Preparation for Repair

1) Remove tip from scaler
2) Remove scaler from air supply
3) Remove gasket from back end of scaler. Examine gasket for obvious wear or disfigurement. Replace if necessary.

Remove Water Line and Water Line Assembly Gasket

Some models attach the exhaust plug to the water line assembly while others secure the exhaust plug to the air connector assembly. For either model remove the water line assembly {SST007} by pulling it directly out of the scaler. In some cases the exhaust plug {SST018} must be pulled out using a small pair of pliers [THR091]. Doing this may damage the exhaust plug, which would then require replacement.

Remove water line assembly gasket and discard.

NOTE: Remove water line assembly before proceeding with the repair to avoid damage to the water line assembly.

Water line Inspection: Examine the water line assembly for crimps or bends. Verify the weld is in good condition and there is no blockage. If blockage occurs, the water line assembly may be cleared by using a small wire [THR068]. If any other damage has occurred, replacement is recommended.
**STEP 3**

**Remove Nose**

It should only be necessary to use hand strength to remove the nose. Grip the main housing {SST009} with one hand and the nose {SST026} with the other hand. Turn the nose counter clockwise to remove.

If the nose cannot be removed by hand, place a strip of emery cloth and leather [TSX007] over the nose and grip with 6” pliers [THR062]. Place a second strip of emery cloth and leather at the forward end of the main housing {SST009} just below the nose and grip with a second pair of pliers. Unscrew the nose in a counter clockwise direction. Once the nose has been loosened, you can unscrew the nose and remove by hand.

Remove the two large o-rings from the front of the scaler spindle.

**NOTE:** The large o-rings are a mandatory replacement part.

**Nose Inspection:** Inspect for obvious damage and corrosion, including damage to the internal threads. If any of these conditions exists, replace the nose.
**STEP 4**

**Remove Main Housing**

It should only be necessary to use hand strength to remove the main housing [SST009]. Grip the steel connector [SST013] with one hand and the main housing with the other hand. Turn the main housing counter clockwise to remove.

If the main housing cannot be removed by hand, place a strip of emery cloth and leather [TSX007] at the forward end of the main housing and grip with 6” pliers [THR062]. Place a second strip of emery cloth and leather on the steel connector [SST013] just over the exhaust ports and grip with a second pair of pliers. Unscrew the main housing in a counter clockwise direction. Once the main housing has been loosened, you can unscrew the main housing and remove by hand.

**Main Housing Inspection:** Inspect for obvious damage or corrosion. If either condition exists, replace the main housing.

**STEP 5**

**Remove Quad Rings and Rotor**

Remove the quad rings and rotor, then discard.

**NOTE:** There are two main variations of the rotor area on the spindle. One variation requires 4 quad rings and the other requires 2 quad rings. Remember which variation you are repairing for reassembly.

**NOTE:** Quad rings and rotor are mandatory replacement parts.
### Remove Steel Connector

Some models attach the steel connector (SST013) to the air connector assembly (SST012) with a retaining pin while others secure the steel connector to the air connector assembly with a set screw.

In either case, the baffling material (SST003) must first be removed. Use a dental pick (THR066) or X-acto knife (THR060) to elevate the baffling out from around the aluminum spindle stop and remove.

#### Retaining Pin Models

If the model you are repairing uses a retaining pin, use a punch (THR094) to knock the retaining pin into the air connector assembly. Then slide the steel connector off of the air connector assembly.

**NOTE:** Use caution. Only punch until the pin is free and resting in the hole of the air connector assembly. Continuing to punch will cause damage to the air connector assembly.

#### Set Screw Models

If the model you are repairing utilizes the set screw design, use an allen wrench (THR067) to remove the set screw. Then slide the steel connector off of the air connector assembly.

**NOTE:** Most repair shops replace the retaining pin with the set screw design during refurbishing.

#### Steel Connector Inspection

Inspect for obvious damage and corrosion. Inspect threads for excessive wear and check weld joint for proper adhesion. If any of these conditions occur, replacement is recommended.

