



Disassembly/Assembly Instructions

Disassembly Instructions – 35, 50, 60 (K) RPM Turbine, Hand-Held, Pencil Grinder
Models: 51700, 51701, 51702, 51703, 51704, 51705, 51706, 51707, 51708, 51730, 51731, 51732, 51733, 51750, 51753, 51756

Important: Use these instructions along with tool parts page or manual.

NOTICE: Shut off air supply. Open ON/OFF Valve to deplete remaining air. Disconnect tool from air supply hose. Insert **51694** Pin through housing cross-hole. Use **95731** Wrench (8 mm) to remove accessory from collet. Remove **51657** Collet Cap and insert. (If needed, use **96486** Collet Insert Removal Tool.)

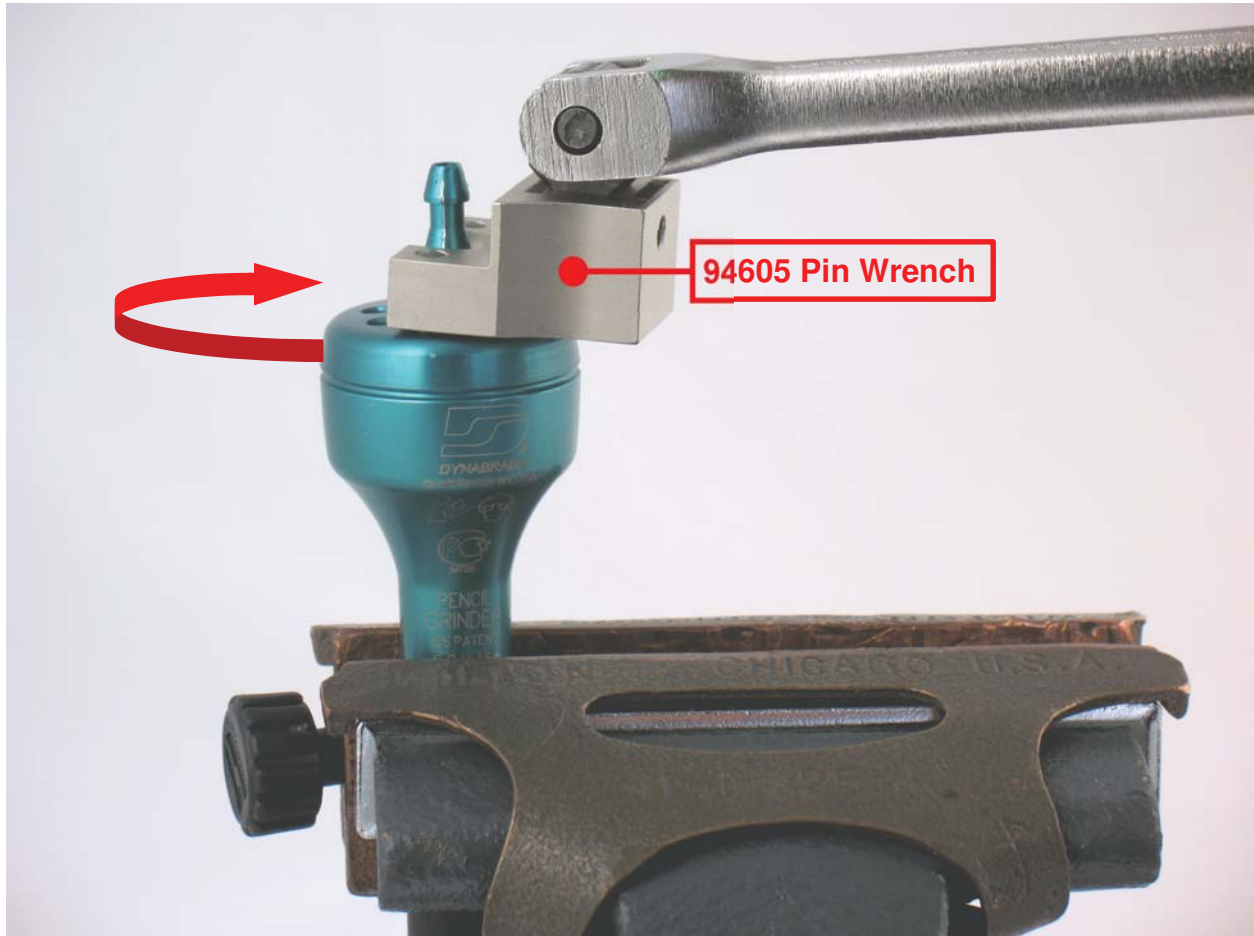
Disassembly:



