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ISO 12217-3:2017 NON-SAILING BOATS OF HULL LENGTH LESS THAN 6m

Manufacturer:	HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ
Signatory, Name:	
Signatory, Title:	
Phone:	
Email:	
WWW:	
CIN Model Year:	2023
Model Name:	YAT CAR

This calculation sheet is ONLY for non-sailing boats smaller than 6m; therefore worksheets regarding sailing boats are omitted!

This calculation sheet is provided by IMCI / IMCI(UK) "as is" and any express or implied warranties, including, but not limited to, the implied warranties of fitness for a particular purpose are disclaimed.

blue cells are derived values
yellow cells require data input

Please make sure to set your signature on the summary! (worksheet 15)
either digitally or print summary, sign and attach scan

- most worksheets have additional comments / remarks / other calculations beside the printout area; please take into account.

- For boats with quick-draining cockpit the cockpit calculation according to ISO 11812 shall be enclosed to the documentation.

- Please attach other detailed information as appropriate, e.g. photos, sketches etc. for sill height, openings, companion way doors, location of flooding points, practical tests etc.

ISO 12217-3:2017 NON-SAILING BOATS OF HULL LENGTH LESS THAN 6m
CALCULATION WORKSHEET No. 1

ISO 12217-3:2017 non-sailing boats en210531

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Design Category intended:	**D**		**Monohull / multihull:**	**Monohull**	**Propul. type**	**OB**
Item			**Symbol**	**Unit**	**Value**	**Ref.**
Length of hull as in ISO 8666			L_H	m	4.60	4. Table 1
Length of waterline in loaded arrival condition			L_{wl}	m	4.20	4. Table 1
Empty Craft condition mass			m_{EC}	kg	610.0	3.3.1
standard equipment (incl. OB engine(s))				kg	130.0	3.4.10
water ballast in tanks which are notified in the owner's manual to be filled when the boat is afloat				kg		3.3.2
Light craft condition mass			m_{LC}	kg	740.0	3.3.2
Mass of:						
Desired crew limit			CL	----	4	3.4.2
Mass of:						
desired crew limit at 75 kg each				kg	300.0	
provisions + personal effects				kg	250.0	3.3.3
drinking water				kg	23.8	3.3.3
fuel				kg	9.5	3.3.3
lubricating and hydraulic oils				kg	0.0	3.3.3
black water				kg	23.8	3.3.3
grey water				kg	0.0	3.3.3
water ballast				kg	0.0	3.3.3
any other fluids carried aboard (e.g. bait tanks)				kg	0.0	3.3.3
stores, spare gear and cargo (if any)				kg		3.3.3
optional equipment and fittings not included in basic outfit				kg		3.3.3
inflatable life raft(s)				kg		3.3.3
other small boats carried aboard				kg		3.3.3
margin for future additions				kg		3.3.3
Maximum load = sum of above masses			m_L	kg	607.0	3.3.3
Maximum Load condition mass			m_{LDC}	kg	1347.0	3.3.4
mass to be removed for loaded arrival condition				kg	50.0	3.3.5
Loaded Arrival condition mass			m_{LA}	kg	1297.0	3.3.5
Maximum recommended load for builder's plate				kg	610.0	ISO 14945
Is boat sail or non-sail?			**Symbol**	**Unit**	**Value**	**Ref.**
nominal sail area			A_S	m^2	0.0	3.4.8
sail area / displacement ratio = A_S / $(m_{LDC})^{2/3}$				-----	0.0000	3.1.2
CLASSIFIED AS [non-sail if AS / (mLDC)2/3 < 0.07]			SAIL/NON-SAIL ?		**NON-SAIL**	3.1.2

If NON_SAIL, GO TO WORKSHEET No.2 If SAIL, use ISO 12217-3 sailing boats smaller than 6m

NB: If boat is sailing but is also equipped for use as a non-sailing boat, **both** must be examined

ISO 12217-3:2017 CALCULATION WORKSHEET No.2 NON-SAIL TESTS TO BE APPLIED

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Question	Answer	Ref.
Is boat fully enclosed? (see definition in ref.) YES/NO?	Yes	3.1.5
Is boat partially protected? (see definition in ref.) YES/NO?	Yes	3.1.6

Item	Symbol	Unit	Value	Ref.
Lenght of hull	L_H	m	4.60	4. Table 1
Beam of hull	B_H	m	2.25	4. Table 1
Beam of waterline	B_{wl}	m	2.25	4. Table 1
Freeboard amidships	F_M	m	0.40	4. Table 1

Choose any ONE of the following options and use all the worksheets indicated for that option.

Option	1[a]	2	3[a]	4	5	6[a]
Applicable to	L_H < 6,0 m			4,8 m ≤ L_H < 6,0 m		
Design categories possible	C and D	C and D	D	C and D	D only	C and D
Applicable to engine powers of	Any amount	Any amount	≤ 3 kW	Any amount	Any amount	Any amount
Applicable to the following types of engine installation	Any	Any	Any	Any	Any	Inboard engines only
Decking or covering	All boats except 'fully enclosed' [b]	'Fully enclosed' [c]	All boats except 'fully enclosed' [b]	'Partially protected' [d]	All boats except 'fully enclosed' [b]	All boats except 'fully enclosed' [b]
Downflooding openings	4	4	4	4	4	4
Downflooding height test	4[e] or 5[e]	4 or 5	4 or 5	4 or 5	4 or 5	4 or 5
Recess size		6[f]				
Offset load test	7	7		7	7	7
Heel due to wind	8[g]	8[g]	8[g]	8[g]	8[g]	8[g]
Flotation standard	Level					Basic
Flotation test	9					9 or 10
Flotation elements	annex D		annex D			annex D
Capsize recovery test			11			
Detection and removal of water	14	14	14	14	14	15
SUMMARY	15	15	15	15	15	15

a Boats using options 1, 3 and 6 are considered to be susceptible to swamping when used in their design category.
b That is, any boat that is not 'fully enclosed', thus including boats without any decking.
c This term is defined in 3.1.5.
d This term is defined in 3.1.6.
e The downflooding height test is not required to be conducted on the following boats:
- those which, when tested in accordance with normative annex C.4.3, have been shown to support, in addition to the mass required by C.2 and Table C.5, an additional equivalent dry mass (kg) of (75·CL + dry weight of stores and equipment included in the maximum total load), or
- those boats that do not take on water when heeled to 90° from the upright in the light craft condition.

f This test only applies to boats of design category C.
g The application of Worksheet 8 is only required for boats where $A_{LV} / (L_H B_H) \geq 0,5$.

