



BETTCHER[®]
Industries, Inc.

Operating Instructions & Parts List for



Trim Vac[®]

645i

Manual # 105357

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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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Original Instructions

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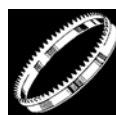
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Section 1

Safety and Ergonomics

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 **WARNING**

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



DANGER 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)



WARNING 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)



CAUTION 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)



NOTICE 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 safety definitions provided comply with the American National Standard for Product Safety Information in Product Manuals, Instructions and Other Collateral Materials. (ANSI Z535.4-2011)

This manual is printed in black and white.



Safety Symbols



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

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.

 **WARNING**

The manufacturer assumes no liability for any unauthorized design changes, modification, or use of parts not supplied by the manufacturer.

The use of parts not designed for use on that specific model, including changes in operating procedures made by the owner or any of his personnel.

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.

 **WARNING**

Sharp blades may cause 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:

 **WARNING**

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 the blades. Metal mesh gloves are recommended for the “non-knife” hand.

Keep hands away from moving blades!

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, disconnected from the air supply, and tagged as “unsafe” until such time as proper repairs are made and the machine again operates normally.

 **WARNING**

Hearing loss may occur!

Always operate with hose and muffler attached.

 **WARNING**

Sharp blades may cause injury!

Always disconnect air supply prior to servicing unit.



 **WARNING**

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.

 **WARNING**

If your trimmer develops unusual vibration, do not continue to use it without first undertaking corrective action as outlined in the fault and detection section of this operating instruction.



Safety Recommendations and Warnings (Continued)



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.

Safety Features

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.

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.



Section 2

Designated Use

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Recommended Operation

Model 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

Models: Whizard Trimvac® 645i

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



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Installation

The workstation for each operator should be designed so that the operator's movements in performing the job are natural and easy. 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.

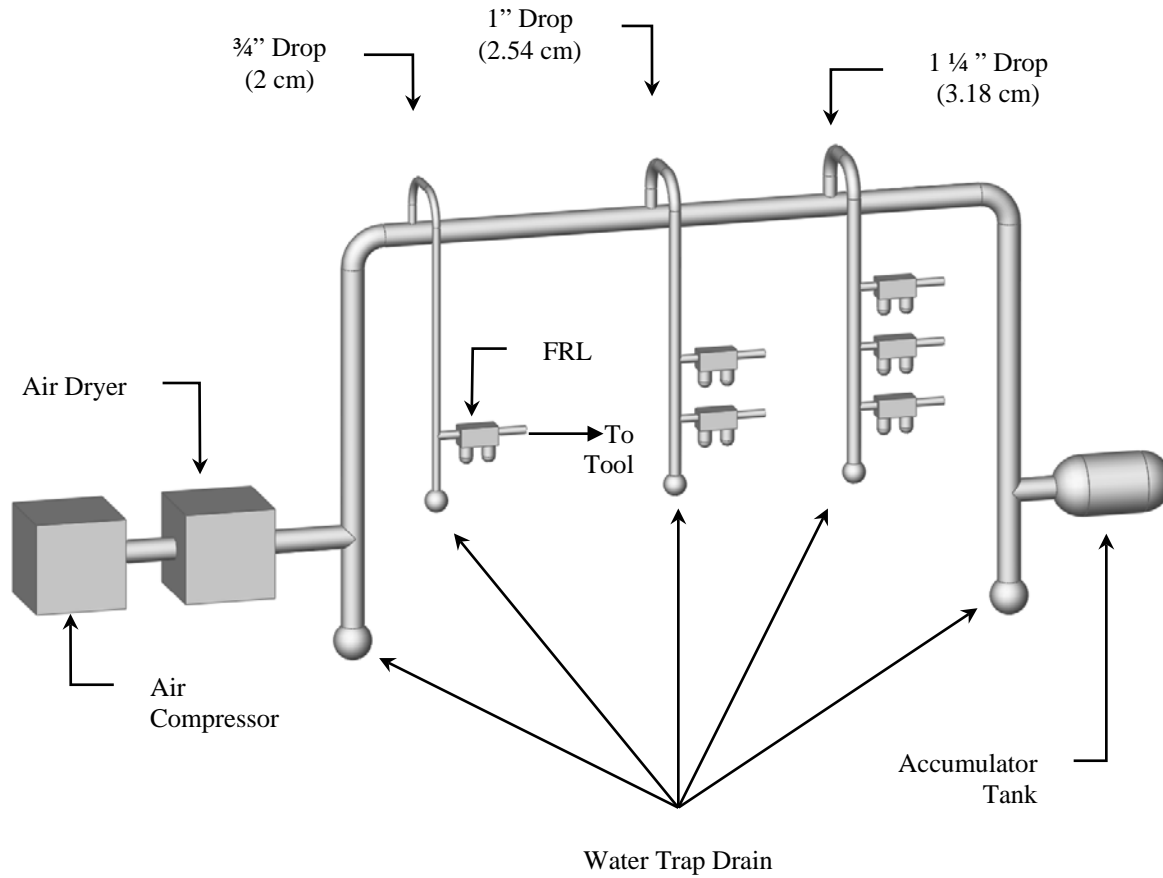
IMPORTANT: Be sure the air supply is a constant 90 pounds per square inch (6.2 bar) and the volume is a minimum of 14 cubic feet per minute (396 liters per minute) per unit.

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.



Installation (Continued)



Performance Specifications

Pressure (psi)	90
Air Consumption (cfm)	14
Speed, No Load (rpm)	5,700 Max No Load Motor Assembly
Power (hp)	.22 (164W)
Sound (dBA)	74dBa Max.
Weight (lbs)	.8 (.36kg)



Section 4

Instructions for Operation

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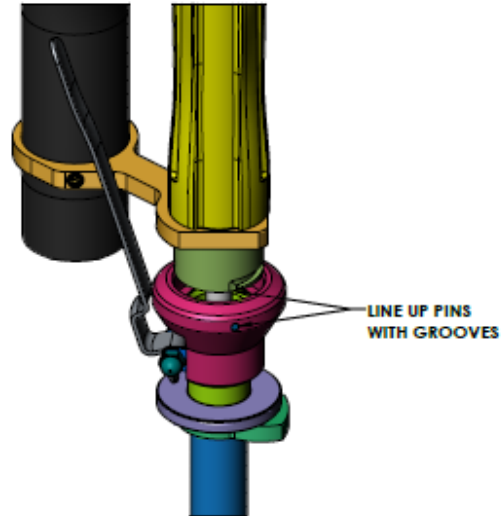
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Hose Assembly Attachment

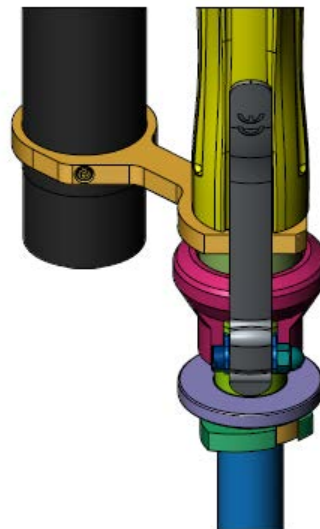
Step 1:

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



Step 2:

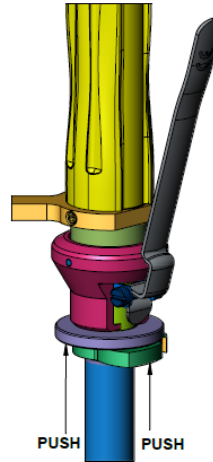
- Slide the power unit into the hose assembly.
- Rotate the power unit 90°.



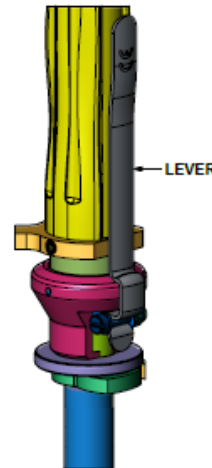


Starting the Trimmer with Standard Hose Assembly

- 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.



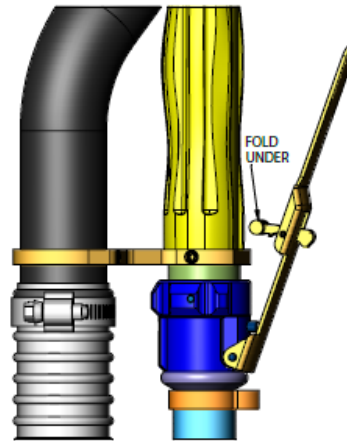
- Release the lever to turn the trimmer off.



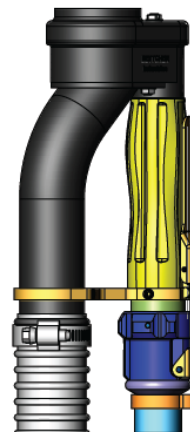


Starting the Trimmer with Quick-Start Hose Assembly

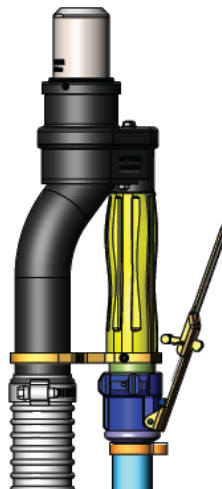
- Fold the safety into the lever.



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



- Release the lever to turn the trimmer off.





Tool Operation



Sharp blades may cause cut injury!



Never hold the product being trimmed in your hand.

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.

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 214 Blade Sharpener or by hand stoning.

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



Blade Steeling



Sharp blades may cause cut injury!



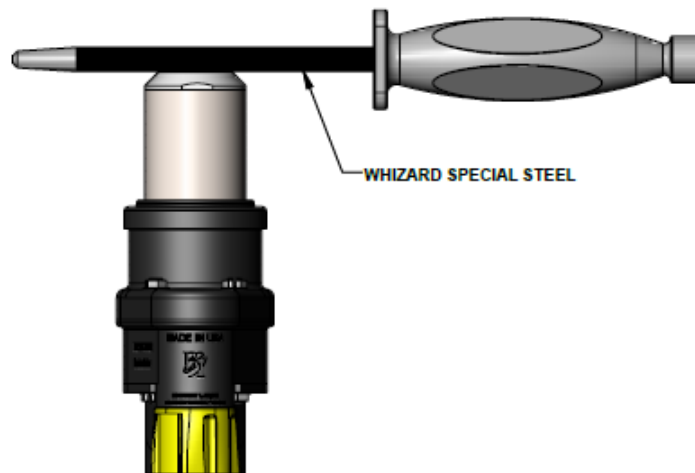
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.

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

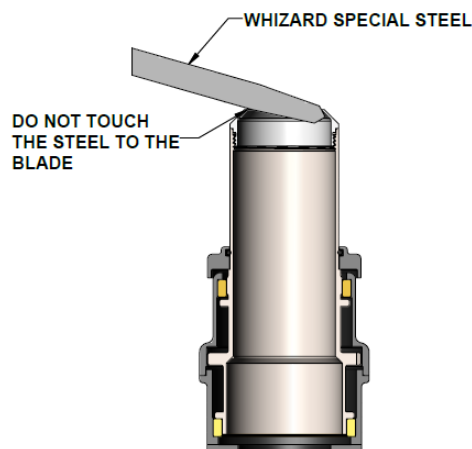


Blade Steeling (Continued)

- Steel the outside edge of the blade by laying the special Whizard® 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.

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

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

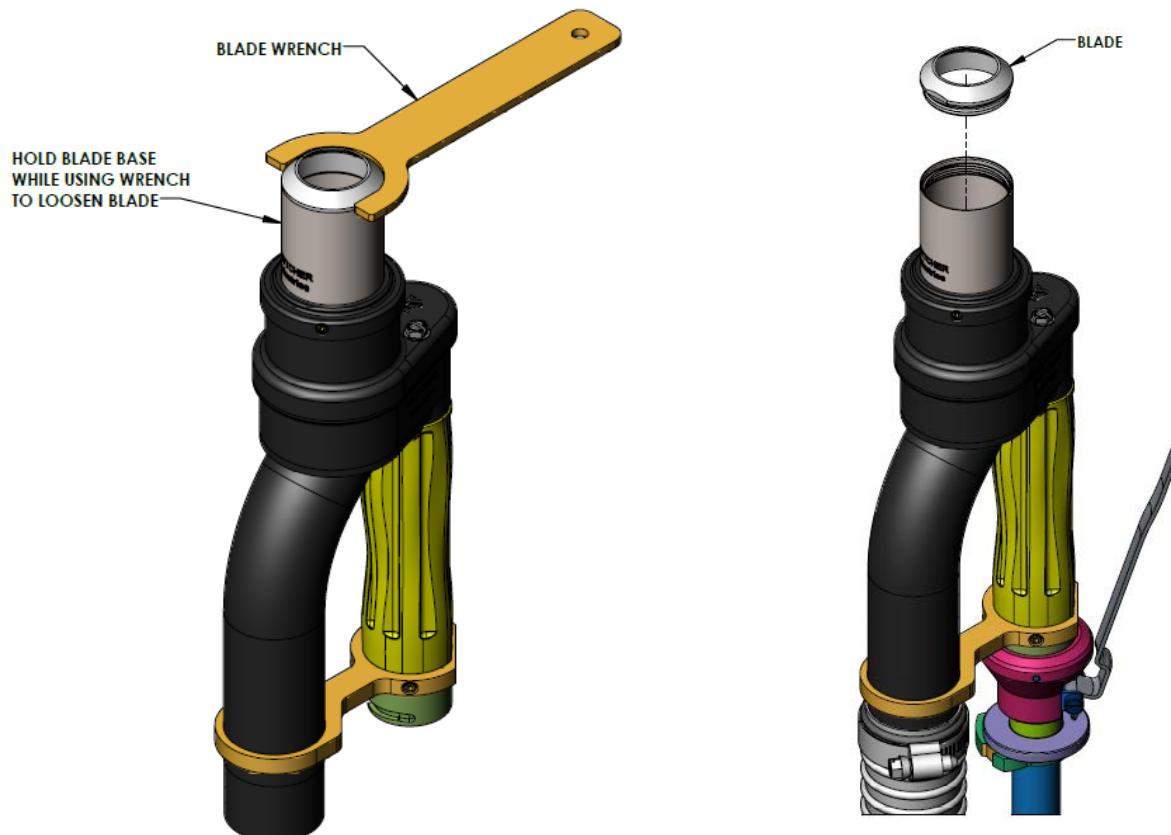
The Whizard Trimvac® 645i has been designed to allow the blade to be quickly removed and reinstalled.



Blade Changing (Continued)

To Change the Blade

- 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.*





Section 5

Maintenance

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Maintenance Schedule

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

General Maintenance

- Drain filter bowls daily.
- Inspect 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 air pressure is set at 90-100 psi. ***Do not exceed 100 psi!***

Handpiece Maintenance



WARNING

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.

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

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



Handpiece Maintenance (continued)

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

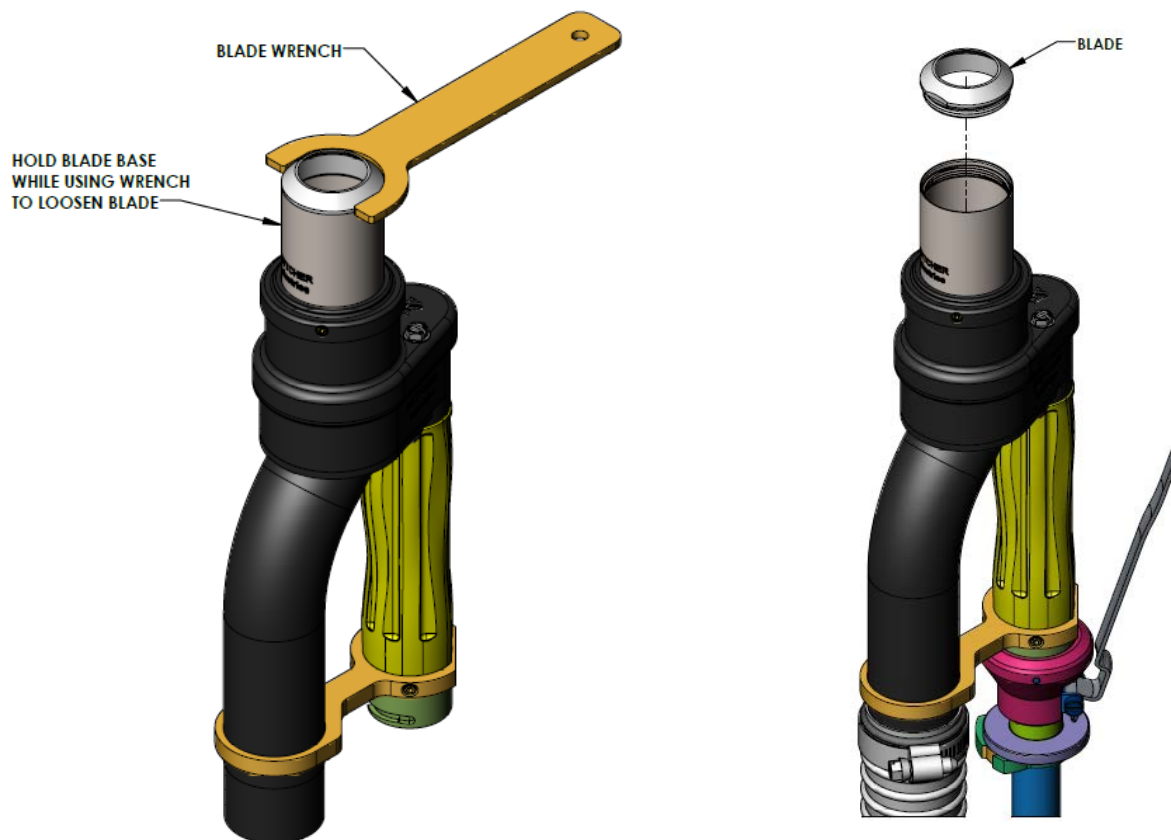
- 1 – Flat Head Screwdriver
- 1 – Hex Wrench (supplied with the Whizard Trimvac[®] 645i Trimmer)
- 1 – Blade Wrench (supplied with the Whizard Trimvac[®] 645i Trimmer)



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.*

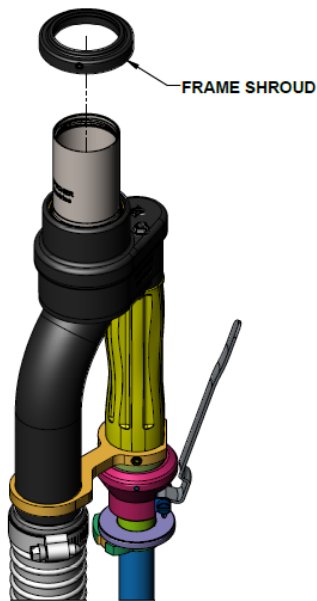




Disassembly of Handpiece (Continued)

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.

