

Title	ICLL 2003 Amend / ANNEX I / Reg. 28
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 28

Freeboard tables

Type 'A' ships

(1) The tabular freeboard for type 'A' ships shall be determined from table 28.1:

Table 28.1 - Freeboard table for type 'A' ships

Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)
24	200	51	455	78	814
25	208	52	467	79	828
26	217	53	478	80	841
27	225	54	490	81	855
28	233	55	503	82	869
29	242	56	516	83	883
30	250	57	530	84	897
31	258	58	544	85	911
32	267	59	559	86	926
33	275	60	573	87	940
34	283	61	587	88	955
35	292	62	600	89	969
36	300	63	613	90	984
37	308	64	626	91	999
38	316	65	639	92	1014
39	325	66	653	93	1029
40	334	67	666	94	1044
41	344	68	680	95	1059
42	354	69	693	96	1074
43	364	70	706	97	1089
44	374	71	720	98	1105
45	385	72	733	99	1120
46	396	73	746	100	1135
47	408	74	760	101	1151
48	420	75	773	102	1166
50	443	77	800	104	1196
105	1212	168	2240	231	2880
106	1228	169	2254	232	2888
107	1244	170	2268	233	2895
108	1260	171	2281	234	2903
109	1276	172	2294	235	2910
110	1293	173	2307	236	2918
111	1309	174	2320	237	2925
112	1326	175	2332	238	2932
113	1342	176	2345	239	2939
114	1359	177	2357	240	2946
115	1376	178	2369	241	2953
116	1392	179	2381	242	2959

117	1409	180	2393	243	2966
118	1426	181	2405	244	2973
119	1442	182	2416	245	2979
120	1459	183	2428	246	2986
121	1476	184	2440	247	2993
122	1494	185	2451	248	3000
123	1511	186	2463	249	3006
124	1528	187	2474	250	3012
125	1546	188	2486	251	3018
126	1563	189	2497	252	3024
127	1580	190	2508	253	3030
128	1598	191	2519	254	3036
129	1615	192	2530	255	3042
130	1632	193	2541	256	3048
131	1650	194	2552	257	3054
132	1667	195	2562	258	3060
133	1684	196	2572	259	3066
134	1702	197	2582	260	3072
135	1719	198	2592	261	3078
136	1736	199	2602	262	3084
137	1753	200	2612	263	3089
138	1770	201	2622	264	3095
139	1787	202	2632	265	3101
140	1803	203	2641	266	3106
141	1820	204	2650	267	3112
142	1837	205	2659	268	3117
143	1853	206	2669	269	3123
144	1870	207	2678	270	3128
145	1886	208	2687	271	3133
146	1903	209	2696	272	3138
147	1919	210	2705	273	3143
148	1935	211	2714	274	3148
149	1952	212	2723	275	3153
150	1968	213	2732	276	3158
151	1984	214	2741	277	3163
152	2000	215	2749	278	3167
153	2016	216	2758	279	3172
154	2032	217	2767	280	3176
155	2048	218	2775	281	3181
156	2064	219	2784	282	3185
157	2080	220	2792	283	3189
158	2096	221	2801	284	3194
159	2111	222	2809	285	3198
160	2126	223	2817	286	3202
161	2141	224	2825	287	3207
162	2155	225	2833	288	3211
163	2169	226	2841	289	3215
164	2184	227	2849	290	3220
165	2198	228	2857	291	3224
166	2212	229	2865	292	3228
167	2226	230	2872	293	3233
294	3237	318	3325	342	3387
295	3241	319	3328	343	3389
296	3246	320	3331	344	3392
297	3250	321	3334	345	3394
298	3254	322	3337	346	3396
299	3258	323	3339	347	3399
300	3262	324	3342	348	3401
301	3266	325	3345	349	3403
302	3270	326	3347	350	3406
303	3274	327	3350	351	3408
304	3278	328	3353	352	3410
305	3281	329	3355	353	3412
306	3285	330	3358	354	3414
307	3288	331	3361	355	3416
308	3292	332	3363	356	3418
309	3295	333	3366	357	3420
310	3298	334	3368	358	3422
311	3302	335	3371	359	3423
312	3305	336	3373	360	3425
313	3308	337	3375	361	3427
314	3312	338	3378	362	3428
315	3315	339	3380	363	3430
316	3318	340	3382	364	3432
317	3322	341	3385	365	3433

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation. Ships above 365 m in length shall be dealt with by the Administration.

