

# User Guide

## 10HP Smart Power Unit for Smart Compactor

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*B&J Atlantic, Inc.*

## **DISCLAIMER**

This user guide is furnished by B&J Atlantic, Inc. as a reference manual only. Usage of any smart compactor power unit is at the user's own risk.

Any repairs not done by B&J Atlantic, Inc. shall be done at the customer's own risk. Damage created from an attempt by the customer to repair the power unit will not be covered by B&J Atlantic.

### **Contact Information**

Please call (904) 338-0088 or e-mail [help@bjatlantic.com](mailto:help@bjatlantic.com) for troubleshooting help.

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## SAFETY PRECAUTIONS

All power units produced by B&J Atlantic, Inc. meet all OSHA requirements, ANSI Z245.5 1997, and ANSI Z245.2 1997 for power units used on trash compactors, balers, etc. Safety interlocks, warning indicators, and warning labels must be observed by the user.



**CAUTION: Power unit operation should only be allowed by trained personnel who are at least 18 years of age.** Failure to follow all instructions before operating any power unit can cause personal injury or property damage.



**Power unit operation requires high voltage and high current.** Undesired operation can result in electrocution or bodily injury. Only a certified electrician should work with any electrical wiring of the power unit.



**Power unit operates under high pressure.** Hydraulic oil pressure can easily exceed 1800 pounds per square inch (psi) during operation. Any potential for leak or breakage on the high-pressure side of the system can result in impact and bodily injury.

# SPECIFICATIONS

## Hydraulic/Mechanical

<u>Pump motor</u> : 10HP, 1750RPM, 3PH, 230/460V/60Hz, 215YZ, Direct-coupling	(Part No: BA14010)
<u>Hydraulic gear pump</u> : 10.5GPM, 23.7cc/rev, 3000psi maximum	(Part No: BS24000)
<u>Inline check valve</u> : ¾ Steel inline check valve with SAE-12 port	(Part No: C20-12FS7)
<u>Pressure gauge</u> : 0-3000psi indicating range	(Part No: SEC-201L-254P)
<u>Pressure switch</u> : 0-3000psi adjustable, ¼ NPT port, piston type	(Part No: ME12250)
<u>Subplate</u> : A & B ports ½ NPT connected to compactor	(Part No: DO5-P12)
<u>Relief Valve</u> : 0-3000psi adjustable, Sun Cavity cartridge	(Part No: SU-10000)
<u>D05 single solenoid directional control valve</u> : 120 Vac solenoid coil	(Part No: GO3-2B3-R110)
<u>D05 double solenoid directional control valve</u> : 120 Vac solenoid coil	(Part No: GO3-3C3-R110)
<u>Oil level switch</u> (optional)	(Part No: UL-05000)
<u>Oil heater</u> (optional): 230/460V, 1PH, 1kW, thermostat with adjustable set-point	(Part No: UL81000)
<u>20 gallon JIC tank</u> with floor bottom holes for anchoring	(20-GALRES)
<u>Side gauge with thermometer</u> : 5 inch long	(Part No: SNA-127BST12)
<u>Breather cap</u> : 10 Micron filter ¾ NPT	(Part No: STF 11034)



## **Electrical**

Control box: NEMA 12 enclosure

Programmable Logic Controller: 8 120V inputs, 4 relay outputs, 120-240VAC input power

Contactors: 26A or 40A 3-pole contactor (depending on input voltage)

Overload: up to 12-19A or 24-32A overload (depending on input voltage)

Transformer: 460/230/208V to 120VAC, 100VA

- Primary side: 2 – 2A ATQ fuses
- Secondary side: 1 – 2A ATQ fuse

Terminal Block

Remote with 15' sealtite conduit





# INSTALLATION

## Changing voltage settings:

Each power unit can be wired for 208/230V or 460V 3-phase power.

### 1. Motor wiring

#### 3 PHASE - 12 LEAD MOTOR CONNECTIONS

VOLTAGE	L1	L2	L3	TIE	TIE	TIE
460V	1, 12	2, 10	3, 11	4,7	5,8	6,9
208/230V	1,6,7,12	2,4,8,10	3,5,9,11			

**NOTE: For 460V, wire power to L1, L2, L3 and use 3 individual wire nuts to tie the TIE pairs together.**

### 2. Transformer primary side

- 208V: Connect H4 and H3
- 230V: Connect H4 and H2
- 460V: Connect H4 and H1

### 3. Overload

- change to a 13-19A overload for 460V, change to a 24-32A overload for 208/230V

### Hydraulic oil:

It is recommended to use AW hydraulic oil ISO 46 or 68 depending on the conditions that the power unit operates in.

### Setting the pressure switch:

The pressure switch is used to detect end of cylinder length and to determine if the compactor is full. It is set at 1500psi at the factory.

- With the pressure switch cover open, use a wrench to increase the pressure switch setting by turning the plunger clockwise and to decrease the pressure switch setting by turning the plunger counterclockwise.
- Replace the cover once done

### Setting the system pressure:

The relief valve is used to set the operating pressure at which the power unit runs when at dead-head (eg. Cylinder is fully retracted). It is set at 1800psi at the factory.

