

Dynorbital-Spirit™

12,000 RPM Air Powered Random Orbital Sander

Air Tool Manual – Safety, Operation and Maintenance

SAVE THIS DOCUMENT, EDUCATE ALL PERSONNEL

Models:

3/8" Orbit	3/16" Orbit	3/32" Orbit
21000 21011	21020 21031	21040 21051
21001 21012	21021 21032	21041 21052
21002 21013	21022 21033	21042 21053
21003 21014	21023 21034	21043 21054
21004 21015	21024 21035	21044 21055
21005 21016	21025 21036	21045 21056
21006 21017	21026 21037	21046 21057
21007 21018	21027 21038	21047 21058
21008 21019	21028 21039	21048 21059
21009 21060	21029 21061	21049 21062
21010 21063	21030 21064	21050 21065



FOR COMPLETE MODEL DESCRIPTION REFERENCE PAGE 6.

! WARNING

Read and understand this tool manual before operating your air tool. Follow all safety rules for the protection of operating personnel as well as adjacent areas. Always operate, inspect and maintain this tool in accordance with the American National Safety Institute (ANSI) Safety Code for Portable Air Tools – B186.1. For additional safety information, refer to Safety Requirements for the Use, Care and Protection of Abrasive Wheels – ANSI B7.1, Code of Federal Regulation – CFR 29 Part 1910, European Committee for Standards (EN) Hand Held Non-Electric Power Tools – Safety Requirements and applicable State and Local Regulations.

SAFETY LEGEND

	! WARNING Read and understand tool manual before work starts to reduce risk of injury to operator, visitors, and tool.	
	! WARNING Eye protection must be worn at all times, eye protection to conform to ANSI Z87.1.	
	! WARNING Respiratory protection to be used when exposed to contaminants that exceed the applicable threshold limit values required by law.	
	! WARNING Practice safety requirements. Work alert, have proper attire, and do not operate tools under the influence of alcohol or drugs.	
	! WARNING Ear protection to be worn when exposure to sound, exceeds the limits of applicable Federal, State or local statutes, ordinances and/or regulations.	
	! WARNING Air line hazard, pressurized supply lines and flexible hoses can cause serious injury. Do not use damaged, frayed or deteriorated air hoses and fittings.	

SAFETY INSTRUCTIONS

Carefully Read all instructions before operating or servicing any Dynabrade® Abrasive Power Tool. Products offered by Dynabrade are not to be modified, converted or otherwise alerted from the original design without expressed written consent from Dynabrade, Inc.

Tool Intent: Dynorbital-Spirit™ Random Orbital Sander is used for sanding and finishing a variety of materials including wood, metal, plastic, fiberglass, solid surfaces, composites, rubber, glass and stone.

Do Not Use Tool For Anything Other Than Its Intended Applications.

Training: Proper care, maintenance, and storage of your tool will maximize its performance.

- Employer's Responsibility – Provide Dynorbital-Spirit™ operators with safety instructions and training for safe use of tools and accessories.

Accessory Selection:

- Abrasive/accessory RPM (speed) rating MUST be approved for AT LEAST the tool RPM rating.
- Before mounting an accessory, visually inspect for defects. Do not use defective accessories.
- Follow tool specifications before choosing size and type of accessory.
- Only use recommended fittings and air line sizes. Air supply hoses and air hose assemblies must have a minimum working pressure rating of 150 PSIG (10 bars, g) or 150 percent of the maximum pressure produced in the system, whichever is higher. (See Tool Machine Specifications Table.)

OPERATING INSTRUCTIONS

Warning: Always wear eye protection. Operator of tool is responsible for following: accepted eye, face, respiratory, hearing and body protection.

Caution: Hand, wrist and arm injury may result from repetitive work, motion and overexposure to vibration.

(Continued on next page.)

OPERATING INSTRUCTIONS (continued)

- Keep hand and clothing away from working end of the air tool.

Operation: Be sure that any loose clothing, hair and all jewelry is properly restrained.

- Secure inlet bushing on air tool with a wrench before attempting to install the air fitting to avoid damaging housing assembly.
- Check tool RPM (speed) with tachometer with air pressure set at 90 PSIG while the tool is running. If tool is operating at a higher speed than the RPM marked on the tool housing, or operating improperly, the tool must be serviced and corrected before use.

Caution: Tool RPM must never exceed abrasive/accessory RPM rating. Check accessory manufacturer for details on maximum operating speed or special mounting instructions.

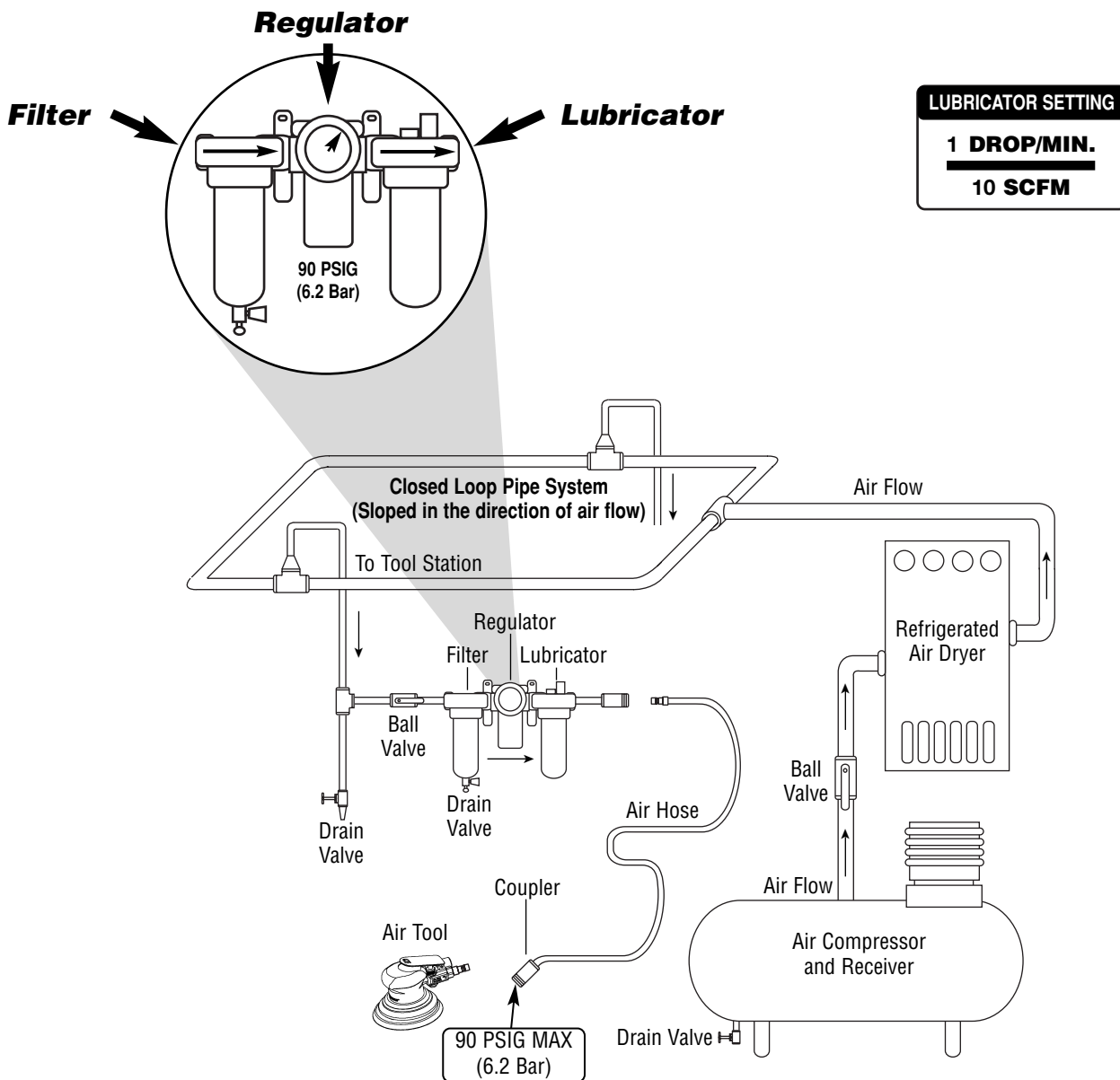
- With power source disconnected from air tool, mount recommended accessory into collet assembly.
- Connect air tool to power source. Be careful NOT to depress throttle lever in the process. **Do not expose air tool to inlet pressure above 90 PSIG or (6.2 Bars).**

