

### **Disassembly Instructions – Mini Vacuum Dynorbital EXTREME**

**Models:** X31V

**Important:** Disconnect sander from the air supply.

**Notice:** Use these instructions along with the tool manual. To avoid damage, use the **special repair tools** designed for motor disassembly and assembly. Position **57092 Repair Collar** around the housing. Fasten sander in vise with sanding pad facing up. Do not over tighten sander in vise. Use **95263 Wrench (17 mm)** to hold the balancer shaft stationary.



To remove sanding pad, turn counterclockwise.



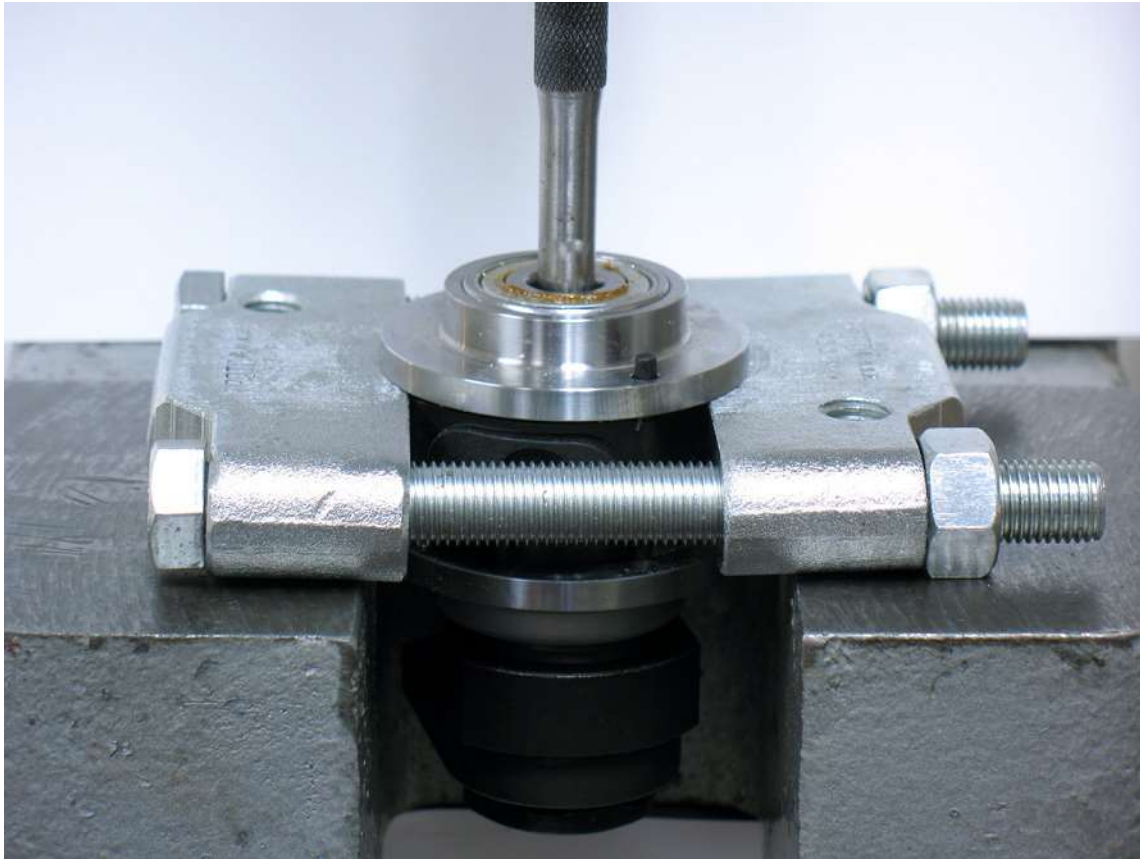


1. Use **56061 Lock Ring Wrench** to remove **59415 Lock Ring**.
  - Turn counterclockwise.



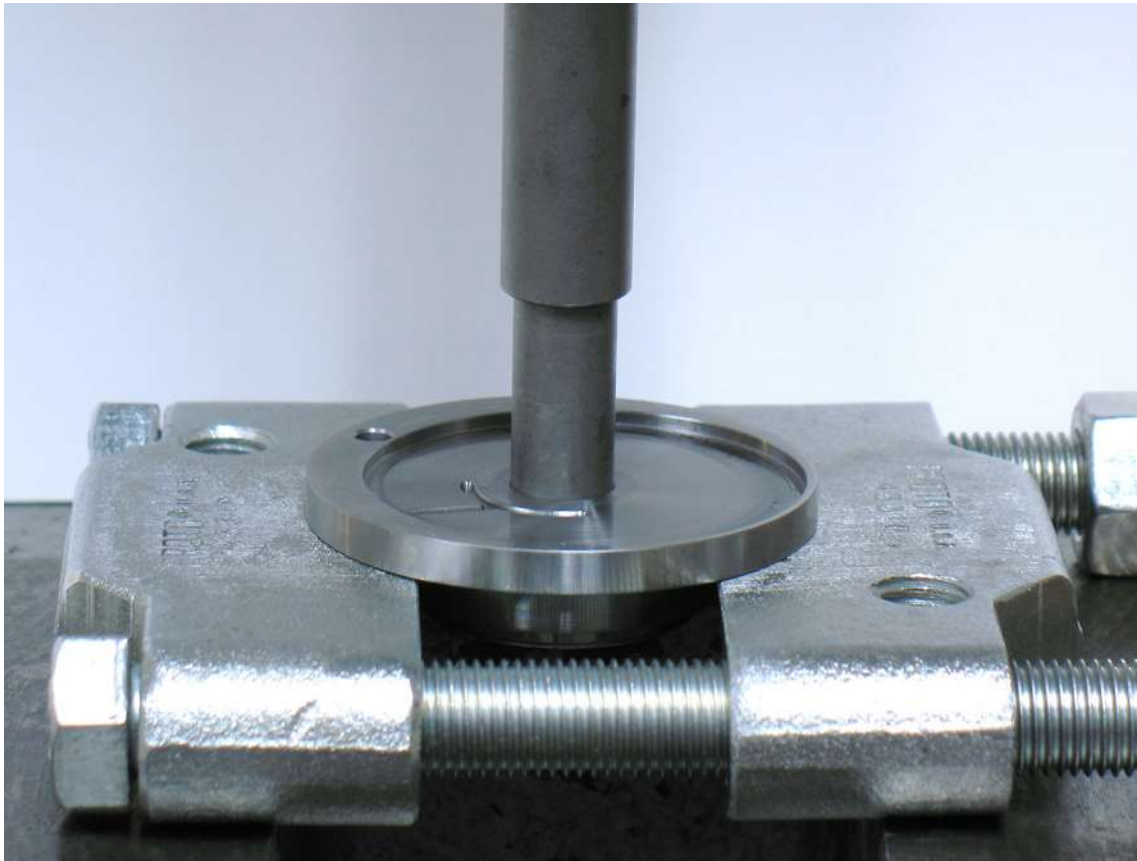


2. Remove motor from housing.
  - Remove **01024** O-Ring from **59412** Cylinder Sleeve Adapter.
  - Remove lock ring **59415** from motor assembly

