

300 R.P.M. RIGHT-ANGLE NUTSETTER

Model: 7787



⚠ WARNING

READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

Pneumatic tools should always be installed and used in accordance with A.N.S.I. B186.1 "Safety Code For Portable Air Tools."

⚠ WARNING

- Operate this tool at 90 p.s.i.g. (6.2 bar) maximum air pressure at the air inlet of the tool.
- Disconnect air supply from tool before removing/installing bit, socket or device attached to tool or performing maintenance procedures.
- Keep hands, clothing and long hair away from rotating end of tool.
- Anticipate and be alert for sudden changes in motion during start up and operation of any power tool.
- Never exceed rated r.p.m. of tool.
- Wear suitable eye and hearing protection while operating tool.
- Tool shaft can continue to rotate briefly after throttle is released.
- Do not lubricate tools with flammable or volatile liquids such as kerosene, diesel or jet fuel.
- Do not remove any labels. Replace any damaged label.
- Use only accessories recommended by ARO.
- Do to the high torque output of this tool (120 ft lbs), ARO recommends the tool be equipped with a torque reaction arm for operator safety (see page 9).

⚠ WARNING

Repeated prolonged operator exposure to vibrations which may be generated in the use of certain hand-held tools may produce Raynaud's phenomenon, commonly referred to as Whitefinger disease. The phenomenon produces numbness and burning sensations in the hand and may cause circulation and nerve damage as well as tissue necrosis. Repetitive users of hand-held tools who experience vibrations should closely monitor duration of use and their physical condition.

NOTICE

- The use of other than genuine ARO replacement parts may result in safety hazards, decreased tool performance and increased maintenance and may invalidate all warranties.
- ARO is not responsible for customer modification of tools for applications on which ARO was not consulted.
- Tool maintenance and repair should be performed by authorized, trained, competent personnel. Consult your nearest ARO authorized servicer.
- It is the responsibility of the employer to place the information in this manual into the hands of the operator.


For parts and service information, contact your local ARO distributor, or the Customer Service Dept. of the Ingersoll-Rand Distribution Center, White House, TN at PH: (615) 672-0321, FAX: (615) 672-0601.

ARO Tool & Hoist Products

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⚠ WARNING



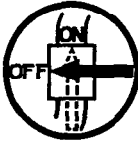
Wear eye protection when operating or performing maintenance on this tool.

⚠ WARNING



Wear hearing protection when operating this tool.

⚠ WARNING




Turn off air supply and disconnect air supply hose before installing, removing or adjusting any accessory on this tool, or before performing any maintenance on this tool.

⚠ WARNING



Air powered tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.

⚠ WARNING



Do not carry the tool by the hose.

⚠ WARNING



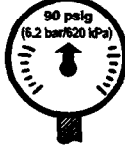
Do not use damaged, frayed or deteriorated air hoses and fittings.

⚠ WARNING



Do not overreach when operating this tool. Keep body stance balanced and firm.

⚠ WARNING



Operate at 90 p.s.i.g. (6.2 bar/620 kPa) maximum air pressure.

NOTICE

⚠ WARNING

Read the manual before operating this tool.
Operate at 90 psig/6.2 bar max.

PN 48176-1 LABEL

This label must appear on the tool at all times. If it is lost or damaged, a replacement label is available at no cost.

WARNING = Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage.

CAUTION = Hazards or unsafe practices which could result in minor personal injury or product or property damage.

NOTICE = Important installation, operation or maintenance information.

ROUTINE LUBRICATION REQUIREMENTS

Lack of or an excessive amount of lubrication will affect the performance and life of this tool. Use only recommended lubricants at below time intervals:

EVERY 8 HOURS OF TOOL OPERATION - Fill lubricator reservoir of recommended F.R.L. with spindle oil (29665). If an in line or air line lubricator is not used, apply several drops of spindle oil (29665) in air inlet.

EVERY 160 HOURS OF TOOL OPERATION - Lubricate gearing and right-angle assembly. Pack bearings, coat shafts and lubricate gears with NLGI #1 "EP" grease (33153). Gearing should contain approximately 1/8 oz. (3.5 g) of grease per reduction. Right angle assembly should contain approximately 1/8 oz. (3.5 g) of grease.

AIR SUPPLY REQUIREMENTS


For maximum operating efficiency, the following air supply specifications should be maintained to this air tool:

- AIR PRESSURE - 90 p.s.i.g. (6.2 bar)
- AIR FILTRATION - 50 micron
- LUBRICATED AIR SUPPLY
- HOSE SIZE - 3/8" (10 mm) I.D.

An ARO® model C28231-810 air line FILTER/REGULATOR/LUBRICATOR (F.R.L.) is recommended to maintain the above air supply specifications.

