COOPER Tools

# Parts Manual • Ersatzteil–Liste

**PL31-14CF** September 10, 2002

DOTCO®

45-8439

## 14CF...Series

0.4hp Pistol Grip Drills



**TOOL CLASSIFICATION**
14= ERGO Drill Series

| 14 | C | F | S | xx | - | xx | NL |
|---|---|---|---|---|---|---|---|

**THROTTLE TYPE**
C= Trigger Actuated

**MOTOR SIZE**
.4 hp

**HANDLE STYLE**
S= Small Handle

**SPEED CODE**
**90 =** 29,000 RPM
**91 =** 5,200 RPM
**92 =** 3,800 RPM
**93 =** 3,200 RPM
**94 =** 2,400 RPM
**95 =** 1,000 RPM
**96 =** 700 RPM
**97 =** 600 RPM

**OPTIONAL**
**Indicates Model With *Oil Less* Blades (extra cost option)**

**TERMINATION CODES**
**37 =** 5/32” Jacobs Chuck
**38** = 1/4” Jacobs Chuck (#1BA)
**40** = No Chuck
**42** = 1/4” Jacobs Chuck (#7BA)
**47** = 3/8” Jacobs Chuck (#22BA)
**51** = 3/8” Jacobs Chuck (#41BA
**53** = 1/2” Jacobs Chuck (#33B)
**54** = 1/4” Internal Hex Slip Chuck
**56** = 3/8” Keyless

***IMPORTANT: Read and comply with safety and operating instructions contained in this manual.***

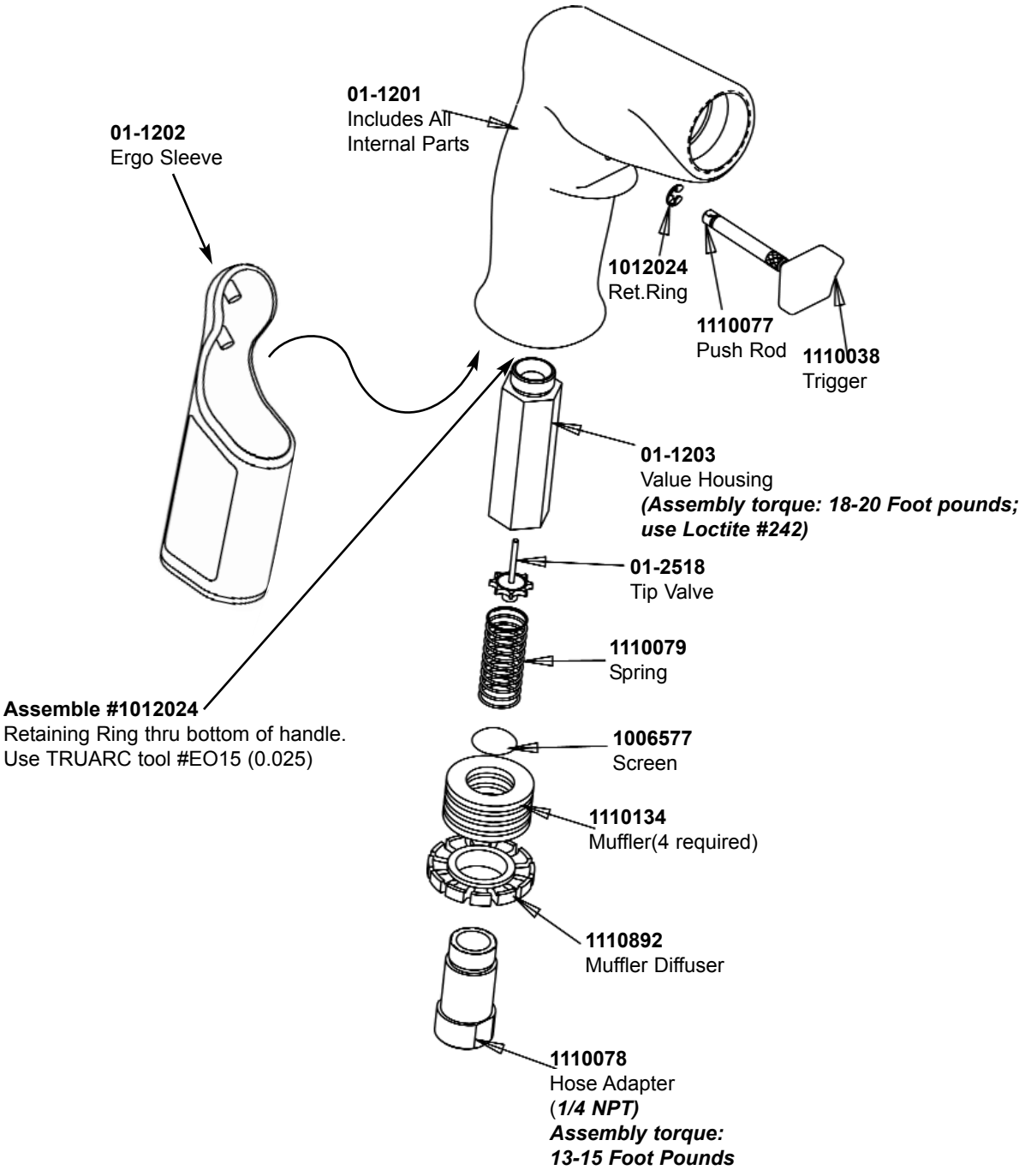
**For additional product information visit our website at http://www.coopertools.com**

