

# Models:

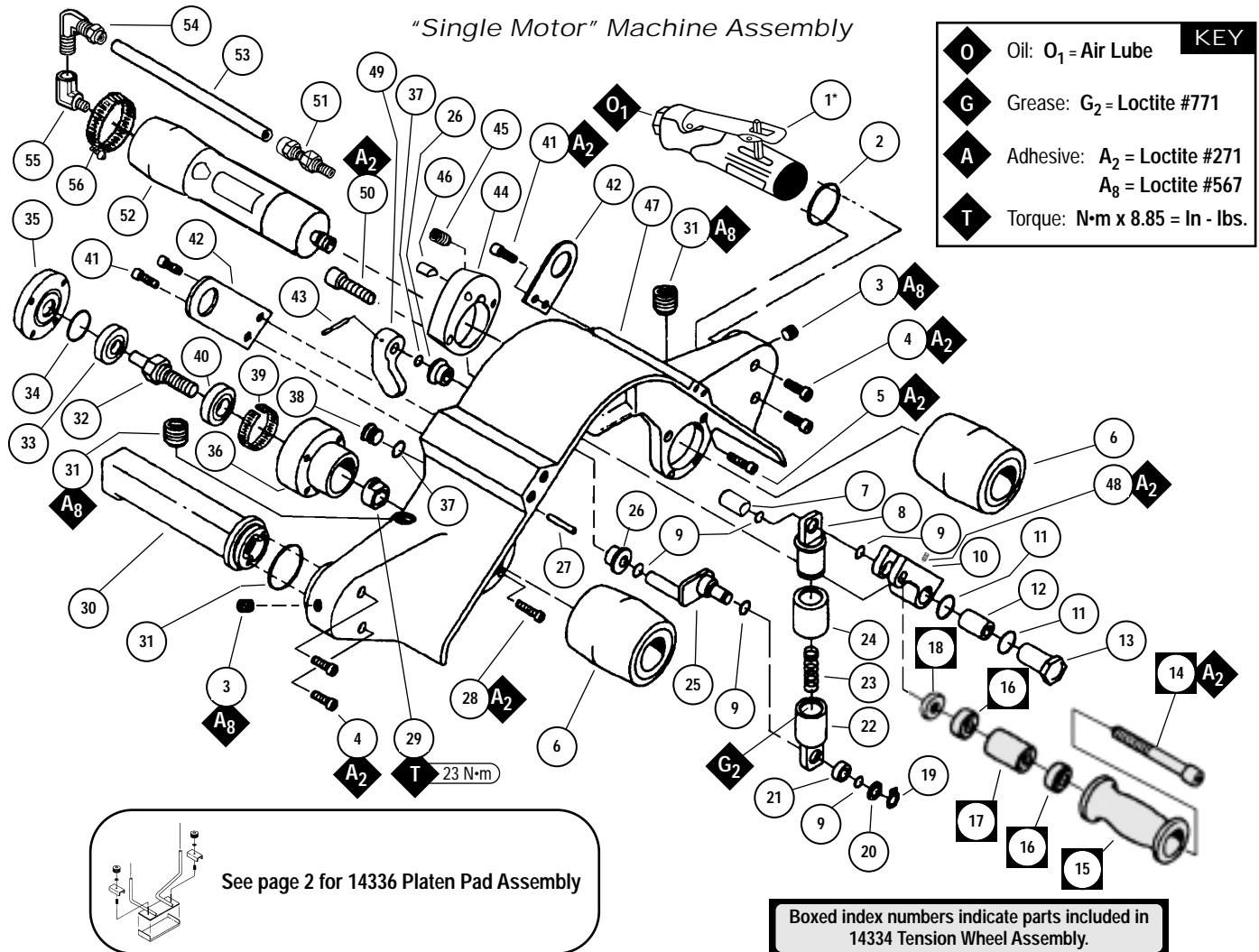
- 14308 - 3,400 RPM, "Single Motor", Standard Duty
- 14309 - 3,400 RPM, "Dual Motor", Standard Duty
- 14310 - 3,400 RPM, "Single Motor", w/platen, Standard Duty
- 14311 - 3,400 RPM, "Dual Motor", w/platen, Standard Duty
- 14312 - 950 RPM, "Single Motor", Extra Slow Speed
- 14313 - 950 RPM, "Single Motor", w/platen, Extra Slow Speed

