

## REPORT ON OIL ENGINE MACHINERY.

No. 847

Received at London Office 17 SEP 1928

Date of writing Report 13-9-1928 When handed in at Local Office 15-9-1928 Port of Malmö

No. in Survey held at Malmö Date, First Survey 26-10-1927 Last Survey 8-9-1928  
Reg. Book, Suppl. Number of Visits 934568 on the <sup>Single</sup> Twin <sup>Triple</sup> Screw vessel "POLLUX"  
<sup>Quadruple</sup>Tons { Gross 8741.23  
Net 4874.40Built at Malmö By whom built Hockums M. V. Aktief. Yard No. 156 When built 1928  
Engines made at Malmö By whom made Hockums M. V. Aktief. Engine No. 17218 When made 1928  
Donkey Boilers made at Malmö By whom made Hockums M. V. Aktief. Boiler No. 883/4 When made 1928  
Brake Horse Power 2500 Owners Trelleborgs Angf. Nya Aktief. Port belonging to Trelleborg  
Nom. Horse Power as per Rule 584 Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes  
Trade for which vessel is intended Oil Tanker.OIL ENGINES, &c. Type of Engines Diesel Oil Engines MAN. 2 or 4 stroke cycle 4 Single or double acting Single  
Maximum pressure in cylinders 35 kg/cm<sup>2</sup> Diameter of cylinders 570 mm Length of stroke 1000 mm No. of cylinders 2x6=12 No. of cranks 2x6=12Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 770 mm Is there a bearing between each crank Yes  
Revolutions per minute 145 Flywheel dia. 2100 mm Weight 5885 kg. Means of ignition Diesel syst. Kind of fuel used Diesel OilCrank Shaft, dia. of journals as per Rule 351 mm as fitted 360 mm Crank pin dia. 360 mm Crank Webs Mid. length breadth shrunk Thickness parallel to axis 225 mm  
Flywheel Shaft, diameter as per Rule 351 mm as fitted 360 mm Intermediate Shafts, diameter as per Rule 238 mm as fitted 238 mm Thrust Shaft, diameter at collars as per Rule 250 mm as fitted 260 mmTube Shaft, diameter as per Rule 260 mm as fitted 261 mm Is the shaft fitted with a continuous liner Yes  
Screw Shaft, diameter as per Rule 260 mm as fitted 261 mm Is the after end of the liner made watertight in the propeller boss YesBronze Liners, thickness in way of bushes as per Rule 15.5 mm as fitted 17.19 mm Thickness between bushes as per rule 15 mm  
If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner YesIf 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 shaft NoPropeller, dia. 3200 mm Pitch 2900 mm No. of blades 3. Material Bronze whether Moveable No Total Developed Surface each 35.2 sq. feet  
Method of reversing Engines MAN system Is a governor or other arrangement fitted to prevent racing of the engine when declutched Yes Means of lubrication Forced

Thickness of cylinder liners Both 32 mm Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled or lagged with non-conducting material Both If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine Funnel

Cooling Water Pumps, No. 2 rotary 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. None Diameter Stroke Can one be overhauled while the other is at workPumps connected to the Main Bilge Line No. and Size 3. Two of 165x240 mm dbl. & one of 10x10" dbl. (Ballast Pump). Bilge & ball pump  
How driven By elect. motor / fwd. 150x150x150 mm dbl. in main pump room 150x200x150 mm dbl.Ballast Pumps, No. and size 1 of 10x10" dbl. Lubricating Oil Pumps, including Spare Pump, No. and size 2 of 60 m<sup>3</sup>/hour (Rotary)  
Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary BilgePumps, No. and size:—In Machinery Spaces 3-3 1/2" & 3-3 1/2" in dry cargo hold, 1-3 1/2" in fwd. cofferdam, 1-4" & 3" in main pump room  
In Holds, &c. 1-4" in after cofferdamIndependent Power Pump Direct Suctions to the Engine Room Bilges, No. and size 1-5 1/2" conn. to Ballast Pump 2-6" for emerg. use  
Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes Are the Bilge Suctions in the Machinery Spacesled 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 BothAre 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 YesWhat pipes pass through the bunkers How are they protected  
What pipes pass through the deep tanks oil fuel Suct. pipe from after cofferdam Have they been tested as per Rule YesAre 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 No funnel Is it fitted with a watertight door worked fromIf a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork  
Main Air Compressors, No. 2 (one of each eng.) No. of stages 3. Diameters 530-470-105 Stroke 400 mm Driven by main eng.Auxiliary Air Compressors, No. 1. No. of stages 3. Diameters 380-340-75 Stroke 250 mm Driven by elect. motor  
Small Auxiliary Air Compressors, No. 1. No. of stages 2. Diameters 105-42 Stroke 80 mm Driven by steam eng.Scavenging Air Pumps, No. Diameter Stroke Driven by  
Auxiliary Engines crank shafts, diameter as per Rule 146.5 mm as fitted 155 mm Identical marks on same LLOYD'S 874 P.K. 20.6.27 LLOYD'S 884 P.K. 13.6.27AIR 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 Yes What means are provided for cleaning their inner surfaces Injection air receiver by means of steam and caustic soda.Is there a drain arrangement fitted at the lowest part of each receiver Yes  
High Pressure Air Receivers, No. 3. Cubic capacity of each 400 litres Internal diameter 448 mm thickness 26 mmSeamless, lap welded or riveted longitudinal joint Lap welded Material Steel Range of tensile strength 36.3-39.2 kg/cm<sup>2</sup> Working pressure by Rules 71.3 kg/cm<sup>2</sup>  
Starting Air Receivers, No. 1. Total cubic capacity 20000 litres Internal diameter 1850 mm thickness 25.5 mmSeamless, lap welded or riveted longitudinal joint Riveted Material Steel Range of tensile strength 45.3-48.8 kg/cm<sup>2</sup> Working pressure by Rules 25.4 kg/cm<sup>2</sup>

