L23/30H-L28/32H Maintenance

L23/30H-L28/32H Warning

It is important that all MAN Diesel & Turbo engines are operated within the given specifications and performance tolerances specified in the engines‘ Technical Files and are maintained according to the MAN Diesel & Turbo maintenance instructions in order to comply with given emissions regulations.

L23/30H Main Particulars

Cycle	:	**4-stroke**
Configuration	:	**In-line**
Cyl. Nos. available	:	**5-6-7-8**
Power range	:	**650-1280 kW**
Speed	:	**720/750/900 rpm**
Bore	:	**225 mm**
Stroke	:	**300 mm**
Stroke/bore ratio	:	**1.33:1**
Piston area per cyl.	:	**398 cm^2**
Swept volume per cyl.	:	**11.9 ltr.**
Compression ratio	:	**13.5:1**
Max. combustion pressure	:	**130 bar***
Turbocharging principle	:	**Constant pressure system and intercooling**
Fuel quality acceptance	:	**HFO (up to 700 cSt/50° C, RMK700) MDO (DMB) - MGO (DMA, DMZ) according ISO8217-2010**

Power lay-out		MCR version		
Speed	rpm	720	750	900
Mean piston speed	m/sec.	7.2	7.5	9.0
Mean effective pressure	bar	18.2	18.1	17.9
Max. combustion pressure	bar	130	130	130*
Power per cylinder	kW/cyl.	130	135	160

Overload rating (up to 10%) allowable in 1 hour for every 12 hours				
Power per cylinder	kW/cyl.	145	150	175

*For L23/30H-900 rpm version a pressure of 135 bar measured at the indicator cock correspond to 130 bar in the combustion chamber.

