

## REPORT ON OIL ENGINE MACHINERY.

No. 2010

Date of writing Report 17th Dec. 1920 When handed in at Local Office Stockholm Port of Stockholm  
 No. in Survey held at Stockholm Date, First Survey 1st January 1918 Last Survey 8th Dec. 1920  
 Reg. Book. Single on the Trip Screw vessels M.S. "Flanchford" Tons Gross  
 Master Stockholm Built at Stockholm By whom built J. E. G. Bolinder's Co. Ltd. Yard No. 14/20/23 When built 1920  
 Engines made at Stockholm By whom made J. E. G. Bolinder's Co. Ltd. Engine No. 14/20/23 When made 1920  
 Boilers made at Stockholm By whom made J. E. G. Bolinder's Co. Ltd. Boiler No. 14/20/23 When made 1920  
 Horse Power 320 Owners Messrs. James Pollack, Sons & Co. Port belonging to London  
 Horse Power as per Rule 91 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

ENGINES, &c.—Type of Engines Cylinder Oil Engine 2 or 4 stroke cycle Single or double acting reversible  
 Maximum pressure in cylinders 18.5 kg/cm<sup>2</sup> No. of cylinders 4 No. of cranks 4 Diameter of cylinders 420 mm.  
 Length of stroke 480 mm. Revolutions per minute 225 Means of ignition Hot bulb Kind of fuel used Cude oil  
 Distance between a bearing between each crank yes Span of bearings (Page 92, Section 2, par. 7 of Rules) 544 mm.  
 Distance between centres of main bearings 840 mm. Is a flywheel fitted yes Diameter of crank shaft journals as per Rule 176 mm. ✓  
 Diameter of crank pins 180 mm. Breadth of crank webs as per Rule 234 mm. ✓ Thickness of ditto as per Rule 98.5 mm. ✓  
 Diameter of flywheel shaft as per Rule 178 mm. ✓ Diameter of tunnel shaft as per Rule 169 mm. ✓ Diameter of thrust shaft as per Rule 175 mm. ✓  
 Diameter of screw shaft as per Rule Is the screw shaft fitted with a continuous liner the whole length of the stern tube  
 After end of the liner made watertight in the propeller boss If the liner is in more than one length are the joints burned  
 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  
 If liners are fitted, is the shaft lapped or protected between the liners If without liners, is the shaft arranged to run in oil  
 Diameter of outer gland fitted to stern tube Length of stern bush Diameter of propeller  
 Diameter of propeller No. of blades state whether moveable Total surface square feet  
 Method of reversing Timing Is a governor or other arrangement fitted to prevent racing of the engine when declutched yes Thickness of cylinder liners none fitted.  
 Are the cylinders fitted with safety valves no Means of lubrication pumps Are the exhaust pipes and silencers water cooled or lagged with  
 Conducting material If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine  
 No. of cooling water pumps one Is the sea suction provided with an efficient strainer which can be cleared  
 In the vessel No. of bilge pumps fitted to the main engines one Diameter of ditto 110 mm. Stroke 130 mm.  
 Can one be overhauled while the other is at work No. of auxiliary pumps connected to the main bilge lines How driven  
 No. of pumps No. and sizes of suction connected to both main bilge pumps and auxiliary bilge pumps:—In engine room  
 In holds, etc. No. of ballast pumps How driven Sizes of pumps  
 Is the ballast pump fitted with a direct suction from the engine room bilges State size Is a separate auxiliary pump suction fitted in  
 Engine Room and size Are all the bilge suction pipes fitted with roses Are the roses in Engine Room always accessible  
 Are the sluices on Engine Room bulkheads always accessible Are all connections with the sea direct on the skin of the ship  
 Are they valves or cocks Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates  
 Are the discharge pipes above or below the deep water line Are they each fitted with a discharge valve always accessible on the plating of the vessel  
 Are all pipes, cocks, valves and pumps in connection with the machinery accessible at all times Are the bilge suction pipes, cocks and valves arranged so as to prevent any  
 Communication between the sea and the bilges Is the screw shaft tunnel watertight Is it fitted with a watertight door  
 Is it fitted with a watertight door If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork  
 No. of main air compressors 1 No. of stages 2 Diameters 275/100 mm. Stroke 240 mm. Driven by main engine  
 No. of auxiliary air compressors No. of stages Diameters Stroke Driven by  
 No. of small auxiliary air compressors No. of stages Diameters Stroke Driven by  
 No. of scavenging air pumps none fitted Diameter Stroke Driven by  
 Diameter of auxiliary Diesel Engine crank shafts as per Rule Are the air compressors and their coolers made so as to be easy of access yes

RECEIVERS:—No. of high pressure air receivers 1 Internal diameter 143 mm. Cubic capacity of each 20 litres  
 Material S. M. Steel Seamless, lap welded or riveted longitudinal joint Seamless Range of tensile strength min. 23 tons/sq. inch  
 Thickness 4.5 mm. Working pressure by Rules 517 lbs. No. of starting air receivers 1 Internal diameter 434 mm.  
 Total cubic capacity 296 litres Material S. M. Steel Seamless, lap welded or riveted longitudinal joint Lap welded  
 Range of tensile strength min. 23 tons/sq. inch thickness 8 mm. Working pressure by rules 260 lbs. 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 yes What means are provided for cleaning their  
 Internal surfaces manhole Is there a drain arrangement fitted at the lowest part of each receiver yes



## IS A DONKEY BOILER FITTED?

If so, is a report now forwarded?

## HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS .....	18.10.1920	18.5 kg./sq. cm.	37 kg./sq. cm.	Lloyd's Test 37 kg. Stem. 18.10.20. A.	
" " COVERS .....	18.10.1920.	ditto	ditto		
" " JACKETS.....	18.10.1920		3.5 kg./sq. cm.		
" " PISTON WATER PASSAGES.....	(Open piston)				
MAIN COMPRESSORS—1st STAGE.....	18.10.20.	8 kg./sq. cm.	16 kg./sq. cm.	A	
" 2nd " .....	18.10.20.	30 kg./sq. cm.	60 kg./sq. cm.		
" 3rd " .....					
3 AIR RECEIVERS—STARTING .....	18.10.20	15 kg./sq. cm.	30 kg./sq. cm.	starting Lloyd's Test 30 kg. Working Pr. 15 kg. No. 2204, Stem. 18.10.20. A.	Injection Lloyd's Test 60 kg. Working Pr. 30 kg. No. 2203, Stem. 18.10.20. A.
" INJECTION .....					
AIR PIPES .....				2 spare starting air receivers Lloyd's Test 30 kg. Working Pr. 15 kg. No. 2207-2208, Stem. 18.10.20. A.	
FUEL PIPES .....					
FUEL PUMPS .....					
2 SILENCER S. ....	1.10.20		3.5 kg./sq. cm.	Hydr. Test 3.5 kg. Stem. 1.10.20. A.	
" WATER JACKET .....	1.10.20		3.5 kg./sq. cm.		
SEPARATE FUEL TANKS .....					

PLANS. Are approved plans forwarded herewith for shafting *See Secretary's letter E. 3.10.11; 1.7.14 & 10.1.16.* Receivers *Starting E. 8.3.16* Separate Tanks  
 (If not, state date of approval) *Injection E 5.2.15*

SPARE GEAR *to be supplied and inspected on delivery.*

The foregoing is a correct description,

Manufacturer.

Dates of Survey while building { During progress of work in shops -- 1/11/13; 10/5; 29/7; 14/8; 2.8.20/9; 1.5.21/10; 15.22/11; 9/12 1918; 8/1.19/2; 14/3 1919; 8/6.13/7; 8.9.23/9; 18/10 1920  
 During erection on board vessel --  
 Total No. of visits 23

Dates of Examination of principal parts—Cylinders 18.10.20 Covers 18.10.20 Pistons 18.10.20 Rods Connecting rods 15/11; 22/11; 9/12 1918  
 29/9; 1.5.10/1913 29/7.14/8 1918 Compressor 29/7.5/11; 2.8.9 1918  
 Crank shaft 8.25/9; 2.2.20 Thrust shaft 8.25/9; 2.2.20 Pommel shafts 23/9; 18/10 20 Screw shaft Propeller Stern tube Engine seatings 18/10 1920  
 Engines holding down bolts Completion of pumping arrangements Engines tried under working conditions 23.9.1920.  
 Completion of fitting sea connections Stern tube Screw shaft and propeller  
 Material of crank shaft S. M. Steel Identification Mark on Do. Lloyd's No. 3052 Stem. 18.10.20. A Material of thrust shaft S. M. Steel Identification Mark on Do. Lloyd's No. 3011 Stem. 18.10.20. A  
 Material of Compressor crank S. M. Steel Identification Marks on Do. Lloyd's No. 3024 Stem. 18.10.20. A Material of screw shafts Identification Marks on Do.  
 Is the flash point of the oil to be used over 150° F. yes  
 Is this machinery duplicate of a previous case yes If so, state name of vessel (See Stem. Report No. 1944)

General Remarks (State quality of workmanship, opinions as to class, &c.)

*I am of opinion that this motor is of superior material and workmanship, and as it has been designed and constructed under my special survey I have respectfully to submit that it will be eligible to be classed \*LMC, as soon as it has been fitted in a classed vessel to the satisfaction of the Society's Surveyors*

The amount of Entry Fee ... £ : : When applied for.  
 Special *Survey* in ship ... £ 22 12/4 : 14.12.1920  
 Donkey Boiler Fee ... £ : : When received.  
 Travelling Expenses (if any) £ : : Dec 9. 20 1920

Committee's Minute

Assigned *See minute on Lon 84545*

*K. J. Andersson*  
 Engineer/Surveyor to Lloyd's Register of Shipping.



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