ARO
Tool & Hoist Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

"O" SERIES DRILLS

SECTION M 20
MANUAL 30
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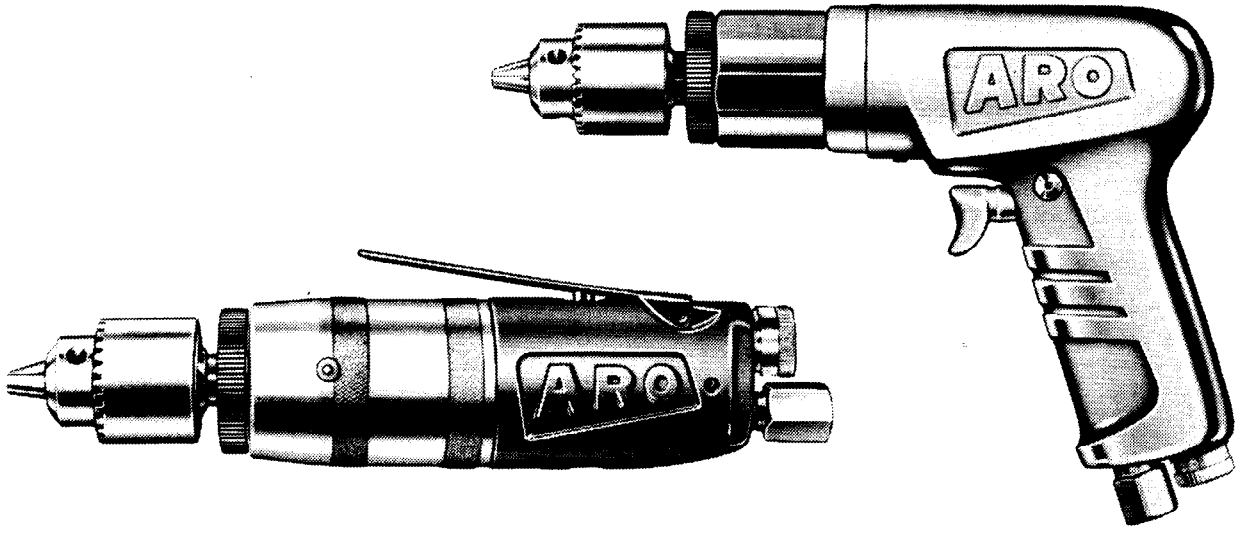
Form: 4561

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS TOOL.



FEATURES:
PISTOL GRIP OR LEVER TYPE THROTTLE
BUILT-IN OILER (PISTOL GRIP MODELS)
FLUSH FITTINGS FOR LUBRICATION OF GEARING
QUIET-EXHAUST AIR SYSTEM
SUSPENSION BAIL (LEVER THROTTLE MODELS)
1/4" N.P.T.F. FEMALE AIR INLET ADAPTER
3/8" – 24 THREADED DRIVE SPINDLE

INDEX PAGE

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
Ingersoll-Rand Company
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INGERSOLL-RAND®
PROFESSIONAL TOOLS

MODEL IDENTIFICATION

LEVER HEAD TYPE THROTTLE							
MODEL	R.P.M.	TOTAL REDUCTION	MOTOR ASS'Y.	GEARING DRIVE	GEARING AUX.	CHUCK NO.	CHUCK CAP.
7137-F	2,800	5.56:1	33807	33836	–	47340	1/4
7141-D	4,500	3.4:1		33835	–	30209	1/4
7252-D	500	30.9:1		33836	33837	47341	3/8
7256-F	800	18.9:1		33835	33837	30510	5/16
7259-D	1,200	11.6:1		33835	33853	47341	3/8
7902-D	16,000	DIRECT DRIVE		33808	–	47340	1/4

PISTOL GRIP TYPE THROTTLE							
MODEL	R.P.M.	TOTAL REDUCTION	MOTOR ASS'Y.	GEARING DRIVE	GEARING AUX.	CHUCK NO.	CHUCK CAP.
7364-D	3,000	5.56:1	37959	33836	–	47340	1/4
7365-D	550	30.9:1		33836	33837	30510	5/16
7366-D	900	18.9:1		33835	33837	47341	3/8
7367-D	1,500	11.6:1		33835	33853	47341	3/8
7368-D	5,000	3.4:1		33835	–	47340	1/4
7369-D	16,500	DIRECT DRIVE		33808	–	30209	1/4
● 7386-D	2,500	6.86:1	37960	34009	–	47340	1/4

▒ CANCELLED

● OBSOLETE

KEEP HANDS AND CLOTHING AWAY FROM ROTATING END OF TOOL.

EYE PROTECTION should be worn at all times while operating power tools.

DISCONNECT AIR SUPPLY from tool or shut off air supply line to tool and exhaust (drain) air line to tool of compressed air BEFORE installing or removing a bit, or otherwise performing service or maintenance to tool.

AIR AND LUBE REQUIREMENTS

AIR PRESSURE of 90 p.s.i.g. (6 bar) at the air inlet of the tool is required for maximum motor efficiency. If necessary, an air regulator should be installed to maintain this pressure when tool is in operation.

FILTERED AND OILED AIR will allow the tool to operate more efficiently and yield a longer life to operating parts and mechanisms. A line filter capable of filtering particles larger than 50 microns should be used with a line oiler.

FILTER-REGULATOR-LUBRICATOR (F-R-L) assembly Model 128231-300 is recommended for use with this Air Tool. The capacity of the individual Filter-Lubricator is adequate to provide clean (40 micron) oiled and regulated air for the tool. The Filter-Regulator-Lubricator must be installed on the stationary air line, in that order, with the Lubricator nearest to the tool. NEVER mount the unit on the detachable flexible hose to the tool.

IF LINE OILER is not used and tool does not have a built-in oiler, apply a small amount of Spindle Oil in air inlet of tool and run free for one minute to insure proper lubrication; after each 8 hours of operation.

FLUSH TOOL with a solution of three parts cleaning solvent and one part light oil after each 40 hours of operation. After flushing, apply a small amount of Spindle Oil in air inlet and run free for one minute to insure proper lubrication.