RECOMMENDED LUBRICANTS

After disassembly is complete, all parts, except sealed or shielded bearings, should be washed with solvent. To relubricate parts, or for routine lubrication, use the following recommended lubricants:

 Where Used	ARO Part #	Description
Air Motor	29665	1 qt Spindle Oil
"O" Rings & Lip Seals	36460	4 oz. Stringy Lubricant
Gears and Bearings	33153	5 lb. "EP" - NLGI #1 Grease

INSPECTION, MAINTENANCE AND INSTALLATION

Disconnect air supply from the tool or shut off air supply and exhaust (drain) line of compressed air before performing maintenance or service to the tool.

It is important that the tools be serviced and inspected at regular intervals for maintaining safe, trouble-free operation of the tool.

Be sure the tool is receiving adequate lubrication, as failure to lubricate can create hazardous operating conditions resulting from excessive wear.

Be sure that the air supply lines and connectors are of proper size to provide a sufficient quantity of air to the tool.

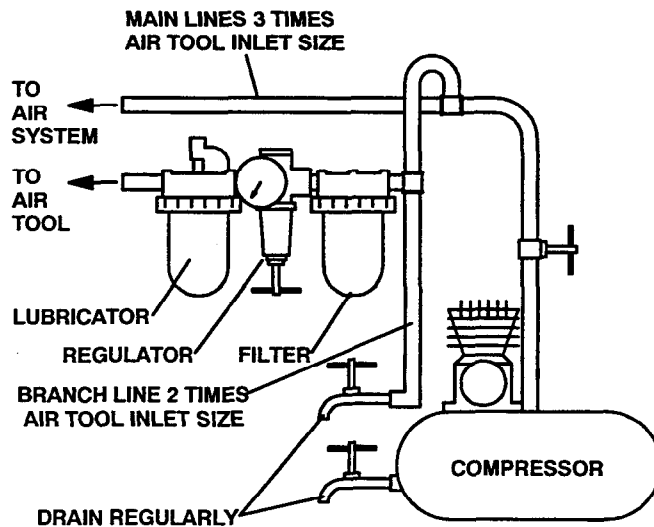
Tool maintenance and repair shall be performed by authorized, trained, competent personnel. Tools, hose and fittings shall be replaced if unsuitable for safe operation and responsibility should be assigned to be sure that all tools requiring guards or other safety devices shall be kept in legible condition. Maintenance and repair records should be maintained on all tools. Frequency of repair and the nature of the repairs can reveal unsafe application. Scheduled maintenance by competent authorized personnel should detect any mistreatment or abuse of the tool and worn parts. Corrective action should be taken before returning the tool for use.

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.

Upon reassembling, lubricate parts where required. Use 33153 grease, or equivalent, in bearings. Use 36460 lubricant for "O" ring assembly. When assembling "O" rings or parts adjacent "O" rings, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually hold steel balls and other small parts in place while assembling.

When replacement parts are necessary, consult drawing containing the part for identification.

Always use clean, dry air. Dust, corrosive fumes and/or excessive moisture can damage the motor of an air tool. An air line filter can greatly increase the life of an air tool. The filter removes rust, scale, moisture and other debris from the air lines. Low air pressure (less than 90 p.s.i.g.) reduces the speed of the air tool. High air pressure (more than 90 p.s.i.g.) raises performance beyond the rated capacity of the tool and could cause injury. Shown below is a typical piping arrangement.



DISASSEMBLY/ASSEMBLY INSTRUCTIONS

- Never apply excessive pressure by a holding device which may cause distortion of a part.
- Apply pressure evenly to parts which have a press fit.
- Apply even pressure to the bearing race that will be press fitted to the mating part.
- Use correct tools and fixtures when servicing this tool.
- Don't damage "O" rings when servicing this tool.
- Use only genuine ARO® replacement parts for this tool. When ordering, specify part number, description, tool model number and serial number.

RIGHT-ANGLE DISASSEMBLY

- Clamp tool in a smooth face vise, clamping on flats of motor housing (7).
- Using a wrench on flats of lock ring (51), unthread lock ring completely and pull right-angle assembly from tool.
- Remove lock nut (65) and seal (64), releasing shaft (61) and components.
- Remove lock nut (58) - LEFT HAND THREADS - releasing bevel gear (59) and bearing (60).
- To remove bevel pinion (48) and components from right-angle housing (53), remove pipe plug (57) and insert a suitable rod thru the opening and against the bevel pinion. Tap the rod to remove the bevel pinion from the right-angle housing. Bearings (45 and 47) are press fit on bevel pinion. Press sleeve (46) off bevel pinion, removing bearing (45).
- Do not remove needle bearing (47) from sleeve (46) unless damage is evident.

