

I. INSTALLATION INSTRUCTIONS

IT SHALL BE THE RESPONSIBILITY OF THE INSTALLER OF THE SELF CONTAINED COMPACTORS TO INSTALL COMPACTORS IN ACCORDANCE WITH CURRENT ANSI Z245 SAFETY STANDARD AND OTHER APPLICABLE CODES. **K-PAC DOES NOT ASSUME RESPONSIBILITY FOR INSTALLATION PROCEDURES OF THIS EQUIPMENT.** CONFORMANCE TO APPLICABLE LOCAL, STATE AND FEDERAL LAWS CONCERNING INSTALLATION RESTS WITH THE CUSTOMER.

 **Warning:** All involved personnel shall study this manual completely before proceeding. Study the installation carefully to be certain that all safety guards, and safety devices are provided and in the proper place to protect personnel and equipment during and after the installation.

INSTALLATION SITE

1. Careful consideration should be given to the site selected for the K-PAC Compactor.
2. **Concrete Pad:** Ample room should be provided for the collecting vehicle to maneuver, including room to avoid OVERHEAD ELECTRIC AND TELEPHONE LINES. The unit should be placed on a reinforced concrete pad. Preferred dimensions of the concrete pad are 10'0" wide and length of 5'0" greater than the length of the self-contained compactor roll-off platform. It should be a minimum of 3,000 PSI concrete, steel reinforced, 6" thick. For good housekeeping practices, it is recommended that a drain beneath the platform be incorporated in the pad to allow for wash-down, etc. Concrete should be flush with the surrounding ground level. This is important for roll-off truck access. NOTE: The pad must be level on outside 2' to allow contact of all four platform rollers.

To provide accessibility, the concrete pad should be positioned to allow 2'0" between the container and the building wall if installed parallel with the building. Allow a minimum of 45' of clear space from container end of pad for container handling vehicle.

Container guide (optional) should be anchored with bolts grouted in with setting compound approximately 5" deep. Spacing between guides is determined by rail spacing of the containers.

3. **Dock installation:** If appropriate accessories are ordered from K-PAC, the compactor will be furnished with an open top 4-sided hopper (mounted or unmounted as ordered), or a closed hopper with safety hand and toe rails.

If the compactor cannot be directly abutted to the dock, or if there is any difference in the 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 current ANSI Z245 Safety Standards). Note transition must allow for pickup of compactor by roll-off truck and return without damage to transition.

4. **Power Unit:** Must be located within 3' of the loading chamber for access in an emergency. If this is not possible, an auxiliary emergency stop control must be installed within this 3' range. Power unit to be anchored as required by the customer.
5. Make sure that an appropriate hopper is installed to ensure safe operation. The type of compacted material should be considered to protect operator and any nearby personnel from possible flying debris. It is also very important that reliable safety interlocks are installed. To install safety interlock, remove jumper between electrical terminals #5 & #6 and replace with interlock wires. (Refer to schematics on pages P20-P25.)

SAFETY DECAL REQUIREMENTS

Be certain appropriate decals are applied in their proper locations. It is recommended that a decal "DANGER - - DO NOT ENTER" K-PAC #74-319 is applied to any access door. When your compactor leaves the factory, SAFETY DECALS are installed for everyone's protection. The decals are subject to wear and abuse due to the nature of operation. These decals must be maintained. Additional decals may be purchased through your K-PAC dealer or directly from the K-PAC factory. See decal placement drawing on page P33 of this manual.

ELECTRICAL INSTALLATION

A separate lockable branch circuit for the power unit must be installed by a qualified electrician. Check the supply voltage and frequency on the power unit before connecting to main supply disconnect device (customer furnished). The actual voltage must be within $\pm 5\%$ of the nameplate rating when the unit is subject to maximum relief setting. If voltage is not compatible, a qualified electrician must take whatever steps are necessary to make the voltage compatible. (See page O16 for instructions on converting power unit voltage.)

Warning: Before wiring changes are made, make sure that the disconnect switch is padlocked in the "OFF" position. Place an appropriate warning tag **"UNDER REPAIR, DO NOT ENERGIZE WITHOUT THE PERMISSION OF _____"**, on the disconnect switch so that the switch will not be energized without notifying the person making the wiring changes.

All wiring should be in accordance with Local and National Electric Code regulations. Recommended fuses and wire sizes are listed on a chart below, but the ratings must always meet or exceed any local code.

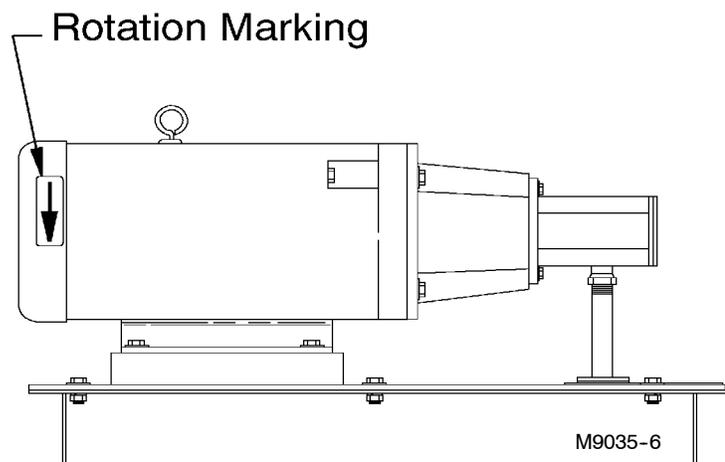
After making sure that all wiring is correct, run power lines between the customer's disconnect switch and motor starter for the K-PAC compactor.

See inside of the control panel door on the power unit for the electrical schematic. Check that power unit is set up for supply voltage being used. NOTE: Power units are standard from the factory as 230V. Included in an envelope inside the control panel are conversion instructions to both 208V and 460V. Also included are necessary parts, schematics and decals.

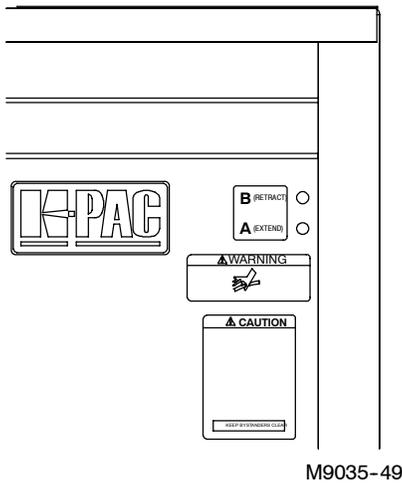
Included with the electrical schematic is an overload heater chart. Proper heater selection is part of the conversion process. Be sure motor is also wired for proper voltage. Any incorrect wiring can burn up components so double check your work. NOTE: Conversion instructions are included in this manual on page O16.

Motor Horsepower	Line Voltage	Dual Element Time Delay Fusetron - Amps	Minimum Wire Size to 100' Copper	Minimum Wire Size to 200' Copper
10 HP 3 Phase	208	45	8 Ga.	6 Ga.
	230	45	8 Ga.	6 Ga.
	460	25	10 Ga.	8 Ga.
5HP 1Phase	220	50	8Ga.	8Ga.
10HP 1 Phase	220	80	4Ga.	3Ga.

