

## C12-TON HAND HYDRAULIC COMPRESSION TOOL



### INTRODUCTION

The C12-ton compression tool was designed for installing tubular compression accessories on stranded electrical conductors. Twelve tons thrust can be developed by this hand-operated compressor.

The compressor piston can be adjusted to a position that will require a minimum of hand pumping to compress an accessory.

Twisting the pump handle clockwise will advance the piston until the lower die-half contacts the accessory to be compressed. Compression is completed by pumping the pump lever. When the die-halves touch the compression is complete.

The piston is retracted by pulling the trigger on the pump lever and making another pumping stroke. It will retract only to the positions previously set, thus minimizing the amount of pumping needed to complete the next compression.

Note that all operating controls are located such that the operator need not remove his hands from the tool.



### WARNING

THE C12-TON TOOL IS NOT TO BE USED FOR "HOT LINE" WORK.

### SPECIFICATIONS

#### PUMP SECTION:

SINGLE SPEED WITH MECHANICAL RAPID ADVANCE,  
PUMP OUTPUT .042 CU.IN. (.00069 LITER) PER STROKE.  
HIGH PRESSURE RELIEF VALVE SET TO OPEN AT 10,400/10,000 PSI (716/689 BAR).  
RESERVOIR CAPACITY, 4 7/8 CU.IN. (.08 LITER).  
USABLE OIL, 3 3/4 CU.IN. (.06 LITER)  
OIL TYPE USED, AMOCO RYKON MV.  
HANDLE EFFORT, 4 1/8 LBS. (1.87 KG) PER 1000 PSI (68.9 BAR)

#### TOOL SECTION:

1.813 (4.605 CM) DIA.RAM, .912 (2.31 CM) STROKE WITH DIES.  
REQUIRES 2.35 CU.IN. (.038 LITER) OIL MINIMUM.  
CRIMPING FORCE, 26,332 LBS. (11,944 KG)  
AT 10,200 PSI (702 BAR)  
(13.1 TONS U.S., 11.89 TONS METRIC)  
TOTAL WEIGHT, 13.6 LBS. (6.16 KG).

#### CRIMPING CAPACITY:

NO.6 THRU 750MCM CU, 500MCM AL.  
(3 THRU 379.5 SQ.MM.CU, 253 SQ.MM.AL)

## IMPORTANT SAFETY INFORMATION



This is the safety alert symbol.

It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death



### DANGER

Denotes an imminently hazardous situation which, if not avoided, will result in death or serious injury.



### WARNING

Denotes a potentially hazardous situation which, if not avoided, could result in death or serious injury.



### CAUTION

Denotes a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### CAUTION

Caution used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

### IMPORTANT

Denotes an operating or service procedure or condition considered essential for expedient and efficient operation and service.



**WARNING** To help prevent personal injury,



- Always wear eye protection whenever operating hydraulic equipment.



- Always wear hearing protection as required.

- Operation, repair, or maintenance of hydraulic equipment should be performed by a qualified person who understands the proper function of hydraulic equipment per local directives and standards.
- Hydraulic equipment must be assembled correctly and then checked for proper function before use. Use hydraulic components of the same hydraulic pressure ratings. An appropriate hydraulic pressure gauge is recommended to monitor pressure.



- Never place your hands or other body parts near a hydraulic fluid leak. Never use your hands or other body parts to check for a possible leak.

High pressure fluid can be injected under your skin causing serious injury and/or infection.



- Exercise caution to avoid the risk of fire. An incomplete crimp can cause a fire. Use proper die, connector and cable. Improper combinations can result in an incomplete crimp.



- This tool is not insulated. When using this unit near energized electrical lines, use proper personal protective equipment.



### WARNING

- This tool is intended for two-handed operation. Maintain a firm grip on both handles during operation. Using this tool in any other manner can result in injury or equipment damage.

### IMPORTANT

- Properly dispose of all fluids, components, and assemblies at the end of their useful life.
- Hydraulic fluid should be compatible with all hydraulic components.



### WARNING



It is the operators responsibility to read and understand the following safety statements,

- Only qualified operators should install, operate, adjust, maintain, clean, repair, or transport this machinery.
- Inspect tool before use. Replace any worn or damaged parts. Failure to observe these warnings can result in severe injury or death.



### WARNING



Keep hands away from the crimping tool head when crimping.

**OPERATING INSTRUCTIONS****WARNING DO NOT OPERATE THE COMPRESSOR WITHOUT DIES.**

Select the proper dies for use on the accessory to be compressed. Push the die release button on the C-head and slide one of the identical die-halves into position. The die retainer pin locks the die in place. Insert the other die- half in the ram body by depressing the die release button located in a slight well in the ram.

