OPERATION, MAINTENANCE, AND INSTALLATION MANUAL

FOR

RJ-88SC, RJ-250SC, and RJ-250SC Ultra with Solar Power Unit

Includes HT (Hydraulic Tailgate) Units and SL (Streamline, Liquid Removal) Units



SELF-CONTAINED COMPACTOR CONTAINER



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OPERATION

Introduction

Thank you for purchasing a Marathon Self-Contained Compactor/ Container.

This compactor is designed to give you reliable and superior performance for many years to come. The purpose of this manual is to provide the owner and operator(s) the necessary information to properly and safely install, operate, and maintain your self-contained compactor. Also included are sections regarding troubleshooting and service procedures. The manual is not intended as a primary training source, but as a reference guide for authorized, trained personnel. Each person involved in the operation, maintenance and installation of the machine should read and thoroughly understand the instructions in this manual and follow ALL warnings.

The employer(s) involved in the operation, maintenance, and installation of the compactor should also read and understand the most current version of the following applicable standards:

ANSI Standard No. Z245.2, "Stationary Compactor Safety Requirements"

A copy of this standard may be obtained from ANSI (www.ansi.org) at:

25 West 43rd Street New York, NY 10036

OSHA Title 29 CFR, Part 1910.147

"The Control of Hazardous Energy (Lock-Out and Tag-Out)" (www.osha.gov)

Any service or repair instructions contained in this manual should be performed by factory authorized personnel only.

If you should need assistance with your equipment, please contact your distributor. When contacting your distributor, you will need to provide:

- Serial Number:__
- Installation Date:
- Electrical Schematic Number:______

If you have any safety concerns with the equipment, or need further information, please contact us at 1-800-633-8974 or:

Marathon Equipment Company Attn: RamJet® Service Department P.O. Box 1798 Vernon, AL 35592-1798

Specifications



	88SC	250SC	250SC Ultra	250SC HT
"A", Clear Top Opening (L x W) (inches)	30 1/2 x 48	41 1/2 x 60	41 1/2 x 60	41 1/2 x 60
"B″ (inches)	70	67	67	67
"C" (inches)	43	48	48	49
"D" (max) (inches)	95*	104*	104*	102*
"E" (max) (inches)	284 1/2*	299 1/2*	269*	277*
Charge Box Capacity (cubic yards)	1.0	1.70	1.70	1.70
WASTEC	.70	1.31	1.31	1.31
Cycle Time (sec)	44	33	33	33

* Determined by the size and capacity of the container.

Pre-Operation Instructions

Federal regulation prohibits the use of this equipment by anyone under 18 years of age.



STAY CLEAR OF ALL INTERNAL PARTS OF THE SELF-CONTAINED COMPACTOR/CONTAINER DURING OPERATION. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH!

NEVER ENTER ANY PART OF THE COMPACTOR UNLESS THE DISCON-NECT SWITCH HAS BEEN LOCKED-OUT AND TAGGED-OUT. See "Lock-Out & Tag-Out Instructions" on page 2-1 in the Maintenance section. Before starting the compactor, be sure no one is inside. Be certain that everyone is clear of all points of operation and pinch point areas before starting.



THE EMPLOYER SHOULD ALLOW ONLY AUTHORIZED AND TRAINED PERSONNEL TO OPERATE THIS COMPAC-TOR. This compactor is equipped with a key operated locking system. The key(s) should be in the possession of only authorized personnel.

DO NOT REMOVE ACCESS COVERS EXCEPT FOR SERVICING. Only authorized service personnel should be allowed inside. All access doors on the compactor body should always be secured in place when the unit is operating. See Lock-Out & Tag-Out instructions in the Maintenance section.



ONLY AUTHORIZED PERSONNEL SHOULD BE ALLOWED INSIDE THE MOTOR CONTROL PANEL.

The motor control panel contains high voltage components. See Lock-Out & Tag-Out Instructions in the Maintenance section.

If the compactor is equipped with a security gate or doghouse with security door, **BE SURE THAT THE SECURITY GATE OR DOOR IS CLOSED BEFORE THE COMPACTOR IS STARTED.**

Control Panel



- **START/FORWARD** This switch controls the compactor operation mode, automatic or manual (automatic is photocell mode).
- **EMERGENCY STOP** When pressed, this pushbutton stops all powered operation of the compactor.
- **REVERSE** This pushbutton reverses the compaction ram. The motor must be running for this button to operate. Refer to the "Manual Override Instructions" on the next page for details of the operation.
- **POWER ON** This pushbutton indicates whether the unit is awake or in sleep mode. If the light is illuminated, the unit is awake and is ready to cycle. When operating on battery power, the machine goes into sleep mode after a set period of inactivity. To wake the machine, depress and release this button. The light then illuminates, indicating the machine is ready to cycle. When the machine is operating on grid power, the "Power On" light is constantly illuminated.

Operating Instructions (Standard Models)

 First, place the material to be discarded into the compactor.
 Note: If you are loading the compactor through a door or gate, close it before starting the compactor. Refer to "Decal Placement for Optional Loading Configurations" on page 1-11 to determine how your compactor is set up.



- 2. Insert the key into the key switch. Turn it clockwise and depress for 1 to 2 seconds and release.
- 3. Repeat, if necessary, after the compactor has stopped.
- 4. When you have finished using the compactor, remove the key from the key switch.

IN CASE OF EMERGENCY: Push the large red button to STOP

MANUAL OVERRIDE INSTRUCTIONS (Ram Stop Rear Only Machines)

If the ram is stopped in any position:

- To move the ram forward, turn the key switch clockwise and depress.
- To move the ram rearward, depress and hold the Reverse button, turn and depress the key switch, release the key switch, then release the Reverse button.

