

No. 1837

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2203 No. in Register Book 3571

ENDRICK

S.S. "HORSA"

Makers of Engines RAMAGE & FERGUSON. LTD.

Works No. 267

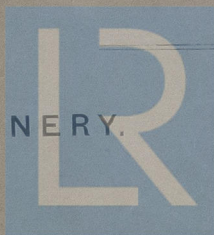
Makers of Main Boilers CALEDON S & EC: LTD.

Works No. B 10

Makers of Donkey Boiler CALEDON S & EC: LTD.

Works No. B 10

MACHINERY.



© 2021

Lloyd's Register
Foundation

002602-002610-0147

No. 1837

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

S.S. "HORSA"

Makers of Engines RAMAGE & FERGUSON LTD.

Works No. 267.

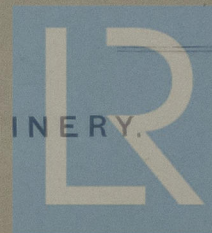
Makers of Main Boilers CALEDON S. & E. CO. LTD.

Works No. B10

Makers of Donkey Boiler CALEDON S. & E. CO. LTD.

Works No. B10

MACHINERY.



© 2021

Lloyd's Register
Foundation

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

14 October 1928

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the ~~Single Triple~~ ^{Single Triple} Screw 'HORSA'

Official No.

Port of Registry LEITH.

Registered Owners LEITH HULL & HAMBURG S.P. CO LTD

Engines Built by RAMAGE & FERGUSON LTD.

at LEITH.

Main Boilers Built by CALEDON S. & E. CO LTD.

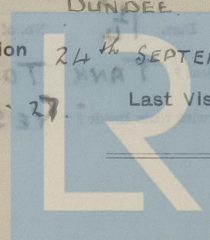
at DUNDEE

Donkey " " CALEDON S. & E. CO LTD.

at DUNDEE.

Date of Completion 24 SEPTEMBER 1928

First Visit 9-11-27. Last Visit 23-9-28. Total Visits 52.



Lloyd's Register
Foundation

RECIPROCATING ENGINES.

Works No. **267** No. of Sets **ONE** Description **TRIPLE EXPANSION, SURFACE CONDENSING, DIRECT ACTING, INVERTED, RECIPROCATING STEAM ENGINES.**

No. of Cylinders each Engine **3** No. of Cranks **3**
 Diars. of Cylinders **20" 33" 54"** Stroke **36"**
 Cubic feet in each L.P. Cylinder **47.7**

Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr? **YES.**

" " " each Receiver? **YES.**

Type of H.P. Valves, **PISTON.**
 " 1st L.P. " **DOUBLE PORTED "D" SLIDE VALVE.**

" ~~2nd L.P.~~ "

" L.P. "

" Valve Gear **STEPHENSON LINK MOTION.**

" Condenser **SURFACE TYPE.** Cooling Surface **1488** sq. ft.

Diameter of Piston Rods (plain part) **5 1/4"** Screwed part (bottom of thread) **3.786"**

Material " **INGOT STEEL**

Diar. of Connecting Rods (smallest part) **5"** Material **SCRAP IRON.**

" Crosshead Gudgeons **5 1/2"** Length of Bearing **6 1/2"** Material " "

No. of Crosshead Bolts (each) **4** Diar. over Thrd. **2 1/4"** Threds. per inch **6** Material **W. "**

" Crank Pin " " **2** " **3 1/4"** " **6** " " "

" Main Bearings **6** Lengths **12**

" Bolts in each **2** Diar. over Thread **2 1/2"** Threads per inch **6** Material **W. IRON**

" Holding Down Bolts, each Engine **78** Diar. **1 1/4"** No. of Metal Chocks **78.**

Are the Engines bolted to the Tank Top or to a Built Seat? **TANK TOP.**

Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? **YES.**

If not, how are they fitted? **—**

Connecting Rods, Forged by **CARMICHAEL & SON. DUNDEE.**

Piston " " **FIFE FORGE CO. KIRKCALDY.**

Crossheads, " " **CARMICHAEL & SON. DUNDEE.**

Connecting Rods, Finished by **RAMAGE & FERGUSON. LEITH.**

Piston " " " " " "

Crossheads, " " " " " "

Date of Harbour Trial **12. 9. 28.**

" Trial Trip **14. 9. 28.**

Trials run at **FIRTH OF FORTH.**

Were the Engines tested to full power under Sea-going conditions? **YES.**

If so, what was the I.H.P.?

