



Tool Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

SECTION M30
MANUAL 32

Released: 6/81

Revised: 1-6-95

Form: 1923-2

"QRT" SERIES SCREWDRIVERS

Models: 8506-B(), 8509-B(),
8515-B() and 8521-B().



⚠ 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

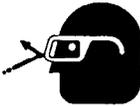
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FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

⚠ 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



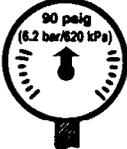
Do not use damaged, frayed or deteriorated air hoses and fittings.

⚠ 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

⚠ WARNING

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



PN 48176-1 LABEL
(NON-EU MODELS)

PN 49883 LABEL
(-EU MODELS)

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 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 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 – 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.

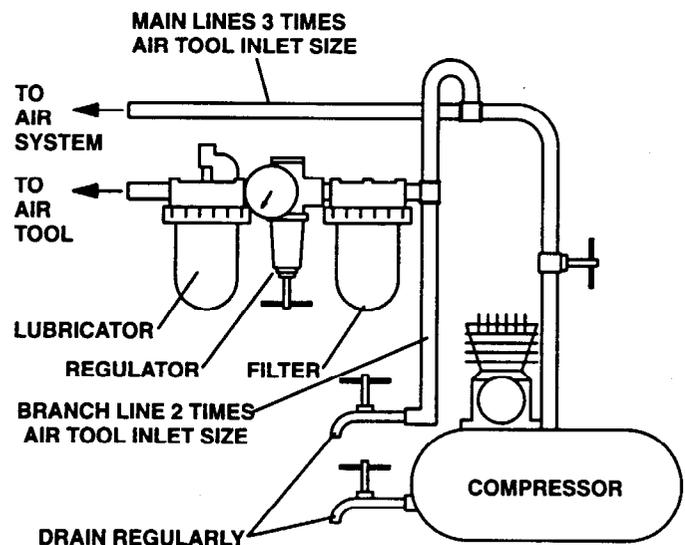
Tool maintenance and repair shall be performed by authorized, trained, competent personnel. Tools, hose and fittings shall be replaced if unsuitable for safe operation and responsibility should be assigned to be sure that all tools requiring guards or other safety devices shall be kept in legible condition.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



MODEL IDENTIFICATION

MODEL NUMBER	R.P.M.	CLUTCH ASSEMBLY	CLUTCH HOUSING ASSEMBLY	AUXILIARY GEARING	DRIVE GEARING	MOTOR ASSEMBLY	GEARING RED.
8506-BPR-D	600	NONE	NONE	33837	45764	33816	18.7:1
8506-BPR-D-EU	600	NONE	NONE	33837	45764	33816	18.7:1
8506-BPR-F	600	46008-1	45638	33837	36327	33816	18.7:1
8509-BPR-D	900	NONE	NONE	33853	45764	33816	11.56:1
8509-BPR-F	900	46008-1	45638	33853	36327	33816	11.56:1
8515-BPR-D	1500	NONE	NONE	NONE	45759	33811	6.8:1
8515-BPR-D-EU	1500	NONE	NONE	NONE	45759	33811	6.8:1
8515-BPR-F	1500	46008-1	45638	NONE	36329	33811	6.8:1
8521-BPR-D	2100	NONE	NONE	NONE	45762	33816	5.5:1
8521-BPR-F	2100	46008-1	45638	NONE	36324	33816	5.5:1

CANCELLED

MODELS WITH -EU SUFFIX ARE "EC" COMPLIANT MODELS.

DISASSEMBLY AND ASSEMBLY OF TOOLS

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

Before starting to disassemble or assemble this tool (any part or completely), be sure to read "Inspection, Maintenance and Installation" section.

To minimize the possibility of parts damage and for convenience, the steps for disassembly or assembly listed on the following pages are recommended.

The basic sections and instructions for removing them from the tool are as follows:

DRIVE SECTION

Remove clutch housing from tool (left hand threads); grasp clutch assembly and pull from gearing.

