

Performance Increase Kit Installation Instructions (I-no. X51)



Note

This Technical Information replaces the previous Technical Information dated April 5, 2006.

Changes/additions compared to the previous TI:

- ▶ Additional vehicle types added

Vehicle Type: **911 Carrera S (997)/911 Carrera 4S (997)/911 Targa 4S (997)**

Model Year: **As of 2006 up to 2008**

Engine Type: Standard engine M97/01 with engine power of 261 kW (355 HP)

Concerns: **Subsequent performance increase to 280 kW (381 HP)**

General: A parts kit is available for increasing the performance of the standard engine. Increased performance is achieved by implementing the following measures on the engine:

- new cylinder heads with flow-optimized intake and exhaust ports;
- exhaust ports and exhaust valves with larger cross-section and stronger exhaust valve springs;
- new exhaust manifolds with larger cross-section and optimized flow behavior;
- new intake manifolds with modified cross-section (material: aluminum sand cast);
- new throttle housing (referred to below as electronic throttle adjuster) with larger cross-section (previously: 76 mm diameter; new: 82 mm diameter);
- new air cleaner housing made of carbon with two intake channels;
- modified maps for the DME control unit;
- increased engine speed.

Certain modifications are also required and the following preconditions must be met on the vehicle side:

- sports exhaust system including chrome-plated tailpipes;
- new underbody cover in the rear area;
- additional radiator together with an additional air inlet in the front apron – not for vehicles with Tiptronic transmission (I-no. 249).

The higher-performance engine is also available as a factory option for the new vehicles specified above under Exclusive option No. "X51".

Software: In September 2005, the software for the PIWIS Tester was updated to version 11.0. After completing the programming of the DME control unit, the control unit is given a new part number for the respective country or variant (see also Step 8). The new number can be read out under the menu item "Identification".

Engine run-in: Engine speeds greater than 5,000⁻¹ (rpm) are not permitted over a run of 300 miles (500 km). The maximum engine output of 280 kW (381 HP) depends on the total mileage of the engine at the time of the retrofit and is achieved as from a total mileage of approx. 6100 miles (10,000 km).

Warranty: Retrofitting:
Warranty in accordance with the Repair Conditions and the Warranty Conditions for Original Porsche Parts.

If the engine to be converted has over 25,000 miles (40,000 km) mileage, the crankshaft main bearing and the connecting-rod bearings must also be replaced.
If there is obvious wear on the connecting-rod bushings (scores), the connecting rods must also be replaced.

New vehicle with power kit "X51":
Vehicle warranty in accordance with the Porsche Guidelines.

Diagram:

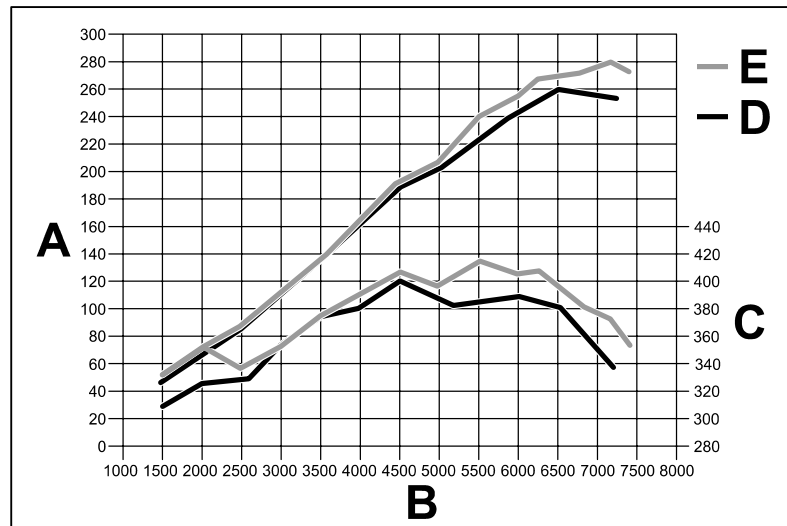


Figure 1

- A** – Power (kW)
- B** – Engine speed (rpm)
- C** – Tightening torque (Nm/ftlb.)
- D** – Standard engine
- E** – Engine with increased performance – 280 kW (381 HP) at 7,200 rpm and 415 Nm (307 ftlb.) at 5,500 rpm

Technical description:

	Standard-production engine	Increased performance engine
Engine type:	M 97/01	M 97/01 S
No. of cylinders:	6	6

Bore:	99 mm	99 mm
Lift:	82.8 mm	82.8 mm
Displacement:	3,824 ccm	3,824 ccm
Compression ratio:	11.8 : 1 (-0.6)	11.8 : 1 (-0.6)
Max. engine power at engine speed:	261 kW at 6,600 rpm	280 kW at 7,200 rpm
Max. torque at engine speed:	400 Nm (296 ftlb.) at 4,600 rpm	415 Nm (307 ftlb.) at 5,500 rpm
Max. litre output:	68.3 kW/l	73.2 kW/l
Engine speed limitation at:	7,300 rpm	7,450 rpm - vehicles with manual transmission only
Idle speed as of MY '06:	720 ± 80	720 ± 80
v _{max} e.g. for 911 Carrera 2 Coupé (manual transmission):	293 km/h (182 mph)	300 km/h (186 mph)

Information: Please inform your sales staff and customers about the running-in instructions. Copy the first three pages of this Technical Information notice and give these to the customers!

- Part s Info:
- 997.044.100.00¹** ⇒ Performance increase 280 kW (381 HP), including sports exhaust system (I No. XLF)
 - 997.044.100.02** ⇒ Performance increase 280 kW (381 HP), without I No. XLF
 - 997.044.100.04** ⇒ Sealing set
 - 997.044.100.05²** ⇒ Additional radiator; set

ONLY for vehicles without Sport Chrono package (I Nos. 639/640) and without I No. XLF:

- 997.613.129.00.FMH** 1 x ⇒ Switch for sports exhaust system ⇒ vehicles without Porsche Active Suspension Management (PASM – I No. 475)
- 997.613.131.00.FMH** 1 x ⇒ Switch for sports exhaust system ⇒ vehicles with I No. 475

¹ **ONLY** for vehicles without sports exhaust system (I No. XLF)

² **NOT** for vehicles with Tiptronic transmission (I No. 249)

Parts List:

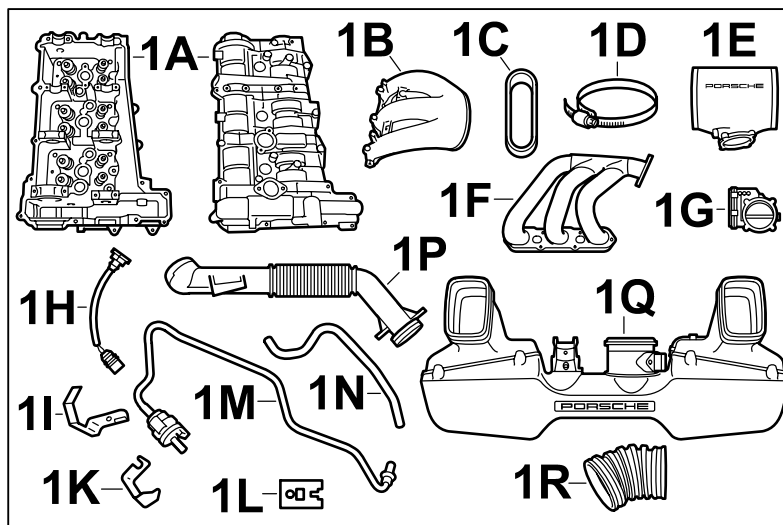


Figure 2

Scope of performance increase:

997.104.001.40	1 x	Cylinder head set; cylinders 1-3 and 4-6 complete ⇒ Figure 2 -1A- incl. cylinder head cover and valves
997.110.115.40	2 x	Intake-air distributor ⇒ Figure 2 -1B-
997.110.685.40	2 x	Rubber sleeve ⇒ Figure 2 -1C-
999.512.694.00	4 x	Hose clamp 170 - 190/9 ⇒ Figure 2 -1D-
997.110.416.40	1 x	Distributor pipe ⇒ Figure 2 -1E-
997.111.106.00	1 x	Exhaust manifold, right ⇒ Figure 2 -1F-
997.111.105.00	1 x	Exhaust manifold, left (not shown)
999.075.074.00	12 x	Hexagon-head bolt, M8 x 26 (exhaust manifold, not shown)
997.605.116.00	1 x	Electronic throttle adjuster ⇒ Figure 2 -1G-
997.607.130.00	1 x	Electric line (tank vent extension) ⇒ Figure 2 -1H-
997.110.429.40	1 x	Tank vent line support ⇒ Figure 2 -1I-
999.073.189.09	3 x	Countersunk screw, BM6 x 12 (not shown)
997.110.423.40	1 x	Support foot for electronic throttle adjuster ⇒ Figure 2 -1K-
997.110.433.40	2 x	Support ⇒ Figure 2 -1L-
997.110.129.40	1 x	Tank vent line assembly, incl. valve ⇒ Figure 2 -1M-
997.110.127.40	1 x	Tank vent line ⇒ Figure 2 -1N-
997.107.915.00	1 x	Oil filler neck assembly ⇒ Figure 2 -1P-, incl. sealing ring, 42 x 4(999.707.348.40)

900.385.050.09	2 x	Torx screw, M6 x 16 (oil filler neck, not shown)
997.110.025.00	1 x	Air cleaner housing, carbon, incl. hot-film mass air flow meter, air-cleaner element and left/right sealing bellows ⇒ <i>Figure 2 -1Q-</i>
999.512.016.00	2 x	Hose clamp, 80 - 100 (not shown)
997.110.225.00	1 x	Air box for air cleaner/electronic throttle adjuster ⇒ <i>Figure 2 -1R-</i>
997.110.252.00	1 x	Sealing plate, right (referred to as air guide below)
999.084.052.02	6 x	Lock nut, M8 (not shown)
999.073.092.09	8 x	Cheese head bolt, M10 x 1 x 50 (not shown)
996.104.216.02	2 x	Cap (not shown)
996.104.215.54	4 x	Cap (not shown)
999.385.003.09	42 x	Torx screw, BM6 x 30 (not shown)
996.105.244.03	4 x	Cap for actuating element (not shown)
900.385.272.09	8 x	Hexagon-head bolt, M6 x 12 (not shown)
900.387.264.09	2 x	Cheese head bolt, M6 x 16 (not shown)
999.073.317.09	4 x	Round head screw, M6 x 30 (not shown)
999.073.316.09	4 x	Hexagon-head bolt, M6 x 20 (not shown)
900.385.023.04	4 x	Torx screw, BM6 x 25 (not shown)
900.380.008.09	4 x	Hexagon nut, M10 (not shown)
900.378.183.09	2 x	Hexagon-head bolt, M8 x 140 (not shown)
900.378.105.09	2 x	Hexagon-head bolt, M8 x 70 (not shown)
900.380.005.09	10 x	Hexagon nut, M8 (not shown)
900.385.125.01	4 x	Torx screw, M6 x 45 – DIN34801 – (not shown)
999.073.317.09	4 x	Torx screw, M6 x 30, micro-self-locking (tandem pump, not shown)
999.073.316.09	4 x	Torx screw, M6 x 20, micro-self-locking (oil suction pump, not shown)
997.504.629.04	1 x	Rear underbody cover – front section – (not shown)
997.612.906.00	1 x	Electrical system materials for line extension for hot-film mass air flow meter/air cleaner flap removed (not shown), consisting of: 1 x electric line incl. 5-pin connector, 2 x connector housing (2-pin) incl. plugs, 6 x shrink-fit sleeve, 6 x crimping sleeve
997.044.200.02 ³	1 x	Sports exhaust system, complete (for details of parts scope, see TI, Group 2, No. 5/05 “Sports exhaust system”)
997.111.520.00 ⁴	2 x	Clamping sleeve

- 3** **ONLY** in Performance increase set, 280 kW (381 HP), including sports exhaust system (I No. XLF) ⇒ 997.044.100.00
- 4** **Also** contained in set ⇒ 997.044.100.02.

