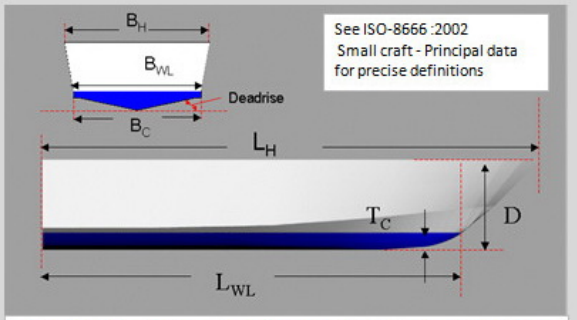
MANUFACTURER/PERSON RESPONSIBLE FOR REPORT	Yacht Engineering	
Contact details	Igor Yourev	
BOAT:	PD 1000	Report 30 сентября 2018 г.

CRAFT PRINCIPAL DATA

SELF-CERTIFIER-12215-5

Hull length (Pt.5, 6.1)	10,000 m	L_H	
Length of waterline (Pt.5, 6.1)	9,280 m	L_{WL}	See typicals?
Maximum beam	2,100 m	B_H	No
Waterline beam	1,710 m	B_{WL}	
Chine beam (Pt.5 Ref 6.1)	1,680 m	B_C	
Draft at mid-LWL	0,300 m	T_c	
Hull depth at mid-LWL	0,800 m	D	
Maximum displacement (Pt 5 3.2)	3800 kg	m_{LDC}	
Bottom deadrise angle @ $0.4L_{WL}$	7 deg	β	Must exceed 10 degs
Maximum speed (Pt.5, 6.1)	8,0 knots	V	
Design Category (Pt 5, 3.1)	C		



See ISO-8666 :2002 Small craft - Principal data for precise definitions

Please note: ISO-12215-5 uses the AFT end of the waterline as the datum for defining deadrise angle and longitudinal locations of components

Dynamic load factor 0,39 g's

Zone and mode	Base pressures		Minimums		Pt.5 clause
Bottom displacement mode	$p_{BMD\ BASE}$	56,4 kPa	p_{BMMIN}	11,8 kPa	8.1.2
Bottom planing mode	$p_{BMP\ BASE}$	31,7 kPa	p_{BMMIN}	11,8 kPa	8.1.3
Side			p_{SMIN}	5,0 kPa	8.1.4
Deck	$p_{DM\ BASE}$	17,8 kPa	p_{DMIN}	5,0 kPa	8.1.6

GLASS REINFORCED POLYESTER

Further explanations? No

ft, lbs Convert units? m, kg No

Clear all | What's next? | Go to MATERIALS | Go To Zone Central | Write Report? | WRITE REPORT | Go to help | HELP? How to treat curvature

ISO-12215-5:2008 Base pressure calculations				
k_{DC}	0,60			Table 2, Pt.5, 7.2
$n_{\bar{x}}$	0,387			Pt.5, 7.3.2 Eqn (1)
$n_{\bar{x}}$	0,985			Pt.5, 7.3.2 Eqn (2)
$n_{\bar{x}}$ used	0,387			Pt.5, 7.3.2
$n_{\bar{x}}$ for k_L	3,000			Pt.5, 7.3.3
k_L =	0,090	x +	0,501	Pt.5, 7.4 Eqn (3)
Beta for Eqn (1)	10			Pt.5, 6.1

Исходные данные для расчета

MATERIALS LIST

Enter COMBI-MAT as WR gsm-CSM gsm ,e.g. 800WR & 225CSM as '800-225' - include the '-'

GLASS FIBRE	Fibre Type	Fibre mass grams/m²	Total fibre grams/m²	Mat mass: all glass (R)	ISO default fibre content Simple	Complex	Select Simple or Complex	PLY LABEL	MECHANICAL PROPERTIES E (MPa)	G (MPa)	UTS (MPa)	UCS(MPa)	UFS(MPa)	USS(MPa)	t (mm)
	CSM (Hand laid)	225	225	n/a	0,30	0,25	Simple	CSM225(S)	5120	2200	68,0	93,6	121,7	49,6	0,53
	CSM (Hand laid)	300	300	n/a	0,30	0,25	Simple	CSM300(S)	5120	2200	68,0	93,6	121,7	49,6	0,70
	CSM (Hand laid)	450	450	n/a	0,30	0,25	Simple	CSM450(S)	5120	2200	68,0	93,6	121,7	49,6	1,05
	WR (0/90)	600	600	n/a	0,48	0,36	Simple	WR600(S)	10592	2445	146,3	115,2	178,1	61,1	0,78
	COMBI-MAT	600-300	900	0,33	0,40	0,31	Simple	CM900(S)	8160	2336	106,4	105,6	149,9	56,0	1,48
	COMBI-MAT	800-225	1025	0,22	0,42	0,30	Simple	CM1025(S)	8783	2364	115,8	108,1	156,6	57,3	1,58
	UD-0	300	300	n/a	0,55	0,41	Simple	UD300(S)	20245	1906	386,6	262,0	390,4	40,0	0,32
	UD-0	600	600	n/a	0,55	0,41	Simple	UD600(S)	20245	1906	386,6	262,0	390,4	40,0	0,64