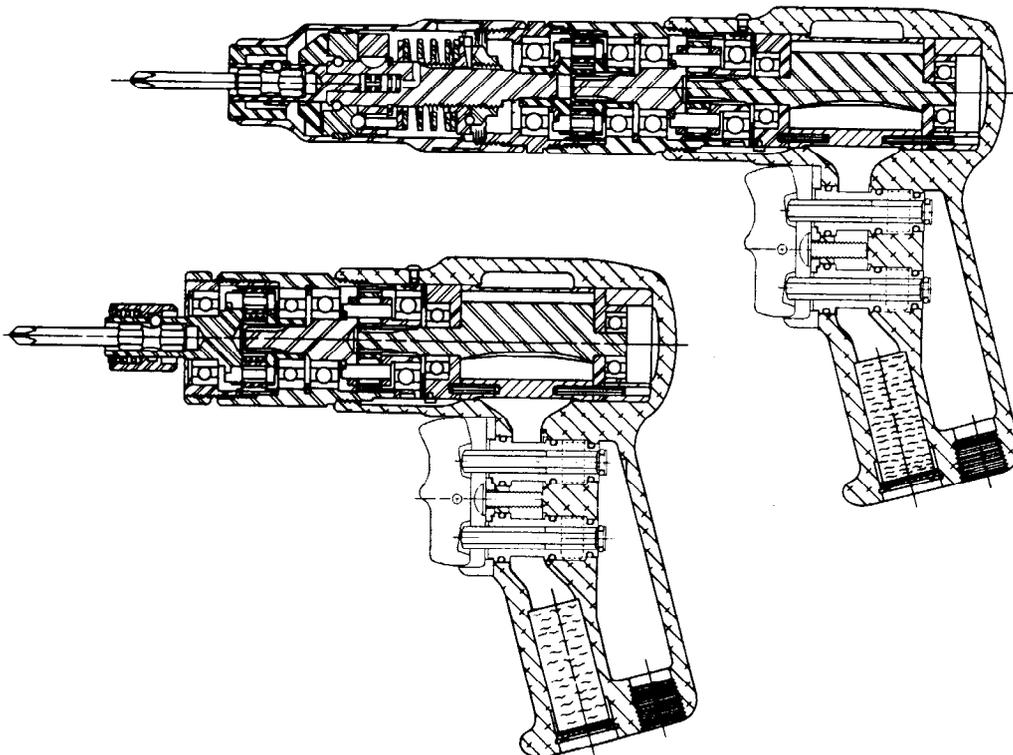
GEARING SECTION

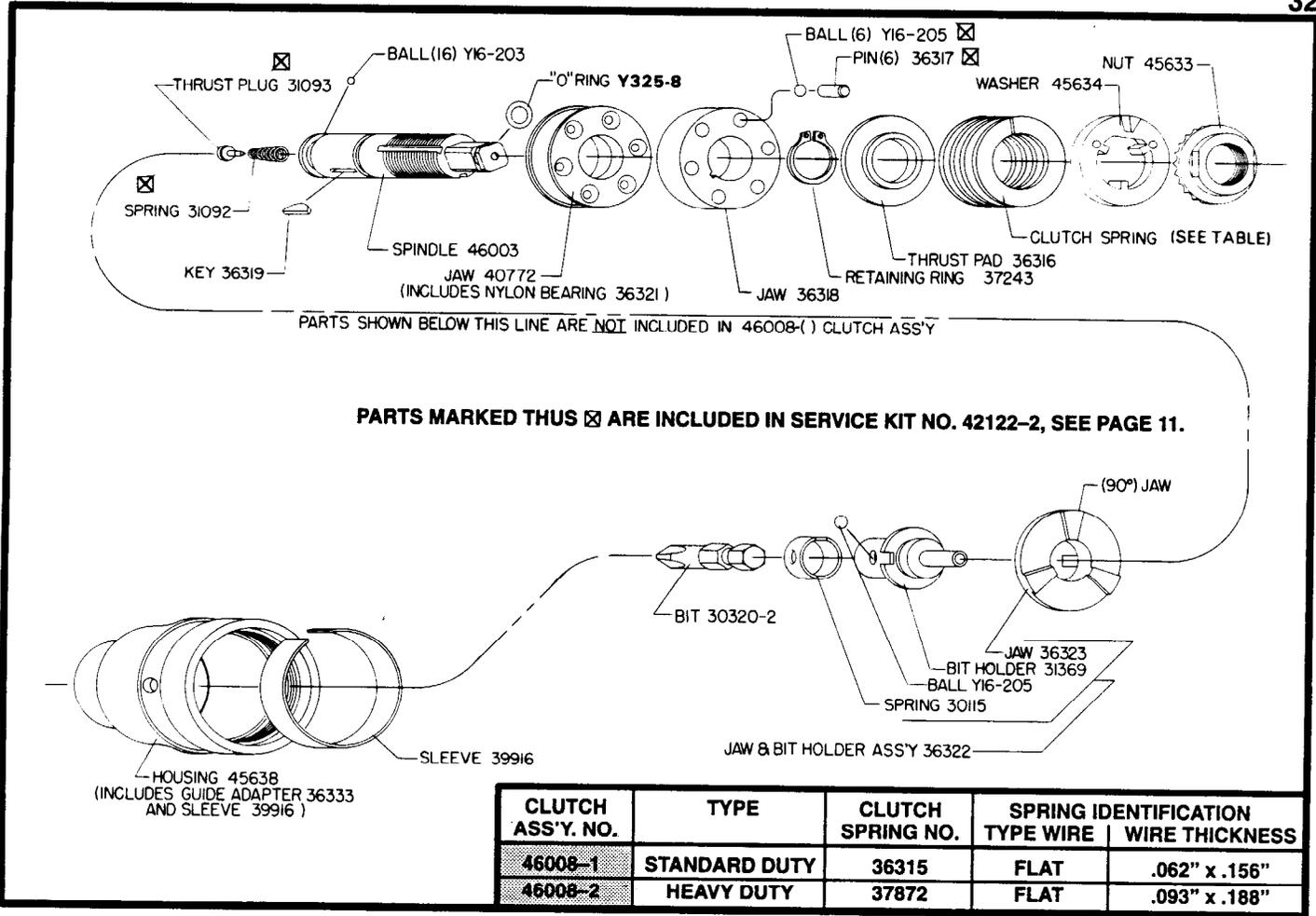
Remove drive section. Hold motor housing in a suitable fixture or strap wrench and remove gearing using a wrench on flats of ring gear. See pages 6, 7 and 8.

MOTOR SECTION

Motor may be removed from housing after removal of gearing. See page 9 for complete disassembly of motor. See page 10 for throttle disassembly.