**CooperTools**
P.O. Box 1410
Lexington, SC 29071-1410

DOTCO

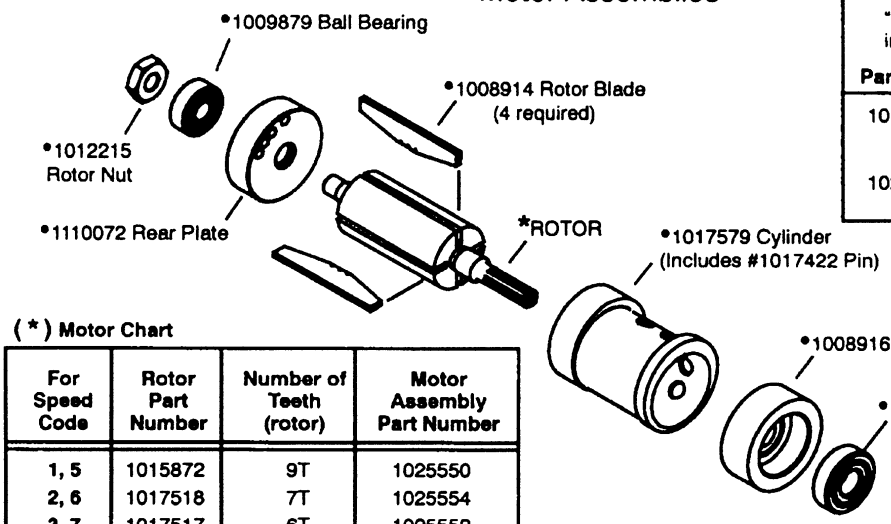
## 14CFS Series Pistol Grip Drills

**Model Series: 14CFS**
**(Small Handle)**



# 14CFS Series Pistol Grip Drills

## Motor Assemblies




**( * ) Motor Chart**

| For Speed Code | Rotor Part Number | Number of Teeth (rotor) | Motor Assembly Part Number |
|---|---|---|---|
| 1, 5 | 1015872 | 9T | 1025550 |
| 2, 6 | 1017518 | 7T | 1025554 |
| 3, 7 | 1017517 | 6T | 1025552 |
| 4 | 1017516 | 5T | 1025556 |
| 0 | 1110122 | 9T | 1025618 |

**"OIL-LESS" ROTOR BLADES**

"Oil-Less" rotor blades can be assembled in tools at extra cost, as follows.

