

## PROPER USE GUIDELINES

Cumulative Trauma Disorders can result from the prolonged use of manually powered hand tools. Hand tools are intended for occasional use and low volume applications. A wide selection of powered application equipment for extended-use, production operations is available.

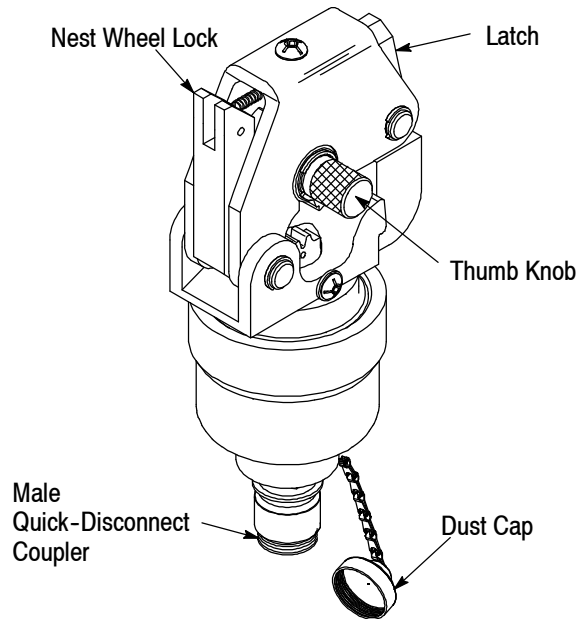


Figure 1

## 1. INTRODUCTION

This instruction sheet provides application, maintenance, and inspection procedures for Hydraulic Crimping Head 1673672-1 (See Figure 1). The tool is used to crimp SOLISTRAND\* Terminals and Splices onto solid or stranded copper wire sizes 8 through 2 AWG.

The crimping head is designed for use with Foot Hydraulic Pump 1583659-1, Hand Hydraulic Pump 1583661-1, or Electric Hydraulic Pumps 1583660-1 (115 Vac), and 1583661-2 (230 Vac).

Read these instructions, and all applicable references, before inserting the nest or indenter, and crimping any terminals or splices.

### NOTE



*Dimensions on this document are in millimeters (with inches in brackets). Figures and illustrations are for reference only and are not drawn to scale.*

Reason for revision is given in Section 9, REVISION SUMMARY.

## 2. DESCRIPTION

Main components of the crimping head are: a yoke which houses the indenter and retains the terminal

assembly for crimping, a latch which allows pivoting of the yoke on the pivot pin (typically required for splice terminations), a cylinder which contains the head's hydraulic chamber, a piston (ram) which holds and controls the indenter, and a male quick connect/disconnect coupler which mates with the coupler on hose or handle control to release or supply pressure.

### DANGER



*To avoid personal injury when using hydraulic crimping equipment:*

- Do NOT modify the crimping equipment in any way.
- Use only the nest and indenter, terminals, and wire specified for the head.
- Do NOT perform repairs other than those specified in the instructional material supplied with the equipment.

## 3. CRIMPING HEAD INSTALLATION

Each crimping head is shipped with a coating of lubricating oil to prevent rust and corrosion. Wipe the oil off before installing the crimping head on the power unit. Note that the crimping head is shipped without oil inside the cylinder. To install crimping head, proceed as follows.

### DANGER



*Make sure that hydraulic pressure to the hose is released and that power supply is disconnected to electric power unit, if applicable.*

1. Thoroughly clean the coupling area of the hose assembly and crimping head.
2. Remove protective dust caps from both quick connect/disconnect couplers.
3. Hold hose vertically to prevent oil spillage. Attach hose to coupling section on head. Thread properly and tighten the collar.

### CAUTION



*Oil flow must be unobstructed between power unit and crimping head. Make sure that all couplers are fully mated and tightened.*

### CAUTION



*If crimping head must be removed after being in production, pressure must be released in the hydraulic system before head is removed.*

- If using Electric Hydraulic Pump 1583660-[ ], DISCONNECT POWER UNIT FROM POWER SUPPLY.

