

Models:

- 52315 - 12,000 RPM, 1/4"
- 52316 - 15,000 RPM, 1/4"
- 52317 - 20,000 RPM, 1/4"
- 52318 - 12,000 RPM, 6 mm
- 52319 - 15,000 RPM, 6 mm
- 52320 - 20,000 RPM, 6 mm

.4 Hp/Right-Angle/Rear Exhaust 1/4" & 6mm Die Grinder

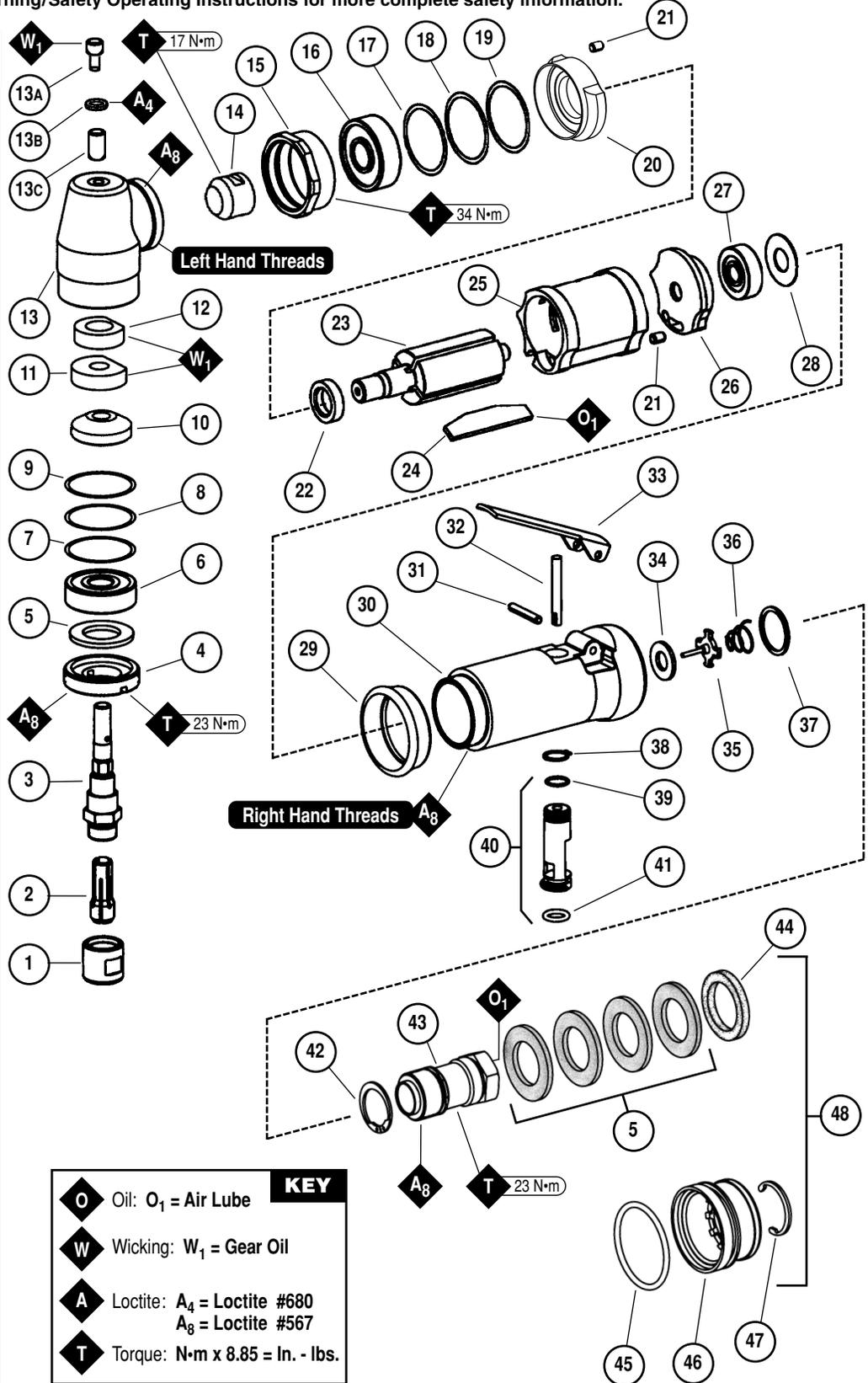
Air Motor and Machine Parts

WARNING

Always operate, inspect and maintain this tool in accordance with the Safety Code for portable air tools (ANSI B186.1) and any other applicable safety codes and regulations. Please refer to Dynabrade's Warning/Safety Operating Instructions for more complete safety information.

