

# VirtuScaler Descaling Tool

Motor and Machine Parts

## Models:

**30304** – 2" wide for work on inside of pipe.

**30336** – 2" wide for work on flat surfaces.

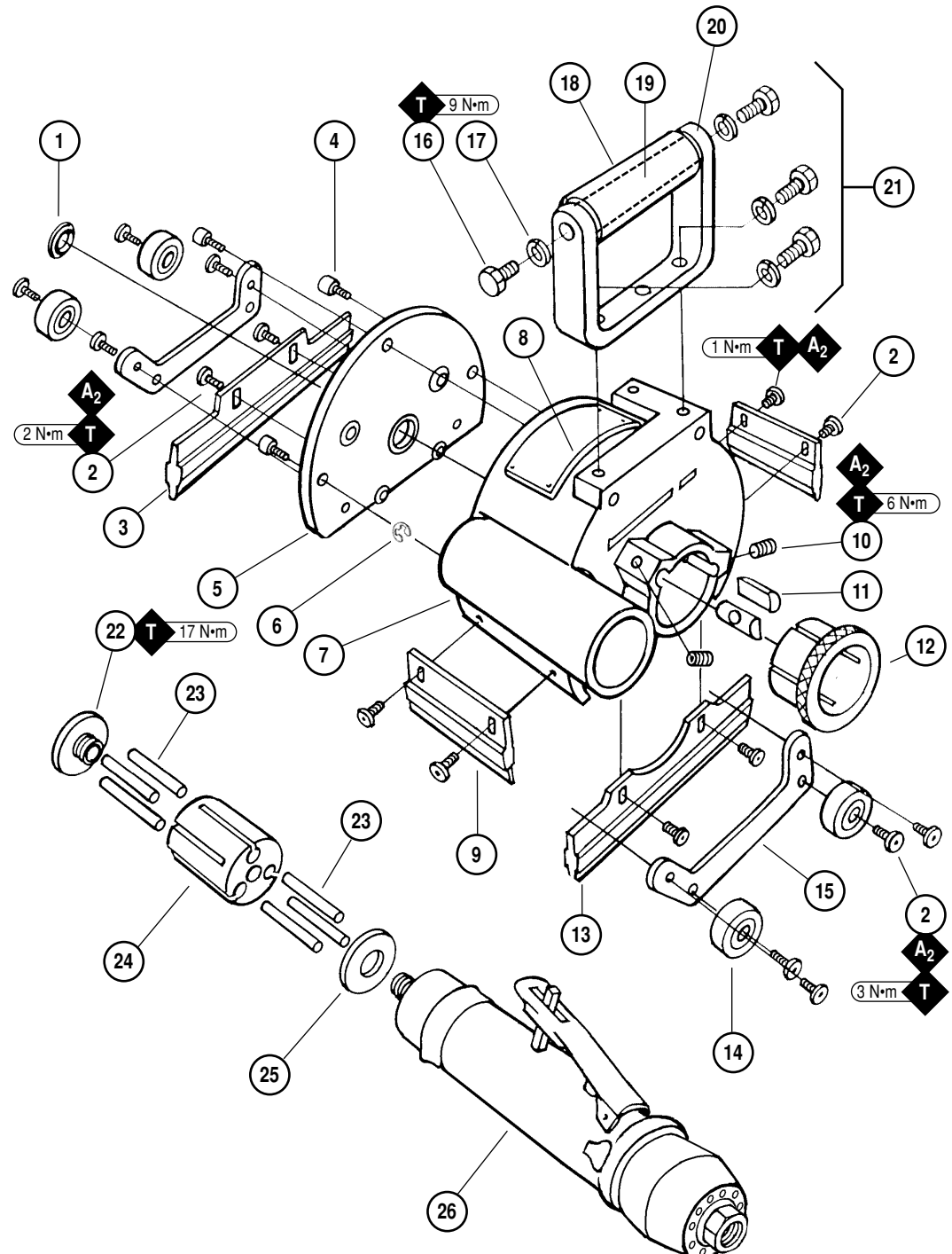


Always operate, inspect and maintain this tool in accordance with the Safety Code for portable air tools (ANSI B186.1) and any other applicable safety codes and regulations. Please refer to Dynabrade's Warning/Safety Operating Instructions for more complete safety information.

