

Service record book



MAN marine Diesel engines D28 Common Rail

Subject to technical alterations in the interests of further development.

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Data on drive system and boat

1. Name and address of owner	
2. Data on drive system	
3. Engine model:	4. Output in kW / rpm:
5. Works number:	6. Date of commissioning:
7. Engine number Starboard engine:	rpm
8. Engine number Port engine:	rpm
9. Name of MAN agent, Date, Signature:	
10. Boat details	
11. Boat type:	
12. Boat name:	
13. Boat number, Year of construction:	

Introduction

Dear Customer,

Congratulations on your decision to equip your new boat with MAN marine Diesel engines. These engines boast top performance and operational reliability while requiring only a minimum of maintenance. However, to ensure faultless operation, some checks and maintenance work are necessary at regular intervals.

This handbook provides an overview of all specified maintenance work ("Maintenance plan").

According to this plan the maintenance work is to be carried out by an MAN-authorized workshop either after a certain number of operating hours has been clocked up or at least once a year.

To make it easier for you to handle your new engine system correctly, the following publications are on board the boat:

- Operating Instructions for MAN Marine Diesel Engines (one for each engine)
- Fuels, Lubricants and Coolants for MAN Diesel Engines (one for each engine)
- Spare-parts catalogue (one for each engine)
- List of service points see the internet under:
<http://www.man-engines.com/> → Marine → Service → Service centers

We shall be pleased to answer your questions on aspects which cannot be clarified with these publications. When submitting an enquiry, please always indicate **the 14-digit engine number** which you can find on the form "Data on drive system and boat" on page 1, on the model plate on the engine or in the documents from your shipyard.

Yours faithfully,

MAN Truck & Bus AG
Nuremberg Works

Execution of maintenance work on the basis of operating hours clocked up

General notes on the execution of service work

All service work to be routinely performed for up to 4,000 operating hours is listed on the following pages.

If the number of operating hours allocated to the respective service has not been clocked up within one year, service work is to be carried out at yearly intervals.

Each and every service job (routinely performed on the basis of operating hours clocked up or at yearly intervals) is entered in the chapter "Service record" of this booklet.

At each service the MAN-authorized workshop will confirm with stamp and signature that the work as per maintenance plan has been carried out correctly.

It must be ensured that all entries are complete, correct and legible.

After each service the maximum engine speed (max. boat speed) which can be achieved under load is to be ascertained in a trial run. This engine speed ought not to be below the rated speed (see model plate). This test is to be regarded as proof of maximum engine output.

Peripheral conditions for the engine speed test:

- Boat under load (tanks filled, equipment on board)
- No encrustation on hull, propeller or shaft system

Remarks on work and / or repairs deemed necessary or performed may also be noted down.

General notes on care and maintenance

General

- Exchange worn seals.
- Tighten screwed connections for which tightening torques are specified (see “Service Data”), always using a torque wrench.
- Clean removed parts before refitting them, and check them for damage unless exchange is mandatory.

When checking the engine oil level or changing the engine oil

- The procedure for changing engine oil and oil filters is described in the Operator’s Manual in the chapter “Maintenance and care”.
- Keep vicinity of filler orifices and of dipsticks clean, so that no dirt can get into the oil pan.
- **Caution:** Do not fill up with oil beyond the max. notch on the dipstick.
Overfilling causes damage to engine.
- If loss of oil is due to leaks, ascertain and eliminate cause.

When checking the coolant level

- Top up with missing quantity of fluid, ensuring that the concentration of the antifreeze / anti-corrosion agent is correct (see Operating Instructions, chapter “Maintenance and care” and the publication “Fuels, Lubricants and Coolants for MAN Diesel Engines”).
- Ascertain and eliminate cause of loss of coolant.

When changing the coolant

- Drain and fill up with coolant and bleed cooling system as described in the Operating Instructions, chapter “Maintenance and care”.
- For antifreeze / anti-corrosion agents see publication “Fuels, Lubricants and Coolants for MAN Diesel Engines”.