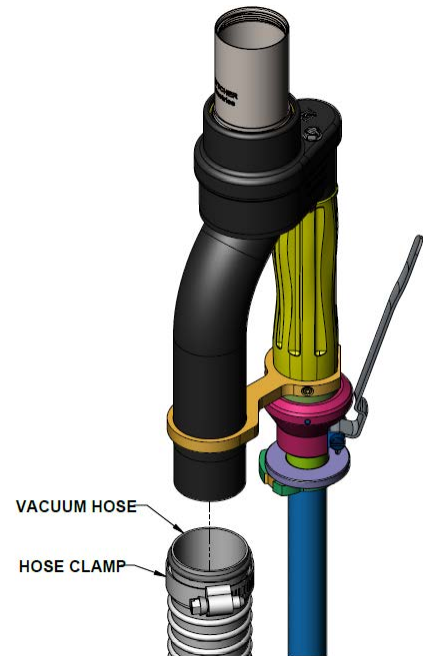




Disassembly of Handpiece (Continued)

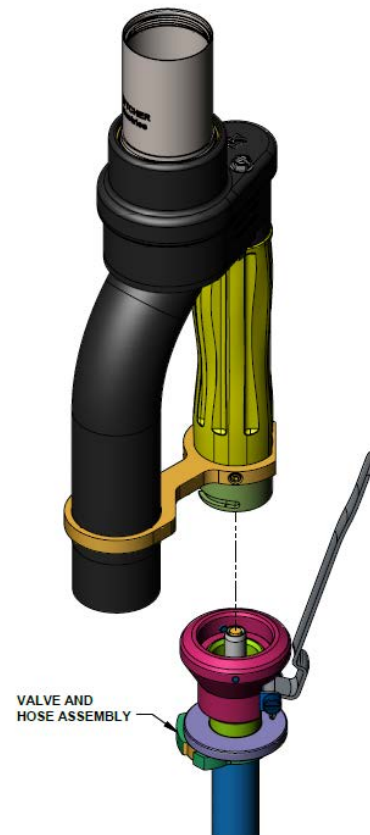
Step 3: Remove Vacuum Hose:

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



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.

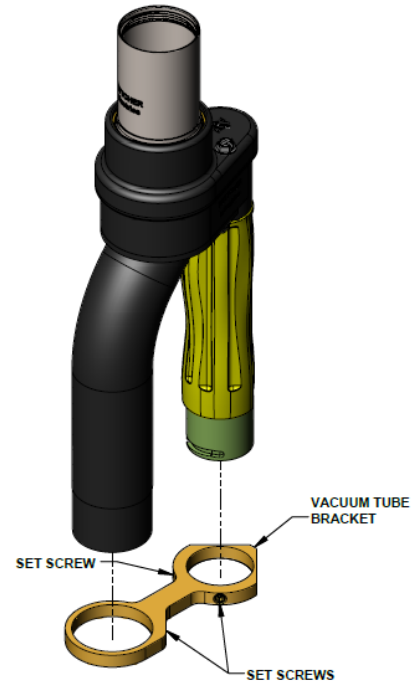




Disassembly of Handpiece (Continued)

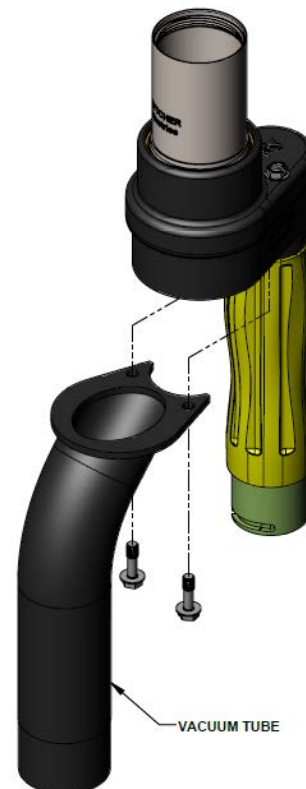
Step 5: Remove the vacuum tube bracket:

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



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.





Disassembly of Handpiece (Continued)

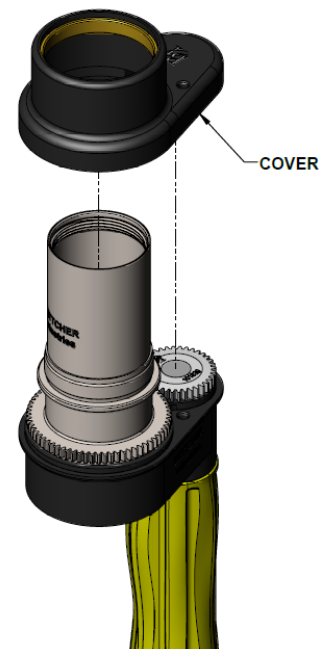
Step 7: Loosen/Remove the cover screws:

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



Step 8: Remove frame cover:

- Pull the frame cover away from the frame.

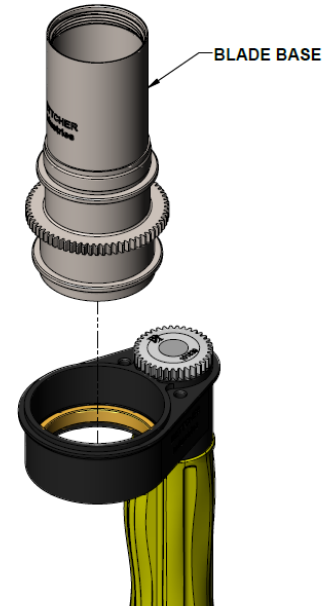




Disassembly of Handpiece (Continued)

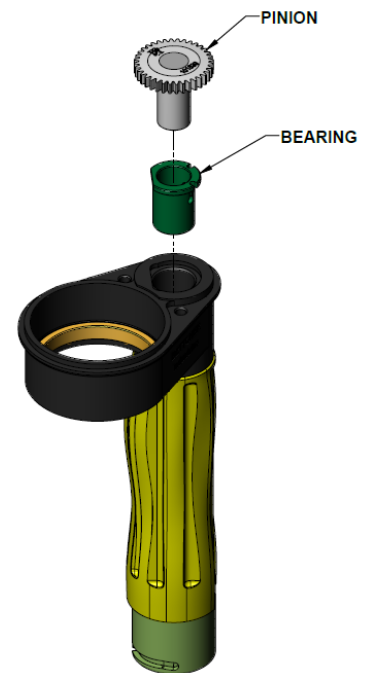
Step 9: Remove blade base:

- Pull the blade base out of the frame.



Step 10: Remove pinion and bearing:

- Pull the pinion and bearing out of the frame.

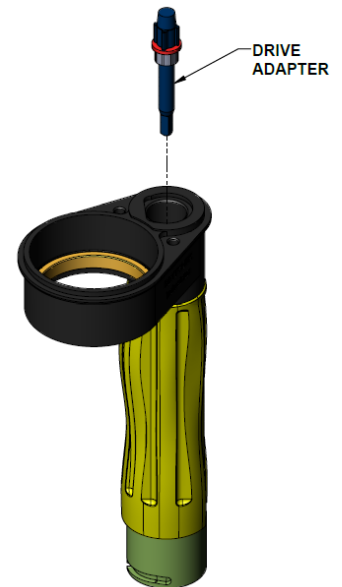




Disassembly of Handpiece (continued)

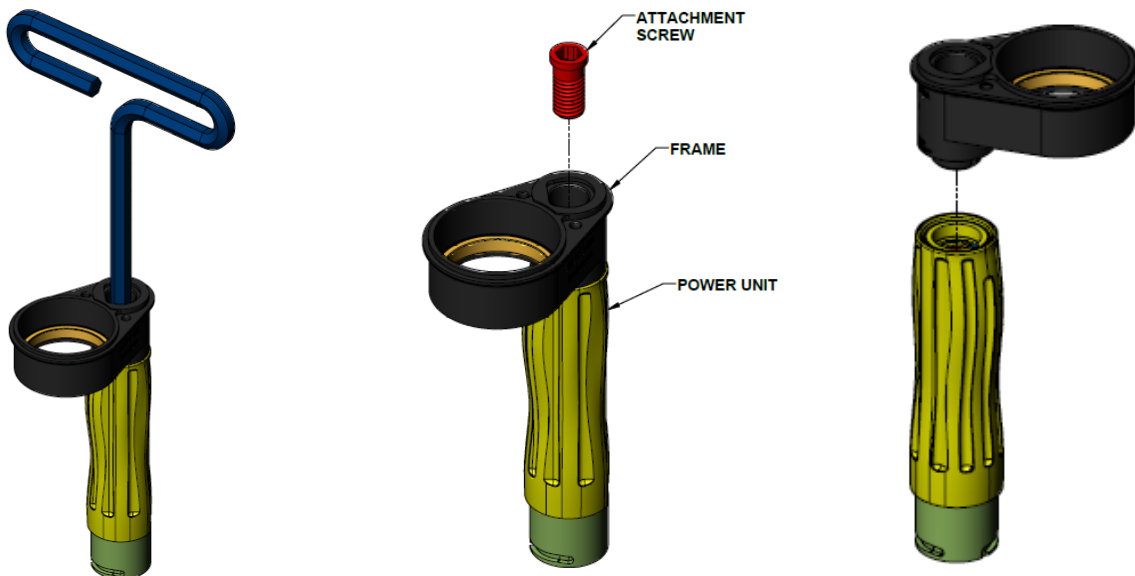
Step 11: Remove driver adapter:

- Pull the drive adapter out of the frame.



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.





Inspection and Maintenance of Handpiece



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.

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

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

Blade

- Check for damage to threads.
- Check for damage to the cutting edge.

Blade Base

- Check for damage to threads
- Check for worn or chipped teeth



Inspection and Maintenance of Handpiece (Continued)

Pinion Gear

- Check for worn or chipped teeth. Worn out teeth are indicated by rounded off or 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.
- The bearing should be replaced after 500 hours of use.

Cover

- Inspect the surface that mounts to the frame.

Frame

- Inspect the surface where the cover mounts.

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

! WARNING

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.

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

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

! WARNING

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.

- The blade should be sharpened daily with the use of a Whizard® Model 214 Blade Sharpener or by hand stoning. Use the same sharpener setting as a 360 blade.
- 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.



Blade Sharpening (Continued)

Hand Stoning

- With the motor running, apply the flat side of the stone to the flat part of the blade.



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.

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

- Move the stone, using a “back and forth” motion.
- Use the Special Whizard® Steel to finish sharpening. (See Blade Steeling in Section 4)





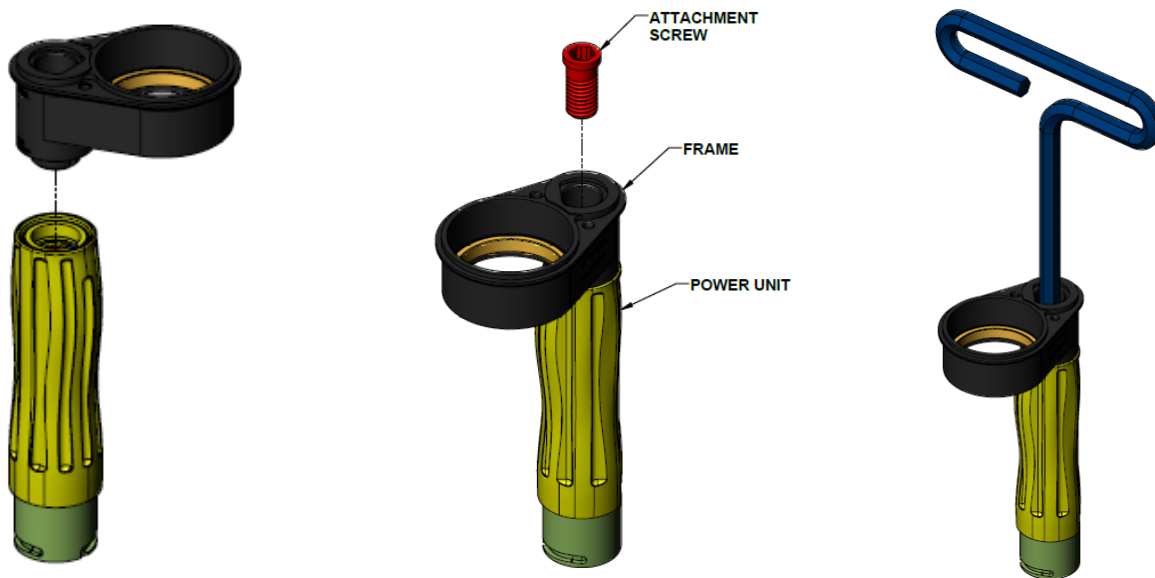
Assembly of Handpiece

Prior to assembly, be sure 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)*





Assembly of Handpiece (Continued)

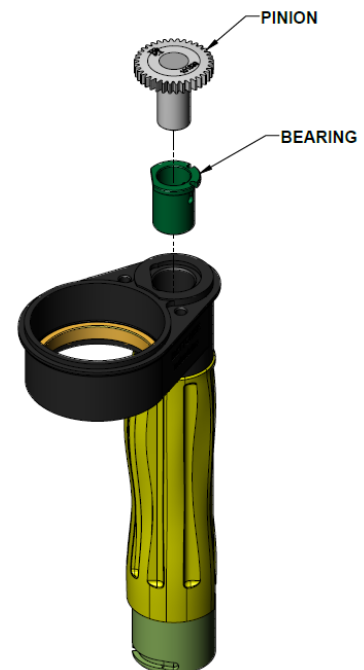
Step 2: Install Drive Adapter

- 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.

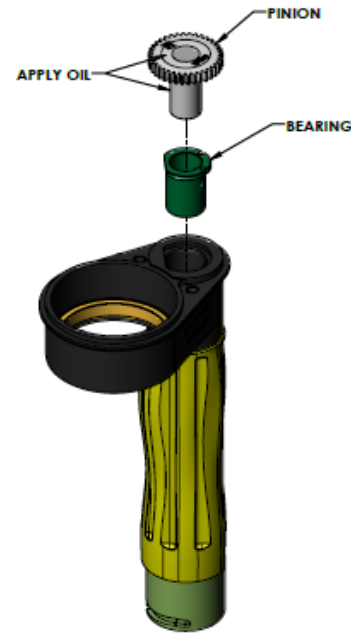




Assembly of Handpiece (Continued)

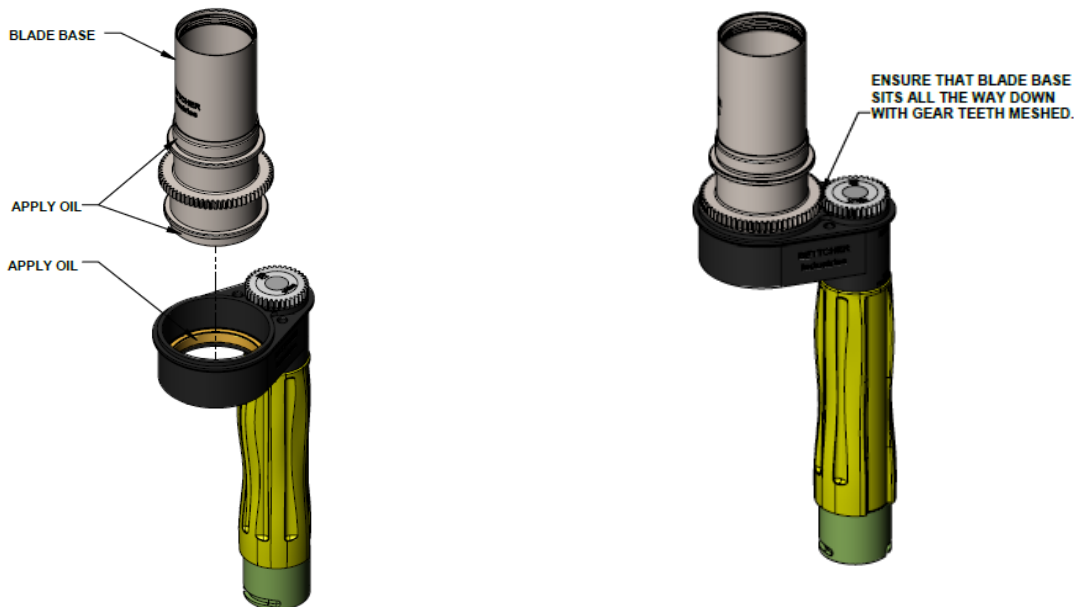
Step 3: Install Pinion Bearing and Pinion (continued)

- 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



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.