Option selected	2

ISO 12217-3:2017 CALCULATION WORKSHEET No. 4 DOWNFLOODING

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Downflooding Openings:

Question	Answer	Ref.
Have all appropriate downflooding openings been identified?	Yes	3.2.1
Have potential downflooding openings within the boat been identified?	Yes	6.3.1.4
Do all closing appliances satisfy ISO 12216?	Yes	6.3.1.1
Hatches or opening type appliances are not fitted below minimum height above waterline?	Yes	6.3.1.2
Seacocks comply with requirements?	Yes	6.3.1.3
Categories possible: C or D if all are YES	**D**	6.3.1

Downflooding Height:

Downflooding height test required according to clause 6.3.2.1 ?	**required**

Requirement			Basic require-ment	Reduced value for small openings	Reduced value at outboard	Increased value at bow
Applicable to			all options	all options (only if figures are used)	options 1,3,5	options 1,3,5,6
ref.			6.3.2.2 a)	6.3.2.2 e)	6.3.2.2 c)	6.3.2.2 b)
obtained from Figs. 3 + 4 or annex A?			**fig 3 & 4**	= basic x 0.75	= basic x 0.80	= basic x 1.15
Maximum area of small openings ($50L_H^2$) (mm^2) =				1058	/////////	////////
Required downflooding height $h_{D(R)}$	Fig. 3/ann. A	Category C				
	Fig. 3/ann. A	Category D	**0.23**	**0.17**	**0.18**	**0.26**
Actual Downflooding Height h_D			**0.45**	**0.34**	**0.36**	**0.52**
Design Category possible			**D**	**D**		
Small openings according to 6.3.2.2e) exist				YES / NO	**Yes**	
Design Category possible on Downflooding Height = lowest of above						**D**

Downflooding Height: Outboard boats when starting:

Question	Answer	Ref.
Does person forward of engine weighs more than 75 kg?	Yes	6.3.3
Does mass of engine(s) fitted comply?	Yes	6.3.3
Is least height from waterline to flood point greater than 0,1 m?	Yes	6.3.3
NB: All boats fitted with externally mounted outboard engines must achieve YES to all the above.	**Pass**	6.3.1

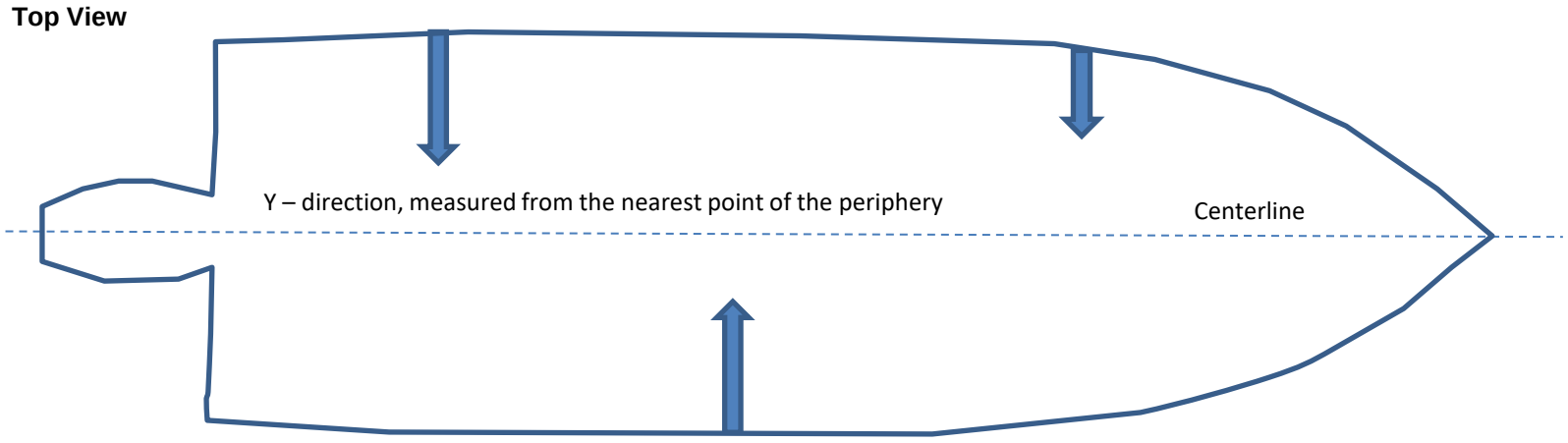
ISO 12217-3:2017 CALCULATION WORKSHEET No.4a DOWNFLOODING OPENINGS / CLOSING APPLIANCES

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

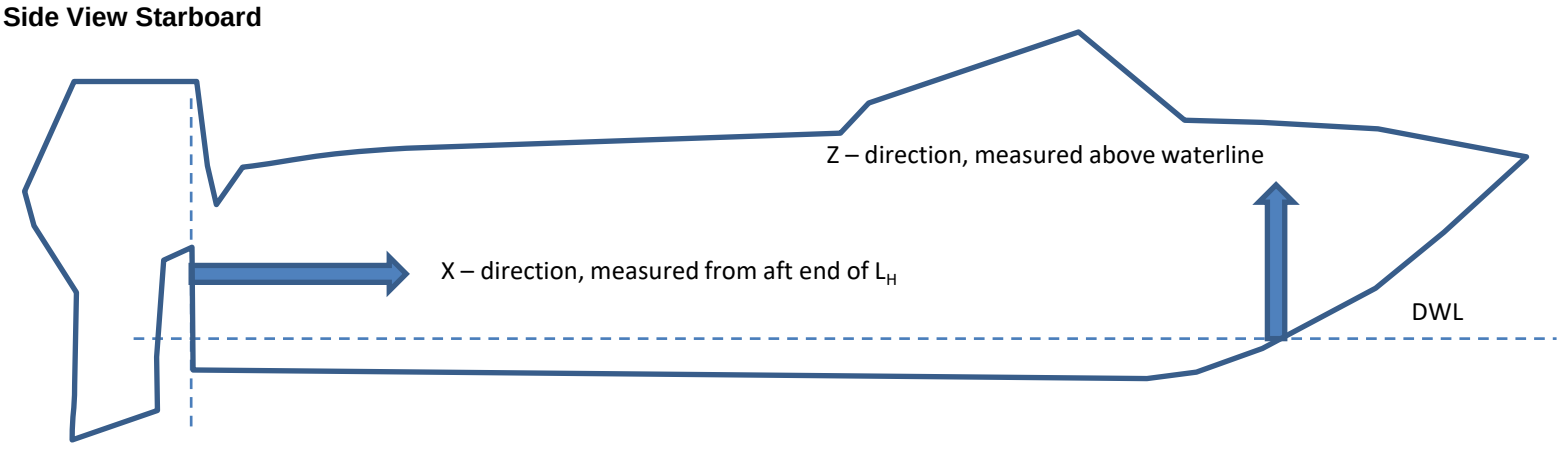
General overview downflooding openings and closing appliances