When checking for leaks of oil, coolant and fuel

- Carry out visual check of engine exterior (crankshaft, cylinder heads etc.) for emergence of oil.
- Carry out visual check of all fluid-containing parts (reservoirs, pipes, hoses) for leaks.
- Carry out visual check of pipes and hoses to see whether they are correctly routed or show chafing marks.



Caution:

Observe safety regulations in Operating Instructions.

Maintenance plan

Service on the basis of operating hours



Note:

The maintenance work is to be carried out after reaching the operating hours or, at the latest, once per year.

The maintenance work to be carried out is that, which first becomes due.

after ... hours of operation	Maintenance service				
	M1	M2	M3	M4	M5
200	X	X	X		
400*	X	X	X	X	X
600	X	X	X		
800	X	X	X	X	X
1000	X	X	X		
1200	X	X	X	X	X
1400	X	X	X		
1600	X	X	X	X	X
1800	X	X	X		
2000	X	X	X	X	
2200	X	X	X		
2400	X	X	X	X	X
2600	X	X	X		
2800	X	X	X	X	
3000	X	X	X		
3200	X	X	X	X	X
3400	X	X	X		
3600	X	X	X	X	
3800	X	X	X		
4000	X	X	X	X	X

* Retighten cylinder head bolts, not for R6-800, R6-730

Maintenance work in accordance with time intervals

according to chronological intervals	Maintenance service			
	M1	M2	M3	M4
yearly	X	X	X	X

In addition to the service on the basis of operating hours clocked up the following maintenance work according to chronological intervals are necessary:

according to chronological intervals	Maintenance service	
	A1	A2
2 years	X	
4 years		X

Maintenance plan

Maintenance service

M1	Checking	<ul style="list-style-type: none"> ● Engine exterior for loss of oil and coolant¹⁾ ● Coolant level ● Concentration of antifreeze / anti-corrosion agents ● Engine oil level / gearbox oil level¹⁾ ● Engine alarms ● Functioning of instruments¹⁾ ● Coolant hoses for leaks ● Fuel lines for leaks ● V-belt tension, retightening if necessary V-belt(s) ● Condition of impeller ● Water hose clamps, pipe connections and bolts for security, retightening if necessary ● Alignment of the shaft system (In the event of abnormal vibrations, since the elastic engine mounts may have settled.) ● Trial run / Engine speed test with boat under full load²⁾ 	M2	Cleaning	<ul style="list-style-type: none"> ● Fuel pre-filter ● Draining water from auxiliary fuel filter
	M3	Changing	<ul style="list-style-type: none"> ● Fuel filter cartridges³⁾ 		
	M4	Changing	<ul style="list-style-type: none"> ● Engine oil ● Engine oil filter cartridge ● Filter element of crankcase breather ● Air filter <p>Reading out</p> <ul style="list-style-type: none"> ● Read out diagnostic system memory 		
	M5	Checking / Setting	<ul style="list-style-type: none"> ● Valve clearance 		
	A1	Changing	<ul style="list-style-type: none"> ● Both valve caps on expansion tank <p>Cleaning</p> <ul style="list-style-type: none"> ● Intercooler / charge-air pipes / turbocharger ● Heat exchanger (pipe cluster) 		
A2	Changing	<ul style="list-style-type: none"> ● Coolant ● All hoses (e.g. fuel supply and return lines, gearbox oil cooler) 			



Caution:

Checking the injectors of Common Rail engines is not specified.

- 1) Daily visual checks are to be carried out by the captain in the course of on-board routine jobs
- 2) Full load means: Water and fuel tanks are filled, boat equipment complete incl. dinghy
- 3) Fuel filters need changing more often if contamination is present in the fuel system

Once the respective number of operating hours has been clocked up (see page 6), the aforementioned maintenance work M1 to M5 is to be carried out by an MAN-authorized workshop.

Jobs A1 and A2 due every year or every other year must be performed irrespective of the number of operating hours clocked up at the respective time.

The warranty conditions

Extent of warranty

MAN warrants that within the period of the warranty all D 28 engine components identified as being faulty will, at MAN's discretion, be either replaced or repaired, the warranty conditions being decisive for this.

