For Serial No. 9J1264 and Higher

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

Parts Page Reorder No. PD04•34
Effective June, 2004
Supersedes PD01•80

Mini-Dynorbital Random Orbital Sander

Air Motor and Machine Parts

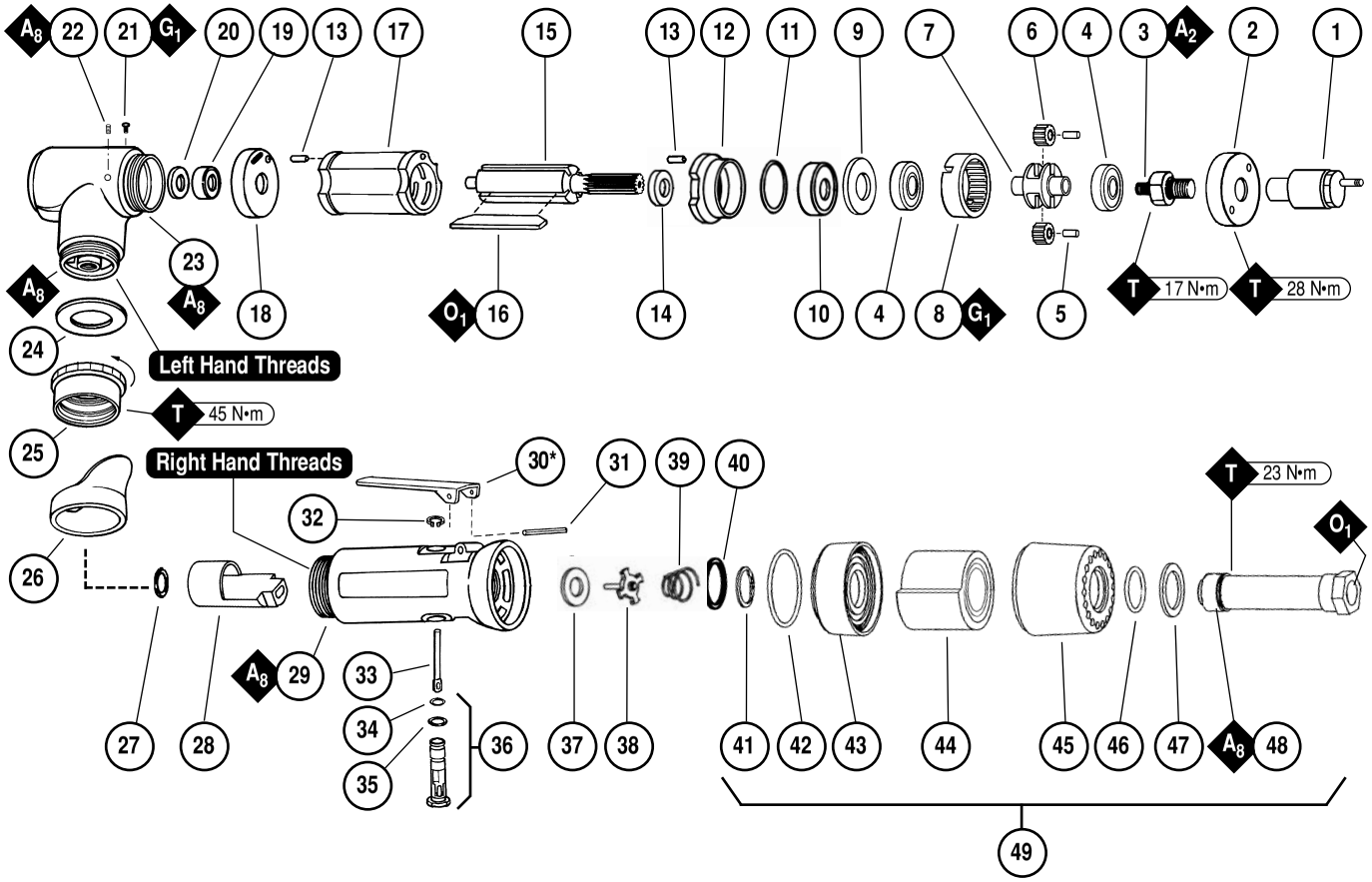
Models:

51410 — 3", 3,200 RPM, with 54034 Orbital Assy.
51411 — 3", 3,200 RPM, with 54035 Orbital Assy.
51412 — 3", 5,000 RPM, with 54034 Orbital Assy.
51415 — Versatility Kit

⚠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. See inside for Important Operating, Maintenance and Safety Instructions.**

