

# DI16 091M. 480-553 kW

IMO Tier III, IMO Tier II



The marine engines from Scania are based on a robust design with a strength optimised cylinder block containing wet cylinder liners that can easily be exchanged. Individual cylinder heads with 4 valves per cylinder promotes repairability and fuel economy.

The engine is equipped with a Scania developed Engine Management System, EMS, in order to ensure the control of all aspects related to engine performance. The injection system is based on electronically controlled unit injectors that in combination with SCR (Selective catalytic Reduction) gives low exhaust emissions with good fuel economy and a high torque already at low revs.

The engine can be fitted with many accessories such as air cleaners, PTOs and cast iron flywheel housing with dual positions for starter in order to suit a variety of installations.

	Rating	Engine speed (rpm)	
		1500	1800
Gross power, full load (kW)	PRP	480	553
Gross torque (Nm)		3056	2934
Spec fuel consumption. Full load (g/kWh)		203	207
Spec fuel consumption. 3/4 load (g/kWh)		199	203
Spec fuel consumption. 1/2 load (g/kWh)		201	207
Optimum fuel consumption (g/kWh)		199	
Reductant consumption. Full load (g/kWh)		16	16
Heat rejection to coolant* (kW)		359	418

\*Including charge air

**PRP - Prime power:** For continuous operation and unlimited yearly operation at varying load. Max. mean load factor of 70% of rated power over 24 h of operation.  
1 hour/12 hours period of accumulated peak overload to 110%.

## Standard equipment

- Scania Engine Management System, EMS
- Unit injectors, PDE
- Twin turbochargers, heat insulated
- Fuel pre-filter with water separator
- Fuel filter
- Oil filter, full flow
- Centrifugal oil cleaner
- Oil cooler, integrated in block
- Oil filler, in valve cover
- Deep front oil sump
- Oil dipstick, front
- Starter, 2-pole 7.0 kW
- Alternator, 2-pole 100A
- Flywheel SAE 14
- Silumin flywheel housing, SAE 1 flange
- Front-mounted engine brackets
- SCR-system
- Catwalk and cover for belt transmission
- Closed crankcase ventilation
- Operator's manual

## Engines with heat exchanger:

- Sea water charge air cooler
- Impeller sea water pump
- Dual heat exchangers with expansion tanks

## Optional equipment

- Hydraulic pump
- Side-mounted PTO
- Front-mounted PTO
- Exhaust connections
- Engine heater
- Engine brackets with different heights
- Stiff rubber suspension
- Air cleaner
- Cast iron flywheel housing, SAE 1 flange
- Reversible fuel filter
- Low coolant level sensor
- Variable idle speed setting
- Low oil sump
- Reversible oil filters
- Oil draining with pump
- Oil level sensor
- Reductant feed pump
- Bilge pump

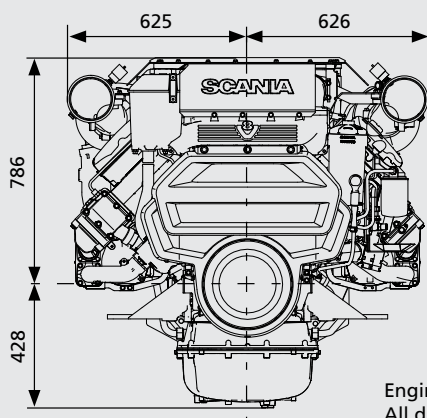
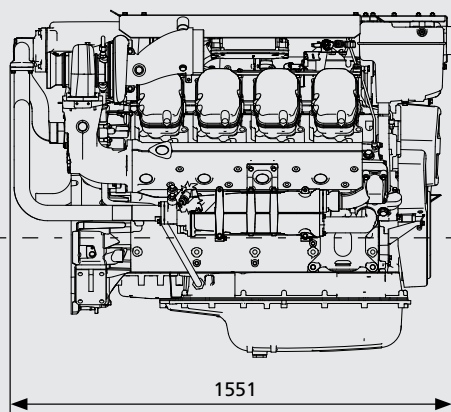


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### Engine description

No of cylinders	V 8
Working principle	4-stroke
Firing order	1 - 5 - 4 - 2 - 6 - 3 - 7 - 8
Displacement	16.4 litres
Bore x stroke	130 x 154 mm
Compression ratio	16.7:1
Weight (excl oil and coolant)	1670 kg (Engine with heat exchanger) 1600 kg (Engine with keel cooling)
Piston speed at 1500 rpm	7.7 m/s
Piston speed at 1800 rpm	9.24 m/s
Camshaft	High position alloy steel
Pistons	Steel pistons
Connection rods	I-section press forgings of alloy steel
Crankshaft	Alloy steel with hardened and polished bearing surfaces
Oil capacity	40-48 dm <sup>3</sup> (standard oil sump)
Electrical system	2-pole 24V



