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ARO®
Tool & Hoist Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

Released: 3–11–91
Revised: 10–7–94
Form: 3826–2

150 SERIES POWER MOTOR

Models: 7785
325 R.P.M.

⚠ 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) 672–0601.

ARO Tool & Hoist Products
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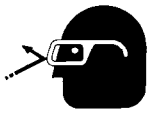
INGERSOLL-RAND®
PROFESSIONAL TOOLS

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

⚠ WARNING

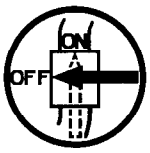


Wear eye protection when operating or performing maintenance on this tool.

⚠ 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.

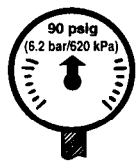
⚠ WARNING

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

⚠ WARNING

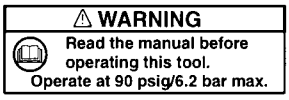
Do not overreach when operating this tool. Keep body stance balanced and firm.

⚠ WARNING



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

NOTICE



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. Inject 2 to 3 strokes of NLGI #1 "EP" grease (33153) thru grease fitting in lock nut (52). Gearing should contain approximately 1/8 oz. (3.5 g) of grease per reduction.

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.

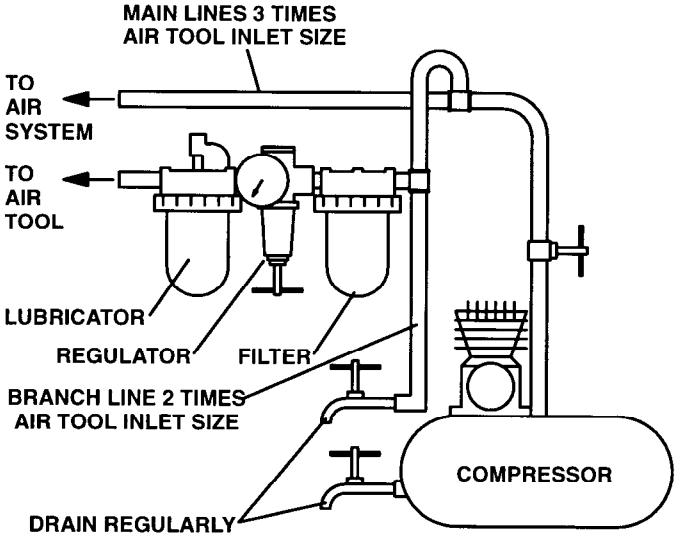
Tool maintenance and repair shall be performed by authorized, trained, competent personnel. Tools, hose and fittings shall be replaced if unsuitable for safe operation and responsibility should be assigned to be sure that all tools requiring guards or other safety devices shall be kept in legible condition.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

