



FOR USE WITH THE QUANTUM AIR MOTOR

# Operating Instructions and Parts List for the Whizard® TrimVac® 645i

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**The information provided in these operating instructions is important to your health, comfort and safety.**

**For safe and proper operation, read this entire manual before using this equipment.**



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SECTION 1

Safety and Ergonomics

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The information provided in these operating instructions is important to your health, comfort and safety. For safe and proper operation, read this entire manual before using this equipment.



Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain this product. Protect yourself, others and equipment by observing all safety information. Failure to comply with instructions could result in personal injury and/or damage to the equipment. Any use in applications other than those for which the equipment was designed and built may result in equipment damage and/or serious injuries.



Retain this manual for future reference. Be thoroughly familiar with the controls and proper use of this equipment.

The manufacturer assumes no liability for any unauthorized changes in operating procedures or for unauthorized changes or modifications made to the design of the machine or any factory-installed safety equipment, whether these changes are made by the owner of this equipment, by his employees, or by service providers not previously approved by Bettcher Industries, Inc.

## SIGNAL WORDS AND SIGNAL WORD PANELS

---

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

*(The signal word DANGER is in white letters on a safety red background)*



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

*(The signal word WARNING is in black letters on a safety orange background)*



Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

*(The signal word CAUTION is in black letters on a safety yellow background)*



Indicates information considered important but not hazard-related (e.g. messages relating to property damage.)

*(The signal word NOTICE is in italicized, white letters on a safety blue background)*



The signal word definitions provided, comply with the American National Standard for Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials (ANSI Z535.6-2011).

This technical manual is printed in black and white.

## SAFETY SYMBOLS

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The safety alert symbol indicates a potential personal injury hazard.

It is not used for messages related to property damage.

The safety alert symbol may be used alone or in conjunction with a signal word in a signal word panel.



Danger of electrical shock.



Blade hazard, keep hands clear.



Read operator's manual.



Protective safety gloves must be worn.



Symbols are harmonized with ANSI Z535.4 and ISO 3864-2 standards. Warning symbols are presented on a safety yellow background. Mandatory action symbols are presented on a safety blue background.

This technical manual is printed in black and white.

# SAFETY RECOMMENDATIONS AND WARNINGS

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Whizard Trimvac® Trimmers are used for removal of fat and tissue, the recovery of lean meat from bone, and as a universal cutting tool in industry. Any use in applications other than those for which the Whizard® trimmer was designed and built may result in serious injuries.

The manufacturer assumes no liability for any unauthorized changes in operating procedures or for unauthorized changes or modifications made to the design of the machine or any factory-installed safety equipment, whether these changes are made by the owner of this equipment, by his employees, or by service providers not previously approved by Bettcher Industries, Inc.



Use only replacement parts manufactured by Bettcher Industries, Inc. Use of substitute parts will void the warranty and may cause injury to operators and damage to equipment.

The use of parts other than those listed in the parts list for the specific model may cause blade lock-up, resulting in an unsafe operating condition.

Sharp blades may cause cut injury!





## SAFETY RECOMMENDATIONS AND WARNINGS (CONTINUED)

Whizard Trimvac® 645i has been designed to obtain the highest possible degree of safety. The trimmer contains a sharp knife blade. Handle this equipment with caution, as you would any sharp object. In particular, read and apply the following safety recommendations:

Sharp blades may cause cut injury!

For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades. Metal mesh gloves are recommended for the free hand.

Keep hands away from moving blade.



If at any time this machine does not appear to operate normally or exhibits a marked change in performance, it should be immediately shut down, unplugged, and tagged as “UNSAFE” until such time as proper repairs are made and the machine again operates normally.

Hearing loss may occur! Always operate with hose and muffler attached.



Sharp blades may cause injury! Always disconnect air supply prior to servicing unit.



Long or repeated use of various power tools vibrating excessively is suspected of contributing to certain hand, wrist or forearm disorders in susceptible individuals. If excessive vibration occurs, it is an indication that there are worn parts that need replacement.



If your trimmer develops unusual vibration, do not continue to use it without first undertaking corrective action as outlined in the troubleshooting guide in this operating instruction.



Use only replacement parts manufactured by Bettcher Industries, Inc. Use of substitute parts will void the warranty and may cause injury to operators and damage equipment.



## SAFETY FEATURES

All Quantum Flex+® Air Tools have been designed for use with the Standard Hose Assembly and the Quick Start Hose Assembly. The Standard Hose Assembly requires two hands to activate, preventing the tool from being started accidentally.

The Quick Start Hose Assembly can be started with one hand, but has a safety lever.

Two-handed start-up prevents the tool from being started accidentally.

The air supply is disconnected from the motor when the run lever is released.

## ERGONOMIC FEATURES

Quantum Flex+® Air Tools can be configured in both right and left handed configurations.

Optional thumb support - An adjustable thumb support is available to ensure a proper and comfortable fit while providing added control and stability of the tool during use.

## ADDITIONAL FEATURES

The hose assembly swivels for easier trimmer rotation and operator comfort.

The hose is ten feet (3.05 m) long to allow for greater operator mobility.

## PERFORMANCE SPECIFICATIONS

The noise emission value is less than 74 dB(A).

Vibration of the handpiece is less than TBD m/sec<sup>2</sup>.

No negative side effects have been reported.

Pressure (psi)	90
Air Consumption (cfm)	14
Speed, No Load (rpm)	5,700 Max No Load Motor Assembly
Power (hp)	.22 (164W)
Sound (dBA)	74 dBA Max
Weight (lbs)	0.8 (0.36 kg)

## SECTION 2

# Designated Use

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Designated use

16

**The manufacturer assumes no liability for any unauthorized changes in operating procedures or for unauthorized changes or modifications made to the design of the machine or any factory-installed safety equipment, whether these changes are made by the owner of this equipment, by his employees, or by service providers not previously approved by Bettcher Industries, Inc.**



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**The use of parts other than those listed in the parts list for the specific model may cause blade lock-up, resulting in an unsafe operating condition.**

## DESIGNATED USE

---

Quantum Flex+® Air Trimmers are used for removal of fat and tissue, the recovery of lean meat from bone, and as a universal cutting tool in industry. Any use in applications other than those for which the trimmer was designed and built may result in serious injuries.

### **TRIMVAC® 645i**

Beef Slaughter - Internal Defatting

## SECTION 3

# Unpacking and Installation

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# SAFETY FIRST

Sharp blades may cause injury!

Unpack the Whizard Trimvac® 645i carefully.



# INCLUDED WITH YOUR MACHINE

Part Number	Description
113326	Planetary Gear Grease Gun (Needle-Nose)
184134	Spanner Wrench
184128	Hex Wrench
184282	4 oz. Tube of Max-Z-Lube
103603	Pint of Oil
104232	Bearing Removal / Installation Tool
104639	Blade Wrench
100655	Special Stone
100641	Special Steel

# INSTALLATION

The workstation for each operator should be designed so that the operator's movements in performing the job are natural and easy. A sideways sweeping motion with the Quantum Flex®+ Air Trimmer is preferable to a reaching motion. Long reaching motions and high muscle strain should be avoided if possible. Also, a proper working height is needed to avoid excessive shoulder and back exertion.

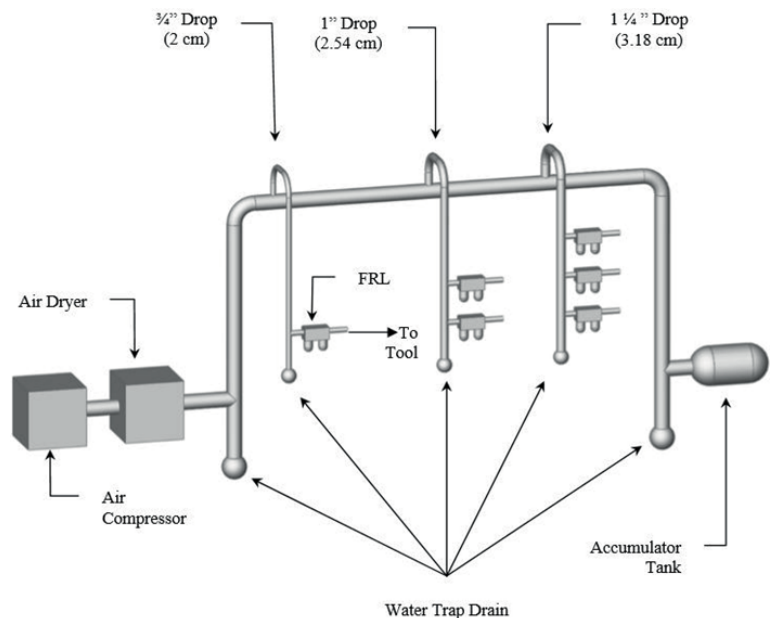
## AIR SUPPLY

A clean, dry, lubricated air supply is critical to proper operation. The filter, regulator and lubricator (FRL) unit, furnished with your complete Whizard Trimvac® 645i, should be mounted horizontally at the air supply outlet and in such a position as to be easily reached for draining the filter bowl and refilling the lubricator. The filter bowl should be drained, and the lubricator refilled, daily.

**IMPORTANT:** Be sure the air supply is a constant 90 pounds per square inch (6.2 bar) and the volume is a minimum of 14 cubic feet per minute (396 liters per minute) per unit.

## SUPPLY LINE:

- Use a 2 inch to 6 inch (5 cm to 15 cm) pipe for the air supply.
- All air outlet drops should be connected to the top of the main air supply line to minimize the possibility of moisture and dirt reaching the motor.
- Drops should be at least:
  - ¾ inch (2 cm) pipe for one (1) tool.
  - 1 inch (2.54 cm) pipe for two (2) tools.
  - 1 ¼ inch (3.18 cm) pipe for three (3) tools.
- A FRL should be used for each tool. Do not run multiple tools off of a single FRL.
- All air outlets should be located close enough to the operator's work station so that additional hose is not required.







## SECTION 4

# Operation Instructions

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## POWER UNIT/ HEAD ASSEMBLY

**Prior to assembly, ensure all parts are clean and have been inspected for wear per Section 5.**

### Step 1: Attach head to power unit

- While holding the frame, align the pin in the power unit with one of the notches on the frame. The frame is designed with multiple notches to allow the head to be adjusted to the most comfortable position for the operator.
- Insert the attachment screw in the frame.
- Tighten the attachment screw **FIRMLY**, using the supplied hex wrench

NOTE: Recommended torque of 115-140 lb-in (13-16 N-m)



## POWER UNIT/ HEAD ASSEMBLY (CONTINUED)

### Step 2:

#### INSTALL DRIVE ADAPTER

- Insert drive adapter and align the square end with the square hole in the power unit.
- Drive adapter should drop in with no pressing force required.
- The retaining ring will sit flush against the attachment screw when properly aligned.



### Step 3:

#### INSTALL PINION BEARING AND PINION

- Push handpiece bearing into the frame bore and align the bearing flat with the frame flat.
- The bearing should go in with minimal effort and not require pressing.
- Do not force the bearing in. If the bearing does not go in easily, check frame and bearing for damage or build-up.
- Add a few drops of Whizard® food grade lubricating oil to the pinion shaft.
- Insert the pinion into the bearing bore.
- The pinion should go in with minimal effort and not require pressing.
- Do not force the pinion into the bearing. If the pinion does not go in easily, check bearing and pinion for damage or build-up.
- The pinion should sit flush against the bearing. If it does not, rotate the pinion to seat it flush with the bearing.
- Add a few drops of Whizard® food grade lubricating oil to the top of the pinion

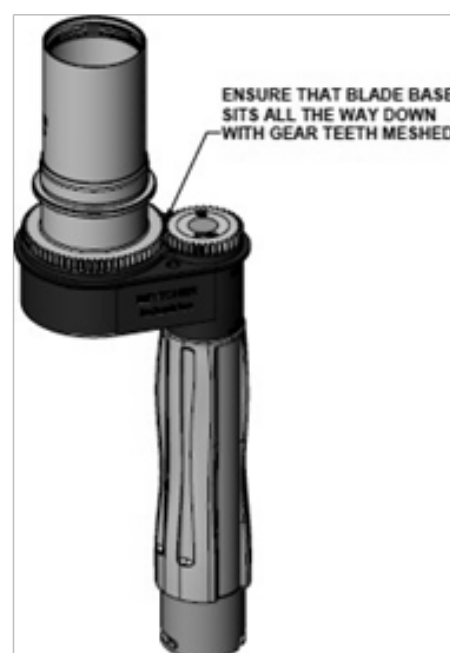


## POWER UNIT/ HEAD ASSEMBLY (CONTINUED)

Step 4:

### INSTALL BLADE BASE

- Apply a film of Whizard® Food Grade Multipurpose Lubricating Oil to the three (3) surfaces indicated on the blade base and lower bearing.
- Lower the blade base into the frame so that it sits on the lower bearing.
- The blade base is properly seated when the teeth of the blade base and the pinion gear are fully meshed.

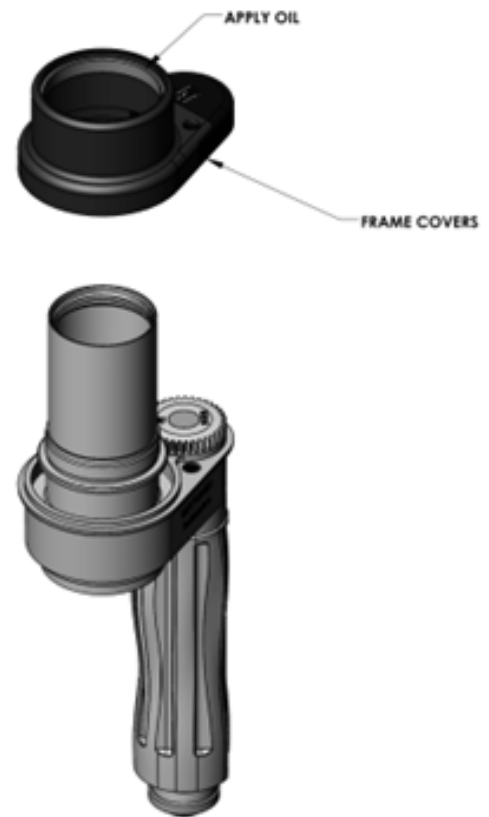


## POWER UNIT/ HEAD ASSEMBLY (CONTINUED)

Step 5:

### INSTALL FRAME COVERS

- Apply a film of Whizard® Food Grade Multipurpose Lubricating Oil to the inside diameter of the upper bearing as shown.
- Lower the frame covers around the blade base and onto the frame.



Step 6:

### INSTALL FRAME COVER SCREWS

- Using a flat head screwdriver or a nut driver, install and tighten the two (2) cover screws.

**NOTE:** Recommended torque of 20-30 lb-in (2.3-3.4 N-m).



## POWER UNIT/ HEAD ASSEMBLY (CONTINUED)

Step 7:

### INSTALL VACUUM TUBE

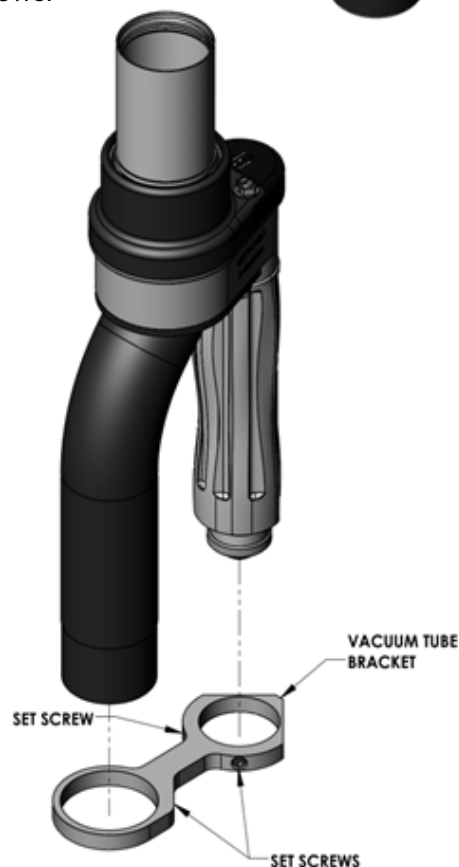
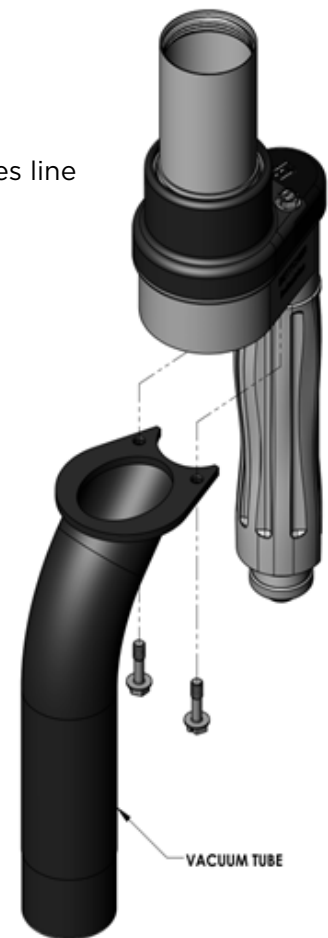
- Hold the vacuum tube to the bottom of the frame so that the screw holes line up with the screw holes in the bottom of the frame.
- Install and tighten the two (2) screws.

**NOTE:** Recommended torque of 20-30 lb-in (2.3-3.4 N-m).

Step 8:

### INSTALL VACUUM TUBE BRACKETS

- Slide the bracket onto the ends of the power unit and vacuum tube.
- Install the bracket so that it is all the way up against the rubber grip of the power unit.
- Using a hex wrench, tighten the three (3) set screws.



## POWER UNIT/ HEAD ASSEMBLY (CONTINUED)

Step 9:

### INSTALL THE AIR HOSE ASSEMBLY

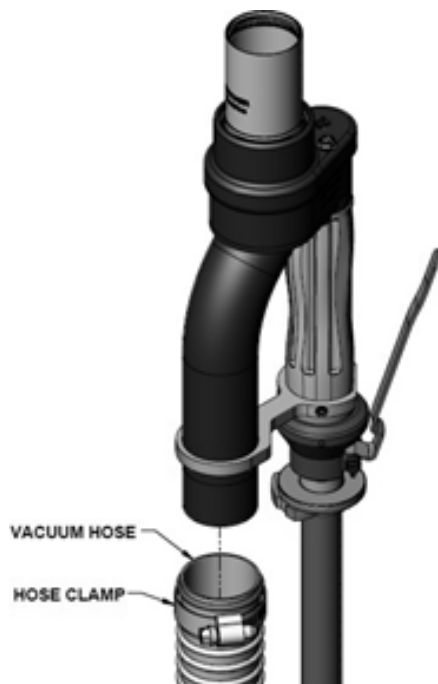
- Align the pins in the air hose assembly with the grooves on the power unit.
- Slide the power unit into the air hose assembly.
- Rotate the power unit 90° degrees.



Step 10:

### ATTACH THE VACUUM HOSE

- Slide the vacuum hose onto the end of the vacuum tube.
- Tighten the hose clamp screw.



## POWER UNIT/ HEAD ASSEMBLY (CONTINUED)

Step 11:

### INSTALL FRAME SHROUD

- Slide the frame shroud around the blade base and all the way down until it bottoms out.
- A light film of oil on the o-ring inside the frame shroud will aid in sliding the shroud all the way down.
- Using a hex wrench, tighten the two (2) set screws.
- The blade base should rotate freely without any contact between the frame shroud and the frame cover. If the frame shroud rubs on the frame cover, the lower bearing is probably worn and need replaced.



Step 12:

### INSTALL THE BLADE

**WARNING!:** Sharp blades may cause cut Injury. Only grip the outside diameter of the blade. Keep fingers and hands away from the blade's cutting edge.

- If necessary, clean any debris from the threads of the blade base and the blade. Turn clockwise to screw the blade into the blade base.
- Keep turning by hand until the blade is fully seated in the blade base.
- **NOTE:** Only tighten the blade finger-tight. It is NOT necessary to tighten the blade with the blade wrench. Doing so may make the blade extremely difficult to remove later.

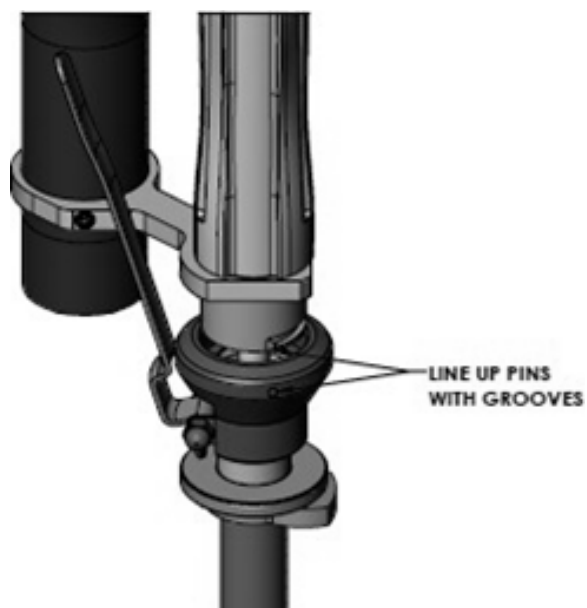




## HOSE ASSEMBLY ATTACHMENT

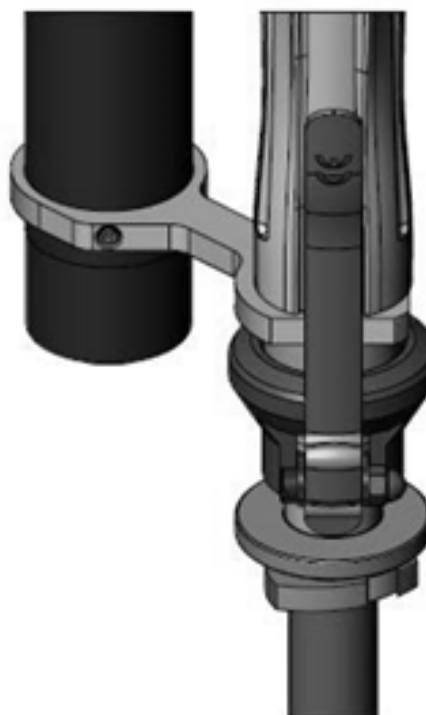
### Step 1:

- Align the pins in the hose assembly with the grooves on the power unit.



### Step 2:

- Slide the power unit into the hose assembly.
- Rotate the power unit 90°.
- The lever will rotate toward the bottom of the tool.



## STARTING THE TRIMMER - STANDARD HOSE ASSEMBLY

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- Hold the power unit and push the flange and/or hose clamp of the hose assembly toward the power unit.



- Hold the lever against the power unit to keep the trimmer running.



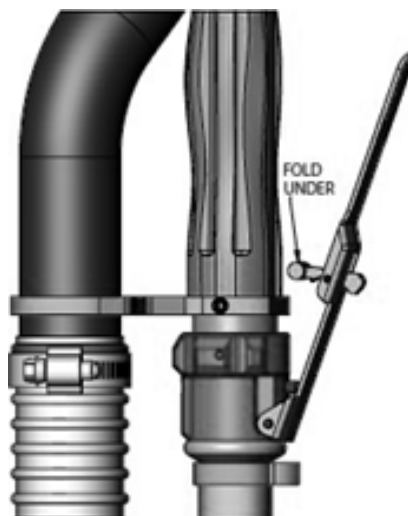
- Release the lever to turn the trimmer off.



## STARTING THE TRIMMER - QUICK START HOSE ASSEMBLY

---

- Fold the safety into the lever.



- Hold the lever against the power unit to keep the trimmer running.



