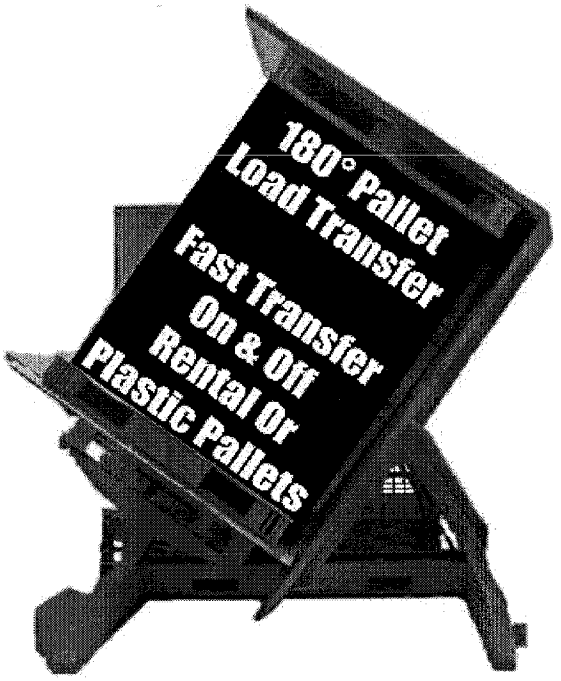
PT-61

# Owner's Manual

# Pallet Inverter




Serial # _____

## INSTALLATION

1. Locate machine into correct working position - REMEMBER to allow space behind the machine for servicing. Remove basket retaining bolt (located on the right side).

2. Fit the rear and side guards as per fitting instructions on Pages 5 & 6.

3. It is recommended that floor mounted stop blocks are fitted at the rear of the inverter. This will prevent the machine moving under pressure from loading.

4. Position the pendant control unit to ensure the operator has a clear view of work area and cannot be operated from within the machine closure.

5. Connect a three (3) phase 230/460V 20 amp supply to the main control panel at the rear of the machine. If there is any possibility of interference or damage to the supply wiring, ensure it is suitably protected.

6. Check hydraulic oil level (see p. 17, item # 2).

7. SYSTEM TEST: Switch on main isolator located on control panel door and release the stop button on the operator pendant. Using the (green) start button on the operator pendant, start the electrical motor. Depress the clamp button, then the unclamp button. If the machine does not respond STOP IMMEDIATELY. Running the motor in reverse can seriously damage the hydraulic pump.

8. To alter motor rotation:- ISOLATE THE INPUT SUPPLY. Change two of the input conductors supplying the machine and retest as above.

9. Pre-Production Test. Start the machine. With machine empty operate for 2 complete cycles (one cycle equals:- full clamp, full inversion of 180 degrees, then unclamp. Inspect all hydraulic lines and ram for oil leaks. Using a suitable test load, operate the machine for a minimum of two complete cycles, again check for hydraulic leaks.

10. Normal clamping pressure is adjustable and should be set to suit the product handled (nominally set before delivery). Adjustment (if required) is described on page 18.

    Suggested pressures.

| | | |
|---|---|---|
| Heavy bagged goods (flour, cement etc) | 135-170 bar | (2,000-2,500psi) |
| Milk powder, animal feed (bagged) | 130 bar | (1,900 psi) |
| Tins, cans, paper, cardboard | 110 bar | (1,600 psi) |
| Glass bottles or jars | 95-110 bar | (1,400-1,600psi) |
| Frozen foods | 55-70 bar | (800-1,000psi) |

    It is recommended that pressure adjustments are made by a competent person using a practice load before handover to production department.

11. Handover. It is recommended that the control panel lock key should be

retained by the maintenance department or production supervisor as a safety measure. Handover of the machine to the production department should be accompanied by a copy of the operating procedure or, preferably, the operator(s) instructed on a personal basis before utilization of the machine.

SUPPLEMENTARY INFORMATION

Functions of the Control Buttons.

RED BUTTON - Stops all machine movement and motor.
GREEN BUTTON - Starts motor.
CLAMP BUTTON - Clamps single moving table
UNCLAMP BUTTON – Unclamps single moving table
ROTATE BUTTON - Rotates basket 180° clockwise
INVERTER BUTTON – Rotates basket back 180° counter clockwise

NOTE: Motion buttons must be held in the depressed position until the motion is completed. Premature release will stop the motion immediately..

| DATE | ISSUE |
|---|---|
| 09-11-01 | A |

DRG No.
1-SP-9922

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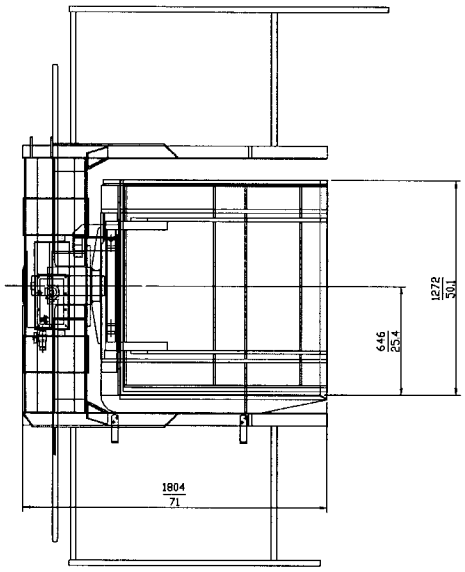
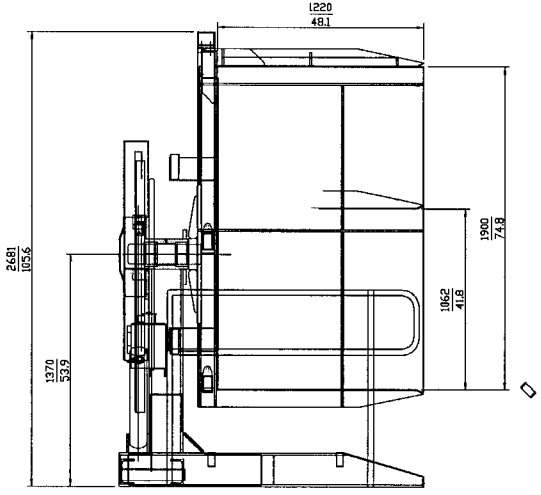
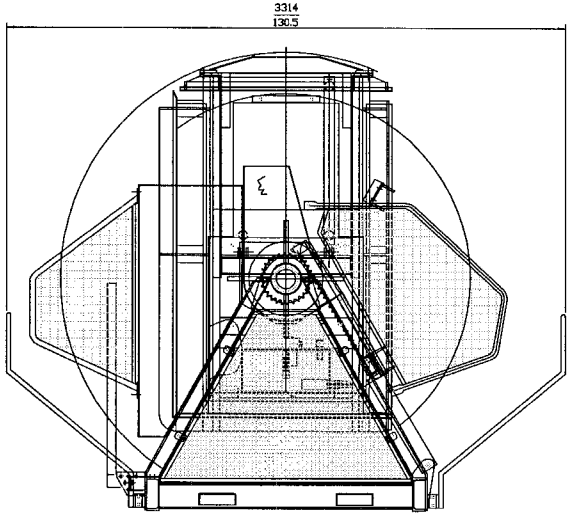