Type 'B' ships

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(2) The tabular freeboard for type 'B' ships shall be determined from table 28.2:

Table 28.2 - Freeboard table for type 'B' ships

Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)	Length of ship (m)	Freeboard (mm)
24	200	70	721	116	1609
25	208	71	738	117	1630
26	217	72	754	118	1651
27	225	73	769	119	1671
28	233	74	784	120	1690
29	242	75	800	121	1709
30	250	76	816	122	1729
31	258	77	833	123	1750
32	267	78	850	124	1771
33	275	79	868	125	1793
34	283	80	887	126	1815
35	292	81	905	127	1837
36	300	82	923	128	1859
37	308	83	942	129	1880
38	316	84	960	130	1901
39	325	85	978	131	1921
40	334	86	996	132	1940
41	344	87	1015	133	1959
42	354	88	1034	134	1979
43	364	89	1054	135	2000
44	374	90	1075	136	2021
45	385	91	1096	137	2043
46	396	92	1116	138	2065
47	408	93	1135	139	2087
48	420	94	1154	140	2109
49	432	95	1172	141	2130
50	443	96	1190	142	2151
51	455	97	1209	143	2171
52	467	98	1229	144	2190
53	478	99	1250	145	2209
54	490	100	1271	146	2229
55	503	101	1293	147	2250
56	516	102	1315	148	2271
57	530	103	1337	149	2293
58	544	104	1359	150	2315
59	559	105	1380	151	2334
60	573	106	1401	152	2354
61	587	107	1421	153	2375
62	601	108	1440	154	2396
63	615	109	1459	155	2418
64	629	110	1479	156	2440
65	644	111	1500	157	2460
66	659	112	1521	158	2480
67	674	113	1543	159	2500
68	689	114	1565	160	2520
69	705	115	1587	161	2540

162	2560	225	3660	288	4490
163	2580	226	3675	289	4502
164	2600	227	3690	290	4513
165	2620	228	3705	291	4525
166	2640	229	3720	292	4537
167	2660	230	3735	293	4548
168	2680	231	3750	294	4560
169	2698	232	3765	295	4572
170	2716	233	3780	296	4583
171	2735	234	3795	297	4595
172	2754	235	3808	298	4607
173	2774	236	3821	299	4618
174	2795	237	3835	300	4630
175	2815	238	3849	301	4642
176	2835	239	3864	302	4654
177	2855	240	3880	303	4665
178	2875	241	3893	304	4676
179	2895	242	3906	305	4686
180	2915	243	3920	306	4695
181	2933	244	3934	307	4704
182	2952	245	3949	308	4714
183	2970	246	3965	309	4725
184	2988	247	3978	310	4736
185	3007	248	3992	311	4748
186	3025	249	4005	312	4757
187	3044	250	4018	313	4768
188	3062	251	4032	314	4779
189	3080	252	4045	315	4790
190	3098	253	4058	316	4801
191	3116	254	4072	317	4812
192	3134	255	4085	318	4823
193	3151	256	4098	319	4834
194	3167	257	4112	320	4844
195	3185	258	4125	321	4855
196	3202	259	4139	322	4866
197	3219	260	4152	323	4878
198	3235	261	4165	324	4890
199	3249	262	4177	325	4899
200	3264	263	4189	326	4909
201	3280	264	4201	327	4920
202	3296	265	4214	328	4931
203	3313	266	4227	329	4943
204	3330	267	4240	330	4955
205	3347	268	4252	331	4965
206	3363	269	4264	332	4975
207	3380	270	4276	333	4985
208	3397	271	4289	334	4995
209	3413	272	4302	335	5005
210	3430	273	4315	336	5015
211	3445	274	4327	337	5025
212	3460	275	4339	338	5035
213	3475	276	4350	339	5045
214	3490	277	4362	340	5055
215	3505	278	4373	341	5065
216	3520	279	4385	342	5075
217	3537	280	4397	343	5086
218	3554	281	4408	344	5097
219	3570	282	4420	345	5108
220	3586	283	4432	346	5119
221	3601	284	4443	347	5130
222	3615	285	4455	348	5140
223	3630	286	4467	349	5150
224	3645	287	4478	350	5160
351	5170	356	5220	361	5268
352	5180	357	5230	362	5276
353	5190	358	5240	363	5285
354	5200	359	5250	364	5294
355	5210	360	5260	365	5303

Freeboards at intermediate lengths of ship shall be obtained by linear interpolation. Ships above 365 m in length shall be dealt with by the Administration.

Title	ICLL 2003 Amend / ANNEX I / Reg. 29
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 29

Correction to the freeboard for ships under 100 m in length

The tabular freeboard for a type 'B' ship of between 24 m and 100 m in length having enclosed superstructures with an effective length of up to 35% of the length of the ship shall be increased by:

$$7.5 (100 - L) (0.35 - E_1/L) \text{ (MM)}$$

where

L is the length of the ship in m; and

E_1 is the effective length E of superstructure in m as defined in regulation 35, but excluding the length of trunks.

Title	ICLL 2003 Amend / ANNEX I / Reg. 30
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 30

Correction for block coefficient

Where the block coefficient (C_b) exceeds 0.68, the tabular freeboard specified in regulation 28 as modified, if applicable, by regulations 27(8), 27(10) and 29 shall be multiplied by the factor:

$$\frac{(C_b + 0.68)}{1.36}$$

The block coefficient is not to be taken greater than 1.0.

Title	ICLL 2003 Amend / ANNEX I / Chapter III (Reg.27~40) / Reg. 31
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 31

Correction for depth

(1) Where D exceeds $L/15$ the freeboard shall be increased by $(D-L/15)R$ mm, where R is $L/0.48$ at lengths less than 120 m and 250 at 120 m length and above.

