

PORSCHE

Powertrain

Technology Workshop Cayenne



Newly developed V6 and V8 engines



**3.0-litre V6
turbo engine**
Cayenne



**2.9-litre V6
twin-turbo engine**
Cayenne S

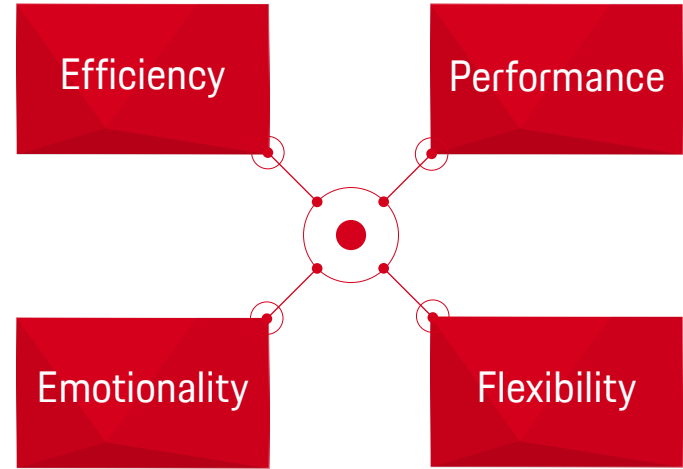
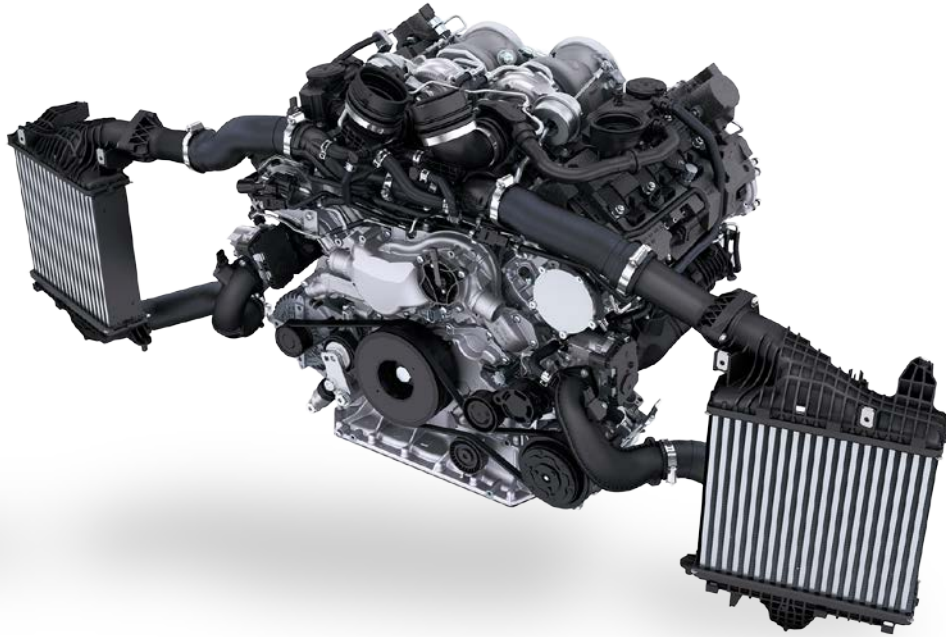