Place the compressor in position over the accessory to be compressed. If the accessory is larger in diameter than the throat opening of the C-head, put the compressor over the conductor and then slide it over the accessory in the correct position for the first compression. Twist the reservoir handle clockwise until the lower die-half advances to touch the accessory to be compressed. Back off a quarter turn - do not turn the reservoir handle again - ram will retract to this preset position each time the hydraulic pressure is released. This partial retraction of the ram allows enough clearance to move the compressor along the accessory for each successive compression and requires a minimum of hand pumping for the next compression.

Complete each compression by pumping until the dies touch at their flat surfaces nearest the throat of the C-head. If it is not convenient to observe the dies, pump until the safety valve operates, although compression will have been completed before the safety valve relieves the hydraulic pressure. The operation of the valve will cause an audible click and a pronounced difference in the feel of the pumping.

To retract the ram, open the compressor handles, hold the pressure release trigger down, and close the handles firmly to push in the pressure release plunger. The ram will retract to the pre-selected position. If the die opening must be increased further, use same procedure as above and while the trigger is held down, turn the reservoir handle counter clockwise.

It should be noted that the ram can be advanced rapidly by merely twisting the reservoir handle, but it is necessary to both trip the release trigger and twist the reservoir handle to retract the ram from a pre-selected position.

Move the compressor into position for the next compression and repeat the procedure. Do not use the compressor for any purpose other than that for which it was designed. This tool has been manufactured to precision tolerances. It should be used with the same care and attention as any other fine piece of equipment.

The C-head of the compressor can be rotated through 180 degrees to place the throat opening perpendicular to the conductor even though the operator may be working from an awkward position on a utility pole.

**WARNING THE NEOPRENE COVER IS NOT INTENDED TO AFFORD PROTECTION TO THE OPERATOR FOR "HOTLINE" WORK.****Compatible Hydraulic Fluids:**

The use of Amoco Rykon MV oil is recommended. Compatible fluids include:

Mobil DTE 13  
Mobil ATF 220  
Shell Tellus 32  
Arco Dexron III  
Citgo AW32  
Citgo Dexron III

Other fluids also may be used if they meet or exceed the following specifications:

Viscosity: 180 SSU at 100 degree F.  
Flash Point: 350 degree F  
Pour Point: -50 degree F

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**Sheet No. 2 of 6**

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**Rev Date: 09 Feb 2004**

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## **SERVICING INSTRUCTIONS**

### **PREVENTIVE MAINTENANCE**

The majority of service troubles are caused by dirt collecting about the tool or in the oil system. Keep the tool clean and prevent foreign matter from entering the compressor while filling the reservoir. Lubricate all moving parts and keep the C-head stop screw, ram guide screw, and reservoir handle stop screw tightened.

### **FILLING RESERVOIR**

To add or replace oil in the compressor, retract the ram completely. Loosen the reservoir handle stop screw and remove the handle. Remove the reservoir plug and O-ring seal. Pull the stem of the reservoir piston out as far as possible. Add oil until it fills the stem. See "Compatible Hydraulic Fluids" Section.



### **WARNING DO NOT USE BRAKE FLUID OF ANY KIND.**

Before replacing the reservoir plug, advance the ram a short distance by stroking the pump lever. Retract the ram by pulling the trigger on the pump lever and make a pumping stroke, first having taken precautions against splashing of the oil. Repeat this procedure until air bubbles cease appearing. Add oil if necessary to fill the stem, first making certain the C-head ram is fully retracted so that too much oil is not added. Replace the O-ring, reservoir magnetic plug and handle; tighten the reservoir handle stop screw.

Pump until the die faces meet, and then retract the ram. If the ram does not retract completely, too much oil had been added. Drain enough to permit complete retraction.

### **REPLACING HYDRAULIC SEALS**

Maintenance and repair of this tool should be provided with the same reasonable care given other fine equipment. Service should be performed by adequately trained personnel in repair shops under clean conditions. For those owners having adequately staffed repair facilities, a hydraulic seal replacement kit No. 3-3554 containing O-rings, gaskets, etc., needed for one complete replacement of hydraulic seals in the compressor. Include compressor serial number when ordering all parts.

To replace the seals it is necessary to separate the C-head and piston assemblies from the cylinder. Remove both die halves. Removing the quick coupler drains the oil and aids in dis-assembly. Remove screw and washer to unlock cylinder.

Unscrew the C-head and the piston will also rotate. After nine complete turns the piston spring rod is unthreaded from within the cylinder and the piston guide arrangement should be removed. Further rotation will separate the C-head from the cylinder. Pull the piston from the cylinder. All seals and rings are now accessible.

Reassemble with clean parts lubricated with the same grade of oil used in the remote pump. The steel piston washer and leather wiper are installed on the outside of the piston with the steel washer next to the shoulder on the piston.