Scope of sealing set:⁵

997.111.113.00	2 x	Seal (exhaust manifold/catalytic converter)
997.104.201.02	2 x	Cylinder-head gasket
996.104.203.00	6 x	Sealing ring (spark plug recess)
999.707.404.40	2 x	O-ring, 17.05 x 1.78 (Hall sender)
999.701.761.40	6 x	O-ring, 28 x 2 (guide housing for flat-base tappets)
999.707.554.40	2 x	O-ring, 95 x 2.5 (oil suction & tandem pump)
999.917.560.00	1 x	Grease (for O-ring)
000.043.204.35	1 x	Sealant, 50 ml
900.123.147.30	3 x	Sealing ring, A27 x 32 (chain tensioner)
900.123.007.30	1 x	Sealing ring, A14 x 18 (screw plug for camshaft cover)
996.111.107.55	2 x	Exhaust manifold seal, X51
999.707.346.40	6 x	O-ring, 15 x 3 (guide rail)
999.707.573.40	6 x	O-ring, 8.3 x 3.05 (fuel injector)
997.110.247.00	6 x	Seal (intake flange)
997.110.319.40	1 x	Seal (distributor pipe)
999.701.789.40	2 x	O-ring, 12 x 2 (tandem pump line)
900.123.106.30	1 x	Sealing ring, A18 x 24 (oil drain plug)
997.107.538.00	4 x	Seal (preliminary oil separator)

- 5** The sealing set contains only those seals required for engine conversion (replacing cylinder heads, intake and exhaust manifolds).

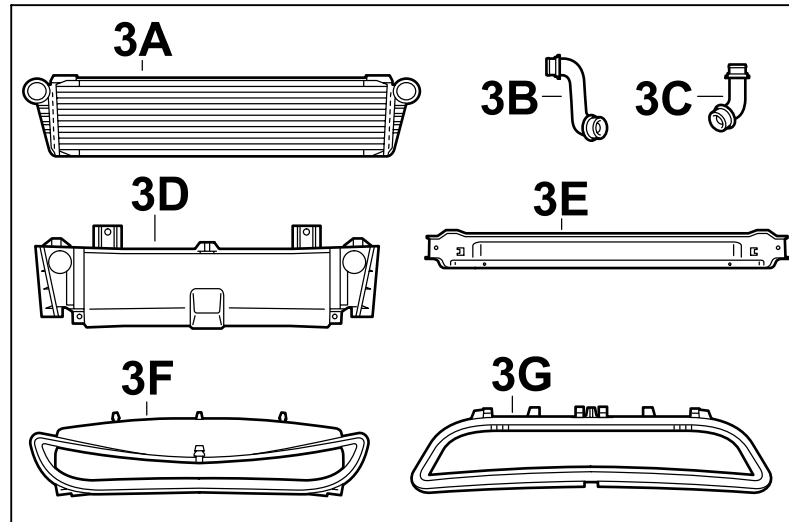


Figure 3

Scope: additional radiator

997.106.037.02	1 x	Radiator – middle – ⇒ <i>Figure 3 -3A-</i> (referred to below as middle radiator); incl. four rubber mountings (997.106.437.01)
997.106.639.03	1 x	Coolant return line ⇒ <i>Figure 3 -3B-</i>
997.106.638.03	1 x	Coolant supply line ⇒ <i>Figure 3 -3C-</i>
997.504.487.00	1 x	Retaining frame, upper ⇒ <i>Figure 3 -3D-</i>
999.072.048.09	2 x	Hexagon-head bolt, M8 x 25 (not shown)
997.504.485.00	1 x	Retaining frame, lower ⇒ <i>Figure 3 -3E-</i>
997.575.141.00	1 x	Air guide ⇒ <i>Figure 3 -3F-</i>
997.505.541.01.01C	1 x	Air inlet on front apron ⇒ <i>Figure 3 -3G-</i>
999.084.447.09	2 x	Hexagon nut, M8 (not shown)
900.378.035.09	2 x	Hexagon-head bolt, M6 x 16 (not shown)
999.591.882.02	2 x	Captive nut, M6 (not shown)
900.378.074.09	4 x	Hexagon-head bolt, M8 x 16 (not shown)
999.591.869.02	4 x	Speed nut, M8 (not shown)

Repairs:

A cylinder head complete with valves, valve springs, inserted plugs and a suitable cylinder head cover are available for carrying out repairs on the engine.

997.104.901.00	1 x	Cylinder head of cylinders 1 to 3
997.104.902.00	1 x	Cylinder head of cylinders 4 to 6

Materials:	000.043.203.78	9 x	Coolant; 1 liter container
	000.043.204.17	1 x	"Opti Pit" extreme pressure grease for engine repairs
	000.043.206.56	1 x	Servo fluid "Pentosin CHF 202", 1 litre
	000.043.300.13	1 x	Optimol MP3, 80 g
	000.043.204.35	1 x	Loctite 5900, 50 ml; black-grey
	996.107.225.52	1 x	Oil filter
	— — — —	~ 7.5l	Engine oil (see respective TI, Group 1)
	— — — —	--	Primer and top-coat paint (see Workshop Manual and vehicle color code)

Tools:

**Note**

Only work tools that were not described in the Workshop Manual are listed here. For details of special tools, e.g. for removing and installing the engine, please refer to the relevant description!

Open-ended/ring wrench a/f 13	Triangular scraper
Center drill bit, Ø up to 20 mm	Flat file (30 mm wide)
Paintbrush	Scissors
PWIS Tester P 9718	Battery charger
Press-out and unlocking tools for flat and round plug connections of every size NR.155	

**ATTENTION****Risk of damage to lines and/or hoses (vacuum)**

- **due to incorrect routing.**
- ⇒ **Maintain a sufficient distance from components exposed to high temperatures while driving.**
- ⇒ **Avoid making tight bends.**

Work Procedure: 1 Preparatory work.

- 1.1 Drive vehicle onto the platform lift and extend rear spoiler manually using the button in the center console.
- 1.2 Disconnect the battery ⇒ *Workshop Manual '2706IN Work instructions after disconnecting the battery'* and raise the vehicle ⇒ *Workshop Manual '401000 Lifting the vehicle'*.
- 1.3 Remove engine ⇒ *Workshop Manual '100119 Removing and installing engine – section on "Removing"*.

- 1.4 Remove transmission ⇒ *Workshop Manual '343527 Removing and refitting the transmission – section on "Removing and refitting"* or automatic transmission ⇒ *Workshop Manual '373527 Removing and refitting automatic transmission'*.
 - 1.5 Remove clutch ⇒ *Workshop Manual '305019 Removing and installing clutch – section on "Removing"* and double-mass flywheel ⇒ *Workshop Manual '136019 Removing and installing flywheel – section on "Removing"*.
 - 1.6 Remove three-phase generator ⇒ *Workshop Manual '272219 Removing and installing three-phase generator – section on "Removing"*.
 - 1.7 Remove both cylinder heads ⇒ *Workshop Manual '157019 Removing and installing cylinder head – section on "Removing"*.
 - 1.8 Carefully inspect the cylinder walls, pistons and re-used parts for wear and clean them. If signs of wear are detected on the components, these components must also be replaced!
- 2 Convert engine.
- 2.1 Fit new cylinder heads.
 - 2.1.1 Clean sealing surfaces on the crankcase and cylinder heads, and rub until they are completely dry.
 - 2.1.2 Fit new cylinder-head gasket (⇒ 997.104.201.02) on the crankcase while ensuring that the upper and lower sides are positioned correctly ⇒ *Figure 4*.
 - 2.1.3 Guide new cylinder head over the fixed drive chain and put it on the crankcase.
 - 2.1.4 Tighten cylinder head using original cheese head bolts while observing the tightening procedure ⇒ *Workshop Manual '157019 Removing and installing cylinder head – section on "Installing"*.
Tightening torque: 30 Nm (22 ftlb.)
Then loosen all bolts in reverse tightening sequence and tighten them again.
Tightening torque: 20 Nm (15 ftlb.) + 2 x torque angle: 70 °
 - 2.1.5 Insert new O-rings 28.0 x 2.0 (6 x ⇒ 999.701.761.40) at the relevant position in the cylinder head.
Fit the guide housing for flat-base tappets for cylinders 1 - 3 and 4 - 6.
Tightening torque: 10 Nm (7.5 ftlb.)
 - 2.2 Fit valve drive, solenoid hydraulic valves and cylinder head covers.
 - 2.2.1 Install old camshafts ⇒ *Workshop Manual '150520 Removing and installing camshaft – section on "Installing"* and set the timing.

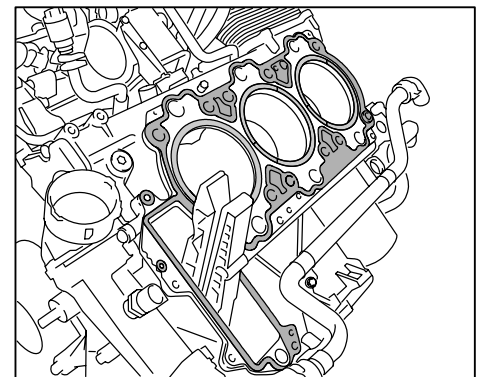


Figure 4

2.2.2 Remove solenoid hydraulic valve for **camshaft timing** from the old cylinder heads and **fit it** on the new cylinder heads ⇒ *Figure 5 -A-*; ⇒ *Workshop Manual '153719 Removing and installing solenoid hydraulic valve (camshaft timing)'*.

2.2.3 Remove solenoid hydraulic valve for **valve lift control** from the old cylinder heads and **fit it** on the new cylinder heads ⇒ *Figure 5 -B-*; ⇒ *Workshop Manual '155519 Removing and installing solenoid hydraulic valve (valve lift control)'*.

2.2.4 Insert new spark plug recess seals (6 x ⇒ 996.104.203.00) ⇒ *Figure 5 -C-* and fit both cylinder head covers ⇒ *Workshop Manual '159119 Removing and installing cover for camshaft housing – section on "Installing"*.

Tightening torque: 13 Nm (9.5 ftlb.)

2.2.5 Fit new cap for adjusting element ⇒ 996.105.244.03 to solenoid hydraulic valves for camshaft timing and valve lift control using old supports.

Tightening torque: 10 Nm (7.5 ftlb.)

2.3 Refit or install spark plugs, senders, oil pumps and various components of the exhaust system.

2.3.1 Remove spark plugs from the old cylinder heads and fit them on the new cylinder heads with the ignition coils ⇒ *Workshop Manual '287020 Removing and installing spark plug'*.

Tightening torque for re-used spark plugs: 25 Nm (19 ftlb.)

Tightening torque for new spark plugs: 30 Nm (22 ftlb.)

