

# MAN

# V51/60DF

## Propulsion – High efficiency variant

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

- Best-in-class fuel consumption in gas mode
- Robust performance in gas mode
- Self-learning combustion control
- High reliability and long TBOs
- Gas start capability
- Full power output down to MN70

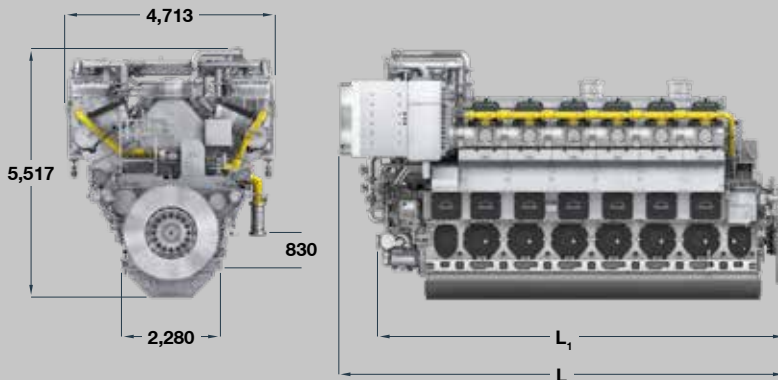


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### Dimensions

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



### Output

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

Minimum centerline 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)

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### General

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

### Fuel consumption at 85 % MCR

- Liquid fuel mode: 177 g/kWh
- Gas mode: 7,200 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-LP)

### 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 MAN SaCoS<sub>one</sub>

#### Air management

- Variable turbine area allowing improved adaption for diesel and gas mode operation while maintaining highest turbocharger efficiency over entire engine load

#### Fuel system

- Common rail pilot fuel injection system
- Conventional main injection system
- Variable injection timing for lowest fuel consumption while meeting IMO Tier II emission limits in diesel mode

#### Gas system

- Cylinder individual low pressure gas admission system, 5.7 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

- Gas start capability
- 100 % power take-off at engine free end available
- Variable inlet valve timing for improved combustion in part load operation

MCR = Maximum continuous rating

SCR-LP = Selective catalytic reduction (low pressure)

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