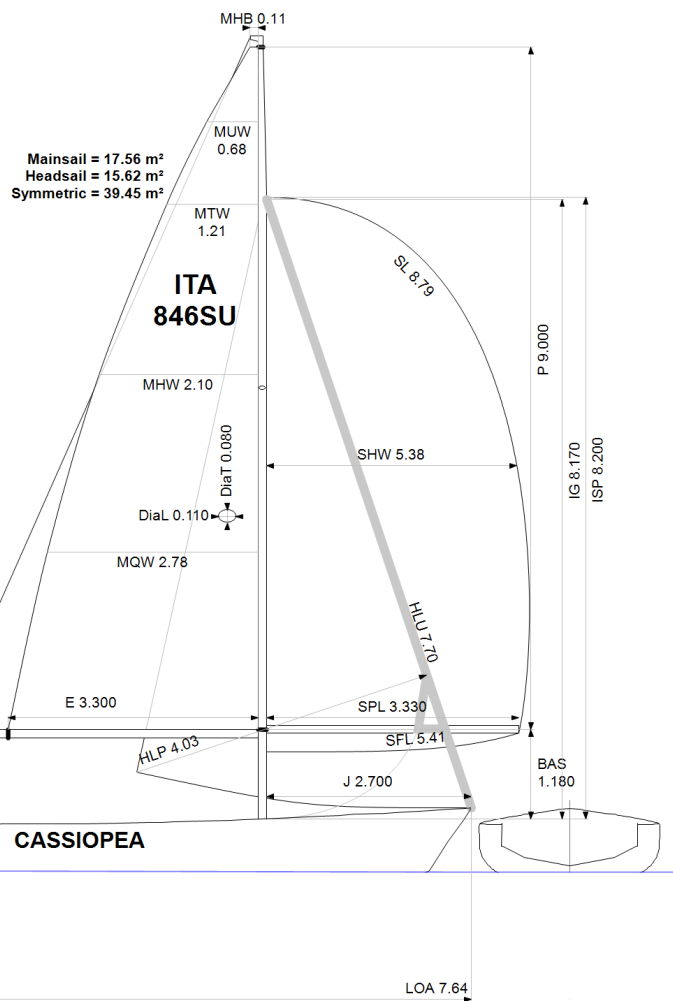


APH ToD: **623.4** CDL: **7.029**

APH ToT: **0.9624** CertNo: **25/2**



BOAT

Class	Surprise
Designer	Joubert/Nivelt
Builder	Archambault
Age date	01/1977
Series date	01/1977
Offset file	SURPRISE.OD.OFF
Data file	I846SU

HULL

Length Overall	7.640 m
Maximum Beam	2.384 m
Draft	1.576 m
Displacement	1,285 kg
DLR	4.5984
IMS Division	Sportboat
Dynamic Allowance	0.170%
Age Allowance	0.487%

PROPELLER

Installation	No Propeller
Type	N/A
Diameter	N/A

CREW

Maximum weight	400 kg (declared)
Minimum weight	270 kg * when applied
Non Manual Power	No
Crew Arm Extension	

SAIL AREAS (m²)

	Measured	Rated
Mainsail	17.56	17.93
Headsail Luffed	15.62	15.62
Headsail Flying		
Symmetric	39.45	39.45
Asymmetric		

STORM SAIL AREAS (m²)

Trysail	5.20
Storm Jib	3.34
Heavy Weather Jib	9.02

SAIL LIMITS

Headsails	5 * One set on the forestay * Woven polyester sails
Spinnakers	4

STABILITY

Righting Moment	N/A
Stability Index	N/A

The owner and any other person in charge is responsible that boat is complying with her certificate in accordance with RRS 78.1 and ORC Rule 304.