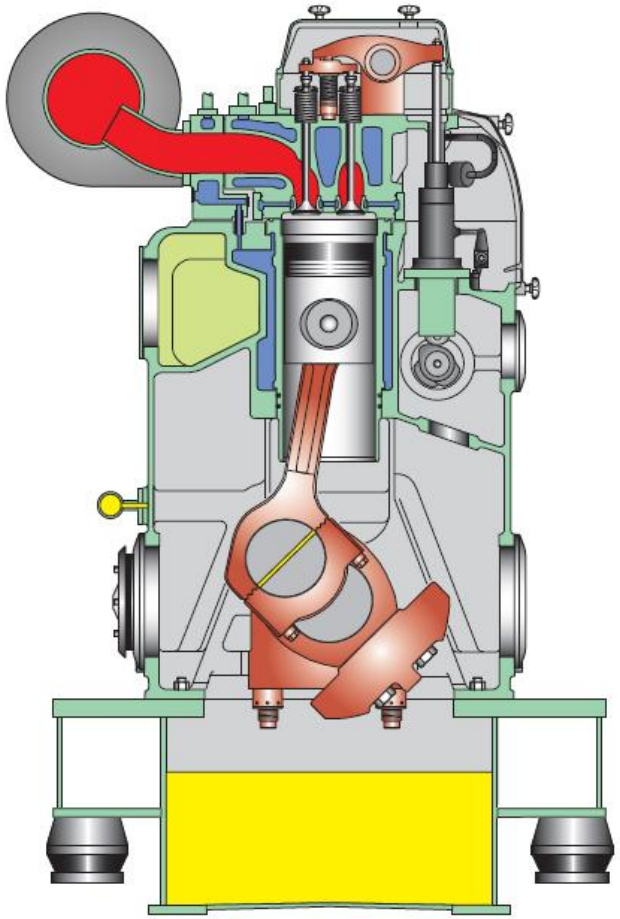
L28/32H Main Particulars

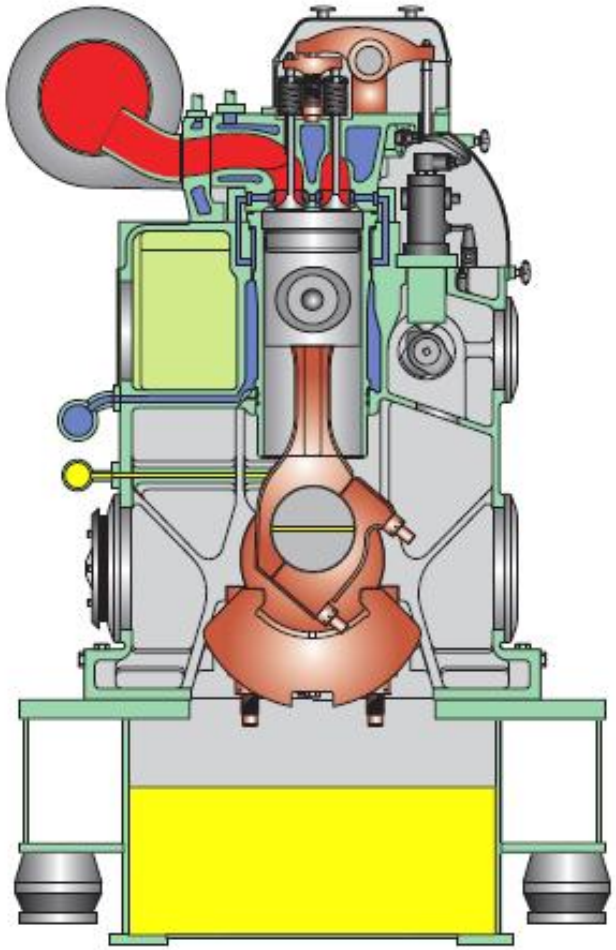
Cycle	:	**4-stroke**
Configuration	:	**In-line**
Cyl. Nos. available	:	**5-6-7-8-9**
Power range	:	**1050-1980 kW**
Speed	:	**720/750 rpm**
Bore	:	**280 mm**
Stroke	:	**320 mm**
Stroke/bore ratio	:	**1.14:1**
Piston area per cyl.	:	**616 cm²**
Swept volume per cyl.	:	**19.7 ltr.**
Compression ratio	:	**13.9:1**
Max. combustion pressure	:	**130 bar**
Turbocharging principle	:	**Constant pressure system and intercooling**
Fuel quality acceptance	:	**HFO (up to 700 cSt/50° C, RMK700) MDO (DMB) - MGO (DMA, DMZ) according ISO8217-2010**

Power lay-out		MCR version	
Speed	rpm	720	750
Mean piston speed	m/sec.	7.7	8.0
Mean effective pressure	bar	17.8	17.9
Max. combustion pressure	bar	130	130
Power per cylinder	kW/cyl.	210	220

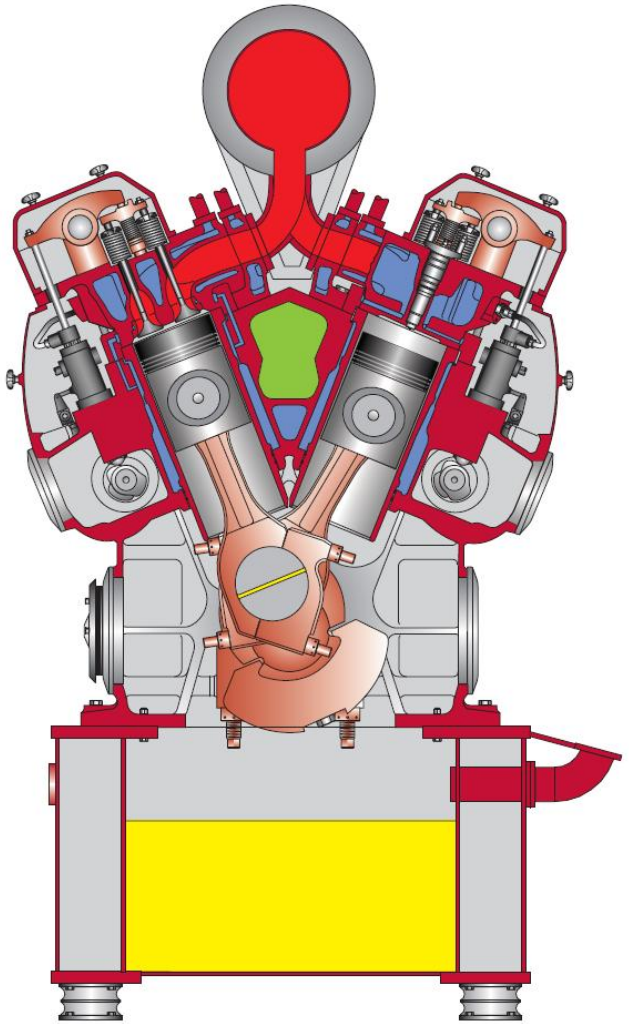
Overload rating (up to 10%) allowable in 1 hour for every 12 hours			
Power per cylinder	kW/cyl.	230	240

