



Tool Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

SECTION M12
MANUAL 26

Released: 8/80

Revised: 12-22-95

Form: 1808-2

"0" SERIES RIGHT-ANGLE GRINDER 13,000 R.P.M.

Models: 8318



WARNING

**READ THIS MANUAL CAREFULLY BEFORE INSTALLING,
OPERATING OR SERVICING THIS EQUIPMENT.**

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

To aid the operator's understanding of proper and safe use of grinders, the publications, "Use, Care and Protection of Abrasive Wheels", A.N.S.I. B7.1, and "Safety Code for Portable Air Tools", A.N.S.I. B186.1, can be purchased from:

American National Standards Institute, Inc.
1430 Broadway
New York, New York 10018

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 grinding wheel, wire brush or performing other 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.
- Use tool only for purposes for which it was intended.

- Do not use excessive work pressure.
- 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) 672-0801.

ARO Tool Products

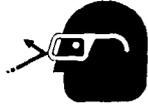
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FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

⚠ WARNING



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

⚠ WARNING



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 Read the manual before operating this tool. Operate at 90 psig/6.2 bar max.</p>	
<p>PN 48176-1 LABEL (NON-EU MODELS)</p>	<p>PN 49883 LABEL (-EU MODELS)</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.

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 40 HOURS OF TOOL OPERATION – Flush tool with a solution of three (3) parts cleaning solvent to one (1) part spindle oil. After flushing, apply a small amount of spindle oil in air inlet and run tool for one minute to insure proper lubrication.

EVERY 160 HOURS OF TOOL OPERATION – Apply ARO 33153 grease thru grease fitting in right-angle housing to lubricate gears and bearings. Right-angle should contain approximately 1/8 oz. (3.5 g) of grease.

AIR SUPPLY REQUIREMENTS

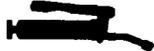
For maximum operating efficiency, the following air supply specifications should be maintained to this air tool:

- 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 re-

pair 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.

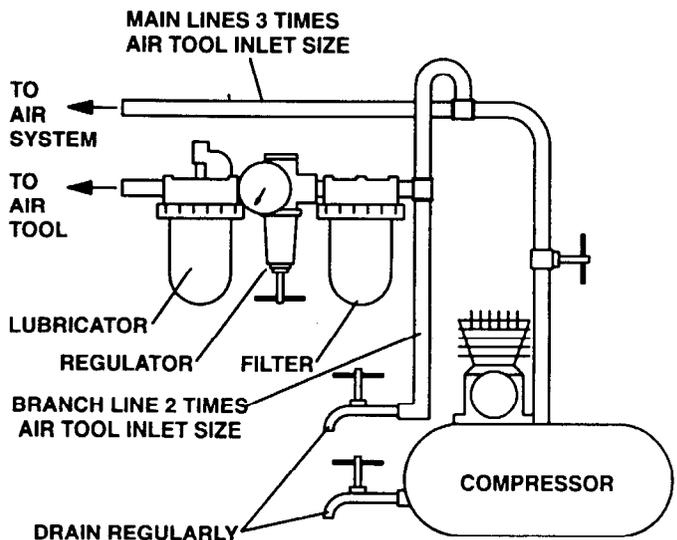
Before mounting a wheel, after all tool repairs and whenever a grinder is issued for use, the speed of the grinder shall be checked with a tachometer to make certain that its actual speed does not exceed its rated speed.

Safety guards shall be in good functional condition. Damaged, bent or severely worn guards shall be replaced. A guard which has been subjected to a wheel failure is likely to be internally weakened and shall not be reused.

Replace guard.

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	LEVER	MOTOR HOUSING	DESCRIPTION
8318	36603	45557	GUARD AND FLANGES FOR TYPE 27 AND 28 REINFORCED WHEELS. 1/4" THICK x 4" DIAMETER MAXIMUM WHEEL SIZE.
8318-EU	45779	49921	

MODELS WITH -EU SUFFIX ARE "EC" COMPLIANT MODELS

Model 8318-() has flanges and guards for use with type 27 and 28 wheels (1/4" thick x 4" diameter - maximum wheel size). NOTE: Right-angle section can be positioned on tool, with respect to lever throttle, in 8 different positions (45° increments) to best suit the operator (right or left handed, application considerations, etc.).

OPERATION

Safe and efficient operation of your ARO grinder can best be attained by observing proper operating, inspection and maintenance procedures. Allow only competent and qualified people to operate grinder and subject each grinder to a regular inspection and maintenance procedure. The qualified grinder operator must be carefully instructed in the safe operation and use of the grinder, including a study of the manufacturer's literature. The grinder operator should have a good attitude regarding safety.

Operator Safety Equipment. The grinder operator shall wear safety goggles or face shield at all times the grinder is turned on. Other protective clothing shall be worn if necessary for spark deflection. Respirators shall be used in poorly ventilated areas. Adjacent personnel shall be protected from grinding sparks and wheel fragments by protective barriers.

