

# OPERATORS' GUIDE



## REL-100SDA

### 100 TON SINGLE & DOUBLE ACTING HYDRAULIC COMPRESSION TOOL

Designed to compress sleeves and lugs on ACSR and ACAR full tension, transmission and substation connections.

Accepts most shell type dies currently used with Alcoa, Burndy, and other 100 ton presses.

Weight: 95 lbs.

Width: 8.25 inches

Height: 15 inches

#### **CAUTION**

Do not operate  
without dies.



**RELIABLE EQUIPMENT & SERVICE CO., INC.**  
92 Steamwhistle Drive • Ivyland, PA 18974 • USA  
Phone: 215-357-3500 • Fax: 215-357-9193

MODEL: \_\_\_\_\_

MAX. PRESSURE: \_\_\_\_\_

SERIAL NO.: \_\_\_\_\_

YEAR: \_\_\_\_\_

## WARNING



All information found in this guide must be read and understood before use or testing of this tool.

Failure to read and understand these warnings and safe handling instructions could result in severe personal injury and or death.



# RELIABLE EQUIPMENT & SERVICE CO., INC.

REL-100 Series Manual 10-07

# DISTRIBUTED BY

## REGISTRATION

UPON RECEIPT OF THIS TOOL, COMPLETE THE REGISTRATION BELOW.

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

\_\_\_\_\_

PHONE \_\_\_\_\_ FAX \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

DATE OF PURCHASE \_\_\_\_\_

DEALER NAME \_\_\_\_\_



CAUTION

The information in this manual is intended to guide the user in the use and application of this tool. It is not intended as a substitute for proper training and experience in safe work practices for this type of equipment.

Consult your supervisor or safety personnel if you have any questions regarding the safe operation of this tool.

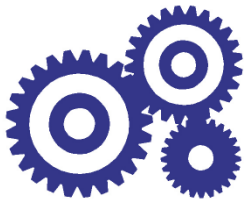
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If you have any questions regarding the information found in this manual please contact RELIABLE EQUIPMENT at 800-966-3530 or FAX 215-357-9193.



**THIS SYMBOL INDICATES ITEMS OF EXTREME IMPORTANCE.**  
Safety of user and others may be in jeopardy if these instructions are not read and understood.



# RELIABLE EQUIPMENT & SERVICE CO., INC.



<b>Model</b>	<b>REL-100SDA</b>
<b>Output</b>	<b>100 ton</b>
<b>Weight</b>	<b>95 lbs.</b>
<b>Dimensions</b>	<b>8.25"W x 15"H</b>
<b>Ram Stroke</b>	<b>.98" travel</b>
<b>Oil Capacity</b>	<b>.66 pint</b>

Breather valve allows easy conversion for operation with single acting systems.

Suspension eye allows use for aerial operations



## REL-100SDA

### 100 TON SINGLE/DOUBLE ACTING HYDRAULIC CRIMPING TOOL

The **REL-100SDA** 100 ton press has been designed to compress sleeves and lugs on ACSR and ACAR full tension, transmission and substation connections.

Operable from the **REL-1915** electric/hydraulic pump, **REL-10-I** intensifier, or any 3/4 hp, 10,000 psi hydraulic power source with an adequate reservoir.

Accepts most 100 ton shell type dies currently used with Alcoa, Burndy, and other 100 ton presses. Double acting feature eliminates the possibility of jamming or hanging up.

#### FEATURES:

- Removable die cap for easy connector positioning.
- 3/8" Screw-type couplers
- Breather valve allows conversion to single acting
- Suspension eye included
- Steel case included
- Long Life Expectancy (tested to 50,000 cycles)



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Phone: 800-966-3530 • Fax: 215-357-9193



**BEFORE USING THIS TOOL, READ THE WARNINGS and the recommended practices described in this manual. Failure by the operator to read and fully understand these warnings will leave this person unqualified to use and operate this tool. Property damage, severe personal injury, and/or death could result by not following these warnings.**

**WARNING**

These warnings will appear in appropriate locations when they are pertinent to the particular subject being shown. Read each one carefully and follow them strictly.



**Eye Protection**

**WARNING**

Always wear eye protection to avoid injury from flying debris or hydraulic oil leaks. Failure to do so can result in serious personal injury.



**Skin Irritation**

**WARNING**

Hydraulic oil may cause irritation. Use care to prevent contact with skin. In case of accidental contact, wash affected area immediately



**Hard Hat**

**WARNING**

Always wear a hard hat to avoid injury from falling debris. Failure to do so can result in serious personal injury.