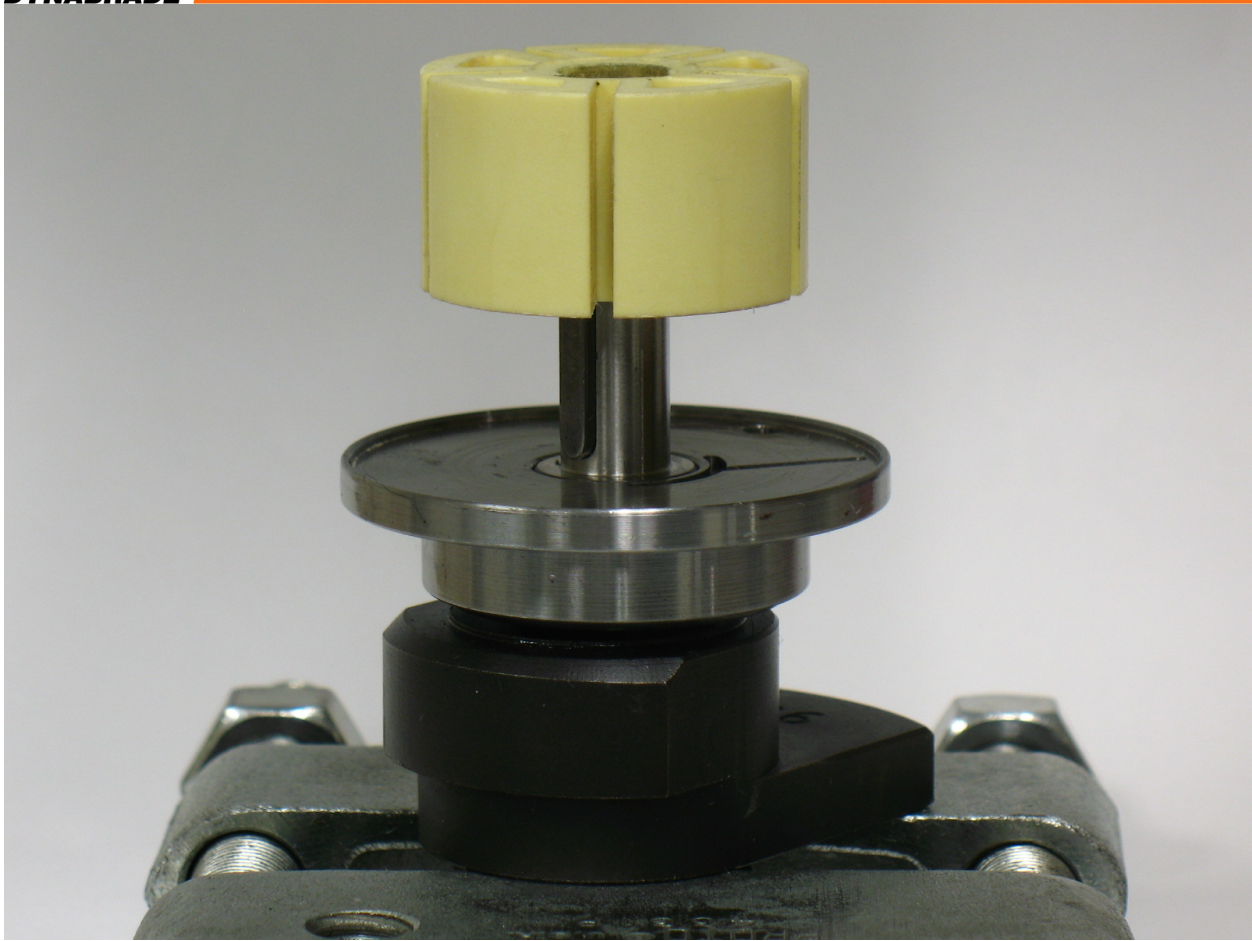


3. Fasten **96346 Bearing Separator** (2") around **59411** Cylinder Sleeve. Place bearing separator and motor in **96232 Arbor Press** (#2) with counterweight pointing down.
  - Use arbor press and 5/16" or 8 mm diameter flat-end drive punch to push shaft out of **01139** Bearing.
  - Remove **59411** Cylinder Sleeve & **59412** Cylinder Sleeve Adaptor