**4.0-litre V8
twin-turbo engine**
Cayenne Turbo

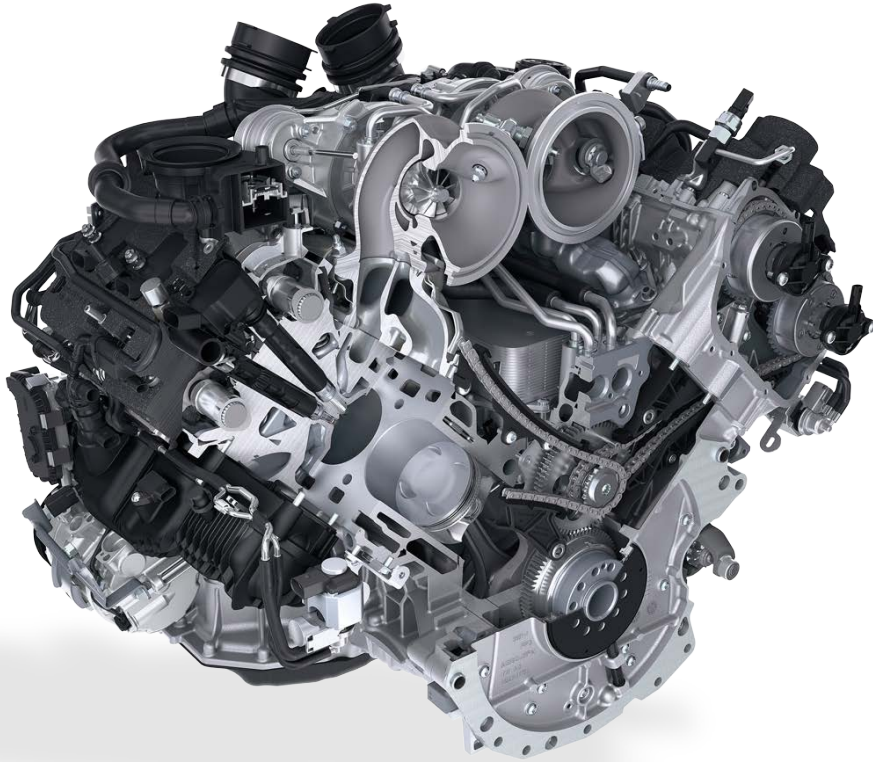
Meets a wide spread of requirements



The new V8 twin-turbo engine from Porsche



Key features



| 4.0-litre V8 twin-turbo engine

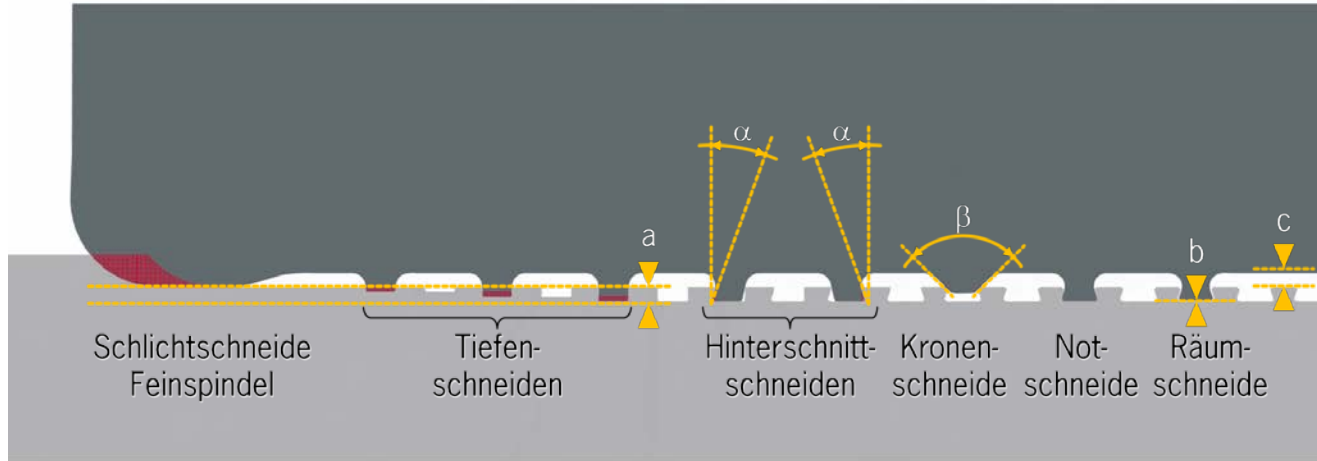
| Turbochargers within the inner V

| Dual-branch process air flow

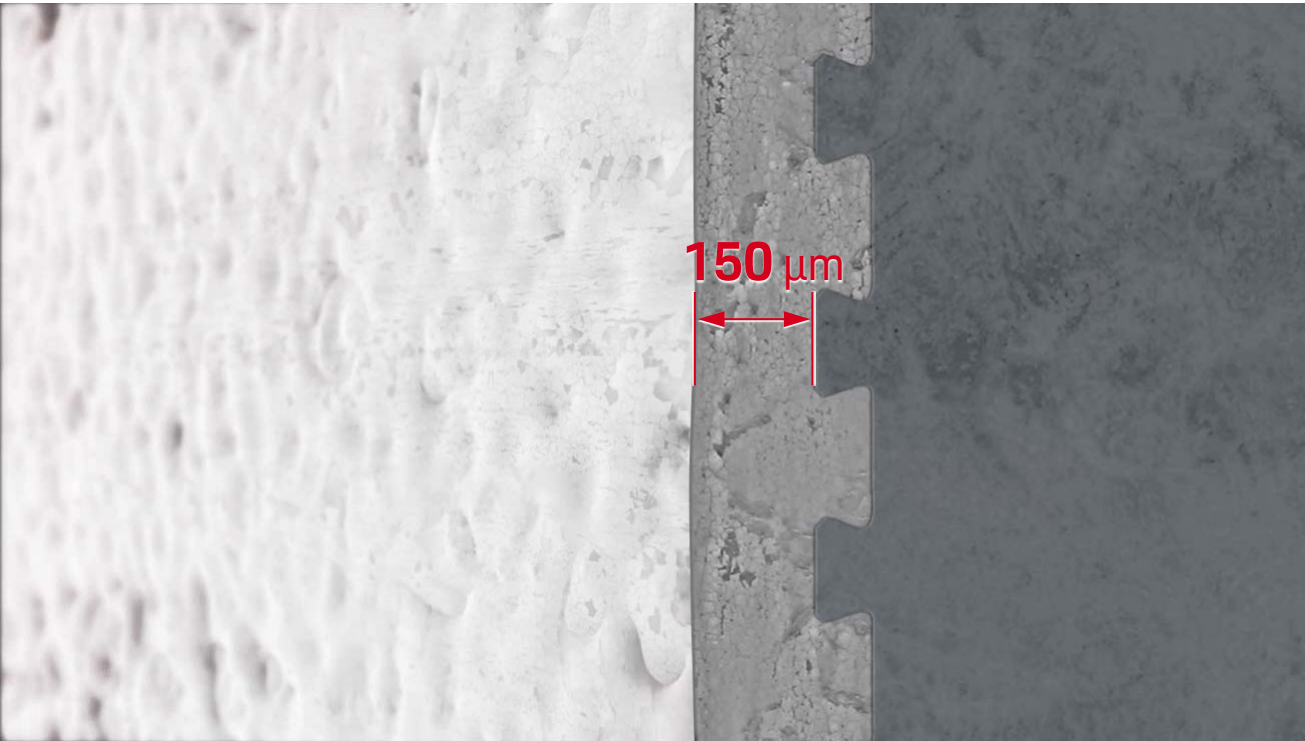
| Modular layout

| Fulfills global market requirements

Cylinder crankcase

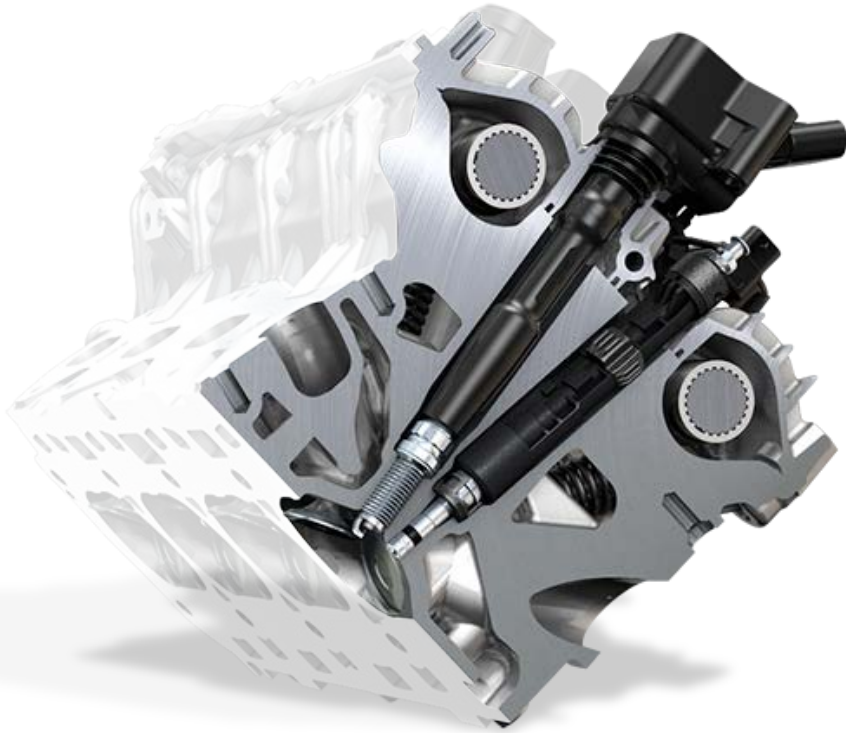


Cylinder crankcase



- | Good tensile strength
- | Minimal wear
- | Low oil consumption
- | High robustness

