



## **Tech Note**

The following BMW factory bulletin could have been placed in the TSB section of our catalog, but I thought it would better serve in the TechNote area so I might be able to explain why this pertains to catalytic converter codes and failures.

Although this bulletin is pointing toward BMW secondary air injection fault codes, there is some very important information embedded in here.

See Item 8 on Page 3 of the body of the bulletin.

They are making mention of the possibility of cracked vacuum lines going to the non-return valve. They've even updated the vacuum line since 11/98!

This can be an underlying cause of a lean condition, but worse yet, if a cracked vacuum line is affecting only one or

two cylinders (closest to where the vacuum source is), this could result in un-equal fuel distribution.

If one or two cylinders is running lean for any reason, there will be left over oxygen after combustion. The upstream O2 sensor will see this oxygen and report to the Powertrain Control Module that a lean condition exists. This will prompt the computer to increase the injector on time or pulse width across the board because it has no idea that just one or two cylinders are running lean. This condition causes the other cylinders to run RICH! YES, a single lean cylinder or two can cause the overall system to run rich which is a MAJOR contributing factor to carbon and soot buildup. Also, conditions like this can contribute to substrate melt-down due to excessive fuel in the exhaust!

See the bulletin below:

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SI B 12 04 00

Engine Electrical Systems

November 2002

Service Engineering

This Service Information bulletin supersedes S.I. 12 04 00 dated July 2000.

[NEW] designates changes to this revision

SUBJECT

Secondary Air System Faults

MODEL

[NEW] All models with M52, M54, S52 and S54 engine

All models with M44 engine produced as of 1/97

[NEW] All models with M60 (3.0 liter) engine produced as of 10/94, M62 engine produced as of 9/98

[NEW] All models with S62 engine

[NEW] All models with M73 engine

SITUATION

Customer complains that the "Check Engine" lamp is illuminated and the following fault is set in the Engine control module (ECM/DME):

[NEW] M52, M54, S52, and S54 engine:

Fault code 245 (F5 hex) – Secondary air injection, bank 1

Fault code 246 (F6 hex) – Secondary air injection, bank 2

[NEW] M60, M62 and S62 engine

Fault code 80 – Secondary air injection, bank 1

Fault code 81 – Secondary air injection, bank 2

M44 and M73 engine:

Fault code 80 - Secondary air injection system

CAUSE

Failure within the secondary air injection system.

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#### PROCEDURE

The following diagnostic tips / steps should be followed if the above customer complaint is received:

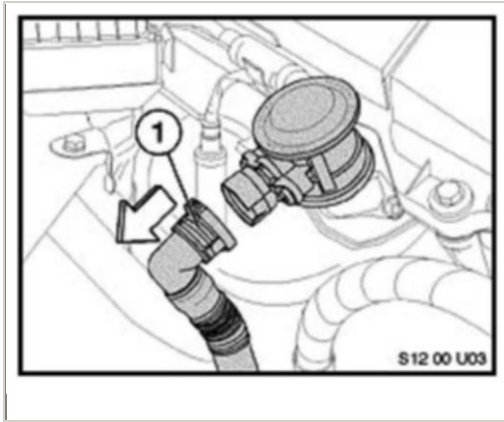
1. For E36 vehicles equipped with M52 engine prod. 10/95 - 2/96 also refer to SI 12 04 96 regarding Recall Campaign No. 96E-A01.
2. Refer to the OBD II training manual for illustrations and explanation of system operation.
3. Perform test modules/component activation of secondary air system located in the "Service Functions" section using DISplus/GT1.
4. Check operation of secondary air pump using instructions provided in DISplus/GT1.
5. If pump is not operating correctly check air pump relay. For vehicles with M52 engine a modified relay was introduced into production P/N 12 63 1 742 690.
6. If the relay is operating correctly and the electrical connections/wiring to the pump are OK, check the condition of the pump.
7. If the air pump is seized it must be replaced.

#### **Important note:**

If the pump is seized as a result of moisture (water in pump), an improperly operating non-return valve is the cause. The non-return valve may stick open and allow exhaust gases to condense within the air pump housing leading to a failure of the pump.

#### **Non-return valve sealing / leakage check:**

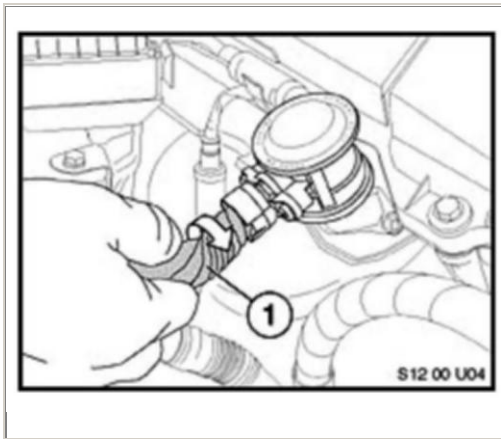
The non-return valve must be checked as follows any time a seized secondary air pump has been replaced due to moisture.