(2) Where D is less than $L/15$ no reduction shall be made, except in a ship with an enclosed superstructure covering at least $0.6L$ amidships, with a complete trunk, or combination of detached enclosed superstructures and trunks which extend all fore and aft, where the freeboard shall be reduced at the rate prescribed in paragraph (1).

(3) Where the height of the superstructure or trunk is less than the corresponding standard height, the calculated reduction shall be corrected in the ratio of the height of the actual superstructure or trunk to the applicable standard height, as defined in regulation 33.

Title	ICLL 2003 Amend / ANNEX I / Chapter III (Reg.27~40) / Reg. 32
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 32

Correction for position of deck line

Where the actual depth to the upper edge of the deck line is greater or less than D, the difference between the depths shall be added to or deducted from the freeboard.

Title	ICLL 2003 Amend / ANNEX I / Reg. 32-1
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 32-1

Correction for recess in freeboard deck

(1) Where a recess is arranged in the freeboard deck, and it does not extend to the sides of the ship, the freeboard calculated without regard to the recess shall be corrected for the consequent loss of buoyancy. The correction shall be equal to the value obtained by dividing the volume of the recess by the waterplane area of the ship at 85% of the least moulded depth (see figure 32-1.1).

(2) The correction shall be an addition to the freeboard obtained after all other corrections have been applied, except bow height correction.

(3) Where the freeboard, corrected for lost buoyancy as above, is greater than the minimum geometric freeboard determined on the basis of a moulded depth measured to the bottom of the recess, the latter value may be used.

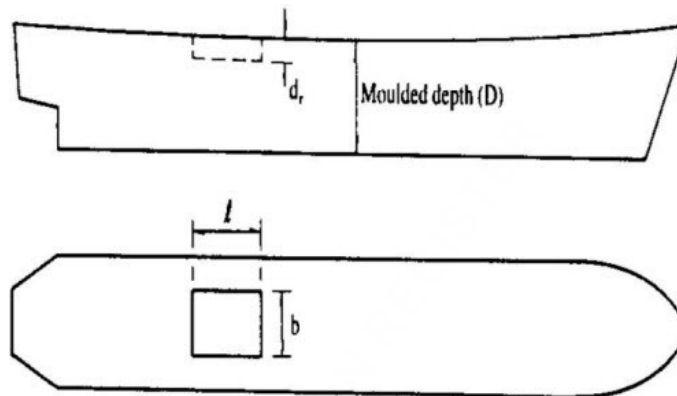


Figure 32-1.1

Correction is the addition to freeboard equal to:

$$\frac{l \times b \times d_r}{WP \text{ Area at } 0.85D}$$

Title	ICLL 2003 Amend / ANNEX I / Reg. 33
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 33

Standard height of superstructure

The standard height of a superstructure shall be as given in the following table:

L(metes)	Standard Height (m)	
	Raised Quarter Deck	All other Superstructures
30 or less	0.90	1.80
75	1.20	1.80
125 or more	1.80	2.30

Table 33.1

The standard heights at intermediate lengths of the ship shall be obtained by linear interpolation.

Title	ICLL 2003 Amend / ANNEX I / Reg. 34
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 34

Length of superstructure

(1) Except as provided in paragraph (2), the length of a superstructure (S) shall be the mean length of the parts of the superstructure which lie within the length (L).

Where a superstructure bulkhead is recessed, the effective length of the superstructure shall be reduced by an amount equal to the area of the recess in plan view divided by the breadth of the superstructure at the midlength of the recess. Where the recess is unsymmetrical about the centreline, the largest portion of the recess shall be considered as applying to both sides of the ship. A recess need not be decked over.

(2) Where the end bulkhead of an enclosed superstructure extends in a fair convex curve beyond its intersection with the superstructure sides, the length of the superstructure may be increased on the basis of an equivalent plane bulkhead. This increase shall be two-thirds of the fore and aft extent of the curvature. The maximum curvature which may be taken into account in determining this increase is one-half the breadth of the superstructure at the point of intersection of the curved end of the superstructure with its side.

Where there is an extension to a superstructure, which extension has a breadth on each side of the centre line at least 30% of the breadth of the ship, the effective length of the superstructure may be increased by considering an equivalent superstructure bulkhead in the form of a parabola. This parabola shall extend from the extension at the centreline and pass through the junction of the actual superstructure bulkhead with the sides of the extension and extend to the sides of the ship. This parabola shall be completely contained within the boundary of the superstructure and its extensions.

If the superstructure is set-in from the side, up to the limit allowed under regulation 3(10), the equivalent bulkhead should be calculated on the basis of the actual breadth of the superstructure (and not the breadth of the ship).

(3) Superstructures which have sloped end bulkheads shall be dealt with in the following manner:

(a) When the height of superstructure, clear of the slope, is equal to or smaller than the standard height, length S is to be obtained as shown in figure 34.1.

(b) When the height is greater than the standard, length S is to be obtained as shown in figure 34.2.

(c) The foregoing will apply only when the slope, related to the base line, is 15° or greater. Where the slope is less than 15°, the configuration shall be treated as sheer.