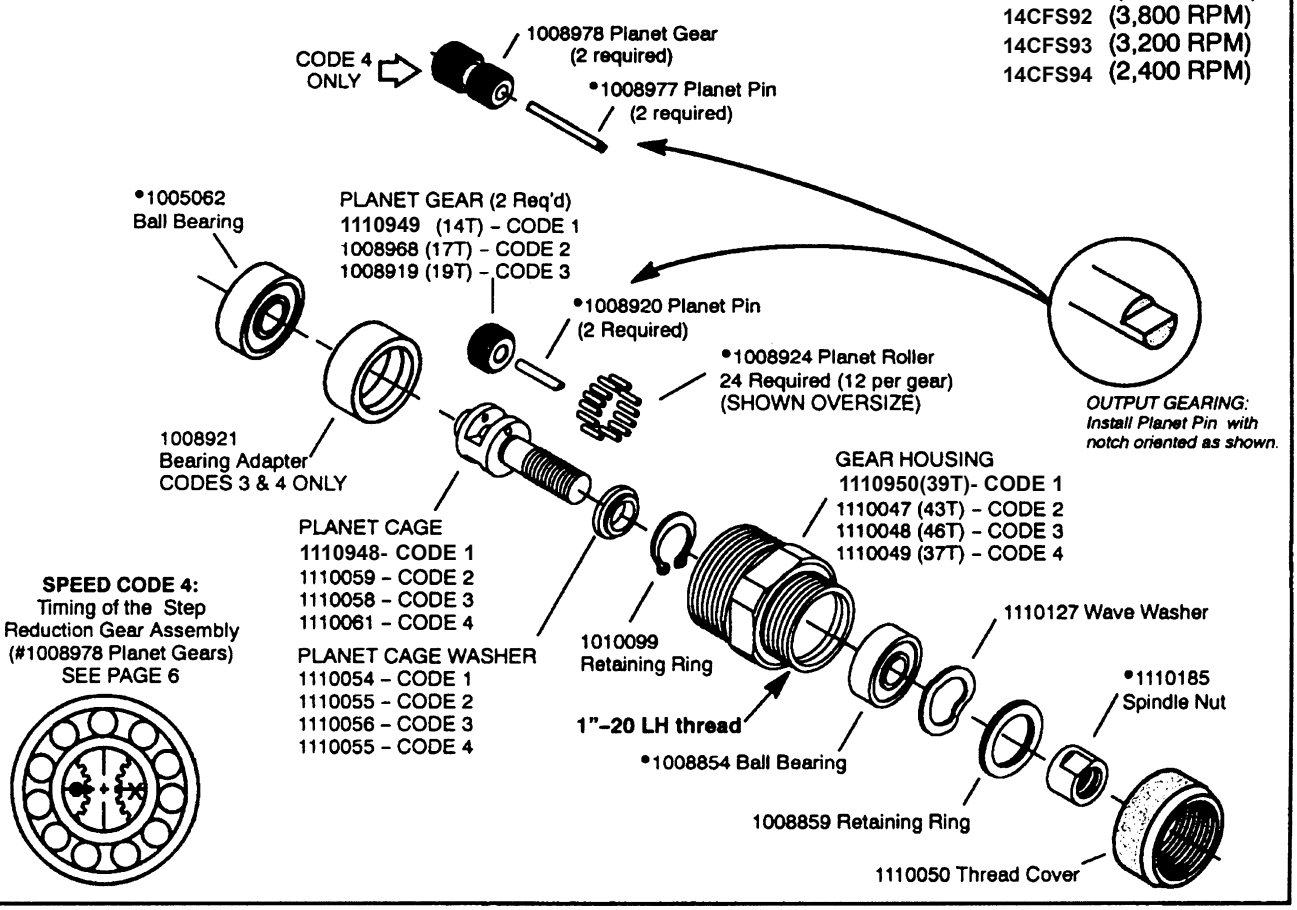
| Part Num. | Description |
|---|---|
| 1019725 | (4 each) blades installed by factory in tools. Order in tool by adding **NL** to end of model code. |
| 1025414 | Package of 100 (not assembled in tools) |

( • ) Indicates recommended spare part. Order one (1) or one set for every 6-10 tools. Small, easily lost or low cost parts should also be ordered on the basis of 3-4 per 10 tools.

