



BETTCHER[®]
Industries, Inc.

Operating Instructions & Parts List for



Manual # 107193

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Operating Instructions in other languages are available on request. Additional copies of Operating Instructions are available by calling or writing your Regional Manager, or by contacting:

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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

Table of Contents

Section 1.....	<i>Safety and Ergonomics</i>
Section 2.....	<i>Designated Use</i>
Section 3.....	<i>Unpacking and Installation</i>
Section 4.....	<i>Instructions for Operation</i>
Section 5.....	<i>Maintenance</i>
Section 6.....	<i>Cleaning</i>
Section 7.....	<i>Service Parts</i>
Section 8.....	<i>Contact and Document Information</i>



Section 1

Safety and Ergonomics

CONTENTS OF THIS SECTION

Signal Words and Signal Word Panels.....	1-2
Safety Symbols.....	1-3
Safety Recommendations and Warnings	1-4
Safety Features	1-6
Ergonomic Features	1-6
Additional Features.....	1-6

 **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 Z535.6-2011)

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

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.

 **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)

Quantum Flex[®] Air Trimmers have 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.

Ergonomic Features

An optional, 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.



Section 2

Designated Use

CONTENTS OF THIS SECTION

Recommended Operation	2-2
Quantum Flex® Air 350 / 360.....	2-2
Quantum Flex® Air 440.....	2-2
Quantum Flex® Air 620.....	2-2
Quantum Flex® Air 625.....	2-3
Quantum Flex® Air 500.....	2-3
Quantum Flex® Air 505.....	2-3
Quantum Flex® Air 564.....	2-3
Quantum Flex® Air 750.....	2-3
Quantum Flex® Air 850 / 1850.....	2-4
Quantum Flex® Air 880-B / 1880 with Adjustable Depth Gauge.....	2-4
Quantum Flex® Air 880-S with Adjustable Depth Gauge.....	2-4
Quantum Flex® Air 1000.....	2-5
Quantum Flex® Air 1300.....	2-5
Quantum Flex® Air 1400 with Adjustable Depth Gauge	2-5
Quantum Flex® Air 1500 with Adjustable Depth Gauge	2-5
Quantum Flex® TRIMVAC® 18	2-6
Quantum Flex® TRIMVAC® 45	2-6



Recommended Operation

Quantum Flex® Air Trimmers are made for several recommended operations. Assure that you are using the correct tool for your specific application. The following recommendation list is not intended to be a total and comprehensive listing, but is offered as a guide. Additional applications are possible.

Quantum Flex® Air 350 / 360

BEEF

- Cartilage Removal
- Liver Spotting
- Bone Trimming
- Strip Intestine

PORK

- Button Bones
- Bone Trimming
- Spotting Livers / Removing Gall Sacks

POULTRY

- Turkey Breast
- Turkey Necks
- Chicken Backs
- Turkey Thighs
- Turkey Cage
- Oil Sacks

Quantum Flex® Air 440

POULTRY

- Chick Wing Drop
- Chicken Thigh Deboning
- Turkey Thighs / Knuckle Deboning

Quantum Flex® Air 620

BEEF KILL/OFFAL

- Removing Lean from Heads
- De-Veining Livers

POULTRY

- Removing Lean from Turkey Carcasses
- Removing Lean from Turkey Necks
- Removing Oil Sacks

PORK KILL/OFFAL

- Removing Eyelids
- Cleaning Stick Wounds
- Removing Eardrums
- Removing Lean from Heads
- Spotting Livers / Removing Gall Sacks

BEEF BONING / FABRICATION

- Removing Lean from Bones, Especially:
 - Neck Bones - Atlas Bones
 - Chine Bones from Strips or Rib Eyes
 - Pelvic Bones / Aitch Bones
 - Rib Cages
 - Blade Bones
 - Strip Bones
 - Feather Bones

PORK CUT

- Trimming Neck Bones
- Removing Lean from Bones
- Removing Tails



Designated Use

Recommended Operation (Continued)

Quantum Flex® Air 625

BEEF

- Upgrading Retrim

POULTRY

- Fat Trimming of Turkey Thighs
- Trimming of Turkey Skins

PORK

- Fat Trimming of Pork Loins
- Upgrading Retrim

Quantum Flex® Air 500

POULTRY

- Turkey Thigh Knuckles

PORK KILL

- Trim Pork Snouts
- Trim Pork Trachea
- Trim Pork Heads

PORK CUT

- Remove Lean from Neck Bones of Heavy Hogs
- Remove Tails from Heavy Hogs
- Removing 99% Picnic Muscle from Bellies
- Removing Pork Tenderloins

INDUSTRIAL

- Foam Industry

Quantum Flex® Air 505

POULTRY

- Turkey Thigh Trim

BEEF BONING/FABRICATION

- Removing Lean from Fat Generated in Fabrication

Quantum Flex® Air 564

PORK KILL

- Remove Tenderloin
- Mark Tenderloin

Quantum Flex® Air 750

PORK CUT

- Remove Diaphragm Lean
- Removal of Picnic Hearts

PORK KILL

- Remove Cheek Meat
- Remove Blood Clots from Jowls

FOAM INDUSTRY

- Remove Defects
- Flash Trimming



Recommended Operation (Continued)

Quantum Flex® Air 850 / 1850

PORK KILL

- Removing Leaf Lard

HAM PROCESSING

- External Ham Defatting
- Internal Ham Defatting
- Defat Pork Loins
- Remove Oyster Meat

BEEF

- Recover Lean from Fat
- Trim Lean from Rib Caps
- Trim Beef Tripe

POULTRY

- Defatting Turkey Skins
- Defatting Turkey Thighs

Quantum Flex® Air 880-B / 1880 with Adjustable Depth Gauge

BEEF BONING/FABRICATING

- Removing Dirt and Hair
 - Slaughter Floor
 - Prior to Loading
 - Upon Receiving
 - Prior to Fabrication
- Final Trim on Primal Fat Shaping

Quantum Flex® Air 880-S with Adjustable Depth Gauge

PORK

- Remove Skin or Hair Patches
- Trimming Pork Loins and Canadian Backs
- Internal and External Defatting of Hams

POULTRY

- Defatting Turkey Thighs

BEEF

- Removing Membranes and Light Fat Covering from Top Rounds, Bottom Rounds, Briskets and Cube Steak Material



Designated Use

Recommended Operation (Continued)

Quantum Flex® Air 1000

PORK CUT

- Defat Hams, Picnics and Butts
- Removing Lean from:
 - Picnic Face
 - Fat Backs
 - Clear Plates
 - Bootjack
- Jowls Shoulder End of Belly
- Belly (Wire Muscle – Pickle Pocket)
- Plate Trim

BEEF SLAUGHTER

- Defatting Hot Beef Externally & Internally
- Kidney Fat, Heart Fat, Pelvic Fat & Cod Fat

Quantum Flex® Air 1300

BEEF KILL

- Pizzle Cord Removal
- Removing External Fat

BEEF BONING / FABRICATION

- Primal Fat Shaping :
 - Strips
 - Sirloin Butts
 - Ribs
- Defat Navels (Pastrami)

HAM BONING

- External Defat of Hams
- External Defat of Pork Shoulders

Quantum Flex® Air 1400 with Adjustable Depth Gauge

PORK PROCESSING

- Defatting
 - Whole Hams
 - Shoulders
 - Canadian Backs
- Removing Beater Marks
- Scraping Leaf Lard

BEEF PROCESSING

- Carcass Hair & Dirt Removal
- Defatting
 - New York Strips & Sirloin Butts
 - Rounds and Ribeyes

Quantum Flex® Air 1500 with Adjustable Depth Gauge

PORK PROCESSING

- Removing Skin Patches from Bellies
- Defatting
 - Whole Hams
 - Pork Loins

BEEF SLAUGHTER

- Defatting Hot Beef Externally
- Hair and Dirt Removal



Recommended Operation (Continued)

Quantum Flex® TRIMVAC® 18

BEEF and PORK SLAUGHTER

- Removal of Spinal Column

Quantum Flex® TRIMVAC® 45

BEEF and PORK SLAUGHTER

- Internal Defatting

Salmon and Whitefish Processing

- Frame Scraping

Cheese Processing

- Remove Mold



Section 3

Unpacking and Installation

CONTENTS OF THIS SECTION

Safety First	3-2
Included with your Machine – (Small Quantum Flex® Air Tools).....	3-2
Models: 350, 360, 440, 620, 625, 500, 505, 564	3-2
Safety First	3-3
Included With Your Machine – (Large Quantum Flex® Air Tools).....	3-3
Models: 750, 850, 880-B, 880-S, 1850, 1880, 1000, 1300, 1400, 1500	3-3



Safety First



WARNING

**Sharp blades may cause injury!
Unpack the trimmer carefully.**



**Included with your Machine – (Small Quantum Flex® Air Tools)
Models: 350, 360, 440, 620, 625, 500, 505, 564**

Part Number	Description
173226	Filter Regulator Lubricator (FRL) Kit
100642	Special Steel
103603	Pint of Oil
113326	Planetary Gear Grease Gun (Needle-Nose)
184134	Spanner Wrench
107325	Hex Wrench (Small Tool)
184128	Hex Wrench (Large Tool)
184282	4 oz. Tube of Max-Z-Lube
143631	14 oz. Cartridge of Special Whizard® Grease



Safety First



**Sharp blades may cause injury!
Unpack the trimmer carefully.**



**Included With Your Machine – (Large Quantum Flex® Air Tools)
Models: 750, 850, 880-B, 880-S, 1850, 1880, 1000, 1300, 1400, 1500**

Part Number	Description
173226	Filter Regulator Lubricator (FRL) Kit
100642	Special Steel
103603	Pint of Oil
113326	Planetary Gear Grease Gun (Needle-Nose)
184134	Spanner Wrench
107325	Hex Wrench (Small Tool)
184128	Hex Wrench (Large Tool)
184282	4 oz. Tube of Max-Z-Lube
143631	14 oz. Cartridge of Special Whizard® Grease



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 Quantum Flex® Air, 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.

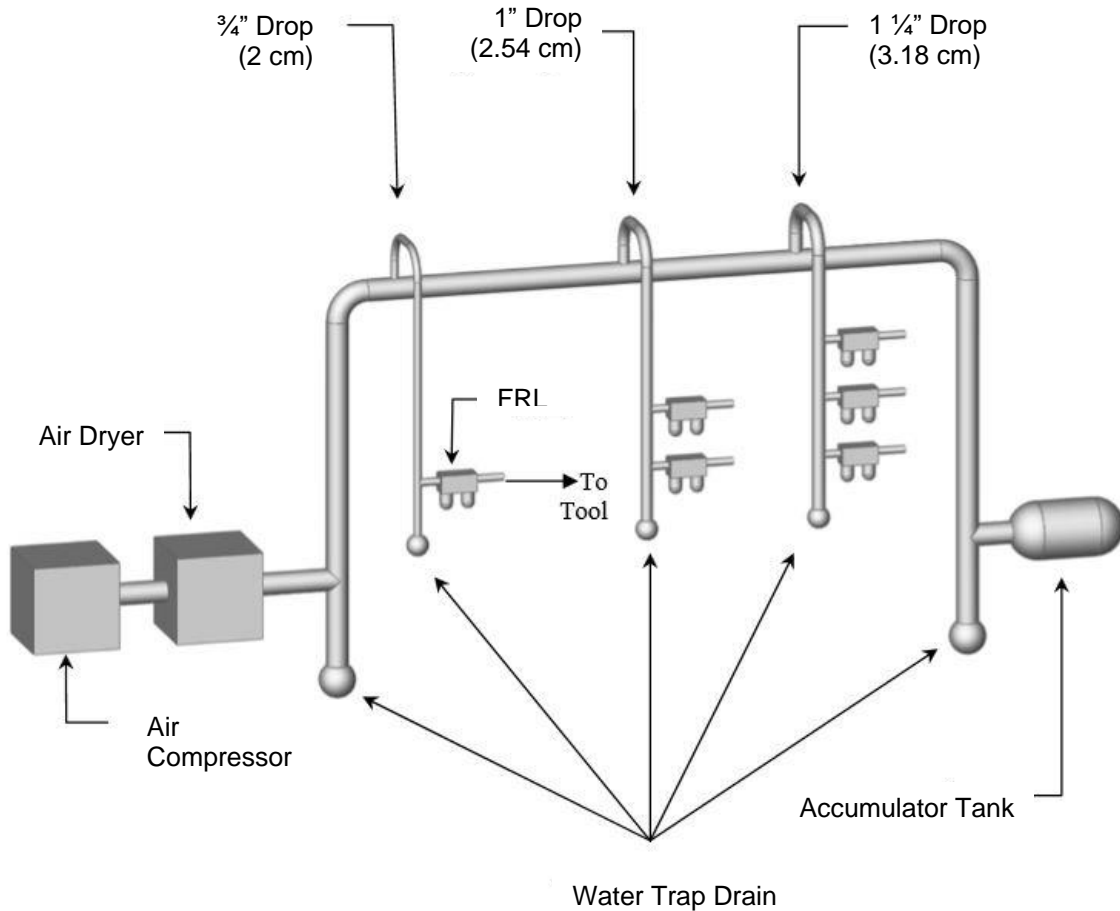
IMPORTANT: Be sure the air supply is a constant 90 pounds per square inch (6.2 bar) and the volume is a minimum of 14 cubic feet per minute (396 liters per minute) per unit.

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

CONTENTS OF THIS SECTION

Optional Thumb Support	4-2
Power Unit / Head Assembly - Attachment and Adjustment.....	4-3
Install Depth Gauge (Optional)	4-15
Hose Assembly Attachment	4-16
Starting the Trimmer with Standard Hose Assembly	4-17
Starting the Trimmer with Quick-Start Hose Assembly.....	4-18
Depth Gauge Adjustment	4-19
Tool Operation.....	4-21
Blade Steeling	4-22
Blade Changing – Small Tools	4-24
Blade Removal - Small Tools	4-24
Models: 350, 360, 440, 500, 505, 564, 620, 625	4-24
Blade Installation - Small Tools	4-24
Models: 350, 360, 440, 500, 505, 564, 620, 625	4-24
Blade Changing – Large Tools	4-25
Blade Removal - Large Tools.....	4-25
Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880	4-25
Blade Installation - Large Tools.....	4-25
Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880	4-25



Optional Thumb Support

If using the optional adjustable thumb support, the operator's thumb should be fully supported and rest comfortably in the support. The thumb support has been optimized to fit most hands comfortably.

NOTE

If the operator normally wears a glove, this process should be done with the glove(s) used in normal operation.

We do not recommend the use of Nitrile gloves in direct contact with the Quantum Flex® Air handles because the gloves may become slippery.



Power Unit / Head Assembly - Attachment and Adjustment

The Quantum Flex[®] Air Trimmers have been designed to allow the head of the tool to be rotated relative to the handle. In this way, the tool can be adjusted to align the blade with the product, while maintaining a comfortable position for the operator's wrist.

The position that is selected should be based on the individual workstation, product, and operator. To determine the proper position, it will be necessary to observe the operator while trying various positions. Select the position which is most comfortable to the operator.



Sharp blades may cause injury!





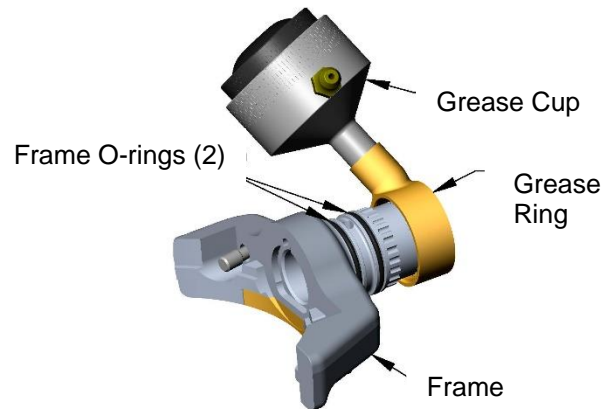
Power Unit / Head Assembly - Attachment and Adjustment

(Continued)

Step 1:

Grease Cup and Ring

- Pick up the Quantum Flex® Air Trimmer.
- Pick up the grease cup and ring. Apply a small amount of Whizard® Special Grease to the frame o-rings.
- With a twisting motion, install the grease ring onto the frame over the o-rings.



NOTICE

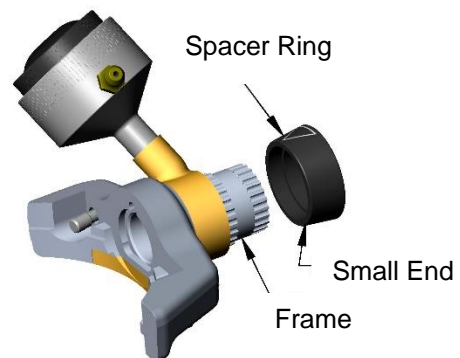
Be careful not to squeeze the o-rings out of their grooves, or they could be trapped and damaged.

- Rotate the grease cup to the desired position.

Step 2:

Spacer Ring

- Select the spacer ring or optional thumb support.
- **If the spacer ring is used**, Slide the spacer ring onto the frame, small end first.





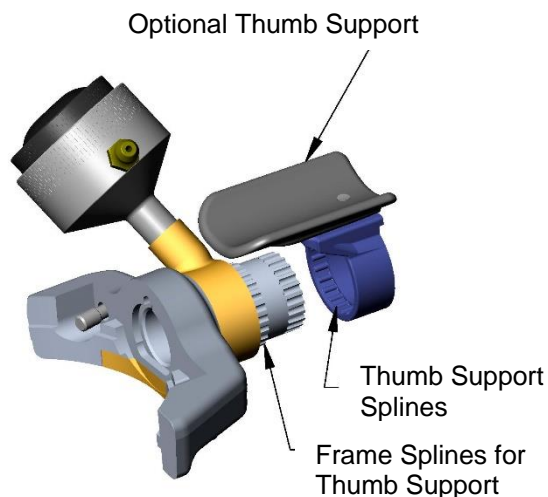
Instructions for Operation

Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 3:

Optional Thumb Support

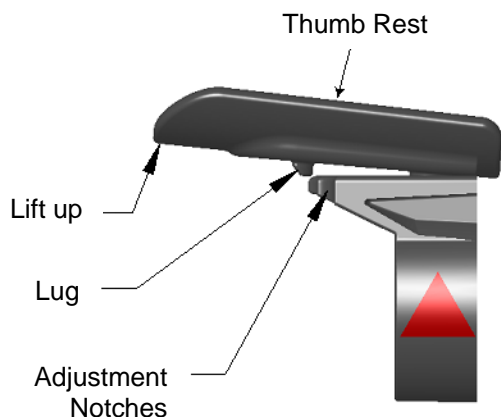
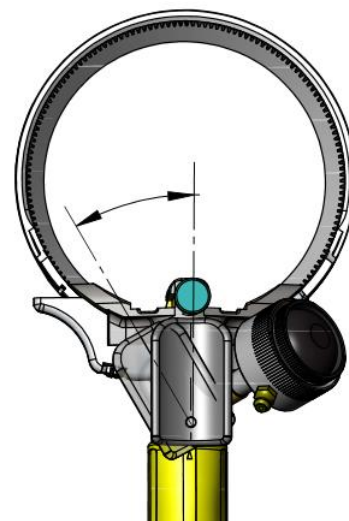
- Pick up a spacer ring or optional thumb support.
- If the optional thumb support is used, align the thumb support splines with the frame splines.
- The optional thumb support should be located on the opposite side of the grease cup.



Thumb Support Angle Adjustment

- Lift up on the front of the thumb support until the lug comes out of the notch underneath the thumb support.
- Rotate the thumb rest to a new position.
- Push the thumb rest back down to seat the lug into a new notch.

NOTE: It may be necessary to rotate the grease cup to a new position to adjust the thumb support to the desired position.





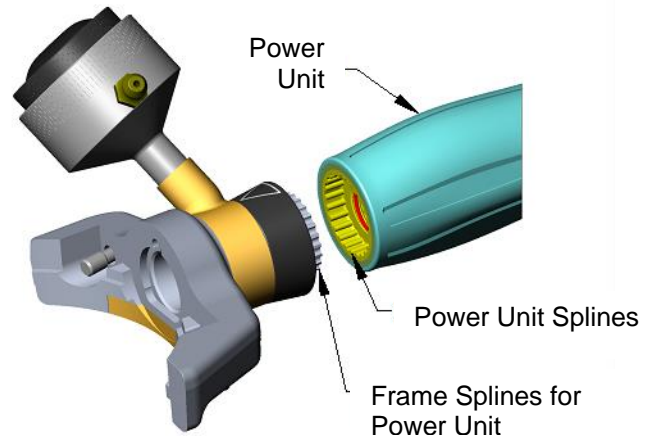
Power Unit / Head Assembly - Attachment and Adjustment

(Continued)

Step 4:

Power Unit

- While holding the trimmer, pick up a power unit.
- Firmly push the power unit towards the bottom of the spacer ring or optional thumb support. Align the power unit spline with the splines on the frame.



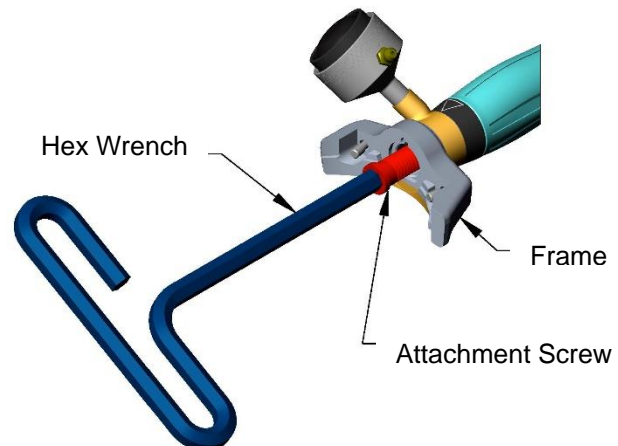
NOTE: *The handle can be adjusted to suit the operator and the work station by pulling the power unit back away from the frame and re-locating it on another set of notches on the frame.*

Step 5:

Attachment Screw

- Insert the attachment screw in the frame.
- Tighten the attachment screw **FIRMLY**, using the supplied hex wrench.

NOTE: *Recommended torque of 50-60 lb-in (5.6-6.8 N-m) for Small Tools and 115-140 lb-in (13-16 N-m) for the Large Tools.*



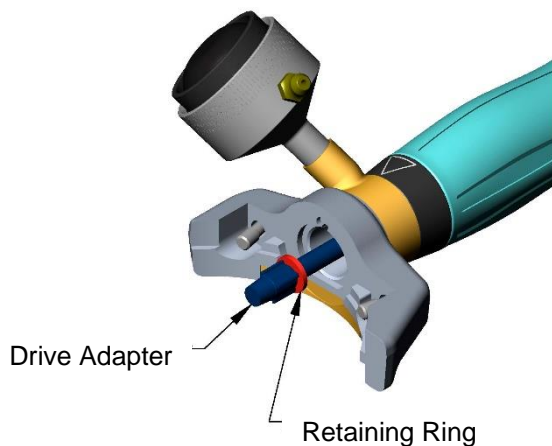


Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 6:

Install Drive Adapter

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



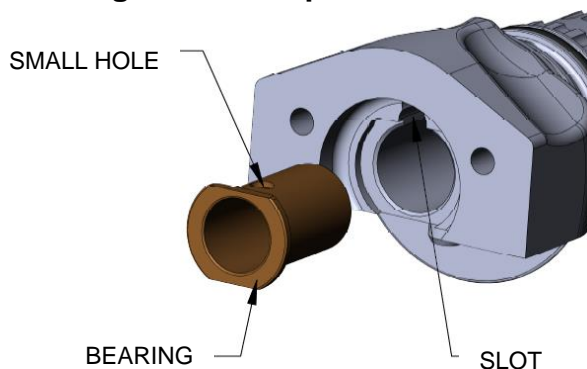
Step 7: Install Bearing – Small Tools

- Push the handpiece bearing in the frame bore and align the small hole through the bearing wall with the slot in the frame. This will align the correct flat on the bearing with the flat in the frame.

NOTICE

Installing the bearing upside down will damage the bearing when the cover plate is tightened down.

DO NOT force the bearing in. If it does not go in, check frame and bearing for damage or build-up.





Power Unit / Head Assembly - Attachment and Adjustment

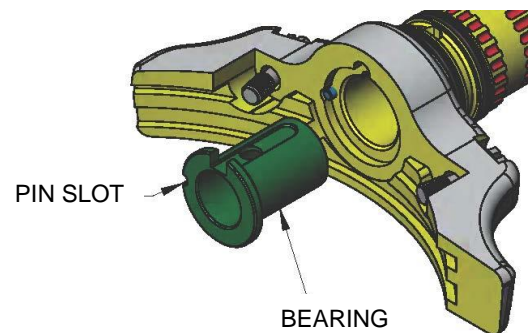
(Continued)

Step 7: Install Bearing – Large Tools

- Push the handpiece bearing in the frame bore and align the bearing slot with the frame pin.
- The bearing should go in with minimal effort and not require pressing.

NOTICE

DO NOT force the bearing in. If it does not go in, check frame and bearing for damage or build-up.





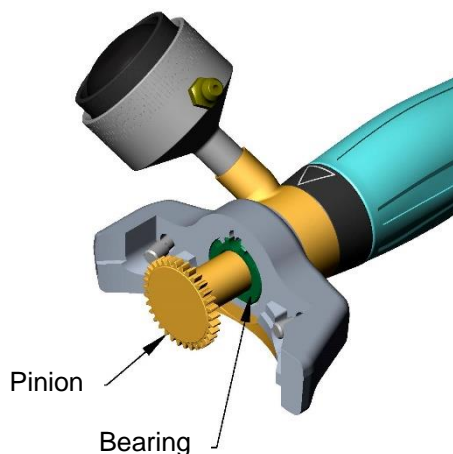
Instructions for Operation

Power Unit / Head Assembly - Attachment and Adjustment
(Continued)

Step 8:

Install Pinion

- 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 the pinion does not, rotate the pinion to seat it flush with the bearing.

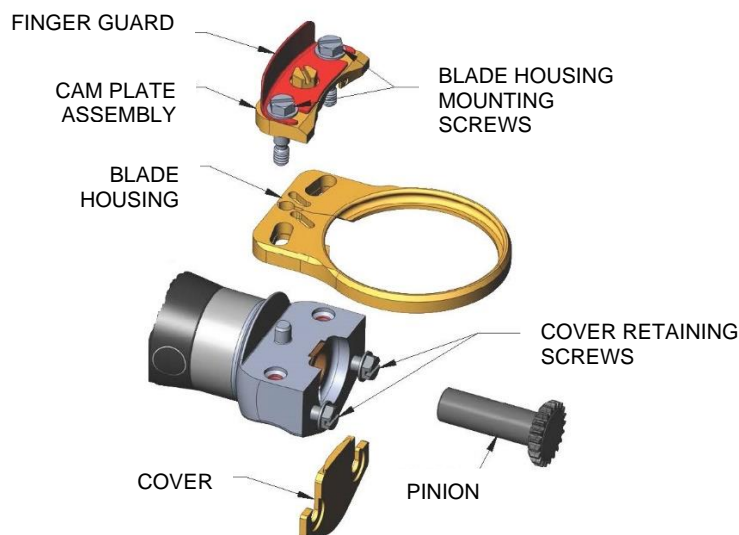


Step 9:

Install Blade Housing, Finger Guard, Cam Plate Assembly, and Cover Plate - Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625

- Place the cover on the frame and tighten the cover retaining screws.
- Place the blade housing on the frame and then place the cam plate assembly and finger guard on the housing.
- Using a ¼" nut driver wiggle the cam hex and apply a small amount of force so the tabs on the cam mate up with the slots on the blade housing.
- Screw the blade housing mounting screws into frame but leave them loose.





Power Unit / Head Assembly - Attachment and Adjustment

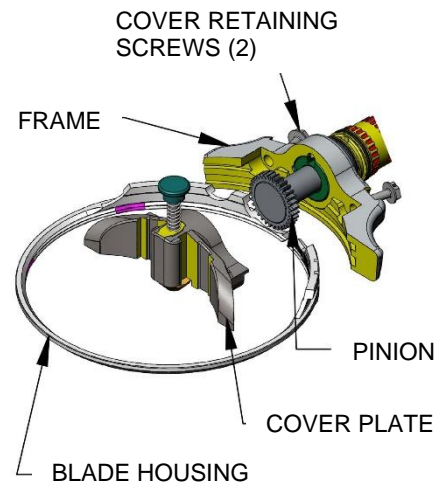
(Continued)

Step 9:

Blade Housing and Cover Plate Installation - Large Tools

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

- Set the blade housing on the frame and put the cover plate on.
- While holding the cover plate firmly against the housing and frame start the two cover retaining screws.
- Tighten the screws lightly.





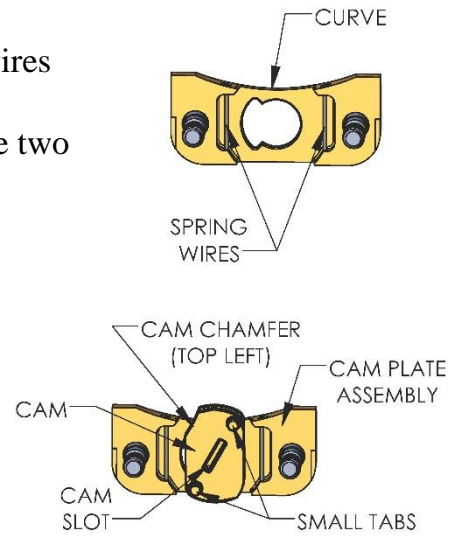
Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 10:

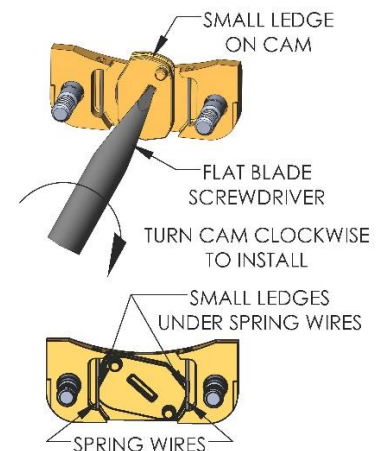
Install Cam into the Cam Plate Assembly - Small Tools Only

Models: 350, 360, 440, 500, 505, 564, 620, 625

- Position the cam plate assembly so that the two spring wires are visible and the curve is facing away from you.
- Apply a small amount of WhizLube Spray on each of the two spring wires. *Refer to Section 7.*
- With small tabs facing upward, insert the cam into the cam plate assembly, positioning the cam slot as shown. *Note: The location of the chamfer on the cam is at the top left.*
- Using a flat blade screwdriver, apply a light, downward force and turn the cam clockwise about 1/4 turn until it stops.



NOTICE: Make certain the two small ledges on the cam go under the spring wire during the assembly.





Power Unit / Head Assembly - Attachment and Adjustment

(Continued)

Step 11:

Blade Installation – Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625



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.

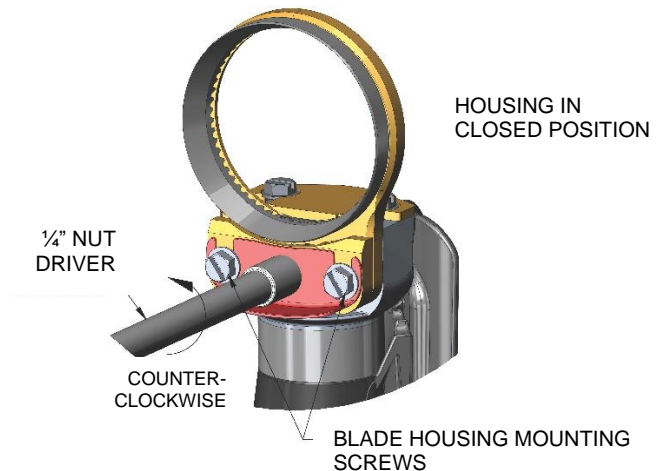
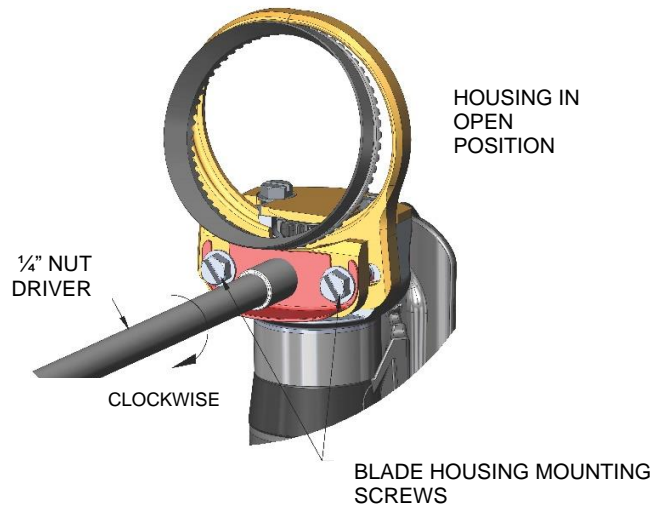


Keep hands away from moving blades!

- Turn the tool over so that the blade housing mounting screws are pointing upward.
- Loosen the two blade housing mounting screws if they are not loose already.
- Using ¼" nut driver turn the cam clockwise about 1/8 of a turn until it locks the blade housing in the open position.
- Insert a new blade into the housing.
- Turn the cam counter-clockwise about 1/8 of a turn to close the blade housing.
- Tighten the two blade housing mounting screws.
- The blade should rotate freely.

WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.

NOTE: *There is no adjustment in the blade housing on the small tools.*





Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 11:

Blade Installation – Large Tools

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880



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!

- Turn the tool over so the blade side is up.
- Spread open the blade housing with a screwdriver.

NOTE: *A slight tension on the left cover screw will allow the blade housing to stay open on its own.*

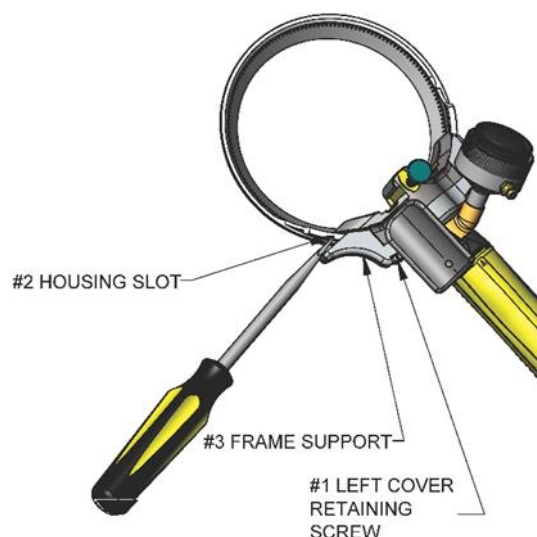
- Insert a new blade in the housing.
- Loosen the left cover retaining screw so the housing will close.
- Adjust the housing for proper running clearance. The blade should turn freely with a slight side-to-side motion. This leaves room for the grease.

WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.

- Tighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher torque wrench kit is recommended.
- Re-check the running clearance.

Blade is too tight

- If the blade is too tight in the housing, adjustments can be made by loosening the left cover retaining screw and slightly spreading open the housing.
- Check the housing for proper running clearance and retighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher torque wrench kit is recommended.





Power Unit / Head Assembly - Attachment and Adjustment (Continued)

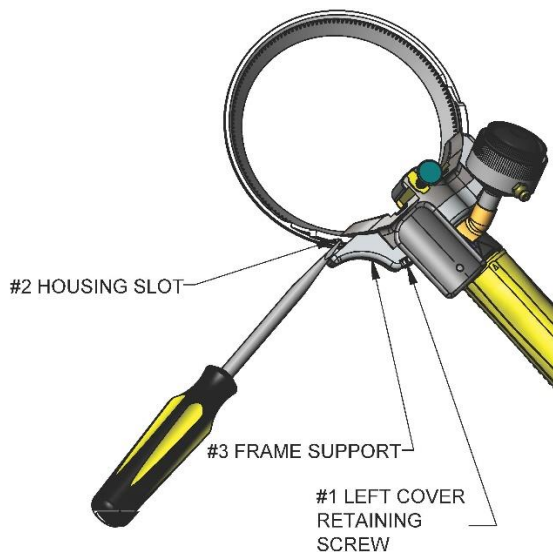
Step 11:

Blade Installation – Large Tools (Continued)

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

Blade is too loose

If the blade is too loose in the housing, adjustments can be made by slightly loosening the left cover retaining screw and squeezing the housing lightly. Check the housing for proper running clearance and retighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher® torque wrench kit is recommended.



