

PACCAR MX-11 engines



The 10.8 litre Euro 6 PACCAR MX-11 engine uses ultra-modern common rail technology, a turbo with variable geometry and advanced controls for maximum efficiency. In order to comply with the strict Euro 6 emission requirements, it features exhaust gas recirculation, together with an active soot filter and SCR technology.

The engines MX-11 271, 291 and 320 provide additional torque at low revs in the highest gear for direct drive gearboxes and in the two highest gears for overdrive gearboxes to support lower fuel consumption of the vehicle.

Engine	Output - kW (hp)	Torque - Nm
MX-11 220	220 (299) at 1675 rpm	1350 at 900-1400 rpm
MX-11 251	251 (341) at 1675 rpm	1500 at 900-1400 rpm
MX-11 270	270 (367) at 1600 rpm	1900 at 900-1125 rpm ¹⁾
MX-11 300	300 (408) at 1600 rpm	1800 at 900-1400 rpm 2100 at 900-1125 rpm ¹⁾
MX-11 330	330 (449) at 1600 rpm	2000 at 900-1400 rpm 2300 at 900-1125 rpm ¹⁾ 2200 at 900-1400 rpm

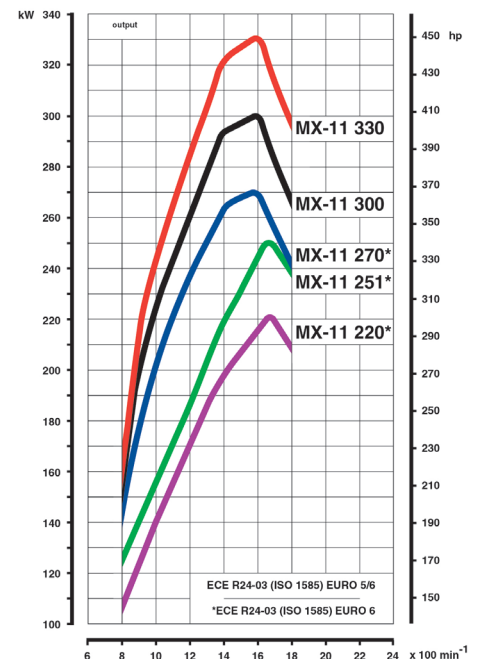
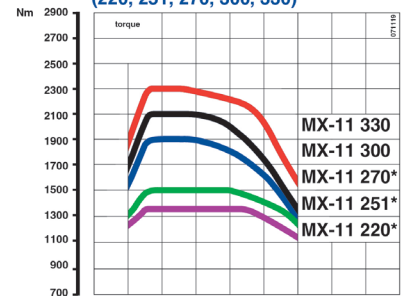
¹⁾ in the highest gear for direct drive gearboxes and in the two highest gears for overdrive gearboxes

General information

Six-cylinder in-line turbocharged diesel engine with intercooling. Ultra clean combustion with Exhaust Gas Recirculation (EGR), Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR) aftertreatment for Euro 6 emission levels.

Bore x stroke	123 x 152 mm
Piston displacement	10.8 litres
Compression ratio	18.5 to 1

PACCAR MX-11
(220, 251, 270, 300, 330)



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Main construction

- Cylinder block
 - compact graphite iron (CGI) with vertical ribs to maximize strength and achieve low noise levels
- Cylinder head
 - Integrated housing for the high pressure fuel pumps
 - compact graphite iron (CGI) one-piece cylinder head with double overhead camshafts and integrated air intake manifold
- Valves
 - composite valve cover
 - four valves per cylinder
 - valves with single valve springs
- Cylinder liners
 - wet liners with Anti Polishing Ring
- Pistons
 - oil cooled piston with three piston rings each
- Crankshaft
 - 'stepped-die' forged steel crankshaft without contra-weights
- Oil sump
 - composite oil sump
- Distribution gear
 - low-noise rear mounted distribution drive with straight gears



Fuel injection and induction

- Fuel injection
 - common rail with 2 high pressure pump units integrated in the engine block
- Injectors
 - injectors with variable needle opening pressure
- Injection
 - max. 2500 bar
- Induction
 - turbocharged with charge cooling (intercooling)
- Turbocharger
 - variable geometry turbocharger (VTG)
- Intercooler
 - aluminium, single-row, transverse-type intercooler