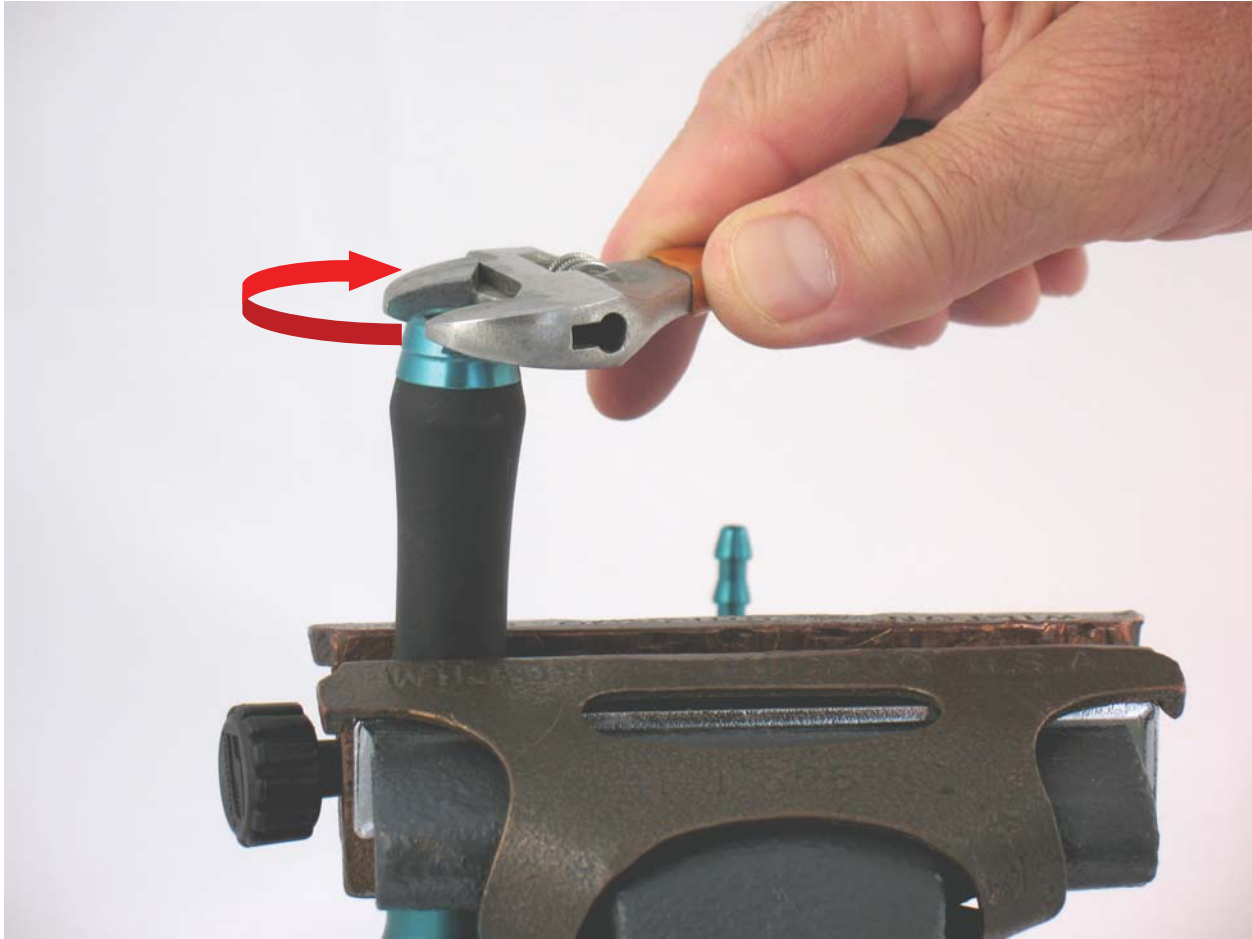
1. To remove **51276** Hose from turbine cover, cut hose 1.000" (~25 mm) from cover.
 - Cut hose from barb.
 - *Set hose aside until **Assembly Step #13**.*



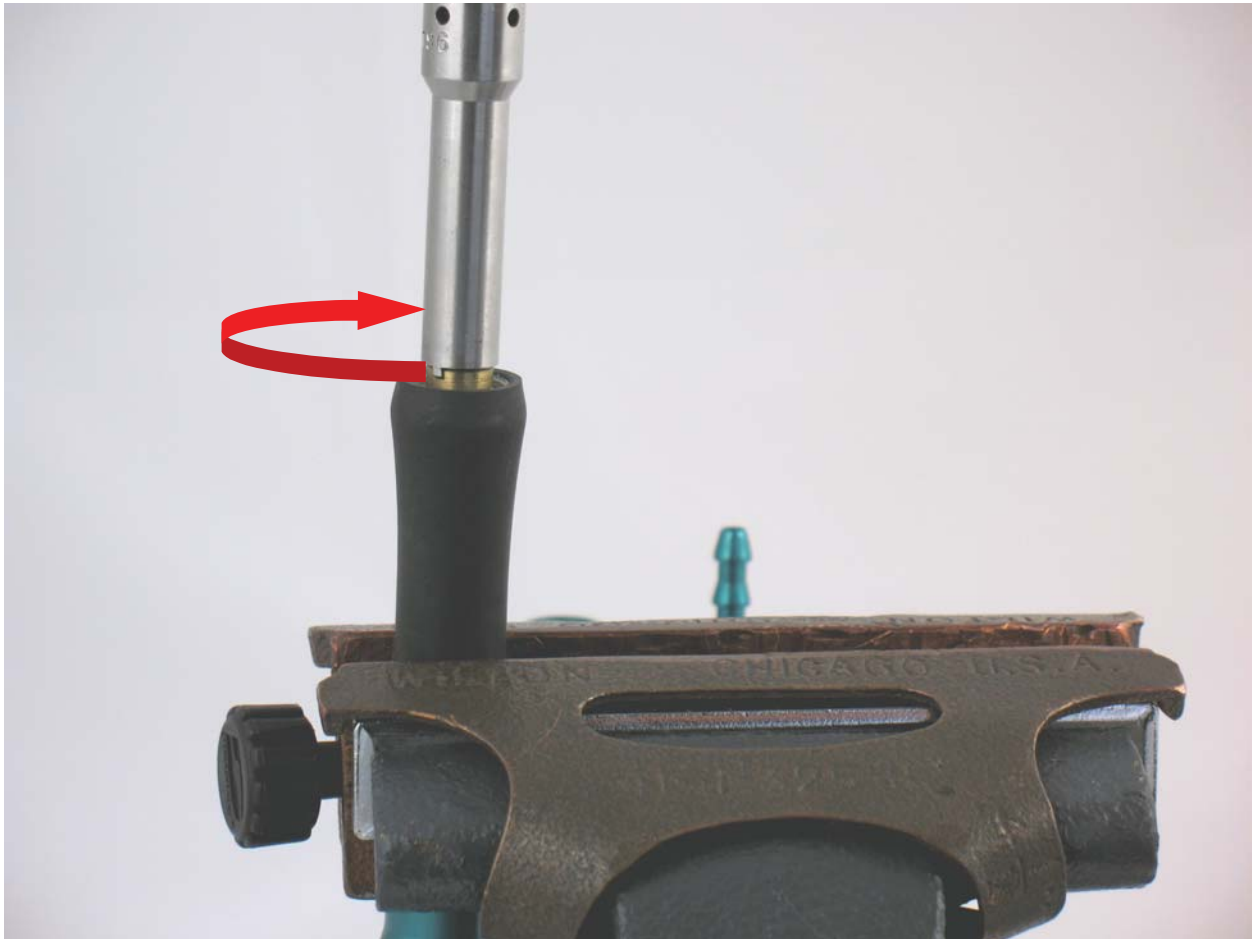
2. Insert **51694** Pin through housing and drive shaft cross-holes.
 - Fasten housing in vise with aluminum or bronze jaws.
 - Use a "HEAT GUN" to warm housing and soften thread adhesive.



