

Model:

53060 - 3/8" Drill Chuck, 3,400 RPM
53090 - 1/2" Drill Chuck, 950 RPM
53091 - 3/8" Drill Chuck, 950 RPM
53095 - 3/8" Drill Chuck, 4,500 RPM
53096 - 3/8" Drill Chuck, 20,000 RPM

Pistol Grip Drill

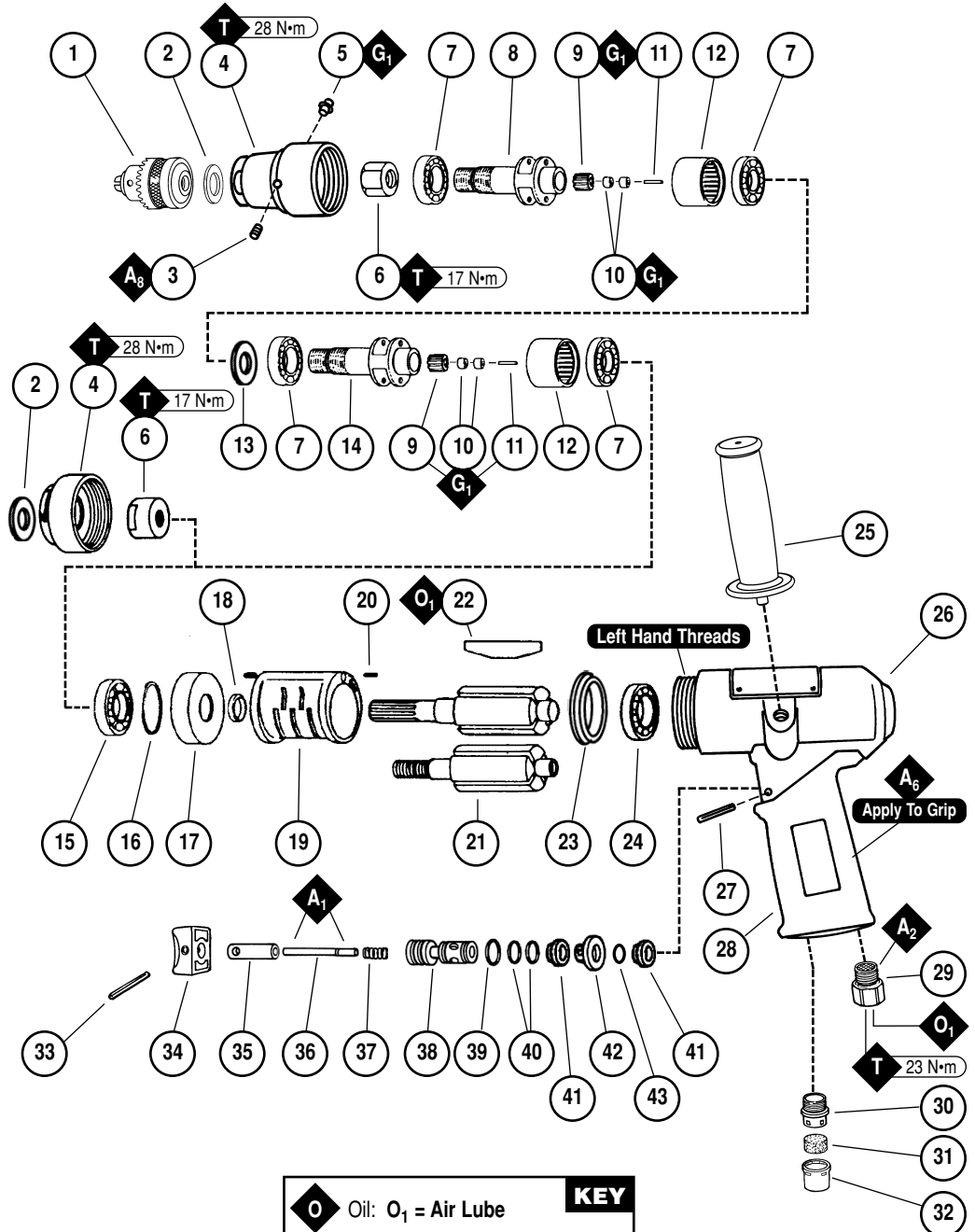
Air Machine and Motor Parts

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.