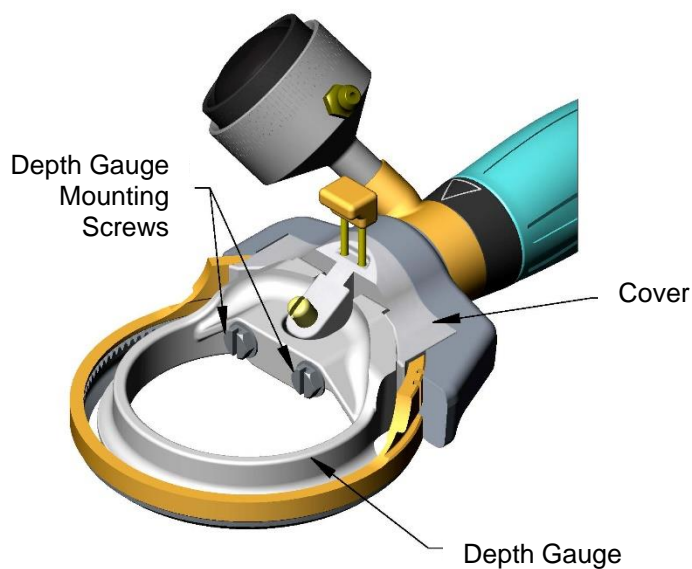


Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 12:

Install Depth Gauge (Optional)

- Loosen depth gauge attachment screws.
- Slide depth gauge onto the cover.
- Adjust the depth gauge to the desired height.
- (See Depth Gauge Adjustment for more information)
- Tighten the depth gauge attachment screw(s).

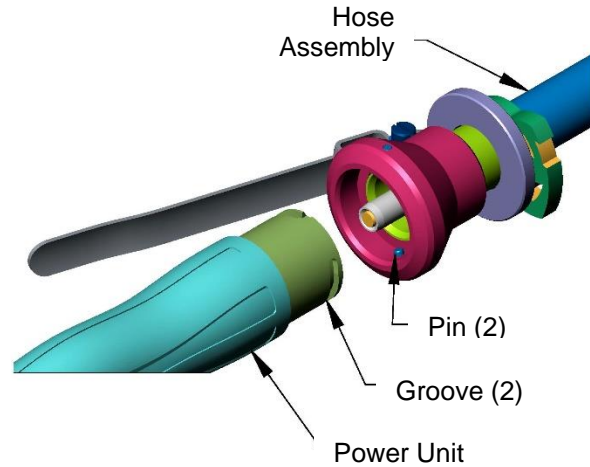




Hose Assembly Attachment

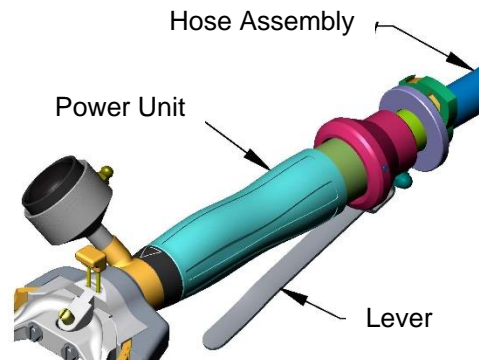
Step 1:

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



Step 2:

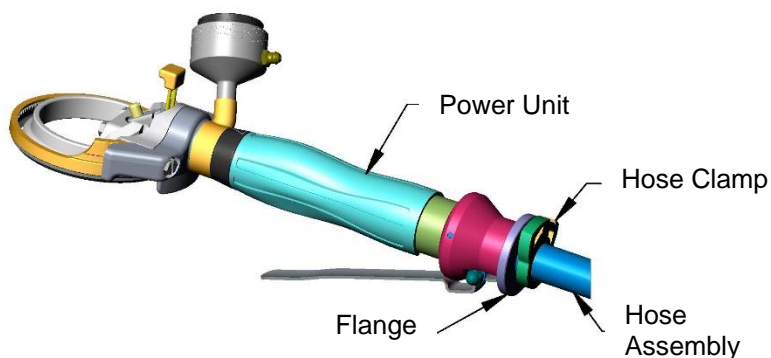
- Slide the power unit into the hose assembly
- Rotate the power unit 90°
- Lever will rotate toward the bottom of the tool.



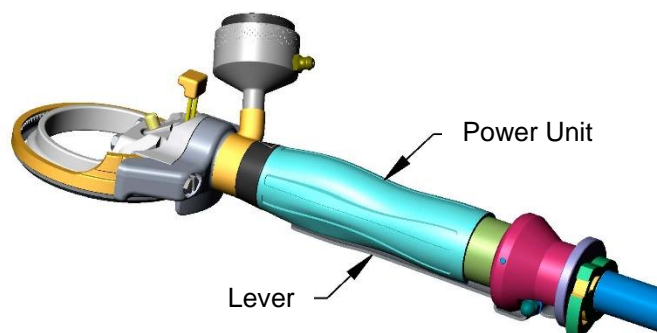


Starting the Trimmer with Standard Hose Assembly

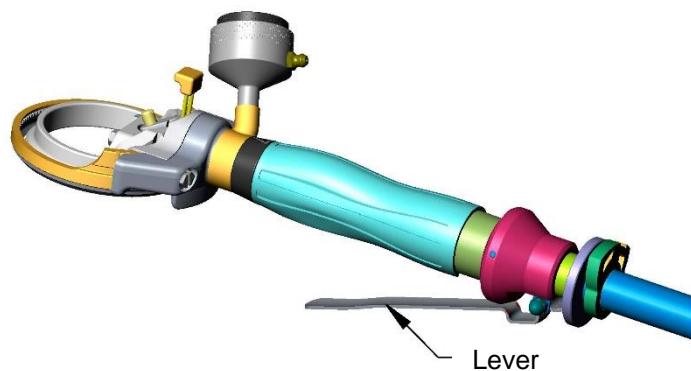
- Hold the power unit and push the flange and or hose clamp of the hose assembly toward the power unit.



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



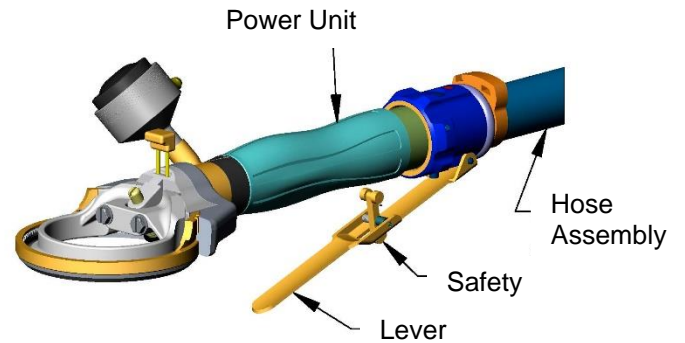
- Release the lever to turn the trimmer off.



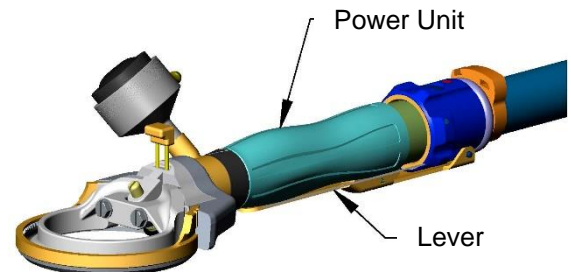


Starting the Trimmer with Quick-Start Hose Assembly

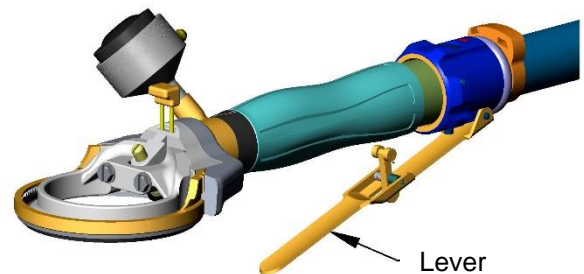
- Fold the safety into the lever.



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



- Release the lever to turn the trimmer off.





Depth Gauge Adjustment

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.

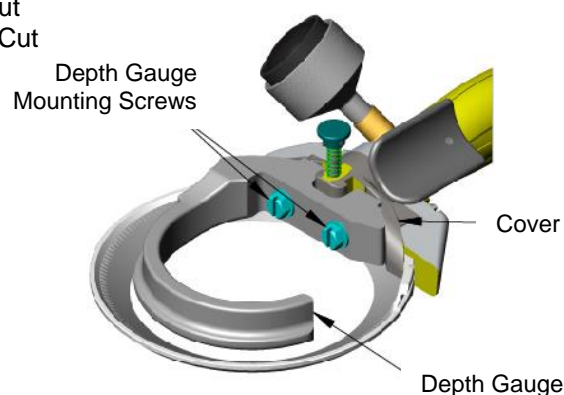
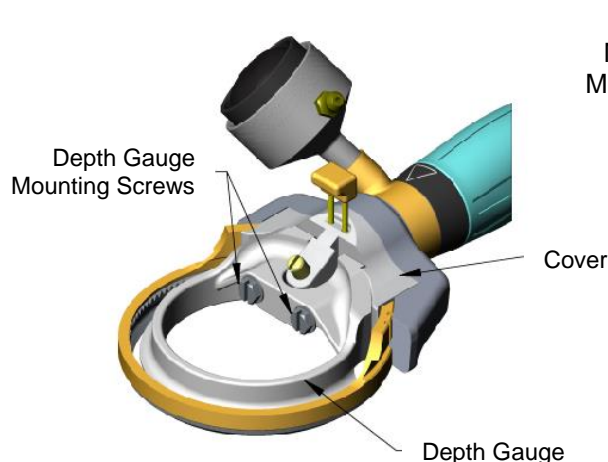
Always disconnect the tool from the air supply prior to servicing.

Quantum Flex® Air Models 625, 505, 880, 1880, 1400 and 1500:

These models are equipped with an adjustable depth gauge for setting a controlled product trim thickness. The depth gauge can be adjusted for cuts up to ¼" thick. A depth gauge setting device is also available.

To adjust the depth:

- Hold the handpiece with the blade facing downward.
- Loosen the depth gauge attachment screw(s).
- Adjust the depth gauge setting by sliding it up or down to the desired height.
- Retighten the depth gauge attachment screw(s).



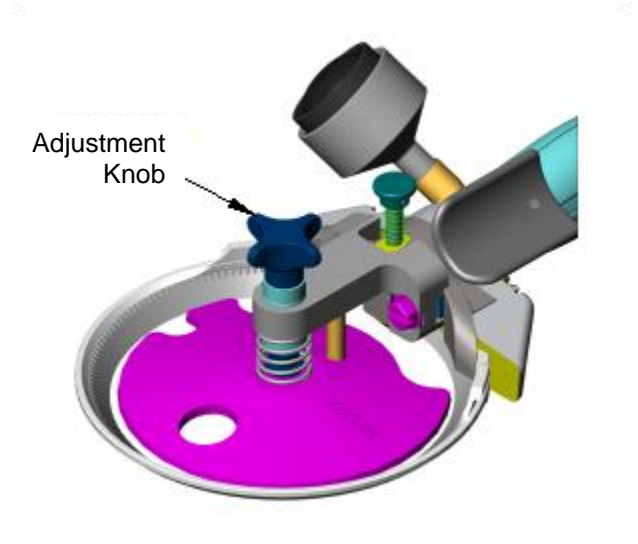


Depth Gauge Adjustment (Continued)

Optional Adjustable Fat (F) and Skinner (S) Disc Gauges for the Quantum Flex® Air Models 850, 1850, 1000 and 1300

- Hold the handpiece with the blade facing downward.
- Adjustments – Turn the adjustment knob **clockwise** for a thicker cut, or **counterclockwise** for a thinner cut.

Important: *Take care not to turn the adjustment knob too far as the disc may disengage from the shaft.*



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.



Tool Operation



Sharp blades may cause cut injury!
Never hold the product being trimmed in your hand.
Always lay the product flat on the work surface.

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.

On flat bones, such as backbones or blades, use a long, quick, gliding stroke.

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.



Blade Steeling

! WARNING

Sharp blades may cause cut injury!

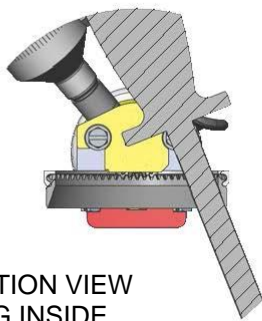


For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.

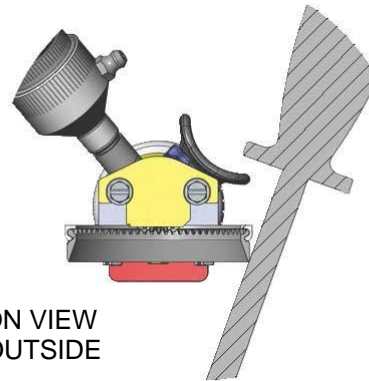
Always disconnect the tool from the air supply prior to servicing.

Steeling For Quantum Flex® Air Models: 350, 440, 500, 564, 620, and 750

- Be sure to hold the steel at the actual angle of the blade edge. Running the steel at an angle greater than the factory ground angle will round over the edge and make re-sharpening more difficult.



CROSS-SECTION VIEW
OF STEELING INSIDE
BLADE EDGE



CROSS-SECTION VIEW
OF STEELING OUTSIDE
BLADE EDGE

- Use the steel lightly and always make the last pass of the steel on the inside surface of the blade.
- Steeling can be accomplished with much greater consistency with the use of the specially designed Edge Master™ Steels. See Section 7; Blade Sharpening and Steeling Equipment, or contact your Regional Manager or Bettcher Industries, Inc. for more information.
- Replace or sharpen the blade if this procedure does not improve the cutting action.
 - The Quantum Flex® Air Trimmers have been designed to allow the blades to be quickly removed and reinstalled.

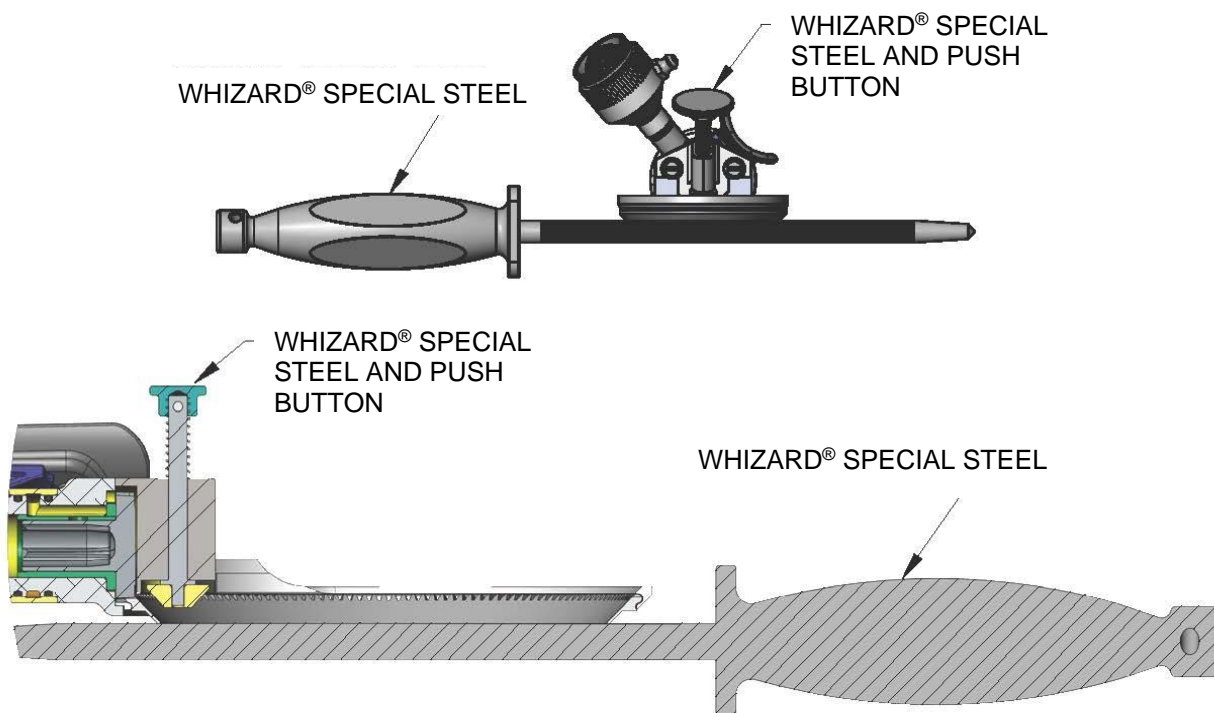


Instructions for Operation

Blade Steeling (Continued)

Steeling for Quantum Flex® Air Models: 360, 505, 850, 880, 1850, 1880, 1000, 1300, 1400 and 1500

- Use the Whizard® special steel against the flat ground surface on 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.
- The inside edge of the blade should be steeled only with the special steeling device mounted on the inside diameter of the blade housing. This is accomplished as follows :
- Hold the Whizard® special steel on the bottom edge of the blade, and the handpiece in your normal operating hand, with the blade down, or away from you.
- At the same time, lightly push down with your thumb on the push button, holding the steeling device lightly against the blade edge for several blade rotations.





Blade Changing – Small Tools



WARNING

Sharp blades may cause cut injury!



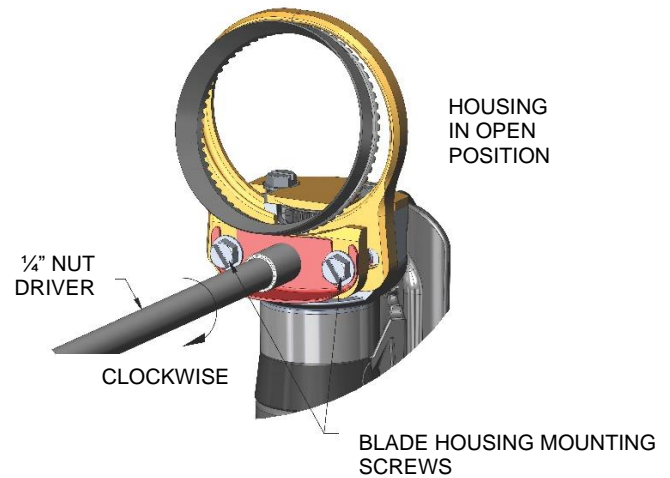
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.

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

Blade Removal - Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625

- Hold the tool in your hand with the blade edge facing upward.
- Loosen the two blade housing mounting screws.
- Using ¼" nut driver turn the cam clockwise about 1/8 of a turn until it locks the housing in the open position.
- Remove the blade from the blade housing.



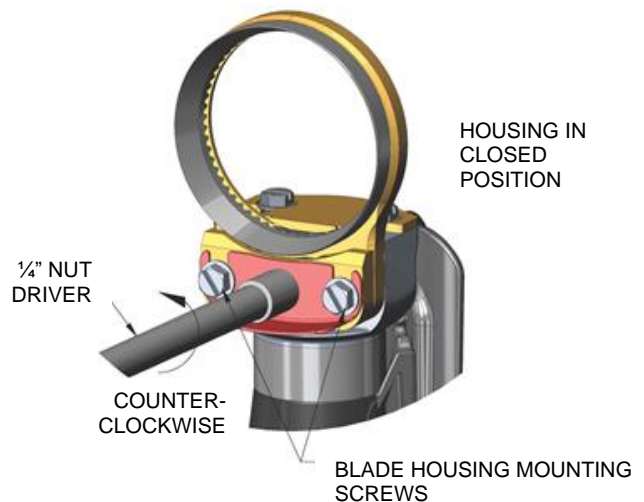
Blade Installation - Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625

- Insert a new blade into the housing.
- Turn the cam counter-clockwise about 1/8 of a turn to close the blade housing.
- Tighten the two blade housing mounting screws.
- The blade should rotate freely.

WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.

NOTE: *There is no adjustment in the blade housing on the small tools.*





Blade Changing – Large Tools



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.

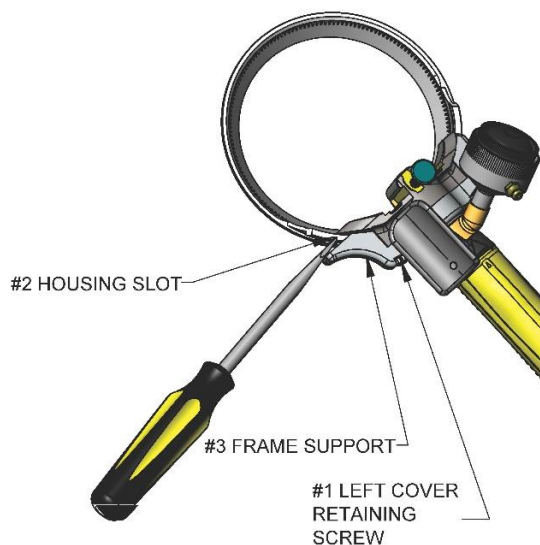
Blade Removal - Large Tools

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

- Hold the tool in your hand.
- Loosen only the left cover retaining screw (Item #1).
- With a screwdriver held in the opposite hand, insert the screwdriver in the housing slot (Item #2). Using the frame as the support point (Item #3), spread open the housing. The blade should fall out.

NOTE: *Some tools have 2 slots in the housing.*

NOTE: *A slight tension on the left cover screw will allow the blade housing to stay open on its own.*



Blade Installation - Large Tools

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

- Turn the tool over so the blade side is up.
- Spread open the blade housing with a screwdriver.

NOTE: *A slight tension on the left cover screw will allow the blade housing to stay open on its own.*

- *Insert a new blade in the housing.*
- Loosen the left cover retaining screw so the housing will close.
- Adjust the housing for proper running clearance. The blade should turn freely with a slight side-to-side motion. This leaves room for the grease.

WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.

- Tighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher torque wrench kit is recommended.
- Re-check the running clearance.



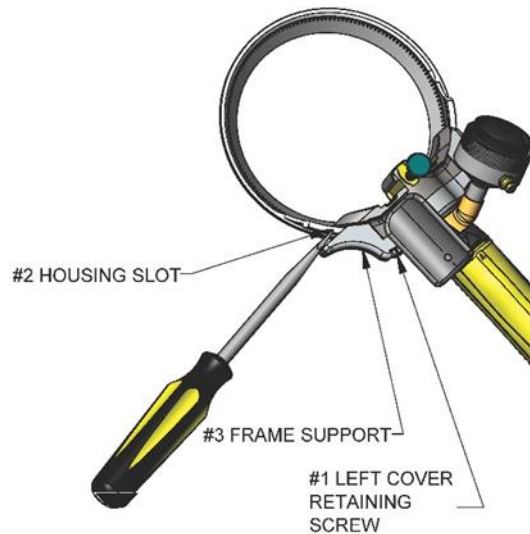
Blade Changing – Large Tools (Continued)

Blade Installation - Large Tools (continued)

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

Blade is too tight

- If the blade is too tight in the housing, adjustments can be made by loosening the left cover retaining screw and slightly spreading open the housing.
- Check the housing for proper running clearance and retighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher torque wrench kit is recommended. *Refer to Section 7, Tools*



Blade is too loose

- If the blade is too loose in the housing, adjustments can be made by slightly loosening the left cover retaining screw and squeezing the housing lightly. Check the housing for proper running clearance and retighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher® torque wrench kit is recommended. *Refer to Section 7, Tools.*

Section 5

Maintenance

CONTENTS OF THIS SECTION

Maintenance Schedule	5-3
General Maintenance	5-3
Handpiece Maintenance	5-3
Required Tools for Handpiece Maintenance	5-3
Disassembly of Handpiece	5-4
Daily Inspection and Maintenance of Handpiece	5-12
Blade Sharpening	5-15
Power Unit / Head Assembly - Attachment and Adjustment	5-16
Quantum Flex® TRIMVAC® Handpiece Maintenance	5-28
Required Tools for Quantum Flex TrimVac® Handpiece Maintenance	5-28
Disassembly of the Quantum Flex® Trimvac® Handpiece.....	5-28
Vacuum Hose Removal for Quantum Flex® TRIMVAC® Handpiece.....	5-29
Vacuum Hose Bracket Removal Quantum Flex® TRIMVAC® Handpiece.....	5-30
Hose Adapter and Cover Removal for Quantum Flex® TRIMVAC® Handpiece.....	5-31
Blade Sharpening of Quantum Flex® TRIMVAC® Handpiece	5-32
Hose Adapter and Cover Installation for Quantum Flex® TRIMVAC® Handpiece.....	5-34
Vacuum Hose Bracket Installation for Quantum Flex® TRIMVAC® Handpiece.....	5-35
Vacuum Hose Installation for Quantum Flex® TRIMVAC® Handpiece.....	5-36
Power Unit Maintenance	5-37
Disassembly of Power Unit.....	5-37
Inspection and Maintenance of Power Unit	5-40
Assembly of Power Unit	5-44



Seal Plate Maintenance	5-48
Required Tools for Seal Plate Maintenance	5-48
Replace Seal	5-48
Air Motor Maintenance.....	5-49
Required Tools for Air Motor Maintenance	5-49
Disassembly of Air Motor	5-50
Inspection and Maintenance of Air Motor	5-53
Assembly of Air Motor.....	5-55
Valve and Hose Assembly Maintenance	5-58
Required Tools for Valve and Hose Assembly Maintenance	5-58
Inspection of Valve and Hose Assembly.....	5-58
Disassembly of Valve and Hose	5-59
Assembly of Valve and Hose.....	5-60
Quick Start Valve and Hose Assembly Maintenance.....	5-61
Required Tools for Quick Start Valve and Hose Assembly Maintenance	5-61
Inspection of Valve and Hose Assembly.....	5-61
Disassembly of Quick Start Valve and Hose	5-62
Assembly of Quick Start Valve and Hose	5-63
Fault Detection and Correction	5-64

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

The Quantum Flex[®] Air 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.

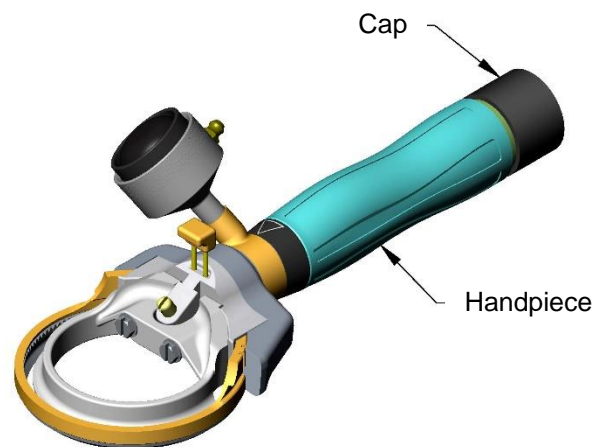
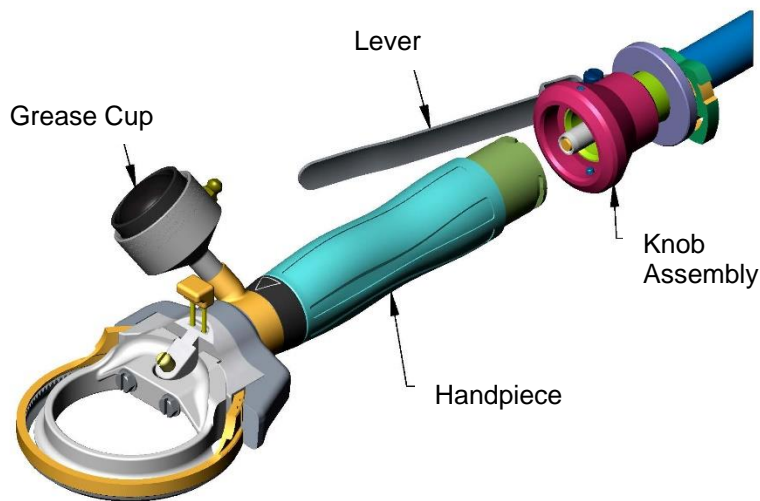
Required Tools for Handpiece Maintenance

- 1 – Flat head screwdriver
- 1 – Hex Wrench (supplied with the Quantum Flex[®] Air Trimmer)

Disassembly of Handpiece

Step 1: Remove Handpiece from Hose Assembly:

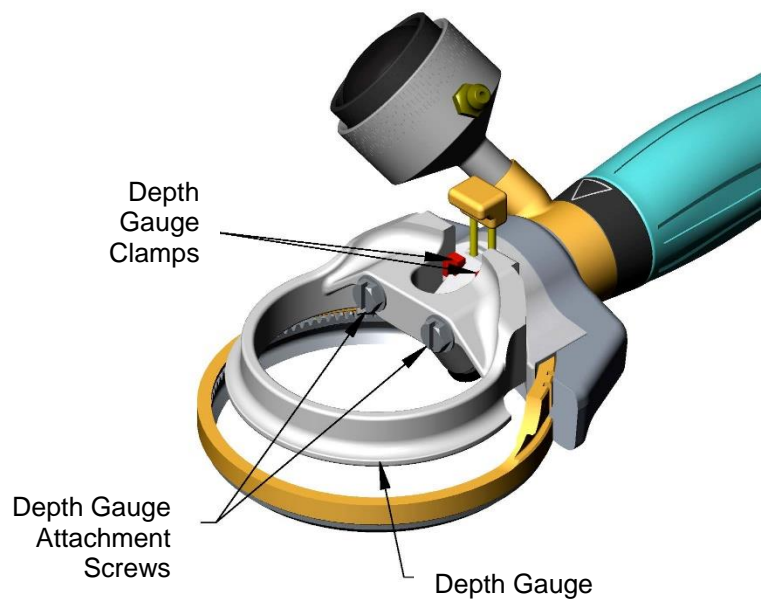
- While holding the handpiece, grip the knob assembly with the opposite hand.
- Rotate the knob assembly 90° and pull the hose assembly from the handpiece.
- Place the cap over the end of the handpiece to protect the handle and protect the motor from water damage.



Disassembly of Handpiece (Continued)

Step 2: Removal / Disassembly of the Depth Gauge from the Cover:

- Loosen, but do not remove, the depth gauge attachment screw(s) located inside the depth gauge.
- Slide the depth gauge upward until the depth gauge clamp(s) slide out of the cover plate grooves.



Disassembly of Handpiece (Continued)

! WARNING

Sharp blades may cause cut injury!



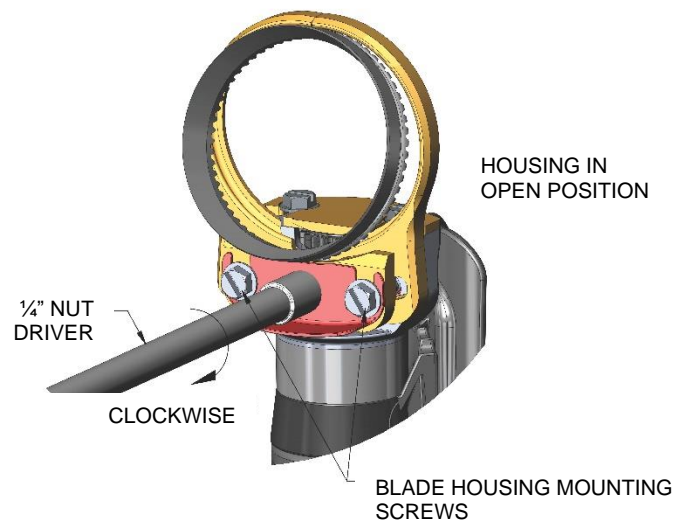
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades.

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

Step 3: Blade Removal – Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625

- Hold the tool in your hand with the blade edge facing upward.
- Loosen the two blade housing mounting screws.
- Using 1/4" nut driver turn the cam clockwise about 1/8 of a turn until it locks the housing in the open position.
- Remove the blade from the blade housing.
- Hold the tool with the blade side up.
- Loosen only the left cover retaining screw.



Disassembly of Handpiece (Continued)

 **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.

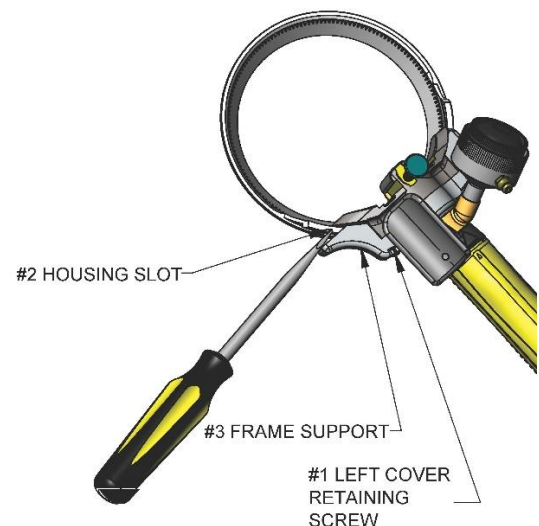
Step 3: Blade Removal –Large Tools

Models 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

- Hold the tool in your hand.
- Loosen only the left cover retaining screw (Item #1).
- With a screwdriver held in the opposite hand, insert the screwdriver in the housing slot (Item #2). Using the frame as the support point (Item #3), spread open the housing. The blade should fall out.

NOTE: Some tools have 2 slots in the housing.

NOTE: A slight tension on the left cover screw will allow the blade housing to stay open on its own.



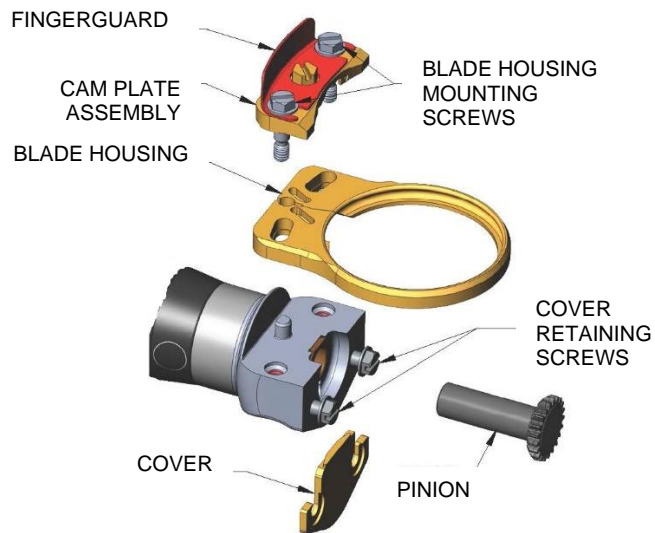
Disassembly of Handpiece (Continued)

Step 4: Remove the Blade Housing, Finger Guard, Cam Plate Assembly and Cover Plate (Small Tools Only)

- Loosen both blade housing mounting screws until the cam assembly is free.

NOTE: *The screws will stay in the cam plate assembly.*

- Remove the blade housing.
- Loosen both cover retaining screws until the cover is free. The cover retaining screws do not need to be completely removed from the frame to remove the cover.
- Pull the pinion out of the frame.

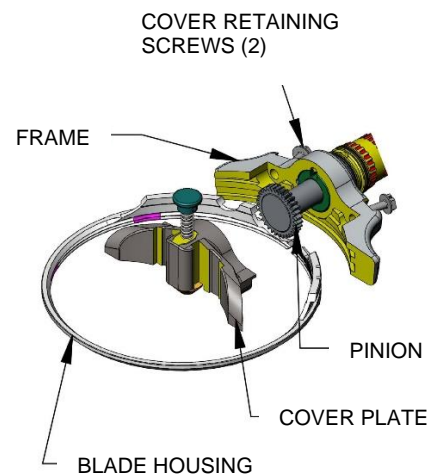


Step 4: Remove the Blade Housing and Cover Plate (Large Tools Only)

- Loosen cover retaining screws until the cover is free.