Error *Means incompatible mix of fibre mass and reinforcement type, e.g. COMBI-MAT has been defined as 300 only or CSM defined as as 600-225. With COMBI-MAT use, e.g. 800-225 and for all other reinforcements use a single figure.*

CORE	Core Type	Density kg/m³	PLY LABEL	ISO MECHANICAL PROPERTIES Ec (MPa)	Gc (MPa)	UCS (MPa)	USS (MPa)
1	EGB	140	EGB-140	2948	120	9,28	2,15
2	Rigid PVC II	80	PVC-80	78	25	1,31	1,07
3	Rigid PVC II	130	PVC-130	138	42	2,56	1,92
4	Rigid PVC II	200	PVC-200	222	65	4,31	3,11
5	Bulker mat	630	Bulker	880	28	8,00	4,00

PLY

Label	Density kg/m³	Thickness (mm)	Angle (Degrees)	ISO MECHANICAL PROPERTIES E (MPa)	G (MPa)	UCS (MPa)	USS (MPa)
Ply1	550	12,7	90	3797	660	28,48	19
Ply2	550	15	90	3857	660	29	11
Ply3	500	19,1	90	3509	600	26	10

Typical density 500-650 kg/m³

ft, lbs *Convert units?* m, kg Yes

COMBI-MAT, CSM, WR CONVERTER			
US notation	2415	ISO equivalent	813-457
DENSITY CONVERTER			
lb/cubic ft	5,0	kg/cubic metre	80

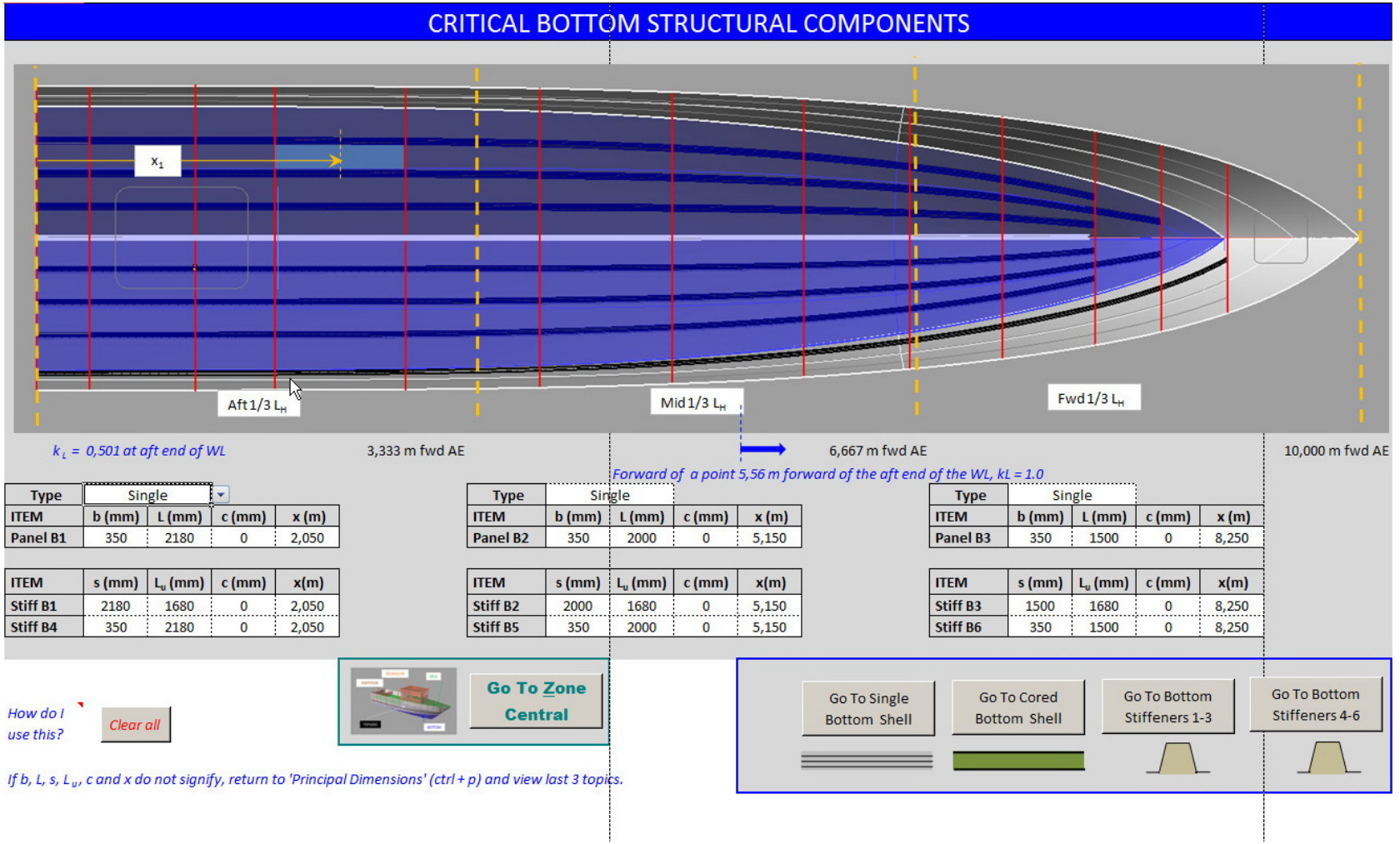
How do I use this page? *Clear all* *Show mechanical properties* Yes