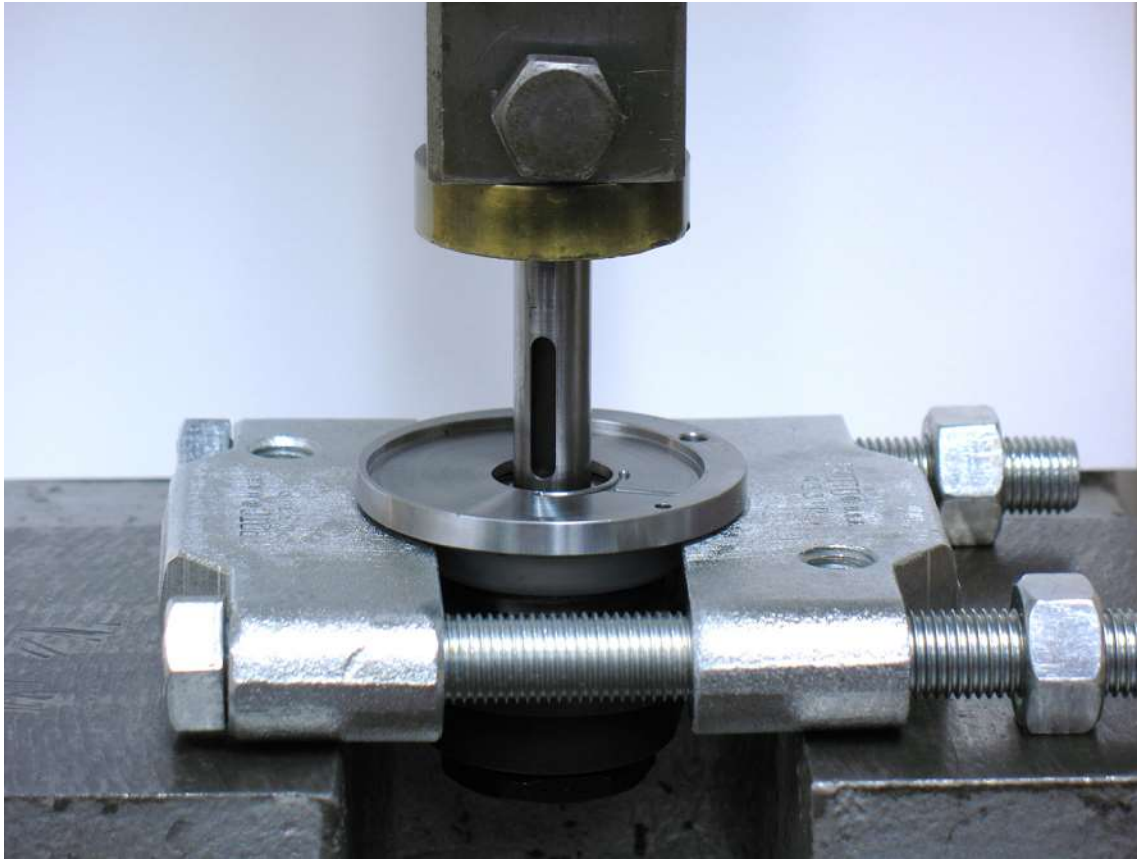




4. Use **96214 Bearing Removal Tool** to remove **01139 Bearing** from **59405 Rear Bearing Plate**.

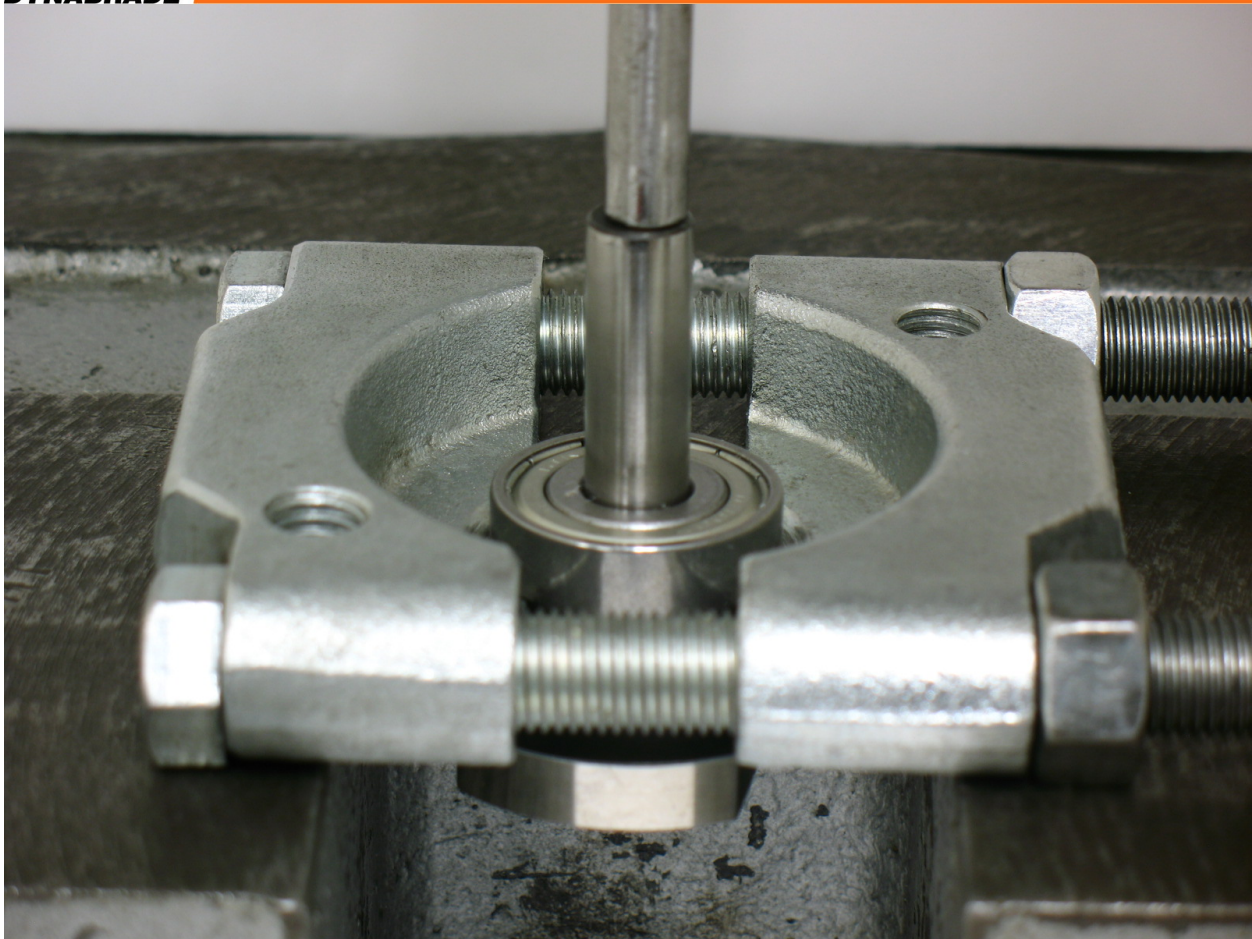


5. Remove vanes, rotor and key.



6. Use bearing separator and arbor press to remove the front bearing plate.





7. Fasten bearing separator between **58368** Bearing and the counterweight.
  - Place bearing separator in arbor press with counterweight pointing down.
  - Push shaft balancer from **58368** Bearing.

**Motor disassembly completed.**



## ***Disassembly/Assembly Instructions***

### **Balancer Shaft and Bearing Disassembly:**

1. Fasten counterweight in vise with hex of **59406** Balancer Shaft pointing up.
  - Use a thin slot-blade screwdriver as a pick to remove **95613** Snap Ring.  
(Next three views.)









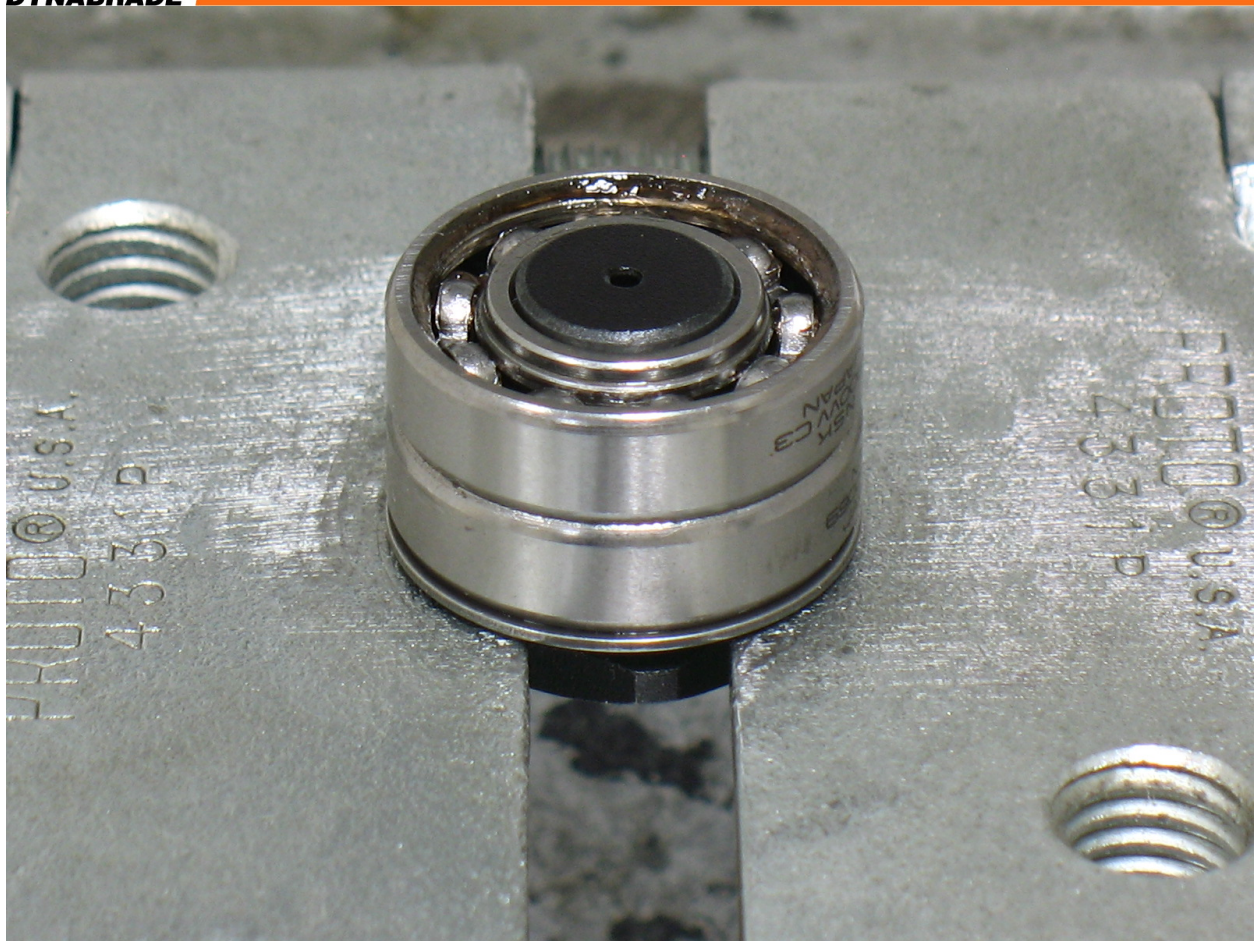


2. To break adhesive bond, use two, large slot-blade screwdrivers to pry out balancer shaft and bearing. **Notice:** If necessary, use a HEAT GUN to warm counterweight to soften adhesive.



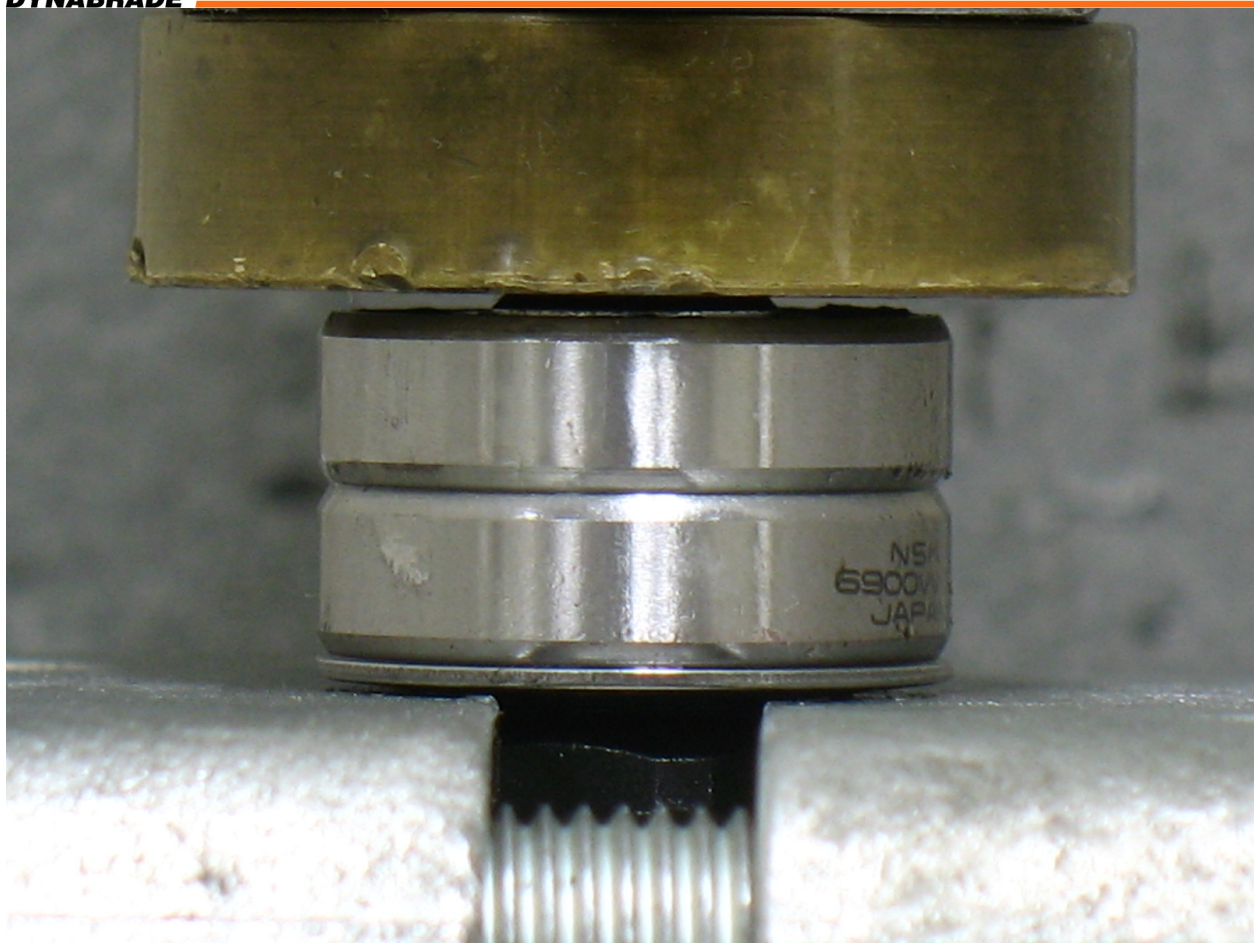
3. Use **54141 Bearing Puller** to remove balancer shaft and **59416 Bearings (2)**.



