



Tool Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

SECTION M40
MANUAL 36

Released: 9/72

Revised: 12-22-95

Form: 036-2

“0” SERIES POWER MOTORS (“0” AND “2200” SERIES GEARING)

Models: 8226-()A, 8229-()A, 8230-()A and 8232-().



⚠ 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 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.
- 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.

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) 672-0801.

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



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




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

⚠ WARNING




Wear hearing protection when operating this tool.

⚠ 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.

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.

MODEL IDENTIFICATION

MODEL NUMBER	TOTAL RED.	RATED R.P.M.	MOTOR ASSEMBLY	ADAPTER GEARING	AUXILIARY GEARING	DRIVE GEARING
8226-6A	27.4:1	700	37960-1	42501		40830
8226-7A	41.3:1	450	37959-1	42500		40831
8226-8A	50.9:1	375	37960-1	42501		40831
8226-10A	109.7:1	170	37960-1	42501	40833	40830
8226-11A	165.1:1	110	37959-1	42500	40834	40830
8226-12A	203.8:1	90	37960-1	42501	40834	40830
8226-13A	306.7:1	60	37959-1	42500	40834	40831
8226-14A	378.5:1	50	37960-1	42501	40834	40831
8229-1A	1:1	19,000	37959-1			33808
8229-2A	3.4:1	5700	37959-1			33835
8229-3A	5.56:1	3500	37959-1			33836
8229-4A	6.86:1	2800	37960-1			34009
8229-5A	11.6:1	1650	37959-1		33853	33835
8229-6A	18.9:1	1000	37959-1		33837	33835
8229-7A	23.4:1	800	37960-1		39852	33835
8229-8A	30.9:1	600	37959-1		33837	33836
8229-9A	38.1:1	500	37960-1		39852	33836
8230-1A	1:1	19,000	37959-1			43637
8230-2A	3.4:1	5700	37959-1			34076
8230-3A	5.56:1	3500	37959-1			33361
8230-4A	6.86:1	2800	37960-1			39851
8230-5A	11.6:1	1650	37959-1		33853	34076
8230-6A	18.9:1	1000	37959-1		33837	34076
8230-7A	23.4:1	800	37960-1		39852	34076
8230-8A	30.9:1	600	37959-1		33837	33361
8230-9A	38.1:1	500	37960-1		39852	33361
8232-1	1:1	19,000	37959-1			39940
8232-2	3.4:1	5700	37959-1			39937
8232-3	5.56:1	3500	37959-1			39938
8232-4	6.86:1	2800	37960-1			39939
8232-5	11.6:1	1650	37959-1		33853	39937
8232-6	18.9:1	1000	37959-1		33837	39937
8232-7	23.4:1	800	37960-1		39852	39937

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 40 HOURS OF TOOL OPERATION – Flush tool with a solution of three (3) parts cleaning solvent to one (1) part spindle oil (or use kerosene).

EVERY 160 HOURS OF TOOL OPERATION – Lubricate gearing. Pack bearings, coat shafts and lubricate gears with NLGI #1 “EP” grease (33153).

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

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.

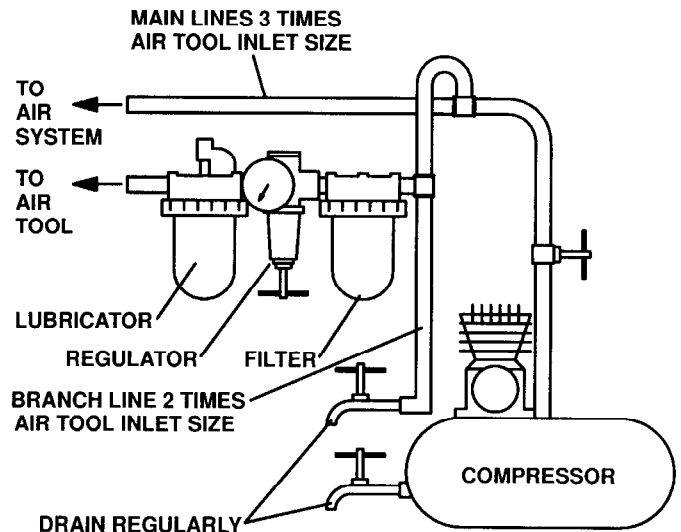
Tool maintenance and repair shall be performed by authorized, trained, competent personnel. Tools, hose and fittings shall be replaced if unsuitable for safe operation and responsibility should be assigned to be sure that all tools requiring guards or other safety devices shall be kept in legible condition.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

NOTICE

- 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

MODELS 8226-()A

- Remove keys (121) from spindle.
- Remove screws (114) and washers (115), releasing drive gearing from tool.
- Grasp nose housing (126) in one hand and tap drive end of spindle with a soft face hammer; spindle and components will loosen from nose housing.
- Gearing should not be disassembled further unless damage is evident, as Brinelling of the bearing races may occur, making replacement necessary.
- To disassemble further, remove bearing (122).
- Rotate snap ring (108 or 118) so the open portion will allow the removal of one shaft (103).
- Remove shaft (103), releasing gear.
- Repeat for removal of opposite shaft and gear.
- To remove bearing (102), remove snap ring (108 or 118), insert shafts into spindle and alternately tap ends, loosening bearing.

MODELS 8229-()A AND 8230-()A

- Remove key (66) or nut (55) from spindle.
- Remove thread guard (56).
- Using wrenches on flats of ring gear (53) and adapter (36), unthread and remove drive gearing.
- Grasp ring gear in one hand and tap drive end of spindle with a soft face hammer; spindle and components will loosen from ring gear.
- Gearing should not be disassembled further unless damage is evident, as Brinelling of the bearing races may occur, making replacement necessary.
- To disassemble further, remove spring washer (52), bearing (51 or 57) and spacer.
- Remove shafts, releasing gears.
- To remove bearing (27), insert shafts into spindle and alternately tap ends, loosening bearing.

MODELS 8232-()

- Remove collet nut (81), releasing collet (80).
- Using wrenches on flats of ring gear (74) and adapter (36), unthread and remove drive gearing.
- Unthread and remove lock ring (79) and felt seal (78).
- Unthread and remove lock nut (77).
- Grasp ring gear in one hand and tap drive end of spindle with a soft face hammer; spindle and components will loosen from ring gear.
- Gearing should not be disassembled further unless damage is evident, as Brinelling of the bearing races may occur, making replacement necessary.
- To disassemble further, alternately tap ends of shafts to remove bearing (27) and washer (28).
- Remove shafts from spindle, releasing gears.

DRIVE GEARING ASSEMBLY

MODELS 8226-()A

- Assemble snap ring (108 or 118) to spindle.
- Pack bearing (102) with ARO 33153 grease and assemble to spindle, pressing on inner race of bearing.
- Lubricate gears and needle bearings (104) liberally with ARO 33153 grease and assemble one gear to spindle, securing with shaft.

- Repeat for assembly of opposite shaft and gear. Gearing should contain approximately 1/4 oz. (7 g) of grease.
- Rotate opening of snap ring 90° from either shaft.
- Assemble bearing (122) to spindle, pressing on inner race of bearing.
- Lubricate seal (125) with ARO 36460 lube and assemble into nose housing (126). NOTE: Assemble seal with lips toward gearing.
- Assemble washer (124), wave washer (123) and spindle and components into nose housing.
- Assemble nose housing to housing (111) and secure with screws (114) and washers (115). NOTE: Assemble gearing to motor housing (7) before assembling motor assembly or head (1) to tool (see "MOTOR ASSEMBLY").
- Assemble spacer (127) and keys (121) to spindle.

MODELS 8229-()A AND 8230-()A

- Assemble spacer and bearing (51 or 57) to spindle, pressing on inner race of bearing.
- Lubricate gears liberally with ARO 33153 grease and assemble to spindle, securing with shafts. NOTE: Be sure each shaft (29) contains 15 needle bearings. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.
- Pack bearing (27) with ARO 33153 grease and assemble spacer (28)(where applicable) and bearing (27) to spindle, pressing on inner race of bearing.
- Assemble washer (52)(large diameter toward bearing) and gearing into ring gear (53).
- Assemble ring gear and components to tool and tighten, using wrenches on flats of ring gear (53) and adapter (36).
- Assemble thread guard (56) to ring gear.
- Assemble key (66) or nut (55) to spindle.

MODELS 8232-()

- Lubricate gears liberally with ARO 33153 grease and assemble to spindle, securing with shafts. NOTE: Be sure each shaft (29) contains 15 needle bearings. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.
- Pack bearing (27) with ARO 33153 grease and assemble washer (28) and bearing (27) to spindle, pressing on inner race of bearing.
- Pack bearings (76 or 83) with ARO 33153 grease and assemble into ring gear, pressing on outer race of bearings. NOTE: Assemble bearings with unmarked faces together.
- Assemble felt seal (78) to lock ring (79) and assemble lock ring to ring gear (74), securing bearings.
- Assemble spindle and components into ring gear (74).
- Assemble lock nut (77) to spindle.
- Assemble ring gear and components to tool and tighten, using wrenches on flats of ring gear (74) and adapter (36).
- Assemble collet (80) and collet nut (81) to spindle.

