SPECIFICATIONS

Model no.	909-1700
Free Speed (RPM)	95
Throttle	Lever type
Rotation	Reversible
Max. Torque Ft-Lb	240
Air Pressure psi	90
Air Inlet	1/2” NPT
Hose	1/2” I.D.
Air Flow @Free Speed	70 CFM
Spindle	3/4” square
Weight	13.3 Lb

Thomas C. Wilson, Inc.
21-11 44th Avenue, Long Island City, New York 11101
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SM-156A

Wilson
Smarter Tools for Smarter Work

Right-Angle Tube Roller

Model 909-1700

OPERATING INSTRUCTIONS & SERVICE MANUAL

TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND OPERATOR’S MANUAL.

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SAFETY INSTRUCTIONS

WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS
Failure to follow all instructions listed below, may result in accident, fire and/or personal injury.
SAVE THESE INSTRUCTIONS

1. Do not allow corrosive gases or foreign material to enter the unit. Moisture, oil-based contaminants, or other liquids must be filtered out.

2. Eye protection is always required when running motor.

3. Hearing protection is recommended when in close proximity to all operating air motors.

4. Dust mask, non-skid safety shoes, hard hat, gloves and other personal safety equipment must be used.

5. Stay alert, watch what you are doing, and use common sense when operating a power tool.

6. Dress properly. Do not wear loose clothing or jewelry.

7. Keep your work area clean and well lit.

8. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.

9. Disconnect the tool from the air supply before installing, making any adjustment, changing accessories, servicing or storing tool.

TROUBLE-SHOOTING

PROBLEM	CAUSE & REMEDY
Motor will not run.	1. Inefficient air supply —Check 90 psi and 90 CFM air supply. 2. Clogged air inlet screen —Replace. 3. Broken or severely worn rotor blades —Replace. 4. Rust due to improper storage of tool —Disassemble and clean– Refer to Disassembly procedure. 5. Broken throttle valve pin or lever —Replace.
Motor will not reach RPM.	1. Insufficient air volume —Check 90 CFM supply. 2. Dirty air inlet screen —Clean. 3. Worn rotor blades —Replace. 4. Air supply hose chocked or too small —See Operating Procedure recommended hose.
Motor stalls at high torque	1. Insufficient air pressure —Check 90 psi supply 2. Dirty air inlet screen —Clean. 3. Rotor blades worn, chipped or broken —Replace.
Motor fails to stop	1. Broken throttle valve spring —Replace. 2. Valve ball does not seal —Replace or rework valve seat.

Disassembly

Before starting to disassemble or reassemble this tool (any part or completely) be sure to read MAINTENANCE Section.

The basic sections and instructions for removing them from are as follows:

RIGHT-ANGLE SECTION

Using wrenches on flats of Lock Ring (Key #3 of page 7), loosen Ring completely and pull Right-Angle Section from gearing.

GEARING SECTION

Hold motor housing on flats in a vise, and remove gearing section using a wrench on flats of Lock Nut (key#8 of page 8). Separate Drive Gearing from Auxiliary Gearing.

MOTOR AND THROTTLE SECTION

The remaining section becomes the Motor and Throttle Section.

Unscrew Stack-Up Nut (key 25 of page 9) and lift out Rotor and Cylinder Assembly. Remove Retaining Ring (key 12) to disassembly Rotor and Rotor Blades.

GUIDELINES FOR TUBE EXPANSION

Improperly rolled joints create additional expense to correct. The optimal joint is one that develops a leak tight joint with adequate strength for the service intended with the minimum amount of cold working or reduction of the tube wall. Experience indicates that joints of this type are obtainable with non-ferrous tubes in surface condensers by expanding to a wall reduction of 3% to 4% after metal to metal contact of the tube 0.D. with the tube sheet hole. Steel tubes in heat exchangers may require wall reductions of 5% to 10%; soft copper and aluminum tubes in heat exchangers also require larger wall reductions in the area of 8% to 12%. Boiler tubes require wall reductions of 12% to 14%.
A typical example of the application of this method is indicated for a 2" x 10 ga. tube in a condenser.

