UL 310

Stabitlity calculaiton according to ISO 12217-3-2017 Small craft Stability and buoyancy assessment

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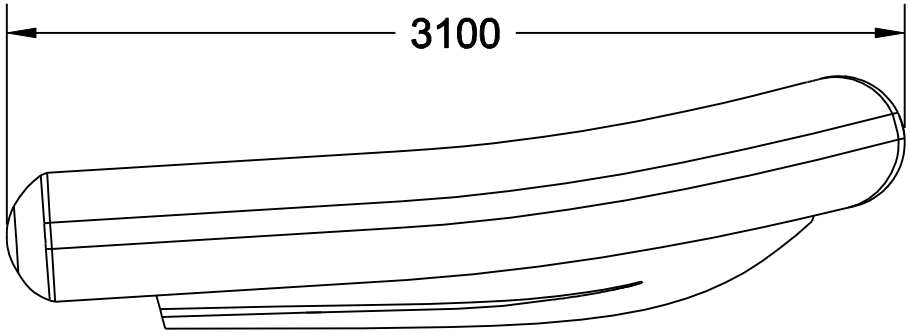
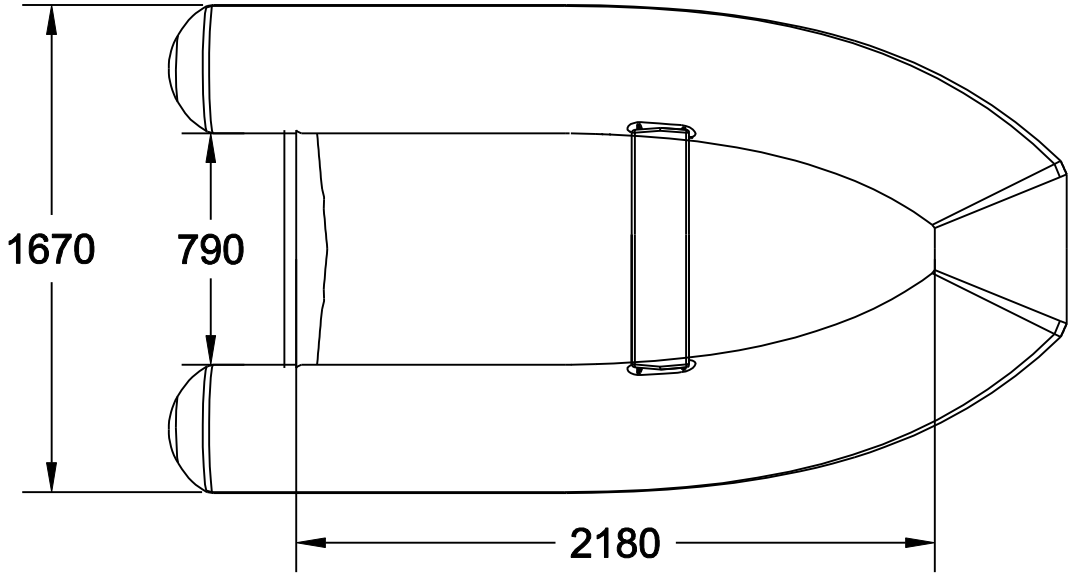
DND DAWN YACHT DESIGN 厦门道恩建筑设计有限公司			ITEM	PROJECT:	UL 310
			UL 310	Cat.	cat. C
	Signature			REV.	PAPER / SCALE
Design by			Stability calculations	R2	A4
Checked by					
Technic by				sheet	1 of 8
Approved by		DATE 2018.05			

CONTENT





SPECIFICATION

Loa	3100mm
Beam	1730mm
Inside Length	2180mm
Inside Width	790mm
Weight	49Kg
Max Pax	5
Max Load	585Kg
Max HP	15
Shaft	Short
Tube	44cm
Airtight Chambers	3

DND
DAWN YACHT DESIGN

	Signature		
Design by	S.C/L		
Checked by			
Technic by			
Approved by		DATE	2017.04.19

Drawing Title

General Arrangement

Project Name: UL310

Drawing NO ul31-01-01

	PAPER	SCALE
	A4	1:25
SHEET	1 of 1	

R2

UL310 Weight			
Weight of the boat	49	kg	
Weight of the motor	60	kg	
test load	251.25	kg	5 passengers
TOTAL test mass:	**360.25**	kg	

The total test load m_t, in kilograms, shall be calculated using the following formula:

$m_t = (0{,}67 \times n \times 75) + (0{,}67 \times 37{,}5)$ for a child, if applicable

n is the maximum permissible number of adults determined by the manufacturer (see 6.1), i.e. 75 kg for each permissible adult and 37,5 kg for a child, if applicable.