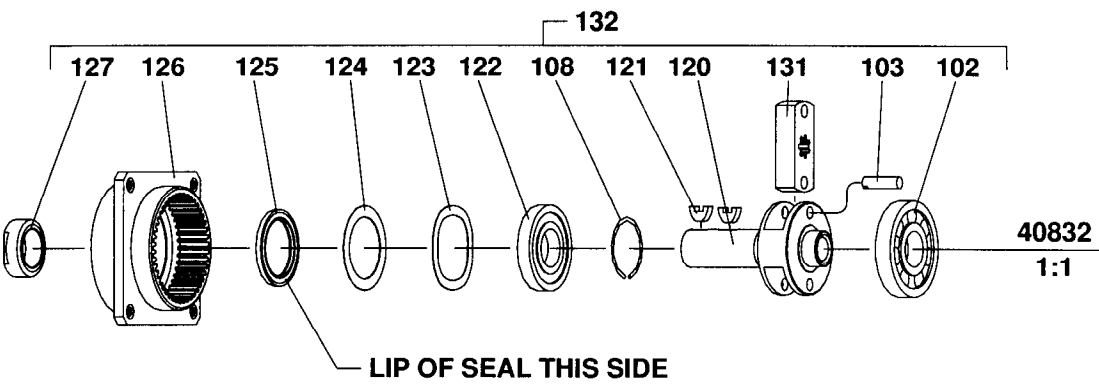
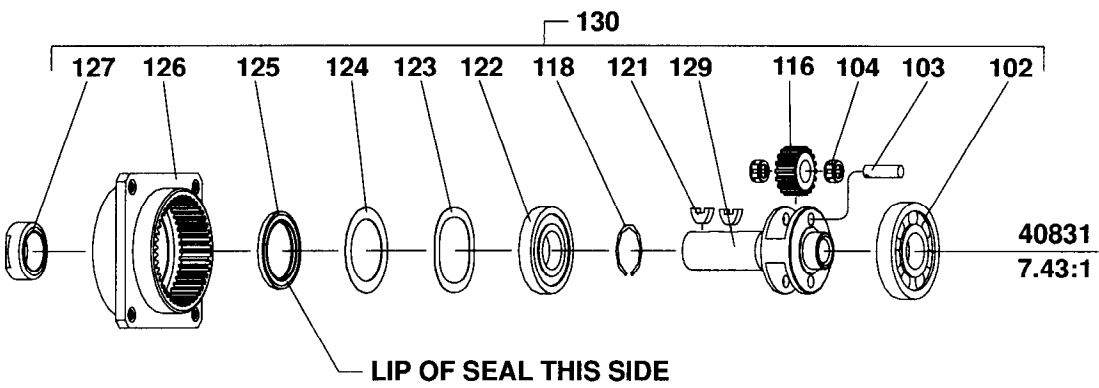
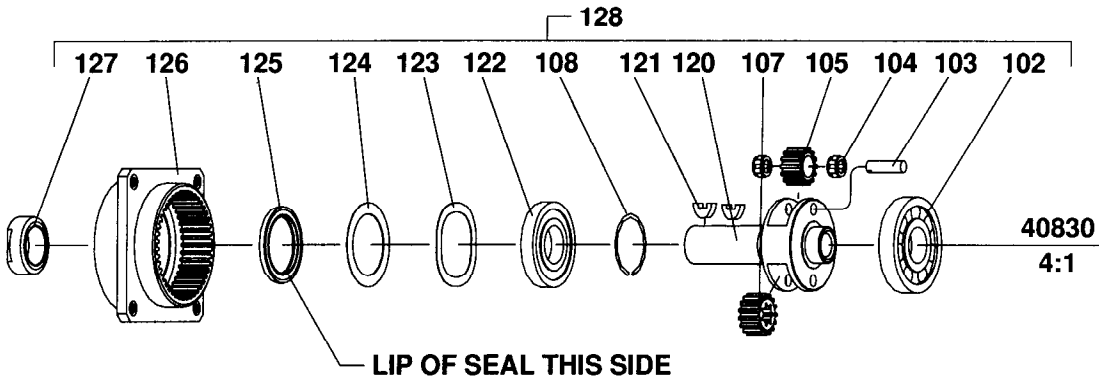
AUXILIARY GEARING DISASSEMBLY

MODELS 8226-()A

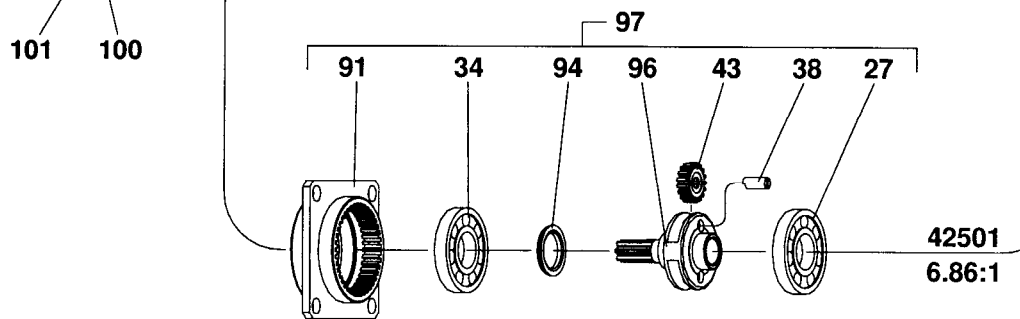
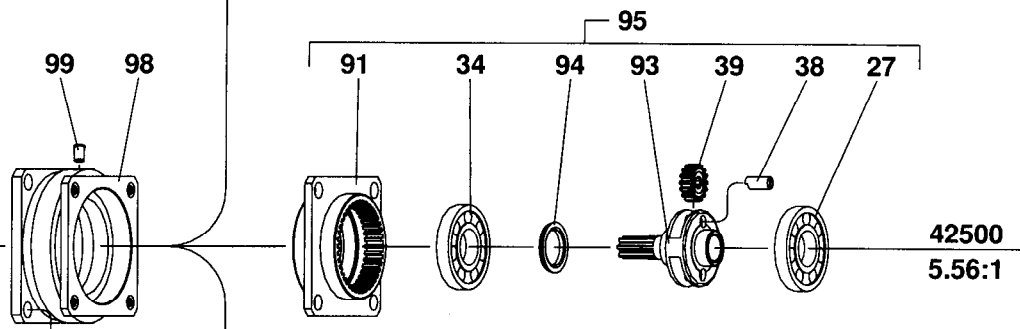
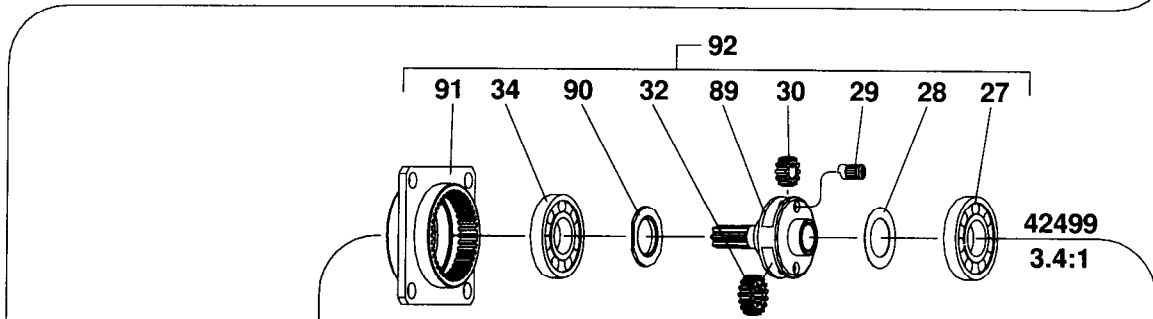
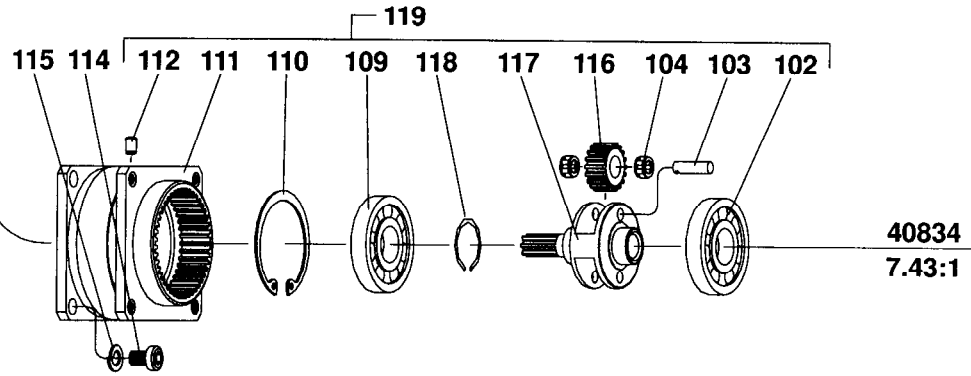
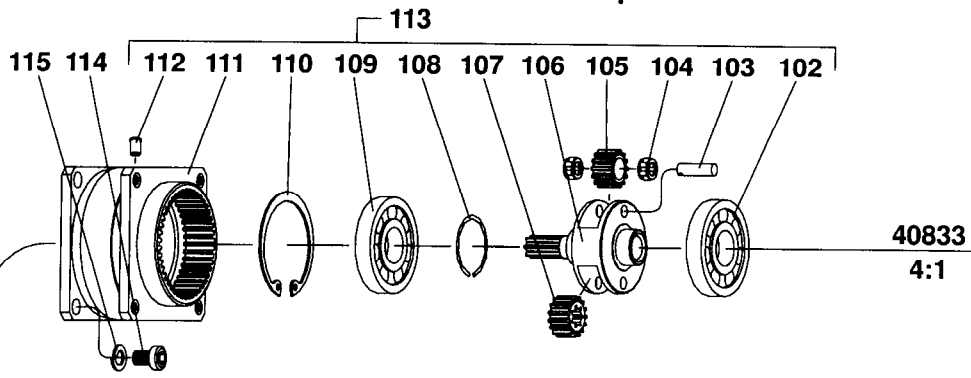
- Remove drive gearing from tool.
- Remove screws (100) and washers (101), releasing auxiliary gearing (113 or 119).
- Grasp housing (111) in one hand and tap drive end of spindle with a soft face hammer; spindle and components will loosen from housing.
- Gearing should not be disassembled further unless damage is evident, as Brinelling of the bearing races may occur, making replacement necessary.
- To disassemble further, remove bearing (109).
- Rotate snap ring (108 or 118) so the open portion will allow the removal of one shaft (103).
- Remove shaft (103), releasing gear.
- Repeat for removal of opposite shaft and gear.
- To remove bearing (102), remove snap ring, insert shafts into spindle and alternately tap ends, loosening bearing.