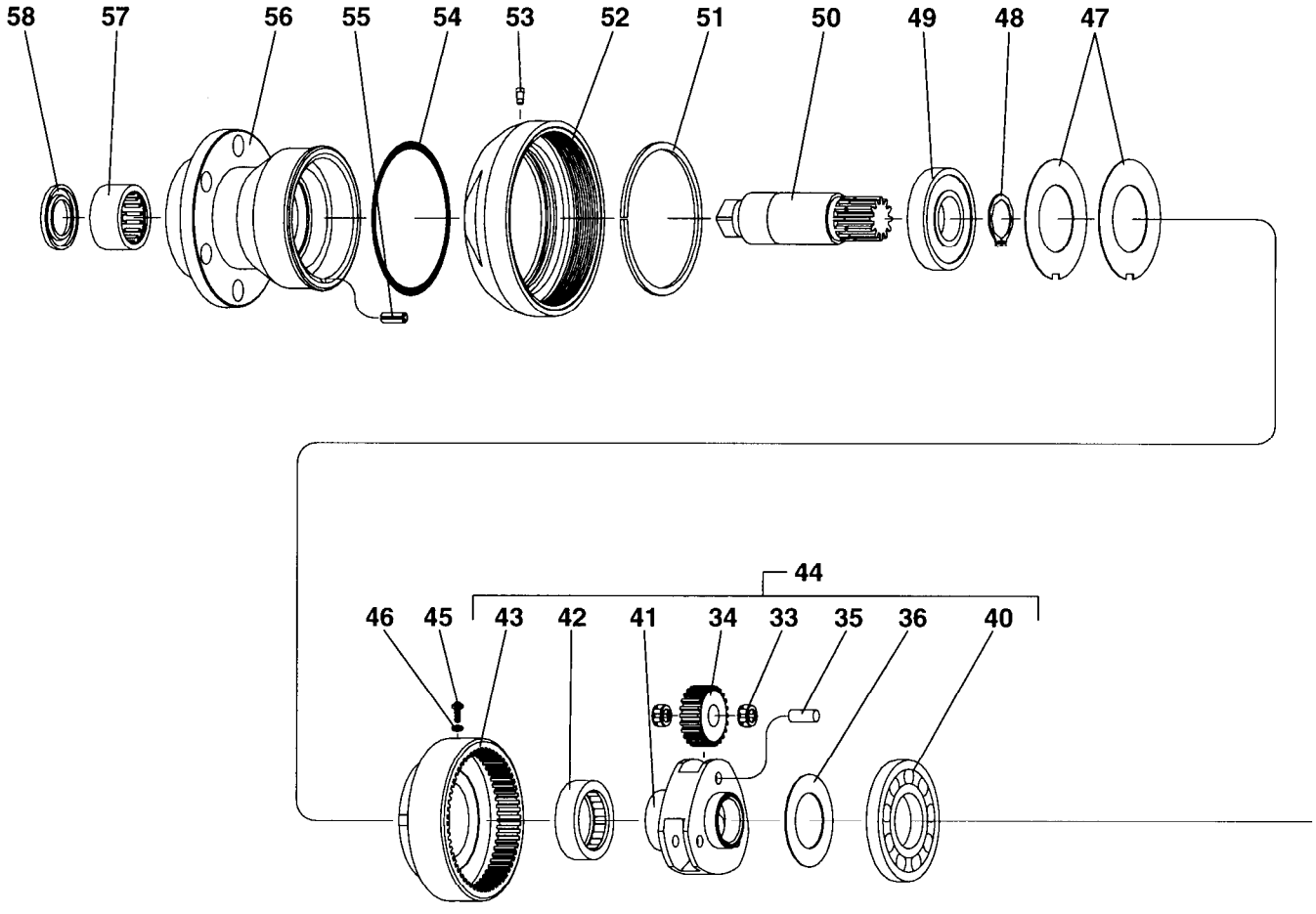
Upon reassembling, lubricate parts where required. Use 33153 grease, or equivalent, in bearings. Use 36460 lubricant for "O" ring assembly. When assembling "O" rings or parts adjacent "O" rings, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually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