1280.

Revs. per min. **92.**

Pressure in 1st L.P. Receiver, **57** lbs., 2nd L.P., **11 1/2** lbs., L.P., lbs., Vacuum, **24 3/4** ins.

Speed on Trial **12.88 knots.**

If the Conditions on Trial were such that full power records were not obtained give the following estimated

data:—

Builders' estimated I.H.P. **1400.**

Revs. per min. **90.**

Estimated Speed **11.5 knots.**

20. 9. 28. LOADED TRIALS.

SPEED = 12.17 knots. REVS. = 89.



© 2021

Lloyd's Register
Foundation

TURBINE ENGINES

Works No. _____ Type of Turbines _____
 No. of H.P. Turbines _____ No. of L.P. _____ No. of Stern _____

Are the Propeller Shafts driven direct by the Turbines or through Gearing?

Is Single or Double Reduction Gear employed?

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revs. per min. of H.P. Turbines at Full Power

S.H.P.

" " I.P. " "

" " L.P. " "

" " 1st Reduction Shaft

" " 2nd " "

" " Propeller Shaft

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial

Knots. Propeller Revs. per min.

S.H.P.

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION



© 2021

Lloyd's Register
Foundation

Description of Generators

Is Single or Double Reduction Gear employed?

Description of Motors

Diary of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion

2nd Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revol. per min. of Generators at Full Power

„ Motors

" 1st Reduction Shaft

" 2nd "

„ Propellers at Full Power

Total Shaft Horse Power

Date of Harbour Trial

12 Trial Trip

Trials run at

Speed on Trial

Knots. Propeller Revols. per min.

S.H.P.

Generators

Meters

Reduction Gear

Turbine Spindles forged by

Wheels forged or cast by

Reduction Gear Shafts forged by

Wheels forged or cast by

DESCRIPTION OF INSTALLATION

MULTI COLLAR HORSE SHOE
2 A STERN
1 AHEAD

© 2021

Lloyd's Register
Foundation

PUMPS, ETC.

No. of Air Pumps **ONE** Diar. **18"** Stroke **20"**

Worked by Main or Independent Engines? **MAIN ENGINES.**

No. of Circulating Pumps **ONE** Diar. **11½"** Stroke **20"**

Type of " **D.A. BUCKET TYPE.**

Diar. of " **Suction from Sea 8½"**

Has each Pump a Bilge Suction with Non-return Valve? **YES** Diar. **6"**

What other Pumps can circulate through Condenser? **BALLAST PUMP.**

No. of Feed Pumps on Main Engine **TWO.** Diar. **3"** Stroke **20"**

Are Spring-loaded Relief Valves fitted to each Pump? **YES.**

Can one Pump be overhauled while the others are at work? **YES.**

No. of Independent Feed Pumps **TWO.** Diar. **8½" x 6"** Stroke **13" WEIRS**

What other Pumps can feed the Boilers? **GENERAL SERVICE PUMP 8" x 6" x 8"**

No. of Bilge Pumps on Main Engine **TWO.** Diar. **3"** Stroke **20"**

Can one Pump be overhauled while the others are at work? **YES.**

No. of Independent Bilge Pumps **NONE**

What other Pumps can draw from the Bilges? **BALLAST PUMP.**

GENERAL SERVICE PUMP.