## Output Planetary Gearing

SINGLE STAGE:

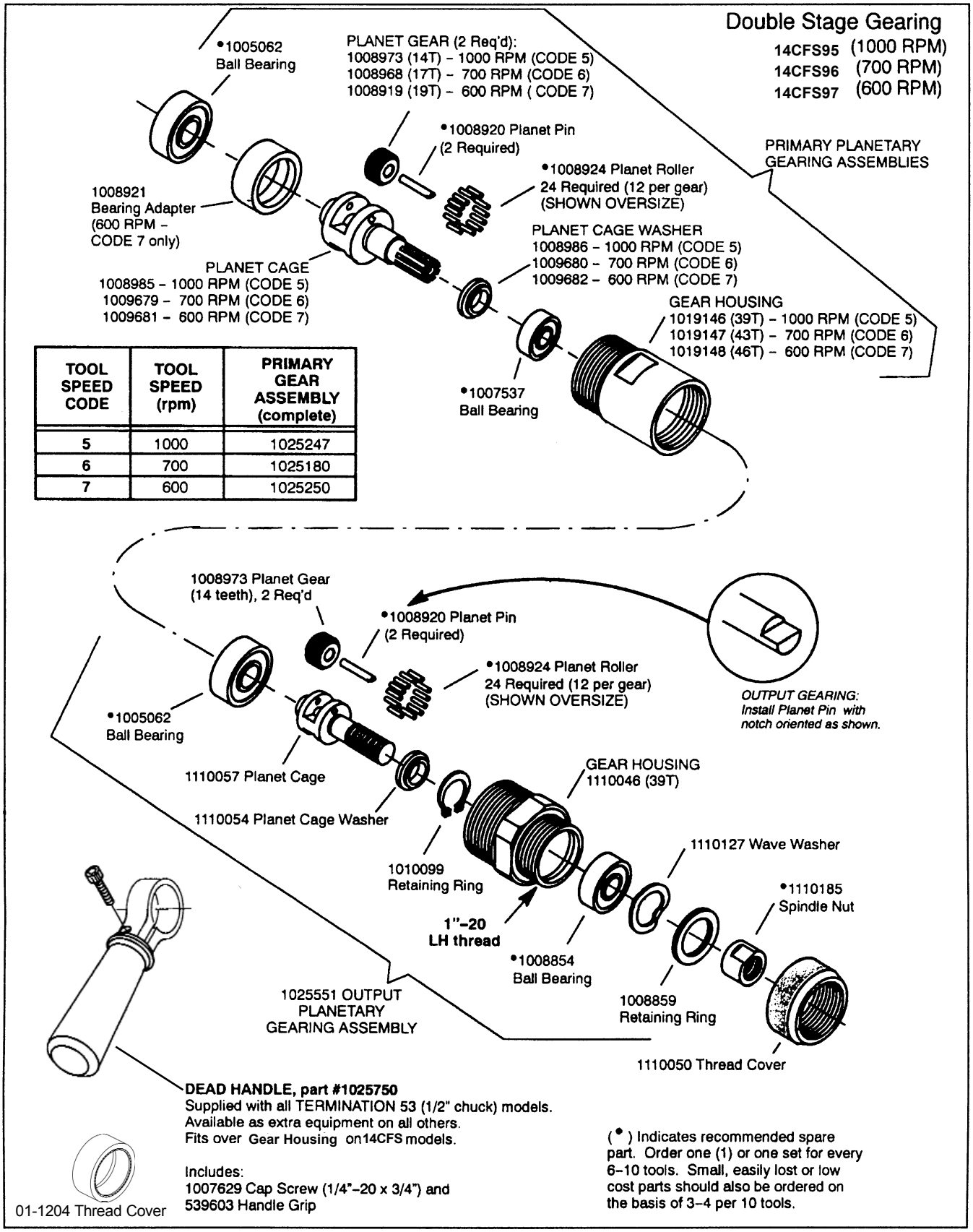
14CFS91 (5,200 RPM)
14CFS92 (3,800 RPM)
14CFS93 (3,200 RPM)
14CFS94 (2,400 RPM)




