Parts Page Reorder No. PD01•62
Effective July, 2001

Vacuum Drill

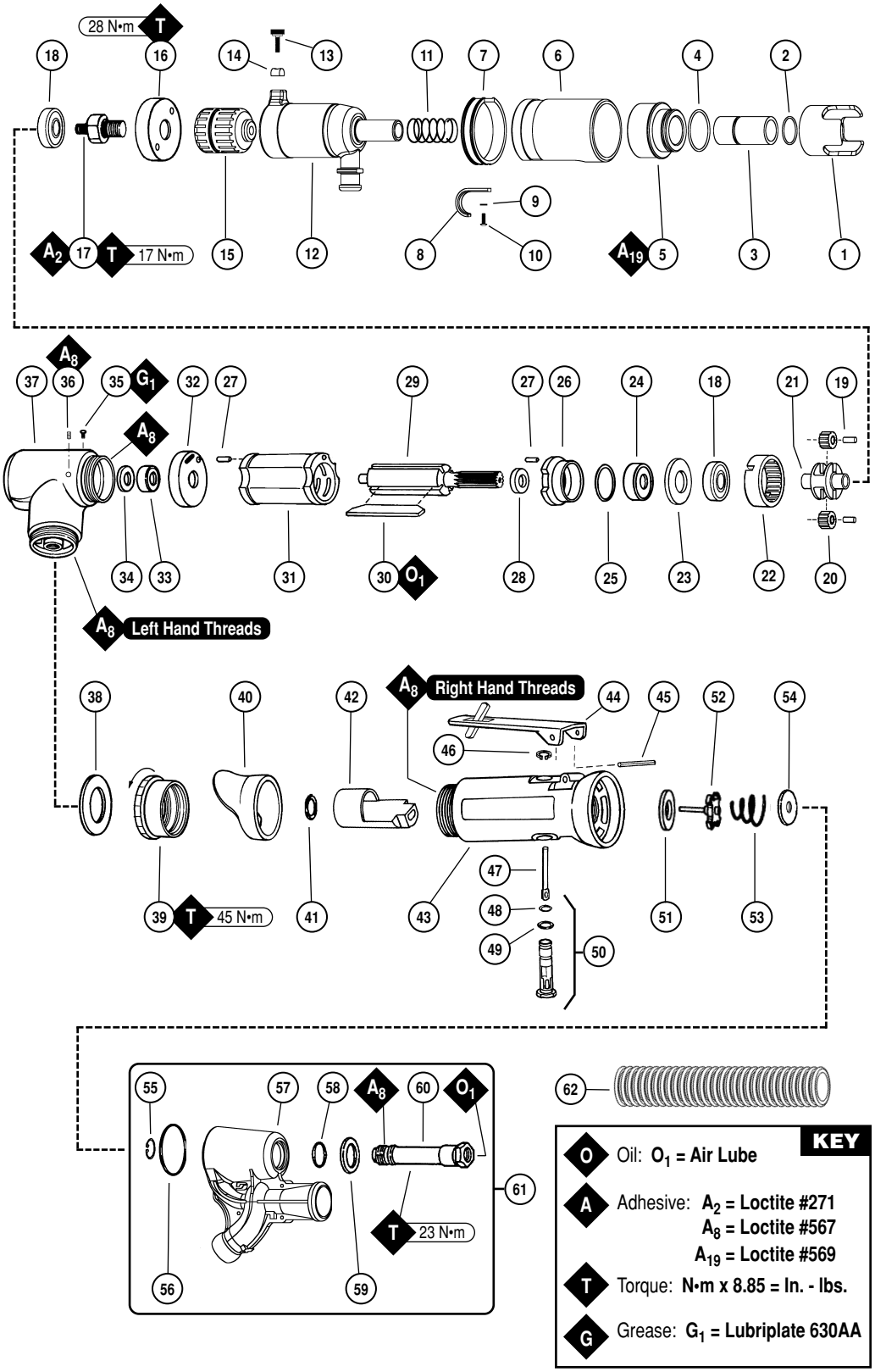
Models:
53200 – 3,200 RPM
53210 – 5,000 RPM