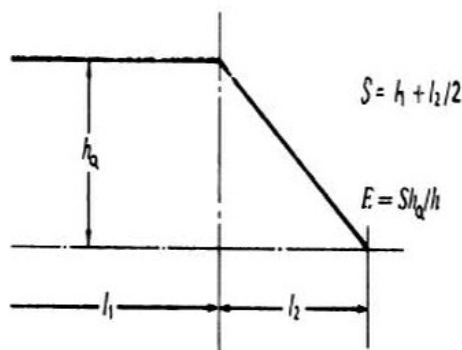


Figure 34.1 - Height of superstructure equal to or smaller than the standard height h

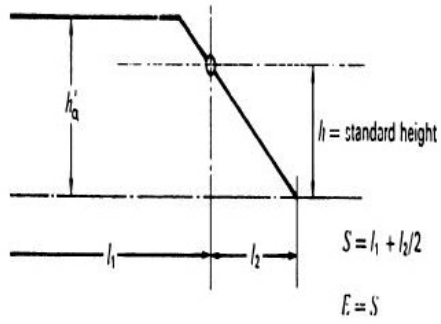


Figure 34.2 - Height of superstructure greater than the standard height

Title	ICLL 2003 Amend / ANNEX I / Chapter III (Reg.27~40) / Reg. 35
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 35

Effective length of superstructure

(1) Except as provided in paragraph (2), the effective length (E) of an enclosed superstructure of standard height shall be its length.

(2) In all cases where an enclosed superstructure of standard height is set-in from the sides of the ship as permitted in regulation 3(10), the effective length shall be the length modified by the ratio of b/B_s , where:

b is the breadth of the superstructure at the middle of its length; and

B_s is the breadth of the ship at the middle of the length of the superstructure.

Where a superstructure is set-in for a part of its length, this modification shall be applied only to the set-in part.

(3) Where the height of an enclosed superstructure is less than the standard height, the effective length shall be its length reduced in the ratio of the actual height to the standard height. Where the height exceeds the standard, no increase shall be made to the effective length of the superstructure (see figures 34.1 and 34.2).

Where the height, clear of the slope, of a superstructure which has sloped end bulkheads is less than the standard height, its effective length E shall be its length S as obtained from figure 34.1, reduced in the ratio of the actual height to the standard height.

Where a poop or forecastle of less than standard height is fitted on a ship with excessive sheer but without any superstructure within $0.2L$ amidships, credit may be given to the height of the poop or forecastle by increasing the actual height by the difference between the actual and the standard sheer profiles. The deduction for excess sheer in accordance with regulation 38(16) is not to be granted.

(4) The effective length of a raised quarter deck, if fitted with an intact front bulkhead, shall be its length up to a maximum of $0.6L$. Where the bulkhead is not intact, the raised quarter deck shall be treated as a poop of less than standard height.

The maximum effective length of $0.6L$ of a raised quarterdeck is to be measured from the after perpendicular, even where a poop is fitted in conjunction with the raised quarterdeck.

(5) Superstructures which are not enclosed shall have no effective length.

Title	ICLL 2003 Amend / ANNEX I / Chapter III (Reg.27~40) / Reg. 36
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 36

Trunks

(1) A trunk or similar structure which does not extend to the sides of the ship shall be regarded as efficient on the following conditions:

- (a) the trunk is at least as strong as a superstructure;
- (b) the hatchways are in the trunk deck, the hatchway coamings and covers comply with the requirements of regulations 13 to 16 inclusive and the width of the trunk deck stringer provides a satisfactory gangway and sufficient lateral stiffness. However, small access openings with watertight covers may be permitted in the freeboard deck;
- (c) a permanent working platform fore and aft fitted with guard rails is provided by the trunk deck, or by detached trunks connected to superstructures by efficient permanent gangways;
- (d) ventilators are protected by the trunk, by watertight covers or by other equivalent means;
- (e) open rails are fitted on the weather parts of the freeboard deck in way of the trunk for at least half their length or, alternatively, freeing port area in the lower part of the bulwarks, subject to regulation 24(2), of 33% of the total area of the bulwarks is provided;
- (f) the machinery casings are protected by the trunk, by a superstructure of at least standard height, or by a deckhouse of the same height and of equivalent strength;
- (g) the breadth of the trunk is at least 60% of the breadth of the ship; and
- (h) where there is no superstructure, the length of the trunk is at least 0.6L.

(2) The full length of an efficient trunk reduced in the ratio of its mean breadth to B shall be its effective length.

(3) The standard height of a trunk is the standard height of a superstructure other than a raised quarter deck.

(4) Where the height of a trunk is less than the standard height, its effective length shall be reduced in the ratio of the actual to the standard height. Where the height of hatchway coamings on the trunk deck is less than that required under regulation 14-1, a reduction from the actual height of trunk shall be made which corresponds to the difference between the actual and the required height of coaming.

