



Tool Products

# OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

Released: 4-3-92

Revised: 11-10-95

## 50 SERIES POWER MOTOR

Model 7769-( )



### **⚠ 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.

#### **⚠ 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 servicenter.
- 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) 672-0801.

#### **ARO Tool Products**

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**FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.**

**⚠ 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**



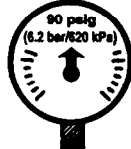
Do not use damaged, frayed or deteriorated air hoses and fittings.

**⚠ 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**

<p><b>⚠ WARNING</b></p>  <p>Read the manual before operating this tool. Operate at 90 psig/6.2 bar max.</p>	<p>This label must appear on the tool at all times. If it is lost or damaged, a replacement label is available at no cost.</p>
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PN 48176-1 LABEL

**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 clutch parts with molybdenum grease (40036-1). Lubricate gearing. Pack bearings, coat shafts and lubricate gears with NLGI #1 "EP" grease (33153). Gearing should contain approximately 3/32 oz. (2.7 g) of grease. Clutch should contain approximately 1/16 oz. (1.8 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 – 5/16" (8 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
Clutches	40036-1	1 lb. "EP" Molybdenum Disulfide

## 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.

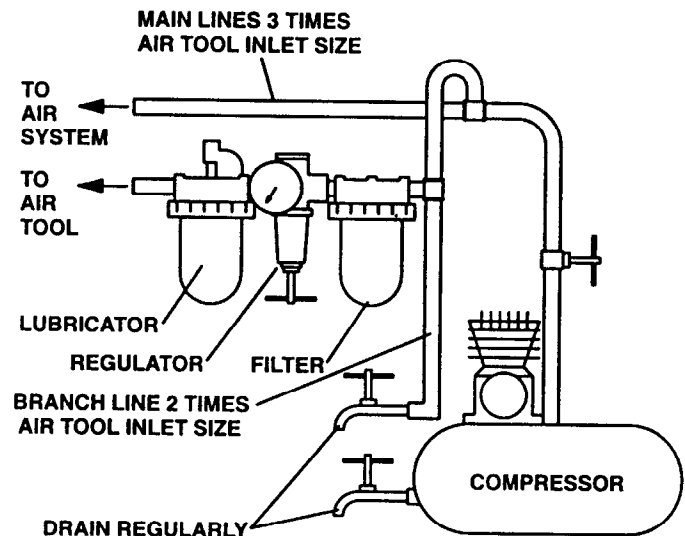
Tool maintenance and repair shall be performed by authorized, trained, competent personnel. Tools, hose and fittings shall be replaced if unsuitable for safe operation and responsibility should be assigned to be sure that all tools requiring guards or other safety devices shall be kept in legible condition. 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.

