excessively hard to turn, the Radial Adjusting Screw will break. Adjust the Tool Holder gib as required. Refer to the section "Adjusting the Tool Holder".

Adjusting the Tool Holder

The gibs on the tool holders need to be adjusted so that there is a slight drag when turning the Radial Adjusting Screw. If it is too tight, the Radial Adjusting Screw will break. Too loose and it will result in a poor surface finish and / or broken tool bit.

- Make sure the gib and dovetails are clean and free of debris.
- Examine parts for damage and replace as required.
- Use lubricant sparingly on the Feed Screw, gib, and dovetails or wipe to a film condition.

CAUTION: Excess lubricant collects grit and chips that can damage or jam the thread.

- With the gib screws loose, move the tool holder to the outward most position.
- Apply a light force to the gib screws until the gib is in positive contact with the dovetail.
- Run the tool holder the full length of the dovetail.
- Be sure the tool holder runs smoothly and evenly for the full length of the dovetail.
- It should take about 5 in-lbs (.56 N-m) to rotate the Radial Adjusting Screw.
- Re-adjust as necessary until the above torque spec is achieved.

CAUTION: Do not use power tools to rotate the Radial Adjustment Screw.

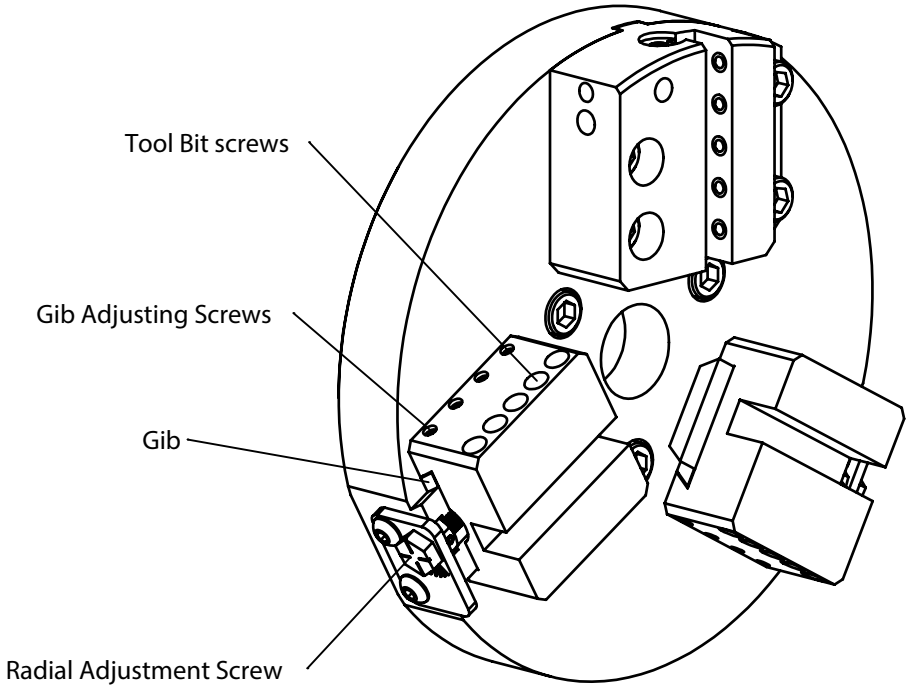


Figure 13: Gib Adjustment

9. Z-AXIS MITER PLATE (OPTIONAL ACCESSORY)

Remove the Cutting Head spacer plate.

- Remove the Cutting Head assembly and the supporting mounting brackets.

CAUTION

CAUTION: These items weigh approximately 100 lbs (45kg) and will require an external device to lift.

- Remove the spacer plate (dowel pins are used to locate the spacer plate, it may be necessary to thread a screw into the mounting bracket attaching holes to help release the spacer plate from the base).

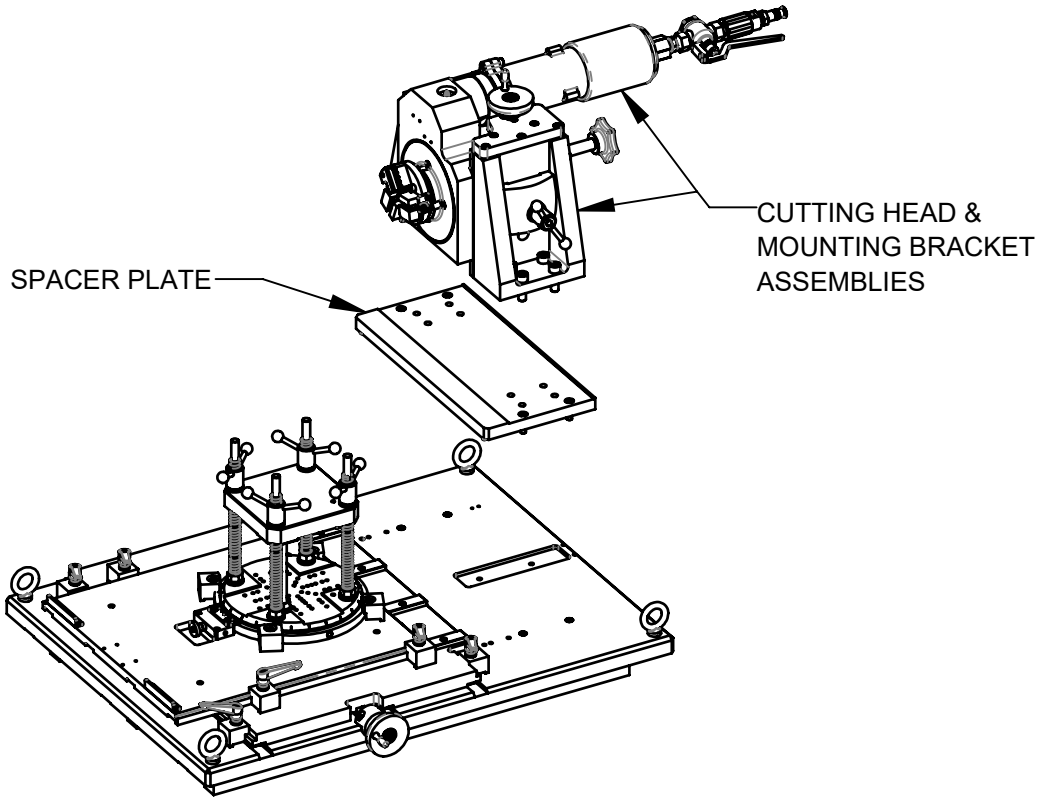


Figure 14: Spacer Plate Removal Drawing

Clean any chips or debris from all holes and surfaces where the miter plate assembly will be installed.

Install the miter plate wedge block and feed screw assembly.

Move the wedge block (via the feed handle) so that it is as close to the feedscrew handle as possible (this will allow the miter plate to sit flush on the base for the remaining assembly steps).

Install the miter plate assembly.

- Align the dowel pins in the pivot blocks with the alignment holes in the base plate.
- Tighten the pivot block hold down screws.
- Tighten the miter plate hold down screws

Install the Cutting Head assembly and the supporting mounting brackets.

Install the angle scale block.

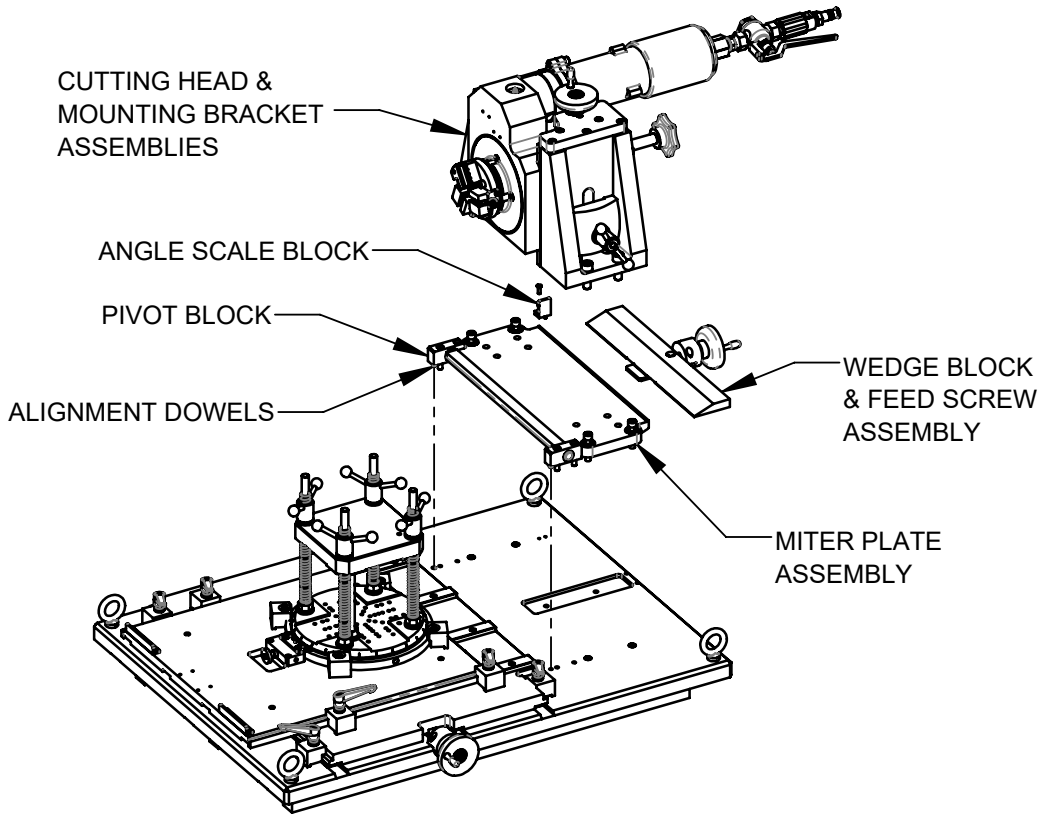


Figure 15: Miter Plate Installation Drawing

To adjust the miter angle:

- If necessary, slide the turntable back so that the cutting head / tool bits will not contact the fitting while adjusting the miter angle.
- Loosen the four (4) miter plate hold down screws.
- Adjust the angle of the miter using the wedge block feed screw. The angle scale can be used to determine the angle of miter.

  For reference: One (1) turn of the feedscrew will change the angle approximately .13°.

  7.5 turns of the feedscrew will change the angle approximately 1°.

- Once the miter angle has been set, tighten the four (4) miter plate hold down screws.

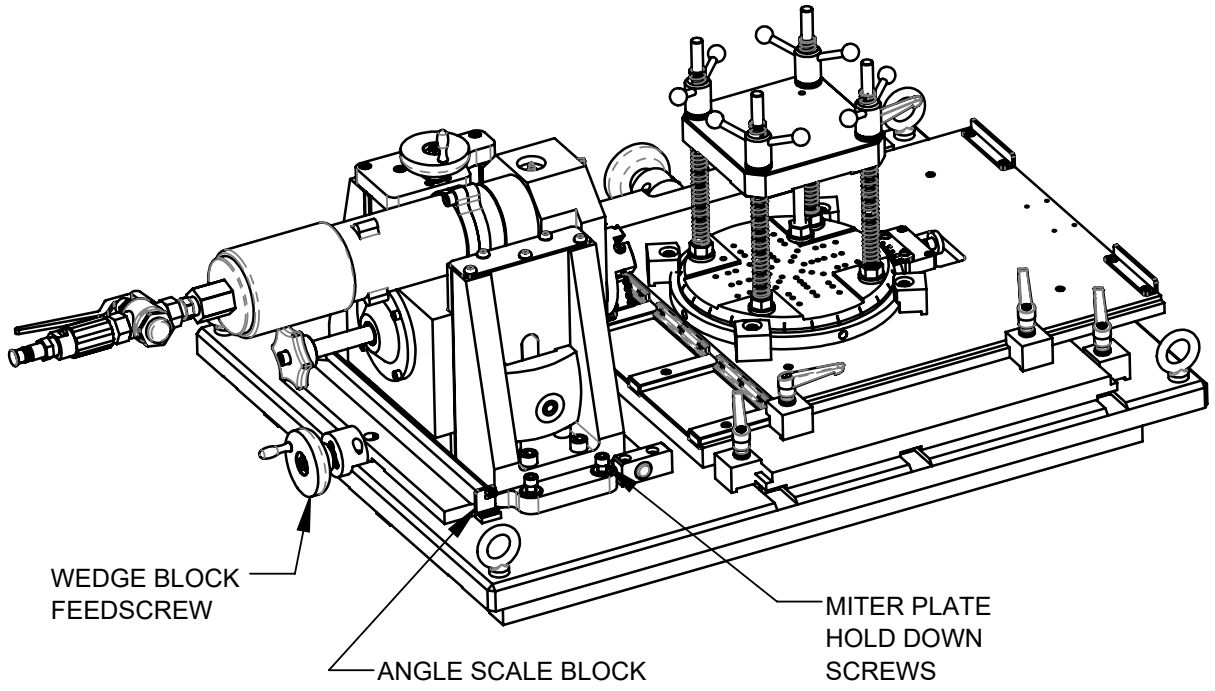


Figure 16: Miter Angle Adjustment

10. OPERATION

Refer to the configuration table to determine which components to use for the specific size fitting you are working with. (Not every possible fitting is listed. To machine a fitting that is not listed, choose the components that will best fit and secure the fitting.)

Attach the proper air supply line to the Model 536.

NOTE: Use an adequate in-line filter, regulator, and lubricator.

Depress the Air Motor Hand Lever.

- Adjust the cutting speed by rotating the Valve at the air connection. (Refer to Section 14 for recommended cutting speeds.)
- In general, working speed is one-half of the free speed.

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

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

- If 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.
- To avoid Tool Bit damage, the feed rate should be very slow until the Tool Bit is contacting the pipe continually during at least one full revolution.

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

Discontinue feed and allow the Cutting Head to rotate one to three revolutions to improve the finish of the prep surface.

Rotate the Feed Knob counter-clockwise to separate the Cutting Head and the tube or pipe.

Stop the Cutting Head rotation by releasing the Air Motor Hand Lever.

Rotate the Feed Knob counter-clockwise until the Tool Bit(s) clear(s) the tube or pipe by at least 1/8” (3 mm) or more.

If machining another 'leg' on the same fitting, rotate turntable to appropriate position. Refer to Section 7 (Centering Cone) to re-center fitting as needed.

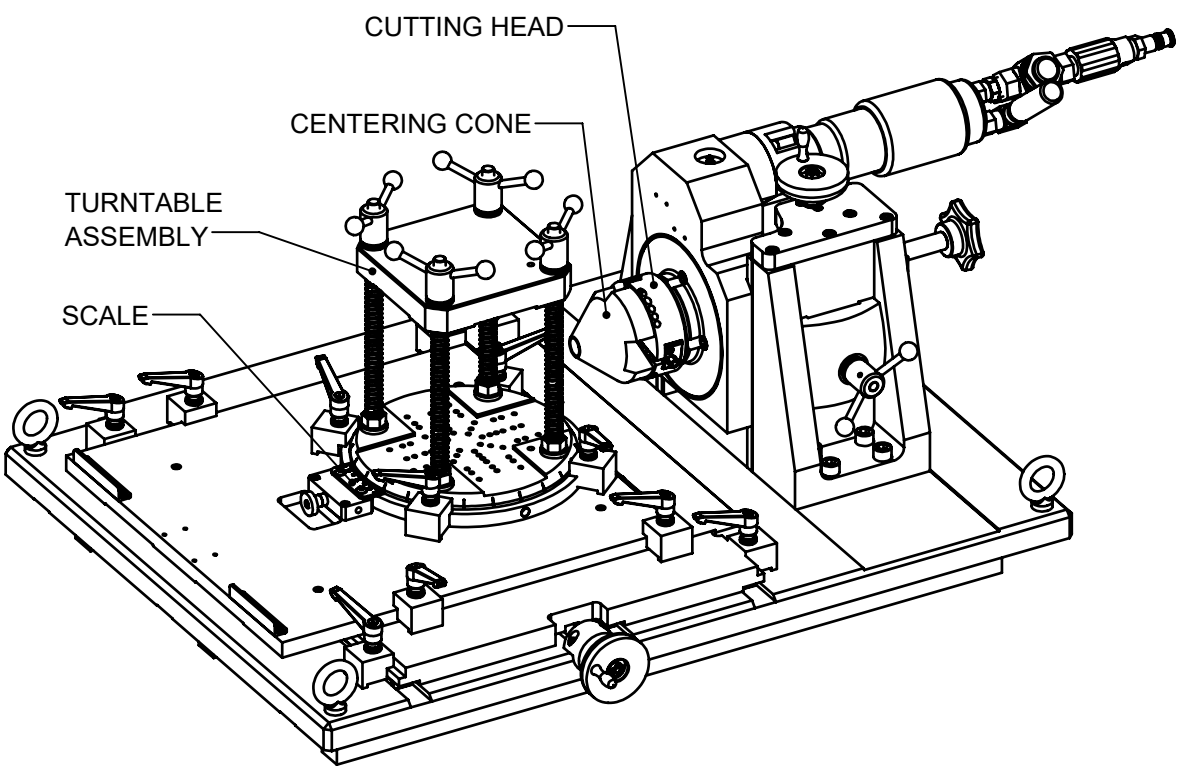


Figure 17: Configuration

NOTE: If the Feed Handle self feeds when the motor is on, the front bushing may need to be adjusted. It can become loose as it wears over time or due to machine vibration. Tighten the bushing by following the steps below (refer to IPB 02-3073 for item P/N's and illustration).

