

For Serial No. 1945 and Higher

Parts Page Reorder No. PD02•51T
Effective October, 2002
Supersedes PD98•40

Right-Angle Dynascal[®]

Models:

30337 – 2" wide for work on flats.

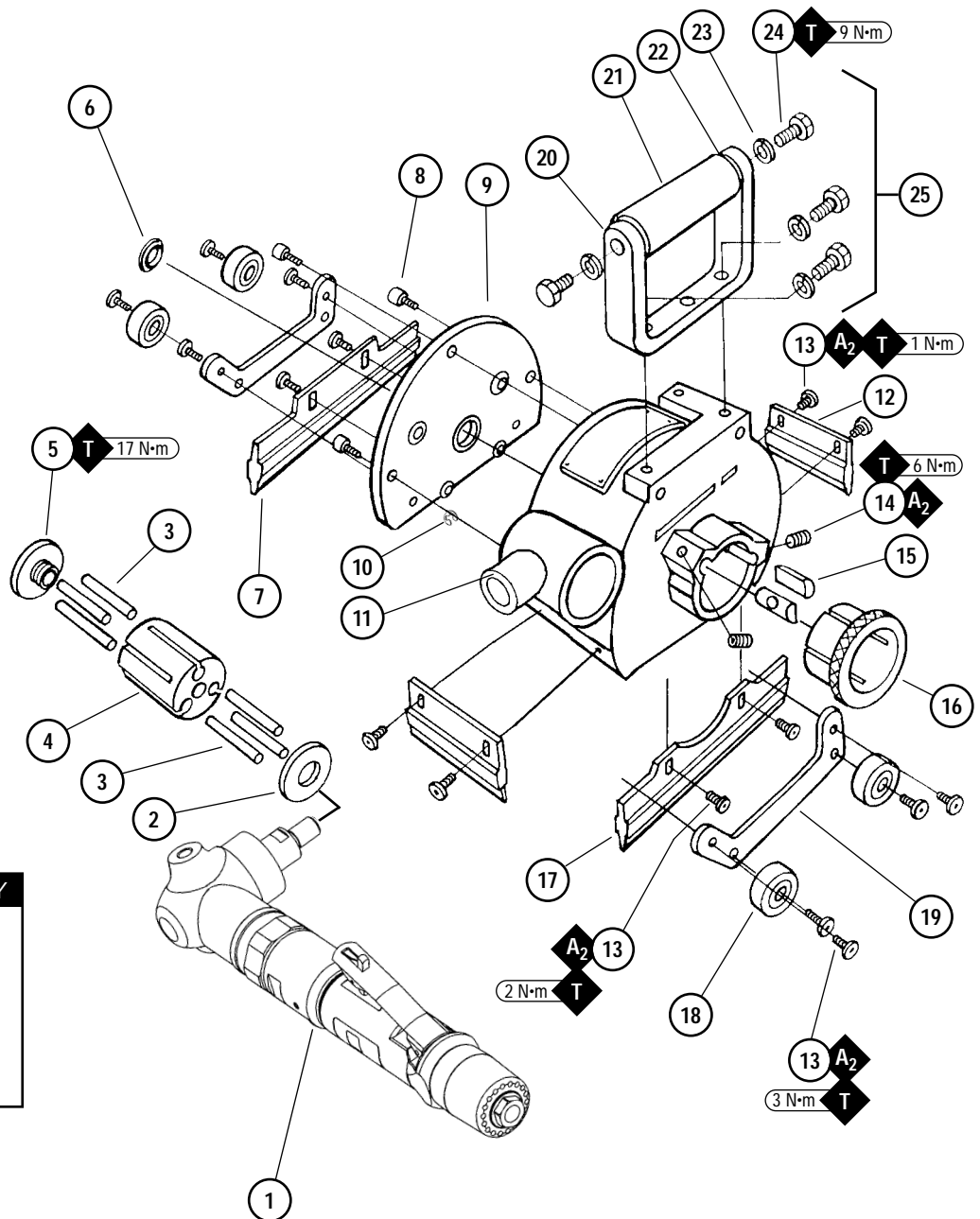
Air Motor and Machine Parts

⚠ 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.