NOTE: All drawings are not blocked by a password, so please replace with own drawings if at hand.
NOTE: See X,Y, Z coordinates for worksheet 4b as illustrated below

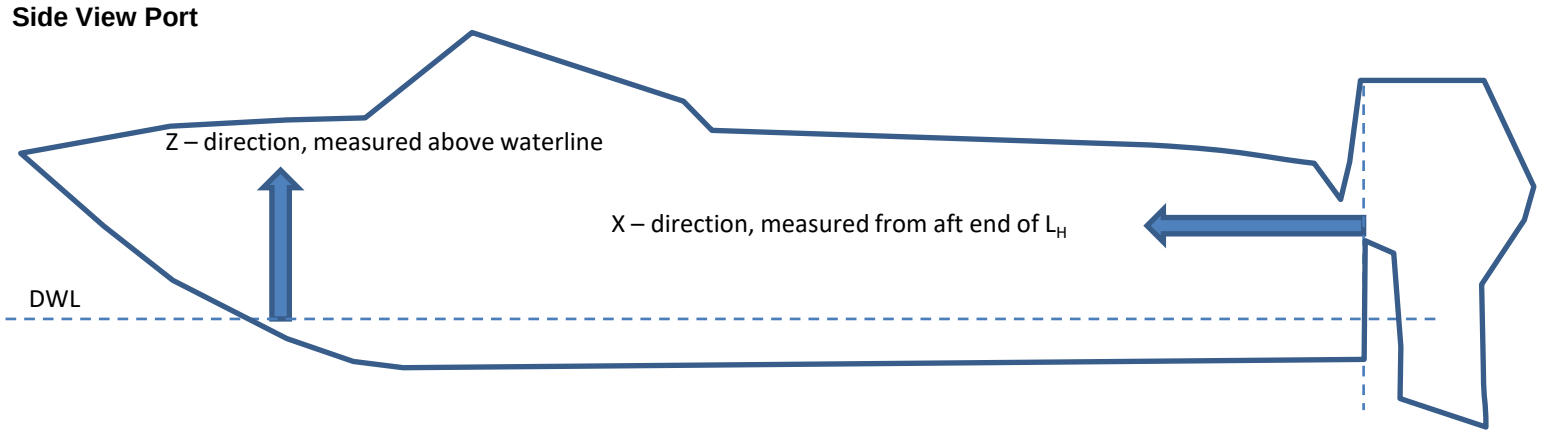
Top View



Side View Starboard



Side View Port



Please insert a short describtion and measurements of downflooding openings and closing appliances under the corresponding number on worksheet 4b

ISO 12217-3:2017 CALCULATION WORKSHEET No.4b DOWNFLOODING OPENINGS

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

General overview downflooding openings and closing appliances

NOTE: Please submit for every pre-fabricated closing appliance a declaration of conformity (DoC) of the product.
Please submit for every non pre-fabricated closing appliance a calculation acc. to ISO 12216 (see IMCI template).
For both a watertightness test must be done!

Description of the downflooding opening / closing appliance	Nr.	X[(a)] [m]	Y [m]	Z (=h_D) [m]	opening type[(b)]
Aft Door	*1*	0.25	0.00	0.60	non pre-fabricated closing appliances
FWD Door	*2*	4.00	0.00	0.60	non pre-fabricated closing appliances
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	15				
	16				
	17				
	18				
	19				
	20				
	21				
	22				

(a) Please be aware that X is measured from the aft end of $L_{H.}$
In Annex A calculations x_D is measured from the bow or stern, whichever is nearest

(b) opening typs are: normal downflooding openings without any opening appliances; pre-fabricated opening appliances; non-pre-fabricated opening appliances and other devices

ISO 12217-3:2017 CALCULATION WORKSHEET No.5 DOWNFLOODING HEIGHT

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Calculation using normative annex A assuming use of option 2

Item	Symbol	Unit	Opening 1	Opening 2	Opening 3	Opening 4
Position of openings						
Least longitudinal distance from bow/stern	x	m	0			
Least travers distance from gunwale	y	m	0			
F_1 = greater of(1 - x/L_H) or (1 - y/B_H)	F_1	----	1.00	1.00	1.00	1.00
Size of openings:						
Combined area of openings to top of any down-flooding opening	a	mm^2	0			
Longitudinal distance of opening from tip of bow	x'_D	m	0			
Limiting value of a = $(30L_H)^2$		mm^2	19044	19044	19044	19044
If $a \geq (30L_H)^2$, F_2 = 1,0 If $a < (30L_H)^2$, $F_2 = 1 + \frac{x'_D}{L_H}\left(\frac{\sqrt{a}}{75\ L_H} - 0,4\right)$	F_2	----	1.00	1.00	1.00	1.00
Size of recesses:						
Volume of recesses which are not self-draining in accordance with ISO 11812	V_R	m^3	0			
Is opening not a recess? Is cockpit quickdraining? Is cockpit not quickdraining?			opening not a recess			
$k = V_R/(L_H B_H F_M)$	k	----	0	0	0	0
If opening is not a recess, $F_3 = 1$ If recess is quickdraining, $F_3 = 0.7$ If recess is not quick draining, $F_3 = (0.7 + k^{0.5})$; max. 1,2	F_3	----	1.00	1.20	1.20	1.20
Displacement:						
Loaded displacement volume (see 3.5.2, EN ISO 8666)	V_D	m^3	1.31			
B = B_H for monohulls, B_{WL} for multihulls	B	m	2.25			
$F_4 = [(10\ V_D)/(L_H\ B^2)]^{1/3}$	F_4	----	0.83			
Flotation:						
For boats using option 1 or 3 F5 = 0,8 For boats using option 4 F5 = 1,25 For boats using option 6 F5 = 0,9 All other boats F5 = 1	F_5	----	1			
Required calculation height: = $F_1F_2F_3F_4F_5L_H/15$	$h_{D(R)}$	m	0.25	0.30	0.30	0.30
Required downfooding height with limits applied (see annex A, Table A.1) — Category C	$h_{D(R)}$	m				
Required downfooding height with limits applied (see annex A, Table A.1) — Category D	$h_{D(R)}$	m	0.2	0.2	0.2	0.2
Measured Downflooding Height:	h_D	m	0.45			
Design Category possible:			**D**			
Lowest of above =						**D**

ISO 12217-3:2017 CALCULATION WORKSHEET No. 6 recess size

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

NB: This sheet is to be completed for the Loaded Arrival Condition. **calculation not applicable**

Please submit multiple copies of this page if applicable

	Recess	1	Ref.

