

# REPORT ON MACHINERY.

No. 526.

Port of *Nagasaki*

Received at London Office MON. JAN 21 1907

No. in Survey held at *Nagasaki* Date, first Survey *1<sup>st</sup> May 06* Last Survey *18<sup>th</sup> December, 1906.*  
 leg. Book. *"* (Number of Visits *74.*)

on the *Steel Twin Screw S. "Hitachi Maru"* Gross *6715.77*  
 Tons Net *4163.77*

Master *W. Townsend* Built at *Nagasaki* By whom built *Mitsu Bishi S & E. Works* When built *1906.*

Engines made at *Nagasaki* By whom made *Mitsu Bishi S & E. Works* when made *1906.*

Boilers made at *Nagasaki* By whom made *Mitsu Bishi S & E. Works* when made *1906.*

Registered Horse Power *631.* Owners *Nippon Yusen Kaisha* Port belonging to *Tokio.*

Com. Horse Power as per Section 28 *631.* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes.*

ENGINES, &c.—Description of Engines *Twin Screw Triple Expansion* No. of Cylinders *Three* No. of Cranks *3.*

Dia. of Cylinders *20. 33 1/2. 56"* Length of Stroke *48* Revs. per minute *80.* Dia. of Screw shaft *as per rule 12.6* Material of *Lockfast*  
*as fitted 13.5* screw shaft *Iron.*

Is the screw shaft fitted with a continuous liner the whole length of the stern tube *Yes* Is the after end of the liner made water tight

the propeller boss *Yes.* If the liner is in more than one length are the joints burned *Yes* If the liner does not fit tightly at the part

tween the bearings in the stern tube is the space charged with a plastic material insoluble in water and non-corrosive *✓* If two

liners are fitted, is the shaft lapped or protected between the liners *✓* Length of stern bush *6'-0"*

Dia. of Tunnel shaft *as per rule 11.4* Dia. of Crank shaft journals *as per rule 12.07* Dia. of Crank pin *12 1/2"* Size of Crank webs *16x8 1/4"* Dia. of thrust shaft under

rollers *12 1/2"* Dia. of screws *15-0* Pitch of Screws *17'-9"* No. of Blades *4* State whether moveable *Yes* Total surface *68.8* *S.F.EACH.*

No. of Feed pumps *Two* Diameter of ditto *3 3/4"* Stroke *24"* Can one be overhauled while the other is at work *Yes.*

No. of Bilge pumps *Two* Diameter of ditto *3 3/4"* Stroke *24"* Can one be overhauled while the other is at work *Yes.*

No. of Donkey Engines *Five* Sizes of Pumps *7x5x7-5 1/2x3 1/2x5* No. and size of Suctions connected to both Bilge and Donkey pumps

Engine Room *3 1/2 3 1/2, 1 1/2 4"* *9 1/2x7x10 all duplex* In Holds, &c. *Two 3 1/2" in each hold.*

and *1 1/2 8" from Ballast Pump* *One 3 1/2" Suction to tunnel well.*

No. of Bilge Injections *2* sizes *7"* Connected to condenser, or to circulating pump *C. Pump* Is a separate Donkey Suction fitted in Engine room & size *1 1/2 8"*

Are all the bilge suction pipes fitted with roses *Yes* Are the roses in Engine room always accessible *Yes* Are the sluices on Engine room bulkheads always accessible *NONE.*

Are all connections with the sea direct on the skin of the ship *Yes* Are they Valves or Cocks *Both.*

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates *Yes* Are the Discharge Pipes 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 are carried through the bunkers *Bilge and exhaust from masts* How are they protected *asbestos rope and strong wood casing.*

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times *Yes.*

Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges *Yes*

Dates of examination of completion of fitting of Sea Connections *24. 11. 06* of Stern Tube *24. 11. 06* Screw shaft and Propeller *25. 11. 06*

Is the Screw Shaft Tunnel watertight *Yes* Is it fitted with a watertight door *Yes* worked from *upper deck.*