FOR DETAIL DRGS SEE MASTER SHEET




| GEN. TOL. ± | L ± | MATERIAL UNLESS NOTED :- | ALL WELDING TO BE IN ACCORDANCE WITH BS 5135:1984 | DO NOT SCALE - IF IN DOUBT ASK PLEASE INFORM IF MODIFICATIONS ARE MADE DURING MANUFACTURE | © THIS DRAWING IS CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT COPIED OR COMMUNICATED TO OTHER PERSONS OR COMPANIES | G.T.BUNNING & SONS LTD GRESSENHALL | TITLE | SCALE | ISSUE |
|---|---|---|---|---|---|---|---|---|---|
| ◎ | ▱ | EN10025:S275JR - GENERAL<br>EN10025:S275J0 - HOLLOW SECTS<br>BS970 080M40 - BRT BAR | | | | | GENERAL ARRANGEMENT<br>STD 1900 FS - AMERICAN | 1:XX | A |
| | | | | | | | | DRG No. | |
| | | | | | | | | 1-SP-9922 | |

## INSTALLING SAFETY GUARDS

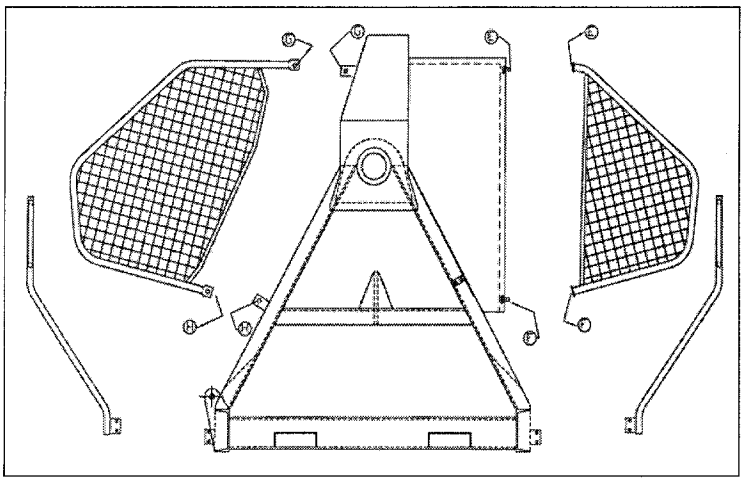
NOTE: It is recommended that the guards are fully unpacked and each part identified before fitting to the machine. DO NOT fully tighten the fixing nuts and bolts until the complete guard assembly has been fitted to the machine.

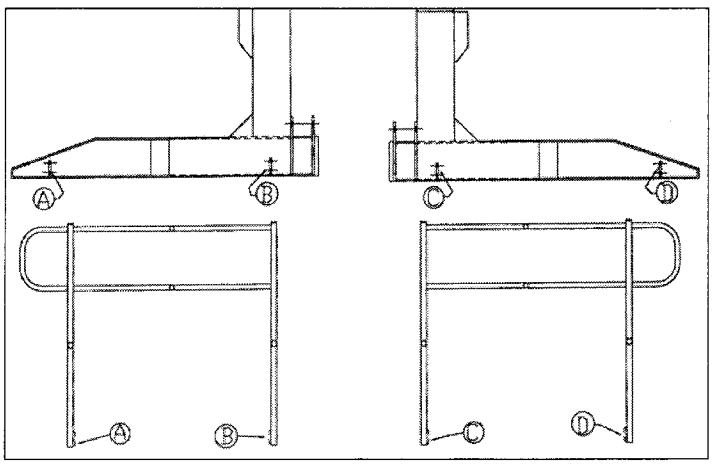
PARTS LIST

| | |
|---|---|
| 8 off | ½" x 1¾ Long Bolts + ½"Nyloc Nuts |
| 3 off | ½" x 1¼" Long Bolts + ½" Nyloc Nuts |
| 1 off | ½" x ¾" Long bolts + ½" Nyloc Nuts |

1. All machine sections connect to the corresponding on the machine guarding.
2. Starting with A and work down to H, connecting guarding to machine with the correct nuts and bolts.
2. Do not fully tighten nuts and bolts.
3. After all guarding has been attached to the corresponding machine section, fully tighten all nuts and bolts.

Figure 2





## OPERATION

1. MACHINE CONTROLS

    (a) Main electrical panel (situated at rear of machine) has the main on/off ("lock off") switch .

    (b) Operator control pendant.

RED BUTTON Stops all machine movement motor and hydraulic pump.

GREEN BUTTON. Starts motor and hydraulic pump.

NOTE: Motion buttons must be held in the depressed position until the motion is completed. Premature release will stop the motion immediately.

2. Complete initial safety checks as stated in the safety sec.. Ensure isolator switch is ON.

3. Load machine as required by production department ensuring product is as close to sidewall as possible for minimum slippage during cycle.

4. Using operator control panel, depress the start button. Operate clamp button to clamp load in position. If further adjustment of pressure relief valve is required, contact maintenance department.

5. Operate rotation button to invert the load through 180°.

6. On completion of inversion, operate unclamp button to release clamping table to the fully open position and remove the load.

