

# PACCAR PR engines

PR228 - PR265



The development programme for the PACCAR PR engine range was driven by the objective to offer the best performance and the lowest operating costs. To achieve this, DAF focused on reliability, durability, fuel economy and high torque at lower engine revs to guarantee excellent driveability.

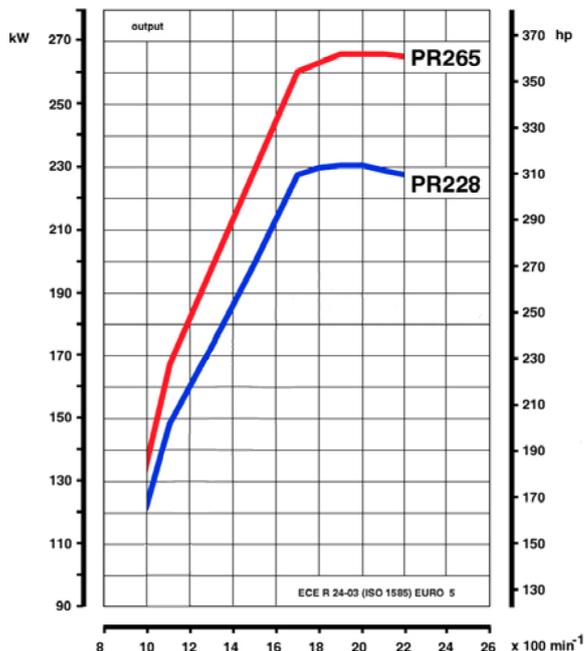
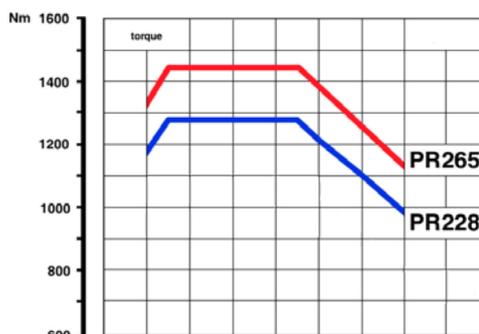
Engine	Output * kW (hp)	Torque Nm
PR228	228 (310)	1275 at 1100 - 1700 rpm
PR265	265 (360)	1450 at 1100 - 1700 rpm

\* at rated engine speed 2200 rpm

### General information

Six-cylinder in-line turbocharged diesel engine with intercooling. Clean combustion with Selective Catalytic Reduction (SCR) aftertreatment for Euro 5 emission levels. EEV standards are met in combination with a passive soot filter.

Bore x stroke ..... 118 x 140 mm  
 Piston displacement ..... 9.2 litres  
 Compression ratio ..... 17.4 to 1



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## Details

### Main construction

Cylinder block	cast iron
Cylinder head	2 separate cross-flow type heads, each covering 3 cylinders; cast iron
Valves	four valves per cylinder
Cylinder liners	dry, replaceable, plateau honed
Pistons	oil-cooled pistons; low expansion, aluminium alloy with cast iron insert for top ring
Piston rings	double cone top ring with chromium-ceramic lining; compression ring; oil scraper ring
Crankshaft	nitrided, forged alloy steel; supported in 7 bearings; 4 balance weights
Cam shaft	steel forged, induction hardened; supported in 7 bearings; driven from the timing gears
Distribution gear	front mounted distribution drive with straight gears

### Fuel injection and induction

Fuel injection	Electronic Unit Pump system (EUP); dual rail system
Injectors	SMART injectors with variable needle opening pressure
Injection timing	electronically controlled SMART injection system with variable start, pressure and rate
Injection pressure	max. 1500 bar
Fuel injection	one electronically controlled pump unit per cylinder
Induction	turbocharged with charge cooling (intercooling)
Turbocharger	with controlled by-pass
Intercooler	1 row tube transverse type, aluminium, located in front of radiator

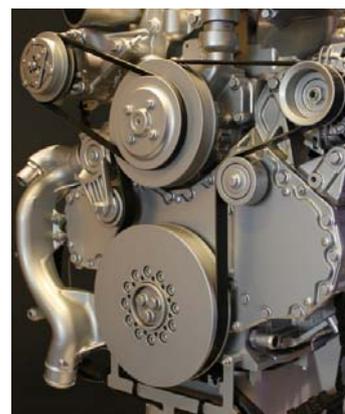
### Lubrication

Oil sump	sheet steel extruded, capacity min. 20 litres, max. 28 litres
Oil filter	standard servicing - full flow cartridge filter extended servicing - large capacity full flow cartridge filter and centrifugal by-pass filter
Oil cooler	coolant-to-oil plate type heat exchanger
Oil pump	gear-type, crankshaft driven



### Auxiliaries and exhaust brake

Compressor	driven from timing gears
Alternator	poly V-belt driven at engine front
Steering pump	driven from timing gears
Exhaust brake	pneumatically operated butterfly valve in the exhaust ducting



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## General

### Reliability and durability

The reliability of complex machinery like a modern diesel engine not only depends on the robustness of its main components, but is as much the result of careful design of the details.