While the ram is moving:

- To reverse the ram while it is moving forward, press the Reverse button.
- To cause the ram to move forward while it is moving rearward, depress the key switch.

NOTE: Refer to "Optional Controls for Manual Override" on Ram Stop Forward Machines.

Operation 1-6

Operating Instructions (Photoelectric Cycle Control Model)

NOTE: This compactor features an ANSI Z245.21 - 5.12.1 compliant start-up alarm that is both audible and visible during the activation of the AUTOMATIC mode.

Operating Instructions (AUTOMATIC mode)

- 1. Place the material to be discarded into the compactor. **Note:** If you are loading the compactor through a door or gate, close it before starting the compactor.
- 2. Insert the first key into the "MANUAL OFF - AUTOMATIC" key-switch and turn to the "AUTOMATIC" position.
- 3. Insert the second key into the "START" switch and turn to the right.
- 4. Depress the key in the "START" switch and hold it continuously for 20 seconds.
- Both the audible and visual start-up alarms will • energize for 5 seconds.
- After 5 seconds, the audible alarm will stop, but the • visual alarm will continue for an additional 15 seconds (for a total of 20 seconds).
- After 20 seconds, the motor will start and the ram will extend, then retract (one complete cycle).
- The light continues to flash until the unit is manually • turned off, automatically shuts down, or is switched to manual mode.
- If there is a 15-minute elapse without a cycle being • initiated by the photocell or without operation of any of the push buttons, the power unit will shut down.

NGE

In AUTOMATIC mode, the power unit will restart the ram automatically any time the photocell detects ANY OBJECT in the charge box.



AUDIBLE

START-UP ALARM (Mounted on Power Unit)



Optional Controls

- 1. **SUSTAINED MANUAL PRESSURE CONTROL BUTTON** (Hold-To-Run, Release-To-Stop) - This option requires the compactor operator to remain at the pushbutton station while the compactor is in use. Actuation requires depressing the "Hold-To-Run" and "Start" buttons. After the unit has started, the "Start" button is released. If the "Hold-To-Run" button is released, the unit will stop instantly.
- 2. **ADVANCE WARNING / CONTAINER FULL LIGHT** When the light starts flashing (ADVANCE WARNING), then 200 PSI is left before the pressure switch is activated to shut the unit off and container is full (unit will run when light flashes). When the light stays on continuously (CONTAINER FULL), the container is full and is ready to be emptied before its next use. To deactivate the light, depress the illuminated emergency stop button (The unit will not run while the light is continuously on).
- 3. **RAM STOP FORWARD** When a machine with this option has been stopped, the ram automatically begins to move rearward when restarted. To move the ram forward (when it is stopped), hold the forward button down, turn the key switch clockwise, depress and release the key switch, then release the forward button. To reverse the ram while it is moving forward, depress the key switch. To cause the ram to move forward while it is moving rearward, press the forward button.
- 4. **ACCESS INTERLOCK** This is optional with units equipped with doors, chutes, or access gates. It prevents the unit from operating while a door or gate is open.
- 5. **PHOTOELECTRIC CYCLE CONTROL** (Photocell) Consists of an LED light source and a reflector. It can be mounted on a hopper or chute. Two holes, located so as to prevent any hazard, are located on opposite walls of the chute. When the light beam is blocked for 15 seconds, the compactor is activated and will continue to run until the obstruction has been cleared.
- 6. **AUTOMATIC SHUTDOWN** Used with the Photoelectric Cycle Control. If a blockage in the charge chamber causes the compactor to continue cycling, the timer will shut the compactor down after the preset time has passed. To deactivate the timer, the illuminated pushbutton is pressed after clearing the blockage.
- THERMOSTATICALLY CONTROLLED OIL HEATER This option is installed in the oil reservoir. The thermostat is adjustable so the heater will heat the oil when the oil temperature goes below a specified level. It is recommended to set the thermostat between 70° F - 100° F.

Decals

Warning Decal Requirements

When your compactor leaves the factory, several warning decals are installed for your protection. These labels are subject to wear and abuse due to the nature of operation. The FOLLOWING DECALS MUST BE MAINTAINED. Additional decals may be purchased through your distributor or from Marathon Equipment Company by either calling the parts department at **1-800-633-8974** or going to **www.parts1stop.com** to place an order online.

When ordering replacement decals, match the reference numbers in the chart below with the drawing on the next page (and on the following pages for optional equipment or HT models). You can also look for the part number in the lower right corner of the decal.

Part #	Ref #	Description	
05-0325		Rivets, 1/8 X 1/2 Alum (to go with 06-0364)	4
06-0038	1	Warning: Do not remove access cover	2
06-0039	2	Danger: Crushing/Shearing Hazard - Do Not Enter	3****
06-0067	3	Do not remove container until	2
06-0072	4	Quick Clean Tank	1
06-0093	5	Fire Hose Port	2
06-0094	6	Notice: Wipe off seal after dumping	2
06-0121	7	Caution: Federal reg prohibits operation under age 18.	2
06-0124	8	CYCON	2
06-0249	9	Danger: High Voltage, Crushing, Pressurized Fluid	2
06-0364	10	Compactor Serial Number	2
06-1839	11	American Flag	
06-0057	12	Warning: Stand Clear of Compactor	
06-0002	13	RAMJET	4
06-3123	14	Danger: Confined Space	3****
06-3231	15*	ULTRA Decal	2
06-0040	16**	Warning: Crushing/Shearing Hazard	****
06-0052	17**	Warning: Crushing gate must be closed	****
06-0104	18***	HT Operating Instructions	
06-0105	19***	Danger: Crush Hazard-Stand clear of tailgate	3
06-3660		Multiple Lockout (E/S) - (Located on Power Unit)	
06-3661		Multiple Lockout (E/F) - (Located on Power Unit)	1

* Only on "Ultra" models.