Cylinder head

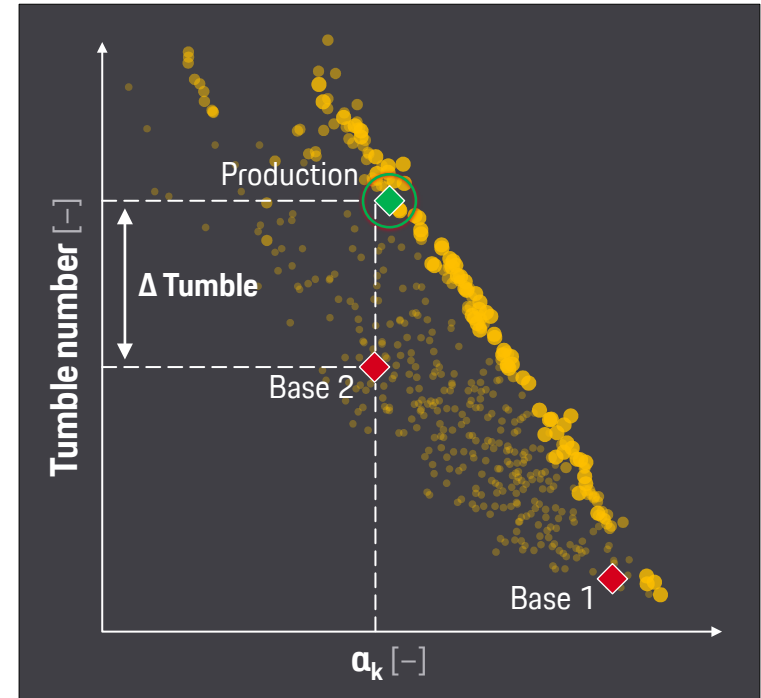
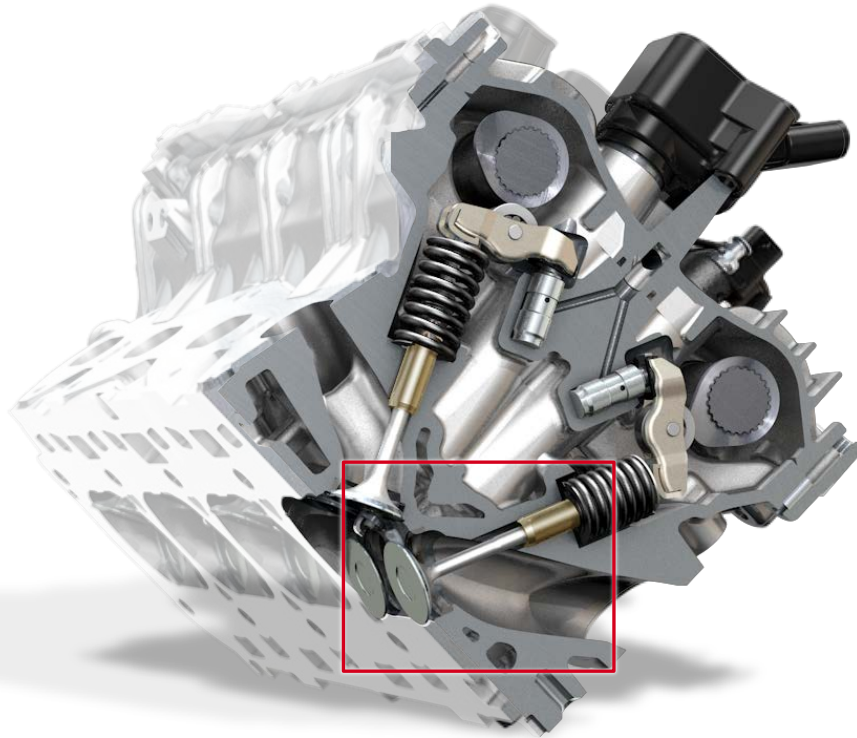


| Solenoid multi-hole injectors

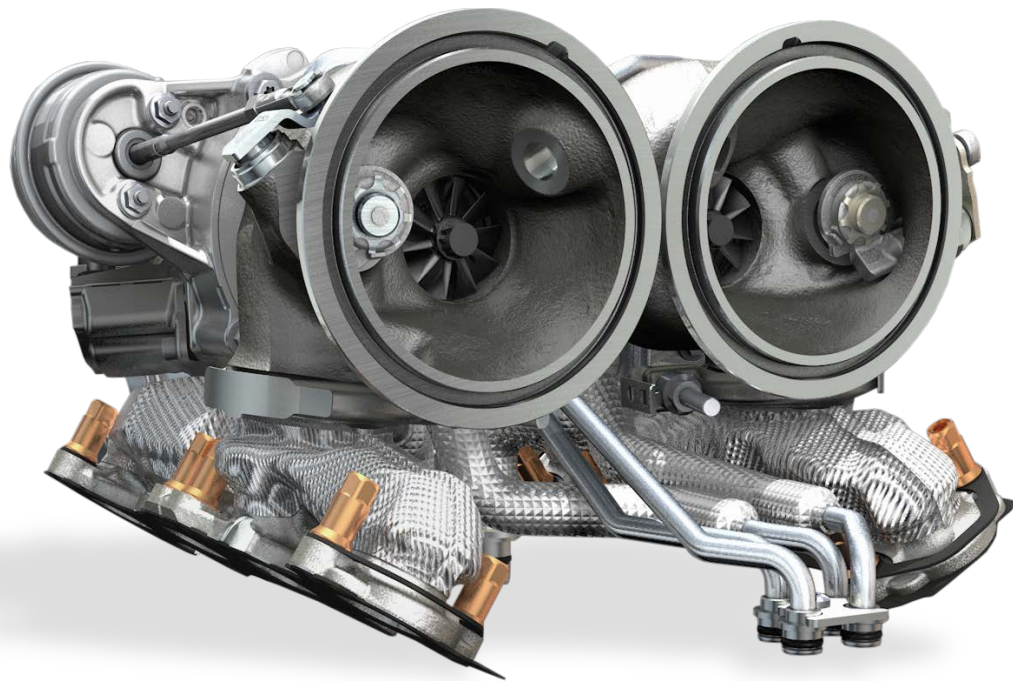
| Central position

| 250 bar fuel pressure

Cylinder head



Turbocharging



- | Compact, isolated manifolds
- | Electric recirculation valves
- | Vacuum-controlled wastegate

Turbocharging



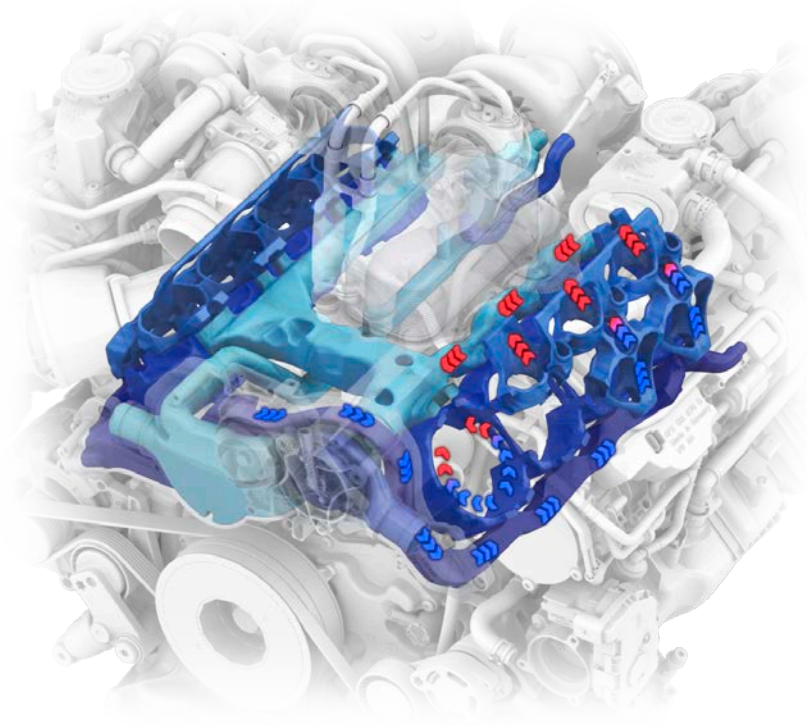
- | Manifold with separate pipes
- | Twin-scroll turbines
- | Counter-rotating

High-performance cooling system



- | Switchable water pump
- | Driven via intermediate shaft
- | Map-controlled thermostat