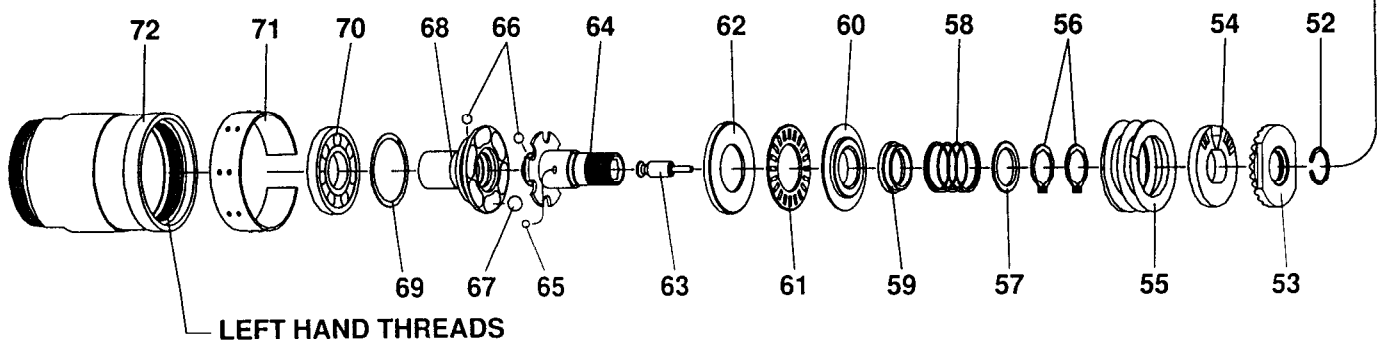
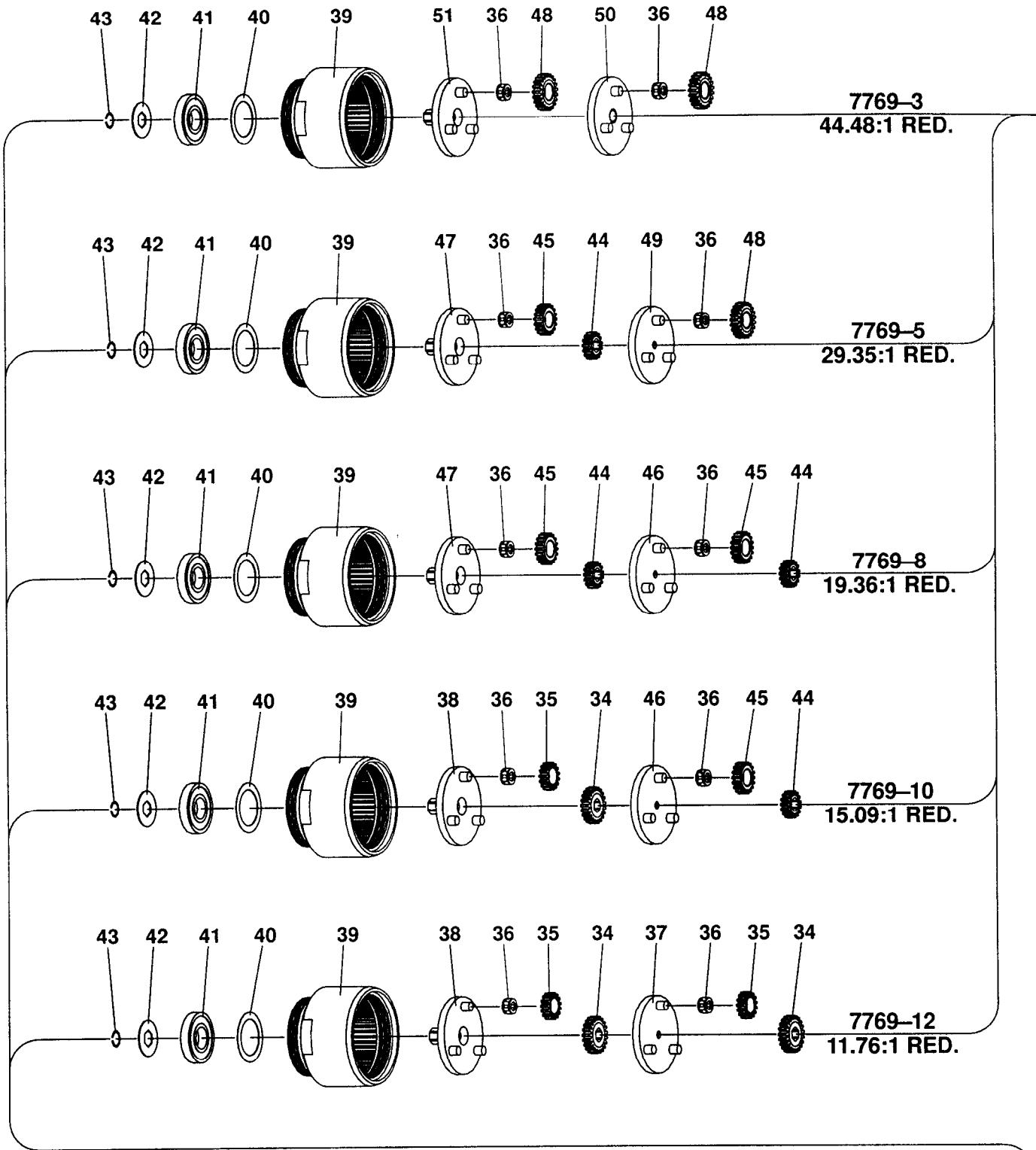
Disassembly should be done on a clean work bench with a clean cloth spread to prevent the loss of small parts. After disassembly is completed, all parts should be thoroughly washed in a clean solvent, blown dry with air and inspected for wear levels, abuse and contamination. Double sealed or shielded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

