



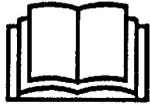
# OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

## SINGLE-SHOT AIR GUNS

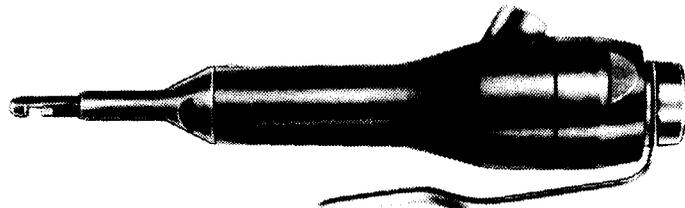
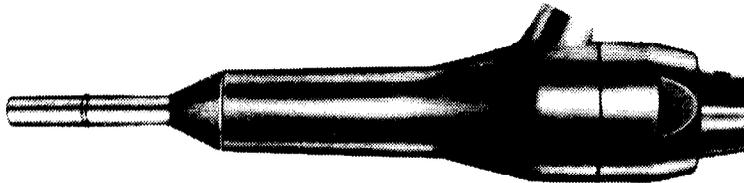
SECTION M60  
MANUAL 30  
Released: 9/66  
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Form: 4039

Models: 8142, 8142-R, 8143-AB, 8143-AR,  
8144-AB, 8144-AR, 8145-AB, 8145-AR,  
8146, 8146-R, 8147, 8147-R.



### ⚠ WARNING

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



#### FEATURES:

- LEVER OR BUTTON TYPE THROTTLE
- SIX (6) DIFFERENT ATTACHMENTS AVAILABLE FOR CUTTING OR DRIVING FUNCTIONS
- SEVEN (7) FOOT LONG 3/16" I.D. HOSE ASSEMBLY WITH FILTER

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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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## MODEL IDENTIFICATION

MODEL NUMBER		PARTS GROUP IDENTIFICATION LETTER AND DESCRIPTION
BUTTON THROTTLE	LEVER THROTTLE	
8142	8142-R	"C" - CENTER PUNCH
8143-AB	8143-AR	"D" - WIRE CUT-OFF TOOL *
8144-AB	8144-AR	"E" - CUT AND CRIMP TOOL *
8145-AB	8145-AR	"F" - CUT AND BEND TOOL *
8146	8146-R	"G" - TUBULAR PUNCH
8147	8147-R	"H" - PLASTIC RIVET DRIVER

 CANCELLED MODELS

\* RATED CAPACITIES

COPPER WIRE = .010" - .040" DIAMETER

STEEL WIRE = .012" MAXIMUM DIAMETER

## GENERAL DESCRIPTION AND OPERATION

**CUTTING TYPE:** The cutter hammer never strikes the cutter anvil. The wire to be cut should be held against the cutter anvil (or pull tool towards you) so the hammer has room to travel and perform the cutting operation. The cutter hammer will not strike the cutter anvil even when no wire is in the bit, thus eliminating the possibility of bit damage from striking one another.

Your ARO single-shot air gun will operate thru a pressure range of 40 - 100 p.s.i.g. (see power output range). The power output of the tool is directly proportional to the pressure input. An air regulator should be installed to maintain the desired air pressure when the tool is operating (see "Air and Lube Requirements").

**POWER OUTPUT RANGE:**

DRIVING TYPE TOOLS - 30 lb. - 75 lb. impact blow with 40 - 100 p.s.i.g. (maximum recommended operating pressure) at the tool inlet.

CUTTING TYPE TOOLS - Approximately 65 lb. impact blow with 90 p.s.i.g. (maximum recommended operating pressure) at the tool inlet.

The ARO single-shot air gun tools are divided into two basic categories - DRIVING type and CUTTING type. In normal operation, the tool will, with each operation of the throttle, deliver an impact blow to the bit and upon release of the throttle, will re-cycle to a shut-off position.

## 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.

## AIR AND LUBE REQUIREMENTS

**AIR PRESSURE.** This group of tools are operable thru a pressure range of 40 - 100 p.s.i.g. at the air inlet of the tool.

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 C28231-810 is recommended for use with each tool. The capacity of the individual Filter-Regulator-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.

**AIR HOSES.** Air supply hoses shall have a minimum working pressure rating of 150 p.s.i.g. (10 bars) or 150 percent of the maximum pressure produced in the system, whichever is higher and shall have an oil-resistant inner surface and an abrasion-resistant surface. When severe operating conditions make the possibility of cutting or damaging the hose likely, the hose shall be of extra-ply, armored or other protective construction. Hoses should be as flexible as possible to provide maximum maneuverability and control.

Recommended Lubricants: Spindle Oil (29665), 1 qt. (.9 liter) container for oiler and air inlet; "O" ring Lubricant (36460), 4 oz. (113 g) tube for lubrication and installation of "O" rings.

## MAINTENANCE

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

vent, blown dry with air and inspected for wear levels, abuse and contamination. When replacement parts are necessary, consult drawing containing the part for identification.

