

**For Serial No. 9J1264 and Higher**

<b>O</b>	Oil: O <sub>1</sub> = Air Lube	<b>KEY</b>
<b>A</b>	Adhesive: A <sub>2</sub> = Loctite #271 A <sub>8</sub> = Loctite #567	
<b>T</b>	Torque: N·m x 8.85 = In. - lbs.	
<b>G</b>	Grease: G <sub>1</sub> = 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

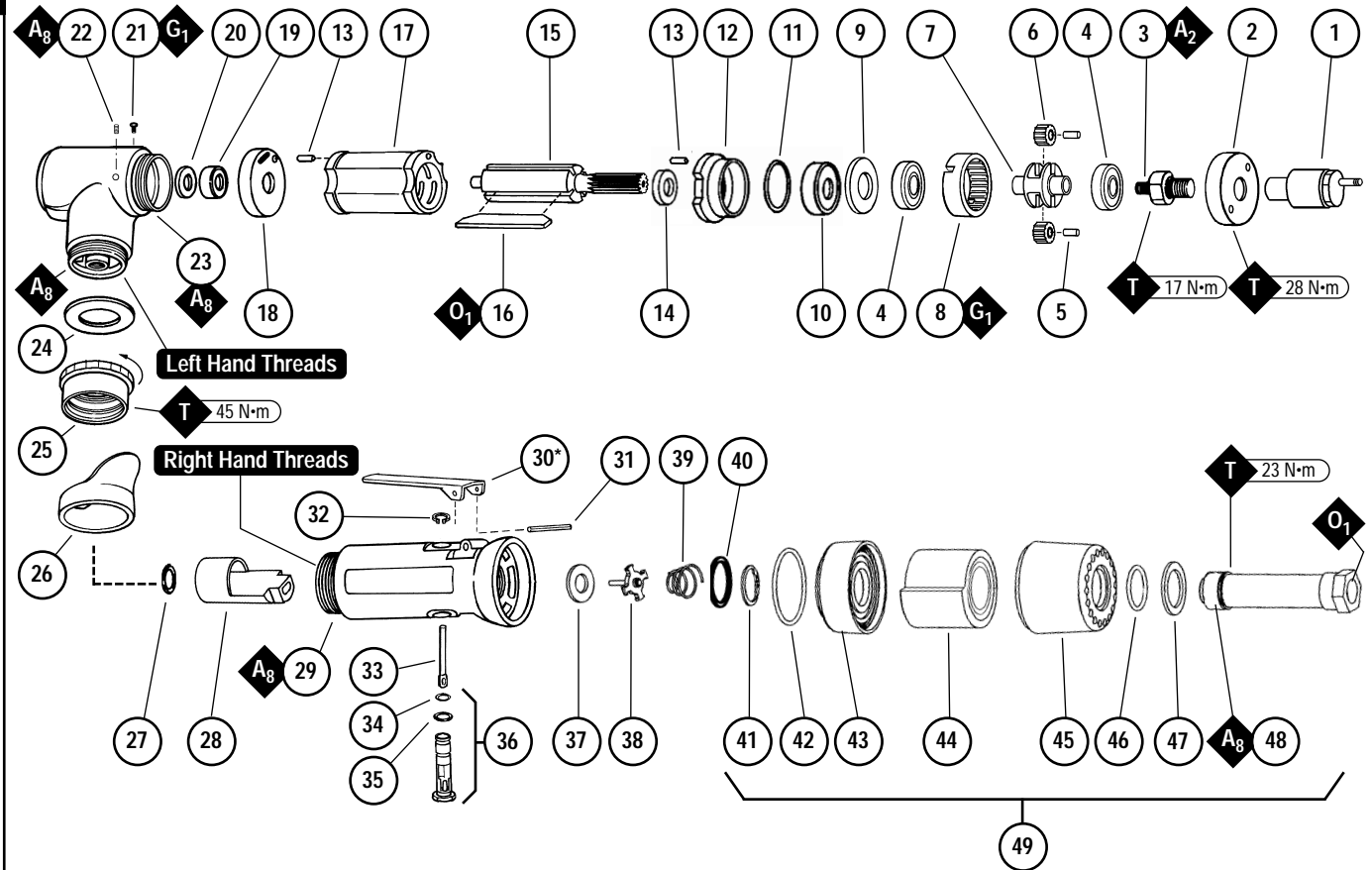
## WARNING

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	25 01461 Lock Nut
54035 Sanding Head	26 01558 Collar
2 50781 Rear Exhaust Cover	27 95523 O-Ring
3 50782 Adapter	28 01470 Insert
4 54552 Bearing (2)	29 02107 Housing - 51410
5 54472 Gear Shaft (2)	02108 Housing - 51411
6 54519 3,200 RPM Gear (2)	02202 Housing - 51412
06213 5,000 RPM Gear (2)	30 01448 Throttle Lever
7 Planetary Carrier	31 12132 Pin
50786 3,200 RPM	32 95558 Retaining Ring
50787 5,000 RPM	33 01449 Valve Stem
8 54468 Ring Gear	34 95730 O-Ring
9 50778 Spacer	35 01024 O-Ring
10 02649 Bearing	36 01469 Speed Regulator Assy.
11 54529 Shim (3/pkg.)	37 01464 Seal
12 01478 Front Plate	38 01472 Tip Valve
13 50767 Pin (2)	39 01468 Spring
14 01479 Spacer	40 01564 Air Control Ring
15 54554 3,200 RPM Rotor	41 95711 Retaining Ring
54553 5,000 RPM Rotor	42 95438 O-Ring
16 01480 Blade (4/pkg.)	43 94521 Muffler Base
17 01476 Cylinder	44 94528 Felt Muffler
18 02673 Rear Bearing Plate	45 94522 Muffler Cap
19 02696 Bearing	46 95375 O-Ring
20 02679 Shield	47 94526 Spacer
21 01041 Grease Fitting	48 94523 Inlet Adapter
22 50784 Set Screw	49 94519 Muffler Assembly
23 50776 Motor Housing	
24 01548 Gasket	



\* 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 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 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.

Loctite® is a registered trademark of Loctite Corp.

## Optional Accessories



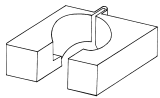
### Dynaswivel®

- 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.



### 52296 Repair Collar

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



### 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.

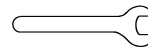


### 95542 Grease 10 oz.

- 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.

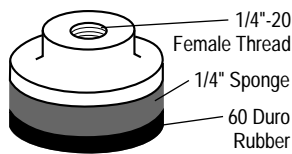


### Open-End Wrench

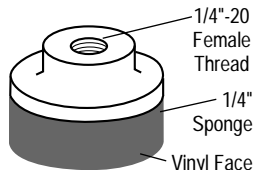
- 95262 – 14mm open-end.**
- 95281 – 19mm open-end.**

## Mini-Dynorbital Sanding Pads

### "Medium" Dual-Density

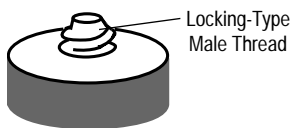


### "Soft" Density



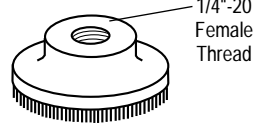
### "Soft" Locking-Type

For optional 54029, 54030 or 54035 Sanding Head.



### "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](http://www.dynabrade.com)

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

©DYNABRADE, INC., 2004

PRINTED IN USA