**Foot Protection**

**WARNING**

Always wear foot protection. Failure to do so can result in serious personal injury.



**Hearing Protection**

**WARNING**

Always wear hearing protection, to avoid hearing loss due to long term exposure to high noise levels.



**Protective Gloves**

**WARNING**

Always wear protective gloves Failure to do so can result in serious personal injury.



## WARNING

### SAFE OPERATION & CARE

**USE THIS TOOL FOR ITS INTENDED PURPOSE ONLY**

Any other use can result in personal injury or property damage.

**INSPECT TOOL BEFORE USE.** Replace any worn, damaged or missing parts. A damaged or improperly assembled tool may malfunction, injuring operator and/or nearby personnel.

**INSPECT HYDRAULIC HOSES AND COUPLINGS** before each use. Repair or replace if any cracking, leakage, wear or damage is found. Worn or damaged hoses may fail resulting in personal injury or property damage.

**CLEAR WORK AREA** of all bystanders and unnecessary personnel before operating this tool.

**KEEP ALL PARTS OF THE BODY AWAY FROM MOVING PARTS.**

Failure to observe this warning could result in serious injury.



## WARNING

### HYDRAULIC POWER SUPPLY

**DO NOT** attempt to make any changes to any of the component parts or accessories when connected to the power source.

**DO NOT** adjust, inspect, or clean tool while the tool is connected to the power source. The tool could accidentally start up and cause serious injury.

**DO NOT** over-pressure or under-pressure this unit. Failure to comply may cause an incomplete compression and or cause Damage the Tool, and Void your Warranty.

**DO NOT** adjust, inspect, or clean tool while the tool is connected to the power source. The tool could accidentally start up and cause serious injury.



## WARNING

### OIL INJECTION INJURY

Hydraulic oil or fluid under the skin is a serious injury. Oil under pressure can penetrate the skin and may cause dismemberment or loss of life. Seek medical assistance immediately if such an injury should occur.

Always wear safety gloves, eye protection and all required safety equipment when operating or handling this tool.

**DO NOT** use fingers or hands to attempt to locate a leak.

**DO NOT** handle hoses or couplers while system is pressurized.

**NEVER** open or service the system before depressurizing.



**WARNING**

## HOSES AND FITTINGS

There exists the potential for shock in using anything other than certified nonconductive hoses and hydraulic oil with dielectric properties, when using system components near energized electrical lines. Failure to recognize these conditions could cause electrocution.

Hoses and fittings used with this tool must comply with S.A.E. J1273 which covers recommended practice for selection, installation, and maintenance of hose and hose assemblies. The **correct hoses and fittings are available from your supplier.**

**WARNING:** Failure to comply with these warnings could result in severe bodily injury.



**WARNING**

## UNIT/HOSE CONNECTIONS

**ALWAYS DISCONNECT** pump/power source and move toggle switch to **OFF** before connecting or disconnecting any components.

**ALWAYS DEPRESSURIZE** hydraulic system, before slowly disconnecting this unit or any of the systems components.

**ALWAYS TIGHTEN** couplings completely. Loose or improperly tightened couplings will not allow fluid to pass through the hose creating a blockage in the supply or return line.

**ALWAYS INSPECT HOSES AND CONNECTORS** before connection to tool. Replace or repair if any leakage is evident. Leakage is a sign of deterioration in component parts. Worn or leaking parts must be repaired or replaced, or tool damage or severe injury could result.



**CAUTION**

## HOSE INSTALLATION

**ALWAYS ENSURE CONNECTORS ARE CLEAN**

**DOUBLE ACTING** - Care must be taken to assure the correct connection of the hoses to the pressure and return (tank) ports. Connect the return hose to the return (tank) port on the power source, then to the return port on the tool.

Connect the pressure hose to the pressure port on the tool, then to the "P" pressure port on the power source.

Operation with hydraulic flow reversed can cause malfunction. Failure to fully comply can result in severe injury or death.



**WARNING**

**Operation/Safety** methods may vary in accordance with the working guidelines established by each utility or contractor.

For your own safety, ensure that you fully comply with all safe operation guidelines required by your employer.



**WARNING**

## **ELECTRICAL SHOCK HAZARD**

Always wear and use the necessary clothing, equipment and safety practices to protect against electrical shock. Failure to follow these rules can result in serious personal injury or death.