TOOLS having built-in oil reservoir should be filled after each 40 hours of operation.

GEARING should be grease lubricated approximately every 160 hours of operation. Inject 2 to 3 strokes of grease (33153), or equivalent, thru grease fitting in housing.

CAUTION: An excessive amount of lubricant in a tool will affect the speed and power. Each set of planetary gearing should contain approximately 1/8 oz. (3.5 g) of grease.

RECOMMENDED HOSE SIZE–5/16" (8 mm) nominal inside diameter.

RECOMMENDED LUBRICANTS: Spindle Oil (29665), 1 qt, (.9 liter) container for oiler and air inlet; Grease 33153, 5 lb. (2.3 kg) can for gears and bearings, "O" Ring Lubricant 36460, 4 oz. (113 g) tube for lubrication and installation of "O" Rings.

OPERATING PRECAUTIONS

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.

DISCONNECT AIR SUPPLY from tool or shut off air supply line to tool and exhaust (drain) air line to tool of compressed air BEFORE performing service or maintenance to tool.

AIR TOOLS are made of precision parts and should be handled with reasonable care when servicing. Excessive pressure exerted by a holding device may cause distortion of a part. Apply pressure evenly when disassembling (or assembling) parts which have a press fit. When removing or installing bearings, apply pressure to the bearing race that will be the press fit to the mating part; if this is not practiced, Brinelling of the bearing races may occur making replacement necessary. It is important that the correct tools and fixtures are used when servicing this Air Tool.

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. When REPLACEMENT PARTS are necessary, consult drawing containing the part for identification.

BEFORE REASSEMBLING, lubricate parts where required. Use 33153 Grease, or equivalent, in bearings. Use 36460 Lubricant for "O" Ring Assembly. When assembling "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 ORDERING PARTS, be sure to list PART NUMBER, PART NAME, MODEL NUMBER AND SERIAL NUMBER OF TOOL. USE ONLY GENUINE ARO REPLACEMENT PARTS.

DISASSEMBLY AND REASSEMBLY OF TOOLS

Before starting to disassemble or reassemble this tool (any part or completely) be sure to read Maintenance Section.

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

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

GEARING SECTION

Secure tool in a suitable holding device. Place wrench on Spacer(30756-1); place Chuck Key in Chuck and strike key a sharp blow to loosen chuck. Remove chuck and Spacer (30756-1). Remove Thread Guard (32070). Using a wrench on flats of Ring Gear and a strap wrench on motor housing, unthread and remove gearing sections. Models having both drive and auxiliary gearings, separate using wrenches on flats of Ring Gears. See page 4 for gearing disassembly.

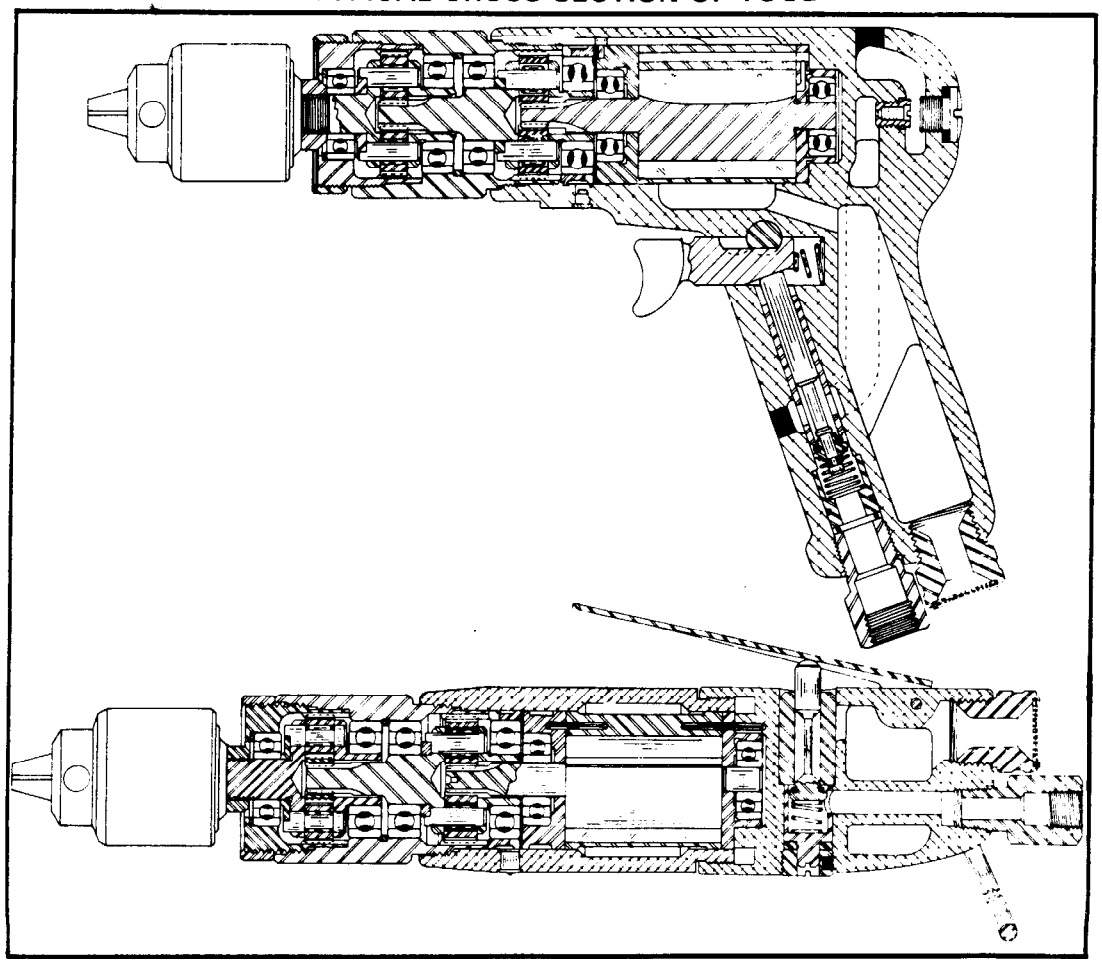
MOTOR SECTION

Motor assembly may be removed after removal of gearing section from tool. See pages 5 and 6 for motor assembly.

