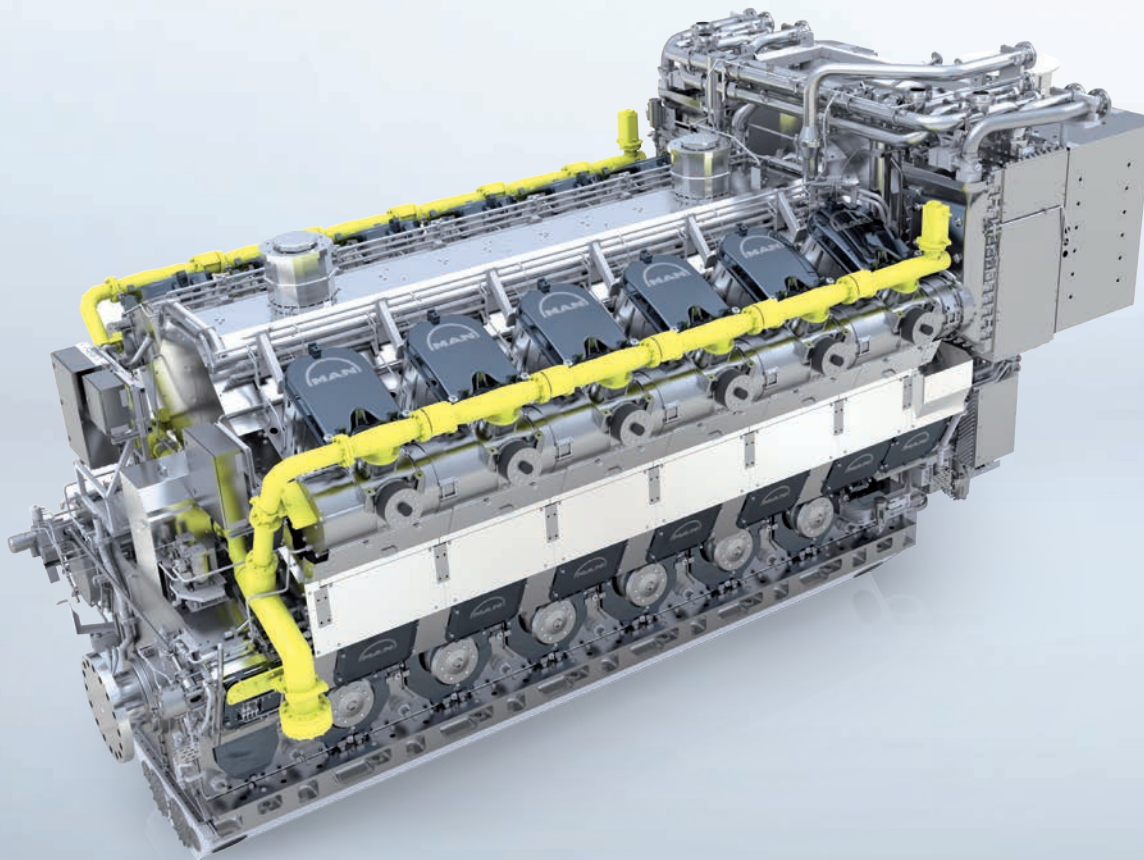


**FOUR  
STROKE  
MARINE  
ENGINES**



# MAN V51/60DF

**DIESEL-ELECTRIC PROPULSION**

Let your fuel take you further. By combining diesel and gas technologies in one engine, the MAN 51/60DF gives you absolute fuel flexibility. There's no better way to keep your engine running effectively and economically. Full steam ahead.

## **Benefits at a glance**

- High power output
- Lowest fuel consumption over entire engine load
- Best load acceptance behaviour
- Full fuel flexibility
- High reliability and long TBOs

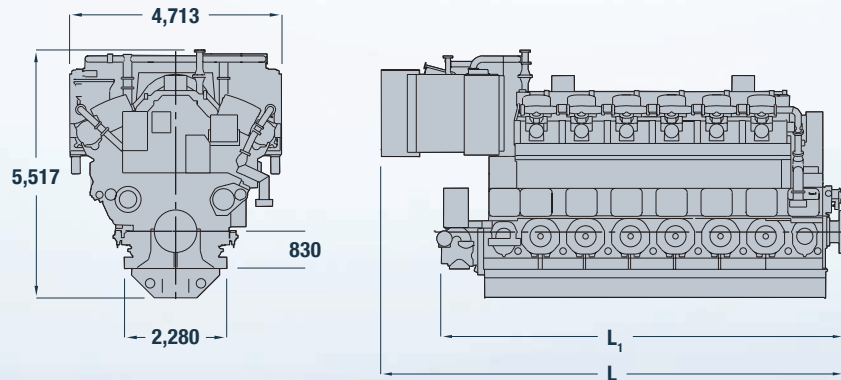
Engineering the Future – since 1758.

**MAN Diesel & Turbo**



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DIESEL-ELECTRIC PROPULSION



## Dimensions

Cyl. No.	12	14	16	18	
L	10,254	11,254	12,254	13,644	mm
L <sub>1</sub>	9,088	10,088	11,088	12,088	mm
Dry mass	187	213	240	265	t

## Output

Speed	514	500	rpm
mep	20.0	20.6	bar
MAN 12V51/60DF	12,600	12,600	kW
MAN 14L51/60DF	14,700	14,700	kW
MAN 16L51/60DF	16,800	16,800	kW
MAN 18L51/60DF	18,900	18,900	kW

Minimum centreline distance for twin engine installation: 4,800 mm  
 LHV of fuel gas  $\geq 28,000$  kJ/Nm<sup>3</sup>  
 (Nm<sup>3</sup> corresponds to one cubic meter of gas at 0 °C and 1.013 bar)  
 Last updated August 2016

## General

- Engine cycle: Four-Stroke
- No. of cylinders: 12, 14, 16, 18
- Bore: 510 mm – Stroke: 600 mm
- Swept volume per cyl: 122.6 dm<sup>3</sup>

## Fuel consumption at 85 % MCR

- Diesel Mode: 180.2 g/kWh
- Gas Mode: 7,265 kJ/kWh

## Cylinder output (MCR)

- At 500/514 rpm: 1,050 kW
- Power-to-weight ratio: 14.0 – 14.8 kg/kW

## Compliance with emission regulations

- IMO Tier II
- IMO Tier III (Gas mode)
- IMO Tier III (Diesel mode with MAN SCR)

## Main features

- Turbocharging system**  
High efficiency constant pressure MAN TCA series exhaust turbocharging system
- Engine automation and control**  
MAN in-house developed engine attached Safety and Control System **SaCoS<sub>one</sub>**
- Air management**  
Variable turbine area allowing improved

MCR = Maximum Continuous Rating | SCR = Selective Catalytic Reduction

adaption for Diesel and Gas mode operation while maintaining highest turbo-charger efficiency over entire engine load

## Fuel system

Common Rail pilot fuel injection system  
 Conventional main injection system  
 Variable injection system for lowest fuel consumption while meeting IMO Tier II emission limits in Diesel mode

## Gas system

Cylinder individual low pressure gas admission system, 5 bar(g) at inlet of gas valve unit

## Cooling system

2-string high and low temperature cooling water systems

## Starting system

Starting air valves within cylinder heads

## Engine mounting

Resilient or rigid mounting

## Optional equipment

- Fuel Sharing mode for highest fuel flexibility
- 100 % Power Take-Off at engine free end available
- Variable inlet valve timing for improved combustion in part load operation

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