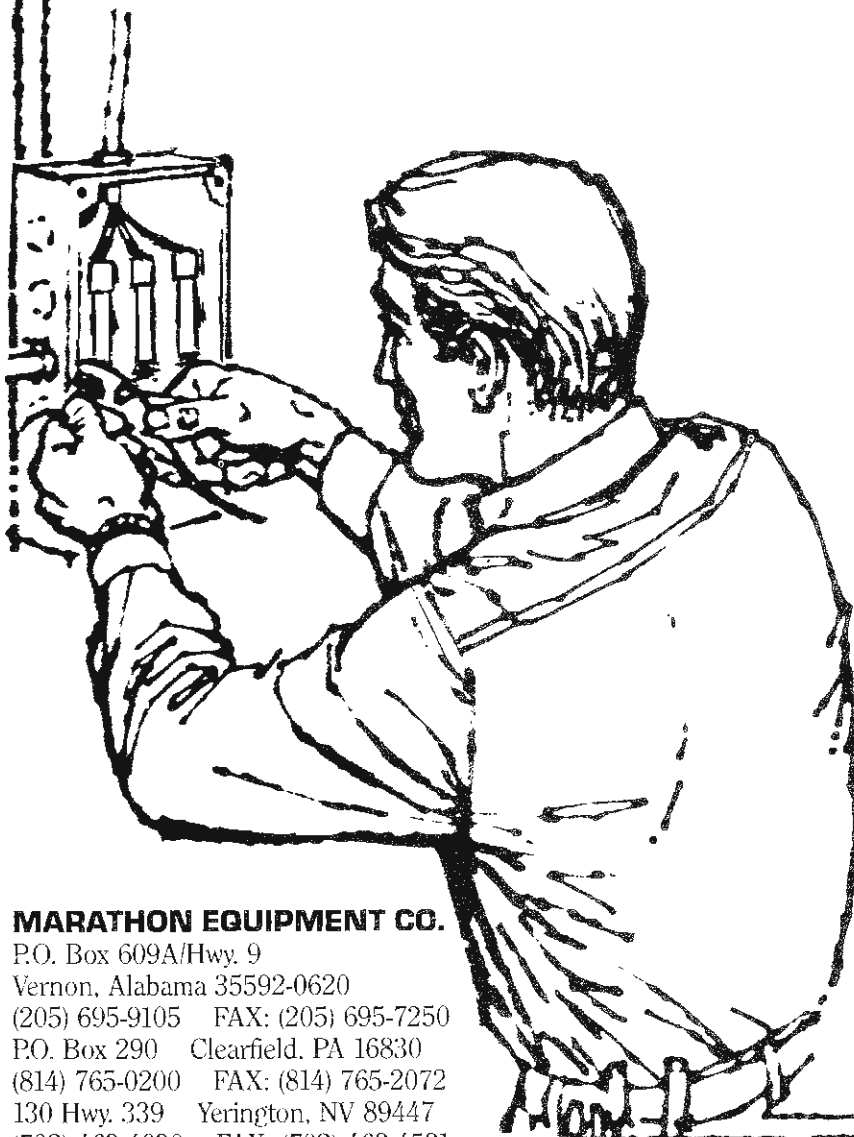


# ***PLAY IT SAFE!***

MARATHON COMPACTOR  
INSTALLATION, OPERATING  
AND SERVICE MANUAL



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# MARATHON COMPACTOR INSTALLATION, OPERATING AND SERVICE MANUAL

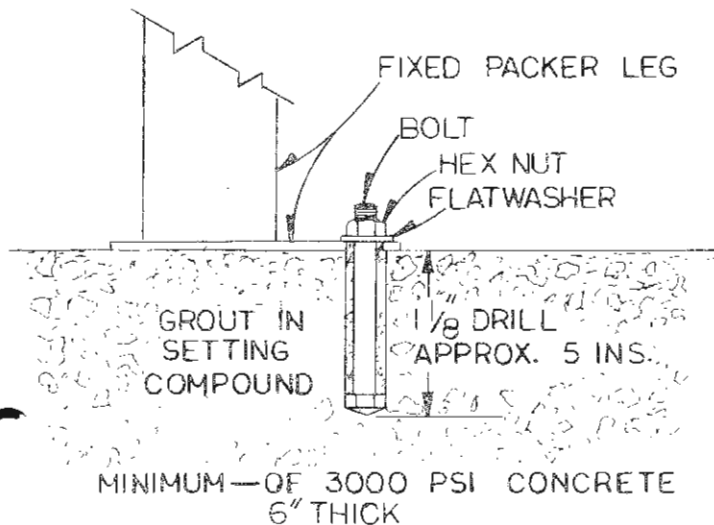
## I. INSTALLATION INSTRUCTIONS

### A. CAUTION:

1. REVIEW THIS BROCHURE BEFORE MAKING INSTALLATION. STUDY THE JOBSITE AND INSTALLATION REQUIREMENTS CAREFULLY TO BE CERTAIN ALL NECESSARY SAFEGUARDS AND OR SAFETY DEVICES ARE PROVIDED TO PROTECT ALL PERSONNEL AND EQUIPMENT DURING INSTALLATION AND AS A COMPLETED SYSTEM. SPECIAL ATTENTION IS DIRECTED TO THE EXTRACT FROM AMERICAN NATIONAL STANDARDS INSTITUTE Z245.1 (GREEN BOOKLET, INSIDE ENVELOPE.) [THIS EXTRACT APPLICABLE TO STATIONARY COMPACTORS ONLY.]
2. "These operating instructions are not intended as a substitute for training and experience in proper use and safety procedures in operating this equipment."
3. "Marathon does not assume responsibility for installation procedures of this equipment. Conformance to applicable local, state, and federal laws concerning installation rests with the customer."

### B. CONCRETE PAD:

1. Preferred dimensions of the concrete pad are 10'0" wide and a length of 5'0" greater than combined length of compactor and receiver container. It should be of minimum 3,000 PSI concrete, steel reinforced, 6" thick. For good housekeeping practices, it is recommended a drain beneath the area of the charge box be incorporated in the pad connecting to a sanitary sewer. It is preferred concrete pad be flush with the surrounding ground level. If it must be raised above surrounding ground level, pad at end opposite packer should be tapered to ground level. **NOTE:** Units equipped with 4 ground rollers **must** have level pad—no taper.
2. To provide accessibility, concrete pad should be positioned to allow 2'0" between container and building wall if installed parallel with building. Allow a minimum of 45' of clear space from container-end of pad for container handling vehicle.



### C. ANCHORING:

1. Compactor should be anchored to concrete pad using four (4) minimum 3/4" x 6" long anchor bolts. These bolts can be secured to concrete pad using either "Porok" or special concrete anchors. To allow for construction variations, it is best if these holes are drilled in the concrete after prelocating compactor in its desired location. Holes in compactor leg plates are 1-5/16" in diameter to permit use of a 1-1/8" concrete drill bit. When compactor has been permanently located, shimmed to compensate for concrete pad unevenness, and anchor bolts set, tighten all nuts securely.
2. Container guide (optional) should be anchored in an identical manner, spacing between guides determined by rail spacing of container.

### D. DOCK INSTALLATION:

1. If appropriate accessories are ordered from Marathon, compactor will be furnished with either a 700 lb. or 8,000 lb. capacity tread plate (diamond pattern) top, four-sided hopper (mounted or unmounted as ordered) or three-sided hopper with hinged gate (mounted or unmounted) and hand and toe rails (mounted or unmounted). If the hopper is to be field installed, be certain it is not welded to the treadplate top. Hand and toe rails are welded to treadplate and to hopper. **THESE ACCESSORIES SHOULD NOT BE ALTERED AS THEY ARE MANUFACTURED IN ACCORDANCE WITH THOSE STANDARDS WHICH PREVAIL AT THE TIME OF MANUFACTURE.**
2. If compactor cannot be directly abutted to the dock or if there is any difference in height between dock and compactor, an appropriately sturdy transition section should be provided (by the customer) and securely affixed to both dock and compactor. Hand and toe rails should be extended as required to suit this transition. (See ANSI Z245.1 Safety Standards.)

### E. CHUTE-FED INSTALLATION:

1. Compactors installed in this arrangement are normally fed "through-the-wall". The lower edge of the access hole in the wall should be a MINIMUM of 42" (and, if possible, not more than 58") from inside floor level. A security door (in accordance with local code) should be installed in the wall opening. In the absence of local code, this door should be constructed of 3/16" thick steel or of steel hollow core design and be lockable from the inside of building.
2. **NOTE:** When compactor is equipped with a photoelectric cycle control (or any automatic cycling device—see ANSI Z245.1, 8.2), an interlock must be installed on security door which prevents compactor from cycling whenever door is open.

### F. DECALS:

1. Be certain appropriate decals are applied in their proper locations. It is also recommended that a decal—"Danger—Do Not Enter"—is applied to any access door (such as security chute doors). For decal locations, see page 2.

## SAFETY DECAL REQUIREMENTS

When your compactor leaves the factory and is installed, several SAFETY DECALS are installed for everyone's protection. These labels are subject to wear and abuse due to the nature of the operation. **THESE DECALS MUST BE MAINTAINED.** Additional decals can be purchased through your Marathon Distributor or directly from Marathon's home office.

Decal No. 06-045—DANGER: 460 VOLTS.

Decal No. 06-038—CAUTION: DO NOT REMOVE ACCESS COVER EXCEPT FOR SERVICING. TURN CONTROL PANEL KEY SWITCH TO OFF POSITION AND REMOVE KEY.

Decal No. 06-039—DANGER: DO NOT ENTER.

Decal No. 06-040—CAUTION: KEEP OUT.

Decal No. 06-041—CAUTION: THIS COMPACTOR STARTS AUTOMATICALLY.