Rated boat velocities in knots

Wind Velocity	4 kt	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat Angles	42.9°	42.9°	41.1°	38.7°	36.7°	36.1°	35.9°	36.4°	37.9°
Beat VMG	2.25	3.10	3.77	4.25	4.55	4.66	4.72	4.73	4.65
52°	3.48	4.71	5.56	6.01	6.27	6.41	6.48	6.56	6.56
60°	3.71	4.95	5.75	6.15	6.43	6.61	6.71	6.82	6.86
75°	3.87	5.10	5.87	6.27	6.60	6.88	7.08	7.29	7.42
90°	3.72	5.02	5.94	6.41	6.73	6.95	7.27	7.78	8.08
110°	3.73	5.05	5.97	6.50	6.97	7.42	7.81	8.42	9.01
120°	3.54	4.86	5.83	6.38	6.88	7.38	7.93	9.18	10.32
135°	3.10	4.30	5.29	6.07	6.55	7.03	7.54	8.98	12.12
150°	2.49	3.61	4.64	5.52	6.16	6.60	7.04	8.09	10.31
Run VMG	2.15	3.13	4.02	4.79	5.50	6.01	6.41	7.23	8.93
Gybe Angles	146.7°	146.7°	151.2°	153.2°	161.8°	170.0°	172.7°	169.0°	140.7°

Time Allowances in secs/NM									
Wind Velocity	4 kt	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat VMG	1599.5	1159.9	954.1	846.5	791.4	772.2	763.4	761.4	773.8
52°	1033.3	764.7	647.2	598.8	574.2	561.6	555.2	548.9	548.8
60°	970.0	727.8	625.6	584.9	560.2	544.2	536.5	527.6	524.7
75°	930.9	706.4	613.8	573.7	545.6	523.5	508.5	494.0	485.4
90°	969.0	716.5	606.5	561.8	534.8	517.7	495.1	462.7	445.6
110°	964.9	713.2	602.8	554.1	516.3	485.5	460.8	427.7	399.3
120°	1015.7	740.7	617.6	564.1	523.2	488.1	453.9	392.1	348.8
135°	1162.8	836.7	679.9	592.6	549.8	512.3	477.3	401.0	297.0
150°	1445.0	997.1	776.5	652.8	584.6	545.8	511.2	445.1	349.2
Run VMG	1673.4	1151.3	895.8	751.4	654.6	599.2	561.5	498.1	403.2
Selected Courses									
Windward / Leeward	1634.6	1155.6	925.0	798.9	723.0	685.7	662.5	629.7	588.5
All purpose	1228.9	887.9	729.0	648.6	601.2	573.8	552.7	520.3	486.5

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	761.9	0.7876
All purpose	623.4	0.9624

Data in meters/kilograms (Metric)

HULL AND APPENDAGES (Lightship Trim)

Class	Surprise	LOA	7.640	VCGD	-0.034
Measurement	01/04/2004	Max. Beam	2.384	VCGM	-0.014
HIN		Draft	1.576	RM Rated (kg·m)	27.6
Plan review		Displacement	1,285	Limit of positive stability(°)	N/A
Hull construction	Cored	Wetted area	11.45	Stability Index	N/A
Carbon rudder	No	IMS L	6.939	Default crew weight	375
Light stanchions	No	LSM0	6.538	Declared crew weight	400
Trim tab	No	Acc. length	7.640		
		Sink (kg/mm)	8.68		

PROPELLER

Propeller Type	No Propeller
Hydro generator	No

RIG

Forestay tension	Aft	P	9.000	E	3.300
Inner stay	None Fitted	IG	8.170	J	2.700
Mast material	Aluminum	ISP	8.200	BAS	1.180
Single headsail furler	Yes	MDT1	0.080	FSD	No Foil
Mainsail furler	No	MDL1	0.110	SFJ	
Articulated bowsprit	No	MDT2	0.079	SPL	3.330
Non-circular rigging	No	MDL2	0.060	WPL	
Fiber rigging	No	TL	1.950	TPS	
Adjustable mast foot	No	MW	0.100	BD	0.109
Running backstays	0	GO	0.100	MWT	
Checkstays	0			MCG	
Spreaders	1				
Rotating mast	No				

