



Tool Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

Released: 8-5-94

Revised:

"0" SERIES SCREWDRIVERS

Models: 7332-E1, 7359-E1,
7359-E2 and 7359-E3.



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 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 Products

Ingersoll-Rand Company

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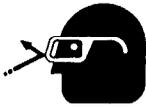
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FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

⚠ WARNING



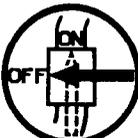
Wear eye protection when operating or performing maintenance on this tool.

⚠ 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>⚠ WARNING</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 gearing. Pack bearings, coat shafts and lubricate gears with NLGI #1 "EP" grease (33153). Gearing should contain approximately 1/32 oz. (.9 g) of grease for single reduction and 3/32 oz. (2.7 g) for double 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 – 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:



<u>Where Used</u>	<u>ARO Part #</u>	<u>Description</u>
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.

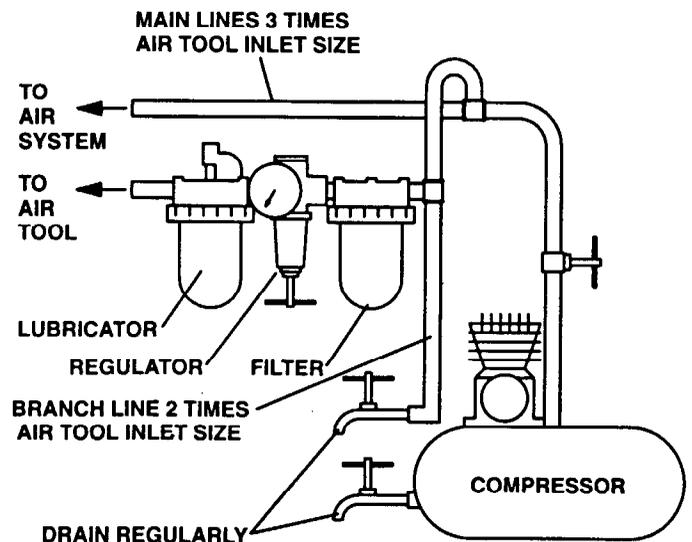
Tool maintenance and repair shall be performed by authorized, trained, competent personnel. Tools, hose and fittings shall be replaced if unsuitable for safe operation and responsibility should be assigned to be sure that all tools requiring guards or other safety devices shall be kept in legible condition.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