Index Key

No.	Part #	Description
1	53033	3/8" Drill Chuck 1/2"-20 (Incl. Drill Chuck Key)
	53034	1/2" Drill Chuck 1/2"-20 (Incl. Drill Chuck Key)
	53087	3/8" Drill Chuck 3/8"-24 (Incl. Drill Chuck Key)
2	55031	Felt Ring
3	04014	Set Screw (2 req. 950 Rpm) (1 req. 3,400-4,500 Rpm)
4	53185	Cover (950 Rpm)
	55030	Cover (3,400 - 4,500 Rpm)
	55029	Cover (20,000 Rpm)
5	01041	Grease Fitting (2 req. 950 Rpm) (1 req. 3,400 - 4,500 Rpm)
6	04114	Spindle Nut
	55038	Spindle Nut (20,000 Rpm)
7	02552	Bearing (4 req. 950 Rpm) (2 req. 3,400 - 4,500 Rpm)
8	53165	Planetary Carrier
9	53195	Gear (4) - 53090/53091 (2) - 53095
	53193	Gear (2) - 53060
10	04026	Bearing (8 Req. 950 Rpm) (4 Req. 3,400 - 4,500 Rpm)
11	53182	Gear Shaft (4 Req. 950 Rpm) (2 Req. 3,400 - 4,500 Rpm)
12	53191	Ring Gear (2 Req. 950 Rpm) (1 Req. 3,400 - 4,500 Rpm)
13	53188	Spacer (950 Rpm Only)
14	53164	Planetary Carrier (950 Rpm)
15	01007	Bearing
16	01121	Shim (3/pkg.)
17	53183	Front Bearing Plate
	55026	Front Bearing Plate (20,000 Rpm)
18	01010	Spacer
19	01028	Cylinder
20	50767	Pin
21	04017	Rotor - 53060
	04009	Rotor - 53090/53091/53095
	55025	Rotor - 53096
22	01185	Blade (4/pkg.)
23	55027	Rear Bearing Plate
	01743	Rear Bearing Plate (20K Rpm)
24	02649	Bearing
25	53163	Handle Assembly
26	55048	Housing - 53060
	53066	Housing - 53090
	53118	Housing - 53091
	53067	Housing - 53095
	53119	Housing - 53096
27	96025	Pin
28	55024	Grip
29	56023	Inlet Bushing
30	57066	Muffler Body
31	56027	Muffler Insert
32	56028	Muffler Cap
33	50936	Pin
34	55035	Trigger
35	55043	Trigger post
36	55052	Valve Stem
37	96069	Spring
38	55039	Bushing
39	50939	O-Ring
40	02027	O-Ring (2)
41	55051	Valve Stop (2)
42	55041	Valve
43	96147	O-Ring



KEY	
O	Oil: O ₁ = Air Lube
A	Adhesive: A ₁ = Loctite #609 A ₂ = Loctite #271 A ₆ = Loctite #380 A ₈ = Loctite #567
T	Torque: N·m x 8.85 = In. - lbs.
G	Grease: G ₁ = Lubriplate 630 AA

See inside for Important Operating, Maintenance and Safety Instructions.

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: 1 pt. 473 ml.) 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 PSIG 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 96047) is available which includes assorted parts to help maintain motor in peak operating condition.
7. Gear case of this Dynabrade air tool should be lubricated with one plunge for every 50 hours of use by Dynabrade's **95541** Grease Gun and **95542** Grease.

Safety Instructions:

Products offered by Dynabrade should not be converted or otherwise altered from original design without expressed written consent from Dynabrade, Inc.