(CONTINUED ON PAGE 13)

DRIVE GEARING MODELS 8226-()A

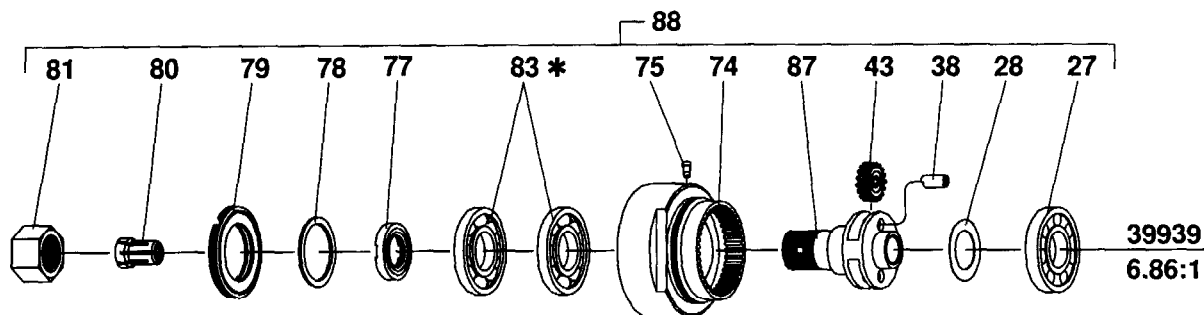
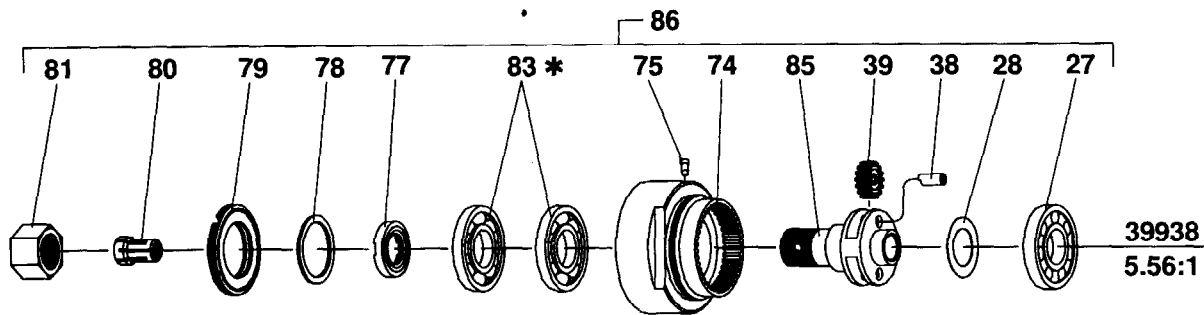
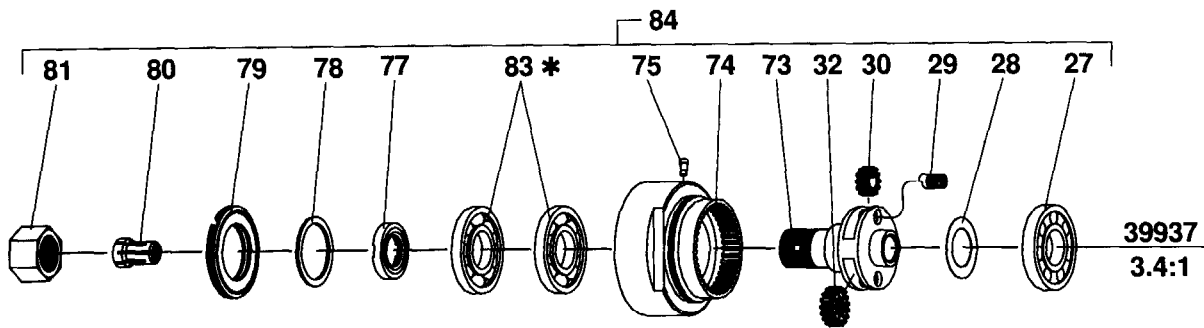
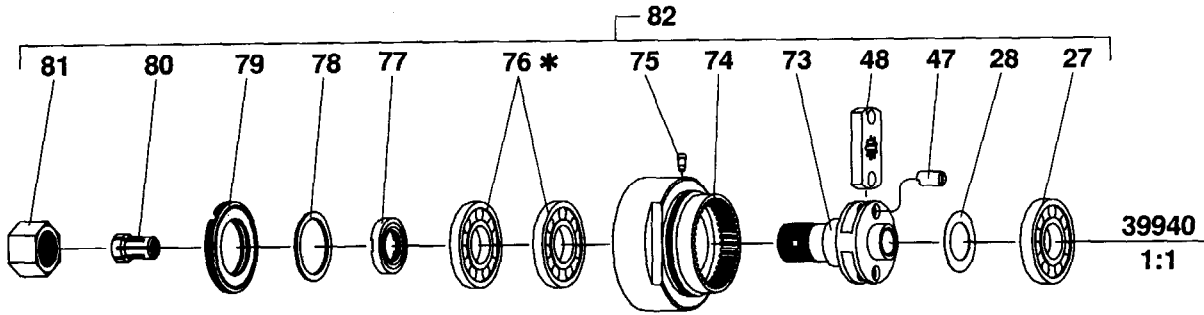


