



# Surge Tank Kits

MODELS AFFECTED: All BBCV

# UPDATE

## ISSUE

On some BBCVs, cracking has occurred in the coolant surge tank, in the area of its mounting flanges.

## CORRECTIVE ACTION

Two new coolant surge tank kits are available for order by Dealers through normal Blue Bird Service Parts ordering channel, Parts123. The two different kits accommodate the mounting location, which differs according to whether the bus is equipped with an O2 emissions-compliant engine or an O7 emissions-compliant engine.

Both kits mount the new tanks by a set of brackets which "cage" the new tank, rather than by tabs molded into the tank. Both kits include detailed instructions. For reference, the Instructions documents are included in this Service Update.

## PROCEDURE

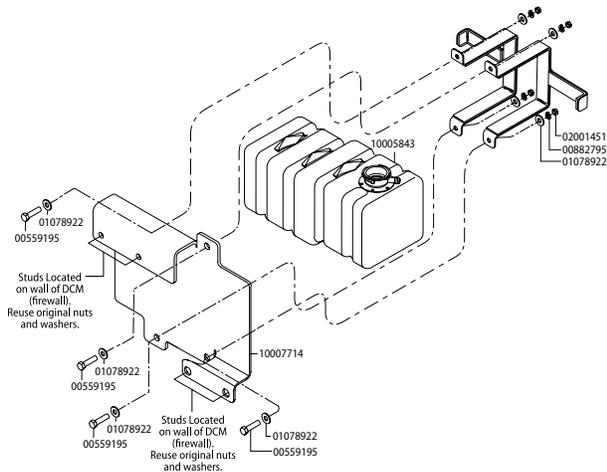
**1** On BBCV buses equipped with O2 emissions standards compliant engines (bus year models 2007 and prior), the surge tank is mounted toward the right side (curb side) of the engine compartment. Instructions document 10009923A (included on the following pages of this Service Update) describes the mounting procedure of kit number 10007697 in detail.

**2** On BBCV buses equipped with O7 emissions standards compliant engines (bus year models 2008 and later), the surge tank is mounted toward the center of the engine compartment. Instructions document 10009924 (included on the following pages of this Service Update) describes the mounting procedure of kit number 10007704 in detail.

*For BBCV with O2 Engines, Use:*

**Kit: 10007697**

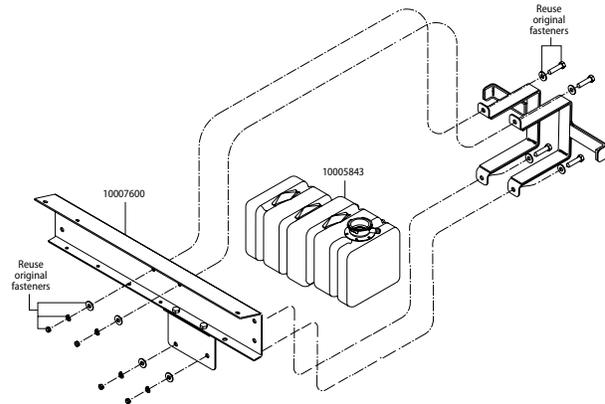
**Instructions: 10009923A**



*For BBCV with O7 Engines, Use:*

**Kit: 10007704**

**Instructions: 10009924**



## INSTRUCTIONS (INCLUDED ON FOLLOWING PAGES IN THIS UPDATE)

| PART NUMBER | QUANTITY | DESCRIPTION                                    |
|-------------|----------|--|
| 10009923A   | 1        | Instructions, Kit, Surge Tank, O2 Eng_10007697 |
| 10009924    | 1        | Instructions, Kit, Surge Tank, O7 Eng_10007704 |

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



# INSTRUCTIONS

FOR: **10007697** | Kit, Surge Tank Replacement

**Applies To:** Blue Bird Vision (BBCV) school buses equipped with 02 emissions standards compliant engines, with coolant surge tank mounted on the right side (curbside) of the engine compartment Driver Control Module (firewall)

## OVERVIEW

This kit replaces the original-equipment coolant surge tank with an improved tank and mounting system. This kit is not for later BBCVs with 07 emission standards compliant engines, on which the tank is mounted in the center of the firewall.