Insert piston into cylinder, rotate assembly until hand tight. Backoff one-half turn to permit the piston wipers to center themselves in the C-head bore. Thread the C-head onto the cylinder until the bottom of the die groove in piston is flush at a corresponding point on the C-head. Continue rotation until the key slots align. At this attitude, top of piston should not have entered C-head opening and a die-half can be inserted in piston groove.

Reassemble the piston guide arrangement with Loctite on screw threads.

Invert the tool and fill the cylinder with oil. Bleed air from cylinder by rocking tool back and forth. Assemble 3/8 inch female quick coupler.

### TROUBLE SHOOTING

If the ram will not extend completely, it will generally be found that there is an insufficient amount of oil in the compressor's hydraulic system. This trouble can also be caused by faulty pump plunger packing or release valve packing by the pressure release valve being stuck open, or by foreign matter preventing the release valve balls from seating properly. Faulty packing will usually be detected by excess oil leakage around the pump plunger. A stuck valve ball can usually be freed by rapping the tool sharply.



**CAUTION**

Avoid damage to other parts in the process of rapping. Foreign matter can frequently be flushed from a valve seat by pumping very rapidly with abrupt strokes.

If the dies will not close and pumping is difficult, check the die number to make certain the proper size die is being used on the accessory. If the dies will not close and pumping becomes easier, usually additional oil is needed in the compressor. There is also the possibility that the pressure release valve balls are not seating properly.

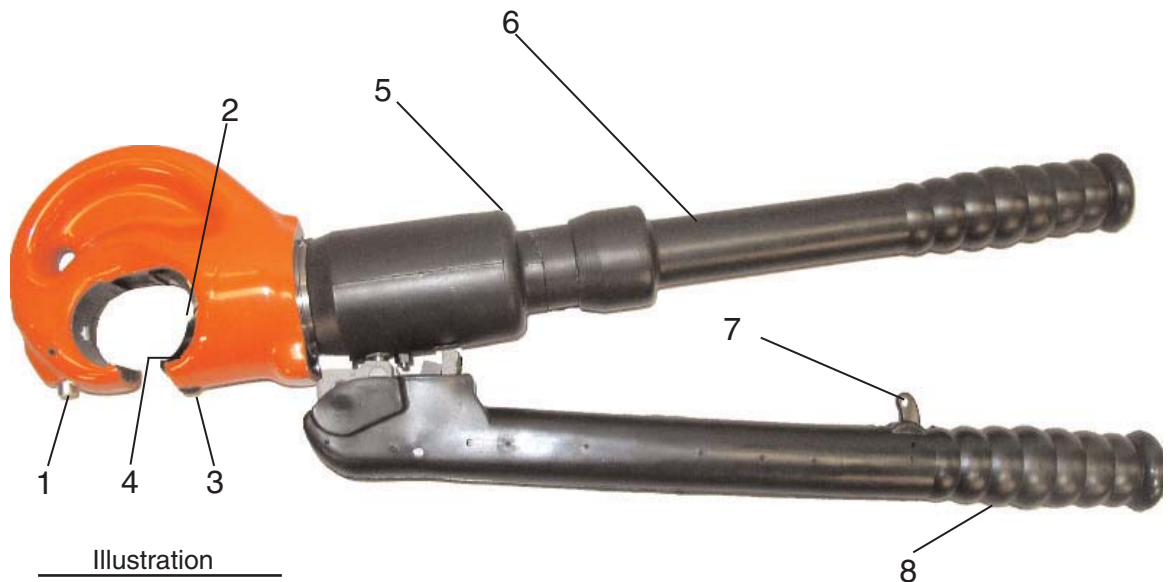
If the ram will not retract completely, it will generally be found that there is too much oil in the compressor. Drain enough to permit complete retraction. If the ram will not retract and the oil reservoir is not full, the ram is likely being held by a deformed washer.

A small amount of leakage is desirable around the ram; pump plunger, and pressure release valve plunger to lubricate these parts. If enough leakage occurs to cause the oil to run, the packing should be replaced.

If rotating the reservoir handle will not advance the ram to within a half-inch of closing the dies, additional oil is needed in the compressor. If rotating the handle will not move the ram, either the ram is being held by a deformed washer or the reservoir piston has been deformed and is seizing on the reservoir walls. Such deformation occurs only if the reservoir handle is screwed tight against a fully advanced ram and the pressure release or safety valve is operated. The momentary pressure surge against the face of the reservoir piston may cause it to buckle and wedge against the wall of the reservoir. No purpose is served in screwing the handle tight and doing so abuses the tool.

If the dies do not lock in position, the action of the retaining pins is probably restricted by dirt. Clean and oil these parts.