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12	02043	Wick - 12,000 RPM
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Important Operating, Maintenance and Safety Instructions

Carefully read all instructions before operating or servicing any Dynabrade® Abrasive Power Tool.

Warning: Hand, wrist and arm injury may result from repetitive work motion and overexposure to vibration.

Important: All Dynabrade Rotary Vane air tools must be used with a Filter-Regulator-Lubricator to maintain all warranties.

Operating Instructions:

Warning: Eye, face, respiratory, sound and body protection must be worn while operating power tools. Failure to do so may result in serious injury or death. Follow safety procedures posted in workplace.

1. With power source disconnected from tool, securely fasten abrasive/accessory on tool.
2. Install air fitting into inlet bushing of tool. **Important:** Secure inlet bushing of tool with a wrench before attempting to install the air fitting to avoid damaging valve body housing.
3. Connect power source to tool. Be careful not to depress throttle lever in the process.
4. Check tool speed with tachometer. If tool is operating at a higher speed than the RPM marked on the tool or operating improperly, the tool should be serviced to correct the cause before use.
5. Air tools are not intended for use in explosive atmospheres and are not insulated for contact with electrical power sources. Sanding/Grinding certain materials can create explosive dust. It is the employers responsibility to notify the user of acceptable dust levels. Sanding/Grinding can cause sparks which can cause fires or explosions. It is the users responsibility to make sure the work area is free of flammable materials.

Maintenance Instructions:

1. Check tool speed regularly with a tachometer. If tool is operating at a higher speed than the RPM marked on the tool, the tool should be serviced to correct the cause before use.
2. Some silencers on air tools may clog with use. Clean and replace as required.
3. All Dynabrade Rotary Vane air motors should be lubricated. Dynabrade recommends one drop of air lube per minute for each 10 SCFM (example: if the tool specifications state 40 SCFM, set the drip rate of your filter-lubricator at 4 drops per minute). Dynabrade Air Lube (P/N **95842**: 1 pt. 473 ml.) is recommended.
4. An Air Line Filter-Regulator-Lubricator must be used with this air tool to maintain all warranties. Dynabrade recommends the following: **11405** Air Line Filter-Regulator-Lubricator — Provides accurate air pressure regulation, two-stage filtration of water contaminants and micro-mist lubrication of pneumatic components. Operates up to 40 SCFM @ 100 PSIG has 3/8" NPT female ports.
5. Lubricate wick system through angle gear head Gear Oil fitting with 2-3 plunges every **8 hours** of use for maximum gear life. **Important:** Use recommended angle gear oil only for wick system. **Do not contaminate wick with any other oil or grease product (Order 95848 Gear Oil and 95541 Gun).**
6. Use only genuine Dynabrade replacement parts. To reorder replacement parts, specify the **Model #, Serial # and RPM** of your machine.
7. A Motor Tune-Up Kit (P/N **96179**) is available which includes assorted parts to help maintain motor in peak operating condition. Please refer to Dynabrade's Preventative Maintenance Schedule for a guide to expectant life of component parts.
8. Mineral spirits are recommended when cleaning the tool and parts. Do not clean tool or parts with any solvents or oils containing acids, esters, keytones, chlorinated hydrocarbons or nitro carbons.
9. DO NOT clean or maintain air tools with chemicals that have a low flash point (example: WD-40®).

Safety Instructions:

Products offered by Dynabrade should not be converted or otherwise altered from original design without expressed written consent from Dynabrade, Inc.



- **Important:** User of tool is responsible for following accepted safety codes such as those published by the American National Standards Institute (ANSI).
- Operate machine for one minute before application to workpiece to determine if machine is working properly and safely before work begins.
- Always disconnect power supply before changing abrasive/accessory or making machine adjustments.
- Inspect abrasives/accessories for damage or defects prior to installation on tools.
- Please refer to Dynabrade's Warning/Safety Operating Instructions Tag (Reorder No. **95903**) for more complete safety information.
- **Warning:** Hand, wrist and arm injury may result from repetitive work, motion and overexposure to vibration.

Notice

All Dynabrade motors use the highest quality parts and metals available and are machined to exacting tolerances. The failure of quality pneumatic motors can most often be traced to an unclean air supply or the lack of lubrication. Air pressure easily forces dirt or water contained in the air supply into motor bearings causing early failure. It often scores the cylinder walls and the rotor blades resulting in limited efficiency and power. Our warranty obligation is contingent upon proper use of our tools and cannot apply to equipment which has been subjected to misuse such as unclean air, wet air or a lack of lubrication during the use of this tool.