## PROCEDURE

**WARNING** Always follow all federal, state, local, and shop safety standards and use proper safety equipment when performing this procedure.

**1** Secure the vehicle and prepare it for access to the needed areas:

- 1.1 Park vehicle on level surface. Apply the parking brake. Remove key and chock wheels.
- 1.2 Open the engine hood. Locate the coolant surge tank. Verify that the surge tank is mounted on the right side (curbside) of the Driver Control Module (firewall), as shown.



If the surge tank is located in the middle of the firewall, do not use this kit (10007697). A separate kit (10007704) is available for later model BBCV buses with the surge tank located in the middle of the firewall.

**2** Remove the original surge tank as follows:

**WARNING** Allow the engine and cooling system to cool to ambient temperature before proceeding.

- 2.1 Slowly loosen the surge tank pressure cap. Remove the cap and retain it for use on the new tank.
- 2.2 Partially drain coolant: Place a suitable drain pan under the radiator drain valve. Open the drain valve and allow the coolant to drain to a level below that of the bottom of the surge tank. Close the drain valve when the surge tank is empty of coolant.
- 2.3 Disconnect the wire harness connector from the low coolant sensor.
- 2.4 Disconnect the two small vent hoses from the surge tank.
- 2.5 Loosen the clamp which secures the surge tank fill hose to the bottom of the surge tank. Disconnect the fill hose from the bottom of the tank.
- 2.6 Disconnect the overflow hose from the surge tank fill neck. Retain this hose for re-use on the new tank.
- 2.7 Remove the four nuts and four washers which secure the surge tank to the firewall, and remove the surge tank. Retain the nuts and washers for reuse.
- 2.8 Remove the low coolant sensor from the surge tank. This will be reinstalled on the new tank.

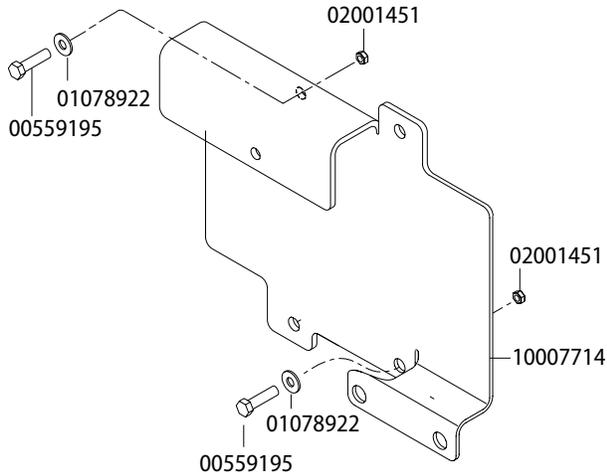


# INSTRUCTIONS

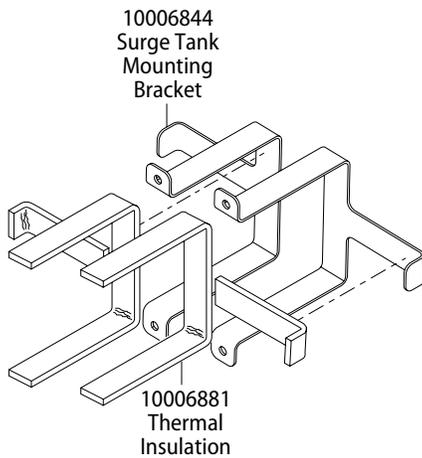
FOR: **10007697** | Kit, Surge Tank Replacement

**3** To simplify installation of the new tank, loosely pre-assemble some of the parts as follows:

3.1 Slide one 3/8" flat washer (02129567) onto each of two 3/8" capscrews (00559195). Insert the two capscrews into the two holes of the spacer plate (10007714) indicated below. Temporarily install a 3/8" nut (02001451) to retain the bolts during installation of the spacer plate.



3.2 Apply strips of thermal insulation (10006881) to the inner surfaces of each surge tank mounting bracket (10006844). Three strips are provided. Use two full strips for the vertical members of the brackets. Cut the third strip in half for the two short horizontal members.



**4** Mount the spacer plate to the bus as follows:

4.1 Position the spacer plate onto the four firewall studs from which the original tank was removed. Securely fasten the plate using the original lock nuts removed in step 2.7.