- Release the lever to turn the trimmer off.



## PREPARATION FOR OPERATION

**Sharp blades may cause cut injury!**

**For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades. Metal mesh gloves are recommended for the free hand.**

**ALWAYS check to ensure that the blade is free to rotate in the machine prior to starting. If the blade does not rotate, it may cause the handpiece to rotate in the hand.**

**Keep hands away from moving blade.**

**NEVER lay the handpiece down on the work station or let it hang free by the driveline or Flexshaft and casing assembly. Always turn off the drive unit and place the handpiece in the hanger bracket.**

**NEVER place the handpiece in the hanger while the blade is still revolving.**



Always hold the handle of the Quantum Flex+® Air Trimmer with your thumb extended. Let the handle rest naturally in your hand, in a relaxed manner. Each person should be allowed to hold the handpiece in a position that is most comfortable to them.

The most-commonly used motion is a long sweeping or gliding stroke across the trimming surface. Hold the blade surface as flat to the trim surface as possible. A scooping action should be used around the vertebra.

During the cutting operation do not try to pull the blade out of a cut. Let the blade do the work, as you would any other cutting tool. Finding the proper angle for Quantum Flex+® Air trimming will become easier as the operator gains experience using the tool.

As with any meat cutting tool, your speed and efficiency is only as good as the blade sharpness.

In order to achieve maximum unit and operator efficiency, it is recommended that sharp blades be installed at each shift break. For this reason, it is suggested that extra blades be kept on hand. For example, if 4 units are being used and there are 3 shift breaks, 16 blades would be required. This would provide a sharp blade for start-up and one for each break.

When following this procedure, steeling of the blade is minimized, and blades need only be sharpened once a day with the use of a Whizard® Model 210 Universal Blade Sharpener, Whizard® Model 214 Blade Sharpener, Bettcher® AutoEdge, or by hand stoning.

If blades are not changed at each shift break, it may be required to steel the blade.

To grease the blade, turn on the drive unit by pulling down on the switch lever or by rotating it. While the blade is rotating, press the rubber cap of the grease cup on the handpiece with your thumb. Press only until a light coating of lubricant appears on the blade in the gear tooth area.

During daily use, the grease cup rubber cap should be depressed every 30 minutes. Refill when empty.

**Whizard Quantum® High Performance Grease meets the standards required of previously approved H-1 lubricants for use in federally inspected meat and poultry plants. DO NOT use a substitute type lubricant, including Whizard Special Grease. Use of substitute lubricants could result in damage to the unit.**

**NOTICE**

## SECTION 5

# Maintenance

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## MAINTENANCE SCHEDULE

Description	Schedule
Handpiece	Daily
Power Unit	After 80 Hours of Use
Hose Assembly	As Required

## GENERAL MAINTENANCE

- Drain filter bowls daily.
- Inspect the filter for damage and dirt build-up. Replace when necessary.
- Fill lubricator (oiler) daily or more often if needed.
- Verify oiler is set to deliver 3 drops of oil per minute.
- Verify the air pressure is set at 90-100 psi. **Do not exceed 100 psi!**

## HANDPIECE MAINTENANCE

### Sharp blades may cause cut injury!

For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades. Metal mesh gloves are recommended for the free hand.

Always disconnect air supply and remove tool from hose assembly prior to servicing.

Only grip the outside diameter of the blade. Keep fingers and hands away from the blade's cutting edge.



The Whizard Trimvac® 645i Trimmer was designed to allow quick and easy removal of the handpiece from the hose assembly. This allows the trimmer to be removed from the hose assembly while still on the production line. The hose assembly can be left hanging on the production line and the handpiece can be returned to the knife room for service. It is recommended that this procedure be followed. The removal of the 10 feet (3.05 m) of hose will allow easier service, storage, and handling by knife room personnel.

## Required Tools for Handpiece Maintenance

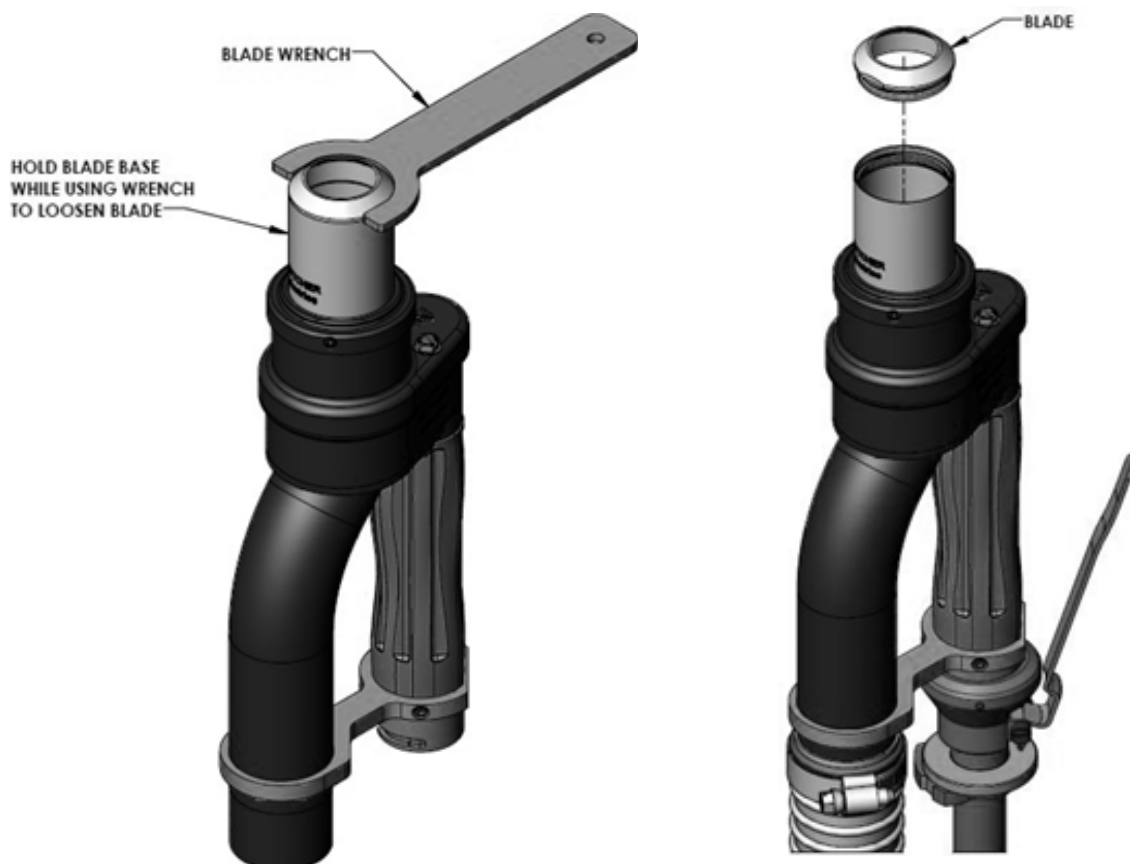
- 1 – Flat Head Screwdriver
- 1 – Hex Wrench (supplied with the Whizard Trimvac® 645i Trimmer)
- 1 – Blade Wrench (supplied with the Whizard Trimvac® 645i Trimmer)

## DISASSEMBLY OF HANDPIECE

Step 1:

### REMOVE BLADE FROM BLADE BASE

- Holding the blade base with one hand, use the blade wrench on the flats of the blade to loosen the blade. Turn the wrench counter-clockwise
- Continue rotating the blade counter-clockwise until it is free from the blade base. **WARNING!:** Sharp blades may cause cut injury. Only grip the outside diameter of the blade. Keep fingers and hands away from the blade's cutting edge.



## DISASSEMBLY OF HANDPIECE (CONTINUED)

### Step 2:

#### REMOVAL/DISASSEMBLY OF THE FRAME SHROUD FROM THE BLADE BASE

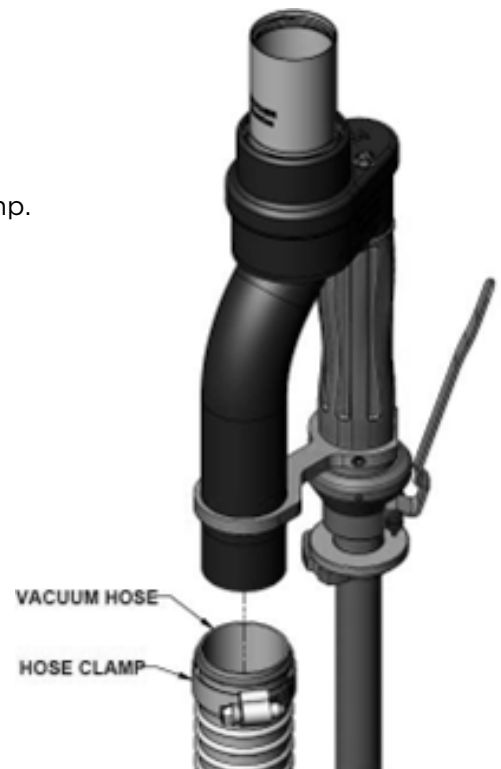
- Using a hex wrench, loosen, but DO NOT REMOVE the two (2) set screws
- Pull the frame shroud off of the blade base. Using a twisting motion may help as the shroud is removed.



### Step 3:

#### REMOVE VACUUM HOSE

- Using a flat head screwdriver, loosen the screw on the hose clamp.
- Pull the vacuum hose off of the vacuum tube





## DISASSEMBLY OF HANDPIECE (CONTINUED)

### Step 4:

#### REMOVE HANDPIECE FROM HOSE ASSEMBLY

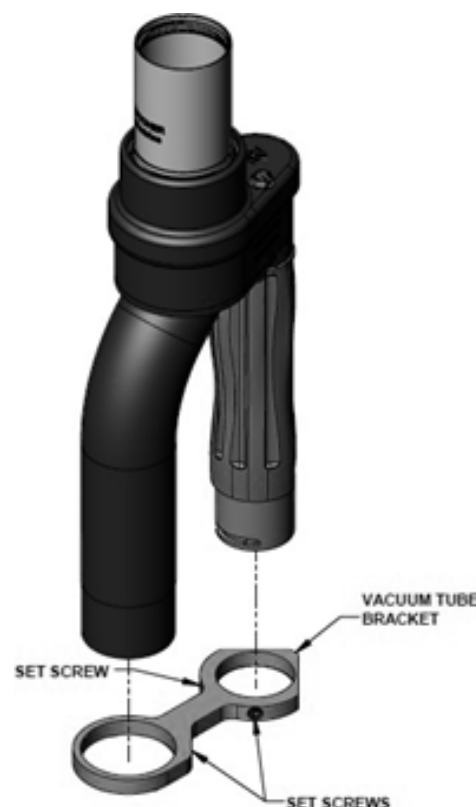
- While holding the handpiece, grip the knob assembly with the opposite hand.
- Rotate the knob assembly 90° and pull the hose assembly from the handpiece.



### Step 5:

#### REMOVE THE VACUUM TUBE BRACKET

- Using a hex wrench, loosen the three (3) set screws.
- Pull the vacuum tube bracket off of the handpiece

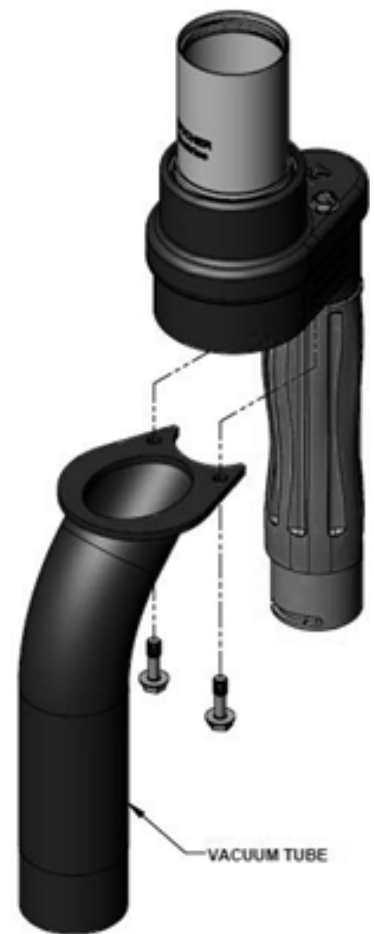


## DISASSEMBLY OF HANDPIECE (CONTINUED)

Step 6:

### REMOVE VACUUM TUBE

- Using a flat head screwdriver or a nut driver, loosen the two (2) screws until they disengage from the frame
- The vacuum tube will separate from the handpiece.



Step 7:

### LOOSEN/REMOVE THE COVER SCREWS

- Using a flat head screwdriver or a nut driver, remove the two (2) screws.



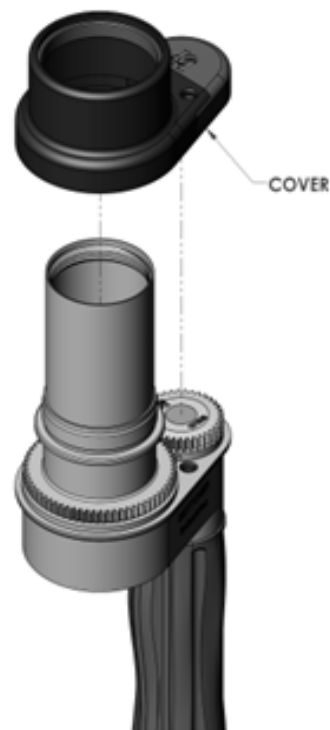
## DISASSEMBLY OF HANDPIECE (CONTINUED)

---

Step 8:

### REMOVE FRAME COVERS

- Pull the frame covers away from the frame.



Step 9:

### REMOVE BLADE BASE

- Pull the blade base out of the frame.



## DISASSEMBLY OF HANDPIECE (CONTINUED)

Step 10:

### REMOVE PINION AND BEARING

- Pull the pinion and bearing out of the frame.



Step 11:

### REMOVE DRIVE ADAPTER

- Pull the drive adapter out of the frame.

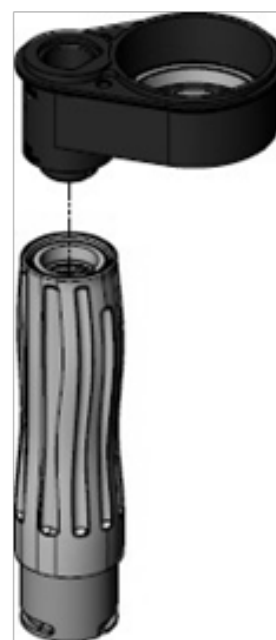
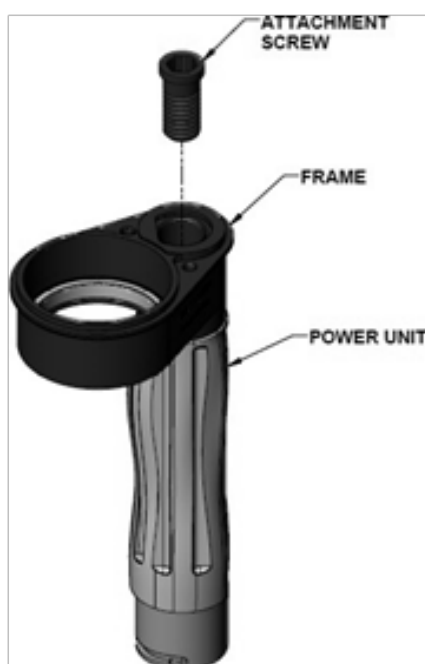


## DISASSEMBLY OF HANDPIECE (CONTINUED)

Step 12:

### REMOVE THE FRAME FROM THE POWER UNIT

- Remove attachment screw from the inside the frame using the supplied hex wrench.
- Remove the frame from the power unit.



# DAILY INSPECTIONS AND MAINTENANCE

Inspection of all parts for excessive wear is critical to ensure proper and safe operation. Vibration or lock-up may occur as a result of the use of excessively worn parts.



Sharp blades may cause cut injury!

Always disconnect the tool from the air supply prior to servicing.

Do not adjust handle or thumb support with the trimmer running, or with blade installed.



After sharpening blade, all abrasive dust must be completely removed from the handpiece. Disassemble the unit and carefully wash each piece with hot, soapy water and a small brush.

For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.

Only grip the outside diameter of the blade. Keep fingers and hands away from the blade's cutting edge.

## BLADE/BLADE BASE

- Check for worn or chipped teeth.
- Check for damage to threads.
- Check for damage to the cutting edge.

## BLADE HOUSING WEAR

- Inspect the inner diameter of the housing for wear.
- With a new blade installed in the housing on the tool carefully check for movement of the blade in the housing from side to side and up and down.

**NOTE:** If there is excess movement in the blade from side-to-side and/or up and down, the housing is NOT acceptable and needs replaced.

## PINION GEAR

- Check for worn or chipped teeth. Worn out teeth are indicated by rounded off and pointed tops on the teeth.

## PINION

- Install a new pinion and move the pinion side to side.
- If the pinion feels loose in the bearing, the bearing should be replaced.

## DAILY INSPECTIONS AND MAINTENANCE (CONTINUED)

---

### BEARING

- Install a new pinion and move the pinion side to side.
- If the bearing feels egg-shaped, it should be replaced.
- The bearing should be replaced at 500 hours of use or sooner.

### COVER PLATE

- Look for signs of corrosion or wear on the covers.
- Pay special attention to the area covering the gear teeth.
- If the edge of the cover is worn, exposing the pinion and blade teeth, the covers should be replaced

### HANDLE RETAINING KNOB

- Inspect for cracks.
- Make sure spring tension in the metal button is adequate.
- Make sure the metal button is clean and moves freely.

### FRAME

- Inspect the frame surfaces where the covers mounts.
- Look for corrosion and any nicks or burrs that may prevent proper housing seating.
- Inspect the housing locating key for damage (Large tools only).
- Inspect frame o-rings for cuts or other damage. Replace if necessary.

### DRIVE ADAPTER ASSEMBLY

- Inspect the drive adapter assembly for the following. Replace the drive adapter assembly if damaged.
- Inspect the square end of the driver for rounded corners.
- Inspect the retaining ring for damage.
- If retaining ring has moved out of the groove or is missing, replace drive adapter assembly.

## BLADE SHARPENING

**Sharp blades may cause cut injury!**

**Always disconnect the air supply prior to servicing.**

**For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.**

**After sharpening, all abrasive dust must be completely removed from the handpiece. Disassemble the unit and carefully wash each piece with hot, soapy water and a small brush.**



## MACHINE SHARPENING

The blade should be stoned or sharpened on a Whizard® Model 210 Universal Blade Sharpener, Whizard® Model 214 Blade Sharpener (International Only), hand stoning, or Bettcher® AutoEdge at the end of each work day. Use the same sharpener setting as a 360 blade. Be sure to clean the blade first to remove all grease or meat particles which could coat the stone and greatly reduce its effectiveness. In the event the stone becomes coated, simply scrub it using hot, soapy water.

Clean all grease and meat particles from the blade before sharpening. Sharpening blades that have not been cleaned will coat the stone or grinding wheel and greatly reduce its effectiveness.

- If the stone or grinding wheel becomes coated, gently scrub them clean using hot, soapy water.

## HAND STONING

With the trimmer running, apply the flat side of the stone to the outside of the blade as shown in the illustration. The stone should be applied with the flat part of the stone resting on the flat part of the blade edge to be ground, using a “back and forth” motion. Use the Special Whizard® Steel to finish sharpening the blade.





## STEELING THE BLADE

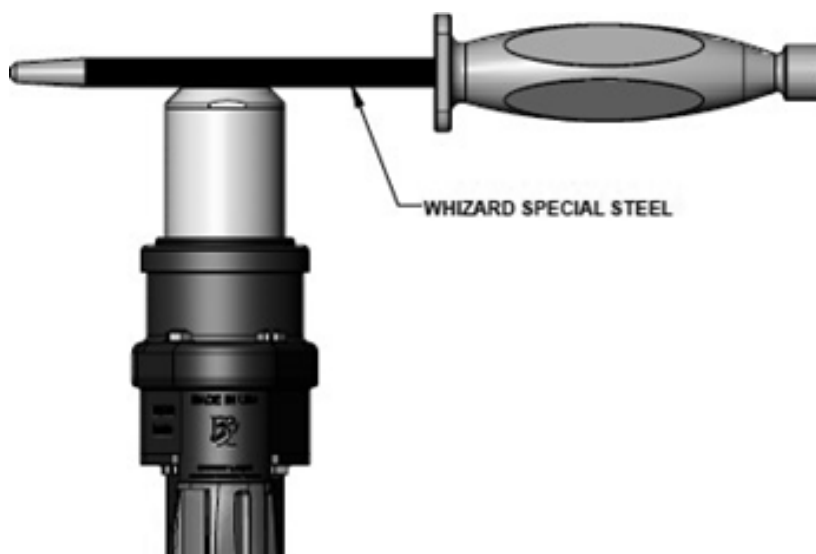
**Sharp blades may cause injury!**

**For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of the blades. Metal mesh gloves are recommended for the free hand.**

**Keep hands away from moving blades!**



- Steel the outside edge of the blade by laying the Whizard® Special Steel flat against the outside surface of the blade. Be sure to hold the steel flat and across the centerline of the blade to prevent “rounding off” or rolling of the edge.



- Steel the inside of the blade by placing the cone shaped tip of the Whizard® Special Steel on the inside edge of the blade. Do not touch the blade with the shaft of the Whizard® Special Steel.



## BLADE CHANGING

Sharp blades may cause cut injury!

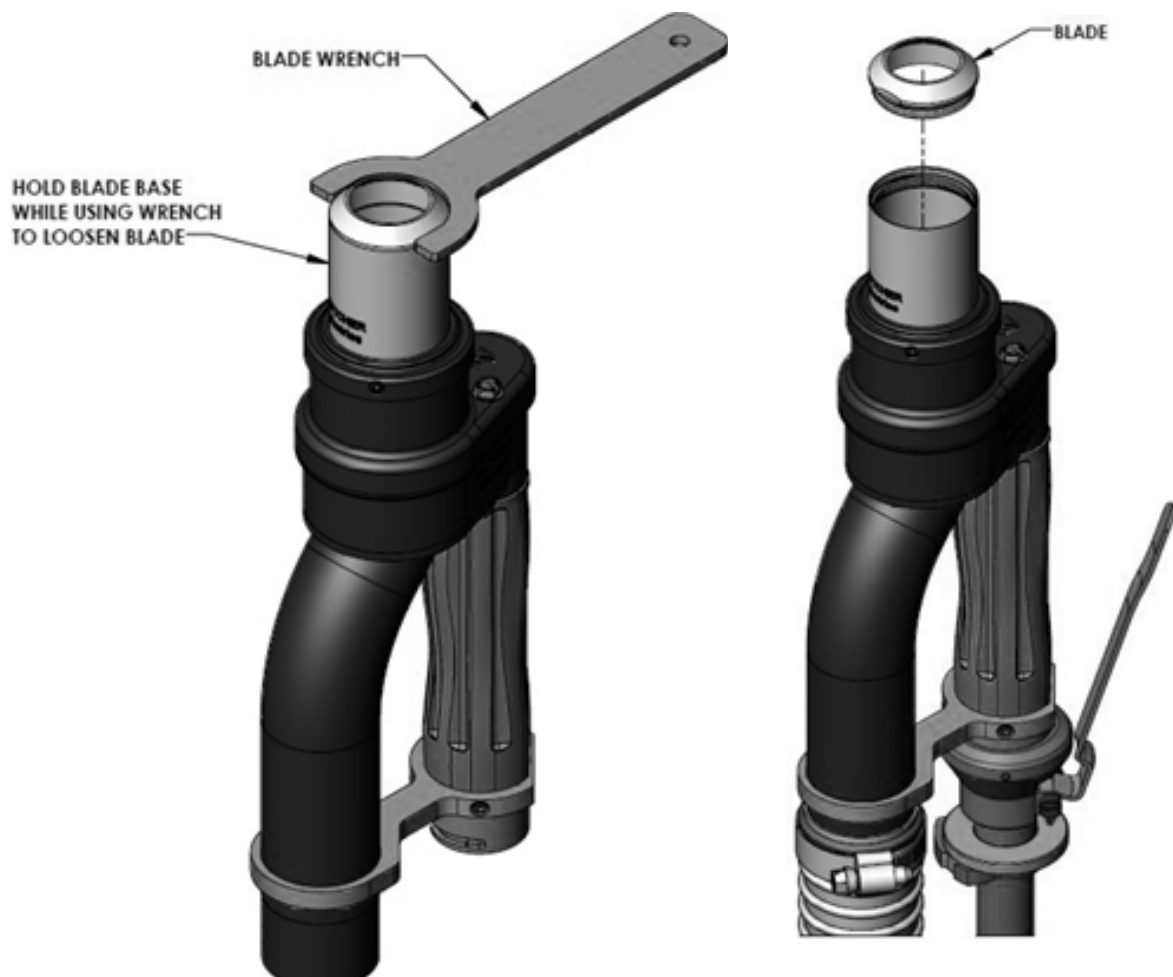
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades. Metal mesh gloves are recommended for the free hand.