Index Key

No.	Part #	Description
1	**54034**	Sanding Head
	54035	Sanding Head
2	**50781**	Rear Exhaust Cover
3	**50782**	Adapter
4	**54552**	Bearing (2)
5	**54472**	Gear Shaft (2)
6	**54519**	3,200 RPM Gear (2)
	06213	5,000 RPM Gear (2)
7		Planetary Carrier
	50786	3,200 RPM
	50787	5,000 RPM
8	**54468**	Ring Gear
9	**50778**	Spacer
10	**02649**	Bearing
11	**54529**	Shim (3/pkg.)
12	**01478**	Front Plate
13	**50767**	Pin (2)
14	**01479**	Spacer
15	**54554**	3,200 RPM Rotor
	54553	5,000 RPM Rotor
16	**01480**	Blade (4/pkg.)
17	**01476**	Cylinder
18	**02673**	Rear Bearing Plate
19	**02696**	Bearing
20	**02679**	Shield
21	**01041**	Grease Fitting
22	**50784**	Set Screw
23	**50776**	Motor Housing
24	**01548**	Gasket
25	**01461**	Lock Nut
26	**01558**	Collar
27	**95523**	O-Ring
28	**01470**	Insert
29	**02107**	Housing - **51410**
	02108	Housing - **51411**
	02202	Housing - **51412**
30	**01448**	Throttle Lever
31	**12132**	Pin
32	**95558**	Retaining Ring
33	**01449**	Valve Stem
34	**95730**	O-Ring
35	**01024**	O-Ring
36	**01469**	Speed Regulator Assy.
37	**01464**	Seal
38	**01472**	Tip Valve
39	**01468**	Spring
40	**01564**	Air Control Ring
41	**95711**	Retaining Ring
42	**95438**	O-Ring
43	**94521**	Muffler Base
44	**94528**	Felt Muffler
45	**94522**	Muffler Cap
46	**95375**	O-Ring
47	**94526**	Spacer
48	**94523**	Inlet Adapter
49	**94519**	Muffler Assembly



*** Optional 01462 Safety Lock Lever Available.**

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**: 1pt. 473ml.) 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. 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 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.

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

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 CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
51410/51411	.4 (298)	3,200	79 dB(A)	3/24 (680)	90 (6.2)	3/8"-24 male	1.8 (.8)	8 (203)	5-1/2 (140)
51412	.4 (298)	5,000	79 dB(A)	3/24 (680)	90 (6.2)	3/8"-24 male	1.8 (.8)	8 (203)	5-1/2 (140)

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

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 orbital assembly.
3. With an adjustable pin wrench, or **50971** Lock Ring Wrench remove **50781** 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 **02696** 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 pointing 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 felt muffler.
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 2.5mm drift pin, remove **12132** Pin and 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 assembly. 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 Plate for 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 or 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 **54552** 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 **50781** 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 orbital sanding head assembly.

Motor Assembly Complete.

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).

(continued on next page)

Disassembly/Assembly Instructions (continued)

4. Roll felt muffler 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 **01564** Air Control Ring into valve body housing.
8. Apply #567 Loctite® 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.
10. 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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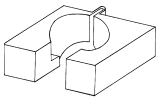
Optional Accessories



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.



52296 Repair Collar

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



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.



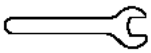
96174 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.



50971 Lock Ring Wrench

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

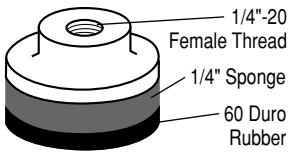


Open-End Wrench

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

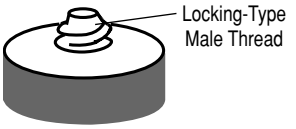
Mini-Dynorbital Sanding Pads

"Medium" Dual-Density

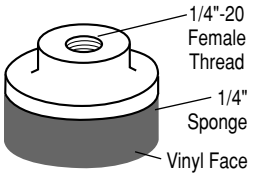


"Soft" Locking-Type

For optional **54029**, **54030** or **54035** Sanding Head.

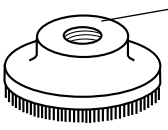


"Soft" Density



"Hook 'n Loop"

For use with abrasive impregnated non-woven nylon discs.



Part Number	3/4" (19 mm)	1-1/4" 32 mm)	Medium Rubber	Soft Vinyl	Hook-Face	Thread
54017	✔		✔			1/4"-20 Female
54018		✔	✔			1/4"-20 Female
54031		✔		✔		Locking-Type
54033		✔	✔			Locking-Type
54087	✔			✔		1/4"-20 Female
54088		✔		✔		1/4"-20 Female
54089	✔				✔	1/4"-20 Female
54090		✔			✔	1/4"-20 Female

All Pads: 5,000 RPM Maximum Operating Speed

Visit Our Web Site: www.dynabrade.com

Email: Customer.Service@Dynabrade.com

DYNABRADE®

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