Caution: After installing the accessory, before testing or use and/or after assembling tool, the Dynorbital-Spirit™ must be started at a reduced speed to check for good balance. Gradually increase tool speed. DO NOT USE if tool vibration is excessive. Correct cause, and retest to insure safe operation.

- Make sure that work area is uncluttered, and visitors are at a safe range from the tools and debris.
- Use a vise or clamping device to hold work piece firmly in place.
- Do not apply excessive force on tool or apply "rough" treatment to it.
- Always work with a firm footing, posture and proper lighting.

Report to your supervisor any condition of the tool, accessories, or operation you consider unsafe.

Air System



- Dynabrade Air Power Tools are designed to operate at 90 PSIG (6.2 Bar/620 kPa) maximum air pressure at the tool inlet, when the tool is running. Use recommended regulator to control air pressure.

- Ideally the air supply should be free from moisture. Incorporating a refrigerated air dryer after the compressor and drain valves at each tool station (as shown) further reduces moisture from condensation in the air supply.

Maintenance Instructions

Important: A Preventative Maintenance Program is recommended whenever portable power tools are used.

- Use only genuine Dynabrade replacement parts to insure quality. To order replacement parts, specify **Model#**, **Serial#** and **RPM** of your air tool.
- All Dynabrade Rotary Vane air tools must be used with a Filter-Regulator-Lubricator to maintain all warranties. Dynabrade recommends the following: **11405** Air Filter-Regulator-Lubricator (FRL) – Provides accurate air pressure regulation and two stage filtration of water contaminants. Operates 40 SCFM/1,133 LPM @ 100 PSIG with 3/8" NPT female ports.
- Dynabrade recommends one drop of air lube per minute for each 10 SCFM (example: if the tool specification states 40 SCFM, set the drip rate on the filter-lubricator to 4 drops per minute). Dynabrade Air Lube (P/N **95842**: 1 pt 473 ml) is recommended.

Routine Preventative Maintenance: Check free speed of Dynorbital-Spirit™ using a tachometer.

- 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.
- DO NOT clean or maintain tools with chemicals that have a low flash point (example: WD-40®).
- A Drop-In Motor and Tune-Up Kit are available, see specific kit number on page 9.
- Air tool stampings must be kept legible at all times, if not, reorder and replace. User is responsible for maintaining specification information i.e.: Model #, S/N, and RPM.
- Blow air supply hose out prior to initial use.
- Visually inspect air hoses and fittings for frays, visible damage and signs of deterioration. Replace damaged or worn components.
- Refer to Dynabrade's Warning/Safety Operating Instructions Tag (Reorder No. **95903**) for safety information.

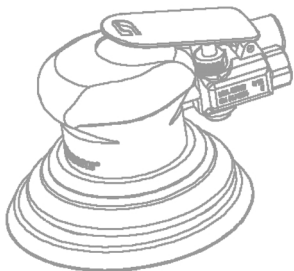
After maintenance is performed on tool, add a few drops of Dynabrade Air Lube (P/N **95842**) to the air line and start the tool a few times to lubricate air motor. Check for excessive tool vibration.

Handling and Storage:

- Protect tool inlet from debris (See Notice Below).
- DO NOT carry tool by air hose.
- Protect abrasive accessories from exposure to water, solvents, high humidity, freezing temperature and extreme temperature changes.
- Store accessories in protective racks or compartments to prevent damage.

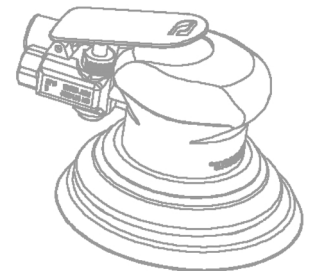
Notice

All Dynabrade motors use the highest quality parts and materials 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.



Reference Contact Information

1. **American National Safety Institute – ANSI**
25 West 43rd Street
Forth Floor
New York, NY 10036
Tel: 1 (212) 642-4900
Fax: 1 (212) 398-0023

2. **Government Printing Office – GPO**
Superintendent of Documents
Attn. New Orders
P.O. Box 371954
Pittsburgh, PA 15250-7954
Tel: 1 (202) 512-1803

3. **European Committee for Standardization**
Rue de Stassart 36
B - 1050 Brussels, Belgium

For Models:

21000, 21001, 21002, 21003, 21004, 21005, 21006
 21007, 21008, 21009, 21010, 21011, 21012, 21013
 21014, 21015, 21016, 21017, 21018, 21019, 21020
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 21063, 21064, 21065

Dynorbital-Spirit™

Complete Assembly

KEY

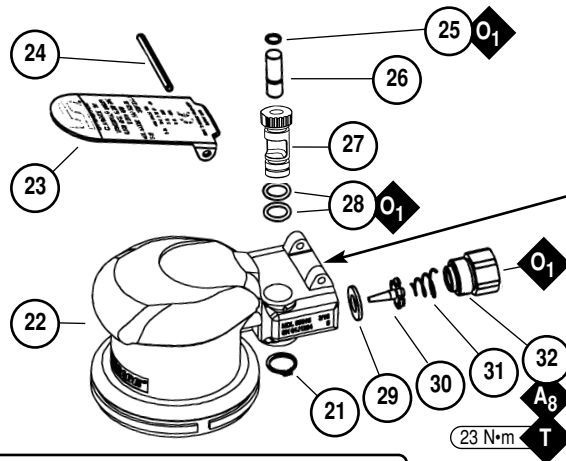
- O** Oil: O₁ = Air Lube
- A** Adhesive: A₁ = Loctite #609
A₂ = Loctite #271
A₈ = Loctite #567
- T** Torque: N·m x 8.85 = In. - lbs.

