| Subject: **Conflicts between the Volvo VN Truck Cluster and Cummins Engines with Road Relays** | Initial Release Date: 08/26/97 | | Revision Date: | Revision: |
| | Product Group: Volvo VN Cluster | | | Page: 1 of 4 |

## 1. Introduction

Sometimes conflicts are experienced between the Volvo VN Truck instrument cluster and Cummins engines with Road Relays. This document describes how to fix the problem by updating the cluster software to version 6.75.

## 2. Required Tools and Reference Documents

- AMETEK/Dixson Programming Software Update Kit - This kit contains all necessary equipment to perform the upgrade.

- Torx T25 driver - To loosen the cluster retaining screws

- Torque driver - capable of $2.0 \pm 0.3$ Nm ($17.5 \pm 2.5$ in-lb), and with Torx T25 bit

- 110 VAC power source - To power the laptop computer

- Diagonal cutting pliers - To cut the cable ties on the rear of the cluster

- Replacement cable ties - To secure the wiring harness to the cluster after the update

- VN Cluster Cross Reference Sheet

## 3. Procedure

1. Verify the ignition is OFF, then gain access to the cluster by following the instructions in Figure 1.
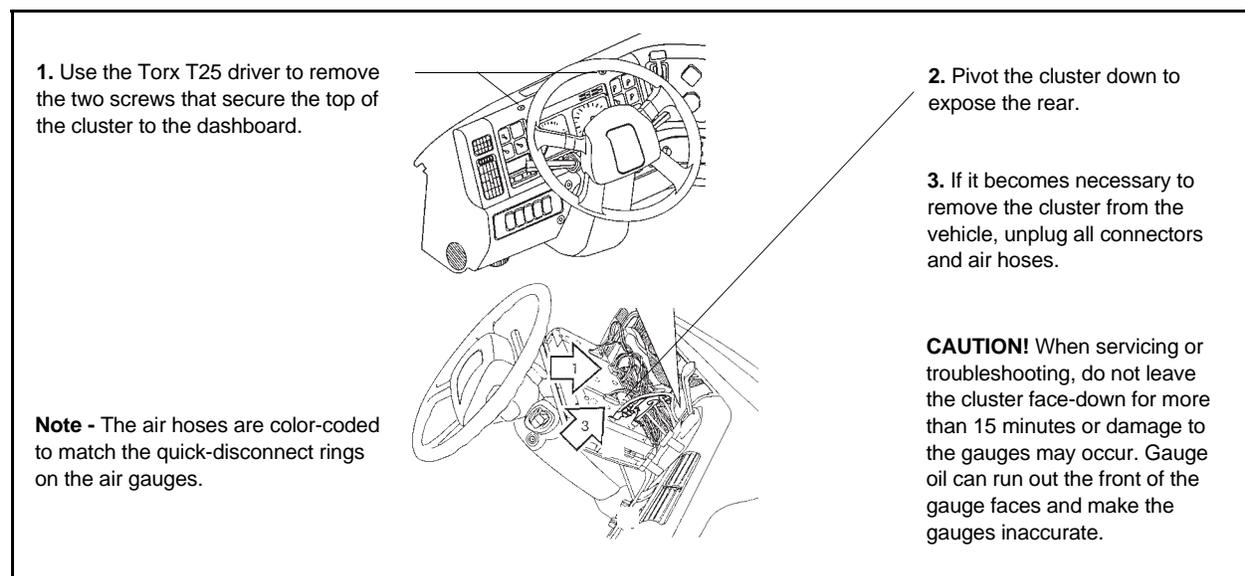
**1.** Use the Torx T25 driver to remove the two screws that secure the top of the cluster to the dashboard.

**Note -** The air hoses are color-coded to match the quick-disconnect rings on the air gauges.

**2.** Pivot the cluster down to expose the rear.

**3.** If it becomes necessary to remove the cluster from the vehicle, unplug all connectors and air hoses.

**CAUTION!** When servicing or troubleshooting, do not leave the cluster face-down for more than 15 minutes or damage to the gauges may occur. Gauge oil can run out the front of the gauge faces and make the gauges inaccurate.

**Figure 1**   *Gaining access to the rear of the cluster*

| Subject: **Conflicts between the Volvo VN Truck Cluster and Cummins Engines with Road Relays** | Initial Release Date: 08/26/97 | Revision Date: | Revision: |
|---|---|---|---|
| | Product Group: Volvo VN Cluster | | Page: 2 of 4 |

2.  Cut the cable ties that secure the wiring harness to the back of the cluster.

3.  Locate the two green connectors LY and LX on the left end of the cluster and unplug them. See Figure 2 for connector location.
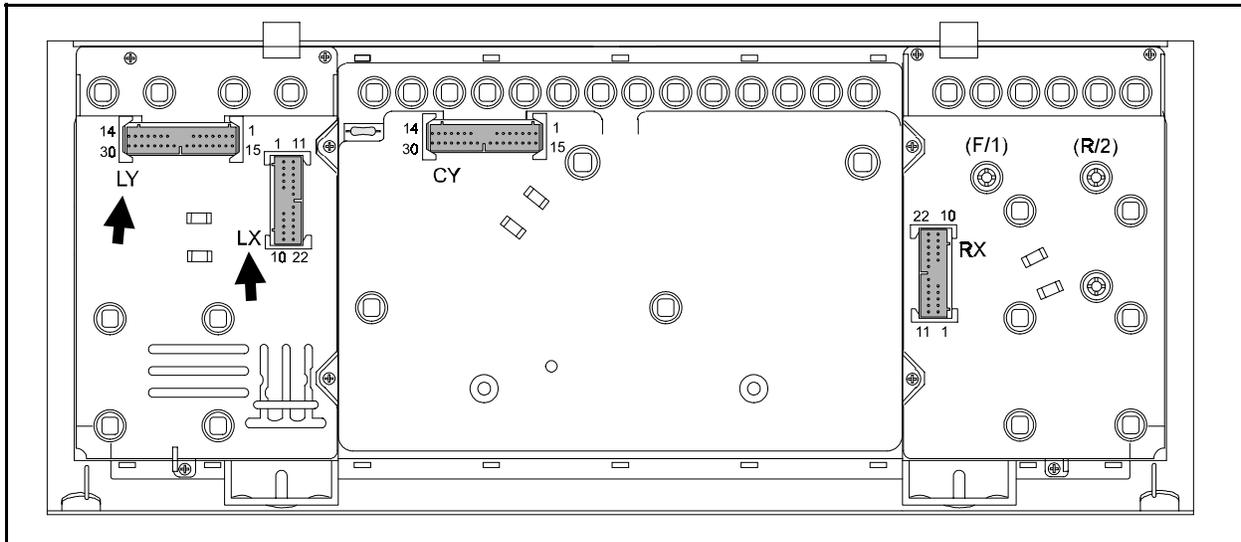