Further exemptions according to 6.4.1

Please insert minimum freeboard to the recess coaming. Is minimum freeboard > LH / 10?		m		6.4.1
Angle of vanishing stability > 90° ?		YES/NO		6.4.1a)
Over at least 35% of the periphery is the depth of the recess less than 3% of the max. breadth of the recess (e.g. toe rails, low bulwarks)		YES/NO		6.4.1b)
At least 5% of the bulwark area positioned within the lowest 25% of the bulwark height drains overboard and the bulwark height is less than 12,5% of the maximum breadth of the recess *(attention, req. 1) and 2) below must get also a "Yes" to fullfill all requirements)*		YES/NO		6.4.1c)
Unobstructed drainage area from the recess on each side of the boat centreline		m²		6.4.1d)
Volume of the recess to the recess retention level		m³		6.4.1d)
Drainage area per side (m²) divided by recess volume (m³)				6.4.1d)
Height position of drainage area (lowest 25% / lowest 50% / full depth)				6.4.1d)
Requirements of 6.4.1.d) fullfilled? *(attention, req. 1) and 2) below must get also a "Yes")*		YES/NO		6.4.1d)
1) the lower edge of the drainage openings are not more than 10 mm above recess sole height for at least 70 % of the width of each opening?		YES/NO		6.4.1 c) & d)
2) If drainage area is provided by an open or partially open transom, are the openings extend to the outboard sides of the recess sole on both sides?		YES/NO		6.4.1 c) & d)

Is recess exempt from size limit? If "yes", no further calculation required.			6.4.1

Calculation methods:

Item	Symbol	Unit	Value Recess 1	Ref.
SIMPLIFIED METHOD: Use 1), 2) or 3) below.				
Average freeboard to loaded waterline at aft end of recess	F_A	m		6.4.2.1
Average freeboard to loaded waterline at sides of recess	F_S	m		6.4.2.1
Average freeboard to loaded waterline at forward end of recess	F_F	m		6.4.2.1
Waterline length at mLA	L_{WL}	m		
Waterline breadth at mLA (for multihulls insert max. beam waterline acc. to ISO 8666)	B_{WL}	m		
Maximum length of recess at the retention level (see 3.5.11)	l	m		6.4.2.4
Maximum breadth of recess at the retention level (see 3.5.11)	b	m		6.4.2.4

- In case of assymetric recesses (e.g. bowrider, centercockpits,….), please insert length and breadth of each area below; this allows a more exact calculation using simplified method 1) or 2)

	max. length	*max. breadth*	*Unit*	*% loss GMT (option 1)*	*% loss GMT (option 2)*	Ref.
Maximum length and breadth of recess part A			m			6.4.2.2/3
Maximum length and breadth of recess part B			m			6.4.2.2/3
Maximum length and breadth of recess part C			m			6.4.2.2/3
Maximum length and breadth of recess part D			m			6.4.2.2/3
Maximum length and breadth of recess part E			m			6.4.2.2/3
Maximum length and breadth of recess part F			m			6.4.2.2/3
Maximum length and breadth of recess part G			m			6.4.2.2/3
Maximum length and breadth of recess part H			m			6.4.2.2/3
Maximum length and breadth of recess part I			m			6.4.2.2/3

to be continued on page 2

Symbol	Unit	Value	Ref.

ISO 12217-3:2017 CALCULATION WORKSHEET No. 6 recess size

	Symbol	Unit	Recess 1	Ref.
Average freeboard to recess periphery $= (F_A + 2F_S + F_F) / 4$	F_R	m	0	6.4.2.1
Category C permitted percentage loss in metacentric height $(GM_T) = 1\,200\, F_R / L_H$			n.a.	6.4.2.1

SIMPLIFIED METHOD: Use 1), 2) or 3) below.			Recess 1	
1) Loss of GM_T used?				6.4.2.1
Second moment of area of free-surface of recess	SMA_{RECESS}	m^4	0	6.4.2.2
Metacentric height of boat at m_{LA}	GM_T	m		6.4.2.2
Calculated percentage loss in metacentric height	$(GM_T) = \frac{102\ 500 \times SMA_{RECESS}}{m_{LA} \times GM_T}$			6.4.2.2
2) Second moment of areas used?				6.4.2.1
Second moment of area of free-surface of recess	SMA_{RECESS}	m^4	0	6.4.2.3
Second moment of area of waterplane of boat at m_{LA}	SMA_{WP}	m^4	0	6.4.2.3
Calculated percentage loss in metacentric height	$(GM_T) = \left(\frac{245 \times SMA_{RECESS}}{SMA_{WP}}\right)$			6.4.2.3
3) Recess dimensions used?				6.4.2.1*
Maximum length of recess at the retention level (see 3.5.11)	l	m	0	6.4.2.4
Maximum breadth of recess at the retention level (see 3.5.11)	b	m	0	6.4.2.4
Calculated percentage loss in metacentric height	$(GM_T) = 270\left(\frac{l \times b^3}{L_H \times B_H^3}\right)^{0.7}$		0	6.4.2.4

Requirement: from results above, applied design category possible?	**n.a.**	6.4.2.1

DIRECT CALCULATION METHOD used?				6.4.3
Percentage full of water = 60 – 240 F/L_H				** see below
Wind heeling moment for intended design category	M_W	N·m		** see below
Crew heeling moment at ϕ_{GZmax}		N·m		** see below
Maximum swamped righting moment up to least of ϕD, ϕV or 50°		N·m		** see below
Required margin of righting moment over heeling moment		N·m	n.a.	** see below
Actual margin of righting moment over heeling moment		N·m		** see below

Applied design category possible?	**n.a.**	

**** For non-sailing boats, the direct calculation method of ISO 12217-1:2017, 6.5.3 may be used.**

**** For sailing boats, the direct calculation method of ISO 12217-2:2017, 6.3.3 may be used.**

ISO 12217-3:2017 CALCULATION WORKSHEET - No. 7a OFFSET LOAD TEST

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Mass of people used for test

