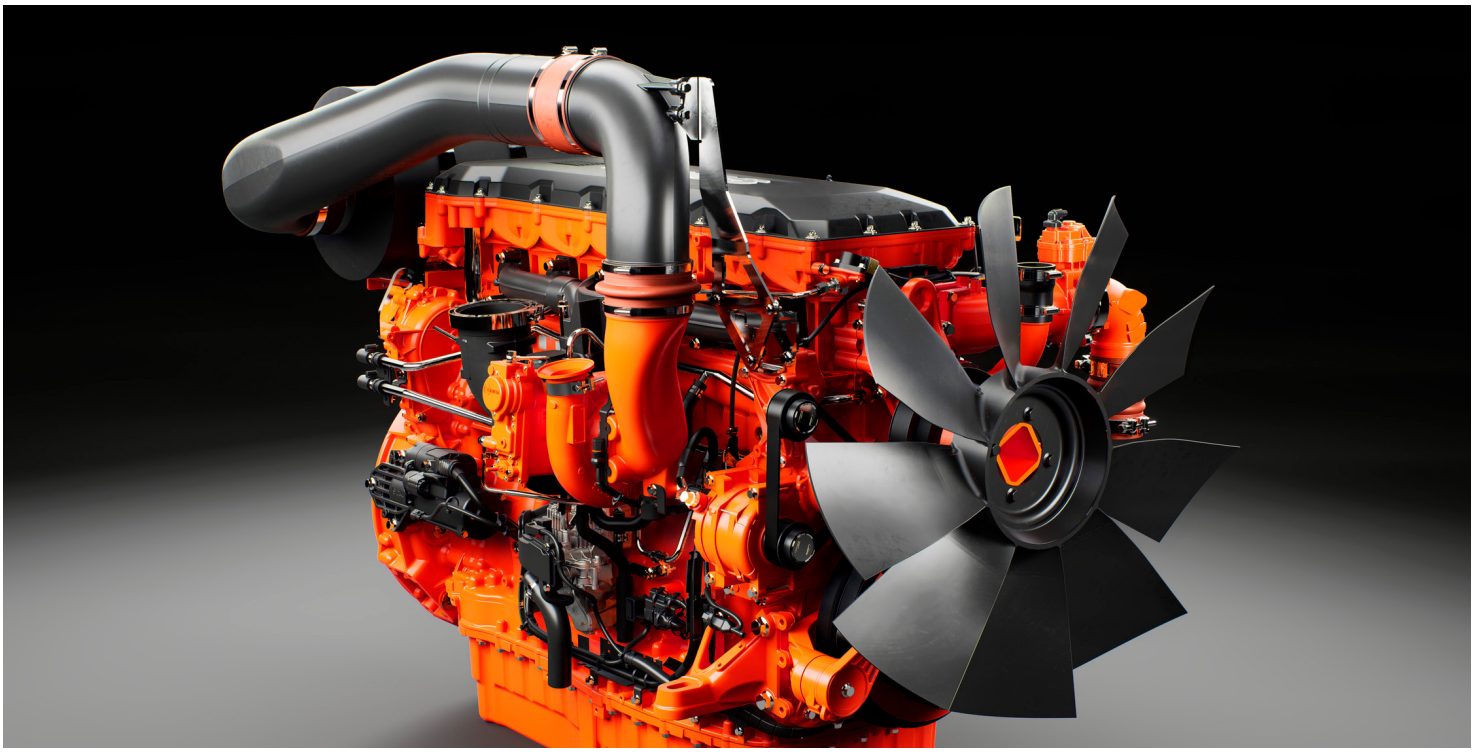
SCANIA POWER GENERATION ENGINE: CHINA STAGE IV

# 13-LITRE ENGINE



## Engine description

DC13 506A. 400/400 kVA (355/361 kW)

| | |
|---|---|
| **Engine speed** | 1,500/1,800 rpm |
| **Emission compliance** | China Stage IV |
| **Rating** | PRP |
| **No of cylinders** | 6 in-line |
| **Working principle** | 4-stroke |
| **Displacement** | 12.7 litres |
| **Weight** | 1,074 kg (excluding oil and coolant) |
| **Oil capacity** | 28-38 litres (standard oil sump) |
| **Electrical system** | 1-pole 24 V DC |

Scania's emission compliant power generation engines are based on the next generation engine platform, which provides superior economy and reliability. The engines offer easy installation for the producer of the equipment as well as easy access to daily checks and service for the operator. The engines can be fitted with many accessories such as air cleaners, exhaust fittings and cooling packages to suit a variety of installations.

