Disassembly Instructions - 3" Extension Die Grinders

Motor Disassembly:

1. Secure the flats of the motor housing in a vise with aluminum or bronze jaws.
2. Loosen and remove the collet assembly: retaining nut, cap, insert, and any accessory.
3. Use a hot air gun to warm the **53550** Adapter and soften the thread adhesive. Use an adjustable wrench to loosen the adapter. Turn counterclockwise. Remove the **51072** Coupler, and **53175** Collar.
4. Pull the motor assembly out of the housing.
5. Fasten the **96346** Bearing Separator (2") around the end of the **01013** Cylinder that touches the **01245** Rear Bearing Plate.
6. Position the bearing separator on the table of the **96232** Arbor Press (#2) so that the **51066** Rotor Nut is pointing down.
7. Use a 1/4" diameter flat end drive punch as a press tool to push the rotor shaft out of the **01015** Bearing. Remove the **01011** Vanes.
8. Use the **96211** Bearing Removal Tool and the **96232** Arbor Press (#2) to remove the **01015** Bearing from the rear bearing plate.
9. Secure the body of the **01148** Rotor in a vise with aluminum or bronze jaws, with the **51066** Rotor Nut pointing up.
10. Use an adjustable wrench to remove the **51066** Rotor Nut. Turn counterclockwise.
11. Remove the **01008** Front Bearing Plate, **01007** Bearing, Shims, and **01010** Spacer.

Motor Disassembly Complete.

Extension Disassembly:

1. Use an adjustable wrench to hold the **51105** Collet Body stationary, and use a 5/8" hex socket and wrench to loosen the **53551** Coupling Nut. Turn counterclockwise. Remove the spindle from the spindle housing.
2. Remove bearings from spindle housing and spindle.

Extension Disassembly Complete.

94519 Muffler and Valve Disassembly:

1. Secure the flats of the motor housing in a vise with aluminum or bronze jaws, with the muffler pointing up.
2. Use an adjustable wrench to loosen the **94523** Inlet Adapter. Turn counterclockwise. Remove the **94519** Muffler and valve components.
3. Refer to the parts page and exploded view of the **94519** Muffler for the order of disassembly.
4. Use a 2.5 mm drive punch to remove the **01017** Pin and throttle lever.

94519 Muffler and Valve Disassembly Complete.

Important: Clean and inspect all parts before assembling.

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Assembly Instructions - 3" Extension Die Grinders

Motor Assembly:

1. With the threaded stem of the **01148** Rotor pointing up, secure the body of the rotor in a vise with aluminum or bronze jaws.
2. Install the **01010** Spacer onto the rotor.
3. Place .003" (.08 mm) thick shim(s) into the **01008** Front Bearing Plate and install the **01007** Bearing. Install these parts as an assembly onto the rotor.
4. Install the **51066** Rotor Nut onto the rotor. (Torque to 17 N·m/150 in. lbs.) Use retaining ring pliers to install the **95711** Retaining Ring onto the rotor nut.
5. Check the clearance between the rotor and the bearing plate with a .001" (.03 mm) thick feeler gauge. The clearance should be .001" (.03 mm) to .0015" (.04 mm). If it is necessary to adjust the clearance, repeat steps 3-5 adding or removing shims. Once the proper rotor/gap clearance is achieved proceed with the motor assembly.
6. Lubricate the **01011** Vanes (4/pkg.) with the **95842** Dynabrade Air Lube 10W/NR (or equivalent). Install the vanes into the rotor.
7. Place the **01013** Cylinder onto the assembly so that the air inlet passage will line up with the air inlet passage in the **01245** Rear Bearing Plate.
8. Place the raised outside edge of the **96241** Bearing Press Tool against the outside race of the **01015** Bearing. Use the **96232** Arbor Press (#2) to install the **01015** Bearing into the **01245** Rear Bearing Plate.
9. Place the raised center of the **96241** Bearing Press Tool against the inside race of the **01015** Bearing. Use the **96232** Arbor Press (#2) to install the bearing/rear plate assembly onto the **01148** Rotor. **Important:** Carefully press the bearing/rear plate assembly onto the rotor until it just touches the cylinder. Doing so will achieve a snug fit between the bearing plates and the cylinder. A snug fit traps the cylinder while still allowing it to be shifted from side to side with a slight amount of finger pressure. A loose fit will not achieve proper preload of the motor bearings.
10. Line up the outer diameters of the front plate, cylinder, and rear plate. Carefully slide the motor assembly into the housing. Line up the rear bearing plate with the recess on the inside of the motor housing. Make sure that the motor is positioned properly so that it fits all the way into the housing before installing the **53550** Adapter (with extension assembly attached). **Note:** If the adapter with extension assembly is ready to be installed, continue following steps 11-13. However, if necessary, first follow and complete the 'Extension Assembly' Instructions, and then continue with following steps 11-13.
11. Secure the flats of the motor housing in a vise with aluminum or bronze jaws, with the **51066** Rotor Nut pointing up. Install the **53175** Collar over the end of the motor housing. Install the **51072** Coupler onto the rotor nut.
12. Apply a small amount of Loctite #567 (or equivalent) to the threads of the adapter and install it onto the motor housing. (Torque to 34 N·m/300 in. lbs.)
13. Pull the **53175** Collar forward onto the adapter.