7. The machine does not require to be re-inverted before the next operation; however, care should be taken with bagged goods to ensure bags are not trapped in the clamp table slides.

8. On completion of work task or shift end return the inversion unit to the vertical position with the fixed sidewall on the left-hand side (when viewed from the front of the machine).

**NEVER LEAVE LOADS SEMI-INVERTED.**

## MAINTENANCE

**NOTE:- Ensure the Inverter is isolated from main power supply at the customer supplied disconnect and the starter before servicing, adjusting, or repair work.**

1. **WEEKLY**

   a) Check hydraulic ram shaft is clean and free from dirt and abrasions.
   b) Apply grease through points A to C.
   c) Check hydraulic oil is clean and high on sight gauge (refer to p. 17 item # 2). DO NOT OVERFILL.
   d) Keep dirt and debris clear from beneath the machine.

2. **MONTHLY**

   a) Clean and lightly oil ram shaft. Use hydraulic oil.
   b) Check hydraulic oil return filter. Observe gauge (refer to p. 17, item #4) during a working cycle, change filter if needle is continually on red (refer to section 3 below).
   c) Check condition of rubber buffer pads, if split or showing signs of disintegration, replace immediately.
   d) Remove gearbox cover 'E' and apply grease to rack and pinion.

3. SIX MONTHLY

   a) Change oil and filters, use only high quality shear stable hydraulic oil with high viscosity index (see recommendations below).

   b) Oil and filter change procedure - ensure machine body is in vertical position (moving table at top and fully closed) and pump motor is isolated (lockout/tagout at customer supplied disconnect).

      i) Disconnect pressure and return oil lines, plug ends to prevent entry of dirt etc.

      ii) Unscrew return filter, CAUTION - this is under pressure from internal spring - withdraw filter assembly, replace cartridge and reassemble.

      iii) Remove tank lid retaining bolts, ease lid/motor assembly from tank, allowing oil pump/strainer unit to drain into tank.

      iv) Remove strainer filter and fit new unit. DO NOT over tighten. Place aside lid assembly and cover to prevent ingress of dirt.

      v) Release tank from 'A' frame, position over a drain tray and empty tank through drain hole on bottom left hand side of tank OR:-
      Pump out oil from tank and replace with new oil. Approximately 10 gallons, giving an air gap between oil surface and tank lid of 2"(oil should be visible at the bottom of filler/breather filter).

vi) Reassemble, ensuring gasket is flat and correctly located before securing the tank lid.

c) Check all hydraulic connections are secure and free from leaks.

d) Check all pivot pins and floor anchor bolts are secure.

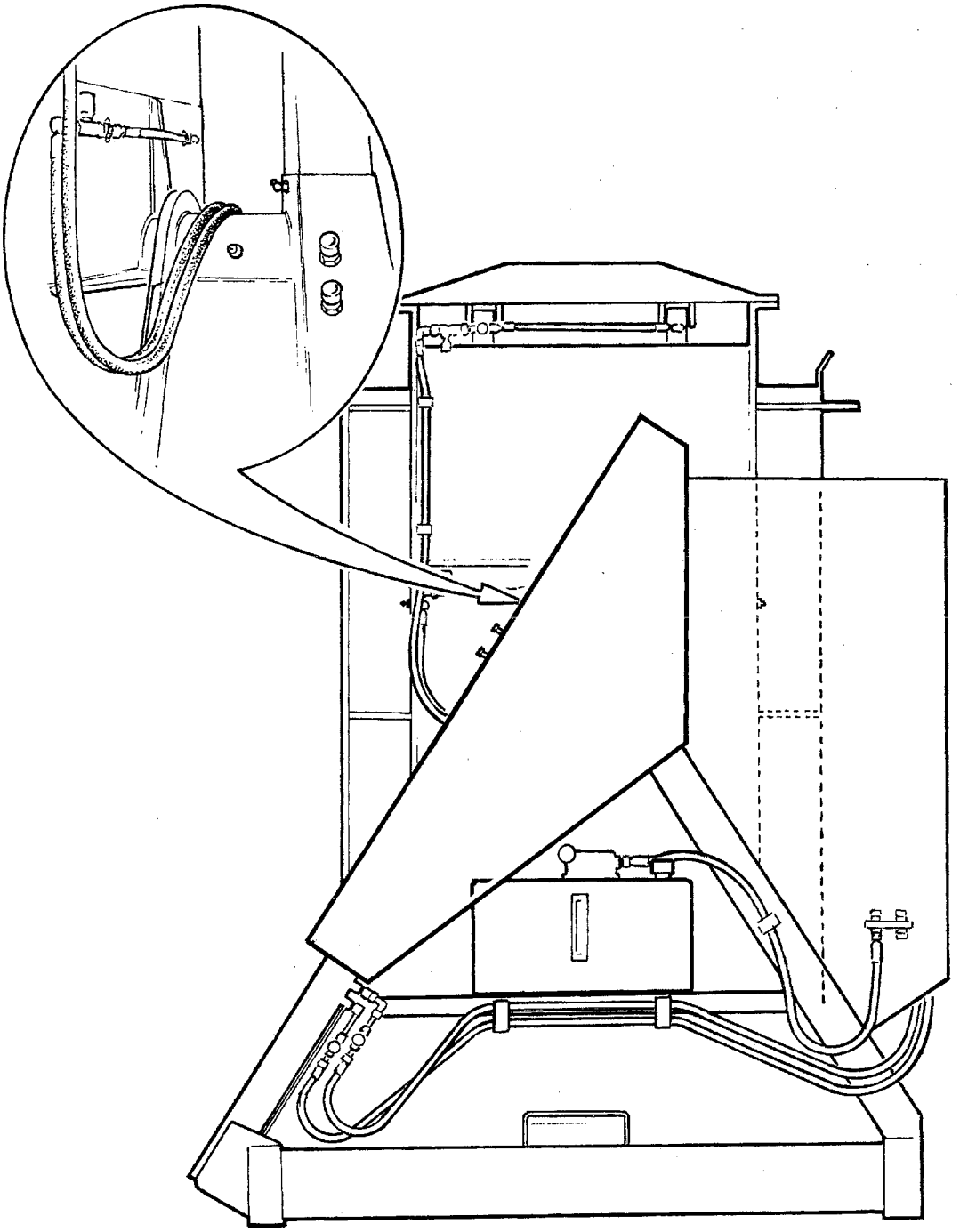
e) Check all electrical connections and wiring is secure and free from damage.

f) Adjust rack wear plate at point 'D'. Release locknuts, screw in adjuster bolts finger tight and lock in position.

