BETTCHER
A Fortifi Company

FOR USE WITH THE WHIZARD QUANTUM® DRIVE UNIT

Operating Instructions and Parts List for the Bettcher® Quantum Flex+™

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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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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.

WARNING

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

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

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

SIGNAL WORDS AND SIGNAL WORD PANELS

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

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

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

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

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

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

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

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

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

This technical manual is printed in black and white.

SAFETY SYMBOLS

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

⚠ WARNING

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

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

⚠ 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. Metal mesh gloves are recommended for the free hand.

Keep hands away from moving blade.

⚠ WARNING

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

All electrical repairs should be completed by a qualified electrician or approved service provider.

Always turn off the Whizard® Drive Unit and place the handpiece in the hanger bracket. Never lay the handpiece down on the workstation or let it hang free by the driveline or Flexshaft and casing assembly. Never place the handpiece in the hanger while the blade is still revolving.

Always disconnect the power and remove the tool from the driveline or Flexshaft and casing assembly prior to servicing.

SAFETY RECOMMENDATIONS AND WARNINGS (CONTINUED)

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

⚠ WARNING

Avoid use of this machine in standing water.

⚠ 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.

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

⚠ WARNING

Whizard® Series II Flexshaft and casing assemblies are not compatible with Quantum Flex+® Tools. Whizard® Series II Flexshaft and casing assemblies must be converted prior to use with Quantum Flex+® Tools.

NOTICE

SAFETY FEATURES

All Quantum Flex+® Tools have been designed for use with an optional disconnect which will stop blade rotation when the trigger/lever is released. This trigger/lever has been designed in such a way that minimal grip force is required for operation, using three fingers.

ERGONOMIC FEATURES

Small, medium, and large handle sizes are available to help improve the operator's grip and comfort. Fitting the correct size handle to the worker's hand is a very important step. Quantum Flex+® Tools can be configured in both right and left handed configurations.

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

Whizard® Micro-Break Hand Strap - This strap has been designed to allow the user to relax the fingers between work cycles while maintaining control of the trimmer. This is beneficial to the operator to reduce exposure to mechanical stresses.

NOISE AND VIBRATION LEVELS

Forces applied by the worker are greatly reduced via the drive motor and limited to guiding the rotating knife blade.

The noise emission value is less than 79 dB(A).

Vibration of the handpiece is less than 1.1 m/sec^2.

No negative side effects have been reported.

SECTION 2

Designated Use

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

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

DESIGNATED USE

The Quantum Flex+® Trimmers are specifically designed for use with the Whizard Quantum® Drive Unit, Whizard® Ultra Drive Unit and the Whizard® UN-84 Drive Unit. They are used for removal of fat and tissue, the recovery of lean meat from fat and as a universal cutting tool in the meat industry.

WARNING! Any use in applications other than those for which the Quantum Flex+® Trimmer was designed and built may result in serious injuries.

MACHINE SPECIFICATIONS

Quantum Flex+® Trimmers are highly effective for use in the meat industry, designed with the highest possible standards for safety, ergonomics and production. These versatile machines, with their carefully engineered and durable cutting edge, bring uniformity and consistent yield control to all operations. This Operating Instruction covers the following models:

Model	Use
X350	Bone Trimmer
X360	Bone Trimmer
X440	Bone Trimmer
X500	Bone Trimmer
X500A	Bone Trimmer
X505	Defatting Machine
X564	Bone Trimmer
X620	Bone Trimmer
X620A	Bone Trimmer
X625	Defatting Machine
X750+	Bone Trimmer
X850+	Defatting Machine
X880+ (S & B)	Primal Fat Shaper
X1850+	Defatting Machine
X1880+	Primal Fat Shaper
X1000+	Defatting Machine
X1300+	Primal Fat Shaper
X1400+	Ham Finisher
X1500+	Skinning Machine

RECOMMENDED OPERATION

Quantum Flex+® Trimmers are made for several recommended operations. Ensure 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.

MODEL X350/ X360

Beef Kill / Offal	Poultry	Pork Kill / Offal
Cartilage removal Liver spotting Bone trimming Strip intestine	Turkey: breast, necks, thighs, cage Chicken backs Oil sacks	Button bones Bone trimming Spotting livers / Removing gall sacks

MODEL X440

Poultry
Chicken wing drop Chicken thigh deboning Turkey thigh / knuckle deboning

MODEL X500 / X500A

Poultry	Pork Kill	Pork Cut
Turkey thigh knuckles **INDUSTRIAL** Foam Industry	Trim pork snouts Trim pork trachea Trim pork heads	Remove lean from neck bones of heavy hogs Remove tails from heavy hogs Removing 99% picnic muscle from bellies Removing pork tenderloins

MODEL X505

Poultry	Beef Boning / Fabrication
Turkey thigh trim	Removing lean from fat generated in fabrication

RECOMMENDED OPERATION (CONTINUED)

MODEL X564

Pork Kill
Remove tenderloin
Mark tenderloin

MODEL X620 / X620A

Beef Kill / Offal	Poultry	Pork Kill / Offal
Removing lean from heads	Removing lean from turkey carcasses	Removing eyelids
De-veining livers	Removing lean from turkey necks	Cleaning stick wounds
	Removing oil sacks	Removing eardrums
		Removing lean from heads
		Spotting livers / removing gall sacks

Beef Boning / Fabrication	Pork Cut
Removing lean from bones, especially:	Trimming neck bones
Neck bones - atlas bones	Removing lean from bones
Chine bones from strips or rib eyes	Removing tails
Pelvic bones / aitch bones	
Rib cages	
Blade bones	
Strip bones	
Feather bones	

RECOMMENDED OPERATION (CONTINUED)

MODEL X625

Beef	Poultry	Pork
Upgrading retrim	Fat trimming of turkey thighs Trimming of turkey skins	Fat trimming of pork loins

MODEL X750+

Foam Industry	Pork Kill	Pork Cut
Remove defects Flash trimming	Remove cheek meat Remove blood clots from jowls	Remove diaphragm lean Removal of picnic hearts

MODEL X850+ / X1850+

Beef	Poultry	Pork Processing
Recover lean from fat Trim lean from rib caps Trim beef tripe	Defatting turkey skins Defatting turkey thighs	External ham defatting Internal ham defatting Defat pork loins Remove oyster meat Pork kill Removing leaf lard

MODEL X880+B / X1880+ 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

RECOMMENDED OPERATION (CONTINUED)

MODEL X880+S / X1880+ WITH ADJUSTABLE DEPTH GAUGE

Hog Kill / Hot Cut / Ham Processing	Top Rounds / Bottom Rounds / Briskets /Cube Steak Material	Turkey
Remove skin or hair patches Trimming pork loins and Canadian backs Internal and external defatting of hams	Removing membranes and light fat covering	Defatting turkey thighs

MODEL X1000+

Hot Cut	Beef Slaughter
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	Defatting hot beef externally and internally Kidney fat, heart fat, pelvic fat and cod fat

MODEL X1300+

Beef Kill	Beef Boning / Fabrication	Ham Boning
Pizzle cord removal Removing external fat	Primal Fat Shaping: - Strips - Sirloin Butts - Ribs Defat navels (Pastrami)	External defat of hams External defat of pork shoulders

RECOMMENDED OPERATION (CONTINUED)

MODEL X1400+ WITH ADJUSTABLE DEPTH GAUGE

Pork Processing	Beef Processing
Defatting: - Whole hams - Shoulders - Canadian Backs Removing beater marks Scraping leaf lard	Carcass hair and dirt removal Defatting: - New York strips and sirloin butts - Rounds and ribeyes

MODEL X1500+ WITH ADJUSTABLE DEPTH GAUGE

Pork Processing	Beef Slaughter
Removing skin patches from bellies Defatting: - Whole hams - Pork loins	Defatting hot beef externally Hair and dirt removal

FUNCTION

Quantum Flex+® Trimmers are durable and efficient, promoting higher yields for meat and poultry trimming. Quantum Flex+® Trimmers are superbly designed for ease of handling while reducing operator fatigue.

A vertically hung motor drives a flexible shaft. The flexible shaft drives a rotating blade in the handpiece via a gear and pinion. Forces applied by the worker are greatly reduced via the drive motor and limited to guiding the rotating knife blade.

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WORK STATION

Correct installation is extremely important to achieve maximum efficiency for both the Quantum Flex+® Trimmer unit being used and the operator. Incorrect installation may possibly hamper the operator's movements and cause undue wear or damage to the driveline and parts of the unit.

NOTICE

The work station 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+® 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.

Improperly hung drive units may result in excessive operator effort and decrease in mobility. Increased fatigue and loss of efficiency may occur.

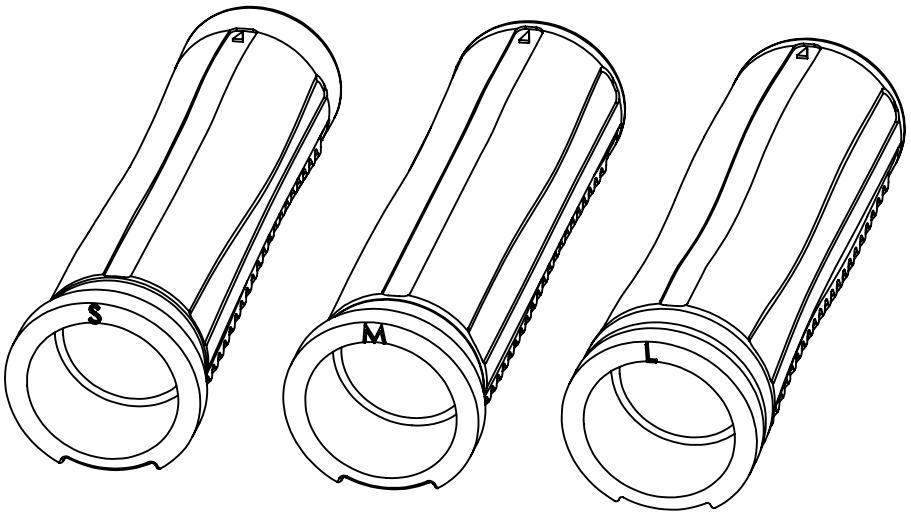
⚠ CAUTION

Refer to your appropriate Whizard® Drive Unit manual for instructions on the proper placement and installation of your Whizard® Drive Unit.

OPTIONAL THUMB SUPPORT AND HANDLE ADJUSTMENT

Your Quantum Flex+® Trimmer has been supplied with a spacer ring or optional thumb support. If using the optional 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.

Fitting the correct size handle to the grip of an operator's hand is a very important step when trying to reduce risks associated with cumulative trauma disorders. ***NOTE:*** *S,M,L markings on handle.*



Here is a very simple procedure to determine correct handle size

1. Assemble three (3) knives each with a different size handle.

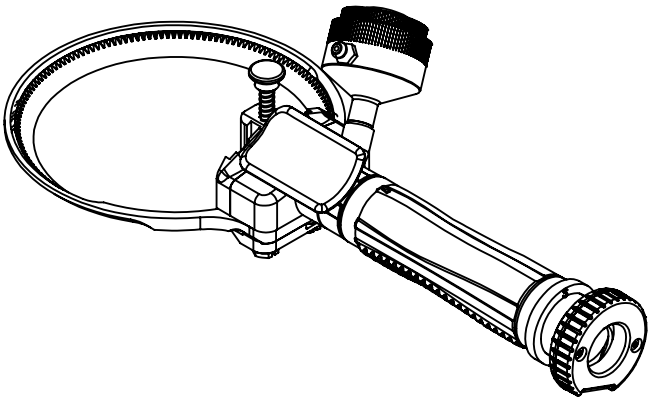
2. Allow the user to hold the knife and apply the grip pressure normally used during the job operation.

NOTE: *If the operator normally wears a glove, this process should be done with all the gloves used in normal operation.*

The operator should choose the handle that is most comfortable. Allow the operator to work with this handle on a tool for several days. If the operator is not comfortable with the handle selection allow the operator to try a different size.

OPTIONAL THUMB SUPPORT AND HANDLE ADJUSTMENT (CONTINUED)

The Quantum Flex+® Trimmers have been designed to allow the head of the tool and the thumb support to be rotated relative to the handle. In this way, the tool can be adjusted to position the blade properly to the product while the handle can be set to allow the operator to have a comfortable position for the wrist.

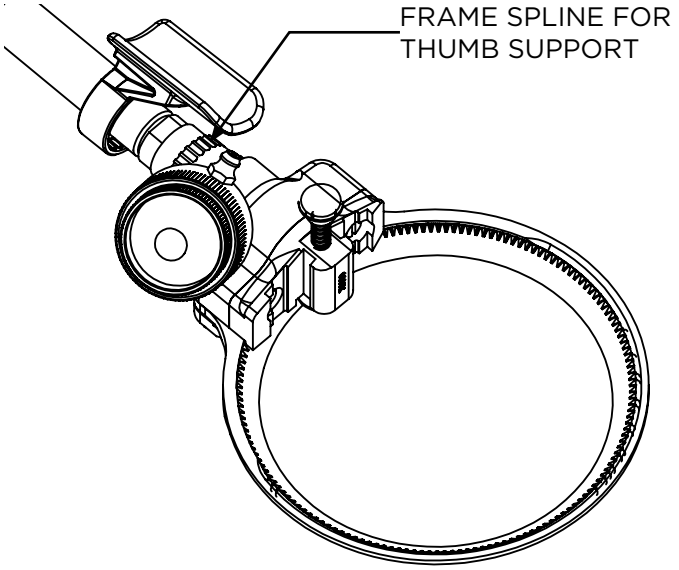


The position which is selected will vary based on the individual work station, product, and operator. To determine the proper position, it will be necessary to observe the operator while trying various positions. Select the position in which the operator's wrist appears to maintain the most neutral position and which is comfortable to the operator.

Here is a very simple procedure to determine correct handle size:

1. Pick up the Quantum Flex+® Trimmer. Loosen the handle retaining knob enough to be able to pull the handle back far enough to disengage it from the frame splines.

2. Pull the thumb support back to disengage it from the frame splines. Rotate the thumb support to a new position and push it forward to engage the frame splines. Rotate the handle to a new position and push it forward to engage the frame splines.



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

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

3. Tighten the handle retaining knob.

Tighten firmly but take care not to overtighten or the handle will be damaged. **NOTICE**

OPTIONAL WHIZARD® MICRO-BREAK HAND STRAP AND ADJUSTMENT

The Whizard® Micro-Break Hand Strap has been designed to allow the user to relax the fingers of the hand between work cycles while maintaining control of the trimmer, which can be beneficial and may reduce risks associated with stress.

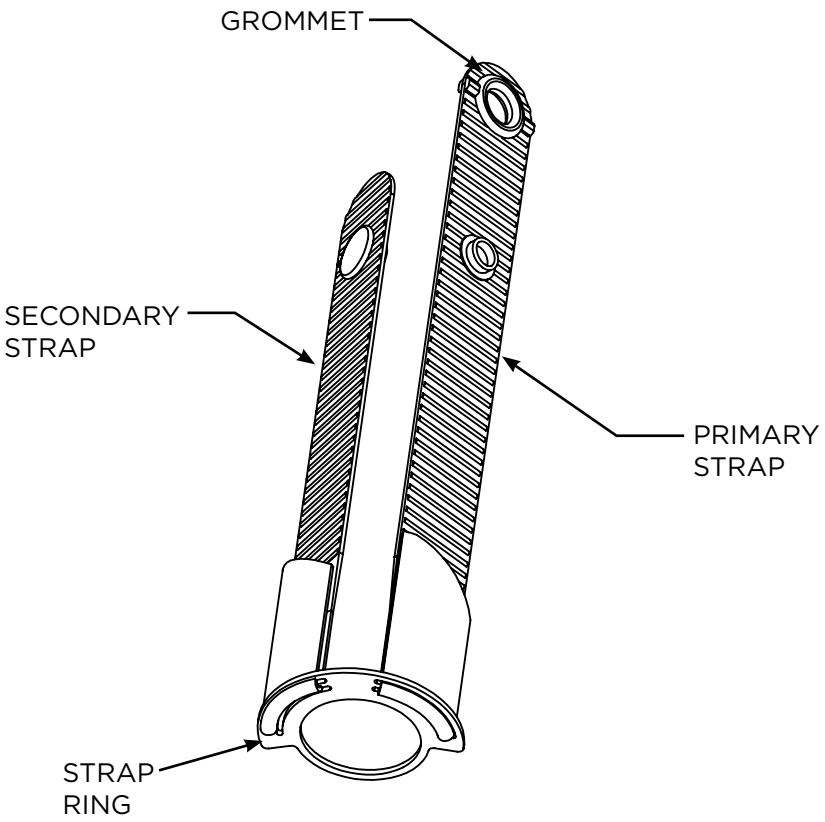
The Whizard® Micro-Break Hand Strap comes complete with a primary and secondary strap. The straps can be adjusted for comfort by adjusting the strap length using the strap ring at the bottom of the handle. If the secondary strap is not needed, it can be removed from the strap ring.

NOTE: *The primary strap has the grommet and will be placed over the threads on the grease cup.*

1. Remove the grease cup and retaining knob from the tool.
2. With the retaining knob removed from the handle, place the strap ring over the handle retaining knob.
3. Screw on the handle retaining knob.

Tighten firmly but take care not to overtighten or the handle will be damaged. **NOTICE**

4. Place the grommet of the primary strap over the threads on the grease cup.
5. Thread the grease cup into the grease ring.
6. Adjust the strap using the strap ring to make the strap shorter or longer.

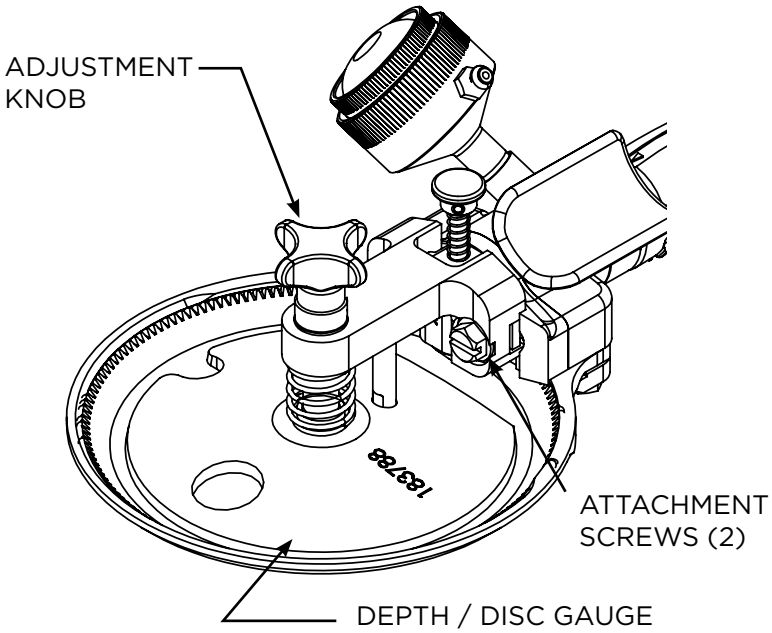


OPTIONAL DISC GAUGE OR DEPTH GAUGE INSTALLATION

OPTIONAL DISC GAUGES FOR MODELS: X850+, X1850+, X1000+ AND X1300+

Optional adjustable disc gauges are available for the X1000 and X1300 trimmers. *Refer to Section 7, Service Parts to order.*

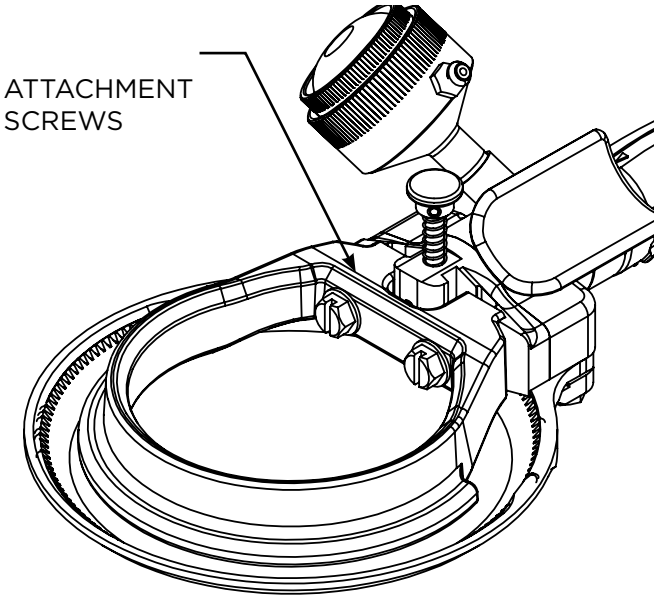
1. Slide the disc gauge downward along the cover plate grooves until the disc gauge clamps catch in position.
2. The final height adjustment can be made after the blade is installed.
3. Tighten the two attachment screws.



ADJUSTABLE DEPTH GAUGE FOR MODELS: X880+ (S & B), X1880+, X1400+ AND X1500+ ONLY

These tools come equipped with an adjustable depth gauge for setting a controlled product trim thickness. The depth gauge can be adjusted for cuts up to 1/4” thick. A depth gauge setting device is also available.

1. Slide the depth gauge downward along the cover plate grooves until the depth gauge clamps catch in position.
2. The final height adjustment can be made after the blade is installed.
3. Tighten the two attachment screws.



OPTIONAL POST HANDLE KIT

To reduce the possibility of cumulative trauma to the wrist caused by the excessive bending (Ulnar Deviation) necessary to perform certain trimming or defatting operations, a post handle option is available for all Quantum Flex+® Trimmers.

The post handle allows the operator to hold the tool with the wrist in a more natural, relaxed position. The operator holds this vertical handle in a more natural position for scraping-type trimming, and the assembly is also designed to let the operator relax his/her grip between cuts for added ergonomic benefit.

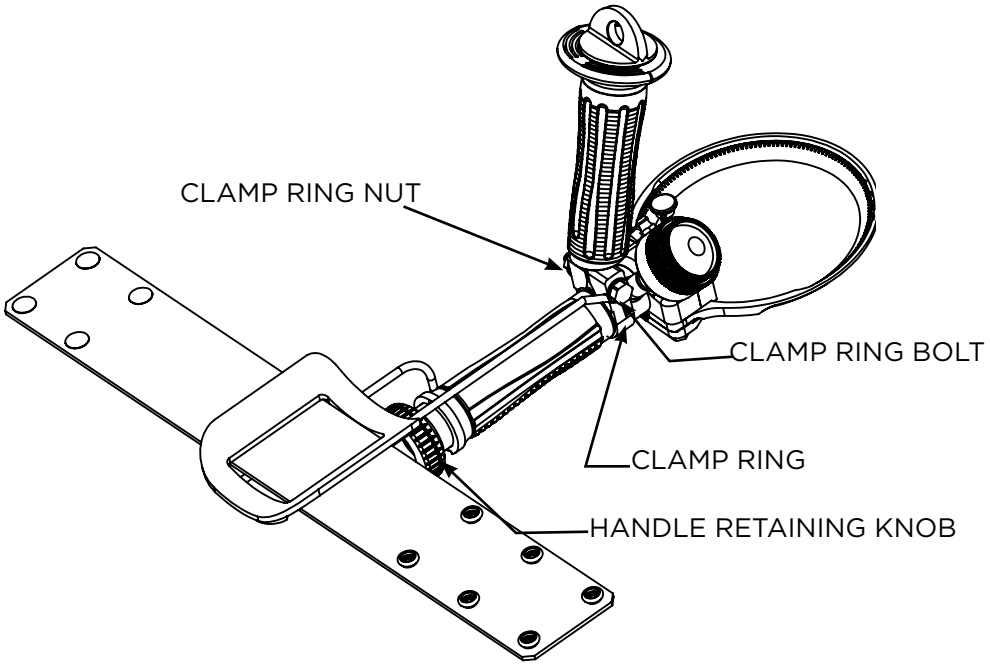
The universal post handle is custom-tailored to most any job by loosening a clamp ring, adjusting the vertical handle to its most comfortable position, then retightening this ring.

SIDE-TO-SIDE ADJUSTMENT:

1. Loosen handle retaining knob, clamp ring, bolt and nut.
2. Pull the handle and clamp ring back to disengage the splines on the frame.
3. Rotate the clamp ring and post handle to a new position.
4. Push forward to engage the frame splines.
5. Tighten the clamp ring bolt and nut and handle retaining knob.

ARM-REST STRAP ADJUSTMENT:

1. Two adjustments are provided by the two pairs of snaps.
2. Select the most comfortable position.



Contact your Regional Manager for pricing and suitability of the Post Handle for your particular application. *Refer to Section 7, Service Parts to order.*

ATTACHING QUANTUM FLEX+® TRIMMER TO THE WHIZARD QUANTUM® DRIVELINE OR WHIZARD® FLEXSHAFT AND CASING ASSEMBLY

THE DISCONNECT CASING

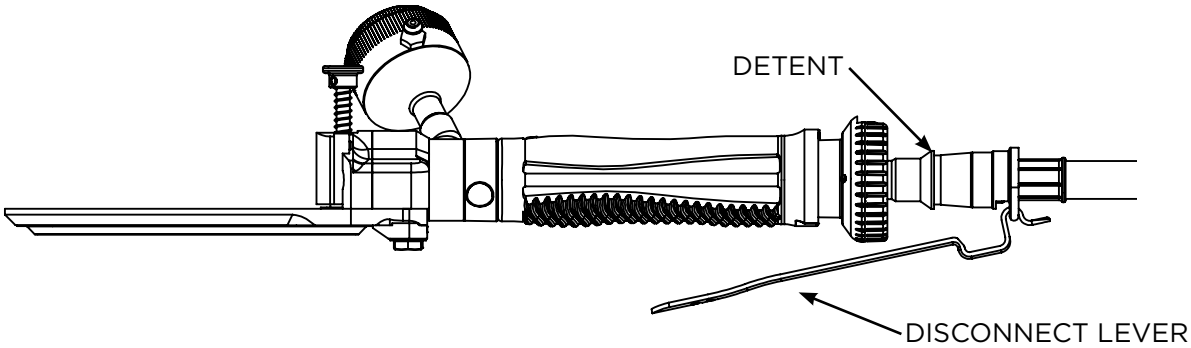
1. Hold the trimmer in the hand you will use in operation, and with the other hand, grasp the Whizard Quantum® Driveline or Whizard® Flexshaft and casing assembly and push it into the end of the tool through the handle retaining knob until the latch catches the detent.

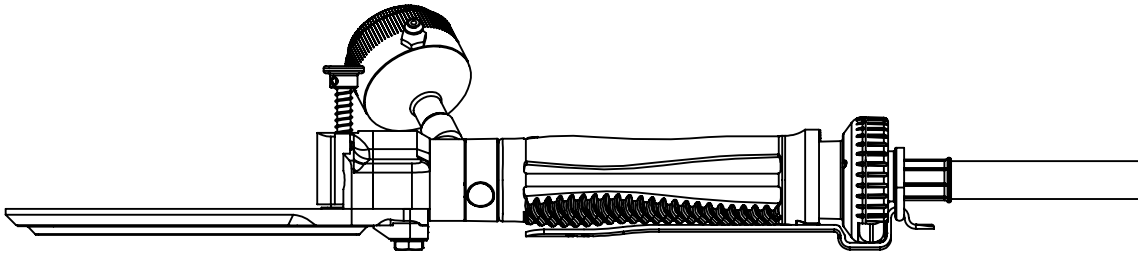
2. The disconnect lever rotates freely around the handle.

3. Align the disconnect lever in the notched-out area of the handle. Slightly open the fingers on the hand holding the trimmer. Push the driveline or Flexshaft casing assembly inward and hold the lever down in the handle groove with the normal operating hand.

4. Check to see that the lever is seated completely flat within the groove.

5. Release the lever and the casing should pop out and stop the blade from turning. The motor will continue to operate.





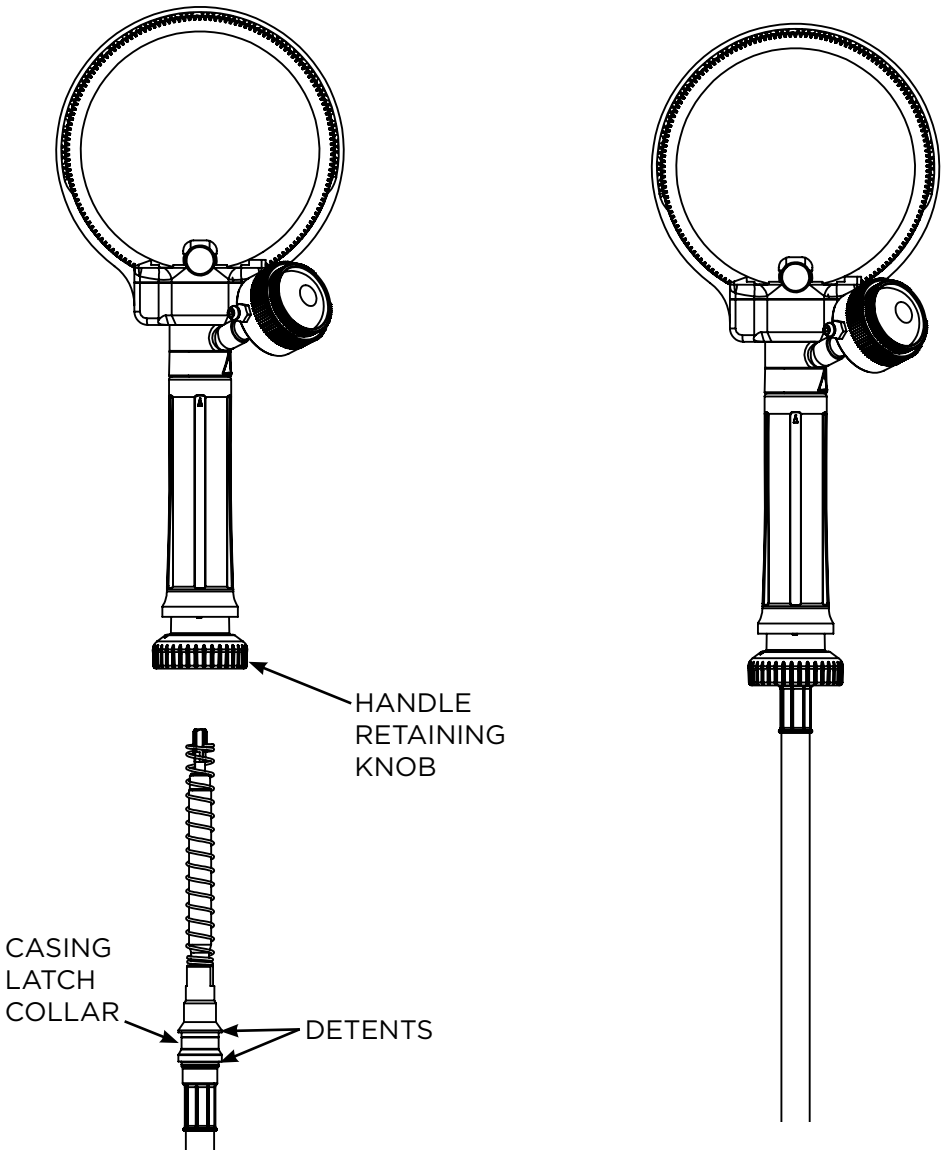
ATTACHING QUANTUM FLEX+® TRIMMER TO THE WHIZARD QUANTUM® DRIVELINE OR WHIZARD® FLEXSHAFT AND CASING ASSEMBLY (CONTINUED)

NON-DISCONNECT MODELS

1. Hold Quantum Flex+® Trimmer in the hand you will use in operation.

2. With opposite hand, grasp the Whizard Quantum® Driveline or Whizard® Flexshaft casing assembly and push it through handle retaining knob.