FLOTATION AND STABILITY

Calculation method	VCG entered directly
VCG entered	-0.056
Flotation Date	01/04/2004

MAINSAIL

<i>Id</i>	<i>MHB</i>	<i>MUW</i>	<i>MTW</i>	<i>MHW</i>	<i>MQW</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	0.11	0.68	1.21	2.10	2.78	17.56	25/03/2025	

HEADSAIL

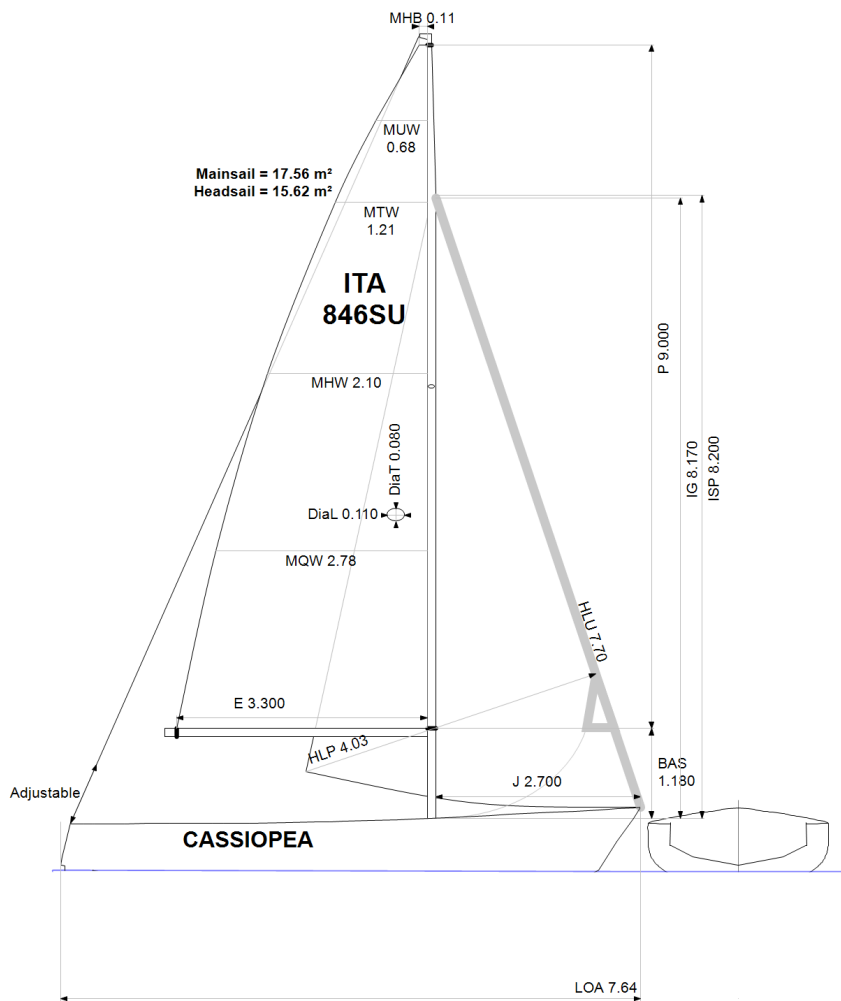
<i>Id</i>	<i>HHB</i>	<i>HUW</i>	<i>HTW</i>	<i>HHW</i>	<i>HQW</i>	<i>HLP</i>	<i>HLU</i>	<i>Btn</i>	<i>Flying FT</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	0.03					4.03	7.70	No	No	15.62	27/04/2023	

SYMMETRIC SPINNAKER

<i>Id</i>	<i>SLU</i>	<i>SLE</i>	<i>SL</i>	<i>SHW</i>	<i>SFL</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	8.79	8.79	8.79	5.38	5.41	39.45	26/03/2023	