What's next? **Go To Zone Central** Return to Principal Dimensions *Populate*

IMPORTANT NOTE (A): **Define MATERIAL LIST ONCE ONLY AT THE START OF THE PROJECT.** If you enter a ply, e.g. CSM225(S) in for example the bottom shell THEN go back to MATERIAL LIST and alter the fibre mass to 275 gsm, the old label will no longer be recognised. When this happens an '*' appears next to the ply in question (shell only not stiffeners). **RULE: MATERIAL LIST once. Use Clear all to remove old plies from old runs in the shell or stiffener layups.**

IMPORTANT NOTE (B): When working with laminate schedules, either in shell or stiffeners, **ENTER either the Ply label with the number of plies OR a Ply label of 'None' and 0 plies.** DO NOT enter **'None' with a No. of plies > 0** OR a **valid label with a No. of plies = 0.** Sometimes the program will warn you or is smart enough to ignore this but it is poor practice as it complicates comparing the program output with laminate schedules shown on drawings.

Характеристики стандартных материалов



Расчетные размеры элементов днища

Go To BOTTOM zone

BOTTOM SHELL LAYUP SCHEDULE (SINGLE SKIN)

Go To BOTTOM zone

PANEL B1 — Zone: Aft 1/3 L

Clear all plies

Ply No.	Label	No. plies	Glass	+ Resin	t (mm)
1 outer	CSM300(S)	1	300	1000	0,70
2	CSM450(S)	4	1800	6000	4,20
3	WR600(S)	4	2400	5000	3,10
4	None	0	0	0	0,00
5	None	0	0	0	0,00
6	None	0	0	0	0,00
7	None	0	0	0	0,00
8	None	0	0	0	0,00
9	None	0	0	0	0,00
10	None	0	0	0	0,00
11	None	0	0	0	0,00
12	None	0	0	0	0,00

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Glass to meet robustness	1727 gsm	4500 gsm	2,61	PASSES
Thickness to meet strength	3,70 mm	8,01 mm	2,16	PASSES

PANEL B1

b (mm)	350	L (mm)	2180	k_c
c (mm)	0	x (m)	2,05	1,000
L_{max} (mm)	875	for A_D	A_D (m^2)	0,306
L_{max} (mm)	734,3	for k_2	k_2	0,500
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,491	0,685	11,84
Displacement	1,395	0,685	0,685	15,88
Actual fibre content by mass		0,38	P_{BM}	15,88
Effective UFS (MPa)		142		

PANEL B2 — Zone: Middle 1/3 L

Clear all plies

Ply No.	Label	No. plies	Glass	+ Resin	t (mm)
1 outer	CSM300(S)	1	300	1000	0,70
2	CSM450(S)	4	1800	6000	4,20
3	WR600(S)	4	2400	5000	3,10
4	None	0	0	0	0,00
5	None	0	0	0	0,00
6	None	0	0	0	0,00
7	None	0	0	0	0,00
8	None	0	0	0	0,00
9	None	0	0	0	0,00
10	None	0	0	0	0,00
11	None	0	0	0	0,00
12	None	0	0	0	0,00