NOTE: *The screws will stay in the frame.*

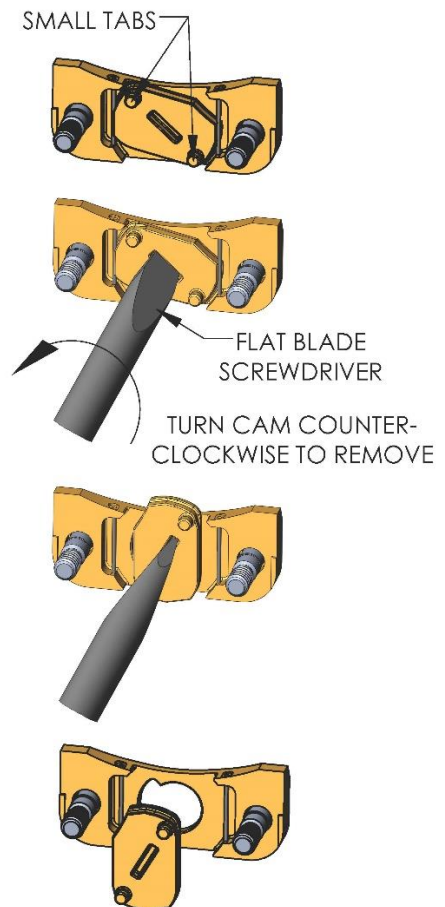
- Remove the blade housing.
- Pull the pinion out of the frame.



Disassembly of Handpiece (Continued)

Step 5: Cam Removal from the Cam Plate Assembly - Small Tools Only Models: 350, 360, 440, 500, 505, 564, 620, 625

- Position the cam and cam plate assembly so that the small tabs located on the cam are facing upward.
- Using a flat blade screwdriver turn the cam counter clockwise 1/4 turn and remove the cam.



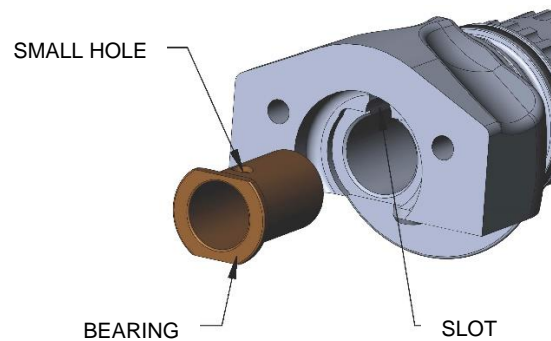
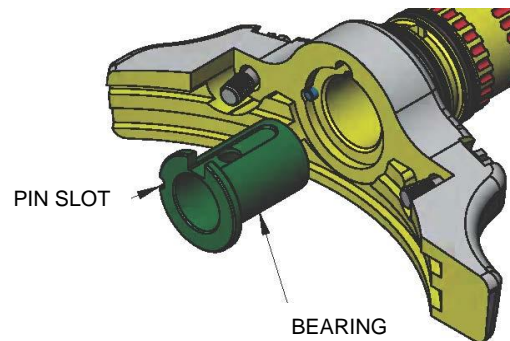
Disassembly of Handpiece (Continued)

Step 6: Remove the Bearing from the Frame:

- The bearing is pulled out from the front of the tool.
- Use a screwdriver to reach into the bearing and catch the bearing grease groove.

NOTE: *The bearing in the small tool does not have grease grooves.*

- While pulling upward, try to rotate the bearing back and forth. Since the bearing is not a press-fit, this will work in most cases.



NOTICE

If the bearing will not come out, it may be necessary to run a tap into the bearing and pull on the tap. If this is done, then the bearing must be replaced due to damage.

A bearing removal tool is available for large and small tool models. Order part number 184983 for large tool models and 107330 for small tool models

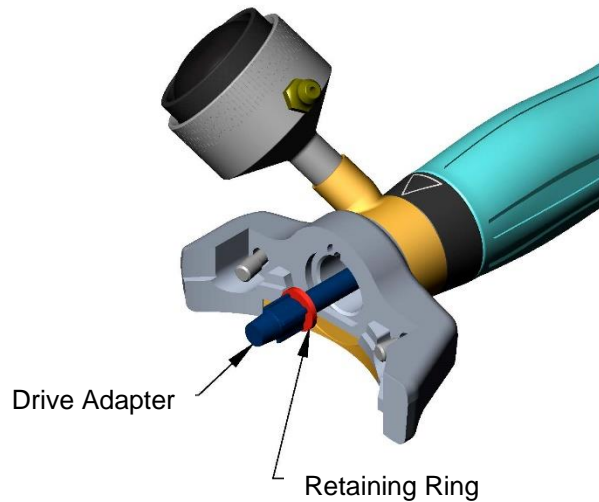
The handpiece is now completely disassembled.

NOTE: LARGE TOOLS ONLY - *The cover retaining screws do not normally need removed. If they need removal, turn the screw while pulling down to engage the thread in the frame.*

Disassembly of Handpiece (Continued)

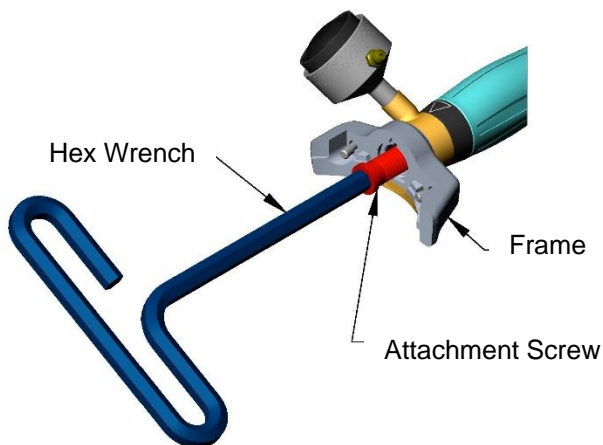
Step 7: Remove Drive Adapter:

- Pull the drive adapter out of the frame.



Step 8: Remove Frame from Power Unit:

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



Daily Inspection and Maintenance of Handpiece

 **WARNING**

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 power and remove the tool from the driveline or flexshaft and casing assembly 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.

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

Blade

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

Daily Inspection and Maintenance of Handpiece (Continued)

Blade Housing Wear

Small Tool Models: 350, 360, 440, 500, 505, 564, 620, 625

- 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.
- **NOTICE:** *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.*

Large Tool Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

- Inspect the inner diameter of the housing for wear.
- When holding the housing with a new blade installed, if the split in the housing touches the other side, and the blade is still loose, the housing needs to be replaced. If a gap is seen, the housing is acceptable.

Pinion Gear

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

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.

Daily Inspection and Maintenance of Handpiece (Continued)

Cover Plate

- Look for signs of corrosion or wear on the cover.
- 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 cover should be replaced.

Frame

- Inspect the frame surfaces where the housing 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.

Steeling Device - Models: 625, 505, 850, 880, 1850, 1880, 1000, 1300, 1400 and 1500

- Inspect the surface condition of the carbide steel. If chipped or cracked it should be replaced.
- Make sure the steeling device and the plunger are free to move.
- The plunger and steel should be cleaned and oiled with mineral oil in order to keep free movement and prevent build-up of dirt.

Depth Gauge / Disc Gauge Clamps - Models: 625, 505, 850, 880, 1850, 1880, 1000, 1300, 1400 and 1500

- Inspect the depth gauge / disc for wear or damage.
- Make certain the depth gauge /disc clamps are not bent.

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.

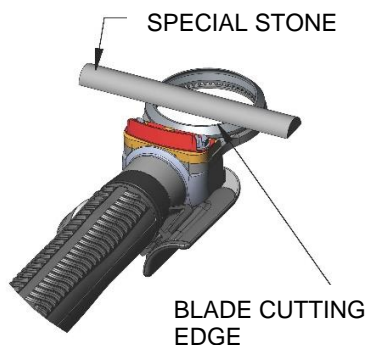
Machine Sharpening

The blade should be stoned or sharpened on a Whizard® Model 210 Universal Blade Sharpener, Whizard® Model 214 Blade Sharpener (International Only), or Bettcher® AutoEdge at the end of each work day. 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.

Hand Stoning

Models: 360, 625, 505, 850, 880, 1850, 1880, 1000, 1300, 1400 and 1500

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.



SPECIAL STONE

BLADE CUTTING
EDGE

Power Unit / Head Assembly - Attachment and Adjustment

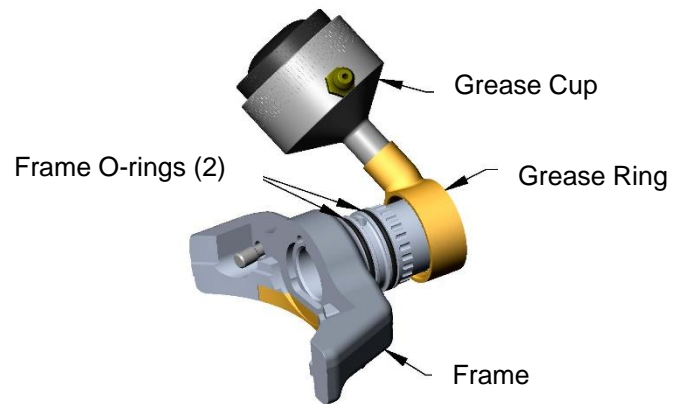
WARNING

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

Step 1:

Grease Cup and Ring

- Pick up the Quantum Flex® Air Trimmer.
- Pick up the grease cup and ring. Apply a small amount of Whizard® Special Grease to the frame o-rings.
- With a twisting motion, install the grease ring onto the frame over the o-rings.

**NOTICE**

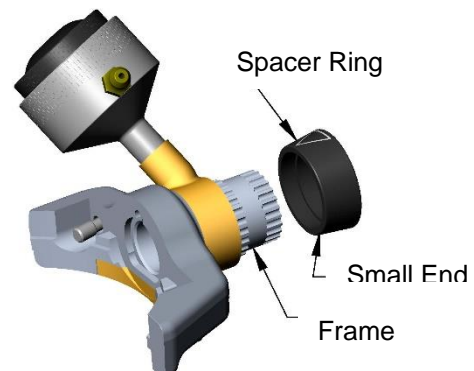
Be careful not to squeeze the o-rings out of their grooves, or they could be trapped and damaged.

- Rotate the grease cup to the desired position.

Step 2:

Spacer Ring

- Select the spacer ring or optional support.
- **If the spacer ring is used**, Slide the spacer ring onto the frame, small end first.



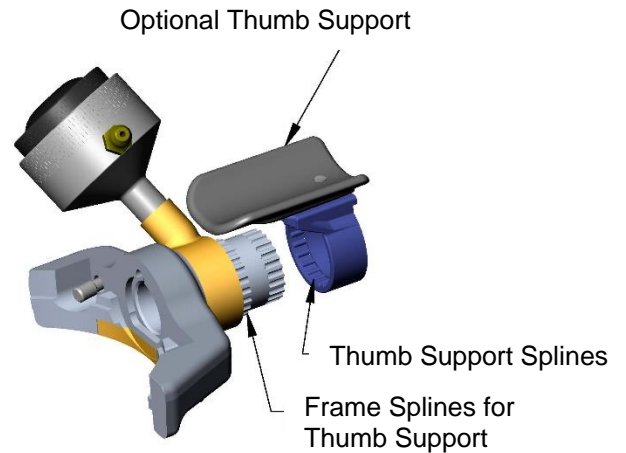
Power Unit / Head Assembly - Attachment and Adjustment

(Continued)

Step 3:

Optional Thumb Support

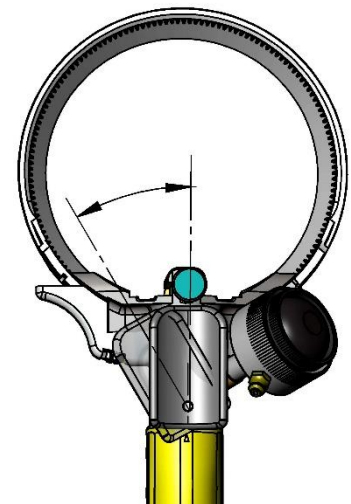
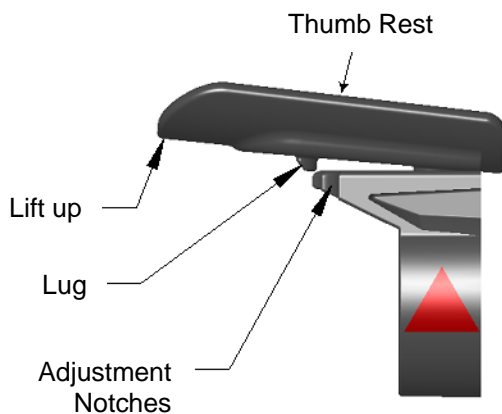
- Pick up a spacer ring or optional thumb support.
- If the optional thumb support is used, align the thumb support splines with the frame splines.
- The optional thumb support should be located on the opposite side of the grease cup.



Thumb Support Angle Adjustment

- Lift up on the front of the thumb support until the lug comes out of the notch underneath the thumb support.
- Rotate the thumb rest to a new position.
- Push the thumb rest back down to seat the lug into a new notch.

NOTE: It may be necessary to rotate the grease cup to a new position to adjust the thumb support to the desired position.



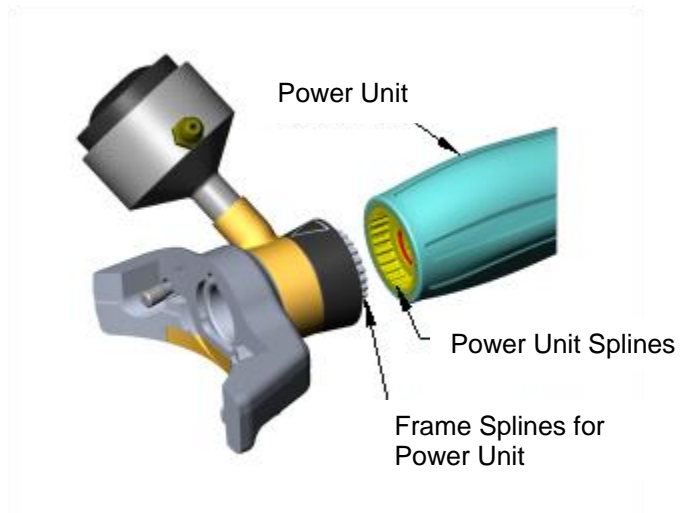
Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 4:

Power Unit

- While holding the trimmer, pick up a power unit.
- Firmly push the power unit towards the bottom of the spacer ring or optional thumb support. Align the handle spline with the splines on the frame.

NOTE: *The handle can be adjusted to suit the operator and the work station by pulling the power unit back away from the frame and re-locating it on another set of notches on the frame.*

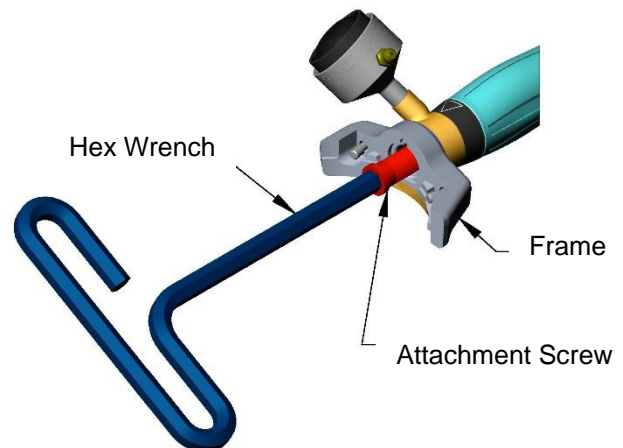


Step 5:

Attachment Screw

- Insert the attachment screw in the frame.
- Tighten the attachment screw **FIRMLY**, using the supplied hex wrench.

NOTE: *Recommended torque of 50-60 lb-in (5.6-6.8 N-m) for Small Tools and 115 lb-in (13-16 N.m) for Large Tools.*

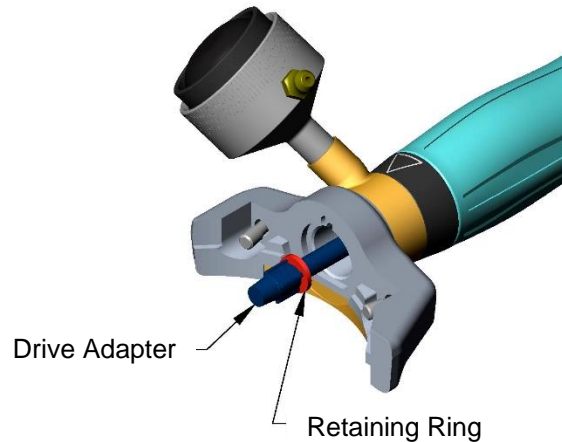


Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 6:

Install Drive Adapter

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



Step 7:

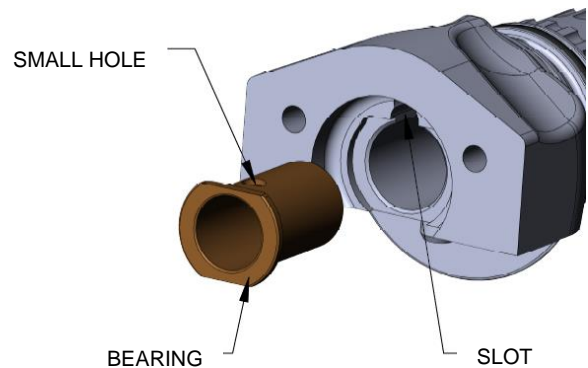
Install Bearing – Small Tools

- Push the handpiece bearing in the frame bore and align the small hole through the bearing wall with the slot in the frame. This will align the correct flat on the bearing with the flat in the frame.

NOTICE

Installing the bearing upside down will damage the bearing when the cover plate is tightened down.

DO NOT force the bearing in. If it does not go in, check frame and bearing for damage or build-up.



Power Unit / Head Assembly - Attachment and Adjustment (Continued)

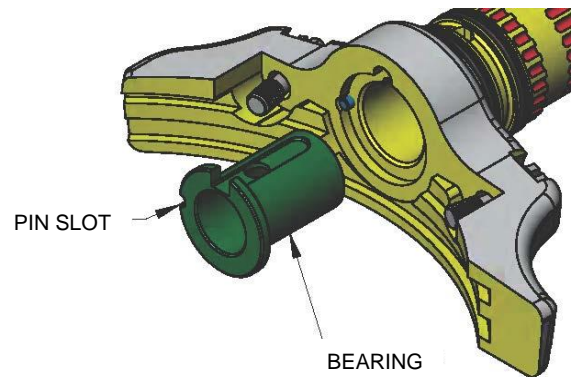
Step 7:

Install Bearing – Large Tools

- Push the handpiece bearing in the frame bore and align the bearing slot with the frame pin.
- The bearing should go in with minimal effort and not require pressing.

NOTICE

DO NOT force the bearing in. If it does not go in, check frame and bearing for damage or build-up.

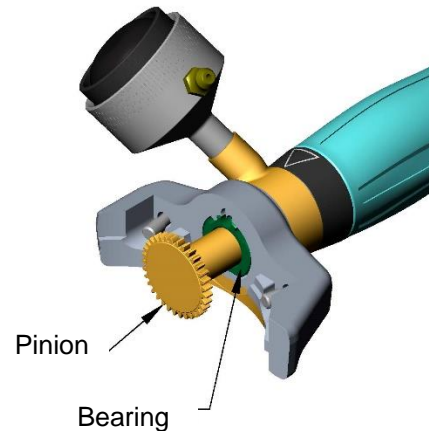


Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 8:

Install Pinion

- 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 the pinion does not, rotate the pinion to seat it flush with the bearing.

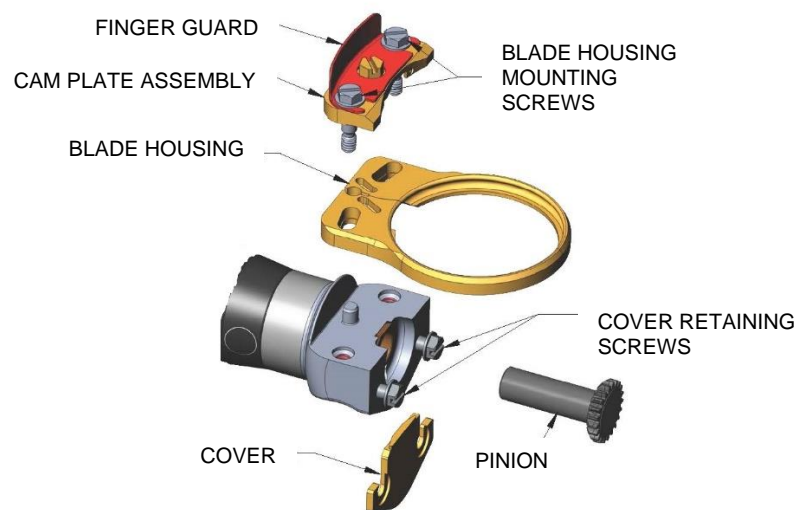


Step 9:

Install Blade Housing, Finger Guard, Cam Plate Assembly, and Cover Plate - Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625

- Place the cover on the frame and tighten the cover retaining screws.
- Place the blade housing on the frame and then place the cam plate assembly and finger guard on the housing.
- Using a ¼" nut driver wiggle the cam hex and apply a small amount of force so the tabs on the cam mate up with the slots on the blade housing.
- Screw the blade housing mounting screws into frame but leave them loose.



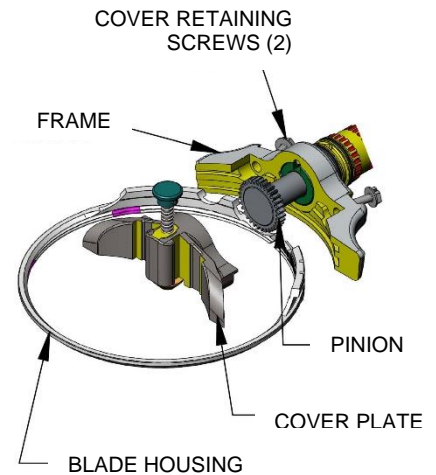
Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 9:

Install Blade Housing and Cover Plate Installation - Large Tools

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

- Set the blade housing on the frame and put the cover plate on.
- While holding the cover plate firmly against the housing and frame start the two cover retaining screws.
- Tighten the screws lightly.



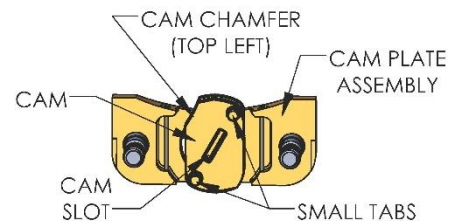
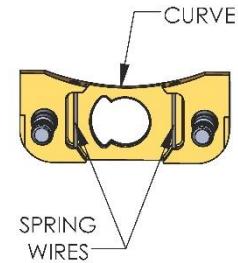
Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 10:

Install Cam into the Cam Plate Assembly - Small Tools Only

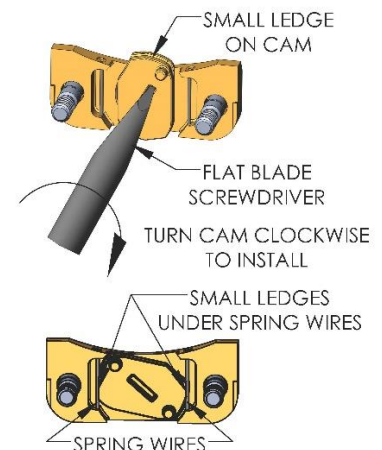
Models: 350, 360, 440, 500, 505, 564, 620, 625

- Position the cam plate assembly so that the two spring wires are visible and the curve is facing away from you.
- Apply a small amount of WhizLube Spray on each of the two spring wires. *Refer to Section 7.*
- With small tabs facing upward, insert the cam into the cam plate assembly, positioning the cam slot as shown.
Note: The location of the chamfer on the cam is at the top left.



- Using a flat blade screwdriver, apply a light, downward force and turn the cam clockwise about 1/4 turn until it stops.

NOTICE: Make certain the two small ledges on the cam go under the spring wire during the assembly.



Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 11:

Blade Installation – Small Tools

Models: 350, 360, 440, 500, 505, 564, 620, 625,

 **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.

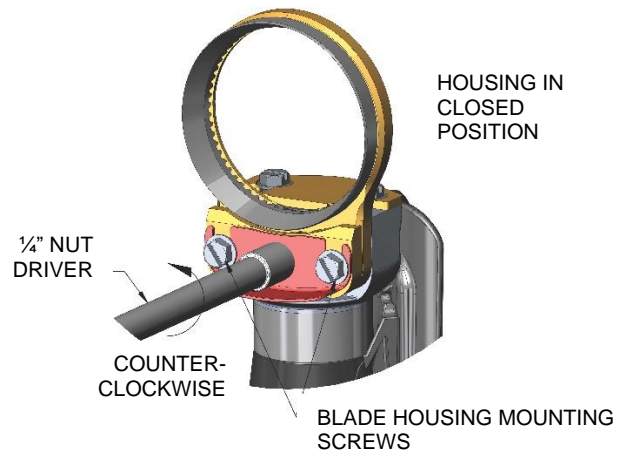
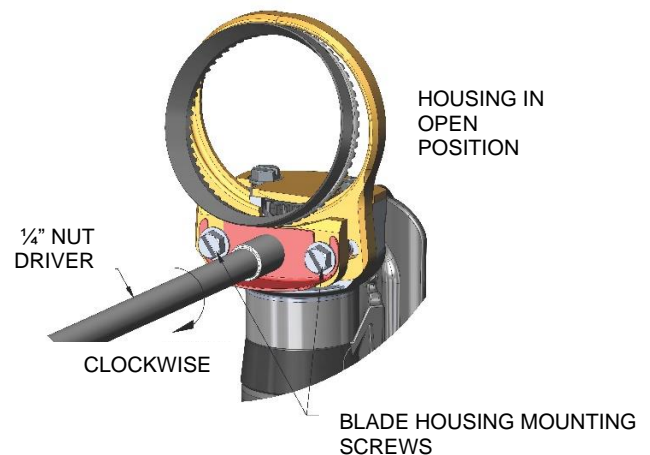


Keep hands away from moving blades!

- Turn the tool over so that the blade housing mounting screws are pointing upward.
- Loosen the two blade housing mounting screws if they are not loose already.
- Using ¼" nut driver turn the cam clockwise about 1/8 of a turn until it locks the blade housing in the open position.
- Insert a new blade into the housing.
- Turn the cam counter-clockwise about 1/8 of a turn to close the blade housing.
- Tighten the two blade housing mounting screws.
- The blade should rotate freely.

WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.

NOTE: There is no adjustment in the blade housing on the small tools.



Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 11:

Blade Installation – Large Tools

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880



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!

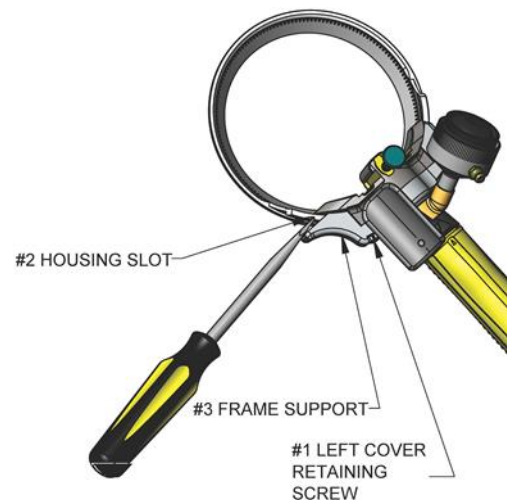
- Turn the tool over so the blade side is up.
- Spread open the blade housing with a screwdriver.

NOTE: A slight tension on the left cover screw will allow the blade housing to stay open on its own.

- Insert a new blade in the housing.
- Loosen the left cover retaining screw so the housing will close.
- Adjust the housing for proper running clearance. The blade should turn freely with a slight side-to-side motion. This leaves room for the grease.

WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.

- Tighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher torque wrench kit is recommended.
- Re-check the running clearance.



Blade is too tight

- If the blade is too tight in the housing, adjustments can be made by loosening the left cover retaining screw and slightly spreading open the housing.
- Check the housing for proper running clearance and retighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher torque wrench kit is recommended.

Power Unit / Head Assembly - Attachment and Adjustment (Continued)

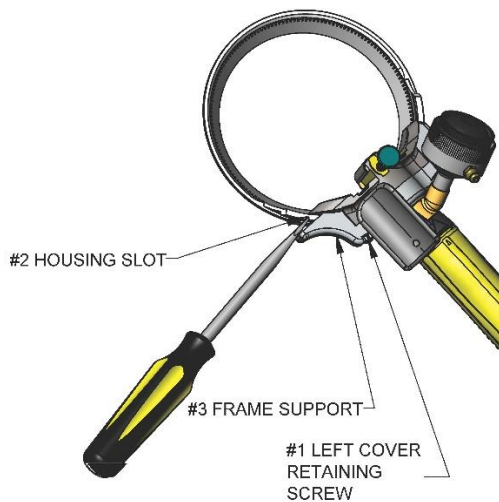
Step 11:

Blade Installation – Large Tools (Continued)

Models: 750, 850, 1000, 1300, 1400, 1500, 1850, 1880

Blade is too loose

If the blade is too loose in the housing, adjustments can be made by slightly loosening the left cover retaining screw and squeezing the housing lightly. Check the housing for proper running clearance and retighten the left cover screw to 35 in-lb. (4 N-m). Use of the Bettcher® torque wrench kit is recommended.

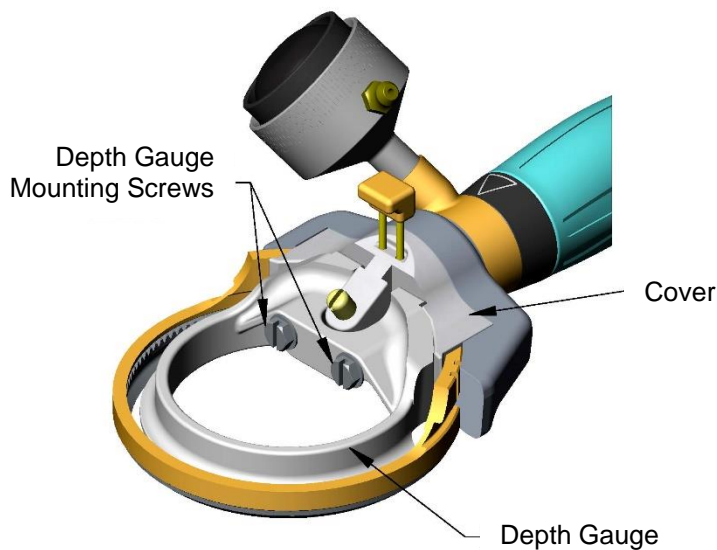


Power Unit / Head Assembly - Attachment and Adjustment (Continued)

Step 12:

Install Depth Gauge (Optional)

- Loosen depth gauge attachment screws.
- Slide depth gauge onto the cover.
- Adjust the depth gauge to the desired height.
- (See Depth Gauge Adjustment for more information)
- Tighten the depth gauge attachment screw(s).



Quantum Flex[®] TRIMVAC[®] Handpiece Maintenance



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 blades.

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

Required Tools for Quantum Flex TrimVac[®] Handpiece Maintenance

1 – 3/32” hex wrench (supplied with the Quantum Flex[®] TRIMVAC[®])

1 – 3/8” hex wrench (supplied with the Quantum Flex[®] TRIMVAC[®])

Disassembly of the Quantum Flex[®] Trimvac[®] Handpiece

Disassembly is identical to the standard, Small Quantum Flex[®] Air Handpiece with the exception of the following:

- Hose Removal
- Vacuum Hose Bracket Removal
- Hose Adapter and Cover Removal
- TrimVac[®] 18 Blade Sharpening

Refer to Section 5, Disassembly of Handpiece and Daily Inspection and Maintenance of Handpiece for Quantum Flex Air Small Tools.

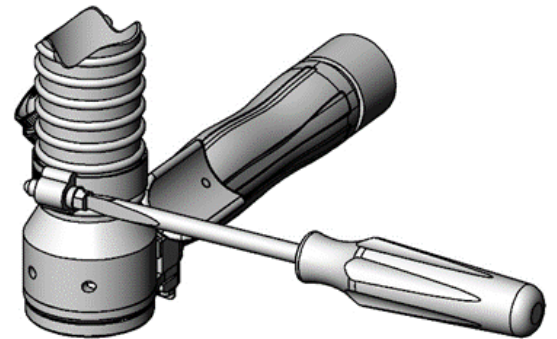
Vacuum Hose Removal for Quantum Flex[®] TRIMVAC[®] Handpiece

Step 1: Remove Vacuum Hose:

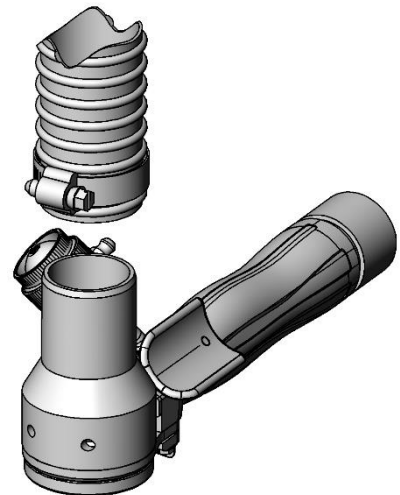
- Slide the Quantum Flex[®] Air hose out of the clips on the vacuum hose.
- Repeat for each clip.



- Loosen the screw on the hose clamp.



- Slide the vacuum hose off of the hose adapter.

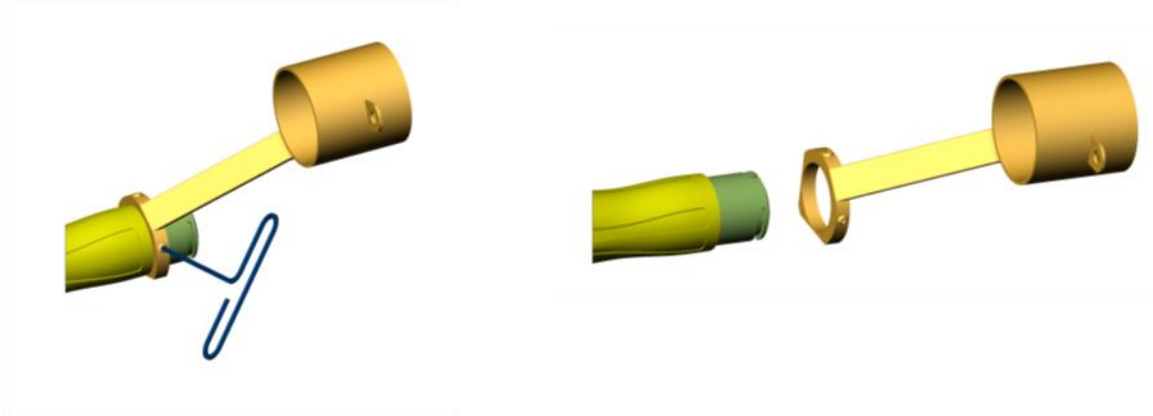


- Slide the hose out of the vacuum hose bracket.

Vacuum Hose Bracket Removal Quantum Flex® TRIMVAC® Handpiece

Step 1: Remove Vacuum Hose Bracket:

- Loosen the hose bracket screws.
- Slide the hose bracket off of the power unit.

