

# 1hp Right Angle Dynisher® Governor Controlled

Parts Page Reorder No. PD09•36

Effective July, 2009

Supersedes PD02•43

For Serial No. 08E1000A and Higher

*Air Tool Manual – Safety, Operation and Maintenance*

SAVE THIS DOCUMENT, EDUCATE ALL PERSONNEL

## Models:

**13450 – 2,800 RPM**

**13460 – 2,800 RPM, Versatility Kit**



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## ⚠ 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 Standards 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

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

### ⚠ WARNING

Some dust created by sanding, grinding, drilling, and other construction activities contain chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints
- Crystalline silica from bricks and cement and other masonry products
- Arsenic and chromium from chemically treated lumber

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

### 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 altered from the original design without expressed written consent from Dynabrade, Inc.

**Tool Intent:** Right Angle Dynisher® is designed for surface preparation, cleaning and finishing using coated abrasives and non-woven nylon products.

**Do Not use tool for anything other than its intended applications.**

**This power tool is not intended for use in potentially explosive atmospheres and is not insulated against contact with electrical power.**

**Training:** Proper care, maintenance, and storage of your tools will maximize their performance.

- Employer's Responsibility – Provide Right Angle Dynisher® 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.
- Tool is designed for uses with 3/4" & 1" unthreaded bore wheels, the maximum wheel dia. is 6" and the maximum wheel width is 4".
- When mounting 3/4" unthreaded bore wheels use any combination of the 13441 & 13434 Flanges and the 50750 Spacer as required to properly position the wheel.
- Mount 1" Diameter unthreaded bore wheels by using 96037 Adapters (sold separately).
- Before mounting an accessory, visually inspect for defects. Do not use defective accessories.
- Use only recommended accessories. See back page of manual and Dynabrade catalog.
- 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 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.)
- DO NOT use – cut off wheels, grinding wheels or any bonded product.

### 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.

- Keep hand and clothing away from working end of the air tool.
- 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.
- BEFORE MOUNTING A ACCESSORY, after all tool repairs and whenever a Dynisher® is issued for use, 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 onto arbor assembly. Dynacushion should be mounted with valve stem accessible for inflation. Inflate Dynacushion using 94465 Wheel Inflation tool. Inflate only enough to prevent abrasive from slipping or falling off. DO NOT OVER-INFLATE DYNACUSHION (20 PSIG max.).
- Adjust handle support using 01678 Screw to desired position. The shroud assembly can also be adjusted using (3) 96278 Screw Assemblies to best protect operator from abrasive debris during use. See Complete Assembly Breakdown for hardware locations.
- 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 reassembling tool, the right-angle Dynisher® 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.
- Air tools are not intended for use in explosive atmospheres and are not insulated for contact with electric power sources.
- 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.
- Ensure that sparks and debris resulting from work do not create a hazard.
- This tool is rear exhaust. Exhaust may contain lubricants, vane material, bearing grease, and other materials flushed thru the tool.

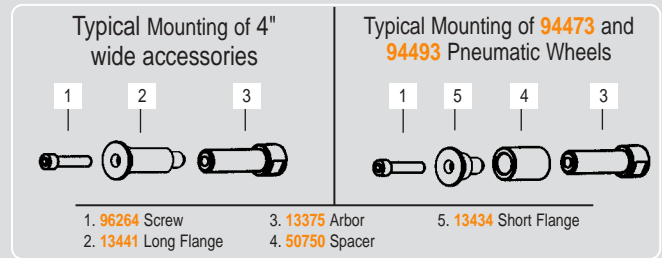
**Warning:** Grinding/sanding certain materials can create explosive dust.

It is the employers responsibility to notify the user of acceptable dust levels.

- 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.
- Contact with abrasive may cause abrasions or cuts.