L23/30H-L28/32H Cross section





V28/32S Cross section

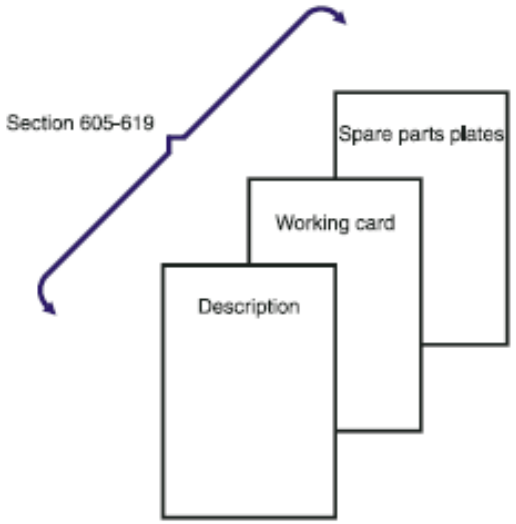


L28/32H Main Particulars

Cycle	:	4-stroke
Configuration	:	V-built
Cyl. Nos. available	:	12-16-18
Power range	:	2700 - 4230 kW
Speed	:	720/750 rpm
Bore	:	280 mm
Stroke	:	320 mm
Stroke/bore ratio	:	1.14:1
Piston area per cyl.	:	616 cm²
Swept volume per cyl.	:	19.7 ltr.
Compression ratio	:	13.9:1
Max. combustion pressure	:	145 bar
Turbocharging principle	:	Constant pressure system and intercooling
Fuel quality acceptance	:	HFO (up to 700 cSt/50° C, RMK700) MDO (DMB) - MGO (DMA, DMZ) according ISO8217-2010

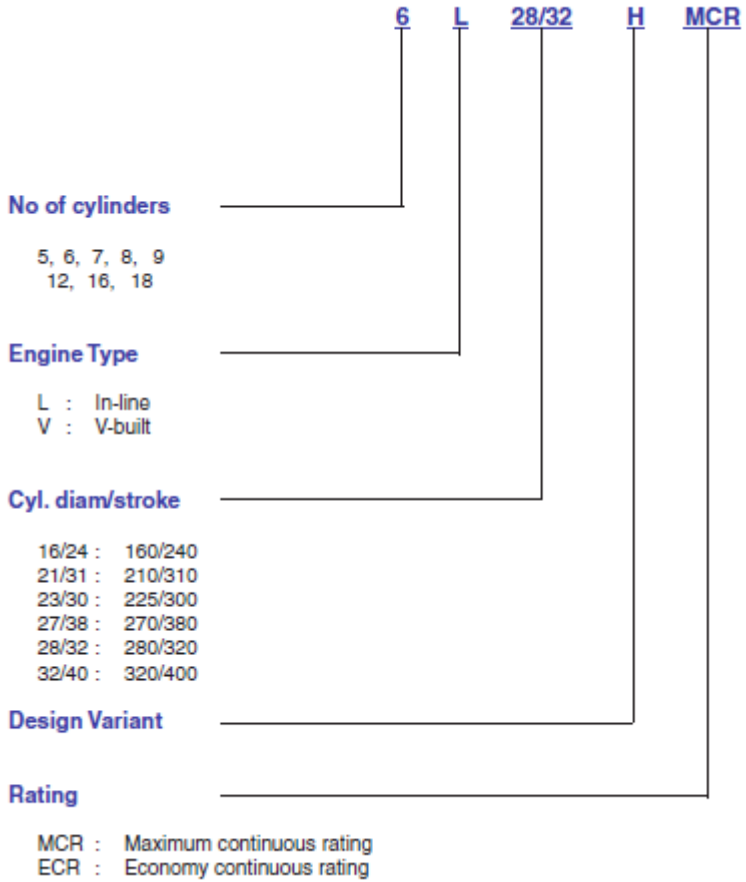
Power lay-out		MCR version	
Speed	rpm	720	750
Mean piston speed	m/sec.	7.7	8.0
Mean effective pressure	bar	19.0	19.1
Max. combustion pressure	bar	145	145
Power per cylinder	kW/cyl.	225	235