TYPICAL CROSS SECTION OF TOOL





CANCELLED

EXTERNAL CLUTCH ADJUSTMENT

Rotate sleeve (39916) and align open portion of sleeve with slot in housing (45638). Depress bit to engage clutch jaws and rotate bit until notch in side of adjusting washer (45634) aligns with slot in housing. Insert no. 2 Phillips screwdriver thru slot in housing and into notch in adjustment washer and gear teeth in nut. Turn screwdriver counterclockwise to increase torque/ clockwise to decrease torque.

DISASSEMBLY

- Remove clutch housing (left hand threads) and bit holder assembly (36322) from tool. Grasp clutch assembly and pull from gearing.
- Remove adjusting nut (45633), washer (45634) and clutch spring.
- Remove retaining ring (37243), releasing jaw (36318), key (36319), jaw (40772) and balls (Y16-203).

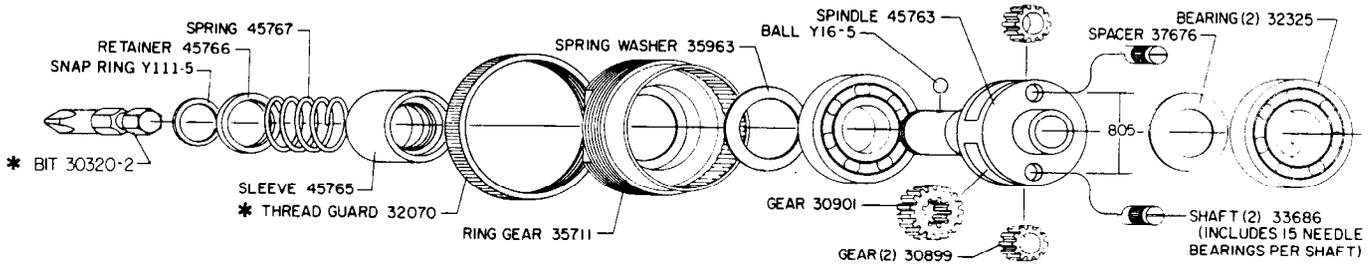
ASSEMBLY

NOTE: Lubricate balls, jaw faces and bit holder shaft with ARO 40036-1 grease when assembling clutch. Clutch assembly should contain approximately 1/8 oz. (3.5 g) of grease.

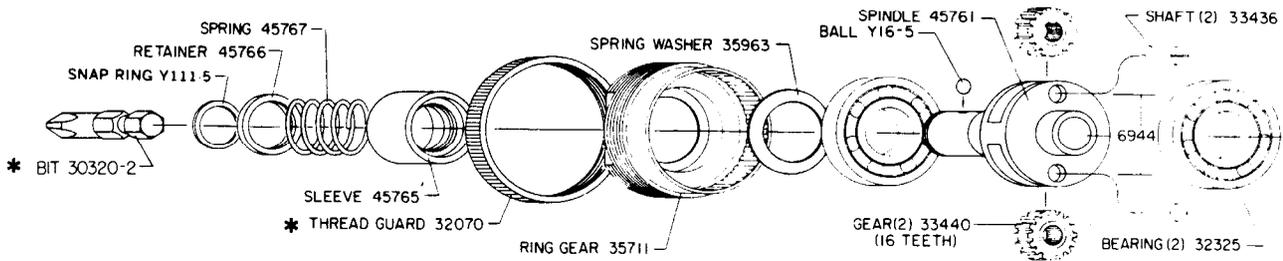
- Assemble jaw (40772) to spindle (46003), aligning face of jaw with center of bearing groove in spindle. Assemble balls (Y16-203) into groove and slide jaw ahead to retain balls in groove.
- Assemble key (36319) and jaw (36318) to spindle and secure with retaining ring (37243). NOTE: Assemble jaw (36318) to spindle with small hole in face of jaw facing jaw (40772).
- Assemble balls (Y16-205), pins (36317), thrust pad (36316), clutch spring, washer (45634) and nut (45633). Adjust to desired tension (see "Clutch Adjustment").
- Assemble spring (31092), plug (31093), bit holder assembly (36322) and bit to spindle and assemble to tool. Assemble clutch housing to tool.

DRIVE SECTION

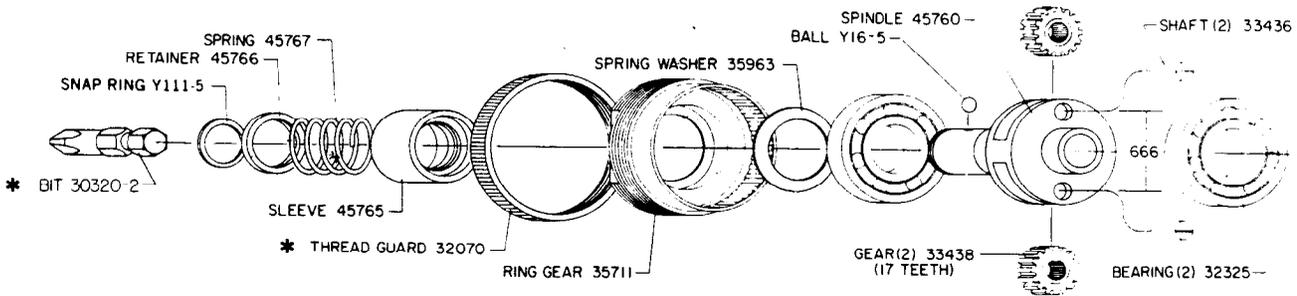
CHUCK AND GEARING ASSEMBLIES



45764 CHUCK AND GEARING ASSEMBLY (3.4:1)



45762 CHUCK AND GEARING ASSEMBLY (5.56:1)



45759 CHUCK AND GEARING ASSEMBLY (6.86:1)

*** NOT INCLUDED IN GEARING ASSEMBLY**

DISASSEMBLY

- a. Depress retainer (45766) and sleeve (45765) and remove snap ring (Y111-5), retainer (45766), spring (45767), sleeve (45765) and ball (Y16-5).
- b. Remove thread guard (32070), exposing flats on ring gear (35711). Using a suitable wrench on flats of ring gear, unthread and remove gearing assembly from tool.
- c. 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.