**SPEED CODE 4:**
Timing of the Step Reduction Gear Assembly (#1008978 Planet Gears)
SEE PAGE 6

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## 14CFS Series Pistol Grip Drills

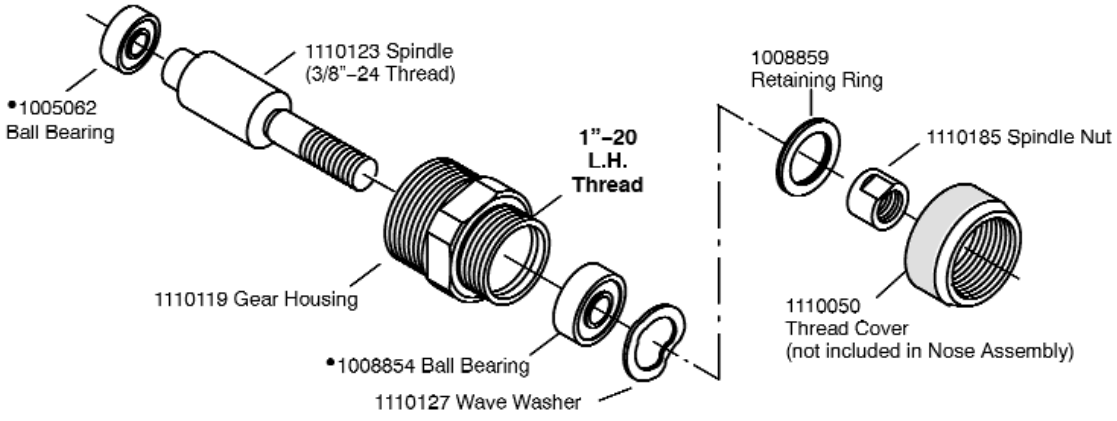



| TOOL SPEED CODE | TOOL SPEED (rpm) | PRIMARY GEAR ASSEMBLY (complete) |
|---|---|---|
| 5 | 1000 | 1025247 |
| 6 | 700 | 1025180 |
| 7 | 600 | 1025250 |

## 1025595 Nose Assembly

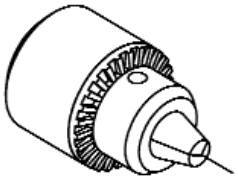
Speed Code "0" (29,000 rpm)