Tube Expansion Calculations:

Tube Sheet Hole Dia.	2.010
- Tube O.D.	-2.000
= Clearance	=0.010
+ Tube I.D.	+1.732
=I.D. @ Metal to Meta	=1.742
+13%Reduction (.134x.13x2)	+0.035
=Expanded I.D.	=1.777

OPERATION

Always operate, inspect and maintain this tool in accordance with American National Standards Institute Safety Code for Portable Air Tools (ANSI B186.1) and any other applicable safety codes and regulations.
FOR TOP PERFORMANCE AND MAXIMUM DURABILITY OF PARTS, OPERATE THIS TOOL AT 90 psig (6.2bar/620kPa) AIR PRESSURE WITH ½" (13mm) DIAMETER HOSE.

WARNING: Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool. Failure to do could result in injury.

Air powered tools can vibrate in use. Repetitive motions, uncomfortable positions, vibrations can cause injury to hands, fingers, wrists of some persons. Stop using any tool if discomfort, tingling felling or pain occurs. Seek medical advice before resuming use.

HOSE AND HOSE CONNECTIONS

Use ½" (13mm) hose or hose fitting with a Male Hose Nipple (1/2" hose to ½" male pipe) for attaching it to the tube Roller. A smaller hose or hose fitting will reduce the power and efficiency of the Tube Roller.

OPERATION (Cont')

LUBRICATION

After each two or three hours of operation, unless an Air Line Lubricator is used, disconnect the air hose and pour into the inlet about 3cc of SAE No. 10 or 'Wilsolub' Pneumatic motor oil Cat. No. 9047.

The use of an Air Line Lubricator is recommended with any air-operated tool. Install an Wilson automatic lubricator Cat. No. 8597 as close to the tool as possible.

Gearing and Right-Angle Assembly should be grease lubricated approximately every 160 hours of operation. Inject bearing type grease, 1 to 2 strokes through grease fitting in housing.

OPERATION INSTRUCTIONS

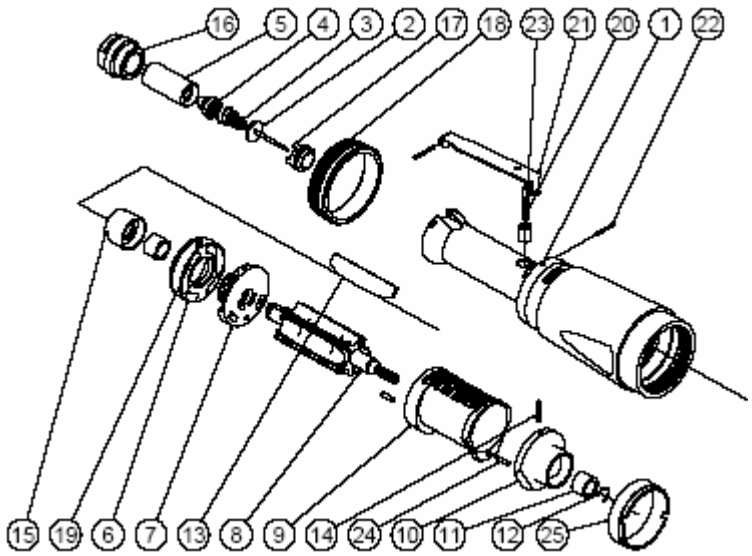
Never operate this tool unless its dead handle/reaction bar is held firmly against a solid mass.

Do not use a heavy oil or gum-forming oil. The use of either will cause sluggish, inefficient performance.

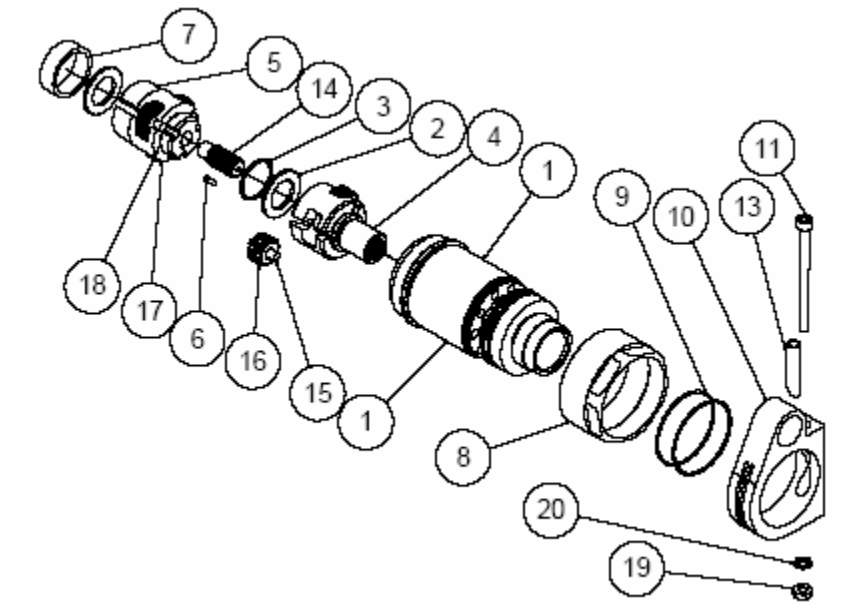
Use only clean oil. Dirty oil will cause cutting and scoring of internal parts.