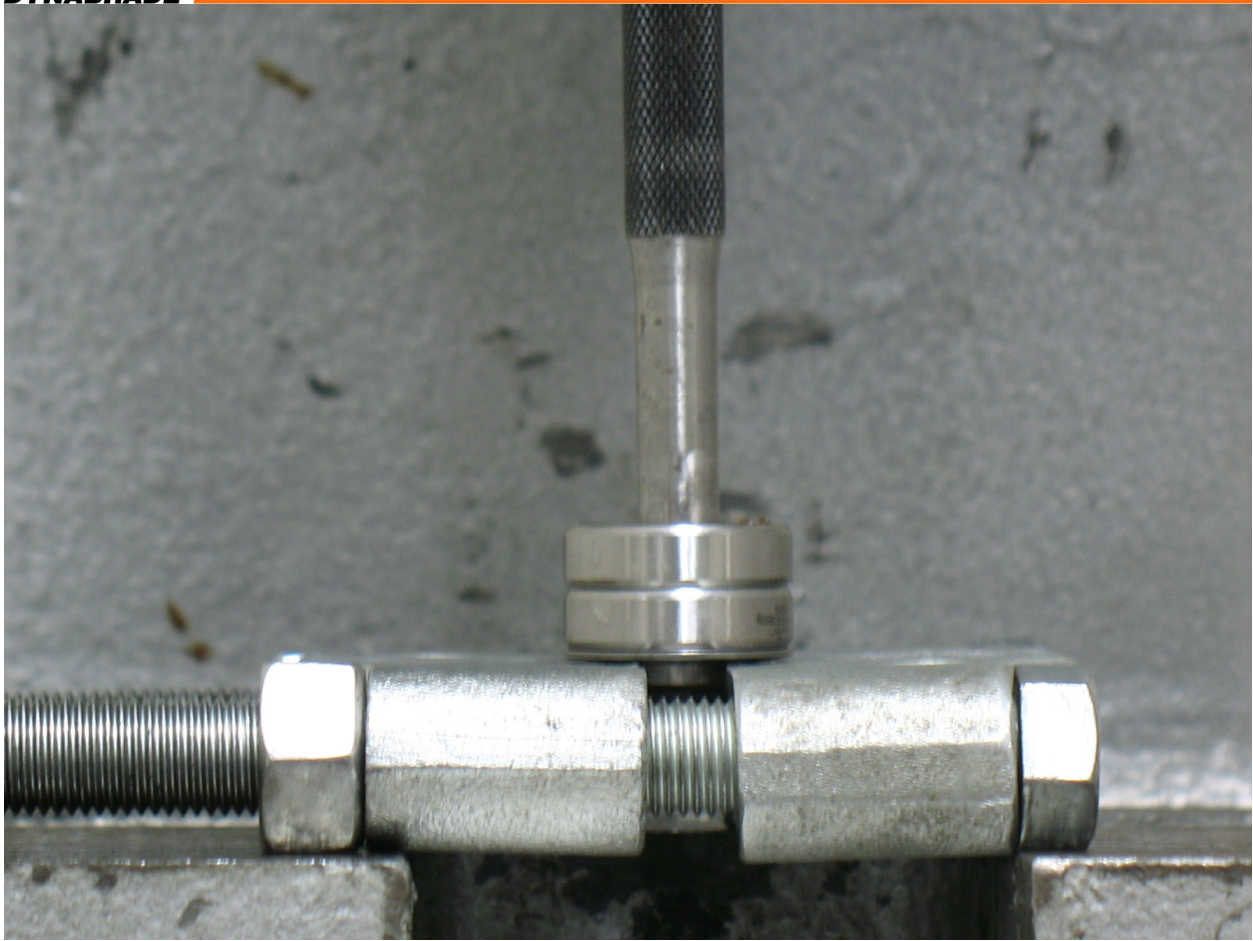


4. Fasten bearing separator between **95612** Spring (bearing shield) and hex end of balancer shaft.





5. Place bearing separator and balancer shaft in arbor press with hex end pointing down.
  - Use the arbor press to break the adhesive bond.



6. Use a 5/16" or 8 mm diameter flat-end drive punch as a press tool to push balancer shaft out of **59416** Bearings.



**Balancer shaft and bearing disassembly completed.**

**Clean and inspect parts before assembling.**





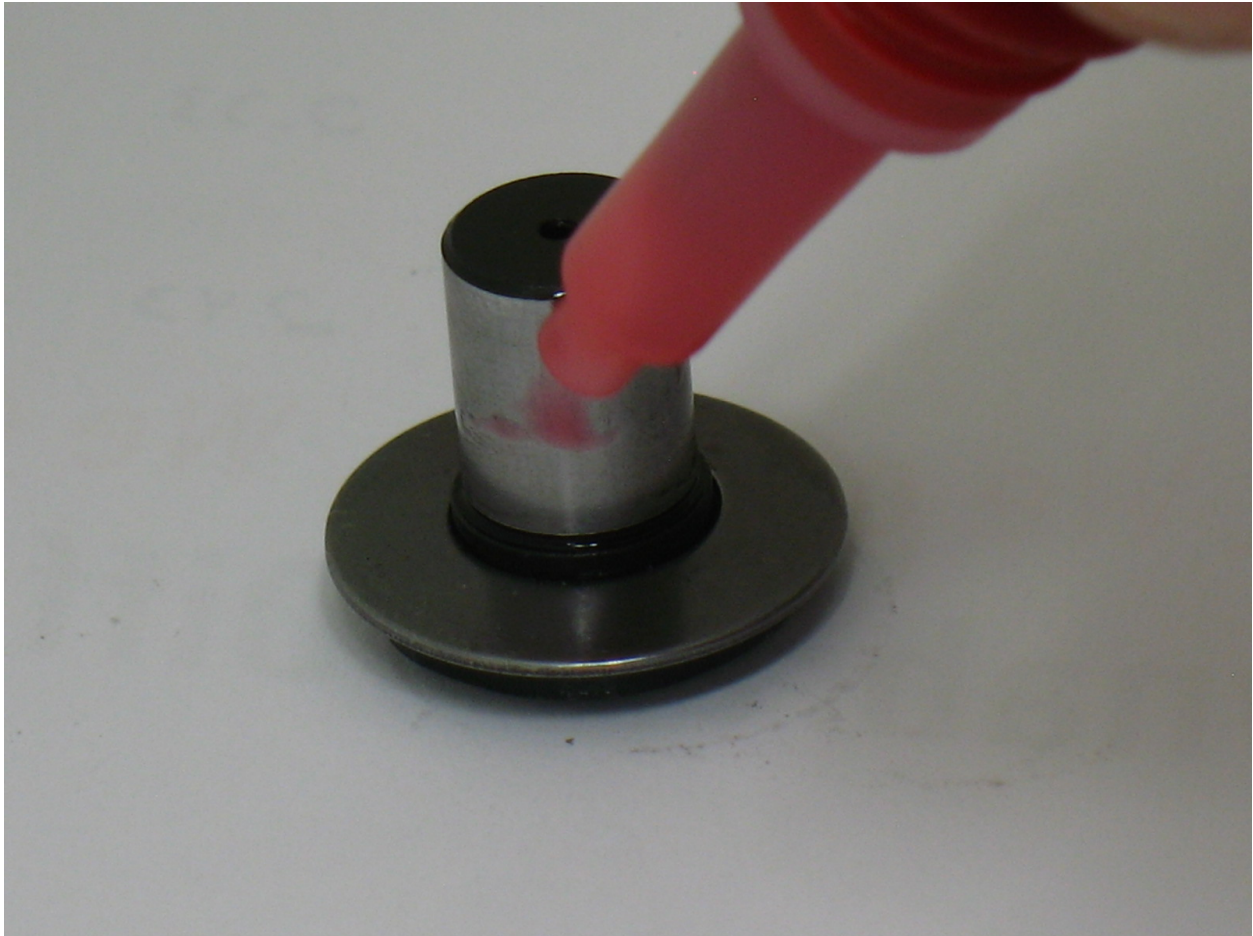
## ***Disassembly/Assembly Instructions***