** Only on optional equipment (access gates, hoppers, and/or doghouse.*** Only on HT units (hydraulic tailgate).

**** Quantity varies depending on optional equipment (note qty on machine).

Decal Placement

Match reference numbers to the chart on the previous page. The next page shows the decal images.





FRONT VIEW

<u>REAR VIEW</u>



 \ast Installed on both sides of compactor in same location.

**Also installed on remote power pack.

Decal Images



Decal Placement for Optional Loading Configurations

Match reference numbers to "Decals" on page 1-8 when ordering replacement decals.



* Located on each outside wall.

Decals For Hydraulic Tailgate (HT) Units

In addition to the decals and their placement specified on the previous pages, the self-contained units with the hydraulic tailgate option require the following decals located as shown below.



MAINTENANCE

Lock-Out & Tag-Out Instructions



WARNING: This machine contains multiple lockouts (1 for the AC circuit and 2 each for the DC circuits). All must be locked out before service or maintenance can be performed.

Before entering any part of the compactor, be sure that all sources of energy have been shut off, all potential hazards have been eliminated, and the compactor is locked-out and tagged-out in accordance with OSHA and ANSI requirements.

If the ram is pressing against a load,





move the ram rearward before shutting the compactor down. The specific lockout and tag-out instructions may vary by

company. The following instructions are provided as minimum guidelines.

The battery disconnect is shown on the left.

Instructions

- 1. Move the main disconnect lever to the OFF position.
- 2. Padlock the disconnect lever with a keyed padlock and take the key with you.
- Along with the padlock, place an appropriate, highly visible, warning tag on the disconnect lever. The tag should provide a warning such as: "Danger: Do not operate equipment. Person working on equipment." Or: "Warning: Do not energize without the permission of ______."
- 4. Move each battery disconnect switch to the OFF position.
- 5. Padlock each disconnect switch with a keyed padlock and take the keys with you.
- 6. After locking and tagging the compactor, try to start and operate the compactor to make sure the lock-out and tag-out is effective. If it is, remove the key from the key-switch and take it with you.



ELECTRICAL: The panel box contains high voltage components. Only authorized service personnel should be allowed inside the panel only after ALL the lock-out and tag-out procedures have been completed.

HYDRAULIC: Stored hydraulic energy must be removed from the compactor hydraulic circuit for complete lock-out and tag-out. Make sure that this energy has been relieved by manually depressing the solenoid valve pin located in the center of the coil end of the directional control valve.



Periodic Maintenance

WARNING: Ram speed accelerates as the Ram retracts. Never enter any part of the self-contained compactor/container until the unit has been Locked-Out and Tagged-Out.

Monthly

- 1. Check external hoses for chafing, rubbing, or other deterioration and damage.
- 2. Check for any obvious unsafe conditions in the compactor area.
- 3. Check oil level in hydraulic reservoir. Level should be 3/4 of sight gauge.
- 4. Clean out or wash out debris from behind the compactor ram.
- 5. Lubricate the ram guidance tracks using the grease fittings on the compactor side (for guided ram machines only), and check guide shoes for wear.

Three Months

- 1. Check functional operation of controls and options (stop button, timers, lights, and so on).
- 2. Check hydraulic cylinder, internal hoses, and connections for leakage. Check hoses for chafing and wear.
- 3. Lubricate the container door hinges.

Annually

1. Lubricate electric motor bearings annually per the manufacturers instructions.

Filter Maintenance

- 1. The hydraulic filter should be cleaned at regular yearly intervals.
- 2. The filter may be removed from the unit by disconnecting the union on the suction side of the pump, removing the four bolts retaining the cover plate, and lifting the filter from the reservoir.
- 3. Care should be exercised in cleaning the filter to ensure that the element is not torn. Clean the element with a soft brush and standard industrial solvent.
- 4. Replace the filter after cleaning and tighten the union securely. Pump noise and a "crackle" sound is most often caused by air entering the pump suction line. Tightening the suction fittings will usually eliminate the problem.

Procedures for Hydraulic System Pressure Check

Pressure Settings

When the hydraulic cylinders used in the RamJet Self-Contained compactor are fully extended or retracted, they bypass internally. This makes it impossible for the hydraulic system to reach relief pressure. Follow the recommendations below for proper pressure setting.

- 1. Disconnect and lock-out power per the procedure on page 2-1.
- 2. Using the quick disconnects, disconnect the hydraulic hoses from the compactor.
- 3. Remove the 1/4" plug from the check valve and install a 0-3000 PSI pressure gauge.
- 4. Loosen the lock nut on the relief valve and turn the adjustment screw several turns counter-clockwise.
- 5. Remove the lock-out provisions and turn the disconnect to the ON position. Start the power unit using the Operating Instructions starting on page 1-5.
- 6. With the hoses disconnected, the power unit will build pressure. Raise the relief pressure by turning the relief adjustment screw clockwise. Adjust the relief valve to the desired pressure setting and tighten the lock nut. See the chart below.
- 7. Press the EMERGENCY STOP button to stop the power unit, and relieve the stored hydraulic energy as described at the bottom of page 2-1.
- 8. Disconnect and lock-out power as described in Step 1.
- 9. Remove the pressure gauge and replace the 1/4'' plug in the check valve.
- 10. Reconnect the hydraulic hoses, and remove the lock-out provisions.

Model #	HP	GPM	Relief Valve Setting	Res. Cap.	Cylinder Bore	Cylinder Rod	Cylinder Str
RJ-88SC	1.5	3	1700	20	4	2-1/2	25
RJ-250SC	1.5	3	1850	20	4	2-1/2	31-5/8
RJ-250 Ultra	1.5	3	1850	20	4	2-1/2	31-5/8

Pressure Setting Chart

Notes:

- On units with the Advance Warning Light, set the pressure 200 PSI below the pressure switch setting.
- Includes HT units & SL units.