Are all Bilge Suctions fitted with Roses? **YES.**

Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges? **YES.**

Are all Sea Connections made with Valves or Cocks next the Ship's sides? **YES.**

Are they placed so as to be easily accessible? **YES**

Are the Discharge Chests placed above or below the Deep Load Line? **BELOW**

Are they fitted direct to the Hull Plating and easily accessible? **YES.**

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges

on the Outside? **YES.**



© 2021

Lloyd's Register
Foundation

MAIN BOILERS

Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars? MOUNTED ON PILLARS

Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes? PIPES

Are these Pipes connected to Boilers by Cocks or Valves? COCKS

Are Blow-off Cocks or Valves fitted on Boiler Shells? VALVES

No. of Strakes of Shell Plating in each Boiler 2

Plates in each Strake 1

Thickness of Shell Plates Approved $1\frac{11}{16}$ "in Boilers $1\frac{3}{16}$ " B

Are the Rivets Iron or Steel? STEEL

Are the Longitudinal Seams Butt or Lap Joints? BUTT

Are the Butt Straps Single or Double? DOUBLE

Are the Double Butt Straps of equal width? YES

Thickness of outside Butt Straps $\frac{29}{32}$ "inside $1\frac{1}{32}$ "

Are Longitudinal Seams Hand or Machine Riveted? MACHINE

Are they Single, Double, or Treble Riveted? TREBLE

No. of Rivets in a Pitch 5

Diar. of Rivet Holes $1\frac{3}{16}$ " Pitch $8\frac{1}{4}$ "

No. of Rows of Rivets in Centre Circumferential Seams ✓

Are these Seams Hand or Machine Riveted? ✓

Diar. of Rivet Holes Pitch ✓

No. of Rows of Rivets in Front End Circumferential Seams 2

Are these Seams Hand or Machine riveted? HAND AND MACHINE

Diar. of Rivet Holes $1\frac{3}{16}$ " Pitch $3\frac{1}{2}$ "

No. of Rows of Rivets in Back End Circumferential Seams 2

Are these Seams Hand or Machine Riveted? MACHINE

Diar. of Rivet Holes $1\frac{3}{16}$ " Pitch $3\frac{1}{2}$ "Size of Manholes in Shell $16" \times 12"$ Dimensions of Compensating Rings $3'1" \times 2'9" \times 1\frac{11}{16}"$

DONKEY BOILER

MOUNTED ON PILLARS

PIPES

COCKS

VALVE

1

 $1\frac{11}{16}$ " $1\frac{11}{16}$ " $1\frac{11}{16}$ "

STEEL

LAP

✓

✓

✓

✓

MACHINE

DOUBLE

2

 $1\frac{11}{16}$ "

✓

✓

✓

ONE

HAND

 $1\frac{11}{16}$ "

ONE

MACHINE

 $1\frac{11}{16}$ " $16" \times 12"$ $2'7" \times 2'3" \times 1\frac{11}{16}"$

© 2021

Lloyd's Register
Foundation

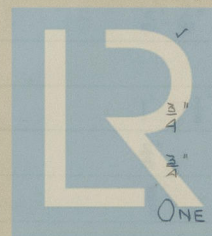
MAIN BOILERS

Thickness of End Plates in Steam Space Approved		$1\frac{1}{4}$ "
" " " " " in Boilers		$1\frac{1}{4}$ "
Pitch of Steam Space Stays		$1'-8" \times 1'-8"$
Diar. " " " " Approved	3" Threads per Inch	9
" " " " " in Boilers	3" "	9
Material of " " "		STEEL
How are Stays Secured?		DOUBLE NUTS
Diar. and Thickness of Loose Washers on End Plates	OUTSIDE - $6\frac{1}{4}" \times \frac{1}{4}"$	INSIDE - $6\frac{1}{2}" \times \frac{1}{4}"$
" " Riveted " " "		✓
Width " " Doubling Strips "		✓
Thickness of Middle Back End Plates Approved		$\frac{25}{32}$ "
" " " " " in Boilers		$\frac{25}{32}$ "
Thickness of Doublings in Wide Spaces between Fireboxes		✓
Pitch of Stays at " " " "		$8" \times 8"$
Diar. of Stays Approved	$1\frac{5}{8}"$ Threads per Inch	9
" " in Boilers	$1\frac{5}{8}"$ "	9
Material "		STEEL
Are Stays fitted with Nuts outside?		YES
Thickness of Back End Plates at Bottom Approved		$\frac{25}{32}$ "
" " " " " in Boilers		$\frac{25}{32}$ "
Pitch of Stays at Wide Spaces between Fireboxes		$8" \times 8"$
Thickness of Doublings in " "		✓
Thickness of Front End Plates at Bottom Approved		$\frac{13}{16}"$
" " " " " in Boilers		$\frac{13}{16}"$
No. of Longitudinal Stays in Spaces between Furnaces		3