3. Use **94605** Pin Wrench to remove turbine cover. Turn counterclockwise.



4. Invert pencil grinder in vise.
 - Use an adjustable wrench to remove collet guard. Turn counterclockwise.



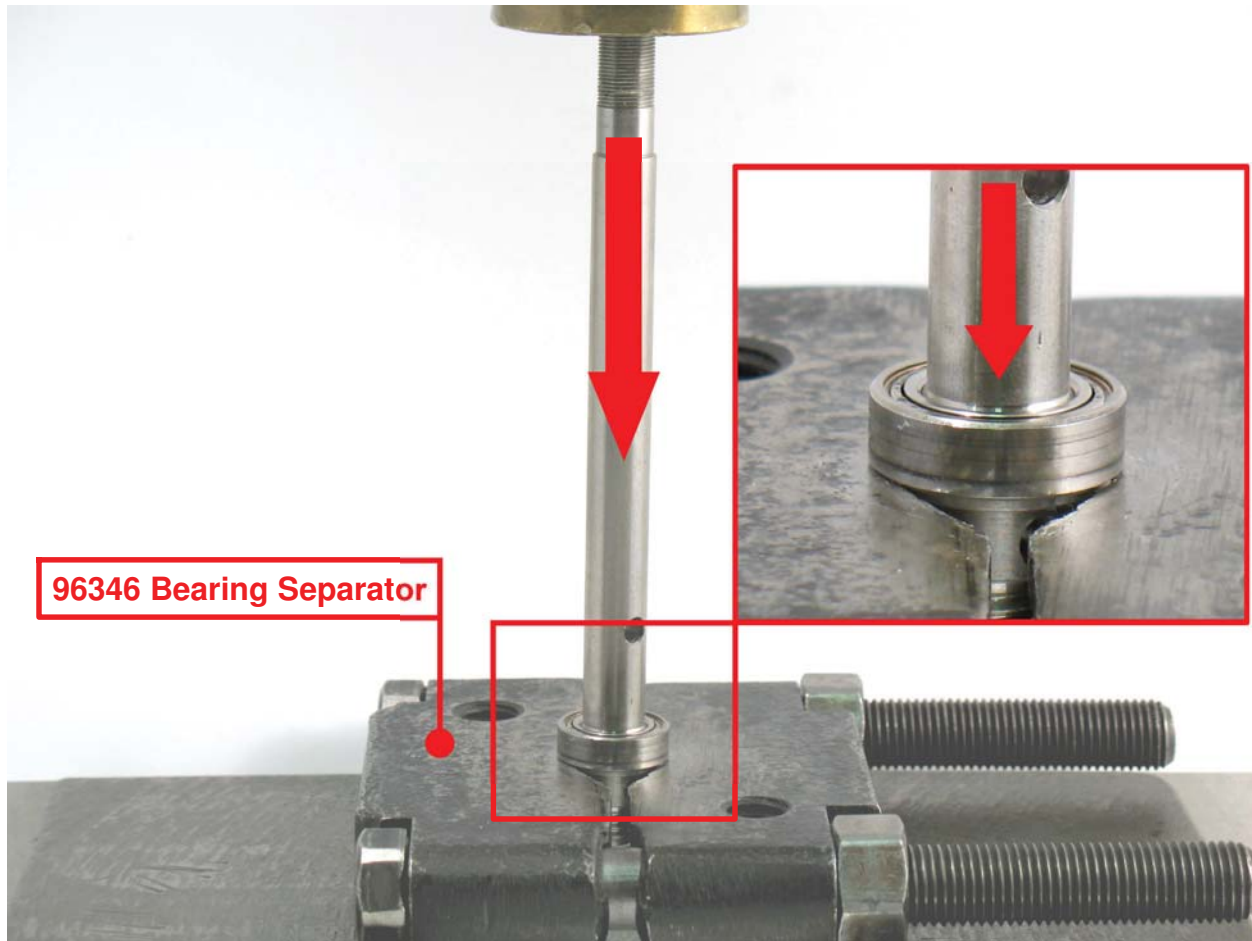
5. Use **96479** Extension Retainer Wrench to remove **51548** Bearing Retainer.
 - Turn counterclockwise.
 - Remove housing from vise and remove **94984** Spacer.



