

Sail Yacht “Wind M”

L = 9 m

Stability Calculation by ISO 12217-2
with program Maxsurf Stability v.22.03

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Rousse-Bulgaria, 02.07.2020

SPECIFIED CONDITION - SAIL YACHT 9M-23062020

Stability 22.03.00.121, build: 121
Model file: C:\Users\Razmik\Documents\My Works,07092014\Freeship plus\Бдòà Âèðàëëÿ-08042020\Sail Yacht 9m-22062020\Sail Yacht 9m-23062020 (Highest precision, 10 sections, Trimming off, Skin thickness not applied). Long. datum: AP; Vert. datum: Baseline.
Analysis tolerance - ideal(worst case): Disp.‰: 0,01000(0,100); Trim‰(LCG-TCG): 0,01000(0,100); Heel‰(LCG-TCG): 0,01000(0,100)

Free to Trim
Specific gravity = 1,025; (Density = 1,025 tonne/m^3)

Draft Amidships m	0,472
Displacement t	3,500
Heel deg	0,0
Draft at FP m	0,386
Draft at AP m	0,558
Draft at LCF m	0,482
Trim (+ve by stern) m	0,172
WL Length m	8,634
Beam max extents on WL m	2,288
Wetted Area m^2	13,875
Waterpl. Area m^2	12,078
Prismatic coeff. (Cp)	0,521
Block coeff. (Cb)	0,366
Max Sect. area coeff. (Cm)	0,730
Waterpl. area coeff. (Cwp)	0,611
LCB from zero pt. (+ve fwd) m	4,015
LCF from zero pt. (+ve fwd) m	3,997
KB m	0,312
KG m	0,047
BMt m	1,127
BML m	11,228
GMt m	1,393
GML m	11,494
KMt m	1,439
KML m	11,538
Immersion (TPc) tonne/cm	0,124
MTc tonne.m	0,045
RM at 1deg = GMt.Disp.sin(1) tonne.m	0,085
Max deck inclination deg	1,0943
Trim angle (+ve by stern) deg	1,0943

Key point	Type	Freeboard m
Margin Line (freeboard pos = 1 m)		0,691
Deck Edge (freeboard pos = 1 m)		0,767
DF point 1	Downflooding point	0,611
DF point 2	Downflooding point	0,611
DF point 3	Downflooding point	1,309
DF point 4	Downflooding point	1,309

Loadcase - Minimum Operating Condition

Damage Case - Intact

Free to Trim
Specific gravity = 1,025; (Density = 1,025 tonne/m^3)
Fluid analysis method: Use corrected VCG

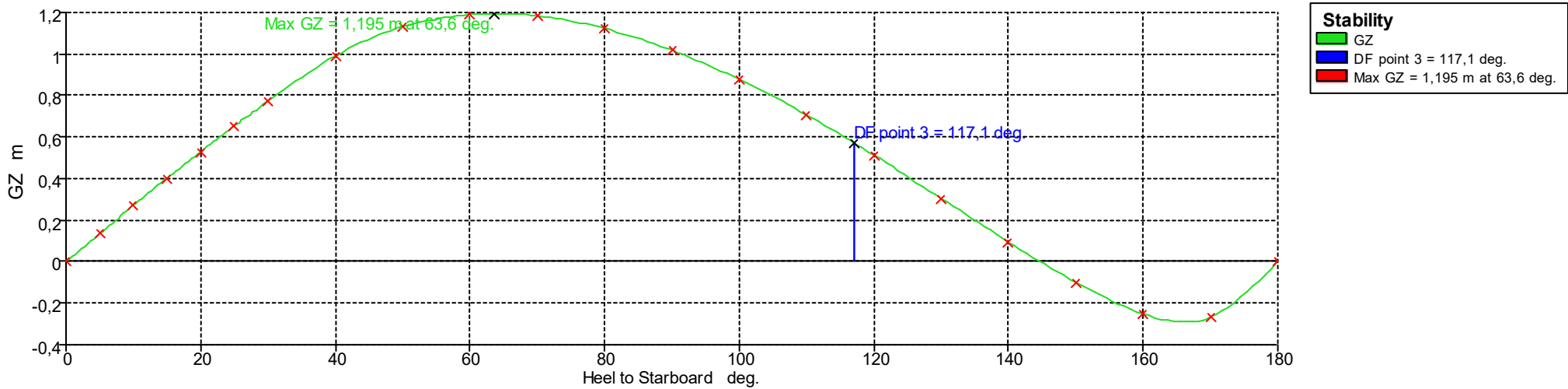
Item Name	Quantity	Unit Mass tonne	Total Mass tonne	Unit Volume m^3	Total Volume m^3	Long. Arm m	Trans. Arm m	Vert. Arm m	Total FSM tonne.m	FSM Type
Lightship	1	2,550	2,550			3,770	0,000	-0,140	0,000	User Specified
Passengers	2	0,075	0,150			2,800	0,000	1,600	0,000	User Specified
Total Loadcase			2,700	0,000	0,000	3,716	0,000	-0,043	0,000	
FS correction								0,000		
VCG fluid								-0,043		

