Volvo Car Corporation
TIE - Technical Information Exchange

TIE - Technical Journal

Title CEM Fault Tracing

Ref No **US16352.1.2 en-GB**
Issuer SWIECZOR - Stan Wieczorek
Partner 3 US 7510 Volvo Cars North America
Func Group 3723 **Func Desc** electric distribution box; electric dist

Status Released
Status Date 2010-03-03
Issue Date 2010-03-03
Reference

Attachment

File Name	File Size
attachment 37-24.pdf	0.0139 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
184							2005 -2006		0390000 -0446916	200425 -200609
275							2005 -2006		0134000 -0327999	200425 -200539
285							2005 -2006		0459000 -0554348	200425 -200539
295							2005 -2006		0220217 -0253999	200425 -200539
384							2005 -2006		0134000 -0254487	200425 -200539

CSC

Code	Description
3L	Repair information/Repair information/Not for warranty use
2V	Software/Vehicle communication/Software/Vehicle communication/Not for warranty use

DTC

Control Module	Code	Fault Type
CEM	DF03	Intermittent
CEM	1A51	Intermittent
CEM	DF16	Intermittent
CEM	1A64	Intermittent

Text
DESCRIPTION:

Analysis of replaced CEMs indicates a high No Fault Found rate. To help identify the actual root cause to certain electrical symptoms, this Tech Net Note is intended to clarify the role of the CEM in the vehicle and in the CANbus system. The following Tech Net Note is meant to clear out some confusion and hopefully reduce the number of CEMs being misdiagnosed. This information is intended to supplement the information provided in VADIS Design and Function for the CEM, CANbus fault-tracing and Software download.

SERVICE:

See attachment.

Volvo Car Corporation
TIE - Technical Information Exchange

TIE - Technical Journal

Title CEM Fault Tracing

Ref No US16389.1.1 en-GB
Issuer CHINDER1 - Catherine Hinderman
Partner 3 US 7510 Volvo Cars North America
Func Group 3724 **Func Desc**

Status Released
Status Date 2007-08-07
Issue Date 2007-06-19
Reference

Attachment

File Name	File Size
Attachment TJ 16389.doc.pdf	0.0139 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
184							1999 -1999		0000580 -0063999	199815 -199850
285							2001 -2001		0026213 -0170999	200020 -200107
384							2001 -2001		0000148 -0092351	200032 -200107

CSC

DTC

Text
DESCRIPTION:

Analysis of replaced CEMs indicates a high No Fault Found rate. To help identify the actual root cause to certain electrical symptoms, this Tech Net Note is intended to clarify the role of the CEM in the vehicle and in the CANbus system. The following Tech Net Note is meant to clear out some confusion and hopefully reduce the number of CEMs being misdiagnosed. This information is intended to supplement the information provided in VADIS Design and Function for the CEM, CANbus fault-tracing and Software download.

SERVICE:

See attachment.

Tech-*Net* Notes

"Fixed Right – First Time"

Volvo Technicians, Service and Parts Managers

NO: 3x-xx
DATE:
MODEL: All P2X (S60 S80 V70 XC70 XC90)
M. YEAR: 2005-2006 (structure week 200425-200545)
CHASSIS:

XC90	FC1	134000-256551
V70	FC1	459000-555060
S60	FC2	425000-522407
S80	FC1	390000-435423
XC70	FC1	173000-220845
V70	FC2	459000-554206

(FC = Factory code) 11th position of the VIN number

SUBJECT: CEM harness terminal corrosion due to water entrance in plenum (Instruction for new harness installation)
REFERENCE: VIDA repair instruction

This document supersedes the previous document dated 5/23/2006. Changes to this document are: Method 2 for later chassis numbers has been deleted due to the harness with the integrated grommet and plenum lid is no longer available. Method 1 shall be used for all chassis numbers in the header.
Please update your records.

DESCRIPTION:

Various electrical function and communication symptoms may occur in M/Y 2005-2006 vehicles caused by wet corrosion in the CEM connector.

The grommet that seals the harness entrance to the Plenum box may not seal properly if it has been incorrectly assembled.

This may cause a number of different functionality symptoms and DTC's to be set.

Examples include but not limited to:

- Headlight on, even if ignition key is taken out of ignition lock.
- Warning messages in DIM display.
- Warning lamps lit up.
- Brake lights always on.
- No start condition.

PRODUCT MODIFICATION: A new plenum sealing strategy with integrated rubber grommet was introduced in production from 2005 week 45. See photo below. This new sealing strategy will be carried over to the replacement engine bay harnesses on the chassis numbers indicated, by modification of the replacement harness.

Modified replacement harness

SERVICE:

If there are signs of water penetration in plenum box and/or wet corrosion at the CEM connectors, it will be necessary to install a new CEM and replace the engine bay cable harness according to the method below:

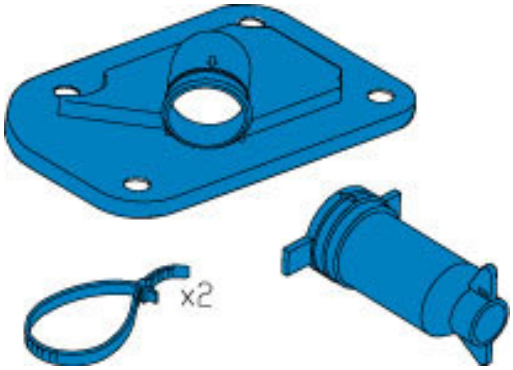
Modification of the original type replacement harness

Parts required;

- Engine bay cable harness, check VIDA parts catalogue

(This is the original type engine bay harness which will be modified with the instruction below)

- Plenum lid, P/N 30728860
- Service grommet, P/N 30775689
- Cable tie, P/N P/N 983750 (2 required)

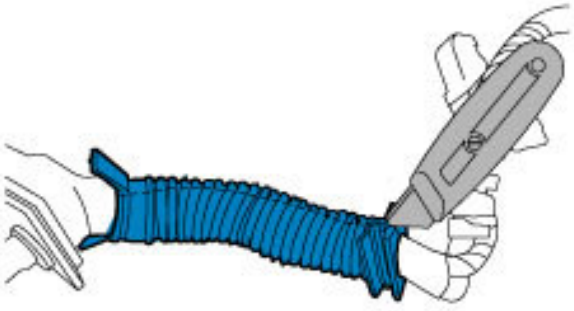


1.

Removing the existing rubber grommet

Remove the old rubber grommet using a knife.

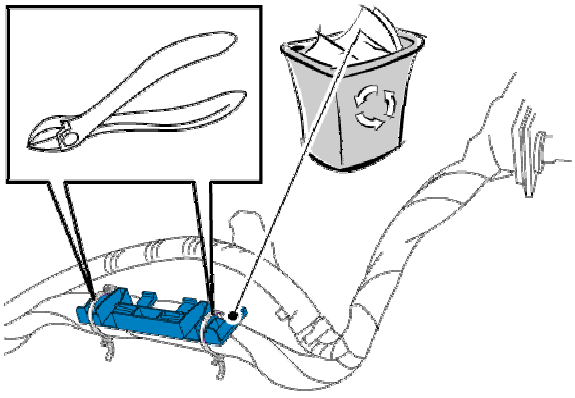
Caution! Make sure that no hoses or cables are damaged.



IMG-243942

2.

Remove and discard the holder from the new cable harness.

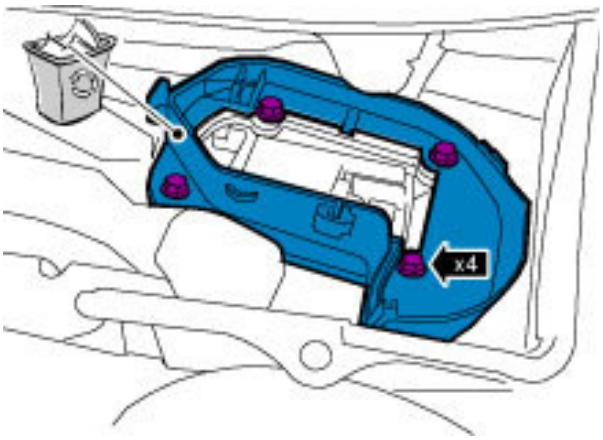


IMG-244520

3.

Remove and discard the existing surround.

Save the attachment screws to attach the new cover to the plenum floor.



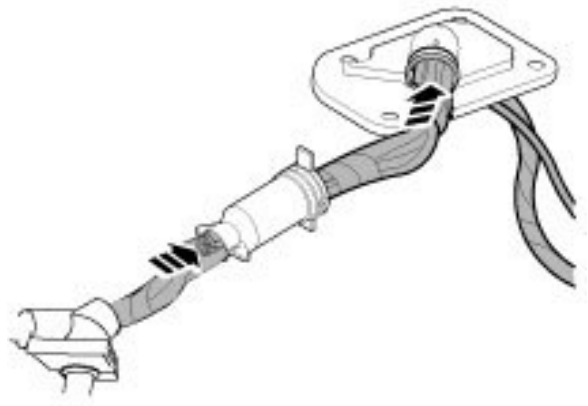
IMG-243946

4.

Installing the new seal

Route the cable harness through the new rubber grommet and cover.

Caution! Exercise caution so that the rubber grommet is not damaged when the connectors are threaded through.

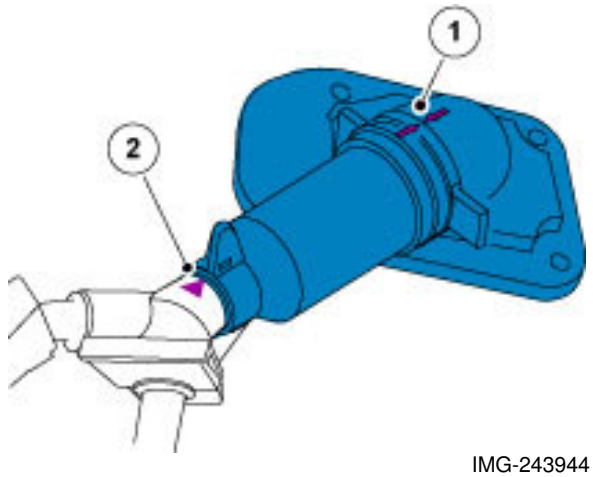


IMG-244521

5.

Installing the new seal, continued

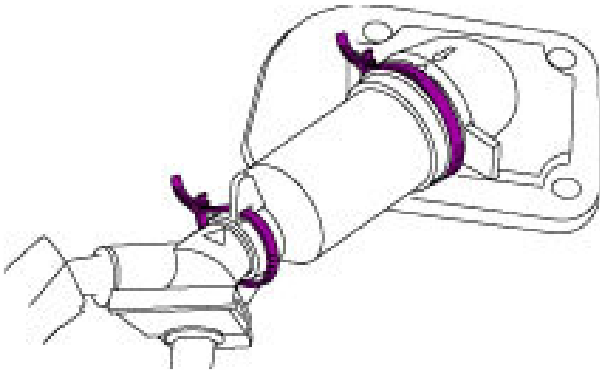
Align the arrows (1) towards each other. Arrow (2) must point towards the handle on the rubber grommet.



IMG-243944

6.

Installing the cable ties



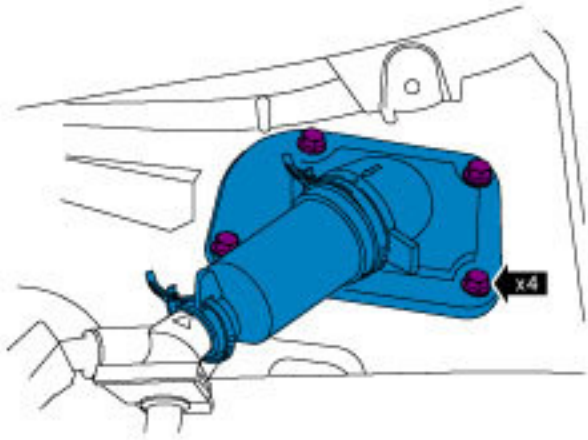
IMG-243945

7.

Installing the cover

Note: After installation, the cable harness under the cover will be slightly over length. Clamp it up in a suitable manner to prevent chaffing.

Tighten the screws to 10 Nm.



IMG-243947

WARRANTY CLAIM INFORMATION

LABOR OP	LABOR DESCRIPTION	LABOR TIME
37349-2	**Harness engine comp/dashboard repair**	**See Note below**

Claims may be submitted under the new car warranty when there is a documented customer complaint using claim type: 01

Note: General Labor time based on technician time required for repair. This repair is subjected to all audit requirements outlined in the warranty Policy and Procedure manual.

VOLVO for life,
Volvo Cars of North America, LLC

Please circulate, read and initial: _____Svc Mgr _____ Parts Mgr _____Shop Foreman

_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ TECHS

_____ Warranty Administrator _____ _____ _____ _____ _____ _____ S. Advisors

Volvo Car Corporation
TIE - Technical Information Exchange

TIE - Technical Journal

Title CEM harness terminal corrosion due to water entrance in plenum

Ref No US16409.1.4 en-GB
Issuer SWIECZOR - Stan Wieczorek
Partner 3 US 7510 Volvo Cars North America
Func Group 3723 **Func Desc** electric distribution box; electric dist

Status Released
Status Date 2008-05-28
Issue Date 2008-05-28
Reference

Attachment

File Name	File Size
TNN_37-35v2.doc	0.2929 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
184							2005 -2006	1	0390000 -0435423	200425 -200540
275							2005 -2006	1	0134000 -0256551	200425 -200540
285							2005 -2006	1	0459000 -0555060	200425 -200540
285							2005 -2006	2	0459000 -0554206	200425 -200540
295							2005 -2006	1	0173000 -0220845	200425 -200540
384							2005 -2006	2	0425000 -0522407	200425 -200540

CSC

Code	Description
7B	Starting/Engine does not start/Engine does not turn/No clicking sound at start attempt
AA	Starting/Engine does not start/Engine turns
BE	Starting/Engine does not start/Engine does not turn/Unsure when/at all times
BF	Starting/Engine does not start/Engine does not turn/Clicking sound at start attempt
BJ	Starting/Engine does not start/Unsure when/at all times
EY	Headlights/Does not work
CI	Tail light/Brake light does not work
7G	Text window and warning symbol/Yellow symbol and text message
EA	Text window and warning symbol/Red symbol and text message
FB	Text window and warning symbol/Other problems
IV	Text window and warning symbol/Text message

DTC

Text
DESCRIPTION:

Various electrical function and communication symptoms may occur in M/Y

2005-2006 vehicles caused by wet corrosion in the CEM (Central Electrical Module)

connector. The grommet that seals the harness entrance to the Plenum box may not seal

properly if it has been incorrectly assembled.