- Using a wrench, twist the locking nut counterclockwise
- Using a 5/32" SAE hex key, turn the screw clockwise to increase the pressure or counterclockwise to decrease the pressure
- Relock the nut by twisting it clockwise

# USAGE

Depending on the features included with the power unit during delivery, functions may vary.

## Controls on Remote

- The **80/100% light** indicates how full the compactor is based on the pressure switch pressure setting. The light will blink to indicate 80% full and stay solid for 100% full. (Optional: separate 80% light and 100% light)
- **Key-switch** has three positions: Auto for allowing the power unit to operate automatically after pressing the start switch, Off for removing the key and preventing unauthorized usage of the power unit, and Manual for manually operating the compactor cylinder by using the selector switch (Forward or Reverse)
- **Start button** initiates the power unit to operate the compactor cylinder in its programmed extending and retracting cycle
- **Selector switch** is a center return allowing the user to manually operate the compactor cylinder forward or reverse ONLY when the key-switch is in the hand position
- **Emergency stop** can be depressed to stop the unit immediately and to reset the power unit. This button cuts power to the motor contactor, PLC, directional control valve solenoid, and light indicators

## Manual operation

*Note: If the power unit has the interlock feature, all interlocks must be in place before the power unit will operate.*

- With the key in the Hand position and the selector switch twisted to Forward or Reverse, the power unit will extend or retract the cylinder until the user releases the selector

### Automatic cycle operation

*Notes: If the power unit has the interlock feature, all interlocks must be in place before the power unit will operate.*

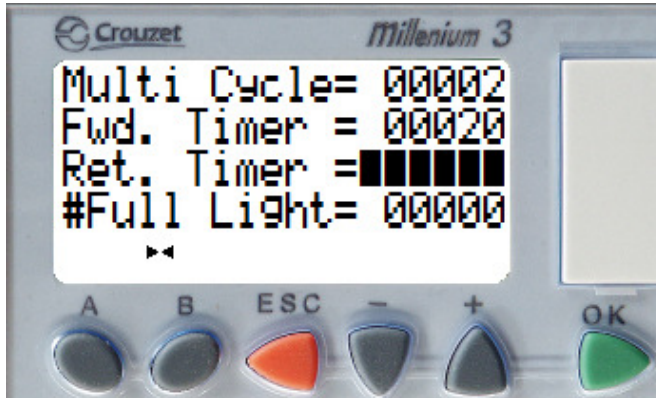
*If the power unit has the door counter feature, with all interlocks in place, the power unit will sound the horn and light for a short period before operating.*

- With the key-switch in Auto position and the Start button depressed, the power unit will retract the cylinder for a five seconds or until it has reached the fully retracted position.
- Valve solenoid with shift to extend the cylinder for a preset amount of time.
- Valve solenoid with shift again to retract the cylinder for a preset amount of time or until the pressure switch is activated.
- If the power unit has the multicycle feature, it will repeat the cycle by extending and retracting the compactor cylinder until it has reached the desired number of cycles.
- If the power unit has a stop-extend feature, it will extend the cylinder completely then shutdown.

### Changing the extend/retract timer/multi-cycle count

1. To change any settings, you must be able to access the front of the PLC by opening the control panel. The PLC display should be scrolling through various screens.

2. Press and hold the A button for 5 seconds and the following screen should be displayed:



3. Press the up button (+ button) or down button (- button) to move the cursor up or down to highlight the extend timer, forward timer, or multi-cycle count.
4. Press **OK** (now the number should be blinking), then press the up button (+ button) or down button (- button) to change the number of seconds or counts.
5. Once the desired time or count is selected, press **OK** to save the value.
6. To change another parameter, press the up button (+ button) or down button (- button) to highlight another value.
7. If otherwise done, press **ESC** repeatedly until scrolling display is shown.

# DRAWINGS



## MAINTENANCE



***CAUTION: Operating in and around the power unit can be hazardous. Power unit operation requires high voltage and high current, and operates under high pressure.*** Failure to follow all instructions before operating any power unit can cause personal injury or property damage.

B&J Atlantic continues to make the most reliable, easy to use, and maintenance free power units available on the market. To ensure maximum power unit life, it is highly recommended that regular maintenance be performed on each and every power unit.

### Hydraulic System

Every power unit can be sensitive to the amount of load put during their operational life, the condition of the supply voltage, and the weather conditions that it operates in. To ensure that the power unit operates as long as possible, necessary steps to allow the unit to operate in its optimal condition should be followed.

### Hydraulic oil

1. Ensure that there is an adequate amount of hydraulic oil in the reservoir on a regular basis. Low hydraulic oil can cause the unit to not function normally and can cause it to prematurely overheat.
2. Check for any unusual coloration of the hydraulic oil. Dark oil usually indicates that the oil had run at the end of its operational life or that the oil has run too hot (eg. Power unit running too often). Cloudy oil usually indicates that too much water has mixed with the oil thereby eliminating the functional properties of the oil to operate under harsh conditions.