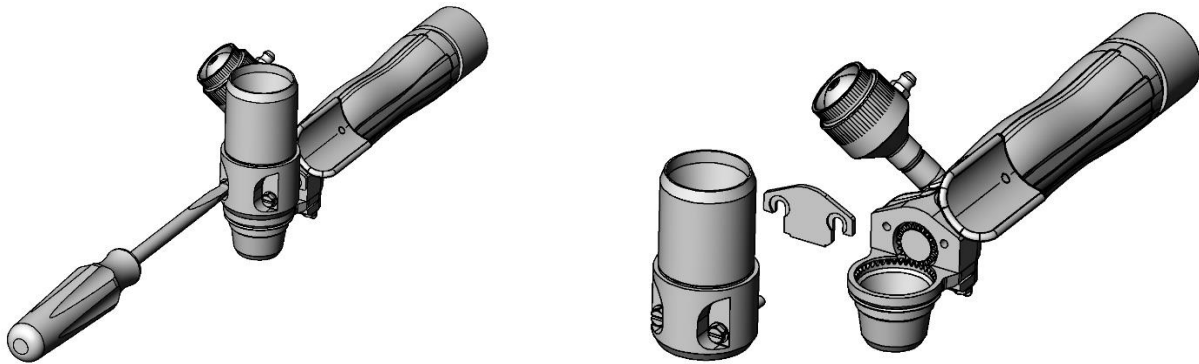


Hose Adapter and Cover Removal for Quantum Flex® TRIMVAC® Handpiece

Step 1: Remove Hose Adapter and Cover:

Quantum Flex® Air TRIMVAC® 18:

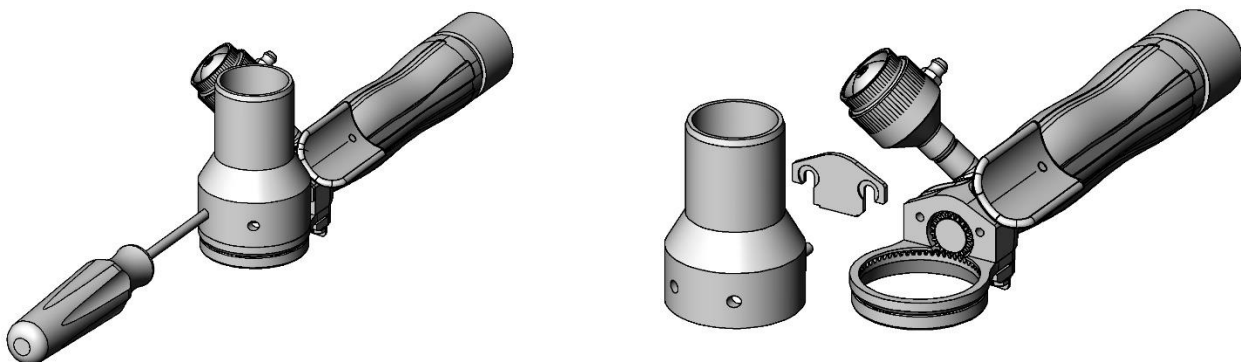
- Loosen the (2) cover retaining screws from the frame to remove the cover and the hose adapter.



Step 1: Remove Hose Adapter and Cover:

Quantum Flex® Air TRIMVAC® 45:

- Loosen the (2) cover retaining screws from the frame to remove the cover and the hose adapter.



Blade Sharpening of Quantum Flex® TRIMVAC® Handpiece

 **WARNING**

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.

 **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.

Quantum Flex® TRIMVAC® 45 Sharpening

- The blade should be sharpened daily with the use of a Whizard® Model 210 Universal Blade Sharpener, a Whizard® Model 214 Blade Sharpener, Bettcher® AutoEdge, or by hand stoning.
- Clean all grease and meat particles from the blade before sharpening. Sharpening blades that have not been cleaned will contaminate the stone or grinding wheel and greatly reduce its effectiveness.
 - If the stone or grinding wheel becomes contaminated, gently scrub them clean using hot, soapy water.

Blade Sharpening of Quantum Flex[®] TRIMVAC[®] Handpiece (Continued)

Quantum Flex[®] Air TRIMVAC[®] 18 Sharpening

NOTICE: It is necessary to remove the finger guard from the Quantum Flex[®] Air TrimVac 18 before using the TrimVac18 Sharpener. Refer to Section 5, *Disassembly of Handpiece, Small Tools*.

- With the trimmer running, insert the blade into the TRIMVAC[®] Sharpener. The plastic cap on the top of the sharpener will guide the handpiece into the sharpener.
- Press the blade lightly onto the sharpening and steeling rods for a few seconds.

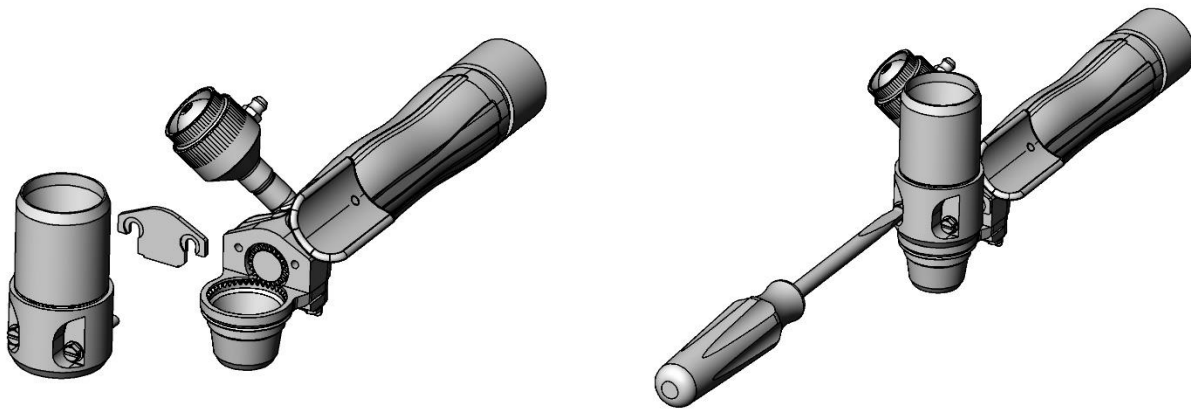


Hose Adapter and Cover Installation for Quantum Flex® TRIMVAC® Handpiece

Step 1: Install Hose Adapter and Cover:

Quantum Flex® Air TRIMVAC® 18:

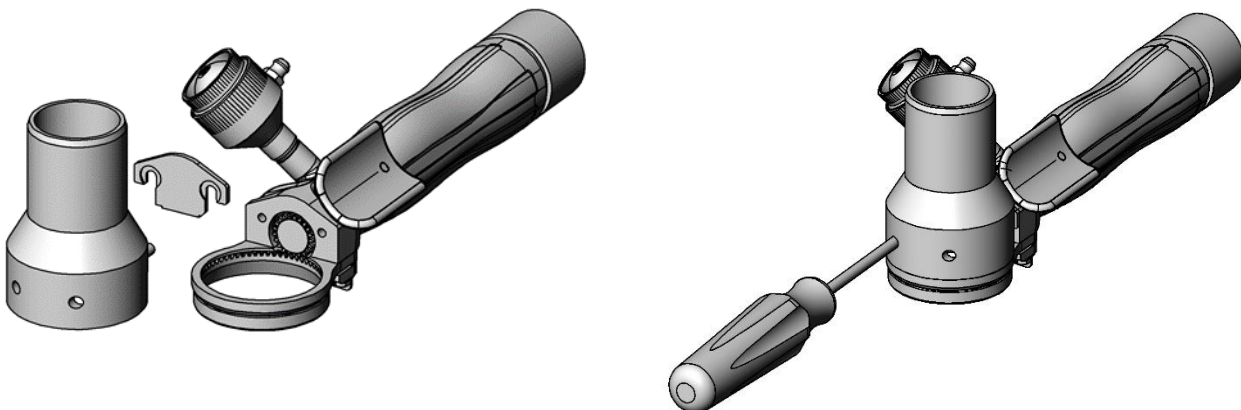
- Attach the hose adapter and cover to the frame using the (2) cover retaining screws.



Step 1: Install Hose Adapter and Cover:

Quantum Flex® Air TRIMVAC® 45:

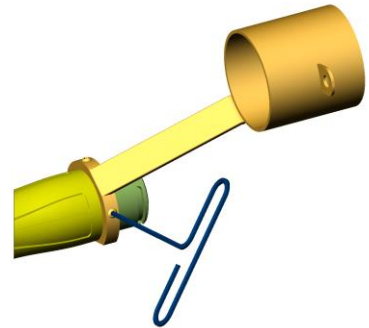
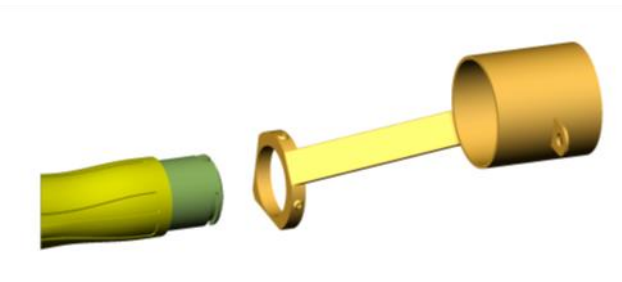
- Attach the hose adapter and cover to the frame using the (2) cover retaining screws.



Vacuum Hose Bracket Installation for Quantum Flex® TRIMVAC® Handpiece

Step 1: Install Vacuum Hose Bracket:

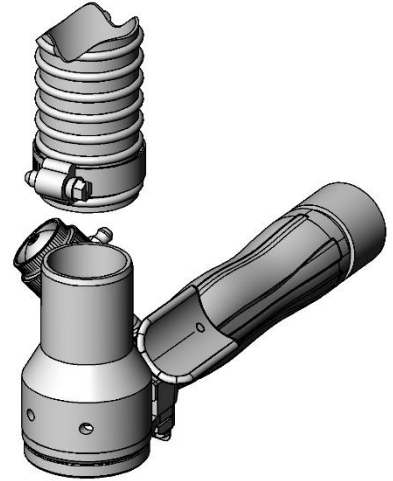
- Slide the hose bracket onto the power unit.
- Align the flat on the vacuum hose bracket with the lever relief groove on the power unit.
- Tighten the hose bracket screws.



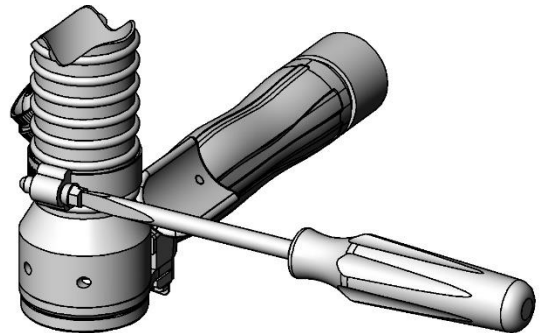
Vacuum Hose Installation for Quantum Flex® TRIMVAC® Handpiece

Step 1: Attach Vacuum Hose:

- Slide the vacuum hose through the vacuum hose bracket.
- Slide the vacuum hose onto the hose adapter.



- Tighten the hose clamp screw.



- Slide the Quantum Flex® Air hose into the clips on the vacuum hose.
- Repeat step for each clip.



Power Unit Maintenance

Required Tools for Power Unit Maintenance

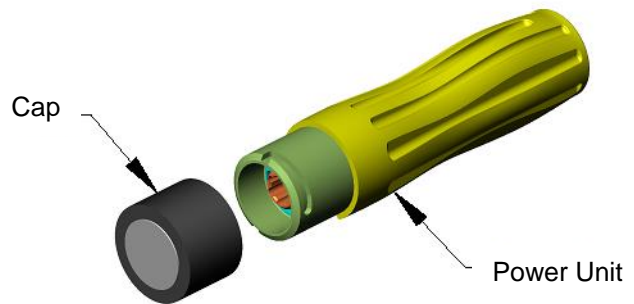
1 – Spanner Wrench (Supplied with your Quantum Flex[®] Air Trimmer)

Disassembly of Power Unit

Step 1: Remove Cap

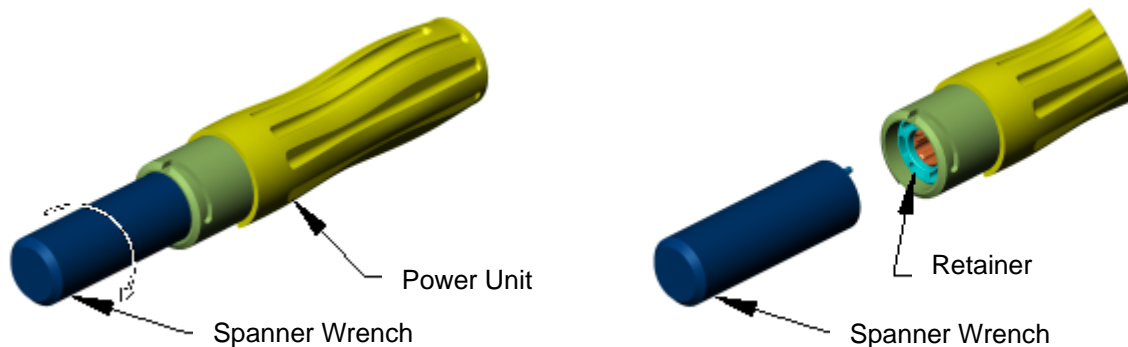
- Remove the cap.

NOTE: *Do not discard the cap.*



Step 2: Unscrew Retainer

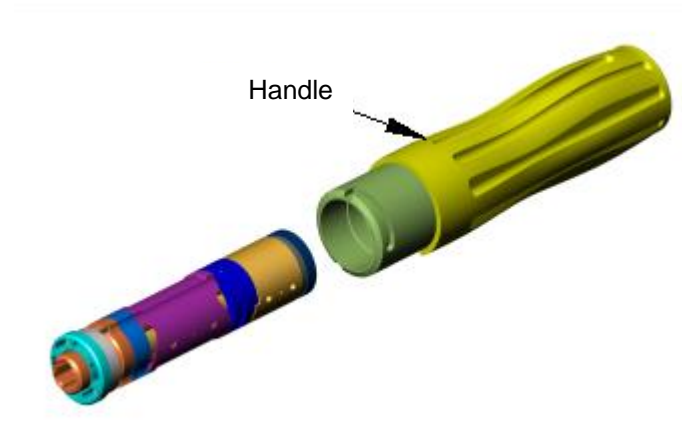
- Unscrew the retainer using the supplied spanner wrench. The retainer is a left-handed thread and must be turned to the right (clockwise) to unscrew.



Disassembly of Power Unit (Continued)

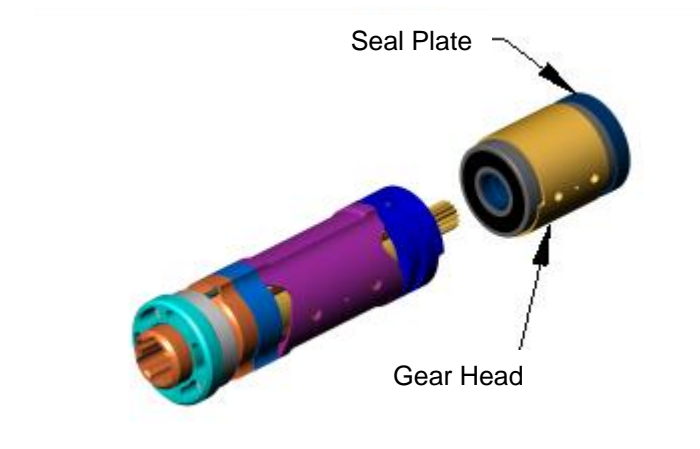
STEP 3: Slide Components Out Of Handle

- 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, tap the handle lightly against a plastic block to dislodge the parts.



STEP 4: Separate Seal Plate And Gear Head Assembly

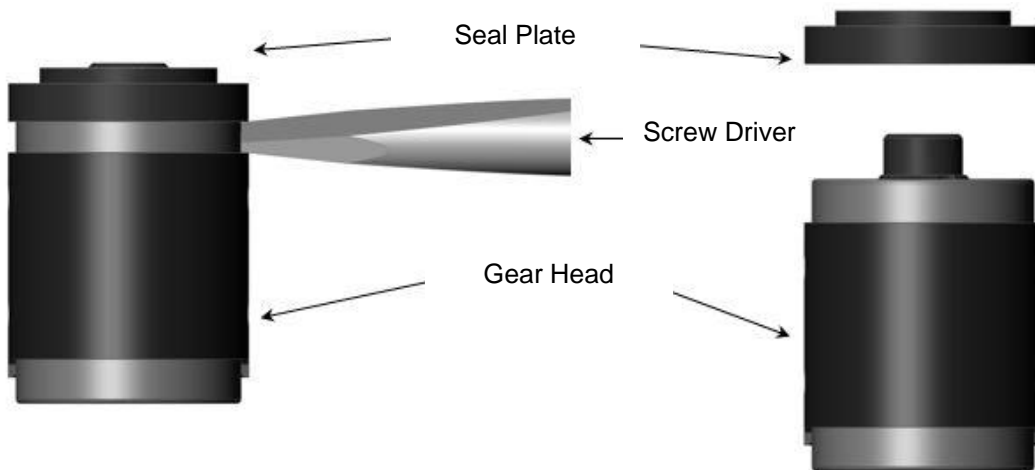
- Separate the seal plate and gear head assembly from the air motor, adapter plate, muffler, and retainer.



Disassembly of Power Unit (Continued)

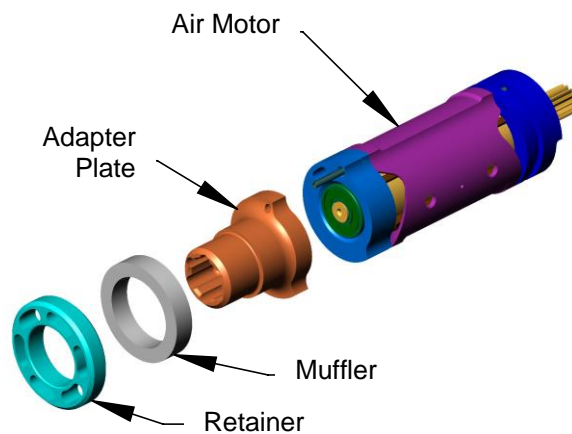
Step 5: Remove Seal Plate

- 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.

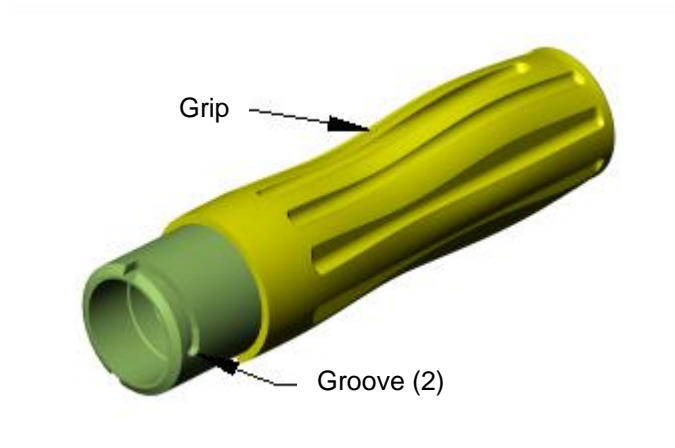


Inspection and Maintenance of Power Unit

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

Handle

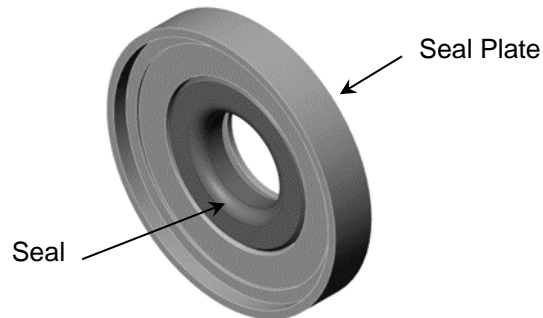
- Clean the handle with warm soapy water and a soft brush. Remove any build up from the grooves. Rinse the handle and dry thoroughly.
- Inspect the handle for the following and replace if damage is detected.
 - Inspect the handle grip for tears, cuts, or wear.
 - Inspect the handle grooves for nicks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



Inspection and Maintenance of Power Unit (Continued)

Seal Plate

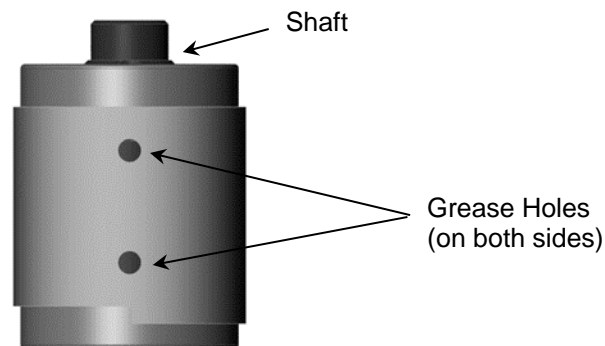
- Inspect the seal plate I.D. and O.D. for nicks, dents or wear. Replace the seal plate if damaged. (See Seal Plate Maintenance).
- Inspect the seal I.D. for nicks, cuts or cracks. Replace the seal if damaged. (See Seal Plate Maintenance).



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.

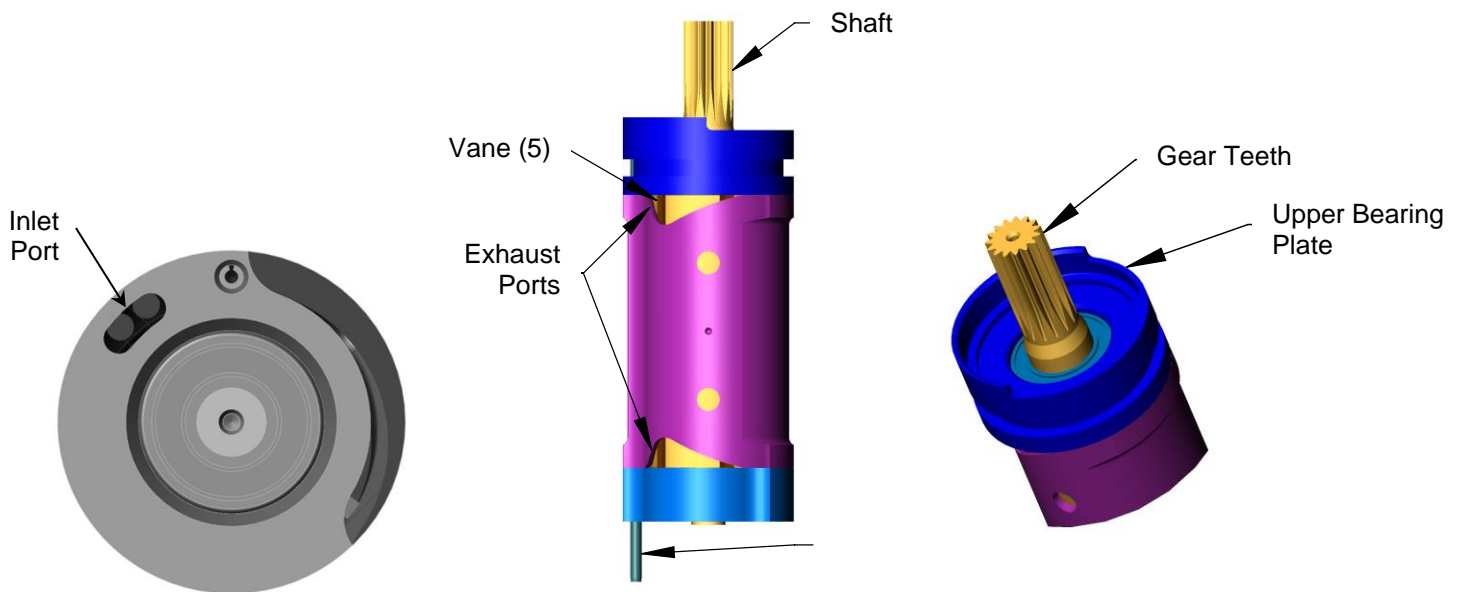
NOTE: *Use only Max-Z-Lube high performance lubricant.*



Inspection and Maintenance of Power Unit (Continued)

Air Motor

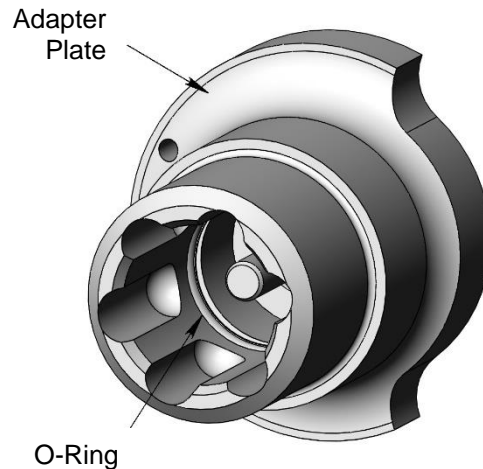
- Clean all build-up out of the inlet and exhaust ports.
- Inspect the air motor for the following and replace or repair the air motor if damage is detected. (See Air Motor Maintenance Section to repair the air motor).
 - Check for worn or chipped teeth. Worn out teeth are indicated by rounded off or 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.

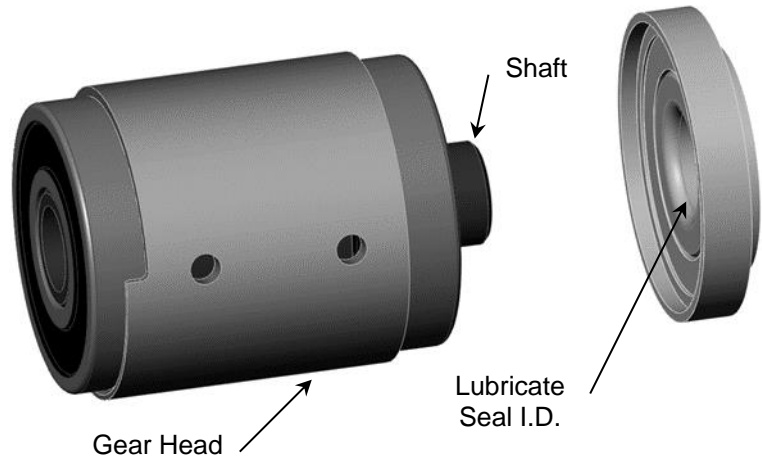
Assembly of Power Unit

Step 1: Install Seal Plate

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

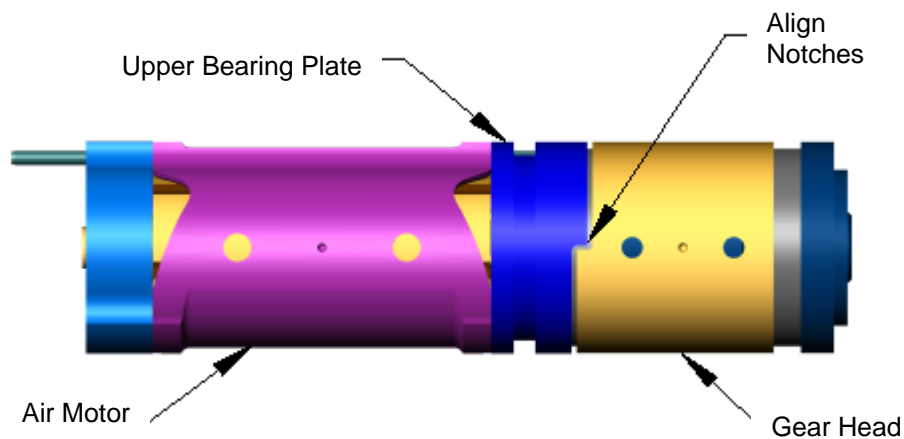
NOTE: Use only *Max-Z-Lube high performance lubricant*.

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



Step 2: Align Gear Head and Air Motor

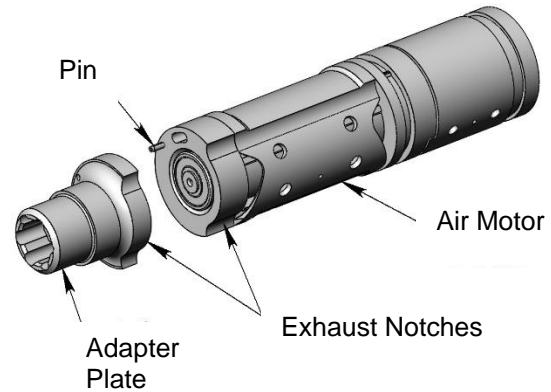
- Slide the gear head over the rotor shaft.
- Align the top notches on the gear head and upper bearing plate.
- Seat gear head in top plate.



Assembly of Power Unit (Continued)

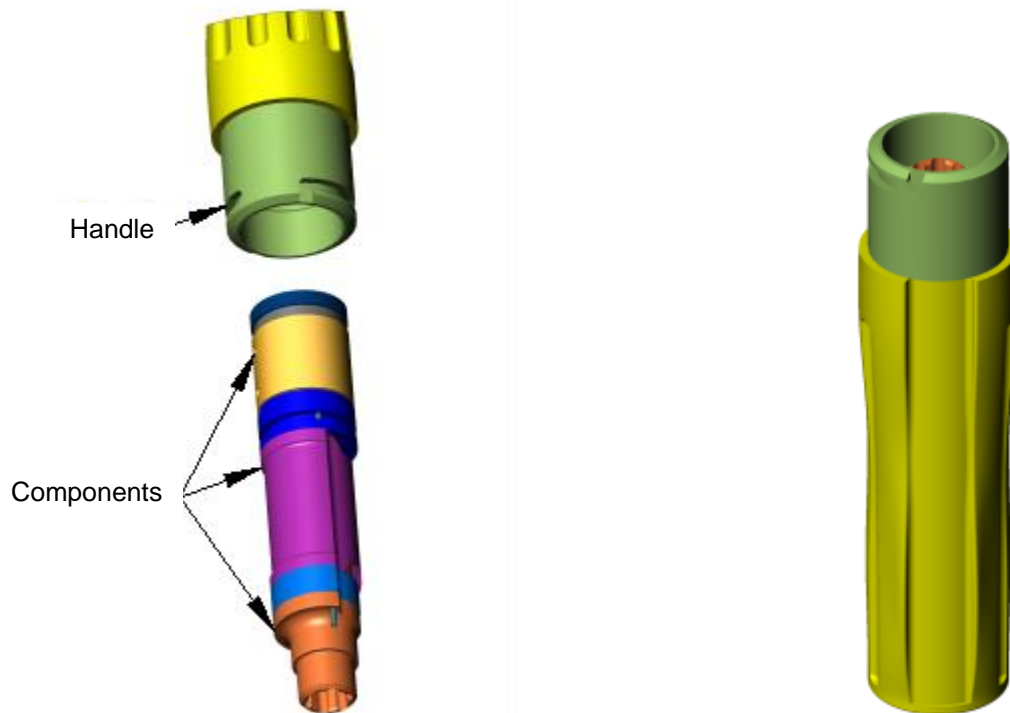
Step 3: Align Adapter Plate

- 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

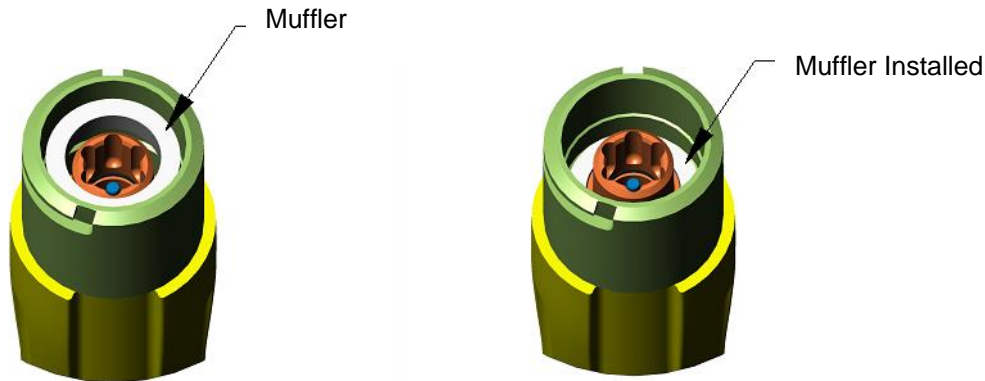
- Slide components up into the handle.
- Be careful not to let the components separate and become misaligned.
- While holding the components in place, turn the handle over.



Assembly of Power Unit (Continued)

Step 5: Install Muffler

Slide the muffler into the power unit.

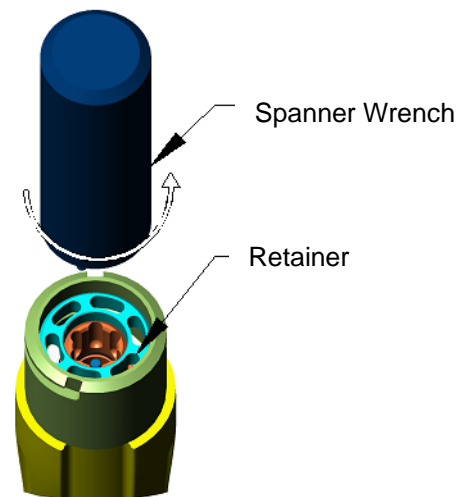


Step 6: Install Retainer

- 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)*

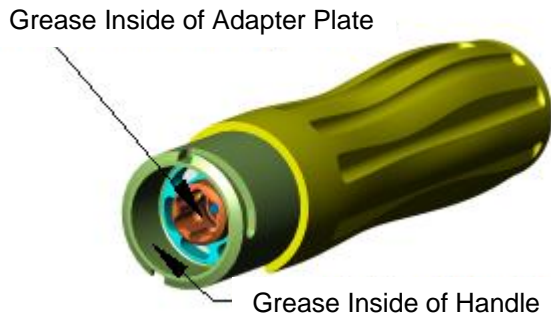
IMPORTANT: *Be careful not to cross thread the retainer. This will cause poor motor performance.*



Assembly of Power Unit (Continued)

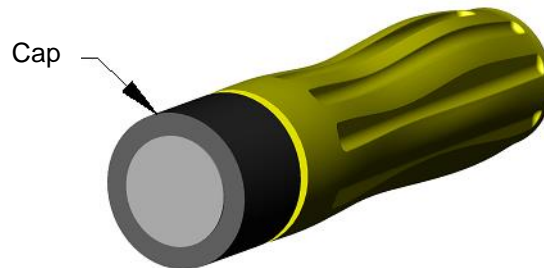
Step 7: Grease Power Unit

- 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

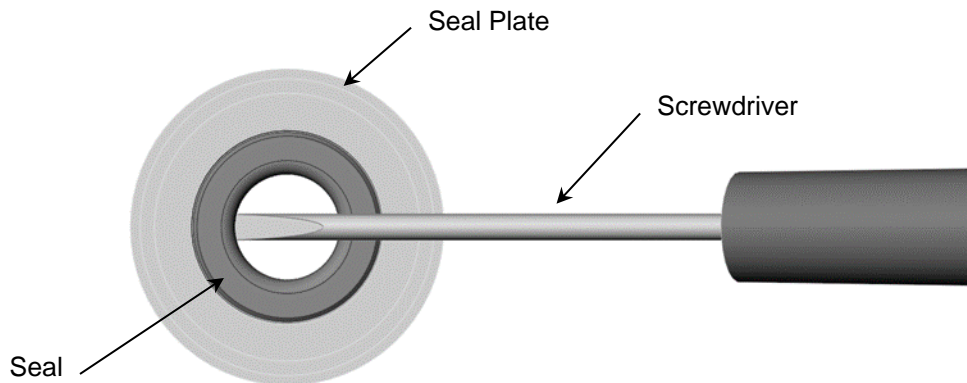
Required Tools for Seal Plate Maintenance

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.

