

Rpt. 17 (a)

3 JUL 1959

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Survey held at Osaka, Japan No. of visits 8 First date 4th Nov., 1958 Last date 4th Feb., 1959

REFRIGERATED CARGO INSTALLATION
REPORT ON REFRIGERATING MACHINERY

Machinery made by The Sabroe Co., of Japan Ltd. Machine Nos. 60029, 60030
Intended for Yard No. or Ship's Name 3872 When made 1959-Feb.
Built or building at Mukaishima, Japan
OWNERS V/O Sudoimport, U.S.S.R. By whom Hitachi S.B. & Eng., Co., Ltd., Mukaishima S.Y.
Primary refrigerant NH3 Medium for cooling chambers (brine, primary refrigerant, etc.) NH3 Direct Expansion

PARTICULARS OF REFRIGERATING MACHINES OF EACH SIZE (Including machines (if any) for cooling liquid refrigerant)

RECIPROCATING TYPES

(1) No. of machines 2 No. of cylinders per machine 2 Single or double acting Single Single or two-stage Single
Diameter of cylinders 150mm Vertical horizontal or Vee Vertical Diameter of piston rod if double acting -
No. of cranks 2 Stroke 125mm Speed of machines as fitted: Maximum R.P.M. 700 Minimum R.P.M. 550
Single speed, set speeds or variable speed two speed Clearance volume as percentage of swept volume 3.7%
Swept volume of machine(s) at maximum R.P.M. 185.5 M3/hr x 2 How driven (direct, V belt, gearing, etc.) Direct
Prime Movers (steam engine, oil engine, electric motor, etc.) Electric Motor B.H.P. 4.0 HP Maximum R.P.M. 700

(2) No. of machines No. of cylinders per machine Single or double acting Single or two-stage
Diameter of cylinders Vertical, horizontal or Vee Diameter of piston rod if double acting
No. of cranks Stroke Speed of machines as fitted: Maximum R.P.M. Minimum R.P.M.
Single speed, set speeds or variable speed Clearance volume as percentage of swept volume
Swept volume of machine(s) at maximum R.P.M. How driven (direct, V belt, gearing, etc.)
Prime Movers (steam engine, oil engine, electric motor, etc.) B.H.P. Maximum R.P.M.

Material of compressor crankshafts Forged Steel Have they been manufactured and tested in accordance with the Rules and/or Secretary's letters? Yes
Tensile strength 55.2 - 60.1 kg/mm2 Have other important steel forgings and castings been manufactured and tested in accordance with the Rules? Yes
Are safety devices fitted to compressors in accordance with the Rules? Yes (spring type) Are compressors arranged for multiple-effect compression? No

OTHER TYPES (e.g., Centrifugal, steam jet, etc.)
(3)

Where two machines only are provided, are all the working parts interchangeable? Yes
Is provision to be made for liquid refrigerant sub-cooling? No If so, state method

PARTICULARS OF GAS CONDENSERS OF EACH TYPE AND SIZE

No. of shell-and-tube type 2 No. of shells in each 1 No. of tubes per shell 58 Material and thickness of tubes Steel & 3.5mm thickness
Cooling medium and No. of passes Sea water and 6 No. of tubes each pass 10 & 9 Internal diameter of tubes 35.7mm
Total No. of tubes per condenser 58 Total external surface of tubes in each condenser 18.8 M2
No. of coil-in-casing type No. of casings No. of coils each casing Material, external diameter and thickness of coils
External surface of each coil Cooling medium and No. of passes
Total external surface of coils each condenser Can each coil be readily shut off or disconnected?
Other types

PARTICULARS OF EVAPORATORS (BRINE COOLERS) OF EACH TYPE AND SIZE

No. of shell-and-tube type No. of shells in each No. of tubes per shell Material and thickness of tubes
No. of passes of brine No. of tubes each pass Internal diameter of tubes
Total No. of tubes per evaporator Total external surface of tubes in each evaporator
No. of coil-in-casing type No. of casings No. of coils each casing Material, external diameter and thickness of coils
External surface of each coil Total external surface of coils in each evaporator Can each coil be readily shut off or disconnected?
Other types Salt Water Cooler Dimension of Cooler Casing 939.5mm width x 1,429mm length x 800mm height.
Cooling tube size 34mm OD. x 3.2mm thickness x 20 sets.
Total cooling surface 39.6 M2

OTHER COMPONENTS, ETC.