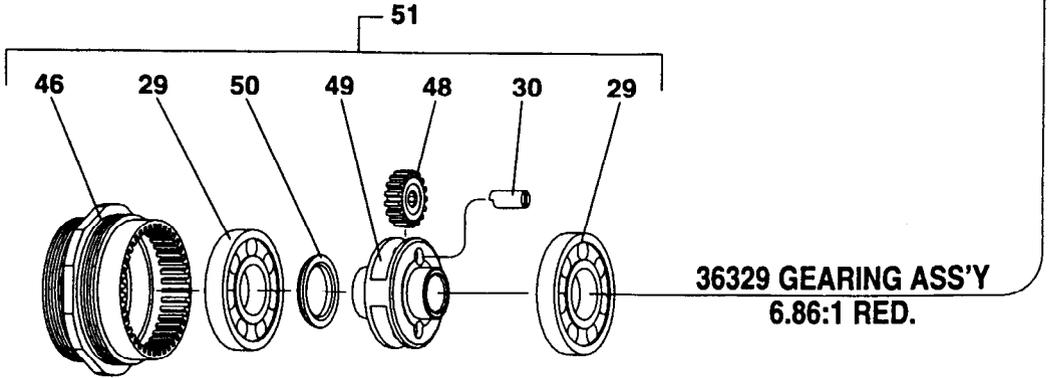
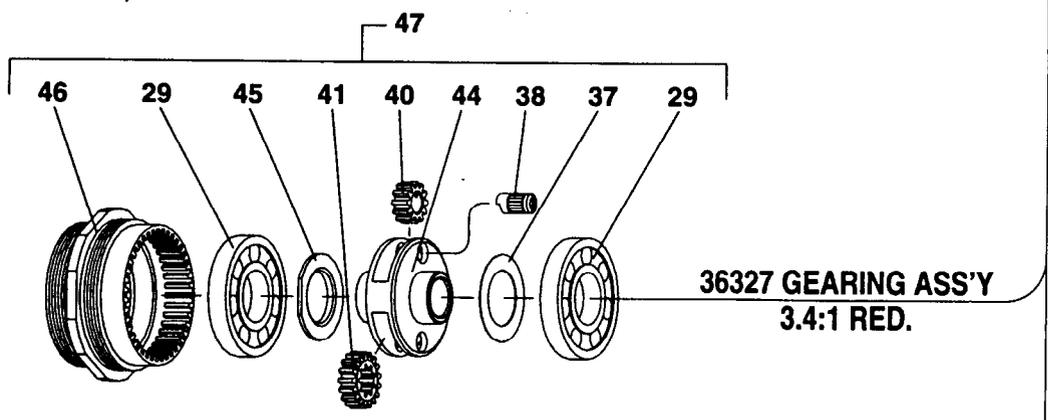
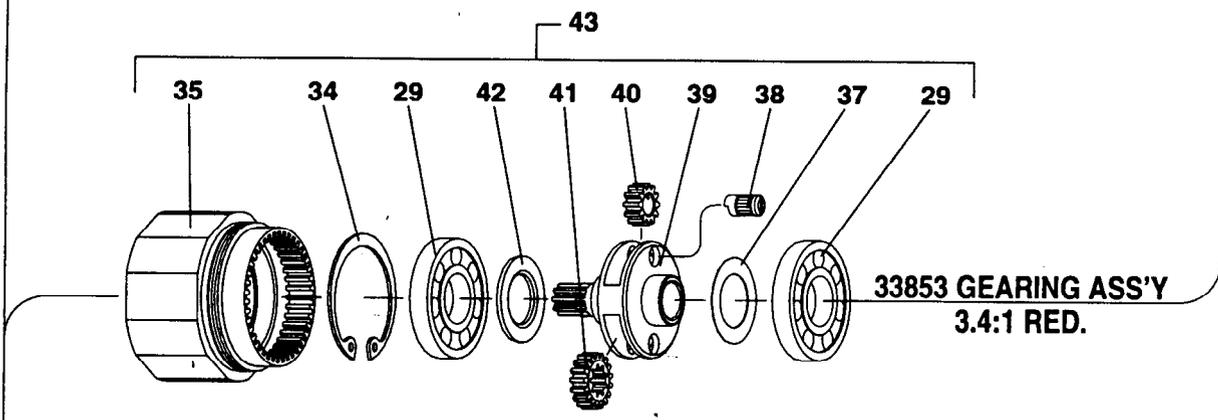
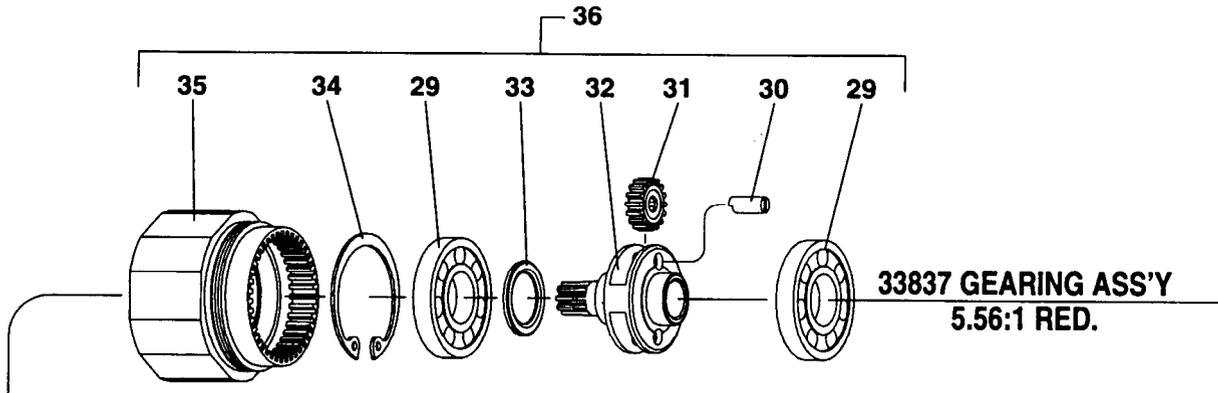
Disassembly should be done on a clean work bench with a clean cloth spread to prevent the loss of small parts. After disassembly is completed, all parts should be thoroughly washed in a clean solvent, blown dry with air and inspected for wear levels, abuse and contamination. Double sealed or shielded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