Models: 14CFS90–xx




## Drill Chuck Terminations

Terminations 37, 38, 42, 47, 51, 53 & 56

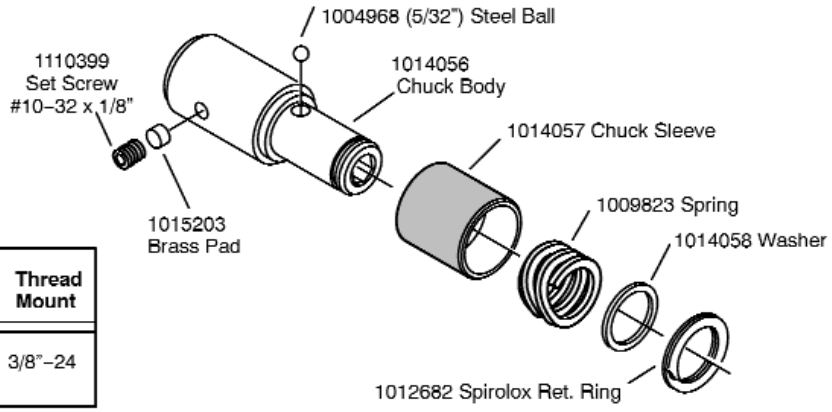


**Drill Chuck Options, includes:**

| Termination Number | Chuck Part Number | Chuck Capacity | Thread Mount | Jacobs Description |
|---|---|---|---|---|
| **–37** | 1075 (w/ 620Chuck Key) | 0 – 5/32" | 5/16"–24 | **#0B** (smooth sleeve) |
| **–38** | 1005078 (w/1005079 Chuck Key) | 0 – 1/4" | 3/8"–24 | **#1BA** (smooth sleeve) |
| **–42** | 1001505 (w/1005023 Chuck Key) | 0 – 1/4" | 3/8"–24 | **#7BA** (fluted sleeve) |
| **–47** | 863420 (w/Jacobs #KG Chuck Key) | 0 – 3/8" | 3/8"–24 | **#22BA** (fluted sleeve) |
| **–51** | 1001252 (w/1006375 Chuck Key) | 0 – 3/8" | 3/8"–24 | **#41BA** (smooth sleeve) |
| **–53** | 1009726 (w/1005022 Chuck Key) | 5/64" – 1/2" | 3/8"–24 | **#33BA** (fluted sleeve) |
| **–56** | 1110945 (Keyless Chuck) | 0 – 3/8" | 3/8"–24 | |

## 1021679 Quick Change "Slip Chuck" Termination

Termination 54




| Termination Number | QC Chuck Part Number | Output Spindle | Thread Mount |
|---|---|---|---|
| **–54** | 1021679 | 1/4" hex (internal) | 3/8"–24 |

## LUBRICATION

**Air Motor Lubrication**
Use "**Air Lube 10H−NR**" which has a paraffin base. Air Lube is available from CooperTools in one gallon containers by ordering part number 533485. In−line oilers should be used, adjusted to yield about one drop per minute (not per cycle) initially. Oiler adjustments vary (50 clicks/drop, 20 clicks/drop, etc.). If in doubt, contact your supplier. Each time the tool cycles, a drop or partial drop is released into the tool.

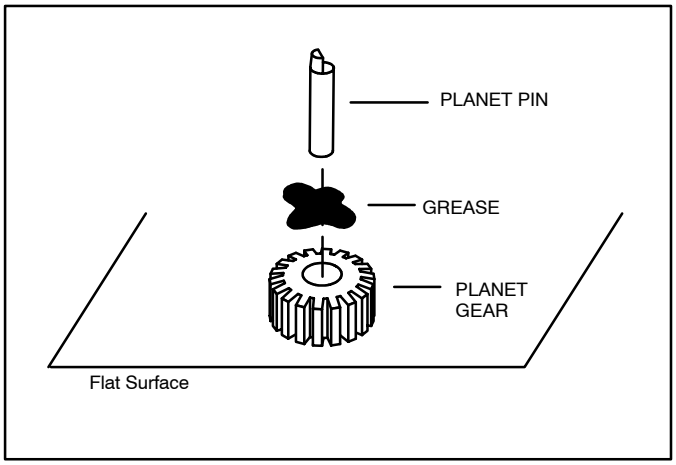
**Planetary Gear Lubrication**
Use teflon grease, available from CooperTools in one pound cans, under part number 513156. Establish a routine inspection and re−lubrication program, **don't short cut.** Re−lubricate planetary by filling 1/3 to 1/2 full. Midget grease fittings are provided on the gear housings and internal gears for external lubrication.

During periodic maintenance, re−lubrication or service where the gears are not replaced, use Cooper's teflon grease. Fill 1/3 to 1/2 full but do not overfill. Too much grease will cause overheating.

## GEARING REASSEMBLY

### Planetary Gearing

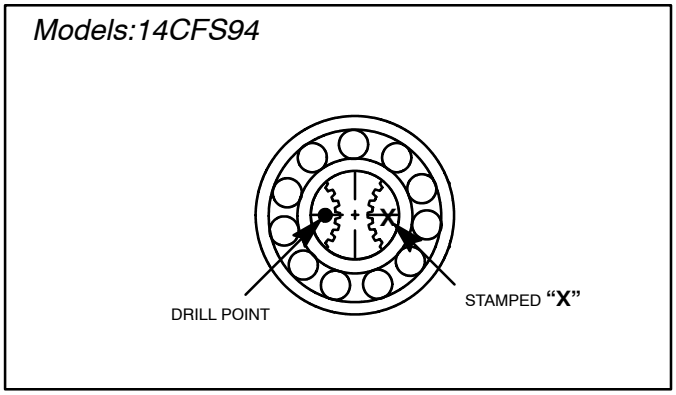
Place a small amount of grease in each planet gear, as illustrated at right, and place on a smooth clean surface. Insert a planet pin — notched end up — in each gear. Then, install the correct number of rollers (12) around each gear. Grease will hold the rollers in position when the planet gears are removed.




