25 OCT 1963

Rpt. 4e

Date of writing report 14. 10. 63. Received London ..... Port ..... No. 867

Survey held at Patricroft No. of visits in shop 6 First date 18. 9. 63. Last date 11. 10. 63.

FIRST ENTRY REPORT ON MAIN ENGINE REDUCTION GEARING

Name of Ship ..... Owners .....

Hull built at Hamburg by Messrs. Wiedmann & Walters Yard No. 65 Year 1963

Main engines made at Patricroft by L. Gardner & Sons Ltd. Engine Nos. 140519 140520 140521 140522 Year 1963

Reduction gearing made at Patricroft by L. Gardner & Sons Ltd. Gear No. 15260/1 15262/3 15264/5 15266/7 Year 1963

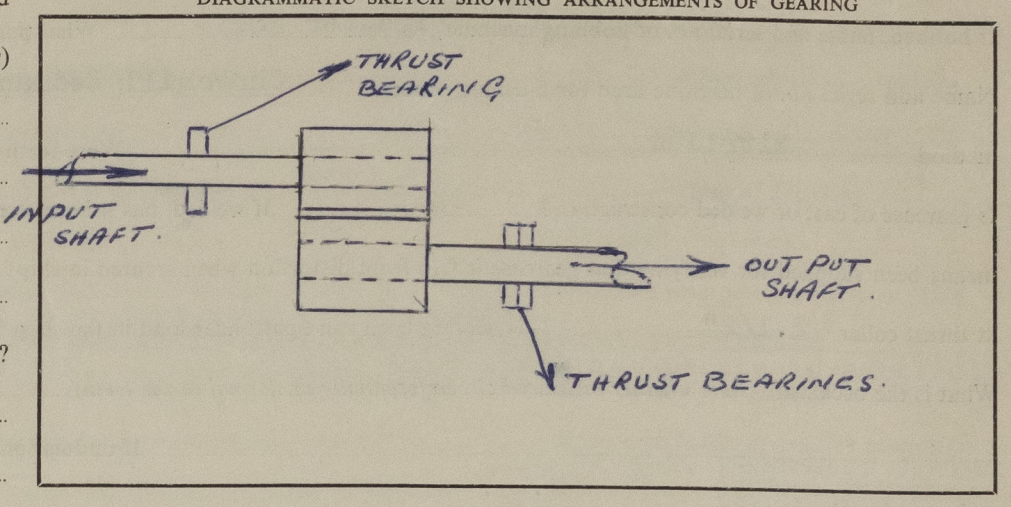
Type of engine with which gearing is to be used ..... State if for Class 1 or 2 ice strengthening .....

The following particulars are to be given as fully and clearly as possible. Wording not applicable should be cancelled by a black line.

Description of gearing, including reversing arrangements and clutches, if any, and No. of sets (*state if ball or roller bearings*)

Single Helical reversed by friction Clutch

DIAGRAMMATIC SKETCH SHOWING ARRANGEMENTS OF GEARING



If single helical, what is the position of the gear thrust bearing?

Ford end of pinion shaft

Helix angle, primary 12°RH secondary 12°LH

Type of involute tooth form 6DP Approved maximum total S.H.P. 78.2 at 1300 R.P.M. of main wheel

PINIONS	PRIMARY			SECONDARY		
	HP	MP	LP	HP	MP	LP
Maximum S.H.P. to be delivered to primary pinions ...		78.2		———	———	———
Revolutions per minute		1300				
Diameter of pitch circle, inches/mm.		4.6005				
No. of teeth		27				
Total width of face, parallel to axis, inches/mm. ...		3.7/16				
Width of gap, inches/mm.						
Diameter of shaft at bearings, inches/mm.		1.3/4"				
No. of bearings		2				
Span of bearing centres, inches/mm.		7"				
Material, state nominal composition and heat treatment	EN40B/T Nitrided at 525°C for 40 Hrs. Surface hardened 800-900 HVID					
Tensile strength, tons per sq. in./kg. per sq. mm. ...		55 Tons/in^2(min)				
QUILL SHAFTS						
Diameter, inches/mm.						
Material, state nominal composition						
Tensile strength, tons per sq. in./kg. per sq. mm. ...						
FLEXIBLE COUPLINGS						
Type of coupling						
Material, driving member...						
Tensile strength, tons per sq. in./kg. per sq. mm. ...						
Material, driven member						
Tensile strength, tons per sq. in./kg. per sq. mm. ...						