6. Use soft-face hammer to bump drive shaft and remove from housing.



7. Insert **51694** Pin through cross-hole in drive shaft.
 - Fasten drive shaft in vise with turbine motor pointing up.
 - Use an adjustable wrench or **96408** Top Plate Wrench to remove **51655** Top Plate and disassemble motor. Turn counterclockwise.



8. Use **96346** Bearing Separator and **96232** Arbor Press to remove **51651** or **51686** Bearing. **NOTICE:** If bearing remained in housing, use “HEAT GUN” to warm housing and soften adhesive. Knock end of housing on wooden surface to remove bearing.



9. Use **95890** Taper Pin, or a 9 mm (~.354") diameter rod, as a ram to remove **51544** or **51685** Bearing from housing.



- 10.** Use **94999** Air Bushing Tool, or a wood screw to remove **51662** Air Bushing.
- Remove **51684** Muffler.

Disassembly Completed.

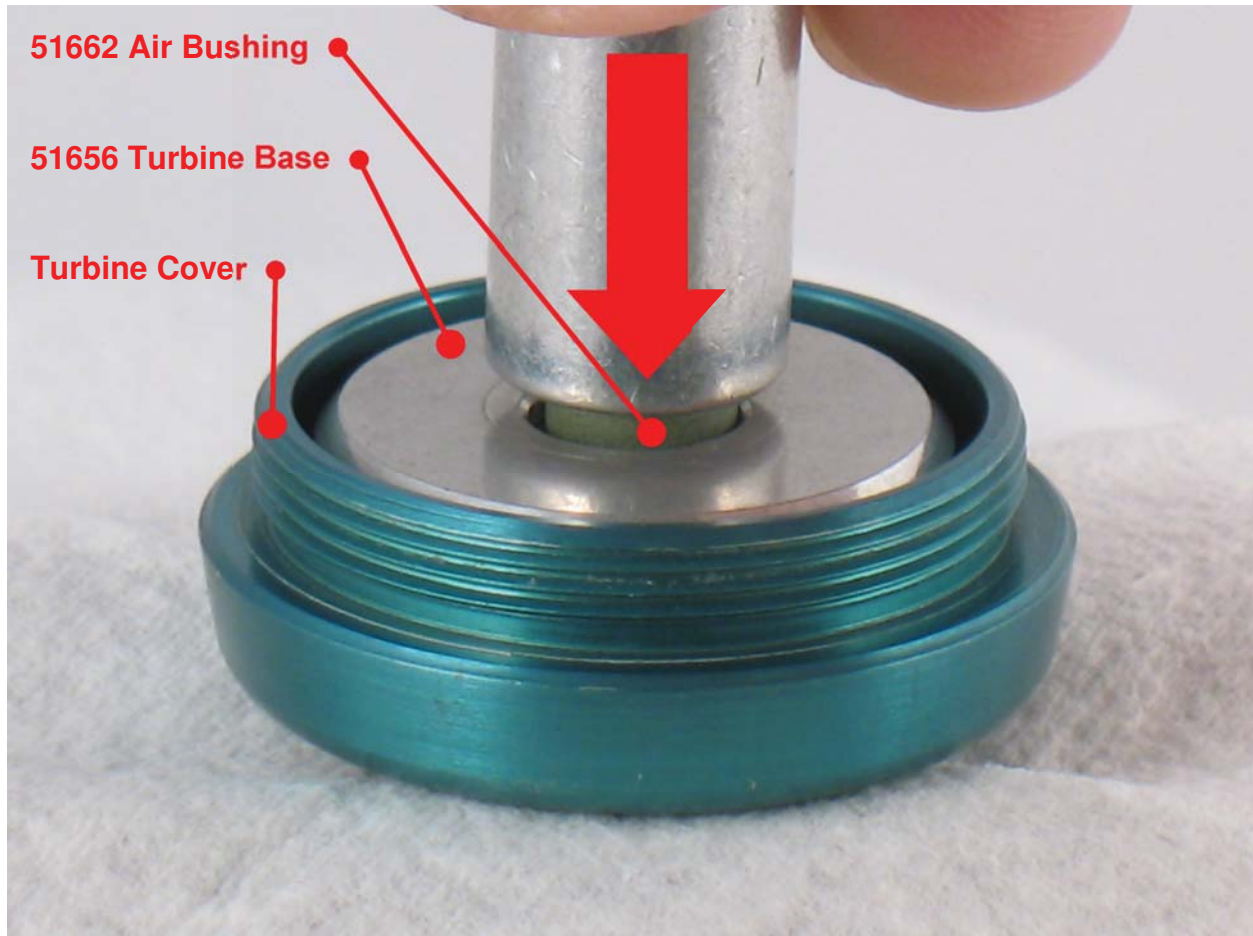
Clean, inspect, and replace worn parts before assembling.

Assembly Instructions – 35, 50, 60 (K) RPM Turbine, Hand-Held, Pencil Grinder

Assembly:



