

Disassembly/Assembly Instructions – Wrenchless Pencil Grinder

Important: The Dynabrade Pneumatic Power Tool Lifetime Warranty Policy does NOT cover normally wearable parts and products. Before servicing this tool please contact Dynabrade Inc. or a Dynabrade Subsidiary for information regarding the Dynabrade Pneumatic Power Tool Lifetime Warranty Policy.

Notice: Special repair tooling referred to in these instructions can be ordered from Dynabrade. (See Page __)

Disconnect tool from the air supply before servicing.

Collet Disassembly/Assembly:

To Disassemble:

1. Rotate the **60083** Lever counterclockwise to open the collet.
2. To loosen and remove the collet insert, turn it counterclockwise.

To Assemble:

1. To reduce accessory run-out and sticking; thoroughly clean, inspect, and polish as necessary, the **60118/60119** Collet Insert, and the collet body end of the drive shaft.
2. Install an accessory with the correct diameter shank into the collet insert. Turn the collet insert clockwise to secure the accessory in the collet. Note: Tighten the collet insert around the shank of the accessory until a precise slip fit is established.

Notice: To avoid damage to the **60118/60119** Collet Inserts never allow the collet to collapse empty, always close on an accessory shank or the supplied pin.

3. Rotate the **60083** Lever clockwise until it locks, securing the accessory in the collet.

Collet Disassembly/Assembly Complete.

Motor Disassembly/Assembly:

To Disassemble:

1. (Follow Collet Disassembly Instructions)
2. To replace the **60093** Bearing, and the **51651** Bearing, remove the **60066** Nosepiece. Turn counterclockwise. Note: The **60081** Washer, **60094** Spring, and **60087** Washer Seal can be removed with the nosepiece.
3. Use a 2 mm hex key to remove the **60112** Screw, and **60083** Lever. Also, remove the **60080** Cam Support, and **60082** Cam from the housing.
4. Apply moderate heat to the **60110/60111** Turbine Cover to soften the thread sealant. Insert an adjustable pin spanner wrench in the exhaust holes of the **60110/60111** Turbine Cover and remove it from the housing. Turn counterclockwise.
5. Use caution when removing **60077** Bumper as the Bumper holds the Spring Washers in a compressed state. Carefully remove the **60077** Bumper by inserting a 4mm hex key into the internal hex recess in the turbine end of the drive shaft. Hold it stationary with the hex key and remove Bumper with an adjustable wrench. Turn the **60077** Bumper counterclockwise.
6. Important: It is helpful to carefully slide the **60088** Front Seal, **60089** Outer Housing Seal, **60090** Inner Race Seal, **60092** Rear Seal, **60093** Bearing, **60074** End Support, and the twenty [20] **60073** Spring Washers from the housing onto a 6" (152 mm) long, by 1/4" (6 mm) diameter shaft to keep all of the parts in the proper order. These parts must be installed in the same manner as they are removed. Note the orientation of all of the parts.
7. Remove the drive shaft with the **60078** Spring Washer Compressor, **60091** Pin, **60079** Collet Adjustment Screw, **51651** Bearing, **60102** Spring and turbine air motor from the housing.
8. Use an adjustable wrench to remove the **60099** Hex Nut securing drive shaft by inserting a 4 mm hex key into the internal hex recess in the turbine end of the drive shaft. Turn counterclockwise.
9. Remove the **60069** Brake Plate, **51675/51691** Governor, and **51678** Turbine. Remove **60098** Pin and **51656** Turbine Base.
10. Use a 1/16" diameter drive punch to remove the **60091** Pin, **60078** Spring Washer Compressor and **60079** Collet Adjustment Screw. Note: Drive the **60091** Pin from the hole in the side of **60078** Spring Washer Compressor that is not chamfered (press fit side).

Clean and inspect all parts before assembling.

To Assemble:

1. Slide **60102** Spring and **51651** Bearing onto the drive shaft.
2. Secure the drive shaft in a vise with bronze or aluminum jaws and install the **60079** Collet Adjustment Screw into the end of the drive shaft with the male thread pointing toward the collet end of the drive shaft. Slide the **60078** Spring Washer Compressor onto the drive shaft with the cross hole toward the turbine motor end of the drive shaft. Line-up the holes of the two parts and install the **60091** Pin through the chamfered-hole side of the spring washer compressor. Use a drive punch to set the **60091** Pin flush with the outside diameter of the spring washer compressor.
3. Install the **51656** Turbine Base onto the drive shaft.
4. Install the **60098** Pin into the cross-drilled hole in the drive shaft. Centralize the pin in the drive shaft.
5. Install the **51678** Turbine, and the **51675/51691** Governor onto the drive shaft.
6. To install the **60069** Brake Plate, align the slot in the brake plate with the **60098** Pin and the notches with the **51678** Turbine.
7. Apply a small amount of Loctite #222 (or equivalent) to the hex nut threads on the drive shaft. Tighten the **60099** Hex Nut onto the drive shaft. (Torque to 4.5 N m/40 in. lbs.)
8. Carefully slide the twenty [20] **60073** Spring Washers, **60074** End Support and temporarily secure **60077** Bumper to retain parts. Apply a small amount of Loctite #609 (or equivalent) to the outer race of the bearing and install the drive shaft assembly into the housing.