DONKEY BOILER

M/IAM

Thickness of End Plates Approved		$\frac{3}{4}"$
" " " " " in Boilers		$\frac{3}{4}"$
Pitch of Steam Space Stays		$1'-4" \times 1'-3"$
Diar. " " " " Approved	2" Threads per Inch	9
" " " " " in Boilers	2" "	9
Material of " " "		STEEL
How are Stays Secured?		DOUBLE NUTS
Diar. and Thickness of Loose Washers on End Plates	$8" \times \frac{3}{4}"$	
" " Riveted " " "		✓
Width " " Doubling Strips "		✓
Thickness of Middle Back End Plates Approved		$\frac{3}{4}"$
" " " " " in Boilers		$\frac{3}{4}"$
Thickness of Doublings in Wide Spaces between Fireboxes		✓
Pitch of Stays at " " " "		$8\frac{3}{4}"$
Diar. of Stays Approved	$1\frac{1}{2}"$ Threads per Inch	9
" " in Boilers	$1\frac{1}{2}"$ "	9
Material "		STEEL
Are Stays fitted with Nuts outside?		YES
Thickness of Back End Plates at Bottom Approved		$\frac{3}{4}"$
" " " " " in Boilers		$\frac{3}{4}"$
Pitch of Stays at Wide Spaces between Fireboxes		$8\frac{3}{4}"$
Thickness of Doublings in " "		✓



© 2021

Lloyd's Register
Foundation

MAIN BOILERS

Diar. of Stays Approved	2"	Threads per Inch	9
" " in Boilers	2"		9
* Material "			STEEL
Thickness of Front Tube Plates Approved		$\frac{13}{16}$ "	
" " " in Boilers		$\frac{13}{16}$ "	
Pitch of Stay Tubes at Spaces between Stacks of Tubes		9"	
Thickness of Doublings in " " "		✓	
" Stay Tubes at " " "		$\frac{3}{8}$ "	
Are Stay Tubes fitted with Nuts at Front End ?		No.	
Thickness of Back Tube Plates Approved		$\frac{3}{4}$ "	
" " " in Boilers		$\frac{3}{4}$ "	
Pitch of Stay Tubes in Back Tube Plates		9"	
" Plain "		$4\frac{1}{2}" \times 4\frac{1}{2}"$	
Thickness of Stay Tubes		$\frac{3}{8}$ "	
" Plain "		8 B.W.G.	
External Diar. of Tubes		$3\frac{1}{4}"$	
Material "		IRON	
Thickness of Furnace Plates Approved		$\frac{9}{16}$ "	
" " " in Boilers		$\frac{9}{16}$ "	
Smallest outside Diar. of Furnaces		$3'-6\frac{1}{8}"$	
Length between Tube Plates		7'-0"	
Width of Combustion Chambers (Front to Back)		$2'-9\frac{21}{32}"$	
Thickness of " " Tops Approved		$\frac{5}{8}"$	
" " " in Boilers		$\frac{5}{8}"$	
Pitch of Screwed Stays in C.C. Tops		8"	