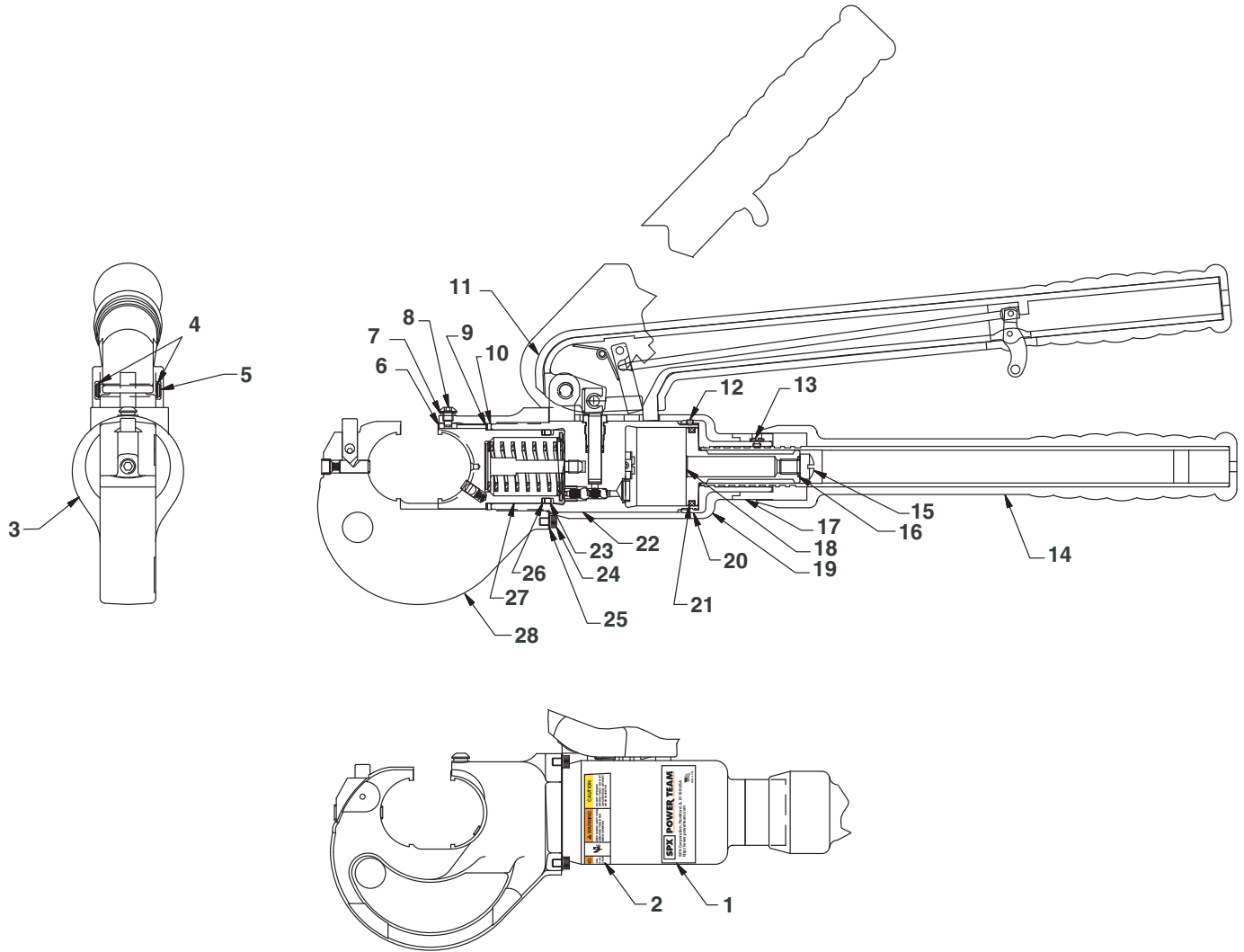
If it is difficult to unlock the die-haves, the die release buttons should be lubricated. The die retaining pin set screw in the C-head above the die release button is staked in position. To further tighten this screw will make it difficult or impossible to release the die.



Illustration

- |                              |                     |
|------------------------------|---------------------|
| 1. Top Die Release Button    | 5. Reservoir        |
| 2. Bottom Die Release Button | 6. Reservoir Handle |
| 3. Piston Guide Screw        | 7. Release Striker  |
| 4. Piston                    | 8. Pump Lever       |