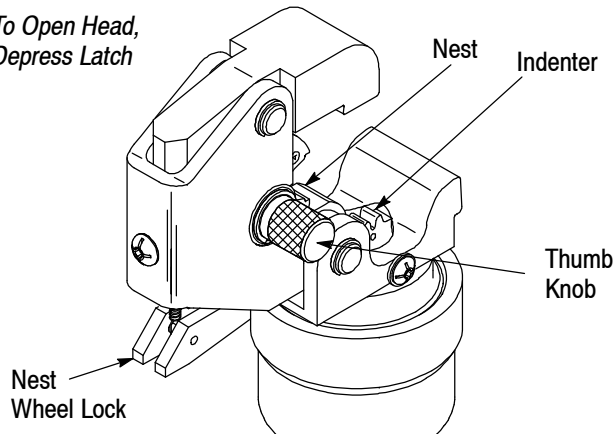
#### 4. NEST SELECTION

##### DANGER



To avoid personal injury, release the hydraulic pressure to the hose. Disconnect electric hydraulic pump unit from power supply.

To Open Head,  
Depress Latch



Pull Back Nest Wheel Lock, Then Turn Thumb Knob to Select Desired Nest

Figure 2

1. Depress the latch and open the crimping head as shown in Figure 2.
2. While the head is open, pull back the nest wheel lock and turn the thumb knob until the desired nest appears. Wire size numbers appear at each nest.
3. Rotate the thumb knob left or right until the nest wheel locks into place. If the nest wheel is not properly locked, the head cannot be closed.

#### 5. WIRE STRIPPING

Strip wires to the dimensions listed in Figure 3.

| WIRE SIZE | WIRE STRIP LENGTH |              |                           |              |
|-----------|-------------------|--------------|---------------------------|--------------|
|           | Terminals         |              | Butt and Parallel Splices |              |
|           | Min.              | Max.         | Min.                      | Max.         |
| 8         | 8.38 [.330]       | 9.14 [.360]  | 10.41 [.410]              | 11.18 [.440] |
| 6         | 9.91 [.390]       | 10.67 [.420] | 11.94 [.470]              | 12.70 [.500] |
| 4         | 11.43 [.450]      | 12.19 [.480] | 13.46 [.530]              | 14.22 [.560] |
| 2         | 13.21 [.520]      | 14.0 [.550]  | 14.99 [.590]              | 15.75 [.620] |

Figure 3

##### CAUTION



Do not use wires with nicked or missing conductor strands.

#### 6. CRIMPING PROCEDURE

##### DANGER



To avoid personal injury, release the hydraulic pressure to the hose. Disconnect electric hydraulic pump unit from power supply.

1. Center the terminal or splice wire barrel in the nest as shown in Figure 4. For best results, position the brazed seam on the terminal or splice toward the indenter.

##### NOTE

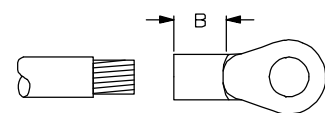


Wire size stamped on the terminal or splice must correspond to the wire size stamped in the nest.

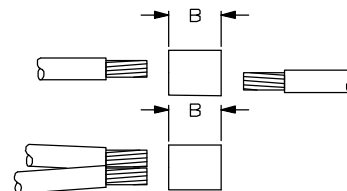
2. Activate the power unit to advance the indenter and hold the terminal or splice in place. Do not deform the wire barrel of the terminal or splice.
3. Insert the stripped wire into the wire barrel of terminal or splice. When crimping terminals and parallel splices, the end of the wire must be flush with or extend slightly beyond the end of the wire barrel. When crimping butt splices, wire must be visible through the inspection hole.
4. Activate the power unit to complete the crimp.
5. To complete the other half of the butt splice, remove and reposition uncrimped half of the splice in the nest. Insert wire and then activate the power unit to crimp the splice. The completed terminal or splice should be as shown in Figure 5.