Index Key

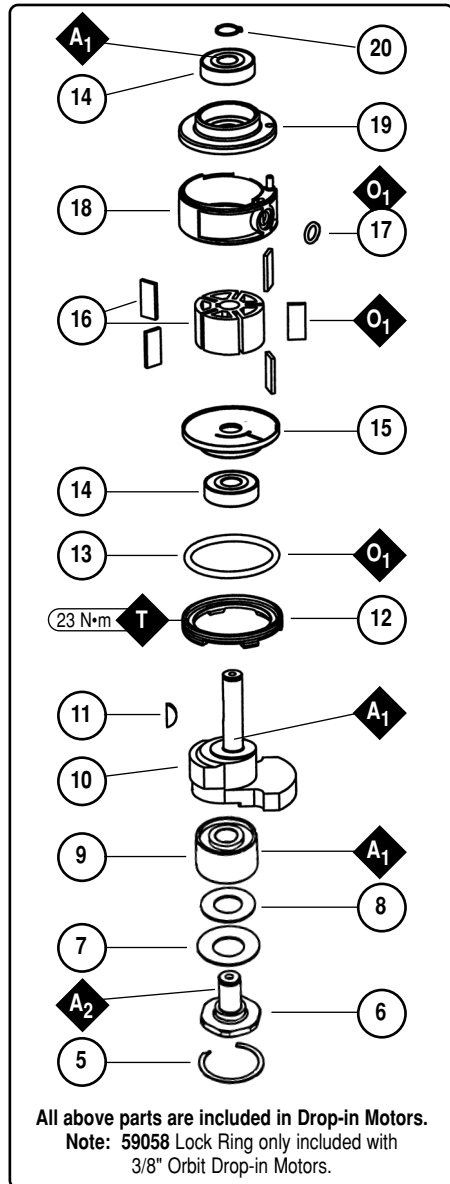
No.	Part #	Description
1		Sanding Pads (See Pg. 10)
2		Vacuum Lip-Seal Shroud
3		Vacuum Shroud
4		Shroud (Non-Vac)
5		Snap Ring
6		Balancer Shaft
7		Washer
8		Bearing Seal
9		Bearing
10		Motor Shaft Balancer

Orbit	3" & 3-1/2"	5"	6"
3/8"	59070	59071	59072
3/16"	59060	59061	59062
3/32"	59065	59066	59067

11	98461	Key
12	59058	Lock Ring
13	50659	O-Ring
14	58368	Bearing (2)
15	59076	Front Bearing Plate
16	57113	Rotor/Blade Set
17	01024	O-Ring
18	59051	Cylinder
19	59077	Rear Bearing Plate
20	98463	Retaining Ring
21	95697	Retaining Ring
22		Housing (See Chart, Pg. 6)
23	59054	Throttle Lever - 3/8"
	59052	Throttle Lever - 3/16"
	59053	Throttle Lever - 3/32"
24	98927	Pin
25	98459	O-Ring
26	58363	Valve Stem
27	59075	Speed Regulator
28	01025	O-Ring (2)
29	01464	Seal
30	58365	Tip Valve
31	01468	Spring
32	01494	Inlet Bushing



See page 5 for Machine Exhaust Assemblies.



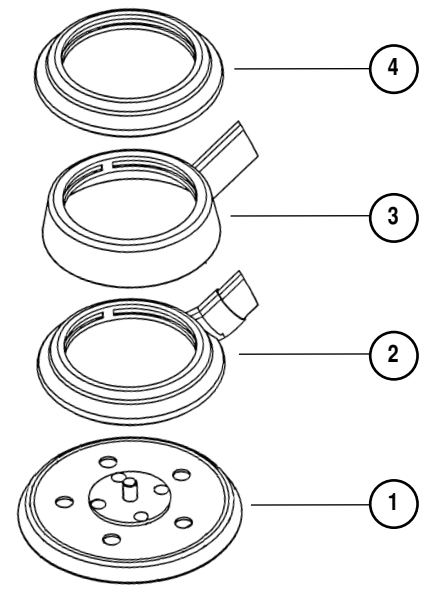
All above parts are included in Drop-in Motors.
 Note: 59058 Lock Ring only included with 3/8" Orbit Drop-in Motors.



Highly Recommended Drop-in Complete Motor Assemblies

Orbit	3" & 3-1/2"	5"	6"
3/8"	59450	59453	59456
3/16"	59451	59454	59457
3/32"	59452	59455	59458

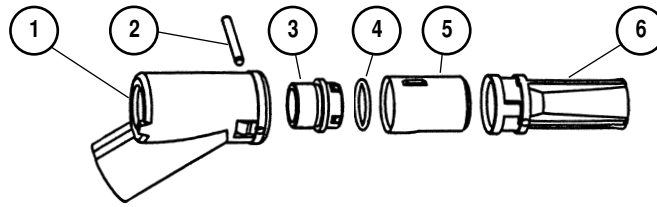
For assembly instructions, see page 6.



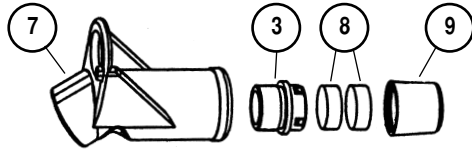
Note: To order replacement parts specify the **Model #** and **Serial #** of your machine.

Machine Exhaust Assemblies

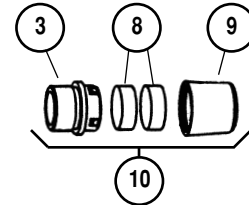
Self Generated Vacuum (Vac-Ready)/Machine Exhaust



Central Vacuum/Machine Exhaust



Non-Vacuum/Machine Exhaust



Non-Vacuum to Vacuum Conversion Kits

Original Non-Vac Tool	Converts to	Kit Part Number
3-1/2" (89 mm)	Self-Generated Vac-Ready	57118
3-1/2" (89 mm)	Central Vac-Ready	57119
5" (127 mm)	Self-Generated Vac-Ready	57120
5" (127 mm)	Central Vac-Ready	57121
6" (152 mm)	Self-Generated Vac-Ready	57122
6" (152 mm)	Central Vac-Ready	57123

Index Key

No.	Part #	Description
1	57083	Vacuum Adapter
2	96197	Dowel Pin
3	57066	Muffler Body
4	95526	O-Ring
5	57068	Vac Nozzle
6	57067	Vac Tube
7	57093	Vacuum Adapter
8	56027	Muffler Insert (2)
9	56028	Muffler Cap
10	59273	Muffler Assembly

Optional: 30 quantity Muffler Insert available, P/N 56054.

Vacuum Conversion Instructions

To Disassemble:

1. Disconnect tool from power source. Invert machine and secure in vise, using **57092** Collar (supplied in **57098** Repair Kit) or padded jaws.
2. Remove sanding pad with **50679** (26 mm) Open-End Wrench (supplied with sander) and lip-seal shroud from housing.
3. Remove **56028** Muffler Cap and **56027** Muffler Insert (2) from **57066** Muffler Body. Using a 12 mm hex wrench (supplied in **57098** Repair Kit), remove muffler body from housing (not applicable for Self-Generated Vac to Central Vac).

Non-Vac to Self-Generated Vac for Hook-Up to Self-Contained Dust Collection System

1. Attach **57083** Vacuum Adapter to either **57084**, **57086**, **57087** Vacuum Overskirts or **57089** Vacuum Lip-Seal Shroud. Then attach to the housing making sure the protrusions on the overskirt or shroud are aligned with the notches on the housing.
2. Place **95526** O-Ring on the muffler body between the shoulder and the four (4) protrusions. Using a 12 mm hex wrench, attach the muffler body and o-ring to the housing through the vacuum adapter.
3. Place vacuum nozzle into the vacuum adapter with the slots facing outward making sure that the knob on the nozzle is aligned with the slot in the adapter.
4. Place **57067** Vacuum Tube into the vacuum adapter with the grooves facing inward until the adapter "snaps" onto the tube and the tube cannot be pulled out. If the tube can be pulled out, rotate it 1/4 turn and place it back into the adapter until it "snaps".
5. Rotate tube until holes line up. Insert dowel pin in holes until it is centered. Attach sanding pad, attach machine to portable dust collection system.

