PORSCHE

Service Information

2017 Technik Introduction

718 Boxster/S (982)

Porsche AfterSales Training

Student Name: _____

Training Center Location: _____

Instructor Name: _____

Date: _____

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Printed in the USA

Part Number - PNA 718 001 17 Edition - 4/16

Foreword

The new 718 Boxster. The future: Open as always.

“Roadster dreams have always borne the name Porsche.” With its new name “718 Boxster”, the Boxster therefore continues the tradition of successful, fast and lightweight 2-seater roadsters.

Its renowned ancestors, the 550 Spyder and 718, already enjoyed great motor sports successes and produced corresponding headlines with the concept of an agile cornering specialist powered by a legendary flat-four engine. The lightweight engine in particular resulted in an ideal weight distribution with a central and low center of gravity, therefore making it possible to realize the driving dynamics that allowed the 718 to achieve numerous successes in the 50s and 60s.

The new generation of the Boxster now follows in these footsteps, loosely based on the maxim “Less is more”.

The heart of the roadster, which has been uncompromisingly designed for maximum agility and driving dynamics, is the completely newly developed turbo flat-four engine generation.

Offering compact design together with optimum efficiency, the new engines with a displacement of 2.0 and 2.5 l represent a quantum leap in performance for the Boxster also in combination with the introduction of turbocharging.

The fundamental performance capability of the four-cylinder technology was also confirmed in 2015 by the victory of the 919 Hybrid at Le Mans – with a state-of-the art turbocharged 4-cylinder engine concept.

The Boxster adopts this successful concept and transfers it to series production with the 718 Boxster models. The new flat-four turbo engine combines a high-revving layout with enormous torque, while at the same time offering a highly emotional engine sound with typical flat engine characteristics.

However, most important of all: 35 hp extra engine power and up to 74 ft lbs (100 Nm) more torque combined with significantly reduced emissions are clear proof of the performance capability of this drive concept.

The 718 Boxster S additionally uses the variable turbine geometry (VTG) familiar from the 911 Turbo and underlines the significantly enhanced performance with acceleration from 0-62 mph (0-100 km/h) in just 4.2 s.

In addition to the convincing drive concept, the new 718 Boxster also features a new, much more distinctive design in comparison with the predecessor, an even sportier chassis and suspension setup with 10% more direct steering, as well as a host of new performance, comfort and assistance systems.

With the introduction of the new infotainment system, comprising PCM, Connect or Connect Plus, a state-of-the-art and comprehensive connectivity package is now also available in the 718 Boxster. This consists of completely new, high-performance hardware with a high-resolution 7-inch multi-touch screen. This provides the basis for a modern user interface like that familiar from smartphones. This is also additional impressive proof of the future-oriented technologies used in a vehicle that, like its ancestors, will set new standards in the class of lightweight and powerful roadsters.

You can therefore look forward to the new Porsche 718 Boxster. Its technological enhancements are described in detail in this Service Information Technik manual.

Your Global Service Qualification Team

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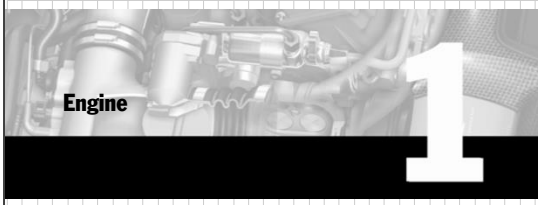
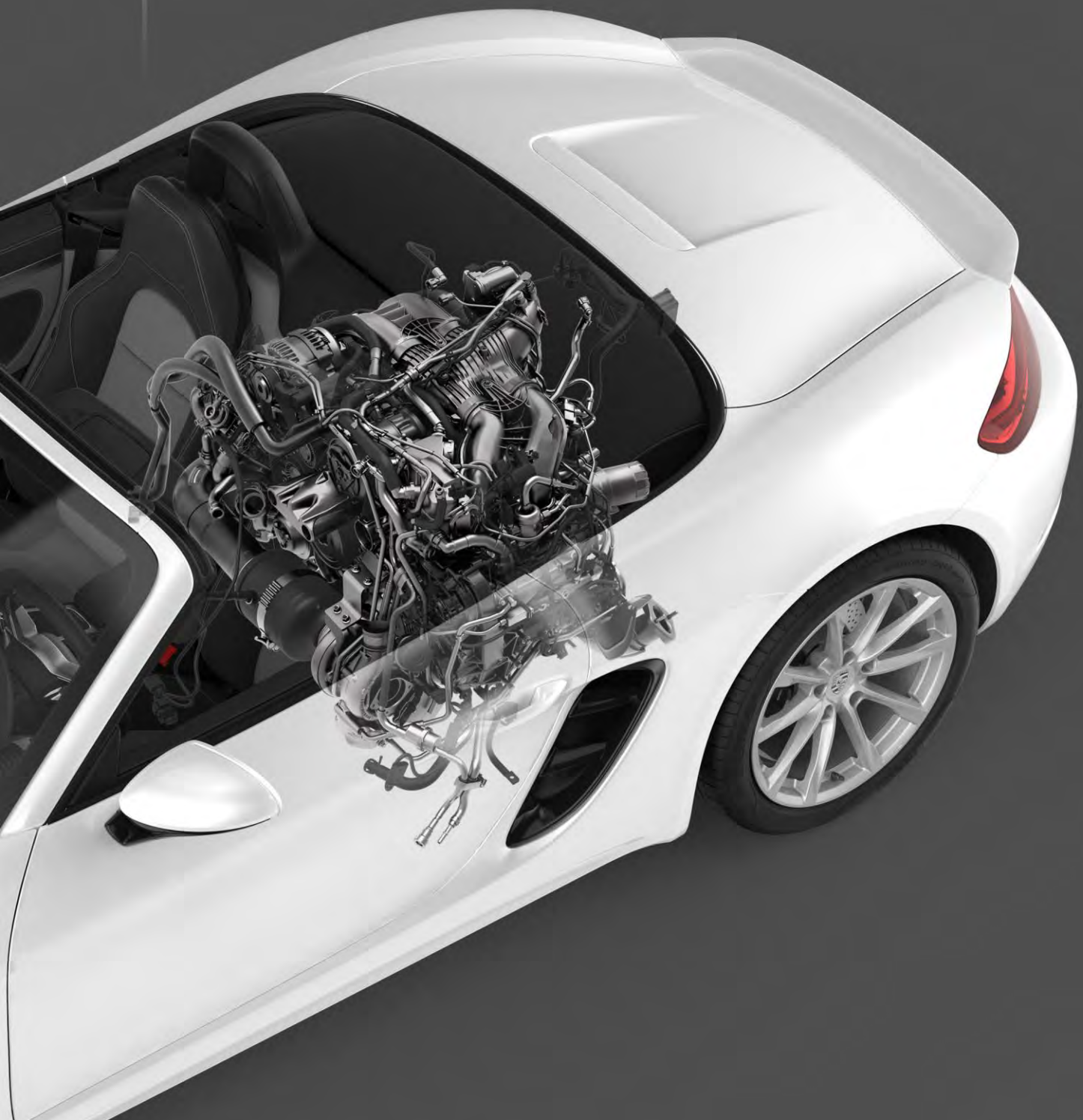


Group 1
Engine



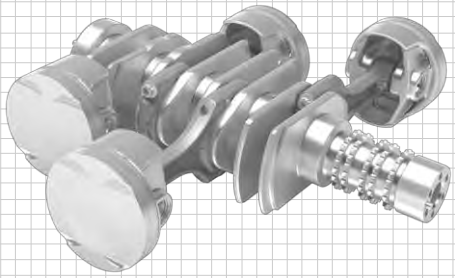
1 Engine

1.1 Introduction

Flat-four engine 718 Boxster S MY17 1_01_17

A completely new generation of flat-four engines is used in the 718 Boxster MY17. These engines are part of the current 9A2 engine generation, which made its debut in the Porsche 911 Carrera MY17.

The Porsche tradition has its roots in flat-four engines. The goal was therefore clear right from the start: the unique Porsche genes, such as characteristic engine sound, high revving ability and typical Sports Car performance, had to be reconciled with current environmental requirements such as low fuel consumption and emissions. The result is impressive in every respect. In fact, the performance of the previous six-cylinder generation is even significantly improved.



Crankshaft drive for the flat-four engine 1_02_17

The four-cylinder engine generation is characterized in particular by the following features:

- very high power with broad torque curve
- outstanding responsiveness
- very favorable fuel consumption and emission values
- low weight

1.2 2.0 l/2.5 l flat-four engine with turbocharger

1.2.1 Technical data

	Unit	718 Boxster MY17	718 Boxster S MY17
Engine type		MA220/MDDP	MA222/MDDN
Design		Flat engine	
Number of cylinders	i	4	
Valves per cylinder		4	
Turbocharging		Turbocharger	VTG turbocharger
Displacement	cm^3	1,988	2,497
Bore	mm (in)	91 (3.582)	102 (4.016)
Stroke	mm (in)	76.4 (3.008)	
Compression ratio		9.5:1	
Max. power	hp (kW)	300 (220)	350 (257)
at engine speed	rpm	6,500	
Max. torque (EC)	Nm	380	420
Net torque (USA)	ft lbs	280	310
at engine speed	rpm	1,950 – 4,500	1,900 – 4,500
Max. power output per liter (EC)	kW/l	111	103
Idle speed	rpm	800 +/- 50	
Maximum engine speed	rpm	7,500	
Engine speed limitation through		Electronic throttle and fuel cutoff	
Engine weight	lbs (kg)	399 (181)	412 (187)
Oil change quantity with filter	qts (l)	6 (5.7)	

Extract, data available at copy deadline, subject to change

Comparison of technical data

718 Boxster MY17/Boxster MY12-16

	Unit	718 Boxster MY17	Boxster MY12-16
Engine type		MA220/MDDP	MA122
Design		Flat engine	
Number of cylinders		4	6
Valves per cylinder		4	
Turbocharging		Turbocharger	without
Displacement	cm^3	1,988	2,706
Bore	mm	91	89
Stroke	mm	76.4	72.5
Compression ratio		9.5:1	12.5:1
Max. power (EC)	hp (kW)	300 (220)	265 (195)
at engine speed	rpm	6,500	6,700
Max. torque (EC)	ft lbs (Nm)	280 (380)	206 (280)
at engine speed	rpm	1,950 – 4,500	4,500 – 6,500
Max. power output per liter (EC)	kW/l	111	72
Idle speed	rpm	800 +/- 50	680 +/- 25
Maximum engine speed	rpm	7,500	7,800
Engine weight	lbs (kg)	399 (181)	439 (199)

Extract, data available at copy deadline, subject to change

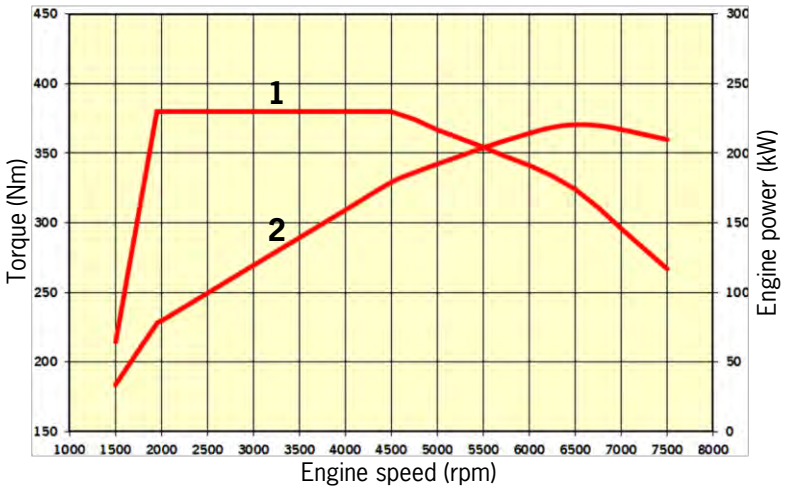
718 Boxster S MY17/Boxster S MY12–16

	Unit	718 Boxster S MY17	Boxster S MY12-16
Engine type		MA222/MDDN	MA123
Design		Flat engine	
Number of cylinders		4	6
Valves per cylinder		4	
Turbocharging		VTG turbocharger	without
Displacement	cm^3	2,497	3,436
Bore	mm	102	97
Stroke	mm	76.4	77.5
Compression ratio		9.5:1	12.5:1
Max. power (EC)	hp (kW)	350 (257)	315 (232)
at engine speed	rpm	6,500	6,700
Max. torque (EC)	ft lbs (Nm)	310 (420)	266 (360)
at engine speed	rpm	1,900 – 4,500	4,500 – 5,800
Max. power output per litre (EC)	kW/l	103	68
Idle speed	rpm	800 +/- 50	680 +/- 25
Max. engine speed	rpm	7,500	7,800
Engine weight	lbs (kg)	412 (187)	437 (198)

Extract, data available at copy deadline, subject to change

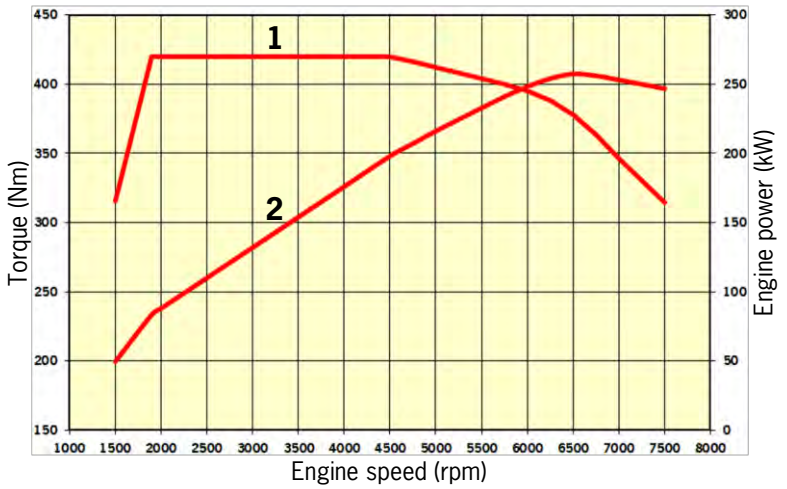
Power/torque diagram

Full load curve 718 Boxster MY17, engine type MA220/MDDP



Full load curve 2.0-liter flat engine, engine type MA220/MDDP 1_03_17

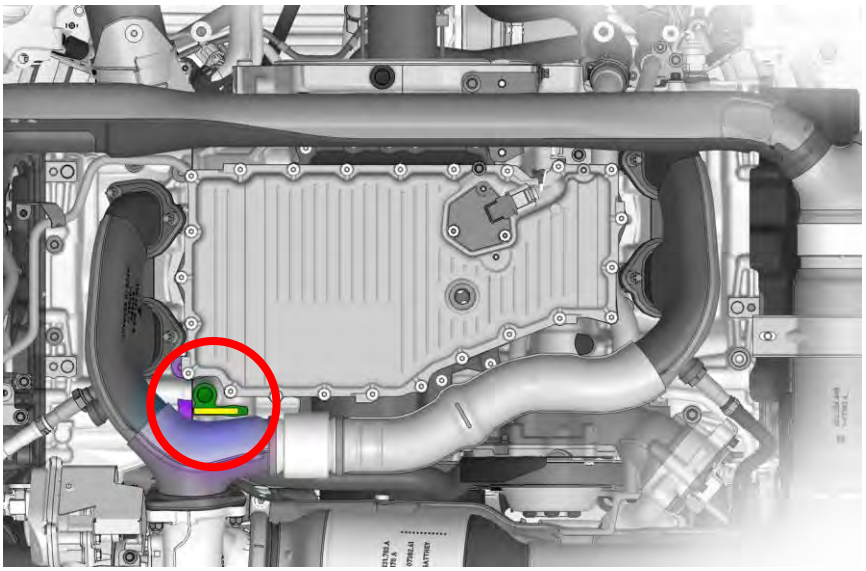
Full load curve 718 Boxster S MY17, engine type MA222/MDDN



Full load curve 2.5-liter flat engine, engine type MA222/MDDN 1_04_17

1 Torque (Nm)
2 Engine power (kW)

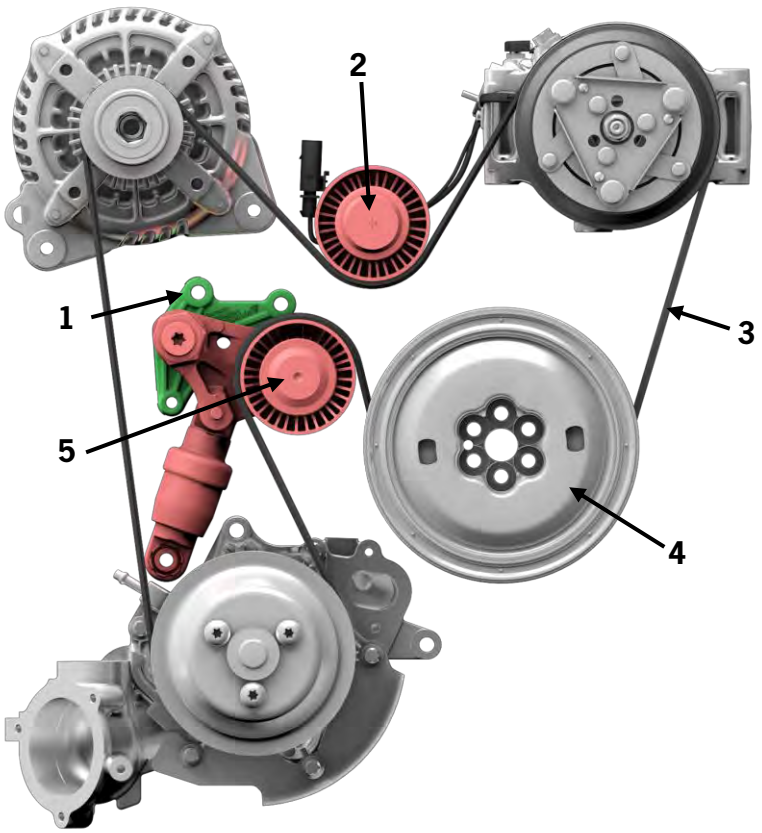
Engine number



Position of engine number 1_05_17

The engine number is located on the belt side on the right crankcase half and can be read from below in installed condition.

1.2.2 Belt drive

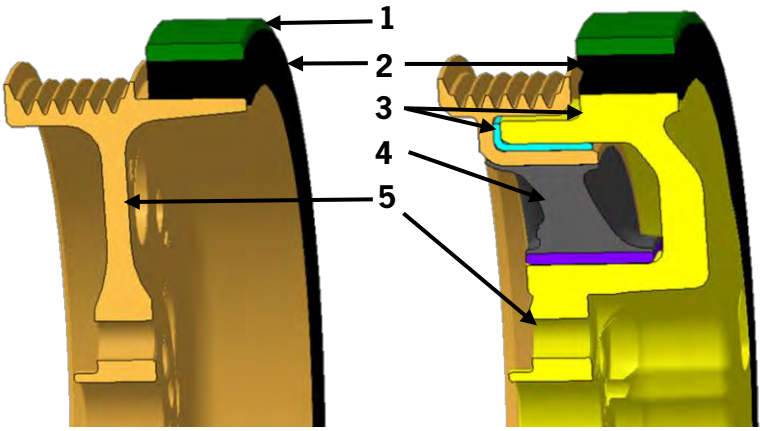


Belt drive (2.5 l flat engine) 1_06_17

1 Belt tensioner bracket
2 Deflection roller
3 Poly-V-belt
4 Vibration damper
5 Belt tensioner

The design of the belt drive is largely identical to that for the six-cylinder engines. Due to the different vibration behavior, the 2.5 l engine has a vibration damper with decoupled pulley instead of the conventional vibration damper (see below) and a differently matched belt tensioner is used.

Vibration damper with decoupled pulley



Vibration damper, 718 Boxster MY17 1_07_17

Vibration damper with decoupled pulley, 718 Boxster S MY17 1_08_17

The vibration damper with decoupled pulley on the 718 Boxster S has an additional decoupling element (4) between hub and pulley. This significantly reduces transmission of crankshaft rotational irregularity to the belt drive.

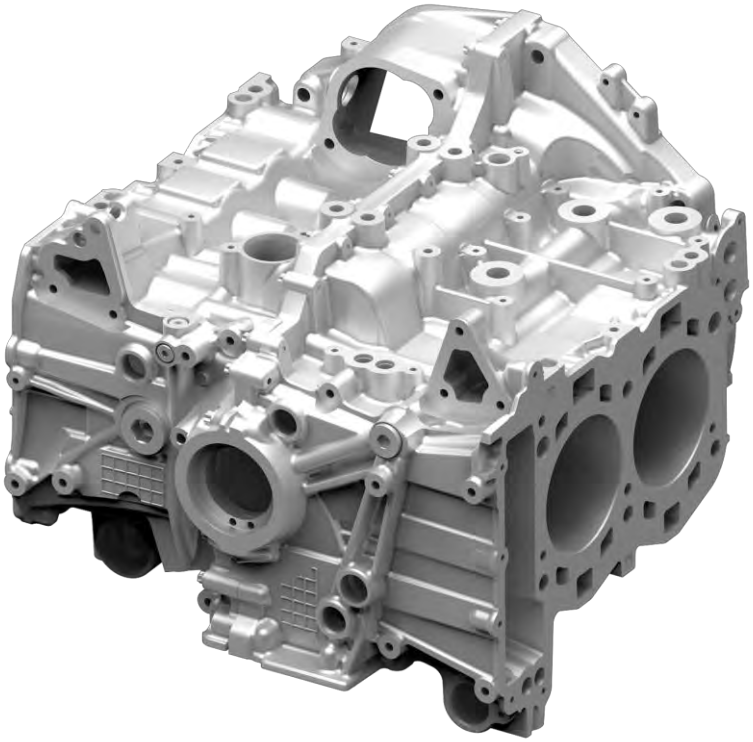
There is a maintenance-free plain bearing (3) between the drive hub and pulley to support the radial load due to the belt tension.

1 Flywheel mass
2 Flywheel mass decoupling element
3 Plain bearing
4 Pulley decoupling element (with steel inner race)
5 Drive hub

For design reasons, the vibration damper with decoupled belt pulley does not have any staking bores for adjustment work on the timing drive mechanism. Please observe the current Workshop Manual for adjustment work!

1.2.3 Engine block

Crankcase



Crankcase 2.0 l/2.5 l flat-four engine 1_09_17

Design

The design of the flat-four engines for the 718 Boxster MY17 and 718 Boxster S MY17 was derived from the redesigned flat-six engines of the 911 Carrera MY17. By keeping the same parameters (flange dimensions, etc.) relevant for production, the four-cylinder engines can be manufactured on the same production installations as the six-cylinder engines.

The hypoeutectic aluminum alloy AlSi7Cu0.5Mg is used for the crankcase. Production takes place using a low-pressure casting process with subsequent heat treatment.

The procedures for disassembly and assembly of the two crankcase halves and the crankshaft drive essentially correspond to those for the six-cylinder engines.

The heat treatment process comprises the three steps

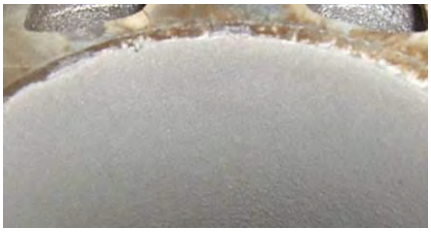
- homogenization
- quenching
- artificial ageing

This achieves a higher tensile strength of the cast material.

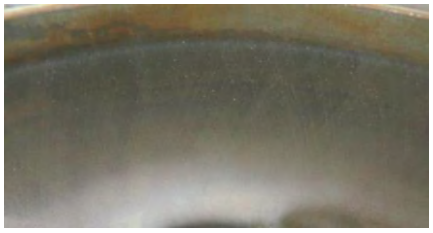
Cylinder liners

The fuel consumption and emission characteristics of the engine are positively influenced by an innovative coating for the cylinder liners. This coating technology (PTWA = **P**lasma **T**ransfer **W**ire **A**rc) leads to a significant reduction in the internal engine friction. With the PTWA method, a thin ferrous coating is applied to the previously roughened cylinder liner.

The coating material in the form of a wire is initially melted on by way of an electric arc and an argon/hydrogen plasma. The molten mass is then atomized and applied to the roughened cylinder liner. The collision of the atomized mass with the substrate results in solid interlocking of the materials. A lamellar coating with a defined porosity is thus produced step-by-step which guarantees a high degree of oil adhesion during engine operation.

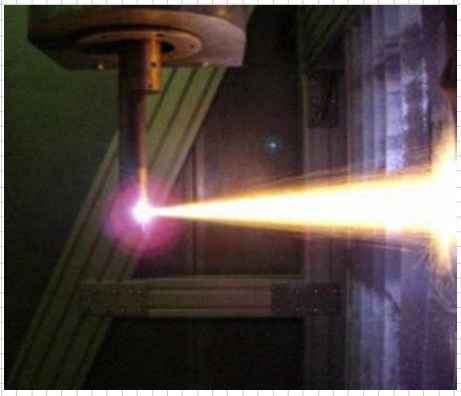


Cylinder liner with PTWA coating (before honing) 1_10_17



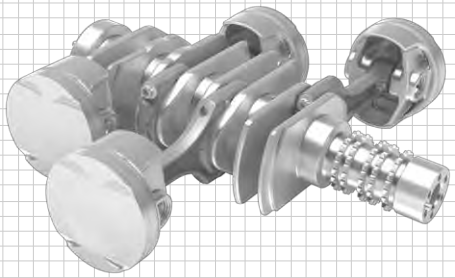
Cylinder liner after honing 1_11_17

A low-friction, smooth and dimensionally accurate cylinder liner is produced by subsequent multi-stage mechanical honing.



PTWA application 1_12_17

Wear assessment of PTWA cylinder liners is primarily carried out by way of visual inspections (similar to ALUSIL liners). The assessment criteria are discolorations and surface damage.

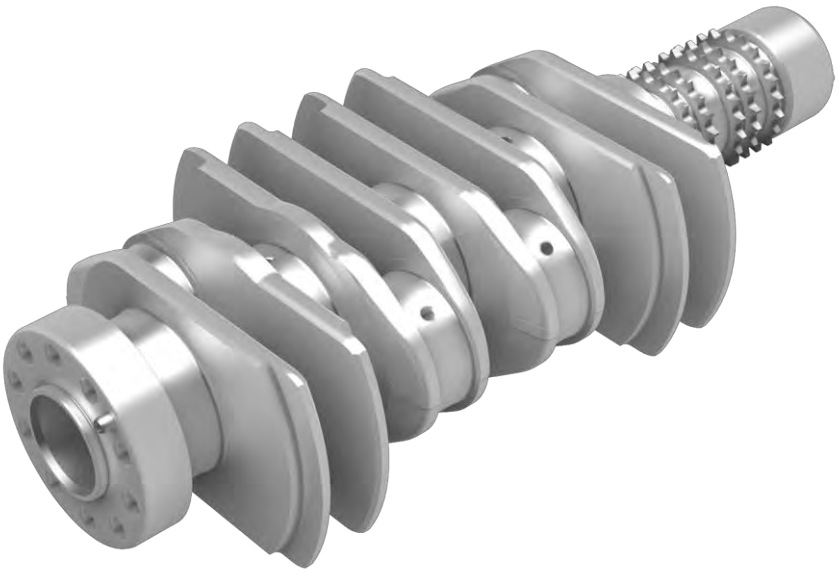


Crankshaft drive for the flat-four engine 1_02_17

Crankshaft drive

The design of the crankshaft drive is largely based on the design for the flat-six engines.

Crankshaft



Crankshaft for the flat-four engine 1_13_17

The crankshaft is supported by six bearings (five main bearings and one support bearing). The bearings and bearing dimensions correspond to the six-cylinder engines (lead-free ternary bearings with steel backing, main bearing diameter 63 mm, support bearing diameter 52 mm).

The bearings 1, 3, 5 and 6 (support bearing) are smooth bearings and bearings 2 and 4 are grooved bearings. Oil is supplied via the grooved bearings to the connecting rod bearings on the crankshaft.

Main bearing 4 is designed as a thrust bearing. Axial play is determined by two thrust washers, which are inserted at the left and right of the bearing.

The stroke is a uniform 76.4 mm for both displacement variants.

The drive for the two timing drive mechanisms (each with duplex chain) and the demand-controlled oil pump (with simplex chain) is located on the pulley side.

Connecting rod

Connecting rod 1_14_17

Forged steel rods with a cracked big end are used. The connecting rod small end has a diameter of 22 mm in the 2.0 l version and 23 mm in the 2.5 l version.

Like for the main bearings, lead-free ternary bearings are used as the connecting rod bearings.

The connecting rods are classified according to weight and can therefore be replaced only as a set (four rods).

Pistons

Piston on 718 Boxster MY17 1_15_17

Piston on 718 Boxster S MY17 1_16_17

Please observe the specifications in the current Workshop Manual for piston assembly!

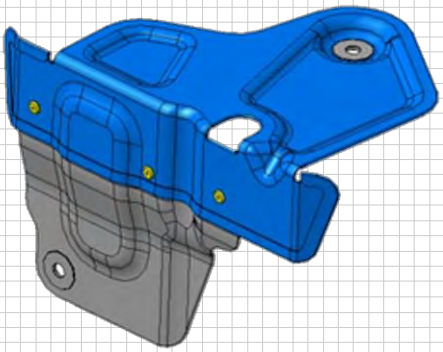
Aluminum forged pistons are used in the flat-four engines. The piston diameter is approx. 91 mm for the 2.0 l variant and approx. 102 mm for the 2.5 l variant.

Piston rings

Three piston rings are fitted on the piston (from top to bottom):

- Steel plain compression ring
- Stepped taper-faced ring
- Three-piece oil scraper ring

Observe the installation position of the piston rings in accordance with the Workshop Manual!



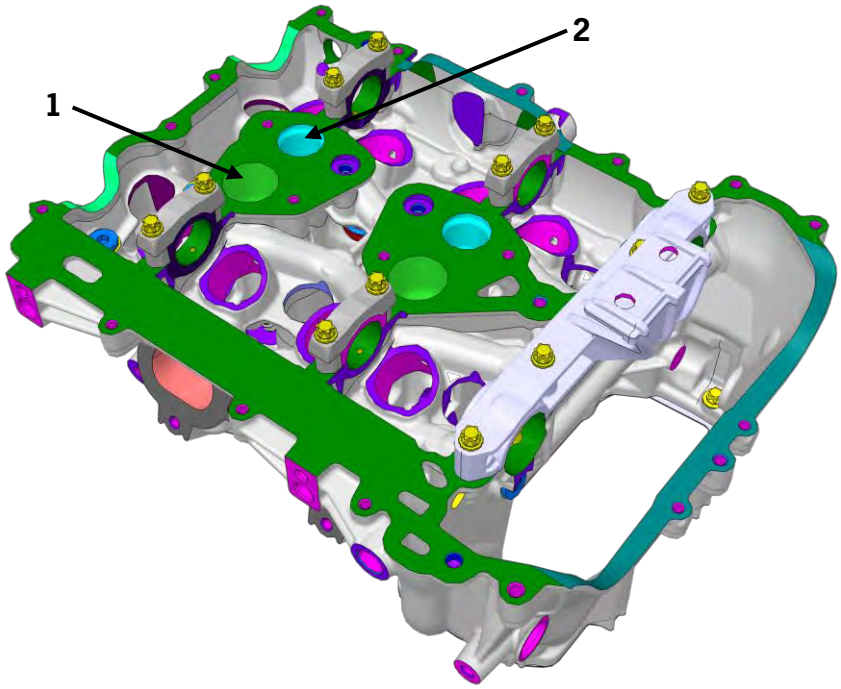
Heat shield of oil pan 1_18_17

Oil pan

Two-piece oil pan 1_17_17

The oil pan of the flat-four engines comprises two parts. Unlike on the flat-six engines, it is made of aluminum. This was necessary due to the direct proximity of the exhaust system. A heat shield plate is installed between the oil pan and turbocharger in order to additionally reduce the effect of heat.

1.2.4 Cylinder head



Cylinder head 1_19_17

The design of the cylinder heads was derived from the six-cylinder variant. They are made from AlSi7Cu3Mg and are cast using the Rotacast process (with subsequent heat treatment).

The spark plug and high-pressure injector are located centrally in the combustion chamber directly next to each other. As a result, the intake and exhaust camshafts are positioned relatively far apart (147 mm).

The camshafts are supported directly in the cylinder head by way of a double bearing saddle and two individual bearing covers in each case.

Valve covers

The engine/transmission suspension was changed from three-point to four-point mounting. For this purpose, there is a bearing bracket on each of the two valve covers which supports the engine mounts on the left and right respectively. The bearing bracket is screwed together with the valve cover.

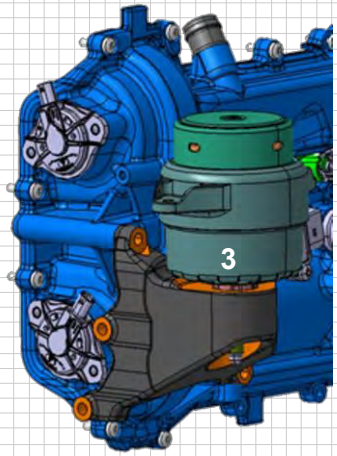
1 Spark-plug recess
2 Injector bore

The spark-plug recess is slightly angled. For this reason, a wobbly extension must always be used for disassembly and assembly of the spark plugs. The spark plug must be carefully inserted in the recess in order to avoid deformation of the electrodes. Attention! There is a risk of damage if this is not observed.

Different spark plugs are used in the 2.0 l and 2.5 l engine variants:

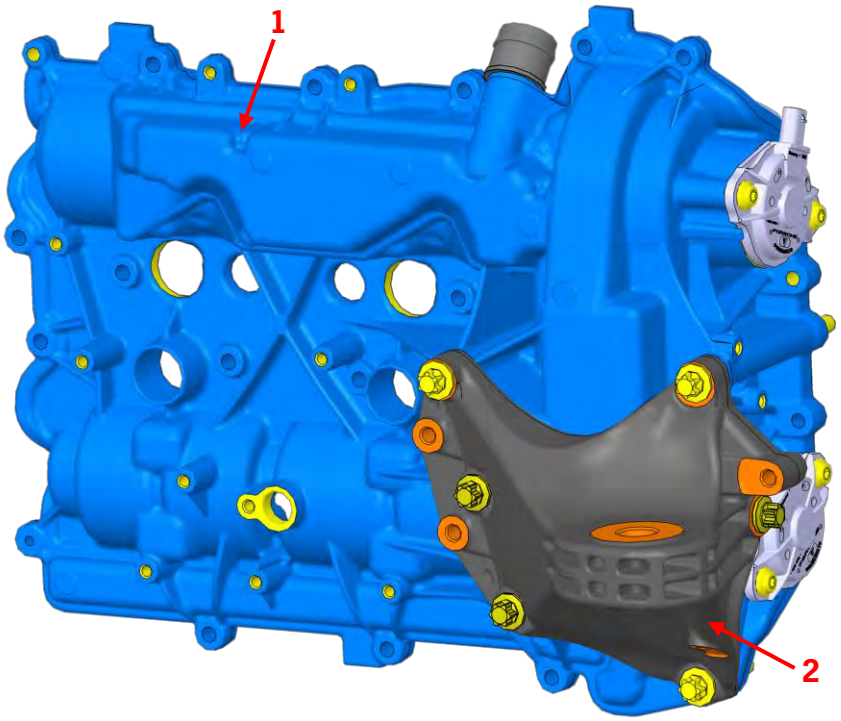
- 718 Boxster MY17: Bosch
- 718 Boxster S MY17: NGK

Attention: Danger of confusion!



Valve cover with engine mount 1_21_17

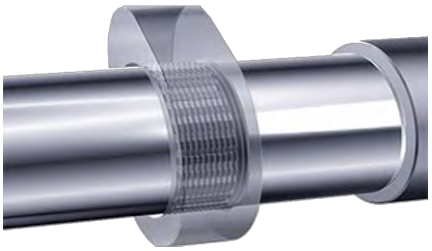
1 Valve cover
2 Bearing bracket
3 Engine mount



Valve cover with bearing bracket 1_20_17

Camshafts

Radial and axial splines on shaft and cam 1_24_17

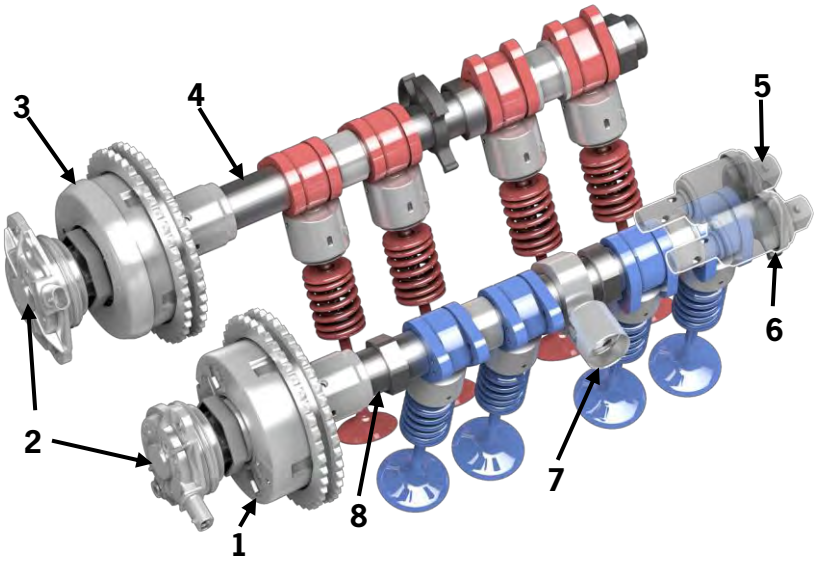


Positive connection of shaft and cam 1_25_17

The assembled camshafts already familiar from other engine concepts are also used in the flat-four engines. In a manufacturing process, the cam profiles with axial splines are pressed on over radial splines on the camshaft tube to produce a positive connection.

Valve drive

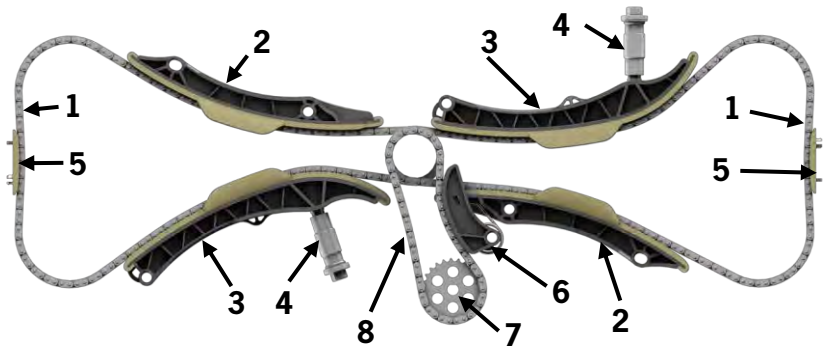
Both the intake and exhaust camshafts have the familiar vane adjusters with central valve. Porsche VarioCam Plus valve lift adjustment is used on the intake and exhaust valves.



Valve drive 1_22_17

1 Intake camshaft adjuster with central valve screw
2 Solenoid actuators
3 Exhaust camshaft adjuster with central valve screw
4 Exhaust camshaft
5 Valve lift adjustment valve, exhaust
6 Valve lift adjustment valve, intake
7 Roller tappet drive, high-pressure pump
8 Intake camshaft

1.2.5 Timing drive mechanism



Timing drive mechanism 1_23_17

1 Duplex roller chain
2 Guide rail
3 Tensioning rail
4 Chain tensioner
5 Chain guide
6 Oil pump tensioning rail
7 Oil pump sprocket
8 Simplex roller chain

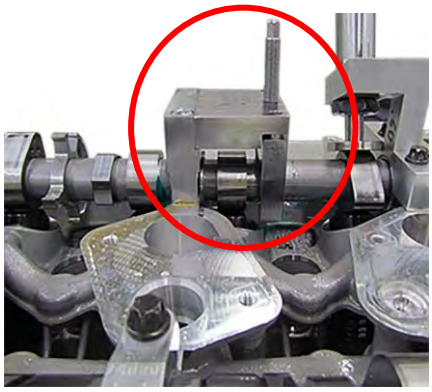
The timing drive mechanism was adopted fully from the flat-six engines. The intake and exhaust camshafts of both cylinder banks are each driven by a separate duplex roller chain with 8 mm pitch and 146 chain links. The chain tensioners operate hydraulically and are equipped with a helper spring. In comparison with the 9A1 engine generation, it was possible to approximately halve the spring preload by way of an optimized oil pressure line. This in turn further reduces friction and wear.

The oil pump is driven separately via a single simplex roller chain. The chain tension is ensured here by a mechanical chain tensioner.

"9A1" is the development designation of the first DFI flat engine (911 Carrera as of MY09).

Valve timing

Staking tool 9772/1 1_26_17

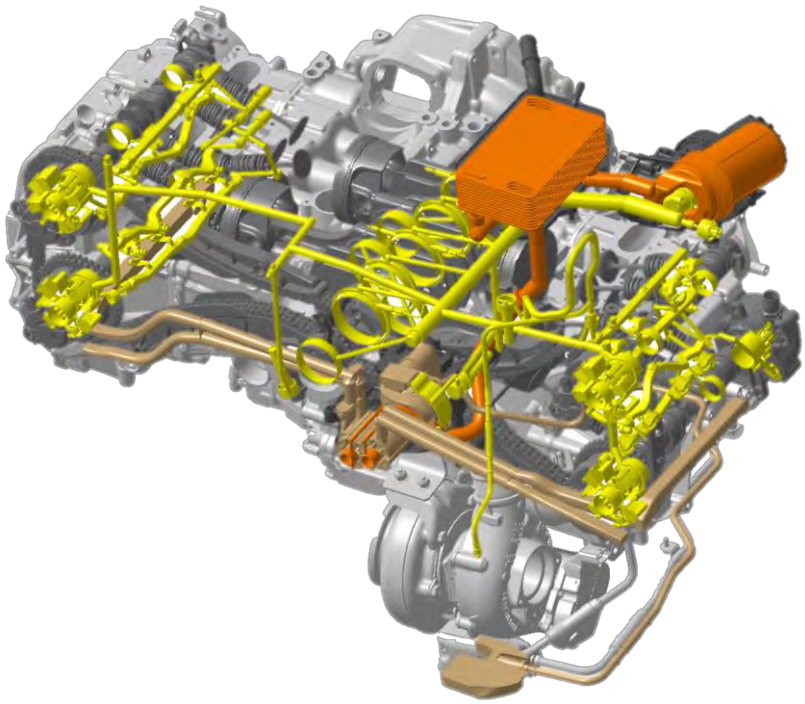


Installation position of staking tool 1_27_17

The timing is adjusted in a similar way to the flat-six engine. The already familiar special tool 9772/1 (two-part) is used for positioning the camshafts. The tool is installed instead of a camshaft bearing cover in each case.

The crankshaft must be turned on by one revolution between adjustment of the left and right timing drive mechanisms! Please also observe the current Workshop Manual!

