UL 240

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

By Xiamen DAWN DESIGN

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604B-588 Yuntong Center, No.95 Xiangyunyilu road, Xiamen area of

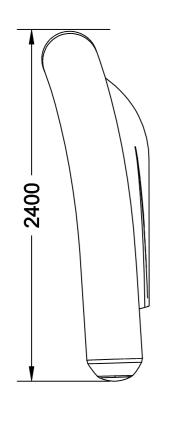
China(Fujian) Pilot Free Trade Zone

Owner: 王弘涛

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	Signature			REV.	PAPER	SCALE
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Approved by	DATE	2018.05				

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SPECIFICATION

2400mm	1510mm	1602mm	750mm	29Ka	າ	290Kg	4	Short	38cm	က
Loa	Beam	Inside Length	Inside Width	Weight	Max Pax	Max Load	Max HP	Shaft	Tube	Airtight Chambers

1510 750



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UL240 Weight					
Weight of the boat	29	kg			
Weight of the motor	40.9	kg			
test load	150.75	kg	3 passengers		
TOTAL test mass:	220.65	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

This is applicable to Type II boats only.

— For boats without a transom: $P_{\text{max}} = 0.8F(d)$

For boats with a transom: $P_{\text{max}} = 1,2F(d)$

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

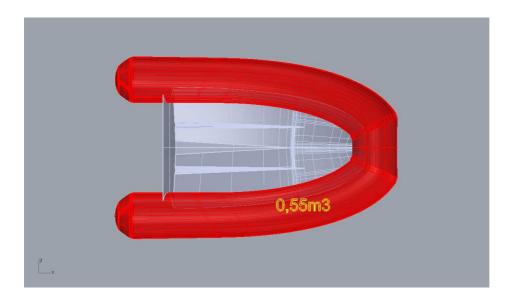
is the overall length of the boat, in metres, from the bow to the extremity of the rear float (excluding handholds or other fittings);

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

	l(m)	b(m)	Pmax Kw	Pmax HP
UL 240	2.39	1.510	4.33	5.81

UL240 Buoyancy

Inflatable Buoyancy tube: 0.55 m³



Maximum Load

— For Types I and III: $m = (0.5 \times V \times 1000) - M$

— For Types II and IV: $m = (0.75 \times V \times 1000) - M$

where

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

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

M 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 outboard 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
0.55	29	383.5	290

Maximum number of passengers

$$n = \frac{l_1}{0.38} - 1$$

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 240	1.6	3.211		3

Hydrostatics Report

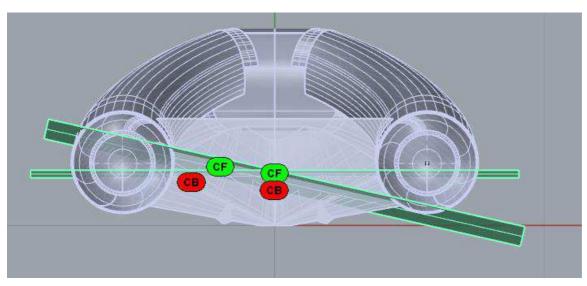
Length Overall, LOA	2.400	m
L _H =	2.400	m
Beam Overall, Boa	1.510	m
Waterline Length, Lwl	1.966	m
Waterline Beam, Bwl	1.505	m
Navigational Draft, T	0.198	m
Displacement Weight	220.650	kgf
Volume	0.215	m³
LCG	0.370	m
TCG	0.000	m
VCG	0.390	m
Fluid Density	1025.000	kg/m³
LCB	0.367	m
TCB	0.334	m
VCB	0.128	m
Wetted Surface Area	2.474	m²
Waterplane Area, Awp	2.038	m²
LCF	0.433	m
TCF	0.000	m
Weight To Immerse	20.913	kgf/cm
I(transverse)	0.361	m^4
I(longitudinal)	0.425	m^4
BMt	1.680	m
BMI	1.974	m
GMt	1.419	m
GMI	1.713	m
Mt	1.615	m
MI	1.909	m
Heel Angle	0.000	deg
Trim Angle	-0.575	deg
Cb	0.368	
Cwp	0.689	
Cvp	0.534	
Cws	3.805	

Offset load test simulation

1.Test condition							
	weight(kg)	x (mm)	y(mm)	z(mm)	Mx	Му	Mz
boat	69.9	370	0	206	25863	0	14399.4
load	150.75	370	375	470	55777.5	56531.3	70852.5
	220.65	370.0	256.2	386.4	81640.5	56531.3	85251.9
1.General							