Index Key

No.	Part#	Description
1	01138	Air Motor
2	96010	Rear Flange
3	33041	Keeper Pin (6)
4	30330	Hub
5	30331	Front Flange
6	95983	Plug
7	33034	Brush Assembly
8	97056	Screw (3)
9	33026	Cover
10	97055	E-Clip (3)
11	33030	Housing
12	33036	Brush Assembly (2)
13	95981	Screw (16)
14	95530	Cam Screw (2)
15	11801	Cam Lock (2)
16	30358	Adapter
17	33029	Brush Assembly
18	30356	Guide Wheel (4)
19	33027	Bracket Assembly (2)
20	31101	U Handle Bracket
21	95169	Soft Grip
22	31102	Top Handle Rod
23	95167	Washer (4)
24	95158	Bolt (4)
25	31100	Handle Assembly (Incl. 95167 Washer (4) and 95158 Bolt (4).)



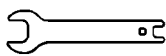
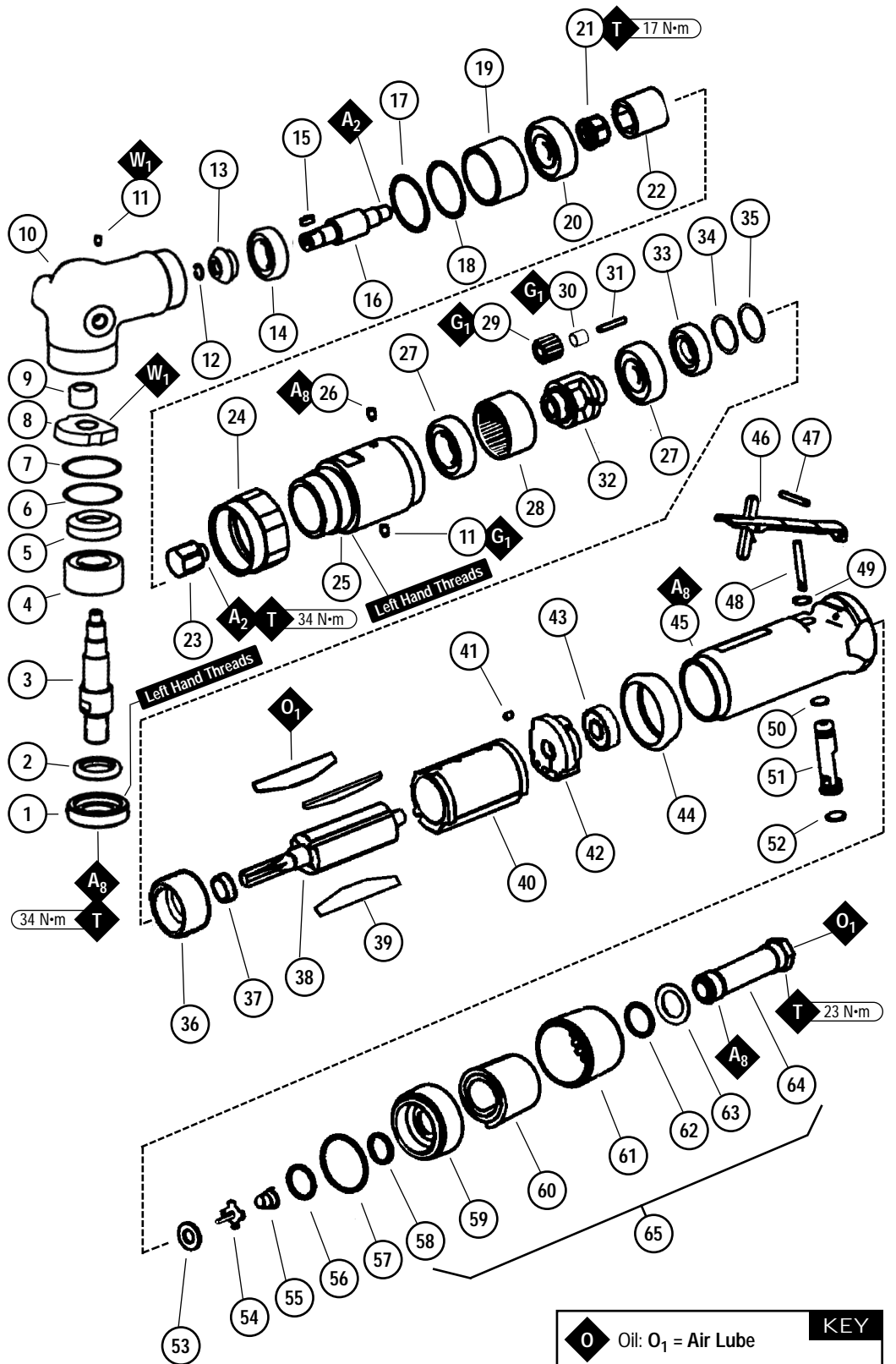
KEY	
O	Oil: O ₁ = Air Lube
A	Adhesive: A ₂ = Loctite #271
T	Torque: N·m x 8.85 = In. - lbs.
W	Wicking: W ₁ = Gear Oil

See inside for Important Operating Instructions and Accessories.