NOTE: Gearing should not be disassembled further unless it is necessary to replace a part, as Brinelling of the bearing races may occur, making replacement of bearing necessary.

- d. To disassemble completely, remove bearing (32325) from chuck end of spindle. Alternately tap ends of shafts, loosening bearing (32325) from opposite end of spindle.
- e. Remove shafts to remove gears from spindle.

ASSEMBLY

Pack ball bearings (lubricate needle bearings on shafts) and lubricate gears liberally with ARO 33153 grease upon assembly. Gearing assembly should contain approximately 1/8 oz. (3.5 g) of grease.

- a. Assemble gears to spindle and secure with shafts. Align notch in end of shaft with flange on spindle. **NOTE:** Be sure shafts (33686) contain fifteen needle bearings per shaft.
- b. Assemble spacer (37676), where applicable, and bearings (32325) to spindle.
- c. Assemble washer (35963) to ring gear, with small diameter of washer facing bearing, and assemble spindle and components to ring gear.
- d. Assemble gearing to tool and tighten securely. Assemble thread guard (32070) to ring gear.
- e. Lubricate ball (Y16-5) with grease and assemble ball, sleeve, spring and retainer to spindle and secure with snap ring (Y111-5).

GEARING SECTION

M30

DRIVE GEARING

32

DISASSEMBLY

- a. Remove spindle and components from ring gear.
- b. To remove gears from spindle, remove bearing, spacer and shafts.

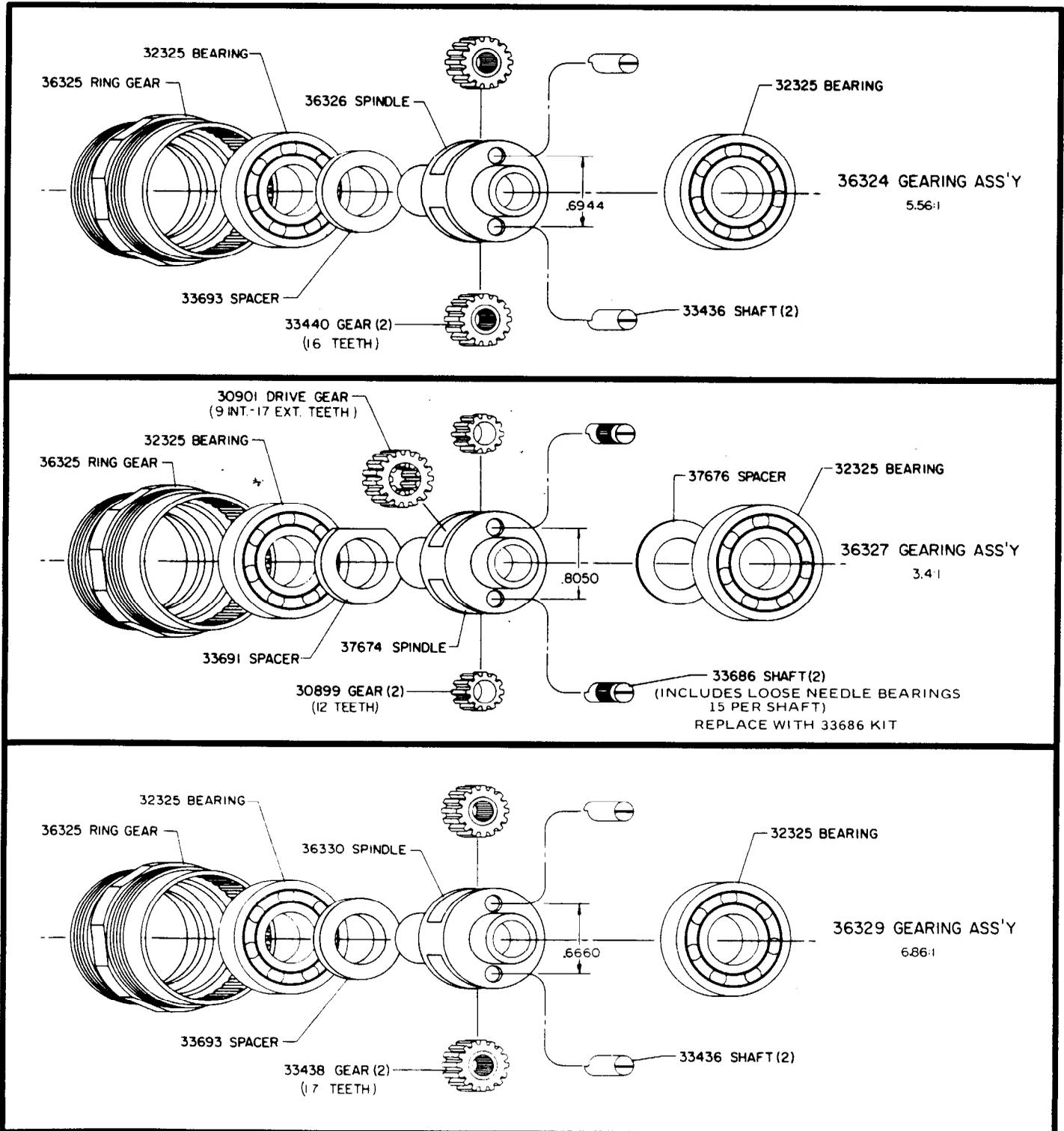
approximately 1/8 oz. (3.5 g) of grease.