(5) Where the trunk height is less than standard and the trunk hatch coamings are also of less than standard height, or omitted entirely, the reduction from the actual height of trunk on account of insufficient hatch coaming height shall be taken as the difference between 600 mm and the actual height of coaming, or 600 mm if no hatch coamings are fitted. Reduction in the actual height of trunk shall not be required in cases where only small hatches with less than standard height are fitted in the trunk deck for which dispensation from the requirement of standard coaming height may be given.

(6) Continuous hatchways may be treated as a trunk in the freeboard computation, provided the provisions of this paragraph are complied with in all respects.

The trunk deck stringer referred to in paragraph (1)(b) may be fitted outboard of the trunk side bulkhead in association with the following:

- (a) the stringer so formed is to provide a clear walkway of at least 450 mm in width on each side of the ship;
- (b) the stringer is to be of solid plate, efficiently supported and stiffened;
- (c) the stringer is to be as high above the freeboard deck as practicable. In the freeboard calculation, the trunk height is to be reduced by at least 600 mm or by the actual difference between the top of the trunk and the stringer, whichever is greater;
- (d) hatch cover securing appliances are to be accessible from the stringer or walkway; and
- (e) the breadth of the trunk is to be measured between the trunk side bulkheads.

(7) Where the trunk adjoining the superstructures such as poop, bridge or forecastle is included in the calculation of freeboard, openings shall not be arranged in that part of the bulkhead which is common for the trunk and superstructure. A relaxation may be made for small openings such as for piping, cable or manholes with covers attached by means of bolts.

(8) The sides of a trunk included in the calculation of freeboard shall be intact. Side scuttles of the non-opening type

and bolted manhole covers may be allowed.

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Title	ICLL 2003 Amend / ANNEX I / Reg. 37
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For Ships Constructed	On or after 1-1-2005

Regulation 37

Deduction for superstructures and trunks

(1) Where the effective length of superstructures and trunks is 1L, the deduction from the freeboard shall be 350 mm at 24 m length of ship, 860 mm at 85 m length and 1,070 mm at 122 m length and above. Deductions at intermediate lengths shall be obtained by linear interpolation.

(2) Where the total effective length of superstructures and trunks is less than 1L, the deduction shall be a percentage obtained from the following table:

Percentage of deduction for type 'A' and 'B' ships

	Total Effective of Superstructures and Trunks										
	0	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	1.0L
Percentage of deduction for of superstructures	0	7	14	21	31	41	52	63	75.3	87.7	100

Percentages at intermediate lengths of superstructures and trunks shall be obtained by linear interpolation.

Table 37.1

(3) For ships of type 'B' where the effective length of a forecastle is less than 0.07L no deduction is allowed.

Title	ICLL 2003 Amend / ANNEX I / Reg. 38
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 38

Sheer

General

- (1) The sheer shall be measured from the deck at side to a line of reference drawn parallel to the keel through the sheer line amidships.
- (2) In ships designed with a rake of keel, the sheer shall be measured in relation to a reference line drawn parallel to the design load waterline.
- (3) In flush deck ships and in ships with detached superstructures the sheer shall be measured at the freeboard deck.
- (4) In ships with topsides of unusual form in which there is a step or break in the topsides, the sheer shall be considered in relation to the equivalent depth amidships.
- (5) In ships with a superstructure of standard height which extends over the whole length of the freeboard deck, the sheer shall be measured at the superstructure deck. Where the height exceeds the standard, the least difference (Z) between the actual and standard heights shall be added to each end ordinate. Similarly, the intermediate ordinates at distances of $1/6L$ and $1/3L$ from each perpendicular shall be increased by $0.444Z$ and $0.111Z$, respectively. Where there is an enclosed poop or forecastle superimposed on the superstructure, sheer credit shall be allowed for such a poop or forecastle, according to the method of paragraph (12) as shown in figure 38.1.

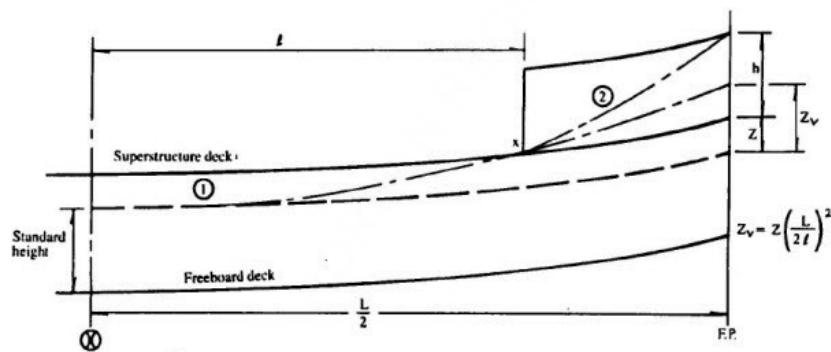


Figure 38.1

- (6) Where the deck of an enclosed superstructure has at least the same sheer as the exposed freeboard deck, the sheer of the enclosed portion of the freeboard deck shall not be taken into account.
- (7) Where an enclosed poop or forecastle is of standard height with greater sheer than that of the freeboard deck, or is of more than standard height, an addition to the sheer of the freeboard deck shall be made as provided in paragraph (12).