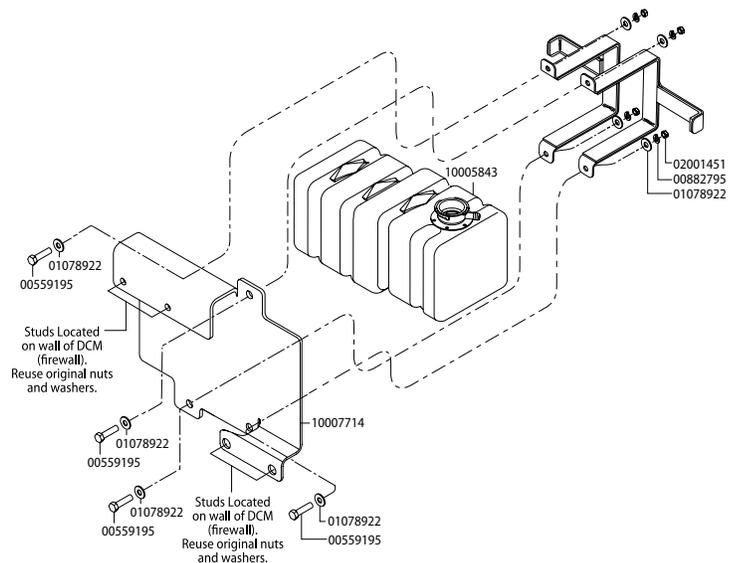
**5** With the spacer plate mounted, mount the new surge tank as follows:

5.1 Hold the head of the inboard (nearest driver side) cap-screw which was loosely pre-assembled in step 3.1. Remove the nut while holding the bolt in place.

5.2 Position the new surge tank, along with the inboard mounting bracket (10006844) against the spacer plate, with the top hole of the mounting bracket on the cap-screw. Loosely fasten with a 3/8" lock washer (00882795) and a 3/8" nut (02001451).

5.3 Insert a 3/8" capscrew (00559195) through the hole of the spacer plate below the tank and through the lower hole of the mounting bracket. Install the bolt from the back side. (All four mounting bolts should be installed with the shanks of the bolts pointing toward the front of the bus.) Loosely fasten with a 3/8" lock washer (00882795) and a 3/8" nut (02001451).

5.4 Similarly install the outboard mounting bracket. Tighten all fasteners.





**6** Reattach fittings and hoses, as follows:

- 6.1 Apply Teflon sealing tape to the threads of the low coolant sensor. Install the sensor in the new surge tank. Tighten sensor 1 to 1.5 turns past finger tight. Reconnect the harness connector.
- 6.2 Reattach the fill hose to the bottom port of the tank, the two vent hoses to the side of the tank, and the overflow hose to the fill neck.
- 6.3 Refill the surge tank with the same brand of Blue Bird approved coolant as is installed in the bus. Install the surge tank pressure cap.

**7** Complete the installation, as follows:

- 7.1 Start and operate the engine until normal operating temperature is achieved. Check the surge tank hose connections and low coolant sensor for leaks.
- 7.2 Turn off the engine. Re-check the coolant level and replenish as needed.

The procedure is complete, and the bus may be returned to routine service.

| PARTS       |          |  |
|-------------|----------|--|
| PART NUMBER | QUANTITY | DESCRIPTION                                      |
| 10005843    | 1        | Tank, Surge, 7.75 Quart                          |
| 10006844    | 2        | Bracket, Mtg, Surge Tank, BBCV                   |
| 10006881    | 3        | Insulation, Thermal, Strip, Surge Tank, BBCV     |
| 10007714    | 1        | Plate, Spacer, Surge Tank, BBCV                  |
| 00559195    | 4        | Capscrew, HexHd, 3/8-16 NC X 1, GR8, Yel Zn Dich |
| 02129567    | 8        | Washer, Flat, 3/8, Zinc Plated (each)            |
| 00882795    | 4        | Lockwasher, Split Ring, 3/8, Med, Yellow Dich    |
| 02001451    | 4        | Nut, Hex HD, 3/8-16, Yellow Dichromate           |