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Glass to meet robustness	1727 gsm	4500 gsm	2,61	PASSES
Thickness to meet strength	4,39 mm	8,01 mm	1,83	PASSES

PANEL B2

b (mm)	350	L (mm)	2000	k_c
c (mm)	0	x (m)	5,15	1,000
L_{max} (mm)	875	for A_D	A_D (m^2)	0,306
L_{max} (mm)	734,3	for k_2	k_2	0,500
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,491	0,963	14,98
Displacement	1,395	0,685	0,963	22,33
Actual fibre content by mass		0,38	P_{BM}	22,33
Effective UFS (MPa)		142		

PANEL B3 — Zone: Forward 1/3 L

Clear all plies

Ply No.	Label	No. plies	Glass	+ Resin	t (mm)
1 outer	CSM300(S)	1	300	1000	0,70
2	CSM450(S)	4	1800	6000	4,20
3	WR600(S)	4	2400	5000	3,10
4	None	0	0	0	0,00
5	None	0	0	0	0,00
6	None	0	0	0	0,00
7	None	0	0	0	0,00
8	None	0	0	0	0,00
9	None	0	0	0	0,00
10	None	0	0	0	0,00
11	None	0	0	0	0,00
12	None	0	0	0	0,00

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Glass to meet robustness	1727 gsm	4500 gsm	2,61	PASSES
Thickness to meet strength	4,47 mm	8,01 mm	1,79	PASSES

PANEL B3

b (mm)	350	L (mm)	1500	k_c
c (mm)	0	x (m)	8,25	1,000
L_{max} (mm)	875	for A_D	A_D (m^2)	0,306
L_{max} (mm)	734,3	for k_2	k_2	0,500
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,491	1,000	15,56
Displacement	1,395	0,685	1,000	23,20
Actual fibre content by mass		0,38	P_{BM}	23,20
Effective UFS (MPa)		142		

Расчет толщины и слоев обшивки днища

Go To BOTTOM zone

BOTTOM STIFFENER No.s 1-3 LAYUP SCHEDULE

Go To BOTTOM zone

Clear all entries

STIFFENER	B1	Zone	Aft 1/3 L

CORE/FORMER (INSIDE) DIMENSIONS

Crown width	13 mm		
Core material		Depth	800 mm
Ply1			
Base width	13 mm		

Ply core: Expect crown&base width = 12 mm

Attached plating		*Single*
Bond width per side	30 mm	

COVER LAMINATE (ONE SIDE ONLY)

Label	No. plies
CSM450(S)	*1*
WR600(S)	*2*
None	*0*
None	*0*

ADDITIONAL CROWN REINFORCEMENT

Label	No. plies
UD500(S)	*3*

ISO-12215-5 REQUIREMENT

Criterion None	Required	Actual	CF	RESULT
Flexural strength (N.m)	6072	41543	6,84	PASSES
Shear strength (N)	21687	185121	8,54	PASSES
Stiffness (N.sq.m)	6376	5562958	872,48	PASSES
Buckle web t both sides	15,65	5,21	n/a	PASSES

STIFF B1

s (mm)	2180	L_u (mm)	1680	k_{cs}
c (mm)	0	x (m)	2,05	1,000
s_{min} (mm)	2180	for A_D	A_D (m^2)	3,662
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,250	0,685	11,84
Displacement	0,664	0,250	0,685	11,84
			P_{BM}	11,84

Clear all entries

STIFFENER	B2	Zone	Middle 1/3 L

CORE/FORMER (INSIDE) DIMENSIONS

Crown width	13 mm		
Core material		Depth	800 mm
Ply1			
Base width	13 mm		

Ply core: Expect crown&base width = 12 mm

Attached plating		*Single*
Bond width per side	30 mm	

COVER LAMINATE (ONE SIDE ONLY)

Label	No. plies
CSM450(S)	*1*
WR600(S)	*2*
None	*0*
None	*0*

ADDITIONAL CROWN REINFORCEMENT

Label	No. plies
UD500(S)	*3*

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Flexural strength (N.m)	5571	41543	7,46	PASSES
Shear strength (N)	19896	185121	9,30	PASSES
Stiffness (N.sq.m)	5850	5562958	951,01	PASSES
Buckle web t both sides	14,99	5,21	n/a	PASSES