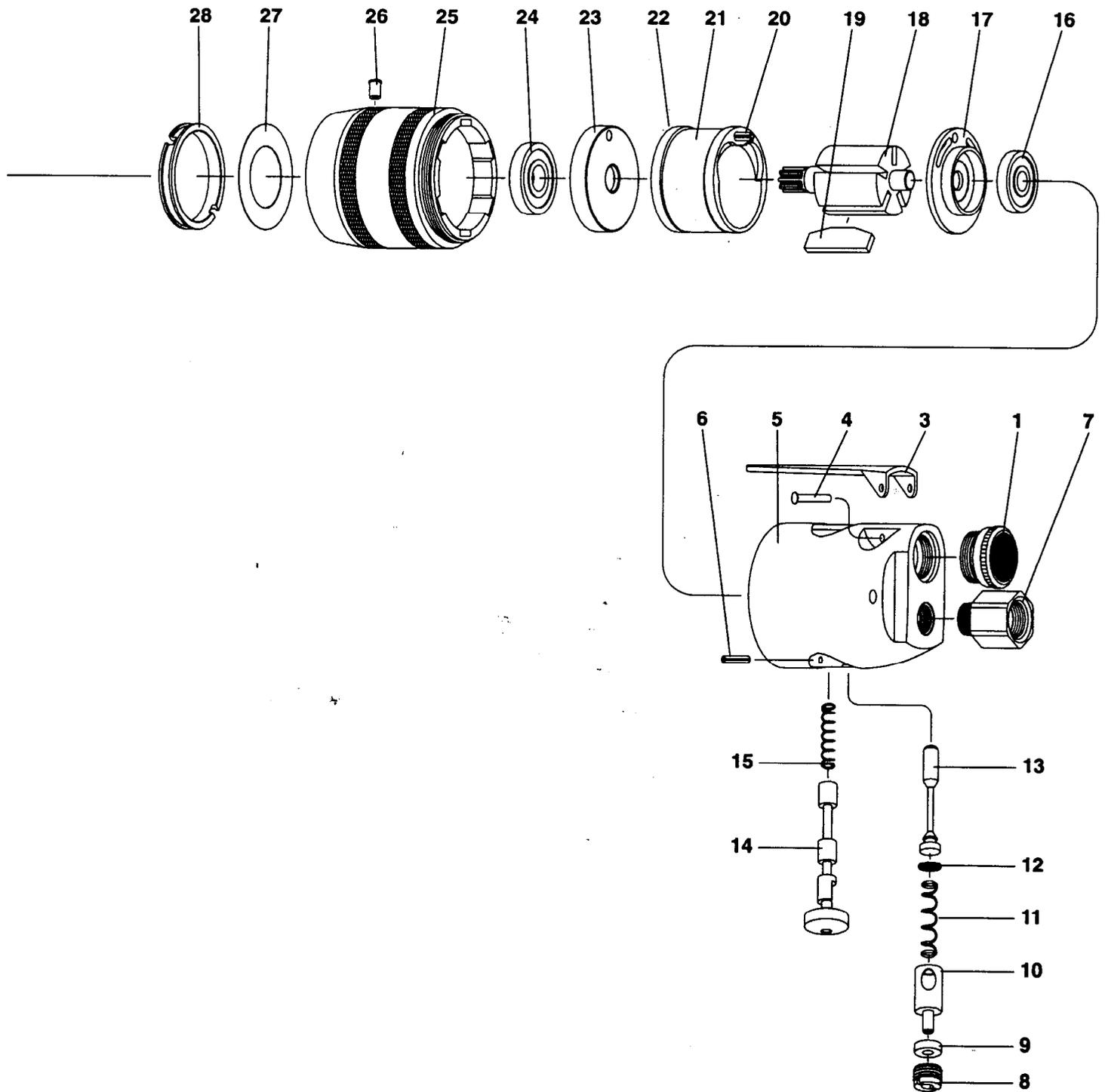
Upon reassembling, lubricate parts where required. Use 33153 grease, or equivalent, in bearings. Use 36460 lubricant for "O" ring assembly. When assembling "O" rings or parts adjacent "O" rings, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually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