- Remove power source from the motor.
- Extend the cutting head out enough to be able to insert a spanner wrench (with a pin diameter of .115") between the cutting head and the main housing.
- Tighten the bearing nut until it is snug.
- Attach power to the drive motor and turn it on. Verify that the feed handle does not self-feed. Do not over tighten the bearing nut. Doing so will cause excessive force having to be applied to turn the feed handle, which will cause premature wear to the associated parts.
- Repeat procedure as required.

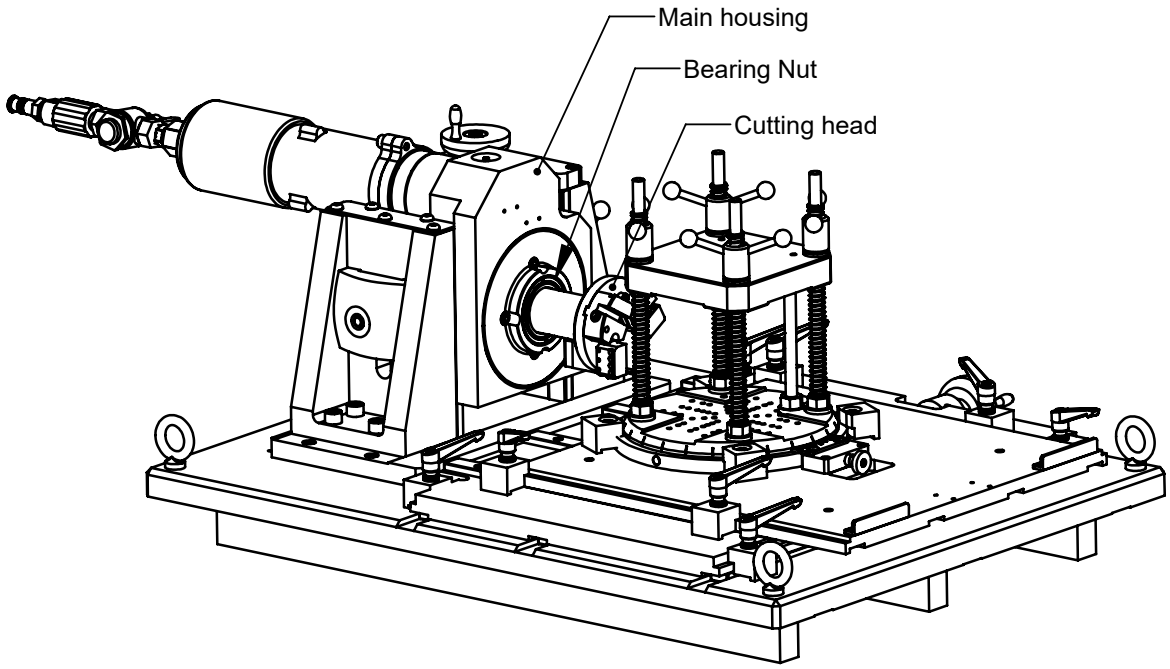


Figure 18: Bearing Nut Adjustment

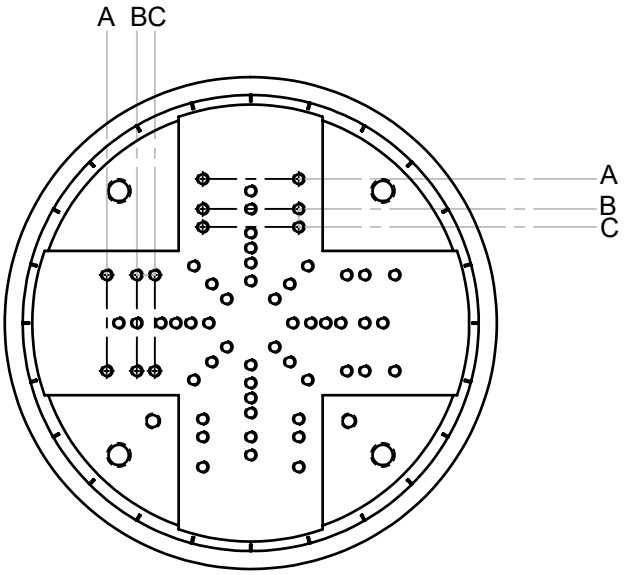
11. CONFIGURATION TABLE

PIPE SIZE	FITTING TYPE	CUTTING HEAD SIZE & P/N	CENTERING CONE & P/N	SCALE SIZE & P/N	TURNTABLE SIZE & P/N	SADDLE SIZE [2]	JACKSCREW OR FIXED BLOCK ASSY P/N
1	TEE / CROSS	SMALL 21-0800	SMALL 21-0804	SMALL 24-0359	SMALL 08-1690	1"	33-4701 (1/4-20 x 3.0)
	ELBOW, LONG						
	ELBOW, SHORT						[1]48-4370 (SST) [1]48-4585 (AL)
1.25	TEE / CROSS					1.25"	33-4702 (1/4-20 x 2.75)
	ELBOW, LONG						
	ELBOW, SHORT						[1]48-4371 (SST) [1]48-4586 (AL)
1.5	TEE / CROSS					1.5"	33-4702 (1/4-20 x 2.75)
	ELBOW, LONG						
	ELBOW, SHORT						
2	TEE / CROSS					2 - 2.5"	33-4703 (1/4-20 x 2.5)
	ELBOW, LONG						
	ELBOW, SHORT						
2.5	TEE / CROSS						
	ELBOW, LONG						
	ELBOW, SHORT						
3	TEE / CROSS					3 - 3.5"	33-1247 (1/4-20 x 1.8)
	ELBOW, LONG						
	ELBOW, SHORT						
3.5	TEE / CROSS						33-1246 (1/4-20 x 2.15)
	ELBOW, LONG			LARGE 24-4863	LARGE 08-1689		33-4704 (5/16-18 x 2.0)
	ELBOW, SHORT			SMALL 24-0359	SMALL 08-1690		33-1246 (1/4-20 x 2.15)
4	TEE / CROSS	LARGE 21-0802	LARGE 21-0806	LARGE 24-4863	LARGE 08-1689	4"	33-4705 (5/16-18 x 2.81)
	ELBOW, LONG						
	ELBOW, SHORT						
6	TEE / CROSS					6"	33-4706 (5/16-18 x 1.69)
	ELBOW, LONG						
	ELBOW, SHORT						

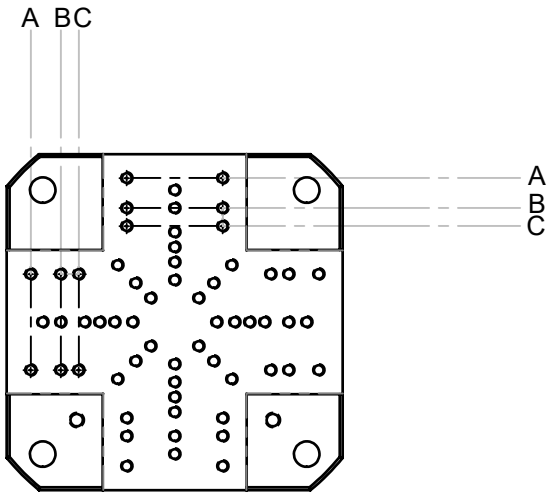
1. Use the Fixed Block Assembly with the Base Assembly (P/N 48-4372).

