

**Parts Manual**

**45-8168**

PL30-1222-2

04/21/2011



**DOTCO®**

**12-22 Series  
Right Angle Grinders & Sanders**

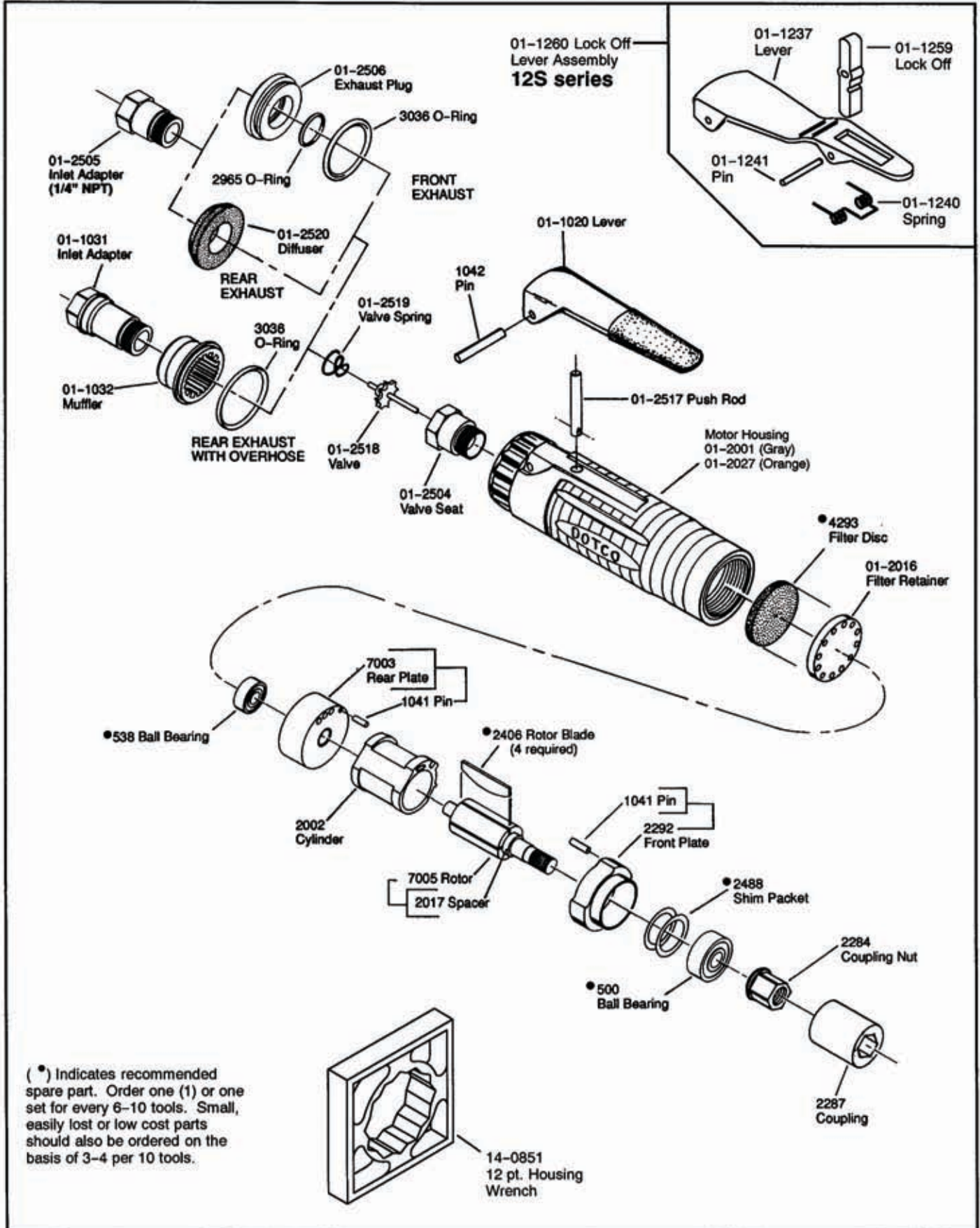


	<b>12</b>	<b>X</b>	<b>2</b>	<b>2</b>	<b>XX</b>	<b>-</b>	<b>XX</b>	<b>XX</b>	<b>OH</b>
Product Classification									
<b>12</b> = Ergo Grinder/Sander									
Trottle Type									
<b>L</b> = Locking Lever									
<b>S</b> = Locking Lever									
Motor Size									
<b>2</b> = 0.6 hp									
Handle Style									
<b>2</b> = Angle									
Speed Options (RPM)									
<b>Front Exhaust</b>	<b>Rear Exhaust</b>								
<b>50</b> = 6,000	<b>80</b> = 6,000								