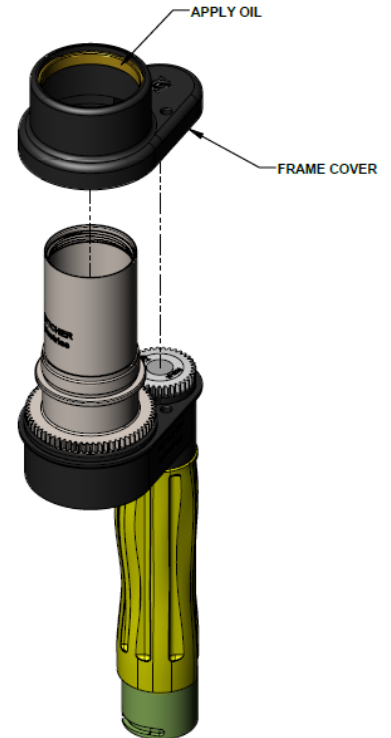




Assembly of Handpiece (Continued)

Step 5: Install Frame Cover

- Apply a film of Whizard® Food Grade Multipurpose Lubricating Oil to the inside diameter of the upper bearing as shown.
- Lower the frame cover 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).*



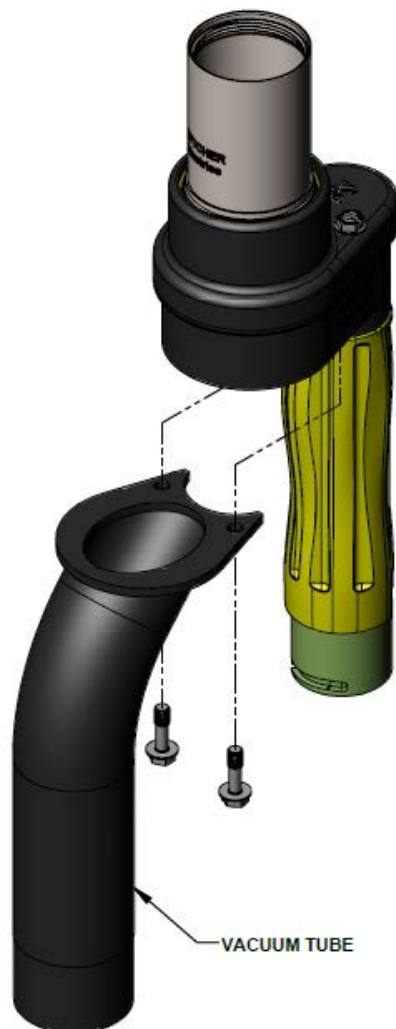


Assembly of Handpiece (Continued)

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).*

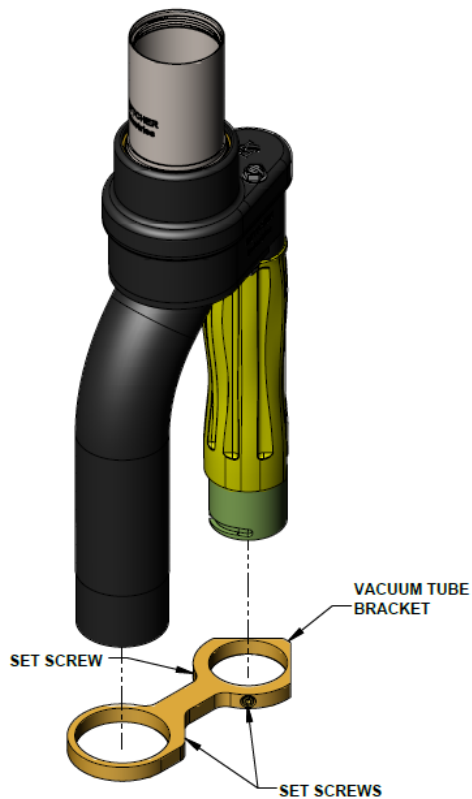




Assembly of Handpiece (Continued)

Step 8: Install Vacuum Tube Bracket

- 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.

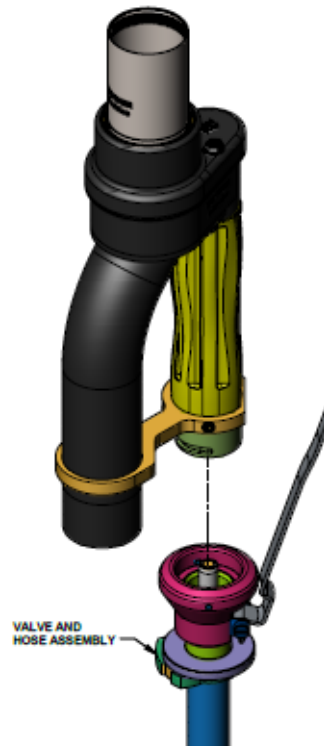




Assembly of Handpiece (Continued)

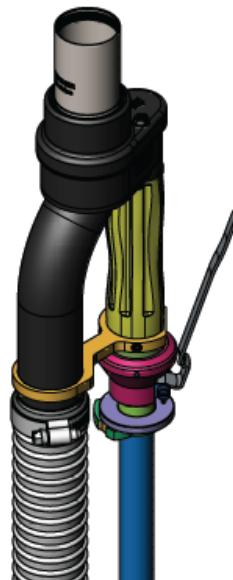
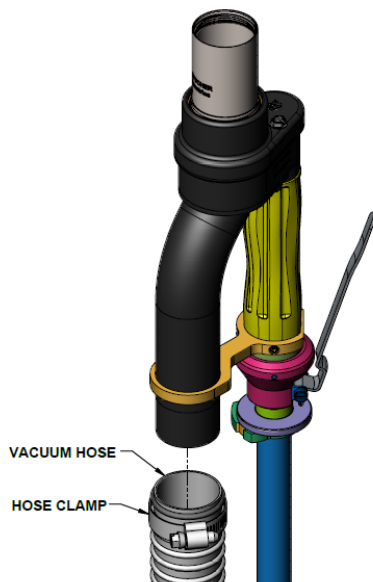
Step 9: Install the Air Hose Assembly

- 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.

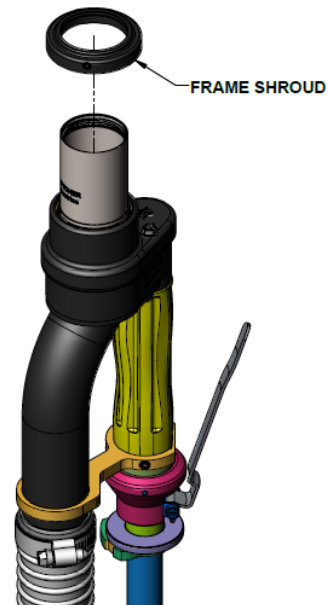




Assembly of Handpiece (Continued)

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.





Assembly of Handpiece (Continued)



Sharp blades may cause cut injury!



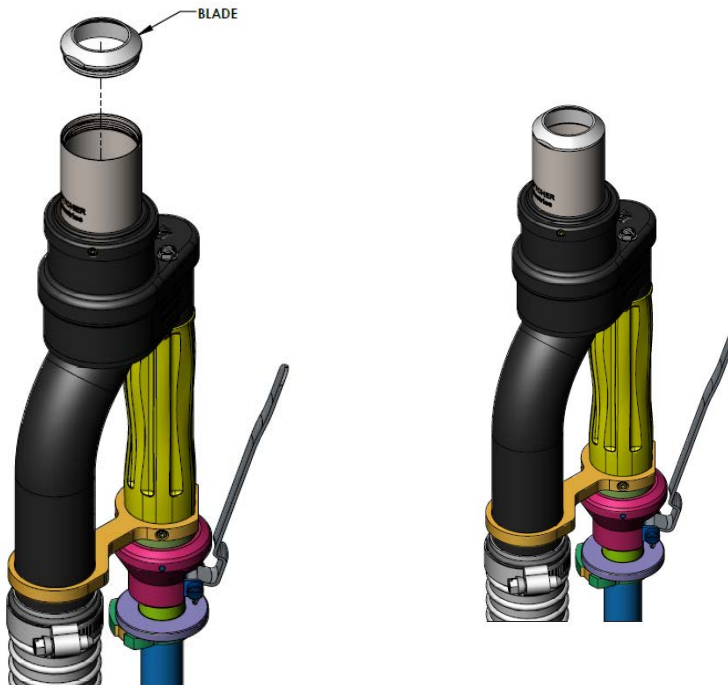
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.

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

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

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.*

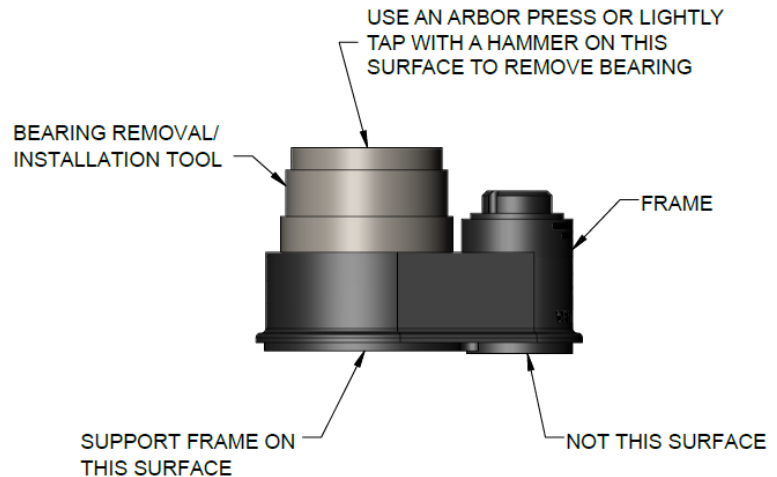




Changing the Lower Bearing

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.

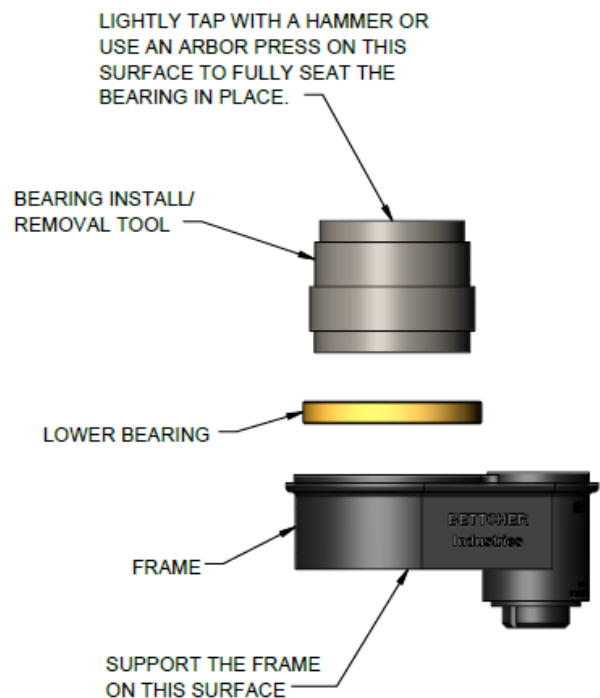


Step 2:

- 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.

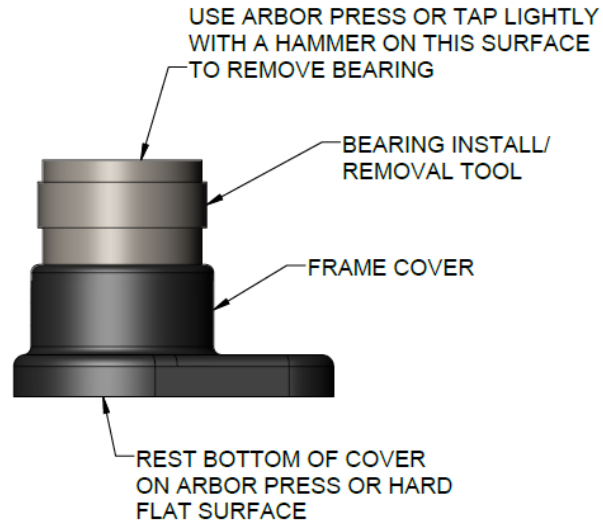




Changing the Upper Bearing

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.

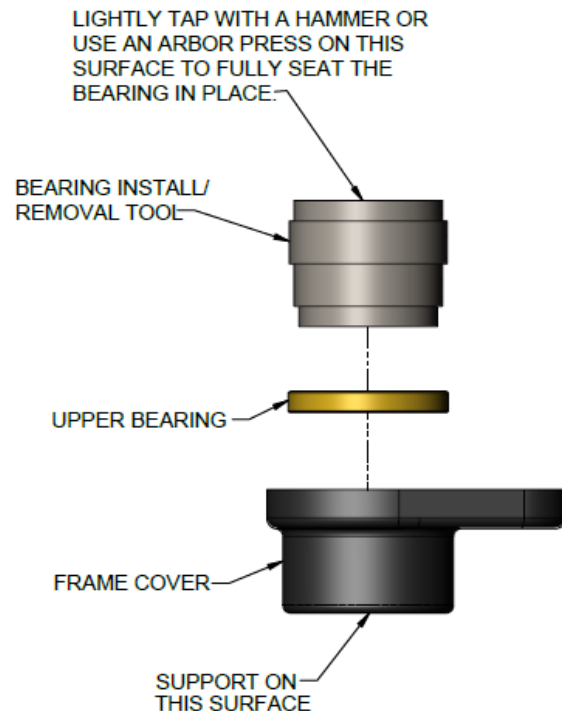


Step 2:

- 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

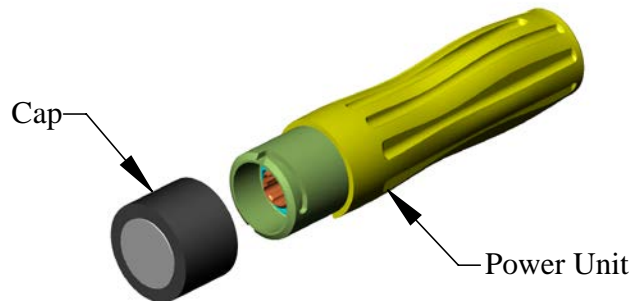
1 – Spanner Wrench (Supplied with your Whizard Trimvac[®] 645i Trimmer)

Disassembly of Power Unit

Step 1: Remove Cap

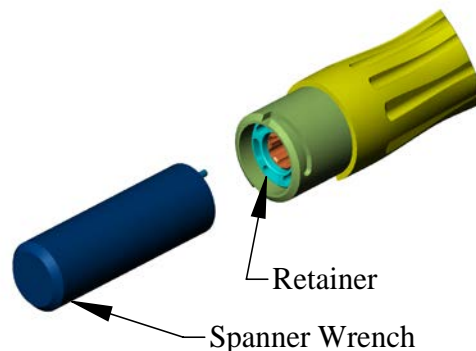
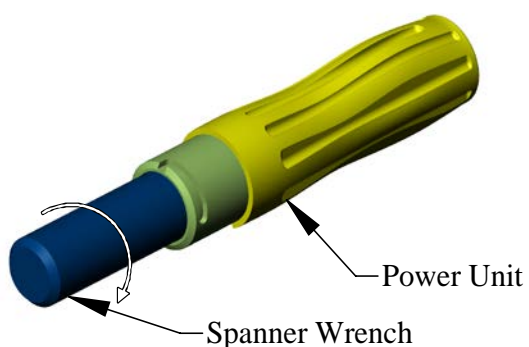
- Remove the cap.

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.

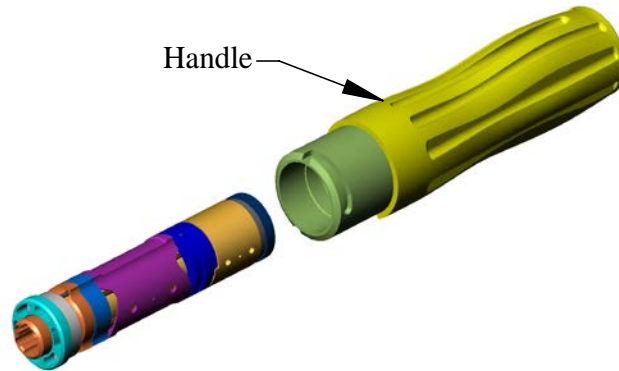




Disassembly of Power Unit (Continued)

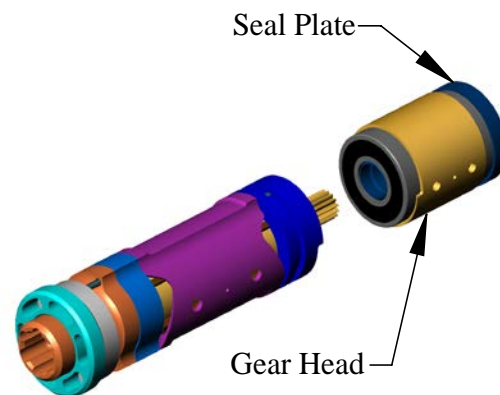
STEP 3: Slide Components Out Of Handle

- 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 easily, 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.