8226-()A AUXILIARY GEARING



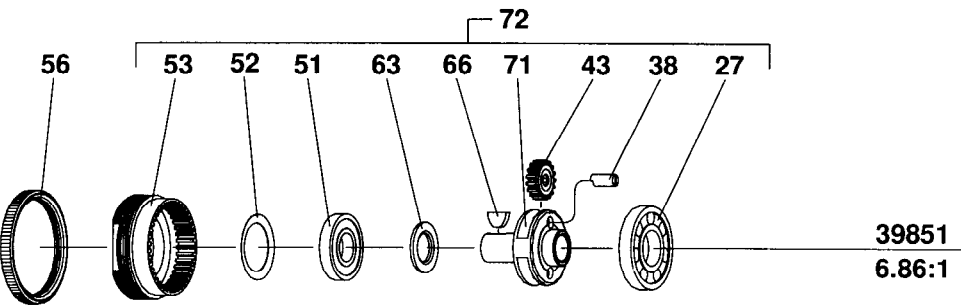
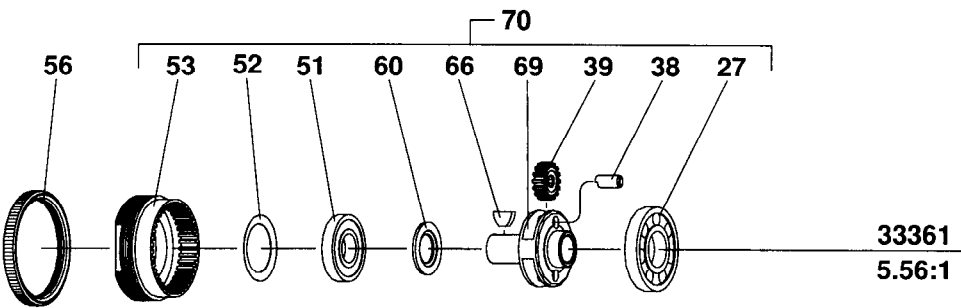
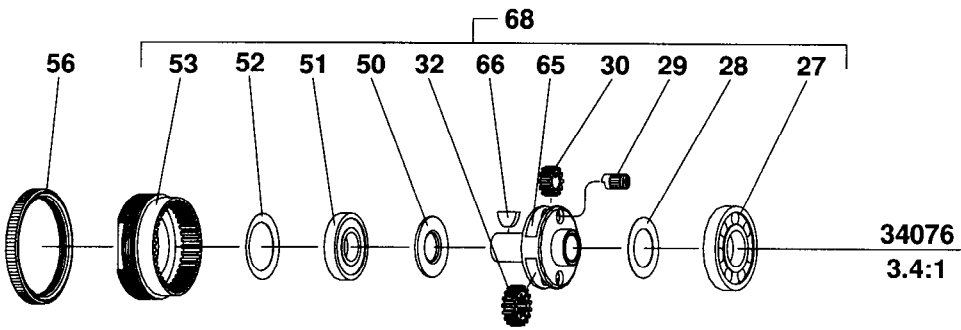
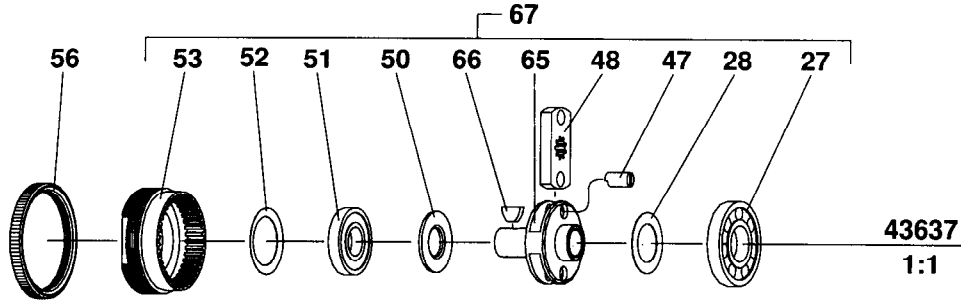
8232-() DRIVE GEARING

M40
36

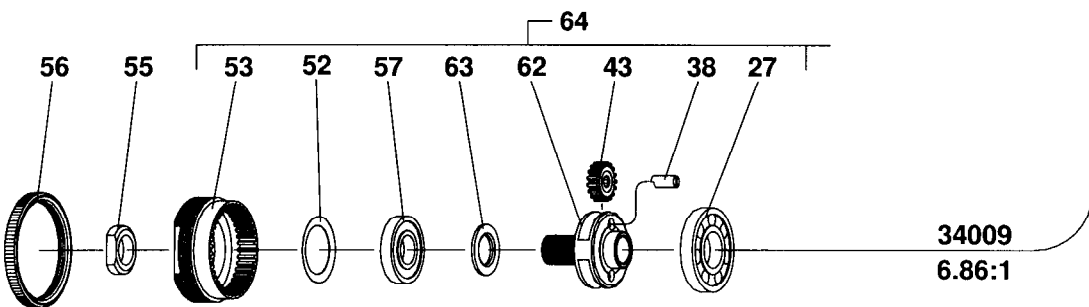
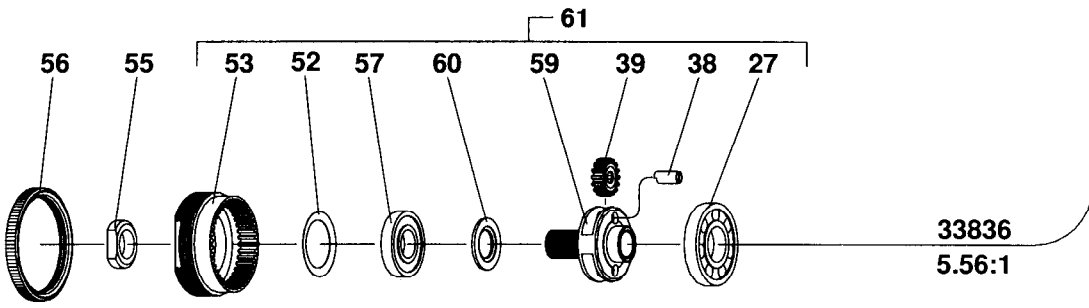
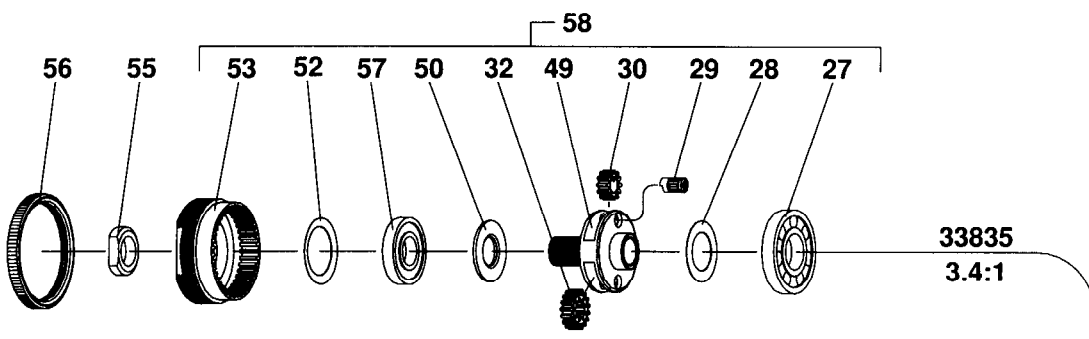
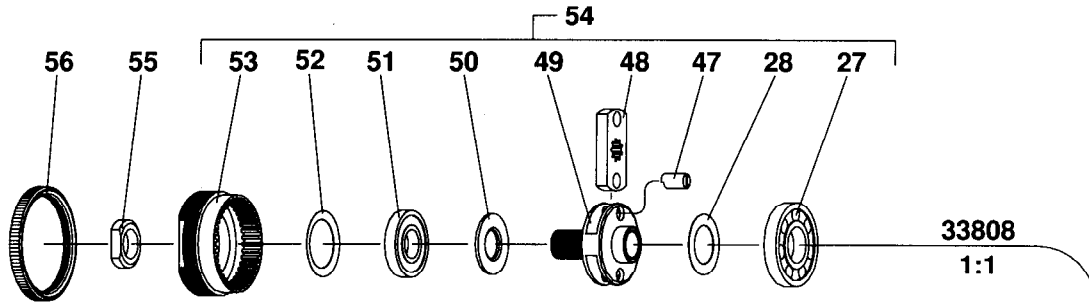


