

Models:

- 52220 – 15,000 RPM, 1/4 Collet**
- 52221 – 18,000 RPM, 1/4 Collet**
- 52222 – 20,000 RPM, 1/4 Collet**
- 52223 – 24,000 RPM, 1/4 Collet**

.5 Hp/7°/Short Shank/Rear Exhaust Die Grinder

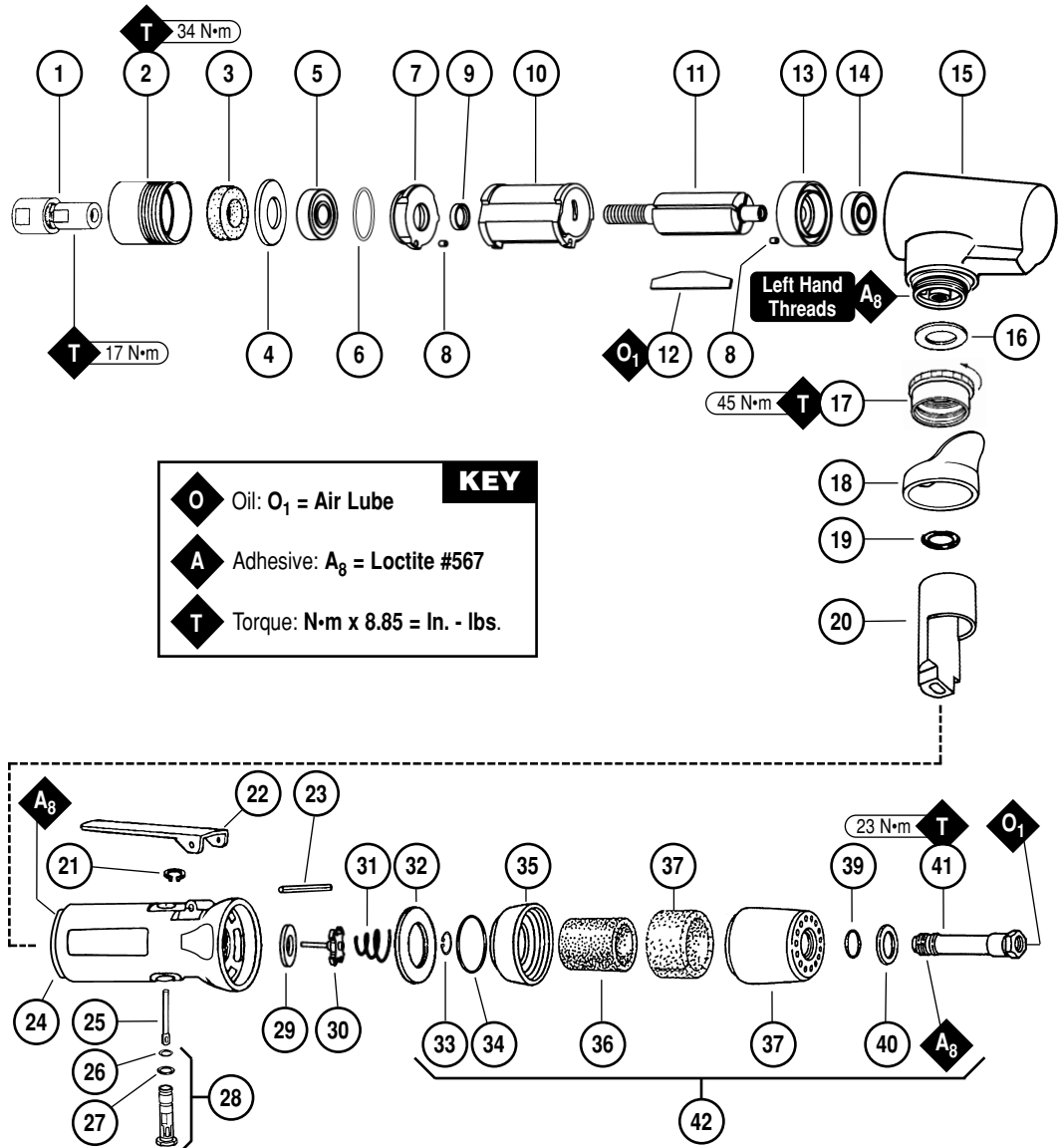
Air Motor and Machine Parts

! 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.