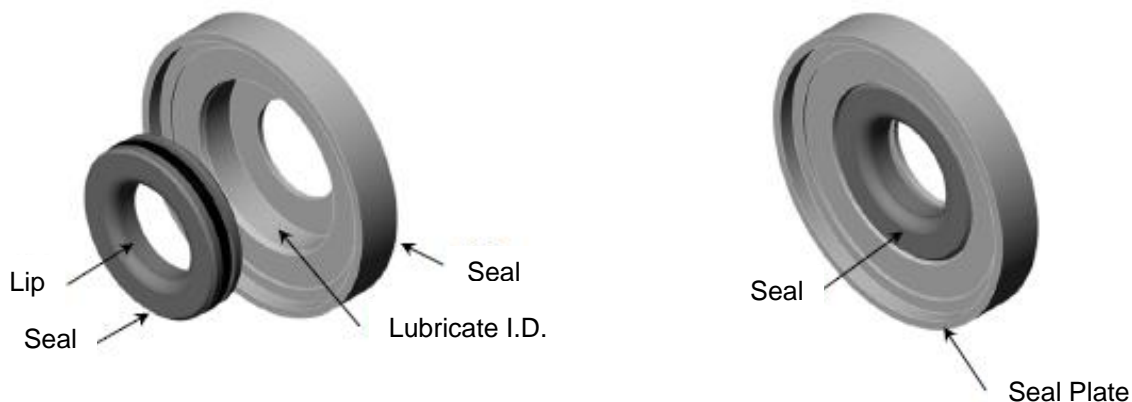


Step 2: Install Seal

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

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

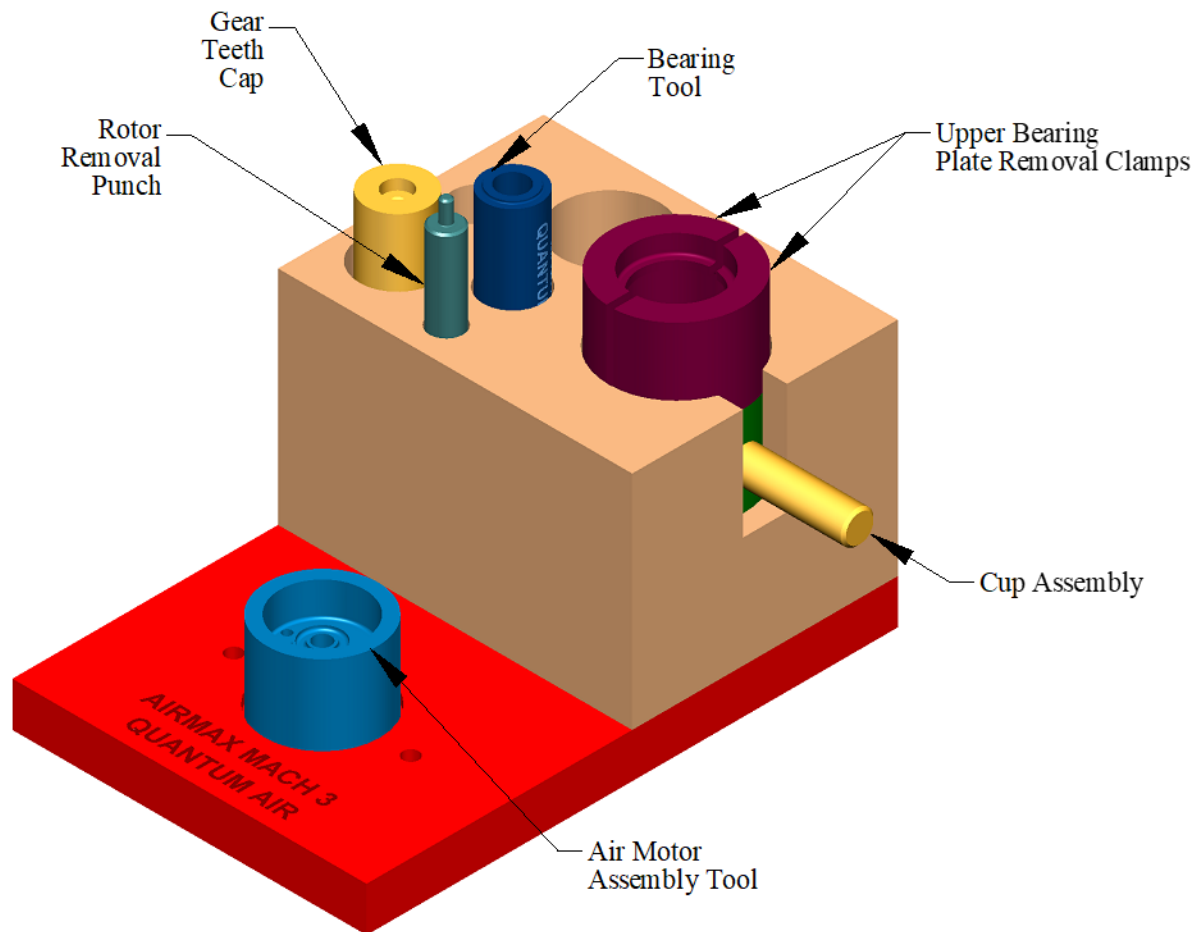
- Press the seal into the seal plate. The lip of the seal should curl into the seal plate.



Air Motor Maintenance

Required Tools for Air Motor Maintenance

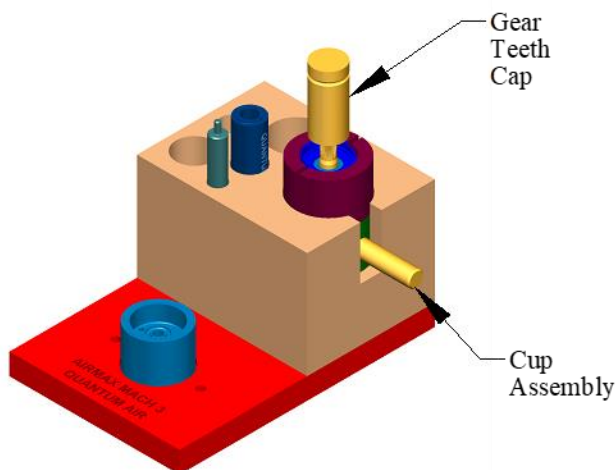
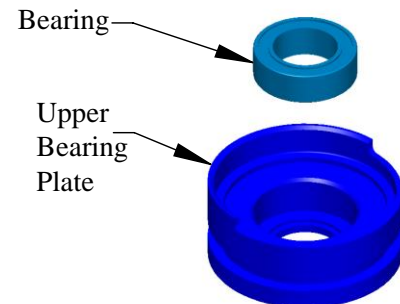
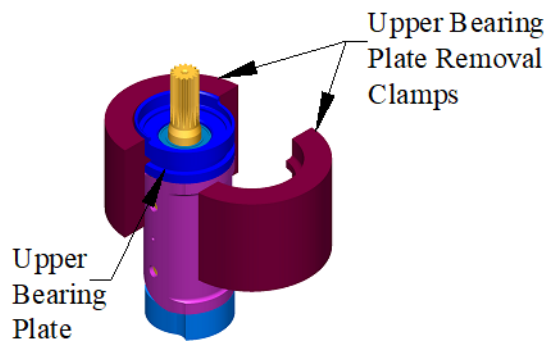
- 1 – Hammer
- 1 – Quantum Flex[®] Air Maintenance Kit



Disassembly of Air Motor

Step 1: Remove Upper Bearing Plate and Bearing

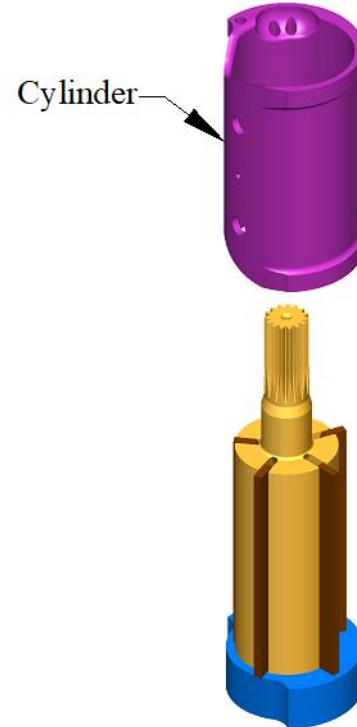
- Place upper bearing plate removal clamps around the upper bearing plate and place this assembly into the cup assembly in the maintenance kit.
- Place gear teeth cap over rotor gear teeth.
- Using a hammer, tap the gear teeth until the rotor is removed from the upper bearing plate.
- Pull the upper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



Disassembly of Air Motor (Continued)

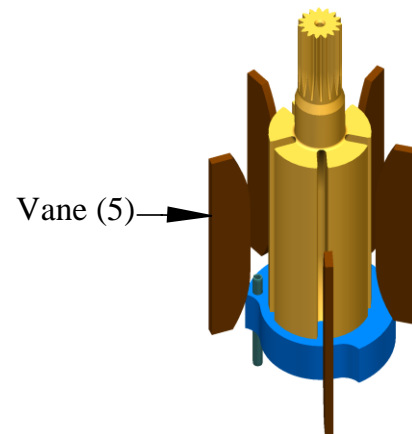
Step 2: Remove Cylinder

- Slide the cylinder off the rotor.



Step 3: Remove Vanes

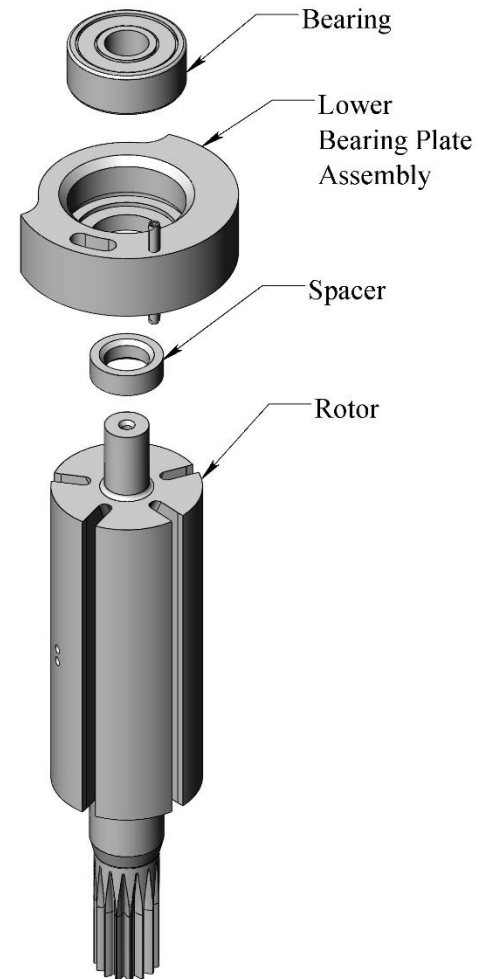
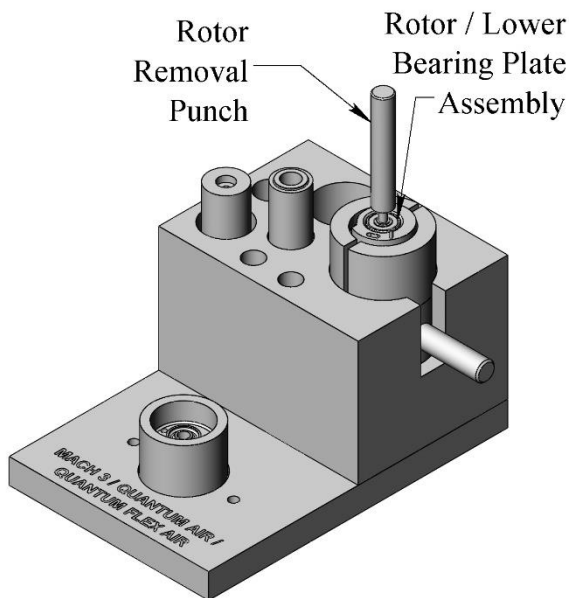
- Remove the vanes from the slots.



Disassembly of Air Motor (Continued)

Step 4: Remove Lower Bearing Plate

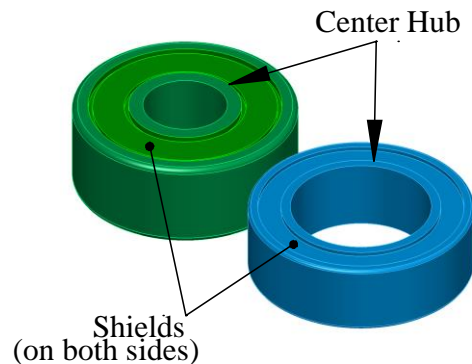
- Set the rotor / lower bearing plate assembly in the upper bearing plate removal clamps. Be sure the plate sits flush on the clamps. The alignment pin in the lower bearing will sit between the clamps.
- Place the small diameter of the rotor removal punch on the end of the rotor shaft.
- Using a hammer, 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

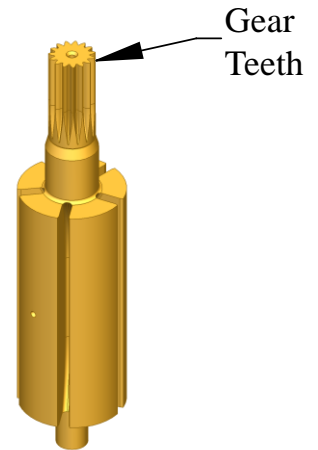
- Inspect the vanes for chipped or broken tips. Replace if damaged.
- Inspect the vanes for grooves. If grooves are more than .010" (.25mm) deep, replace the vanes.
- Inspect the vane height. If the overall vane height is less than .195" (.5mm), replace the vanes.

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.

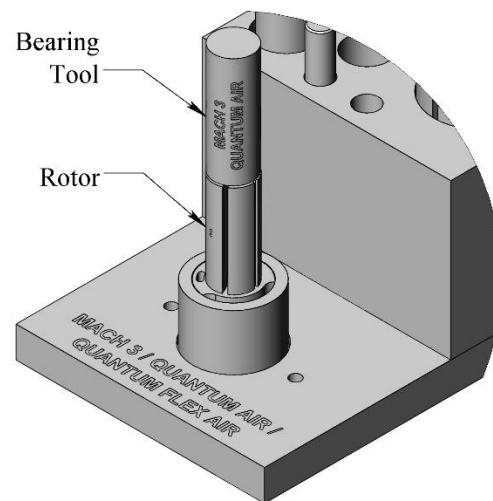
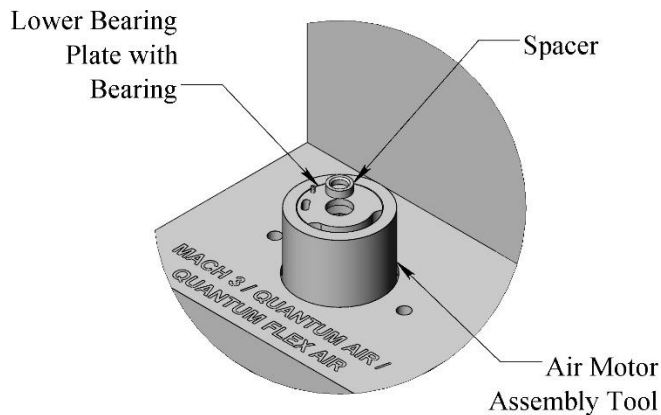
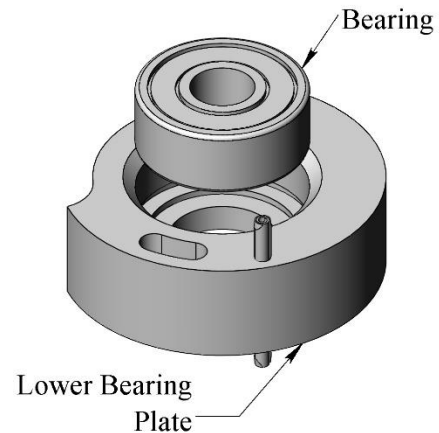
Lower Bearing Plate

- 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

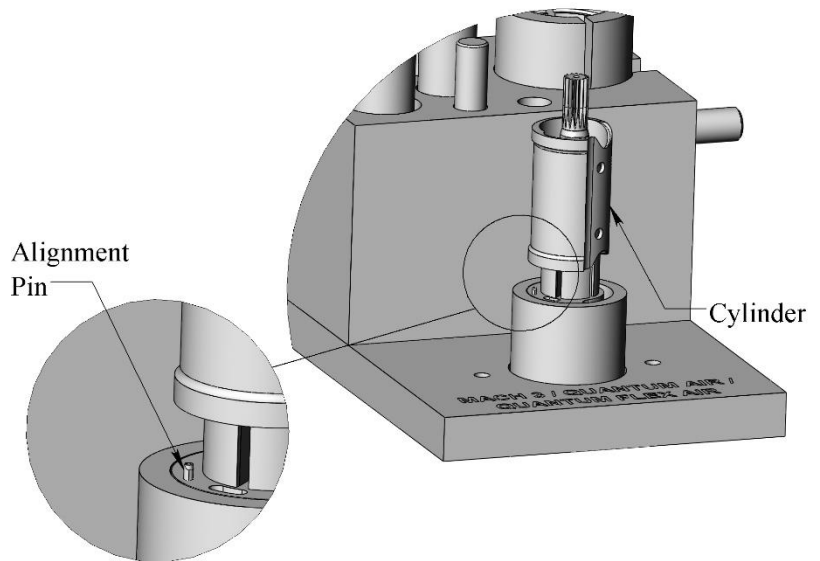
- Insert the bearing into the lower bearing plate.
- Place the lower bearing plate, with bearing, in the air motor assembly tool. Line up the pin in the lower bearing plate with the clearance hole in the air motor assembly tool.
- Insert the spacer into the lower bearing plate.
- Insert the small shaft 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.



Assembly of Air Motor (Continued)

Step 2: Install Cylinder

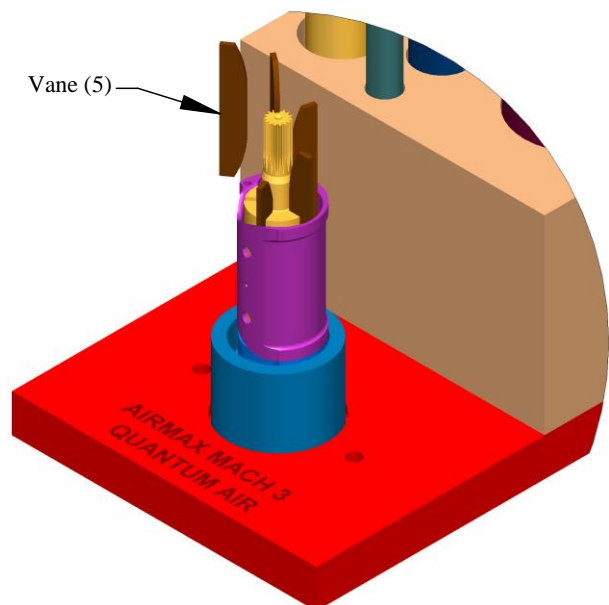
- Align the exhaust channels on the cylinder and lower bearing plate.
- Slide the cylinder over the rotor.
- The alignment pin in lower bearing plate will slide into the alignment hole in the cylinder.



Step 3: Install Vanes

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

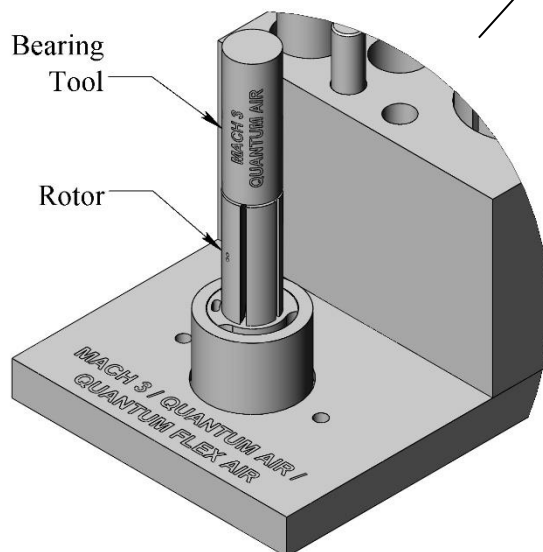
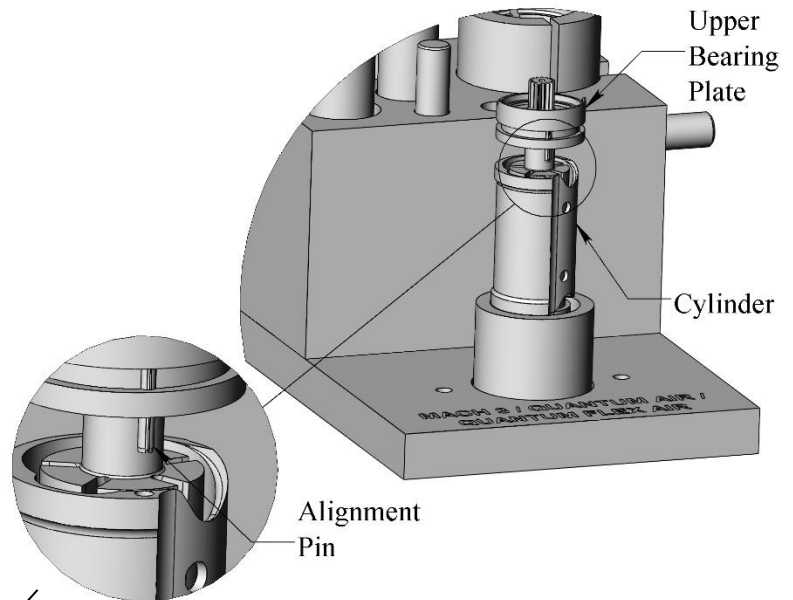
Note: Vanes should be aligned with the curved side towards the rotor center. Vane length should match the length of the rotor slot. Do not use the standard Whizard® AirMax vane kit in the Quantum Flex® Air.



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

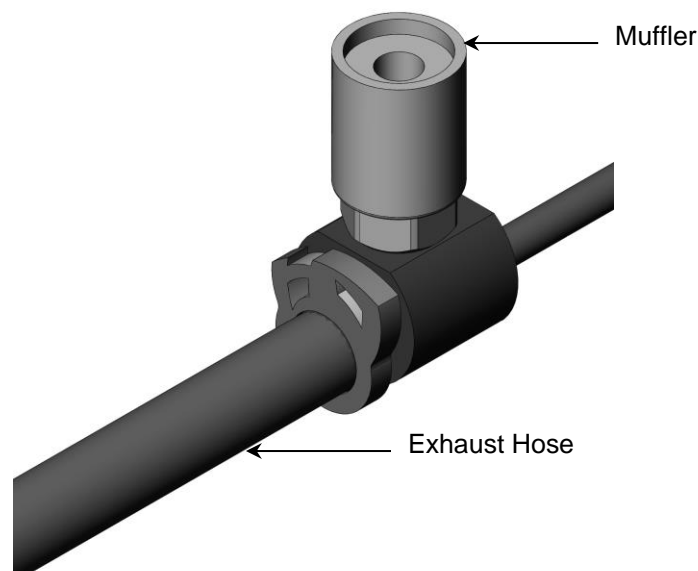
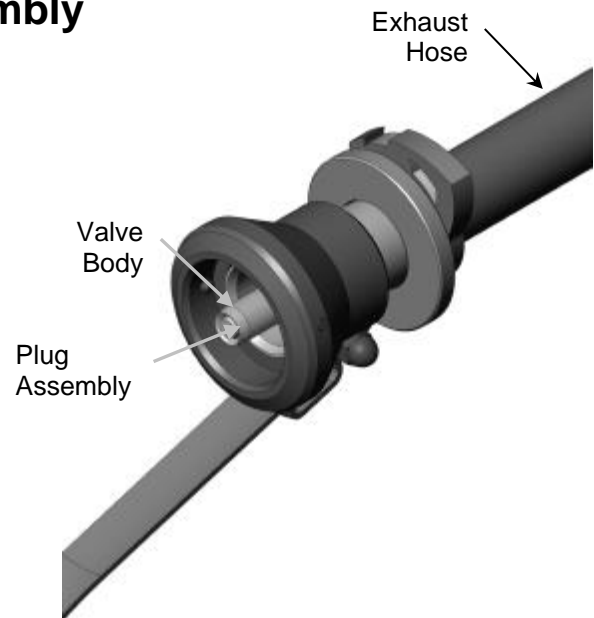
Required Tools for Valve and Hose Assembly Maintenance

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

Inspection of Valve and Hose Assembly

Valve and Hose Assembly

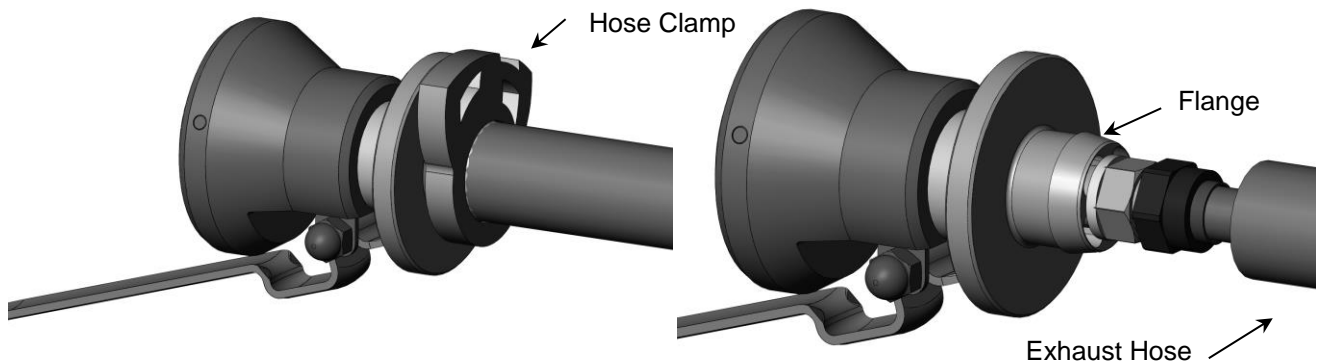
- Connect the valve and hose assembly to the FRL at 90-100 psi.
- If air leaks around the plug assembly, replace the valve assembly.
- If the valve body is dented, nicked, or scratched, replace the valve assembly.
- If air can be felt leaving the muffler, replace the hose assembly.
- If the exhaust hose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



Disassembly of Valve and Hose

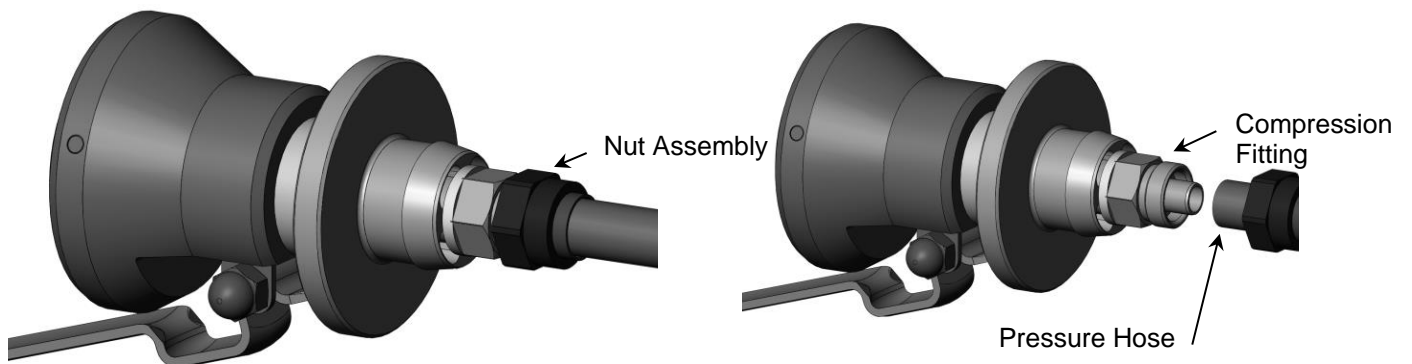
Step 1: Disconnect Exhaust Hose

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



Step 2: Disconnect Pressure Hose

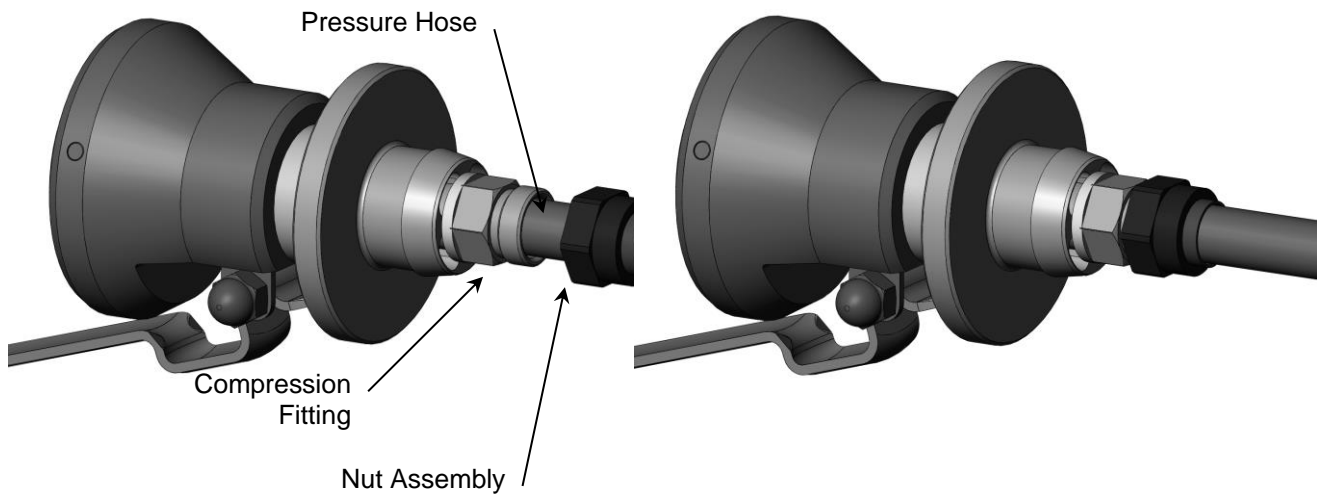
- Unscrew the nut assembly from the compression fitting.
- Slide the pressure hose off of the compression fitting.



Assembly of Valve and Hose

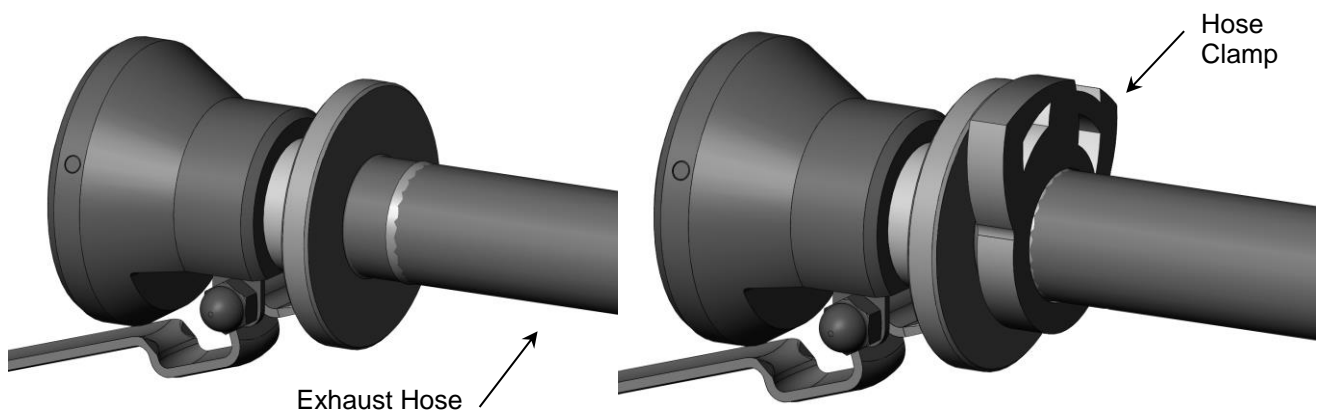
Step 1: Connect Pressure Hose

- 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

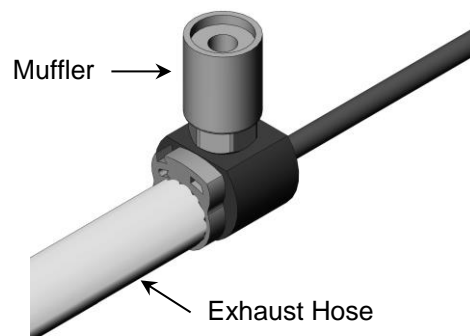
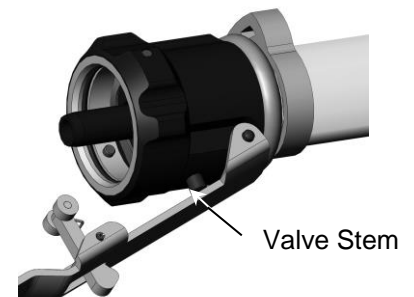
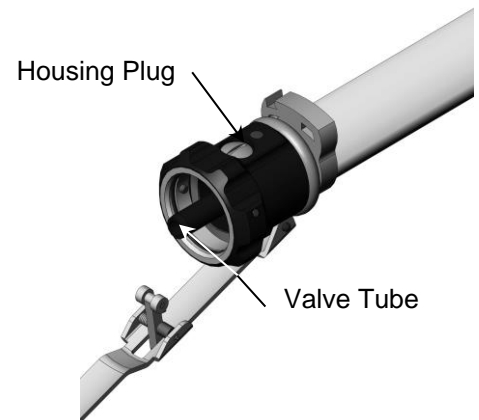
Required Tools for Quick Start Valve and Hose Assembly Maintenance

- 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

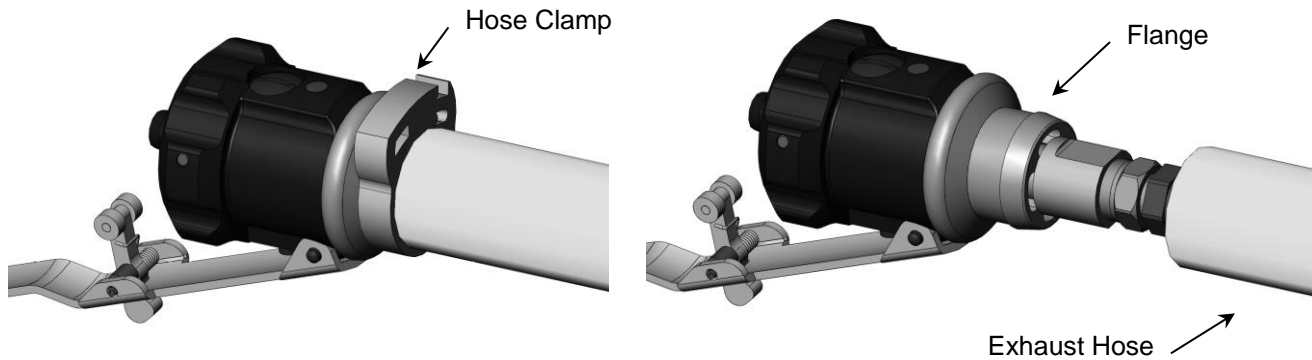
- Connect the valve and hose assembly to the FRL at 90-100 psi.
- If air leaks around the housing plug, replace the o-ring on the housing plug
- If air leaks around the valve stem, replace the lower valve stem o-ring.
- If air leaks through the valve tube, replace the upper valve stem o-ring.
- If replacing 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

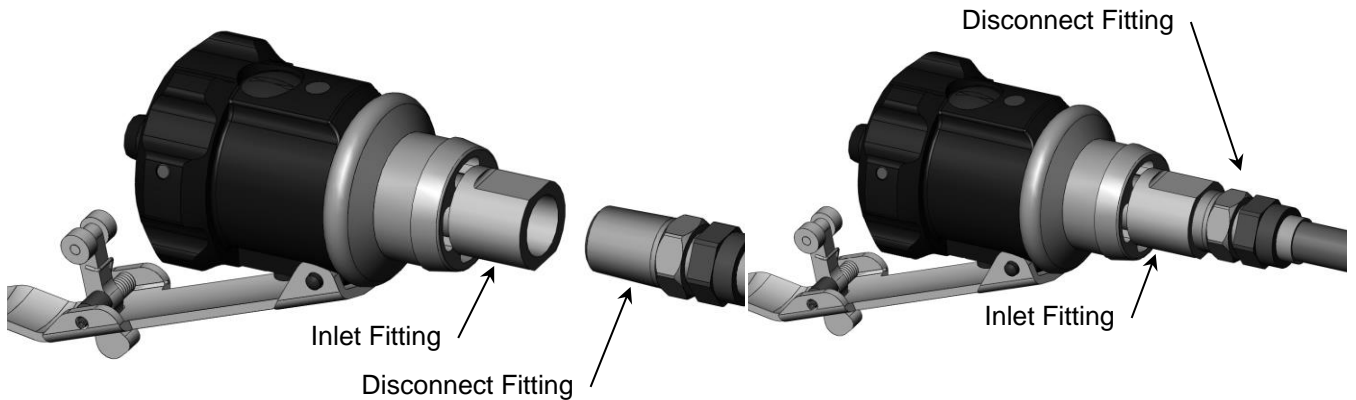
- Unscrew the disconnect fitting from the inlet fitting.