Starting and Stopping. Before starting a grinder, the operator shall make sure that no one is in the unguarded plane of wheel rotation. Upon mounting a new wheel, grinder shall be run at operating speed with the safety guard in place or in a protected enclosure for at least one minute before applying the wheel to the work. Check speed and balance of wheel. Before a grinder is put down, the throttle shall be released and the wheel shall come to a stop. Tool rests, hangers or balancers are recommended.

Safety guards are furnished in the accessory groups along with necessary flanges and other supporting hardware. The wheel guard is detachable for replacement due to damage or to convert to another size or type wheel only. A proper guard must be attached before using the grinder.

Use only wheels with adequate speed ratings. The maximum op-

erating speed marked on the wheel, blotters or packaging, shall equal or exceed the rated speed stamped on the grinder.

At each wheel change, Aro recommends the free speed be checked by competent authorized personnel, using a good reliable tachometer, to assure that the maximum tool speed is lower than manufacturers rated speed for the wheel to be used. A speed check shall never be made with grinding wheel on the grinder. NOTE: The speed of the tool may be regulated by turning air regulator (35642) right or left. If necessary, loosen nut (36609) to facilitate adjustment of air regulator.

Grinders shall not be operated at a speed exceeding its rated speed.

Use recommended guard.

If a wire brush should ever be used with this tool; insure the speed rating of the brush is greater than the speed of the tool the brush is to be used with and insure the brush conforms to applicable safety standards. Be certain the brush is compatible with mounting of the tool. Always use a wheel guard.

SAFETY GUIDE FOR PORTABLE GRINDER USE

Some of the more common causes of wheel breakage are: Improper mounting of the wheels, improper speeds, abusive operation and careless handling.

DO

Do always handle and store wheels in a careful manner (handle with due regard, grinding wheels are fragile). Grinding wheels shall be stored in protective racks or containers and protected from moisture and temperature extremes.
Do visually inspect all wheels before mounting for possible damage in transit.
Do check maximum operating speed established for the wheel against grinders speed.
Do check mounting flanges for correct size and design.
Do use mounting blotters supplied with wheels where applicable.
Do be sure tool is kept in first class operating condition.
Do always use a guard covering at least 1/2 of the grinding wheel.
Do allow newly mounted wheels, with guard in place, to run at operating speed for at least one minute before grinding.
Do always wear safety glasses or goggles when grinding.
Do always observe all safety rules when operating or handling portable grinders.

and

DON'T

Don't use a wheel that has been dropped.
Don't force a wheel onto the spindle or alter the size of the mounting. If the wheel won't fit the spindle, get one that will.
Don't ever exceed the maximum operating speed established for the wheel.
Don't use mounting flanges on which the bearing surfaces are not clean and flat.
Don't tighten the mounting nut excessively. Tighten only sufficiently to drive the wheel and prevent slippage.
Don't grind on the side of the wheel unless wheel is specifically designed for that purpose.
Don't start the grinder until the wheel guard is in place.
Don't jam the wheel into the work.
Don't stand directly in front of a grinding wheel whenever a grinder is started.
Don't grind material for which the wheel is not designed.
Don't grind in grooves. Twisting of wheels in grooves can cause them to break.

GRINDING WHEEL MOUNTING INSTRUCTIONS

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Disconnect air supply from grinder or shut off air supply and exhaust (drain) air line of compressed air before mounting or removing any abrasive wheel or wire brush, or otherwise performing maintenance or service to the tool.

Check grinder speed before mounting grinding wheel (or other type accessory) with a reliable tachometer to make sure that the actual speed of the grinder does not exceed its rated free speed.

Check operating speed of grinding wheel or wire brush to be used with the grinder. The maximum operating speed marked on the grinding wheel, blotters or packaging, shall equal or exceed the rated free speed of the grinder. Also, the type and size of the grinding wheel or wire brush shall be compatible with the grinder size and type.

Check abrasive wheels prior to mounting for chips or cracks. Cracked or chipped wheels shall not be used.

Care must be taken that a grinding wheel, or wire brush, of the correct speed rating is used. Rated wheel capacities for Aro grinders are maximum only. Regardless of the rated capacity and speed of any Aro grinder, abrasive wheels or wire brushes shall never be operated at a speed greater than that recommended by the wheel (or brush) manufacturer.

Dressing Abrasive Wheels. Upon mounting a grinding wheel, the tool should be operated at gradually increasing speed and checked for good balance of the wheel. If unbalance is observed, the wheel shall be dressed. If dressing fails to establish acceptable balance, the wheel shall not be used.

MOUNTING INSTRUCTIONS FOR TYPE 27 AND 28 GRINDING WHEELS

The adapter shall be screwed securely on the spindle, using a spanner type wrench. NOTE: When the adapter is integral with the grinding wheel, any necessary spacers shall conform to the wheel manufacturer's recommendations.

If the wheel is separate from the adapter, the wheel shall be placed on the adapter face and the adapter nut screwed on firmly

against the wheel, using an adapter nut wrench while holding the spindle from rotating. The wheel shall be checked for firmness of mount by holding the spindle and pulling on the edge of the wheel in the tightening direction. The safety guard shall be properly positioned to be between the wheel and the operator. The mounting shall be checked to assure its secure mounting. The lip of the guard shall be forward of the wheel.

