

# KaVo SUPERtorque LUX 659B – PB (Pushbutton) Repair Procedure



Tools needed to properly repair this handpiece:

1. Kavo Coupler
2. Kavo 647B/649B Back Cap Removal Tool (10129)
3. Auto-Chuck Protector Punch (00024 & 00024A)
4. Small Channel Lock Pliers
5. One Pair of Dykes
6. A Small straight pin or Exacto Knife

The KaVo 659B is a new KaVo handpiece. It came out in 2006 and you should now start seeing them out of Manufacturers warranty. Lube is required on this handpiece.

## STEP 1

Try to determine the problem before opening the handpiece. Insert a high speed bur, checking that it inserts smoothly and tightens securely. Twist the bur manually to feel how smoothly it turns. Attach it to your air hose and run the handpiece (if you can). Check that air pressure is at 40-45 p.s.i.. Listen for the appropriate pitch at full speed and for a smooth rundown. Check the water spray – it should be a fine mist. Attempt to cut a shell to test the torque. Disassemble the handpiece following the instructions below.

## DISASSEMBLY



### STEP 2

Using the Kavo PB back cap removal tool (10129), twist in a counterclockwise direction to unscrew the back cap and remove the turbine assembly.

**TIP:** Sometimes the cap is very tight. Be very careful not to let the tool slip and strip or scratch the back cap.



### STEP 3

Instead of pressing the bearings off the spindle, they must be broken off. This is done so the relationship between the impeller and spindle is not disturbed. To do this, grip the turbine assembly as seen in the picture to the left. Position the assembly over a trashcan and *wear eye protection*). Be very careful that the small channel lock pliers do not make any contact with the impeller, as this could damage it and/or disturb its position on the spindle and thus its balance.

Also ensure that the channel lock position on the pliers will not allow them to close all the way. If the pliers can fully close, it is very likely that when the bearing breaks, the pliers will collapse onto and damage the spindle.

Once the bearings have been removed, the inner races of the bearings will be left on the spindle.



### STEP 4

In order to get a better grip on the inner bearing race with the jaws of the dykes, it is helpful to cut small grooves on opposite sides of the race. Using a high speed handpiece and a cutting bur, as seen in the picture to the left, lightly score grooves on opposite sides of the bearing race. *It is very important that the bur does not contact and damage the impeller or cut through the bearing race and damage the spindle.*



### STEP 5

The inner race of the bearings must now be removed. Grab hold of one of the bearing races with a pair of side cutters or dykes (as shown).



### STEP 6

Now place the assembly over the large hole in your work block. Once there, place the auto-chuck protector punch over the back of the spindle and press (picture at far left). Then turn the spindle over and use the same technique on the other race, using the 00024R round punch.

**TIP:** You may find this technique a little hard to manage with only two hands at first. Keep practicing, possibly on an old spindle. It is a very quick and safe way to remove inner races once you get the hang of it. Call us with any questions on this method.

At this point, we must determine if you have an **OEM Turbine** or an **After-Market Turbine**.



An **OEM Turbine** is easily identifiable by the **Holes** drilled into the impeller Blades.



An **After-Market turbine** will have **NO holes** drilled into the impeller Blades.



The disassembled OEM turbine should now look like the assembly pictured at left. KaVo applies Loc-Tite to their spindle in the factory. Please take a few moments to remove any left over Loc-Tite from the assembly using a razor blade or Exacto knife.

## **STEP 7**

Remove the o-rings from inside the back cap (left) and from the handpiece head.



# OEM Turbine Assembly ONLY



Picture Number	Part Number	Description
1	10106 10106S	O-Ring O-Ring (Sable brand)
2	10216	KaVo OEM Loading Spring Kit
3	40405CM	KaVo 659B Rear Bearing (Myonic)
3	40405CB	KaVo 659B Rear Bearing (Barden)
4	40518	KaVo 659B Rear Spindle Spacer (.010")
5	N/A	OEM KaVo 659B Spindle/Impeller Combo
6	40410D	KaVo 659B Front Spindle Spacer (.015")
7	10101DB	KaVo 659B Front Bearing (Barden)

## REASSEMBLY (OEM Turbine Only)



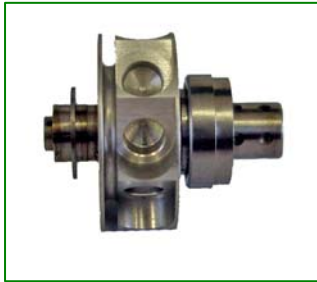
### STEP 1

**Original Turbine Only:** All OEM KaVo turbines require Loctite to secure the bearings to the spindle. Apply a very small amount of Loctite to the spindle with a needle. Then spread the Loctite out around the spindle where the bearing will eventually sit.



