

# Pencil Grinder

## Variable Speed, 60,000 RPM Max.

PD14.13R  
June, 2017  
Supersedes PD14.13

**Safety, Operation and Maintenance – Save This Document and Educate All Personnel**

Model	Style	Collet Insert
52850	Standard	1/8"
52851	Extended	
52855	Standard	3 mm
52856	Extended	

**For Serial No. 14F3506B and Higher**

**DIE GRINDER**



52850

Find The Most Current Offering of Support Documents and Accessories at [www.Dynabrade.com](http://www.Dynabrade.com)

### ⚠ 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 Requirements for the Use, Care and Protection of Abrasive Wheels – ANSI B7.1, Compressed Air and Gas Institute (CAGI) Safety Code for Portable Air Tools – CAGI B186.1, Code of Federal Regulation – CFR 29 Part 1910, International Organization for Standardization (ISO) Hand Held Non-Electric Power Tools – ISO 11148, Safety Requirements and applicable State and Local Regulations.



Read and understand tool manual before work starts to reduce risk of injury to operator, visitors, and tool.



Eye protection must be worn at all times, eye protection to conform to ANSI Z87.1.



Ear protection to be worn when exposure to sound, exceeds the limits of applicable Federal, State or local statutes, ordinances and/or regulations.



Practice safety requirements. Work alert, have proper attire, and do not operate tools under the influence of alcohol or drugs.



Respiratory protection to be used when exposed to contaminants that exceed the applicable threshold limit values required by law.



Air line hazard, pressurized supply lines and flexible hoses can cause serious injury. Do not use damaged, frayed or deteriorated air hoses and fittings.

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 and OPERATING INSTRUCTIONS



Carefully Read and Understand the General and Die Grinder sections found in Tool Safety and Operating Guidelines (PN00001676) Before Handling or Using Tool.

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.

**Tool Intent:** Pencil Grinders are used for light deburring, deflashing, surface preparation, cleaning and finishing using up to 1/8" matched mandrel accessories. Do not use inappropriate accessories such as grinding wheels, router bits, cut-off wheels, saws, etc. on a pencil grinder.

**DO NOT USE Tool for Anything Other Than Its Intended Applications.**

**Training:** Proper care, maintenance, and storage of your air tool will maximize tools performance and reduce chance for accident.

**Employer's Responsibility:** Provide operators with safety instructions and training for safe use of tools and accessories.

**Report to Your Supervisor any Condition of the Tool, Accessories or Operation you Consider Unsafe.**

# MAINTENANCE INSTRUCTIONS

**Important:** To keep tool safe, a Preventative Maintenance Program is recommended. The program should include inspection of the tool and all related accessories and consumables, including air lines, pressure regulators, filters, oilers, etc. (refer to CAGI B186.1 for additional maintenance information). If accessory or tool breakage occurs, investigate failure to determine the cause and correct before issuing tool for work. Use the following schedule as a starting point in developing a Preventative Maintenance Program. If tool does not operate properly (RPM, vibration, start/stop) after these scheduled checks or at any time, the tool must be repaired and corrected before returning tool to use.

## INSTALLATION

- To ensure long life and dependable service, use a Closed Loop Air System and Filter-Regulator-Lubricator (FRL) as diagramed below.
- Each tool should have its own dedicated hose connected to an air supply FRL. Quick disconnects should be installed at the FRL in an effort to reduce contamination into the tool. Securely affix all fittings and hose assemblies.
- 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: **10690** Air Line Filter-Regulator-Lubricator — Provides accurate air pressure regulation, two-stage filtration of water contaminants and micro-mist lubrication of pneumatic components.
- Dynabrade recommends 1 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). **95842** Dynabrade Air Lube is recommended.

## MAINTENANCE SCHEDULE

Maintenance schedules depend on the type and style of tool. Refer to page 3 to reference symbols associated with specific maintenance items/areas. Match maintenance schedules accordingly. See page 4 for any additional maintenance information.

**Note:** Turbine style air motors do not require oil.

### Daily (every 8 hours):

- Inspect tool and accessories for damage or broken parts. Replace items as necessary to ensure proper operation and safety.
- **G** Lubricate motor as recommended. Use **95842** Dynabrade Air Lube (10W/NR). Apply 1 drop/minute of air lube per 20 SCFM.
- Check air line pressure with a gage. (MAX. 90 PSIG or 6.2 Bar operating pressure at the air inlet of the tool.)
- **W** Lubricate wick system and right angle gears through gear case fitting. Apply 3 plunges of **95848** Gear Oil. Use **95541** Lubricant Gun (Prime lubricant gun before use).
- Check tool for proper operation: If operating improperly or demonstrates unusual vibration, the tool must be serviced and problem corrected before further use.

