Technical Service Bulletin

01 MIL on (P0491 and P0492 stored at same time)

01 13 83 2033001/1 March 29, 2013.

Model(s)	Year	VIN Range	Vehicle-Specific Equipment
A6	2009 - 2011	All	Engine code CCAA
A6	2010 - 2011	All	Engine code CALA
Q7	2011 - 2012	All	Engine code CJWE
Q7	2011 - 2012	All	Engine code CJWC
Q7	2011 - 2012	All	Engine code CJWB
A4	2009 - 2011	All	Engine code CALB
A4	2010 - 2011	All	Engine code CCBA
Q5	2009 - 2012	All	Not applicable

Condition

- MIL on.
- **DTC P0491** and **P0492** (Secondary Air System Insufficient Flow, Bank 1/2) are stored at the same time.
- Mileage is greater than 15,000 miles.

Technical Background

Under certain driving conditions, the secondary air ports in the cylinder head can accumulate carbon over time, causing a restriction.

Production Solution

Not applicable.

Service

Tip: This TSB will be updated soon. Please use the latest revision.

For Q5, S4 and A6 3.0T, follow the steps below. For A6 3.2AVS and Q7 3.0T, call Technical Assistance Center (TAC). Please note that before performing this repair for the first time, it is mandatory that the technician complete Audi Academy Course #940134 and assessment #940134B, otherwise the warranty claim will be denied. The course and assessment can be found on the Audi Academy CRC site. Specific video sections are reference in the instructions below.

Perform VAS Testing

1. Delete all DTCs and bring the engine to operating temperature.
2. Go into **Basic Setting** in the VAS tester (VSD) and select **Secondary Air System Check**.
3. Start the test on the VAS tester.
4. Depress the brake pedal first, followed by the gas pedal.
5. Record MVBs:

   PRS_SA_DIF (record max value)

   MASS_SA_REL (recode value at the end of test)

   - If **PRS_SA_DIF** max pressure is below 170mbar, follow GFF for these DTCs.
   - If max value of **PRS_SA_DIF** is greater than 170mbar / hPa and **MASS_SA_REL** below 0.6, the secondary air ports have to be cleaned. Follow the steps below.

Tip: To restart the test, back out of VSD to the main screen and cycle the key.

Prepare for Power Washing

1. Move the exhaust sliding bushings (that connect the catalytic converter and muffler) back, then lower the catalytic converter pipes (Figure 1). Cleaning water will drain out of the catalytic converter pipes during the cleaning process.

***Figure 1**. Lowered catalytic converter pipes*

2. Remove all spark plugs.
3. Drain the coolant so that it can be reused.
4. Bring front end of the car into service position (for Q5, A6, S4, and S5 Cabrio) to make room in the front of the engine. The Q7 has enough room for access to the front of the cylinder heads.
5. For 3.0T only: remove the coolant supply lines (intercooler of supercharger) in the front of the engine (Figure 2).

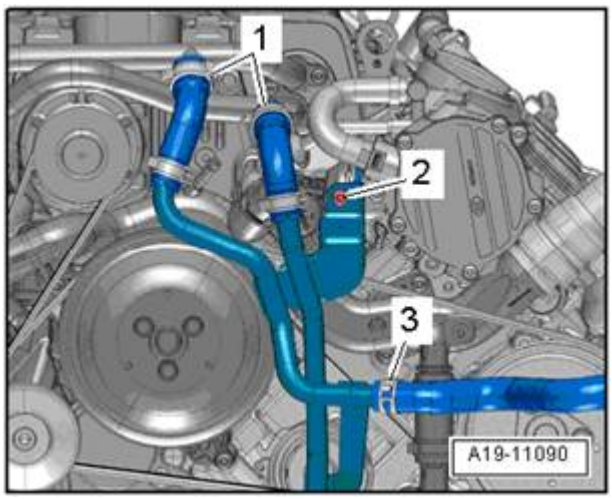

***Figure 2.** Front coolant pipes to be removed for 3.0T*

6. Remove the following components:

- Coolant pipe (Figure 3,1)
- Coolant flange (Figure 3,2)
- Pulley and if needed bracket, of power steering pump (Figure 3,3)
- Pulley of water pump (Figure 3,4)
- Coolant tube (Figure 3,5)
- Dipstick tube (Figure 3,6)

