

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office

2 DEC 1934

30 JAN 1935

Date of writing Report 28 DEC 1934 When handed in at Local Office 28 DEC 1934 Port of London
 No. in Reg. Book. 90765 Survey held at Port of London Date: First Survey 31 JUL 1934 Last Survey 5 DECEMBER 1934
 (No. of Visits 11)

on the Refrigerating Machinery and Appliances of the "REX" Port Wyndham Tons { Gross _____ Net _____

Vessel built at Glasgow By whom built J. Brown & Co. Ltd. Yard No. 541 When built 1934

Owners Commonwealth Dominions Port belonging to _____ Voyage _____

Refrigerating Machinery made by J. E. Hall Ltd. Machine No. 9096
9097
9098 When made 1934

Insulation fitted by _____ When fitted _____ System of Refrigeration CO₂ + Brine

Method of cooling Cargo Chambers Brine + Air Insulating Material used _____

Number of Cargo Chambers insulated 21 Total refrigerated cargo capacity 485,000 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed on 2nd deck, aft E.R. Casing

Refrigerating Units, No. of 3 Single, double, or triple _____ Cubic feet of air delivered per hour _____

Total refrigeration or ice-melting capacity in tons per 24 hours 168 tons Are all the units connected to all the refrigerated chambers yes

Compressors, driven direct or ~~through~~ ^{single} ~~double~~ reduction gearing. Compressors, single or double acting single No. of cylinders 2 per mach.
(6)

Diameter of cylinders 5" Diameter of piston rod 2 1/4" Length of stroke 10" No. of strokes per minute 260/300

Motive Power supplied from Electric motors direct coupled

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders _____ Diameter _____

Length of stroke _____ Working pressure _____ Diameter of crank shaft journals and pins 6 1/2" journals, 4" pins

Breadth and thickness of crank webs 9" x 4 1/2" No. of sections in crank shaft one Revolutions of ~~engines~~ ^{com. machs} per minute 260/300

Oil Engines, type _____ 2 or 4 stroke cycle _____ Single or double acting _____ B.H.P. _____

No. of cylinders _____ Diameter _____ Length of stroke _____ Span of bearings as per Rule _____

Maximum pressure in cylinders _____ Diameter of crank shaft journals and pins _____

Breadth and thickness of crank webs _____ No. of sections in crank shaft _____ Revolutions of engine per minute _____

Electric Motors, type open with canopy No. of 3 Rated 160 B.H.P. Kilowatts _____

Volts at 220 a revolutions per minute _____ Diameter of motor shafts at bearings _____

Reduction Gearing, maximum shaft horse power at 1st pinion _____ Revolutions per minute at full power at 1st pinion _____

2nd pinion _____ 1st reduction wheel _____ main shaft _____ Pitch circle diameter, 1st pinion _____ 2nd pinion _____

1st reduction wheel _____ Main wheel _____ Width of face, 1st reduction wheel _____ Main wheel _____

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 1st pinion _____ 2nd pinion _____

1st reduction wheel _____ Main wheel _____ Flexible pinion shafts, diameter 1st _____ 2nd _____

Pinion shafts, diameter at bearings, External, 1st _____ 2nd _____ Internal, 1st _____ 2nd _____

Diameter at bottom of teeth of pinion, 1st _____ 2nd _____ Wheel shafts, diameter at bearings, 1st _____

Main _____ Diameter at wheel shroud, 1st _____ Main _____

Gas Condensers, No. of 3 Cast iron or steel casings cast iron Cylindrical or rectangular cylindrical

No. of coils in each 14 Material of coils S.D. copper 3/4" x 10 d. Can each coil be readily ~~shut off~~ or disconnected yes

Water Circulating Pumps, No. and size of Supplied by Owners how worked _____ Gas Separators, No. of 6

Gas Evaporators, No. of 3 Cast iron or steel casings steel Pressure or gravity type low pressure

No. of coils in each casing 14 Material of coils S.D. Steel 1 1/2" x 15/8" o.d. Can each coil be readily ~~shut off~~ or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of 12 Are there two separate systems, so that one may be in use while the other is being

cleared of snow no No. of coils in each battery 8 - 3 coils Material of coils S.D. Steel 1 1/2" low Can each coil be readily shut off or

disconnected yes Total cooling surface of battery coils 9500 sq. ft. Is a watertight tray fitted under each battery yes

Air Circulating Fans, Total No. of 10 - 30" each of 4000 cubic feet capacity, at 2500 revolutions per minute

Steam or electrically driven Electrically Where spare fans are supplied are these fitted in position ready for coupling up no

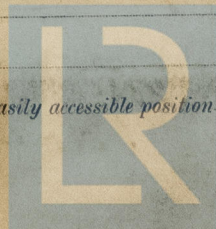
Brine Circulating Pumps, No. and size of, including the additional pump 1 - 2" " " how worked Electric direct

Brine Cooling System, closed or open closed Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber See separate list attached

Can each section be readily shut off or disconnected yes Are the control valves situated in an easily accessible position yes

NOTE.—THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED.