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	**53215**	Cup
2	**01064**	O-Ring
3	**53214**	Nozzle
4	**14064**	O-Ring
5	**53216**	Pipe Adapter
6	**53217**	Top Pipe
7	**96501**	Strap
8	**53212**	Trigger
9	**96502**	Lock Washer
10	**96503**	Button Head Cap Screw
11	**96527**	Spring
12	**53218**	Shroud
13	**53219**	Locking Knob
14	**40029**	Motor Lock
15	**96526**	Drill Chuck
16	**53208**	Rear Exhaust Cover
17	**50782**	Adapter
18	**54552**	Bearing (2)
19	**54472**	Gear Shaft (2)
20	**54519**	3,200 RPM Gear (2)
	06213	5,000 RPM Gear (2)
21	**Planetary Carrier**	
	50786	3,200 RPM
	50787	5,000 RPM
22	**54468**	Ring Gear
23	**50778**	Spacer
24	**02649**	Bearing
25	**54529**	Shim (3/pkg.)
26	**01478**	Front Bearing Plate
27	**50767**	Spring Pin (2)
28	**01479**	Spacer
29	**Rotor**	
	54553	5,000 RPM
	54554	3,200 RPM
30	**01480**	Blade (4/pkg.)
31	**01476**	Cylinder
32	**02673**	Rear Bearing Plate
33	**02696**	Bearing
34	**02679**	Shield
35	**01041**	Grease Fitting
36	**50784**	Set Screw
37	**50776**	Motor Housing
38	**01548**	Gasket
39	**01461**	Lock Nut
40	**01558**	Collar
41	**95523**	O-Ring
42	**01470**	Insert
43	**53220**	Housing - **53200**
	53223	Housing - **53210**
44	**01462**	Safety Lock Lever
45	**12132**	Pin
46	**95558**	Retaining Ring
47	**01449**	Valve Stem
48	**95730**	O-Ring
49	**01024**	O-Ring
50	**01469**	Speed Regulator
51	**01464**	Seal
52	**01472**	Tip Valve
53	**01468**	Spring
54	**01564**	Air Control Ring
55	**95711**	Retaining Ring
56	**95438**	O-Ring
57	**94532**	Vacuum Adapter
58	**95375**	O-Ring
59	**94526**	Spacer
60	**94523**	Inlet Adapter Assembly
61	**53207**	Vacuum Assembly
62	**96520**	Vacuum Hose



KEY

- **O** Oil: **O_1 = Air Lube**
- **A** Adhesive: **A_2 = Loctite #271**, **A_8 = Loctite #567**, **A_{19} = Loctite #569**
- **T** Torque: **N•m x 8.85 = In. - lbs.**
- **G** Grease: **G_1 = Lubriplate 630AA**

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 20 SCFM (example: if the tool specifications state 40 SCFM, set the drip rate of your filter-lubricator at 2 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: **10681** 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. Lubricate planetary gears through the grease fitting with 2 plunges for every 50 hours of use, to achieve maximum gear life (order **95542** Grease 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 **96174**) is available which includes assorted parts to help maintain motor in peek 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.

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	Air Flow Rate SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
53200	.4 (289)	3,200	86 dB(A)	24 (680)	90 (6.2)	3/8"-24 male	3.2 (1.45)	10-1/2 (267)	10 (254)
53210	.4 (289)	5,000	86 dB(A)	24 (680)	90 (6.2)	3/8"-24 male	3.2 (1.45)	10-1/2 (267)	10 (254)

Additional Specifications: Air Inlet Thread 1/4" NPT • Hose I.D. Size 1/4" (6 mm)

Disassembly/Assembly Instructions - .4 Hp/7°/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. Remove shroud and drill chuck.
3. With an adjustable pin wrench, remove **53208** Rear Exhaust Cover by turning counter-clockwise.
4. Remove **50784** Set Screw and pull **50782** Adapter and planetary carrier assembly from **50776** Housing.
5. Press planetary carrier assembly from rear **54552** Bearing. Remove ring gear and gears from **50786** or **50787** Planetary Carrier.
6. Secure planetary carrier in vise and remove **50782** Adapter. Press carrier from front **54552** Bearing.
7. Grab onto pinion and pull motor assembly from motor housing. Remove **50778** Spacer.
8. Press **54553** or **54554** Rotor from **02673** Rear Bearing Plate. Press **02626** Rear Bearing from rear bearing plate, remove **02679** Shield.
9. Remove cylinder and rotor blades from rotor.
10. Press **54553** or **54554** Rotor through **02649** Front Bearing and **01478** Front Bearing Plate.

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.
5. Remove **01564** Air Control Ring from valve body. Using needle nose pliers, remove **01468** Spring, **01472** Tip Valve and **01464** Seal.
6. Using a 2.5 mm 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.

Shroud Disassembly:

1. Remove **96520** Vacuum Hose, **53219** Locking Knob and **40029** Motor Lock from **53218** Shroud.
2. Remove **96503** Screw and **53212** Trigger.
3. Rotate **96501** Strap to remove **53217** Top Pipe from shroud, then remove strap from top pipe.
4. Remove **96527** Spring from shroud. Remove **53215** Cup from **53216** Pipe Adapter. Remove **53214** Nozzle from pipe adapter.
5. Remove **14064** O-Ring from pipe adapter. Remove **01064** O-Ring from nozzle.