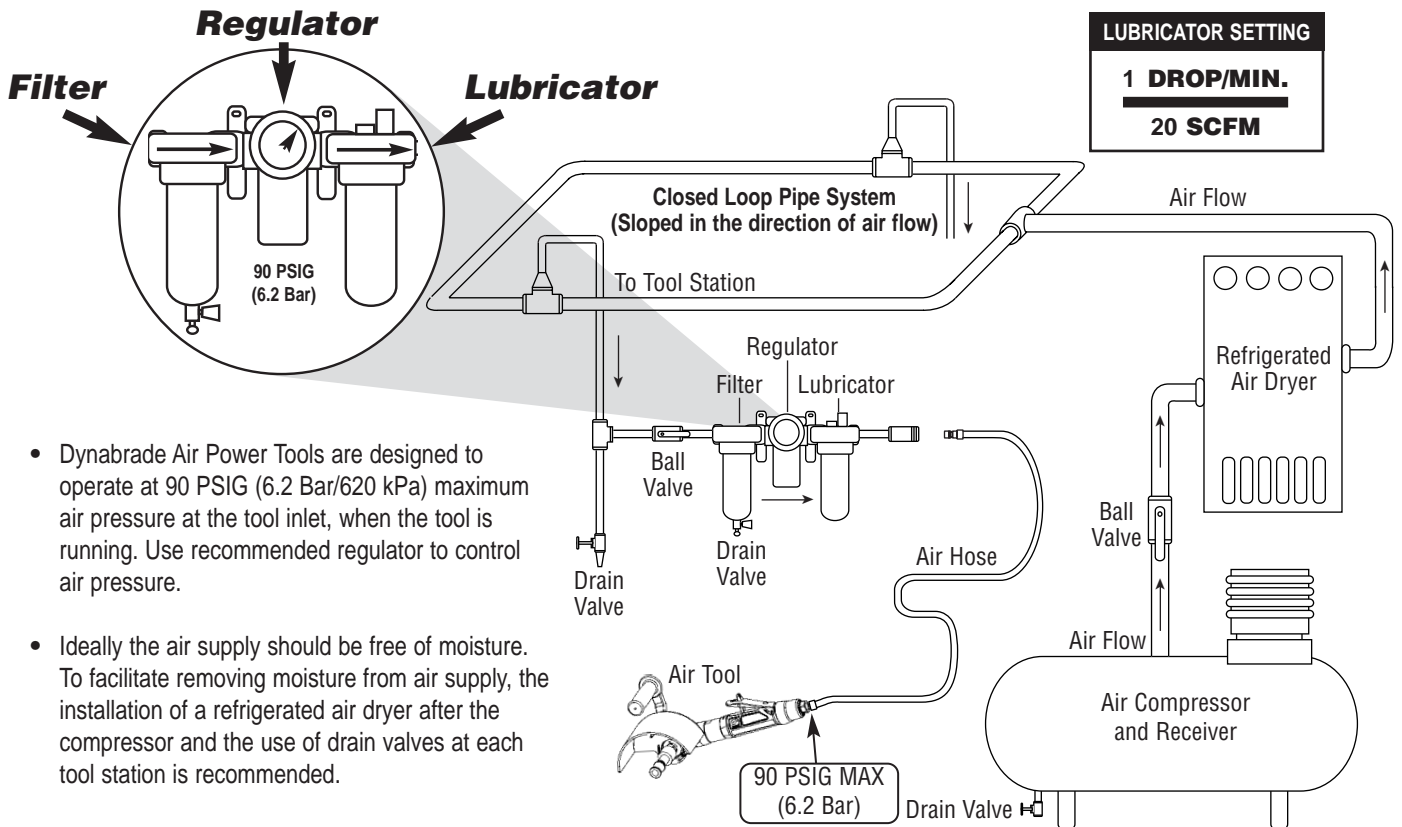
**Report to your supervisor any condition of the tool, accessories, or operation you consider unsafe.**

### Mounting Diagram



**Note:** Diagrams are for mounting 3/4" I.D. Smooth Bore Wheels. For 1" I.D. Smooth Bore Wheels use 96037 Adapters (sold separately) to reduce the wheel I.D. to 3/4" and follow diagrams above for that width hub).

## 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 of moisture. To facilitate removing moisture from air supply, the installation of a refrigerated air dryer after the compressor and the use of drain valves at each tool station is recommended.

## Maintenance Instructions

**Important:** To keep tool safe a Preventative Maintenance Program is recommended whenever portable power tools are used. The program should include inspection of air supply lines, air line pressure, proper lubrication and repair of tools. Refer to ANSI B186.1 for additional maintenance information.

- Use only genuine Dynabrade replacement parts to insure quality. To order replacement parts, specify **Model#**, **Serial#** and **RPM** of your air tool.
- 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: **10681** Air Filter-Regulator-Lubricator (FRL) – Provides accurate air pressure regulation and two stage filtration of water contaminants.
- Lubricate wick system through the angle gear oil fitting with **2-3 plunges for every 24 hours of use**, to achieve maximum gear life. **Important:** Use only the recommended angle gear oil for the wick system. Do not contaminate the wick with any other oil or grease product (order **95848** Gear oil and **95541** Gun). Lubrication gun should be upside down during lubrication. (See Fig.1)
- Grease the planetary gear assembly with the **95542** Grease by applying **2-3 plunges** with the **95541** Grease Gun after every **50 hours of use**, achieve maximum gear life. (See Fig. 2)
- Dynabrade recommends one drop of air lube per minute for each 20 SCFM (example: if the tool specification states 40 SCFM, set the drip rate on the filter-lubricator to 2 drops per minute). Dynabrade Air Lube (P/N **95842**: 1 pt 473 ml) is recommended.