<b>51</b> = 9,000	<b>81</b> = 9,000								
<b>52</b> = 11,000	<b>82</b> = 11,000								
Termination Code									
<b>01</b> = 200 Series Collet									
<b>80</b> = 5/8-11 External Thread Spindle									
Optional Collet (no extra cost)									
<b>08</b> = 1/8"	<b>18</b> = 9/32"	<b>M6</b> = 6mm							
<b>10</b> = 5/32"	<b>20</b> = 5/16"	<b>M8</b> = 8mm							
<b>12</b> = 3/16"	<b>22</b> = 11/32"								
<b>14</b> = 7/32"	<b>24</b> = 3/8"								
Overhose Option (extra cost)									
<b>OH</b> = Overhose (rear exhaust models only)									

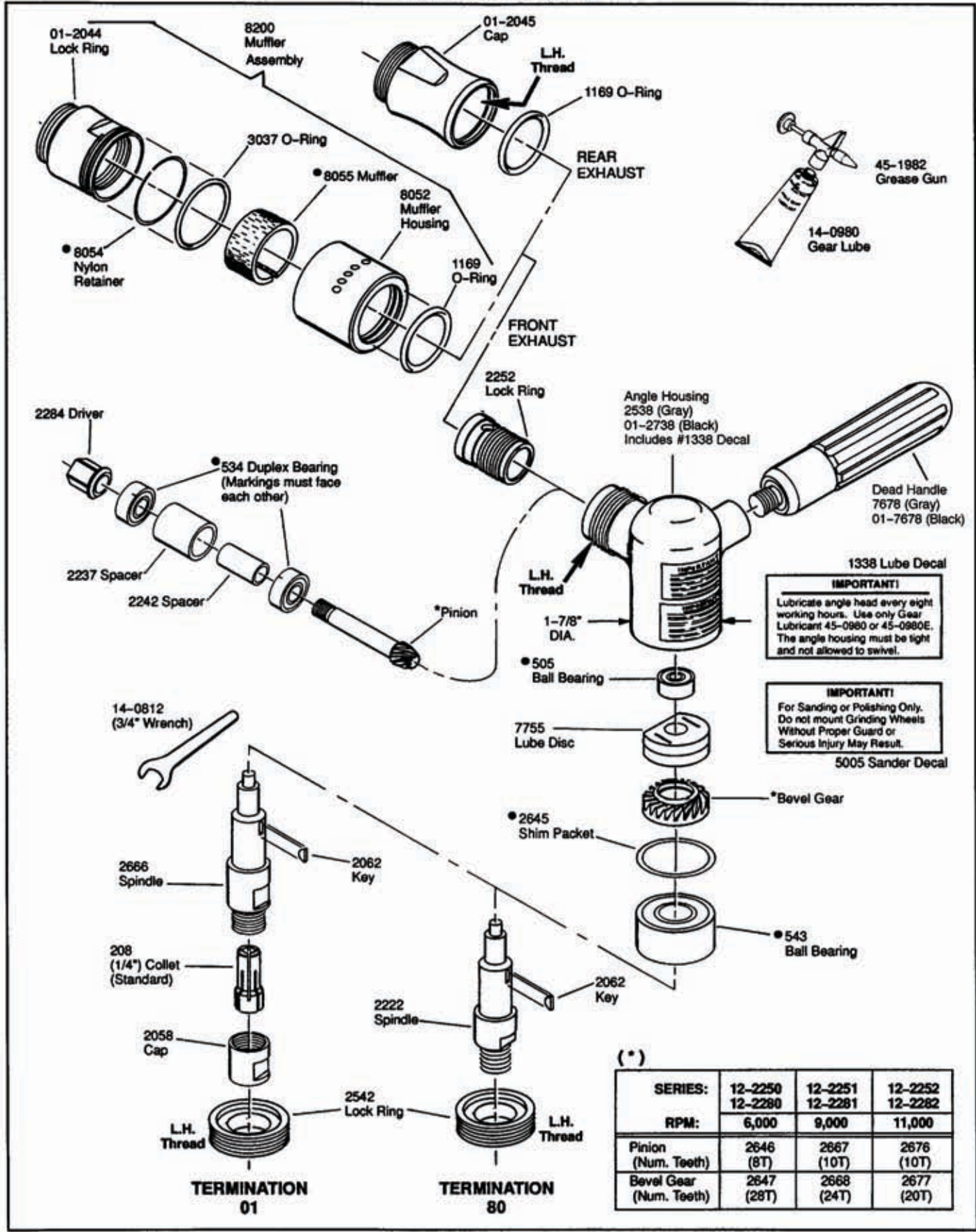
*For additional product information visit our website at:*