RIGHT-ANGLE ASSEMBLY

- Assemble needle bearing (47) into sleeve (46), pressing .062" below flush with the end of the sleeve.
- Lubricate needle bearing (47) with ARO 33153 grease and assemble sleeve (46) onto bevel pinion (48).
- Lubricate bearing (45) with ARO 33153 grease and assemble onto bevel pinion, pressing on inner race of bearing and pressing to shoulder of pinion. NOTE: Assemble bearing with shielded side out.
- Lubricate teeth on bevel pinion (48) liberally with ARO 33153 grease and assemble pinion and components into right-angle housing (53), pressing on outer race of bearing.
- Lubricate needle bearing (55) liberally with ARO 33153 grease.
- Lubricate bearing (60) with ARO 33153 grease and assemble to shaft (61), pressing on inner race of bearing.
- Assemble bevel gear (59) to shaft, securing with lock nut (58) - LEFT HAND THREADS. NOTE: Torque nut to 60 - 70 ft lbs.
- Assemble locking pin (62) and insert (63) into shaft.
- Lubricate teeth on bevel gear (59) liberally with ARO 33153 grease and assemble shaft (61) and components into right-angle housing, pressing on outer race of bearing. See "Routine Lubrication Requirements", page 3.
- Lubricate seal (64) with ARO 36460 lube and assemble into lock nut (65), with lips of seal going into nut first.
- Assemble lock nut (65) to housing, securing shaft and components.
- Assemble right-angle assembly to tool, securing with lock ring (51).
- NOTE: If right angle assembly is not in proper alignment with handle section, remove two screws (43) and washers (44) and rotate ring gear (41) to align screw holes with another set of holes in ring gear (29).
- Assemble screws (43) and washers (44), securing ring gear.

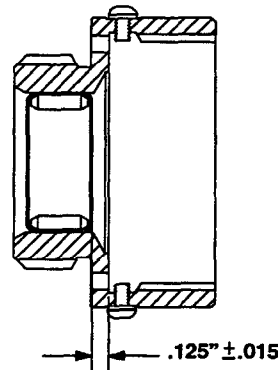
DRIVE GEARING DISASSEMBLY

- Remove right-angle assembly from tool.
- Remove two screws (43) and washers (44) and pull drive gearing from tool.

- Remove spindle (38) and components from ring gear (41). Do not disassemble further unless damage is evident.
- To disassemble, alternately tap ends of shafts (37), loosening bearing (35).
- Remove bearing (35), thrust race (36) and shafts (37), releasing gears (39).
- Do not remove needle bearing (42) unless damage is evident. To remove, press out of ring gear.

DRIVE GEARING ASSEMBLY

- Lubricate needle bearing (42) with ARO 33153 grease and press into ring gear (41). NOTE: Bearing is to be located .125" ± .015 from face of ring gear (see illustration below).



- Lubricate needle bearings (40) with ARO 33153 grease and assemble to gears (39). Assemble two bearings per gear.
- Lubricate gears (39) liberally with ARO 33153 grease and assemble to spindle (38), securing with shafts (37) (see "Routine Lubrication Requirements", page 3). NOTE: Press shafts flush to .005" below face of spindle.
- Assemble thrust race (36) and bearing (35) to spindle, pressing on inner race of bearing.
- Assemble spindle and components into ring gear (41).
- Assemble ring gear (41) and components to tool (29), securing with two screws (43) and washers (44).
- Assemble right-angle assembly to tool.

AUXILIARY GEARING DISASSEMBLY

- Remove right-angle assembly and drive gearing from tool.
- Slide off exhaust sleeve (34), releasing screen (33) and muffler pad (32).
- Using wrenches on flats of ring gear (26) and motor housing (7), unthread and remove ring gear (29) and components from tool.
- Remove retaining ring (30) and tap on splined end of spindle (25) lightly with a soft face hammer; spindle and components will loosen from ring gear.
- Remove thrust race (27) and shafts (26), releasing gears (23).
- Do not remove bearing (28) from ring gear (29) unless damage is evident.

AUXILIARY GEARING ASSEMBLY

- Lubricate bearing (28) with ARO 33153 grease and assemble into ring gear (29), pressing on outer race of bearing.
- Lubricate needle bearings (24) with ARO 33153 grease and assemble to gears (23). Assemble two bearings per gear.
- Lubricate gears (23) liberally with ARO 33153 grease and assemble to spindle, securing with shafts (26). See "Routine Lubrication Requirements", page 3. NOTE: Press shafts flush to .005" below face of spindle.
- Assemble thrust race (27) to spindle and assemble spindle and components into ring gear, securing with retaining ring (30).
- Lubricate "O" rings (31) with ARO 36460 lube and assemble to ring gear (29).

DISASSEMBLY/ASSEMBLY INSTRUCTIONS

- Assemble ring gear and components to motor housing (7), using wrenches on flats of ring gear and motor housing. Tighten securely.
- Assemble muffler pad (32) and screen (33) to ring gear, securing with exhaust sleeve (34).
- Assemble drive gearing and right-angle assembly to tool.

MOTOR DISASSEMBLY

- Remove right-angle assembly and gearing from the tool.
- Tap front edge of motor housing (7) to remove motor assembly.
- Using wrenches on flats of bearing retainer (10) and end plate (13), unthread and remove bearing retainer.
- Remove nut (11) and retaining ring (22).
- Grasp cylinder in one hand and tap splined end of rotor with a soft face hammer; motor will come apart.
- Remove bearing (12), end plate (13) and spacer (14).