Tightening torque for ignition coils: 10 Nm (7.5 ftlb.)

2.3.2 Remove hall sender from the old cylinder heads and fit it on the new cylinder heads with new M6 x 16 cheese head bolts (2 x ⇒ 900.387.264.09) ⇒ *Workshop Manual '283919 Removing and installing hall sender'*.

Tightening torque: 10 Nm (7.5 ftlb.)

2.3.3 Remove oil-pressure sender from old cylinder head for cylinders 4–6, and fit it on the new cylinder head ⇒ *Workshop Manual '170419 Removing and installing oil-pressure sender'*.

Tightening torque: 30 Nm (22 ftlb.)

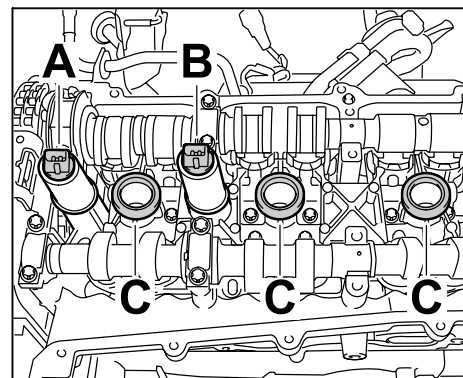


Figure 5

- 2.3.4 Remove brackets for muffler support from the old cylinder heads and fit them on the new cylinder heads using the old hexagon-head bolts M8 x 40 (1 x per bracket) and M8 x 25 (2 x per bracket) ⇒ Figure 6.

Tightening torque: 23 Nm (17 ftlb.)

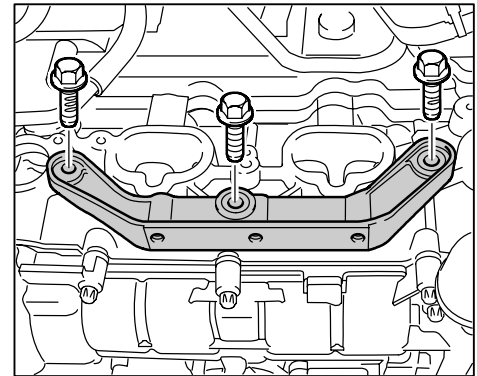


Figure 6

- 2.3.5 Install oil suction and tandem pump.

Grease new O-rings 95 x 2.5 (2 x ⇒ 999.707.554.40) with Optimol MP3 and fit them on the oil suction and tandem pump.

Fit oil suction pump on cylinder head for cylinders 1-3 with new M6 x 20 Torx screws (4 x ⇒ 999.073.316.09) ⇒ Figure 7.

Tightening torque: 10 Nm (7.5 ftlb.)

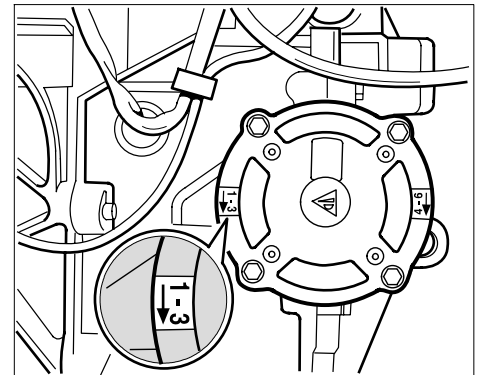


Figure 7

Replace O-rings 12 x 2 (2 x ⇒ 999.701.789.40) on the vacuum line of the tandem pump ⇒ Figure 8 -A- and fit line to the tandem pump.

Fit tandem pump together with vacuum line and new M6 x 30 round head screw (4 x ⇒ 999.073.317.09; ⇒ Figure 8 -B-) on the cylinder head for cylinders 4-6 ⇒ Workshop Manual '159119 Removing and installing cover for camshaft housing – section on "Installing".

Tightening torque: 10 Nm (7.5 ftlb.)

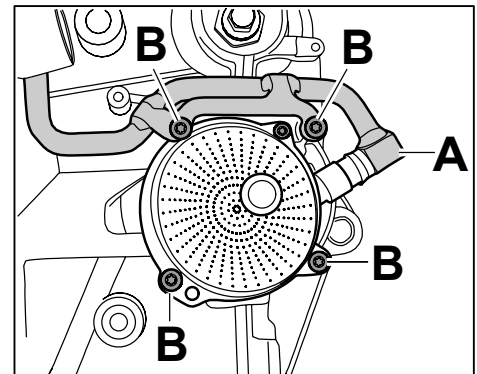


Figure 8

- 2.3.6 Remove oil filler neck and replace it with a new oil filler neck.

Fit new oil filler neck (⇒ 997.107.915.00) with new O-ring 42 x 4 and new Torx screws M6 x 16 (2 x ⇒ 900.385.050.09) ⇒ Workshop Manual '171519 Removing and installing oil filler neck – section on "Installing".

- 2.3.7 Remove tank vent line and valve and replace it with the new lines and valve.

Connect the two new tank vent lines (⇒ 997.110.127.00; ⇒ Figure 9-**1M**-/ ⇒ 997.110.129.40; ⇒ Figure 9-**1N**-) together while observing the direction of flow and clip them in at the T-piece for the oil separator.

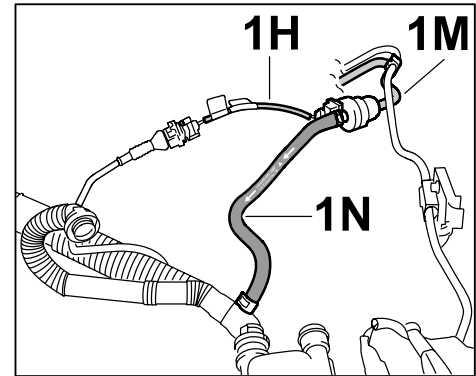


Figure 9

- 2.3.8 Connect electric line (⇒ 997.607.130.00; ⇒ Figure 9-**1H**-) as an extension to the tank vent valve connector.

- 2.3.9 Install support for air-conditioning compressor.
Tightening torque: 23 Nm (17 ftlb.)

- 2.3.10 Fit both preliminary oil separators with new seals (2 x ⇒ 997.107.538.00) to the new cylinder heads.
Tightening torque: 10 Nm (7.5 ftlb.)

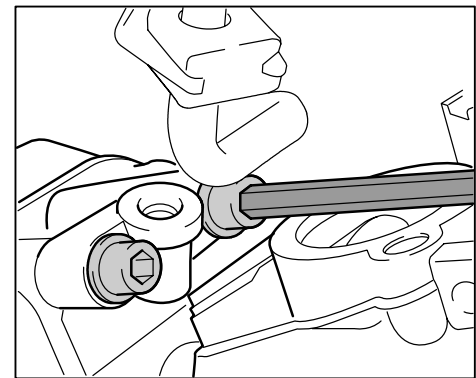


Figure 10

- 2.3.11 Fit cover plates for ignition coils using 2 x M6 x 16 screws on each ⇒ Workshop Manual '261219 Removing and installing cover plate – section on "Installing".

Tightening torque: 10 Nm (7.5 ftlb.)

- 2.3.12 Install support for rear muffler on the new cylinder heads.

Tightening torque: 23 Nm (17 ftlb.)

- 2.3.13 Fit new exhaust manifold seals (2 x ⇒ 996.111.107.55) on the new cylinder heads while ensuring that the upper and lower sides are positioned correctly.

Fit new exhaust manifolds (⇒ 997.111.105.00/ ⇒ 997.111.106.00) uniformly on the cylinder head using two new screws each (⇒ 999.075.074.00).

Insert remaining screws and tighten according to tightening sequence ⇒ Workshop Manual '261019 Removing and installing exhaust manifold – section on "Installing".

Tightening torque: 23 Nm (17 ftlb.)

2.3.14 Install air-conditioning compressor ⇒ *Workshop Manual '873419 Removing and installing air-conditioning compressor – section on "Installing"*.

Tightening torque for lines: 20 Nm (15 ftlb.)

Tightening torque for M8 screws: 23 Nm (17 ftlb.)

2.4 Install three-phase generator ⇒ *Workshop Manual '272219 Removing and installing three-phase generator – section on "Installing"*.

2.5 Fit drive belt.

Pay attention to operating direction of used belts. Check once again that the drive belt is positioned correctly on the belt pulleys ⇒ *Workshop Manual '137819 Removing and installing drive belt – section on "Installing"*.



Note

Align hose clamps ⇒ Figure 11 -1D-, in such a way that they can be accessed easily when the throttle housing and engine are fitted in the vehicle.

2.6 Complete and install new intake-air distributor.

2.6.1 Place new rubber sleeve (⇒ 997.110.685.40; ⇒ *Figure 11 -1C-*) on the new intake-air distributor for cylinder row 1-3 (⇒ 997.110.115.40; ⇒ *Figure 11 -1B-*) and pre-fit loosely with a new hose clamp (⇒ 999.512.694.00; ⇒ *Figure 11 -1D-*).

2.6.2 Place new distributor pipe (⇒ 997.110.416.40; ⇒ *Figure 11 -1E-*) with new hose clamp on the rubber sleeve for the intake-air distributor for cylinder row 1-3 and pre-fit it loosely.

2.6.3 Place new rubber sleeve on the distributor pipe and pre-fit loosely with a hose clamp.

2.6.4 Place new intake-air distributor for cylinder row 4-6 on the rubber sleeve for the distributor pipe and pre-fit loosely with a hose clamp.

2.6.5 Fit new support for tank vent line (⇒ 997.110.429.40; ⇒ *Figure 11 -1I-*) on new intake-air distributor for cylinder row 1-3 using a new countersunk screw BM6 x12 (⇒ 999.073.189.09; ⇒ *Figure 11 -A-*).

Tightening torque: 10 Nm (7.5 ftlb.)

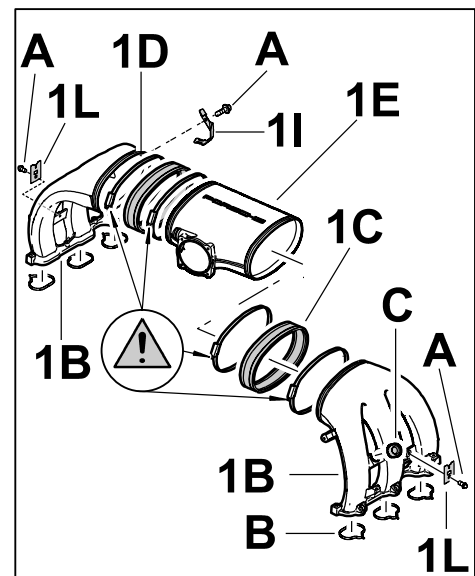


Figure 11

- 2.6.6 Fit sleeve for temperature sensor (⇒ *Figure 11 -C-*) from the old intake-air distributor on the support for the intake-air distributor for cylinder row 4–6 and insert temperature sensor into sleeve.
- 2.6.7 Fit both supports (⇒ 997.110.433.40; ⇒ *Figure 11 -1L-*) on the two intake-air distributors as shown in *Figure 11* using new countersunk screws BM6 x12 (2 x ⇒ 999.073.189.09; ⇒ *Figure 11 -1A-*).
Tightening torque: 10 Nm (7.5 ftlb.)
- 2.6.8 Position new seals (6 x ⇒ 997.110.247.00; ⇒ *Figure 11 -B-*) on the intake-air distributor flanges.
- 2.6.9 Position intake-air distributor, complete with seals on the cylinder heads and fit with 12 screws ⇒ *Workshop Manual '244619 Removing and installing intake-air distributor – section on "Installing"*.
Tightening torque: 10 Nm (7.5 ftlb.)
- 2.6.10 Tighten all hose clamps (4 x ⇒ 999.512.694.00).
Tightening torque: 3 + 0.5 Nm (2 + 0.5 ftlb.)
- 2.7 Install fuel injectors ⇒ *Workshop Manual '244019 Removing and installing fuel injector – section on "Installing"*.
- 2.7.1 Replace O-rings 8.03 x 3.05 (6 x ⇒ 999.707.573.40) on all fuel injectors ⇒ *Figure 12 -A-* and clean sealing faces with a lint-free cloth.
- 2.7.2 Spray fuel injectors with silicon spray and insert fuel distributor pipe ⇒ *Figure 12 -B-* with fuel injectors fitted into the corresponding openings in the intake-air distributor.
- 2.7.3 Fit screws ⇒ *Figure 12 -C-* for fuel distributor pipe on the intake-air distributor.
Tightening torque: 10 Nm (7.5 ftlb.)
- 2.7.4 Fit cable holder by moving the cable duct into position on the fuel distributor pipe and clipping it in.
Connecting cable connector.
- 2.7.5 Fit all lines (brake booster vacuum line, tank vent lines, etc.) on the intake-air distributor or into the supports provided.