HEAD SECTON

Valve parts may be removed from head without removal of head from tool. See pages 6 and 7.

TYPICAL CROSS-SECTION OF TOOL



DISASSEMBLY

Remove Gearing from tool as outlined on page 3. Grasp Ring Gear in one hand and tap drive end of Spindle with a non-metallic hammer; Spindle and components will loosen from Ring Gear. Gearing should not be disassembled further unless necessary to replace a part, as brinelling of the bearing races may occur making replacement necessary.

To disassemble completely; remove Bearing and Spacer from drive end of Spindle. Alternately tap ends of Shafts to loosen Bearing (and Spacer where applicable) from opposite end of Spindle. Remove Shafts to remove Gears from Spindle.

REASSEMBLY

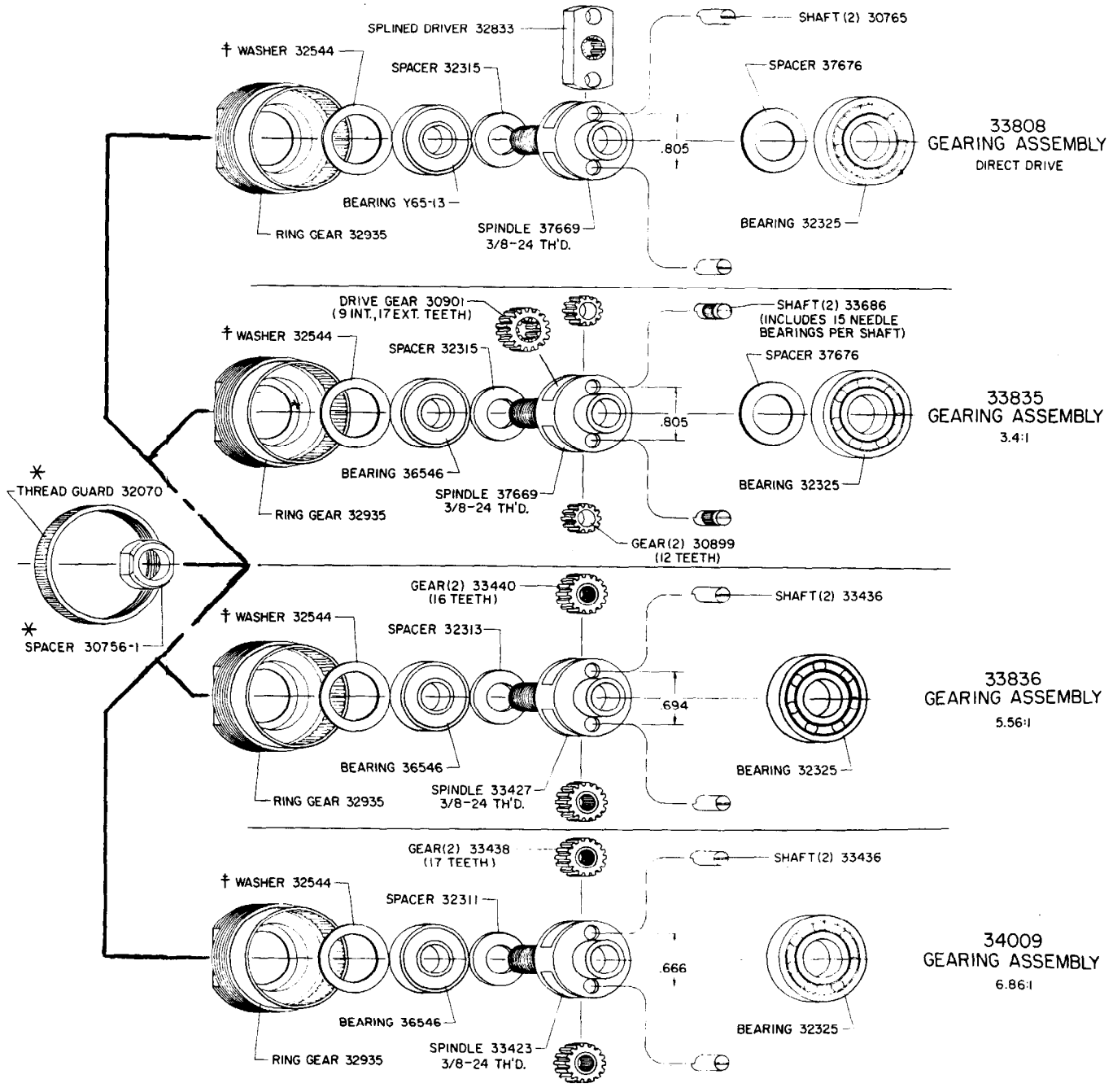
Pack Bearings and lubricate Gears and Shafts liberally with grease (33153), or equivalent. Gearing assembly should contain approximately 1/8 oz. (3.5 g) of grease.

Assemble Spacer and Bearing to drive end of Spindle. Assemble Gears to Spindle and secure with Shafts (insure Shafts 33686 contain 15 needle bearings per shaft), aligning notch in end of shafts with Spacer already assembled to Spindle.

Assemble Bearing (and Spacer where applicable) to opposite end of spindle and assembly Spindle to Ring Gear.

Disassembly and reassembly of Auxiliary gearing will be similar to that of the Drive Gearing.