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:

RIGHT-ANGLE SECTION

Place tool in a suitable holding device, loosen nut (31508) completely and pull right-angle section from tool.

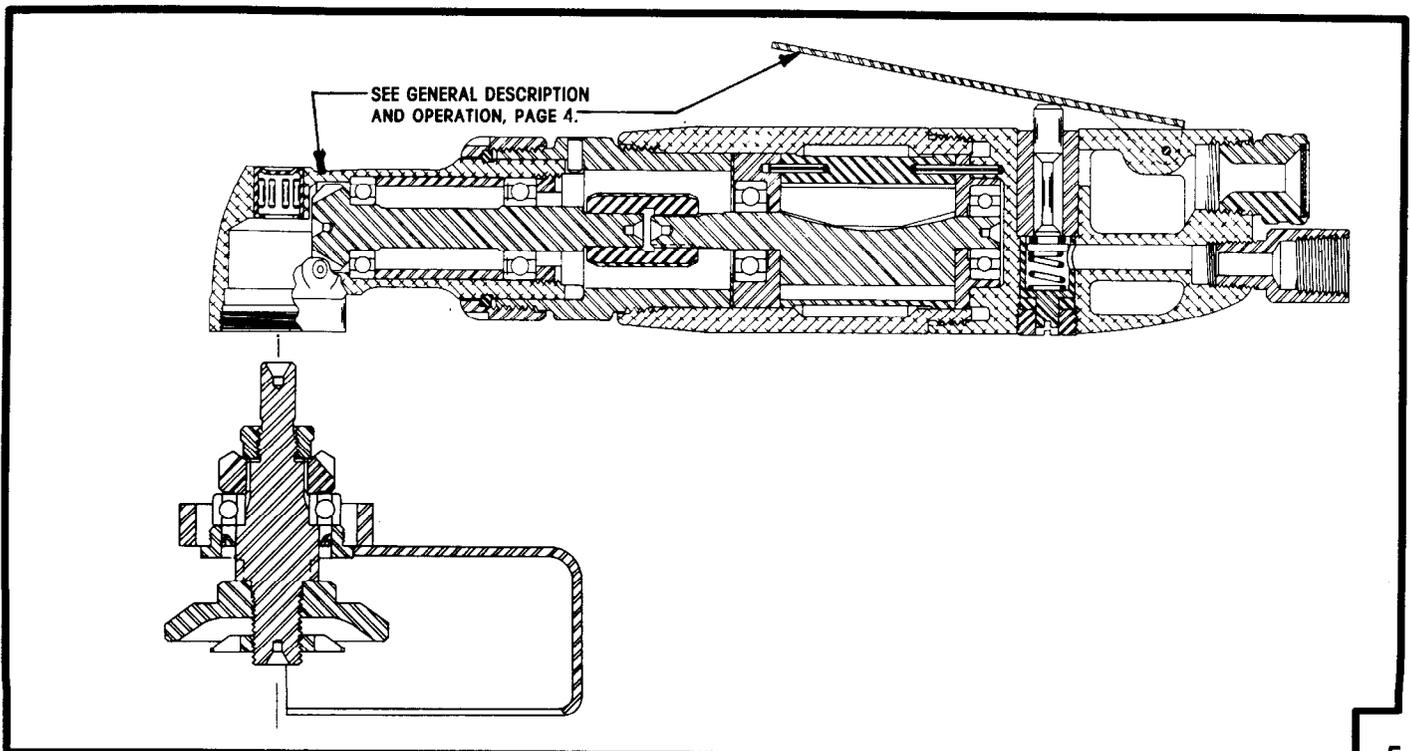
MOTOR SECTION

Motor assembly can be removed from the tool after the removal of the right-angle section and adapter (45562).