Fig.1



Fig.2

### Routine Preventative Maintenance:

- Check free speed of right-angle Dynisher® using a tachometer. This governor controlled right-angle Dynisher® should be speed checked every 20 hours of use or weekly, whichever occurs more frequently.
- **DO NOT** disassemble the governor for any reason. Reorder correct speed – governor assembly (See Assembly Breakdown) and recheck free speed of tool with 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 Motor Tune-Up Kit (P/N **96532**) is available which includes high wear and medium wear motor parts.
- Air tool labels must be kept legible at all times, if not, reorder label(s) and replace. User is responsible for maintaining specification information i.e.: Model #, S/N, and RPM. (See Assembly Breakdown)
- 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:

- Use of tool rests and hangers are recommended.
- 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.

## Machine Specifications

Model Number	Motor hp (W)	Tool RPM	Sound Level	Air Flow Rate SCFM (LPM)	Air Pressure PSIG (Bars)	Arbor Size Inch (mm)	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
All Models	1 (746)	2,800	80 dB(A)	42 (1201)	90 (6.2)	3/4 (19)	6 (2.6)	15 (381)	7 (178)

Additional Specifications: Air Inlet Thread 3/8" NPT • Hose I.D. Size 3/8" (10 mm) • Air Flow Rate Based At Max HP. • Air Pressure 90 PSIG Max

### Notice

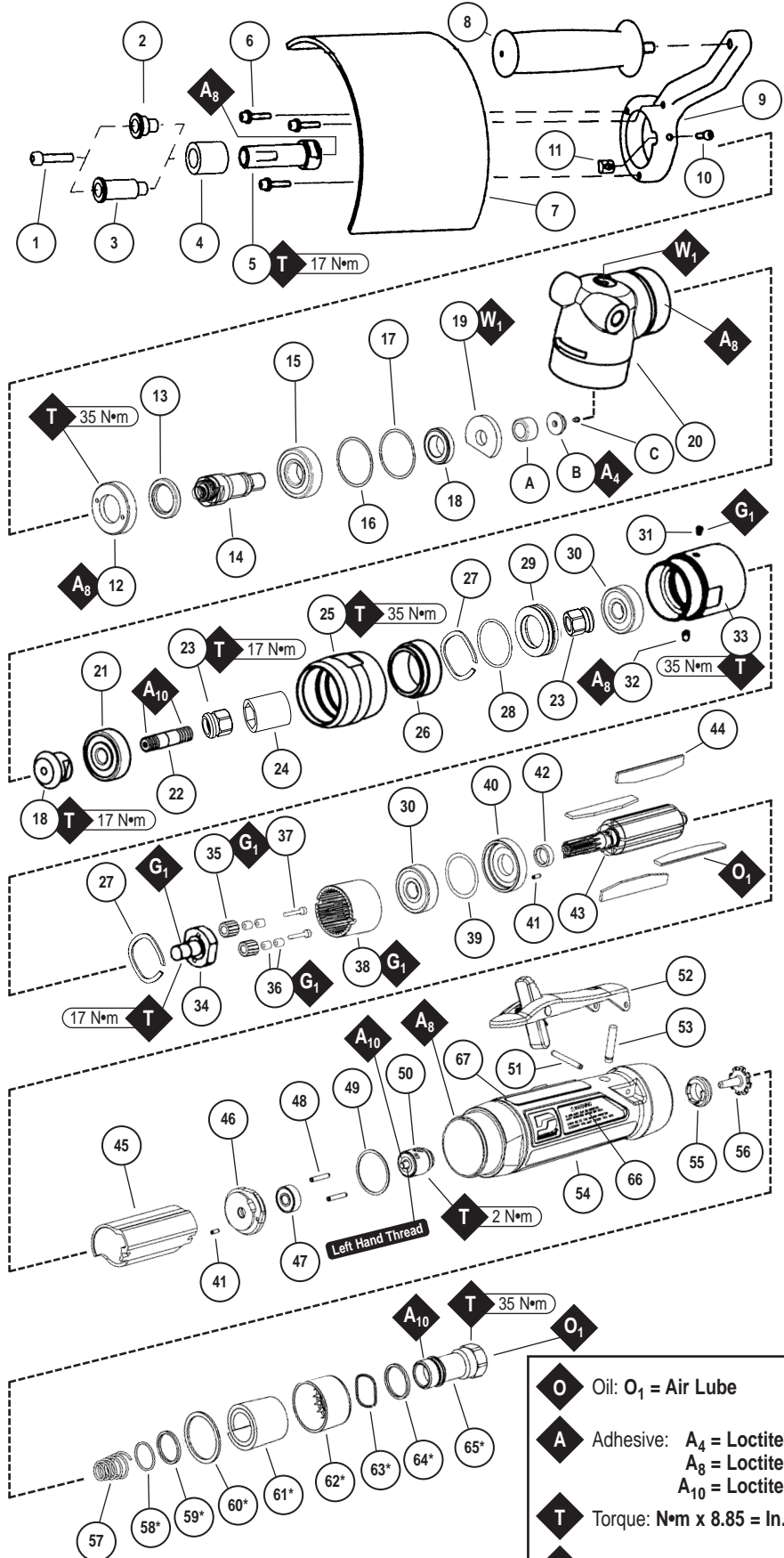
All Dynabrade motors use the highest quality parts and metals available and are machined to exacting tolerances. The failure of quality pneumatic motors can most often be traced to an unclean air supply or the lack of lubrication. Air pressure easily forces dirt or water contained in the air supply into 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.