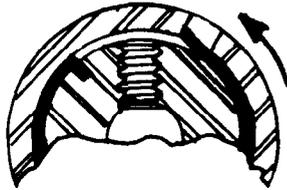
Before reassembling, lubricate "O" rings with 36460 lubricant. When assembling "O" rings or parts adjacent "O" rings, care must be exercised to prevent damage to the rubber sealing surfaces. A small amount of grease will usually hold steel balls and other small parts in place while assembling.

When ordering parts, be sure to list **part number, part name, model number and serial number of tool.** Use only genuine ARO® replacement parts.

## NOSE PARTS

### DISASSEMBLY

With nose end up, secure tool in a suitable holding device locating on flats of cap (40407-2). Remove screw (40418-1) from nose piece. Rotate nose piece, exposing end of retaining wire (40428). Insert screwdriver or similar tool into hole in housing, lifting retaining wire. Rotate nose piece, feeding out retaining wire (see illustration). Remove nose piece from housing, releasing spring and driving bit.

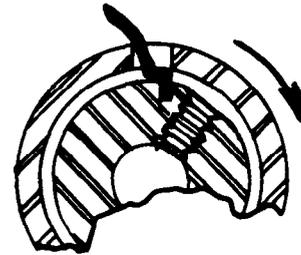


TO REMOVE RETAINING WIRE (40428).

### ASSEMBLY

Apply a small amount of spindle oil (29665) to bit before assembling nose piece.

Assemble driving bit and spring into housing (40431-2). Assemble nose piece into housing, aligning hole in housing with 1/32" diameter hole in nose piece. Assemble retaining wire (40428) into hole and rotate nose piece (see illustration). Align threaded hole in nose piece with hole in housing and assemble screw (40418-1).



TO ASSEMBLE RETAINING WIRE (40428).