#### Set Screw or Retaining Pin Inspection

Inspect threads and drive socket for set screw for excessive wear or stripping and obvious damage or corrosion. Inspect retaining pin for obvious damage or corrosion. If these conditions occur, replacement is recommended.
**Remove Aluminum Spindle Block**

Some models attach the aluminum spindle block [SST020] to the air connector assembly with a retaining pin while others secure the spindle block to the air connector assembly with a set screw.

If the model you are repairing utilizes the set screw design, use an allen wrench [THR067] to remove the set screw. If a retaining pin is utilized, use a small pair of wire cutters [THR065] to remove retaining pin.

After extracting the retaining pin or set screw, remove the aluminum spindle block.

**NOTE:** The aluminum spindle block will sometimes be bonded to the air connector assembly with an adhesive. Place a piece of emery cloth and leather on the air connector assembly and grip with 6” pliers. Grip the aluminum spindle block with a small pair of pliers [THR091] opened to the largest setting, protecting the block using a piece of emery cloth and leather. Twist clockwise and counter clockwise (back and fourth) until the bond is broken, then remove.

**Aluminum Spindle Block Inspection:** Inspect for obvious damage and corrosion. Inspect that the spindle block stop pin is in place and not broken. If any of these conditions occur, replacement is recommended.
**STEP 8**

Remove Main Spindle from Air Connector Assembly

Locate crimp rings (SST019) and cut them using a small pair of wire cutters (THR065). Remove the crimp rings and suspension grommet (SST002) from the main spindle and the air connector assembly. Discard the suspension grommet and crimp rings. NOTE: These are mandatory replacement parts.

**Main Spindle Inspection:** Inspect for obvious damage at the tip and the internal threads. Inspect rotor location for excessive wear, scratches, or exposed brass. Check for any blockage in the ten (10) air ports. If blockage occurs, it can usually be cleared by using a small wire (THR068). If the blockage cannot be removed, the spindle must be replaced. If any other conditions occur, the spindle must be replaced.

**Air Connector Inspection:** Inspect for obvious damage and corrosion. Look closely at knurled barb for signs of excessive damage. Check that the intake tube is in place and secure, replace if necessary. If the model you are repairing has the exhaust plug secured to the air connector assembly, check that it is not damaged and is secure. Replace if necessary.

**STEP 9**

Remove Water Line Brace

Insert the water line brace removal tool (TSX005) into the back of the main spindle. While applying downward pressure, twist the tool clockwise, then remove. Remove the outer o-rings (SST180) of the water line brace and discard. The o-rings are mandatory replacement parts.

**Water Line Brace Inspection:** Inspect the inner o-rings ability to seal. Insert the water line assembly through the water line brace assembly. There should be a slight resistance between the inner o-rings and the water line assembly. If no resistance is present, discard the water line brace and replace with a new one. If resistance is present, proceed with the replacement of the outer o-rings.
**STEP 10**

**Install Water Line Brace**

Lubricate the outer o-rings with oil [TPX002] or grease [TPX010] to aid in the installation of the water line brace {SST006}.

Place the water line brace into the back of the main spindle (end with the stop ring). Use the water line installation tool [TSX006] to insert the water line brace down into the main spindle until it comes to a firm stop.

**STEP 11**

**Attach Main Spindle to the Air Connector Assembly**

Insert the air connector assembly’s knurled barb into the suspension grommet {SST019}. Install a crimp ring over the suspension grommet (end not attached to the barb) and pull into place.

**TECH TIP:** While pulling the crimp ring into place, gently pull on the suspension grommet to stretch it a little. This reduces the diameter allowing for easier installation of the crimp ring.

Use the crimp ring tool [THR040] to crimp the ring into place.

Install, but do not crimp at this time, the second crimp ring onto the suspension grommet. Then insert the knurled end of the main spindle {SST107} into the open end of the suspension grommet.