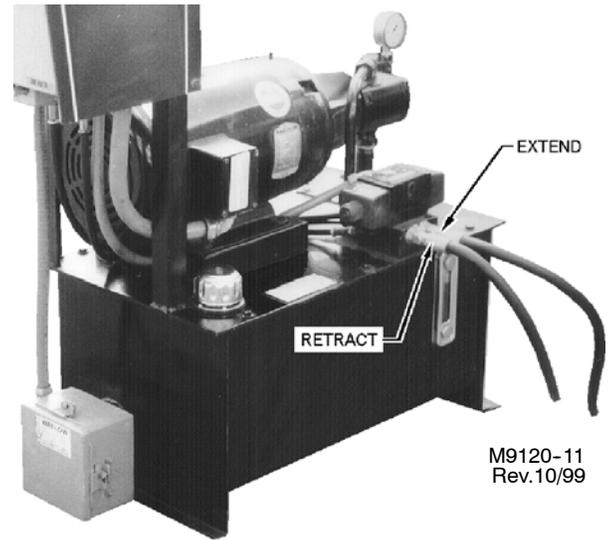
Quickly start and stop, and then observe the direction of the electric motor rotation. If the pump runs backwards, **STOP IMMEDIATELY!** The pump will be damaged if it is run in reverse even for short periods of time. If the direction of rotation is not in agreement with the marking on the motor, (See illustration to the right) correct the motor rotation. NOTE: On 3-Phase motors, reversing any two incoming power lines will reverse the pump motor rotation.



HYDRAULIC HOSE INSTALLATION



Compactor



Power Pack

Install quick disconnects on the hydraulic hoses provided. Connect the “A” or “Extend” fittings on both the power pack and the compactor. Connect the “B” or “Retract” fittings on both the power pack and the compactor. See the illustration above for location of the extend and retract fittings.

PUSH-BUTTON CONTROLS

If remote push-button station is furnished, it will be factory wired using Sealtite. If, in order to install this push-button station inside the building, it is necessary to disconnect it from the wires, exercise care that these wires are reconnected as originally furnished.

⚠ Caution: Controls must be located so that MUSHROOM STOP BUTTON is readily accessible to the 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 the manner described above.

II. START-UP AND TESTING INSTRUCTIONS

⚠ Warning: Make sure that all access covers, hopper door or gates are closed and secured.

Before proceeding with this test, make sure that persons are clear of the loading chamber and the container.

Do not test this unit until you have read and understood the operating and maintenance instructions in this manual.

1. With the main disconnect switch OFF, visually inspect all hydraulic, mechanical, and electrical connections on power unit and compactor. All connections must be tight.
2. Check oil level in the reservoir to be sure it is adequate. The oil must be to the 3/4 level or full on the sight gage. Use Dexron III oil.
3. Lubricate all oil and grease points on the compactor as instructed under “Monthly Check” in the Preventive Maintenance Section of this manual. See pages O7 through O9.
4. Close the main power supply switch, BE ALERT for smoking, electrical arcing, or fuse failure. If any irregularity is observed, open main supply switch IMMEDIATELY. Find the source of trouble and make the necessary corrections.
5. OBSERVE MOTOR ROTATION. Turn key and depress “START” button momentarily then quickly depress “STOP” button and observe motor rotation. It must rotate in the direction of the arrow on the motor housing (Clockwise). If motor rotation is incorrect, open the main disconnect switch. If motor is 3-Phase, reverse any two power wires at the control box.

6. If rotation is correct, jog the electric motor to prime the pump. If the pump makes excessive noise, shut the system down and check the suction line for leaks or an obstruction. Remember the suction side of the pump will have to lift the fluid, so leaks will generally not appear as oil running down a pipe line. IT MAY BE NECESSARY, after all fittings have been checked for tightness, to run the system and apply oil to plumbing junctions and observe whether the oil is being drawn into the system, indicating a leak.
7. Turn key and depress "START" momentarily. When released, the ram will move, and continue to move until it reaches full extension, then the ram will automatically shift to retract. Upon reaching the retracted position, the power will shut off.

⚠ Caution: With multicycle option, unit may be set to cycle more than one cycle.

8. After the completion of the packing cycle, the power unit should stop automatically. If it does not, press the "STOP" button. Check the timers in power panel. They may be faulty or incorrectly adjusted. If unit has stopped in mid-cycle, unit may dwell at the end of extend or retract position to resynchronize unit time.

⚠ Warning: Make sure the interlocks are installed and functioning properly.

With the factory electric interlock installed, opening of the hopper access door or gate will shut down the power unit. Doors or gate must be closed for power unit to operate.

III. OPERATING INSTRUCTIONS



⚠ Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

EMPLOYER RESPONSIBILITY FOR SELF-CONTAINED COMPACTORS

The employer shall provide properly maintained self-contained compactors that meet all applicable regulatory safety standards and shall be responsible for:

1. Ensuring that the installation of self-contained compactors is in conformance with local codes, ordinances, and manufacturer's recommendations.
2. Providing for instruction and training in safe methods of work to employees before assigning them to operate, clean, service, maintain, or repair the equipment. Such instruction and training shall include procedures provided by the manufacturer.
3. Monitoring the employee's operation of self-contained compactors and taking appropriate action to ensure proper use of the equipment, including adherence to safe practices.
4. Repairing, prior to placing the self-contained compactors into service, any mechanical malfunctions or breakdowns that affect the safe operation of the equipment.
5. Establishing and following a program of periodic and regular inspections of all self-contained compactors to ensure that all parts, component equipment, and safeguards are in safe operating condition and adjusted in accordance with the manufacturer's recommended procedures. This shall include keeping all malfunction reports and records of inspections and maintenance work performed.

⚠ Caution: Employers should allow only authorized and trained personnel to operate the compactor. Therefore, this compactor is equipped with a key operated locking system, and the key(s) shall be in the possession of only authorized personnel.

6. **No one should ever be permitted in the charge chamber unless power disconnect switch has been turned off and locked with key in possession of person doing maintenance in the charge chamber. An appropriate tag "UNDER REPAIR, DO NOT USE" should be attached to the disconnect switch so that the switch will not be energized without notifying the person doing the service work. Before restarting compactor, be sure box is clear of all personnel.**
7. Operator shall be certain that all individuals are clear of point of operation and pinch point area before actuating controls.
8. All access doors on compactor body should always be secured in place.
9. If compactor is equipped with safety door or gates, this door or gates **MUST BE CLOSED BEFORE OPERATING COMPACTOR.**

BEFORE OPERATING, check to see that the loading chamber is empty and free to operate. Make sure that the two hydraulic hoses are completely connected. (Incomplete connection restricts or stops the flow of hydraulic fluid.) **See "Hydraulic Safety" page O6.**

OPERATING INSTRUCTIONS FOR STANDARD COMPACTORS

1. Place material to be discarded into charge chamber or hopper.
2. Insert key in keylock start switch, turn clockwise, and depress "START" from 1 to 2 seconds, then release. After release, key can be turned to "OFF" position and removed to prevent unauthorized use.
3. Upon start-up of unit, ram extends until the ram reaches end of stroke determined by timer setting which applies power to the reversing solenoid, making ram retract until the retract time has elapsed.
4. All compactors must and do have a stop button. It consists of a red mushroom style head and by activating (depressing) it you will immediately shut unit down regardless of ram's position.
5. Ram can be retracted when extending by depressing reverse button. If ram is stopped in any position other than fully retracted, to extend, turn keylock start; to retract, depress and hold reverse button, depress "start", release "start" first and then release the "reverse" button.

Optional Features:

1. 100% Full Light - when the light is activated, container is full and ready to be emptied before its next use. To deactivate the light, depress stop button. See page O12, Item 15 for light adjustment.
2. 80% Full Light - when light is activated, container is nearing full level, and hauler contact for pick-up should be made. See page O11, item 14, for light adjustment.
3. Safety Control - this is a safety option requiring compactor operator to remain at push-button station while compactor is in use (commonly referred to as "Deadman" control). Actuation requires depressing "SAFETY" and "START". After unit has started, "START" button is released. If the "SAFETY" button is released, unit will stop instantly.
4. Multicycle - this is used when more than one cycle is desired. Set Digi-Set timer to 10-15 seconds less than the recorded time for number of cycles desired. Cycles are determined by unit continuing to cycle until set time has elapsed, then completing that cycle. Each cycle is approximately 32 seconds.