## POWER UNITS

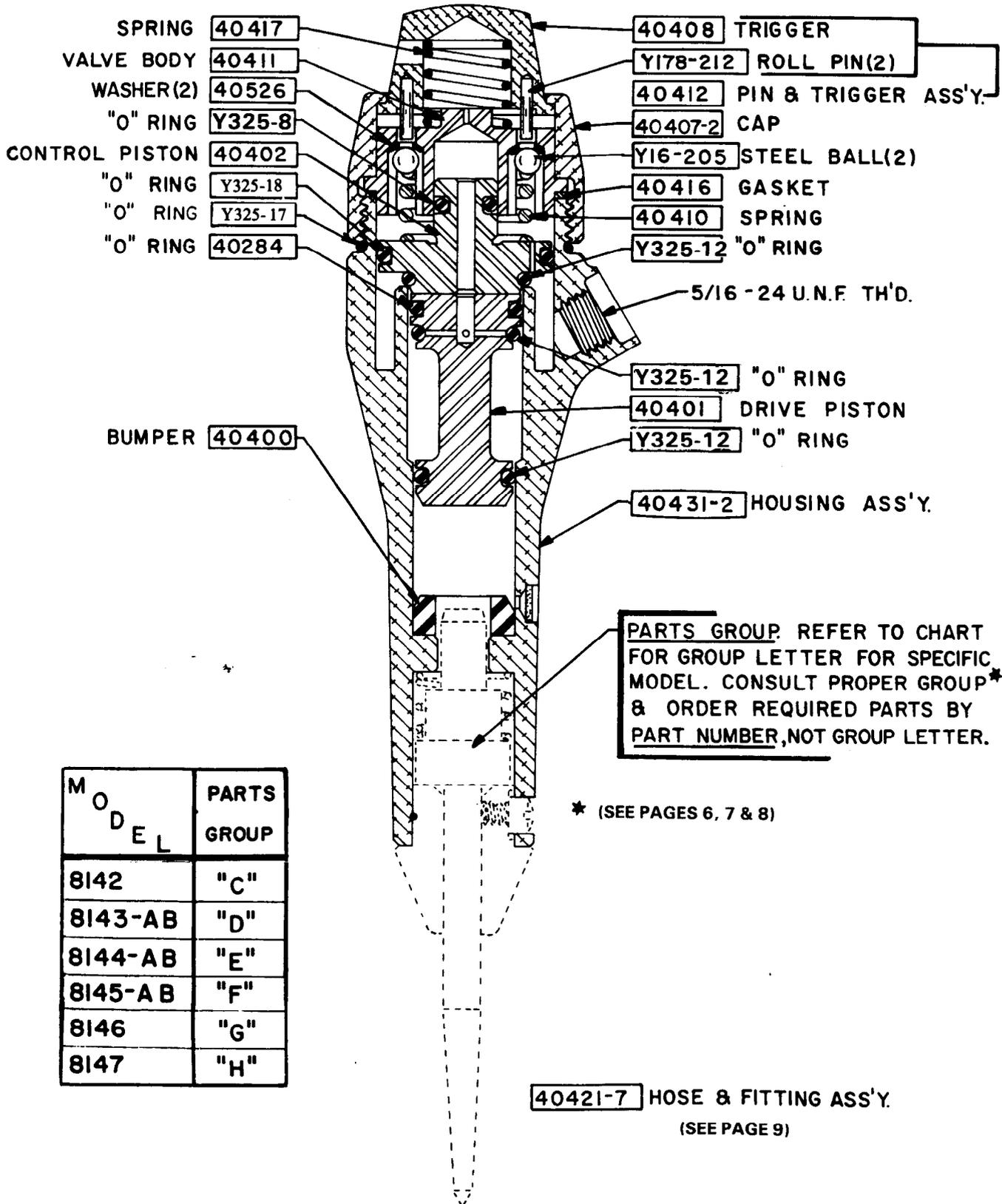
### DISASSEMBLY

Loosen cap (40407-2), hold tool in a vertical position with cap at bottom and remove cap carefully to avoid losing the loose parts. There will be an audible "pop" when the drive piston moves out of its cylinder, releasing the trapped air. Remove control piston (40402) from valve body (40411), releasing spring (40410), steel balls (Y16-205) and valve seats (40526). Remove valve body (40411) and spring (41100). Tap open end of housing lightly (on soft material or palm of hand) to remove drive piston (40401). Remove bumper (40400) from housing.

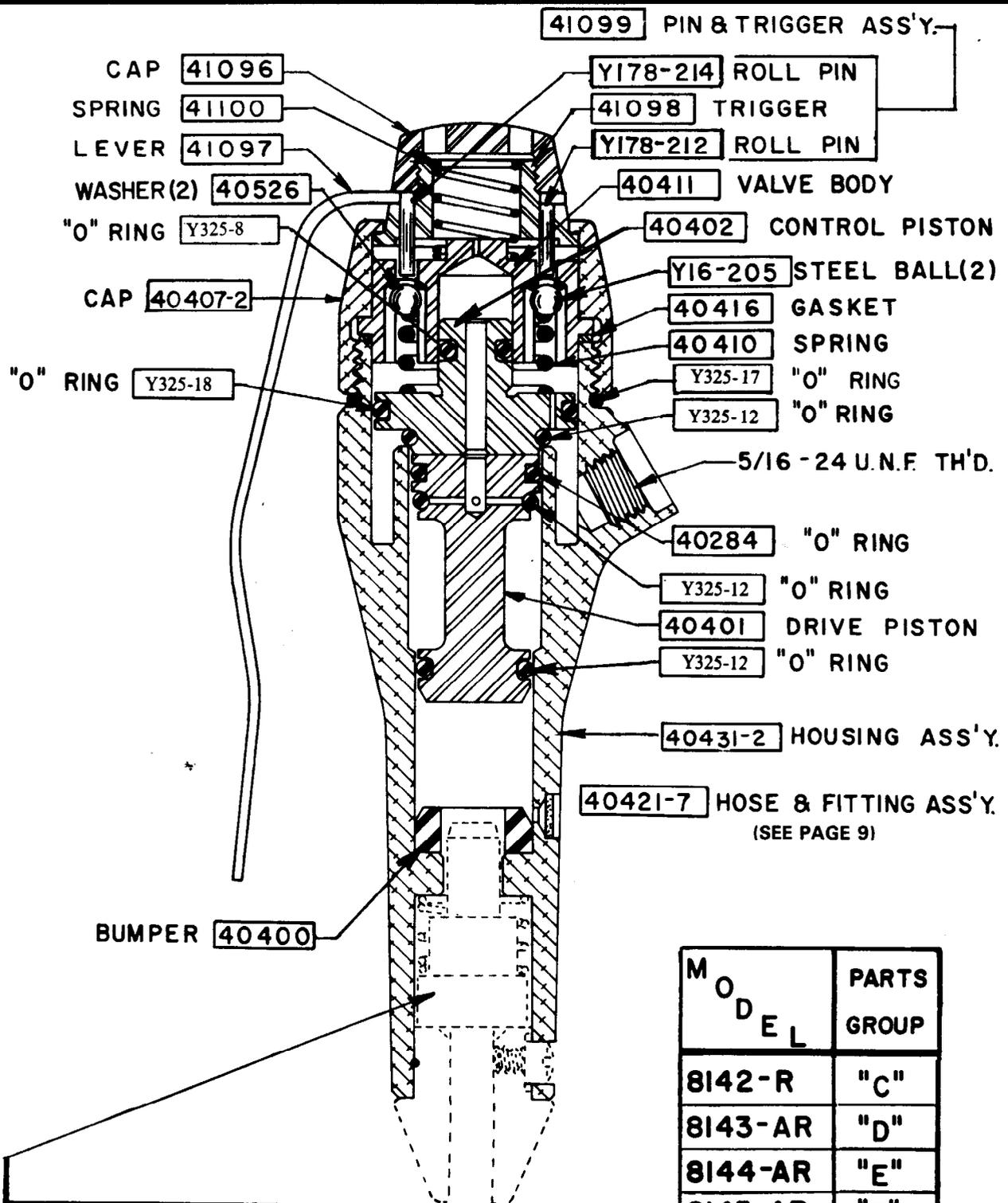
### ASSEMBLY

Lubricate all "O" rings with "O" ring lubricant (36460) upon assembly. It is recommended that "O" rings be replaced whenever a part containing "O" rings has been disassembled.