DONKEY BOILER

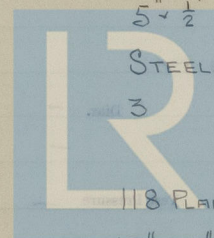
Threads per Inch	9	
" " " in Boilers	9	
* Material "		STEEL
Thickness of Front Tube Plates Approved		$\frac{3}{4}"$
" " " in Boilers		$\frac{3}{4}"$
Pitch of Stay Tubes at Spaces between Stacks of Tubes		$8\frac{1}{2}" \times 12\frac{3}{4}"$
Thickness of Doublings in " " "		$\frac{3}{4}"$
" Stay Tubes at " " "		$\frac{3}{8}"$
Are Stay Tubes fitted with Nuts at Front End ?		No.
Thickness of Back Tube Plates Approved		$\frac{5}{8}"$
" " " in Boilers		$\frac{5}{8}"$
Pitch of Stay Tubes in Back Tube Plates		$8\frac{1}{2}" \times 12\frac{3}{4}"$
" Plain "		$4\frac{1}{4}" \times 4\frac{3}{8}"$
Thickness of Stay Tubes		$28 @ \frac{3}{8}"$, $8 @ \frac{5}{16}"$
" Plain "		9 S.W.G.
External Diar. of Tubes		3"
Material "		IRON
Thickness of Furnace Plates Approved		$\frac{9}{16}"$
" " " in Boilers		$\frac{9}{16}"$
Smallest outside Diar. of Furnaces		$2'-11\frac{5}{8}"$
Length between Tube Plates		5'-6"
Width of Combustion Chambers (Front to Back)		$1'-7\frac{7}{8}"$
Thickness of " " Tops Approved		$\frac{5}{8}"$
" " " in Boilers		$\frac{5}{8}"$
Pitch of Screwed Stays in C.C. Tops		$6\frac{1}{2}"$

© 2021

Lloyd's Register
Foundation

Diam. of Screwed Stays Approved	$\frac{5}{8}$ "	Threads per Inch	9
" " " in Boilers	$\frac{5}{8}$ "		9
Material " "			STEEL
Thickness of Combustion Chamber Sides Approved	$\frac{5}{16}$ "		
" " " " in Boilers	$\frac{5}{16}$ "		
Pitch of Screwed Stays in C.O. Sides			8" x 8"
Diam. " " Approved	$\frac{5}{8}$ "	Threads per Inch	9
" " " in Boilers	$\frac{5}{8}$ "		9
Material " "			STEEL
Thickness of Combustion Chamber Backs Approved	$\frac{19}{32}$ "		
" " " " in Boilers	$\frac{19}{32}$ "		
Pitch of Screwed Stays in C.O. Backs			8" x 8"
Diam. " " Approved	$\frac{3}{4}$ "	Threads per Inch	9
" " " in Boilers	$\frac{3}{4}$ "		9
Material " "			STEEL
Are all Screwed Stays fitted with Nuts inside C.O.?			YES
Thickness of Combustion Chamber Bottoms	$\frac{21}{32}$ "		
No. of Girders over each Wing Chamber			4
" " " Centre "			4
Depth and Thickness of Girders			8 $\frac{1}{2}$ " x 2- $\frac{7}{8}$ " STEEL
Material of Girders			STEEL
No. of Stays in each			3
No. of Tubes, each Boiler			169 PLAIN. 100 STAY. 269 TOTAL
Size of Lower Manholes			15" x 11"

VERTICAL DONKEY BOILERS	9
No. of Boilers	9
Material	STEEL
Thickness of Combustion Chamber Sides Approved	$\frac{5}{16}$ "
" " " " in Boilers	$\frac{5}{16}$ "
Pitch of Screwed Stays in C.O. Sides	9 $\frac{1}{2}$ "
Diam. " " Approved	$\frac{1}{2}$ "
" " " in Boilers	$\frac{1}{2}$ "
Material " "	STEEL
Thickness of Combustion Chamber Backs Approved	$\frac{1}{2}$ "
" " " " in Boilers	$\frac{1}{2}$ "
Pitch of Screwed Stays in C.O. Backs	8" x 7 $\frac{3}{4}$ "
Diam. " " Approved	$\frac{1}{2}$ " & $\frac{1}{8}$ "
" " " in Boilers	$\frac{1}{2}$ " & $\frac{1}{8}$ "
Material " "	STEEL
Are all Screwed Stays fitted with Nuts inside C.O.?	YES
Thickness of Combustion Chamber Bottoms	$\frac{5}{8}$ "
No. of Girders over each Wing Chamber	4
" " " Centre "	✓
Depth and Thickness of Girders	5" x $\frac{1}{2}$ "
Material of Girders	STEEL
No. of Stays in each	3
No. of Tubes, each Boiler	118 PLAIN. 36 STAY. 154 TOTAL
Size of Lower Manholes	15" x 11"



© 2021

Lloyd's Register
Foundation

VERTICAL DONKEY BOILERS.

No. of Boilers — Type SEE PAGES 15-23.