Length Overall, LOA L _H = 2.400 Beam Overall, Boa 1.510 Waterline Length, Lwl Waterline Beam, Bwl Navigational Draft, T Displacement Weight Volume 1.220.650 VCG 0.370 TCG 0.256 WCG 0.390 Fluid Density LCB 0.364 TCB 0.308 WCB 0.159 Wetted Surface Area Waterplane Area, Awp LCF 10.521 TCF 0.201 Weight To Immerse I(Iransverse) I(Iongitudinal) 0.325 m/4 BMI 0.872 m Mt 0.789 Mt 1.428 Meled Angle -12.715 deg Trim Angle -1.497 deg			
Beam Overall, Boa 1.510 m Waterline Length, Lwl 1.911 m Waterline Beam, Bwl 1.387 m Navigational Draft, T 0.275 m Displacement Weight 220.650 kgf Volume 0.215 m³ LCG 0.370 m TCG 0.256 m VCG 0.390 m Fluid Density 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(Iongitudinal) 0.325 m^4 BMI 0.872 m BMI 0.512 m GMI 0.635 m GMI 0.789 <t< td=""><td>Length Overall, LOA</td><td>2.400</td><td>m</td></t<>	Length Overall, LOA	2.400	m
Waterline Length, Lwl Waterline Beam, Bwl Navigational Draft, T Displacement Weight Volume Volume VCG VCG VCG VCG VCG VCG VCG VC	L _H =	2.400	m
Waterline Beam, Bwl Navigational Draft, T Displacement Weight Volume 0.215 m³ 220.650 kgf LCG 0.370 m TCG 0.256 m VCG 0.390 m TCB 0.364 m Fluid Density LCB 0.308 m 1025.000 kg/m³ LCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² 2.214 m² Waterplane Area, Awp LCF 0.521 m 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(Ingitudinal) 0.325 m^4 Mary Mary Mary Mary Mary Mary Mary Mary	Beam Overall, Boa	1.510	m
Navigational Draft, T Displacement Weight Volume 0.275 m³ m LCG 0.370 m 0.256 m m LCG 0.370 m TCG 0.256 m m VCG 0.390 m TCB 0.390 m m Fluid Density LCB 0.364 m 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m m Wetted Surface Area VCB 0.159 m VCB 0.159 m m² Waterplane Area, Awp LCF 0.521 m TCF 0.201 m m² LCF 0.521 m TCF 0.201 m M Weight To Immerse I5.904 kgf/cm I(Inogitudinal) 0.325 m²4 kgf/cm 0.872 m m BMI 0.872 m BMI 0.872 m m GMI 0.635 m GMI 0.635 m m GMI 1.275 m M 0.789 m MI 0.789 m MI 1.428 m m Heel Angle -12.715 deg Heel Angle -12.715 deg	Waterline Length, Lwl	1.911	m
Displacement Weight Volume 0.215 m³ LCG 0.370 m TCG 0.256 m VCG 0.390 m Fluid Density 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMI 0.872 m BMI 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	Waterline Beam, Bwl	1.387	m
Volume 0.215 m³ LCG 0.370 m TCG 0.256 m VCG 0.390 m Fluid Density 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² UcF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMI 0.872 m BMI 0.635 m GMI 0.789 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	Navigational Draft, T	0.275	m
LCG 0.370 m TCG 0.256 m VCG 0.390 m Fluid Density 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^44 I(longitudinal) 0.325 m^44 BMt 0.872 m BMI 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 0.789 m Heel Angle -12.715 deg	Displacement Weight	220.650	kgf
TCG 0.256 m VCG 0.390 m Fluid Density 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 0.789 m MI 1.428 m Heel Angle -12.715 deg	Volume	0.215	m³
VCG 0.390 m Fluid Density 1025.000 kg/m³ LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 0.789 m MI 1.428 m Heel Angle -12.715 deg	LCG	0.370	m
Fluid Density	TCG	0.256	m
LCB 0.364 m TCB 0.308 m VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 0.789 m Heel Angle -12.715 deg	VCG	0.390	m
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VCB 0.159 m Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMI 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	LCB	0.364	m
Wetted Surface Area 2.214 m² Waterplane Area, Awp 15.904 m² LCF 0.521 m TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 0.789 m Heel Angle -12.715 deg	TCB	0.308	m
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TCF 0.201 m Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 0.789 m Heel Angle -12.715 deg	Waterplane Area, Awp	15.904	m²
Weight To Immerse 15.904 kgf/cm I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	LCF	0.521	m
I(transverse) 0.187 m^4 I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	TCF	0.201	m
I(longitudinal) 0.325 m^4 BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	Weight To Immerse	15.904	kgf/cm
BMt 0.872 m BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	,	0.187	m^4
BMI 1.512 m GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	,	0.325	m^4
GMt 0.635 m GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	BMt	0.872	m
GMI 1.275 m Mt 0.789 m MI 1.428 m Heel Angle -12.715 deg	=		m
Mt 0.789 m Ml 1.428 m Heel Angle -12.715 deg			m
Ml 1.428 m Heel Angle -12.715 deg			m
Heel Angle -12.715 deg	****	0.789	m
8			m
Trim Angle -1.497 deg	•		_
	Trim Angle	-1.497	deg

2.Test



Water does not enter into the boat.