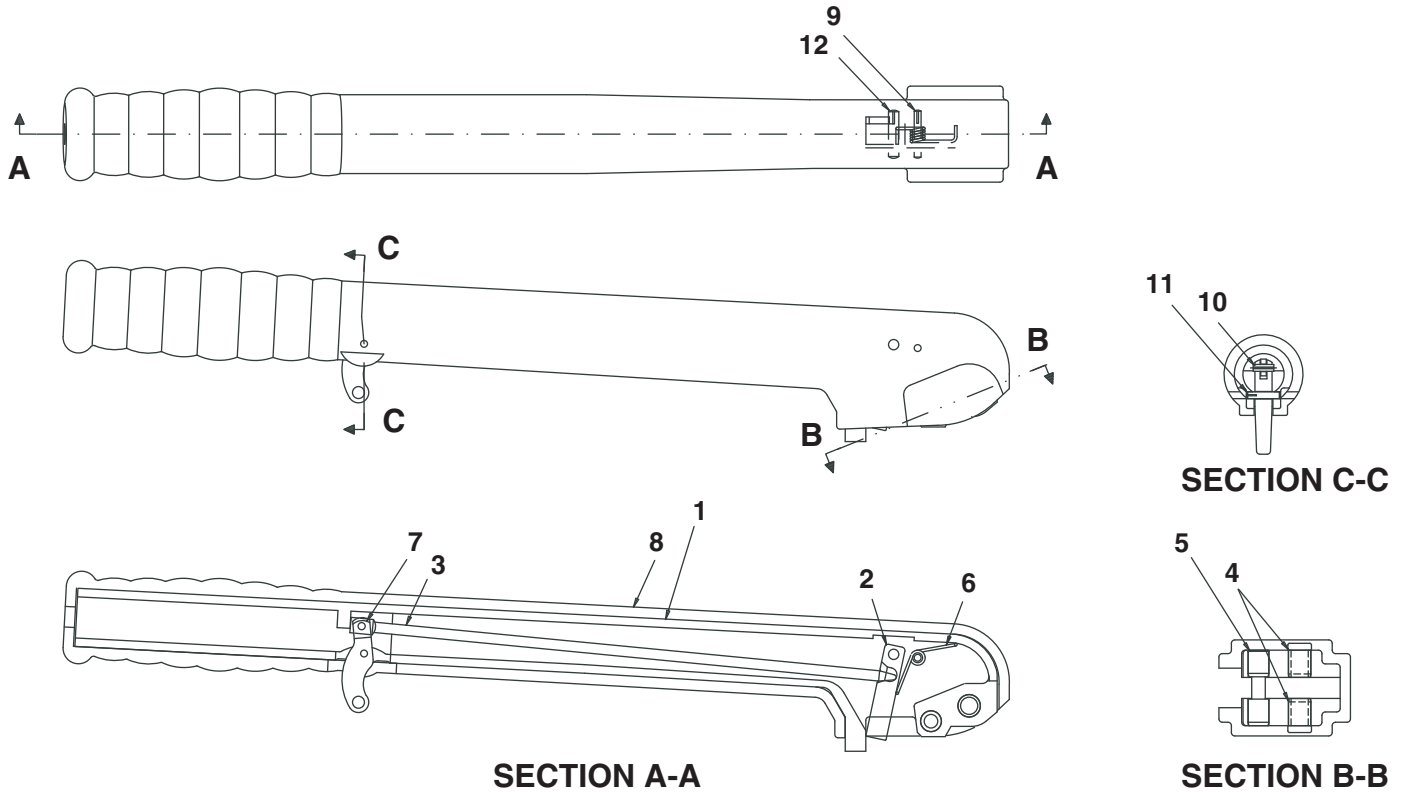
**PARTS LIST**



**C12-TON**

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	1000056	1	Label, (Tradename Power Team)	18	3-1197	1	Piston, Reservoir
2	1000055	1	Decal, (Warning & Caution)	19	3-5071	1	Rubber Covering, Cylinder
3	420691	1	Decal, (Product Blank)	20	3-1201	1	Cap, Reservoir
4	5-0691	1	Ring, Tru-Arc #5103-31	21	5-1260	1	Quad-Ring, 1-5/8 x 1-7/8 x 1/8
5	3-1199	1	Pin, Fulcrum	22	3-1195	1	Cylinder Assembly
6	3-1204	1	Key	23	5-1263	1	O-Ring
7	5-1258	1	Lockwasher 1/4 x .047 x .078 HI-C	24	5-1259	2	Screw, 10-24 x 1/4 SHCS
8	3-1203	1	Screw, Key	25	12356	2	Washer, Tooth Int. .37 x .20
9	3-1205	1	Washer, Piston	26	3-1214	1	Ring, Back-up
10	3-1211	1	Wiper	27	3-1193	1	Ram Assembly
11	3-1192	1	Lever Assembly	28	3000094	1	C-Head Assembly, ( Coated)
12	5-0342	1	Screw. 8-32 x 1/8 Flat Pt. Skt. Se	ITEM NOT SHOWN			
13	3-1200	1	Screw, Stop	2000147	1	Bag, Nylon Carrying (2.5" x 6" x 22")	
14	3-1196	1	Handle, Assembly				
15	5-3667	1	Screw, 3/8-16 x 1/2 Fill. Hd. Mach.				
16	10268	1	O-Ring, .50 x .37 Nitrile				
17	3-1207	1	Rubber Covering, Cap				