MOTOR ASSEMBLY

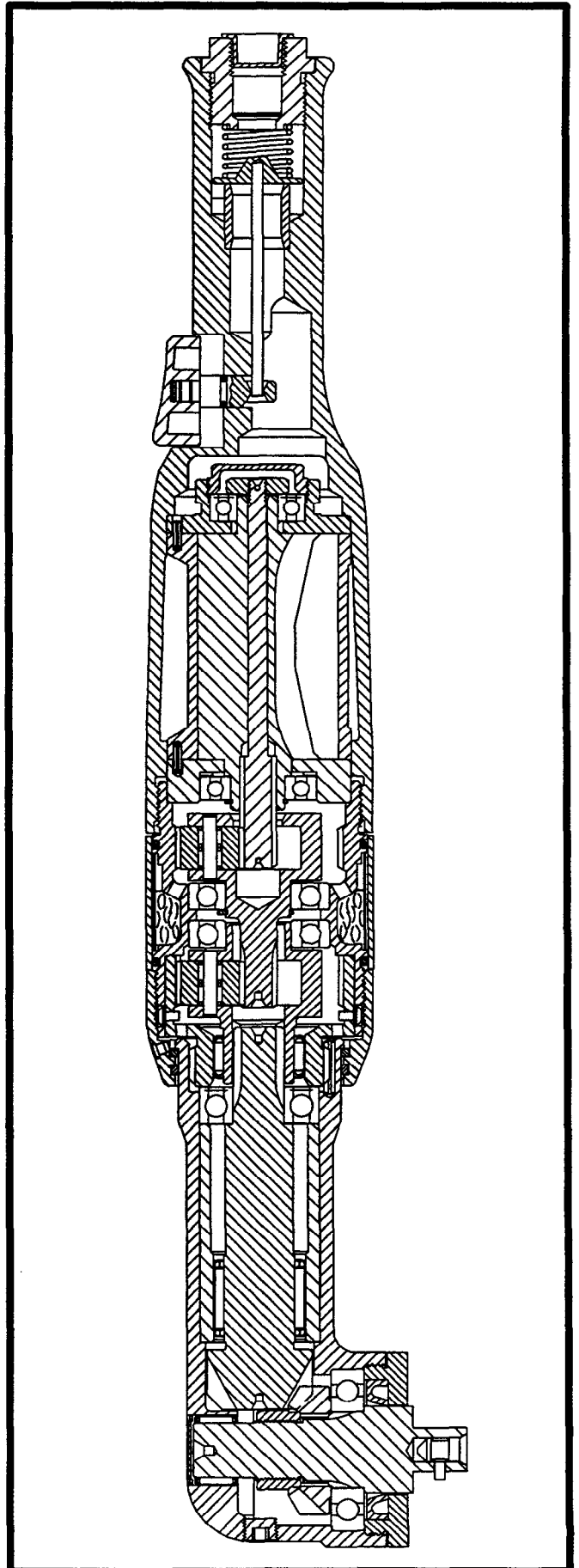
- Lubricate bearing (12) with ARO 33153 grease and assemble into end plate (13), pressing on outer race of bearing. NOTE: Assemble bearing with shielded side out.
- Assemble spacer (14) and end plate (13) to rotor, pressing on inner race of bearing.
- Assemble nut (11) to rotor and tighten to 65 - 75 in. lbs.
- Coat five rotor blades (16) with ARO 29665 spindle oil and assemble to rotor slots - straight side out.
- Coat i.d. of cylinder (18) with ARO 29665 spindle oil and assemble over rotor, aligning roll pin (17) with hole in end plate (13).
- Lubricate bearing (21) with ARO 33153 grease and assemble washer (20) and bearing (21) into end plate (19), pressing on outer race of bearing.
- Assemble end plate (19) to rotor, aligning roll pin (17) in cylinder with hole in end plate. NOTE: Press on inner race of bearing.
- Assemble retaining ring (22) to rotor, securing end plate.
- Assemble bearing retainer (10) to end plate (13) and tighten to 110 - 130 in. lbs.
- Coat teeth of rotor with ARO 33153 grease and assemble motor assembly into motor housing (7).
- Assemble gearing and right-angle assembly to tool.