Motor Assembly Complete.

Extension Assembly continued on the next page:

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Extension Assembly:

1. Install two **51075** Wavy Washers onto the short stem of the **53556** Spindle. Place the raised center of the **96419** Bearing Press Tool against the inside race of the **51078** Bearing. Use the **96232** Arbor Press (#2) to install the bearing onto the spindle.
2. Secure the diameter of the **53556** Spindle in a vise with aluminum or bronze jaws, with the **51078** Bearing pointing up. Install the **53551** Coupling Nut onto the spindle. (Torque to 17·Nm/150 in. lbs.)
3. Install the spindle into the **53558** Spindle Housing. Support the **53551** Coupling Nut on the table of the **96232** Arbor Press (#2). Install one of the **51078** Bearings (2) onto the spindle and spindle housing. Use the raised outside edge of the **96418** Bearing Press Tool against the outside race of the **51078** Bearing and install it with the press. Do the same for installing the second **51078** Bearing.
4. Install the **51105** Collet Body onto the **53556** Spindle. Use an adjustable wrench to hold the collet body stationary. Use a 5/8" socket and torque wrench to secure **53551** Coupling Nut and collet body. (Torque to 17·Nm/150 in. lbs.)
5. Secure the wrench flats of the **53550** Adapter in a vise with aluminum or bronze jaws, with the internal threads of the adapter facing up. Apply a small amount of Loctite #567 (or equivalent) to the threads of the spindle housing and install it into the **53550** Adapter. (Torque to 23 N·m/200 in. lbs.)

Extension Assembly Complete:

94519 Muffler and Valve Assembly:

1. Use the exploded view of the **94519** Muffler Assembly as a guide for the proper order of assembly. **Note:** Set aside the assembled muffler and install it after the valve components are installed into the housing.
2. Secure the flats of the motor housing in a vise with aluminum or bronze jaws with the air inlet opening pointing up.
3. Install the **01464** Valve Seal. Install the **01477** Valve Stem. Use a needle nose pliers to grasp the back of the **01472** Tip Valve and insert its metal stem into the hole in the **01477** Valve Stem. Carefully, use the needle nose pliers to install the **01468** Spring placing the small end of the spring against the back of the tip valve. Apply a small amount of Loctite #567 (or equivalent) to the threads **94523** Inlet Adapter and install the Muffler Assembly. (Torque to 23 N·m/200 in. lbs.)
4. Install the throttle lever and secure it with the **01017** Pin.
5. Use an adjustable wrench to hold the **94523** Inlet Adapter stationary when installing the air fitting.

94519 Muffler and Valve Assembly Complete.

Tool Assembly Complete.

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