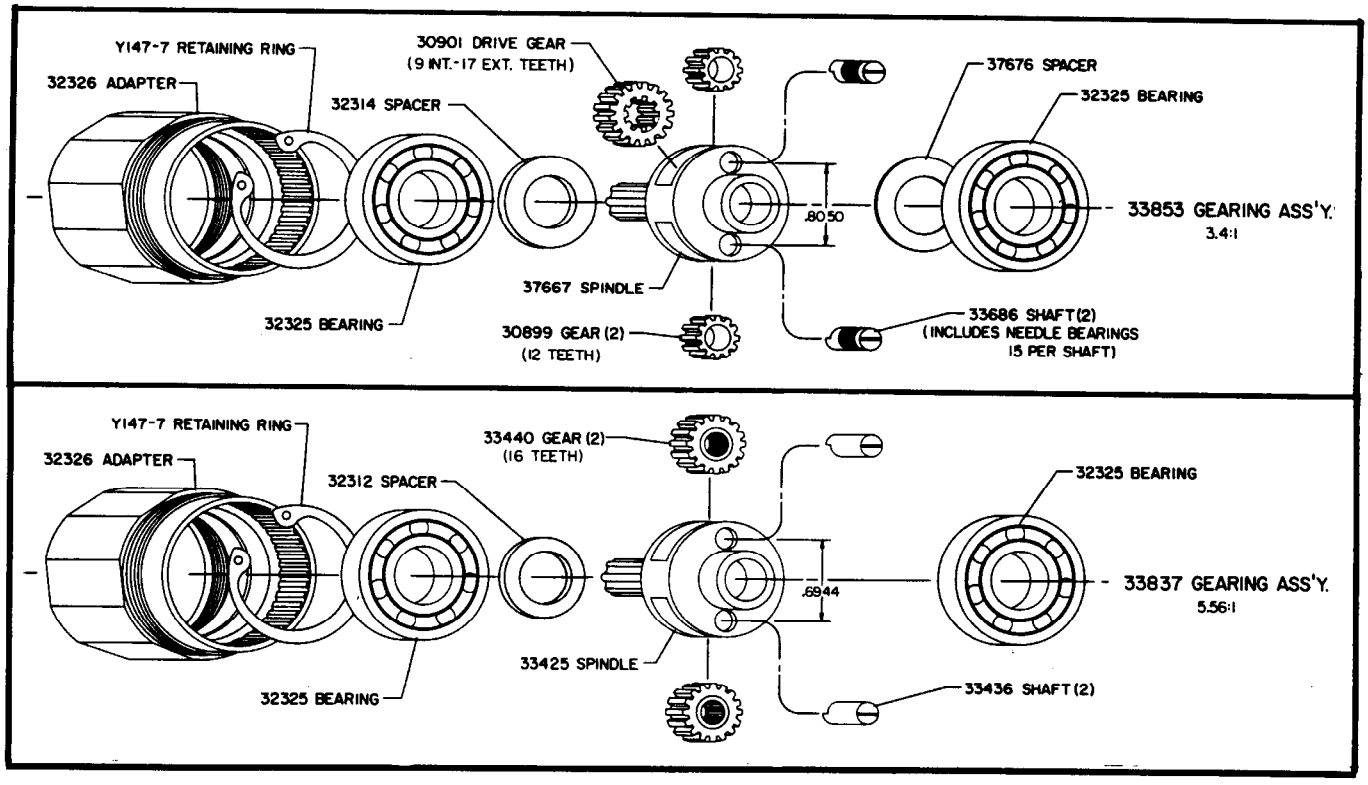
DRIVE GEARING



* **NOT INCLUDED IN GEARING ASSEMBLY**

† NOTE: SPRING TYPE WASHER, ASSEMBLE TO RING GEAR WITH LARGE DIAMETER FACING BEARING.

GEARING SECTION



MOTOR SECTION

DISASSEMBLY

Remove Motor Assembly from tool as outlined on page 3. Grasp Cylinder in one hand and tap splined end of Rotor with a non-metallic hammer; motor will come apart.

REASSEMBLY

Assemble Bearings into End Plates and assemble End Plate (30750 or 37956) to Rotor. When assembling bearing to rotor insure pressure is applied squarely to the inside race of bearing. Coat I.D. of Cylinder with Spindle Oil and assemble Cylinder over Rotor aligning air inlets and Roll Pin of Cylinder with air inlet and hole in End Plate for Roll Pin.

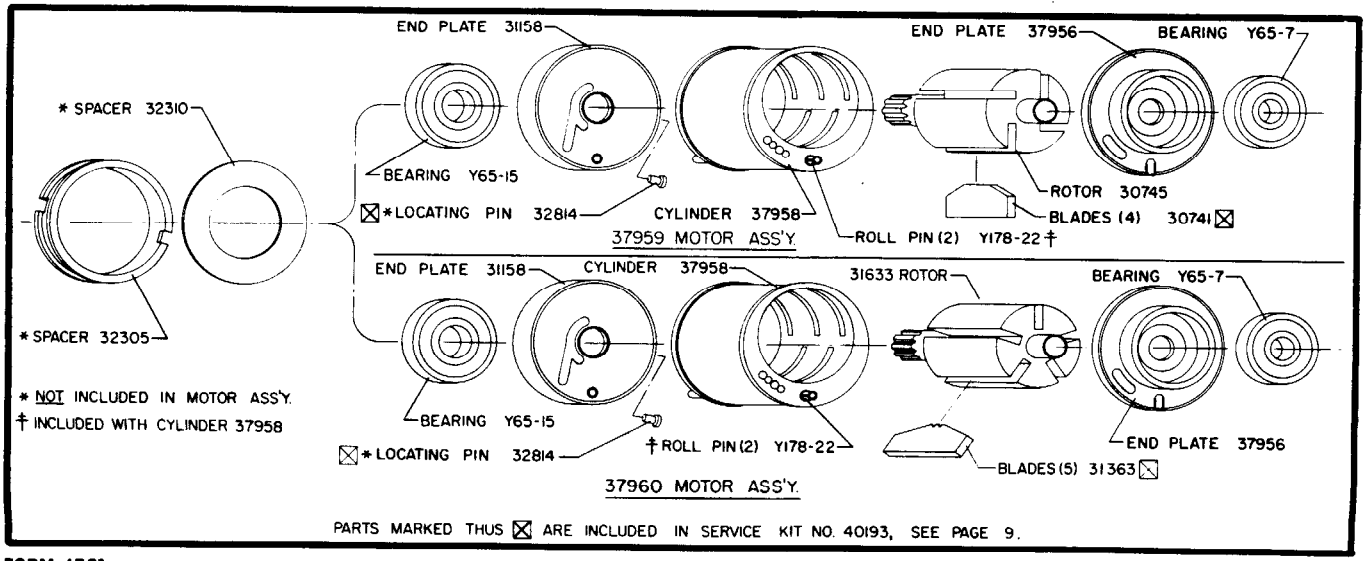
Assemble Blades to Rotor and assemble front End Plate (31158) to Rotor aligning hole in end plate with roll pin in cylinder.