Non-Vac to Central Vac

1. Attach **57093** Vacuum Adapter to either **57084**, **57086**, **57087** Vacuum Overskirts or **57089** Vacuum Lip-Seal Shroud. Then attach to the housing making sure the protrusions on the overskirt or shroud are aligned with the notches on the housing.
2. Using a 12 mm hex wrench, attach the muffler body to the housing through the central vacuum adapter.
3. Place muffler cap with inserts on muffler body making sure that the protrusions on the body fit in the pockets on the cap.
4. Attach weight-mated vacuum sanding pad with **50679** (26 mm) Open-End Wrench. Attach machine to central vacuum system.

Self-Generated Vac to Central Vac

1. Remove **96197** Dowel Pin with an 1/8" drive pin. Remove **57067** Vacuum Tube from **57083** Vacuum Adapter by turning it clockwise while pulling backward.
2. Using a small flat screwdriver, pry vacuum nozzle until it is loose and then remove it by using two fingers to push and pull it until it hits the "legs" on vacuum adapter. Place vacuum tube back into vacuum adapter far enough to push the "legs" back then push vacuum nozzle and vacuum tube out the rest of way.
3. Using a 12 mm hex wrench (supplied in **57098** Repair Kit), remove the **57066** Muffler Body and **95526** O-Ring from the housing through the adapter. Remove the o-ring from the muffler body.
4. Remove **57083** Vacuum Adapter and attach **57093** Vacuum Adapter to either **57084**, **57086**, **57087** Vacuum Overskirts or **57089** Vacuum Lip-Seal Shroud. Then attach to the housing making sure that the protrusions on the overskirt or shroud are aligned with the notches on the housing.
5. Using a 12 mm hex wrench, attach the muffler body and o-ring to the housing through the central vacuum adapter.
6. Place muffler cap with inserts on muffler body making sure that the protrusions on the body fit in the pockets on the cap. Attach sanding pad.

Central Vac to Self Generated Vac

1. Remove **57093** Central Vacuum Adapter and put the **57083** Vacuum Adapter in its place.

(Continued on next page.)

Vacuum Conversion Instructions (continued)

2. Place **95526** O-Ring on the muffler body between the shoulder and the four (4) protrusions. Using a 12 mm hex wrench (supplied in **57098** Repair Kit), attach the muffler body and o-ring to the housing through the vacuum adapter.
3. Place vacuum nozzle into the vacuum adapter with the slots facing outward making sure that the knob on the nozzle is aligned with the slot in the adapter.
4. Place **57067** Vacuum Tube into the vacuum adapter with the grooves facing inward until the adapter "snaps" onto the tube and the tube cannot be pulled out. If the tube can be pulled out, rotate it 1/4 turn and place it back into the adapter until it "snaps".
5. Rotate tube until holes line up. Insert **96197** Dowel Pin in holes until it is centered. Attach machine to portable dust collection system.

Drop-in Motor Removal/Replacement Instructions - Dynorbital-Spirit™

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

Drop-in Motor Repair Kit P/N 59459 is available which includes special repair tools for the correct removal and replacement of the air motor.

Disconnect tool from power source before motor exchange.

To Remove:

1. Disconnect the sander from the air supply.
2. Invert the sander, and place the **57092** Repair Collar (supplied in the **59459** Drop-in Motor Repair Kit) around the housing and secure in a vise. Padding can be used on the vise jaws to protect the housing. **Important:** Do not over tighten the sander in the vise. If the sander is held too tight the removal of the lock ring and air motor will be difficult.
3. Remove the sanding pad with the **50679** 26 mm Open-end Wrench. (Supplied with the sander.)
4. Insert the **56058** Lock Ring Tool (supplied in the **59459** Drop-in Motor Repair Kit) into the corresponding tabs of the lock ring. Loosen the **59058** Lock Ring turning it counterclockwise.
5. Remove the **59058** Lock Ring and the **50659** O-Ring from the air motor assembly. (3/32" and 3/16" dia. orbits only.)
6. Discard the air motor assembly.

To Install Replacement:

Important: Clean and inspect the housing, valve mechanism, and exhaust assembly. Replace any valve, muffler, or vacuum components as is necessary. Follow all torque and lubrication specifications.

1. Place the **50659** O-Ring into the **59058** Lock Ring and slip these over the motor shaft balancer. (3/32" and 3/16" dia. orbits only.) Spread 1 drop of pneumatic tool oil on the surface between the **50659** O-Ring and the **59076** Front Bearing Plate.
2. Apply 1 drop of oil to the **01024** O-Ring. (O-Ring is supplied with the drop-in air motor assembly.)
3. With the sander housing secured in a vise (use the **57092** Repair Collar of padding on the jaws of the vise to protect the housing) slide the drop-in air motor into the housing aligning the line-up post with the notch on the inside of the housing. Note: Make certain that the line-up post enters the notch in the housing and that the **01024** O-Ring remains seated in the side of the cylinder.
4. Tighten the lock ring with the **56058** Lock Ring Wrench. (Torque to 23 N•m/200 in.-lbs.)
5. Install a Dynabrade weight-mated sanding pad.

Drop-in Motor Replacement Complete.

Important: Before connecting the sander to the air supply, depress the throttle lever and place 2-3 drops of Dynabrade Air Lube (P/N **95842**) directly into the sander's air inlet. The sander should now be tested at 90 PSIG. operating pressure at the sander's air inlet. Operate the sander for 30 seconds to determine if it is operating properly and to allow the lubricating oil to permeate the air motor.

Complete Model Description/Housing Number

Model Number	Vacuum Description	Housing Number	Model Number	Vacuum Description	Housing Number	Model Number	Vacuum Description	Housing Number
21000	3" Non-Vacuum	21151	21020	3" Non-Vacuum	21163	21040	3" Non-Vacuum	21175
21001	3" Basic Vacuum	21152	21021	3" Basic Vacuum	21164	21041	3" Basic Vacuum	21176
21002	3" Deluxe Vacuum	21152	21022	3" Deluxe Vacuum	21164	21042	3" Deluxe Vacuum	21176
21003	3" Self Generated Vacuum	21152	21023	3" Self Generated Vacuum	21164	21043	3" Self Generated Vacuum	21176
21004	3" Central Vacuum	21153	21024	3" Central Vacuum	21165	21044	3" Central Vacuum	21177
21005	3-1/2" Non-Vacuum	21154	21025	3-1/2" Non-Vacuum	21166	21045	3-1/2" Non-Vacuum	21178
21006	3-1/2" Basic Vacuum	21155	21026	3-1/2" Basic Vacuum	21167	21046	3-1/2" Basic Vacuum	21179
21007	3-1/2" Deluxe Vacuum	21155	21027	3-1/2" Deluxe Vacuum	21167	21047	3-1/2" Deluxe Vacuum	21179
21008	3-1/2" Self Generated Vacuum	21155	21028	3-1/2" Self Generated Vacuum	21167	21048	3-1/2" Self Generated Vacuum	21179
21009	3-1/2" Central Vacuum	21156	21029	3-1/2" Central Vacuum	21168	21049	3-1/2" Central Vacuum	21180
21010	5" Non-Vacuum	21157	21030	5" Non-Vacuum	21169	21050	5" Non-Vacuum	21181
21011	5" Basic Vacuum	21158	21031	5" Basic Vacuum	21170	21051	5" Basic Vacuum	21182
21012	5" Deluxe Vacuum	21158	21032	5" Deluxe Vacuum	21170	21052	5" Deluxe Vacuum	21182
21013	5" Self Generated Vacuum	21158	21033	5" Self Generated Vacuum	21170	21053	5" Self Generated Vacuum	21182
21014	5" Central Vacuum	21159	21034	5" Central Vacuum	21171	21054	5" Central Vacuum	21183
21015	6" Non-Vacuum	21160	21035	6" Non-Vacuum	21172	21055	6" Non-Vacuum	21184
21016	6" Basic Vacuum	21161	21036	6" Basic Vacuum	21173	21056	6" Basic Vacuum	21185
21017	6" Deluxe Vacuum	21161	21037	6" Deluxe Vacuum	21173	21057	6" Deluxe Vacuum	21185
21018	6" Self Generated Vacuum	21161	21038	6" Self Generated Vacuum	21173	21058	6" Self Generated Vacuum	21185
21019	6" Central Vacuum	21162	21039	6" Central Vacuum	21174	21059	6" Central Vacuum	21186

