

Survey of Hull – Existing Ships

Table 10.1.2 - Maximum Permissible Diminution in Topsides and Bottom Areas considering Requirements of Longitudinal Strength

Ship Type	Structural Group			Maximum diminution (see note 1)	
				Over 0.4L amidships	At 0.1L from perpendiculars
1	Topsides (See note 2)	Plating		15%	20%
		Longitudinals		15%	20%
	Bottom (see note 3)	Plating :	Single bottom	15%	20%
			Double bottom	20%	20%
		Longitudinals	Single bottom	15%	20%
			Double bottom	20%	20%
2 (see note 4)	Topsides (See note 2)	Plating		10%	20%
		Longitudinals		15%	20%
	Bottom (see note 3)	Plating :	Single bottom	10%	20%
			Double bottom	15%	20%
		Longitudinals	Single bottom	15%	20%
			Double bottom	15%	20%

NOTES:

- Intermediate values are to be obtained by linear interpolation.
- Topsides area comprises deck (outside line of openings for dry cargo ships), stringer and sheer strake (including rounded gunwales) together with associated longitudinals.
- Bottom area comprises keel, bottom and bilge plating together with associated longitudinals for single bottom vessels and also area of tanktop, double bottom girders and associated longitudinals for double bottom vessels.
- Where the diminution in total topside area (i.e. plating + longitudinals) in the 0.4L amidships region is in excess of 12%, calculations showing that the hull girder section modulus based on actual gauged thicknesses is not reduced by more than 10% are required. Head Office is to be contacted in such cases.

Survey of Hull – Existing Ships

Table 10.1.1 - Maximum Permissible Diminutions of Individual Plates, Stiffeners and Girders

Ship Type	Structural Item	Maximum Permissible Diminutions	
		Plating	Stiffeners & Girders
1	Strength deck	20%	20%
2	Bottom Shell	20%	20%
	Tank Top		
	Double bottom floors and girders		
	All other remaining structures	25%	25%
	Strength deck including top side tanks(see note 5)	20%	20%
	Bottom shell (see note 5)	20%	20%
	Tank top including lower wing tanks		
	Double bottom floors and girders		
	Side Shell	20%	Stiffeners 25% (see note 3) Girders 20%
	Continuous longitudinals bulkheads and tank bulkheads	20%	Stiffeners 25% Girders 20%
	Watertight transverse bulkheads	20%	Stiffeners 25% Girders 20%
		(see note 4)	
	All other remaining structures	25%	25%
Definitions:			
Ship type 1 : Includes all vessels below 90m in length other than oil or chemical tankers, liquefied gas carriers and dry bulk carriers.			
Ship type 2 : All vessels other than those of ships type 1 as defined above, are type 2 vessels			

Survey of Hull – Existing Ships

- Notes : 1) The diminution percentages are to be applied on the "as built" thicknesses. On special request they may be recalculated based on minimum rule scantlings.
- 2) The permissible values of diminutions given above refer to the average reductions for an individual item.
- 3) For hold shell frames and brackets in bulk carriers maximum permissible diminution is 20%.
- 4) For corrugated bulkheads of cargo holds in bulk carriers which are designed for water ballast and those of No.1 hold forward, the maximum permissible diminution is 15%.
- 5) For vessels of length $L > 120$ m, sufficient strength against buckling is also to be ensured. For this purpose the ratios given below for plating girders and stiffeners, are generally not be exceeded.

	Max. ratio for Material Grade			t = minimum acceptable thickness for buckling s = spacing of longitudinals on plating or longitudinal girders hw = web height of flanged longitudinal h = height of flatbar longitudinal b = flange width for unsymmetrically flange longitudinal or half flange width for symmetrically flanged longitudinal
	Ord. M.S.	H-32	h-36	
$S/t..hw/t$	56	52	51	
H/t	16	15.5	15	
H/t	10	10	10	