Keep hands away from moving blade.

The Whizard Trimvac® 645i has been designed to allow the blade to be quickly removed and reinstalled.



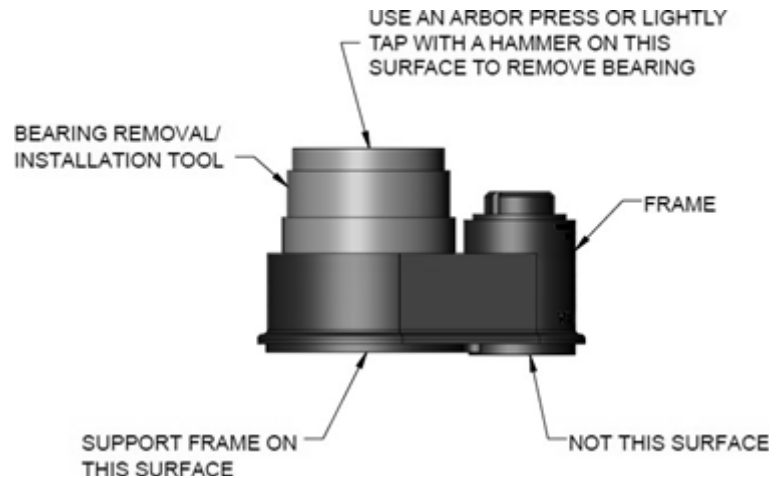
- Holding the blade base with one hand, use the blade wrench on the flats of the blade to loosen the blade. Turn the wrench counter-clockwise.
- Continue rotating the blade counter-clockwise until it is free from the blade base.
- **WARNING!** Sharp blades may cause cut injury. Only grip the outside diameter of the blade. Keep fingers and hands away from the blade's cutting edge.
- If necessary, clean any debris from the threads of the blade base and the blade.
- Start screwing a new or re-sharpened blade back into the blade base. Turn clockwise.
- Keep turning by hand until the blade is fully seated in the blade base.
- **NOTE:** Only tighten the blade finger-tight. It is NOT necessary to tighten the blade with the blade wrench. Doing so may make the blade extremely difficult to remove later.



# CHANGING THE LOWER BEARING

## Step 1:

- Rest the indicated surface of the frame on a hard, flat surface or on an arbor press.
- Insert the large end of the bearing removal/install tool into the inside diameter of the bearing as shown.
- Using a hammer, lightly tap the center of the tool, or use an arbor press to push down on the tool. The lower bearing will separate from the frame.

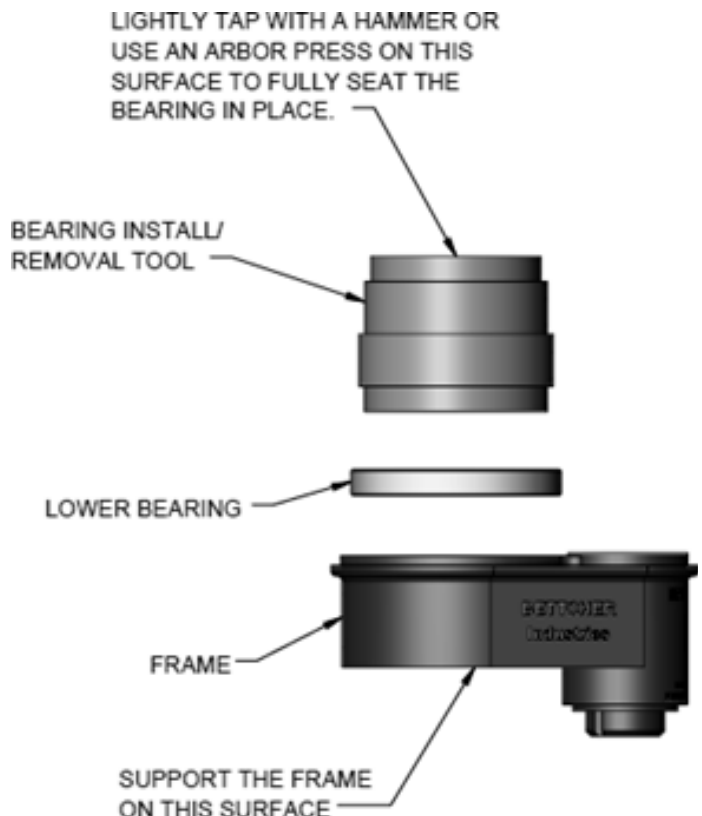


## Step 2:

- Clean the bearing seat area of any debris before installing a new bearing.

## Step 3:

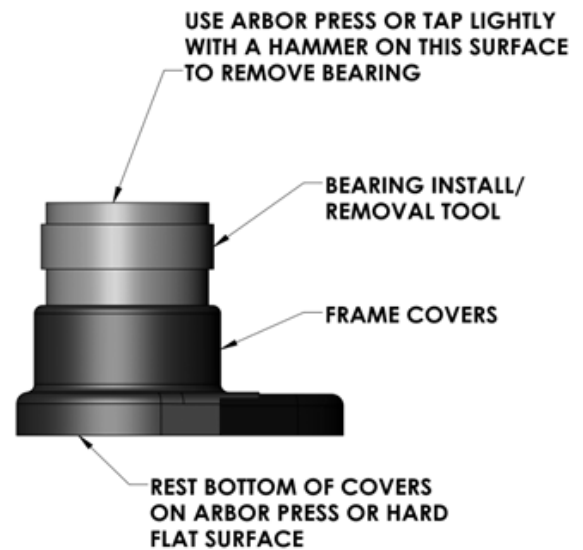
- Turn the frame over and place the indicated surface on a hard, flat surface or on an arbor press.
- Insert the large end of the bearing removal/install tool through the center of the new bearing.
- Rest the bearing and tool inside the frame so that it is sitting just above the bearing's seating area.
- Using a hammer, lightly tap the center of the tool, or use an arbor press to push down on the tool. Repeat until the bearing is fully seated at the bottom of its seating area.



## CHANGING THE UPPER BEARING

### Step 1:

- Rest the indicated surface of the frame cover on a hard, flat surface or on an arbor press.
- Insert the small end of the bearing removal/install tool into the inside diameter of the bearing as shown.
- Using a hammer, lightly tap the center of the tool, or use an arbor press to push down on the tool. The upper bearing will separate from the frame cover.

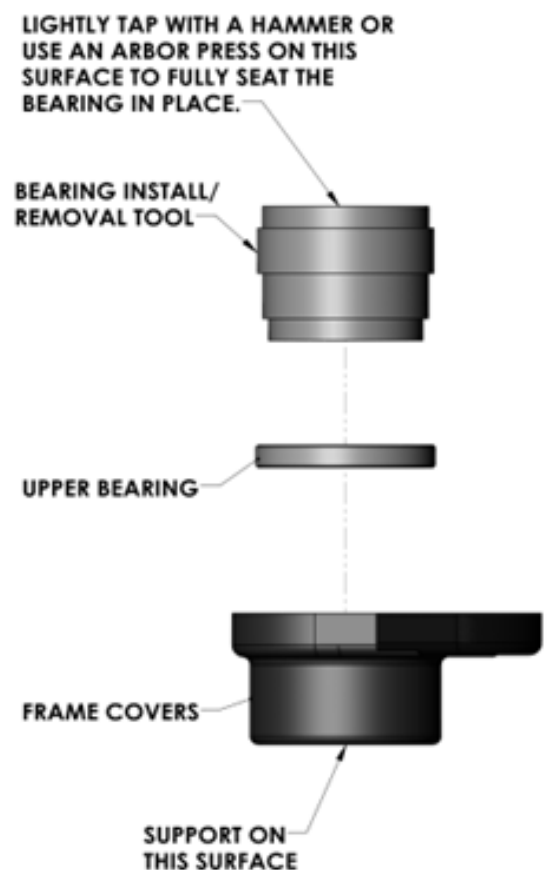


### Step 2:

- Clean the bearing seat area of any debris before installing a new bearing.

### Step 3:

- Turn the frame over and place the indicated surface on a hard, flat surface or on an arbor press.
- Insert the small end of the bearing removal/install tool through the center of the new bearing.
- Rest the bearing and tool inside the frame so that it is sitting just above the bearing's seating area.
- Using a hammer, lightly tap the center of the tool, or use an arbor press to push down on the tool. Repeat until the bearing is fully seated at the bottom of its seating area.



## POWER UNIT MAINTENANCE

### REQUIRED TOOLS FOR POWER UNIT MAINTENANCE

1 - Spanner Wrench (Supplied with your Quantum Flex+(R) Air Trimmer)

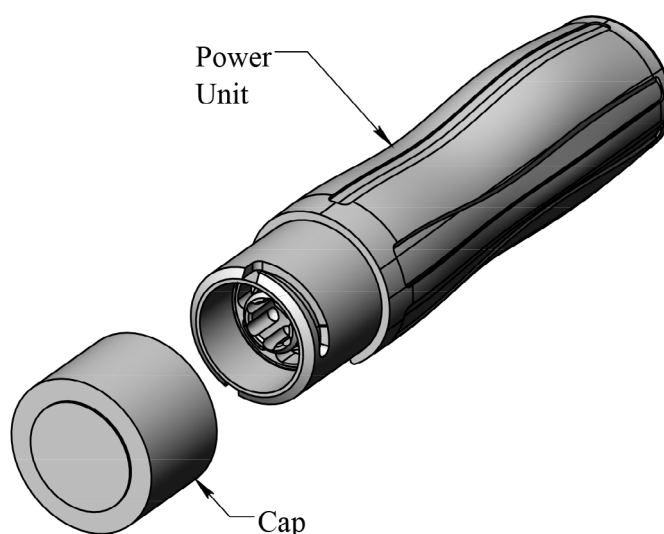
## POWER UNIT DISASSEMBLY

Step 1:

### REMOVE CAP

- Remove the cap.

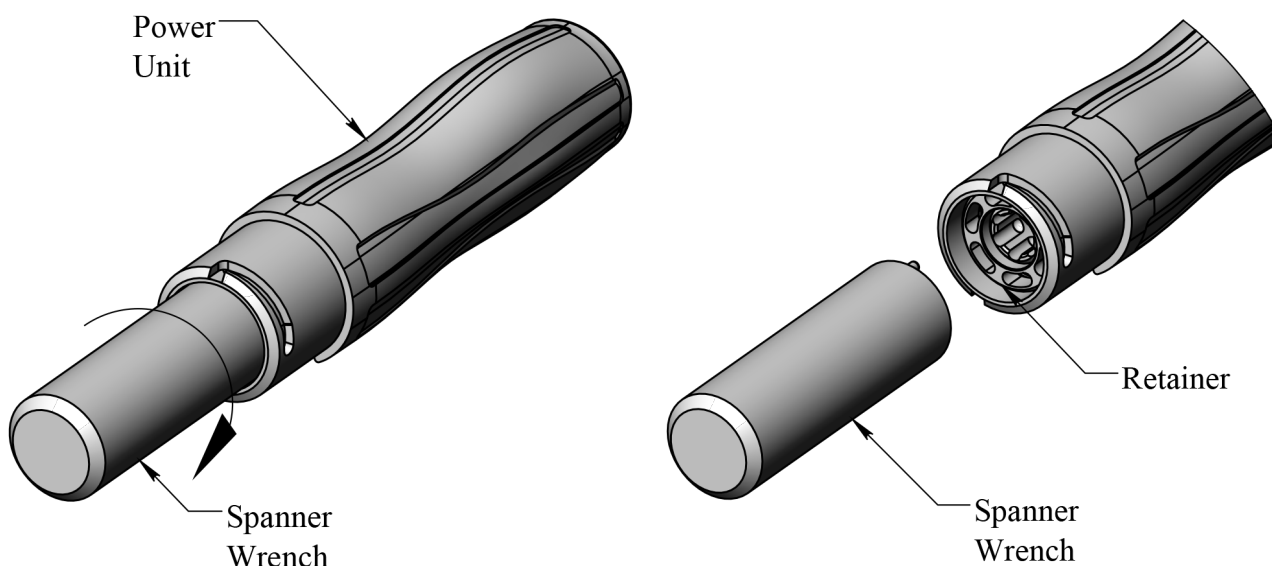
**NOTE:** Do not discard the cap.



Step 2:

### UNSCREW RETAINER

- Unscrew the retainer using the supplied spanner wrench. The retainer is a left-handed thread and must be turned to the right (clockwise) to unscrew.

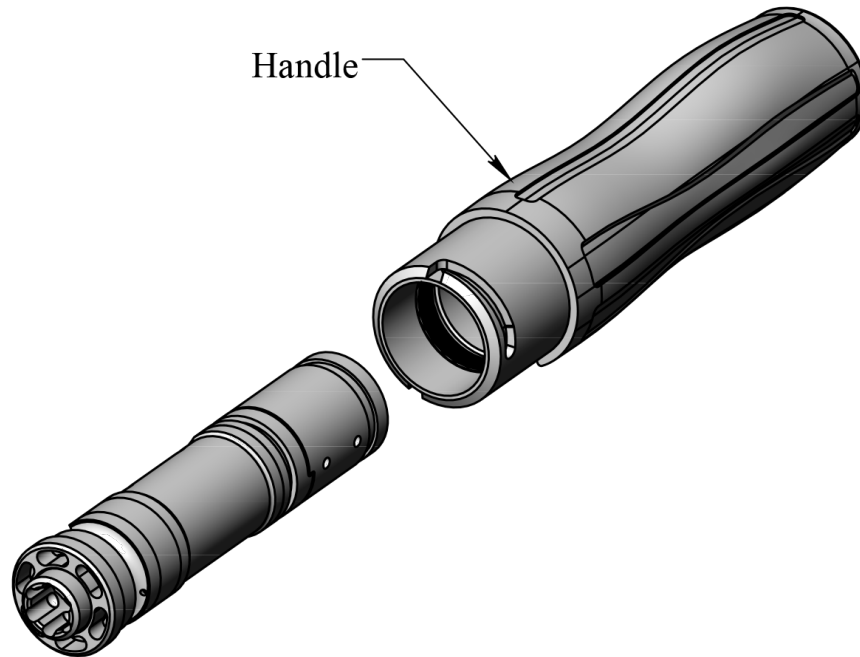


## POWER UNIT DISASSEMBLY (CONTINUED)

Step 3:

### SLIDE COMPONENTS OUT OF HANDLE

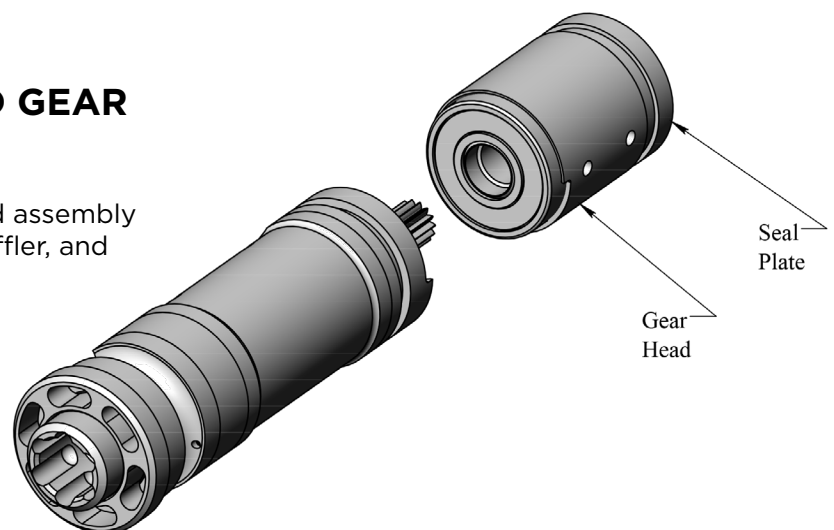
- Slide the seal plate, gear head, air motor, adapter plate, muffler, and retainer out of the handle.
- The parts should slide out easily. If the parts do not slide out, tap the handle lightly against a plastic block to dislodge the parts.



Step 4:

### SEPARATE SEAL PLATE AND GEAR HEAD ASSEMBLY

- Separate the seal plate and gear head assembly from the air motor, adapter plate, muffler, and retainer.

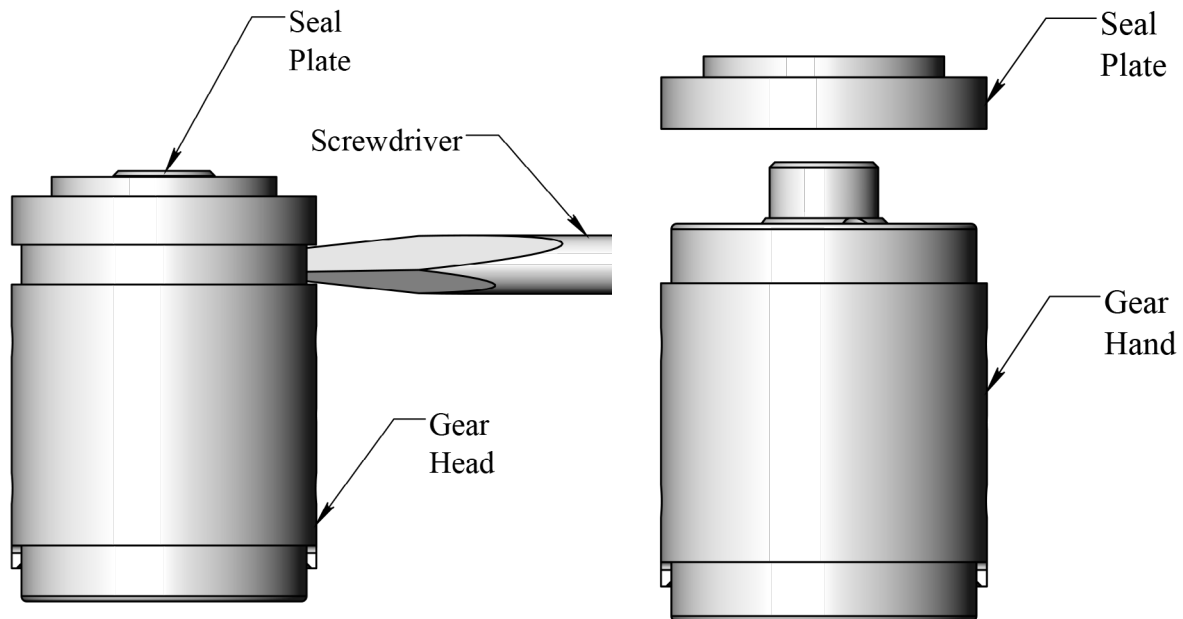


## POWER UNIT DISASSEMBLY (CONTINUED)

Step 5:

### REMOVE THE SEAL PLATE

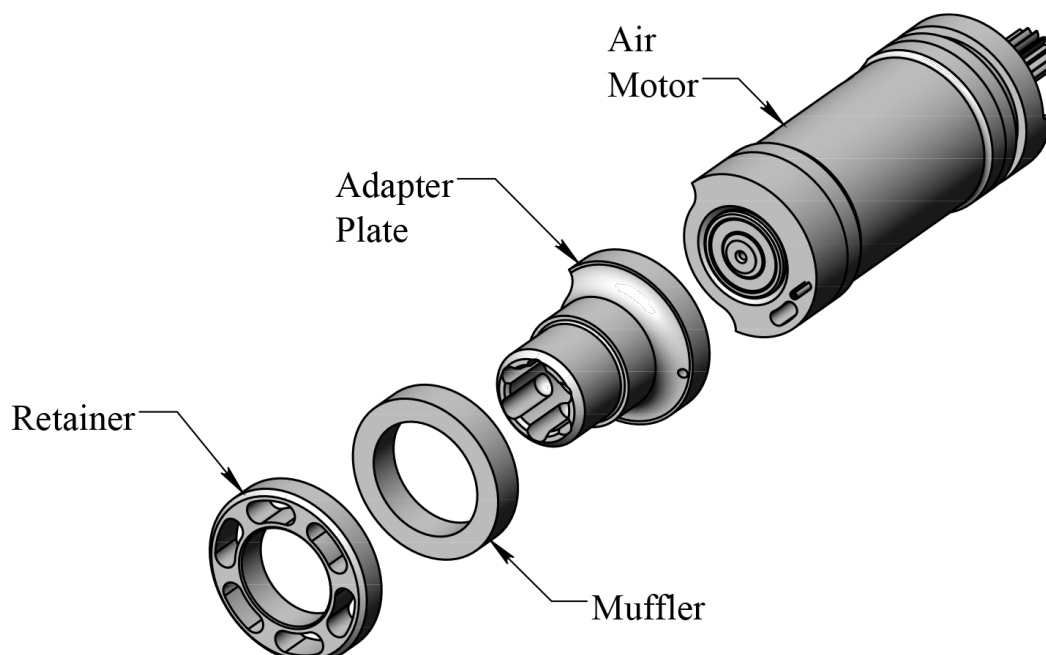
- Remove the seal plate from the top of the gear head.
- Insert a screwdriver between the seal plate and ring gear and twist to remove the seal plate.



Step 6:

### SEPARATE REMAINING COMPONENTS

- Separate air motor, adapter plate, muffler, and retainer.