STIFF B2

s (mm)	2000	L_u (mm)	1680	k_{cs}
c (mm)	0	x (m)	5,15	1,000
s_{min} (mm)	2000	for A_D	A_D (m^2)	3,360
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,250	0,963	11,84
Displacement	0,664	0,250	0,963	11,84
			P_{BM}	11,84

Clear all entries

STIFFENER	B3	Zone	Forward 1/3 L

CORE/FORMER (INSIDE) DIMENSIONS

Crown width	13 mm		
Core material		Depth	800 mm
Ply1			
Base width	13 mm		

Ply core: Expect crown&base width = 12 mm

Attached plating		*Single*
Bond width per side	30 mm	

COVER LAMINATE (ONE SIDE ONLY)

Label	No. plies
CSM450(S)	*1*
WR600(S)	*2*
None	*0*
None	*0*

ADDITIONAL CROWN REINFORCEMENT

Label	No. plies
UD500(S)	*3*

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Flexural strength (N.m)	4178	41543	9,94	PASSES
Shear strength (N)	14922	185121	12,41	PASSES
Stiffness (N.sq.m)	4387	5562958	1268,01	PASSES
Buckle web t both sides	12,98	5,21	n/a	PASSES

STIF B3

s (mm)	1500	L_u (mm)	1680	k_{cs}
c (mm)	0	x (m)	8,25	1,000
s_{min} (mm)	1500	for A_D	A_D (m^2)	2,520
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,261	1,000	11,84
Displacement	0,664	0,250	1,000	11,84
			P_{BM}	11,84

Расчет поперечного набора днища (переборок)

Go To BOTTOM zone

BOTTOM STIFFENER No.s 4-6 LAYUP SCHEDULE

Go To BOTTOM zone

Clear all entries

Stiffener	B4	Zone	Aft 1/3 L

CORE/FORMER (INSIDE) DIMENSIONS

Crown width	200 mm
Core material	Ply3
Depth	40 mm
Base width	200 mm

Ply core: Expect crown&base width = 19 mm

COVER LAMINATE (ONE SIDE ONLY)

Label	No. plies
CSM450(S)	1
WR600(S)	3
None	0
None	0

Attached plating	Single
Bond width per side	30 mm

ADDITIONAL CROWN REINFORCEMENT

Label	No. plies
UD500(S)	2

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Flexural strength (N.m)	1642	1756	1,07	PASSES
Shear strength (N)	4518	7544	1,67	PASSES
Stiffness (N.sq.m)	2237	11329	5,07	PASSES
Buckle web t both sides	1,77	6,76	n/a	PASSES

STIFF B4

s (mm)	350	L_u (mm)	2180	k_{cs}
c (mm)	0,00	x (m)	2,05	1,000
s_{min} (mm)	719,4	for A_D	A_D (m^2)	1,568
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,301	0,685	11,84
Displacement	0,564	0,250	0,685	11,84
			P_{BM}	11,84

Clear all entries

Stiffener	B5	Zone	Middle 1/3 L

CORE/FORMER (INSIDE) DIMENSIONS

Crown width	200 mm
Core material	Ply3
Depth	40 mm
Base width	200 mm

Ply core: Expect crown&base width = 19 mm

COVER LAMINATE (ONE SIDE ONLY)

Label	No. plies
CSM450(S)	1
WR600(S)	3
None	0
None	0

Attached plating	Single
Bond width per side	30 mm

ADDITIONAL CROWN REINFORCEMENT

Label	No. plies
UD500(S)	3

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Flexural strength (N.m)	1382	1756	1,27	PASSES
Shear strength (N)	4145	7544	1,82	PASSES
Stiffness (N.sq.m)	1727	11329	6,56	PASSES
Buckle web t both sides	1,69	6,76	n/a	PASSES

STIFF B5

s (mm)	350	L_u (mm)	2000	k_{cs}
c (mm)	0	x (m)	5,15	1,000
s_{min} (mm)	660	for A_D	A_D (m^2)	1,320
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,317	0,963	11,84
Displacement	0,600	0,250	0,963	11,84
			P_{BM}	11,84

Clear all entries

Stiffener	B6	Zone	Forward 1/3 L

CORE/FORMER (INSIDE) DIMENSIONS

Crown width	200 mm
Core material	Ply3
Depth	20 mm
Base width	200 mm

Ply core: Expect crown&base width = 19 mm

COVER LAMINATE (ONE SIDE ONLY)