Engine with heat exchanger  
All dimensions in mm

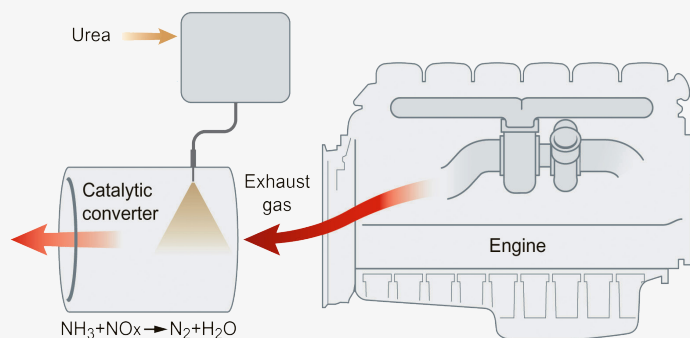


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## SCR system

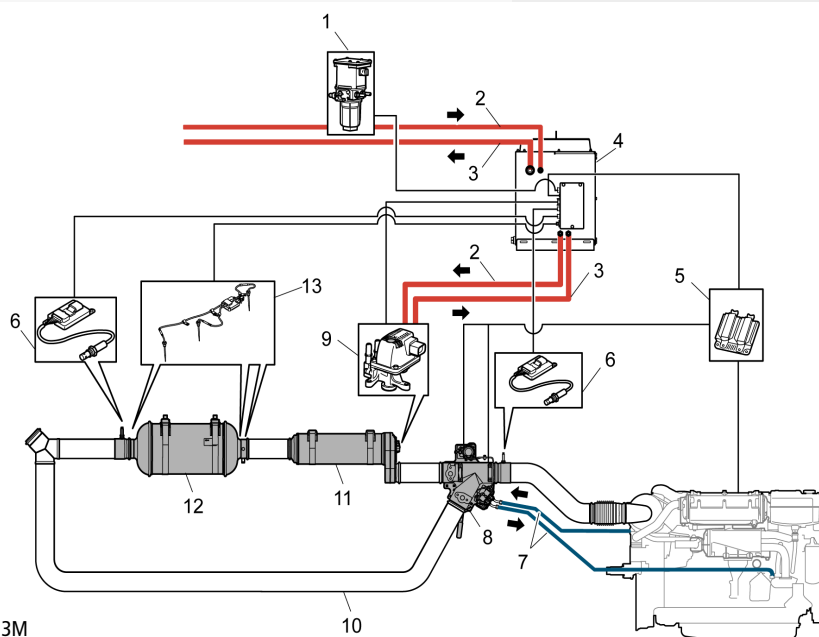


The principle for Scania SCR system

SCR (Selective Catalytic Reduction) technology is used on Scania's engines for IMO Tier III to reduce the  $\text{NO}_x$  content in the exhaust gases.

A chemical process is started by injecting reductant, an urea and water mixture, 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 gases in the catalytic converter and forms harmless products such as nitrogen gas and water. Through the use of SCR the exhaust gases are purged of poisonous levels of  $\text{NO}_x$  in the best possible way. Scania is making use of a system that is carefully developed and tested in our own laboratory.

The Scania SCR system contains an exhaust routing valve that enables to by-pass the SCR system in order to meet the class requirements for marine installations. The system is delivered with an urea unit in stainless steel, prepared for connection to a main tank supported by customer. To ensure the flow of reductant between the main tank and the urea unit a reductant feed pump controlled by Scania can be included. The system can be offered with all mechanical and electrical parts needed except from the exhaust piping which is to be adapted according to the customers installation.



System overview DI13M

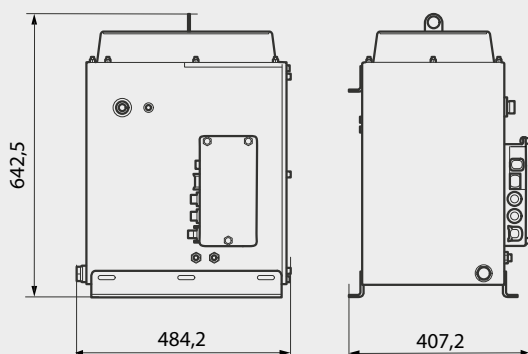
	Standard	Optional		Standard	Optional
1 Reductant feed pump	-	✓	8 Exhaust routing valve	✓	-
2 Reductant fluid pressure line	-	-	9 Reductant doser	✓	-
3 Reductant fluid return line	-	-	10 Branch pipe	-	-
4 Urea unit (including reductant tank, -pump, -pick up unit and control unit EEC)	✓	-	11 Evaporator module	✓	-
5 Control unit EMS	✓	-	12 SCR catalyst	✓	-
6 $\text{NO}_x$ sensors	✓	-	13 Exhaust temperature sensors	✓	-
7 Coolant pipes	-	-			



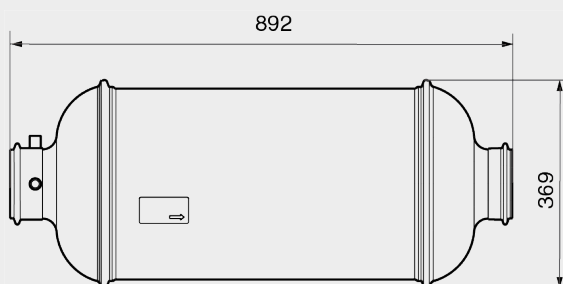
## SCR system

### Urea unit

Total volume: 30 litres  
Filling volume: 16 litres



### SCR catalyst



### Evaporator module