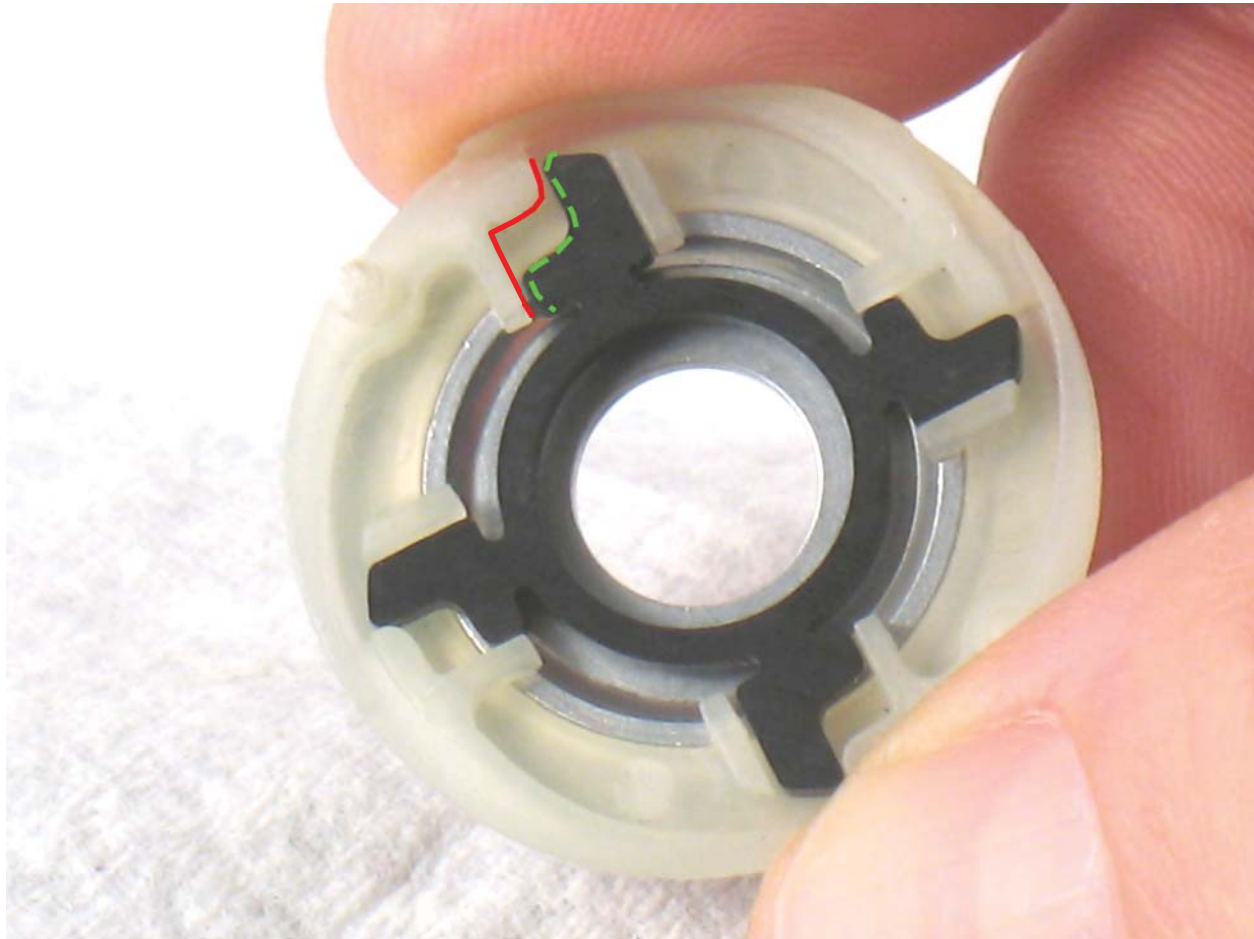
1. Apply Loctite #7649 Primer or equivalent to threads on turbine cover and collet guard.
 - **NOTICE:** Provide good ventilation and allow solvent to evaporate until surfaces are completely dry.



2. Press new **51662** Air Bushing into turbine cover.
 - **NOTICE:** Allow 1/16" (~1.5 mm) of bushing to jut out of turbine cover. Use **51656** Turbine Base as a "JIG" to preset air bushing depth.
 - *Set turbine cover aside until **STEP #13**.*



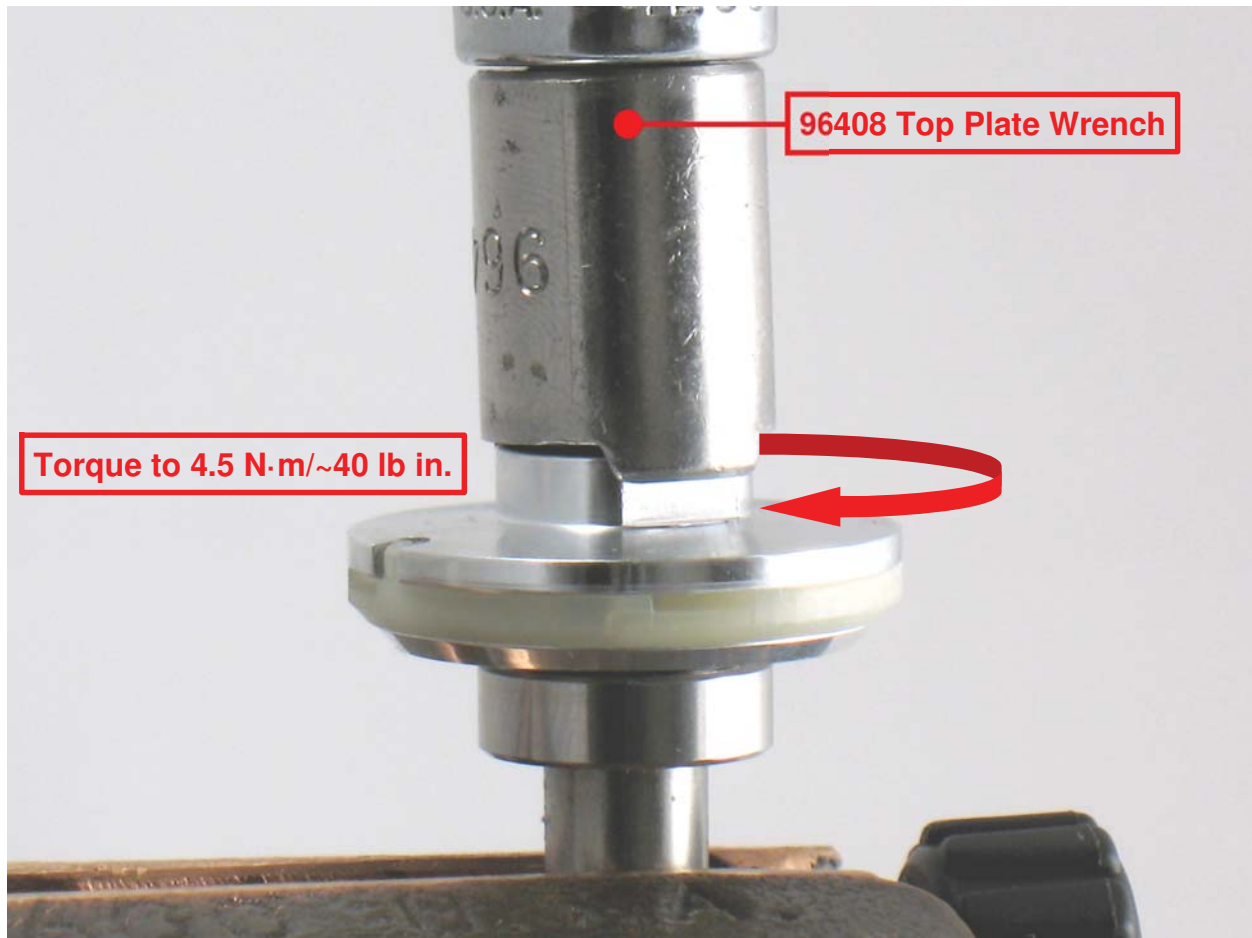
3. Use "RAISED INSIDE DIAMETER" of **96418** Bearing Press Tool, and **96232** Arbor Press to install **51651** or **51686** Bearing onto drive shaft.