MODEL NUMBER	R.P.M.	ROTOR (ITEM 18)	MOTOR ASSEMBLY	AUXILIARY GEARING ASS'Y	DRIVE GEARING ASS'Y	TOTAL RED.
7332-E1	1500	31633	33811		36329	6.8:1
7359-E1	3000	31603	33816		36327	3.4:1
7359-E2	550	31603	33816	33837	36327	18.9:1
7359-E3	900	31603	33816	33853	36327	11.56:1

1	Muffler	40191	26	Grease Fitting	35323
2	Bail (not shown)	32863	27	Spacer	32310
3	Lever	36603	28	Spacer	32305
4	Rivet	36992	29	Bearing (2 req'd)	32325
5	Housing	39209	30	Shaft (2 req'd)	33436
6	Roll Pin	Y178-7	31	Planet Gear (2 req'd) (16 teeth)	33440
7	Adapter	32377	32	Spindle	33425
8	Nut	36609	33	Spacer	32312
9	Seal	35675	34	Retaining Ring	Y147-7
10	Air Regulator	35642	35	Adapter	32326
11	Spring	31131	36	Auxiliary Gearing Assembly (5.56:1 ratio)	33837
12	"O" Ring	Y325-7	37	Spacer	37676
13	Valve Stem	36602	38	Shaft (2 req'd) (includes 15 needle bearings per shaft)	33686
14	Reverse Valve	39207	39	Spindle	37667
15	Spring	30032	40	Planet Gear (2 req'd) (12 teeth)	30899
	Head Assembly (includes items 5 thru 15)	39210	41	Drive Gear (9 interior - 17 exterior teeth)	30901
16	Bearing	Y65-7	42	Spacer	32314
17	Rear End Plate	31601	43	Auxiliary Gearing Assembly (3.4:1 ratio)	33853
18	Rotor	See table	44	Spindle	37674
19	Blade (5 req'd)	31363	45	Spacer	33691
20	Roll Pin (long)	Y178-24	46	Ring Gear	36325
21	Cylinder (includes items 20 and 22)	37684	47	Drive Gearing Assembly (3.4:1 ratio)	36327
22	Roll Pin (short)	Y178-20	48	Planet Gear (2 req'd) (17 teeth)	33438
23	Front End Plate	31602	49	Spindle	36330
24	Bearing	Y65-15	50	Spacer	33693
	Motor Assembly (includes items 16 thru 24)	See table	51	Drive Gearing Assembly (6.86:1 ratio) ..	36329
25	Motor Housing (includes item 26)	36606			

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 GEARING DISASSEMBLY

- Using wrenches on flats of ring gear (46) and adapter (35), unthread and remove drive gearing assembly (47 or 51).
- Grasp ring gear (46) in one hand and tap drive end of spindle (44 or 49) with a soft face hammer; spindle and components will loosen from ring gear.
- Remove bearing (29) and spacer (45 or 50) from drive end of spindle.
- Alternately tap ends of shafts (30 or 38) to loosen bearing (29) (and spacer 37, where applicable).
- Remove shafts (30 or 38), releasing gears.