Examples include but not limited to:

- Headlight on, even if ignition key is taken out of ignition lock.
- Warning messages in DIM (Driver's Information Module) display.
- Warning lamps lit up.
- Brake lights always on.

□ No start condition.

SERVICE:

See attachment.

Volvo Car Corporation
TIE - Technical Information Exchange

TIE - Technical Journal

Title FTS: CEM may cause brake light, headlight, horn or wiper to turn on by itself.

Ref No **US17082.5.0 en-GB**
Issuer SWIECZOR - Stan Wieczorek
Partner 3 US 7510 Volvo Cars North America
Func Group 3723 **Func Desc** electric distribution box; electric dist

Status Closed
Status Date 2009-10-05
Issue Date 2008-07-09
Reference

Attachment

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
275							2007 -9999	21	0328000 -9999999	200620 -999999
285							2007 -2007	21	0617000 -0673859	200620 -200717
285							2007 -2008	22	0617000 -0693560	200620 -200739
295							2007 -2007	21	0254000 -0288671	200620 -200718
384							2007 -9999	22	0600000 -9999999	200620 -999999

CSC

Code	Description
EY	Headlights/Does not work
DB	Tail light/Backup lights constantly lit
HI	Horn/Does not work
JN	Windshield wiper/Does not work

DTC

Text
* DESCRIPTION: Reports with the above listed CSC's has been received, stating that the brake

* light, headlight, horn or wiper may turn on by itself and remain on until a battery reset has

* been performed. Replacing the CEM has solved the symptom.

* PRODUCT MODIFICATION: To prevent the brake light from turning on by itself, a SW

* workaround solution has been introduced from structure week 200826- and chassis numbers;

* 275, 502892-

* 384, 724299-

* The software is backwards compatible to structure week 200425.

* The SW will shut off the output signal from CEM if it is incorrectly set to high. The SW will

* also add a diagnostic function and set DTC CEM-8D04 if this workaround solution has been

* activated.

* The permanent action to take care of the symptoms described above is to make the CEM

* more robust towards interference. This job is upstarted and planned to be introduced into

* production late quarter 4 2008.

* MATERIAL RETURN: Only after request in technical reports.

* TECHNICAL REPORT: Yes, please submit a vehicle report if the symptom of brake light turning

* on by itself would occur, even if the CEM is upgraded with the new software.

* SERVICE: If the symptom of brake light turning on by itself would occur, please order and

* download the CEM Upgrade, P/N 30677017, to prevent this symptom from occurring.

* If any of the other symptoms would occur, please fault trace concerned cables and related

* components before any CEM may be replaced.

In urgent cases where a temporary solution is required, a battery disconnection for 10

minutes may solve the symptom, but it will probably return again.

VSTG OPERATION NUMBER:

36004-2 Software control module downloading

37206-2 Control module / relay box passenger compartment (CEM) replace

31116-2 Battery cable disconnect and reconnect

F.GROUP: 3729 **VARIANT, M/Y : P2X, MY 2005**

TJ REF : 8529

TITLE: Electrical function and communication symptom due to water entrance at Plenum box

CONDITION:

: Various electrical function and communication symptoms may occur in M/Y 2005 vehicles caused by wet corrosion in the CEM connector, if water has penetrated through the plenum box by the sealing grommet.

The grommet that seals the cables to the CEM may not seal good enough, if it has been incorrectly assembled.

This may cause a number of different functionality symptoms and DTC's to be set.

Examples:

- –Headlights and/or Brake light is on, even if ignition key is taken out of ignition lock.
- –Warning messages in DIM display.
- –Warning lamps lit up.
- –Engines run w/ key out of ignition
- –Engine stalls
- –**Battery flat**
- –**Climate sys fan on all the time**
- –**Frt. Park lights stuck on**

F.GROUP: 3729 **VARIANT, M/Y : P2X, MY 2005**

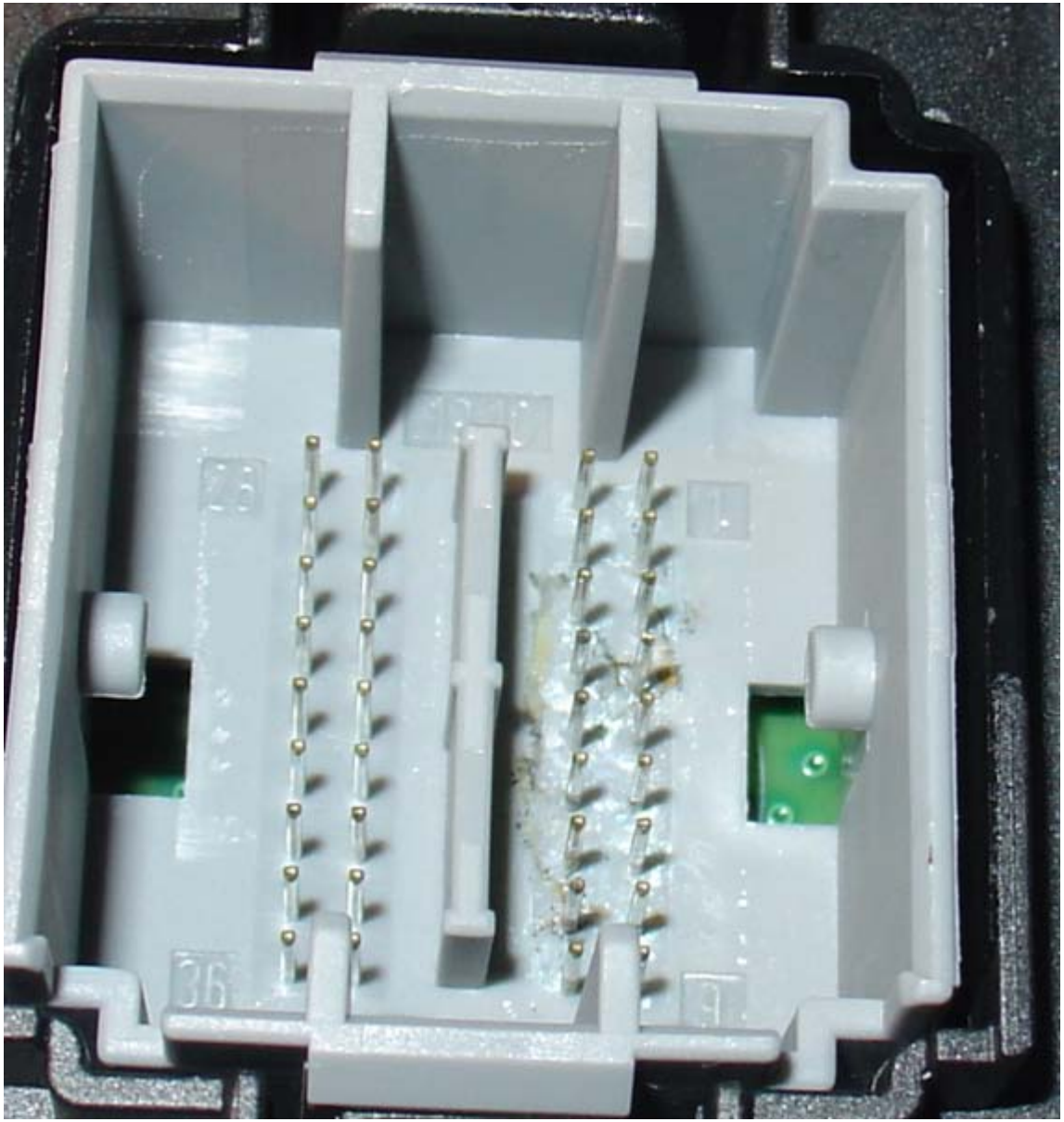
TJ REF : 8529

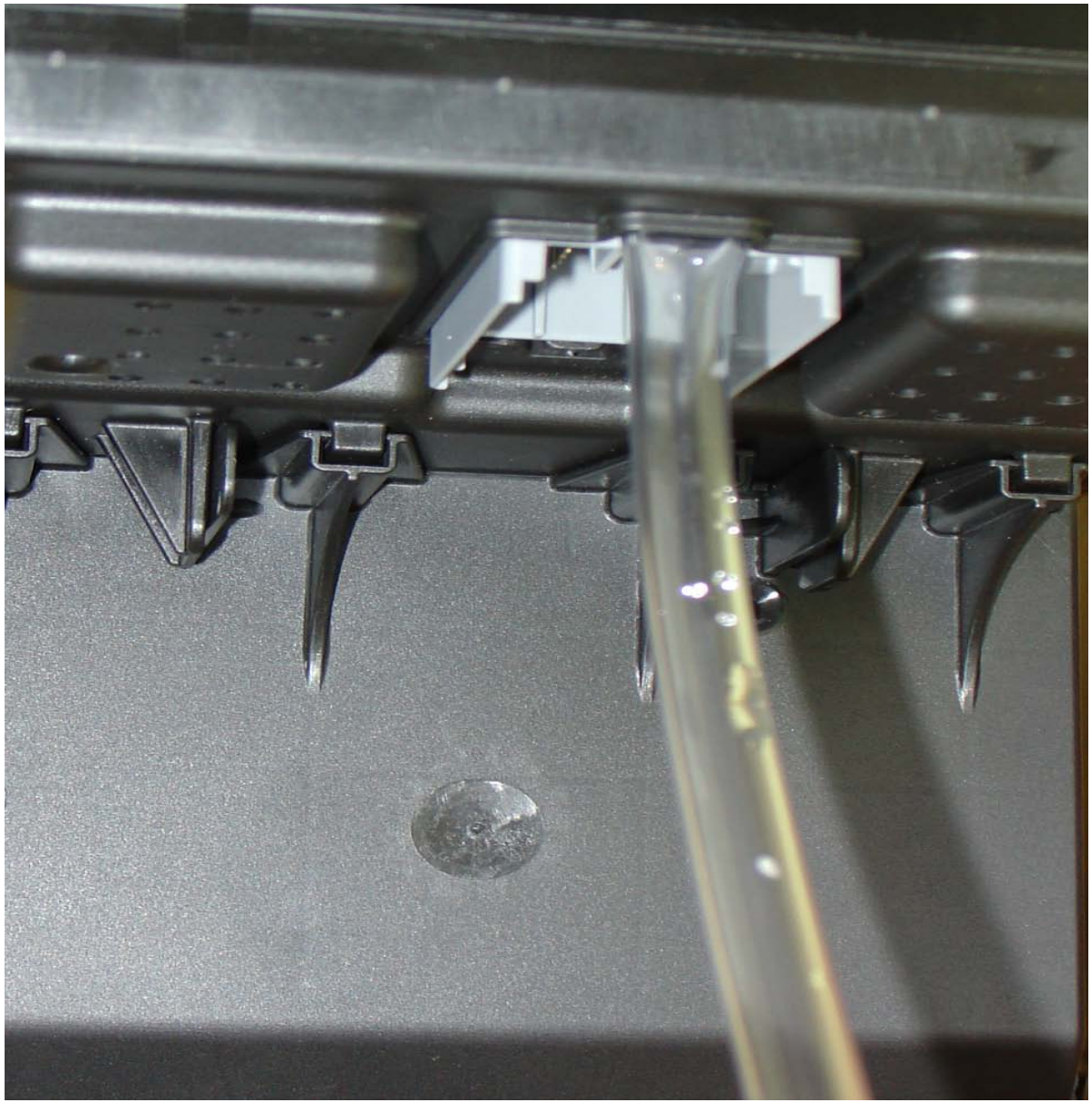
TITLE: Electrical function and communication symptom due to water entrance at Plenum box, cont.

PRODUCTION SOLUTION:
A new designed plenum box lid is being developed.
Planned for introduction into production during Q2/ 2006.

SERVICE SOLUTION:

Locate and correct the water leakage according to TJ 8529.





ELECTRICAL

BRUNSWICK, GA
MARCH 2006

URBAN DAGERHORN, STAN WIECZOREK & PÄR NILSSON
ROCKLEIGH, NJ, USA

F.GROUP: 3726 **VARIANT, M/Y: P2X, MY 05 and 06 up to W539**

TJ REF : 8529

TITLE: CEM harness, Water entrance through plenum

CONDITION:
Water entrance through
plenum cover corroding the CEM harness
Terminals.

PRODUCTION SOLUTION:
Harness with integrated lid/Plenum
cover introduced W540

SERVICE SOLUTION;
Harness with integrated lid can be used on cars from W520 to W540 with 2 exceptions “NM” and “S” harness.
These 2 can be used on cars back to W446.

Refer to lazy dog on your memory sticks.