Insure Rotor does not bind (if rotor binds, tap splined end lightly to loosen) and assemble to tool.

ASSEMBLING MOTOR TO TOOL

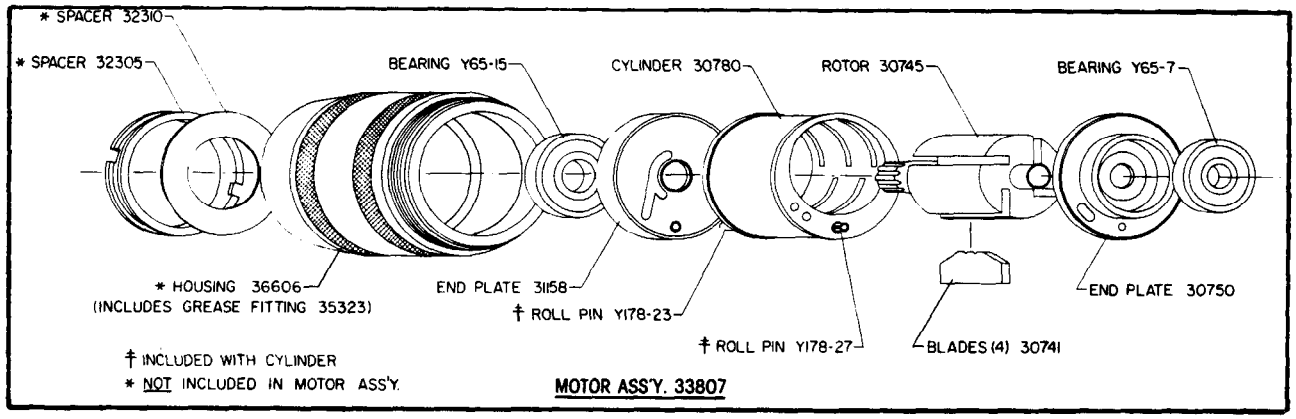
LEVER THROTTLE MODELS: Remove Motor Housing (36606) from head. Place Head in a suitable holding device with the "motor end" in an upright position. Assemble Motor Assembly to Head aligning Roll Pin in motor with hole provided in head (.106 dia. blind hole). Slip Motor Housing over motor and secure to Head. Assemble Spacer (32310), Spacer (32305) and gearing to tool.

PISTOL GRIP MODELS: Assemble Locating Pin (32814) to front End Plate and assemble motor to housing aligning Locating Pin with groove in housing. Assemble Spacer (32310), Spacer (32305) and gearing to tool.



PARTS MARKED THUS ☒ ARE INCLUDED IN SERVICE KIT NO. 40193, SEE PAGE 9.

MOTOR SECTION



HEAD SECTION

DISASSEMBLY

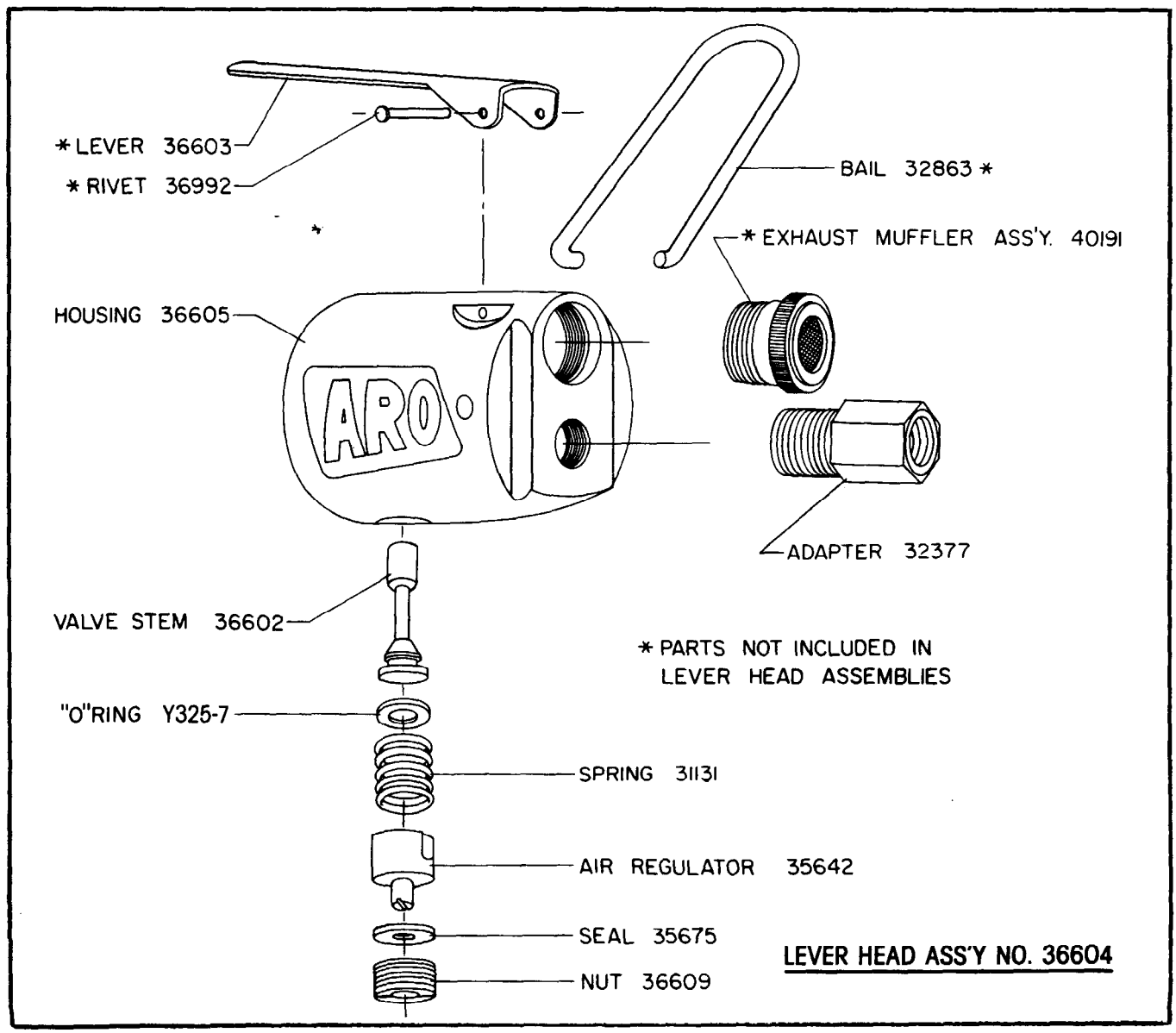
To remove Valve components from housing, remove Nut (36609).