Motor Assembly/Disassembly Instructions - Dynorbital-Spirit™

Important: Manufacturers warranty is void if tool is disassembled before warranty expires.

A Full Service Repair Kit P/N 57098, is available which includes special repair tools for correct disassembly/assembly of the sander.

To Disassemble

1. Disconnect sander from air supply.
2. Invert the sander, and place the 57092 Repair Collar (supplied in the 57098 Full Service Repair Kit) around the housing and secure in a vise. Padding can be used on the vise jaws to protect the housing. **Important:** Do not over tighten the sander in the vise. If the sander is held too tight the removal of the lock ring and air motor will be difficult.
3. Remove sanding pad with the 50679 26 mm Open-end Wrench (supplied with the sander).
4. Insert 56058 Lock Ring Tool (supplied in 57098 Full Service Repair Kit) into the corresponding tabs of lock ring. Loosen the 59058 Lock Ring turning it counterclockwise.
5. Remove the 59058 Lock Ring and the 50659 O-Ring from the air motor assembly (3/32" and 3/16" dia. orbits only).
6. Remove 01024 O-Ring and 98463 Retaining Ring from motor assembly.
7. Fasten a 2 in. bearing separator (P/N 96346 available) around the 59051 Cylinder just below the 59077 Rear Bearing Plate. Place the air motor assembly in a #2 arbor press (P/N 96232 available) so that the separator is resting on the table of the arbor press and with the balancer pointing down.
8. Use a flat nose 3/16" dia. drive punch as a press tool. Place it against the small end of the motor shaft balancer and push the shaft out of the upper 58368 Bearing.
9. Remove the rotor, vanes and rotor key from the motor shaft balancer.
10. Again fasten the 2 in. bearing separator between remaining 59076 Front Bearing Plate/58368 Bearing and the top of the balancer. Rest the separator on the table of the arbor press and push the motor shaft out of the 58368 Bearing.
11. Disassemble the balancer assembly as follows:
 - a.) Place motor shaft assembly into a soft jaw vise. Using a thin screwdriver, pick out the end of 95630 Snap Ring and peel out. This will loosen the balancer assembly.
 - b.) Screw the threaded portion of the 56056 Bearing Puller (supplied in 57098 Repair Kit) into the 57069 Balancer Shaft and heat the outside of the motor shaft balancer to approximately 200° F (approximately 10 seconds with a propane torch). Now, using the slider weight, pull the assembly out.
 - c.) Press off 56052 Bearing with a bearing separator and remove bearing seal and bearing shield.
12. If during step 11, the 56052 Bearing remains in the motor shaft balancer, it can be removed by the heating the shaft balancer again and using either an inside bearing puller or a blind hole bearing puller.

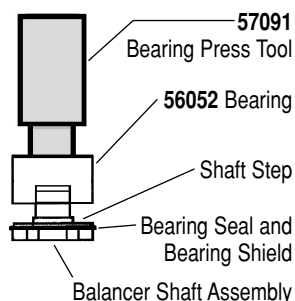
To Assemble:

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

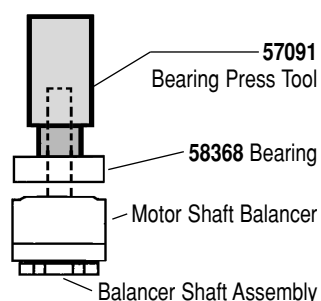
1. Assemble the balancer assembly as follows:
 - a.) Install 95630 Snap Ring onto balancer shaft. Install 95628 Shield with convex face toward hex of balancer shaft.
 - b.) Install 56053 Seal. **Note:** Be certain seal is pressed completely over shaft step.
 - c.) Apply 1 drop of #271 Loctite® (or equivalent) and spread over several places around inside diameter of 56052 Bearing and the outside diameter of the 57069 Balancer Shaft.
 - d.) Press fit 56052 Bearing with seal side toward hex of balancer shaft up to shaft step as shown in **Drawing 1**. This must be a firm press fit for proper retention of bearing.
2. Place the motor shaft balancer in a soft jaw vise with large end-up.
3. Apply 1 drop of #609 Loctite® (or equivalent) and spread over several places around the outside diameter of the 56052 Bearing and slide balancer assembly into the motor shaft balancer until 56052 Bearing are firmly seated at bottom. Squeeze 95630 Snap Ring into groove in motor shaft balancer to complete the assembly. Remove from vise. Place 50659 O-Ring and 59058 Lock Ring onto the motor shaft balancer (3/8" orbit models only).
4. Apply 1 drop of #609 Loctite® (or equivalent) and spread around lower area of motor balancer shaft where the front 58568 Bearing will be located.
5. Install 58368 Bearing onto the motor shaft balancer down to the shoulder as shown in **Drawing 2**.
6. Press 59076 Front Bearing Plate onto 58368 Bearing as shown in **Drawing 3** and check for smooth rotation.
7. Install the 98451 Rotor Key and 57090 Rotor on the motor shaft balancer. Place the 56073 Vanes into the rotor slots.
Note: Vanes should be lubricated with Dynabrade Air Lube P/N 95842 (or equivalent) before installation.
8. Place 59051 Cylinder Assembly over rotor. The "short" line-up post goes toward the front bearing plate.
9. Place 58368 Bearing into 59077 Rear Bearing Plate. Apply 1 drop of #609 Loctite® (or equivalent) and spread around inside diameter of 58368 Bearing.

(Continued on next page.)