RECOMMENDED OIL etc:-

HYDRAULIC OIL - AW 32 Mobil DTE 24
OR EQUIVALENT.

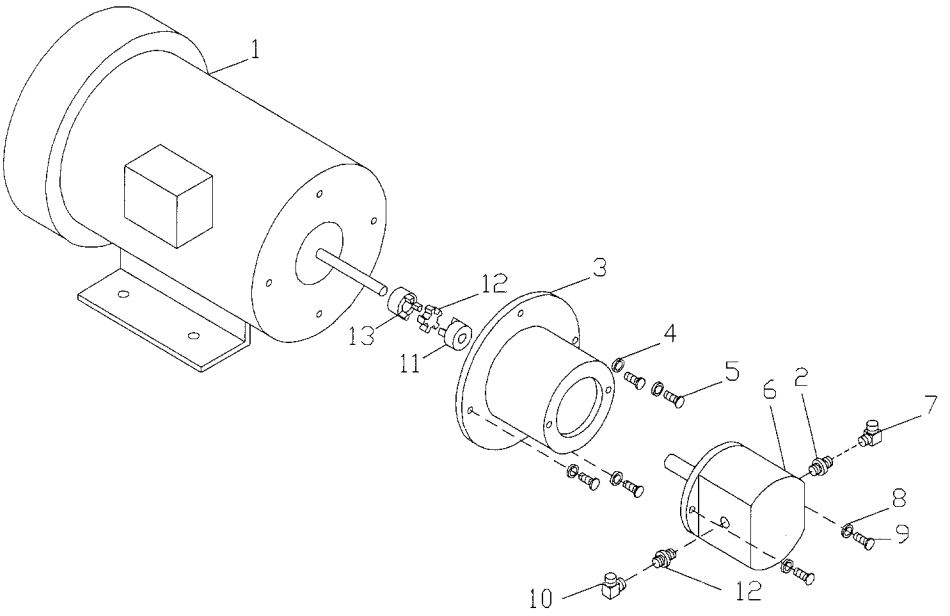
GREASE - LITHIUM base multipurpose NLGI#2 OR EQUIVALENT.



## PUSH BUTTON CONTROL
## TROUBLE SHOOTING

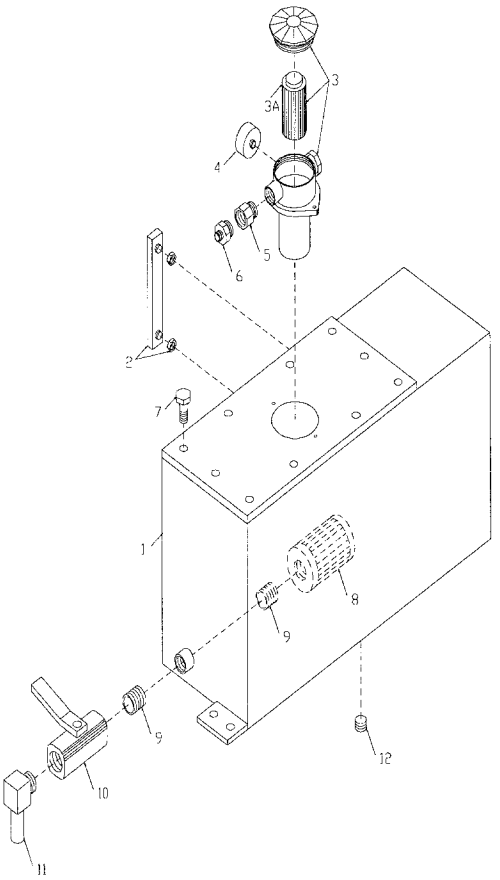
| FAULT | POSSIBLE CAUSE |
|---|---|
| MOTOR WILL NOT START | Check input supply. Check isolator(s) are in the "on" position.<br>Check light guard system alignment (if fitted).<br>Check all plug/socket connections are made correctly. |
| MOTOR STARTS BUT MACHINE FAILS TO OPERATE | Check that the retaining bolt has been<br>Check motor rotation (Counter clockwise).<br><br>Check main system pressure is correct (see manual). |
| MOTOR RUNS. MACHINE WILL CLAMP/ UNCLAMP BUT WILL NOT INVERT IN ONE/ BOTH DIRECTONS | Check flow control valves have not been closed on main Inverter ram. |
| MOTOR RUNS. MACHINE WILL INVERT BUT NOT CLAMP/UNCLAMP OR BOTH | Check flow control valves have not been closed on clamp rams located on rear of turning body. |
| MOTOR RUNS. MACHINE INVERTS BUT CLAMPS SLOWLY IF LOAD IS PLACED ON MOVING TABLE. EXCESSIVE NOISE FROM CLAMP ASSEMBLY | Check clamp pressure (see Clamp Pressure Relief Valve Adjustment in Manual) if fitted.<br>Check level of lubrication.<br>Check for obstruction i.e. broken pallets. |
| LOSS OF HYDRAULIC OIL | Check machine for leaks. |
| FALL IN HYDRAULIC PRESSURE | Worn hydraulic pump. |

**PUMP MOTOR ASSEMBLY**




| ITEM NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1. | 10672 | Baldor motor 5hp, 3 phase; 230/460 volt |
| 2. | 6400-8-10 | Adapter |
| 3. | 1960 | Adapter |
| 4. | ½" | Lock Washer |
| 5. | ½-13x1"HHB | Bolt |
| 6. | PLP20.8DO-31S1-LOC/OCN | Pump |
| 7. | 6500-8 | Adapter |
| 8. | 3/8" | Lock Washer |
| 9. | 3/8-16x1" HHB | Bolt |
| 10. | 4601-12 | Adapter |
| 11. | LO95 5/8 x 5/32 | Coupling |
| 12. | LO95 SOX | Spider |
| 13. | LO95 1 1/8 x 1/4 | Coupling |