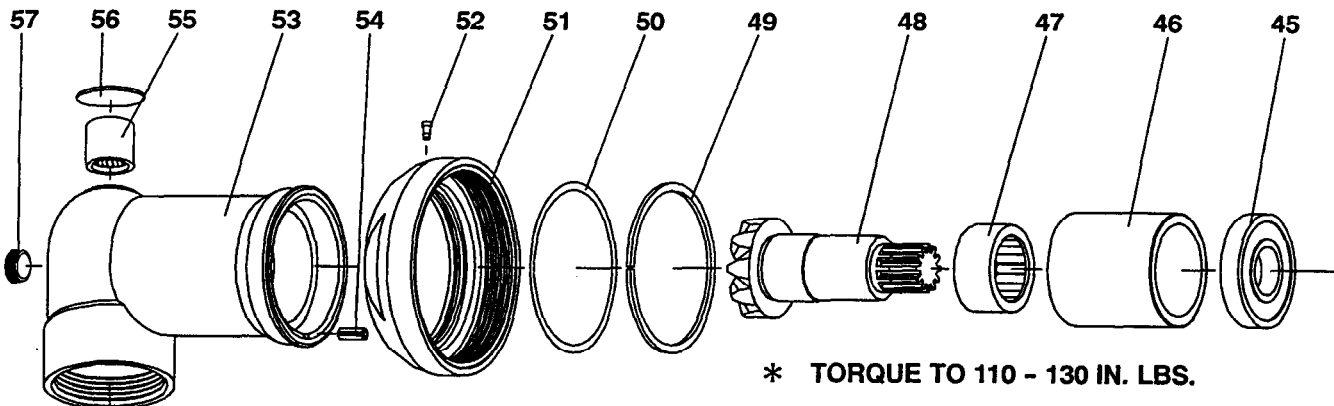
THROTTLE DISASSEMBLY

- Remove inlet adapter (2), releasing spring (3), valve body (4) and throttle rod (5). NOTE: Do not remove throttle rod (5) from valve body (4) unless damage is evident, as they are assembled with a hard drying adhesive.
- Removal of throttle rod (5) releases throttle valve (9) and "O" ring (8).
- Do not remove seat (6) unless damage is evident.

THROTTLE ASSEMBLY

- Assemble seat (6) into housing (7).
- Lubricate "O" ring (8) with ARO 36460 lube and assemble to groove in throttle valve (9).
- Assemble throttle valve (9) to housing (7).
- Assemble throttle rod (5), with valve body (4), into housing (7), being sure throttle rod passes thru hole in throttle valve (9).
- Assemble spring (3) into housing, securing with inlet adapter (2).
- Clean and replace screen (1) in inlet adapter.



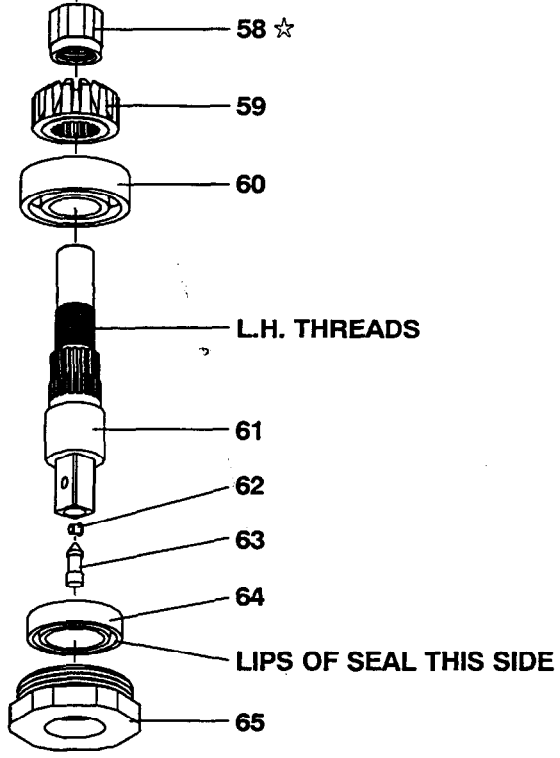


* TORQUE TO 110 - 130 IN. LBS.

☆ TORQUE TO 60 - 70 FT LBS.

● TORQUE TO 65 - 75 IN. LBS.

