

# REPORT ON OIL ENGINE MACHINERY.

No. 6235

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Date of writing Report 19<sup>th</sup> Oct 1937 When handed in at Local Office 19/10/ 1937 Port of **YOKOHAMA**  
No. in Survey held at **YOKOHAMA** Date, First Survey 17<sup>th</sup> February 1937 Last Survey 14<sup>th</sup> Oct 1937  
Reg. Book. Number of Visits 87

on the <sup>Single</sup> ~~Triple~~ ~~Quadruple~~ Screw vessel **M.V. "KAIJO MARU"** Tons { Gross 8637 Net 6368  
Built at **Yokohama** By whom built **Mitsubishi Jukogyo K. K. Yokohama Dock** Yard No. 279 When built 1937  
Engines made at **Yokohama** By whom made **Mitsubishi J. K. K. Yokohama Ok** Engine No. 279 When made 1937  
Donkey Boilers made at **Yokohama** By whom made **Mitsubishi J. K. K. Yokohama Ok** Boiler No. 279 When made 1937  
Brake Horse Power **4500** Owners **Nippon Tanker K. K.** Port belonging to **Tokio.**  
Nom. Horse Power as per Rule **1166.8** Is Refrigerating Machinery fitted for cargo purposes **no** Is Electric Light fitted **yes**  
Trade for which vessel is intended **Carrying petroleum in bulk.**

**MAIN ENGINES, &c.**—Type of Engines **Mitsubishi MAN** 2 or 4 stroke cycle **2** Single or double acting **yes**  
Maximum pressure in cylinders **45 kg/cm<sup>2</sup>** Diameter of cylinders **600 mm** Length of stroke **1100** No. of cylinders **6** No. of cranks **6**  
Position of bearings, adjacent to the Crank, measured from inner edge to inner edge **885 mm** Is there a bearing between each crank **yes**  
Revolutions per minute **130** Flywheel dia. **2100 mm** Weight **3400 kgs** Means of ignition **Solid** Kind of fuel used **Crude Oil**  
Crank Shaft, dia. of journals as per Rule **414 mm** Crank pin dia. **420 mm** Crank Webs Mid. length breadth **348 mm** Thickness parallel to axis **365 mm**  
as fitted **420 mm** Mid. length thickness **355 mm** Thickness around eye hole **372 mm**  
Flywheel Shaft, diameter as per Rule **348 mm** Intermediate Shafts, diameter as per Rule **348 mm** Thrust Shaft, diameter at collars as per Rule **365 mm**  
as fitted **420 mm** as fitted **355 mm** as fitted **372 mm**  
Screw Shaft, diameter as per Rule **380 mm** Is the screw shaft fitted with a continuous liner **yes**  
as fitted **406 mm**

**Bronze Liners**, thickness in way of bushes as per Rule **25.9 mm** Thickness between bushes as per rule **18 mm** Is the after end of the liner made watertight in the propeller boss **yes**  
If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner **yes**  
If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive **yes**  
If two liners are fitted, is the shaft lapped or protected between the liners **yes** Is an approved Oil Gland or other appliance fitted at the after end of the tube **yes**  
If so, state type **Oil Gland** Length of Bearing in Stern Bush next to and supporting propeller **1870 mm**

Propeller, dia. **4,777 mm** Pitch **3439 mm** No. of blades **4** Material **h. Bronze** whether Moveable **yes** Total Developed Surface **6.612 sq. feet**  
Method of reversing Engines **Direct** Is a governor or other arrangement fitted to prevent racing of the engine when declutched **yes** Means of lubrication **oil**  
Thickness of cylinder liners **40 mm** Are the cylinders fitted with safety valves **yes** Are the exhaust pipes and silencers water cooled or lagged with non-conducting material **lagged**  
If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine **yes**

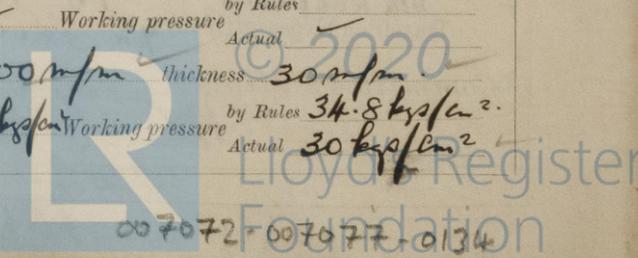
Cooling Water Pumps, No. **Two** Is the sea suction provided with an efficient strainer which can be cleared within the vessel **yes**  
Bilge Pumps worked from the Main Engines, No. **Two** Diameter **100 mm** Stroke **210 mm** Can one be overhauled while the other is at work **yes**  
Pumps connected to the Main Bilge Line { No. and Size **2-20 T/hr** **1-160 T/hr** **1-75 T/hr.**  
How driven **Main engine** **Steam** **Steam**

Ballast Pumps, No. and size **1-160 T/hr** Lubricating Oil Pumps, including Spare Pump, No. and size **1-200 mm** **1-240 x 220 x 500 mm**  
Are two independent means arranged for circulating water through the Oil Cooler **yes** Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Machinery Spaces **1-90 mm** **1-200 mm** **2-90 PS fine** **1-140 S.S. fine** **1-150 mm P.S. fine** In Pump Room **1-75 mm**  
In Holds, &c. **1-50 mm** **2-50 mm** **1-75 mm** **2-75 mm** **1-75 mm**

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size **1-140 mm** **1-200 mm** **1-150 mm**  
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **yes** Are the Bilge Suctions in the Machinery Spaces led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges **yes**  
Are all Sea Connections fitted direct on the skin of the ship **yes** Are they fitted with Valves or Cocks **None**  
Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates **yes** Are the Overboard Discharges above or below the deep water line **above**  
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel **yes** Are the Blow Off Cocks fitted with a spigot and brass covering plate **yes**  
That pipes pass through the bunkers **After cofferdam bilge suction** How are they protected **Oil bunker**  
That pipes pass through the deep tanks Have they been tested as per Rule **yes**