High-performance coolant circuits



Aerodynamics and thermodynamics
adapt to the requirements of the powertrain



Reduced friction losses



| Controllable piston spray nozzles

| Cylinder liners coated

| Piston ring tuning

| Ventilation openings

| Switchable water pump

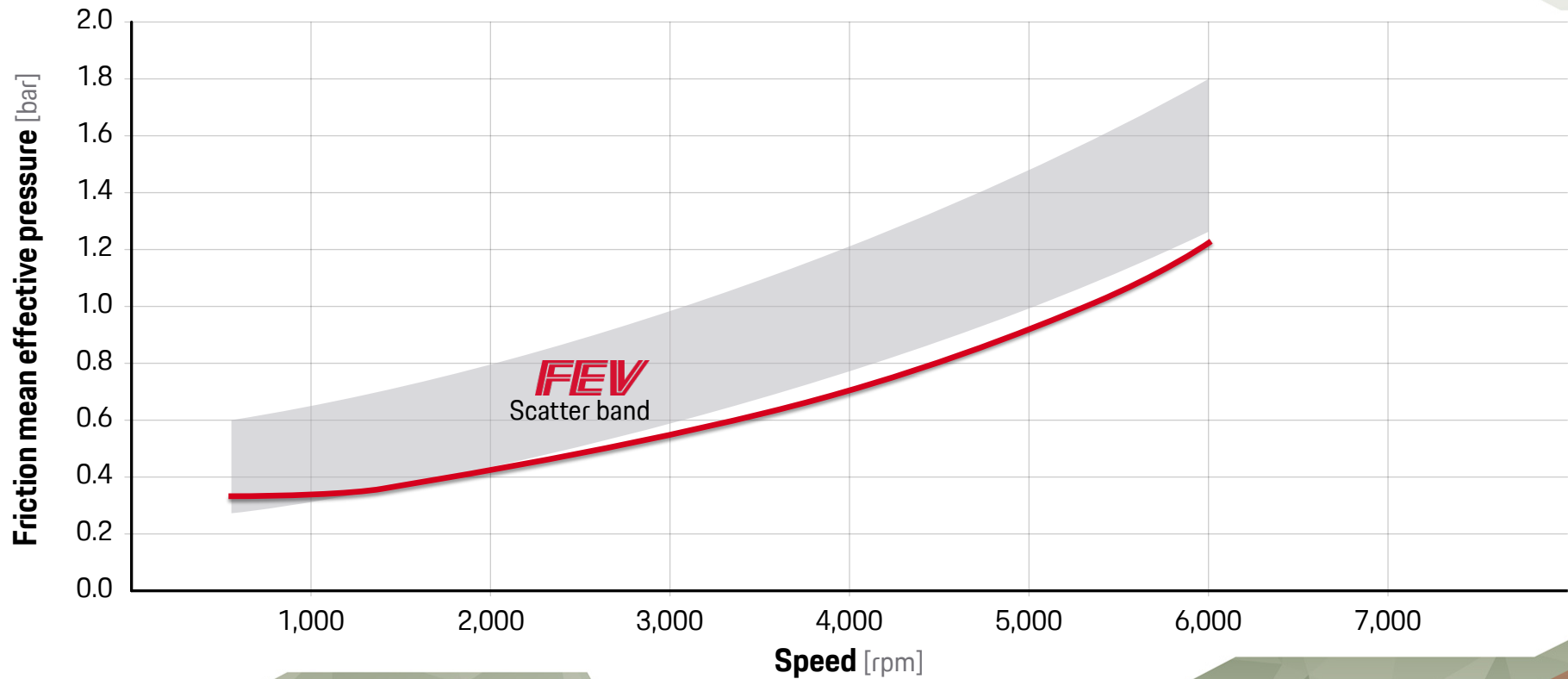
| Map-controlled thermostat

| Gear-chain timing drive