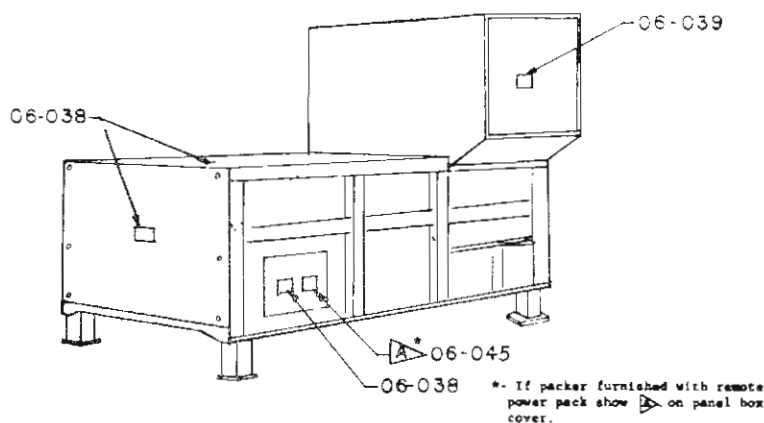
Location: On or next to photoelectric eye on units with this option.

Decal No. 06-042—CAUTION: BEFORE OPENING DOOR TURN CONTROL PANEL KEY SWITCH TO OFF POSITION, REMOVE KEY, AND BLOCK OFF TRASH CHUTE.

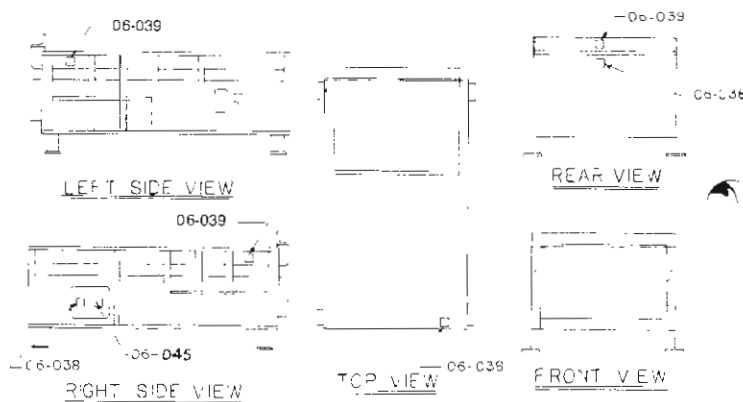
Location: On each charging hopper access door when unit so equipped.

Decal No. 06-052—CAUTION: GATE MUST BE CLOSED BEFORE OPERATING COMPACTOR.

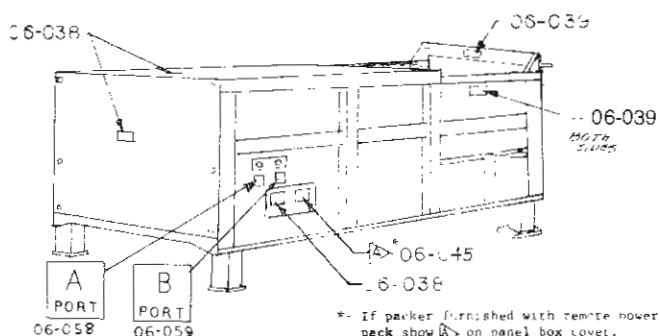
**LOCATION OF SAFETY DECALS  
ON UNIT W/SECURITY CHUTE**



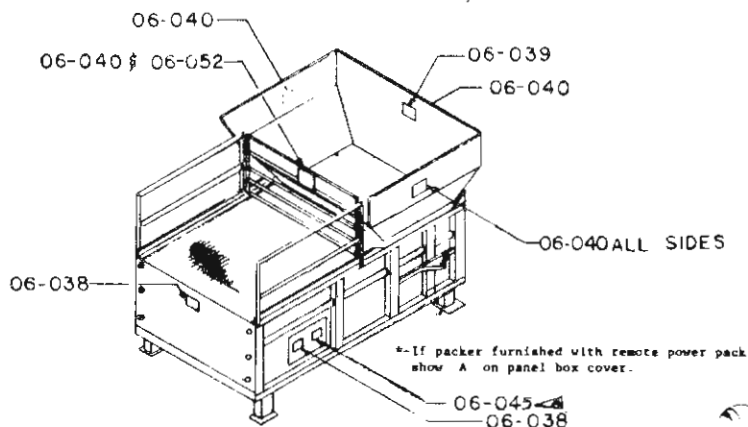
**LOCATION OF SAFETY DECALS  
ON STANDARD COMPACTOR**



**LOCATION OF SAFETY DECALS  
ON REMOTE UNIT**



**LOCATION OF SAFETY DECALS  
ON UNIT W/GATE TYPE HOPPER**



## II. ELECTRICAL INSTALLATION

### A. ELECTRICAL:

1. A lockable fused disconnect switch (customer furnished) must be installed and be within sight of compactor's electrical panel box location, not to exceed 50'0" from compactor. This fused disconnect switch should be sized in accordance with compactor (see page 3, Fuse and Circuit Breaker Chart below).

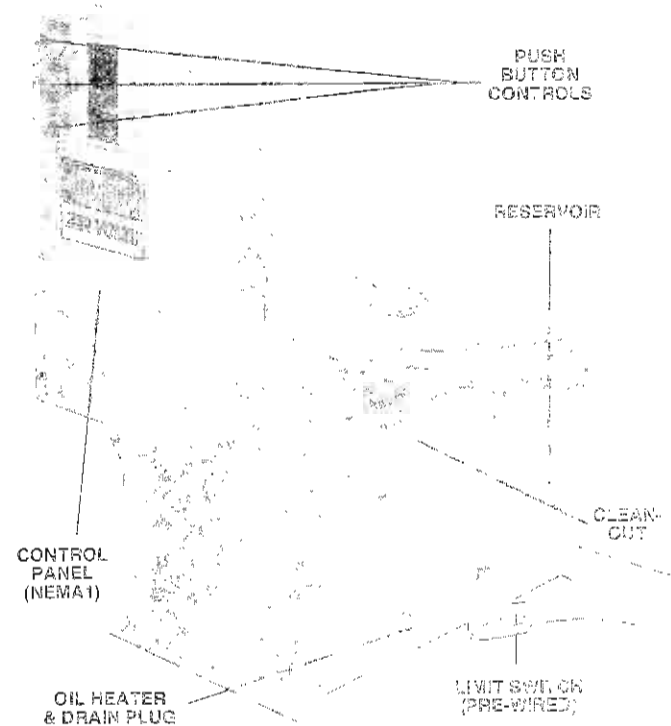
**CAUTION:** All equipment should be grounded per National Electric Code.

FUSE & CIRCUIT BREAKER CHART/BALDOR MOTORS					
Motor Size	VAC	Full Load AMP.	Dual Element Fuse Max. Size	Circuit Breaker Max. Size	Service Disconnect Amps.
3 HP	208	9.0	15	20	30
3 PH	230	8.6	15	20	30
	460	4.3	7	15	30
5 HP	208	13.1	25	30	30
3 PH	230	11.5	25	30	30
	460	5.7	12	15	30
10 HP	208	30.0	45	70	60
3 PH	230	28.0	45	60	60
	460	14.0	25	30	30
15 HP	208	47.5	60	90	60
3 PH	230	45.0	60	90	60
	460	22.5	30	40	30
20 HP	208	52	100	125	100
3 PH	230	50	90	125	100
	460	24	45	60	60
30 HP	208	85.0	150	175	200
3 PH	230	74.0	100	125	200
	460	37.0	60	90	60
SINGLE PHASE					
¾ HP	120	10.6	20	20	30
	230	5.3	10	15	30
3 HP	208	16.8	30	45	30
	230	16.0	25	40	30
5 HP	230	23.0	45	60	60
10 HP	208	51.5	60	80	100
	230	49.0	60	80	100

WIRE SIZES THW Copper 75°C-167°F 3 PHASE				
Length	To 100'	To 200'	To 300'	
3 HP				
208	12	10	8	
230	12	10	8	
460	12	10	8	
5 HP				
208	10	8	6	
230	10	8	6	
460	12	10	8	
10 HP				
208	8	6	4	
230	8	6	4	
460	10	8	6	
15 HP				
208	6	4	3	
230	6	4	3	
460	8	6	4	
20 HP				
208	3	2	1	
230	4	3	2	
460	8	6	4	
30 HP				
208	1	0	00	
230	2	1	0	
460	6	4	3	
SINGLE PHASE				
¾ HP				
120	12	10	8	
230	12	10	8	
3 HP				
230	10	8	6	
5 HP				
230	8	6	4	
10 HP				
230	4	3	2	

### A. FUSED DISCONNECT

### B. REMOTE POWER PACK:

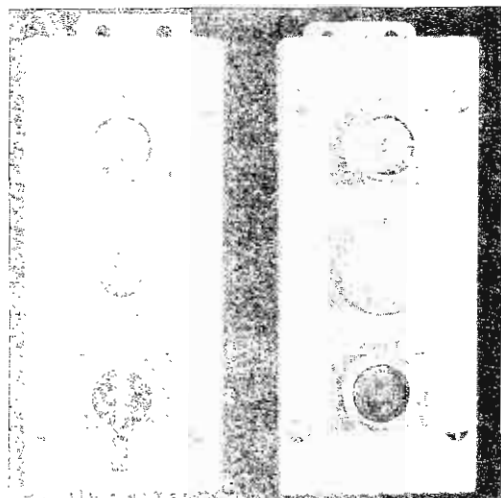


1. If remote power pack is furnished (optional), it should be installed and anchored as required by the customer. If push buttons are mounted in face of panel box, be certain these controls are located as to be in a convenient, but not hazardous, location to the customer.
2. For through-the-wall power pack installation, refer to SK-41230—located inside electrical control panel. SPECIAL CARE SHOULD BE EXERCISED TO PROTECT THE HOSES FROM RIDING SHARP CORNERS AND FROM ABRADING DUE TO FLEXING DURING OPERATIONS.
3. Connect hydraulic hoses to power pack exercising care to follow port decals (A or B) on packer and power pack. In the event the decals have been obliterated, the hose leading from the rear of the cylinder should be installed in the side port of the block to which solenoid valve is bolted (A Port). The hose leading from rod end of cylinder should be connected to end of block to which solenoid valve is bolted (B Port). PORTS ARE REVERSED ON "R" UNITS. (See page 18 for Port Locations.)
4. Limit switch is connected to remote power pack with sealite. To install, bolt limit switch to inside packer body (holes are pre-drilled) and adjust arm (Page 11). Other packer mounted electrical options are color coded and referenced to electrical schematic inside electrical panel box. Be certain wires are properly connected (Check local codes to be certain Sealite is acceptable.)