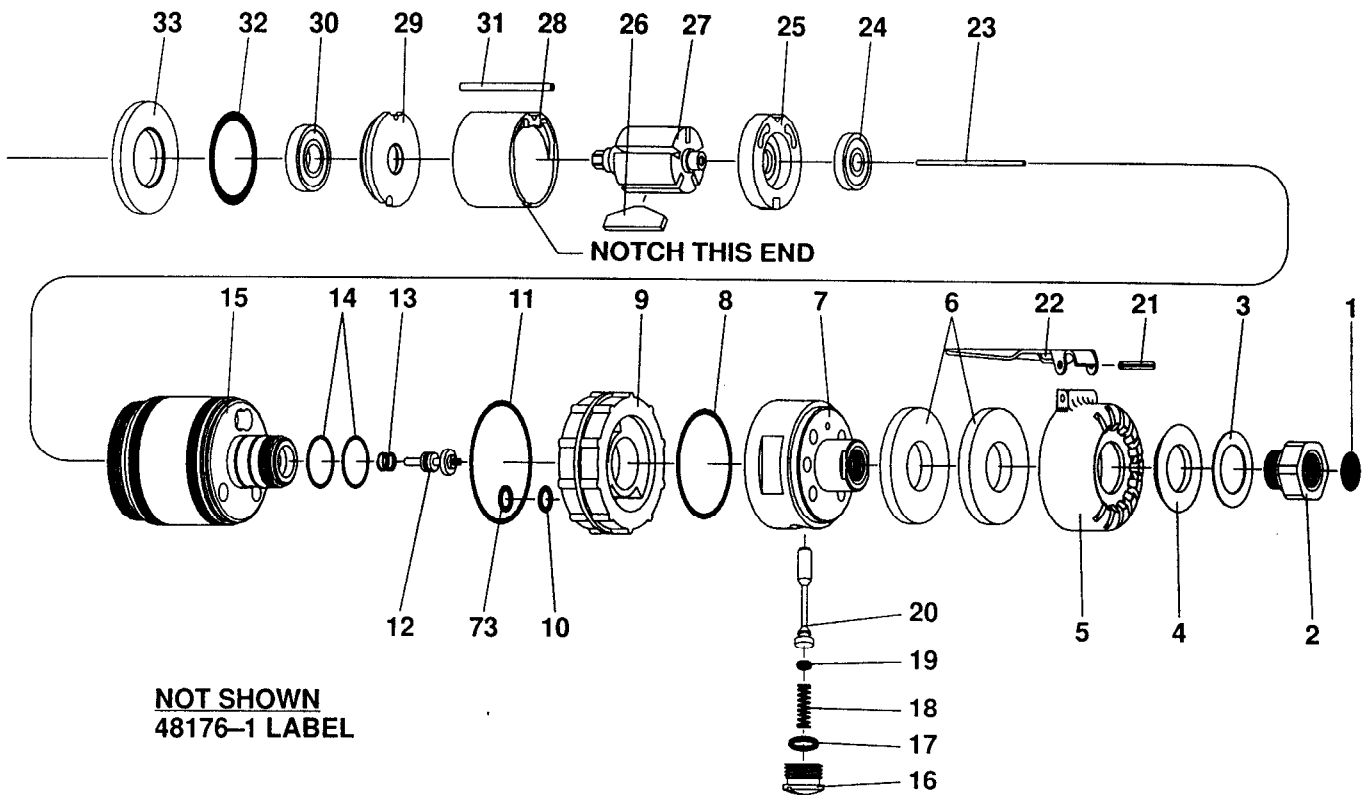
Upon reassembling, lubricate parts where required. Use 33153 grease, or equivalent, in bearings. Use 36460 lubricant for "O" ring assembly. When assembling "O" rings or parts adjacent "O" rings, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually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







PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

1	Screen .....	33911	37	Carrier Assembly .....	46521
2	Inlet Adapter .....	46377	38	Spindle Assembly .....	47752
3	Spacer .....	47139	39	Ring Gear .....	46467
4	Diffuser Washer .....	46449	40	Spacer .....	46496
5	Exhaust Cap .....	46448	41	Ball Bearing .....	Y65-13
6	Filler (2 req'd) .....	46452	42	Washer .....	47694
7	Head .....	48387-1	43	Snap Ring .....	Y142-2
8	"O" Ring .....	Y325-27	44	Sun Gear (1 or 2 req'd) 15 teeth .....	46466
9	Reverse Ring .....	48229-1	45	Planet Gear (3 or 6 req'd) 18 teeth .....	46900
10	"O" Ring .....	Y325-9	46	Carrier Assembly .....	46522
11	"O" Ring .....	Y325-29	47	Spindle Assembly .....	47753
12	Valve Assembly (includes "O" ring Y325-6) .....	48411-1	48	Planet Gear (3 or 6 req'd) 21 teeth .....	46901
13	Spring .....	47587	49	Carrier Assembly .....	46721
14	"O" Ring (2 req'd) .....	48882	50	Carrier Assembly .....	47544
15	Motor Housing (includes Roll Pin Y178-19) .....	48394-1	51	Spindle Assembly .....	47750
16	Screw .....	37776	52	Snap Ring .....	Y110-105
17	"O" Ring .....	Y325-13	53	Adjustment Nut .....	46895
18	Spring .....	47709	54	Adjustment Washer .....	48093
19	"O" Ring .....	Y325-7	55	Clutch Spring .....	48047
20	Throttle Valve Stem .....	36602	56	Retaining Ring (2 req'd) .....	Y145-18
21	Roll Pin .....	Y178-28	57	Guide .....	48295-1
22	Lever .....	48246-1	58	Spring .....	47064
23	Throttle Rod .....	46511-408	59	Ball Sleeve .....	48294-1
24	Ball Bearing .....	47724	60	Thrust Race .....	48094
25	Rear End Plate .....	46312-1	61	Thrust Bearing .....	38995
26	Blade (5 req'd) .....	46413	62	Thrust Race .....	48301-1
27	Rotor (see chart, page 7)		63	Plunger .....	48293-2
	spline drive .....	46469	64	Spindle .....	48299-1
	hex drive .....	46453	65	Ball (6 req'd) .....	Y16-203
28	Cylinder .....	46311	66	Ball (23 req'd) .....	Y16-204
29	Front End Plate .....	47722	67	Ball (6 req'd) .....	Y16-206
30	Ball Bearing .....	Y65-13	68	Driven Jaw .....	48386-1
	MOTOR ASSEMBLY (includes items 24		69	Retaining Ring .....	48300-1
	thru 30)(see chart, page 7)		70	Ball Bearing .....	Y65-12
31	Locating Pin .....	47723-1		AUTO SHUT-OFF CLUTCH (includes	
32	"O" Ring .....	Y325-214		items 52 thru 70 .....	48407-3
33	Spacer .....	46412	71	External Adjustment Sleeve .....	46534
34	Sun Gear (1 or 2 req'd) 21 teeth .....	46465	72	Clutch Housing .....	48373-1
35	Planet Gear (3 or 6 req'd) 15 teeth .....	46899	73	"O" Ring .....	Y328-9
36	Needle Bearing (6 req'd) .....	42315			

