

October 20, 2004

Dear Blue Bird Owner:

You will find enclosed Service Bulletin S04JC regarding a modification to the Multiplex system on certain Blue Bird "Vision" school buses. We recommend that Service Bulletin S04JC be performed to reduce battery draw, thus maintaining battery reserve. Please review the list of buses provided with Service Bulletin S04JC carefully to determine if this modification should be performed on your bus (es).

A qualified repair technician should perform Service Bulletin S04JC. You may contact your appropriate Blue Bird distributor for assistance.

Parts required to perform this modification are available from your Blue Bird distributor.

Time required to modify Version 1 Multiplex systems is 0.5 hours per bus. Time required to modify Version 2 Multiplex systems is 0.3 hours per bus.

Service Bulletin S04JC expires one year from date of issue.

If you no longer own the bus (es) identified on the enclosed cover sheet, please indicate new owner in the "sold to" section of the cover sheet and return to us at the address below:

BLUE BIRD BODY COMPANY  
P.O. BOX 937  
FT. VALLEY GA 31030  
ATTN: TECHNICAL PUBLICATIONS

Should you have any questions concerning this bulletin, please contact your Blue Bird distributor.

Sincerely,

Bill Coleman  
Blue Bird Corporation

## **ADDENDUM TO SERVICE BULLETIN S04JC**

Since S04JC-BBCV Multiplex System Modification addresses a sensitive issue, battery draw, which may affect engine starting in cold climate conditions, and not all Visions are affected, a heads up to you to inform you with the facts might be beneficial.

### **SUMMARY**

There are currently three versions of the multiplex system in operation in the BBCV.

Version 1- This version is a dual multiplex module system that does not go into “sleep mode” when the ignition is switched off. This version was installed on buses with factory service numbers 0122012 through 0154520.

Version 2- Version 2 is a single module system that goes into “modified sleep mode” when the ignition is switched off. This version is on buses with factory service numbers 0154530 through 0160375. These buses were not equipped with a battery disconnect switch as standard equipment.

Version 3- This version is a single multiplex module system on all BBCV with factory service numbers greater than 00167915, that goes into “sleep mode” when the ignition is switched off.

### **BBCV INCLUDED IN SERVICE BULLETIN S04JC**

All Version 1- Service Bulletin S04JC provides for a wiring harness that will allow the multiplex system on these buses to go into “sleep mode” when the ignition is switched off. This dramatically reduces battery draw and on average increases the number of days of battery reserve significantly when the bus is not being operated. (Note: Version 1 multiplex modules are not to be replaced by Versions 2 or 3 modules under Service Bulletin S04JC.)

Version 2- BBCV included in S04JC are busses that (1) are not equipped with a battery disconnect switch, **and** (2) are subject to be operated in sub zero temperatures. S04JC will provide for replacement of the Version 2 multiplex module with the Version 3 multiplex module which reduces the battery draw to a level comparable to the All American when the bus is not being operated.

### **BBCV NOT INCLUDED IN SERVICE BULLETIN S04JC**

Version 2- BBCV not included are busses that (1) are equipped with a battery disconnect switch, **or** (2) are not operated in sub zero temperature conditions.

Version 3- All BBCV with Version 3 multiplex modules are designed to go into “sleep mode” and have very low continuous battery draws when the bus is not in operation.



# MPX Modification

# BULLETIN

## MODELS AFFECTED:

All Blue Bird Visions with Version 1 multiplex systems, and certain Blue Bird Visions with Version 2 multiplex systems.

### ISSUE

In operations where buses are commonly left parked for extended periods, the current draw of the multiplex system in non-sleep mode may drain batteries.

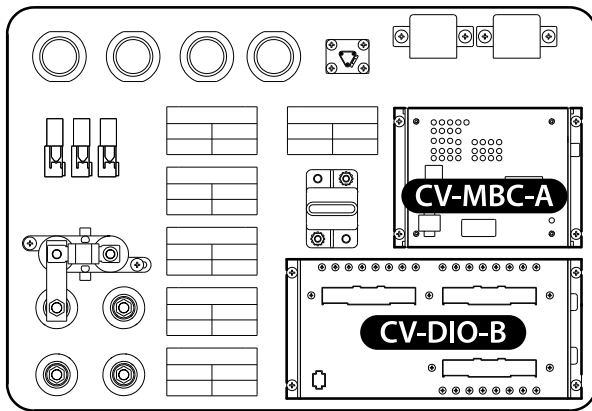
### CORRECTIVE ACTION

On Version 1 units, the wiring harness modification described below results in a significantly reduced current draw during sleep mode. On Version 2 units, the MPX module is replaced with the model used in Version 3 units.