2. Refer to IPBs (Section 18) for part numbers.

12. V-BLOCK POSITION CONFIGURATION TABLE



SMALL TABLE BASE



SMALL TABLE TOP

Figure 19: Small Table Mounting Location

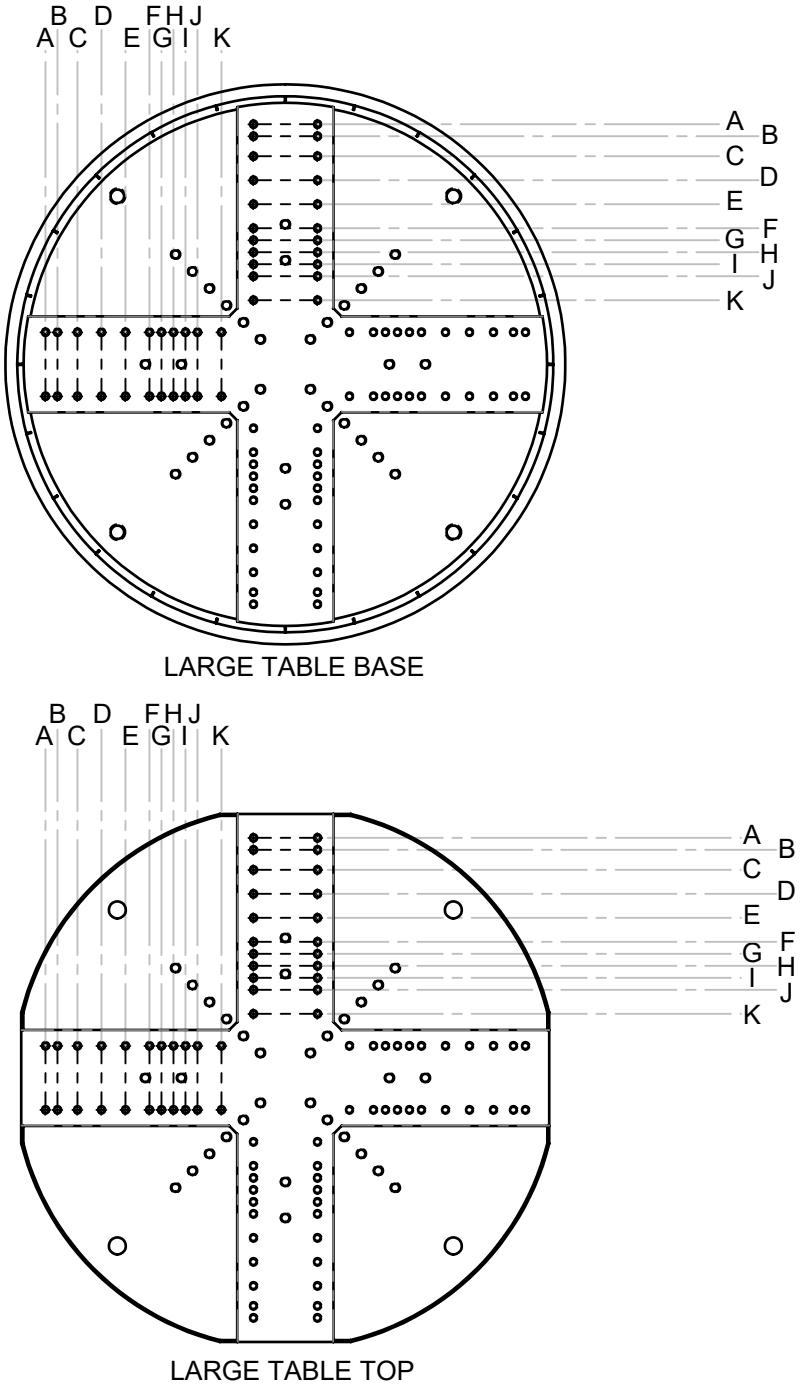


Figure 20: Large Table Mounting Location

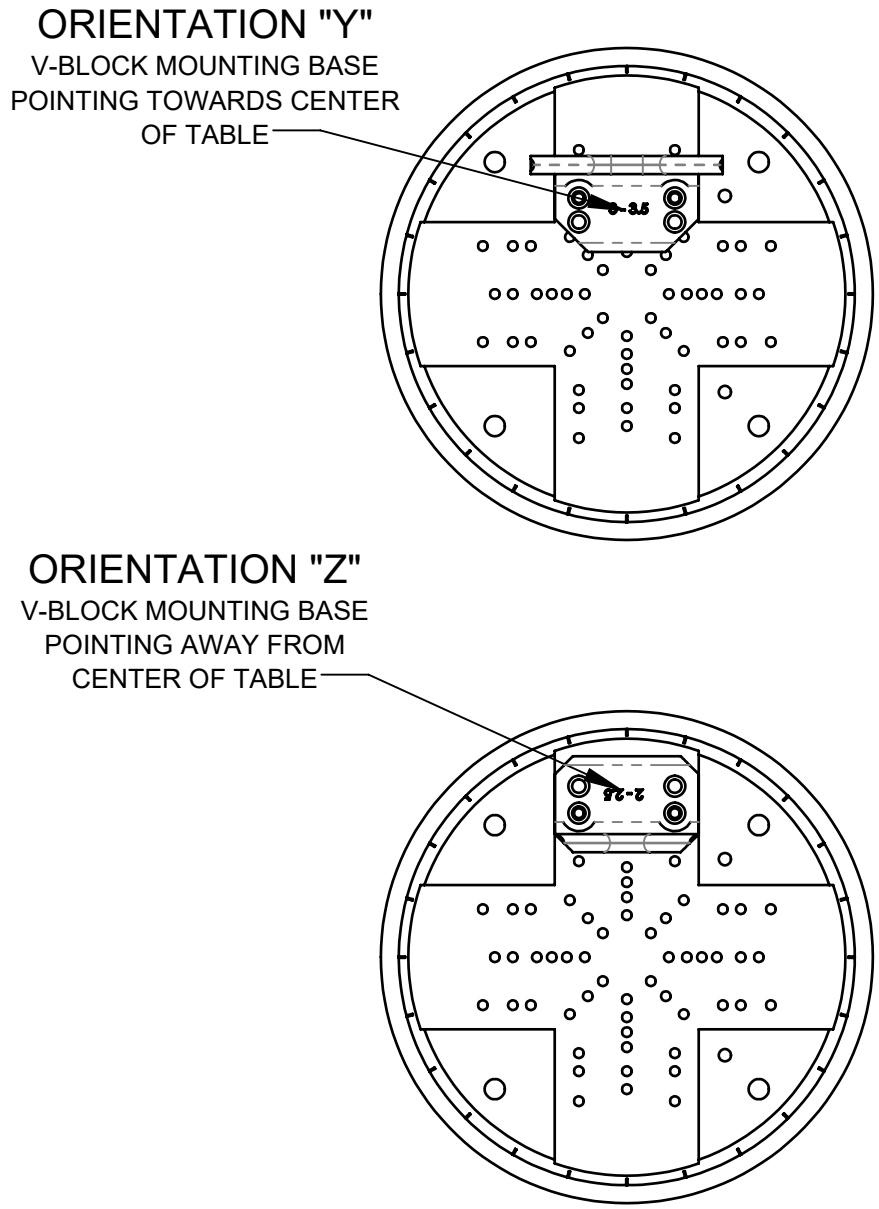


Figure 21: V-Block Mounting Orientation

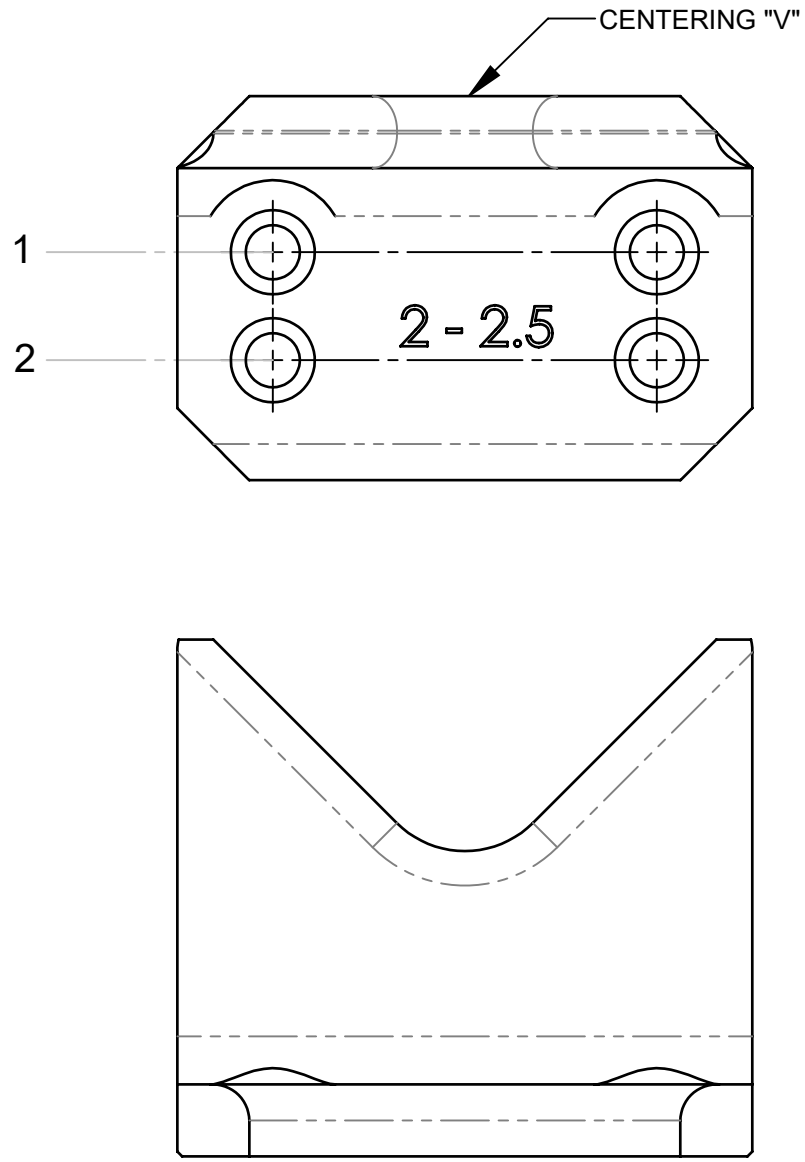


Figure 22: V-Block Mounting Location

536 V-BLOCK MOUNTING LOCATIONS, SMALL TABLE

PIPE SIZE	FITTING TYPE	BASE PLATE HOLE LOCATION	TOP PLATE HOLE LOCATION	V-BLOCK MOUNTING ORIENTATION	V-BLOCK HOLE LOCATION
1	TEE / CROSS	B	B	Z	1
1	ELBOW, LONG	B	B	Z	1
1	ELBOW, SHORT	48-4370 - BLOCK ASSY, 1" SHORT ELBOW			
1.25	TEE / CROSS	C	C	Z	1
1.25	ELBOW, LONG	C	C	Z	1
1.25	ELBOW, SHORT	48-4371 - BLOCK ASSY, 1-1/4" SHORT ELBOW			
1.5	TEE / CROSS	A	A	Z	2
1.5	ELBOW, LONG	A	A	Z	2
1.5	ELBOW, SHORT	B	B	Z	2
2	TEE / CROSS	A	A	Z	2
2	ELBOW, SHORT	C	C	Z	1
2	ELBOW, LONG	A	A	Z	1
2.5	TEE / CROSS	A	A	Z	1
2.5	ELBOW, LONG	B	B	Y	1
2.5	ELBOW, SHORT	A	A	Z	2
3	TEE / CROSS	C	C	Y	1
3	ELBOW, LONG	A	A	Y	1
3	ELBOW, SHORT	A	A	Z	1
3.5	TEE / CROSS	B	B	Y	1
3.5	ELBOW, SHORT	C	C	Y	1

NOTE:

- PROPERLY CENTER THE CUTTING HEAD TO THE FITTING BEFORE MACHINING
- WHEN ROTATING THE BASE PLATE TO AN ADJACENT FITTING FACE, THE FITTING **MUST BE CENTERED WITH THE MACHINE AGAIN**
- FAILURE TO ALIGN EACH FITTING FACE WILL RESULT IN NON-CONCENTRIC CUTS AND POOR PERFORMANCE OF THE MACHINE

536 V-BLOCK MOUNTING LOCATIONS, LARGE TABLE

PIPE SIZE	FITTING TYPE	BASE PLATE HOLE LOCATION	TOP PLATE HOLE LOCATION	V-BLOCK MOUNTING ORIENTATION	V-BLOCK HOLE LOCATION
3.5	ELBOW, LONG	I	I	Y	2
4	TEE / CROSS	K	K	Y	2
4	ELBOW, LONG	G	G	Y	2
4	ELBOW, SHORT	K	K	Y	2
6	TEE / CROSS	F	F	Y	1
6	ELBOW, LONG	A	A	Y	1
6	ELBOW, SHORT	H	H	Y	2

NOTE:

- PROPERLY CENTER THE CUTTING HEAD TO THE FITTING BEFORE MACHINING
- WHEN ROTATING THE BASE PLATE TO AN ADJACENT FITTING FACE, THE FITTING **MUST BE CENTERED WITH THE MACHINE AGAIN**
- FAILURE TO ALIGN EACH FITTING FACE WILL RESULT IN NON-CONCENTRIC CUTS AND POOR PERFORMANCE OF THE MACHINE

13. 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:	**Tube or Pipe is Slipping in the Saddles**
	The saddles are not in full contact with the pipe or tube.
	The clamping pressure is too light.
	Scale and/or other foreign material is present on the pipe or tube.
	Weld seams, swelling, or bumps under the saddles are preventing full contact.
	Dull tool bits are causing extra force in the axial and/or radial direction.

Problem:	**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:	**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:	**Tool Bit does not Reach Work**
	Incorrect tool blocks are installed.
	Incorrect tool bit is installed.
Problem:	**Hydraulic Motor does not Start**
	The hydraulic power supply is shut off.
	The hydraulic motor is damaged and will not run free.
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.

14. DIAL INDICATOR KIT

Additional degree of precision can be obtained by use of the Dial Indicator Kit (P/N 05-0060).

- Follow instructions in the Clamping and Centering Cone sections before proceeding.

Slide the Indicator Rod into the hole provided in the Cutter Head, and lock lightly with the Set Screw.

Adjust the Indicator Hardware to give a zero reading with extra travel in both directions.

Use machine power to rotate the Cutter Head, stopping once every 90° to record reading.

Adjust “X” and “Z” axis to center fitting.

- Repeat 5.21.4 to check.
- If needed, repeat 5.21.5 until fitting is centered to required precision.
- Snug all locks.

15. CUTTING SPEEDS

This chart shows RPM to obtain specified Tool Bit surface cutting speed on the surface of the pipe.

True Diameter	RPM for 200 in/min (5080 mm/min)	RPM for 250 in/min (6350 mm/min)	RPM for 300 in/min (7620 mm/min)
1.00” / 25.4mm	64	80	96
2.00” / 50.8mm	32	40	48
3.00” / 76.2mm	21	27	32
4.00” / 101.6mm	16	20	24
6.00” / 152.4mm	11	13	16
(Cutting speeds approximate)			

Use 200 surface inches per minute (508 surface centimeters 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 (635 surface centimeters per minute) for: Mild steels and some thin wall stainless steels when coolants are permitted and applied.

Use 300 surface inches per minute (762 surface centimeters per minute) for: Aluminum and thin-wall mild steel and tube with coolants.

Basic feed recommendations are:

- 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” to .006” (.08mm to .15mm) feed].
    - Never allow the Tool Bit to burnish the surface.
- Reduced feeds and speeds will normally minimize chatter problems.

16. ACCESSORIES

The following accessories are recommended for use with the Model 536 Bench Mounted Fitting Machine and are available from Tri Tool Inc.:

- A Portable Air Filter Caddy (P/N 75-0115)
- Tool Bits* (Refer to Section 16.)
- A Dial Indicator Kit (P/N 05-0060.) (This helps for extra accuracy in aligning and squaring fittings.)
- Z-Axis Miter Plate Assembly (P/N 08-1781)
- Stainless Steel saddle kit (P/N 05-1482)

*Special Tooling Kits for fittings not covered by universal tooling, can be designed and built by Tri Tool Inc. Consult Tri Tool Inc. for details.

17. TOOL BITS

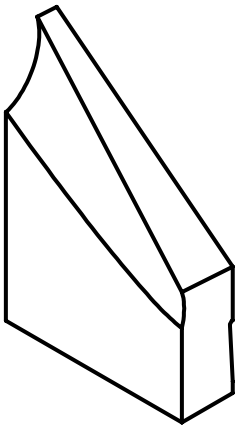


Figure 23: Bevel Tool Bit

Part No.	Description
99-2905	TOOL BIT, BEVEL, 37.5 DEG., SMALL
99-2906	TOOL BIT, BEVEL, 37.5 DEG., LARGE

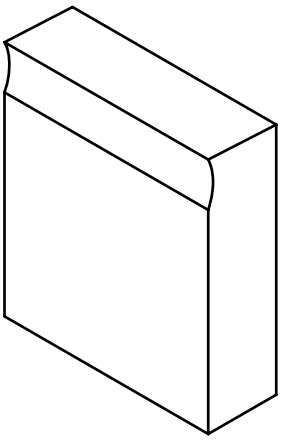


Figure 24: Facing Tool Bit

Part No.	Description
99-2904	TOOL BIT, FACING, .375 X 1, TALL

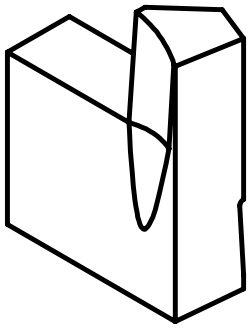


Figure 25: ID Chamfer Tool Bit

Part No.	Description
99-2910	ID CHAMFER BIT, 10 DEG., SMALL
99-2911	ID CHAMFER BIT, 10 DEG.

18. MACHINING OUT OF ROUND PIPE

Mount the fitting on the Model 536 table as required.

Install the Facing Tool Bit and the Deburring Tool Bit into the Cutting Head.

Center and square the fitting to the cutting head.

- Use the Centering Cone or the Dial Indicator depending on the accuracy required.
- Using the Deburr Tool Bit as a reference, determine the high and low spots on the out-of-round ID.
- Readjust the Deburr Tool Bit inward if too much material will be taken.

Machine the minimum amount of material from the fitting.

Note: Because the OD turning Tool Bit will reduce the diameter, removing material for a full chamfer may not be needed.

Install the OD Turning Tool Bit. Set the diameter for minimum wall consolidations.

Machine the OD until the Facing Tool Bit is just about to touch the face.

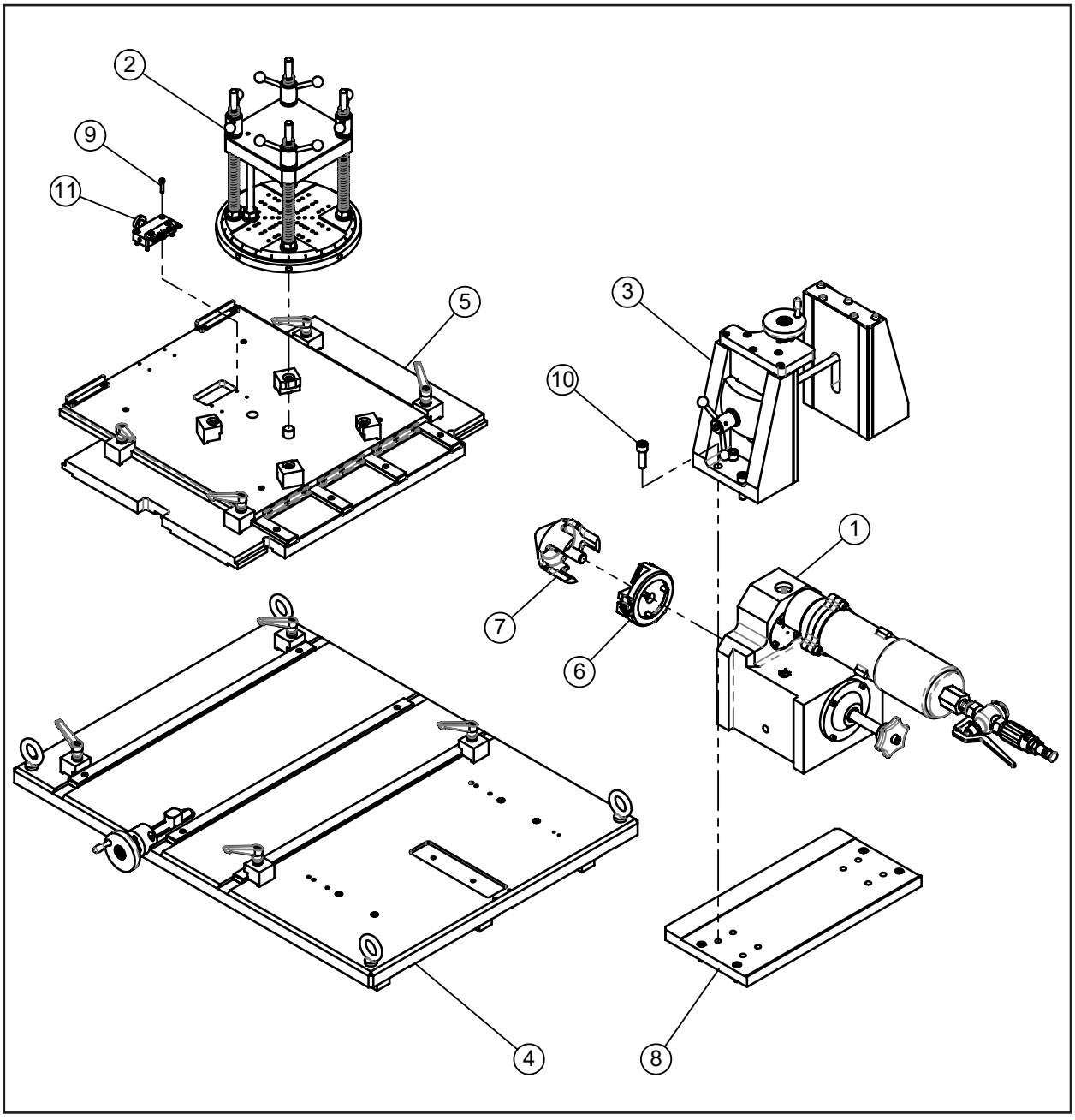
Remove the OD Turning Tool Bit.

Note: The out-of-round condition will cause the ID to be machined at 2 opposite sides while the OD is machined at the 2 sides which are 90 degree to the ID cuts. In order to minimize the wall thickness variation, the amount of material removed from the ID should be about the same as removed from the OD.

Note: To minimize the risk of minimum wall thickness violations, the Tool Bit diameters should be set to maximum material specifications for the prep.