# 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.

## CLUTCH DISASSEMBLY

- Clamp tool in a smooth face vise, clamping on inlet adapter (2).
- Remove clutch housing, using a strap type wrench – LEFT HAND THREADS.
- Remove clutch assembly from tool.
- Clamp drive end of driven jaw (68) in a smooth face vise, being careful not to damage driven jaw.
- Remove snap ring (52).
- Using a 7/8" wrench, remove adjustment nut (53).
- Remove adjustment washer (54) and clutch spring (55).
- Remove retaining rings (56).
- Slide off guide (57), spring (58), ball sleeve (59), thrust race (60) and thrust bearing (61). NOTE: Removal of ball sleeve (59) releases six balls (65) and plunger (63).
- Remove thrust race (62), releasing six balls (67).
- Remove retaining ring (69), then rotate driven jaw to remove twelve balls (66). Separate driven jaw and spindle (64), releasing eleven balls (66).

## CLUTCH ASSEMBLY

- For clutch part lubrication, use Molycote G-N grease on parts as pointed out in this section.
- Lubricate ball grooves of spindle (64).
- Install eleven balls (66) into groove.
- Assemble spindle into driven jaw (68), securing balls.
- Assemble twelve balls (66) into driven jaw, then secure with retaining ring (69).
- Lubricate ball pockets of driven jaw and install six balls (67) into pockets, securing with thrust race (62).
- Lubricate and assemble thrust bearing (61) and thrust race (60) to spindle.
- Coat plunger (63) with spindle oil 29665 and assemble to spindle, securing with balls (65). NOTE: Assemble two balls per hole.
- Secure balls with ball sleeve (59).
- Assemble spring (58) and guide (57) to spindle, securing with retaining rings (56).
- Install clutch spring (55).
- Lubricate face of adjustment washer (54) and install on spindle.
- Thread adjustment nut onto spindle, securing with snap ring (52).
- Lubricate bearing (70) with ARO 33153 grease and assemble to driven jaw, pressing on inner race of bearing.
- Assemble clutch assembly to tool.
- Assemble clutch housing (72) to tool – LEFT HAND THREADS.
- See "Clutch Adjustment".

## CLUTCH ADJUSTMENT

### EXTERNAL:

- Rotate sleeve (71) until opening in housing is visible.
- Rotate driven jaw (68) until notch in adjustment washer (54) is visible.
- Insert no. 1 Phillips screwdriver into notch to turn gear teeth on nut (53).

- Clockwise = decrease torque.
- Counterclockwise = increase torque.

### INTERNAL:

- Remove clutch housing and clutch assembly from tool. NOTE: Clutch housing has left hand threads.
- Clamp drive end of driven jaw in a smooth face vise, being careful not to damage driven jaw.
- Hold clutch assembly from turning, then rotate adjustment nut (53), using a 7/8" wrench.

## GEARING DISASSEMBLY

- Remove clutch assembly from tool.
- Remove ring gear (39), using a wrench on flats.
- Remove snap ring (43) and washer (42).
- Remove spindles and gears from ring gear. NOTE: Keep gears grouped with mating spindle.
- Do not remove bearing (41) or spacer (40) unless damage is evident.
- To remove bearing (41) and spacer (40) from ring gear, press on spacer (40) from inside splined end of ring gear.
- Do not remove gear (34 or 44) from carrier assembly unless damage is evident. Gears are press fit onto carrier assemblies.

## GEARING ASSEMBLY

- Assemble spacer (40) and bearing (41) into ring gear (39), pressing on outer race of bearing.
- Coat shafts of spindles with ARO 33153 grease.
- Assemble gears and bearings (36) to shafts of mating spindle.
- Assemble carrier assembly to spindle assembly.
- Lubricate sets of gears liberally with ARO 33153 grease (see "Routine Lubrication Requirements", page 3).
- Assemble spindles and gearing into ring gear. Rotate spindles and gears to align gear teeth with splines of ring gear.
- Assemble washer (42) and snap ring (43) to spindle.
- Thread ring gear to tool, tightening with wrench on flats.
- Assemble clutch assembly to tool.