Assembly of Quick Start Valve and Hose

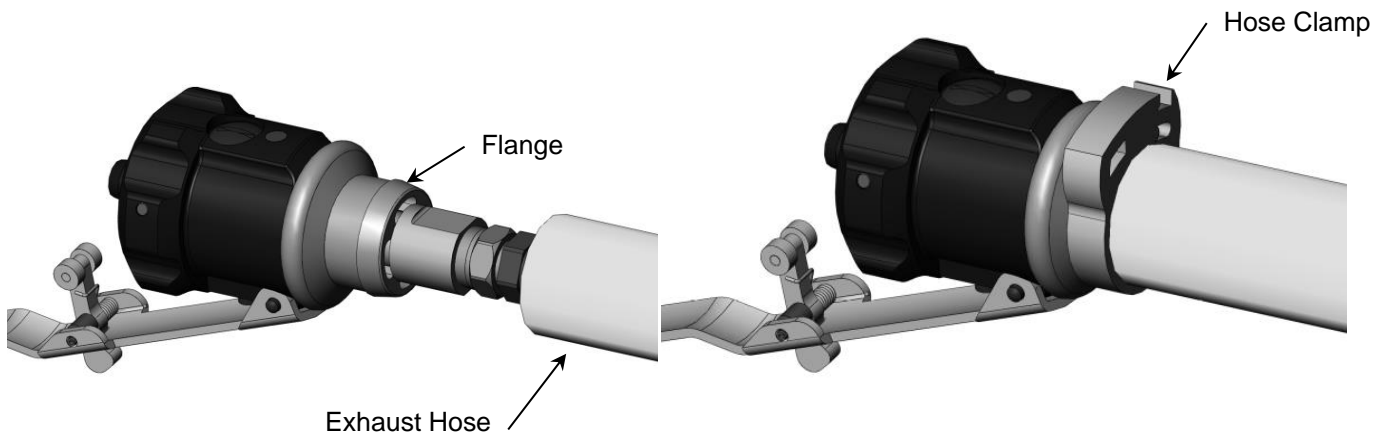
Step 1: Connect Pressure Hose

- 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
	Blade too tight in blade housing	Adjust blade housing
	Product build-up	Clean trimmer
Handpiece Hot	Pinion gear tight in handpiece bearing	Clean corrosion from the handpiece bearing and lubricate, or replace
	Blade tight in blade housing	Adjust blade housing
	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
Blade Will Not Rotate	Blade housing is too tight	Adjust blade housing
Blade Skips	Blade too loose in blade housing	Adjust blade housing
Dull Blade	Improperly sharpened blades will cause loss of production, increase wear of parts, and operator fatigue	Sharpen blade with a Whizard® Model 210, Whizard® 214 Blade Sharpener or Bettcher® AutoEdge
Optional Thumb Support Rotates	Anti-rotation rib has broken off	Replace thumb support

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 Quantum Flex® Air	



Section 6

Cleaning

CONTENTS OF THIS SECTION

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



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 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 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

CONTENTS OF THIS SECTION

350 Quantum Flex® Air Head Assembly	7-4
360 Quantum Flex® Air Head Assembly	7-6
Quantum Flex® TrimVac® 18 Head Assembly	7-8
440 Quantum Flex® Air Head Assembly	7-10
620 Quantum Flex® Air Head Assembly	7-12
625 Quantum Flex® Air Head Assembly	7-14
Quantum Flex® TrimVac® 45 Head Assembly	7-16
500 Quantum Flex® Air Head Assembly	7-18
505 Quantum Flex® Air Head Assembly	7-20
564 Quantum Flex® Air Head Assembly	7-22
750 Quantum Flex® Air Head Assembly	7-24
850 Quantum Flex® Air Head Assembly	7-26
880-B Quantum Flex® Air Head Assembly	7-28
880-S Quantum Flex® Air Head Assembly	7-30
1850 Quantum Flex® Air Head Assembly	7-32
1880 Quantum Flex® Air Head Assembly	7-34
1000 Quantum Flex® Air Head Assembly	7-36
1300 Quantum Flex® Air Head Assembly	7-38
1400 Quantum Flex® Air Head Assembly	7-40
1500 Quantum Flex® Air Head Assembly	7-42



Lubrication and Lubrication Equipment.....	7-44
Air Supply Equipment	7-44
Optional Blades	7-45
Blade Sharpening and Steeling Equipment	7-46
Covers, Depth Gauges and Depth Gauge Equipment	7-47
Cleaning Equipment	7-47
Cleaning Solution.....	7-47
Complete Power Unit Assembly	7-48
Complete Air Motor Assembly	7-50
Complete Valve and Hose Assembly.....	7-52
Complete Valve and Hose Assembly (Continued).....	7-53
Complete Quick Start Valve and Hose Assembly	7-54
Tools and Maintenance Kit	7-56

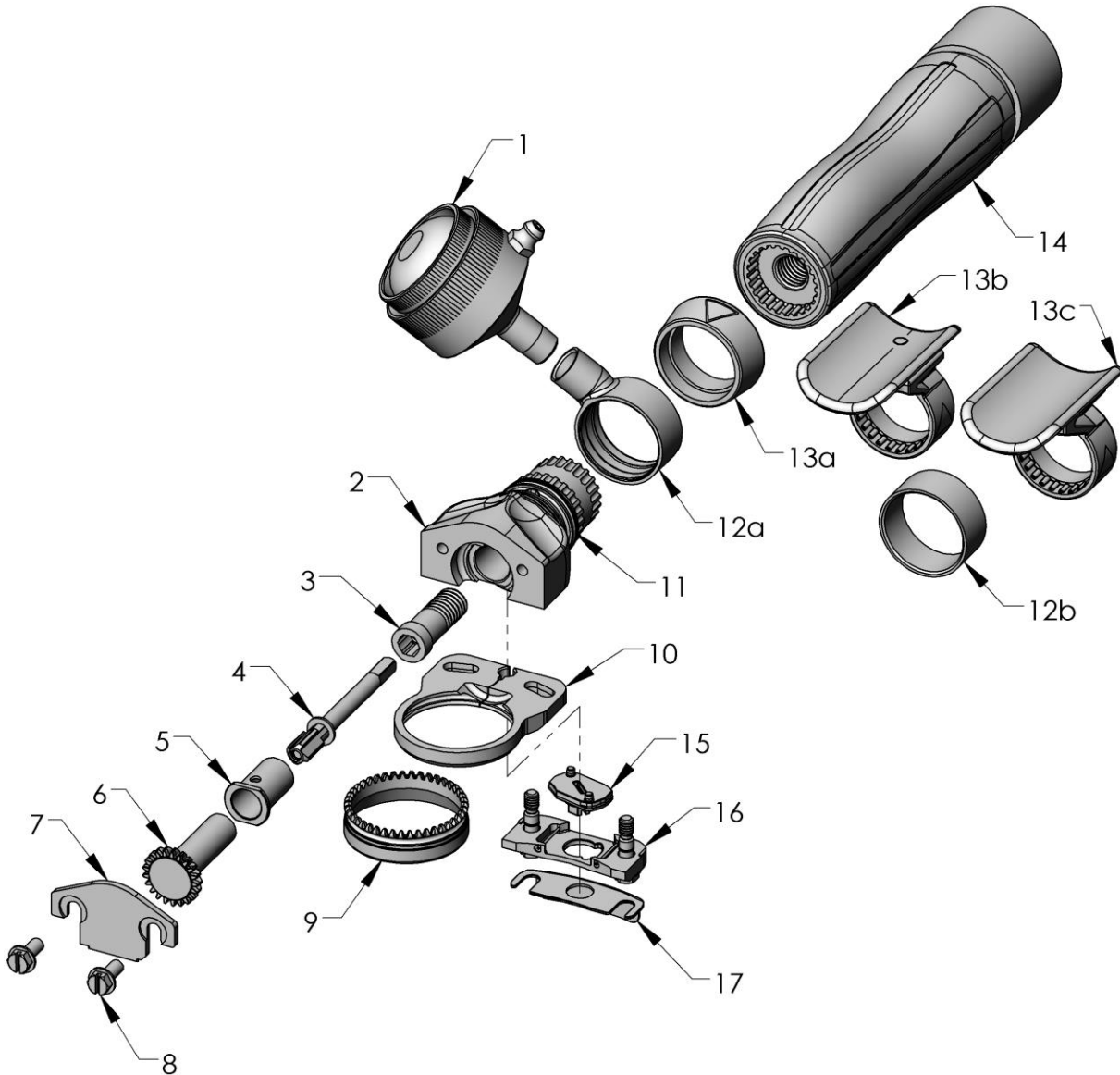
<p>BETTCHER INDUSTRIES, INC. PROUDLY MANUFACTURES QUALITY PARTS FOR YOUR BETTCHER EQUIPMENT. FOR OPTIMUM PERFORMANCE OF YOUR BETTCHER EQUIPMENT, USE ONLY PARTS MANUFACTURED BY BETTCHER INDUSTRIES, INC.</p>
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350 Quantum Flex® Air Head Assembly



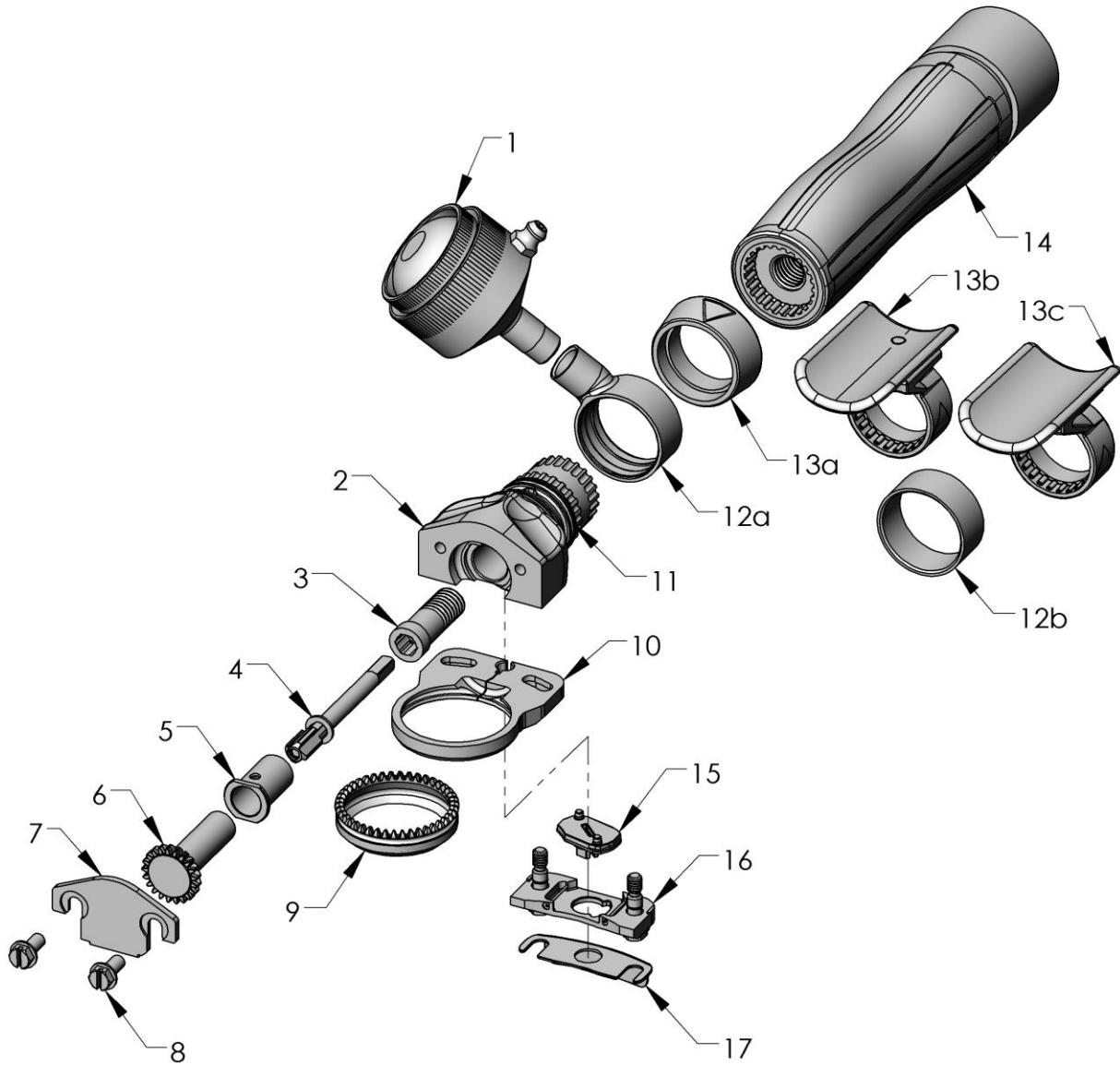


350 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	350 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107142	1
8	Cover Retaining Screw	107222	2
9	Blade	107188	1
10	Blade Housing	106576	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1



360 Quantum Flex® Air Head Assembly



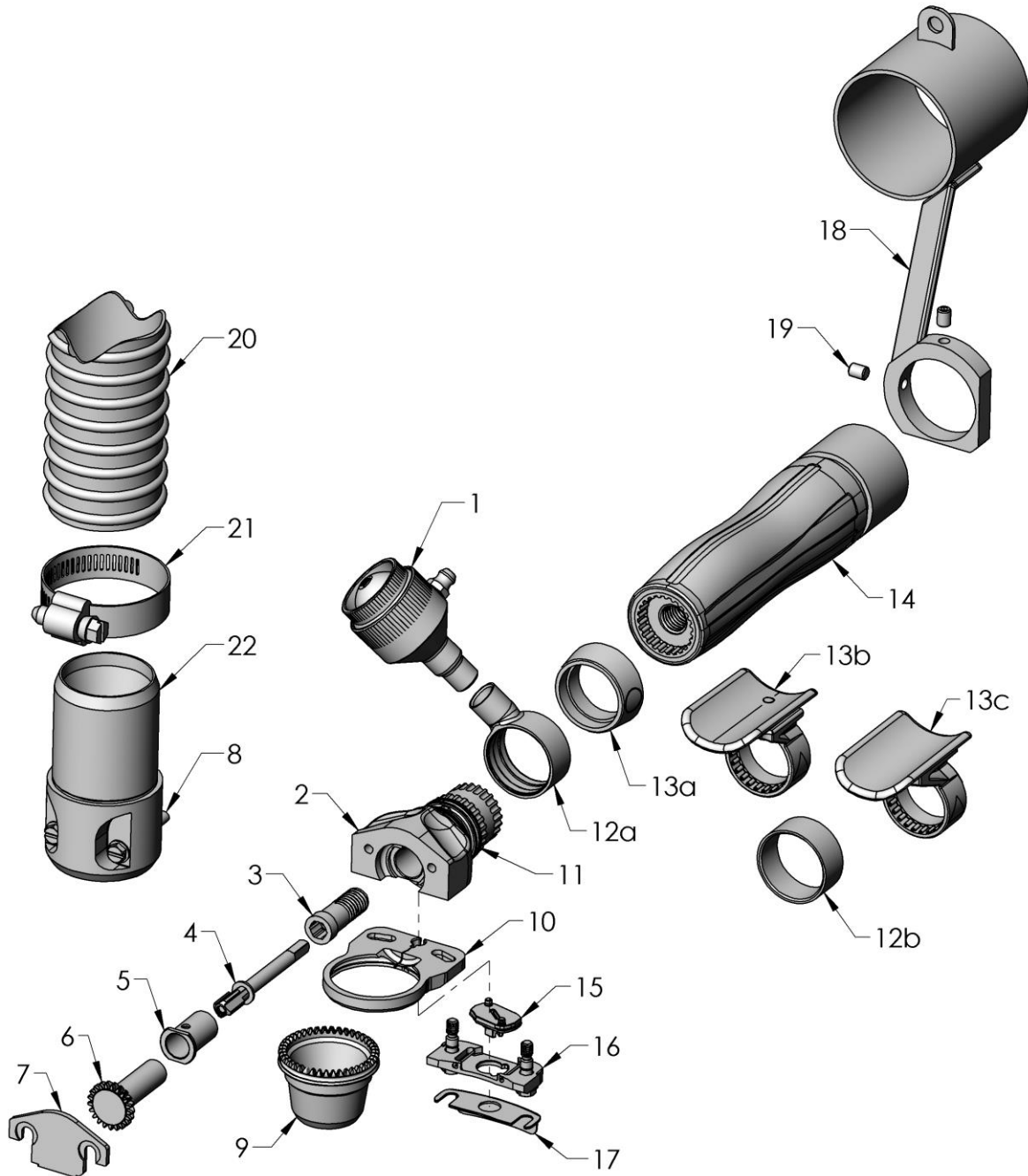


360 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	360 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107142	1
8	Cover Retaining Screw	107222	2
9	Blade	105546	1
10	Blade Housing	106576	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1



Quantum Flex® TrimVac® 18 Head Assembly



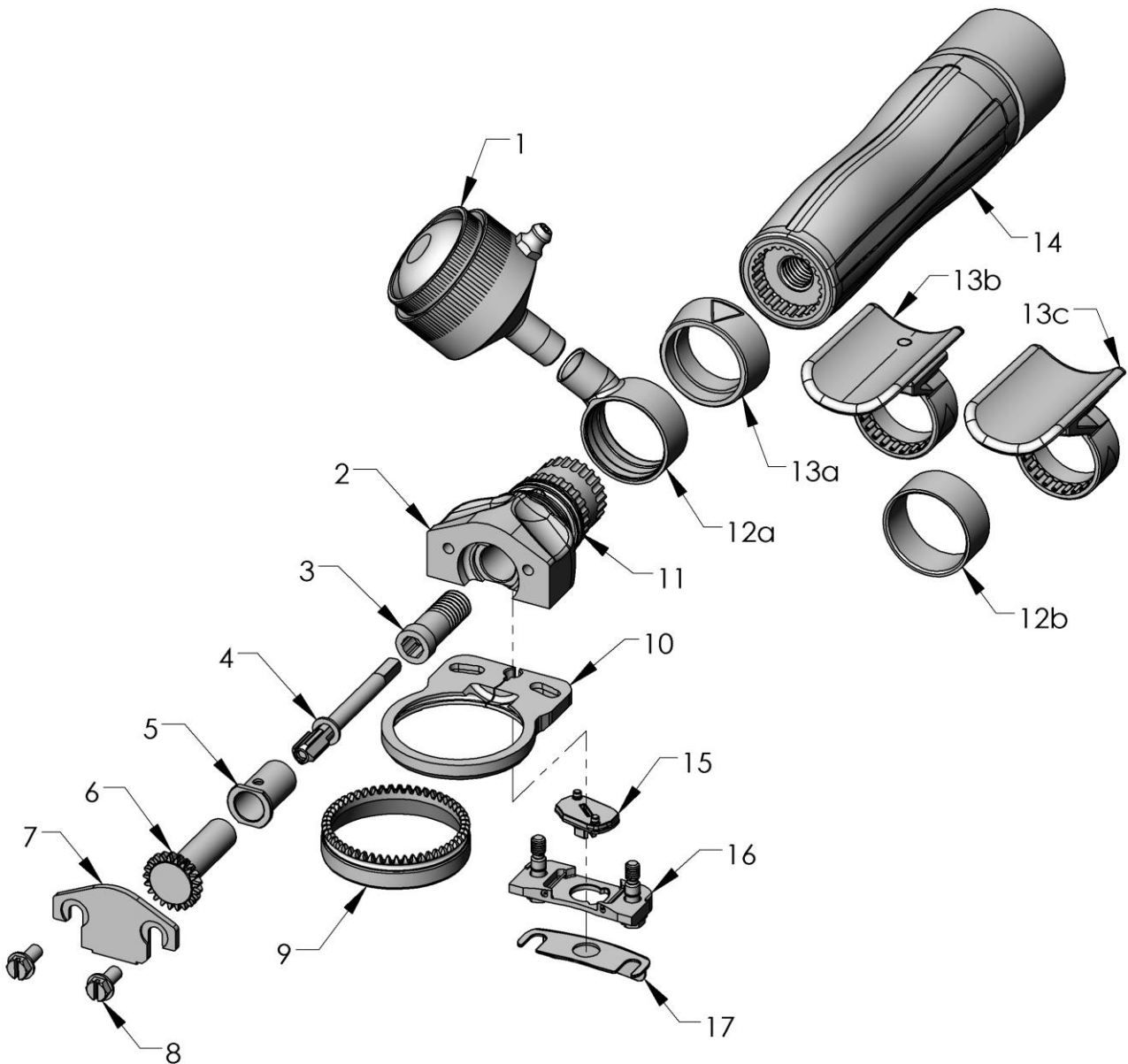


Quantum Flex® TrimVac® 18 Head Assembly (Continued)

ITEM	DESCRIPTION	TRIMV AC® 18	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107142	1
8	Cover Retaining Screw	107316	2
9	Blade	107223	1
10	Blade Housing	106576	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1
18	Vacuum Hose Bracket Kit (Includes Item 19)	184344	1
19	Set Screw	120053	2
20	Vacuum Hose Assembly (Includes Item 21)	184358	1
21	Hose Clamp	184359	1
22	Hose Adapter Assembly (Includes Item 8)	107497	1



440 Quantum Flex® Air Head Assembly



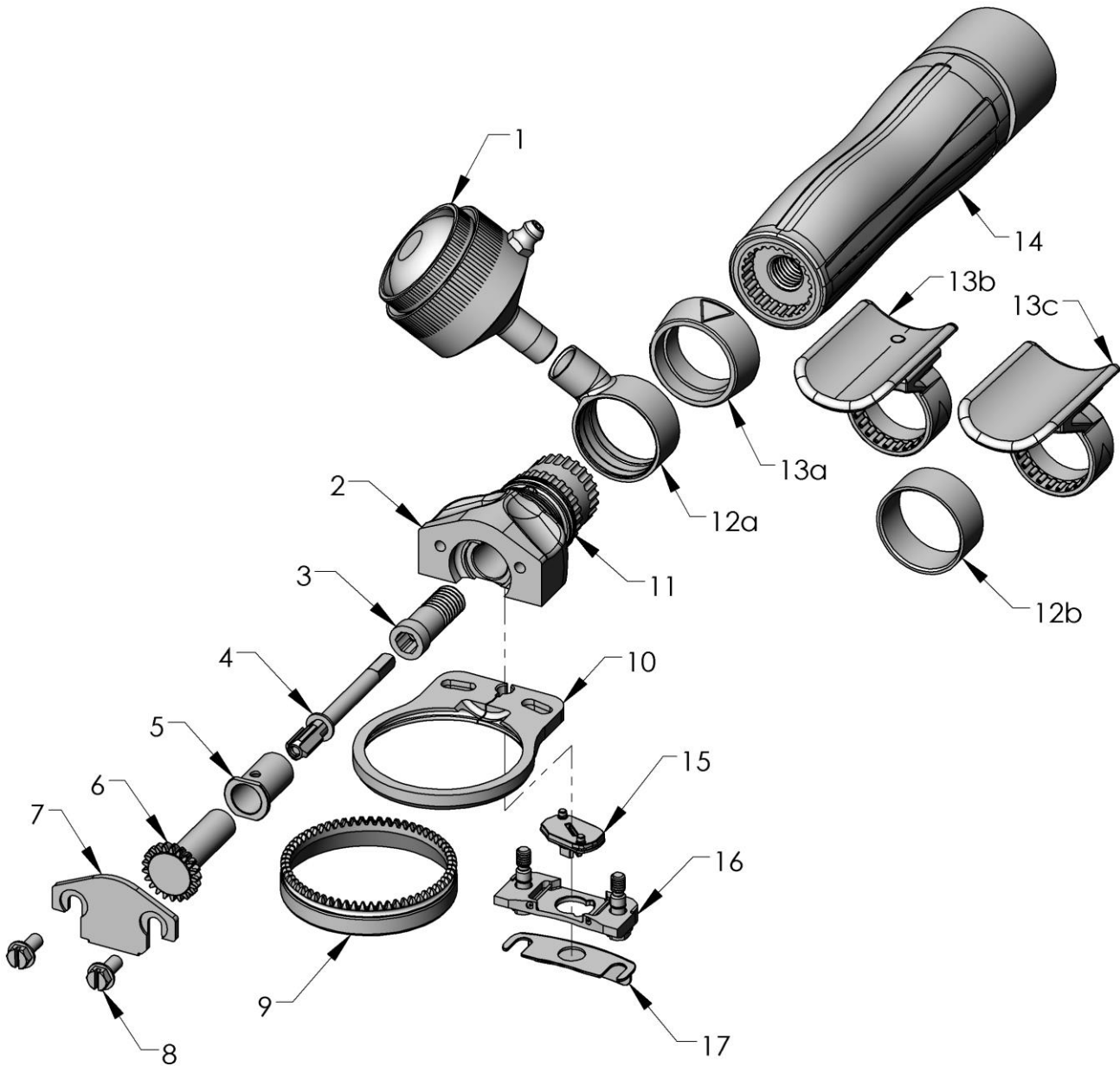


440 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	440 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107141	1
8	Cover Retaining Screw	107222	2
9	Blade	107187	1
10	Blade Housing	106577	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1



620 Quantum Flex® Air Head Assembly



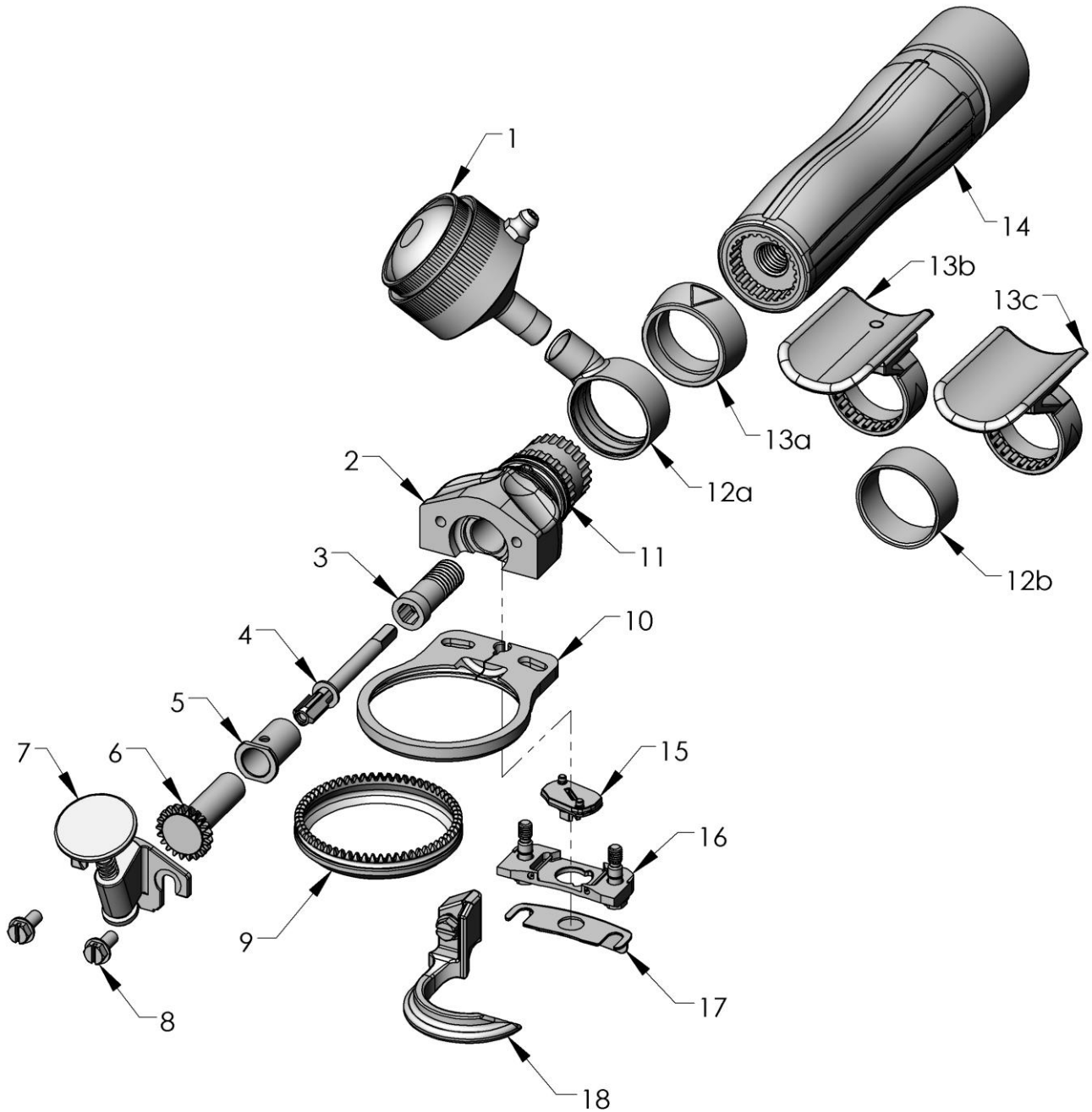


620 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	620 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107139	1
8	Cover Retaining Screw	107222	2
9	Blade	107185	1
10	Blade Housing	105366	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1



625 Quantum Flex® Air Head Assembly



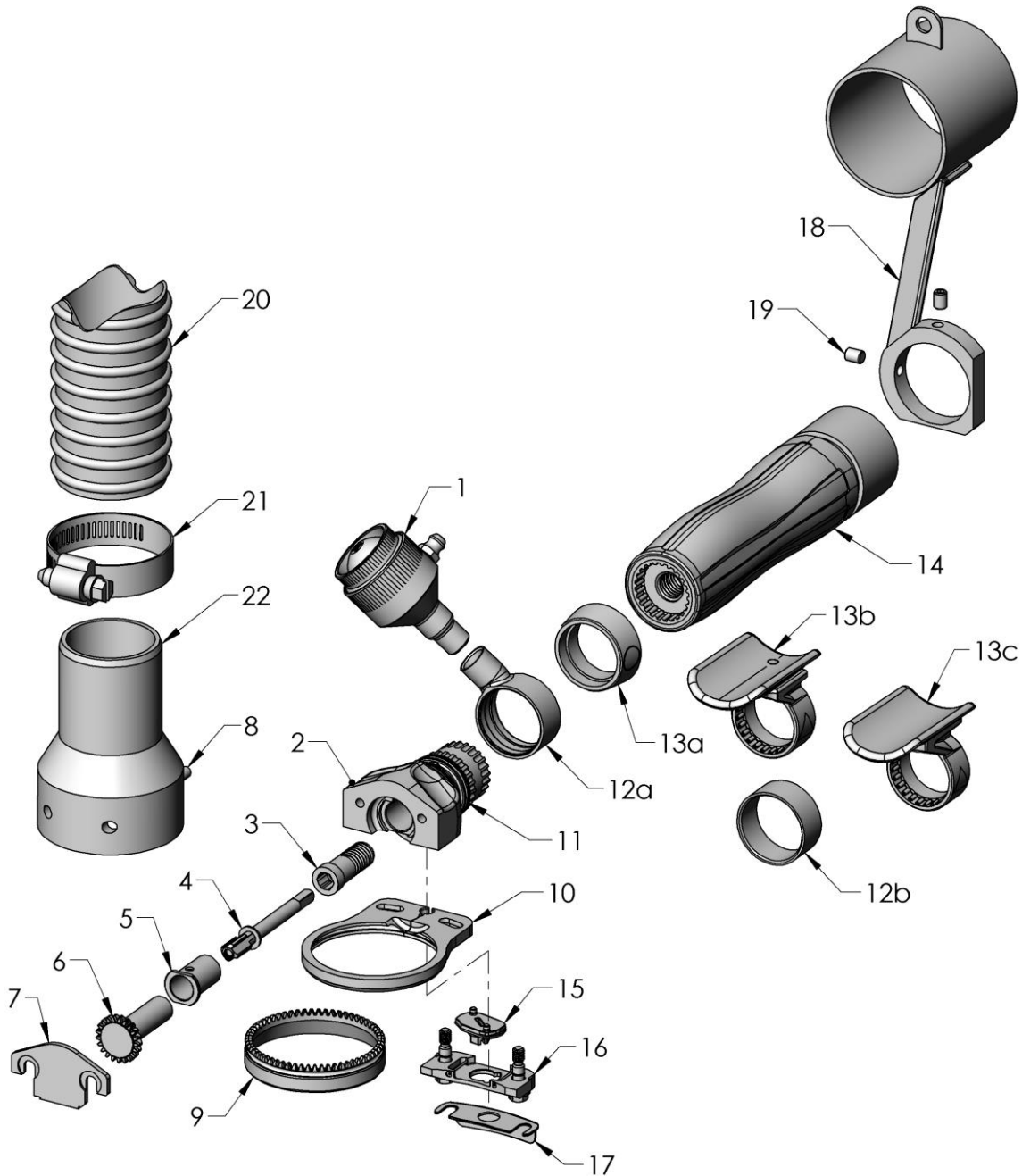


625 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	625 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107174	1
8	Cover Retaining Screw	107222	2
9	Blade	104835	1
10	Blade Housing	105366	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1
18	Depth Gauge Assembly (Optional)	107178	1



Quantum Flex® TrimVac® 45 Head Assembly



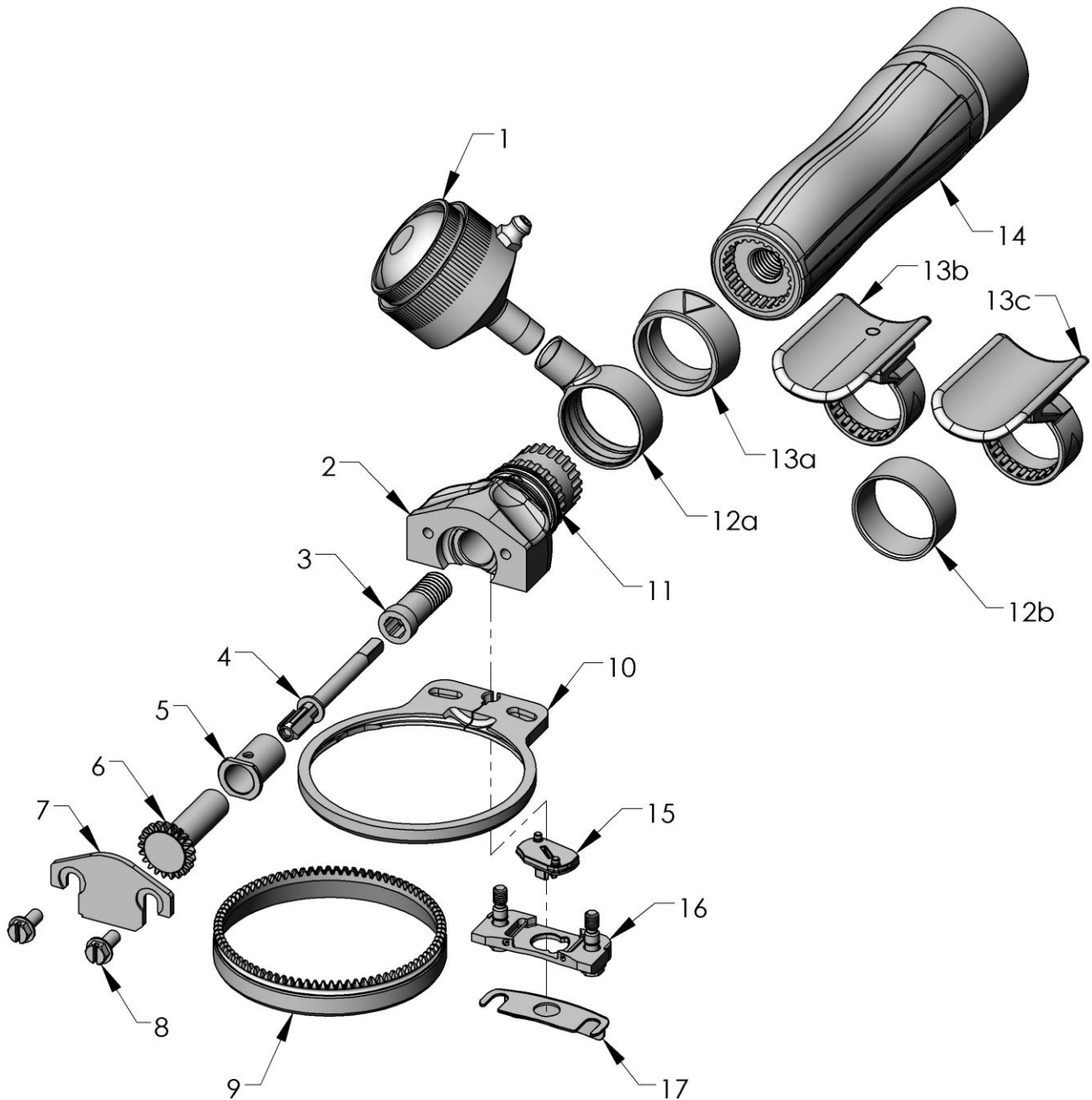


Quantum Flex® Air TrimVac® 45 Head Assembly (Continued)