# Slow Speed Dynangle® II

## 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.

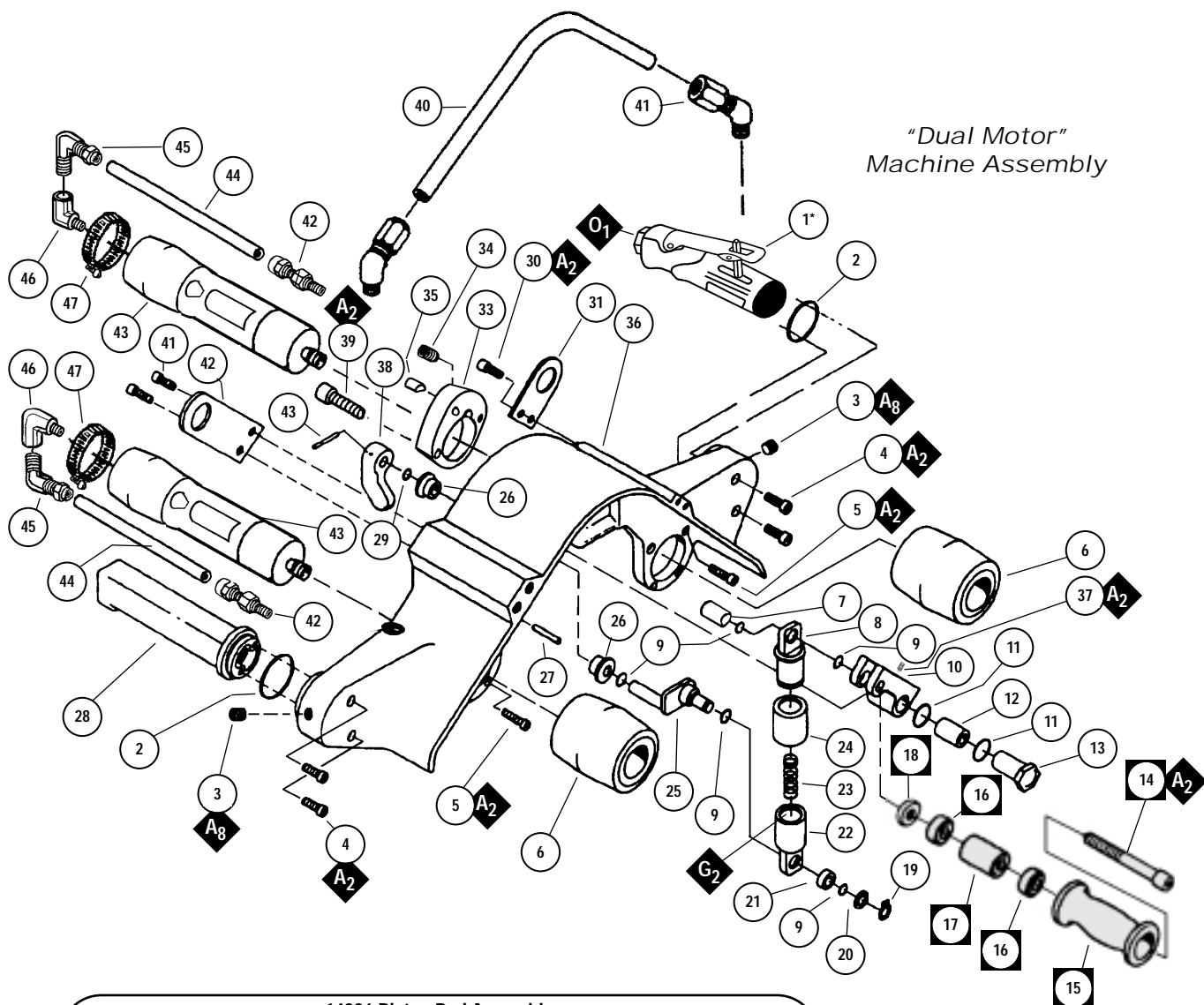


### Index Key

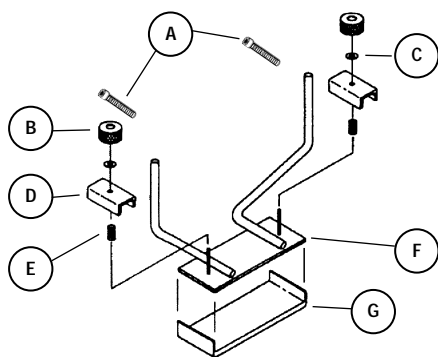
No. Part # Description

1	07167	Throttle Valve Assy.*	16	95398	Bearing (2)	31	95561	Plug (2)	46	11801	Motor Housing
2	14064	O-Ring	17	14346	Spacer	32	14329	Shaft	47	14320	Housing
3	95562	Plug (2)	18	14347	Spacer	33	01266	Bearing	48	95952	Set Screw
4	95720	Screw (4)	19	95558	Retaining Ring	34	95584	O-Ring	49	14331	Lever
5	95221	Screw (8)	20	95557	Washer	35	14328	Cover	50	95559	Screw
6	01794	Drive Wheel (2)	21	95572	Bushing	36	14327	Housing	51	96062	Connector
7	14353	Bushing	22	14318	Retainer	37	01025	O-Ring (2)	52	04210	950 RPM Motor
8	14317	Retainer	23	95556	Spring	38	14348	Plug		04211	3,400 RPM Motor
9	95288	O-Ring (5)	24	14319	Cover	39	95583	Ring	53	96060	3,400 RPM Tubing
10	14316	Idle Arm	25	14324	Cam Assembly	40	02552	Bearing		96064	950 RPM Tubing
11	95526	O-Ring (2)	26	95560	Bearing (2)	41	95536	Screw (4)	54	96061	Elbow
12	95555	Bearing	27	95333	Pin	42	14333	Bracket (2)	55	96063	Elbow
13	14343	Step Nut	28	95564	Screw (4)	43	95164	Pin	56	95884	Clamp
14	95565	Screw	29	14330	Nut	44	14082	Motor Mount			
15	14344	Tension Idler	30	14332	Dead Handle Assy.	45	95392	Screw			