## **GENERAL SAFETY**



**USE ALL APPROPRIATE AND APPLICABLE PERSONAL SAFETY EQUIPMENT** as required by the operating company.

**ALWAYS INSPECT TOOL** for wear or deterioration every day.

Replace all parts that show signs of wear or damage.

**INSPECT TOOL BEFORE USE.** Replace any worn, damaged or missing parts. A damaged or improperly assembled tool may injure operator and/or nearby personnel.

**KEEP ALL PARTS OF THE BODY AWAY** from moving parts of the tool.

**KEEP HANDS OUT FROM BETWEEN CRIMPING JAWS AT TOOL HEAD.**

**ALL BODY PARTS SHOULD BE OUTSIDE DANGER ZONE PRIOR TO CRIMPING.**

**MAKE SURE** there is no person in close proximity to you or the tool who could be injured by any operation being performed, tool malfunction or flying debris.

**DO NOT OVEREXTEND** your position by overreaching or unbalancing the footing necessary to maintain physical control of your body and the tool.

**ALWAYS MAINTAIN** a firm grip on the tool to avoid loss of control during an operation, causing property damage, serious injury or death.

**USE THIS TOOL FOR THE MANUFACTURERS' INTENDED PURPOSE ONLY.**

**OBSERVE CLOSELY ALL SAFETY RULES FOR A PARTICULAR JOB CLASS**

**FAILURE TO HEED THESE WARNINGS COULD RESULT IN  
PROPERTY DAMAGE, SERIOUS PERSONAL INJURY OR DEATH.**



# CONVERSION INSTRUCTIONS

## FROM DOUBLE TO SINGLE ACTING HYDRAULIC PRESS

- 1 Ensure ram is in it's fully retracted position.
- 2 Remove upper female coupling from tool. (See photo to right)
- 3 Tip unit to pour oil from upper cylinder into a suitable container.
- 4 Insert supplied vent (below right) using appropriate pipe thread sealant and tighten.
- 5 Connect appropriate high pressure hose from an approved power source and operate as a single acting hydraulic tool.



## FROM SINGLE TO DOUBLE ACTING HYDRAULIC PRESS

- 1 Ensure hydraulic ram is in it's fully retracted position.
- 2 Insert (Female) coupling into upper port using appropriate pipe thread sealant and tighten.
- 3 Connect appropriate high pressure hoses from an approved power source and operate as a double acting hydraulic tool.

Contact **RELIABLE EQUIPMENT** with any questions regarding the operation of this tool.

## INSTALLATION OF LIFTING EYE

- 1 Remove lifting eye (secured inside box) from box lid.
- 2 Turn locking nut completely up on lifting eye.
- 3 Screw eye completely into tool head, then tighten locking nut against tool.



Refer to all safety procedures as recommended by your employer.

# OPERATING INSTRUCTIONS

## Double Acting Compression (as shipped from factory)

Use in conjunction with any 10,000 PSI hydraulic power source with the appropriate oil capacity (i.e. REL-1915), equipped with a four way control valve (i.e. PVA 0022), or a double acting high pressure power source.

Connect the return line from the pump to the top (female) return port on the press.

Connect the advance line from the pump to the bottom (male) advance port on the press.

**NOTE:** Proper die selection is vital to the success of the crimp. *Always use the proper die as recommended by the lug or sleeve manufacturer.*

Depress upper die button and slide die half into position. Release die button and ensure that the die is secured properly in place.

Depress lower die button and slide die half into position. Release die button and ensure that the die is secured properly in place.

Rotate center top handle 90° and remove press cap. Insert sleeve or lug to be crimped. Replace press cap and rotate 90°.

Activate valve to close dies. valve will Pop-Off, return to neutral when desired pressure has been achieved and compression is complete.

Activate the valve to retract the dies.

Rotate handle 90°, remove cap. REMOVE COMPLETED CRIMP.

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## Single Acting Compression

**Convert to single acting as shown on previous page.**

Use in conjunction with any 10,000 PSI hydraulic power source with the appropriate oil capacity (i.e. REL-1915), equipped with a two or three way control valve (i.e. PVA 0021)

Connect the advance line from the pump to the bottom (male) advance port on the press.

**NOTE:** Proper die selection is vital to the success of the crimp. *Always use the proper die as recommended by the lug or sleeve manufacturer.*

Depress upper die button and slide die half into position. Release die button and ensure that the die is secured properly in place.

Depress lower die button and slide die half into position. Release die button and ensure that the die is secured properly in place.

Rotate center top handle 90° and remove press cap. Insert sleeve or lug to be crimped. Replace press cap and rotate 90°.

