**Handpiece Parts & Products**

**Star Twist Type Nose Cone**

### STEP 1: Preparation for Repair

Remove Nose Cone from the Motor by pulling up on the Nose Cone Release Ring at the base of the Nose Cone and pulling the Nose Cone directly away from the Motor.

Remove the Bur and replace with a Slowspeed Shipping Pin [THR054]. To unlock the bur, grasp forward portion of the Nose Cone with one hand and rear portion of the Nose Cone with the other hand and twist counter clockwise.

### STEP 2: Removing the Collet Releasing Ring

Remove the Collet Releasing Ring Lock by placing a Small Screwdriver [THR097] between the opening of the Releasing Ring Lock and the Alignment Pin. Using a Small ScrewDriver, twist to expand the Releasing Ring Lock and slide forward, then remove from the Nose Cone by pulling directly off.

**Inspection of the Releasing Ring Lock**: Check for distortion or cracks.

Remove the Collet Releasing Ring. Align the slot in the Collet Releasing Ring with the Pin that aligns the Collet Releasing Ring Lock, then remove the Collet Releasing Ring by pulling directly away from the Nose Cone. Realign one of the slots on the Ring with the Alignment Pin on the Nose and continue pulling directly off of the Nose Cone to complete the removal of the Ring.

**NOTE**: Two Collet Release Balls will fall out. Disassembly is recommended to be done over a tray. The balls are .093 in diameter.

**Inspection**: Check the Releasing Ring Lock, Releasing Ring and the Collet Release Balls for obvious damage or corrosion. Replace if needed.
**STEP 3**

**Disassembling the Nose Cone Release Ring**

Invert the Nose Cone and push the Release Ring down, exposing the Retaining Clip.

Remove the Retaining Clip by placing a Small ScrewDriver [THR097] in the slot. Twist the screwdriver and gently pull up to remove. **NOTE:** Use caution, clip may spring away from the assembly and be lost.

Remove the Retaining Balls. Continue to press down on the Nose Cone Release Ring and remove the balls with a Dental Pick [THR066] or Magnet (rotating the Nose Cone while holding the Nose Cone Release Ring back may allow all four balls to fall out).

The Nose Cone Release Ring can now be removed by pulling directly away from the Nose Cone. Then remove the Spring by pulling it directly away from the Nose Cone.

**Inspection:** Check the Nose Cone Release Ring, Retaining Balls and Retaining Clip for obvious damage. Replace if needed.
**STEP 4 Removing the Main Spindle Assembly from the Housing**

Place a strip of Leather & Emery Cloth [TSX007] around the front of knurled area on the Housing and grip lightly with 6” Pliers.

Insert the Nose Cone Wrench [THR086] in the rear of the Nose Cone and place a 4” Adjustable Wrench [THR080] on it and twist counter clockwise to loosen. Use hand pressure to unscrew completely and remove.

Press directly on the Slowspeed Shipping Pin to dislodge the Spindle Assembly. Then remove by pulling directly away from the Nose Cone.
Removing Front Nose Cone Bearing & Detent Spring

Place a strip of Leather & Emery Cloth [TSX007] around the knurled area and grip lightly with 6” Pliers [THR062]. Place a 2nd strip of Leather & Emery Cloth around the Nose and grip with 6” Pliers (Do not place grip of pliers on top of Alignment Pin). Unscrew the Nose in a counter clockwise direction to loosen. Complete removal of the Nose by unscrewing by hand.

**WARNING:** Use extreme caution when gripping the Nose Cone. The Nose is thin walled and excessive grip force may disfigure or crush the Nose Cone Body.

**NOTE:** When the Nose is removed the Spring may thrust the Bearing out of the assembly, use caution.

Using a Dental Pick [THR066], elevate Bearing {LST023} and remove. Then elevate the Thrust Washer and remove. Lastly, remove the Tension Springs.

Turn the Housing over and insert the handle of a Dental Pick to remove the Collet opener by pressing directly out. The Bearing is a mandatory replacement part.

**Inspect Housing:** Check Collet Window for excessive wear. Check all parts for obvious damage.
**STEP 6**

**Disassembling the Main Spindle Assembly**

Remove the Shipping Bur.

Hold the Rear Collet Bearing with your fingers and pull the Collet Sheath directly away from the Assembly using your other hand.