Assemble bumper (40400) into place in housing. Assemble "O" rings (Y325-12 and 40284) to drive piston and assemble into housing. Assemble "O" rings (Y325-12, Y325-18 and Y325-8) to control piston (40402) and assemble into housing. Assemble "O" ring (Y325-17) to housing. Assemble spring (41100) into cap (40407-2). Assemble valve body (40411) into cap with valve holes aligned to roll pins in cap. Assemble valve seats (40526), steel balls (Y16-205) and spring (40410) into valve body (40411). Assemble cap to housing.



M O D E L	PARTS GROUP
8142	"C"
8143-AB	"D"
8144-AB	"E"
8145-AB	"F"
8146	"G"
8147	"H"



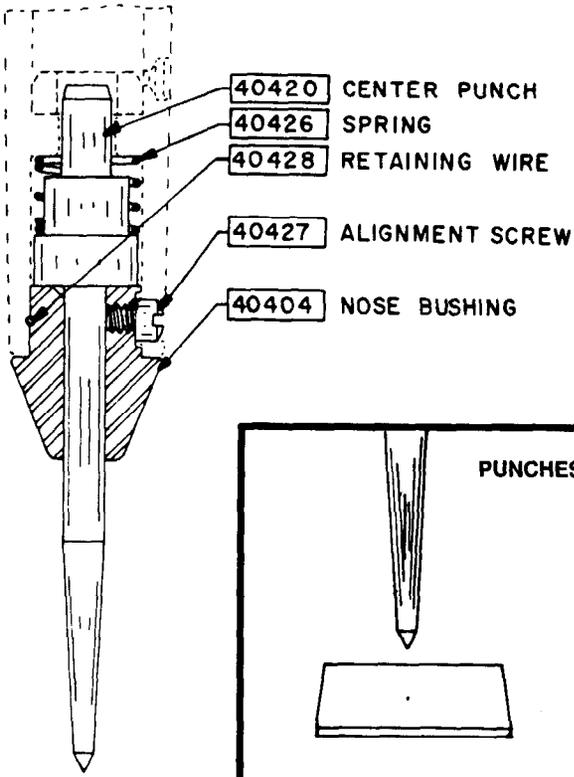
**PARTS GROUP. REFER TO CHART FOR GROUP LETTER FOR SPECIFIC MODEL. CONSULT PROPER GROUP\* & ORDER REQUIRED PARTS BY PART NUMBER, NOT GROUP LETTER.**

M O D E L	PARTS GROUP
8142-R	"C"
8143-AR	"D"
8144-AR	"E"
8145-AR	"F"
8146-R	"G"
8147-R	"H"

\* (SEE PAGES 6, 7 & 8)

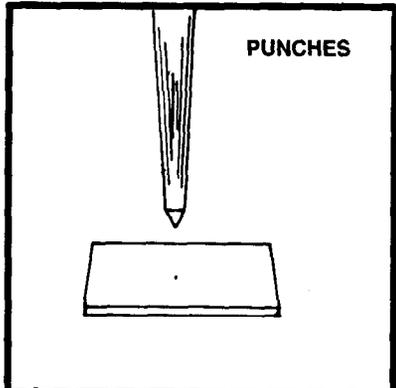
# NOSE PART GROUPINGS

## PARTS GROUP "C" FOR MODELS 8142, 8142-R CENTER PUNCH

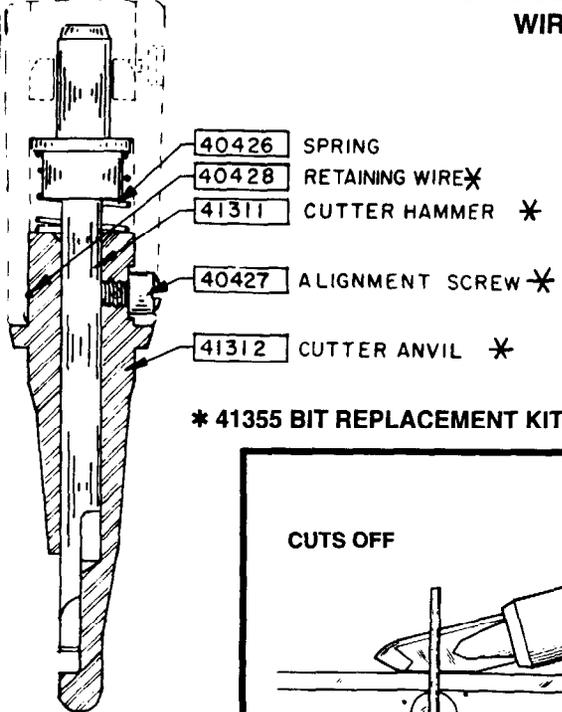


Rated Power Output: 30 – 100 lbs. impact blow with 40 – 100 p.s.i.g. at tool inlet.