One Year Warranty

Following the reasonable assumption that any inherent defect which might prevail in a product will become apparent to the user within one year from the date of purchase, all equipment of our manufacture is warranted against defects in workmanship and materials under normal use and service. We shall repair or replace at our factory, any equipment or part thereof which shall, within one year after delivery to the original purchaser, indicate upon our examination to have been defective. Our obligation is contingent upon proper use of Dynabrade tools in accordance with factory recommendations, instructions and safety practices. It shall not apply to equipment which has been subject to misuse, negligence, accident or tampering in any way so as to affect its normal performance. Normally wearable parts such as bearings, contact wheels, rotor blades, etc., are not covered under this warranty.

Model Number	Motor HP (W)	Motor RPM	Sound Level	Maximum Air Flow CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
52315/52318	.4 (298)	12,000	86 dB(A)	3/21 (595)	90 (6.2)	N/A	1.1 (.5)	5-3/4 (146)	2-7/8 (71)
52316/52319	.4 (298)	15,000	86 dB(A)	3/21 (595)	90 (6.2)	N/A	1.1 (.5)	5-3/4 (146)	2-7/8 (71)
52317/52320	.4 (298)	20,000	87 dB(A)	3/21 (595)	90 (6.2)	N/A	1.1 (.5)	5-3/4 (146)	2-7/8 (71)

Additional Specifications: Air Inlet Thread 1/4" NPT • Hose Size 1/4" or 8 mm

Disassembly/Assembly Instructions - Right-Angle Tools

Important: Manufacturer's warranty is void if tool is disassembled before warranty expires.
Please refer to parts breakdown for part identification.

Angle-Head Disassembly:

1. Disconnect the tool from the air supply. **Important:** Hold the air inlet adapter securely with a wrench before removing the air fitting so as to prevent damage to the composite housing.
2. Remove the collet cap and the collet insert.
3. Secure the **02031** Housing in a vise by using the **52296** Repair Collar to provide protection for the housing. Position the housing so that the **02035** Lock Ring is facing up.
4. Use the **50791** Lock Ring Tool to remove the **02035** Lock Ring, by turning it counter-clockwise.
5. Grasp the spindle and pull the spindle along with the **54520** Bearing, the gear and the shims out of the housing.
6. The bearing and gear can be pressed off the spindle with **96232** Arbor Press.
7. If necessary the **02033** Needle Bearing can be removed by using a 5/16" dia. flat end drive punch to push the **02041** Gear Oil Plate, and **01041** Gear Oil Fitting out of the **02031** Housing.

Angle-Head Disassembly Complete.

Motor Disassembly:

1. Disconnect the tool from the air supply. **Important:** Hold the air inlet adapter securely with a wrench before removing the air fitting so as to prevent damage to the composite housing.
2. Secure the motor housing in a vise by using the **52296** Repair Collar or padded jaws to provide protection for the housing. Position the tool so that the angle-head is pointing up.
3. Use 34 mm or an adjustable wrench to remove the **01461** Lock Nut by turning it clockwise.
4. Pull the motor assembly out of the motor housing.
5. Fasten the **96340** 2" Bearing Separator around the portion of the **01476** Cylinder that is closest to the **02676** Rear Bearing Plate.
6. Place the bearing separator on the table of the arbor press so that the pinion gear end of the rotor is pointing toward the floor.
7. Use a 3/16" dia. flat end drive punch as a press tool and position it on the rear rotor shaft. Press the rotor out of the **02696** Bearing. The **02696** Bearing can be removed from the **02676** Bearing Plate with the **96210** Bearing Removal Tool and the arbor press.
8. Secure the vane slotted body of the rotor in a vise with bronze or aluminum jaws so that the pinion gear is pointing up. Use a wrench to remove the pinion gear from the rotor by turning it counter clockwise.
9. Push the **02649** Bearing out of the front bearing plate and remove the shims. Slip the **01479** Spacer off the rotor.

Motor Disassembly Complete.

Valve Body Disassembly:

1. Use the **52296** Repair Collar to securely hold the motor housing in a vise so that the inlet adapter is pointing up.
2. Remove the **94535** Muffler Assembly by loosening the **01578** Inlet Adapter. Remove the **01468** Spring, **01472** Tip Valve, and **01464** Seal.
Note: Refer to the parts breakdown for part identification and the sequence of assembly for the **94535** Muffler.
3. Reposition the motor housing in the vise so that the throttle lever, and the **12132** Pin are accessible. Remove the pin and lever by using a 2.5 mm dia. drive punch.
4. Use retaining ring pliers to remove the **95558** Retaining Ring and push the **01469** Speed Regulator Assembly out of the motor housing.