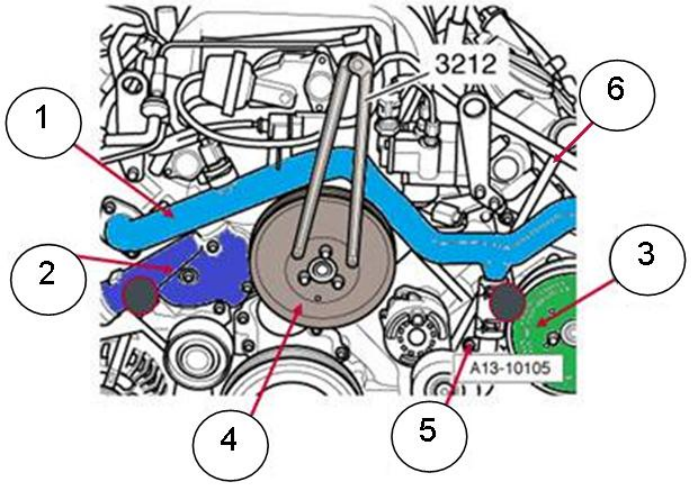

Figure 3. *Engine component removal*

Note:

When removing the dipstick tube, turn it 180 degrees, then reinstall it for water protection.

Note:

To loosen the coolant tube, remove 2 bolts (Figure 4, A and C), open clip (Figure 4, B), and pry bushing apart as shown in training video (Figure 4, D). There is no need to loosen the AC compressor.

Cover opening of right coolant pipe to prevent coolant circuit contamination.

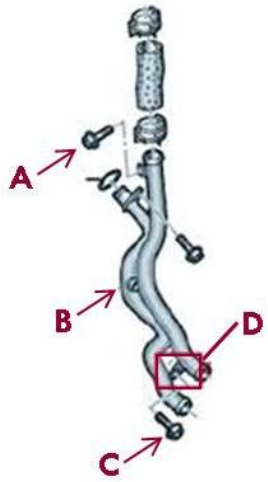

Figure 4. *Loosening the coolant tube*

7. Remove main port freeze plug by hitting the marked area with a small punch until it turns (Figure 5). Remove with pliers.

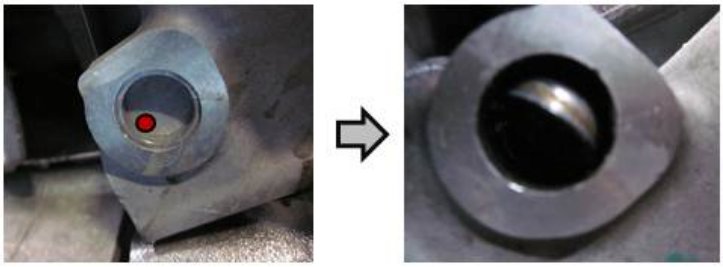

Figure 5. *Marked area on main port of freeze plug.*

Prepare to Power Wash

Warning:

- Read pressure washer user manual and follow these safety instructions.
- Always insert special cleaning hose into adaptor and engine *before* turning pressure washer on.
- If switching special cleaning to a different port, turn pressure washer off and release residual pressure by pulling the trigger before removing the special cleaning hose from the engine.
- Wear safety glasses and gloves.

1. Become familiar with the special tool set VAS6825 (Figure 6):

   - Special hose with scale for cleaning single ports (Figure 6,1)
   - Special hose for cleaning the main ports (Figure 6,2)
   - Hose adaptor for the special hose with scale (Figure 6,3)
   - Engine adaptor for bank one (Figure 6, 4a)
   - Engine adaptor for bank two (Figure 6, 4b)