2. **WARNING:** Before and during making any electrical connections and/or maintenance and/or testing, be sure fused disconnect switch is in "off" position and padlocked. Place on fused disconnect switch appropriate warning tag! "Warning—Do Not Energize Without Permission of \_\_\_\_\_."

### C. PUSH BUTTON CONTROL STATION:

1. If remote push button station is furnished, it will be factory wired using Sealtite. If, in order to install this pushbutton station inside the building, it is necessary to disconnect it from the wires, exercise care that these wires are reconnected as originally furnished. (Check local codes to be certain Sealtite is acceptable.)



2. **CAUTION:** Controls must be located so that Mushroom (Emergency) Stop Button is readily accessible to operator and within three (3) feet of charging chamber access door. If installation requires this push button control station to be located in a more remote area, a second Emergency Stop should be added and installed in manner described above.

### D. ELECTRICAL CONNECTIONS:

1. Run power lines between fused disconnect switch (customer furnished) and compactor's electrical panel box, in accordance with local electrical codes, using knock-outs in bottom of panel box. **NOTE:** High legs should be installed to L3 on motor starter.
2. Check voltage at fused disconnect switch to be certain it is the same as is shown on compactor or remote power pack. If voltage is correct, put fused disconnect switch in "ON" position. If not, refer to Voltage Change Chart (See page 5).

## III. START-UP INSTRUCTIONS

- A. Check to be sure oil reservoir is filled (Refer to maintenance chart for recommendations on hydraulic oil) to ¾ level on sight gauge. Hydraulic System pressure has been factory set and entire unit operated prior to shipment.
- B. **CAUTION: MAKE SURE PERSONS AND MATERIAL ARE CLEAR OF CHARGE BOX AREA.**
- C. Depress Start Button. Check Pump Shaft for proper rotation.
- D. **CAUTION:** If pump rotates **backward**, stop immediately. Pump will be damaged if run in reverse even for short periods. Reversing any two incoming power lines will reverse pump motor rotation.

## IV. OPERATING INSTRUCTIONS

### A. CHECKPOINTS PRIOR TO OPERATION:

1. **CAUTION: EMPLOYERS SHOULD ALLOW ONLY AUTHORIZED AND TRAINED PERSONNEL TO OPERATE THIS COMPACTOR. THEREFORE, THIS COMPACTOR IS EQUIPPED WITH A KEY OPERATED LOCKING SYSTEM, AND THE KEYS SHOULD BE IN THE POSSESSION OF ONLY AUTHORIZED PERSONNEL.**
2. No one should ever be permitted in charge box unless disconnect switch has been turned off and locked. Before restarting compactor, be sure box is clear of all personnel.
3. Operator shall be certain that all individuals are clear of point of operation and pinch point area before actuating controls.
4. After receiving container has been emptied and returned, check to be certain ratchets and claws (or chains) are securely attached to receiving container.

5. All access doors on compactor body should always be secured in place.
6. If compactor equipped with safety gate, this gate **MUST BE CLOSED BEFORE OPERATING COMPACTOR.**

### B. OPERATING INSTRUCTIONS FOR STANDARD COMPACTORS:

1. Place material to be discarded into charge box.
2. Insert key in keylock start push button, turn clockwise, depress, and hold from 1 to 2 seconds, then release. After completion of cycle, key should be turned to "OFF" position and removed to prevent unauthorized use.
3. Upon start-up of unit, ram extends until actuator (located on underside of ram) reaches the "limit switch", which opens a normally closed CCW contact and applies power to the reversing solenoid, making ram retract until once again limit switch is activated opening a normally closed CW contact which will shut unit off until further use. **NOTE:** CCW is "counter clockwise" and CW is "clockwise".

The self-contained units (RJ-250SC, RJ-100SC, RJ-88SC) do not use a limit switch, but rather timer system, to shift or shut down.

#### Timer Settings

	T1	T2
RJ-88SC	27	17
RJ-100SC	21	16
RJ-240SC/250SC	19	13

#### Timer Settings (Ram Stop Forward)

	T1	T2
RJ-88SC	17	27
RJ-100SC	16	21
RJ-240SC/250SC	13	19

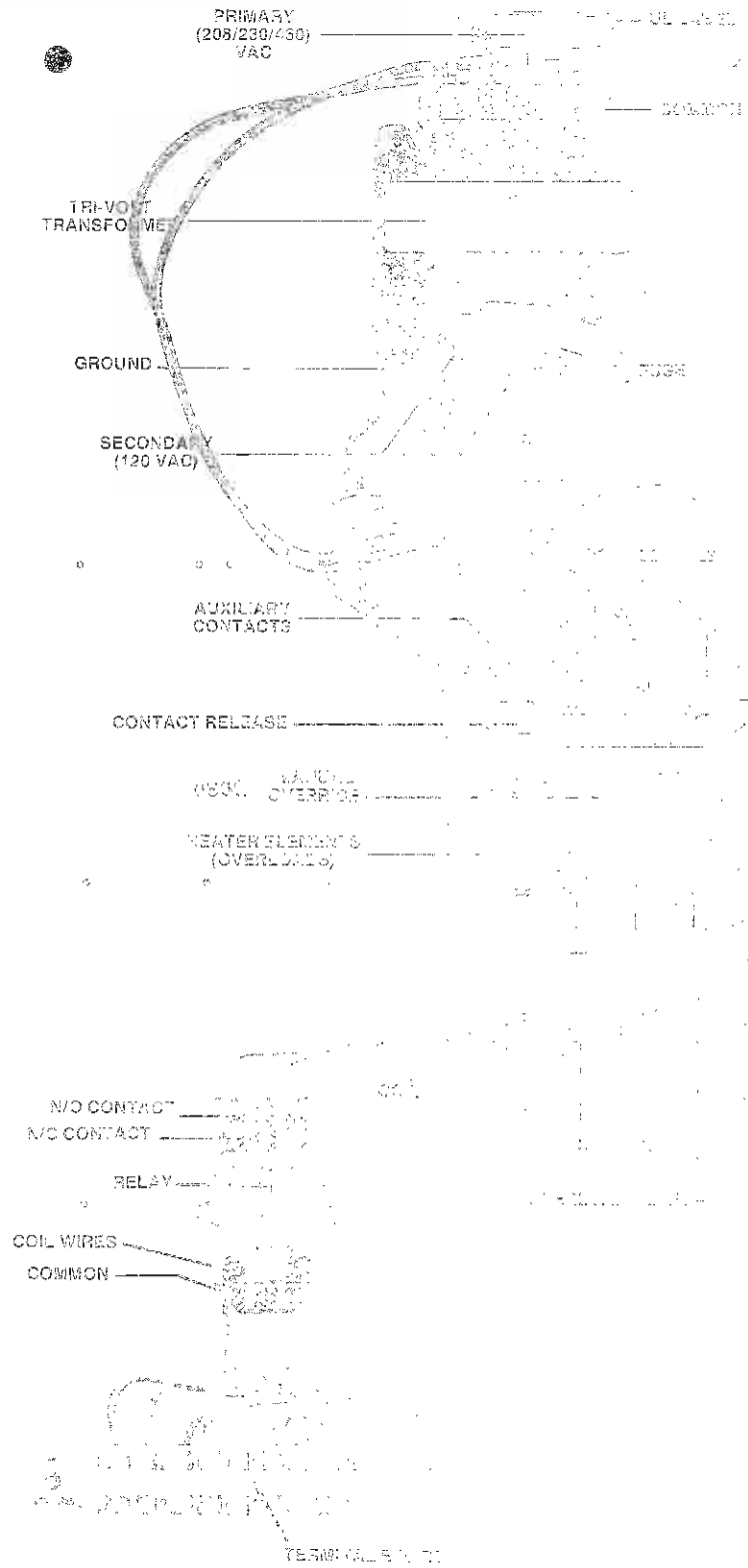
**Note:** Because of changes in pump efficiency, adjustments to time settings may be desired. Actual time settings should be about ½ to 1 second longer than full stroke on extend and retract.

4. Most of our compactors are equipped with a pressure switch. When compactor has filled container to its pressure switch setting, unit will shut down to keep from packing refuse so tight that unloading is extremely difficult.  
"R" units use a timer activated system rather than pressure. (See R operating instructions.)
5. All compactors must and do have a stop button. MECO's consists of a red mushroom style head and by activating (depressing) it you will shut unit down regardless of ram's position.
6. Ram can be retracted when extending by depressing reverse button. Ram can be extended when retracting by depressing keylock start button. If ram is stopped in any position other than fully retracted, to extend, depress keylock start; to retract, depress and hold reverse button, depress keylock start, release start first and then release reverse button.

### C. OPTIONAL FEATURES:

1. **CONTAINER FULL LIGHT**—When light is activated, container is full and ready to be emptied before its next use. To deactivate light, depress illuminated emergency stop light. (Unit will not run if light is activated.)
2. **ADVANCE WARNING LIGHT**—When light is activated, container is nearing full level and a pick up call should be made. You have 250 PSI left before pressure switch is activated to shut unit off and container is full. (Unit will run with light on.)
3. **DEADMAN CONTROL**—This is a safety option requiring compactor operator to remain at push button station while compactor is in use. Actuation requires depressing "Deadman" and "Start" buttons. After unit has started, "Start" button is released. If "Deadman" button is released, unit will stop instantly.
4. **CYCLE TIMER**—This is used when more than one cycle is desired. Factory setting is for three strokes (Adjustable). (R's have timer as standard—factory set for one stroke.)
5. **PHOTOELECTRIC CYCLE CONTROL**—(Comes standard with container full light & special key switches). Consists of a light source and reflector. It can be mounted on chute attached to

# CONTROL PANEL



packer or on opposite walls of room in which packer is installed. In the latter arrangement, two holes, properly located so as to eliminate any hazard, should be provided in chute for light beam. This mounting arrangement keeps photoelectric eye and reflector cleaner and reduces chance of accidental misalignment while in use. The light source is LED and, therefore, beam is not visible.

When light beam has been interrupted for approximately 15 seconds, it will automatically activate packer which will continue running until obstruction between light source and reflector is cleared.