## Index Key

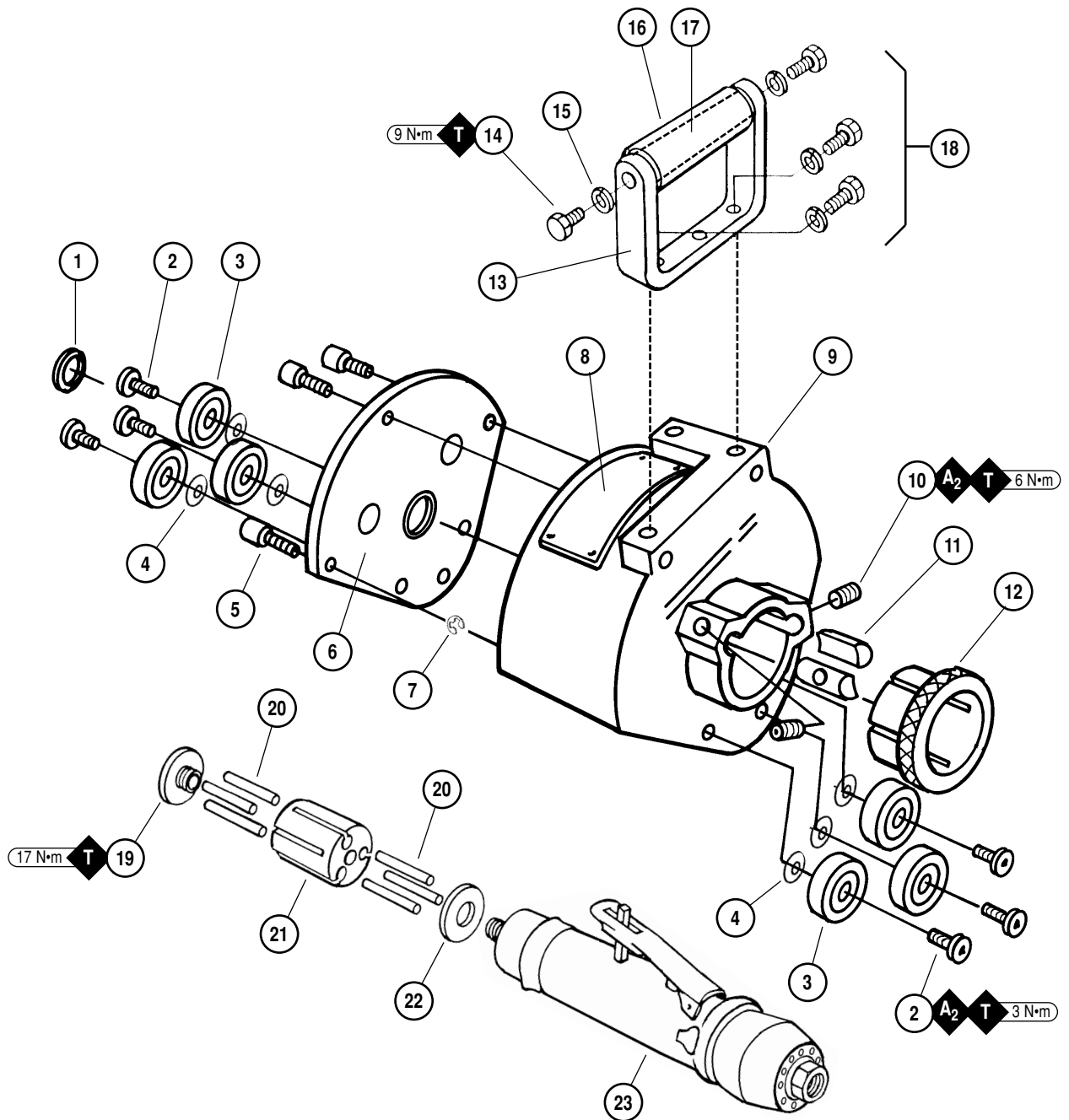
No.	Part #	Description
1	95983	Plug
2	95981	Screw (16)
3	33034	Brush Assembly
4	97056	Screw (3)
5	33026	Cover
6	97055	Retaining Ring (3)
7	33025	Housing
8	95133	Label
9	33036	Brush Assembly (2)
10	95530	Cam Screw (2)
11	11801	Cam Lock (2)
12	30358	Adapter
13	33029	Brush Assembly
14	30356	Guide Wheel (4)
15	33027	Bracket Assembly (2)
16	95158	Bolt (4)
17	95167	Washer (4)
18	95169	Soft Grip
19	31102	Handle Rod
20	31101	U Handle
21	31100	Handle Assembly
22	30331	Front Flange
23	33041	Keeper Pin (6)
24	30330	Hub
25	96010	Rear Flange
26	04206	Air Motor

## Model 30336 – 2" wide Roto Peen®, accepts vacuum hook-up



See inside for Important Operating Instructions and Accessories.