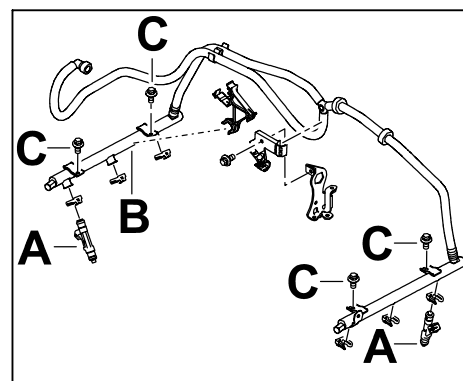


Figure 12

2.8 Fit electronic throttle adjuster ⇒ *Workshop Manual '244219 Removing and installing throttle housing – section on "Installing"*.

2.8.1 Insert new seal (⇒ 997.110.319.40; ⇒ *Figure 13 -B-*) on the distributor pipe flange ⇒ *Figure 13 -1E-*.

2.8.2 Pre-fit new electronic throttle adjuster (⇒ 997.605.116.00; ⇒ *Figure 13 -1G-*) loosely with three new Torx screws M6 x 45 (⇒ 900.385.125.01; ⇒ *Figure 13 -A-*) on the distributor pipe.

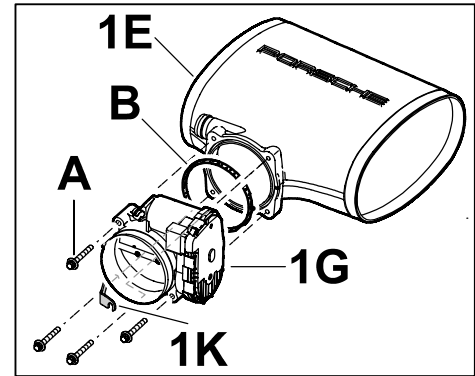


Figure 13

2.8.3 Fit new support foot for electronic throttle adjuster (⇒ 997.110.423.40; ⇒ *Figure 13 -1K-*) on electronic throttle adjuster with new Torx screws M6 x 45 (⇒ 900.385.125.01).

Tightening torque for all four screws: 10 Nm (7.5 ftlb.)

2.9 Install engine carrier ⇒ *Workshop Manual '103019 Removing and installing engine carrier – section on "Installing"*.

Tightening torque for M10 collar nuts: 65 Nm (48 ftlb.)

Tightening torque for M8 Torx screw: 10 Nm (7.5 ftlb.)

3 Stamp in the letter "S" at the end of the standard engine number in the engine housing with the engine type M97/01 ⇒ *Figure 14*.

If there is no space left at this position, the letter can also be stamped in front of the engine type.

4 Fit remaining exhaust system components and route vacuum lines.

4.1 Install catalytic converters with new seals (2 x ⇒ 997.111.113.00) and new clamps (2 x ⇒ 997.111.520.00) ⇒ *Workshop Manual '267319 Removing and installing catalytic converter – section on "Installing"*.

Tightening torque for lock nuts on flange: 23 Nm (17 ftlb.)

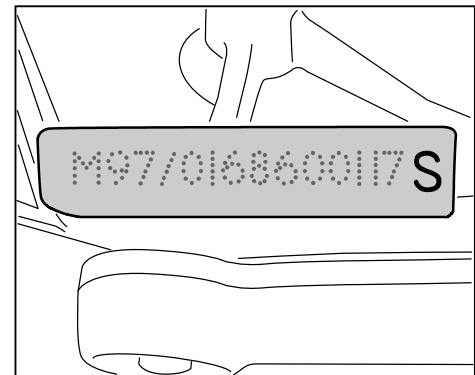


Figure 14

4.2 **ONLY** for vehicles without sports exhaust system (I No. XLF):

4.2.1 Remove stop-chock holder ⇒ *Figure 15 -A-* from old rear muffler and fit it on the new rear muffler.
Tightening torque: 23 Nm (17 ftlb.)

4.2.2 Clip in hose clip at the top on the right ⇒ *Figure 15 -B-* and left rear muffler bracket at the engine side.

4.2.3 Fit vacuum lines on the vacuum units (see "Sports exhaust system" TI).

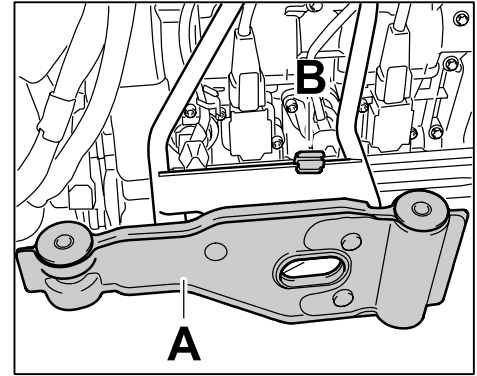


Figure 15

4.3 Install rear muffler ⇒ *Workshop Manual '263319 Removing and installing rear muffler – section on "Installing"*

4.3.1 Position complete muffler on the rear muffler support and pre-fit loosely with new M8 hexagon nuts (3 x ⇒ 900.380.005.09).

4.3.2 Align clamping sleeve for catalytic converter/muffler and tighten clamping sleeve and M8 hexagon nuts.

Tightening torque for both: 23 Nm (17 ftlb.)

4.3.3 Install oxygen sensors ahead of catalytic converter ⇒ *Workshop Manual '246919 Removing and installing oxygen sensor ahead of catalytic converter – section on "Installing"/*behind catalytic converter ⇒ *Workshop Manual '247319 Removing and installing oxygen sensor behind catalytic converter – section on "Installing"*.

4.4 Route vacuum lines as follows and connect to the Y-piece for the change-over valve.

- 4.4.1 Rear muffler, right:
 Vacuum unit (⇒ Figure 16 -A-) → hose clip on rear muffler bracket (⇒ Figure 16 -B-) → between intake channel for cylinders 5 and 6 (⇒ Figure 16 -C-) → preliminary oil separator (⇒ Figure 16 -D-) → above starter (⇒ Figure 16 -E-) → in front of intake-air distributor for cylinders 1–3 (⇒ Figure 16 -F-) → to Y-piece for change-over valve.

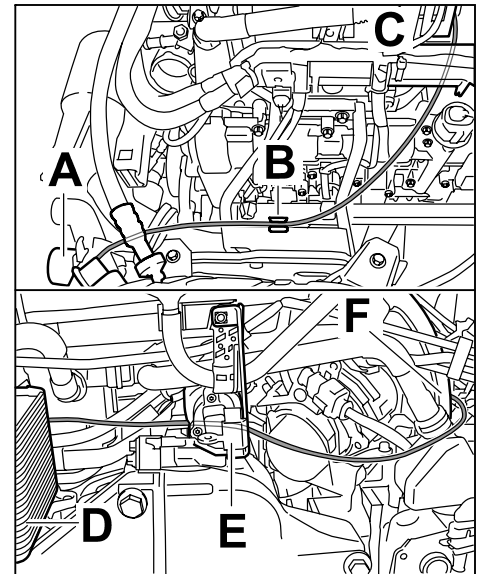


Figure 16

- 4.4.2 Rear muffler, left:
 Vacuum unit (⇒ Figure 17 -A-) → hose clip on rear muffler bracket (⇒ Figure 17 -B-) → fuel collection pipe (⇒ Figure 17 -C-) → to Y-piece ⇒ Figure 17 -D-.

- 4.4.3 Attach Y-piece (⇒ Figure 17 -D-) and protective tube (⇒ Figure 17 -E-) bent as shown in Figure 17 (top) to the change-over valve (⇒ Figure 17 -F-).
 Connect change-over valve to support for intake channel for cylinders 1–3.

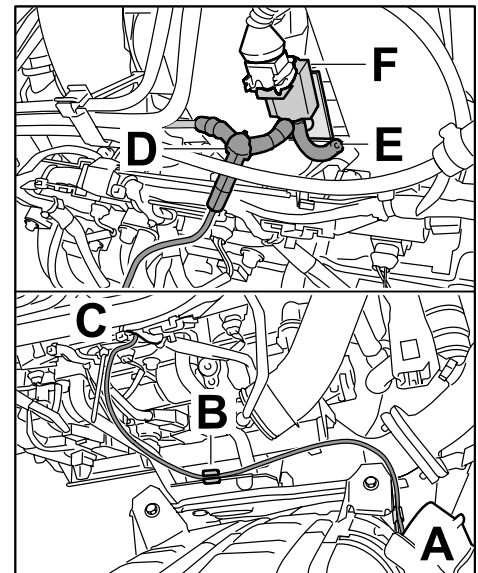


Figure 17

5 Install engine and carry out concluding work in the engine compartment.

- 5.1 Install clutch ⇒ *Workshop Manual '305019 Removing and installing clutch – section on "Installing"* and double-mass flywheel ⇒ *Workshop Manual '136019 Removing and installing flywheel – section on "Installing"*.
- 5.2 Refit transmission ⇒ *Workshop Manual '343527 Removing and refitting the transmission'* or automatic transmission ⇒ *Workshop Manual '373527 Removing and refitting automatic transmission'*.

- 5.3 Install engine ⇒ *Workshop Manual '100119 Removing and installing engine – section on "Installing"*.

Tightening torque for M12 collar nuts on engine mounting: 85 Nm (63 ftlb.)

- 5.4 Remove plugs for bearing pins on new air cleaner housing (⇒ 997.110.025.00) from the old positions ⇒ *Figure 18-A-* and position them – offset to the left – into the bores ⇒ *Figure 18-B-* on the cross member.

Install air cleaner housing ⇒ *Workshop Manual '242519 Removing and installing air cleaner housing – section on "Installing"*.