### PROCEDURE

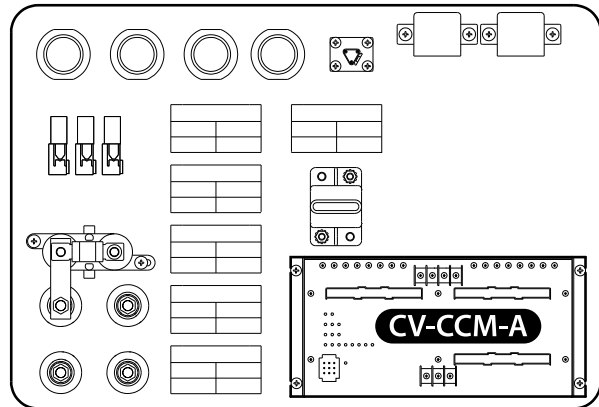
**1** Disconnect the negative terminal of the battery. Remove the four screws securing the PDU cover, and remove the cover. Determine if the unit is equipped with a Version 1, Version 2, or Version 3 MPX system. The version is easily identifiable by the following criteria:

**Version 1** units have two separate multiplex modules; a DIO module and a MBC module. If the vehicle is Version 1, go to step 2 of this procedure to perform the necessary wiring harness modification.

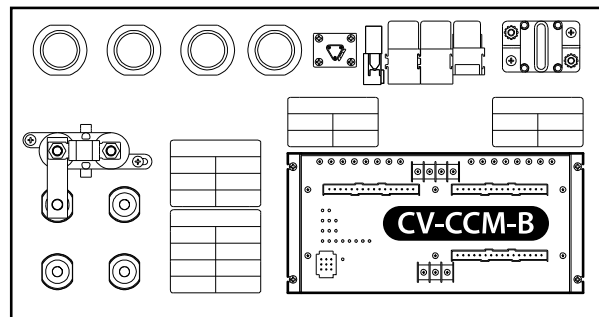


**Version 2** units have one MPX module, and its model designation is CV-CCM-A. If the vehicle is Version 2, proceed as follows:

- 1.1** Unplug the harness blocks from the module. Remove the four mounting screws, and remove the module.
- 1.2** Mount the new module. Reconnect the harness blocks. This is the only modification required.
- 1.3** Go to step 12 of this procedure.



**Version 3** units have one MPX module, and its model designation is CV-CCM-B. If the vehicle is Version 3, no modification is necessary. Replace the PDU cover.



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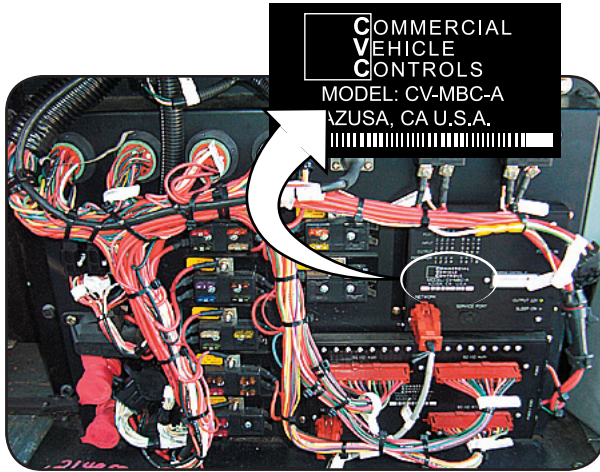
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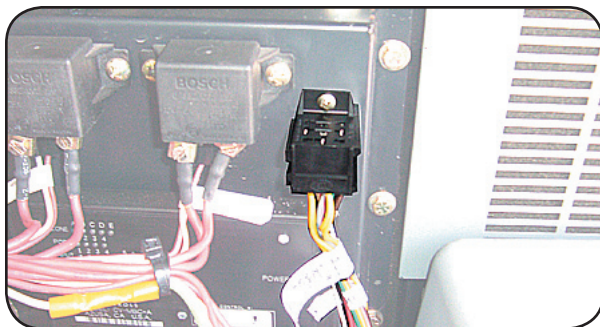
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**2** Steps 2–10 of this procedure apply **only** to Vision buses with Version 1 Multiplex systems. Version 1 systems are those with two separate MPX modules in the PDU, as shown, with Main Bus Controller module model number CV-MBC-A.