**Model 30304 – 2" wide Roto Peen®**



Index Key		
No.	Part #	Description
1	95983	Plug
2	95716	Screw (6)
3	30005	Guide Wheels (6)
4	95146	Washer (6)
5	97056	Screw (3)
6	31112	Cover
7	97055	Retaining Clip (3)
8	95133	Label
9	31106	Housing
10	95530	Cam Screw (2)
11	11801	Cam Lock (2)
12	30358	Adapter
13	31101	U Handle
14	95158	Bolts (4)
15	95167	Washer (4)
16	95169	Soft Grip
17	31102	Handle Rod
18	31100	Handle Assembly
19	30331	Front Flange
20	33041	Keeper (6)
21	30330	Hub
22	96010	Rear Flange
23	04206	Air Motor

## 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. Lubriplate Planetary Gears through the Gear Casing Fitting with **2-3 plunges for every 50 hours of use, to achieve maximum gear life (order 95542 Grease and 95541 Gun)**.
6. Use only genuine Dynabrade replacement parts. To reorder replacement parts, please specify the **Model #**, **Serial #** and **RPM** of your machine.
7. A Motor Tune-Up Kit (P/N **96260**) is available which includes assorted parts to help maintain motor in peak operating condition.
8. 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.

### 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. Dirt 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)	Sound Level	Abrasive Belt Size Inch (mm)	Air Flow Rate SCFM (LPM)	Spindle Thread	RPM (Loaded)	Weight Pound (kg)	Length Inch (mm)	Air Pressure PSIG (Bars)
<b>30304</b>	.7 (522)	94 dB(A)	2" (51)W	38 (1,076)	1/2"- 20 male	2,400	6.2 (2.8)	11-3/4" (298)	90 (6.2)
<b>30336</b>	.7 (522)	94 dB(A)	2" (51)W	38 (1,076)	1/2"- 20 male	2,400	6.5 (2.9)	11-3/4" (298)	90 (6.2)

Additional Specifications: Height 8-1/4" (210mm) • Air Inlet Thread 3/8" (10mm) NPT • Hose Size 1/2" (13mm)