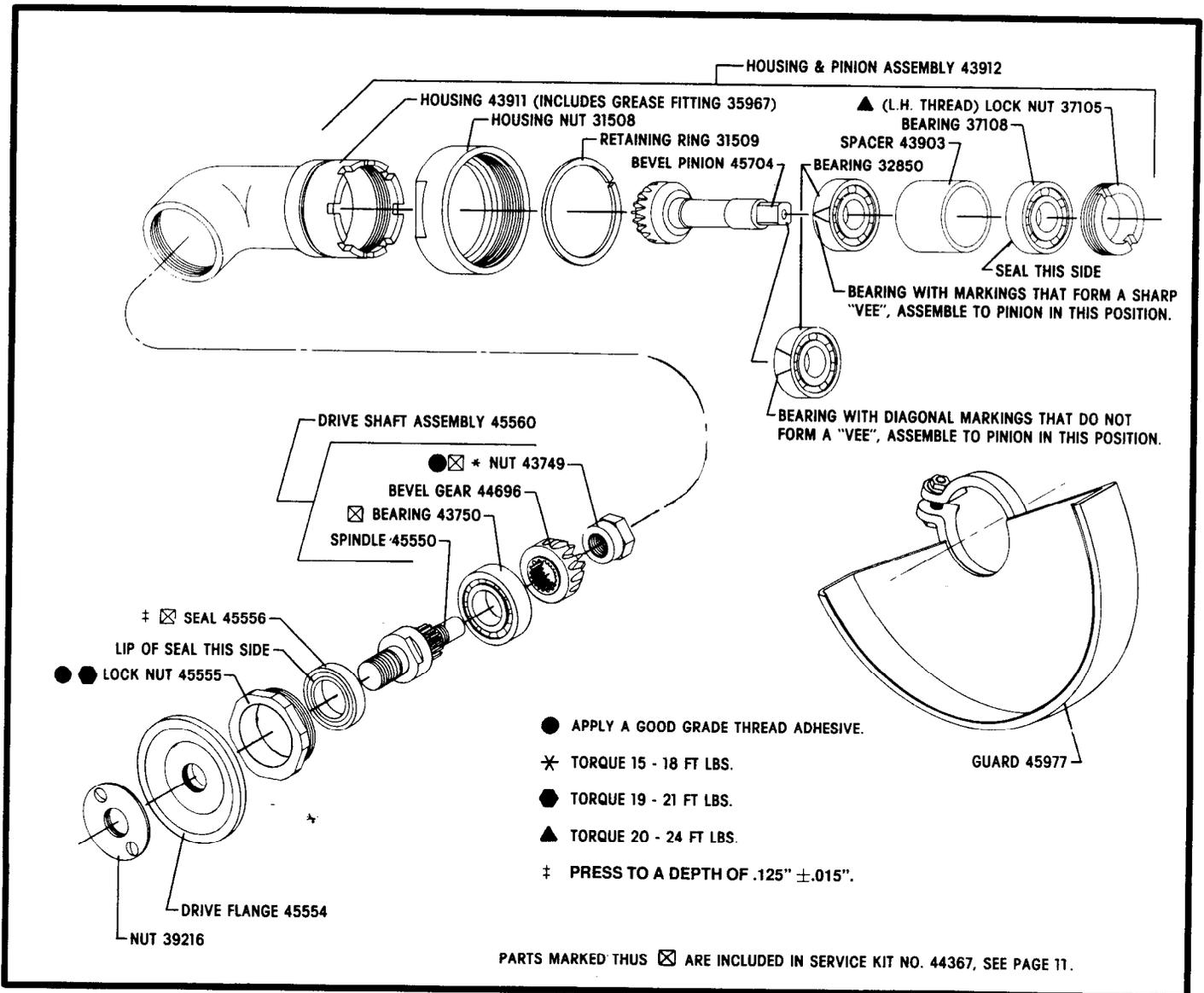
HEAD SECTION

Place head of tool in a suitable holding device and, using a strap type wrench on motor housing, unscrew and remove.

TYPICAL CROSS SECTION OF TOOL



RIGHT-ANGLE SECTION



DISASSEMBLY

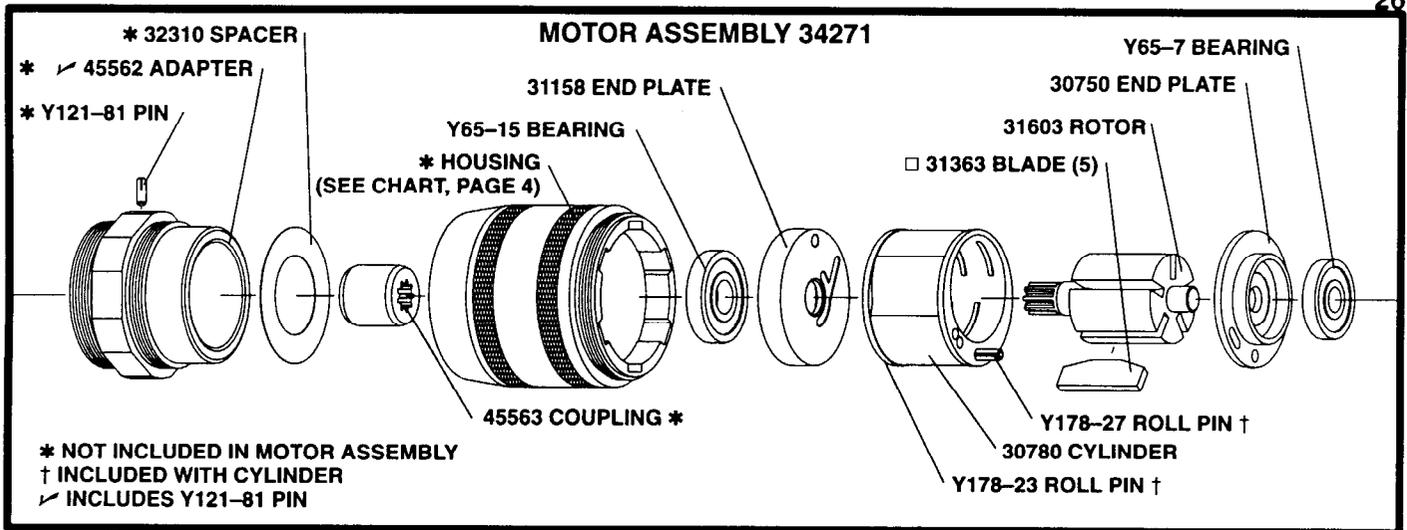
- Remove lock nut (45555), with seal (45556), and remove drive shaft assembly from housing.
- Remove nut (43749) to remove gear (44696) and bearing (43750) from spindle.
- Remove lock nut (37105) – left hand thread – to remove bevel pinion (45704) and components from housing.

