

LONDON

Rpt. 17 (a)

Date of writing Report 12th June, '58 Received London Port KOBE No. FE-5824
Survey held at Osaka, Japan No. of visits 4 First date 18th Nov., 1957 Last date 16th Jan., 1958.

REFRIGERATED CARGO INSTALLATION
REPORT ON REFRIGERATING MACHINERY

Machinery made by The Sabroe Co., of Japan Ltd. Machine Nos. 330077, 330078, 330079 When made 1958-lmo.
Intended for Yard No. of Ship's Name Y. 1499
Building at Nagasaki, Japan By whom Mitsubishi Zosen K.K.
OWNERS Daido Kaiun K.K.
Primary refrigerant Dichlorodifluoromethane Medium for cooling chambers (brine, primary refrigerant, etc.) Cold air circulation

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

RECIPROCATING TYPES

(1) No. of machines 3 No. of cylinders per machine 3 Single or double acting Single Single or two-stage two
Diameter of cylinders 150mm Vertical, horizontal or Vee Vertical Diameter of piston rod if double acting
No. of cranks 3 Stroke 125mm Speed of machines as fitted: Maximum R.P.M. 500 Minimum R.P.M. 250
Single speed, set speeds or variable speed Two speed (500/250) Clearance volume as percentage of swept volume 3.7%
Swept volume of machine(s) at maximum R.P.M. 3.31 M3/m. (total cylinders) How driven (direct, V belt, gearing, etc.) V belt
Prime Movers (steam engine, oil engine, electric motor, etc.) Electric motor B.H.P. 30 Maximum R.P.M. 1,800

(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 55.2-59.7 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? -
Is provision to be made for liquid refrigerant sub-cooling? Yes If so, state method by intercooler

PARTICULARS OF GAS CONDENSERS OF EACH TYPE AND SIZE

No. of shell-and-tube type 3 No. of shells in each 1 No. of tubes per shell 1-178 (standby use) Almi brass and 1.24mm
Cooling medium and No. of passes Sea water and 4 passes 2-158 No. of tubes each pass 40 & 49 Internal diameter of tubes 13.394mm
Total No. of tubes per condenser 178 and 158 Total external surface of tubes in each condenser 17.2M², 15.3 & 15.3M²
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

OTHER COMPONENTS, ETC.

No. of oil separators 6 No. of filters 10-liquid 3-gas No. of liquid receivers 3 No. of driers 3 No. of brine heaters -
Other pressure vessels, give particulars Intercooler, 3
Particulars of air cooler coils and condensers: Plain coils, external diameter 34mm Thickness 3.2mm Material Steel
Extended surface coils, internal diameter Thickness Material
Pitch of fins or plates Dimensions of fins or plates Total extended surface per foot of pipe
Air cooler coil assemblies, total No. 8 Length of pipe and No. of coils of each size 298M x 4 coils Can each coil be readily shut off or disconnected? No

Cooling grid sections, total No. and length of pipe of each size -
Primary refrigerant piping, internal diameter and thickness of each size (I.D. 62.45 49.75 37.61 25.27 22.10 18.93 16.55 13.38 10.21
Material Copper (T. 2.11 2.11 1.65 1.65 1.65 1.65 1.25 1.25 1.25
(I.D. 6.72 3.55 How manufactured
T. 1.4 1.4 Yes MARK - USED AT OSAKA

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.

PRESSURE TESTS AT WORKS

DESCRIPTION	Working Pressure	Hydraulic Pressure	Date of Test	Air Test Pressure	Date of Test	Stamped
Compressor cylinders		350 lb/in ²	18-11-57	200 lb/in ²	18-11-57	J.N.
Compressor crankcases		200	18-11-57, 2-12-57	150	18-11-57, 2-12-57	JN, SH
Oil separators, oil separators		350	28-11-57, 2-12-57	200	28-11-57, 2-12-57	SH, KT
Filters						
Driers						
Strainers						
Stop valves and connections	350		18-11-57	200	18-11-57	JN
Liquid receivers	350		28-11-57	200	28-11-57	KT
Condenser shells condensers	350		28-11-57	200	28-11-57	KT
Evaporator (brine cooler) shells or coils						
Condenser headers and connections						
Condenser condensers water ends	100		28-11-57	-	-	KT
Evaporator headers and connections						
Evaporator coil casings or brine ends						
Air cooler coil assemblies	350		16-1-58	200	16-1-58	YK
Chamber grid sections						
Float regulators						
Brine heaters						
Primary refrigerant piping						
Other pressure parts						
Interstage coolers	350		2-12-57	200	2-12-57	SH

PLANS: Drawing No. and date of approval of each plan concerned.

Compressors, crankshaft	P560 & 24-10-57	Crankcases	P561 & 24-10-57	Cylinders	P559 & 24-10-57
Filters	-	Separators	P557 & 24-10-57	Liquid receivers	P553-1 & 24-10-57
Evaporators	-	Strainers	-	Float regulators	-
Condensers	P553-1 & 24-10-57	Driers	-	Brine heaters	-
Air coolers	P555 & 24-10-57				
Other pressure parts	Intercoolers - P563 & 24-10-57				

General remarks (state quality of workmanship, opinions as to class, etc.)

The Refrigerating Machinery 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 Machinery are eligible to be classed with this Society with the Notation of +RMC when satisfactorily installed.

PARTICULARS OF MACHINERY FOR REGISTER BOOK

No. of units 3
 Total B.H.P. of all compressor prime movers 90
 Makers Sabroe Co., of Japan Ltd.
 Prime Movers Electric Motor
 Refrigerant Dichlorodifluoromethane
 Date of construction 1958-lmo.

MACHINERY PARTICULARS:

3-3cyl. Com SA compressors 150x150x125mm x 500 r.p.m.
 3- S. & T. condensers.

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

£52,250

Fee applied for: 29th July,

19 58. (Kobe)

Travelling expenses £ 2,600

Received by me,

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FRIDAY 12 SEP 1958

Date of Committee

Minute

de Nag 1005



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