Index Key

No.	Part #	Description
1	50010	Collet Assembly
2	04072	Lock Ring
3	04066	Felt Silencer
4	04069	Block Plate
5	01007	Bearing
6	01121	Shim Pack (3/pkg.)
7	01008	Bearing Plate
8	50767	Pin (2)
9	01010	Rotor Spacer
10	01013	Cylinder
11	01148	Rotor
12	01011	Blade Set (4/pkg.)
13	01014	Rear Bearing Plate
14	01015	Bearing
15	01447	Housing
16	01548	Gasket
17	01461	Lock Nut
18	01558	Collar
19	95523	O-Ring
20	01470	Insert
21	95558	Retaining Ring
22	01448	Throttle Lever
	01462	Safety Lock Lever
23	12132	Pin
24	02150	Housing – 52220
	02151	Housing – 52221
	02152	Housing – 52222
	02153	Housing – 52223
25	01449	Valve Stem
26	95730	O-Ring
27	01024	O-Ring
28	01469	Speed Regulator Assy.
29	01464	Seal
30	01472	Tip Valve
31	01468	Conical Spring
32	01642	Cntrl. Ring 15,000 RPM
	01606	Cntrl. Ring 18,000 RPM
	01607	Cntrl. Ring 20,000 RPM
	01564	Cntrl. Ring 24,000 RPM
33	95711	Retaining Ring
34	95438	O-Ring
35	94521	Muffler Base
36	94524	Sintered Muffler
37	94525	Felt Muffler
38	94522	Muffler Cap
39	95375	O-Ring
40	94526	Spacer
41	94523	Inlet Adapter
42	94520	Muffler Assembly



Symbol	Description	Key
O	Oil: O ₁ = Air Lube	KEY
A	Adhesive: A ₈ = Loctite #567	
T	Torque: N•m x 8.85 = In. - lbs.	

Please indicate: Model #, Serial #, and RPM when ordering replacement parts.
 See reverse side for Accessories and Important Operating, Maintenance and Safety Instructions.

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 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. It is strongly recommended that all Dynabrade rotary vane air tools be used with a Filter-Regulator-Lubricator to minimize the possibility of misuse due to unclean air, wet air or insufficient lubrication. 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 40 SCFM @ 100 PSIG has 3/8" 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 **96044**) is available which includes assorted parts to help maintain motor in peak operating condition.
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, sanding pads, 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)
52220	.5 (373)	15,000	1/4" NPT	76 dB(A)	3/23 (651)	90 (6.2)	3/8"-24 male	2 (.9)	8-1/8 (206)	4-1/2 (114)
52221	.5 (373)	18,000	1/4" NPT	77 dB(A)	3/23 (651)	90 (6.2)	3/8"-24 male	2 (.9)	8-1/8 (206)	4-1/2 (114)
52222	.5 (373)	20,000	1/4" NPT	79 dB(A)	4/25 (708)	90 (6.2)	3/8"-24 male	2 (.9)	8-1/8 (206)	4-1/2 (114)
52223	.5 (373)	24,000	1/4" NPT	78 dB(A)	4/27 (765)	90 (6.2)	3/8"-24 male	2 (.9)	8-1/8 (206)	4-1/2 (114)

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

Disassembly/Assembly Instructions – .5 Hp Rear Exhaust

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

Notice: Dynabrade strongly recommends the use of their 52296 Repair Collar (sold separately) during assembly/disassembly activities. Failure to use this collar will highly increase the risk of damage to the valve body of this tool. Please refer to parts breakdown for part identification.

Motor Disassembly:

1. Disconnect tool from power source.
2. Secure air tool in vise using 52296 Repair Collar.
3. With an adjustable pin wrench or 50971 Lock Ring Tool remove 04072 Lock Ring by turning counter-clockwise. Remove 04066 Felt Silencer and 04069 Block Plate.
4. Remove collet from rotor shaft by inserting a 3/16" hex wrench through collet body and into rotor shaft. Twist collet from shaft.
5. Remove 01013 Cylinder, blades (4) and 01010 Spacer from rotor. **Note:** 01007 Bearing, 01008 Front Bearing Plate and spacer are a slip fit onto rotor.
6. Press rotor from 01014 Rear Bearing Plate. Press 01015 Bearing from bearing plate.
Optional: To disassemble the valve body from the motor housing, peel back 01558 Collar to expose 01461 Lock Nut. Unscrew lock nut/valve body from housing (left hand threads).