ASSEMBLY

- NOTE: Pack bearings and lubricate gears liberally with ARO 33153 grease upon assembly. Right-angle assembly should contain approximately 1/8 oz. (3.5 g) of grease.
- Assemble bearing (32850), spacer (43903) and bearing (37108) to bevel pinion (45704). NOTE: Bearing (32850) has two different styles of identification markings; see above showing different style markings and correct positioning on bevel pinion. Assemble bearing (37108) to bevel pinion (45704) with shielded side facing inward.
- Assemble bevel pinion (45704), with bearings and spacer, to housing and secure with lock nut (37105) – left hand threads. Torque to 20 – 24 ft lbs.
- Assemble bearing (43750) and bevel gear (44696) to spindle and secure with nut (43749). NOTE: Apply a good grade thread adhesive before assembly.
- Assemble seal (45556) into lock nut (45555). NOTE: Assemble seal to a depth of .125" ±.015".
- Assemble drive shaft assembly to housing and secure with lock nut (45555) and seal (45556). NOTE: Torque lock nut to 19 – 21 ft lbs.
- NOTE: Right-angle section can be positioned on tool, with respect to lever throttle, in 8 different positions (45° increments) to best suit the operator (right or left handed, application considerations, etc.).

MOTOR SECTION

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DISASSEMBLY

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

ASSEMBLY

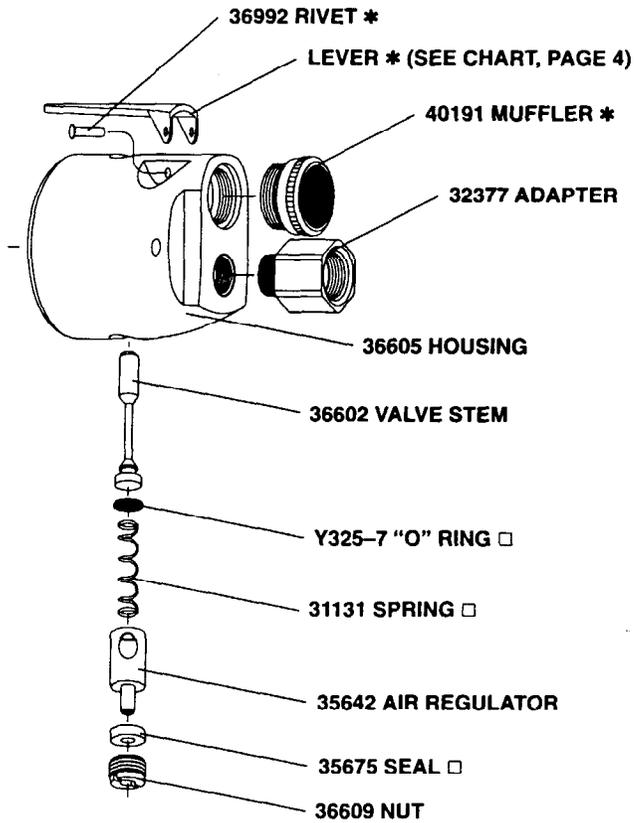
- Assemble bearings to end plates, pressing on outer race of bearings.
- Assemble end plate (30750) to rotor, pressing on inner race of bearing.
- Coat i.d. of cylinder with ARO 29665 spindle and assemble over rotor, aligning air inlet holes in cylinder with inlet slot of end plate and roll pin with hole in end plate.
- Coat blades with ARO 29665 spindle oil and assemble to rotor slots - straight side out.

- Assemble end plate (31158) to rotor and cylinder, aligning roll pin with hole in end plate. NOTE: Press on inner race of bearing.
- Be sure rotor does not bind (if rotor binds, tap splined end lightly with a soft face hammer to loosen) and assemble to tool. See "Assembling Motor to Tool".

ASSEMBLING MOTOR TO TOOL

- Remove motor housing from head. Place head of tool in a suitable holding device with the "motor end" in an upright position. Place motor assembly on head, aligning roll pin (Y178-27) with .106" diameter blind hole in head. Slip motor housing over motor and secure to head. Assemble spacer (32310), adapter (45562), coupling (45563) and right-angle assembly to tool.

HEAD SECTION



* NOT INCLUDED IN HEAD ASSEMBLY

HEAD ASSEMBLY

PARTS MARKED THUS □ ARE INCLUDED IN SERVICE KIT NUMBER 44367, SEE PAGE 11.