## OIL TANK ASSEMBLY




| ITEM NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1. | 11310 | Oil tank |
| 2. | FSA127-1.1-T12 Lev.ind | Site glass |
| 3. | RFMBN3HC-75G10A1.0/12T | Filter |
| 3a. | 0075 R 010 BN3HC | Replacement element |
| 4. | CF-400-0015 | Gauge |
| 5. | 6405-12-12r | Adapter |
| 6. | 2404-8-12 | Adapter |
| 7. | ¼"-20 x ¾" HHB | Bolt |
| 8. | P5-3/4-100 | Strainer |
| 9. | ¾ x close-std | Nipple |
| 10. | A-116-12 ¾ | Ball valve |
| 11. | 4501-12-12 | Adapter |
| 12. | 5406-P-8 | Adapter |

## ADJUSTABLE RELIEF VALVE

SETTING THE SYSTEM & CLAMP PRESSURE (see figure 5 on next page)

***Step 1***
Press the green start button on the yellow pendant to start the motor and pump.

***Step 2***
Turn the clamping pressure adjustment to the maximum PSI.

A) Unthread the 9/16" lock nut, turn the 1/8" Allen screw all the way in (clockwise) See diagram Fig #6 reducing valves

***Step 3***
Setting the system pressure to 2200 PSI

A) Unthread 9/16" lock nut.
B) While holding the clamp button down on the yellow pendant, turn the ½" nut secured by the 9/16" lock nut to the right (clockwise) until the gauge reads 2200 PSI.
C) Tighten the 9/16" lock nut.
C) Release the clamp button. The system pressure is set. See diagram for the manifold body.

***Step 4***
Setting the clamp pressure

A) Hold the clamp button down on the yellow pendant to close the tables and maintain pressure.
B) Whilst maintaining pressure, adjust the valve to alter the pressure as appropriate. Pressure will register on the adjacent gauge. Loosen the 9/16" lock nut using suitable wrench
C) Using a 1/8" Allen Key, turn the adjustment to the left (counter-clockwise) until the desired pressure is reached (1800 PSI is standard)
D) Tighten the 9/16" lock nut. See diagram Fig #6 Reducing Valve
E) Machine Test - to ensure clamping pressure is correct, place turning

Unit in the vertical position. Place the heaviest of the normal production loads in the inverter and activate clamping tables. The tables should move smoothly, evenly and clamp load without crushing or slippage during inversion.

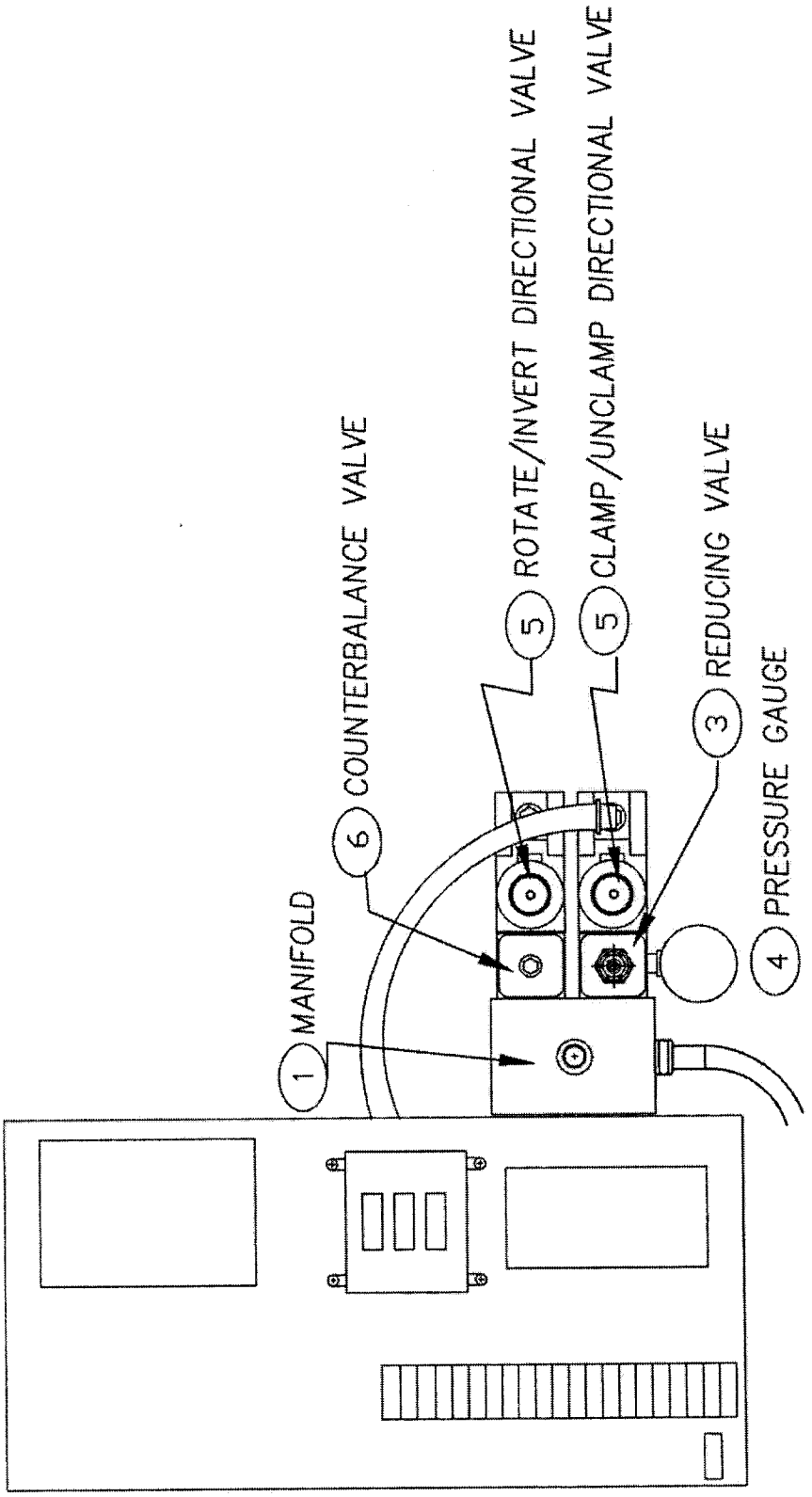
NOTE: Clamping pressure is greater than the pressure required for the Inversion movement, therefore no other adjustment is required.