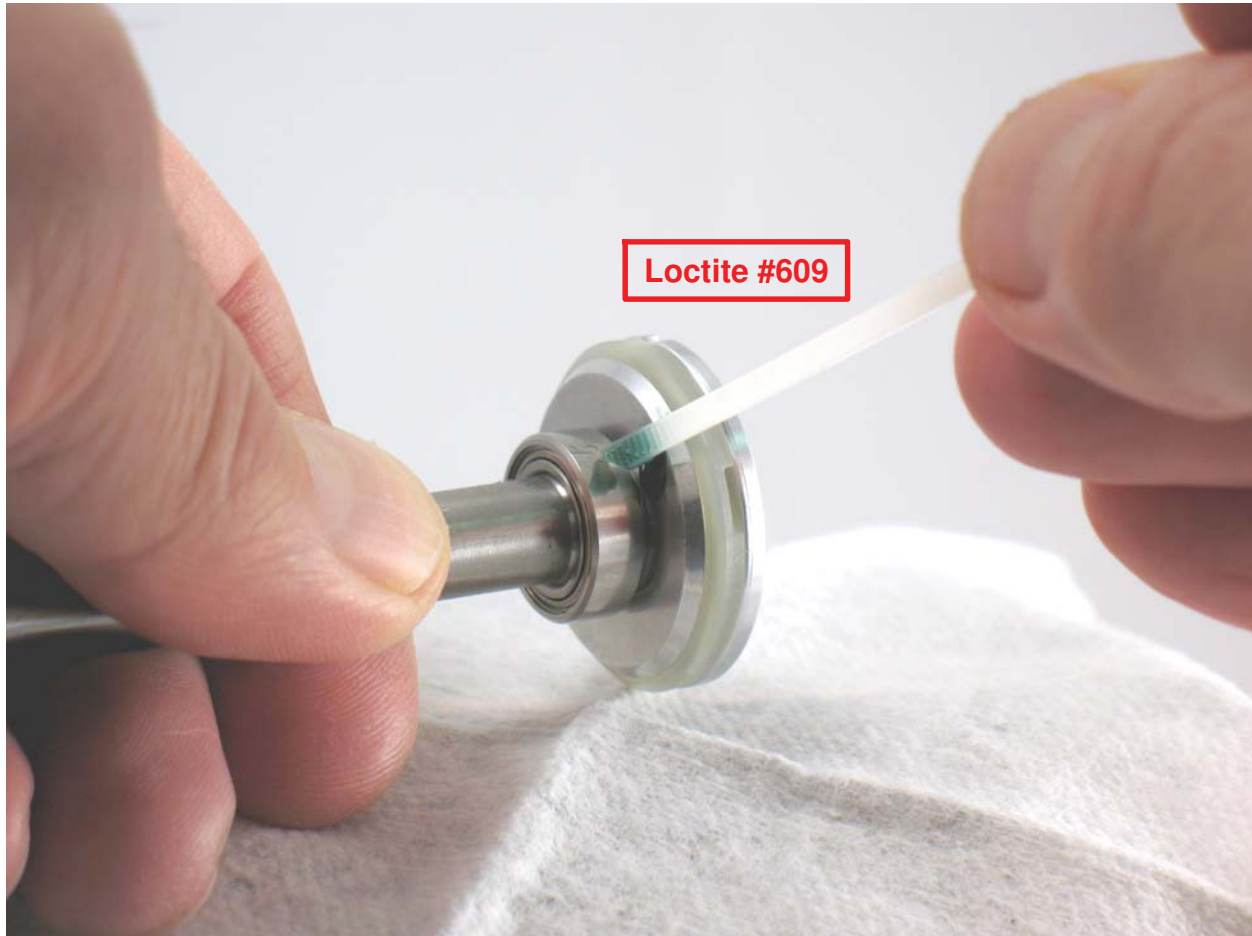
4. Install **51678** Turbine and **51691** (35K), **51692** (50K), or **51675** (60K) Governor.