### **Assembly Instructions - Dynorbital EXTREME**

#### **Balancer Shaft and Bearing Assembly:**



1. Install **95612** Spring (Bearing shield) onto the **59405** balancer shaft. Face the convex side of the spring (bearing shield) toward the hex end of the balancer shaft

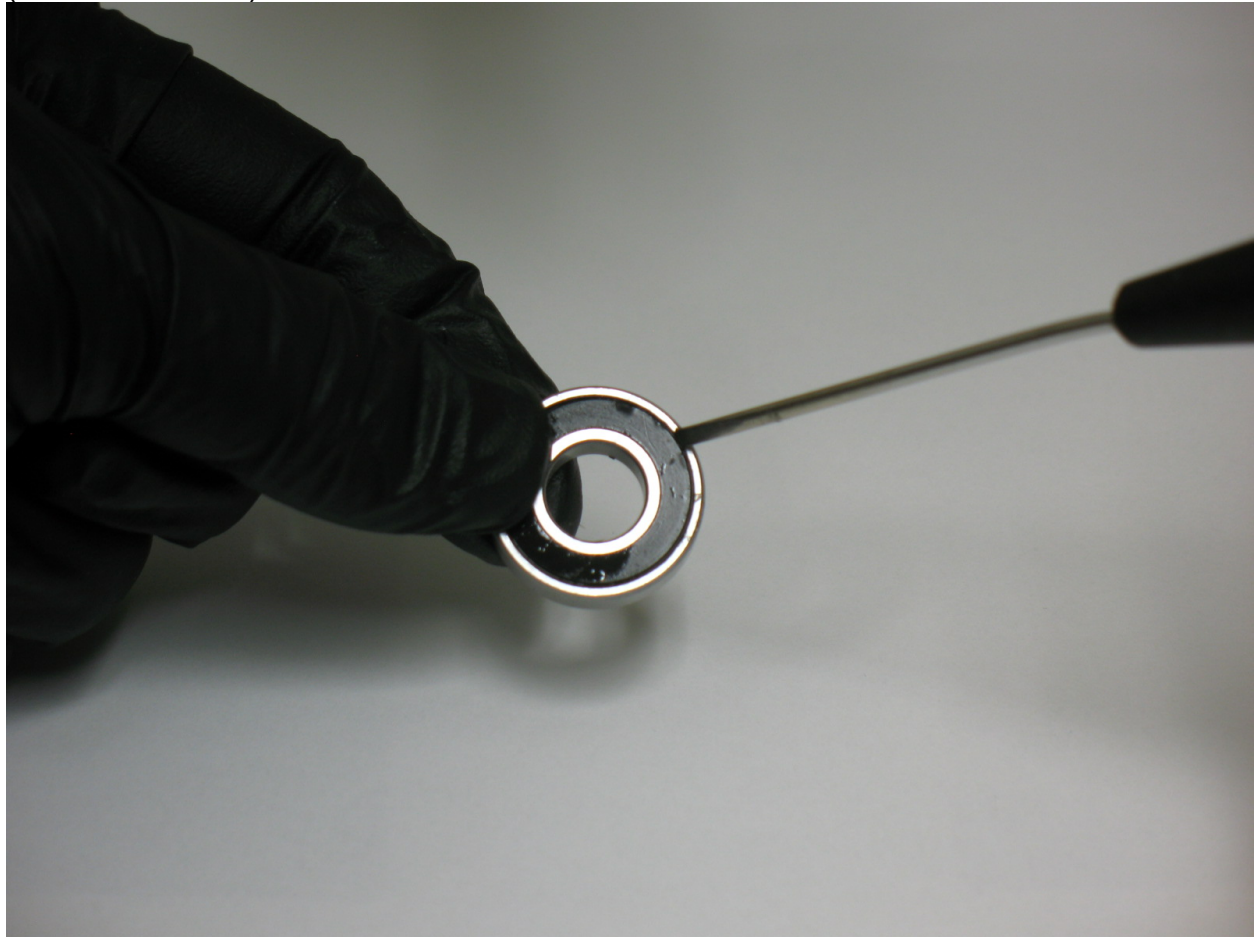


2. Apply a small amount of Loctite #271 or equivalent to outside diameter of balancer shaft.



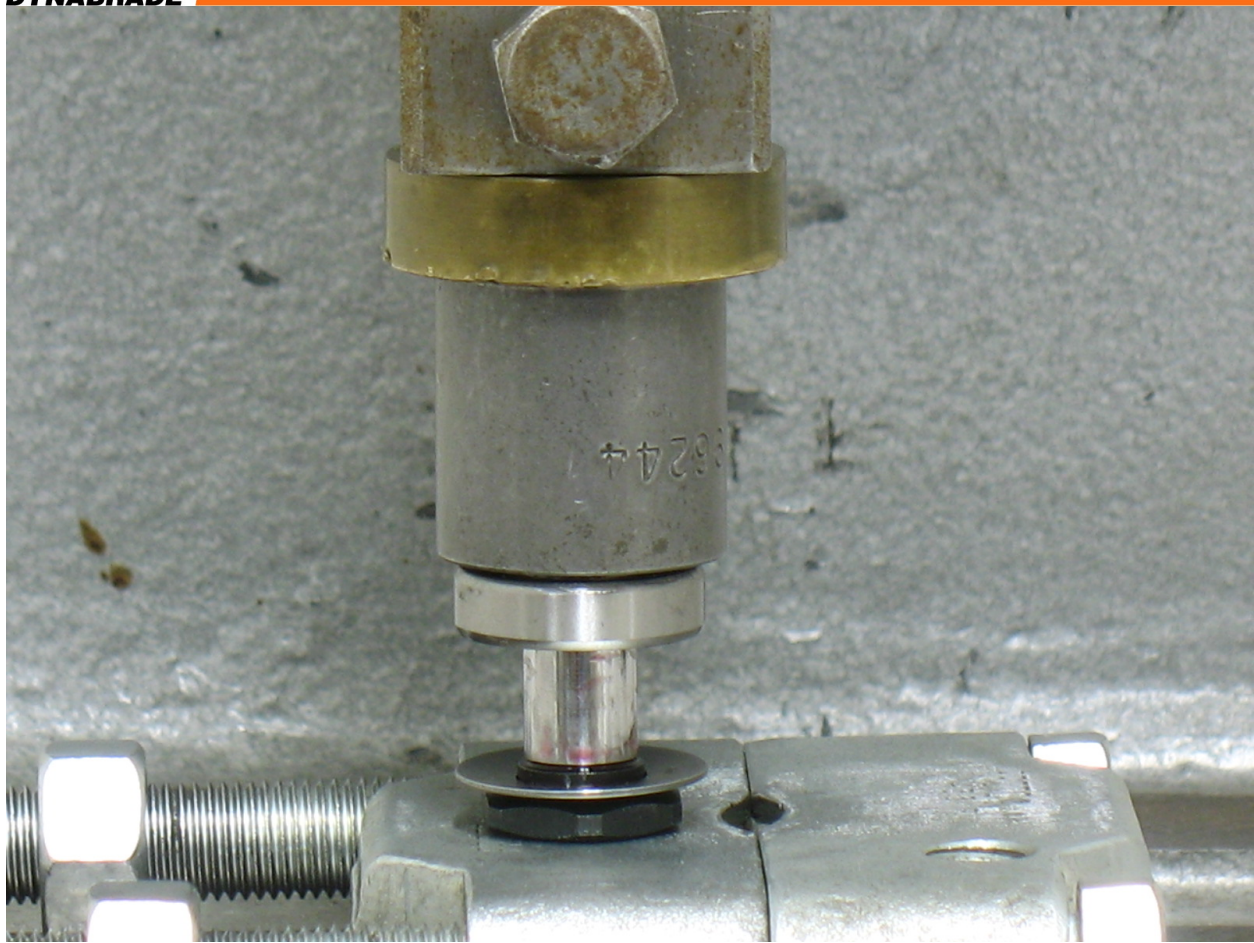
## ***Disassembly/Assembly Instructions***