19. ILLUSTRATED PARTS BREAKDOWN

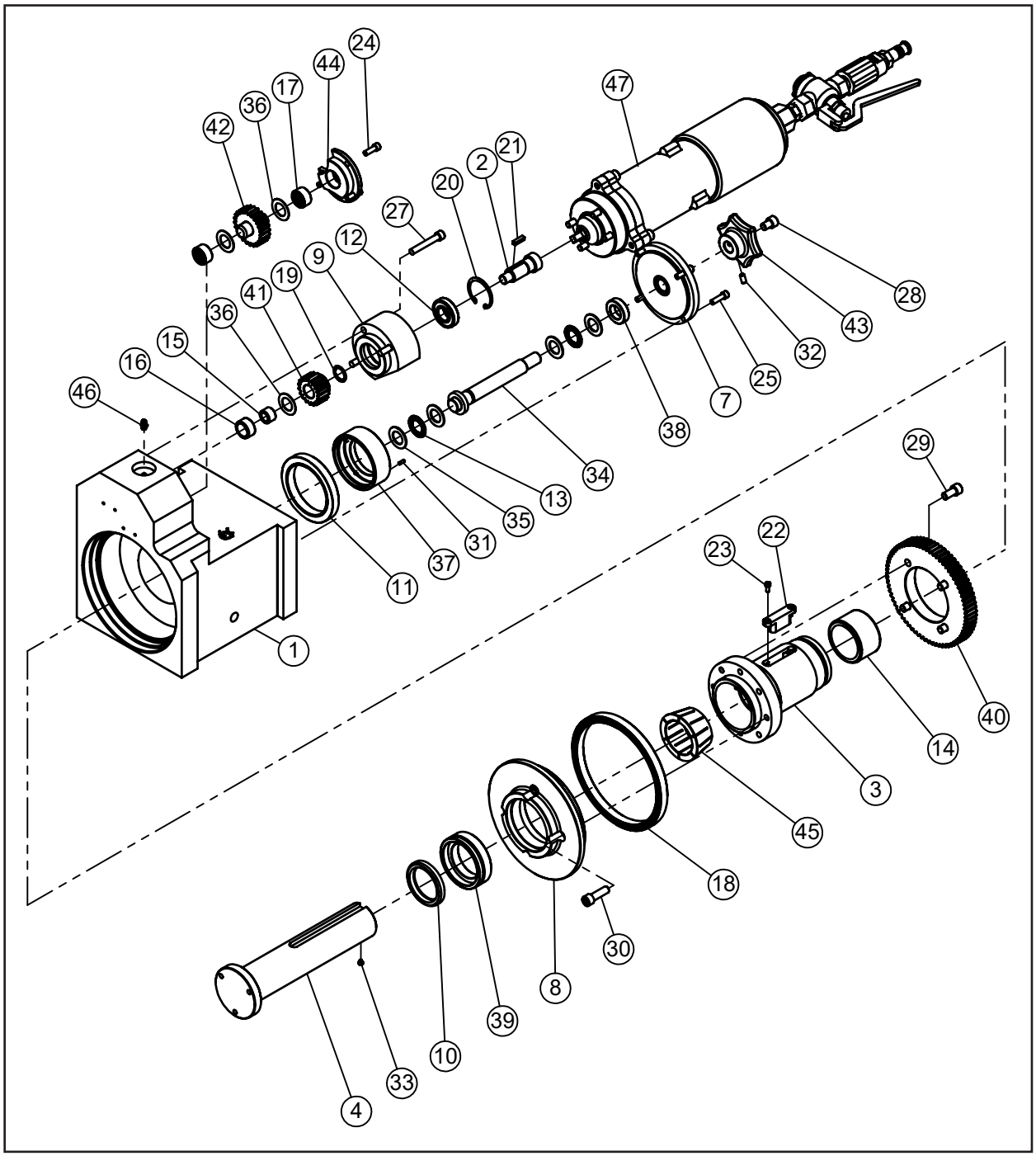
MODEL 536 FITTING MACHINE (01-2516)



Parts List, Model 536 Fitting Machine (P/N 01-2516)

Item No.	Part No.	Description	Qty
1.	02-3073	MODEL 536 FITTING MACHINE SUB ASSY	1
2.	08-1690	TURNTABLE ASSY, SMALL, 536	1
3.	08-1780	MOUNTING ASSY, DRIVE GROUP, 536	1
4.	08-1782	BASE PLATE ASSY, 536 FITTING MACHINE	1
5.	08-1783	X-Y TABLE ASSY, 536 FITTING MACHINE	1
6.	21-0800	HEAD ASSY, SMALL	1
7.	21-0804	HEAD ASSY, CENTERING, SMALL	1
8.	24-5050	PLATE ASSY, SPACER, DRIVE GROUP, 536	1
9.	33-0031	SCREW, CAP (#10-24 X 7/8)	4
10.	33-0107	SCREW,CAP (1/2-13 X 1.50)	8
11.	48-4367	BLOCK ASSY, INDEX	1
	NOT SHOWN		
	05-1485	KIT, TOOL, 536 FITTING MACHINE	1
	05-1583	KIT, SADDLE, 536 FITTING MACHINE, ALUM.	1
	08-1689	TURNTABLE ASSY, LARGE, 536	1
	21-0802	HEAD ASSY, LARGE	1
	21-0806	HEAD ASSY, CENTERING, LARGE	1
	ACCESSORIES		
	05-1482	KIT, SADDLE, 536 FITTING MACHINE, SST	
	08-1781	ASSY, Z-AXIS MITER, 536	

MODEL 536 FITTING MACHINE SUB-ASSEMBLY (02-3073)



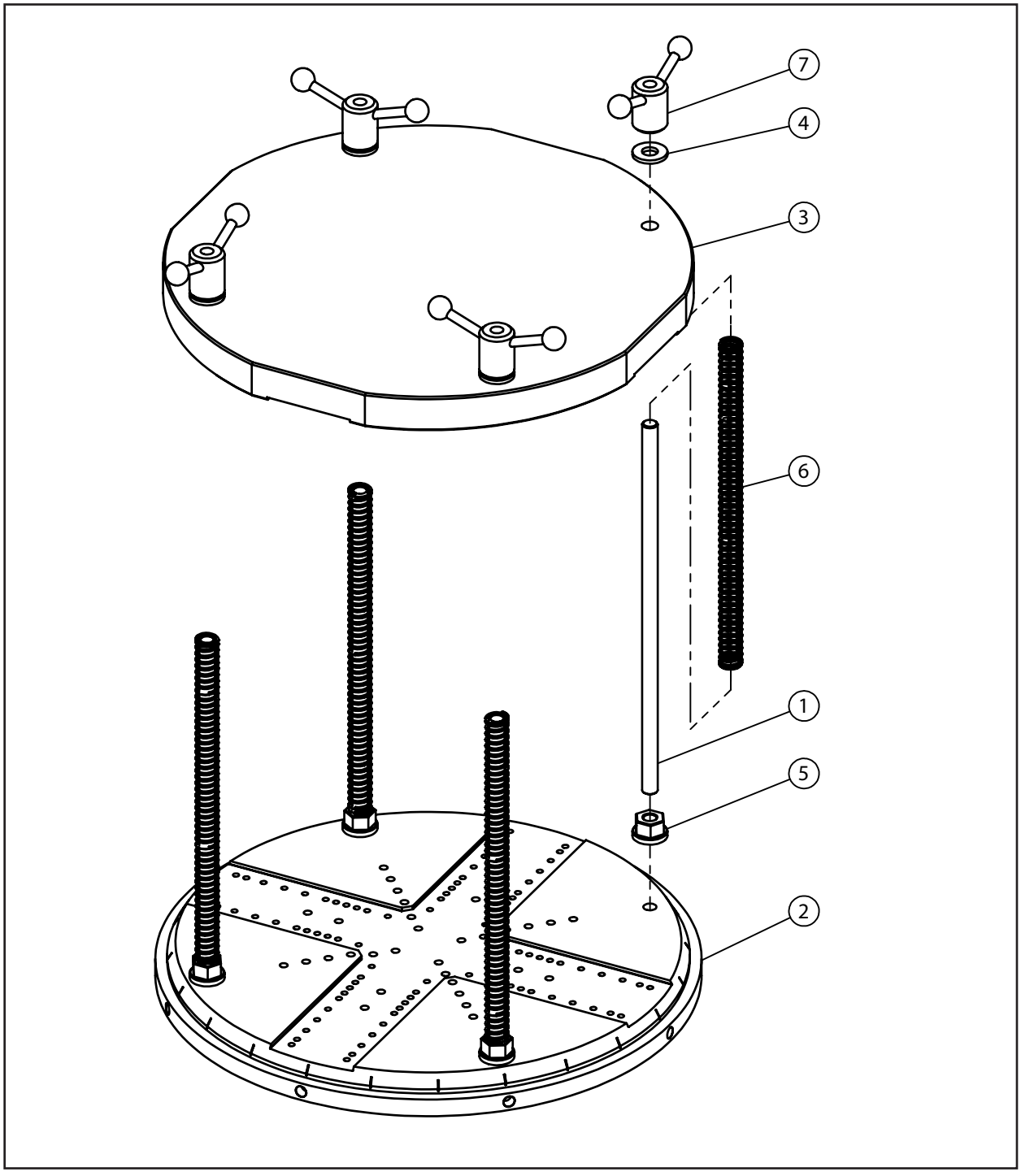
Parts List, Model 536 Fitting Machine Sub-Assembly (P/N 02-3073)

Item No.	Part No.	Description	Qty
1.	19-1842	HOUSING ASSY, 536	1
2.	20-0612	SHAFT, DRIVE	1
3.	20-1727	SHAFT, DRIVE	1
4.	20-1728	SHAFT, MAIN	1
6.		NOT USED	
7.	24-0573	PLATE ASSY,FEED	1
8.	24-4836	PLATE, END	1
9.	27-1603	ADAPTER, MOTOR, MOD	1
10.	28-0670	SEAL,OIL,2 X 2-9/16 X 21/64	1
11.	29-0002	BRG,BALL,2-15/16X 3-7/8 X 7/16	1
12.	29-0020	BRG,BALL,3/4 X 1-5/8 X 7/16	1
13.	29-0067	BRG,THRUST,.75 X 1.25 X .078	2
14.	29-0185	RACE, BEARING, 2” X 2 1/2” X 3/4”	1
15.	29-0186	RACE, BEARING, 1/2” X 3/4” X 1/2”	1
16.	29-0187	BEARING, ROLLER, 3/4” X 1” X 1/2”	1
17.	29-0807	BEARING, NEEDLE	2
18.	29-0808	BRG,BALL,6 X 6-3/4 X 1/2	1
19.	30-0060	RING, RETAINING, EXT	1
20.	30-1089	RING,RETAIN,INT,1-5/8 DIA	1
21.	31-0037	KEY, 3/16 SQUARE	1
22.	31-0152	KEY, TORQUE	1
23.	33-0019	SCREW, CAP, #8-32 X 3/8	2
24.	33-0040	SCREW, CAP,1/4-20 X 3/4”	3
25.	33-0041	SCREW, CAP, 1/4-20 X 7/8	4
26.		NOT USED	
27.	33-0060	SCREW, CAP, 5/16-18 X 2	3
28.	33-0067	SCREW,CAP,3/8-16 X 1/2	1
29.	33-0069	SCREW,CAP,3/8-16 X 3/4	4
30.	33-0072	SCREW,CAP,3/8-16 X 1-1/4	4

Parts List, Model 536 Fitting Machine Sub-Assembly (P/N 02-3073)

Item No.	Part No.	Description	Qty
31.	33-0469	SCREW,SET,6-32 X 3/16,CUP PT	1
32.	33-0503	SCREW, SET, CUP POINT, 1/4-20 X 1/2	2
33.	33-1949	SCREW, SET, BRASS TIP, 1/4 - 20 X 1/4”	1
34.	33-4573	SCREW, FEED	1
35.	34-0106	WASHER, THRUST	4
36.	34-0302	WASHER, THRUST	3
37.	35-0237	NUT, BEARING RETAINING	1
38.	35-0255	NUT, THRUST	1
39.	35-1115	NUT, BEARING	1
40.	39-0784	GEAR, SPUR, 12 D.P., 72 T., 6.000 P.D.	1
41.	39-0787	GEAR, SPUR, 18 TEETH	1
42.	39-1363	GEAR, IDLER, 24T	1
43.	42-0081	KNOB, MOD., FEED	1
44.	43-1268	COVER, BEARING	1
45.	45-0620	BUSHING, FRONT	1
46.	54-0375	FITTING,GREASE	1
47.	57-0366	MOTOR ASSY, AIR	1

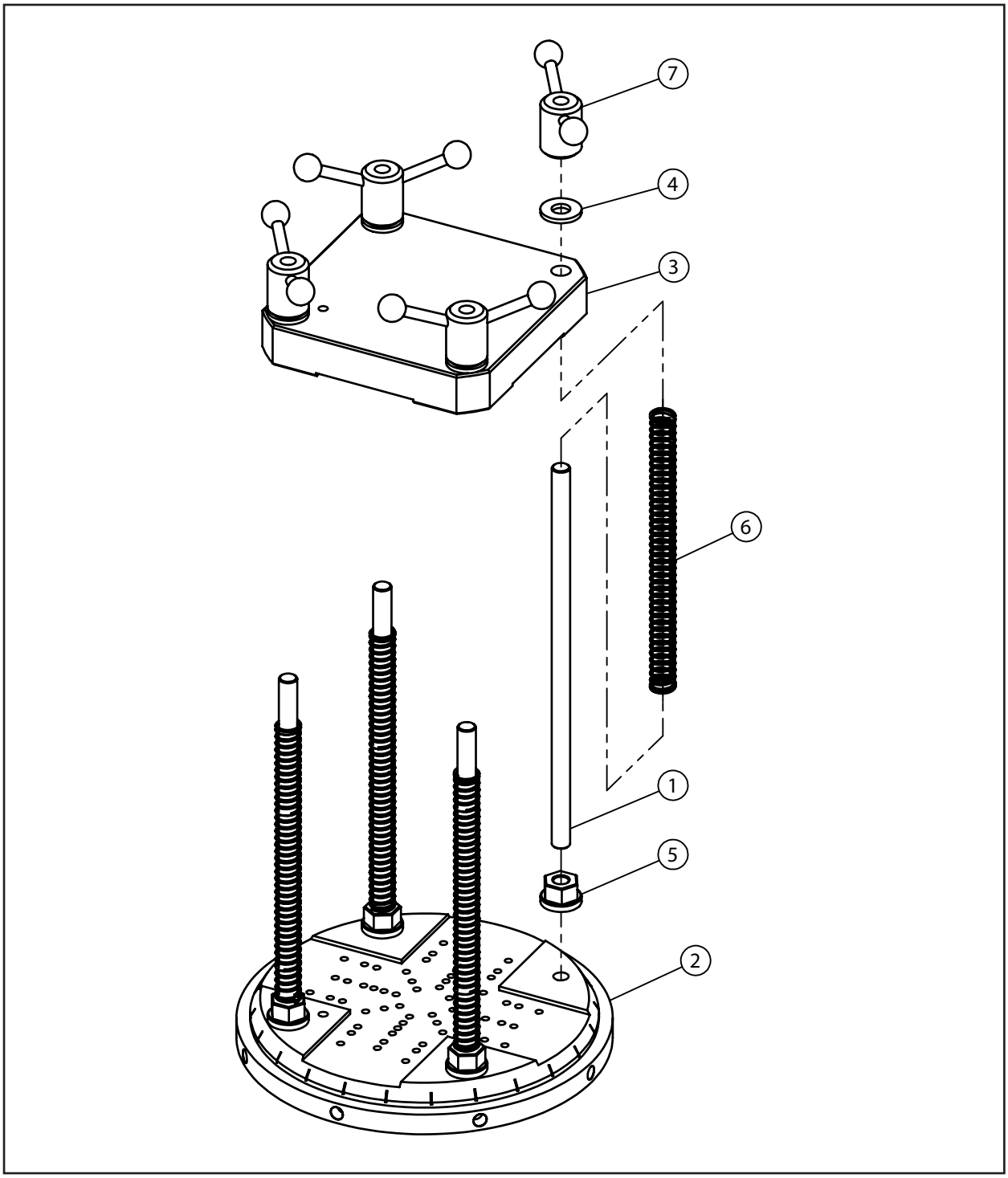
MODEL 536 LARGE TURNTABLE ASSEMBLY (08-1689)



Parts List, Model 536 Large Turntable Assembly (P/N 08-1689)