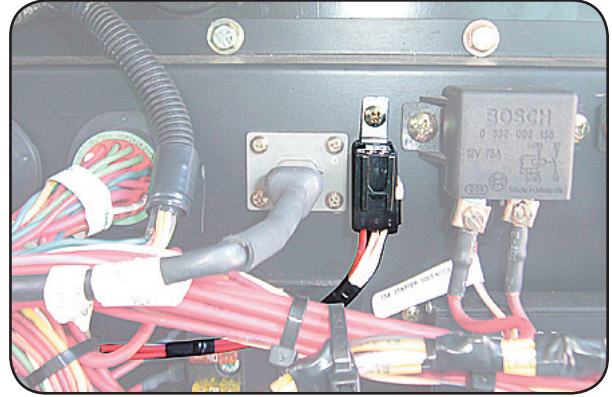


**3** Drill a  $\frac{5}{32}$  hole to attach the Diode Block connector of the new harness to the PDU box in the location shown. Attach with a short #10 self tapping sheet metal screw. Insert the Diode Block (0081525) into the connector.

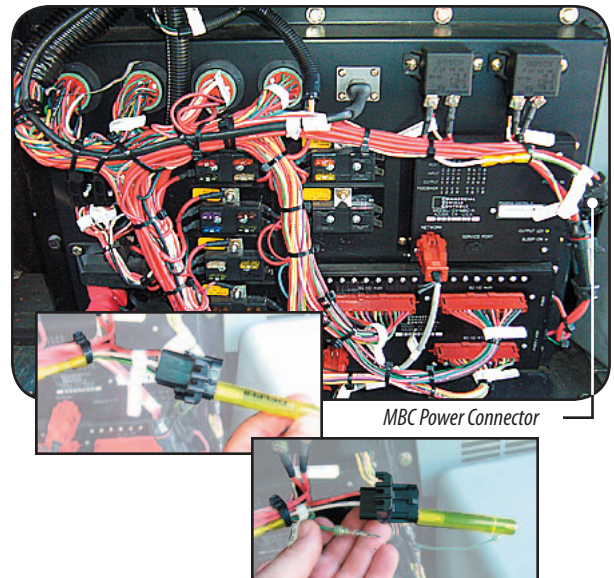
**CAUTION** Use a short drill bit. Drill slowly and only through the sheet metal, being mindful of components which may be on other side of the panel.



**4** Similarly mount the Micro Relay Socket of the new harness in the location shown. Insert Micro Relay (1746387) into the socket. Take the same precaution to avoid drilling deeply and possibly damaging components on other side of the panel.



**5** Unplug MBC Power connector (far right side of image). Slide yellow pin removal tool over the pin of the green wire (labeled SYS WAKE). Pull the green wire from the connector.



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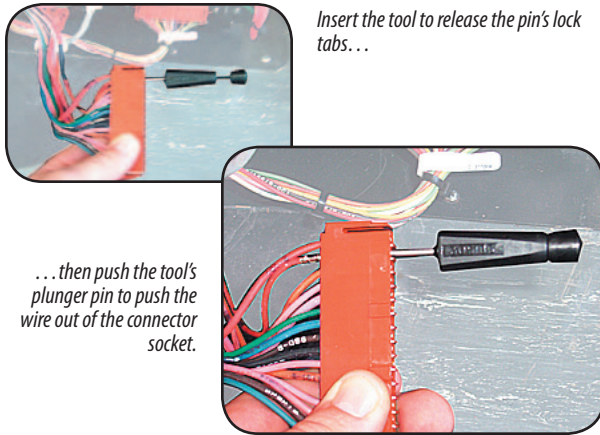
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**6** Insert the green wire of the new harness labeled SYS WAKE into the socket from which the original green wire was removed in step 4. Reconnect the MBC Power connector.

**7** The green wire removed in step 4 is spliced into a white wire, labeled Wake Up, at a yellow butt connector located a few inches from the MBC Power Connector. Cut the white wire on both sides of the yellow butt connector. Discard the yellow butt connector and the green wire end. Then reconnect the two cut ends of the white wire back together with a new butt connector.

**8** The photos below show how to use the black pin removal tool. The tool is inserted over the pin to be removed. This retracts the lock tabs of the connector pin. Then depressing the tool's plunger pushes the pin out of the connector block.