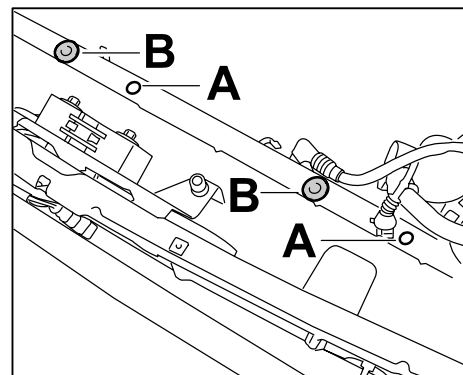


Figure 18

- 5.5 Extend electric plug connection for the hot-film mass air flow meter (MAF) using electric wire harness (⇒ 997.612.906.00).

- 5.5.1 Cut off old 5-pin connector for the hot-film mass air flow meter and strip 10 mm off the ends of the line.

- 5.5.2 Crimp lines from the wire harness from ⇒ 997.612.906.00 together with the vehicle wire harness and insert in crimping sleeves as follows:

Line 6602; WH/BU; 0.5²
(measurement signal +) with the line
of the same color

Line 6621; VT/RD; 0.5² (5 V –
reference voltage) with the line of
the same color

Line 6601; BN/WH; 0.5² (ground)
with the line of the same color

Line 6620; RD/BU; 0.5² (supply voltage) with the line of the same color

Line 6600; BU/GY; 0.5² (temperature sensor) with the line of the same color

- 5.5.3 Insert crimped ends of lines into shrink-fit sleeves, shrink-fit them and wrap oil/acid-resistant adhesive tape around the join.

- 5.6 Check that the 2-pin connector housing is sealed with two plugs (⇒ *Figure 19-A1-*). If not: press in plugs on the back of the connector housing.

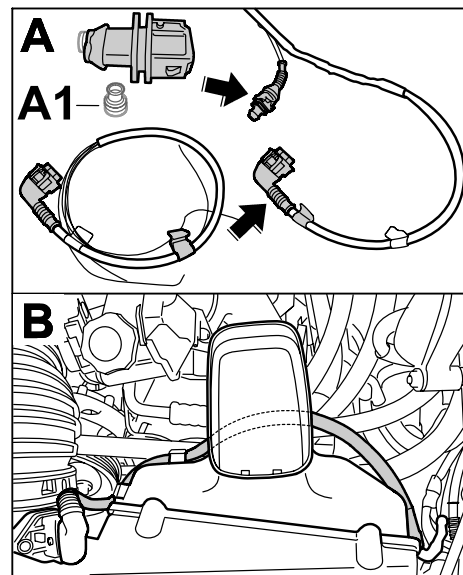


Figure 19

Connect plug connection to the "Air-cleaner flap activation" connection (no longer required) on the vehicle.

Tie electric line back as far as possible in the rear right of the engine compartment and secure to existing components ensuring that it cannot become chafed.

- 5.7 Route electric line in front of the carbon air cleaner housing to the 5-pin hot-film mass air flow meter (MAF) connection and clip it into the cable holder on the air cleaner housing. Connect 5-pin plug connection to the MAF ⇒ *Figure 19 -bottom-*.

- 5.8 **ONLY** for vehicles with sports exhaust system (I No. XLF):

Close off 2-pin connector on the vehicle side for the old sports exhaust system change-over valve using a 2-pin connector housing, including plugs.

Tie electric line back as far as possible and secure to existing components in such a way that it cannot become chafed.

- 5.9 Connect pneumatic actuation system for the electric change-over valve ⇒ *Figure 20*.

T-piece for line to brake booster (top left in engine compartment ⇒ *Figure 20 -A-*) → bent protective tube for sports exhaust system change-over valve (⇒ *Figure 20 -B-*).

- 5.10 Clip in sealing bellows (right/left) on the left and right intake channel on the air cleaner housing. Check that they are seated securely.

- 6 Remove rear underbody cover – front section – and replace it with the new cover (⇒ 997.504.629.04) ⇒ *Workshop Manual '519419 Removing and installing rear cover'*.

- 7 Convert rear lid for the right intake channel.

- 7.1 Preparatory work.

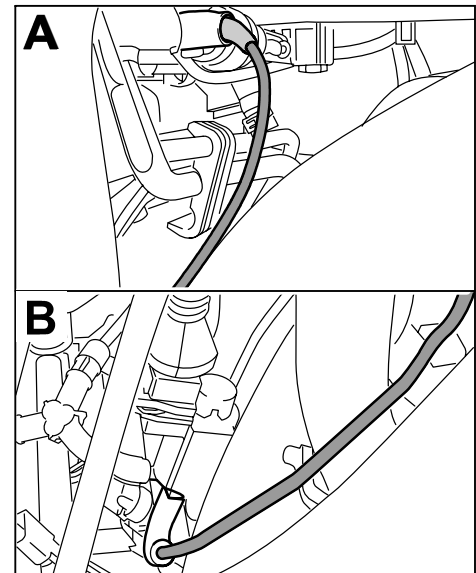


Figure 20



Note

First print out the templates (enclosures) and verify that the scale is correct!

In the event of serious deviations, check the print settings in Adobe Acrobat and change them as follows if necessary:

File ⇒ Page Setup ⇒ Properties:

Select "Paper Size: letterhead" and make sure "Fit to Scale" is not selected. Then confirm by clicking "OK" and close the "Print Setup" box.

When printing the file, check that "Scale to paper size" is not selected. If adjustments are necessary, change the print output % accordingly.

- 7.1.1 Print out template (see enclosure) and cut it out according to the rear lid version (standard-production vehicle or vehicle with aerokit).
- 7.1.2 Remove rear lid ⇒ *Workshop Manual '559019 Removing and installing rear lid - section on "Removing"* or ⇒ *Technical Information '665800 Aerokit'*.
- 7.1.3 **ONLY** for vehicles with standard rear lid:
Partly disassemble the rear lid ⇒ *Workshop Manual '559037 Disassembling and assembling rear lid - section on "Disassembling and assembling"*. To do this:
Remove plastic caps, loosen clamping screws and remove upper part of spoiler.
Remove folding wall from upper part of spoiler and partly disassemble lower part of spoiler.
Remove auxiliary brake light ⇒ *Workshop Manual '947019 Removing and installing auxiliary brake light - section on "Removing"*
- 7.1.4 **ONLY** for vehicles with aerokit rear lid:
Partly disassemble rear lid. To do this:
Guide wire harness and sleeve for fan blower, brake light and engine compartment light out of the bore (rear lid) into the inside of the rear lid.
Check that there is ample clearance for tools (drill, vibrating saw and file).
- 7.2 Position template according to ⇒ *Figure 21 -A-* on the standard rear lid or according to ⇒ *Figure 21 -B-* on the aerokit rear lid.
Align template with the edges of the body and fix in place.
Use a pen to mark a cut-out on the rear lid.
- 7.3 Make the cut-out for the right intake channel using a center drill bit, jig saw and file, and smooth off the cut edges with a file or triangular scraper.

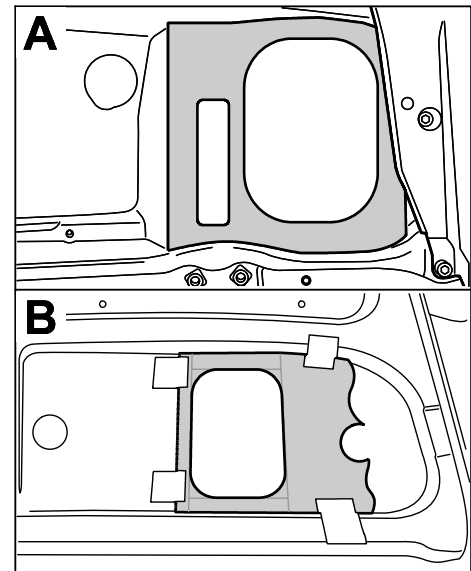


Figure 21

- 7.3.1 **ONLY** for vehicles with aerokit rear lid:
After cutting out the required section, work on the material at the sides ⇒ *Figure 22 -A-* using a flat file to ensure that the new air guide will engage securely.

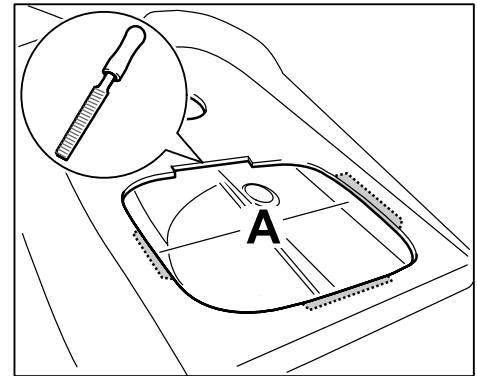


Figure 22

- 7.3.2 **ONLY** for vehicles with standard rear lid:
Make cut-out for the right intake channel in the lower part of the spoiler as required ⇒ *Figure 23*.
Smooth off cut edges with a file or triangular scraper.

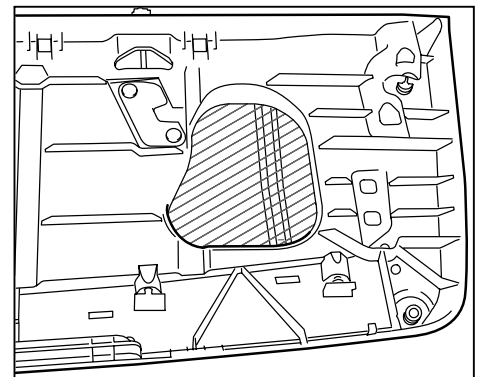


Figure 23

- 7.4 Observe the "Inside" ⇒ *Figure 24 -A-* and "Outside" ⇒ *Figure 24 -B-* marking on the air guide (⇒ 997.110.252.00) and check that it can be clipped into the cut-out without any great effort and that it fits securely.
If not: rework the cut-out.
- 7.5 Carry out measures for maintaining long-term body protection ⇒ *Workshop Manual '501000 Corrosion protection measures during repairs'*.
- 7.6 Clip right air guide (⇒ 997.110.252.00) into the rear lid.
- 7.7 Assemble rear lid.

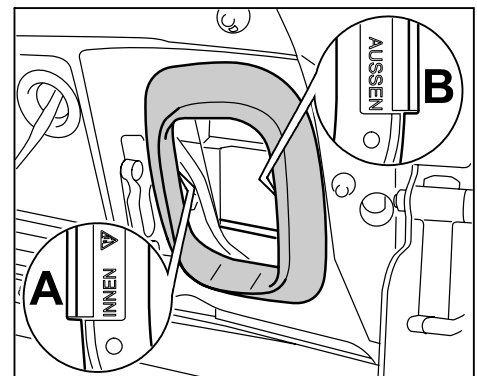


Figure 24

- 7.7.1 **ONLY** for vehicles with standard rear lid:

Install auxiliary brake light ⇒ *Workshop Manual '947019 Removing and installing auxiliary brake light - section on "Installing"*

Assemble lower part of spoiler and fit folding wall to upper part of spoiler.

Position upper part of spoiler on lower part, tighten clamping screws and fit plastic caps.

7.7.2 **ONLY** for vehicles with aerokit rear lid:

Insert sleeve of electric wire harness for fan blower, brake light and engine compartment light into the bore (rear lid).

Secure electric wire harness on or in rear lid, if necessary, so that it cannot become chafed.

7.8 Install rear lid ⇒ *Workshop Manual '559019 Removing and installing rear lid - section on "Installing"* or ⇒ *Technical Information '665800 Aerokit'* and adjust it ⇒ *Workshop Manual '559015 Adjusting rear lid'*.

8 Change plug connections on DME control module and program DME control module.

8.1 Enable Sports exhaust system function on DME control module.

8.1.1 Expose DME control module ⇒ *Workshop Manual '247019 Removing and installing DME control module – section on "Removing"*.