Where a poop or forecastle consists of two layers, the method shown in figure 38.2 shall be used.

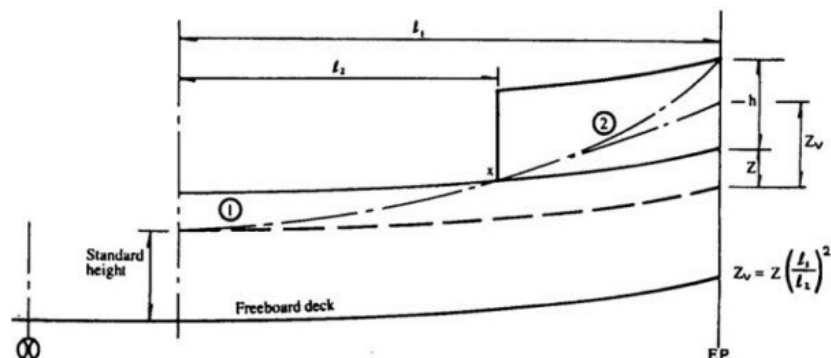


Figure 38.2

In figures 38.1 and 38.2, the following definitions apply:

Z is as defined in paragraph (5); and

Z_v is the end ordinate of a virtual standard parabolic curve taken through the point "X". If Z_v is greater than (Z + h), the end ordinate shall be (Z + h), in which case point "X" shall be disregarded and curve (2) not taken into account.

When the length of the first tier superstructure is greater than 0.5l, the virtual standard parabolic curve shall commence at amidships as indicated in figure 38.1.

Standard sheer profile

(8) The ordinates of the standard sheer profile are given in the following table:

Standard sheer profile (where L is in m)

	Station	Ordinate (in millimetres)	Factor
After half	After Perpendicular	25(L/3+10)	1
	1/6L from A.P.	11.1(L/3+10)	3
	1/3L from A.P.	2.8(L/3+10)	3
	Amidships	0	1
Forward half	Amidships	0	1
	1/3 from F.P.	5.6(L/3+10)	3
	1/6 from F.P.	22.2(L/3+10)	3
	Forward perpendicular	50(L/3+10)	1

Table 38.1

Measurement of variation from standard sheer profile

(9) Where the sheer profile differs from the standard, the four ordinates of each profile in the forward or after half shall be multiplied by the appropriate factors given in the above table of ordinates. The difference between the sums of the respective products and those of the standard divided by 8 measures the deficiency or excess of sheer in the forward or after half. The arithmetical mean of the excess or deficiency in the forward and after halves measures the excess or deficiency of sheer.

(10) Where the after half of the sheer profile is greater than the standard and the forward half is less than the standard, no credit shall be allowed for the part in excess and deficiency only shall be measured.

(11) Where the forward half of the sheer profile exceeds the standard, and the after portion of the sheer profile is not less than 75% of the standard, credit shall be allowed for the part in excess. Where the after part is less than 50% of the standard no credit shall be given for the excess sheer forward. Where the after sheer is between 50% and 75% of the standard, intermediate allowances may be granted for excess sheer forward.

(12) Where sheer credit is given for a poop or forecastle the following formula shall be used:

$$s = \left(\frac{y}{3}\right) \left(\frac{L'}{L}\right)$$

where:

s is the sheer credit, to be deducted from the deficiency, or added to the excess of sheer;

y is the difference between actual and standard height of superstructure at the after or forward perpendicular;

L' is the mean enclosed length of poop or forecastle up to a maximum length of 0.5 L; and

L is the length of the ship as defined in regulation 3(1).

The above formula provides a curve in the form of a parabola tangent to the actual sheer curve at the freeboard deck and intersecting the end ordinate at a point below the superstructure deck a distance equal to the standard height of a superstructure. The superstructure deck shall not be less than standard height above this curve at any point. This curve shall be used in determining the sheer profile for forward and after halves of the ship.

(13)

(a) Any excess in the height of a superstructure which does not extend to the after perpendicular cannot be

regarded as contributing to the shear allowance.

(b) Where the height of a superstructure is less than standard, the superstructure deck shall not be less than the minimum height of the superstructure above the virtual shear curve at any point. For this purpose y shall be taken as the difference between the actual and minimum height of the superstructure at the after/forward perpendicular.

(c) For a raised quarterdeck credit may be given only when the height of this quarterdeck is greater than the standard height of 'other superstructures' as defined in regulation 33, and only for the amount by which the actual height of the raised quarterdeck exceeds that standard height.

(d) When a poop or a forecastle has sloping end bulkheads, the shear credit may be allowed on account of excess height. The formula given in paragraph (12) shall be used, the values for y and L' being as shown in figure 38.3.