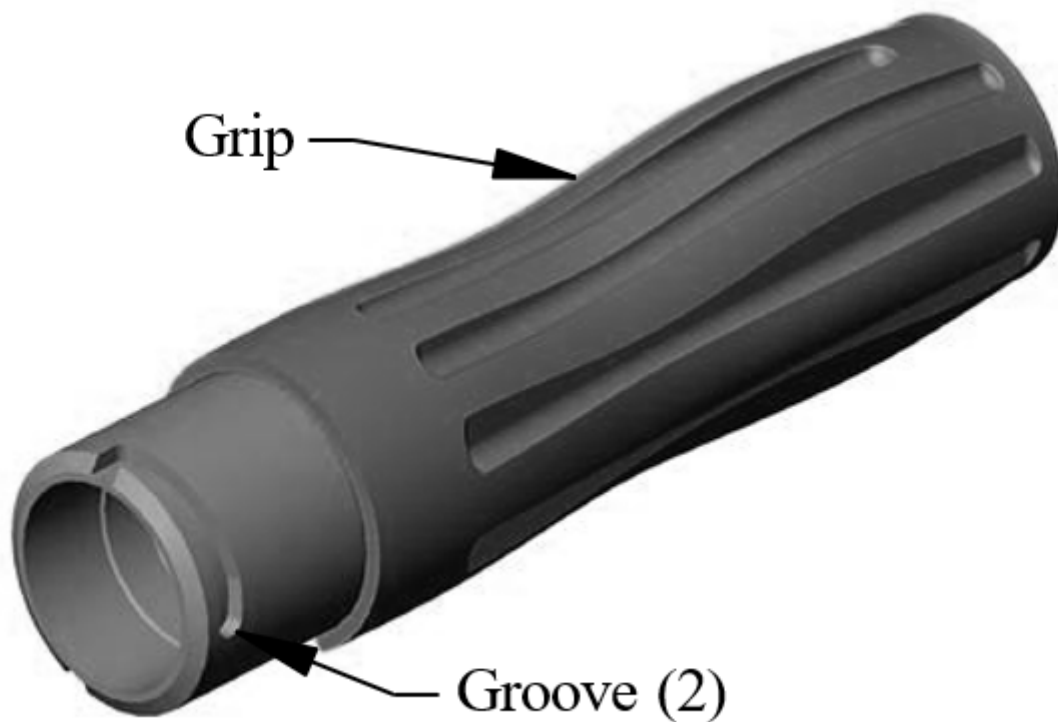
## POWER UNIT INSPECTION AND MAINTENANCE

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Inspection and maintenance should be performed after every 80 hours of use.

### HANDLE

- Clean the handle with warm soapy water and a soft brush. Remove any build up from the grooves. Rinse the handle and dry thoroughly.
- Inspect the handle for the following and replace if damage is detected.
  - Inspect the handle grip for tears, cuts, or wear.
  - Inspect the handle grooves for nicks or wear.
  - Inspect the handle I.D. for dents.

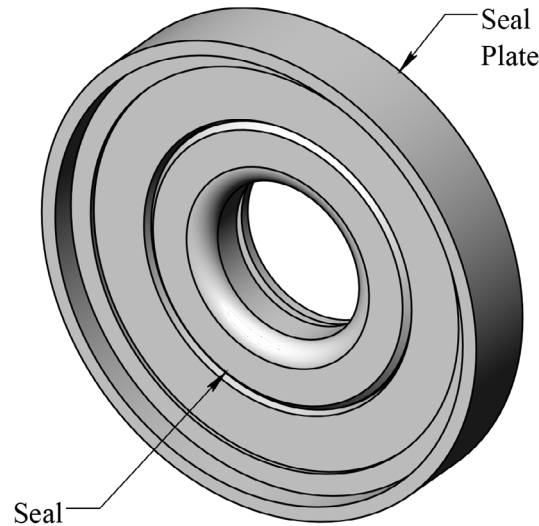




## POWER UNIT INSPECTION AND MAINTENANCE (CONTINUED)

### SEAL PLATE

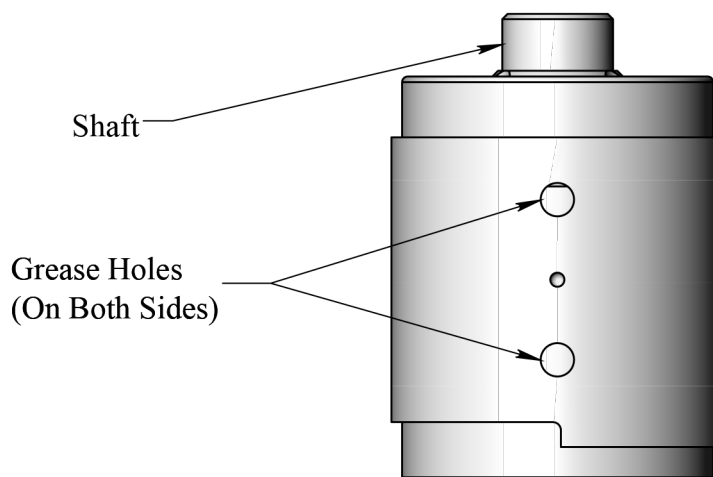
- Inspect the seal plate I.D. and O.D. for nicks, dents or wear. Replace the seal plate if damaged. (See Seal Plate Maintenance).
- Inspect the seal I.D. for nicks, cuts or cracks. Replace the seal if damaged. (See Seal Plate Maintenance).



### GEAR HEAD

- Inspect the gear head, by rotating the shaft.
  - If the shaft does not rotate, replace the gear head.
  - If you feel a rough or gritty resistance while rotating the shaft, replace the gear head.
- Re-grease gear head with Max-Z-Lube grease every 80 hours of use.
  - Squeeze grease in through the rotor shaft hole in the bottom of the gear head.
  - Continue to supply grease until clean grease comes out of the grease holes in the ring gear.
  - This method will thoroughly re-grease gear head and clean out debris trapped in the gear head.

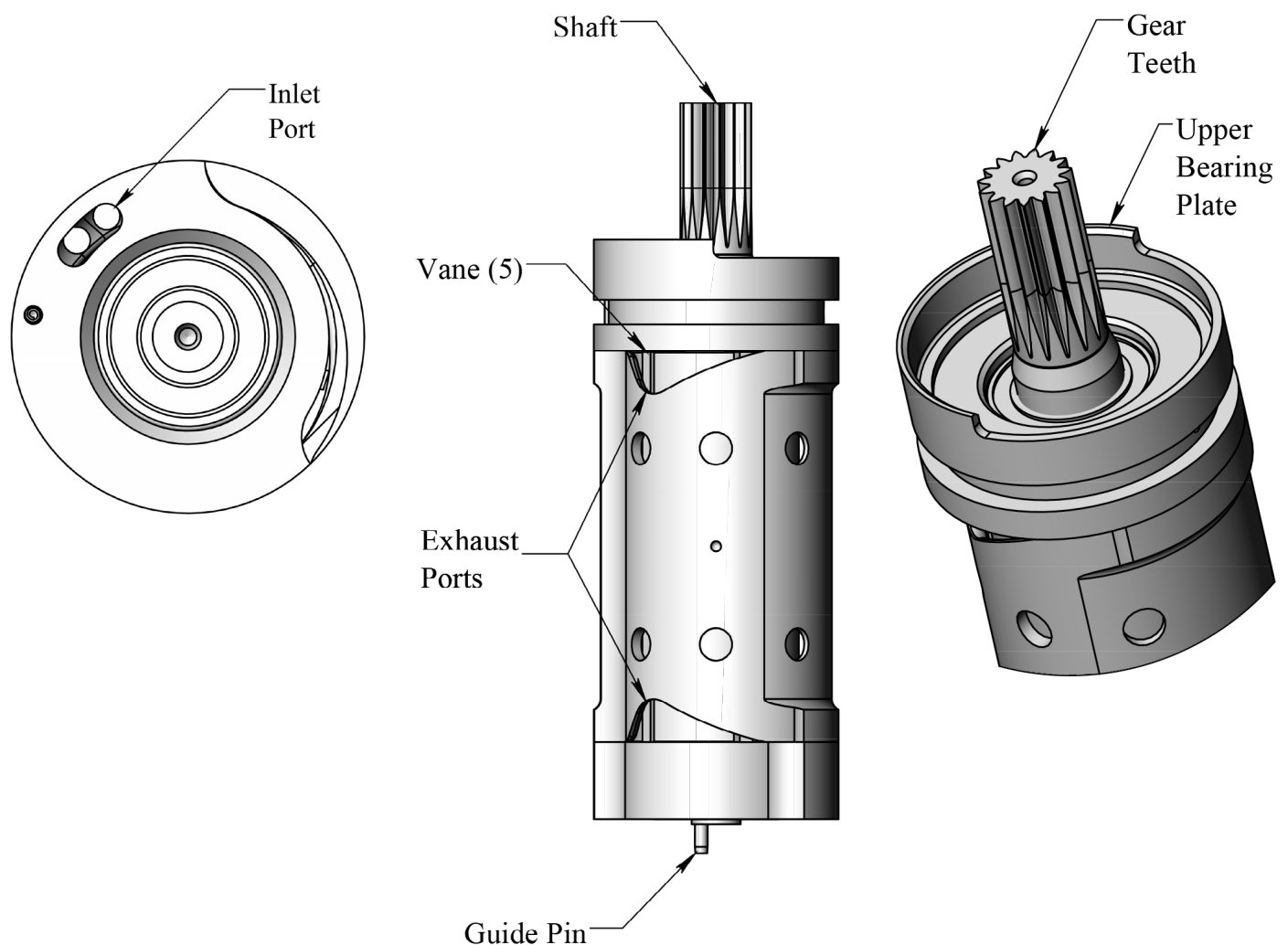
**NOTE:** Use only Max-Z-Lube high performance lubricant.



## POWER UNIT INSPECTION AND MAINTENANCE (CONTINUED)

### AIR MOTOR

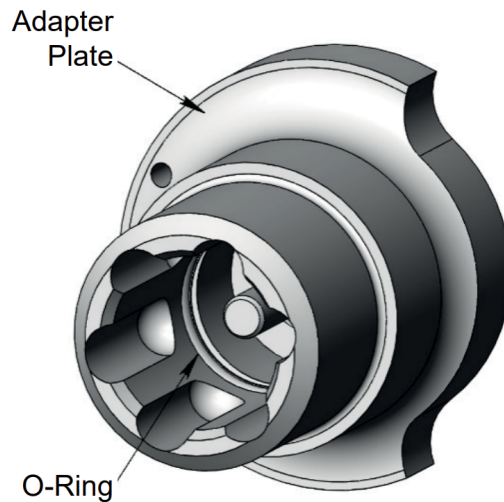
- Clean all build-up out of the inlet and exhaust ports.
- Inspect the air motor for the following and replace or repair the air motor if damage is detected. (See Air Motor Maintenance Section to repair the air motor).
  - Check for worn or chipped teeth. Worn out teeth are indicated by rounded off or pointed tops on the teeth.
  - Look for cracked or broken gear teeth.
  - Inspect the upper bearing plate I.D. and O.D. for nicks, dents, or wear.
  - Inspect the vanes for chipped or broken tips by looking through the exhaust ports and rotating the shaft to see all five vanes.
  - Inspect the guide pin to verify it is not bent.
  - The shaft should rotate freely.
- Lubricate the air motor with mineral oil through the exhaust ports.



## POWER UNIT INSPECTION AND MAINTENANCE (CONTINUED)

### ADAPTER PLATE

- Inspect the adapter plate for cracks or chips. Replace the adapter plate if damaged.
- Inspect o-ring for nicks, cuts or tears. Replace the o-ring if damaged.



### MUFFLER

- Inspect the muffler for broken or protruding wires. Replace the muffler if damaged.
- Muffler may be cleaned with parts cleaner to remove build-up. Replace muffler if excessive build up prevents proper cleaning.

**NOTE:** Do not clean the muffler while it is installed in the power unit.



### RETAINER

- Inspect the retainer for cracks or chips. Replace the retainer if damaged.
- Inspect the retainer threads for damage. Replace the retainer if damaged.

## POWER UNIT ASSEMBLY

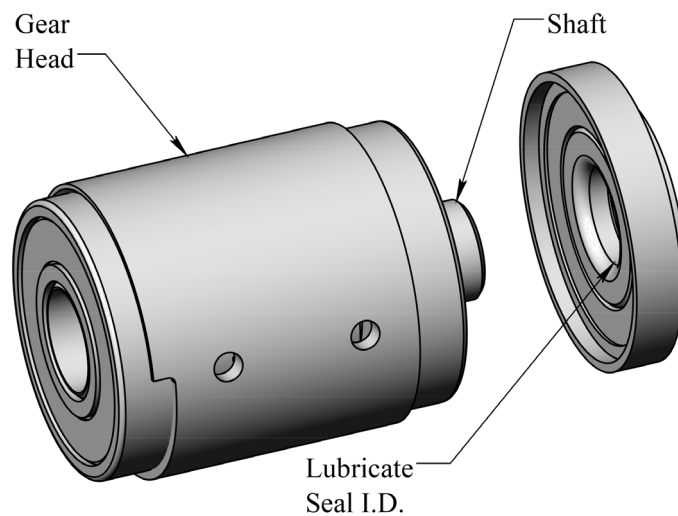
Step 1:

### INSTALL SEAL PLATE

- Apply a small amount of Max-Z-Lube to the Seal I.D.

**NOTE:** Use only Max-Z-Lube high performance lubricant.

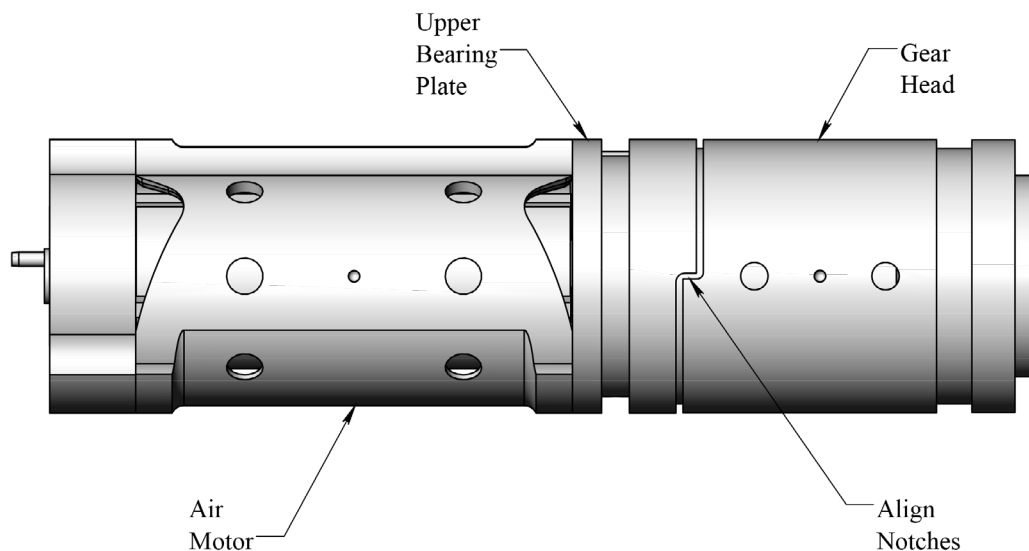
- Slide the seal plate over the gear head shaft and onto the gear head bearing.



Step 2:

### ALIGN GEAR HEAD AND AIR MOTOR

- Slide the gear head over the rotor shaft.
- Align the top notches on the gear head and upper bearing plate.
- Seat gear head in top plate.

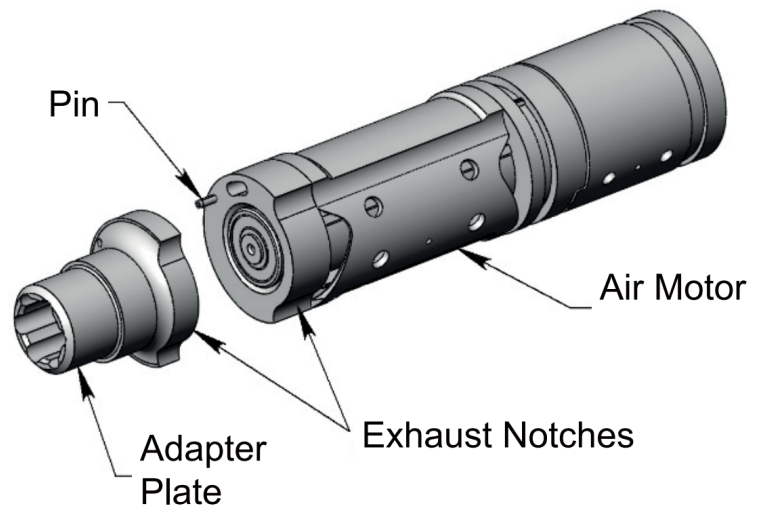


## POWER UNIT ASSEMBLY (CONTINUED)

Step 3:

### ALIGN ADAPTER PLATE

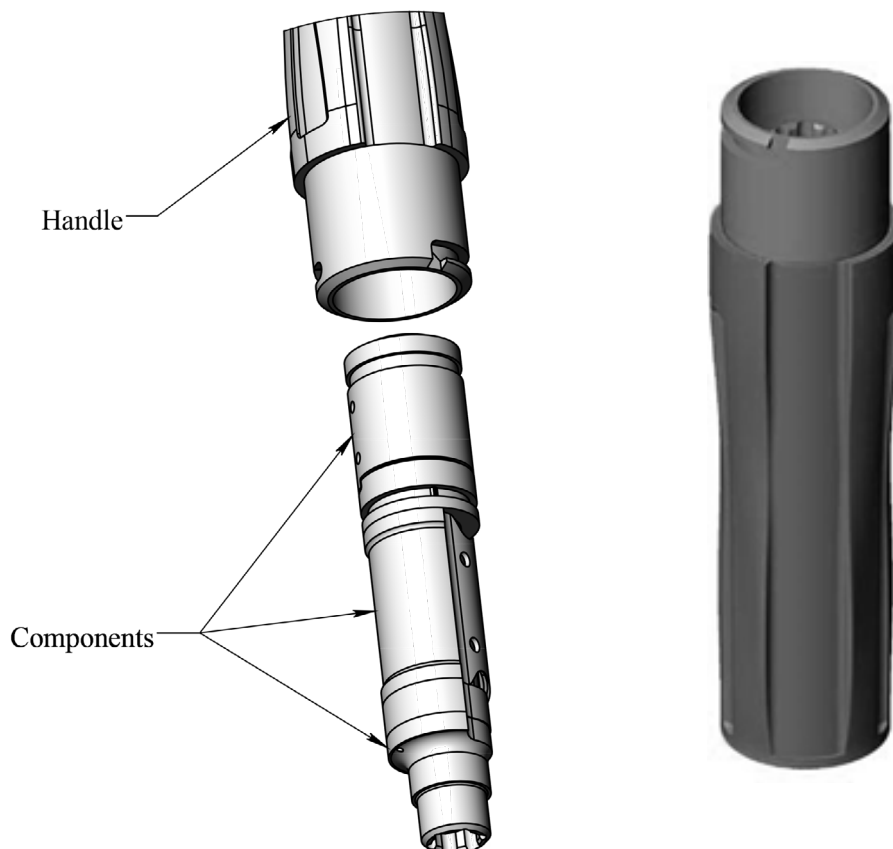
- Slide the adapter plate over the pin in the air motor.
- Align the exhaust notches on the adapter plate and the air motor.



Step 4:

### SLIDE COMPONENTS INTO HANDLE

- Slide components up into the handle.
- Be careful not to let the components separate and become misaligned.
- While holding the components in place, turn the handle over

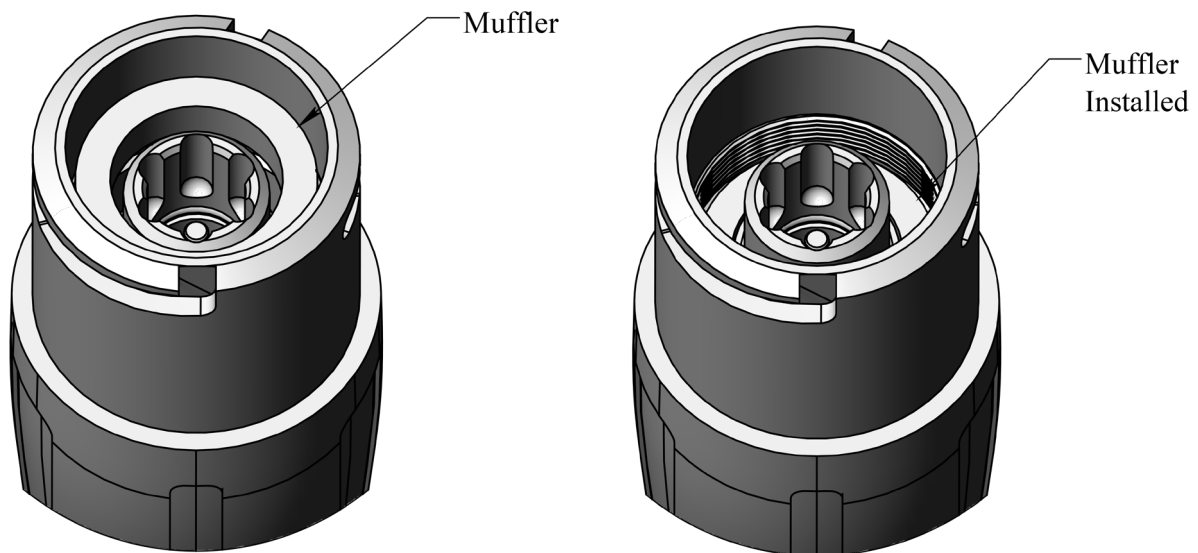


## POWER UNIT ASSEMBLY (CONTINUED)

Step 5:

### INSTALL MUFFLER

- Slide the muffler into the power unit.



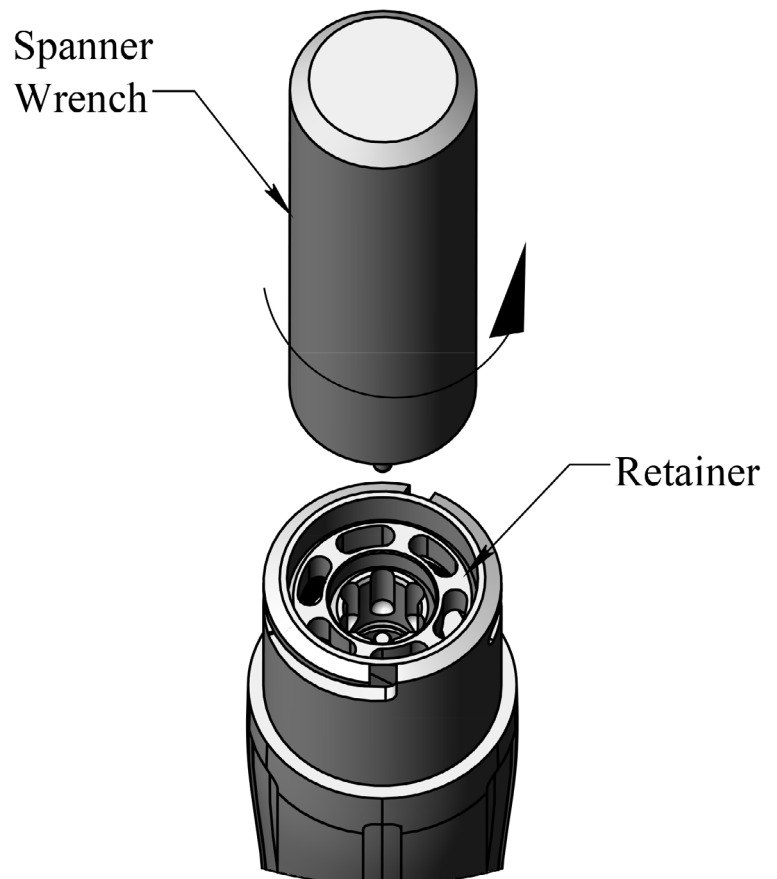
Step 6:

### INSTALL RETAINER

- Screw the retainer firmly into the power unit, using the supplied spanner wrench. The retainer is a left-hand thread, and must be turned to the left (counter-clockwise) to tighten.

