
Attention Service Manager/Parts Department

Bulletin Level: 2*

Specific Warranty Coverage:

Parts:	Covered
Labor:	1 hour
Travel:	1 hour

Subject: Reduced run time in Focus II 17" and 20" Autoscrubbers equipped with *Discover* 114AH EV31A AGM Batteries -***Amended TSBCL2010-013 to show correct settings in Figure 6b***

Models Affected: 05322A - Focus II L17 AGM Battery
05324A - Focus II L20 AGM Battery
05325A - Sunbelt Rental Boost L17
05332A - Focus II S20 AGM Battery
05334A - Focus II S20 AGM Battery, Chemical System
05342A - Focus II L20 AGM Battery
05344A - Focus II L20 AGM Battery, Chemical System
05352A - Focus II L20 CYL AGM Battery
05354A - Focus II L20 CYL AGM Battery, Chemical System
05362A - Focus II BOOST L20 AGM Battery
05364A - Focus II BOOST L20 AGM Battery, Chemical System

Parts List Form Number(s) Affected: 9097066000

ECO#: A-05415

Informational Bulletin: N/A

Issue: Some Focus II 17" and 20" Compact Autoscrubbers, equipped with *Discover* 114AH EV31A AGM Batteries, have exhibited premature battery failures resulting in reduced run time.

Cause:

1. A defective vent seal was found in the EV31A AGM batteries which resulted in the loss of water from the electrolyte, causing the glass mats to dry out.
2. Charging algorithm set incorrectly (toggle and/or DIP switches).

Corrective Action: Factory:

1. An improved vent design was implemented on the EV31A AGM battery/ P/N 41034A, with a date code of August 09 and later. As a further improvement effective 4/12/10, *Discover* 114AH EV31A AGM battery, P/N 41034A, has been replaced with *Discover* 140 AH EV12A battery, P/N 56380239, to provide increased run time.
2. Effective 3/18/10 w/8000022396, improved process controls were implemented to ensure the charger toggle switch is set correctly at the factory during the battery installation process.

Field:

1. If reduced run time is being experienced on a machine prior to SN 8000022396 and installed after 1/1/2008, check the date code and condition of the batteries as described under To Check the Battery Condition, Figures 1-7. If the batteries fail to hold a charge or indicate an open or shorted cell condition as described, replace both batteries with P/N 56380239.

* **Technical Service Bulletin Levels:**

Level 1: These Bulletins contain general information and are without specific warranty coverage.

Level 2: These Bulletins describe continuous quality improvements that are made to products. Specific warranty coverage may apply and if so is noted in the Bulletin.

Level 3: These Bulletins describe a quality problem that has been determined to require a mandatory update to the product. Specific warranty coverage is as noted in Bulletin.

2. Check the low-voltage cutoff setting as described under To Check the Low Voltage Cutoff Setting and reset if required.
3. Check the charger toggle switch and DIP switch settings as described under To Check The Charge Settings, Figures 1-10, and reset as necessary.

To Check the Battery Condition

IMPORTANT!!

In order for the replacement of batteries to qualify for warranty coverage, the following steps must be completed by an authorized Clarke service center using the diagnostic equipment noted. The date code of the battery, open circuit voltage measured for each battery in step 5 below, and charger setting must be included in the description section of the warranty claim.

1. Verify the charger toggle switch is set to GEL, and plug in the on-board battery charger. Allow the charger to run through a full charge cycle to verify the batteries have been fully charged. If the batteries are fully discharged this will take approximately 9-10 hours.
2. After the batteries have been fully charged, run the machine for 3-5 minutes to remove any surface charge from the batteries. Measure the Open Circuit Voltage (OCV) of each battery using a digital voltmeter or multimeter. If the battery measures more than 12.9 volts it still has a surface charge. (Also refer to TSBCL2010-14 for information on how to check battery Open Circuit Voltage (OCV).