EXAMPLE: 3 Cycles desired: $3 \times 32 = 96$. $96 - 15 = 81$ Seconds. Set Digi-Set switches 64, 16 and 1 to "ON" position. Total time is 81 seconds, which is 17 seconds more than 2 cycles, and 15 seconds less than 3 cycles. So, 3 cycles will be completed.

5. Ram Stop Forward - exchange extend and retract hoses at power unit. Reset timer T1 for retract time and timer T2 for extend time.

IV. MAINTENANCE INSTRUCTIONS

It shall be the responsibility of the employer who operates the equipment to ensure the proper caring for, cleaning, inspecting, and maintaining of compaction equipment, in the case of employers who maintain their own equipment, the training of competent personnel for this purpose.

It shall be the responsibility of the employer to establish and follow a program of periodic and regular inspections of compaction equipment, and to ensure that all parts, auxiliary equipment, and safeguards are in safe operating condition and adjusted in accordance with the manufacturer's recommended procedures. The employer shall maintain records of these inspections and of maintenance work performed.

 **Warning:** Before removing any access panels or entering charge chamber, make absolutely sure that main disconnect power box is shut off and locked, with key to said lock in possession of person entering charge chamber or area behind bolted access covers. A tag should also be attached to the disconnect that reads: **"DO NOT CONNECT POWER"**.

WORK AREA AROUND COMPACTORS: It shall be the responsibility of the employer to provide adequate work area around the compactor to permit safe maintenance, servicing, and cleaning practices. It shall be the responsibility of the employer to keep all surrounding floors free from obstructions, from accumulation of waste water, and from grease, oil or water.

HYDRAULIC SAFETY: PLEASE READ CAREFULLY!



 **Warning:** Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

AVOID HEATING NEAR PRESSURIZED HYDRAULIC HOSES

Flammable spray can be generated by heating near pressurized hydraulic hoses, resulting in severe burns to yourself and bystanders. Do not heat by welding, or using a torch near hoses. Hose can be accidentally cut when heat goes beyond the immediate flame area.

THE FOLLOWING WARNINGS PERTAIN TO THE MORE COMMON ABUSES OF HYDRAULIC HOSE:

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| <ol style="list-style-type: none">1. INSPECT the hose assembly before each use.2. REPLACE the hose assembly immediately if:<ol style="list-style-type: none">a. The jacket of the hoses appears abnormal.b. You have reason to believe it may be abnormal.c. There is any fluid leakage.d. The couplings are damaged.e. The hose is damaged or kinked.f. The reinforcement is visible through the jacket. | <ol style="list-style-type: none">3. DO NOT EXCEED the maximum recommended working pressure of the hose.4. DO NOT KINK the hose assembly.5. DO NOT BEND the hose assembly beyond its maximum recommended bend radius.6. DO NOT EXPOSE to temperatures in excess of 225° Fahrenheit.7. DO NOT USE AS A STRENGTH MEMBER for pulling or lifting purposes. |
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 **Caution:** If replacing hydraulic hose, use only hose that meets or exceeds 3,000 PSI working pressure.

IMPORTANT: REPAIR OF HYDRAULIC CYLINDERS SHOULD BE MADE BY AN AUTHORIZED DEALER.

PREVENTIVE MAINTENANCE

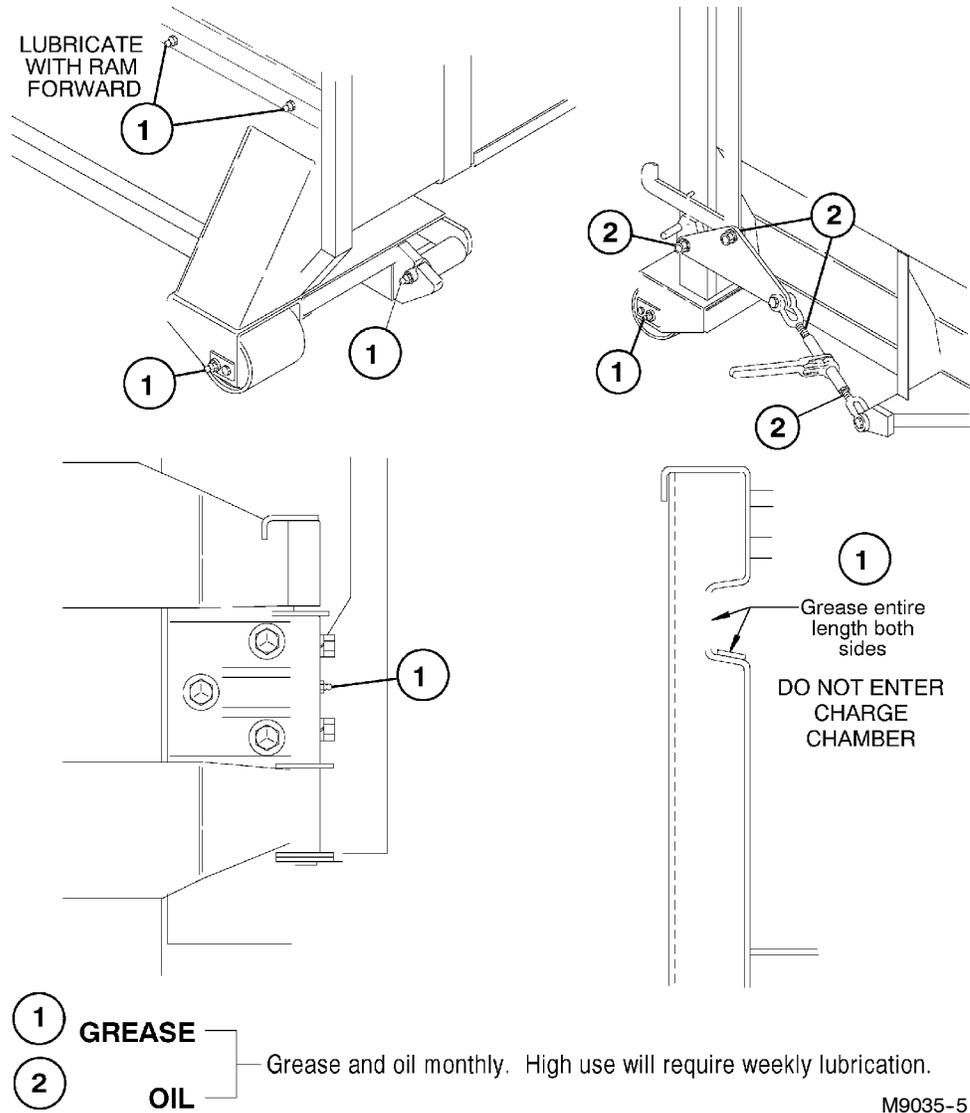
We recommend that the user of the K-PAC compactors adopt a program of regularly scheduled maintenance procedures. This schedule should be followed to insure against premature failure of mechanical or hydraulic components.