* ASSEMBLE WITH UNMARKED FACES TOGETHER

8230-()A DRIVE GEARING

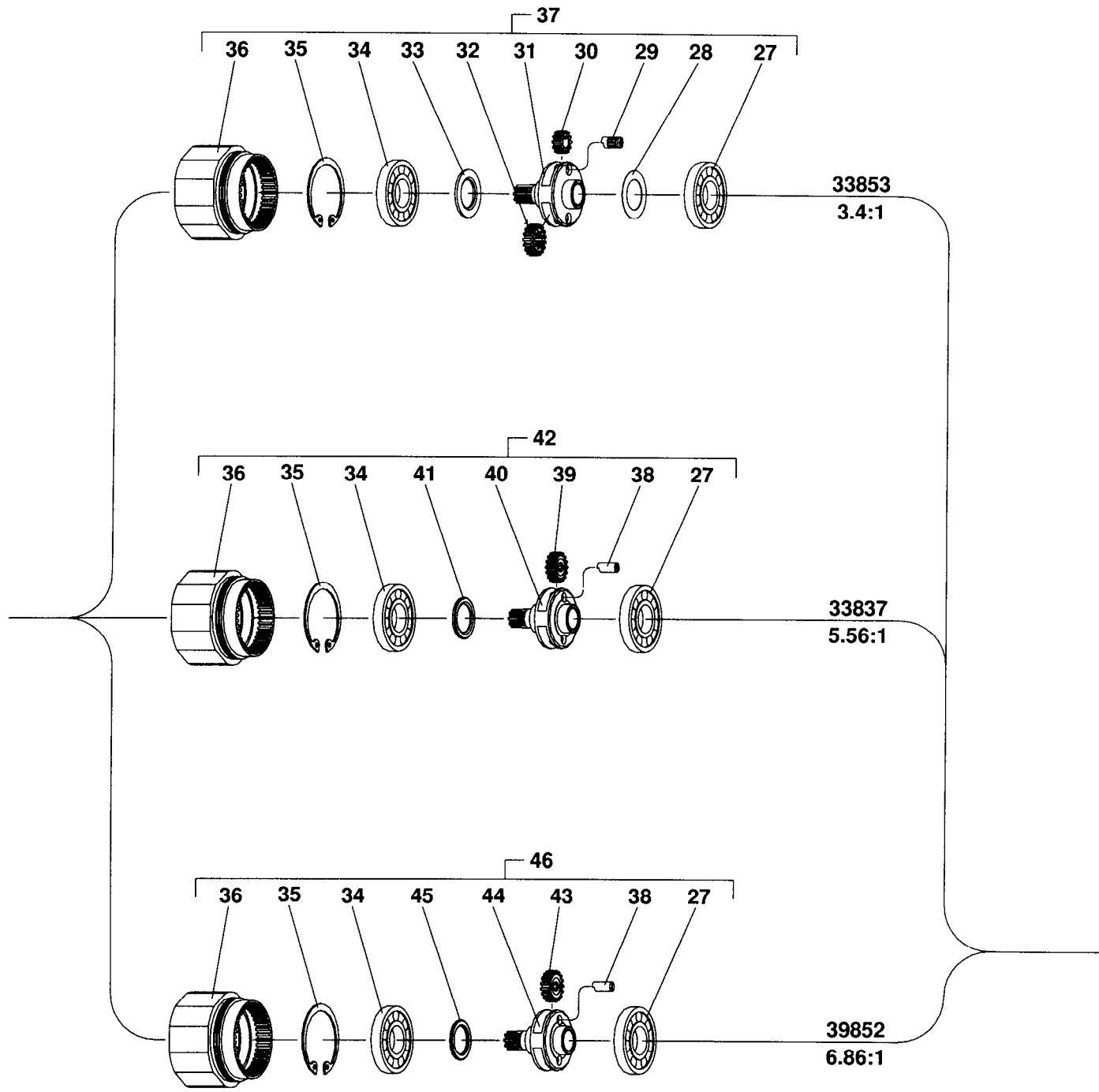


8229-()A DRIVE GEARING

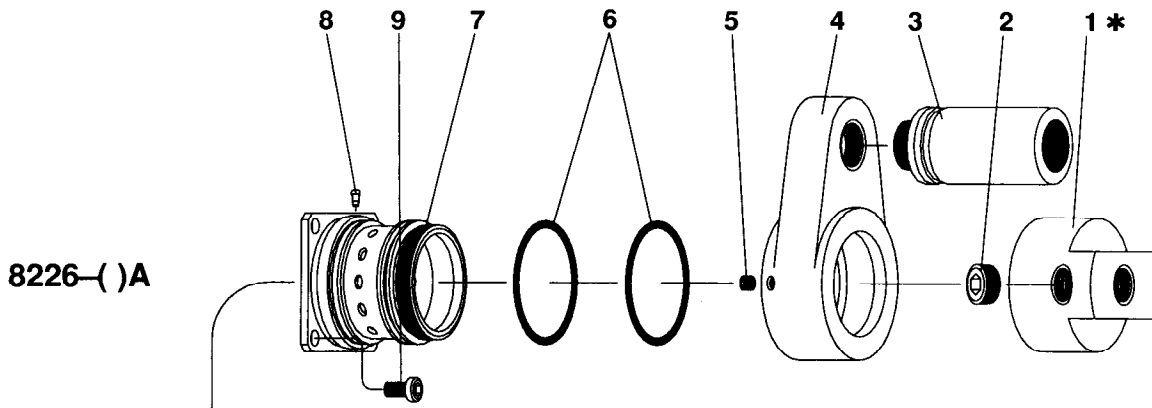


AUXILIARY GEARING

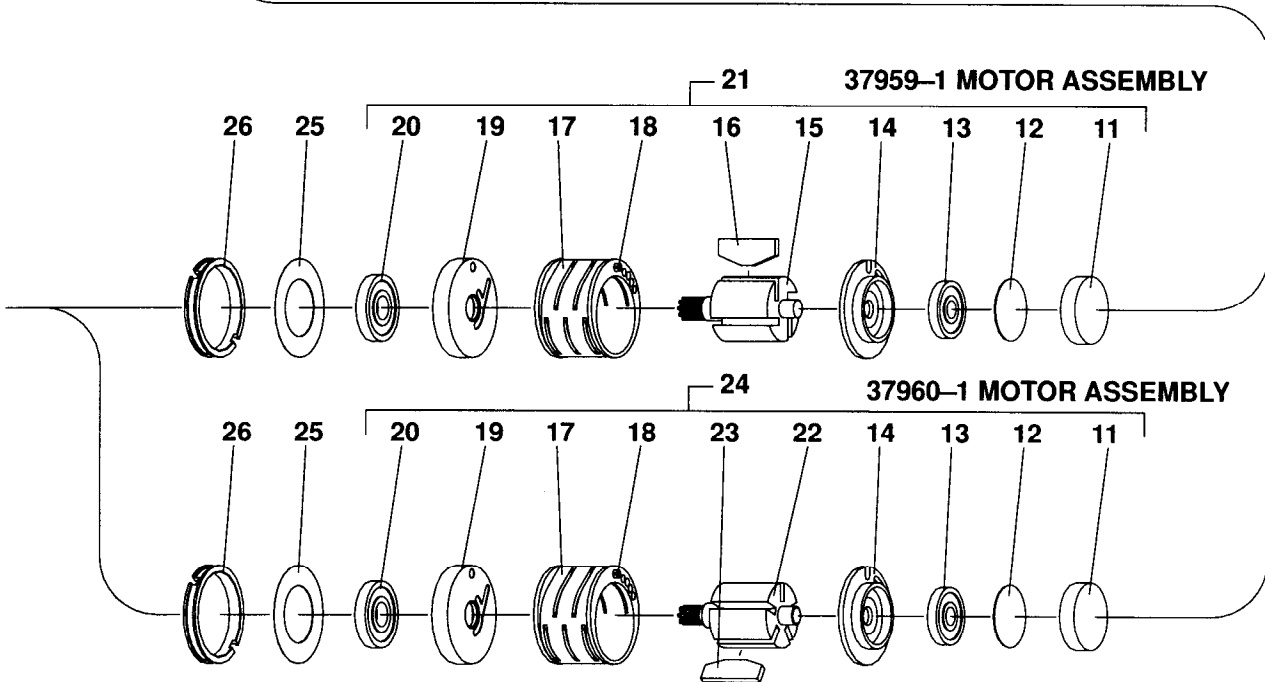
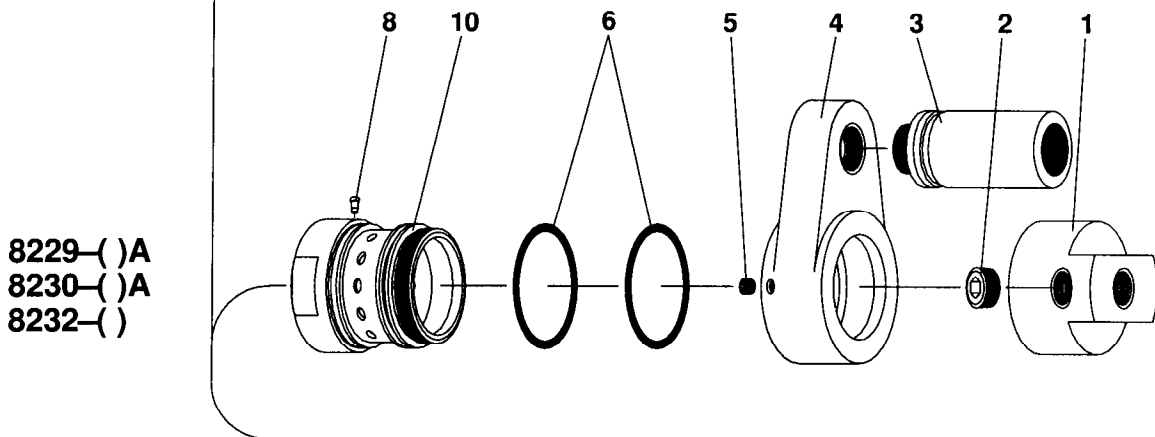
MODELS 8229-()A, 8230-()A AND 8232-()



NOT SHOWN
30470 WRENCH (MODELS 8232-() ONLY)



* TIGHTEN TO 35 - 40 FT LBS.



PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

1	Housing Cap	42519	67	Drive Gearing Assembly (1:1)	43637
2	Plug	Y227-3	68	Drive Gearing Assembly (3.4:1)	34076
3	Muffler Assembly	43551-3	69	Spindle	33963
4	Manifold Assembly (includes item 5)	43556	70	Drive Gearing Assembly (5.56:1)	33361
5	Screw	Y23-102	71	Spindle	39848
6	"O" Ring (2 req'd)	Y325-127	72	Drive Gearing Assembly (6.86:1)	39851
7	Housing Assembly (includes item 8)	42486	73	Spindle	39934
8	Grease Fitting	35967	74	Ring Gear (includes item 75)	39984
9	Screw (4 req'd)	Y154-53	75	Grease Fitting	35967
10	Housing Assembly (includes item 8)	43634	76	Ball Bearing (2 req'd)	34682
11	Cap	38783	77	Lock Nut	38718
12	Shield	38805	78	Felt Seal	38720
13	Bearing	Y65-7	79	Lock Ring	38719
14	Rear End Plate	37956	80	Collet	31812-8
15	Rotor	30745	81	Collet Nut	38721
16	Rotor Blade (4 req'd)	30741	82	Drive Gearing Assembly (1:1)	39940
17	Cylinder Assembly (includes item 18)	37958	83	Ball Bearing (2 req'd)	48305-1
18	Roll Pin (2 req'd)	Y178-22	84	Drive Gearing Assembly (3.4:1)	39937
19	Front End Plate	31158	85	Spindle	39935
20	Bearing	Y65-15	86	Drive Gearing Assembly (5.56:1)	39938
21	Motor Assembly	37959-1	87	Spindle	39936
22	Rotor	31633	88	Drive Gearing Assembly (6.86:1)	39939
23	Rotor Blade (5 req'd)	31363	89	Spindle	42496
24	Motor Assembly	37960-1	90	Spacer	33691
25	Spacer	32310	91	Ring Gear	40499
26	Spacer	32305	92	Adapter Gearing Assembly (3.4:1)	42499
27	Bearing	32325	93	Spindle	42497
28	Washer	37676	94	Spacer	33693
29	Shaft (2 req'd)(includes 15 needle bearings per shaft)	33686	95	Adapter Gearing Assembly (5.56:1)	42500
30	Planet Gear (2 req'd)	30899	96	Spindle	42498
31	Spindle	37667	97	Adapter Gearing Assembly (6.86:1)	42501
32	Spur Gear	30901	98	Adapter (includes item 99)	42502
33	Spacer	32314	99	Grease Fitting	35323
34	Bearing	32325	100	Screw (4 req'd)	Y154-52-C
35	Retaining Ring	Y147-7	101	Washer (4 req'd)	Y14-10
36	Adapter	32326	102	Ball Bearing	33704
37	Auxiliary Gearing Assembly (3.4:1)	33853	103	Shaft (2 req'd)	40841
38	Shaft (2 req'd)	33436	104	Needle Bearing (4 req'd)	42271
39	Planet Gear (2 req'd)	33440	105	Planet Gear (2 req'd)	46417
40	Spindle	33425	106	Spindle	40839
41	Spacer	32312	107	Spur Gear	34574
42	Auxiliary Gearing Assembly (5.56:1)	33837	108	Snap Ring	40842
43	Planet Gear (2 req'd)	33438	109	Ball Bearing	33704
44	Spindle	39849	110	Snap Ring	33708
45	Spacer	39850	111	Gear Housing (includes item 112)	37968
46	Auxiliary Gearing Assembly (6.86:1)	39852	112	Grease Fitting	35323
47	Shaft (2 req'd)	30765	113	Auxiliary Gearing Assembly (4:1)	40833
48	Drive Spline	32833	114	Screw (4 req'd)	Y154-52-C
49	Spindle	37669	115	Washer (4 req'd)	Y14-10
50	Spacer	32315	116	Planet Gear (2 req'd)	46416
51	Bearing	Y65-13	117	Spindle	40840
52	Spring Washer	32544	118	Snap Ring	40843
53	Ring Gear	32935	119	Auxiliary Gearing Assembly (7.43:1)	40834
54	Drive Gearing Assembly (1:1)	33808	120	Spindle	40837
55	Nut	30756-1	121	Key (2 req'd)	41277
56	Thread Guard	32070	122	Ball Bearing	33706
57	Bearing	36546	123	Wave Washer	47589
58	Drive Gearing Assembly (3.4:1)	33835	124	Washer	47590
59	Spindle	33427	125	Seal	37389
60	Spacer	32313	126	Nose Housing	37878
61	Drive Gearing Assembly (5.56:1)	33836	127	Spacer	33697
62	Spindle	33423	128	Drive Gearing Assembly (4:1)	40830
63	Spacer	32311	129	Spindle	40838
64	Drive Gearing Assembly (6.86:1)	34009	130	Drive Gearing Assembly (7.43:1)	40831
65	Spindle	37671	131	Drive Spline	34488
66	Key	Y62-2	132	Drive Gearing Assembly (1:1)	40832

MODELS 8229-()A, 8230-()A AND 8232-()

- Remove drive gearing from tool.
- Using wrenches on flats of adapter (36) and motor housing (10), unthread and remove gearing.
- Grasp adapter (36) in one hand and tap splined end of spindle with a soft face hammer; spindle and components will loosen from adapter.
- Gearing should not be disassembled further unless damage is evident, as Brinelling of the bearing races may occur, making replacement necessary.
- To disassemble further, remove bearing (34) and spacer from spindle.
- Remove shafts (29 or 38), releasing gears.
- To remove bearing (27), insert shafts into spindle and alternately tap ends, loosening bearing.

AUXILIARY GEARING ASSEMBLY**MODELS 8226-()A**

- Assemble snap ring (110) to housing (111).
- Assemble snap ring (108 or 118) to spindle.
- Pack bearing (102) with ARO 33153 grease and assemble to spindle, pressing on inner race of bearing.
- Lubricate gears and needle bearings (104) liberally with ARO 33153 grease and assemble one gear to spindle, securing with shaft.
- Repeat for assembly of opposite shaft and gear. Gearing should contain approximately 1/4 oz. (7 g) of grease.
- Rotate opening of snap ring 90° from either shaft.
- Pack bearing (109) with ARO 33153 grease and assemble to spindle, pressing on inner race of bearing.
- Assemble spindle and components into housing (111).
- Assemble housing (111) and components to adapter (98) and secure with screws (100) and washers (101). NOTE: Assemble gearing to motor housing (7) before assembling motor assembly or head (1) to tool (see "MOTOR ASSEMBLY"). Align grease fitting (112) with grease fitting (99).
- Assemble drive gearing to tool.

MODELS 8229-()A, 8230-()A AND 8232-()

- Assemble retaining ring (35) to adapter (36).
- Pack bearing (34) with ARO 33153 grease and assemble spacer and bearing to spindle, pressing on inner race of bearing.
- Lubricate gears liberally with ARO 33153 grease and assemble to spindle, securing with shafts. NOTE: Be sure each shaft (29) contains 15 needle bearings. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.
- Pack bearing (27) with ARO 33153 grease and assemble spacer (28)(where applicable) and bearing (27) to spindle, pressing on inner race of bearing.
- Assemble spindle and components into adapter (36).
- Assemble adapter (36) and components to tool and tighten, using wrenches on flats of adapter (36) and motor housing (10).
- Assemble drive gearing to tool.

ADAPTER GEARING DISASSEMBLY

- Remove drive and auxiliary gearing from tool.
- Remove screws (9), releasing adapter gearing from tool.
- Grasp ring gear (91) in one hand and tap splined end of spindle with a soft face hammer; spindle and components will loosen from ring gear.
- Gearing should not be disassembled further unless damage is evident, as Brinelling of the bearing races may occur, making replacement necessary.
- To disassemble further, remove bearing (34) and spacer from spindle.
- Remove shafts (29 or 38), releasing gears.
- To remove bearing (27), insert shafts into spindle and alternately tap ends, loosening bearing.

ADAPTER GEARING ASSEMBLY

- Pack bearing (34) with ARO 33153 grease and assemble spacer (90 or 94) and bearing to spindle, pressing on inner race of bearing.

- Lubricate gears liberally with ARO 33153 grease and assemble to spindle, securing with shafts. NOTE: Be sure each shaft (29) contains 15 needle bearings. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.
- Pack bearing (27) with ARO 33153 grease and assemble spacer (28)(where applicable) and bearing to spindle, pressing on inner race of bearing.
- Assemble spindle and components into ring gear (91).
- Assemble ring gear (91) and components to motor housing (7) and secure with screws (9). NOTE: Assemble gearing to motor housing (7) before assembling motor assembly or head (1) to tool (see "MOTOR ASSEMBLY").

MOTOR DISASSEMBLY

- The motor assembly can be removed from either end of motor housing (7 or 10).
- To remove from "gearing" end of motor housing, remove gearing from tool.
- Remove spacers (26 and 25) and motor assembly from motor housing.
- Remove cap (11) and shield (12) from end plate (13).
- Grasp cylinder in one hand and tap splined end of rotor with a soft face hammer; motor will come apart.
- Remove bearing (13) and end plate (14) from rotor.

MOTOR ASSEMBLY

- Assemble bearing (13) to end plate (14), pressing on outer race of bearing.
- Assemble end plate (14) to rotor, pressing on inner race of bearing.
- Coat rotor blades (16 or 23) with ARO 29665 spindle oil and assemble to rotor slots — straight side out.
- Coat i.d. of cylinder (17) with ARO 29665 spindle oil and assemble over rotor, aligning roll pin (18) and air inlet slots in end of cylinder with holes in end plate.
- Assemble bearing (20) to end plate (19), pressing on outer race of bearing.
- Assemble end plate (19) to rotor, pressing on inner race of bearing. NOTE: Align hole in end plate with roll pin (18) in cylinder. Be sure rotor turns without binding.
- Assemble shield (12) and cap (11) to rear end plate (14).
- Models 8229-()A, 8230-()A and 8232-() — Assemble motor assembly into motor housing (10), aligning roll pin (18) with .1065" diameter blind hole in head (largest hole). Assemble spacers (25 and 26) and gearing to motor housing (10).
- Models 8226-()A — Assemble gearing to motor housing (7). Place head (1) in a vise, with the motor end upright. Place motor assembly on head (1), aligning roll pin (18) with .1065" diameter blind hole (largest hole). Assemble spacers (25 and 26) to motor. Assemble motor housing (7), with gearing and manifold attached, over motor and thread to head. NOTE: Tighten to 35 – 40 ft lbs.