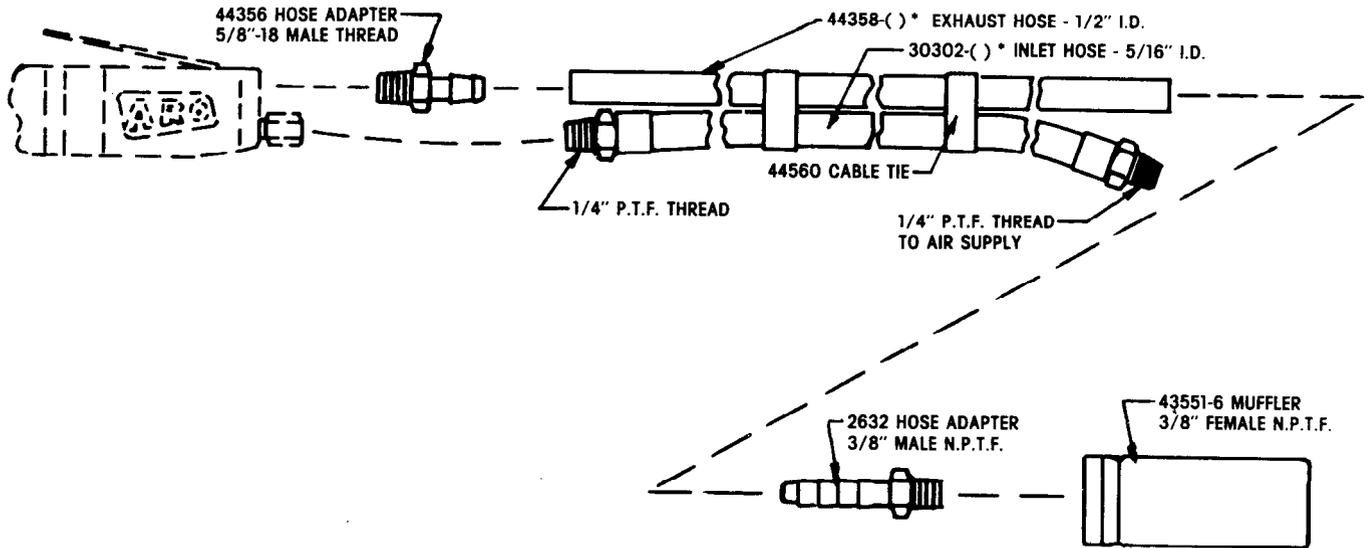
DISASSEMBLY

_ To remove valve components from head, remove nut (36609).

ASSEMBLY

_ Assemble "O" ring (Y325-7) to valve stem (36602) and assemble to head. Assemble spring (31131) and regulator (35642) to head and secure with seal (35675) and nut (36609). When assembling regulator to head, be sure hole in regulator is aligned with air inlet of head.

44360-() * PIPED EXHAUST SYSTEM ASSEMBLY

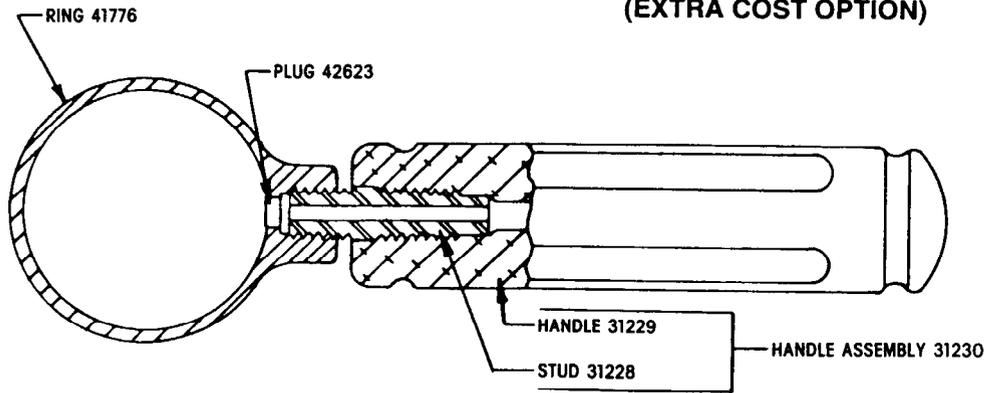


PIPED EXHAUST ASSEMBLY CONSISTS OF 5/16" I.D. AIR INLET HOSE WITH 1/4" MALE FITTING AT EACH END, 44356 EXHAUST HOSE ADAPTER WITH 5/8" - 18 MALE THREAD AND 2632 BARBED INSERT WITH 3/8" MALE THREAD.