### Every 20 Hours/Once a Week (which ever comes first):

- **G** For tools without "wick system", lubricate right angle gears through lubricant fitting. Apply 1 plunge of **95544** Grease. Use **95541** Lubricant Gun. (Prime lubricant gun before use).
- Measure RPM (speed) by setting air pressure to 90 PSIG (6.2 Bar) at tool inlet, without accessory mounted, while the tool is running. Using

tachometer, check spindle speed of the tool. Unless otherwise stated the no-load speed may not exceed the rated speed. If tool speed exceeds maximum rated RPM, service as required and correct before use.

- If tool is running too fast: look for worn, damaged or missing governor, air control rings and silencer(s). Service as required.
- If tool is running too slow: look for malfunctioning governor, clogged inlet screen, silencer(s) or air stream. Service as required.

**Note:** Special care must be taken when servicing governors. Refer to specific tool manual for governor instructions and/or speed control devices. Governor assemblies made from molded plastic components are non-serviceable and must be replaced.

### Every 50 Hours:

- **G** Lubricate planetary gears through gear case fitting with 3 plunges of **95544** Grease. Use **95541** Lubricant Gun. (Prime lubricant gun before use).

## REPAIR

- Use only genuine Dynabrade replacement parts to ensure quality. To order replacement parts, specify Model#, Serial# and RPM of your air tool.
- 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.
- A Motor Tune-Up Kit is available which includes high wear and medium wear motor parts.
- Air tool markings must be kept legible at all times, if not, reorder housing and replace. User is responsible for maintaining specification information.

- **O** After maintenance is performed on tool, add a few drops of **95842** Dynabrade Air Lube to the tool inlet and start the tool a few times to lubricate air motor. Verify RPM (per 20 hr maintenance schedule), vibration and operation.

## HANDLING & STORAGE

- Use of tool rests, hangers and/or balancers is recommended.
- Protect tool inlet from debris (see Notice below).
- **Do Not** carry tool by air hose or near the tool throttle lever.
- Store accessories in protective racks or compartments to prevent damage.
- Follow the handling instructions outlined in the operating instructions when carrying the tool and when changing accessories.
- Protect accessories from exposure to water, solvents, high humidity, freezing temperature and extreme temperature changes.

## END OF USE/DISPOSAL

When tool has reached its end of useful service, disassemble tool into its primary components (i.e. steel, aluminum and plastic) and recycle or discard per local, state and/or federal regulations as to not harm the environment.

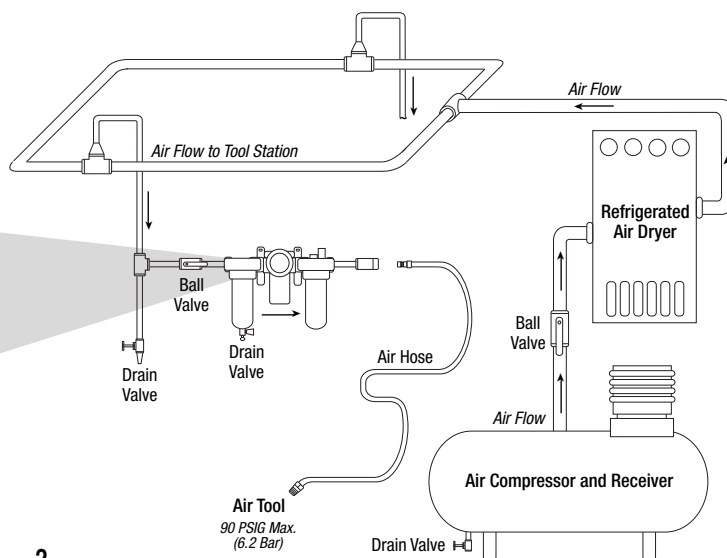
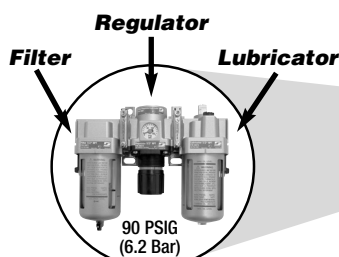
## NOTICE

All Dynabrade air motors use the highest quality parts available and are manufactured to exacting tolerances. Air motor failures are often traced to lack of lubrication or unclean air supply. Compressed air can force dirt and other contaminants into motor bearings causing early failure. Contaminants can score cylinder wall and vanes resulting in reduced efficiency and power. Our warranty obligation is contingent upon proper use of our tools. Air motors which have been subjected to misuse, contaminated air or lack of lubrication will void warranty.