MILERS, &c.—(Letter for record *5*) Manufacturers of Steel *Leeds Forge, Lanarkshire Steel Co.*

Total Heating Surface of Boilers *9167.5* Is Forced Draft fitted *Yes* No. and Description of Boilers *Four Scotch.*

Working Pressure *200 lbs* Tested by hydraulic pressure to *400 lbs* Date of test *31. 8. 06* No. of Certificate *25.*

Can each boiler be worked separately *Yes.* Area of fire grate in each boiler *56.37* *S.F.* No. and Description of Safety Valves to

each boiler *Two Direct Spring* Area of each valve *7.67* *S.F.* Pressure to which they are adjusted *205 lbs* Are they fitted with easing gear *Yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *17"* Mean dia. of boilers *14'-0"* Length *11'-6"* Material of shell plates *Steel*

Thickness *1 1/16"* Range of tensile strength *28-32* Are the shell plates welded or flanged *No* Descrip. of riveting: cir. seams *2 R. LAP.*

Long. seams *3 R. D.B.S.* Diameter of rivet holes in long. seams *1 1/2"* Pitch of rivets *10+5"* Lap of plates or width of butt straps *21 13/16"*

Percentages of strength of longitudinal joint *92 %* Working pressure of shell by rules *231 lbs* Size of manhole in shell *16x12" M'NEILS.*

Size of compensating ring *22x17x1 1/2"* No. and Description of Furnaces in each boiler *3. Horizontal* Material *Steel* Outside diameter *45 1/4"*

Length of plain part *top 5"* Thickness of plates *bottom 5"* Description of longitudinal joint *Welded.* No. of strengthening rings *✓*

Working pressure of furnace by the rules *222* Combustion chamber plates: Material *Steel* Thickness: Sides *45"* Back *3 1/4"* Top *45"* Bottom *8"*

Pitch of stays to ditto: Sides *9 1/2x8 1/4"* Back *9x8 1/2"* Top *9x8 1/2"* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *211*

Material of stays *Steel* Diameter at smallest part *1 5/8"* Area supported by each stay *79.8* Working pressure by rules *229.* End plates in steam space:

Material *Steel* Thickness *1 1/8"* Pitch of stays *18 1/4x17"* How are stays secured *2 N + W* Working pressure by rules *222* Material of stays *Steel*

Diameter at smallest part *3 1/2"* Area supported by each stay *319* Working pressure by rules *235* Material of Front plates at bottom *Steel*

Thickness *3 1/4"* Material of Lower back plate *Steel* Thickness *1 1/16"* Greatest pitch of stays *11 3/4"* Working pressure of plate by rules *250.*

Diameter of tubes *2 1/2"* Pitch of tubes *3 7/8x3 5/8"* Material of tube plates *Steel* Thickness: Front *3 1/4"* Back *3 1/4"* Mean pitch of stays *8 5/8"*

Pitch across wide water spaces *13"* Working pressures by rules *240* Girders to Chamber tops: Material *Steel* Depth and

Thickness of girder at centre *9x1 3/4"* Length as per rule *30"* Distance apart *8 1/2"* Number and pitch of stays in each *2 1/2 9"*

Working pressure by rules *260* Superheater or Steam chest; how connected to boiler *✓* Can the superheater be shut off and the boiler worked

separately *✓* Diameter *✓* Length *✓* Thickness of shell plates *✓* Material *✓* Description of longitudinal joint *✓* Diam. of rivet

plates *✓* Pitch of rivets *✓* Working pressure of shell by rules *✓* Diameter of flue *✓* Material of flue plates *✓* Thickness *✓*

Stiffened with rings *✓* Distance between rings *✓* Working pressure by rules *✓* End plates: Thickness *✓* How stayed *✓*

Working pressure of end plates *✓* Area of safety valves to superheater *✓* Are they fitted with easing gear *✓*



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# VERTICAL DONKEY BOILER—Manufacturers of Steel