**6. AUTOMATIC SHUTDOWN**—(Recommended for use with Photoelectric Cycle Control)

Automatic Shutdown prevents extended continuous packer operation due to "blocked" photoelectric eye, thereby avoiding unnecessary wear and tear to packer due to heat buildup. This option package includes a timer which can be set for up to 30 minutes (for high-rise applications, we recommend 15 to 30 minutes), an illuminated push button so that operator knows why unit has shut down, plus other completing parts. To deactivate timer, one merely depresses illuminated push button after clearing blockage.

**7. THERMOSTATICALLY CONTROLLED OIL HEATER**—The Oil Heater is installed in oil reservoir and is equipped with a manually adjustable thermostat control so that heater is functioning only when required (does not have to be disconnected during summer months), its temperature range is 30 to 100 degrees F. (Not available for 3 HP units—use ATF.)

**8. PACKER MOUNTED JOG CONTROL STATION**—Jog Control Station is mounted on charge box end of packer (RH standard—if LH desired, must be specified). It consists of a three position key switch—Remote, Off, Bypass and a three position selector switch—Ram Extend, Off, Ram Retract. Key switch is normally left in "Remote" mode. In that position, remote push button station can be operated, but Jog Control Station is deactivated. When container is to be emptied, driver's key is inserted and switch rotated to "Bypass" mode which permits driver to manually control packer in order to clear charge box. If container will be absent for a period of time, key switch can be rotated to "Off" position which deactivates all controls and prevents cycling unit without container present. This option is particularly useful for chute fed installations, especially where access into building is difficult.

**9. TRASH MANAGER**: This system consists of three Advance Warning lights (70/ 80/ 90) activated by a system of three pressure switches and a Full Container Light (100) activated by a timer. The system is designed to minimize the effect of pressure spikes which, in ordinary Full Container or Advance Warning devices, will cause false signals. Pressure spikes are normally caused by the action of the compactor crushing refuse or by objects wedging between the breaker bar and the ram.

The Trash Manager prevents false lights in these situations because no electrical current is allowed to flow to the pressure switches until the ram has passed the breaker bar. This is accomplished by making the compactor ram stop forward. When the ram is fully extended, the compactor motor shuts down. When the motor is shut down, electrical current is allowed to flow to the pressure switches. The refuse in the container exerts force on the ram face and, in turn, the hydraulic cylinder. The more refuse that is packed into the container, the greater the force of the ram. Pressure is created in the hydraulic fluid trapped between the cylinder and the check valve. The pressure is then registered by the pressure switches, which are set to activate at increasingly higher pressures. The pressure switches cause the first three lights to energize in controlled sequence.

The fourth light is controlled by a timer. The packer is allowed out stroke time plus 15 seconds to complete a compaction stroke. If the ram does not reach the limit switch in that time, the timer will shut the compactor down and turn on the "100/full" light. When the container has been emptied, lights can be reset by depressing the stop button.

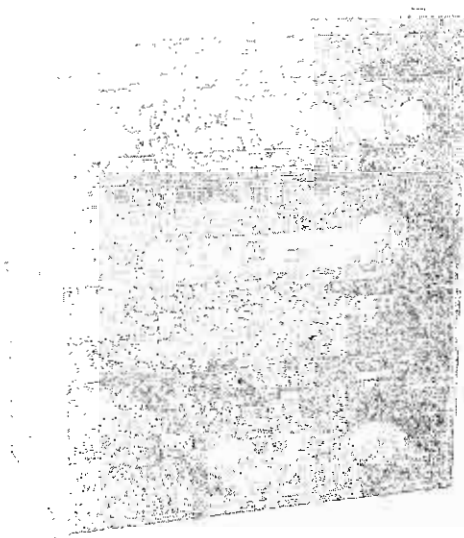
The timer shut down has the effect of allowing the compactor to run "at relief". Therefore, the relief valve on Trash Manager compactors is set at the same pressure previously used for the pressure switch ("normal") shut down on conventional compactors. To accommodate a Pressure Boost/Jog Control, a second relief valve is introduced into the hydraulic system. When the optional Trash Manager Pressure Boost/Jog Control is activated it automatically bypasses the lower relief valve pressure setting used by the Trash Manager and functions at the second ("maximum") pressure setting, typically 300 psi higher.

A remote station is also available for the Trash Manager. The remote station contains a duplicate set of indicator lights for the Trash Manager. It can be mounted in a second location for use by a person responsible for calling the hauler when the compactor is full.

**TRASH MANAGER PRESSURE SETTING**

1. Turn power to "off" position and padlock. Attach appropriate warning tag.
2. Loosen locking nuts on triple pressure switch and turn adjusting screws counter clockwise several turns.
3. Loosen relief valve lock nut and turn counter clockwise several turns.
4. Insert jumper wire between TB -9 and TB -21 (for 70/light). For 80/(PS cir. -2) install jumper between TB -9 and TB -22. For 90/(PS cir. -3) install jumper between TB -9 and TB -23.
5. Turn binary switch on T-1 timer (512 second) to "on" position.
6. Loosen and drop limit switch arm.
7. Install pressure gauge in pressure gauge port.
8. Turn power to "on" position and start machine—ram will retract.
9. Reverse ram and run it forward. It will bottom out and run at relief pressure.
10. Set relief valve to listed pressure in chart for 70/light.
11. Turn adjusting nut (PS cir. -1) clockwise until 70/light is activated and lock screw.
12. Repeat above procedure (-10 and -11) to set 80/ and 90/ lights.
13. Reset relief pressure to factory standard and lock nut.
14. Adjust limit switch arm to factory standard (see page 8).
15. Turn 512 second switch on timer to "off" position.
16. Turn power to "off" position and remove jumpers.
17. Turn power to "on" position and test machine for normal operation.

For Trash Manager Trouble Shooting, Refer To Page 17.





# **PRESSURE SETTING CHART FOR TRASH MANAGER**

Relief*	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100
Pressure Switch Circuit #0 90%	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950
Pressure Switch Circuit #2 80%	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750
Pressure Switch Circuit #1 70%	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500

\*Lower standard relief pressure to switch pressure on all Trash Manager units.

## **2. OPERATING INSTRUCTIONS FOR RJ-30 "S-CURVE" EXTRUDER COMPACTORS:**



1000 PSI

### **1. PROPER CHARGING OF THE COMPACTION TUBE**

- Loosen lock nuts on "S" tube restrictor adjustment screw.
- Turn adjustment screw until restrictor is completely retracted. In adjusting, you will notice that it is spring loaded, therefore, it is important to observe spring compression in charging.
- Initial charging of compactor should be done with corrugated material. **WARNING:** Never charge compactor with bundles of stacked corrugated material.
- Install pressure gauge in gauge port. Start machine. Deposit Refuse. Type of material being compacted will determine correct restrictor adjustment. Feed material into unit for 20-30 strokes. Restrictor should be adjusted inward until a consistent pressure of 900 to 1000 PSI is reached.
- When "S" tube is fully charged and compacted material is being extruded into container, continue compacting waste. While observing pressure gauge, after 10 to 20 cycles, if pressure gauge has had very slight variations in pressure, compactor is charged properly.
- Remove pressure gauge and tighten lock nuts on restrictor adjustment screw.
- Restrictor adjustment should be rechecked (per above) after compactor has been used for two weeks.

1000 PSI

----- "S" TUBE

1000 PSI  
1000 PSI  
1000 PSI

----- "S" TUBE

### **CAUTION:**

Feeding the RJ-30 with other than "house" refuse may cause the S-tube to jam. Examples of this "non-compactable" refuse are: stacks of computer paper, catalogs, books, newspapers, magazines, bundles of boxed forms, wood, and dense plastic materials.

While the above material will start into the S-tube the lack of proper "flexing" through the remainder of the tube can cause an increase in pressure thereby jamming the tube.

A periodic pressure check should be performed on the unit (bi-weekly) to insure the differences in the type material being compacted has not increased pressure over the 500-1000 PSI mark.

**ATTEMPTING TO COMPACT NON-COMPACTABLE REFUSE, SUCH AS THOSE LISTED ABOVE, IN THE RJ-30 VOIDING THE WARRANTY.**

- IF ONLY HOUSEHOLD REFUSE IS PROPERLY CHARGED, A MINIMUM PRESSURE TO REMOVE FROM GAUGE:

- Volvo's Hardtop 50-80 4"x4"x24" wooden blocks (ask Volvo).
- Loosen lock nuts on "S" tube mounted restrictor valve adjusting screw.
- Turn adjustment screw clockwise until restrictor valve is completely backed out (even with tube).
- Install 1000 PSI. Bourdon Man. pressure gauge in gauge port.

e. Begin putting blocks into charge box, 10-12 blocks at a time, flat on charge box floor and parallel with face of ram. (CAUTION: WOODEN BLOCKS MAY SPLINTER! AVOID CONTACT WITH CHARGING CHAMBER AREA DURING CYCLE OF MACHINE. A TEMPORARY COVER SHOULD BE PLACED OVER CHARGING CHAMBER AREA TO AVOID POSSIBLE INJURY DUE TO FLYING DEBRIS. OPERATOR SHOULD BE SURE ALL INDIVIDUALS ARE CLEAR OF UNIT). Depress start button; while ram is going forward check pressure gauge to see what pressure unit is exerting to force compacted material out of "S" tube. If pressure gauge reaches 1200 PSI and no material has been expelled from "S" tube, motor will shut off because pressure switch setting has been reached.

f. Depress reverse button, then depress start button while holding reverse. Ram should move to rear and unit should stop in its normal position.

g. Loosen screws holding top cover of pressure switch or insert jumper to override switch so that it can not be activated. (Screws located on each end of pressure switch of old style single.)

h. Put 10-12 more blocks into charge box, depress start button. Compacted material should begin to be expelled out of "S" tube. Unit should cycle and reverse to its normal position.

i. Continue to put blocks into charge box until "S" tube is cleared.

j. Retighten pressure switch top cover screws (old style) or remove jumper.

**CAUTION: DO NOT TURN ADJUSTING SCREW ON TOP OF PRESSURE SWITCH.**

k. Remove blocks.

l. Now unit is ready for proper charging. **NOTE:** See Proper Charging of Compaction Tube.