APH ToD: **651.0** CDL: **6.770**

APH ToT: **0.9217** CertNo: **25/1**



BOAT

Class	Surprise
Designer	Joubert/Nivelt
Builder	Archambault
Age date	01/1977
Series date	01/1977
Offset file	SURPRISE.OD.OFF
Data file	I846SU

HULL

Length Overall	7.640 m
Maximum Beam	2.384 m
Draft	1.576 m
Displacement	1,285 kg
DLR	4.5984
IMS Division	Sportboat
Dynamic Allowance	0.260%
Age Allowance	0.487%

PROPELLER

Installation	No Propeller
Type	N/A
Diameter	N/A

CREW

Maximum weight	240 kg (declared)
Minimum weight	130 kg * when applied
Non Manual Power	No
Crew Arm Extension	

SAIL AREAS (m²)

	Measured	Rated
Mainsail	17.56	17.93
Headsail Luffed	15.62	15.62
Headsail Flying		
Symmetric		
Asymmetric		

STORM SAIL AREAS (m²)

Trysail	5.20
Storm Jib	3.34
Heavy Weather Jib	9.02

SAIL LIMITS

Headsails	1 * One set on the forestay * Zero set flying * Woven polyester sails
Spinnakers	0 * No spinnaker pole aboard

STABILITY

Righting Moment	N/A
Stability Index	N/A

The owner and any other person in charge is responsible that boat is complying with her certificate in accordance with RRS 78.1 and ORC Rule 304.

Rated boat velocities in knots

Wind Velocity	4 kt	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat Angles	42.8°	42.8°	40.5°	38.3°	37.6°	37.5°	37.6°	38.5°	40.7°
Beat VMG	2.30	3.17	3.84	4.26	4.42	4.48	4.51	4.49	4.37
52°	3.57	4.79	5.62	6.02	6.19	6.27	6.31	6.35	6.33
60°	3.82	5.04	5.80	6.18	6.38	6.48	6.54	6.61	6.62
75°	3.98	5.20	5.93	6.31	6.61	6.81	6.92	7.09	7.16
90°	3.85	5.09	5.88	6.32	6.67	6.99	7.26	7.60	7.81
110°	3.30	4.57	5.55	6.14	6.58	7.00	7.43	8.37	8.98
120°	3.07	4.30	5.31	5.98	6.42	6.86	7.30	8.39	10.03
135°	2.62	3.76	4.77	5.57	6.11	6.51	6.93	7.87	9.21
150°	2.17	3.19	4.13	4.90	5.57	6.04	6.39	7.13	8.06
Run VMG	1.90	2.76	3.57	4.36	5.08	5.69	6.12	6.86	7.68
Gybe Angles	144.8°	144.8°	146.0°	170.3°	171.4°	173.6°	175.6°	175.4°	173.7°

Time Allowances in secs/NM									
Wind Velocity	4 kt	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat VMG	1567.6	1137.4	938.0	844.6	814.1	802.8	798.5	801.5	823.9
52°	1007.1	750.9	640.8	597.6	581.4	574.4	570.6	566.7	568.6
60°	943.5	714.8	620.5	582.9	564.4	555.9	550.7	544.5	544.1
75°	904.9	692.6	607.4	570.1	544.9	528.5	520.0	507.9	503.1
90°	935.5	707.1	611.9	570.0	539.7	514.8	495.9	473.5	460.8
110°	1092.1	788.5	649.2	586.1	547.4	514.2	484.4	430.1	401.1
120°	1173.2	836.6	678.2	601.7	560.4	525.0	493.3	428.9	359.1
135°	1376.0	957.9	754.3	645.8	589.5	552.8	519.8	457.5	390.9
150°	1659.4	1129.9	872.4	734.6	646.8	596.5	563.5	504.6	446.6
Run VMG	1898.2	1304.7	1007.3	825.0	708.3	633.2	588.1	525.1	468.9
Selected Courses									
Windward / Leeward	1731.2	1221.0	972.7	834.8	761.2	718.0	693.3	663.3	646.4
All purpose	1296.4	931.6	760.2	674.1	627.8	599.1	579.4	549.3	528.4