WARNING Over adjustment can crush products and damage clamp table assemblies.

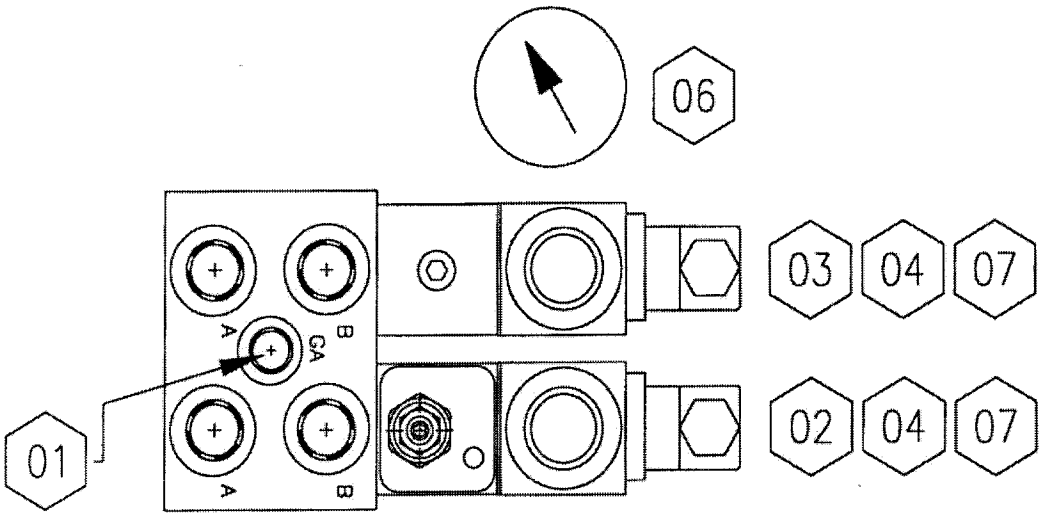
SUGGESTED PRESSURES.

| | | |
|---|---|---|
| Heavy bagged goods (flour, cement etc) | 135-170bar | (2,000-2,500psi) |
| Milk powder, animal feed (bagged) | 130 bar | (1,900psi) |
| Tins, cans, paper, cardboard | 110 bar | (1,600psi) |
| Glass bottles or jars | 95-110 bar | (1,400-1,600psi) |
| Frozen Foods | 55-70 bar | (800-1,00psi) |

(FIGURE 5 )

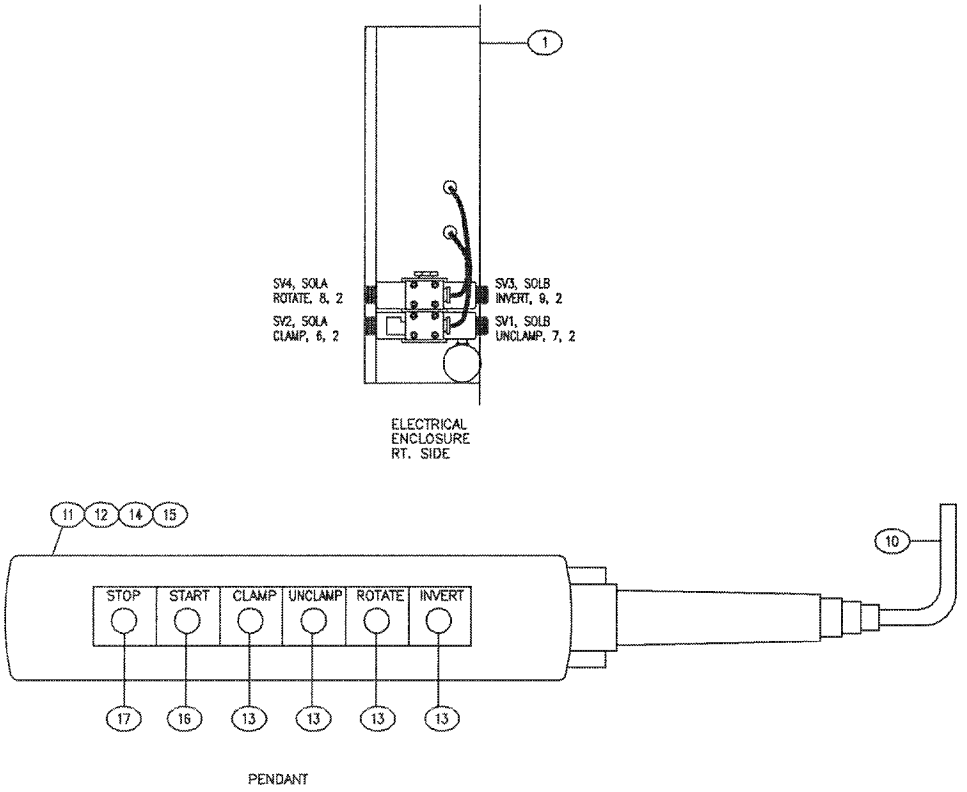

1 MANIFOLD
6 COUNTERBALANCE VALVE
5 ROTATE/INVERT DIRECTIONAL VALVE
5 CLAMP/UNCLAMP DIRECTIONAL VALVE
3 REDUCING VALVE
4 PRESSURE GAUGE

**SOLENOID VALVE ASSEMBLY**




| ITEM NO | PART NO | DESCRIPTION |
|---|---|---|
| 1 | AD03-S02-2P/S | Manifold Subplate 2-Stations |
| 2 | CBCA-LAN-EBY | Counterbalance, Cross A-B |
| 3 | PBDB-LAN-EBA | Reducing Valve, Port A |
| 4 | 4WE6G6X/EW110N9DA | 4X3 Dir. Valve Tandem Center |
| 5 | RPEC-FAN | Relief Valve |
| 6 | 0-3000 PSI | Pressure Valve w/Needle Valve |
| 7 | 10-24 X 3 ¾" SHCS | Mounting Bolts |