### Lifetime Warranty

All Dynabrade portable pneumatic power tools are rigorously inspected and performance tested in our factory before shipping to our customers. If a Dynabrade tool develops a performance problem and an inherent defect is found during normal use and service, Dynabrade will warrant this tool against defects in workmanship and materials for the lifetime of the tool. Upon examination and review at our factory, Dynabrade shall confirm that the tool qualifies for warranty status, and will repair or replace the tool at no charge to the customer. Normally wearable parts and products are NOT covered under this warranty. Uncovered items include bearings, contact wheels, rotor blades, regulators, valve stems, levers, shrouds, guards, O-rings, seals, gaskets and other wearable parts. Dynabrade's warranty policy is contingent upon proper use of our tools in accordance with factory recommendations, instructions and safety practices. It shall not apply to equipment that has been subjected to misuse, negligence, accident or tampering in any way so as to affect its normal performance. To activate lifetime warranty, customer must register each tool at [www.dynabrade.com](http://www.dynabrade.com). Dynabrade will not honor lifetime warranty on unregistered tools. A one-year warranty will be honored on all unregistered portable pneumatic power tools. Lifetime warranty applies only to portable pneumatic tools manufactured by Dynabrade, Inc. in the USA. Lifetime warranty applies only to the original tool owner; warranty is non-transferable.

# 1hp Right Angle Dynisher® Complete Assembly Breakdown

Index Key		
No.	Part #	Description
1	96264	Screw
2	13434	Flange
3	13441	Flange
4	50750	Spacer
5	13375	Arbor
6	96278	Screw Assembly (3)
7	13442	Shroud
8	53163	Handle Assembly
9	13377	Handle Support
10	01678	Screw
11	40029	Cam Lock
12	50963	Retainer
13	50899	Seal
14	53611	Spindle
15	97679	Bearing
16	97678	Shim
17	97677	Shim
18	53637	Gear Set
19	53608	Wick
20	53600	Right-Angle Housing Assy. Includes the following:
	A	96325 Shell Bearing
	B	53649 Gear Oil Plate
	C	01041 Gear Oil Fitting
21	01266	Bearing
22	53635	Pinion Adapter
23	51969	Coupler Nut (2)
24	50902	Coupler
25	53650	Lock Ring
26	53651	Spacer
27	96498	Wave Spring (2)
28	95438	O-Ring
29	53620	Adapter
30	54520	Bearing (2)
31	01041	Grease Fitting
32	04014	Set Screw
33	53695	Gear Housing
34	53669	Carrier
35	53195	Gear (2)
36	04026	Needle Bearing (4)
37	53679	Shaft (2)
38	53665	Ring Gear
39	51951	Shim Pack (4/pkg.)
40	51922	Front Bearing Plate
41	96441	Pin (2)
42	51927	Spacer
43	53666	Rotor
44	51926	Blade (4/pkg.)
45	51925	Cylinder
46	51923	Rear Bearing Plate
47	02057	Bearing
48	96445	Pin (2)
49	51924	Gasket
50	51933	Governor Assembly
51	96444	Pin
52	51949	Safety Lever Assembly
53	51946	Valve Stem Assembly (Incl. 96443 O-Ring)
54	13376	Housing (Includes: Warning & Specification Labels)
55	51945	Valve Seat
56	51944	Tip Valve
57	51943	Spring
58*	96442	O-Ring
59*	51940	Spacer
60*	53682	Gasket
61*	94528	Felt Silencer
62*	53686	Muffler Cap
63*	94924	Wave Spring
64*	53683	Spacer
65*	53681	Inlet Bushing (Incl. 2 - 51938 Screens)



Label Key		
No.	Part #	Description
66	00001180	Warning Label
67	00001181	Specification Label

KEY	
<b>O</b>	Oil: O <sub>1</sub> = Air Lube
<b>A</b>	Adhesive: A <sub>4</sub> = Loctite #680 A <sub>8</sub> = Loctite #567 A <sub>10</sub> = Loctite #243
<b>T</b>	Torque: N•m x 8.85 = In. - lbs.
<b>G</b>	Grease: G <sub>1</sub> = Grease 630-AA
<b>W</b>	Wicking: W <sub>1</sub> = Gear Oil

Note: All index numbers with an asterisk are included in P/N 53655 Muffler Assembly.