Drawing 1

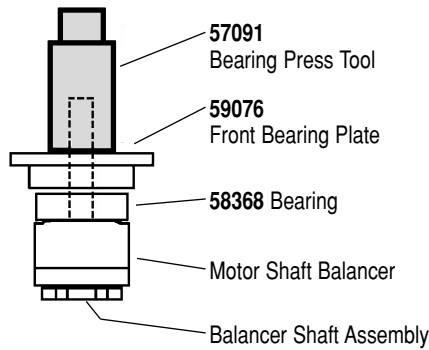


Drawing 2

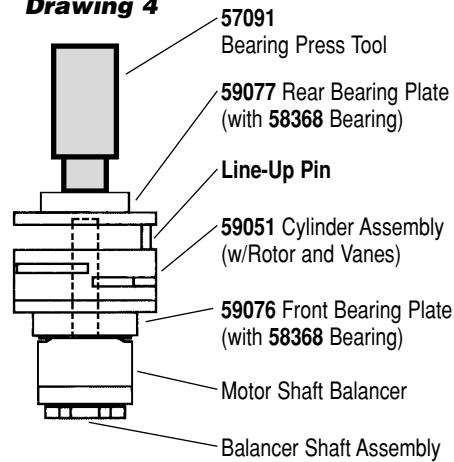


Motor Assembly/Disassembly Instructions - Dynorbital-Spirit™

Drawing 3



Drawing 4



To Assemble (Continued):

10. Place **59077** Rear Bearing Plate (with **58368** Bearing pressed into place) over shaft and "long" end of line-up pin and press fit in place as shown in **Drawing 4**.
11. Install **98463** Snap Ring in groove.
12. Place **01024** O-Ring into recess in side wall of cylinder.
13. Install **50659** O-Ring into **59058** Lock Ring. Slide the lock ring assembly over the motor shaft balancer (3/32" and 3/16" orbits only). Apply 1 drop of pneumatic tool oil and spread between the motor bearing plate and **50659** O-Ring.
14. Place 1 drop of pneumatic tool oil on **01024** O-Ring.
15. Secure motor housing in vise, using **57092** Collar or padded jaws. Slide motor assembly into second housing. **Note:** Be certain line-up post enters the notch in the bottom of the housing and **01024** O-Ring stays seated in cylinder.
16. Tighten lock ring with **56058** Lock Ring Tool to 23 N•m/200 in.-lbs. Attach weight-mated sanding pad.

Valve and Speed Regulator Assemblies:

1. Secure housing in vice using **57092** Collar or padded jaws.
2. Remove inlet bushing, **01468** Spring, **58365** Tip Valve and **01464** Seal from housing. Remove **98927** Pin from housing and lever.
3. Remove **95697** Snap Ring. Press the speed regulator and valve stem out of the housing. Remove the **01025** O-Rings (2) and **98459** O-Ring.
4. Place new **01025** O-Rings (2) on the speed regulator and a new **98459** O-Ring on the valve stem. Then place in housing with valve stem. Install new **95967** Snap Ring. Apply a small amount of pneumatic tool oil to valve o-rings.
5. Place new **01464** Seal in housing. Using tweezers or needle nose pliers, place the tip valve into housing so that the tip valve goes under the valve stem. Place new **01468** Spring into housing so small end is towards tip valve.
6. Apply a small amount of #567 Loctite® (or equivalent) around the threads of the first inlet bushing and tighten into housing to 23 N•m/200 in. - lbs.
7. Install Lever on housing with **98927** Pin centered on housing.

Note: Motor should operate at between 11,000 and 12,000 RPM at 6.2 bar (90 PSIG). RPM should be checked with a tachometer. Before operating, we recommend that 2-3 drops of Dynabrade Air Lube P/N **95842** (or equivalent) be placed directly into the air inlet with throttle lever depressed. Operate the machine for approximately 30 seconds before application to workpiece to determine if machine is working properly and safely and to allow lubricating oils to properly dispense through machine.

Loctite® is a registered trademark of the Loctite Corp.

Disc Pad Change:

1. Insert **50679** Wrench on flats of **57069** Balancer Shaft and twist off sanding pad by hand.
2. With wrench still in place, hand tighten new pad on tool.
3. No need to remove shroud or overskirt.

Required Weight of Pads:

- 3" Models — Use pad weighing 75g.
- 3-1/2" Models — Use pad weighing 80g.
- 5" Models — Use pad weighing 100g.
- 6" Models — Use pad weighing 130g.

Preventative Maintenance Schedule

For All Dynorbital-Spirit™ Sanders

This service chart is published as a guide to expectant life of component parts. The replacement levels are based on average tool usage over one year. Dynabrade Inc. considers one year usage to be 1,000 hours or 50% of a man year. Parts included in motor tune-up kit are identified by High Wear and Medium Wear items.

Parts Common to all Models:

LEGEND	
X	Type of wear, no other comments apply.
L	Easily lost. Care during assembly/disassembly.
D	Easily damaged during assembly/disassembly.
R1	Replace each time tool is disassembled.
R2	Replace each second time tool is disassembled.



Drop-in Motors

- Allows a quick and easy replacement. No motor adjustments needed.

- 59450 – 3", 3-1/2" Dia., 3/8" Orbit
- 59451 – 3", 3-1/2" Dia., 3/16" Orbit
- 59452 – 3", 3-1/2" Dia., 3/32" Orbit
- 59453 – 5" Dia., 3/8" Orbit
- 59454 – 5" Dia., 3/16" Orbit
- 59455 – 5" Dia., 3/32" Orbit
- 59456 – 6" Dia., 3/8" Orbit
- 59457 – 6" Dia., 3/16" Orbit
- 59458 – 6" Dia., 3/32" Orbit

Complete Repair Solution

Includes: 10 Pack of Drop-in Motors
59459 Repair Kit

- 59460 – 3", 3-1/2" Dia., 3/8" Orbit
- 59461 – 3", 3-1/2" Dia., 3/16" Orbit
- 59462 – 3", 3-1/2" Dia., 3/32" Orbit
- 59463 – 5" Dia., 3/8" Orbit
- 59464 – 5" Dia., 3/16" Orbit
- 59465 – 5" Dia., 3/32" Orbit
- 59466 – 6" Dia., 3/8" Orbit
- 59467 – 6" Dia., 3/16" Orbit
- 59468 – 6" Dia., 3/32" Orbit

10 Pack of Drop-in Motors

- 59470 – 3", 3-1/2" Dia., 3/8" Orbit
- 59471 – 3", 3-1/2" Dia., 3/16" Orbit
- 59472 – 3", 3-1/2" Dia., 3/32" Orbit
- 59473 – 5" Dia., 3/8" Orbit
- 59474 – 5" Dia., 3/16" Orbit
- 59475 – 5" Dia., 3/32" Orbit
- 59476 – 6" Dia., 3/8" Orbit
- 59477 – 6" Dia., 3/16" Orbit
- 59478 – 6" Dia., 3/32" Orbit

Index #	Part Number	Description	Number Required	High Wear 100%	Medium Wear 70%	Low Wear 30%	Non-Wear 10%
1	See Note	Sanding Pad	1				X
2	57084	Vacuum Shroud	1			X	
3	57089	Vacuum Lip-Seal Shroud	1			X	
4	54458	3-1/2" Shroud (Non-Vac)	1				X
	56051	5" & 6" Shroud (Non-Vac)	1				X
5	95630	Snap Ring	1			L	
6	57069	Balancer Shaft	1				X
7	95628	Washer	1				X
8	56053	Bearing Seal	1		X		
9	56052	Bearing	1		X		
10	See Note	Motor Shaft Balancer	1				X
11	98461	Key	1		X		
12	59058	Lock Ring	1			X	
13	50659	O-Ring	1			X	
14	58368	Bearing	2		X		
15	59076	Front Bearing Plate	1			X	
16	57113	Rotor/Blade Set	1	X			
17	01024	O-Ring	1		X		
18	59051	Cylinder	1			X	
19	59077	Rear Bearing Plate	1			X	
20	98463	Retaining Ring	1		D		
21	95697	Retaining Ring	1		D		
22	See Note	Housing	1				X
23	See Note	Throttle Lever	1			X	
24	98927	Pin	1		X		
25	98459	O-Ring	1		X		
26	58363	Valve Stem	1		X		
27	59075	Speed Regulator	1		X		
28	01025	O-Ring	2		X		
29	01464	Seal	1		X		
30	58365	Tip Valve	1		L		
31	01468	Spring	1		L		
32	01494	Inlet Bushing	1				X

Note: Please refer to page 4 of tool manual for specific part number.