1.2.6 Oil supply



Oil circuit 1_25_17

Oil mist separator

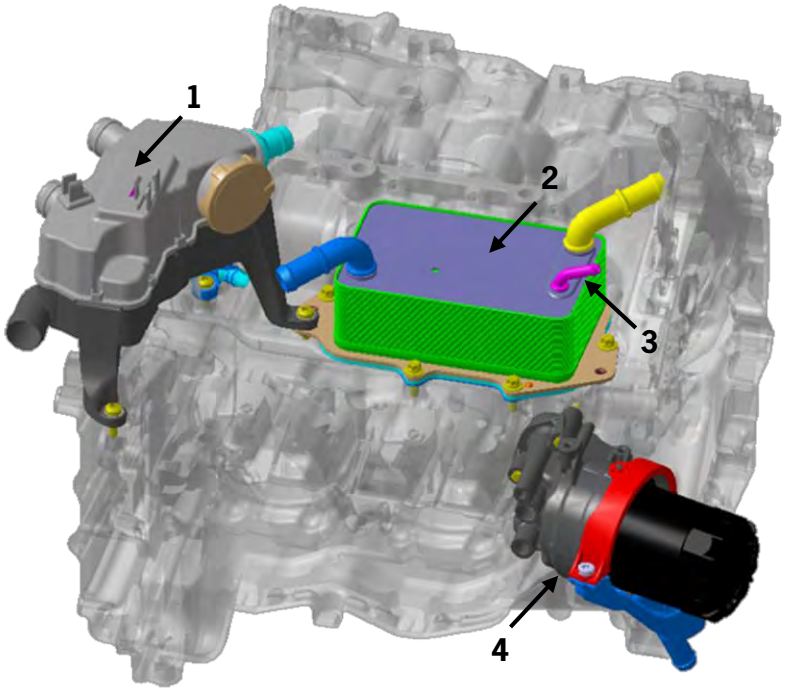
The oil-mist separator is located above the crankcase. The pressure-regulating valve is integrated in the housing.

Oil-filter housing

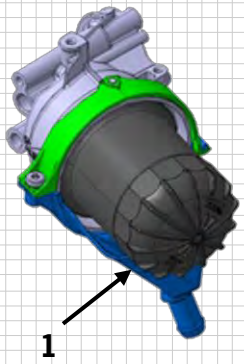
Like on the previous models, the oil-filter housing is accessible from below. To permit easier handling, there is a drip funnel on the oil filter base which allows the emerging oil to be drained in a directed way when the filter is changed.

Oil/water heat exchanger

The oil/water heat exchanger is mounted on the top of the crankcase. In addition to the two coolant connections, there is a coolant bleeding connection on the top of the housing.



Additional components for oil circuit 1_24_17



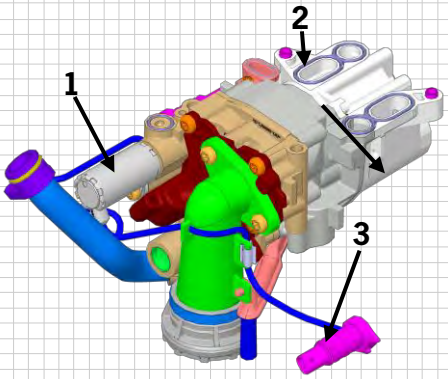
Oil-filter housing 1_26_17

1 Drip funnel

In order to avoid soiling of the rear axle when the oil filter is changed, a corresponding commercially available hose must be fitted on the connection piece of the drip funnel.

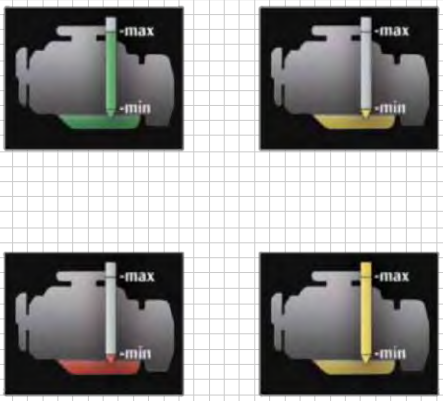
1 Oil mist separator
2 Oil/water heat exchanger
3 Coolant bleeding connection
4 Oil-filter housing

1 Oil pump drive
2 Extraction at cylinder heads
3 Vane pump
4 Extraction at turbocharger
5 Electrical connection for control valve
6 Control valve



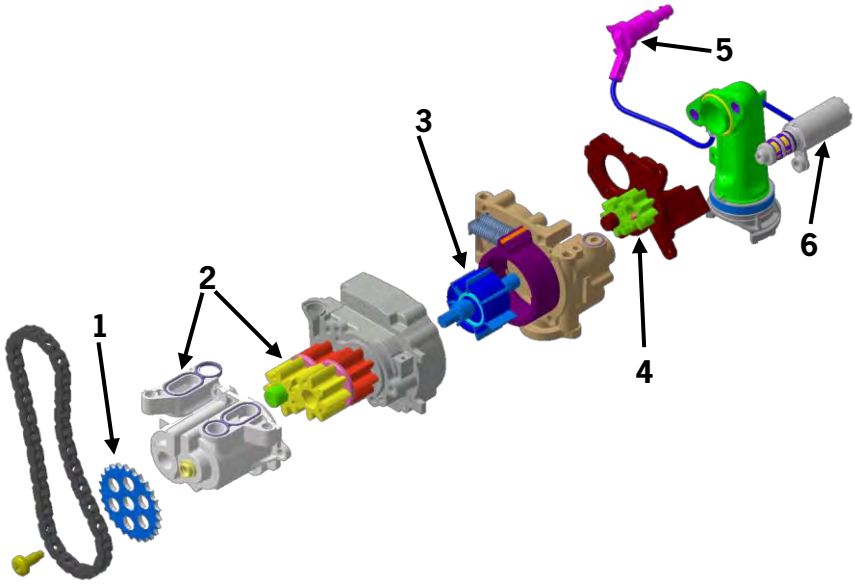
Oil pump (rear view) 1_28_17

1 Control valve
2 Extraction at cylinder heads
3 Electrical connection for control valve



Displays for oil level measurement 1_29_17

Oil pump



Oil pump 1_27_17

A modular oil pump is installed. However, unlike in the flat-six engines, a one-stage pressure pump is used in the flat-four engines (six-cylinder engine: two-stage pressure pump).

The pressure oil pump is a continuously variable vane pump. For this purpose, the control valve on the pump is energized via the DME control unit. If activation fails, the pump is mechanically adjusted to “high delivery output”.

Three oil scavenge pumps are integrated in the pump housing. These extract the oil from the cylinder heads and at the turbocharger.

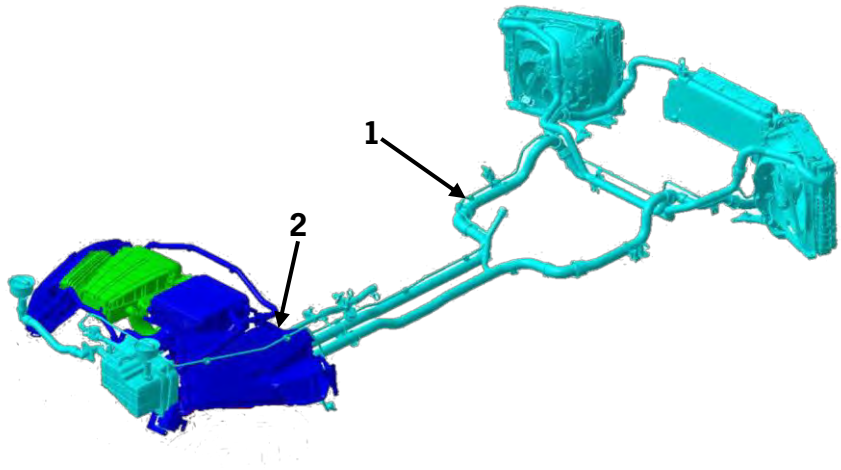
Oil level measurement

Like in the previous models, oil level measurement is performed by way of an electronic oil level sensor. The result of the measurement is displayed on the instrument cluster.

Piston crown cooling

Like on the flat-six engines, spray nozzles are installed in the crankcase for piston crown cooling. These have a mechanical pressure valve which opens at 34.8 psi (2.4 bar). The valve closes at 26.1 psi (1.8 bar) when the oil pressure falls. This means that a sufficient oil pressure can be ensured at the bearing locations even at low engine speeds, particularly when the engine is hot and when the engine oil has correspondingly low viscosity.

1.2.7 Cooling system



High and low-temperature cooling circuits 1_30_17

The flat-four engines feature a high-temperature cooling circuit and a low-temperature cooling circuit.

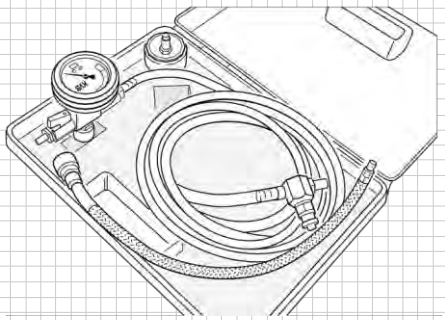
Repair

Bleeding of the high-temperature and low-temperature cooling circuits takes place jointly. The filling device 9696, bleeding adapter 9696/1 and vacuum pump VAS 6096/2 are required for proper bleeding. All shut-off valves of the thermal management system must be open during the bleeding procedure. This takes place via a corresponding guided procedure defined in the PIWIS Tester.

Both cooling circuits are described in detail in Group 2.

1 High-temperature cooling circuit
2 Low-temperature cooling circuit

After disassembly of the indirect charge-air cooler, e.g. for assembly work on the engine, where coolant escapes from the system, the cooling system must be completely bled!



Filling device 9696 1_33_17

When carrying out bleeding, the coolant expansion tank is filled up to the “MAX” marking. No coolant must be topped up if a subsequent visual inspection shows that the coolant level has fallen below the “MAX” marking! Coolant must be topped up only if the messages “Refill coolant” or “Refill coolant immediately” are displayed on the instrument cluster.

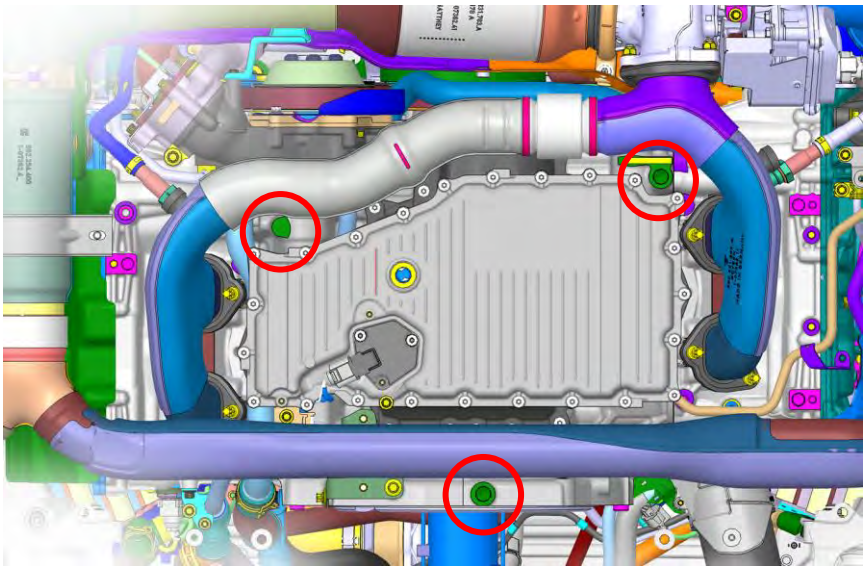
1.2.8 Special tools

Engine removal and installation

Due to the four-point mounting, the engine is removed together with the transmission and rear axle.

The chassis component positions must be correspondingly measured and if necessary adjusted after installation.

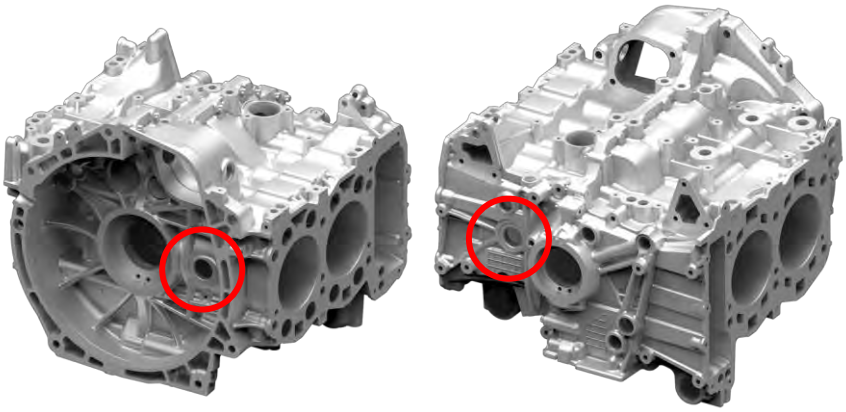
Drive unit with rear axle on lifting table 1_34_17



Engine support points 1_35_17

The engine support points have been changed compared with the six-cylinder variant. The rear support point is on the oil pan. The support point on the lifting table is provided with a rubber pad at the corresponding location.

Removing and installing the piston pins



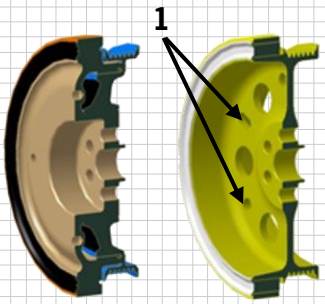
Piston pin assembly opening 1_36_17

In order to permit disassembly and assembly of the piston pins and circlips, both the flat-four engines have one service opening in the output (flywheel) and belt drive sides in the crankcase half for cylinders 1 – 2. This is necessary because the #1 connecting rod blocks access to the #2 piston pin through the hole at the pulley side of the case.'

The familiar tools for the flat-six engine are used on the belt drive side.
New, shorter tools are used for work in order to prevent interference from the engine/transmission repair stand:

- Disassembly tool for piston-pin circlips, short
- Assembly tool for piston-pin circlips, short
- Disassembly/assembly tool for piston pins, short
- Centring mandrel for piston/connecting rod, short

Due to the different piston pin diameters of the two displacement variants, the corresponding tools are available in two diameters.



Vibration damper with decoupled belt pulley and conventional vibration damper 1_37_17

1 Staking bores

Adjustment work on timing drive mechanism/staking the crankshaft

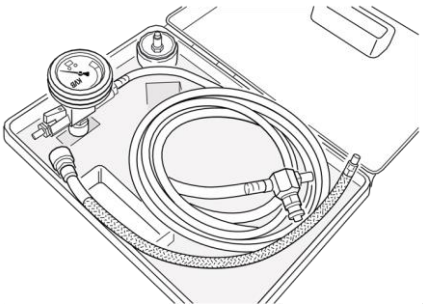
For design reasons, the vibration damper with decoupled belt pulley does not have any staking bores for positioning the crankshaft. The procedure described in the current Workshop Manual must be followed when carrying out adjustment work.

The special tool 9772/1 is used for staking the camshafts.

Bleeding the cooling system

The following special tools are required for bleeding the cooling system properly:

- Filling device 9696,
- Bleeding adapter 9696/1,
- Vacuum pump VAS 6096/2.



Filling device 9696 1_33_17

Vacuum pump VAS 6096/2 1_38_17

It is recommended to position the canister of filling device 9696 as high as possible, e.g. using a ladder. This significantly assists the coolant flow during the bleeding procedure.

Group 2
DME engine electronics

2 DME engine electronics

2.1 Introduction

The flat engines from Porsche have been renowned for their outstanding features for decades: compact design, low centre of gravity, high revving stability, immediate responsiveness, a characteristic sound and surprisingly low fuel consumption. All of these are characteristics that a Sports Car designer wants from an engine. And the new 4-cylinder turbo engines offer exactly these characteristics.

2.0 l 4-cylinder turbo engine 718 Boxster MY17 2_01_17

They have made it possible to realize the largest increase in torque and power that has ever been achieved in the history of the Boxster with the introduction of a new engine.

Development objectives

The engines of the new Boxster generation are a completely new development. During the development of the engines, particular attention was paid to transferring the typical virtues of a naturally aspirated engine, such as excellent responsiveness and a high-revving engine characteristic, to a turbo engine. This was achieved in an impressive manner. The maximum engine speed of the 718 Boxster/S MY17 is 7,500 rpm. This is an impressive value for turbocharged engines and is previously unrivalled in the segment.

2.0 l 4-cylinder turbo engine 718 Boxster MY17 2_02_17

The technical solution for this:

- Downsizing of the displacement by 4-cylinder technology in combination with turbocharging. On the 718 Boxster MY17, turbocharging is performed by a turbocharger with integrated wastegate. On the 718 Boxster S MY17, turbocharging takes place by means of a VTG turbocharger, also with integrated wastegate. The displacement was adapted to 2.0 l in the 718 Boxster and 2.5 l in the S model. This corresponds to a reduction of 0.7 liters for the 718 Boxster model and 0.9 liters for the 718 Boxster S model.
- The cylinder heads are also new. The intake and exhaust ports have been flow-optimized and feature efficient cross-flow cooling.
- The turbo engines of the 718 Boxster MY17 models feature efficient indirect charge-air cooling.

One of the development goals was to achieve sporty performance with lower CO_2 emissions. This technology made it possible to reduce CO_2 emissions by up to 13% in spite of a significant increase in power.

2.2 2.0 l/2.5 l flat-four engine with turbocharger

2.2.1 Technical data

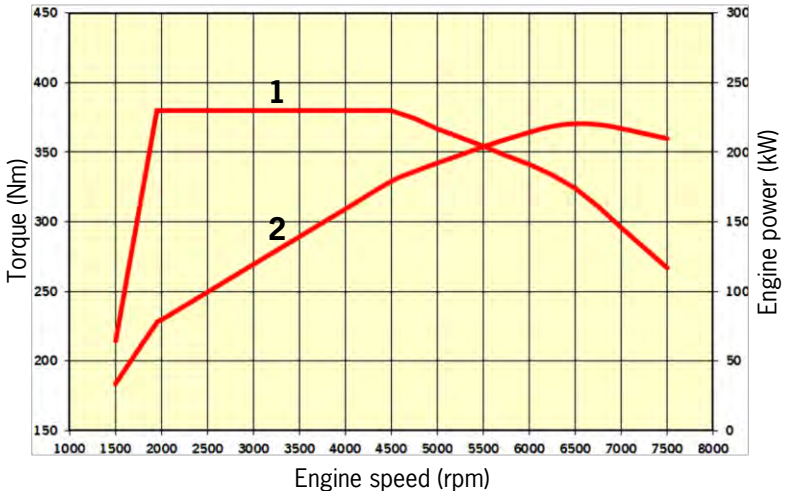
The new turbo engines offer the same level of responsiveness as naturally aspirated engines, but deliver 74 and 44 ft lbs (100 and 60 Nm) more torque and 35 hp more power than the naturally aspirated engines of the previous model. The torque curve is significantly higher over the entire rpm range, which offers noticeable advantages for driving performance.

	718 Boxster MY17	718 Boxster S MY17
Combustion process	DFI	DFI
Swept volume	1,988 cm³	2,497 cm³
Bore	91 mm	102 mm
Compression ratio	9.5:1	9.5:1
Engine power at engine speed	300 hp (220 kW) 6,500 rpm	350 hp (257 kW) 6,500 rpm
Torque at engine speed	280 ft lbs (380 Nm) 1,950 – 4,500 rpm	310 ft lbs (420 Nm) 1,900 – 4,500 rpm
Max. engine speed	7,500 rpm	7,500 rpm
Idle speed	800 ± 50 rpm	800 ± 50 rpm
Throttle valve	57 mm	74 mm

The engine of the 718 Boxster S differs from that of the 718 Boxster by virtue of the larger displacement as well as the use of a large (familiar from the 911 Turbo) VTG turbocharger with integrated wastegate and a modified engine control.

1 Torque (Nm)
2 Engine power (kW)

Power and torque diagrams

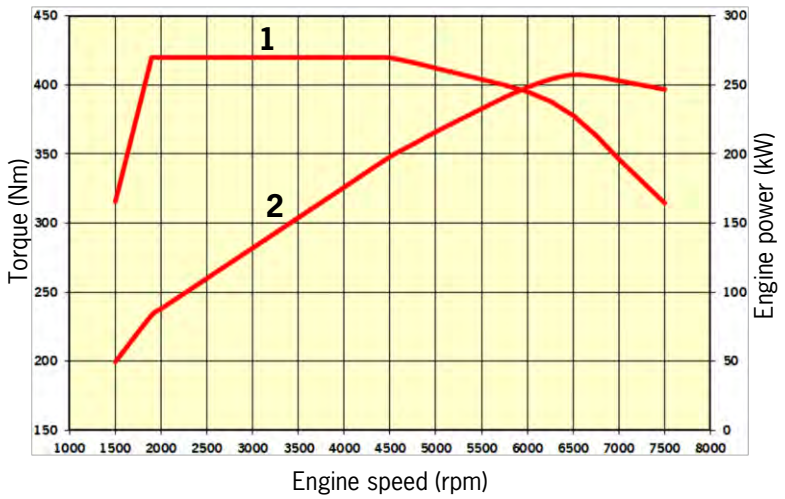


Power/torque diagram for 718 Boxster MY17 2_03_17

The 718 Boxster offers a constantly available torque of 280 ft lbs (380 Nm) between 1,950 rpm and 4,500 rpm. The maximum torque increased from 207 ft lbs to 280 ft lbs (280 Nm to 380 Nm) (+77 ft lbs/100 Nm) in the 718 Boxster models.

This provides for significantly increased elasticity values and excellent acceleration reserves.

The power output was increased by 35 hp for both models. The 718 Boxster models now produce 300 hp (220 kW) and the 718 Boxster S models 350 hp (257 kW.



Power/torque diagram for 718 Boxster S MY17 2_04_17

The maximum torque of the 718 Boxster S models increased from 266 ft lbs to 310 ft lbs (360 Nm to 420 Nm) (+44 ft lbs/60 Nm) and is available as a constant torque between 1,900 rpm and 4,500 rpm.

2.2.2 Fuel system

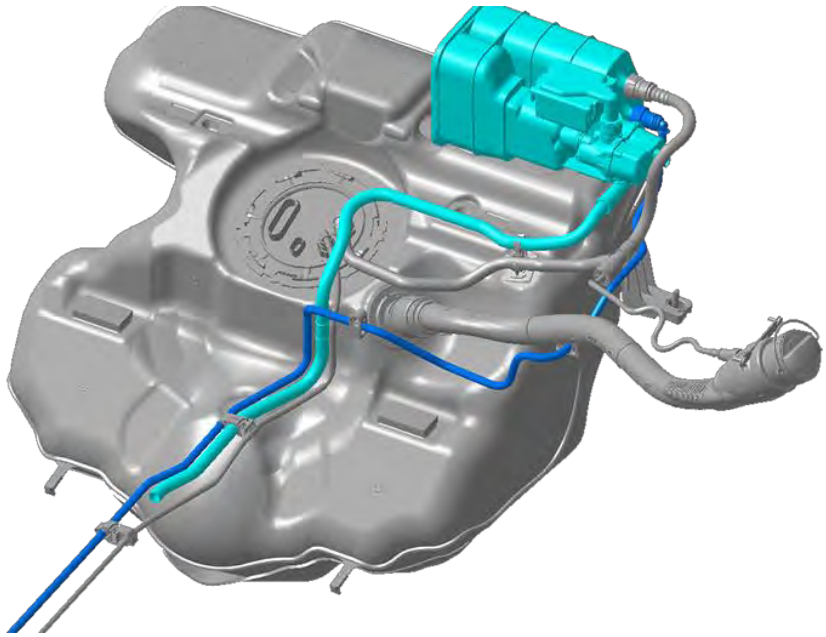
Fuel quality

The engine is designed to provide optimum performance and fuel consumption if unleaded fuel with 93 octane is used.

Low-pressure system

The fuel tank and activation of the electric fuel pump are essentially comparable with the previous 981 models.

The tank capacity is approx. 16.9 gal. (64 l) for the Boxster S and approx. 14.3 gal. (54 l) (optionally 16.9 gal./64 l) for the Boxster, including 2.1 gal. (8 l) reserve capacity. The control unit supplies the electric DC fuel pump with power, and the pressure regulator in the fuel tank limits the low pressure to max. 87 psi (6 bar). Like on the 981, the control unit for activation of the electric DC fuel pump is located under the battery holder.

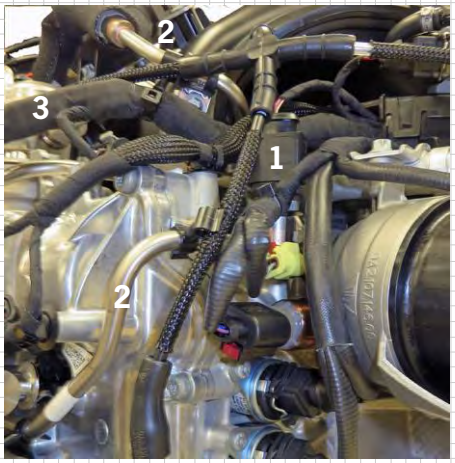


Fuel tank 2_43_17

Fuel low-pressure sensor

For measuring the fuel low pressure, the engines are equipped with a fuel low-pressure sensor, which is located on the left cylinder bank (bank 2) in the low-pressure line upstream of the fuel high-pressure pump. This enables regulation of the fuel low pressure between 51 and 87 psi (3.5 and 6.0 bar) depending on the fuel requirement.

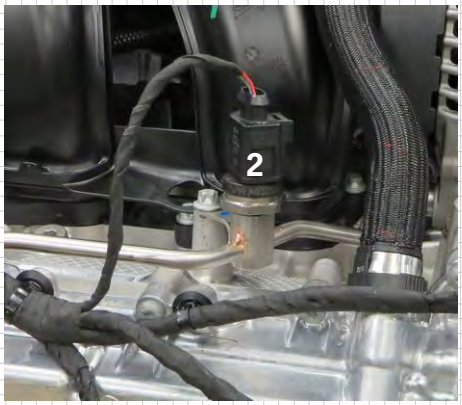
The safety instructions and specifications in the PIWIS information system must be observed when working on the fuel system.



Fuel 2_05_17

1 Fuel low-pressure sensor
2 Low-pressure line
3 Fuel high-pressure pump (bank 2)

Fuel high-pressure pump (DFI) 2_07_17



Fuel high-pressure sensor 2_08_17

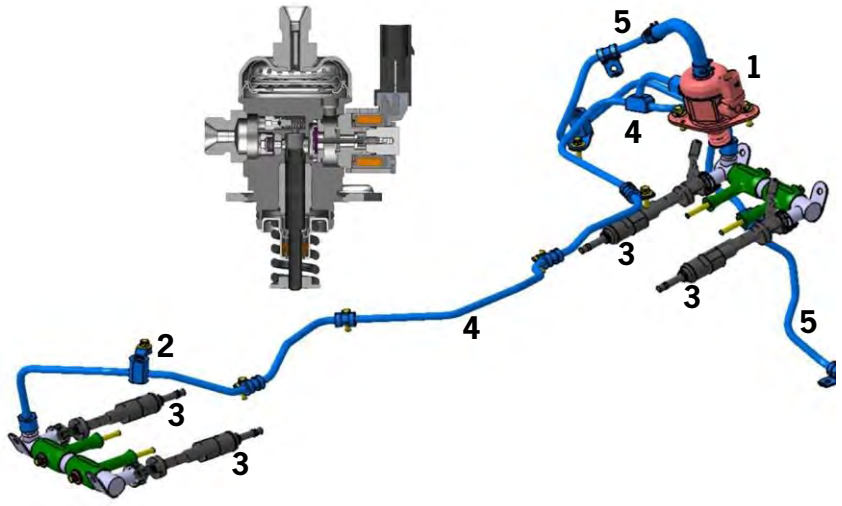
1 Fuel high-pressure pump with quantity control valve (bank 2, left)
2 Fuel high-pressure sensor (bank 1, right)
3 7-hole injectors
4 High-pressure line (HP)
5 Low-pressure line (LP) from the electric fuel pump

High-pressure system

The direct fuel injection (DFI) system has been completely redesigned. New features include the central injector position of the 7-hole injectors in the cylinder head and an increased fuel pressure. Both measures optimise the mixture formation and the combustion characteristics so effectively that, despite the use of turbocharging, it was possible to dispense with secondary-air injection during the warm-up phase. The previous models had a side injector position with 4- or 6-hole injectors and a maximum injection pressure of 1740 psi (120 bar).

Fuel high-pressure pump with quantity control valve

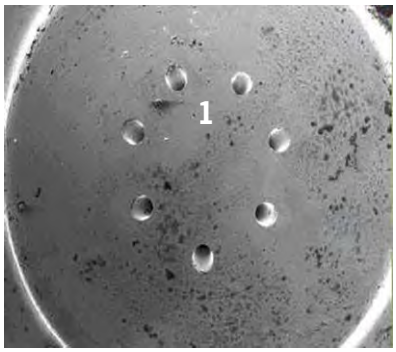
The fuel high-pressure pump with quantity control valve is located on the cylinder head of bank 2 (left). This valve was enhanced to reduce noise development. The single-piston high-pressure pump is actuated by a triple cam on the intake camshaft via a roller tappet. The fuel high-pressure rails are located in the centre of the cylinder heads. Depending on the operating conditions, the quantity control valve regulates the fuel high-pressure between 1812 and 3045 psi (125 and 210 bar (briefly up to max. 3625 psi/250 bar in the warm-up phase). The quantity control valve is activated directly by the DME control unit.



High-pressure system DFI 2_06_17

Injectors

The central position of the 7-hole injector in the cylinder head promotes a homogeneous, symmetrical fuel distribution in the cylinder. The Boxster and Boxster S have different 7-hole injectors. The spray hole diameter and the spray pattern are matched to the respective displacement and cylinder diameter.



7-hole injector 2_09_17

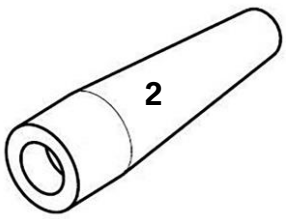
Injector position 2_10_17

Voltage boosters with flexible drivers are installed in the DME control unit for injector activation.

Special tools

The following new special tools are available for extracting the injectors and fitting new Teflon sealing rings:

Extraction tool 2_74_17

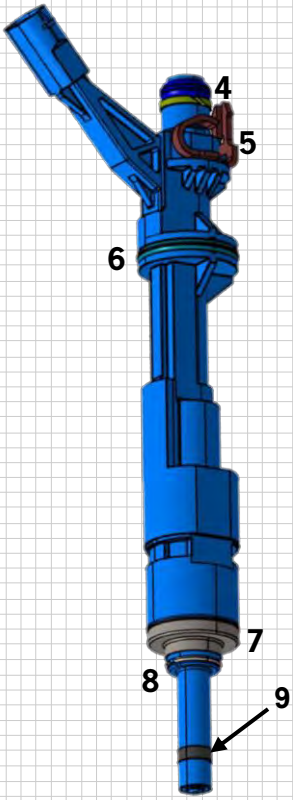


Assembly sleeve 2_75_17

1 Extraction tool for central injector T10133/33

2 Assembly sleeve for Teflon sealing ring on injector T10133/31

1 7-hole injector
2 Central injector position
3 Spark plug
4 O-ring (with lubrication coating)
5 Holding-down device (pre-assembled)
6 Bore seal (with lubrication coating)
7 Spacer ring (pre-assembled)
8 Circlip (pre-assembled)
9 Teflon sealing ring (to combustion chamber)



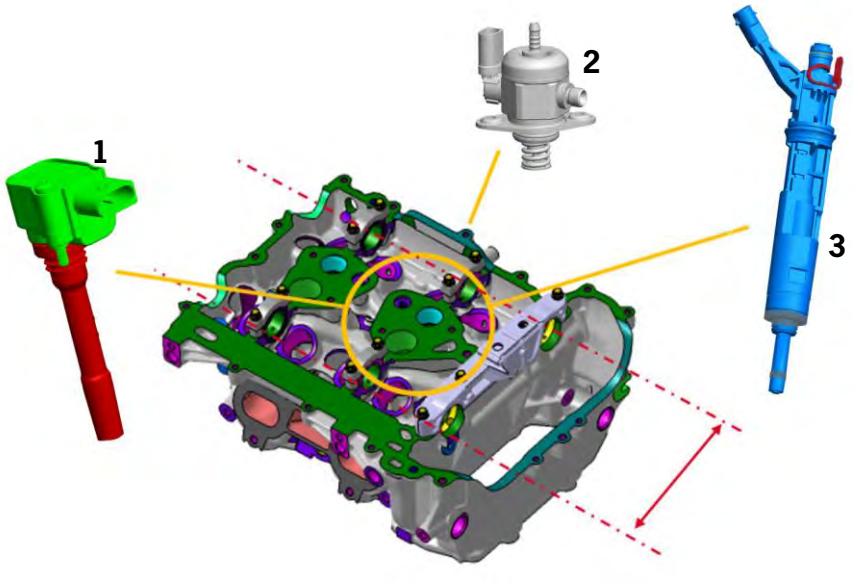
7-hole injector 2_11_17

The Teflon sealing ring must be replaced each time the injector is removed.

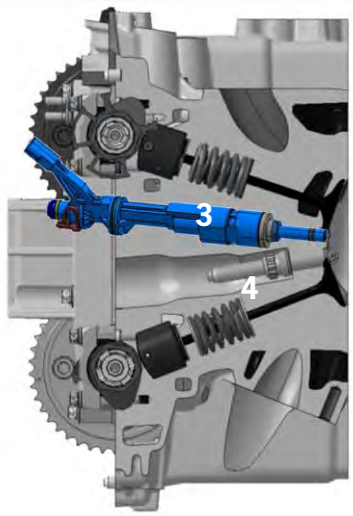
1 Ignition coil
2 Fuel high-pressure pump
3 Injector
4 Spark plug
5 High-pressure rail

Installation positions

The illustrations show the installation positions of the spark plugs and injectors located centrally in the combustion chamber as well as the fuel high-pressure pump with quantity control valve on the cylinder head of bank 2.



Position of components in the cylinder head 2_12_17



Cylinder head 2_13_17

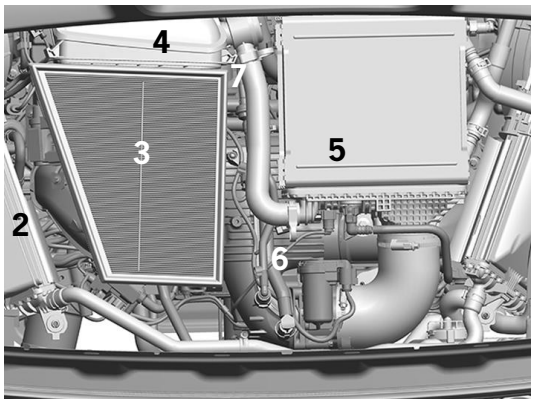
Bank 2 (left) 2_14_17

2.2.3 Intake system

Air routing

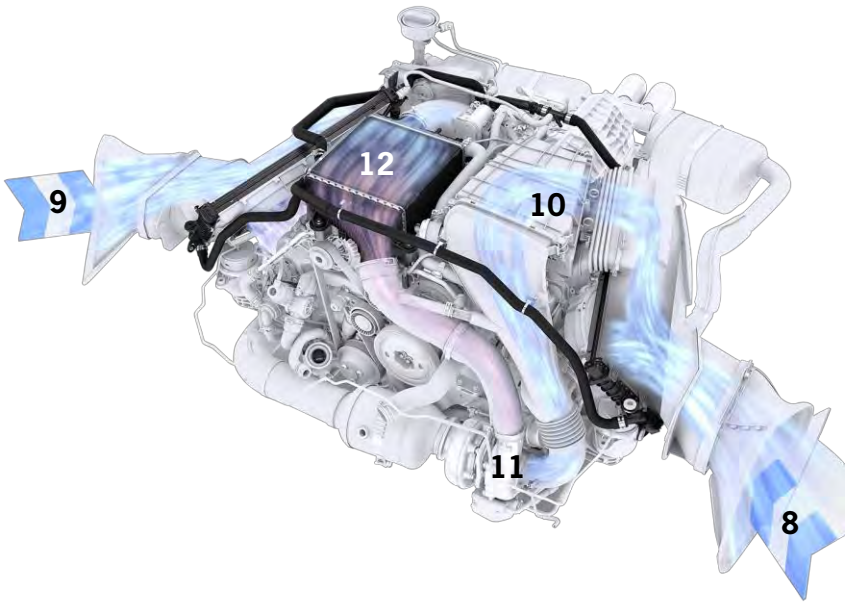
The raw air intake to the air cleaner housing takes place via the left air intake.

Left air intake 2_15_17



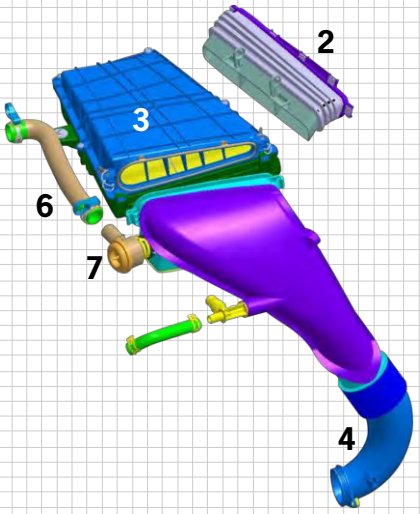
Engine compartment cover open, vehicle rear end at bottom 2_16_17

The intake duct is routed from the air cleaner housing to the intake side of the turbocharger installed near the front of the driver side cylinder bank (bank 2).



Intake system air routing 2_72_17

1 Left air intake
2 Fresh air intake
3 Air cleaner housing cover
4 Intake side of turbocharger
5 Indirect charge-air cooler (ICAC)
6 Hose to diverter valve
7 Diverter valve
8 Air intake on left (intake air and low-temperature module)
9 Air intake on right (low-temperature module)
10 Air cleaner housing
11 Turbocharger
12 Indirect charge-air cooler (ICAC)

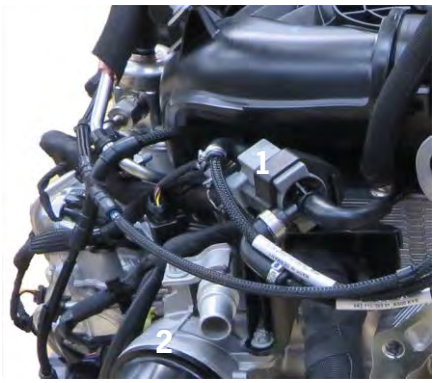


Intake system air routing 2_17_17

Diverter valve

The diverter valve is located just after the air cleaner housing in the intake duct to the turbocharger. When the diverter valve is activated by the DME control unit, a bypass is produced between the charge-air side (downstream of the indirect charge-air cooler) and the intake side of the turbocharger.

The electro-pneumatic switching valve for deceleration air is located above the oil filter.



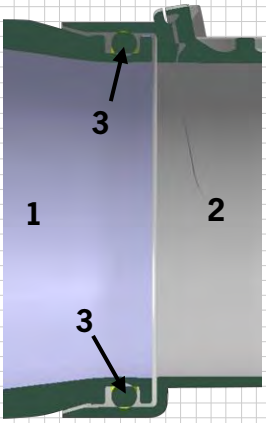
Left engine side, view from vehicle rear 2_18_17

Top view, vehicle rear at bottom 2_19_17

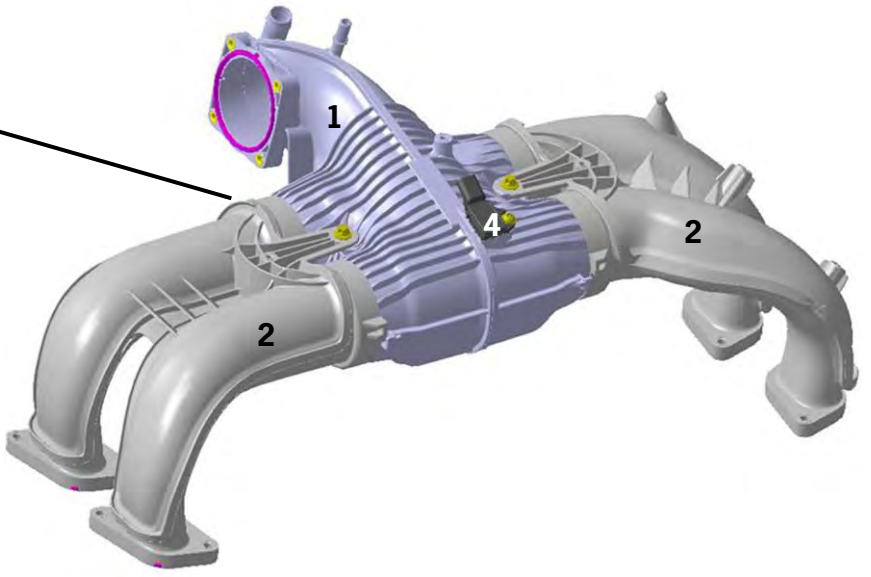
1 Electro-pneumatic switching valve for deceleration air
2 Oil-filter housing
3 Diverter valve
4 Air cleaner housing cover

Intake manifold

The intake manifold of the 718 Boxster/S MY17 consists of individual intake ports with a gas cycle-optimized length of approx. 340 mm.



Connection point 2_20_17



Intake manifold 2_21_17

1 Intake distributor
2 Intake port
3 O-ring
4 Intake manifold pressure/intake air temperature sensor (SENT)

The connection points between intake distributor and distributor tube are sealed with O-rings.

Intake manifold pressure/intake air temperature sensor (SENT)

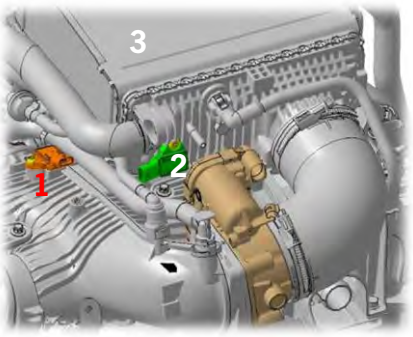
The intake manifold pressure/intake air temperature sensor is located in the intake distributor.

These digital sensors transmit a SENT protocol. SENT = Single Edge Nibble Transmission.

Boost pressure sensor (SENT)

The boost pressure sensor is installed on the indirect charge-air cooler (ICAC).

Intake manifold pressure sensor 2_22_17



Boost pressure sensor 2_23_17

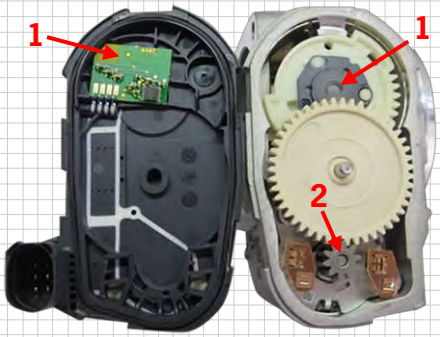
1 Intake manifold pressure sensor (SENT)
2 Boost pressure sensor (SENT)
3 ICAC

Throttle valve adjusting unit (electronic throttle)

The throttle valve adjusting unit (electronic throttle) has digital contactless rotation-angle sensors for position feedback of the throttle valve. This ensures freedom from wear and a high degree of measurement accuracy over the entire service life. In the throttle valve adjusting unit, the throttle valve, throttle valve drive and throttle valve angle sensor (Hall IMC) are integrated in one housing.