Dynascalor® Complete Assembly

Index Key

No.	Part#	Description
1	50963	Retainer
2	50899	Shaft Seal
3	30357	Spindle Assembly
4	50887	Bearing
5	50996	Gear
6	96306	Shim (As req.)
7	96307	Shim (3/Pkg. as req.)
8	02048	Wick
9	96325	Bearing
10	50962	Angle Housing Assy. (Incl. 01041 Fitting)
11	01041	Lubrication Fitting (2)
12	95939	Retaining
13	52124	Pinion
14	01266	Bearing (2)
15	50435	Key
16	50985	Pinion Shaft
17	07154	Shim
18	07155	Shim
19	50986	Spacer
20	01266	Bearing (2)
21	53551	Coupling Nut
22	50951	Coupler
23	50956	Hex Adapter
24	50987	Lock Ring
25	50970	Gear Casing Assembly (Incl. 01041 Fitting)
26	04014	Screw
27	02552	Bearing (2)
28	53191	Ring Gear
29	53193	Gear (2)
30	04026	Needle Bearing (4)
31	53182	Gear Shaft (2)
32	53180	Planetary Carrier
33	01007	Front Bearing
34	01294	Shim
35	01293	Shim
36	53183	Front Bearing Plate
37	01010	Motor Spacer
38	04017	Rotor
39	01185	Motor Vanes
40	01028	Motor Cylinder
41	50767	Pin
42	01721	Rear End Plate
43	02649	Bearing
44	53175	Collar
45	51484	Housing
46	01089	Safety Lock Lever
47	01017	Pin
48	01477	Valve Stem
49	95558	Retaining Ring
50	95730	O-Ring
51	01247	Speed Regulator
52	01024	O-Ring
53	01464	Seal
54	01472	Tip Valve
55	01468	Spring
56	01564	Air Control Ring
57	95438	O-Ring
58	95711	Retaining Ring
59	94521	Muffler Base
60	94528	Muffler
61	94522	Muffler Cap
62	95375	O-Ring
63	94526	Spacer
64	94523	Inlet Adapter
65	94519	Muffler Assembly



95281 19mm Wrench

KEY	
O	Oil: O ₁ = Air Lube
A	Adhesive: A ₂ = Loctite #271 A ₈ = Loctite #567
T	Torque: N·m x 8.85 = In. - lbs.
W	Wicking: W ₁ = Gear Oil

Disassembly/Assembly Instructions - 3,100 RPM

Important: Manufacturer's warranty is void if tool is disassembled before warranty expires.
Please refer to parts breakdown for part identification.

Motor and Gear Casing Disassembly:

1. **Important:** Inlet adapter must be secured before attempting to remove air fitting to avoid damaging composite motor housing.
2. Disconnect tool from power source, and secure motor housing, using the two molded flats, in a padded vise.
3. Remove **50970** Gear Casing Assembly using 40mm wrench flats provided.
4. Remove **04014** Set Screw from gear casing.
5. Push **50956** Hex Adapter through **50970** Gear Casing Assembly.
6. Remove **02552** Bearing from planetary assembly (opposite end from hex adapter).
7. Remove **53191** Ring Gear and spur gears from **53180** Planetary Carrier.
8. Secure planetary carrier in vise and remove **50956** Hex Adapter. Press carrier through **02552** Bearing.
9. Grab onto pinion gear and pull **53169** Motor Assembly from motor housing.
10. Secure **01028** Cylinder and press **04017** Rotor through **01721** Rear Bearing Plate.
11. Press **04017** Rotor through **53183** Front Bearing Plate and remove **01010** Spacer, **01007** Bearing and shims.

Motor Disassembly Complete.