Name	Ident.	Mass (kg)
Person 1	A	150
Person 2	B	150
Person 3	C	150
Person 4	D	150
Person 5	E	
Person 6	F	
Person 7	G	

downflooding opening obvious to the crew? Yes

Offset Load Test

Name	Ident.	Mass (kg)
Person 8	H	
Person 9	I	
Person 10	J	
Person 11	K	
Person 12	L	
Person 13	M	
Person 14	N	

average mass per person: 150
number of persons permitted (through offset load test) 7

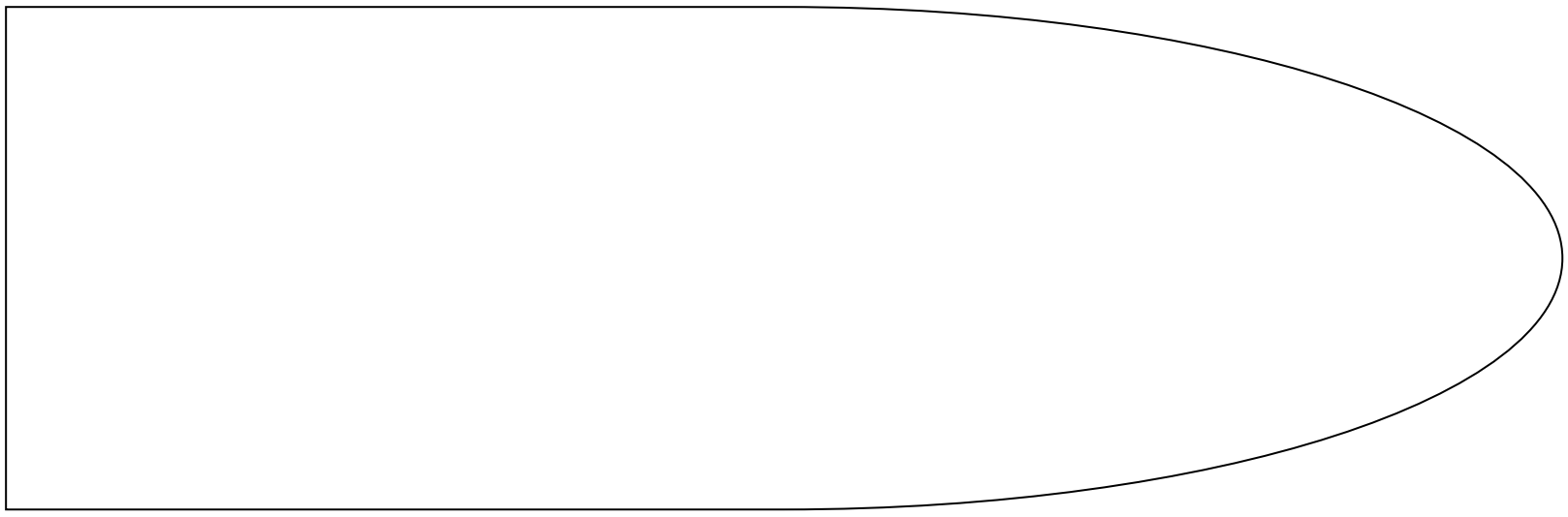
Crew Area
Areas included and access limitations (if any):

Area	P/S[1]	Incl?	Persons limit
Main Cockpit			
Aft Cockpit			
Fwd Cockpit			
Salon			
Cabins			
Side Decks			
Fore Deck			

Area	P/S	Incl?	Persons limit
Cuddy Top			
Coachroof Top			
Wheelhouse Top			
Fly Bridge			
Swim Platform			

[1] Note whether it is asymmetric by adding P (port ort S (starboard) to denote the larger side)

Sketch: Indicate possible seating locations along the length of the side to be tested using numbers, so that these may later be used to record the positions that people actually occupy. Locations should not be closer than 0.5 m between centers, and not less than 0.2 m from outboard edge unless on sidedecks less than 0.4 m wide.



Gunwale load test (Only if the mass in the light craft condition is less than 800kg)

Item	Answer	Ref.
Load of 85 kg applied to gunwale?	Yes	6.5.4.1
Does boat capsize or swamp? (If YES, must be restricted to design category D)	No	6.5.4.2
Warning sign required?	No	6.5.4.2

ISO 12217-3:2017 CALCULATION WORKSHEET - No. 7b OFFSET-LOAD TEST

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Stability Test - Full Procedure

Boat being tested for:		**stability**	**X**	**downflooding**	please mark

L_H (m)	Min. permitted freeboard margin (m) (see Table 4)	Max. permitted heel angle (°) $= 11{,}5 + \frac{(24 - LH)^3}{520}$	Intended crew limit (CL)	Intended design category	Mass Test weights per person (kg) (Cat D only) [1]	Max. Mass of test weights (kg) (= 98 x CL)
4.60	0.010	25.54	4	D	65.17	392

Does boat have a list?	No		If "YES" to which side?	
Is crew area asymetric?	No		If "YES" to which side?	
Is downflooding asymetric?	No		If "YES" to which side?	
Boat tested:	to Port			

[1] See clause 6.5.3.4

Test Data:

Mass ident.	Location		Mass (kg)	Total mass (kg)	Lever (m)	Moment (kg-m)	Heel angle (°) P/S	min. freeb'd (m)	
	area	fore & aft						fwd	aft
1	saloon		150	150	0.90	135.00	2.10	0.40	0.40
2	saloon		150	300	0.90	135.00	4.90	0.32	0.32
3	saloon		150	450	0.90	135.00	8.30	0.29	0.29
4	saloon		150	600	0.90	135.00	10.10	0.25	0.25
5				600		0.00			
6				600		0.00			
7				600		0.00			
8				600		0.00			
9				600		0.00			
10				600		0.00			
11				600		0.00			
12				600		0.00			
13				600		0.00			
14				600		0.00			
15				600		0.00			
16				600		0.00			
17				600		0.00			
18				600		0.00			
19				600		0.00			
20				600		0.00			
						∑	max. angle	min freeboard	
total:						**540.00**	**10.10**	**0.25**	**0.25**

Max. mass of people allowed per above:	**600**	**hence CL =**		**at**		**kg / person**	
Design category given:	**D**	**Gunwale Load Test:**		**PASS/FAIL**		**Pass**	
Safety Signs Required:	**Fig 5:**		**Fig 6:**		**Fig 7:**		
	Fig 8:		**Fig 9:**				