Throttle valve sensor

The throttle valve sensor has a redundant design. The feedback of throttle valve position is via two independent, counter-rotating and contactless sensors. The generated voltage signals are comparable with those of the previously installed potentiometers.



IMC sensor and drive 2_26_17

1 IMC sensor
2 Drive

Adaptation of the electronic throttle must be performed with the PIWIS Tester after a reset. The lower limit position (throttle valve closed) is taught here.

Actuator

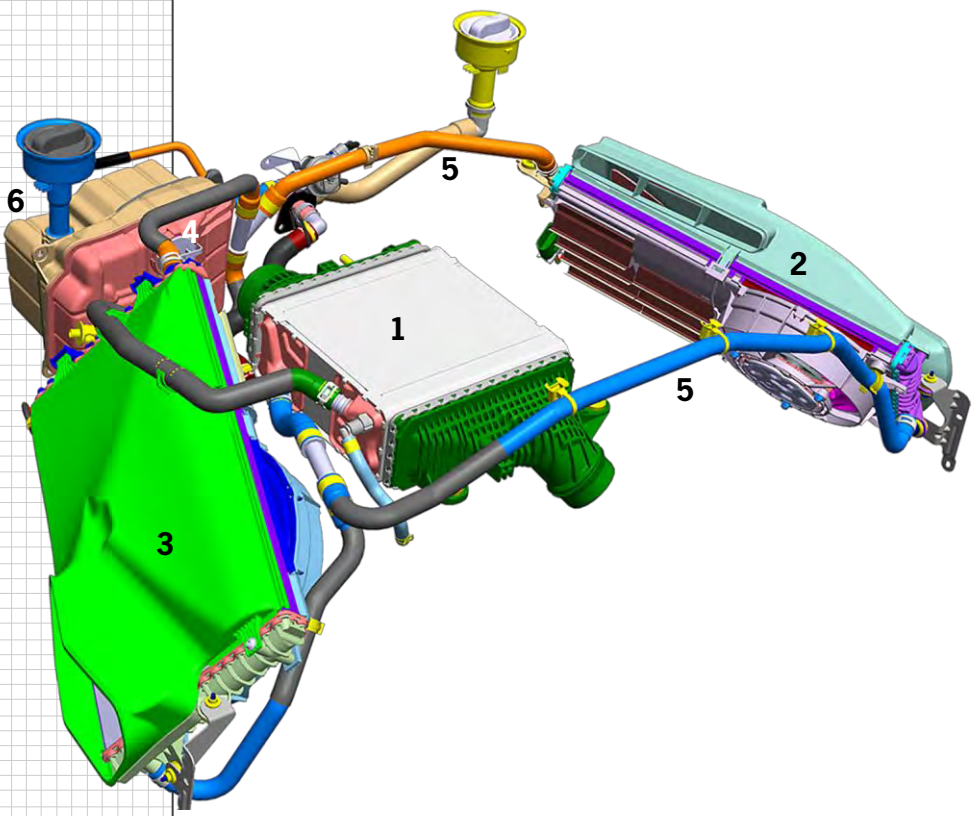
The actuator consists of a DC motor with two-stage gear unit. The throttle valve is positioned between the lower and upper mechanical end stops by way of an electric motor.

Actuation

The DME control unit actuates the throttle valve electrically. Input variables for activation include the position of the accelerator pedal and requests from systems that can influence the engine torque.

Charge-air cooling

The turbocharged Boxster engines feature newly-developed, compact and efficient low-temperature charge-air cooling. The charge air heated by the turbocharging process is cooled by an indirect charge-air cooler (ICAC) positioned above the engine.

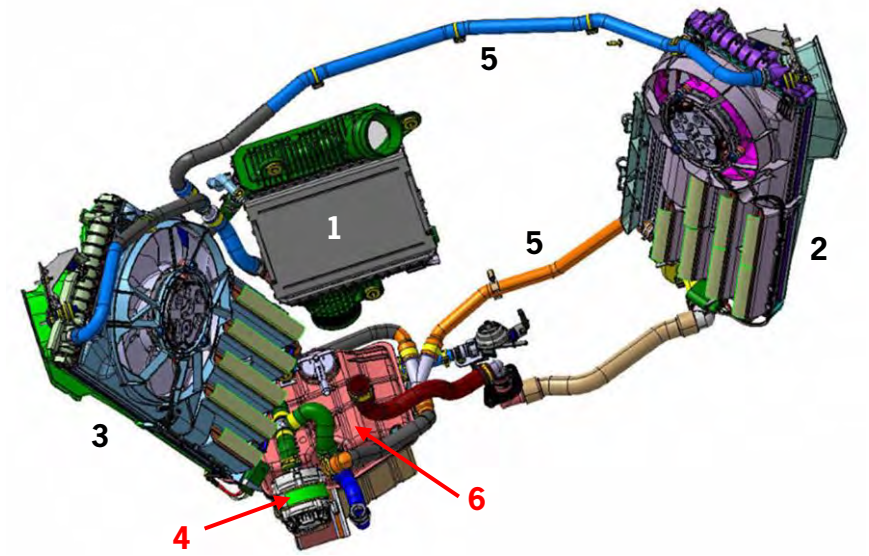


Charge-air cooling 718 Boxster/S MY17 2_28_17

1 Indirect charge-air cooler (ICAC)
2 Low-temperature module, left
3 Low-temperature module, right
4 Electric low-temperature coolant pump
5 Low-temperature hoses
6 Coolant expansion tank

The indirect charge-air cooler is in turn cooled via an additional low-temperature (LT) cooling circuit. The heated charge air flows through the indirect charge-air cooler and gives off its heat to the coolant of the low-temperature circuit. The heat absorbed in the coolant is then dissipated to the ambient air again via the low-temperature modules accommodated in the side parts on the left and right. The low-temperature modules each comprise an air/water heat exchanger (radiator), an electric fan on the inner side as well as internally mounted ram-air flaps to optimize the air flow.

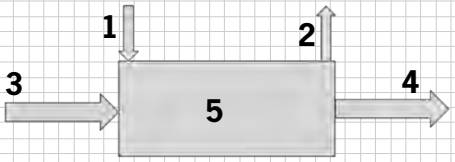
The arrangement of the low-temperature circuit and low-temperature modules with electric fan and ram-air flaps located behind the side air intakes can be easily seen from below. The heated charge air is cooled in the low-temperature modules by means of an air/water heat exchanger. The indirect charge-air cooler (ICAC) has a partially integrated low-temperature cooling circuit (LT). In other words, the high-temperature circuit (high-temperature engine cooling circuit) shares the same coolant expansion tank with the low-temperature circuit (ICAC), but otherwise operates independently of the HT circuit.



Charge-air cooling on 718 Boxster/S MY17, view from below 2_29_17

Electric low-temperature coolant circulation pump

The electric low-temperature coolant pump is controlled based on demand depending on the required charge-air temperature and engine load.



Temperature ranges ICAC 2_29_17

1 Coolant temperature upstream of ICAC up to 140° F (66° C)
2 Coolant temperature downstream of ICAC up to 194° F (90° C)
3 Charge-air temperature upstream of ICAC up to 356° F (180° C)
4 Charge-air temperature downstream of ICAC up to 162° F (72° C)
5 Indirect charge-air cooler

1 Indirect charge-air cooler (ICAC)
2 Low-temperature module, left, with electric fan and ram-air flaps
3 Low-temperature module, right, with electric fan and ram-air flaps
4 Electric low-temperature coolant pump
5 Low-temperature hoses
6 Coolant reservoir

2_31_17

1 Engine compartment temperature sensor

1 VTG turbocharger Boxster S

Electric fans for the low-temperature modules right/left

The electric fans are controlled based on demand depending on the required charge-air temperature, engine load and engine compartment temperature.

They also serve as engine compartment purge fans depending on the engine compartment temperature.

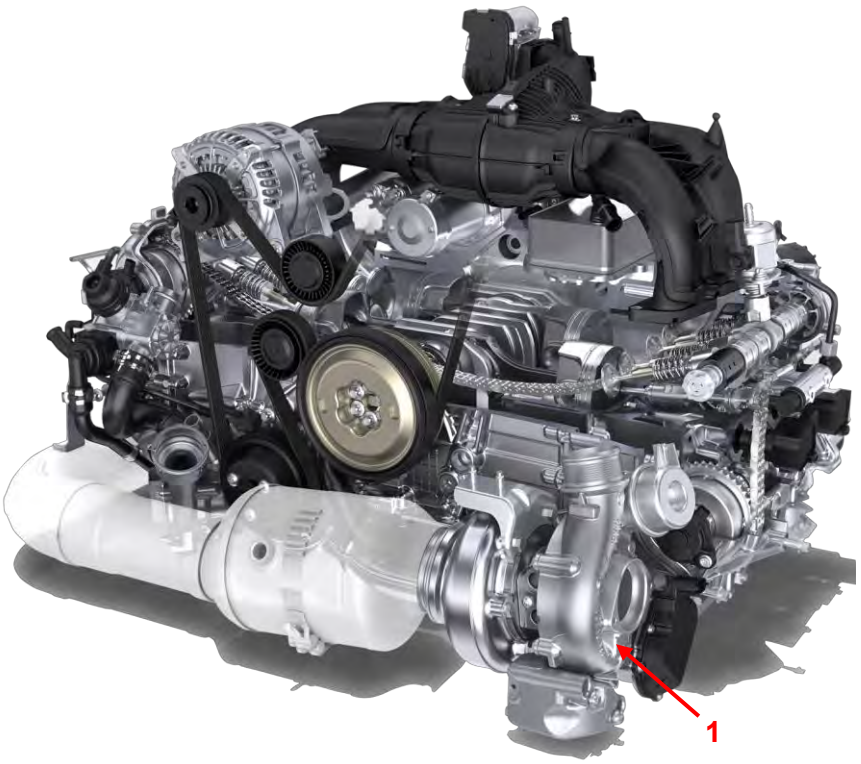
Ram-air flaps

The ram-air flaps at the exhaust-air guides of the low-temperature modules prevent recirculation of the hot air from the engine compartment through the low-temperature radiators, thus improving cooling power.

2.2.4 Turbocharging

The 718 Boxster/S MY17 models feature turbocharging with one turbocharger with a wastegate.

In spite of the reduction in displacement, the new engines therefore offer not just significantly higher maximum power but also a significantly higher torque over a wide engine speed range.



Installation position of VTG turbocharger in the 718 Boxster S at front left in direction of travel 2_40_17

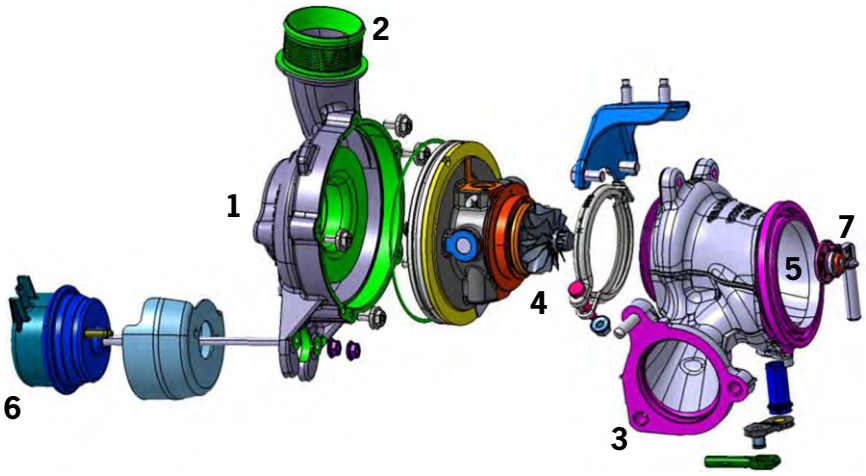
Responsiveness

When designing the turbocharging setup, particular importance was placed on the responsiveness of the turbocharger. The turbocharger is therefore “primed” during sporty driving in the part-load range. For this purpose, the wastegate valve is closed, the ignition point is retarded and the throttle valve is closed slightly.

The current drive torque therefore remains the same, but the boost pressure upstream of the throttle valve is increased. During subsequent acceleration with fully depressed accelerator pedal (throttle valve wide open), a higher boost pressure and a higher torque are then immediately available.

In the event of a load change during full-load acceleration, the throttle valve is not completely closed when the accelerator pedal is released (vehicle in deceleration mode). As a result, the boost pressure is not completely depleted and is available again for further acceleration following renewed actuation of the accelerator pedal. For the performance of both models, this means significantly increased elasticity, with responsiveness typical of naturally aspirated engines and a high revving ability. The torque increase is particularly evident during an intermediate sprint from 62 to 124 mph (100 to 200 km/h).

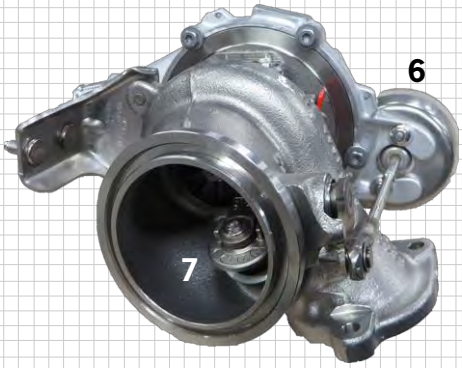
Turbocharger Boxster



Turbocharger with wastegate in 718 Boxster MY17 2_33_17

View above bank 2 (left) 2_32_17

1 Boost-pressure control valve



Turbocharger 718 Boxster 2_34_17

1 Fresh air (intake)
2 Boost pressure (outlet) – to indirect charge-air cooler
3 Exhaust gas inlet
4 Turbine wheel (exhaust gas)
5 Exhaust gas outlet – to catalytic converter
6 Wastegate actuator
7 Wastegate

VTG turbocharger in 718 Boxster S MY17 2_36_17

1 Fresh air (intake)
2 Compressor wheel (air side)
3 Boost pressure (outlet – to indirect charge-air cooler)
4 Exhaust gas inlet
5 Turbine wheel (exhaust gas)
6 VTG guide blades
7 Exhaust gas outlet (to catalytic converter)
8 Wastegate actuator
9 Wastegate

A turbocharger with wastegate is used for boost pressure control on the 2.0 l Boxster. The wastegate is closed by a vacuum in order to increase the boost pressure.

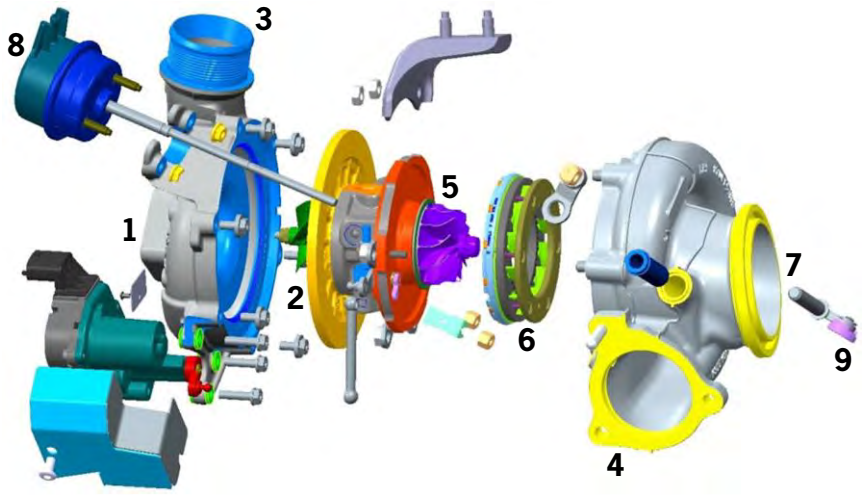
The maximum boost pressure of the 718 Boxster MY17 is approx. 20.3 psi (1.4 bar). It is therefore 4.3 psi (0.3 bar) higher than in the Boxster S.

Turbocharger Boxster S

A turbocharger with the Variable Turbine Geometry (VTG) familiar from the 911 Turbo with additional wastegate is used in the 2.5 l Boxster S MY17.

The principle of variable guide blades, which guide the exhaust flow onto the turbine wheels of the turbocharger in a variable and targeted manner, combines the function of a small and large turbocharger. Here, the guide blades are practically closed for good response with high torque values at low engine speeds and are open for high output values at high engine speeds. In addition, maximum torque is available over a wide engine speed range. The maximum boost pressure of the 718 Boxster S MY17 is approx. 15.9 psi (1.1 bar).

The additional use of a wastegate means that the exhaust backpressure can be reduced and the turbine efficiency increased by opening the wastegate in conditions with high mass throughput.



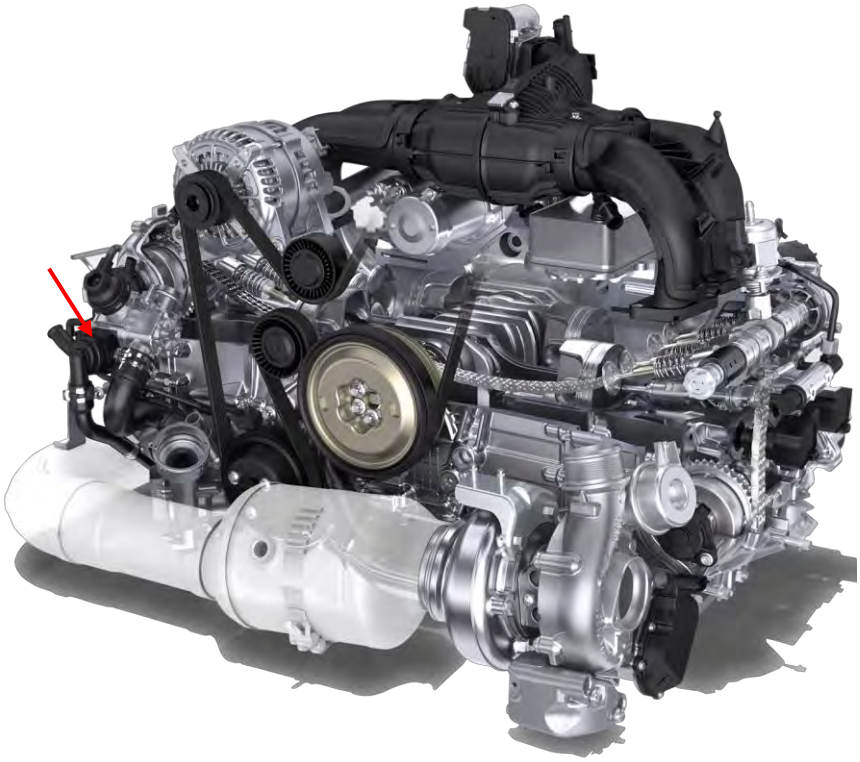
VTG turbocharger with wastegate in 718 Boxster S MY17 2_35_17

The wastegate is opened by a vacuum as required.

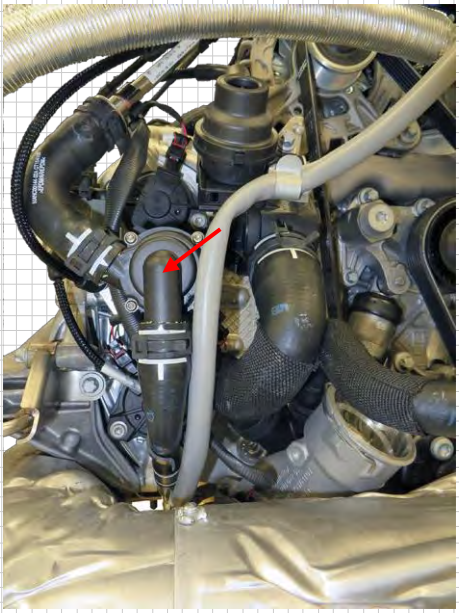
Use of this turbocharging technology is exceptional for turbocharged spark-ignition engines. Featuring variable turbine blades, it enables the 718 Boxster S MY17 to operate with a maximum exhaust temperature of up to approx. 1796 ° F (980° C). An exhaust-gas temperature sensor (SENT) is installed on turbocharger for monitoring the exhaust-gas temperature.

Electric coolant run-on pump for turbocharger

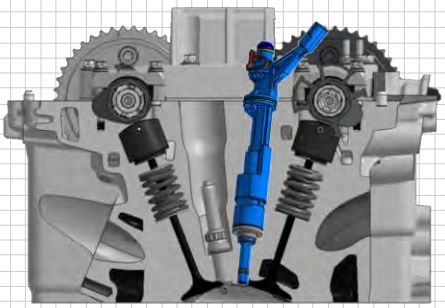
The electric coolant run-on pump for the turbocharger is located at the front right in direction of travel on cylinder bank 1 in the 718 Boxster/S MY17. It is switched on by the DME control unit depending on the operating conditions. It can also be activated as required after the hot engine is switched off in order to cool the turbocharger by circulating the coolant.



View from front 2_40_17



Electric coolant run-on pump 2_37_17



Position of spark plug and injector in the cylinder head 2_73_17

1 7-hole injector
2 Central injector position
3 Spark plug
4 Combustion chamber design in area of intake valves

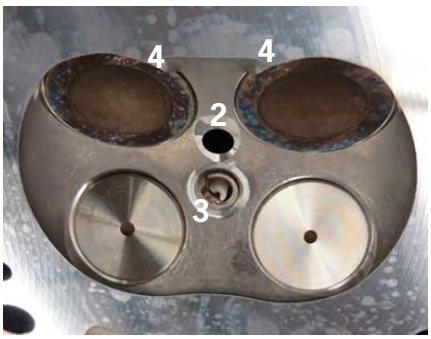
2.2.5 Mixture formation

Combustion chamber design

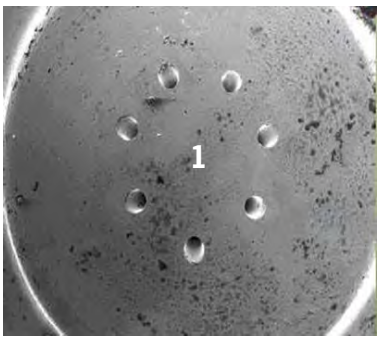
The central injector position in the cylinder head of the 4-cylinder turbo engines permits new piston crown forms compared with the previous DFI engines. On the 2.0 l engine in the 718 Boxster MY17, the piston crown has a slight recess. In contrast, the piston crown on the 2.5 l engine in the 718 Boxster S MY17 is flat.

Piston crowns 2.0 l left/2.5 l right 2_38_17

Overall, the central injector is at a more uniform and greater distance to the piston crown, which improves mixture formation.



Injector position and combustion chamber design 2_10_17



7-hole injector 2_09_17

Tumble intake port

The intake ports and combustion chambers in the cylinder head have been further developed in order to increase the charge motion of the air above the piston crown. The type of charge motion used here generates an air swirl during the intake process, which rotates in the cylinder parallel to the crankshaft axis. This type of charge motion is called tumble.

DFI injection strategies

Depending on the operating condition, the following injection strategies are selected:

Start

Depending on ambient temperature:

- 3x during the intake stroke
- In case of extreme cold, 3x during the compression stroke

Catalytic converter heating

- 2x during the intake stroke, 1x during the compression stroke

Warm-up phase

Idling

- 1x during the intake stroke

Acceleration with low to medium load

- 2x during the intake stroke

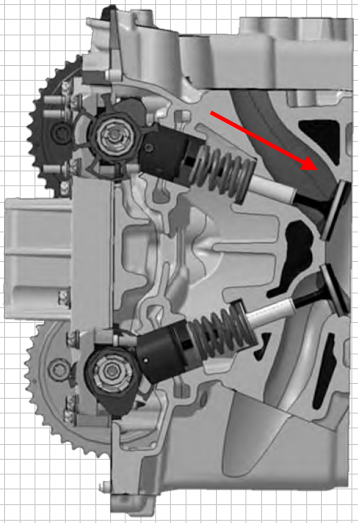
Operating temperature

- Single injection for small and medium load

Acceleration at high load

- 2x during the intake stroke up to 3,500 rpm
- 1x during the intake stroke above 3,500 rpm

The central injector position and the increase in the fuel pressure (to up to 3625 psi /250 bar) optimize mixture formation and the combustion behavior to such an extent that it was possible to dispense with the secondary-air injection process previously used to heat up the catalytic converters. This makes it possible to achieve lower untreated exhaust gas emissions and to comply with all required exhaust emission values.



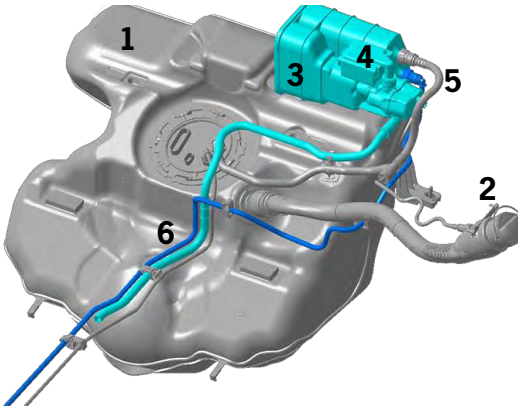
Tumble intake port 2_41_17

1 Fuel tank
2 Aeration, filler neck
3 Carbon canister
4 Tank leakage diagnostic module DMTL (USA)
5 Tank ventilation to carbon canister
6 Carbon canister line to the engine compartment
7 Silencer
8 Tank vent valve
9 Check valve
10 Ventilation to intake port
11 Ventilation to intake side of turbocharger (with boost pressure)

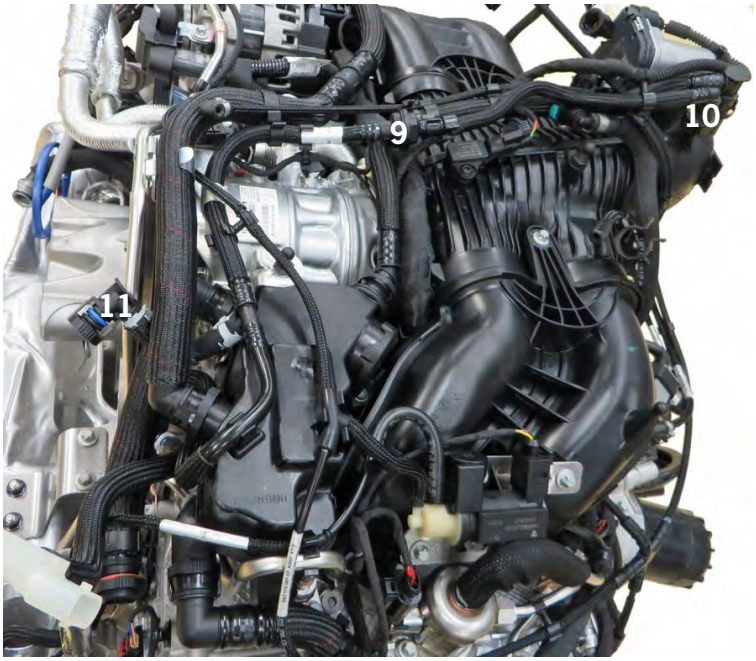
Tank ventilation

The carbon canister is located in the technical space above the fuel tank. The fuel tank is aerated and vented via the carbon canister. When the vehicle is being driven, venting takes place into the intake system by clocked operation of the tank vent valve (via the check valve directly into the intake port when a vacuum is present and into the intake side of the turbocharger when boost pressure is present).

Fuel low-pressure line 2_42_17



Fuel tank with carbon canister 2_43_17



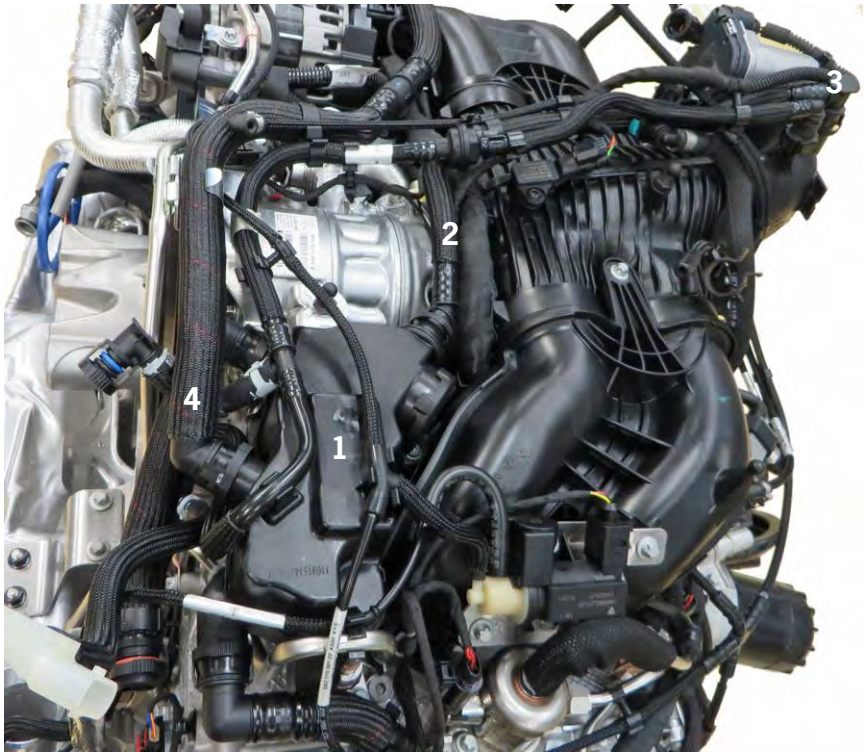
Tank ventilation 2_44_17

Tank leakage diagnostic module (DMTL)

On vehicles for the USA, a tank leakage diagnostic module (DMTL) is installed for tank ventilation diagnosis. The function of the DMTL has already been described for the 987.

Crankcase ventilation

Crankcase ventilation takes place via the positive crankcase ventilation valve with oil separator. When there is a vacuum in the intake port, ventilation takes place directly into the intake port via the vent line and check valve. When charge pressure is present, ventilation takes place into the intake side of the turbocharger.



Crankcase ventilation 2_44_17

1 Crankcase ventilation/oil separator
2 Ventilation to the intake port (at idle speed)
3 Ventilation to intake side of turbocharger (with boost pressure)
4 Ventilation of the cylinder heads

2.2.6 Ignition system

Individual ignition coils

The individual ignition coils are fitted with a captive steel screw. The newly developed ignition coils in the “plug top” design with integral ignition driver are designed for a higher ignition voltage requirement (over 30 kV).

Individual ignition coil 2_45_17

1 Ignition coil with integral ignition driver
2 Captive steel screw
3 Spark plug connector with contacting spring
4 Contact plate for contacting with spark plug connector
5 Spark plug with one ground electrode

Different spark plugs are installed in the 718 Boxster/S MY17!

A special bi-hexagonal socket with a width across flats of 14 mm is required to remove the spark plugs. The spark-plug recess is slightly angled. For this reason, a flexible extension (a/f 14) must be used.

Spark plugs

Different air-gap spark plugs with one ground electrode are used on the 718 Boxster and 718 Boxster S.

The spark plugs have a modified high-voltage terminal with contact plate for contacting. The new contacting design requires optimum seating of the ignition coil contacting spring on the contact plate of the spark plug. Slight coating of the silicone sheath with talcum powder is necessary to facilitate re-installation and above all removal of the ignition coil.

Knock control

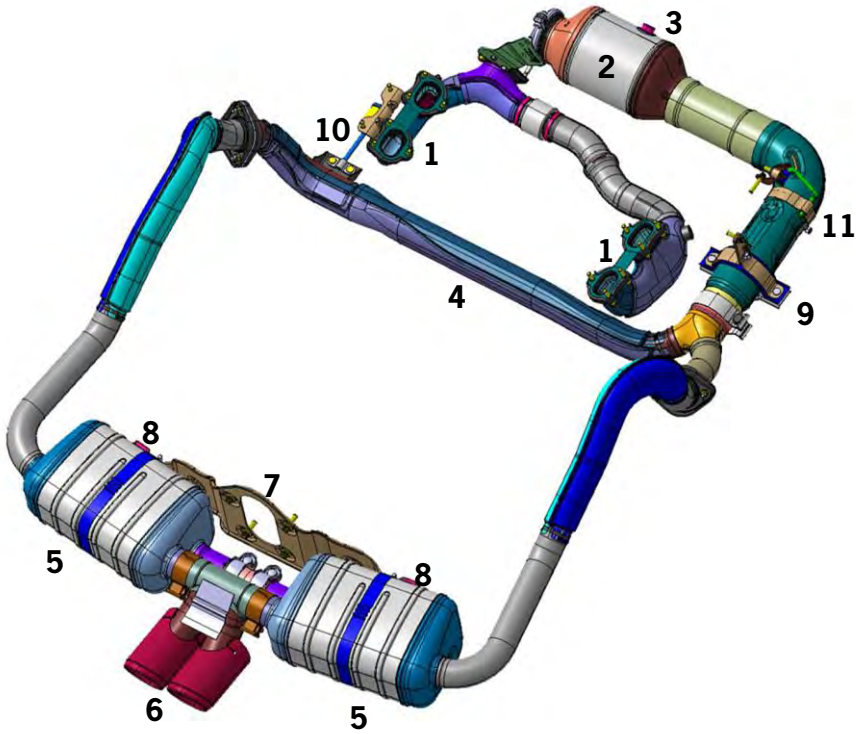
The DME control unit features enhanced signal evaluation for knock detection. The engine is designed for a fuel octane rating of 93 octane. If 90 or lower octane is used, the knock control responds accordingly, which can result in reduced engine power.

Knock sensors

The flat-four engine has two knock sensors on the engine block for knock detection.

2.2.7 Exhaust system

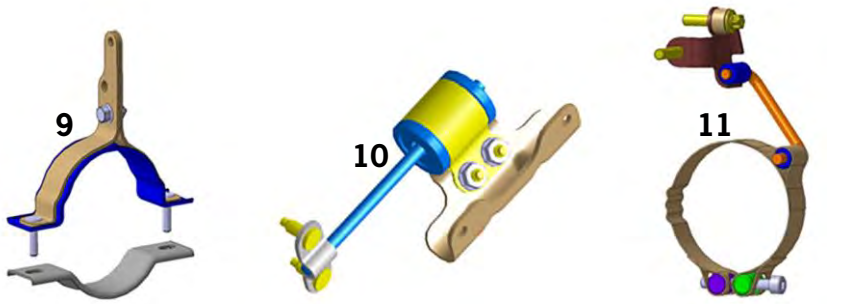
The sound of a flat engine is something very special and contributes significantly to the particularly emotional driving experience in a 718 Boxster. The sound is especially emotional in the higher engine speed range. The use of turbo technology in the 718 Boxster MY17 models naturally affects the character of the engine sound. To ensure that the 718 Boxster MY17 continues to offer an sporty sound experience that is typical for Porsche, three completely new exhaust systems were developed. The Boxster and Boxster S have twin-branch manifolds, a single-branch catalytic converter and a twin-branch muffler.



Exhaust system 718 Boxster/S MY17 (tailpipes of Boxster S) 2_47_17

The country-specific change intervals for the spark plugs, plug type, heat rating and tightening torques can be found in the PIWIS information system/maintenance schedule.

1 Air gap-insulated exhaust manifolds on left/right with connecting pipe
2 Catalytic converter
3 Oxygen sensor downstream of catalytic converter
4 Intermediate pipe (with integral insulation)
5 Main mufflers, left/right (sports exhaust system with flap on right)
6 Tailpipes (718 Boxster S)
7 Transmission suspension
8 Tension bands for transmission suspension
9 Main mounting – load-carrying, on engine
10 Bracket with shock element
11 Bracket with vibration compensation

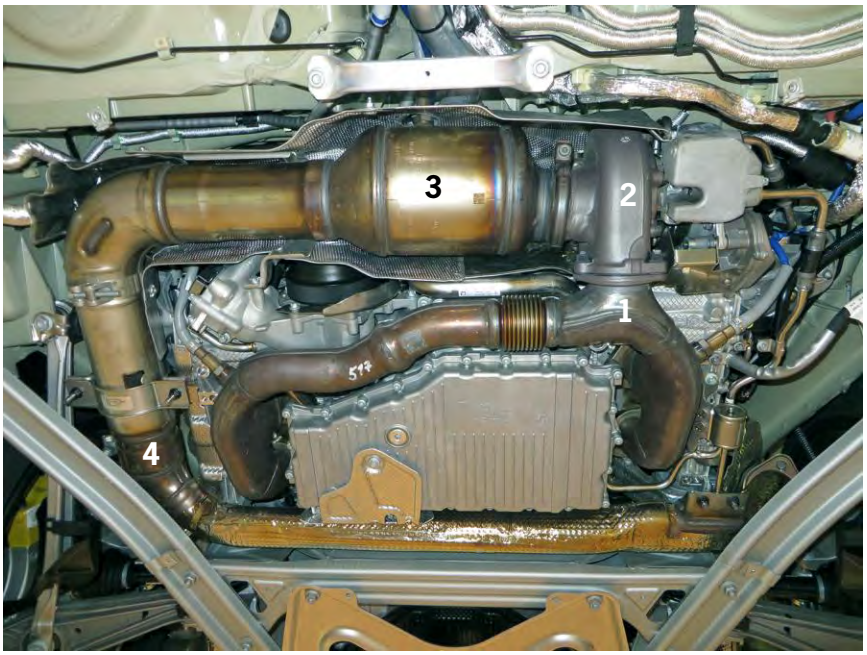


3 bracket versions in exhaust system area 2_48_17

9 Main mounting – load-carrying, on engine
10 Bracket with shock element
11 Bracket with vibration compensation

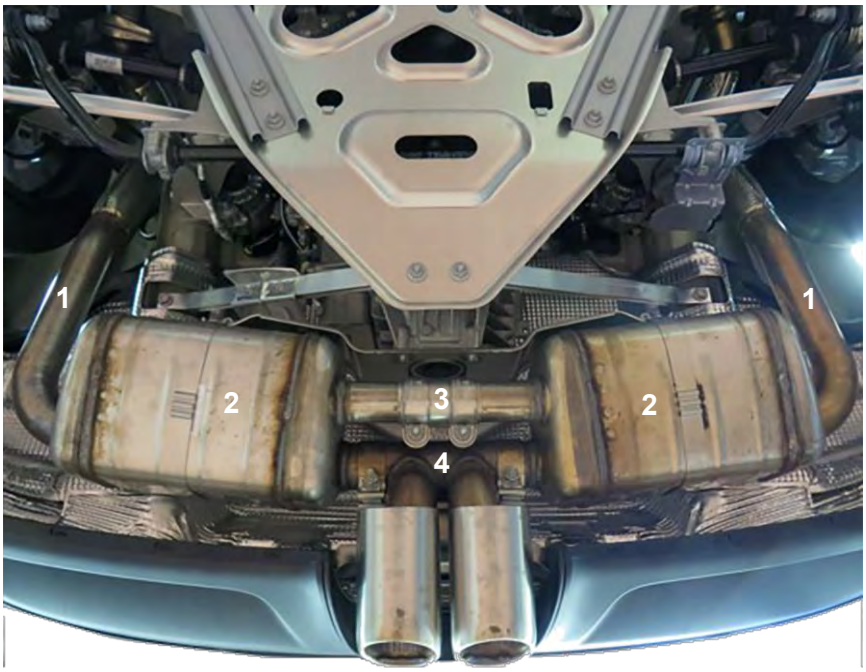
Exhaust gas routing

The exhaust gases of the two cylinder banks 1 and 2 are merged upstream of the turbocharger. The single-branch catalytic converter is flanged directly onto the turbocharger outlet. After the catalytic converter, the exhaust gas flow is branched towards the left and right rear mufflers.



View from below 2_49_17

1 Merging upstream of the turbocharger
2 Turbocharger
3 Catalytic converter
4 Branching to left and right mufflers

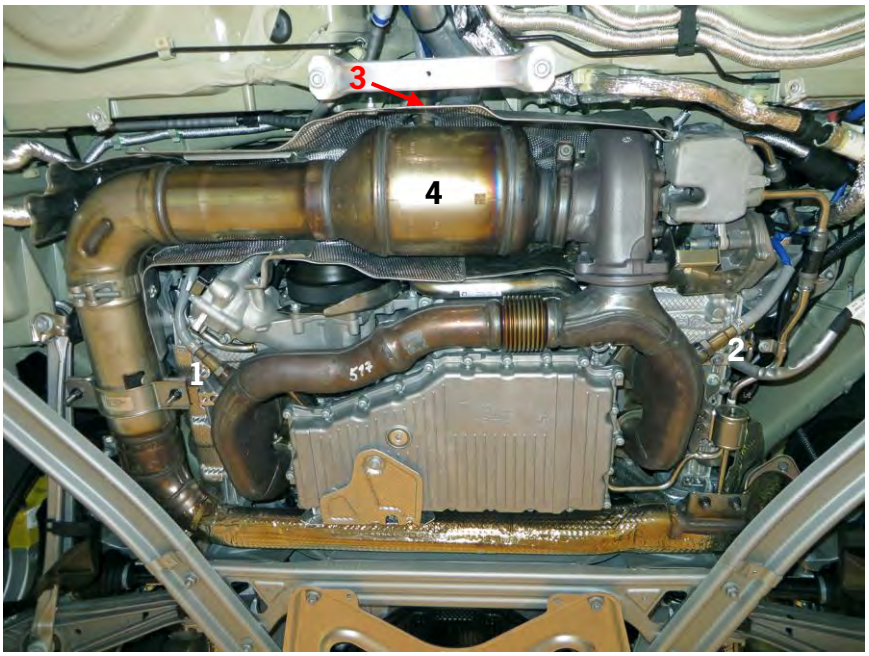


View from below, rear of vehicle 2_50_17

1 Branching to left and right mufflers
2 Mufflers on left/right
3 Connecting pipes with clamp at front
4 Connecting pipe with clamps and tailpipes at rear

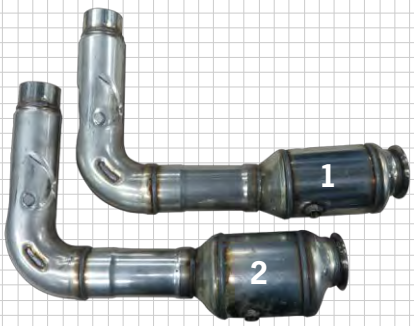
The two mufflers are connected with each other twice via connecting pipes. The two tailpipes, which are additionally provided with covers, are welded on at the rear connecting pipe.

Emission control



Installation positions of oxygen sensors 2_49_17

1 LSU oxygen sensor upstream of catalytic converter, bank 1 (right)
2 LSU oxygen sensor upstream of catalytic converter, bank 2 (left)
3 LSF oxygen sensor (in the catalytic converter)
4 Catalytic converter



Catalytic converters 718 Boxster/S MY17 2_51_17

1 Catalytic converter 718 Boxster
2 Catalytic converter 718 Boxster S

The engines and the emission control are designed for low untreated exhaust gas emissions and comply with all worldwide emission regulations.

Mufflers

The mufflers for the 718 Boxster and 718 Boxster S are identical except for the tailpipes.

Internal design of mufflers on 718 Boxster/S (tailpipe 718 Boxster S) 2_52_17

Tailpipe 718 Boxster

The 718 Boxster features a twin-branch exhaust system with an oval single-tube tailpipe made of brushed stainless steel.