Greatest Int. Diar. — Height —

Height of Boiler Crown above Fire Grate —

Are Boiler Crowns Flat or Dished? —

Internal Radius of Dished Ends — Thickness of Plates —

Description of Seams in Boiler Crowns —

Diar. of Rivet Holes — Pitch — Width of Overlap —

Height of Firebox Crowns above Fire Grate —

Are Firebox Crowns Flat or Dished? —

External Radius of Dished Crowns — Thickness of Plates —

No. of Crown Stays — Diar. — Material —

External Diar. of Firebox at Top — Bottom — Thickness of Plates —

No. of Water Tubes — Ext. Diar. — Thickness —

Material of Water Tubes —

Size of Manhole in Shell —

Dimensions of Compensating Ring —

Heating Surface, each Boiler — Grate Surface —

SUPERHEATERS.

Description of Superheaters —

Where situated? —

Which Boilers are connected to Superheaters? —

Can Superheaters be shut off while Boilers are working? —

No. of Safety Valves on each Superheater — Diar. —

Are „ „ fitted with Easing Gear? —

Date of Hydraulic Test — Test Pressure —

Date when Safety Valves set — Pressure on Valves —

MAIN STEAM PIPES

ONE ONE

COPPER COPPER

SEAMLESS SEAMLESS

4 1/2 4 1/2

4 W 6 4 W 6

BRAZED BRAZED

4.9.18 4.9.18

360 lbs 360 lbs



© 2021

Lloyd's Register
Foundation

MAIN STEAM PIPES.

No. of Lengths	ONE	ONE
Material	COPPER	COPPER
Brazed, Welded or Seamless	SEAMLESS	SEAMLESS
Internal Diam.	4 1/2"	4 1/2"
Thickness	4WG	4WG
How are Flanges secured?	BRAZED	BRAZED.
Date of Hydraulic Test	4-9-28	4-9-28
Test Pressure	360/lbs	360/lbs.

No. of Lengths	
Material	
Brazed, Welded or Seamless	
Internal Diam.	
Thickness	
How are Flanges secured?	
Date of Hydraulic Test	
Test Pressure	

No. of Lengths	
Material	
Brazed, Welded or Seamless	
Internal Diam.	
Thickness	
How are Flanges secured?	
Date of Hydraulic Test	
Test Pressure	



© 2021

Lloyd's Register
Foundation

EVAPORATORS.

No. — Type — Tons per Day —
 Makers —
 Working Pressure — Test Pressure — Date of Test —
 Date of Test of Safety Valves under Steam —

FEED WATER HEATERS.

No. — Type —
 Makers —
 Working Pressure — Test Pressure — Date of Test —

FEED WATER FILTERS.

No. ONE Type GRAVITATION. Size 9014 SQ. INS.
 Makers CARUTHERS & CO LTD. No 309
 Working Pressure ATMOS. Test Pressure — Date of Test 14-9-28

LIST OF DONKEY PUMPS.

DESCRIPTION SIZE MAKERS No
BALLAST PUMP 7"x8"x12" RAMAGE & FERGUSON 22
SUCTIONS:- SPECIAL BILGE, BILGE MAIN, SEA, TANKS.
DISCHARGES:- AUX. CONDENSER, MAIN CONDENSER, OVERBOARD, TANKS, REFRIG. N° 23 TANKS.
WATER FEED PUMP 1 1/2" G. & J. WEIR LTD 87753.
SUCTIONS:- FLOAT TANK, FRESH WATER TANK, SEA.
DISCHARGE:- MAIN CHECKS, AUX CHECKS.
GENERAL SERVICE PUMP 8"x6"x8" T. LAMONT 14548.
SUCTIONS:- SEA, MAIN BILGE, TANKS, BOILERS.
DISCHARGE:- AUX. CONDENSER, OVERBOARD, DECK, HOSE, BOILERS, D. BOILER, SANITARY.

DONKEY BOILER PUMP 4"x2 3/4"x5" T. LAMONT 94349.
SUCTIONS:- FLOAT TANK, FRESH WATER TANK, SEA.
DISCHARGE:- DONKEY BOILER.

STEERING ENGINE.



