

Spare Parts for Ships' Machinery

1. Scope

This Japanese Industrial Standard specifies quantity of spare parts to be supplied for marine machinery.

2. Definitions

The principal terms used in this standard shall be defined as follows:

- (1) **Ships** General merchant ships such as passenger boats, freight vessels and tankers (excluding fishing boats, special vessels and those navigating within coasting area).
- (2) **Machinery** Machines or devices in general which are installed in and around the engine room for the purpose of propelling ships. However, this standard excludes such machines or installations as generators, motors and devices attached thereto, and air pumps.
- (3) **Spare Parts** Parts provided in advance for use in replacing damaged or worn parts and can replace them without requiring special machining.

3. Quantity of Supply

The quantity of the spare parts to be supplied is, as a rule, classified into the following groups of Category 1 and Category 2 generally in accordance with the requirements given in Tables 1 to 13. These tables show the required quantity for one vessel excluding the case of purifiers. In a case of the purifier, see Remark of Table 10. However, when two sets or more of machines or devices for same purpose and same type are to be installed, the quantity may as well be limited to that for one set unless otherwise specified by legislation.

- (1) **Category 1** The quantity required by legislation and deemed appropriate to be supplied by manufacturers of machines or devices and the quantity of spare parts to be essential by users.
- (2) **Category 2** Quantity required by legislation.

Remarks: "A" denotes the quantity specified in the rules for ship's machinery and "B" the quantity specified by the classification societies NK, LR and NV.

The symbols of each classification society are as follows:

NK: Nippon Kaiji Kyokai

LR: Lloyd's Register of Shipping

NV: Det Norske Veritas

The terms "ships of NK class for major coasting service" in the table signify those ships classed in NK flying the Japanese flag and engaged in the major coasting service.

Table 1 Propulsion machinery

		Parts name	Required quantity		Remarks	
			Category 1	Category 2		
				A		B
Main steam turbine	Turbine and accessories	Rotor bearing metals each type	For 1 bearing, each type	For 1 bearing, each type	For 1 bearing, each type	—
		Rotor thrust bearing pads	1 face set for each turbine	1 face set for each turbine	1 face set for each turbine	—
		Rotor thrust bearing adjusting pieces	1 face set for each turbine	1 face set for each turbine	1 face set for each turbine	—
		Joint bolts for turbine casing	1/20 of total, each type	—	—	—
		Gland seal packing for rotor	1 set for each turbine	1 set for each turbine	1 set for each turbine ⁽¹⁾	Note ⁽¹⁾ : Including springs.
		Valves and springs for gear pump	For 1 turbine	—	—	—
		Springs for oil pressure control valve	1 piece, each type	—	—	—
		Springs for safety valve	1 piece, each type	—	—	—
		Springs for principal parts	1 piece, each type	—	—	—
		Various O rings	Total	—	—	—
		Special gaskets	Total	—	—	—
		Thermometers	1 set, each type	—	—	—
	Lubricating oil cooling pipes	1/50 of total, each type	—	—	—	
	Lubricating oil strainers (Element)	1 piece, each type	—	1 set for each turbine	—	
	Reduction gear	Reduction gear bearing metals	For 1 bearing, each type	For 1 bearing, each type	For 1 bearing, each type	—
Bolts and nuts for reduction gear casing		1/20 of total, each type	—	—	—	
Bolts and nuts for flexible coupling		For 1 coupling, each type	—	—	—	
Special packing		Total	—	—	—	
Thermometers		1 set, each type	—	—	—	
Main condenser	Cooling pipes	1/50 of total	—	—	—	
	Anode plates	Total	—	—	—	
	Glass tubes for water gauge	2	—	—	—	
	Special packing	Total	—	—	—	
Thermometers	1 set, each type	—	—	—	—	
Main diesel engine	Cylinder cover and fittings	Complete supplies for cylinder cover (including valves and fittings)	For 1 cylinder	For 1 cylinder ⁽²⁾	For 1 cylinder ⁽³⁾ ⁽⁴⁾	Notes: ⁽²⁾ Only for ships with a length over 50 m. ⁽³⁾ : Cylinder valve for 1 cylinder for engine without cylinder cover. ⁽⁴⁾ : May be omitted for ships of NK class with a length not exceeding 50 m for major coasting service. ⁽⁵⁾ : Only for one cylinder for ships of NK class for major coasting service.
		Bolts and nuts for cylinder cover	1/2 of that for 1 cylinder	1/2 of that for 1 cylinder ⁽²⁾	1/2 of that for 1 cylinder	
		Complete supplies for fuel injection valve	For 1 engine	For 1 cylinder	For 1 engine ⁽⁵⁾	
		Complete supplies for starting valve	For 1 cylinder	For 1 cylinder	For 1 cylinder	
		Complete supplies for cylinder cover escape valve	For 1 cylinder	For 1 cylinder ⁽⁶⁾	For 1 cylinder ⁽⁶⁾	Note: ⁽⁶⁾ Only for cylinders with a dia. of 230 mm or more.
		Complete supplies for exhaust valve	For 2 cylinders	For 1 cylinder	For 1 cylinder ⁽⁵⁾	Note: ⁽⁵⁾ Same as above.