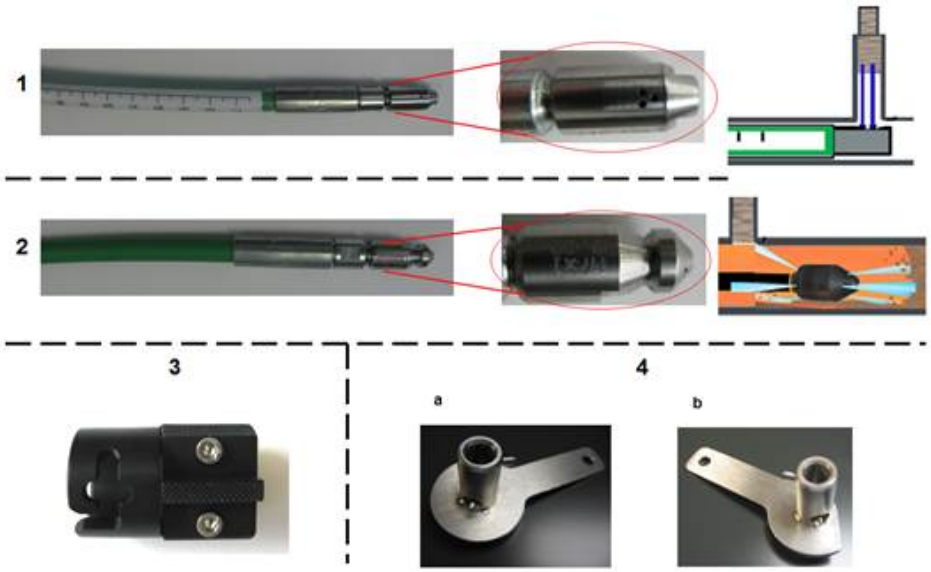

***Figure 6**. Special tool set VAS6825*

2. To catch water, put a pan under the front of the engine and under the disconnected catalytic converter pipes.

3. Install engine adaptors on the appropriate banks (Figure 7, Figure 8).

Figure 7*. Engine adaptor on bank one.*

Figure 8. *Engine adaptor on bank two.*

4. To ensure proper pressure washer function use a ¾ inch water supply hose (no longer than 60 feet) to supply pressure washer.

   The Audi-supplied pressure washer comes with a 22mm male-to-male adapter (to connect special tool to trigger gun), a pressure gauge (to connect between pressure washer and high pressure hose), and a 220V power adapter.

   Make sure that pressure is at least 1800 psi when using the special single port cleaning hose (the hose with the scale). Use the table below to compensate for low water pressure:

psi While Cleaning Single Ports	**Cleaning Time in Minutes**
Less than 1900	Pressure too low – check water supply
1900	4
2000 or higher	3

Power Wash the Ports

Cleaning Main Secondary Port:

1. Insert special main port cleaning hose (the hose without the scale) two inches into the engine adaptor.
2. Turn the pressure washer on.
3. Holding the cleaning hose tightly, pull the pressure washer trigger.
4. Gradually move the cleaning hose into the port, going back and forth until the combi valve is reached. All water comes out at the adaptor #4.
5. Continue going back and forth through the whole port until only clean water drains out of the cylinder head.
6. Do the same with the other cylinder head.

Cleaning Single Ports:

1. Because every port has a different distance to the cylinder head, use the table below to position the hose adaptor for the special single port cleaning hose (the hose with the scale) correctly into the hose. The back side of the hose adaptor must align with the number on the scale of the cylinder to be cleaned (Figure 9). The longitudinal slot on the hose adaptor must align with the black line on the scale for correct rotational positioning (Figure 9).

Dimensions Port	1	2	3
Bank One	10.5	19.5	28.5
Bank Two	13.7	22.7	31.8

Figure 9: *Arrow indicating how the back side of the adaptor must align with the scale. Red dotted line indicating how the longitudinal slot must align with the black line on the scale.*

2. After adjusting the position of the hose adaptor, insert the special single port cleaning hose into the hose adaptor, and bring it back into locking position (Figure 10).