ITEM	DESCRIPTION	TrimVac® 45	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107174	1
8	Cover Retaining Screw	183376	2
9	Blade	104835	1
10	Blade Housing	105366	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1
18	Vacuum Hose Bracket Kit (Includes Item 19)	184344	1
19	Set Screw	120053	2
20	Vacuum Hose Assembly (Includes Item 21)	184358	1
21	Hose Clamp	184359	1
22	Hose Adapter Assembly (Includes Item 8)	107498	1



500 Quantum Flex® Air Head Assembly



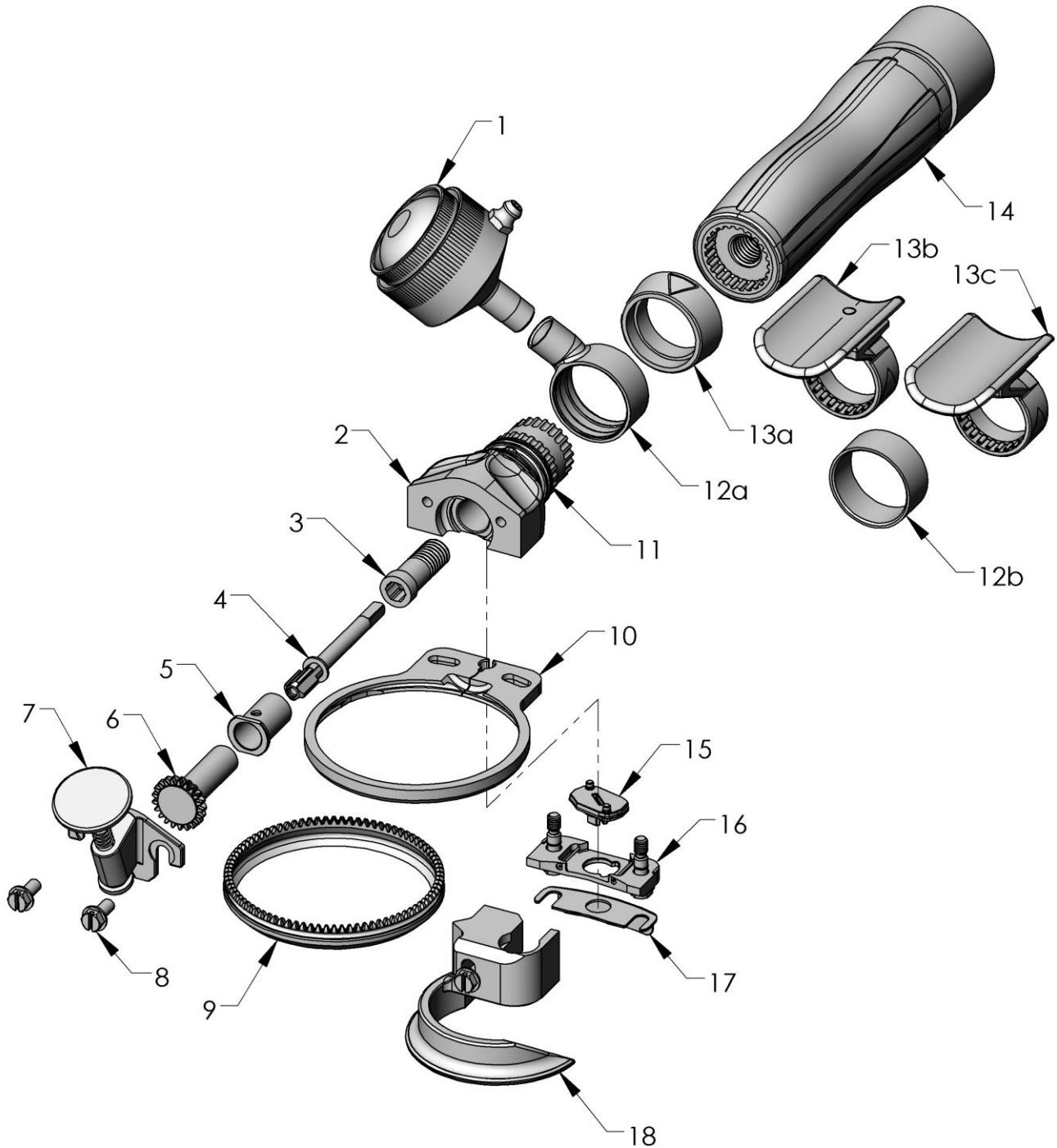


500 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	500 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107140	1
8	Cover Retaining Screw	107222	2
9	Blade	107186	1
10	Blade Housing	106596	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1



505 Quantum Flex® Air Head Assembly



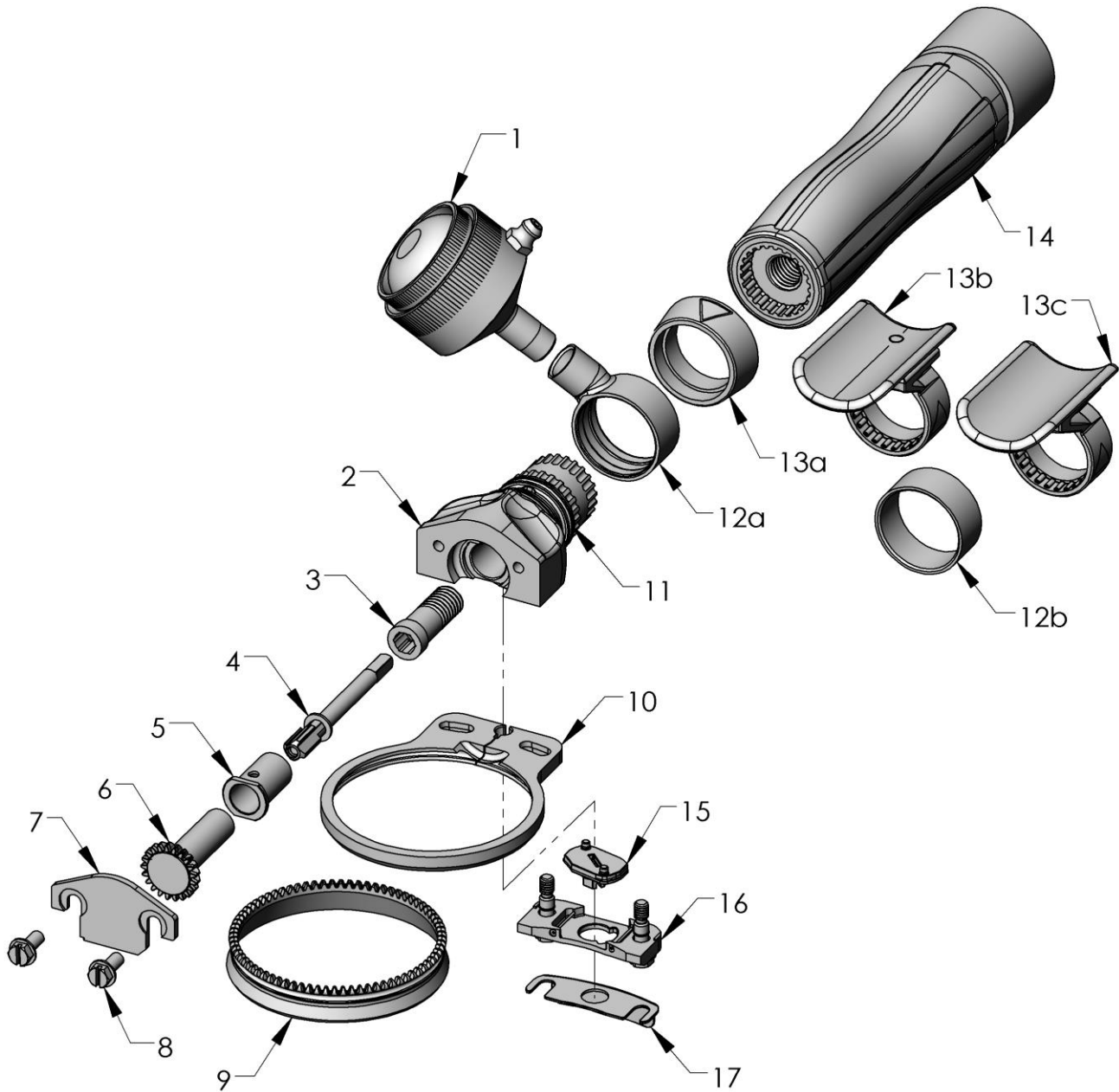


505 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	505 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107241	1
8	Cover Retaining Screw	107222	2
9	Blade	105548	1
10	Blade Housing	106596	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1
18	Depth Gauge Assembly (Optional)	107242	1



564 Quantum Flex® Air Head Assembly



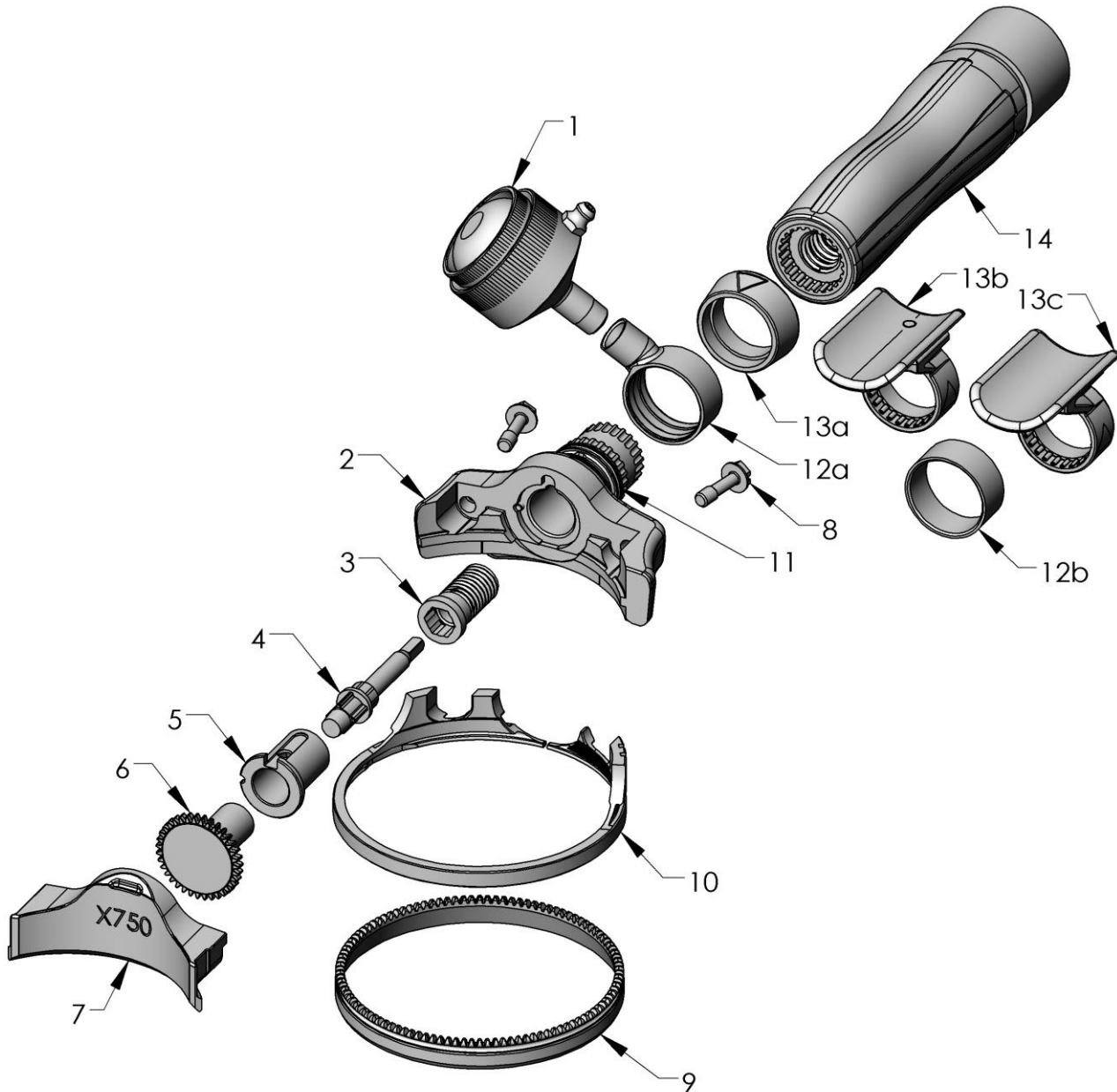


564 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	564 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	101090	1
	Washer	123523	1
	Retaining Ring Only	101576	1
	Bulb	163265	1
	Cup with Fitting	101089	1
2	Frame	107192	1
3	Attachment Screw	106825	1
4	Drive Adapter Assembly	106818	1
5	Bearing	104943	1
6	Pinion	104902	1
7	Cover	107244	1
8	Cover Retaining Screw	107222	2
9	Blade	107144	1
10	Blade Housing	107208	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	106806	1
15	Cam	106602	1
16	Cam Plate Assembly	106557	1
17	Finger Guard	106589	1



750 Quantum Flex® Air Head Assembly



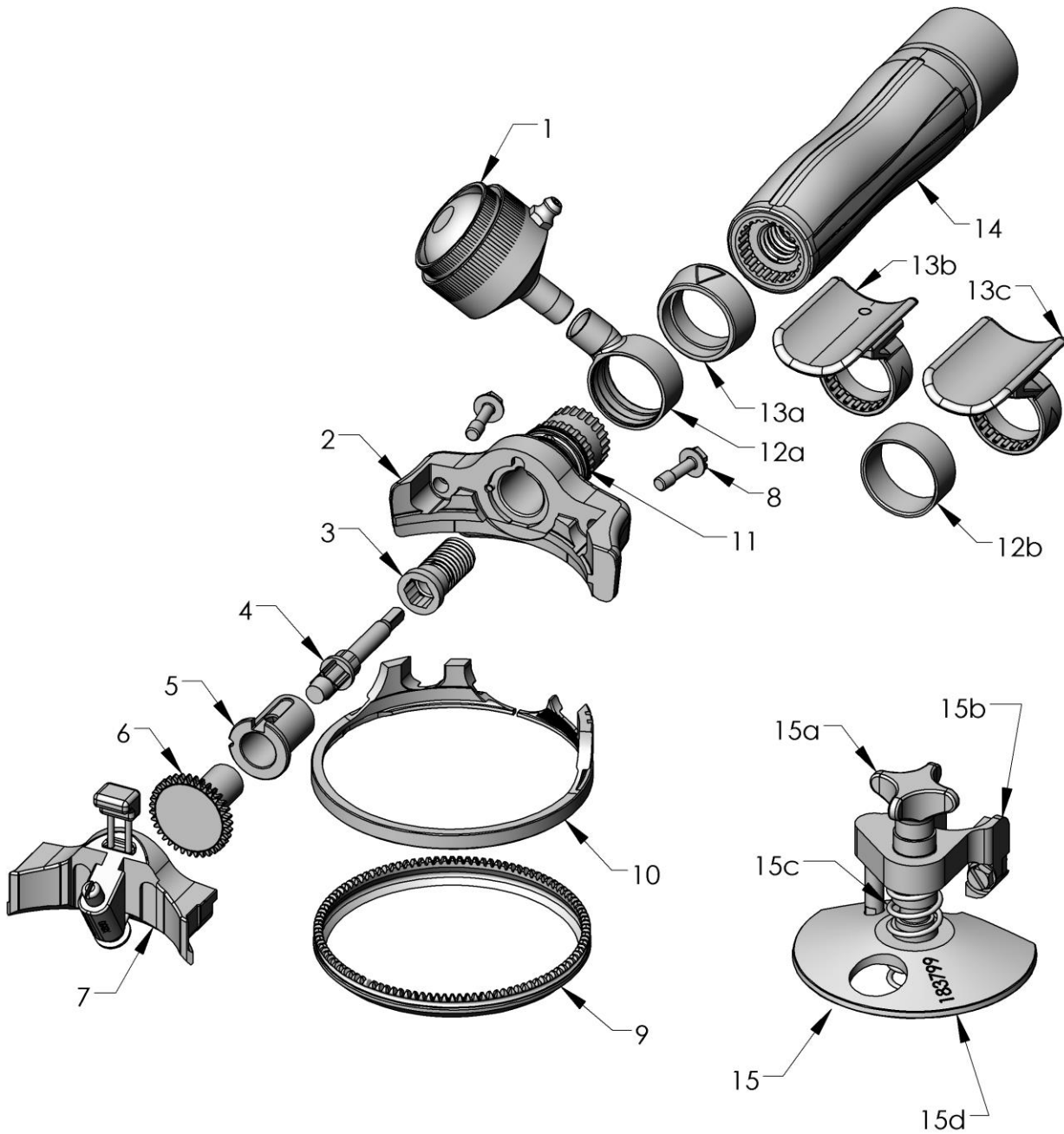


750 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	750 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107199	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105443	1
7	Cover	105465	1
8	Cover Retaining Screw	188017	2
9	Blade	105042	1
10	Blade Housing	105445	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1



850 Quantum Flex® Air Head Assembly



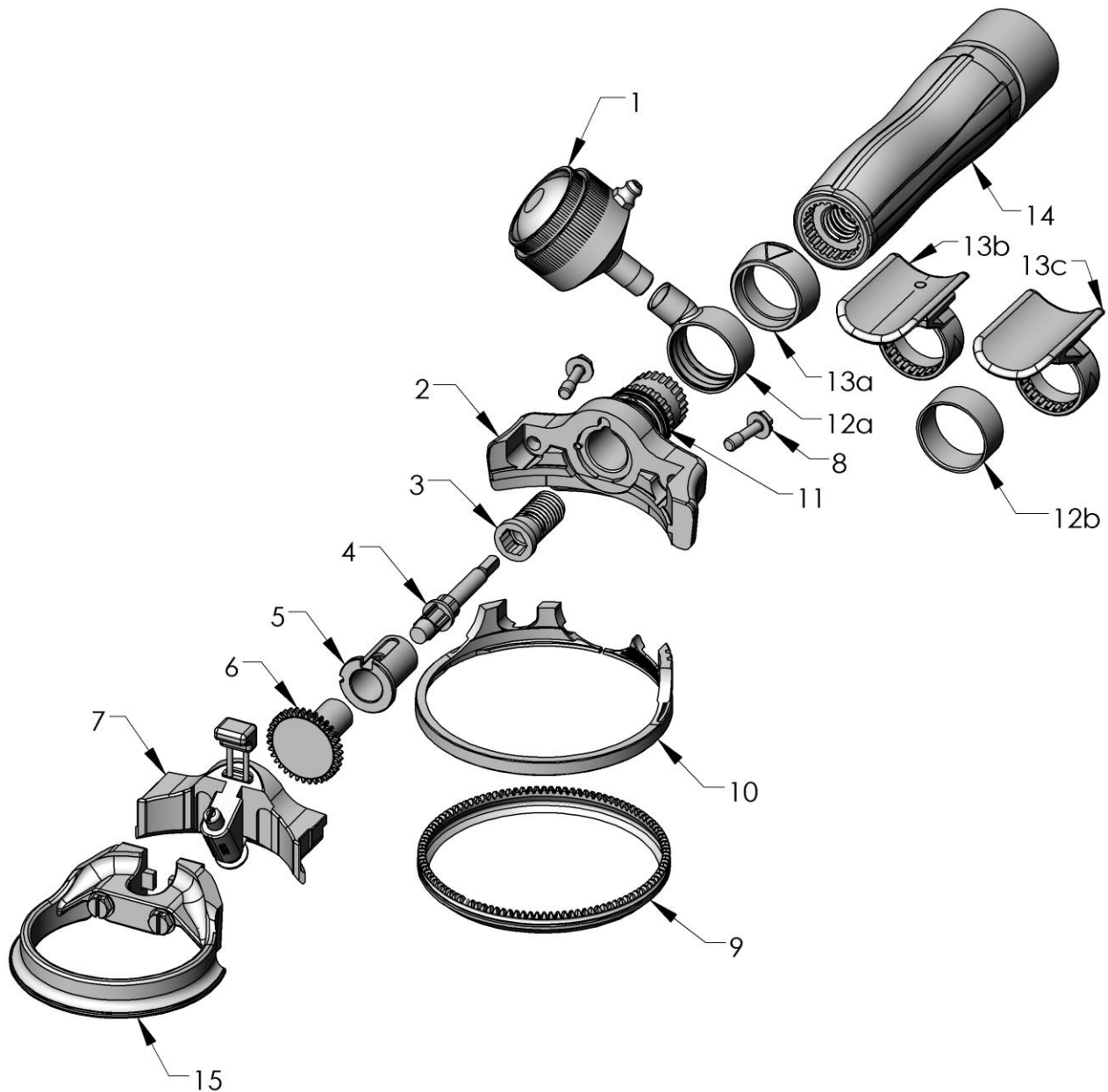


850 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	850 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107199	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105443	1
7	Cover	105488	1
8	Cover Retaining Screw	188017	2
9	Blade	104834	1
10	Blade Housing	105445	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Disc Gauge Kit 850S (Optional) (Includes 15a, 15b, 15c, 15d)	183801	1
15a	Knob	183791	1
15b	Frame Assembly	183798	1
15c	Spring	121635	1
15d	Disc Assembly	183799	1



880-B Quantum Flex® Air Head Assembly



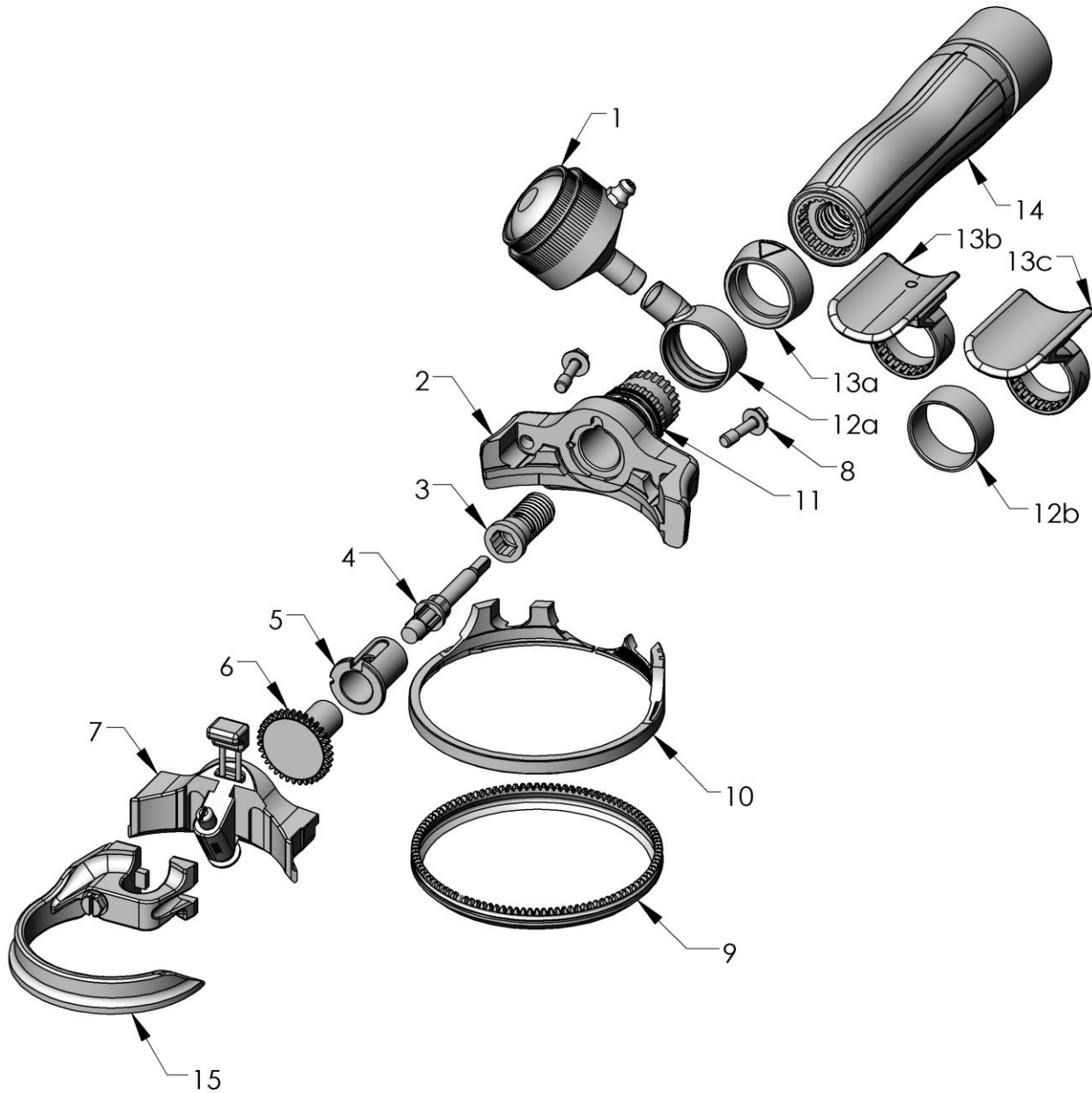


880-B Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	880-B Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107199	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105443	1
7	Cover	105488	1
8	Cover Retaining Screw	188017	2
9	Blade	104834	1
10	Blade Housing	105445	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	101216	1
15	Depth Gauge Assembly	183075	1



880-S Quantum Flex® Air Head Assembly



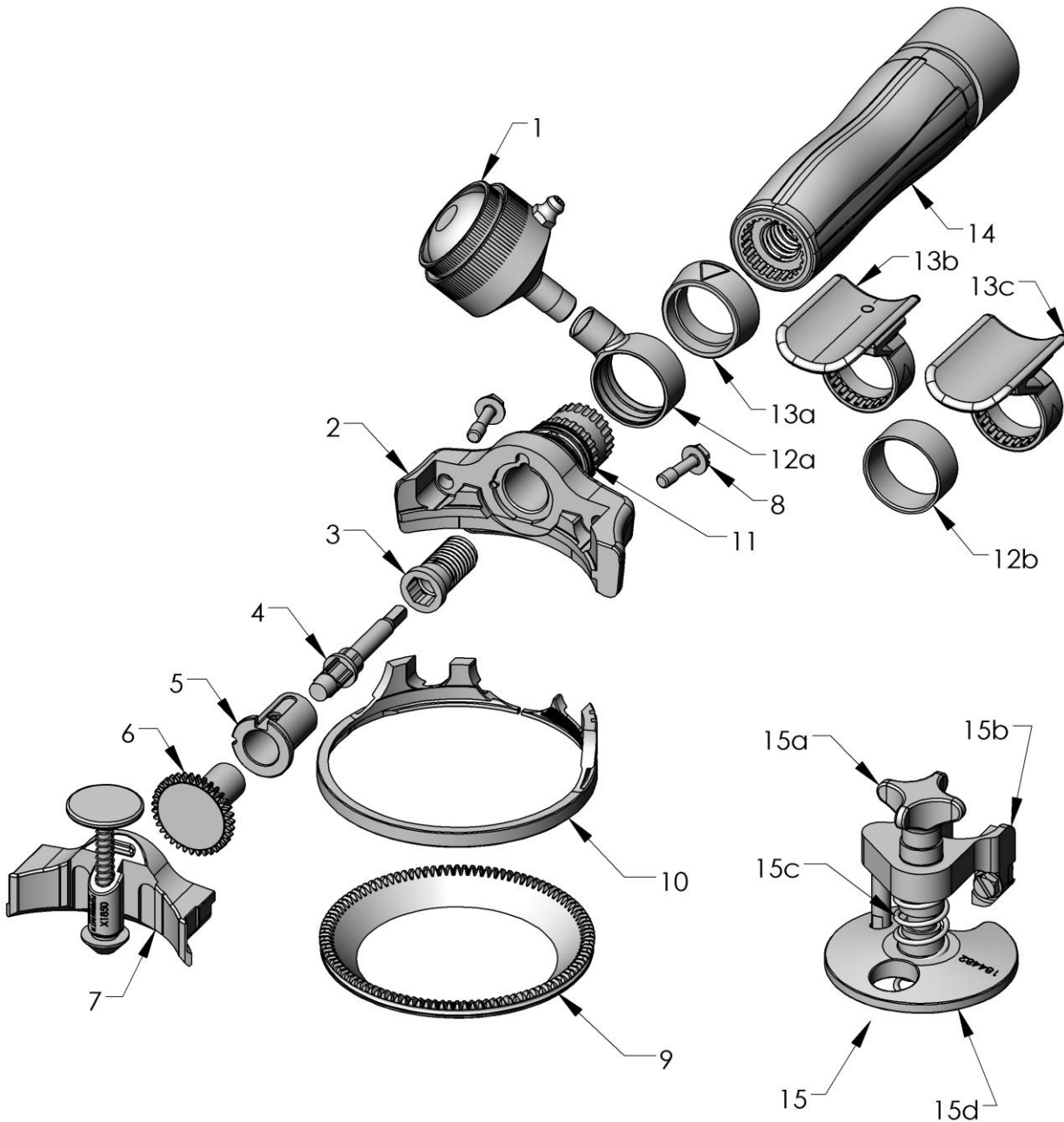


880-S Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	880-S Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107199	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105443	1
7	Cover	105488	1
8	Cover Retaining Screw	188017	2
9	Blade	104834	1
10	Blade Housing	105445	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Depth Gauge Assembly	183076	1



1850 Quantum Flex® Air Head Assembly



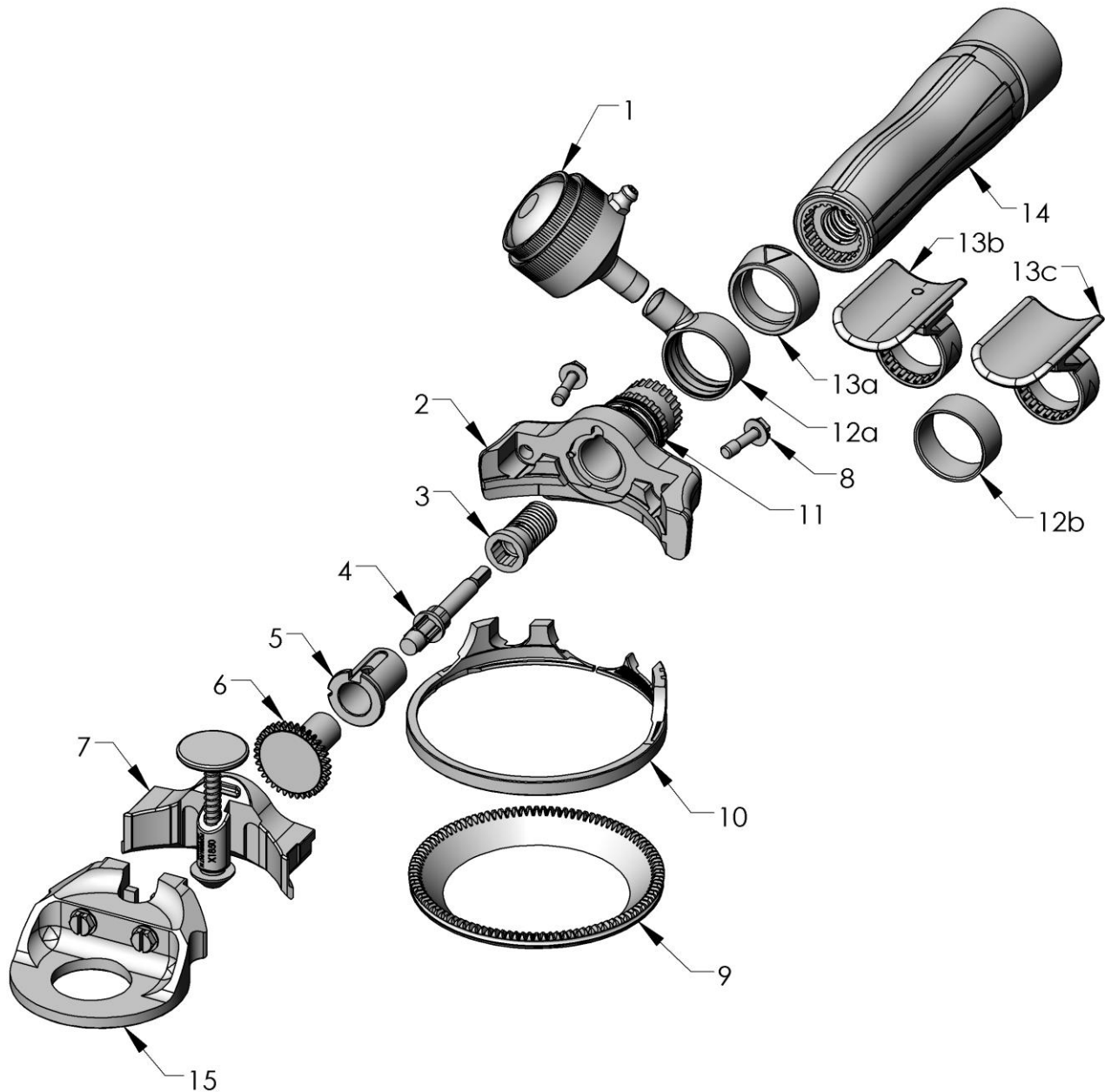


1850 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	1850 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107199	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105443	1
7	Cover	105489	1
8	Cover Retaining Screw	188017	2
9	Blade	105497	1
10	Blade Housing	105445	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Disc Gauge Kit - Optional	184479	1
15a	Knob	183791	1
15b	Frame	183798	1
15c	Spring	121635	1
15d	Disc Assembly	184481	1



1880 Quantum Flex® Air Head Assembly



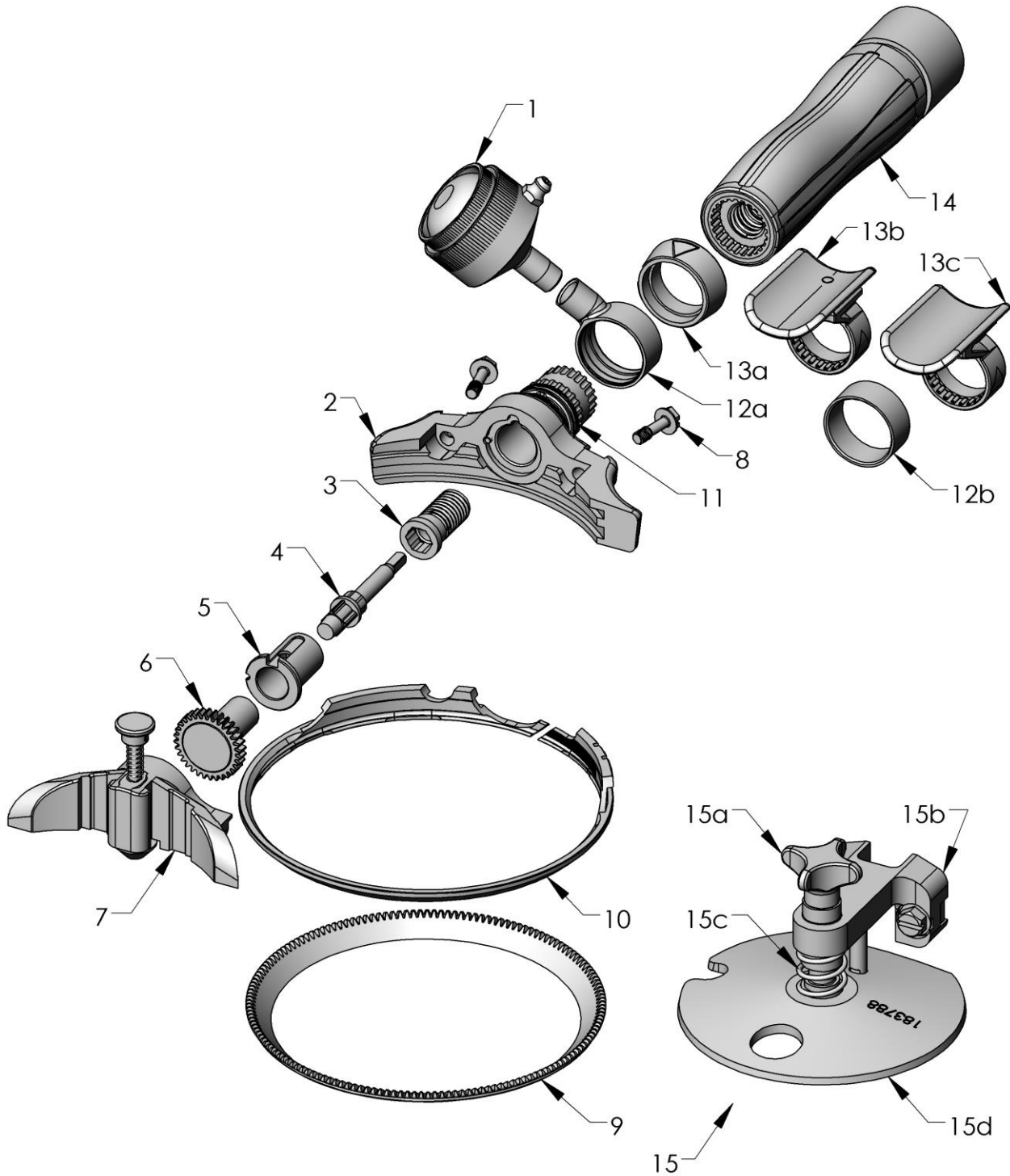


1880 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	1880 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107199	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105443	1
7	Cover	105489	1
8	Cover Retaining Screw	188017	2
9	Blade	105497	1
10	Blade Housing	105445	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Depth Gauge Assembly	183077	1