**NOTE:** Recommended torque of 25-30 lb-in. (2.8-3.4 N-m)

**IMPORTANT:** Be careful not to cross thread the retainer. This will cause poor motor performance.

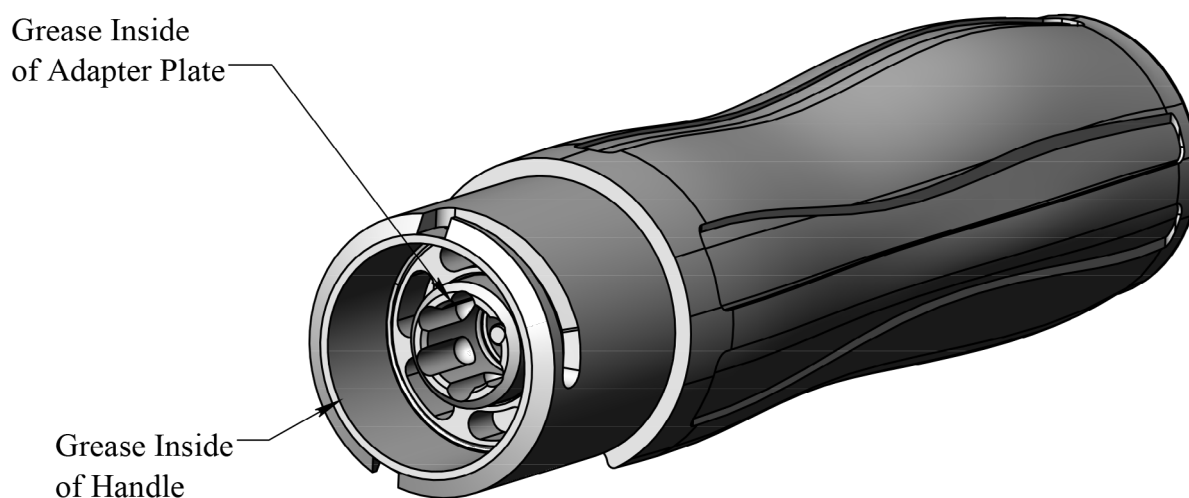


## POWER UNIT ASSEMBLY (CONTINUED)

Step 7:

### GREASE POWER UNIT

- Grease the inside of the handle and the inside of the adapter plate with Max-Z-Lube.



Step 8:

### INSTALL CAP

- Slide the cap over the end of the power unit.



# SEAL PLATE MAINTENANCE

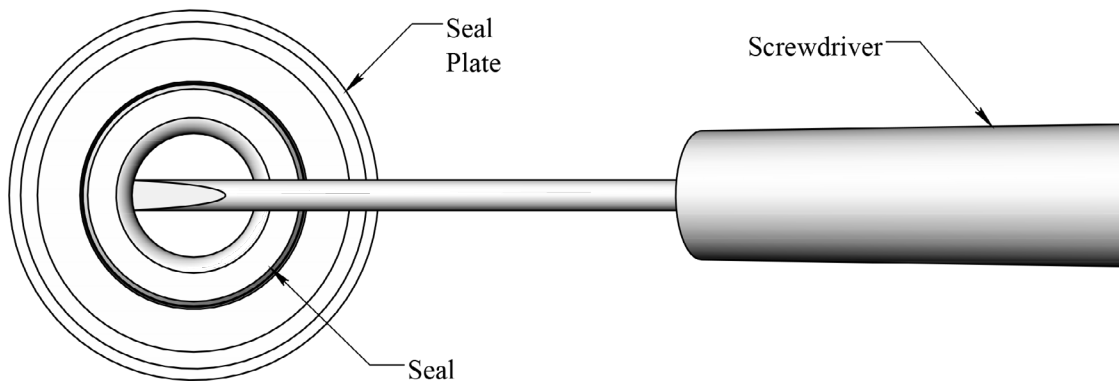
## REQUIRED TOOLS FOR SEAL PLATE MAINTENANCE

1 - Small flat head screwdriver

Step 1:

### REMOVE SEAL

- To remove seal, use a small flat head screwdriver to pry the seal out of the seal plate.



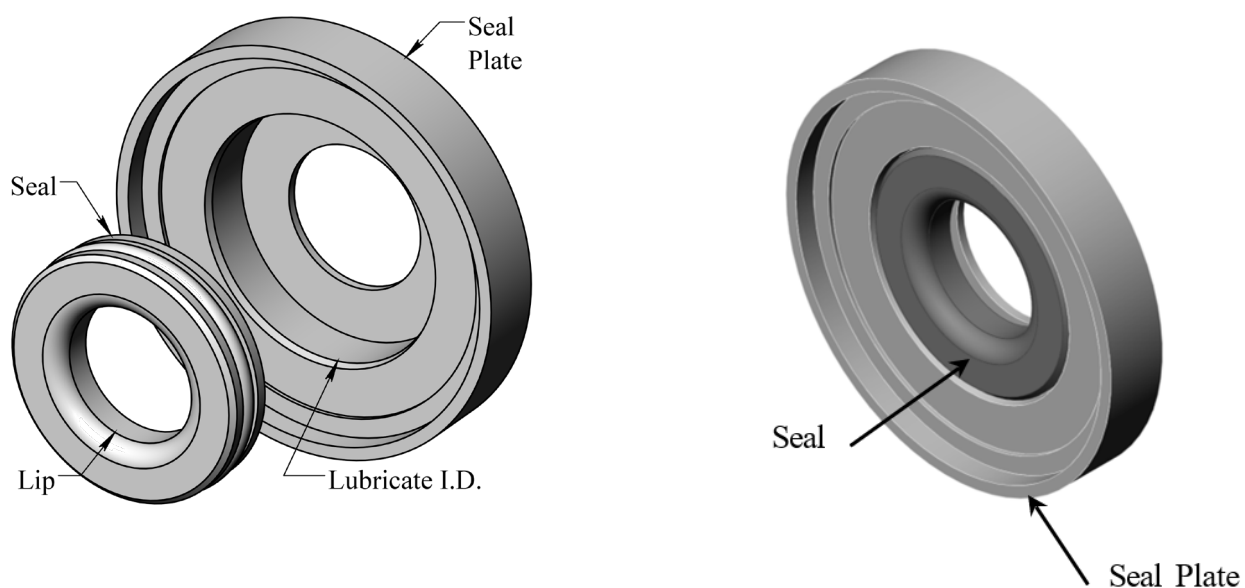
Step 2:

### INSTALL SEAL

- Then, install the new seal, applying a small amount of Max-Z-Lube to I.D. of the seal plate.

**NOTE:** Use only Max-Z-Lube high performance lubricant.

- Press the seal into the seal plate. The lip of the seal should curl into the seal plate.



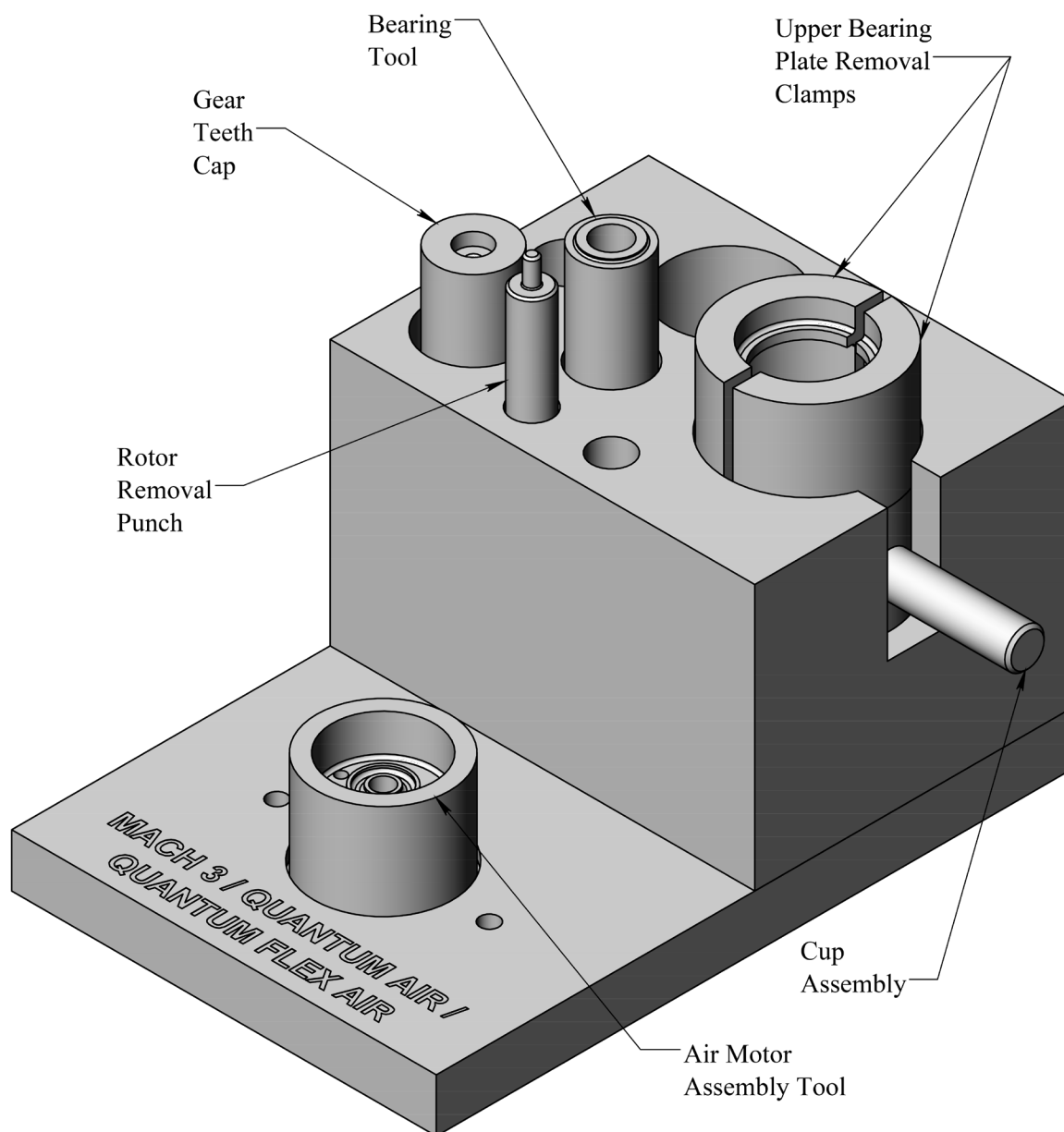


# AIR MOTOR MAINTENANCE

## REQUIRED TOOLS FOR SEAL PLATE MAINTENANCE

1 - Hammer

2 - Whizard® AirMax MACH 3 Maintenance Kit

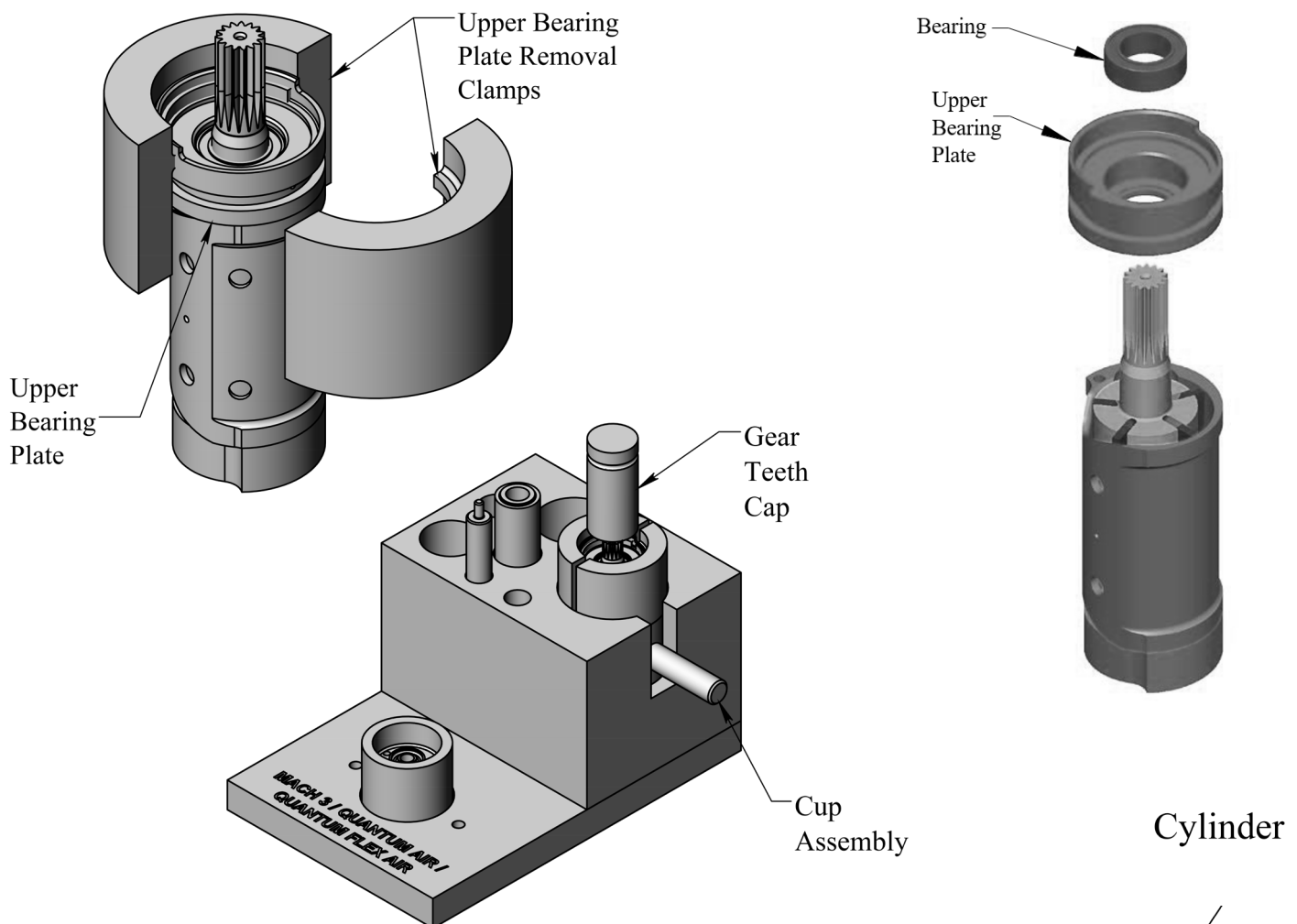


# AIR MOTOR DISASSEMBLY

## Step 1:

### REMOVE UPPER BEARING PLATE AND BEARING

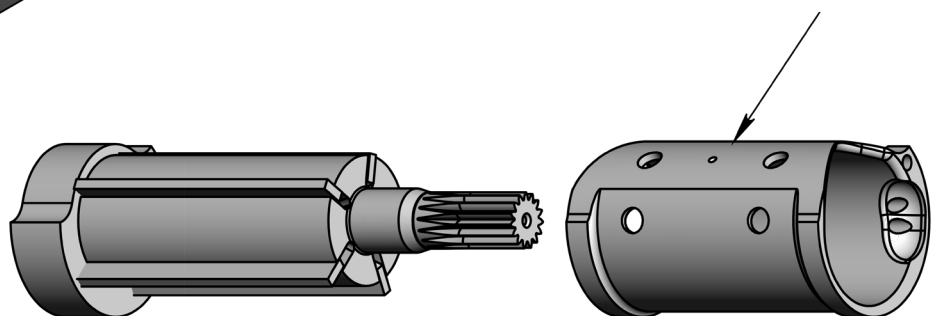
- Place upper bearing plate removal clamps around the upper bearing plate and place this assembly into the cup assembly in the maintenance kit.
- Place gear teeth cap over rotor gear teeth.
- Using a hammer, tap the gear teeth until the rotor is removed from the upper bearing plate.
- Pull the upper bearing out of the upper bearing plate.



## Step 2:

### REMOVE CYLINDER

- Slide the cylinder off the rotor.

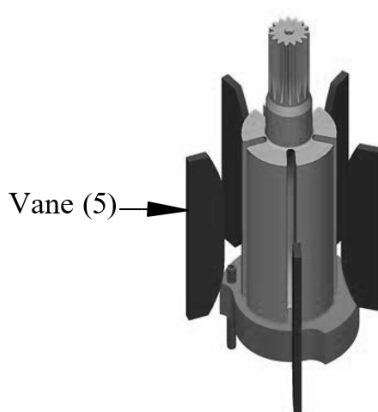


## AIR MOTOR DISASSEMBLY (CONTINUED)

Step 3:

### REMOVE VANES

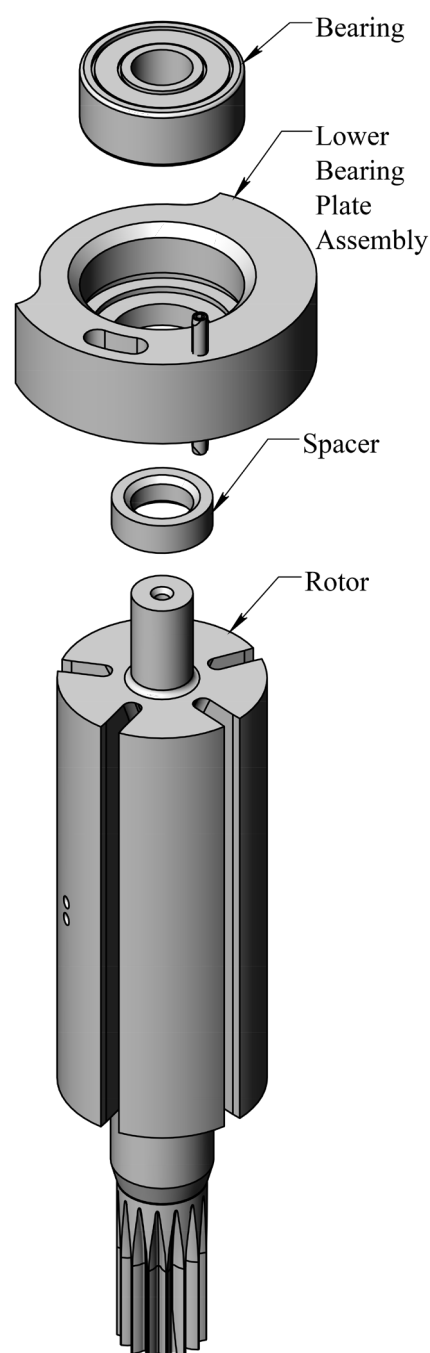
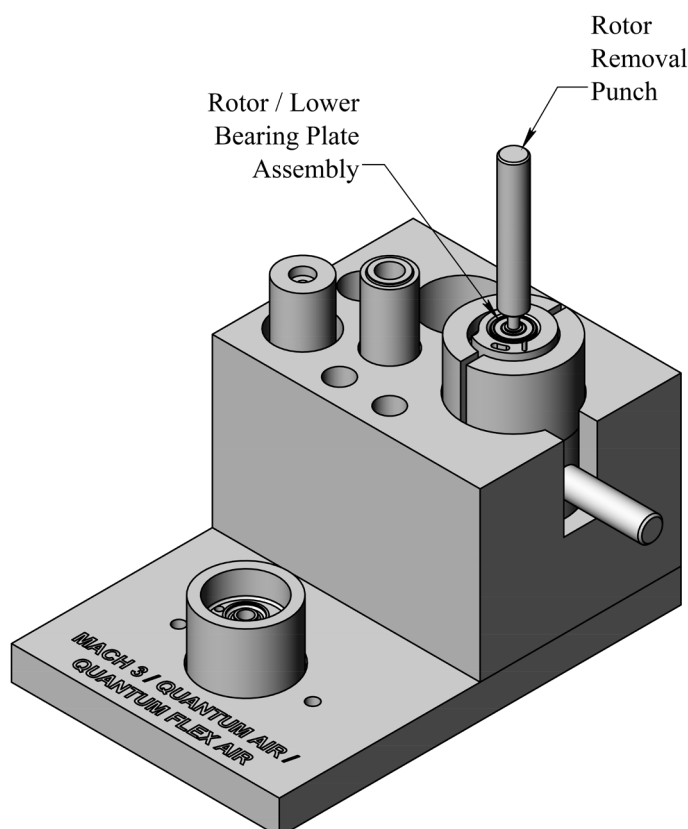
- Remove the vanes from the slot



Step 4:

### REMOVE LOWER BEARING PLATE

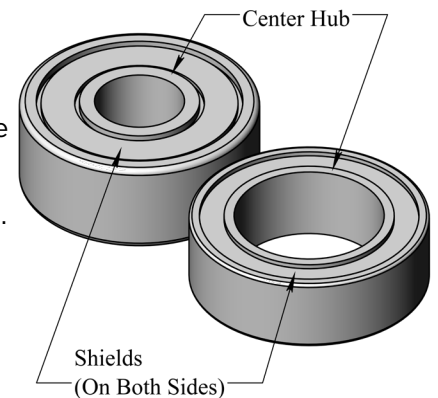
- Set the rotor/lower bearing plate assembly in the upper bearing plate removal clamps. Be sure the plate sits flush on the clamps. The alignment pin in the lower bearing will sit between the clamps.
- Place the small diameter of the rotor removal punch on the end of the rotor shaft.
- Using a hammer, tap the rotor removal punch until the rotor is removed from the lower bearing plate.
- Pull the bearing out of the lower bearing plate.
- Slide the spacer off of the rotor shaft.



# AIR MOTOR INSPECTION AND MAINTENANCE

## UPPER AND LOWER BEARING

- Inspect the shields for dents. If damaged, replace the bearing.
- Rotate the bearing. If you feel a rough or gritty resistance, replace the bearing.
- If the center hub can be moved from side to side, replace the bearing.



## UPPER AND LOWER BEARING PLATES

- Inspect the I.D. and O.D. on both the upper and lower bearing plates for nicks, dents, or wear. Replace the bearing plate if damaged.
- Inspect the alignment pin to be sure it is not bent. Replace the bearing plate if damaged.
- Clean and dry the part thoroughly.

## CYLINDER

- Inspect the cylinder I.D. for grooves. If the grooves are more than .002" (.05mm) deep, replace the cylinder.
- Clean and dry the part thoroughly.

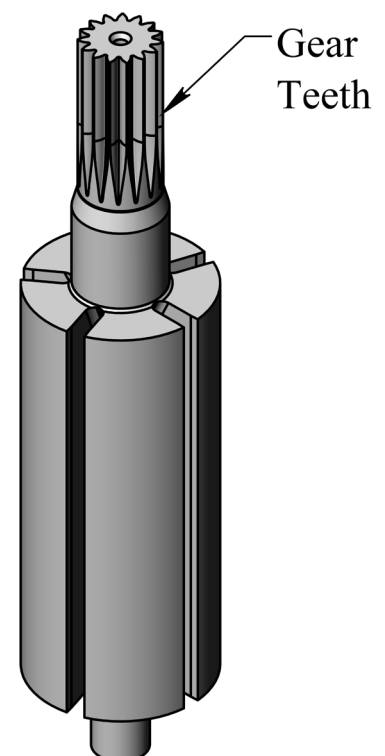
## VANES

- Inspect the vanes for chipped or broken tips. Replace if damaged.
- Inspect the vanes for grooves. If grooves are more than .010" (.25mm) deep, replace the vanes.
- Inspect the vane height. If the overall vane height is less than .195" (.5mm), replace the vanes.

**NOTE:** Always replace all five (5) vanes as a set

## ROTOR

- Inspect the gear teeth for cracked or broken teeth and replace the rotor if damaged.
- Inspect the gear teeth for excessive wear. If the gear teeth are worn to a sharp point, replace the rotor.
- Clean and dry the part thoroughly.