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	799.7	0.7503
All purpose	651.0	0.9217

Data in meters/kilograms (Metric)

HULL AND APPENDAGES (Lightship Trim)

Class	Surprise	LOA	7.640	VCGD	-0.034
Measurement	01/04/2004	Max. Beam	2.384	VCGM	-0.014
HIN		Draft	1.576	RM Rated (kg·m)	27.6
Plan review		Displacement	1,285	Limit of positive stability(°)	N/A
Hull construction	Cored	Wetted area	11.45	Stability Index	N/A
Carbon rudder	No	IMS L	6.811	Default crew weight	375
Light stanchions	No	LSM0	6.538	Declared crew weight	240
Trim tab	No	Acc. length	7.640		
		Sink (kg/mm)	8.68		

PROPELLER

Propeller Type	No Propeller
Hydro generator	No

RIG

Forestay tension	Aft	P	9.000	E	3.300
Inner stay	None Fitted	IG	8.170	J	2.700
Mast material	Aluminum	ISP	8.200	BAS	1.180
Single headsail furler	Yes	MDT1	0.080	FSD	No Foil
Mainsail furler	No	MDL1	0.110	SFJ	
Articulated bowsprit	No	MDT2	0.079	SPL	
Non-circular rigging	No	MDL2	0.060	WPL	
Fiber rigging	No	TL	1.950	TPS	
Adjustable mast foot	No	MW	0.100	BD	0.109
Running backstays	0	GO	0.100	MWT	
Checkstays	0			MCG	
Spreaders	1				
Rotating mast	No				

FLOTATION AND STABILITY

Calculation method	VCG entered directly
VCG entered	-0.056
Flotation Date	01/04/2004



Non Spin/HSF
Club Certificate
2025

CASSIOPEA
ITA-846SU

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MAINSAIL

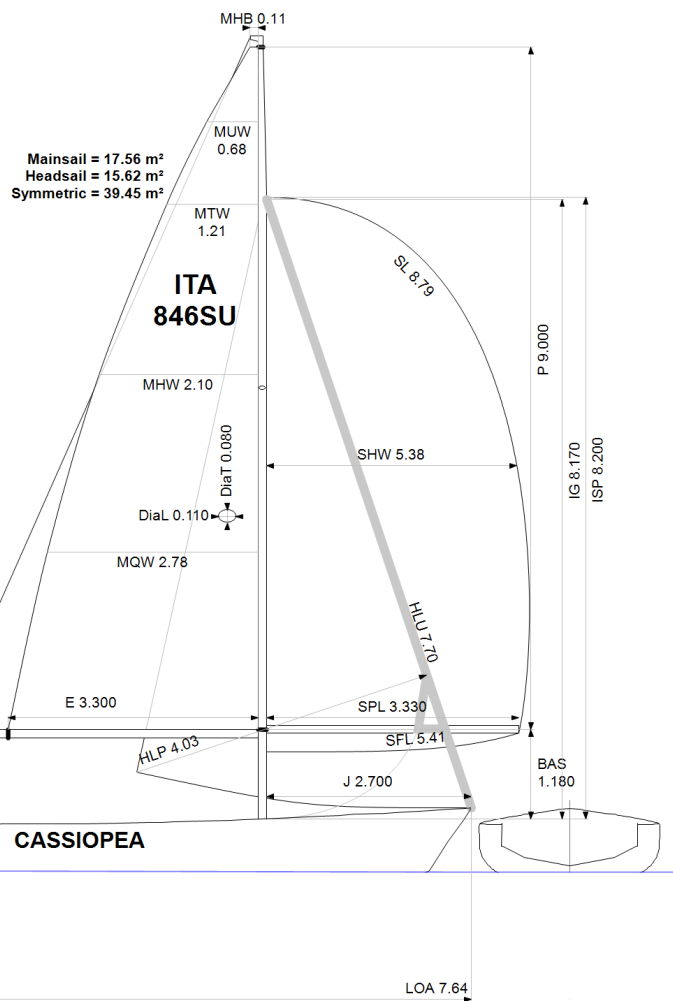
<i>Id</i>	<i>MHB</i>	<i>MUW</i>	<i>MTW</i>	<i>MHW</i>	<i>MQW</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	0.11	0.68	1.21	2.10	2.78	17.56	25/03/2025	