NOTE! If there is any evidence of moisture In the CEM connectors, the harness Must be replaced. The terminals will Eventually be compromised

ENGINE BAY HARNESS		P28 05:40	P28 05:40	P2X 05:40
Ny Plenumgenomföring		**0540 > 0520**	**0540 > 0520**	**0540 > 0520**
	LABEL	**20V8**	P28 non V8	KB
Man. Petrol, DSTC	**J**			30739748 > 30737530
Man. Petrol, ABS/STC	**K**			30739749 > 30737531
Man. Petrol, DSTC, ECPS,Vacc,CCD,GDL	**R**			30739750 > 30737532
Man. Diesel, DSTC, ECPS,GDL	**C**			30739751 > 30737533
Man. Diesel, ABS/STC, ECPS,GDL	**A**			30739752 > 30737534
Aut. Petrol, DSTC	**L**			30739753 > 30737535
Aut. Petrol, ABS/STC	**M**			30739754 > 30737536
Aut. Petrol, DSTC, ECPS,Vacc,CCD,GDL	**T**			30739755 > 30737537
- " - R-line	**U**			30739756 > 30737538
Aut. Diesel, DSTC, ECPS,GDL	**D**			30739757 > 30737539
Aut. Diesel, ABS/STC, ECPS,GDL	**B**			30739758 > 30737540
Man. Petrol, DSTC, ECPS,Vacc,GDL	**NJ**		30739746 > 30739353	30739759 > 30737541
Man. Petrol, ABS/STC, ECPS,Vacc,GDL	**NK**			30739760 > 30737542
Aut. Petrol, DSTC, ECPS,Vacc,GDL	**NL**		30739825 > 30667342	30739761 > 30737543
Aut. Petrol, ABS/STC, ECPS,Vacc,GDL	**NM**		30667342 back to 0446	30739762 > 30737544
Man. Bi-fuel, DSTC, ECPS,GDL	**E**			30739763 > 30737545
Man. Bi-fuel, ABS/STC, ECPS,GDL	**F**			30739764 > 30737546
Aut. Bi-fuel, DSTC, ECPS,GDL	**G**			30739765 > 30737547
Aut. Bi-fuel, ABS/STC, ECPS,GDL	**H**			30739766 > 30737548
Man, Diesel, DSTC, ECPS, GDL, CCD	**NC**			30739767 > 30737549
Aut, Diesel, DSTC, ECPS, GDL, CCD	**ND**			30739768 > 30737550
Aut. Petrol, DSTC, ECPS,Vacc,CCD,GDL,6cyl	**Y**			30739769 > 30737551
Aut. Petrol, DSTC, ECPS,Vacc,GDL,6cyl	**V**		30739826 > 30667343	30739770 > 30737552
Aut. Petrol, ABS/STC, ECPS,Vacc,GDL,6cyl	**S**		30667343 back to 0446	30739771 > 30737553
V8	**NA**	30739745 > 30739344		

P2X CEM harness Service grommet

For cars from start of production MY **2005 up to W520** you must use the original P/N harness as well as a service grommet P/N 30775689 and a plenum lid P/N 30728860.
The grommet will be removed from the new harness and replaced with the service grommet and lid.
Preliminary service instructions are on your memory sticks

NOTE! If there is any evidence of moisture In the CEM connectors, the harness Must be replaced. The terminals will Eventually be compromised

ELECTRICAL

Rockleigh NJ
June 2008

MAGNUS BODMAR & STAN WIECZOREK
ROCKLEIGH, NJ, USA

F.GROUP: 3723 **VARIANT, M/Y: P2X MY 2007 -**

TJ REF : 17082

TITLE: CEM may cause brake light to turn on by itself

DESCRIPTION: We have received reports stating that the brake light, headlight, horn or wiper may turn on by itself and remain on until a battery reset has been performed. Replacing the CEM has solved the symptom.

SERVICE:

A SW workaround that will shut off the output signal from CEM if it is incorrectly set to high, is under development. This SW is scheduled to be released 08w26. The SW will also add a diagnostic function and set a DTC if this workaround solution has been activated.

DTC *CEM-8D03*, if this is observed with the complaints about brake lights being on. Replace CEM.

F.GROUP: 3723 **VARIANT, P2X M/Y: 2005 2006**

TJ REF : 8529

TITLE: New repair method for corroded CEM connectors

DESCRIPTION: In the past we have replaced the Engine harness if water ingress has damaged the connector at the CEM.

METHOD MODIFICATION:

Extensions with assembled connectors will be spliced into the engine harness instead of replacing the entire harness

TNN will be updated after method verification.

Volvo Car Customer Service		
		TJ Instruction
		No. T9159
		Date June -08 Issue 01
Title	Connector replacement	Page 1 of 4
Model	S80 (-06), V70 (00-08), XC70 (-07),S60, XC90	
Model Year	2005-2006	
Competence requirement	Volvo Level 3E Technician	

Material	Quantity	Part No.
Extension cable (32 pin)	1	31270635*
Extension cable (36 pin)	1	31270634*

* Only if necessary

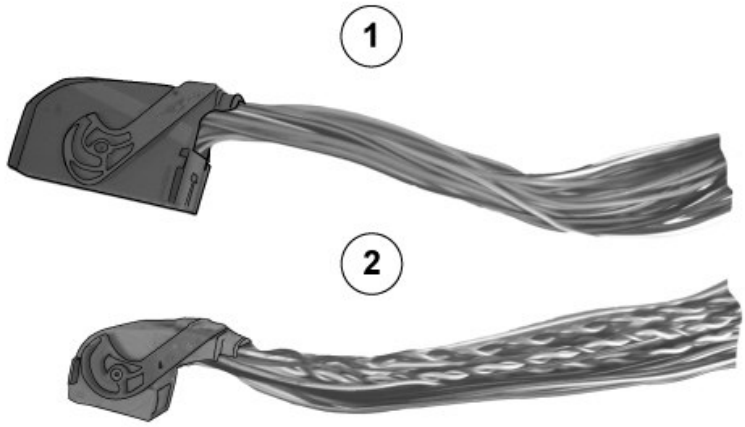
1.

Explanation

To prevent having to replace the entire engine compartment cable harness in the event of water penetrating the central control module (CEM), 2 different types of extension cables have been introduced.

(1) Extension cable, 32 pin

(2) Extension cable, 36 pin



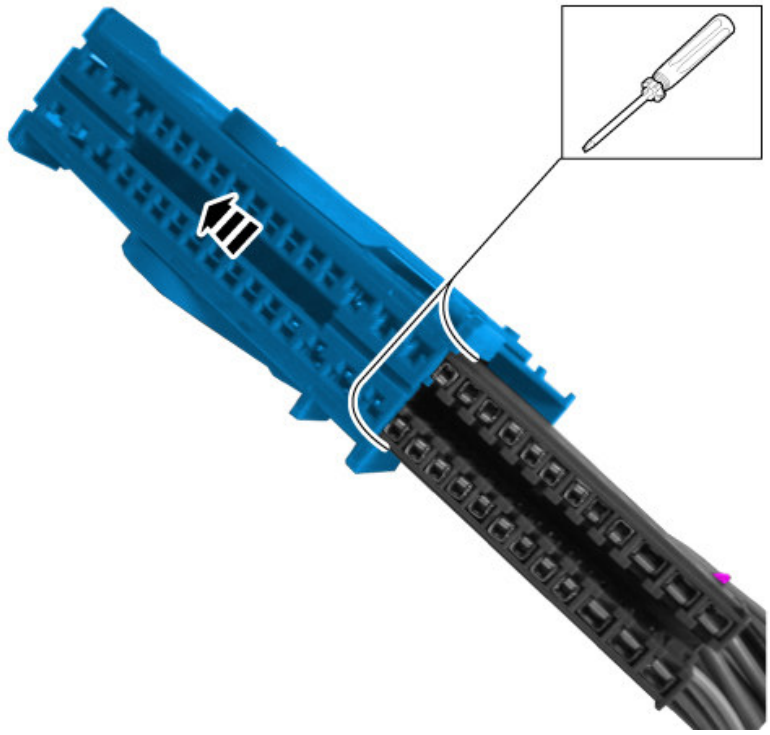
IMG-277370

VOLVO

2.

Replacement of the 32 pin connector

Remove the secondary catch.



IMG-277371

3.

32-pin connector

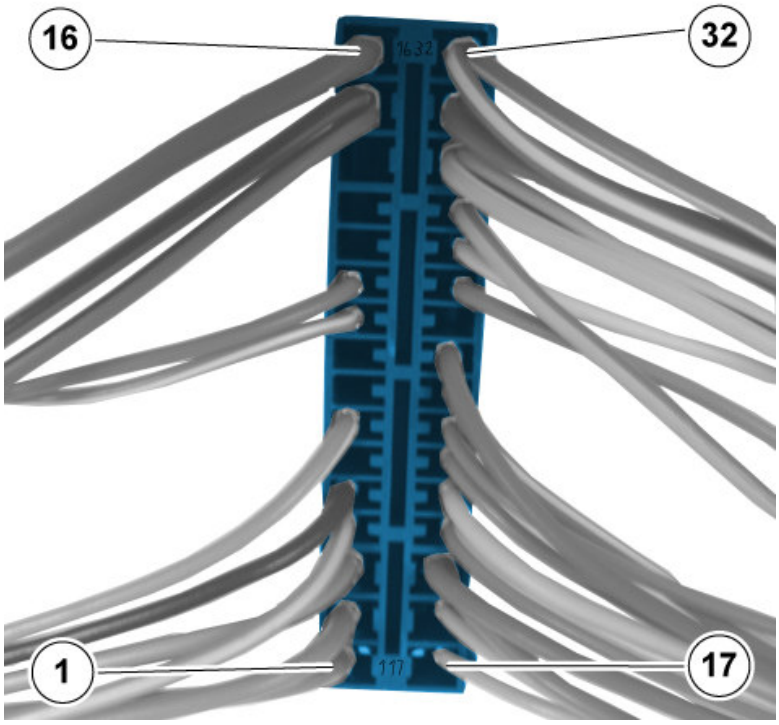
Caution! Cut and splice one cable at a time.

For cable splicing see:

Removal, replacement and installation
Electrical system
Cables and fuses
Wiring

Caution! The splice is designed to fit all variants, which means that colors and number of cables do not always correspond. Always start from the location of the terminals in the vehicle's connector at the cable splice.

Caution! If one or several of the cables remain, it/they must be removed or a moisture proof splice must be installed in the end of the cable(s).



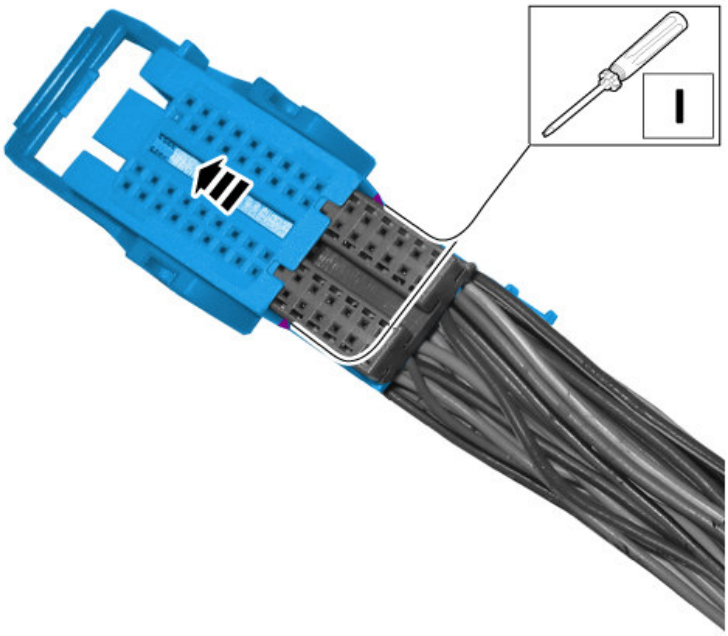
IMG-277372

Install the secondary catch.

4.

Replacement of the 36 pin connector

Remove the secondary catch.



IMG-277373

5.

36 pin connector

Caution! Cut and splice one cable at a time.

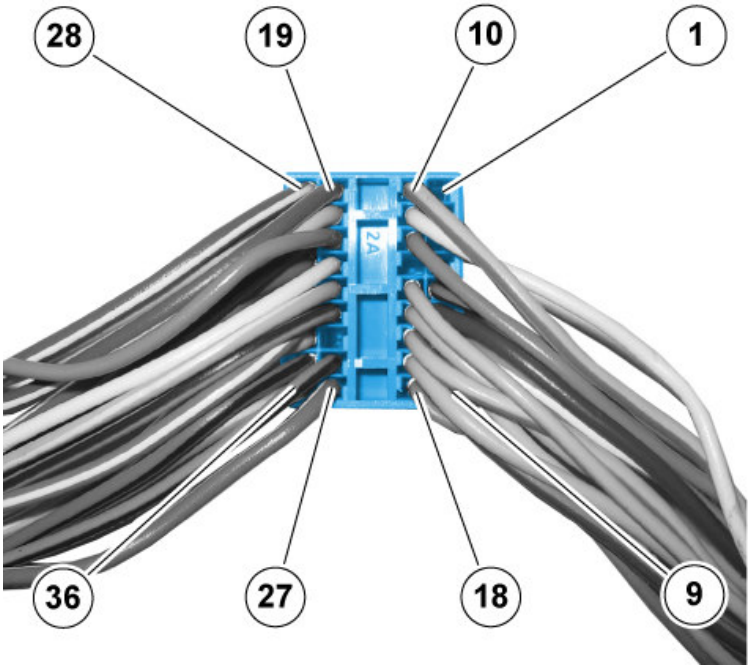
For cable splicing see:

Removal, replacement and installation
Electrical system
Cables and fuses
Wiring

Caution! The splice is designed to fit all variants, which means that colors and number of cables do not always correspond. Always start from the location of the terminals in the vehicle's connector at the cable splice.