8.1.2 Pull off all connectors on DME control module ⇒ *Figure 25* and release connector C ⇒ *Figure 25 -C-*.

8.1.3 **ONLY** for vehicles with sports exhaust system (I No. XLF): Release line 5631; GY/GN; 0.5² (change-over valve for sports exhaust system) from chamber 14 using the Porsche press-out tool, then insulate it and tie it back. This line is no longer needed.

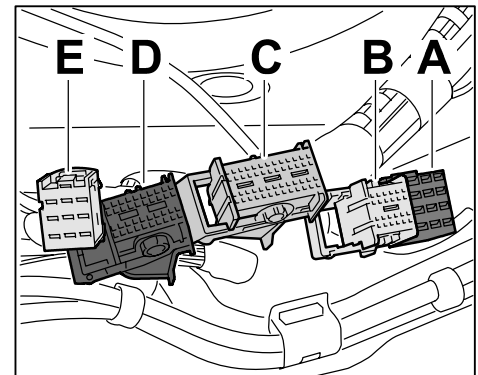


Figure 25

8.1.4 Press line 9730; WH; 0.5² (intake pipe change-over valve) out of chamber 4 using the Porsche press-out tool and insert it into chamber 14 (sports exhaust system valve).

8.1.5 Assemble connector for the DME control module, lock it and plug it into the DME control module.

8.2 Program DME control module, see also ⇒ *Workshop Manual '247019 Removing and installing DME control module'*.

For programming, query all necessary data (Vehicle Ident. No. [VIN]/old and new DME programming code, and old and new immobilizer code) in the Integrated Porsche Dealer Processing System (IPAS).

8.2.1 Connect a battery charger and PIWIS Tester P 9718 to the vehicle.

- 8.2.2 PIWIS Tester P 9718 must then be started.
Switch on the ignition in the vehicle and press **>>** to continue.
Select vehicle type and press **>>** to continue.
Read out vehicle data and perform an automatic control unit search.
- 8.2.3 Select DME control module and press **>>** to continue.
Select control unit identification and press **>>** to continue.
Take a note of the current Porsche part number for DME control module (e.g. 997618622N2).
Press **<<** to go back one step.
- 8.2.4 Select Program control unit and press **>>** to continue.
Enter the Vehicle Ident. Number. Press **>>** to continue and confirm with **F7** .
From IPAS:
Enter the old DME programming code. Press **>>** to continue and confirm with **F7** .
Enter new DME programming code. Press **>>** to continue and confirm with **F7** .
From IPAS:
Enter old immobilizer code. Press **>>** to continue and confirm with **F7** .
Enter new immobilizer code. Press **>>** to continue and confirm with **F7** .
- 8.2.5 Specify vehicle type – in this case: “997S” and press **>>** to continue.
Specify transmission type as “Manual transmission” or “Tiptronic”, and press **>>** to continue.
Specify model year – in this case: “As of MY 06” and press **>>** to continue.
- 8.2.6 Select a country-specific exhaust-gas standard according to the list provided below – in this case: “997 X51 3.8 I EU4 (manual transmission)” for example, and press **>>** to continue.
997 X51 3.8 I Japan (manual transmission or Tiptronic): ⇒ Japan, as of model year '06;
997 X51 3.8 I EU2 (manual transmission or Tiptronic): ⇒ Countries **without** European On Board Diagnosis – EOBD (less stringent exhaust-gas regulations, e.g. RoW), as of model year '06;
997 X51 3.8 I EU4 (manual transmission or Tiptronic): ⇒ Countries **with** EOBD (e.g. Germany), as of model year '06;
997 X51 3.8 I LEV (manual transmission or Tiptronic): ⇒ Low Emission Vehicle (USA), as of model year '06;

- 8.2.7 Press **[F8]** to start programming.
The following message appears: "Programming will take approx. 15 minutes! Please wait...".
- 8.2.8 Once programming is completed successfully, the following message appears: "Programming was completed successfully, **[>>]**" and you are prompted to delete the "CAN timeout" fault that is reported after each control unit programming session for each control unit that is connected to CAN.
Press **[>>]** to continue.
- 8.2.9 Confirm that programming was performed successfully by checking the new Porsche part number of the DME control module (previous part number, see Step 8.2.2). The new part number must match one of the part numbers specified below, depending on the vehicle type and exhaust-gas standard.
- The .0X index specified below depends on the current PIWIS Tester update and can be ignored.
- Vehicles with manual transmission:
997 X51 3.8 | Japan: ⇒ 997.618.637.0X
997 X51 3.8 | EU2: ⇒ 997.618.637.0X
997 X51 3.8 | EU2: ⇒ 997.618.632.0X
997 X51 3.8 | LEV: ⇒ 997.618.634.0X
- Vehicles with Tiptronic transmission:
997 X51 3.8 | Japan: ⇒ 997.618.638.0X
997 X51 3.8 | EU2: ⇒ 997.618.631.0X
997 X51 3.8 | EU4: ⇒ 997.618.633.0X
997 X51 3.8 | LEV: ⇒ 997.618.635.0X
- 8.3 Carry out concluding programming steps (fault memory for control units with CAN and teaching and adaptation routine for throttle – electronic throttle, cruise control present/not present) according to instructions in the Workshop Manual.
- 9 Carry out subsequent work after installing the engine (filling in and draining coolant, warming up engine to operating temperature, checking all fluid levels and topping up if necessary, see ⇒ *Workshop Manual '100119 Removing and installing engine – section on "Installing"*).
- 10 **ONLY** for vehicles without Tiptronic transmission:
- 10.1 Preparatory work.
- 10.1.1 Remove front apron ⇒ *Workshop Manual '631519 Removing and installing front apron - section on "Removing"*.
- 10.1.2 Pull off electric plug connection to the horn and remove horn along with its support.
- 10.1.3 Remove retaining clips on the Henn couplings, at the plugs on the left side radiator (bottom) and right side radiator (top).



DANGER

Danger of scalding from hot pressurized coolant

- ⇒ **Only work on the coolant system when the engine is "cool".**
- ⇒ **Wear protective gloves and goggles.**



WARNING

Coolant is corrosive and hazardous to health

- **Risk of skin irritation**
- **Risk of eye irritation**
- ⇒ **Wear protective gloves and goggles.**
- ⇒ **If you come into contact with coolant, wash off immediately with plenty of warm water.**



Note

Despite the fact that the coolant has been drained, residual amounts of coolant can still emerge at the joints during removal.
Have sufficient collecting containers and cloths to hand.

10.1.4 Remove plugs on the two side radiators using universal pliers.

- 10.1.5 Fit retaining clips back in the Henn couplings for the two side radiators ⇒ *Figure 26 -A (right side)-*.

- 10.2 Install middle radiator ⇒ *Workshop Manual '198019 Removing and installing middle radiator - section on "Installing"*.

- 10.2.1 Clip coolant supply line (⇒ 997.106.638.03) ⇒ *Figure 26 -B-* and return line (⇒ 997.106.639.03) into the respective Henn couplings on the side radiators.

- 10.2.2 Fit upper retaining frame (⇒ 997.504.487.00; plastic) to the end plate with M8 x 25 hexagon-head bolts (2 x ⇒ 999.072.048.09) and M8 hexagon nuts (2 x ⇒ 999.084.447.09).

Tightening torque for bolt and nut: 13 Nm (9.5 ftlb.)



Note

A second person is required for fitting the middle radiator.

- 10.2.3 Guide middle radiator (⇒ 997.106.037.02) into the upper retaining frame while observing the installation position.
Connect coolant supply and return lines to the middle radiator so that they engage audibly.
Check that the Henn couplings are engaged correctly.

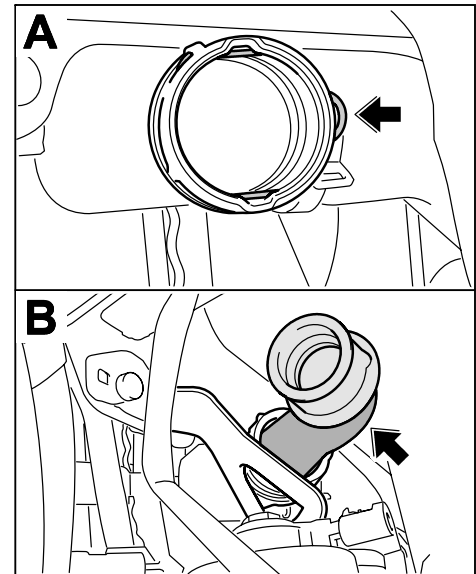


Figure 26

10.2.4 Fit the air guide on the middle radiator.
When doing so, make sure that the pins at the top of the air guide engage securely in the openings provided on the upper retaining frame.

10.2.5 Position lower retaining frame (⇒ 997.504.485.00) on the radiator and fit it to the speed nuts in the upper retaining frame using M6 x 16 hexagon head bolts (2 x ⇒ 900.378.035.09).

Tightening torque: 10 Nm (7.5 ftlb.)

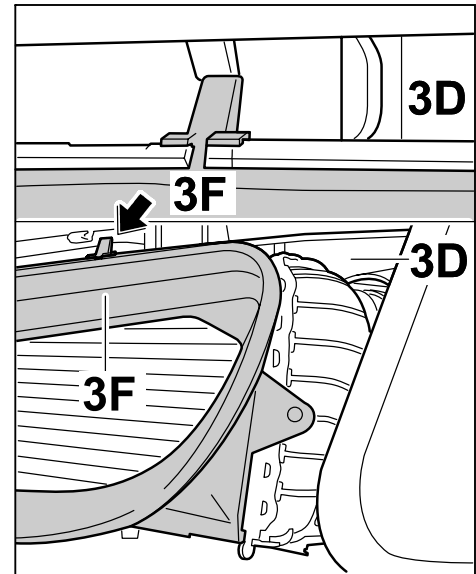


Figure 27

10.3 Convert front apron.

10.3.1 Unclip electric wire harness and water spray line close to the cover for the middle air inlet (inside of front apron).

10.3.2 Unclip cover of air inlet and replace it with the air inlet ⇒ 997.505.541.01.01C.

10.3.3 Clip air inlet (⇒ 997.505.541.01.01C) into the front apron.

10.3.4 Route electric line and water spray line and secure in position.

10.4 Concluding work.

10.4.1 Install horn along with support and connect electric plug connection.

10.4.2 Fit front apron ⇒ *Workshop Manual '631519 Removing and installing front apron - section on "Installing"*.

10.4.3 Complete subsequent work after installing middle radiator ⇒ *Workshop Manual '198019 Removing and installing middle radiator - section on "Installing"*.

11 **ONLY** for vehicles without Sport Chrono package (I Nos. 639/640) and without sports exhaust system (I No. XLF): Installing switch for sports exhaust system

11.1 Preparatory work.

11.1.1 Remove center console cover at the left/right ⇒ *Workshop Manual '681419 Removing and installing centre console cover - section on "Removing"* and remove air-conditioning system regulator ⇒ *Workshop Manual '870219 Removing and installing air-conditioning system regulator - section on "Removing"*.

11.1.2 Remove shift-lever knob with shift-lever boot ⇒ *Workshop Manual '340419 Removing and installing shift-lever knob - section on "Removing"* and front centre console cover.