Tailpipe 718 Boxster MY17 2_53_17

Tailpipe 718 Boxster S MY17 2_54_17

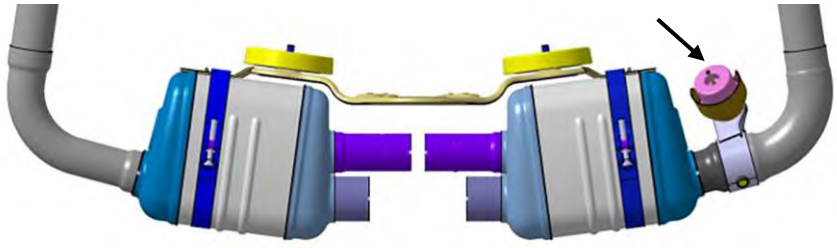
Tailpipe 718 Boxster S

The 718 Boxster S is equipped with a twin-branch exhaust system with centrally arranged round twin tailpipes made of brushed stainless steel.

Sports exhaust system (optional)

The sports exhaust system optionally available for all models has two centrally arranged round sports tailpipes. The tailpipes of the sports exhaust system are available in silver or black.

Black tailpipe for sports exhaust system 2_55_17



Sports exhaust system (option) with flap on right 2_56_17

This exhaust system features a flap control which opens the exhaust flap on the right silencer depending on the engine speed as from approx. 3,500 rpm. This reduces the exhaust backpressure for even better power development and an even more sporty, rich flat-engine sound.

The exhaust flap can be activated by way of a button in the center console.

2.2.8 Thermal management

Like the previous model, the 718 Boxster MY17 is also equipped with thermal management for the reduction of fuel consumption and CO_2 emissions, particularly after cold starting.

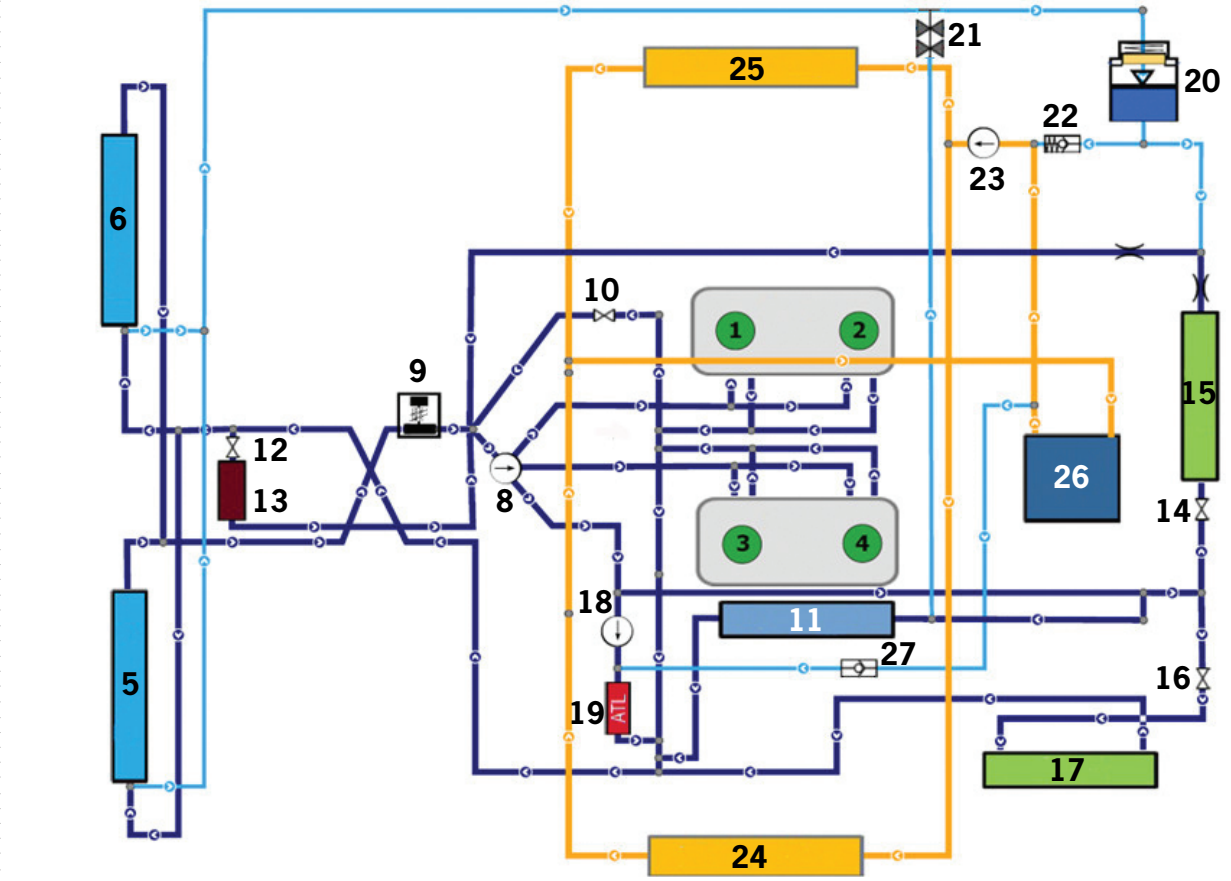
The following conditions are met through thermal management, for example:

- Operating temperature is reached quickly after cold starting
- Fast adjustment to calculated setpoint temperature (221° F – 185° F/ 105° – 85° C) depending on operating conditions
- High coolant throughput at full throttle. Here, the engine, transmission and heating are warmed up more quickly through demand-based activation of various partial cooling circuits.

The tasks and function of thermal management were already described in detail for the Boxster 981.

Center console button 2_57_17

System overview



Function overview of thermal management

2_59_17

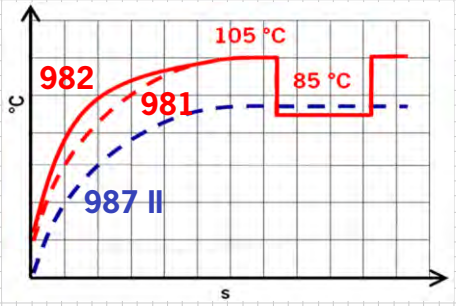
When filling and bleeding the HT and LT cooling circuits and checking the coolant level, the specifications of the PIWIS information system must be observed in all cases.

1 1-4 cylinders
5 Left radiator
6 Right radiator
7 N/A USA
8 Switched coolant pump
9 Thermostat with electrical map control
10 Coolant shut-off valve
11 Engine oil/water heat exchanger
12 Shut-off valve for heating heat exchanger
13 Heating heat exchanger
14 Shut-off valve for gear wheel set heat exchanger
15 Gear wheel set heat exchanger
16 Shut-off valve for clutch heat exchanger
17 Clutch heat exchanger
18 Electric run-on pump for turbocharger
19 Turbocharger
20 Coolant expansion tank
21 Comfort valve with bleeding lever
22 Filler tube check valve, LT
23 Electric pump, low-temperature
24 Low-temperature radiator, left
25 Low-temperature radiator, right
26 Indirect charge-air cooler (ICAC)
27 Check valve for LT ventilation

Changes compared with 981 Boxster MY12-16

- Additional low-temperature circuit with the indirect charge-air cooler (ICAC) and an electric coolant pump for charge-air cooling
- After a cold start, the switched coolant pump is closed by way of vacuum in order to achieve faster warming-up through the standing coolant
- The electric coolant after-run pump for the turbocharger guarantees cooling of the turbocharger even after the engine is switched off

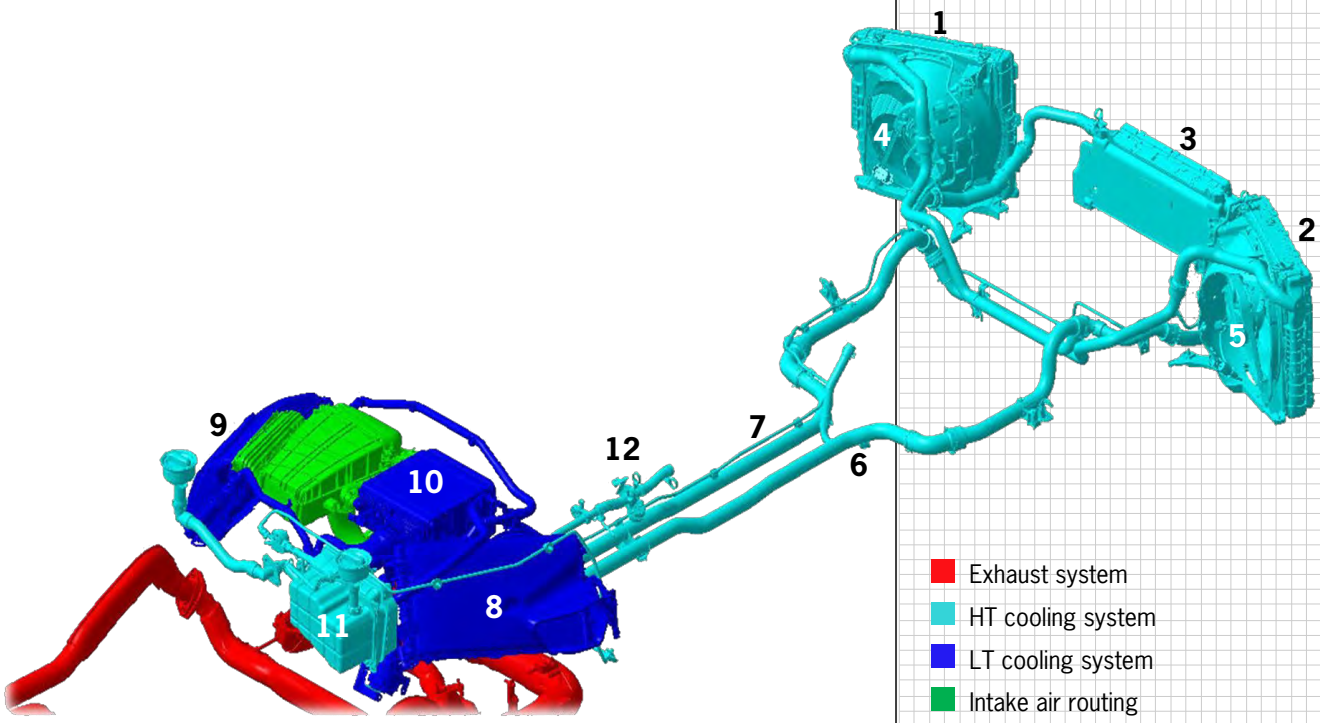
The side graphic shows the faster increase in coolant temperature after a cold start in comparison with the previous models.



Temperature increase after cold start 2_58_17

High-temperature circuit (HT) and low-temperature circuit (LT)

A new feature is the low-temperature circuit with the indirect charge-air cooler (ICAC) for charge-air cooling.



Components of the cooling system 2_60_17

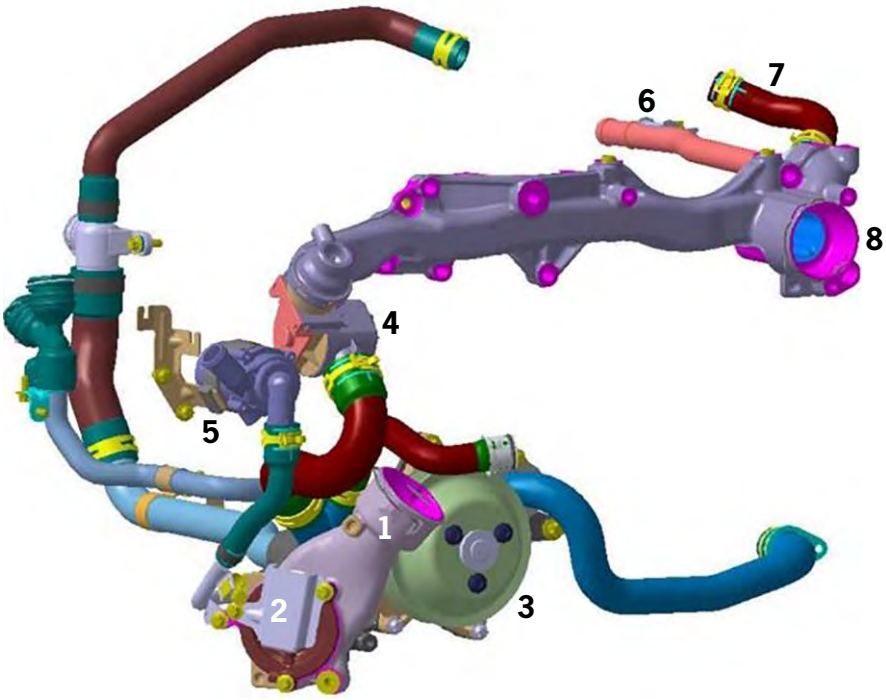
1 Left radiator
2 Right radiator
3 Center radiator (super hot countries only)
4 Radiator fan, left
5 Radiator fan, right
6 Coolant line to the radiators
7 Coolant line from the radiators
8 Low-temperature module, right
9 Low-temperature module, left
10 Indirect charge-air cooler (ICAC)
11 Coolant expansion tank (HT/LT)
12 Heater valve

Vacuum filling of the low-temperature circuit is necessary after removing and installing the indirect charge-air cooler.

1 Coolant supply
2 Map-controlled thermostat
3 Coolant pump (switched)
4 Coolant shut-off valve
5 Electric coolant run-on pump for turbocharger
6 Transmission heat exchanger
7 Oil-water heat exchanger
8 Coolant return line

1 Closed after cold start and in the warm-up phase (vacuum present)
2 Connection for vacuum line
3 Coolant pump open (coolant is circulated, no vacuum present/aerated)

Cooling system, components on engine



Cooling system components on engine 2_61_17

Switched coolant pump

Depending on the cooling requirement, the switched coolant pump is switched according to demand in two stages and makes a further contribution to reducing fuel consumption and CO_2 emissions.

The coolant flow is stopped (standing coolant) in fully closed state. The switched coolant pump is open and coolant is circulated when the engine is at operating temperature.

Coolant pump closed 2_62_17

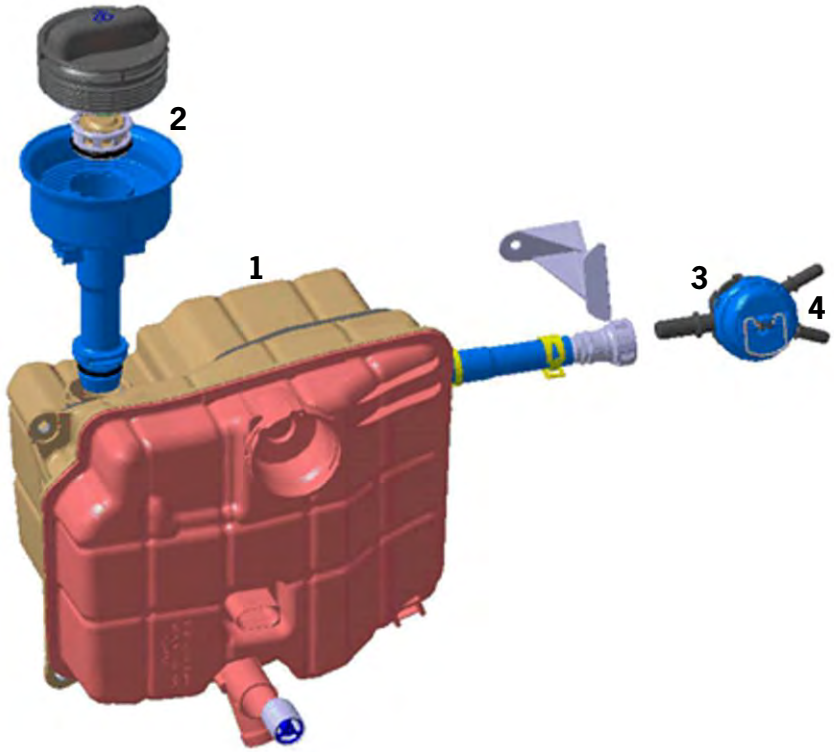
Coolant pump open 2_63_17

View of bank 1, front 2_39_17

1 Electro-pneumatic switching valve for switched water pump
2 Electro-pneumatic switching valve for coolant shut-off valve

Coolant expansion tank

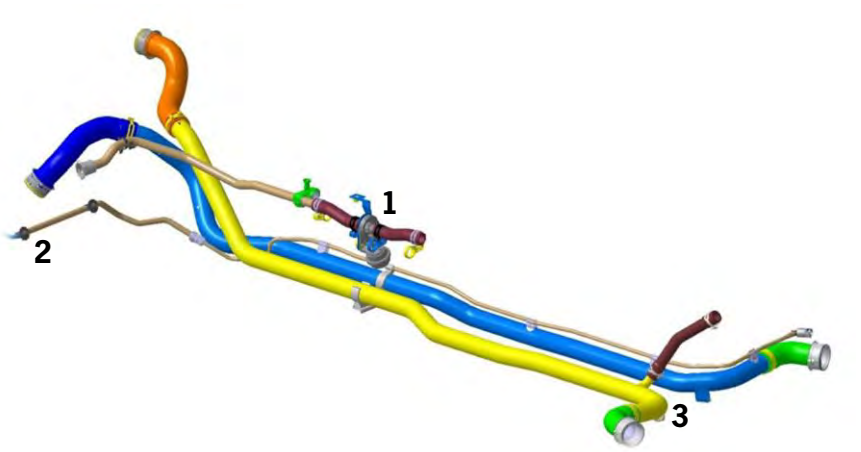
The high-temperature and low-temperature circuits use the same coolant expansion tank.



Coolant expansion tank 2_64_17

1 Expansion tank for high- and low-temperature circuits
2 Filler neck with level indicator
3 Comfort valve
4 Venting – engine and radiator

1 Coolant shut-off valve in heating tube
2 Vent lines
3 Coolant supply and return lines



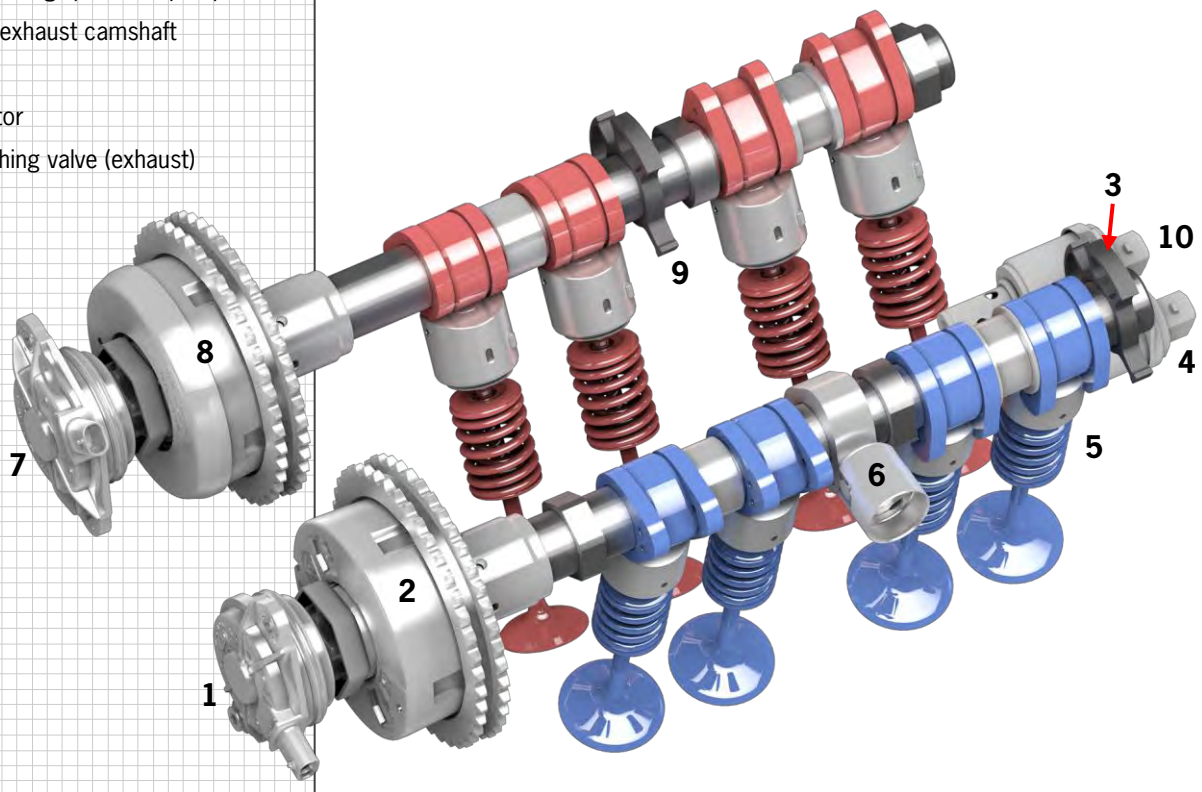
Coolant lines 2_65_17

2.2.9 Additional DME functions

VarioCam Plus

The VarioCam Plus variable valve control on the intake camshafts has been significantly extended. The system now additionally features continuous VarioCam Plus camshaft control with valve-lift adjustment of the exhaust camshafts.

1 Central valve, intake camshaft
2 Vane adjuster
3 Hall-sender rotor
4 Valve lift switching valve (intake)
5 Switchable bucket tappets
6 Roller tappet for high-pressure pump
7 Central valve, exhaust camshaft
8 Vane adjuster
9 Hall-sender rotor
10 Valve lift switching valve (exhaust)



VarioCam Plus 2_66_17

This permits high power and torque values as well as favorable fuel consumption and low exhaust emissions. This also improves the responsiveness of the turbochargers. Depending on the engine operating conditions, the following adjustments are possible:

Intake camshaft

- Continuous: 0° crank angle to max. 50° crank angle
- Valve lift (small): 3.60 mm
- Valve lift (large): 718 Boxster: 9.90 mm/718 Boxster S: 10.00 mm

Exhaust camshaft

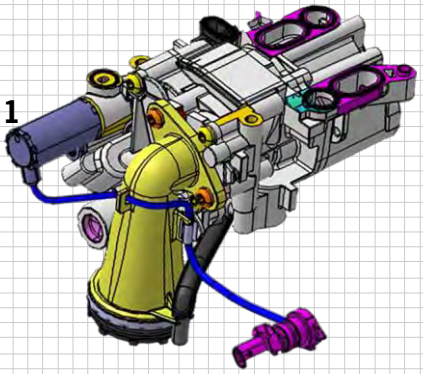
- Continuous: 0° crank angle to max. 55° crank angle
- Valve lift (small): 5.30 mm
- Valve lift (large): Cylinders 1+3: 8.71 mm/Cylinders 2+4: 9.90 mm

Dynamic control of oil pressure

The oil supply is realised by means of a variable oil pump. The valve for dynamic oil pressure control is activated by the DME control unit.

Sport Chrono package

The Sport Chrono package is the first choice for increasing the driving performance and driving pleasure. This package has been significantly redesigned for the 718 Boxster MY17. The various driving modes are now no longer selected using buttons on the centre console, but instead via the Mode switch located in the redesigned steering wheel. Individual mode is now available in addition to the three existing modes Normal, SPORT and SPORT PLUS. The settings for the PASM, sports exhaust system, Auto Start Stop function and rear spoiler can be combined individually based on Normal mode or SPORT modes via a corresponding menu in the instrument cluster. The saved combination can be retrieved the next time the vehicle is started by turning the Mode switch to position I.



Oil pump and oil pressure control 2_67_17

1 Electro-hydraulic valve for dynamic oil pressure control

Mode switch 2_68_17

Sport Response function 2_69_17

With the Sport Chrono package, the standard SPORT button in the center console is omitted. The stopwatch in the dashboard upper section remains part of the package.

Sport Response Button (vehicles with PDK only)

Another new function in the Sport Chrono package is the SPORT Response button located in the center of the Mode switch on vehicles with PDK. Inspired by motor sport, the SPORT Response button on the 718 Boxster MY17 gives the driver the option of changing the responsiveness of the vehicle directly at the press of a button.

When the SPORT Response button is pressed, the engine and transmission are prepared for maximum responsiveness. In the part-load range, the wastegate for the turbocharger is closed to allow the boost pressure to build up more quickly. The engine responds much more directly to accelerator pedal commands and reaches maximum power more quickly. At the same time, the PDK switches to a special shift map.

In part-load range, the PDK immediately switches back to an engine speed range of between 4,500 to 6,000 rpm. At this point, the shift map is moved upwards again so that the PDK only switches to the next-higher gear at a later time, thereby retaining the extremely direct responsiveness of the high engine speed range for a few hundred revolutions longer.

A countdown timer on the display in the instrument cluster informs the driver how much longer the SPORT Response function will remain active before the vehicle reverts back to the previously selected mode after 20 seconds have elapsed. The SPORT Response function can be activated as often as required. Pressing the SPORT Response button again while the function is active, deactivates the function.

Coasting mode (vehicles with PDK)

Coasting mode is designed primarily for reducing fuel consumption and emissions. Coasting is driving at idle speed without any engine braking effect. Coasting takes place after the accelerator pedal has been fully released in the normal way. A distinction is made between the functions of coasting and intelligent trailing throttle fuel cutoff depending on the operating condition.

In SPORT mode, the focus is on the fun factor and the sound. In SPORT PLUS mode, maximum performance is made available.

Intelligent trailing throttle fuel cutoff (ISA)

With intelligent trailing throttle fuel cutoff (ISA), the application is optimized for the interaction between engine and PDK transmission in order to achieve further fuel consumption benefits.

The engine resumption speed was reduced to 860 rpm (previously 1,088 rpm). This was made possible by detection of the brake pressure. When driving in virtual gears (with the clutch not fully closed), closing the throttle triggers downshifts to enable prolonged deceleration operation of the engine.

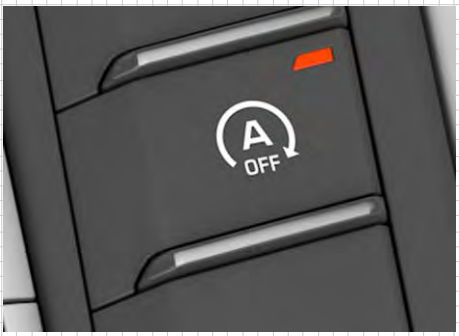
Virtual gears

The virtual transmission ranges already familiar from the 911 Turbo were implemented in conjunction with the PDK to increase efficiency (fuel saving potential). If the transmission control detects that the vehicle is travelling at a constant speed, it shifts to a higher gear until the engine would in theory turn at approx. 800 rpm.

To maintain driving comfort, the transmission control increases the engine speed automatically by the clutch allowing slight slip, but only within a range (with low engine load) that does not increase wear. The driver remains totally unaware of these sophisticated technical processes.

Extended Auto Start Stop function

Specific optimizations of various systems such as the PDK also contribute to a reduction in fuel consumption on the 718 Boxster MY17 models. For example, the 718 Boxster models now feature the enhanced Auto Start Stop function, which already switches the engine off when the vehicle is rolling to a stop situation (at a speed of less than 1.2 mph (2 km/h). The detailed conditions/prerequisites are described in the Owner's Manual.



Auto Start Stop button on center console 2_70_17

Electric sound actuator

In addition to the new exhaust systems, an electric sound actuator is responsible for creating an sporty Porsche-specific sound in the passenger compartment of the vehicle. The electric sound actuator is installed on the front engine cover in the passenger compartment. It is activated by way of a separate control unit connected with the CAN bus. This control unit is located at the rear left of the luggage compartment.

2_24_17

The goal of the sound actuator is to support/enrich the engine-specific sound, whereby the acoustic component of the sound actuator should harmonize with the sound of the engine and exhaust system depending on load, engine speed and driving speed.

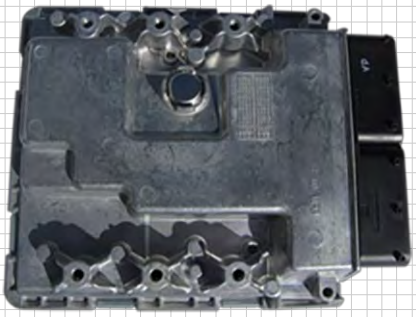
2.2.10 DME control unit SDI 21.1

Overview of sensors

- Accelerator pedal sensor (electronic)
- Throttle valve sensor (electronic)
- Fuel high-pressure sensor
- Fuel low-pressure sensor
- Pressure sensor for tank ventilation (vehicles with DMTL only)
- Engine oil temperature sensor
- Coolant temperature sensor 1 (cylinder head)
- Engine compartment temperature sensor
- Coolant temperature sensor 2 (radiator outlet)
- Transmission oil temperature sensor (gear wheel set)
- Brake vacuum sensor
- Oxygen sensor downstream of catalytic converter
- Oxygen sensor upstream of catalytic converter, bank 1
- Oxygen sensor upstream of catalytic converter, bank 2
- Knock sensor, bank 1
- Knock sensor, bank 2
- Engine speed sensor (Hall) (crankshaft)
- Intake camshaft sensor, bank 1
- Intake camshaft sensor, bank 2
- Exhaust camshaft sensor, bank 1
- Exhaust camshaft sensor, bank 2
- Transmission speed sensor (MT)
- Neutral gear sensor (MT)
- Duo-sensor (oil temperature and oil level sensor, PULS II)
- Brake pedal sensor
- Clutch sensor (MT)
- PDK P/N
- Crash signal
- Intake manifold pressure/intake manifold temperature sensor (SENT)
- Boost pressure sensor (SENT)
- Exhaust temperature sensor (SENT) – only for VTG turbocharger
- Oil pressure sensor (SENT)

CAN connections

- CAN Drive



DME control unit SDI 21.1 2_71_17

Overview of actuators

- Throttle valve servo motor
- DME relay
- High-pressure injector, cylinder 1 to cylinder 4
- Ignition module, cylinder 1 to cylinder 4
- VarioCam Plus, intake, cylinders 1+2
- VarioCam Plus, exhaust, cylinders 1+2
- VarioCam Plus, intake, cylinders 3+4
- VarioCam Plus, exhaust, cylinders 3+4
- Diverter valve (electro-pneumatic)
- Coolant shutoff valve (coolant bypass)
- Coolant shut-off valve (gear wheel set cooling PDK + MT)
- Coolant shut-off valve (PDK clutch cooling)
- Map-controlled thermostat (electric heater)
- Intake camshaft adjuster, bank 1
- Intake camshaft adjuster, bank 2
- Exhaust camshaft adjuster, bank 1
- Exhaust camshaft adjuster, bank 2
- Coolant run-on pump (electric, for turbocharger)
- Tank vent valve
- Boost pressure adjuster, wastegate (2.0 l only)
- VTG turbocharger with integr. wastegate (2.5 l only)
- Engine mount switch-over valve
- Transmission mount switch-over valve
- Relay for electric fuel pump
- Control unit for demand-controlled fuel pump
- Tank leakage diagnosis DMTL (USA and South Korea only)
- Charge-air cooler 1 (EC fan)
- Charge-air cooler 2 (EC fan)
- Water pump 1, low-temperature circuit (ICAC)
- Radiator fan 1
- Radiator fan 2
- Quantity control valve 1 (Bosch HDP5)
- Oil pressure-regulating valve
- Valve, switched mechanical water pump
- Starter relay

Group 3
Power transmission

3 Power transmission

3.1 Introduction

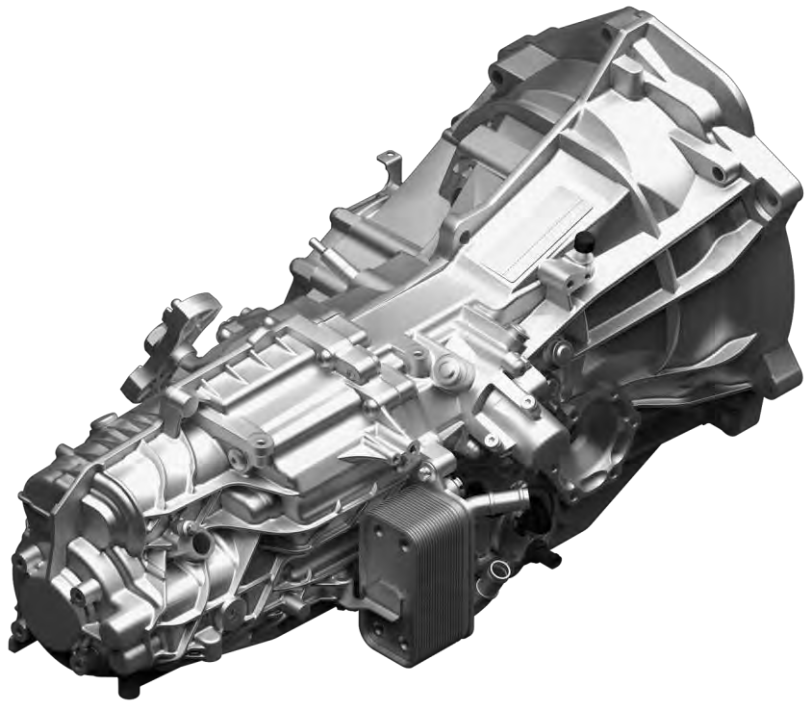
The familiar manual and PDK transmissions are used for the 718 Boxster/S MY17. The details of the respective transmissions have been adapted for these models in each case.

3.2 Technical data

	Unit	Manual transmission	PDK (option)
Transmission type (type code)		G8200/G8220	CG210/CG240
Vehicle		718 Boxster/S	718 Boxster/S
Clutch		Single-plate dry clutch	2x radially nested multiple-disc wet clutches
Number of gears, forward/reverse		6/1	7/1
Spread		4.06	6.34
Filling capacity	qts (l)	3.4 (3.2)	3.4 + 5.7 (3.2 + 5.4)
Weight (ready for installation)	lbs (kg)	154 (69.85)	244 (110.5)
Additional weight of differential lock	kg	0.55	2.8
1st gear	i	3.308	3.909
2nd gear	i	1.950	2.292
3rd gear	i	1.407	1.654
4th gear	i	1.133	1.303
5th gear	i	0.950	1.081
6th gear	i	0.814	0.881
7th gear	i		0.617
Reverse gear	i	3.000	3.545
Rear-axle ratio	i	3.889	3.250

Extract, data available at copy deadline, subject to change

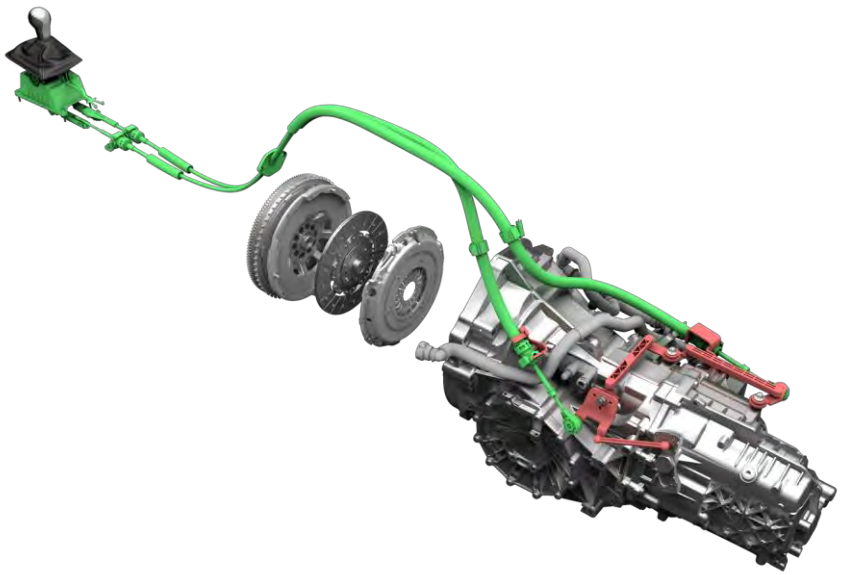
3.3 Manual transmission



Manual transmission of the 718 Boxster/S MY17 3_01_17

The manual transmission of the 718 Boxster/S MY17 is based on the G8120 manual transmission used in the previous model.

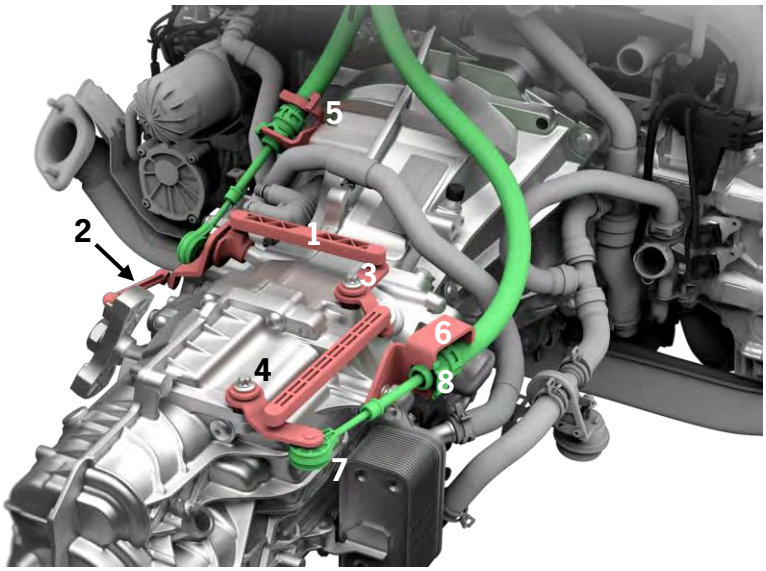
3.3.1 Outer shift mechanism



Shift lever connection and shift cable routing on the transmission of the 718 Boxster/S 3_02_17

Gearshifts are still performed using two shift cable mechanisms, which are guided from the gearshift bracket via the engine to the transmission.

On the manual transmission of the 718 Boxster/S MY17, both cables are routed over the engine between the air cleaner and integrated charge-air cooler.

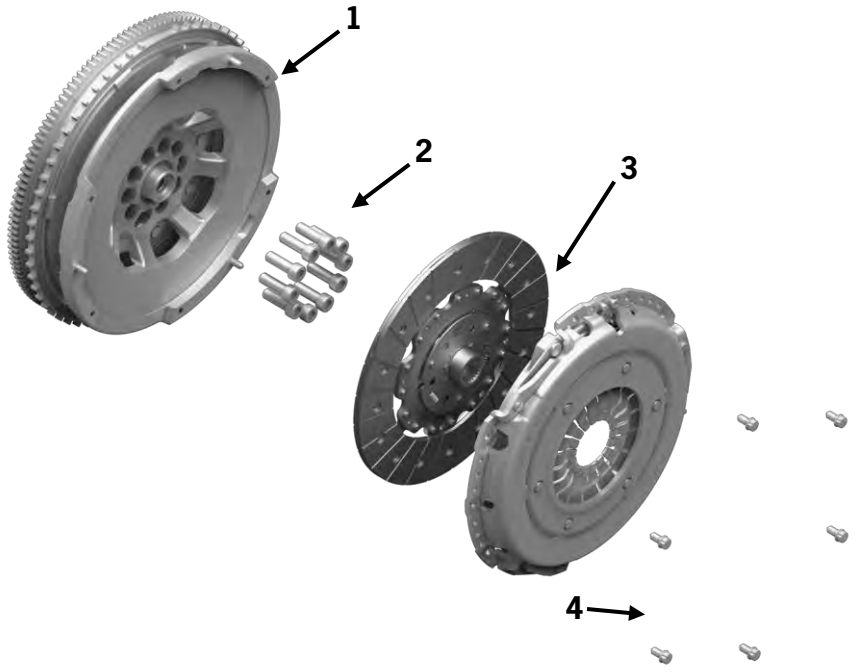


Shift mechanism on manual transmission of 718 Boxster/S MY17 3_03_17

On the manual transmission in the 718 Boxster/S MY17, the right shift cable is connected to the transmission via an additional reversing lever (4) on the transmission housing.

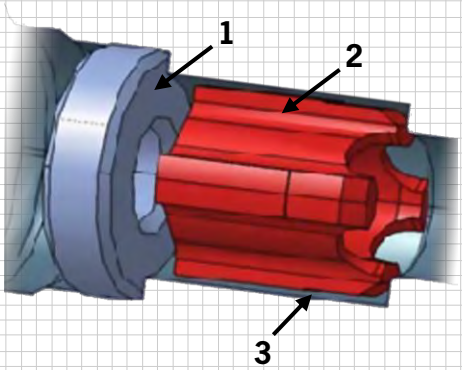
1 Shift lever on shifting shaft
2 Coupling rod to shifting mass
3 Front reversing lever on transmission housing
4 Rear reversing lever on transmission housing
5 Shift cable support bracket
6 Pre-selector cable support bracket
7 Shift cable ring eyelets on ball pin
8 Attachment hose holders for shift cable in support bracket

3.3.2 Clutch



Single-plate clutch 3_04_17

1 Dual-mass flywheel
2 10x cheese head bolt
3 Clutch set
4 6x bi-hexagon screw



Peak Torque miter 3_06_17

1 Disc cover
2 Valve disc
3 Housing

The clutch pressure plate and clutch plate have been adapted to the engine characteristics in order to reliably transfer the higher torque of the turbo engines. An adapted internal gear ratio ensures that the actuating forces are identical in spite of the reinforced diaphragm spring.

Clutch slave cylinder

In order to minimize the effects of incorrect operation, e.g. foot slipping off the clutch pedal, a clutch slave cylinder with peak torque limiter (PTL) is installed in the 718 Boxster MY17. This extends the clutch engagement speed to at least 20 ms if necessary.

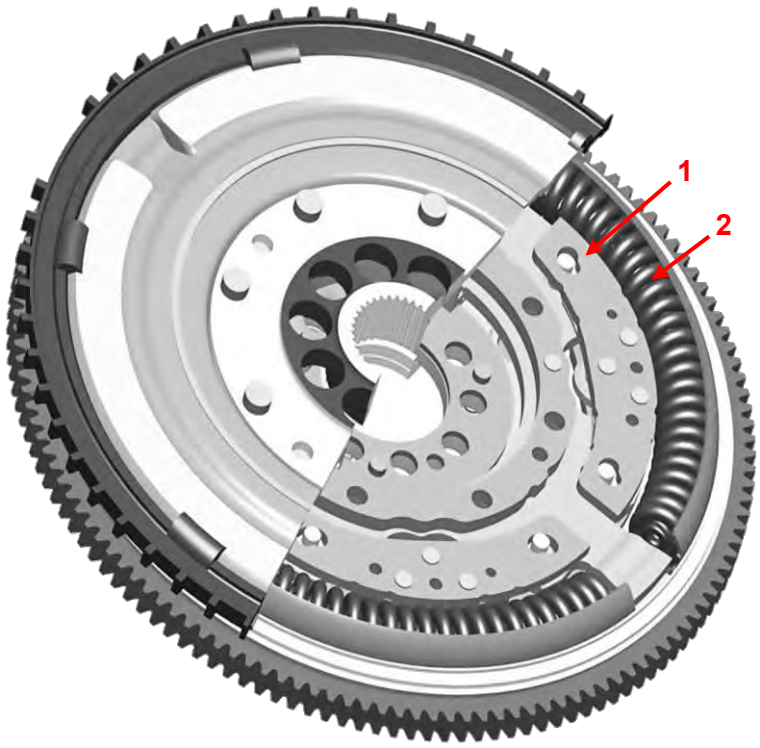
A movable valve disc is integrated in the hydraulic connection of the slave cylinder for this purpose. The valve disc moves against the cylinder housing when the clutch is disengaged. The clutch hydraulic fluid flows both through the bore in the valve disc as well as past the outside of the valve disc.