Motor Housing Disassembly:

1. Secure motor housing, using the two molded flats in a padded vise, with the air inlet facing upwards.
2. Remove **94519** Muffler Assembly from motor housing.
3. Remove **01564** Air Control Ring, **01468** Spring, **01472** Tip Valve and **01464** Seal from motor housing.
4. Using a 2.5mm drift pin, tap **01017** Spring from housing and remove **01089** Throttle Lever and **01477** Valve Stem.
5. Remove **95558** Retaining Ring. Push **01247** Speed Regulator Assembly from housing.

Motor Housing Disassembly Complete.

Right-Angle Housing and Spindle Disassembly:

1. Secure housing in a padded vise, and remove **50987** Lock Ring (left-hand thread) using 44mm wrench flats.
2. Remove **50951** Coupler and pull **53351** Coupling Nut and pinion assembly from housing.
3. Secure pinion in a padded vise and remove **53551** Coupling Nut, remove **01266** Bearing, **50986** Spacer and shims.
4. Secure **01266** Bearing and push **50985** Pinion Shaft through pinion and bearing, remove **50435** Key.
5. Secure housing in a padded vise with spindle facing upwards.
6. Remove **50963** Retainer using an adjustable pin wrench (left-hand thread).
7. Pull spindle assembly from angle-housing. Remove shims and **02048** Wick from housing.
8. Secure **50887** Bearing and push spindle through bevel gear and bearing.
9. Remove **96325** Shell Bearing using **57099** Bearing Puller.

Angle-Housing Disassembly Complete.

Motor and Gear Casing Assembly:

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

1. Place **04017** Rotor in padded vise with threaded spindle facing upwards.
2. Slip **01010** Spacer onto **04017** Rotor.
3. Place a .002" shim into **53183** Front Bearing Plate as an initial spacing and slip **01007** Bearing into plate. **Note:** **01121** Shim Pack contains .001" and .002" shims.
4. Press bearing/bearing plate assembly onto rotor.
5. Check clearance between rotor and bearing plate by using a .001" feeler gauge. Clearance should be at .001" to .0015". Adjust clearance by repeating steps 2-4 with different shim if necessary.
6. Once proper rotor gap clearance is achieved, install well lubricated **01185** Blades (4) into rotor slots. Dynabrade recommends using their **95842** Air Lube.
7. Install cylinder over rotor/pinion. Be sure air inlet holes of cylinder face away from **53183** Front Bearing Plate.
8. Press **02649** Rear Bearing into rear bearing plate. Press bearing/bearing plate assembly onto rotor. Be sure that pin and air inlet holes line up with pin slot and air inlet holes in cylinder. **Important:** Fit must be snug between bearing plates and cylinder. If too tight, rotor will not turn freely. Rotor must then be lightly tapped at press fit end so it will turn freely while still maintaining a snug fit. A loose fit will not achieve the proper preload of motor bearings.
9. Secure motor housing in padded vise so motor cavity faces upwards. Install motor assembly into housing. Be sure motor inlet is facing the handle and it drops all the way into housing.
10. Press front **02552** Bearing onto front end of **53180** Planetary Carrier.

continued on next page

Disassembly/Assembly Instructions - 3,100 RPM (continued)

11. Apply #271 Loctite® to **50956** Hex Adapter and install onto **53180** Planetary Carrier (torque 17.0 N•m/150 in. - lbs.).
12. Install **53193** Gears, **04026** Bearings and **53182** Gear Shafts onto planetary carrier.
13. Slip **53191** Ring Gear over gears and press rear **02552** Bearing onto planetary carrier.
14. Install planetary carrier assembly into **50970** Gear Casing by aligning the slot in **53191** Ring Gear with set screw hole.
15. Apply #567 Loctite® (or equivalent) to **04014** Set Screw and install into **50970** Gear Casing.
16. Apply two drops of #271 Loctite® adhesive to motor housing threads.
17. Install gear casing sub-assembly onto motor housing to secure motor, torque 28 N•m/250 in-lbs.