"B" Equals Wire Barrel

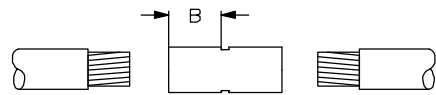
Terminal



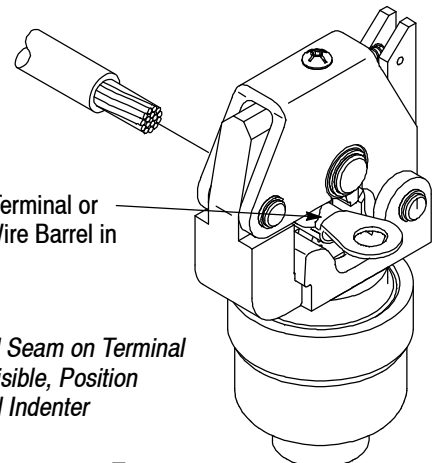
Parallel Splice



Butt Splice



Center Terminal or  
Splice Wire Barrel in  
Nest

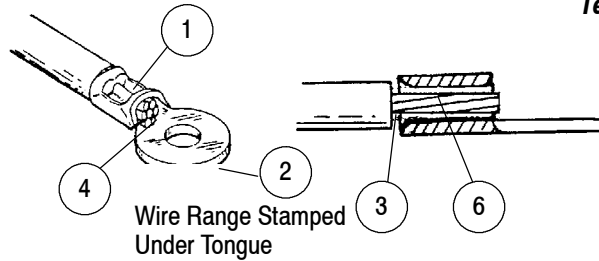
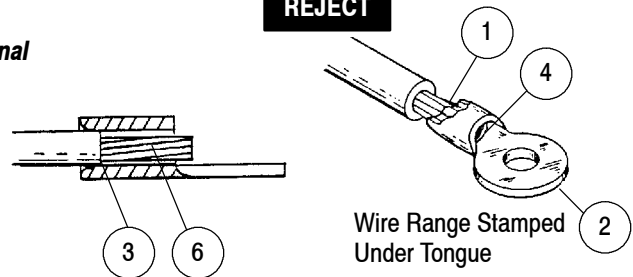
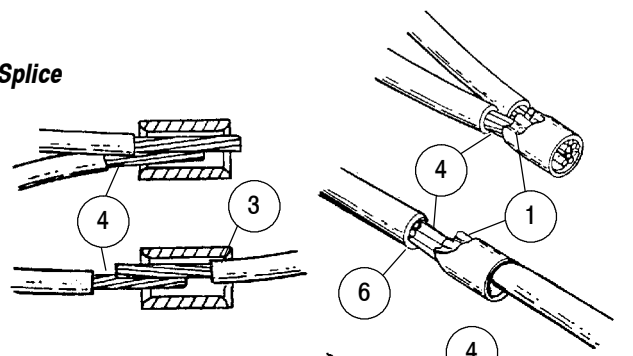
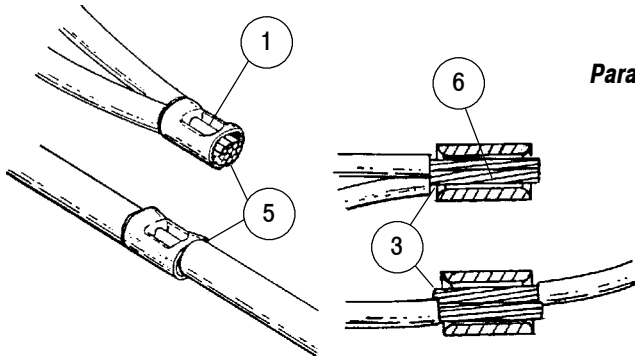
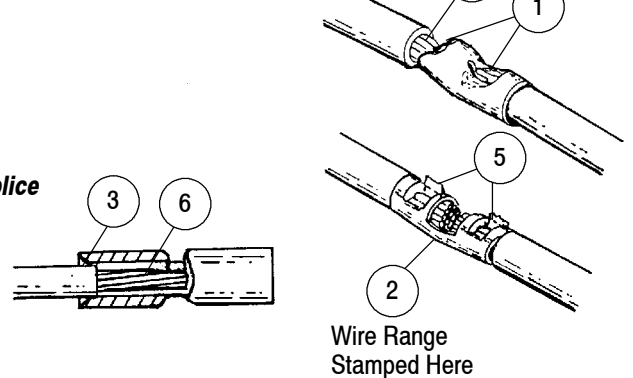
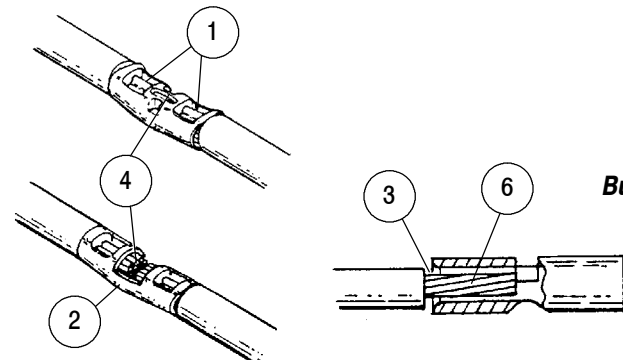


