Mini-Dynorbital® Supreme

Model:
57500 – 5,000 RPM

Air Motor and Machine Parts

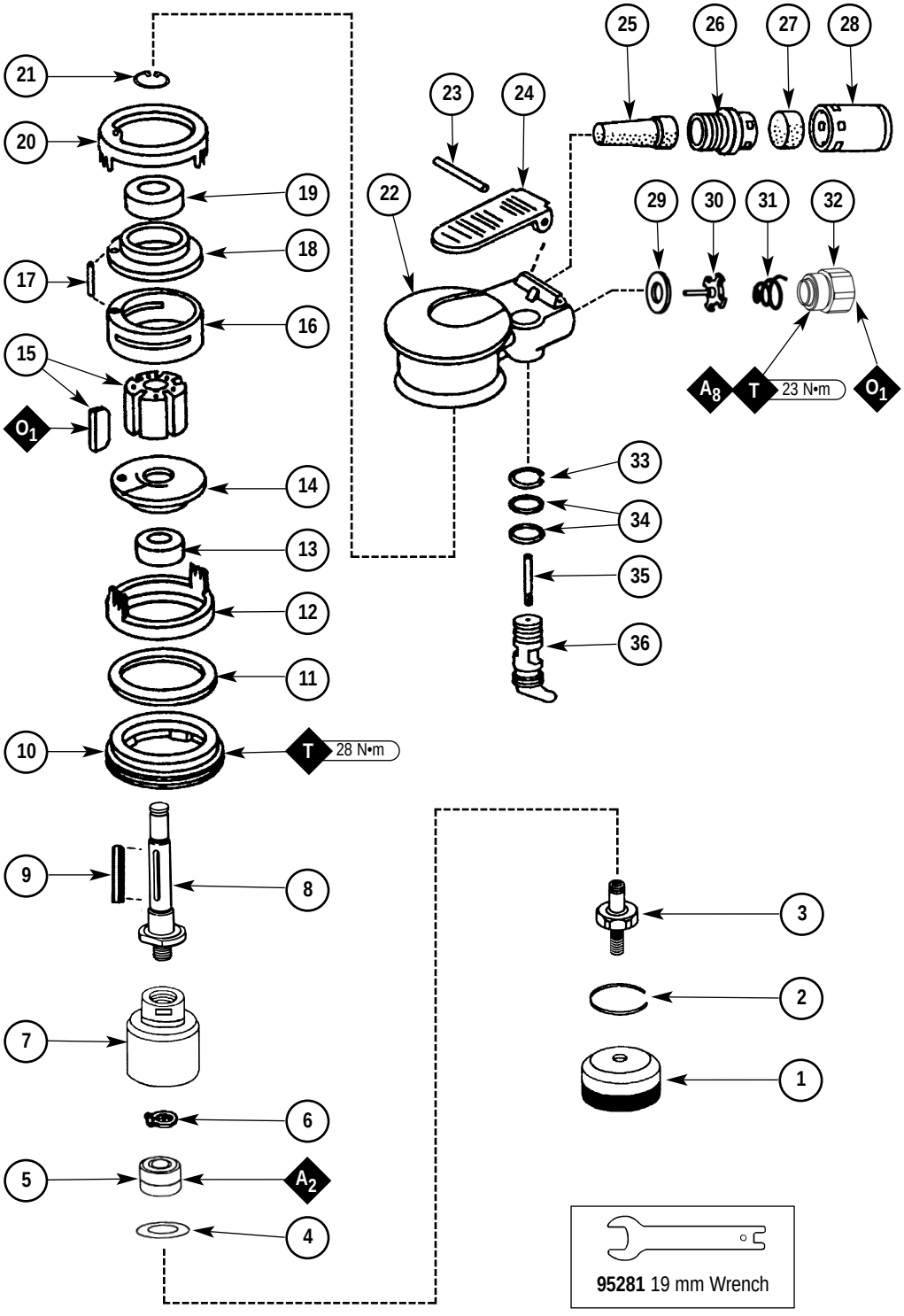
⚠WARNING **Always operate, inspect and maintain this tool in accordance with the Safety Code for portable air tools (ANSI B186.1) and any other applicable safety codes and regulations. Please refer to Dynabrade's Warning/Safety Operating Instructions for more complete safety information.**

Key

- **A** Adhesive: **A_2 = Loctite #271**, **A_8 = Loctite #567**
- **O** Oil: **O_1 = Air Lube**
- **T** Torque: **N•m x 8.85 = In. - lbs.**