## CLOSED LOOP AIR SYSTEM

### Sloped in Direction of Air Flow

- Dynabrade Air Power Tools are designed to operate at 90 PSIG (6.2 Bar) 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. 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.



### Lubricator Setting

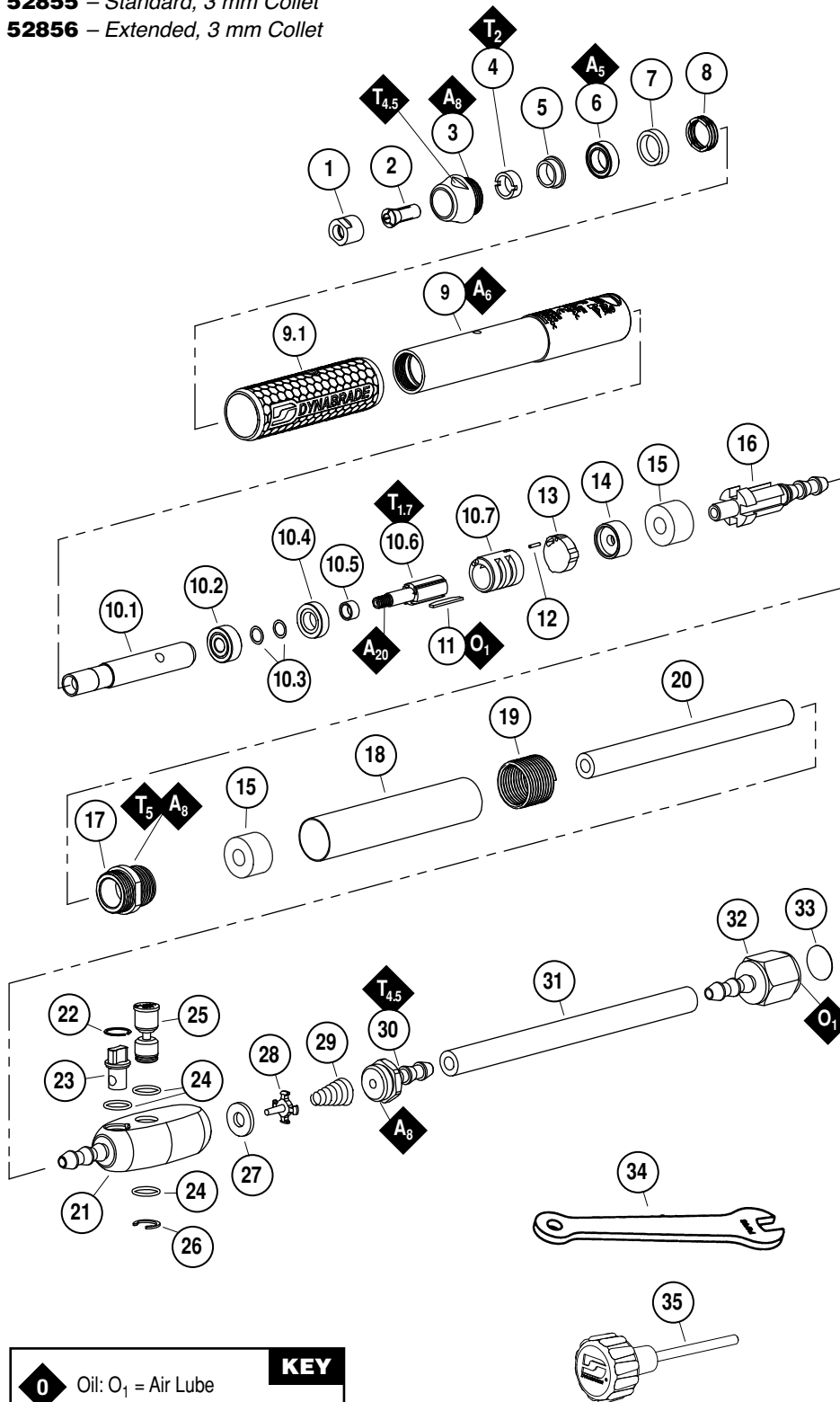
1 Drop/Minute per 20 SCFM

## Models

- 52850** – Standard, 1/8" Collet
- 52851** – Extended, 1/8" Collet
- 52855** – Standard, 3 mm Collet
- 52856** – Extended, 3 mm Collet