\*See page 5 for 07167 Throttle Valve Assembly.



14336 Platen Pad Assembly



#### Index Key

No. Part # Description

A	95150	Screw (2)
B	14342	Knob (2)
C	95563	Washer (2)
D	14338	Clamp (2)
E	95570	Spring (2)
F	14337	Mount
G	14341	Platen

Boxed index numbers indicate parts included in 14334 Tension Wheel Assembly.

#### Index Key

No. Part # Description

1	07167	Throttle Valve Assy.*	13	14343	Step Nut	25	14324	Cam Assembly	37	95952	Set Screw
2	14064	O-Ring	14	95565	Screw	26	95560	Bearing (2)	38	14331	Lever
3	95562	Plug (2)	15	14344	Tension Idler	27	95333	Pin	39	95559	Screw
4	95720	Screw (4)	16	95398	Bearing (2)	28	14332	Dead Handle Assy.	40	14335	Air Line
5	95221	Screw (8)	17	14346	Spacer	29	01025	O-Ring (4)	41	95566	Fitting (2)
6	01794	Drive Wheel (2)	18	14347	Spacer	30	95536	Screw (4)	42	96062	Connector (2)
7	14353	Bushing	19	95558	Retaining Ring	31	14333	Bracket (2)	43	04211	3,400 RPM Motor (2)
8	14317	Retainer	20	95557	Washer	32	95164	Pin	44	96060	3,400 RPM Tubing (2)
9	95288	O-Ring (5)	21	95572	Bushing	33	14082	Motor Mount (2)	45	96061	Elbow (2)
10	14316	Idle Arm	22	14318	Retainer	34	95392	Screw (2)	46	96063	Elbow (2)
11	95526	O-Ring (2)	23	95556	Spring	35	11801	Motor Lock (2)	47	95884	Clamp (2)
12	95555	Bearing	24	14319	Cover	36	14320	Housing			