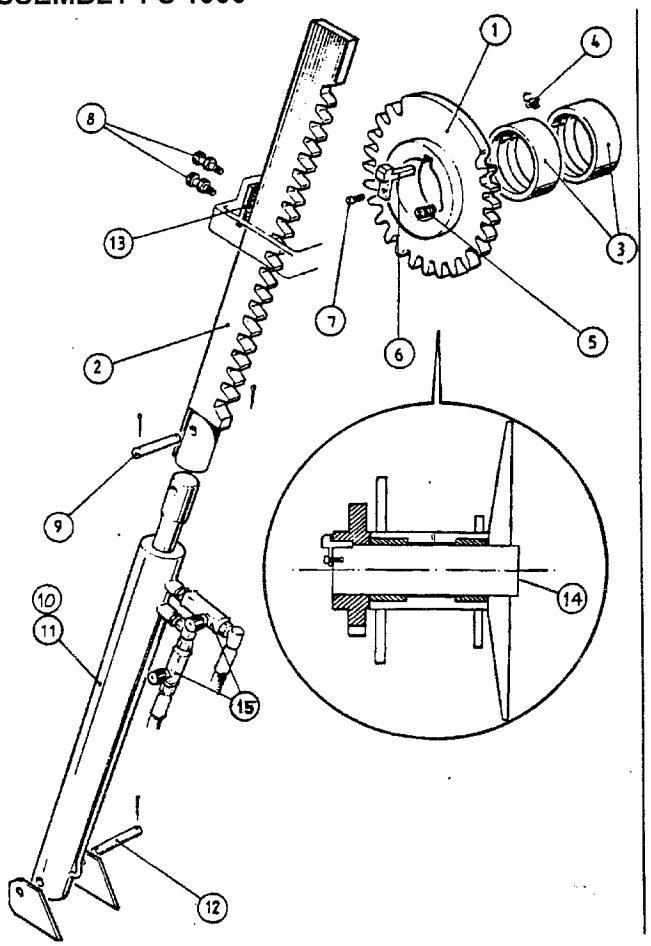
## PUSH BUTTON PENDANT CONTROL ASSEMBLY




| ITEM NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1. | 146000 | Disconnect Box |
| 2. | PKZ/S-SP | Starter |
| 3. | A-H-PKZ2 | Shaft |
| 4. | H-PKZ2 | Door Handle |
| 5. | NH11-PKZ2 | Aux. Contact |
| 6. | B150MBT713RK | Transformer |
| 7. | 2 Amp | Sec. Fuse |
| 8. | 1 1/2 Amp | Princ. Fuses |
| 9. | See Sheet 1 | Trip Module |
| 10. | 4A-1812 | 18 Gauge 12-Cond |
| 11. | XAC-A06 | Pendant Enclosure |
| 12 | XAC-A009 | Mechanical Interlock |
| 13. | XAC-A9411 | Pushbutton - White |
| 14. | ZB2 - BE101 | N.O. Contact Block |
| 15. | ZB2 - BE102 | N.C. Contact Block |
| 16. | XAC - A9413 | Pushbutton - Green |
| 17. | XAC-A9414 | Pushbutton - Red |

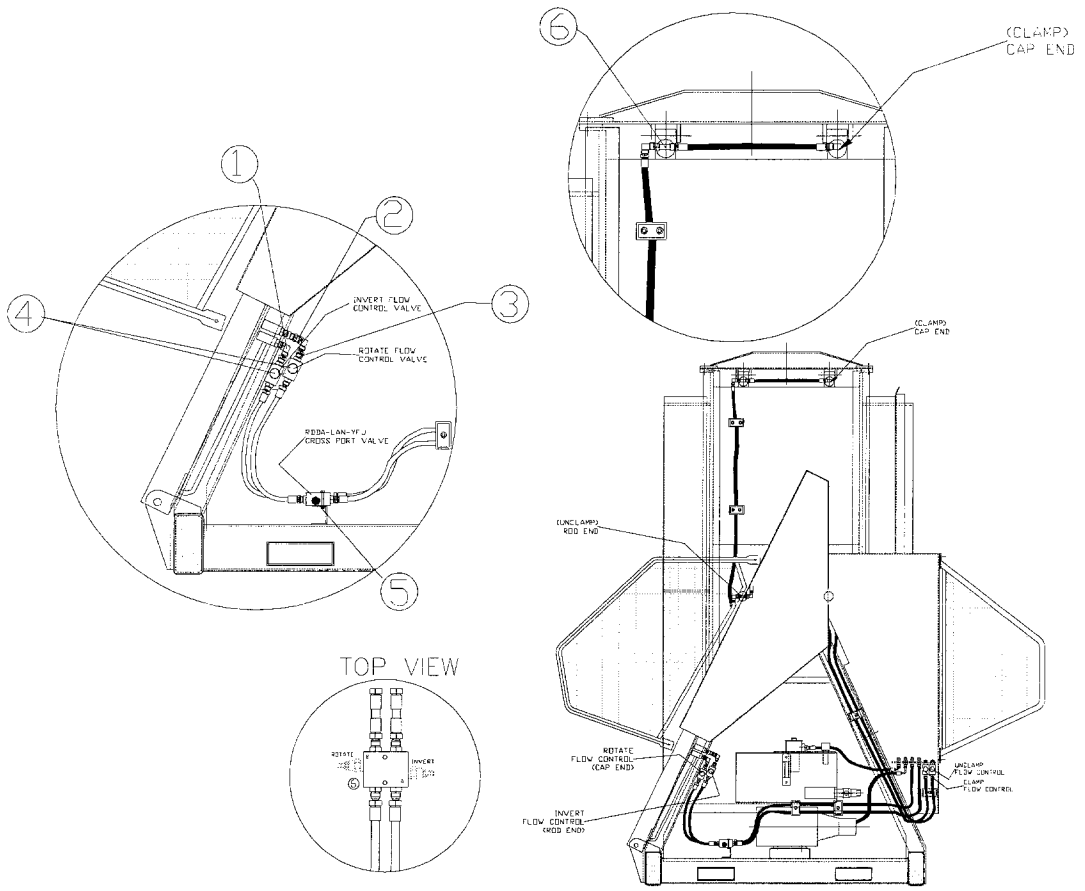
Legend:- F = female. M = male.