1. INITIAL CHECK:
 - a. All nuts and bolts during the first week of use, and then monthly thereafter.
 - b. Hydraulic reservoir oil level should be at mid to upper range of sight glass with ram retracted. Use a good quality Dexron III Automatic Transmission Fluid.
 - c. Hydraulic lines for leaks.
 - d. Hydraulic hose condition. (Check for damage, kinks, etc.)
 - e. Access covers to be sure fasteners are in place.
 - f. Power unit. Remove dust and dirt from outside of control box. Wipe off any dirt or grease, oil or moisture.
2. AFTER EMPTYING
 - a. Wipe tailgate seal and mating surface clean; insure tailgate ratchet is tight.
3. MONTHLY CHECK
 - a. Lubricate ram guidance system with ram to front. Grease zerks on side of unit with EP grease. Also, lubricate the wear surfaces of the guide area with the same EP grease. **DO NOT ENTER CHAMBER TO LUBRICATE.** See item 8, page O8.
 - b. Check external hoses for chafing, rubbing, or other deterioration and damage.
 - c. Check for any obvious unsafe conditions, such as electrical lines or operator obstructions, in compactor area.
 - d. Check oil level in hydraulic reservoir.
 - e. Wash unit out.
4. 3 MONTH CHECK:
 - a. Check functional operation of standard controls and options (stop button, timers, lights, etc.)
 - b. Open top cover and wash out behind ram. Clean out any accumulation of waste material.
 - c. Check hydraulic cylinder and internal hoses for leakage; hoses for chafing and wear.
5. MAINTENANCE INSTRUCTIONS FOR TAILGATE SEALS:
 - a. To prevent leakage, seal and mating surface should be wiped clean after unit has been emptied.
 - b. Periodically inspect seal for abrasions.
 - c. Check that seal is contacting the mating surface properly. If corrosion or damage has occurred on this surface, it may be necessary to sand or buff smooth.
6. FILTER MAINTENANCE:
 - a. Hydraulic filter should be cleaned after one (1) month of operation and then at regular intervals of not more than six (6) months
 - b. Filter may be removed from unit by disconnecting pipe on suction side of pump, removing four bolts retaining cover plate, and lifting filter from reservoir. Filter may also be removed by tipping tank at angle and removing cleanout cover on end. With cover removed, filter can be accessed and removed.
 - c. Care should be exercised in cleaning filter to insure that the element is not torn. Clean with soft brush and standard industrial solvent.
 - d. Replace filter after cleaning; tighten union securely. Be sure to tighten pipe to pump before tightening 4 bolts on cover plate. Pump noise and "crackle" sound is most often caused by air entering pump suction line. Tightening the suction fittings will usually eliminate such problems.

7. YEARLY CHECK:

- a. Electrician to check all electrical connections, check motor resistance (recording successive readings helps to prevent future failure). Under heavy use, grease the motor. (DO NOT OVER-GREASE)
- b. Hydraulic system - prior to winter season, drain and clean inside of reservoir by removing clean-out cover. Check and clean filter, replace cover and refill. Check for tightness. Refill reservoir with Dexron III Automatic Transmission Fluid (high quality).
- c. Check structure of compactor for potential trouble areas and repair as needed.
- d. Check hoses to insure that they do not become severely worn before being replaced. A broken hose will allow the reservoir to be pumped dry and ruin the pump.
- e. Check condition of ram guide blocks and slide material on blocks. Replace if necessary. Keeping the slide material replaced when necessary will greatly extend the life of the compactor floor and sides. (See slide block replacement instructions)
- f. Check condition of cylinder pivot pins and wear bushings. Replace as necessary. (See section titled "CYLINDER PIVOT PIN INSPECTION")
- g. Open top inspection cover plate and clean out any accumulation of waste material. Wash area and replace cover. If build-up is significant, then a more frequent clean-out is advised. Too much build-up can cause hydraulic hose and fitting failure.

8. LUBRICATION:



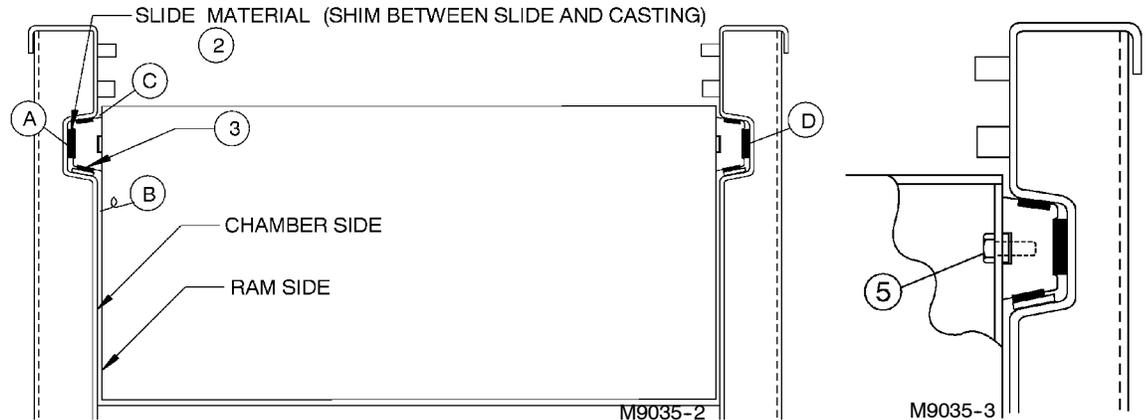
NOTE: Clean-out or maintenance require the loading chamber cover to be open and the compactor's ram to be extended. To EXTEND the ram -- first turn the "START" switch and fully extend the ram. When the ram is fully extended, press the "STOP" button, and remove the key.

Warning: Before removing any access panels or entering charge chamber, make absolutely sure main disconnect power box is shut off and locked, with key to said lock in possession of person entering charge chamber or area behind bolted access covers. A tag should also be attached to the disconnect stating "DO NOT CONNECT POWER".

Open the access cover on the top of the compactor by removing the attaching bolts. When lubrication or maintenance is complete, replace the cover before any operation.

Warning: This procedure is for maintenance only. All access covers shall be replaced and bolted in position after lubrication or clean-out.

9. SLIDE BLOCK REPLACEMENT AND ADJUSTMENT *(Very Important)*



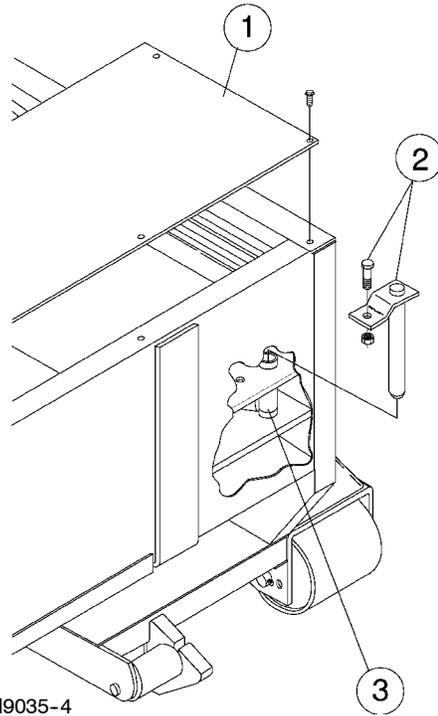
- a. Check side movement of ram. If ram sides contact chamber sides, check condition of side slide material. If material is okay, it may be necessary to add shims behind blocks. See the illustration above.

Make sure ram will move through complete stroke without binding. Make shim adjustment at the tightest position in the ram stroke. Shim to center as evenly as possible.

- b. If shim change is necessary, measure gap between block 2 and side of chamber at gap D. Make sure ram is moved to contact point A, B, or C. Measure gap D and record. Check if gap is present at A. If so, measure and record. A gap may exist at point A if ram contacts point B or C before point A. Add recorded gap A and D together to determine total shimming thickness necessary. Divide the total by 2 and add this amount to each side. Ram side and chamber sides should have equal clearance on both sides. Divide shims as necessary to accomplish.
- c. Cast iron slide block (4) must be removed from ram (remove bolt 5, quantity of 2 per block) and slide out of guide slot to add or remove side or bottom shims. After adding shims reinstall blocks onto ram and torque bolt to 50 ft. lbs. New bolts with lock bolt patch should be used (part #62-614).
- d. Check condition and wear of bottom slide strip (3). If bottom of cast block is rubbing near strip, replace side slide strip (3). Remove cast block per instructions C above.

10. CYLINDER PIVOT PIN INSPECTION

- a. Remove access cover (1) as shown. **See warning at beginning of maintenance instructions concerning disconnecting power before removing access cover.**
- b. Remove pin at each end of cylinder by removing bolt and pin (2). Check condition of pin and bushing in cylinder (3). If pin or bushing show significant wear, replace.
- c. When re-installing pins, make sure retaining pin is tightened securely.