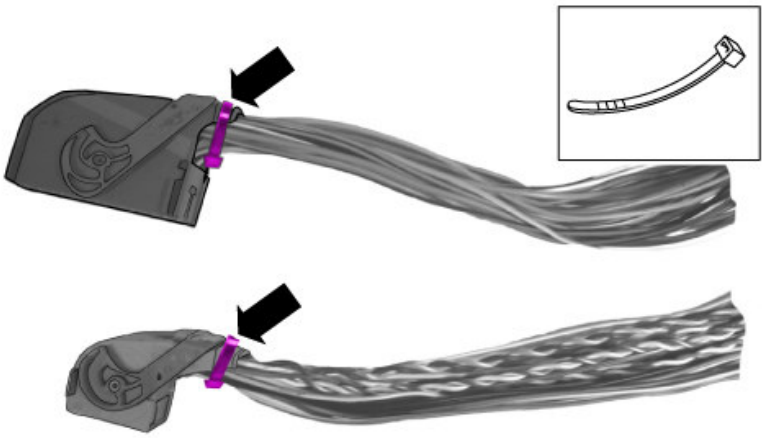
Caution! If one or several of the cables remain, it/they must be removed or a moisture proof splice must be installed in the end of the cable(s).

Install the secondary catch.



IMG-277374

6.



IMG-294644

		Volvo Car Customer Service
		TJ Instruction
		No. T9158
		Date June -08 Issue 01
Title	Replacement of the plenum cover	Page 1 of 7
Model	S80 (-06), V70 (00-08), XC70 (-07),S60, XC90	
Model Year	2005-2006	
Competence requirement	Volvo Level 3E Technician	

Material	Quantity	Part No.
Seal RHD	1	30728861
Seal LHD	1	30728860
Rubber grommet	1	30775689
Cable tie	2	983750
Central electronic module (CEM)	1	30786890*
CEM reload S80	1	9438273*
CEM reload V70/XC70	1	9494722*
CEM reload S60	1	8645433*
CEM reload XC90	1	8691290*

* Only if necessary

1.

Note! Some variation in the illustrations may occur, but the essential information is always correct.

VOLVO

2.

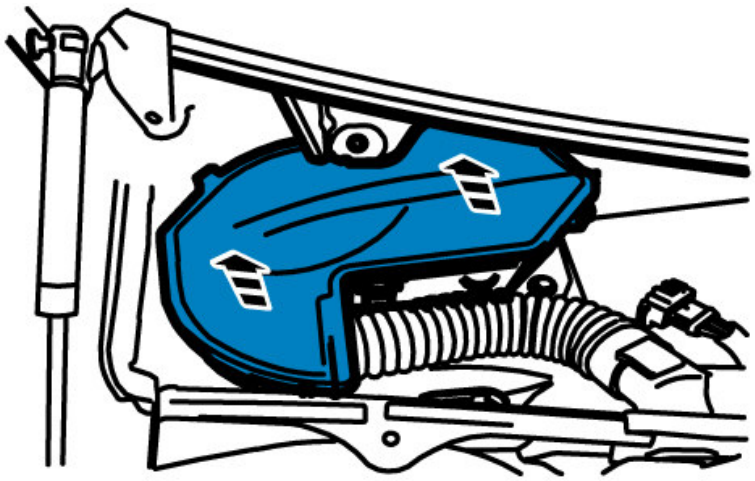
Remove the battery's minus cable, see:

Removal, replacement and installation
Electrical system
Battery and mounting
Battery

Remove the wiper mechanism, see:

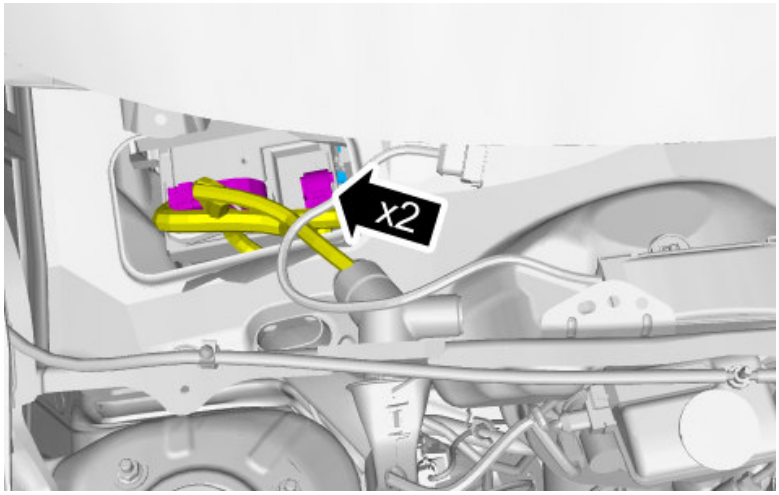
Removal, replacement and installation
Electrical system
Other electrical equipment
Cleaner

3.



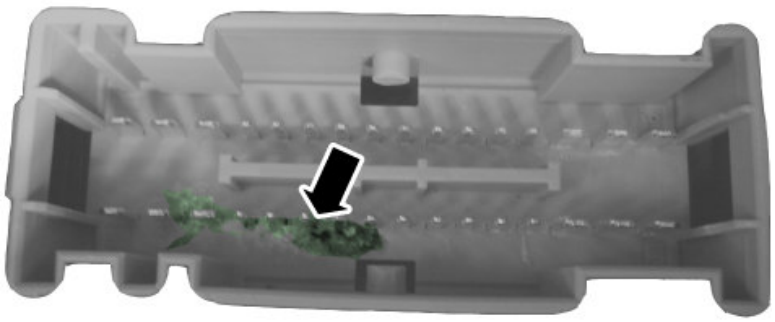
IMG-277365

4.



5.

Checking the connector



IMG-277367

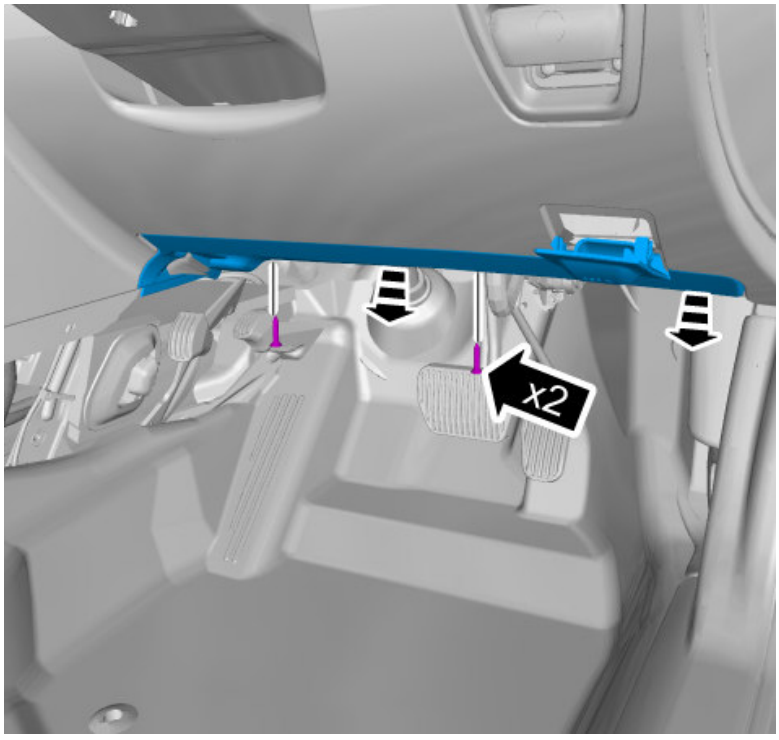
Check that there is no oxidation in any of the upper connectors on the CEM.
If there is oxidation, the CEM must be replaced at the same time as replacing any affected connectors.

For CEM replacement, see:

Removal, replacement and installation
Electrical system
Cables and fuses
Central electrical unit and fuse box.

To replace the connector, see Instruction T9159, Connector replacement.

6.



IMG-277368

7.

Release the engine bay wiring harness, under the dashboard.

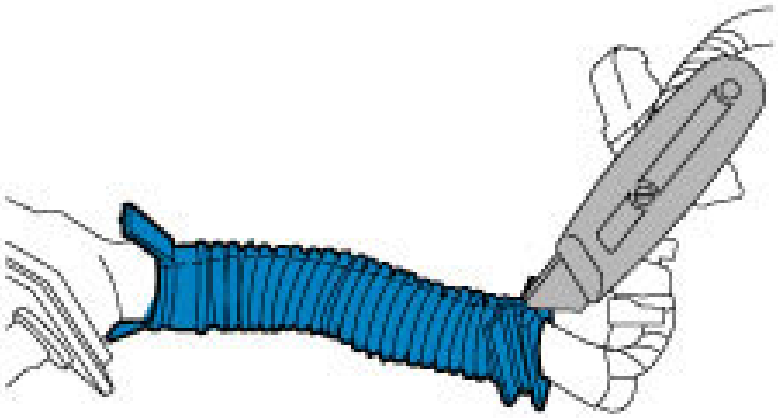
Route the wiring harness in the plenum channel.

8.

Removal of the existing rubber grommet

Caution! Do not damage any wirings.

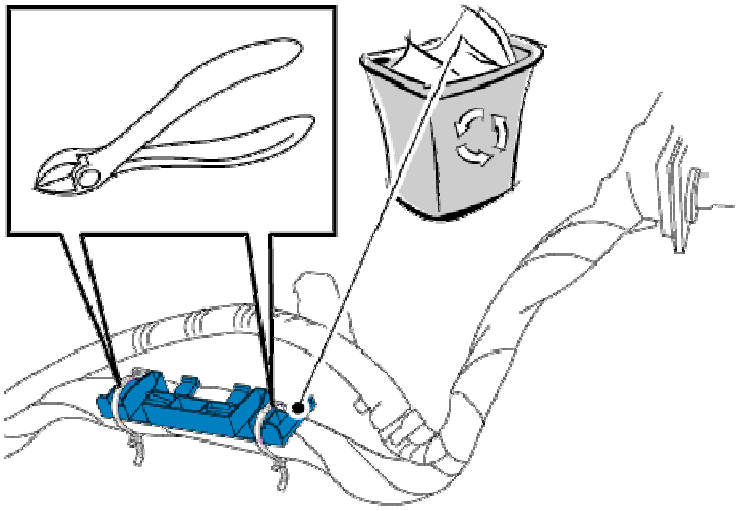
Remove the old rubber grommet using a knife.



IMG-243942

9.

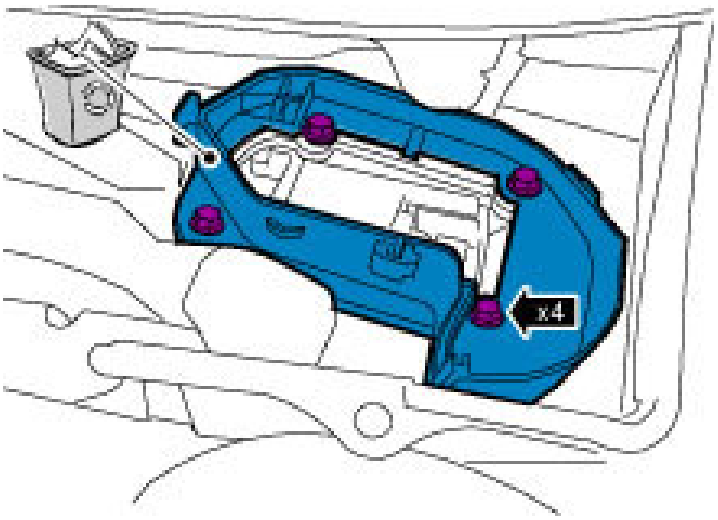
Remove the holder from the wiring harness.



IMG-244520

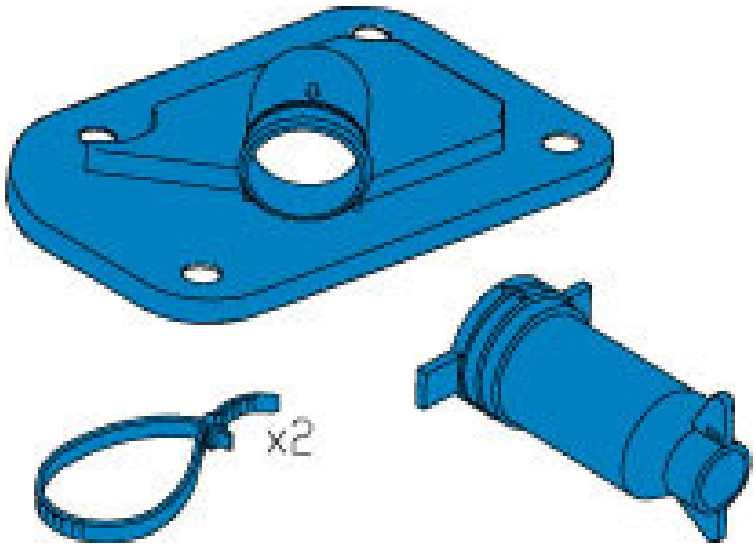
10.

Removal of border



IMG-243946

11.



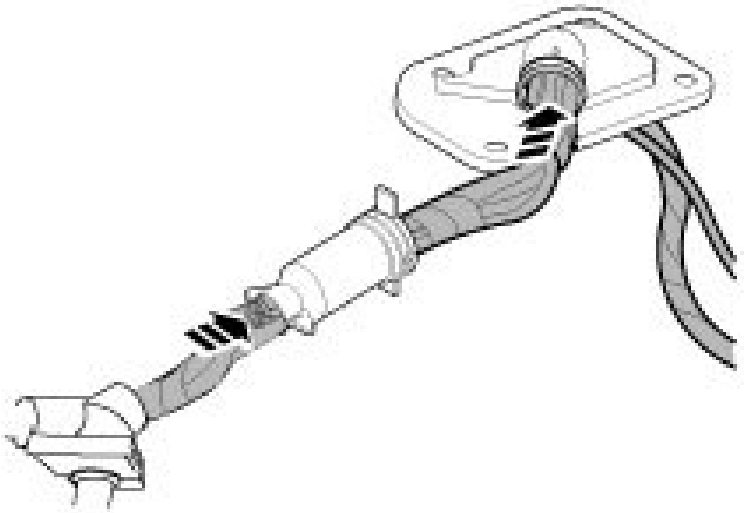
IMG-243943

12.