Motor Assembly:

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

1. Slip **01479** Spacer onto **54553** or **54554** Rotor.
2. Place a .002" Shim into **01478** Front Bearing plates an initial spacing. Then slip **02649** Bearing into **01478** Front Bearing Plate. Press assembly onto rotor.
3. Check the clearance between rotor and bearing plate by using a .001" feeler gauge. Clearance should be at.001" to .0015". Adjust clearance by repeating steps 1-3 changing shims as required.
4. Once proper rotor gap clearance is achieved, install lubricated blades into rotor slots, (use **95842** Dynabrade Air Motor Oil or equivalent).
5. Install **01476** Cylinder so it rests against the **01478** Front Bearing Plate, (make sure inlet holes of cylinder line up with inlet holes in **02673** Rear Bearing Plate.)
6. Press **02696** Bearing into **02679** Rear Bearing Plate. Press this assembly onto rotor. **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 end so it will turn freely while still maintaining a snug fit. A loose fit will not achieve the proper preload on motor bearings. Next, place a small amount of grease on the **02696** Bearing and stick **02679** Shield against the bearing.
7. Secure housing in vise using **52296** Repair Collar or padded jaws so that motor cavity points upward.
8. Install motor assembly into housing, making sure motor drops all the way into housing.
9. Install **50778** Spacer so that flat side rests against **02649** Bearing.
10. Press front **54520** Bearing onto front end of **50786** or **50787** Planetary Carrier.
11. Hold planetary carrier in a soft jaw vise and apply one drop of #271 Loctite® to the threads of **50782** Adapter. Install adapter onto planetary carrier. Torque to 17 N•m/150 in. lbs.
12. Install planetary gears and **54472** Gear Shafts onto planetary housing.
13. Slip **54468** Ring Gear over gears making sure that notches in ring gear will align with lock screw and grease fitting in **50776** Housing once planetary gear assembly is installed.
14. Press rear **54552** Bearing onto **50786** or **50787** Planetary Carrier, until the outer race of the bearing touches the ring gear.
15. Slip the complete planetary gear assembly into **50776** Housing and install **50784** Lock Screw.
16. Install **53208** Rear Exhaust Cover onto **50776** Housing. Torque to 28 N•m/250 in. lbs.
17. Lubricate planetary gears through **01041** Grease Fitting with two plunges every 50 hours of use for maximum gear life.
18. Install drill chuck and shroud.

Motor Assembly Complete.

(continued on next page)

Disassembly/Assembly Instructions (continued)

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. Install **95438** O-Ring into groove on vacuum adapter. Place **95375** O-Ring and **94526** Spacer into recessed area of vacuum adapter.
5. Slip **94523** Inlet Adapter through vacuum adapter and install **95711** Retaining Ring on inlet adapter.
6. Install **01564** Air Control Ring into valve body housing.
7. Apply Loctite® #567 PST Pipe Sealant to threads of **94523** Inlet Adapter and install entire vacuum assembly onto valve body (torque 23 N•m/200 in. - lbs.).
8. Replace air fitting. Secure inlet adapter with a wrench before tightening air fitting.
9. Install throttle lever and **12132** Pin.

Shroud Assembly:

1. Install **01064** O-Ring in groove on **53214** Nozzle. Install **14064** O-Ring in groove on **53216** Pipe Adapter.
2. Install pipe adapter in **53217** Top Pipe using Loctite® #411.
3. Install **53214** Nozzle in pipe adapter. Install **53215** Cup on pipe adapter. Install **96527** Spring on shroud.
4. Install strap in groove on top pipe. Rotate strap to install top pipe on shroud.
5. Attach **53212** Trigger to strap with **96502** Lock Washer and **96503** Screw.
6. Install **40029** Motor Lock in shroud and then install **53219** Locking Knob.
7. Install **98520** Vacuum Hose between shroud and vacuum assembly.

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

Notice: To adjust throttle body orientation for a rear exhaust tool:

1. Use **52296** Repair Collar to secure valve body in vise with **50776** Housing facing up.
2. Peel down **01558** Collar to expose the hex portion of **01461** Lock Nut.
3. Using a 34 mm crows foot and firmly holding motor housing, turn **01461** Lock Nut counter clockwise to loosen assembly.
4. Adjust orientation of the throttle lever to agree with your grip and comfort level allowing for additional rotation due to torquing.
5. Using the 34 mm crows foot and a torque wrench set to 400 lb. in., (while firmly holding motor housing in place to reduce housing rotation) tighten **01461** Lock Nut.

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



Dynaswivel®

- Patented "universal-joint" connects portable air tools to an air line.
- Swivels 360° AT TWO PIVOT POINTS allowing the air hose to drop directly to the floor while providing superb tool handling.
- New lightweight, non-marring composite construction; industrial quality.

94300 – 1/4" NPT.



96174 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.

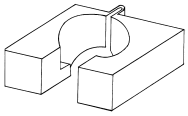


95542 Grease 10 oz.

- 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.

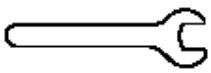
95541 Push-type Grease Gun

- One-hand operation.



52296 Repair Collar

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



Open-End Wrench

95262 – 14 mm open-end.

Visit Our Web Site: www.dynabrade.com **Email:** Customer.Service@Dynabrade.com

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