Repairs

For execution of the necessary work the customer has to

- grant the necessary time and opportunity,
- provide at his own expense helpers, machinery and equipment and carry out secondary work,
- perform at his own expense any work above and beyond the original extent of the order.

Depending on the kind of damage, MAN will assume to a reasonable amount both the travelling expenses arising for authorised service technicians and the necessary dispatch costs for spare and replacement parts. Extra costs in connection with particular travelling and dispatch expenses are to be borne by the customer.

Repairs will be performed within normal, regular working hours. Extra costs for work outside regular working hours are to be borne by the customer. If engine removal and installation work is necessary, MAN will bear, at most, the labour costs of 32 man-hours per ship. Additional labour costs are to be borne by the customer.

The warranty does not include

- the exchange of wearing parts such as filters, V-belts and service products (oil, anti-freeze and anti-corrosion agents),
- the costs of the execution of the normal service work to be carried out at regular intervals,
- damage resulting from the use of unsuitable service products or from improper handling / operation,
- indirect costs of loss of use, of loss of time, of expenses for board and lodging, of freight charges, of mooring fees, of fuel and of all other consequential costs which may be incurred in connection with warranty cases.

Maintenance record

Maintenance record

400

Location	
Performed at operating hours	
Invoice number	
Product name of engine oil / viscosity class	
Max. engine speed as tested (starboard engine)	
Max. engine speed as tested (Port engine)	
Next maintenance (date and/or operating hours)	
Stamp, Date, Signature	

800

Location	
Performed at operating hours	
Invoice number	
Product name of engine oil / viscosity class	
Max. engine speed as tested (starboard engine)	
Max. engine speed as tested (Port engine)	
Next maintenance (date and/or operating hours)	
Stamp, Date, Signature	

Maintenance record

1200

Location

Performed at operating hours

Invoice number

Product name of engine oil / viscosity class

Max. engine speed as tested
(starboard engine)

Max. engine speed as tested
(Port engine)

Next maintenance
(date and/or operating hours)

Stamp, Date, Signature

1600

Location

Performed at operating hours

Invoice number

Product name of engine oil / viscosity class









Max. engine speed as tested
(starboard engine)









Max. engine speed as tested
(Port engine)

Next maintenance
(date and/or operating hours)

Stamp, Date, Signature

Maintenance record

	2000
Location	
Performed at operating hours	
Invoice number	
Product name of engine oil / viscosity class	
Max. engine speed as tested (starboard engine)	
Max. engine speed as tested (Port engine)	
Next maintenance (date and/or operating hours)	
Stamp, Date, Signature	

	2400
Location	
Performed at operating hours	
Invoice number	
Product name of engine oil / viscosity class	
Max. engine speed as tested (starboard engine)	
Max. engine speed as tested (Port engine)	
Next maintenance (date and/or operating hours)	
Stamp, Date, Signature	

Maintenance record

2800

Location

Performed at operating hours

Invoice number

Product name of engine oil / viscosity class

Max. engine speed as tested
(starboard engine)

Max. engine speed as tested
(Port engine)

Next maintenance
(date and/or operating hours)

Stamp, Date, Signature

3200

Location

Performed at operating hours

Invoice number

Product name of engine oil / viscosity class

Max. engine speed as tested
(starboard engine)

Max. engine speed as tested
(Port engine)

Next maintenance
(date and/or operating hours)

Stamp, Date, Signature

Maintenance record

3600

Location

Performed at operating hours

Invoice number

Product name of engine oil / viscosity class

Max. engine speed as tested
(starboard engine)

Max. engine speed as tested
(Port engine)

Next maintenance
(date and/or operating hours)

Stamp, Date, Signature

4000

Location

Performed at operating hours

Invoice number

Product name of engine oil / viscosity class

Max. engine speed as tested
(starboard engine)

Max. engine speed as tested
(Port engine)

Next maintenance
(date and/or operating hours)

Stamp, Date, Signature

Maintenance record

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