

Rpt. 4b

Date of writing report 13th September, 1957.

Received London 26 SEP 1957

Port Gothenburg

No. 23548.

Survey held at Trollhättan

No. of visits In shops 15
On vessel

First date 19.6.56.

Last date 20.9.57.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name Gross tons abt. 2000

Owners Rederi A-B. Wallen Managers Axel Falkland Port of Registry Råå Year Month

Hull built at Norrköping By A-B. Norrköpings Varv Yard No. 158 When 1957

Main Engines made at Trollhättan By Nydqvist & Holm A-B. Eng. No. 1697 When 1957

Gearing made at --- By ---

Donkey boilers made at --- By --- Blr. Nos. --- When ---

Machinery installed at Norrköping By A-B. Norrköpings Varv When 1957.

Particulars of restricted service of ship, if limited for classification ---

Particulars of vegetable or similar cargo oil notation, if required ---

Is ship to be classed for navigation in ice? Yes Is ship intended to carry petroleum in bulk? ---

Is refrigerating machinery fitted? --- If so, is it for cargo purposes? --- Type of refrigerant ---

Is the refrigerating machinery compartment isolated from the propelling machinery space? --- Is the refrigerated cargo installation intended to be classed? ---

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line may be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but the port and report number should be stated.

No. of main engines 1 No. of propellers 1 Brief description of propulsion system Main Engine, straight shafting & propeller

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Nohab Polar M 68 T

No. of cylinders per engine 8 Dia. of cylinders 500 mm. stroke(s) 700 mm. 2 or 4 stroke cycle 2 Single or double acting S A

Maximum approved BHP per engine 3000 at 235 RPM of engine and 235 RPM of propeller.

Corresponding MIP 6.54 kg/cm² (For DA engines give MIP top & bottom) Maximum cylinder pressure 60 kg/cm² Machinery numeral 600

Are the cylinders arranged in Vee or other special formation? No If so, number of crankshafts per engine ---

TWO STROKE ENGINES. Is the engine of opposed piston type? No If so, how are upper pistons connected to crankshaft? ---

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? Through ports No. and type of mechanically driven scavenge pumps or blowers per engine and how driven 1 - ring piston blower cog wheel driven from the crank shaft

No. of exhaust gas driven scavenge blowers per engine --- Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? ---

If a stand-by or emergency pump or blower is fitted, state how driven --- No. of scavenge air coolers --- Scavenge air pressure at full power 155 mm. Hg Are scavenge manifold explosion relief valves fitted? Yes

FOUR STROKE ENGINES. Is the engine supercharged? --- Are the undersides of the pistons arranged as supercharge pumps? --- No. of exhaust gas driven blowers per engine ---

No. of supercharge air coolers per engine --- Supercharge air pressure --- Can engine operate without supercharger? ---

TWO & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel 1 Inlet --- Exhaust --- Starting 1 Safety 1

Material of cylinder covers Cast iron Material of piston crowns Cast iron Is the engine equipped to operate on heavy fuel oil? No

Cooling medium for: Cylinders Fresh water Pistons Oil Fuel valves No cooling Overall diameter of piston rod for double acting engines ---

Is the rod fitted with a sleeve? --- Is welded construction employed for: Bedplate? No Frames? No Entablature? No Is the crankcase separated from the underside of pistons? No

Is the engine of crosshead or trunk piston type? Trunk Total internal volume of crankcase 13.6 m³ No. and total area of explosion relief devices 8 x 110 cm² Are flame guards or traps fitted to relief devices? Traps Is the crankcase readily accessible? Yes If not, must the engine be removed for overhaul of bearings, etc? ---

Is the engine secured directly to the tank top or to a built-up seating? --- How is the engine started? By compr. air

Can the engine be directly reversed? Yes If not, how is reversing obtained? ---

Has the engine been tested working in the shop? Yes How long at full power? 7 hours.

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 2/8 & 1/9 -57. State barred speed range(s), if imposed for working propeller --- For spare propeller --- Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? Yes

Where positioned? Forward end of engine Type Pendulum damper No. of main bearings 9 Are main bearings of ball or roller type? No

Distance between inner edges of bearings in way of crank(s) 674 mm. Distance between centre lines of side cranks or eccentrics of opposed piston engines ---

Crankshaft type: Built, semi-built, solid. (State which) Semi - built

Diameter of journals 330 mm. Diameter of crankpins 330 mm. Breadth of webs at mid-throw 480 mm. Axial thickness of webs 175 & 200 mm.

If shrunk, radial thickness around eyeholes 153 mm. Are dowel pins fitted? No Crankshaft material Journals S.M. Steel Approved 52 kg/mm²

Webs Tensile strength ---

Diameter of flywheel 1724 mm. Weight 2190 kgs. Are balance weights fitted? No Total weight --- Radius of gyration ---

Diameter of flywheel shaft None Material --- Minimum approved tensile strength ---

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with thrust - shaft.