<https://dotcotool.com/product-category/dotco-air-tools/dotco-sanders/dotco-right-angle-sanders/dotco-12-22-series-right-angle-sanders/>

**DOTCO®**  
**12-22 Series ERGO Right Angle Sanders**  
**Motor & Motor Housing Assemblies**



**DOTCO®**  
**12-22 Series ERGO Right Angle Sanders**  
**Angle Head Assembly**



**1338 Lube Decal**

**IMPORTANT!**  
Lubricate angle head every eight working hours. Use only Gear Lubricant 45-0980 or 45-0980E. The angle housing must be tight and not allowed to swivel.

**IMPORTANT!**  
For Sanding or Polishing Only. Do not mount Grinding Wheels Without Proper Guard or Serious Injury May Result.

**5005 Sander Decal**

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SERIES:	12-2250 12-2280	12-2251 12-2281	12-2252 12-2282
RPM:	6,000	9,000	11,000
Pinion (Num. Teeth)	2646 (8T)	2667 (10T)	2676 (10T)
Bevel Gear (Num. Teeth)	2647 (28T)	2668 (24T)	2677 (20T)



## INSTALLATION

For best tool performance, a working air pressure of **90 pounds per square inch** is recommended. Piping, fittings and hose should be adequate to maintain **90 psig** while the tool is in operation. An air line filter and lubricator, such as Cooper Power Tool's #F02-M Filter (1/4" NPT) and #L02-EP Lubricator (1/4" NPT) should be used (**refer to Cooper's "F-R-L" brochure**). Hose should be blown out before attaching to the tool.

## LUBRICATION

The gears in the angle head must be lubricated every 8 hours of operation with a high quality gear grease. Cooper Power Tool's Grease #45-0980 is recommended. Cooper's Grease Gun # 45-1982 is furnished with each tool. Insert the nozzle into the flush type lube fitting, located in the side of the angle head, and pump four or five times. The motor must be lubricated and free of moisture. Use a high grade SAE #5

spindle oil, such as Cooper's Lubricating Oil #45-0918 (*one quart*). Two or three drops per minute should be sufficient.

## LOSS OF POWER

It is seldom necessary to disassemble this tool for loss of power. A loss of power may not be related to the tool. First, check the air line regulator. Also check the air line pressure; it should be 90 psig at or near the tool while it is running. Check the size of hose and fittings to be certain they are not causing air restrictions. Make certain they are not plugged with dirt, rust or scale.

## SERVICE INSTRUCTIONS

Do not squeeze tool or parts in a vise except as specified. Care must be used in their assembly and disassembly. When pressing bearings onto a shaft, press only on the inner race. When pressing bearings into a bore, press on the outer race only. **NOTE:** ball bearings are the shielded type. They are lubricated for life by the bearing manufacturer and should not be washed out with solvents to clean.

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## DISASSEMBLY INSTRUCTIONS

### To Disassemble Complete Sander

1. Place the special 12—point socket wrench, *part #14-0851*, horizontally in a vise and insert the tool's housing vertically into the wrench. Unscrew Cap (*part #01-2045, rear exhaust tools*) or Lock Ring (*part #01-2044, front exhaust tools*) and remove the angle head assembly.