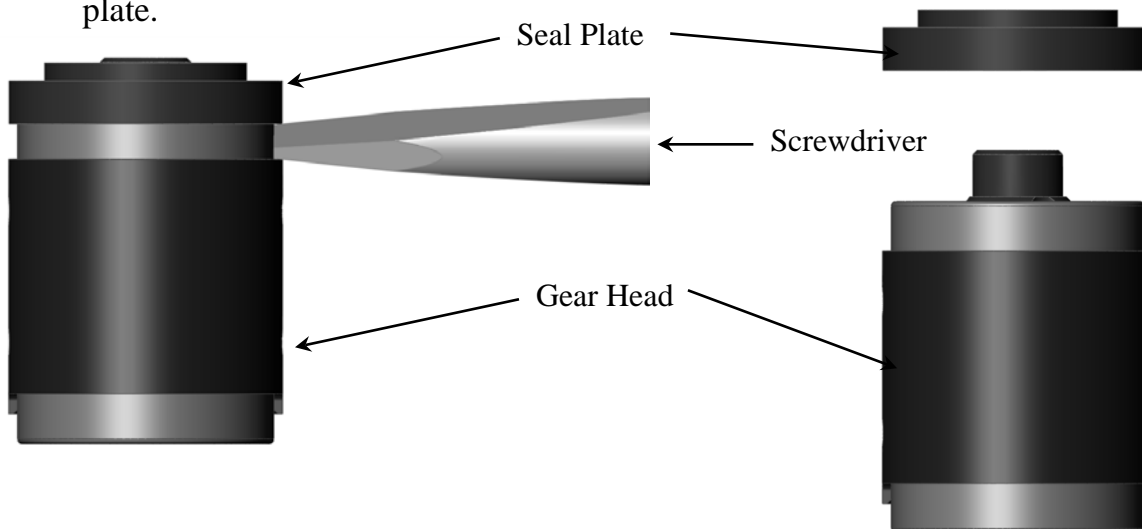




Disassembly of Power Unit (Continued)

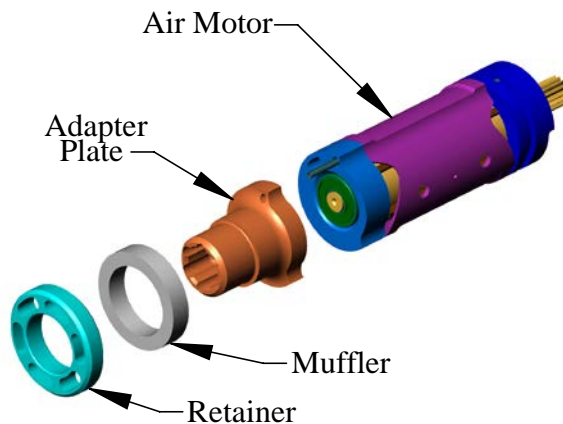
Step 5: Remove Seal Plate

- 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.



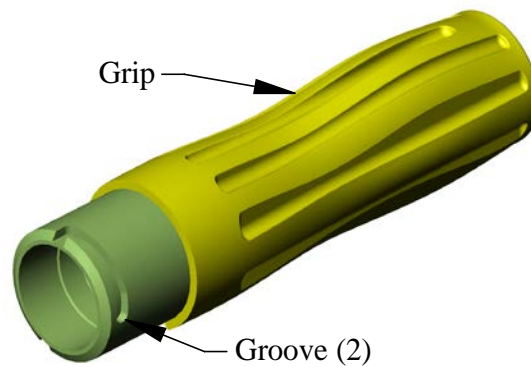


Inspection and Maintenance of Power Unit

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.

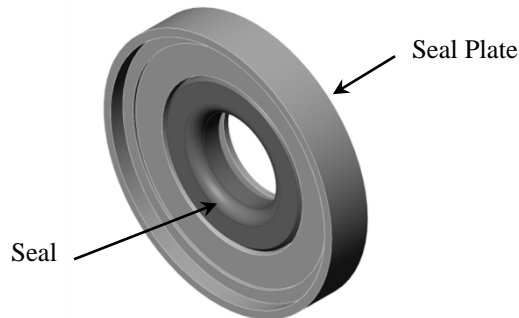




Inspection and Maintenance of Power Unit (Continued)

Seal Plate

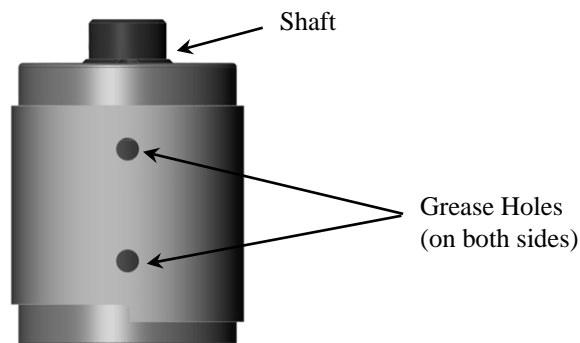
- Inspect the seal plate I.D. and O.D. for nicks, dents or wear. Replace the seal plate if damaged. (See Seal Plate Maintenance).
- Inspect the seal I.D. for nicks, cuts or cracks. Replace the seal if damaged. (See Seal Plate Maintenance).



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.

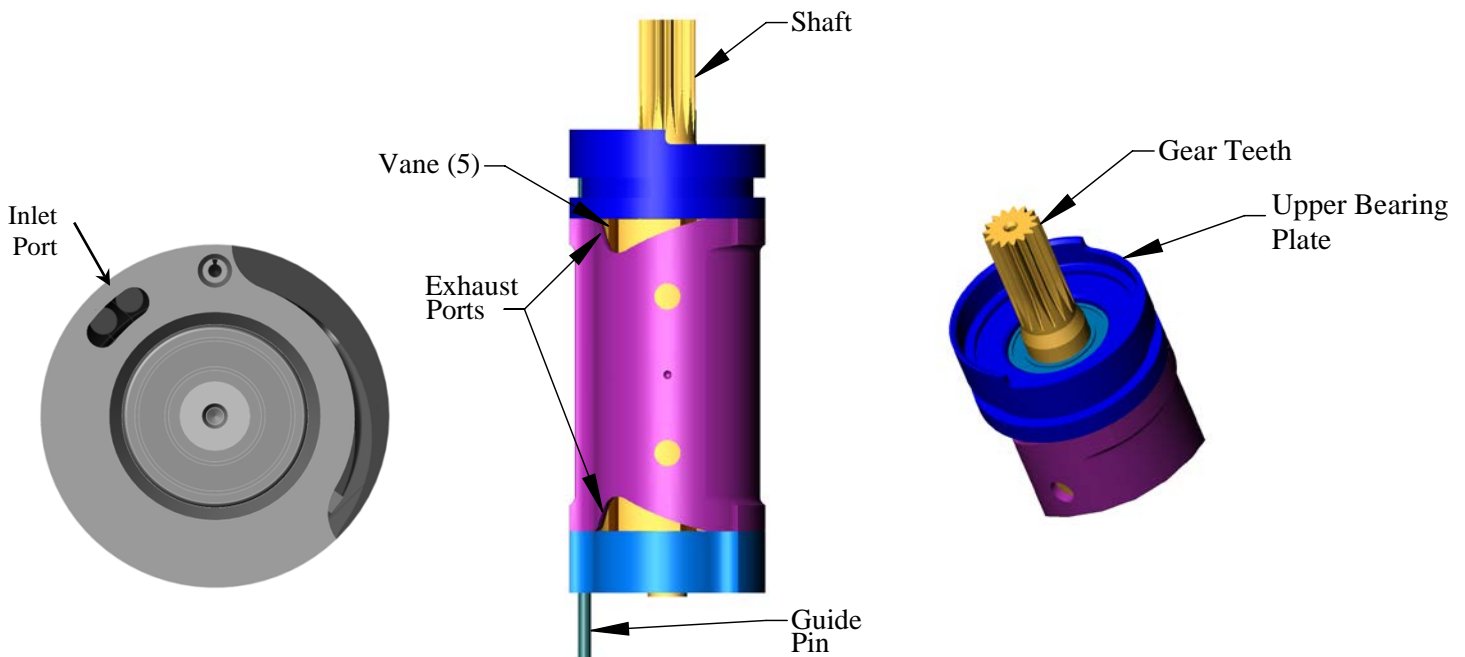




Inspection and Maintenance of Power Unit (Continued)

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.

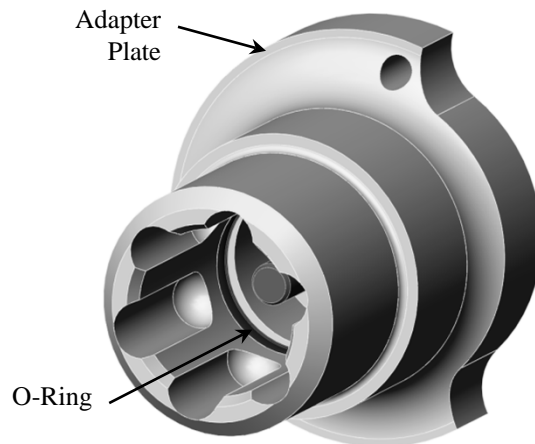




Inspection and Maintenance of Power Unit (Continued)

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.



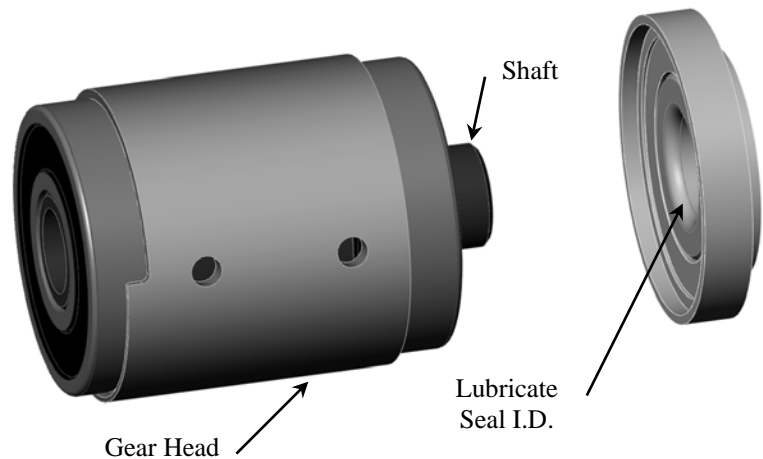
Assembly of Power Unit

Step 1: Install Seal Plate

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

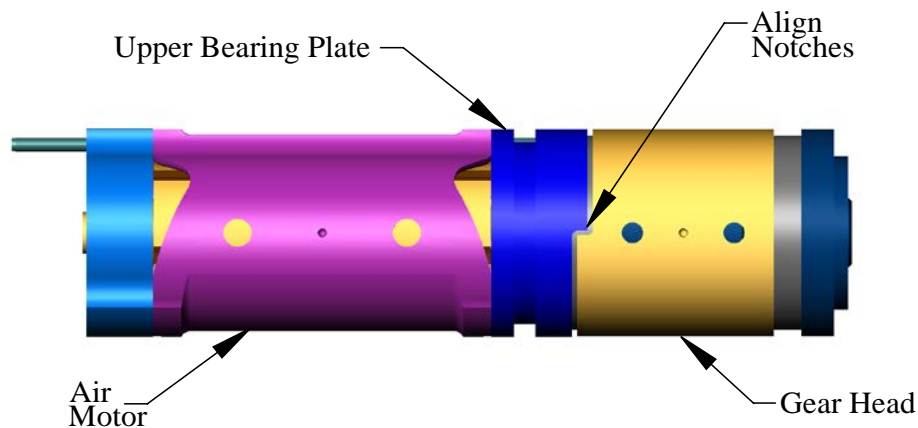
NOTE: Use only Max-Z-Lube high performance lubricant.

- 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.

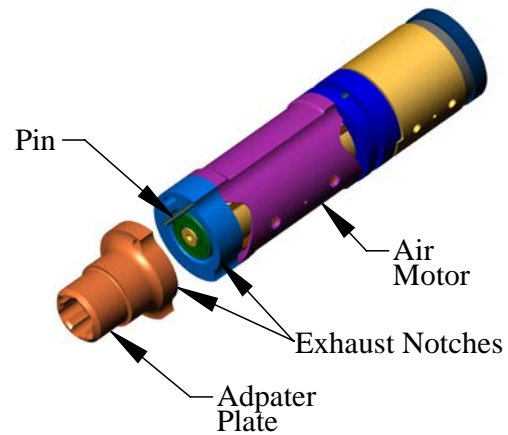




Assembly of Power Unit (Continued)

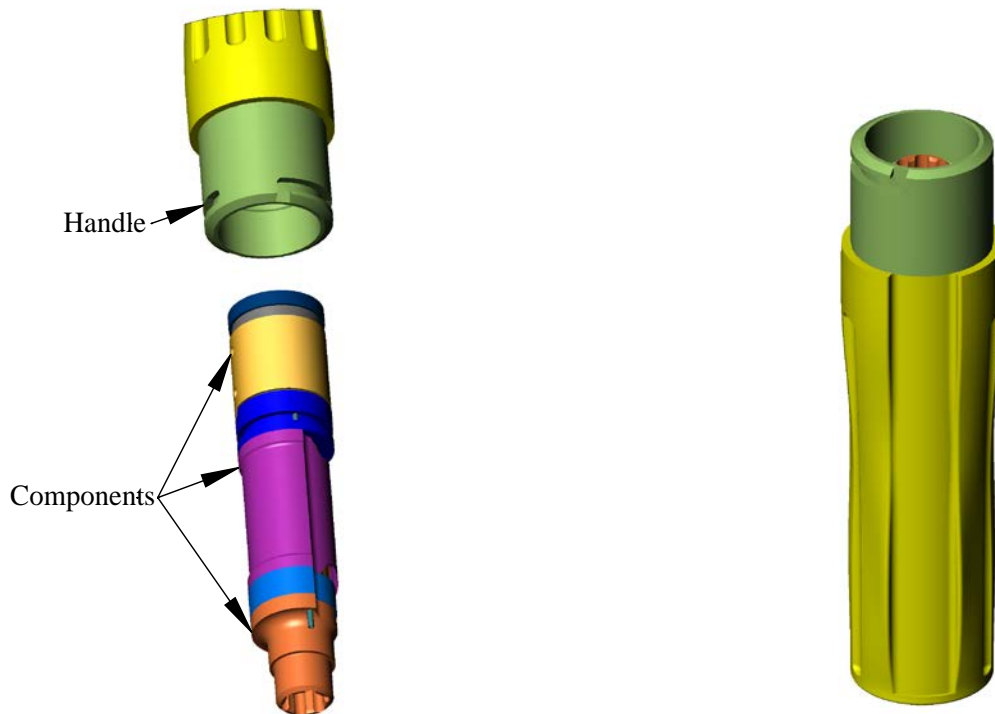
Step 3: Align Adapter Plate

- 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.

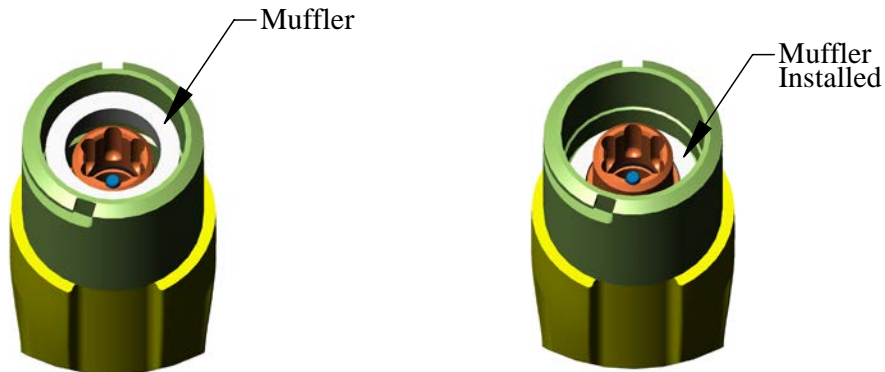




Assembly of Power Unit (Continued)

Step 5: Install Muffler

Slide the muffler into the power unit.

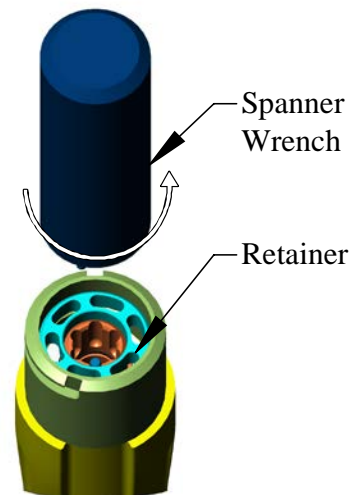


Step 6: Install Retainer

- 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.*

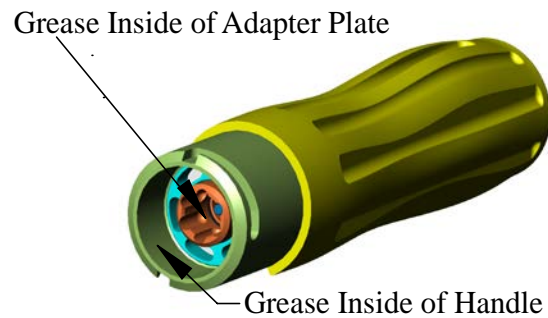




Assembly of Power Unit (Continued)

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

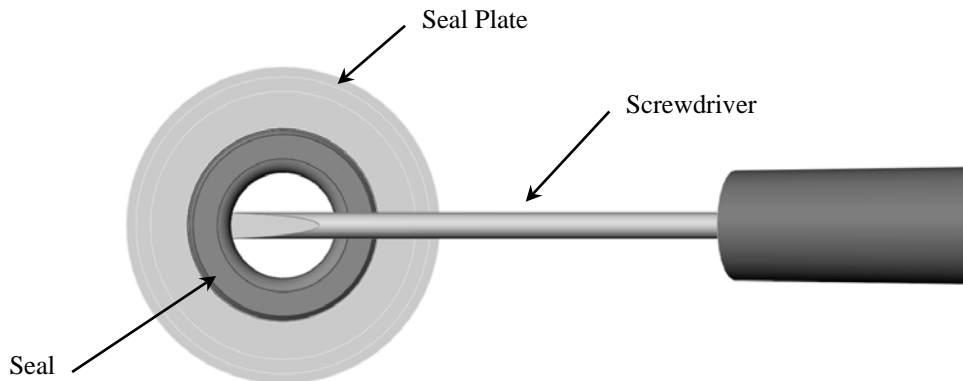
Required Tools for Seal Plate Maintenance

1 – Small flat head screwdriver

Replace Seal

Step 1: Remove Seal

- Use a small flat head screwdriver to pry the seal out of the seal plate.