Weekly, or before storing the Tool for a long time, put a liberal amount of oil into the Air Inlet. Also keep operating air moisture to a minimum. Compressor after coolers, air line traps, water separators, and rust inhibiting oil can help.

Clean or replace rusted parts during service check.



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	909-5135	MOTOR HOUSING
2	1	909-5355	THROTTLE VALVE
3	1	909-3590	SPRING
4	1	909-3593	SCREEN
5	1	909-1091	SLEEVE
6	1	909-3292	REVERSING VALVE
7	1	909-3291	UPPER END PLATE
8	1	909-6537	ROTOR
9	1	909-3294	CYLINDER
10	1	909-6710	LOWER END PLATE
11	2	909-0511	BEARING
12	1	909-3521	RETAINING RING
13	5	909-2584X	ROTOR BLADE
14	1	909-S106	PIN
15	1	909-1273	CAP
16	1	909-1092	INLET FITTING
17	1	909-5356	VALVE SEAT
18	1	909-3589	ACTUATING RING
19	1	909-0716	THREADED PIN
20	1	909-5113	VALVE STEM
21	1	909-5112	LEVER
22	2	909-103P	SPRING PIN
23	1	909-5136	BUSHING
24	2	909-S119	SPRING PIN
25	1	909-6703	STACK-UP NUT
26	1	8659-0000	O-RING
27	1	8653-0000	O-RING
28	2	41708-0000	O-RING
29	1	909-0973	O-RING
30	1	909-0828	O-RING
31	1	909-6989	PLUG
32	1	909-6481	SPRING
33	1	909-3293	BUTTON



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	909-2950	GEAR CASE
2	3	909-2985	THRUST WASHER
3	2	909-0201	RETAINING RING
4	1	909-3217	LOWER CASE
5	1	909-3218	UPPER GEAR CASE
6	1	909-0887	KEY
7	1	909-0512	NEEDLE ROLLER BEARING
8	1	909-2957	LOCK NUT
9	2	909-0923	O-RING
10	1	909-2953	REACTION BAR COLLAR
11	1	909-151P	SOCKET HEAD CAP SCREW
13	1	909-1281	LOCK SLEEVE
14	1	909-3239	SHORT SPINDLE GEAR
15	3	909-3236	IDLER PIN
16	3	909-3227	IDLER GEAR
17	3	909-3533	IDLER GEAR
18	3	909-3233	IDLER PIN
19	1	28041-0000	NUT
20	1	21946-0000	WASHER
21	1	909-3943	BEARING
22	1	909-3350	RETAINING RING
23	1	909-0218	RETAINING RING

Maintenance

WARNING

Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool. Failure to do could result in injury.

Air tools are made of precision parts and should be handled with reasonable care when servicing.

Excessive pressure exerted by a holding device may cause distortion of a part. Apply pressure evenly when disassembling (or assembling) parts which have a press fit.

When removing or installing bearing, apply pressure to the bearing race that will be the press fit to mating part; if this is not practiced, Brinelling of the bearing race may occur making replacement necessary.

It is important that the correct tools and fixtures are used when servicing this tool.