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Common
Are thermometers fitted to the outflow and to each return brine pipe yes Where the tanks are closed are they ventilated as per Rule
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated
Steam Condensing Plant. State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)						
GAS COMPRESSORS	20-9-34	1000 lb. sq. in.	3000 lb. sq. in.	1500 lb. sq. in.	OK	
" SEPARATORS	5-12-34	do.	do.	do.	OK	
" CONDENSER COILS	31-4-34	14-8-34	do.	do.	OK	
" EVAPORATOR COILS	22-8-34	28-8-34	do.	do.	OK	
" CONDENSER HEADERS AND CONNECTIONS	4-9-34	18-9-34	do.	do.	OK	
" CONDENSER CASINGS	26-9-34	4-9-34	do.	do.	OK	
" EVAPORATOR CASINGS	20-9-34	4-9-34	do.	do.	OK	
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	4-9-34	56 10 lb. sq. in.	30 lb. sq. in.	"	OK	
BRINE PIPING AFTER ERECTION IN PLACE	14-9-34	do.	do.	"	OK	

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory

Dates of test _____ Density of Brine _____ by _____ hydrometer
Temperatures (when the cargo chambers are cooled down to the required test temperatures) of air at the snow box and of the return air _____ &
or, delivery and return air at direct expansion or brine cooled batteries _____ & _____, outflow and return brine _____ &
atmosphere _____ cooling water inlet and discharge _____ & _____ gas in condensers _____ and evaporators _____
the average temperature of the refrigerated chambers _____ and the rise of temperature in these chambers upon the expiration of _____ hours
time after the machinery and cooling appliances have been shut off _____

SPARE GEAR.

Are the machines in accordance with Section 4, Clause 2 of the Rules

Are the working parts of the machines, pumps and motors respectively, interchangeable

ARTICLES SUPPLIED AS PER RULE.

6 pistons & rods for compressor
3 sets of rings for compressor pistons
1 crankshaft
1 spindle & impeller for cent. brine pumps each size
1 set valves and springs for V.D. brine pump.
1 pump bucket complete for do. do.
2 regulator valve spindles
1 additional brine pump in engine room
1 pair main bearing shells lined W.M. with bolts & nuts
1 pair crankpin do. do.
1 pair crosshead bearings with cap bolts & nuts.
36 lubricator piston leathers
36 do. gland do.
12 sets special metal packing rings for compressor glands
2 sets copper joint rings for compressors
1 do. do. do.
1 set of two leather moulds
3 lengths each 1 1/2" x 1 1/2" piping
3 W.I. bands each 1 1/2" x 1 1/2" bore.
12 W.I. sockets & backnuts each 1 1/2" x 1 1/2" bore
1 set of ratchet screwing dies 1 1/2" x 1 1/2" bore
2 pair CO₂ pipe flanges
assorted bolts & nuts & sundry brine cocks

ELECTRICAL SPARES.

Armature in zinc lined case } One of each for
Set of field coils } Machine motors
Set of interpole coils } For brine pump motors each size
Set of brushes } Vertical duplex brine pump
Set of brushes } motor
Set of starter spares }

ADDITIONAL SPARE GEAR SUPPLIED.

6 sets of 2 valve seats & springs for
36 addl. springs for comp. valves
2 springs for water relief valves
2 do. brine do. do.
2 do. CO₂ safety valve
1 pump for pressure lubricator
3 CO₂ gauges - 1 hydrometer
12 wood clad thermometers
1 separator drain plug
36 safety valve discs
3-1/2" CO₂ gauge valves & 9 pipes
6 bolts with 6 sets leather washers
for machine coupling
1 fitted box for comp. parts
1 anemometer.

30" fans
1 spare motor
3 sets brushes
1 set starter spares
1 spare 2 bladed rotor.
14 1/2" 15" 12" fans
1 spare vent motor
1 do. long. do.
3 sets brushes
1 set starter spares
12" fans
1 spare motor
1 set brushes
1 spare rotor for
14 1/2" & 15" fans

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, LTD.

