

71, Fenchurch Street, E.C.3.

4th July, 1944

Ref: DLB/BE.

Enclosure.

Dear Sirs,

HALLAND INDUSTRIAL.
2 - 950 B.H.P. Diesel Engines.
Stern gears and Propellers.
Fabril Yard Nos. 117/118.

With reference to the call of your Mr. Jackson at this office on the 12th ultimo and also to your letter of the 29th ultimo I have to inform you that further calculations have been made regarding the torsional vibration characteristics of the above engines and it is recommended that:-

- (1) the diameter of the screw shaft be increased to 8 1/2 in. (9.45")
- (2) the diameter of the intermediate shaft be increased to 9 1/2 in.
- (3) the mass inertia of the engine flywheel be reduced from 4160 lbs.ins.sec.2 to 1781 lb.ins.sec.2.

With these recommendations, the calculated one node natural frequency is 1300 V.P.M. and the 4th order vibration stress occurs at 325 R.P.M., 30% above normal services speed.

The only vibration stress of any magnitude within the working range is that of the 8th order, which occurs at 162.5 R.P.H. the calculated stress being 6000 lbs. in.².

The two node natural frequency is 2755 V.P.M. which places the 9 1/2 order stress 16% above normal service speed. The calculated stresses for this node of vibration are as follows:-

P.T.O.



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ORDER NO.	R.P.H.	STRESS LB/IN ²
9 $\frac{1}{2}$	290	2870
10	275	2585
10 $\frac{1}{2}$	262	2950
11	250	261
11 $\frac{1}{2}$	240	1221
12	230	3270

In view of the magnitude of the 8th order one node vibration stress, it is considered that a notice board should be fitted near the control station in the engine room bearing an inscription to the effect that the engines of the vessel should not be worked continuously between 145 and 180 R.P.H.

I take this opportunity of enclosing an account in respect of the Society's Services in this matter.

I am, Dear Sirs,
Yours faithfully,

Acting Secretary.

Messrs. Mirrlees, Bickerton & Day Ltd.
Hazel Grove.
Nr. STOCKPORT.



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