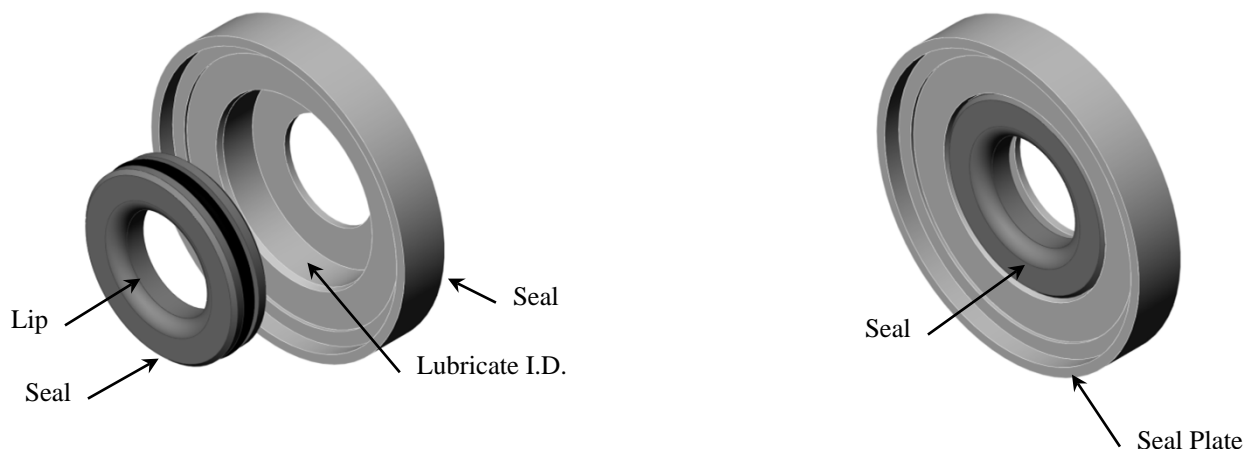


Step 2: Install Seal

- Apply a small amount of Max-Z-Lube to ID 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.



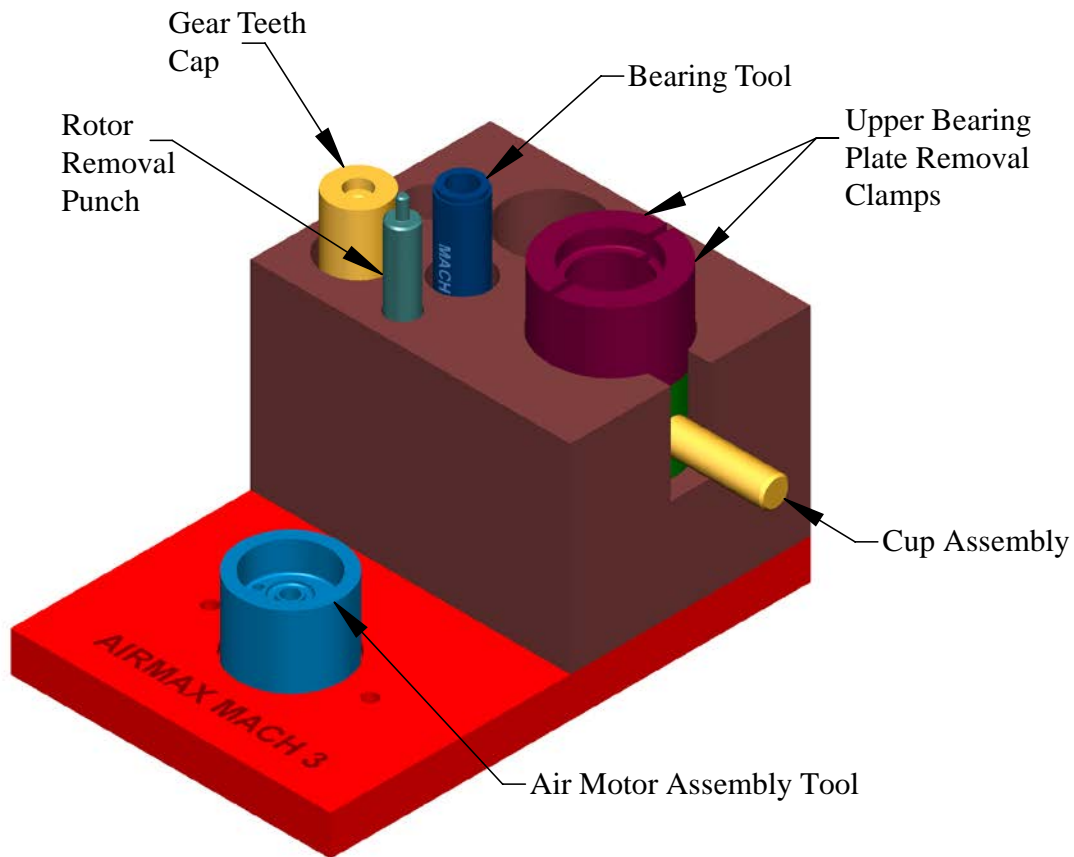


Air Motor Maintenance

Required Tools for Air Motor Maintenance

1 – Hammer

1 – Whizard® AirMax MACH 3 Maintenance Kit

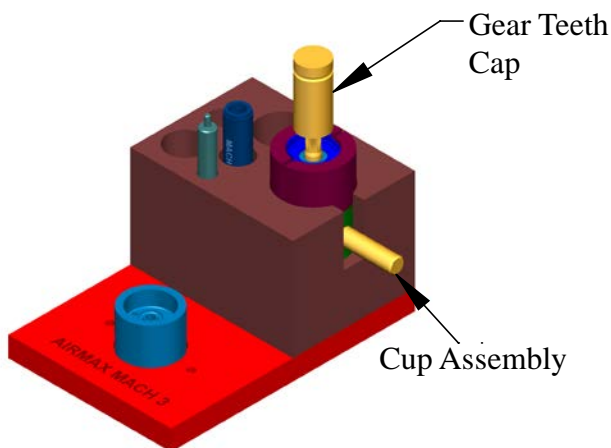
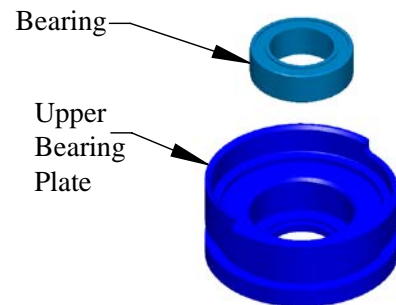
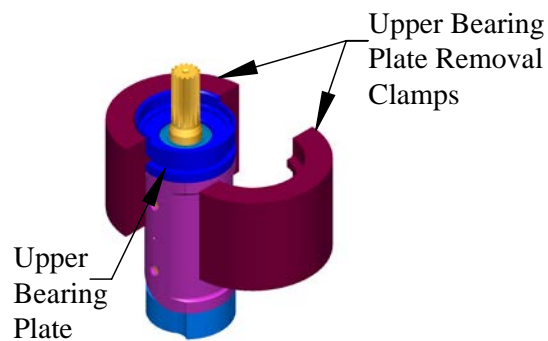




Disassembly of Air Motor

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.

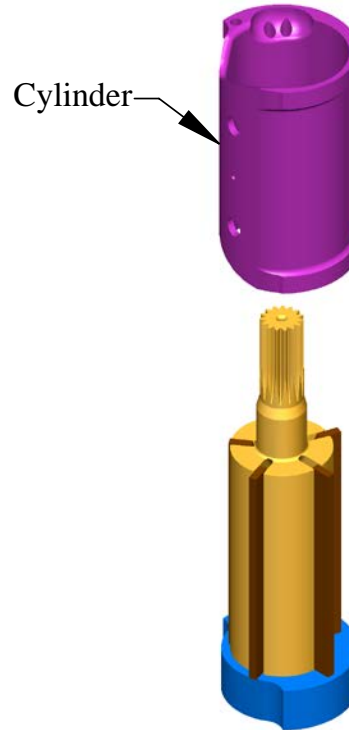




Disassembly of Air Motor (Continued)

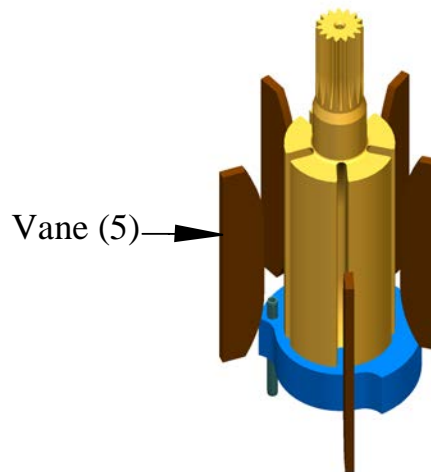
Step 2: Remove Cylinder

- Slide the cylinder off the rotor.



Step 3: Remove Vanes

- Remove the vanes from the slots.

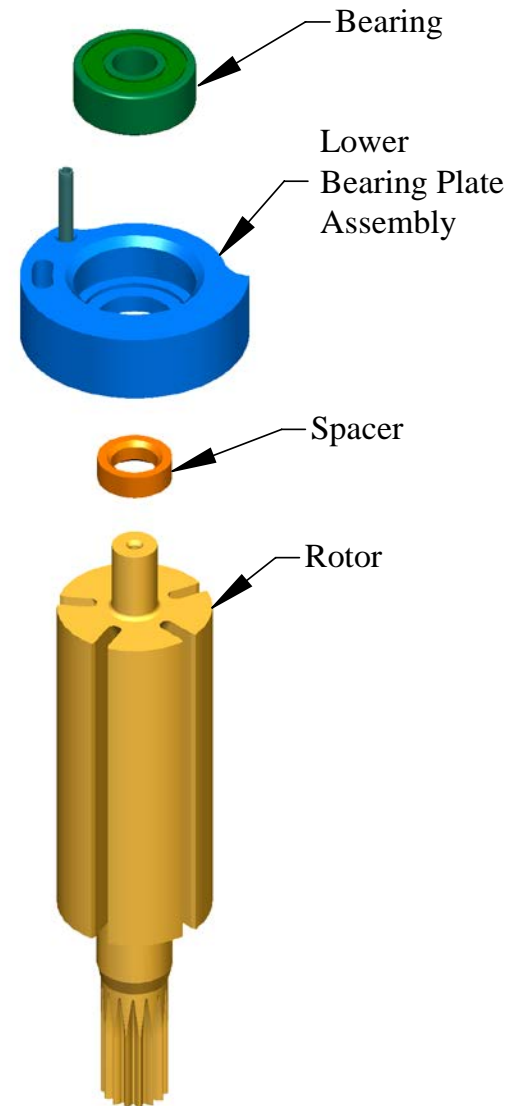
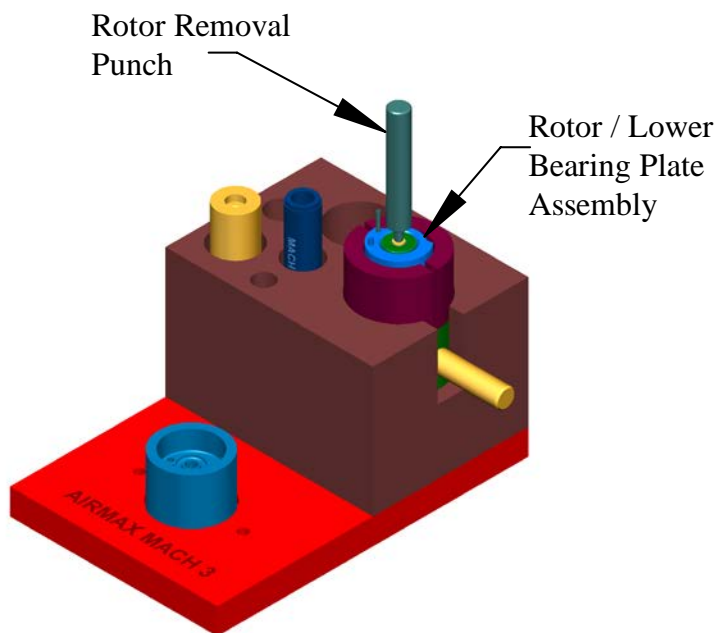




Disassembly of Air Motor (Continued)

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.

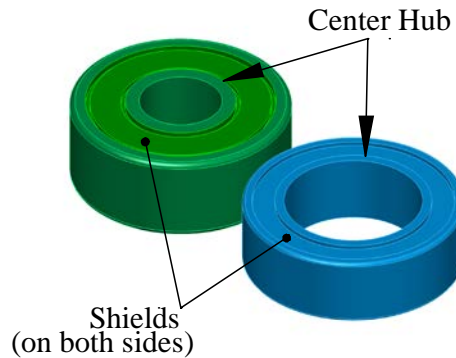




Inspection and Maintenance of Air Motor

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 Bearing Plate

- Inspect the I.D. and O.D. for nicks, dents, or wear. Replace the upper bearing plate if damaged.
- Inspect the alignment pin to be sure it is not bent. Replace the upper 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.

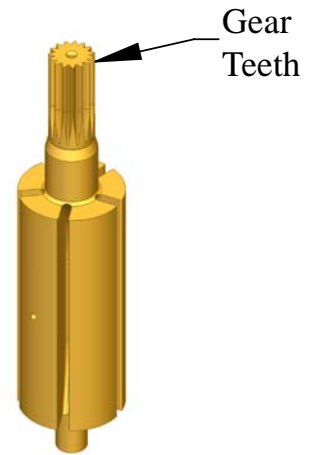
NOTE: *Always replace all five (5) vanes as a set.*



Inspection and Maintenance of Air Motor (Continued)

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.

Lower Bearing Plate

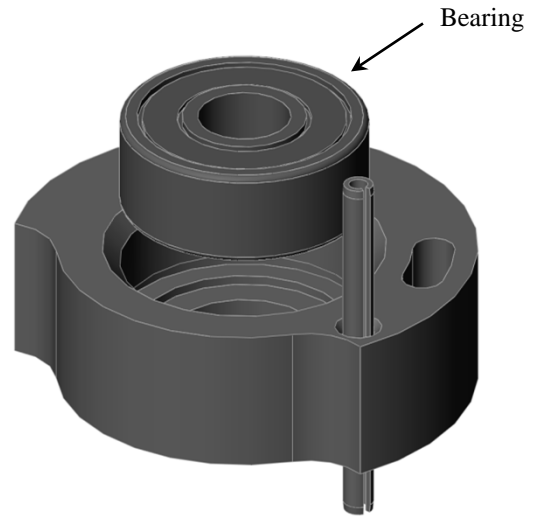
- Inspect the I.D. and O.D. for nicks, dents, or wear. Replace the lower bearing plate if damaged.
- Inspect the alignment pin to be certain it is not bent. Replace the lower bearing plate if damaged.
- Clean and dry the part thoroughly.



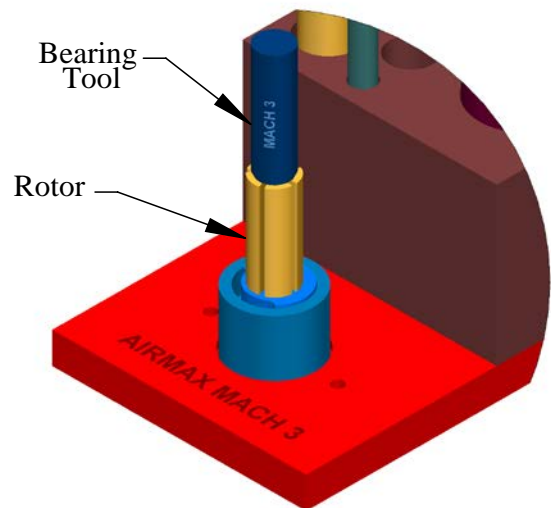
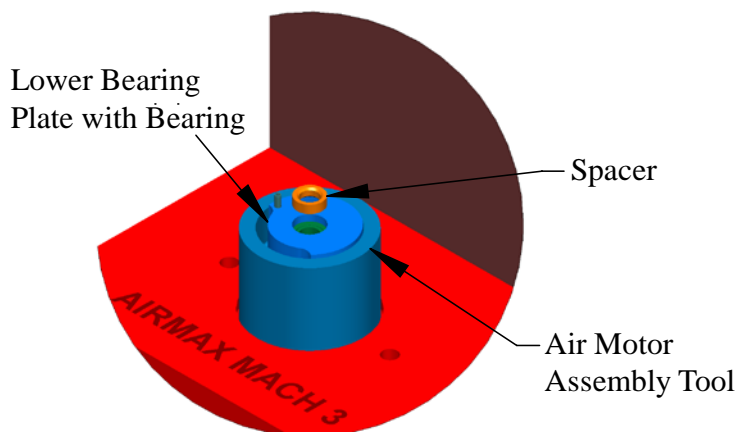
Assembly of Air Motor

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.