Disconnect the air pump feed line/hose (1) at the non-return valve (line from the secondary air pump

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to the non-return valve).



Visually inspect the non-return valve fitting internally for carbon type contamination. (Twisting the corner of a clean shop rag into the valve fitting as shown will assist with this check.)

If no carbon type deposits are found on the rag, this indicates that the non-return valve is sealing correctly and does not need to be replaced.

If carbon type deposits are found on the rag, the non-return valve is not sealing correctly and must be replaced.

**Note:**

A non-return valve which is not sealing correctly will cause damage to the secondary air pump as described above.

8. Check also for cracked vacuum lines going to the non-return valve.

^ For vehicles with M44 engine the vacuum line P/N 11 73 7 501 180 going to the non-return valve has been

improved since 11/98.

^ For E46 323i/iA and 328i/iA vehicles produced 4/98 - 7/98 see S.I. number 12 04 98 regarding the vacuum hose to the secondary air non return valve service action.

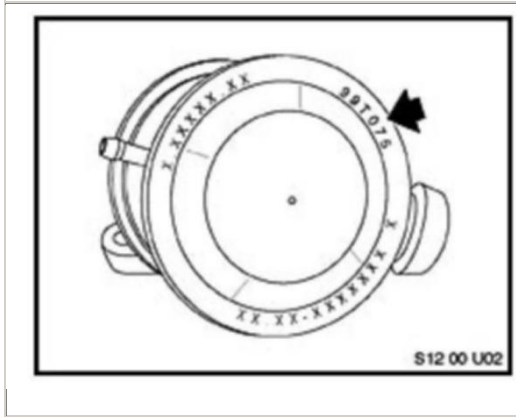
**PARTS INFORMATION**

<b>Part Number</b>	<b>Description</b>	<b>Quantity</b>
12 63 1 742 690	Relay	1
11 73 7 501 180	Vacuum line (M44)	1
<b>NEW</b> 11 72 1 744 255	Non-Return valve (E36-M52, S52)	1
<b>NEW</b> 11 72 1 433 713	Non-Return valve (E36-M44)	1
<b>NEW</b> 11 72 7 500 378	Non-Return valve (E36 Z3-M52, M54)	1
<b>NEW</b> 11 72 1 435 420	Non-Return valve (E46-M52, M54)	1
<b>NEW</b> 11 72 7 830 680	Non-Return valve (E46-S54)	1
<b>NEW</b> 11 72 1 704 887	Non-Return valve (E34-M60)	1
<b>NEW</b> 11 72 1 427 078	Non-Return valve (E39-M60)	1
11 72 1 745 907	Non-Return valve (E39-M52)	1
11 72 1 707 619	Non-Return valve (E39 M62)	1
<b>NEW</b> 11 72 1 433 713	Non-Return valve (E39, E52-S62)	1
11 72 1 707 619	Non-Return valve (E38, E53-M62)	1
11 72 1 704 257	Non-Return valve (E38-M73 Cyl. 1-6)	1
11 72 1 704 258	Non-Return valve (E38-M73 Cyl. 7-12)	1

Improved Non-Return valves have been phased into production on all models.

**PARTS INFORMATION**

Improved Non-Return valves have been phased into production on all models.



A Non-return valve with a dated code stamping as of 99T075 (arrow) and later is the improved version. date cose explanation: 99=year, T=day, 075=75th day of the year.

Only the improved non-return valves are available from the Parts Distribution Centers.

Necessary repairs are covered under the terms of the BMW New Vehicle Limited Warranty.

<b>Defect Code</b>	<b>11 72 91 96 00</b>	
Labor Operation:	11 72 000	Removing and installing or replacing air pump
Labor Allowance:	<b>NEW</b> Model	FRU
	E36 (323i/328i/M3)	7
	E36 (318i)	8
	E36 (Z3)	6
	E46 (All)	4
	E34 (530i)	7
	E39 (528i/530i/540i)	10
	E39 (M5)	8
	E53 (X5 3.0)	5
	E53 (X5 4.4)	6
	E38 (740i/iL)	6
	E 38 (750iL)	11
Labor Operation:	11 72 550	Removing and installing or replacing non-return valve
Labor Allowance:	<b>NEW</b> Model	FRU



	E36 (323i/328i/M3)	3	
	E36 (318i)	3	
	E36 (Z3)	3	
	E46 (All)	2	
	E34 (530i)	4	
	E39 (528i/530i)	3	
	E39 (540i/M5)	3	
	E53 (X5 3.0)	2	
	E53 (X5 4.4)	4	
	E38 (740i/iL)	3	
Labor Operation	11 72 552		Removing and installing or replacing non-return valve (cylinder bank 1-6)
Labor Allowance	Model E38 (750iL)		FRU 10
Labor Operation	11 72 554		Removing and installing or replacing non-return valve (cylinder bank 7-12)
Labor Allowance	Model E38 (750iL)		FRU 7