57098 Full Service Repair Kit:

Includes special tools for proper disassembly/assembly of the Dynorbital-Spirit™.

- Includes: 57092 Repair Collar
56058 Lock Ring Wrench
56056 Bearing Puller
57091 Bearing Press Tool
57099 Bearing Puller
96034 12mm Hex Wrench



59459 Drop-in Motor Repair Kit:

Includes special tools for proper disassembly/assembly of the Dynorbital-Spirit™ drop-in motor.

- Includes: 57092 Repair Collar
56058 Lock Ring Wrench



96510 Tune-Up Kit

- Tune-Up Kit contains high wear and medium wear parts.

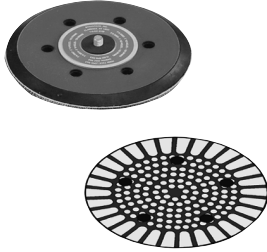
Random Orbital Sanding Pads

Perfectly balanced and weight-mated to Dynorbital® Spirit Random Orbital Sander.



Premium Urethane Pad - Vinyl Face for PSA-Type Discs					
Pad Description	3-1/2" Dual Purpose	5"		6"	
		Non-Vac	Vac	Non-Vac	Vac
3/8" Thick, Soft Density	—	56102	56100	56103	56101
3/8" Thick, Medium Density	—	56106	56104	56107	56105
5/8" Thick, Soft Density	56097	56185	56186	56187	56188
5/8" Thick, Medium Density	56098	56175	56176	56177	56178

- Premium urethane pads, available in soft or medium density, resist heat build-up.
- New 5/8" thick pads, ideal for sanding of intricate contours.
- Unique vinyl surface pads provide excellent disc adhesion, allowing for quick removal of used discs.



Rubber Pad, Medium Density - Vinyl Face Pads for PSA-Type Discs					
Pad Description	3-1/2" Dual Purpose	5"		6"	
		Non-Vac	Vac	Non-Vac	Vac
1/2" Thick, "Diamond Pattern Face"	—	50630	50631	50632	50633
1/2" Thick, "Post Pattern Face"	—	—	50695	—	50696

- Special rubber/vinyl face pads for PSA discs.
- "Post Pattern" design for enhanced vacuum pick-up.
- Unique vinyl surface pads provide excellent disc adhesion, allowing for quick removal of used discs.
- No need to align vacuum holes, saves time on disc changes.



Premium Urethane Pad - Hook Face Short Nap Pads for Scrim-Back Discs					
Pad Description	3-1/2" Dual Purpose	5"		6"	
		Non-Vac	Vac	Non-Vac	Vac
3/8" Thick, Soft Density	—	56157	56155	56158	56156
3/8" Thick, Medium Density	—	54325	54326	54327	54328
5/8" Thick, Soft Density	54311	56195	56196	56197	56198
5/8" Thick, Medium Density	54313	56180	56181	56182	56183

- Hook face "short nap" pads for reattachable discs.



Rubber, Medium Density - Hook Face Long Nap Pads for Non-Woven Nylon Discs					
Pad Description	3-1/2" Dual Purpose	5"		6"	
		Non-Vac	Vac	Non-Vac	Vac
1/2" Thick, Medium Density	54314	50605	50607	50606	50610

- Hook face "long nap" pads for Abrasive Impregnated Non-Woven Nylon Discs.

• 3-1/2", 5" and 6" diameter disc pads have 5/16"-24 male threaded stud.
 • The 3-1/2" diameter discs, without holes, can be used on vacuum and non-vacuum 3-1/2" Dynorbital-Spirit™ Sanders.

Coated Abrasive Discs

Silicon Carbide Discs / PSA Mounted						
Disc Type	Abrasive Grit					
	80	100	120	150	180	220
5" Diameter						
No Holes	93051	93052	93053	93054	93055	93056
5-Hole Pattern	93060	93061	93062	93063	93064	93065
6" Diameter						
No Holes	93069	93070	93071	93072	93073	93074
6-Hole Pattern	93077	93078	93079	93080	93081	93082

Note: Other grits available upon request.

All Discs: 120 Grit and Coarser – 125/Roll; 8 Rolls = Unit.
 150 Grit & Finer – 250/Roll; 4 Rolls = Unit. Complete rolls only.

Premium Aluminum Oxide Discs / PSA Mounted							
Disc Type	Abrasive Grit						
	80	100	120	150	180	220	320
3-1/2" Diameter							
*No Holes	92090	—	92092	—	92094	92095	92097
5" Diameter							
No Holes	93101	93102	93103	93104	93105	93106	—
5-Hole Pattern	93109	93110	93111	93112	93113	93114	—
6" Diameter							
No Holes	93200	93201	93202	93203	93204	93205	—
6-Hole Pattern	93215	93216	93217	93218	93219	93220	—

Note: Other grits available upon request.

*Used on either vacuum or non-vacuum 3-1/2" sander.

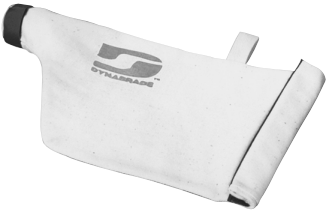
All Discs: 120 Grit and Coarser – 125/Roll; 10 Rolls = Unit.
 150 Grit and Finer – 175/Roll; 6 Rolls = Unit. Complete rolls only.

Self-Contained Dust Collection Systems

Easily attach to Dynorbital® Supreme Random Orbital Sander – Self-Generated Vac-Ready Models.



- 50694 Mini-Reusable Felt Bag**
- New bag design features a one micron filter rating. Bag traps over 99% of vacuum particles one micron or larger.
 - Mounts directly to any Vac-Ready tool or to any exhaust hose.
 - Measures 11" long x 3" wide. End opens up - no need to remove bag from tool when emptying.



- 50683 Reusable Felt Bag**
- New bag design features a one micron filter rating. Bag traps over 99% of vacuum particles one micron or larger.
 - Hook 'n loop end for easy emptying.
 - Measures 14-1/2" L x 7-1/2" W.
 - Connects to vacuum hose.



- 56304 Reusable Felt Bag w/Zipper**
- New bag design features a one micron filter rating. Bag traps over 99% of vacuum particles one micron or larger.
 - Has zipper-lock end.
 - Measures 14-1/2" L x 7-1/2" W.
 - Connects to vacuum hose.



- 59586 Hose Cover (5' long cloth cover)**
- Covers air line and exhaust/vacuum hoses (not included).
 - Eliminates damage from hoses dragging on the workpiece.



- 54284 Mini-Flex-Hose System**
- 95580 Air Line 1" dia. x 28" long.
 - 50638 Flex-Hose 1" dia. x 18" long.
 - 50694 Mini-Reusable Felt Bag.
 - 95362 Rubber Connectors (3) which connect air line to exhaust hose.