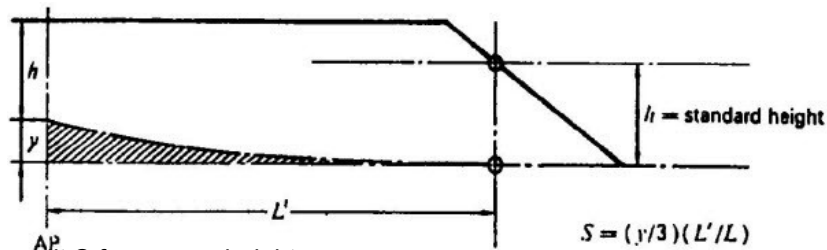


Figure 38.3 Shear credit S for excess height

Correction for variations from standard shear profile

(14) The correction for shear shall be the deficiency or excess of shear (see paragraphs (9) to (11) inclusive), multiplied by

$$0.75 - \frac{S}{2L}$$

where S is the total length S of enclosed superstructures as defined in regulation 34 without trunks.

Addition for deficiency in shear

(15) Where the shear is less than the standard, the correction for deficiency in shear (see paragraph (14)) shall be added to the freeboard.

Deduction for excess shear

(16) In ships where an enclosed superstructure covers 0.1L before and 0.1L abaft amidships, the correction for excess of shear as calculated under the provisions of paragraph (14) shall be deducted from the freeboard; in ships where no enclosed superstructure covers amidships, no deduction shall be made from the freeboard; where an enclosed superstructure covers less than 0.1L before and 0.1L abaft amidships, the deduction shall be obtained by linear interpolation. The maximum deduction for excess shear shall be at the rate of 125 mm per 100 m of length.

In applying this paragraph, the height of the superstructure shall be related to its standard height. Where the height of the superstructure or raised quarterdeck is less than standard, the reduction shall be in the ratio of the actual to the standard height thereof.

Title	ICLL 2006 Amend / ANNEX I / Reg. 39
Effective Date	1-7-2008
For Ships Constructed	On or after 1-7-2008
Note	Paragraph (1) amended by Res.MSC.223(82) enters into force on 1 July 2008.

Regulation 39

Minimum bow height and reserve buoyancy

(1) The bow height (F_b), defined as the vertical distance at the forward perpendicular between the waterline corresponding to the assigned summer freeboard and the designed trim and the top of the exposed deck at side, shall be not less than:

$$F_b = (6075(L/100) - 1875(L/100)^2 + 200(L/100)^3) \times (2.08 + 0.609C_b - 1.603C_{wf} - 0.0129(L/d_1))$$

where:

F_b is the calculated minimum bow height, in mm;

L is the length, as defined in regulation 3, in m;

B is the moulded breadth, as defined in regulation 3, in m;

d_1 is the draught at 85% of the least moulded depth, in metres; (~~KR~~: replaced by Res.MSC.223(82))

C_b is the block coefficient, as defined in regulation 3;

C_{wf} is the waterplane area coefficient forward of $L/2$: $C_{wf} = A_{wf} / \{(L/2) \times B\}$;

A_{wf} is the waterplane area forward of $L/2$ at draught d_1 , in m^2 .

For ships to which timber freeboards are assigned, the summer freeboard (and not the timber summer freeboard) is to be assumed when applying paragraph (1).

(2) Where the bow height required in paragraph (1) is obtained by sheer, the sheer shall extend for at least 15% of the length of the ship measured from the forward perpendicular. Where it is obtained by fitting a superstructure, such superstructure shall extend from the stem to a point at least 0.07L abaft the forward perpendicular, and shall be enclosed as defined in regulation 3(10).

(3) Ships which, to suit exceptional operational requirements, cannot meet the requirements of paragraphs (1) and (2) of this regulation may be given special consideration by the Administration.

(4)

(a) The sheer of the forecastle deck may be taken into account, even if the length of the forecastle is less than 0.15L, but greater than 0.07L, provided that the forecastle height is not less than one half of standard height of superstructure as defined in regulation 33 between 0.07L and the forward perpendicular.

(b) Where the forecastle height is less than one half of the standard height of superstructure, as defined in regulation 33, the credited bow height may be determined as follows:

(i) Where the freeboard deck has sheer extending from abaft 0.15L, by a parabolic curve having its origin at 0.15L abaft the forward perpendicular at a height equal to the midship depth of the ship, extended through the point of intersection of forecastle bulkhead and deck, and up to a point at the forward perpendicular not higher than the level of the forecastle deck (as illustrated in figure 39.1). However, if the value of the height denoted h_t in figure 39.1 is smaller than the value of the height denoted h_b then h_t may be replaced by h_b in the available bow height.

(ii) Where the freeboard deck has sheer extending for less than 0.15L or has no sheer, by a line from the forecastle deck at side at 0.07L extended parallel to the base line to the forward perpendicular (as illustrated in figure 39.2).