Principles of Operation

Standard System Operating Characteristics (1-1/2 HP)

The system uses special cylinders to move the ram and a PLC (programmable logic controller) to control the operation of the ram. When the hydraulic cylinders used in the self-contained compactors are fully extended or retracted, they bypass internally. This makes it impossible for the hydraulic system to reach relief pressure. The sequence of operation for this system is as follows:

Description Of Operation

The Solar Power Unit operates on either 12 Volt battery power or 120 Volt single phase grid power. This unit is programmed for maximum solar utilization and has the ability to switch to grid power for sunless days or extreme duty cycles.

When the Start button is depressed, the PLC sends a run signal to the motor starter. The contacts on the motor starter then close, providing power to the motor/pump. This provides flow to the compactor cylinders. When the system runs at low pressure, the Hi-Lo valve is in "High flow" mode and provides a flow of 3 GPM.

The unit is equipped with a "regen mode", where the base and rod ends of the cylinder are connected. This provides the quickest possible cycle time for the unit by utilizing the volume of the rod end to augment the flow to the base end of the cylinder. Each cycle starts in regen. Once a pressure of 550 psi has been reached, the unit drops out of "regen mode" and continues forward in "High flow" mode.

As the container begins to fill and operating pressure increases, the Hi-Lo pump drops out the "High flow" section of the pump and reduces the flow going to the cylinder. This enables the unit to provide the full pressure required for an industrial compactor (typically 1850 psi), although this may vary by model.

The unit is equipped with a sleep mode to turn off the inverter and conserve battery power when the unit is not in use. An illuminated "Power On" pushbutton indicates whether the unit is awake or asleep. If the light is illuminated, the unit is awake and is ready to cycle. When operating on battery power, the machine will go into sleep mode after a set period of inactivity. To wake the machine, the operator depresses and releases the "Power On" button. The pushbutton light illuminates, indicating the machine is ready to cycle. When the machine is operating on grid power, the "Power On" light is constantly illuminated.

The battery charge is maintained by the solar panel and solar panel controller. If the battery charge gets too low for compactor operation, a low voltage control relay switches the system to grid power. The compactor continues to run on grid power while the solar panel charges the batteries. The low voltage control relay switches back to the battery bank when there is sufficient battery power to run the compactor. The required electrical service size for the unit is a 30 A breaker.

Cylinder Removal Instructions

- 1. Remove access covers from compactor.
- 2. Remove hoses (4 for 88SC and 250SC, 2 for the 250 Ultra).
- 3. Remove cylinder pins.
- 4. Remove cylinders (2 each for the 88SC, 250SC, and 250 Ultra).
- 5. To install the cylinders, reverse the above steps.

Tailgate Seal Replacement

When the door/tailgate seal becomes damaged or worn, replace the seal.

WARNING: For units with hydraulic tailgates, before performing any inspection or maintenance on the seal, support the raised tailgate with a crane, forklift, or other positive maintenance prop.

- When removing the old seals (top & bottom), mark the position of the seal joints. Pry the seal retainer up slightly to allow removal of the old seals.
- When installing the new seals, join the seals at the same positions.



Typical Panel Box Configuration



This diagram represents a typical panel box configuration for the self-contained compactors. The panel box on your compactor may differ depending on the model and/or optional equipment/controls.

To order replacement parts, please call our Parts Department at **1-800-633-8974** or order online by logging on **www.parts1stop.com**.

Refer to the following chart to identify components:

Ref #	Part #	Description
1	03-5630	Inverter 8000 W
2	03-5634	Voltage Relay
3	03-4732	Power Supply
4	03-5631	Reversing Contactor
5	03-5638	PLC
6	03-5637	Motor Starter
7	03-5633	Solar Controller

Power Unit - Standard 1.5 HP



Match the reference numbers with the following chart to identify components. For replacement part ordering, call our parts department at **1-800-633-8974** or log on to **www.parts1stop.com** to quickly place your order online.

Ref. #	Part #	Description	Qty
1	03-2649	Motor 1-1/2 HP	1
2	03-0369	Pump 3 GPM	1
3	02-5233	Valve w/ Regen Center	1
4	02-3958	Subplate w/ Relief	1
5	02-0185	Check Valve	1
6	03-0658	Pressure Switch	1
7	03-0658	Pressure Switch	1
8	02-0197	Breather Cap	1
9	03-5635	Battery Disconnect	1
10	03-5247	Battery 12 V	1