Manufacturer.

DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.						IN TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.
FRAME No. (Fore Peak)	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No. (Boiler Room)	A									
FRAME No. (Engine Room)	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No. (After Peak)	F									
SIDES										
OVERHEADING										
FLOORS OF CHAMBERS										
TRUNK HATCHWAYS										
THRUST RECESS, SIDES AND TOP										
TUNNEL SIDES AND TOP										
TUNNEL RECESS, FRONT AND TOP										

FRAMES OR REVERSE FRAMES, FACE

BULKHEAD STIFFENERS, TOP _____ BOTTOM _____ AND FACE _____

RIBBAND ON TOP OF DECKS

SIDE STRINGERS, TOP _____ BOTTOM _____ AND FACE _____

WEB FRAMES, SIDES _____ AND FACE _____

BRACKETS, TOP _____ BOTTOM _____ AND FACE _____

INSULATED HATCHES, MAIN _____ BILGE _____ MANHOLE _____

HATCHWAY COAMINGS, MAIN _____ BILGE _____

HOLD PILLARS

MASTS _____ VENTILATORS _____

Are insulated plugs fitted to provide easy access to bilge suction roses _____ tank, air, and sounding pipes _____ heels of pillars _____

and manhole doors of tanks _____ Are insulated plugs fitted to ventilators _____ cargo ports _____ and side lights _____

Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected _____ if so, how _____

Oil Storage Tanks, where adjacent to the insulated chambers, state what provision has been made for ventilating the air space between the insulation and the bulkhead plating _____

Coal Bunker Bulkheads, and Brine Outflow and Return Pipes passing through coal bunkers. Is the insulation, so far as practicable, fireproof _____

Where Cooling Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof _____

Cargo Battens, Dimensions and spacing, sides _____ floors _____ tunnel top _____
fixed or portable _____ Are screens fitted over the brine grids at chamber sides _____ hinged or permanently fixed _____

Thermometer Tubes, No. and position in each chamber _____

diameter _____ are they fitted in accordance with Section 3, Clause 8 _____

Protection of Pipes. Are all pipes, including air and sounding pipes, which pass through or into insulated chambers, well insulated _____

Draining Arrangements. Where the chambers are situated below the load water line, what provision is made for draining the inside of the chambers _____

Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off _____

What provision is made for draining the refrigerating machinery room _____

brine return room _____ fan room _____ water circulating pump room _____

Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers _____



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Sounding Pipes, No. and position in each chamber situated below the load water line

Diameter _____ Are all sounding pipes in way of insulated chambers fitted in accordance with Section 3, Clause 11

Are all wood linings tongued and grooved _____ Are cement facings reinforced with expanded steel lattice _____

How is the expanded metal secured in place _____

How are the cork slabs secured to the steel structure of the vessel _____

Air Trunkways in Chambers, inside dimensions, main _____ and branch _____

Are they permanently fixed or collapsible, or portable _____ State position in chambers _____

Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors _____ Are the door frames efficiently insulated _____

Are insulated plugs supplied for the doorways _____ Where are the doors worked from _____

Cooling Pipes in Chambers, diameter _____ Are they galvanised externally _____

How are they arranged in the chambers _____

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers _____

The foregoing is a correct description of the Insulation and Appliances.

Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery _____ and Insulation _____
(If not, state date of approval)

Is the Refrigerating Machinery and Appliances duplicate of a previous case _____ If so, state name of vessel _____

If the survey is not complete, state what arrangements have been made for its completion and what remains to be done _____

General Remarks (State quality of workmanship, opinions as to class, &c.) *The refrigerating machinery has been constructed under special survey and the materials and workmanship are good and it will be eligible for the notation of + Lloyds R.M.C. (with date) when the installation and testing are satisfactorily completed.*

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	POWER.		INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.		Cubic feet of air delivered per hour.	Ice melting capacity per 24 hours. Tons.	No.	Capacity. Cubic ft.
3	6	Carb. Dury	J. E. Hall	1934	(1) Brine piping (2) Insulating		168	21	431288

Fee £ 42 0 0 (Fee applied for, 28 JAN 1935)
Travelling Expenses £ : : (Received by me, 8-2 1935)

D. Gemmell.
Surveyor to Lloyd's Register.

Committee's Minute *GLASGOW 29 JAN 1935*

Assigned *See Gls. Rpt. 55340a*



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