HEADSAIL

<i>Id</i>	<i>HHB</i>	<i>HUW</i>	<i>HTW</i>	<i>HHW</i>	<i>HQW</i>	<i>HLP</i>	<i>HLU</i>	<i>Btn</i>	<i>Flying FT</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	0.03					4.03	7.70	No	No	15.62	27/04/2023	

APH ToD: **628.7** CDL: **6.589**

APH ToT: **0.9544** CertNo: 25/1



BOAT

Class	Surprise
Designer	Joubert/Nivelt
Builder	Archambault
Age date	01/1977
Series date	01/1977
Offset file	SURPRISE.OD.OFF
Data file	I846SU

HULL

Length Overall	7.640 m
Maximum Beam	2.384 m
Draft	1.576 m
Displacement	1,285 kg
DLR	4.5984
IMS Division	Sportboat
Dynamic Allowance	0.180%
Age Allowance	0.487%

PROPELLER

Installation	No Propeller
Type	N/A
Diameter	N/A

CREW

Maximum weight	170 kg (declared)
Minimum weight	120 kg * when applied
Non Manual Power	No
Crew Arm Extension	

SAIL AREAS (m²)

	Measured	Rated
Mainsail	17.56	17.93
Headsail Luffed	15.62	15.62
Headsail Flying		
Symmetric	39.45	39.45
Asymmetric		

STORM SAIL AREAS (m²)

Trysail	5.20
Storm Jib	3.34
Heavy Weather Jib	9.02

SAIL LIMITS

Headsails	5 * One set on the forestay * Woven polyester sails
Spinnakers	4

STABILITY

Righting Moment	N/A
Stability Index	N/A

The owner and any other person in charge is responsible that boat is complying with her certificate in accordance with RRS 78.1 and ORC Rule 304.

Rated boat velocities in knots

Wind Velocity	4 kt	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat Angles	42.6°	42.6°	40.4°	38.5°	37.9°	38.5°	38.7°	39.8°	42.3°
Beat VMG	2.31	3.18	3.85	4.20	4.32	4.36	4.37	4.34	4.20
52°	3.59	4.81	5.62	5.98	6.11	6.17	6.21	6.23	6.20
60°	3.84	5.06	5.81	6.15	6.30	6.38	6.43	6.49	6.48
75°	4.01	5.22	5.94	6.31	6.57	6.73	6.82	6.97	7.02
90°	3.86	5.13	5.94	6.33	6.67	6.97	7.20	7.48	7.67
110°	3.83	5.15	6.04	6.54	6.96	7.26	7.52	7.99	8.41
120°	3.64	4.97	5.93	6.48	6.98	7.47	7.94	8.63	9.33
135°	3.19	4.42	5.42	6.17	6.68	7.21	7.83	9.47	11.57
150°	2.54	3.68	4.72	5.61	6.25	6.73	7.24	8.52	11.14
Run VMG	2.19	3.18	4.09	4.88	5.58	6.09	6.53	7.49	9.65
Gybe Angles	146.5°	146.5°	151.0°	153.2°	162.4°	169.1°	169.1°	162.2°	145.6°