Troubleshooting Chart

Problem	Possible Cause	Solution
UNIT WILL NOT START	(1) No electrical power to unit(2) No electrical power to control circuit	 (1A) Turn on main disconnect. (1B) Replace fuses/reset breakers (2A) Check primary and secondary sides of transformer. (2B) Check for correct voltage. Check
	(3) No electrical power to motor	 (2D) Check for confect voltage. Check control fuses. (2C) Check stop button. (2D) Check start button to be sure contact closes when depressed. (3A) Check overload resets.
UNIT WILL NOT CONTINUE RUNNING WHEN START BUT- TON IS RELEASED	 (1) Motor starter is in-operative. (2) Motor starter auxiliary contacts are inoperative (3) Reverse Button is inoperative 	 (1A) Check motor starter coil & wiring. (2A) Check motor starter contacts and wiring (3A) Check reverse button to be sure contacts are closed (3B) Check wiring
	(4) Secondary contact on start button is inoperative	(4A) Check contact (wired black & or- ange) to be sure it is operating properly (4B) Check wiring
MOTOR RUNS BUT RAM DOES NOT MOVE NORMALLY	(1) Insufficient oil in reservoir(2) Low relief pressure	(1A) Fill reservoir with oil (2A) Check relief pressure (refer to PROCEDURES-HYDRAULIC PRESSURE CHECK and PRESSURE SETTINGS for
	(3) Oil leakage in cylinder	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
	 (4) Defective pump (5) Oil leakage from hose fittings (6) Low voltage (7) Pump may be driven in the wrong direction of rotation 	 (3C) Replace cylinder (4A) Replace pump (5A) Tighten hose fittings (6A) Check voltage (7A) Stop immediately to prevent seizure. Check direction of drive rotation (proper rotation direction is indicated
	(8) Shaft broken, or shaft key sheared	(8A) Visually inspect motor and pump shaft and hub couplings for damage. Replace if necessary.
	(9) Intake pipe from reservoir blocked, or oil viscosity too heavy to prime	(9A) Drain system. Add clean fluid of proper viscosity and specifications. Filter as recommended. Check system filter for cleanliness.
	(10) Intake air leaks (foam in oil or sounds like gravel in pump)(11) Units shift slowly	(10A) Check intake connections. Tighten securely (11A) Flow control valve (restrictor)
	(12) Valve response sluggish	(12A) Contaminated oil-drain and flush system. (12B) Inadequate voltage, check volt- age, check coil (12C) Disassemble valve & clean

Problem	Possible Cause	Solution
UNIT WILL NOT REVERSE	(1) Solenoid valve is in-operative(2) Reverse button in-operative	(1A) Check coil in solenoid valve (2A) Check reverse button contacts.
PUMP MAKES NOISE-SOUNDS LIKE GRAVEL	 (1) Partly clogged intake strainer or restricted intake pipe (2) Defective bearing 	(1A) Pump must receive intake fluid freely or cavitation results. Drain sys- tem, clean intake pipe and clean or re-
	(3) Air leak at pump intake pipe joints	(2A) Replace pump (3A) Tighten joints as required.
PUMP SHAFT SEAL LEAKING	(1) Seal worn or damaged	(1A) Replace seals or pump.
EXCESSIVE HEAT	(1) Continuous running	 (1A) When over 140 degrees F or hot in comparison with circuit lines, pump should be shut down immediately. Be- fore restarting, insure that fluid cooling capacity is adequate to remove system generated heat. (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 Pres- sure Shifting Power Pack.
	(2) Undersized hydraulic lines(3) High ambient temp in relationto oil temp.(4) Excessive system leakage	(2A) Replace with larger hydraulic lines (3A) Use lower viscosity oil (4A) Check system for bypassing or leaks
RAPID WEAR	 (1) Abrasive matter in the hy- draulic oil being circulated through pump (2) Viscosity of oil too low at work- ing conditions (3) Pressure too high (4) Air recirculation causing pump noise 	 (1A) Install adequate filter or clean. (1B) Replace oil more often and clean tank (2A) Replace oil with factory recommended . (3A) Reduce pump pressures to factory specifications. (4A) Tighten all fittings.
ERRATIC OPERATION	 (1) Valve sticking or binding (2) Viscosity of oil too high (3) Air in system (4) Low oil (5) Low voltage 	 (1A) Disassemble & clean as necessary (2A) Change oil to factory recommended viscosity (3A) Check for leaks, tighten fittings (4A) Fill reservoir with oil (5A) Check primary & secondary sides of transformer for correct voltage.
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-make sure all connections are tight (1E) Check motor leads to be sure all connections are tight surges or voltage 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 drop power to the motor if surges are present.
	Maintenance 2-9)

INSTALLATION

Concrete Pad Requirements

CAUTION: Review this manual before making the installation. Study the job site and installation requirements carefully to be certain all necessary safeguards and or safety devices are provided to protect all personnel and equipment during the installation and as a completed system. Special attention is directed to the most current extract from American National Standards Institute Z245.2.

These operating instructions are not intended as a substitute for training and experience in proper use and safety procedures in operating this equipment.

Marathon Equipment Co. does not assume responsibility for the installation procedures of this equipment. Conformance to applicable local, state, and federal laws concerning installation rests with the customer.

Concrete Pad

- 1. Preferred dimensions of the concrete pad are 10'-0" wide and a length of 5'-0" greater than the length of the compactor/container. It should be level with a minimum 3000 PSI concrete steel reinforced, 6" thick. It is preferred that the concrete pad be flush with the surrounding ground level. NOTE: Units with four ground rollers must be installed on a level pad.
- To provide accessibility, the concrete pad should be positioned to allow 2'-0" between the machine and building wall if installed parallel with the building. Allow a minimum of 45' of clear space from end of pad for the container handling vehicle.

Note: The clearances given are minimums. Your installation may require greater clearances, depending on the site and the hauling equipment that will be used.

Container Guides

If container guides (optional) are used with the self-contained units, the guides should be anchored to the concrete pad using 3/4" X 6" anchor bolts. These bolts should be concrete anchors or expansion type anchor bolts. To allow for construction variations, it is best if these holes are drilled in the concrete after prelocating the container guides in their desired location. Drill holes and place anchor bolts in each location provided on the guides. When the guides have been placed in position, and the anchor bolts have set, securely tighten all nuts.

Steel Installation Procedures

Dock Installation

If the appropriate accessories are ordered from Marathon Equipment Co., the compactor/container will be furnished with either a four-sided hopper or a three-sided hopper with a hinged gate. **These accessories should not be altered as they are manufactured in accordance with those standards which prevail at the time of manufacture.**

If the compactor/container cannot be directly abutted to the dock or if there is any difference in height between the dock and the compactor/container, an appropriately sturdy transition section should be provided by the customer and securely affixed to the dock. Along with the transition section, a compactor/container guidance/stop mechanism should be installed to assure that the unit does not bottom out against the transition section or dock during dock placement (See ANSI Z245.2 Safety Standards). Optional container guides with stops are available from Marathon and are recommended for proper dock placement of the compactor/container.