## Disassembly Instructions - 1hp Right Angle Dynisher®

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

**Disconnect tool from power source before tool repair.**

### Right Angle Head Disassembly:

1. Remove **96264** Screw, flange and abrasive accessory.
2. Remove **13377** Handle Support by loosening **01678** Screw.
3. Secure **53600** Right Angle Housing, against both side handle bosses, in a padded vise with spindle facing upward.
4. Using **97782** Pin Wrench (**ordered separately**) or an adjustable pin wrench, remove **50963** Retainer. (**Left Hand Threads**)
5. Remove **50899** Seal from retainer.
6. Pull spindle and gear assembly from housing.
7. Press spindle through **97679** Bearing and spiral bevel gear.
8. Remove shims and **53608** Wick from right angle housing.
9. Remove **53650** Lock Ring from right angle housing (**Left Hand Threads**) and from **53695** Gear Casing (**Right Hand Threads**).
10. Remove angle head from vise and remove **96325** Bearing by pressing **53649** Gear Oil Plate through housing.
11. Pull pinion gear, bearing and coupler sub-assembly from angle housing.
12. Secure gear, bearing and coupler sub-assembly by the pinion gear wrench flats and remove the **51969** Coupler Nut (twist counterclockwise).
13. Secure **53635** Pinion Adapter using an allen wrench and remove pinion gear (twist counterclockwise).
14. Press **53635** Pinion Adapter through **01266** Bearing.

**Right Angle Head Disassembly Complete.**

### Planetary Gear Case Disassembly:

1. Remove **04014** Set Screw from **53695** Gear Casing and remove gear casing (**Right Hand Thread**) from motor housing.
2. Slide **53665** Ring Gear from gear casing.
3. Secure planetary carrier using **53698** Wrench (ordered separately) and remove **51969** Coupler Nut (twist counterclockwise).
4. Press planetary carrier thread end through **54520** Bearing.
5. Remove **96498** Wave Spring.
6. Press **53679** Pins from carrier to remove gears.

**Planetary Gear Case Disassembly Complete.**

### Motor Disassembly:

1. Remove **53651** Spacer and **96498** Wave Spring from housing assembly.
2. Pull motor assembly from housing.
3. Remove governor assembly by using a slotted screwdriver. (**Left Hand Thread**)
4. Secure **51925** Cylinder using **96209** Motor Repair Clamp (**ordered separately**) and place a 1/8" (3 mm) drift pin to the base of the internal thread and press the **53666** Rotor from the **02057** Bearing.
5. Slide **02057** Bearing from **51923** Rear Bearing Plate.
6. Remove **51925** Cylinder and **51926** Blades.
7. Press rotor through **54520** Bearing, **51922** Front Bearing Plate and **51927** Spacer.
8. Slide **54520** Bearing and shims from **51922** Front Bearing Plate.

**Motor Disassembly Complete.**

### Housing Disassembly:

1. Secure housing using **51989** Repair Collar (**see back cover for Optional Accessories**).
2. Remove inlet bushing with muffler assembly (twist counterclockwise).
3. Remove **53682** Gasket, **51943** Spring, **96442** O-Ring, **51940** Spacer, **94528** Felt Silencer, **53686** Muffler Cap, **94924** Wave Spring and **53683** Spacer from **53681** Inlet Bushing.
4. Remove **51944** Tip valve and **51945** Valve Seat.
5. Remove housing and **51989** Repair Collar and lay collar on bench with flange facing down so it is supporting throttle lever. Place a 3/32" (2.4 mm) drift pin on **96444** Pin and tap pin thru housing.
6. Remove **51946** Valve Stem Assembly.
7. Remove **96443** O-Ring from **51946** Valve Stem Assembly.

**Housing Disassembly Complete.**

## Assembly Instructions - 1hp Right Angle Dynisher®

### Housing Assembly:

1. Secure housing using **51989** Repair Collar (**see back cover for Optional Accessories**) with inlet facing upward.
2. Slide **96443** O-Ring onto **51946** Valve Stem Assembly and slide sub-assembly until o-ring passes through housing hole. Make certain valve stem assembly slides freely after the o-ring passes through the hole.
3. Install **51945** Valve Seat by aligning 3 male prongs with three deep slots on insert. Make certain valve seat is pressed flat against base of pocket. **Note:** Add a few drops of Dynabrade Air Lube (P/N **95842**) to pocket walls before inserting **51945** Valve Seat.
4. Install **51944** Tip Valve as shown.
5. Pre-assemble muffler, slide **53683** Spacer over **53681** Inlet Bushing and up against the hex head base. Slide **94924** Wave Spring over **53681** Inlet Bushing and up against spacer. Pre roll **94528** Felt Silencer and install it in **53686** Muffler Cap. Support felt/muffler cap assembly and slide **53681** Inlet Bushing thru the inside until the muffler cap assembly seats against the **94924** Wave Spring. Flare the felt and place **51940** Spacer over male thread and set **96442** O-Ring into groove at the base of thread. Return felt to unflared form. Slide **51943** Spring into bushing and up to the two **51938** Screens.
6. Place **53682** Gasket over felt silencer and against **53686** Muffler Cap.
7. Apply one drop of Loctite® #243 (or equiv.) to **53681** Inlet Bushing Thread.
8. Align small inside diameter of **51943** Spring to cone point on **51944** Tip Valve and thread inlet bushing and sub-assembly into place. Torque bushing to 35 N•m (310 lb.-in.).
9. Remove housing from **51989** Repair Collar and place repair collar onto the bench top with the part number identifier against the bench. Align the throttle lever holes to housing pinhole and rest the housing and throttle lever onto the legs of the repair collar. Press **96444** Coiled Pin into lever hole and center into housing.