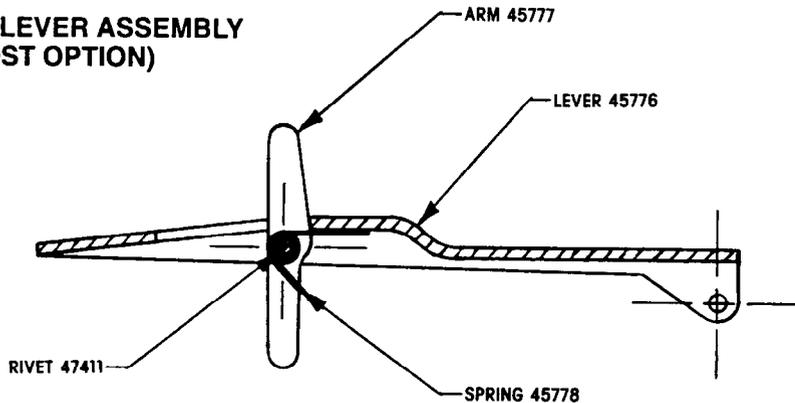
* TO ORDER PIPED EXHAUST SYSTEM ASSEMBLY: ADD DASH NUMBER TO PART NUMBER TO INDICATE DESIRED LENGTH OF HOSE IN FEET. EXAMPLE: 44360-20, THE -20 INDICATES 20 FEET OF HOSE. ORDER LENGTH DESIRED UP TO 30 FEET MAXIMUM.

TO ASSEMBLE TO TOOL: REMOVE EXHAUST MUFFLER AND REPLACE WITH ADAPTER 44356. THREAD INLET HOSE TO INLET ADAPTER AND TIGHTEN SO EXHAUST HOSE ALIGNS WITH ADAPTER 44356 AND SLIP EXHAUST OVER ADAPTER. NO CLAMP IS NEEDED TO SECURE HOSE TO ADAPTER SINCE EXHAUST PRESSURE IS VERY LOW.

42625-1 AUXILIARY HANDLE ASSEMBLY
(EXTRA COST OPTION)



45779 LOCK-OFF LEVER ASSEMBLY
(EXTRA COST OPTION)

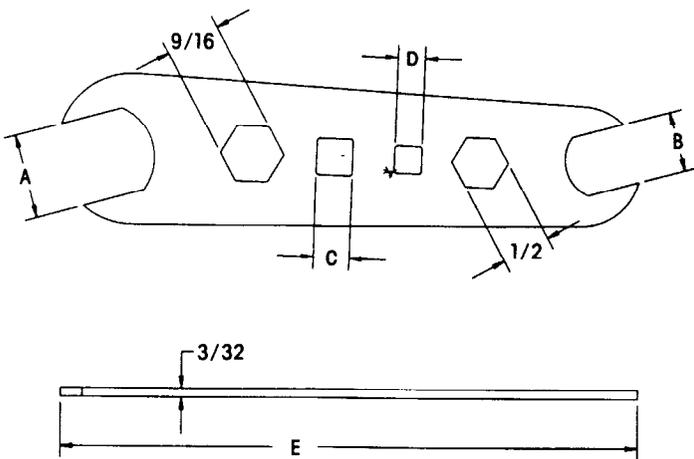


TROUBLE SHOOTING

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

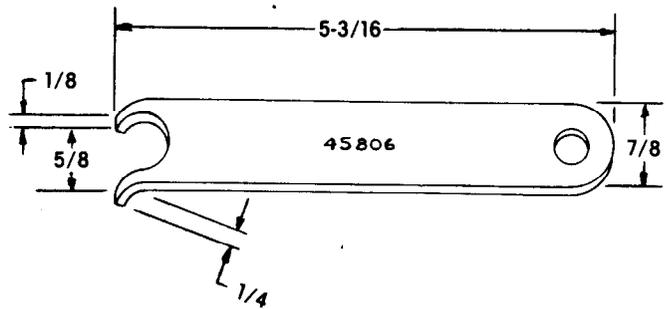
CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
LOW SPEED AND POWER OR GRINDER WILL NOT RUN.	<ol style="list-style-type: none"> INADEQUATE AIR SUPPLY. AIR INLET OR EXHAUST SCREEN PLUGGED. OBSTRUCTION IN THROTTLE VALVE OR VALVE NOT OPENING. IMPROPER LUBRICATION OF UNIT (MOTOR OR RIGHT-ANGLE). ROTOR BLADES STICKING OR BADLY WORN. WORN BEARINGS IN MOTOR OR RIGHT-ANGLE. COUPLING 45563 BADLY WORN. BUILT-IN REGULATOR 35642 IMPROPERLY ADJUSTED. 	<ol style="list-style-type: none"> CHECK AIR SUPPLY FOR CORRECT REGULATOR ADJUSTMENT (90 P.S.I.G. MAX. WHEN TOOL IS OPERATING). INSPECT, WASH CLEAN. DISASSEMBLE THROTTLE, CLEAN, INSPECT FOR OBSTRUCTIONS OR DAMAGED PARTS. BE SURE LUBRICATOR IS FULL OF OIL AND RIGHT-ANGLE IS LUBRICATED REGULARLY. DISASSEMBLE, CLEAN, INSPECT, REPLACE WORN OR DAMAGED PARTS, LUBRICATE. CHECK REGULATOR ADJUSTMENT.
THROTTLE VALVE HARD TO OPERATE.	<ol style="list-style-type: none"> DAMAGED VALVE PIN, "O" RING OR SPRING. 	<ol style="list-style-type: none"> DISASSEMBLE VALVE COMPONENTS, INSPECT, REPLACE IF NECESSARY.
TOOL WILL NOT SHUT OFF.	<ol style="list-style-type: none"> DAMAGED VALVE COMPONENTS. 	<ol style="list-style-type: none"> DISASSEMBLE VALVE COMPONENTS, INSPECT, REPLACE PARTS IF NECESSARY.