2. **To remove & disassemble motor:** Unscrew Lock Ring (or Cap) and pull motor from housing. Hold motor in one hand and tap the rear of rotor (*part #7005*) with a brass drive punch until Rear Plate (*part #7003*) and Ball Bearing (*part #538*) are free from rotor. Remove Cylinder (*part #2255*) and four Rotor Blades (*part #2006*).

Driver (*part #2284*) may be removed by holding the rotor in soft vise jaws and unthreading the driver. The Front Plate (*part #2292*) and Ball Bearing (*part #500*) can now be pressed off (**NOTE:** do not lose Spacer - *part #2017*).

3. **To disassemble angle head:** Remove Lock Ring (*part #2252*) and pull out the pinion assembly. If this assembly cannot easily be removed, tap lightly on the pinion end of the housing with a small plastic mallet, use care not to hit head enough to damage threads or to raise burrs on housing end. To disassemble pinion assembly, the pinion gear may be held in soft vise jaws while unscrewing the Driver (*part #2284*). Press off the first half of the duplex bearing (*part #534*) from pinion. Remove two spacers. Press off the second half of the duplex bearing.

To disassemble the output spindle assembly, unscrew Lock Ring (*part #2542 - NOTE: LH thread*) and pull out spindle assembly. Remove Bearing (*part #505*) and press off bevel gear. After Key (*part #2062*) is removed, Bearing (*part #543*) can be pressed off of spindle.



## ASSEMBLY INSTRUCTIONS

All parts should be thoroughly cleaned and inspected before assembly. Ball bearings are normally replaced in most repairs.

### To assemble motor:

4. Make sure all parts are clean and oiled. Press Pins (*part #1041*) —if necessary— into the motor end plates. To correct for bearing tolerances, it is necessary to use shims to maintain correct clearances between the ends of the rotor and the bearing plates. Shim Packet (*part #2488*) contains a 0.001" shim and two 0.002" shims. Insert a 0.002" Shim in the Front Bearing Plate's pocket and install #500 Ball Bearing into the Front Plate. Also, install #538 Ball Bearing into the Rear Bearing Plate, #7003. Slip Spacer, *part #2017*, onto the threaded end of the Rotor. Support the rotor on the *rear end* and assemble the front plate assembly onto the rotor by pressing on the bearing's inner race. Thread Driver (*part #2284*) onto rotor tightly by holding rotor in soft vise jaws.

5. Hold rotor in left hand and front bearing plate in the other hand. Apply an outward (pulling) pressure and observe the spacing between the end of the rotor and bearing plate. This must be from flush, not rubbing, to 0.002" maximum. If the rotor rubs the bearing plate, reduce the spacing between the bearing and bearing plate by removing the 0.002" shim entirely or by substituting the 0.001" shim for the 0.002" shim. However, if there was more than 0.002" between the bearing and bearing plate, **add 0.001"** between the bearing and bearing plate. Install Cylinder (*part #2002*) – NOTE: BE SURE CYLINDER IS NOT ON BACKWARDS, air inlet in cylinder must line up with air inlet in Rear Plate (*part #7003*) when Pin (*part #1041*) in engaged in mating slot of cylinder.

6. Insert all four Rotor Blades (*part #2006*) in rotor. Support the assembly on the face of the Driver (*part 2284*). Press on the Rear Plate (*part #7003*) by pressing on the inner race of Ball Bearing (*part #538*) just enough to bring the bearing plate up against the cylinder. There should be only a slight drag between the bearing plate and the cylinder when these are moved in the fingers. Position cylinder until motor turns freely.

7. Insert motor assembly into housing. Screw in Lock Ring (*part #01-2044, front exhaust tools*) or Cap (*part #01-2045, rear exhaust tools*) but do not tighten Lock Ring or Cap at this time. Check the assembly by spinning the driver – it must spin finger free.

### To assemble angle head:

NOTE: do not place grease in angle head assembly until the proper gear mesh is obtained. Refer to instructions, below.