When the clutch is engaged, the valve disc moves against the disc cover and thus reduces the cross-section of the clutch line.

Dual-mass flywheel

The dual-mass flywheel with integrated centrifugal pendulums familiar from the 911 Carrera/S MY17 is used on the 718 Boxster MY17. This was adapted for the flat-four engines.

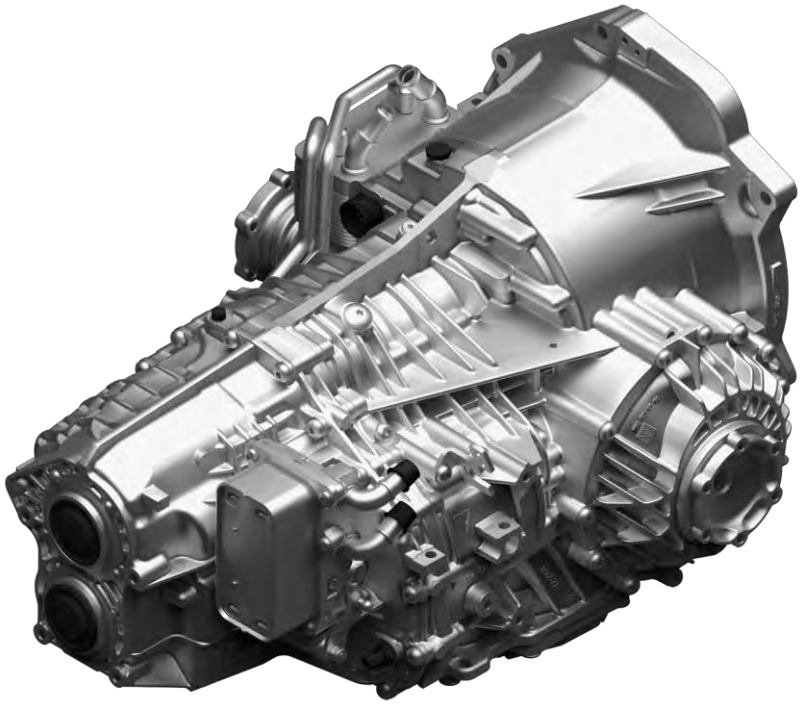
The use of centrifugal pendulums significantly reduces torsional vibrations particularly in the low engine speed range, thereby improving driving comfort in the low-end rpm range.



Dual-mass flywheel with centrifugal pendulum 3_05_17

1 Centrifugal pendulum
2 Arc springs (inner and outer)

3.4 Porsche Doppelkupplung (PDK)



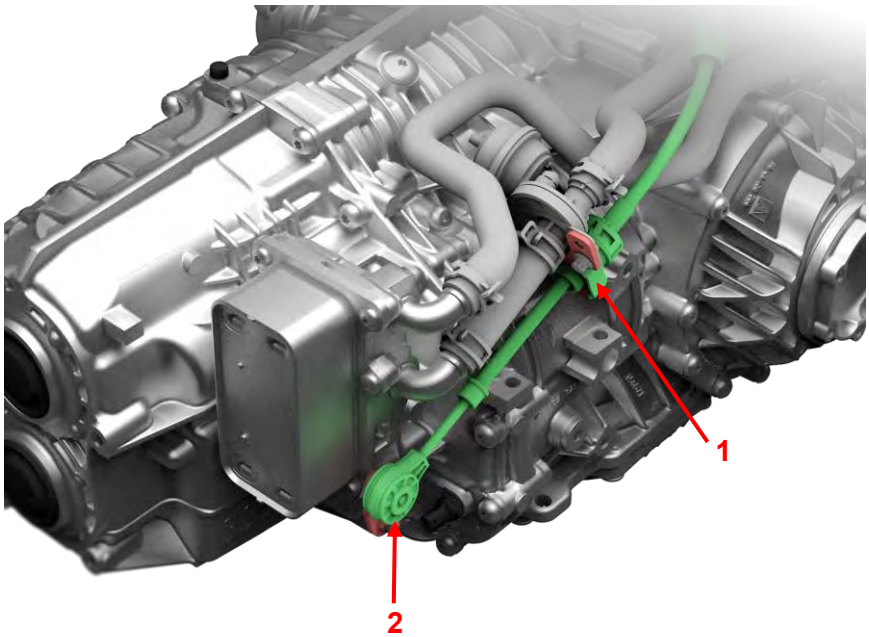
Porsche Doppelkupplung of the 718 Boxster/S MY17 3_07_17

The Porsche Doppelkupplung (PDK) of the 718 Boxster/S MY17 is based on the double-clutch transmission used in the previous model.

3.4.1 Technical data

Gearshift positions	P, R, N, D, M, +, -
Selector lever	Engaged in each gearshift position
Selector lever lock	• from P to R • from R to P • from N to R Released by pressing the release button
Gearshift lock (shift lock)	In P and N Released by switching on ignition and actuating brake pedal
Parking lock engagement/ disengagement	Via selector cable
Transmission range engagement/disengagement	Via vehicle electrical system/CAN
Delta compared with previous model	Shifting direction • Downshift (-) forward • Upshift (+) back New design of selector knob Without shift pattern on release button

3.4.2 Outer shift mechanism



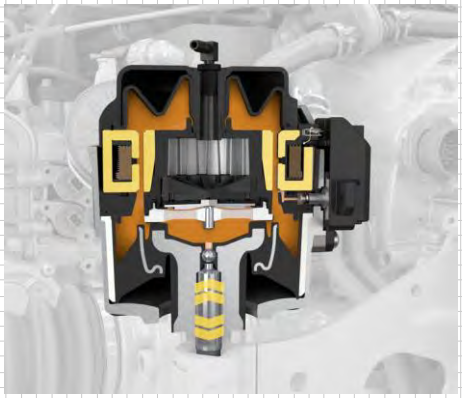
Selector lever connection on PDK of 718 Boxster/S MY17 3_08_17

1 Attachment hose holder for cable
2 Cable eyelet on ball pin

3.4.3 Operating and display concept

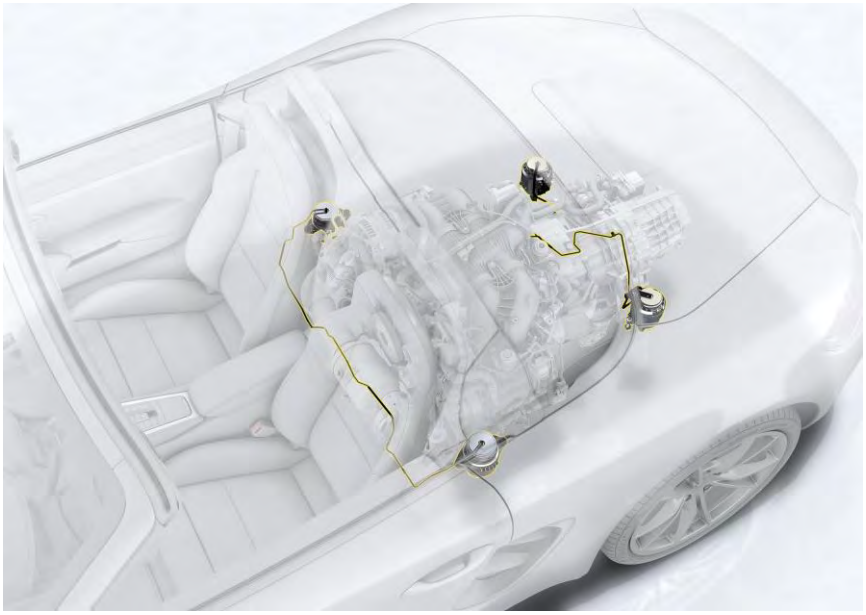
3_09_17

As on the 911 GT3 MY14 and the 911 Carrera MY17, the shift direction of the manual shift mechanism was also reversed on the 718 Boxster/S MY17. The selector lever is pushed forward to downshift and pulled back to upshift.



Sectional view of PADM transmission mount 3_11_17

3.5 Transmission mount



Unit mount

In addition to the conventionally designed transmission mount, PADM (Porsche Active Drivetrain Mount) is available as an option for the first time for the Boxster models. The two transmission mounts are replaced here by two active hydraulic mounts.

The function and effect is the same as the PADM system used on the 911.

Group 4
Chassis

4 Chassis

4.1 Introduction

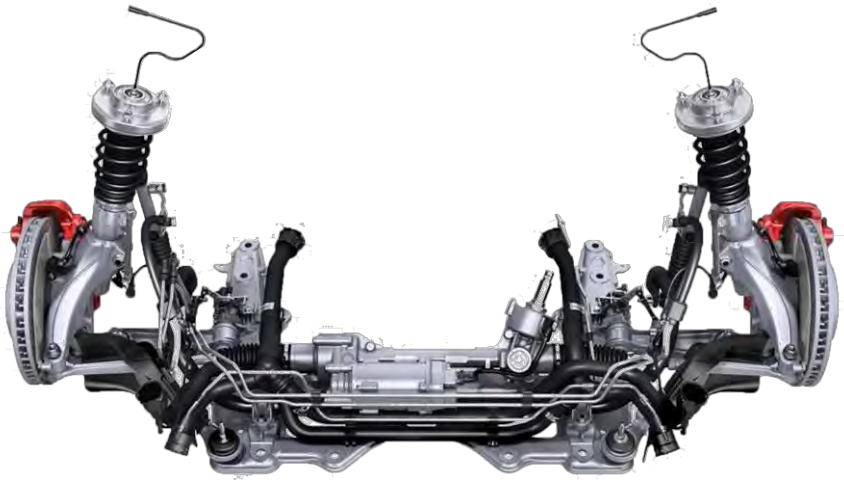
As part of the continuous process of adapting the chassis of the Porsche 718 Boxster models to the increased customer wishes and sporting challenges, the following optimizations were implemented:

- The wheel width on the rear axle was increased by 0.5 inches compared with the previous model (with unchanged tire size)
- The springs, dampers and anti-roll bars were also retuned to adapt them to the new chassis
- The speed-sensitive power steering is an enhancement from the Porsche 911 Turbo model year 2014 and is functionally extended with lane change assist
- The new sports steering wheel with the optional Sport Chrono package includes a Mode switch for selecting the different driving modes directly on the steering wheel
- The size of the brakes has been increased in line with the enhanced driving performance
- The PCCB of the 911 Carrera model year 2012 is optionally available for all models
- All models are equipped as standard with the third generation of the Tire Pressure Monitoring system
- The software of the chassis control systems was adapted to the increased power of the new turbo engines
- All models can be optionally equipped with the cruise control system with braking intervention function
- The engine and transmission mounts were redesigned and are integrated in the proven PADM system

Note:

The new 718 Boxster models come in three ride heights:
- Standard
- PASM (-10mm)
- PASM Sport Suspension (-20mm)

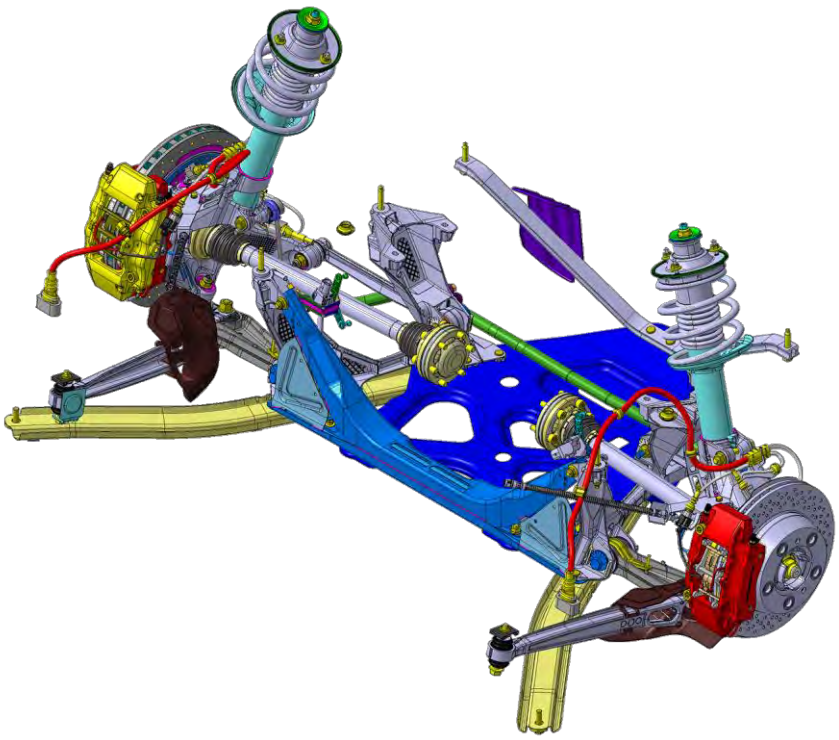
4.2 Front axle



Front axle 4_01_17

The wheel carriers, wheel hubs, wheel bearings and control arms were adopted from the 911 Carrera MY12 for the 718 Boxster MY17. In addition, the springs, dampers and anti-roll bars were retuned. The increased anti-dive characteristic reduces diving at the front of the vehicle during full braking and shortens the braking distance.

4.3 Rear axle



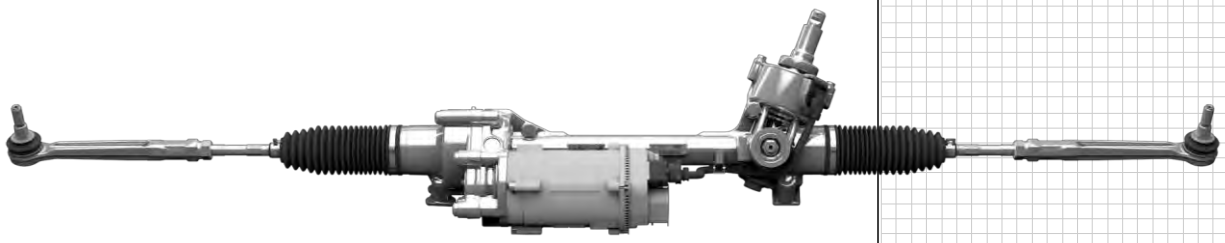
Rear axle 4_02_17

The Porsche-optimized MacPherson suspension used on the 718 Boxster models is essentially the same as the suspension used on the previous model. The springs, dampers and anti-roll bars were also retuned here.

4.4 Power steering

Like the 911 Turbo MY14, the 718 Boxster MY17 models are also equipped with electromechanical power assistance for the steering. This has the following features and functions:

- Electromechanical power assistance
- Speed-sensitive steering torque control
- Steering pulse for μ -split braking
- Power steering Plus (option)
- Lane change assist (option)



Steering gear 4_03_17

The direct steering in the 718 Boxster MY17 models was set up so that it is approx. 10% more direct than in the previous model. The electromechanical steering thus ensures even more agile and direct handling. The rear wheels have been made 0.5 inches wider for the same tyre size, thereby ensuring the stability typical for Porsche and also further enhancing precision.

	718 Boxster (982)	**Boxster (981)**
Steering ratio (variable)	15.0:1 (center position) to 12.5	16.5:1 (center position) to 12.37

The complete steering column, including adjustment function, has been adopted from the 911 Carrera MY12.

4.4.1 Steering wheels

The design of the new sports steering wheel is based on that of the 918 Spyder steering wheel and, in combination with optional Sport Chrono package, includes a Mode switch for selecting the different driving modes directly on the steering wheel.

The GT sports steering wheel is available as an option. With a diameter of 360 mm, the steering wheel is 15 mm smaller than the standard sports steering wheel. This gives it an even more dynamic appearance and provides an even more direct steering feeling.

	Standard, optional: paddles	**With multi-function & heating I-no. 489, optional: paddles**	**With Mode switch (Sport Chrono) optional: paddles, multi-function & heating**
Sports steering wheel (Ø 375 mm)			
GT sports steering wheel (Ø 360 mm)			

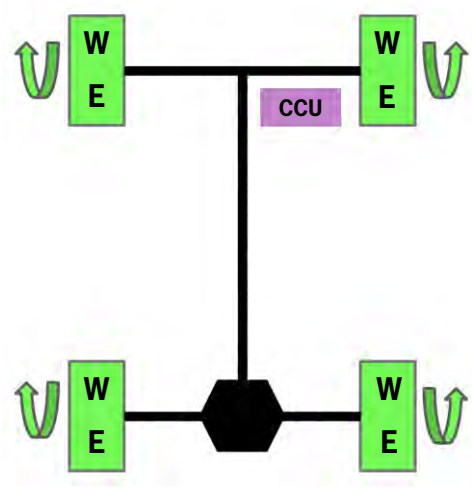
The multi-function and steering wheel heating are also optionally available for all steering wheels.

4.5 Tire Pressure Monitoring (TPM)

The third-generation Tire Pressure Monitoring (TPM) system is used in the 718 Boxster MY17.

- Direct-measuring unidirectional TPM system
- Special TPM valves with installed wheel electronics (WE) (as for the generation 2.6 TPM in the 991)

System overview



CCU = Compact control unit with integrated antenna and off-center installation

WE = Wheel electronics
Sensor with detection of direction of rotation

Overview of third-generation TPM 4_05_17

4.5.1 Wheel electronics

Wheel electronics units are installed on all four wheels. These wirelessly transmit all the required information to the TPM control unit. The compact wheel electronics units comprise several individual components:

- Valve
- Pressure sensor
- Temperature sensor
- Battery
- Voltage monitoring
- Transmitter

The wheel electronics units transmit their information only while the vehicle is moving. After extended idle periods, the pressure display only becomes active once the trip is started and the vehicle exceeds speeds of approx. 16 mph (25km/h). See message in the instrument cluster.

The system can no longer actively interrogate the TPM Gen3 wheel electronics due to the omission of the transmitters in the wheel housings.

Wireless data transmission

Wireless data transmission takes place at specified intervals. The following data is transmitted to the TPM control unit via the four wheel electronics units:

- Wheel sensor ID
- Measured tire pressure
- Air temperature in the tire
- Residual battery life of the wheel sensors
- Clockwise/counterclockwise rotation

Transmission behavior of the wheel electronics

The wheel electronics units enter into energy-saving mode approx. 5 minutes after the vehicle trip has been completed and stop transmitting new data. Energy-saving mode can be ended by a change in tire pressure of more than 1.5 psi (0.1 bar). The wheel electronics start transmitting again after approx. 2 min.

4.5.2 TPM control unit (compact control unit)

The TPM control unit receives the radio signals from the wheel electronics, evaluates them and transmits the information to the instrument cluster, where the information can be displayed. It is equipped with an integrated antenna in order to receive the wireless signals.

Wheel positions

The wheel positions are taught automatically through evaluation of the side and axle information.

Side determination

During side determination, the directions of rotation of the individual wheels are determined by acceleration sensors in the wheel electronics.

Front and rear axle detection

Front axle/rear axle detection is performed using different signal levels. These signal levels are determined by the different distances between the wheel electronics and the control unit with integral antenna, which is mounted off-center on the front axle. The further the sensors are positioned away from the control unit, the lower the level of the transmitted signal.

Communication with the instrument cluster takes place via MMI CAN.

4.5.3 TPM operating and display concept

The previous Porsche TPM operating and display concept has been retained as far as possible.

The required tire pressures of all approved tires to be monitored, load conditions and operating modes where applicable (standard/comfort pressure) are stored in the instrument cluster as previously.

Pressure display on instrument cluster

All pressures are displayed at the end of the trip until the ignition is switched OFF (irrespective of the wheel electronics transmission mode)

If the ignition is switched ON again within approx. 10 minutes, all pressures continue to be displayed.

Service

It also remains possible to add additional tires (e.g. Tequipment) including the required pressures at the free positions in the “Tire type” menu by means of the PIWIS tester.

The TPM menu is entered directly by acknowledging the actual pressure display “Tire pressure”.

The first level shows the TPM status with the configured tire type to be monitored and its dimensions (“19" S”=19-inch summer tyres), the specifications for the selected load condition and – if available for selection – the mode (standard/comfort pressure).

Tire pressure display 4_06_17

Fill info access 4_07_17

Tire pressure adaptation

A tick is set for “Comfort press.” by clicking. If no tick is displayed, the standard pressure applies (up to v_{max}).

The 2nd level is reached by confirmation of “Tire type”. Here it is then possible to select the approved tires.

Example for tire type 4_08_17

Pressure deviation display 4_09_17

Service

The temperature-compensated pressure deviations (from the required pressure) are displayed in the 2nd level after confirming “Fill info”.

Teaching wheel set

- Vehicle is stationary for at least 5 minutes
- Installed tyre type selected in the TPM menu
- Message: “System learns from 16 mph (25 km/h)”
- Driving with v > 16 mph (25 km/h)
- Ideally, drive without stopping until the pressures are displayed
- Learning time less than 2 min

The system only teaches the wheel electronics while the vehicle is moving. Stationary phases can extend the learning time significantly. Deviations from the teaching procedure described can lengthen the teaching time significantly. The teaching process is only completed UNSUCCESSFULLY if the message “Tire pressure monitoring fault” is displayed.

Fault display 4_10_17

Wheel change display 4_11_17

Message: “Wheel change detected”

The system is able to automatically recognize a wheel change or a change of the wheel electronics. The following message appears on the instrument cluster: “Wheel change detected”.

4.6 Wheels and tires

4.6.1 Wheels

The Carrera S wheel will be available in the option range of the 20-inch wheels. The wheel range now includes the 20-inch Carrera Sport wheel from Exclusive. The Carrera Classic wheel remains available.

Display after ignition ON 4_12_17

Carrera Classic wheel 4_13_17

The rear wheels of the Boxster models have been widened by 0.5 inches – with the same tire size. This measure ensures stability in combination with the direct steering and further improves precision.

4.6.2 Tires

A new generation of 18-, 19- and 20-inch summer tires will be introduced for the 718 Boxster MY17 models. The new generation of summer tires have extremely good dry handling characteristics, while the wet handling characteristics have also been improved.

A special rubber compound yields additional benefits for greater fuel economy. During the development of the summer tires, engineers focused on consistent lightweight construction, outstanding traction and driving stability, optimum driving comfort, low rolling resistance, an improved wear pattern and a long tire service life.

4.7 Brakes

4.7.1 Brake system versions for the 718 Boxster models

The braking performance was adapted due to the higher engine power. The dimensions of the brake system have changed as a result.

The table below contains the dimensions of the individual brake discs on the 718 Boxster MY17 models:

Derivative	Front axle	Rear axle
718 Boxster 981 Boxster	Ø 330 x 28 mm Ø 315 x 28 mm	Ø 299 x 20 mm Ø 299 x 20 mm
718 Boxster S 981 Boxster S	Ø 330 x 34 mm Ø 330 x 28 mm	Ø 299 x 20 mm Ø 299 x 20 mm
PCCB (adopted from 991)	Ø 350 x 34 mm	Ø 350 x 28 mm

4.7.2 Porsche Ceramic Composite Brake (PCCB)

The optional Porsche Ceramic Composite Brake (PCCB) of the 718 Boxster MY17 models is equipped with brake discs with a diameter of 350 mm on the front and rear axles. The PCCB is available for all Boxster models and tire sizes.

4.7.3 Multi-collision brake

The multi-collision brake is used as standard on the 718 Boxster model year 2017. If a collision is detected by this system, braking is initiated automatically with a maximum deceleration of 0.6 g to a speed of 6 mph (10km/h).

In the event of an accident, multi-collision braking can help the driver to reduce the risk of skidding and the danger of further collisions during the accident by initiating braking automatically.

Function

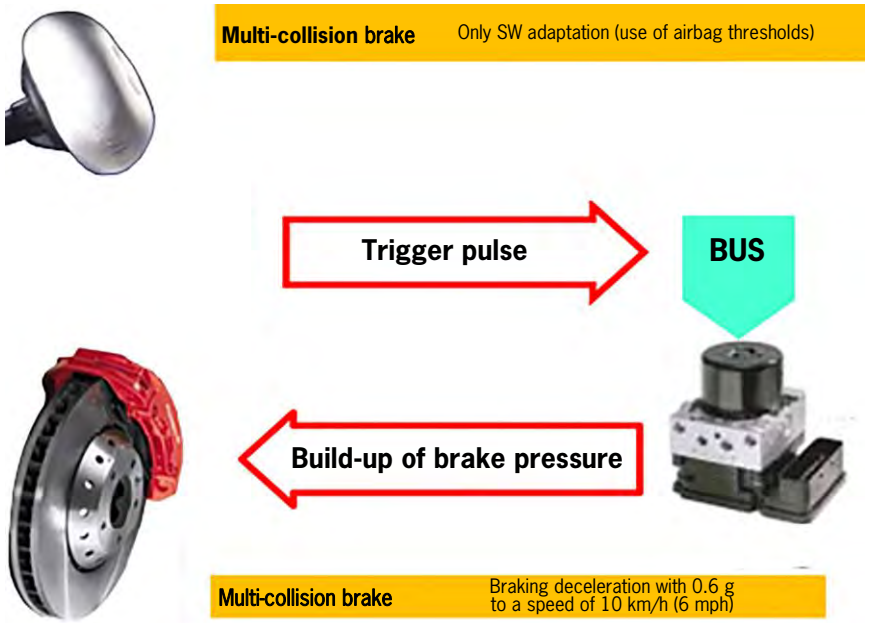
Multi-collision braking functions only:

- in the event of front, side and rear-end collisions
- if the airbag control unit detects a corresponding activation threshold during an accident
- if an accident occurs when the vehicle is traveling at a speed above approx. 6 mph (10 km/h)

The driver has the option of actively intervening in the braking process at any time and intensifying braking by actuating the brake pedal or interrupting braking by accelerating (accelerator pedal position > 90%).

Only software modifications in the existing PSM control unit and the airbag control unit are required to implement the function.

In the event of a collision, the multi-collision brake is triggered by a pulse from the airbag control unit. The activation threshold is coupled to the seat-belt pretensioner/airbag threshold.



Functional representation of the multi-collision brake 4_15_17

PCCB brake disc 4_14_17

PSM automatically brakes the vehicle provided the hydraulic brake system, PSM and the electrical system are not damaged and are still working after the accident.

Trigger pulse DME

CAN bus

The 718 Boxster MY17 models have a chassis with zero position without PASM.

4.8 Control systems

4.8.1 Cruise control with braking intervention (Cruise control Plus)

When driving downhill, cruise control Plus can maintain the set cruise control speed by initiating automatic braking interventions. This is done by implementing a deceleration request of the DME (up to max. 0.1g). Cruise control constantly maintains any desired speed between approx. 20 – 150 mph (30 – 240 km/h). If “PSM off” is selected, the system is switched to “PSM on” when the target speed is set.

Overview of cruise control with braking intervention (cruise control Plus) 4_16_17

Porsche Active Suspension Management (PASM)

The 718 Boxster models are optionally available with the electronically controlled Porsche Active Suspension Management (PASM) damper system with active and continuous control of the shock absorbers on the front and rear axles, including lowering of the vehicle height by 10 mm.

PASM Sports Suspension (-20 mm)

The PASM Sport Suspension (-20 mm) is offered for the first time for the 718 Boxster S. In comparison with PASM, the body is an additional 10 mm lower. This lowers the vehicle center of gravity even further, and has a positive effect on the driving dynamics capabilities of the vehicle.

The PASM Sport Suspension (-20 mm) is optionally available only for 718 Boxster S.

4.8.2 Sport Chrono package

The Sport Chrono package for the 718 Boxster MY17 has been significantly modified.

Design

The various driving modes are now no longer selected using buttons on the centre console, but instead via a rotary selector switch known as the Mode switch located in the redesigned steering wheel. Individual mode is now available in addition to the three existing modes Normal, SPORT and SPORT PLUS.

Function

The settings for the PASM, sports exhaust system, auto start/stop function and rear spoiler can be combined individually based on Normal mode or SPORT modes via a corresponding menu in the instrument cluster.
The saved combination can be retrieved the next time the vehicle is started by turning the Mode switch to the individual (I) position.

With the Sport Chrono package, the standard SPORT button in the center console is omitted. The stopwatch in the dashboard upper section remains part of the package.

Steering wheel with Mode switch 4_17_17

Further information on the SPORT Response button can be found in Group 2.

Sport Response button

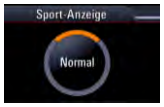
Another new function in the Sport Chrono package is the SPORT Response button located in the center of the Mode switch in conjunction with PDK.

The SPORT Response button on the 718 Boxster gives the driver the option of changing the responsiveness of the vehicle directly at the press of a button.

4.8.3 PSM Sport

In conjunction with the Sport Chrono package, the Porsche Stability Management (PSM) system on the 718 Boxster models features a PSM Sport mode that can be activated separately. Briefly pressing the PSM button in the center console sets the PSM system to a particularly sporty mode. In this mode, the ambitious driver can push closer to the limit range of the vehicle while remaining in a safe environment. However, PSM remains constantly active in the background.
PSM Sport mode can be activated independently of the selected driving mode.
“PSM off” is activated as usual by a long press on the PSM button.

4.8.4 Overview of Mode switch from Sport Chrono package (SCP)

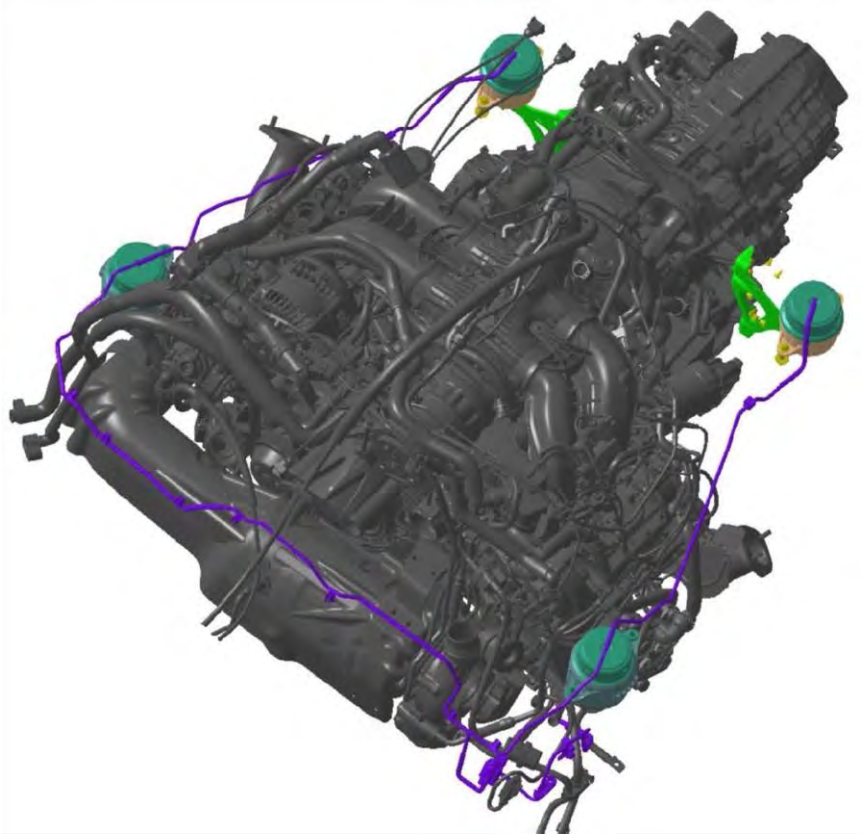
	Mode switch (Sport Chrono Package)				
	- O -	**- S -**	**- S+ -**	**- I -**	Sport Response button
	NORMAL 	SPORT 	SPORT PLUS 	INDIVIDUAL 	
					 for a maximum of 20 s
Drive					
Engine management	Normal	Sport	Performance	Preselection	Selected mode
Dynamic Boost	Normal	Sport	Performance	**Normal Sport Sport Plus**	O, S, S+ or I
Accelerator pedal characteristic	Normal	Sport	Performance		
Idle speed increase	–	active	active		
Rev-limiter	Normal	Sport	Sport		
Intermediate throttle application for downshifts	–	active	active		
Backfire	–	active	–	Individual	Engine
PDK shift characteristic	Normal	Sport	Performance	**Sport chassis** PASM Auto Start Stop Virtual gears Sports exhaust system Wing	**= Sport Plus**
Launch Control	–	–	active		
Auto Start Stop	active	–	–		
Virtual gears	active	–	–		
Chassis					
Dynamic engine mounts	Normal	Sport	Performance		
PASM[1)]	Normal	Normal	Sport		
PSM	"PSM Sport" function via PSM button on center console			Other	PDK
Other				**= Preselection** Normal or Sport or Sport Plus	**= Sport Plus** with shift characteristic Sport Response
Dynamic cornering light	Normal	Sport	Sport		
Dynamic high beam (option)[2)]	Normal	Sport	Sport		
Adaptive cruise control (option)[3)]	Normal	Sport	Sport		
Sports exhaust system		active	active		
Rear spoiler	Speed-sensitive				

1) PASM program additionally adjustable individually via PASM button

2) Dynamic high beam only in conjunction with PDLS Plus (LED headlights)

3) In conjunction with the option adaptive cruise control incl. Porsche Active Safe (PAS)

4.8.5 Porsche Active Drivetrain Mount (PADM)



Overview of dynamic engine and transmission mounts 4_18_17

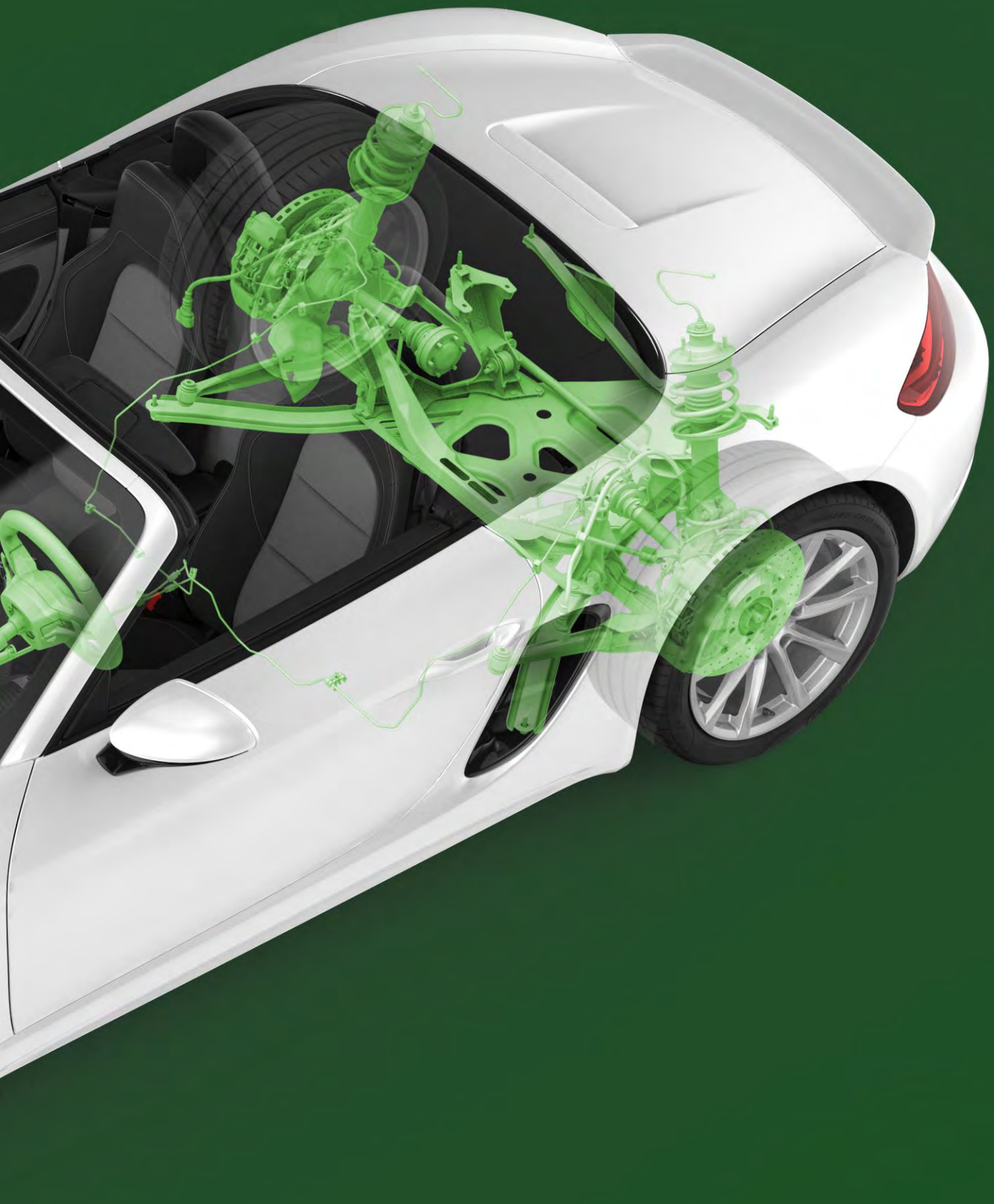
The 718 Boxster MY17 models feature a 4-point drivetrain mount. The engine now has two switchable and vacuum-controlled engine mounts as standard (in comparison with the central non-switchable engine mount of the previous model).

The standard transmission mounts are two conventional hydraulic mounts.

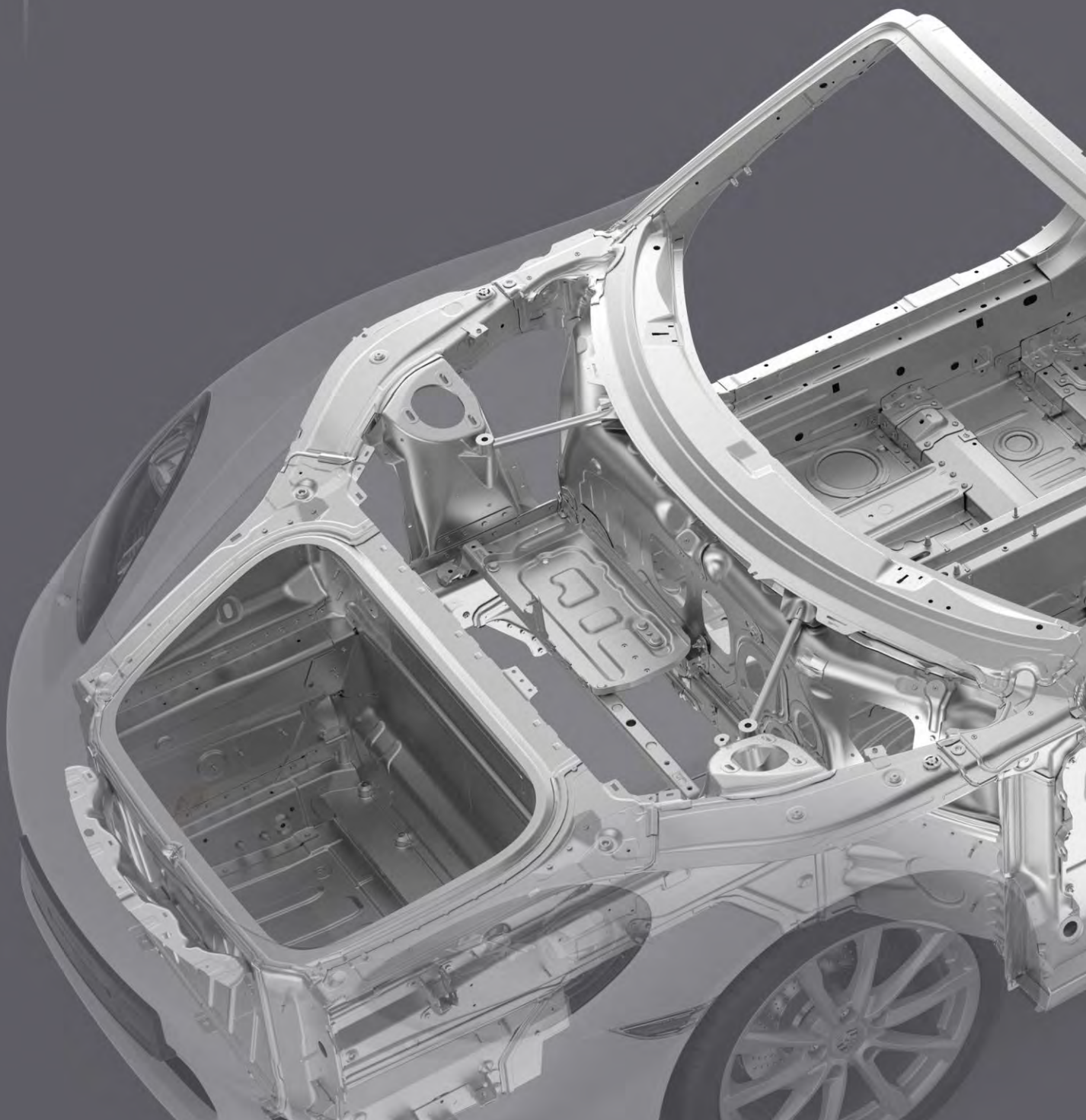
The optional transmission mounts are designed as active hydraulic mounts for I-no. PADM (in combination with Sport Chrono). They use the magnetorheological fluid familiar from previous PADM mounts.

Maintenance

The engine must be lowered by approx. 50 mm (measured at the engine mount pin) in order to remove the engine mounts. It is also not necessary to disconnect the coolant lines, so that there is also no need to drain, fill and bleed these lines.



Group 5
Body



5 Body

5.1 Introduction

When developing the 718 Boxster MY17 (982), it was largely possible to adopt the Boxster MY12-16 (981) body.

The body front section, floorpan assembly and rear end were adopted virtually unchanged. Modifications here only affect individual holders or pins that were either added or relocated.

5.2 Comparison of technical data

	Unit	718 Boxster MY17 (982)	Boxster MY12-16 (981)
Bodyshell weight (without add-on parts)	kg	219	217
cd value	-	0.32	0.31
Length	mm	4,379	4,374
Width (exterior mirrors folded in)	mm	1,801	1,801
Height (standard chassis)	mm	1,281	1,282

Extract, data available at copy deadline, subject to change

The increase in weight of the bodyshell results in the following:

- 4-point mount: bearing brackets for four-point engine mount
- Side section profile above the tail light.