## SPACER

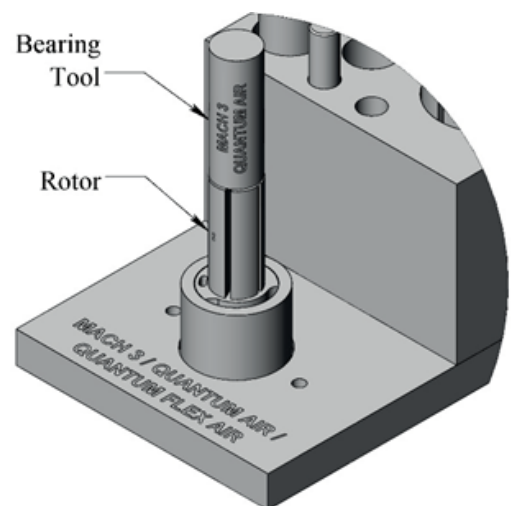
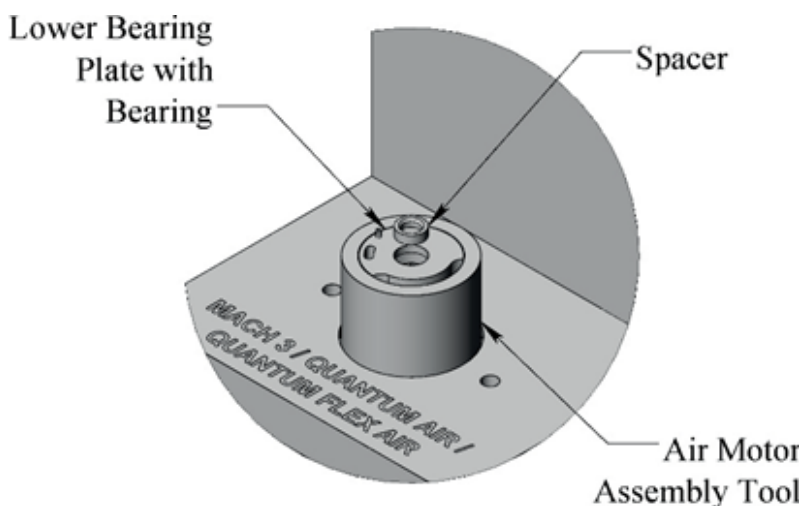
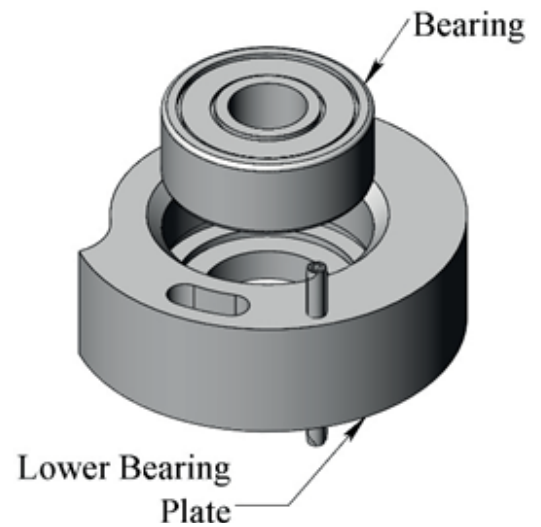
- Inspect the spacer for nicks or cracks. Replace if damaged.
- Clean and dry the part thoroughly.

# AIR MOTOR ASSEMBLY

## Step 1:

### INSTALL ROTOR

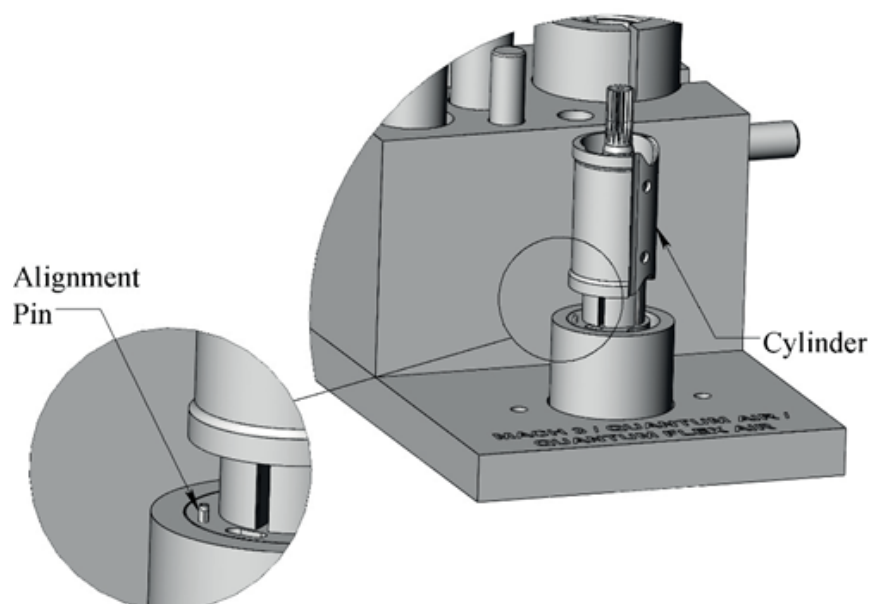
- Insert the bearing into the lower bearing plate.
- Place the lower bearing plate, with bearing, in the air motor assembly tool. Line up the pin in the lower bearing plate with the clearance hole in the air motor assembly tool.
- Insert the spacer into the lower bearing plate.
- Insert the small shaft of the rotor into the spacer.
- Slide the bearing tool over the rotor shaft.
- Using a hammer, tap the bearing tool until the rotor is fully seated in the lower bearing plate.



## Step 2:

### INSTALL CYLINDER

- Align the exhaust channels on the cylinder and lower bearing plate.
- Slide the cylinder over the rotor.
- The alignment pin in lower bearing plate will slide into the alignment hole in the cylinder.



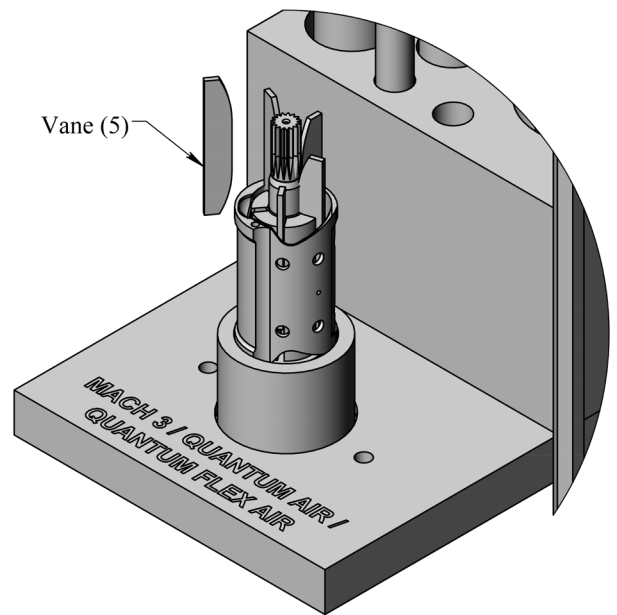
## AIR MOTOR ASSEMBLY (CONTINUED)

### Step 3:

#### INSTALL VANES

- Slide the vanes (5) into the slots (5).

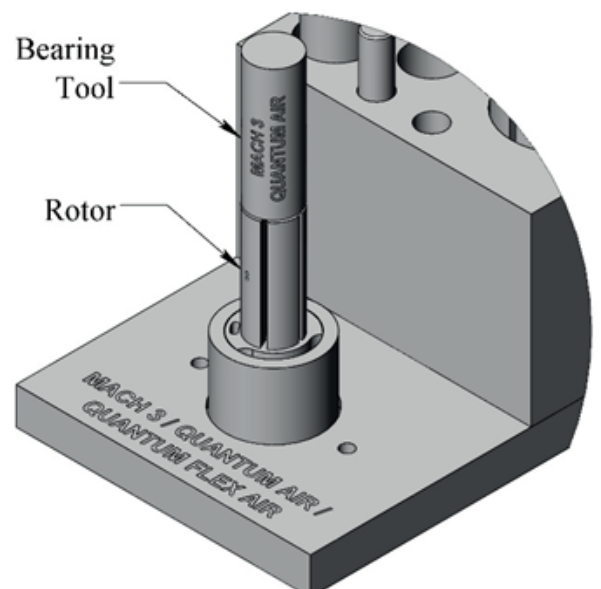
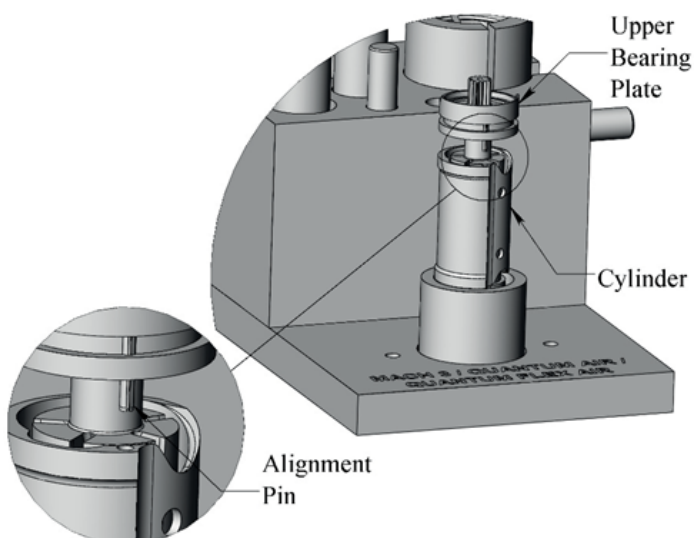
**NOTE:** Vanes should be aligned with the curved side towards the rotor center. Vane length should match the length of the rotor slot. Do not use the standard Whizard® AirMax vane kit in the Quantum Flex+® Air Trimmer.



### Step 4:

#### INSTALL UPPER BEARING PLATE

- Slide the upper bearing plate over the rotor shaft.
- The alignment pin in the upper bearing plate will slide into the alignment hole in the cylinder.
- Slide the upper bearing over the rotor shaft.
- Place the bearing tool on the upper bearing.
- Using a hammer, tap the bearing tool until the upper bearing plate is fully seated on the cylinder.
- The rotor will spin freely when properly assembled.



## VALVE AND HOSE ASSEMBLY MAINTENANCE

### REQUIRED TOOLS FOR VALVE AND HOSE ASSEMBLY MAINTENANCE

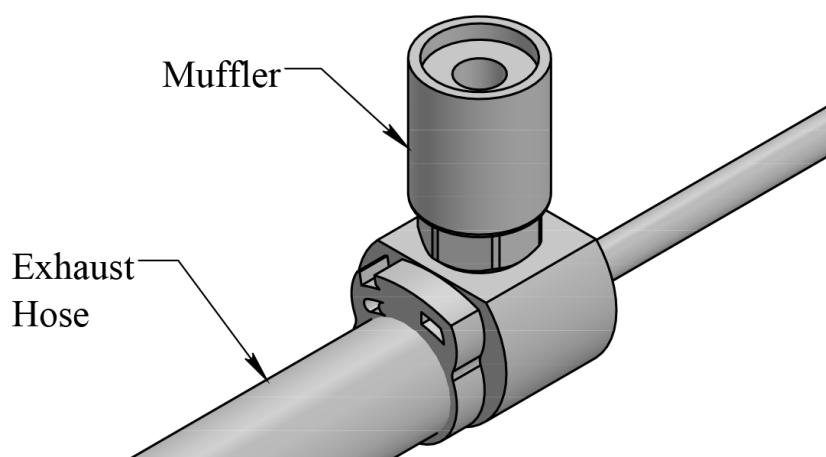
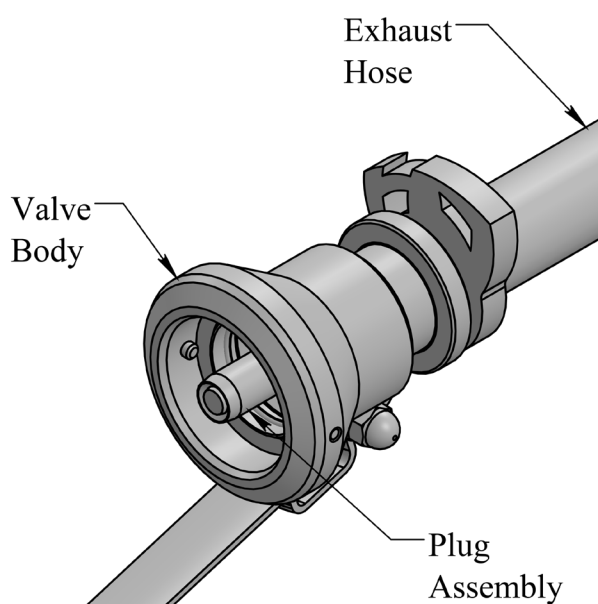
1 - 1/2" Open End Box Wrench

1 - 9/16" Open End Box Wrench

## VALVE AND HOSE ASSEMBLY INSPECTION

### VALVE AND HOSE ASSEMBLY

- Connect the valve and hose assembly to the FRL at 90-100 psi.
- If air leaks around the plug assembly, replace the valve assembly.
- If the valve body is dented, nicked, or scratched, replace the valve assembly.
- If air can be felt leaving the muffler, replace the hose assembly.
- If the exhaust hose is cut, torn, or nicked, replace the exhaust hose.
- If the muffler is dirty or clogged, replace the muffler.



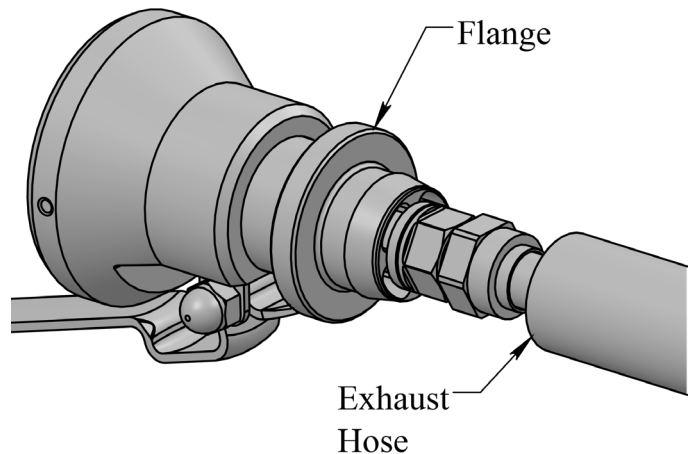
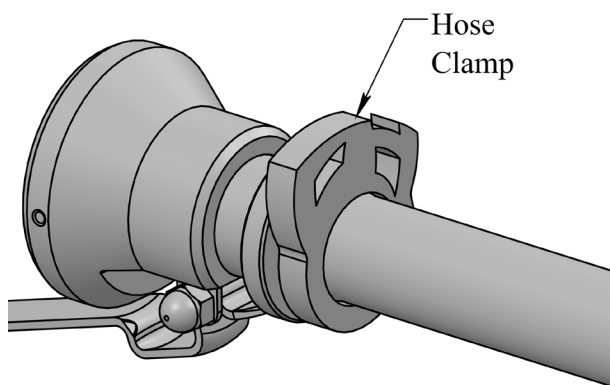


## VALVE AND HOSE DISASSEMBLY

### Step 1:

#### DISCONNECT EXHAUST HOSE

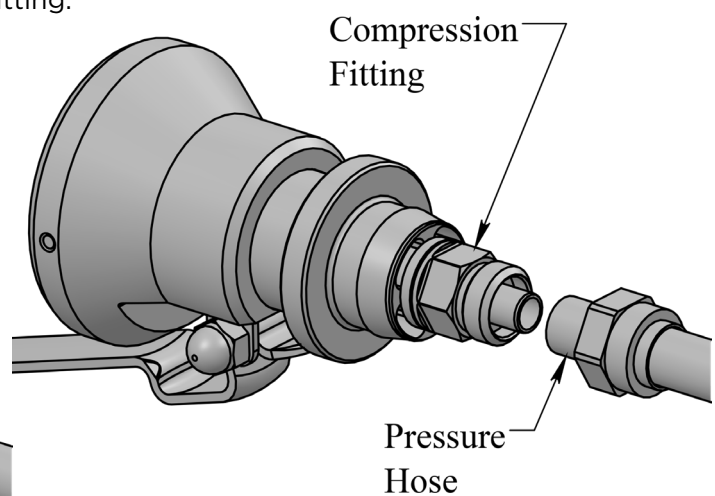
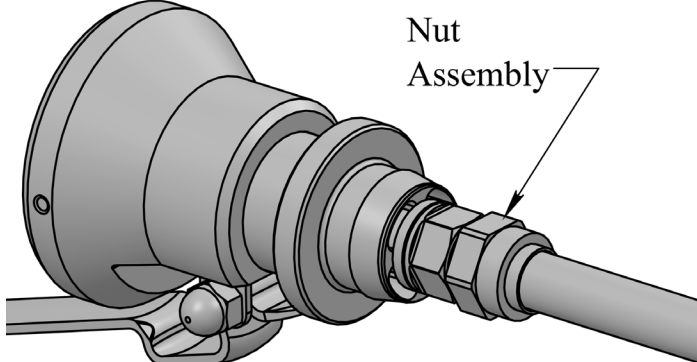
- Remove the hose clamp.
- Slide the exhaust hose off of the flange.



### Step 2:

#### DISCONNECT PRESSURE HOSE

- Unscrew the nut assembly from the compression fitting.
- Slide the pressure hose off of the compression fitting.



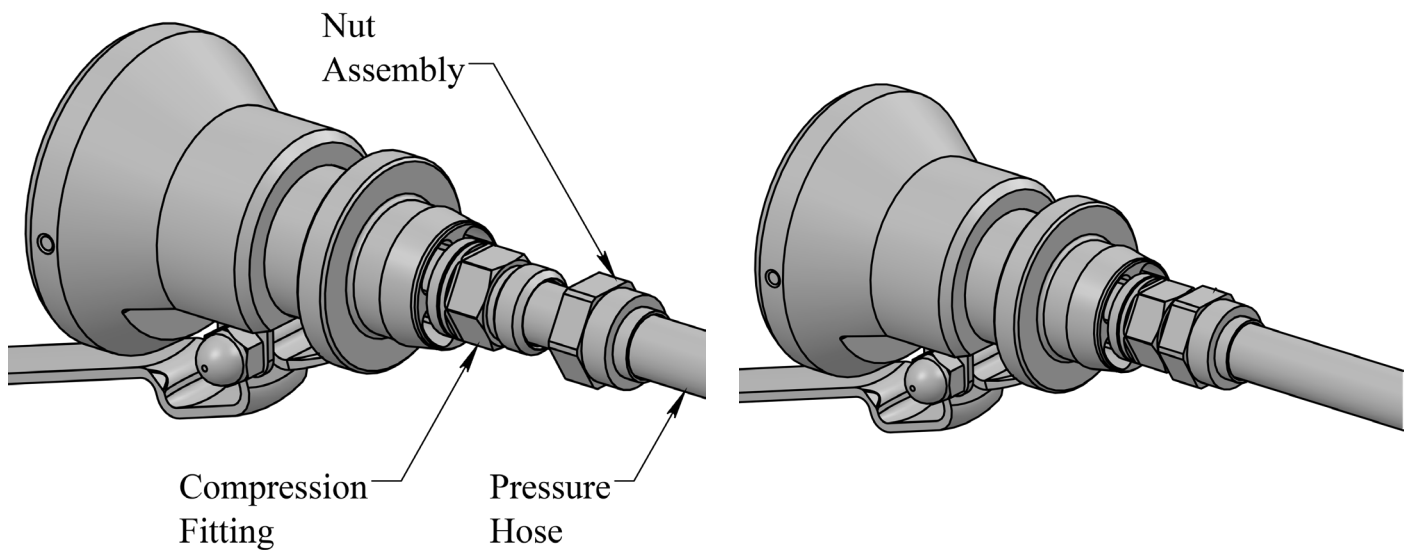


## VALVE AND HOSE ASSEMBLY

Step 1:

### CONNECT PRESSURE HOSE

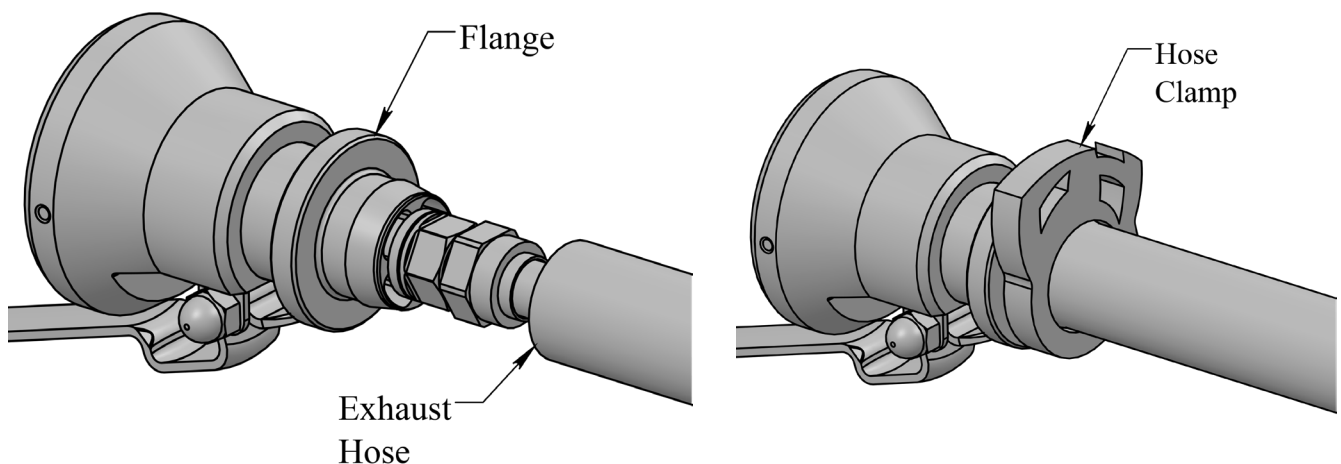
- Slide the nut assembly over the pressure hose.
- Slide the pressure hose onto the compression fitting.
- Screw the nut firmly onto the compression fitting.



Step 2:

### CONNECT EXHAUST HOSE

- Slide the exhaust hose onto the flange.
- Install hose clamp.