3. A power unit that seems to lose hydraulic oil quickly usually indicates that there might be a leak in the hydraulic circuit or it is evaporating too quickly.

### **Electrical**

The control box door should be closed all the way and the screws to hold the door should be screwed tight. Condensation and rain can easily contribute to rust and electrical damage.

## TROUBLESHOOTING



**CAUTION:** *Operating in and around the power unit can be hazardous. Power unit operation requires high voltage and high current, and operates under high pressure.* Failure to follow all instructions before operating any power unit can cause personal injury or property damage.

**Problem:** The power unit does not operate.

### Possible Causes:

1. There is no power to the unit.
2. Transformer primary fuses are blown.
3. Transformer secondary fuses are blown.
4. The overload has tripped.
5. Loose wiring.
6. Loss of phase.
7. Transformer not wired to the correct voltage on primary side.

### Solutions:

1. Check for power present at all places with a volt meter: after the main disconnect, on the transformer primary side, on the transformer secondary side, before the PLC, etc.
2. Reset the overload.
3. Check to make sure no Emergency Stop buttons are engaged and that the key-switches are in the correct modes.
4. Check for power present on all 3 phases by measuring between phases with a volt meter.

5. Refer to the INSTALLATION section to rewiring the transformer primary side to the correct voltage.

*Note: Solving problems with power can be difficult. Never work with live electricity especially if you are not experienced or not trained personnel.*

**Problem:** Overload trips frequently.

Possible Causes:

1. Wrong overload is used.
2. Overload is set incorrectly.
3. Supply power is too low.
4. Three phase power is unbalanced.

Solutions:

1. Use correct overload and ensure that it is set correctly.
2. Ensure that the correct gauge wire to the power unit is used and decrease the wiring length if necessary.
3. Contact the electric company to make sure the step down transformer is connected correctly, etc.

**Problem:** The contactor/motor starter chatters or refuses to stay on during start up.

Possible Causes:

1. Supply power is too low.
2. Three phase power is unbalanced.

3. Transformer on primary side is not connected correctly thereby having too low voltage on secondary side.

Solutions:

1. Typically when the motor is turned on, it creates a power surge thereby quickly dropping the supply power due to the large amount of startup current it draws. Using too small gauge wire or having too long of wire to the power unit causes this problem.
2. Contact the electric company to make sure the step down transformer is connected correctly, etc.
3. Refer to the INSTALLATION section to rewiring the transformer primary side to the correct voltage.

**Problem:** The compactor cylinder does not operate correctly.

Possible Causes:

1. The hoses are connected backwards.
2. One or both of the hoses are not fully attached on to the hose quick disconnect.
3. There is not enough hydraulic oil.
4. There is an obstruction in the compactor.

Solutions:

1. Check to make sure the hoses are connected correctly (eg. Extend and retract).
2. Disconnect the hose off the quick disconnect and firmly reattach the hose.
3. Check the side gauge to make sure there is enough hydraulic oil in the reservoir.
4. Check to see if there are any objects or trash blocking the cylinder and thereby preventing it to perform its desired operation.

**Problem:** The motor seems to operate really fast or slower than normal.

Possible Cause:

**STOP OPERATING THE UNIT IMMEDIATELY**

Most likely cause is that the motor was not wired to the correct voltage.

Solutions:

Refer to the INSTALLATION section to rewiring the motor to the correct voltage.

**Problem:** The motor runs but the ram does not move or moves erratically.

Possible Causes:

1. The hydraulic oil level is too low.
2. The directional control valve wires are loose or disconnected.
3. The directional control valve is defective.
4. The pump may be worn out.
5. The suction strainer, tubing, or hoses may be clogged.

Solutions:

1. Check the side gauge to make sure there is enough hydraulic oil in the reservoir.
2. Tighten and/or reconnect the wires to the valve (refer to the DRAWING section).
3. Swap the solenoids or swap the entire valve. It is recommended to change the entire valve as problems are typically mechanical and not electronic.
4. Swap the gear pump.
5. Replace suction filter, hoses, tubing, etc. to remove clogged section.

**Problem:** The compactor does not develop enough pressure.

Possible Causes:

1. The system relief valve is clogged, or not adjusted correctly.
2. The piston seals in the cylinder are leaking.
3. The directional control valve wires are loose or disconnected.
4. The directional control valve is defective.
5. The pump may be worn out.

Solutions:

1. Replace the relief valve or readjust the relief valve to the correct pressure.
2. Repack, rebuild or replace the cylinder.
3. Tighten and/or reconnect the wires to the valve (refer to the DRAWING section).
4. Swap the solenoids or swap the entire valve. It is recommended to change the entire valve as problems are typically mechanical and not electronic.
5. Swap the gear pump.

**Problem:** The compactor never indicates 80% or 100% full.

Possible Causes:

1. The pressure switch is not connected, set incorrectly, or defective.
2. The extend timer is set too short.

Solutions:

1. Readjust, reconnect, or replace the pressure switch.
2. Refer to the USAGE section to adjust the extend timer to the correct setting.