

Rpt. 4b (Cons) REPORT ON MAIN INTERNAL COMBUSTION RECIPROCATING ENGINE

3 AUG 1965  
Received London

FOR CONSIDERATION BY THE COMMITTEE OF LLOYD'S REGISTER OF SHIPPING

Ship's Name "RAPHAEL"

Port GENOA

Gross tons 31,133

Date of completing rpt. 9/6/1965

Rpt. No.

30070 1

Place of survey, if different from above as above

No. of visits in shops 48

First date 23/11/1962

Last date 8/3/1965

Ship built by ANSALDO S.P.A. CANTIERE NAVALE, GENOVA/SESTRI

Yard No. 1598

Yr. Mo.

Engine made by ANSALDO S.A. STAB. MECCANICO (GENOVA)

Engine No. 909003

When 1965 2

17.8.65

Fee Lit. - 1.391.250 plus Lit. 97.090 (welding) Lit. 1.488.340

Expenses

Lit. 7.480 - R.T. (see over) Lit. 1.216

Licence name & type of engine ANSALDO FIAT 909S

No. of engines One

2 or 4 stroke cycle two

Single (SA), or opposed piston (OP) SA

No. of cylinders, each engine 9

Diameter of cylinders 900mm.

Stroke(s) 1600mm.

(a) (b)

BHP on which fees have been calculated 19.000

Corresponding RPM 122

Corresponding MIP 8.97Kg/sq.cm.

Maximum cylinder pressure 70Kg/sq.cm.

Machinery numeral 3800

TWO STROKE ENGINES ONLY

Is engine of opposed piston type? no

Is the exhaust discharged through ports in the cylinders or valve(s) in the cylinder covers? through ports in the cylinders

No. and type of mechanically driven scavenging pumps or blowers, each engine, and how driven 9 reciprocating type pumps—double action driven by the main engine crossheads

Are the under sides of pistons used as scavenging pumps? no

Are relief valves fitted to scavenging manifold? yes

Scavenging air pressure at full power 0.94Kg/sq.cm.

TWO & FOUR STROKE ENGINES

Is the engine supercharged? yes

No. of exhaust gas driven supercharge blowers, each engine four

No. and type of mechanically driven charging pumps or blowers, each engine none

Are the under sides of pistons used as supercharge pumps? How driven? no

No. of supercharge air coolers, each engine 1st stage = 2 2nd stage = 5

Supercharge air pressure at full power 0.94 Kg/cq.cm.

Can engine operate without supercharger? yes

Is welded construction used for:	BEDPLATE? yes	FRAMES? yes	ENTABLATURE? no.
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Are tie-bolts fitted? yes

Is crankcase separated from under sides of pistons? yes

Is engine of crosshead or trunk piston type? crosshead type

Is crankcase readily accessible? yes

~~NO. OF EXHAUST GAS DRIVEN SUPERCHARGE BLOWERS, EACH ENGINE~~

Total internal volume of crankcase 236m3

No. and total area of explosion relief devices 9 - 30300cm2

Are flame guards or traps fitted to: Crankcase relief devices? yes

Starting air pipes at cyl. starting air valves? yes (bursting discs)

Can engine be reversed? yes

~~NO. OF EXHAUST GAS DRIVEN SUPERCHARGE BLOWERS, EACH ENGINE~~

How is engine started? by compressed air

Type of governor fitted FIAT—centrifugal type

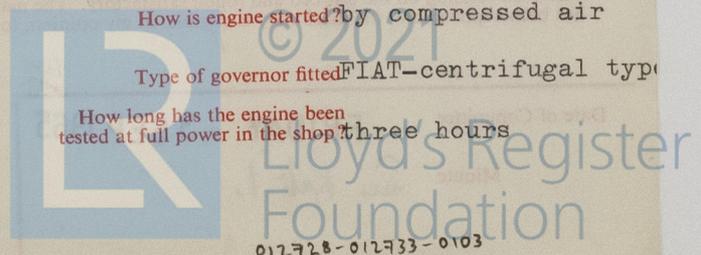
How long has the engine been tested at full power in the shop? three hours

No. of valves each cylinder:	INLET	EXHAUST
	—	—
FUEL one	STARTING one	RELIEF one
	—	—
Cooling medium for:	CYLINDERS fresh water	
	PISTONS lub.oil	FUEL VALVES fresh water

Material of { Cylinder covers } S.M. Steel  
 { Piston crowns }

NOTE:—The particulars in this report are to be given as fully and as clearly as possible. Where the answer is "NO" or "NONE" say so. Ticks and other signs of doubtful meaning are not to be used. Wording not applicable to be cancelled.