**Housing Assembly Complete.**

(Continued on next page.)

## Assembly Instructions - (Continued)

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

Please refer to parts breakdown for part identification.

### Motor Assembly:

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

1. Place rotor into a padded vise with gear teeth or male thread facing upwards.
2. Slip **51927** Spacer over rotor shaft and down against rotor body face.
3. Press **96441** Pin into **51922** Front Bearing Plate. Make certain, coiled pin does not protrude beyond internal bearing surface.
4. Place a .002" shim into the base of **51922** Front Bearing Plate as an initial spacing and slide **54520** Bearing to the front plate base. **Note:** **51951** Shim Pack contains .001" and .002" shims.
5. Press Bearing/Bearing Plate assembly onto rotor.
6. Check clearance between rotor and front bearing plate by using a .001" feeler gauge. Clearance should be between .001" – .0015". Adjust clearance by repeating steps 4 and 5 with different shims if necessary.
7. Once proper rotor gap clearance is achieved, install well lubricated **51926** Blades (4) into rotor slots. Dynabrade recommends lubricating blades with **95842** Air Lube.
8. Install **51925** Cylinder over rotor and front plate raised boss. Align coiled pin on front plate to cylinder slot.
9. Press **96441** Coiled Pin into blind hole on **51923** Rear Bearing Plate. Press (2) **96445** Coiled Pins into the back side of rear bearing plate.
10. Peel backing off **51924** Gasket and apply it firmly in place onto **51923** Rear Bearing Plate.
11. Place **51923** Rear Bearing Plate over rotor mandrel and insert raised boss on rear bearing plate into cylinder diameter, while inserting short coiled pin into cylinder slot. Be sure inlet slot on rear bearing plate line up with inlet slot on cylinder. To correct alignment flip cylinder end to end and repeat steps 8 & 9 for correct assembly.
12. Using **96243** Bearing Press Tool (*ordered separately*) press **02057** Bearing onto rotor and into **51923** Rear Bearing Plate hole until it is seated. **Important:** While pressing **02057** Bearing, make certain to contact the inner race of bearings only. Cylinder must fit snug between bearing plates. If too tight, rotor will not turn freely. Rotor must be lightly tapped at press fit end until rotor spins freely while still maintaining a snug fit. A loose fit will not achieve the proper preload on motor bearing. While pressing **02057** Bearing, make certain to contact inner race of bearing.
13. Add one drop of Loctite® 243 (or equiv.) to governor assembly male thread and screw governor assembly into place (**Left Hand Thread**) with slotted screw head. Torque to 2 N•m (18 lb.-in.).
14. Install motor assembly into housing, making sure motor seats all the way into housing. **Note:** Align both **96445** Pins to slots in insert and against **51924** Gasket.

**Motor Assembly Complete.**

### Planetary Gear Casing Assembly:

1. Install **53665** Ring Gear over **54520** Front Motor Bearing, keeping 2 slots facing outward.
2. Install gears with needle bearings on retainer shafts and assemble shaft assembly onto planetary carrier by pressing retainer shafts into place.
3. Place **96498** Wavy Washer at the base of **53695** Gear Casing female threaded end.
4. Slide planetary carrier assembly, with threaded end first, into **53695** Gear Casing and through **54520** Bearing.
5. Apply one drop of Loctite® #243 (or equiv.) to threads of **51969** Coupler Nut. Secure planetary carrier using **53698** Wrench (*order separately*) and thread on **51969** Coupler Nut (twist clockwise). Torque to 17 N•m (150 lb.-in.).
6. Install **53665** Ring Gear over **54520** Front Motor Bearing, keeping 2 slots facing outward.
7. Apply a small amount of Loctite® #567 (or equiv.) to male thread of motor housing and thread **53695** Gear Casing over ring gear and onto motor housing. **Important:** Align rotor spline into planet gears to allow carrier to spin freely.
8. When slots from ring gear line up with set screw hole, apply a small amount of Loctite® #567 (or equiv.) to male thread of **04014** Set Screw, and install set screw to lock ring gear in place.
9. Torque **53695** Gear Casing to 35 N•m (310 lb.-in.).