#### E. OPERATING INSTRUCTIONS FOR "R" (RENTAL) COMPACTORS:

1. Place ram stop toggle switch in panel box in desired position. "R" Label—ram stop rear or "F" Label—ram stop forward.

a) Ram Stop Rear: Place key into keylock start button and turn, depress key and ram will extend (ram will retract if limit switch is not fully actuated). Ram should extend until limit switch (cw) is actuated then retract until limit switch (cw) is actuated by front actuator shutting unit down.

b) Ram Stop Forward: For initial conversion, place key into key lock start button and turn, depress key and ram will extend until limit switch (cw) is actuated shutting unit down. Depress key switch and ram will retract. Ram should retract until limit switch (cw) is actuated causing ram to extend until limit switch (cw) is actuated shutting unit down.

c) Ram Direction Control:

1) The direction of the ram can be changed at any point in the cycle by using the ram direction control selector switch. If the ram is moving forward, it can be reversed by turning and holding the selector switch in the "Reverse" position.

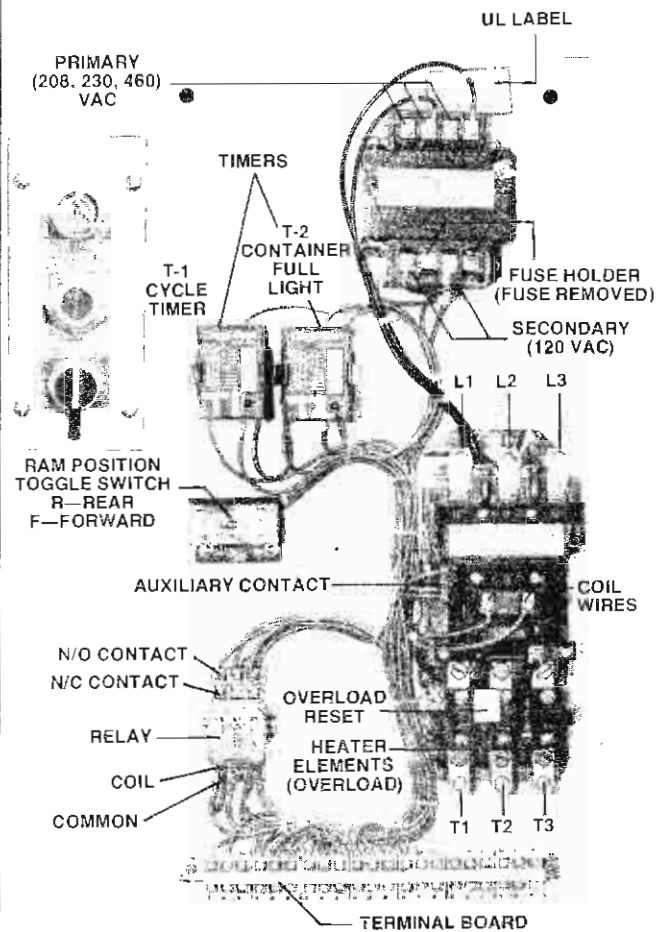
2) If the ram is moving in the reverse direction, it can be made to move forward by turning and holding the selector switch in the "Forward" position.

3) If the ram is not moving, it can be made to move forward or reverse by turning and holding the selector switch to the desired direction and pushing the keylock start button.

**NOTE:** Use of this switch should be limited to emergencies due to affecting the timing sequence of the unit. After use, for normal operation, return the ram to the desired position (ramstop forward or reverse) and depress the stop button. Pull the stop button out and the unit is now ready for normal operation.

2. **CYCLE TIMER:** Each "R" unit (except RJ-100SC) has a cycle timer (T1) as standard. T1 will allow unit to cycle more than one stroke. Timer must be adjusted to time out (red light on timer goes

#### RJ-225R CONTROL PANEL AND CONTROL STATION



out) on extend stroke only. Unit will shut down in mid-stroke if timer times out on retract stroke.

3. **CONTAINER FULL:** Each "R" unit (except 100SC) has a timer (T2) to activate full light when the container is filled. This is set by timing extend stroke of ram and adding 15 seconds to that time. When light comes on, unit will shut down. To reset unit, depress Emergency Stop/Container Full switch and pull out to normal position.

#### F. REGENERATIVE SYSTEMS OPERATING CHARACTERISTICS:

1. "Regenerative", when applied to hydraulic circuit, means regenerating flow, that is, taking flow from the rod end of a cylinder and combining it with flow from the pump to extend a cylinder. This process greatly increases "cylinder extend speed", but correspondingly reduces cylinder force. The force available in this type circuit cannot generally be depended upon to do work, only extend cylinder at high speed.

2. There are various ways to accomplish a regenerative circuit. On Marathon compactors we use a three-position solenoid valve. In the center of neutral position both cylinder ports are ported internally within valve to pump pressure port, tank port is blocked. When pump is started, it supplies pressure to both ends of cylinder. The area on the rear side of piston is greater than the area on the rod side of piston because of the area of the rod; therefore the cylinder extends. Oil coming out of rod end of cylinder joins with pump oil and fills blind end of cylinder, however both ends of cylinder have same pressure.

3. When cylinder extends in regeneration (high speed, valve center position), and meets the load, pressure is sensed by a pressure switch and valve is shifted to "full" extend. In full extend rod end of cylinder is directed to tank and pump to rear of cylinder, therefore providing full force at normal speed.
4. When ram reaches the end of its stroke, it actuates the limit switch, switching valve to full retract. When fully retracted, ram actuates limit switch, shutting off electric motor and solenoid valve spring centers, leaving it in regeneration position for start of next cycle.

#### G. HI-LO SYSTEMS OPERATING CHARACTERISTICS:

The system utilizes a double pump to obtain maximum speed, maximum force and minimum horsepower.

The front section of the pump is the high pressure section. The rear section supplies low pressure oil during advance and retract to minimize cycle time.

Four-way valve directs oil to cylinder to extend, retract main ram.

There are two check valves in main pressure line. First check valve acts as a load holding check to eliminate reverse rotation of pump & motor. Second check valve isolates the two pumps during high pressure compaction part of cycle. When low pressure pump is unloaded.

Shifting speed controls are utilized on main valve to slow down valve shifting. This is used to reduce hydraulic and mechanical shock.

#### OPERATION:

Motor is started and directional valve is shifted to extend position. Ram extends at high speed until resistance is met (pressure increase). Unloading of the low pressure pump is accomplished hydraulically, and is set on unloading valve in low pressure pump. Ram now advances on high pressure pump only to accomplish high force portion of compaction cycle. Pressure is limited by pressure switch, which shuts unit off if maximum pressure is reached before actuating limit switch.

**Note:** Relief valve in high pressure pump line must be set slightly higher than pressure switch setting.

In normal stroking when limit switch is reached, directional valve reverses and both pumps return ram.

#### H. OPERATING INSTRUCTIONS FOR RJ-450HD/PC HI FORCE AND RJ-575HD/PC PRECRUSHER COMPACTORS

##### 1. SEQUENCE OF OPERATION

- a. Refuse is placed in charge box.
- b. Machine is started, ram moves forward against refuse.
- c. Refuse is "crushed" against the vertical steel blade which is in the down position.
- d. The ram then hesitates as the blade is hydraulically raised up out of the way.
- e. The ram continues its forward movement and packs the refuse into the container at maximum force.
- f. After the ram returns to its fully retracted position, the blade again returns to its "down" position ready for the next cycle. When the container becomes packed out, the ram will remain in the forward position. After the container is emptied, manually return the ram to the rear and lower the blade down into position.

##### 2. ELECTRICAL SYSTEM

The Marathon precrusher series packers are equipped with a state-of-the-art programmable controller. This is a computerized system which replaces the control relays normally used in a compactor control system. This system is made up of three basic parts: input, output and central processing unit or CPU. With this system, all functions of the precrusher system (including the compactor) are controlled with a high degree of accuracy, therefore, allowing for the precise timing required to operate this system. The software or program required to operate the controller is held in memory in a "plug-in" E-prom module which can be replaced "in field" when necessary. The controller has a switch that reads "MAN-AUTO". This switch should remain in the "AUTO" position for normal operation. When in "AUTO," the controller will "reload" the program held in the E-prom in the event of a power failure.

##### 3. HYDRAULIC SYSTEM

The RJ-450HD/PC and RJ-450HD/PC High Force, and

RJ-575HD/PC utilizes two different types of directional control valves for hydraulic control of the machine. The blade is controlled by a 4-way valve with a regen spool which allows the blade to be raised at optimum speed as the ram is in its rest position prior to compaction mode. The RJ-575HD/PC uses a closed center valve as flow is sufficient to lower the ram at the sufficient speed. The ram itself utilizes a 4-way valve with a motor spool. This will allow the pressure to be relieved after the precrush cycle so that the blade can be raised out of the way after which the valve is again energized and the ram continues forward in its normal packing cycle. Also incorporated in the RJ-450HD/PC is a two way solenoid valve which includes a check valve which prevents hydraulic flow entering the blade cylinders during compaction.

#### 4. CONTROL STATION OPERATION

- a. To initiate operation:
  1. Insert the key into the keyed OFF/ON switch and turn to the "ON" position.
  2. Depress "START" button.
- b. To operate the compactor without the precrusher function:
  1. Raise the precrusher blade to its full up position by turning the "UP/DOWN" switch to the "UP" position.
  2. Depress the "START" button to begin the packing cycle. The machine will not operate without the precrusher function.
- c. To restore the precrusher function:
  1. Lower the precrusher blade by turning the "UP/DOWN" switch to the "DOWN" position. The machine will now operate with the precrusher function.
- d. Manual control of direction:
  1. Locate and turn the "FORWARD/REVERSE" switch in the direction desired.
  2. After the switch is released, the machine will shut down.
- e. Emergency shutdown and startup prevention:
  1. In the event of an emergency or other need to immediately shutdown the compactor, depress the red "STOP" button.
  2. To prevent unauthorized operation of the compactor, turn the "OFF/ON" switch to the "OFF" position and remove the key.

#### 5. SPECIAL INSTALLATION INSTRUCTION

1. Guarding and safety requirements:
  - a. Hopper walls and "feed side" gate of approximately 50" are recommended. The "feed side" gate can be of solid or expanded metal construction. The thickness of the material should be sufficient to withstand heavy usage.

### V. MAINTENANCE CHART:

#### A. AFTER EMPTYING

1. (Self-contained unit only) Wipe tailgate seal and mating surface clean; insure tailgate ratchet is tight.