Item No.	Part No.	Description	Qty
1.	23-0239	ROD, THREADED	4
2.	24-4851	PLATE, CAROUSEL, 17.5” DIA	1
3.	24-4862	PLATE, CLAMPING, LARGE	1
4.	34-0133	WASHER, FLAT, 1/2 X 1-1/8 X 1/8	4
5.	35-0062	NUT, FLANGE, 1/2-13 X 11/16	4
6.	40-0530	SPRING, COMPRESSION, 3/4 X 12.00	4
7.	41-0044	HANDLE, SPEED	4

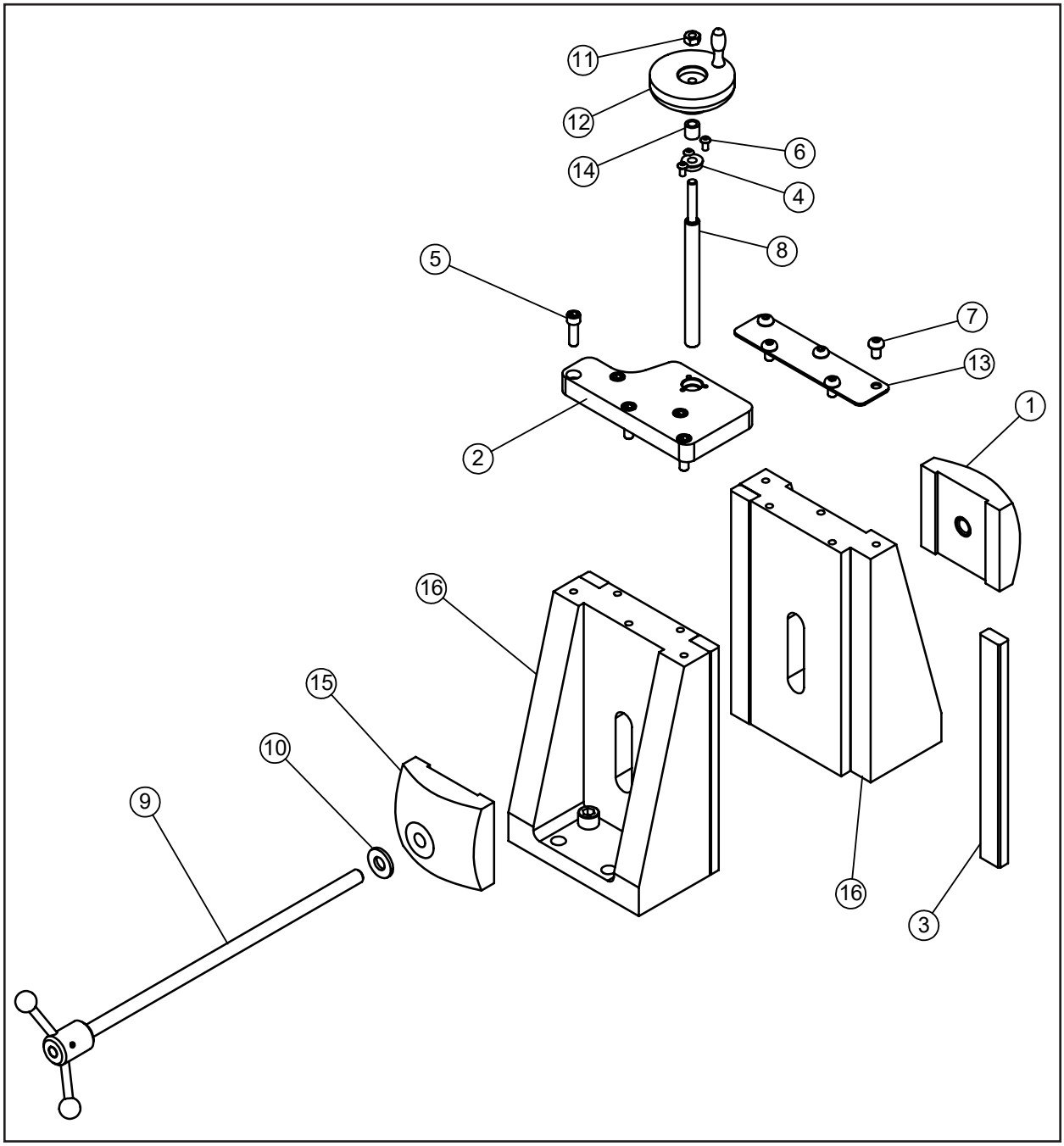
MODEL 536 SMALL TURNTABLE ASSEMBLY (08-1690)



Parts List, Model 536 Small Turntable Assembly (P/N 08-1690)

Item No.	Part No.	Description	Qty
1.	23-0732	ROD, THREADED	4
2.	24-0357	PLATE, CAROUSEL	1
3.	24-0358	PLATE, CLAMPING	1
4.	34-0133	WASHER, FLAT, 1/2 X 1-1/8 X 1/8	4
5.	35-0062	NUT, FLANGE, 1/2-13 X 11/16	4
6.	40-0531	SPRING, COMPRESSION, 5/8 X 8.75	4
7.	41-0044	HANDLE, SPEED	4

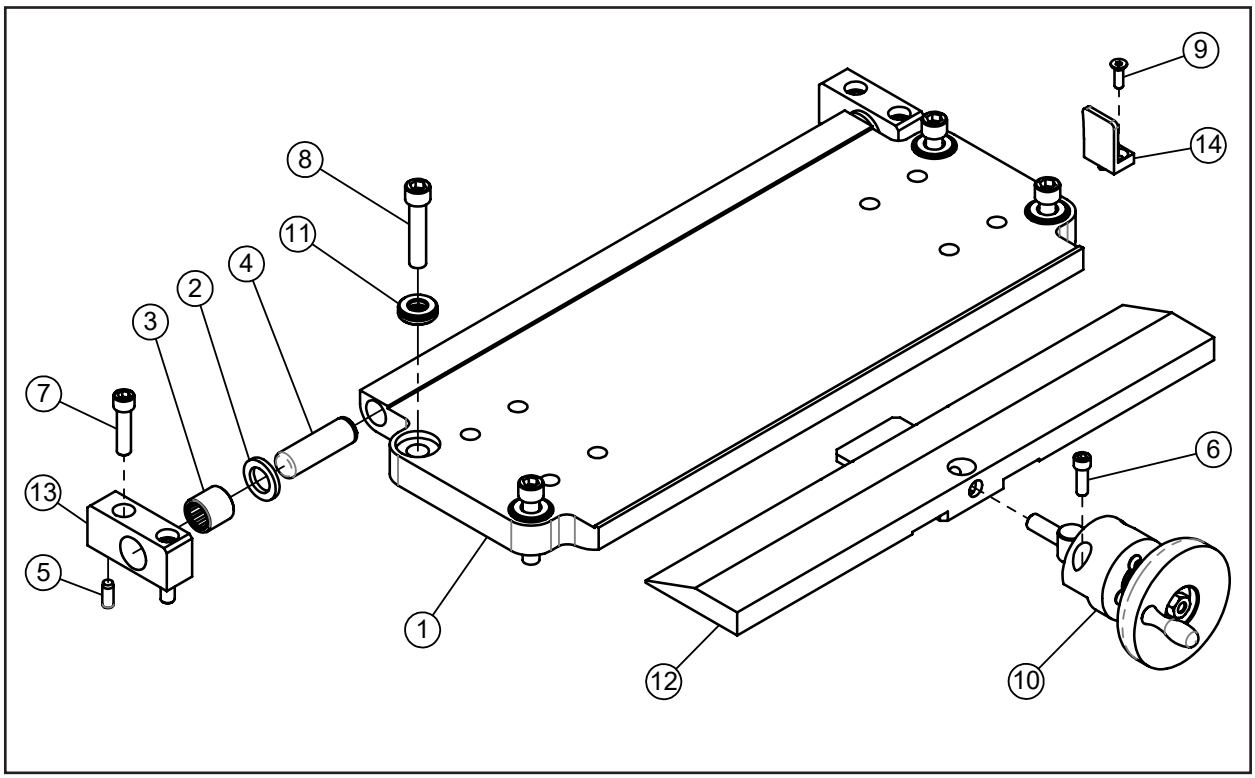
MODEL 536 MOUNTING ASSEMBLY, DRIVE GROUP (08-1780)



Parts List, Model 536 Mounting Assembly, Drive Group (P/N 08-1780)

Item No.	Part No.	Description	Qty
1.	08-0039	BLOCK ASSY, THREADED	1
2.	24-4852	PLATE, Z-THRUST	1
3.	26-2063	BAR, Z-RAIL	4
4.	29-0119	BRG,FLANGE,5/16 X 11/16 X 1/4	1
5.	33-0056	SCREW,CAP,5/16-18 X 1	5
6.	33-0278	SCREW,BUTTON,10-24 X 3/8	3
7.	33-0291	SCREW,BUTTON,5/16-18 X 1/2	5
8.	33-1245	SCREW, LEAD	1
9.	33-4618	SCREW ASSY, Z-CLAMP	1
10.	34-0133	WASHER,FLAT,1/2 X 1-1/8 X 1/8	1
11.	35-0007	NUT,HEX,5/16-18 X 7/32	1
12.	42-0058	KNOB, MOB	1
13.	43-1270	COVER, TOP	1
14.	46-0022	SLEEVE	1
15.	48-0204	BLOCK, DRILLED	1
16.	48-4571	BLOCK, UPRIGHT, 536	2

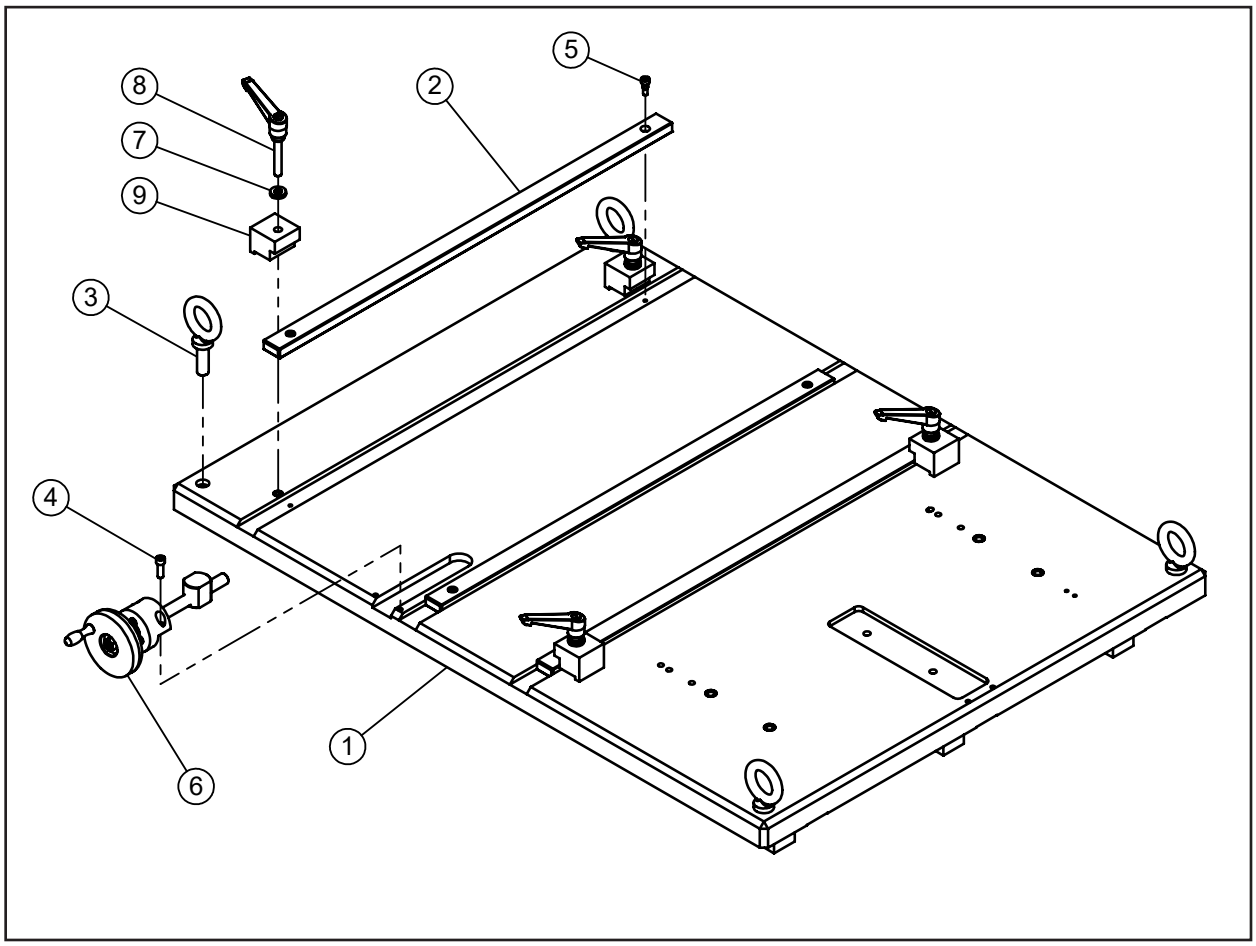
ASSEMBLY, Z-AXIS MITER, 536 (08-1781)



Parts List, Assembly, Z-Axis Miter, 536 (P/N 08-1781)

Item No.	Part No.	Description	Qty
1.	24-5036	PLATE, Z-AXIS MITER	1
2.	29-0684	BEARING,THRUST,BRONZE	2
3.	29-0866	BEARING, NEEDLE, .625ID X .8125OD X .75	2
4.	32-0161	DOWEL PIN (DIA .250 x .75)	2
5.	32-0206	PIN,DOWEL,1/4 DIA X 5/8	2
6.	33-0040	SCREW, CAP,1/4-20 X 3/4”	2
7.	33-0057	SCREW, CAP (5/16-18 x 1.25)	4
8.	33-0074	SCREW,CAP,3/8-16 X 1-3/4	4
9.	33-0353	SCREW,FLAT,10-24 X 5/8	2
10.	33-4914	SCREW ASSY, Z-AXIS MITER	1
11.	34-0679	WASHER SET,SPHERICAL,3/8”	4
12.	48-4572	BLOCK, WEDGE, Z-AXIS MITER	1
13.	48-4573	BLOCK, MOUNTING, Z-AXIS MITER	2
14.	48-4574	BLOCK, PIVOT SCALE	1