Activate valve to close dies. valve will Pop-Off, return to neutral when desired pressure has been achieved and compression is complete.

Ram will retract automatically when pressure is released.

Rotate handle 90°, remove cap. REMOVE COMPLETED CRIMP.

## WARNING

THE REL-100SDA PRESS HAS BEEN DESIGNED TO OPERATE AT 10,000 PSI.

LOWER PRESSURE MAY REDUCE TONAGE ACHIEVED AND REDUCE CRIMP INTEGRITY.

HIGHER OPERATING PRESSURE MAY CAUSE STRUCTURAL FAILURE AND/OR PERSONNAL INJURY.

## CAUTION

**DO NOT OPERATE PRESS WITHOUT DIES**

Serious damage or personal injury could occur.

## WARNING

USE ONLY HYDRAULIC HOSE COUPLERS RATED FOR 10,000 PSI WORKING PRESSURE.

## CAUTION

FACTORY PRESET GROUND DUMP.  
**DO NOT ADJUST**

**IF YOU HAVE ANY QUESTIONS REGARDING THE PROPER USE AND/OR OPERATION OF THIS TOOL, CONSULT YOUR AREA SUPERVISOR, OR CONTACT RELIABLE EQUIPMENT AT 800-966-3530**

# DAILY MAINTENANCE

The life, reliability, and safety of the tool is dependent on proper maintenance.

Clean all surfaces including head, die seat, ram, and body.

Inspect for wear and damage. Worn or damaged parts may malfunction during operation.

**All parts must be replaced with new parts if signs of wear or damage are evident.**

Keep Label Set clean and legible. Replace decals when necessary.

Manufacturer recommends regular testing for proper pressure and operation.

Test at least every 6 months, test more often under heavy usage.

## GENERAL INFORMATION

### IMPORTANT NOTE

**The greatest single cause of failure for any hydraulic equipment is dirt.**

**IMPORTANT:** Extreme caution should be used to prevent the entry of this material into the unit. Wipe off all couplings and fittings before connecting to unit. Be sure that any pump to be used with the compression tool is clean and free of dirt and contaminants.

**PERIODIC MAINTENANCE:** Occasionally lubricate die stop plunger assemblies. Use of a molybdenum disulfide grease is recommended. Pull pin and pivot pin assemblies should also be cleaned and lubricated to prevent sticking.

**OIL LEAKAGE:** A small amount of seepage from the piston and pump seals is normal and necessary to aid in the lubrication of the moving parts. Excessive leakage may indicate the need for seal replacement and should be performed only by an authorized Reliable service center.

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**IF YOU HAVE ANY QUESTIONS REGARDING THE PROPER USE AND/OR OPERATION OF THIS TOOL, CONSULT YOUR AREA SUPERVISOR, OR CONTACT RELIABLE EQUIPMENT SERVICE AT 800-966-3530**

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## TROUBLE SHOOTING

**IF DIES WILL NOT LOCK INTO RETAINER,** the die retainer may be obstructed with dirt. Application of a cleaning agent or penetrating oil will help free the retainers of foreign material. Keep retainers lightly oiled.