When Brazed Seam on Terminal or Splice is Visible, Position Seam Toward Indenter

Figure 4

**NOTE**

If SOLISTRAND terminal or splice sticks in the die after crimping, apply a rocking motion to remove it from the die.

**ACCEPT****Terminal****REJECT****Parallel Splice****Butt Splice**

- ① Crimps centered. Crimps may be off center BUT NOT OFF END OF WIRE BARREL.
- ② AWG wire size being used matches wire range stamped on terminal or splice and tool.
- ③ Wire insulation does not enter wire barrel.
- ④ Conductor is visible through inspection hole of butt splice. Conductor is flush with or extends slightly beyond end of terminal wire barrel.
- ⑤ On parallel splices, conductor ends must be flush with or extend slightly beyond end of barrel.
- ⑥ No nicked or missing conductor strands.

- ① Crimped off end of splice or terminal wire barrel.
- ② AWG wire size being used does not match wire range stamped on terminal or splice and tool.
- ③ Wire insulation entered barrel of terminal or splice.
- ④ Conductor not inserted far enough in terminal or splice. End of conductor must be visible through inspection hole of butt splices, and be flush with or extend beyond end of terminal wire barrel or parallel splice.
- ⑤ Excessive "flash" on terminal or splice indicates wrong wire, splice, terminal or tooling combination was used, or damaged dies.
- ⑥ Nicked or missing conductor strands.

Figure 5

## 7. INSPECTION/MAINTENANCE

### DANGER



*Make sure hydraulic pressure is released and power supply is disconnected before following inspection and maintenance procedures, unless otherwise specified in the procedure.*

Each crimping head is assembled and inspected before shipment. It is recommended that the crimping head be inspected immediately upon its arrival at your facility, and at regularly scheduled intervals, to ensure that the crimping head has not been damaged during handling. Frequency of inspection depends upon the following: care, amount of use, and handling of the head; type and size of products crimped; degree of operator skill; and environmental conditions.

### 7.1. Cleaning

Remove accumulations of dirt and grease on the crimping head, especially in areas where dies are installed and terminals are crimped. Clean the entire head frequently with a clean, lint-free cloth.

### 7.2. Visual Inspection

Refer to Figure 6 and proceed as follows:

1. Visually inspect die closure surfaces for chipped, pitted, or flattened areas.

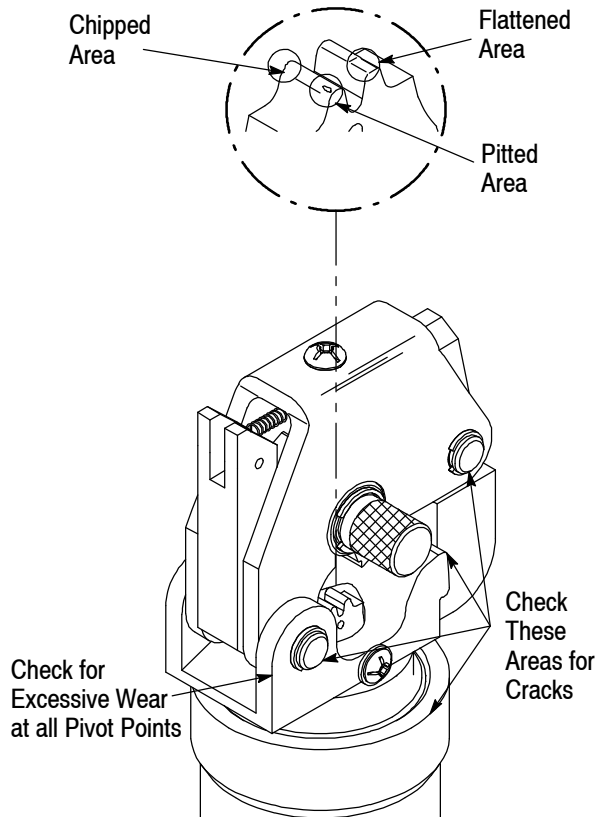


Figure 6

2. With hydraulic pressure released, inspect the assembled head for nicks, scratches, and cracks. Inspect for cracks especially at the corners of the yoke and around the top of the cylinder.