3a. Use thin slot blade screwdriver to remove 3 of the 4 seals from the 59416 bearings  
(next three views)









- 3b. First, install the **59416** bearing with the seal. Face the sealed side of the bearing toward the 95612 Spring (Bearing Shield).
- Use raised inside diameter of **96244 Bearing Press Tool** and arbor press to install **59416** Bearing.
  - Press bearing to step on shaft.





- 3c. Use small diameter of **96244 Bearing Press Tool** and arbor press to install second **59416** bearing with no seals, in the same manner as the first.





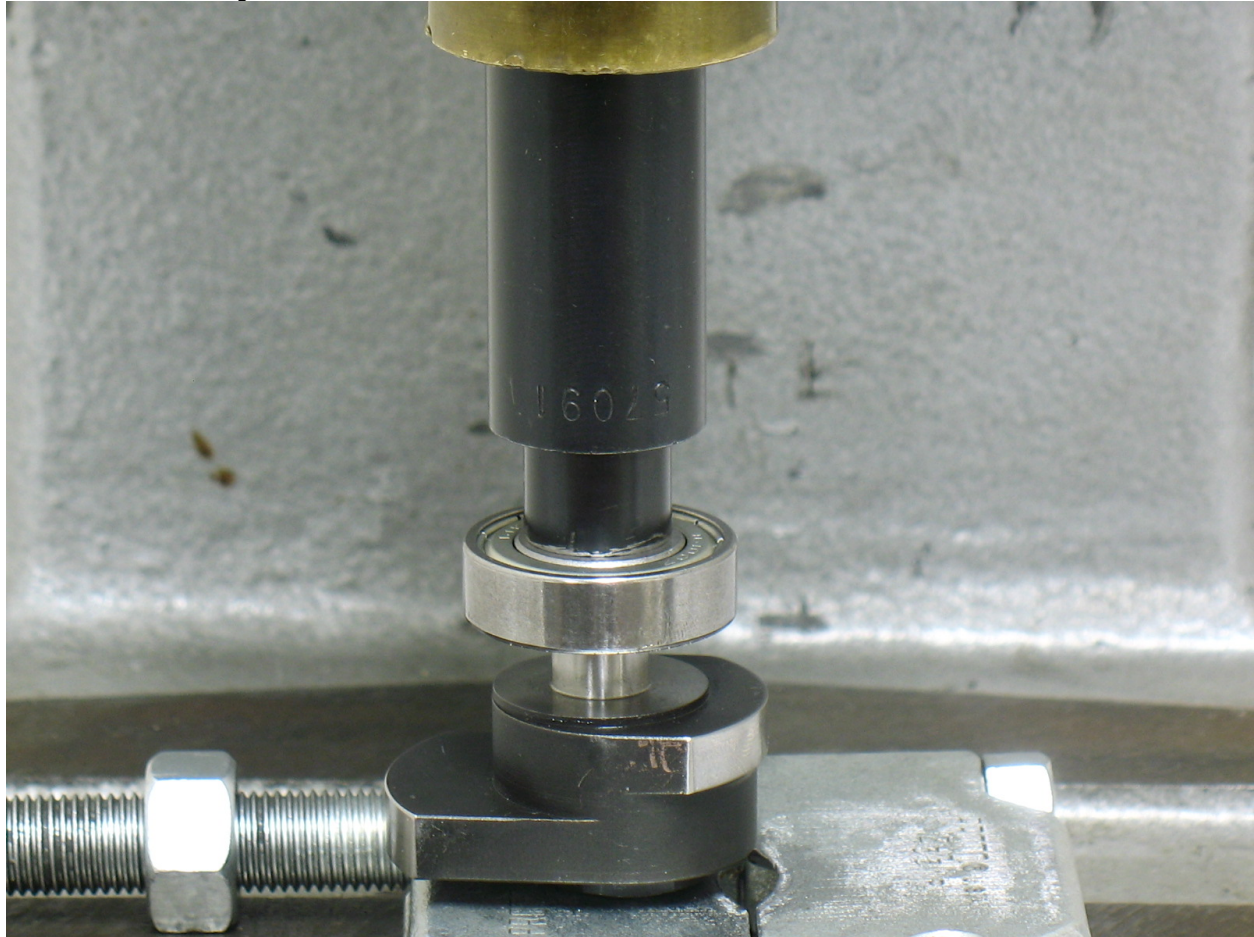
4. Apply a small amount of Loctite #271 or equivalent to outside diameter of **59416** Bearing.
  - Place **95613** Snap Ring over the hex end of the balancer shaft
  - Install balancer shaft with bearings into shaft balancer.



5. Use a thin slot-blade screwdriver to compress and install **95613** Snap Ring into groove of shaft balancer.

**Balancer shaft and bearing assembly completed.**

**Motor Assembly:**



1. Use small diameter of **57091 Bearing Press Tool** and arbor press to install **58368** Bearing onto shaft balancer.

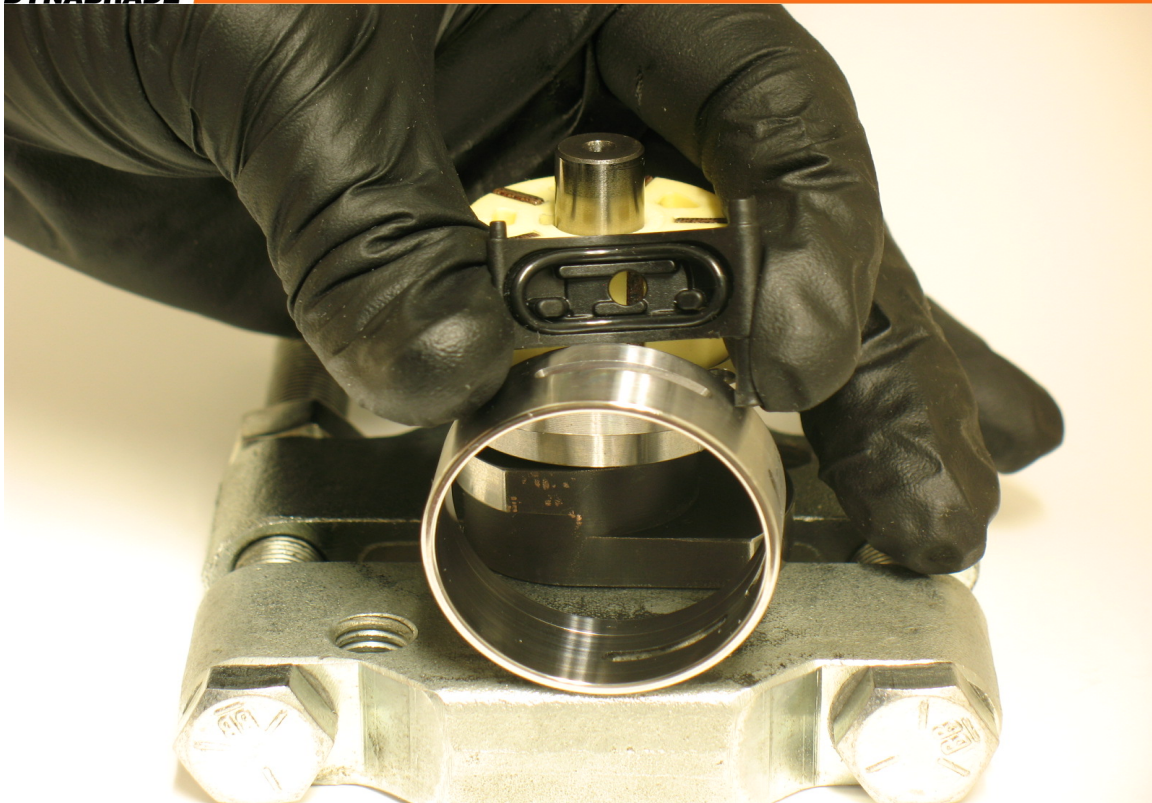




- 2 Use large diameter end of **57091 Bearing Press Tool**, and arbor press to install **59408 Front Bearing Plate**.