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IS A DONKEY BOILER FITTED? *Yes. One vertical. Two multibubular.* If so, is a report now forwarded? *Yes.*

PLANS. Are approved plans forwarded herewith for Shafting *10/6 and 2/4 1927* Receivers *27/7 and 9/2 1927* Separate Tanks *8/2 1928.*  
(If not, state date of approval)

Donkey Boilers *1/6 1927*

General Pumping Arrangements *29/11 27 & 1/1 28*

Oil Fuel Burning Arrangements *8/2 1928.*

SPARE GEAR *Main engines:-* 1 cylinder cover. 9 complete air inlet or exhaust valves with extra seats and valves. 6 complete fuel valves with 3 extra valves and 9 seats. 2 complete start air valves. 1 complete safety valve with 1 extra valve and seat. 1 cylinder liner. 2 pistons complete and 5 sets of piston rings for one piston. 6 extra scrape rings. 6 complete telescopic pipes. 1 set of skew wheels for the cam shaft drive for one engine and 1 roller with pin each. size 2 bolts with nuts for cylinder covers (No studs used) 4 crosshead bearing bolts and nuts and 4 halves of brasses. 2 crank pin bearing bolts & nuts and 1 complete bearing. 2 main bearing bolts & nuts and 2 halves of bearings. 1 set coupling bolts for each size of couplings. 1 propeller shaft. 2 cast iron propellers. 1 complete set of all working parts for one fuel pump, also liners, packings etc. for same.

*Main engine air compressors:-* 3 sets of piston rings for the H stage and 2 sets ditto for each of the IP and LP stages, for one compressor (Continued on sheet II).

The foregoing is a correct description,

KOCKUMS MEKANISKA VERKSTADS  
AKTIE-BOLAG

Manufacturer.

Dates of Survey while building  
During progress of work in shops - *26/10/11, 30/11, 9/12, 10/12, 28/12, 1927, 24/1, 25/1, 2/2, 11/2, 15/2, 24/2, 27/2, 28/2, 3/3, 3/3, 7/3, 8/3, 10/3, 10/3, 13/3, 23/3, 23/3, 31/3, 31/3, 5/4, 3/4, 12/4, 14/4, 14/4, 23/4, 24/4, 25/4, 27/4, 29/4*  
During erection on board vessel - *20/7, 21/7, 23/7, 26/7, 27/7, 28/7, 30/7, 30/7, 31/7, 1/8, 10/8, 11/8, 13/8, 14/8, 15/8, 17/8, 17/8, 18/8, 20/8, 23/8, 24/8, 27/8, 27/8, 29/8, 30/8, 31/8, 3/9, 4/9, 5/9, 6/9, 7/9, 8/9 - 1928*  
Total No. of visits *93.*

Dates of Examination of principal parts—Cylinders *9/2, 27/2, 5/4, 28* Covers *4/5, 12/27, 5/4, 28* Pistons *24, 25/1, 28* Rods *3, 14/3, 28* Connecting rods *12, 20/3, 28*

Crank shaft *See but. attached* Flywheel shaft *21/7-28* Thrust shaft *21/7-28* Intermediate shafts *21/7-28* Tube shaft *✓*

Screw shaft *—* Propellers *3/4-28* Stern tube *20/7-28* Engine seatings *8/8-28* Engines holding down bolts *8, 10/8-28*