# 04206 Air Motor

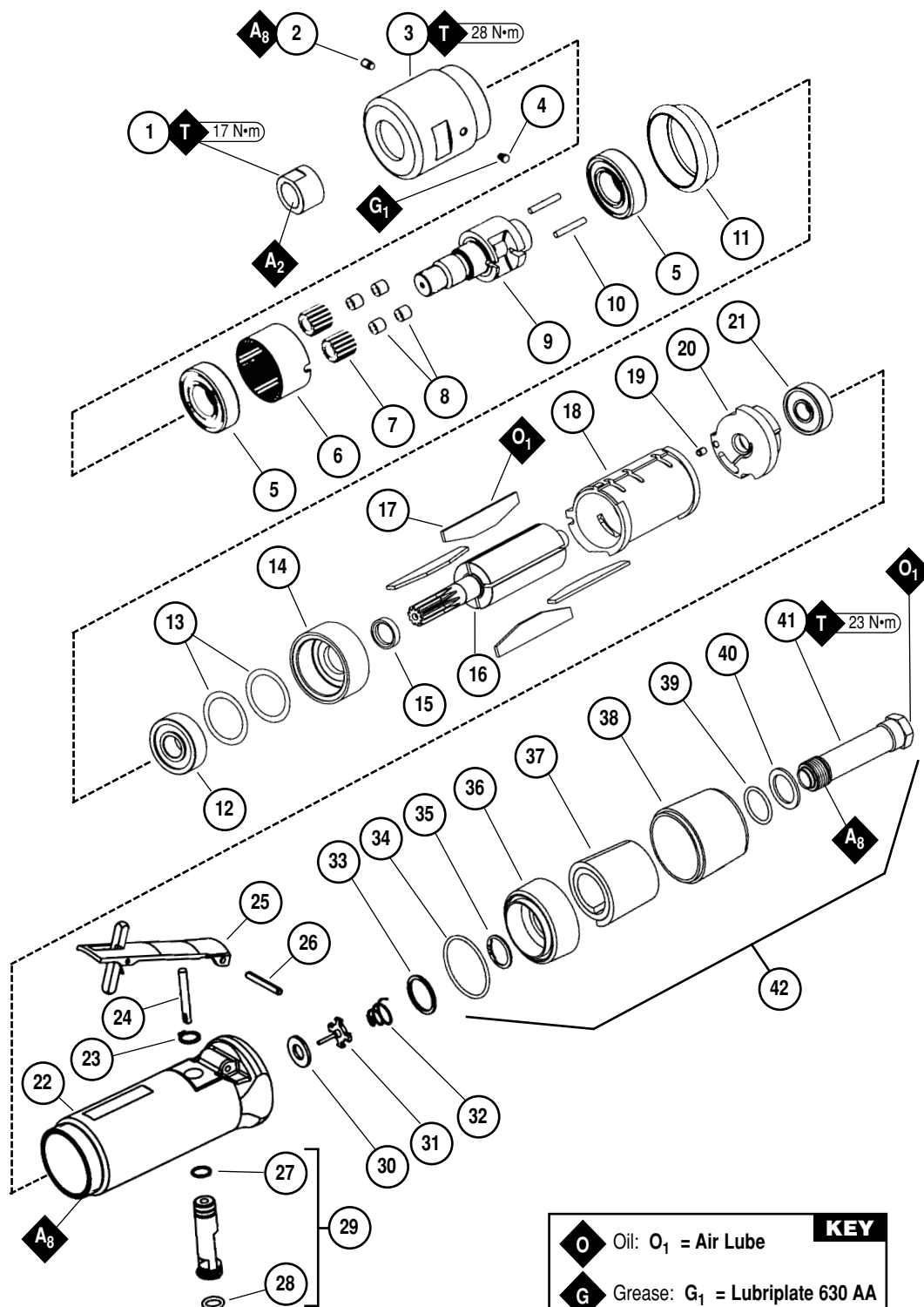
## WARNING

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	04032	Spindle Nut
2	04014	Lock Screw
3	53186	Planetary Housing
4	01041	Grease Fitting
5	02552	Bearing (2)
6	53191	Ring Gear
7	53193	Gear (2)
8	04026	Bearing (4)
9	53165	Planetary Carrier
10	53182	Gear Shaft (2)
11	53175	Rubber Collar
12	01007	Bearing
13	01121	Shim (3/pkg.)
14	53183	Front Bearing Plate
15	01010	Motor Spacer
16	04017	Rotor
17	01185	Blades (4/pkg.)
18	01028	Cylinder
19	50767	Pin
20	01721	Rear Bearing Plate
21	02649	Bearing
22	30465	Housing
23	95558	Retaining Ring
24	01477	Valve Stem
25	01089	Throttle Lever
26	01017	Pin
27	95730	O-Ring
28	01024	O-Ring
29	01247	Speed Reg. Assy.
30	01464	Seal
31	01472	Tip Valve
32	01468	Spring
33	01564	Air Control Ring
34	95438	O-Ring
35	95711	Retaining Ring
36	94521	Muffler Base
37	94528	Felt Muffler
38	94522	Muffler Cap
39	95375	O-Ring
40	94526	Spacer
41	94523	Inlet Adapter
42	94519	Muffler Assembly



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

## **Disassembly/Assembly Instructions - 3,400 RPM**

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

Please refer to parts breakdown for part identification.

### **Motor Disassembly:**

1. Disconnect tool from power source. Remove hub assembly from motor spindle.
2. Secure air tool in padded vise.
3. With an adjustable pin wrench, remove **53186** Planetary Housing by turning counter-clockwise.
4. Remove **04014** Set Screw and **53175** Rubber Collar, pull planetary carrier assembly from **53186** Planetary Housing.
5. Press planetary carrier assembly from rear **02552** Bearing. Remove ring gear and gears from **53165** Planetary Carrier.
6. Secure planetary carrier in vise and remove **04032** Spindle Nut. Press carrier from front **02552** Bearing.
7. Grab onto pinion and pull motor assembly from motor housing.
8. Press **04017** Rotor from **01721** Rear Bearing Plate. Press **02649** Rear Bearing from rear bearing plate.
9. Remove cylinder and rotor blades from rotor.
10. Press **04017** Rotor through **01007** Front Bearing and **53183** front Bearing Plate.
11. Remove **01007** Bearing and shims from **53183** Bearing Plate. Remove **01010** Spacer from rotor.