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Stability 22.03.00.121, build: 121
Model file: C:\Users\Razmik\Documents\My Works,07092014\Freeship plus\İşler - 08042020\Sail Yacht 9m-22062020\Sail Yacht 9m-23062020 (Highest precision, 10 sections, Trimming off, Skin thickness not applied). Long. datum: AP; Vert. datum: Baseline.
Analysis tolerance - ideal(worst case): Disp. %: 0,01000(0,100); Trim%(LCG-TCG): 0,01000(0,100); Heel%(LCG-TCG): 0,01000(0,100)

Free to Trim
Specific gravity = 1,025; (Density = 1,025 tonne/m^3)

Draft Amidships m	0,391
Displacement t	2,700
Heel deg	0,0
Draft at FP m	0,200
Draft at AP m	0,583
Draft at LCF m	0,420
Trim (+ve by stern) m	0,383
WL Length m	8,716
Beam max extents on WL m	2,200
Wetted Area m^2	12,276
Waterpl. Area m^2	11,023
Prismatic coeff. (Cp)	0,476
Block coeff. (Cb)	0,351
Max Sect. area coeff. (Cm)	0,737
Waterpl. area coeff. (Cwp)	0,575
LCB from zero pt. (+ve fwd) m	3,730
LCF from zero pt. (+ve fwd) m	3,825
KB m	0,279
KG m	-0,043
BMt m	1,240
BML m	11,954
GMt m	1,563
GML m	12,277
KMt m	1,518
KML m	12,223
Immersion (TPc) tonne/cm	0,113
MTc tonne.m	0,037
RM at 1deg = GMt.Disp.sin(1) tonne.m	0,074
Max deck inclination deg	2,4347
Trim angle (+ve by stern) deg	2,4347



Heel to Starboard deg	0,0	5,0	10,0	15,0	20,0	25,0	30,0	40,0	50,0	60,0	70,0	80,0	90,0	100,0	110,0	120,0	130,0	140,0	150,0	160,0	170,0	180,0
GZ m	0,000	0,136	0,270	0,402	0,530	0,654	0,773	0,991	1,131	1,190	1,184	1,122	1,017	0,878	0,707	0,512	0,305	0,095	-0,099	-0,250	-0,268	0,000
Area under GZ curve from zero heel m.deg	0,0000	0,3392	1,3540	3,0348	5,3666	8,3284	11,8970	20,7523	31,4422	43,1016	55,0185	66,5904	77,3205	86,8262	94,7792	100,8908	104,9825	106,9815	106,9399	105,1395	102,3463	100,8407
Displacement t	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700	2,700
Draft at FP m	0,200	0,200	0,197	0,193	0,188	0,180	0,168	0,123	0,004	-0,242	-0,769	-2,462	n/a	-4,449	-2,761	-2,208	-1,969	-1,859	-1,812	-1,786	-1,706	-1,583
Draft at AP m	0,583	0,577	0,559	0,528	0,482	0,418	0,334	0,089	-0,245	-0,740	-1,658	-4,276	n/a	-5,945	-3,304	-2,381	-1,868	-1,514	-1,242	-1,037	-0,963	-1,011
WL Length m	8,716	8,708	8,730	8,743	8,743	8,539	8,003	7,477	7,239	7,044	7,035	7,315	7,571	7,765	7,911	8,030	8,081	8,048	7,897	7,591	7,177	6,784
Beam max extents on WL m	2,200	2,200	2,198	2,193	2,186	2,179	2,177	2,080	1,779	1,559	1,397	1,393	1,412	1,450	1,444	1,526	1,652	1,799	1,970	2,354	2,693	3,105
Wetted Area m^2	12,276	12,273	12,264	12,247	12,225	12,205	12,205	12,283	12,265	12,111	12,163	12,141	12,139	12,179	12,337	12,590	12,891	13,065	13,112	13,437	14,713	16,877
Waterpl. Area m^2	11,023	11,020	11,011	10,993	10,972	10,957	10,968	10,610	9,428	8,295	7,694	7,280	7,039	6,979	6,596	6,620	6,645	6,800	7,045	7,613	9,387	12,348
Prismatic coeff. (Cp)	0,476	0,477	0,476	0,475	0,475	0,486	0,517	0,554	0,570	0,594	0,607	0,598	0,570	0,543	0,531	0,536	0,508	0,472	0,437	0,411	0,414	0,434
Block coeff. (Cb)	0,351	0,354	0,363	0,381	0,412	0,474	0,603	1,595	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
LCB from zero pt. (+ve fwd) m	3,730	3,730	3,728	3,726	3,723	3,720	3,718	3,716	3,720	3,728	3,738	3,745	3,750	3,750	3,743	3,730	3,705	3,671	3,631	3,598	3,597	3,625
LCF from zero pt. (+ve fwd) m	3,825	3,827	3,831	3,839	3,848	3,858	3,866	3,931	4,035	4,060	4,129	4,131	4,130	4,131	4,118	4,156	4,239	4,260	4,234	4,128	3,787	3,830
Max deck inclination deg	2,4347	5,5408	10,2511	15,1370	20,0740	25,0354	30,0126	40,0003	50,0076	60,0127	70,0119	80,0062	90,0000	99,9958	109,9956	119,9985	129,9988	139,9706	149,8515	159,5257	168,9814	176,3637
Trim angle (+ve by stern) deg	2,4347	2,3998	2,3015	2,1278	1,8707	1,5172	1,0536	-0,2168	-1,5801	-3,1691	-5,6384	-11,3936	n/a	-9,4407	-3,4498	-1,1013	0,6391	2,1944	3,6228	4,7600	4,7221	3,6363