Label	No. plies
CSM450(S)	1
WR600(S)	3
None	0
None	0

Attached plating	Single
Bond width per side	30 mm

ADDITIONAL CROWN REINFORCEMENT

Label	No. plies
UD500(S)	3

ISO-12215-5 REQUIREMENT

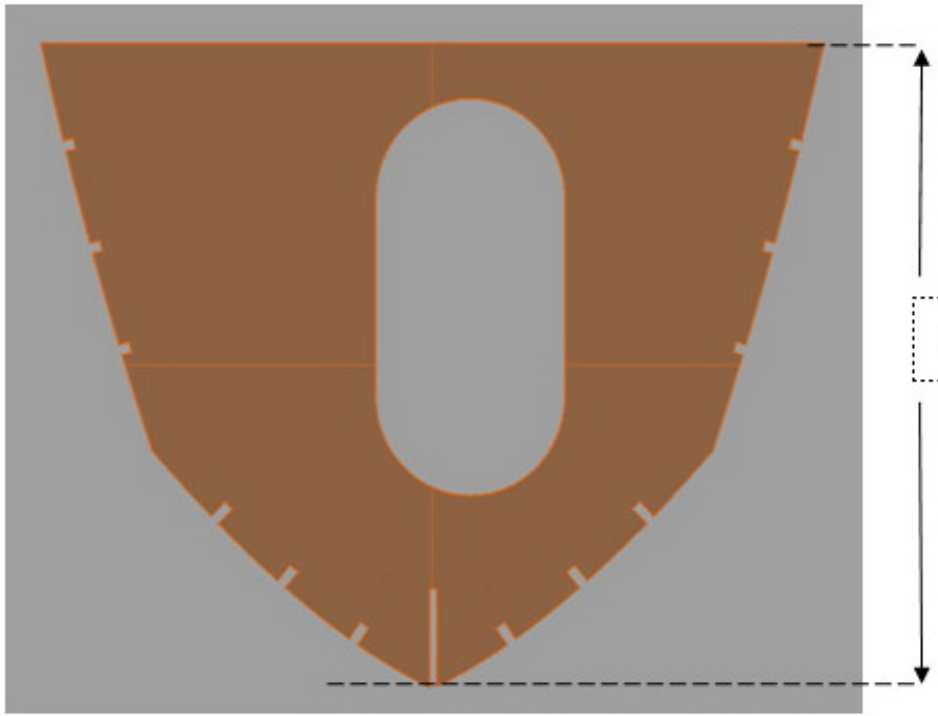
Criterion	Required	Actual	CF	RESULT
Flexural strength (N.m)	783	891	1,14	PASSES
Shear strength (N)	3131	3424	1,09	PASSES
Stiffness (N.sq.m)	734	3415	4,65	PASSES
Buckle web t both sides	1,09	6,76	n/a	PASSES

STIFF B6

s (mm)	350	L_u (mm)	1500	k_{cs}
c (mm)	0	x (m)	8,25	1,000
s_{min} (mm)	495	for A_D	A_D (m^2)	0,743
Mode	k_R	k_{AR}	k_L	P_{BM}
Planing	1,000	0,376	1,000	11,93
Displacement	0,700	0,264	1,000	11,84
			P_{BM}	11,93

Расчет продольного набора днища (стрингеров)