**Motor Disassembly Complete.**

### **Valve Body Disassembly:**

1. Position valve body in padded vise with air inlet facing up.
2. Remove air fitting by securing **94523** Inlet Adapter with a wrench and twist air fitting from inlet adapter.  
**Important:** **94523** Inlet Adapter must be secured before attempting to remove air fitting to avoid damaging valve body housing.
3. Remove **94523** Inlet Adapter.
4. Remove **95711** Retaining Ring from inlet adapter and separate **94521** Muffler Base from **94522** Muffler Cap. Remove **94528** Felt Muffler.
5. Remove **01564** Air Control Ring from valve body. Using needle nose pliers, remove **01468** Spring, **01472** Tip Valve and **01464** Seal.
6. Using a 2.5 mm drift pin, tap **01017** Pin from housing and remove throttle lever.
7. Remove **95558** Retaining Ring. Push **01247** Regulator from valve body and remove o-rings.

**Disassembly Complete.**

### **Motor Assembly:**

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

1. Slip **01010** Spacer onto **04017** or **04009** rotor.
2. Place a .002 shim into **53183** Bearing Plate (**Note:** **01121** Shim Pack contains .001 and .002 shims) and slip **01007** Bearing into plate.
3. Press **01007**, **53183** Bearing/Bearing Plate onto **04017** Rotor.
4. Check the clearance between rotor and bearing plate by using .001 feeler gage, clearance should be at .001 to .0015. Adjust clearance by repeating steps 2-4 with a different shim if necessary.
5. Once proper rotor/plate clearance is achieved, install well-lubricated **01185** Blades into **04017** Rotor. Dynabrade Air Lube P/N **95842** is recommended for lubrication.
6. Install **01028** Cylinder so it rests against **53183** Bearing Plate. (Make sure that the air inlet opening faces away from the **53183** Bearing Plate.)
7. Press **02649** Bearing into **01721** Rear Bearing Plate. Press these parts onto **04017** Rotor, be sure that the line-up pin and the air inlet opening line up with pin slots and air passage. **Important:** Fit must be snug between bearing plates and cylinder. If too tight, rotor will not turn free. Release, press and repress assembly so that it turns free, while still maintaining a snug fit. A loose fit will not achieve the proper preload of the motor bearing.
8. Install motor assembly into motor housing, making sure that the bearing plate node fits into the notch inside the housing.
9. Press front **02552** Bearing onto front end of first **53165** Planetary Carrier.
10. Apply one drop of #271 Loctite® to threads of **04032** Nut and install nut onto planetary carrier (torque 17 N•m/150 in.- lbs.).
11. Install gears with needle bearings and **53182** Gear Shafts onto planetary carrier.
12. Slip **53191** Ring Gear over planetary gears making sure that the notches will line up with the set screw and the grease fitting. Then press rear **02552** Bearing onto planetary carrier.
13. Slide planetary gear assembly into **53186** Planetary Housing and apply a small amount of #567 Loctite® to the threads of **04014** Set Screw and install.
14. Install **53175** Rubber Collar onto **53186** Planetary Housing. Apply a small amount of #567 Loctite® to the threads of the motor housing and install Planetary Housing onto housing to secure motor (torque 28 N•m/250 in.- lbs.).