PART NUMBER FOR ORDERING



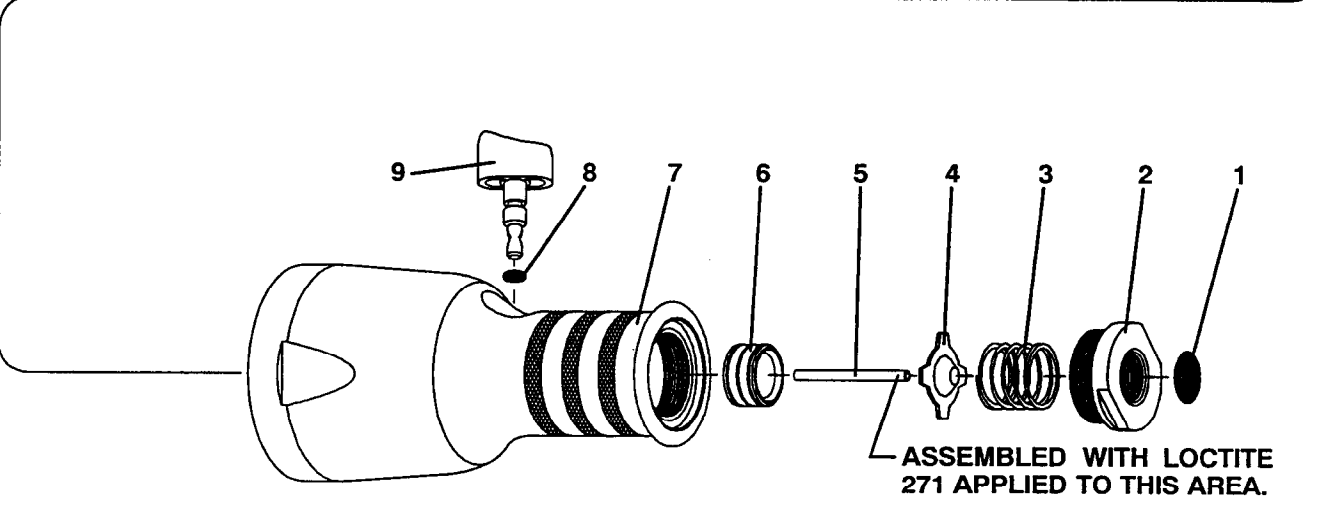
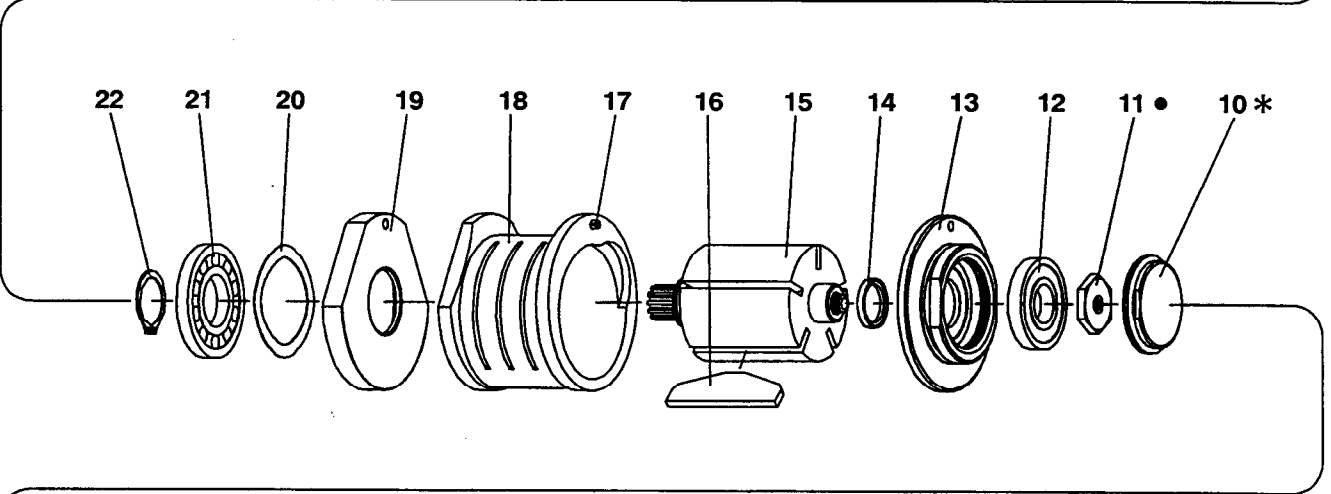