Figure 1 – Checking battery voltage (typical)

3. Use a load tester to check the condition of each battery. Make sure to follow the instructions included with the load tester. (Also refer to TSBCL2010-14 for information on how to load-test batteries.)
4. Apply a load for 15 seconds. The voltage should stabilize above 9.6 volts while on load. If below 9.6 volts, replace the battery.



Figure 2 – Battery Load Tester (typical)

5. Measure the open circuit voltage across the battery terminals for each battery with a digital voltmeter. Refer to Figure 1. Replace the battery if one of the conditions below is met:
 - 1) If there is a .5V difference between the highest to the lowest battery
 - 2) If the battery will not recharge to 75% of the voltage of a fully charged battery (Refer to table below)
 - 3) If the digital voltmeter shows 0, which would indicate an open cell
 - 4) If the digital voltmeter measures 10.45-10.65 there is likely a shorted cell.

<i>Open Circuit Voltage vs. State of Charge Comparison *</i>			
% Charge	Open Circuit Voltage		
	Flooded	Gel	AGM
100	12.70-12.60	12.95-12.85	12.90-12.80
75	12.40	12.65	12.60
50	12.20	12.35	12.30
25	12.00	12.00	12.00
0	11.80	11.80	11.80

NOTE: Divide values in half for 6-volt batteries.

** The "true" O.C.V. of a battery can only be determined after the battery has been removed from the load (charge or discharge) for 24 hours.*

6. Determine the manufacturing date of the batteries.

To determine the manufacturing date, note the 10-digit date code stamped in the cover. The first two digits will be letters. The coding system is as follows:

First letter:

- D = 2004
- E = 2005
- F = 2006
- G = 2007
- H = 2008
- I = 2009
- J = 2010

Second letter:

- A = January
- B = February
- C = March
- D = April, etc.



Figure 3 – Battery Date Code (typical)

The first two letters on the battery date code shown in Figure 3 are "J" and "A", which indicate that the battery was manufactured in January of 2010.

- 7.** If a battery was manufactured before August of 2009 and fails the load test, replace both batteries with *Discover* 140 AH EV12A batteries. Note that the batteries will be 1.0" taller than the current EV31A batteries, but will still fit easily into battery compartment.



Figure 4 – *Discover* 140 AH EV12A Batteries

To Check the Low Voltage Cutoff Setting

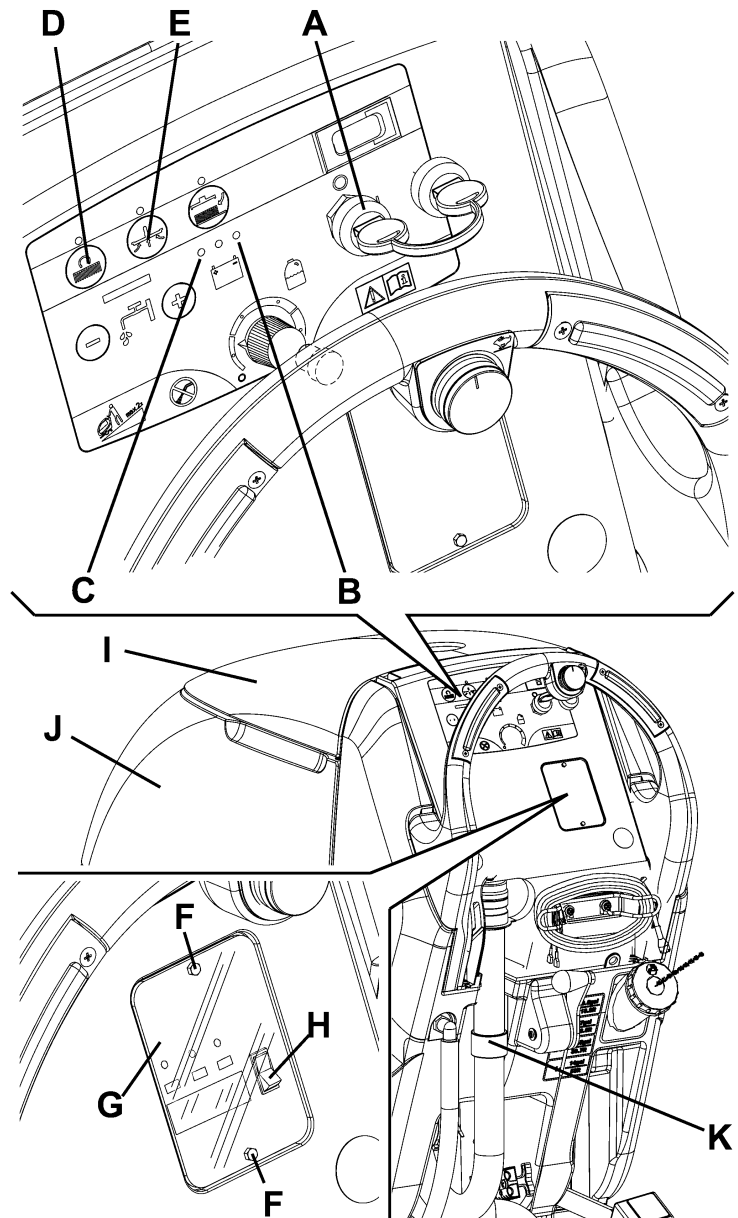
Check the Low Voltage Cutoff Setting as described in the Operator Manual or as follows:

BATTERY INSTALLATION AND BATTERY TYPE SETTING (WET OR AGM)

According to the type of batteries (WET or AGM), set the machine and electronic board of the battery charger as follows:

Machine setting

- 1) Turn the ignition key (A, Fig. 7) to "I" and in the very first seconds of machine operation pay attention to the following: If the green warning light (B) is flashing, the machine is set to AGM. If the red warning light (C) is flashing, the machine is set to WET.
- 2) If the setting is to be changed, perform the following procedure:
- 3) Turn off the machine and turn the ignition key (A) to "0".
- 4) Press and hold the switches (D) and (E) at the same time, then turn the ignition key (80) to "I".
- 5) Release the switches (D) and (E) at least 8 seconds after turning the machine on.
- 6) Within 3 seconds, press the switch (E) again for a few seconds and check that the warning light for the required setting is flashing (as shown in step 1).



To Check the Charger Settings

1. Make sure the batteries are disconnected from the machine.
2. Empty the recovery tank. (This will prevent spillage when removing the control panel.)
3. See Figure 5. Remove the two bottom screws and washers holding the control panel to the machine. Note that this is more easily done with a long, ball-end 5/32" hex wrench.



Figure 4 – Bottom Control Panel Screw and Washer (typical)

4. See Figure 6. Remove the two top screws and washers holding the control panel to the machine.
5. Remove the discharge hose from the hose clamp, and unwind the charger cord from the cable support on the control panel.
6. Carefully lift the control panel away from the machine far enough to access the charger.



Figure 5 – Top Control Panel Screw and Washer (typical)

7. The DIP switches should never have to be changed from the factory setting if using OEM batteries. However, to ensure that the settings have not been changed, see Figures 6a and 6b. Peel back the large label to access the DIP switches.

See Figure 6a. The original style charger (P/N 9097461000) had an LED display and eight DIP switches under the label. Make sure the switches are set as follows:

- Position 1 – OFF
- Positions 2, 3 and 4 – ON
- Positions 5, 6, 7 and 8 do not matter



Figure 6a – DIP Switches on Old Style Chargers

See Figure 6b. The current style charger P/N 9098296000 (without an LED display) has two DIP switches under the label. Make sure the switches are set as follows:

- Position 1 – OFF
- Position 2 – ON



Figure 6b – DIP Switches on Current Style Chargers

Note: These DIP switch settings do not need to be changed when changing between OEM Wet and AGM/Gel batteries.

8. See Figure 7. Make sure the **WET/GEL** toggle switch is set to the **GEL** (AGM) position.
9. When the DIP and WET/GEL switches are set correctly, reposition the control panel on the machine, then reinstall and tighten the top and bottom control panel screws and washers.
10. Reconnect the batteries.



Figure 7 – WET/GEL Switch Set to GEL