#### B. MONTHLY

1. (Guided Ram Machines Only) Lubricate ram guidance system at zerk on side of unit with general purpose grease.
2. (Remote power units only) Check external hoses for chafing, rubbing, or other deterioration and damage.
3. Check for any obvious unsafe conditions, such as electrical lines or operator obstructions, in compactor area.
4. Check oil level in hydraulic reservoir.
5. SC Units—hose behind Ram—wash unit out.

#### C. THREE MONTHS

1. Check functional operation of standard controls and options (stop button, timers, lights, etc.)
2. (Guided Ram machines only) Adjust ram bottom wiper strip.
3. Check hydraulic cylinder and internal hoses for leakage; hoses for chafing and wear.
4. (Floor machines only) Lubricate ram rear guidance system by applying general purpose grease at wear points.
5. (Various units) Lubricate pivots at zerk on each end of cylinder.

#### D. RECOMMENDED OILS

1. Union—Unax—215  
Unax—AW—215
2. Gulf—Harmony 47  
Harmony 48—AW
3. Standard—EP Hydraulic 15
4. Exxon—Teresstic 47  
Nuto 48
5. Texaco—Rando 215
6. Shell—Turbo 29  
Tellus 29
7. Phillips—Mangus 215
8. Quaker State—Dextron II  
(Automatic Transmission Fluid)
9. Citgo—Pacemaker 46

#### E. Maintenance Instructions for Tailgate Seals on Self-Contained Compactors (RJ-88SC, RJ-100SC, RJ-250SC)

1. To prevent leakage, seal and mating surface should be wiped clean after unit has been emptied.
2. Periodically inspect seal for abrasions.

#### F. Filter Maintenance

1. Hydraulic filter should be cleaned after 1 month of operation and then at regular intervals of not more than six months.
2. Filter may be removed from unit by disconnecting union on suction side of pump, removing four bolts retaining cover plate, and lifting filter from reservoir.
3. Care should be exercised in cleaning filter to insure the element is not torn. Clean with soft brush and standard industrial solvent.
4. Replace filter after cleaning; tighten union securely. Pump noise and "crackle" sound is most often caused by air entering pump suction line. Tightening suction fittings will usually eliminate such problems.

### VI. TROUBLE SHOOTING INFORMATION:

- A. This section has been arranged to help you check your compactor, find the problem, and fix it in the shortest possible time. The following basic tools are needed:

1. Pressure gauge—liquid filled, 0-3000 PSI
2. A voltage, ohm, and amperage meter.
3. Two screwdrivers: 1 Med Std. blade  
2 Sm. Phillips blade
4. Adjustable wrench
5. Set of Allen wrenches
6. Flashlight
7. Electrical schematic
8. Continuity Light

- B. The chart on pages 14-17 has been compiled to aid you in finding probable cause to any malfunction to your compactor.

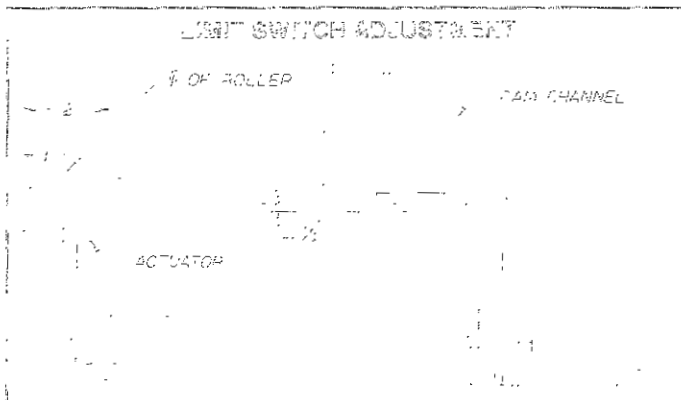
### VII. PROCEDURES

#### A. Hydraulic System Pressure Check (Limit Switch Shifting Units)

1. Turn fused disconnect to "OFF" position and padlock.
2. Relieve any pressure in system by manually depressing solenoid valve pin located in center of coil end of pilot valve.
3. Remove gauge port plug located in check valve on pump discharge line and install a 0-3000 PSI liquid filled hydraulic gauge.
4. Loosen and lower limit switch arm. This is done to prevent ram from retracting while checking pressures.
5. Loosen lock nut on relief valve and back off (CCW) adjustment knob several turns.
6. Turn fused disconnect to "ON" position.
7. Extend ram until it bottoms out at end of the stroke and slowly turn adjustment knob (CW) watching pressure gauge until unit

shuts down. Compare pressure recorded at time of shut-down with "Pressure Switch" setting listed on Pressure Chart.

8. If pressure does not agree refer to below to set pressures. If pressure agrees, proceed omitting items 9, 10 & 11.
9. Remove silver colored cap on pressure switch top cover and turn (CCW) adjusting screw several turns (old style) (CW new style). Turn knob on relief valve (CCW) several turns.
10. Restart machine, letting cylinder bottom and turn in (CW) adjusting knob on relief valve until pressure reaches PSI listed in column "Pressure Switch Setting" of pressure chart.
11. Turn adjusting screw on top cover of pressure switch (CW) until machine shuts down (old style) (CCW new style).
12. Loosen pressure switch top cover screws and pull cover "UP" so that switch can not be activated (old style) or insert jumper (new style).
13. Re-start machine, letting cylinder bottom and turn in (CW) adjusting knob on relief valve until pressure reaches PSI listed in the column "Relief Valve Setting" on the pressure chart.
14. Lock knob in place with relief valve lock nut and depress top of pressure switch or remove jumper. Machine should shut down. Tighten pressure switch top cover screws and re-seal relief valve and pressure switch.
15. Run machine several times to make sure it will shut down at end of stroke.
16. Re-adjust limit switch arm by the drawing below, remove pressure gauge, re-install plug, and cycle machine several times to insure proper operation.



#### B. Hydraulic System Pressure Check

(Pressure shifting units—RJ-250SCP, RJ-100SCP)

1. Turn fused disconnect to "OFF" position and padlock.
2. Relieve any pressure in system by manually depressing solenoid valve pin located in center of coil end of pilot valve.
3. Remove gauge port plug and install a 0-3000 PSI liquid filled hydraulic gauge.
4. Remove top cover caps on both pressure switches and turn adjusting screws (CCW) several turns (old style) (CW new style).
5. Loosen lock nut on relief valve and turn adjusting screw (CCW) several turns.
6. Start machine. Ram will move forward, bottoming at end of stroke, continuing to run.
7. Slowly turn relief valve adjusting screw (CW) until desired pressure setting is reached. (Consult pressure setting chart).
8. Turn adjusting screw on pressure switch #2 (CW old style or CCW new style) until unit shifts.
9. Ram will retract, bottom and continue to run.
10. Consult pressure setting chart for correct shutdown pressure.
11. Turn adjusting screw on pressure switch #1 (CW old style or CCW new style) until unit shuts down.
12. Remove two end screws on pressure switch #1 and raise cover so switch cannot be activated or insert jumper on new style.
13. Restart machine. Bring ram to rear and set relief as listed in pressure setting chart.
14. Tighten lock nut relief valve. Depress top of pressure switch #1. (Unit will shut down-old style) or remove jumper (new style).
15. Tighten end screws on pressure switch (old style) and replace caps. Pressure is now set to factory standard.

### POWER PACK COMPONENT LOCATION

1. To set pressures, disconnect the hydraulic lines from the packer.

2. Using 1/2" pipe plugs, block the pipe thread connections on a spare set of 1/2" quick disconnects. Connect the plugged quick disconnects to the power unit hydraulic hoses (an alternate method is to remove the hoses and plug the ports in the valve subplate).
3. To set the pressure relief, back out the adjustment screw on the relief valve. Install a pressure gauge in the 1/4" port on the check valve.
4. Press the start button and turn the relief valve adjustment screw clockwise until the desired pressure is reached.
5. Tighten the relief adjustment locknut.
6. Reconnect the hydraulic hoses.

### PRESSURE CHART

Model No.	HP	Power Pack GPM	Pressure Switch Setting	Relief Valve Setting
1835	3	4	1100	1400
30	15	18.5	1200	1500
130	3	6	1000	1200
88SC	5	6	----	1700
160	10	10	1850	2150
100SC	10	10	----	1850
100SC "R"	10	13	1300 1300	1600
250SC/240SC	10	10	----	1850
225	10	13	1650	1950
225 "R"	10	13	----	1250
225S	10	13	1550	1850
225HD	15	13	2100	2400
225HD "R"	15	13	----	1500
325	15	18.5	1650	1950
325 "R"	15	18.5	----	1250
325HD	15	18.5	1650	1950
325XHD	30	51.7	1750	2050
450	15	18.5	1700	2000
550	15	18.5	1300 1700	2000
575HD	30	51.7	2200	2500
575XHD	30	68	1650	1950
450HD/PC "HF" Door	20	18	2150 1500	2450 1700
575HD/PC Door	30	51.7	2200 1500	2500 2500

### E. Limit Switch Adjustment

Loosen screws securing limit switch arm to limit switch. Rotate to proper position and retighten screw. **NOTE:** Limit switch should be so adjusted that ram automatically stops  $\frac{3}{4}$ " less than full extend and full retract positions of cylinder. (See drawing page 11.)

To increase number of cycles, move binary switches to "ON" position. **NOTE:** Times are cumulative. **EXAMPLE:** 16 seconds + 8 seconds = 24 seconds.

This adjustment should be made only by authorized personnel.

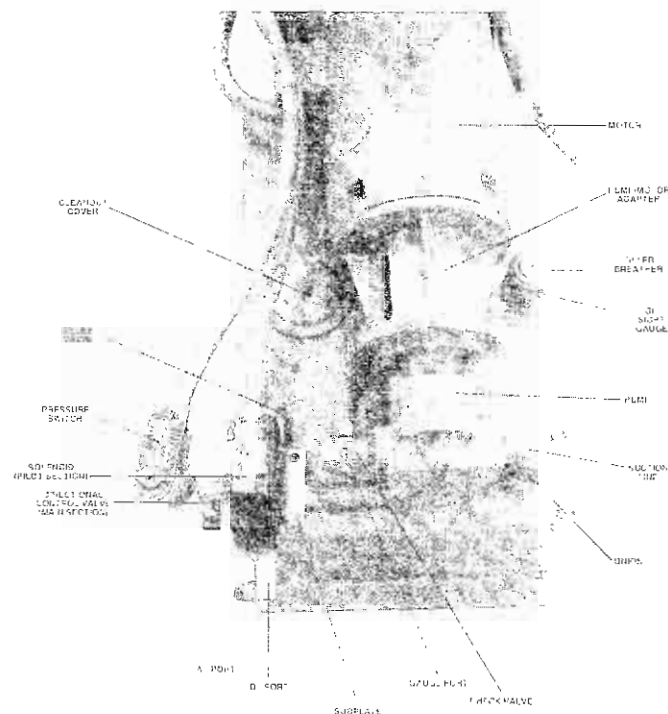
This device automatically operates the compactor when refuse blocks the beam for approximately 15 seconds. **NOTE:** It is important that the electric eye lens and reflector are kept clean to prevent continuous cycling of compactor.