L23/30H-L28/32H Instruction manual split

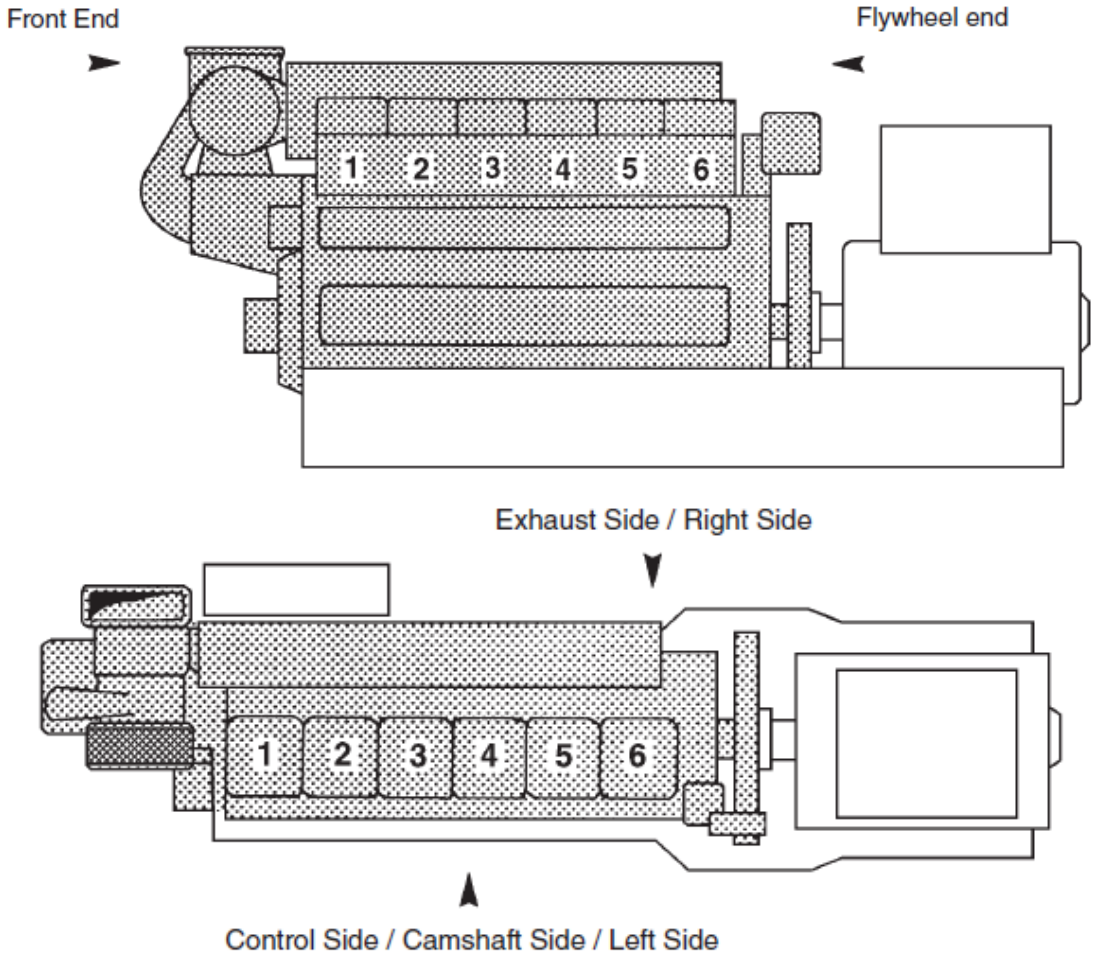


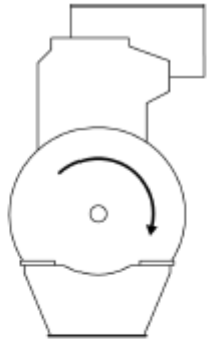
The first five sections (600-604) of the book serve as a guide to engine operation, and the next fifteen sections (605-619) contain technical descriptions, spare parts illustrations with appurtenant parts lists, as well as working cards.
The last section (620) comprises tools.
The engine is divided into a number of main components/ assemblies, each of which is described in a section of this book (section 605-619).