Valve Body Disassembly Complete.

Valve Body Assembly:

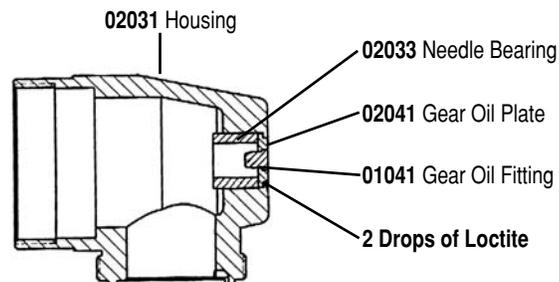
1. Install the **01469** Speed Regulator Assembly into the motor housing, and secure it in place with the **95558** Retaining Ring.
2. Use the **52296** Repair Collar to securely hold the motor housing in a vise so that the air inlet is pointing up.
3. Insert the **01449** Valve Stem into the speed regulator assembly so that the hole in the valve stem aligns with the air inlet hole in the motor housing.
4. Install the **01464** Seal so that it lays flat. Use a needle nose pliers to grasp the nylon portion of the **01472** Tip Valve and install it so that the metal pin fits into the hole of the **01449** Valve Stem.
5. Install the **01468** Spring so that the smaller end fits over the back of the tip valve.
6. Apply a small amount of Loctite #567 (or equivalent) to the male threads of the **01578** Inlet Adapter and install the **94535** Muffler Assembly. Tighten the inlet adapter. (Torque to 23 N·m/200 in.- lbs.)

Valve Body Assembly Complete.

Motor Reassembly:

Important: Clean and inspect parts for wear or damage before assembling.

1. Secure the vane slotted body of the rotor in a vise with bronze or aluminum jaws so that the threaded end is pointing up.
2. Slip the **01479** Spacer onto the **02037** Rotor.
3. Place a .002" thick shim into the **01478** Front Bearing Plate as an initial spacing and then install the **02649** Bearing into the front bearing plate.
4. Use the **96240** Bearing Press Tool so that it pushes against the inner race of the **02649** Bearing and with an arbor press, install the bearing and plate assembly onto the rotor.
5. Check the clearance between the rotor and the bearing plate with a .001" thick feeler gage. Clearance should be .001" to .0015". If it's necessary, readjust clearance by repeating steps 3-5 with a different thickness shim.
6. Once the proper rotor/plate clearance is achieved, apply the **95842** Dynabrade Air Lube (10W/NR or equivalent) to the (4) **01480** Blades and install them into the rotor.



Disassembly/Assembly Instructions - (continued)

- Use the **96216** Bearing Press Tool so that it pushes against the outer race of the **02696** Bearing and install it into the **02676** Rear Bearing Plate with an arbor press.
- Install the **01478** Cylinder so that it rests against the **01478** Bearing Plate. **Note:** Make sure that the air inlet passage of the cylinder is properly aligned with the air inlet passage in the **02676** Bearing Plate.
- Use the **96216** Bearing Press Tool so that it pushes against the inner race of the **02696** Bearing and install the rear bearing/plate assembly onto the motor assembly with an arbor press. **Important:** Carefully press the rear bearing/plate assembly onto the rotor until it touches the **01476** Cylinder. A "snug" fit should exist between the bearing plates and cylinder. If it is too tight the rotor will not turn freely and will cause damage to the bearings. If it is too loose the proper bearing preload will not be achieved.
- Apply a small amount of grease to the seal of the **02696** Rear Bearing and place the **02679** Shield against the seal of the bearing.
- Install the motor assembly into the housing so that the air passage node of the rear bearing plate aligns with the air passage notch inside the housing.
- Apply a small amount of Loctite #567 (or equivalent) to the threads of the motor housing and use a 34 mm (or adjustable wrench) to connect the angle-head assembly to the motor housing (Torque to 34 N•m/300 in.- lbs.).

Motor Assembly Complete.

Angle-Head Assembly:

Important: Clean and inspect parts for wear or damage before assembling.

