

REPORT ON OIL ENGINE MACHINERY.

No. 946.
-6 MAY 1927

Received at London Office

Port of **Bremen**

Survey held at **Bremen** 1st May 1927

Date, First Survey **23rd March 1926** Last Survey **25th April 1927**

Number of Visits **48**

Single }
on the **Twin** } Screw vessels

" **BISCAYA** "

Tons { Gross **6190**
Net **3536**

Brumm

By whom built

Thürmer Schiff- u. Maschinenbau A.G.
Werk A.G. Witten

Yard No. **399**

When built **1926/27**

By whom made

By whom made

Engine No. **1487**

When made **1926/27**

By whom made

By whom made

Boiler No. **1462/60**

When made **1926/27**

Horse Power **2100**

Owners **Brumm & Co. Transport G.m.b.H.**

Port belonging to **Brumm**

Horse Power as per Rule **438**

Is Refrigerating Machinery fitted for cargo purposes **no**

Is Electric Light fitted **yes**

ENGINES, &c. Type of Engines **Thürmer M.A.N. Oil Engines** 2 or 4 stroke cycle **4** Single or double acting **single**
on pressure in cylinders **35 kg/cm²** No. of cylinders **6** Diameter of cylinders **700 mm.** No. of cranks **6** Length of stroke **1400 mm.**
bearings, adjacent to the Crank, measured from inner edge to inner edge **970 mm.** Is there a bearing between each crank **yes**
ions per minute **110** Flywheel dia. **2490 mm** Weight **4555 kg** Means of ignition **air injection** Kind of fuel used **gas oil**
Shaft, dia. of journals as per Rule **443 mm** Crank pin dia. **450 mm.** Crank Webs Mid. length breadth **840 mm.** Thickness parallel to axis **455 mm.**
as fitted **450 "** Mid. length thickness **290 "** Thickness around eye hole **192.5 "**
eel Shafts, diameter as per Rule **450 mm.** Intermediate Shafts, diameter as per Rule **336 mm** Thrust Shaft, diameter at collars as per Rule **353 mm.**
as fitted **450 "** as fitted **336 "** as fitted **410 "**
Shafts, diameter as per Rule **366 mm** Is the **yes** shaft fitted with a continuous liner **yes**
as fitted **366 "** Is the **no** screw **yes**
e Liners, thickness in way of bushes as per Rule **19 mm.** Thickness between bushes as per rule **14.25 mm** Is the after end of the liner made watertight in the
as fitted **22 "** as fitted **17.5 "**
r 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**
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**
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
the tube shaft **no** Length of Bearing in Stern Bush next to and supporting propeller **1770 mm.**
eller, dia. **4400 mm** Pitch **3300 mm** No. of blades **4** Material **bronze** whether Moveable **no** Total Developed Surface **6.72** sq. ft.
od of reversing Engines **direct** Is a governor or other arrangement fitted to prevent racing of the engine when declutched **yes** Means of lubrication
Thickness of cylinder liners **32.5/40 mm** Are the cylinders fitted with safety valves **yes** Are the exhaust pipes and silencers water cooled or lagged with
exhaust pipes **water cooled** Is the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine **yes**
ing Water Pumps, No. **2** Flywheel each **1000 mm.** Is the sea suction provided with an efficient strainer which can be cleared within the vessel **yes**
Pumps fitted to the Main Engines, No. **2** Diameter **160 mm.** Stroke **150 mm.** Can one be overhauled while the other is at work **yes**
No. and Size **2 bilge pump each 30 cub. m. per hour, 1 ballast pump 100 cub. m. per hour**
ps connected to the Main Bilge Line **by electric motor**
st Pumps, No. and size **1-100 cub. m. per hour** Lubricating Oil Pumps, including Spare Pump, No. and size **2 Tooth wheel each 2 cub. m. per hour**
two independent means arranged for circulating water through the Oil Cooler **yes** Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
s, No. and size:—In Engine and Boiler Room **1-90 mm. dia., 3-70 mm. dia., in boiler room 1-70 mm.**
olds, &c. **In each hold 1-300 mm. dia., 1-150 mm. dia., in each stowage tank 1-150 mm. dia. 1 in after plate 100 mm. dia. 1 in fore plate 100 mm. dia.**
pendent Power Pump Direct Suctions to the Engine Room Bilges, No. and size **1-150 mm.**
all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **yes** Are the Bilge Suctions in the Machinery Space
om easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges **yes**
ll Sea Connections fitted direct on the skin of the ship **yes** Are they fitted with Valves or Cocks **valves**
hey 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**
hey 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**
pipes pass through the bunkers **none** How are they protected **yes**
pipes pass through the deep tanks **none** Have they been tested as per Rule **yes**
ll Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **yes**
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
artment to another **yes** Is the Shaft Tunnel watertight **none** Is it fitted with a watertight door **yes** worked from **yes**
wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork **yes**