ASSEMBLY

NOTE: Pack bearings and lubricate gears liberally with ARO 33153 grease upon assembly. Gearing assembly should contain

- a. Assemble spacer (33691 or 33693) and gears to spindle and secure with shafts, aligning notch in shafts with spacer. NOTE: Shafts (33686) contain fifteen (15) loose needle bearings (33458) per shaft.

- b. Assemble spacer (37676), where applicable, and bearings to spindle and assemble to ring gear.



GEARING SECTION AUXILIARY GEARING

DISASSEMBLY

- a. Grasp adapter (ring gear) in one hand and tap splined end of spindle with a soft face hammer; spindle and components will loosen from adapter.
- b. To remove gears from spindle, remove bearing, spacer and shafts, aligning notch in shafts with spacer.

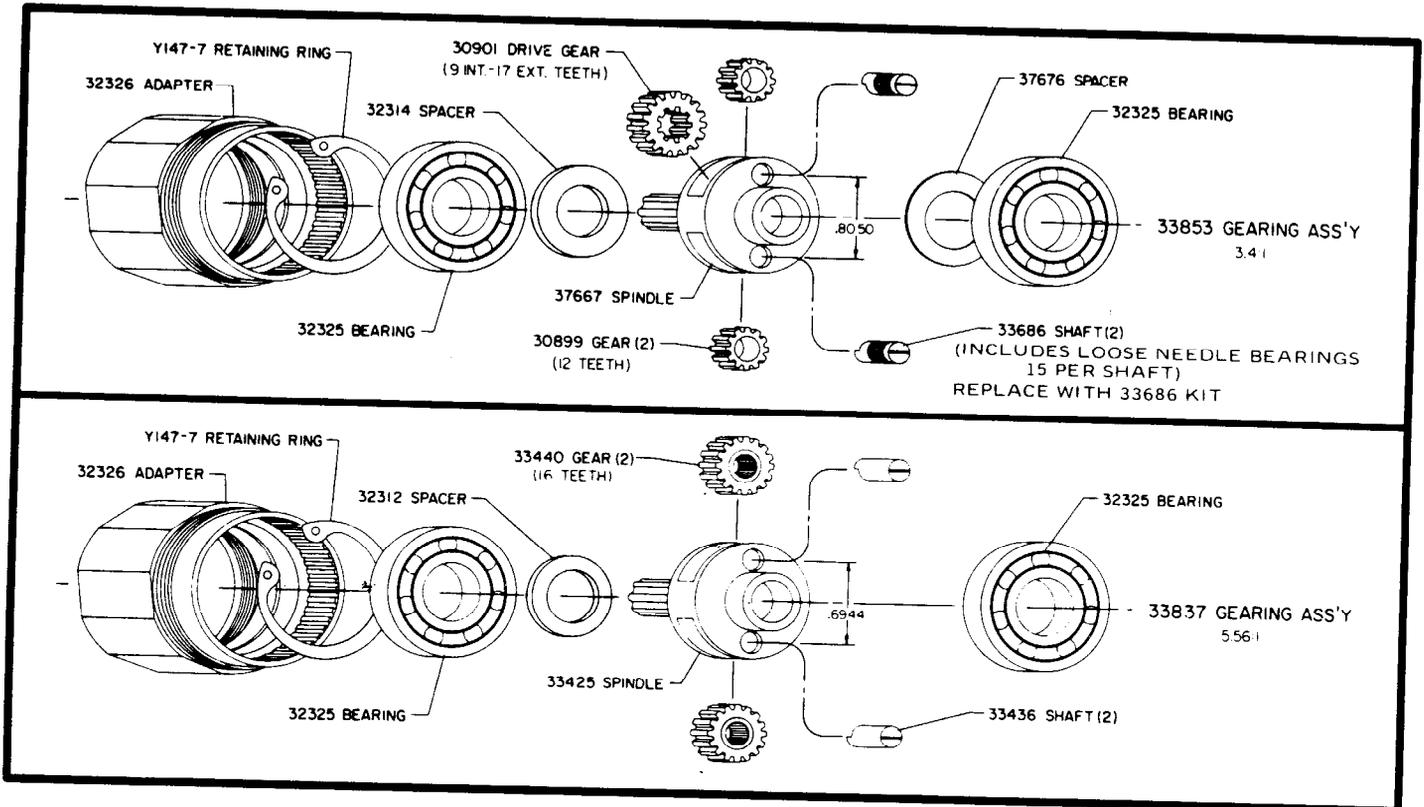
33153 grease upon assembly. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.

ASSEMBLY

NOTE: Pack bearings and lubricate gears liberally with ARO

- a. Assemble spacer (32314 or 32312) and gears to spindle and secure with shafts, aligning notch in shafts with spacer.
- NOTE: Shafts (33686) contain fifteen (15) loose needle bearings (33458) per shaft.