Table 1 (continued)

Parts name		Required quantity			Remarks	
		Category 1	Category 2			
			A	B		
Main diesel engine	Cylinder cover and fittings	Working pipe for hydraulically driven exhaust valve	For 1 cylinder	—	—	
		Complete supplies for suction valve	For 1 cylinder	For 1 cylinder	For 1 cylinder	—
		Indicator cocks or valves	For 2 cylinders	—	—	—
		Gaskets and packing for cylinder cover	1/2 of that for 1 engine	—	—	—
	Cylinder liner	Complete supplies for cylinder liner	For 1 cylinder	For 1 cylinder	For 1 cylinder ⁽⁷⁾	Note: ⁽⁷⁾ Including joint ring gaskets.
		Gaskets and packing for cylinder liner	1/2 of that for 1 engine	—	—	—
	Piston and connecting rod	Complete supplies for piston (with piston rings, pins, etc.)	For 1 cylinder	For 1 cylinder ⁽⁸⁾	For 1 cylinder ⁽⁹⁾ ⁽¹⁰⁾	Notes: ⁽⁸⁾ Only for ships with a length over 50 m. ⁽⁹⁾ Crosshead engine: Including piston rods, stuffing boxes, skirts, rings, studs and nuts. Trunk piston engine: Including skirts, rings, studs, nuts, piston pins and connecting rods. ⁽¹⁰⁾ May be omitted for ships of NK class with a length not exceeding 50 m for major coasting service.
		Piston rings	For 2 cylinders	For 1 cylinder	For 1 cylinder	
		Complete supplies for piston rod stuffing box	For 1 cylinder	—	—	Only for crosshead engines.
		Packings and springs for piston rod	For 1 cylinder	—	—	Only for crosshead engines.
		Bolts for piston rod	For 1 cylinder	—	—	Only for crosshead engines.
		Crosshead pin bearings or complete set of bearing shells (with shims, bolts and nuts)	For 1 cylinder, each type	For 1 cylinder, each type ⁽¹¹⁾	For 1 cylinder, each type ⁽¹²⁾	Notes: ⁽¹¹⁾ For single-acting engines - Only the bottom halves of the upper metals and the upper halves of the bottom metals. ⁽¹²⁾ Ships of NK class for major coasting service may conform to ⁽¹¹⁾ .
		Crankpin bearing or complete set of bearing shells (with shims, bolts and nuts)	For 1 cylinder, each type	For 1 cylinder, each type ⁽¹¹⁾	For 1 cylinder, each type ⁽¹²⁾	
		Foot liners	For 1 cylinder	—	—	—
	Main bearing	Main bearing or complete set of bearing shells	For 1 bearing, each type ⁽¹³⁾	For 1 bearing, each type ⁽¹³⁾ ⁽¹⁴⁾	Notes: ⁽¹³⁾ Including shims, bolts and nuts. ⁽¹⁴⁾ May be omitted for ships of NK class for major coasting service.	
	Thrust bearing	Thrust pads	For 1 face	For 1 face	For 1 face	For one bearing for thrust bearing with different pad face contours. One for each type for ball bearing type thrust bearings.
	Scavenging air valves	Complete supplies for air suction and discharge valves for scavenging air blower	For 1 pump, each type	For 1 pump, each type	For 1 pump, each type	Only for 2-stroke cycle engines

Remark: Cylinder cover is also called as "cylinder head."

Table 1 (continued)