Motor Disassembly Complete.

Valve Body Disassembly:

1. Position valve body in vise using 52296 Repair Collar 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 sintered muffler and felt muffler.
5. Remove air control ring from valve body. Using needle nose pliers, remove 01468 Spring, 01472 Tip Valve and 01464 Seal.
6. Using a 2.5mm drift pin, tap 12132 Pin from housing and remove throttle lever.
7. Remove 95558 Retaining Ring. Push 01469 Regulator from valve body and remove o-rings.

Disassembly Complete.

Motor Assembly:

Important: Be sure parts are clean and in good repair before assembling.

1. Place rotor in padded vise with a threaded spindle facing upwards.
2. Slip 01010 Spacer onto rotor.
3. Place a .002" shim into front bearing plate as an initial spacing and slip 01007 Bearing into plate. **Note:** 01121 Shim Pack contains .001" and .002" shims.
4. Install bearing/bearing plate assembly onto rotor.
5. Tighten collet assembly onto rotor (torque to 17 N•m/150 in. - lbs.).
6. 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 1-5 with different shims if necessary.
7. Once proper rotor/gap clearance is achieved, install well lubricated 01011 Blades (4) into rotor slots. Dynabrade Air Lube P/N 95842 is recommended.
8. Install cylinder over rotor. Be sure air inlet holes of cylinder face away from bearing plate.
9. Press 01015 Rear Bearing into 01014 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.
10. Secure motor housing in padded vise so motor cavity faces upwards.
11. Install motor assembly into housing. Be sure motor drops all the way into housing.
12. Insert 04069 Block Plate and 04066 Felt Silencer into 04072 Lock Ring and install onto motor housing (torque 17 N•m/150 in. - lbs.).
13. Motor adjustment must now be checked. With motor housing still mounted in vise, pull end of rotor and twist (10-15 lbs. force), rotor should turn freely without drag. If drag or rub is felt, then increase preload or remove shim. Also, push end of rotor and twist (10-15 lbs. force), rotor should turn freely without drag. If drag or rub is felt, then deload or add shim.

Valve Body Assembly:

1. Insert 01469 Regulator with o-rings and valve stem in place into valve body. Secure with 95558 Retaining Ring.
2. Secure valve body in vise using 52296 Repair Collar with air inlet facing upwards. Insert 01464 Seal.
3. Line up hole in valve stem with hole in 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 towards tip valve).
4. Assemble sintered muffler and felt muffler together and place in 94522 Muffler Cap. Install 94521 Muffler Base onto muffler cap.
5. Install 95438 O-Ring into groove on muffler base. Place 95375 O-Ring and 94526 Spacer into recessed area of muffler cap.
6. Slip 94523 Inlet Adapter through muffler assembly and install 95711 Retainer Ring into groove on inlet adapter.
7. Install air control ring into valve body housing.
8. Apply Loctite® #567 PST Pipe Sealant to threads of 94523 Inlet Adapter and install entire muffler assembly onto valve body (torque 23.0 N•m/200 in. - lbs.).
9. Replace air fitting. Secure inlet adapter with a wrench before tightening air fitting. Install throttle lever and 12132 Pin.

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. 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 properly penetrate motor.

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Optional Accessories



53032 – 1/4" Drill Chuck
Includes: **53052** Mated Chuck Key



Collet Inserts

- **50065** – 1/8"
- **50016** – 6mm
- **50039** – 8mm



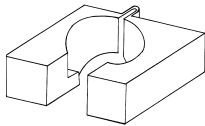
Dynaswivel®
Swivels 360° at two locations which allows an air hose to drop straight to the floor, no matter how the tool is held.

- **94300** 1/4" NPT



96044 Motor Tune-Up Kit:

- Includes assorted parts to help maintain and repair motor.



52296 Repair Collar

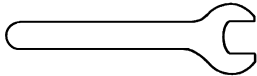
- Specially designed collar for use in vise to prevent damage to valve body housing during disassembly/assembly.



50971 Lock Ring Tool

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

Wrenches



95262 – 14mm open-end.
95281 – 19mm open-end.



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