Motor Housing Assembly:

1. Insert **01247** Regulator with o-rings and valve stem, place into motor housing. Secure with **95558** Retaining Ring.
2. Secure valve body in padded vise with inlet facing upwards. Insert **01464** Seal.
3. Line up hole in valve stem with hole in housing (looking past brass bushing). Insert **01472** Tip Valve so that the metal pin passes through the hole in the valve stem. Install **01468** Spring (small end towards tip valve).
4. Assemble felt muffler and place in **94522** Muffler Cap. Install **94521** Muffler Base onto muffler cap.
5. Install **94538** O-Ring into groove on muffler base. Place **95375** O-Ring and **94526** Spacer into recessed area of muffler cap.
6. Slip **94523** Inlet Adapter through muffler assembly and install **95711** Retainer Ring into groove on inlet adapter.
7. Install **01564** Air Control Ring into valve body housing.
8. Apply #567 Loctite® Pipe Sealant to threads of **94523** Inlet Adapter and install entire muffler assembly onto valve body. (Torque 23.0 N•m/200 in-lbs.)
9. Replace air fitting. Secure inlet adapter with a wrench before tightening air fitting. Install throttle lever and **01017** Pin.

Right-Angle Housing and Spindle Assembly:

1. Secure **50985** Pinion Shaft in padded vise with key slot end up. Install **02552** Bearing onto pinion shaft.
2. Press pinion gear onto pinion shaft with **50435** Key in key slot. Replace **95939** Retaining Ring.
3. Secure pinion in padded vise and install **50986** Spacer, **01266** Bearing and **53551** Coupling Nut.
4. The **50986** Spacer must fit snug between the two **01266** Bearings (shim required to achieve a snug fit).
5. Apply #271 Loctite® adhesive to spindle thread and install **53551** Coupling Nut (torque 17 N•m/150 in-lbs.).
6. Install **96235** Shell Bearing into angle housing and insert pinion/shaft assembly.
7. Apply #567 Loctite® to angle housing and install **50987** Lock Ring (left-hand thread, 44mm wrench flats).
8. Insert **50951** Coupling over **53551** Coupling Nut.
9. Install **50987** Lock Ring and angle housing sub-assembly onto **50970** Gear Casing. Take care in the aligning of the two male hex adapters to the **50951** Coupling (torque 45 N•m/400 in-lbs.).
10. Press **50887** Bearing and bevel gear onto spindle assembly.
11. Secure angle housing with drive spindle cavity facing upward and install well lubricated **02048** Wick (wick must be completely saturated with **95848** Gear Oil before installation). **Note:** Do not contaminate wick with any other oil or grease product.
12. Insert spindle assembly and check for gear alignment and backlash. Install shims as required (Minimum backlash is recommended for maximum gear life. Make sure there is clearance throughout 360° revolution.).
13. Install **50963** Retainer with **50899** Shaft Seal in place (left-hand thread), torque 34 N•m/300 in-lbs.

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.

Loctite® is a registered trademark of Loctite Corp.

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. Air tools are not intended for use in explosive atmospheres and are not insulated for contact with electrical power sources.

Maintenance Instructions:

1. 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.
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. Lubricate Planetary Gears through the gear casing grease fitting with 2-3 plunges for every 50 hours of use, to achieve maximum gear life (order **95542** Grease and **95541** Gun).
6. Lubriplate wick system through the angle gear head gear oil fitting with 2-3 plunges for every 8 hours of use, to achieve maximum gear life. Important: Use only 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).
7. Use only genuine Dynabrade replacement parts. To reorder replacement parts, please specify the **Model #**, **Serial #** and **RPM** of your machine.
8. A Motor Tune-Up Kit (P/N **96178**) is available which includes assorted parts to help maintain motor in peak operating condition.
9. 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.
- **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.