## MOTOR DISASSEMBLY

- Remove clutch assembly and gearing from tool.
- Remove spacer (33), "O" ring (32) and throttle rod (23).
- Tap front edge of housing to remove motor assembly. Locating pin (31) should also come out.
- Tap drive end of rotor (27) with a soft face hammer; motor will come apart. NOTE: Bearing (30) is light press fit on rotor.
- Remove end plate (25) and bearing (24) from rotor.

## MOTOR ASSEMBLY

- Lubricate bearing (24) with ARO 33153 grease.
- Assemble bearing (24) to end plate (25), pressing on outer race of bearing.
- Assemble end plate (25) to rotor, pressing on inner race of bearing.
- Coat five rotor blades (26) with ARO 29665 spindle oil and assemble to rotor slots – straight side out.
- Coat i.d. of cylinder (28) with ARO 29665 spindle oil and assemble over rotor. NOTE: Air inlet slots in end of cylinder must be aligned with two air inlet holes in end plate (25).
- Assemble bearing (30) to end plate (29), pressing on outer race of bearing.
- Assemble end plate (29) to rotor, pressing on inner race of bearing. Be sure rotor turns without binding.
- Insert pin (31) into .096" diameter blind hole at bottom of motor cavity in housing.
- Align notches of end plates and cylinder and install motor into housing, aligning notches with pin (31).

# DISASSEMBLY/ASSEMBLY INSTRUCTIONS

- Grease and assemble "O" ring (32) to end plate.
- Assemble spacer (33) to motor.
- Coat throttle rod (23) with ARO 29665 spindle oil and insert into rotor.
- Assemble gearing and clutch assembly to tool.

## HOUSING DISASSEMBLY

- Clamp air inlet (2) in a smooth face vise.
- Unthread head (7), using a wrench on flats.
- Remove spacer (3), diffuser washer (4), exhaust cap (5) and fillers (6).
- Remove screen (1) from inlet adapter.
- Remove screw (16) and "O" ring (17), releasing spring (18) and valve stem (20).
- Clamp head (7) in a smooth face vise.
- Using a strap type wrench, unthread and remove housing (15) from head.
- Remove reverse ring (9) and "O" rings (73 and 10), allowing removal of "O" rings (11 and 14).
- Remove valve assembly (12) and spring (13).

## HOUSING ASSEMBLY

- Grease "O" ring of valve assembly (12) and assemble spring (13) and valve assembly to housing (15).
- Grease and assemble "O" rings (11 and 14) to housing.
- Grease and assemble "O" rings (10 and 73) to reverse ring (9) and assemble reverse ring to housing.
- Grease and assemble "O" ring (8) to head.
- Assemble housing (15) to head (7), tightening with a wrench on flats of head and a strap wrench on housing.
- Grease and assemble "O" ring (19) to valve stem (20).
- Lubricate valve stem (20) with ARO 29665 spindle oil and assemble to head (7).
- Assemble spring (18) to head, securing with "O" ring (17) and screw (16).
- Install two fillers (6) into exhaust cap (5).
- Assemble exhaust cap (5) to head, aligning lever with valve stem (20).
- Assemble diffuser washer (4) and spacer (3) to head, securing with inlet adapter (2).
- Clean and replace screen (1) in inlet adapter.

MODEL NUMBER	R.P.M.	ROTOR (ITEM 27)	MOTOR ASSEMBLY	GEARING RED.
7769-3	300	46469	47725	44.48:1
7769-5	500	46469	47725	29.35:1
7769-8	800	46453	47726	19.36:1
7769-10	1000	46453	47726	15.09:1
7769-12	1200	46453	47726	11.76:1