3. Inspect pivot pin holes and latch pin holes for wear. Replace parts, as needed.

4. Activate power unit. Raise ram to UP position. Inspect flat and round surfaces of ram for galling (fretting or wear by friction), cracks, or oil leakage. Release pressure and make sure that ram retracts smoothly.

5. If head shows evidence of galling, cracks, oil leakage, or rough cycling, return the crimping head to for repairs. (Refer to Section 8, REPLACEMENT AND REPAIR).

### NOTE



*It is recommended that the head be returned to Tyco Electronics once a year (or every 7,500 cycles) for magnetic particle inspection. Refer to Instruction Sheet 408-8909.*

### 7.3. Die Closure Inspection

Every crimping head die set is inspected for proper die closure before shipment. However, the dies should be inspected for excessive wear periodically. Die closure is accomplished using GO/NO-GO plug gages. Suggested plug gage design and GO/NO-GO dimensions are shown in Figure 7.

### NOTE



*Tyco Electronics neither manufactures nor sells plug gages.*

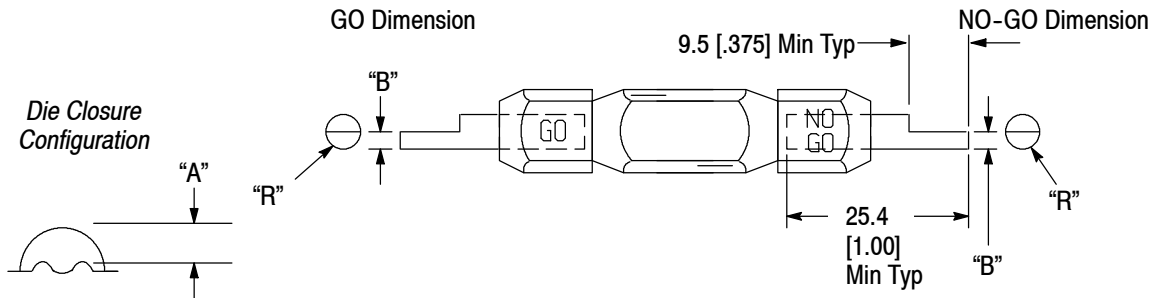
1. Clean the oil and dirt from the closure surfaces, and plug gage members.

2. Lock the desired nest in the crimp position and raise the indenter to the full UP position, as shown in Figure 8, Detail A.

3. With the indenter positioned at the full UP position, inspect the die closure using the appropriate plug gage. Hold the gage in alignment with die closure and carefully insert, without forcing, the GO member. See Figure 8. The GO member must pass completely through the die closure as shown in Figure 8, Detail B.

4. Try to insert the NO-GO member. The NO-GO member may enter partially, but must NOT pass completely through the die closure. See Figure 8, Detail B.

5. If the die closure meets the GO/NO-GO gage conditions, the die closure is considered dimensionally correct. If the die closure does *not* conform with the GO/NO-GO gage conditions, contact your local Tyco Electronics Representative.

**Suggested Plug Gage Design**

| DIE SIZE | BARREL CRIMP DIMENSIONS "A" |             | GAGE MEMBER DIMENSIONS "B"  |                               | RADIUS "R"  |
|----------|-----------------------------|-------------|-----------------------------|-------------------------------|-------------|
|          | GO                          | NO-GO       | GO                          | NO-GO                         |             |
| 8        | 2.11 [.083]                 | 2.54 [.100] | 2.11 - 2.12 [.0830 - .0833] | 2.51 - 2.54 [.0990 - .1000]   | 3.58 [.141] |
| 6        | 3.12 [.123]                 | 3.48 [.137] | 3.12 - 3.13 [.1230 - .1233] | 3.477 - 3.479 [.1369 - .1370] | 3.96 [.156] |
| 4        | 4.04 [.159]                 | 4.39 [.173] | 4.04 - 4.05 [.1590 - .1593] | 4.391 - 4.394 [.1729 - .1730] | 5.56 [.219] |
| 2        | 4.83 [.190]                 | 5.18 [.204] | 4.83 - 4.84 [.1900 - .1903] | 5.17 - 5.18 [.2039 - .2040]   | 6.35 [.250] |