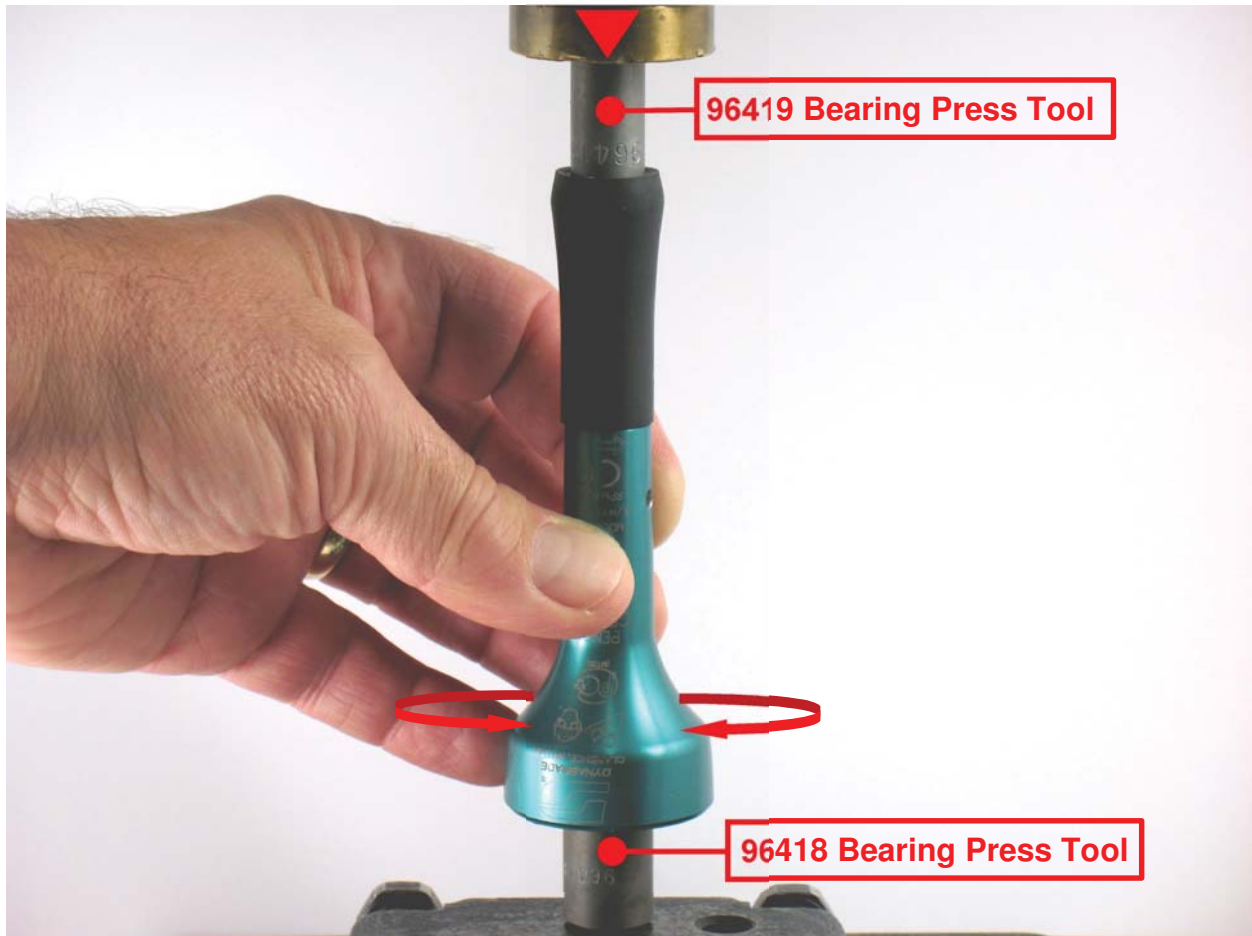
5. Assemble turbine base, turbine, governor and top plate to make up the motor unit.
 - Hold the motor unit together, apply a small amount of Loctite #222, or equivalent on threads of **51655** Top Plate.
 - Carefully, fasten motor unit onto drive shaft.




6. Insert **51694** Pin through cross-hole in drive shaft.
 - Fasten drive shaft in vise with aluminum or bronze jaws.
 - Use **96408** Top Plate Wrench and torque wrench to tighten top plate.
 - Torque to 4.5 N·m/~40 lb in.



7. Apply a small amount of Loctite #609, or equivalent to outside diameter of **51651** or **51686** Bearing.
 - Install **51661** Wave Spring and drive shaft assembly into housing.



8. Apply a small amount of Loctite #609, or equivalent to outside diameter of **51685** Bearing.
- Use “*RAISED OUTSIDE DIAMETER*” **96419** Bearing Press Tool and arbor press to install **51544** or **51685** Bearing.
 - **NOTICE:** Once bearing is installed, invert **96419** Bearing Press Tool with “*RAISED INSIDE DIAMETER*” toward inside race of bearing.
 - Apply a slight load on bearings with arbor press. Check fit and rotation of bearings.
 - **NOTICE:** Use a pipe-cleaner  to wipe Loctite from housing threads.



9. Insert **51694** Pin through cross-holes in housing and drive shaft.
 - Remove assembly from arbor press and fasten in vise, with threaded end of drive shaft pointing up.
 - Install **94984** Spacer, with larger diameter toward **51544** or **51685** Bearing.