8. Make certain all parts are properly cleaned. Press Ball Bearing (*part #543*) against spindle shoulder; press only on bearing's inner race. Insert Key (*part #2062*) in slot of

spindle. Align keyway of bevel gear with key and press gear onto spindle until it seats on inner race of bearing. Complete the spindle assembly by pressing on Ball Bearing (*part #505*) until it seats on spindle's shoulder.

**NOTE: LUBE DISCS ARE NOT INSTALLED UNTIL AFTER GEAR MESH IS OBTAINED BY PROPER SHIMMING.**

Insert this assembly into housing and thread Lock Ring (*part #2542* – NOTE: **LH thread**) into housing until tight.

9. To assembly the pinion assembly, press one half of duplex bearing (*part #534*) onto pinion, taking care to keep the small marking (refer to drawing on exploded view) facing the other half of the duplex bearing. Slip inner Spacer (*part #2242*) and outer Spacer (*part #2237*) over pinion. Press second half of the duplex bearing onto the pinion taking care to keep the small marking on the bearing in line, and facing, the marking on the other bearing. Screw on Driver (*part #2284*) and tighten. Install the pinion assembly into the angle housing, making sure that the gear teeth of the pinion mesh with the bevel gear by revolving the spindle slowly. Screw in Lock Ring (*part #2252*) and tighten.

### Gear mesh and shimming:

Pinion assembly and spindle assembly (without Lube Discs) should be in angle housing and held in place with both Lock Rings tightened, per above instructions. Gears must be shimmed at this time according to the following instructions.

When proper shimming is obtained, remove spindle assembly from the angle head, remove top Ball Bearing (*part #505*) and install Lube Disc (*part #7755*). Discs must be filled with Cooper's Lube #45-0980 prior to assembly on the spindle. Reinstall spindle assembly into the housing aligning flats on lube disc with pinion gear and tighten lock ring.

10. Due to gear manufacturing and bearing tolerances, it is sometimes necessary to place a thin shim between the outer race of Bearing (*part #543*) and the internal shoulder of angle housing (*part #2538*) against which it seats. There should be a backlash of 0.002" – 0.003" between the two gears. After the angle head spindle and angle head pinion have been assembled and before any lubricant has been applied to the gears, slowly rotate the spindle back-and-forth a few degrees with the fingers. If the gears are in mesh but no backlash can be felt, remove the spindle's Lock Ring (*part #2542*), remove spindle assembly and position two shims, each 0.001" thick (*from shim packet, part #2645*) on the outer race of Bearing (*part #543*). Use a little grease to hold shims on bearing. Reassemble components and again follow procedure.

If there is still not sufficient backlash, add another shim. Shim Packet (*part #2645*) contains two 0.001" and one 0.003" thick shims. It is suggested that when a gear is worn out that **both** gears be replaced.



**To assemble complete angle head assembly to the motor:**

**front exhaust tools –**

Install a new Muffler (*part #8055*) into Muffler Housing (*part #8052*) and an O-Ring (*part #3037*) over Lock Ring (*part #01-2044*). Position a new Nylon Retainer (*part #8054*) into the second groove of Lock Ring and install the muffler housing onto the Lock Ring.

**all tools –**

Thread the angle head assembly into the Cap (rear exhaust

tools) or Lock Ring (front exhaust tools) – NOTE: LH threads – revolving the angle assembly with the Cap or Lock Ring. Before tightening, position the angle head assembly approximately in the desired position and hold both housings while tightening the Cap (or Lock Ring).

**Pre Operation Inspection**

Before tool is connected to the air line, be sure spindle turns freely. Tools should not be operated if there is any rubbing or binding in the assembly. Add a few drops of oil to tool before testing.



**WARNING!**

**CHECK SPEED OF TOOL WITHOUT WHEEL BEFORE IT IS RELEASED FOR USE**

The SPEED TOLERANCE is rated speed minus 10%. The tool must NOT have a free speed higher than the RPM stamped on the housing. Use an accurate tachometer to check the speed, with 90 PSIG air pressure at the tool while running.



## Sales & Service Centers

**Note:** All locations may not service all products. Please contact the nearest Sales & Service Center for the appropriate facility to handle your service requirements.

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**Apex Tool Group  
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1470 Post & Paddock  
Grand Prairie, TX 75050  
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Fax: 972-641-9674

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