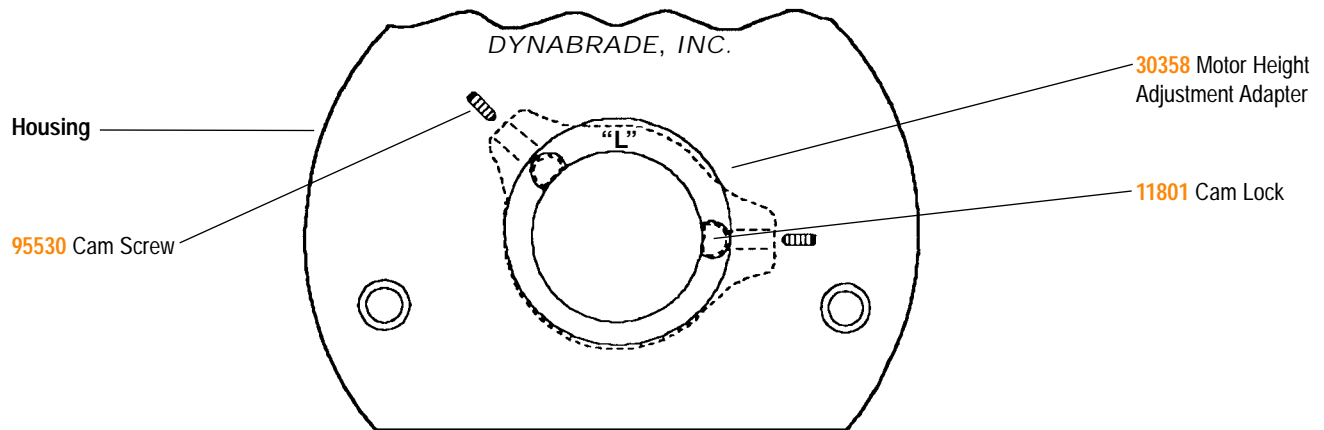
One Year Warranty

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)	RPM Loaded	Sound Level	Air Flow Rate CFM/SCFM (LPM)	Air Pressure PSIG (Bars)	Spindle Thread	Length Inch (mm)	Weight Pound (kg)
30337	.7 (522)	2,400	94 dB(A)	5/38 (1,076)	90 (6.2)	1/2"-20 Male	15 (381)	6.5 (2.9)

Additional Specifications: Air Inlet Thread 1/4" (6mm) NPT • Hose Size I. D. 1/2" or 15mm • Height 8-1/4" (210mm)

Instructions for Adjusting Position of Roto-Peen to Work Surface



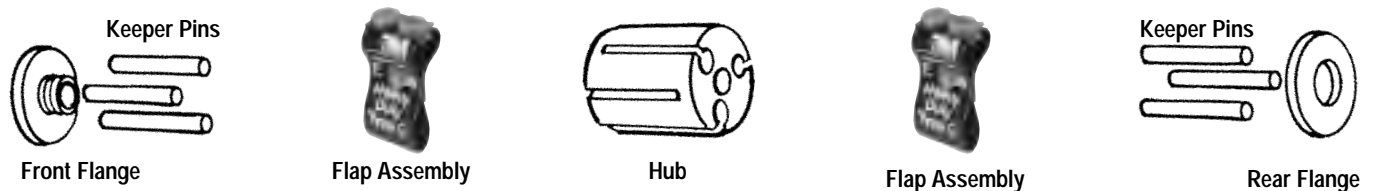
- Using a hex wrench, loosen both **95530** Cam Screws located on the housing near the motor inlet hole.
- Rotate **30358** Motor Height Adjustment Adapter for desired distance of roto-peen/motor from workpiece:
 - "L" at 12 o'clock – lowest position.**
When motor height adjustment adapter is set in the "L" position ("L" at 12 o'clock), the roto-peen/motor is set at its lowest position. This position is best for low RPM operation.
 - "L" at 9 or 3 o'clock – nominal/mean/middle position.**
Turning the adjustment adapter 90° to the left or right from the lowest position sets the roto-peen/motor in the nominal or mean position. This position is best for normal operating conditions (90 PSIG and 2,400 RPM under load).
 - "L" at 6 o'clock – highest position.**
Turning the adjustment adapter 180° to the left or right from the lowest position sets the roto-peen/motor at the highest distance from the workpiece.

Note: The adjustment adapter is preset at the factory in the highest position.

WARNING

Do not exceed 3,400 RPM.
Do not operate machine without guarding in proper position.
Disconnect power supply from tool before making any changes or adjustments to hub or flap assemblies.
Use eye, face, hearing and body protection while operating this tool. Full face shield and muff type hearing protection is recommended.

Mounting Instructions for 3M Heavy Duty Roto Peen



Types of 3M Roto Peen Flaps:

Type B – Designed for removing lighter latex or rubber-like coatings from steel or concrete, or for producing a high profile on steel.

Type C – Designed for removing scale from steel, removing coatings from steel and concrete, or preparing steel and concrete to accept coatings.

Note: The front side of each flap is printed to identify the specific **TYPE**. When loading flaps into the hub make sure the printed side of the flap must face in the direction of rotation.