Application: This tool is designed to permit tireless one-hand center punching, leaving the other hand free to hold the work.



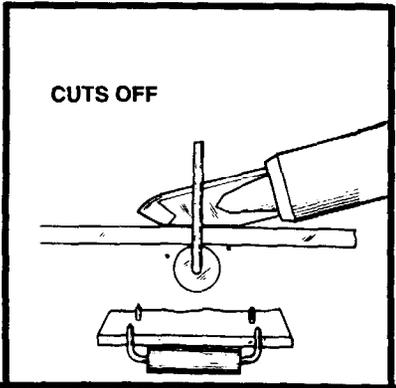
## PARTS GROUP "D" FOR MODELS 8143-AB, 8143-AR WIRE CUT-OFF TOOL



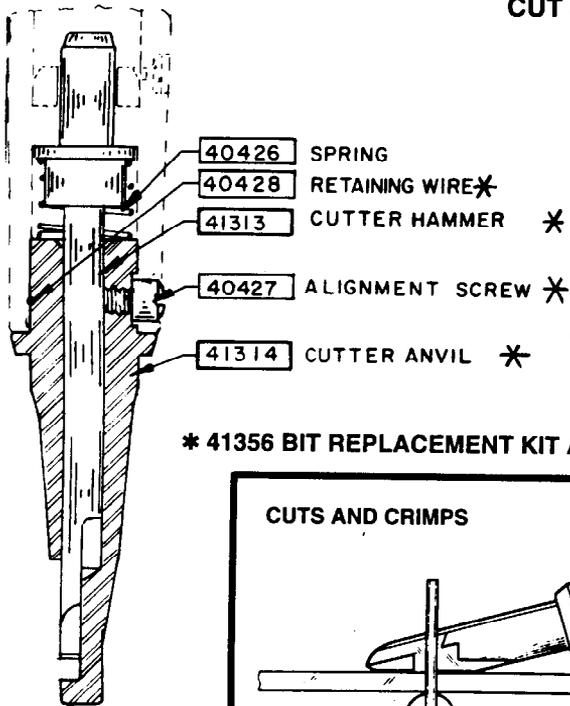
Rated Power Output: Approximately 65 lb. impact blow with 90 p.s.i.g. at tool inlet.

Application: This tool is designed to cut-off copper wire (.010" – .040" diameter) and/or component leads. When the component leads have been soldered to the printed circuit boards. The leads can be cut consistently and uniformly close to the surface of the board, eliminating the possibility of "short circuits". The cutting edges of the bits are kept from contacting each other (.001" – .003" space) greatly improving wear life. The tool should be held with wire firmly against anvil portion of the tool. CAUTION: Some electronic components have hard steel leads – wear life of cutting edge will be short when used on such leads.