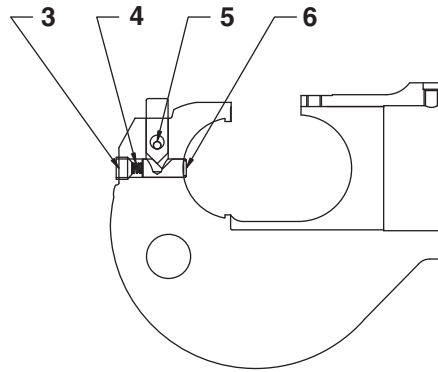
PARTS LIST



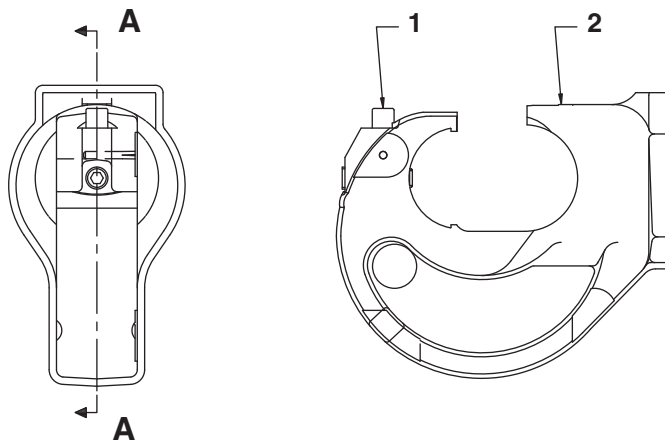
LEVER ASSEMBLY 3-1192

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	3-1246	1	Lever	7	3-1253	1	Trigger
2	3-1248	1	Striker, Release	8	3-1254	1	Covering, Rubber, Lever
3	3-1249	1	Shaft	9	5-1265	1	Pin
4	3-1250	2	Bushing, Lever	10	5-1269	1	Pin
5	3-1251	1	Pin, Plugger	11	5-1270	1	Pin
6	3-1252	1	Spring, Striker	12	5-1271	1	Pin

**PARTS LIST**



**SECTION A-A**

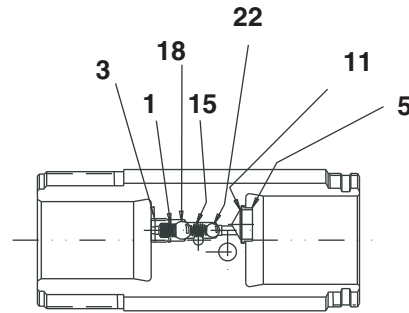
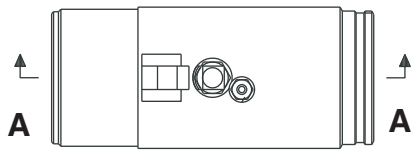


**C-HEAD ASSEMBLY 3000094**

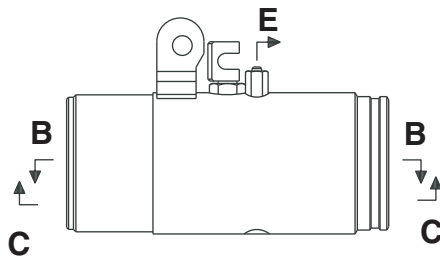
Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	3-1237	1	Shaft, Die Release	4	3-1239	1	Spring
2	2000152	1	C-Head, Crimped	5	5-1265	1	Pin, Driv-lok
3	5-0662	1	Screw, Set	6	3-1238	1	Pin, Die Retaining



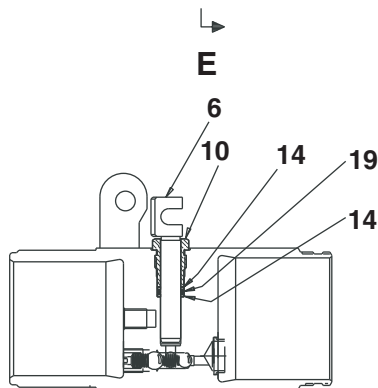
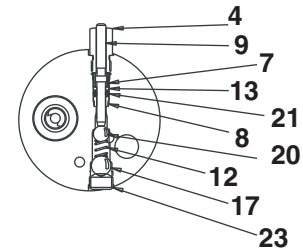
PARTS LIST



Stake Item 5 in place, Install Item 3 flush to .030 above surface and stake in place to prevent Rotation

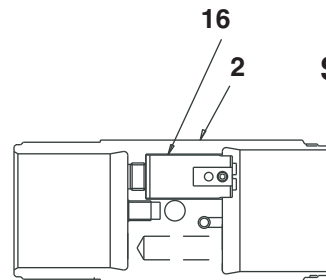


SECTION C-C



Apply 5-2538 adhesive to threads of Item 10

SECTION A-A



Tighten Item 16 to 35 Ft.Lbs.