Scania's next generation inline engines are equipped with a Scania-developed Extra High Pressure fuel injection system based on common rail technology, and a turbocharger optimized for operation in combination with the exhaust gas aftertreatment system. Together with Scania's Engine Management System, the result is an engine that fulfils the strictest exhaust gas emission requirements while it delivers low fuel consumption and high power.

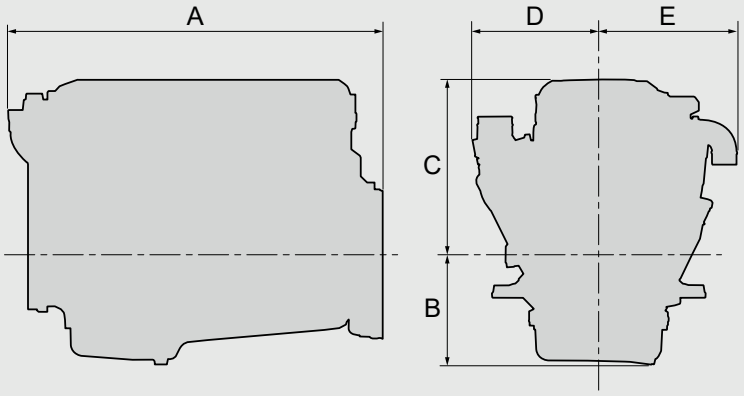
**Standard equipment**

- Variable Geometry Turbocharger (VGT)
- Dual Overhead Camshaft (DOHC)
- Saver ring in cylinder liner
- Aluminum flywheel housing, SAE 1 flange
- Flywheel SAE 14
- Front-mounted engine brackets
- Open crankcase ventilation
- Electric air intake throttle
- Front- and rear-mounted lifting eyes
- Extra High Pressure fuel injection system, XPI
- Engine-mounted fuel filter and extra pre-filter with water separator, for separate mounting
- Deep front oil sump
- Magnetic drain plug for oil draining
- Oil filter, full flow
- Oil cooler, integrated in cylinder block
- Oil filler and dipstick, short, left-hand side, in ladder frame
- Scania Engine Management System, EMS
- Starter motor, 1-pole, 5.5 kW (EMS-controlled)
- Alternator, 1-pole 100 A (EMS-controlled)
- Distributed exhaust gas aftertreatment system

## Dimensions

| | |
|---|---|
| **A** Overall length | 1,401 |
| **B** Centre of crankshaft to bottom | 370 |
| **C** Centre of crankshaft to top | 691 |
| **D** Centre of crankshaft to right-hand side | 498 |
| **E** Centre of crankshaft to left-hand side | 513 |

All dimensions indicated in mm.