ISO 12217-3:2017 CALCULATION WORKSHEET No.7c Simplified procedure for OFFSET LOAD TEST

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

This method may only be applied by calculation; requirements must be fulfilled for both conditions LC1 and LC2

Preparation (curves of moments in Nm)

Question	Answer	ref.
Mass and the centre-of-gravity of the boat calculated for conditions LC1 and LC2?	**Yes**	**6.5.2.2**
Curves of righting moments calculated according to annex E of ISO 12217-1?	**Yes**	**6.5.2.3**
Crew heeling moment curve calculated with 961 CL (B_C/2 - 0,2) cos ϕ or where the crew area includes side decks less than 0,4m wide with 480 CL BC cos ϕ ?	**Yes**	**6.5.2.4**

Test data:

item	symbol	unit	LC1	LC2	ref.
Maximum transverse distance between the outboard extremities of any part of the crew area	B_C	m	1.8		**6.5.2.4 & 6.5.1.7**
Heel angle at the point of intersection between crew heeling moment curve and the curve of righting moment	ϕ_O	degrees	4.17	4.17	**6.5.2.5**
Maximum permitted heel angle	$\phi_{O(R)}$	degrees	**25.54**		**6.5.2.5**
Value of downflooding angle	ϕ_{DA}	degrees	44	47	**6.5.2.5**
Value of minimum freeboard margin at ϕ_O	h_F	m	0.1	0.12	
Minimum required freebord margin	$h_{F(R)}$	m	**0.01**		**6.5.2.5 table 4**
Max. righting moment up to ϕ_{DA}		Nm	4726.45081	4228.22855	
Crew heeling moment at ϕ_O		Nm	2684.24535	2684.24535	

Requirements:

Question		Answer		ref.
Is $\phi_O < \phi_{O(R)}$		**Yes**		**6.5.2.5**
Is $h_F > h_{F(R)}$		**Yes**		**6.5.2.5**
Is the max.righting moment up to ϕ_{DA} > crew heeling moment at ϕ_O?		**Yes**	**Yes**	**6.5.2.5**

Offset load test passed, if all questions above are answered with 'yes'	**Pass/Fail**	**Pass**		**6.5.2.7**

ISO 12217-3:2017 CALCULATION WORKSHEET No. 7d curve of righting moment LC1

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

insert curve of righting moment in 5° steps in one of following units:

N m ***kg m*** ***m***

OFFSET LOAD TEST

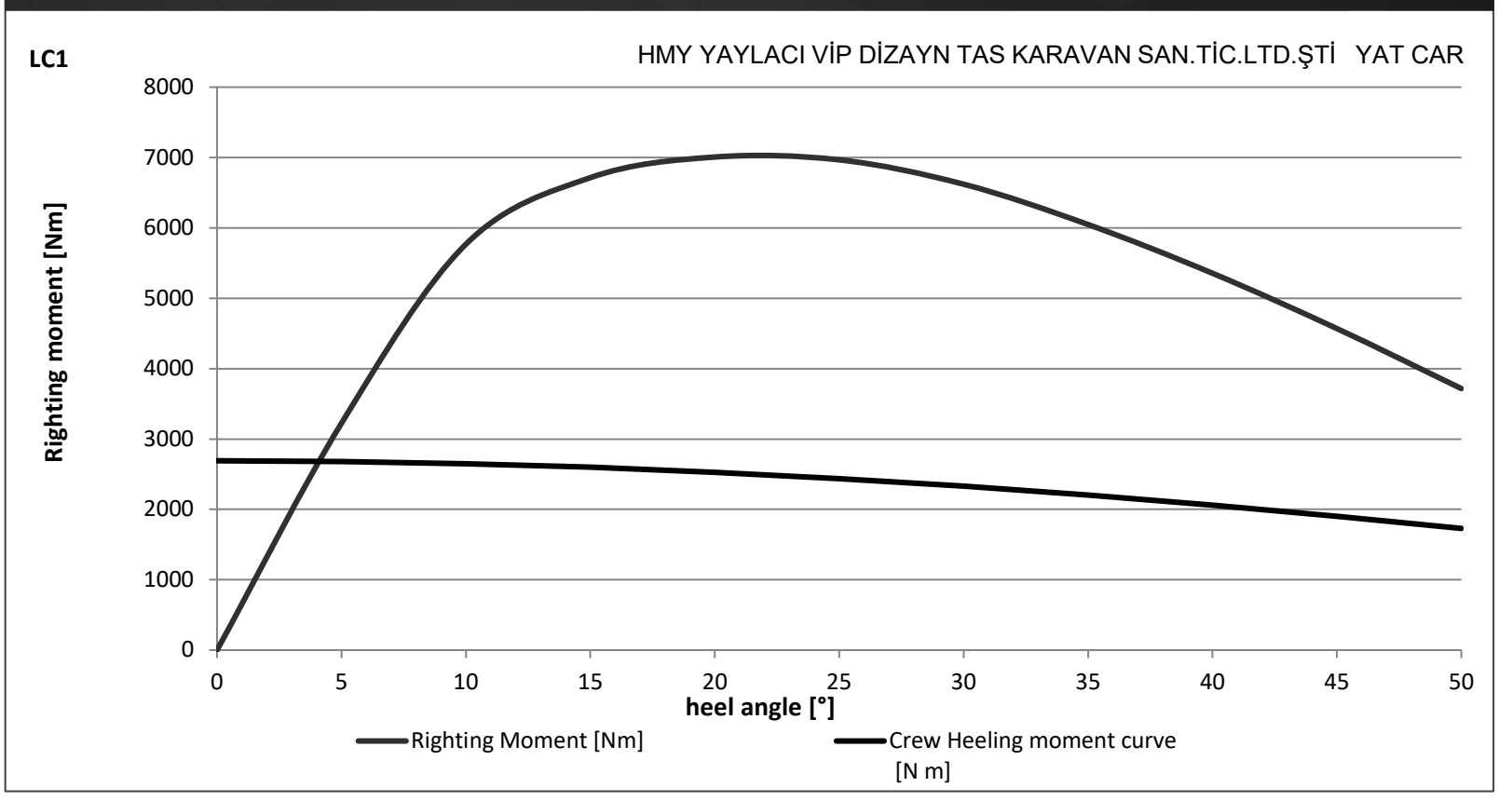
mLC1 1358.5

m	chosen unit
normal	crew heeling moment curve (either normal or if side decks smaller 0,4m)

heeling angle[°]	insert Righting Arm / Moment [Nm, kg m, m]	Righting Moment [Nm]	Righting Moment [kg m]	Arm Gz [m]	Crew Heeling moment curve [N m]
0	0	0	0	0.00	2690.80
5	0.242	3,224	329	0.24	2680.56
10	0.433	5,768	588	0.43	2649.92
15	0.504	6,714	685	0.50	2599.11
20	0.526	7,007	715	0.53	2528.52
25	0.523	6,967	710	0.52	2438.69
30	0.497	6,621	675	0.50	2330.30
35	0.454	6,048	617	0.45	2204.17
40	0.402	5,355	546	0.40	2061.27
45	0.343	4,569	466	0.34	1902.68
50	0.279	3,717	379	0.28	1729.61

point of intersection of righting moment curve and crew heeling moment curve

Φ_C
4.17



ISO 12217-3:2017 CALCULATION WORKSHEET No. 7e curve of righting moment LC2

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

insert curve of righting moment in 5° steps in one of following units:

N m ***kg m*** ***m***

OFFSET LOAD TEST

mLC2 1358.5

m	chosen unit
normal	crew heeling moment curve (either normal or if side decks smaller 0,4m)

heeling angle[°]	**insert Heeling Arm/Moment [Nm, kg m, m]**	**Heeling Moment [Nm]**	**Heeling Moment [kg m]**	**Arm Gz [m]**	**Crew Heeling moment curve [N m]**
0	0	0	0	0.00	2690.80
5	0.242	3,224	329	0.24	2680.56
10	0.433	5,768	588	0.43	2649.92
15	0.504	6,714	685	0.50	2599.11
20	0.526	7,007	715	0.53	2528.52
25	0.523	6,967	710	0.52	2438.69
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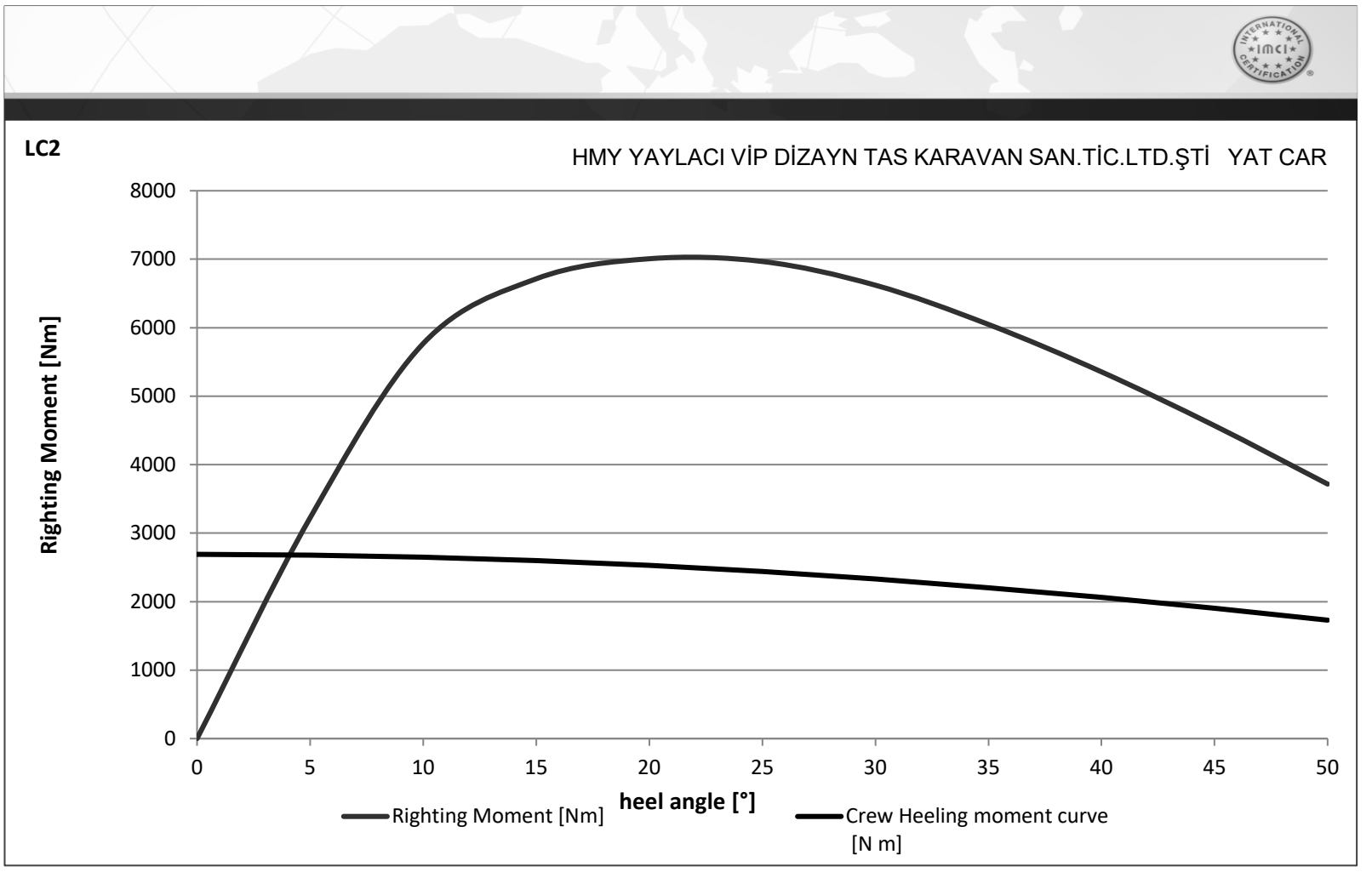
35	0.454	6,048	617	0.45	2204.17
40	0.402	5,355	546	0.40	2061.27
45	0.343	4,569	466	0.34	1902.68
50	0.279	3,717	379	0.28	1729.61

point of intersection of righting moment curve and crew heeling moment curve

Φ_C
4.17



ISO 12217-3:2017 CALCULATION WORKSHEET No.8 **HEEL DUE TO WIND ACTION**

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

NB: This sheet is to be completed for the Offset Load Test condition

Initial check: **Design Categories C and D only**

Item	Symbol	Unit	Value	Ref.
Windage area in offset load test condition	A_{LV}	m^2	6.60	3.4.12
Length of Hull	L_H	m	4.60	4. Table 1
Beam of hull	B_H	m	2.25	4. Table 1
Ratio $A_{LV}/(L_H B_H)$		-----	0.64	6.6.1
Is ratio $A_{LV}/(L_H B_H)$ equal to or greater than 0.5?			Yes	6.6.1
If answer is NO, no other assessment is required.				