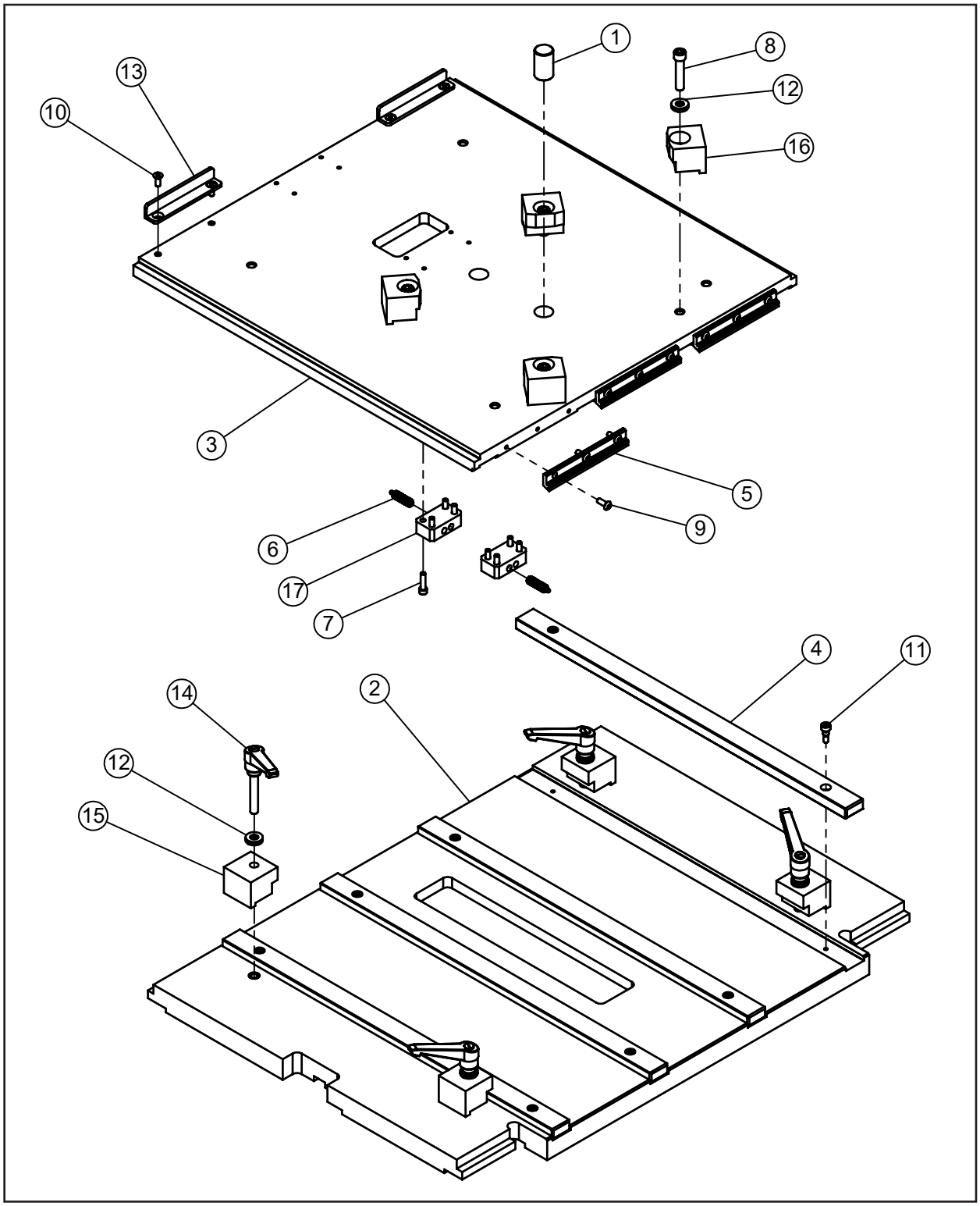
MODEL 536 FITTING MACHINE BASE PLATE ASSEMBLY (08-1782)



Parts List, Model 536 Fitting Machine Base Plate Assembly (P/N 08-1782)

Item No.	Part No.	Description	Qty
1.	24-5039	PLATE ASSY, BASE, 536	1
2.	26-2014	BAR, X-RAIL	3
3.	30-0188	EYEBOLT,SHLDR,3/8-16 X 1 1/4	4
4.	33-0040	SCREW, CAP,1/4-20 X 3/4”	2
5.	33-1004	SCREW, SHOULDER (DIA .250 x .250)	6
6.	33-4616	SCREW ASSY, X-TABLE	1
7.	34-0179	WASHER SET,SELF ALIGN,5/16	4
8.	41-1152	HANDLE, MOD	4
9.	48-0205	BLOCK, CLAMP	4

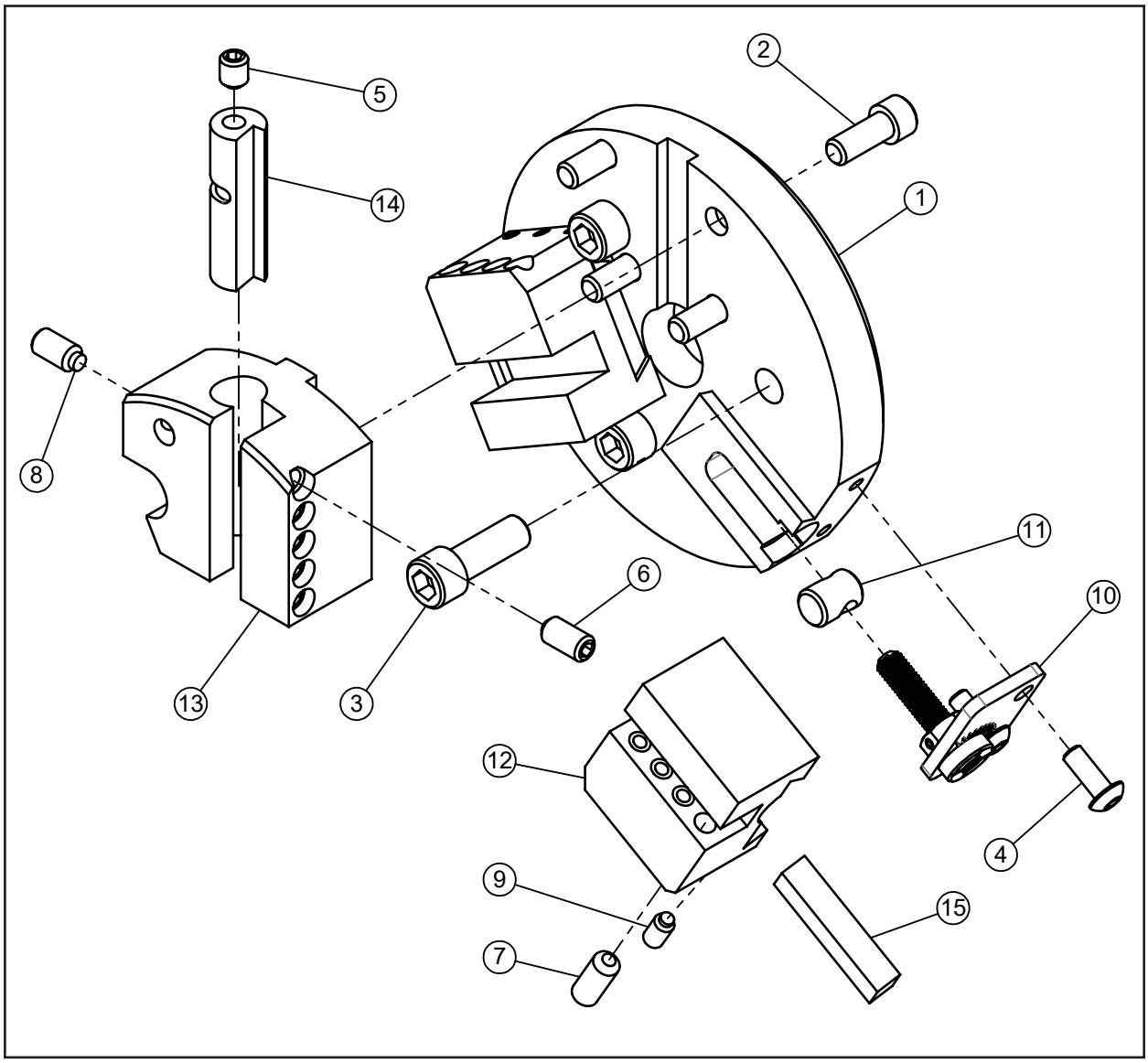
MODEL 536 FITTING MACHINE X-Y TABLE ASSEMBLY (08-1783)



Parts List, Model 536 Fitting Machine X-Y Table Assembly (P/N 08-1783)

Item No.	Part No.	Description	Qty
1.	20-0196	SHAFT, PIVOT	1
2.	24-5048	PLATE ASSY, X-TABLE	1
3.	24-5049	PLATE, Y-TABLE	1
4.	26-2064	BAR, Y-RAIL	4
5.	28-0690	WIPER, 536 FITTING MACHINE	3
6.	30-0130	PLUNGER,SPRNG,5/16-18 X 1	2
7.	33-0030	SCREW,CAP,10-24 X 3/4	8
8.	33-0058	SCREW,CAP,5/16-18 X 1-1/2	4
9.	33-0279	SCREW,BUTTON,10-24 X 1/2	9
10.	33-0352	SCREW,FLAT,10-24 X 1/2	4
11.	33-1004	SCREW, SHOULDER (DIA .250 x .250)	8
12.	34-0179	WASHER SET,SELF ALIGN,5/16	8
13.	41-0046	HANDLE, PUSH-PULL	2
14.	41-1152	HANDLE, MOD	4
15.	48-0205	BLOCK, CLAMP	4
16.	48-4389	BLOCK, CLAMP, TURNTABLE	4
17.	48-4577	BLOCK, STOP	2

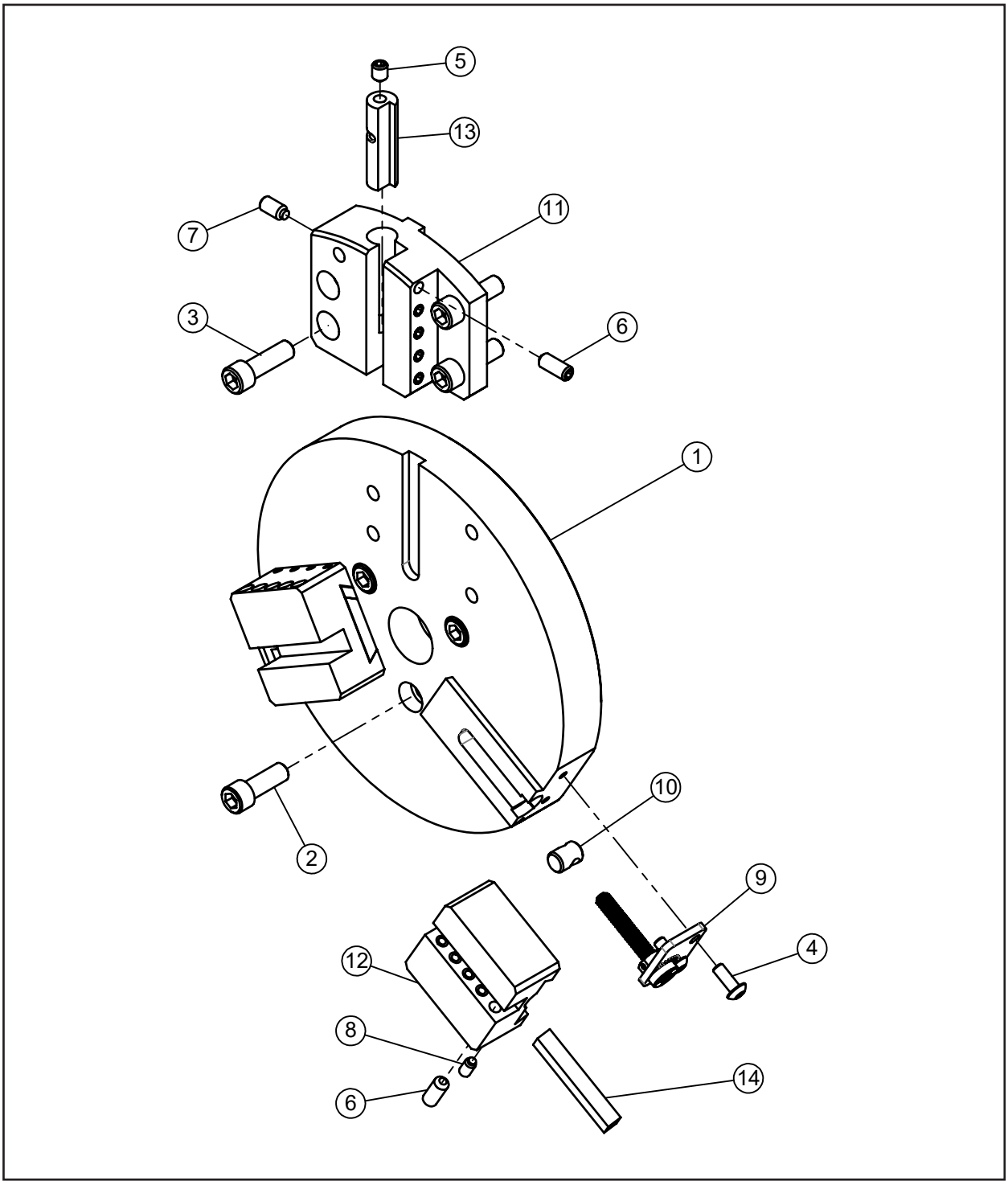
MODEL 536 SMALL HEAD ASSEMBLY (21-0800)



Parts List, Model 536 Small Head Assembly (P/N 21-0800)

Item No.	Part No.	Description	Qty
1.	21-0799	HEAD, FACING, SMALL	1
2.	33-0039	SCREW,CAP,1/4-20 X 5/8	4
3.	33-0055	SCREW, CAP (5/16-18 x .88)	3
4.	33-0279	SCREW,BUTTON,10-24 X 1/2	4
5.	33-0500	SCREW, SET, 1/4-20 X 5/16 CUP PT	1
6.	33-0503	SCREW, SET, CUP POINT (1/4-20 x .50)	5
7.	33-0504	SCREW,SET,1/4-20 X 5/8 CUP PT	8
8.	33-0927	SCREW,SET,1/4-20 X 1/2,HDOG	1
9.	33-1335	SCREW,SET,10-24 X 3/8,HDOG	6
10.	33-4912	SCREW ASSY, FEED, SMALL	2
11.	35-1180	NUT, FEED	2
12.	48-4587	BLOCK, TOOL, SMALL HEAD	2
13.	48-4604	BLOCK, TOOL HOLDER	1
14.	62-0201	CAM, FACING BIT	1
15.	66-0699	RAIL, GIB, SMALL HEAD	2

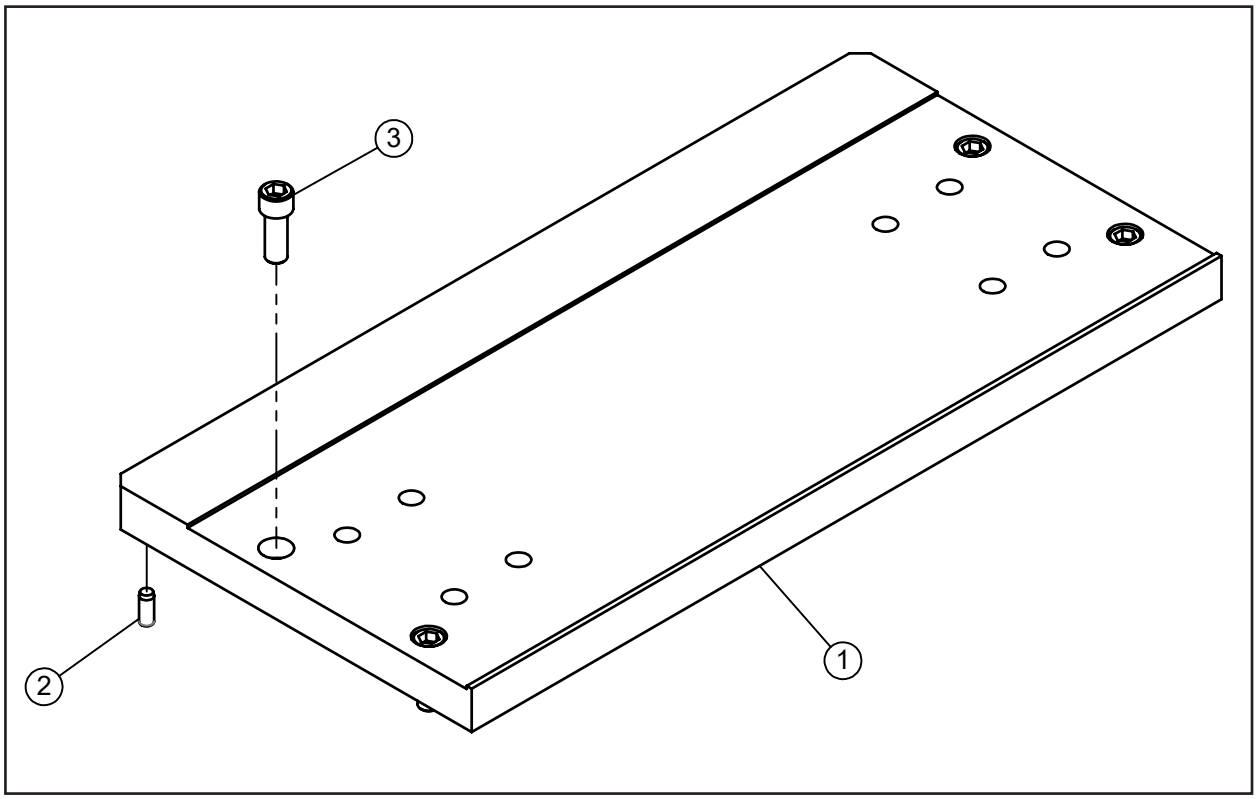
MODEL 536 LARGE HEAD ASSEMBLY (21-0802)



