

LIST OF CRITICAL SPARES FOR MAIN ENGINE TO BE CARRIED ONBOARD FOR SAFE OPERATION - DieselShip

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- Adequate spare parts for the propelling machinery together with the necessary tools for maintenance and repair shall be readily available for use while at sea for safe operation of the vessel.
- The SMS of the vessel shall clearly indicate the minimum number of spares and tools required for the safe operation of the ship while at sea and during long passages, additionally it is the responsibility of the shipboard engineers to ensure critical spares are in order for any planned voyages.
- Manufacturers recommendation on the minimum number of spares to be taken into account and the availability of spares in the region the ships plying and the time taken to reach the ship shall always be taken into account.
- The classification societies also recommend critical spares and the number to be carried onboard.

S.No	Spares	Minimum	Reason
1	Main bearings or shells for one bearing of each size and type fitted, complete with shims, bolts and nuts	1	Critical spare: As failure on one of the units may also render the engine in-operable and continue to operate with damaged bearings may also cause permanent failure of crankshaft and moving parts, consequential damages like CC explosion etc.

2	Main thrust block	1 Set	<p>Pads for one face of Michell-type thrust block or Inner and outer race with rollers where roller thrust bearings are fitted.</p> <p>Failure on TB could lead to seizure of the shaft which can lead to the loss of propulsion power.</p>
3	Cylinder liner complete with joint rings and gaskets	1 full set	<p>Cylinder liner complete set shall always be ready to go, as cylinder liner crack, seizure, leaky or-rings etc are troubles which usually occur on the engines and it is always desirable to keep as many number as possible, but atleast 1 full set is mandatory.</p>
4	Cylinder Head assembly	1 full set	<p>Cylinder cover complete with valves, joints rings and gaskets. For engines without covers, the respective valves for one cylinder unit Cylinder cover studs or bolts, with nuts, as applicable for one cylinder</p>
	Valves		
	Exhaust valves, complete with casings, seats, springs and other fittings for one cylinder	2 sets	<p>Exhaust valves are usually carried minimum 2 sets ready go as the chances of failures on fuel system will finally cause issues on exhaust valves.</p> <p>In adequate access to the exhaust valves while in port and regular visual inspection is not always viable hence it is always desirable to keep 2 sets ready to go.</p>
5	Air inlet valves, complete with casings, seats, springs and other fittings for one cylinder	1 Set	<p>As the inlet valve doesn't involve higher temperature as that of exhaust, 1 set is minimum recommended.</p>
	Starting air valve, complete with casing, seat, springs and other fittings	1 set	<p>Starting air valves may get stuck or develop leak but these valves can be overhauled onboard while at sea, hence 1 set is recommended.</p>
	Relief valve, complete	1 set	<p>Cylinder relief valve shall be carried as leaky valve may cause delay in replacing</p>

	Fuel injection valves of each size and type fitted, complete with all fittings, for one engine	1set	and if it is available ready, this can be changed quickly. Depends on the number of units on the engine. It is always desirable to keep atleast the number required to keep the valves ready for 2 units.
	Connecting rod bearings		
6	Bottom end bearings or shells of each size and type fitted, complete with shims, bolts and nuts, for one cylinder	1set	Critical spare same as main bearing.
	Top end bearings or shells of each size and type fitted, complete with shims, bolts and nuts, for one cylinder	1set	Critical spare same as main bearing.
	PISTON & PISTON ASSEMBLY		
7	Pistons	1SET	– Crosshead type, piston of each type fitted, complete with piston rod, stuffing box, skirt, rings, studs and nuts – Trunk piston type, piston of each type fitted, complete with skirt, rings, studs, nuts, gudgeon pin and connecting rod
	Piston rings	1 set	Piston rings, for one cylinder is minimum recommended to carry.
	Piston cooling	1 Set	Telescopic cooling pipes and fittings or their equivalent, for one cylinder unit
8	Gear and chain for camshaft drives	1 Set	Complete gear train and chain, chain repair kit shall be kept ready to repair any kind of failure that may arise as a simple failure may render the whole engine inoperable.
9	Cylinder lubricators	1	Lubricator complete, of the largest size, with its chain drive or gear wheel

10	Fuel injection pumps	1 set	Fuel pump complete, or, when replacement at sea is practicable, a complete set of working parts for one pump (plunger, sleeve, valves, springs, etc.)
11	Fuel injection piping	1	High pressure fuel pipe of each size and shape fitted, complete with couplings
12	Scavenge blowers (including turbochargers)	1 set	Rotors, rotor shafts, bearings, nozzle rings and gear wheels or equivalent working parts if of other types
13	Scavenging system	1 set	Suction and delivery valves for one pump of each type fitted
14	Reduction and/or reverse gear		Complete bearing bush, of each size fitted in the gear case assembly Roller or ball race, of each size fitted in the gear case assembly
15	Gaskets and packings	1 set	Special gaskets and packings of each size and type fitted for cylinder covers and cylinder liners for one cylinder