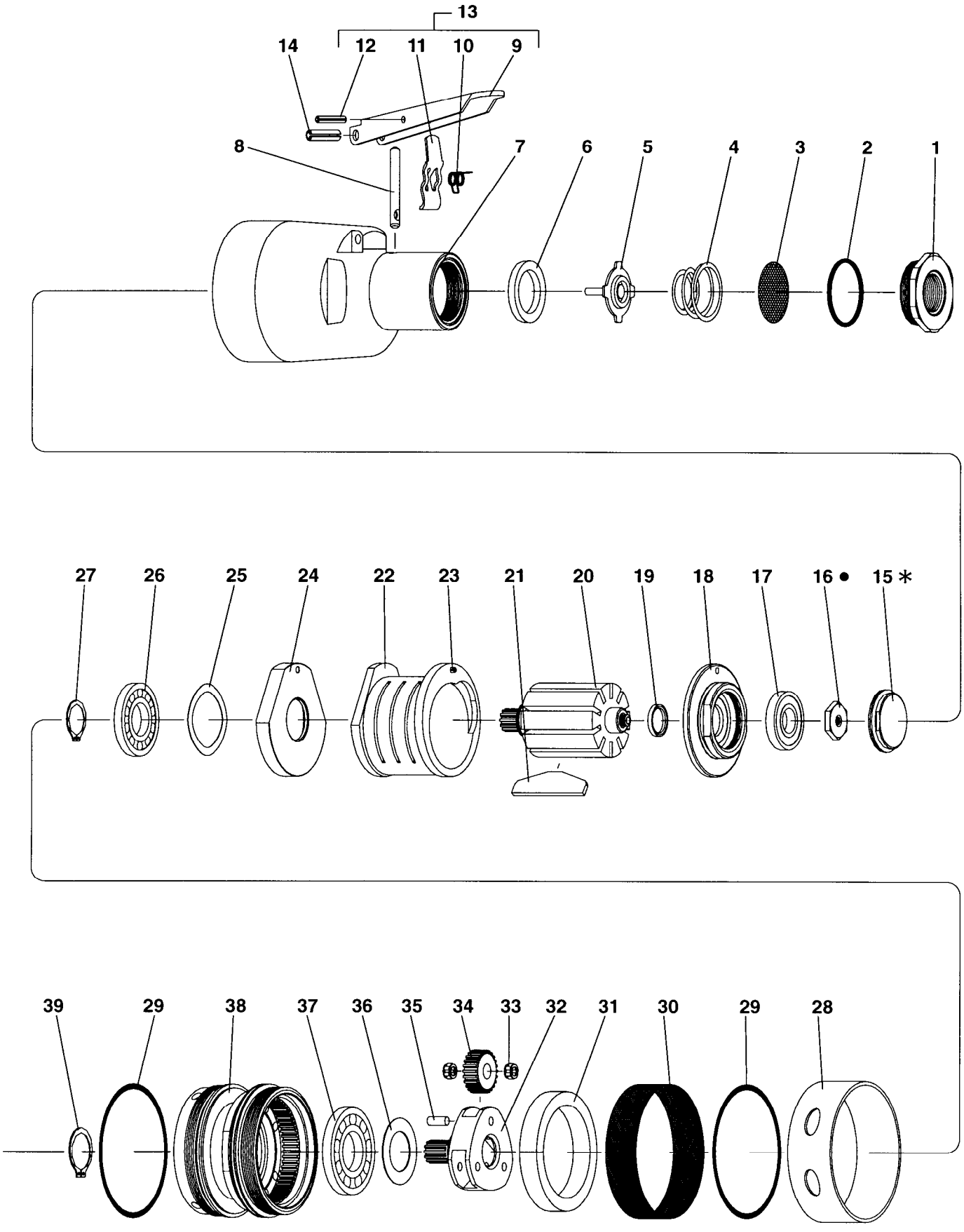


		PART NUMBER FOR ORDERING			PART NUMBER FOR ORDERING
1	Adapter	48975	30	Screen	44941
2	"O" Ring	Y325–24	31	Exhaust Pad	46726–1
3	Screen	46149	32	Spindle	45410–2
4	Spring	46834	33	Needle Bearing (6 req'd)	42271
5	Valve	48979	34	Planet Gear (3 req'd)	41427
6	Seat	48973	35	Pin (3 req'd)	45322
7	Housing	48980	36	Thrust Race	45080
8	Valve Stem	46198	37	Bearing	39527
9	Lever	48983	38	Gear Housing	45418
10	Spring	46291–1	39	Retaining Ring	Y145–23
11	Arm	47474	40	Bearing	39527
12	Roll Pin	46548	41	Spindle	45411–2
13	Lever Assembly	48984	42	Needle Bearing	35614
14	Roll Pin	Y178–78	43	Ring Gear	45417
15	Bearing Retainer	45189	44	Gearing Assembly 6.0:1 ratio	45426
16	Nut	45305	45	Screw (2 req'd)	39896
17	Bearing	34690	46	Lock Washer (2 req'd)	Y14–4
18	Rear End Plate	45405	47	Spacer (2 req'd)	44920–1
19	Spacer	33555	48	Retaining Ring	Y145–20
20	Rotor	48981	49	Bearing	31823
21	Blade (10 req'd)	45406	50	Drive Shaft	48977
22	Cylinder (includes item 23)	48986	51	Retaining Ring	45416
23	Roll Pin (2 req'd)	Y178–19	52	Lock Nut (includes item 53)	45413–2
24	Front End Plate	45415	53	Grease Fitting	35967
25	Spring Washer	42087	54	"O" Ring	Y325–134
26	Bearing	39164	55	Roll Pin	Y178–39
27	Retaining Ring	Y145–22	56	Housing	48976
	Motor Assembly (includes items 15 thru 27)	48982	57	Needle Bearing	43925
28	Exhaust Sleeve	45412	58	Seal	43075
29	"O" Ring (2 req'd)	Y325–141			