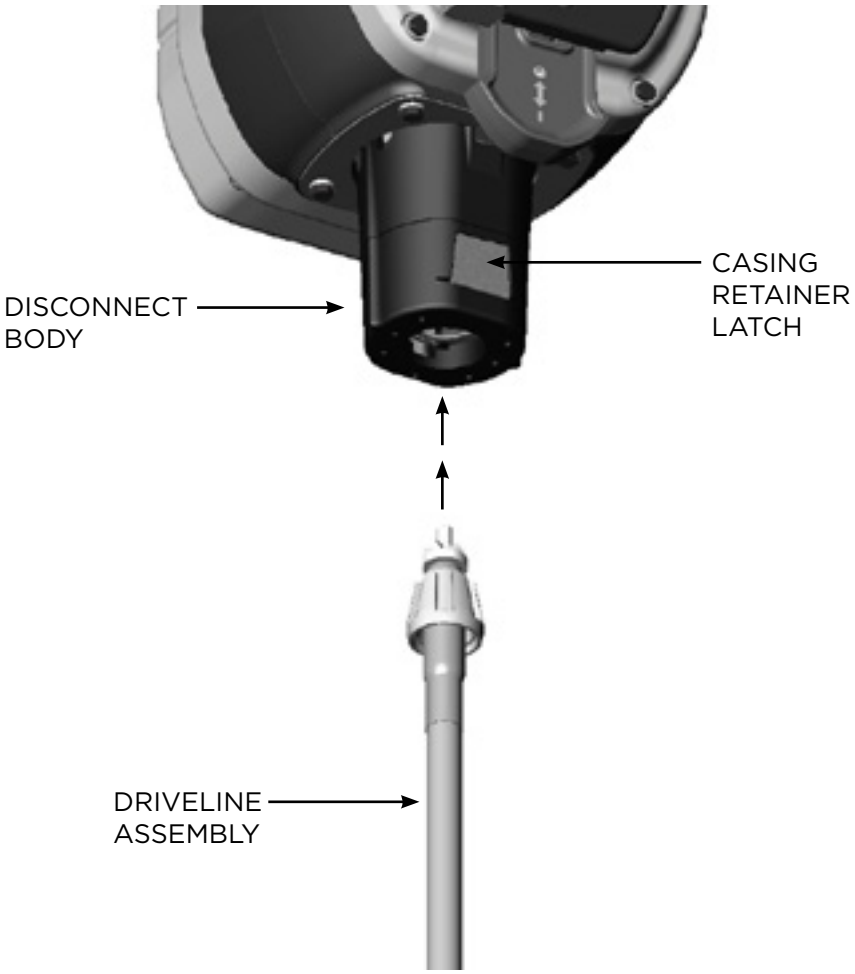
3. Push driveline or Flexshaft and casing assembly until both detents are inserted. Two clicks (2) will be heard.



ATTACHING WHIZARD QUANTUM® DRIVELINE TO THE WHIZARD QUANTUM® DRIVE UNIT

INSTALL WHIZARD QUANTUM® DRIVELINE TO DISCONNECT BODY

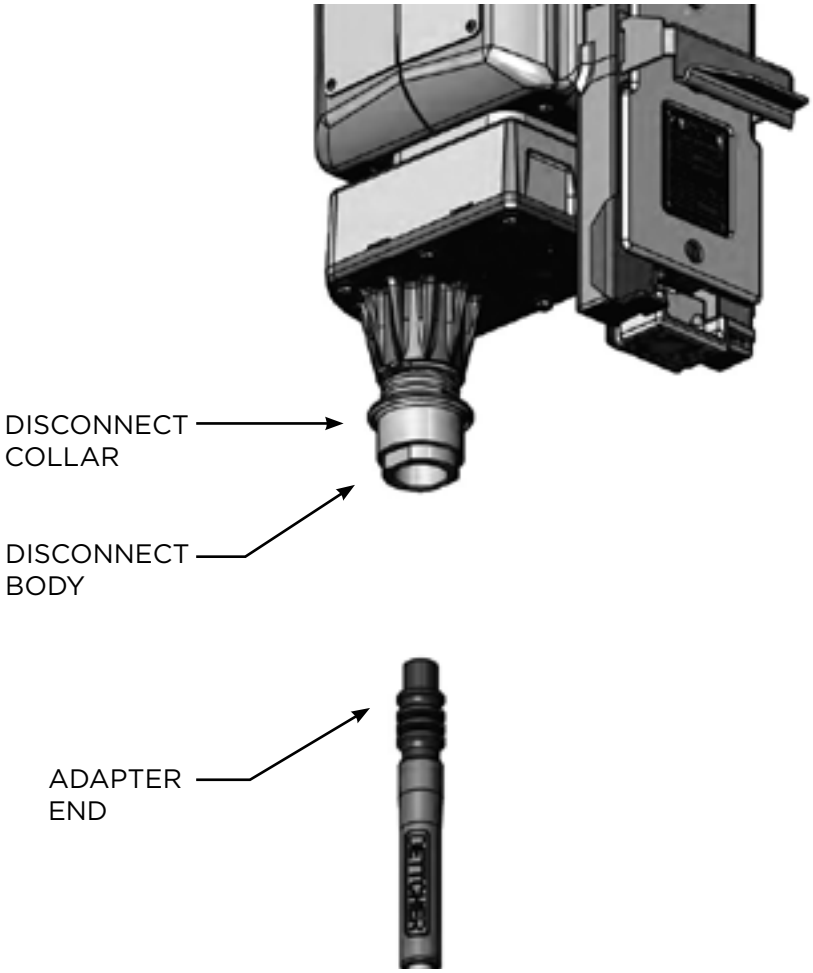
Insert proper end of the driveline into disconnect body. The driveline will latch in place when fully inserted into disconnect body.



ATTACHING THE WHIZARD® FLEXSHAFT AND CASING ASSEMBLY TO THE WHIZARD® UN-84 OR WHIZARD® ULTRA DRIVE UNIT

INSTALL WHIZARD® FLEXSHAFT AND CASING ASSEMBLY TO DISCONNECT BODY

Install the Flexshaft and casing assembly to the motor disconnect by lifting the disconnect collar and inserting the adapter end of the Flexshaft and casing into the disconnect body. It may be necessary to rotate the casing assembly to align the square drive of the Flexshaft with the square hole in the motor shaft adapter. Release the disconnect collar to secure the casing to the motor assembly. The Flexshaft/ casing assembly should swivel freely.



PREPARATION FOR OPERATION

Sharp blades may cause cut injury!

WARNING

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

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

Keep hands away from moving blade.

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

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

With the handpiece held in your operating hand, stand at your normal work position and move your hand and the handpiece over your normal work area to check that there are no binds or sharp bends in the driveline or Flexshaft and casing assembly.

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

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

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

NOTICE

SECTION 4

Instructions For Operation

Operating instructions **36**
Steeling the blade **38**
Blade changing **40**

OPERATING INSTRUCTIONS

Always hold the handpiece of the Quantum Flex+® Trimmer with your thumb extended. Let the handpiece rest naturally in the palm of the 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-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, such as dipping ice cream, 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 the Quantum Flex+® Trimmer will become easy after experience and use of 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 virtually eliminated, and blades need only be sharpened once a day. The blade should be stoned or sharpened on a Whizard® Model 210 Universal Blade Sharpener, Whizard® Model 214 Blade Sharpener, or Bettcher® AutoEdge at the end of each work day. *Refer to Section 5, Blade Sharpening.*

If blades are not changed at each shift break, it may be required to steel the blade. *Refer to Section 4, Steeling the Blade.*

OPERATING INSTRUCTIONS (CONTINUED)

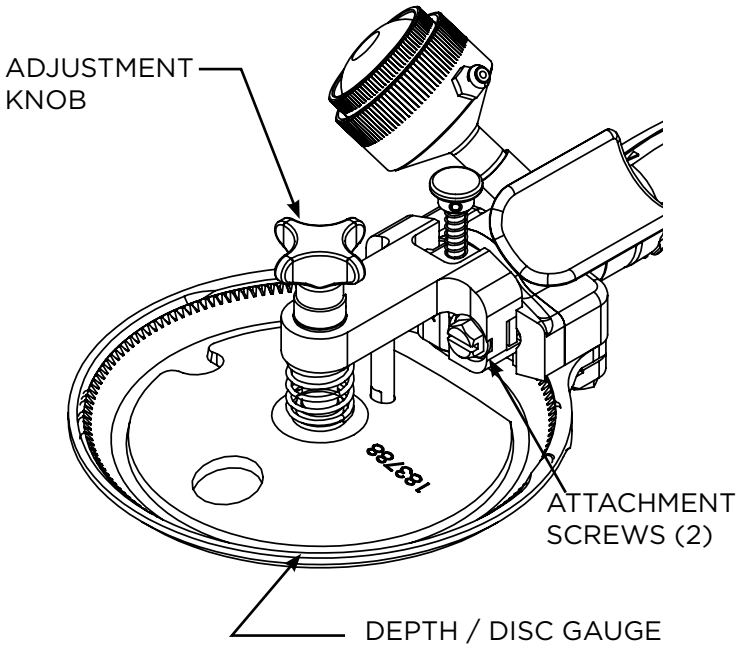
OPTIONAL DISC GAUGES FOR MODELS: X850+, X1850+, X1000+ AND X1300+

Optional adjustable disc gauges are available for the X1000 and X1300 trimmers. *Refer to Section 7, Service Parts to order.*

To adjust depth:

1. Hold the handpiece with the blade facing downward.
2. Turn the adjustment knob clockwise for a thicker cut, or counterclockwise for a thinner cut.

NOTE: *Take care not to turn too far as the depth control hub may disengage from the shaft.*

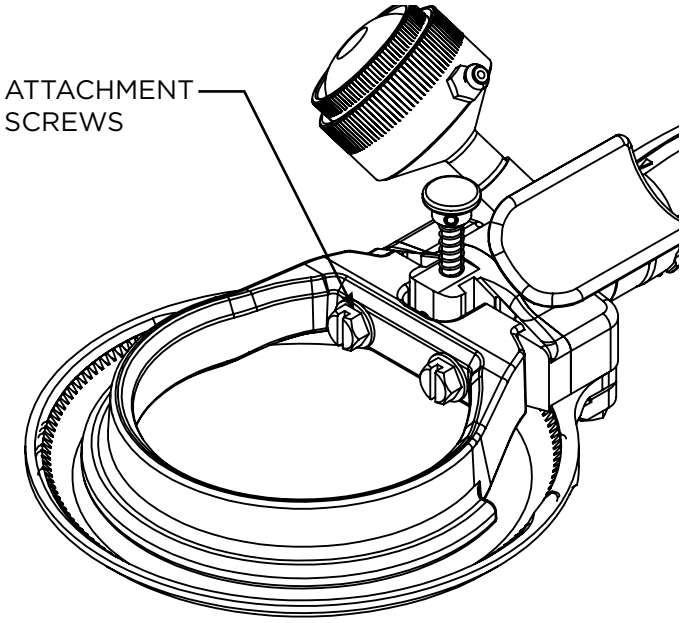


ADJUSTABLE DEPTH GAUGE FOR MODELS: X880+ (S & B), X1880+, X1400+ AND X1500+ ONLY

These tools come equipped with an adjustable depth gauge for setting a controlled product trim thickness. The depth gauge can be adjusted for cuts up to 1/4" thick. A depth gauge setting device is also available.

To adjust depth:

1. Hold the handpiece with the blade facing downward.
2. Loosen the attachment screws at the base of the plastic depth gauge.
3. Adjust the gauge setting by sliding it up or down to the desired height.
4. Retighten the attachment screws.



STEELING THE BLADE

Use the Whizard Special Steel anytime you feel the edge of the blade needs to be raised for better cutting action.

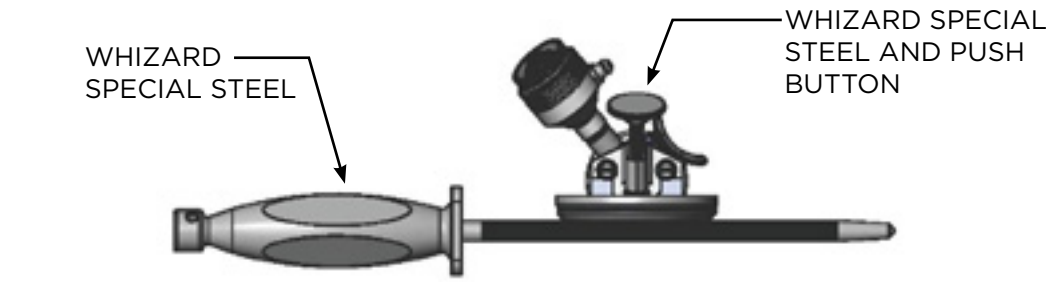
STEELING FOR MODELS: X360, X505, X850+, X880+, X1850+, X1880+, X1000+, X1300+, X1400+ AND X1500+

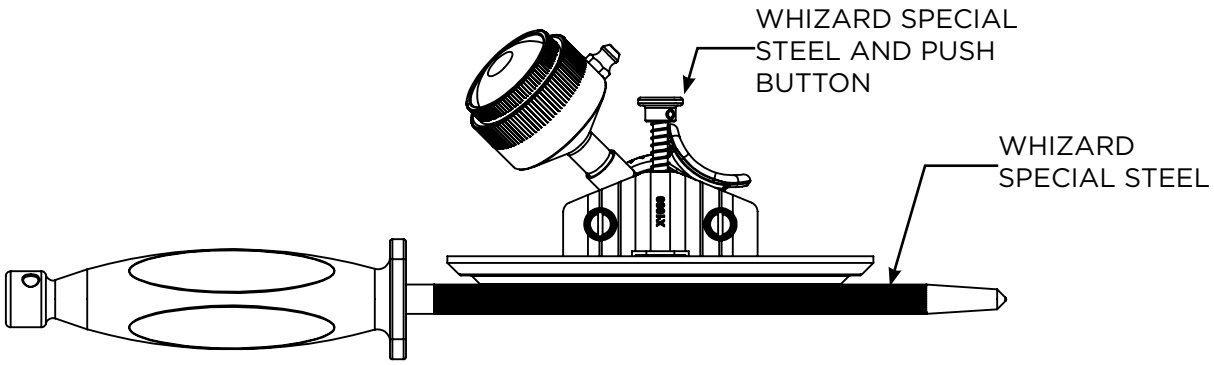
Use the Whizard® Special Steel against the flat ground surface on the outside surface of the blade. Be sure to hold the “steel” flat and across the centerline of the blade to prevent “rounding off” or rolling of the edge.

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:

1. 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.
2. With your thumb, lightly push down on the push button of the steeling device. **DO NOT** hold the steeling device against the rotating blade steadily, but rather lightly contact the blade edge.

Replace or sharpen the blade if this procedure does not improve the cutting action.

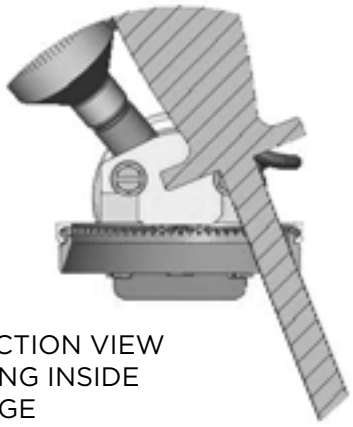




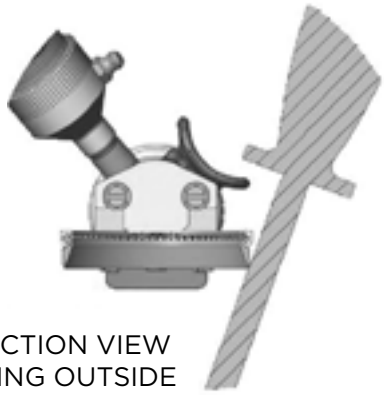
STEELING THE BLADE (CONTINUED)

STEELING FOR MODELS: X350, X440, X500, X500A, X564, X620, X620A AND X750+

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 resharpening 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 blade on the inside surface of the blade.

Steeling can be accomplished with much greater consistency with the use of the specially designed Whizard® Edge Master Steels. For more information contact your Sales Representative at Bettcher Industries. *Refer to Section 7, Blade Sharpening and Steeling Equipment.*

Replace or sharpen the blade if this procedure does not improve the cutting action. Blade running time can be extended with the use of Bettcher® EZ Edge sharpeners. The Bettcher® EZ Edge allows the operator to sharpen a blade at the work station. *Refer to Section 7, Blade Sharpening and Steeling Equipment.*

The Quantum Flex+® Trimmer has been designed in such a way as to allow the blades to be quickly removed and reinstalled.

BLADE CHANGING

Sharp blades may cause cut injury!

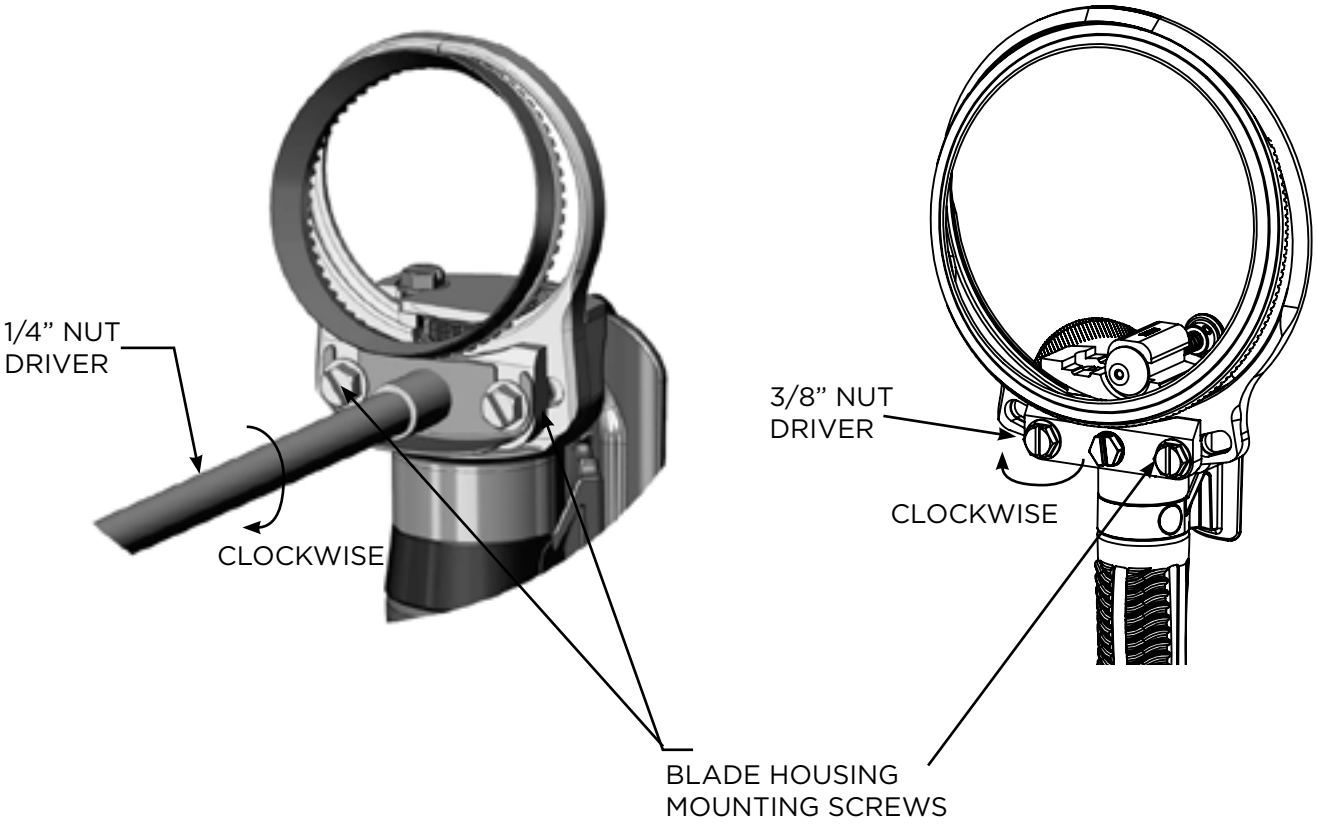
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades. Metal mesh gloves are recommended for the free hand.

Keep hands away from moving blade.

BLADE REMOVAL

1. Hold the tool in your hand with the blade edge facing upward.
2. Loosen the two blade housing mounting screws about 1/2 turn.
3. Using a 1/4” nut driver for small tools and a 3/8” nut driver for large tools, turn the cam clockwise about 1/8" of a turn until it locks the housing in the open position.
4. Remove the blade from the blade housing.

HOUSING IN OPEN POSITION



BLADE CHANGING (CONTINUED)

Sharp blades may cause cut injury!

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

Keep hands away from moving blade.

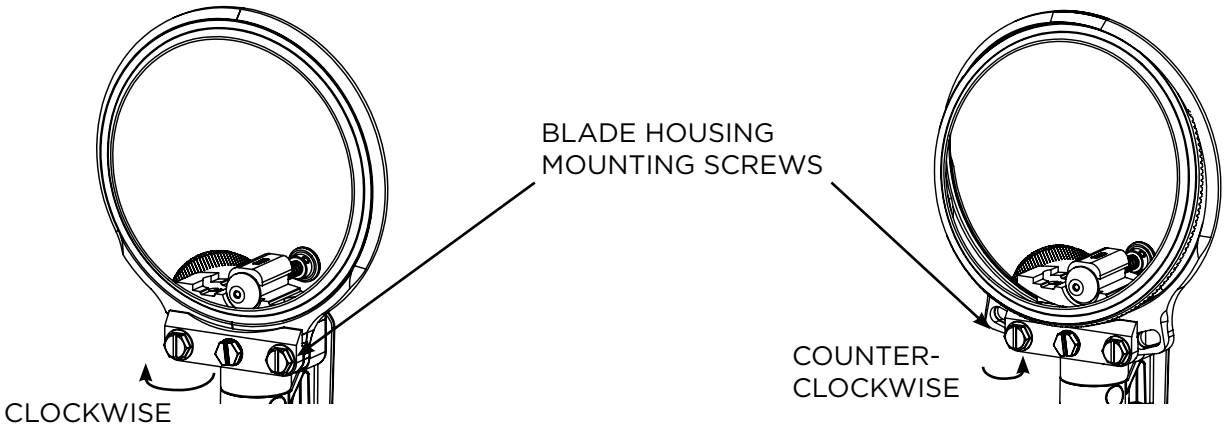
BLADE INSTALLATION

1. Turn the tool over so that the blade housing mounting screws are pointing upward.
2. Loosen the two blade housing mounting screws about 1/2 turn if they are not loose already.
3. Using a 1/4” nut driver for small tools and a 3/8” nut driver for large tools, turn the cam clockwise about 1/8 of a turn until it locks the blade housing in the open position.
4. Insert a new blade into the housing.
5. Turn the cam counter-clockwise about 1/8 of a turn to close the blade housing.
6. Tighten the two blade housing mounting screws. Torque Screws to 25 in-lb. (2.8 N-m).
7. 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.

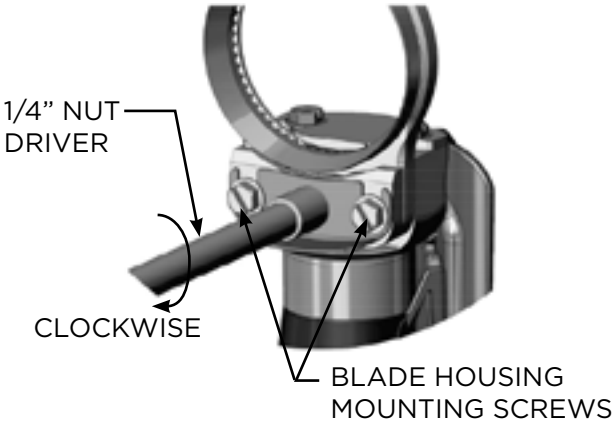
NOTE: *Only hand screwdrivers and hand nut drivers should be used, and electric power tools including electric screwdrivers, impact screwdrivers and socket wrenches, should not be used. Doing so risks damage to the tool. If the force seems high for opening or closing the housing, recheck that the cam plate screws are loose. Using excessive force by hand risks slipping and contacting the sharp blade.*

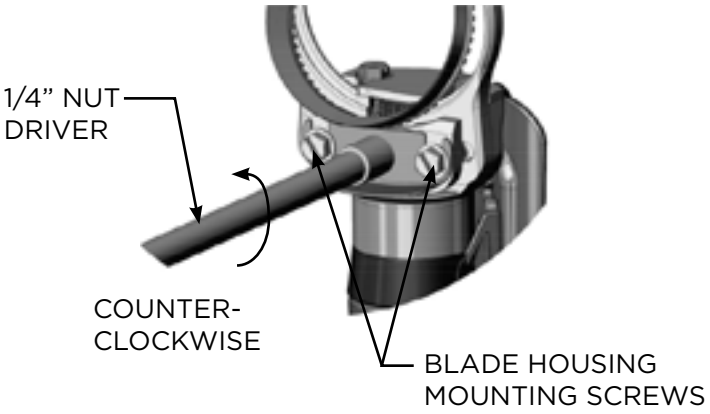
BLADE CHANGING (CONTINUED)



HOUSING IN CLOSED POSITION

HOUSING IN OPEN POSITION





SECTION 5
Maintenance

Removing Whizard Quantum® Driveline from the Whizard Quantum® Drive Unit **44**

Removing Whizard® Flexshaft and casing assembly from the Whizard® UN-84 OR Whizard® Ultra Drive Unit **45**

Removing Quantum Flex+® Trimmer from the Whizard Quantum® Driveline or Whizard® Flexshaft and casing assembly **46**

Disassembly of handpiece **47**

Daily inspections and maintenance **52**

Driver assembly inspection and replacement **55**

Daily inspection - Whizard® Flexshaft and casing assembly **57**

Maintenance - Whizard® Flexshaft and casing assembly **59**

Blade sharpening **62**

Assembly of handpiece **63**

Optional disc gauge or depth gauge installation and adjustment **69**

Optional Whizard® Micro-Break Hand Strap and adjustment **71**

Optional post handle kit and adjustment **72**

Fault detection and correction **73**

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

Always turn off the drive unit and place the handpiece in the hanger bracket. Never lay the handpiece down on the workstation or let it hang free by the driveline or Flexshaft and casing assembly. Never place the handpiece in the hanger while the blade is still revolving.

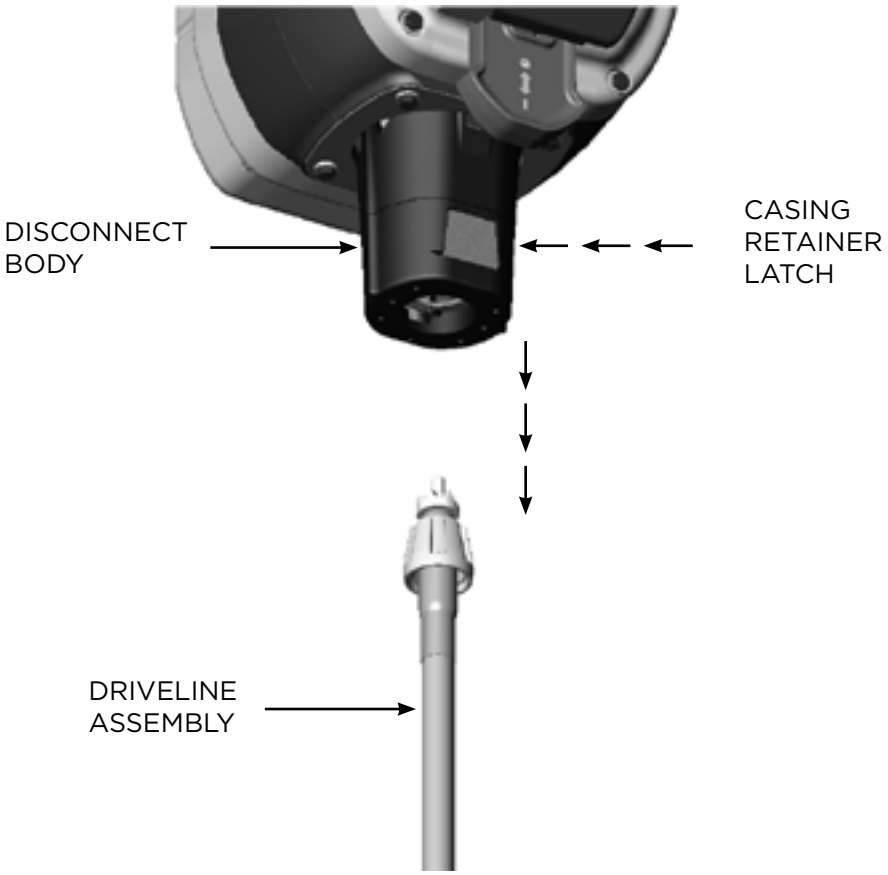
Always disconnect the power and remove the tool from the driveline or Flexshaft and casing assembly prior to servicing.

All electrical repairs should be completed by a qualified electrician or approved service provider.