**Figure 2**   *Cluster as seen when pivoted down from the dashboard.*

4.  Plug the two green connectors from the update kit into connectors LX and LY on the cluster.

5.  Plug the red (+) and black (–) banana jack connectors from the update kit into the red and black power terminals on the dash.

6.  Turn the ignition ON but ***do not start the engine***. The graphic display unit on the cluster should light and the clock display should flash.

7.  Connect the AC power cord from the update kit and start the computer by pressing the large violet button on the computer. After a few seconds you should see the following screen:

```
      Volvo VN Instrument Cluster Software upgrade to 6.75

  WARNING!  Once the upgrade process has been started,
            it must be allowed to run to completion. Stopping
            the process early will DAMAGE the cluster.

 Are all the cables hooked up correctly?

 Type YES to continue. __
```

8.  Type YES and press the Enter key. The screen should display:

```
Would you like to quit without updating the cluster?
Type NO to continue. __
```

# Product Information Note
## 072-40225

**AMETEK**/DIXSON

287 27 Road, Grand Junction, CO 81503
Phone: (970) 244-1241; FAX: (970) 245-6267

| Subject: **Conflicts between the Volvo VN Truck Cluster and Cummins Engines with Road Relays** | Initial Release Date: 08/26/97 | | Revision Date: | Revision: |
|---|---|---|---|---|
| | Product Group: | Volvo VN Cluster | | Page: 3 of 4 |

9.  Type NO and press the Enter key. The screen should display:

    ```
    WARNING!  Disturbing the system while it is programming
              will DAMAGE the cluster. Do not disconnect the wiring,
              power, or press any keys while it is running.

    Are you ready to update the software?

    Type YES to continue. __
    ```

10. Type YES and press the Enter key. The programming process will begin when the screen displays:

    ```
    Upgrading the VN instrument cluster Software to version 6.75

        The cluster display will go blank

    This process should take about five minutes
    ```

11. ***Do not interrupt programming procedure.*** Let the program finish. When the programming is complete, the graphics display will return, and the computer will display the following data to indicate that the programming operation is complete. If the second series of lines does not match the first, the cluster has not been updated properly—retry the programming procedure:

    ```
    Verify the following lines
    .
    S, CERROR, 1000  (This means no error, anything else is an error)
    S, PERROR,  F  (This means no error, anything else is an error)
    F, PROG, 0000, Download Successful     (anything else is an error)
    .
    S, CERROR, 1000
    S, PERROR,  F
    F, PROG, 0000, Download Successful
    .
    .
    If not successful, Verify hookup and try again
    .
    .
    Turn computer off now
    C:\ __
    ```

## 3.1   Documenting the Change

If the programming was successful, place an updated software label on the cluster as shown on the *VN Cluster Reference Sheet*. The update label will aid in identifying the cluster should future service be required.

## 3.2   Reinstalling the Cluster

1.  Disconnect the AC power cord from the update kit.

2.  Turn the ignition OFF.

# Product Information Note
# 072-40225

**AMETEK**/DIXSON

287 27 Road, Grand Junction, CO 81503
Phone: (970) 244-1241; FAX: (970) 245-6267

| Subject: **Conflicts between the Volvo VN Truck Cluster and Cummins Engines with Road Relays** | Initial Release Date: 08/26/97 | Revision Date: | Revision: |
|---|---|---|---|
| | Product Group: Volvo VN Cluster | | Page: 4 of 4 |

3. Disconnect the red and black banana jack connectors from the power terminals.

4. Reconnect the two green connectors from the truck harness into LX and LY.

5. To relieve the strees on the connectors, secure the cables to the back of the cluster using new cable ties.

6. Install the cluster into the dash and use the torque wrench to tighten the two Torx screws at the top of the cluster to $2.0 \pm 0.3$ Nm ($17.5 \pm 2.5$ in-lb).

## 4. Testing the Installation

Test the update and the installation as follows:

1. Turn the ignition ON but do not start the engine.

2. Press the MODE button on the front of the cluster one time. The display should indicate **DIAGNOSTICS MENU**.

3. Press the UP button until the following is displayed:

   **'Cluster Self Test Mode'**
   **'SW ID : IC 6.75'**

   This will verify that version 6.75 has been installed and that the cluster is connected properly.

## 5. Technical Assistance

You can obtain technical assistance in completing this procedure by calling the AMETEK/Dixson Service Department at (800) 205-7710 or (970) 244-1259 Monday through Thursday between 7 a.m. and 5:30 p.m. Mountain Time, or Friday between 7 a.m. and 12 noon.