No.	Description	NONE.			
Made at	By whom made	When made	Where fixed		
Working pressure	tested by hydraulic pressure to	Date of test	No. of Certificate	Fire grate area	Description of Safety
Valves	No. of Safety Valves	Area of each	Pressure to which they are adjusted	Date of adjustment	
If fitted with easing gear	If steam from main boilers can enter the donkey boiler	Dia. of donkey boiler	Length		
Material of shell plates	Thickness	Range of tensile strength	Descrip. of riveting long. seams		
Dia. of rivet holes	Whether punched or drilled	Pitch of rivets	Lap of plating	Per centage of strength of joint	Rivets Plates
Working pressure of shell by rules	Thickness of shell crown plates	Radius of do.	No. of stays to do.	Dia. of stays	
Diameter of furnace Top	Bottom	Length of furnace	Thickness of furnace plates	Description of joint	
Working pressure of furnace by rules	Thickness of furnace crown plates	Stayed by			
Diameter of uptake	Thickness of uptake plates	Thickness of water tubes	Dates of survey		

**SPARE GEAR.** State the articles supplied:— *As per rule, and in addition, two Morison's Lockfast Iron Propeller shafts, complete set of piston rings and piston valve rings for each engine, one crank shaft, one piston rod, four propeller blades &c &c.*

The foregoing is a correct description,

Manufacturer. *J. Maruta for Gen Manager Mitsui Bishi Dockyard Yokohama*

Dates of Survey while building { During progress of work in shops - Continuous from 1<sup>st</sup> May 1906, to 21<sup>st</sup> September 1906.  
During erection on board vessel - Continuous from 22<sup>nd</sup> September.  
Total No. of visits 74.

Is the approved plan of main boiler forwarded herewith *Yes*  
" " " donkey " " " *None.*

Dates of Examination of principal parts—Cylinders 4. 5. 06 Slides 12. 5. 06 Covers 6. 7. 06 Pistons 13. 7. 06 Rods 8. 9. 06  
Connecting rods 8. 9. 06 Crank shaft 5. 7. 06 Thrust shaft 5. 9. 06 Tunnel shafts 5. 9. 06 Screw shafts 18. 9. 06 Propellers 20. 11. 06  
Stern tubes 17. 9. 06 Steam pipes tested 13. 10. 06 Engine and boiler seatings 14. 9. 06 Engines holding down bolts 12. 10. 06  
Completion of pumping arrangements 25. 11. 06 Boilers fixed 15. 11. 06 Engines tried under steam 29. 11. 06, 4.  
Main boiler safety valves adjusted 26. 11. 06 Thickness of adjusting washers *No washers, brass jam nuts.*  
Material of Crank shaft *Steel* Identification Mark on Do. 1658 &c Material of Thrust shaft *Steel* Identification Mark on Do. 1658 &c  
Material of Tunnel shafts *Steel* Identification Marks on Do. 1658 &c Material of Screw shafts *Iron* Identification Marks on Do. 4307 T.L.T.  
Material of Steam Pipes *Iron lap welded* 13. 10. 06 Test pressure 600 lbs per square inch.

**General Remarks** (State quality of workmanship, opinions as to class, &c. *These Engines and Boilers have been specially surveyed during construction, the materials used and workmanship are of good quality, all parts examined while being machined, they are satisfactorily and securely fitted on board, and have been seen working well, under a full head of steam, and in my opinion are now eligible to be noted L.M.C. 12.06 in the Register Book.*

*Machinery fitted amidships.*

*Mean speed on trial, vessel light 15.6 knots.*

It is submitted that this vessel WILL BE eligible for the record *L.M.C. 12.06 E.D. ELEC. LIGHT.*

The amount of Entry Fee. £ 3 : - :  
Special £ 77. 10 :  
Donkey Boiler Fee £ : :  
Travelling Expenses (if any) £ : :  
When applied for. 19. 12. 1906  
When received. 20. 12. 1906

Committee's Minute

TUES. JAN. 22 1907

Assigned

*L.M.C. 12.06*

MACHINERY CERTIFICATE  
WRITTEN.

*A. C. Heron*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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