Parts List, Model 536 Large Head Assembly (P/N 21-0802)

Item No.	Part No.	Description	Qty
1.	21-0801	HEAD, FACING, LARGE	1
2.	33-0055	SCREW, CAP (5/16-18 x .88)	3
3.	33-0056	SCREW,CAP,5/16-18 X 1	4
4.	33-0279	SCREW,BUTTON,10-24 X 1/2	4
5.	33-0500	SCREW, SET, 1/4-20 X 5/16 CUP PT	1
6.	33-0504	SCREW,SET,1/4-20 X 5/8 CUP PT	15
7.	33-0927	SCREW,SET,1/4-20 X 1/2,HDOG	1
8.	33-1335	SCREW,SET,10-24 X 3/8,HDOG	8
9.	33-4913	SCREW ASSY, FEED, LARGE	2
10.	35-1180	NUT, FEED	2
11.	48-4570	BLOCK, TOOL HOLDER	1
12.	48-4588	BLOCK, TOOL, LARGE HEAD	2
13.	62-0201	CAM, FACING BIT	1
14.	66-0700	GIB,STRAIGHT	2

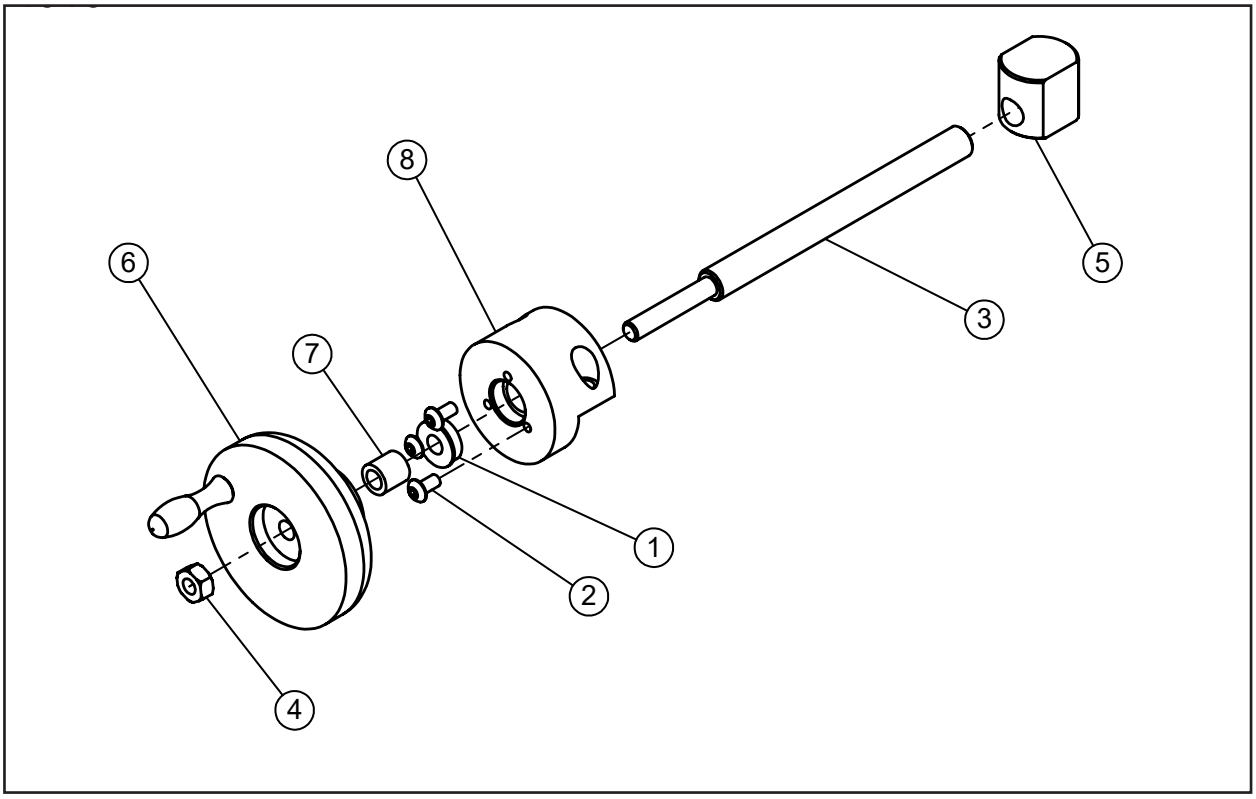
PLATE ASSEMBLY, SPACER, DRIVE GROUP, 536 (24-5050)



Parts List, Plate Assembly, Spacer, Drive Group, 536 (P/N 24-5050)

Item No.	Part No.	Description	Qty
1.	24-5040	PLATE, SPACER, DRIVE GROUP, 536	1
2.	32-0206	PIN,DOWEL,1/4 DIA X 5/8	2
3.	33-0071	SCREW,CAP,3/8-16 X 1	4

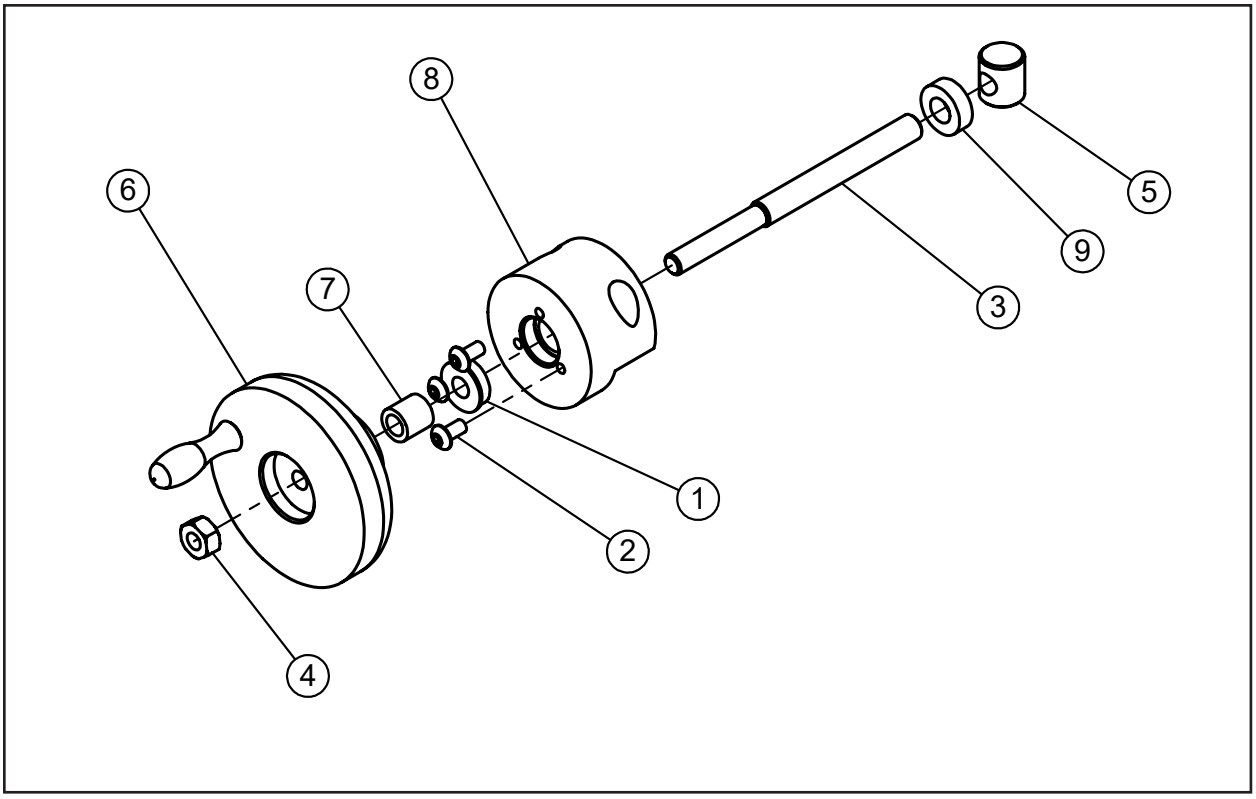
SCREW ASSEMBLY, X-TABLE (33-4616)



Parts List, Screw Assembly, X-Table (P/N 33-4616)

Item No.	Part No.	Description	Qty
1.	29-0119	BEARING, FLANGE	1
2.	33-0278	SCREW, BUTTON, 10-24 X 3/8	3
3.	33-1245	SCREW, LEAD	1
4.	35-0007	NUT, HEX, 5/16-18 X 7/32	1
5.	35-0178	NUT, BARREL	1
6.	42-0058	KNOB	1
7.	46-0022	SLEEVE	1
8.	48-0203	BLOCK, X-THRUST	1

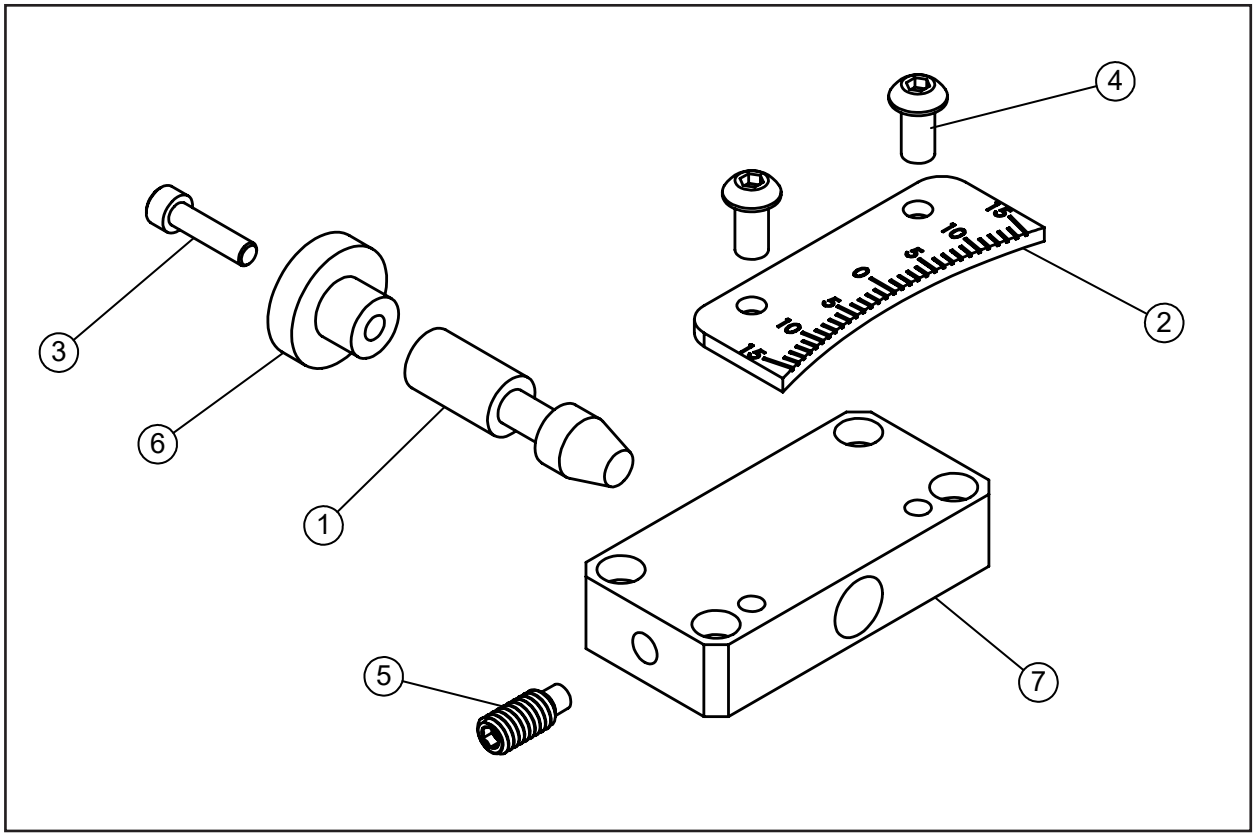
SCREW ASSEMBLY, Z-AXIS MITER (33-4914)



Parts List, Screw Assembly, Z-Axis Miter (P/N 33-4914)

Item No.	Part No.	Description	Qty
1.	29-0119	BRG,FLANGE,5/16 X 11/16 X 1/4	1
2.	33-0278	SCREW, BUTTON, 10-24 X 3/8	3
3.	33-4915	SCREW, LEAD	1
4.	35-0007	NUT, HEX, 5/16-18 X 7/32	1
5.	35-1178	NUT, FEED	1
6.	42-0058	KNOB, MOB	1
7.	46-0022	SLEEVE	1
8.	48-4575	BLOCK, SCREW, Z-AXIS MITER	1
9.	44-1751	SPACER, FEED SCREW	1

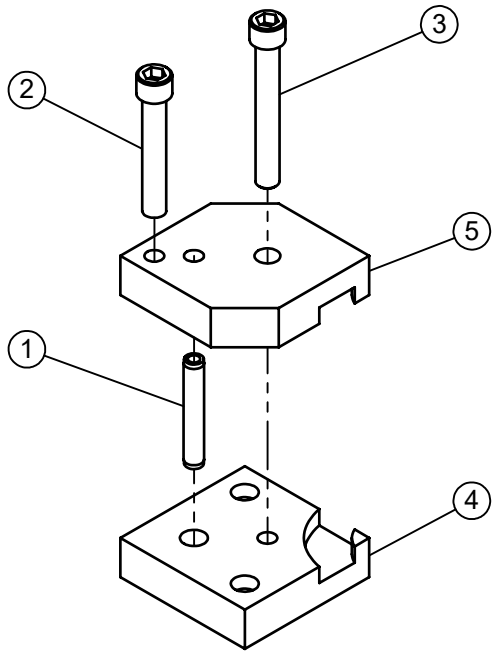
BLOCK ASSEMBLY, INDEX (48-4367)



Parts List, Block Assembly, Index (P/N 48-4367)

Item No.	Part No.	Description	Qty
1.	20-0197	SHAFT, INDEX	1
2.	24-0359	PLATE, INDEX, SMALL	1
3.	33-0030	SCREW, CAP, 10-24 X 3/4	1
4.	33-0285	SCREW, BUTTON, 1/4-20 X 1/2	2
5.	33-4623	SCREW, 5/16-18 X 3/4, HDOG, LONG TIP	1
6.	42-0023	KNOB	1
7.	48-0213	BLOCK, INDEX	1
	NOT SHOWN		
	24-4863	PLATE, INDEX, LARGE	1

BLOCK ASSEMBLY, 1” SHORT ELBOW, SST (48-4370)