* TORQUE TO 110 – 130 IN. LBS.

• TORQUE TO 65 – 75 IN. LBS.



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.

DRIVE SECTION DISASSEMBLY

_ Using wrenches on flats of lock nut (52) and housing (7), unthread lock nut (52), releasing housing (56) and components from tool.
_ Remove spacers (47) from housing.
_ Pressing on drive end of drive shaft (50), press drive shaft out rear end of housing.
_ Remove retaining ring (48), releasing bearing (49).
_ Do not remove needle bearing (57), unless damage is evident.
_ To remove needle bearing (57), remove seal (58) and press needle bearing out of housing.

DRIVE SECTION ASSEMBLY

_ Pack bearings with ARO 33153 grease when assembling.
_ Press needle bearing (57) into housing (56). NOTE: Shoulder of needle bearing should be located .187" ±.010" from drive end of housing (see figure below).
_ Grease seal (58) with ARO 36460 lubricant and assemble to housing, with lips of seal facing needle bearing. NOTE: Seal is to be flush or .010" below flush.
_ Assemble bearing (49) to drive shaft (50), pressing on inner race of bearing. NOTE: Assemble bearing on shaft with shielded side of bearing towards splined end of shaft.
_ Secure bearing with retaining ring (48).
_ Assemble drive shaft (50) into housing, pressing on outer race of bearing.
_ Assemble roll pin (55) to slot in housing.
_ Assemble two spacers (47) into housing, aligning slots in spacers with roll pin.
_ Assemble housing and components to tool, aligning roll pin (55) with one of the four slots in ring gear (43).
_ Thread lock nut (52) to gear housing (38), tightening securely.

DRIVE GEARING DISASSEMBLY

_ Using wrenches on flats of lock nut (52) and housing (7), unthread lock nut (52) and remove housing (56) and components from tool.
_ Remove screws (45) and lock washers (46) and pull drive gearing from gear housing (38).
_ Remove spindle and components from ring gear (43).
_ Do not disassemble further unless damage is evident.
_ To disassemble, alternately tap ends of pins (35), loosening bearing (40).
_ Remove bearing (40), thrust race (36) and pins (35), releasing gears (34).
_ Do not remove needle bearing (42) unless damage is evident.
_ To remove needle bearing (42), press out of ring gear.

DRIVE GEARING ASSEMBLY

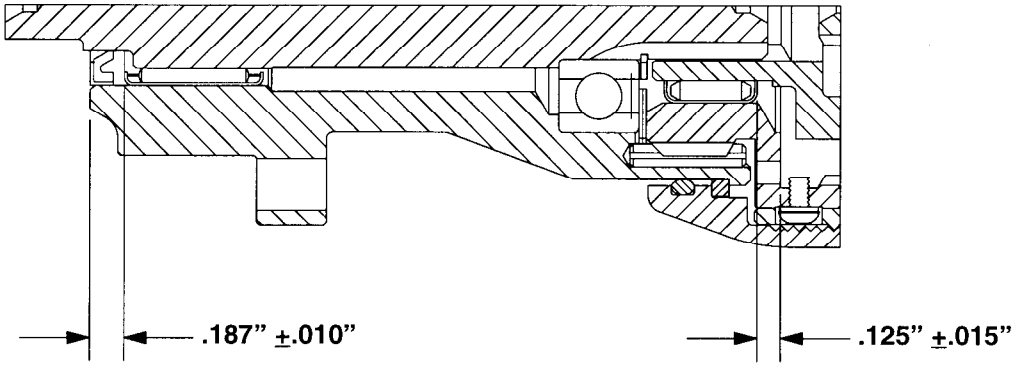
_ Pack bearings and lubricate gears liberally with ARO 33153 grease when assembling. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.
_ Lubricate needle bearings (33) and assemble to gears.
_ Assemble gears (34) to spindle (41), securing with pins (35).
_ Assemble thrust race (36) and bearing (40) to spindle, pressing on inner race of bearing.
_ Press needle bearing (42) into ring gear (43). NOTE: Shoulder of needle bearing is to be located .125" ±.015" from shoulder of ring gear (see figure below).
_ Assemble spindle into ring gear and assemble ring gear to tool, aligning screw holes in ring gear with holes in gear housing (38).
_ Secure ring gear with screws (45) and lock washers (46).
_ Assemble housing (56) and components to tool, tightening lock nut (52) securely.