# INSTRUCTIONS

FOR: **10007704** | Kit, Surge Tank Replacement

**Applies To:** Blue Bird Vision (BBCV) school buses equipped with 07 emissions standards compliant engines, with coolant surge tank mid-mounted on the engine compartment Driver Control Module (firewall)

## OVERVIEW

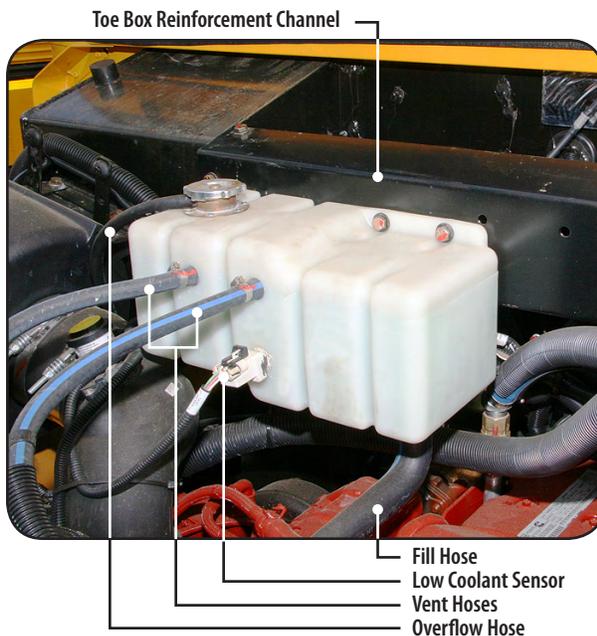
This kit replaces the original-equipment coolant surge tank with an improved tank and mounting system. This kit is not for use on earlier BBCVs with 02 emission standards compliant engines, on which the tank is mounted on the right side of the firewall.

## PROCEDURE

**WARNING** Always follow all federal, state, local, and shop safety standards and use proper safety equipment when performing this procedure.

**1** Secure the vehicle and prepare it for access to the needed areas:

- 1.1 Park vehicle on level surface. Apply the parking brake. Remove key and chock wheels.
- 1.2 Open the engine hood. Locate the coolant surge tank. Verify that the surge tank is mounted near the center of the Driver Control Module (firewall), as shown below.



If the surge tank is located on the right side (curbside) of the firewall, do not use this kit (10007704). A separate kit (10007697) is available for earlier model BBCV buses with the surge tank located on the right side of the firewall.

**2** Remove the original surge tank as follows:

**WARNING** Allow the engine and cooling system to cool to ambient temperature before proceeding.

- 2.1 Slowly loosen the surge tank pressure cap. Remove the cap and retain it for use on the new tank.
- 2.2 Partially drain coolant: Place a suitable drain pan under the radiator drain valve. Open the drain valve and allow the coolant to drain to a level below that of the bottom of the surge tank. Close the drain valve when the surge tank is empty of coolant.
- 2.3 Disconnect the wiring harness connector from the low coolant sensor.
- 2.4 Disconnect the two small vent hoses from the front of the surge tank.
- 2.5 Loosen the clamp which secures the fill hose to the bottom of the surge tank. Disconnect the fill hose from the bottom of the tank.
- 2.6 Disconnect the overflow hose from the surge tank fill neck. Retain this hose for re-use on the new tank.
- 2.7 Remove the six bolts (three at each end) which mount the toe box reinforcement channel. Remove the channel and surge tank as an assembly. Retain the six fasteners and the wire loom clamps that secure the heater hoses to the channels, for reuse.
- 2.8 Remove the low coolant sensor from the surge tank. This will be reinstalled on the new tank.
- 2.9 Remove the four bolts, nuts, and washers which mount the surge tank to the channel. Also remove the two bolts, nuts, and washers which attach the lower flange bracket to the channel. Retain these fasteners for reuse on the new parts.