Index Key

No.	Part	Description
1	**Sanding Pad** (See page 4.)	
2	**95613**	Retaining Ring
3	**54124**	Balancer Shaft
4	**95612**	Bearing Shield
5	**50722**	Balancer Bearing (2)
6	**95558**	Retaining Ring
7	**54036**	Counter Weight
8	**57528**	Motor Shaft Balancer
9	**56047**	Rotor Key
10	**57059**	Lock Ring
11	**95973**	Washer
12	**57055**	Front Ring
13	**57088**	Bearing
14	**57057**	Front Bearing Plate
15	**57113**	Rotor/Blade Set (5)
16	**57058**	Cylinder (Incl. **95971** Pin)
17	**95971**	Pin
18	**57056**	Rear Bearing Plate
19	**01206**	Bearing
20	**57054**	Rear Ring
21	**95626**	Retaining Ring
22	**57526**	Mini Housing
23	**95979**	Pin
24	**57527**	Lever
25	**57065**	Cone Muffler
26	**57066**	Muffler Body
27	**56027**	Muffler Insert (3)
28	**56028**	Muffler Cap
29	**01464**	Seal
30	**01472**	Tip Valve
31	**01468**	Conical Spring
32	**01494**	Inlet Bushing
33	**95697**	Retaining Ring
34	**01025**	O-Ring (2)
35	**01477**	Valve Stem
36	**57064**	Speed Regulator
		or
	57053	Recessed Speed Reg.



Note: To order replacement parts specify the model and serial number of your machine.

Important Operating, Maintenance and Safety Instructions

Carefully read all instructions before operating or servicing any Dynabrade® Abrasive Power Tool.
Warning: Hand, wrist and arm injury may result from repetitive work motion and overexposure to vibration.
Important: All Dynabrade Rotary Vane air tools must be used with a Filter-Regulator-Lubricator to maintain all warranties.

Operating Instructions:

Warning: Eye, face, respiratory, sound and body protection must be worn while operating power tools. Failure to do so may result in serious injury or death. Follow safety procedures posted in workplace.

1. With power source disconnected from tool, securely fasten abrasive/accessory on tool.
2. Install air fitting into inlet bushing of tool.
   Important: Secure inlet bushing of tool with a wrench before attempting to install the air fitting to avoid damaging valve body housing.
3. Connect power source to tool. Be careful not to depress throttle lever in the process.
4. Check tool speed with tachometer. If tool is operating at a higher speed than the RPM marked on the tool or operating improperly, the tool should be serviced to correct the cause before use.

Maintenance Instructions:

1. Check tool speed regularly with a tachometer. If tool is operating at a higher speed than the RPM marked on the tool, the tool should be serviced to correct the cause before use.
2. Some silencers on air tools may clog with use. Clean and replace as required.
3. All Dynabrade Rotary Vane air motors should be lubricated. Dynabrade recommends one drop of air lube per minute for each 10 SCFM (example: if the tool specifications state 40 SCFM, set the drip rate of your filter-lubricator at 4 drops per minute). Dynabrade Air Lube (P/N **95842**: 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: **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 PSI has 3/8" NPT female ports.
5. Use only genuine Dynabrade replacement parts. To reorder replacement parts, specify the **Model #**, **Serial #**, and **RPM** of your machine.
6. A Motor Tune-Up Kit (P/N **96109**) is available which includes assorted parts to help maintain motor in peek operating condition.
7. Mineral spirits are recommended when cleaning the tool and parts. Do not clean tool or parts with any solvents or oils containing acids, esters, 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.

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.

Model Number	Pad Inch (mm)	Orbital Diameter Inch (mm)	Length Inch (mm)	Height Inch (mm)	Machine Weight	Air Flow Rate SCFM (LPM)	Sound Level	Motor HP (W)	Air Pressure PSI (Bars)
57500	3/4" (19), 1-1/4" (32)	3/16" (5)	5" (127)	3-5/8" (92)	1.7 lbs. (.8 Kg)	6 (170)	70 dBA	.05 (37)	90 (6.2)

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

(PD00•53)

Disassembly/Assembly Instructions - Mini-Dynorbital® Supreme

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

A Motor Repair Kit (57525) is available which contains special tools for disassembly/assembly. Please refer to parts breakdown for part identification.