Chute-Fed Installation

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 the inside floor level. A security door (in accordance with local code) should be installed in the wall opening. In the absence of a 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 the building.

Decals

Be certain that the appropriate decals are in their proper locations at all times on the machine. For decal locations, see "Decals" on page 1-8 and "Decal Placement" on page 1-9 in the Operation section of this manual.

Note: Installation is not complete until all decals are in place.

Electrical and Hydraulic Installation



The motor control panel contains high voltage components. Only authorized service personnel should be allowed inside. See "Lock-Out & Tag-Out Instructions" on page 2-1 in the Maintenance section.

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

Grounding Instructions

Warning: All equipment should be grounded per National Electric Code.

This appliance must be connected to a grounded, metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the appliance.

If there is any doubt whether the equipment is properly grounded, a qualified electrician should be consulted.

Remote Power Pack Installation

1. The remote power pack should be installed and anchored as required by the customer. If the operator station is mounted in the face of the motor control panel, be certain these controls are located as to be in a convenient, but not hazardous, location to the customer.

Caution: Operator Station must be located so that the Emergency Stop Button is readily accessible to the operator and within three (3) feet of the charging chamber access door. If installation requires the operator station to be located in a more remote area, a second Emergency Stop Button should be added and installed in the manner described above.

- 2. For a through-the-wall power pack installation, see "Through-the-Wall Power Unit Installation" on page 3-5. Special care should be taken to protect the hoses from abrasive objects.
- 3. Connect the hydraulic hoses to the power pack, exercising care to follow the port decals (A or B) on the packer and the power pack. In the event the decals have been worn off, 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 the cylinder should be connected to the end of the block to which the solenoid valve is bolted (B Port). Refer to the "Power Unit - Standard 1.5 HP" on page 2-7 diagrams.

Electrical & Hydraulic Installation (cont.)

Pushbutton Control Panel

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

Caution: Operator Station must be located so that the Emergency Stop Button is readily accessible to the operator and within three (3) feet of the charging chamber access door. If installation requires this operator station to be located in a more remote area, a second Emergency Stop Button should be added and installed in the manner described above.

Electrical Connections

Run power lines, between fused disconnect switch (customer furnished) and compactor's motor control panel, in accordance with local electrical codes, using knock-outs in bottom of motor control panel. See Fuse & Circuit Breaker Chart for Motors and Wire Size Chart, in the Maintenance Section, to determine the proper service disconnect amperage rating and the proper wire size.

NOTE: High legs should be installed to L3 on motor starter.

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.

Start-Up Instructions

1. With the ram fully retracted, check to be sure the oil reservoir is full to the 3/4 level on the sight gauge (Refer to the maintenance chart for hydraulic oil recommendations). The hydraulic system pressure has been factory set and the entire unit has been operated prior to shipment.

Caution: Make sure persons and material are clear of the charge box area.

 Depress the start button and check the pump shaft for proper rotation. CAUTION: If the pump rotates backward, stop immediately. The pump will be damaged if it is operated in reverse even for short periods. Reversing any two incoming power lines will change the motor/pump rotation.

Caution: Make sure that the operators are trained in the proper use of this equipment.

Through-the-Wall Power Unit Installation

If the remote power unit is to be mounted through-the-wall, the following list of material and diagram is the suggested method.

List of Material

Item	Qty	Description	
1	2	lydraulic Hose, Hi-Pressure (sized to power unit*), 36" long	
2	2	Pipe, Sch 80 (sized to power unit*), 36" long	
3	2	lydraulic Hose, Hi-Pressure (sized to power unit*), 48" long	
4	2	Steel plate with holes for Item No. 2, 3/16" x 8" x 12"	
5	4	Coupling, Female (sized to fit hose & pipe*)	
6	3	Coupling, Male x Female Swivel	

* 1/2'' for runs of 20'-0" or less. Consult factory for longer runs.



HAULER INFORMATION

General Hauler Instructions

Before hauling to the landfill:

- 1. Disconnect all hoses and electrical connections (if applicable) between the power unit and the compactor. Make sure they are placed in an area where they will not get damaged.
- 2. Close and secure any hopper doors or gates.
- 3. Make sure that the container door safety chain is secured in the keyhole on the latch side of the container floor.
- 4. If the unit is a Streamline model (SL), disconnect any drain hose(s) connected to the unit and plug all ports.
- 5. Make sure that the hoist lifting the unit is compatible with the understructure on the unit.

Note: Hold-downs should be used to secure the front and rear of the of the container under-structure to the hoist.

At the landfill:

See the next page for door and latch operation instructions.

1. To prevent leakage, the door seal and mating surface should be wiped clean and inspected after the unit has been emptied. When cleaning the seal on units with the hydraulic tailgate option, inspect for damage and replace if necessary.

WARNING: NEVER place any part of your body between the tailgate and the container. Use a mop or similar cleaning device with a long handle to clean the seal. Close inspection of the seal should be done only after the container has been lowered to a level position and the raised tailgate has been supported with a crane, forklift, or other positive maintenance prop.

After returning from the landfill:

- 1. After setting the unit down, reconnect all hoses and electrical connections (if applicable) to the compactor. Make sure they are not laying across sharp corners or any abrasive surface.
- 2. Close and secure any hopper doors or gates.
- 3. Make sure that the container door safety chain is secured in the keyhole on the latch side of the container floor.
- 4. If the unit is a Streamline model (SL), connect any drain hose(s) to the unit.