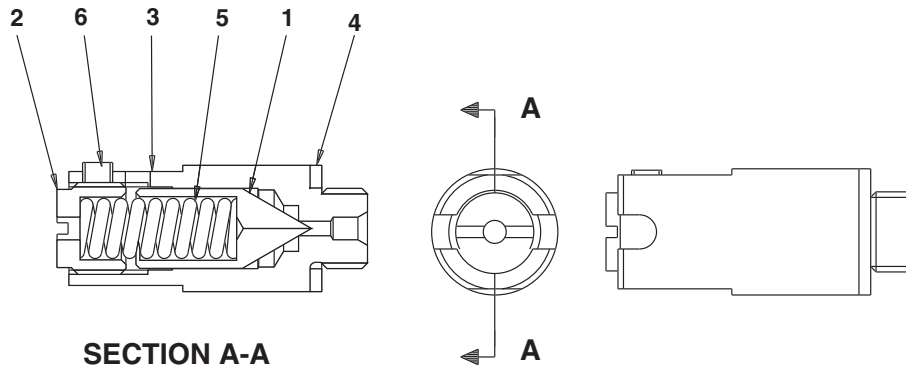
SECTION B-B

CYLINDER ASSEMBLY 3-1195

Item No.	Part No.	No. Req'd	Description
1	3-0688	1	Spring, Compression
2	3-1215	1	Cylinder
3	3-1216	1	Screw, Valve Ball
4	3-1217	1	Screw, Release Stop
5	3-1218	1	Retainer, Screen
6	3-1219	1	Plunger, Pump
7	3-1220	1	Spacer, Packing
8	3-1221	1	Ring, Packing
9	3-1222	1	Plunger, Release
10	3-1223	1	Nut, Plunger
11	3-1225	1	Screen, Intake
12	3-1226	1	Spring, Compression

Item No.	Part No.	No. Req'd	Description
13	3-1227	1	Washer, Nylon
14	3-1228	2	Washer, PTFE
15	3-1229	1	Spring, Compression
16	3-2716	1	Valve Assembly, HP Relief
17	10377	1	Ball
18	10423	1	Ball
19	14763	1	O-Ring
20	10375	1	Ball
21	10268	1	O-Ring
22	10374	1	Ball
23	5-0658	1	Screw, Set

**PARTS LIST**



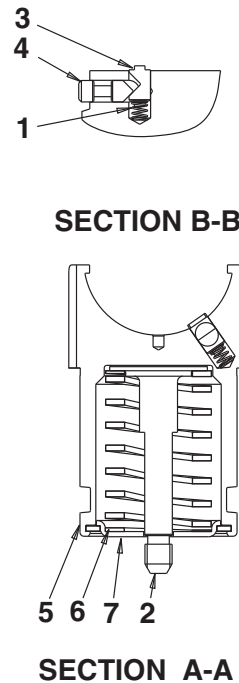
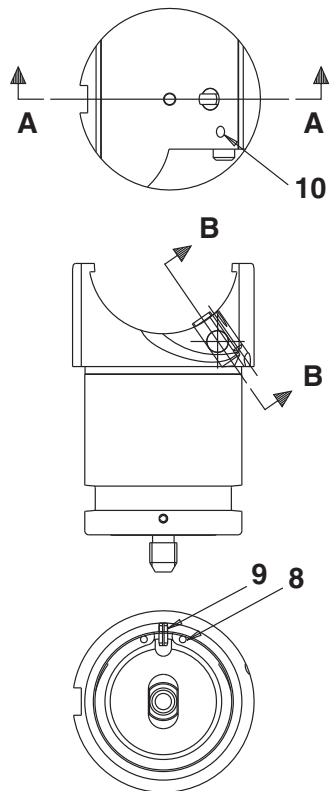
**H.P. RELIEF VALVE ASSEMBLY 3-2716**

Item No.	Part No.	No. Req'd	Description
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1	3-0654	1	Plunger, Valve
2	3-1091	1	Screw, Adjusting
3	3-1232	1	Body, Valve

Item No.	Part No.	No. Req'd	Description
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4	3-1233	1	Washer
5	3-1234	1	Spring
6	5-1264	1	Screw, Hollow Jam