MANIFOLD DISASSEMBLY

- Remove muffler (3) from manifold (4).
- Place head (1) in a vise, clamping on flats.
- Unthread and remove motor housing (7 or 10).
- Unthread set screw (5) and slide manifold off housing.

MANIFOLD ASSEMBLY

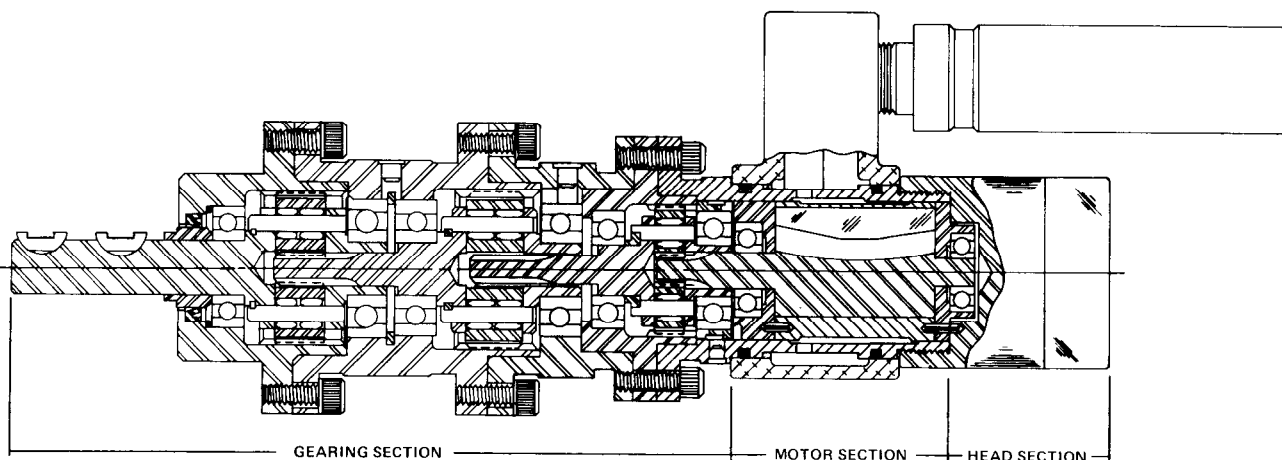
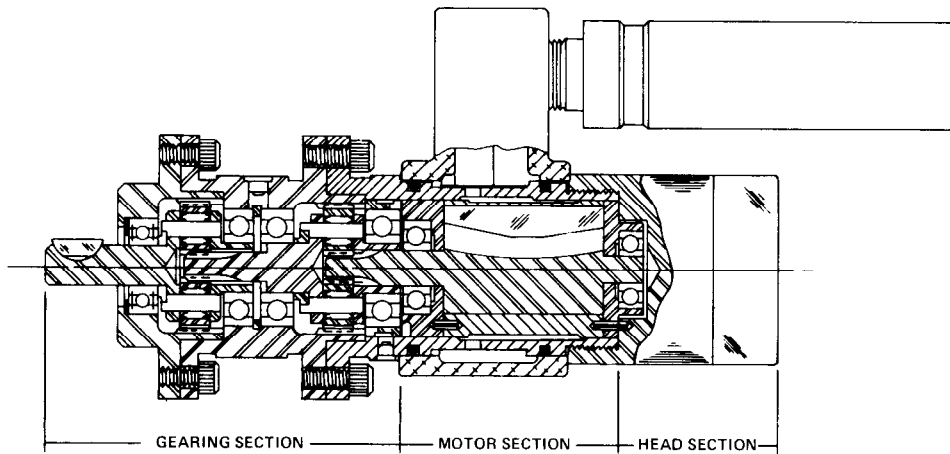
- Grease "O" rings (6) with ARO 36460 lube and assemble to grooves in motor housing (7 or 10).
- Assemble manifold (4) to motor housing.
- Assemble motor assembly and gearing to tool (see "MOTOR ASSEMBLY").
- Assemble head (1) to motor housing. NOTE: For models 8226-()A, tighten to 35 – 40 ft lbs.
- Rotate manifold so muffler will be located approximately 180° from cylinder exhaust slots and tighten set screw (5).
- Assemble muffler (3) to manifold.

TROUBLE SHOOTING

LISTED BELOW ARE SOME OF THE MOST COMMON CAUSES FOR THE POWER MOTOR 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.

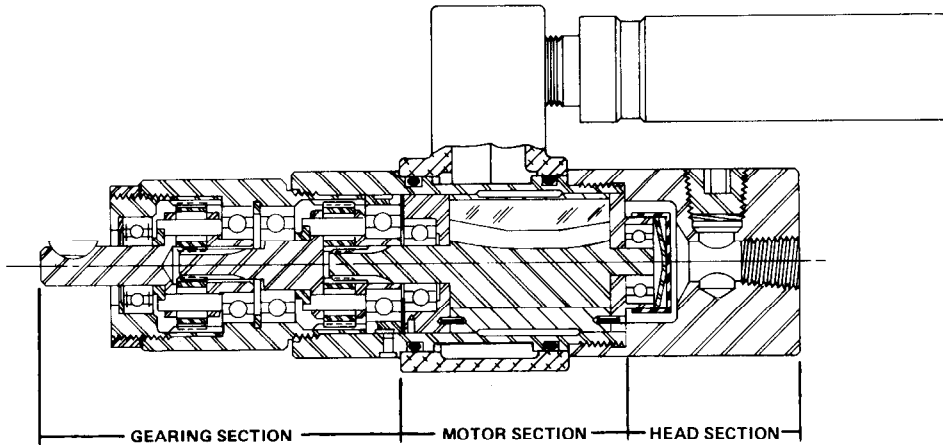
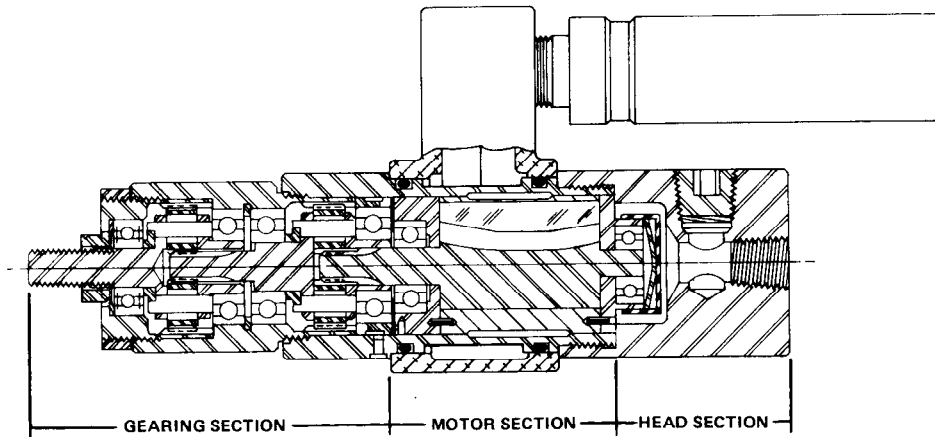
CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
LOW SPEED OR FAILURE TO OPERATE.	1. INADEQUATE AIR SUPPLY.	1. CHECK AIR SUPPLY FOR CORRECT REGULATOR ADJUSTMENT (90 P.S.I.G. MAX. WHEN TOOL IS OPERATING).
	2. MOTOR AND/OR GEARING NOT BEING PROPERLY LUBRICATED.	2. REFER TO AIR AND LUBE REQUIREMENTS, PAGE 3.
	3. CLOGGED MUFFLER.	3. REPLACE MUFFLER.
	4. CLOGGED AIR INLET TO MOTOR. STICKING, BADLY WORN OR BROKEN ROTOR BLADES OR BEARING IN MOTOR.	4. DISASSEMBLE, CLEAN, INSPECT. REPLACE BADLY WORN OR BROKEN ROTOR BLADES OR BEARINGS. REFER TO MOTOR DISASSEMBLY/ASSEMBLY, PAGE 14.
	5. BADLY WORN BEARINGS OR GEARS IN GEARING SECTION.	5. DISASSEMBLE, CLEAN, INSPECT. REPLACE WORN OR DAMAGED PARTS. LUBRICATE. REFER TO GEARING DISASSEMBLY/ASSEMBLY.