Installation of the new seal

Caution! Do not damage the rubber grommet when routing the connector through.

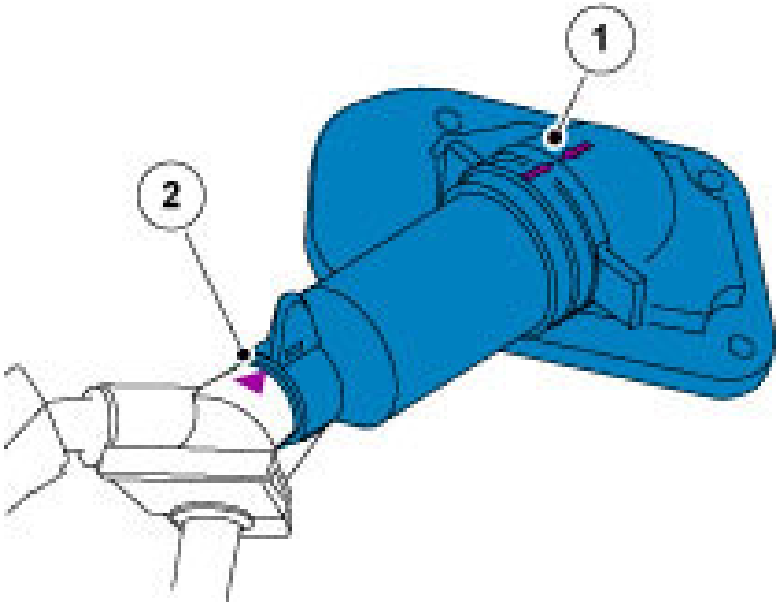
Route the wiring harness through the new rubber grommet and cover.



IMG-244521

13.

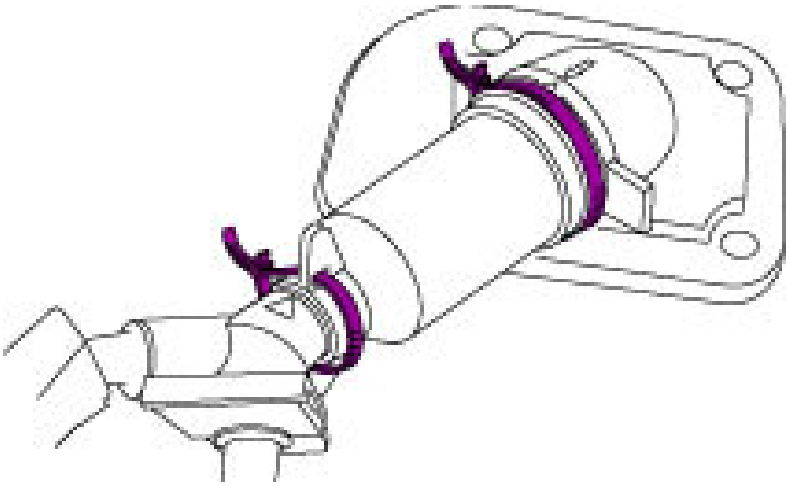
Position the arrows (1) opposite each other. Arrow (2) must point towards the handle on the rubber grommet.



IMG-243944

14.

Installation of the cable ties



IMG-243945

15.

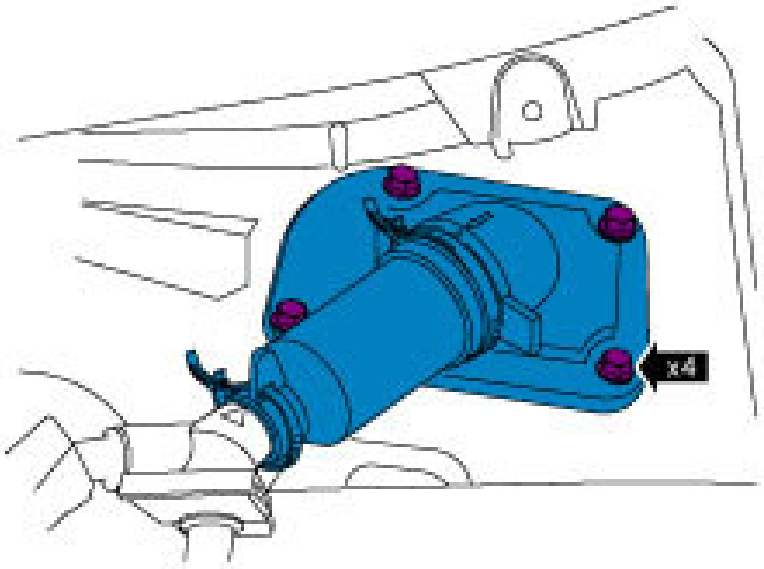
Installation of the cover

Caution! Ensure that the rubber gaskets remain in place on the four screws.

Note! After replacement, there will be some wiring harness excess. Secure in a suitable location.

Tighten to 10 Nm.

To install, reverse the removal procedure.



IMG-243947

Volvo Car Corporation
TIE - Technical Information Exchange

TIE - Technical Journal

Title Electrical function and communication symptom in M/Y 2005-2006, water in CEM

Ref No US8529.17.0 en-GB
Issuer SWIECZOR - Stan Wieczorek
Partner 3 US 7510 Volvo Cars North America
Func Group 3729 **Func Desc** miscellaneous

Status Released
Status Date 2008-06-09
Issue Date 2008-06-09
Reference Q2-060322

Attachment

File Name	File Size
T9158EN01.doc	0.4628 MB
T9159EN01.doc	0.5078 MB
Rubber gasket.JPG	0.0210 MB
New plenum box 2005w40-.JPG	0.0254 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
184							2005 -2006	21	0390000 -0435423	200425 -200540
275							2005 -2006	21	0134000 -0256551	200425 -200540
285							2005 -2006	21	0459000 -0555060	200425 -200540
285							2005 -2006	22	0459000 -0554206	200425 -200540
295							2005 -2006	21	0173000 -0220845	200425 -200540
384							2005 -2006	22	0425000 -0522407	200425 -200540

CSC

Code	Description
BJ	Starting/Engine does not start/Unsure when/at all times
EY	Headlights/Does not work
CI	Tail light/Brake light does not work
IV	Text window and warning symbol/Text message

DTC

Text
* TJ instruction attachments "T9158EN01.doc" and "T9159EN01.doc" changed in headers.

DESCRIPTION: Electrical function and communication symptoms may occur in M/Y 2005-2006 vehicles caused by wet corrosion in the CEM connector, if water has penetrated through the plenum box via the sealing grommet.

The grommet that seals the cables to the CEM may not seal good enough, if it has been incorrectly assembled.

This may cause different functionality symptoms and DTC's to be set.

Examples:

- Headlight on, even if ignition key is taken out of ignition lock.

- Warning messages in DIM display.

- Brake lights always on while parked.

- No start condition.

PRODUCT MODIFICATION: A new plenum box (see picture, New plenum box 2005w40-) with integrated rubber grommet was introduced in VCC production from 2005 week 40.

See end chassis break points in TJ header.

MATERIAL RETURN: If requested in vehicle report.

TECHNICAL REPORT: Yes, please submit a report if there are signs of water ingress after the chassis break points in TJ header.

SERVICE: If there are signs of water penetration in plenum box and / or wet corrosion at CEM connectors, it is necessary to:

- Replace the plenum cover in S60/V70/XC70/S80, cars between 2004w25-2005w20,
See instruction T9158.

- Replace the plenum cover in XC90, cars between 2004w25-2004w45,
See instruction T9158.

- Replace engine bay connectors and terminals with extension cables. See instruction T9159.

- replace CEM (according to VIDA).

NOTE! See instruction T9158, operation 15 and caution text. Both steel washer and rubber gasket must be moved over to the new cover. See attached picture, Rubber gasket.JPG

PARTS: See attached instructions T9158 and T9159.

VSTG OPERATION NUMBER:

99376-2 Rubber seal cable harness engine, replace

37206-2 CEM, replace

36004-2 Software control module downloading

Tech-*Net* Notes

"Fixed Right – First Time"

Volvo Technicians, Service and Parts Managers

NO:	37-24
DATE:	10-22-2002
MODEL:	**MY 99** – S80, **MY 01** – S60, V70 and V70 XC
SUBJECT:	CEM Fault Tracing
REFERENCE:	Tech Note 37-18, 37-22, 34-05, 36-35

THIS TECH NOTE SUPERCEDES THE PREVIOUS 37-24 DATED 10-21-2002.
PLEASE UPDATE YOUR FILES.

DESCRIPTION:
Analysis of replaced CEMs indicates a high No Fault Found rate. To help identify the actual root cause to certain electrical symptoms, this Tech Net Note is intended to clarify the role of the CEM in the vehicle and in the CANbus system. The following Tech Net Note is meant to clear out some confusion and hopefully reduce the number of CEMs being misdiagnosed. This information is intended to supplement the information provided in VADIS Design and Function for the CEM, CANbus fault-tracing and Software download.

NOTE: The CEM contains vehicle specific information which cannot be erased once programmed; once a CEM is programmed, it can not be used in another vehicle. Therefore, a CEM should **not** be programmed to a vehicle for fault tracing. Don't condemn the CEM.

SERVICE:

Common misunderstandings:

CANbus Faults:
"Do not shoot the messenger." Although the CEM monitors CANbus communication and verifies the presents of the other nodes, it is not responsible for all CANbus activity. When CANbus related faults are posted in the CEM, there seem to be a misunderstanding that the CEM is faulty. The CEM has ways of identifying faults in other nodes or in cable harness. When the CANbus is active, the CEM is checking for specific signals from each of the nodes (control units). Typically DTC CEM 1A51-1A64 indicates the CEM has not received the normal CAN message from the specific node, see Tech Net Note 37-22. DTC CEM DF03 – DF16 point towards short circuits from the CANbus wires (green and white twisted pair) to ground or +. This does NOT mean that the CEM is faulty, the CEM has detected that there is a fault somewhere in the vehicle.

Battery drain:
When fault tracing a vehicle for battery drain or dead battery, components with direct battery feed should be checked. For example: Does a light stay on?, does the power stage for the passenger compartment fan draw current after the key is out of the ignition? is the side mirror heater on constantly? is a relay activated all the time? (this is only a few examples, the wiring schematic for the specific vehicle being fault traced should be used for additional possibilities)

SW download:
The SW download procedure for CEM in VADIS is clarified in Tech Net Note 37-18, and **must** be used when replacing or programming a CEM. A SW download failing does not break any nodes. It may be difficult to recover, but it is possible (See **Tech Net Note 34-05**).

Immobilizing:
Immobilizer related problems are rarely due to a faulty CEM hardware. See **Tech Net Note 36-35** for proper immobilizer fault tracing.

Faulty relay activation:
Some CEMs are replaced when it is only the relay that is faulty. Relays are very easy to replace and test in another position, or another car. Often if a CEM is misdiagnosed due to a faulty relay, the faulty relay may then be installed into another position when the CEM is replaced. This will give the impression that: (1) the original CEM was defective; and (2) the new CEM has a different defect.

The CEM power feed relays should give a very straightforward fault tracing. If for example there are codes 1A54, PSM not alive, 1A55 CCM not alive, and 1A56 DIM not alive, it is important to check the relay 2/29, extended X feed.

Some tips and hints:

- The CEM monitoring function in VADIS is a very useful tool to determine if a relay is pulled or an input is detected as low or high. This monitor function, together with an actual measurement with the breakout box, will solve many questions regarding whether or not the CEM is operating correctly. Note only the CEM relay coil is diagnosed, not the actual relay output.

- When fault tracing CANbus related DTCs, refer to the "Data Communication" pages in the appropriate wiring diagram. These pages provide critical information including which nodes are connected in series and which are connected in parallel.

- CEM contains PIN codes related to immobilizer function but has got NOTHING to do with remote key PIN codes, or memory for power seat or memory mirrors. (remote codes are stored in UEM, seat memory in PSM, and mirror memories in DDM and PDM respectively.)

- The starter motor relay, which is activated by the CEM, has 0V output from the CEM both in activated and non activated state. Do not rule out any possibilities based on the voltage only. Check if the relay clicks or use a test lamp if available. The 0V ”supplied” by the CEM in the non activated state will not energize a relay coil.

- The CEM monitors the CAN high (white) and CAN low (green) cables. This does NOT mean that any CANbus problems are CEM related. The likelihood that the CEM causes a DTC E001 code is not higher than that another node does it. When fault tracing CANbus related fault codes in the CEM and other nodes, measure CANbus resistance (See TNN 37-22). Check behind radio for a pinched wire, check the CANbus wiring to the SRS, TCM, and ECM, including terminal tension.

CAUTION: When checking terminal tension, take care not to damage the female terminal by probing with a test lead or paper clip. Male terminal, part number 9441394 (the female counter part is part number 9442486) can be used to safely check for proper terminal tension in the applicable connectors.

- **NOTE:** If a DTC E001 is permanent in any node and the cable harness is OK, a good tip is to depower all nodes having DTC E001 in them (except the CEM) and see if the code disappears. Then reinstall them one by one until the code reappears. If it is possible to communicate with the vehicle in ignition pos 0 and 1 but not in 2, look for a 15 fed node corrupting the CANbus.