Structural Partition (non-WT) - See 11.8 of ISO-12215-5



0,800 m

Expected figure 0,8 m

Partition type	All plywood
Plywood thickness	12,70 mm

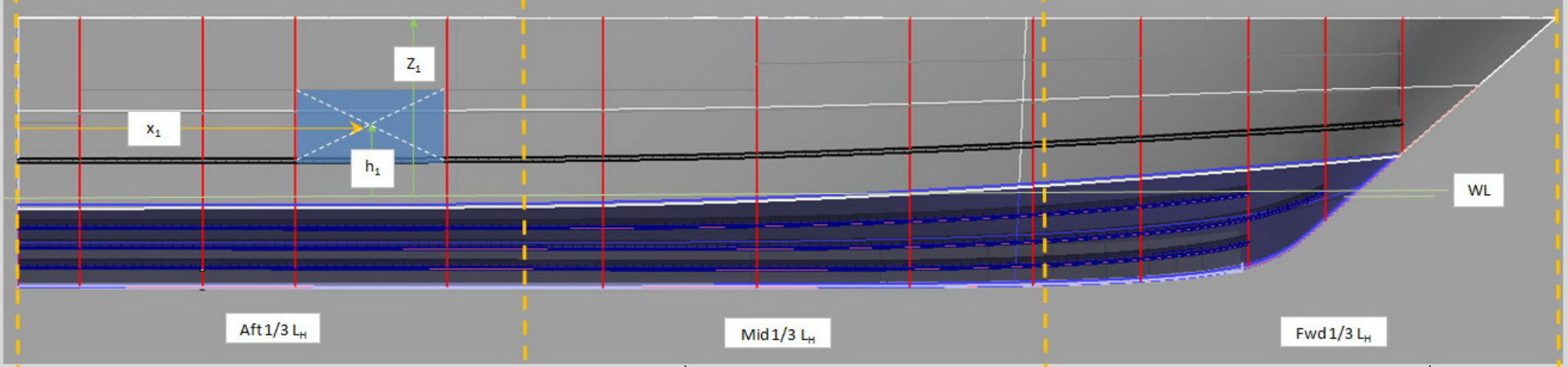
Criterion	Required	Actual	CF	RESULT
Strength (N)	131	672	5,14	PASSES
Stiffness (N.m)	59	683	11,66	PASSES

Technical notes:

1. Section 11.8.2 assumes a design stress of 25 MPa and E of 4000 MPa for plywood

2. Section 11.8.2.2 uses approximations for section modulus and second moment of area which are marginally conservative for modulus and more so for 'I' (the latter making some allowance for shear deflection of a cored partition).

Расчет сечения переборок



3,333 m fwd AE → 6,667 m fwd AE 10,000 m fwd AE

k_L = 0,501 at aft end of WL

Forward of a point 5,56 m forward of the aft end of the WL, kL = 1.0

Type	Single					
ITEM	b (mm)	L (mm)	c (mm)	x (m)	Z (m)	h (m)
Panel S1	350	2180	0	2,050	0,500	-0,075
Type	If panel lies above & below WL, % of panel below					57 %

Type	Single					
ITEM	b (mm)	L (mm)	c (mm)	x (m)	Z (m)	h (m)
Panel S2	350	2000	0	5,150	0,500	-0,075
Type	If panel lies above & below WL, % of panel below					57 %

Type	Single					
ITEM	b (mm)	L (mm)	c (mm)	x (m)	Z (m)	h (m)
Panel S3	350	1500	0	8,250	0,500	-0,075
Type	If panel lies above & below WL, % of panel below					57 %

ITEM	s (mm)	L_u (mm)	c (mm)	x(m)	Z (m)	h (m)
Stiff S1	2180	700	0	2,050	0,500	0,150
Stiff S4						

ITEM	s (mm)	L_u (mm)	c (mm)	x(m)	Z (m)	h (m)
Stiff S2	2000	700	0	5,150	0,500	0,150
Stiff S5						

ITEM	s (mm)	L_u (mm)	c (mm)	x(m)	Z (m)	h (m)
Stiff S3	1500	700	0	8,250	0,500	0,150
Stiff S6						

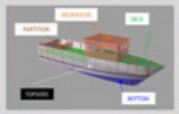
Stiff S1	If frame lies above & below WL, enter span % below	38 %
Stiff S4	If frame lies above & below WL, enter span % below	0 %

Stiff S2	If frame lies above & below WL, enter span % below	38 %
Stiff S5	If frame lies above & below WL, enter span % below	0 %

Stiff S3	If frame lies above & below WL, enter span % below	38 %
Stiff S6	If frame lies above & below WL, enter span % below	0 %

For instructions view 'Bottom zone'.
Go to 'Bottom zone' via 'Zone Central'.
For help on structure above and below WL
go to help on 'Principal dimensions' via 'zone central'

Clear all



Go To Zone Central

Go To Single Side Shell

Go To Cored Side Shell

Go To Side Stiffeners 1-3

Go To Side Stiffeners 4-6

Расчетные размеры элементов борта

PANEL	S1	Zone	Aft 1/3 L

Clear all plies

Ply No.	Label	No. plies	Glass	+ Resin	t (mm)
1 outer	CSM300(S)	1	300	1000	0,70
2	CSM450(S)	3	1350	4500	3,15
3	WR600(S)	3	1800	3750	2,33
4	None	0	0	0	0,00
5	None	0	0	0	0,00
6	None	0	0	0	0,00
7	None	0	0	0	0,00
8	None	0	0	0	0,00
9	None	0	0	0	0,00
10	None	0	0	0	0,00
11	None	0	0	0	0,00
12	None	0	0	0	0,00