Motor Disassembly:

1. Disconnect tool from power source.
2. Invert machine and secure in vice, using **57092** Collar (supplied in **57525** Repair Kit) or padded jaws. Remove sanding pad.
3. Insert **56058** Lock Ring Tool (supplied in **57525** Repair Kit) into corresponding tabs of lock ring and unscrew. Motor may now be lifted out for service.
4. Remove lock ring, washer, front ring and rear ring from motor. Remove **95626** Snap Ring, upper motor may now be disassembled.
5. Remove the rear plate and the cylinder assembly by securing the cylinder in a bearing separator gripped on the cylinder exhaust and extra pocket area. Push the motor shaft balancer through the bearing.
6. Remove the rotor, vanes and rotor key from the motor shaft balancer. Remove the front plate using a small (#2) arbor press. Support the edges of the front plate while pressing on the small end of the motor shaft balancer.
   - **a.)** If, during step 7, the front plate and bearing remain together, press bearing out of the front plate using **57091** Press Tool (supplied in **57525** Repair Kit).
   - **b.)** If, during step 7, the front plate and **57088** Bearing remains on the motor shaft balancer, it can be removed with a bearing separator.
7. Remove **01206** Bearing from the rear plate by using a bearing press tool.
8. Disassemble the head assembly as follows:
   - **a.)** Place head assembly into a soft jaw vise. Using a thin screwdriver, pick out the end of snap ring and peel out.
   - **b.)** Screw threaded portion of the **54121** Bearing Puller (supplied in **57525** Repair Kit) onto the balancer shaft and using the slider weight, pull out.
   - **c.)** Remove **95558** Retaining Ring. Press off **57022** Bearings and remove loose parts.
10. If during step 9, the **57022** Bearings remain in the head assembly, they can be removed by the heating the counter weight and using either an inside bearing puller or a blind hole bearing puller.

Motor disassembly complete.

To Reassemble:

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

1. Assemble the balancer assembly as follows:
   - **a.)** Install **95613** Snap Ring onto **54124** Balancer Shaft. Install **95612** Shield with convex face toward hex of balancer shaft.
   - **b.)** Remove three of the four bearing seals from the **50722** Bearings. Press fit **50722** Bearings onto **54124** Balance Shaft with the remaining bearing seal facing **95612** Shield. Install **95558** Retaining Ring.
2. Place **54036** Counter Balance into a soft jaw vise with the large end up.
3. Apply a slight amount #271 Loctite® (or equivalent) in several places around the outside diameter of the **50722** Bearings and slide into the **54036** Counter Weight until **50722** Bearings are firmly seated at bottom. Squeeze **95613** Snap Ring into groove to complete the assembly. Remove from vise.
4. Press **57088** Bearing onto the motor shaft balancer down to the shoulder.
5. Press **57057** Front Bearing Plate onto **57088** Bearing and check for smooth rotation.
6. Place the **57113** Rotor and **56047** Rotor Key on the **57528** Motor Shaft Balancer. Place the vanes into the rotor slots.
   Note: Vanes should be lightly lubricated with Dynabrade Air Lube P/N **95842** (or equivalent) before installation into rotor slots.
7. Place **57058** Cylinder Assembly over rotor. The "short" line-up pin goes toward the front plate.
8. Place **57056** Rear Bearing Plate (with **01206** Rear Bearing pressed into place) over shaft and "long" end of line-up pin and press fit in place.
9. Place **95626** Snap Ring in groove.
10. Place **57054** Rear Ring over the rear plate and line-up pin. Turn the motor over and place **57055** Front Ring over the front plate making sure that the "legs and fingers" on the front and rear rings line-up. Also the small cut-outs on both rings should line-up with the square holes in the cylinder/end plate assembly. Place **95973** Washer and **57059** Lock Ring onto the front ring with 1 drop of pneumatic tool oil spread between the washer and lock ring.
11. Secure motor housing in vise, using **57092** Collar or padded jaws. Spread 2-3 drops of pneumatic tool oil around the housing bore and slide motor assembly in housing. **Note:** Be certain line-up pin enters the pocket in bottom of the housing and the "legs" of the rings stay in line.
12. Tighten lock ring with **56058** Lock Ring Tool torque to 28 N•m/250 in. - lbs.

Motor assembly is complete. Please allow 30 minutes for adhesives to cure before operating tool.