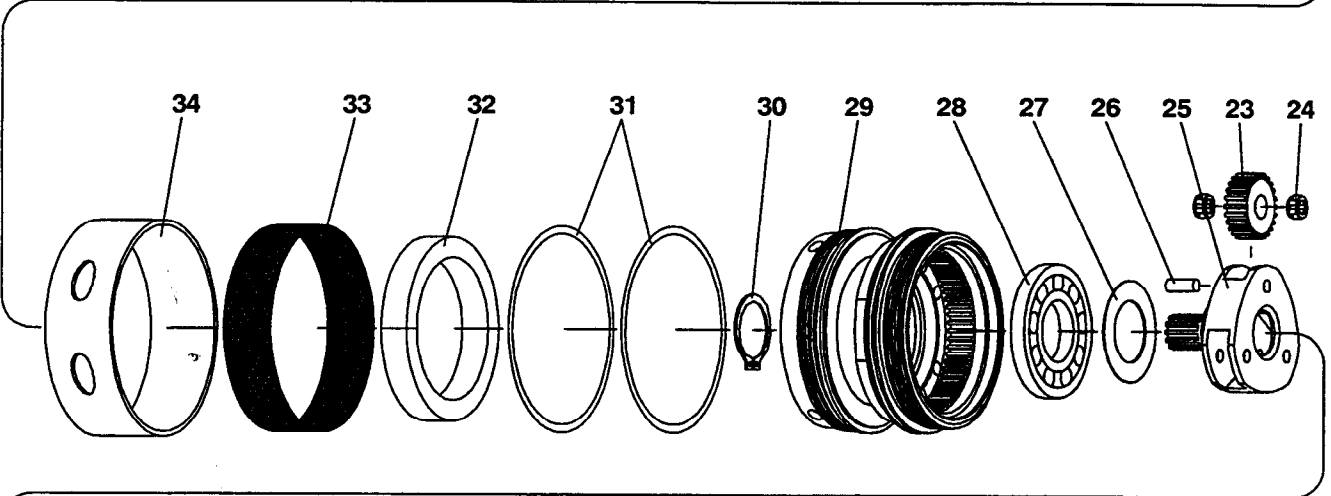
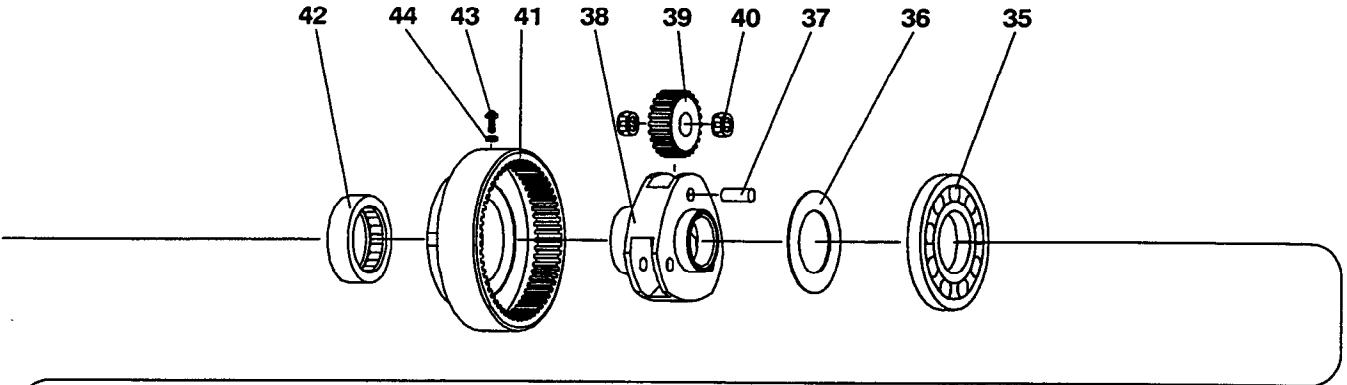
L.H. THREADS