**RAM ASSEMBLY 3-1193**

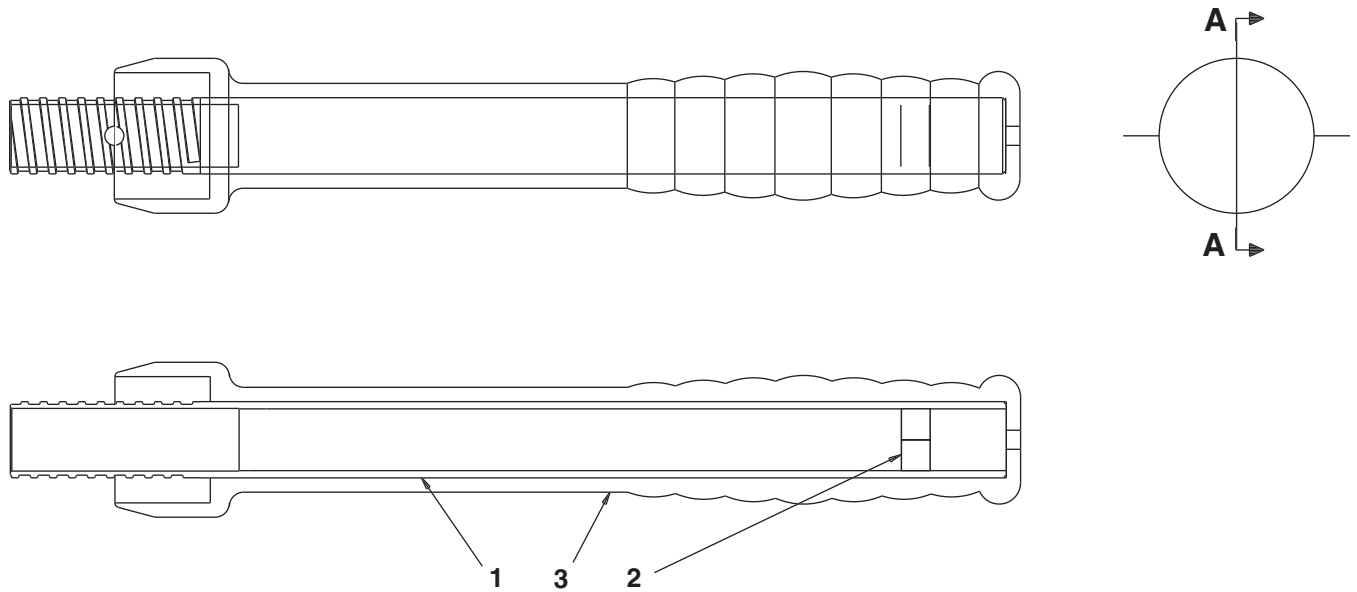
Item No.	Part No.	No. Req'd	Description
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1	3-1239	1	Spring
2	3-1240	1	Rod, Spring
3	3-1241	1	Pin, Retaining
4	3-1242	1	Shaft, Release
5	3-1243	1	Ram

Item No.	Part No.	No. Req'd	Description
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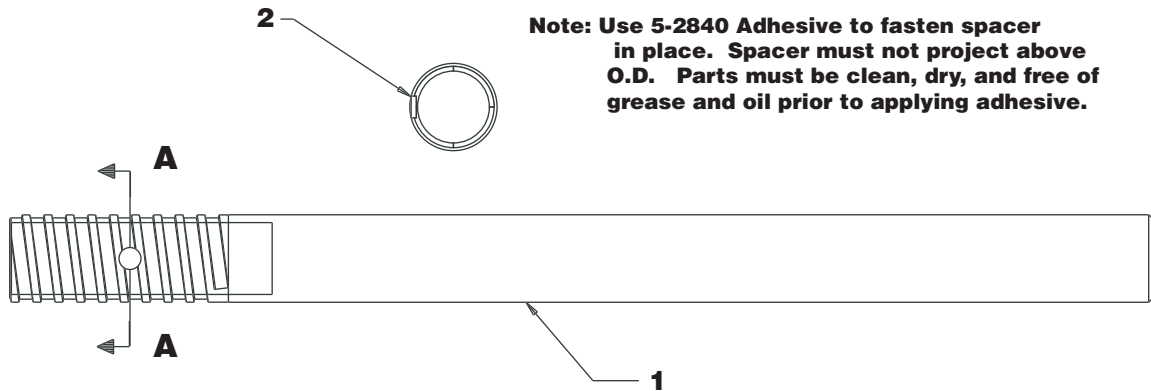
6	3-1244	1	Spring
7	3-1245	1	Support, Spring
8	5-1266	1	Ring, Retaining
9	5-1267	1	Pin, Roll
10	5-1269	1	Pin, Roll

**PARTS LIST**



**RESERVOIR HANDLE ASSEMBLY 3-1196**

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	3-1255	1	Handle Sub-Assembly (See below)	2	3-1256	1	Plug, Res. Handle
				3	3-1257	1	Covering, Handle



**RESERVOIR SUB - ASSEMBLY 3-1255**

Item No.	Part No.	No. Req'd	Description	Item No.	Part No.	No. Req'd	Description
1	3-4775	1	Handle, Reservoir	2	3-4776	1	Spacer, Stop