Door/Latch Operation



Hauler Information 4-2

Hydraulic Tailgate Operation (For Optional HT Units)

The truck hoist must have a hydraulic selector valve, with 1500 psi minimum, to operate the hydraulic tailgate. The hydraulic tailgate is supplied with one 1/2'' NPTF male quick disconnect mounted on the drivers side of the unit. A 1/2'' female quick disconnect is supplied for use on the truck hoist valve plumbing.

CAUTION:

- Stand clear of tailgate when lifted.
- Truck must be on firm, level surface before lifting tailgate.
- Front and rear hold-downs must be engaged.
- Tilt hoist before lifting tailgate.



- 3. Raise hoist.
- 4. Lift tailgate.
- 5. Empty contents.



- 6. Clean the seal as described in "General Hauler Instructions" on page 4-1. Note all warnings.
- 7. Lower tailgate as low as possible.
- 8. Lower hoist.
- 9. Lower tailgate completely.
- 10. Engage and tighten latches.
- 11. Remove hydraulic connection.

Hauler Information 4-3

WARNING: NEVER PLACE ANY PART OF YOUR BODY BETWEEN THE TAILGATE AND THE CONTAINER.

Instructions for Using the Maintenance Bar

- 1. Lower tailgate approximately 24" between the container bottom and compactor tailgate.
- 2. Remove locking pin from maintenance bar and slide bar toward compactor.
- 3. Align holes in the position collar and bar and insert pin.
- 4. Use a mop or similar cleaning device with a long handle to clean the seal.
- 5. Raise tailgate to relieve pressure on maintenance bar, remove pin, return bar to retracted position and insert pin through collar and bar.



Hauler Information 4-4

Liquid Removal (For Optional SL Units)

The RamJet Self-Contained Streamline compactor/containers are designed with an internal drain system for liquid removal, ported to each corner of the machine. The unit comes standard with one ball valve. This valve can be moved to any of the four drain outlets on the machine. The valve should be located at the lowest outlet on the machine for proper drainage. The customer can attach a drain hose with a 3" NPT male fitting to the drain valve.



SOLAR POWER UNIT

Solar Power Unit - Specifications

Compactor Model	Self-Contained/Stationary (Qty)
Motor - 120 VAC, 1.5 HP, 3 GPM HiLo motor/pump combination	2
Batteries - sealed AGM deep-cycle lead acid 12 volt, 110 amp hours	4
140 Watt Solar Panel OR 100 Watt Solar Panel	1 2

Solar Power Unit - Schematic

For further information, refer to "Principles of Operation" on page 2-4.



Battery Specifications

Nomina	l Voltage	12V
Rated C	Capacity	110 Ah/20HR
	L	331 mm
Dimensions	W	173 mm
	Total H.	243 mm
We	ight	Approx. 33 kg(72.75lbs)
	20 HR 5.5 A	110 Ah
Capacity	10 HR 10.0A	100 Ah
20°C	5 HR 18 A	90 Ah
(68ºF)	4 HR	87.7 Ah
	1 HR 80 A	80 Ah
Internal 1	resistance	Approx. 4 milliohms
Terr	ninal	Flag
Charging (Constant-	Cycle	Initial charging current less than 40A Voltage 14.40 – 15.0V
Voltage)	Float	Voltage 13.50 - 13.80
Capacity affected by Temp (20 HR)		40 °C => 102% 25 °C => 100% 0 °C => 95% -15 °C => 65%
Self Discharge (25 °C)		Capacity after 3 mth. storage 91% Capacity after 6 mth. storage 82% Capacity after 12 mth. Storage 64%

Specifications & Characteristics



The Plate material: Pb-Ca-Sn alloy and oxide of Pb (activity material)

Construction: Positive plate and negative plate, battery case – ABS, AGM separator, H 2 SO 4 and valve.		
Electrolyte concentration: 1.32		
Watts per cell @ 4 hour = 44		
Run time @ $25 \text{ A} = 4 \text{ hours } 16 \text{ min}$		
CCA	720A	
Discharge rate @ 4 hours = $22A$		







Solar Power Unit - Parts List

Part #	Description	Qty
PANEL BOX		
03-5552 & 03-5553	Panel Box	1
03-5630	Inverter	1
03-5631	Reversing Contactor	1
03-4732	Power Supply	1
03-4448	Fuse 2 Amp	1
03-4480	Fuse 1 Amp	1
03-5634	Voltage Relay	1
03-5638	PLC	1
03-5633	Solar Controller	1
03-5637	Motor Starter	
PPK (Power Unit)		
02-0050	Suction Filter	1
03-2649	Motor 1-1/2 HP	1
02-0369	Pump 3 GPM	1
02-3958	Sub-plate	1
02-5233	Valve	1
03-0658	Pressure Switch	1
SOLAR PANEL		
03-5247	Battery	4
03-5635	Battery Disconnect	2
03-5399	Red Battery Cable	Varies
03-5400	Black Battery Cable	Varies
03-5632	Solar Panel	1

*Call our Parts Department at **1-800-633-8974** for these part numbers.

Solar Power Unit - Wire Sizes

Distance (Feet)	Wire Size (Gauge)	Wire Diameter (Inches)	Conduit Size (Inches)
20	10	< 3/16	1/2
25	10	< 3/16	1/2
30	10	< 3/16	1/2
35	8	< 1/4	1/2
40	8	< 1/4	1/2
45	8	< 1/4	1/2
50	6	1/4	3/4
60	6	1/4	3/4
70	6	1/4	3/4
80	4	> 5/16	1
90	4	> 5/16	1
100	4	> 5/16	1
125	3	> 3/8	1
150	3	> 3/8	1
200	1	>7/16	1-1/4