Figure 7

**7.4. Crimping Head Check-Out Procedure**

If the ram fails to return to the DOWN position after completion of a crimping cycle, the cause may be in the crimping head. To determine whether or not the trouble is in the crimping head, release pressure in the power unit. If the ram retracts, the trouble is not in the crimping head. If ram does NOT retract, return crimping head to Tyco Electronics for repair. See Section 8, REPLACEMENT AND REPAIR.

necessary. Order replacement parts through your Tyco Electronics Representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 1-717-986-7605, or write to:

CUSTOMER SERVICE (38-35)  
TYCO ELECTRONICS CORPORATION  
P.O. BOX 3608  
HARRISBURG, PA 17105-3608

Tools may also be returned for evaluation and repair. For tool repair service, contact a Tyco Electronics Representative at 1-800-526-5136.

**8. REPLACEMENT AND REPAIR**

Customer-replaceable parts are listed in Figure 9. A complete inventory can be stocked and controlled to prevent lost time when replacement of parts is

**9. REVISION SUMMARY**

- Updated document to corporate requirements
- Added ORIGINAL INSTRUCTIONS

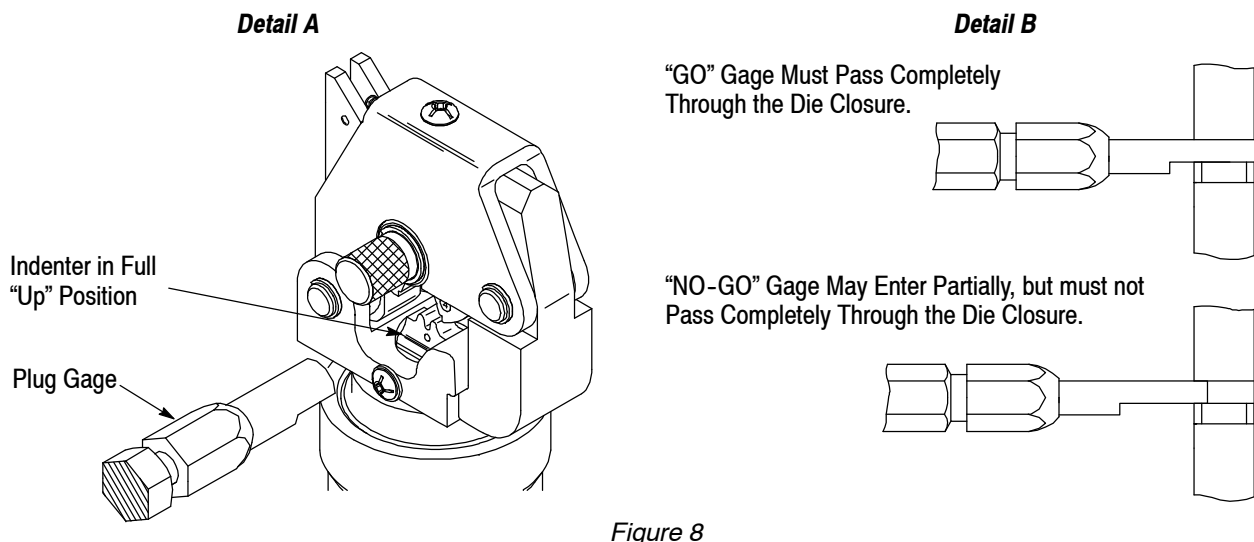
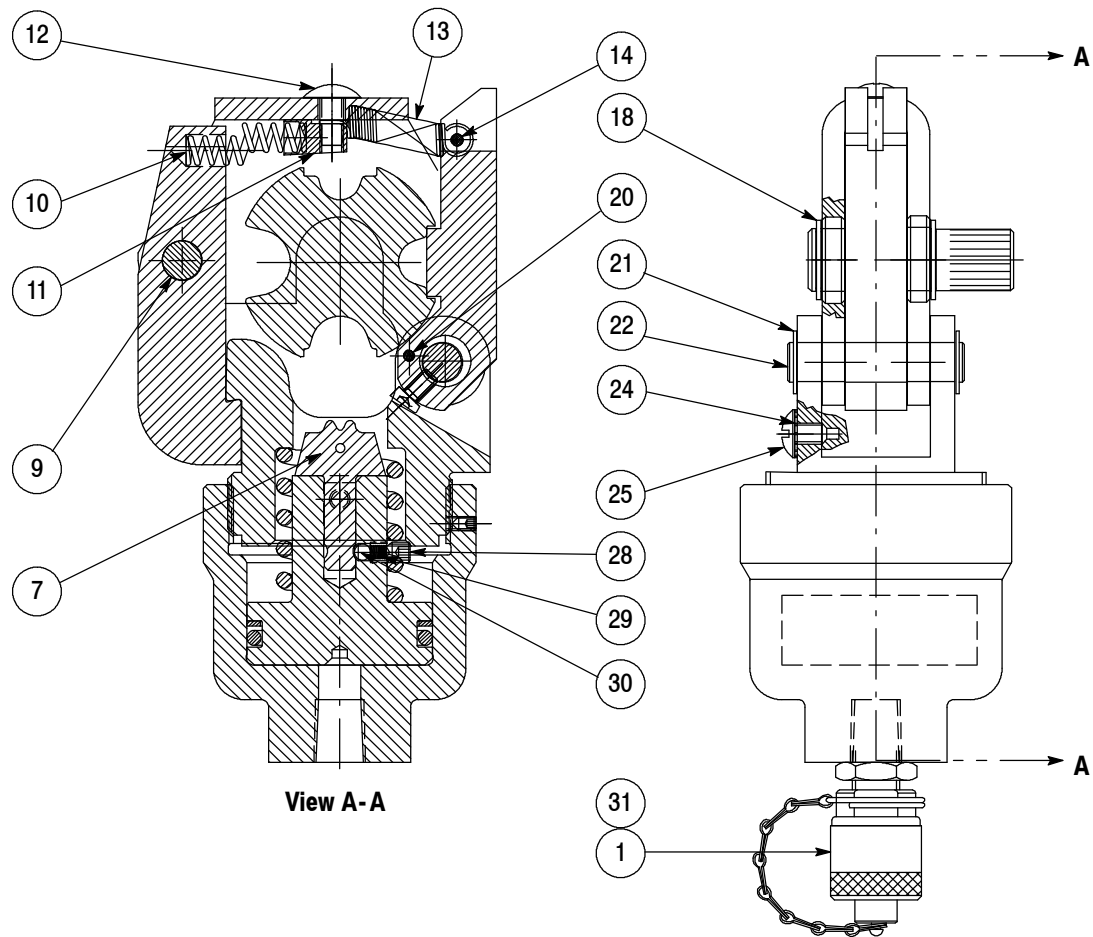