Maximum power

6.2 Maximum motor power

This is applicable to Type V boats only.

The motor maximum power, in kilowatts, shall be determined by the manufacturer and shall not exceed that calculated using the following formula:

$$P_{max} = 10 \times F(d) - 33$$

where

P_{max} is the maximum motor power rating, in kilowatts, determined in accordance with ISO 8665;

$F(d)$ is the dimensional factor = $l \times b$

where

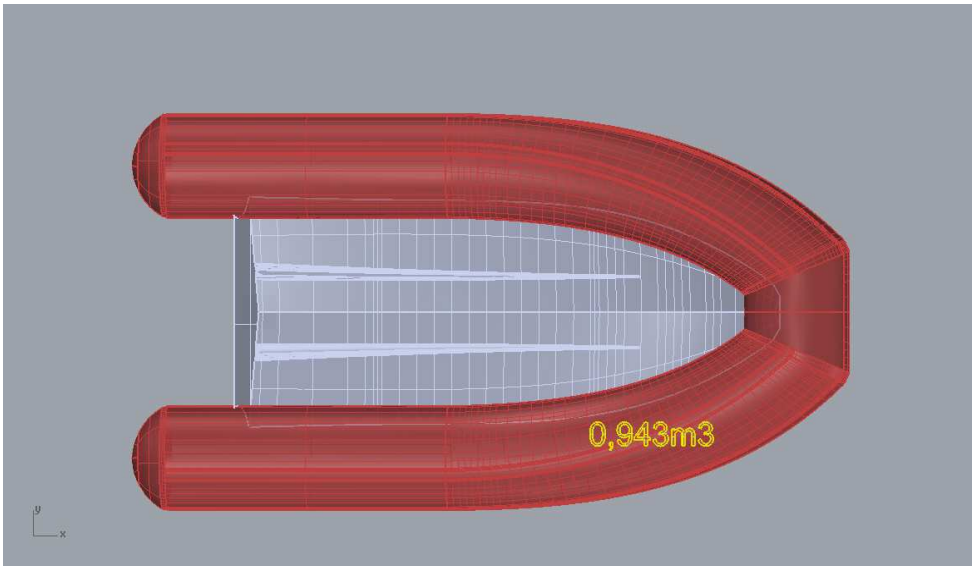
l is the overall length of the boat, in metres, from the bow to the extremity of the rear float (excluding handholds or other fittings);

b is the overall beam of the boat, in metres (excluding handholds or other fittings).

	l(m)	b(m)	Pmax Kw	Pmax HP
UL 310	3.1	1.730	20.63	**27.67**

UL310 Buoyancy

Inflatable Buoyancy tube: **0.943** m^3



Maximum Load

The maximum load which may be carried by the boat shall be determined by the manufacturer and shall not exceed that calculated using the following formula:

$$m = (0{,}75 \times V \times 1\,000) - m_b$$

where

m is the maximum load capacity, in kilograms (total mass on board including persons, equipment, motor(s) and fuel);

V is the volume, in cubic metres, of the buoyancy of the boat;

m_b is the total mass, in kilograms, of the boat as supplied by the manufacturer [inclusive of all permanently installed equipment supplied with the boat: hull, fittings and similar items but without motor(s) and fuel]. Permanently installed engine(s) and drive systems shall also be included.

Buoyancy volume (m3)	M (kg)	m (kg)	Max load reccomended by manufacturer:
m^3	kg	kg	kg
0.943	49	658.25	585

Maximum number of passengers

$$n = \frac{l_i}{0{,}38} - 1$$

where l_i is the inboard length, in metres.

Under no circumstances shall the value, n, expressed in body mass, exceed the maximum load capacity (see 6.4).