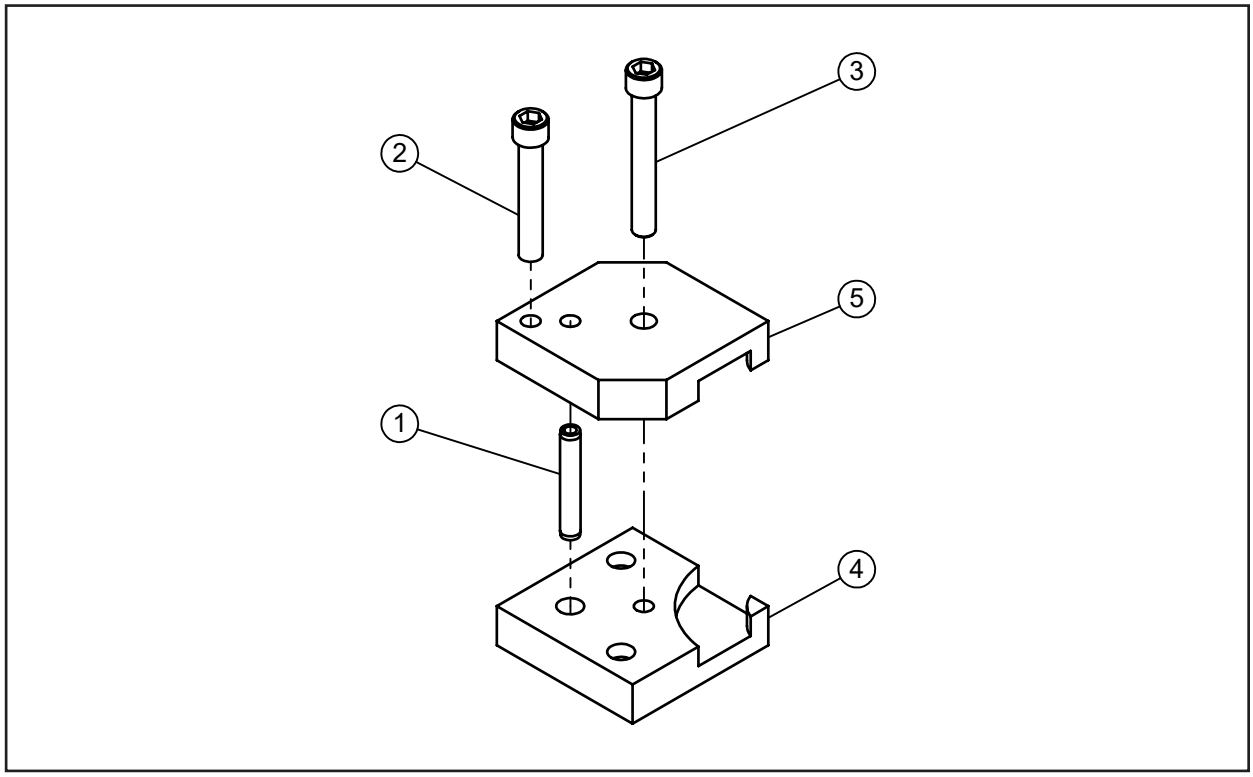
Parts List, Block Assembly, 1” Short Elbow, SST (P/N 48-4370)

Item No.	Part No.	Description	Qty
1.	32-0065	PIN, ROLL, 5/16 DIA X 2”	1
2.	33-4717	SCREW, CAP, 3/8-16 X 2-1/4	1
3.	33-0078	SCREW, CAP, 3/8-16 X 1.50	1
4.	47-2826	BRACKET, SUPPORT, ELBOW, 1” SHORT	1
5.	47-2827	BRACKET, CLAMP, ELBOW, 1” SHORT	1

Parts List, Block Assembly, 1” Short Elbow, Aluminum (P/N 48-4585)

Item No.	Part No.	Description	Qty
1.	32-0065	PIN, ROLL, 5/16 DIA X 2”	1
2.	33-4717	SCREW, CAP, 3/8-16 X 2-1/4, FULL THD	1
3.	33-0078	SCREW, CAP, 3/8-16 X 1.50	1
4.	47-2924	BRACKET, SUPPORT, 1” SHORT ELBOW	1
5.	47-2925	BRACKET, CLAMP, 1” SHORT ELBOW	1

BLOCK ASSEMBLY, 1-1/4” SHORT ELBOW, SST (48-4371)



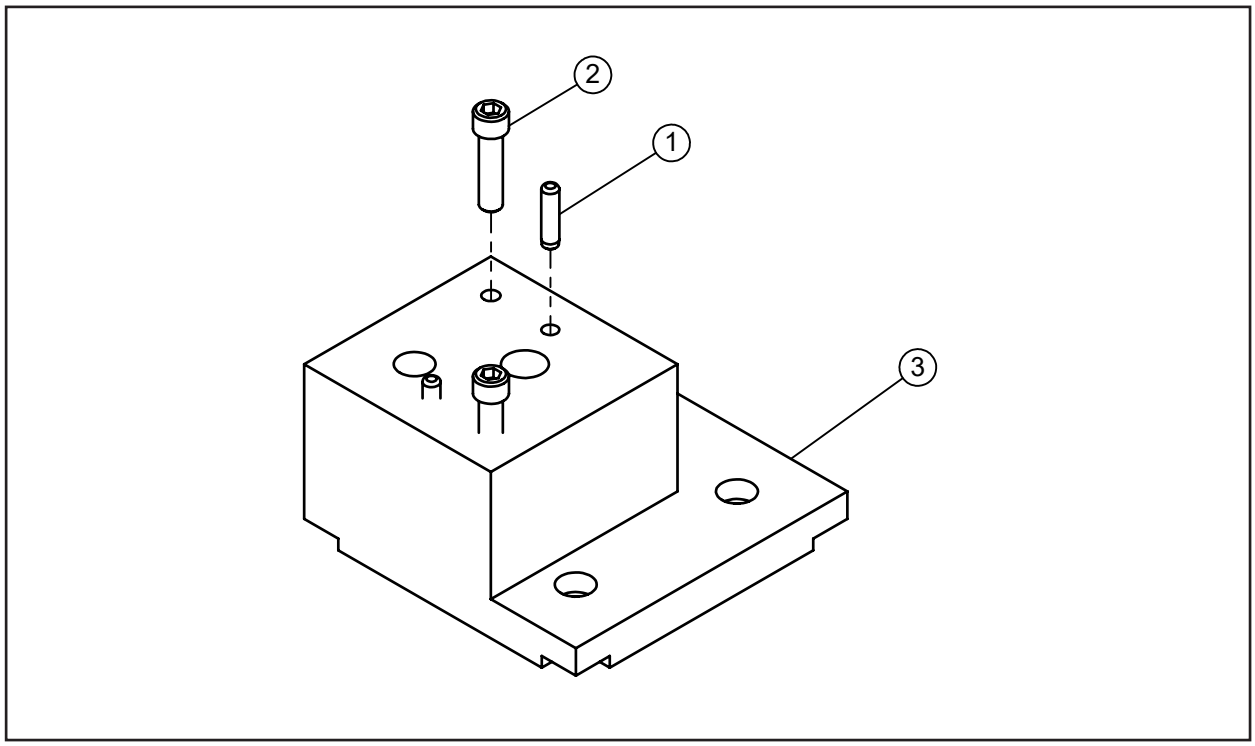
Parts List, Block Assembly, 1-1/4” Short Elbow, SST (P/N 48-4371)

Item No.	Part No.	Description	Qty
1.	32-0065	PIN, ROLL, 5/16 DIA X 2”	1
2.	33-4717	SCREW, CAP, 3/8-16 X 2-1/4	1
3.	33-0078	SCREW, CAP, 3/8-16 X 1.50	1
4.	47-2828	BRACKET, SUPPORT, ELBOW, 1-1/4” SHORT	1
5.	47-2829	BRACKET, CLAMP, ELBOW, 1-1/4” SHORT	1

Parts List, Block Assembly, 1-1/4” Short Elbow, Aluminum (P/N 48-4586)

Item No.	Part No.	Description	Qty
1.	32-0065	PIN, ROLL, 5/16 DIA X 2”	1
2.	33-4717	SCREW, CAP, 3/8-16 X 2-1/4, FULL THD	1
3.	33-0078	SCREW, CAP, 3/8-16 X 1.50	1
4.	47-2926	BRACKET, SUPPORT, 1-1/4” SHORT ELBOW	1
5.	47-2927	BRACKET, CLAMP, 1-1/4” SHORT ELBOW	1

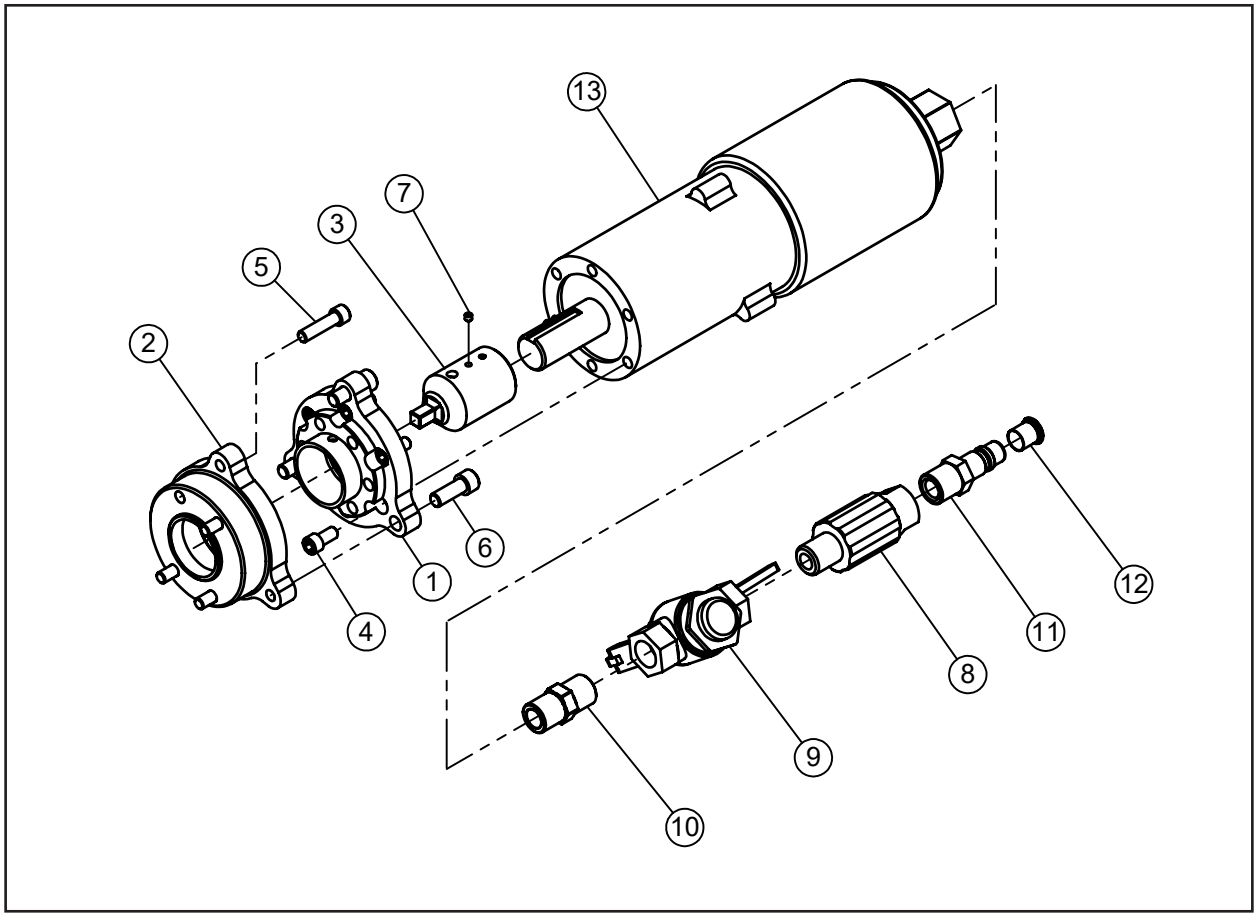
BLOCK ASSEMBLY, SMALL FITTING, BASE (48-4372)



Parts List, Block Assembly, Small Fitting, Base (P/N 48-4372)

Item No.	Part No.	Description	Qty
1.	32-0081	PIN, DOWEL, 5/32	2
2.	33-0042	SCREW, CAP, 1/4 - 20 X 1”	2
3.	48-4366	BLOCK, BASE, FITTING CLAMP	1

MOTOR ASSEMBLY, AIR (57-0366)



Parts List, Motor Assembly, Air (P/N 57-0366)

Item No.	Part No.	Description	Qty
1.	27-1536	ADAPTER, MOTOR,4800	1
2.	27-1602	ADAPTER, PLATE	1
3.	27-1604	ADAPT, DRIVE.I/R 44 SERIES, MOD	1
4.	33-0053	SCREW, CAP (5/16-18 x .63)	6
5.	33-0057	SCREW, CAP (5/16-18 x 1.25)	4
6.	33-0071	SCREW, CAP, 3/8-16 X 1	3
7.	33-4366	SCREW, SET, 10-32 X 3/16 CUP PT	2
8.	53-0046	VALVE, FLOW CONTROL, 1/2”NPT	1
9.	53-0182	VALVE, SQUEEZE LEVER-ARM, 150 PSI	1
10.	54-0019	NIPPLE, 1/2 EPIPE TO 1/2 EPIPE	1
11.	54-0126	COUPLING, MALE QD TO 1/2 EPIPE	1
12.	54-0201	CAP, YELLOW	1
13.	57-0020	MOTOR, AIR, INLINE	1

Parts List, Kit, Saddle, 536 Fitting Machine, SST (P/N 05-1482)

Item No.	Part No.	Description	Qty
1.	23-0738	ROD ASSY, PLATE SUPPORT, SMALL	1
2.	23-0739	ROD ASSY, PLATE SUPPORT, LARGE	1
3.	33-0040	SCREW, CAP, 1/4-20 X 3/4	8
4.	33-1246	SCREW ASSY, JACK #1	4
5.	33-1247	SCREW ASSY, JACK #2	4
6.	33-4701	STUD, ASSY, 1/4-20 X 3.0”	4
7.	33-4702	STUD, ASSY, 1/4-20 X 2.75”	4
8.	33-4703	STUD, ASSY, 1/4-20 X 2.5”	4
9.	33-4704	STUD, ASSY, 5/16-18 X 2.00”	4
10.	33-4705	STUD, ASSY, 5/16-18 X 2.81”	4
11.	33-4706	STUD, ASSY, 5/16-18 X 1.69”	4
12.	48-4359	BLOCK, VEE, 1”	4
13.	48-4360	BLOCK, VEE, 1-1/4”	4
14.	48-4361	BLOCK, VEE, 1-1/2”	4
15.	48-4362	BLOCK, VEE, 2”, 2-1/2”	4
16.	48-4363	BLOCK, VEE, 3”, 3-1/2”	4
17.	48-4364	BLOCK, VEE, 4”	4
18.	48-4365	BLOCK, VEE, 6”	4
19.	48-4370	BLOCK ASSY, 1” SHORT ELBOW	1
20.	48-4371	BLOCK ASSY, 1-1/4” SHORT ELBOW	1
21.	48-4372	BLOCK ASSY, SMALL FITTING, BASE	1

Parts List, Kit, Saddle, Aluminum (P/N 05-1583)

Item No.	Part No.	Description	Qty
1.	23-0738	ROD ASSY, PLATE SUPPORT, SMALL	1
2.	23-0739	ROD ASSY, PLATE SUPORT, LARGE	1
3.	33-0040	SCREW,CAP,1/4-20 X 3/4	8
4.	33-1246	SCREW ASSY,JACK #1	4
5.	33-1247	SCREW ASSY,JACK #2	4
6.	33-4701	STUD, ASSY, 1/4-20 X 3.0"	4
7.	33-4702	STUD, ASSY, 1/4-20 X 2.75"	4
8.	33-4703	STUD, ASSY, 1/4-20 X 2.5"	4
9.	33-4704	STUD, ASSY, 5/16-18 X 2.00"	4
10.	33-4705	STUD, ASSY, 5/16-18 X 2.81"	4
11.	33-4706	STUD, ASSY, 5/16-18 X 1.69"	4
12.	48-4372	BLOCK ASSY, SMALL FITTING, BASE	1
13.	48-4578	BLOCK, VEE, 1"	4
14.	48-4579	BLOCK, VEE, 1.25"	4
15.	48-4580	BLOCK, VEE, 1.5"	4
16.	48-4581	BLOCK, VEE, 2", 2.5"	4
17.	48-4582	BLOCK, VEE, 3", 3.5"	4
18.	48-4583	BLOCK, VEE, 4"	4
19.	48-4584	BLOCK, VEE, 6"	4
20.	48-4585	BLOCK ASSY, 1" SHORT ELBOW	1
21.	48-4586	BLOCK ASSY, 1.25" SHORT ELBOW	1

Parts List, Kit, Tool, 536 Fitting Machine (P/N 05-1485)

Item No.	Part No.	Description	Qty
1.	36-0007	WRENCH, L, 5/32 HEX	1
2.	36-0008	WRENCH, L, 3/16 HEX	1
3.	36-0010	WRENCH, L,1/4 HEX	1
4.	36-0018	WRENCH, T, 1/8 HEX	1
5.	36-0042	WRENCH, COMBINATION, 7/8	1
6.	36-0075	WRENCH, COMBINATION, 1/2	1
7.	36-0098	WRENCH, COMBINATION, 7/16	1

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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

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