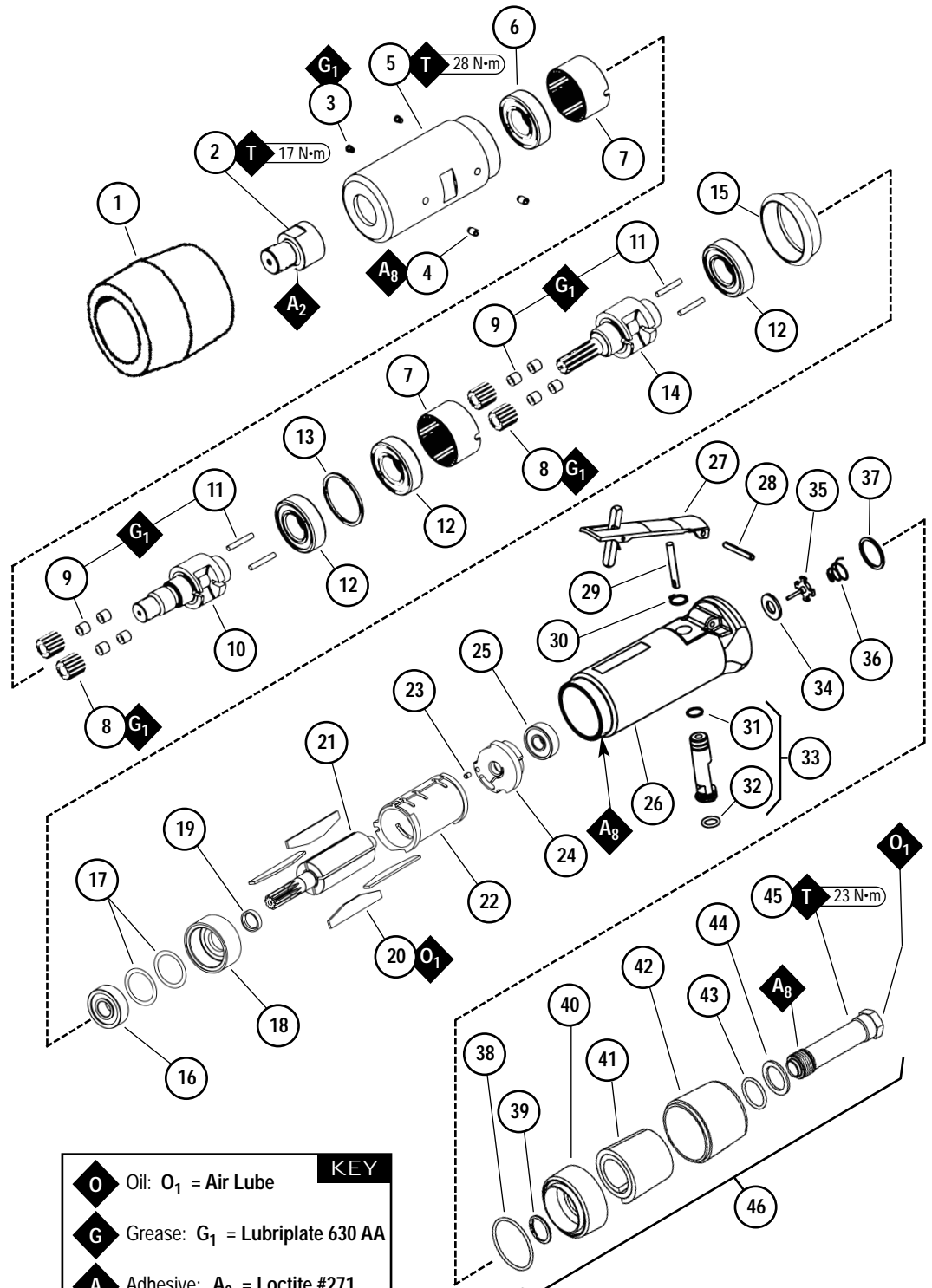
\*See page 5 for 07167 Throttle Valve Assembly.

# 04210 Air Motor Assembly

## Index Key

No. Part # Description

1	01794	Drive Wheel
2	14081	Spindle Adapter
3	01041	Grease Fitting (2)
4	04014	Set Screw (2)
5	53187	Planetary Housing
6	96508	Bearing
7	53191	Ring Gear (2)
8	53195	Gear (4)
9	04026	Bearing (8)
10	53162	Planetary Carrier
11	53182	Gear Shaft (4)
12	02552	Bearing (3)
13	53188	Spacer
14	53164	Planetary Carrier
15	53175	Insulator Collar
16	01007	Bearing
17	01121	Shim (3/pkg.)
18	53183	Front Bearing Plate
19	01010	Spacer
20	01185	Blades (4/pkg.)
21	04009	Rotor
22	01028	Cylinder
23	50767	Pin
24	01721	Rear Bearing Plate
25	02649	Bearing
26	01295	Housing
27	01089	Safety Throttle Lever
28	01017	Pin
29	01477	Valve Stem
30	95558	Retaining Ring
31	95730	O-Ring
32	01024	O-Ring
33	01247	Speed Reg. Assy.
34	01464	Seal
35	01472	Tip Valve
36	01468	Spring
37	01564	Air Control Ring
38	95438	O-Ring
39	95711	Retaining Ring
40	94521	Muffler Base
41	94528	Felt Muffler
42	94522	Muffler Cap
43	95375	O-Ring
44	94526	Spacer
45	94523	Inlet Adapter
46	94519	Muffler Assembly

