

**Models:**

53501 — 18,000 RPM, 1/4" Collet

53502 — 20,000 RPM, 1/4" Collet

53506 — 18,000 RPM, 6mm Collet

53507 — 20,000 RPM, 6mm Collet

# Extension Die Grinder

## Air Motor and Machine Parts

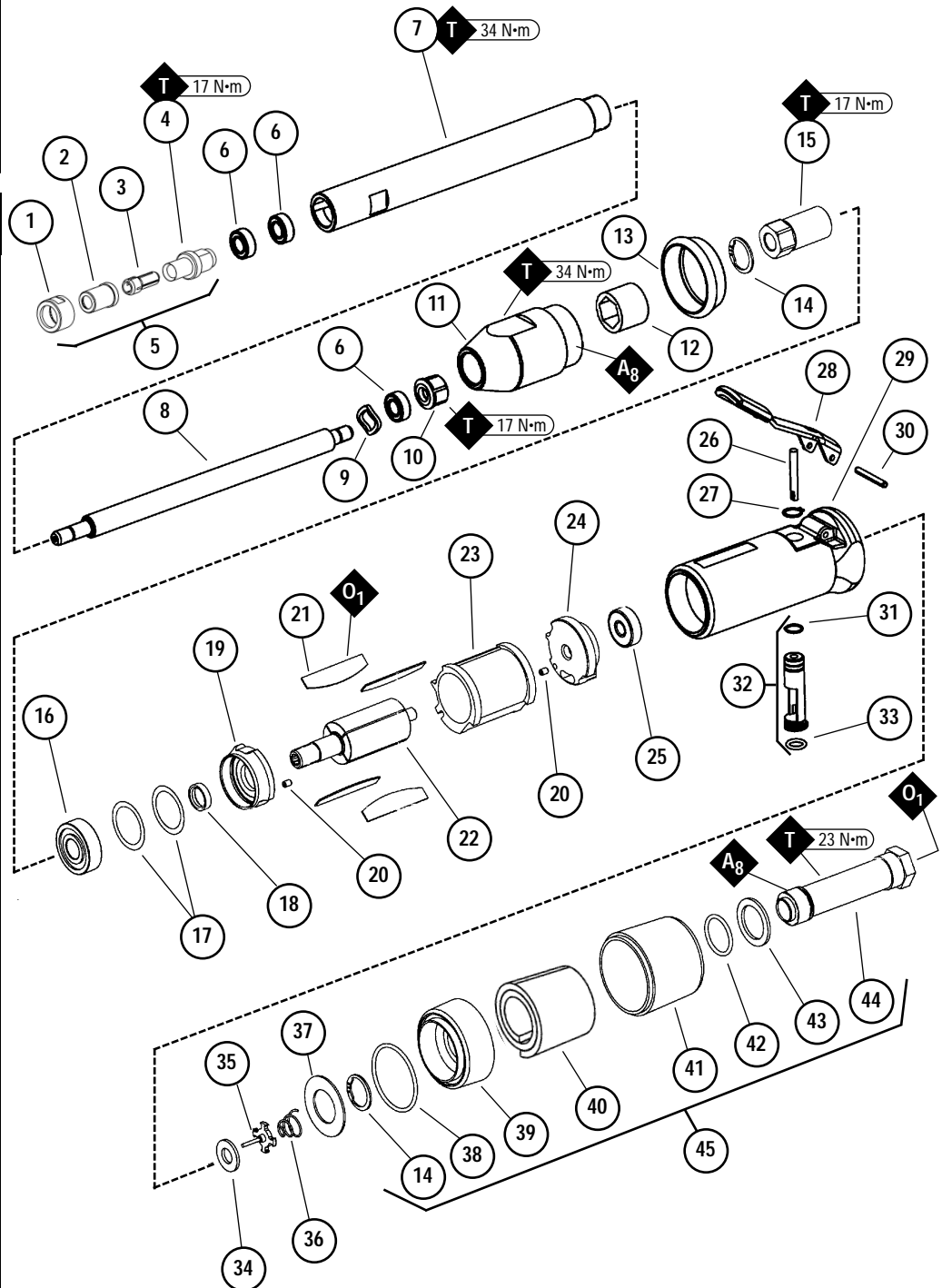
### ⚠ WARNING

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.

<b>O</b>	Oil: O <sub>1</sub> = Air Lube
<b>A</b>	Adhesive: A <sub>8</sub> = Loctite #567
<b>T</b>	Torque: N•m x 8.85 = In. - lbs.

