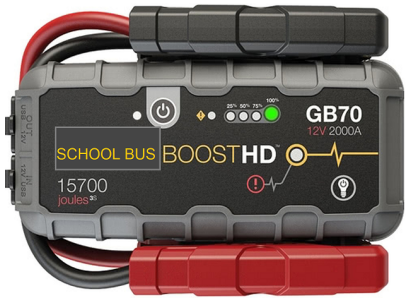
Starting Units Parked for Extended Periods

Service Update #20-0728



Suggestions on Starting Units Parked for Extended Periods

BATTERIES REQUIRE MAINTENANCE!

We originally issued Service Update #20-0505/Blue Bird #PA-15-20 which spoke on battery storage in buses that were not being used due to the early closure of schools in New York and tips on extended storage for batteries in those units.

As it appears that to some degree the reopening of schools may be taking place where units may be needed and as technicians begin to prep their fleets for this, we have seen an increase in the number of calls related to Check Engine Lights.

In some of our testing we have found that when units sit and have even had batteries disconnected, they show 12.4-12.6 volts but when cranking the voltage drops to 9.2 and that is when we see issues with Check Engine Lights as this creates a spike in amperage through the electrical system.

We recommend that batteries, even if they have been disconnected, be tested to ensure they have the proper voltage as discussed in PA-15-20 which is attached and if not, they are properly charged as indicated in the Product Announcement.

PLEASE NOTE: Using a “charge pack” or booster should only be used in emergency situations

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Or at the New York Head Mechanic website

BLUE BIRD

Product Announcement **PA-15-20**

May 4, 2020

EXTENDED STORAGE OF BUS BATTERIES

Announcement

The ongoing concerns surrounding COVID-19 have presented a variety of operational challenges to the nation's school bus fleet. One specific issue pertains to buses kept in storage for a longer period of time than normal. During this extended storage there may be electronics continuously drawing on the batteries, causing the voltage to drop below the level required to start the engine. In order to ensure your batteries', have ample starting power upon the next use of the bus, it's important that proactive preventative maintenance steps are taken to preserve the energy stored in each battery.

Additionally, these tips are useful in the future when this situation is over and we're all back to a more normal schedule when buses are down for Summer Vacation.

(Thanks! To Deka Batteries for these very helpful tips, learn more: ***www.dekabatteries.com***)

Tips for Extended Storage

When a bus is being prepared for an extended period of storage, the below steps should be taken in order to ensure optimal battery performance upon the next use of the bus:

1) Turn off bus
2) If there is a battery disconnect switch, turn the disconnect switch to the "off" position.
3) Remove the **Negative (-) terminal**
4) Remove the **Positive (+) terminal**
5) Inspect terminals, posts and cables for any corrosion or damage.
    a. Clean/replace any dirty or damaged parts.

Please see below chart for actions recommended for a variety of storage scenarios:

	Over night	Over weekend	Over holiday/long weekend (3+ days)	Extended storage (more than 1 week)
Bus with disconnect Switch	Turn to "off" position	Turn to "off" position	Turn to "off" position, then disconnect the batteries (above steps)	Turn to "off" position, then disconnect the batteries (above steps)
Bus without disconnect Switch	No action required	No action required	disconnect the batteries (above steps)	disconnect the batteries (above steps)

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When the bus is ready to be put back into service, follow the below steps for best results:

1) Check Voltage and CCAs on the battery. Should the Voltage test below 12.4V (flooded) or 12.6 (AGM) the batteries will need to be recharged and tested prior to use (see "Charging" below)
2) Inspect terminals, posts and cables for any corrosion or damage.
    a. Clean/replace any dirty or damaged parts.
3) Reconnect the **Positive Terminal (+)**
4) Reconnect the **Negative terminal (-)**
5) If there is a disconnect switch, turn it to the "on" position
6) The bus can now be started

Testing

Testing batteries before installation or reconnection after extended storage will ensure your customers do not experience unexpected no-starts and downtime. Please see below for the two kinds of testing we recommend:

1) Conductance testing
    a. Conductance testing will measure internal resistance by sending a signal down into the battery. The result will show how many CCAs the battery currently has. This will also test voltage.
2) Load Testing
    a. Load testing is the most reliable form of testing, as it will actually simulate putting a load on the battery.

For both conductance testing and (especially) load testing it is important to use charging/testing post adaptors, never the stainless-steel stud.

A note about posts:

Never connect testing or charging clamps directly to the stainless-steel stud. Always use charging/testing adaptor posts to ensure lead to lead contact. If charging/testing adaptors are not available, the lead pad may be used if the connection is secure and safe.

a. Stainless steel has a higher internal resistance than lead. This means it will be much more difficult for the energy coming from the charger to flow into the battery. At best the battery may take a long time to charge, if at all. At worst the electrical energy will build up at the stud and become thermal energy, causing the stud to melt (this can happen when testing with a load tester as well).

b. When using a conductance tester, a false reading may be obtained if the testing clamps are connected directly to the stainless-steel stud. Remember, stainless steel has a higher internal resistance than lead and conductance testers use internal resistance to determine the battery's health.

Charging

Prior to charging, it's important to know if the batteries are Flooded or AGM, as they will charge at different rates. Follow the below steps for the best charging results:

1) Test the batteries to determine current Voltage
2) Use the below chart to determine what amount of time will be needed to charge the batteries at the desired rate
    a. Example: A flooded battery at 11.8V will take 10.7 hours to charge at a rate of 10 amps.

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OCV		State of	Charger Maximum Rate			
Flooded	AGM	Charge	50 amps	30 amps	20 amps	10 amps
12.6V	12.8V	100%	READY TO USE			
12.4V	12.6V	75%	0.6	0.9	1.3	2.5
12.2V	12.3V	50%	1.2	1.9	2.7	5.1
12.0V	12.0V	25%	1.8	2.9	4.3	7.8
11.8V	11.8V	0%	2.5	4.0	5.7	10.7

3) Connect the **Positive (+)** charging clamp to the **Positive** post
4) Connect the **Negative (-)** charging clamp to the **Negative** post
5) Charge for desired amount of time and rate. Be sure to follow all safety precautions noted in your charger's manual
6) After the battery is done charging, let sit for 24-48 hours to allow the surface charge to soak into the battery
   a. A load test will dissipate the surface charge if 24-48 hours is not available.
7) Retest to battery to ensure it meets the rating requirements

Battery Shelf Life

Batteries are a consumable item, and will self-discharge over time. Should the voltage of a battery fall below 12.40v (flooded) or 12.60 (AGM) the battery will need to be recharged to 12.65 (flooded) or 12.80 (AGM).

- Disconnected, without any loads, it will typically take 3 months for these thresholds to be reached.
- Self-discharge is accelerated when the battery is installed in a unit, especially if not equipped with a disconnect switch, as the bus may have key-off loads drawing from the battery.

Questions?

If you have any questions regarding these product updates, please contact your field service manager.

Following these steps will help ensure Maximum Battery Life!

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CONTACT OUR SERVICE OR PARTS DEPARTMENT WITH ANY QUESTIONS

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