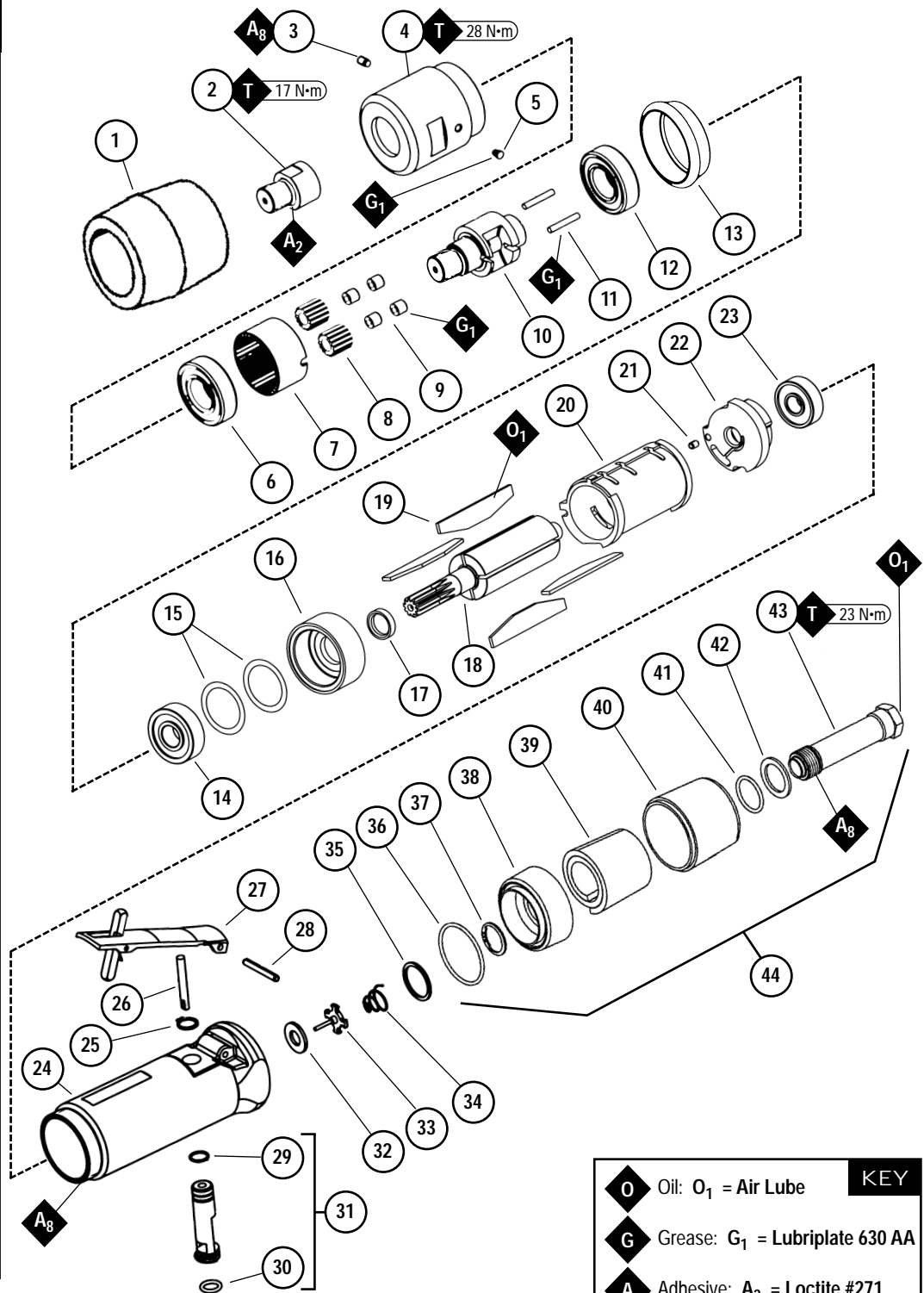


KEY	
<b>O</b>	Oil: O <sub>1</sub> = Air Lube
<b>G</b>	Grease: G <sub>1</sub> = Lubriplate 630 AA
<b>A</b>	Adhesive: A <sub>2</sub> = Loctite #271 A <sub>8</sub> = Loctite #567
<b>T</b>	Torque: N·m x 8.85 = In. - lbs.