Lower Bearing
Plate

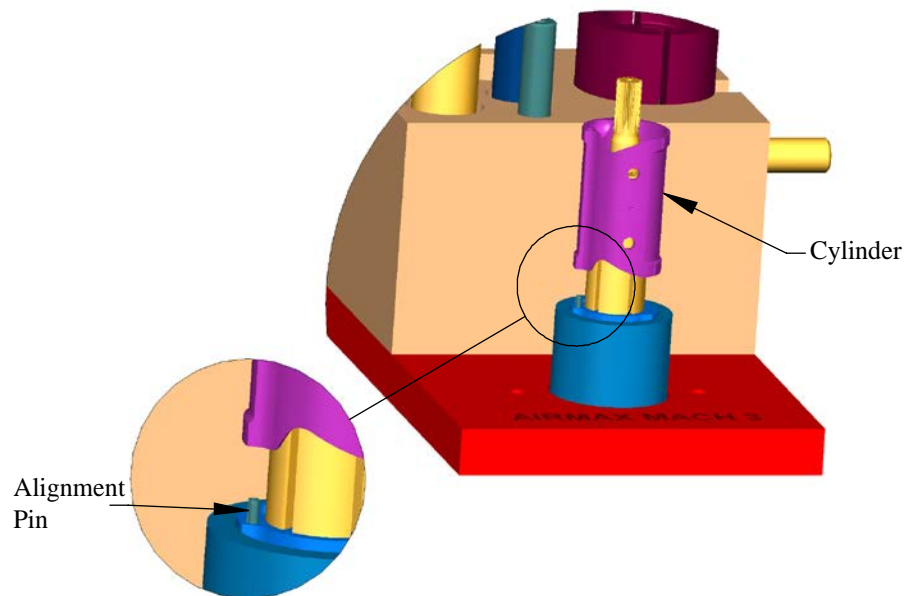




Assembly of Air Motor (Continued)

Step 2: Install Cylinder

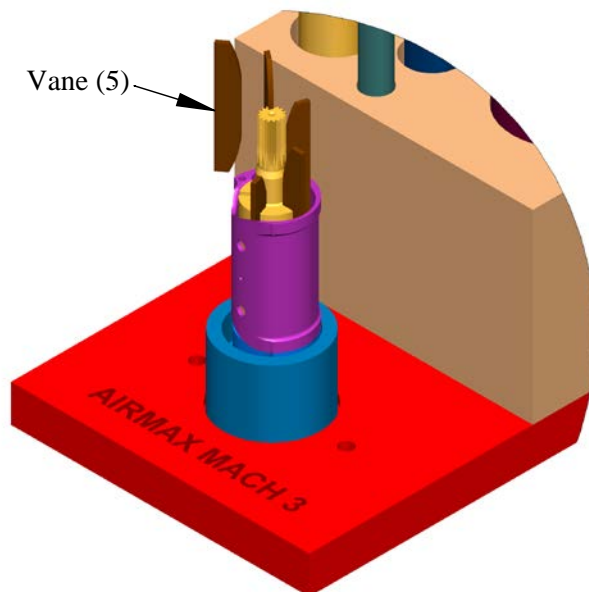
- Align the exhaust channels on the cylinder and lower bearing plate.
- Slide the cylinder over the rotor.
- The alignment pin in lower bearing plate will slide into the alignment hole in the cylinder.



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 Whizard® AirMax MACH 3.

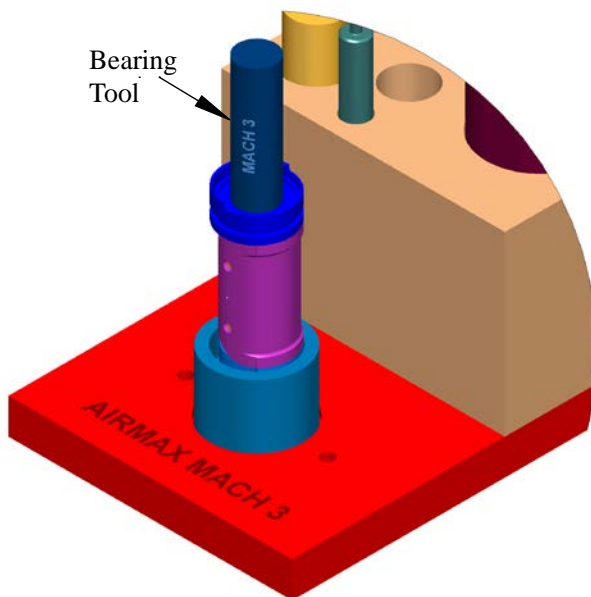
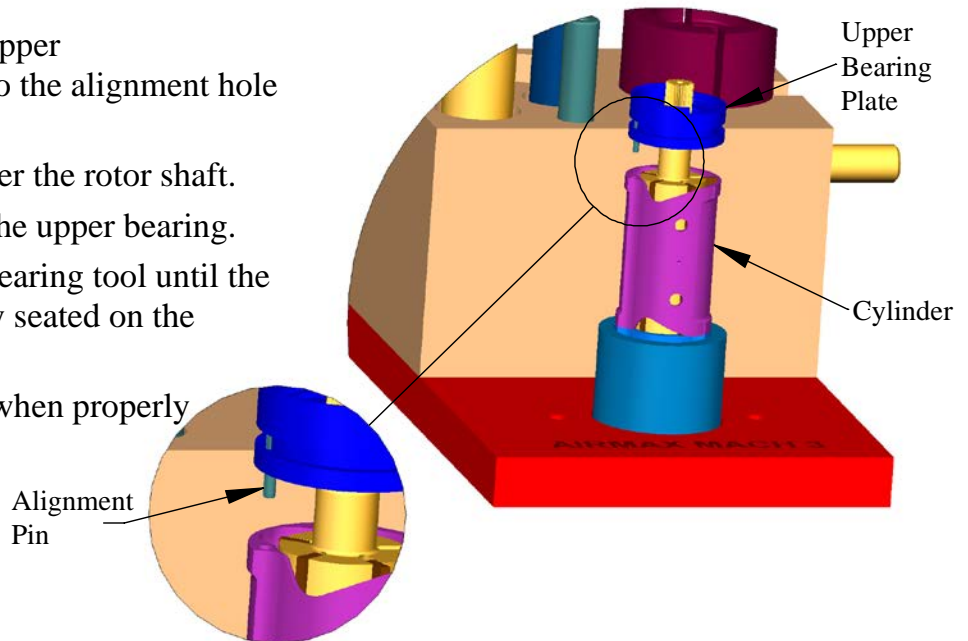




Assembly of Motor (Continued)

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

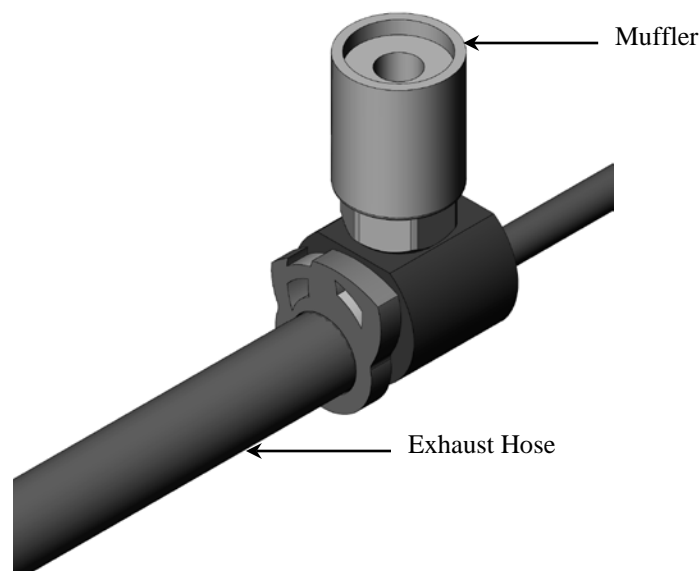
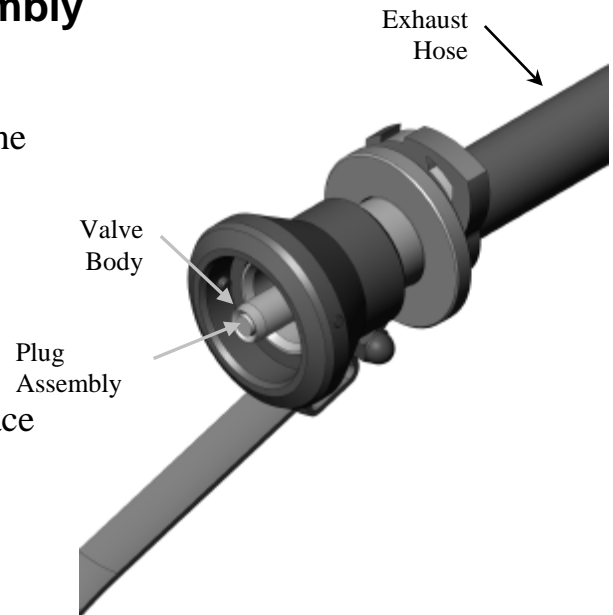
Required Tools for Valve and Hose Assembly Maintenance

- 1 – 1/2” Open End Box Wrench
- 1 – 9/16” Open End Box Wrench

Inspection of Valve and Hose Assembly

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.

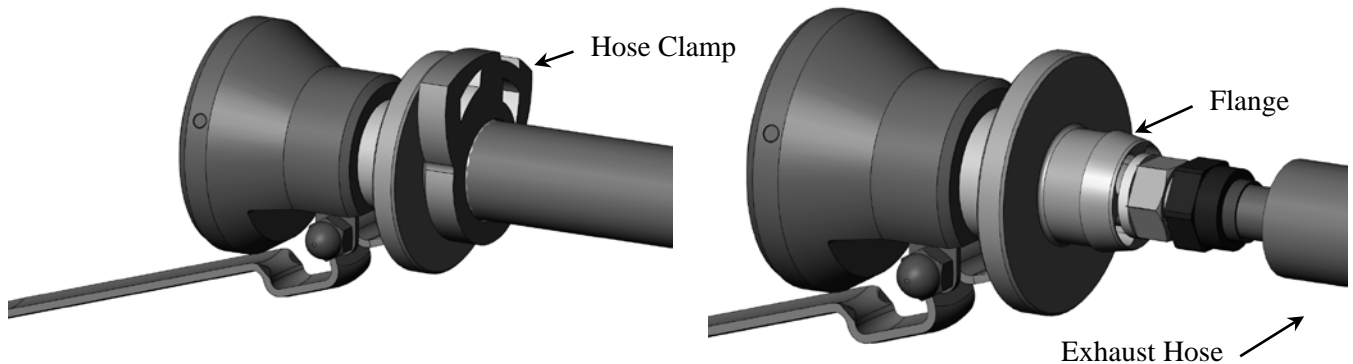




Disassembly of Valve and Hose

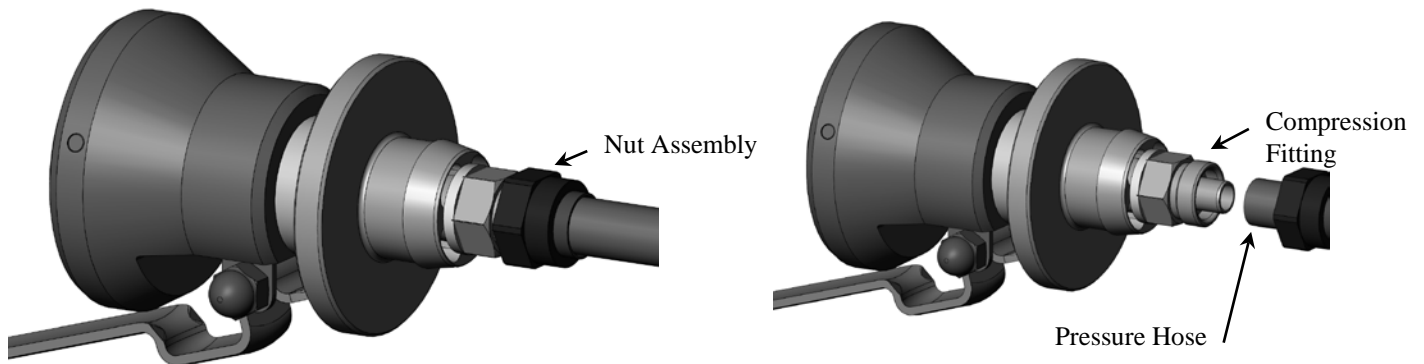
Step 1: Disconnect Exhaust Hose

- 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.

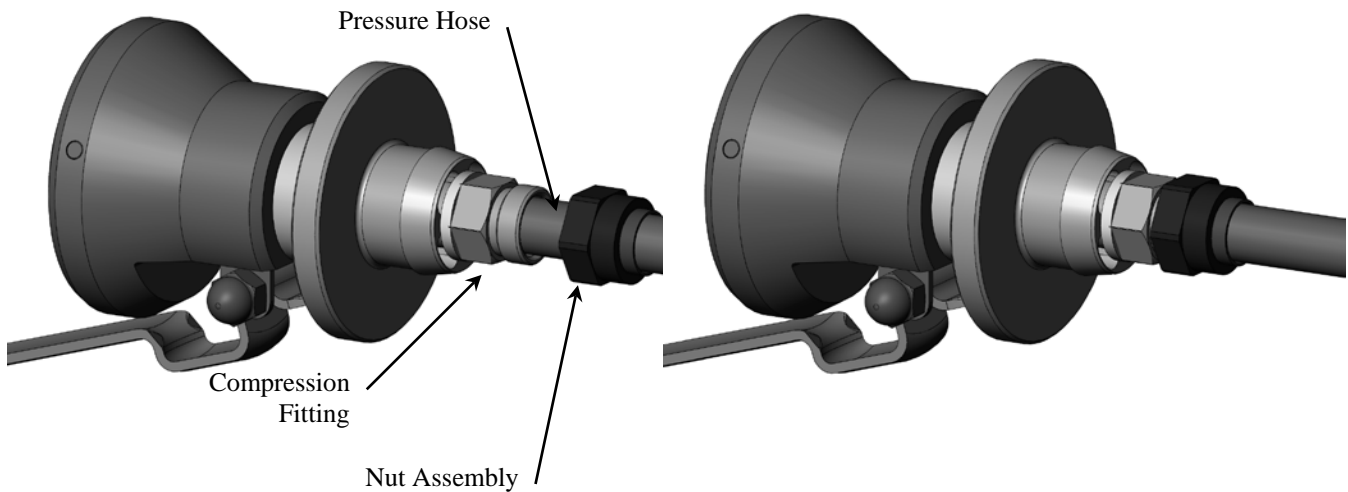




Assembly of Valve and Hose

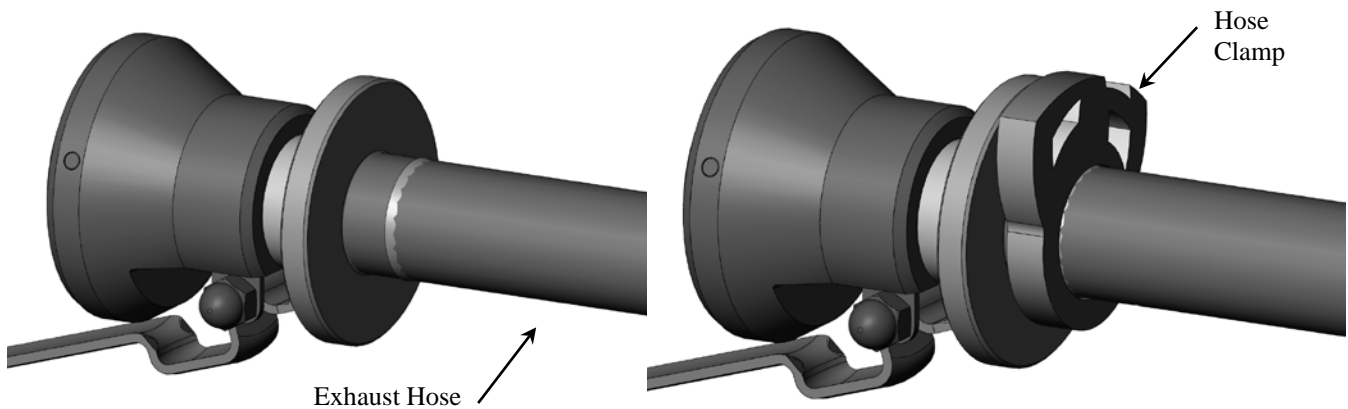
Step 1: Connect Pressure Hose

- 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

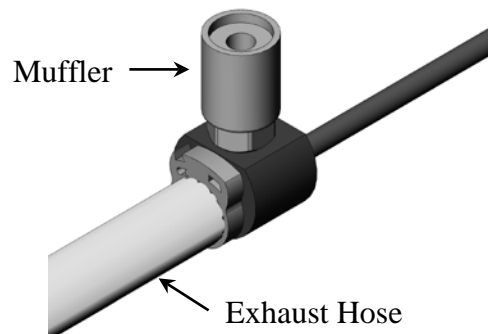
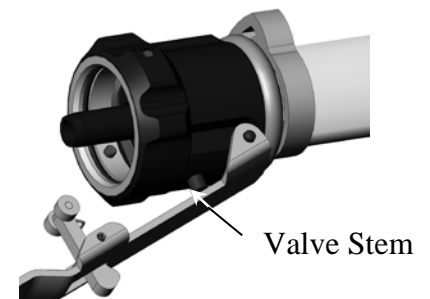
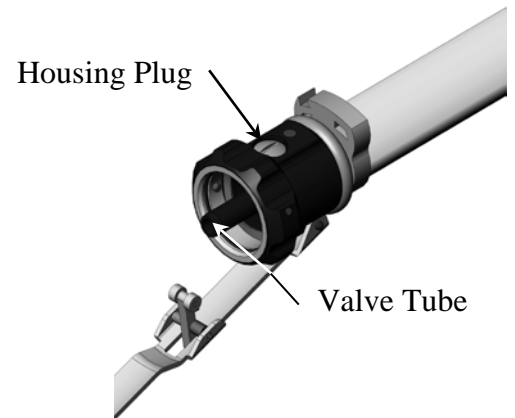
Required Tools for Quick Start Valve and Hose Assembly Maintenance

- 1 – 1/2" Open End Box Wrench
- 1 – 9/16" Open End Box Wrench

Inspection of Valve and Hose Assembly

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.