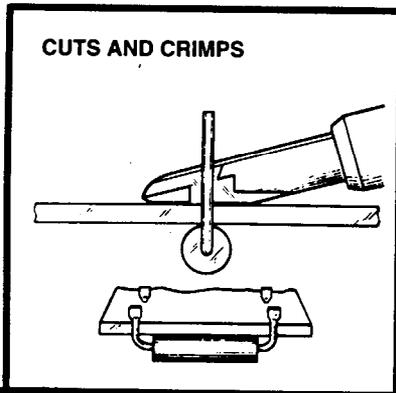
\* 41355 BIT REPLACEMENT KIT ASS'Y



## PARTS GROUP "E" FOR MODELS 8144-AB, 8144-AR CUT AND CRIMP TOOL



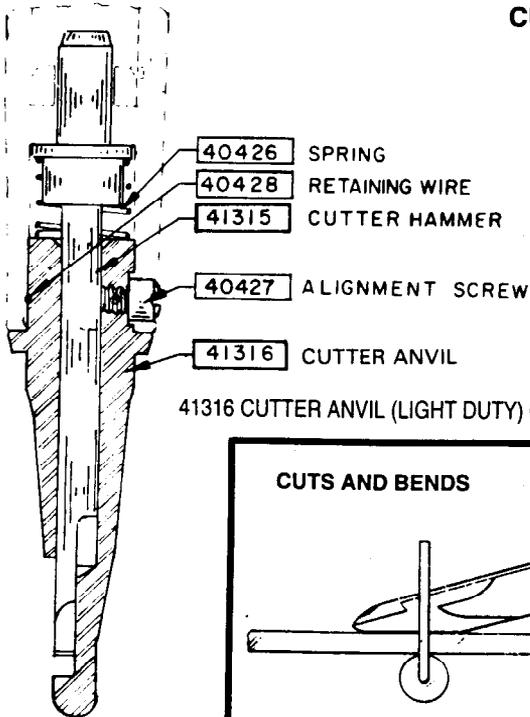
\* 41356 BIT REPLACEMENT KIT ASS'Y



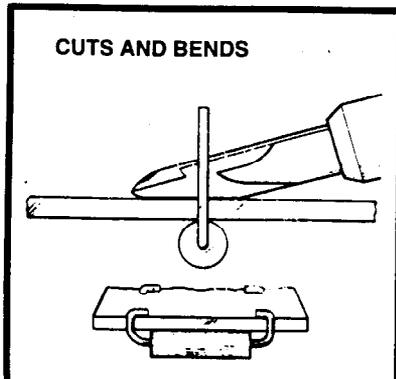
Rated Power Output: Approximately 65 lb. impact blow with 90 p.s.i.g. at tool inlet.

Application: This tool is designed to cut-off and crimp tinned-copper component leads (.010" - .040" diameter), in order to retain the electronic component to its printed circuit board prior to soldering. The cut-off will be a consistent height above the board - crimping will be uniform in width, thus minimizing human variables. Thickness and width of crimp is dependant on wire material, hardness and air pressure. The tool should be held with wire firmly against anvil portion of the tool. CAUTION: Some electronic components have hard steel leads. This tool is not recommended for use on such leads.

## PARTS GROUP "F" FOR MODELS 8145-AB, 8145-AR CUT AND BEND TOOL



41316 CUTTER ANVIL (LIGHT DUTY) OPTIONAL



Rated Power Output: Approximately 65 lb. impact blow with 90 p.s.i.g. at tool inlet.

Application: This tool is designed to cut-off and bend over tinned-copper electronic component leads (.010" - .040" diameter). The tool should be held with wire firmly against anvil portion of the tool. CAUTION: Some electronic components have hard steel leads - wear life of cutting edge will be short when used on such leads.

When replacing anvil, make sure the hammer (41315) is sharp. Using a new anvil with a dull hammer causes side loading which will fracture the anvil.

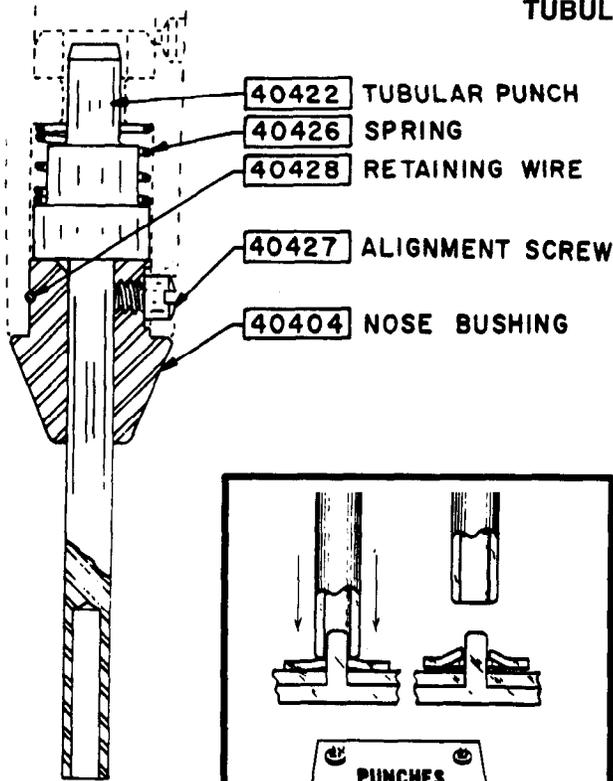
cutting leads of greater than .030" diameter will decrease anvil life.

While the tool is rated at 90 p.s.i.g., a customer should decrease air pressure to the level that cleanly cuts the wire but does not require the operator to twist the tool to break the lead.

Make sure the operator allows the tool to do the cutting. If the operator is twisting the tool to assist in breaking the lead, side loading of the anvil is taking place. That will cause fracturing.