- To galvanically separate the OBDII connector from the rest of the vehicle's CANbus, the CEM contains 4 diagnostic relays. This means that the CEM "opens" communication HW wise to both high speed and low speed. The command to open this communication is sent via K-line from the VADIS cart to the CEM. This means that if VADIS can communicate to at least one node in the low speed and one node in the high speed CAN net, then these diagnostic relays are functioning properly. A broken K-line communication (between VADIS and the CEM) would disable both CAN nets. For cases in which there is no communication from VADIS to the vehicle (and the vehicle is function properly), verify the proper functionality of the VCT2000 cable.

- CEM is involved in the alarm system but so are other nodes. For vehicles after MY01, VADIS can be used to determine what triggered the alarm. Verify proper functionality of door locks, PDM, DDM, and UEM, for example by using the monitor function in vehicle communication in VADIS.

- Note! there is a big difference between "there is no DTC:s in a node" and "the node does not report a DTC". When reading DTC:s from all nodes, and there is a permanent CANbus fault, the VADIS information can be misinterpreted. If a node is not listed, it does not necessarily mean that the node contains no DTC, it can mean that the node is not responding.

- The CEM only communicates the temperature on a serial link to the TCU (seat heater control unit). If this serial link has good voltage levels when high and low, the CEM is NOT likely to be the root cause for a seat heater problem.

VOLVO for life,
Volvo Cars of North America, LLC.
Technical Service

Please read, initial and circulate:

____Svc Mgr ____ Parts Mgr ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ TECHS

____Wty Administrator _____Shop Foreman

Tech-*Net* Notes

"Fixed Right – First Time"

Volvo Technicians, Service and Parts Managers

NO:	32-04
DATE:	12-14-2005
MODEL:	S60, S80, V70, XC70, XC90 (excl. V8)
M. YEAR:	2005 & 2006
SUBJECT:	CEM DTC DD21 due to faulty LIN-network, Alternator Not Charging
REFERENCE:	VIDA

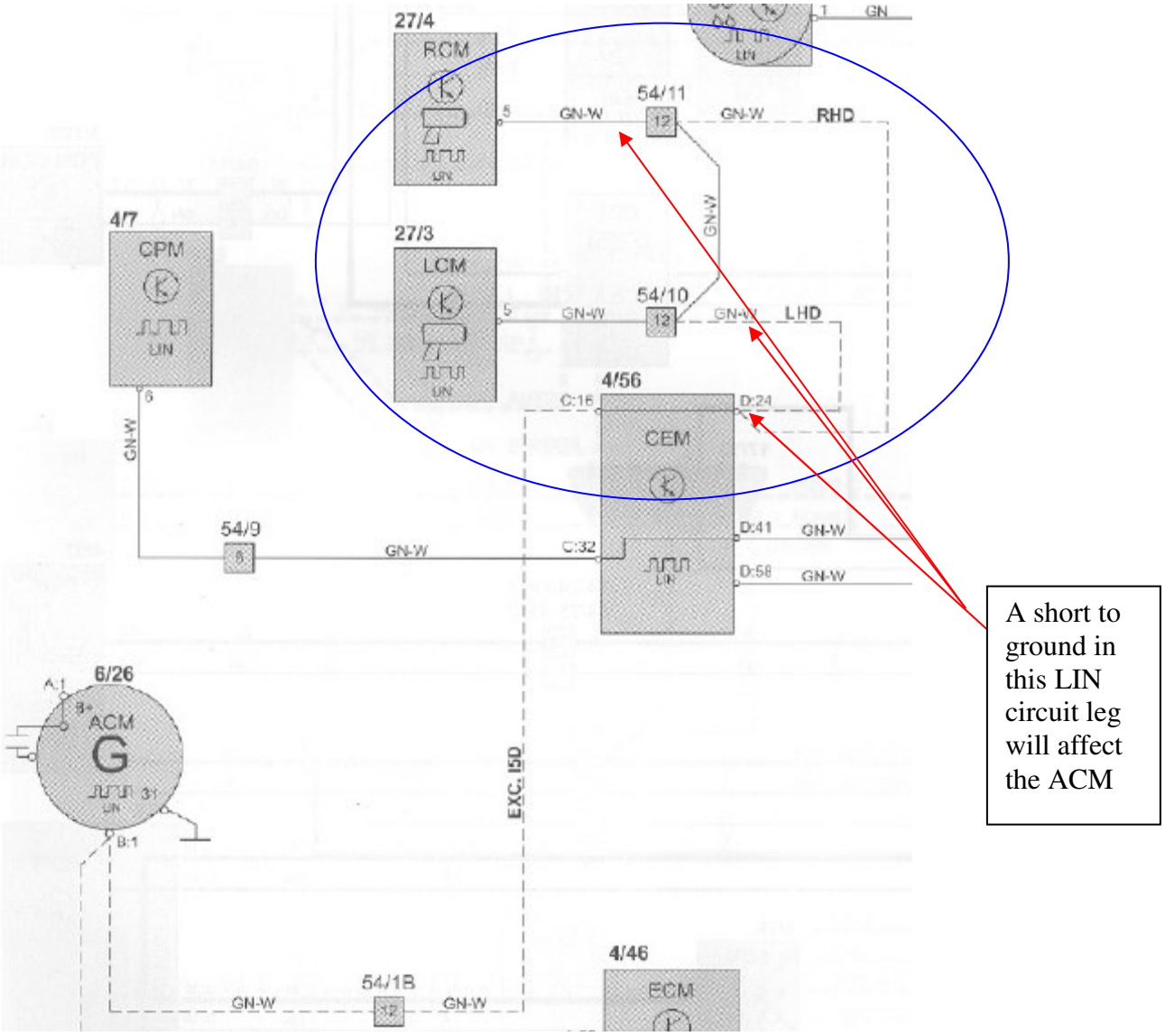
DESCRIPTION:
DTC CEM-DD21 may be set because of faulty communication between the Alternator and CEM due to the installation of extra LIN wiring for the upcoming BLIS, (Blind Spot Information System). Customers may also report an intermittent DIM message "POWER SYSTEM SERVICE REQUIRED" It may be possible that there is a pinched LIN-bus wire from the CEM to the BLIS-system between A-pillar body and the dashboard assembly on the left side. See details below under "SERVICE".

PRODUCT MODIFICATION:
A clip has been installed on the cars to prevent the LIN wire being pinched in production.

SERVICE:
Although BLIS (BLind spot Information System) has not been introduced yet, vehicles are pre-wired in production. The cables from CEM to RCM (Right Camera Module) and LCM (Left Camera Module) are present up to the mirror connector in both front doors.

The LIN-bus is also connected internally inside the CEM (see updated wiring diagram). When fault tracing a CEM-DD21, please assure that the RCM and LCM circuits are not overlooked. The BLIS circuits are not indicated in the Wiring Diagram for MY2005, but have been corrected for MY2006.

BLIS = Blind Spot Information System
ACM = Alternator Control Module
LCM = Left-hand Camera Module
RCM = Right-hand Camera Module
CEM = Central Electrical Module
LIN = Local interconnect network



If there is a short to ground in the circuit from CEM D24, repair the affected wiring as necessary.

If the DTC CEM-DD21 remains, perform normal fault tracing for the DTC per VIDA instruction.

WARRANTY CLAIM INFORMATION

LABOR OP	LABOR DESCRIPTION	LABOR TIME
03740	Checking cables for DTC CEM DD 21	0.3 hr
37419	General op for repairing cables	-------
	(Claimed time must be substantiated)	

Claims may be submitted under the new car warranty when there is a documented customer complaint using claim type: 01

VOLVO for life,
Volvo Cars of North America, LLC
Technical Service

Please circulate, read and initial: _____Svc Mgr _____ Parts Mgr _____Shop Foreman

_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ TECHS

_____ Warranty Administrator _____ _____ _____ _____ _____ _____S. Advisors

Tech-*Net* Notes

"Fixed Right – First Time"

Volvo Technicians, Service and Parts Managers

NO:	37-24
DATE:	10-22-2002
MODEL:	**MY 99** – S80, **MY 01** – S60, V70 and V70 XC
SUBJECT:	CEM Fault Tracing
REFERENCE:	Tech Note 37-18, 37-22, 34-05, 36-35

THIS TECH NOTE SUPERCEDES THE PREVIOUS 37-24 DATED 10-21-2002.
PLEASE UPDATE YOUR FILES.

DESCRIPTION:
Analysis of replaced CEMs indicates a high No Fault Found rate. To help identify the actual root cause to certain electrical symptoms, this Tech Net Note is intended to clarify the role of the CEM in the vehicle and in the CANbus system. The following Tech Net Note is meant to clear out some confusion and hopefully reduce the number of CEMs being misdiagnosed. This information is intended to supplement the information provided in VADIS Design and Function for the CEM, CANbus fault-tracing and Software download.

NOTE: The CEM contains vehicle specific information which cannot be erased once programmed; once a CEM is programmed, it can not be used in another vehicle. Therefore, a CEM should **not** be programmed to a vehicle for fault tracing. Don't condemn the CEM.

SERVICE:

Common misunderstandings:

CANbus Faults:
"Do not shoot the messenger." Although the CEM monitors CANbus communication and verifies the presents of the other nodes, it is not responsible for all CANbus activity. When CANbus related faults are posted in the CEM, there seem to be a misunderstanding that the CEM is faulty. The CEM has ways of identifying faults in other nodes or in cable harness. When the CANbus is active, the CEM is checking for specific signals from each of the nodes (control units). Typically DTC CEM 1A51-1A64 indicates the CEM has not received the normal CAN message from the specific node, see Tech Net Note 37-22. DTC CEM DF03 – DF16 point towards short circuits from the CANbus wires (green and white twisted pair) to ground or +. This does NOT mean that the CEM is faulty, the CEM has detected that there is a fault somewhere in the vehicle.

Battery drain:
When fault tracing a vehicle for battery drain or dead battery, components with direct battery feed should be checked. For example: Does a light stay on?, does the power stage for the passenger compartment fan draw current after the key is out of the ignition? is the side mirror heater on constantly? is a relay activated all the time? (this is only a few examples, the wiring schematic for the specific vehicle being fault traced should be used for additional possibilities)

SW download:
The SW download procedure for CEM in VADIS is clarified in Tech Net Note 37-18, and **must** be used when replacing or programming a CEM. A SW download failing does not break any nodes. It may be difficult to recover, but it is possible (See **Tech Net Note 34-05**).

Immobilizing:
Immobilizer related problems are rarely due to a faulty CEM hardware. See **Tech Net Note 36-35** for proper immobilizer fault tracing.

Faulty relay activation:
Some CEMs are replaced when it is only the relay that is faulty. Relays are very easy to replace and test in another position, or another car. Often if a CEM is misdiagnosed due to a faulty relay, the faulty relay may then be installed into another position when the CEM is replaced. This will give the impression that: (1) the original CEM was defective; and (2) the new CEM has a different defect.

The CEM power feed relays should give a very straightforward fault tracing. If for example there are codes 1A54, PSM not alive, 1A55 CCM not alive, and 1A56 DIM not alive, it is important to check the relay 2/29, extended X feed.

Some tips and hints:

- The CEM monitoring function in VADIS is a very useful tool to determine if a relay is pulled or an input is detected as low or high. This monitor function, together with an actual measurement with the breakout box, will solve many questions regarding whether or not the CEM is operating correctly. Note only the CEM relay coil is diagnosed, not the actual relay output.

- When fault tracing CANbus related DTCs, refer to the "Data Communication" pages in the appropriate wiring diagram. These pages provide critical information including which nodes are connected in series and which are connected in parallel.

- CEM contains PIN codes related to immobilizer function but has got NOTHING to do with remote key PIN codes, or memory for power seat or memory mirrors. (remote codes are stored in UEM, seat memory in PSM, and mirror memories in DDM and PDM respectively.)

- The starter motor relay, which is activated by the CEM, has 0V output from the CEM both in activated and non activated state. Do not rule out any possibilities based on the voltage only. Check if the relay clicks or use a test lamp if available. The 0V ”supplied” by the CEM in the non activated state will not energize a relay coil.

- The CEM monitors the CAN high (white) and CAN low (green) cables. This does NOT mean that any CANbus problems are CEM related. The likelihood that the CEM causes a DTC E001 code is not higher than that another node does it. When fault tracing CANbus related fault codes in the CEM and other nodes, measure CANbus resistance (See TNN 37-22). Check behind radio for a pinched wire, check the CANbus wiring to the SRS, TCM, and ECM, including terminal tension.

CAUTION: When checking terminal tension, take care not to damage the female terminal by probing with a test lead or paper clip. Male terminal, part number 9441394 (the female counter part is part number 9442486) can be used to safely check for proper terminal tension in the applicable connectors.

- **NOTE:** If a DTC E001 is permanent in any node and the cable harness is OK, a good tip is to depower all nodes having DTC E001 in them (except the CEM) and see if the code disappears. Then reinstall them one by one until the code reappears. If it is possible to communicate with the vehicle in ignition pos 0 and 1 but not in 2, look for a 15 fed node corrupting the CANbus.

- To galvanically separate the OBDII connector from the rest of the vehicle's CANbus, the CEM contains 4 diagnostic relays. This means that the CEM "opens" communication HW wise to both high speed and low speed. The command to open this communication is sent via K-line from the VADIS cart to the CEM. This means that if VADIS can communicate to at least one node in the low speed and one node in the high speed CAN net, then these diagnostic relays are functioning properly. A broken K-line communication (between VADIS and the CEM) would disable both CAN nets. For cases in which there is no communication from VADIS to the vehicle (and the vehicle is function properly), verify the proper functionality of the VCT2000 cable.

- CEM is involved in the alarm system but so are other nodes. For vehicles after MY01, VADIS can be used to determine what triggered the alarm. Verify proper functionality of door locks, PDM, DDM, and UEM, for example by using the monitor function in vehicle communication in VADIS.