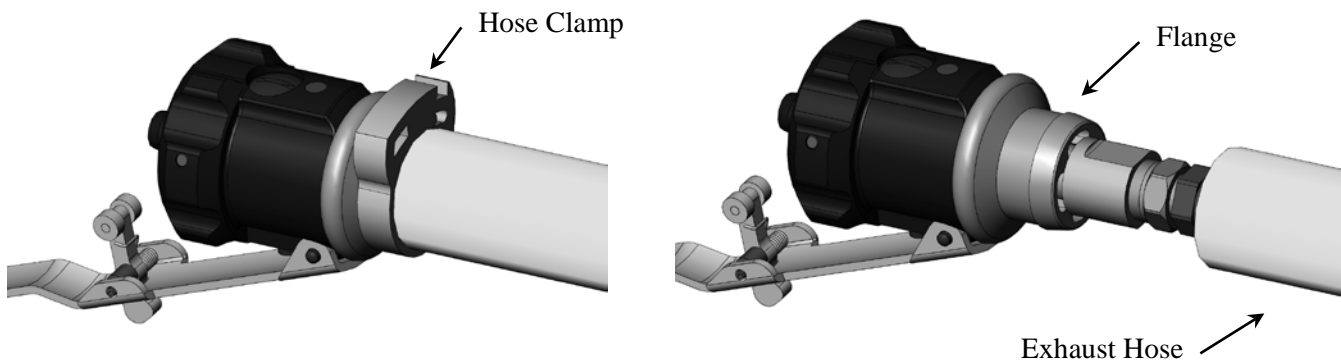




Disassembly of Quick Start Valve and Hose

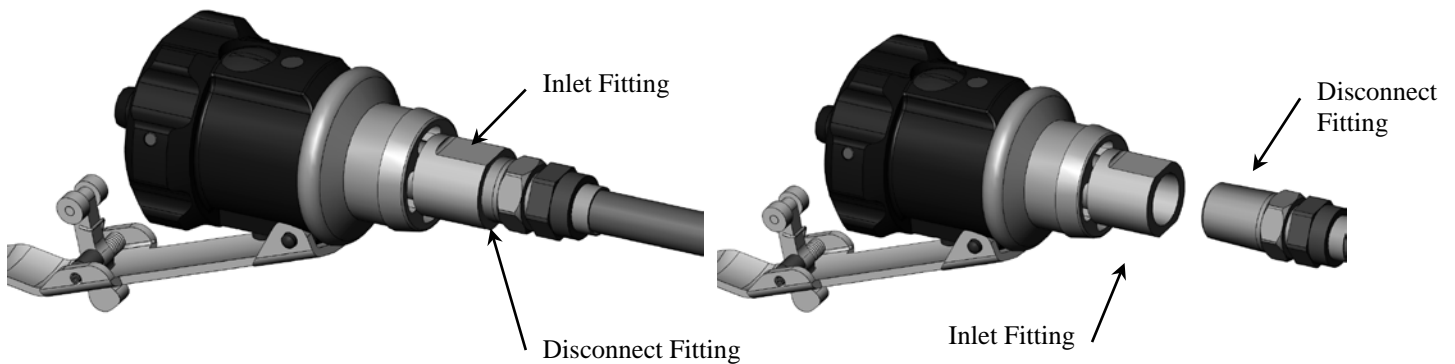
Step 1: Disconnect Exhaust Hose

- 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.

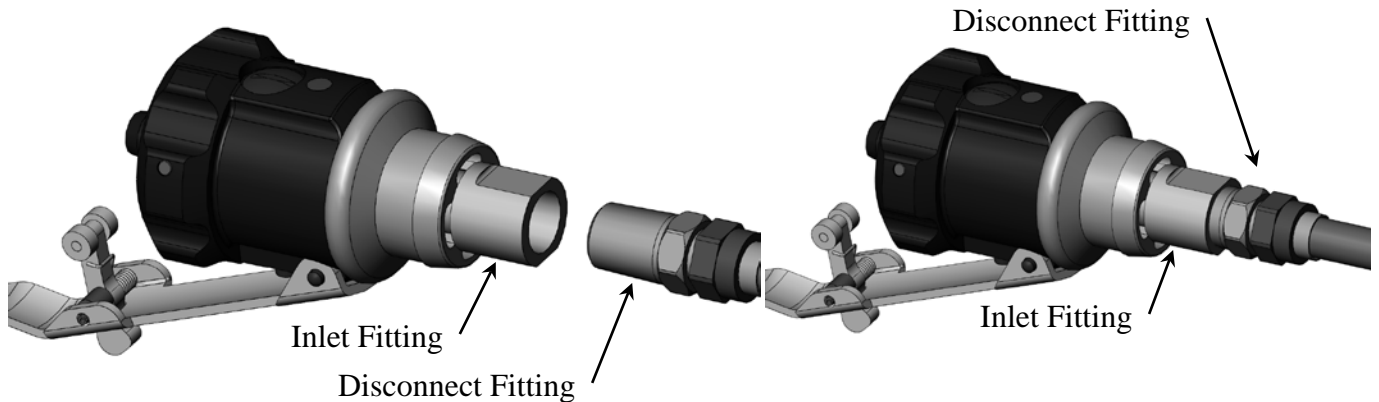




Assembly of Quick Start Valve and Hose

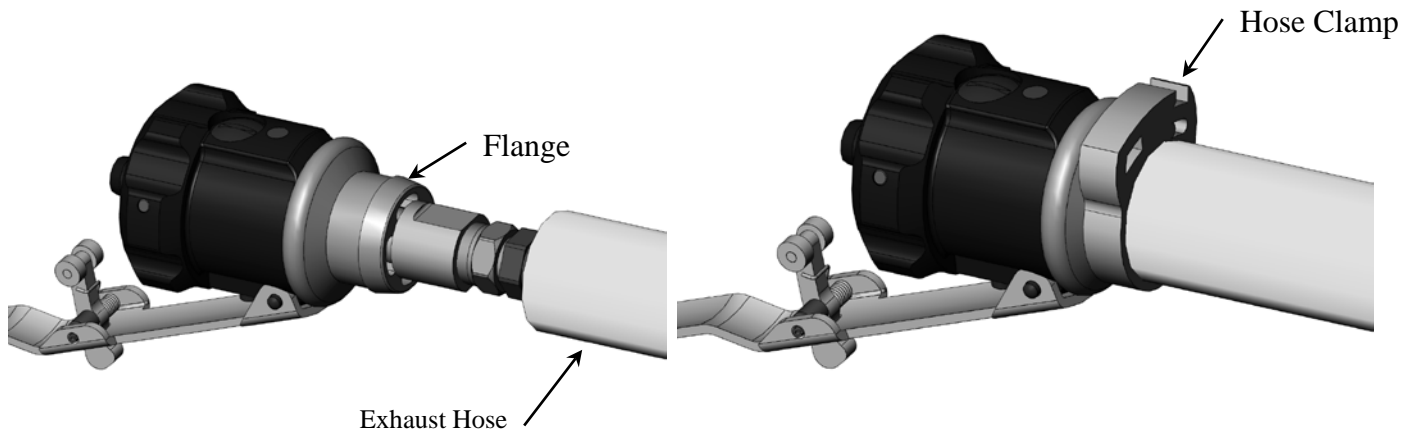
Step 1: Connect Pressure Hose

- Screw the disconnect fitting into the inlet fitting.



Step 2: Connect Exhaust Hose

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





Fault Detection and Correction

PROBLEM	PROBABLE CAUSE	REMEDY
Handpiece Vibration	Handpiece bearing worn	Replace bearing
	Pinion gear worn	Replace pinion
	Teeth on pinion worn	Replace pinion
	Product build-up	Clean trimmer
Handpiece Hot	Pinion gear tight in handpiece bearing	Clean corrosion from the handpiece bearing and lubricate, or replace
	Handpiece bearing not installed correctly (No clearance between face of pinion gear and blade housing) causing mechanical bind	Reinstall the bearing correctly.
	Power Unit seal worn (Air blowing through front of Power Unit)	Replace Seal and O-Ring in Power Unit
Dull Blade	Improperly sharpened blades will cause loss of production, increase wear of parts, and operator fatigue	Sharpen blade with a Whizard® 214 Blade Sharpener



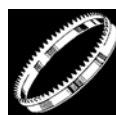
Fault Detection and Correction (Continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Motor Does Not Run	Air supply hose leaks	Replace hose assembly
	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 adapter plate
	Air motor bearings are seized	Replace air motor or bearing
	Vanes are broken or worn	Replace all 5 vanes
	Gear head is seized	Replace gear head
Motor Runs but Blade Does Not Turn	Teeth on pinion worn	Replace pinion
	Teeth on blade worn	Replace blade
	Drive adapter worn	Replace drive adapter
	Drive adapter missing	Install drive adapter
	Motor and gear head not engaged	Properly engage air motor and gear head
	Teeth on rotor worn	Replace air motor or rotor
	Gear head worn	Replace gear head
	Head attachment screw loose	Tighten head attachment screw



Fault Detection and Correction (Continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Loss of Power	Air pressure too low	Set air pressure to 90-100 psi (6.2-6.9 bar)
	Mineral oil is not being supplied to tool	Fill lubricator (oiler)
	Too much water in the air line	Replace filter
		Drain filter bowl
		Drain water traps
		Replace filter
	Blade tight in blade housing	Adjust blade housing
	Drive adapter worn	Replace drive adapter
	Motor and gear head not engaged	Properly engage air motor and gear head
	Teeth on rotor worn	Replace air motor or rotor
	Gear head worn	Replace gear head
	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 adapter plate
	Vanes are broken or worn	Replace all 5 vanes
Muffler in power unit is clogged	Replace muffler	
Incorrect vane kit in the air motor.	Use vane kit for Whizard® AirMax MACH 3.	



Section 6

Cleaning

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Cleaning after Daily Use.....	6-2
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Periodic Cleaning During Use

Light rinsing during operation is recommended.

Thorough rinsing at each break is highly recommended to improve 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 Whizard Trimvac® 645i trimmer head assembly and clean each part thoroughly with a brush and cleaner. For best results, clean the Whizard® 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 Solutions

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



Section 7

Service Parts

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⚠ WARNING

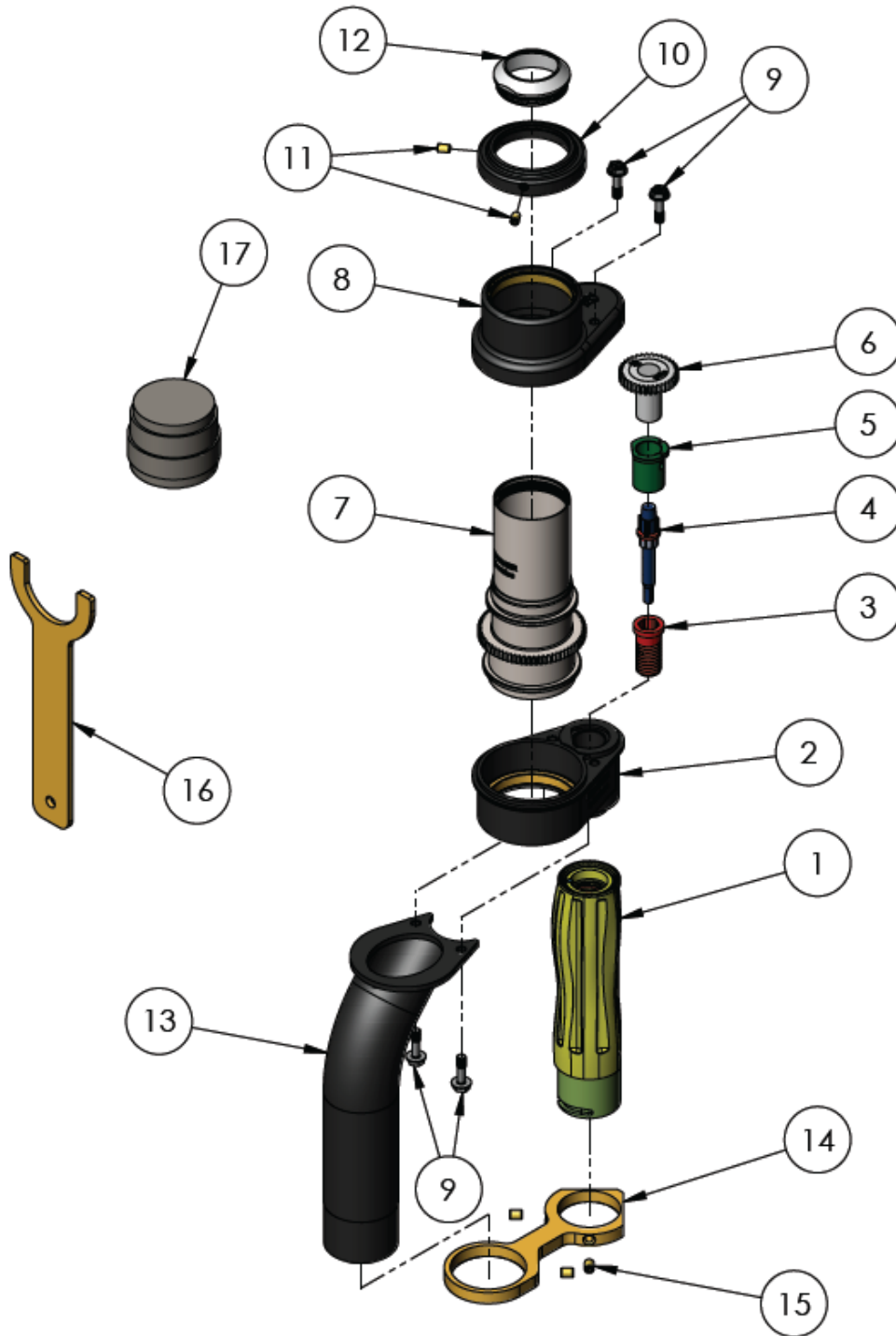
The manufacturer assumes no liability for any unauthorized design changes, modification, or use of parts not supplied by the manufacturer.

The use of parts not designed for use on that specific model, including changes in operating procedures made by the owner or any of his personnel.

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.



Whizard Trimvac® 645i Head Assembly





Whizard Trimvac® 645i Head Assembly (Continued)

Item	Description	Part Number	Qty.
1	Power Unit - Small Handle (Yellow)	185923	1
2	Frame with lower bearing	105223	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 cover with upper bearing	105224	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	--



Lubrication and Lubrication Equipment

Part Number	Description
103603	Pint of Oil
184282	4 oz. Tube of Max-Z-Lube Grease
113326	Planetary Gear Grease Gun (Needle Nose)

Air Supply Equipment

Part Number	Description
173226	Filter, Regulator, Lubricator (FRL) Kit
185789	Replacement Filter Element
103386	Automatic Air Coupler



Blade Sharpening and Steeling Equipment

Part Number	Description
100655	Special Stone (Small Tools)
100641	Special Steel (Small Tools)
184423	Steeling Assembly Ball Tip

Cleaning Equipment

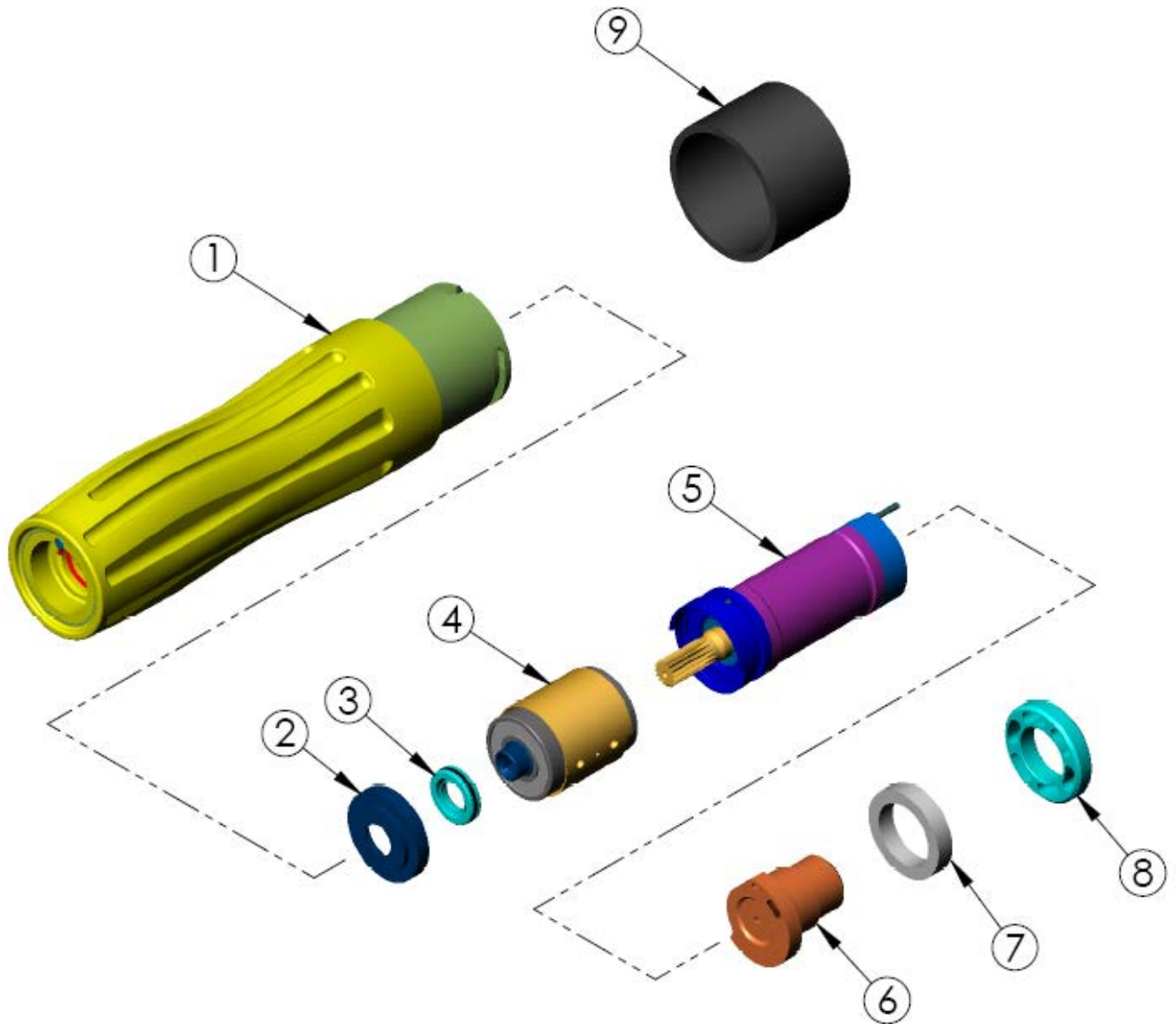
Part Number	Description
184334	Handpiece Cleaning Kit (Contains the following)
184335	Handpiece Cleaning Pick
184336	Stainless Steel Hand Brush
184337	Scrub Brush
184338	1-1/2" Diameter Tubing Brush
184339	1/2" Diameter Tubing Brush