- 11.1.3 Loosen center console completely ⇒ *Workshop Manual '681719 Removing and installing centre console – section on "Removing"*, but do not remove it!
- 11.1.4 Remove oddments tray ⇒ *Workshop Manual '681619 Removing and installing oddments tray – section on "Removing"* and switch console close to the center console ⇒ *Workshop Manual '962719 Removing and installing switch console – section on "Removing"*.
- 11.1.5 Loosen fuse box ⇒ *Workshop Manual '978409 Loosening and securing fuse box – section on "Loosening"* and remove left inner door sill trim ⇒ *Workshop Manual '680519 Removing and installing inner door sill trim – section on "Removing"*, main light switch ⇒ *Workshop Manual '940519 Removing and installing main light switch – section on "Removing"* and trim panel under dashboard ⇒ *Workshop Manual '701919 Removing and installing trim panel under dashboard – section on "Removing"*.
- 11.1.6 Remove trim panels for both B-pillars ⇒ *Workshop Manual '706719 Removing and installing B-pillar trim – section on "Removing"*.
- 11.1.7 **ONLY** for vehicles with BOSE Surround Sound System (I No. 680):
Remove subwoofer.
- 11.1.8 Remove rear side trim panels ⇒ *Workshop Manual '707519 Removing and installing rear side trim panel – section on "Removing"*, rear three-point belts ⇒ *Workshop Manual '691219 Removing and installing rear three-point seat belt – section on "Removing"* and rear emergency seat backrest including brackets.
- 11.1.9 Expose DME control unit, if you have not already done so under Step 8 and disconnect plug connections to the control unit.
- 11.2 Route and connect electric wire harness.

A = Connector to sports exhaust system switch

X2_1 = B-pillar connection point

D = DME control unit, connector D

- 11.2.1 Wrap adhesive tape around line 9726; BU/BU; 0.5² and line 9727; GY/GN; 0.5² from the sports exhaust system set. Pay attention to attached socket and pin contacts while doing so.
- 11.2.2 Connect lines as follows on connector D for the DME control unit:
Line 9726; BU/BU; 0.5² in chamber 6; function: plug in switch for sports exhaust flap.
Line 9727; GY/GN; 0.5² in chamber 17; function: plug in LED for sports exhaust system switch.

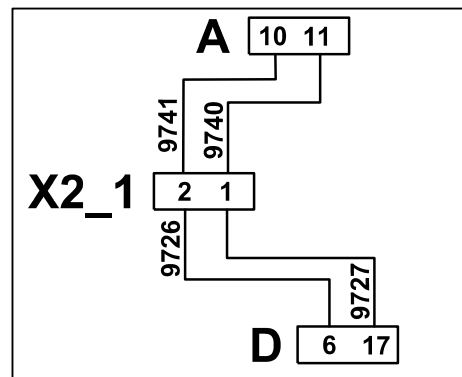


Figure 28

11.2.3 Route both lines along the electric wire harness as follows:
DME control unit (on the Coupé:
⇒ *Figure 29 -A-*) → node point of floorpan assembly for rear seats
→ left side panel → left B-pillar (⇒ *Figure 29 -B-*).

11.2.4 Plug pin contacts of both lines into 2-pin connector as follows:
Line 9727; GY/GN; 0.5² in chamber 1; function: LED for sports exhaust system switch
Line 9726; BU/BU; 0.5² in chamber 2; function: switch for sports exhaust flap

11.2.5 Connect 2-pin plug connection for connection point X2_1 (left B-pillar) to the wire harness from the “Sports exhaust system” set.

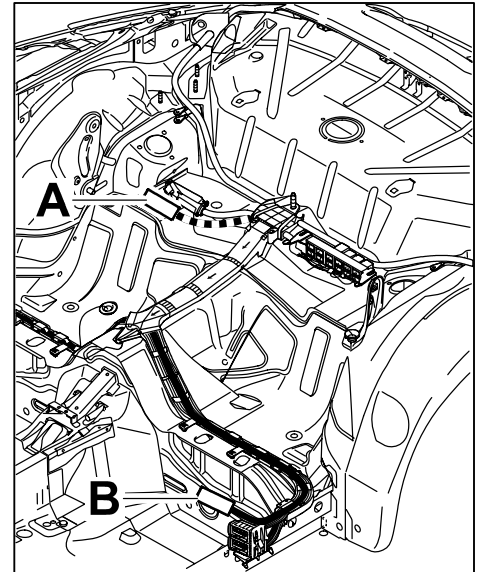


Figure 29

Make sure the line colors match in the plug socket and connector!
Chamber 1: GY/GN; 0.5²; lines: 9727 (connector) and 9740 (plug socket)
Chamber 2: BU/BU; 0.5²; lines: 9726 (connector) and 9741 (plug socket)

11.2.6 Route lines 9740; GY/GN; 0.5² and 9741; BU/BU; 0.5 from the B-pillar to the switch console, in the center console area, as follows:
Connection point X2_1 (left B-pillar) → door sill → A-pillar → underneath dashboard, above retaining frame (along standard wire harness) → lower slot in center console

11.2.7 Open secondary lock on 16-pin connector for the new switch module including “sports exhaust system” symbol and insert socket contacts of the lines (No. 9741 and No. 9740) into the 16-pin plug socket as follows:

Line 9740; GY/GN; 0.5² in chamber A11; function: LED for sports exhaust system switch
Line 9741; BU/BU; 0.5² in chamber A10; function: switch for sports exhaust flap

11.2.8 Close secondary lock on 16-pin connector.

11.2.9 Secure all lines to existing lines or components with tie-wraps or wrapping tape without tension and so that no chafing occurs.

11.3 Concluding work

11.3.1 Connect plug connections to the DME control unit and install DME control unit and secure trim panels.

- 11.3.2 Install rear emergency seat backrest including brackets, rear three-point belts ⇒ *Workshop Manual '691219 Removing and installing rear three-point seat belt – section on "Installing"* and rear side trim panels ⇒ *Workshop Manual '707519 Removing and installing rear side trim panel – section on "Installing"*.
- 11.3.3 **ONLY** for vehicles with BOSE Surround Sound System (I No. 680):
Install subwoofer.
- 11.3.4 Install trim panels for both B-pillars ⇒ *Workshop Manual '706719 Removing and installing B-pillar trim – section on "Installing"*.
- 11.3.5 Install trim panel under dashboard ⇒ *Workshop Manual '701919 Removing and installing trim panel under dashboard – section on "Installing"*, main light switch ⇒ *Workshop Manual '940519 Removing and installing main light switch – section on "Installing"*, left inner door sill trim ⇒ *Workshop Manual '680519 Removing and installing inner door sill trim – section on "Installing"* and fuse box ⇒ *Workshop Manual '978409 Loosening and securing fuse box – section on "Securing"*.
- 11.3.6 Install new switch for sports exhaust system (⇒ 997.613.129.00 FMH; ⇒ *Figure 30 -A-* or ⇒ 997.613.131.00 FMH; ⇒ *Figure 30 -B-*) depending on vehicle equipment (with or without PASM – I No. 475) in the centre console area ⇒ *Workshop Manual '962719 Removing and installing switch console – section on "Installing"* and install oddments tray ⇒ *Workshop Manual '681619 Removing and installing oddments tray – section on "Installing"*.
- 11.3.7 Completely install center console ⇒ *Workshop Manual '681719 Removing and installing centre console – section on "Installing"*, front center console cover and shift-lever knob with shift lever boot ⇒ *Workshop Manual '340419 Removing and installing shift-lever knob – section on "Installing"*.
- 11.3.8 Install air-conditioning system regulator ⇒ *Workshop Manual '870219 Removing and installing air-conditioning system regulator – section on "Installing"* and centre console cover at the left/right ⇒ *Workshop Manual '681419 Removing and installing centre console cover – section on "Installing"*.

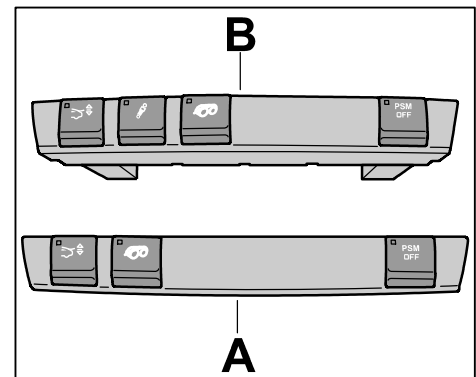


Figure 30

12 Reading out fault memory and "sports exhaust system" function test

- 12.1 Read out the fault memory and erase it if necessary (if you have not already done so when programming the DME control module).
- 12.1.1 Connect a battery charger and PIWIS Tester P 9718 to the vehicle.

- 12.1.2 PIWIS Tester P 9718 must then be started.
- 12.1.3 Read out the fault memories of all control units and delete any faults that are present.
- 12.1.4 PIWIS Tester P 9718 and the battery charger must now be disconnected.
- 12.2 Carry out a function test on the "sports exhaust system".
 - 12.2.1 Start the vehicle.

Depending on the vehicle status, the "sports exhaust system" is activated for 2 to 3 seconds because there is no vacuum at the rear mufflers. The exhaust flaps are open and the exhaust motor noise can be heard clearly.
As the vacuum at the rear mufflers increases, the exhaust flaps close and the exhaust motor noise eases off. The "sports exhaust system" is not active.

The LED in the switches (Sport Chrono package [I Nos. 639/640] or sports exhaust system [I No. XLF]) does not come on when you start the vehicle!
 - 12.2.2 Press the switch (Sport Chrono package [I Nos. 639/640] or sports exhaust system [I No. XLF]).

LED in the switches comes on.
After a regulating phase of around 2 to 3 seconds, the exhaust flaps open and the exhaust motor noise can be heard clearly.
The "sports exhaust system" is active.

Working Times: 10 01 31 00 –Engine (1 x) for 911 Carrera S (997), increased performance–
ONLY for vehicles with manual transmission

Labor time: **2520 TU**

- Includes: Removing and installing engine and rear lid; replacing cylinder heads, exhaust manifold, intake distributor, oil filler neck and air cleaner housing; installing rear muffler for sports exhaust system and connecting vacuum lines; adding the letter S to the engine number and reworking rear lid. Programming DME control unit; reading out all control units and erasing fault memories. Filling with fuel. Performing function test on the sports exhaust system. Removing and installing front apron; draining coolant and installing (middle) radiator; installing air inlet in front apron.
- Without: Power measurement, test drive or installing switch console with switch for sports exhaust system.

10 01 31 03 –Engine (1 x) for 911 Carrera S (997), increased performance–
ONLY for vehicles with automatic transmission (I No. 249)

Labor time: **2480 TU**

Includes: Removing and installing engine and rear lid; replacing cylinder heads, exhaust manifold, intake distributor, oil filler neck and air cleaner housing; installing rear muffler for sports exhaust system and connecting vacuum lines; adding the letter S to the engine number and reworking rear lid. Programming DME control unit; reading out all control units and erasing fault memories. Filling with fuel. Performing sound function test on sports exhaust system.

Without: Installing (middle) radiator, power measurement, test drive or installing switch console with switch for sports exhaust system.

96 27 23 50 –Switch console with switch for sports exhaust system (1 x) retrofitted – ONLY for vehicles without sports exhaust system (I No. XLF) and without Sport Chrono package (I Nos. 639/640)

Labor time: **150 TU**

Includes: Removing and installing switch console, routing and connecting line from switch console with “Sports exhaust system” switch to DME control unit; changing DME control unit connections.