# Pencil Grinder

## Complete Assembly



ITEM	P/N	DESCRIPTION	QTY.
1	51657	COLLET CAP	1
2	51659 51673 51780 51674	1/8" COLLET INSERT - 52850/51 3 MM COLLET INSERT - 52855/56 1/16" COLLET INSERT - OPTIONAL 3/32" COLLET INSERT - OPTIONAL	AR
3	55390 55388	COLLET GUARD - 52850/55 COLLET GUARD - 52851/56	1
4	51548	BEARING RETAINER	1
5	94984	DEBRIS ELIMINATOR	1
6	51544	BEARING	1
7	55416	SPACER	1
8	55394	WAVE SPRING	1
9	55391 55421 55420 55422	HOUSING ASSEMBLY - 52850 HOUSING ASSEMBLY - 52851 HOUSING ASSEMBLY - 52855 HOUSING ASSEMBLY - 52856	1
9.1	55393	GRIP	1
10	01960 01961	ROTOR ASSEMBLY - 52850/55 ROTOR ASSEMBLY - 52851/56	1
10.1	55392 55389	SPINDLE - 52850/55 SPINDLE - 52851/56	1
10.2	55395	BEARING	1
10.3	55414	SHIM PACK (3/PKG)	1
10.4	55396	FRONT BEARING PLATE	1
10.5	55397	SPACER	1
10.6	55398	ROTOR	1
10.7	55400	CYLINDER	1
11	55404	VANE (4/SET)	1
12	96593	PIN	1
13	55401	REAR PLATE	1
14	55402	VALVE SEAT	1
15	55418	MUFFLER	2
16	55419	MANIFOLD STEM	1
17	55405	VALVE LOCK	1
18	55406	OVERHOSE	1
19	55407	SPRING	1
20	51276	HOSE - 24"	1
21	55409	VALVE HOUSING	1
22	55411	RETAINING RING	1
23	55410	THROTTLE INSERT	1
24	95730	O-RING	3
25	51665	ON/OFF VALVE	1
26	51669	RETAINING RING	1
27	51664	VALVE SEAT	1
28	51663	TIP VALVE	1
29	51676	SPRING	1
30	51271	BARB FITTING	1
31	51277	HOSE - 42"	1
32	51269	FITTING	1
33	56022	INLET SCREEN	1
34	95731	8 MM WRENCH	1
35	51694	PIN WRENCH	1

AR – "As Required"

**KEY**

**O** Oil: O<sub>1</sub> = Air Lube

**A** Adhesive: A<sub>5</sub> = Loctite #290  
A<sub>6</sub> = Loctite #380  
A<sub>8</sub> = Loctite #567  
A<sub>20</sub> = Loctite #248

**T<sub>x</sub>** X = Torque Value (N•m)

**T** Torque: N•m x 8.85 = lb•in.

**Always follow adhesive manufacturers cleaning and priming recommendations.**

The rated RPM of a mounted point is lowered if the overhang (end of collet to abrasive) exceeds .5 inches (12.7 mm). Refer to ANSI B 7.1 tables for overhang and additional information. ANSI reference tables available at [www.dynabrade.com](http://www.dynabrade.com) Find at Parts Page/Technical Document Page for each model.

## LIFETIME WARRANTY

To validate Dynabrade Lifetime Warranty, you must register each tool at: [www.dynabrade.com](http://www.dynabrade.com). Registration of each tool at website is required. Dynabrade will not honor Lifetime Warranty on unregistered tools. Please view the entire Lifetime Warranty Policy at : [www.dynabrade.com](http://www.dynabrade.com).



## MACHINE SPECIFICATIONS

Model	Max. Speed	Power	Air Consumption	Collet Insert	Weight	Length
52850	60,000 RPM	0.1 hp (75 W)	6 SCFM (170 LPM)	1/8"	0.7 lb. (0.3 kg)	4.5" (114 mm)
52851	60,000 RPM	0.1 hp (75 W)	6 SCFM (170 LPM)	1/8"	0.7 lb. (0.3 kg)	5.5" (140 mm)
52855	60,000 RPM	0.1 hp (75 W)	6 SCFM (170 LPM)	3 mm	0.7 lb. (0.3 kg)	4.5" (114 mm)
52856	60,000 RPM	0.1 hp (75 W)	6 SCFM (170 LPM)	3 mm	0.7 lb. (0.3 kg)	5.5" (140 mm)

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

Visit [dynabrade.com](http://dynabrade.com) for your model's current vibration and sound data.