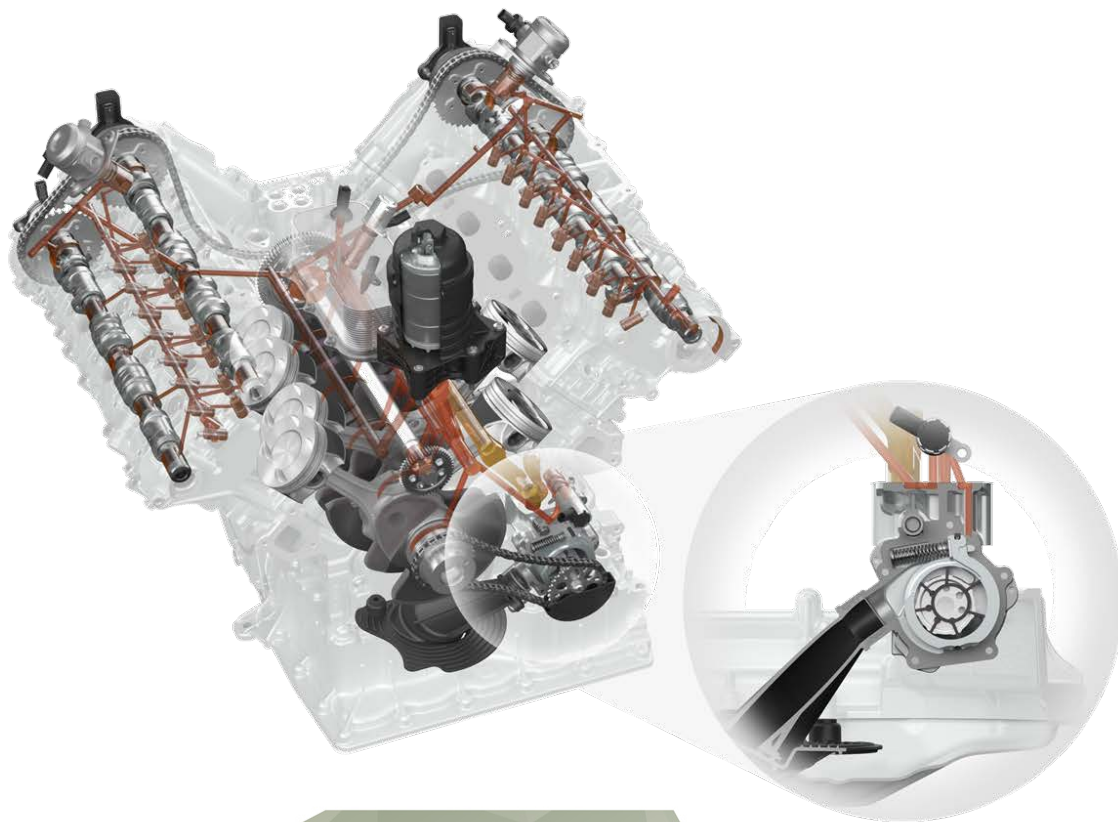
| Simplified belt drive

| Use of low-friction oils

Reduced friction losses



Efficient oil circuit



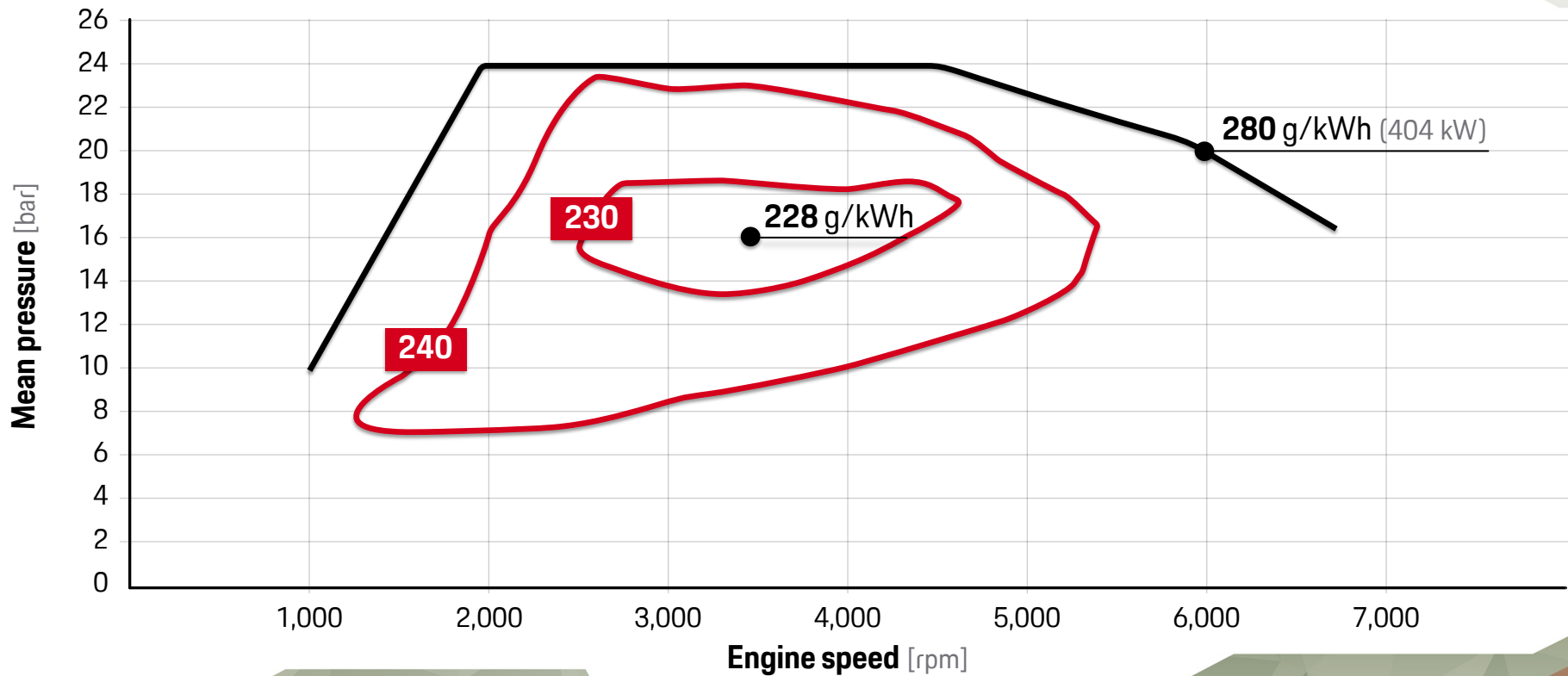
| Variable oil pump

| Fast response times

| Responds to driving programme

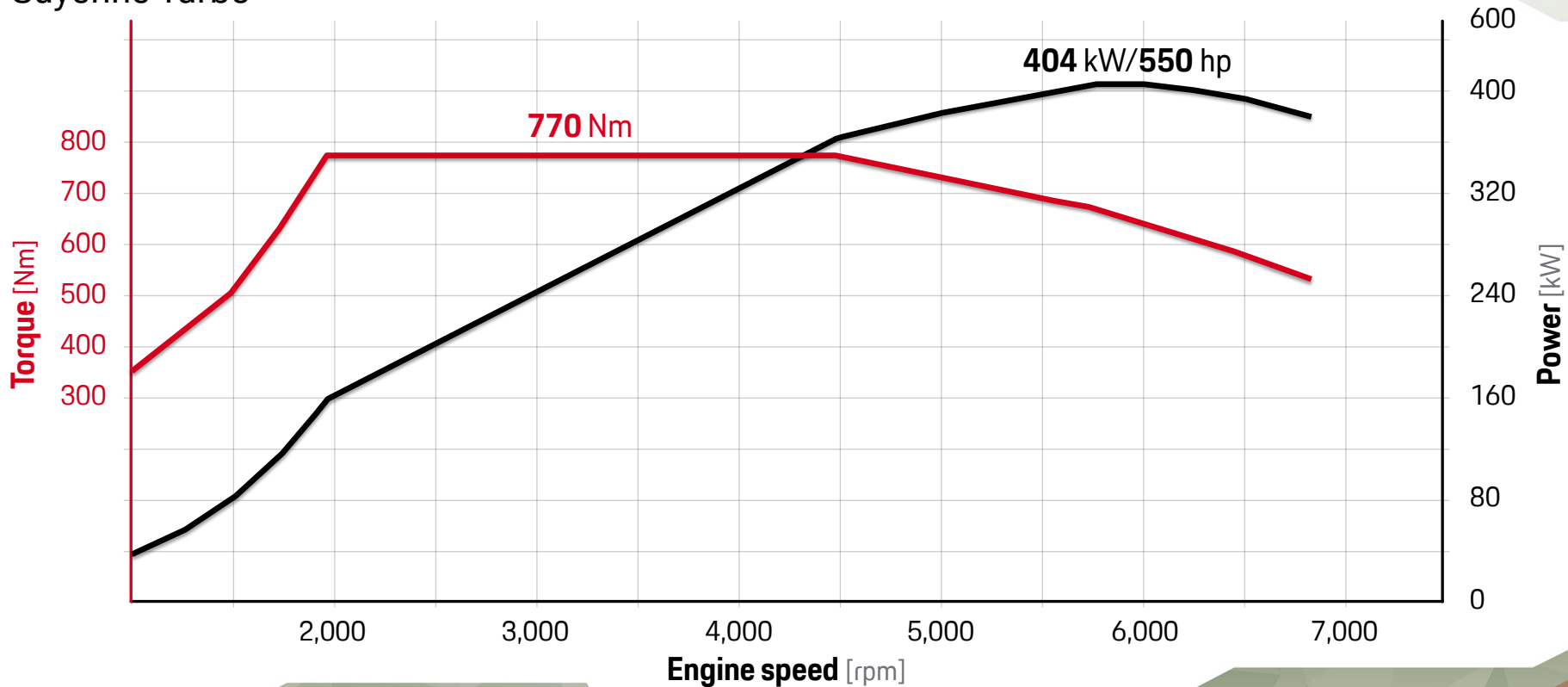
| Fulfils varying requirements,
such as a high lateral acceleration
on the race track