Air Compressors, No. **one** No. of stages **3** Diameters **700/620/550 mm** Stroke **500 mm.** Driven by **main engine**
Auxiliary Air Compressors, No. **2** No. of stages **3** Diameters **270/240/156 mm** Stroke **180 mm** Driven by **elec. motor**
Auxiliary Air Compressors, No. **one** No. of stages **2** Diameters **100/35 mm** Stroke **100 mm.** Driven by **elec motor driven from steam driven generator**
Refrigerating Air Pumps, No. **yes** Diameter **yes** Stroke **yes** Driven by **yes**
Auxiliary Engines crank shafts, diameter as per Rule **142.5 mm**
as fitted **155 mm**

RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule **yes**
the internal surfaces of the receivers be examined **yes** What means are provided for cleaning their inner surfaces **flanges**

High Pressure Air Receivers, No. **one** Cubic capacity of each **200 litres** Internal diameter **400 mm.** thickness **25 mm.**
less, lap welded or riveted longitudinal joint **Lap welded** Material **M. steel** Range of tensile strength **36-42 kg/mm²** Working pressure by Rules **84 kg/cm²**
Working Air Receivers, No. **4 for main eng.** Total cubic capacity **8800 litres** Internal diameter **775 mm.** thickness **40 mm.**
1 - aux " **lap welded** Material **M. steel** Range of tensile strength **40-45 kg/mm²** Working pressure by Rules **104 kg/cm²**
less, lap welded or riveted longitudinal joint **yes** **25 mm.** **92 "**

IS A DONKEY BOILER FITTED? *yes*
HYDRAULIC TESTS:—

If so, is a report now forwarded? *yes*

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED. <i>LLOYD'S TEST</i>	REMARKS.
ENGINE CYLINDERS <i>Liners</i>	<i>1926: June 26, July 5, 12, 19, 22, 27</i>	<i>18 kg/cm²</i>	<i>18 kg/cm²</i>	<i>75 atm. 29/6; 5, 12, 19, 22, 27/7. 1926</i>	
" " COVERS	<i>15/3/27</i>	<i>2</i>	<i>20</i>	<i>20 atm. 15/3/27 3/7</i>	
" " JACKETS	<i>31/8/26</i>	<i>2</i>	<i>6</i>	<i>6 atm. 31/8/26 3/7</i>	
" " PISTON WATER PASSAGES	<i>15, 21/10/26</i>	<i>2</i>	<i>10</i>	<i>10 atm. 15, 21/10/26 3/7</i>	
MAIN COMPRESSORS—1st STAGE	<i>12/7/26</i>	<i>air 2 water 2</i>	<i>air 35 water 6</i>	<i>12/7/26 3/7</i>	
" 2nd "	<i>"</i>	<i>16 2</i>	<i>35 6</i>	<i>29/6/26 3/7</i>	
" 3rd "	<i>29/6/26</i>	<i>75 2</i>	<i>150 6</i>	<i>29/6/26 3/7</i>	
AIR RECEIVERS—STARTING	<i>7, 20/1/27</i>	<i>75</i>	<i>150</i>	<i>150 atm. 7, 20/1/27 3/7</i>	
" INJECTION	<i>17/3/27</i>	<i>75</i>	<i>150</i>	<i>150 atm. 17/3/27 3/7</i>	
AIR PIPES	<i>12/4/27</i>	<i>80</i>	<i>240</i>	<i>3/7</i>	
FUEL PIPES	<i>12/4/27</i>	<i>80</i>	<i>240</i>	<i>3/7</i>	
FUEL PUMPS <i>from MAIN Engine</i>	<i>19/7/26</i>	<i>75</i>	<i>150</i>	<i>G.L.</i>	
SILENCER	<i>✓</i>	<i>✓</i>	<i>✓</i>	<i>✓</i>	
<i>Yachant</i> WATER JACKET	<i>11/8, 25/9/26</i>	<i>2</i>	<i>6</i>	<i>6 atm. 11/8, 25/9/26 3/7</i>	
SEPARATE FUEL TANKS					