REMOVING WHIZARD QUANTUM® DRIVELINE FROM THE WHIZARD QUANTUM® DRIVE UNIT

REMOVE WHIZARD QUANTUM® DRIVELINE FROM DISCONNECT BODY

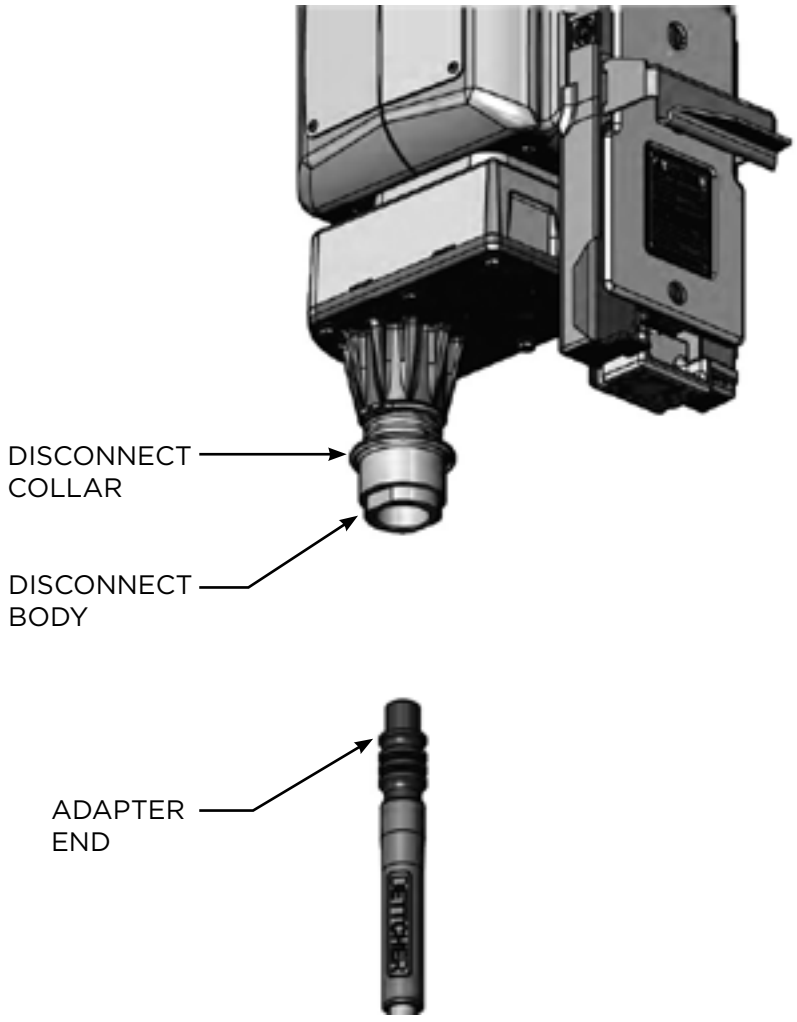
Hold driveline assembly around the top exposed portion, just below the disconnect body. Push casing retainer latch inward and pull driveline down and out of disconnect body.



REMOVING WHIZARD® FLEXSHAFT AND CASING ASSEMBLY FROM THE WHIZARD® UN-84 OR WHIZARD® ULTRA DRIVE UNIT

REMOVE WHIZARD® FLEXSHAFT AND CASING ASSEMBLY FROM DISCONNECT BODY

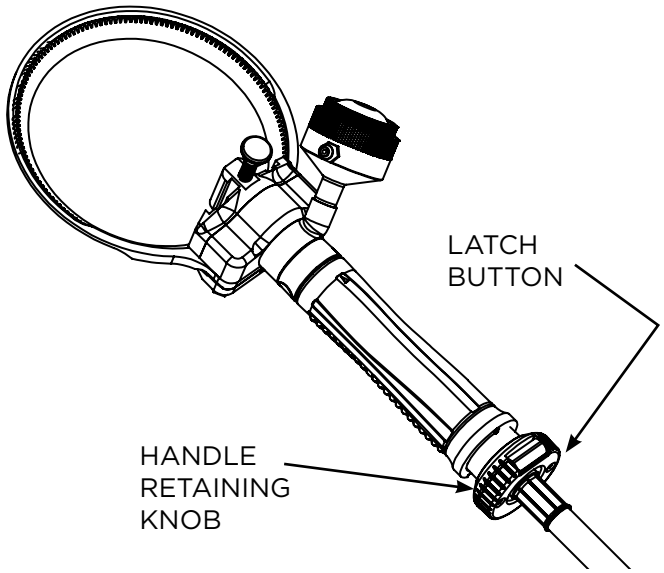
Remove the Whizard® Flexshaft and casing assembly from the drive unit by lifting the disconnect collar and pulling the adapter end of the Flexshaft and casing assembly from the disconnect body.



REMOVING QUANTUM FLEX+® TRIMMER FROM THE WHIZARD QUANTUM® DRIVELINE OR WHIZARD® FLEXSHAFT AND CASING ASSEMBLY

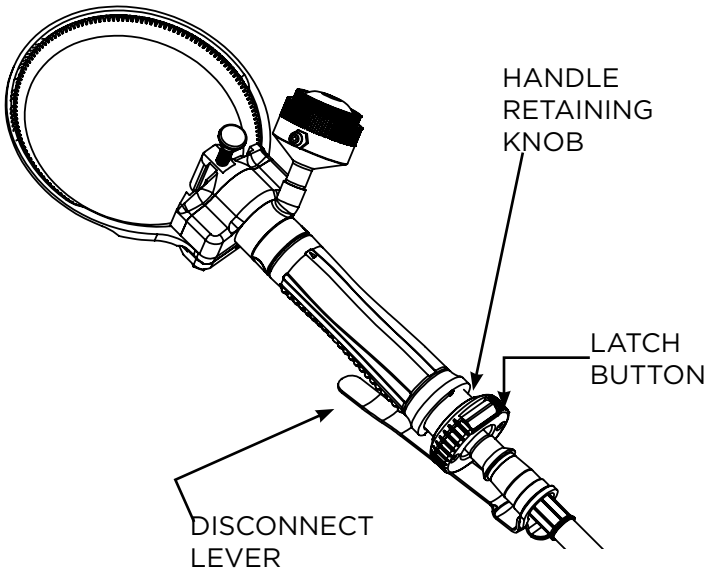
NON-DISCONNECT MODELS

1. Hold Quantum Flex+® Trimmer in the hand you will use in operation.
2. With opposite hand, press the latch button in the handle retaining knob.
3. The driveline or Flexshaft casing assembly should eject from the handle.



DISCONNECT MODELS

1. Release the disconnect lever and the driveline or Flexshaft casing assembly should partially eject from the handle.
2. With the opposite hand, press the latch button in the handle retaining knob.
3. The driveline or Flexshaft casing assembly should eject from the handle.



DISASSEMBLY OF HANDPIECE

Sharp blades may cause cut injury!

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

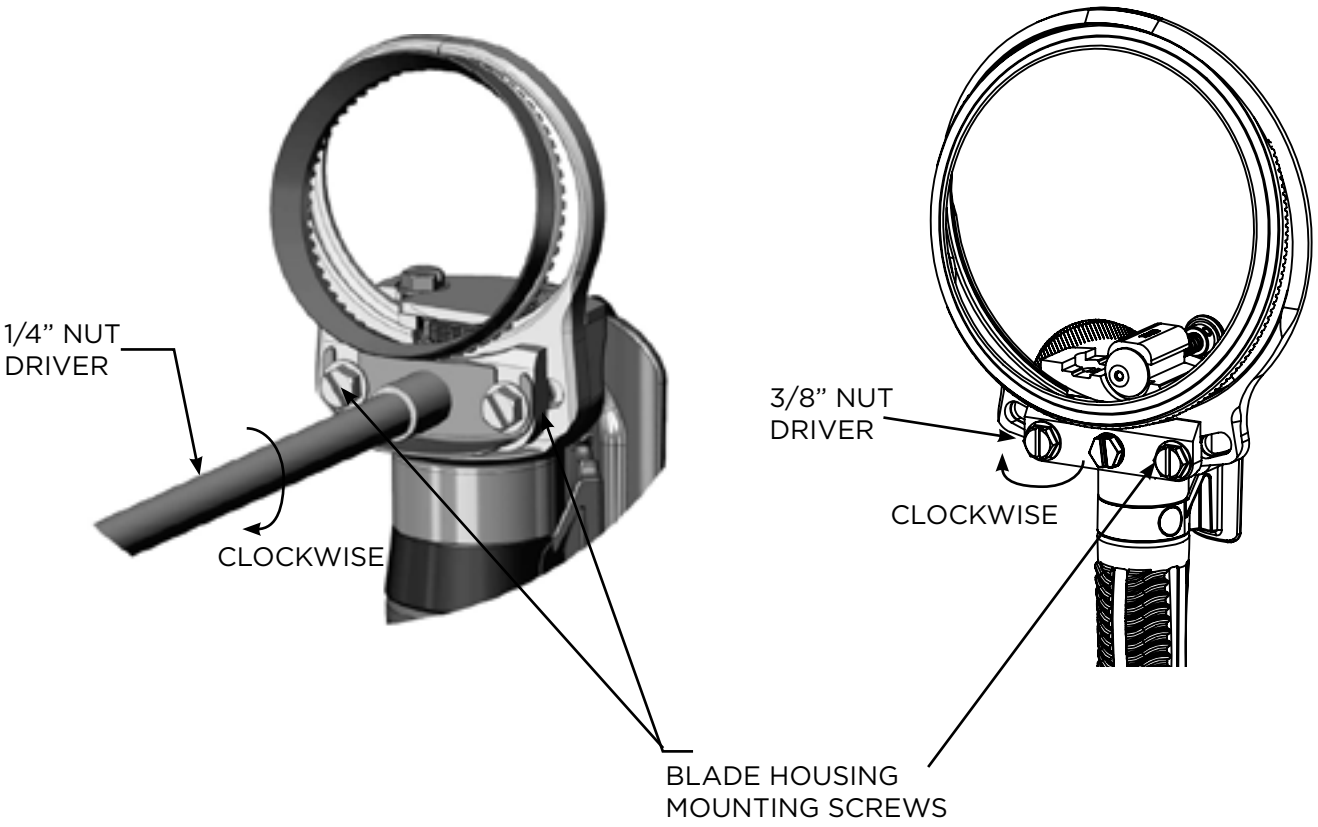
Keep hands away from moving blade.

BLADE REMOVAL

1. Hold the tool in your hand with the blade edge facing upward.
2. Loosen the two blade housing mounting screws about 1/2 turn.
3. Using a 1/4” nut driver for small tools and a 3/8” nut driver for large tools, turn the cam clockwise about 1/8 of a turn until it locks the housing in the open position.
4. Remove the blade from the blade housing.

NOTE: *Only hand screwdrivers and hand nut drivers should be used, and electric power tools including electric screwdrivers, impact screwdrivers and socket wrenches, should not be used. Doing so risks damage to the tool. If the force seems high for opening or closing the housing, recheck that the cam plate screws are loose. Using excessive force by hand risks slipping and contacting the sharp blade.*

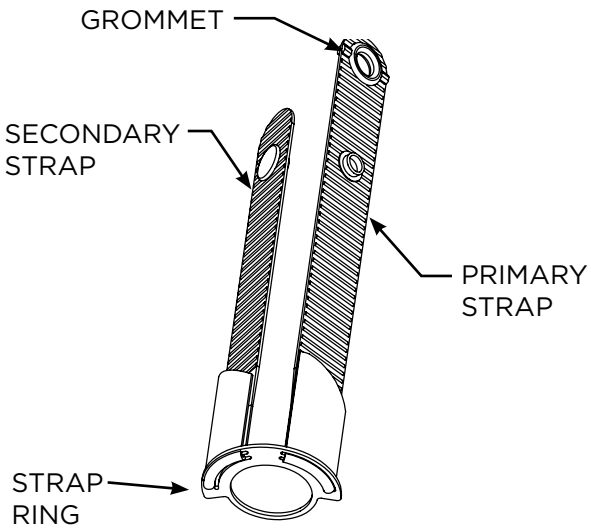
HOUSING IN OPEN POSITION



DISASSEMBLY OF HANDPIECE (CONTINUED)

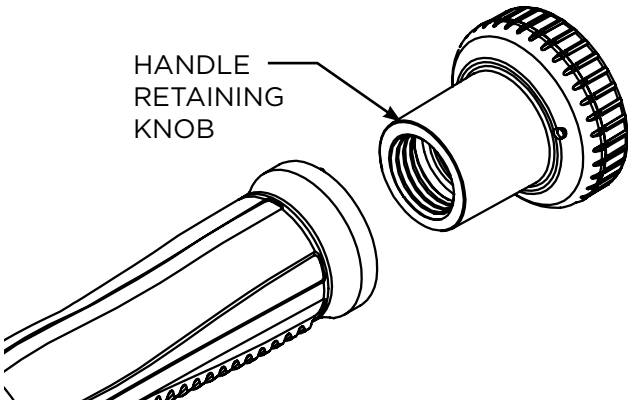
REMOVE THE OPTIONAL WHIZARD® MICRO-BREAK HAND STRAPS

1. Remove the grease cup and retaining knob to remove primary and secondary hand straps.



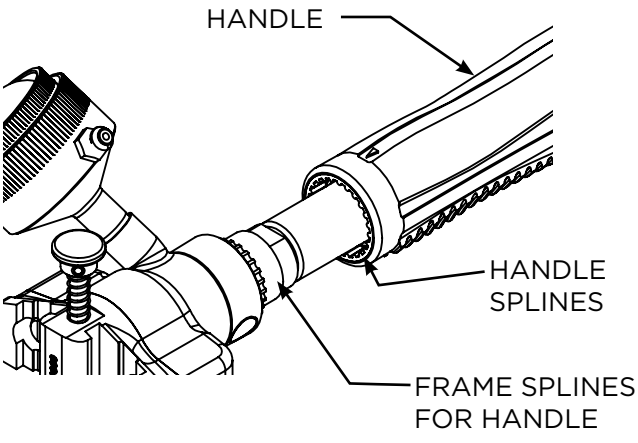
REMOVE THE HANDLE RETAINING KNOB

1. Turn retaining knob counterclockwise.



REMOVE THE HANDLE FROM THE TOOL

1. Pull the handle off the tube.
2. Remove the handle spacer ring or optional thumb support.
3. Remove the grease cup and ring.



DISASSEMBLY OF HANDPIECE (CONTINUED)

REMOVE THE BLADE HOUSING, FINGER GUARD, CAM PLATE ASSEMBLY, AND COVER PLATE - SMALL AND LARGE TOOLS

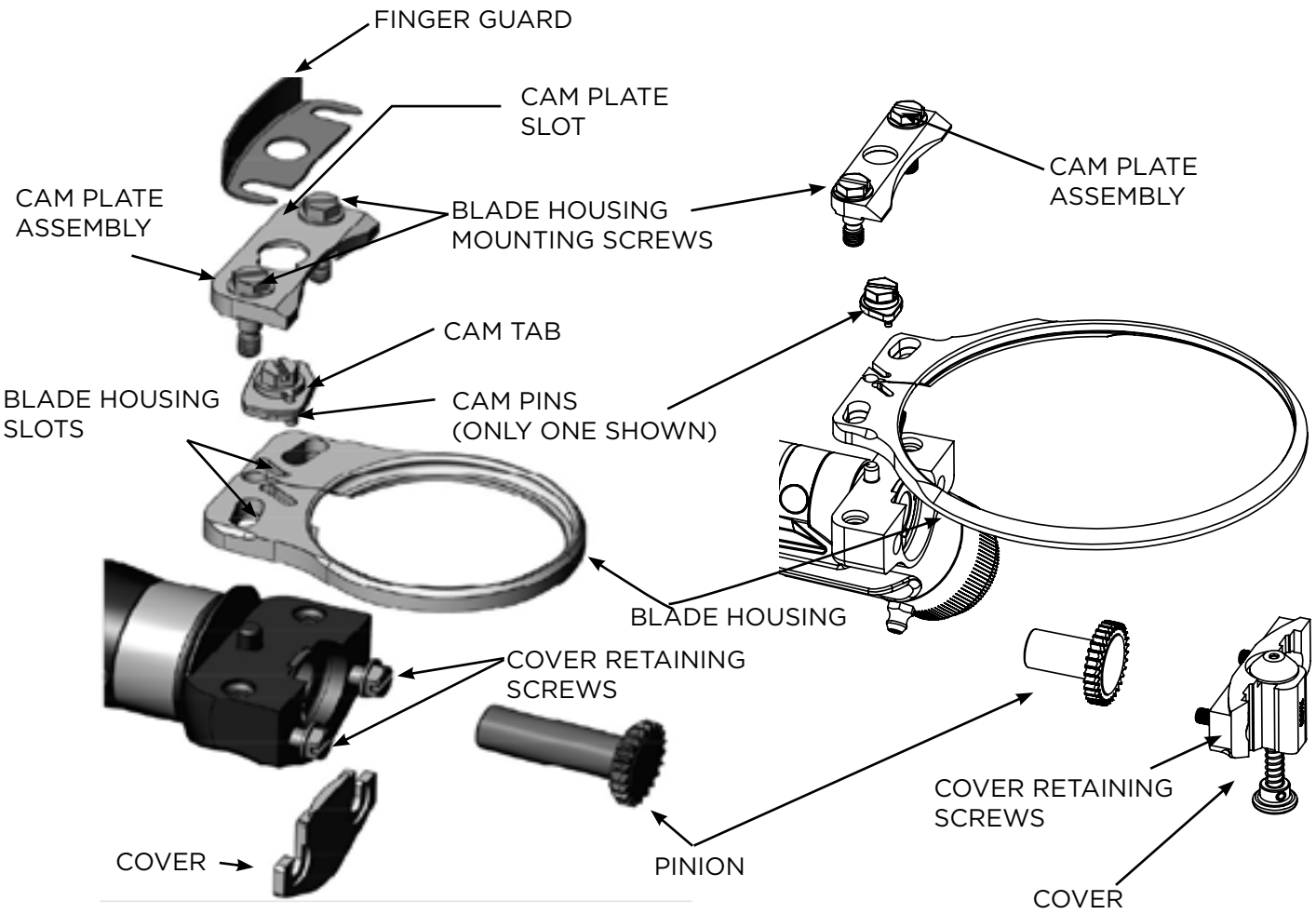
1. Loosen both blade housing mounting screws until the cam plate assembly and cam are free.

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

2. Remove the blade housing.

3. 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 for small tools. For the Large+ tools the cover retaining screws are retained in the cover.

4. Pull the pinion out of the frame.

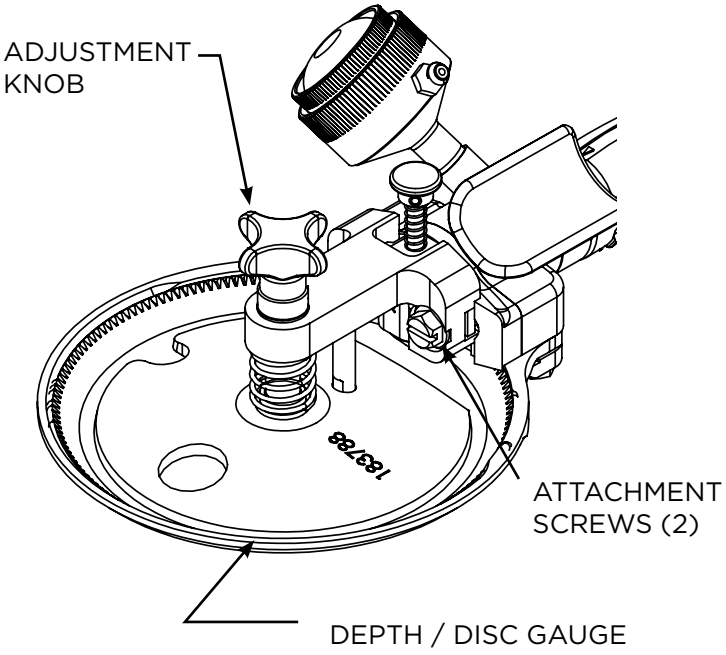


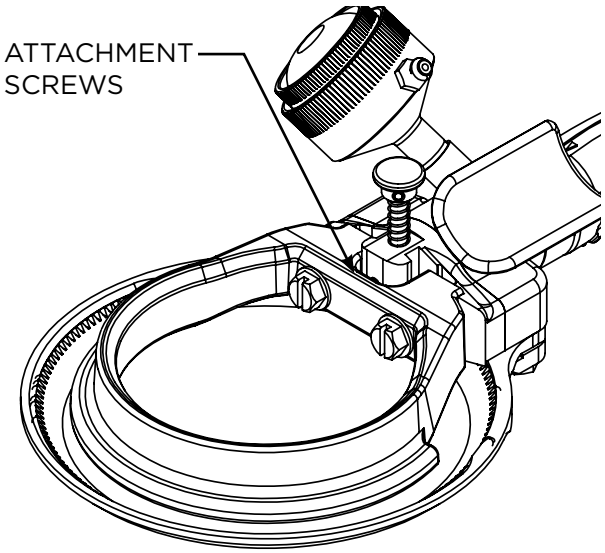
DISASSEMBLY OF HANDPIECE (CONTINUED)

REMOVE THE OPTIONAL DEPTH GAUGE / DISC GAUGE FROM THE COVER PLATE

1. Loosen the two attachment screws located inside the depth gauge. It is not necessary to remove the screws.

2. Slide the gauge upward until the depth gauge clamps come out of the cover plate grooves.





DISASSEMBLY OF HANDPIECE (CONTINUED)

REMOVE THE BEARING FROM THE FRAME

1. The bearing is pulled out from the front of the tool.

2. 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.*

3. 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.

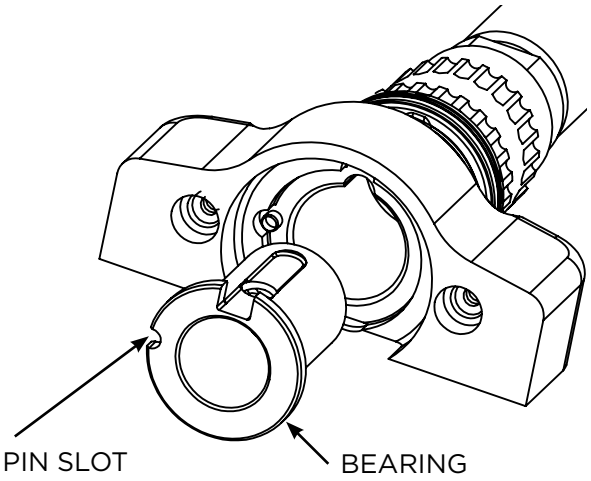
If the bearing will not come out, it may be necessary to run a tap into the bearing and pull on the tap. If this is done, then the bearing must be replaced due to damage.

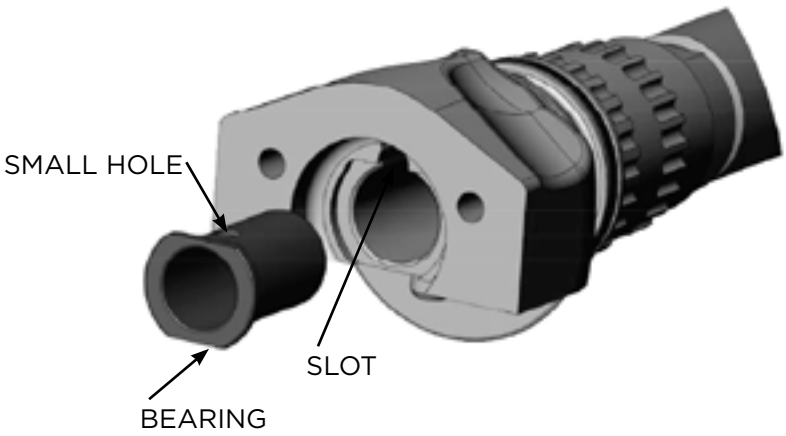
NOTICE

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.

4. The handpiece is now completely disassembled.

NOTE: LARGE TOOLS ONLY - *The cover retaining screws do not normally need removing. If they need removal, turn the screw until it comes out of the cover.*





DAILY INSPECTIONS AND MAINTENANCE

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

Sharp blades may cause cut injury!

Always disconnect 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.

BLADE HOUSING WEAR

— Inspect the inner diameter of the housing for wear.

— With a new blade installed in the housing on the tool carefully check for movement of the blade in the housing from side to side and up and down.

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.*

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.

WHIZARD® MICRO-BREAK HAND STRAPS

— Inspect the strap for hardening and cracks.

— If any fibers, cuts, or cracks are showing, the strap should be replaced.

DAILY INSPECTIONS AND MAINTENANCE (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.

HANDLE RETAINING KNOB

— Inspect for cracks.

— Make sure spring tension in the metal button is adequate.

— Make sure the metal button is clean and moves freely.

FRAME

— Inspect the frame surfaces where the 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: X625, X505, X850+, X880+, X1850+, X1880+, X1000+, X1300+, X1400+ AND X1500+

— 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: X625, X505, X850+, X880+, X1850+, X1880+, X1000+, X1300+, X1400+ AND X1500+

— Inspect the depth gauge / disc for wear or damage.

— Make certain the depth gauge / disc clamps are not bent.

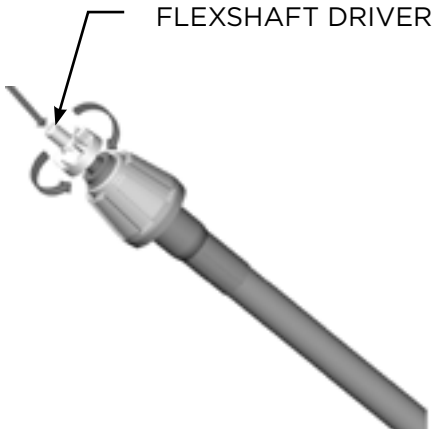
DAILY INSPECTIONS AND MAINTENANCE (CONTINUED)

WHIZARD QUANTUM® DRIVELINE INSPECTION

The Whizard Quantum® Driveline includes a casing and flexible shaft that is factory lubricated and does not require ongoing maintenance lubrication.

NOTE: *The flexible shaft is not removable from the casing.*

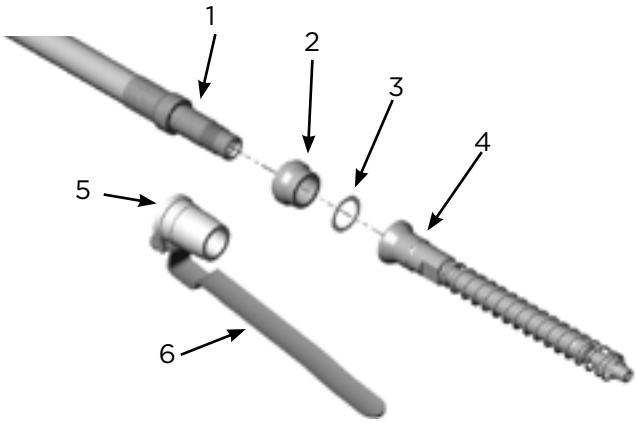
1. Inspect the casing for any cracks, tears or other wear. If any damage is found, replace the Whizard Quantum® Driveline.
2. Check to ensure that the Flexshaft driver can freely rotate in the casing. If it will not rotate, replace the entire assembly.



WHIZARD QUANTUM® DRIVELINE REPLACEMENT

When the driveline needs to be replaced, the driver assembly may be retained and reused.

1. Hold the driveline (#1) in a vise.
2. Unscrew the driver assembly (#4) by turning counterclockwise using the wrench flats on the drive end assembly.
3. Remove the nylon washer (#3), casing latch collar (#2) or lever mounting collar (#5) from the casing.
4. Discard the driveline but retain and reuse the driver assembly (#4), the nylon washer (#3), the casing latch collar (#2) - or the lever mounting collar (#5) and disconnect lever (#6).



TO REASSEMBLE THE DRIVE END ASSEMBLY TO A NEW WHIZARD QUANTUM® DRIVELINE

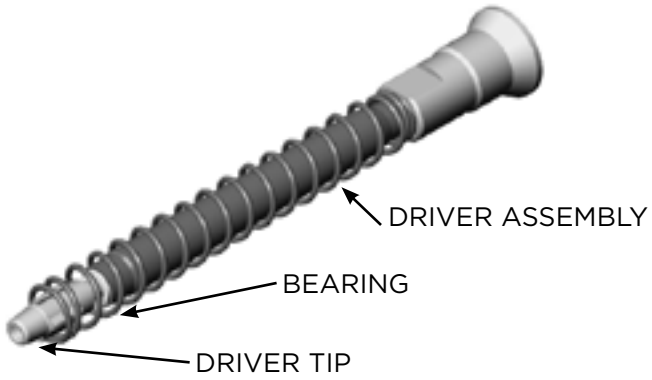
1. If using the driveline disconnect, place the disconnect lever (#6) onto the lever mounting collar (#5).
2. Slip the driveline latch collar (#2) or lever mounting collar (#5) with disconnect lever (#6) onto the new driveline.
3. Slip the nylon washer (#3) onto the new driveline.
4. Clean the threads of the new driveline assembly and apply Loctite #242 Thread locker or equivalent.
5. Screw the driver assembly (#4) on the new driveline.
6. Tighten by hand and then with a wrench while holding the driveline by hand.

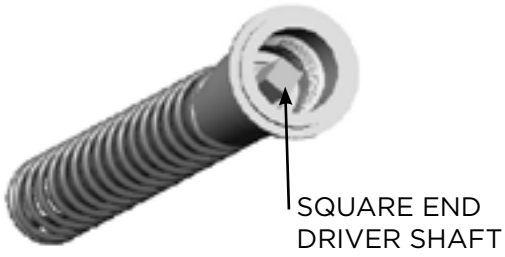
NOTICE: *DO NOT hold the new driveline in a vise or use pliers as damage will occur. It is not necessary to over-tighten this joint.*

DRIVER ASSEMBLY INSPECTION AND REPLACEMENT

WHIZARD QUANTUM® DRIVER ASSEMBLY INSPECTION

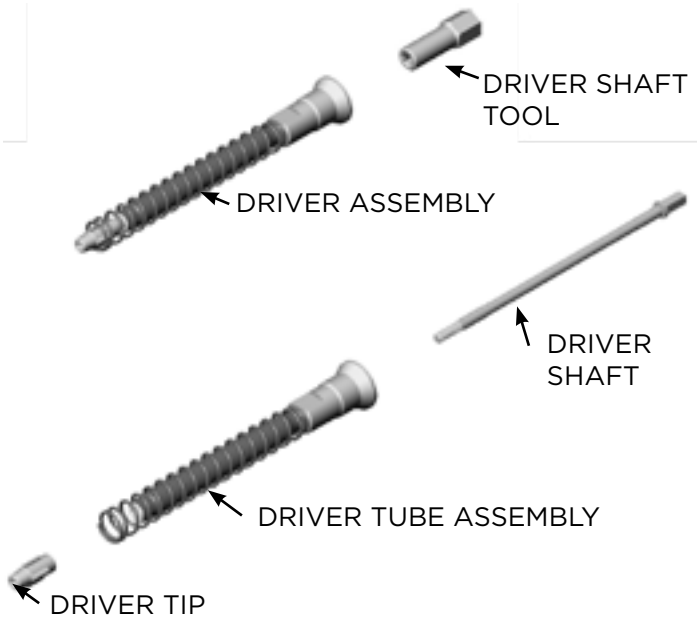
1. Make certain the driver shaft and tip rotate freely and also that they can slide back and forth freely.
2. Check for wear on the bearing at the end of the tube assembly. If the bearing flange is excessively worn, replace the tube assembly.
3. Inspect the flutes of the driver tip. If they are excessively worn, replace the driver tip.
4. Inspect the square end of the driver shaft. If the corners are rounded, replace the driver shaft.