Align the main spindle stop ring (flange) with the indexing hole on the air connector assembly. Then set the main spindle length as directed on the next page.
STEP 11  

**Attach Main Spindle to the Air Connector Assembly, continued**

Setting the main spindle length: Assemble the nose (SST026) onto the main housing (SST009), then screw the main housing onto the steel connector (SST013). Verify that the nose is tightened flush to the main housing and that the main housing is tightened flush with the steel connector. Use this nose, main housing, steel connector assembly as a measuring tool, slide the housing assembly completely down onto the main spindle (SST107) / air connector assembly. The main spindle should be .030” - .040” below the face of the nose. Adjust the main spindle depth within the suspension grommet until you achieve the proper main spindle length.

Once you have achieved the proper main spindle length, crimp the second crimp ring in place with the crimp ring tool [THR040]. Doing this will expand the suspension grommet resulting in an increased length of the main spindle.

Reinstall the nose/housing/connector assembly onto the spindle/air connector assembly. The front of the main spindle should now be flush with the face of the nose. If so, remove nose/housing/connector assembly.

**NOTE:** Ensure that the end of the spindle is flush with the face of the nose, or protruding out from the nose no more than .020”. If the spindle is recessed or protruding out from the nose more than .020” it will result in operating failure. Remove the nose and main housing.
**STEP 12**

### Install Aluminum Spindle Block

Slide the aluminum spindle block \{SST020\} over the air connector assembly \{SST012\}. If the aluminum spindle block does not completely rest flush against the air connector assembly, you will need to use an arbor press \{THR003\} and press block \{THR009\} to finish the assembly.

**Using the press and press block:** Holding the assembly, air connector assembly side up, slide the spindle down into a press block hole that is smaller than the diameter of the aluminum spindle block. With the press extended over the edge of your work bench, place the press block with the assembly under the ram of the arbor press. Lower the ram down over the air connector assembly. Using moderate force, seat the aluminum spindle block flush with the air connector assembly.

Verify that the indexing hole on the aluminum spindle block is aligned with the indexing hole on the air connector assembly.

**TECH TIP:** If the indexing holes are not aligned, an adjustment can be made without removing the aluminum spindle block from the air connector assembly. Place a piece of emery cloth and leather \{TSX007\} on the air connector and grip with 6” pliers \{THR062\}. Grip the aluminum spindle block with a small pair of pliers \{THR091\} opened to the largest setting, protecting the block with emery cloth and leather. Rotate the aluminum spindle block until the indexing holes are aligned.

Verify that the stop ring (flange) of the main spindle is resting in the middle of the aluminum spindle block’s window. The stop ring (flange) cannot make contact with the aluminum spindle block or the block’s retaining pin.

### Secure the aluminum spindle block

Depending on the model you are repairing, the aluminum spindle block is secured one of three ways.

1) **Set screw:** Use an allen wrench and tighten in place firmly
2) **Retaining pin:** Grip the retaining pin with a small pair of pliers to start the pin setting, then use a punch and soft tip hammer to completely set the pin.
3) **Adhesive:** It is recommended that you replace the aluminum spindle block and air connector assembly with the set screw style.
Install Steel Connector and Baffle

Some models attach the steel connector [SST013] to the air connector assembly [SST012] with a retaining pin while others secure the steel connector with a set screw.

In either case, first slide the steel connector over the main spindle and onto the air connector assembly. Align the indexing hole on the steel connector with the indexing hole on the air connector assembly.

**Retaining Pin Model**

If the model your are repairing uses a retaining pin, grip the retaining pin with a small pair of pliers [THR091] to start the pin setting. Then use a punch [THR094] and soft tip hammer [THR061] to set the retaining pin flush with the steel connector.

**Set Screw Model**

If the model you are repairing utilizes the set screw design, use an allen wrench [THR067] to secure the set screw.