AUXILIARY GEARING DISASSEMBLY

_ Remove drive gearing from tool (see "Drive Gearing Disassembly").
_ Slide exhaust sleeve (28) off and remove screen (30) and exhaust pad (31).
_ Using wrenches on flats of gear housing (38) and housing (7), unthread and remove gear housing and components from tool.
_ Remove retaining ring (39).
_ Tap splined end of spindle with a soft face hammer; spindle and components will loosen from gear housing.
_ Bearing (37) is press fit in gear housing. Do not remove bearing unless damage is evident.
_ Remove thrust race (36) and pins (35), releasing gears (34).

AUXILIARY GEARING ASSEMBLY

_ Pack bearings and lubricate gears liberally with ARO 33153 grease when assembling. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.
_ Assemble bearing (37) into gear housing (38), pressing on outer race of bearing.
_ Lubricate needle bearings (33) and assemble to gears (34).
_ Assemble gears to spindle (32), securing with pins (35).
_ Assemble thrust race (36) to spindle and assemble spindle into gear housing (38), securing with retaining ring (39).
_ Grease "O" rings (29) with ARO 36460 lubricant and assemble to grooves in gear housing.



DISASSEMBLY/ASSEMBLY INSTRUCTIONS

- _ Assemble gear housing (38) to housing (7), aligning splines of rotor with splines of gears. Tighten securely using wrenches on flats of gear housing and housing (7).
- _ Assemble exhaust pad (31) and screen (30) to gear housing, securing with exhaust sleeve (28).
- _ Assemble drive gearing to tool.

MOTOR DISASSEMBLY

- _ Remove gearing from tool.
- _ Tap front edge of housing (7) to remove motor assembly.
- _ Using wrenches on flats of rear end plate (18) and bearing retainer (15), unthread and remove retainer.
- _ Remove nut (16).
- _ Remove retaining ring (27).
- _ Grasp cylinder in one hand and tap splined end of rotor with a soft face hammer; motor will come apart.
- _ Remove end plate (18) and bearing (17) from rotor.