### STEP 2

**Original Turbine Only:** Now slide the 40410D (.015") spacer washer over the front of the spindle, (as pictured).



### STEP 3

**Original Turbine Only:** Next, slide the 10102DB bearing onto the front of the spindle. Once that is in place, slide the 40518 (.010") spacer over the button side of the spindle, (as pictured).



### STEP 4

**Original Turbine Only:** Finally, slip the rear bearing onto the spindle. KaVo OEM spindles generally do not require a "PRESS FIT" but if the bearings do not slide onto the spindle, simply press them on using your auto-chuck protector punch.

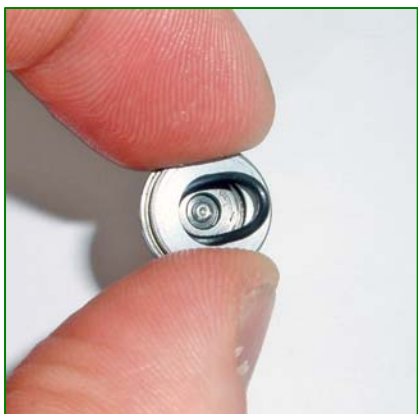


**Original Turbine Only:** Please line-up your 659B Turbine assembly as pictured at left. It should consist of a Back Cap, 2 – O-rings, 2-Loading Springs, the now assembled Turbine and the Handpiece.



### STEP 5

**Original Turbine Only:** First, place the o-ring in the head groove as pictured, (far left). Second, insert the SMALLER of the 2 loading springs (#10216) into the head assembly. Using a punch or small blunt tool, mildly work the loading spring past the head o-ring.



**STEP 6**  
**Original Turbine Only:**  
 Place the o-ring into the back cap. Secure it into the groove as shown (far left).

Next, place the large loading spring (#10216) into the back cap. Again, using a blunt tool, carefully push the spring all the way into the cap, past the o-ring.



**STEP 7**  
**Original Turbine Only:** Now, carefully seat the turbine assembly into the back cap. Once seated properly, insert the assembly into the head of the handpiece. Now, turn the back cap into the head of the handpiece and tighten with your 10129 KaVo Back Cap Wrench.



Picture Number	Part Number	Description
1	10106 10106S	KaVo O-Ring KaVo O-Ring (Sable)
2	10216	KaVo OEM Loading Spring Kit
3	40405CB 40405CM	KaVo 659B Rear Bearing (Barden) KaVo 659B Rear Bearing (Myonic)
4	10116B	KaVo 659B Spindle/Chuck Combo
5	10101B 10101ANG	KaVo 659B Front Bearing (Barden) KaVo 659B Front Bearing (NHBB)



## Reassembly (After-Market Turbine Only)



### STEP 1

**After-Market Turbine Only:** Place your front 10101ANG or 10101B bearing with the Ball Separator side up into Hole # 2 of your work-block.

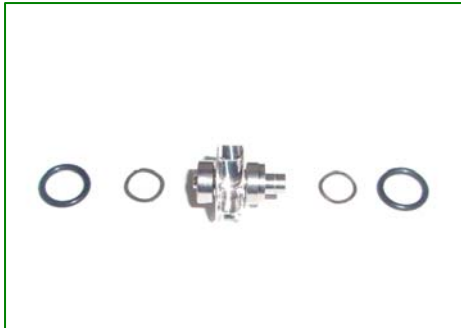
Then, Insert the open end of the 10116B Spindle into the bearing. Using your Auto-Chuck protector punch, carefully press the spindle into the bearing until the impeller makes contact with it.



### STEP 2

**After-Market Turbine Only:** Now, place the rear 10101CB or 10101CM bearing into Hole # 2 of your work-block with the Ball Separator side up.

Next, insert the button side of the spindle into the bearing. Carefully press the spindle into the bearing until the impeller makes contact with it.



### STEP 3

**After-Market Turbine Only:**

Now align your replacement parts as shown at left. Once again, remember that the larger of the two loading springs will go in the back cap and the smaller spring will be placed in the head of the handpiece.



### STEP 4

**After-Market Turbine Only:** First, place the o-ring in the head groove as pictured, (far left). Second, insert the SMALLER of the 2 wavy washers (#10216) into the head assembly.

Using a punch or small blunt tool, mildly work the loading spring past the head o-ring.



### **STEP 5**

**After-Market Turbine Only:** Place the o-ring into the back cap. Secure it into the groove as shown (far left).

Next, place the large loading spring (#10216) into the back cap. Again, using a blunt tool, carefully push the spring all the way into the cap, past the o-ring.



### **STEP 6**

**After-Market Turbine Only:** Now, carefully seat the turbine assembly into the back cap. Once seated properly, insert the assembly into the head of the handpiece. Now, turn the back cap into the head of the handpiece and tighten with your 10129 KaVo Back Cap Wrench.

**You are now ready to test your KaVo 659B Handpiece repair. Remember to test the water spray as well, insuring a fine mist and complete bur coverage during use.**