6148

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Lloyd's Register
Foundation

No. of sets of turbines	Open or closed cycle	BHP per set	at	RPM of output shaft
How is drive transmitted to propeller shaft?				
ARRANGEMENT OF TURBINES. (A small diagram should be attached showing gas cycle.)				
HP drives	at	RPM	HP gas inlet temperature	pressure
IP drives	at	RPM	IP gas inlet temperature	pressure
LP drives	at	RPM	LP gas inlet temperature	pressure
No. of air compressors per set	Centrifugal or axial flow type?	Material of turbine blades		Material of compressor blades
No. of air coolers per set	No. of heat exchangers per set	How are turbines started?		
How is reversing effected?				
Are the turbines operated in conjunction with free piston gas generators?				
Total No. of free piston gas generators	Diameter of working pistons	Diameter of compressor pistons	No. of double strokes per minute at full power	
Gas delivery pressure	Gas delivery temperature	Have the turbines and attached equipment been tested working in the shop?		
How long at full power?				
ELECTRIC PROPULSION (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d.)				
No. of generators	KW per generator	at	RPM	AC or DC? Position
No. of propulsion motors	SHP per motor	at	RPM	Position
How is power obtained for excitation of generators?				Motors?
REDUCTION GEARING (Reciprocating engines or gas turbines. A small line sketch should be attached showing arrangement of gearing.)				
Is gearing of single or double helical type?	If single, position of gear thrust bearing			Is gearing of epicyclic type?
PCD of pinions: First reduction	Second reduction	PCD of wheels: First reduction		Main
Material of pinions	Tensile strength	Material of wheel rims		Tensile strength
Are gear teeth surface hardened?	How are teeth finished?	Diameter of pinion journals		Wheel shaft
journals	Are the wheels of welded construction?	Is gearcase of welded construction?	Has the wheel/gearcase been heat treated on completion of welding?	
Where is the propeller thrust bearing located?	Are gear bearings of ball or roller type?			
CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief description and, for clutches, state how operated.				
Can the main engine be used for purposes other than propulsion when declutched? If so, what?				
STRAIGHT SHAFTING. Diameter of thrustshaft 350 mm. Material S.M. Steel Minimum approved tensile strength 52 kg/mm ²				
Shaft separate or integral with crank or wheel shaft? Separate Diameter of intermediate shaft --- Material ---				
Minimum approved tensile strength --- Diameter of screwshaft cone at large end --- Is screwshaft fitted with a continuous liner? ---				
Diameter of tube shaft. (If these are separate shafts) --- Is tube shaft fitted with a continuous liner in way of stern tube --- Thickness of screw/tube shaft liner ---				
bearings --- Thickness between bearings --- Material of screw/tube shaft --- Minimum approved tensile strength ---				
Is an approved oil gland fitted? If so, state type --- Length of bearing next to and supporting propeller ---				
Material of bearing --- In multiple screw vessels is the liner between stern tube and A bracket continuous? --- If not, is the exposed length of shafting between liners readily visible in dry dock? ---				
PROPELLER. Diameter of propeller --- Pitch --- Built up or solid --- Total developed surface ---				
No. of blades --- Blade thickness at top of root fillet --- Blade material --- Moment of inertia of dry propeller ---				
If propeller is of special design, state type --- Is propeller of reversible pitch type? --- If so, is it of approved design? ---				
State method of control --- Material of spare propeller --- Moment of inertia ---				
AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine None Can they be declutched? ---				
No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate)				
No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 2 - 4000 lit. GOT. cert. No. 19340				
1 - 350 lit. GOT. cert. No. 22140				
How are receivers first charged? --- Maximum working pressure of starting air system 25 kg/cm ² Are the safety devices in accordance with the Rules? Yes Has the starting of the main engines been tested and found satisfactory? Yes				
COOLERS. No. of main engine fresh water coolers --- No. of main engine lubricating oil coolers ---				
OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure ---				
MAIN ENGINE DRIVEN PUMPS (No. and Purpose) None				

NIDQVIST & HOLM ARKITEKTER 17 SEP 1957
 Technical Department
 Lloyd's Register
 Foundation
 Builder

0269²/₂

GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

This main engine has been built in accordance with the Rules and approved plans. Workmanship and materials used are good, and test sheets in respect of crank - and thrust shafts, connecting rods and air receivers are attached. The engine has been tried in shop under full load conditions and found to work satisfactorily.

The engine will be despatched to Norrköping.

Note:-

This engine has been used for experiment with turbo-blowers etc. since 1955 when it was made by Messrs. Uddevallavarvet. All pistons & cylinder liners have been renewed and the engine completely overhauled before delivery to Messrs. Norrköpings Varv.

[Signature]
Engineer Surveyor to Lloyd's Register of Shipping.

PARTICULARS OF IDENTIFICATION MARKS ((Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

RODS Lloyd's GOT. No. 962/3/4 G.U. 17.6.54. Lloyd's GOT. No. 3352/3/4/5/6 A.S. 25.5.54.

CRANKSHAFT ~~BY ROTORSECT~~ Lloyd's GOT. No. 1811 A.O. 9.7.54.

FLYWHEEL SHAFT

THRUSTSHAFT Lloyd's GOT. No. 1812 A.O. 9.7.54.

GEARING

INTERMEDIATE SHAFTS

SCREW AND TUBE SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS Air receivers: 2 x 4000lit. 1 - 35 lit.

Nos. 2717 - 2718
Lloyd's test 50 kgs.
WP 25 kgs.
N.F. 5.5.55.

No. 2839
Lloyd's test 41 kgs.
WP 25 kgs.
A.S. 4.4.57.

Is the installation a duplicate of a previous case?

If so, state name of vessel

Date of approval of plans for crankshaft 2.8.56

Straight shafting 2.8.56

Gearing

Clutch

Separate oil fuel tanks

Pumping arrangements

Oil fuel arrangements

Cargo oil pumping arrangements

Air receivers

3.4.57.

Donkey boilers

Dates of examination of principal parts:-

Fitting of stern tube

Fitting of propeller

Completion of sea connections

Alignment of crank shaft in main bearings 13.9.57.

Engine checks & bolts

Alignment of gearing

Alignment of straight shafting

Testing of pumping arrangements

Oil fuel lines

Donkey boiler supports

Steering machinery

Windlass

Date of Committee

TUESDAY 19 AUG 1958

Special Survey Fee

Kr. 2580:00

Decision

See item 11581

Expenses

Trav.

"

250:00

Date when A/c rendered

25/9 -57.