REASSEMBLY

Lubricate "O" Ring (Y325-7) and assemble to Valve Stem (36602).

Assemble Valve Stem, Spring, Air Regulator, and Seal to housing and secure with Nut (36609). Insure air inlet of Regulator is aligned with air inlet of housing.

See "ASSEMBLING MOTOR TO TOOL", page 5.

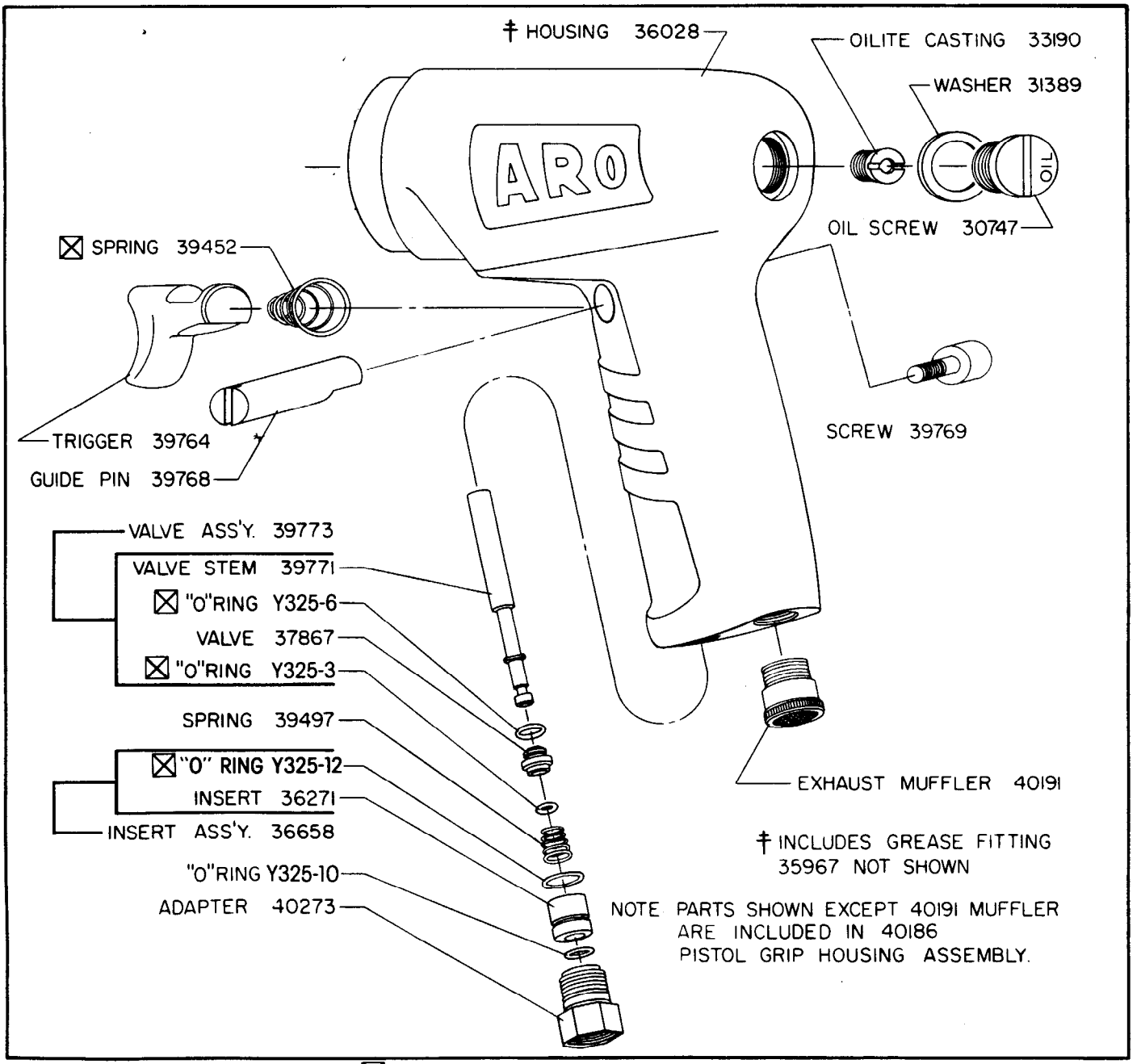


DISASSEMBLY

To remove Valve components from Head, remove Adapter (40273). It may be necessary to lightly tap housing to loosen valve components from housing. To remove Trigger (39764), remove valve components, Screw (39769) and Guide Pin (39768). To remove Oilite Casting (33190); remove screw (30747), empty oil cavity of oil and insert screwdriver into opening and unscrew Oilite Casting.