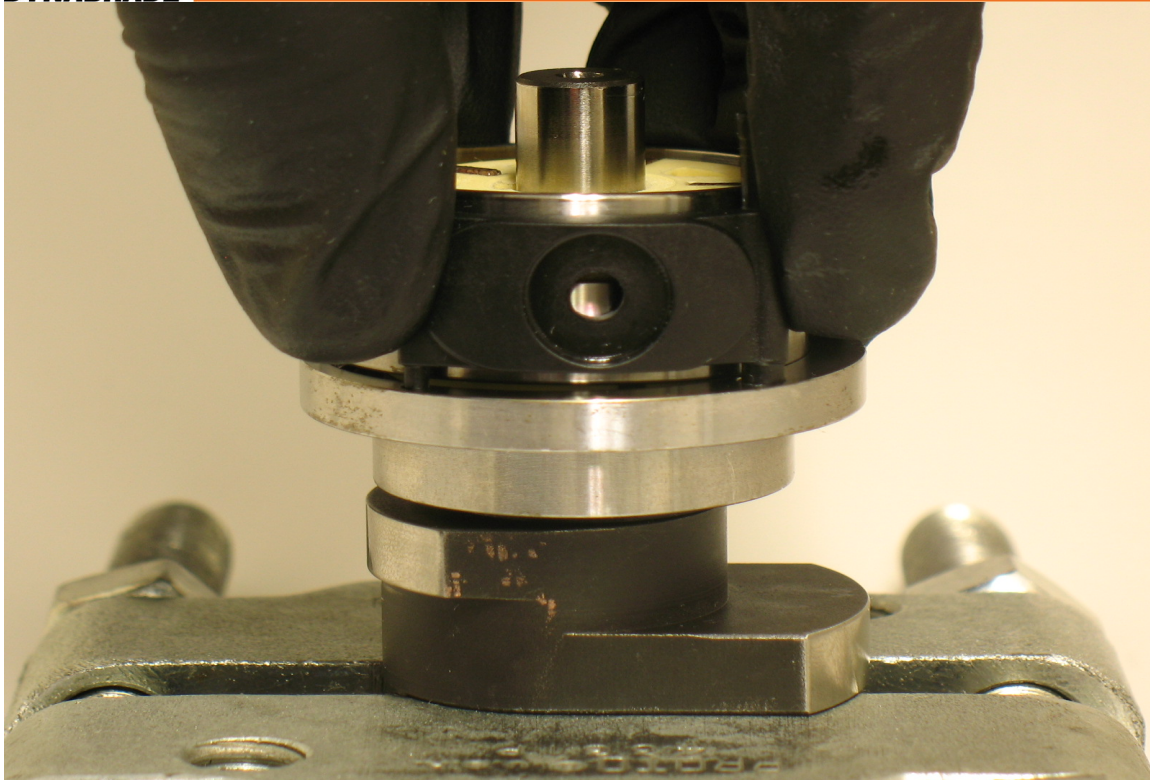


3. Install Key, and Rotor onto shaft balancer.
  - Apply **95842** Dynabrade Air Lube 10W/NR or equivalent to vanes and install.

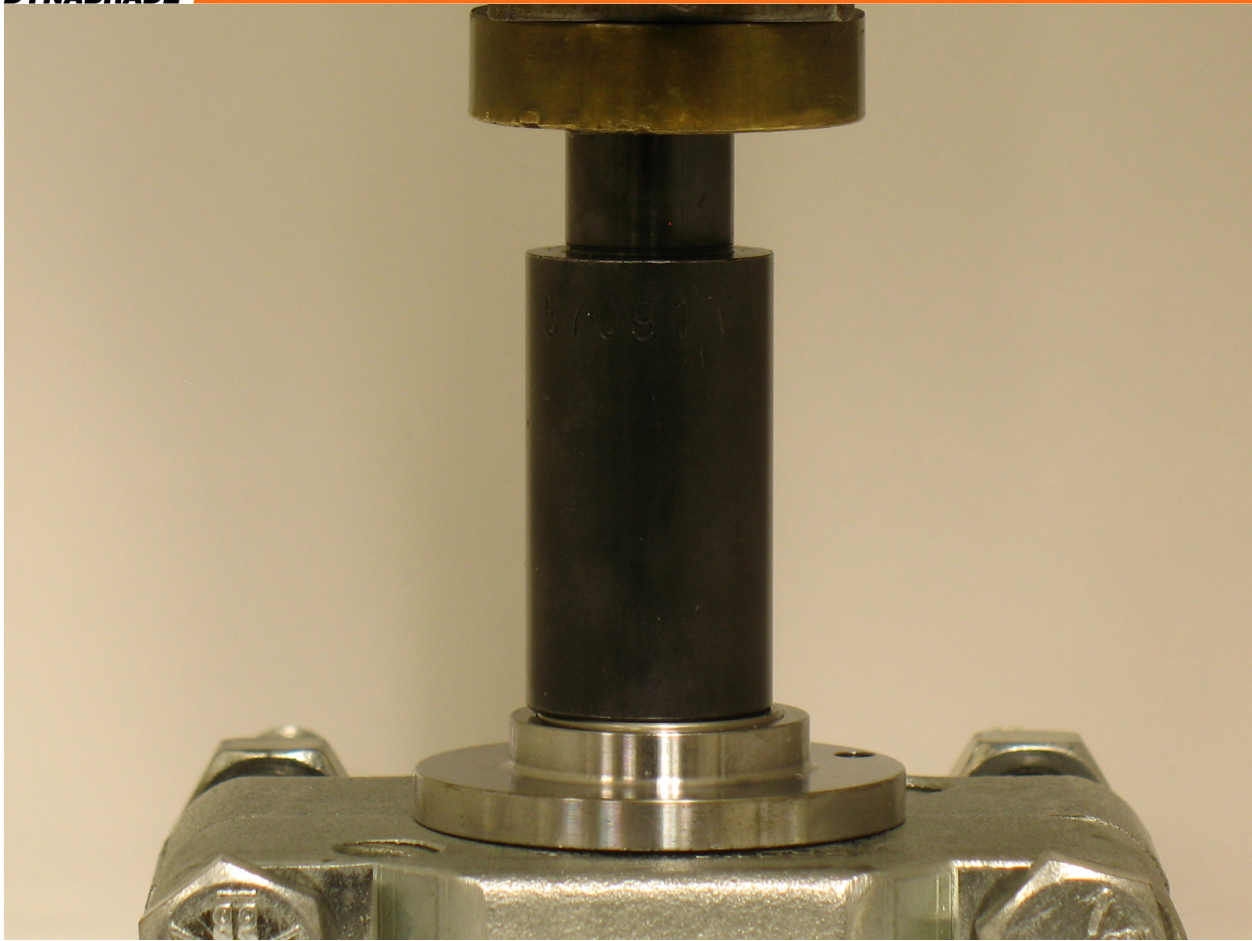


4. Install **95526** O-Ring into **59412** Cylinder Sleeve Adapter.
  - Line-up tab on cylinder sleeve adapter with large single slot in **59411** Cylinder Sleeve.