11. REAR DOOR SEAL INSPECTION & REPLACEMENT

- a. Inspect door seal for fractures or torn spots allowing leakage.
- b. Inspect seal for waste material imbedded into seal or left hanging over rod or seal. Remove all waste material, clean seal and rod thoroughly.
- c. If replacement of seal is necessary, begin removing seal by pulling from end at top of door. Peel out slowly so seal does not tear. After peeling out, scrape and buff seal contact area. After cleaning, replace with new seal. Install bottom horizontal seal first. (See page P2 Item 2 or page P5 Item 2 for High Tail). To install, use a high grade of industrial contact adhesive (99-189) applied to metal surface and rubber surface. Be sure surface is cleaned with a cleaner that will remove oil film, etc. Bond seal per adhesive instructions.
- d. Check contact of seal and material and seal bar by chalking the bar and closing the door. Tighten latch, then loosen latch and open door. Check chalk mark on seal. If tightening is required on hinge side, add 1501-0-6 shims as necessary. NOTE: Hinge adjusted too tight can damage seal.

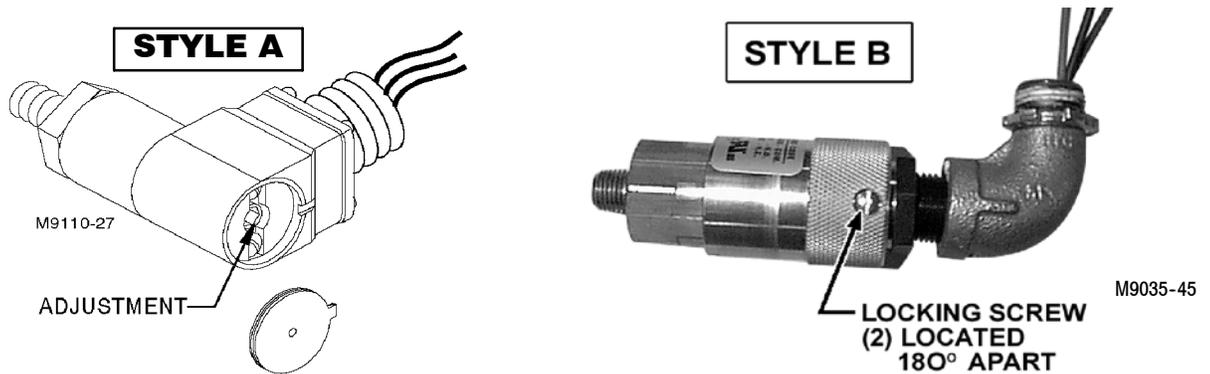
12. BY-PASS POWER UNIT TIMER ADJUSTMENT PROCEDURE

Power Unit Timer Sequence - The T1 timer controls the time for the ram extend stroke. It is initiated when ram forward solenoid A is initiated and begins cycle. When time expires, timer signals solenoid B valve shift and timer T2 is initiated and it's time begins. When T2 time expires, the motor will shut down, unless unit has multicycle option. If multicycle time has not expired, timer T1 and solenoid A will be initiated, creating another cycle. When Timer T3 expires, unit will complete the total cycle and shut down after T2 time has expired on current cycle. Timers T1 & T2 should be set with adequate time to dwell at least 2 seconds and each end of the stroke. **See page P12-P14 for timer locations and P20-P25 for timer electrical schematic integration.**

- a. Time T1 adjustment: Observe power unit operation and time dwell at end of extend stroke on empty compactor. If there is no dwell, increase time on T1 timer until a dwell is present, and time the dwell. Decrease T1 time until dwell is approximately 2-3 seconds.
- b. Timer T2 adjustment: Observe power unit operation and time dwell at end of retract stroke on compactor. If there is no dwell, increase time on T2 timer until a dwell is present, and time the dwell. Decrease T2 time until dwell is approximately 2-3 seconds.
- c. Time T3 adjustment: This timer controls the number of cycles of operation each time the power unit is started. See MULTICYCLE TIMER SETTING PROCEDURE in this section.
- d. Timer T4 adjustment: This timer controls the 100% Full Light. See POWER UNIT 100% FULL LIGHT ADJUSTMENT in this section.

13. BY-PASS POWER UNIT PRESSURE ADJUSTMENT PROCEDURE

- a. Disconnect Compactor to Power Unit hoses as pressure can be created.
- b. Install pressure gauge at fitting on top of pump. Need to adapt 1/8NPT to gauge.
- c. Start unit, allowing pump to build pressure against uncoupled Quick Couplers, and observe pressure reading. If pressure is not 1850 psi or pressure desired, then continue on.
- d. Loosen relief valve lock nut and adjust pressure to 1850 psi or other desired pressure.
- e. Retighten relief valve lock nut
- f. Reconnect hoses to unit and restart unit to check operation.



SPECIAL ITEMS NEEDED TO ADJUST VALVES

1. 0-3000 PSI Glycerine filled hydraulic gauge adaptable to 1/8NPT.
2. Screwdriver
3. 1/8" Allen Wrench (STYLE A)

14. POWER UNIT 80% FULL LIGHT ADJUSTMENT

- a. If this option is included, the pressure switch must be adjusted after customer installation and the desired 80% full level.
- b. This option includes an amber lens light installed in the panel and is factory set at 1750 psi.
- c. If the unit is not signaling full at the desired time, you must readjust the PSA pressure switch. STYLE A: Remove the end cap and turn adjusting screw 1/4 turn clockwise to make unit fuller before light comes on and 1/4 turn counter-clockwise to make unit less full when light comes on. STYLE B: Loosen Locking Screw(s) and rotate knurled collar clockwise to make unit fuller before light comes on, and 1/4 turn counter-clockwise to make the unit less full when light comes on.
- d. If starting point is not known, then disconnect Compactor to Power Unit hoses.
- e. Loosen lock nut on relief valve and adjust screw counter-clockwise several turns.
- f. Start unit and observe pressure gauge reading. Adjust relief valve to the desired pressure switch setting (1750 psi). Stop power unit with stop button, This will also reset 80% full light.
- g. STYLE A: Turn pressure switch adjusting screw counter-clockwise several turns and restart power unit. If light does not come on, start slowly turning pressure switch adjusting screw clockwise until light comes on. STYLE B: Turn pressure switch knurled collar counter-clockwise several turns and restart power unit. If light does not come on, start slowly turning knurled collar clockwise until light comes on. When light comes on, pressure switch is set at pressure relief setting (1750 psi).
- h. Stop power unit with stop button.
- i. Readjust Power Unit pressure per "BY-PASS POWER UNIT ADJUSTING PROCEDURE".
- j. After establishing the starting point it may be necessary to adjust per steps a. through c. above.

15. POWER UNIT 100% FULL LIGHT ADJUSTMENT

- a. The 100% light is based on a timer in conjunction with the 80% pressure switch.
- b. The timer is timing how long the pre-set pressure is maintained. The longer pressure is maintained, the fuller the compactor. If pressure is maintained longer than the timer setting, the 100% full light will turn on. Starting timer setting is 5 seconds.

16. MULTICYCLE TIMER SETTING PROCEDURE:

This is used when more than one cycle is desired, Set Digi-Set timer to 10-15 seconds less than the recorded time for number of cycles desired, Cycles are determined by unit continuing to cycle until set time has elapsed, then completing that cycle. Each cycle is approximately 32 seconds.

EXAMPLE: 3 Cycles desired: $3 \times 32 = 96$. $96 - 15 = 81$ Seconds. Set Digi-Set switches 64, 16 and 1 to "ON" position. Total time is 81 seconds, which is 17 seconds more than 2 cycles, and 15 seconds less than 3 cycles. So, 3 cycles will be completed.

V. GENERAL MAINTENANCE TIPS

OIL: Even if high-grade oil was installed at start-up, oil does become contaminated in time. Watch for discoloration, foaming, or change in viscosity. Ambient conditions as to heat or foreign materials will contribute to problems. Dust and chemicals can be drawn into system vents.