- Note! there is a big difference between "there is no DTC:s in a node" and "the node does not report a DTC". When reading DTC:s from all nodes, and there is a permanent CANbus fault, the VADIS information can be misinterpreted. If a node is not listed, it does not necessarily mean that the node contains no DTC, it can mean that the node is not responding.

- The CEM only communicates the temperature on a serial link to the TCU (seat heater control unit). If this serial link has good voltage levels when high and low, the CEM is NOT likely to be the root cause for a seat heater problem.

VOLVO for life,
Volvo Cars of North America, LLC.
Technical Service

Please read, initial and circulate:

____Svc Mgr ____ Parts Mgr ____ ____ ____ ____ ____ ____ ____ ____ ____ ____ TECHS

____Wty Administrator _____Shop Foreman

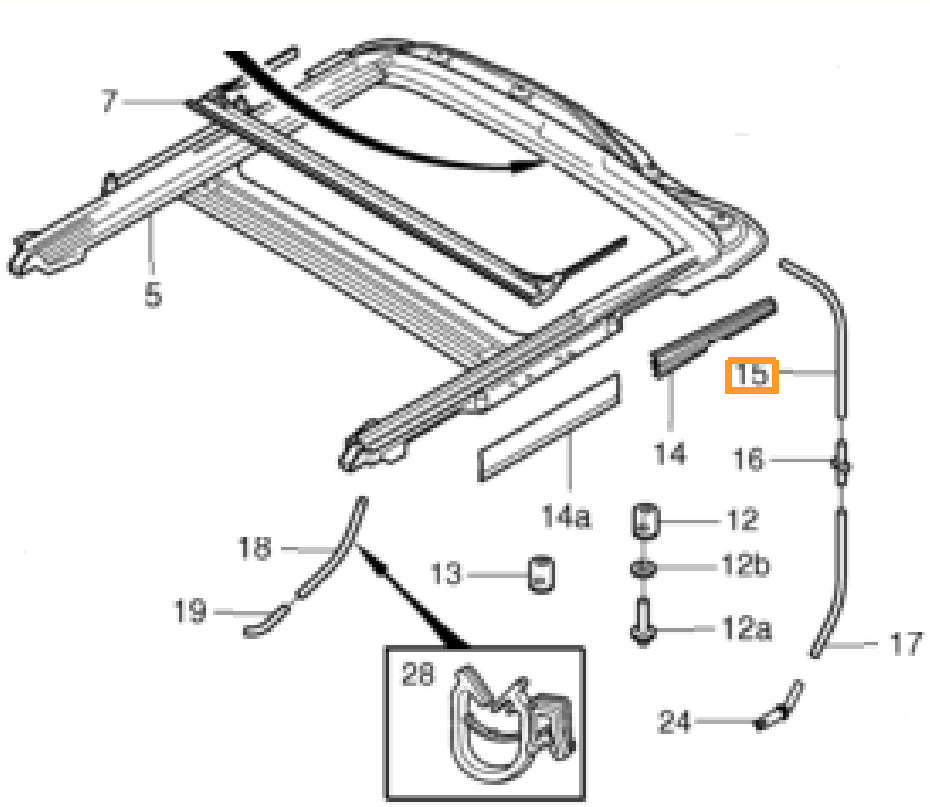
BODY AND INTERIOR

March 2009 Technical Update

Andy McCloskey - Martin Hansson
E-Meeting

All Models Sunroof, water leakage due to shrunk hoses.

Analyze of returned parts from California confirms the statements from the TRs.
Hoses with new material will be introduced 09W15.



P1/P2 Plenum water leakage

P2

PROBLEM DESCRIPTION:

Under specific weather conditions (alternating above/below freezing) there is a risk for the plenum drains to freeze. As a result, water builds up in the plenum box.

CONSEQUENCES:

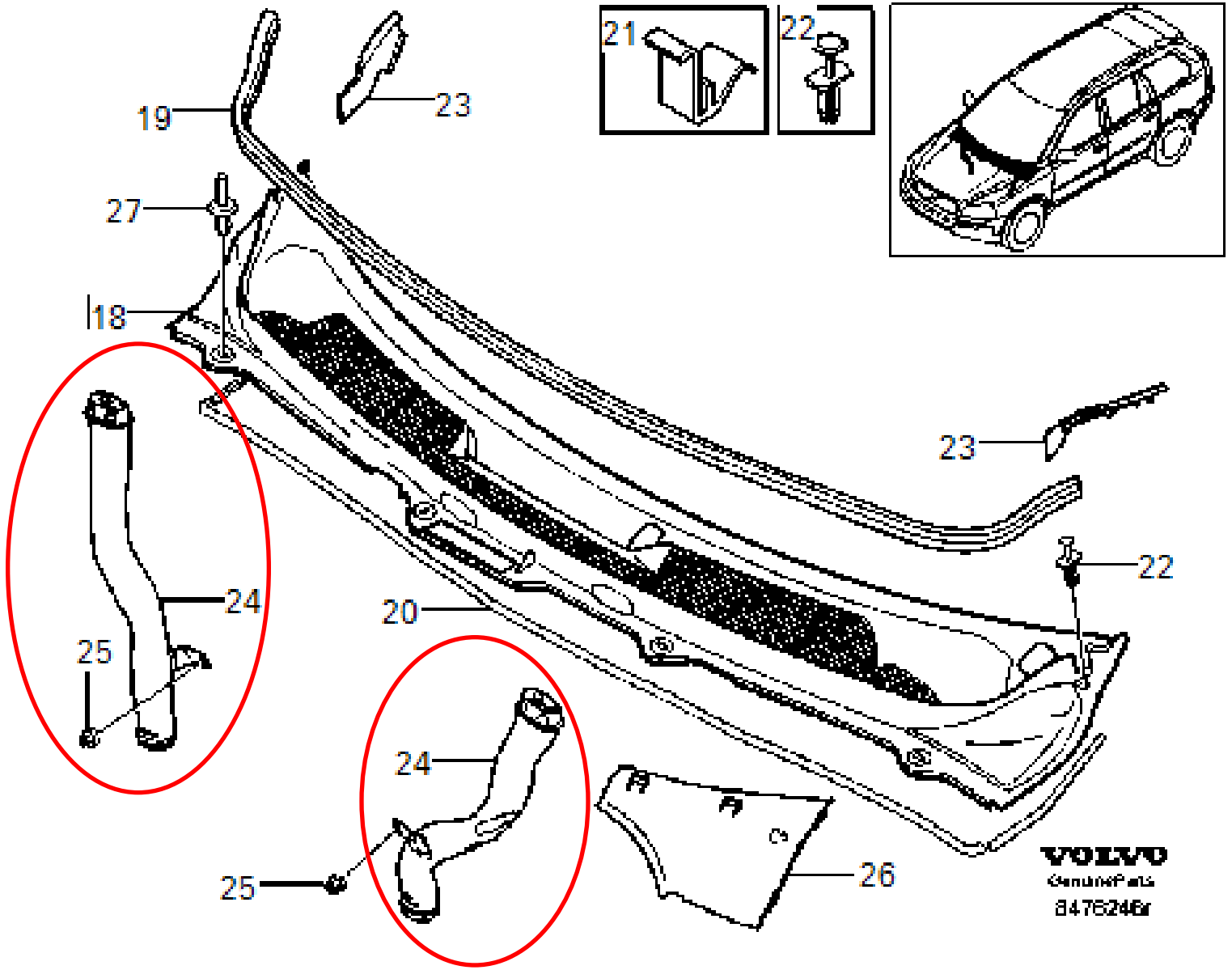
- Water leakage into plenum box – possible CEM damage.
  - => Through rubber grommet (butyl introduced MY05)
  - => Through top lid
  - => Through “Octopus”
  - => Other
- Water leakage into car interior via air box.
  - => Simply goes over the edge of the collar

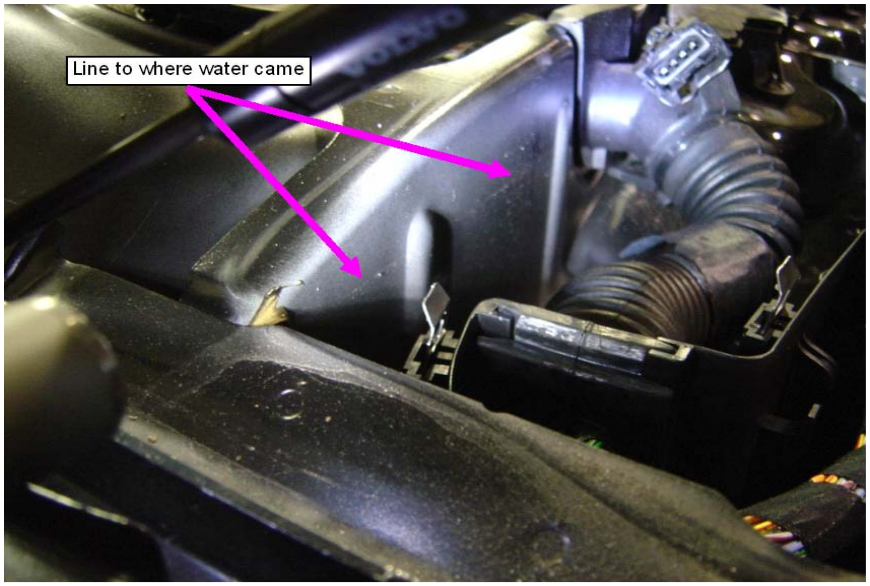
PRODUCT MODIFICATIONS:

- New grommet with improved sealing on the vertical sides - PN 30739162.

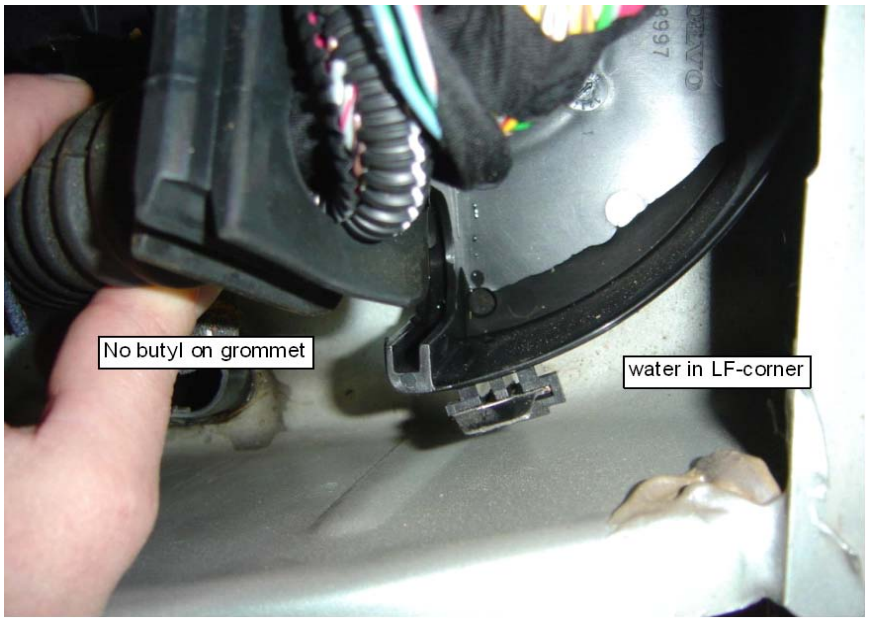
BREAKPOINTS:

S60	465194 - .
S80	407065 - .
V70 Gent	499870 - .
V70 Torslanda	499870 - .
XC70	192783 - .
XC90	189110 - .