© 2021

Lloyd's Register
Foundation

SPARE GEAR

No. of Top End Bolts.	2	No. of Bot. End Bolts.	2	No. of Cylinder Cover Studs	6
" Coupling Bolts	6	" Main Bearing Bolts	2	" Valve Chest "	6
" Junk Ring Bolts	6	" Feed Pump Valves	1 SET.	" Bilge Pump Valves	1 SET
" H.P. Piston Rings	-	" I.P. Piston Rings	-	" L.P. Piston Rings	-
" " Springs	-	" " Springs	-	" " Springs	-
" Safety Valve "	1	" Fire Bars	1/2 SET.	" Feed Check Valves	1 MAIN 1 AUX.
" Piston Rods	-	" Connecting Rods	-	" Valve Spindles	ONE
" Air Pump Rods	-	" Air Pump Buckets	-	" Air Pump Valves	1 SET
" Cir. "	-	" Cir. "	-	" Cir. "	1 SET
" Crank Shafts	-	" Crank Pin Bushes	1 PAIR.	" Crosshead Bushes	-
" Propeller Shafts	-	" Propellers	ONE	" Propeller Blades	-
" Boiler Tubes	6	" Condenser Tubes	20	" Condenser Ferrules	50

OTHER ARTICLES OF SPARE GEAR:-

1 D. BOILER SAFETY VALVE SPRING.

1 " " FEED CHECK VALVE.

2 AIR PUMP HEAD VALVE GUARDS.

2 ECC. STRAP BOLTS & NUTS.

2 FEED PUMP VALVE SEATS.

2 BILGE " " "

9 ESCAPE VALVE SPRINGS.

BAR & PLATE IRON. ASSORTED

100 ASSORTED BOLTS & NUTS.

REFRIGERATORS



© 2021

Lloyd's Register
Foundation

REFRIGERATORS.

No. of Machines *ONE* Capacity of each *15530 C.F.*
 Makers *J & E HALL LTD*
 Description *8A SINGLE VERTICAL STEAM DRIVEN CO2.*
WITH BRINE CIRCULATION.

No. of Steam Cylinders, each Machine *ONE* No. of Compressors *ONE* No. of Cranks *ONE*

Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines or Independently

PUMPS WORKED BY MACHINE

BALLAST PUMP TO CIRCULATE WATER IF REQUIRED.

System of Refrigeration *GRANULATED CORK RETAINED BY WOOD LINING.*

„ Insulation *IN HOLDS.*

Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated

Spaces? *YES*

Are all Pipes, Air Trunks, &c., well secured and protected from risk of damage? *YES*

Are all Bilge, Sounding, and Air Pipes in Insulated Spaces properly insulated? *YES*

Are Thermometer Tubes so arranged that Water cannot enter and freeze in them? *YES.*

Date of Test under Working Conditions *13-9-28.*

RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after - hours.
<i>Nº1 HOLD 'TWEEN DECK</i>	<i>58°</i>	<i>40½° F.</i>	<i>4¾ hrs.</i>	<i>NOT TAKEN</i>
<i>Nº1 " LOWER.</i>	<i>"</i>	<i>40° F.</i>	<i>"</i>	<i>" "</i>
<i>Nº4 " 'TWEEN DECK</i>	<i>"</i>	<i>41° F.</i>	<i>"</i>	<i>" "</i>
<i>Nº4 " LOWER.</i>	<i>"</i>	<i>42° F.</i>	<i>"</i>	<i>" "</i>

Articles of Spare Gear for Refrigerating Plant carried on board:—



© 2021

Lloyd's Register
Foundation

ELECTRIC LIGHTING.

Installation Fitted by TELFORD GRIER & MACKAY LTD.

No. and Description of Dynamos ONE.

Makers of Dynamos ELECTRIC CONSTRUCTION CO LTD.

Capacity " 10KW 91 Amperes, at 110 Volts, 565/650 Revols. per Min.

Current Alternating or Continuous CONTINUOUS CURRENT.

Single or Double Wire System DOUBLE WIRE SYSTEM.

Position of Dynamos STAR, SIDE LOWER PLATFORM.