**NOTE:** In either case the pin or set screw must be flush or slightly recessed with the steel connector.

Wrap baffle material [SST003] around the aluminum spindle block ans use an X-acto knife [THR060] or dental pick [THR066] to feed the baffle material down into the gap between the aluminum spindle block and the steel connector.
Install Rotor and Quad Rings

As noted in step #5, there are two (2) main variations of the rotor are of the main spindle. One variation requires four (4) quad rings and the other requires only two (2) quad rings.

NOTE: The quad rings {SST019} are used to keep the rotor {085-000} in place.

2 Quad Ring Design

If the model you are repairing requires two quad rings, install the first quad ring by sliding it onto the main spindle and positioning it in the proper groove. Then slide the rotor onto the main spindle and over the air ports. Lastly, slide the second quad ring onto the main spindle and position it in the proper groove.

4 Quad Ring Design

If you model you are repairing requires 4 quad rings, install the first 2 quad rings by sliding them onto the main spindle and positioning them in their proper grooves. Then slide the rotor onto the main spindle and over the air ports. Lastly, slide the second 2 quad rings onto the main spindle and position them in their proper grooves.
**STEP 15**

**Install Main Housing**

**TECH TIP:** Apply a small amount of grease [TPX010] to the threads of the main housing {SST009} to reduce the friction and ease installation.

Slide the main housing over the main spindle assembly. Then screw the main housing, in a clockwise direction, into the steel connector until tight.

**NOTE:** It is not necessary to use pliers to tighten the main housing. Only use hand pressure to secure the main housing.

**STEP 16**

**Install O-Rings to Front of Spindle**

**TECH TIP:** Lubricate the o-rings with a drop of oil [TPX002] to ease installation.

Slide the o-rings over the exposed end of the main spindle. Press the o-rings completely up to the main housing.
### Install Nose

**TECH TIP:** Apply a small amount of grease [TPX010] to the threads of the main housing {SST009} to reduce the friction and ease installation.

Slide the nose over the exposed main spindle. Then screw the nose, in a clockwise direction, onto the main housing until tight.

**NOTE:** It is not necessary to use pliers to tighten the nose. Only use hand pressure.

### Install Water Line Assembly

Install the water line assembly gasket {SST004} onto the water line assembly {SST007}. Slide the water line assembly through the smallest hole of the gasket. Verify that the water line assembly gasket holes are aligned with the holes of the water line assembly.

Gently insert the water line assembly into the back end of the scaler. Slide the water line assembly up through the main spindle until it makes contact with the water line brace. Press the water line assembly through the water line brace, there should be a small amount of resistance as the water line assembly slides through the inner o-rings of the water line brace.

The water line assembly is completely installed when there are no visible gaps between the water line assembly flange and the air connector assembly.

### Final Installation

1) Install gasket to the rear of the scaler
2) Install Tip
3) Check function of repair
## Tooling List

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<th>Description</th>
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<tr>
<td>2 Sets Required</td>
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<td>Small Pliers</td>
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<td>Small Wire Cutters</td>
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<td>Crimp Ring Tool</td>
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<tr>
<td>Press Block</td>
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<td>Scaler Tip Wrench</td>
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<tr>
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Handpiece Parts & Products  Scaler Repair Manual (Standard)

Tooling List

Minipure Grease  TPX010
Emery Cloth & Leather  TSX007
# Handpiece Parts & Products

## Parts Listing

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<td>Suspension Grommet</td>
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<td>Outer O Ring</td>
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<td>Water Line Assembly</td>
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<td>Water Line Assembly</td>
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<td>Retaining Clip</td>
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<tr>
<td>Air Connector Assembly</td>
<td>SST012</td>
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*Swivel Model*
**Parts Listing**

Steel Connector SST013  
Universal Tip SST014  
Perio Tip SST015

Tip Wrench SST016  
Front O Ring (Large) SST181  
Rotor Kit SST190

Air Tube SST017  
Exhaust Plug SST018  
Crimp Ring SST019

Spindle Block w/ Pin SST020  
Set Screw SST024  
Set Screw SST025
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<td>Rotor 085-000</td>
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