- **Important:** User of tool is responsible for following accepted safety codes such as those published by the American National Standards Institute (ANSI).
- Operate machine for one minute before application to workpiece to determine if machine is working properly and safely before work begins.
- Always disconnect power supply before changing abrasive/accessory or making machine adjustments.
- Inspect abrasives/accessories for damage or defects prior to installation on tools.
- Please refer to Dynabrade's Warning/Safety Operating Instructions Tag (Reorder No. **95903**) for more complete safety information.
- **Warning:** Hand, wrist and arm injury may result from repetitive work, motion and overexposure to vibration.

Notice

All Dynabrade motors use the highest quality parts and metals available and are machined to exacting tolerances. The failure of quality pneumatic motors can most often be traced to an unclean air supply or the lack of lubrication. Air pressure easily forces dirt or water contained in the air supply into motor bearings causing early failure. It often scores the cylinder walls and the rotor blades resulting in limited efficiency and power. Our warranty obligation is contingent upon proper use of our tools and cannot apply to equipment which has been subjected to misuse such as unclean air, wet air or a lack of lubrication during the use of this tool.

One Year Warranty

Following the reasonable assumption that any inherent defect which might prevail in a product will become apparent to the user within one year from the date of purchase, all equipment of our manufacture is warranted against defects in workmanship and materials under normal use and service. We shall repair or replace at our factory, any equipment or part thereof which shall, within one year after delivery to the original purchaser, indicate upon our examination to have been defective. Our obligation is contingent upon proper use of Dynabrade tools in accordance with factory recommendations, instructions and safety practices. It shall not apply to equipment which has been subject to misuse, negligence, accident or tampering in any way so as to affect its normal performance. Normally wearable parts such as bearings, contact wheels, rotor blades, etc., are not covered under this warranty.

Model Number	Motor HP (W)	Motor RPM	Sound Level	Maximum Air Flow CFM/SCFM (LPM)	Spindle Thread	Air Pressure PSIG (Bars)	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
53060	.7 (522)	3,400	84 dB(A)	5/33 (935)	1/2"-20 male	90 (6.2)	3.2 (1.4)	8-7/8 (224)	6-3/8 (163)
53090	.7 (522)	950	84 dB(A)	5/33 (935)	1/2"-20 male	90 (6.2)	4.8 (2.1)	10-1/2 (267)	6-3/8 (163)
53091	.7 (522)	950	84 dB(A)	5/33 (935)	1/2"-20 male	90 (6.2)	3.9 (1.8)	10-1/2 (267)	6-3/8 (163)
53095	.7 (522)	4,500	84 dB(A)	5/33 (935)	1/2"-20 male	90 (6.2)	3.2 (1.4)	8-7/8 (224)	6-3/8 (163)
53096	.7 (522)	20,000	84 dB(A)	5/33 (935)	3/8"-24 male	90 (6.2)	2.4 (1.1)	7 (180)	6-3/8 (163)

Additional Specifications: Air Inlet Thread 1/4" NPT • Hose Size 3/8" (10 mm)

(PD02*31)

Disassembly/Assembly Instructions

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

A motor tune-up kit is available (P/N 96047) is available to help maintain motor in peak operating condition.

Tool Disassembly:

1. Remove drill chuck and **53163** Side Handle.
2. Carefully secure the tool in a vise so that the spindle is pointing up. To avoid damaging the housing do not over tighten the vise.
3. Remove the **53185/55030/55029** Cover by turning it clockwise. (**Left Hand Thread**)
4. Pull the air motor from the housing.
5. Remove the **56028** Muffler Cap. To remove the **57066** Muffler Body use the **96034** 12 mm Hex Key.

Motor Disassembly:

1. Secure a 2 in. bearing separator around the end of the cylinder closest to the rear bearing plate. Place the separator on the table of the **96232** Arbor press so that the front of the motor is pointing down.
2. Use a 5/32" dia. flat end drive punch as a press tool and push the rotor out of the **02649** Bearing.
3. Remove the **02649** Bearing from the rear bearing plate with the **96213** Bearing Removal Tool and the arbor press.
4. Front Bearing/Plate Removal:
 - A. To remove the front bearing/plate from the **04009** Rotor, use the 2 in. bearing separator and the arbor press by pushing the pinion end of the rotor out of the **01007** Bearing.
 - B. To remove the front bearing/plate from the **55025** Rotor, secure the body of the rotor in a soft aluminum or bronze jaw vise and remove the **55038** Spindle Nut by turning it counterclockwise. The **01007** Bearing and the **01010** Spacer are both a slip fit to the plate and the rotor.