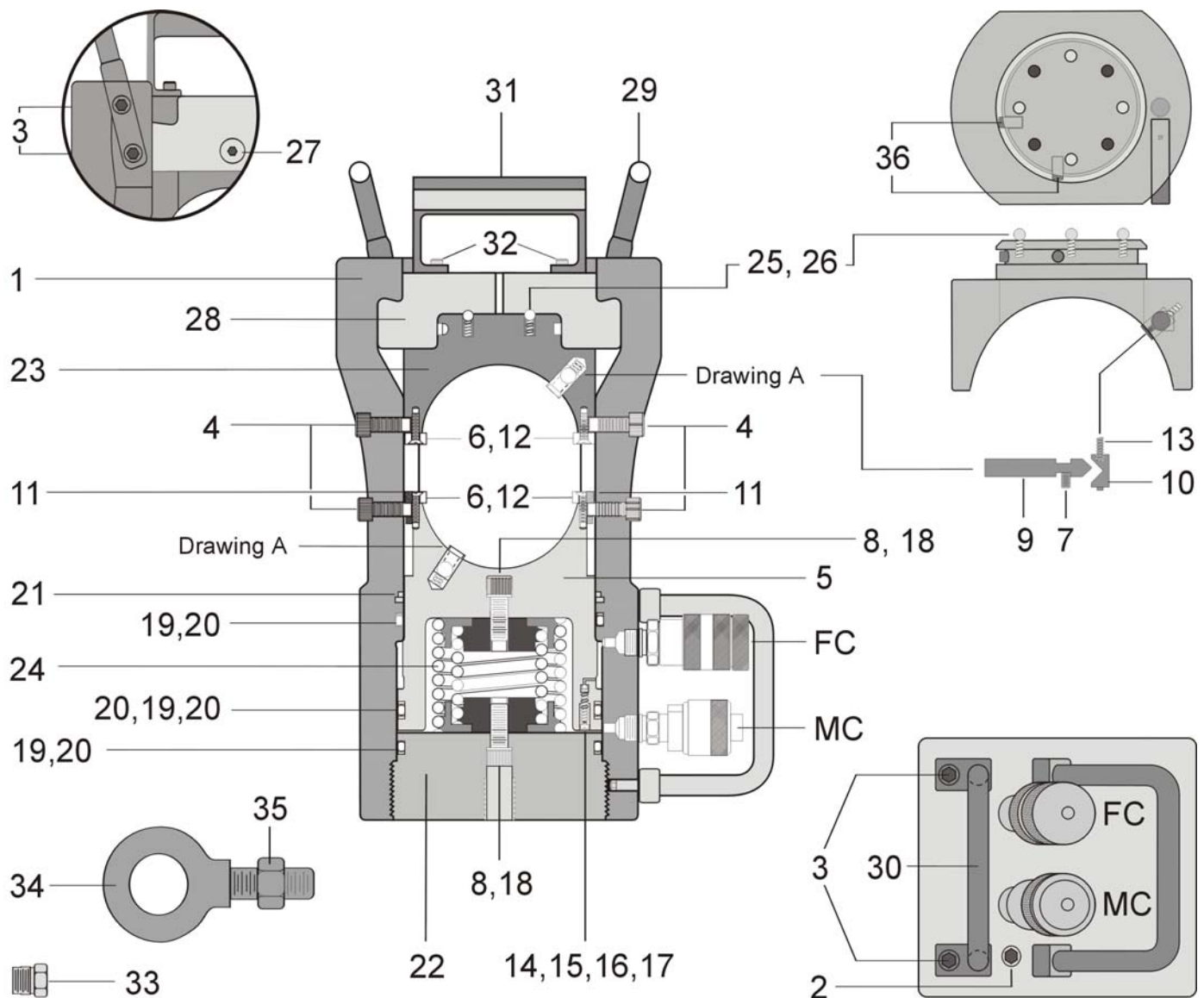
**IF OPERATION BECOMES SLUGGISH,** the head may be obstructed. The head should fit the uprights snugly, but should rotate smoothly. Clean and lubricate the surfaces.

**EXCESSIVE OIL LEAKAGE** around the piston is usually caused by worn piston seals. A small amount of seepage from the piston and pump seals is normal, and necessary to aid in the lubrication of the moving parts.

**IF THE PISTON DOES NOT CLOSE,** check all fittings (pump, valve, & press) are properly connected. If this does not correct the problem, ensure that the pump being used will develop 10,000 psi operating pressure.

**IF THE PISTON WILL NOT RETRACT,** the trouble may be traceable to one of the quick couplers that was not tightly connected prior to use. If male and female halves are not snugly tightened, the ball check valves are not forced completely open. The hydraulic pressure developed by the pump can force oil past the partly open valves, but the pressure developed by the piston retracting spring assembly is not sufficient to force the oil back past the partially open valves. If this is the case, it may be necessary to use pliers or a wrench to close the coupler.

# REL-100SDA PARTS DIAGRAM



## NOTICE

This tool has been MAGNAFLUX tested and certified to meet or exceed accepted industry standards ASTM-E1444, MIL-STD-271F, MIL-STD-2132A, MIL-STD-1907, and ASME codes. (Complete standards documents on file)

Magnetic particle inspected per MMA 42.00 Rev. 9 sub procedure 42.08 Rev. 1

### SAFETY PRECAUTIONS:

Erratic operation or extensive usage requires inspection/repair by qualified service personnel. A magnaflux test should be made on all stress supports and pins after two years of initial service and repeated each subsequent year. The magnetic particle inspection should be certified and marked on the press in the same area as the serial number. The magnaflux mark should contain 00 (month) 00 (year). Example: 0402.