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Glass to meet robustness	1683 gsm	3450 gsm	2,05	PASSES
Thickness to meet strength	3,79 mm	6,18 mm	1,63	PASSES

PANEL S1

b (mm)	350	L (mm)	2180	k_c, k_z below
c (mm)	0	x (m)	2,05	1,000
Z (m)	0,50	h (m)	-0,08	1,150
L_{max} (mm)	875	for A_D	A_D (m^2)	0,306
L_{max} (mm)	734,3	for k_2	k_2	0,500
Wet zone %	57	Displacement mode governs		
Mode	k_R	k_{AR}	k_L	P_{SM}
Planing	1,000	0,491	0,685	8,91
Displacement	1,395	0,685	0,685	16,58
			P_{SM}	16,58
Actual fibre content by mass	0,37			
Effective UFS (MPa)	141			

ISO PRESSURE CALCULATIONS		
Zone	Planing	Displment
P_{SM}	5,01	17,51
P_{BM}	11,84	15,88
Btm & Side	8,91	16,58

PANEL	S2	Zone	Middle 1/3 L

Clear all plies

Ply No.	Label	No. plies	Glass	+ Resin	t (mm)
1 outer	CSM300(S)	1	300	1000	0,70
2	CSM450(S)	3	1350	4500	3,15
3	WR600(S)	3	1800	3750	2,33
4	None	0	0	0	0,00
5	None	0	0	0	0,00
6	None	0	0	0	0,00
7	None	0	0	0	0,00
8	None	0	0	0	0,00
9	None	0	0	0	0,00
10	None	0	0	0	0,00
11	None	0	0	0	0,00
12	None	0	0	0	0,00

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Glass to meet robustness	1624 gsm	3450 gsm	2,12	PASSES
Thickness to meet strength	4,49 mm	6,18 mm	1,38	PASSES

PANEL S2

b (mm)	350	L (mm)	2000	k_c, k_z below
c (mm)	0	x (m)	5,15	1,000
Z (m)	0,50	h (m)	-0,08	1,150
L_{max} (mm)	875	for A_D	A_D (m^2)	0,306
L_{max} (mm)	734,3	for k_2	k_2	0,500
Wet zone %	57	Displacement mode governs		
Mode	k_R	k_{AR}	k_L	P_{SM}
Planing	1,000	0,491	0,963	10,69
Displacement	1,395	0,685	0,963	23,31
			P_{SM}	23,31
Actual fibre content by mass	0,37			
Effective UFS (MPa)	141			

ISO PRESSURE CALCULATIONS		
Zone	Planing	Displment
P_{SM}	5,01	24,62
P_{BM}	14,98	22,33
Btm & Side	10,69	23,31

PANEL	S3	Zone	Forward 1/3 L

Clear all plies

Ply No.	Label	No. plies	Glass	+ Resin	t (mm)
1 outer	CSM300(S)	1	300	1000	0,70
2	CSM450(S)	3	1350	4500	3,15
3	WR600(S)	3	1800	3750	2,33
4	None	0	0	0	0,00
5	None	0	0	0	0,00
6	None	0	0	0	0,00
7	None	0	0	0	0,00
8	None	0	0	0	0,00
9	None	0	0	0	0,00
10	None	0	0	0	0,00
11	None	0	0	0	0,00
12	None	0	0	0	0,00

ISO-12215-5 REQUIREMENT

Criterion	Required	Actual	CF	RESULT
Glass to meet robustness	1624 gsm	3450 gsm	2,12	PASSES
Thickness to meet strength	4,58 mm	6,18 mm	1,35	PASSES

PANEL S3

b (mm)	350	L (mm)	1500	k_c, k_z below
c (mm)	0	x (m)	8,25	1,000
Z (m)	0,50	h (m)	-0,08	1,150
L_{max} (mm)	875	for A_D	A_D (m^2)	0,306
L_{max} (mm)	734,3	for k_2	k_2	0,500
Wet zone %	57	Displacement mode governs		
Mode	k_R	k_{AR}	k_L	P_{SM}
Planing	1,000	0,491	1,000	11,02
Displacement	1,395	0,685	1,000	24,22
			P_{SM}	24,22
Actual fibre content by mass	0,37			
Effective UFS (MPa)	141			

ISO PRESSURE CALCULATIONS		
Zone	Planing	Displment
P_{SM}	5,01	25,58
P_{BM}	15,56	23,20
Btm & Side	11,02	24,22

Расчет толщины и слоев обшивки борта