MAINTENANCE TOOLS

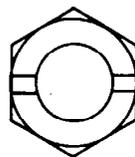


**GENERAL PURPOSE FLAT WRENCH
(FURNISHED WITH EACH TOOL)**

PART NO.	"A"	"B"	"C"	"D"	"E"
30131	11/16"	1/2"			5 9/16"
37167	7/8"	5/8"	3/8"	9/32"	6"



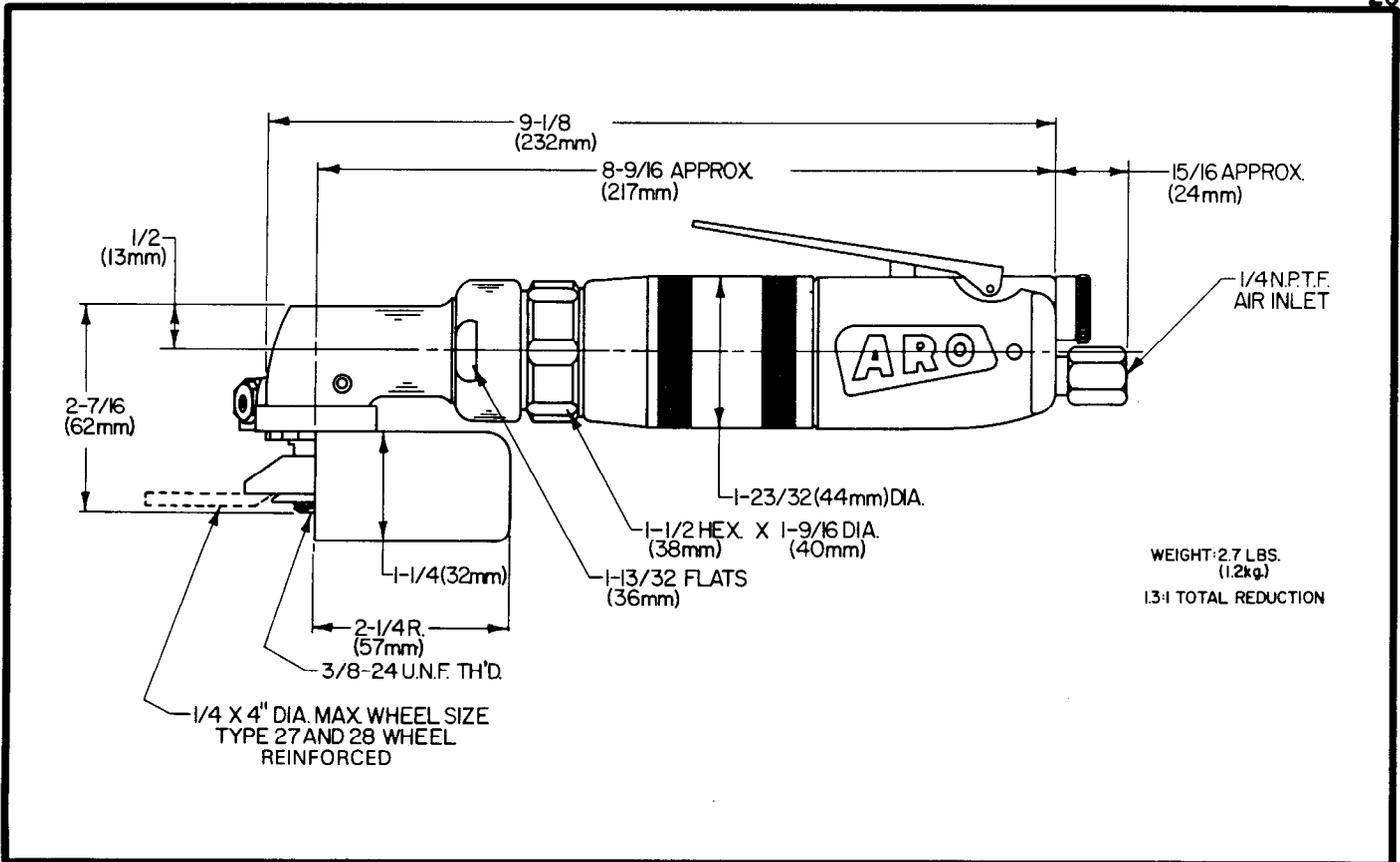
**45806 SPANNER WRENCH
(FURNISHED)**



**41358 WRENCH
AVAILABLE AT EXTRA COST
(FOR USE WITH 37105 LOCK NUT)**

DIMENSIONAL DATA

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SERVICE KIT NO. 44367

CONSISTING OF:

QTY	PART NO.	DESCRIPTION
1	31131	Spring
5	31363	Rotor Blade
1	35675	Seal
1	41795	Motor Oil
1	41799	Gear Lube
1	43749	Nut
1	43750	Bearing
1	45556	Lip Seal
1	Y325-7	"O" Ring



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