# QUICK START VALVE AND HOSE ASSEMBLY MAINTENANCE

## REQUIRED TOOLS FOR QUICK START VALVE AND HOSE ASSEMBLY MAINTENANCE

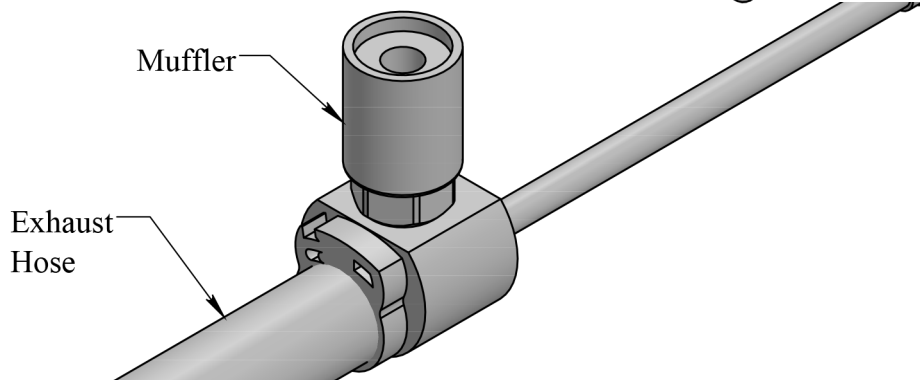
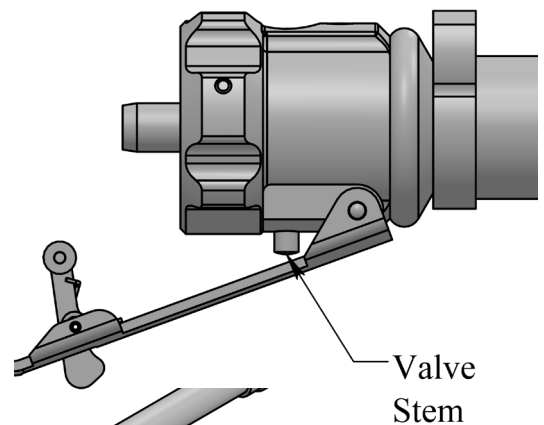
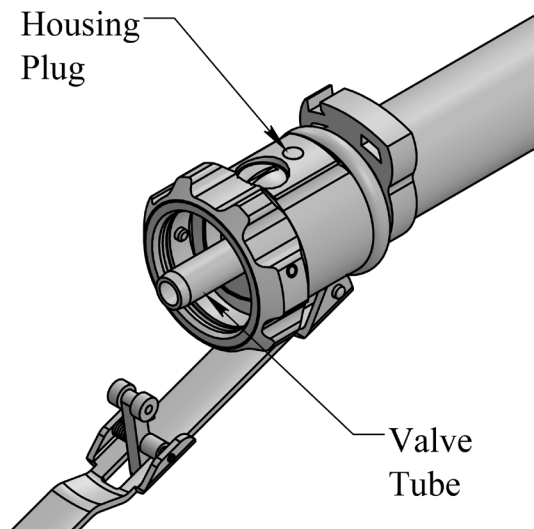
1 - 1/2" Open End Box Wrench

1 - 9/16" Open End Box Wrench

## QUICK START VALVE AND HOSE ASSEMBLY INSPECTION

### QUICK START VALVE AND HOSE ASSEMBLY

- Connect the valve and hose assembly to the FRL at 90-100 psi.
- If air leaks around the housing plug, replace the o-ring on the housing plug
- If air leaks around the valve stem, replace the lower valve stem o-ring.
- If air leaks through the valve tube, replace the upper valve stem o-ring.
- If replacing the valve stem o-rings does not fix the air leak, replace the valve body assembly
- If the valve tube is dented, nicked, or scratched, replace the valve body assembly.
- If air can be felt leaving the muffler, replace the hose assembly.
- If the exhaust hose is cut, torn, or nicked, replace the exhaust hose.
- If the muffler is dirty or clogged, replace the muffler.

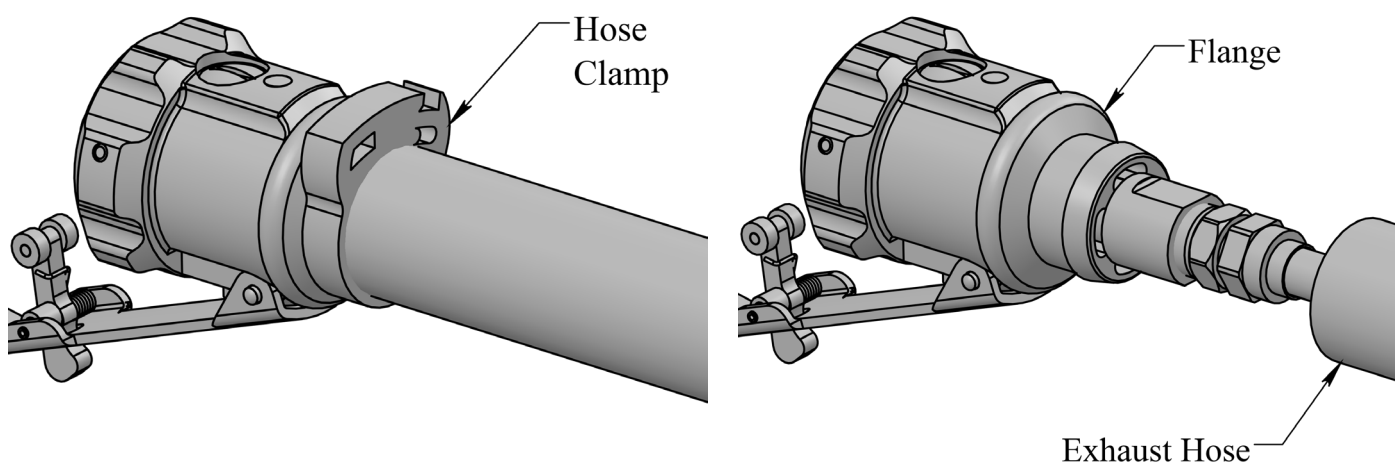


## QUICK START VALVE AND HOSE DISASSEMBLY

Step 1:

### DISCONNECT EXHAUST HOSE

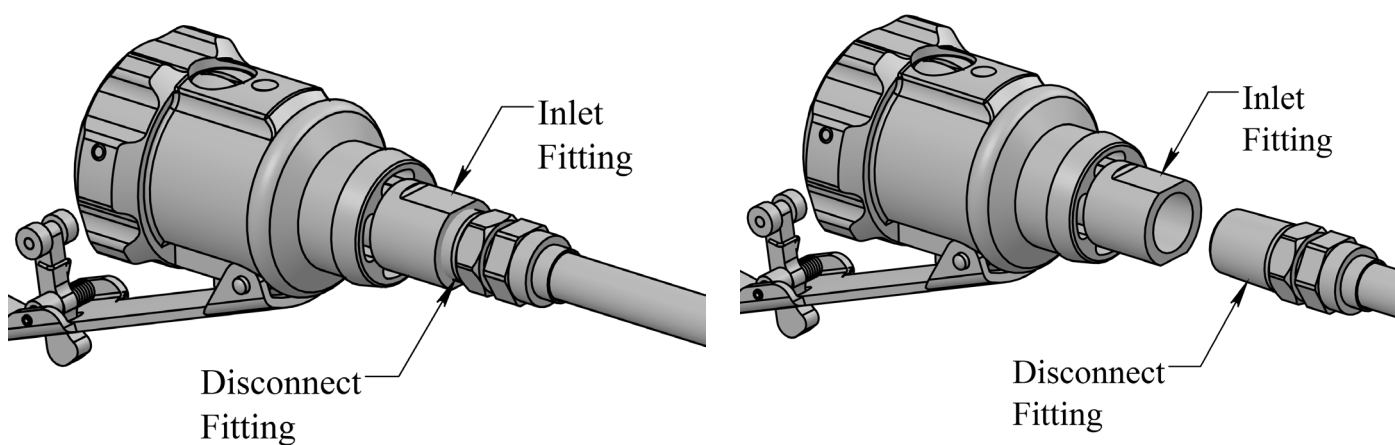
- Remove the hose clamp.
- Slide the exhaust hose off of the flange.



Step 2:

### DISCONNECT PRESSURE HOSE

- Unscrew the disconnect fitting from the inlet fitting.

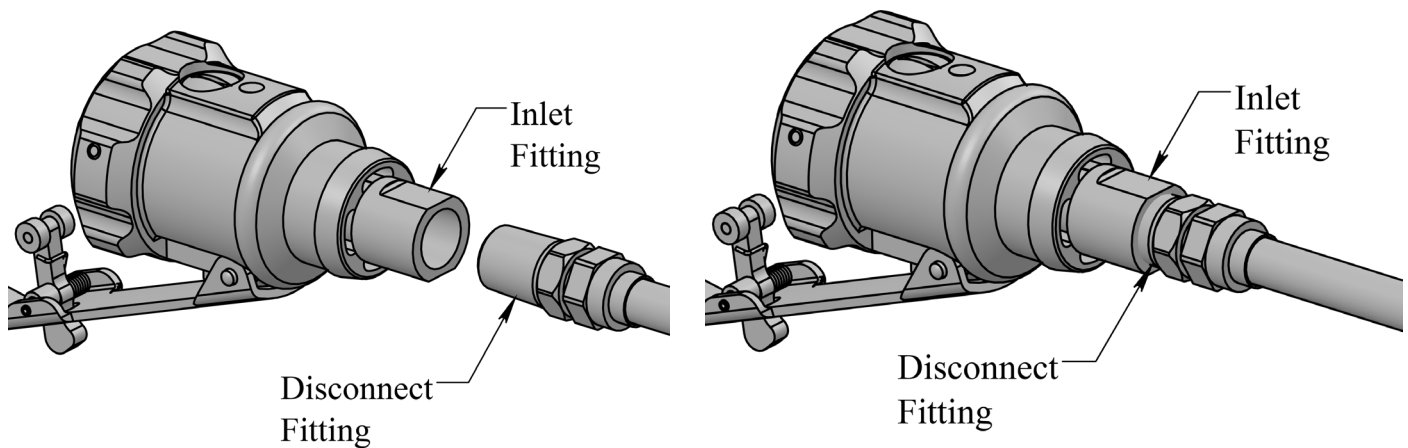


## QUICK START VALVE AND HOSE ASSEMBLY

Step 1:

### CONNECT PRESSURE HOSE

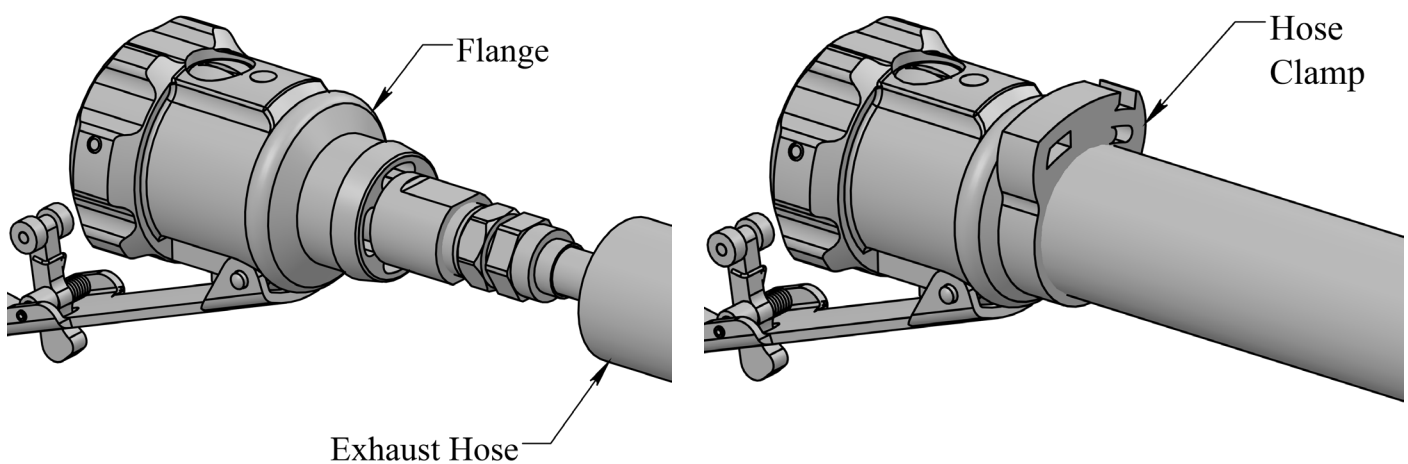
- Screw the disconnect fitting into the inlet fitting.



Step 2:

### CONNECT EXHAUST HOSE

- Slide the exhaust hose onto the flange.
- Install hose clamp.



## FAULT DETECTION AND CORRECTION

Problem	Probable cause	Remedy
<b>Handpiece vibration</b>	Worn handpiece bearing.	Replace.
	Worn pinion gear.	Replace.
	Worn teeth on blade or pinion gear.	Replace.
	Product build-up	Clean trimmer
<b>Handpiece hot</b>	Pinion gear tight in handpiece bearing.	Clean corrosion from the handpiece bearing and lubricate.
	Handpiece bearing not installed correctly - (No clearance between face of pinion gear and blade housing) causing mechanical bind.	Reinstall bearing correctly.
	Power Unit seal worn (Air blowing through front of Power Unit)	Replace Seal and O-Ring in Power Unit
<b>Dull blade</b>	Improperly sharpened blades will cause loss of production, increase wear of parts, and operator fatigue.	Sharpening can best be accomplished by use of a Whizard® Model 210 Universal Blade Sharpener, or Bettcher® AutoEdge. Blades can also be sharpened by hand.
	Blade not steeled properly.	<i>Refer to Section 4, Steeling the Blade.</i>
<b>Optional thumb support</b>	Anti-rotation splines have worn.	Replace.
<b>Blade skips or will not rotate</b>	Handpiece bearing worn.	Check and replace.
	Casing not fully engaged or inserted.	Make certain the casing is fully inserted to the drive position.
<b>Motor does not run</b>	Air supply hose leaks	Replace.
	Air supply pressure is too low	Set air pressure to 90-100 psi
	Retainer is cross threaded	Remove retainer and screw in properly
	Adapter plate is damaged	Replace.
	Air motor bearings are seized	Replace air motor or bearings.
	Vanes are broken or worn	Replace <b>all 5</b> vanes
	Gear head is seized	Replace.

## FAULT DETECTION AND CORRECTION (CONTINUED)

<b>Motor runs but blade does not turn</b>	Teeth on pinion worn	Replace.
	Teeth on blade worn	Replace.
	Drive adapter worn	Replace.
	Drive adapter missing	Install drive adapter.
	Motor and gear head not engaged	Properly engage air motor and gear head.
	Teeth on rotor worn	Replace.
	Gear head worn	Replace.
	Head attachment screw loose	Tighten head attachment screw.
<b>Loss of power</b>	Air pressure too low	Set air pressure to 90-100 psi (6.2-6.9 bar).
	Mineral oil is not being applied to tool	Fill lubricator (oiler).
	Too much water in the air line	Replace filter.
		Drain filter bowl.
		Drain water traps.
		Replace filter.
	Drive adapter worn	Replace drive adapter.
	Motor and gear head not engaged	Properly engage air motor and gear head.
	Teeth on rotor worn	Replace.
	Gear head worn	Replace.
	Gear head not properly greased	Grease gear head.
	Air supply hose leaks	Replace hose assembly.
	Retainer is cross threaded	Remove retainer and screw in properly.
	Adapter plate is damaged	Replace.
	Mufler in power unit is clogged	Replace.
	Vanes are broken or worn	Replace <b>all 5</b> vanes.
	Incorrect vane kit in the air motor	Use vane kit for Quantum Flex+® Air

## SECTION 6

# Cleaning

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Cleaning solutions	76
Cleaning prior to assembly	76
Periodic cleaning during use	76
Cleaning after daily use	76
Cleaning after blade sharpening	76

**To avoid personal injury, always disconnect the power cord before performing any adjustments, disassembly / assembly, trouble shooting or cleaning.**



**The recommended cleaning solution for the Quantum Flex+® Trimmer is eXtra® Heavy Duty cleaner.**



**eXtra® Heavy Duty cleaner, (PN: 184332), is a concentrated cleaner and degreaser for food processing equipment. Contact Bettcher Industries, Inc. for details.**



## CLEANING SOLUTIONS

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**Avoid the use of aggressive cleaning products and all cleaning products containing NaOH (sodium hydroxide) as they will damage the handpiece.**

**NOTICE**

## CLEANING PRIOR TO ASSEMBLY

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Prior to assembly, be sure all parts are clean and have been inspected for wear.

## PERIODIC CLEANING DURING USE

---

Light rinsing during operation is recommended.

Thorough rinsing at each break is highly recommended to increase tool performance.

## CLEANING AFTER DAILY USE

---

If handpiece is removed from hose assembly, install cap to prevent water and debris from entering the motor during cleaning.

Fully disassemble the Quantum Flex+® Air Trimmer head assembly and clean each part thoroughly with a brush and cleaner. For best results, clean the Quantum Flex+® Air Trimmer with Bettcher® EXTRA Heavy Duty Cleaner, diluted according to the directions on the container.

After cleaning, rinse each part thoroughly with water and dry. Assemble the head assembly per instructions in Section 5.

## CLEANING AFTER BLADE SHARPENING

---

After sharpening blade, all abrasive dust must be completely removed from the handpiece. Disassemble the unit and carefully wash each piece with hot, soapy water and a small brush.

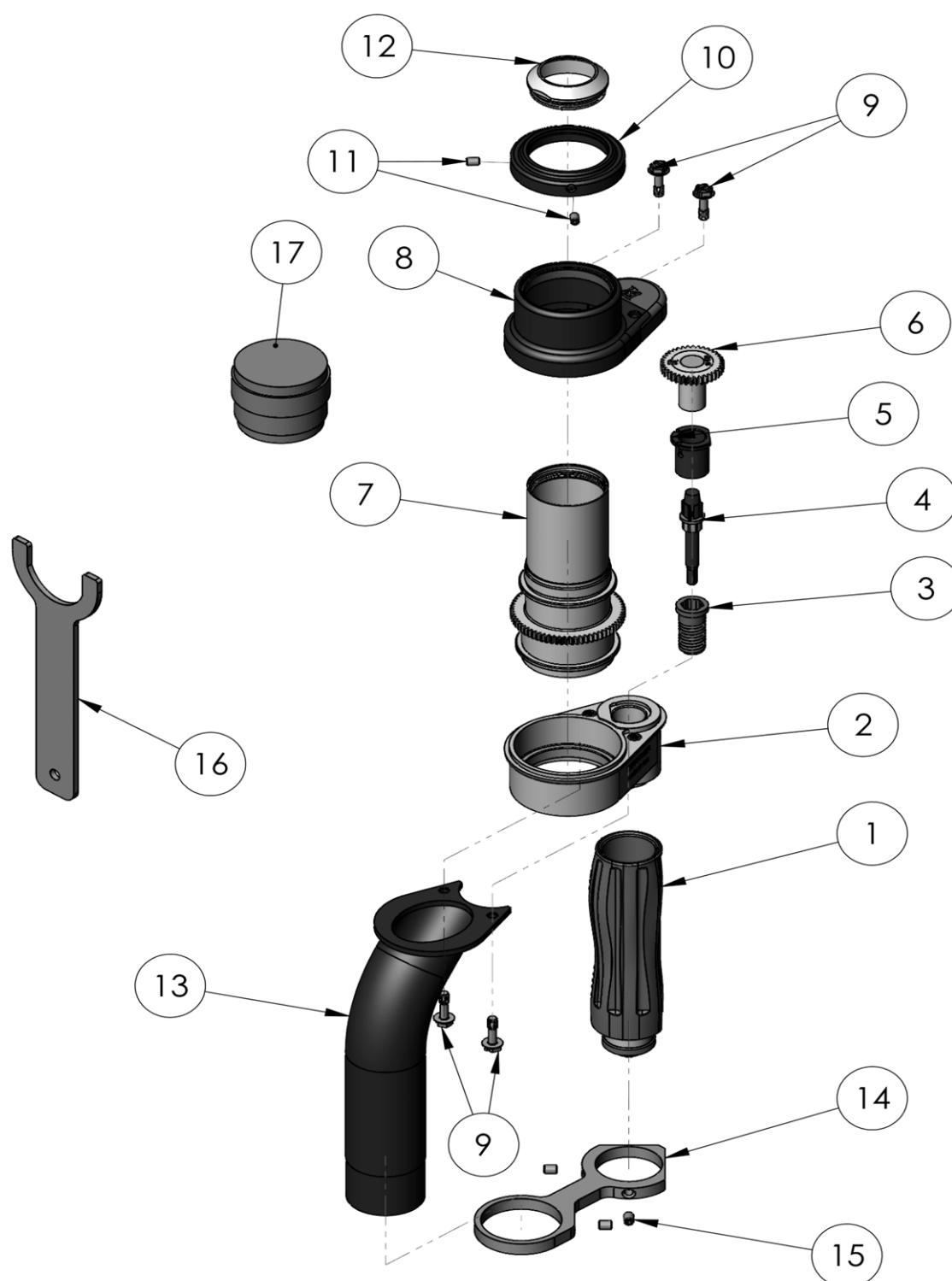


SECTION 7

Service Parts

Whizard Trimvac® 645i assembly	78
Complete power unit assembly	80
Complete air motor assembly	82
Complete valve and hose assembly	84
Complete quick start valve and hose assembly	86
Tools and maintenance kit	88
Also available	90
Cleaning solution & equipment	90
Lubrication and lubrication equipment	90
Air supply equipment	91
Blade sharpening and steeling equipment	91
Tools	91

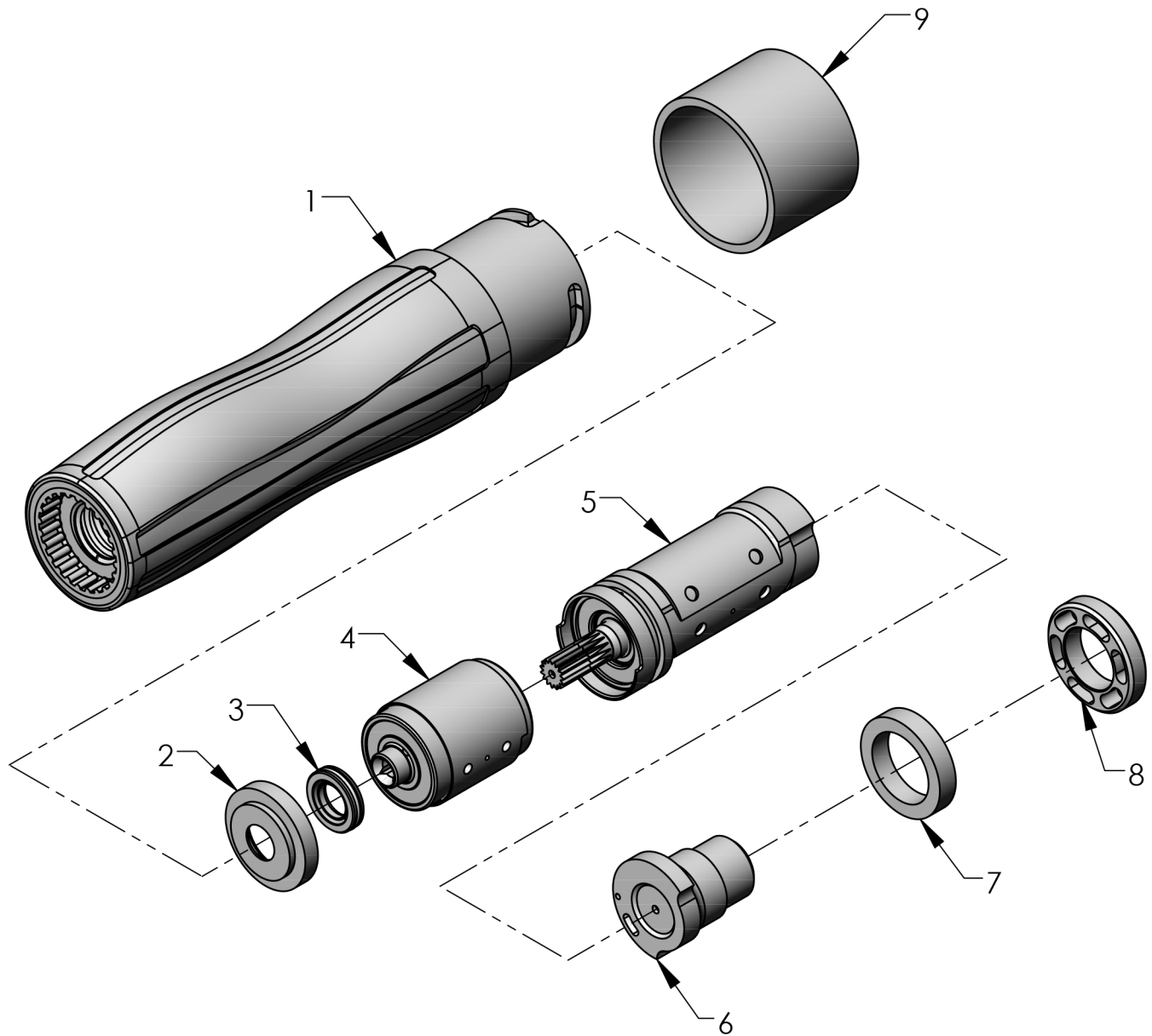
## WHIZARD TRIMVAC® 645i HEAD ASSEMBLY



## WHIZARD TRIMVAC® 645i HEAD ASSEMBLY (CONTINUED)

Item	Description	Part Number	Qty.
1	Power Unit - Quantum Flex Air	107055	1
2	Frame with lower bearing	123769	1
	Lower bearing	104197	1
3	Attachment Screw	184119	1
4	Drive Adapter Assy	184120	1
5	Pinion Bearing	183060	1
6	Pinion	101839	1
7	Blade Base	104198	1
8	Frame covers with upper bearing	123891	1
--	Upper bearing	104202	1
9	Screw	101046	4
10	Frame shroud with o-ring (also includes item 11)	105225	1
--	O-ring	104884	1
11	Set screw	120092	2
12	Blade	102871	1
13	Vacuum tube	104207	1
14	Vacuum tube bracket	103664	1
15	Set screw	120053	3
16	Blade wrench	104639	--
17	Bearing removal / install tool	104232	--