FILTERS: After the start-up of a new system, filter and strainers need very special attention. Chips from pipe threads, metal particles, and other foreign materials can be introduced during hook-up. Clean or replace filter elements after the first month of operation.

RELIEF VALVES: The relief valve is the greatest source of pump and system protection. Likewise, the relief valve is usually the first item to give a warning of other problems. This valve is designed to fail open, or "fail-safe". Relief valve malfunction is most often due to contaminants in the fluid. This is a good time to clean up the system; flush-out, change filter, open and clean any valve passages if necessary.

PUMP: Pump noise is a definite sign of trouble. Check shaft alignment and condition of coupler first. Cavitation is another cause of pump noise. Check for a restricted suction line, undersized pipes if altered, or dirty filter or strainer. Look for a suction line leak, air getting into the suction line by way of the plumbing or low oil supply will cause pump noise as well as erratic and noisy valves. Finally, a worn pump will also feel hotter than the surface of the reservoir. System pressures will drop and cycle rates will become slower. If pump is replaced, be sure to change filters and check out the entire system during down time. Also, check cleanliness of oil at this time.

HEAT: Heat will be developed by all mechanical devices. The amount of heat will depend upon the use, duty cycle, proper adjustment, age, etc. Hydraulic power units usually can throw off any excess heat by way of the surfaces of the plumbing and reservoir. Hydraulic power units should operate in the range of 140° maximum, 160° absolute maximum.

If your new power unit operates too hot, be sure you are using a high-grade oil in the viscosity range of 100-300 SSU (Dexron III is recommended) and that the oil level is up in the reservoir. Check for any partially open by-pass valves. Check for worn directional valves or leaking cylinders. Internal-system leaks at high pressure are the greatest source of heat.

VI. TROUBLE-SHOOTING



Warning: Trouble-shooting to be performed by a qualified maintenance technician only.

PROBLEM	POSSIBLE CAUSE	SUGGESTED REMEDY
Motor won't start or makes growling noise	Start switch turned but nothing happens	Check reset button on starter
		Check wiring to panel
		Check for defective switch block
	No electrical power to unit	Turn on main disconnect
		Replace fuses or reset breakers
	No electrical power to control circuit	Check primary and secondary sides of transformer
		Check for correct voltage, check control fuses
	Thermal overload tripped	Reset. Be sure proper sized overload relays are used and amp setting is correct
	Open motor leads	Check continuity. Clean and tighten
	Very low voltage	Check power source
Single phased	Check power source (3-Phase)	
Rotor or bearings locked	Check shaft for freeness of rotation	
Contactors coil burned out	Replace contactor coil	
Motor runs excessively hot	Blocked ventilation	Clean external and internal ventilation system
	High ambient temperature of 105° Fahrenheit	Provide outside source of cooler air
		Reduce number of cycles per hour
Motor runs noisy	Bad bearings	Disconnect from pump coupling and check. If noise does not stop, replace bearings.
	Bad pump or coupler	Disconnect from coupling and check
Thermal overload relays tripping	Incoming leads to incorrect terminals	Correct lead terminal locations
	Low voltage at motor terminals	Improve power supply and/or increase line size
	Single phasing	Check power source, must have all 3 phases (for 3-Phase models only)
	Excessive voltage drop	Eliminate
	Overload amps set too low	Correct setting per nameplate current on motor
	Incorrect overload for voltage used	Replace per nameplate current on motor
	Loose electrical connections	Clean and retighten
Thermal overload does not trip soon enough	Overload setting too high	Set correctly
	Line voltage too high for motor	Rewire motor and starter. Match to line voltage. Replace overload with correct one or reset if applicable.

PROBLEM	POSSIBLE CAUSE	SUGGESTED REMEDY
Excessive vibration (out of balance)	Motor mounting	Check alignment between motor and pump. Be sure motor mounting is tight and solid.
	Pump	Disconnect pump from coupling and restart motor. If vibration stops, the unbalance is in the pump. Replace the pump.
	Coupling	Remove coupling and restart motor. If the vibration stops, the unbalance is in the coupling. Replace spider coupling.
Packer does not develop full packing force	Main relief set too low	Re-adjust. See pressure adjustment procedures on page O11
Motor and pump run, but compactor does not operate	Low oil level	Add oil
	Hoses not properly connected	Check quick coupler connections
	Loading chamber lid or door open	Compactor ram will not run with lid or door open. Close lid or door.
	Incorrect pump motor rotation	Reverse any two motor leads on the starter (3 Phase only)
	Pump suction screen plugged	Clean suction screen
	Key sheared on pump motor shaft	Replace key and any damaged parts. Make sure set screw is tight and Loctited.
Cycle time too long	Restriction or kink in hose	Check hose. See warning page O6
	Pump worn or damaged	Replace pump
	Pump suction screen plugged	Clean suction screen
Power unit does not shut off at end of packing cycle	On multicycle units the setting may be incorrect	Readjust counter or timer to desired cycles.
	Return timer setting (T2)	Decrease timer setting (T2)
System operates continuously over main relief and ram does not operate	Main relief set too low	Adjust main relief
	Pressure switch set too high or solenoid stuck in "pack" position	Adjust pressure switch or disassemble and clean solenoid valve
Power unit shuts off before end of cycle	Return timer setting (T2)	Decrease timer setting (T2)
Erratic operation	Valve sticking or binding	Disassemble and clean as necessary
	Viscosity of oil too high	Change oil to factory recommended viscosity
	Air in system	Check for leaks, tighten fittings. See warning on page O6
	Low oil	Fill reservoir
	Low voltage	Check primary & secondary sides of transformer for correct voltage
Pump makes noise (sounds like gravel)	Partly clogged intake strainer or restricted intake pipe	Pump must receive intake fluid freely or cavitation results. Flush the system. Clean intake pipe and clean or replace strainer. Add clean fluid.
	Defective bearing	Replace pump
	Air leak at pump intake pipe joints	Tighten joints as required
Pump shaft seal leak	Seal worn or damaged	Replace seals or pump

PROBLEM	POSSIBLE CAUSE	SUGGESTED REMEDY
Rapid pump wear	Abrasive matter in hydraulic oil bearing circulated through pump	Install adequate filter or clean
	Viscosity of oil too low	Replace with factory recommended oil
	Pressure too high	Reduce pump pressure to factory specifications
	Air recirculation causing pump noise	Tighten all fittings.
Excessive heat	Continuous running	When over 140° or hot in comparison with circuit lines, pump should shut down immediately before restarting, insure that fluid cooling capacity is adequate to remove system generated heat
		Install cooler oil
		Install oil temperature shut down switch
	Undersize hydraulic lines added; power unit too far from compactor for hose size	Replace with larger hoses
	High ambient temperature in relation to oil temperature	Use lower viscosity oil
	Excessive system leakage	Check and replace contact block if necessary
Container 80% Full light is on before container is full	Pressure switch setting	Readjust pressure switch. Increase pressure setting
Container 80% Full light does not come on when container is full	Pressure switch setting	Readjust pressure switch. Decrease pressure setting.
	Light bulb burned out	Replace bulb
AVOID THE FOLLOWING: EXCESSIVE GREASING OF MOTOR, MISALIGNMENT OF MOTOR AND PUMP, AND CONTAMINATION ON MOTOR AND ELECTRICAL COMPONENTS.		

VOLTAGE CONVERSION INSTRUCTIONS FOR 10HP, 3-PHASE POWER PACK

See correct wiring schematic in addition to these instructions.