**Motor Assembly Complete.**

### **Valve Body Assembly:**

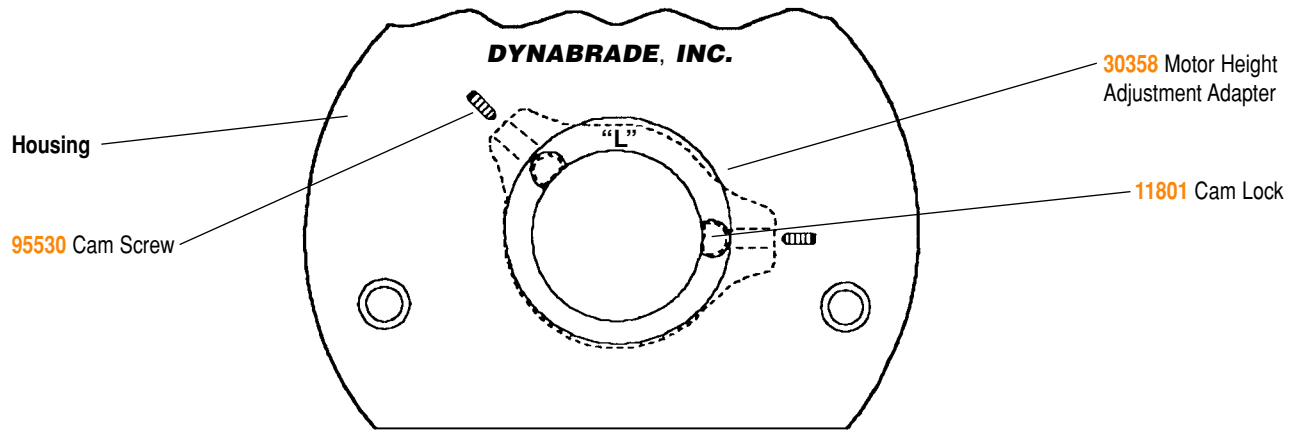
1. Insert **01247** Regulator with o-rings and valve stem in place into valve body. Secure with **95558** Retaining Ring.
2. Secure valve body in padded vise with air inlet facing upward. Insert **01464** Seal.
3. Line up hole in valve stem with hole in housing (looking past brass bushing). Insert **01472** tip Valve so that the metal pin passes through the hole in the valve stem. Install **01468** Spring (small end toward tip valve).
4. Place felt muffler in **94522** Muffler Cap. Install **94521** Muffler Base onto muffler cap.
5. Install **95438** 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** Retaining Ring into groove on inlet adapter.
7. Install **01564** Air Control Ring into valve body housing.
8. Apply #567 Loctite® PST Pipe Sealant to threads of **94523** Inlet Adapter and install entire muffler assembly onto valve body (torque 23 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.

**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.



## Instructions for Adjusting Position of Roto Peen® to Work Surface



1. Using a hex wrench, loosen both **95530** Cam Screws located on the housing near the motor inlet hole.
2. 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 underload).
  - “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

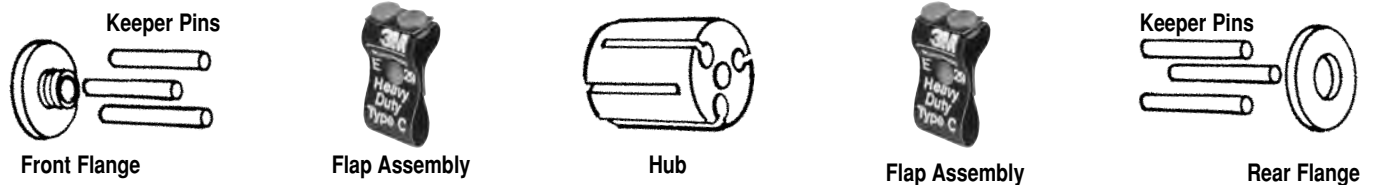
Do not exceed 3,400 RPM.

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.

1. Use the **95135** Hex Key (5/32") to loosen the **97056** Screws (3) and remove the cover.
2. Hold the motor spindle stationary with the **95281** Open End Wrench (19mm).
3. Use the **95303** Hex Key (1/4") to remove the **30331** Front Flange by turning it counterclockwise.
4. Remove the **30330** Hub by turning it counterclockwise.
5. 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.
6. 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.
7. 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.)
8. 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 face in the direction of rotation.

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.

Roto Peen® is a registered trademark of 3M Co.



### 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.



### 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).



### 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.



### 96260 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.

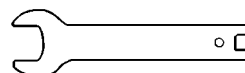
## Wrenches



**95048** – 1/8" hex wrench

**95135** – 5/32" hex wrench

**95303** – 1/4" hex wrench



**95281** – 19 mm open-end



Toll Free (U.S.A.) 1-800-828-7333  
Toll Free (Can.) 1-800-344-1488

Visit Our Web Site: [www.dynabrade.com](http://www.dynabrade.com)

Email: [Customer.Service@Dynabrade.com](mailto:Customer.Service@Dynabrade.com)

**DYNABRADE, INC.,** 8989 Sheridan Drive • Clarence, NY 14031-1490 • Phone: (716) 631-0100 • Fax: 716-631-2073 • International Fax: 716-631-2524  
**DYNABRADE EUROPE S.à.r.l.,** Zone Artisanale • L-5485 Wormeldange—Haut, Luxembourg • Telephone: 352 76 84 94 1 • Fax: 352 76 84 95 1

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