- Use the **95135** Hex Key (5/32") to loosen the **97056** Screws (3) and remove the cover.
- Hold the motor spindle stationary with the **95281** Open End Wrench (19mm).
- Use the **95303** Hex Key (1/4") to remove the **30331** Front Flange by turning it counterclockwise.
- Remove the **30330** Hub by turning it counterclockwise.
- Insert a **33301** Keeper Pin (6) into each flap to be loaded. Slide the flap along with the keeper pin into the hub.
Important: Make sure that all of the loaded flaps face in the same direction.
- With the **96010** Rear Flange installed on the motor spindle, thread the hub along with the loading of flaps onto the motor spindle so that the printed side of the flaps face in the direction of rotation. **Note:** Refer to the arrow on the cover to establish the correct direction of rotation.
- Install the cover and use the 5/32" hex key to secure it in place with a 1/4" hex key. (Torque to 17 N•m/150 in. lbs.)
- Install the cover and use the 5/32" hex key to secure it in place with the **97056** Screws (3).

Important: Check the direction of rotation and the hub with the loading of flaps. The Printed side of the flaps must

Roto Peen is a registered trademark of 3M Co.

Accessories



Roto Peen Flaps

- As flaps rotate against the workpiece, the shot particles mechanically fracture and remove scale and old coatings with minimal removal of the base metal.

Type B - For removing lighter coatings and producing a high profile surface on steel.

Type C - For descaling steel, removing general duty coatings from steel and concrete, and for preparing steel and concrete to accept coatings.

Part Number	Flap Type	Flap Width	Flap Unit
39000	C	1"	12
39001	B	1"	12
39002	C	2"	6
39003	B	2"	6



30330 Hub

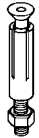
- Six-slot hub for 2" wide flaps.
- Hub carries flexible flap assemblies of bonded shot particles.
- Roto Peen flaps not included.

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96178 Motor Tune-Up Kit

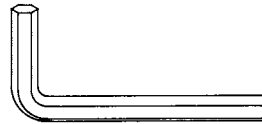
- Includes assorted parts to help maintain and repair motor.



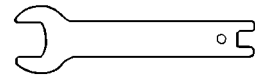
57099 Bearing Puller

- This tool is designed to assist in removing the 96325 Bearing from the angle housing assembly.

Wrenches



- 95048 – 1/8" hex wrench
- 95052 – 3/32" hex wrench
- 95135 – 5/32" hex wrench
- 95303 – 1/4" hex wrench



- 95281 – 19mm open-end



Dynabrade Air Lube

- Formulated for pneumatic equipment.
 - Absorbs up to 10% of its weight in water.
 - Prevents rust and formation of gum and sludge.
 - Keeps pneumatic tools operating longer with greater power and less downtime.
- 95842: 1 pt. (473 ml). 95843: 1 gal (3.8 L).

Grease

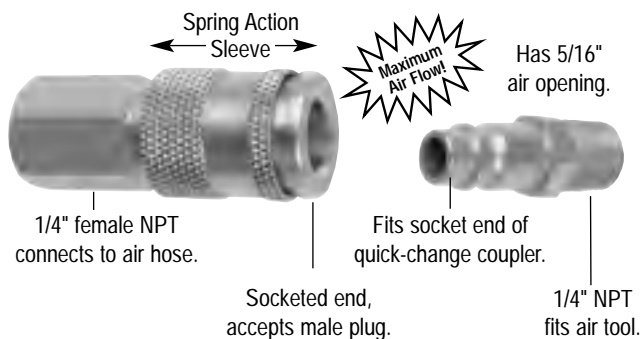
- Multi-purpose grease for all types of bearings, cams, gears.
 - High film strength; excellent resistance to water, steam, etc.
 - Workable range 0° F to 300° F.
- 95541: Push-type Grease Gun (one-hand operation).
95542: 10 oz. (283.5 g) tube.

Gear Oil

- Formulated for geared tools utilizing a wick-type lubrication system.
- 95848: 2.5 oz. (74 ml) tube.

95674 Coupler

95675 Ported Male Plug



Universal Coupler and Plug

95674 Coupler

- Has 1/4" female NPT and quick-change socket. Fits most major brands of male plugs. Single-action quick connect, brass connection.

95675 Ported Male Plug

- Connects to female couplers and air tools. "Ported" design provides up to 35% more air flow capacity than other plug to prevent "starving" the air tool.

95673 Coupler/Plug Assembly

- Includes 95674 Coupler and 95675 Ported Male Plug. For quick connect/disconnect of air hose and air tool.



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