10. Apply a small amount of Loctite #222, or equivalent just above **94984** Spacer.
 - Use torque driver and **96479** Extension Retainer Wrench to install **51548** Bearing Retainer.
 - Torque to 2 N·m/~18 lb in.



11. Apply a small amount of Loctite #567, or equivalent to threads of collet guard.
 - Use a 14 mm crow-foot and torque wrench to install collet guard onto housing.
 - Torque to 4.5 N·m/~40 lb in.

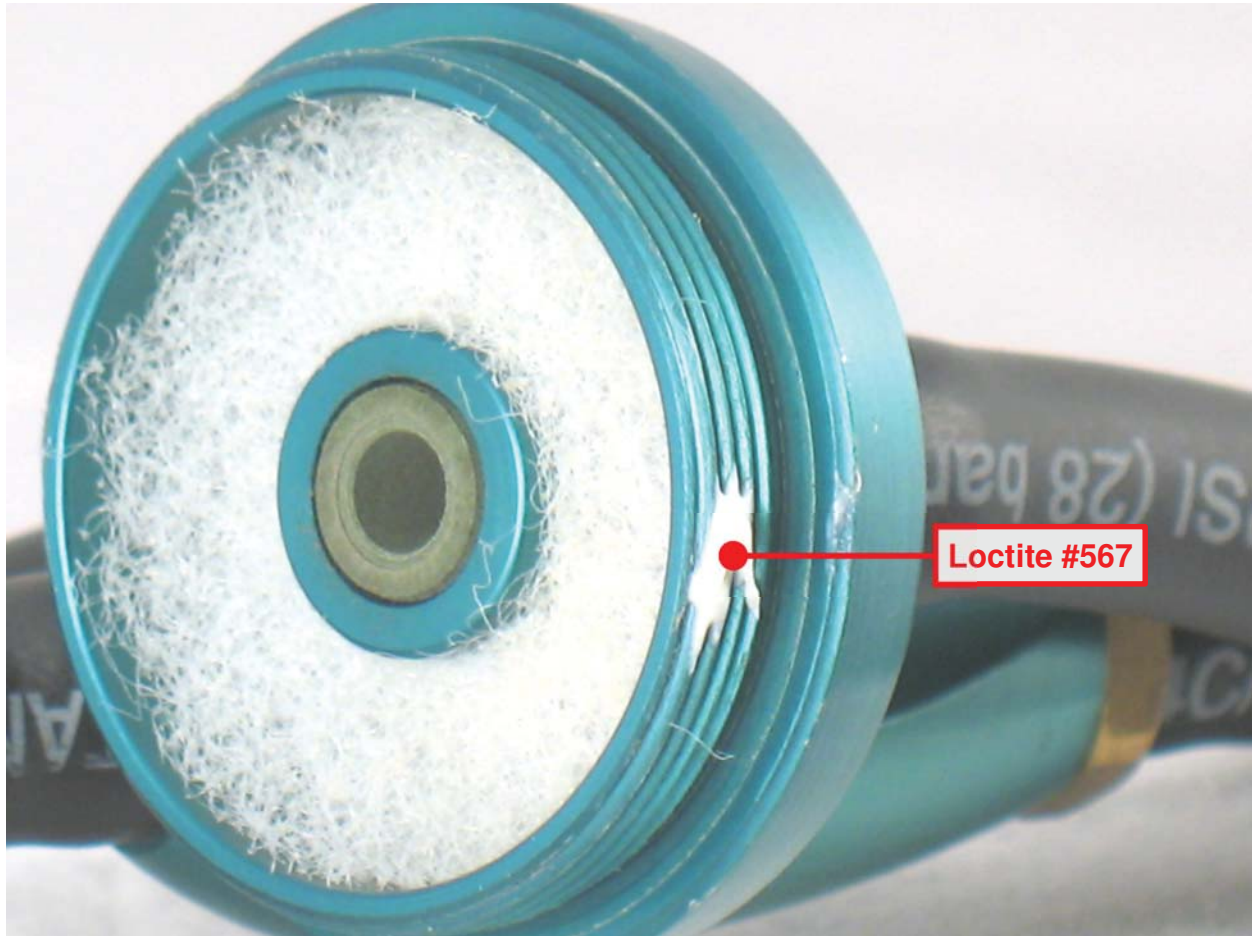


12. Install collet insert.

- Use **95731** Wrench (8 mm) to install **51657** Collet Cap.
NOTICE: Do not over tighten collet assembly.
- Remove pencil grinder from vise and remove **51694** Pin.



13. Install **51276** Hose onto first barb of turbine cover.
- By hand, fasten turbine all the way onto housing. Turn clockwise.
 - Slightly loosen turbine cover from housing until drive shaft turns freely.
 - Connect **51277** Air Hose to air supply.
 - Push **51665** Valve to "**ON**" position. Allow motor to run up to speed.
NOTICE: Air bushing "Wear-In" time will vary. If motor does not initially run to speed, continue to tighten and loosen turbine cover until maximum RPM is achieved.
 - Push **51665** Valve to "**Off**" position, and disconnect tool from air supply.



14. Install **51684** Muffler.
- Apply a small amount of Loctite #567 to threads of turbine cover.



15. Insert **51694** Pin through cross-hole in housing and drive shaft and fasten in vise.
- Use **94605** Pin Wrench and torque wrench to tighten turbine cover.
 - Torque to 14 N·m/~125 lb in.

Important: Allow Loctite Threadlockers and Retaining Compounds to cure/fixture for 30 minutes before checking RPM. • Supply **90 psig. (6.2 Bar)** maximum operating air pressure at air inlet of tool. • Use tachometer to check maximum operating speed without an accessory in collet. • Push **51276** Hose all the way onto turbine cover.

Assembly Completed.