- b. Assemble spacer (37676), where applicable, and bearings to spindle and assemble to adapter (32326).



DISASSEMBLY

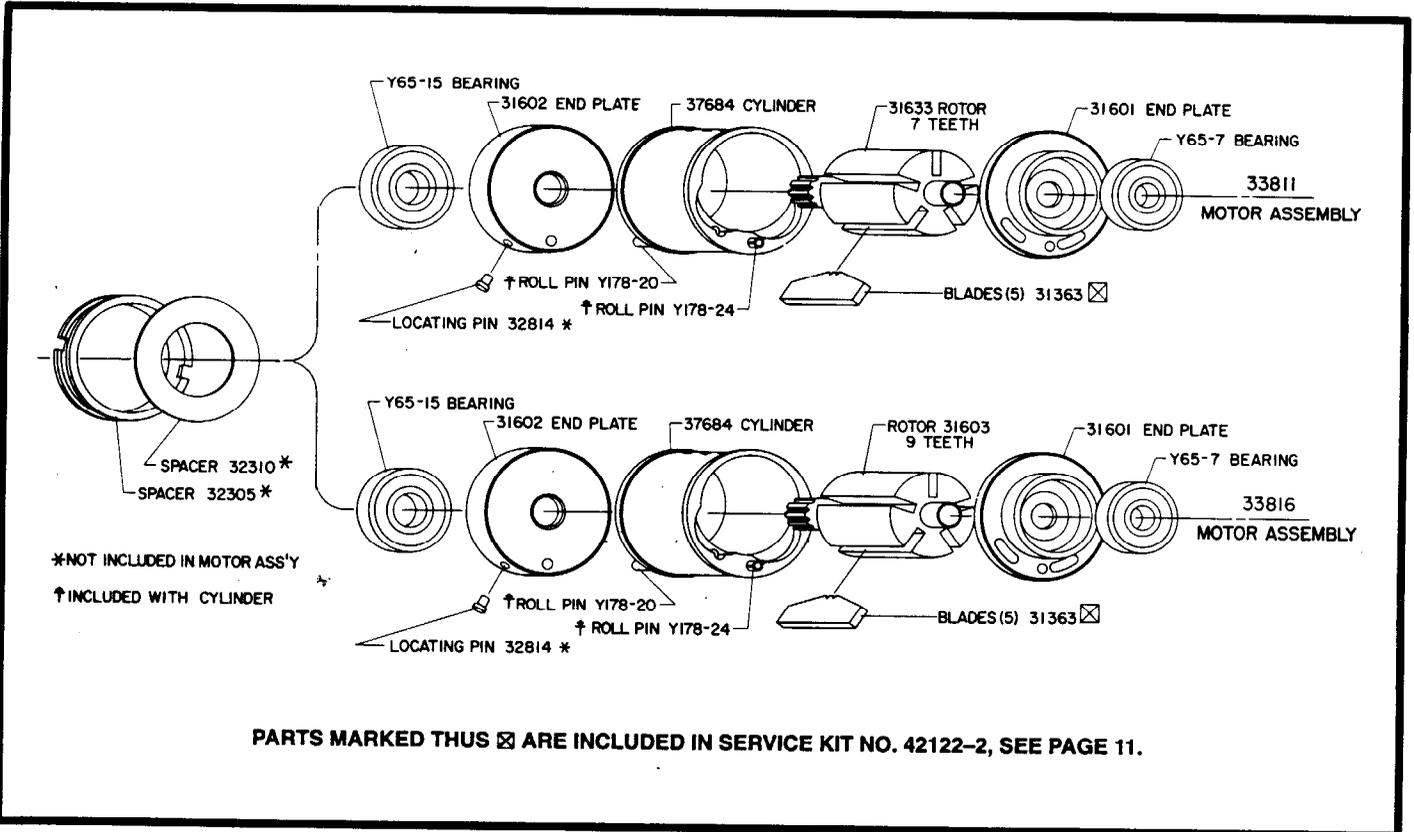
- a. Remove motor from housing. Grasp cylinder in one hand and tap splined end of rotor with a soft face hammer; motor will come apart.

ASSEMBLY

- a. Pack bearings with ARO 33153 grease and assemble bearing (Y65-7) into end plate (31601), pressing on outer race of bearing.
- b. Assemble end plate (31601) to rotor, pressing on inner race of bearing.
- c. Coat i.d. of cylinder (37684) with ARO 29665 spindle oil and

assemble over rotor, aligning air inlet holes of cylinder with air inlet slots of end plate.

- d. Coat blades (31363) with ARO 29665 spindle oil and assemble to rotor slots – straight side out.
- e. Assemble bearing (Y65-15) to end plate (31602), pressing on outer race of bearing.
- f. Assemble end plate (31602) to cylinder, aligning roll pin in cylinder with hole in end plate.
- g. Be sure rotor does not bind (if rotor binds, tap splined end lightly with a soft face hammer to loosen) and assemble motor to housing with locating pin (32814) and porting block (45471).
- h. Assemble spacers (32310 and 32305) and gearing to tool.