Parts name				Required quantity			Remarks
				Category 1	Category 2		
					A	B	
Main diesel engine	Control gear	Driving gears or chains for cam shaft	Gear driven	For 1 engine ⁽¹⁵⁾	—	For 1 engine ⁽¹⁵⁾	Note: ⁽¹⁵⁾ Only for ships under LR and NV.
		Chain driven	Chain driven	For 6 links	For 6 links	For 6 links	—
	Fuel pump	Complete supplies for fuel injection pump or moving parts thereof		For 1 cylinder or 1 piece ⁽¹⁶⁾	For 1 cylinder	For 1 cylinder	Note: ⁽¹⁶⁾ Excluding moving parts for integrated type fuel oil pumps.
				1/2 of that for 1 engine			
	Piping and others	Fuel injection pipes and joints		One for every 4 cylinders of each size and type	One for each size and type	One for each size and type	—
		Piston cooling telescopic tubes (both inner and outer)		For 2 cylinders	For 1 cylinder	For 1 cylinder	—
		Packing rings and springs for piston cooling telescopic tube		For 2 cylinders	—	—	—
		Lubricators for cylinder (including check valve)		For 1 cylinder	For 1 cylinder ⁽¹⁷⁾	For 1 cylinder ⁽¹⁸⁾	Notes: ⁽¹⁷⁾ Only for ships for ocean-going ships. ⁽¹⁸⁾ May be omitted for ships of NK class for major coasting service.
	Turbocharger and auxiliary blower	Rotor, rotor shaft, bearing, nozzle ring, gear or equivalent working parts for turbocharger blower (including exhaust turbocharger)		For 1 turbocharger ⁽¹⁹⁾	—	For 1 turbocharger ⁽¹⁹⁾	Note: ⁽¹⁹⁾ No spare parts may be provided if the engine can be operated without interruption even when one turbocharger fails.
		Main bearings for exhaust gas turbocharger		For 1 turbocharger, each type ⁽²⁰⁾	For 1 turbocharger, each type	—	Note: ⁽²⁰⁾ If duplicated with the above, no spares are required.
		Gland seal packing for rotor of exhaust gas turbocharger		For 1 turbocharger, each type ⁽²⁰⁾	For 1 turbocharger, each type	—	—
		Special gaskets and packing		For 1 bearing, each type	—	—	—
	Air cooler	Anode plates		Total	—	—	—
		Securing pieces for anode plates		Total	—	—	—
		Gaskets		Total	—	—	—
	Reduction gear	Bearing metal		For 1 bearing, each type	For 1 bearing, each type	For 1 bearing, each type	—
		Bearing bush		For 1 bearing, each type	—	For 1 bearing, each type ⁽²¹⁾	Note: ⁽²¹⁾ Excluding ships of NK class.

Table 2 Shafting and propeller

Parts name		Required quantity			Remarks
		Category 1	Category 2		
			A	B	
Shafting	Gland packing for stern tube	1 set	-	-	
Propeller	O rings or packing for propeller	1 piece	-	-	



Table 3 Boiler

Parts name		Required quantity			Remarks
		Category 1	Category 2		
			A	B	
Boiler main body and fittings	Manhole gaskets	Total	—	—	—
	Mudhole gaskets	Total	—	—	—
	Springs for safety valve	1 piece, each type	1 piece, each type	1 piece, each type ⁽²²⁾	Note: ⁽²²⁾ Only for ships of NK or NV class.
	Discs and valve seats for feed water valve	1 piece, each type	—	—	—
	Discs and valve seats for feed water control valve	For 1 valve	—	—	—
	Frames for flat water gauge	1 piece	1 piece	1 piece ⁽²³⁾	Note: ⁽²³⁾ Only for ships of NK class.
	Glass for flat water gauge	2 pieces	2 pieces	2 pieces ⁽²⁴⁾	Note: ⁽²⁴⁾ Only for ships of NK class.
				1 piece ⁽²⁵⁾	Note: ⁽²⁵⁾ Only for ships of NV class.
	Gaskets for flat water gauge	4 pieces	—	1 piece ⁽²⁶⁾	Note: ⁽²⁶⁾ Only for ships of NV class.
	Steam drum pressure gauges	—	—	1 piece ⁽²⁷⁾	Note: ⁽²⁷⁾ Only for ships of NV class.
	Glass and gaskets for tubular type water gauge	As required by classification societies	12 pieces	12 pieces ⁽²⁸⁾	Note: ⁽²⁸⁾ Only for ships of NK class.
				3 pieces ⁽²⁹⁾	Note: ⁽²⁹⁾ Only for ships of NV class.
	Soot blower nozzle tubes	1, each type	—	—	—
	Packing for soot blower	1/2 of total	—	—	—
	Lockings for valve disc	1 piece, each type	—	—	—
	Bricks	1/20 of total, each type	—	—	—
	Securing pieces for brick	1/20 of total, each type	—	—	—
Common parts for combustion equipment	O rings against oil leak	For 1 boiler	—	—	—
	Packing against oil leak	For 1 boiler	—	—	—
	Valves and springs for fuel oil burning pump	For 1 boiler, each type	—	—	—
	Solenoid valve coils for main burner	For 1 boiler	—	—	—
	Solenoid valve coils for firing burner	For 1 boiler*	—	—	—
	Electrodes for firing	For 1 boiler	—	—	—
	Transformers for firing	For 1 boiler	—	—	—
	High-voltage cord for firing electrode	For 1 boiler	—	—	—
	Nozzles and tips for firing	For 1 boiler*	—	—	—
	Fuel oil filter cans	For 1 boiler	—	For 1 boiler ⁽³⁰⁾	Note: ⁽³⁰⁾ Only for ships of NV class.
	Complete supplies for fuel oil service pump	For 1 boiler ⁽³¹⁾	—	—	Note: ⁽³¹⁾ If stand by pumps are provided, no spares are required.
	Oil heaters	For 1 boiler	—	—	—
	Fuel oil burning pump for firing burner	For 1 boiler*	—	—	—
	Shaft couplings, bolts and nuts	For 1 boiler	—	—	—
	Complete supplies for burner	—	—	1 set	Only for ships of NV class.