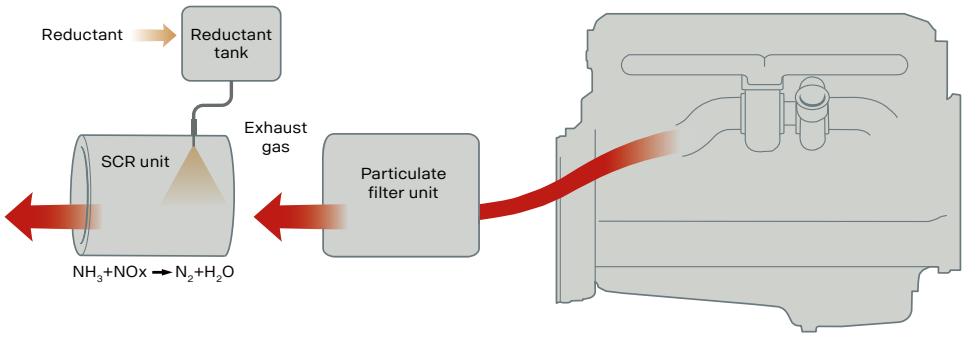

## Technical data

| | 1,500 rpm (50 Hz) | 1,800 rpm (60 Hz) | Unit |
|---|---|---|---|
| Gross power | 400 | 400 | kVA |
| | 355 | 361 | kW |
| Gross torque | 2,260 | 1,915 | Nm |
| Fuel consumption | | | |
| at full load | 183 | 188 | g/kWh |
| at 3/4 load | 183 | 188 | g/kWh |
| at 1/2 load | 187 | 195 | g/kWh |
| at 1/4 load | 213 | 232 | g/kWh |
| Reductant consumption at full load | 22 | 22 | g/kWh |
| Heat rejection | | | |
| to coolant | 110 | 115 | kW |
| to exhaust gas | 223 | 234 | kW |
| to charge air | 51 | 59 | kW |
| to surrounding air | 31 | 32 | kW |
| Air consumption | 27 | 31 | kg/min |
| Air temperature | | | |
| upstream of charge air cooler | 163 | 164 | °C |
| downstream of charge air cooler | 50 | 50 | °C |
| Pressure in intake manifold | 1.76 | 1.66 | bar |
| Pressure drop in charge air cooler | 0.07 | 0.10 | bar |
| Exhaust gas flow | 28 | 32 | kg/min |
| Exhaust gas temperature | 462 | 430 | °C |

**PRP - Prime power:** For continuous operation and unlimited yearly operating time at varying load. Max. mean load factor of 70% of rated power over 24 h of operation. 1 hour/12-hour period of overload to 110% load. Max. 25 h accumulated service time above 100% load per year.

SCANIA INDUSTRIAL AND POWER GENERATION ENGINES

# EXHAUST GAS AFTERTREATMENT SYSTEM

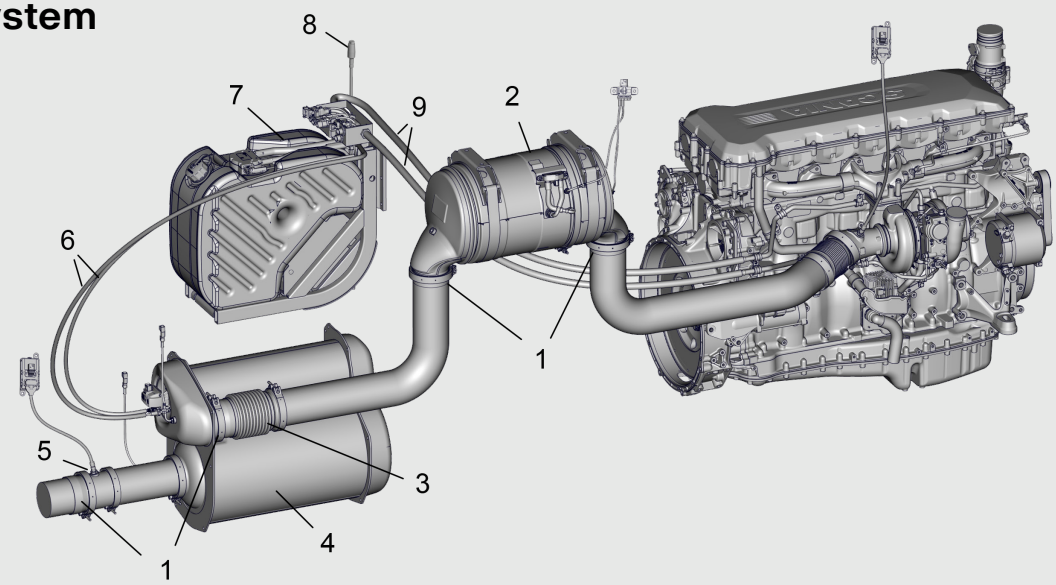



The emissions of particulate matter are filtered through a ceramic structure, that only allows particles smaller than a defined size to pass. When the filter is filled with soot particles to a specific amount, it is regenerated automatically.

SCR technology: A chemical process is started when reductant, a urea and water mixture, is injected into the exhaust gas stream. During injection, the water evaporates, and the urea breaks down to form ammonia. The ammonia then reacts with the nitrogen oxide gases in the catalytic converter and forms harmless products such as nitrogen gas and water.

SCR (Selective Catalytic Reduction) technology, in combination with a particulate filter and an oxidation catalytic converter (integrated in the particulate filter unit), is used on Scania's emission compliant engines to reduce the NOx and particle content in the exhaust gases in the best possible way.