PLANS. Are approved plans forwarded herewith for Shafting *3/3/26* Receivers *25/7/26; 11/8/26* Separate Tanks *24/9/26*
(If not, state date of approval)
Donkey Boilers *26/3/26, 21/5/26* General Pumping Arrangements *23/12/26* Oil Fuel Burning Arrangements *23/12/26*

SPARE GEAR *As per Rules.*

Deutsche Schiff- und Maschinenbau Aktien-Gesellschaft

Werk: Act. Ges. Weser

Manufacturer.

Dates of Survey while building
During progress of work in shops—*1926: 23, 30/3, 7, 14/4, 14, 26, 29/6, 5, 12, 19, 22, 27, 31/7, 7, 11, 19, 26, 30, 31/8, 4, 15, 22, 25/9*
During erection on board vessel—*1927: 22, 23, 29/2, 7, 15, 17, 22, 25/3, 2, 12, 16, 25/4*
Total No. of visits *48*

Dates of Examination of principal parts—Cylinders *19/7, 27/7, 31/8, 26* Covers *15/3, 25/3* Pistons *6/7/26* Rods *31/7/26* Connecting rods *31/7/26*
Crank shaft *22/9/26* Flywheel shaft *and* Thrust shaft *22/9/26* Intermediate shafts *22/9/26* Tube shaft *✓*
Screw shaft *22/9/26* Propeller *30/10/26* Stern tube *28/12/26* Engine seatings *11/10/26* Engines holding down bolts *23/2/27*

Completion of fitting sea connections *8/1/27* Completion of pumping arrangements *25/3/27* Engines tried under working conditions *25/4/27*

Crank shaft, Material *J.M. Steel* Identification Mark *2. Q. 29/6/26* Flywheel shaft, Material *✓* Identification Mark *✓*
Thrust shaft, Material *J.M. Steel* Identification Mark *K.H. 25.5.26* Intermediate shafts, Material *J.M. Steel* Identification Marks *K.H. 31.5.26*
Tube shaft, Material *✓* Identification Mark *✓* Screw shaft, Material *J.M. Steel* Identification Mark *K.H. 31.5.26*

Is the flash point of the oil to be used over 150° F. *yes* ✓

Is this machinery duplicate of a previous case *no* ✓ If so, state name of vessel *✓*

General Remarks (State quality of workmanship, opinions as to class, &c.) *These Diesel Engines and their accessories have been constructed under Special Survey in accordance with the approved plans and instructions and in conformity with the Rules. The material used in the construction are good and the workmanship is satisfactory. The main engine and the auxiliary have been tried under working conditions and were found to work well. 26 consecutive startings of the main engine were made from 2 starting air receiver without replenishment whereby the pressure in the receiver fell from 75 to 14 kg per sq. cm.*

In my opinion these Diesel Engines and their accessories are eligible to be entered in the Register Book with the notation of + L.M.C.H. 27, C.L.

The amount of Entry Fee ... £ 5 : 0 : 0

Special ... £ 90 : 14 : 11 *1st May 27*

Donkey Boiler Fee ... £ 1 : 1 : 1

Travelling Expenses (if any) £ 0 : 4 : 3 *3 June 1927*

Committee's Minute *FRI. 13 MAY 1927*

Assigned

Thurs 4. 27 C.L.

Oil Eng. 2 water tube DB 200H

G. H. C. Kams

Engineer Surveyor to Lloyd's Register of Shipping.



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