## 04211 Air Motor Assembly

No.	Part #	Description
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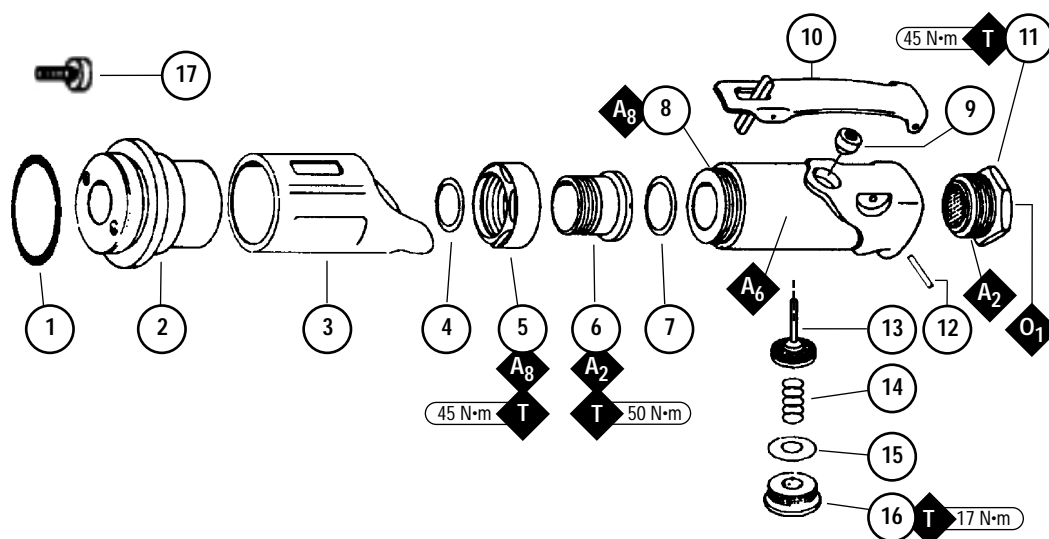
1	01794	Drive Wheel
2	14081	Spindle Adapter
3	04014	Set Screw
4	53186	Planetary Housing
5	01041	Grease Fitting
6	96508	Bearing
7	53191	Ring Gear
8	53193	Gear (2)
9	04026	Bearing (4)
10	53162	Planetary Carrier
11	53182	Gear Shaft (2)
12	02552	Bearing
13	53175	Insulator Collar
14	01007	Bearing
15	01121	Shim (3/pkg.)
16	53183	Front Bearing Plate
17	01010	Spacer
18	04017	Rotor
19	01185	Blades (4/pkg.)
20	01028	Cylinder
21	50767	Pin
22	01721	Rear Bearing Plate
23	02649	Bearing
24	01295	Housing
25	95558	Retaining Ring
26	01477	Valve Stem
27	01089	Throttle Lever
28	01017	Pin
29	95730	O-Ring
30	01024	O-Ring
31	01247	Speed Reg. Assy.
32	01464	Seal
33	01472	Tip Valve
34	01468	Spring
35	01564	Air Control Ring
36	95438	O-Ring
37	95711	Retaining Ring
38	94521	Muffler Base
39	94528	Felt Muffler
40	94522	Muffler Cap
41	95375	O-Ring
42	94526	Spacer
43	94523	Inlet Adapter
44	94519	Muffler Assembly



## Index Key

No.	Part #	Description
1	14064	O-Ring
2	07086	Adapter
3	07136	Handle Grip
4	02658	Packing
5	02631	Nut
6	02626	Adjustment Bushing
7	01746	O-Ring
8	07141	Valve Body Assembly (Incl. 07142 Bushing)
9	07142	Bushing
10	01089	Lever
11	01697	Inlet Bushing
12	01017	Pin
13	07168	Valve Stem Assembly
14	07145	Spring
15	07146	Packing
16	07147	Plug
17	95720	Screw (2)

## 07167 Throttle Valve Assembly



## Disassembly/Assembly Instructions - Dynangle II Slow Speed Motors

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

**Notice:** All of the special repair tools referenced in this manual can be ordered from Dynabrade.

Please refer to this parts page for the proper part identification.

### Planetary Housing Disassembly:

**Note:** The following instructions apply to both single and double planetary gear motors.

1. Disconnect the tool from the air supply.
2. Remove the 01794 Drive Wheel(s).
3. Remove the air motor(s) from the 14320 Housing.
4. Secure the mounting flats of the motor housing in a vise with aluminum or bronze jaws so that the 14081 Spindle Adapter is pointing up.
5. Use an adjustable pin spanner wrench to remove the planetary housing by turning it counterclockwise.
6. Remove the 04014 Set Screw(s) from the planetary housing.
7. Remove the planetary gear assembly(ies) from the planetary housing.
8. Fasten the 96346 Bearing Separator (2") between the rear 02552 Bearing and the 53191 Ring Gear to remove the bearing from the planetary carrier. Place the separator on the table of the 96232 Arbor Press (#2) so that the spindle adapter or the pinion are pointing toward the floor. Use the larger end of the 96214 Bearing Removal Tool to press the planetary carrier from the rear 02552 Bearing.
9. Remove the shafts and gears from the planetary carrier(s).
10. Remove the 14081 Spindle Adapter by carefully holding the 53162 Planetary Carrier in a vise with aluminum or bronze jaws. Use an adjustable wrench to remove the spindle adapter by turning it counterclockwise.
11. Use the bearing separator and the arbor press to remove the front 02552 or 96508 Bearing.