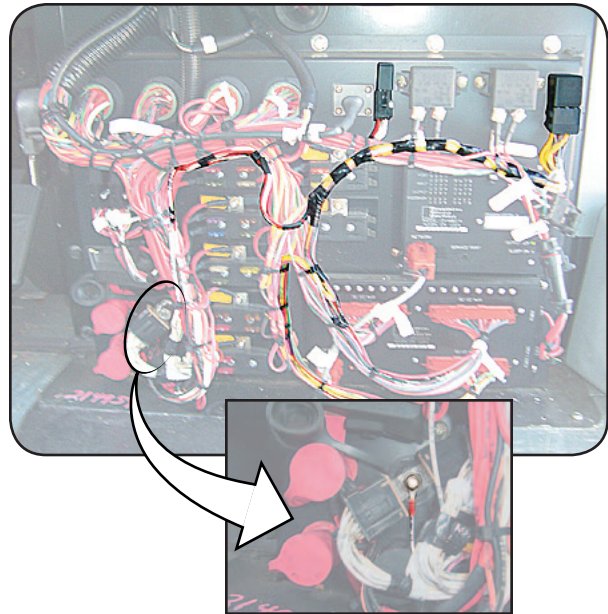
Use the black pin removal tool to remove the wires at the following six locations. Replace each removed wire with the corresponding wire of the new harness:

- Remove wire labeled B1-O14 from Port B1 connector, pin 14. Insert wire labeled B1-O14A from new harness into same socket.
- Remove wire labeled B2-O08 from Port B2 connector, pin 08. Insert wire labeled B2-O08A from new harness into same socket.
- Remove wire labeled B2-I02 from Port B2 connector, pin 02. Insert wire labeled B2-I02A from new harness into same socket.
- Remove wire labeled B3-O04 from Port B3 connector, pin 04. Insert wire labeled B3-O04A from new harness into same socket.

- Remove wire labeled B3-O05 from Port B3 connector, pin 05. Insert wire labeled B3-O05A from new harness into same socket.
- Remove wire labeled B3-O14 from Port B3 connector, pin 14. Insert wire labeled B3-O14A from new harness into same socket.

**9** The 6 wires just removed will now be connected to the corresponding butt connectors on the new harness. Before making these connections, plan the routing of harness so it can be neatly bundled when finished. Then route the six removed wires toward the harness. For each of the six original wires, cut the pin off, leaving an appropriate length of wire for connecting to the new harness butt connector. The wires of the new harness with the butt connectors attached are labeled identically to the original wires you are connecting.

**10** Connect the ground wire of the new harness, labeled STP GND A, to the Chassis Ground Post at the lower left of the PDU. Neatly bundle the harness and wires with cable ties.







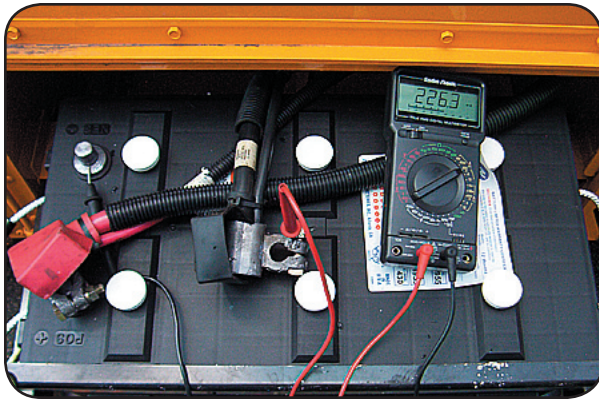
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**11** Before replacing the PDF cover, test the connections by measuring current draw during sleep mode as follows:

**11.1** Make sure ignition is off. (Leaving it on may blow the meter's fuse).

**11.2** Set a multimeter to measure milliamps. Connect the multimeter between negative battery post and negative battery cable.



**11.3** Wait 30 minutes for the system to go to sleep. Sleep mode is indicated by the LED labeled Sleep On, located on the MBC module.



**11.4** When the system indicates Sleep Mode, check the current draw. Draw should be between 80 –100 mA, depending upon optional equipment installed.

**12** Replace the PDU cover. Reconnect the battery. Check the circuits for which wiring has been modified in this procedure for proper operation. The procedure is complete.

Version 1 Units		
PART NUMBER	QUANTITY	DESCRIPTION
0068940	1	Harness
0081525	1	Diode Block
1746387	1	Micro Relay
Version 2 Units		
PART NUMBER	QUANTITY	DESCRIPTION
0077446	1	Module, MPX, CV-MBC/DIO, low current

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