10m,9/64 (MADE AND PRINTED IN ENGLAND)



012728-012733-0103

axial  
Is a torsional vibration damper ~~or~~ fitted?  yes Date of approval of torsional vibration characteristics of engine/flywheel system 11/7/1963

Where positioned Fwd. end of crankshaft

Type FIAT

**CRANKSHAFT**

Total weight of balance wts.	5960	Breadth of webs at mid-throw	1330mm.
Radius of gyration	} Nos. 3&5=939.7mm. } Nos. 6&9=960mm.	Axial thickness of webs	420mm.
No. of main bearings		11	If webs shrunk, radial thickness round eye-holes
Are main bearings of ball or roller type?	no	Nominal shrinkage allowance if dowel pins are not fitted	mm. 1.65 ÷ 1.75%
Distance between inner edges of bearings in way of cranks	1200mm.	Material of: (State whether cast or forged)	Pins { S.M. cast steel
<del>Distance between centre lines of side webs of adjacent cranks</del>			Webs {
Built, semi-built or solid crankshaft	semi-built	Journals	S.M. forged steel
Diameter of:	Journals	Minimum approved tensile strength for:	Pins {
	<del>Crank pins</del>		Webs { 55 Kg/sq.mm.
	<del>Crank pins</del>		Journals {

NOTE:—Where existing machinery is submitted for classification, the circumstances are to be explained as fully as possible, and the recommendation should be suitably amended.

**FLYWHEEL SHAFT.** Separate, integral with crank or thrust shaft integral with thrust shaft Diameter 2870

Material S.M. forged steel Flywheel Diameter ~~2870~~

Minimum approved tensile strength 55 Kg/sq.mm. Weight 3800Kgs.

**THRUST SHAFT.** Separate, integral with crank or flywheel shaft separate from crankshaft Material S.M. forged steel

Diameter adjacent to collar 700mm. Minimum approved tensile strength 55Kg/sq.mm.

**MAIN ENGINE DRIVEN PUMPS** (each engine. State No. and purpose of each pump and, for bilge pumps, the capacity at normal r.p.m.) also **AIR COMPRESSORS** (No. and whether they can be declutched)

none

**DECLARATION TO BE SIGNED BY ENGINE BUILDERS**

To the best of our knowledge this machinery has been soundly constructed in conformity with the Rules, Regulations and requirements of Lloyd's Register of Shipping, and the foregoing particulars of main engines are correct.

*Antonio*  
ANSALDO MECCANICO

(date)

(signature)

A previous similar case was for M.S. "GIUSEPPE VERDI" Engine No. 909002 Port and Report No. GEN-No. 29569.

**IDENTIFICATION MARKS** of important forgings and castings. (Copies of certificates to be forwarded) G.H.H.-WS

Piston & rods (upper part): LLOYD'S WG. N. 8043; 7464; 8045; Crankshaft 336-271  
8067; 7522; 7470; 7462; 7451; 7521. LLOYD'S DSF -20/10/62

Piston rods (lower parts): LLOYD'S WG. P. 21; 20; 17; 330; Thrust/flywheel shaft  
285; 284; 16; 331; 19. LLOYD'S GEN. SS 103

Connecting rods: WG. S. 247; 152; 45; 1479; 149; 150; 127; 152; 505. GM 28/7/62.

**AIR RECEIVERS** if supplied with engine. (Copies of certificates to be forwarded)

Port & Cert. No. GEN.M. 7670

	CRANKSHAFT	THRUST/FLYWHEEL SHAFT	AIR RECEIVERS
Dates of approval of plans	27/8/1962	27/8/1962	14/8/1962

The machinery reported above has been built under Special Survey in accordance with the Rules, approved plans and Secretary's letters, examined running on the test bed and found satisfactory. The materials and workmanship are good, the spare gear required by the Rules has been supplied and the machinery is eligible, in my opinion, to be fitted in a classed ship.

Date of Committee **FRIDAY - 3 SEP 1965**

Minute *See Rpt. 1.*