Cleaning Solution

Part Number	Description
184331	Case of EXTRA Cleaner (four 1 gallon jugs)
184332	EXTRA Cleaner (1 gallon jug)



Complete Power Unit Assembly





Complete Power Unit Assembly (Continued)

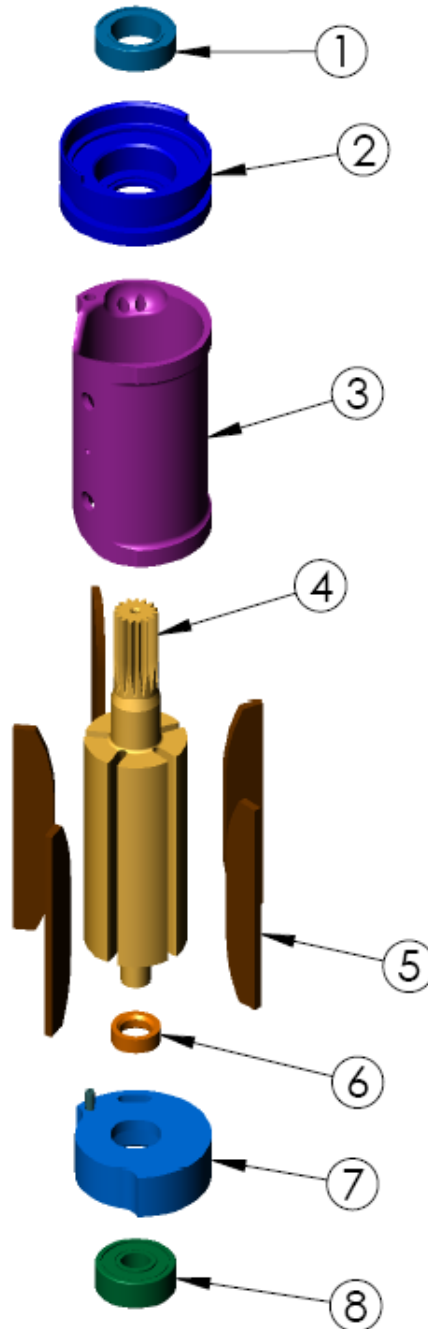
ITEM	DESCRIPTION	SMALL AIRMAX MACH 3 POWER UNIT	QTY.
--	Complete Power Unit Assembly (Yellow) (Includes Items 1, 2, 3, 4, 5, 6, 7, 8, 9)	185923	
--	Complete Power Unit Assembly (Sky Blue) (Includes Items 1, 2, 3, 4, 5, 6, 7, 8, 9)	185924	
1	Over-molded Handle with O-Ring (Yellow)*	185927	1
	Over-molded Handle with O-Ring (Sky Blue)*	185928	1
--	Handle O-Ring (Not shown) (Included with Item # 1)	122316	1
2	Seal Block	184062	1
3	Seal Kit	184427	1
4	Gear Head Assembly	185935	1
5	Air Motor Assembly	185942	1
6	Adapter Plate Assembly	184047	1
--	Adapter Plate O-Ring (Not shown) Included with Item#6	122315	1
7	Muffler	184388	1
8	Retainer	184049	1
9	Cap	184286	1

****Refurbished Items Also Available***

ITEM	DESCRIPTION	Part Number
1	Refurbished Over-molded Handle with O-Ring (Yellow) – Old Part must be returned	185794
1	Refurbished Over-molded Handle with O-Ring (Sky Blue) - Old Part must be returned	185795



Complete Air Motor Assembly



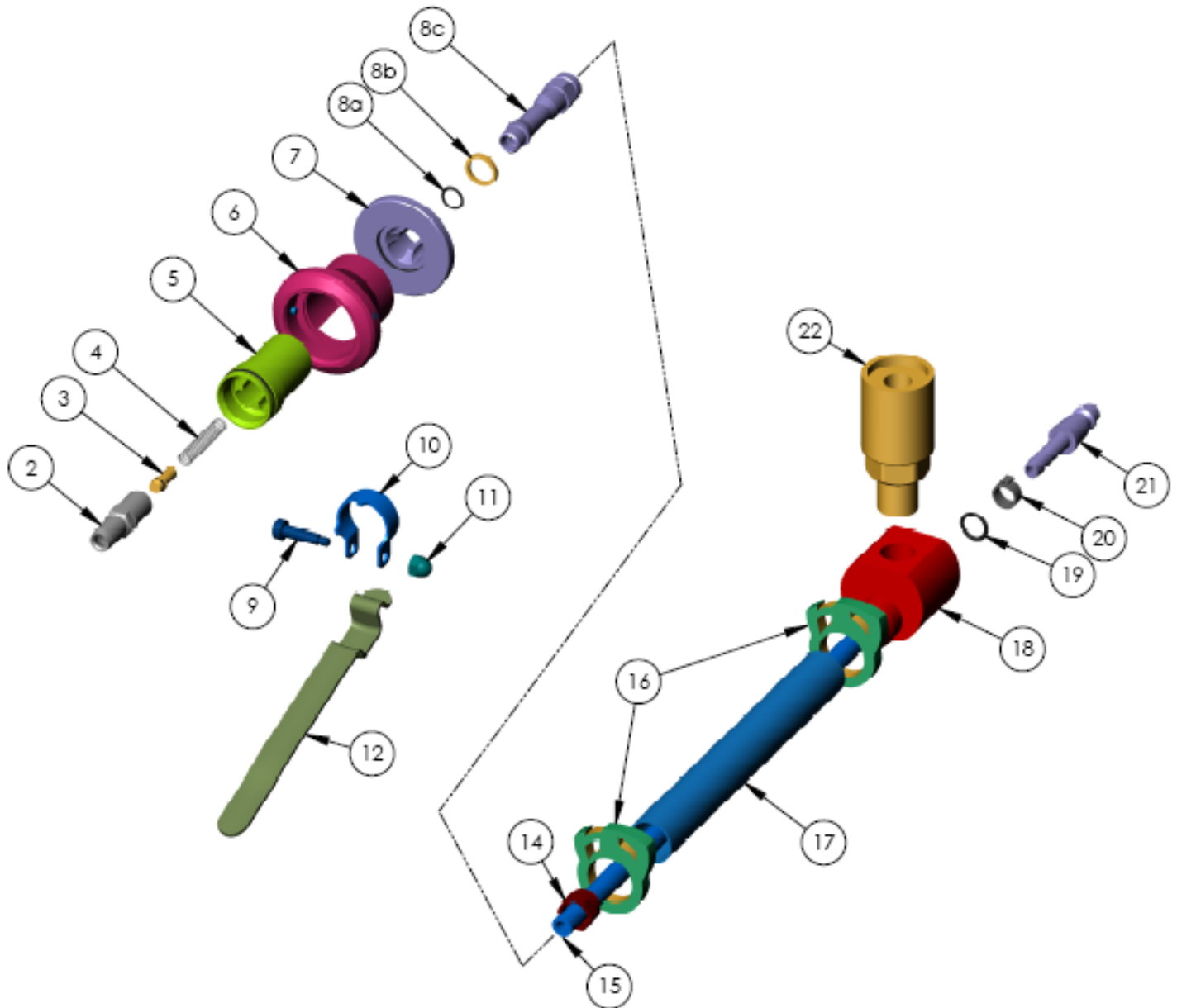


Complete Air Motor Assembly (Continued)

ITEM	DESCRIPTION	PART NUMBER	QTY.
	Complete Air Motor Assembly (Includes Items 1, 2, 3, 4, 5, 6, 7, 8)	185942	
1	Upper Bearing	185950	1
2	Upper Bearing Plate Assembly	185948	1
3	Cylinder	185947	1
4	Rotor	185944	1
5	Vane Kit (Contains 5 Vanes)	185790	1
6	Spacer	184043	1
7	Lower Bearing Plate Assembly	184042	1
8	Lower Bearing	184046	1



Complete Valve and Hose Assembly



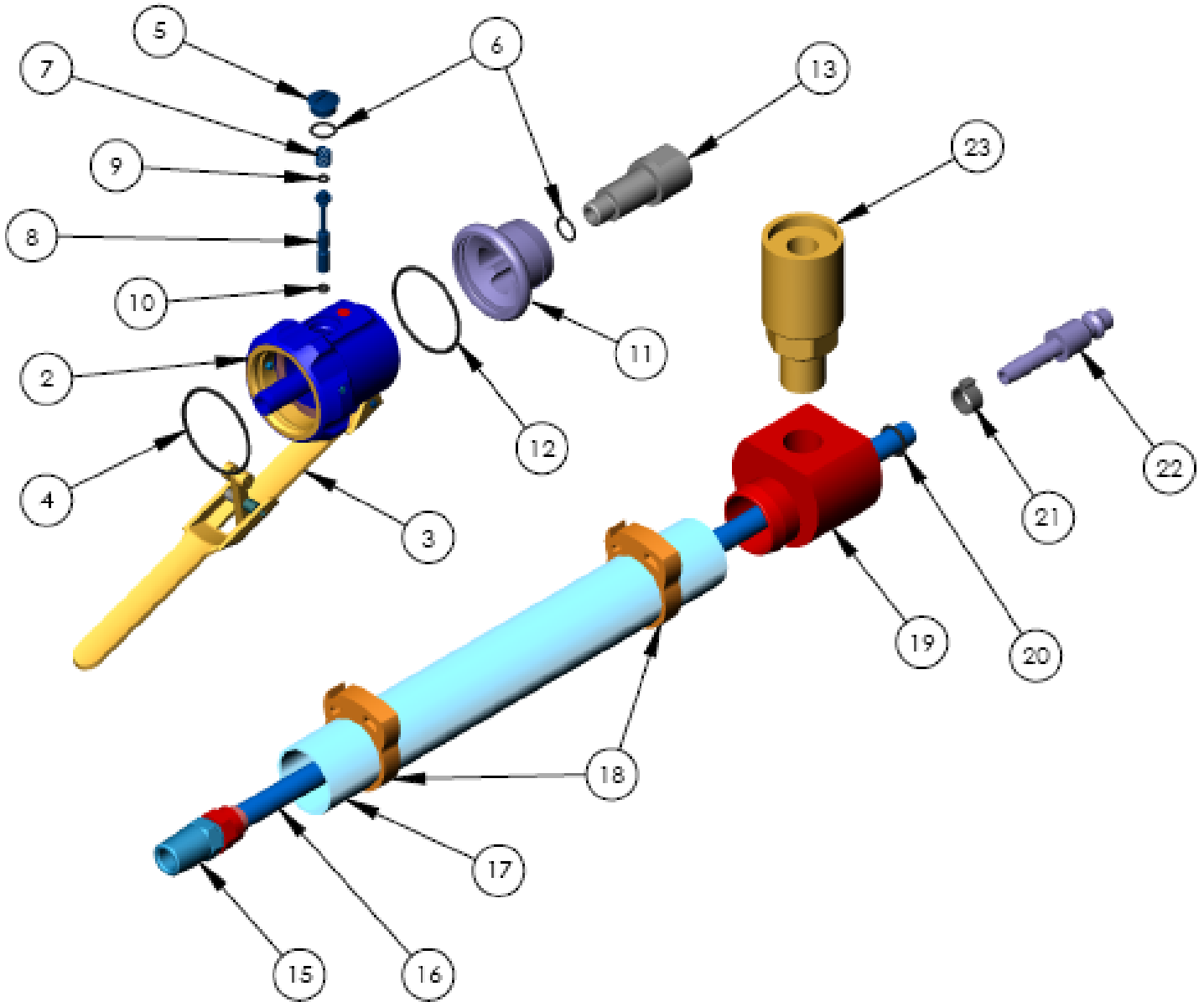


Complete Valve and Hose Assembly (Continued)

ITEM	DESCRIPTION	PART NUMBER	QTY.
	Complete Valve and Hose Assembly (Includes Items 1, 12)	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	1
6	Knob Assembly	184051	1
7	Swivel Fitting Assembly (includes Swivel Fitting O-Ring)	184265	1
--	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	1
14	Nut Assembly	184241	1
15	Pressure Tubing	185370	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 and Hose Assembly



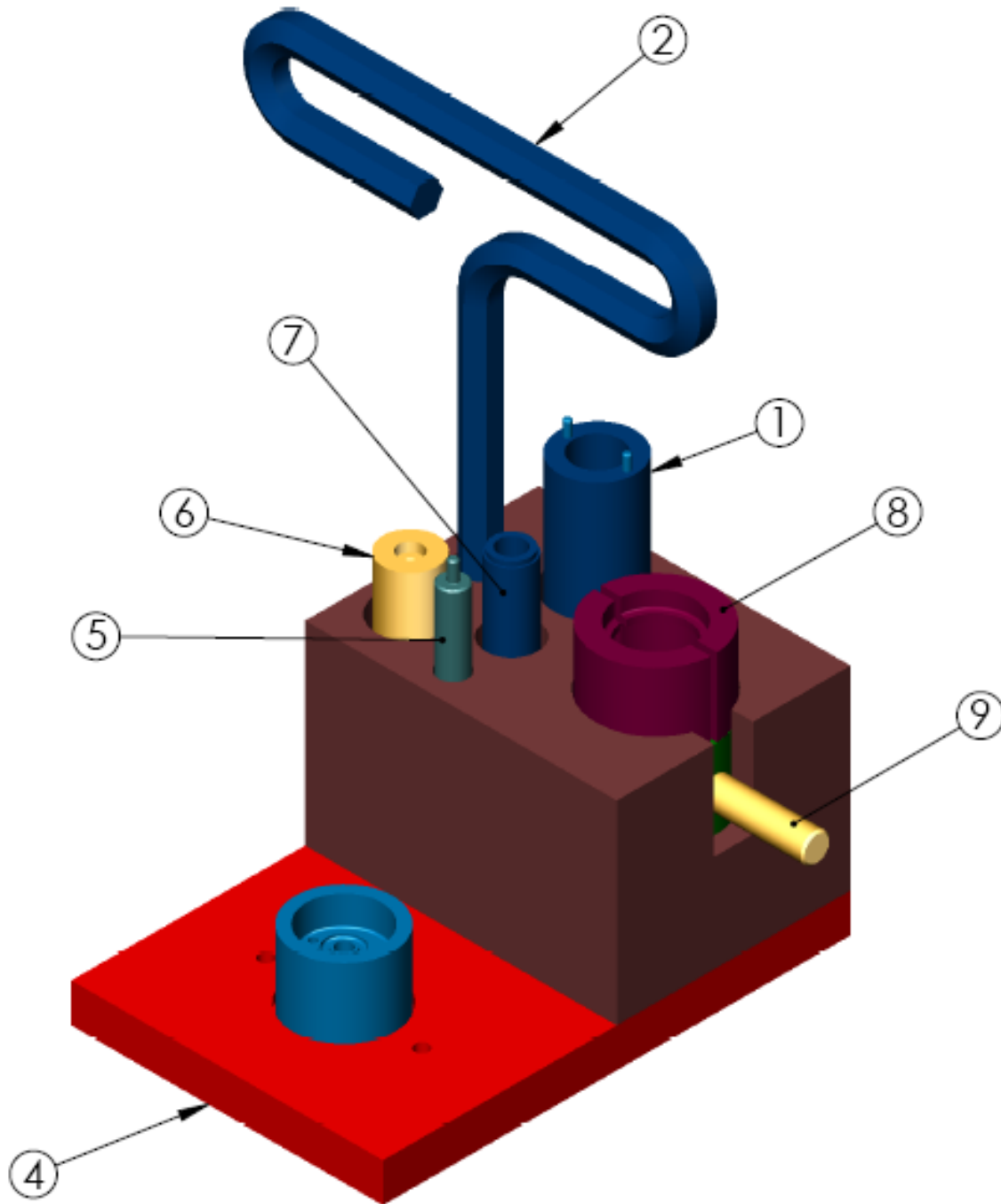


Complete Quick Start Valve and Hose Assembly (Continued)

ITEM	DESCRIPTION	PART NUMBER	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 NUMBER	QTY.
1	Spanner Wrench	184134	1
2	Hex Wrench	184128	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



Section 8

Contact and Document Information

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Contact Addresses and Phone	8-2
Document Identification	8-2
Software and Duplication.....	8-3



Contact Addresses and Phone

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

Bettcher Industries, Inc.
P.O. Box 336
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Fax: +011-41-41-348-0229

Bettcher do Brasil Comércio de Máquinas Ltda.
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São Paulo - SP
CEP 04304-010 - BRASIL
Tel: +55 11 4083 2516
Fax: +55 11 4083 2515

Visit our website at www.bettcher.com

Document Identification

Copies of this Operation Instruction may be ordered by quoting the Document ID as listed below:

Document ID:	Manual #105357
Document Description:	Operating Instructions and Spare Parts List For Whizard Trimvac® 645i
Issued:	DATE: January 23, 2017

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



BETTCHER
Industries, Inc.

Contact and Document Information

Software and Duplication

For more information, contact your local Representative or:

Bettcher Industries, Inc.
Administrative Assistant/Engineering Department
PO Box 336
Vermilion, Ohio 44089
USA