100 Watts (1 x 100 Watt Panel)

200 Watts (2 x 100 Watt Panel)

Distance (Feet)	Wire Size (Gauge)	Wire Diameter (Inches)	Conduit Size (Inches)
20	4	> 5/16	1
25	4	> 5/16	1
30	3	< 3/8	1
35	2	> 3/8	1
40	2	> 3/8	1
45	1	> 7/16	1-1/4
50	1	> 7/16	1-1/4
60	1/0	< 1/2	1-1/4
70	2/0	> 1/2	1-1/2
80	2/0	> 1/2	1-1/2
90	3/0	> 9/16	1-1/2
100	3/0	> 9/16	1-1/2
125	4/0	> 5/8	2
150	250 kcmil	< 3/4	2
200	350 kcmil	13/16	2-1/2

Distance (Feet)	Wire Size (Gauge)	Wire Diameter (Inches)	Conduit Size (Inches)
20	3	< 3/8	1
25	2	> 3/8	1
30	1	> 7/16	1-1/4
35	1	> 7/16	1-1/4
40	1/0	< 1/2	1-1/4
45	2/0	> 1/2	1-1/2
50	2/0	> 1/2	1-1/2
60	3/0	> 9/16	1-1/2
70	3/0	> 9/16	1-1/2
80	4/0	> 5/8	2
90	250 kcmil	< 3/4	2
100	250 kcmil	< 3/4	2
125	300 kcmil	< 13/16	2-1/2
150	400 kcmil	< 15/16	2-1/2
200	500 kcmil	< 1	3

300 Watts (3 x 100 Watt Panel)

Solar Power Unit - Periodic Maintenance

WARNING: Never perform maintenance on the Solar Power Unit without first following the "Lock-Out & Tag-Out Instructions" on page 2-1.

Follow all Periodic Maintenance procedures in the OMI Manual that is specific to your compactor, as well as the following:

Monthly

- 1. Check the solar panel for dust or residue (especially in a heavily particulate or urban environment) and clean as necessary. Usually a hose stream or wiping it off with a clean, damp cloth is sufficient. Avoid using harsh chemicals or cleaning the panel while it is hot.
- 2. Check battery cables, connections, and terminals for wear and/or corrosion.

Recommended Oil

• BioHydran AW 46

Solar Power Unit - Typical Electrical Schematic

Drawing Number: E-8811-A



Typical Electrical Schematic

Drawing Number: E-8811-B



Solar Power Unit - Typical Hydraulic Schematic

Drawing Number: E-0647



General Installation Requirements



CAUTION: The panel box contains high voltage components. Only authorized service personnel should be allowed inside. See "Lock-Out & Tag-Out Instructions" on page 2-1.

Anchoring

The power unit should be anchored to the concrete pad using a minimum of four $1/2'' \ge 6''$ long anchor bolts. These bolts can be secured to the concrete pad using "Porok" or special concrete anchors.

It is recommended to drill these holes into the concrete after pre-locating the power unit to its desired location. When the power unit has been permanently located, shimmed to compensate for unevenness, and anchor bolts set, then tighten all nuts securely.

NOTE: Ensure that anchor bolts are not allowed to torque or twist the power unit when tightened.



Assembling the Solar Panel Stand

The following instructions describe the assembly process for the standard solar panel stand, which can then be mounted on top of the power unit, roof, or other applicable horizontal surface. The components and assembly process for polemounted or wall-mounted stands may vary. See the next page for details on mounting options.

STEP 1

Slide the T-bar neck into the solar panel base as shown in the diagram on the right. Screw the $3/8-16 \times 1''$ bolt into the lock nut welded to the neck of the solar panel base until tightened.



Locate the solar panel frame over the T-bar as shown in the diagram. Slide the 4 tube clamps into each pair of 5/16 threaded pegs and fasten using the provided 5/16 hex self-locking nuts.

Ensure that the frame is centered with the T-bar and base assembly. Tighten the tube clamps sufficiently to prevent slippage of the frame angle chosen for optimum insolation (See "Connecting and Orienting the Solar Panel" on page 5-12).



T-bar

Screw 3/8-16 x 1" bolt into welded

nut until tight.

Solar Panel Base



Mounting the Solar Panel Stand

NOTE: Before choosing where to mount the solar panel stand, read the "Orientation of the Solar Panel" recommendations on the next page. The solar panel and stand can be mounted on either the top of the power unit, a wall, roof, or on a pole located within 100 feet of the power unit and connected to the solar charger controller with an S.O. cord or 12 gauge wiring in conduit or sealtite.

The required bolts for mounting the panel will vary depending on the chosen installation. There are four 1/2" holes on the mounting bracket, all 10" apart from the centers of the adjacent holes. These match the holes in the top of the power unit. For wall, roof, or pole installations, use the proper anchor bolts rated for the specific composition and reference the diagrams below as guidelines for installation.



Connecting and Orienting the Solar Panel

<image>

After mounting the solar panel, connect the cord to the plug in on the power unit.

Orientation of the Solar Panel

In the northern hemisphere, it is best for the solar panels to face southward. In the southern hemisphere, it is best that they face northward. The best angle from the horizontal position will vary by season, but the following equation is given as a general example for winter tilt, which is about 10 degrees steeper than normal recommendations:

Site Latitude x (0.9) + 29 degrees = angle from horizontal position for best tilt

The best angle for optimum insolation will have to be determined on site. Some factors that will prohibit optimum insolation are clouds, haze, trees, or any other opaque object obstructing sunlight from the solar panel. These factors are just as important in determining the best position and angle for the solar panel.

Latitude	Angle	% Of optimum
25° (Key West, Taipei)	51.5°	85%
30° (Houston, Cairo)	56°	86%
35° (Albuquerque, Tokyo)	60.5°	88%
40° (Denver, Madrid)	65°	89%
45° (Minneapolis, Milano)	69.5°	89%
50° (Winnipeg, Prague)	74°	93%

It is recommended that you independently research and assess your site for the best placement.

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