DRIVE GEARING ASSEMBLY

- Lubricate bearing (29) with ARO 33153 grease and assemble spacer (45 or 50) and bearing to drive end of spindle, pressing on inner race of bearing.
- Lubricate gears and shafts liberally with ARO 33153 grease and assemble gears to spindle, securing with shafts. NOTE: Be sure shafts (38) contain 15 needle bearings per shaft.
- Align notch in shaft with spacer (45 or 50).
- Assemble spacer (37) (where applicable) to spindle.
- Lubricate bearing (29) with ARO 33153 grease and assemble to spindle, pressing on inner race of bearing.
- Lubricate gearing with approximately 1/32 oz. (.9g) of grease.
- Assemble spindle and components into ring gear (46).

- Assemble ring gear to tool and tighten, using wrenches on flats of ring gear (46) and adapter (35).

AUXILIARY GEARING DISASSEMBLY

- Remove drive gearing from tool.
- Holding motor housing (25) with a strap wrench, unthread and remove auxiliary gearing using a wrench on flats of adapter (35).
- Grasp adapter (35) in one hand and tap drive end of spindle (32 or 39) with a soft face hammer; spindle and components will loosen from adapter.
- Remove bearing (29) and spacer (33 or 42) from drive end of spindle.
- Alternately tap ends of shafts (30 or 38) to loosen bearing (29) (and spacer 37, where applicable).
- Remove shafts (30 or 38), releasing gears.

AUXILIARY GEARING ASSEMBLY

- Lubricate bearing (29) with ARO 33153 grease and assemble spacer (33 or 42) and bearing to drive end of spindle, pressing on inner race of bearing.
- Lubricate gears and shafts liberally with ARO 33153 grease and assemble gears to spindle, securing with shafts. NOTE: Be sure shafts (38) contain 15 needle bearings per shaft.
- Align notch in shafts with spacer (33 or 42).
- Assemble spacer (37) (where applicable) to spindle.
- Lubricate bearing (29) with ARO 33153 grease and assemble to spindle, pressing on inner race of bearing.
- Lubricate gearing with approximately 1/32 oz. (.9g) of grease.
- Assemble spindle and components into adapter (35).
- Assemble adapter to tool and tighten.

MOTOR DISASSEMBLY

- Remove gearing assemblies from tool.
- Place tool in a suitable holding device with "motor end" up, clamping on flats of housing (5).

DISASSEMBLY/ASSEMBLY INSTRUCTIONS

- Using a strap wrench, unthread and remove motor housing (25).
- Grasp cylinder (21) in one hand and tap splined end of rotor with a soft face hammer; motor will come apart.
- Remove bearing (16) and end plate (17) from rotor.