Time Allowances in secs/NM									
Wind Velocity	4 kt	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat VMG	1558.9	1130.7	936.2	856.7	833.9	825.8	823.1	830.4	858.1
52°	1001.9	747.9	640.1	602.0	589.4	583.5	580.1	578.0	580.7
60°	938.4	712.1	619.8	585.7	571.3	564.3	559.7	555.0	555.3
75°	897.8	689.0	606.2	570.5	548.1	535.3	527.5	516.7	513.2
90°	932.9	702.2	606.5	569.0	539.6	516.7	500.3	481.2	469.4
110°	939.2	699.2	595.6	550.4	517.5	495.6	478.9	450.5	428.3
120°	988.5	724.8	607.5	555.9	516.0	482.1	453.2	417.0	386.0
135°	1129.3	814.4	664.8	583.6	538.5	499.0	460.1	380.3	311.1
150°	1420.0	979.0	762.0	641.8	575.9	534.6	497.3	422.6	323.1
Run VMG	1643.8	1130.4	879.3	738.5	645.0	590.9	551.7	481.0	373.0
Selected Courses									
Windward / Leeward	1599.5	1130.6	907.8	797.6	739.4	708.3	687.4	655.7	615.6
All purpose	1196.5	868.2	717.7	647.5	609.6	586.3	568.5	540.1	513.6

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	771.8	0.7774
All purpose	628.7	0.9544

Data in meters/kilograms (Metric)

HULL AND APPENDAGES (Lightship Trim)

Class	Surprise	LOA	7.640	VCGD	-0.034
Measurement	01/04/2004	Max. Beam	2.384	VCGM	-0.014
HIN		Draft	1.576	RM Rated (kg·m)	27.6
Plan review		Displacement	1,285	Limit of positive stability(°)	N/A
Hull construction	Cored	Wetted area	11.45	Stability Index	N/A
Carbon rudder	No	IMS L	6.766	Default crew weight	170
Light stanchions	No	LSM0	6.538	Declared crew weight	170
Trim tab	No	Acc. length	7.640		
		Sink (kg/mm)	8.68		

PROPELLER

Propeller Type	No Propeller
Hydro generator	No

RIG

Forestay tension	Aft	P	9.000	E	3.300
Inner stay	None Fitted	IG	8.170	J	2.700
Mast material	Aluminum	ISP	8.200	BAS	1.180
Single headsail furler	Yes	MDT1	0.080	FSD	No Foil
Mainsail furler	No	MDL1	0.110	SFJ	
Articulated bowsprit	No	MDT2	0.079	SPL	3.330
Non-circular rigging	No	MDL2	0.060	WPL	
Fiber rigging	No	TL	1.950	TPS	
Adjustable mast foot	No	MW	0.100	BD	0.109
Running backstays	0	GO	0.100	MWT	
Checkstays	0			MCG	
Spreaders	1				
Rotating mast	No				

FLOTATION AND STABILITY

Calculation method	VCG entered directly
VCG entered	-0.056
Flotation Date	01/04/2004



Double Handed
Club Certificate
2025

CASSIOPEA
ITA-846SU

FEDERAZIONE ITALIANA VELA
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MAINSAIL

<i>Id</i>	<i>MHB</i>	<i>MUW</i>	<i>MTW</i>	<i>MHW</i>	<i>MQW</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	0.11	0.68	1.21	2.10	2.78	17.56	25/03/2025	

HEADSAIL

<i>Id</i>	<i>HHB</i>	<i>HUW</i>	<i>HTW</i>	<i>HHW</i>	<i>HQW</i>	<i>HLP</i>	<i>HLU</i>	<i>Btn</i>	<i>Flying FT</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	0.03					4.03	7.70	No	No	15.62	27/04/2023	

SYMMETRIC SPINNAKER

<i>Id</i>	<i>SLU</i>	<i>SLE</i>	<i>SL</i>	<i>SHW</i>	<i>SFL</i>	<i>Area</i>	<i>Meas.Date</i>	<i>Comment</i>
A	8.79	8.79	8.79	5.38	5.41	39.45	26/03/2023	