REASSEMBLY

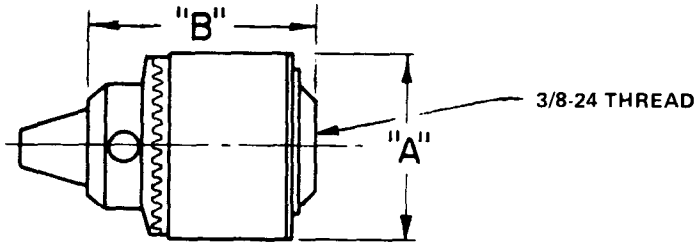
Assemble Spring (39452) and Trigger (39764) to housing. Depress Trigger and insert Guide Pin (39768) thru housing and notch of Trigger securing Trigger to housing. Secure Guide Pin with Screw (39769). Assemble "O" Ring (Y325-6), Valve (37867) and "O" Ring (Y325-3) to Valve Stem (39771) and assemble to housing. Assemble Insert (36271) with "O" Ring (Y325-12) and Spring (39497) to housing and secure with "O" Ring (Y325-10) and Adapter (40273). Replace Oilite Casting if removed, fill oil cavity with spindle oil and seal with washer (31389) and Screw (30747).



PARTS MARKED THUS ☒ ARE INCLUDED IN SERVICE KIT NO. 40193, SEE PAGE 9.

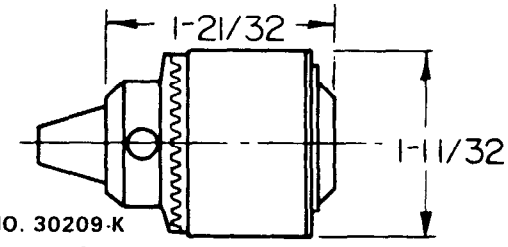
ACCESSORIES

CHUCK NO.	CHUCK CAP.	CHUCK "A"	DIM. "B"	KEY NO.
47340	1/4	1-5/16	1-23/32	30209-K
47341	3/8	1-7/16	1-29/32	30510-K
30896	3/8	1-11/16	2-3/16	30896-K

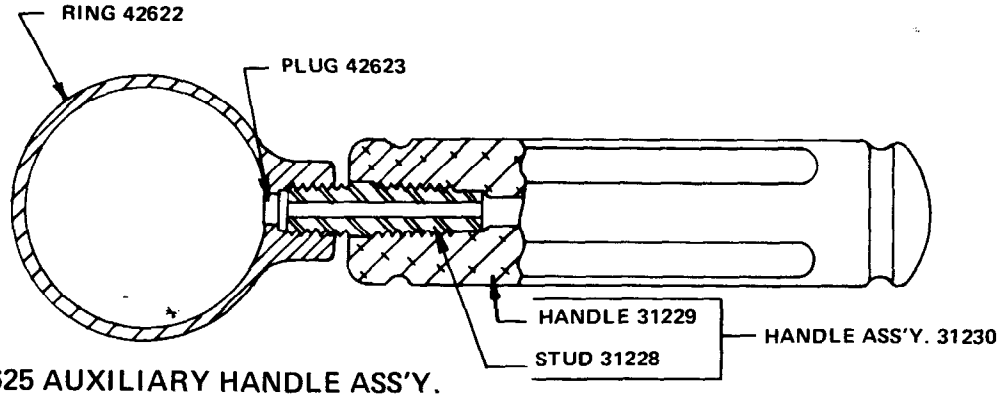


NOTE: ANY OF THE MODELS LISTED ON PAGE 2 (except direct drive models) CAN BE FURNISHED WITH A NO. 1 TAPERED DRIVE SPINDLE AND 1/4" CAPACITY CHUCK NO. 36953 WHEN SPECIFIED ON ORIGINAL ORDER. GEARING ASSEMBLY NUMBERS AND TAPERED SPINDLE NUMBERS ARE GIVEN IN TABLE BELOW.

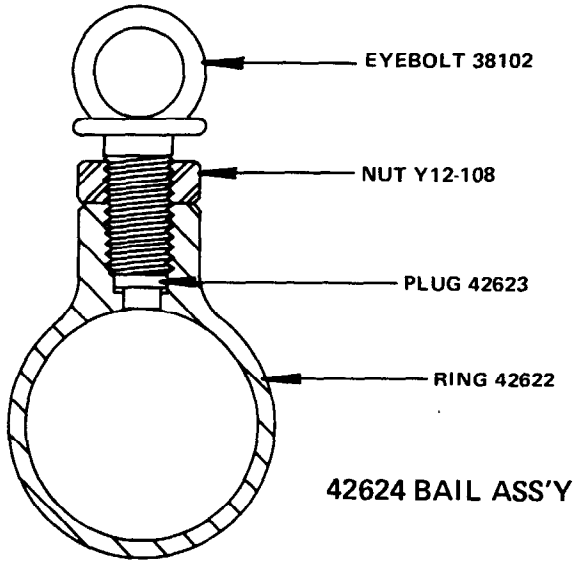
GEARING ASS'Y. WITH TAPER SPINDLE		SAME AS GEARING ASS'Y. (EXCEPT SPINDLE)		TAPER SPINDLE NO.
37005	(5.5:1)	33836	(5.5:1)	36993
37007	(6.8:1)	34009	(6.8:1)	36995
37008	(3.4:1)	33835	(3.4:1)	37675



36953 NO. TAPER CHUCK (1/4" CAP.)



42625 AUXILIARY HANDLE ASS'Y.



42624 BAIL ASS'Y.

TROUBLE SHOOTING CHART

LISTED BELOW ARE THE MOST COMMON CAUSES FOR DRILL MALFUNCTION. MALFUNCTIONS BEYOND THE SCOPE OF THIS MANUAL SHOULD BE BROUGHT TO THE ATTENTION OF YOUR ARO REPRESENTATIVE OR RETURN DRILL TO FACTORY FOR REPAIR.