9. Slide a new **60093** Bearing, the **60092** Rear Seal, **60090** Inner Race Seal, **60089** Outer Housing Seal and **60088** Front Seal from the 6" (152 mm) long, by 1/4" (6 mm) diameter shaft onto the drive shaft and into the housing.
10. Place the **96418** Bearing Press Tool on the bench. Rest the **60099** Hex Nut on the **96418** Bearing Press Tool. Install the **60077** Bumper by pushing down, compressing the spring washers and secure at least a half thread of the bumper onto the end of the drive shaft. Thread the bumper all the way onto the drive shaft until it bottoms out using a 4mm hex key and adjustable wrench.
11. Apply Loctite Primer #7649 (or equivalent) to the threads of the **60110/60111** Turbine Cover. Wait five minutes and apply a small amount of Loctite #567 (or equivalent) to the threads of the **60110/60111** Turbine Cover. Install the turbine cover onto the housing and tighten. (Torque to 14 N m/125 lb in)
12. Install the **60081** Washer, **60094** Spring, and **60087** Washer Seal into the **60066** Nosepiece.
13. Apply a small amount of Loctite #567 (or equivalent) onto the threads of the housing and install the nosepiece assembly.
14. Insert the end of the **60082** Cam through the **60080** Cam Support. Position the cam so that the screw pocket on the shafts points toward the front of the tool. Apply a small amount of the Loctite #271 (or equivalent) to the threads of the cam support and use the **60113** Pin Wrench to install the assembly into the housing. Install the **60083** Lever Assembly onto the end of the **60082** Cam so that it is inline with the housing.
15. Apply a small amount of Loctite #271 (or equivalent) to the threads of **60112** Screw. Use a 2 mm hex key to install the screw and secure the lever to the cam making sure that it aligns into the recess in the **60082** Cam.
16. Swing the **60083** Lever to compress the spring washers and install the **60118/60119** Collet Insert into the end of the drive shaft. Note: Adjust the collet as stated in **Collet Assembly Steps 2 & 3**.

Motor Disassembly/Assembly Complete.

Air Bushing Replacement:

To Remove:

1. To replace the **51662** Air Bushing, use an Easy Out Screw Extractor, or another means to remove it from the **60110/60111** Turbine Cover.
2. Carefully press a new **51662** Air Bushing into the turbine cover. Bushing should be pressed flush with the surface of the turbine cover. Join the turbine cover to the housing, turning the cover until the bottoms against the housing. Next, back the cover off slightly until the drive shaft rotates freely. Carefully connect the tool to the air supply and depress the "ON" button. As the tool is running slowly tighten the turbine cover to 'wear-in' the air bushing. Once the turbine cover has bottomed against the housing, and the tool is running freely, depress the "OFF" button, wait for the drive shaft to stop, and disconnect the tool from the air supply. – Remove the turbine cover from the housing. Apply Loctite Primer #7649 (or equivalent) to the threads of the turbine cover. Wait five minutes and apply a small amount of Loctite #567 (or equivalent) to the threads of the turbine cover. Join and tighten the turbine cover to the housing. (Torque to 14 N m/125 lb in)
3. Test the air motor for proper operation. Important: Always check RPM without an accessory mounted in the tool. – Carefully connect the tool to the air supply. Activate the "ON" button. Use a tachometer to check the speed (RPM) of the tool. The tool should operate within 10% of the rated maximum RPM that is marked on the housing. The tool speed should not exceed the maximum RPM with operating air pressure set to 90 psig. (6.2 Bar) at the air inlet of the tool.

Air Bushing Replacement Complete:

Brake Replacement:

To Remove:

1. To remove the **60110/60111** Turbine Cover, place an adjustable pin spanner wrench in the exhaust holes of the turbine cover and turn it counterclockwise. Note: Apply moderate heat to the turbine cover to soften the thread sealant. Use external retaining ring pliers to remove the **60103** External Retaining Ring and the **60072** Brake Assembly.
2. Remove the **60075** Backing Plate from the bore of the **60072** Brake Assembly.

To Install:

1. Inspect all "o-ring" seals and replace any that are damaged.
2. Make sure that the **60097** Compression Spring is in place. Lubricate the "o-ring" seals with, **95842** Dynabrade Air Lube (10W/NR). Install the new **60072** Brake Assembly with the notches aligned to engage the **60100** Pins [2].
3. Lubricate the "o-ring" seals on the **60075** Backing Plate with **95842** Dynabrade Air Lube (10W/NR). Insert the backing plate into the bore of the **60072** Brake Assembly.
4. Use external retaining ring pliers to secure the **60075** Backing Plate with the **60103** External Retaining Ring. Make sure to engage the retaining ring groove in the turbine cover.
4. Apply Loctite Primer #7649 (or equivalent) to the threads of the turbine cover. Wait five minutes and apply a small amount of Loctite #567 (or equivalent) to the threads of the turbine cover. Join and tighten the turbine cover to the housing. (Torque to 14 N m/125 lb in)

Brake Replacement Complete:

Hose Repair/Replacement:

(To repair or replace damaged air supply hose.)

To Remove:

1. Use a sharp utility knife to cut the hose length-wise, approximately 1" (25 mm) from the end of the tool or valve body. Remove the hose.
2. Trim away the damaged area of the hose, or replace the damaged hose with a new section of **51276** or **51277** Hose. Important: Use only Dynabrade Push-Lock Hose.

Hose Repair/Replacement (Continued):

To Install:

1. Push the hose firmly onto the Push-Lock hose barb fitting. Push the hose all the way on, tight against the mating part.

Hose Repair/Replacement Complete.

Test the air motor for proper operation. Important: Always check RPM without an accessory mounted in the tool. – Carefully connect the tool to the air supply. Activate the “ON” button. Use a tachometer to check the speed (RPM) of the tool. The tool should operate within 10% of the rated maximum RPM that is marked on the housing. The tool speed should not exceed the maximum RPM with operating air pressure set to 90 psig. (6.2 Bar) at the air inlet of the tool.