## OPTIONAL ACCESSORIES



### Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.

Part No. 96602

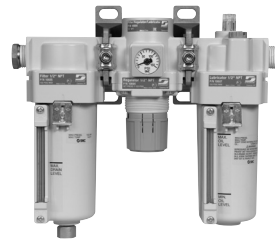


### Dynabrade Air Lube

- Absorbs up to 10% of its weight in water.
- Prevents rust and the formation of sludge.

Part No. 95821: 4 oz.

Part No. 95842: 1 pt.



### Filter-Regulator-Lubricator

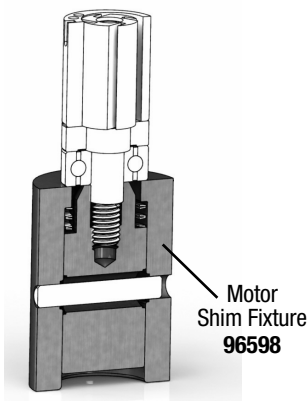
- Accurate air pressure regulation, two stage filtration of water/contaminates and adjustable oil drop.
- 1/2" NPT air inlet thread, also includes two bushings for easy conversion to 3/8" NPT.

Part No. 10690

## SPECIAL REPAIR TECHNIQUES

### Motor Shim Assembly

1. Install **55397** Spacer and **55396** Front Bearing Plate onto Rotor.
2. Add a single .002" (0.05 mm) shim from **55414** Shim Pack next to the Spacer.
3. Install **55395** Bearing onto Rotor.
4. Thread Rotor into **96598** Motor Shim Fixture finger tight.
5. Install **55400** Cylinder over Rotor.
6. Use depth micrometer to measure distance between surface of Cylinder and surface of rotor. Rotor should sit .0015" to .0025" below cylinder.

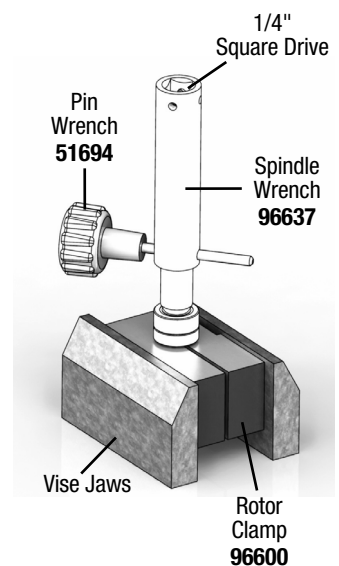


7. Remove Cylinder and unthread assembly from Motor Shim Fixture. (See Torquing the Rotor).

**Note:** If the distance needs adjustment repeat steps 2-6, adding or removing shims as required.

### Torquing the Rotor

1. After properly shimming, place assembly of **55398** Rotor with **55397** Spacer, **55396** Front Bearing Plate, appropriate shims and **55395** Bearing into **96600** Rotor Clamp.
2. Tighten Rotor Clamp in vise jaws.
3. Apply Loctite #248 to Rotor thread and install **55392** Spindle finger tight.
4. Place **96637** Spindle Wrench over Spindle and insert **51694** Pin Wrench into through hole.
5. Use 1/4" Square Drive to Torque Spindle Wrench to 1.7 N•m.
6. Remove Pin Wrench and Spindle Wrench, loosen vise jaws and remove Rotor assembly.



## SPECIAL REPAIR TOOLS



### Motor Shim Fixture

- To set the motor adjustment.

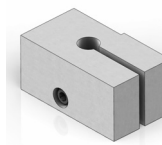
Part No. 96598



### Spindle Wrench

- To tighten or remove spindle from rotor.

Part No. 96637



### Rotor Clamp

- For clamping rotor in a vise.

Part No. 96600

### American National Standards Institute (ANSI)

25 West 43 Rd St., 14th Floor • New York, NY 10036 • Tel: 1 (202) 293-8020

### Compressed Air & Gas Institute

1300 Sumner Ave. • Cleveland, OH 44115-2851  
Tel: 1 (216) 241-7333 • Fax: (216) 241-0105

### European Committee for Standardization

Rue de Stassart 36 • B - 1050 Brussels, Belgium

### International Organization of Standards

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### Government Printing Office

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