ITEM	PART	QTY	DESCRIPTION
1	25001	1	HOUSING
2	25002	1	SET SCREW 5/16-18 X 1/2 SOCKET
3	25003	12	CAP SCREW, 5/15-18 X 1/2 FOR HANDLES
4	25004	2	SCREW, ROTATIONAL STOP 3/8-16 X 1 W/TURNED END
5	25005	1	RAM
6	25006	8	SCREW, FLAT HEAD, HOLDS 25012 10-32 X 1/2
7	25007	2	SET SCREW, HOLDS 25009, 10-32 X 1/4 FULL DOG POINT
8	25008*	2	COPPER WASHER .625 O.D. X .445 I.D. X .060 TK.
9	25009	2	PIN, DETENT, FOR DIE BUTTON
10	25010	2	DIE BUTTON, GOES IN 25005
11	25011	2	KEY, ROTATIONAL STOP FOR RAM
12	25012	4	RETAINER, DIE
13	25013	2	SPRING, DIE BUTTON, GOES UNDER 25010
14	25014	1	BALL, PRESSURE RELIEF ASSY 1/8 DIA. HARD BALL
15	25015	1	PINTLE, PRESSURE RELIEF ASSY
16	25016	1	SPRING, PRESSURE RELIEF ASSY
17	25017	1	SET SCREW, HOLLOW, PRESSURE RELIEF 1/4-28 SOCKET
18	25018	2	SOCKET HEAD SCREW 7/16-14 X 1 3/4
19	25019*	3	O RING -352 70 BUNA
20	25020*	4	BACKUP RING -352 TEFLON, 2 WRAPS
21	25021*	1	WIPER SH959-44 URETHANE
22	25022	1	END PLUG
23	25023	1	CRADLE
24	25024	1	RETURN SPRING ASSEMBLY 25032, 25033, 25034, 25035
25	25025	4	SPRING, FOR BALL DETENTS FOR CRADLE (25023)
26	25026	4	BALL, 1/4 DIA. DETENT ASSY
27	25027	2	SCREW, FLAT HEAD 1/4-20 X 5/8. FOR 25028
28	25028	1	PRESSURE PLATE
29	25029	2	HANDLE, UPPER
30	25030	2	HANDLE, COUPLER
31	25031	1	HANDLE, FOR 25028
32	25036	4	SCREW, FOR 25031, 10-32 X 1/2 BUTTON HEAD SOCKET
33	25037	1	VENT PLUG, FOR SINGLE ACTING
34	25039	1	EYE BOLT 3/4-10 X 2, SHOULDER TYPE
35	25040	1	NUT, FOR EYE BOLT 3/4-10 GRADE 8
36	25038	2	ROLL PIN, ROTATIONAL STOP
	25041	1	SEAL KIT
	25042	1	RAM, ASSEMBLY 25006, 25007, 25009, 25010, 25012, 25013
	25043	1	CRADLE, ASSEMBLY 25006, 25007, 25009, 25010, 25012, 25013
	25044	1	RELIEF VALVE ASSEMBLY 25014, 25015, 25016, 25017

\* DENOTES PART IN SEAL KIT

# MAINTENANCE

**Complete disassembly is not recommended. Return the unit to an authorized dealer for total disassembly and/or repair.**

All maintenance or disassembly should take place on a flat, clean work surface covered with towels or wipers so as to have a clean space for the disassembled parts.

Inspect each part during disassembly for wear, scratches, and cuts. Discard the worn or damaged parts and replace with new factory authorized parts.

O-rings are sensitive to sharp edges. Inspect closely for cuts or damage. A small cut will cause a leak. When assembling or disassembling O-rings, use hydraulic fluid as a lubricant to help disassembly or installation.

**IF YOU HAVE QUESTIONS REGARDING THE REPAIR AND MAINTENANCE OF THIS TOOL CONTACT RELIABLE EQUIPMENT AT 800-966-3530**



## WARNING

BEFORE USING THIS PRODUCT READ THE SAFETY WARNINGS and recommended practices described in the manual. Failure by the operator to read and fully understand the warnings will leave this person unqualified to use and operate the tool.

Failure to observe all warnings and instructions could result in property damage, severe personal injury, and/or death.

## CAUTION

Operation and safety methods may vary in accordance with the guidelines established by each utility. For your safety, ensure that you fully comply with all safe operation guidelines established by your respective power utility.

REL-SM

## DANGER

The user should be properly trained in the correct procedures required for work on or around electrical lines.

## CAUTION

Do not operate without dies.

**NOTE:** Keep Label Set clean and legible. Replace decals when necessary.