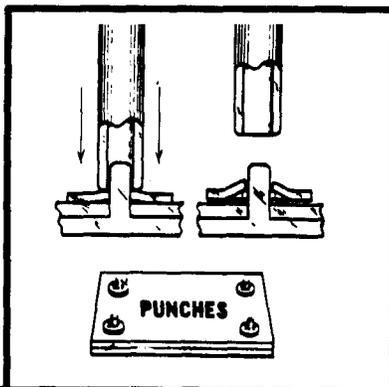
# NOSE PART GROUPINGS

## PARTS GROUP "G" FOR MODELS 8146, 8146-R TUBULAR PUNCH

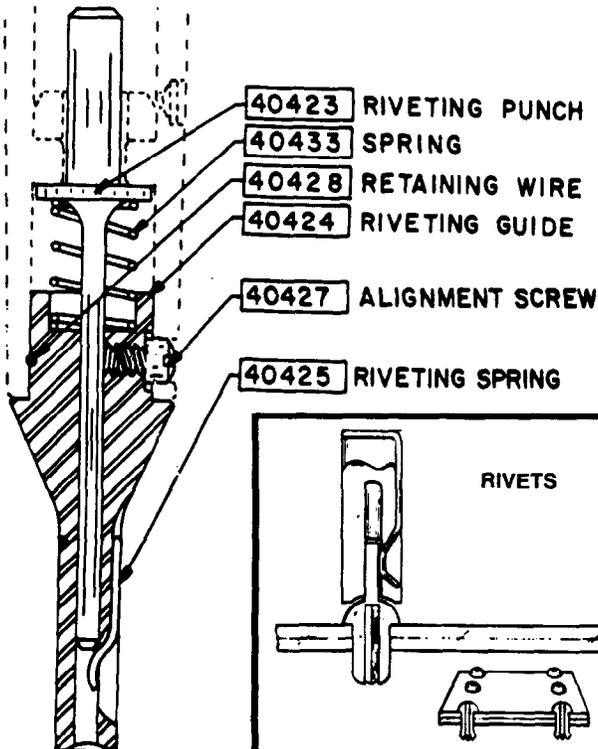


Rated Power Output: 30 - 100 lbs. impact blow with 40 - 100 p.s.i.g. at tool inlet.

Application: This tool is designed to swage retaining cups, stud fasteners, push nuts and similar fasteners onto shafts, projections, etc. with tireless, one-hand operation, leaving the other hand free to hold the part.



## PARTS GROUP "H" FOR MODELS 8147, 8147-R RIVETER

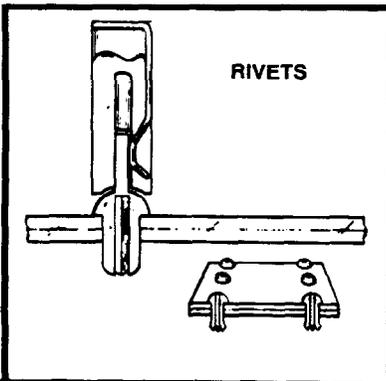


Rated Power Output: 30 - 100 lbs. impact blow with 40 - 100 p.s.i.g. at tool inlet.

Application: This tool is designed to pick up, grip, insert and drive blind plastic rivets.

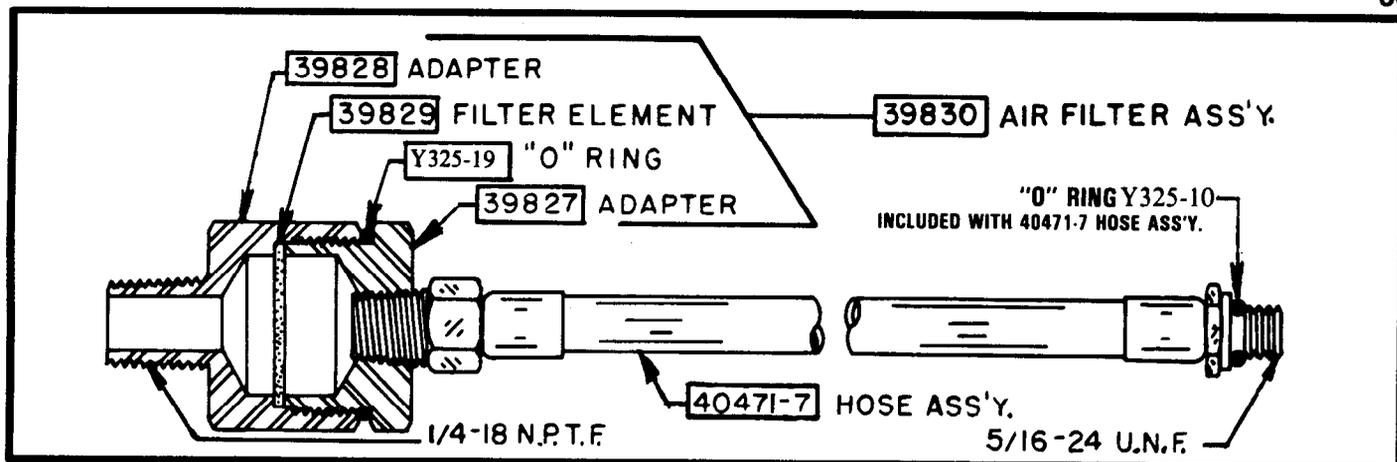
These rivets have gained acceptance where rivets with a high upset force would be prohibitive, i.e. mounting phenolic, plastic, fiberglass, etc. The repeatably accurate tool power output assures consistent quality of riveting.

Bit furnished is designed to work with .136" diameter round head rivet - grip length range = .125" - .187".