7. Wiper strip at bottom of ram may require adjusting. Bolts should be loosened and wiper material moved down to make firm contact with the sliding surface.

2. Debris may be falling from container as it is being removed from compactor. When empty container is reattached, this material is pushed under compactor. To minimize this, place a pallet or large carton into charge box before last stroke, actuate compactor ram and stop in full extend position.

1. If compactor motor fails, and compactor is under warranty, have equipment checked out by an electrician or service man. If there is no problem with fuses or wiring, motor should be taken to nearest authorized motor warranty shop. (If you do not have a listing of authorized motor warranty shops, call Marathon Equipment Company to determine location of shop in your area.) Motor warranty shop will check out motor and determine if factory defective.

2. If motor failed due to defects in material or workmanship, motor warranty shop will repair or replace motor at the manufacturer's expense. If motor failure was not caused by defective factory material or workmanship, it will be repaired only if customer agrees to pay for expense.
3. Marathon Equipment Company will not absorb cost for pick-up or delivery service to service centers on defective motors. Removal and reinstallation are covered in standard warranty policy.



1. To convert packer with standard power pack (except regenerative units) to ram stop forward proceed as follows:

- Reverse CW limit switch and make it CCW between terminals 9 and 10. Reverse CCW limit switch and make it CW between terminals 5 and 6. Reverse Relay 1 contacts (NC) between terminal 8 and motor starter contacts. RI contact will now be N.O. **Note:** For units with cycle timer, you must also reverse wires in limit switch (CW, NO.) to CCW, NO.
2. To convert regenerative unit to ram stop forward, proceed as follows:
- Reverse CW limit switch and make it CCW between terminals 9 and 10. Reverse CCW limit switch and make it CW between terminals 5 and 6. Reverse Relay contact (NC) between terminal 8 and motor starter contact. RI contact will now be NO. Reverse RI contact (NO) between R2 and terminal 16. RI contact will now be NC. Legends must also be changed, i.e. (Start) becomes Start Rear and (Reverse) becomes Forward. **Note:** This applies only to standard (no options) units.

To insure safety and proper operation of this equipment, only factory original replacement parts or equivalent should be used.  
STATIONARY COMPACTORS RECOMMENDED PARTS LIST AND INTERCHANGEABILITY DATA

Part#	Description	Compactor Model No. (All Models "RJ" Series)																					
		30	130	88SC	100SC	100SCR	240SC/ 250SC	160	225	225R	225S	225HD	225HQR	325	325R	325HD	325XHD	450	450HD PCHF	550	575HD	575XHD	1835
*02-0211	HYDRAULIC PARTS LIST																						
02-0407	Pump 13 GPM			X		X			X	X	X	X	X										
02-0228	Pump 6 GPM (3450 RPM)																				X		
*02-0228	Pump 5.7 GPM													X	X			X	X	X			
*02-0259	Pump 18 GPM	X																					
*02-0267	Pump 10 GPM				X		X	X															
*02-0143	Pump 4 GPM																						
*02-0302	Pump 6 GPM		X																				
*02-0214	Relief Cartridge	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
*02-0232	Relief Valve																						
*02-0315	Relief Cartridge																						
*02-0250	Suction Filter																						
*02-0350	Suction Filter																						
*02-0051	Suction Filter 15HP	X				X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
*02-0227	Suction Strainer																						
*02-0231	Hub Coupling																						
*02-0244	Hub Coupling	X				X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
*02-0276	Hub Coupling		X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
*02-0208	Hub Coupling (old)																						
02-0398	Hub Coupling																						
02-0355	Hub Coupling			X																			
02-0212	Hydraulic Control Valve	X				X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
02-0157	Hydraulic Control Valve		X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
02-0278	Hydraulic Control Valve															X							
02-0297	Hydraulic Control Valve (Pilot)																						
02-0399	Hydraulic Control Valve																						
02-0400	Hydraulic Control Valve																			X			
02-0081	Regen Control Valve																				X		
02-0145	Solenoid Coil (Old Style)	X				X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	
02-0295	Solenoid Coil (New Style)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
02-0184	Check Valve	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
02-0204	Check Valve			X																			
02-0233	Check Valve																X			X	X		
02-0352	68 GPM Pump																						
02-0353	Commercial Sealing Pump 62 GPM																						
02-0234	Hydraulic Control Valve																X	X	X	X	X	X	
ELECTRICAL PARTS LIST																							
03-0165	30 HP Motor 208/230/460																						
03-0084	10 HP Motor 208/230/460				X	X		X	X	X	X						X						
03-0343	15 HP Motor 208/230/460	X												X	X	X		X		X			
03-0280	3 HP Motor 208/230/460																						
03-0327	5 HP Motor 208/230/460																						
03-0489	5 HP Motor 208/230/460 (3450 RPM)			X																			
03-0347	20 HP Motor 208/230/460																						
03-0274	Transformer																						
03-0475	Programmable Controller SLC150																						
03-0012	Limit Switch																						

# Compactor Model No. (All Models "RJ" Series)

Part#	Description	30	130	88SC	10MSC	100SCR	250SC	160	225	225R	225S	225HD	325R	325HD	325XHD	450	450HD	550	575HD	575HD	575XHD	1835
*03-0011	Limit Switch	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*03-0013	Pressure Switch (Single)	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*03-0014	Pressure Switch (Dual)																	X				
03-0195	Keylock Start Switch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
03-0196	Mushroom Stop Switch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
03-0197	Black Reverse Button	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
03-0192	Illuminated Push Pull Stop									X		X	X									
03-0364	3 HP Motor 208/230/460 Rigid Base		X																			
*03-0267	Bulb 1/03-0192									X		X	X	X	X	X	X	X	X	X	X	X
03-0288	Transformer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
03-0129	Photo Switch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*03-0131	Reflector 103-0129	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*03-0191	2 AMP Fuses	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
03-0378	Forward Reverse Switch									X		X	X									
03-0458	Circuit Board (CYCON)			X	X		X															
03-0476	3 AMP Fuse																X			X		
03-0269	Selector Switch (2 position)																X			X		
03-0139	Selector Switch (3 position)																(2) X			(2) X		
03-0418	EE Prom-PC																X			X		
03-0417	Varistor Metal Oxide																X			X		
03-0416	Heater #Panel Box																X			X		
<b>CYLINDERS</b>																						
04-0005	Cylinder								X		X	X										
04-0006	Cylinder Energy									X		X										
04-0007	Cylinder																					
04-0009	Cylinder																	X	X	X	X	
04-0028	Cylinder																					
04-0034	Cylinder																					
04-0116	Cylinder					X																
04-0130	Cylinder Prince																					
04-0002	Cylinder	X										X										
04-0160	Cylinder (Old Pressure Shift)		X					X														
04-0180	Cylinder				X																	
04-0190	Cylinder																					
04-0210	Cylinder (Old P/S Circuit)						X															
04-0300	Cylinder (CYCON)						X															
04-0310	Cylinder (CYCON)																					
04-0330	Cylinder (CYCON)			X																		
04-0290	Cylinder (Precaster Door)																(2) X			(2) X		
<b>MISCELLANEOUS HARDWARE</b>																						
*05-0001	Ratchet Binder		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
05-0002	Ratchet Binder																					
05-0050	Ratchet Binder																					
*05-0017	Bolt f/Shoes			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*05-0018	Locknut 1005-0017			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
*06-0005	Long Shoes (Runners)								(2)	(2)		(2)	2	2	2	2	2	2	2	2	2	2
*06-0006	Short Shoes (Runners)			4	4	4	4		2	2		2	2	2	2	2	2	2	2	2	2	2

\*Recommend spare parts  
 \*\*RJ-100SC Serial Numbers 138 to 1299 use 04-0034 Serial Numbers 1300 and above use 04-0160.  
 \*\*\*RJ-325 Serial Numbers 100 to 589 use 04-0007 Serial Numbers 600 and above use 04-0190.  
 \*\*\*\*Serial Numbers 101 to 304.  
 \*\*\*\*\*Serial Numbers 305 and up.