5.3 Box-type bodyshell

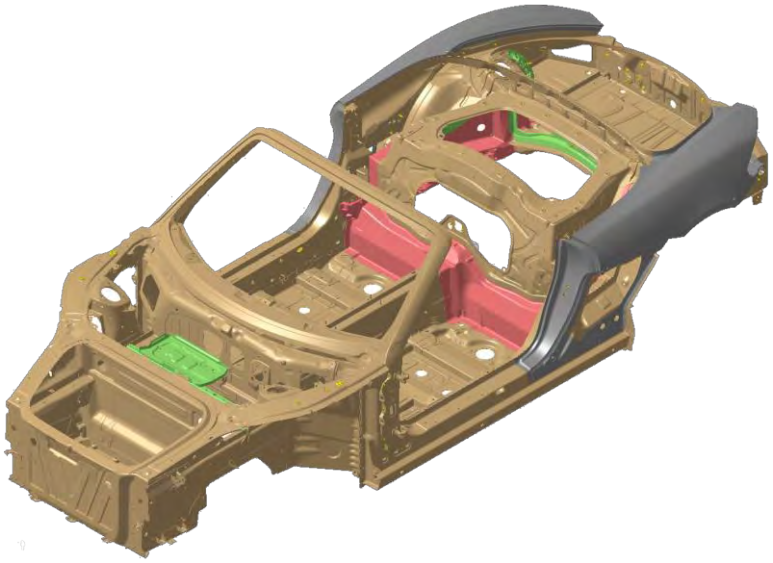
The bodyshell of the 718 Boxster 982 is based on the bodyshell of the Boxster 981. Changes were required only in the following areas:

- Body front section: front end holder, battery box cross member, battery box
- Rear end: expanded foam part, bolt for shaker, engine mounting connection, rear wall, radiator reinforcement, crash reinforcement, shape of side panels

The same joining techniques are used. This way that the familiar flow-drill screws, high-strength blind rivets, MAG welding, spot welding and two-component body adhesive are still used in the event of repairs.

Objective

The objective of bodyshell construction was to implement the new design while at the same time largely adopting the existing bodyshell. The basic structure of the box-type bodyshell has not changed here.



Box-type bodyshell of 718 Boxster MY17 5_01_17

Design

The 718 Boxster models have the same body as that used for the Boxster 981 models in an aluminum/steel composite design. The idea behind this intelligent lightweight construction concept is use of “the right material in the right place”.

This means:

- Extensive use of aluminum to reduce the vehicle weight
- Use of ultra-high-strength steel for greater body rigidity and optimum passenger safety

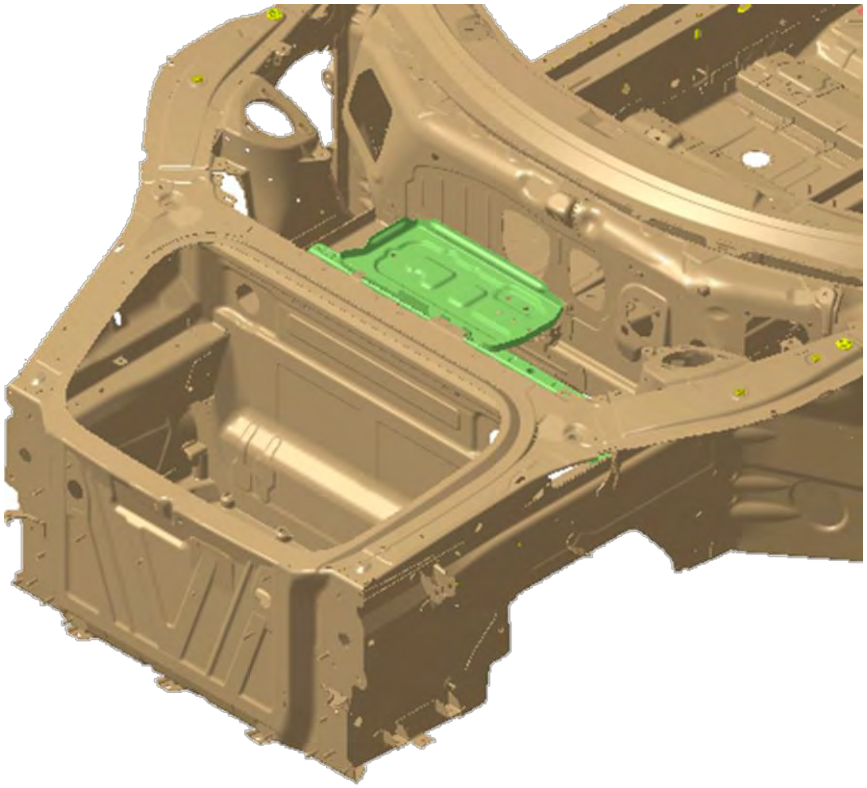
Repair

The repair concept was adopted in its entirety from the Boxster 981 models.

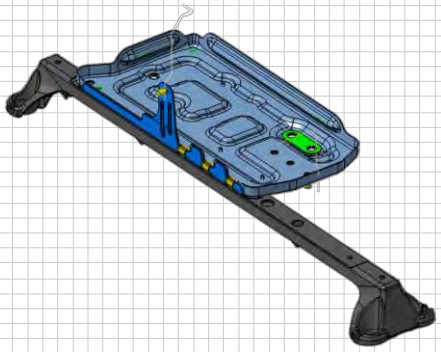
5.3.1 Body front section

Design

In the body front section, the battery box cross member and the battery box itself have been modified. On the 718 Boxster MY17, these parts are designed as assembly parts and are bolted to the bodyshell.



Body front section 718 Boxster MY17 5_03_17



Battery box cross member 5_02_17

Repair

The repair concept for the body front section is the same as for the Boxster 981 models. This means that in the event of structural damage that exceeds the specified bodyshell tolerance of the cast components of +/- 2 mm, the luggage compartment liner or, depending on the further damage, the entire body front section must be replaced.

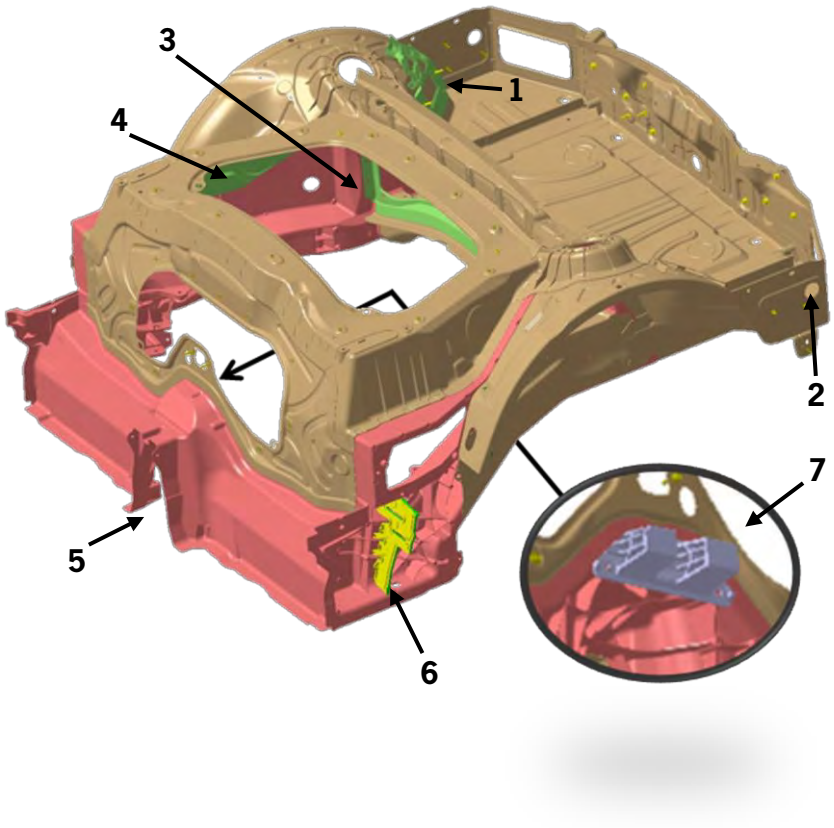
Aluminum sheet
Extruded aluminum profile
Cast aluminum
Adopted from Boxster (981)
Deep-drawn steel

1 Bracket for convertible top control unit
2 Bolt for shaker
3 Rear wall
4 Closed hole
5 Carrier 3 with four-point engine mount
6 Expanded foam part
7 Crash reinforcement

5.3.2 Rear end

Design

The rear end was mainly adopted from the Boxster 981. The changes affect the components listed in the diagram below.



Rear end 718 Boxster MY17 5_04_17

Repair

The repair concept for the rear end is the same as for the Boxster 981 models. This means that in the event of structural damage that exceeds the specified bodyshell tolerance of the cast components of +/- 2 mm, the entire rear end must be replaced.

5.3.3 Add-on parts

It was possible to adopt the front and rear lids from the Boxster 981 models. Consequently, it was only necessary to redevelop the doors and fenders.

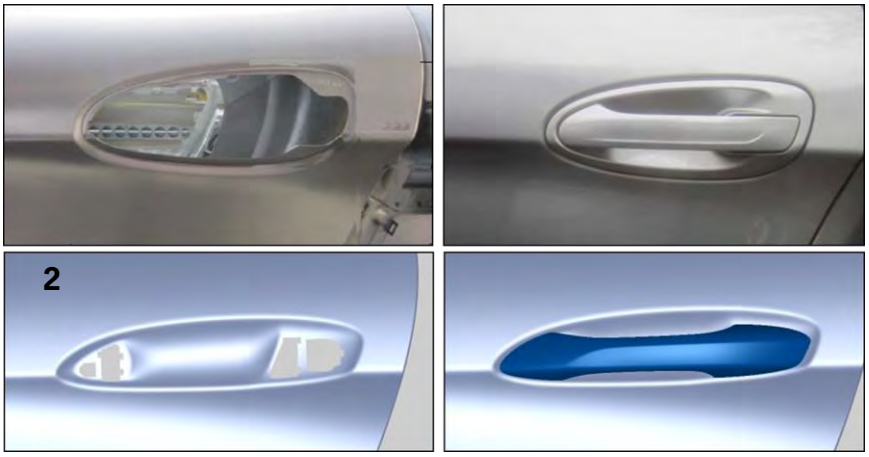
Doors

Design

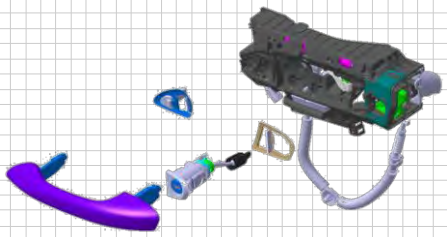
The door shape was adopted from the Boxster 981 models. Since the finger plate has been omitted on the 718 Boxster models, the outer door panel and channel reinforcement have a modified cut in this area.

Comparison of outer door shell on Boxster 981 (left) with 718 Boxster 982 (right) 5_05_17

The door handle is integrated directly in the door outer shell, which is deep drawn at this point. The closing element is bolted to the outer door panel.



Door outer shell 718 Boxster MY17 5_07_16



Outer door handle and closing element 5_06_17
718 Boxster MY17

1 Handle recess on Boxster MY12-16
2 Handle recess on 718 Boxster MY17

Fenders

Design

The shape of the fenders was adapted due the modified front headlights. The connection concept corresponds to that of the Boxster MY12-16 models. The fenders are still made of steel. However, the headlight retaining plate bolted to the fender is omitted, similar to the 911 Carrera MY17 models.

Fender 718 Boxster MY17 5_08_17

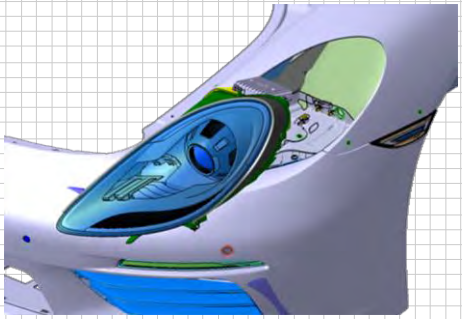
Repair

The repair concept is the same as for the Boxster 981 models.

Headlight retaining plate

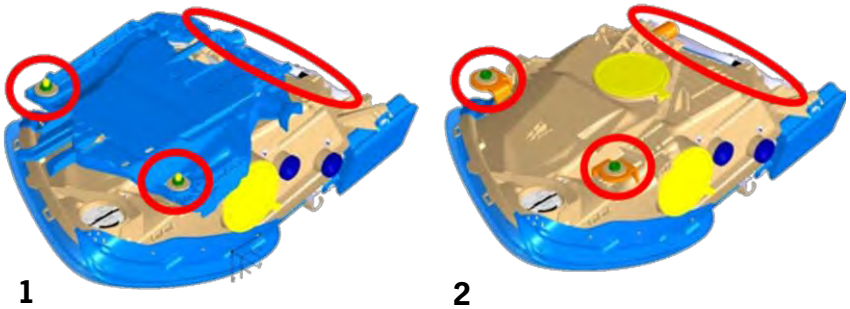
Design

The xenon headlights no longer have a retaining plate, the main headlight housing is secured to the bodyshell directly by two screws and located in position by two pins.



Headlight connection 5_10_17

1 Headlight with retaining plate on Boxster MY12-16
2 Headlight without retaining plate on 718 Boxster MY17



Retaining plate 5_09_17

Repair

The front apron must be detached to remove the headlights. The unlocking key is no longer included in the tool kit. The bulbs for the additional high beam must be replaced in the workshop.

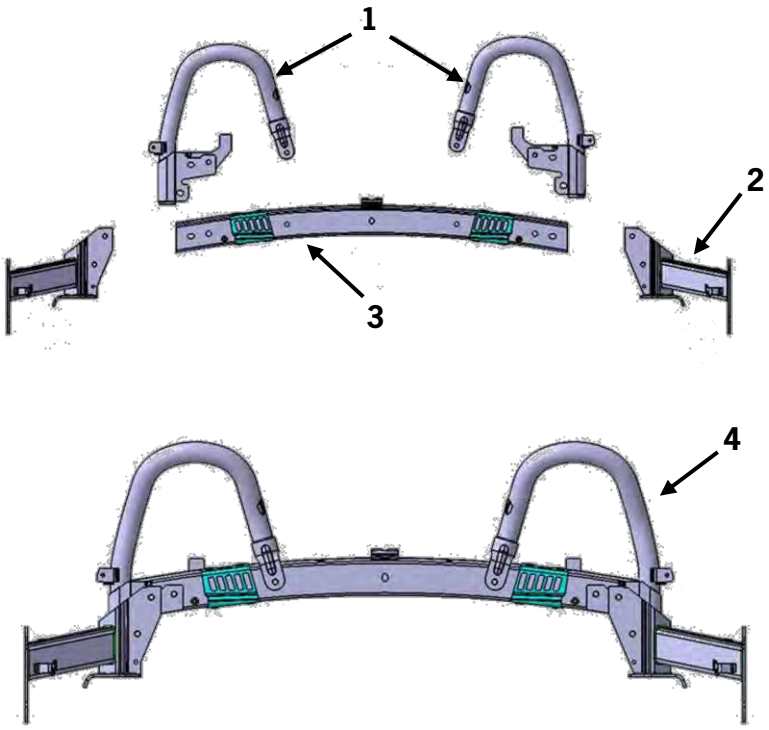
5.3.4 Passive safety

Objective

The passive safety of a vehicle includes all measures that are taken to minimize the consequences of an accident. Various types of high-strength, super-high-strength and ultra-high-strength steel are used for this purpose on the 718 Boxster models. These materials are used in such a way in the vehicle that the impact created in an accident is routed through the bodyshell via defined load paths. The objective is to prevent any deformation or even destruction of the passenger compartment.

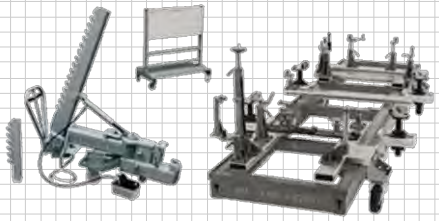
Design

The familiar fixed roll-over protection is used on the 718 Boxster. It consists of the roll-over bars, cross member and mountings.



Roll-over protection 718 Boxster MY17 5_11_17

1 Roll-over bar, left/right
2 Cross member
3 Mountings, left/right
4 Overall system



Straightening system package V.A.G 1920 5_12_17

Electronic measuring system VAS 6527 5_13_17

5.3.5 Special tools & workshop equipment

Special tools

Body repairs on the 718 Boxster MY17 are performed using the following:

- the Boxster 981 straightening set (VAS 6756A)
- the gantry attachment for the Boxster (VAS 5007/69)
- the measuring adapters of the electronic measuring system.

This equipment is set up and used in the same way as existing straightening benches for current vehicle models. It is manufactured by the familiar companies Car-o-liner and Celette.

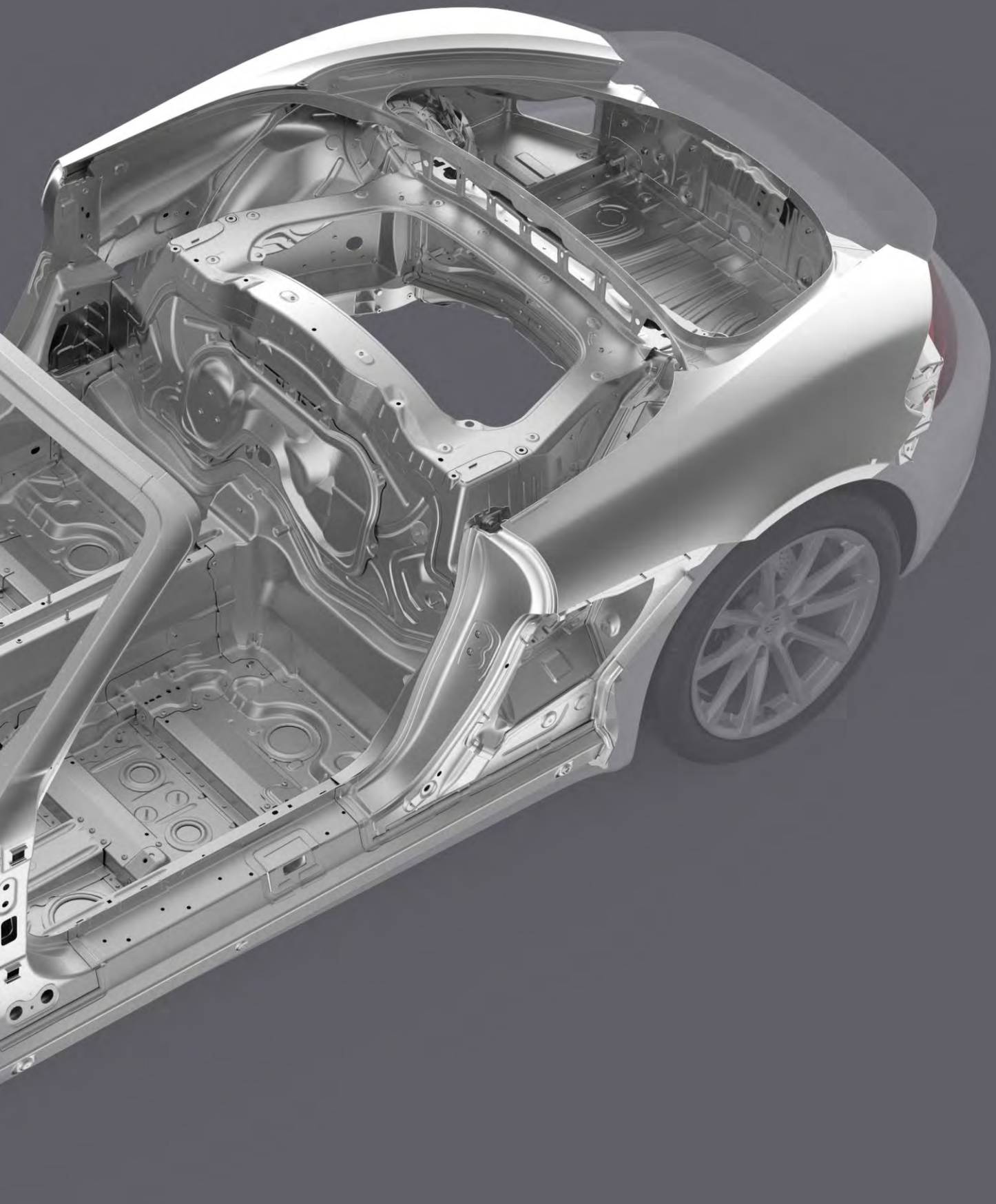
Workshop equipment

The workshop equipment primarily comprises a body measuring and straightening system. Various options are available here. A detailed description of the approved tools can be found in PIWIS. Only the most important workshop equipment is described briefly here.

The complete body straightening system package (V.A.G 1920) consists of straightening bench, straightening device with foot pump and accessory trolley.

The electronic measuring system (VAS 6527) is a further possibility for measuring and repairing the body.

Graphic	5_12_17	5_13_17
Order number	ASE 40645100000	ASE 40645600000
Purpose	Body repairs	



Group 6
Body – Exterior equipment

6 Body – Exterior equipment

6.1 Introduction

The future: Open as always. “Roadster dreams have always borne the name Porsche. The Porsche 356 No. 1 already followed this concept. We now launch the dynamic future of our mid-engine roadsters.” Legends of tomorrow. “The 550 Spyder was the ancestor of all super Sports Cars. Its successor, the 718, set standards on the race track. The 718 Boxster MY17 now follows this tradition. The Intelligent Performance maxim still holds as true today as it did then.” Less is more: Power. “Compact design combined with efficiency: the flat-four turbo engine achieves a quantum leap in performance. There is now no Boxster with less than 300 hp!”

718 Boxster MY17 6_01_17

In addition to the new generation of engines, the 718 Boxster has a much more striking design compared to the previous model, an even sportier chassis as well as a host of new performance, comfort and assistance systems. 718. The number that will make your heart beat faster.

The 718 Boxster MY17 remains compact, while its sharper lines lend the vehicle a much sportier design. The 718 Boxster has a very impressive look. It shows its strong character with greater precision of edges and curves. It is noticeably sporty due to its large wheels with snug wheel openings and short overhangs, clear dynamics and tight proportions due to emphasized air intakes, a low silhouette and a very flat elongated roof. In spite of a much sharper design, the 718 Boxster remains instantly recognisable as a Boxster.

6.2 Front

The horizontal geometry of the air intakes makes the front appear even wider. The fenders are positioned higher than the front hood and the design language of the fenders emphasizes the new headlight design, which incorporates an expressive interior and integral LED daytime running lights.

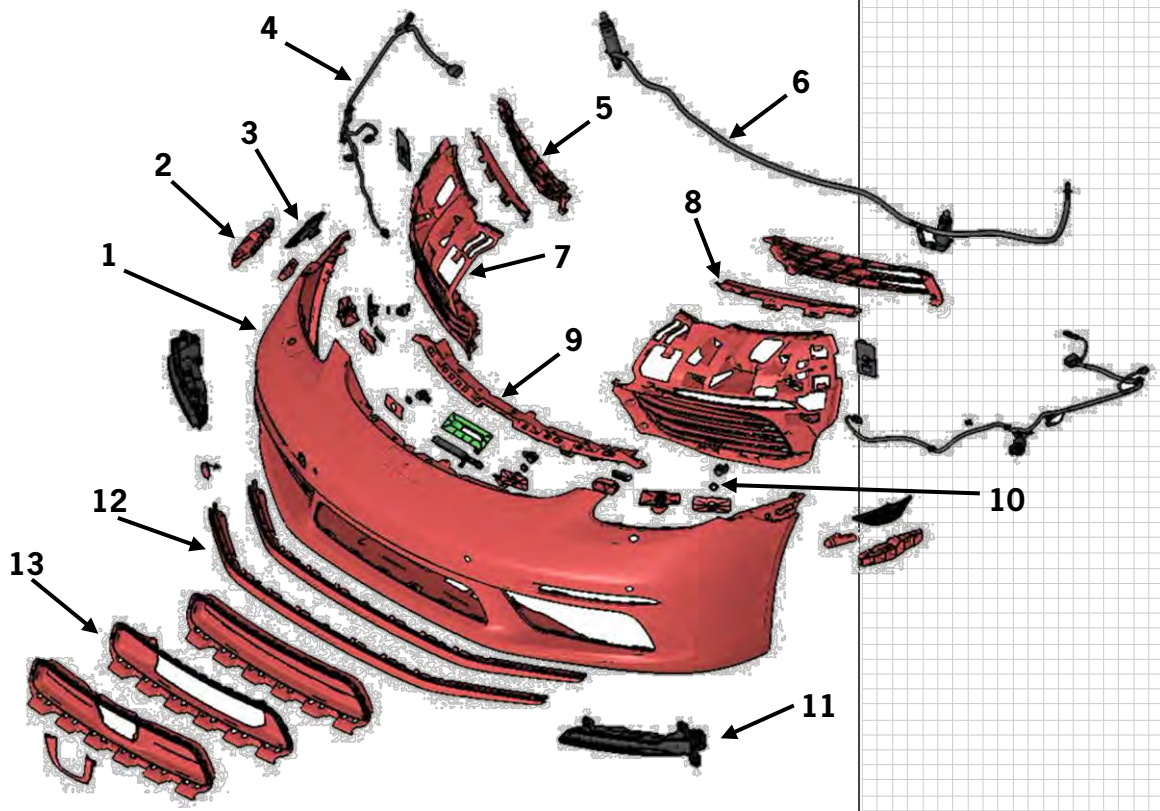
Front view 06_02_17

6.2.1 Front apron

Objective

The front apron of the 718 Boxster has a new impressive shape that is even more distinctive. The front section is flatter and the lines in the front apron lead outwards to make it appear wider from the front. The nose is lower and therefore gives the overall impression that the vehicle is closer to the ground.

The design edges in the top section of the front apron, which continue the contours of the V-shaped profile, are visually striking. This effect is supported by the narrow front light modules above the large side air intakes, which accommodate a position light and direction indicator.



Front apron 718 Boxster MY17 6_03_17

The center part of the new front apron is characterized by two horizontal slats, which further emphasize the visual width of the 718 Boxster.

1 Front apron
2 Cover holder
3 Side light
4 Bumper wiring harness
5 Slat support
6 Tube for headlight cleaning system
7 Grille
8 Grille trim
9 Bracket cover
10 Parking assistant sensor
11 Direction indicator light
12 Spoiler lip
13 Center grille

The much larger air intakes on the front impressively visualize the new turbo engine concept on the outside.

Repair

The connection points joining the front apron to the bodyshell are the same as those on the Boxster 981 models.

6.3 Side view

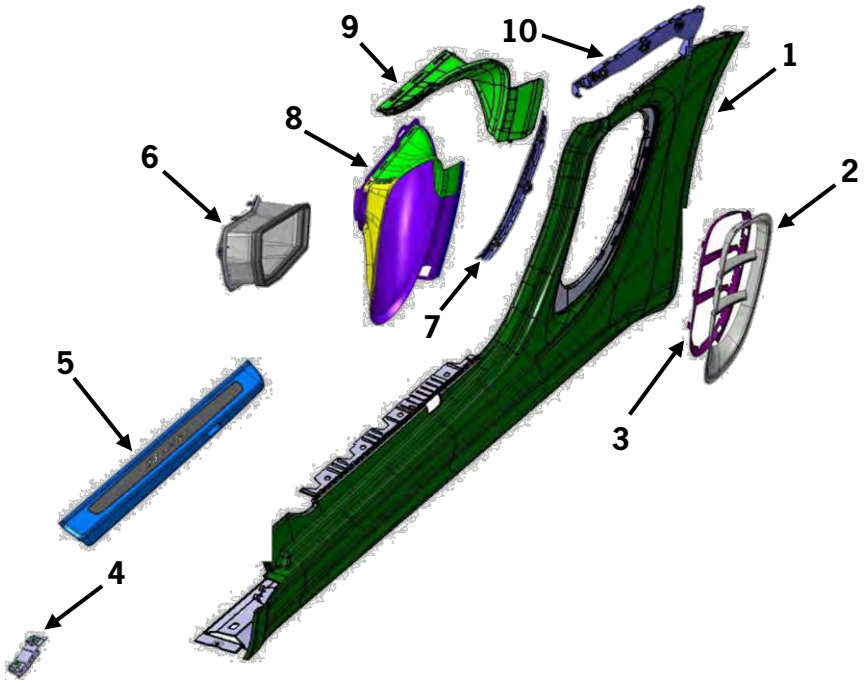
In the side view, the 718 Boxster MY17 models captivate through their unmistakable lines and new design incorporating mirrors, fenders, doors, air intake trim and sill cover drawn with greater precision. The new mirrors are fitted with a V-shaped base and complement the sporty overall appearance of the 718 Boxster. The new door handles are another detail. They do not have a separate finger plate. The handle area on the door appears more defined and harmonious as a result. The indent in the door and the more precisely drawn contour edge lead to redesigned air intake with 2 slats. The enlarged air intake trim also visually emphasises the increased power of the 718 Boxster.

Side view 6_04_17

The fabric top of the 718 Boxster has a flat contour when closed, a feature typical of a Sports Car. The convertible top opens and closes fully automatically in 9 seconds at the push of a button – even when the vehicle is travelling at speeds up to 30 mph (50 km/h).

6.3.1 Side skirts

The basic shape of the side skirts has been adopted from the Boxster MY12-16 (981) models. The new trim for the air intake on the 718 Boxster models has two cross bars. The sill cover has a clearly visible contour edge that brings the vehicle visually closer to the road. The vehicle also appears lighter in the center as a result.



Side skirts 6_05_17

1 Side skirts
2 Air intake trim
3 Retaining frame trim
4 Front retaining strip
5 Door entry guard
6 Inner air duct
7 Retaining strip, centre
8 Side air guide
9 Upper part of air guide
10 Rear retaining strip

Air intake trim 6_06_17

Repair

The connection concept corresponds to that of the Boxster 981 models. The retaining strips are screwed onto the bodyshell and the side skirts are then clipped into position.

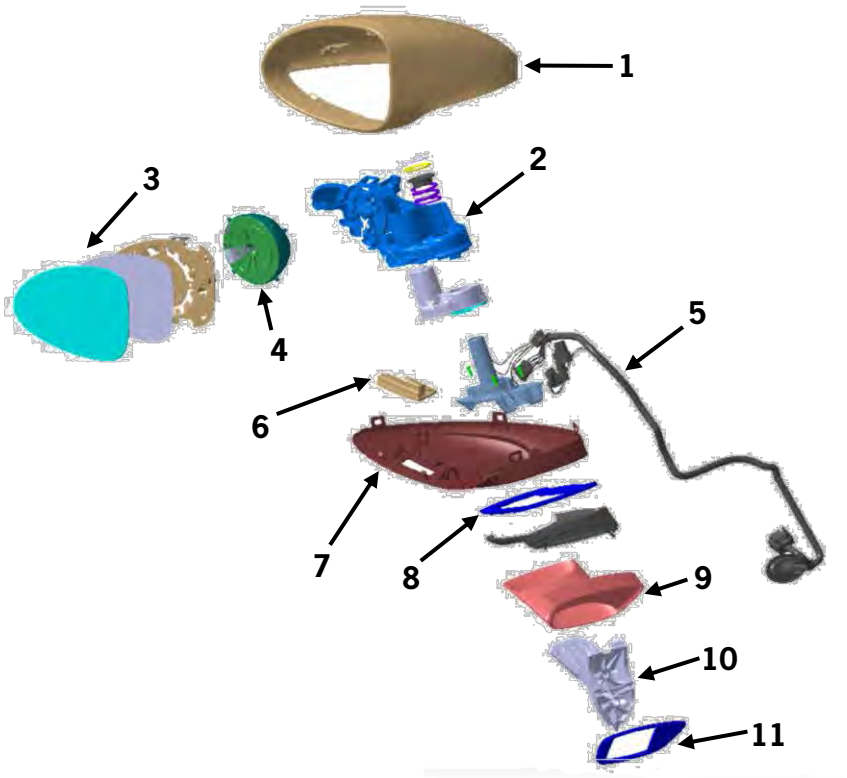
1 Mirror housing
2 Reinforcing plate incl. spring
3 Mirror glass
4 Glass adjustment drive
5 Wiring harness
6 Courtesy lighting
7 Housing cover
8 Seal
9 Mirror base covers
10 Mirror base
11 Seal

Exterior mirror 718 Boxster MY17 6_08_17

6.3.2 Exterior mirrors

Design

The functions of the exterior mirrors correspond to those of the 981 Boxster models. The exterior mirrors have a V-base design and, for the first time, an electric folding function. The upper part is painted in the body color, while the lower part is a black grained plastic component.



Exterior mirror 718 Boxster MY17 6_07_17

Repair

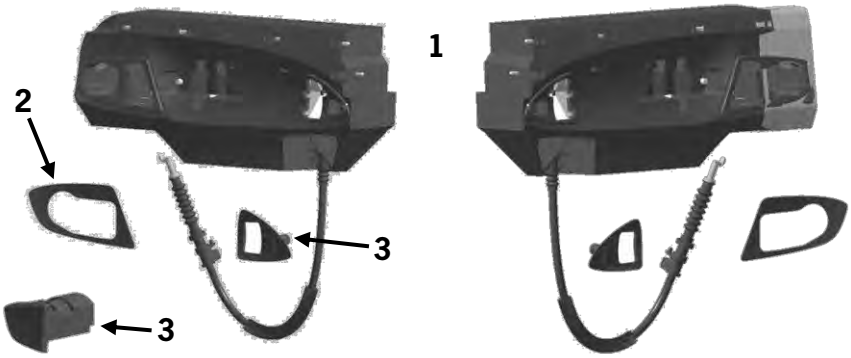
The repair concept provides for replacement of the following components:

- Mirror base
- Mirror housing
- Mirror glass
- Glass adjustment drive
- Seals
- Courtesy lighting
- Wiring harness
- Housing cover
- Reinforcing plate including spring

6.3.3 Doors

Design

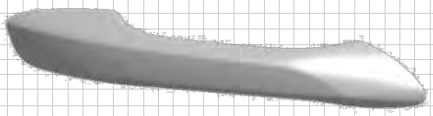
The basic door shape was adopted from the Boxster 981 models. The doors have been adapted in the area around the finger plates through the redesigned door handles. The supporting bows have also been redesigned.



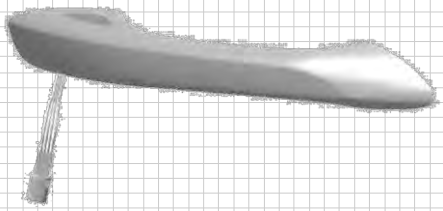
Catch bar 718 Boxster MY17 6_09_17

Repair

The supporting bow is supplied as a spare part with a pre-fitted bowden cable – the bowden cable is also available separately and can be replaced individually. To facilitate assembly, the supporting bow is first clipped in and then screwed into position. Assembly is therefore easier compared to the Boxster 981 models. Seals and hardware accessories are available separately as spare parts. The repair concept is the same as for the Boxster 981 models. KESSY handles are primed as a spare part and supplied with built-in KESSY sensor. The handles are painted in an assembled state.



Door handle without KESSY on 718 Boxster MY17 6_10_17



Door handle with KESSY on 718 Boxster MY17 6_11_17

1 Supporting bow
2 Base
3 Holder

6.4 Rear

The rear end of the 718 Boxster MY17 seems even more dynamic and wider. The feature that stands out on the rear end of the 718 Boxster is the trim strip with integral Porsche logo between the tail lights, which makes the vehicle seem much wider. The completely redeveloped tail lights also catch the eye immediately. The three-dimensional technology in the inner part is visible through the clear glass lens. The night design impresses with sharp, homogeneous tail light and brake light graphics.

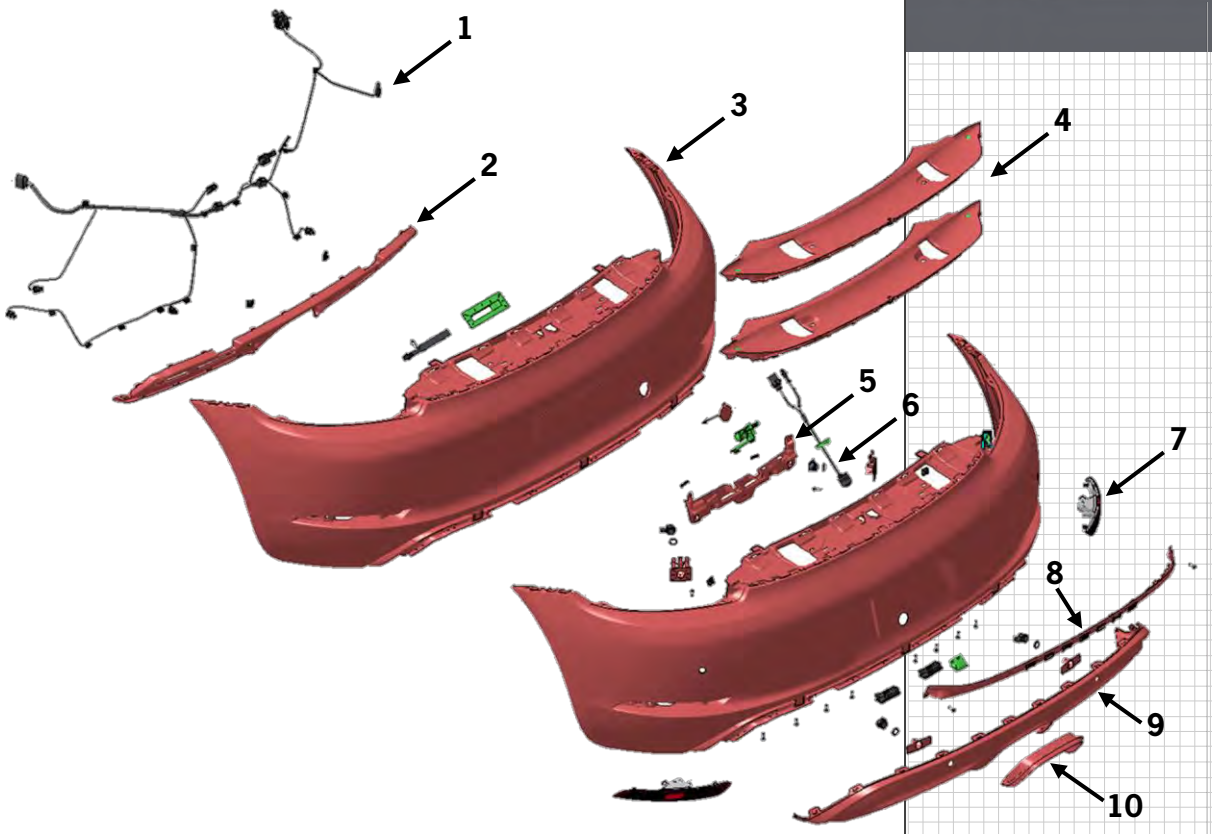
Rear view 06_12_17

The reversing lights are integrated in the four lower brake lights. The tailpipes for the new exhaust systems are also located at the rear. As usual, the 718 Boxster models have one single-tube tailpipe, while the 718 Boxster S models are fitted with one twin tailpipe, which also visually suggests the higher engine performance. Their design has only been slightly adapted in order not to risk their recognition value as typical Porsche design elements. The wing located above is extended automatically at 75 mph (120 km/h) to reduce lift and improve road holding.

6.4.1 Rear apron

Design

The rear bodywork is now more sharply defined. The additional edge at the same height as the reflectors ensures that the vehicle looks significantly wider, commanding an appearance of even greater superiority. The diffusor is positioned higher and the enlarged black surface makes the rear end seem lighter.



Rear apron 6_13_17

1 Wiring harness for rear apron
2 Holder
3 Rear apron
4 Upper cover
5 Cable holder
6 Reversing camera
7 Rear fog light, reflector
8 Trim strip
9 Trim incl. logo
10 Heat shield, tailpipe

Repair

The connection and repair concept was adopted from the Boxster 981 models.

Spoiler blade connection 6_14_17

1 Rear spoiler drive unit
2 Drive unit bolted connection
3 Drive unit connection to bodyshell

The spoiler must be extended before the upper part of the spoiler can be removed. If the drive malfunctions, the emergency release familiar from the previous models can be performed.

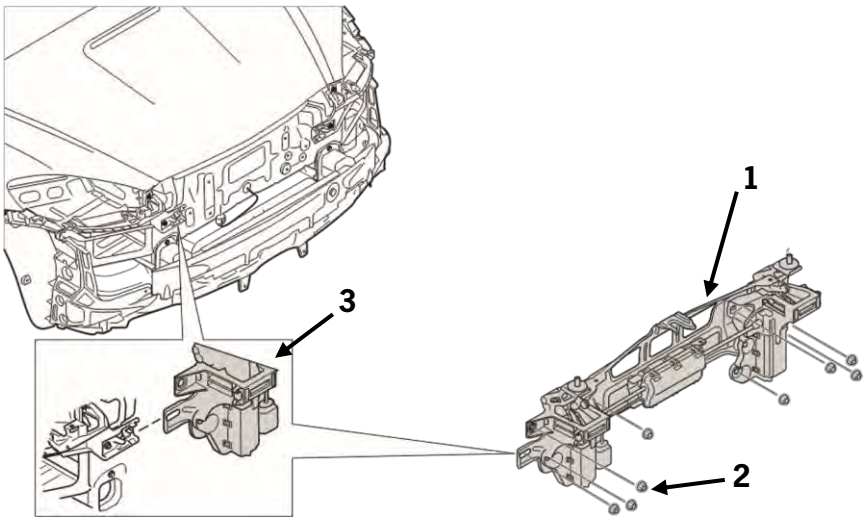
6.4.2 Rear spoiler

Objective

To optimize the drag coefficient and increase the contact pressure on the rear axle at higher speeds, all 718 Boxster models are fitted with an electrically retractable rear spoiler. The rear spoiler was largely adopted from the Boxster 981 models.

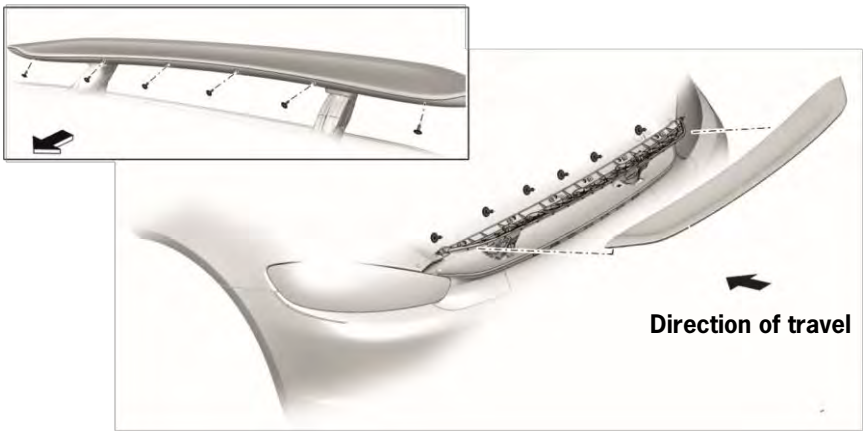
Design

The drive corresponds to that of the Boxster 981 models. It was also possible to adapt the connection concept to the bodyshell and mounting for the spoiler blade.



Rear spoiler drive for 718 Boxster MY17 6_15_17

The rear spoiler blade is 20 mm wider than on the previous models.



Screw connection on upper part of spoiler blade on 718 Boxster MY17 6_16_17

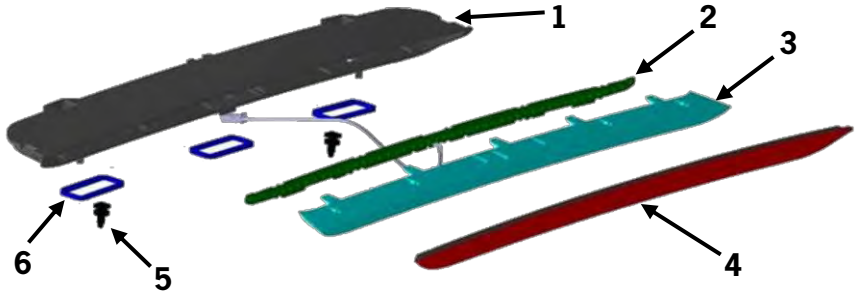
Repair

As on the previous models, the spoiler upper and lower parts, drive unit and buffer stops of the kinematic system can be replaced.