TYPICAL CROSS SECTION OF TOOLS

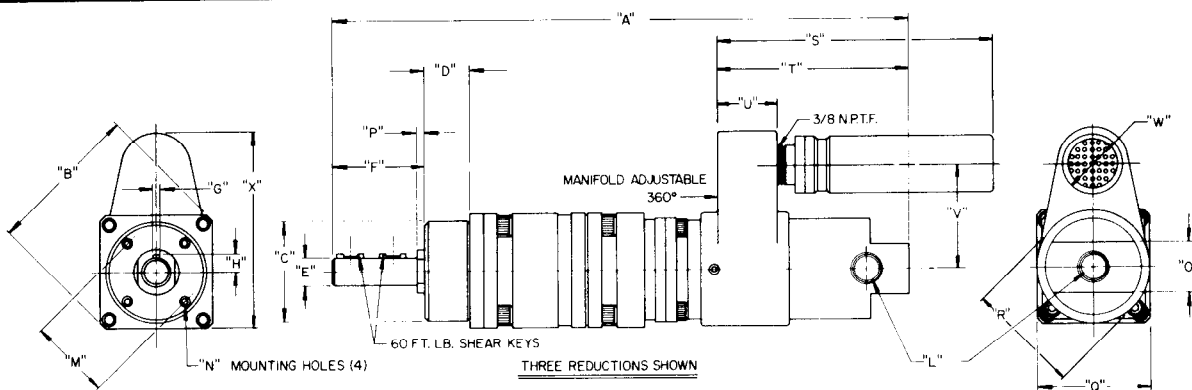


TYPICAL CROSS SECTION OF TOOLS

M40
36



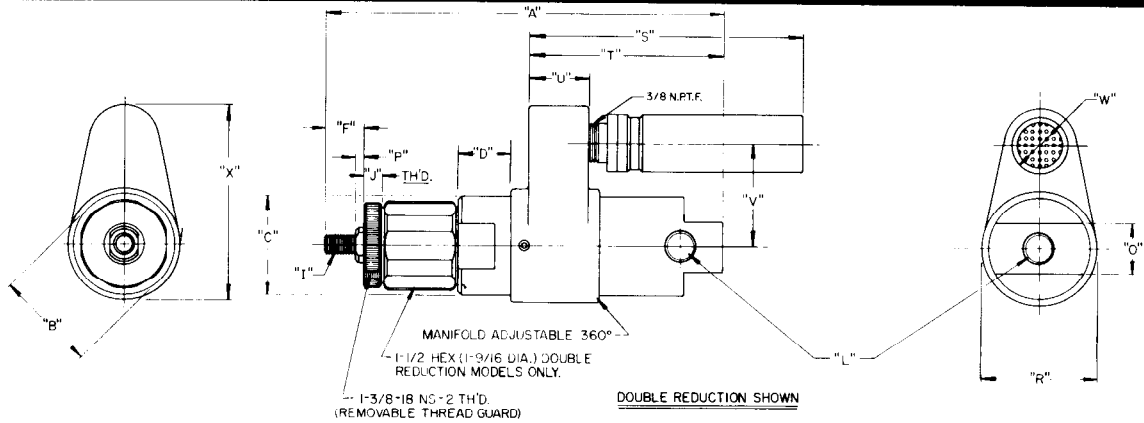
DIMENSIONAL DATA



MODELS	GEAR REDUCTION	A
8226-1 A	2 RED'S.	8-11/16 (221 MM)
	3 RED'S.	10-1/2 (267 MM)

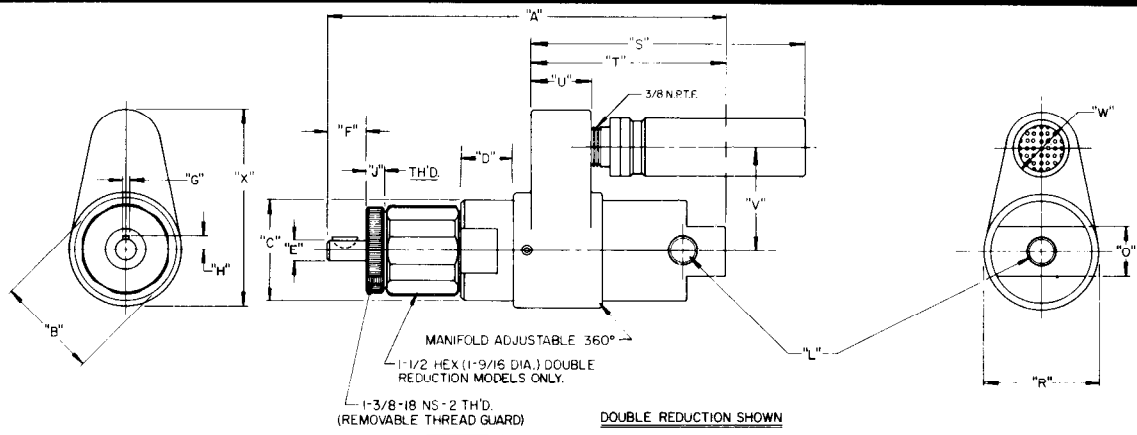
	B	C	D	E	F	G	H	L	M	N	O	P	Q	R	S	T	U	V	W	X
INCHES	2.11/16	1.7490 1.7495	.774 .818	.4990 .4995	1.604 1.655	.125 .126	.304 .314	1/4 N.P.T.F.	1.432 1.442	10-24 UNC.2B	7/8	.098 .164	2	2	4/8	3-13/32	1-1/16	1.13/16	1	3/7/16
MM	68	44.4246 44.4373	19.659 20.777	12.6746 12.6873	40.741 42.037	3.175 3.200	7.721 7.975	AIR INLET	36.372 36.626	TH'D.	22	2.489 4.165	51	51	124	86	27	46	25	87

DIMENSIONAL DATA



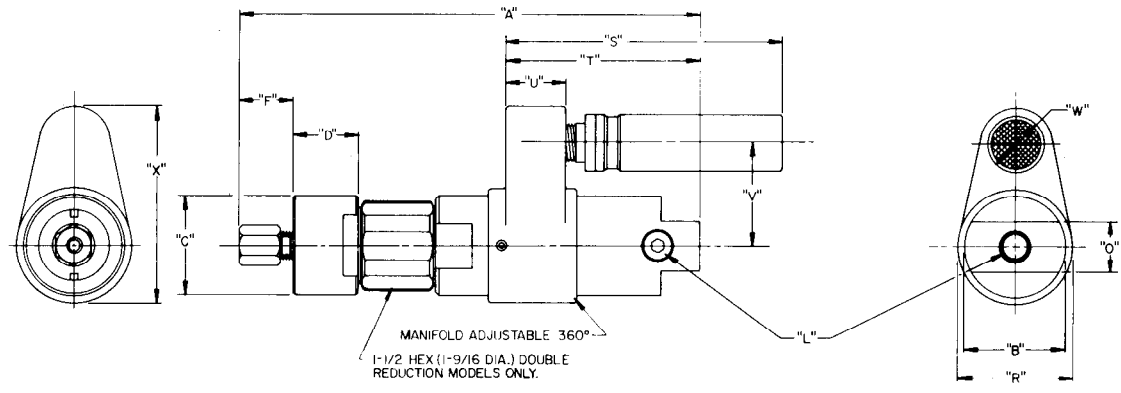
MODELS	GEAR REDUCTION	A
8229- ()-A	SINGLE	5-3/4 (146 MM)
	DOUBLE	7-1/16 (179 MM)

	B	C	D	F	I	J	L	O	P	R	S	T	U	V	W	X
INCHES	1-3/4	1.730 1.740	.960 .980	.688 .740	3/8-24 UNF-3A TH.D.	.270 .292	1/4 N.P.T.F. AIR INLET	7/8	.163 .203	2	4-7/8	3-13/32	1-1/16	1-13/16	1	3-7/16
MM	44	43.924 44.196	24.384 24.892	17.475 18.796		6.858 7.416		22	4.140 5.156	51	124	86	27	46	25	87



MODELS	GEAR REDUCTION	A
8230- ()-A	SINGLE	5-3/4 (146 MM)
	DOUBLE	7-1/16 (179 MM)

	B	C	D	E	F	G	H	J	L	O	R	S	T	U	V	W	X
INCHES	1-3/4	1.730 1.740	.960 .980	.3748 .3751	.688 .740	.0938 .0948	.228 .238	.270 .292	1/4 N.P.T.F. AIR INLET	7/8	2	4-7/8	3-13/32	1-1/16	1-13/16	1	3-7/16
MM	44	43.942 44.196	24.384 24.892	9.5199 9.5275	17.475 18.796	2.3825 2.4079	5.791 6.045	6.858 7.416		22	51	124	86	27	46	25	87



MODELS	GEAR REDUCTION	A
8232- ()	SINGLE	6-7/8 (175 MM)
	DOUBLE	8-3/16 (208 MM)

	B	C	D	F	L	O	R	S	T	U	V	W	X
INCHES	1-3/4	1.749 1.750	1.5/32	15/16 (APPROX.)	1/4 N.P.T.F. AIR INLET	7/8	2	4-7/8	3-13/32	1-1/16	1-13/16	1	3-7/16
MM	44	44.424 44.450	29	24		22	51	124	86	27	46	25	87