## TROUBLE SHOOTING CHART

### PROBLEM

UNIT WILL NOT START

### CAUSE

- ( 1 ) No electrical power to unit
- ( 2 ) No electrical power to control circuit
- ( 3 ) No electrical power to motor
- ( 4 ) "R" Only—Container Full Light On

### SOLUTION

- ( 1A) Turn on main disconnect
- ( 1B) Replace fuses or reset breakers
- ( 2A) Check primary and secondary sides of transformer
- ( 2B) Check for correct voltage. Check control fuses.
- ( 2C) Check stop button
- ( 2D) Check start button to be sure contact closes when depressed
- ( 3A) Check heater resets
- ( 4A) Reset light by depressing "Stop" button

UNIT WILL NOT CONTINUE RUNNING WHEN START BUTTON IS RELEASED

- ( 1 ) CW side of limit switch is open
- ( 2 ) Relay is in-operative
- ( 3 ) Relay contacts are in-operative
- ( 4 ) Motor starter is in-operative
- ( 5 ) Motor starter auxilliary contacts are in-operative
- ( 6 ) Pressure switch is in-operative
- ( 7 ) Reverse Button is in-operative
- ( 8 ) Secondary contact on start button is in-operative
- ( 9 ) "R" Only—Toggle switch in-operative
- (10) "R" Only—Timer contact in-operative

- ( 1A) Depress start button until actuator has moved off of limit switch
- ( 1B) Check CW limit switch contact (NC)
- ( 2A) Check relay coil & wiring
- ( 3A) Check relay contacts and wiring
- ( 4A) Check motor starter coil & wiring
- ( 5A) Check motor starter contacts and wiring
- ( 6A) Check wiring
- ( 6B) Check pressure switch contact to see if closed
- ( 6C) Check pressure switch body to see if actuator rod is moveable
- ( 7A) Check reverse button to be sure contacts are closed
- ( 7B) Check wiring
- ( 8A) Check contact, wired black and orange, to be sure it is operating properly
- ( 8B) Check wiring
- ( 9A) Check toggle switch (NC) between either TB #9 or TB #4 (Ram Stop Fwd) or TB #12 & TB #4 (Ram Stop Rear)
- (10A) Check (NC) T2 contact between TB #2 and aux. motor starter contact

MOTOR RUNS BUT RAM DOES NOT MOVE NORMALLY

- ( 1 ) Insufficient oil in reservoir
- ( 2 ) Low relief pressure
- ( 3 ) Oil leakage in cylinder
- ( 4 ) Defective pump
- ( 5 ) Oil leakage from hose fittings
- ( 6 ) Low voltage

- ( 1A) Fill reservoir with oil
- ( 2A) Check relief pressure (refer to PROCEDURES—Section VII. and Pressure Chart for correct pressure)
- ( 2B) Clean orifice in relief valve and reset pressure
- ( 2C) Check "O" rings on relief valve for damage or leakage
- ( 3A) Check cylinder for bypassing
- ( 3B) Replace seal kit, inspect rod and cylinder tube for scoring or nicks
- ( 3C) Replace cylinder
- ( 4A) Replace pump
- ( 5A) Tighten hose fittings
- ( 6A) Check voltage



- ( 7) Pump may be driven in the wrong direction of rotation
- ( 8) Shaft broken, or shaft key sheared
- ( 9) Intake pipe from reservoir blocked, or oil viscosity too heavy to prime
- (10) Intake air leaks (foam in oil or sounds like gravel in pump)
- (11) FOR REGENERATIVE UNITS ONLY:
  - (1) Pressure switch in-operative
- ( 7A) Stop immediately to prevent seizure. Check direction of drive rotation (proper rotation direction is indicated by arrow on motor)
- ( 8A) Visually inspect motor and pump shaft and hub couplings for damage. Replace if necessary.
- ( 9A) Drain system. Add clean fluid of proper viscosity and specifications. Filter as recommended. Check system filter for cleanliness.
- (10A) Check intake connections. Tighten securely
- (11A) Check pressure switch (NO) contact between TB #2 & TB #16

NOTE: Regenerative units shift out of regeneration at 1000 PSI in order to achieve high force compaction.

(12A) FOR HI-LOW UNITS ONLY:

- (1) Unloading valve inoperable (built into pump).
- (12B) UNIT SHIFTS SLOWLY
- (13) Valve response sluggish
- (14) Loose hub coupling
- (12A) Replace pump
- (12B) Flow control valve (restrictor) clogged —remove and clean orifice.
- (13A) Contaminated oil—drain and flush system.
- (13B) Inadequate voltage—check voltage—check coil
- (13C) Disassemble valve and clean
- (14A) Tighten set screws on hub coupling valves

UNIT WILL NOT REVERSE

- ( 1) Limit switch is in-operative
- ( 2) Solenoid valve is in-operative
- ( 3) Reverse button in-operative
- ( 4) Pressure shifting units only:
- ( 5) CYCON Timer Shift Units
- ( 1A) Check to see if actuator is opening limit switch
- ( 2A) Check coil in solenoid valve
- ( 3A) Check reverse button contacts
- ( 4A) Check pressure switch contact to make sure it opens
- ( 4B) Check wiring
- ( 5A) Check P.C. Board Timer
- ( 1A) Pump must receive intake fluid freely or cavitation results. Drain system, clean intake pipe and clean or replace strainer
- ( 2A) Replace pump
- ( 3A) Tighten joints as required.

PUMP MAKES NOISE—SOUNDS LIKE GRAVEL

- ( 1) Partly clogged intake strainer or restricted intake pipe
- ( 2) Defective bearing
- ( 3) Air leak at pump intake pipe joints

PUMP SHAFT SEAL LEAKING  
EXCESSIVE HEAT

- ( 1) Seal worn or damaged
- ( 1) Continuous running
- ( 1A) Replace seals or pump.
- ( 1A) When over 140 degrees F or hot in comparison with circuit lines, pump should be shut down immediately. Before restarting, insure that fluid cooling capacity is adequate to remove system generated heat. If equipped with photo electric cycle control, be sure lens and reflector are properly aligned and clean.
- ( 1B) Install oil cooler (air or water type)
- ( 1C) Install oil temperature shut down switch
- ( 1D) Check to be sure CYCON Power Pack has not been exchanged for Pressure Shifting Power Pack.

## RAPID WEAR

- ( 2) Undersized hydraulic lines ( 2A) Replace with larger hydraulic lines
- ( 3) High ambient temp. in relation to oil temp. ( 3A) Use lower viscosity oil
- ( 4) Excessive system leakage ( 4A) Check system for bypassing or leaks

## ERRATIC OPERATION

- ( 1) Abrasive matter in the hydraulic oil being circulated through pump ( 1A) Install adequate filter or clean.
- ( 1B) Replace oil more often and clean tank
- ( 2) Viscosity of oil too low at working conditions ( 2A) Replace oil with factory recommended.
- ( 3) Pressure too high ( 3A) Reduce pump pressures to factory specifications.
- ( 4) Air recirculation causing pump noise ( 4A) Tighten all fittings.
- ( 1) Limit switch arm not adjusted properly or switch sticking ( 1A) Adjust limit switch arm (see drawing page 11) Check contacts—replace limit switch
- ( 2) Valve sticking or binding ( 2A) Disassemble & clean as necessary
- ( 3) Viscosity of oil too high ( 3A) Change oil to factory recommended viscosity
- ( 4) Air in system ( 4A) Check for leaks, tighten fittings
- ( 5) Low oil ( 5A) Fill reservoir with oil
- ( 6) Low voltage ( 6A) Check primary & secondary sides of transformer for correct voltage.

## UNIT DOES NOT SHUT DOWN AT END OF CYCLE

- ( 1) Limit switch ( 1A) Check limit switch CW—(ram stop rear) to be sure contact breaks. (CCW FOR RAM STOP FWD)
- ( 2) Pressure shifting units only ( 2A) Check pressure switch to be sure contact breaks (circuit to motor starter coil).
- ( 3) "R" series only ( 3A) Cycle timer set for more than 1 stroke; reset timer
- ( 4) CYCON timer shift units ( 4A) Check P.C. board timer

## OVERLOADS TRIP FREQUENTLY

- ( 1A) Check for correct voltage (incoming power.)
- ( 1B) Check fuses or breakers at disconnect
- ( 1C) Check heater elements to be sure they are tight
- ( 1D) Check wiring from starter to motor to make sure all connections are tight
- ( 1E) Check motor leads to be sure all connections are tight

NOTE: Excessive overload tripping and/or motor or coil failures may occur if voltage surges or voltage drops are frequent in your area. This circumstance can be remedied by the installation of phase protectors which drops power to the motor if surges are present.

## REGENERATIVE UNITS ONLY:

### UNIT WILL NOT SHIFT INTO HIGH FORCE MODE (EXTEND-LOW SPEED)

- ( 1A) Pressure switch circuit #2 in-operable; check contact
- ( 1B) Relay #2 in-operable; check contact (NO) & Coil
- ( 1C) RI (NO) contact in-operable between TB #16 & R2 coil
- ( 1D) Solenoid coil bad—check coil
- ( 1E) Low voltage—check voltage
- ( 1F) Pressure too low—check & reset as needed
- ( 1G) Spool in valve jammed—remove and clean as necessary

## TRASH MANAGER TROUBLE SHOOTING CHART

PROBLEM	CAUSE	SOLUTION
70%, 80%, 90% lights do not come on	( 1) Bulb blown ( 2) Relay #6 inoperative ( 3) Relays #2, 3, 4 inoperative ( 4) No power to TB #9 ( 5) Not enough pressure	( 1) Replace light. ( 2) Check R-6 coil & contacts between TB #9 & 21, 9 & 22, and 9 & 23—should be normally closed. ( 3) Replace relay. ( 4) Check power between TB #9 & TB #7 (should be 120V) correct wiring as necessary. ( 5) Check relief pressure (refer to pressure chart, page 8 for relief setting). Check pressure switch settings on PS #1-3 (refer to pressure chart, page 8 for settings). Refer to How to set pressures below.
Container Full Light does not come on	( 6) Pressure switch Cir. 1-3 inoperative ( 1) Bulb blown ( 2) Too much time on timer	( 6) Replace pressure switch. ( 1) Replace light. ( 2) T-1 time should be set at forward stroke + 15 seconds—(Reset time on timer).
Container Full Light comes on but does not stay on	( 3) Timer contact N.O. between TB #9 & TB# 16 inoperative ( 1) Relay 5 inoperative ( 2) Relay 5 contact inoperative	( 3) Check contact wiring. Check timer to insure contact closes when timer times out. (Replace timer if necessary.) ( 1) Replace relay ( 2) Check wiring on R-5 N.O. contact between TB #9 and RB #16 to insure it closes and stays closed.
Container Full Light comes on but does not shut down machine	( 1) Relay 5 contact inoperative	( 1) Check N.C. R-5 contact between TB #3 & TB #18 to insure it opens if R-5 is energized. Replace relay if necessary.
Container Full Light comes on prematurely	( 1) Not enough time on timer	( 1) Set timer to out stroke + 15 seconds.
70%, 80%, 90% light comes on prematurely	( 1) Temporary blockage of refuse between ram and breaker bar ( 2) Low pressure	( 1) Push stop button in and reset lights—continue to run unit until blockage passes into container. ( 2) See Trash Manager pressure setting.
70%, 80%, 90% lights come on but do not stay on	( 1) Relays 2, 3, 4 inoperative	( 1A) Replace relay ( 1B) Check wiring of N.O. R-2 contact between TB #9 and TB #13 to insure it closes. N.O. R-3 contact between TB #9 and TB #14 to insure it closes—N.O. R-4 contact between TB #9 and TB #15 to insure it closes. If one relay contact malfunctions—check other N.O. contacts on relay and use one of them or replace relay.