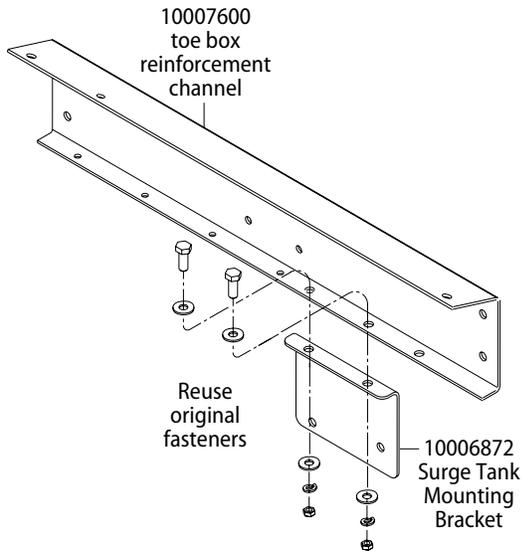


# INSTRUCTIONS

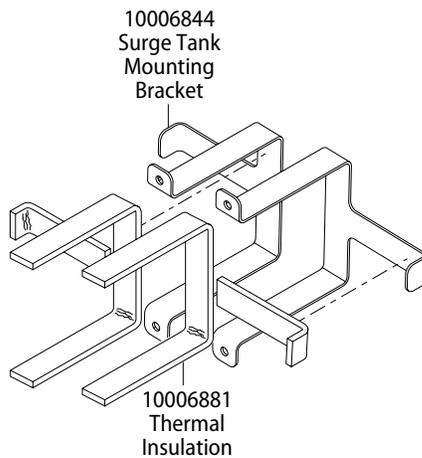
FOR: **10007704** | Kit, Surge Tank Replacement

**3** To simplify installation of the new tank, pre-assemble some of the parts as follows:

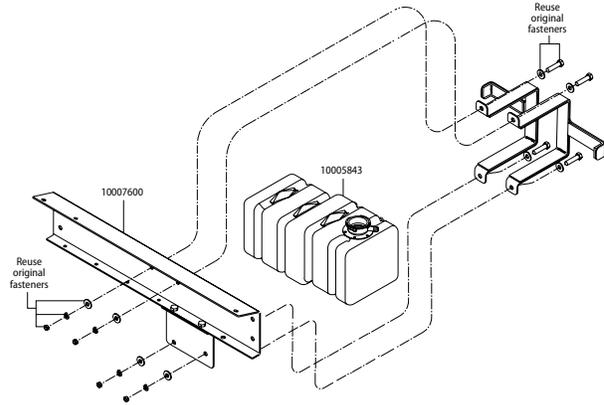
3.1 Assemble the new surge tank mounting bracket (10006872) to the new toe box reinforcement channel (10007600) using the fasteners removed from the original parts in step 2.9, as shown.



3.2 Apply strips of thermal insulation (10006881) to the inner surfaces of each surge tank mounting bracket (10006844). Three strips are provided. Use two full strips for the vertical members of the brackets. Cut the third strip in half for the two short horizontal members.



3.3 Assemble the new surge tank and the two mounting brackets (10006844) to the channel assembly, using the four capscrews (00803171), four lock washers (00882795), and four hex nuts (02001541) included in the kit.



3.4 Apply Teflon sealing tape to the threads of the low coolant sensor. Install the sensor in the new surge tank. Tighten sensor 1 to 1.5 turns past finger tight. 18-26 in lb.

**4** Install the channel/tank assembly in the original position, using the original fasteners removed in step 2.7.

**5** Reattach fittings and hoses, as follows:

- 5.1 Connect the harness connector to the low coolant sensor.
- 5.2 Reattach the fill hose to the bottom port of the tank, the two vent hoses to the front of the tank, and the overflow hose to the fill neck.
- 5.3 Secure the heater hoses to the channel as they were originally attached.
- 5.4 Refill the surge tank with the same brand of Blue Bird approved coolant as is installed in the bus. Install the surge tank pressure cap.