6.4.3 Rear lid

Design

The rear lid corresponds to that of the Boxster 981 models. There are changes only in the area of the raised brake light, which has a new lighting concept. The connection to the rear lid is realized by way of two screw points. As on the Boxster 981 models, the sealing concept includes three bonded-on seals. The trim is bonded directly to the brake light housing.

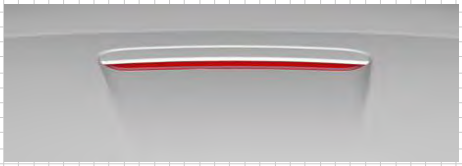


Raised brake light 6_17_17

Repair

The repair concept for the rear lid and the raised brake light corresponds to that of the Boxster 981 models.

Raised brake light 6_18_17



Brake light trim 6_19_17

1 Housing
2 Plate
3 Light guide
4 2-component cover
5 Pin
6 Seal

6.5 Roof systems

Design

The convertible top on the Boxster 981 models was completely adopted for the 718 Boxster MY17 models. The only change is in the position of the synchronization control unit. The unit is no longer installed centrally on the rear bulkhead to the interior of the luggage compartment but is bolted to the inside of the right wheel arch.

Installation position of synchronization control unit 6_20_17

Synchronization control unit 6_21_17

1 Insert
2 Synchronization control unit

Repair

The repair concept for 718 Boxster MY17 convertible top is the same as that of the Boxster 981 models.

Group 7
Body – Interior equipment

7 Body – Interior equipment

7.1 Introduction

Intuitive handling, performance-oriented ergonomics, clear design. The interior of the 718 Boxster MY17 is also designed entirely for sporty driving. A strong emphasis on horizontal lines lends the new dashboard design an imposing look, while retaining the usual high Porsche ergonomic standards: the elevated center console shortens the distance between the steering wheel and the gear/selector lever. The clear arrangement of the function buttons saves time. Pure motor racing: the new sports steering wheel was derived from the 918 Spyder. The optional GT sports steering wheel with a smaller diameter further enhances the cockpit feeling.

Interior of 718 Boxster 7_01_17

The three round instruments with a central rev counter and 4.6 inch color screen are typical of a Boxster. The fundamentally new Porsche Communication Management (PCM) system with 7-inch multi-touch screen with high-quality glass surface blends perfectly into the center console.

- Diameter of sports steering wheel with 918 Spyder design: 375 mm
- Diameter of GT sports steering wheel: 360 mm

Seat systems

The seat system for all models was completely adopted from the Boxster 981 MY12-16 models.

Trim panels, storage facilities and luggage compartment

The trim panels, storage facilities and luggage compartment were largely adopted from the Boxster 981 models. Changes affect the following areas:

- Dashboard upper section
- Dashboard air vents

Passive safety systems

All passive safety systems were adopted from the Boxster 981 models.

Operating and display concept

The operating concept is essentially the same as that of the Boxster 981 models.

7.2 Trim panels, storage facilities and luggage compartment

7.2.1 Trim panels

Design

Apart from the dashboard upper section, it was possible to adopt all trim panels from the Boxster 981 models.

7_02_17

The air vents are also new and lend the dashboard an even more striking appearance.

Repair

The connection concept of the dashboard upper section corresponds to that of the Boxster 981 models.

7.2.2 Storage facilities

Design

As already familiar from the 911 Carrera MY17, the 718 Boxster MY17 also has a raised storage compartment.

Function

This storage compartment contains a USB port that is specifically intended to allow an iPhone to connect to Apple CarPlay if the PCM is equipped with this option. This port will also charge the phone. This is the only USB port that will work with Apple CarPlay. While the phone is connected, it can be stored in this compartment.

Air vents 7_03_17

Center console storage

1 Mobile phone tray

2 USB port

Information on the PCM can be found in Group 9.

7.3 Operating and display concept

The operating and display concept was adopted from the Boxster 981 models. Changes have been implemented in the following areas:

- PCM
- Trim/selector lever operation

7.3.1 PDK cover

Design

The basic structure of the PDK cover was adopted from the Boxster 981 models. Like the GT vehicles from these model years, the shifting direction “+” of the manual gate has been moved to the rear.

Shift gate 7_06_17

The logo for the model designation across all models has also been standardized to “718”.


718 Boxster

Group 8
Heating and air conditioning

8 Heating and air conditioning

8.1 Introduction

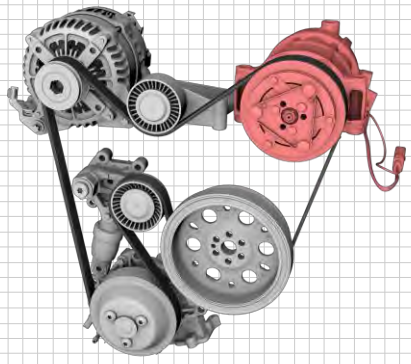
Like its predecessor, the 718 Boxster MY17 offers two-zone climate control, which continues to meet the highest demands in terms of comfort. At the same time, the average power consumption of the refrigerant compressor has been reduced and the overall performance of the air conditioner improved. This leads to faster response of the air conditioning system as well as a reduction in engine fuel consumption and emissions.

In order to meet the current legal requirements and the goals for “reduction of fluorinated greenhouse gases”, the new refrigerant R1234yf is used for the first time at Porsche – in the 718 Boxster. R1234yf will be used in the entire European region (EU28 countries). In addition to the USA, other markets outside the EU countries will also receive the refrigerant R1234yf. The refrigerant R134a will continue to be used in the other markets (RoW).

8.2 Control panel

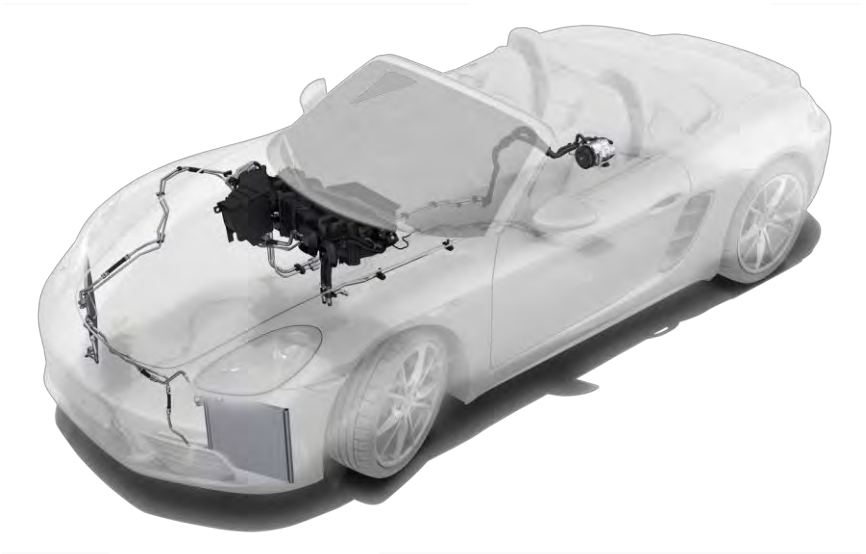
The control panel for the OAU (Operating and Air-conditioning Unit) has been adopted from the predecessor model. The functionality and the operating logic remain unchanged.

The control unit integrated in the OAU regulates and controls all the heating and air conditioning system components. This also includes actuation of the newly added magnetic clutch of the electronically controlled A/C compressor (see section “Air-conditioning compressor”).



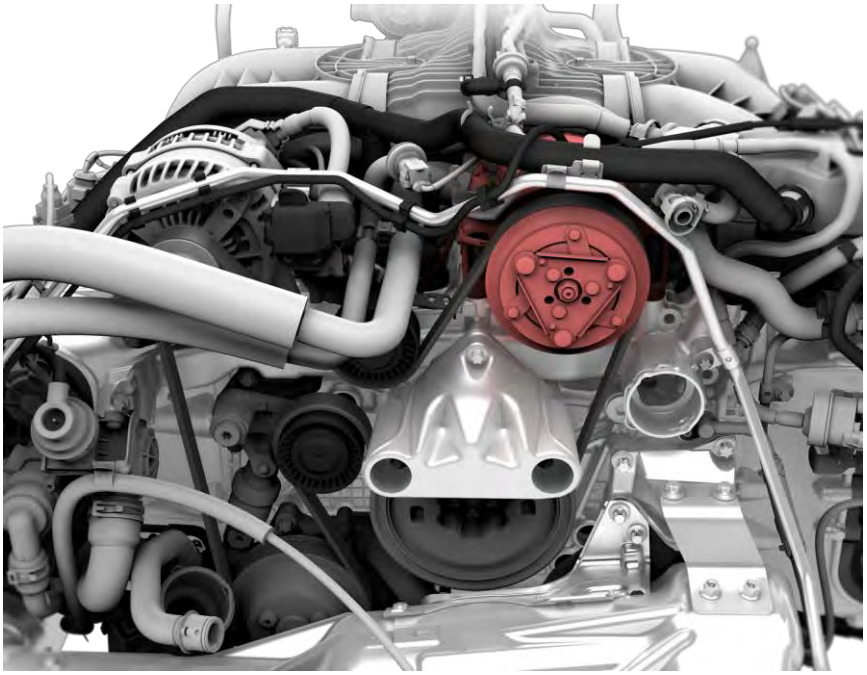
Compressor belt drive 8_02_17

8.3 Refrigerant circuit



Refrigerant circuit – mid-engine concept 8_01_17

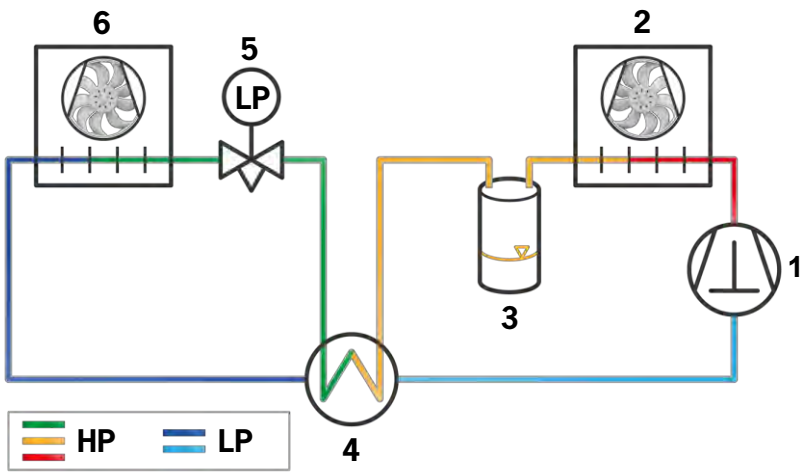
The refrigerant circuit essentially differs from the predecessor model only through the use of an electronically controlled A/C compressor with a magnetic clutch and swash plate. Furthermore, an IHE (Internal Heat Exchanger) is used in conjunction with optimized line routing.



Compressor position in engine compartment 8_03_17

A new refrigerant oil is also used in conjunction with the introduction of the new refrigerant (R1234yf). This oil must not be mixed with other oils or lubricants.

8.3.1 System overview

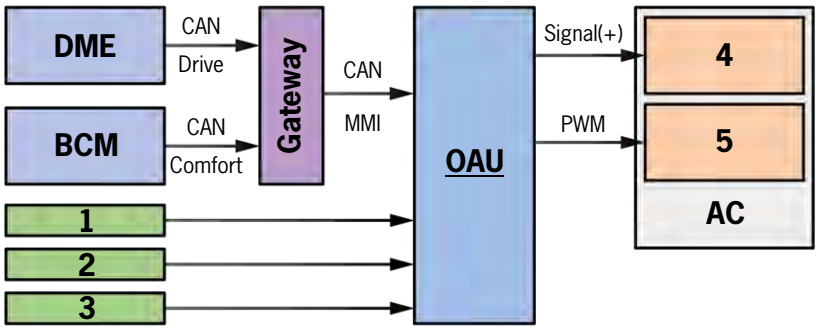


Schematic diagram of refrigerant circuit 8_04_17

1 Compressor
2 Condenser
3 Filter dryer
4 Internal heat exchanger (IHE)
5 Expansion valve
6 Evaporator

HP High pressure
LP Low pressure

8.3.2 Network topology



Block diagram 8_05_17

DME DME control unit
OAU Operating and Air-conditioning Unit (air-conditioning system control unit)
BCM Body control module, front

1 Evaporator temperature
2 Refrigerant pressure (high pressure)
3 Passenger compartment temperature
4 Magnetic clutch (compressor)
5 Control valve (compressor)

AC Refrigerant compressor

CAN Data

Drive CAN Drive
Comfort CAN Comfort
MMI CAN Man Machine Interface

8.3.3 Air-conditioning compressor

Compressor with magnetic clutch and control valve 8_06_17

The A/C compressor can be activated and deactivated via a magnetic clutch. The refrigerant delivery rate can be adjusted in the A/C compressor by actuation of the swash plate located in the compressor.

Function

Like the control valve, the magnetic clutch is actuated by the OAU.

Control of the A/C compressor is performed as a function of the following main input variables:

- **DME**
  - Engine load: torque request by driver
- **BCM**
  - Load management: generator load and vehicle electrical system voltage
- **OAU (sensors)**
  - Evaporator temperature (target/actual)
  - Desired interior temperature
  - Actual interior temperature
  - Refrigerant pressure (HP)

The evaporator temperature is the main input variable used for control of the solenoid valve and consequently of the swash plate position.

Magnetic clutch

The magnetic clutch ensures that the A/C compressor can be fully switched off. The compressor then no longer causes drag torque. This improves engine responsiveness when torque is requested by the driver and reduces fuel consumption.

Design

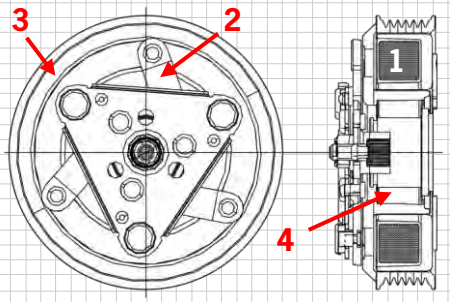
The magnetic clutch of the electronically controlled compressor features an aluminum solenoid coil winding. This reduces the weight of the magnetic clutch and therefore of the complete A/C compressor. The required power consumption is also lower than would be the case with conventional copper windings. Owing to the optimized design of the magnetic clutch and its windings, a lighter belt pulley mount is possible. This benefits the running smoothness of the compressor in conjunction with the new torsional vibration dampers.

8.3.4 Internal heat exchanger

Function

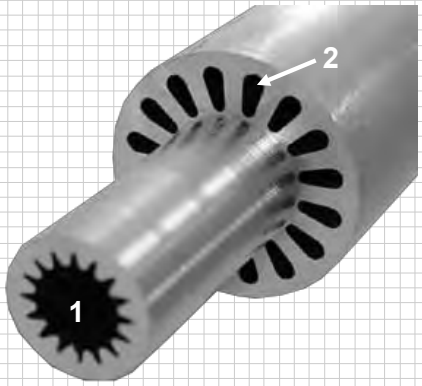
The task of the internal heat exchanger (IHE) is to exchange heat between the high-pressure and low-pressure sides (HP/LP). This takes place via a dual-pipe aluminum profile. The refrigerant under high pressure is routed into the outside of the dual-pipe profile. The refrigerant under low pressure is routed into the center of the pipe profile.

The refrigerant in the high-pressure side transfers heat to the refrigerant low-pressure side. The temperature of the refrigerant downstream of the condenser, i.e. upstream of the evaporator (HP), drops. The relative efficiency of the evaporator increases. Overall, this results in reduced fuel consumption.



8_07_17

1 Solenoid coil made of aluminum (Al coil)
2 Leaf spring for magnetic clutch
3 Torsional vibration damper
4 Belt pulley mount



Design of IHE 8_08_17

1 Low-pressure side (LP)
2 High-pressure side (HP)

Gray covers of the service connections => R1234yf refrigerant

Black covers of the service connections => R134a refrigerant

Due to the increase in the average compressor temperature, free air flow to the A/C compressor must be checked and ensured during servicing.

1 Low-pressure connection (coded)
2 High-pressure connection (coded)
3 Internal heat exchanger (IHE)
4 High-pressure sensor

Further advantages include:

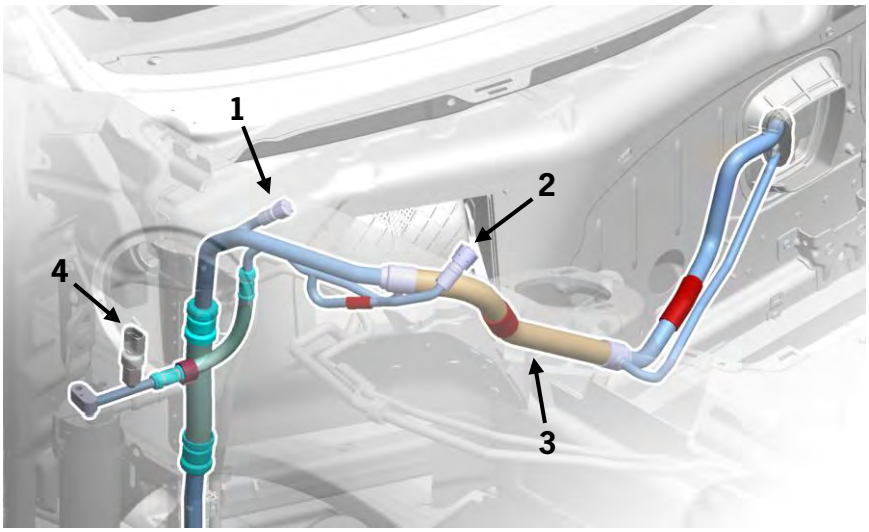
- Improvement of efficiency and performance of the system
- Any remaining fluid is re-evaporated in the IHE
- Improved compressor lubrication
- Increase in the average compressor temperature
- Increase in the cooling output
- Reduction in energy consumption of compressor
- Reduced engine CO_2 emissions

8.3.5 Service connections

Different refrigerants (R1234yf or R134a) are used in the 718 Boxster MY17 depending on the country version. This requires different service connections. In order to avoid confusion, the service connections are mechanically coded depending on the refrigerant used and the covers have different colors.

Installation position

Like on the previous model, the service connections are located close to the housing for fresh air (intake tube with pre-filter).



LHD vehicle 8_09_17

Group 9
Electrics and electronics

9 Electrics and electronics

9.1 Introduction

The electrical equipment of the 718 Boxster MY17 is enhanced and modified with each model. The main modifications relating to Group 9 are as follows:

- New functions, systems compared with the predecessor
- Changes to the lighting, new LED headlight, new tail lights, new attachment concept for the headlights
- New functions on the multi-function display of the instrument cluster
- Heatable washer jets omitted
- New Group door handle
- Use of PCC/PVTS functions via Apple Watch
- Lane Change Assist 3
- New functions with the Sport Chrono option (Individual/Sport Response)
- New infotainment system Porsche Communication Management/PCM4
- MOST 150
- Other new infotainment functions
- Porsche Connect, backend and app-based services

9.2 Network topology

Various data bus systems (CAN 500 kBit/s, LIN 20 kBit/s, MOST 150 MBit/s) are used in the network of the 718 Boxster/S MY17. The gateway control unit serves as a central linking element and allows data exchange as well as protocol-dependent translation of communication between the various networks and bus technologies.

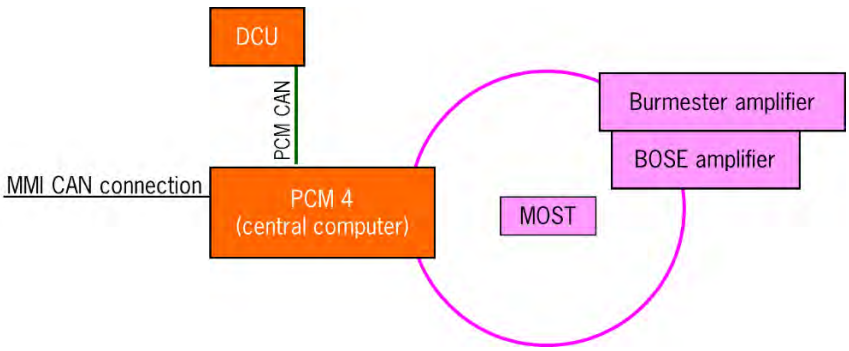
Adaptive cruise control 9_02_17

MOST 150 technology is used with the introduction of PCM4. This connects the digital amplifie.

9_03_17

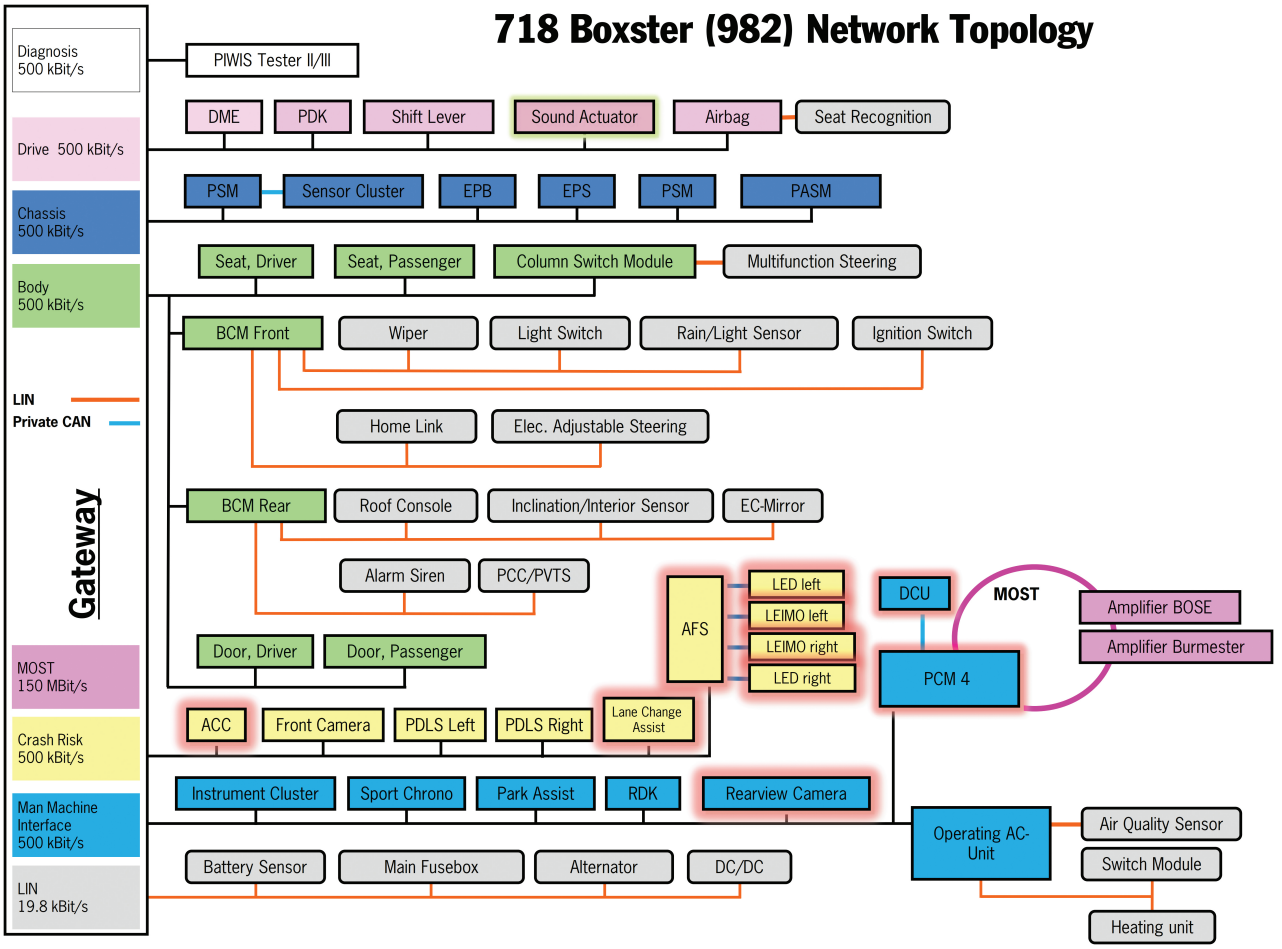
MOST 150 connects PCM4 to the optional/digital amplifier. The display and control unit (DCU) is connected to PCM4 via an internal PCM CAN (Private CAN).

In addition, the gateway control unit centrally controls all vehicle bus communication with respect to power-down/sleep mode for ignition/terminal 15 "off" in accordance with the rules defined in the "Vehicle Network State Manager".



The gateway also assists fault finding using PIWIS Tester II and PIWIS Tester III by providing comprehensive system and diagnostic functions for monitoring network communication.

The gateway control unit also provides vehicle electrical system/vehicle energy management functions as an additional function. These functions support optimization of battery charging during driving as well as minimization of the closed-circuit current by switching off comfort functions and networks when the vehicle is stationary.



Overview of the network topology of the 718 Boxster/S MY17 9_07_17

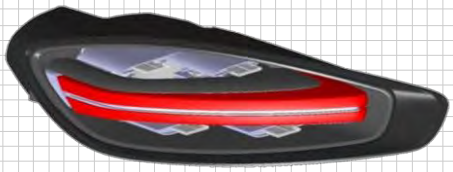
9.3 Vehicle electrical system/energy management

The vehicle electrical system components comprising the battery sensor, main fuse box, generator and DC/DC converter are connected via the LIN bus connected directly to the gateway. The master function is stored in the gateway and is also used for diagnosis, maintenance and coding using a diagnosis tester. The vehicle electrical system/energy management functions are based on the functions from the predecessor 981, specifically:

- AGM battery (maintenance-free)
- External charging/jump starting as well as external voltage supply/emergency power supply
- Battery sensor
- Power distributor/main fuse box, installation positions of the relays/fuses
- Vehicle electrical system recuperation/coasting/Auto Start Stop/DC/DC converter

9.4 Lighting

Three headlight variants are available for the 718 Boxster MY17 models. The standard equipment is a variant with Bi-Xenon headlights for dipped beam and high beam with a daytime running light module consisting of two LEDs. The control unit for the front-end electronics/BCM front is the master control unit for the lighting functions.



Tail light 9_08_17

9_09_17

The second optional variant is a Bi-Xenon headlight with advanced front lighting system (AFS), an LED additional high beam and a daytime running light module with 4 LEDs.

9_10_17

A full-LED headlight with the functions of the 4-LED daytime running light module, LED additional high beam, dynamic cornering light and continuous headlight range control is available as a third variant for the first time in the Boxster models.

9_12_17

9.4.1 Headlight attachment concept

The attachment concept for the headlights on the 718 Boxster MY17 has changed compared with the predecessor. They no longer have a retaining plate for unlocking the headlights, instead the headlight housings are screwed directly onto the bodyshell. The tool kit no longer contains an unlocking key for unlocking the headlight retaining plate. The front apron must now be detached to be able to access the screw connections to remove the headlights.

Combination light 9_11_17

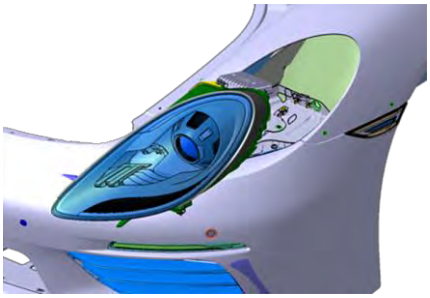
We recommend having bulbs replaced in the workshop due to the increased assembly work required.

Replacing headlight components and long-life bulbs:

- Note: Increased assembly work required!
- See Owner's Manual/Workshop Manual for instructions!
- Unlocking key no longer included in tool kit!

Instructions on how to remove the headlight can be found in the Workshop Manual (PIWIS information system/Owner's Manual).

H9 halogen bulb 9_17_17



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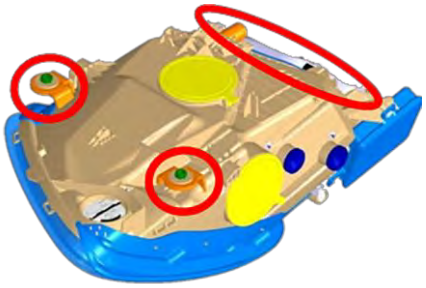


9_14_17

Repair

After headlight replacement/control unit exchange (Xenon/automatic headlight beam adjustment/LED), initial headlight configuration **must** be performed with the PIWIS Tester II! Due to the modified attachment concept, the halogen additional high beam light must be repaired in a qualified workshop.

- Xenon main headlights no longer have a retaining plate
- The main headlight housing is screwed directly to the bodyshell
- The front apron must be detached to remove the headlights
- The unlocking key is no longer included in the tool kit
- Bulbs for the additional high beam light must be replaced in a workshop

9.4.2 25 W Bi-Xenon

A 25 W Bi-Xenon headlight previously used on the predecessor 981 is installed as standard. The headlight is equipped with a daytime running light module with reflector technology. A D8S Xenon bulb is used for the dipped beam and high beam. However, the bulb should be replaced in a qualified workshop due to the use of a new attachment concept for the headlights. The additional high beam is designed as a halogen high beam light with an H9 halogen bulb.

9_15_17

Headlight functions

- Daytime running light module with reflector technology, 2 LEDs
- Dipped beam, Xenon high beam, D8S bulb
- Additional high beam/H9 65 W halogen high beam

9.4.3 35 W Xenon headlight with AFS

A 35 W Bi-Xenon headlight with AFS (Advanced Frontlighting System) is offered as an option. The daytime running light module consists of a lens system equipped with 4 LEDs. A D3S Xenon bulb is used for the dipped beam and high beam. The additional high beam is realized with two reflectors using LEDs.

D8S 25 W bulb 9_16_17

D3S 35 W bulb 9_18_17

35 W Xenon headlight with AFS, option 9_19_17

Headlight functions

- Daytime running lights with lens system, 4 LEDs
- Dipped beam, Xenon high beam, D3S bulb
- LED additional high beam (2 LEDs, 1x Osram 5 Chip, 2 reflectors)

Main headlight functions

	25 W Bi-Xenon	35 W Xenon with AFS	LED
Daytime running lights	2 LEDs	4 LEDs	4 LEDs
Additional high beam	X	LED	LED
Headlight beam adjustment		X	X
Dynamic cornering light		X	X
Continuous headlight range control			X

9.4.4 Lighting functions

Light switch

The light switch has five switch positions for activating different functions. These switch positions are:

- **Off** = Light switched off
- AUTO **AUTO** = Automatic headlights
- Parking light
- Dipped beam/driving light
- Rear fog light

A distinction is made between lighting functions with:

- Ignition off
- Ignition on
- Light switch set to “AUTO”
- the four other light switch positions

A wide range of functions are available; the settings for them can be found in the Driver’s Manual.

Standard lighting

The front light module is designed in LED light guide technology for the functions position light (1 LED) and direction indicator (4 LEDs). The side indicator light features the indicating/hazard warning functions (LED technology).

9_23_17

Position light in front light module 9_20_17

Direction indicator light in front light module 9_21_17

Side indicator light 9_22_17

9.4.5 Rear lighting

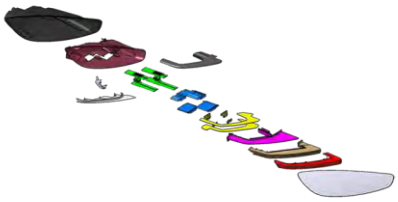
Tail light

The tail light features a new transparent design and 3D look. The attachment concept is the same as the predecessor.

Lighting functions/light patterns

- Brake light: 4 points (12 LEDs), bar (52 LEDs)
- Tail light (52 LEDs)
- Direction indicator light (22 LEDs)
- Reversing light (4 LEDs)

9_24_17



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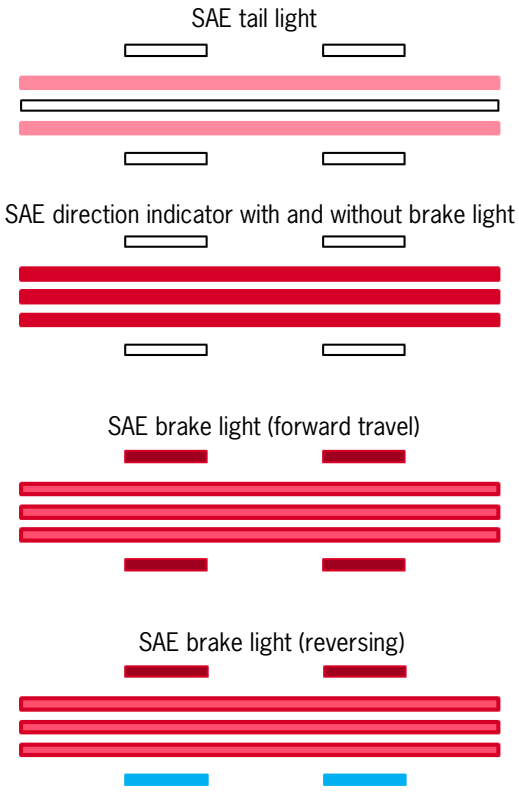
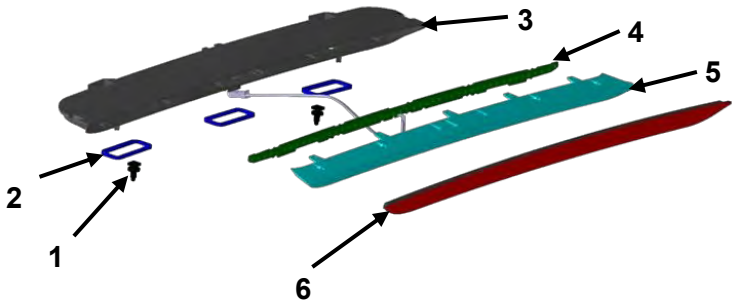


9_26_17

Raised brake light

The raised brake light contains 48 LEDs.

9_27_17



9_28_17

1 Pin
2 Seal
3 Housing
4 Plate
5 Light guide
6 2-component cover

Combination light

The combination light on the rear apron contains the functions of the rear fog light (on one side) and the reflector.

- Rear fog light (1 LED)
- Reflector

The combination light is mounted by way of two clips and one screw.

Combination light 9_29_17

Individual 9_30_17

ACC 9_31_17

Sport Response 9_69_17

Sport Plus 9_34_17

G-force 9_35_17

Chrono 9_36_17

9.5 Instrument cluster

The instrument cluster is the central driver information unit and is used to display data relating to the vehicle, e.g. engine speed, vehicle speed, temperatures and fill levels, warnings and messages.

Instrument cluster 9_32_17

General vehicle settings can be made in the instrument cluster by way of a selection menu and made available to the control unit network via CAN. The following vehicle information/menus can be displayed in the right-hand display area on the multi-function display:

- Vehicle
- Audio, Navigation
- Map, Phone
- Trip
- Tire pressure
- Chrono
- Gear shift assist
- Maximum g-force
- ACC

The multi-function display contains advanced and/or new functions/menus compared with the previous model, including:

- Vehicle\Settings**Individual** (Sport Chrono equipment option)
- Vehicle\Settings\Assist. Systems**PAS** (adaptive cruise control option)
- Vehicle\Settings\Assist. Systems**LCA** (Lane Change Assist option)
- Vehicle\Settings**Car Connect** (Porsche Car Connect/PVTS option)
- **ACC** (option)

9.6 Wash/wipe systems

9.6.1 Windshield washer system

The heatable washer nozzles have been omitted from MY17.

9.7 Door handles

The plastic finger plates of the door handles have been replaced with a deep drawn section in the outer door handle. The look thus conforms with the Group door handle. The handle is available in versions with and without capacitive sensors.

9_38_17

9_39_17

9.8 Porsche Car Connect (PCC)

The familiar components from the Panamera, Cayenne, Macan and 911 are now also used in the 718 Boxster MY17 for the introduction of Porsche Car Connect (Remote Services/PVTS).

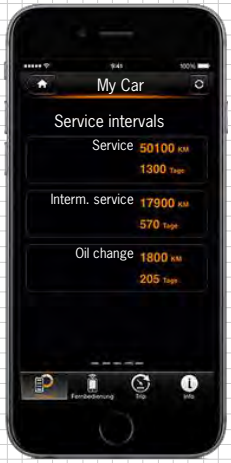
The Porsche Car Connect smartphone app offers the option of establishing a wireless connection with the vehicle via a mobile phone (Apple/Android). This enables vehicle-specific information to be accessed directly via the smartphone and selected settings to be configured directly on the vehicle using the app. There are two vehicle versions available:

- Porsche Car Connect (Remote Service)
- Porsche Car Connect with PVTS Plus (Porsche Vehicle Tracking System Plus)

PCC registration 9_42_17

Apple Watch 9_43_17

Washer jet 9_37_17



9_120_17

9_121_17

9.9 Porsche Vehicle Tracking System Plus (PVTS Plus)

PVTS Plus is a GSM/GPS-based tracking system that allows a control center to locate the vehicle if it is stolen. It can then be found by the authorities. As soon as PVTS Plus detects a theft alarm, the location of the vehicle in question is sent to the SOC.

There are three different PVTS Plus equipment variants:

- PVTS Plus with driver card
- PVTS Plus with remote keypad
- PVTS Plus without driver card/without remote keypad

I-no.	Scope of supply	Driver card	Remote keypad	PVTS profile
7G9	PCC including PVTS WITHOUT security package	NO	NO	Belgium, Luxembourg: AUTONOMOUS RoW: COMFORT
7i0	PCC including PVTS WITH security package	NO	YES	Belgium, Luxembourg: INTEGRATED RoW: not available
7i2	PCC including PVTS WITH security package	YES	NO	Belgium, Luxembourg: not available RoW: ADVANCED

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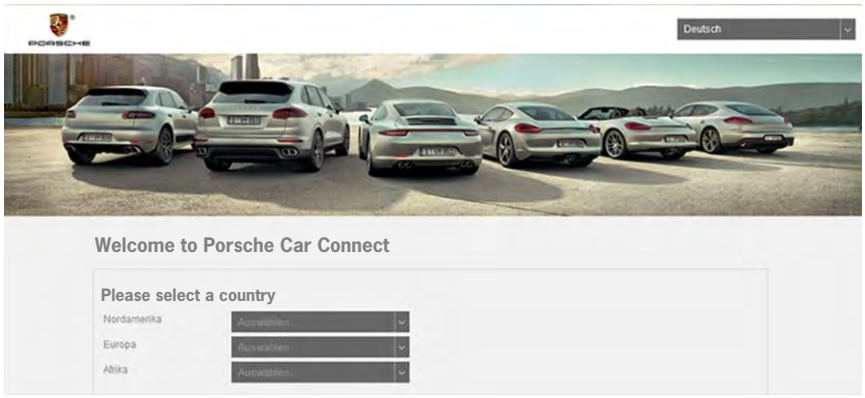
9_122_17

9_123_17



Customer portal registration 9_47_17

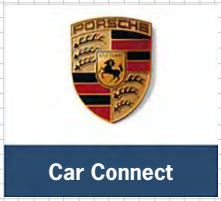
To use the smartphone app/Mobile Online Services (MOS) function, the customer must first apply for these services online by completing a registration process.

- The customer does this by creating a user account on the customer portal. A code is generated during this registration.
- The customer informs the Porsche dealer of this code.
- The Porsche dealer enters this first installation code in the Porsche diagnosis tester, which generates a second installation code.
- PVTS is now activated in the vehicle via the data processing center/backend (Vodafone Automotive) by linking the first and second installation codes for the customer, vehicle and control unit.
- The dealer activates the mobile online services in front of the customer.
- The customer then receives a text message (SMS) that installation has been completed. The customer is also sent a link to the App Store together with the activation code for the application.

Diagnosis/commissioning

The following initial operation steps can be performed using the PIWIS Diagnostic Tester: Procedure:

- “PCC commissioning”
- “Teach PCC driver cards”
- “PCC function test”
- “Deactivate PCC”



Download in App Store 9_48_17

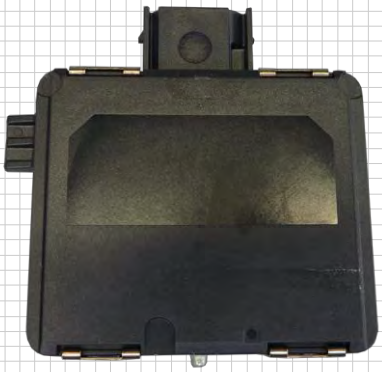
9_49_17

Customers can perform end-to-end diagnosis of the communication chain using the smartphone app.

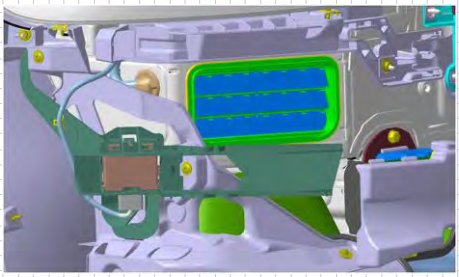
9_40_17

9_44_17

LCA display 9_53_17



LCA3 control unit 9_118_17

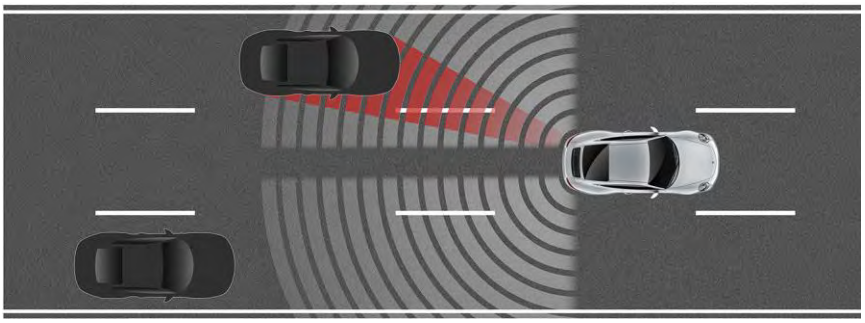


9_41_17

9.10 Driver assistance systems

9.10.1 Lane Change Assist 3 (LCA)

Lane Change Assist will be introduced in the 718 Boxster MY17 for the first time. It uses two radar sensors at the right and left side of the rear bumper to monitor the lanes up to 230 feet (70 meters) behind the vehicle as well as the blind spot. Lane Change Assist therefore enhances driving comfort/the warning function when driving on highways.



Lane Change Assist 9_52_17

If the system detects another vehicle in the adjacent lane or the blind spot, it informs the driver by displaying a visual signal (3 LEDs) in the mirror attachment point finisher. If the driver sets the direction indicator in this scenario, the warning stage information display flashes brightly as a clear warning about the approaching vehicle. The system is active in a speed range from 19 to 155 mph (30 to 250 km/h). It can be activated and deactivated via the on-board computer in the instrument cluster.

LCA settings 9_45_17 9_46_17

This display information is provided in two stages: as long as the driver does not use the direction indicator, the light unobtrusively and subtly signals detected vehicles in the neighboring lanes.