### Timing of the Step Reduction Gear Assembly:

Assemble the planet gears into the planet cage, making sure the notched planet pins fit over the planet cage washer. Rotate each gear until the aligning hole — on the end of one gear — is diametrically opposite the **"X"** mark of the other gear. Hold the gears in this position and slip the planet cage into the internal gear. It's important to avoid "wiping out" the gear teeth.

This is the only position where the gear teeth are lined up.




## MOTOR REASSEMBLY

1. Install ball bearings into both the front and rear plates.
2. Assemble rotor to rear plate/bearing assembly with the rotor's retaining nut. **Position and set the rotor as close as possible to the rear plate, without dragging or rubbing.**

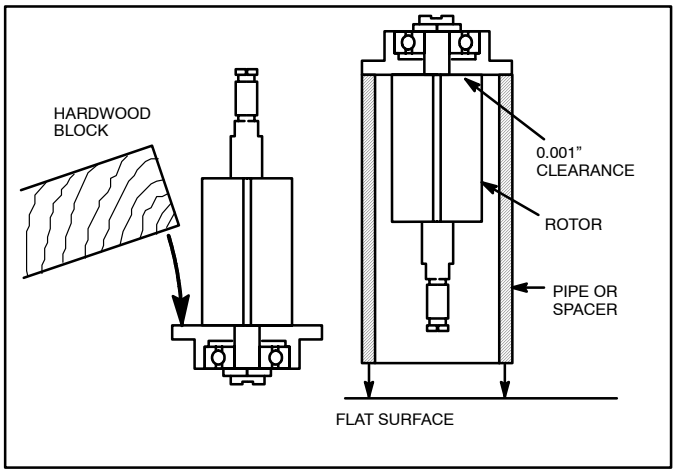
a. A good practice is to stone the blade slots and polish the ends with a medium grit emery cloth.

b. Assemble components making sure the bearing is firmly seated in the rear plate.

3. Begin tightening rotor nut without overtightening to avoid damaging the ball bearing. Alternately spin the rotor while tightening until clearance is judged to be proper — **about 0.001" clearance**.

a. One method, shown at right, is to use a piece of pipe which is slightly longer than the rotor, and tap lightly against a work bench several times. This helps seat threaded components.

b. A second method is to hold the rotor/rear plate assembly vertically (plate downward) and lightly strike the edge of the plate with a wood block, alternating sides.




## PARTS INSPECTION

1. Wash all parts except ball bearings in solvent. Dry and place on a clean cloth for inspection.
2. Check ball bearings for wear. Bearings should turn smoothly with no appreciable shake or looseness.
3. Check rotor blades for wear by comparing with a new blade. Replace if worn more than 1/32" in height.
4. Check motor cylinder for grooves, gouges or pitting. Honing is permissible, however, never remove more than about 0.001" or 0.002" of material. Replacement is usually recommended.

## RECOMMENDED SPARE PARTS LIST

*These parts are suggested as a recommended inventory of spare parts. Where parts are small, low cost, or easily lost we recommend stocking 3 to 4 for every 10 tools. Other larger, lower wear or more expensive parts should be maintained as one (or one set) for every six to ten tools.*