**Planetary Housing Disassembly Complete.**

### Motor Disassembly:

1. Once the planetary housing is removed from the motor housing pull the air motor from the housing.
2. Fasten the 96346 Bearing Separator (2") around the portion of the 01028 Cylinder that is closest to the 01721 Rear Bearing Plate. Place the separator on the table of the 96232 Arbor Press (#2) so that the pinion is pointing down. Use a 3/16" 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 01721 Rear Bearing Plate with the 96213 Bearing Removal Tool and the arbor press.
4. Position the flat side of the 53183 Front Bearing Plate against the bearing separator placing these on the arbor press with the pinion pointing up and push the rotor from the 01007 Bearing.
5. Push the 01007 Bearing out of the 53183 Front Bearing Plate and remove the shims.
6. Slip the 01010 Spacer off the rotor.

**Motor Disassembly Complete.**

### Valve Disassembly:

1. Secure the mounting flats of the motor housing in a vise with aluminum or bronze jaws so that the air inlet is pointing up.
2. Secure the 94523 Inlet Adapter with a wrench and remove the air fitting. **Important:** The 94523 Inlet Adapter must be held stationary with a wrench when the air fitting is installed or removed to avoid damage to the housing.
3. Remove the 94523 Inlet Adapter.
4. Remove the 95711 Retaining Ring and separate the 94521 Muffler Base from the 94522 Muffler Cap.
5. Remove the felt silencer.

6. Remove the **01564** Air Control Ring.
7. Use needle nose pliers to remove the **01468** Spring and the **01472** Tip Valve. The **01464** Seal can be picked out of the housing with a small screwdriver.
8. Use a 2.5 mm drive punch remove the **01017** Pin and throttle lever.
9. Remove the **95558** Retaining Ring and push the **01247** Speed Regulator Assembly along with the **01477** Valve Stem out of the housing.

**Valve Disassembly Complete.**

**Important:** Clean and inspect all parts before assembling.

### Valve Assembly:

1. Install the **01247** Speed Regulator Assembly (o-rings included) along with the **01477** Valve Stem into the housing and secure it in place with the **95558** Retaining Ring.
2. Install the **01464** Seal into the inlet opening of the housing.
3. Align the hole in the **01477** Valve Stem with the inlet opening of the housing.
4. Use needle nose pliers to install the **01472** Tip Valve so that the metal pin fits into the hole of the **01477** Valve Stem.
5. Install the **01468** Spring so that the small end of the spring fits against the tip valve.
6. To install the **94519** Muffler Assembly, apply a small amount of Loctite #567 (or equivalent) to the male threads of the **94523** Inlet Adapter. Install the muffler assembly onto the housing. (Torque to 23 N·m/200 in.-lbs.)

**Valve Assembly Complete.**

### Motor Assembly:

1. Install the **01010** Spacer onto the rotor.
2. Place .003" (.08 mm) thickness in shims from the **01121** Shim Pack into the **53183** Front Bearing Plate as an initial spacing. Install the **01007** Bearing into the **53183** Front Bearing Plate. Use the **96244** Bearing Press Tool against the inner race of the bearing and press the assembly onto the rotor.
3. Check the clearance between the rotor and the bearing plate by using a .001" (.03 mm) thick feeler gauge. The clearance should be a .001" (.03 mm) to .0015" (.04 mm) gap. If necessary adjust the clearance by repeating steps 1-3 changing shims as required. Once the proper rotor gap clearance is achieved, install blades that have been lubricated with the **95842** Dynabrade Air Lube (10W/NR or equivalent).
4. Install the **01028** Cylinder so that it rests against the **53183** Front Bearing Plate. Make sure that the air inlet holes of the cylinder line up with the air inlet holes in the **01721** Rear Bearing Plate. Install the **02649** Bearing into the **01721** Rear Bearing Plate. Use the **96240** Bearing Press Tool against the outer race of the bearing. Press this assembly onto the rotor. Use the **96240** Bearing Press Tool against the inner race of the bearing. **Important:** The fit must be snug between the bearing plates and the cylinder. If it is too tight the rotor will not turn freely. The rotor must turn freely while still maintaining a snug fit. A loose fit will not achieve proper preload of the motor bearings.
5. Secure the housing in a vise. Position the opening of the housing so that the motor cavity is pointing up.
6. Install the motor assembly into the housing making sure that the motor drops all the way into the housing. **Note:** Align the rear bearing plate node with the notch on the inside of the housing.