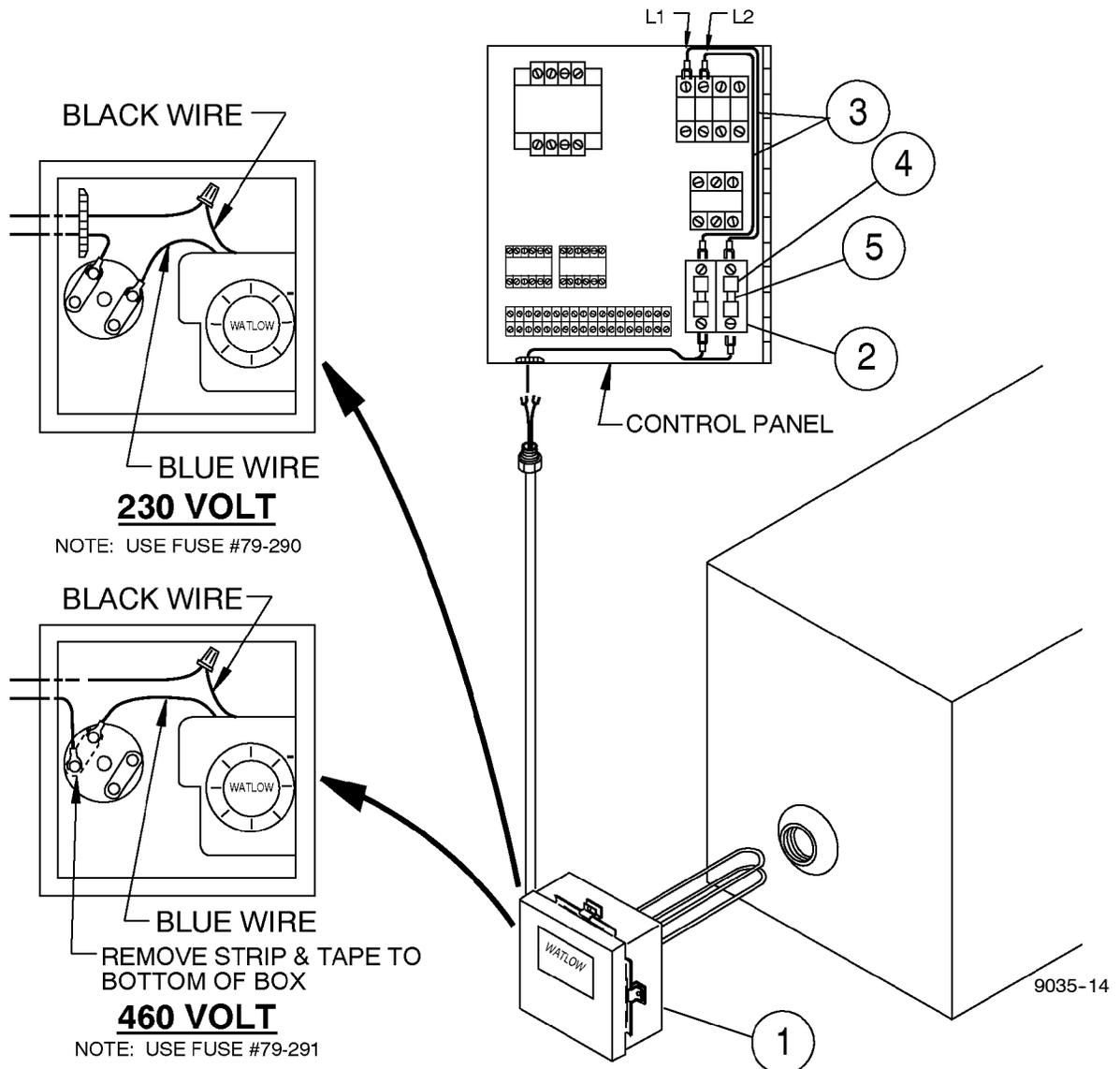
1. What voltage to convert to? See Column I on the chart below.
2. Change motor starter to transformer wire at transformer to agree with the chart voltage desired. (See Columns I and II). This step provides proper control voltage.
3. Change heater pack per chart, Column III. NOTE: The same heater pack is used on 208V and 230V. This step is necessary for proper motor protection.
4. Set Overload Relay amperage per instructions on schematic. (See Column IV)
5. Check wiring of control panel to motor at the motor (*high voltage vs. low voltage*). See plate on motor for correct wiring and change to match desired voltage. (208V and 230V are **low voltage**, 460V is **high voltage**).
6. Change electrical schematic to agree with voltage converted to. (Column VII) NOTE: -0MS Schematic is for multi-cycle.
7. Change voltage decal on outside of control panel to agree with voltage. (Columns I & V)
8. Re-check to see that all steps were done correctly before connecting to power. Be sure power voltage is what power pack now is.
9. If unit has oil heater, be sure to convert its voltage. Also, change fuses included with oil heater kit. (See Column VIII)

I.	II.	III.		IV.	V.	VI.	VII.	VIII.
VOLTAGE	WIRE FROM STARTER TO TRANSFORMER	OVERLOAD RELAY		OVERLOAD SETTING	VOLTAGE DECAL	MOTOR WIRES	ELECTRICAL SCHEMATIC	OIL HEATER FUSE
		K-PAC	CUTLER-HAMMER					
-----	L1-H4 Common	-----			-----	SEE MOTOR PLATE		-----
230V Std.	L2 - H2	79-336	H2014B-3	28 Amp	74-263		9011-230-0MJLLS	79-290
208V	L2 - H3	79-336	H2014B-3	31 Amp	74-262		9011-208-0MJLLS	79-290
460V	L2 - H1	79-335	H2012B-3	14 Amp	74-264		9011-460-0MJLLS	79-291

9010-100-1

Revised 1/05

INSTALLATION INSTRUCTIONS FOR OIL HEATER KIT (1500 WATT)



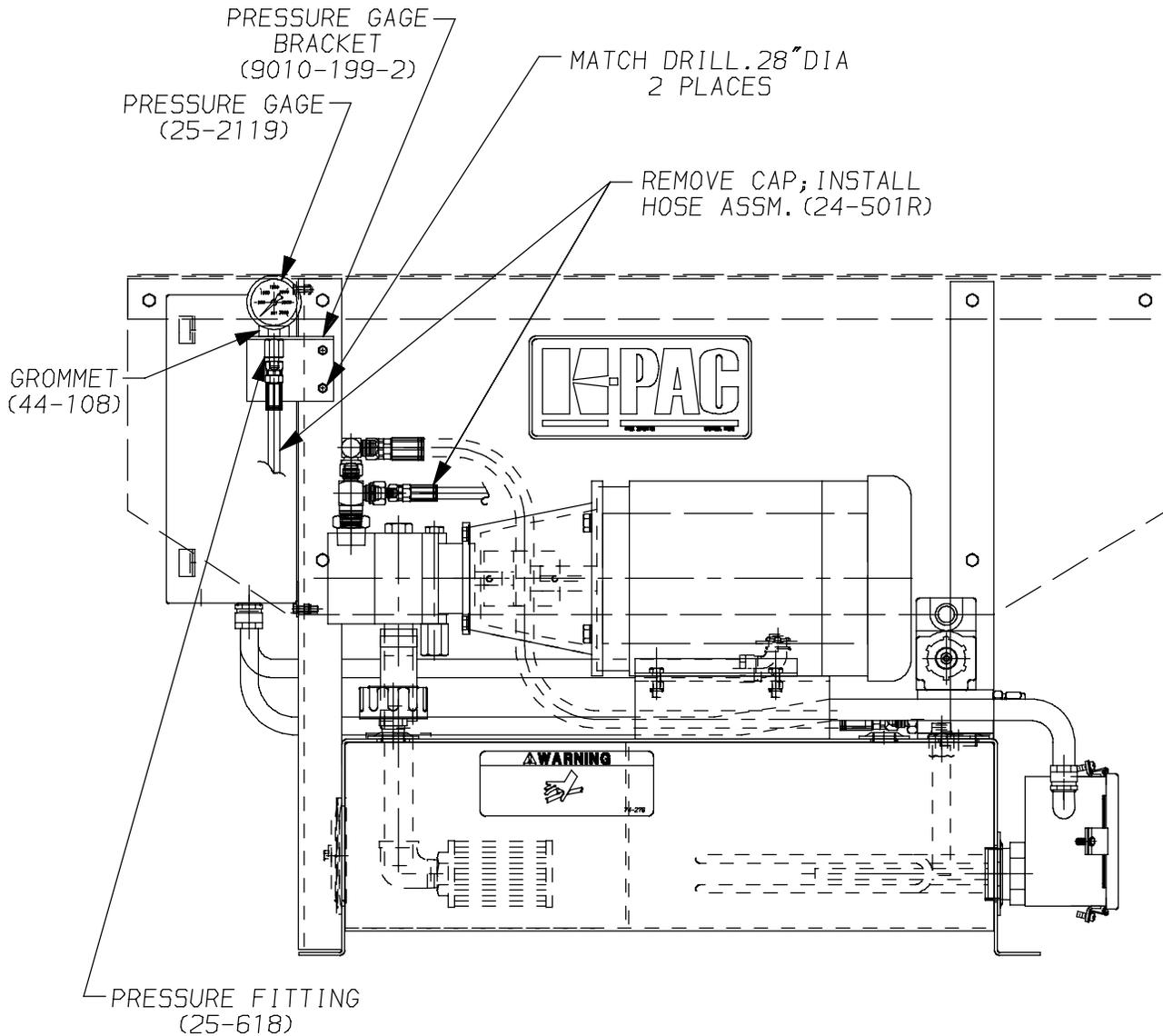
OIL HEATER INSTALLATION PROCEDURE:

1. Determine voltage of power unit for heater compatibility.
2. Use 230 wiring schematic and illustration for 208 Volt and 230 Volt. Assembly (Item 1) is prewired per 230V. Also, note the proper fuse size to use.
3. If 460 Volt is needed, rewire per schematic shown. Also, note the proper fuse size to use. 79-290 is 8 Amp for 230V & 208V. 79-291 is 4 Amp for 460V. Proper fuse **must** be used.
4. Tip hydraulic reservoir with 2" pipe port to top at enough of an angle to clear oil from hole. Remove pipe plug and install heater and tighten. Make sure heater control is oriented correctly.
5. Install fuse block (Item 2) with screws provided (Item 5).
6. Connect wires to bottom screws of fuse block (Item 2), routing them through bottom of electric control panel as shown. Tighten nut to secure liquidite conduit.
7. Install wires (Item 3) to top of fuse block (Item 2) and route around starter to top side L1 & L2 terminals.
8. Install correct size fuses (Item 4) for voltage of power unit and heater. Use 4 Amp for 460V, or 8 Amp for 230 Volt and 208 Volt.
9. Check temperature setting of heater thermostat and set at 65 degrees Fahrenheit.
10. Make sure enclosure for heater control is replaced and tightened securely.

HYDRAULIC GAGE KIT

5 HP POWER UNIT

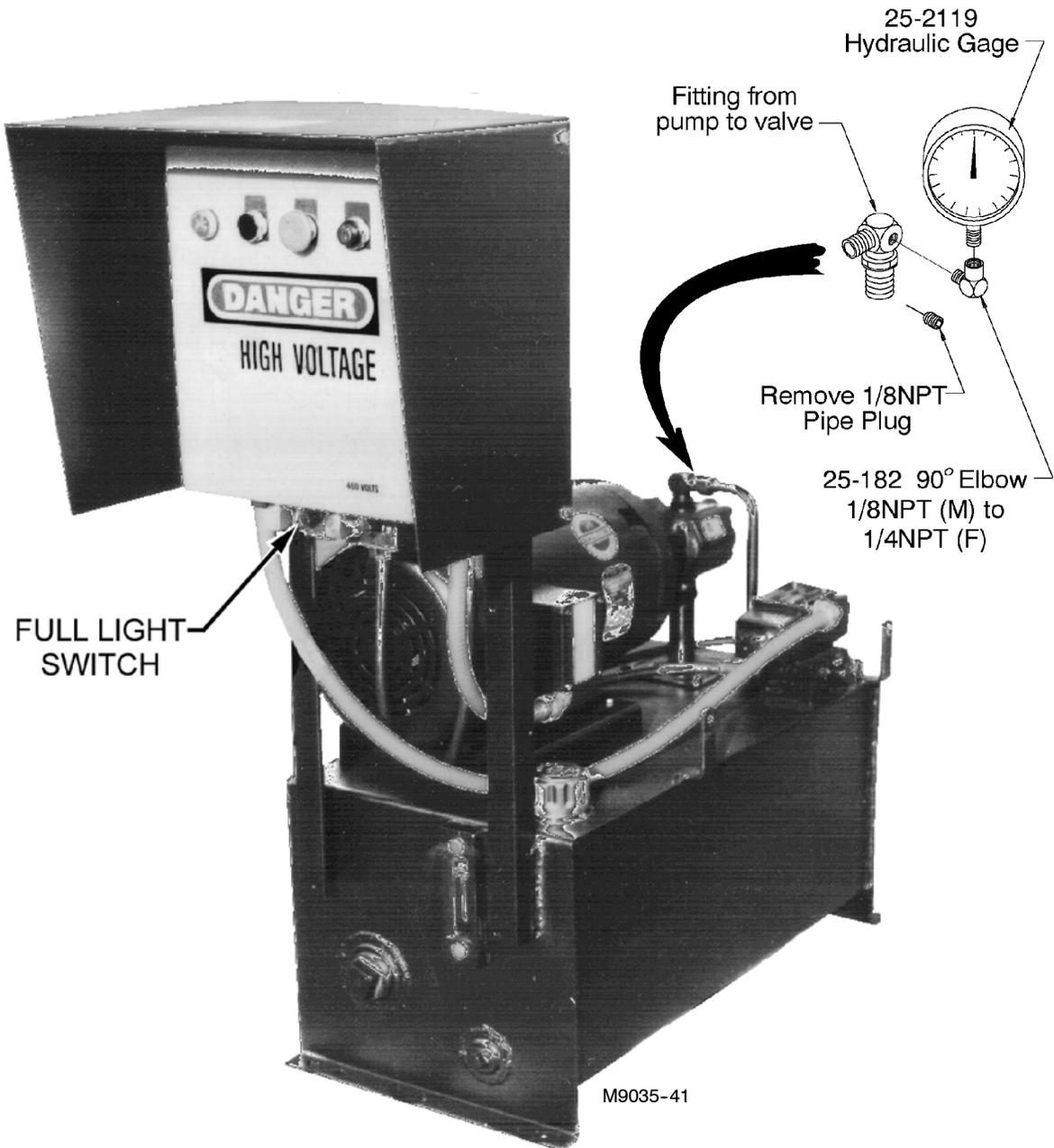
INSTALLATION INSTRUCTIONS



TO INSTALL:

11. Remove side cover if necessary.
12. Remove 7/16 Cap from tee on pump and install one end of hose assembly (24-501).
13. Match drill TWO 9/32"DIA. holes for pressure gage bracket as shown above. Install bracket using TWO (62-417) 1/4NC x 1" GD5 Cap Screw, TWO (64-100) 1/4" STD. Lock Washer, TWO (63-100) 1/4NC Hex Nut.
14. Install Hydraulic Pressure Gage (25-2119), Grommet (44-108) and Pressure Fitting (25-618).
15. Install the remaining end of hose assembly (24-501R) to the pressure fitting (25-618).

HYDRAULIC GAGE KIT
10HP POWER UNIT
INSTALLATION INSTRUCTIONS



1. Remove 1/8NPT Pipe Plug from elbow on pump as shown above.
2. Install the 25-182 90° Elbow, using thread sealer. Turn elbow to vertical position.
3. Install 25-2119 Hydraulic Pressure Gage into elbow as shown. Use thread sealer and turn gage in direction for reading as desired.

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