WHIZARD QUANTUM® DRIVER TIP AND DRIVER SHAFT REMOVAL

1. Grip the driver shaft tool (Part #101252) in a vice and place the driver assembly over the tool so that the square end of the driver shaft fits into the square hole of the tool.
2. Pull the spring back and use a crescent wrench to grip the driver tip.
3. Turn the driver tip CLOCKWISE. Continue to turn the driver tip CLOCKWISE until it is free from the driver shaft.
4. Pull the driver shaft out of the tube.



NOTE: Large and Large+ Tool Models: *X750, X850, X1000, X1300, X1400, X1500, X1850, X1880, X1900, X750+, X850+, X1000+, X1300+, X1400+, X1500+, X1850+ and X1880+ use a large driver tip.*

NOTE: Small Tool Models: *X350, X360, X440, X500, X505, X500A, X564, X620, X625 and X620A use a small driver tip.*

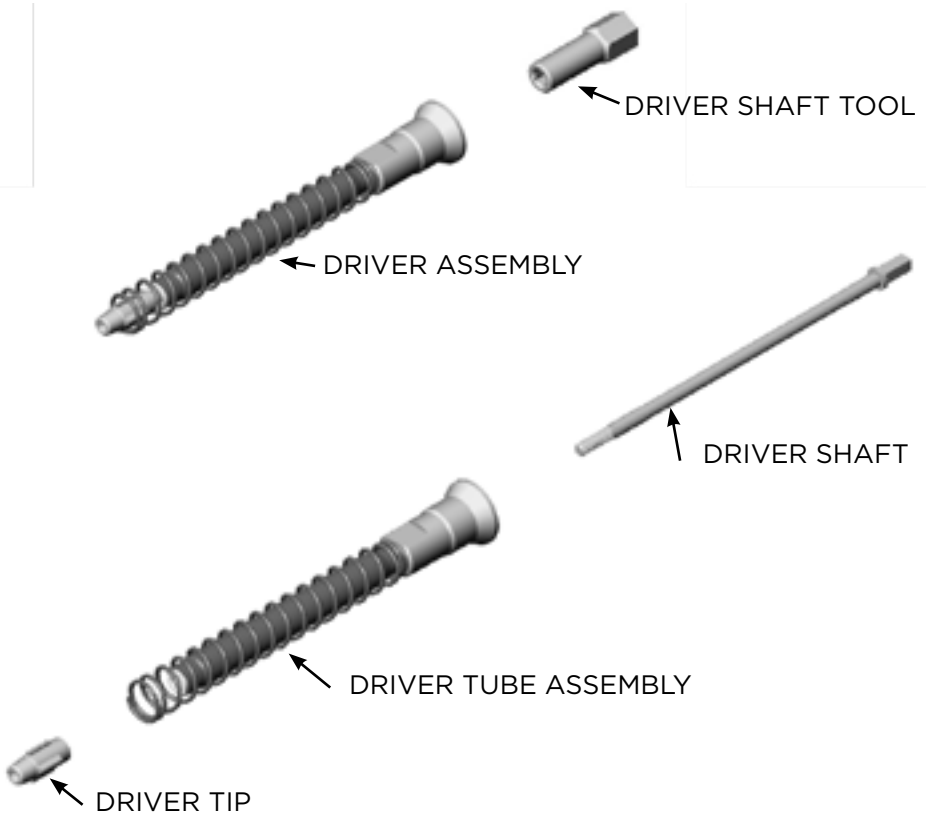
DRIVER ASSEMBLY INSPECTION AND REPLACEMENT (CONTINUED)

ASSEMBLY OF THE WHIZARD QUANTUM® DRIVER ASSEMBLY

Do not overtighten the driver tip. Doing so could break the driver shaft.

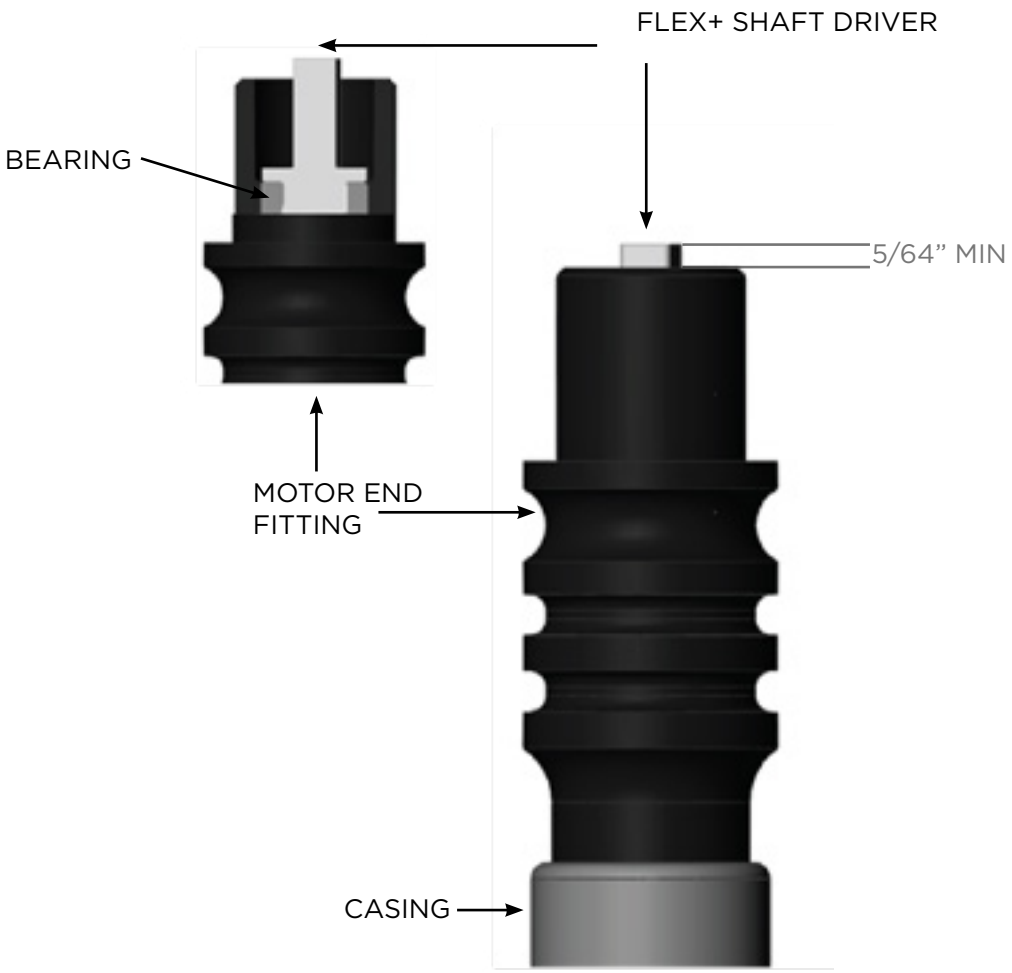
NOTICE

1. Apply Max-Z-lube grease to the 2 bearing areas of the driver shaft. *Refer to Section 7, Lubrication and Lubrication Equipment.*
2. Insert the driver shaft into the tube assembly.
3. Grip the driver shaft tool in a vice and place the driver assembly over the tool so that the square end of the driver shaft fits into the square hole of the tool.
4. Clean the threads of the driver shaft and apply a small amount of Loctite #242 thread locker.
5. Pull back the spring with one hand then thread the driver tip onto the threads with a COUNTER-CLOCKWISE motion. Turn by hand until the driver tip bottoms out.
6. Using a crescent wrench, apply a small amount of torque (25 in-lbs max) to snug the driver tip.



DAILY INSPECTION - WHIZARD® FLEXSHAFT AND CASING ASSEMBLY

1. Inspect the casing for any cracks, tears, or other wear. If any damage is found, replace the casing.
2. Remove the Flexshaft from the casing and check for any Flexshaft damage, such as broken wires or kinking. If any damage is detected, replace the Flexshaft.
3. Reinsert the Flexshaft into the casing, making certain the flange of the Flexshaft is pressed against the bearing inside the casing.
4. Check the extension of the flexible shaft driver at the motor end. The flexible shaft driver should extend past the motor end fitting. If the shaft extends less than 5/64”, replace the casing.



DAILY INSPECTION - WHIZARD® FLEXSHAFT AND CASING ASSEMBLY (CONTINUED)

REASSEMBLE THE DRIVE END ASSEMBLY TO A NEW CASING

1. If using the casing disconnect, place the disconnect lever (#6) onto the lever mounting collar (#5).
2. Slip the casing latch collar (#2) or lever mounting collar (#5) with disconnect lever (#6) onto the new casing.
3. Thread the nylon washer (#3) onto the new casing.
4. Clean the threads of the new casing assembly and apply Loctite #242 Threadlocker or equivalent.
5. Screw the drive end assembly (#4) on the new casing.
6. Tighten by hand and then with a wrench while holding the casing by hand.

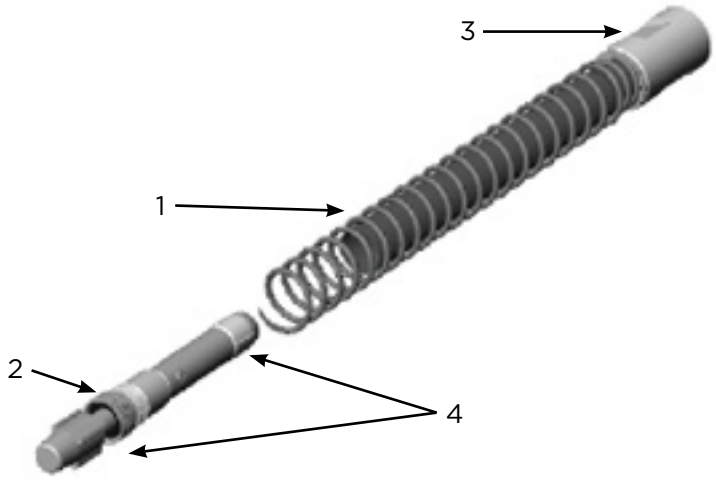
DO NOT hold the new casing in a vise or use pliers as damage will occur. It is not necessary to over-tighten this joint.

NOTICE

DRIVE END ASSEMBLY INSPECTION AND REPLACEMENT REMOVAL OF THE DRIVER ASSEMBLY

1. With one hand, pull the spring (#1) back to expose the knurled cap (#2) at the end of the tube.
2. Using the other hand, grip the knurled cap (#2) with a pair of pliers.
3. Using a 7/16” open end wrench, hold the flats on the drive end assembly (#3) and turn the knurled cap (#2) counterclockwise.
4. Unscrew the knurled cap (#2) until the threads are free from the tube.
5. Pull the driver assembly (#4) out of the tube.

NOTE: *NEVER use pliers on the tube as damage to the internal parts may occur.*

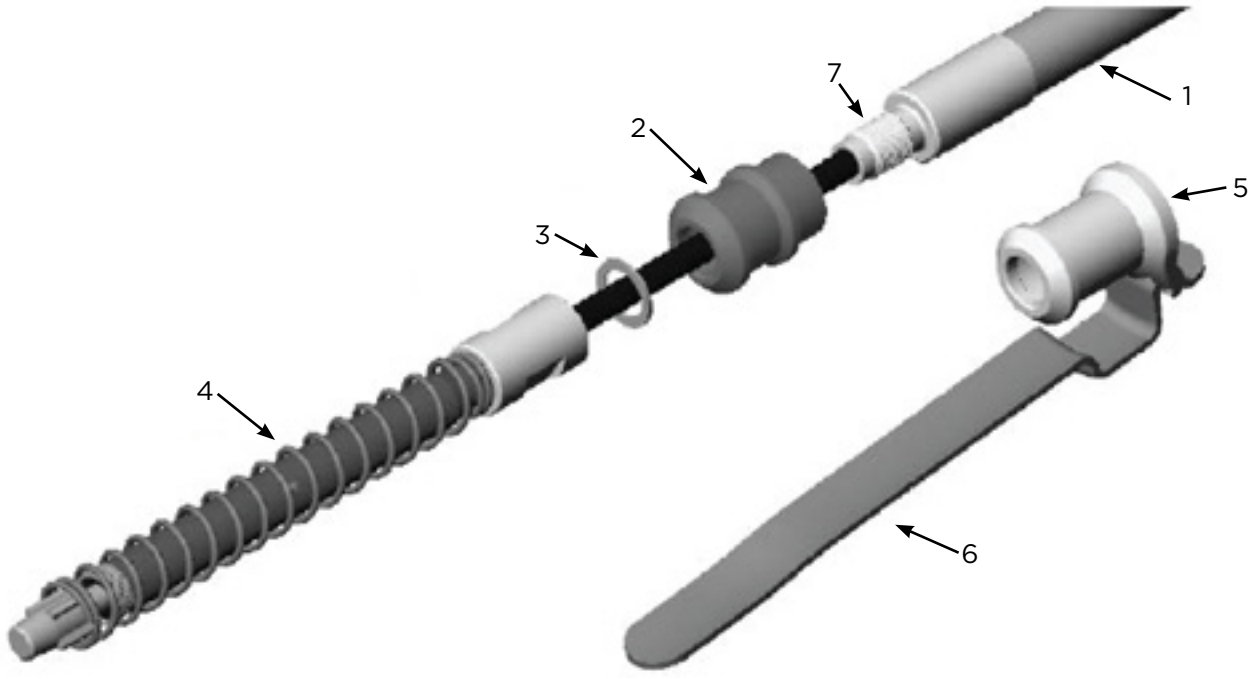


MAINTENANCE - WHIZARD® FLEXSHAFT AND CASING ASSEMBLY

CASING REPLACEMENT

When the casing needs to be replaced, the drive end assembly may be retained and reused.

1. Hold the casing (#1) in a vise.
2. Unscrew the drive end assembly (#4) by turning counterclockwise using the wrench flats on the drive end assembly.
3. Unscrew and remove the nylon washer (#3), casing latch collar (#2) or lever mounting collar (#5) from the casing.
4. Discard the casing but retain and reuse the drive end assembly (#4), the nylon washer (#3), the casing latch collar (#2) - or the lever mounting collar (#5) and disconnect lever (#6).

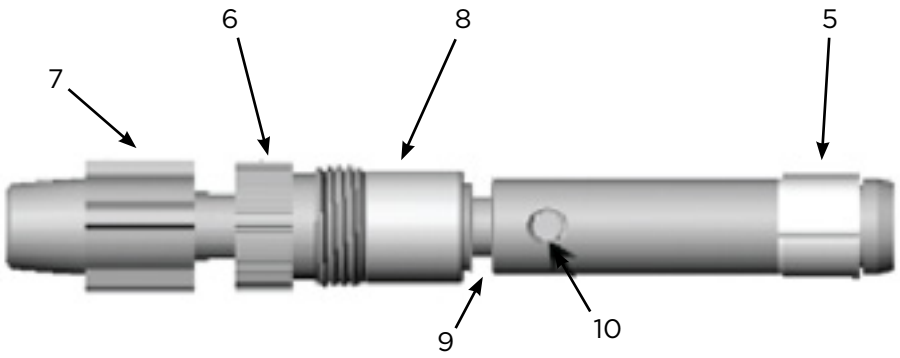


MAINTENANCE - WHIZARD® FLEXSHAFT AND CASING ASSEMBLY (CONTINUED)

INSPECTION OF THE DRIVER ASSEMBLY

1. Wipe off excess grease.
2. Inspect the split bearing (#5) for wear or damage. Replace if required.
3. Slide the knurled cap (#6) forward against the driver tip (#7).
4. Wiggle the bushing (#8) sideways to check for excessive movement.
5. Movement should be minimal.
6. Slide the bushing (#8) and washer (#9) forward toward the driver (#7). If the gap is 1/16” or greater, the driver should be replaced.
7. Check the coupling cross pin (#10). If there is any free play or movement, replace the driver assembly.

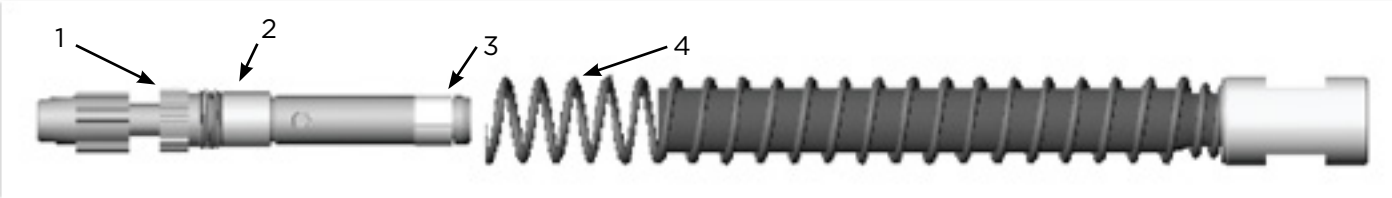
NOTE: *The driver assembly for small diameter Flexshafts have an “S” marked on the driver tip (#7).*



MAINTENANCE - WHIZARD® FLEXSHAFT AND CASING ASSEMBLY (CONTINUED)

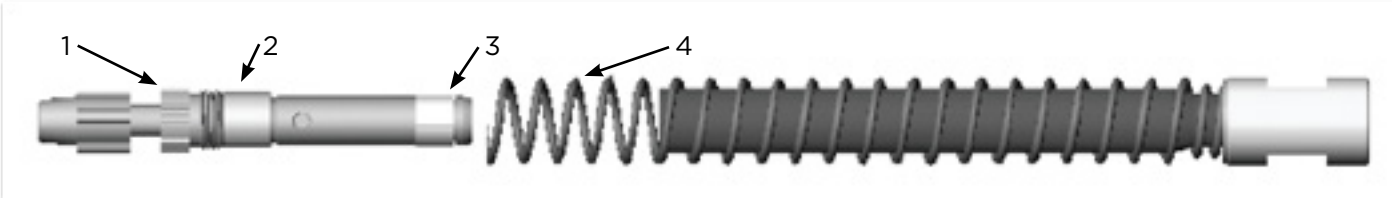
INSTALLATION OF THE DRIVER ASSEMBLY

1. Clean the threads on the tube and knurled cap.
2. Apply Max-Z-Lube grease to split bearing (#3) and bushing (#2). *Refer to Section 7, Lubrication and Lubrication Equipment.*
3. Apply a small amount of Loctite #242 Threadlocker or equivalent to the threads on the knurled cap (#1).
4. Pull the spring (#4) on the drive end assembly back with one hand and insert the driver assembly in the tube.
5. Push in and tighten the knurled cap until it is flush with the end of the tube. Pliers may be used for this however it is not necessary to tighten beyond hand tight.
6. Allow 1/2 hour dry time for the threadlocker before the assembly is put in service.



REPLACEMENT OF SPLIT BEARING (#3)

1. Remove the driver assembly. *Refer to Section 5, Removal of the driver assembly.*
2. Insert a small screwdriver into the split in the bearing.
3. Spread the bearing and slide over the shoulder on the driver.
4. Clean the surface of the coupling and apply Max-Z-Lube grease. *Refer to Section 7, Lubrication and Lubrication Equipment.*
5. Hold the bearing with the inside cone facing the end of the coupling.
6. Push the bearing on until it snaps into position.
7. Install the driver assembly. *Refer to Section 5, Installation of the Driver Assembly.*



BLADE SHARPENING

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.

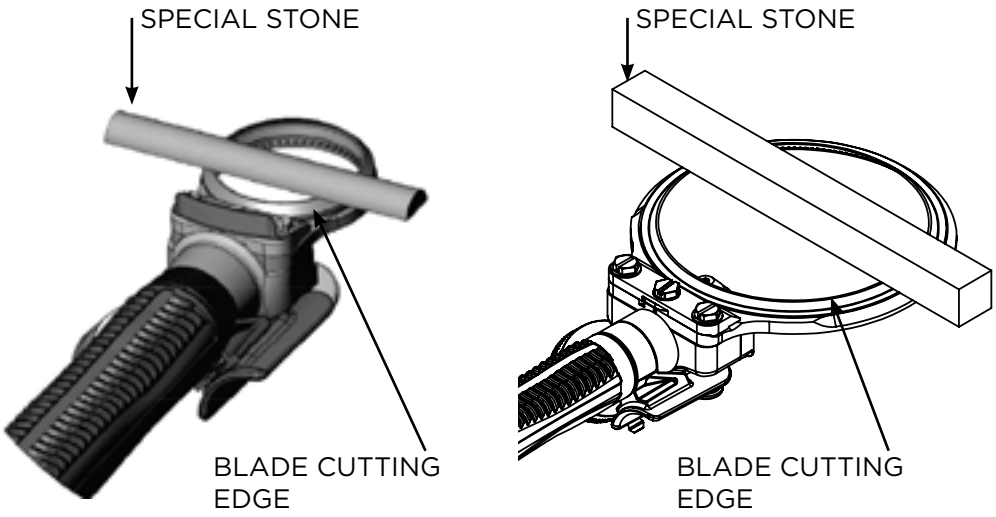
After sharpening, all abrasive dust must be completely removed from the handpiece. Disassemble the unit and carefully wash each piece with hot, soapy water and a small brush.

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: X360, X625, X505, X850+, X880+, X1850+, X1880+, X1000+, X1300+, X1400+ AND X1500+

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. *Refer to Section 4, Steeling the Blade.*

ASSEMBLY OF HANDPIECE

Sharp blades may cause cut injury!

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

Keep hands away from moving blade.

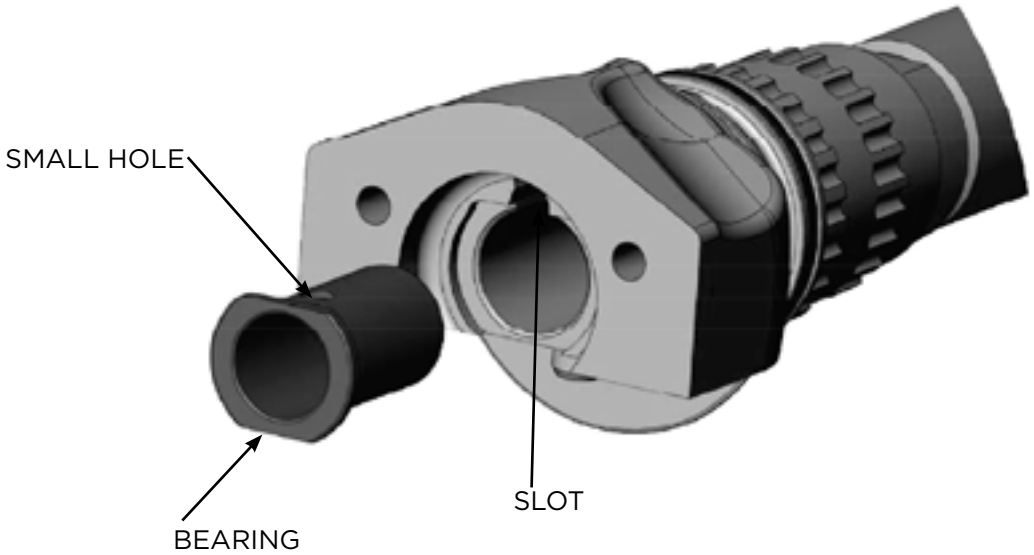
Inspection of all parts for excessive wear is critical to ensure proper and safe operation. Vibration or lock-up may occur as a result of the use of excessively worn parts. Prior to assembly, be sure all parts are clean and have been inspected for wear.

HANDPIECE BEARING INSTALLATION - 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.

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.



ASSEMBLY OF HANDPIECE (CONTINUED)

Sharp blades may cause cut injury!

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

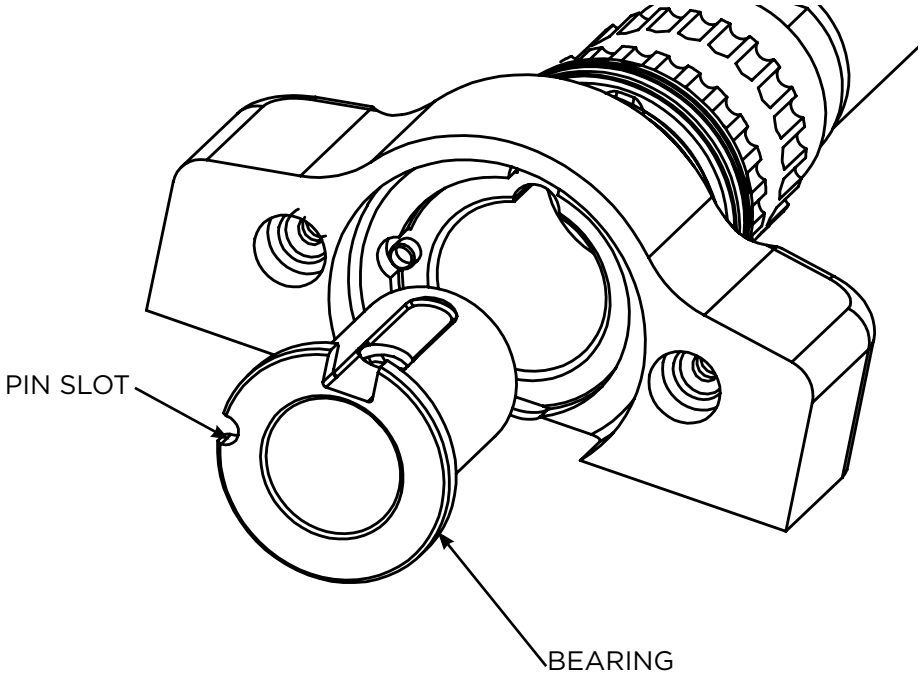
Keep hands away from moving blade.

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

HANDPIECE BEARING INSTALLATION - LARGE TOOLS

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

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



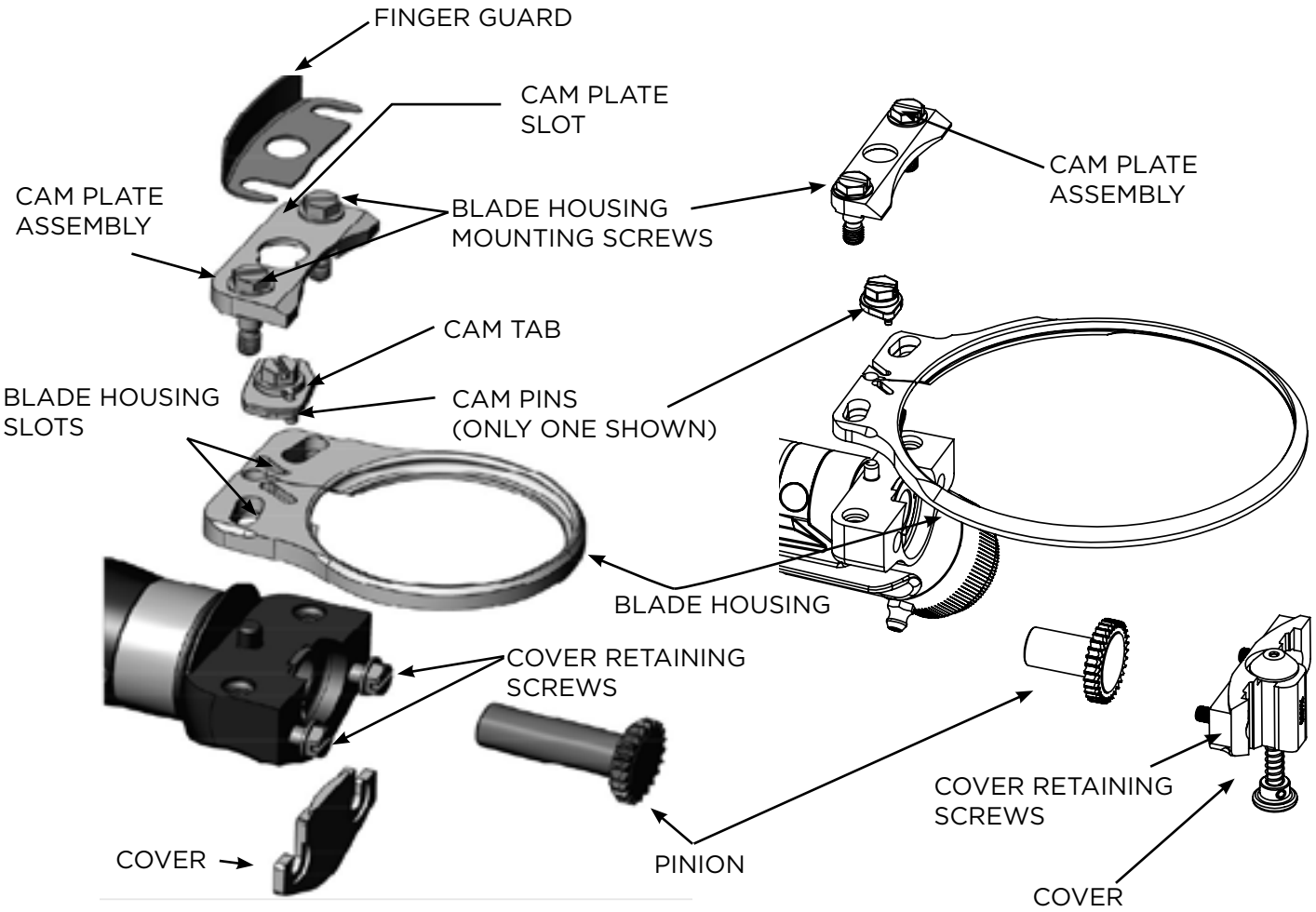
ASSEMBLY OF HANDPIECE (CONTINUED)

BLADE HOUSING, FINGER GUARD, CAM PLATE ASSEMBLY, PINION AND COVER INSTALLATION - SMALL AND LARGE TOOLS

1. Place the pinion in the bearing. It should spin freely in the bearing.
2. Place the cover on the frame and tighten the cover retaining screws Torque screws to 20 in-lbs. (2.3 N-m).
3. Place the blade housing on the frame.
4. Place the cam onto the blade housing, inserting the cam pins into each of the two slots located in the blade housing.