No. of oil separators 2 No. of filters 2 No. of liquid receivers 2 No. of driers - No. of brine heaters -
Other pressure vessels, give particulars
Particulars of cooling grids: Plain coils, external diameter 34mm Thickness 3.2mm Material Solid cold drawn
Extended surface coils, internal diameter Thickness Material
Pitch of plates 100mm Dimensions of plates 3mm thickness x 99mm width Total extended surface per meter of pipe 0.237 M2/Meter
Air cooler coil assemblies, total No. Length of pipe and No. of coils of each size Can each coil be readily shut off or disconnected?
Cooling grid sections, total No. and length of pipe of each size Total section - 8 & total length 1413 meters

Primary refrigerant piping, internal diameter and thickness of each size 52.9mm x 3.8mm, 41.6mm x 3.5, 27.6mm x 3.2, 21.6mm x 2.8, 16.1mm x 2.8, 12.7mm x 2.3
Material Steel How manufactured Sumitomo Metal Industries, Ltd.

Have all components of the refrigerating plant been constructed strictly in accordance with the Rules and approved plans? Yes
Has the spare gear required by the Rules been supplied? Yes Where additional spare gear has been supplied a list is to be attached to the Report.
The foregoing is a correct description of the refrigerating machinery.

The Sabroe Co. of Japan Machinery Manufacturers. Ltd. Osaka



PRESSURE TESTS AT WORKS

DESCRIPTION	Working Pressure kg/cm ²	Hydraulic Pressure kg/cm ²	Date of Test	Air Test Pressure kg/cm ²	Date of Test	Stamped
Compressor cylinders	17.5	42	4-11-58	21	4-11-58	YK
Compressor crankcases	14	21	4-11-58	10.5	4-11-58	YK
Oil separators, XXXXXXXX	17.5	42	14-11-58	21	14-11-58	EI
Filters						
Driers						
Strainers						
Stop valves and connections						
Liquid receivers & tubes	17.5	42	14-11-58	21	14-11-58	EI
Condenser shells XXXX	17.5	42	15-11-58	21	15-11-58	YK
Evaporator (brine cooler) shells or coils						
Condenser headers and connections						
Condenser XXXXXXXX water ends		7	14-11-58			EI
Evaporator headers and connections						
Evaporator coil casings or brine ends						
Air cooler coil assemblies						
Chamber grid sections		35	28-1-59	17.5	28-1-59	MH
Float regulators						
Brine heaters						
Primary refrigerant piping						
Other pressure parts						
Salt water cooler casing		3	24-11-58			MH
Salt water cooler coil	17.5	35	24-11-58	17.5	24-11-58	MH
plate cooler		35	4-2-59	17.5		MH

PLANS: Drawing No. and date of approval of each plan concerned (Approved date 4-11-58)

Compressors, crankshaft	13865 & 13614, FWA-60-10A	Crankcases	2001C	Cylinders	6001
Filters	-	Separators	13658	Liquid receivers	13638
Evaporators	-	Strainers	-	Float regulators	-
Condensers	10031A	Driers	-	Brine heaters	-
Air coolers	-				
Other pressure parts	Salt Water Cooler: DR No. 13882				

General remarks (state quality of workmanship, opinions as to class, etc.) The Refrigerating Units have been constructed under Special Survey in accordance with the Rules, approved Plans and Secretary's letters.

The materials and workmanship are sound and good.

It is recommended that the Refrigerating Units are eligible to be classed with the Society with the Notation of +RMC when satisfactorily installed in the ship.

PARTICULARS OF MACHINERY FOR REGISTER BOOK

No. of units	2	Prime Movers	Electric Motor
Total B.H.P. of all compressor prime movers	80 H.P. For Compressor	Refrigerant	NH ₃
Makers		Date of construction	
MACHINERY PARTICULARS:			
2 - 2 cylinder Single acting compressor		150mm x 125mm x 550/700 r.p.m.	
2 - Shell and Tube type condenser.			

SURVEY FEE (Based on measured cubic capacity on completion of installation)

17.9.59
 CONSTRUCTION (Old Scale 100%) 41,050.-
 INSTALLATION (New Scale 100%) 45,950.-
 INSULATION
 Travelling expenses
 (22 TR 6 B. 713)

Fee applied for, 19
 Received by me, 19

Date of Committee
 Minute