HEAD SECTION

DISASSEMBLY

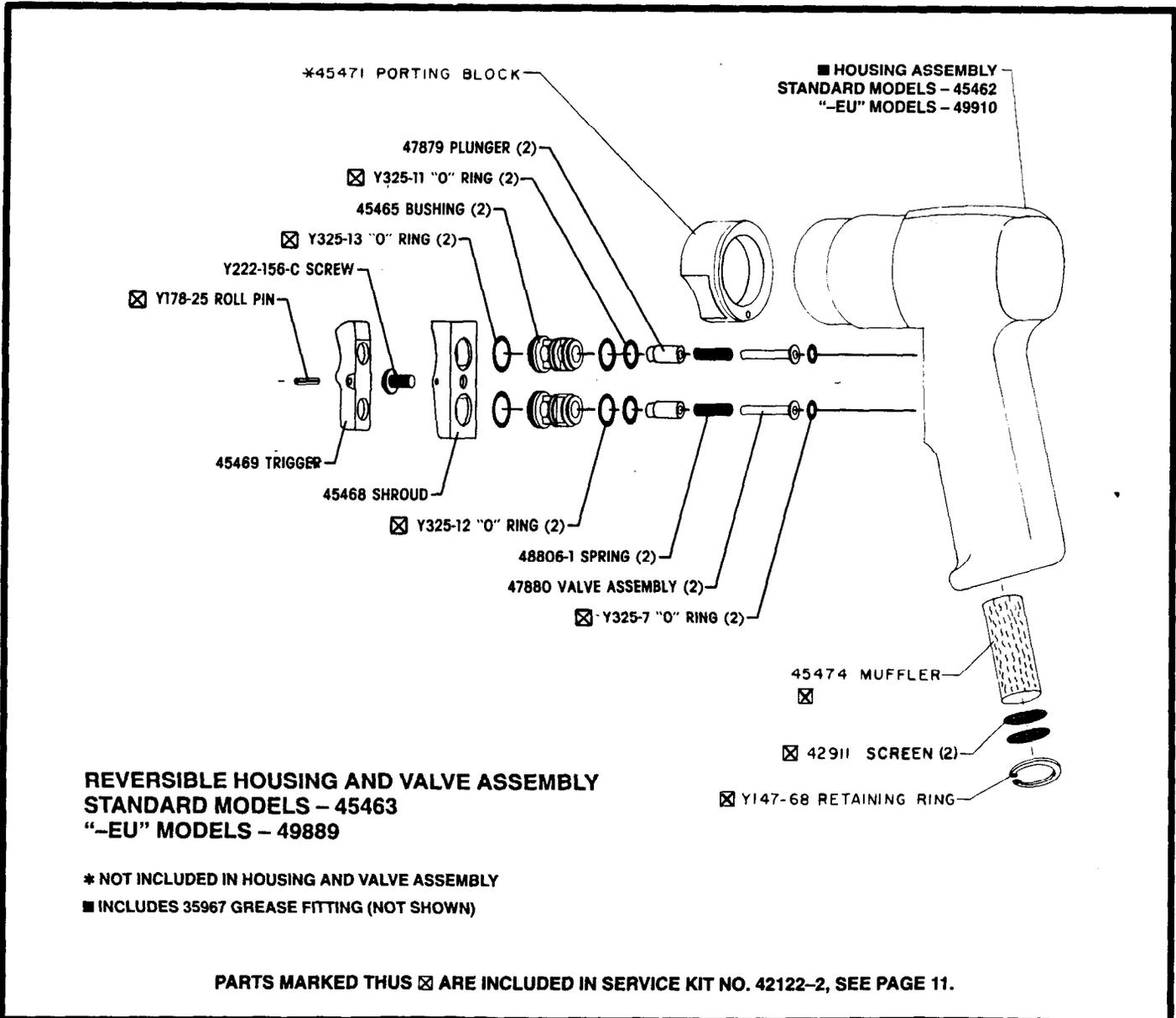
- Remove roll pin (Y178-25), releasing trigger (45469).
- Remove screw (Y222-156-C), releasing shroud (45468).
- Grasp end of valve assembly (47880) and pull to remove valve assembly and bushing (45465).
- Remove retaining ring (Y147-68), releasing screens (42911) and muffler (45474).

ASSEMBLY

NOTE: Whenever a part containing "O" rings has been removed from the tool, it is recommended the "O" rings be replaced. Grease all "O" rings before assembly.

- Assemble "O" rings (Y325-13, Y325-12 and Y325-11) to

- bushings (45465).
- Assemble "O" ring (Y325-7) to valve assembly (47880).
- Lubricate plunger (47879) and valve assembly (47880) with ARO 29665 spindle oil.
- Assemble springs (48806-1) to valve assembly (47880).
- Assemble plungers (47879) and valve assemblies (47880) to bushings (45465) and assemble bushings to housing, aligning flats of bushings with flats of shroud.
- Assemble shroud (45468) to housing, securing with screw (Y222-156-C).
- Assemble trigger to shroud, securing with roll pin (Y178-25).
- Assemble muffler (45474) and screens (42911) to housing, securing with retaining ring (Y147-68).