NOTE: *Make certain the tab on the cam is pointing diagonal towards the cover. This will allow proper alignment of the cam tab with the slot in the cam plate assembly (small tool only).*

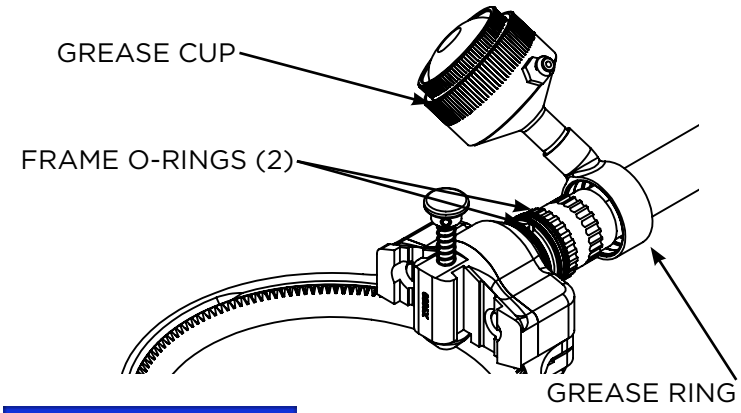
5. Place the cam plate assembly with finger guard (small tool only) over the cam.
6. Screw the blade housing mounting screws into frame but leave them about ½ turn loose from tight.



ASSEMBLY OF HANDPIECE (CONTINUED)

GREASE CUP AND RING

1. Pick up the Quantum Flex+® Trimmer.
2. Pick up the grease cup and ring. Apply a small amount of Whizard Quantum® High Performance Grease to the frame o-rings.
3. With a twisting motion, install the grease ring onto the frame over the o-rings.



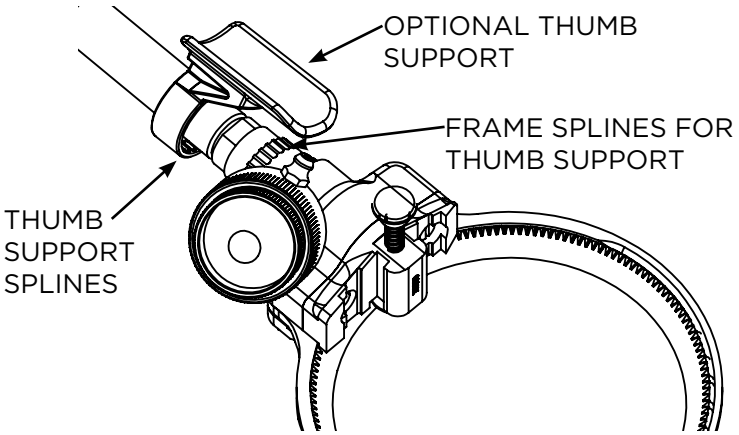
Be careful not to squeeze the o-rings out of their grooves, or they could be trapped and damaged.

NOTICE

4. Rotate the grease cup to the desired position.

OPTIONAL THUMB SUPPORT

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

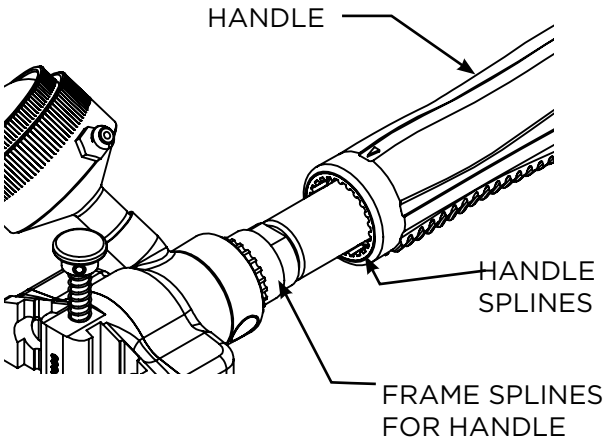


ASSEMBLY OF HANDPIECE (CONTINUED)

HANDLE

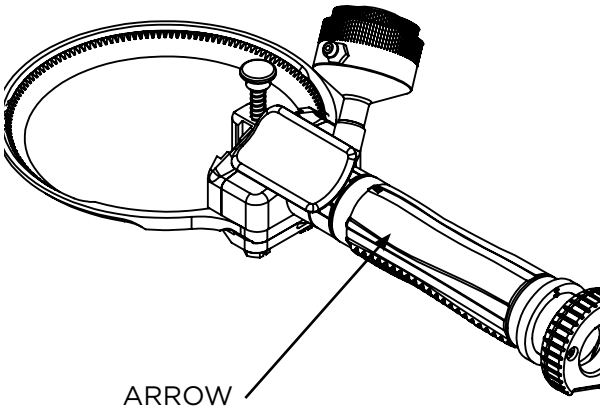
1. While holding the trimmer, pick up a handle.
2. Firmly push the handle towards the bottom of the spacer ring or optional thumb support. Align the handle spline with the splines on the front of the tube.
3. For the initial adjustment position, the arrow on the handle should be on top *as shown.*
4. Screw on the handle retaining knob by turning clockwise.

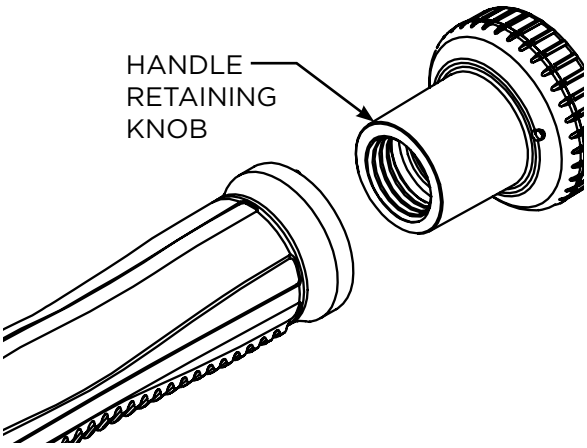
NOTE: *The handle can be adjusted to suit the operator and the work station by pulling the handle back away from the frame and re-locating it on another set of notches on the frame tube.*



Tighten firmly but take care not to over-tighten or the handle will be damaged.

NOTICE





ASSEMBLY OF HANDPIECE (CONTINUED)

Sharp blades may cause cut injury!

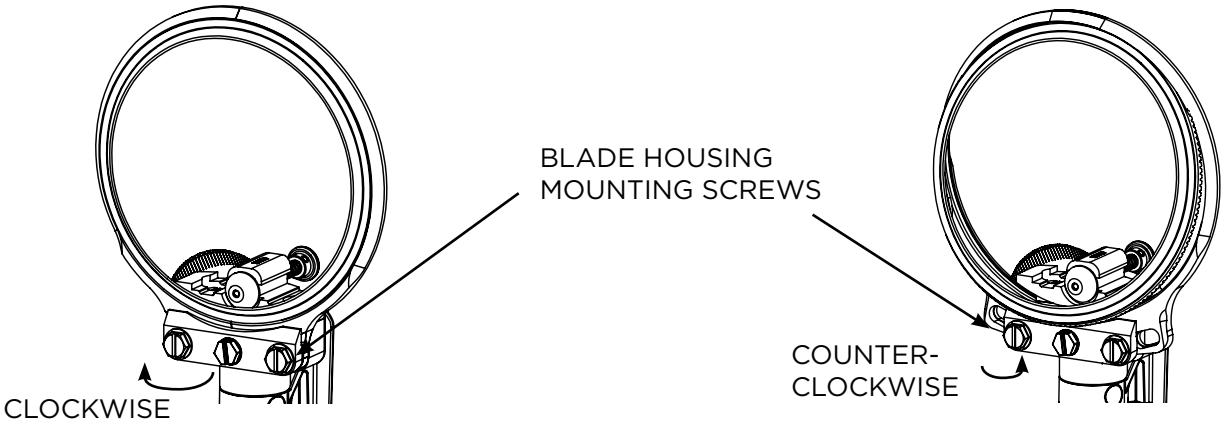
For proper protection of hands, a protective glove should be used when operating this equipment and during the handling of blades. Metal mesh gloves are recommended for the free hand.

Be 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.

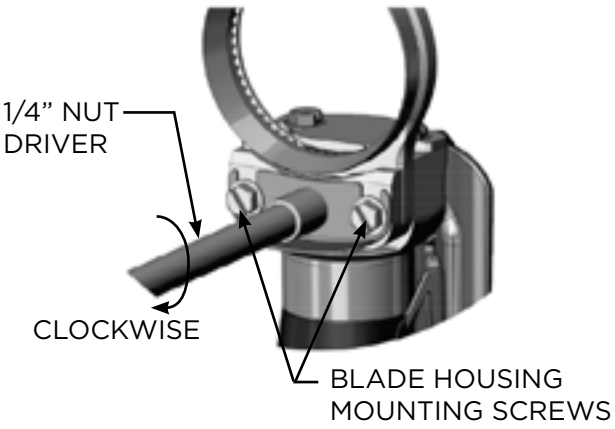
BLADE INSTALLATION - SMALL AND LARGE TOOLS

1. Turn the tool over so that the blade housing mounting screws are pointing upward.
2. Loosen the two blade housing mounting screws about 1/2 turn if they are not loose already.
3. Using a 1/4” nut driver for small tools and a 3/8” nut driver for large+ tools, turn the cam clockwise about 1/4" of a turn until it locks the housing in the open position.
4. Insert a new blade into the housing.
5. Turn the cam counter-clockwise about 1/8 of a turn to close the blade housing.
6. Tighten the two blade housing mounting screws. Torque screws to 25 in-lb. (2.8 N-m).
7. The blade should rotate freely.

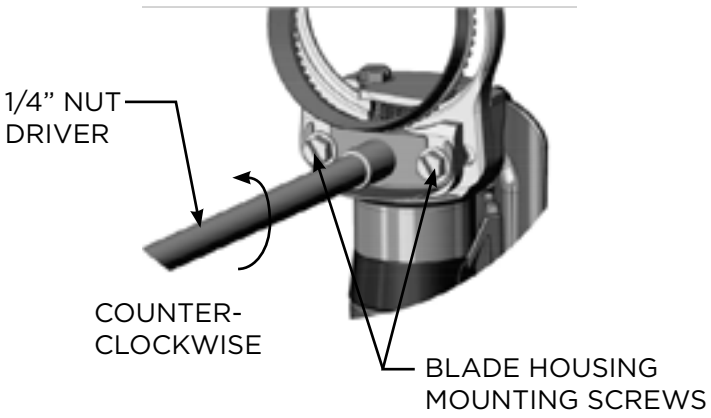
WARNING! Make certain that the blade is free to rotate in the housing. If the blade does not turn freely, it may cause the tool to rotate in the hand.



HOUSING IN CLOSED POSITION



HOUSING IN OPEN POSITION

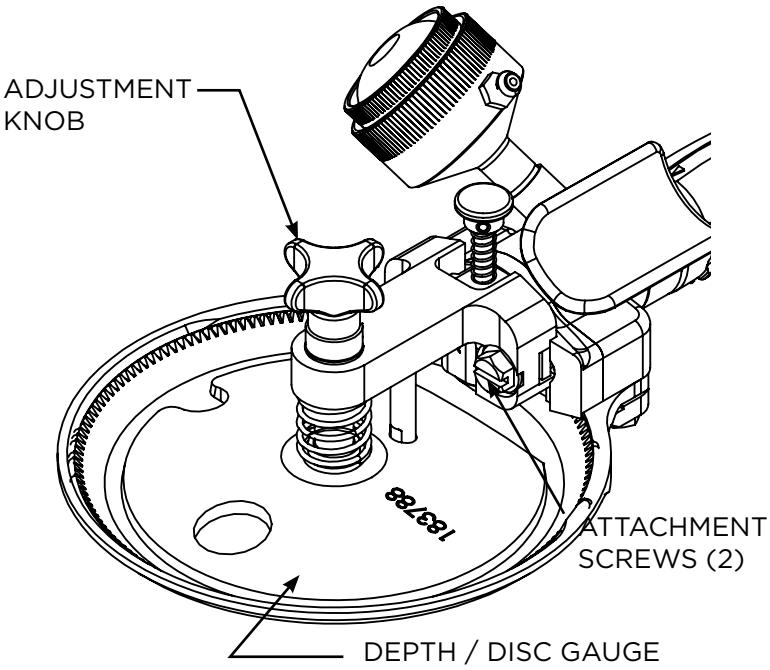


OPTIONAL DISC GAUGE OR DEPTH GAUGE INSTALLATION AND ADJUSTMENT

OPTIONAL DISC GAUGES FOR MODELS: X850+, X1850+, X1000+ AND X1300+

Optional adjustable disc gauges are available for the X850+, X1850+, X1000+ and X1300+ trimmers. *Refer to Section 7, Service Parts to order.*

1. Slide the disc gauge downward along the cover plate grooves until the disc gauge clamps catch in position.
2. The final height adjustment can be made after the blade is installed.
3. Tighten the two attachment screws.



ADJUSTMENT

1. Hold the handpiece with the blade facing downward.
2. Turn the adjustment knob clockwise for a thicker cut, or counterclockwise for a thinner cut.

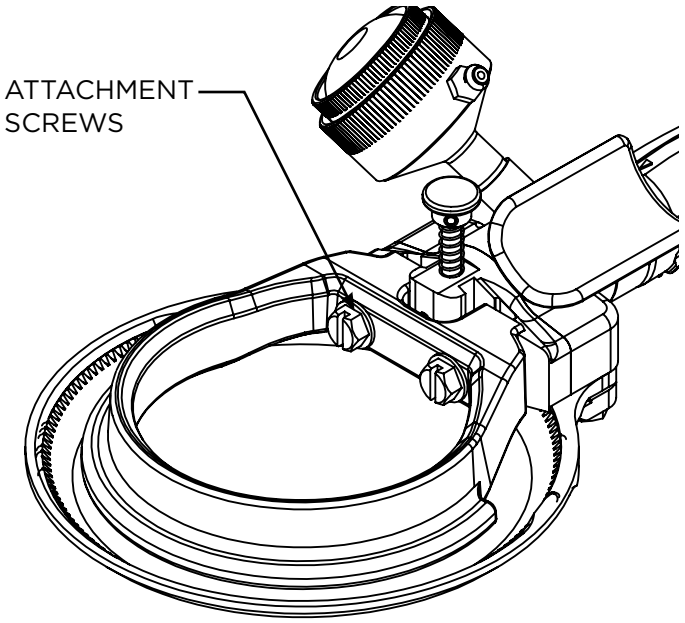
NOTE: *Take care not to turn too far as the depth control hub may disengage from the shaft.*

OPTIONAL DISC GAUGE OR DEPTH GAUGE INSTALLATION AND ADJUSTMENT (CONTINUED)

ADJUSTABLE DEPTH GAUGE FOR MODELS: X880+ (S & B), X1880+, X1400+ AND X1500+ ONLY

These tools come equipped with an adjustable depth gauge for setting a controlled product trim thickness. The depth gauge can be adjusted for cuts up to 1/4" thick. A depth gauge setting device is also available.

1. Slide the depth gauge downward along the cover plate grooves until the depth gauge clamps catch in position.
2. The final height adjustment can be made after the blade is installed.
3. Tighten the two attachment screws.



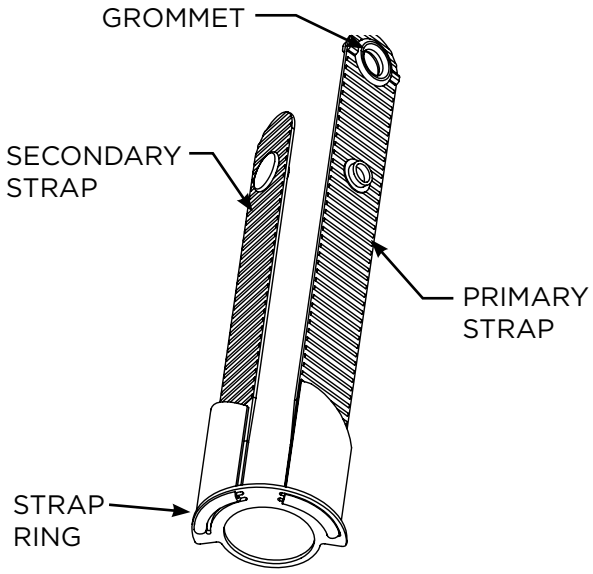
ADJUSTMENT

1. Hold the handpiece with the blade facing downward.
2. Loosen the attachment screws at the base of the plastic depth gauge.
3. Adjust the gauge setting by sliding it up or down to the desired height.
4. Retighten the attachment screws.

OPTIONAL WHIZARD® MICRO-BREAK HAND STRAP AND ADJUSTMENT

The Whizard® Micro-Break Hand Strap has been designed to allow the user to relax the fingers of the hand between work cycles while maintaining control of the trimmer, which can be beneficial and may reduce risks associated with stress.

The Whizard® Micro-Break Hand Strap comes complete with a primary and secondary strap. The straps can be adjusted for comfort by adjusting the strap length using the strap ring. If the secondary strap is not needed, it can be removed from the strap ring.



NOTE: *The primary strap has the grommet and will be placed over the threads on the grease cup.*

1. Remove the grease cup and retaining knob from the tool.
2. With the retaining knob removed from the handle, place the strap ring over the handle retaining knob.
3. Screw on the handle retaining knob.

Tighten firmly but take care not to over-tighten or the handle will be damaged. **NOTICE**

4. Place the grommet of the primary strap over the threads on the grease cup.
5. Thread the grease cup into the grease ring.
6. Adjust the strap using the strap ring.
7. Bring the loose end of the secondary strap across the tool and snap the secondary strap onto the snap by the grommet on the primary strap.

OPTIONAL POST HANDLE KIT AND ADJUSTMENT

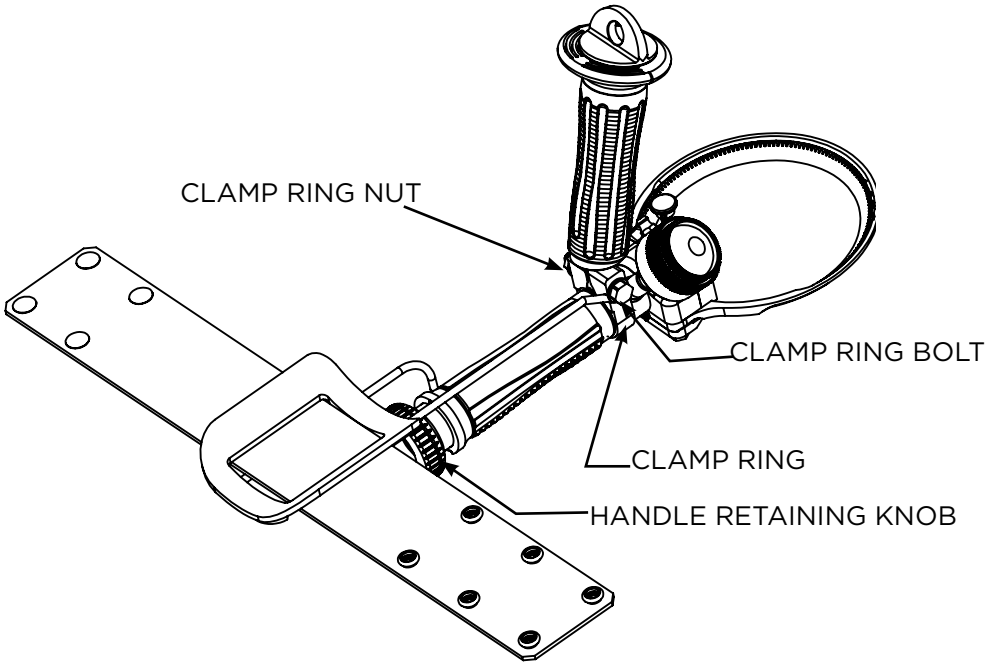
To reduce the possibility of cumulative trauma to the wrist caused by the excessive bending (Ulnar Deviation) necessary to perform certain trimming or defatting operations, a post handle option is available for all Quantum Flex+® Trimmers.

The post handle allows the operator to hold the tool with the wrist in a more natural, relaxed position. The operator holds this vertical handle in a more natural position for scraping-type trimming, and the assembly is also designed to let the operator relax his/her grip between cuts for added ergonomic benefit.

The universal post handle is custom-tailored to most any job by loosening a clamp ring, adjusting the vertical handle to its most comfortable position, then retightening this ring.

SIDE-TO-SIDE ADJUSTMENT:

1. Loosen handle retaining knob, clamp ring, bolt and nut.
2. Pull the handle and clamp ring back to disengage the splines on the frame.
3. Rotate the clamp ring and post handle to a new position.
4. Push forward to engage the frame splines.
5. Tighten the clamp ring and handle retaining knob.



ARM-REST STRAP ADJUSTMENT:

1. Two adjustments are provided by the two pairs of snaps.
2. Select the most comfortable position.

FAULT DETECTION AND CORRECTION

Problem	Probable cause	Remedy
Handpiece vibration	Inside bore of handpiece frame worn out.	Replace frame.
	Worn handpiece bearing.	Replace.
	Worn pinion gear.	Replace.
	Worn teeth on blade or pinion gear.	Replace.
	Blade too loose in blade housing.	Large tools only - Adjust blade housing. If still too loose, try a new blade in the housing.
	Whizard Quantum® Driveline or Whizard® Flexshaft is worn.	Replace.
Handpiece hot	Pinion gear tight in handpiece bearing.	Clean corrosion from the handpiece bearing and lubricate.
	Handpiece bearing not installed correctly - (No clearance between face of pinion gear and blade housing) causing mechanical bind.	Reinstall bearing correctly. With handpiece removed from Whizard Quantum® Driveline, you should be able to rotate the blade freely by hand.
Rapid wear or breakage of the driveline or Flexshaft	Mechanical bind in handpiece.	With handpiece removed from driveline, blade should rotate freely by hand. Correct any mechanical bind.
	Drive unit not installed at proper height or location.	Install drive unit per instructions in drive unit manual.
Dull blade	Improperly sharpened blades will cause loss of production, increase wear of parts, and operator fatigue.	Sharpening can best be accomplished by use of a Whizard® Model 210 Universal Blade Sharpener, or Bettcher® AutoEdge. Blades can also be sharpened by hand.
	Blade not steeled properly.	*Refer to Section 4, Steeling the Blade.*
Optional Thumb Support	Anti-rotation splines have worn.	Replace.
Spring lost from driveline	Improper assembly.	*Refer to Section 5, Driver Assembly Inspection and Replacement.*
Blade skips or will not rotate	Handpiece bearing worn.	Check / replace bearing.
	Casing not fully engaged or inserted.	Make certain the casing is fully inserted to the drive position.
	Broken Flexshaft in the Whizard Quantum® Driveline or Whizard® Flexshaft and casing assembly.	Replace Whizard Quantum® Driveline or Whizard® Flexshaft and casing assembly.

SECTION 6

Cleaning

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

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

Always disconnect the power and remove the tool from the driveline or Flexshaft and casing assembly prior to cleaning or servicing.

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

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

CLEANING SOLUTIONS

Avoid the use of aggressive cleaning products as they will damage the aluminum handle assembly.

NOTICE

Do not use hydrocarbon solvents on the driveline or casing. This will cause driveline or casing to shrink in length and become brittle.

CLEANING PRIOR TO ASSEMBLY

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

PERIODIC CLEANING DURING USE

Remove meat particles and rinse with warm soapy water. Wash the trimmer with warm cleaning solution. For best results, clean the Quantum Flex+® Trimmer with eXtra© Heavy Duty cleaner, diluted according to the directions on the container. Rinse thoroughly with water. *Refer to Section 7, Cleaning Solution.*

CLEANING AFTER DAILY USE

Disassemble and clean thoroughly daily.

Remove the blade and blade housing and clean them with a brush and cleaner. For best results, clean the Quantum Flex+® Trimmer with eXtra© Heavy Duty cleaner, diluted according to the directions on the container. Rinse thoroughly with water and dry. *Refer to Section 7, Cleaning Equipment.*

Remove the hand straps from the handpiece. *Refer to Section 5, Remove the Optional Whizard® Micro-Break Hand Straps.*

Clean the straps in warm, soapy water.

Before assembly, rinse well with clean water and dry. Reassemble the components of the tool. *Refer to Section 5, Assembly of Handpiece.*

CLEANING AFTER BLADE SHARPENING

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

SECTION 7

Service Parts

Quantum Flex+® X350 assembly **78**
Quantum Flex+® X360 assembly **80**
Quantum Flex+® X440 assembly **82**
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Quantum Flex+® X850+ assembly **100**
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Quantum Flex+® X1000+ assembly **104**
Quantum Flex+® X1300+ assembly **106**
Whizard Quantum® Driveline assembly **108**
Whizard® 3/16" Flexshaft and casing assembly - Small Tools Only **110**
Whizard® 1/4" Flexshaft and casing assembly - Small Tools Only **112**
Whizard® 1/4" Flexshaft and casing assembly - Large Tools Only **114**
Optional post handle **116**
Also available **118**

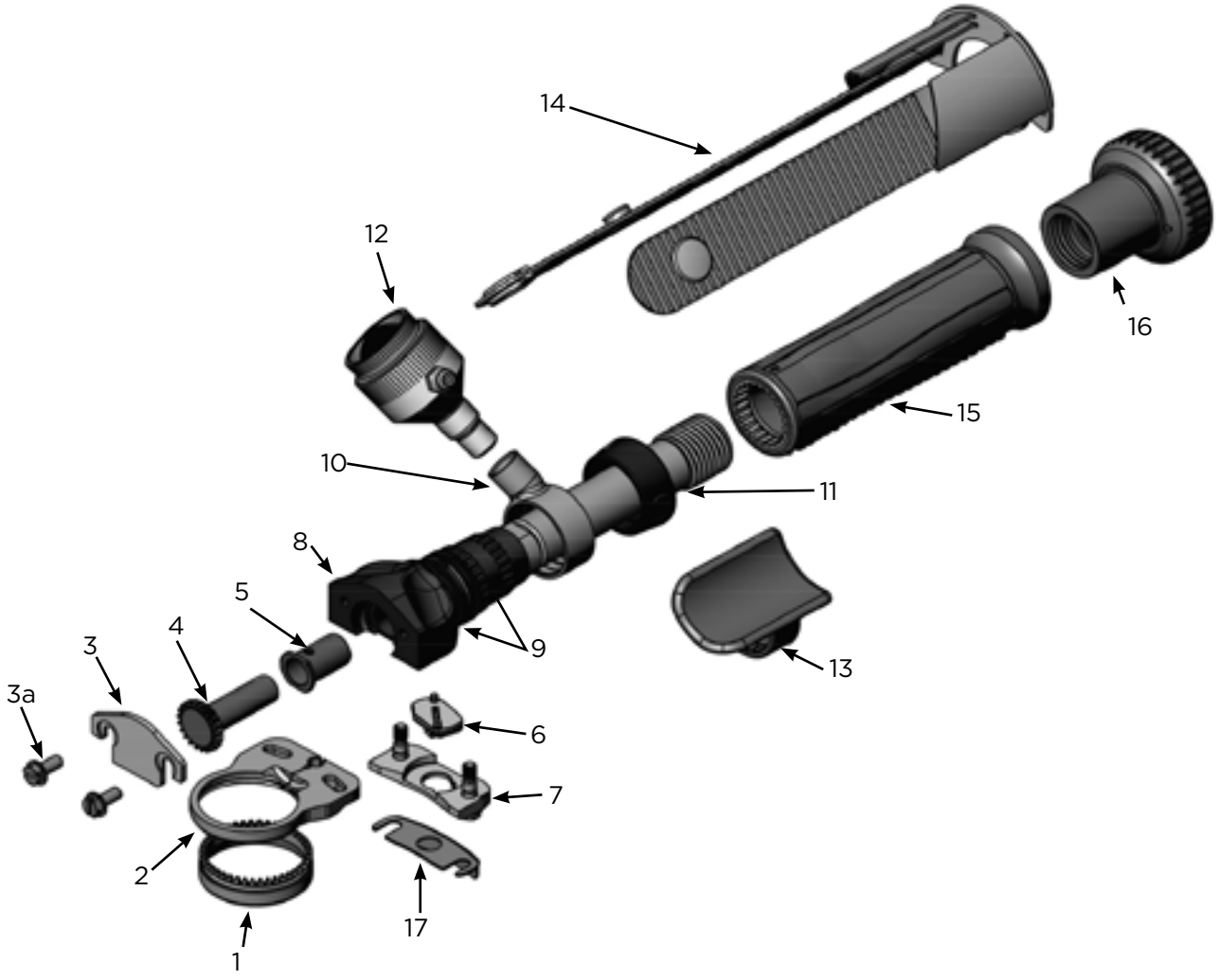
The manufacturer assumes no liability for any unauthorized changes in operating procedures or for unauthorized changes or modifications made to the design of the machine or any factory-installed safety equipment, whether these changes are made by the owner of this equipment, by his employees, or by service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