## RACK & PINION ASSEMBLY FS 1900




| ITEM NO. | PART NO. | ASSEMBLY |
|---|---|---|
| 1. | 103825 | Drive pinion 4½" ID, 12" OD x 40mm thick. |
| 2. | 103850 | Rack 40mm thick to suit 103825. |
| 3. | 103940 | Pair ACM bushes 4½" ID, to suit most models. |
| 4. | 103910 | Grease nipple. |
| 5. | ¾ x 2" G8 | Retaining grub screw. |
| 6. | 103975 | Gib head key. |
| 7. | ½ x 1 ¾" | Set-screw. |
| 8. | ½ x 2" | Adjusting screw with lock nuts. |
| 9. | 103965 | Retaining pin for rack 1" x 3¼". |
| 10. | 102380 | 18" x 3 ½" bore hydraulic ram (DA/350/150/213A) |
| 12. | 103955 | Hydraulic ram retaining pin 1" x 6" |
| 13 | 103926 | ACM wear plate assembly. |
| 14. | 103880 | 4½" OD shaft. |
| 15. | HG-87310 | Flow control valve. |
| 16. | 10563 | Rubber Buffer (not shown). |

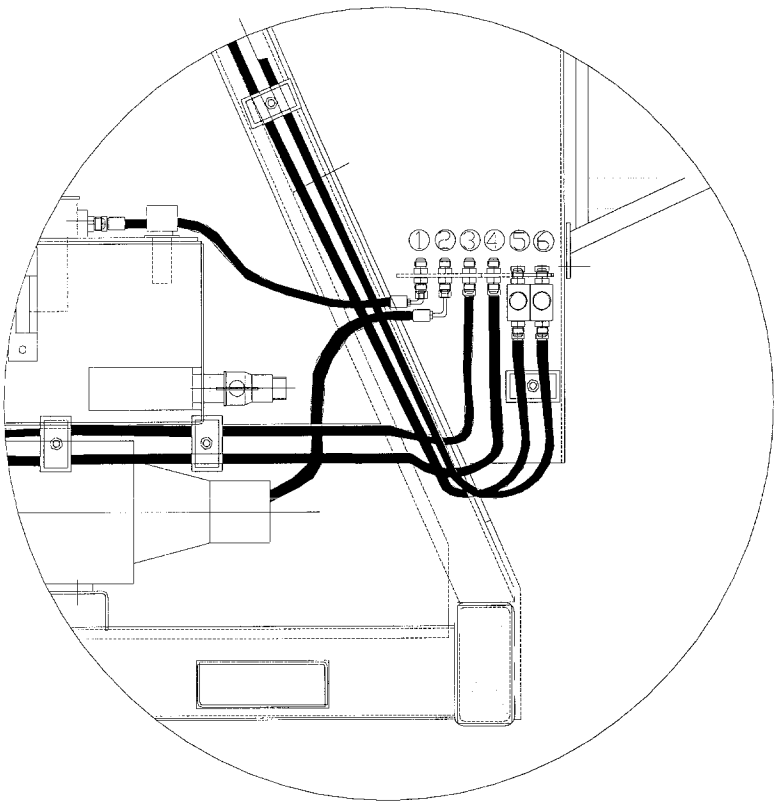
**Hose Assembly**




| Item # | Part # | Description |
|---|---|---|
| 1. | 6504-8-8 | Female to Male BSP Swivel |
| 2. | 6510-8-8 | Female to Female Swivel Union JIC |
| 3. | 6500-8-8 | Female to Male 90 |
| 4. | HG-87310 | Flow Control |
| 5. | RDDA-LAN-YFJ | Cross Port Valve (Optional) |
| 6. | 6600-8-8 | Branch Tee M/F/M |

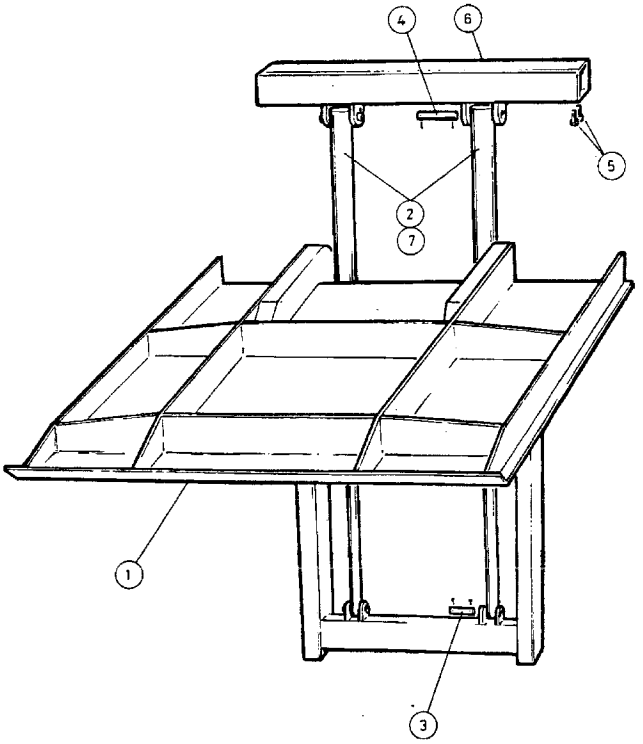
NOTE: All hoses are 3/8"
To reorder specify what hose and length is needed

**Pendant Bulkhead**




1. Tank Return
2. Pump
3. Rotate (Cap End)
4. Invert (Rod End)
5. Clamp (Cap End)
6. Unclamp (Rod End)

**LOAD TABLE ASSEMBLY FS 1900**




| ITEM NO | PART NO | DESCRIPTION |
|---|---|---|
| 1. | - | ---------- |
| 2. | 10224 | 2" bore clamp ram 33" stroke. (DA/200/125/039H) |
| 3. | 10230 | Piston retaining pin with cotters 5/8" dia. X 3¼". |
| 4. | 10240 | Ram retaining pin with cotters ¾" dia. x 4½" |
| 5. | 3/4"x | |
| 6. | 10260 | Cross head |
| 7. | 10226 | Set of hydraulic ram seals 2" bore (2 off) |