# 40421-7 HOSE AND FITTING ASSEMBLY

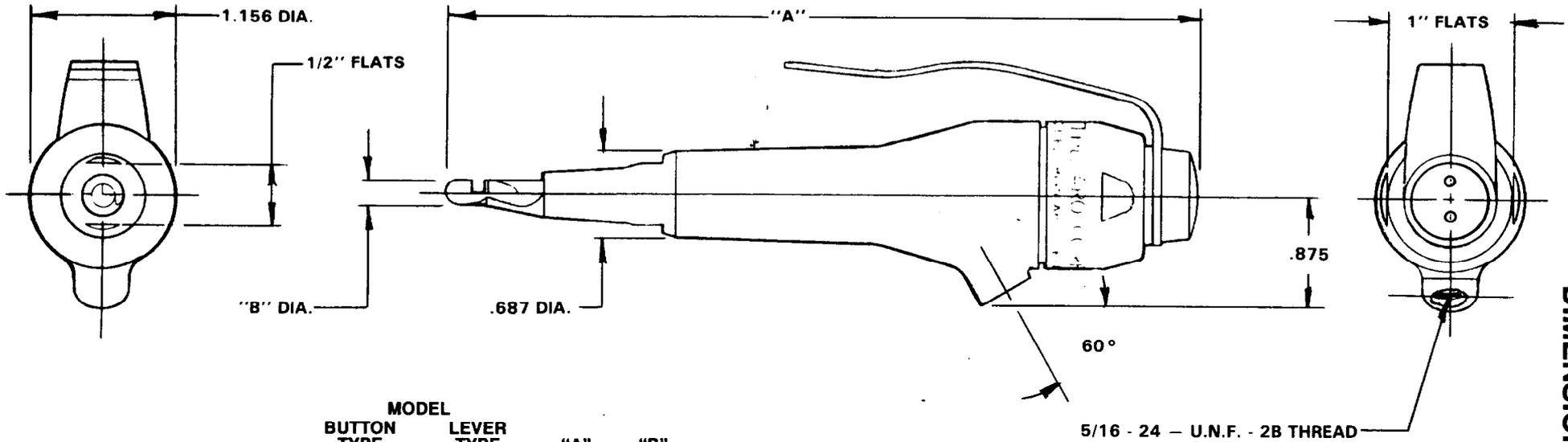
M60  
30



## TROUBLE SHOOTING

LISTED BELOW ARE SOME OF THE MOST COMMON CAUSES FOR THE SINGLE-SHOT AIR GUN 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
DRIVE PISTON DOES NOT RETURN TO START POSITION AFTER THROTTLE IS RELEASED.	1. CLOGGED AIR SUPPLY HOLES IN DRIVE PISTON.	1. DISASSEMBLE, CLEAN, LUBRICATE.
	2. DIRT OR SCALE IN "O" RING GROOVES OF DRIVE PISTON.	2. DISASSEMBLE, CLEAN, LUBRICATE.
	3. DAMAGED "O" RINGS IN DRIVE PISTON.	3. DISASSEMBLE, CLEAN, REPLACE "O" RINGS.
	4. DAMAGED SURFACES IN "O" RING GROOVES OF DRIVE PISTON.	4. DISASSEMBLE, CLEAN, REPLACE DRIVE PISTON AND "O" RINGS, LUBRICATE.
	5. SCORED OR SCRATCHED CYLINDER WALLS OF HOUSING.	5. DISASSEMBLE, CLEAN, REPLACE HOUSING AND "O" RINGS, LUBRICATE.
CONTROL PISTON DOES NOT CYCLE PROPERLY.	1. CAP 40407-2 NOT PROPERLY TIGHTENED.	1. TIGHTEN CAP.
	2. DIRT OR SCALE PREVENTING COMPLETE SHUT-OFF OF BALL VALVES.	2. DISASSEMBLE, CLEAN, LUBRICATE.
	3. CLOGGED BLEED PORT (.021" DIA.) IN CONTROL PISTON.	3. DISASSEMBLE, CLEAN, LUBRICATE.
	4. DIRT OR SCALE IN "O" RING GROOVES OF CONTROL PISTON.	4. DISASSEMBLE, CLEAN, LUBRICATE.
	5. DAMAGED "O" RINGS IN CONTROL PISTON.	5. DISASSEMBLE, CLEAN, LUBRICATE, REPLACE WORN OR DAMAGED PARTS.
	6. DAMAGED SURFACES IN "O" RING GROOVES OF CONTROL PISTON.	6. DISASSEMBLE, CLEAN, REPLACE CONTROL PISTON AND "O" RING, LUBRICATE.
	7. SCORED OR SCRATCHED CYLINDER WALLS OF HOUSING.	7. DISASSEMBLE, CLEAN, REPLACE HOUSING AND "O" RINGS, LUBRICATE.



MODEL		"A"	"B"
BUTTON TYPE	LEVER TYPE		
8142	8142-R	6.000"	.185"
8143-AB	8143-AR	5.895"	.187"
8144-AB	8144-AR	5.937"	.187"
8145-AB	8145-AR	6.000"	.250"
8146	8146-R	6.000"	.185"
8147	8147-R	5.640"	.250"

DIMENSIONAL DATA





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