WARNING

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

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

QUANTUM FLEX+® X350 ASSEMBLY

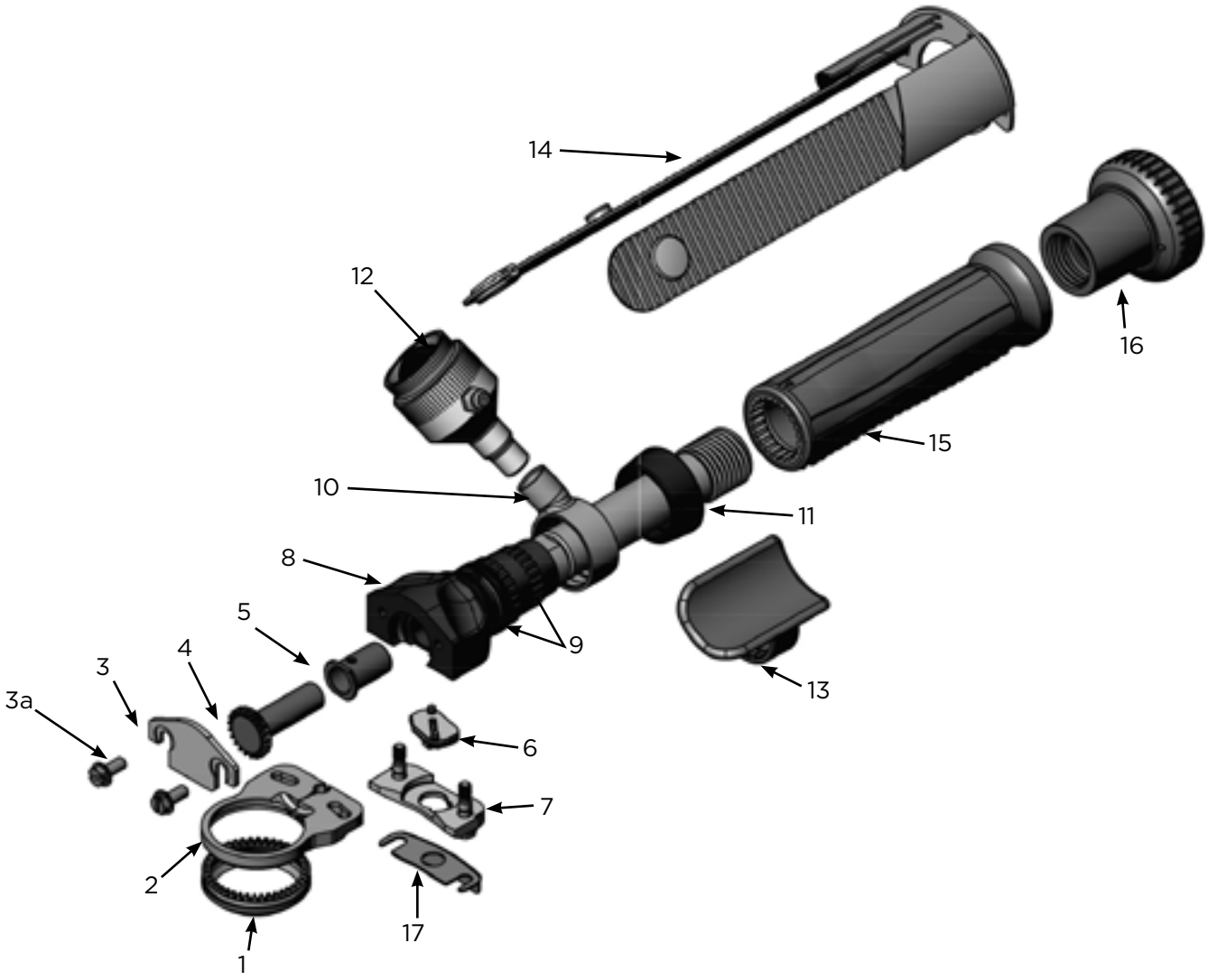


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X350 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X350 Handpiece	109537
1	X350 Blade	107188
2	X350 Blade Housing	106576
3	Small Tool Cover	108359
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Mounting Screw Kit (Includes 2 screws)	106557
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X360 ASSEMBLY

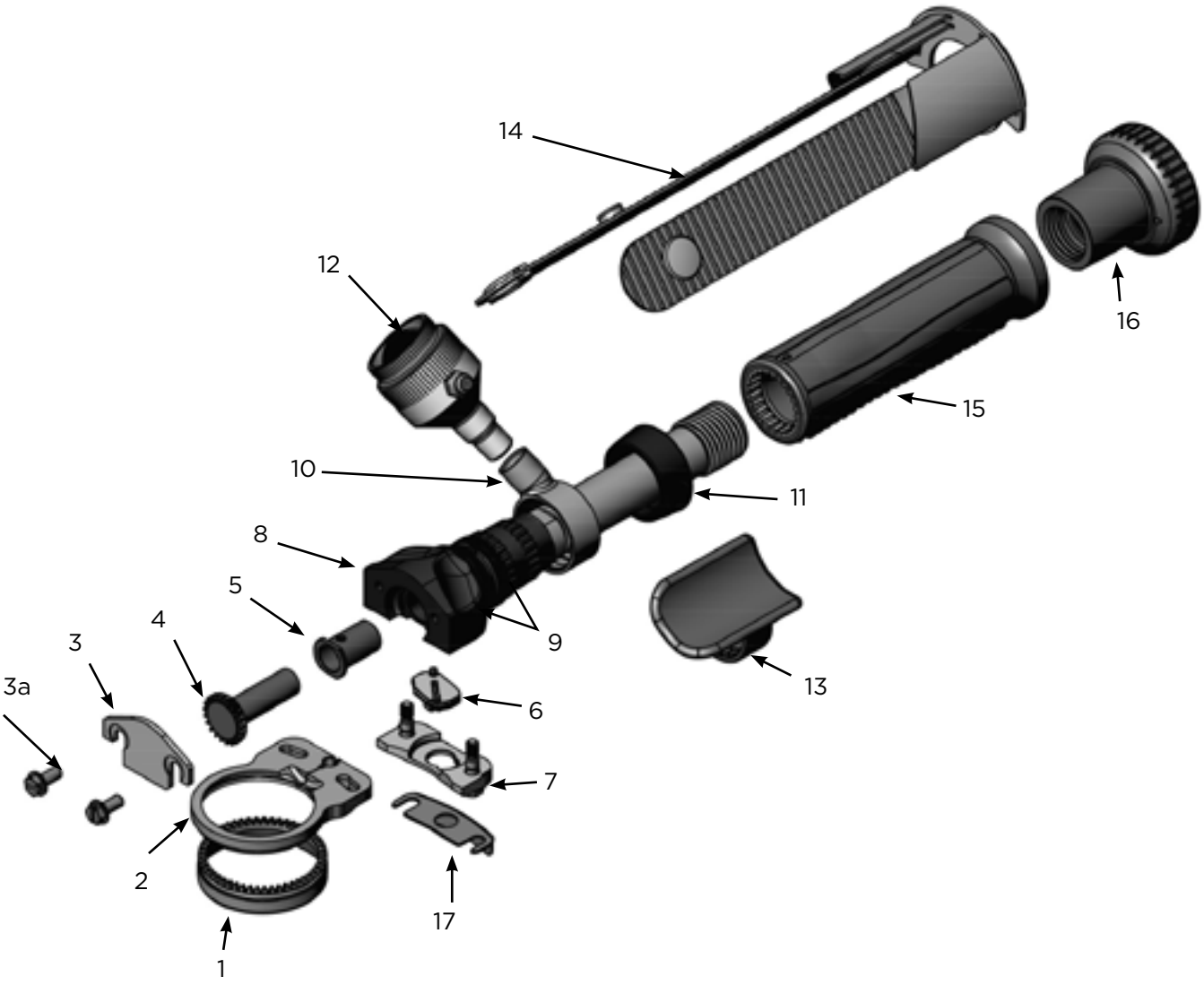


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X360 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X360 Handpiece	109540
1	X360 Blade	105546
2	X350 Blade Housing	106576
3	Small Tool Cover	108359
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X440 ASSEMBLY

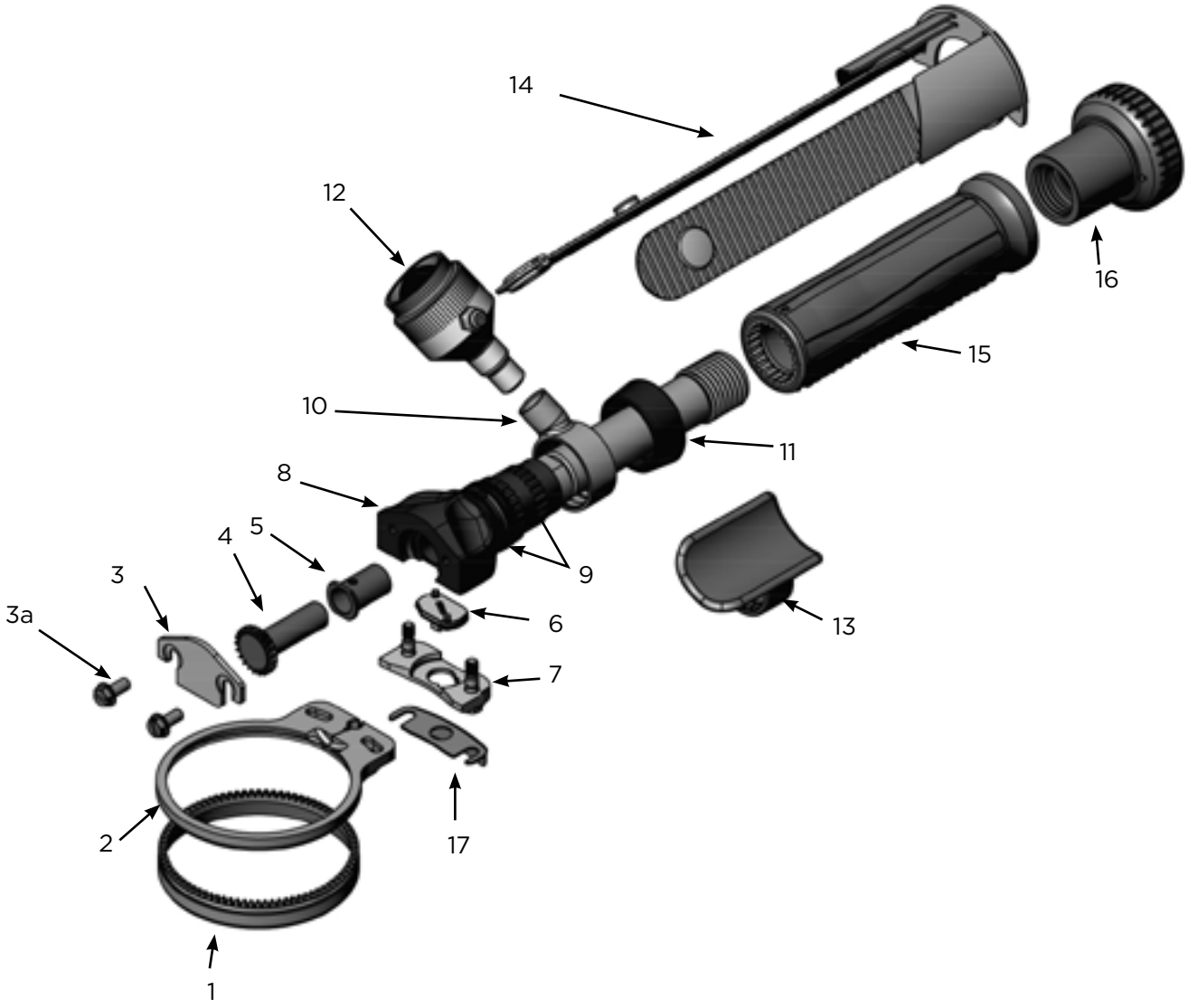


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X440 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X440 Handpiece	109541
1	X440 Blade	107187
2	X440 Blade Housing	106577
3	Small Tool Cover	108359
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support Assembly	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X500 ASSEMBLY

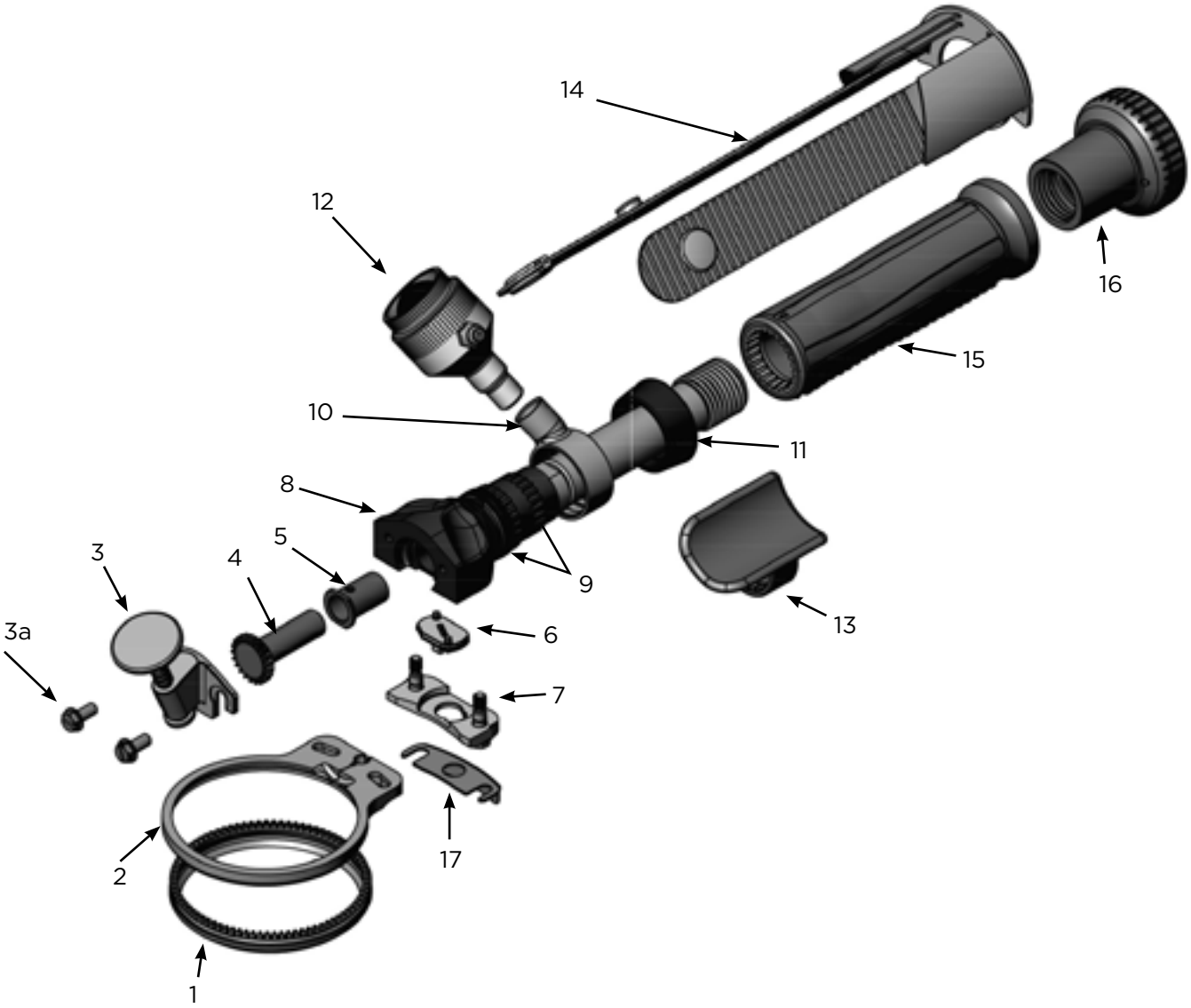


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® 500 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X500 Handpiece	109542
1	X500 Blade	107186
2	X500 Blade Housing	106596
3	Small Tool Cover	108359
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X505 ASSEMBLY

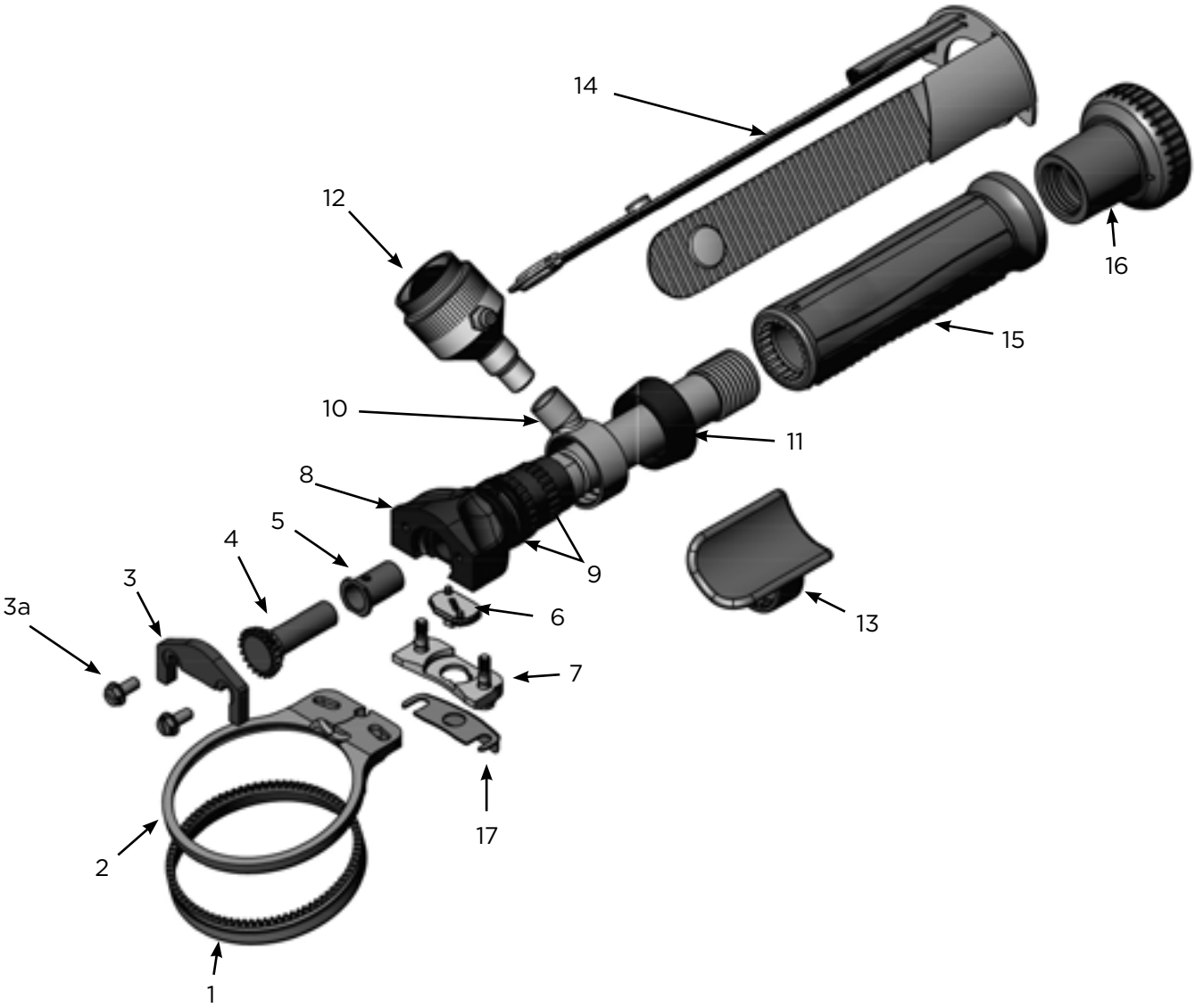


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X505 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X505 Handpiece	109544
1	X505/X625 Blade	105548
2	X500 Blade Housing	106596
3	X505 Cover	108962
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X500A ASSEMBLY



*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X500A ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X500A Handpiece	109545
1	X500 Blade	107186
2	X500A Blade Housing	107273
3	Small Tool Angled Cover	107216
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Angled Pinion	107215
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screw)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

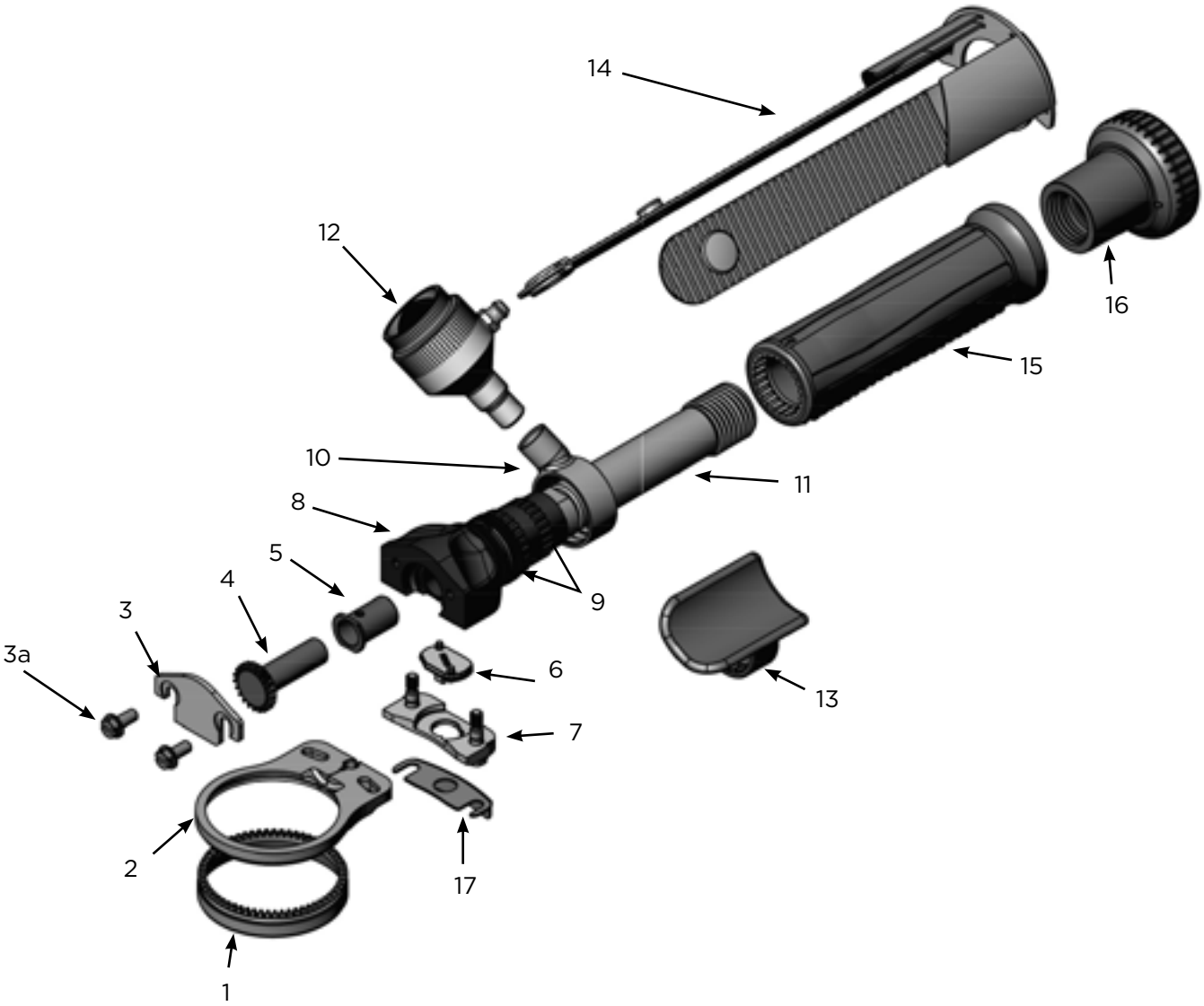
QUANTUM FLEX+® X564 ASSEMBLY

*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X564 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X564 Handpiece	109547
1	X564 Blade	107144
2	X564 Blade Housing	107208
3	Small Tool Cover	108359
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X620 ASSEMBLY

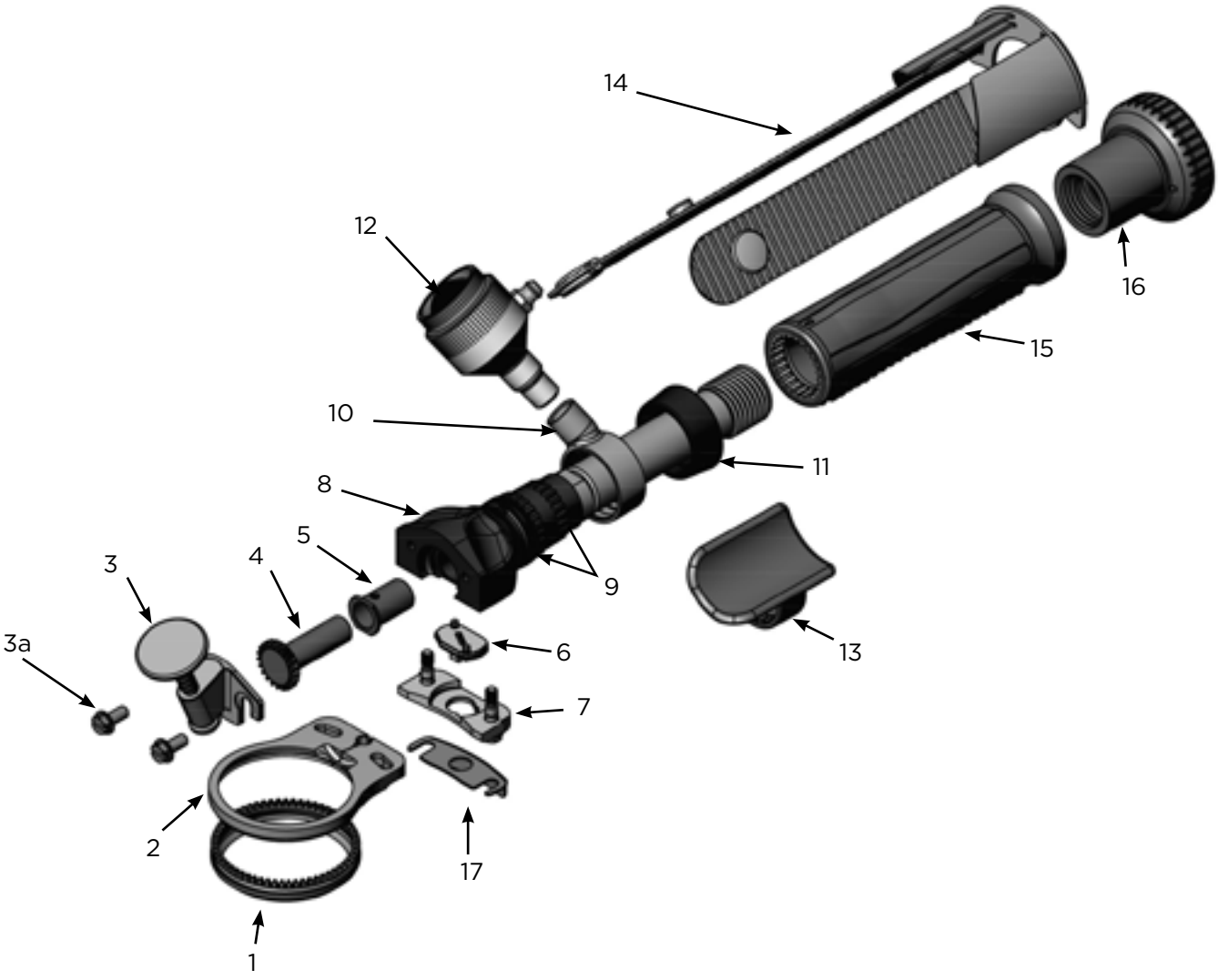


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X620 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X620 Handpiece	109548
1	X620 Blade	107185
2	X620 Blade Housing	105366
3	Small Tool Cover	108359
3a	Cover Retaining Screw (2 required)	107222
4	Small Tool Cover Pinion	104902
5	Small Tool Cover Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X625 ASSEMBLY

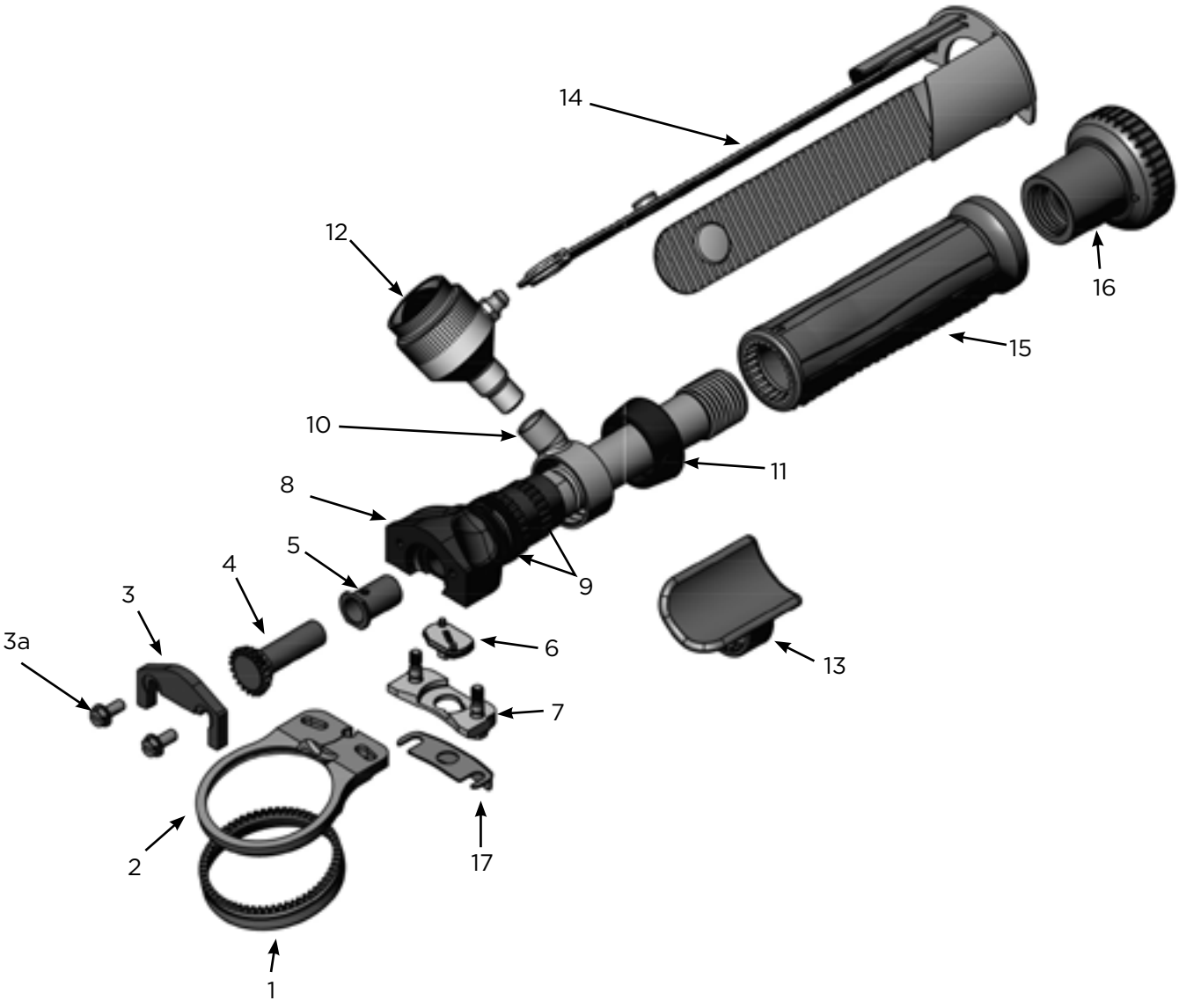


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X625 ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X625 Handpiece	109550
1	X625 Blade	104835
2	X620 Blade Housing	105366
3	X505/X625 Cover with Special Steeling Device	108962
3a	Cover Retaining Screw (2 required)	107222
4	Small Tool Pinion	104902
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X620A ASSEMBLY