The PACCAR PR engines owe their outstanding reliability amongst other things to the integration of the low pressure fuel lines in the unit pump housing, a five layer steel cylinder head gasket to cope with very high peak pressures and foam wiring on the engine block to reduce vibration and load on the connectors.

A reinforced crankshaft and large main bearings reduce the engine stress and contribute to the design life of 800,000 km before any major overhaul on key components is required.

### Performance

The powerful PACCAR PR engines, with maximum torque available at low engine rpm, facilitate a flexible and relaxed driving style, avoiding driver's fatigue even in dense traffic and during multi-stop operations.

A foot operated exhaust brake comes as standard equipment, offering 170 kW braking power at 2800 rpm, while 130 kW is already available at 2400 rpm.



### Fuel efficiency

The PACCAR PR engines are characterised by a highly optimised combustion process, featuring the SMART fuel injection technology with high-pressure multiple injection and variable injection timing.



The very efficient combustion pays off in class leading fuel efficiency.

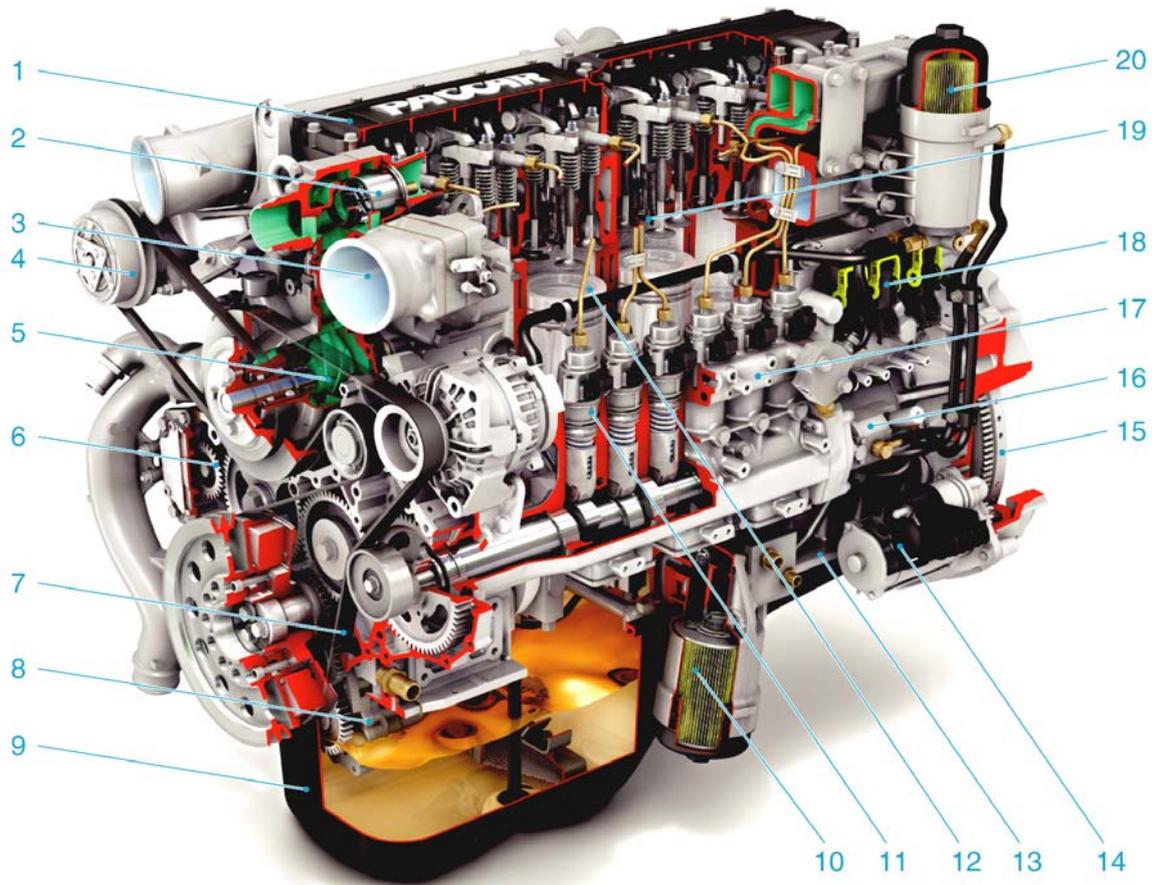
### Environment

PACCAR PR engines use SCR technology to comply with the Euro 5 requirements for exhaust gas emissions.

Low engine noise levels have been achieved by a rigid design of the cylinder block and auxiliaries mounted directly on the distribution housing.

# PACCAR PR engines

lay-out



**Legend:**

- |                                |                         |
|--------------------------------|-------------------------|
| 1. Valve cover                 | 11. Unit pump           |
| 2. Thermostat housing          | 12. Piston              |
| 3. Air intake pipe             | 13. Engine block        |
| 4. Airco compressor drive      | 14. Starter motor       |
| 5. Water pump                  | 15. Flywheel            |
| 6. Air compressor gear wheel   | 16. Fuel lift pump      |
| 7. Poly-V belt auxiliary drive | 17. Unit pump housing   |
| 8. Oil pump                    | 18. ECU unit            |
| 9. Oil sump                    | 19. SMART fuel injector |
| 10. Oil filter                 | 20. Fuel filter         |