Specific fuel consumption



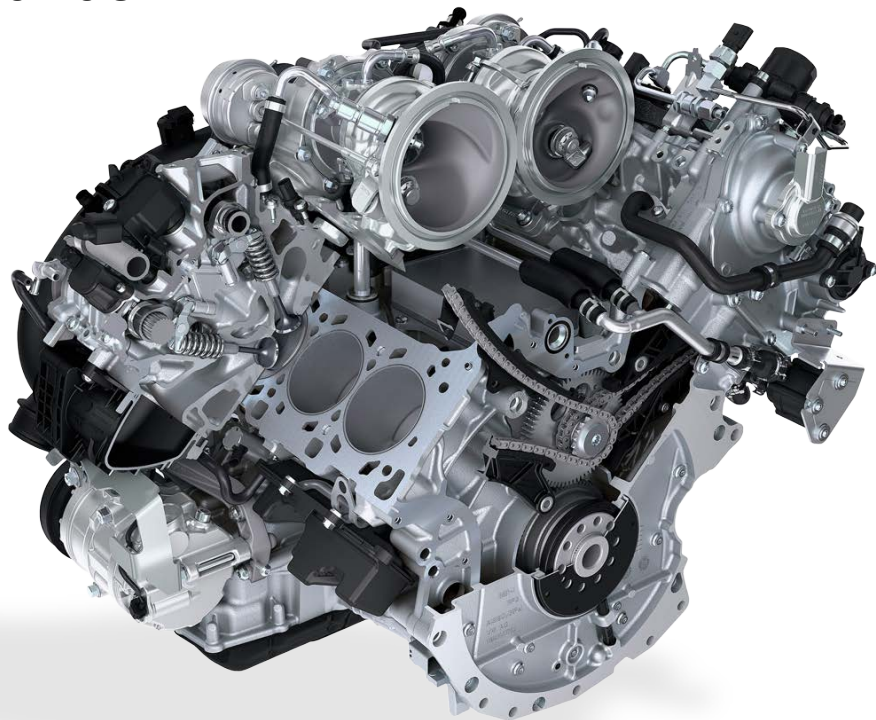
Power and torque

Cayenne Turbo



New 2.9-litre V6 twin-turbo engine

Cayenne S

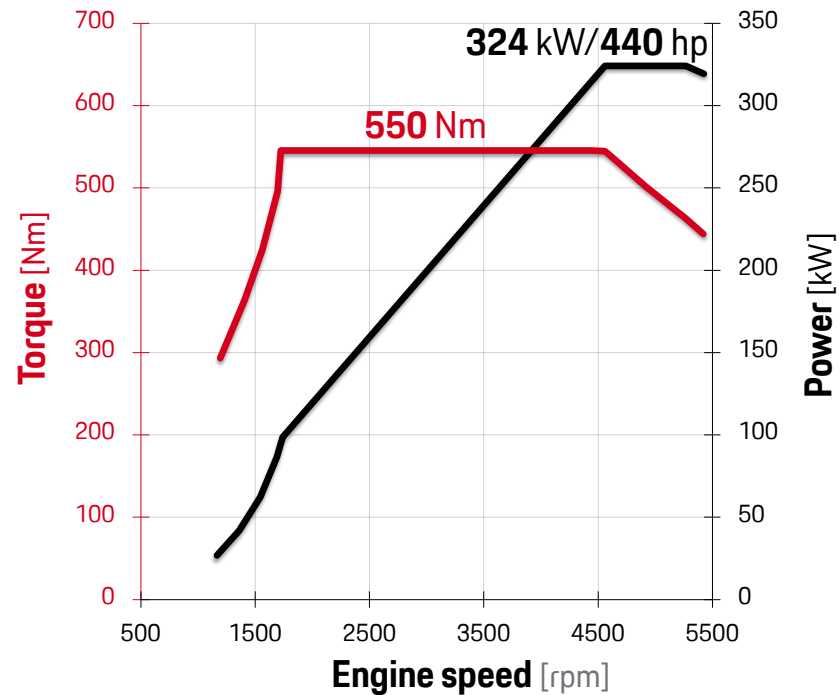
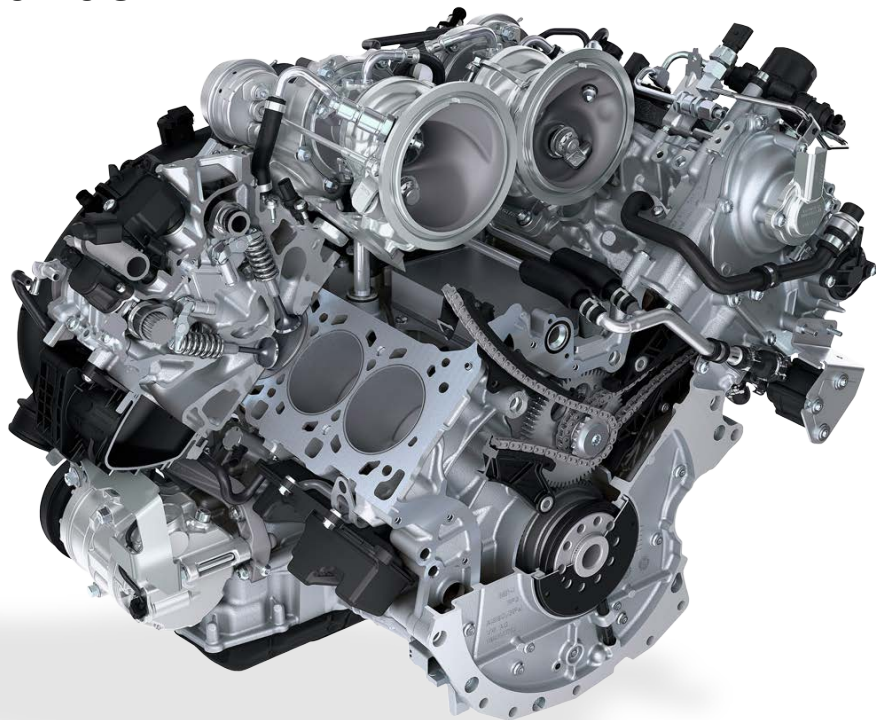


Technical data – an overview:

- | 2.9 litres of displacement
- | 324 kW/440 hp
- | 550 Nm
- | Turbocharger within inner V
- | Valve stroke switching via AVS
- | Integrated exhaust manifold

New 2.9-litre V6 twin-turbo engine

Cayenne S



New 3.0-litre V6 turbo engine

Cayenne

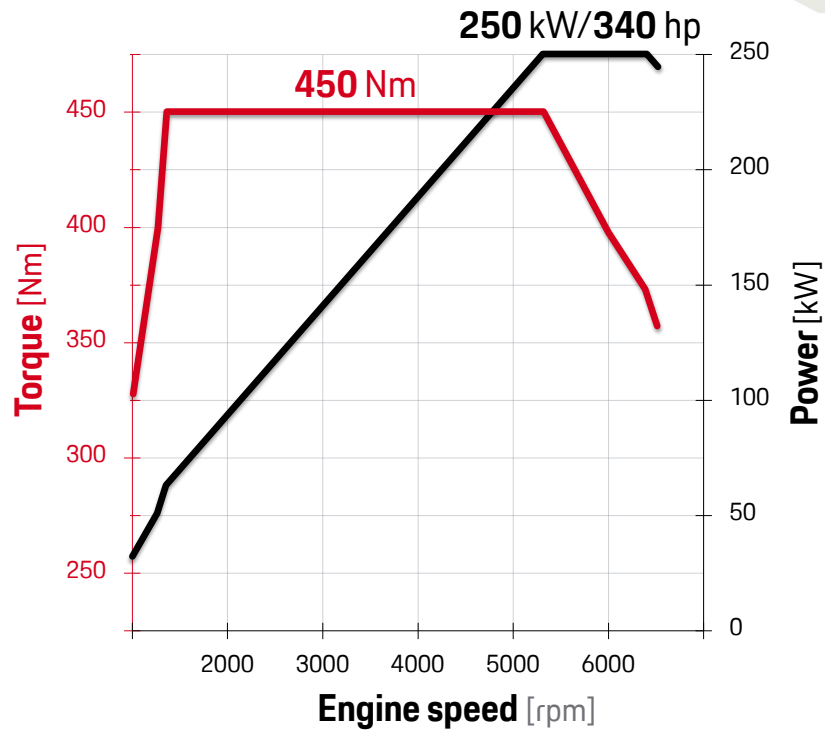


Technical data – an overview:

- | 3.0 litres of displacement
- | 250 kW/340 hp
- | 450 Nm
- | Turbocharger within inner V
- | Valve stroke switching via AVS
- | Integrated exhaust manifold