Code	Criteria	Value	Units	Actual	Status	Margin %
Copy of ISO 12217-2:2002(E)	Copy of 6.2.3 Downflooding angle	40,0	deg	117,1	Pass	+192,75
Copy of ISO 12217-2:2002(E)	Copy of 6.3 Angle of vanishing stability	124,6	deg	144,7	Pass	+16,16
Copy of ISO 12217-2:2002(E)	Copy of 6.4 STIX	32,0	See ISO 12217-2	37,2	Pass	+16,36

Key point	Type	Immersion angle deg	Emergence angle deg
Margin Line (immersion pos = 2 m)		32,5	n/a
Deck Edge (immersion pos = 2 m)		35,3	n/a
DF point 1	Downflooding point	Not immersed in positive range	0
DF point 2	Downflooding point	Not immersed in positive range	0
DF point 3	Downflooding point	117,1	0
DF point 4	Downflooding point	144,6	0

KEY POINTS

Name	Long. Pos. m	Offset m	Height m	Type	Linked to	Flood from	Intact (use for intact case)	Damage (use for final damage cases)	Int'md. (use for intermediate damage cases)	Flow into Tank when immersed
DF point 1	3,270	0,230	1,107	Downflooding point	None	Sea	1	1	1	0
DF point 2	3,270	-0,230	1,107	Downflooding point	None	Sea	1	1	1	0
DF point 3	3,442	0,350	1,802	Downflooding point	None	Sea	1	1	1	0
DF point 4	3,442	-0,350	1,802	Downflooding point	None	Sea	1	1	1	0

CRITERIA: (IF ANY)

Code	Criteria	Value	Units	Actual	Status	Margin %
Copy of ISO 12217-2:2002(E)	Copy of 6.2.2 Downflooding height at equilibrium				Pass	
	the min. freeboard of the	DownfloodingPoints				
	shall be greater than (>)	0,529	m	0.663	Pass	
Copy of ISO 12217-2:2002(E)	Copy of 6.2.3 Downflooding angle				Pass	
	shall be greater than (>)	40,0	deg	117,1	Pass	+192,75
Copy of ISO 12217-2:2002(E)	Copy of 6.3 Angle of vanishing stability				Pass	
	shall be greater than (>)	124,6	deg	144,7	Pass	+16,16
Copy of ISO 12217-2:2002(E)	Copy of 6.4 STIX				Pass	
	delta	0	See ISO 12217-2			
	AS, sail area ISO 8666	57,094	m^2			
	height of centroid of AS	6,174	m			
	LH, Stability calculated	9,004	m			
	BH, Stability calculated	3,200	m			
	LWL, Stability calculated	8,716	m			
	BWL, Stability calculated	2,200	m			
	height of immersed profile area centroid, user spec.	-0,265	m			
	STIX value shall be greater than (>)	32,0	See ISO 12217-2	37,2	Pass	+16,36
	Intermediate values					
	m, mass of boat in current loading condition		tonne	2,700		
	height of waterline in current loading condition		m	0,391		
	phiD, actual downflooding angle		deg	117,1		
	PhiV, actual angle of vanishing stability		deg	144,7		

Code	Criteria	Value	Units	Actual	Status	Margin %
	AGZ, area under righting lever curve, from 0,0 to 117,1 deg.		m.deg	99,3208		
	GZ90, righting lever at 90 deg		m	1,017		
	GZD, righting lever at downflooding angle		m	0,570		
	FR		See ISO 12217-2	4,160		
	LBS, weighted average length		See ISO 12217-2	8,812		
	FL, length factor		See ISO 12217-2	0,957		
	FB, beam factor		See ISO 12217-2	2,441		
	VAW, steady apparent wind speed		m/s	n/a		
	FDS, dynamic stability factor	(2,094)	See ISO 12217-2	1,500		
	FIR, inversion recovery factor	(1,174)	See ISO 12217-2	1,174		
	FKR, knockdown recovery factor	(1,222)	See ISO 12217-2	1,222		
	FDL, displacement-length factor	(0,903)	See ISO 12217-2	0,903		
	FBD, beam-displacement factor	(0,793)	See ISO 12217-2	0,793		
	FWM, wind moment factor	(1,000)	See ISO 12217-2	1,000		
	FDF, downflooding factor	(1,301)	See ISO 12217-2	1,250		