Do couplings permit axial float of pinions? ..... Have primary pinions been dynamically balanced? ..... Have secondary pinions been dynamically or statically balanced? .....

WHEELS	PRIMARY			MAIN
	HP	MP	LP	
Revolutions per minute	———	———	———	665
Diameter of pitch circle, inches/mm.				9.0306
No. of teeth...				53

0m,8,58 T. (MADE AND PRINTED IN ENGLAND)

P.T.O.

WHEELS (*continued*)

	PRIMARY			MAIN
	HP	MP	LP	
Material of rims, state nominal composition				
Tensile strength, tons per sq. in./kg. per sq. mm. ...				
Diameter of shaft at bearings, inches/mm.		SOLID GEARS.		
Material of shaft				
Tensile strength, tons per sq. in./kg. per sq. mm. ...				

Have wheels been statically balanced? Yes Are wheel bodies of cast or welded construction? Forged

Are wheel bodies connected to the shafts by bolts? No Material of wheel bodies Solid Wheels

Are rims shrunk on, or bolted to bodies, or attached by welding? No. Are radial or axial dowels fitted? No.

If shrunk, has the shrinkage allowance been checked and found as approved? Solid Wheels How were the teeth cut? Hobbed and Sha

If hobbed, name and serial no. of hobbing machine Pfauter RSIV What post-hobbing process was applied? Shaving

Name and serial no. of machine used for finishing process Churchill Redman If teeth are surface hardened, sta

method Nitrided Were teeth cut under conditions of temperature control? No.

Is gearcase of cast or welded construction? Cast If welded, has it been stress relieved? - Have trammels or othe

means been supplied for verifying that gearcase is free from distortion when secured in ship? Diameter of sha

at thrust collar 2.1/2" Has gearing been run light/under load in the shop and the tooth contact found satisfactory? Yes.

What is the backlash? (*state whether measured circumferentially or normal to the teeth*)

If undulation records were taken, state maximum height from crest to troug

and wave length, pinions

wheels

Maximum adjacent pitch error normal to teeth, if measured, pinions

wheels Date of approval of plans

If gearing is a duplicate of a previous case, state name of ship

The foregoing description of reduction gearing is correct.

FOR AND ON BEHALF OF
L. GARDNER & SONS LTD

Manufacturer

GENERAL REMARKS

State if the gearing has been constructed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials a workmanship. This report should be forwarded to the Head Office with the First Entry report on the machinery. When gearing is made at a Port other than the Po of installation, the Surveyors at the former should send this report to the Surveyors at the Port of installation as soon as possible after completion of the gearin The latter should complete the Declaration below and send the report to the Head Office with their First Entry report on the machinery.

Survey fee

Expenses

Date when a/c rendered

A Thompson.

Engineer Surveyor to Lloyd's Register of Shipping
(A. THOMPSON.)

INDENTIFICATION MARKS

PRIMARY PINIONS

PRIMARY QUILL SHAFTS

SECONDARY PINIONS

SECONDARY QUILL SHAFTS

FLEXIBLE COUPLINGS

PRIMARY WHEEL RIMS

PRIMARY WHEEL SHAFTS

MAIN WHEEL RIM MAIN WHEEL SHAFT

DECLARATION TO BE COMPLETED AND SIGNED BY THE SURVEYOR AT THE PORT OF INSTALLATION

The above reduction gearing has been fitted on board the at

in a proper manner and found satisfactory when tested on the (*date*) under full-power working conditions for

hours and when examined subsequently.

TUESDAY 2 JUN 1964

DATE OF COMMITTEE

DECISION Sen Hem 13.5.16

Engineer Surveyor to Lloyd's Register of Shipping