**Index Key**

No.	Part #	Description
1	51098	Retaining Nut
2	51107	Cap
3	01485	1/4" Collet Insert
4	01497	6 mm Collet Insert
5	51105	Collet Body
6	51124	1/4" Collet Assembly
7	51078	Bearing (3)
8	51076	Spindle Housing
9	53552	Spindle
10	51075	Wavy Washer
11	53551	Coupling Nut
12	53550	Adapter
13	51072	Coupler
14	53175	Collar
15	95711	Retaining Ring (2)
16	51066	Rotor Nut
17	01007	Bearing
18	01121	Shim Pack (3/pkg.)
19	01010	Spacer
20	01008	Front Bearing Plate
21	50767	Pin (2)
22	01011	Blades (4/pkg.)
23	01148	Rotor
24	01013	Cylinder
25	01245	Rear Bearing Plate
26	01015	Bearing
27	01477	Valve Stem
28	95558	Retaining Ring
29	57344	Throttle Lever
30	01089	Safety Throttle Lever Assembly (Optional)
31	51135	Housing - 53501
32	51136	Housing - 53502
33	51137	Housing - 53506
34	51138	Housing - 53507
35	01017	Spring Pin
36	95730	O-Ring
37	01247	Speed Regulator Assy.
38	01024	O-Ring
39	01464	Seal
40	01472	Tip Valve
41	01468	Spring
42	01642	18,000 Rpm Air Ctrl Ring
43	01606	20,000 Rpm Air Ctrl Ring
44	95438	O-Ring
45	94521	Muffler Base
46	94528	Felt Muffler
47	94522	Muffler Cap
48	95375	O-Ring
49	94526	Spacer
50	94523	Inlet Adapter
51	94519	Muffler Assembly



# 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.

## 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 specification state 40 SCFM, set the drip rate of your filter-lubricator at 4 drops per minute). Dynabrade Air Lube (P/N 95842: 1pt. 473ml.) 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 5/8" NPT female ports.
5. Use only genuine Dynabrade replacement parts. To reorder replacement parts, specify the **Model #**, **Serial #** and **RPM** of your machine.
6. A Motor Tune-Up Kit (P/N 96007) 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.
7. Mineral spirits are recommended when cleaning the tool and parts. Do not clean tool or parts with any solvents or oils containing acids, esters, ketones, chlorinated hydrocarbons or nitro carbons.

## 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	Air Inlet Thread	Sound Level	Air Flow Rate CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
53501/53506	.5 (373)	18,000	1/4" NPT	75 dB(A)	4/30 (850)	90 (6.2)	M8 x 10 male	3.2 (1.5)	17-7/8 (545)	1-7/8 (48)
53502/53507	.5 (373)	20,000	1/4" NPT	77 dB(A)	4/31 (878)	90 (6.2)	M8 x 10 male	3.2 (1.5)	17-7/8 (545)	1-7/8 (48)

Additional Specifications: Hose I.D. Size 3/8" (10 mm)

# Disassembly/Assembly Instructions - Extension Die Grinder

**Important:** Manufacturer's warranty is void if tool is disassembled before warranty expires.

Please refer to parts breakdown for part identification.

## Motor Disassembly:

1. Disconnect tool from power source. Remove collet, retaining nut, cap and insert.
2. Using an adjustable wrench, remove **53558** Spindle Housing by turning counter-clockwise.
3. Remove **53556** Spindle by securing **53551** Coupling Nut in a vise, and loosen **51105** Collet Body.
4. Secure motor housing using padded vise with motor spindle facing upwards.
5. Using an adjustable wrench, remove **53550** Adapter, pull back **53175** Collar.
6. Remove **51072** Coupler.
7. Pull motor assembly from housing.
8. Press **01148** Rotor/Drive Shaft from **01015** Bearing and **01245** Bearing Plate.
9. Press **01015** Bearing from **01245** Bearing Plate.
10. Remove **01013** Cylinder and blades.
11. Secure **01148** Rotor in a padded vise and remove **51066** Rotor Nut (twist counterclockwise).
12. Slip off **01010** Spacer, **01008** Bearing Plate, shims and **01007** Bearing from **01148** Rotor.

**Motor Disassembly Complete.**

## Housing Disassembly:

1. Position housing in padded vise with air inlet facing up.
2. Remove air fitting by securing **94523** Inlet Adapter with a wrench and twist air fitting from inlet adapter.  
**Important:** **94523** Inlet Adapter must be secured before attempting to remove air fitting to avoid damaging valve body housing.
3. Remove **94523** Inlet Adapter.
4. Remove **95711** Retaining Ring from inlet adapter and separate **94521** Muffler Base from **94522** Muffler Cap. Remove **94528** Felt Muffler.
5. Remove air control ring from housing.
6. Using a 2.5 mm drift pin, tap **01017** Pin from housing and remove throttle lever assembly.
7. Remove **95558** Retaining Ring using retaining ring pliers.
8. Push **01247** Regulator from valve body housing and remove o-rings.