***Figure 10**. Locking position / transvers longitudinal movement and of the hose adaptor*

3. While cleaning, make sure that the pressure washer is supplying pressure greater than 1800 psi.

4. Based on the washer's pressure, clean the port based on the table below. While cleaning, continuously move the hose adaptor within the longitudinal and transvers slots (Figure 10).

psi While Cleaning Single Ports	**Cleaning Time in Minutes**
Less than 1900	Pressure too low – check water supply
1900	4
2000 or more	3

Tip: After ten seconds of cleaning, all of the water should be draining out of the exhaust. If water is draining out of the engine adaptor, check the position of the hose adaptor on the hose.

5. Do the same for all remaining cylinders.

6. It is recommended that after cleaning, all single ports are checked with snap-on boroscope BK6000 (or similar, with 90-degree lens), to make sure all ports are clean (Figure 11).

***Figure 11**. Clean single port.*

7. When all carbon is removed, install a new main port plug using an 8mm socket with a short extension, paying special attention to install it squarely. The outer edge of the plug should be recessed ~0.5mm – 1mm behind the outer cylinder head edge.

8. Reinstall all components (except spark plugs) and fill system with coolant according to ELSA.

9. Using a vacuum extractor, remove **all** water from **all** combustion chambers.

10. Make sure **all water is removed** from the combustion chambers by using the **self-start function twice while the spark plugs are still removed** (cover spark plug openings with a towel). Install spark plugs and coils.

    Make sure water is completely drained out of exhaust (make sure the exhaust is lowered enough).

11. Let the car run at idle for 15 minutes so all remaining water in the exhaust system can evaporate.

12. Perform VAS testing again, following instructions above.

    - Recode MVB **MASS_SA_REL.** If value is greater than 0.8 the system is ok.

Warranty

Claim Type:	Use applicable claim type. If vehicle is outside any warranty, this Technical Service Bulletin is informational only.		
Service Number:	2644		
Damage Code:	0010		
Diagnostic Time:	GFF – Checking and clearing fault codes included in existing labor operations	0150 0000	Time stated on diagnostic protocol (Max 40 TU)
	Road test prior to service procedure	No allowance	0 TU
	Road test after service procedure	0121 0004	10 TU
	Technical diagnosis at dealer's discretion (Refer to Section 2.2.1.2 and Audi Warranty Online for DADP allowance details)		
Labor Operations:	**Q5 CALB engine (525)**		
3.2L Engines	Coolant pipe R&I	1961 1906	250 TU
	Power steering pump (overlap reduced)	4898 1999	40 TU
	Loosen/fasten lock carrier	5038 0900	160 TU
	Pressure wash	2644 1999	75 TU
	A6 CALA engine (555)		
	Coolant pipe R&I	1961 1906	220 TU
	Power steering pump (overlap reduced)	4898 1999	40 TU
	Loosen/fasten lock carrier	5038 0900	220 TU
	Pressure wash	2644 1999	75 TU
3.0L Engines	**A6 CCAA engine (625)**		
	Coolant pipe R&I	1961 1941	290 TU
	Power steering pump (overlap reduced)	4898 1999	40 TU
	Loosen/fasten lock carrier	5038 0900	220 TU

	Pressure wash	2644 1999	75 TU
	S4 CCBA engine (565)		
	Coolant pipe R&I	1961 1941	290 TU
	Power steering pump (overlap reduced)	4898 1999	40 TU
	Loosen/fasten lock carrier	5038 0900	160 TU
	Pressure wash	2644 1999	75 TU
	Q7 CJWE, CJWC, CJWB engines (335)		
	Coolant pipe R&I	1961 2039	220 TU
	Power steering pump (overlap reduced)	4898 1999	40 TU
	Pressure wash	2644 1999	75 TU
Claim Comment:	As per TSB #2033001/1		

All warranty claims submitted for payment must be in accordance with the *Audi Warranty Policies and Procedures Manual*. Claims are subject to review or audit by Audi Warranty.

Required Parts and Tools

Part Number	Part Description	Quantity
06E121119A	O-ring cross pipe	2
N 0119078	Freeze plug	2
06E121139E	Seal coolant flange	1
G 012A8G1G	Coolant	0.5

Tool Number	Tool Description	Quantity
VAS6825	Tool set	1
VAS6825/1	Adaptor set	1
Not applicable	Pressure washer	1