1000 Quantum Flex® Air Head Assembly



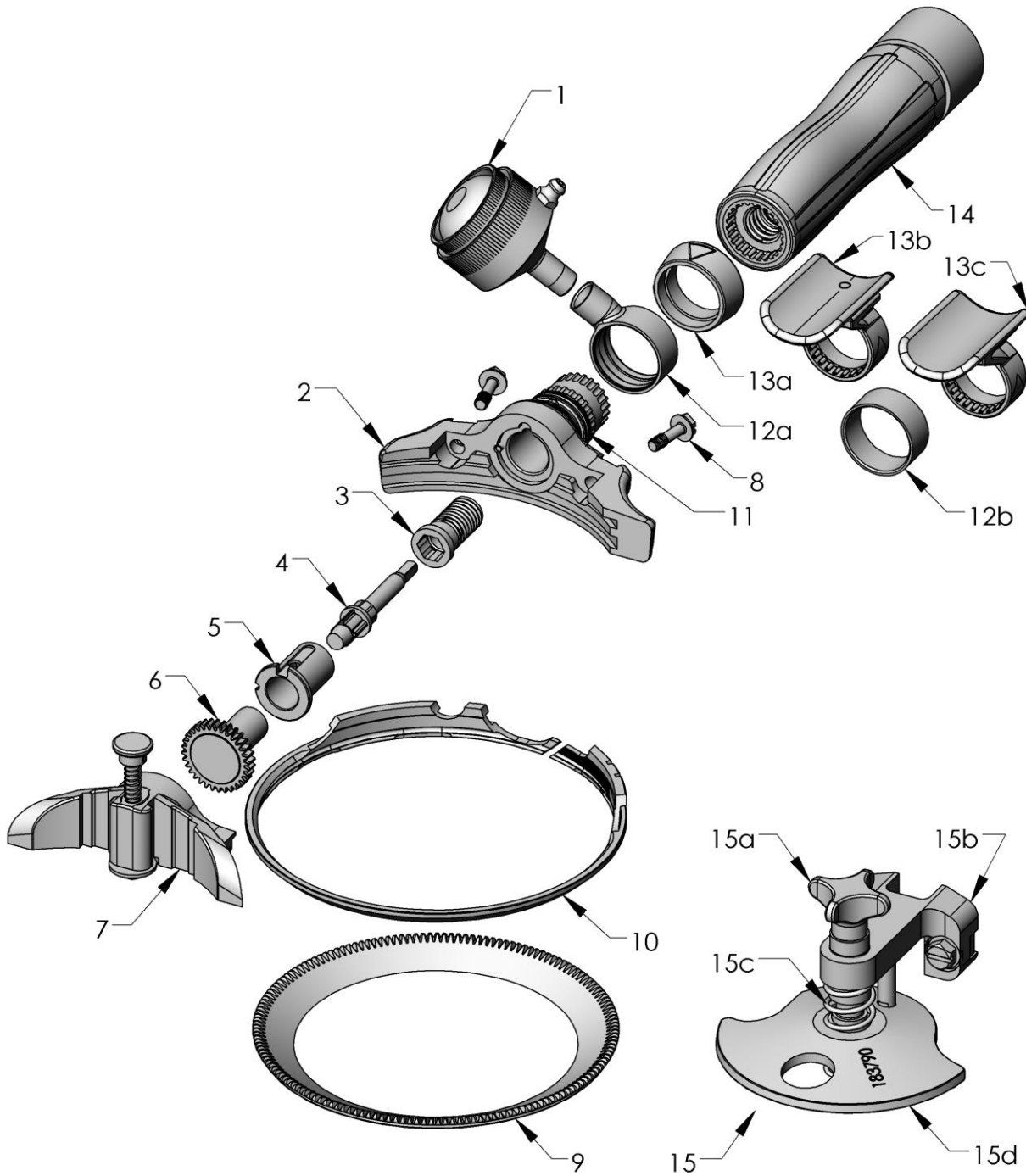


1000 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	1000 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107200	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105502	1
7	Cover	105529	1
8	Cover Retaining Screw	101046	2
9	Blade	104881	1
10	Blade Housing	105505	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Disc Gauge Kit (Optional)		
	X1000 Skinner (S)	183792	1
	X1000 Fat (F)	183793	1
	X1000 Special (N)	184365	1
15a	Knob	183791	1
15b	Frame Assembly	183784	1
15c	Spring	121635	1
15d	Disc Assembly (S)	183787	1
15e	Disc Assembly (F)	183788	1
15f	Disc Assembly (N)	184367	1



1300 Quantum Flex® Air Head Assembly



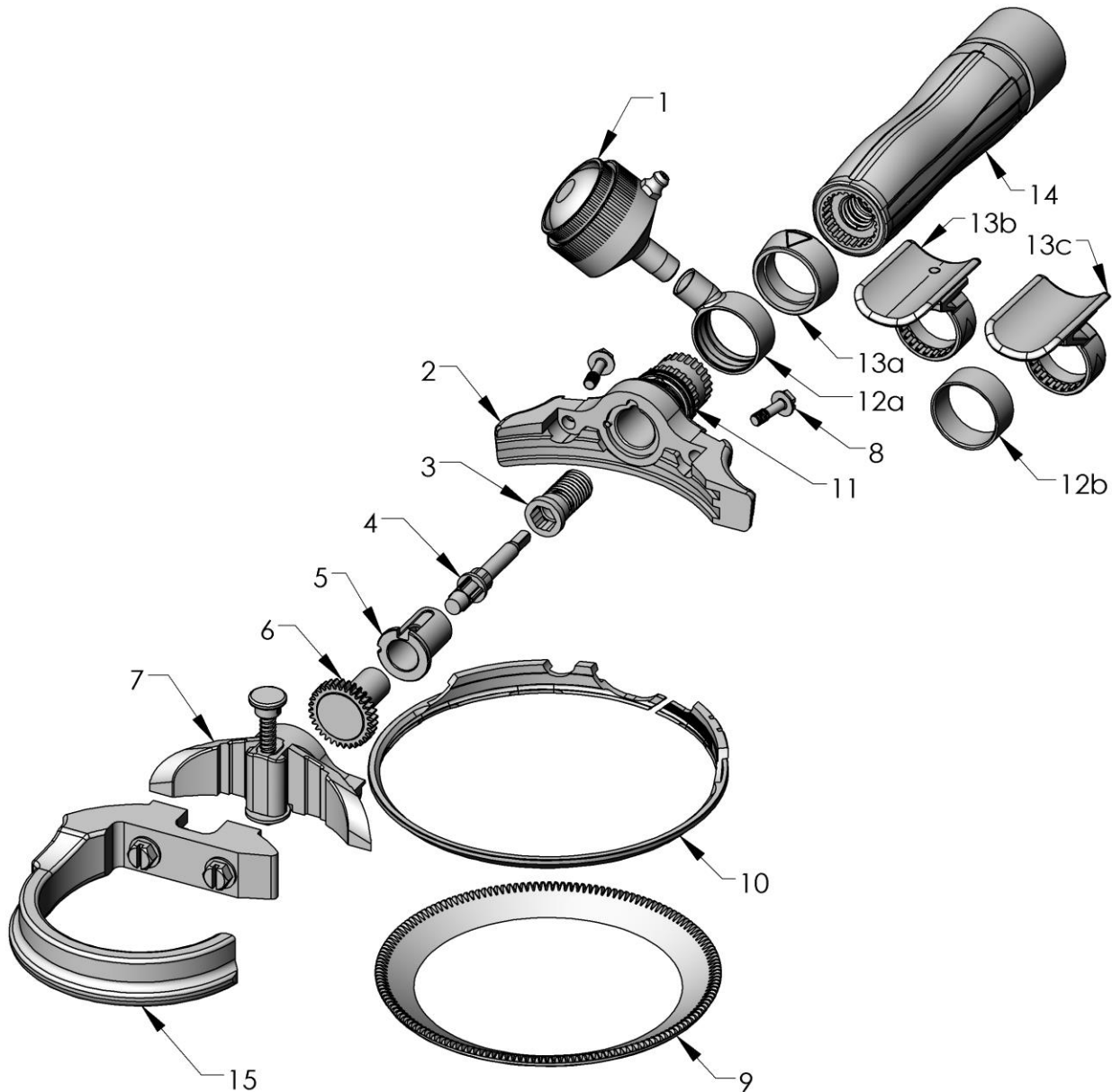


1300 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	1300 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107200	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105502	1
7	Cover	105531	1
8	Cover Retaining Screw	101046	2
9	Blade	104882	1
10	Blade Housing	105505	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Disc Gauge Kit (Optional)		
	X1300 Skinner (S)	183794	1
	X1300 Fat (F)	183795	1
	X1300 Kebab (K)	184996	1
15a	Parts for Disc Gauge		
	Knob	183791	1
	Frame Assembly	183784	1
	Spring	121635	1
	Disc Assembly (S)	183789	1
	Disc Assembly (F)	183790	1
	Disc Assembly (K)	184994	1



1400 Quantum Flex® Air Head Assembly



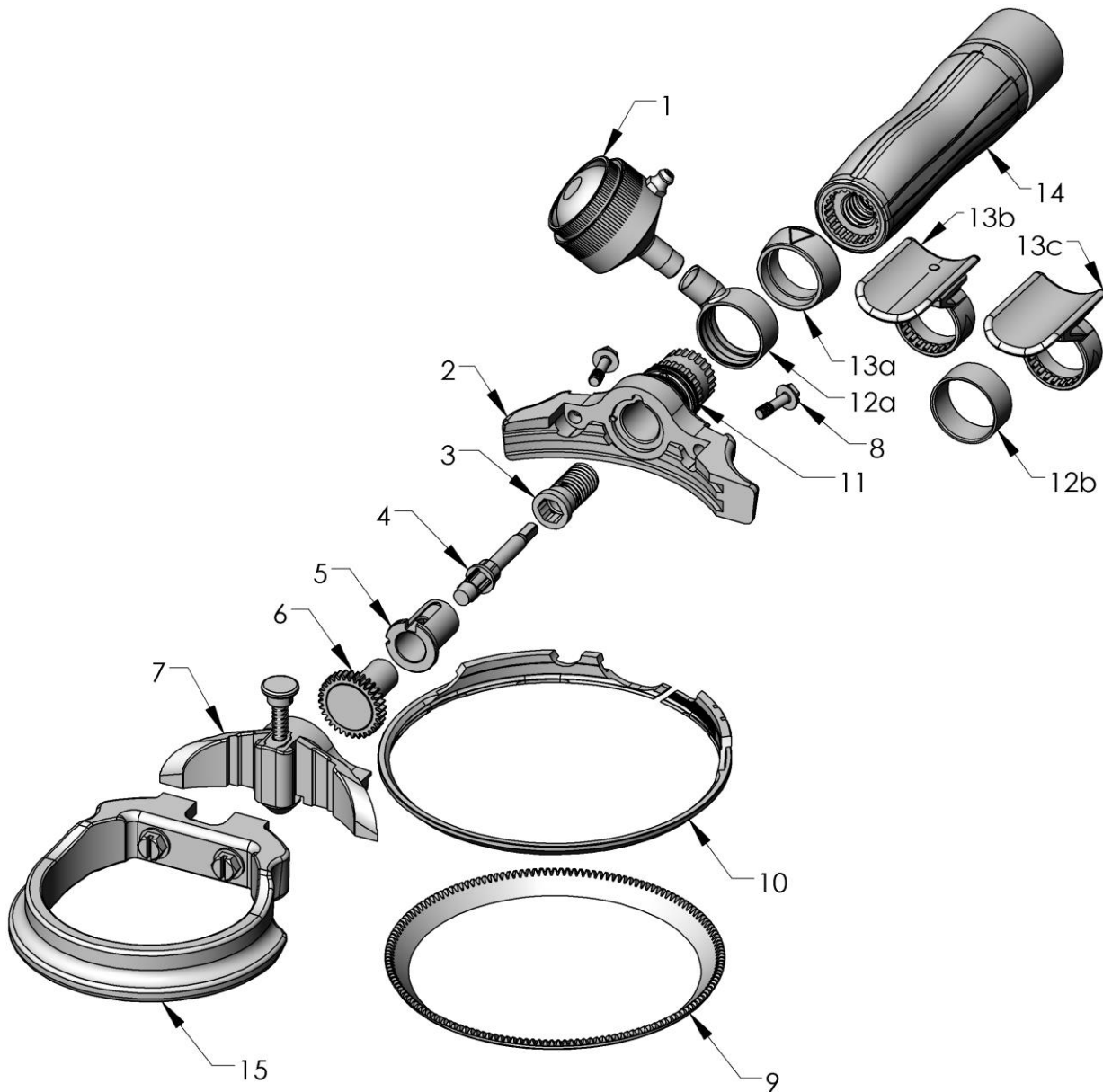


1400 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	1400 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107200	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105502	1
7	Cover	105531	1
8	Cover Retaining Screw	101046	2
9	Blade	104882	1
10	Blade Housing	105505	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	101216	1
15	Depth Gauge Assembly	183159	1



1500 Quantum Flex® Air Head Assembly





1500 Quantum Flex® Air Head Assembly (Continued)

ITEM	DESCRIPTION	1500 Quantum Flex® Air	QTY.
1	Grease Cup (Parts Not Shown)	100998	1
	Retaining Ring Only	101577	1
	Bulb and Ring Only	173208	1
	Cup with Fitting	100999	1
2	Frame	107200	1
3	Attachment Screw	184119	1
4	Drive Adapter Assembly	184120	1
5	Bearing	105533	1
6	Pinion	105502	1
7	Cover	105529	1
8	Cover Retaining Screw	101046	2
9	Blade	104881	1
10	Blade Housing	105505	1
11	Frame O-rings	103388	2
12a	Grease Ring	100961	1
12b	Grease Spacer Ring	101614	1
13a	Handle Spacer Ring	101130	1
13b	Adjustable Thumb Support	101021	1
13c	Fixed Thumb Support	103251	1
14	Power Unit	107055	1
15	Depth Gauge Assembly	183160	1



Lubrication and Lubrication Equipment

Part Number	Description
103603	Pint of Oil
184282	4 oz. Tube of Max-Z-Lube Grease
143631	14 oz. Cartridge Whizard® Grease
163328	25 pack - 14 oz. Cartridge Whizard® Grease
100640	35 Pound Bucket Whizard® Grease
113415	Grease Gun
113326	Planetary Gear Grease Gun (Needle Nose)
101316	Large Grease Cup (Optional)
102273	Grease Fitting
183631	Elbow - Body

Air Supply Equipment

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



Optional Blades

Part Number	Description
107053	X1850 Serrated Blade
105541	X1000 / X1500 Serrated Blade
105542	X1300 / X1400 Serrated Blade
107521	X350 Serrated Blade
107286	X350 Cone Blade
107224	XTV 18 Tapered 8 mm Blade
107278	XTV 14 Blade
107277	XTV 24 15/16" Blade



Blade Sharpening and Steeling Equipment

Part Number	Description
100655	Special Stone (Small Tools)
100660	Special Stone (Large Tools)
100641	Special Steel (Small Tools)
100642	Special Steel (Large Tools)
100650	Ceramic Sharpener
107237	350 Whizard® EdgeMaster™
163074	360 Whizard® EdgeMaster™
107238	440 Whizard® EdgeMaster™
163077	500 Whizard® EdgeMaster™
163072	505 Whizard® EdgeMaster™
163079	620 Whizard® EdgeMaster™
163073	625Whizard® EdgeMaster™
163076	750 Whizard® EdgeMaster™
163071	850 / 880 Whizard® EdgeMaster™
163069	1000 / 1500 Whizard® EdgeMaster™
163070	1300 / 1400 Whizard® EdgeMaster™
122740	Positioner Reel for Whizard® EdgeMaster™
107254	350 Bettcher® EZ Edge Sharpener
183928	360 Bettcher® EZ Edge Sharpener
107255	440 Bettcher® EZ Edge Sharpener
183907	500 Bettcher® EZ Edge Sharpener
183927	505 Bettcher® EZ Edge Sharpener
183892	620 Bettcher® EZ Edge Sharpener
183926	625 Bettcher® EZ Edge Sharpener
183908	750 Bettcher® EZ Edge Sharpener
183925	850/880 Bettcher® EZ Edge Sharpener
173322	1000/1500 Bettcher® EZ Edge Sharpener
173298	1300/1400 Bettcher® EZ Edge Sharpener
184423	Steeling Assembly Ball Tip



Covers, Depth Gauges and Depth Gauge Equipment

Part Number	Description
107242	Depth Gauge X505
107178	Depth Gauge X625
173347	Depth Gauge Setting Device Kit 880-S&B
173348	Depth Gauge Setting Device Kit 1400 and 1500
107166	Poultry Cover X350 / X360 / X440 / X500 / X564 / X620
107183	Poultry Cover X505 / X625

Cleaning Equipment

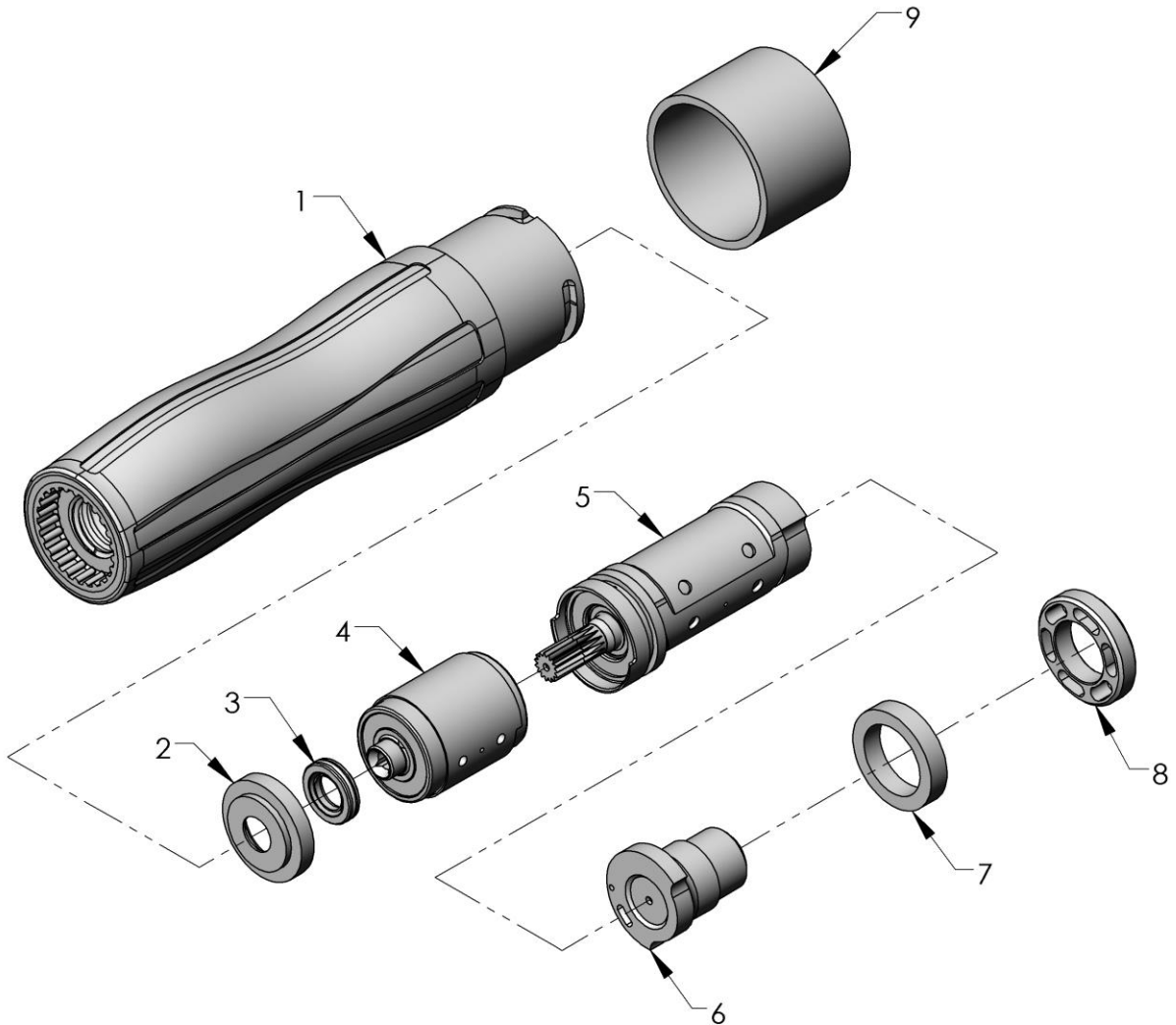
Part Number	Description
184334	Handpiece Cleaning Kit (Contains the following)
184335	Handpiece Cleaning Pick
184336	Stainless Steel Hand Brush
184337	Scrub Brush
184338	1-1/2" Diameter Tubing Brush
184339	1/2" Diameter Tubing Brush

Cleaning Solution

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



Complete Power Unit Assembly



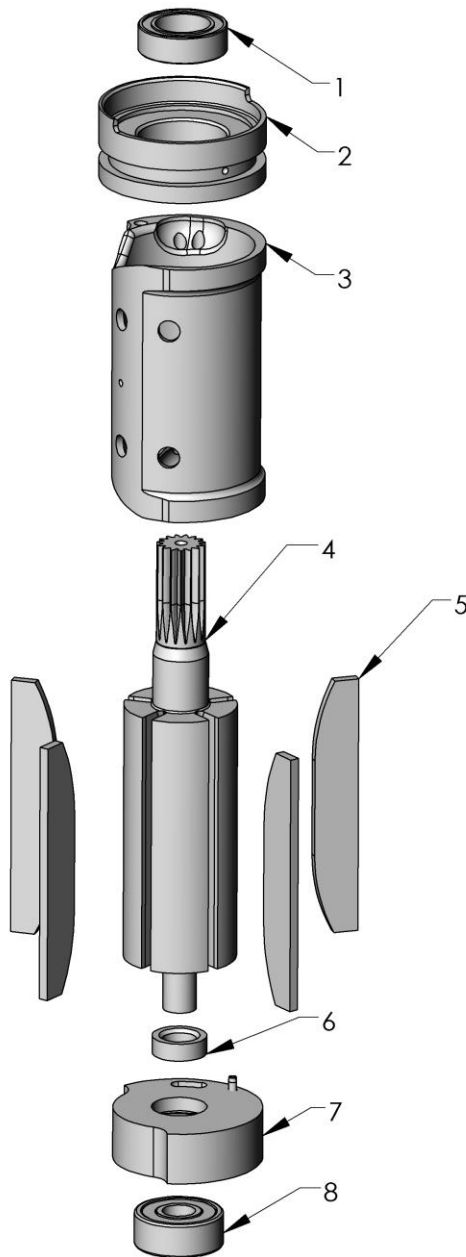


Complete Power Unit Assembly (Continued)

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



Complete Air Motor Assembly



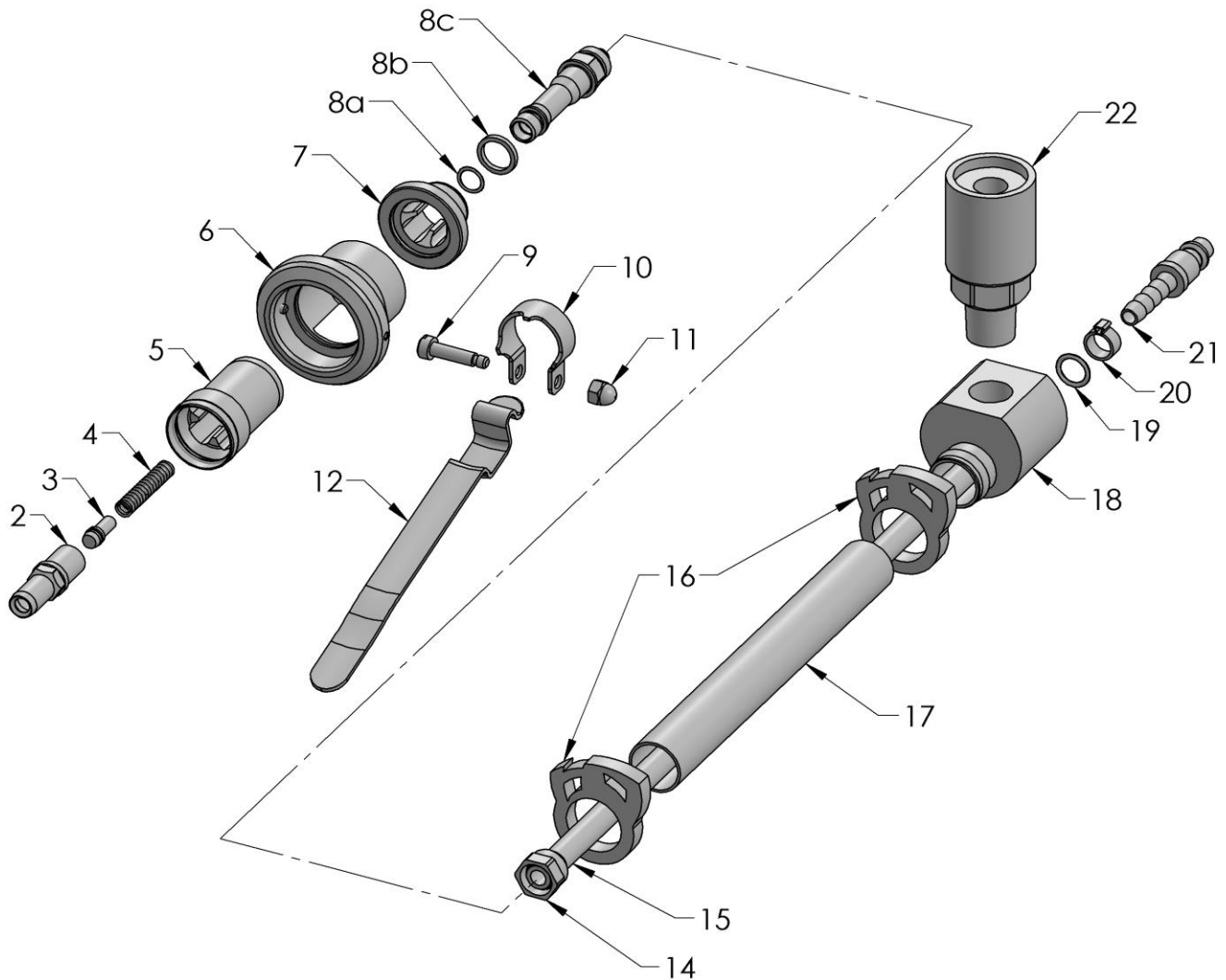


Complete Air Motor Assembly (Continued)

ITEM	DESCRIPTION	PART NUMBER	QTY.
	Complete Air Motor Assembly (Includes Items 1, 2, 3, 4, 5, 6, 7, 8)	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



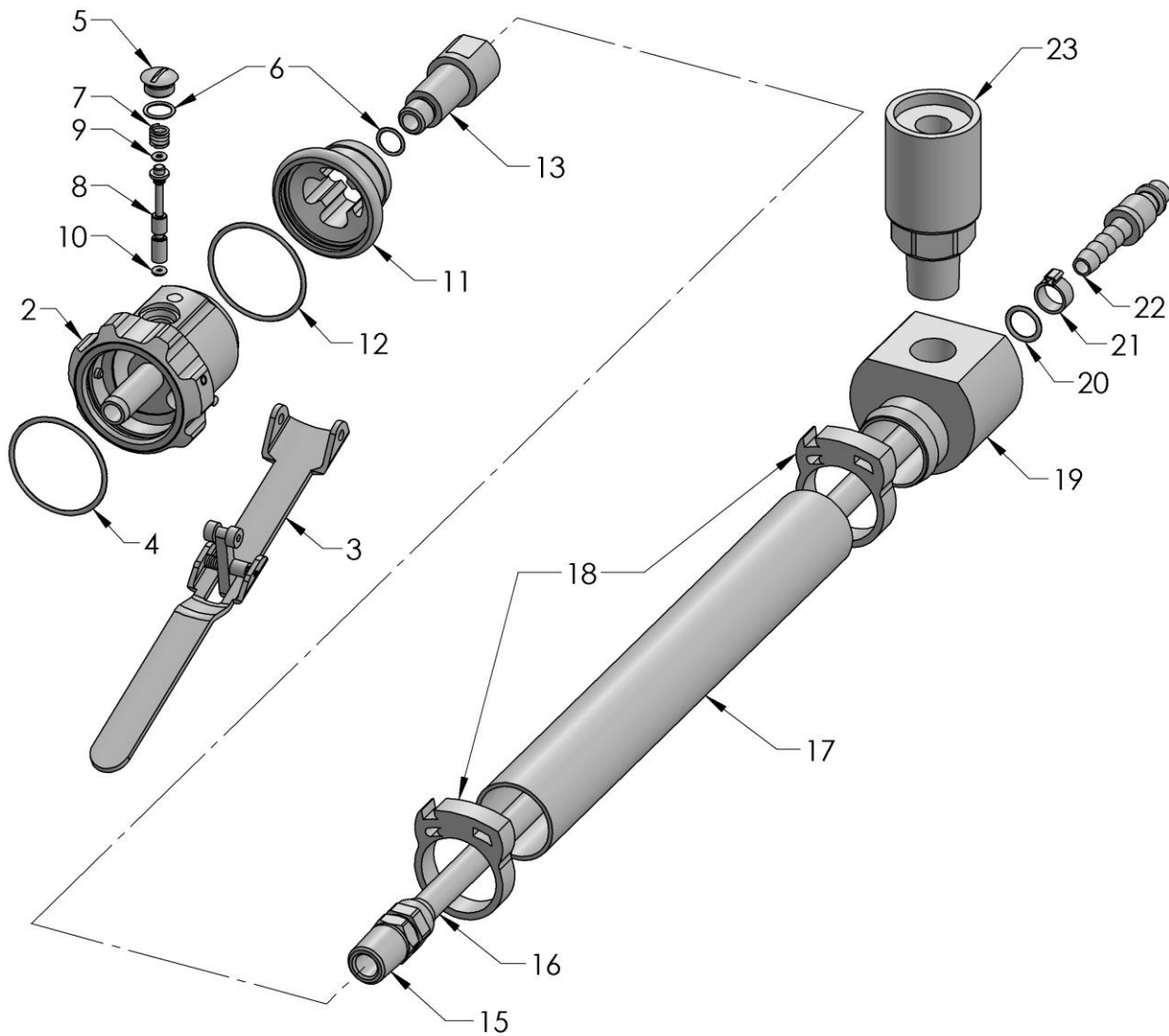


Complete Valve and Hose Assembly (Continued)

ITEM	DESCRIPTION	PART 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	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 and Hose Assembly



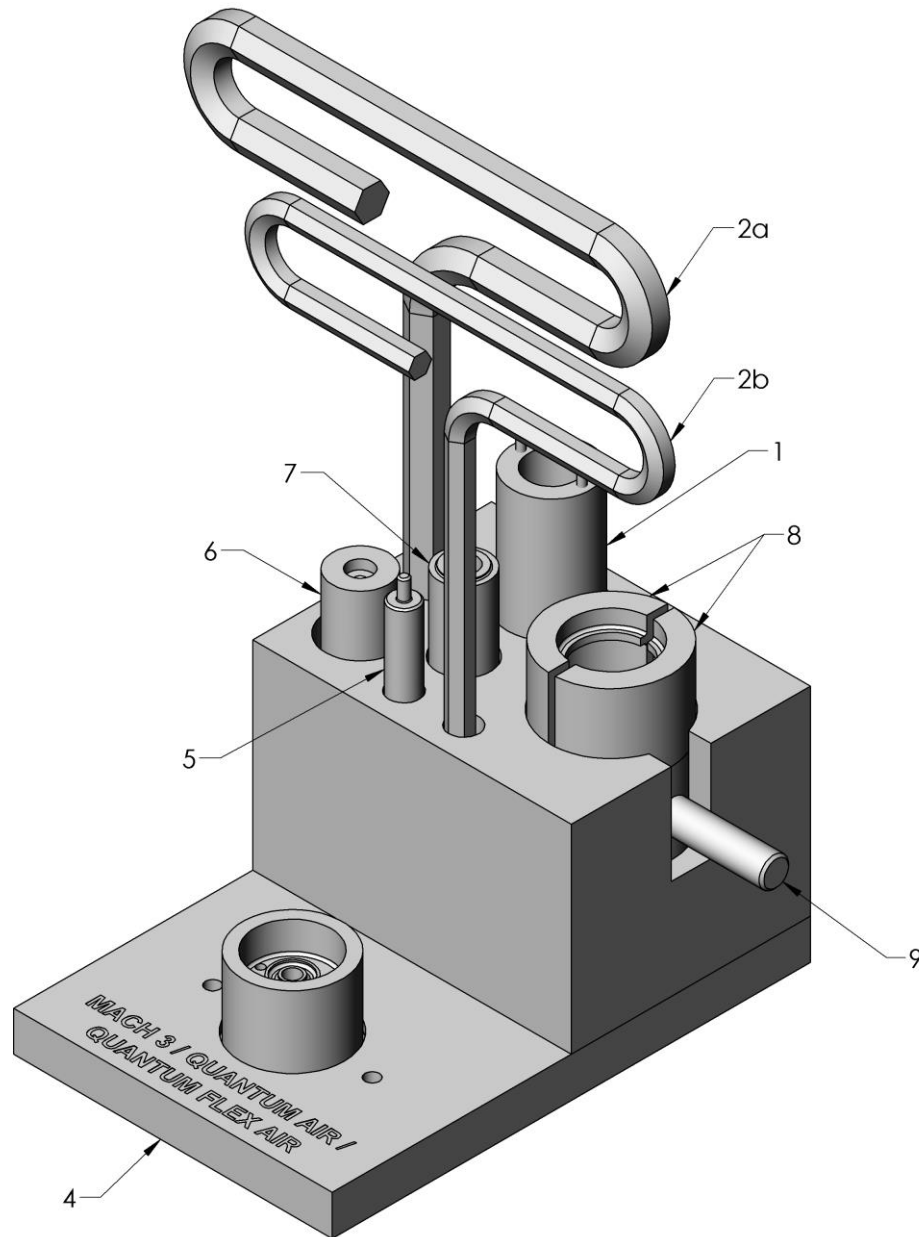


Complete Quick Start Valve and Hose Assembly (Continued)

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
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



Section 8

Contact and Document Information

CONTENTS OF THIS SECTION

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:

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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 #107193
Document Description:	Operating Instructions and Spare Parts List For Quantum Flex® Air Trimmers
Re-Issued:	November 1, 2018

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 trimmer.



BETTCHER
Industries, Inc.

Contact and Document Information

Software and Duplication

For more information, contact your local Representative or:

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