L23/30H-L28/32H Key for Engine Designation

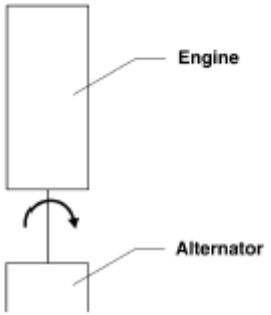


L23/30H-L28/32H Designation of Cylinders





Direction of rotation seen from flywheel end "Clockwise"



L23/30H-L28/32H Planned Maintenance Program

Description (● = Overhaul to be carried out; ■ = Check the condition)	Check new/ Overhauled parts after -hours	Time Between Overhaul: 50	200	2000	8000	16000	32000	Daily	Weekly	Montly	3th month	Observations	Working Card No.
Operating of Engine:													
Readings of data for Engine and Generator, with reference to "Engine Performance Data", section 602-1									■				602-01.00
Cylinder Head:													
Inlet and exhaust valve - Overhaul and regrinding of spindel and valve seat						●							605-01.10
Inspection of inlet, exhaust valves and valve guide						■							605-01.05
Check of valve rotators rotation during engine rotation ...				■									605-01.05
Sleeve for fuel injector						■							605-01.30
Safety valve - Overhaul and adjustment of opening pressure						■							605-01.25
Indicator valve						■						■	605-01.26
Cylinder head cooling water space - Inspection						■							605-01.45
Cylinder head nut - Retightening	200												605-01.40

L23/30H-L28/32H & L28/32H Operation Data & Set points

MAN Diesel & Turbo

Description Page 1 (2)	Operation Data & Set Points	600.30 Edition 50H

L28/32H

		Normal Value at Full load at ISO conditions		Acceptable value at shop test or after repair	Alarm Set point		Autostop of engine	
Lubricating Oil System								
Temp. before cooler (outlet engine)	SAE 30 SAE 40	TI 20 TI 20	60-75° C 65-82° C	<75° C <82° C	TAH 20 TAH 20	90° C 100° C		
Temp. after cooler (inlet engine)	SAE 30 SAE 40	TI 22 TI 22	45-65° C 50-72° C	<65° C <72° C	TAH 22 TAH 22	75° C 85° C	TSH 22 TSH 22	85° C 95° C
Pressure after filter (inlet eng)		PI 22	3.5-4 bar	>4.0 bar	PAL 22	3 bar	PSL 22	2.5 bar
Elevated pressure i.g. when centrifugal filter installed		PI 22	4-5 bar	>4.5 bar	PAL 22	3.5 bar	PSL 22	3.0 bar
Pressure drop across filter		PDAH 21-22	0.5-1 bar	<0.5 bar	PDAH 21-22	1.5 bar		
Prelubricating pressure Pressure inlet turbocharger		PI 23	1.5 ±0.2 bar	>1.5 bar	LAL 25	level switch		
Lub. oil, level in base frame					LAL 28/ LAH 28	low/high level		
Temp. main bearings		TE 29	75-85° C	<85° C	TAH 29	95° C		

10° C change in ambient temperature correspond to approx. 15° C exhaust gas temperature change

L28/32H Data for Pressure and Tolerance

Description Page 1 (2)	Data for Pressure and Tolerance	600.35 Edition 16H

L28/32H

Section	Description	mm. / bar
605	Safety valve to be adjusted to	170 bar
	Maximum inner diameter, valve guide	18.35 mm.
	For grinding of valve spindle and valve seat ring (see also working card 605-01.10)	
	Minimum height of valve head, inlet valve and exhaust valve, "H" 1	6.5 mm.
	Maximum height of spindle above cylinder head, "H" 2	108.0 mm
606	Piston and piston ring grooves (see working card 606-01.10)	
	Clearance between connecting rod bush and piston pin	0.15 - 0.25 mm.
	Maximum ovalness in big-end bore (without bearing)	0.10 mm.
	New cylinder liner, inside diameter	280.03 - 280.08 mm.
	Maximum inside diameter cylinder liner	280.60 mm.

L28/32H Data for Tightening Torque

Description Page 1 (2)	Data for Tightening Torque	600.40 Edition 18H

L+V28/32H

Section	Description		Thread	Tightening Torque Nm	Tightening Pressure bar	Lubricant
605	Cylinder head stud (in frame)	Stud	M 39	200		Loctite 243
	Nut for cylinder head stud	Nut	M 39 x 3		700	Oil / Molykote (Unimol gl 82)
606	Connecting rod screw (see working card 606-01.25)					Molykote (Unimol gl 82)
	Connecting rod screw (hydraulic tightening)	Stud	M 39 x 3			–
		Nut	M 39 x 3		700	

Disclaimer

All data provided in this document is non-binding.

This data serves informational purposes only and is especially not guaranteed in any way. Depending on the subsequent specific individual projects, the relevant data may be subject to changes and will be assessed and determined individually for each project. This will depend on the particular characteristics of each individual project, especially specific site and operational conditions.

Any questions are welcome