CONDITIONS	POSSIBLE CAUSE	CORRECTIVE ACTION
LOW SPEED AND POWER OR DRILL WILL NOT RUN.	1. INADEQUATE AIR SUPPLY	1. CHECK AIR SUPPLY FOR CORRECT REGULATOR ADJUSTMENT (90 PSIG MAX.)
	2. AIR INLET OR EXHAUST SCREEN PLUGGED.	2. INSPECT, WASH CLEAN.
	3. OBSTRUCTION IN THROTTLE VALVE OR VALVE NOT OPENING.	3. DISASSEMBLE THROTTLE, PAGE 6 OR 7. CLEAN , INSPECT FOR OBSTRUCTIONS OR DAMAGED PARTS.
	4. IMPROPER LUBRICATION IN UNIT (MOTOR AND GEARING). ROTOR BLADES STICKING, BADLY WORN OR BROKEN. BEARING FAILURE IN MOTOR OR GEARING.	4. INSURE LUBRICATOR IS FULL OF OIL AND GEARING IS LUBRICATED REGULARLY, REFER TO PAGES 2 AND 4. DISASSEMBLE, CLEAN, INSPECT, REPLACE WORN OR DAMAGED PARTS.
	5. AIR REGULATOR 35642 IMPROPERLY ADJUSTED. LEVER THROTTLE ONLY,	5. CHECK REGULATOR ADJUSTMENT.
THROTTLE VALVE HARD TO OPERATE.	1. DAMAGED VALVE STEM OR COMPONENTS.	1. DISASSEMBLE VALVE COMPONENTS, INSPECT, REPLACE IF NECESSARY.

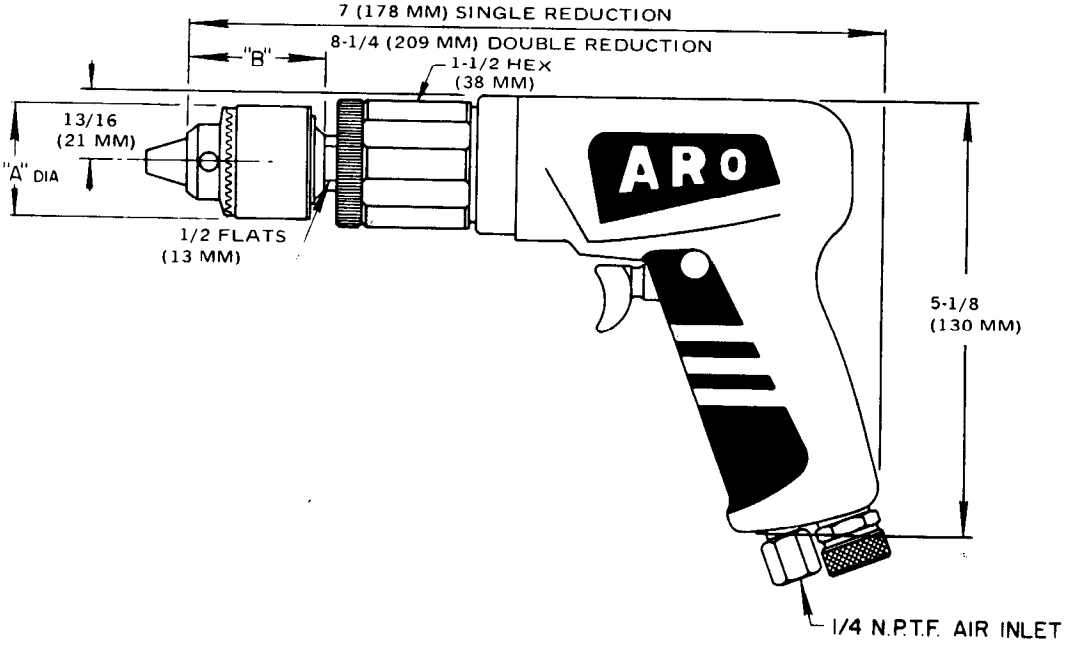
SERVICE KIT NO. 40193

FOR SERVICING PISTOL GRIP MODELS (EXCEPT 7386-D)

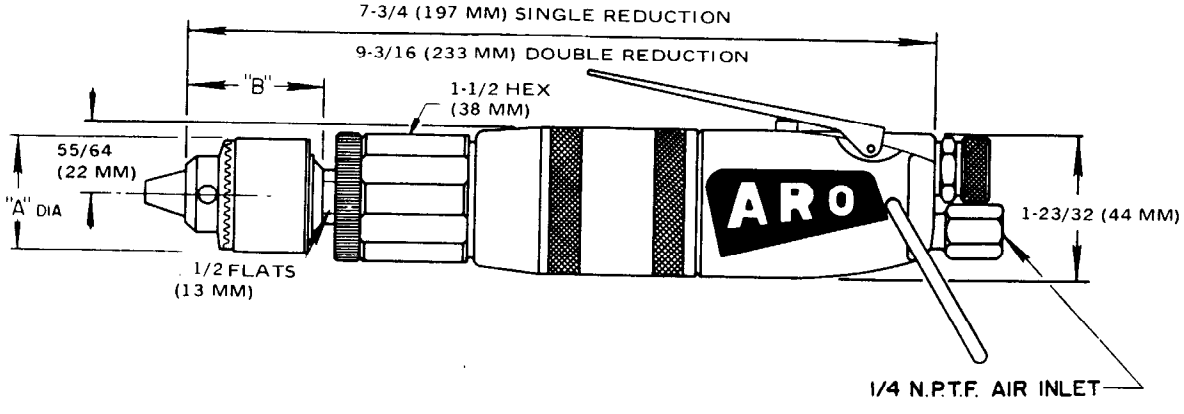
CONSISTING OF:

QTY.	PART NO.	DESCRIPTION
4	30741	Blades
1	32814	Pin
1	Y325-3	O-Ring
1	39452	Spring
1	39497	Spring
1	40191	Muffler
1	Y325-6	O-Ring
1	Y325-10	O-Ring
1	41795	Motor Oil
1	41799	Gear Lube
1	Y325-12	O-RING

DIMENSIONAL DATA



CHUCK NO.	CHUCK CAP.	"A" INCHES	"A" MM	"B" INCHES	"B" MM
47340	1/4	1-5/16	33	1-23/32	44
47341	3/8	1-7/16	36	1-29/32	48



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