New 3.0-litre V6 turbo engine

Cayenne



Technical data



Cayenne



Cayenne S



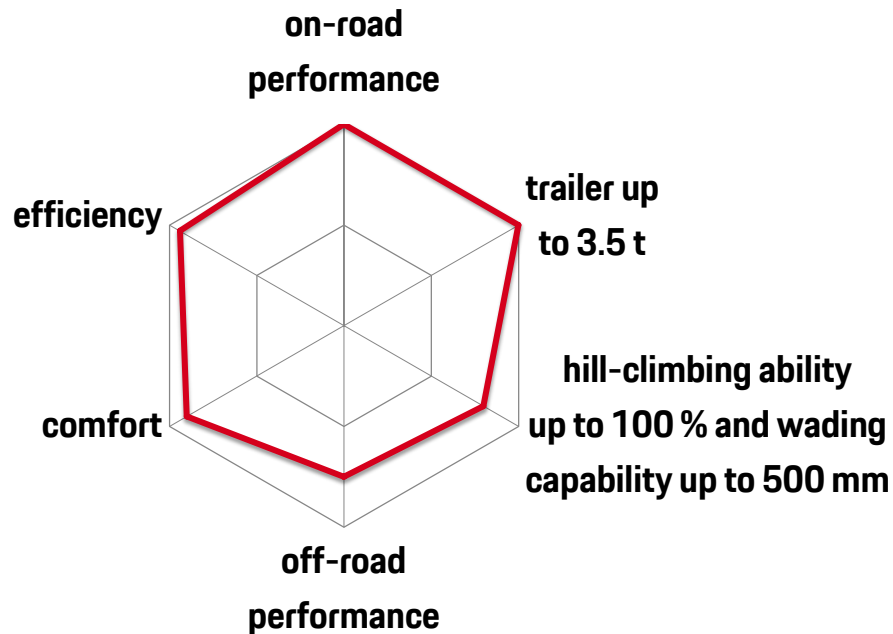
Cayenne Turbo

Engine	3.0-litre V6 turbo	2.9-litre V6 twin-turbo	4.0-litre V8 twin-turbo
Power (kW/hp)	250/340	324/440	404/550
Max. torque (Nm)	450	550	770
Acceleration 0-100 km/h* (s)	5.9	4.9	3.9
NEDC fuel consumption (l/100 km)	9.2-9.0	9.4-9.2	11.9-11.7

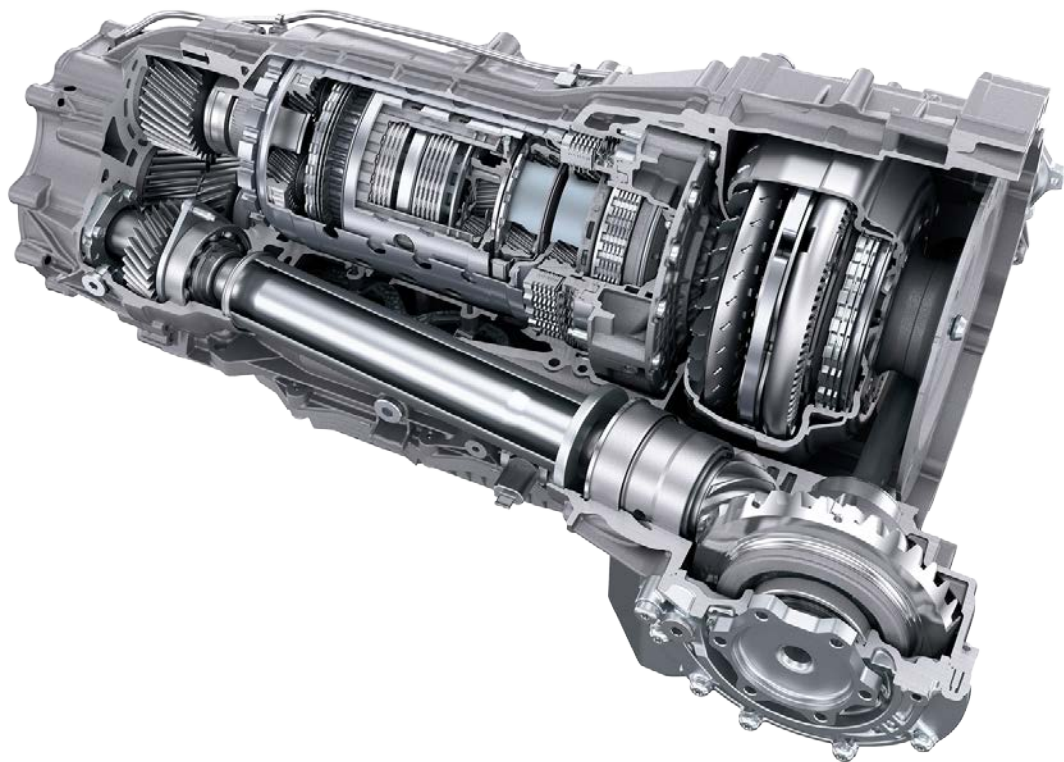
*Sport Chrono

The new Cayenne drivetrain

An exceptional spread of requirements

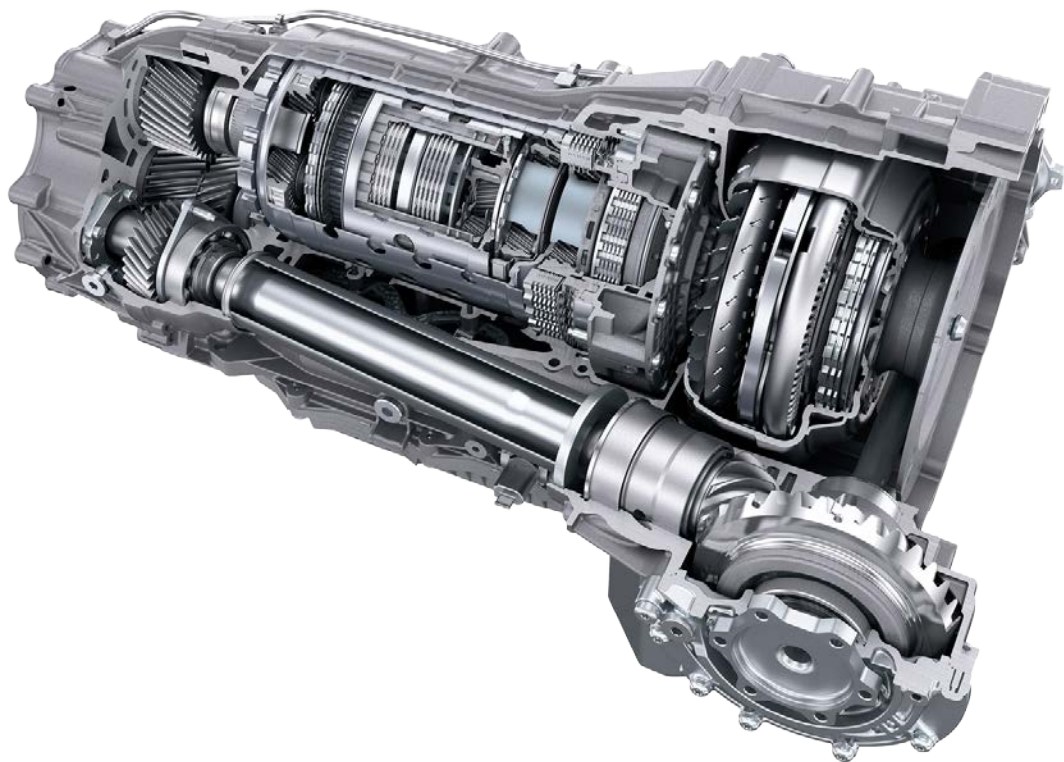


New eight-speed Tiptronic S



- | 8 gears (6+2 configuration)
- | Spread of up to 7.8
- | Torque capacity up to 1,100 Nm at transmission input
- | Integrated front axle differential
- | Full shift-by-wire
- | Universal hybridisation
- | Transmission with torque converter

New eight-speed Tiptronic S



With vane pump for optimal efficiency and shift elements with separated plates to optimise drag loss

