

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office

6 AUG 1938)

Date of writing Report 6 AUG 1938

When handed in at Local Office

6 AUG 1938

Port of London

No. in

Reg. Book.

Survey held at London. Date: First Survey 21st March Last Survey 29th June 1938

(No. of Visits 16)

on the Refrigerating Machinery and Appliances of the S.S. DOMINION MONARCH. Tons { Gross 27155 Net 15813

Vessel built at Wallsend-on-Tyne By whom built Swan Hunter & Higham Yard No. 1547 When built 1938

Owners Shaw Savill & Albion Co.

Port belonging to

Voyage

Refrigerating Machinery made by J. & E. Hall Ltd.

Machine Nos. 9945 9946 9944 9948

When made 1938

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 25

Total refrigerated cargo capacity 586,000 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed H Deck, Midship

Refrigerating Units, No. of 4

No. of machines 4

Is each machine independent yes

Total refrigeration or ice-melting capacity in tons per 24 hours 224 tons Are all the units connected to all the refrigerated chambers yes.

Compressors, driven direct or through

single or double

reduction gearing

Compressors, single or double acting Single

If multiple effect compression no

are relief valves or safety discs fitted yes

No. of cylinders to each unit 2

Diameter of cylinders 5"

Increased 6 1/2" 1948

Diameter of piston rod 2 1/4"

Length of stroke 10"

No. of revolutions per minute 300/200

Motive Power supplied from

Electric Motors.

(State number of boilers, oil engines or electric generators supplying the motive power.)

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 per minute 300 max.

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

AIR RECEIVERS:—Is each receiver, which can be isolated, fitted with a safety valve as per Rule

Can the internal surfaces of the receivers be examined

What means are provided for cleansing their inner surfaces

Is there a drain arrangement fitted at the lowest part of each receiver

If made under survey

No. of Receivers

Cubic capacity of each

Internal diameter

thickness

Seamless, lap welded or riveted longitudinal joint

Material

Range of tensile strength

Working pressure by Rules

Electric Motors, type open type

No. of 4

Rated 160 H.P.

Kilowatts

Volts at 300/200

revolutions per minute. Diameter of motor shafts at bearings

Reduction Gearing

Pitch circle diameter, pinion

Main wheel

Width of face

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, pinion

Main wheel

Pinion shafts, diameter at bearings

Main wheel shaft, diameter at bearings

Gas Condensers, No. of 3

Cast iron or steel casings

Copper

Cylindrical or rectangular

cylindrical

Are safety valves fitted

to casings yes

No. of coils in each 12

Material of coils

S.D. Copper 3/4" x 1"

Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of 2 supplied by shipbuilders

how worked

Gas Separators, No. of 8

Gas Evaporators, No. of 4

Cast iron or steel casings

steel

Pressure or gravity type pressure

If pressure type, are safety

valves fitted

No. of coils in each casing 13

Material of coils

S.D. Steel 1" x 1 5/8"

Can each coil be readily shut off or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of 25

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

Material of coils S.D. Steel 1 1/2" box

Can each coil be readily shut off or

disconnected yes

Total cooling surface of battery coils 25,600 sq. ft.

Is a watertight tray fitted under each battery yes

Air Circulating Fans, Total No. of 30

each of

cubic feet capacity, at

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

how worked electrically

Brine Cooling System, closed or open closed

Are the pipes and tanks galvanised on the inside

No. of brine sections in each chamber

See separate list attached

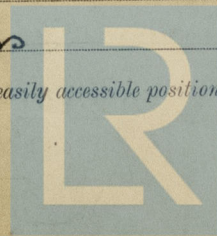
totals = 59 for grids, 95 for coolers

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 yes
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated yes
Are the number and capacity of the machines and the number of pumps and sea connections in accordance with Section 2, Clause 1 of the Rules yes
Is the exhaust steam led to the main and auxiliary condensers yes

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)	24-5-38					
GAS COMPRESSORS	26-5-38	1000lb □	3000lb □	1500lb □	St.	
" SEPARATORS	23-6-38	do.	do.	do.	St.	
" MULTIPLE EFFECT RECEIVERS	29-6-38	do.	do.	do.		
" CONDENSER COILS	21-3-38	none				
3-5-38, 19-4-38	25-3-38					
" CONDENSER COILS	8-4-38	14-5-38	1000lb □	3000lb □	1500lb □	St.
13-5-38, 9-5-38	19-4-38	4-5-38	do.	do.	do.	St.
" EVAPORATOR COILS	26-4-38	6-5-38	do.	do.	do.	St.
" CONDENSER HEADERS AND CONNECTIONS	23-6-38	14-6-38	do.	do.	do.	St.
" CONDENSER CASINGS	13-5-38	10-15lb □	30lb □	-	St.	
" EVAPORATOR CASINGS	14-5-38	10-15lb □	30lb □	-	St.	
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE	6/10/38			90 lb.		
BRINE PIPING AFTER ERECTION IN PLACE	5/12/38			90 lb.		

Have important steel castings and forgings been tested in accordance with the Rules

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)

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

Has the spare gear required by the Rules been supplied yes.

Additional Spare Gear Supplied:-

48 lub piston leathers, 48 additional springs for compressor valves.
48 " gland " 1 spindle + impeller for brine pumps each size.
1 set, 2 leather moulds 1 set bushes " " " " "
1 pump bucket complete for V.D. ram brine pump, 1 crankshaft for CO₂ machine
2 springs for water relief valves, 1 pair main bearing shells, lined H.M. bolts & nuts
2 " " brine " " 1 " crankpin " " " "
2 " " CO₂ " " 1 pump for press. lubr, 3 CO₂ gauge, 1 hydrometer
12 thermometers, 1 separator drain plug, 48 safety valve discs,
4 - 1/8" CO₂ valves + 12 spare pipes for same. 1 fitted box for comp. parts.

ELECTRICAL SPARES.

	Machine motor	Brine Pump motors each size	Fan motors each size	Fans each size
Armature Packed	1		1 motor	
Shunt coils	6	4	-	1 spare motor
Series + interpole coils	6		-	
Bearings	2	8	-	
Carbon brushes	19	48	1 set	
Brush holders	1 set	various	1 set for each of 3 or less of each size fitted.	
Controller spares				
Fan for armatures		1		

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, Ltd.

J. Wells
for DIRECTOR

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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.
BULKHEADS.										
FRAME No. (Fore Peak)	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No. (Boiler Room)	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

and for draining the tank top

Fireproof Insulation. Is the insulation and woodwork fireproof in way of bunkers or any surfaces exposed to excessive heat

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

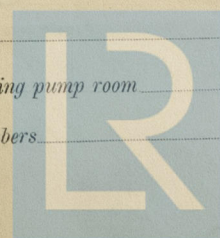
Draining Arrangements. What provision is made for draining the inside of the chambers

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. Are the arrangements satisfactory and in accordance with the approved plans

Are they permanently fixed or collapsible, or portable

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 Minimum thickness 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 + Lloyds R.M.C. (with date) when the installation and testing have been satisfactorily completed.

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity.
4	8	Cast. Linch	J. E. Hall & Co.	1938	Brine & Air	Tons.		25	586,000

Fee London..... £ 16: - : - { Fee applied for, 19 ..
Travelling Expenses £ included { Received by me, 19 ..
hwc 97141

Committee's Minute TUE. 7 FEB 1939

Assigned

D. Gemmell.
Surveyor to Lloyd's Register.



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