References:

Workshop Manual:

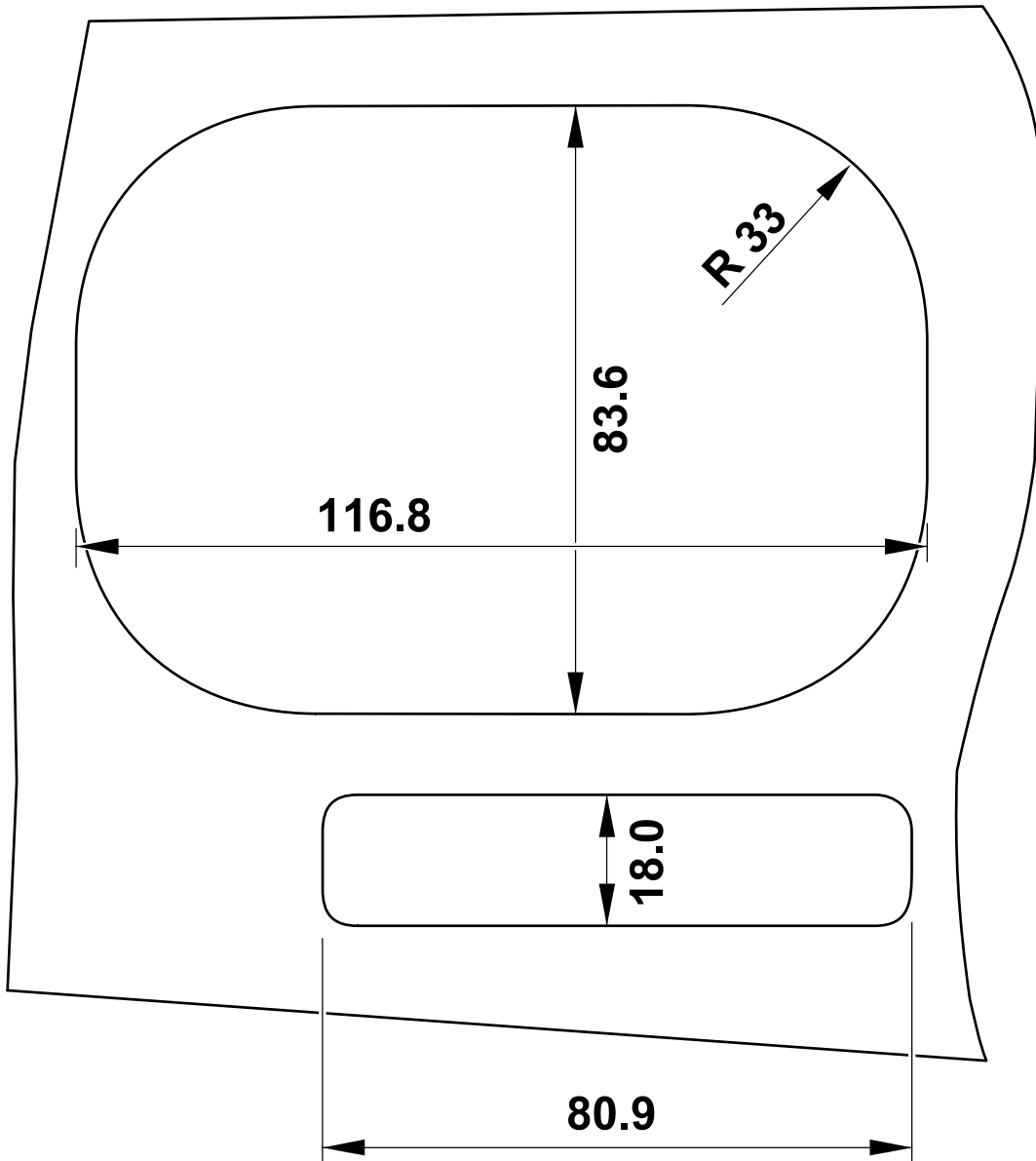
- ⇒ Workshop Manual '100119 Removing and installing engine'
- ⇒ Workshop Manual '103019 Removing and installing engine carrier'
- ⇒ Workshop Manual '136019 Removing and installing flywheel'
- ⇒ Workshop Manual '137819 Removing and installing drive belt'
- ⇒ Workshop Manual '150520 Removing and installing camshaft'
- ⇒ Workshop Manual '153719 Removing and installing solenoid hydraulic valve (camshaft timing)'
- ⇒ Workshop Manual '155519 Removing and installing solenoid hydraulic valve (valve lift control)'
- ⇒ Workshop Manual '157019 Removing and installing cylinder head'
- ⇒ Workshop Manual '159119 Removing and installing cover for camshaft housing'
- ⇒ Workshop Manual '171519 Removing and installing oil filler neck'
- ⇒ Workshop Manual '198019 Removing and installing middle radiator'
- ⇒ Workshop Manual '242519 Removing and installing air cleaner housing'
- ⇒ Workshop Manual '244019 Removing and installing injection valve'
- ⇒ Workshop Manual '244219 Removing and installing throttle body'
- ⇒ Workshop Manual '244619 Removing and installing intake air distributor'
- ⇒ Workshop Manual '246919 Removing and installing oxygen sensor ahead of catalytic converter'
- ⇒ Workshop Manual '247019 Removing and installing DME control module'
- ⇒ Workshop Manual '247319 Removing and installing oxygen sensor behind catalytic converter'
- ⇒ Workshop Manual '261019 Removing and installing exhaust manifold'
- ⇒ Workshop Manual '261219 Removing and installing cover plate'
- ⇒ Workshop Manual '267319 Removing and installing catalytic converter'
- ⇒ Workshop Manual '2706IN Work instructions after disconnecting the battery'
- ⇒ Workshop Manual '272219 Removing and installing generator'

- ⇒ *Workshop Manual '283919 Removing and installing hall sender'*
- ⇒ *Workshop Manual '287020 Removing and installing spark plug'*
- ⇒ *Workshop Manual '340419 Removing and installing shift lever knob'*
- ⇒ *Workshop Manual '305019 Removing and installing clutch'*
- ⇒ *Workshop Manual '343527 Removing and refitting transmission'*
- ⇒ *Workshop Manual '373527 Removing and refitting automatic transmission'*
- ⇒ *Workshop Manual '401000 Lifting the vehicle'*
- ⇒ *Workshop Manual '519419 Removing and installing rear cover'*
- ⇒ *Workshop Manual '559015 Adjusting rear lid'*
- ⇒ *Workshop Manual '559019 Removing and installing rear lid'*
- ⇒ *Workshop Manual '631519 Removing and installing front apron'*
- ⇒ *Workshop Manual '680519 Removing and installing inner door sill trim'*
- ⇒ *Workshop Manual '681419 Removing and installing centre console cover'*
- ⇒ *Workshop Manual '681619 Removing and installing oddments tray'*
- ⇒ *Workshop Manual '681719 Removing and installing centre console'*
- ⇒ *Workshop Manual '701919 Removing and installing trim panel under dashboard'*
- ⇒ *Workshop Manual '706719 Removing and installing B-pillar trim'*
- ⇒ *Workshop Manual '873419 Removing and installing compressor'*
- ⇒ *Workshop Manual '940519 Removing and installing main light switch'*
- ⇒ *Workshop Manual '947019 Removing and installing auxiliary brake light'*
- ⇒ *Workshop Manual '962719 Removing and installing switch console'*
- ⇒ *Workshop Manual '978409 Loosening and securing fuse box'*

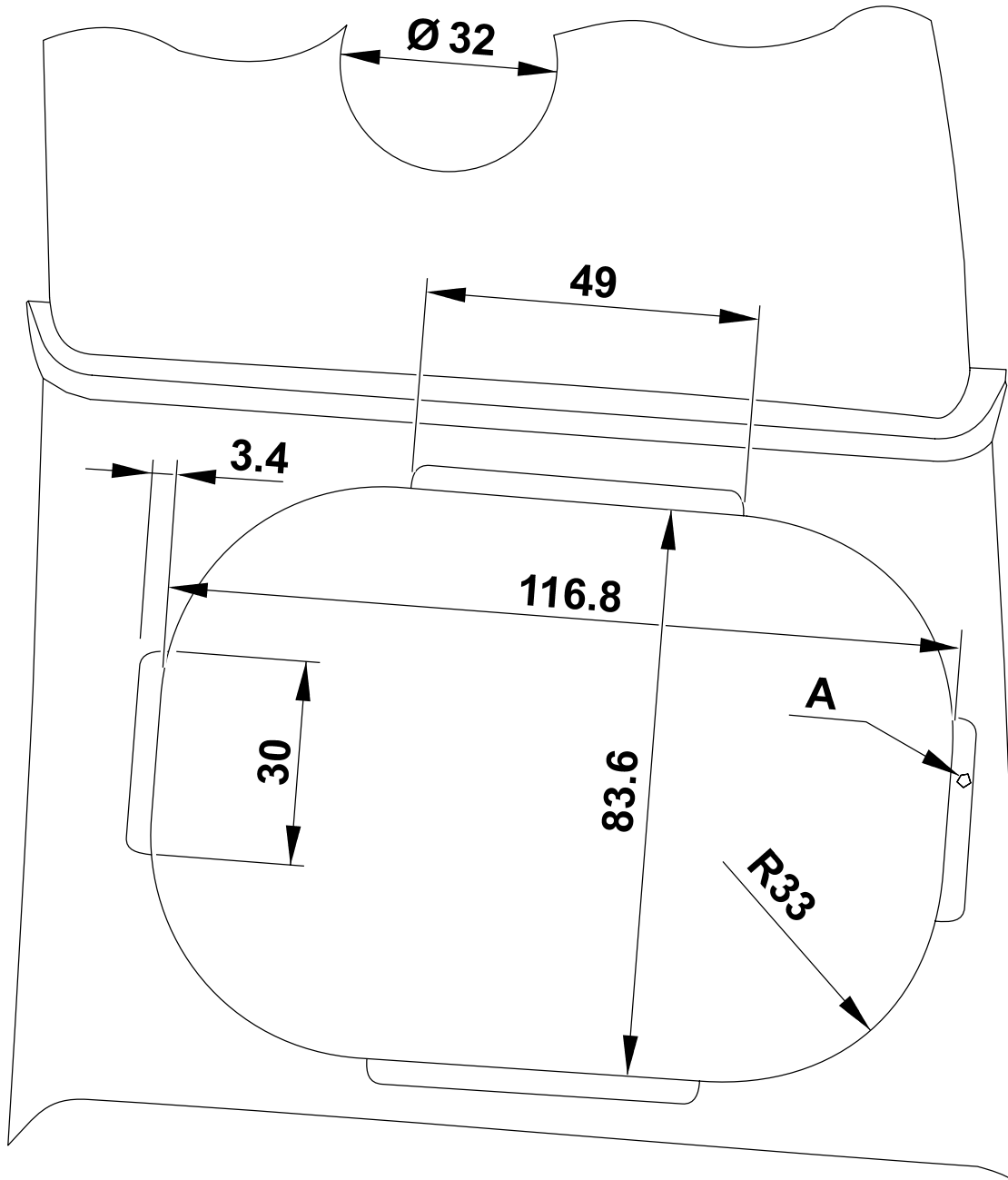
Technical Information:

- ⇒ *Technical Information '665800 Aerokit'*

Enclosures:



Template for standard rear lid



Template for aerokit rear lid

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