## Mechanical system




| | Standard | Optional |
|---|---|---|
| 1 Exhaust flanges | - | Ø114, 130, 155 mm |
| 2 Particulate filter unit | with 90° outlet | with straight outlet |
| 3 Exhaust bellows | - | 1 to 3 pieces |
| 4 SCR unit | without outlet bend | with 90° outlet bend |
| 5 Outlet flange for NOx sensor* | length 323 mm | length 100 mm, weld union, without |
| 6 Reductant hoses | 2.5 m | 4 m, 5 m, 6.5 m |
| 7 Reductant tank | 38 l | 45 l, 60 l, 63 l, 70 l |
| 8 Reductant bleed hose | 0.8 m | 3.3 m |
| 9 Coolant hoses for heating of tank and pump | - | - |

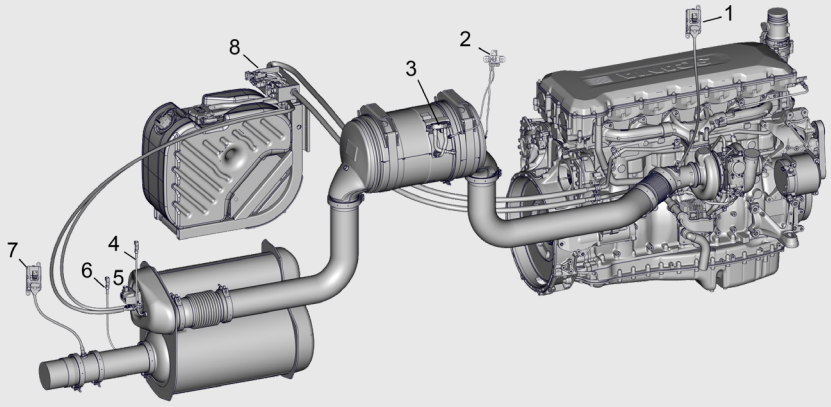
* The NOx sensor must be positioned at least 300 mm downstream of the SCR unit outlet.
Additional reductant storage tanks including pump are also available in the same sizes as the standard reductant tank.

## Electrical system

| |
|---|
| 1 NOx sensor upstream with control unit |
| 2 Temperature sensors with control unit |
| 3 Differential pressure sensor |
| 4 Temperature sensor |
| 5 Reductant doser |
| 6 Temperature sensor* |
| 7 NOx sensor downstream with control unit |
| 8 Electric interface to exhaust emission control system |

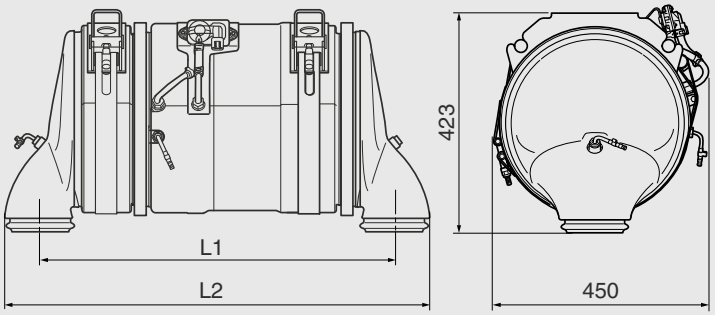
All components are standard equipment. Standard cable length is 3.0 m, optional 4.5 m, 6 m (9 m). Differential pressure sensor is also available for remote mounting.

* Only valid for US Tier 4f compliant engines.



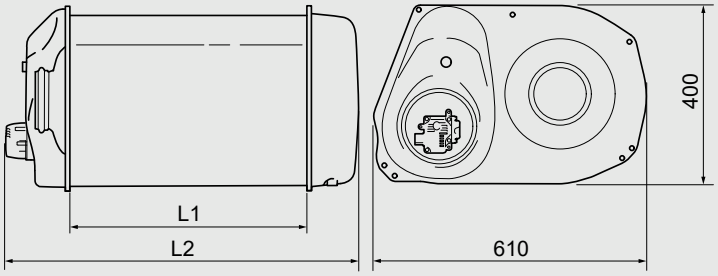

## Particulate filter unit

| Engine | L1 | L2 | Weight |
|---|---|---|---|
| DC11A | 603 mm | 747 mm | 27 kg |
| DC13A | 679 mm | 823 mm | 31 kg |




## SCR unit

| Engine | L1 | L2 | Weight |
|---|---|---|---|
| DC11A | 518 mm | 764 mm | 65 kg |
| DC13A | 595 mm | 841 mm | 73 kg |




## Reductant tank

| Available sizes | | |
|---|---|---|
| **Filling volume** | **Total volume** | **Weight** |
| 38 litres | 50 litres | 53 kg |
| 45 litres | 60 litres | 44 kg |
| 60 litres | 75 litres | 56 kg |
| 63 litres | 80 litres | 50 kg |
| 70 litres | 90 litres | 54 kg |