Slide the Collet Spring off the Collet Assembly.

Remove the Bearing Spacer.

Set the Main Collet Shaft in the Disassembly Block [THR009] suspending the Gear in the Block - use a large enough hole to ensure that the spacer passes through during disassembly. Use the Arbor Press [THR003] to push the Bearing off the Collet Shaft.

Set the Collet Shaft in the Block with the Gear and Spacer setting on top of the Block. Use a 1/16” Punch [TMX003] to gently tap apart.

**Inspection:** Check Gear for cracks or loose press fit. Replace if any of these conditions exist.

**NOTE:** Earlier models may have a retaining pin through the Drive Gear. Use a Small Punch to remove the pin before removing the Gear.
**Reassembly of the Star Nose Cone**

Place the Large Spacer with Step away from the Gear on the Rear of the Collet.

Start gear, by placing on the Collet Shaft by hand and gently pressing. Be careful not to dislodge the Large Spacer.

Place Collet Sleeve over the Collet Shaft for support during assembly.

Then place the Collet Assembly on the Assembly Block [THR009] with the gear resting on the Block. Using the Arbor Press [THR003] carefully press the Collet Shaft into the Gear. NOTE: Use caution. If extremely excessive force is required, verify proper alignment with Collet Shaft and Gear.

Remove the Collet Sleeve from the Collet Shaft.

Install the Bearing onto the Collet Shaft and press into place using the Assembly Block [THR009] and Arbor Press [THR003]. Ensure that the Bearing makes contact with the Spacer.

Install the Small Spacer over the Collet Shaft with the step facing the Bearing.

Slide the Collet Spring over the Collet.

Place the Collet Sheath with stepped side down, towards the Bearing & Spring.

Install a Shipping Pin [THR052].
**Installing the Main Spindle Assembly into Housing**

Hold the Housing and install the Collet Assembly into Nose Cone, bur first.

Thread the Backend Nut into place by hand. Then use the Backend Nut Tool [THR086] to finish.

Hold the Nose Cone with 6” Pliers [THR062] and Leather and Emery Cloth [TSX007] and hold the Backend Nut with the Backend Nut Tool & an Adjustable Wrench [THR080]. Hold the pliers stationary and twist the Adjustable Wrench gently clockwise until tight. DO NOT OVER TIGHTEN.
Installing Slide, Spacer, Spring, Bearing & Nose

Place the Collet Opener into the front of the Nose Cone, smaller step first. Slide to the bottom.

Set Tension Spring on top of the Slide. Set Spacer on top of the Tension Spring - ridged side away from the Spring. Place the Bearing on top of the Thrust Washer.

Screw the Nose into place twisting clockwise until hand tight.

Place Leather & Emery Paper [TSX007] around the Nose Cone and grip with 6” Pliers [THR062] (do not place grip of pliers on the alignment pin). Insert the Backend Nut Tool [THR086] and place the 6” Adjustable Wrench [THR080] in place on the Backend Nut Tool. Tighten clockwise until snug. Do not overtighten.
**Installing the Chuck Release Assembly**

Apply Grease [TPX010] in the highest part of each Collet Window - used to retain the balls during assembly.

Place Balls into the Grease.

Push Collet Ring down, taking care to align the Small Pin on the Housing with Ball Slot on the Collet Release Ring. Place the Retaining Ring on the front of the Nose Cone using a Screwdriver [THR097] to open the slot and sliding down into place.
Reinstalling the Handpiece Release Assembly

Place the Nose Cone facing down on the table. Apply a small amount of Grease [TPX010] into each hole of the Backend.

Set the Spring on the Backend. Set the Ring in place, chamfered edge first, then press down exposing the ball pocket.

Use an X-acto Knife [THR060] with a drop of Grease to install the Balls. When all the Balls are installed the Ring can be released.

Gently pull the Ring back to install the last Retaining Ring. This can be done with your fingers or an X-acto Knife.
Handpiece Parts & Products

Tooling List

- 6” Pliers
  THR062

- Small Screw Driver
  THR097

- 6” Adjustable Wrench
  THR080

- Dental Pick
  THR068

- Arbor Press
  THR003

- Press Block
  THR009

- Emery Cloth & Leather
  TSX007

- Minapure Grease
  TPX010

- X-Acto Knife
  THR060

- Nose Cone Wrench
  THR086