Valve and Speed Regulator Assemblies:

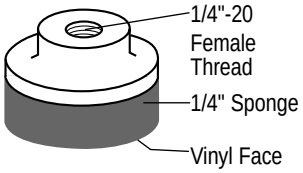
1. Secure housing in vice using **57092** Collar or padded jaws.
2. Remove inlet bushing, **01468** Spring, valve and seal from housing.
3. Remove **95697** Snap Ring. Press the spread regulator and valve stem out of the housing. Remove the **01025** O-Rings (2).
4. Place new **01025** O-Rings (2) on the speed regulator and place in housing with valve stem. Install new **95967** Snap Ring.
5. Place seal in housing. Using tweezers or needle nose pliers, place the valve in the housing so that its pin goes into the valve stem hole. Place **01468** Spring into the housing so the small end is toward the tip valve.
6. Spread a small amount of #567 Loctite® (or equivalent) around the threads of the inlet bushing and tighten into housing torque to 23 N•m/200 in. - lbs.

Tool assembly is complete. Please allow 30 minutes for adhesives to cure before operating tool.

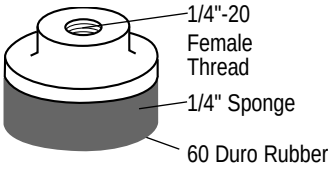
Note: Motor should operate at between 4,500 and 5,000 RPM at 6.2 bar (90 PSI). RPM should be checked with a tachometer. Before operating, we recommend that 2-3 drops of Dynabrade Air Lube P/N **95842** (or equivalent) be placed directly into the air inlet with throttle lever depressed. Operate the machine for approximately 30 seconds before application to work piece to determine if machine is working properly and safely and to allow lubricating oils to properly dispense through machine.

Mini-Dynorbital Sanding Pads/Unit = 10 each

"Soft" Density

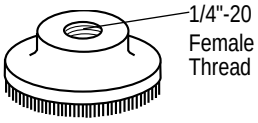


"Medium" Dual-Density



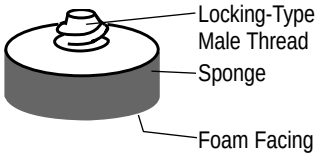
- Order Vinyl Face Pads **54091** or **54092** for wet sanding operations.

"Hook 'n Loop"



- For use with non-woven nylon discs.

"Soft" Locking-Type



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

Part No.	Pad Diameter	Description/Face	Thread Type	Comments
54017	3/4"	Medium/Rubber	1/4"-20 Female	For PSA Discs
54018	1-1/4"	Medium/Rubber	1/4"-20 Female	For PSA Discs
54031	1-1/4"	Soft	Locking-Type	For PSA Discs
54087	3/4"	Soft/Vinyl	1/4"-20 Female	For PSA Discs
54088	1-1/4"	Soft/Vinyl	1/4"-20 Female	For PSA Discs
54089	3/4"	Hook 'n Loop	1/4"-20 Female	Non-Woven Nylon Discs
54090	1-1/4"	Hook 'n Loop	1/4"-20 Female	Non-Woven Nylon Discs
54091	3/4"	Medium/Vinyl	1/4"-20 Female	For PSA Discs
54092	1-1/4"	Medium/Vinyl	1/4"-20 Female	For PSA Discs

Note: All Pads 5,000 RPM maximum. To mount pads that have 1/4"-20 female thread directly to tool for conventional rotary action, use **54021** Adapter.

Coated Silicon Carbide Abrasive Sanding Discs/PSA

Disc Diameter	Abrasive Grit 80	120	180	220
3/4"	**93271**	**93272**	**93274**	**93275**
1-1/4"	**93280**	**93281**	**93283**	**93284**

3/4" Discs: 75/Sheet; 1500 discs = unit. **1-1/4" Discs:** 25/Sheet; 1500 discs = unit. Available in complete sheets only.

Micro-Finishing Film Discs – PSA Mounted/Aluminum Oxide

Disc Diameter	Abrasive Grit 1000 (9 Micron)
3/4"	**93183**
1-1/4"	**93191**

3/4" Discs: 75/Sheet; 1500 discs = unit.
1-1/4" Discs: 25/Sheet; 1500 discs = unit.
Available in complete sheets only.

Non-Woven Nylon Discs – Mount to Hook 'n Loop Pads

Disc Dia.	Grade Very Fine	Medium
3/4"	**90856**	**90858**
1-1/4"	**90860**	**90862**

3/4" Discs: Unit = 225 Discs. **1-1/4" Discs:** Unit = 125 Discs.

96109 Motor Tune-Up Kit:
Includes assorted parts to help maintain and repair motor.

57525 Motor Repair Kit:
Includes special tools for proper disassembly/assembly of the Mini-Dynorbital® Supreme.