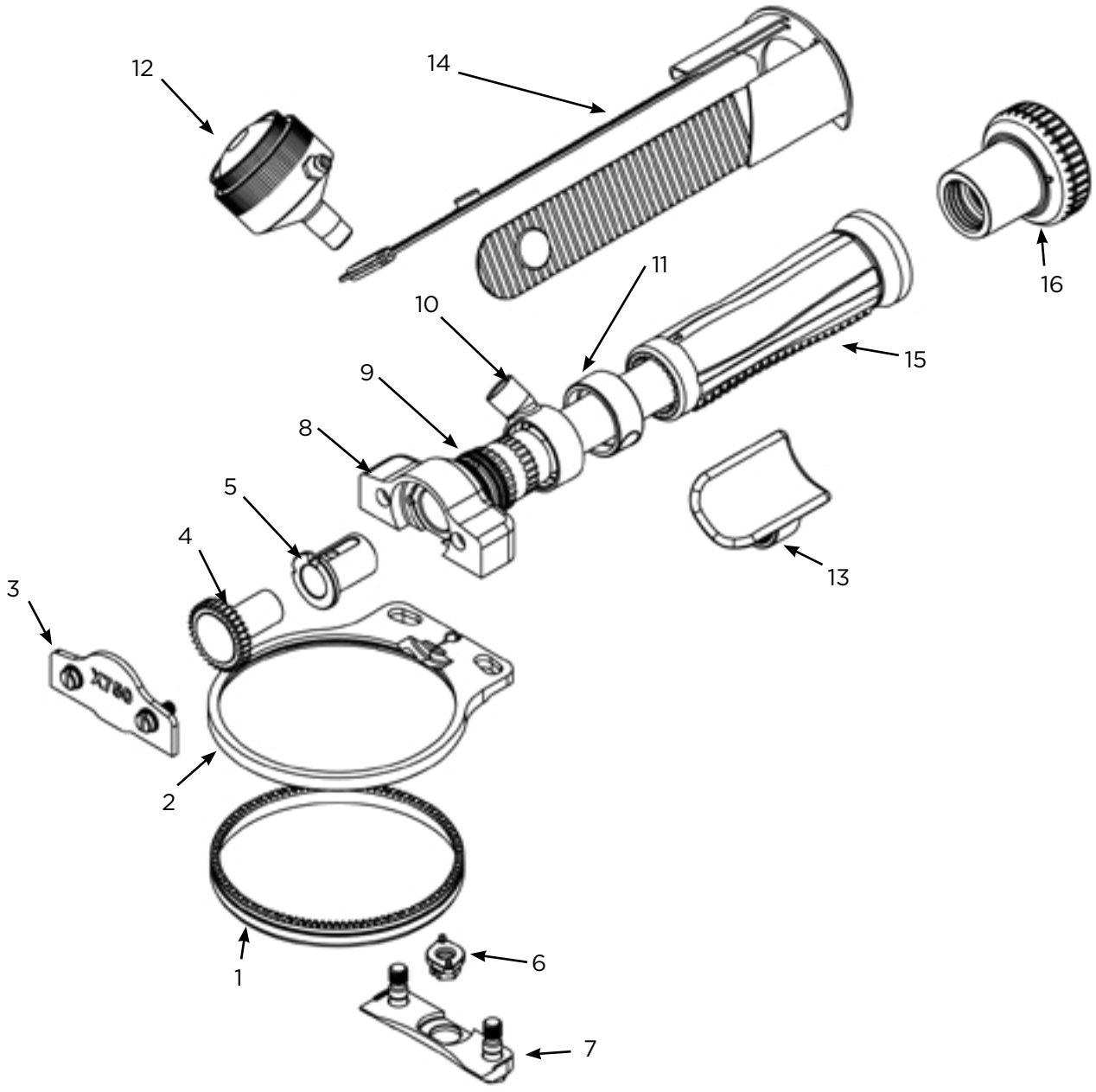


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X620A ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X620A Handpiece	109551
1	X620 Blade	107185
2	X620A Blade Housing	107204
3	Small Tool Angled Cover	107216
3a	Small Tool Cover Retaining Screw (2 required)	107222
4	Small Tool Angled Pinion	107215
5	Small Tool Bearing	104943
6	Small Tool Cam	106602
7	Small Tool Cam Plate Assembly (Includes Mounting Screws)	106557
7a	Small Tool Cam Plate Mounting Screw Kit (Includes 2 screws)	108480*
8	Small Tool Frame Assembly	107297
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Small Grease Cup	101090
--	Parts for Small Grease Cup	--
--	Small Bulb	163265*
--	Small Washer	123523*
--	Small Retainer Ring Only	101576*
--	Small Base and Fitting	101089*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Finger Guard	106589

QUANTUM FLEX+® X750+ ASSEMBLY

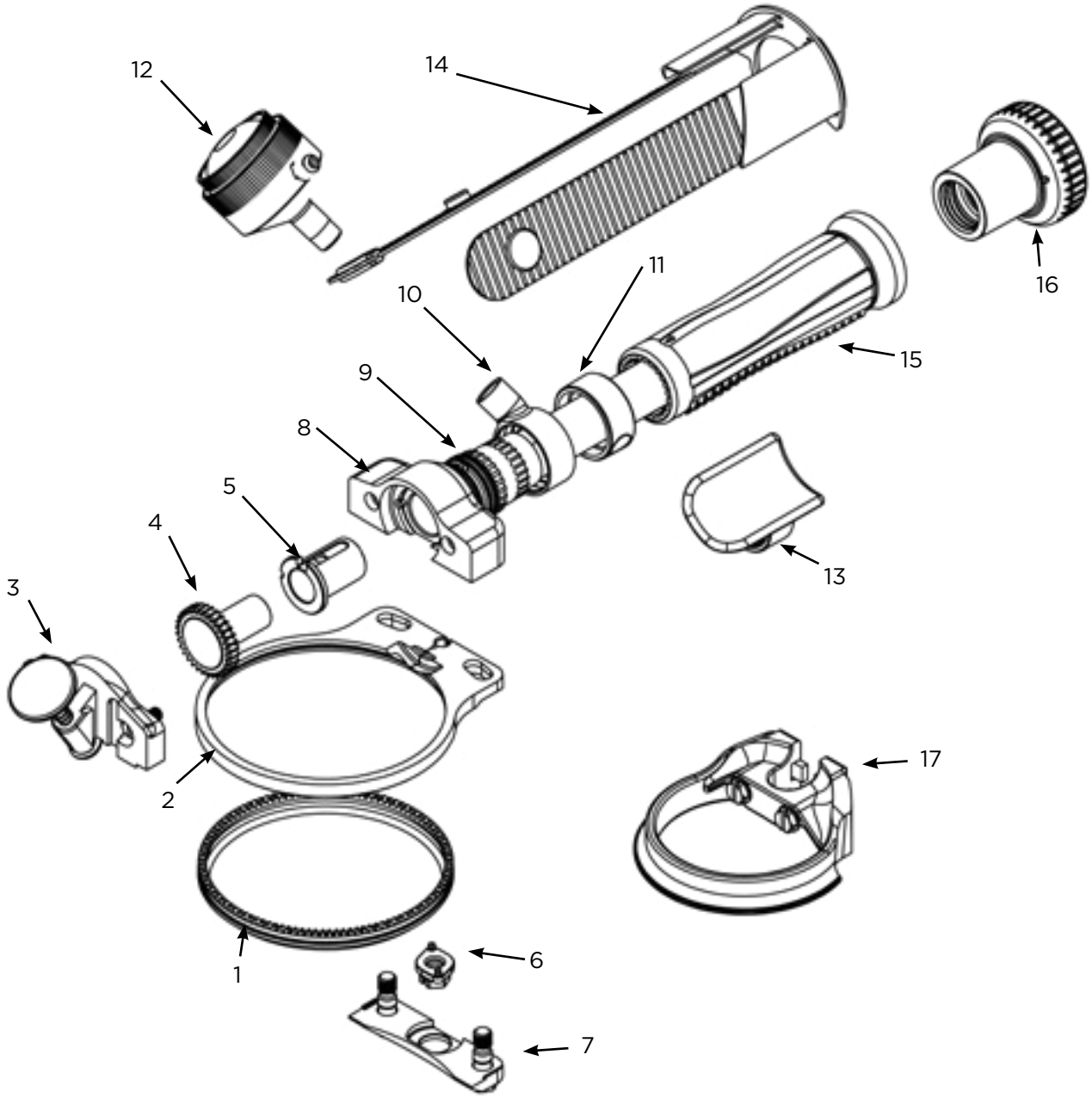


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X750+ ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X750+ Handpiece	121973
1	X750 Blade	105042
2	X750+/X850+ Blade Housing	121620
3	X750+ Cover	122062
--	Large Tool Cover Retaining Screw (2 required)	121571
4	Large Tool Pinion	105502
5	Large Tool Bearing	105533
6	Large Tool Cam	121341
7	Large Tool Cam Plate Assembly	121596
7a	Large Tool Cam Plate Mounting Screw Kit (Includes 2 Screws)	123474
8	Large Tool Frame Assembly	121574
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Medium Grease Cup	100998
--	Parts for Medium Grease Cup	--
--	Medium Bulb and Washer	173208*
--	Medium Retainer Ring Only	101577*
--	Medium Base and Fitting	100999*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649

QUANTUM FLEX+® X850+ ASSEMBLY

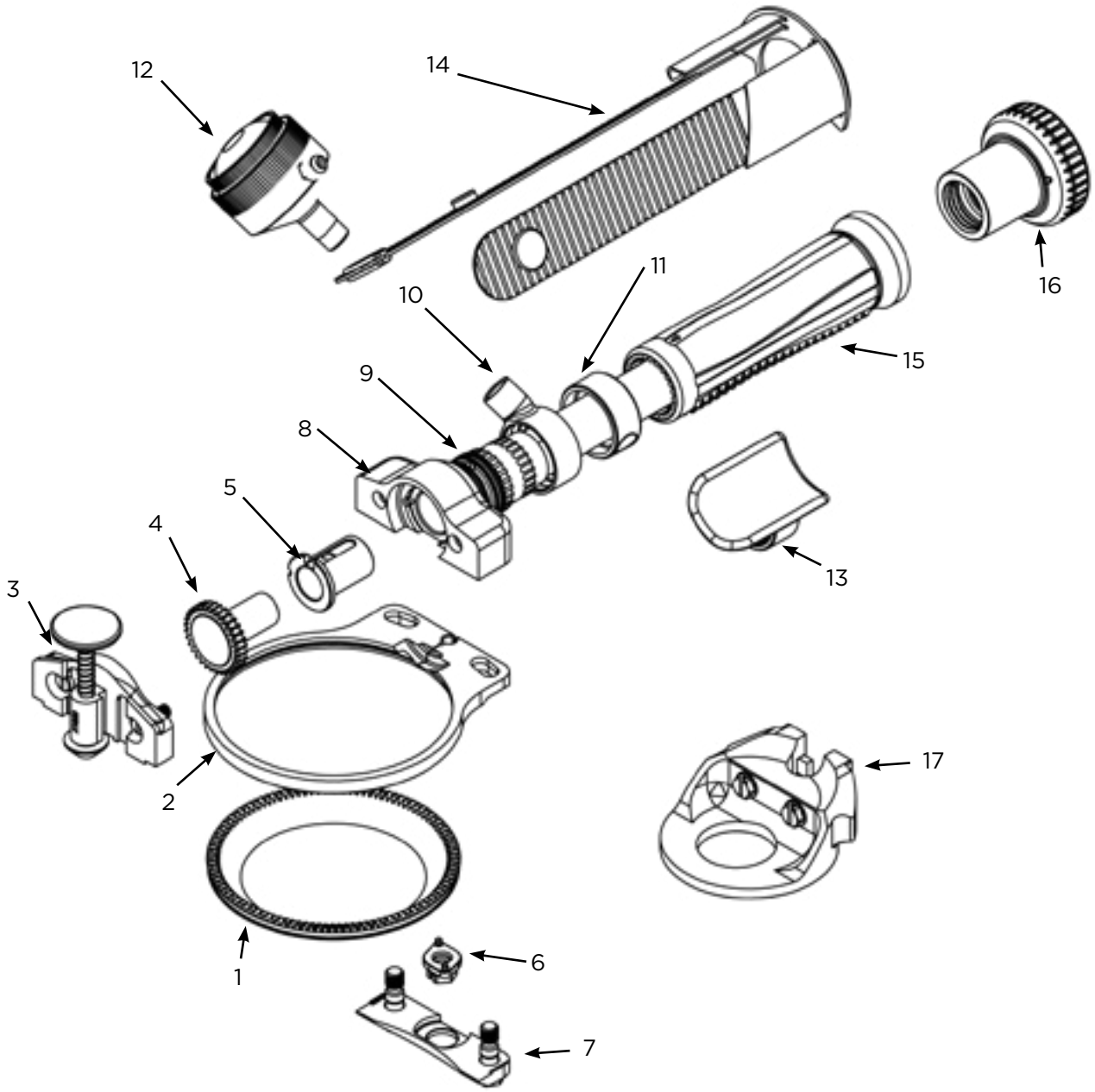


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X850+ ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X850+ Handpiece	121978
1	X850 Blade	104834
2	X750+/X850+ Blade Housing	121620
3	X850+ Cover	122085
--	Large Tool Cover Retaining Screw (2 required)	121571
4	Large Tool Pinion	105502
5	Large Tool Bearing	105533
6	Large Tool Cam	121341
7	Large Tool Cam Plate Assembly	121596
7a	Large Tool Cam Plate Mounting Screw Kit (Includes 2 Screws)	123474
8	Large Tool Frame Assembly	121574
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Medium Grease Cup	100998
--	Parts for Medium Grease Cup	--
--	Medium Bulb and Washer	173208*
--	Medium Retainer Ring Only	101577*
--	Medium Base and Fitting	100999*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Depth Gauge Assembly add to make X880+S	183076*
--	Depth Gauge Assembly add to make X880+B	183075*

QUANTUM FLEX+® X1850+ ASSEMBLY

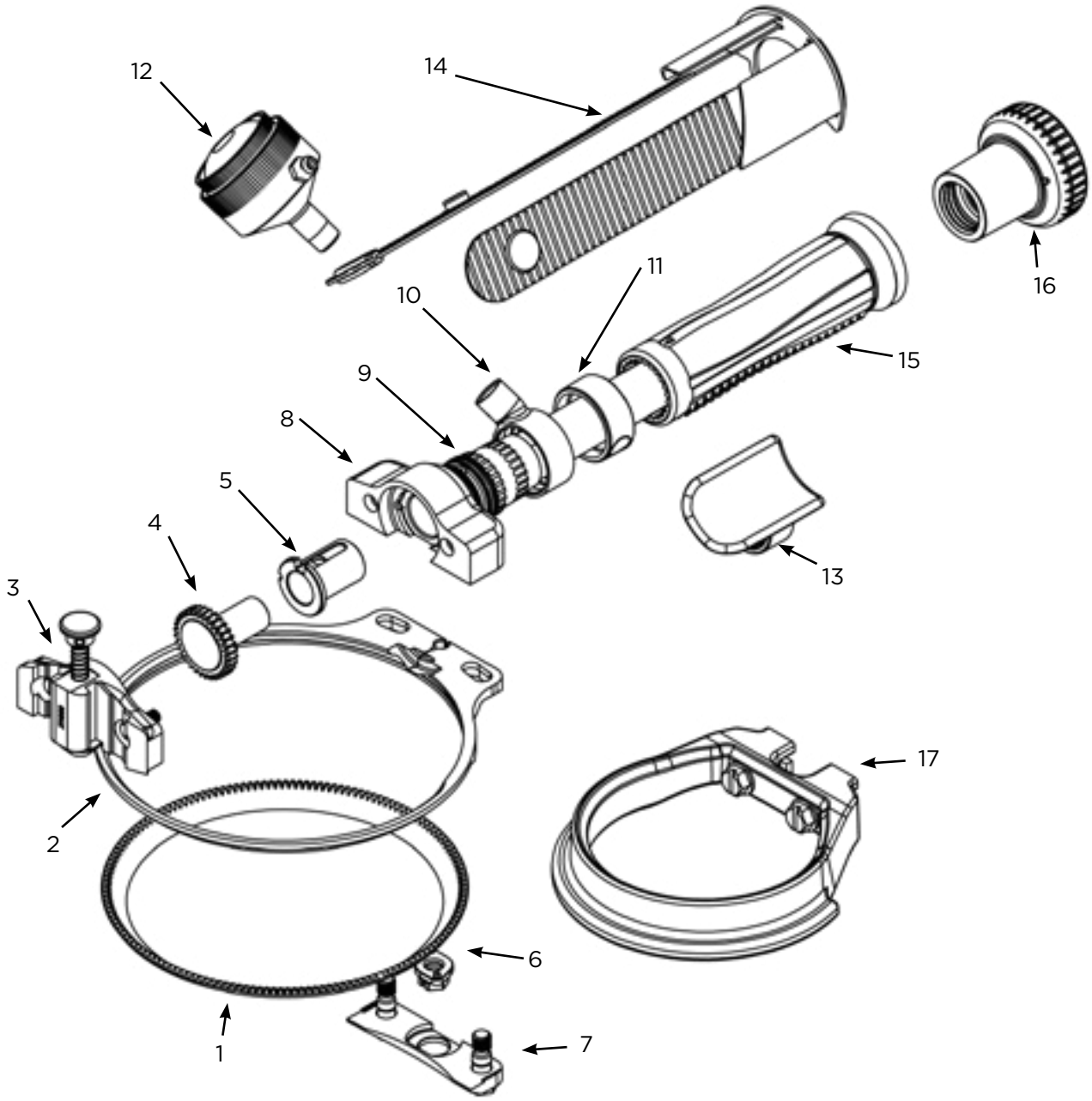


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X1850+ ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X1850+ Handpiece	121979
1	X1850 Blade	105497
2	X750+/X850+ Blade Housing	121620
3	X1850+ Cover	121559
--	Large Tool Cover Retaining Screw (2 required)	121571
4	Large Tool Pinion	105502
5	Large Tool Bearing	105533
6	Large Tool Cam	121341
7	Large Tool Cam Plate Assembly	121596
7a	Large Tool Cam Plate Mounting Screw Kit (Includes 2 Screws)	123474
8	Large Tool Frame Assembly	121574
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Handle Spacer Ring	101030
12	Medium Grease Cup	100998
--	Parts for Medium Grease Cup	--
--	Medium Bulb and Washer	173208*
--	Medium Retainer Ring Only	101577*
--	Medium Base and Fitting	100999*
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Depth Gauge Assembly add to make X1880+	183077*

QUANTUM FLEX+® X1000+ ASSEMBLY

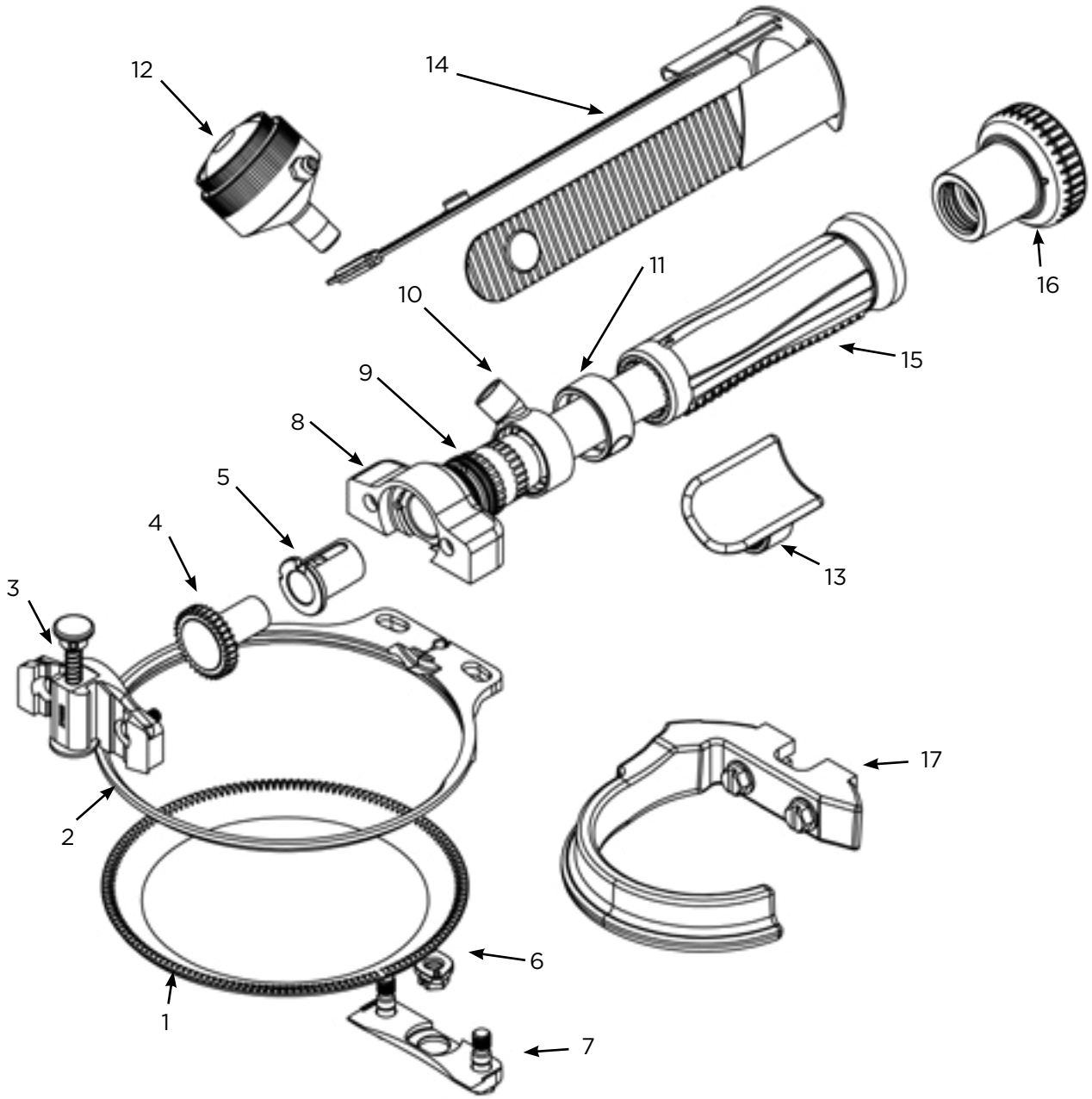


*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X1000+ ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X1000+ Handpiece	121593
1	X1000 Blade	104881
2	X1000+/X1300+ Housing	121593
3	X1000+ Cover with Special Steeling Device	121573
--	X1000 Cover Repair Kit (Not Shown)	183477
--	Large Tool Cover Screw Kit (Includes 2 Screws)	123474
4	Large Tool Pinion	105502
5	Large Tool Bearing	105533
6	Large Tool Cam	121341
7	Large Tool Cam Plate Assembly	121596
7a	Large Tool Cam Plate Mounting Screw Kit (Includes 2 Screws)	123474
8	Large Tool Frame Assembly	121574
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Medium Grease Cup	100998
--	Parts for Medium Grease Cup	--
--	Medium Bulb and Washer	173208*
--	Medium Retainer Ring Only	101577*
--	Medium Base and Fitting	100999*
12	Handle Spacer Ring	101030
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Depth Gauge Assembly add to make X1500+	183160*

QUANTUM FLEX+® X1300+ ASSEMBLY



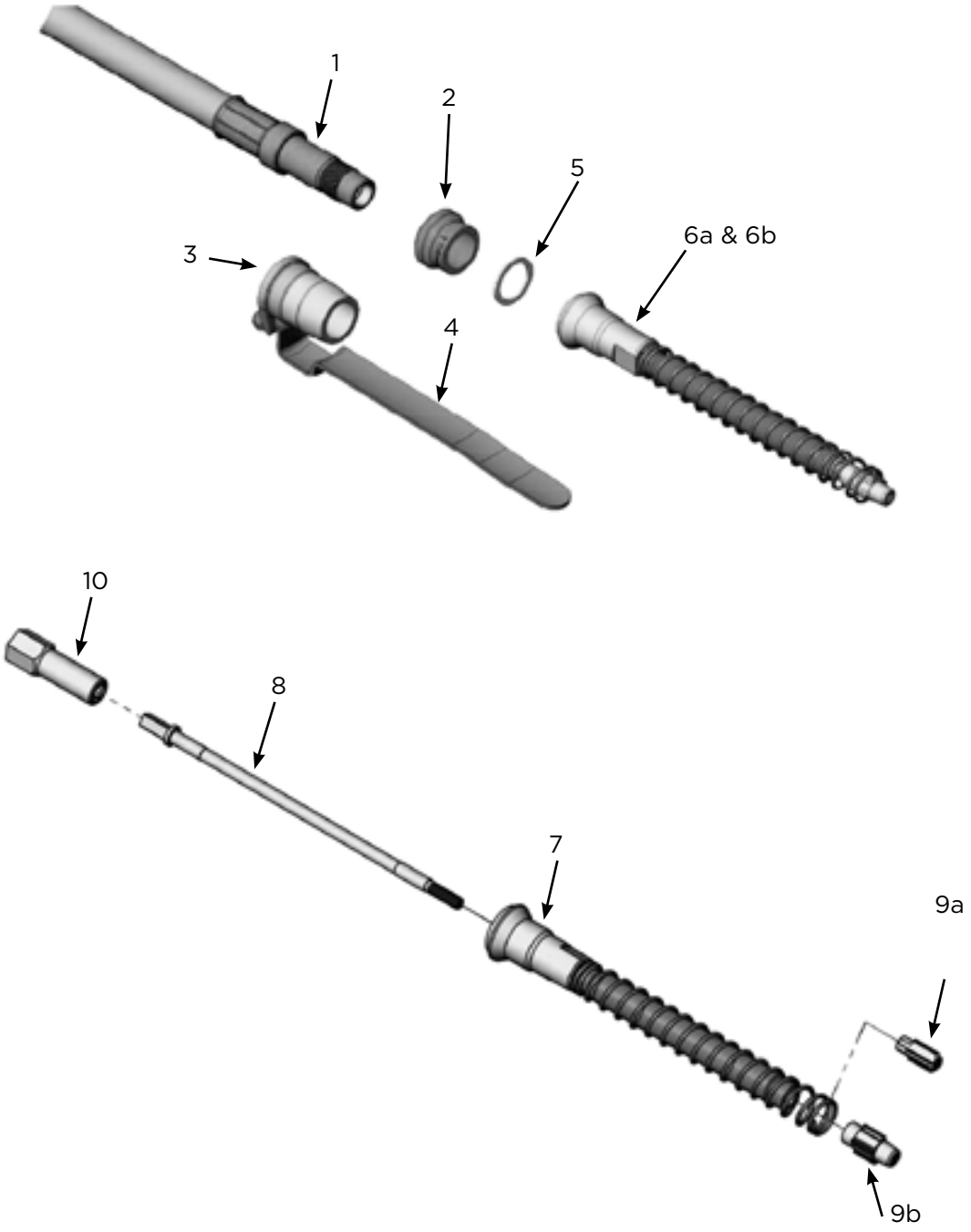
*PARTS NOT INCLUDED WITH HANDPIECE

QUANTUM FLEX+® X1300+ ASSEMBLY (CONTINUED)

Item	Description	PART No.
--	Quantum Flex+ X1300+ Handpiece	121922
1	X1300 Blade	104882
2	X1000+/X1300+ Housing	121593
3	X1300+ Cover with Special Steeling Device	122093
--	X1300 Repair Kit (Not Shown)	183478
--	Large Tool Cover Retaining Screw (2 required)	121571
4	Large Tool Bearing	105533
5	Large Tool Pinion	105502
6	Large Tool Cam	121341
7	Large Tool Cam Plate Assembly	121596
7a	Large Tool Cam Plate Mounting Screw Kit (Includes 2 Screws)	123474
8	Large Tool Frame Assembly	121574
9	Frame o-rings (2 required)	103388
10	Grease Ring	100961
11	Medium Grease Cup	100998
--	Parts for Medium Grease Cup	--
--	Medium Bulb and Washer	173208*
--	Medium Retainer Ring Only	101577*
--	Medium Base and Fitting	100999*
12	Handle Spacer Ring	101030
13	Thumb Support	103251
14	Whizard® Strap Assembly	103060
15	Handle (Small)	106944
--	Handle (Medium)	106947
--	Handle (Large)	106948*
16	Handle Retaining Knob	100649
17	Depth Gauge Assembly add to make X1400+	183159*

