Bureau Veritas Rules

2.2.3 Propeller shafts

The minimum diameter of the propeller shaft is not to be less than the value dp, in mm, given by the following formula:

$$d_p = 100 \cdot k_p \cdot \left[\frac{P}{n \cdot (1 - Q^4)} \cdot \frac{560}{R_m + 160}\right]^{1/3}$$

where:

kp : Factor whore value, depending on the different constructional features of shafts, is given below.

The other symbols have the same meaning as in [2.2.2].

For the calculation of dp, the value of Rm, to be introduced in the above formula is generally to be taken not higher than 600 N/mm2.

In cases of stainless steels and in other particular cases, at the discretion of the Society, the value of R", to be intro- duced in the above formula will be specially considered. In general, the diameter of the part of the propeller shaft located forward of the forward sterntube real may be gradu- ally reduced to the diameter of the intermediate shaft.

The values of factor kp to be introduced in the above for- mula are to be taken as follows:

kp = 1,26 for propeller shafts where:

the propeller is keyed on to the shaft taper in compl i- ance with the requirements of [2.5.5]

kp = 1,22 for propeller shafts where:

the propeller is keyless fitted on to the shaft taper by a shrinkage method in compliance with Ch 1, 8ec 8, [3.1.2], or the propeller boss is attached to an integral propeller shaft flange in compliance with [2.5.1]

the sterntube of the propeller shaft is oi I I ubricated and provided with oil realing glands approved by the Society or when the sterntube is water lubricated and the propeller shaft is fitted with a conti nuous li ner.

The above values of kp apply to the portion of propeller shaft between the forward edge of the aftermost shaft bear- ing and the forward face of the propeller boss or the forward face of the integral propeller shaft flange for the connection to the propeller boss. In no care is the length of this portion of propeller shaft to be less than 2,5 times the rule diameter $\mathbf{d_p}$ obtained with the above formula.

The determination of factor kp for shaft design features other than those given above will be specially considered by the Society in each careo

For the length of the propeller shaft between the forward edge of the aftermost shaft bearing and the forward edge of the forward sterntube seal:

kp = 1, 15 i s to be taken in any event.

Q

• in the case of sol id shafts: Q = O

• in the case of hollow shafts: Q = ratio of the hole diameter to the outer shaft diameter in the section concerned.

where Q :'O: 0,3, Q = O is to be taken.

Hollow shafts whose longitudinal axis does not coincide with the longitudinal hole axis will be specially considered by the Society in each case.

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• 95 for main propulsion systems powered by diese I engines fitted with slip type coupling, by turbines or by electric motors;

• 100 for mai n propulsion systems powered by dierel engines fitted with other type of couplings.

k Factor whose value is given in Tab 2 depending upon the different design features of the shafts.

For shaft design features other than those given in Tab 2, the value of k will be specially considered by the Society in each case.

n speed of rotation of the shaft, in r.p.m., corresponding to power P

P Maximum continuous power of the propulsion machinery for which the classification is requested, in kW.

Rm Value of the minimum tensile strength of the shaft material, in N/mm2. Whenever the use of a steel having Rm in excess of 800 N/mm2 is allowed in accordance with [2.1], the value of Rm to be introduced in the above formula will be subject to special consideration by the Society, but in general it is not to be taken higher than 800 N/mm2. In cares of stainless steels and in other particular cases, at the discretion of the Society, the value of Rm to be introduced in the above formula will be specially considered.

$$d_P = 100 \cdot k_P \cdot \left[\frac{P}{n \cdot (1 - Q^4)} \cdot \frac{560}{R_m + 160} \right]^{1/3}$$