Main Switch Board " " " "

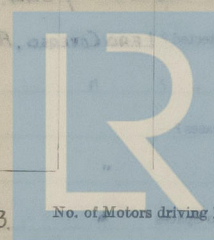
No. of Circuits to which Switches are provided on Main Switch Board SEVEN.

Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
1 NAVIGATION.	10.	VARIOUS.	4.5	7/029	1000	100%	600MEGS.
2. SALOON.	67.	30W.	18	7/036	2571	"	"
3 MIDSHIPS.	35.	30W.	10	7/029	2222	"	"
4 WIRELESS.	-	-	-	7/036	-	"	"
5 AFT.	26	30W.	7	7/029	1560	"	"
6 CARGO.	36	30W.	10	"	2222	"	"
7 ENGINE ROOM.	29	30W.	8.	"	1778.	"	"

Total No. of Lights 203. No. of Motors driving Fans, &c. — No. of Heaters —

Current required for Motors and Heaters —



© 2021

Lloyd's Register
Foundation

Positions of Auxillary Switch Boards, with No. of Switches on each

NONE.

Are Out-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits YES.

On Aux. " " each Auxiliary Circuit —

Wherever a Cable is reduced in size YES.

To each Lamp Circuit

To both Flow and Return Wires of all Circuits when the Double-Wire System is adopted YES.

Are the Fuses of Standard Sizes? YES.

Are all Switches and Out-outs constructed of Non-inflammable Material? YES.

Are they placed so as to be always and easily accessible? YES.

Smallest Single Wire used, No. 1/0.44 S.W.G., Largest, No. 1/0.44 S.W.G.

How are Conductors in Engine and Boiler Spaces protected? LEAD COVERED, ARMoured, BRAIDED.

" Saloons, State Rooms, &c., " "

What special protection is provided in the following cases?—

- (1) Conductors exposed to Heat or Damp
- (2) " " passing through Bunkers or Cargo Spaces
- (3) " " Deck Beams or Bulkheads BEAMERED HOLES.

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables

is unimpaired?

NONE.

Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces?

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface?

Are the Dynamos, Motors, Main and Branch Cables, so placed that the Compasses are not injuriously

affected by them?

YES.

Have Tests been made to prove that this condition has been satisfactorily fulfilled? YES.

Has the Insulation Resistance over the whole system been tested? YES.

What does the Resistance amount to?

250000 Ohms.

Is the Installation supplied with a Voltmeter? YES.

" " " an Ampere Meter? YES.

Date of Trial of complete Installation 14 - 9 - 28.

Duration of Trial 6 Hours.

Have all the requirements of Section 42 been satisfactorily carried out? YES.

Robert H. Craig.



© 2021

Lloyd's Register
Foundation

GENERAL CONSTRUCTION.

Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the

Approved Plans? **YES.**

If not, give details of the points of difference, and state when these were sanctioned by the Chief

Surveyor.

Are the Materials used in the Construction of Engines and Boilers, so far as could be seen, sound and trustworthy? **YES.**

Is the Workmanship throughout thoroughly satisfactory? **YES.**

The above correctly describes the Machinery of the S.S. "HORSA"

as ascertained by ^{me} from personal examination

Robert L. Greig
Engineer Surveyor to the British Corporation for the
Survey and Registry of Shipping.

Fees—

MAIN BOILERS.

	£	s.	d.
H.S. Sq. ft.	:	:	:

G.S.	:	:	:
------	---	---	---

DONKEY BOILERS.

H.S. Sq. ft.	:	:	:
--------------	---	---	---

G.S.	:	:	:
------	---	---	---

£	:	:
---	---	---

ENGINES.

L.P.C. Cub. ft.	:	:	:
-----------------	---	---	---

£	:	:
---	---	---

Testing, &c. ...	:	:	:
------------------	---	---	---

£	:	:
---	---	---

Expenses ...	:	:	:
--------------	---	---	---

Total ... £	:	:	:
-------------	---	---	---

It is submitted that this Report be approved,

Robert Greig
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 14th October 1928

Fees advised

Fees paid



© 2021

Lloyd's Register
Foundation

© 2021

Lloyd's Register
Foundation



© 2021

Lloyd's Register
Foundation



© 2021

Lloyd's Register
Foundation