- 50617 & 56303 – 6' Long Flex-Hose**
- Both systems include 6' long 50682 Flex-Hose.
 - Shown with optional 95361 Air Line (1/4" diameter).
 - 50617: Has 50683 Standard Reusable Felt Bag with hook 'n loop end for easy emptying.
 - 56303: Has 56304 Zipper-Lock Bag.



- 54290 "Bag-in-Box" System**
- 95361 Air Line 5' long.
 - 50682 Flex-Hose 1" dia. x 6' long.
 - 95362 Rubber Connectors (5, attach air line to vacuum hose).
 - 95575 Durable Box Receptacle (to house bag and store tool).
 - Sample paper bag included. Paper bag reorder: 50692 (400/case) or 50693 (24 per package.)

Optional Accessories



- Drop-in Motors**
Allows a quick and easy replacement. No motor adjustments needed.
- 59450 – 3", 3-1/2" Dia., 3/8" Orbit
 - 59451 – 3", 3-1/2" Dia., 3/16" Orbit
 - 59452 – 3", 3-1/2" Dia., 3/32" Orbit
 - 59453 – 5" Dia., 3/8" Orbit
 - 59454 – 5" Dia., 3/16" Orbit
 - 59455 – 5" Dia., 3/32" Orbit
 - 59456 – 6" Dia., 3/8" Orbit
 - 59457 – 6" Dia., 3/16" Orbit
 - 59458 – 6" Dia., 3/32" Orbit

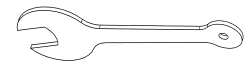
Complete Repair Solution
Includes: 10 Pack of Drop-in Motors
59459 Repair Kit
See page 9 for offering list.



- 59459 Drop-in Motor Repair Kit:**
Includes special tools for proper disassembly/assembly of the Dynorbital-Spirit™ drop-in motor.
Includes: 57092 Repair Collar
56058 Lock Ring Wrench
- 57098 Full Service Repair Kit:**
Includes special tools for proper disassembly/assembly of the Dynorbital-Spirit™.
Includes: 57092 Repair Collar
56058 Lock Ring Wrench
56056 Bearing Puller
57091 Bearing Press Tool
57099 Bearing Puller
96034 12mm Hex Wrench



- Overskirt Shrouds**
Protects pad edges when working near workpiece sides; maximizes dust pick-up on vacuum models.
- 57086: 5" Diameter
 - 57087: 6" Diameter



50679 26 mm Open-End Wrench



- 96510 Tune-Up Kit**
- Includes assorted parts to help maintain and repair motor.

Machine Specifications

3/8" Orbit Models

Model Number	Motor HP (W)	Motor RPM	Dia. Orbit Inch (mm)	Sound Level	Air Flow Rate CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
21000	.25 (186)	12,000	3/8" (10)	81 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6 (152)	3-1/2 (89)
21001, 21002, 21003	.25 (186)	12,000	3/8" (10)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	8-1/2 (216)	3-1/2 (89)
21004	.25 (186)	12,000	3/8" (10)	84 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	7 (178)	3-1/2 (89)
21005	.25 (186)	12,000	3/8" (10)	81 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6 (152)	3-1/2 (89)
21006-08	.25 (186)	12,000	3/8" (10)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	8-1/2 (216)	3-1/2 (89)
21009	.25 (186)	12,000	3/8" (10)	83 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	7 (178)	3-1/2 (89)
21010	.25 (186)	12,000	3/8" (10)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	6-1/2 (165)	3-1/2 (89)
21011, 21012, 21013	.25 (186)	12,000	3/8" (10)	76 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.6 (0.7)	8-1/2 (216)	3-1/2 (89)
21014	.25 (186)	12,000	3/8" (10)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	7-1/4 (184)	3-1/2 (89)
21015	.25 (186)	12,000	3/8" (10)	79 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.6 (0.7)	7 (178)	3-1/2 (89)
21016, 21017, 21018	.25 (186)	12,000	3/8" (10)	79 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.7 (0.7)	9 (229)	3-1/2 (89)
21019	.25 (186)	12,000	3/8" (10)	79 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.6 (0.7)	7-3/4 (197)	3-1/2 (89)

3/16" Orbit Models

Model Number	Motor HP (W)	Motor RPM	Dia. Orbit Inch (mm)	Sound Level	Air Flow Rate CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
21020	.25 (186)	12,000	3/16" (5)	73 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6 (152)	3-1/2 (89)
21021, 21022, 21023	.25 (186)	12,000	3/16" (5)	76 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	8-1/2 (216)	3-1/2 (89)
21024	.25 (186)	12,000	3/16" (5)	74 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	7 (178)	3-1/2 (89)
21025	.25 (186)	12,000	3/16" (5)	73 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6 (152)	3-1/2 (89)
21026, 21027, 21028	.25 (186)	12,000	3/16" (5)	76 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	8-1/2 (216)	3-1/2 (89)
21029	.25 (186)	12,000	3/16" (5)	74 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	7 (178)	3-1/2 (89)
21030	.25 (186)	12,000	3/16" (5)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6-1/2 (165)	3-1/2 (89)
21031, 21032, 21033	.25 (186)	12,000	3/16" (5)	80 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	8-1/2 (216)	3-1/2 (89)
21034	.25 (186)	12,000	3/16" (5)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	7-1/4 (184)	3-1/2 (89)
21035	.25 (186)	12,000	3/16" (5)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	7 (178)	3-1/2 (89)
21036, 21037, 21038	.25 (186)	12,000	3/16" (5)	80 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.6 (0.7)	9 (229)	3-1/2 (89)
21039	.25 (186)	12,000	3/16" (5)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.6 (0.7)	7-3/4 (197)	3-1/2 (89)

3/32" Orbit Models

Model Number	Motor HP (W)	Motor RPM	Dia. Orbit Inch (mm)	Sound Level	Air Flow Rate CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
21040	.25 (186)	12,000	3/32" (2)	76 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.3 (0.6)	6 (152)	3-1/2 (89)
21041, 21042, 21043	.25 (186)	12,000	3/32" (2)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	8-1/2 (216)	3-1/2 (89)
21044	.25 (186)	12,000	3/32" (2)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	7 (178)	3-1/2 (89)
21045	.25 (186)	12,000	3/32" (2)	76 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6 (152)	3-1/2 (89)
21046, 21047, 21048	.25 (186)	12,000	3/32" (2)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	8-1/2 (216)	3-1/2 (89)
21049	.25 (186)	12,000	3/32" (2)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	7 (178)	3-1/2 (89)
21050	.25 (186)	12,000	3/32" (2)	75 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	6-1/2 (165)	3-1/2 (89)
21051, 21052, 21053	.25 (186)	12,000	3/32" (2)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.6)	8-1/2 (216)	3-1/2 (89)
21054	.25 (186)	12,000	3/32" (2)	77 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.4 (0.6)	7-1/4 (184)	3-1/2 (89)
21055	.25 (186)	12,000	3/32" (2)	74 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.6)	7 (178)	3-1/2 (89)
21056, 21057, 21058	.25 (186)	12,000	3/32" (2)	83 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	9 (229)	3-1/2 (89)
21059	.25 (186)	12,000	3/32" (2)	76 dB(A)	2/16 (453)	90 (6.2)	5/16"-24 female	1.5 (0.7)	7-3/4 (197)	3-1/2 (89)

Additional Specifications: Air Inlet Thread 1/4" NPT • Hose I.D. Size 1/4" (8 mm)

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Email: 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

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