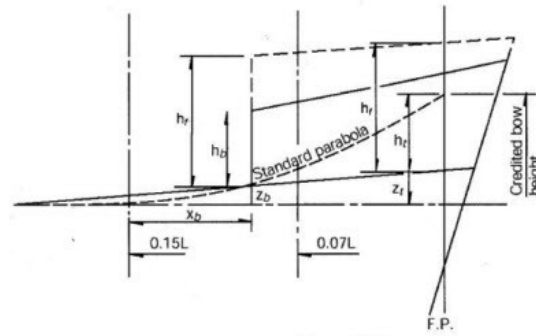


Figure 39.1

$$h_i = Z_b \left(\frac{0.15L}{x_b} \right)^2 - Z_i$$

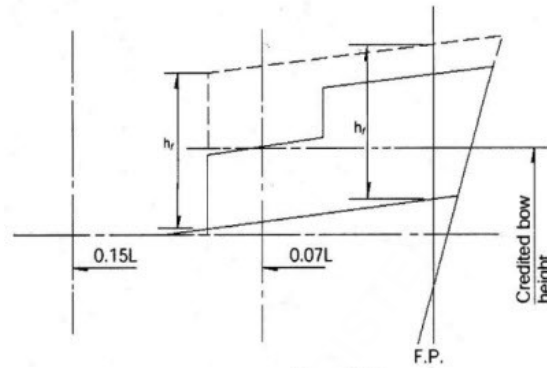


Figure 39.2

h_f = Half standard height of superstructure as defined in regulation 33.

(5) All ships assigned a type 'B' freeboard, other than oil tankers*, chemical tankers* and gas carriers*, shall have additional reserve buoyancy in the fore end. Within the range of 0.15L abaft of the forward perpendicular, the sum of the projected area between the summer load waterline and the deck at side (A1 and A2 in figure 39.3) and the projected area of an enclosed superstructure, if fitted, (A3) shall not be less than:

$$(0.15F_{\min} + 4(L/3 + 10))L/1000 \text{ (m}^2\text{)},$$

where:

F_{\min} is calculated by: $F_{\min} = (F_0 \times f_1) + f_2$;

F_0 is the tabular freeboard, in mm, taken from table 28.2, corrected for regulation 27(9) or 27(10), as applicable;

f_1 is the correction for block coefficient given in regulation 30; and

f_2 is the correction for depth, in mm, given in regulation 31 .

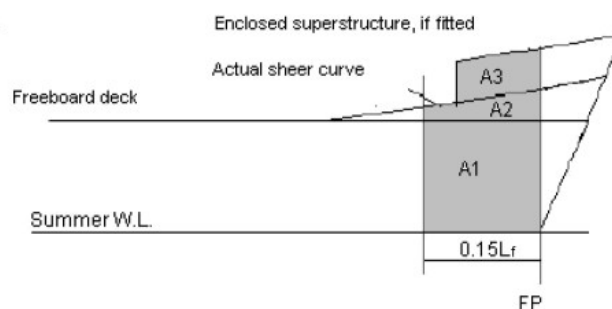


Figure 39.3

* Oil tankers, chemical tankers and gas carriers are defined in the International Convention for the Safety of Life at Sea (SOLAS), 1974, regulations II-1/2.12, VII/8.2 and VII/11.2, respectively.

Title	ICLL 2003 Amend / ANNEX I / Reg. 40
Effective Date	1-1-2005
For Ships Constructed	On or after 1-1-2005

Regulation 40

Minimum freeboards

Summer freeboard

(1) The minimum freeboard in summer shall be the freeboard derived from the tables in regulation 28, as modified by the corrections in regulations 27, as applicable, 29, 30, 31, 32, 37, 38 and, if applicable, 39.

(2) The freeboard in salt water, as calculated in accordance with paragraph (1), but without the correction for deck line, as provided by regulation 32, shall not be less than 50 mm. For ships having in position 1 hatchways with covers which do not comply with the requirements of regulation 16(1) through (5) or regulation 26, the freeboard shall be not less than 150 mm.

Tropical freeboard

(3) The minimum freeboard in the Tropical Zone shall be the freeboard obtained by a deduction from the summer freeboard of one forty-eighth of the summer draught measured from the top of the keel to the centre of the ring of the load line mark.

(4) The freeboard in salt water, as calculated in accordance with paragraph (3), but without the correction for deck line, as provided by regulation 32, shall not be less than 50 mm. For ships having in position 1 hatchways with covers which do not comply with the requirements of regulation 16(1) through (5) or regulation 26, the freeboard shall be not less than 150 mm.

Winter freeboard

(5) The minimum freeboard in winter shall be the freeboard obtained by an addition to the summer freeboard of one forty-eighth of summer draught, measured from the top of the keel to the centre of the ring of the load line mark.

Winter North Atlantic freeboard

(6) The minimum freeboard for ships of not more than 100 m in length which enter any part of the North Atlantic defined in regulation 52 (Annex II) during the winter seasonal period shall be the winter freeboard plus 50 mm. For other ships, the winter North Atlantic freeboard shall be the winter freeboard.

Fresh water freeboard

(7) The minimum freeboard in fresh water of unit density shall be obtained by deducting from the minimum freeboard in salt water:

$$\frac{\Delta}{40T} \text{ (Cm)}$$

where:

Δ is the displacement in salt water in tonnes at the summer load waterline; and

T is the tonnes per centimetre immersion in salt water at the summer load waterline.

(8) Where the displacement at the summer load waterline cannot be certified, the deduction shall be one forty-eight of summer draught, measured from the top of the keel to the centre of the ring of the load line mark.