**Disassembly Complete.**

## Motor Assembly:

**Important:** Be sure parts are clean and in good repair before assembling. Follow all grease, oil, and torque specifications.

1. Place **01148** Rotor in padded vise with spindle facing upwards.
2. Slip **01010** Spacer onto **01148** Rotor.
3. Place a .002" shim into **01008** Front Bearing Plate as an initial spacing and slip **01007** Bearing into plate. **Note:** **01121** Shim Pak contains .001" and .002" shims.
4. Slip bearing/bearing plate assembly onto rotor, torque **51066** Rotor Nut onto rotor shaft. (17 N•m/150in.-lbs.)
5. Check clearance between rotor and bearing plate by using a .001" feeler gauge. Clearance should be at .001" to .0015". Adjust clearance by repeating steps 2-4 with different shim if necessary.
6. Once proper rotor gap clearance is achieved, install well lubricated **01011** Blades (4) into rotor slots. Dynabrade recommends using their **95842** Air Lube.
7. Install cylinder over rotor. Be sure air inlet holes of cylinder face away from **01008** Front Bearing Plate.
8. Press **01015** Rear Bearing into **01245** Rear Bearing Plate. Press bearing/bearing plate assembly onto rotor. Be sure that pin and air inlet holes line up with pin slot and air inlet holes in cylinder. **Important:** Fit must be snug between bearing plates and cylinder. If too tight, rotor will not turn freely. Rotor must then be lightly tapped at press fit end so it will turn freely while still maintaining a snug fit. A loose fit will not achieve the proper preload of motor bearings.
9. Install motor assembly into housing, making sure motor drops all the way into housing.  
**Note:** Align the rear bearing plate node with the notch inside the housing
10. Install **95711** Retaining Ring onto **51066** Rotor Nut using retaining ring pliers, and slip **51072** Coupler onto motor assembly.
11. Apply a small amount of Loctite® #567 to the threads of the **53550** Adapter and thread the adapter into the motor housing (Torque to 34 N•m/300in.-lbs.).

**Motor Assembly Complete.**

## Extension Spindle Assembly:

1. Press (2) **51078** Bearing onto **53556** Spindle.
2. Thread the **51105** Collet Body onto **53556** Spindle and torque to 17 N•m/150 in.-lbs.
3. Install spindle with bearings into **53558** Spindle Housing.
4. Place **51075** Wavy Washer over **53556** Spindle and into **53558** Spindle Housing.
5. Press (1) **51078** Bearing over **53556** Spindle and into **53558** Spindle Housing.
6. Thread the **53551** Coupling Nut onto **53556** Spindle and torque to 17 N•m/150 in.-lbs.
7. Apply a small amount of Loctite® #567 (or equivalent) to threads of the spindle housing.
8. Hold the motor assembly with front pointing toward the floor. Pull the **51072** coupler as far forward as possible.

(continued on next page)

## Disassembly/Assembly Instructions (continued)

9. Thread the extension spindle assembly into the **53550** Adapter at the front of the motor assembly, so that the **53551** coupling nut engages the **51072** Coupler. (Torque to 34 N·m/300 in.-lbs.)
10. Pull the **53175** Collar forward onto **53550** Adapter.

### Valve Body Assembly:

1. Insert **01247** Speed Regulator Assembly with o-rings installed into housing. Secure with **95558** Retaining Ring.
2. Secure valve body in vise with air inlet facing upwards.
3. Insert **01464** Seal into housing.
4. Line-up the hole in the **01477** Valve Stem with the hole in the housing (looking past brass bushing). Insert **01472** Tip Valve so that the metal pin passes through the hole in the valve stem. Install **01468** Spring (small end first).
5. Reassemble muffler assembly. Slip **94523** Inlet Adapter through muffler assembly and secure with **95711** Retaining Ring.
6. Install air control ring into valve body housing.
7. Apply Loctite® #567 PST Pipe Sealant (or equivalent) to threads of inlet bushing and install muffler assembly onto valve body (Torque 23.0 N·m/200 in. - lbs.).
8. Install throttle lever and **01017** Pin. Remove from vise.

**Tool Assembly Complete. Please allow 30 minutes for adhesives to cure before operating tool.**

**Important:** 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.

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## Optional Accessories



### 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** Composite Swivel 1/4" NPT.
- **95461** 3/8" NPT.
- **95462** 1/2" NPT.



### 96007 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.

Visit our Web Site: [www.dynabrade.com](http://www.dynabrade.com)

Email: [Customer.Service@Dynabrade.com](mailto:Customer.Service@Dynabrade.com)



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