IMT
Shaft Alignment Software

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ESSENTIAL INFORMATION FOR SHAFT ALIGNMENT CALCULATION

Reliability of shaft alignment calculations depends on completeness and accuracy of propulsion shafting modeling. Shaft alignment designer should have complete information to model propulsion shafting properly. There are three Category of essential information for shaft alignment calculation:

Category I – obligatory data, lack of which renders impossible any calculations.

Category II – very important additional data, taking in account of which may results in substantial quantitative and qualitative changes.

Category III – descriptions of shaft alignment and operating conditions that enable goal-seeking behavior to derive more relevant results for shaft alignment procedure and ensure more safe propulsion shafting operation.

Pos	Name	Category		
		I	II	III
I. GENERAL				
1	Ship Type and main particulars			*
2	Ship Class			*
3	Is the ship newbuilded or repaired			*
4	If the ship is repaired set out the cause of the repair including description of the damage nature and conditions			*
5	List of main operating conditions			*
6	Assumed alignment conditions		*	
7	Assumed alignment technique			*
8	Shaft alignment procedure limitations		*	
9	Other special conditions			*

II. SHAFTING				
1	General Arrangement of propulsion shafting	*		
2	Drawings of the shafts specifying their lengths and diameters	*		
3	Masses and center of gravity for heavy equipment associated with the shafting	*		
4	Information about filling of the shaft bore (oil, rods etc.)		*	
5	Information regarding propeller shaft liner (material, thickness)		*	
III. BEARINGS				
1	Stern tube drawing		*	
2	Material and dimensions of the stern tube bearing bushes	*		
3	Stern tube bearing lubricator (water, oil)		*	
4	Permissible loads for intermediate bearings specified by manufacturer	*		
5	If permissible loads for intermediate bearings are unknown material and dimensions of bearing bushes	*		
6	Thermal growth at the bearings place	*		
7	Compliance of the stools			*
8	Wear down rate			*
IV. PROPELLER				
1	Weight in the air	*		
2	Material	*		
3	In the case of CPP weight of the blades and hub volume (hub dimensions)	*		
4	Percent of submergence during shaft alignment	*		
5	Percent of submergence in operation		*	
6	Vertical and horizontal hydrodynamic moments in operation (thrust value and eccentricity)		*	
V. ENGINE				
1	Type			*
2	Static thrust load Diagram (for low speed engines)	*		
3	Deflectional and angular compliances at the thrust-shaft flange (for low speed engines)	*		
4	Crankshaft dimensions, allowable loads for engine bearings and allowable stress in crankshaft if data of item 2, 3 for low speed engines are not available	*		

5	Weight of flywheel	*		
6	Thermal growth	*		
7	Additional loads on crankshaft in operation			*
VI. GEAR BOX				
1	Output shaft drawing specifying shaft lengths and diameters	*		
2	Weight of the wheel	*		
3	Permissible loads for gear box bearings specified by manufacturer	*		
4	Allowable difference of loads on output shaft bearings		*	
5	Thermal growth	*		
6	For one pinion helical gear: − Power of pinion − Pitch diameter of wheel − Speed of wheel − Transverse pressure angle of gear wheel − Helix angle of gear			*
VII. COUPLINGS AND SLEEVES				
1	Weight and center of gravity	*		
2	Allowable misalignment for flexible couplings		*	
3	Angular compliance for flexible couplings	*		
VIII. HULL				
1	Design and scantlings of double bottom structures		*	
2	Draughts in main operating conditions including full load and ballast conditions		*	