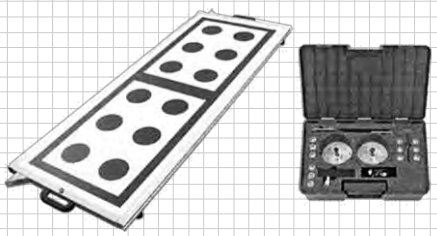
Lane Change Assist decides whether to display the vehicle based on relative speed and distance. If the driver sets the direction indicator, the LEDs will inform him/her of the detected vehicle by flashing brightly.

LCA does not intervene in vehicle control and can be deactivated at any time by the driver via the multi-function display (Vehicle\Settings\Assist. Systems\LCA).

When LCA is activated via the multi-function display, both LED modules in the exterior mirrors briefly light up to provide visual feedback that the system is active. There is no system feedback when LCA is deactivated. The activation status of LCA can be seen via the function light in the instrument cluster/multifunction display. The basic brightness of the LED modules (information display) can be adapted to the driver's wishes in three brightness levels via a menu in the instrument cluster. The effective brightness of the information display depends on this basic setting and is adjusted in tandem with the current outside brightness. The range of the radar sensor is highly dependent on the weather conditions. Temporary unavailability due to dirt on the bumper and/or bad weather conditions (fog, spray behind the vehicle, etc) or a potential system malfunction are indicated via text messages in the instrument cluster and result in automatic deactivation of the system. The system can be reactivated by simply switching it back on manually.

Repair

"Re-calibration" is necessary after replacing a control unit or removing the rear apron (see Workshop Manual). Calibration is performed in the same manner as for the familiar systems, the measurement setup for calibration is described in the PIWIS information system and can be carried out using PIWIS Tester. Coding of the control units is performed during the calibration process. The existing special tool (calibration unit VAS 6350, laser distance meter VAS 6350/2, Doppler generator VAS 6350/4, PIWIS Tester) can still be used for calibration on the 718 Boxster MY17.



VAS 6350 9_58_17

VAS 6350/2 9_59_17

VAS 6350/4 9_60_17

ACC control switch 9_61_17

9.10.2 Adaptive cruise control (ACC)/cruise control (CRC)

Adaptive cruise control (ACC)

The optional adaptive cruise control on the 718 Boxster MY17 is essentially the same as the system on the previous model. It is installed in the front apron at the center of the vehicle. One new feature is that the “coasting” function already familiar from the predecessor model is now available with the adaptive cruise control. This enables a considerable reduction in the fuel consumption.

ACC radar sensor 9_62_17

The distance to the vehicle in front is monitored using radar sensors. There is a radar sensor integrated in the front apron at the center of the vehicle for this. ACC automatically maintains the distance to the vehicle in front or the desired speed and brakes smoothly if the distance to the vehicle in front is reduced, if necessary bringing the vehicle to a complete stop. The speed range can be individually adjusted and set between 19-130 mph (30-210 km/h). ACC is available as an option in combination with Porsche Doppelkupplung (PDK) and actively regulates the speed as a function of the distance to the vehicle in front. A radar sensor monitors the area up to 650 ft ((200 m) in front of the vehicle in the same lane. If you approach the vehicle in front too quickly,Porsche Active Safe (PAS) warns you with an audible and visible signal. If necessary,there is a brief braking jolt and targeted braking is initiated – braking started by the driver is boosted within the system limits, right up to an emergency stop.

Cruise control (CRC)

The cruise control for the 718 Boxster MY17 now brakes actively when the preset speed is reduced on the control stalk or the vehicle exceeds the preset speed when traveling downhill.

9.11 Sport Chrono package

The Sport Chrono package is the first choice on the list of available options for increasing driving performance and driving pleasure. It was significantly redesigned for the 911 Carrera MY17 and is now also available as an option for the 718 Boxster MY17.

Steering wheel operation 9_65_17

Mode switch 9_66_17

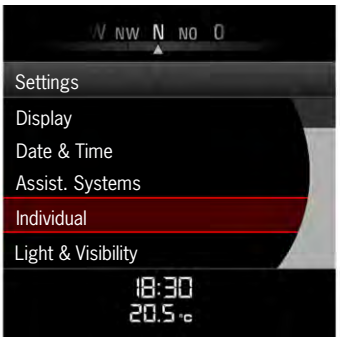
Sport Response display 9_69_17

9.11.1 Mode switch (in combination with PDK)

With the Sport Chrono option, five settings can be selected using the mode switch on the steering wheel:

- Normal (O)
- SPORT (S)
- SPORT PLUS (S+)
- Individual (I)
- Sport Response (centre button)

The settings for PASM, the sports exhaust system, Auto Start Stop function and rear spoiler can be combined individually based on Normal mode or SPORT modes via a corresponding menu in the instrument cluster/multi-function display. The saved combination can be retrieved the next time the vehicle is started by turning the Mode switch.



9_67_17

Individual settings 9_68_17

9.12 PCM 4

Due to the rapid developments in the field of multimedia applications, the challenges placed on vehicle manufacturers in order to keep up-to-date are growing. One example is the fact that many mobile phone manufacturers are updating their top models on an annual basis as well as continuously expanding their software. Vehicle users, in turn, want to connect their current mobile phones to the infotainment systems at any time. In order to meet the requirements of these rapid developments, the development cycles for automotive infotainment systems also have to become shorter. In recent years, the following changes have been implemented at Porsche:

PCM3/CDR30	Introduction in 2008 with the Carrera 997 II
PCM3.1/CDR31	Introduction in 2010 in the Panamera
PCM4	Introduction in 2015 in the 911 Carrera MY17

9.12.1 Infotainment offering

Porsche Communication Management (PCM) with Sound Package Plus 150 W including mobile phone preparation (HFP) is standard on the 718 Boxster MY17

Options

- Navigation module including voice control
- Connect module, including smartphone tray, Porsche Connect and Apple CarPlay·
- Connect Plus module: (includes Connect module) including telephone module, wireless internet access, realtime traffic information (RTTI), online navigation module with Google StreetView· and Google Earth®
- Electronic logbook
- Digital radio/DAB
- BOSE® Surround Sound System
- Burmester® High-End Surround Sound System

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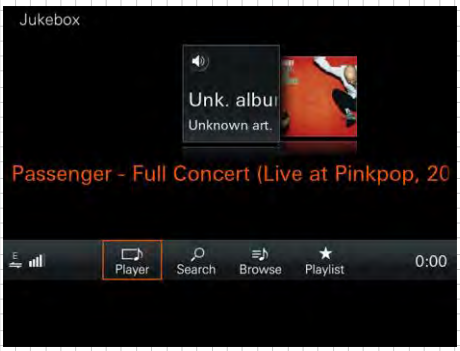
9_71_17

9_72_17

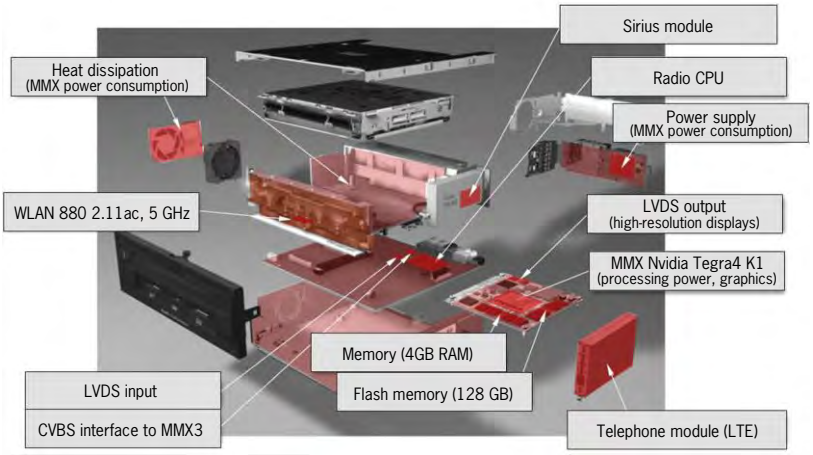


Jukebox 9_73_17

Integrated display and control unit (DCU) with central computer (head unit) of PCM4 9_75_17

9.12.2 Features of the PCM 4

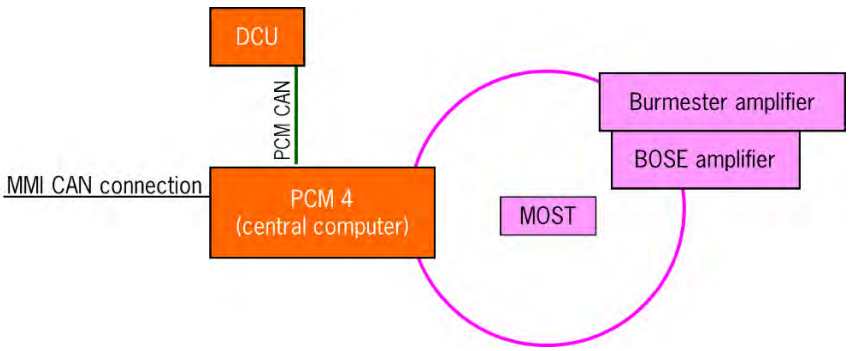
- Frameless display design
- 7-inch WVGA display
- Capacitive touchscreen with handwriting recognition
- DVD single drive, 2 SD slots, 1 SIM slot (under cover)
- Sound Package Plus, 150 W, integral analogue amplifier with digital sound processor



9_74_17

9.12.3 MOST connection

The infotainment system (PCM4) is connected to the vehicle via the MMI CAN in order to send e.g. displays to the instrument cluster or to exchange and display various vehicle settings. The central computer is connected to the Display and Control Unit (DCU) and forms one unit together with this (head unit). These components communicate via the internal PCM CAN. The analog amplifier (Sound Package Plus) is not connected to the MOST ring as this is part of the central computer. The optionally available amplifiers (BOSE/Burmester) are connected via MOST 150.



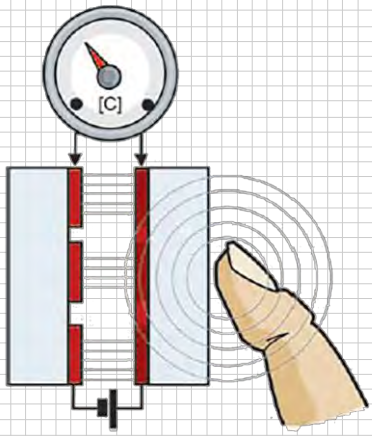
9.12.4 Capacitive touchscreen with proximity detection

Capacitive touchscreen

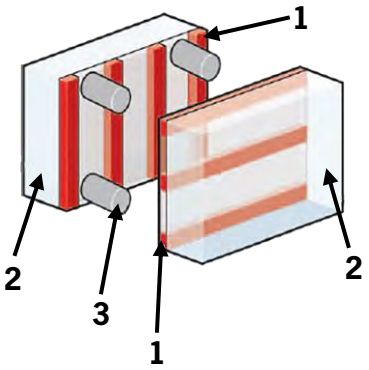
The surface of a capacitive touchscreen consists of two glass panels positioned on top of one another. They are coated with strips of a transparent, conductive metal oxide. The glass panels are arranged such that the coated sides face one another and the strips form a grid. Electrically insulating spacers prevent the coatings from touching.

Function

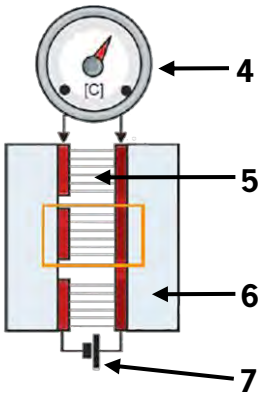
(Figure 9_77_17) Each intersection point on the grid acts like a capacitor because the metal oxide strips are positioned exactly above one another, similar to capacitor plates. An electrical field forms between the strips when a voltage is applied to the two coatings (Figure 9_78_17). The intersection points therefore have a prescribed electrical capacitance, like a capacitor. When a finger touches the surface, for example, (Figure 9_79_17), the operator's electrical field influences the electrical field at the touched intersection point, as well as its capacitance. This results in a change in the voltages at the ends of the coating strips. The evaluation electronics uses this information to calculate the coordinates of the contact point on the touchscreen.



9_79_17



9_77_17

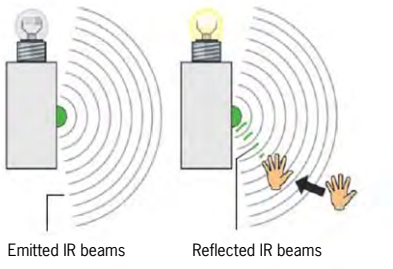


9_78_17

1 Conductive strips
2 Glass panel
3 Spacer
4 Capacitance
5 Electrical field
6 Glass panel
7 Applied voltage

Proximity detection

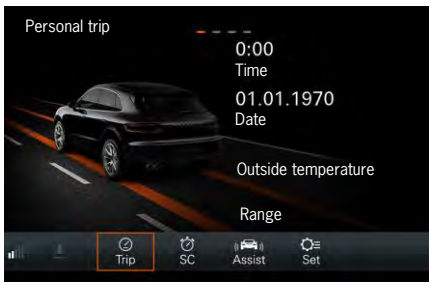
9_80_17



9_81_17

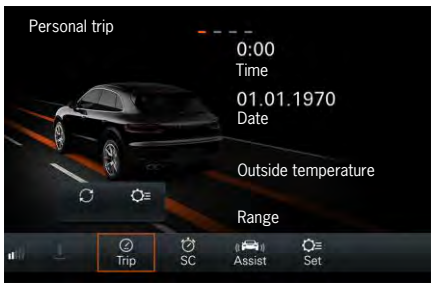
Function

If a hand is moved inside the detection range of the infrared (IR) sensor strips (to the left and right of the display), the hand reflects the radiation emitted by the sensors back to the sensor strip. The reflected beam is then detected by the IR sensors. Following proximity detection, additional graphical operating elements appear on the PCM4 display.



Proximity detection

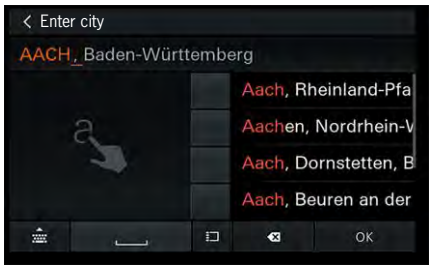
9_82_17



9_83_17

Handwriting recognition

Another new feature is the handwriting recognition feature of PCM. Instead of entering letters using the keypad, the user can now write letters directly onto the touchscreen to make it easier to enter e.g. addresses.



9_84_17

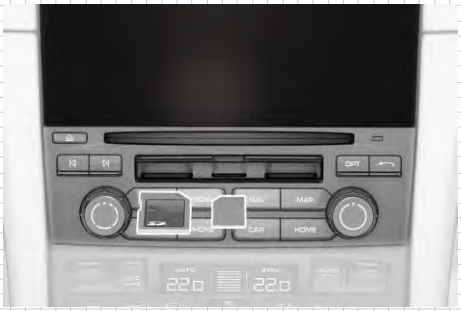
9_85_17

9.12.5 My Screen

The new “My Screen” function in the “Home” menu allows users to create a maximum of three personal screens using various widgets. Frequently used navigation destinations or telephone numbers, for example, can be stored on this screen and retrieved by simply touching the screen. If the user switches off PCM while the “My Screen” view is open, the same screen appears the next time the system is switched on again. Technically speaking, the “My Screen” function divides the screen into a maximum of eight fields to which various widgets can be assigned using drag and drop. The widgets can be positioned anywhere inside the fields, whereby some widgets occupy several fields.

Widget = A component on a graphic user interface

My Screen 9_86_17



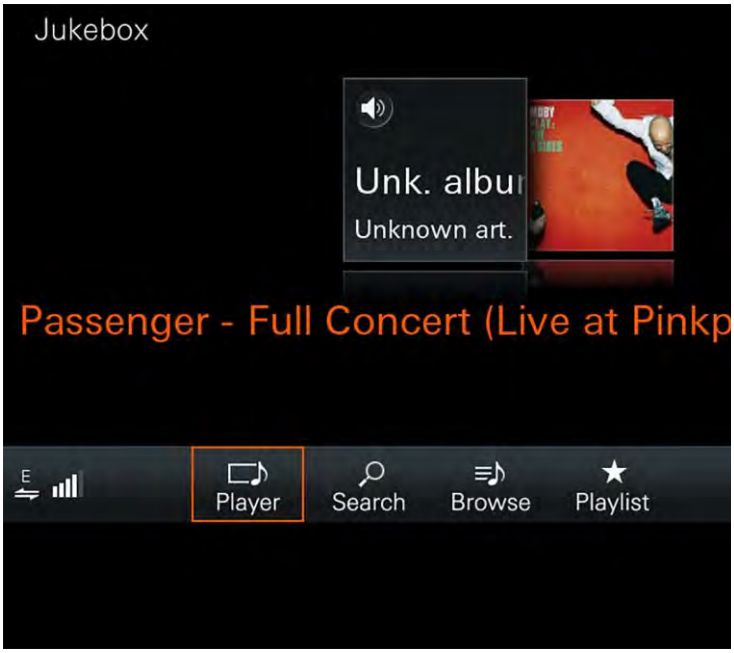
SD/SIM card slot under cover 9_76_17

USB/AUX interface 9_88_17

On vehicles with the Connect/Connect Plus option, the USB connection with Apple detection/Apple CarPlay function is in the center console.

9.12.6 Jukebox

The 11 GB jukebox in the new PCM also includes several new features.



Jukebox 9_87_17

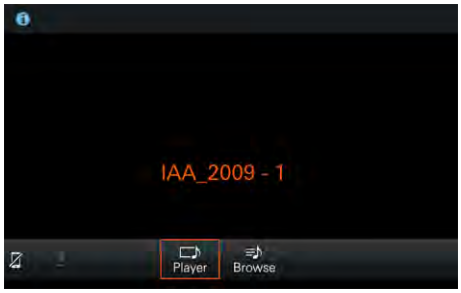
Firstly, it synchronizes MP3 files automatically using a database to display album covers and additional information about the music data stored. In addition to the maximum of two USB ports, music files can now be imported from an SD card inserted into one of the two SD interfaces under the PCM touchscreen or played back directly from the card. There is one USB interface in the oddments tray in the center console. The second USB port is located in the glove box.

9.12.8 Media playback

Music and video files from a wide range of media sources can be played by pressing the Media button. For the first time, DVD video files can be played from DVD and USB/SD memory cards in the following formats:

- Windows Media Audio 9 and 10
- Windows Media Video 9
- MPEG-2/-4, MPEG-1/-2
- ISO-MPEG4, DivX 3, 4 and 5, Xvid
- ISO-MPEG4, H.264 (MPEG4 AVC)

when the vehicle is stationary.



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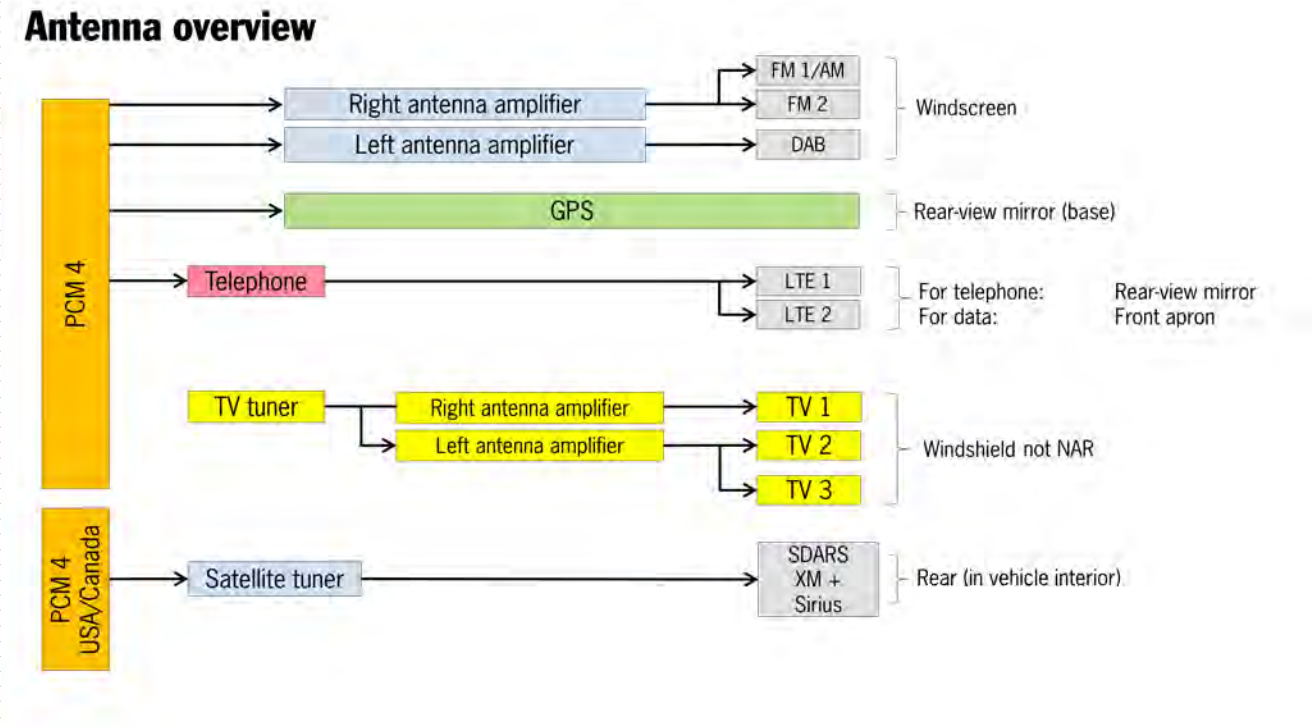
9.12.9 Antenna overview

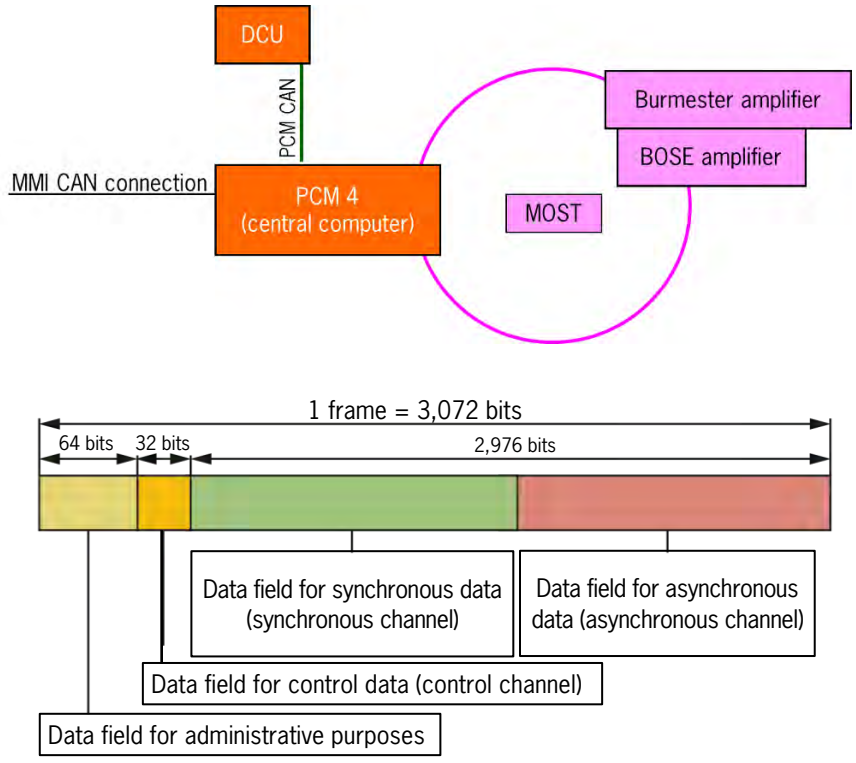
The figure shows an overview of the most commonly used antenna in the 718 Boxster MY17. There are also further antennae for functions such as:

- Remote control (RC) in windshield (LF/HF)
- Keyless Entry Start System (KESSY) interior and exterior antennas
- Porsche Car Connect (PCC)/Porsche Vehicle Tracking System (PVTS) GSM/GPS



9.12.10 MOST 150 data bus

The previous MOST 25 data bus has been replaced by the MOST 150 data bus for the infotainment system. MOST stands for “Media Oriented System Transport”, which is a serial data bus system for transmitting audio, video, voice and data signals via an optical waveguide. MOST 150 is present in the vehicle whenever a BOSE/Burmester digital amplifier is installed. The illustration on the right shows the components connected to the MOST ring. If a digital amplifier is not installed, the MOST ring is omitted from the vehicle. The display and control unit (DCU) is connected to PCM4/ central computer via an internal PCM CAN.



9_115_17

Prior to transmission, the data is divided into data packages, also known as frames. Each frame is 3,072 bits long in the MOST 150 data bus (MOST 25 = 512 bits). The length of the digital useful data is 3,040 bits (MOST 25 = 480 bits), which means that much more information is transmitted per data package in the MOST150. The total length of a frame consists of: one data field for administrative purposes, one data field for control data and two additional data fields. The maximum amount of data that can be stored in the two data fields is limited by these fixed divisions. The data is transmitted via three channels (control, synchronous and asynchronous channels): via the control channel for control data, via the synchronous channel for audio and video data transmission (synchronous real-time transmission without intermediate storage), and via the asynchronous channel for larger quantities of data, e.g. metadata of audio files (asynchronous, event-controlled data transmission, intermediate storage possible). The optical MOST150 data bus exchanges data between the relevant components in digital form. Data transmission using light waves enables a much higher data transfer rate. Light waves have extremely short wavelengths compared to radio waves. They do not generate electromagnetic interference waves and are also immune to interference from external electromagnetic influences.

WiFi connections

Preferably via an additional SIM card, alternatively from a smart phone via the PCM4/hotspot as WiFi client.

Internet access point

The WiFi hotspot is realized in the PCM4 via the LTE telephone module.

Data services

A precondition for using the services is a data plan for the SIM card inserted in the PCM4 or the mobile phone.

Hotspot

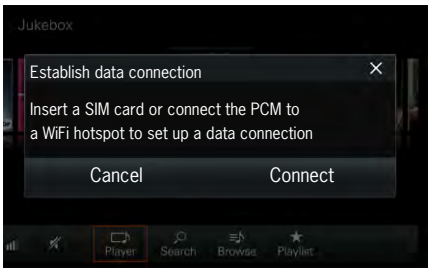
Public internet access point. It is possible to access the internet wirelessly via a hotspot.

9.12.11 Wireless internet access – WLAN (Wireless Local Area Network)

WLAN is an abbreviation for “Wireless Local Area Network”. It refers to a wireless local network to which various devices such as handhelds, smartphones, tablet PCs or laptops can be connected to exchange data or obtain secure access to the internet.

An additional SIM card in the vehicle is the preferred method for establishing a WLAN connection, which means that a vehicle with WLAN offers an on-board internet access point (hotspot). WiFi-compatible end devices can connect to this hotspot in the vehicle to utilize additional Porsche Connect Online Services.

Alternatively, the PCM4 can also connect to a hotspot operated from the smartphone as a WiFi client. However, the telephone module installed in the PCM4 and associated external antenna ensure a faster, more stable mobile connection. A precondition for using the services is a data plan for the SIM card inserted in PCM4 or the mobile phone.



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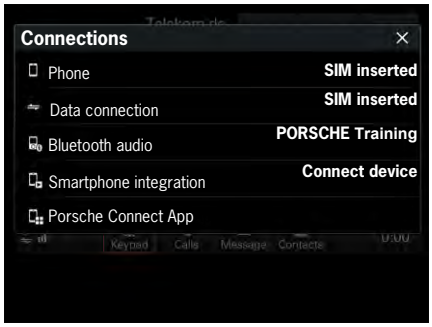


9_96_17

9.13 Sound systems

9.13.1 Sound Package Plus (standard)

PCM4 is equipped with eight speakers and an integral amplifier with output of 150 watts as standard. The external analog amplifier on the predecessor model has been omitted as a result of this output power. An integral digital sound processor for optimized adaptation of the sound pattern in the passenger compartment is also installed.

9.13.2 BOSE® Surround Sound System

The BOSE amplifier is supplied in a country version. With the optional BOSE® Surround Sound System, the customer receives 12 fully active loudspeakers including a 100 watt active subwoofer integrated in the body and center speaker. The amplifier has an output of 555 watts. The fully active system design enables the optimized adaptation of each individual speaker in the passenger compartment.

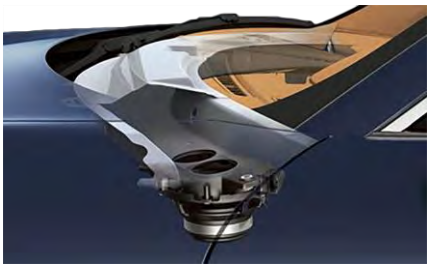
BOSE Surround Sound System 9_99_17

BOSE amplifier/digital 9_98_17

9.13.3 Burmester® High End Surround Sound System

The optional Burmester® High-End Surround Sound System offers the greatest performance with a total output of 821 watts and 12 independently controlled speakers, including a 300 watt active subwoofer integrated in the body. Analogue and digital filters were optimally defined for the specific installation positions.

Burmester components 9_100_17



Active subwoofer 9_101_17

The tweeters are ribbon-based air motion transformers (AMT) offering unmistakably fine, clear and undistorted high-frequency sound reproduction with excellent level stability. All loudspeaker chassis are perfectly coordinated with each other and deliver a natural, richly textured spatial sound, even at high volumes. The result is sound performance of the highest quality, specially adapted to the 718 Boxster MY17.

Installation positions of Burmester components 9_102_17

9.14 Porsche Connect

9.14.1 Mobile Online Services/Aha

Mobile Online Services (MOS) were introduced in the Cayenne in 2012. These services include a smartphone application for iPhone or Android, which must be installed on the smartphone. Only free registration is required for this purpose. The necessary option must be available in the vehicle to be able to use the Mobile Online Services. Following successful connection of the smartphone to the PCM, "Aha" is available as the tuner source. The Aha app provides various services as radio programs. The stations in the preset list in the smartphone app are available in the station list.

Aha functions at a glance:

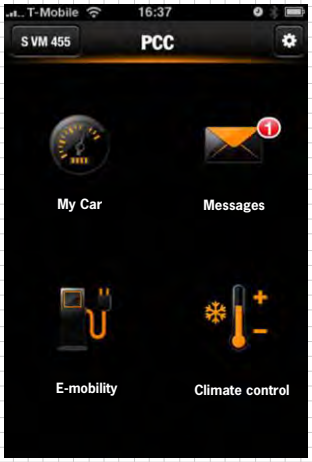
- Internet radio stations: as audio stream (USA: > 2,000, Europe: > 1,100, of which Germany: > 500)
- Personalized web music (Slacker USA)
- Receives and reads out Facebook messages
- Receives and reads out Twitter messages
- Audio books
- Podcasts

Aha 9_103_17

Vodafone Cobra 9_104_17

9.15.2 Porsche Car Connect

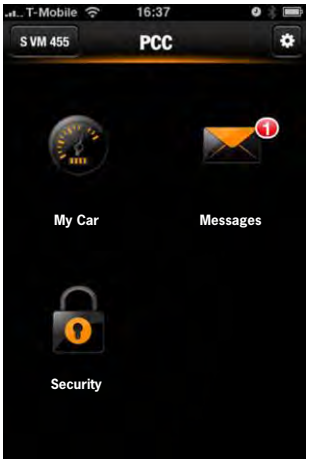
In MY14, further online services were introduced in the Panamera; these were the Porsche Car Connect (PCC) services. The Porsche Car Connect smartphone app offers the option of establishing a wireless connection with the vehicle. This enables vehicle-specific information to be accessed directly via the smartphone and selected settings to be configured directly on the vehicle using the app.



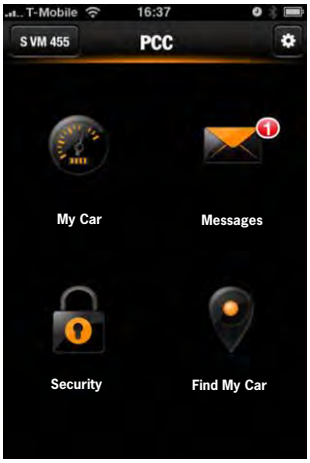
Version 3 9_107_17

Three in-vehicle versions are available:

- **Version 1** Porsche Car Connect (standard)
- **Version 2** Porsche Car Connect with PVTS Plus (Porsche Vehicle Tracking System Plus)
- **Version 3** E-mobility services (hybrid vehicles only)



Version 1 9_105_17



Version 2 9_106_17

With the 718 Boxster MY17, the previous services (Mobile Online Services and Porsche Car Connect) have now been replaced by the new Porsche Connect functionalities. The Aha radio app is replaced by “Porsche Connect”. In parallel to Porsche Car Connect for vehicle-based functions, Porsche Connect provides new infotainment and navigation functions. The following new services have been introduced:

Backend server-based services

- Real-time traffic information (RTTI)
- Google Earth, Google Street View
- POI (Point of Interest) search

App-based services

- My Destinations
- Internet radio, personalized radio
- Flat-rate music services

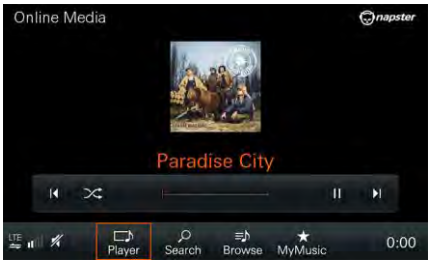
Internet radio

- Connection of the PCM to online radio services via the PCM Connect App
- Huge selection of radio stations and independent regional radio stations available
- Digital reception is independent of the radio station coverage area

Real-time traffic information (RTTI)

- During active navigation, the latest traffic information and traffic disturbances are taken into account. Speed and flow information is displayed on the map and used for arrival time/trip duration calculations. Display is via color-coding of the roads (traffic light system).

Traffic flow 9_110_17



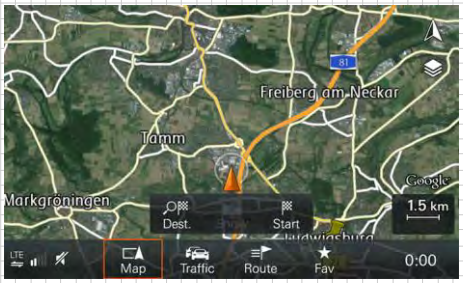
Flat-rate music streaming 9_111_17

Google Earth

- Navigation with Google Earth satellite maps in the map view
- Activation is via a Navigation setting in the Options menu or button in map

Google Street View

Google StreetView is an additional service to Google Earth that provides views of 360-degree panoramic images from a street perspective. (Google Earth must be activated in the PCM4).



Google Earth 9_116_17

Google Street View 9_117_17

The number of services can vary depending on the country!

9_112_17

Personalized radio

- Personalized radio available based on the listening habits of the user
- Direct search possible in the vehicle (genres, popular stations, popular artists, etc.)
- Digital reception is independent of the radio station coverage area

Flatrate music services

Access to flat-rate music services (Napster): Unlimited number of music tracks (tracks, albums, artists, playlists) available.

Apple Car Play

Apple CarPlay® makes individual functions and apps on the iPhone available in the PCM.

Apple CarPlay displays on PCM4 9_113_17

Use

Connection of an iPhone via the USB interface, CarPlay message appears.

Prerequisites

From iPhone 5 or later, IOS 7.1 or higher, Siri and Apple CarPlay are activated on the iPhone in use.

Notes

While Apple CarPlay is being used, only the connected iPhone can be used to make phone calls. Only apps of the iPhone in use can be displayed that are supported by Apple CarPlay. For further information, see: www.apple.com/ios/carplay.

The first time the iPhone is connected, the PCM queries whether the iPhone should only be used to play music like an iPod or whether Apple CarPlay® should be activated. Once the device is connected, ticking the checkbox ensures that the PCM saves the selection as default. Simply select the relevant icon in the home menu on the PCM to use Apple CarPlay®. In addition to the touchscreen, Apple CarPlay® can also be operated using certain hardkeys as well as the rotary pushbutton control. Above the voice control, pressing and holding the button on the steering wheel activates the Apple voice control “Siri”. Just like on the iPhone. This function can be used to e.g. send, read aloud and answer text messages. Mobile phones connected to the PCM via Bluetooth (BT) are automatically disconnected. In the meantime, an inserted SIM cannot be used to make phone calls.

9.14 Abbreviations

	German	English
ABT	Anzeige Bedien Teil	Display Control Unit/Touch Screen
ACC	Abstandsregeltempostat	Adaptive Cruise Control
AFS	Automatische FahrlichtSteuerung	Automatic Forward Lighting
AGA	Schaltbare Abgasanlage	Switchable Exhaust System
AGM		Absorbed Glass Mat
AHK	AnHängerKupplung	Trailer Hitch
ALWR	Automatische Leucht Weiten Regulierung	Automatic Headlamp Levelling
ASD	Auslaufendes SchiebeDach	Sliding roof
AZV	AnhängerZugVorrichtung	Trailer Hitch
BCM	Karosseriesteuergerät	Body Control Module
BCMf	Karosseriesteuergerät	Body Control Module front
BCMf	Vorderwagenelektronik (VWE)	Body Control Module front
BCMr	Karosseriesteuergerät	Body Control Module rear
BCMr	Hinterwagenelektronik (HWE)	Body Control Module rear
BKE	Bedien- und KlimaEinheit	Operating and Airconditioning Unit
BMS	Batteriesensor	Battery Measurement Sensor
BT	BlueTooth Verbindung	BlueTooth Connection
CAN	Zweidraht-Bus (CAN-high/CAN-low)	Control Area Network
CDR	Infotainmentsystem	Infotainment System
CRC	Geschwindigkeitsregler	CRuise Control
DAB	Digitale hörbare Übertragung	Digital Audio Broadcast
DFI	Direkteinspritzer	Direct Fuel Injection
DMB	Digitale Mehrfachmedien Übertragung	Digital Multimedia Broadcast
DME	Digitale Motor Elektronik	Digital Motor Electronic
DTMF	Dual Ton Mehrfrequenz	Dual Tone Multi Frequency
ELV	Elektrische LenkungsVerriegelung	Electrical Steering Lock
EPB	Elektrische Park Bremse	Electrical Parking Brake
ESD	Elektrostatische Entladung	Electro Static Discharge
EZS	Elektrisches ZündSchloss	Ignition Switch
FBAS	Farbe Bild Ausstattung Synchronisation	Color Picture Equipment Synchronisation
FFB	FunkFernBedienung	Remote Key
FLA	FernLichtAssistent	High Beam Assistant
GLW	Gleitende LeuchtWeite	Continuous Headlight Range Control
HAL	HinterAchsLenkung	Rear Axle Steering (RAS)
HBA		Headlight Beam Adjustment
HD	HochDruck	High Pressure
HMI	Mensch Maschine Schnittstelle	Human Machine Interface
HSB	HauptSicherungsBox/Stromverteiler	Main Fusebox/Current Distributer
IHE	Innerer Wärmetäuscher	Internal Heat Exchanger
IWT	Innerer WärmeTauscher	Internal Heat Exchanger
KBA	KameraBasierende Assistenzfunktionen	Camera Based Assistant Functions
KESSY	Schlüsselloser Zugang Fahrzeugstart	Keyless Entry Start SYstem
KJS	KühlerJalousie Steuergerät	Radiator Shutter Control Unit
KLSM	Kombi LenkStockModul & LWS	Steering Column Switch Module
LDS	Licht Dreh Schalter	Light Switch
LDW	Spurverlassenwarnung	Lane Departure Warning
LED	Leuchtdiode	Light Emitting Diode
LEIMO	LEistungsMOdul	Power Module
LIN	Eindraht-Bus	Local Interconnect Network
LKS	Spurhalteasisstent	Lane Keeping Support
LKS	Spurhalteassistent	Lane Keeping Support

LTE	Langzeit Entwicklung	Long Term Evolution
LVDS	Hochgeschwindigkeitsschnittstelle zur Datenübertragung	Low Voltage Differential Signaling
LWS	LenkWinkelSensor	Steering Angle Sensor
MBB	Modularer Backend Baukasten	Modulated Backend Construction Kit
MMI	Mensch Maschine Schnittstelle	Man Machine Interface
MMI	Mensch Maschine Schnittstelle	Man Machine Interface
MMX	Mobile Internet und Multimedia	Multi Media EXtention
MOD	Mobile OnlineDienste	Mobile Online Services
MOST	Lichtwellenleiter Ringtechnologie	Media Oriented System Transport
MPI	Mehrfacheinspritzung	Multiple Point Injection
MTP	Medienübertragungsprotokoll	Media Transfer Protocol
ND	NiederDruck	Low Pressure
OAU	Bedien- und KlimaEinheit	Operating and Airconditioning Unit
PADM	Aktive Aggregatelager	Porsche Active Drivetrain Mounts
PAS	ACC Funktion	Porsche Active Safe
PASM	Elektrisch geregeltes Dämpfungssystem	Porsche Active Suspension Management
PCC	Porsche Fahrzeug Kommunikation	Porsche Car Connect
PCCB	Porsche Keramik Bremse	Porsche Ceramic Composite Brake
PCM	Infotainmentsystem	Porsche Communication Management
PDC	ParkAssistent	Park Distance Control
PDCC	Fahwerkssystem zur Wankstabilisierung	Porsche Dynamic Chassis Control
PDK	Porsche DoppelKupplungsgetriebe	Porsche Double Clutch Transmission
PDLS	Porsche Dynamisches LichtSystem	Porsche Dynamic Light System
PDLS Plus	Frontkamera/Dynamisches Fernlicht	Front Camera/Automatic High Beam
PLG	Elektrische Heckklappe	Power Liff Gate
PSM	Porsche Stabilitäts Management	Porsche Stability Management
PTM	Porsche Traktionsmanagement	Porsche Traction Management
PTV	Porsche Drehmoment Regelung	Porsche Torque Vectoring
PVTS	Porsche Fahrzeugverfolgungssystem	Porsche Vehicle Tracking System
RCC	Audiosystem und Fahrzeuganbindung	Radio and Connected Car
RDK	Reifen Druck Kontrolle	Tire Pressure Monitoring system
RdW	Rest der Welt Märkte	Rest of World Markets
RFK	RückFahrKamera	Reverse Camera
RLF	Regen Licht Feuchtsensor	Rain Light Moisture Sensor
RTTI	Echtzeit Verkehrsinformationen	Real Time Traffic Information
SAD	SchiebeAusstellDach	Sun Rool
SCR	Selektive katalytische Reduktion (AdBlue System)	Selective Catalytic Reduction
SENT		Single Edge Nibble Transmission
SMS	Kurznachricht	Short Message Service
SWA	SpurWechselAssistent	Lane Change Assist
SWaP	SoftWare als Produkt	SoftWare as Product
USB	Universelle Serielle Schnittstelle	Universal Serial Bus
VRLA	Ventilgeregelte Blei-Säuren-Batterie	Valve Regulated Lead Acid
WAW	WindAbWeiser	Wind Deflector
WLAN	Drahtloses Netzwerk	Wireless Local Area Network
ZR	ZentralRechner	Control Process Unit
ZZH	ZuZiehHilfe	Closing Aid for Doors

9 Electrics and electronics