Figure 8



RECOMMENDED SPARE PARTS LIST FOR HYDRAULIC CRIMPING HEAD 1673672-1

| ITEM NO. | PART NUMBER | DESCRIPTION     | QTY PER HEAD |
|----------|-------------|-----------------|--------------|
| 1        | 311470-1    | COUPLER         | 1            |
| 7        | 47322       | INDENTER        | 1            |
| 9        | 301707      | PIN, Retaining  | 1            |
| 10       | 301712      | SPRING          | 1            |
| 11       | 304028      | SPRING, Stop    | 1            |
| 12       | 2-305927-5  | SCREW           | 1            |
| 13       | 304029      | SPRING          | 1            |
| 14       | 3-21028-5   | PIN, Roll       | 1            |
| 18       | 1-21045-3   | RING, Retaining | 2            |
| 20       | 2-21028-4   | PIN, Roll       | 1            |
| 21       | 21045-8     | RING, Retaining | 4            |
| 22       | 301710      | PIN, Retaining  | 1            |
| 24       | 21025-4     | WASHER          | 1            |
| 25       | 4-305927-0  | SCREW           | 1            |
| 28       | 7-306105-5  | SCREW           | 1            |
| 29       | 3-23147-2   | SPRING          | 1            |
| 30       | 23241-1     | BALL            | 1            |
| 31       | 23150-3     | NIPPLE, Hex     | 1            |

Figure 9