



**DATE:**                               **MARCH 06, 2007**

**SUBJECT:**                           **SERVICE UPDATE S0702 MAINTENANCE OF  
RADIATOR SHUTTERS**

**MODELS AFFECTED:**   **ALL AMERICAN, VISION**

You will find enclosed a copy of Service Update S0702 regarding maintenance of radiator shutters on the All American and Vision model buses. Service Update S0702 provides information recommended maintenance procedures.

Questions regarding Service Update S0702 should be directed to your Blue Bird Customer Service Representative.



# Radiator Shutters Maintenance

**MODELS AFFECTED:** A3FE and A3RE with Kysor Radiator Shutters

UPDATE

## ISSUE

Kysor radiator shutters require periodic maintenance in the form of lubrication of the vane pivots.

## CORRECTIVE ACTION

This update presents information from current Service Manuals regarding lubrication of the shutter vane pivots.

## PROCEDURE FOR A3FE

- 1 Please review the following excerpt from Blue Bird Service Manuals regarding lubrication of shutter vane pivots:

### Radiator Shutters

Your bus may be equipped with Radiator Shutters, a popular option on both Forward Engine and Rear Engine All American buses operated in colder climates. Shutters restrict ambient air passing through the radiator and over the engine, and thereby shorten warm-up time for the engine and passenger compartment heaters.

The Kysor Radiator Shutters unit is a window blind-like assembly of adjustable louvers mounted on the fan-side of the radiator. The shutters are spring-loaded in a normally-open position. On buses equipped with air brakes, the shutter mechanism is closed at certain temperatures by an air cylinder, and on buses with hydraulic brakes, by an hydraulic actuator.

Unlike the radiator fan, shutters are not controlled by the engine ECU, but by their own independent circuit. Two temperature sensors—one mounted in the engine coolant circuit and the other in the intake tract of the Charge Air Cooler system—are wired in the Radiator Shutters control circuit. Both sensors are normally closed. When ignition is on, current passes through both sensors, and energizing the Shutter control solenoid to close the shutters. As the engine warms, one or both of the two sensors create an open in the circuit, de-energizing the shutter control solenoid and allowing the louver vanes to open the shutters. The coolant sensor opens at approximately 185°. The intake tract sensor opens at approximately 150°.

Air-powered shutter solenoids receive actuation air from a line leading directly to the supply (wet) air tank. When the solenoid opens, the air which was closing the shutters is expelled through the solenoid's exhaust port.

Hydraulically-powered shutter solenoids receive engine oil from a line leading from an oil supply port on the left side of the engine. When the solenoid opens, the oil which was closing the shutters is returned to the engine sump through the solenoid's drain line.

Shutters should be inspected regularly and kept free of obstructing debris. The pivot points of the louvers and their linkages should be lubricated annually with an anti-seize compound, such as BB # 2550549.

Note: More frequent lubrication, especially during the winter months, is required on buses operating in climates that use salt and other corrosive elements on the roadways.

S0702

S E R V I C E U P D A T E