<u>QTY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
4	30741	BLADE	1	45474	MUFFLER
1	31092	SPRING	6	Y16-205	BALL
1	31093	THRUST PLUG	1	Y147-68	RETAINER RING
5	31363	BLADE	1	Y178-25	ROLL PIN
6	36317	PIN	2	Y180-13	"E" RETAINING RING
1	41795	MOTOR OIL	2	Y325-3	"O" RING
1	41799	GEAR LUBE	2	Y325-7	"O" RING
1	41954	"O" RING LUBE	2	Y325-11	"O" RING
2	42911	SCREEN	2	Y325-12	"O" RING
			2	Y325-13	"O" RING

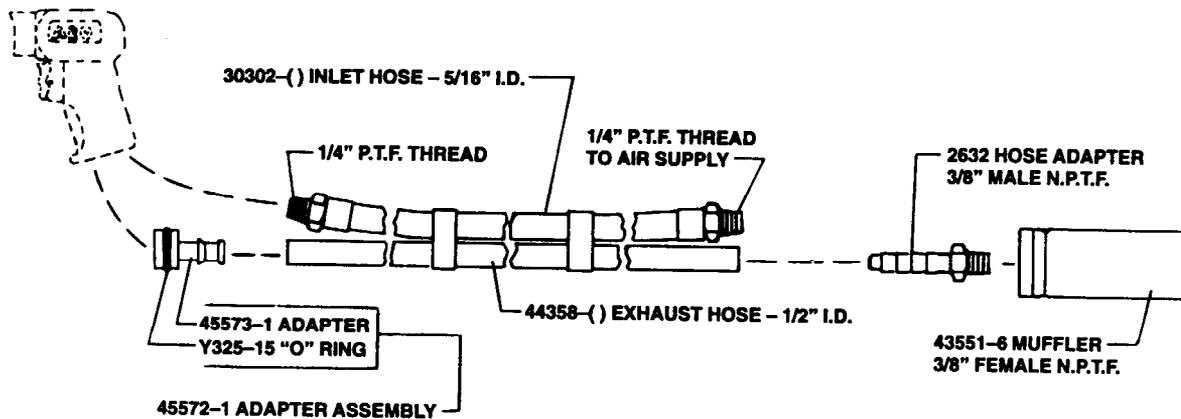
TROUBLE SHOOTING

LISTED BELOW ARE SOME OF THE MOST COMMON CAUSES FOR THE SCREWDRIVER 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.

<u>CONDITION</u>	<u>POSSIBLE CAUSE</u>	<u>CORRECTIVE ACTION</u>
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. CLOGGED AIR INLET, BADLY WORN OR DAMAGED THROTTLE COMPONENTS OR CLOGGED MUFFLER.	2. DISASSEMBLE, CLEAN, INSPECT THROTTLE COMPONENTS, REPLACE WORN OR DAMAGED PARTS. REFER TO PAGE 10.
	3. IMPROPER LUBRICATION OF UNIT (MOTOR AND/OR GEARING), DIRTY MOTOR (ROTOR BLADES STICKING, ETC.), OR BROKEN OR BADLY WORN ROTOR BLADES OR BEARINGS IN MOTOR.	3. BE SURE LUBRICATOR IS FULL OF OIL AND GEARING IS LUBRICATED REGULARLY, REFER TO PAGE 3. DISASSEMBLE, CLEAN, INSPECT, REPLACE WORN OR DAMAGED PARTS, LUBRICATE.
	4. BADLY WORN OR DAMAGED CLUTCH COMPONENTS.	4. DISASSEMBLE CLUTCH. CLEAN, INSPECT, REPLACE WORN OR DAMAGED PARTS, LUBRICATE.
CLUTCH DISENGAGES TOO SOON OR FAILURE OF CLUTCH TO DISENGAGE.	1. IMPROPER CLUTCH ADJUSTMENT.	1. REFER TO CLUTCH ADJUSTMENT, PAGE 5.
	2. BADLY WORN OR DAMAGED CLUTCH COMPONENTS.	2. DISASSEMBLE CLUTCH, CLEAN, INSPECT, REPLACE WORN OR DAMAGED PARTS, LUBRICATE. REFER TO PAGE 5.

ACCESSORIES

44361-() PIPED EXHAUST SYSTEM ASSEMBLY



PIPED EXHAUST ASSEMBLY CONSISTS OF 5/16" I.D. AIR INLET HOSE WITH 1/4" MALE FITTING AT EACH END, 1/2" I.D. EXHAUST HOSE, 45572-1 ADAPTER ASSEMBLY AND 2632 BARBED INSERT WITH 3/8" MALE THREAD.

TO ORDER PIPED EXHAUST SYSTEM ASSEMBLY: ADD DASH NUMBER TO PART NUMBER TO INDICATE DESIRED LENGTH OF HOSE IN FEET. EXAMPLE: 44360-20, THE -20 INDICATES 20 FEET OF HOSE. ORDER LENGTH DESIRED UP TO 30 FEET MAXIMUM.

TO ASSEMBLE ADAPTER TO TOOL: REMOVE RETAINING RING (Y147-68), 2 SCREENS (42911) AND MUFFLER (45474) FROM TOOL. INSERT ADAPTER (45572-1) INTO HOUSING UNTIL IT BOTTOMS IN HOUSING AND SECURE WITH RETAINING RING (Y147-68). THREAD INLET HOSE TO TOOL AND TIGHTEN SO EXHAUST HOSE ALIGNS WITH ADAPTER (45572) AND SLIP EXHAUST HOSE OVER ADAPTER. NO CLAMP IS NEEDED TO SECURE HOSE TO ADAPTER SINCE EXHAUST PRESSURE IS VERY LOW.



37526 AIR REGULATOR

CAN BE USED ON THE "QRT" SCREWDRIVER AS AN IN-LINE REGULATOR. HAS 1/4" MALE N.P.T.F. AND 1/4" FEMALE N.P.T.F. INLET FOR AIR HOSE.