**Motor Assembly Complete.**

### Right Angle Head Assembly:

1. Apply a small amount of Loctite #680 to the top of flange on **53649** Gear Oil Plate and press **01041** Gear Oil Fitting into **53649** Gear Oil Plate and insert sub-assembly into right angle housing.
2. Press **96325** Bearing into housing until it is firmly seated against **53649** Gear Oil Plate. **Important:** While pressing **96325** Bearing, make certain to contact outer race of bearing only.
3. Add one drop of Loctite® #243 (or equiv.) to male thread of **53635** Pinion Adapter and tighten pinion using a 3/16" Hex Key wrench and the pinion wrench flats. Torque to 17 N•m (150 lb.-in.).
4. Using **96244** Bearing Press Tool (*ordered separately*) press **53635** Pinion Adapter into **01266** Bearing. **Important:** While pressing **01266** Bearing, make certain to contact inner race of bearing only.
5. Add one drop of Loctite® #243 (or equiv.) to male thread of adapter and tighten **51969** Coupler Nut using wrench flats. Torque to 17 N•m (150 lb.-in.).
6. Insert sub-assembly into male threaded end of **53600** Right Angle Housing.
7. Apply a small amount of Loctite® #567 (or equiv.) to **53600** Right Angle Housing thread, and install **53650** Lock Ring (**Left hand Threads**).
8. Place **50902** Coupler onto **51969** Coupler Nut.
9. Secure **53600** Right Angle Housing, against both side handle bosses, in a padded vise.
10. Rotate motor housing/gear casing and **53650** Lock Ring until throttle lever is located between the 9-11 o'clock position. Torque lock ring to 35 N•m (310 lb.-in.).
11. Place well lubricated **53608** Wick against **96325** Bearing with flat edge towards pinion gear. (Wick must be completely saturated with Dynabrade **95848** Gear Oil before installation). **Note:** Do not contaminate wick with any other oil or grease product.
12. Press **97679** Bearing onto spindle and against shoulder. **Important:** While pressing **97679**, make certain to contact inner race of bearing only.
13. Press gear, with teeth facing away from bearing, into spindle and against **97679** Bearing inner race.
14. Insert spindle assembly into **53600** Right Angle Housing until **97679** Bearing contacts housing shoulder.
15. Rotate spindle while pressing down into housing to check for gear alignment and backlash. Install shims as required (minimum backlash is recommended for maximum gear life. Make certain there is clearance throughout 360° revolution).
16. Press **50899** Seal into **50963** Retainer with base of seal facing outward.
17. Apply a small amount of Loctite® #567 (or equiv.) to the male thread of the retainer and thread into place. (**Left Hand Thread**)
18. Using **97782** Pin Wrench (*ordered separately*) or an adjustable pin wrench, torque retainer to 35 N•m (310 lb.-in.).

**Right Angle Head Assembly Complete.**

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

**Important:** Before operating, place 2-3 drops of Dynabrade Air Lube (P/N **95842**) directly into inlet with throttle lever depressed. Operate tool for 30 seconds to allow air lube to properly lubricate internal motor components. Motor should now be tested for proper operation at 90 PSIG max. If tool operates at a higher RPM than marked on the tool or if vibration and sound levels seem abnormal, the tool should be serviced to correct the cause before use.

## Preventative Maintenance Schedule

For All 1hp Right Angle Dynisher®

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.

### Parts Common to all Models:

LEGEND	
<b>T</b>	Part included in <b>96532</b> Tune-up Kit
<b>X</b>	Type of wear, no other comments apply.
<b>L</b>	Easily lost. Care during assembly/disassembly.
<b>D</b>	Easily damaged during assembly/disassembly.
<b>R1</b>	Replace each time tool is disassembled.
<b>R2</b>	Replace each second time tool is disassembled.



#### 96532 – 1hp. Motor Tune-Up Kit

- Tune-Up Kit includes high wear and medium wear motor parts.