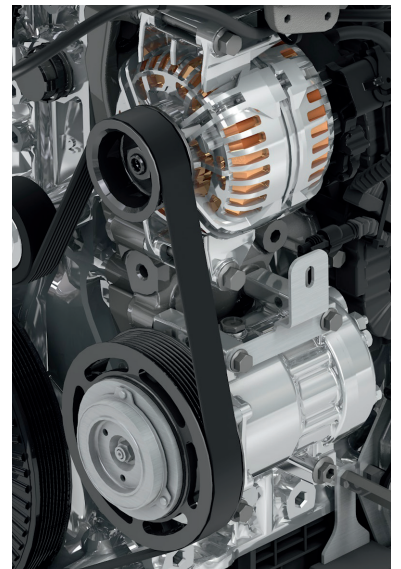


Lubrication

- Oil module
 - pre-assembled module, containing oil filters, oil cooler, thermostat, valves and tubing
- Oil filters
 - full-flow main oil filter; centrifugal by-pass filter for extended service intervals
 - fully recyclable filter cartridges
- Oil cooler
 - thermostatically controlled plate-type stainless steel heat exchanger
- Oil pump
 - vane-type pump, variable, high efficient oil pump

Auxiliaries and exhaust brake/engine brake

- Auxiliary drive
 - poly-V belt drive
 - low-energy air compressor and combined steering pump/fuel feed pump unit driven from the distribution gears
- Exhaust brake
 - electrically controlled Back Pressure Valve (BPV) in the exhaust duct
- MX Engine Brake
 - integrated, electronically controlled, hydraulically operated, compression brake



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Engine torque and performance

Two different engine tunings are used to adapt the PACCAR MX-11 engines to specific application areas. Engines with outputs 220 and 251 kW have been optimized for urban, regional and national distribution, with solo vehicles or combinations up to 32-36 tonnes GCM. These engines deliver maximum torque over an extra wide range of 900-1400 rpm. Engines with outputs 270, 300 and 330 kW have been optimized for one-stop delivery types of application, with GCMs ranging from 36 to 44 tonnes. These MX-11 engines provide additional torque at low revs in the highest gear for direct drive gearboxes and in the two highest gears for overdrive gearboxes to support lower fuel consumption of the vehicle.

Performance

All PACCAR MX-11 engines deliver excellent torque at low engine speeds and a high torque is available over a wide rev range. The optional, very powerful MX Engine Brake offers reliable endurance braking on long descents. The integration of the MX Engine Brake in the service brake operation results in improved driving safety and reduced brake lining wear.

Fuel efficiency

A well-controlled combustion process together with additional technology to achieve the ultra-low Euro 6 emission values, results in an excellent fuel efficiency. The fuel in the common rail is supplied using smart dosing controls, to ensure optimum efficiency by only compressing the amount of fuel mixture that is really needed. This reduces hydraulic losses to a minimum.

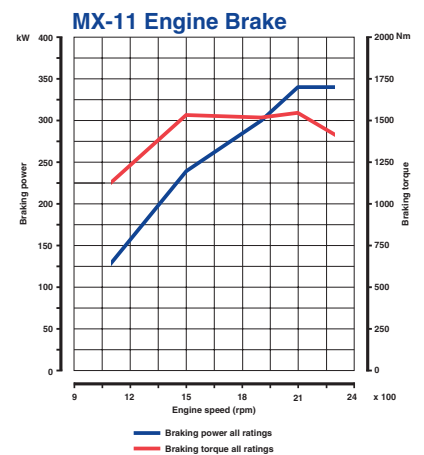
Environment

In order to meet the stringent Euro 6 emission requirements, DAF uses a combination of exhaust gas after-treatment technologies, such as an active soot filter and SCR catalytic converter. The right exhaust gas mixture results in an optimum temperature in the filter to regenerate the collected soot particles.

To allow as much passive regeneration as possible the exhaust manifold, as well as the most essential parts of the exhaust system, have been encapsulated. Also the SCR catalytic converter benefits from the higher temperature which improves the efficiency and reduces the AdBlue consumption.

Euro 5

PACCAR MX-11 engines are also available in Euro 5 versions. The main difference between the Euro 6 and Euro 5 versions relates to the exhaust aftertreatment system and the available MX-11 engine variations. Compared to the Euro 6 version, the Euro 5 version lacks a DOC (Diesel Oxidation Catalyst) and DPF (Diesel Particulate filter) unit. This means the Euro 5 version has no active soot filter. The Euro 5 version can only be specified as MX-11 300 or MX-11 330. The performance of these engines is comparable to the Euro 6 versions.



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Legend:

- | | | |
|------------------------|---------------------------------|------------------------|
| 1. Valve cover | 8. Engine block | 15. Poly-V belt |
| 2. EGR Valve | 9. Oil filter module | 16. Alternator |
| 3. Air intake pipe | 10. Oil sump | 17. Thermostat housing |
| 4. Seventh injector | 11. Crankshaft | 18. EGR mix tube |
| 5. VTG Turbo | 12. Centrifugal oil filter | 19. MX Engine Brake |
| 6. Flywheel | 13. Air conditioning compressor | 20. EGR cooler |
| 7. Exhaust brake valve | 14. Water pump | |