MOTOR ASSEMBLY

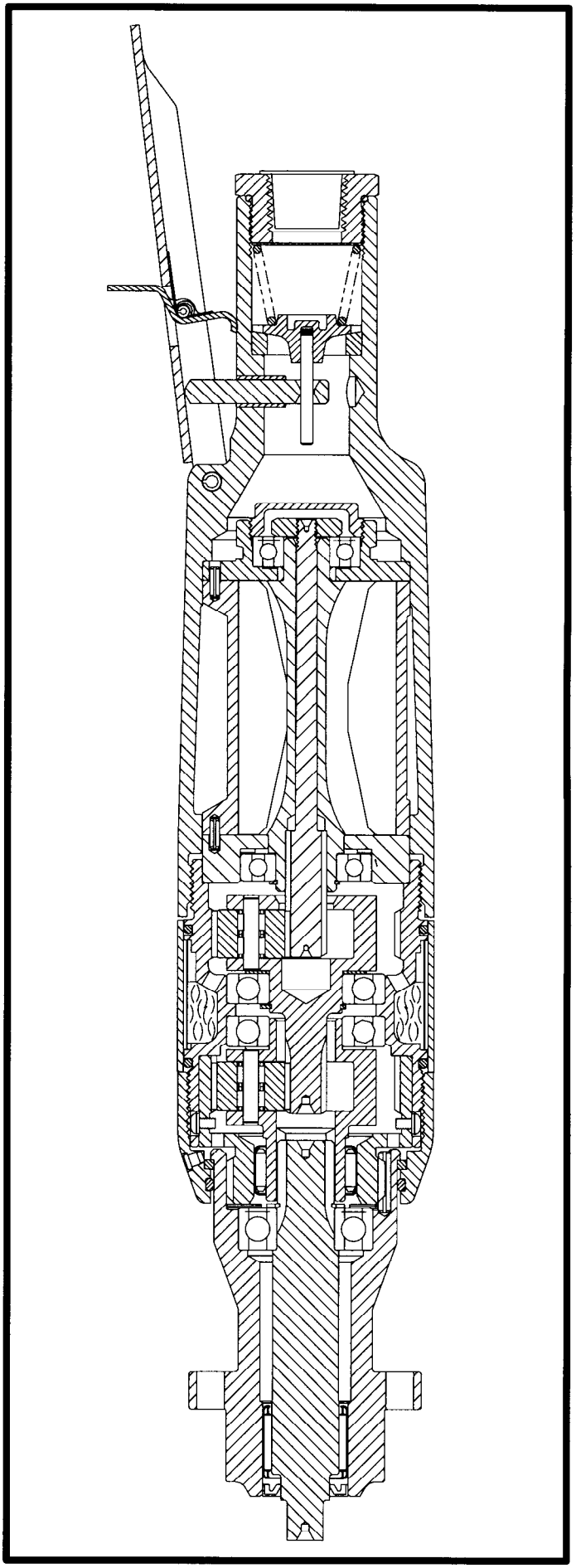
- _ Pack bearings with ARO 33153 grease when assembling.
- _ Assemble bearing (17) to end plate (18), with shielded side of bearing facing out. NOTE: Press on outer race of bearing.
- _ Assemble spacer (19) and end plate (18) to rotor, pressing on inner race of bearing.
- _ Assemble nut (16) to rotor and tighten to 65 – 75 lb. in.
- _ Assemble bearing retainer (15) to end plate (18) and tighten to 110 – 130 lb. in.
- _ Coat ten rotor blades (21) with ARO 29665 spindle oil and assemble to rotor slots – straight side out.
- _ Coat i.d. of cylinder with ARO 29665 spindle oil and assemble over rotor, aligning roll pin in cylinder with hole in end plate.
- _ Assemble spring washer (25) and bearing (26) to end plate (24), pressing on outer race of bearing.
- _ Assemble end plate (24) to rotor, aligning hole in end plate with roll pin in cylinder. NOTE: Press on inner race of bearing.
- _ Assemble retaining ring (27) to rotor. Be sure rotor does not bind.
- _ Assemble motor assembly into housing (7).
- _ Assemble gearing to tool.

THROTTLE DISASSEMBLY

- _ Remove adapter (1) and "O" ring (2), releasing screen (3), spring (4) and valve (5). NOTE: Seat (6) is pressed into housing and should not be removed except for replacement.
- _ Valve stem (8) can be removed only after removal of valve (5).

THROTTLE ASSEMBLY

- _ Lightly press seat (6) to shoulder in housing.
- _ Apply a thin coat of ARO 29665 spindle oil to valve stem (8) and insert into housing, with hole in valve stem aligned with housing to accept valve (5).
- _ Insert valve (5) into housing, with stem of valve passing thru hole in valve stem (8).
- _ Check to be sure valve stem (8) is secured by valve (5).
- _ Assemble spring (4) – small end first – into housing.
- _ Assemble screen (3) into housing.
- _ Grease and assemble "O" ring (2) to adapter (1).
- _ Assemble adapter (1) to housing, securing throttle components.



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