- Press the **01041** Gear Oil Fitting into the **02041** Gear Oil Plate.
- Carefully apply two drops of Loctite #680 (or equivalent) to the recessed area of the **02031** Housing and press the gear oil plate along with gear oil fitting into the housing. (Allow 30 minutes for the adhesive to cure.)
- Press the **02033** Needle Bearing into the housing.
- Position the **96239** Bearing Press Tool so that it rests against the inner race of the **54520** Bearing and press the bearing onto the spindle.
- Align the hex shaped I.D. area of the gear with that of the spindle and press the gear into place.
- Apply a small amount of Loctite #567 (or equivalent) to the mating threads of the **02031** Housing. Connect these parts while being aware of the right and left hand threads.
- Place the **52296** Repair Collar around the motor housing and position the tool in vise so that the angle-housing end of the tool is pointing up.
- Use a 34 mm or an adjustable wrench on the **01461** Lock Nut while holding the angle housing stationary with the other hand. **Note:** The throttle lever can be positioned in 360° to the desired location. Allow for additional rotation when applying torque. (Torque to 23 N•m/200 in.- lbs.)
- Reposition the tool assembly in the vise so that the opening for the **02035** Lock Ring in the angle housing is facing upward.
- Soak the wicks in the **95848** Gear Oil before installing them into the **02031** Housing. Install the top wick first followed by the bottom wick. Position truncated side of the wicks toward the end of the pinion gear.
- Install the **02032** Spindle into the angle housing. Apply a slight amount of pressure down on the spindle while rotating it back and forth checking for the proper backlash or fit between the gears. A slight amount of backlash or clearance should exist between the bevel and pinion gears. When a tight fit exists, then add shims as needed placing the required thickness of shims between the outer race of the **54520** Bearing and the bearing seat in the housing.
- Place (1) **01486** Felt Silencer into the **02035** Lock Ring, and apply a small amount of Loctite #567 (or equivalent) to the threads of the **02035** Lock Ring. Use the **50971** Lock Ring Wrench to install the lock ring onto the **02031** Housing. (Torque to 23 N•m/200 in.- lbs.)
- Install the collet insert and the collet cap.

Angle-Head Assembly Complete. Please allow 30 minutes for adhesives to cure before operating tool.

Important: Before operating, place 2-3 drops of Dynabrade Air Lube (P/N **95842**) directly into air inlet with throttle lever depressed. Operate tool for 30 seconds to determine if tool is operating properly and to allow lubricating oils to permeate the motor. Motor should now be tested for proper operation at 90 PSIG. If motor does not operate properly or operates at a higher RPM than marked on the tool, the tool should be serviced to correct the cause before use. Loctite® is a registered trademark of Loctite Corp.

Optional Accessories



96179 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.



Dynabrade Air Lube

- Formulated for pneumatic equipment.
- Absorbs up to 10% of its weight in water.
- Prevents rust and formation of sludge.
- Keeps pneumatic tools operating longer with greater power and less down time.

95842: 1pt. (473 ml)

95843: 1gal. (3.8 L)

95542 Grease 10 oz.

- Multi-purpose grease for all types of bearings, cams, gears.
- High film strength; excellent resistance to water, steam, etc.
- Workable range 0° F to 300° F.

95541 Push-type Grease Gun

- One-hand operation.

96346 Bearing Separator

- Use the separator to remove gears and bearings.



Dynabrade Angle Gear Oil

- Specifically formulated to saturate wick system in right angle gear head.
- Easy to apply using Dynabrade P/N **95541** Oil Gun. Apply 3 plunges every 8 hours of operation into tools lubrication fitting.

95848: 2 oz. tube

95849: 10 oz. tube



96210 Bearing Removal Tool

- This tool is designed to pass through the I.D. of the bearing plate and push against the I.D. of the bearing.



50971 Lock Ring Tool

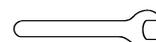
- Lock Ring Tool has a 3/8" square socket for use with 3/8" driver; breaker bar, ratchet head, or torque wrenches.



Dynaswivel®

- Swivels 360° at two locations which allows an air hose to drop straight to the floor, no matter how the tool is held.

94300 1/4" NPT.



95262 14 mm
Open-End Wrench.



Expect a gear life of 500 hours minimum, with proper lubrication.
Apply 3 plunges into lubrication fitting every 8 hours of operation.



52296 Repair Collar

- Specially designed collar for use in vise to prevent damage to valve body of tool during disassembly/assembly.



96216 Bearing Press Tool

96239 Bearing Press Tool

96240 Bearing Press Tool

- This tool is designed to safely press a bearing into a bearing plate and onto a shaft.



Visit Our Web Site: www.dynabrade.com

Email: Customer.Service@Dynabrade.com

DYNABRADE, INC., 8989 Sheridan Drive • Clarence, NY 14031-1490 • Phone: (716) 631-0100 • Fax: 716-631-2073 • International Fax: 716-631-2524
DYNABRADE EUROPE S.à.r.l., Zone Artisanale • L-5485 Wormeldange—Haut, Luxembourg • Telephone: 352 76 84 94 1 • Fax: 352 76 84 95 1