Completion of fitting sea connections *8, 10/8-28* Completion of pumping arrangements *28/8-28* Engines tried under working conditions *8/9-28*

Crank shaft, Material *Steel* Identification Mark *28.15.10.27* Flywheel shaft, Material *Steel* Identification Mark *13810*

Thrust shaft, Material *—* Identification Mark *37242 3763* Intermediate shafts, Material *—* Identification Marks *3, 32-33*

Spare screw Tube shaft, Material *—* Identification Mark *45.21.7.28* Screw shaft, Material *—* Identification Mark *472-473*

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 *M/S "CASTOR" Kockums M.V. of Gd. No. 1.*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The auxiliary machinery of this vessel consist of two 3-cylinder 4 stroke, single acting Diesel engines, manufactured by Messrs Kockums M.V. Aktiebolaget of Malmö. The cylinders are 260 mm in diam. stroke 360 mm and rev. per min = 350. The engines are of the solid injection system and each is working a dynamo of 75 KW.*

*The main and auxiliary engines of this vessel have been built under special survey in accordance with the Rules and the approved plans.*

*The materials fulfils the Rule requirements and the workmanship is good.*

*The shaftings as per forging reports attached herewith.*

*The main and auxiliary engines & pumps have been tested under full working conditions and found working satisfactory.*

*The machinery of this vessel is eligible, in our opinion, to be classed in the Register Book of this Society, viz:- LMC 9, 28.*

*Working pressure of Donkey Boilers 170 and 100 lbs per sq. inch*

The amount of Entry Fee *Rs 109:20* : When applied for,  
Special ... *Rs 1896:44* : *15-9-1928*  
Donkey Boiler Fee ... *Rs 265:12* :  
Hauling air receiver " *Rs 76:44* : *30-10-1928*  
Travelling Expenses (if any) *Rs 76:44* :

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI, 28 SEP 1928

Assigned

*+ LMC 9, 28*  
*Out engines*



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M/S "POLLUX" No 91568 in the Register Book suppl.

Spare gear:- Main engine compressors:- 1 complete set of suction and delivery valves and in addition 1 set of springs, 12 HP, 24 IP and 36 LP single valves. 1 crank and 1 crosshead bearing. 25 tubes for oil cooler.

Auxiliary Diesel engines:- 1 cylinder cover. 1 set of cylinder cover studs and nuts. 3 complete exhaust valves and in addition 2 spindles, 2 valves and 6 valve seats. 9 complete fuel injection nozzles and 12 sprayers. 1 complete inlet valve. 1 complete starting air valve. 1 cylinder liner. 1 piston. 1 set of piston rings for one piston. 1 crosshead pin and a pair of brasses. 2 crank pin bearing bolts and nuts and 1 crank bearing. 1 main bearing bolts and nuts and 2 halves of bearings. 1 set of all working parts for one fuel pump. 8 cam rollers for valve gear. 1 set of valves, seats etc for the cooling water pump. Spare parts for lubricating oil pump.

Auxiliary compressor:- 1 set of piston rings for each of the LP & IP stages and 2 set ditto for the HP stage. 1 complete suction and delivery valve for each stage and in addition 6 single valves of each size. 1 safety valve spring.

Auxiliary pumps:- 1/2 set of valves for oil fuel supply pumps. 1 suction and 1 delivery valve for the ballast pump. 2 suction and 2 delivery valves for the bilge and sanitary pumps.

General:- Lengths of pipes for the fuel delivery and injection air pipes to main and auxiliary engine power cylinders also air delivery pipes from main and auxiliary compressors to the air receivers. A quantity of assorted bolts and nuts. 20 tubes for lubricating oil coolers.

Donkey Boilers:- 1 safety valve spring of each size. 5 stay tubes and 6 plain tubes for the multitubular boilers Burners etc. for the oil fuel burning. Valves etc for the oil fuel burning pressure pump.

The following pumps, not mentioned under the headings in the report, are also installed:-

In the food pump room:- 1 oil transfer pump 150x150x150 mm dbt. steam driven

In the main pump room:- 2 cargo pumps 457x356x560 mm dbt. steam driven

In the motor space 1 oil transfer pump 5 1/4 x 5 x 5" dbt. steam driven

1 rotary oil transfer pump of 20 m<sup>3</sup>/hour, electric driven

1 rotary fresh water pump electric driven

2 feed pumps for multitubular boilers 150x100x150 mm dbt. steam driven

1 feed pump for vertical boiler 75x60x75 mm dbt. steam driven.

1 injector for vertical donkey boiler.

Mr E. B. Scorer, has carried out a part of the survey of these Diesel engines.

Admunden



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