**Motor Assembly Complete.**

### Planetary Housing Assembly:

1. Press the front **02552** or **96508** Bearing onto the threaded or pinion end of the planetary carrier(s).
2. Secure the planetary carrier(s) in a vise with aluminum or bronze jaws.
3. Apply one drop of Loctite #271 (or equivalent) to the threads of the **53162** Planetary Carrier.
4. Install the spindle adapter onto the planetary carrier. (Torque to 17 N·m/150 in.-lbs.)
5. Apply a small amount of the **95542** Grease to the needle bearings, the planetary gears, and the gear shafts. Install these into the planetary carrier(s).
6. Position the **53191** Ring Gear(s) over the planetary gear assembly(ies) so that the notches in the ring gear(s) will align with the set screw and grease fitting openings in the **53186** Planetary Housing.
7. Press the rear **02552** Bearing onto the planetary carrier(s) until the outer race of the bearing touches the ring gear(s).
8. Install the complete planetary gear assembly(ies) into the planetary housing. Apply a small amount of the Loctite #567 (or equivalent) to the **04014** Set Screw(s) and install.
9. Install the **53175** Insulator Collar onto the planetary housing.
10. Apply a small amount of the Loctite #567 (or equivalent) to the threads of the motor housing and align the pinion and planetary gears when installing the planetary housing onto the motor housing. (Torque to 28 N·m/250 in.-lbs.)
11. Lubricate planetary gears through the **01041** Grease Fitting(s), apply 2-3 plunges of the **95542** Grease with the **95541** Grease Gun initially, and there after for every 50 hours of use.

**Planetary Housing Assembly Complete. Tool Assembly Complete.**

## Machine Specifications

Model Number	Motor HP (W)	Motor RPM	Sound Level	Abrasive Belt Size Inch (mm)	Maximum Air Flow CFM/SCFM (LPM)	Max. SFPM (SMPM)	Weight Pound (kg)	Length Inch (mm)	Height Inch (mm)
14308	.7 (522)	3,400	82 dB(A)	2 (51) W x 34 (864) L	5/35 (977)	2,200	19.2 (8.7)	18-7/8 (479)	8-1/2 (216)
14309	.7 (522)	3,400	82 dB(A)	2 (51) W x 34 (864) L	10/70 (1,982)	621	19.2 (8.7)	18-7/8 (479)	8-1/2 (216)
14310	.7 (522)	3,400	82 dB(A)	2 (51) W x 34 (864) L	5/35 (977)	2,200	19.2 (8.7)	18-7/8 (479)	9-9/16 (243)
14311	.7 (522)	3,400	82 dB(A)	2 (51) W x 34 (864) L	10/70 (1,982)	621	19.2 (8.7)	18-7/8 (479)	9-9/16 (243)
14312	.7 (522)	950	84 dB(A)	2 (51) W x 34 (864) L	5/35 (977)	621	19.2 (8.7)	18-7/8 (479)	8-1/2 (216)
14313	.7 (522)	950	84 dB(A)	2 (51) W x 34 (864) L	5/35 (977)	621	19.2 (8.7)	18-7/8 (479)	9-9/16 (243)

Additional Specifications: Air Inlet Thread 1/2" NPT • Hose Size 1/2" (15 mm) • Air Pressure 90 PSIG (6.2 Bars)

# 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.
5. Air tools are not intended for use in explosive atmospheres and are not insulated for contact with electrical power sources. Sanding/Grinding certain materials can create explosive dust. It is the employers responsibility to notify the user of acceptable dust levels. Sanding/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.

## 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 20 SCFM (example: if the tool specification states 40 SCFM, set the drip rate of your filter-lubricator at 2 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: **11289** 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 CFM @ 100 PSIG has 3/8" NPT female ports.
5. Use only genuine Dynabrade replacement parts. To reorder replacement parts, please specify the **Model #**, **Serial #** and **RPM** of your machine.
6. A Motor Tune-Up Kit (P/N 96260) is available which includes assorted parts to help maintain motor in peak operating condition.
7. 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.
8. DO NOT clean or maintain air tools with chemicals that have low flash point (example: WD-40®).

## 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.

## Optional Accessories



### Dynamawivel®

- Swivels 360° AT TWO PIVOT POINTS allowing the air hose to drop directly to the floor while providing superb tool handling.
- 95462** – 1/2" NPT.



### 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)



### 96213, 96214 Bearing Removal Tool

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



### 96240, 96244 Bearing Press Tool

- This tool is used to safely press a bearing into a bearing plate or onto a shaft.



### 96232 #2 Arbor Press

- This arbor press is ideal for the disassembly and assembly of air motors.



### 96260 Motor Tune-Up Kit

- Includes assorted parts to help maintain and repair motor.



### 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.

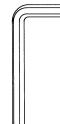
### 95541 Push-type Grease Gun

- One-hand operation.



### 96346 Bearing Separator

- Use this separator to remove bearings and gears.



### 95049 Hex Key Wrench

- (3/16") This wrench is used for the removal and installation of hex screws.

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

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



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