| Part Number | Description | Quan Per Tool | Recommended Spare Pts | |
|---|---|---|---|---|
| | | | Per Tool | Per 10 Tools |
| 1005062 | Ball Bearing (Codes 0–4)<br>Ball Bearing (Codes 5–7) | 1<br>2 | 1<br>2 | 2<br>4 |
| 1006577 | Screen | 1 | 2–3 | 3–4 |
| 1007537 | B. Bearing (Codes 1–4)<br>B. Bearing (Codes 5–7) | 1<br>2 | 1<br>2 | 2<br>4 |
| 1008173 | O–Ring | 1 | 2–3 | 3–4 |
| 1008854 | Ball Bearing | 1 | 1 | 2 |
| 1008914 | Rotor Blade | 4 | 4 | 20 |
| 1008916 | Front Plate | 1 | 0 | 2 |
| 1008920 | Planet Pin (Codes 1–3)<br>Planet Pin (Codes 5–7) | 2<br>4 | 2<br>4 | 4<br>8 |

| Part Number | Description | Quan Per Tool | Recommended Spare Pts | |
|---|---|---|---|---|
| | | | Per Tool | Per 10 Tools |
| 1008924 | Plan. Roller (Codes 1–3)<br>Plan. Roller (Codes 5–7) | 24<br>48 | 24<br>48 | 50<br>100 |
| 1008977 | Planet Pin (Code 4) | 2 | 2 | 4 |
| 1009879 | Ball Bearing | 1 | 1 | 2 |
| 1012215 | Rotor Nut | 1 | 1 | 2 |
| 1017579 | Cylinder | 1 | 1 | 2 |
| 1110072 | Rear Plate | 1 | 0 | 2 |
| 1110170 | O–Ring | 1 | 2–3 | 3–4 |
| 1110134 | Muffler | 4 | 4 | 8 |
| 1110185 | Spindle Nut | 1 | 1 | 2 |

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# Safety First!

**ALWAYS COMPLY WITH:**

1. General industry Safety & Health Regulations, Part 1910, OSHA 2206, available from: Sup't of Documents; Government Printing Office; Washington, DC 20402.
2. Safety Code of Portable Air Tools, ANSI B186.1 available from: American National Standards Institute, Inc.; 1430 Broadway; New York, NY 10018.
3. State and Local regulations.

Portions of the above codes and regulations are listed below for quick reference.

**THE FOLLOWING EXCERPTS ARE NOT INTENDED TO BE ALL INCLUSIVE: STUDY AND COMPLY WITH ALL REGULATIONS!**

1. TOOL INTENT: Tools shall be used only for purposes intended in their design (refer to product catalog).
2. AIR SUPPLY: Test and operate tools at 90 PSIG maximum unless tool is marked otherwise. Use recommended airline filters-regulators-lubricators.
3. UNUSUAL SOUND or VIBRATION: If tool vibrates or produces an unusual sound, repair immediately for correction.
4. OPERATOR PROTECTIVE EQUIPMENT: Wear goggles or face shield at all times tool is in operation. Other protective clothing shall be worn, if necessary. SEE REGULATIONS.
5. SAFETY MAINTENANCE PROGRAM: Employ a safety program to provide inspection and maintenance of all phases of tool operation and air supply equipment in accordance with *"Safety Code for Portable Air Tools."*

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***CAUTION: Disconnect the air supply hose before servicing the tool.***

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

**LUBRICATION:**
The gears in angle head style tools must be lubricated every 8 hours of operation with high quality gear grease. CooperTools' grease #45-0980 is recommended. A Grease Gun, #45-1982, is furnished with each geared tool. Insert the nozzle into the flush type lube fitting, located on the side or top of the angle head, and pump four or five times. The motor must be lubricated and moisture free. Use a high grade SAE #5 spindle oil, such as CooperTools' Lubricating oil #45-0918 (one quart). Two or three drops per minute should be sufficient lubrication. **NOTE: Turbine motor type tools (10-90 & 10-95) must NOT be oiled.**

**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 the tool 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:**
The parts of this tool are small and require careful handling. We recommend the tool be returned to the factory for repair. However, if the tool is to be repaird in the field, carefully follow instructions. Do not squeeze the tool or parts in a vise except as specified. Care must be used during 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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**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 tool speed, with 90 psig air pressure at the tool with the tool running.