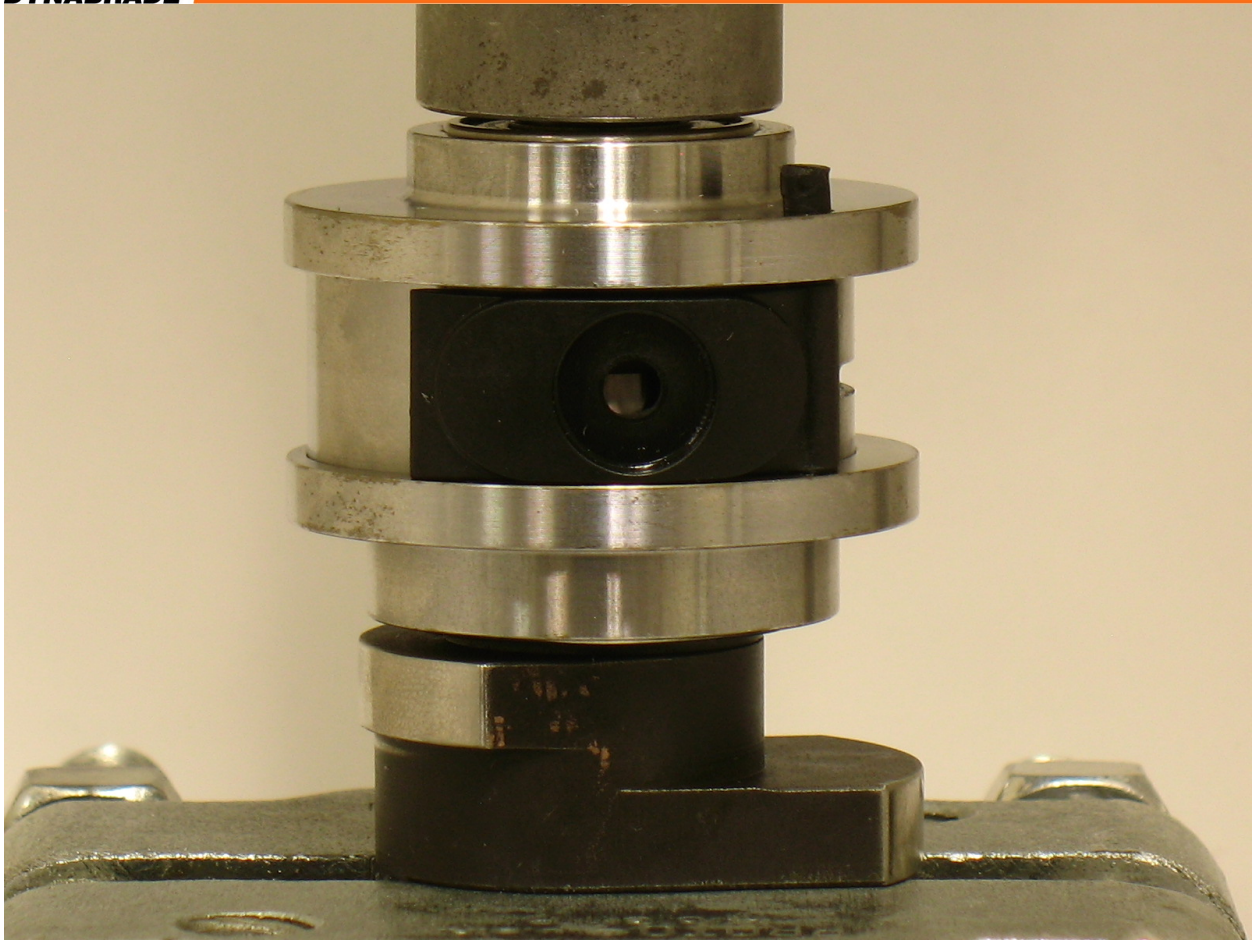




5. Install **59411** Cylinder Sleeve and **591412** Cylinder Sleeve Adapter so that short pins fit into front bearing plate.

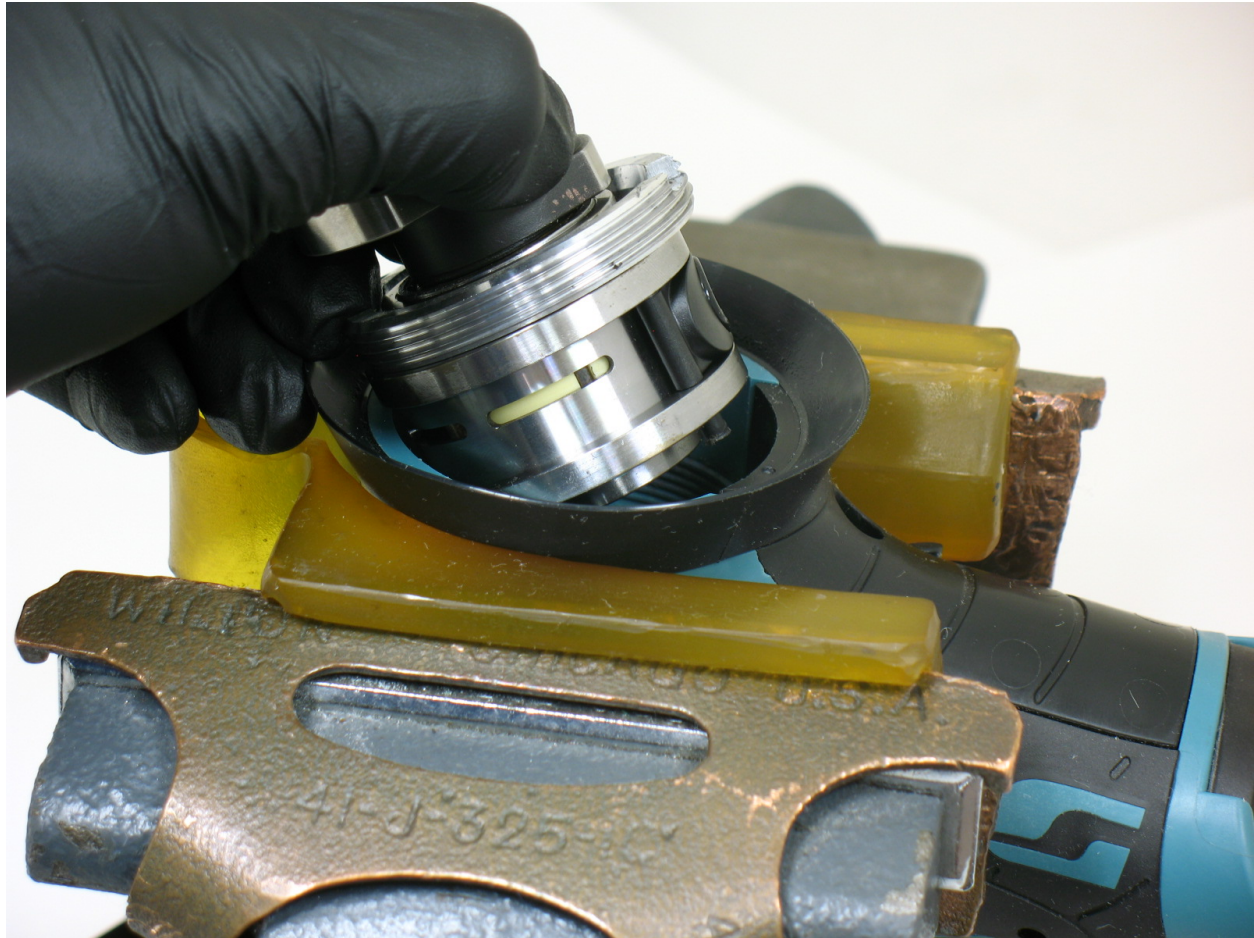


6. Use **LARGE DIAMETER END** of **57091 Bearing Press Tool** and arbor press to install **01139** Bearing into **59409** Rear Bearing Plate.



7. Use **RAISED INSIDE DIAMETER** of **96244 Bearing Press Tool** and arbor press to install bearing and plate onto shaft balancer.
- **Notice:** Carefully press bearing/plate down until it **just touches the cylinder**. This will produce a close fit between the bearing plates and cylinder sleeve.
  - Apply **95842** Dynabrade Air Lube 10W/NR or equivalent to **01024** O-Ring and install into **59412** Cylinder Sleeve Adapter.





8. Place **57092 Repair Collar** around housing. Fasten housing in vice with opening pointing up. **Notice:** Do not over tighten sander in vise or it will be difficult to install **59058 Lock Ring**.
- Install 59415 Lock Ring over counterweight.
  - Sight line-up pin with notch inside housing. Keep finger pressure against lock ring and install motor.



9. Use **56061** Lock Ring Wrench to tighten lock ring. Turn clockwise.
- Torque to 23 N•m/~200 lbs. in.

**Motor assembly completed.**

To install sanding pad, use **95263 Wrench** (17 mm.) to hold balancer shaft stationary. Turn pad clockwise.

**IMPORTANT:**

To verify the correct RPM and tool performance, follow instructions on page 2 of tool manual. Refer to: "Maintenance Schedule - Every 20 Hours/Once a Week - First Bullet:

- Measure RPM" and follow the instructions.

**Vacuum & Exhaust Assemblies:**

To identify vacuum and exhaust components, refer to exploded view and parts list found in tool manual.