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **yes**  
Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another **yes** Is the Shaft Tunnel watertight **yes** Is it fitted with a watertight door **yes** worked from **yes**  
If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork **yes**

Main Air Compressors, No. **One** No. of stages **Two** Diameters **150 x 375 mm** Stroke **180 mm** Driven by **Steam**  
Auxiliary Air Compressors, No. **One** No. of stages **Two** Diameters **60 x 145 mm** Stroke **100 mm** Driven by **Steam**  
Small Auxiliary Air Compressors, No. **One** Diameter **1380 mm** Stroke **850 mm** Driven by **Main engine**  
Auxiliary Engines crank shafts, diameter as per Rule **yes**  
AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule **yes**  
Can the internal surfaces of the receivers be examined and cleaned **yes** Is a drain fitted at the lowest part of each receiver **yes**  
High Pressure Air Receivers, No. **Two** Cubic capacity of each **20,000 litres** Internal diameter **1800 mm** thickness **30 mm**  
Seamless, lap welded or riveted longitudinal joint **Material steel** Range of tensile strength **44-55 kg/cm<sup>2</sup>** Working pressure **34.8 kg/cm<sup>2</sup>**  
Starting Air Receivers, No. **Two** Total cubic capacity **20,000 litres** Internal diameter **1800 mm** thickness **30 mm**  
Seamless, lap welded or riveted longitudinal joint **riveted** Material **steel** Range of tensile strength **44-55 kg/cm<sup>2</sup>** Working pressure **30 kg/cm<sup>2</sup>**



IS A DONKEY BOILER FITTED? Yes

If so, is a report now forwarded? Yes

Is the donkey boiler intended to be used for domestic purposes only No

PLANS. Are approved plans forwarded herewith for Shafting 30-9-37  
(If not, state date of approval)

Receivers 2/4/37

Separate Tanks 28, 29/5/37 17/

Donkey Boilers 4-2-37

General Pumping Arrangements 22/4/37, 13/4/37, 22/9/37 Oil Fuel Burning Arrangements 2/4/37

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes

State the principal additional spare gear supplied List attached

The foregoing is a correct description,

Z. Adachi

Manufacturer.

Dates of Survey while building  
During progress of work in shops - 17/2, 23/2, 27/2, 1/3, 9/3, 13/3, 11/3, 15/3, 16/3, 23/3, 25/3, 27/3, 30/3; 2, 4, 7, 9, 10, 13, 14, 16, 19, 20, 22, 24, 24/4, 3, 4, 5, 7, 10, 15, 17, 19, 22, 25, 31/5, 3, 9, 10, 14, 21, 23, 24, 25, 30/6, 1, 2, 3, 5, 6, 8, 12, 17, 19/7, 3, 5, 9, 11, 12, 13, 14, 17, 26, 31/8, 22/7, 23/7, 10/9, 17/9, 30/9, 1/10, 2/10, 4/10, 8/10, 14/10/36.  
During erection on board vessel - 4/8, 24/8, 19/9, 13/9, 17/9, 2/10, 4/10, 6/10, 7/10, 12/10/37.  
Total No. of visits 77.

Dates of Examination of principal parts - Cylinder 3/5-9/10/37 Covers 27/3-31/8/37 Pistons 9/3-23/7/37 Rods 5/4-23/7/37 Connecting rods 13/4-30/6/37  
Crank shaft 31-5-37 Flywheel shaft 13-9-37 Thrust shaft 13-9-37 Intermediate shafts 13/9 & 12/10/37 Tube shaft ✓

Screw shaft 30/7 & 14/8/37 Propeller 14, 17, 19/5, 4, 5/8/37 Stern tube 10/6 & 4/8/37 Engine seatings 4/8/37 Engines holding down bolts 24/8, 10, 13, 27/8/37  
Completion of fitting sea connections 4-8-37 Completion of pumping arrangements 5-10-37 Engines tried under working conditions 7-10-37

Crank shaft, Material Steel Identification Mark 1644 1644A LR Flywheel shaft, Material Steel Identification Mark 6387 SS. 8-5-37 LR  
Thrust shaft, Material Steel Identification Mark H.D.B. 1-3-37 Intermediate shafts, Material Steel Identification Marks 6418 SS. 22-5-37  
Screw shaft, Material Steel Identification Mark 6426 S.S. LR Screw shaft, Material Steel Identification Mark 6427 LR  
Flywheel shaft, Material Steel Identification Mark FL 25-5-37 Identification Mark SS. 25-5-37 FL

Is the flash point of the oil to be used over 150° F. Yes

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with Yes

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo Yes If so, have the requirements of the Rules been complied with Yes

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with Yes

Is this machinery duplicate of a previous case Yes If so, state name of vessel Hoyo Maru. YKA.RPT.No 593.

General Remarks (State quality of workmanship, opinions as to class, &c.)  
The machinery of this vessel has been built under Special Survey in accordance with the Rules & Approved Plans. Materials & Workmanship are of a high standard. On completion of fitting out onboard machinery tried under full working conditions ahead & stern and all found in order. Manoeuvring test carried out.

The machinery of this vessel is eligible in our opinion to be classed with the boilers & electrical equipment of L.M.C. 10-37.

Table with columns for fee type, amount, and dates. Includes Entry Fee, Special, Donkey Boiler Fee, AIR RECEIVERS, and Travelling Expenses.

Signature of J. Nicholas & K. Kibigawa, Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute assigned 23 Nov 1937 2 DB-163/45 at Mt. Ch