# INSTRUCTIONS

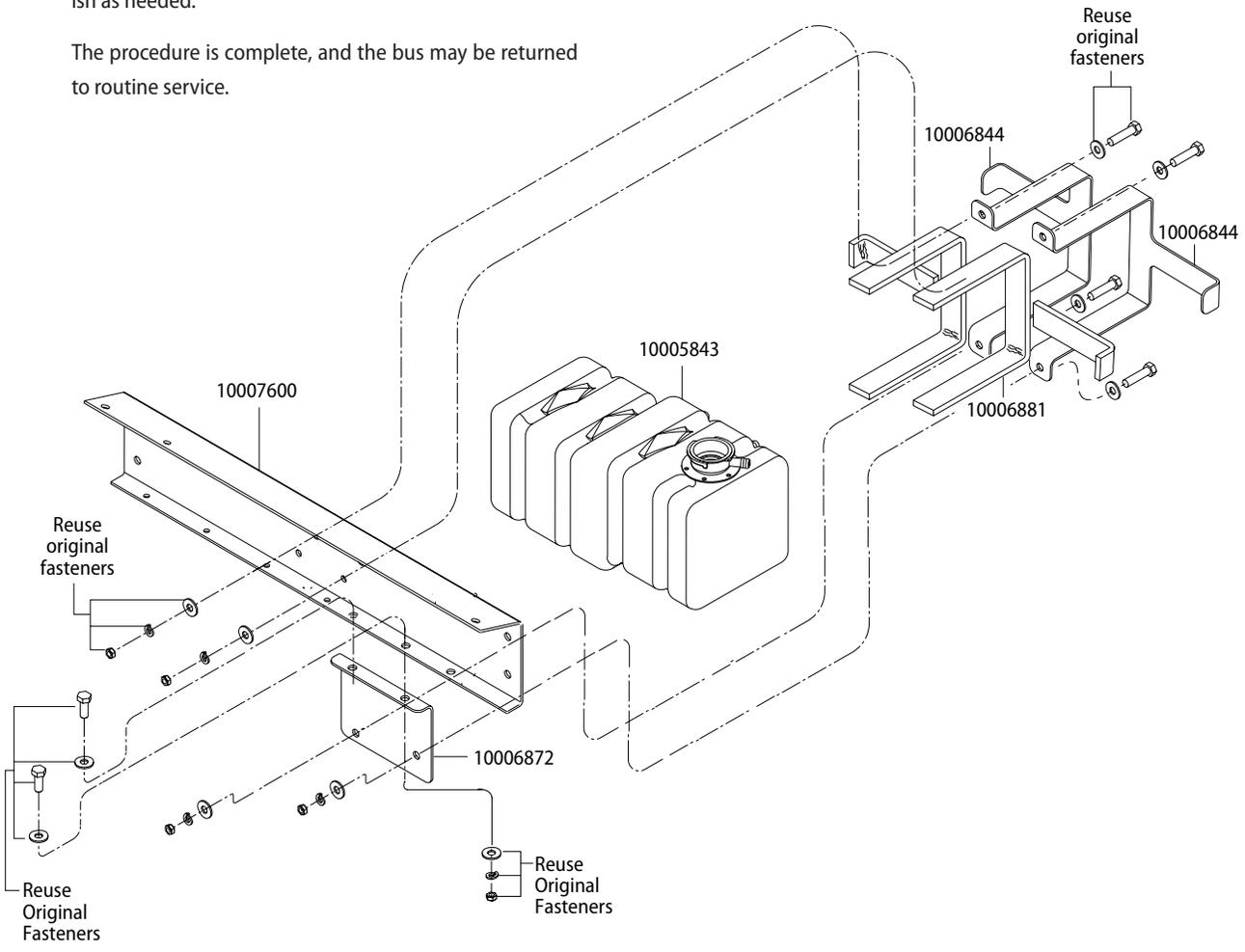
FOR: **10007704** | Kit, Surge Tank Replacement

## 6 Complete the installation, as follows:

6.1 Start and operate the engine until normal operating temperature is achieved. Check the surge tank hose connections and low coolant sensor for leaks.

6.2 Turn off the engine. Re-check the coolant level and replenish as needed.

The procedure is complete, and the bus may be returned to routine service.



| PARTS       |          |  |
|-------------|----------|--|
| PART NUMBER | QUANTITY | DESCRIPTION                                  |
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| 10006844    | 2        | Bracket, Mtg, Surge Tank, BBCV               |
| 10006881    | 3        | Insulation, Thermal, Strip, Surge Tank, BBCV |
| 10006872    | 1        | Bracket, Mtg, Surge Tank To DCM, BBCV        |
| 10007600    | 1        | Channel, Reinf, Toe Box To DCM, 2009, BBCV   |