Index #	Part Number	Description	Number Required	High Wear 100%	Medium Wear 70%	Low Wear 30%	Non-Wear 10%
1	96264	Screw	1				L
2	13434	Flange	1				L
3	13441	Flange	1				L
4	50750	Spacer	1				L
5	13375	Arbor	1				X
6	96278	Screw Assembly	3				X
7	13442	Shroud	1			D	
8	53163	Handle Assembly	1				X
9	13377	Handle Support	1				X
10	01678	Screw	1			D	
11	40029	Cam Lock	1				L
12	50963	Retainer	1				X
13	50899	Seal	1	R2			
14	53611	Spindle	1				X
15	97679	Bearing	1		X		
16	97678	Shim	1		X		
17	97677	Shim	1		X		
18	53637	Gear Set	1			X	
19	53608	Wick	1		X		
20	53600	Housing Assembly	1				X
A	96325	Shell Bearing	1		X		
B	53649	Gear Oil Plate	1				X
C	01041	Gear Oil Fitting	1				X
21	01266	Bearing	1		X		
22	53635	Pinion Adapter	1				X
23	51969	Coupler Nut	2				X
24	50902	Coupler	1			X	
25	53650	Lock Ring	1				X
26	53651	Spacer	1				X
27	96498	Wave Spring	2		T, L		
28	95438	O-Ring	1		T, X		
29	53620	Adapter	1				X
30	54520	Bearing	2		T, X		
31	01041	Grease Fitting	1			D	
32	04014	Set Screw	1			L	
33	53695	Adapter	1			X	
34	53669	Carrier	1			X	
35	53195	Gear	2			X	
36	04026	Needle Bearing	4			X	
37	53679	Shaft	1			X	
38	53665	Ring Gear	1			X	
39	51951	Shim Pack	1		T, L		
40	51922	Front Bearing Plate	1			X	
41	96441	Pin	2			X	
42	51927	Spacer	1		T, X		
43	53666	Rotor	1			X	
44	51926	Blade (4/pkg.)	1	T, X			
45	51925	Cylinder	1			X	
46	51923	Rear Bearing Plate	1			X	
47	02057	Bearing	1		T, X		
48	96445	Pin	2			X	
49	51924	Gasket	1		T, X		
50	51933	Governor Assembly	1				X
51	96444	Pin	1		T, L		
52	51949	Safety lever Assembly	1			X	
53	51946	Valve Stem Assembly (includes 96443 O-Ring)	1		T, X		
54	13376	Housing (Includes labels)	1				X
55	51945	Valve Seat	1				X
56	51944	Tip Valve	1		T, X		
57	51943	Spring	1				X
58	96442	O-Ring	1		T, L		
59	51940	Spacer	1				X
60	53682	Gasket	1				X
61	94528	Felt Silencer	1	T, R1			
62	53686	Muffler Cap	1				X
63	94924	Wave Spring	1				X
64	53683	Spacer	1				X
65	53681	Inlet Bushing (includes 51938 Screens)	2				X

## Optional Accessories

FIND THE MOST CURRENT OFFERING OF SUPPORT DOCUMENTS AND ACCESSORIES @ [WWW.DYNABRADE.COM](http://WWW.DYNABRADE.COM)



### 96005 Male Plug

- Provides up to twice the air flow compared to standard plug design.
- Plug has "ported" design to prevent "starving" of the air tool.



### Dynaswivel®

- Swivels 360° AT TWO PIVOT POINTS allowing the air hose to drop directly to the floor while providing superb tool handling.
- 95461** – 3/8" NPT



### Dynabrade Angle Gear Oil

- Specifically formulated to saturate wick system in right angle gear head.

**95848**: 2 oz. tube

**95541**: Push-type Gear Oil Gun



### 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.



### Dynabrade Air Lube

- Formulated for pneumatic equipment.
- Absorbs up to 10% of its weight in water.
- Prevents rust and formation of sludge.
- Keeps pneumatic tools operating longer with greater power and less down time.

**95842**: 1 pt. (473 ml)

**95843**: 1 gal. (3.8 L)



### 51989 Repair Collar

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



### 97782 Pin Wrench

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



### 96209 Motor Repair Clamp

- Specially designed clamp to secure motor cylinder before disassembly.



### 96037 Spindle Adapters

- Specially designed to adapt a 3/4" male arbor to accept wheels with a 1" unthreaded bore.



### 94473 Dynacushion® Pneumatic Wheel

- Easily regulate hardness by air pressure.
- 5" Diameter x 3-1/2" Wide.
- Inflates to 20 PSIG maximum.
- 3-1/2" wide x 15-1/2" long belt size.



### 53159 Shroud Assembly

- Specially designed shroud for use with 4" dia. x 4" wide or 100 mm x 90 mm abrasive accessories.



### 96532 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.

### 01904 Drop-In Motor

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



### Composite-Style Coupler

- Lightweight 1.4 oz. (.05 Kg), non-marring composite material.
- Easy connect/disconnect by single push-button action.
- Shock-proof, low-vibration, crush-resistant.

**94960**: 1/4" Female NPT

**94980**: 1/4" Male NPT



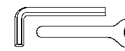
### 53621 Over Hose Assembly

- Over Hose Assembly directs exhaust away from operator.

**95281** – 19 mm open-end wrench.

**95266** – 3 mm hex key wrench.

**96132** – 6 mm hex key wrench.



### Bearing Press Tool

- Used to install bearings.

**96243**: For installing **02057** Bearing.

**96244**: For installing **01266** Bearing.



### 53698 Carrier Wrench

- Carrier Wrench has a 3/8" square socket for use with 3/8" drive; breaker bar, ratchet head, or torque wrenches.



### 94465 Wheel Inflation Tool

- Controlled inflation/deflation of pneumatic wheel.
- Has 1/4" female thread; fits 1/4" air hose.
- **95633** Nozzle replacement available.

## Reference Contact Information

### 1. American National Standards Institute – ANSI

25 West 43<sup>rd</sup> Street  
Forth Floor  
New York, NY **10036**  
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### 3. European Committee for Standardization

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B - 1050 Brussels, Belgium

### 2. Government Printing Office – GPO

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