Calculation of wind heeling moment:

Item	Symbol	Unit	Value	Ref.
Draught at the mid-point of L_{WL}	T_M	m	0.28	6.6.2
Lever between centroids of above and below water areas	h	m	0.68	6.6.2
Calculation wind speed	v_W	m/s	13	
Wind heeling moment $M_{W1} = 0.53\ A_{LV}\ h\ v_W^2$	M_W	Nm	402	6.6.2
Wind heeling moment $M_{W2} = 0.3\ A_{LV}\ (A_{LV}/L_{WL} + T_M)\ v_W^2$	M_W	Nm	620	6.6.2

Angle of heel due to wind:

Item	Symbol	Unit	m_{LA}	Ref.
FROM RIGHTING MOMENT CURVE: angle of heel due to wind	$ø_W$	degrees		6.6.3.a)
OR ALTERNATIVELY: wind heeling moment M_W divided by 9.806	M_W	kg.m	41	6.6.3.b)
Angle of heel due to wind when moment above applied	$ø_W$	degrees		6.6.3.b)
Maximum permitted angle of heel during offset load test (from worksheet 7b)	$ø_{O(R)}$	degrees	25.54	6.5.2.5
Downflooding angle	$ø_{DA}$	degrees	44	3.2.3
Maximum permitted angle of heel due to wind = lesser of $0.7ø_{O(R)}$ and $0.7ø_{DA}$		degrees	17.9	6.6.3.b)
Is angle of heel due to wind less than permitted value?			Pass	6.6.3
Design Category possible on wind heeling =			**D**	

ISO 12217-3:2017 CALCULATION WORKSHEET No. 14 DETECTION + REMOVAL OF WATER

HMY YAYLACI VİP DİZAYN TAS KARAVAN SAN.TİC.LTD.ŞTİ YAT CAR

Item	Response	Ref.
The internal arrangement facilitates the drainage of water to bilge suction point(s), to a location from which it can be bailed rapidly, or directly overboard?	Yes	6.10.1
Is boat provided with a means of removing water from the bilges in accordance with ISO 15083?	Yes	6.10.2
Table 2 option used for assessment:		6.10.3
Can water in boat be detected from helm position?	Yes	6.10.3
Methods used: direct visual inspection	No	6.10.3
transparent inspection panels	No	6.10.3
bilge alarms	Yes	6.10.3
indication of the operation of automatic bilge pumps	Yes	6.10.3
other means (specify):		6.10.3

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ISO 12217-3:2017 non-sailing en210531 — CALCULATION WORKSHEET No.15 — SUMMARY

Design Description:	**YAT CAR**				
Design Category intended:	**D**	**Crew Limit:**	**4**	**Date**	**09/07/2023**

Sheet	Item	Symbol	Unit	Value
	Length of hull: (as in ISO 8666)	L_H	m	**4.60**
	Length of waterline in loaded arrival condition	L_{WL}	m	**4.20**
1	Empty craft condition mass	m_{EC}	kg	**610**
	Maximum load	m_L	kg	**607**
	Maximum recommended load for builder's plate weight		kg	**610**
	Number of portable tanks included in max. recommended load for builder's plate weight?			**0**
	Light craft condition mass	m_{LC}	kg	**740**
	Maximum Loaded condition mass = $m_{LC} + m_{ML}$	m_{LDC}	kg	**1347**
	Is boat sail or non-sail?	SAIL/NON-SAIL		**NON-SAIL**

2	**Option selected:** **2**	**Unit**	**Required**	**Actual**		**Pass/Fail**
4	**Downflooding openings:**	Are all requirements met?		**Pass/Fail**		**Pass**
4 & 5	**Downflooding height:** Worksheet employed for basic height					
	basic requirement	m	0.23		**0.45**	**Pass**
	reduced height for small openings (only using figures)	m	0.17		**0.34**	**Pass**
	reduced height at outboard (options 1 ,3, 5 only)	m	0.18		**0.36**	
	increased height at bow (options 1,3, 5, 6 only)	m	n.a.		**0.52**	**n.a.**
4	**Outboard boats when starting**: Are all requirements met?			**Pass/Fail**		**Pass**
6	**Recess size:** (options 2 in cat C)					
	Simplified method: max reduction in GM_T	%	≤	n.a.		**n.a.**
7	**Offset load test:** (opt 1,2,4-6)					
	Testing for least stability: maximum heel angle	degrees	< 25.54		**10.10**	**Pass**
	Testing for least freeboard: heeled freeboard margin	m	> 0.01		**0.10**	**Pass**
	Maximum crew limit for stability			**4**		
	Maximum crew limit for freeboard			**4**		
7	**Gunwale load test:** *(only if mLC<800kg)* Does boat capsize or swamp?			**Pass/Fail**		**Pass**
8	**Heel due to wind:** Boats assessed in Offset load test condition					**Yes**
	heel angle due to wind	degrees	<		0.00	**Pass**
9	**Flotation test:** (options 1 and 6 only) All preparations completed?			Yes / No		**n.a.**
	*for Level Flotation assess items marked with **LF** , for Basic Flotation with **BF***					
	LF: Swamped stability: 5 min after swamping, does boat heel less than 45°?			Pass / Fail		**n.a.**
	LF & BF: Load test: 5 min after swamping, does boat float as required?			Pass / Fail		**n.a.**
	LF: One Person Test: 5min after swamping, does boat float so that it can be bailed?			Pass / Fail		**n.a.**
	LF & BF: Flotation elements: do all elements comply with all the requirements?			Pass / Fail		**n.a.**

to be continued on page 2

10	**Basic Flotation by calculation:** value of $m_{TEST}/V_B < 930$	Pass / Fail	**n.a.**
11	**Capsize Recovery Test:** (opt. 3 only) requirements met?	Pass / Fail	**n.a.**
	Design Category recommended by the builder		**n.a.**
14	**Detection & removal of water** (all options) Are all requirements met?	Yes / No	**Yes**

NB: Boat must pass all requirements applicable to selected option to be given intended Design Category.

Design Category given:	**D**	Assessed by:	

Documentation of downflooding opening / closing appliance (photo/drawing) attached? ☑

If applicable, cockpit calculation according to ISO 11812 attached ? ☐

If applicable, curve of righting moments in m_{MO} and m_{LA} attached ? ☑

Appropriate add. information attached (e.g. photos, drawings,…) ? ☐

Signature: _____