The value n shall always be rounded down to the nearest integer but, if the first decimal place is greater than 5, a child may be added, or if greater than 7, an adult may be added.

For calculations, the body mass of a child is defined as 37,5 kg and the body mass of an adult as 75 kg.

The data displayed on the builder's plate(s), see clause 8 e), shall include at least one adult and not more than one child.

	l_i	n		N. persons
UL 310	2.18	4.737		5

Hydrostatics Report

Length Overall, LOA	3.100	m
L_H=	3.100	m
Beam Overall, Boa	1.730	m
Waterline Length, Lwl	2.609	m
Waterline Beam, Bwl	1.572	m
Navigational Draft, T	0.263	m
Displacement Weight	360.250	kgf
Volume	0.351	m³
LCG	0.565	m
TCG	0.000	m
VCG	0.496	m
Fluid Density	1025.000	kg/m³
LCB	0.564	m
TCB	0.000	m
VCB	0.185	m
Wetted Surface Area	3.713	m²
Waterplane Area, Awp	3.041	m²
LCF	0.652	m
TCF	0.000	m
Weight To Immerse	31.196	kgf/cm
I(transverse)	0.654	m^4
I(longitudinal)	1.078	m^4
BMt	1.862	m
BMl	3.071	m
GMt	1.552	m
GMl	2.761	m
Mt	1.787	m
Ml	2.996	m
Heel Angle	0.000	deg
Trim Angle	-0.165	deg
Cb	0.309	
Cwp	0.702	
Cvp	0.440	
Cws	3.879	

Offset load test simulation

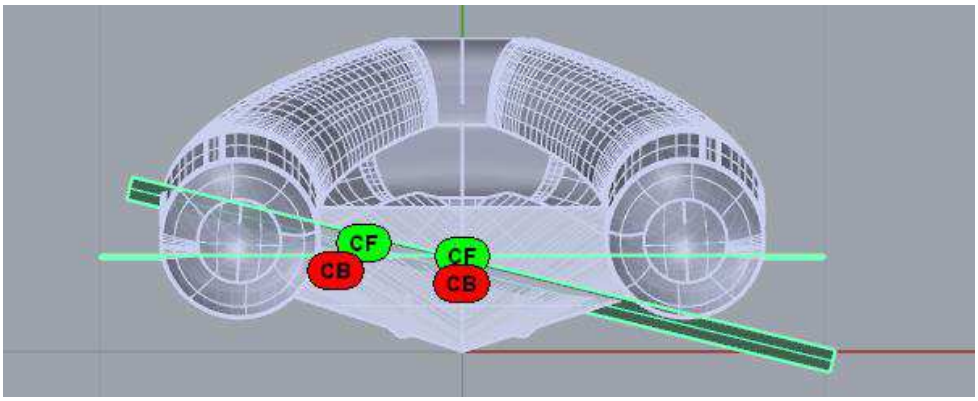
1.Test condition

boat	109	565	0	280	61585	0	30520
load	251.25	565	400	590	141956	100500	148238
	360.25	565.0	279.0	496.2	**203541**	**100500**	**178758**

1.General

Length Overall, LOA	3.100	m
L_H=	3.100	m
Beam Overall, Boa	1.730	m
Waterline Length, Lwl	2.525	m
Waterline Beam, Bwl	1.502	m
Navigational Draft, T	0.305	m
Displacement Weight	360.251	kgf
Volume	0.351	m^3
LCG	0.565	m
TCG	0.279	m
VCG	0.496	m
Fluid Density	1025.000	kg/m^3
LCB	0.560	m
TCB	0.346	m
VCB	0.222	m
Wetted Surface Area	3.162	m^2
Waterplane Area, Awp	2.284	m^2
LCF	0.765	m
TCF	0.273	m
Weight To Immerse	23.435	kgf/cm
I(transverse)	0.272	m^4
I(longitudinal)	0.821	m^4
BMt	0.775	m
BMl	2.339	m
GMt	0.492	m
GMl	2.056	m
Mt	0.683	m
Ml	2.246	m
Heel Angle	-13.772	deg
Trim Angle	-0.991	deg

2.Test



Water does not enter into the boat.