Intuitive shift programme recognises driver preferences

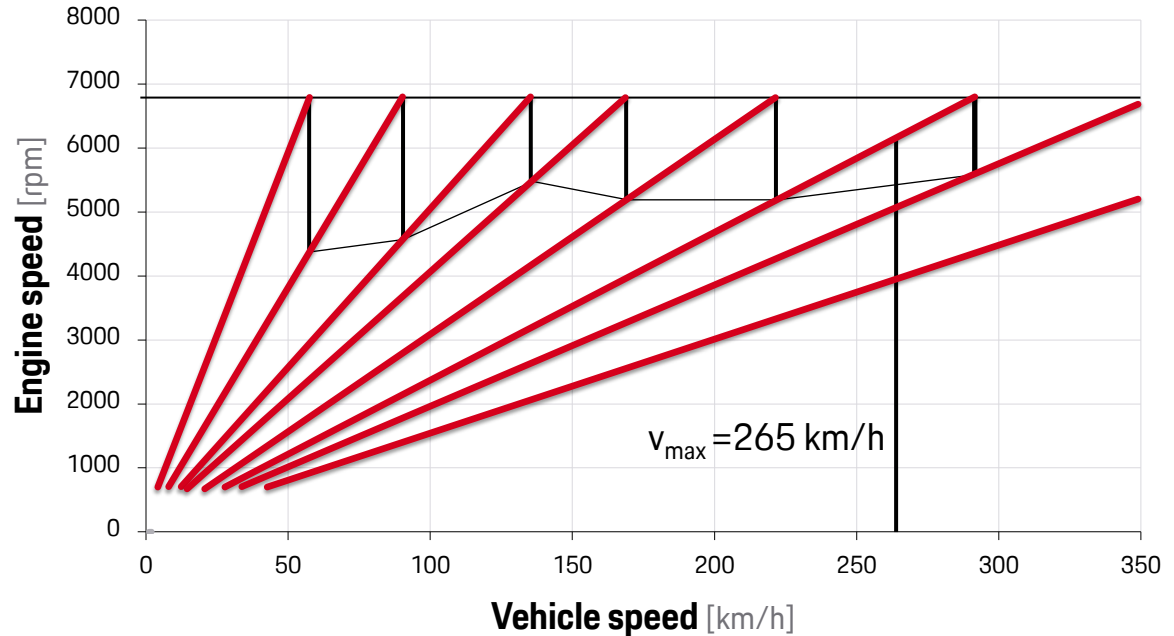
Offroad modes can be selected to suit the terrain

Auto start/stop switches off the engine at coasting down to less than 7 km/h

Gear gradation of the new Tiptronic S in the Cayenne S

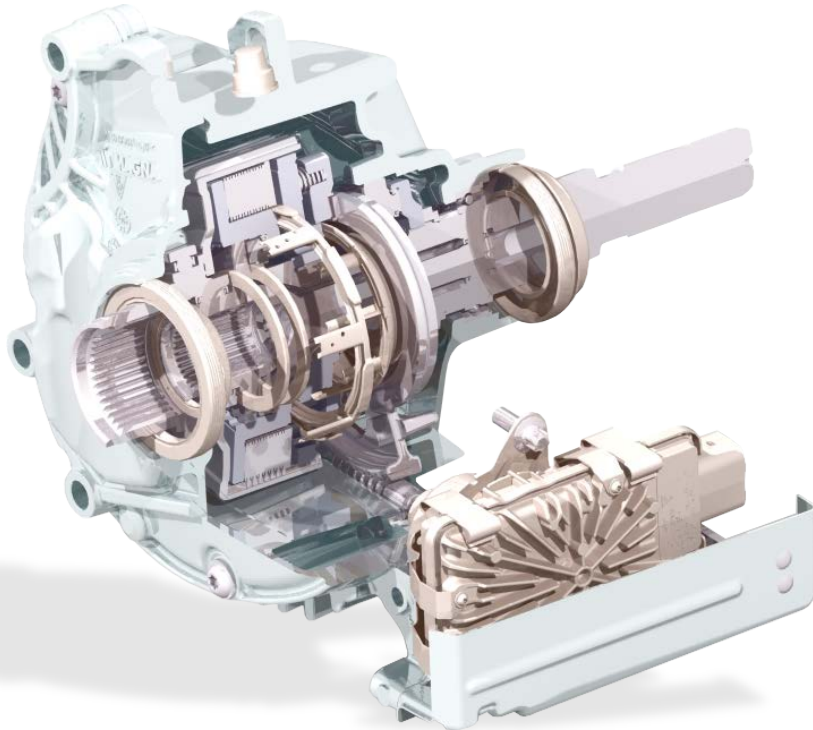
Gear ratios

1st gear	5.00
2nd gear	3.20
3rd gear	2.14
4th gear	1.72
5th gear	1.31
6th gear	1.00
7th gear	0.82
8th gear	0.64
Reverse gear	3.48
Axle ratio	3.2



The new hang-on transfer case

Dynamic-oriented 4WD now standard on all Cayenne models



Electronically controlled wet multi-plate clutch for active transfer of torque to the front axle

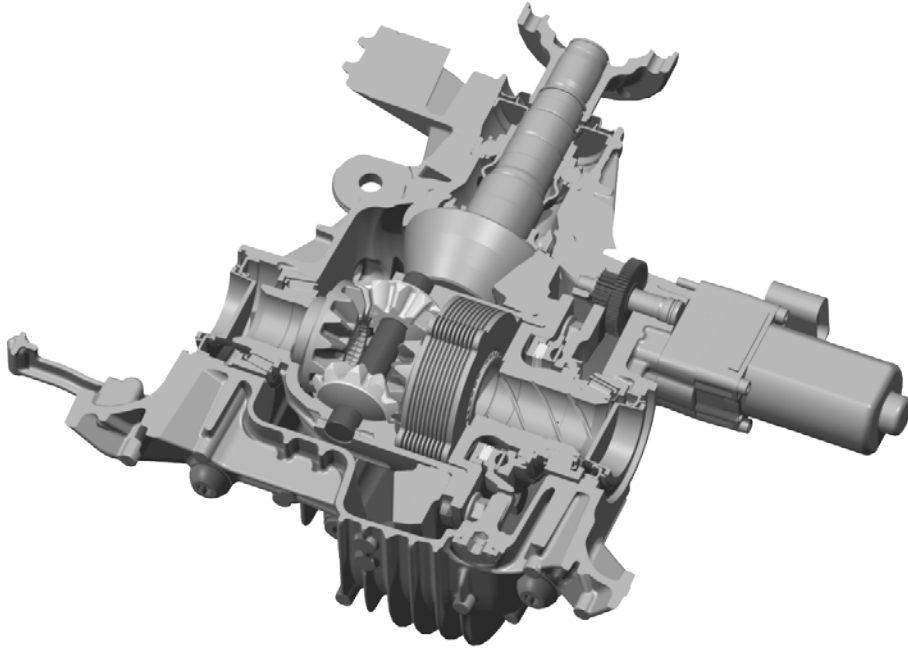
Designed for optimum controllability thanks to difference in speed at the clutch

High on-road and off-road performance with a max. torque capacity of up to 1,400 Nm and high dynamics

Design optimised for weight and package

New rear axle transmission range

With optional controlled differential lock



Weight optimized to match torque capacity of the engine

Optional controlled wet multi-plate clutch as differential lock for optimum performance, driving stability and traction (PTV+)

New gear selector lever for full shift-by-wire



No mechanical connection to the transmission for optimised comfort

Monostable design

New locking concept prevents unintended operation

Auto P function