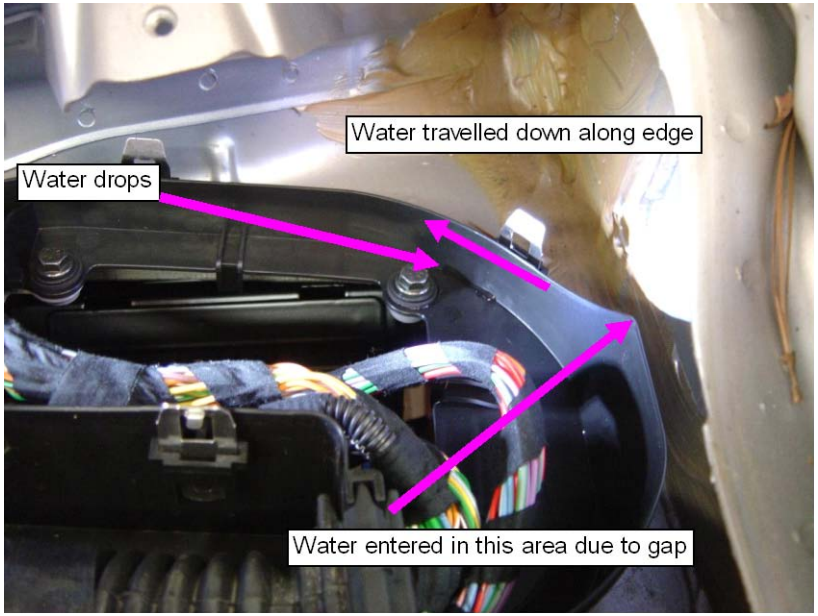

19
23
21
22
27
18
23
22
24
20
25
24
25
26
VOLVO
Genuine Parts
8476246

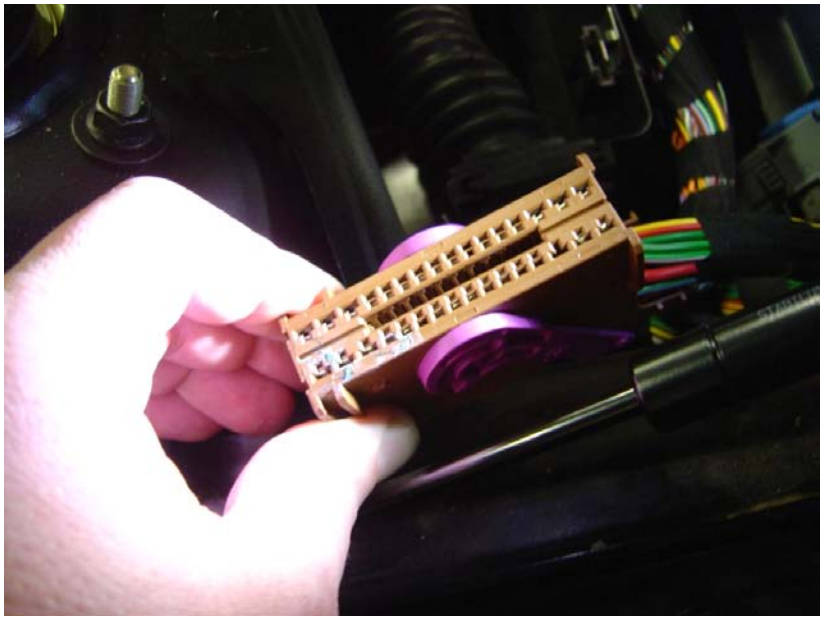

Line to where water came

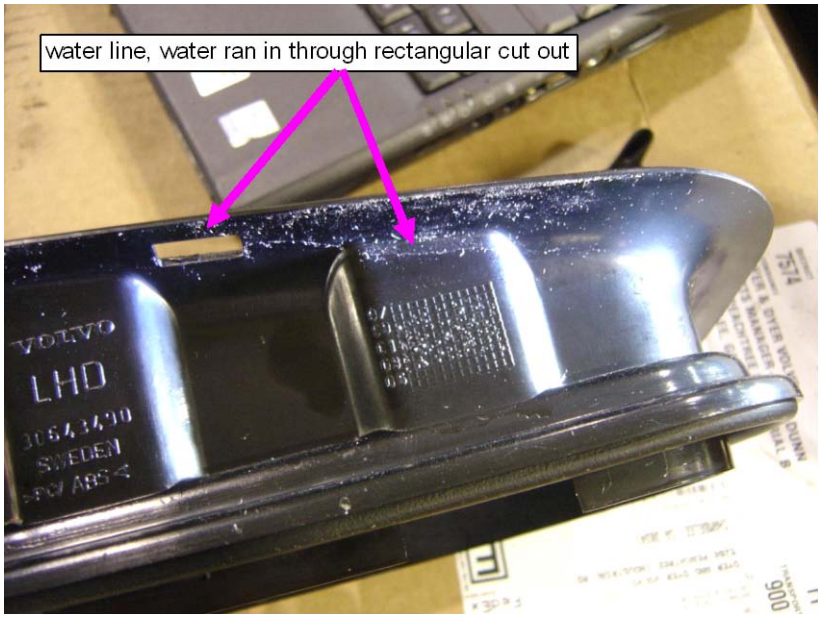

Water drop found in cable harness


No butyl on grommet
water in LF-corner


No indentation in seal


Water travelled down along edge
Water drops
Water entered in this area due to gap




water line, water ran in through rectangular cut out
VOLVO
LHD
SWEDEN

P1/P2 Plenum water leakage

P2

SERVICE (TJ 8529):

- Locate area of leakage and correct
- Seal grommet with sealant PN 1161235.
- Seal plenum box top lid with sealant PN 1161235.
- Replace CEM/engine bay harness if there is corrosion.

TECHNICAL REPORT:

- Yes! Submit a TR with root cause for the water penetration.

* Was the top lid of the plenum box correctly fitted?
* All 5 clips in locked position?
* Guide pins on top lid correctly seated inside the plenum box?
* No wires caught in between top lid and box?
* Top lid sealing undamaged?
* Seal between plenum box and body undamaged?
* Plenum drainage open on both sides?
* Car interior wet? Other?

BODY AND INTERIOR

March 2008

Peter Ahlberg, Andy McCloskey, Martin Hansson
Charlotte NC, USA

XC90, Water leakage from sunroof drainage system.

DESCRIPTION:
Reported via TR:s that we still have issues with water leakege from the sun roof.

HELP needed:
We need your help with more TR:s describing the issue.
We also need your help with input on the consequences. Parts exchanged, dried out etc.
How is it entered in QW90? How to search?

Hose clogged

Hose pinched

Sound trap clogged

Tech-*Net* Notes

"Fixed Right – First Time"

Volvo Technicians, Service and Parts Managers

NO:	37-35
DATE:	02-06-2008
MODEL:	All P2X (S60 S80 V70 XC70 XC90)
M. YEAR:	2005-2006 (structure week 200425-200540)
CHASSIS:	XC90 FC1 134000-256551
	V70 FC1 459000-555060
	S60 FC2 425000-522407
	S80 FC1 390000-435423
	XC70 FC1 173000-220845
	V70 FC2 459000-554206

(FC = Factory code) 11th position of the VIN number

SUBJECT: CEM harness terminal corrosion due to water entrance in plenum (Instruction for new harness installation)

REFERENCE: VIDA repair instruction

This document supersedes the previous document dated 5/23/2006. Changes to this document are: Method 2 for later chassis numbers has been deleted since the harness with the integrated grommet and plenum lid is no longer available. Method 1 shall be used for all chassis numbers in the header. Please update your records.

DESCRIPTION:

Various electrical function and communication symptoms may occur in MY 2005-2006 vehicles caused by wet corrosion in the CEM connector. The grommet that seals the harness entrance to the Plenum box may not seal properly if it has been incorrectly assembled. This may cause a number of different functionality symptoms and DTC's to be set.

Examples include but are not limited to:

- Headlights on, even if ignition key is taken out of ignition lock.
- Warning messages in DIM (Driver Information Module) display.
- Warning lamps lit up.
- Brake lights always on.
- No start condition.

PRODUCT MODIFICATION: A new plenum sealing strategy with integrated rubber grommet was introduced in production from 2005 week 40. See photo below. This new sealing strategy will be carried over to the replacement engine bay harnesses on the chassis numbers indicated, by modification of the replacement harness.

Modified replacement harness

SERVICE:

If there are signs of water penetration in plenum box and/or wet corrosion at the CEM (central electronics module) connectors, it will be necessary to install a new CEM and replace the engine bay cable harness according to the method below:

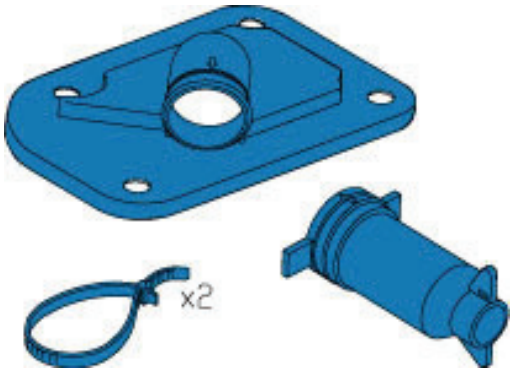
Modification of the original type replacement harness

Parts required;

- Engine bay cable harness, check VIDA parts catalogue

(This is the original type engine bay harness which will be modified with the instruction below)

- Plenum lid, P/N 30728860
- Service grommet, P/N 30775689
- Cable tie, P/N P/N 983750 (2 required)

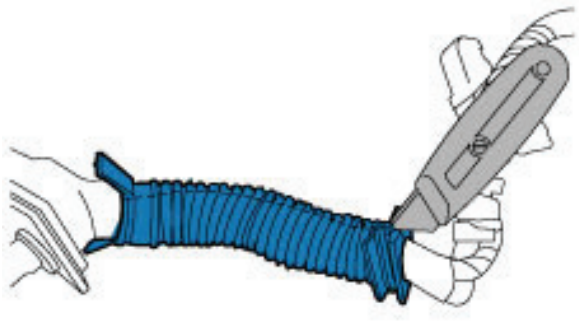


1.

Removing the existing rubber grommet

Remove the old rubber grommet using a knife.

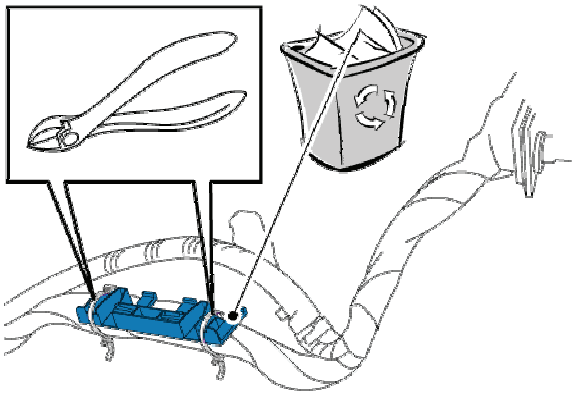
Caution! Make sure that no hoses or cables are damaged.



IMG-243942

2.

Remove and discard the holder from the new cable harness.

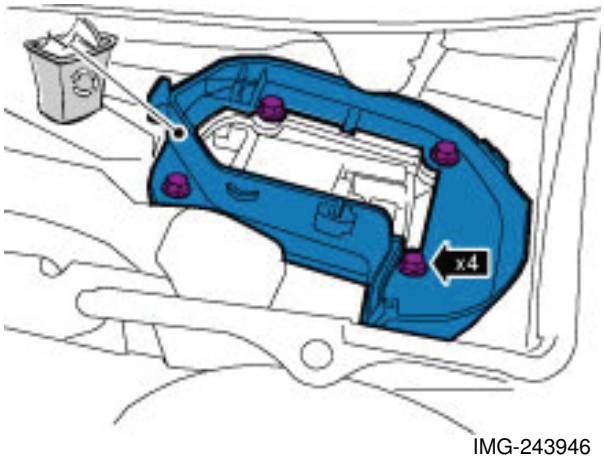


IMG-244520

3.

Remove and discard the existing surround.

Save the attachment screws to attach the new cover to the plenum floor.



IMG-243946

4.

Installing the new seal

Route the cable harness through the new rubber grommet and cover.

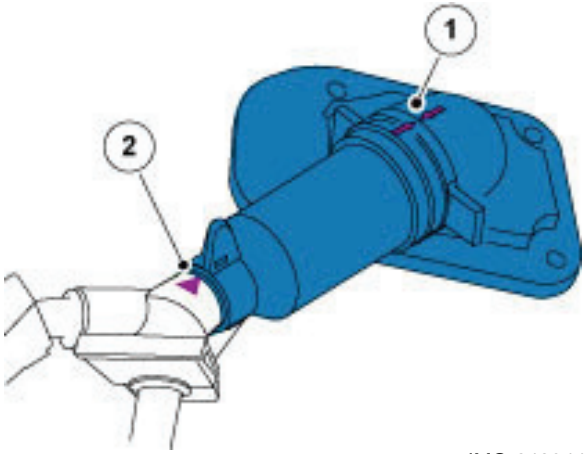
Caution! Exercise caution so that the rubber grommet is not damaged when the connectors are threaded through.

IMG-244521

5.

Installing the new seal, continued

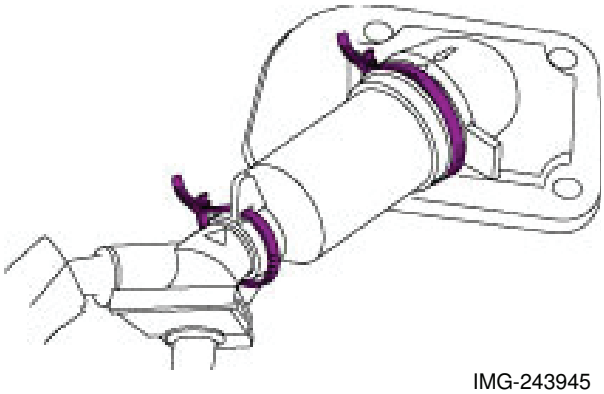
Align the arrows (1) towards each other. Arrow (2) must point towards the handle on the rubber grommet.



IMG-243944

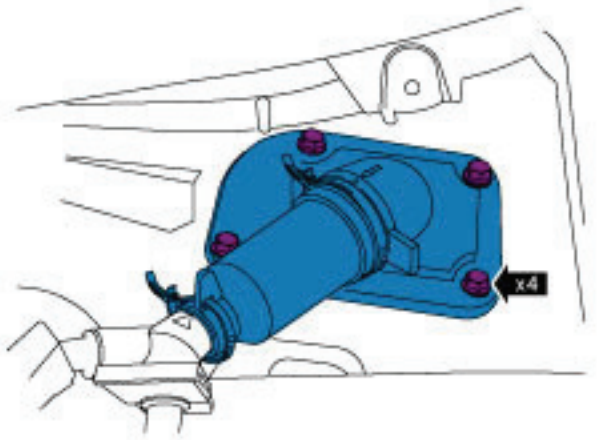
6.

Installing the cable ties



IMG-243945

Installing the cover



IMG-243947

Note: After installation, the cable harness under the cover will be slightly over length. Clamp it up in a suitable manner to prevent chaffing.

Tighten the screws to 10 Nm.

WARRANTY CLAIM INFORMATION

LABOR OP	LABOR DESCRIPTION	LABOR TIME
37349-2	**Harness engine comp/dashboard repair**	**See Note below**

Claims may be submitted under the new car warranty when there is a documented customer complaint using claim type: 01

Note: General Labor time based on technician time required for repair. This repair is subjected to all audit requirements outlined in the Warranty Policy and Procedure manual.

VOLVO for life,
Volvo Cars of North America, LLC
Technical Service

Please circulate, read and initial: _____Svc Mgr _____ Parts Mgr _____Shop Foreman

_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ TECHS

_____ Warranty Administrator _____ _____ _____ _____ _____ _____ _____ S. Advisors