MOTOR ASSEMBLY

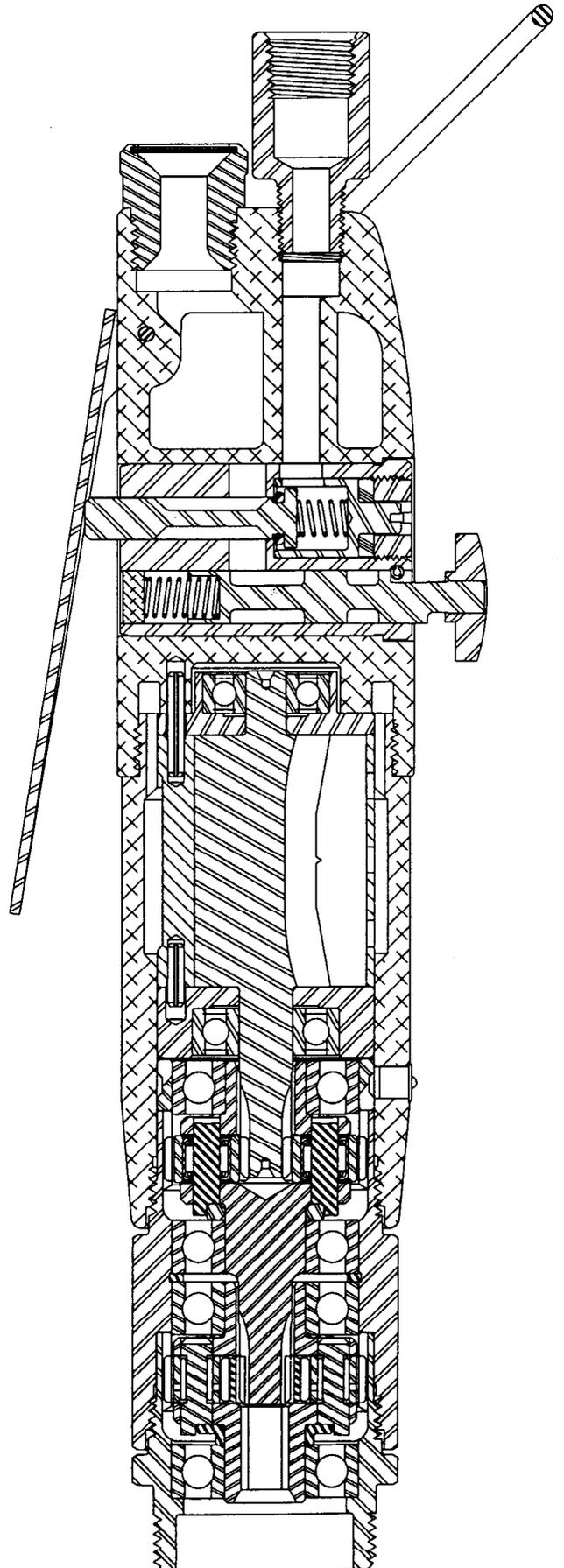
- Assemble bearing (16) into end plate (17), pressing on outer race of bearing.
- Assemble end plate (17) to rotor (18), pressing on inner race of bearing.
- Coat five rotor blades (19) with ARO 29665 spindle oil and assemble to rotor slots – straight side out.
- Coat i.d. of cylinder (21) with ARO 29665 spindle oil and assemble over rotor, aligning roll pin (20) in cylinder with hole in end plate (17). NOTE: Roll pin (20) is the long roll pin.
- Assemble bearing (24) to end plate (23), pressing on outer race of bearing.
- Assemble end plate (23) to cylinder, aligning hole in end plate with roll pin (22) in cylinder. NOTE: Press on inner race of bearing. Be sure rotor does not bind.
- Place housing (5) in a suitable holding device, with "motor end" up.
- Assemble motor assembly to housing, aligning roll pin (20) with .106" diameter blind hole in housing.
- Slip motor housing (25) over motor and thread to housing (5).
- Assemble spacers (27 and 28) and gearing to tool.

THROTTLE DISASSEMBLY

- Remove roll pin (6), releasing reverse valve (14) and spring (15).
- Remove nut (8), releasing valve components from housing (5).

THROTTLE ASSEMBLY

- Lubricate "O" ring (12) with ARO 36460 "O" ring lube and assemble to valve stem (13).
- Lubricate valve stem (13) with ARO 29665 spindle oil and assemble into housing (5).
- Assemble spring (11), air regulator (10) and seal (9) into housing, securing with nut (8). NOTE: Assemble regulator (10) with hole aligned with air inlet of housing.
- Assemble spring (15) and reverse valve (14) to housing, securing with roll pin (6).



MODEL 7359-E2



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