Planetary Gear Disassembly: (Models: 53390, 53391, 53060 and 53095)

1. To remove the planetary gear assemblies from the **53185/55030** Cover remove the **04014** Set Screw(s).
2. Push the planetary assembly(ies) out of the **53185/55030** Cover. (Use the arbor press if needed.)
3. Fasten a 2 in. bearing separator between the rear **02552** Bearing(s) and place the separator on the arbor press so that the planetary carrier spindle/pinion points down. Use the larger end of the **96214** bearing Removal Tool to press the planetary carrier(s) out of the rear **02552** Bearing.
4. Remove the shafts and gears from the planetary carrier(s).
5. Use the bearing separator to also remove the front **02552** Bearing from the **53164** Planetary Carrier.
6. Carefully secure the **53165** Planetary Carrier in a soft aluminum or bronze jaw so that its' spindle is pointing up. Remove the **04114** Spindle Nut turning it counterclockwise.
7. Fasten a 2 in. bearing separator between the front **02552** Bearing and the **53165** planetary Carrier. Place these on the arbor press with the spindle pointing up and press the planetary carrier from the bearing.
8. Remove the **55031** Felt Seal from the cover.

Valve Disassembly:

1. Drive **96025** Pin from housing and pull the valve stem assembly from the housing.
2. To remove the **55051** Valve Stop use a 3/32" dia. flat end drive punch as a press tool, and with the aid of a small separator and an arbor press, push the **55052**.
3. Press **55052** Valve Stem through the second **55051** Valve Stop.

Valve Assembly:

1. Install **96069** Spring and slide **55039** Bushing (with o-rings) onto valve stem/trigger assembly.
2. Apply a small amount of #609 Loctite (or equivalent) onto **55052** Valve Stem and press the first **55051** Valve Stop with its' large end facing away from the **55039** Bushing.
3. Install **96147** O-Ring onto the second **55051** Valve Stop.
4. Apply a small amount of #609 Loctite (or equivalent) onto **55052** Valve Stem and, press **55051** Valve Stop onto the valve stems that the o-ringed side is facing the **55041** Valve. **Important:** Press the second valve stop onto the valve stem only until the large end of the valve stop is flush with the end of the valve stem.
5. Install the valve assembly into the housing and secure it with the **96055** Pin.

Motor Assembly:

Important: Clean and inspect all parts before assembling.

1. Install **01010** Spacer on the rotor.
2. Install .003" thickness of shims into **53183/55026** Front Bearing Plate. Install **01007** Bearing into the front bearing plate.
3. Front Bearing/Plate Installation:
 - A. Use the **96244** Bearing Press Tool and arbor press to install the **53183** Front Bearing Plate along with **01007** Bearing onto the **04009** Rotor. (Place the tool against the inner race of the bearing.)
 - B. Slip the **55026** Front Bearing Plate along with the **01007** Bearing onto the **55025** Rotor. Secure the body of the **55025** Rotor in a soft aluminum or bronze jaw vise and install the **55038** Spindle Nut. (Torque to 17 N•m/150 in.-lbs.)
4. Use a .001" feeler gage to check clearance between the front of the rotor body and the face of the front bearing plate. That clearance must be .001"-.0015". If it is necessary to adjust the clearance, do this by adding or removing the appropriate thickness in shims.
5. Apply Dynabrade Air Lube **95842** to the **01185** Blades and install these into the rotor slot.
6. Install the **01028** Cylinder so that the air inlet area lines up with the air inlet holes in the rear bearing plate.
7. Use the **96240** Bearing Press Tool and arbor press to install the **02649** Bearing into the **55027/01743** Rear Bearing Plate (press tool against the outer race of the bearing).
8. Use the **96240** Bearing Press Tool and arbor press to install the rear bearing/plate onto the **04009/55025** Rotor (press tool against the inner race of the bearing).
Important: The fit must be snug between the bearing plates and the cylinder. However, if its' too tight the rotor will turn freely. In that case the fit must be loosened so that the rotor will turn freely while still maintaining a snug fit.