WHIZARD QUANTUM® DRIVELINE ASSEMBLY

FOR USE WITH WHIZARD QUANTUM® DRIVE



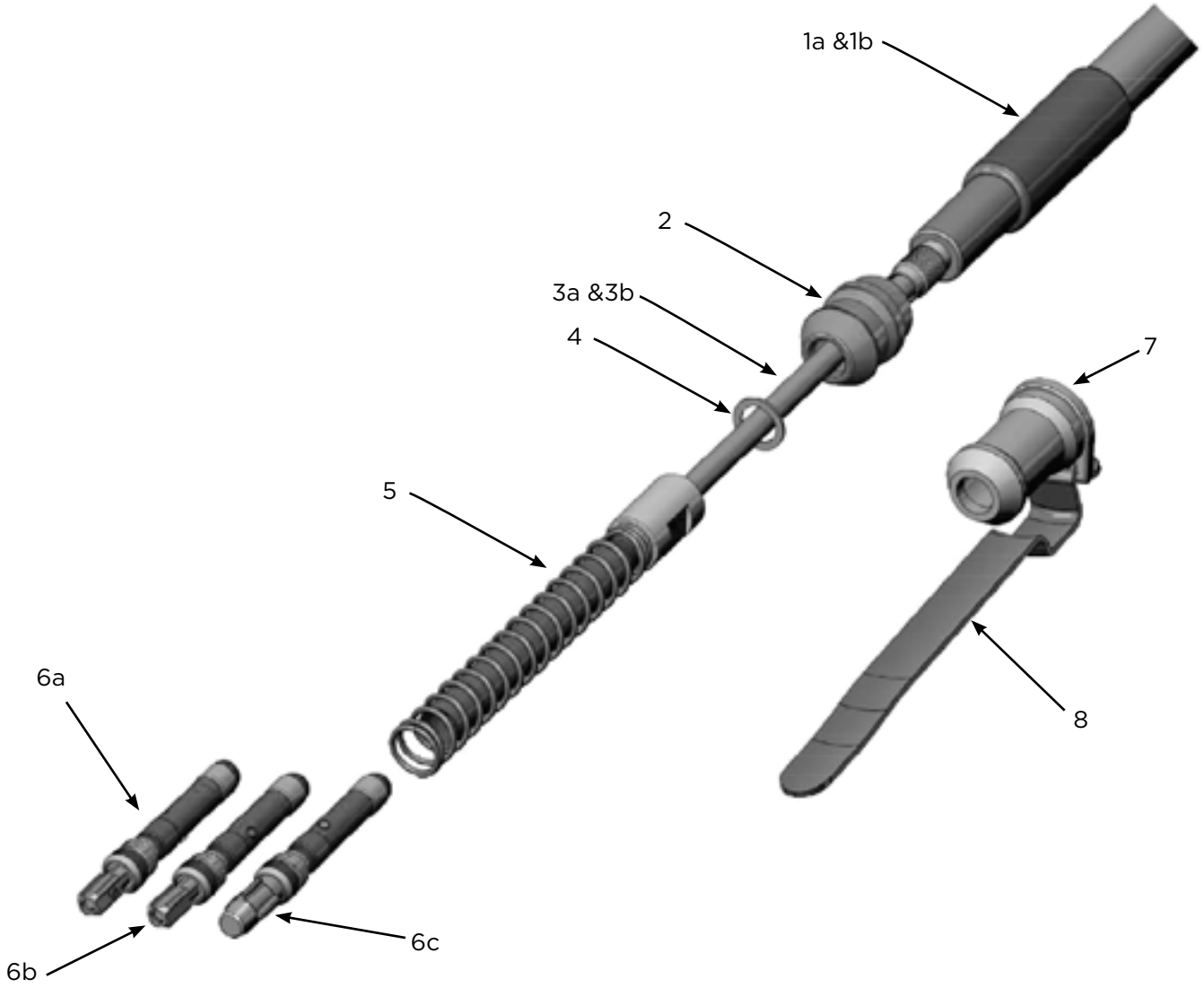
*PARTS NOT INCLUDED WITH HANDPIECE

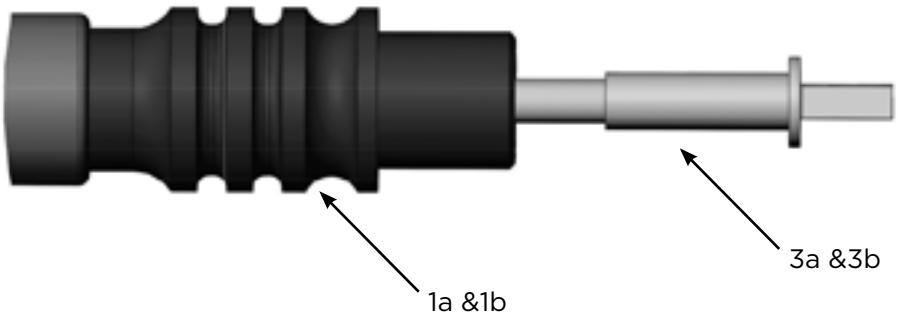
WHIZARD QUANTUM® DRIVELINE ASSEMBLY (CONTINUED)

Item	Description	Without Disconnect			With Disconnect		
		48”	60”	84”	48”	60”	84”
Driveline Assembly Complete Large Diameter (Includes 1,2,5,6a) Small Tools Only		107129	107130	107131	--	--	--
Driveline Assembly Complete Large Diameter (Includes 1,3,4,5,6a) Small Tools Only		--	--	--	107132	107133	107134
Driveline Assembly Complete Small Diameter (Includes 1,2,5,6a) Small Tools Only		107117	107118	--	--	--	--
Driveline Assembly Complete Small Diameter (Includes 1,3,4,5,6a) Small Tools Only		--	--	--	107119	107120	--
Driveline Assembly Complete Large Diameter (Includes 1,2,5,6b) Large Tools Only		101051	101054	102671	--	--	--
Driveline Assembly Complete Large Diameter (Includes 1,3,4,5,6b) Large Tools Only		--	--	--	101055	101056	102672
Driveline Assembly Complete Small Diameter (Includes 1,2,5,6b) Large Tools Only		102755	102756	--	--	--	--
Driveline Assembly Complete Small Diameter (Includes 1,3,4,5,6b) Large Tools Only		--	--	--	102758	102760	--
1	Whizard Quantum® Driveline Large Diameter	100618	100619	102551	100618	100619	102551
1	Whizard Quantum® Driveline Small Diameter	102367	102368	--	102367	102368	--
2	Latch Collar	100711	100711	100711	--	--	--
3	Disconnect Collar	--	--	--	101057	101057	101057
4	Disconnect Lever	--	--	--	183108	183108	183108
5	Plastic Washer	100713	100713	100713	100713	100713	100713
6a	Complete Driver Assembly (Small Tool Only)	100157	100157	100157	100157	100157	100157
6b	Complete Driver Assembly (Large Tool Only)	100709	100709	100709	100709	100709	100709
7	Driver Tube Assembly	101138	101138	101138	101138	101138	101138
8	Driver Shaft	100821	100821	100821	100821	100821	100821
9a	Driver Tip (Small Tool)	104275	104275	104275	104275	104275	104275
9b	Driver Tip (Large Tool)	100305	100305	100305	100305	100305	100305
10	Driver Shaft Tool	101252	101252	101252	101252	101252	101252

WHIZARD® 3/16" FLEXSHAFT AND CASING ASSEMBLY - SMALL TOOLS ONLY

FOR USE WITH UN-84 AND ULTRA DRIVE MOTORS





WHIZARD® 3/16" FLEXSHAFT AND CASING ASSEMBLY - SMALL TOOLS ONLY (CONTINUED)

Item	Description	Without Disconnect			With Disconnect		
		48”	60”	84”	48”	60”	84”
3/16" Casing Assembly Complete (Includes 1a,2,4,5) Small Tools Only		107150	107151	107152	--	--	--
3/16" Casing Assembly Complete (Includes 1a,4,5,7,8) Small Tools Only		--	--	--	107153	107154	107155
1a	3/16" Casing Assembly	183491	183492	183493	183491	183492	183493
2	Casing Latch Collar	105386	105386	105386	--	--	--
3a	3/16" Casing Flexshaft	183661	183662	183832	183661	183662	183832
4	Nylon Washer	123314	123314	123314	123314	123314	123314
--	3/16" Small Tool Driver End Assembly (Includes 5 and 6a)	104338	104338	104338	104338	104338	104338
5	Driver End Sub Assembly	183129	183129	183129	183129	183129	183129
6a	3/16" Small Tool Driver Assembly	105391	105391	105391	105391	105391	105391
7	Lever Mounting Collar	--	--	--	105418	105418	105418
8	Disconnect Lever	--	--	--	183108	183108	183108

Whizard® Series II Flexshaft and casing assemblies are not compatible with Quantum Flex+® Tools. Whizard® Series II Flexshaft and casing assemblies must be converted prior to use with Quantum Flex+® Tools.

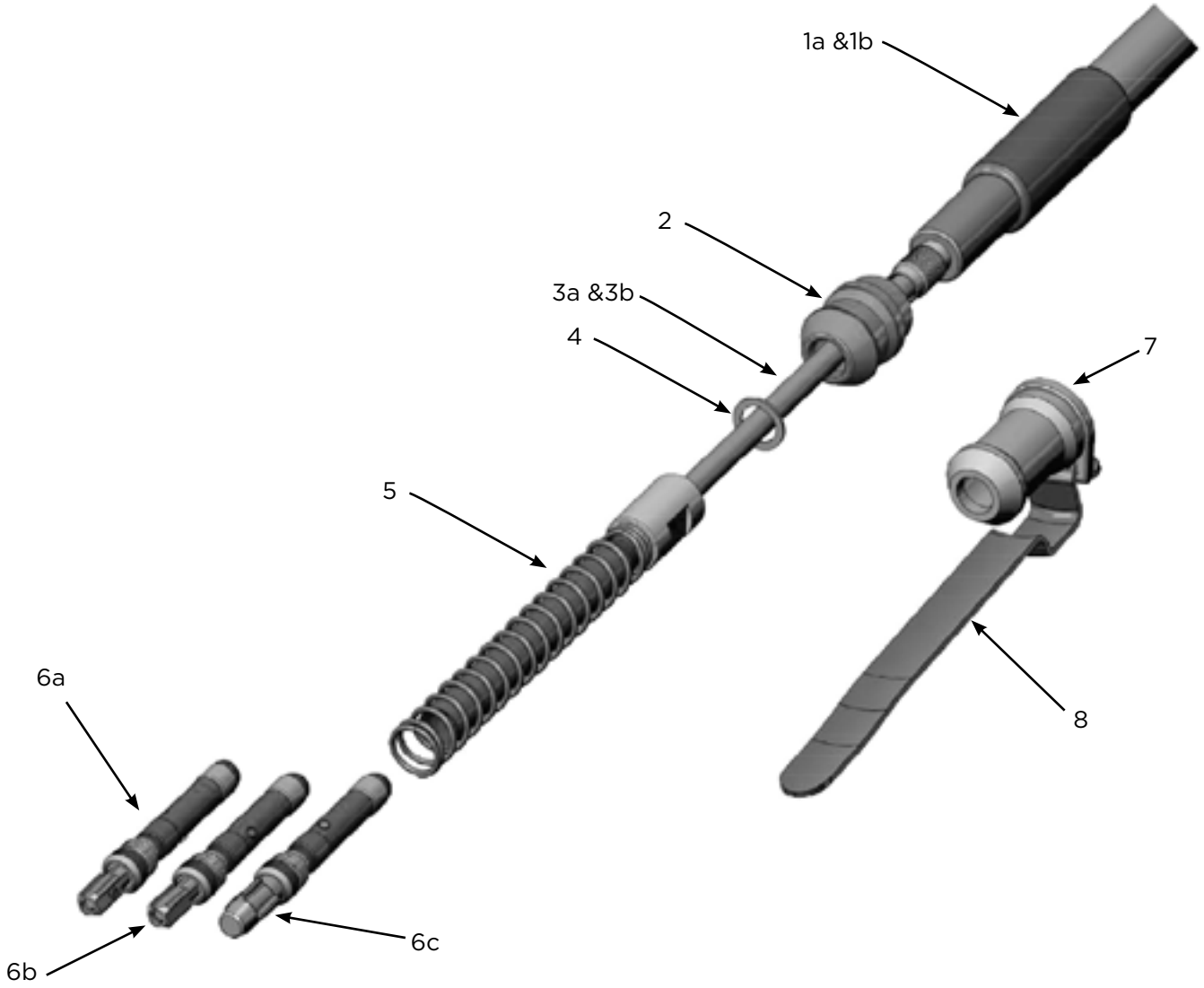
NOTICE

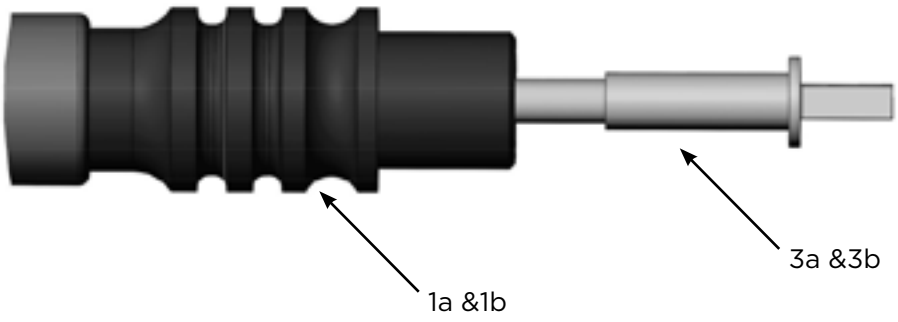
TO CONVERT WHIZARD® SERIES II FLEXSHAFT AND CASING ASSEMBLIES FOR USE WITH QUANTUM FLEX+® TOOLS:

To convert an existing Flexshaft and casing assembly without disconnect that was previously used to drive a Whizard® Series II Tool, simply replace the casing latch collar, part number 183111, with part number 105386. If you have a Flexshaft and casing assembly with disconnect, replace the lever mounting collar, part number 183110 with part number 105418.

WHIZARD® 1/4" FLEXSHAFT AND CASING ASSEMBLY - SMALL TOOLS ONLY

FOR USE WITH UN-84 AND ULTRA DRIVE MOTORS





WHIZARD® 1/4" FLEXSHAFT AND CASING ASSEMBLY - SMALL TOOLS ONLY (CONTINUED)

Item	Description	Without Disconnect				With Disconnect			
		48”	60”	73"	84”	48”	60”	73"	84”
1/4" Casing Assembly Complete (Includes 1b,2,4,5) Small Tools Only		107156	107157	107158	107159	--	--	--	--
1/4" Casing Assembly Complete (Includes 1b,4,5,7,8) Small Tools Only		--	--	--	--	107160	107161	107162	107163
1b	1/4" Casing Assembly	183771	183772	103498	183773	183771	183772	103498	183773
2	Casing Latch Collar	105386	105386	105386	105386	--	--	--	--
3b	1/4" Casing Flexshaft	183837	183838	103504	183839	183837	183838	103504	183839
4	Nylon Washer	123314	123314	123314	123314	123314	123314	123314	123314
--	3/16" Small Tool Driver End Assembly (Includes 5 and 6a)	104338	104338	104338	104338	104338	104338	104338	104338
--	3/16" Small Tool Driver End Assembly (Includes 5 and 6b)	104355	104355	104355	104355	104355	104355	104355	104355
5	Driver End Sub Assembly	183129	183129	183129	183129	183129	183129	183129	183129
6b	1/4" Small Tool Driver Assembly	104355	104355	104355	104355	104355	104355	104355	104355
7	Lever Mounting Collar	--	--	--	--	105418	105418	105418	105418
8	Disconnect Lever	--	--	--	--	183108	183108	183108	183108

Whizard® Series II Flexshaft and casing assemblies are not compatible with Quantum Flex+® Tools. Whizard® Series II Flexshaft and casing assemblies must be converted prior to use with Quantum Flex+® Tools.

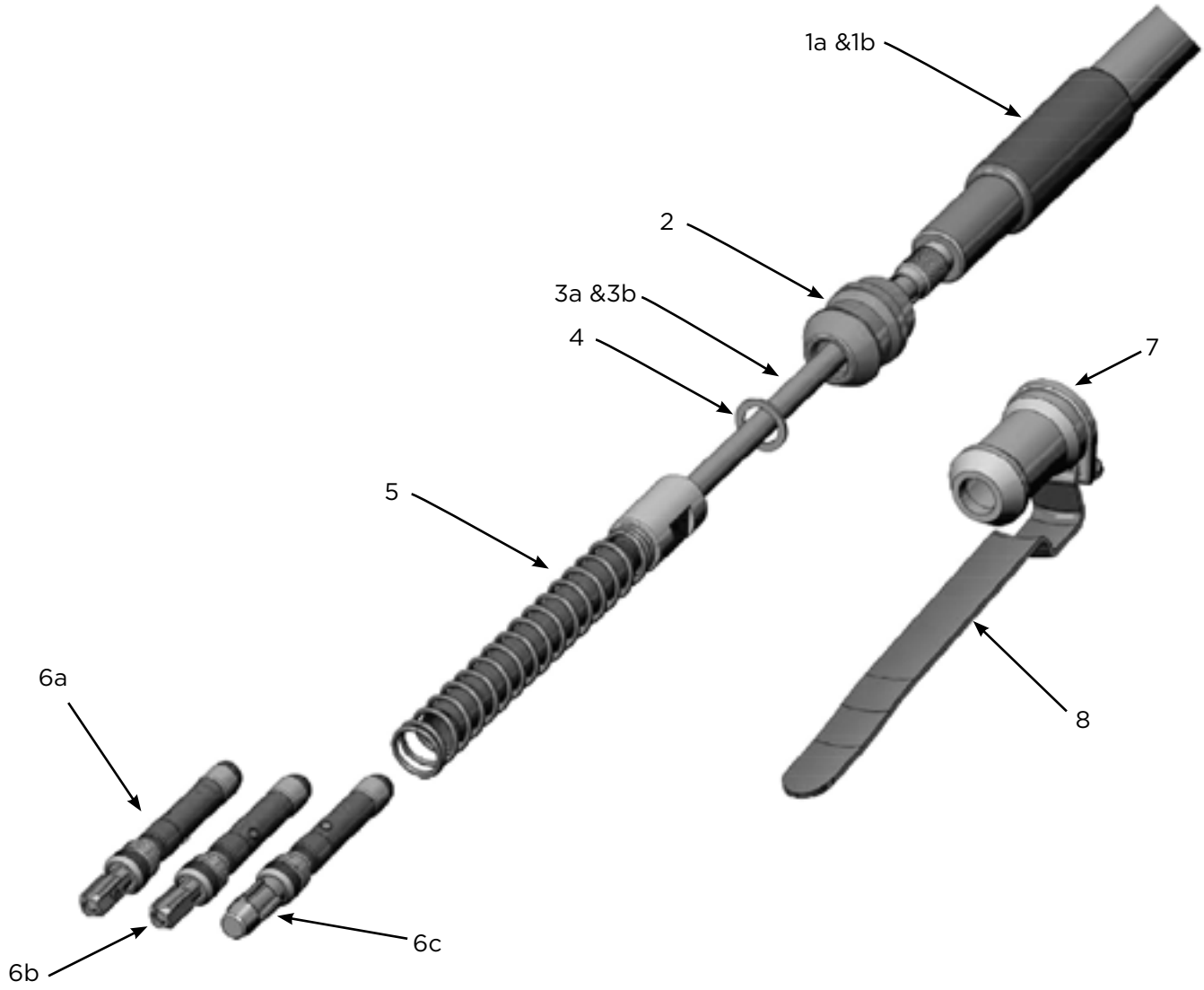
NOTICE

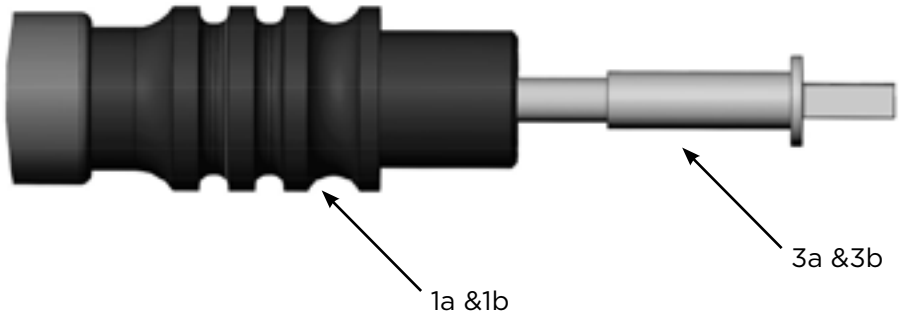
TO CONVERT WHIZARD® SERIES II FLEXSHAFT AND CASING ASSEMBLIES FOR USE WITH QUANTUM FLEX+® TOOLS:

To convert an existing Flexshaft and casing assembly without disconnect that was previously used to drive a Whizard® Series II Tool, simply replace the casing latch collar, part number 183111, with part number 105386. If you have a Flexshaft and casing assembly with disconnect, replace the lever mounting collar, part number 183110 with part number 105418.

WHIZARD® 1/4" FLEXSHAFT AND CASING ASSEMBLY - LARGE TOOLS ONLY (CONTINUED)

FOR USE WITH UN-84 AND ULTRA DRIVE MOTORS





WHIZARD® 1/4" FLEXSHAFT AND CASING ASSEMBLY - LARGE TOOLS ONLY (CONTINUED)

Item	Description	Without Disconnect			With Disconnect		
		48”	60”	84”	48”	60”	84”
1/4" Casing Assembly Complete (Includes 1b,2,4,5) Large Tools Only		106949	106950	106955	--	--	--
1/4" Casing Assembly Complete (Includes 1b,4,5,7,8) Large Tools Only		--	--	--	106961	106962	106977
1b	1/4" Casing Assembly	183771	183772	183773	183771	183772	183773
2	Casing Latch Collar	105386	105386	105386	--	--	--
3b	1/4" Casing Flexshaft	183837	183838	183839	183837	183838	183839
4	Nylon Washer	123314	123314	123314	123314	123314	123314
--	1/4" Large Tool Driver End Assembly (Includes 5 and 6c)	183101	183101	183101	183101	183101	183101
5	Driver End Sub Assembly	183129	183129	183129	183129	183129	183129
6c	1/4" Large Tool Driver Assembly	183101	183101	183101	183101	183101	183101
7	Lever Mounting Collar	--	--	--	105418	105418	105418
8	Disconnect Lever	--	--	--	183108	183108	183108

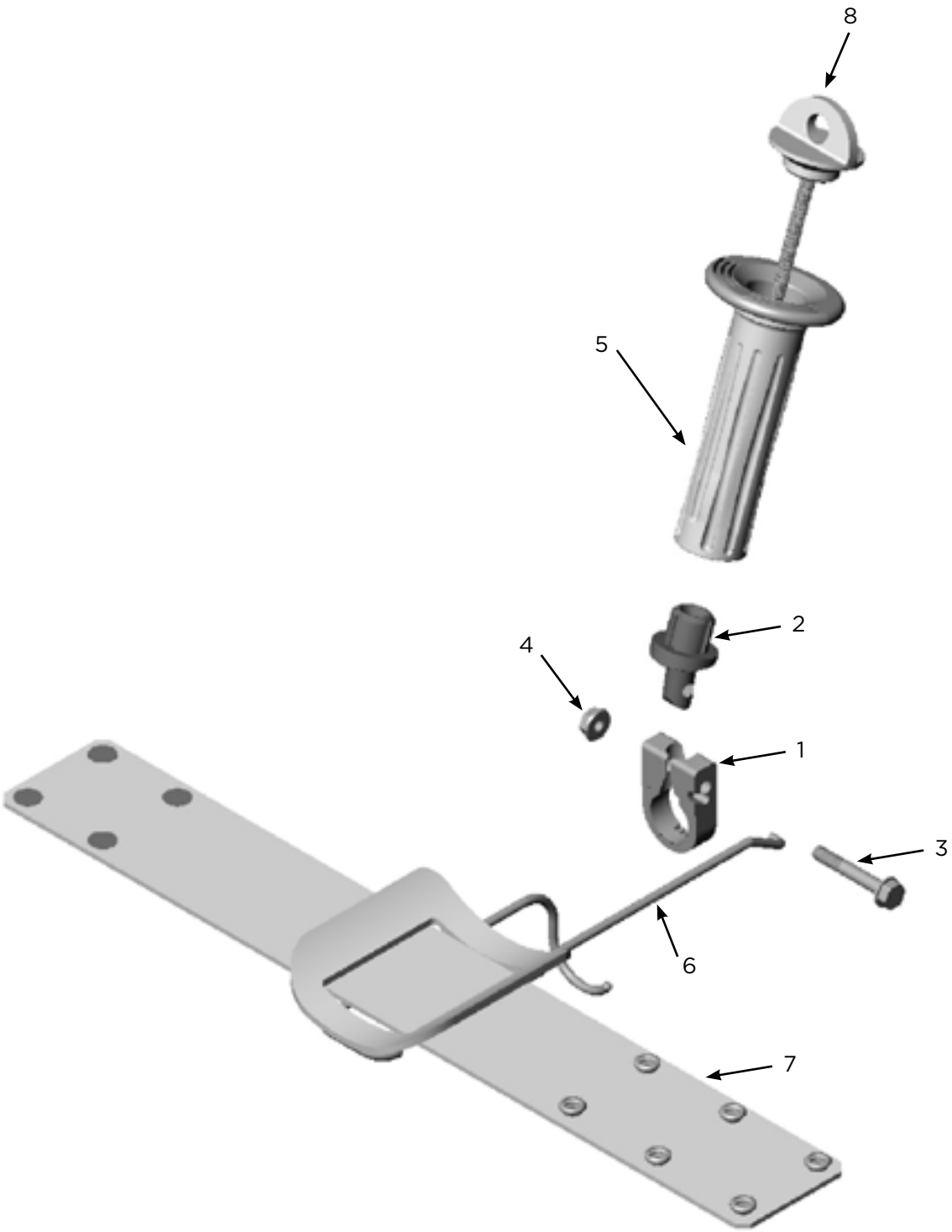
Whizard® Series II Flexshaft and casing assemblies are not compatible with Quantum Flex+® Tools. Whizard® Series II Flexshaft and casing assemblies must be converted prior to use with Quantum Flex+® Tools.

NOTICE

TO CONVERT WHIZARD® SERIES II FLEXSHAFT AND CASING ASSEMBLIES FOR USE WITH QUANTUM FLEX+® TOOLS:

To convert an existing Flexshaft and casing assembly without disconnect that was previously used to drive a Whizard® Series II Tool, simply replace the casing latch collar, part number 183111, with part number 105386. If you have a Flexshaft and casing assembly with disconnect, replace the lever mounting collar, part number 183110 with part number 105418.

OPTIONAL POST HANDLE



OPTIONAL POST HANDLE (CONTINUED)

Item	Description	PART No.	QTY
--	Post Handle Kit (Includes items 1-8)	107280	--
1	Clamp Ring	101131	1
2	Post	183622	1
3	Hex Washer Head Bolt	183623	1
4	Hex Flange Nut	183633	1
5	Post Handle (Small)	183042	1
6	Arm Rest Assembly	183624	1
7	Arm Rest Strap Assembly	183630	1
8	Knob Assembly	183626	1

ALSO AVAILABLE

CLEANING SOLUTION

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

CLEANING EQUIPMENT

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

LUBRICATION AND LUBRICATION EQUIPMENT

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

ALSO AVAILABLE (CONTINUED)

OPTIONAL BLADES AND LOW PROFILE FINGER GUARD

Description	PART No.
X1000 / X1500 Serrated Blade	105541
X1300 / X1400 Serrated Blade	105542
X1850 Serrated Blade	107053
X350 Serrated Blade	107521
X620 Serrated Blade	107645
X500 Serrated Blade	107649
X750 Serrated Blade	107650
X350LP Low Profile Blade	105098
X500LP Low Profile Blade	105547
X620LP Low Profile Blade	104812
X750LP Low Profile Blade	107651
Low Profile Finger Guard	108509

COVERS AND DEPTH GAUGES

Description	PART No.
Depth Gauge X505	107242
Depth Gauge X625	107178
Depth Gauge Setting Device Kit X880 S & B	173347
Depth Gauge Setting Device Kit X1400 and X1500	173348
Depth Gauge Kit X850-S (Skinner)	183801
Poultry Cover X350 / X360/ X440 / X500 / X564 / X620	107166
Poultry Cover Assembly X505 / X625	107183

ALSO AVAILABLE (CONTINUED)

BLADE SHARPENING AND STEELING EQUIPMENT

Description	PART No.
Special Stone (Small)	100655
Special Stone (Large)	100660
Whizard® Special Steel (Small Tools)	100641
Whizard® Special Steel (Large Tools)	100642
X350 Whizard® EdgeMaster™	107237
X360 Whizard® EdgeMaster™	163074
X440 Whizard® EdgeMaster™	107238
X500 Whizard® EdgeMaster™	163077
X505 Whizard® EdgeMaster™	163072
X620 Whizard® EdgeMaster™	163079
X625 Whizard® EdgeMaster™	163073
X750 Whizard® EdgeMaster™	102976
X850 / X880 Whizard® EdgeMaster™	163071
X1850 / X1880 Whizard® EdgeMaster™	185682
X1000 / X1500 Whizard® EdgeMaster™	163069
X1300 / X1400 Whizard® EdgeMaster™	163070
Positioner Reel for EdgeMaster™	122740
X350 Bettcher® EZ Edge	107254
X360 Bettcher® EZ Edge	183928
X440 Bettcher® EZ Edge	107255
X500 Bettcher® EZ Edge	183907
X505 Bettcher® EZ Edge	183927
X620 Bettcher® EZ Edge	183892
X625 Bettcher® EZ Edge	183926

ALSO AVAILABLE (CONTINUED)

BLADE SHARPENING AND STEELING EQUIPMENT (CONTINUED)

Description	PART No.
X750 Bettcher® EZ Edge	102988
X850 / X880 Bettcher® EZ Edge	183925
X1850 / X1880 Bettcher® EZ Edge	185683
X1000 / X1500 Bettcher® EZ Edge	173322
X1300 / X1400 Bettcher® EZ Edge	173298

ERGO STEEL™

Description	PART No.
Ergo Steel™	110008
Ergo Steel™ pack of 10	110039
Ergo Steel™ Parts	--
Alignment Rod	109414
Ergo Steel™ Left Hub	110009
Ergo steel™ Right Hub	11010
Spring	109422
Arm Set Screw	109417
Hub Screw	109416
Anti-Rotation Screw	110013
Nut	123607

TOOLS

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

ALSO AVAILABLE (CONTINUED)

DISC GAUGES

Description	PART No.
Disc gauge Kit X850+S (Skinner)	183801
Disc gauge Kit X1850+K	184479
Disc gauge Kit X1000+S (Skinner)	183792
Disc gauge Kit X1000+F (Fat)	183793
Disc gauge Kit X1000+N (Special)	184365
Disc gauge Kit X1300+S (Skinner)	183794
Disc gauge Kit X1300+F (Fat)	183795
Disc gauge Kit X1300+K (Kebab)	184993
Parts For Disc Gauges	--
X850+S Disc Assembly	183799
X1850+K Disc Assembly	184481
X1000+S Disc Assembly	183787
X1000+F Disc Assembly	183788
X1000+N Disc Assembly	184367
X1300+S Disc Assembly	183789
X1300+F Disc Assembly	183790
X1300+K Disc Assembly	184994
Disc Gauge Knob	183791*
Disc Gauge Frame Assembly For X850+ & X1850+	183798*
Disc Gauge Frame Assembly For X1000+ & X1300+	183784
Disc Gauge Spring	121635*

*PARTS NOT INCLUDED WITH HANDPIECE

SECTION 8

Contact and Document Information

Contact address and phone **124**
Document identification **125**

CONTACT ADDRESS AND PHONE

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DOCUMENT IDENTIFICATION

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

Document ID:	Manual #124334
Document Description:	Operating Instructions and Spare Parts List for the Quantum Flex+® Trimmer
Issued:	Date: June 1, 2024

Operating Instructions for Quantum Flex+® Trimmers may be requested by quoting the model designation of the tool.

SOFTWARE AND DUPLICATION

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BETTCHER®

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