## COMPLETE POWER UNIT ASSEMBLY



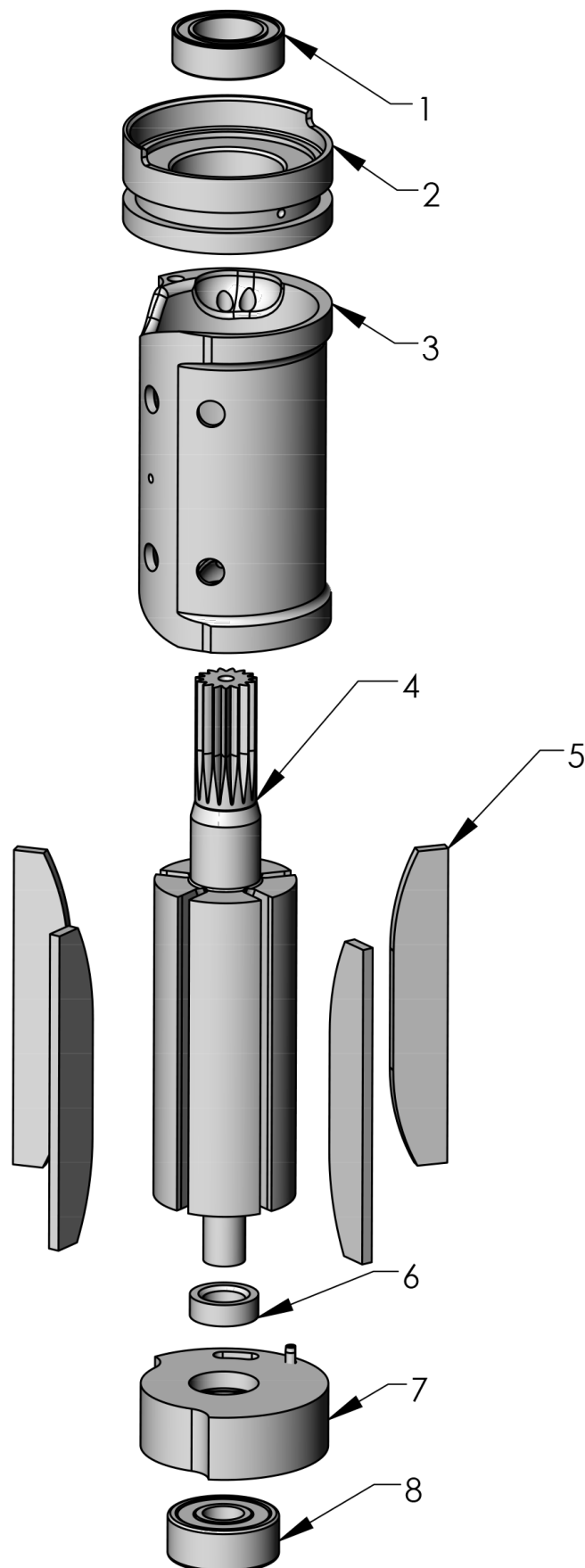
## COMPLETE POWER UNIT ASSEMBLY (CONTINUED)

Item	Description	Large (Gray) Quantum Flex+ Power Unit	Small (Gray) Quantum Flex+ Power Unit	Small (Blue) Quantum Flex+ Power Unit	Small (Yellow) Quantum Flex+ Power Unit
--	Complete Power Unit Assembly	107055	106806	107016	107422
1	Over-molded Handle with O-Ring	107057	106807	107020	107421
--	Handle O-Ring (Not shown)	122316	122316	122316	122316
2	Seal Block	184062	184062	184062	184062
3	Seal Kit	184427	184427	184427	184427
4	Gear Head Assembly	185935	185935	185935	185935
5	Air Motor Assembly	107017	107017	107017	107017
6	Adapter Plate Assembly	107019	107019	107019	107019
--	Adapter Plate O-Ring (Not shown) Included with Item #6	122315	122315	122315	122315
7	Muffler	184388	184388	184388	184388
8	Retainer	184049	184049	184049	184049
9	Cap	184286	184286	184286	184286

## \*REFURBISHED ITEMS ALSO AVAILABLE

Item	Description	Part Number
1	Refurbished Over-molded Handle with O-Ring (Yellow) <i>Old Part must be returned</i>	185794
1	Refurbished Over-molded Handle with O-Ring (Sky Blue) <i>Old Part must be returned</i>	185795

## COMPLETE AIR MOTOR ASSEMBLY

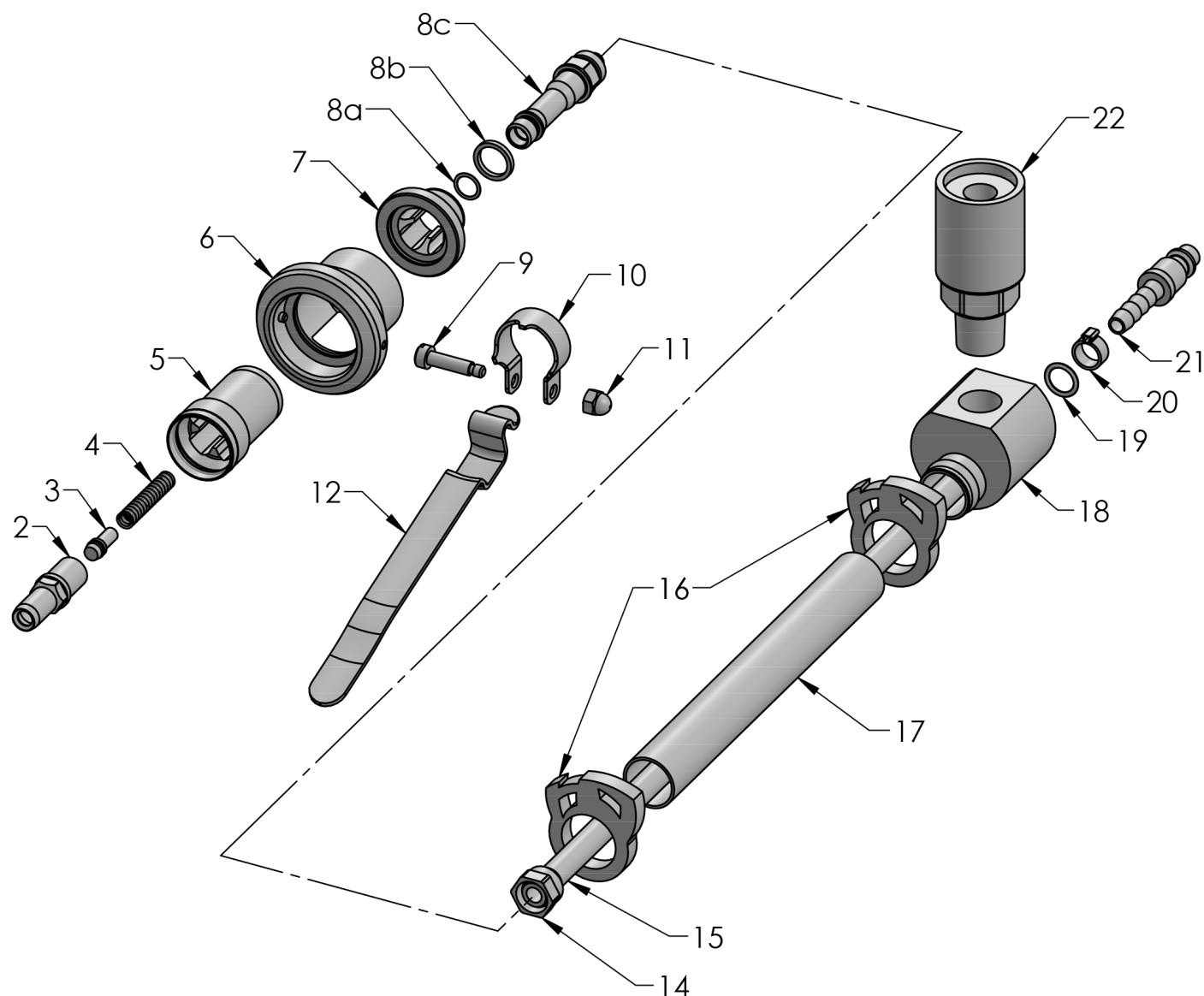


## COMPLETE AIR MOTOR ASSEMBLY (CONTINUED)

---

Item	Description	Part Number	QTY
--	Complete Air Motor Assembly	107017	--
1	Upper Bearing	185950	1
2	Upper Bearing Plate Assembly	185948	1
3	Cylinder	106161	1
4	Rotor	185944	1
5	Vane Kit (Contains 5 Vanes)	185790	1
6	Spacer	184043	1
7	Lower Bearing Plate Assembly	107018	1
8	Lower Bearing	184046	1

## COMPLETE VALVE AND HOSE ASSEMBLY

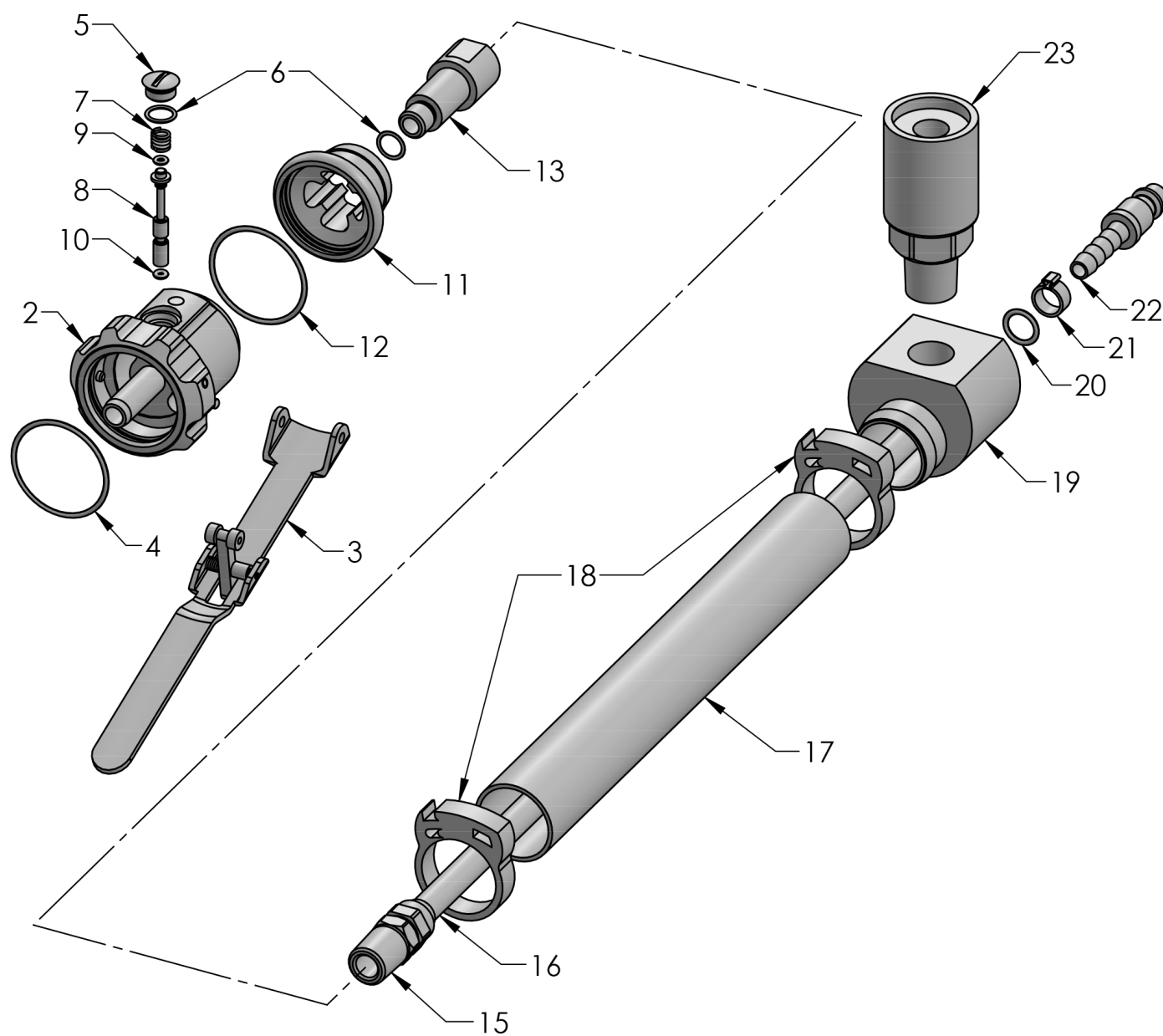




## COMPLETE VALVE AND HOSE ASSEMBLY (CONTINUED)

Item	Description	PART No.	QTY
--	Complete Valve and Hose Assembly	185137	--
1	Valve Assembly (Includes Items 2, 3, 4, 5, 6, 8a, 8b, 8c, 9, 10, 11, 12)	185138	1
2	Valve Body	185139	1
3	Plug Assembly (includes Plug O-Ring)	185140	1
--	Plug O-Ring (not shown)	103299	1
4	Valve Spring	184057	1
5	Exhaust Fitting Assembly (includes Exhaust Fitting O-Ring)	184264	1
--	Exhaust Fitting O-Ring (not shown)	103388	
6	Knob Assembly	184051	1
7	Swivel Fitting Assembly (includes Swivel Fitting O-ring)	184265	
--	Swivel Fitting O-Ring (not shown)	103388	1
8	Compression Fitting Kit (Includes Items 8a, 8b, 8c)	184260	1
8a	O-Ring	143434	1
8b	Washer	184310	1
8c	Compression Fitting	184240	1
9	Shoulder Screw	184065	1
10	Clamp	184053	1
11	Acorn Nut	184066	1
12	Lever	183108	1
13	Hose Assembly (Includes Items 14,15,16,17,18,19,20,21,22)	184263	
14	Nut Assembly	184241	1
15	Pressure Tubing	184061	1
16	Hose Clamp	184484	2
17	Exhaust Tubing	184072	1
18	Exhaust Tube Adapter	184074	1
19	O-Ring	122315	1
20	Hose Clamp	184063	1
21	Disconnect Fitting	121433	1
22	Muffler	184498	1

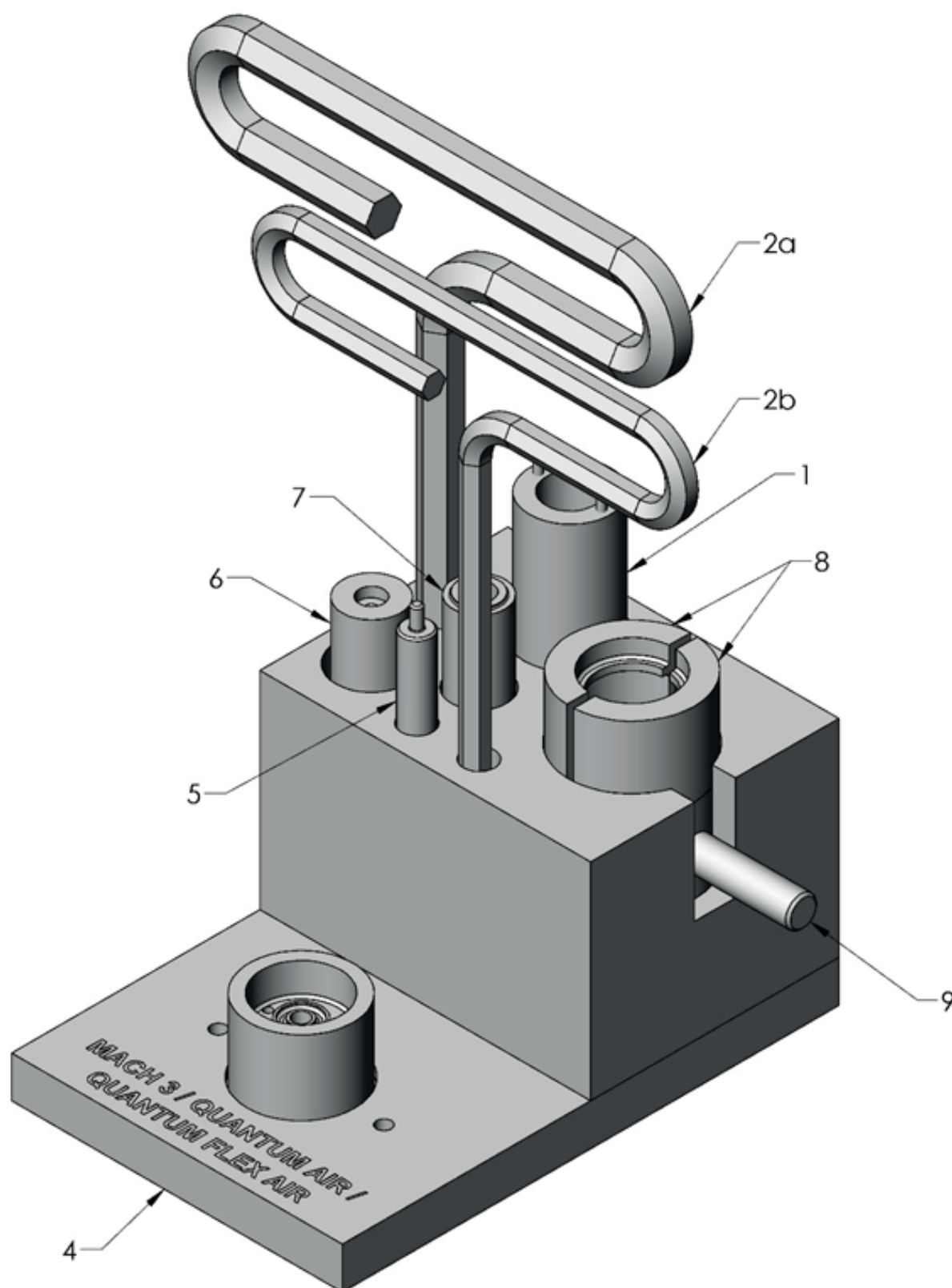
## COMPLETE QUICK START VALVE & HOSE ASSEMBLY



## COMPLETE QUICK START VALVE & HOSE ASSEMBLY (CONTINUED)

Item	Description	PART No.	QTY
--	Complete Valve and Hose Assembly (Includes Items 1, 14)	185374	--
1	Valve Assembly (Includes Items 2, 4, 5, 6, 7, 8, 11, 13)	185351	1
2	Valve Body Assembly (Includes Item 3)	185352	1
3	Lever Assembly Kit (Includes Lever Assembly and Lever Pin)	185385	1
4	O-Ring	122480	1
5	Housing Plug	185383	1
6	O-Ring	143434	2
7	Valve Spring	163792	1
8	Valve Stem Assembly (Includes Items 9, 10)	185356	1
9	O-Ring	143328	1
10	O-Ring	122481	1
11	Exhaust Fitting Assembly (Includes Item 12)	185366	1
12	O-Ring	122480	1
13	Inlet Fitting	185368	1
14	Hose Assembly (Includes Items 15, 16, 17, 18, 19, 20, 21, 22, 23)	185369	1
15	1/8" NPT Fitting	143404	1
16	Pressure Tubing	185370	1
17	Exhaust Tubing	185373	1
18	Hose Clamp	185372	2
19	Exhaust Deflector	185371	1
20	O-Ring	122315	1
21	Hose Clamp	184063	1
22	Disconnect Fitting	121433	1
23	Muffler	184498	1

## TOOLS AND MAINTENANCE KIT



## TOOLS AND MAINTENANCE KIT (CONTINUED)

---

Item	Description	PART No.	QTY
1	Spanner Wrench	184134	1
2a	Hex Wrench (Large Tool)	184128	1
2b	Hex Wrench (Small Tool)	107325	1
3	Maintenance Kit (Includes Items 4, 5, 6, 7, 8, 9)	185975	1
4	Base Assembly	185976	1
5	Rotor Removal Punch	184254	1
6	Gear Teeth Cap	185977	1
7	Bearing Tool	185978	1
8	Top Plate Removal Clamp (2 required)	184255	2
9	Cup Assembly	184246	1
10	Torque Wrench Kit (Not Shown)	183900	1

## ALSO AVAILABLE

### CLEANING SOLUTION

Description	PART No.
eXtra® Heavy Duty cleaner (CASE - Four 1 Gallon Jugs)	184331
eXtra® Heavy Duty cleaner (1 Gallon)	184332

### CLEANING EQUIPMENT

Description	PART No.
Handpiece Cleaning Kit (Contains the following)	184334
Handpiece Cleaning Pick	184335
Stainless Steel Hand Brush	184336
Scrub Brush	184337
1-1/2" Diameter Tubing Brush	184338
1/2" Diameter Tubing Brush	184339

### LUBRICATION AND LUBRICATION EQUIPMENT

Description	PART No.
Duralite® Casing Maintenance Kit (WhizLube Spray)	173519
13.5 oz. Cartridge of Whizard Quantum® High Performance Grease	102609
30 Pack - 13.5 oz. Cartridge of Whizard Quantum® High Performance Grease	103271
4 oz. tube of Max-Z- Lube Grease	184282
35 Pound Bucket of Whizard Quantum® High Performance Grease	102612
Grease Gun	113415
Grease Fitting	102273
Planetary Gear Grease Gun (Needle Nose)	113326
Large Grease Cup	101316
Elbow - Body	183631
Mineral Oil 1 Pint	103603

## ALSO AVAILABLE (CONTINUED)

### AIR SUPPLY EQUIPMENT

Description	PART No.
Filter, Regulator, Lubricator (FRL) Kit	173226
Replacement Filter Element	185789
Automatic Air Coupler	103386

### BLADE SHARPENING AND STEELING EQUIPMENT

Description	PART No.
Special Stone (Small)	100655
Special Stone (Large)	100660
Whizard® Special Steel (Small Tools)	100641
Whizard® Special Steel (Large Tools)	100642
Ceramic Sharpener	100650
Steeling Assembly Ball Tip	184423

### TOOLS

Description	PART No.
Bearing Removal Tool (Small Tool)	107330
Bearing Removal Tool (Large Tool)	184983





## SECTION 8

# Contact and Document Information

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Contact address and phone

**94**

Document identification

**95**

## CONTACT ADDRESS AND PHONE

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For additional information, technical support and spare parts, contact your Regional Manager, Distributor, or Bettcher Representative:

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## DOCUMENT IDENTIFICATION

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Document Description: Operating Instructions and Spare Parts List For Whizard Trimvac® 645i

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Operating Instructions for other Trimmer Models may be requested by quoting the model designation of the tool as shown on the identification plate on the Whizard® Trimmer.

## SOFTWARE AND DUPLICATION

For more information, contact your local Representative or:

Bettcher Industries, Inc.

Administrative Assistant/Engineering Department PO Box 336

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