Planetary Gear Assembly: (Models: 53390, 53391, 53060 and 53095)

1. Press the front **02552** Bearing onto the front of the **53164/53165** Planetary Carrier.
2. Install the **04114** Spindle Nut onto the **53165** Planetary Carrier. (Torque to 17 N•m/150 in.-lbs.)
3. Lubricate the planetary gears, needle bearings, and shafts with P/N **95542** Grease, and install these into the planetary carrier.

Disassembly/Assembly Instructions (continued)

4. Install the **53191** Ring Gear over the planetary carrier so that the set screw and grease fitting notches will orient correctly once placed into the **53185/55030** Cover.
5. Press the rear **02552** Bearing onto the rear of the planetary carrier until it touches the ring gear. **Important:** The fit must be snug between the bearings and the ring gear. However, if its' too tight the planetary carrier will not turn freely. In that case the fit must be loosened so that the planetary carrier will turn freely while still maintaining a snug fit.
6. Install the **55031** Felt Seal into the **53185/55030/55029** Cover.
7. Install the planetary carrier assembly(ies) into the **53185/55030** Cover so that the notches in the ring gear(s) align with the set screw and grease fitting openings in the cover. **Important:** For model **53090** and **53091** be certain to install the **53188** Spacer between the planetary carrier assemblies.
8. Apply a small amount of Loctite #567 (or equivalent) to the threads of the **04114** Set Screw(s) and install into the **53185/55030** Cover.
9. Lubricate the planetary gears through the grease fitting(s) applying 1 plunge at intervals of every 50 hours of use. Order and use the recommended Dynabrade **95542** Grease Gun to insure the maximum gear life.

Tool Assembly:

1. Carefully secure the housing in a vise so that the motor opening is facing up. To avoid damaging the housing do not over tighten the vise.
2. Install the air motor assembly into the housing.
3. Carefully align the cover and the planetary gear assembly(ies) to the housing and the air motor assembly. (**Left Hand Thread**), (Torque to 28 N•m/250 in.-lbs.).
4. Use the **96034** 12 mm Hex Key to install the **57066** Muffler Body into the housing. Place the **56027** Muffler Insert into the **56028** Muffler Cap and install these onto the muffler body.
5. Install the drill chuck and the **53153** Side handle.

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

Important: Motor should now be tested for proper operation at 90 PSIG. If motor does not operate properly or operates at a higher RPM than marked on the tool, the tool should be serviced to correct the cause before use. Before operating, place 2-3 drops of Dynabrade Air Lube (P/N **95842**) directly into air inlet with throttle lever depressed. Operate tool for 30 seconds to determine if tool is operating properly and to allow lubricating oils to properly penetrate motor.

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Accessories



96047 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.



Dynamswivel®

- Swivels 360° at two locations which allows an air hose to drop straight to the floor, no matter how the tool is held.
- **94300** 1/4" NPT.



Dynabrade Air Lube

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

95842: 1 pt. (473 ml)

95843: 1 gal. (3.8 L)



96034 12 mm Hex Key

- This is used for the removal and installation of the **57066** Muffler Body.



Grease

- 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-handed operation).

95542: 10 oz. (283.5 g) tube.



96213 Bearing Removal Tool

96214 Bearing Removal Tool

- This tool is designed to pass through the I.D. of the bearing plate and push against the I.D. of the bearing.



96240 Bearing Press Tool

96244 Bearing Press Tool

- Use with (#2) arbor press to achieve accurate press of bearings and motor parts.



96346 Bearing Separator 2 in.

- This is used to remove bearings, gears, and other components.



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