LIPS OF SEAL THIS SIDE

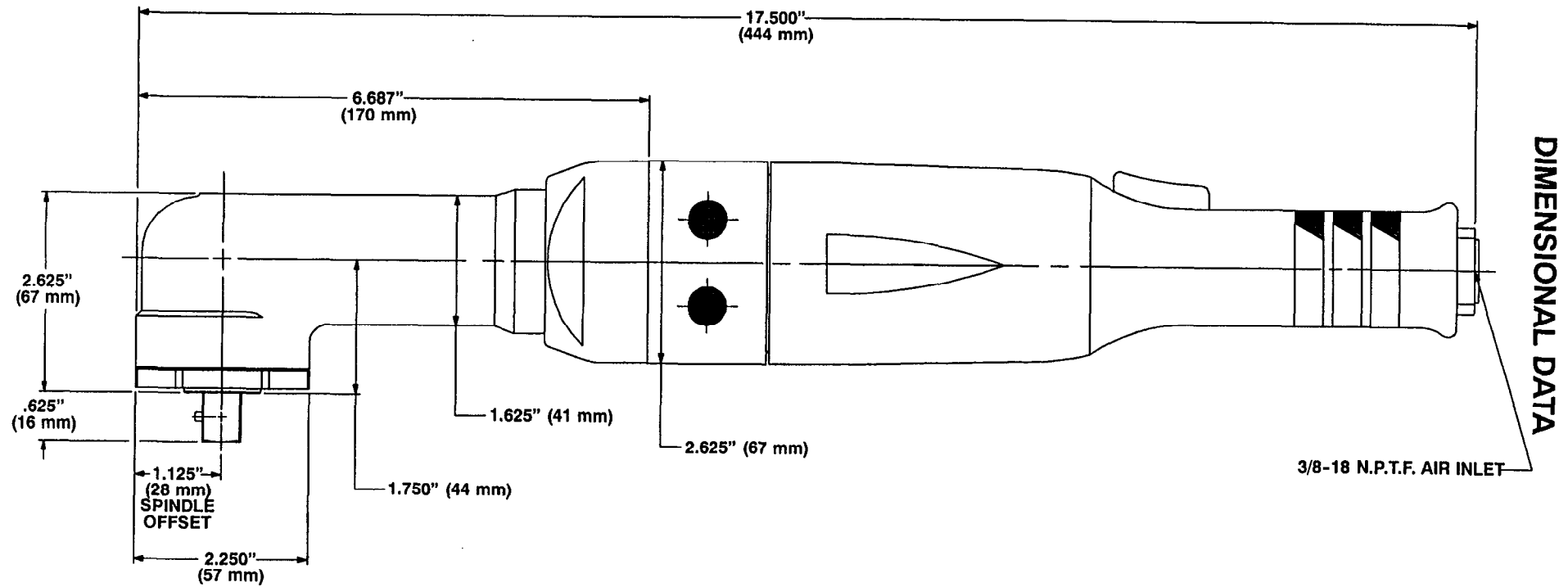
PART NUMBER FOR ORDERING

1	Screen	40199
2	Inlet Adapter	45351
3	Spring	36725
4	Valve Body	45350
5	Throttle Rod	45349
6	Seat	45353
7	Motor Housing	45404
8	"O" Ring	Y325-10
9	Throttle Valve	45355
	HANDLE ASSEMBLY (includes items 1 thru 9)	45431
10	Bearing Retainer	45189
11	Nut	45305
12	Bearing	34690
13	Rear End Plate	45405
14	Spacer	33555
15	Rotor	45420
16	Blade (5 req'd)	45406
17	Roll Pin (2 req'd)	Y178-19
18	Cylinder (includes item 17)	48986
19	Front End Plate	45415
20	Washer	42087
21	Bearing	39164
22	Retaining Ring	Y145-22
	MOTOR ASSEMBLY (includes items 10 thru 22)	45430

23	Gear (3 req'd)	41427
24	Needle Bearing (6 req'd)	42271
25	Spindle	45410-2
26	Shaft (3 req'd)	45322
27	Thrust Race	45080
28	Bearing	39527
29	Ring Gear	45418
30	Retaining Ring	Y145-23
31	"O" Ring (2 req'd)	Y325-141
32	Muffler Pad	46726
33	Screen	44941
34	Sleeve	45412
	AUXILIARY GEARING ASSEMBLY (includes items 23 thru 34)	45427
35	Bearing	39527
36	Thrust Race	45080
37	Shaft (3 req'd)	45322
38	Spindle	45411-2
39	Gear (3 req'd)	41427
40	Needle Bearing (6 req'd)	42271
41	Ring Gear	45417
42	Needle Bearing	35614
	DRIVE GEARING ASSEMBLY (includes items 35 thru 42)	45426
43	Screw (2 req'd)	39896
44	Washer (2 req'd)	Y14-4
45	Bearing	31823
46	Sleeve Assembly (includes item 47)	42881
47	Needle Bearing	40734
48	Bevel Pinion	45750
49	Retaining Ring	45416
50	"O" Ring	Y325-134
51	Lock Ring (includes item 52)	45413-2
52	Grease Fitting	35967
53	Right-Angle Housing (includes items 54 thru 57)	45422
54	Roll Pin	Y178-39
55	Needle Bearing	37791
56	Shield	38805
57	Pipe Plug	Y227-2
58	Lock Nut	42846
59	Bevel Gear	45749
60	Bearing	42865
61	1/2" Square Drive Shaft (includes items 62 and 63)	42906
62	Locking Pin	31565
63	Insert	31566
64	Seal	32558
65	Lock Nut	42845
	RIGHT-ANGLE ASSEMBLY (includes items 45 thru 65)	45421



ASSEMBLED WITH LOCTITE 271 APPLIED TO THIS AREA.



1/2" SQUARE DRIVE

50.4:1 TOTAL REDUCTION

300 R.P.M. FREE SPEED

120 FT LB. (163 Nm) STALL TORQUE

WEIGHT = 9.58 LBS (4.3 Kg)

TROUBLE SHOOTING

LISTED BELOW ARE SOME OF THE MOST COMMON CAUSES FOR THE R/A NUTSETTER TO MALFUNCTION. MALFUNCTIONS BEYOND THE SCOPE OF THIS MANUAL SHOULD BE BROUGHT TO THE ATTENTION OF YOUR ARO REPRESENTATIVE OR RETURN THE TOOL TO THE FACTORY FOR REPAIR.

CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
LOW SPEED OR FAILURE TO OPERATE.	<ol style="list-style-type: none"> 1. INADEQUATE AIR SUPPLY. 2. CLOGGED AIR INLET OR SCREEN (ITEM 1). BADLY WORN OR DAMAGED THROTTLE COMPONENTS. 3. IMPROPER LUBRICATION OF UNIT (MOTOR AND/OR GEARING OR RIGHT-ANGLE ASS'Y), OR DIRTY MOTOR (ROTOR BLADES STICKING, ETC.) OR BROKEN OR BADLY WORN ROTOR BLADES OR BEARINGS IN MOTOR. 	<ol style="list-style-type: none"> 1. CHECK AIR SUPPLY FOR CORRECT REGULATOR ADJUSTMENT (90 P.S.I.G. MAX. WHEN TOOL IS OPERATING). 2. REMOVE AND CLEAN OR REPLACE SCREEN (ITEM 1). DISASSEMBLE, CLEAN AND INSPECT THROTTLE COMPONENTS. REPLACE WORN OR DAMAGED PARTS. 3. BE SURE LUBRICATOR IS FULL OF OIL AND GEARING AND RIGHT-ANGLE ASSEMBLY IS LUBRICATED REGULARLY. REFER TO "ROUTINE LUBRICATION REQUIREMENTS", PAGE 3. DISASSEMBLE, CLEAN, INSPECT AND REPLACE WORN OR DAMAGED PARTS. LUBRICATE WHERE REQUIRED.

ACCESSORIES



42901 TORQUE ARM ASSEMBLY