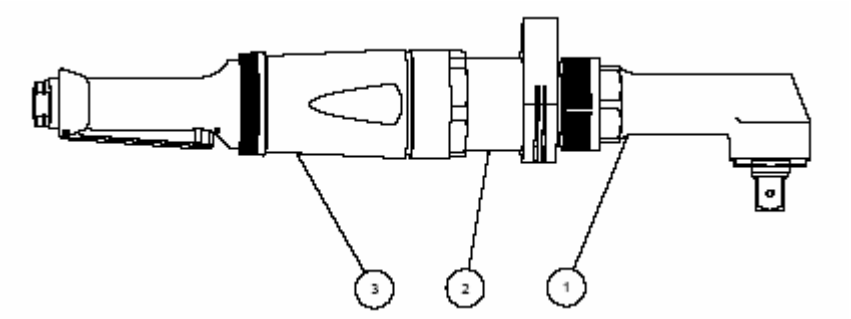
Disassembly should be done on a clean work bench with a clean cloth spread to prevent the loss of small parts. After disassembly is completed; all parts should be thoroughly washed in a clean solvent, blown dry with air and inspected for wear levels, abuse and contamination.

Double sealed or shielded bearings should never be placed in solvent unless a good method of re-lubricating the bearing is available. Open bearings may be washed but should not be allowed to spin while being blown dry. When replacement parts are necessary, consult drawing containing the parts for identification.

Before reassembling, lubricate parts where required. Use bearing grade grease in bearings. When assembling 'O' ring, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually hold steel balls and small parts in place while assembling.

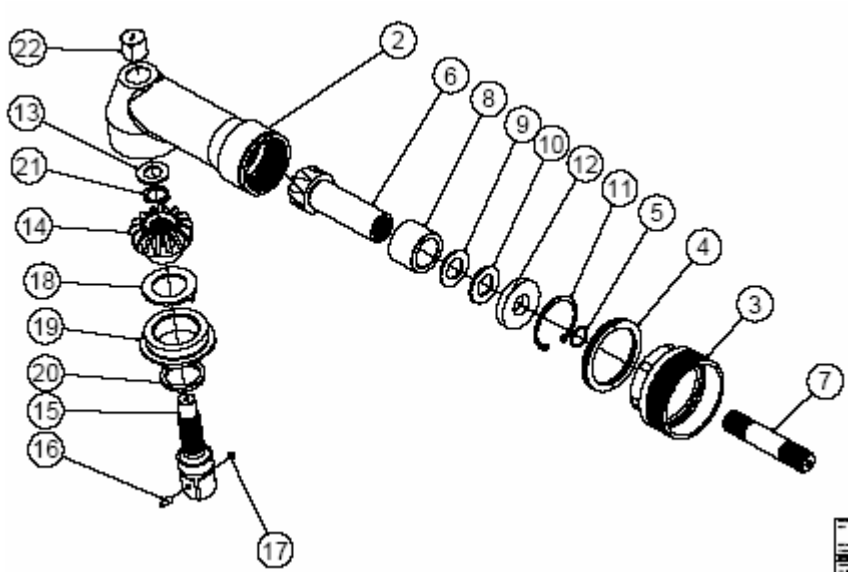
When ordering parts, be sure to list PART NUMBER, PART NAME, MODEL NUMBER AND SERIAL NUMBER OF TOOL. USE ONLY GENIUE REPLACEMENT PARTS.

Parts List



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	909-3939	Angle Drive Assembly
2	1	909-4939	GEAR TRAIN ASSEMBLY
3	1	909-5939	THROTTLE & AIR MOTOR ASSEMBLY

Parts List



Parts List			
ITE	QT	PART NUM	DESCRIPTION
1	2	909-3945	Needle Bearing
2	1	909-3253	Angle Drive Housing
3	1	909-3242	Lock Nut
4	1	909-5539	Split Ring
5	1	909-6483	Elastic Ring
6	1	909-6744	Gear Set
7	1	909-6730	Splined Shaft
8	1	909-3946	BEARING SPACER
9	1	909-2983	Thrust Washer
10	1	909-9141	Thrust Bearing
11	1	71685-0009	Retaining Ring
12	1	909-3235	Thrust Bearing Race
13	1	909-2553	Thrust Washer
15	1	909-3219	Single End Spindle
16	1	909-3355	Button
17	1	909-7020	Plug
18	1	909-3230	Thrust Washer
19	1	909-3245	Retaining Nut
20	1	909-3258	Grease Seal
21	1	909-3002	RETAINING RING
22	1	909-0510	Needle Bearing
23	1	909-0507	Bearing - Drawn Cup
24	1	909-3154	Thrust Bearing