



APH: **679.0**

CDL: **6.557**

GPH: **765.3**

CertNo:

BOAT

Class **Friendship 28**
Designer **Koopmans**
Builder **Friendship**
Age date **07/1977**
Series date **04/1977**
Offset file **HC_00702.off**
Data file

HULL

Length Overall **8.400 m**
Maximum Beam **2.714 m**
Draft **1.669 m**
Displacement **3,653 kg**
DLR **9.6060**
IMS Division **Cruiser/Racer**
Dynamic Allowance **0.610%**
Age Allowance **0.487%**

PROPELLER

Installation **Strut**
Type **Feathering 2 blades**
Diameter **0.300m**

CREW

Maximum weight **435 kg**
Minimum weight **326 kg** * when applied
Non Manual Power **No**
Crew Arm Extension

SAIL AREAS (m²)

	Measured	Rated
Mainsail	14.79	14.92
Headsail Luffed	24.99	24.99
Headsail Flying		
Symmetric	48.07	48.07
Asymmetric		

STORM SAIL AREAS (m²)

Trysail **4.74**
Storm Jib **5.16**
Heavy Weather Jib **13.91**

SAIL LIMITS

Headsails **5**
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	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat Angles	43.3°	41.4°	40.3°	39.3°	38.7°	38.2°	38.2°
Beat VMG	2.79	3.37	3.80	4.12	4.30	4.39	4.44
52°	4.24	5.02	5.54	5.85	6.04	6.14	6.21
60°	4.44	5.23	5.71	6.00	6.17	6.29	6.38
75°	4.55	5.35	5.85	6.13	6.32	6.46	6.64
90°	4.46	5.34	5.94	6.25	6.43	6.53	6.79
110°	4.51	5.45	6.05	6.37	6.62	6.83	7.15
120°	4.38	5.32	5.97	6.33	6.60	6.84	7.28
135°	3.94	4.90	5.67	6.13	6.43	6.70	7.21
150°	3.40	4.35	5.14	5.77	6.16	6.44	6.92
Run VMG	2.94	3.77	4.47	5.10	5.64	6.05	6.57
Gybe Angles	147.8°	152.0°	154.7°	160.4°	173.0°	178.4°	179.0°

Time Allowances in secs/NM							
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat VMG	1290.1	1067.1	947.7	874.6	836.4	820.6	811.6
52°	848.5	717.4	649.8	614.9	596.0	586.2	579.7
60°	810.2	689.0	630.1	600.5	583.2	572.8	564.3
75°	790.5	673.1	615.3	587.3	570.0	557.4	542.1
90°	807.1	674.4	606.4	576.2	560.1	551.7	530.2
110°	798.9	660.3	595.5	564.7	543.8	527.3	503.5
120°	822.6	676.1	603.3	568.8	545.7	526.2	494.2
135°	913.5	734.8	635.4	587.4	559.7	537.7	499.6
150°	1058.7	828.0	700.5	624.0	584.1	559.1	520.0
Run VMG	1222.5	954.9	805.0	705.5	638.1	595.3	547.9
Selected Courses							
Windward / Leeward	1256.3	1011.0	876.3	790.0	737.3	708.0	679.8
All purpose	976.6	799.4	705.4	652.0	621.2	603.1	580.6

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	828.4	0.7243
All purpose	679.0	0.8836

Custom scoring options for Netherlands

Scoring Option	Time On Time
Triple Number Coastal/Long Distance Low	0.6757
Triple Number Coastal/Long Distance Medium	0.8897
Triple Number Coastal/Long Distance High	1.0013
Triple Number Windward/Leeward Low	0.5293
Triple Number Windward/Leeward Medium	0.7281
Triple Number Windward/Leeward High	0.8514
Coastal/Long Distance	0.8130
Predominantly Upwind	0.8163
Predominantly Downwind	0.8697



Data in meters/kilograms (Metric)

HULL AND APPENDAGES (Lightship Trim)

Class	Friendship 28	LOA	8.400	VCGD	0.049
Measurement	10/07/2019	Max. Beam	2.714	VCGM	0.014
HIN		Draft	1.669	RM Rated (kg·m)	50.1
Plan review		Displacement	3,653	Limit of positive stability(°)	N/A
Hull construction	Solid	Wetted area	17.08	Stability Index	N/A
Carbon Rudder	No	IMS L	7.283		
Light stanchions	No	LSM0	7.245		
Trim tab	No	Acc. length	8.400		
		Sink (kg/mm)	11.88		

PROPELLER

Propeller Type	Feathering 2 blades			
Installation	Strut	PRD	0.300	EDL ST3
Twin screw	No	PBW		ST1 ST4
Hydro generator	No	PIPA	0.0005	ST2 ST5

RIG

Forestay tension	Aft	P	9.150	E	2.960
Inner stay	None Fitted	IG	10.150	J	3.200
Carbon mast	No	ISP	10.150	BAS	0.980
Headsail furler	No	MDT1	0.108	FSD	Foil
Mainsail furler	No	MDL1	0.158	SFJ	0.150
Articulated bowsprit	No	MDT2		SPL	3.280
Non-circular rigging	No	MDL2		WPL	
Fiber rigging	No	TL	No Taper	TPS	
Runners/Checkstays	0	MW		BD	
Spreaders	1	GO		MWT	
Rotating mast	No			MCG	

FLOTATION AND STABILITY

Calculation method	RM estimated	SFFP	0.500	SAFP	8.140
Flotation Date	20/04/2022	FFM		FAM	
Measurer		FF	1.145	FA	0.877
Comment		LCFcl	4.865	LCFsh	5.054
		SG	1.0000	HBI	0.981

INVENTORY

OTHER ITEMS	Id	Kind	Description	Weight	LCG	VCG
	SaS		Deductible Sailor Services	24	4.44	0.00
			<i>Total deductible</i>	24	4.44	0.00



Club
Certificate
2023

Boat
Nisos Ork
NED 9066

ORC
Sailor
Services



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>
ORC1	0.10	0.53	0.93	1.70	2.30	14.79	10/07/2019	

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>
ORC1	0.06	0.57	1.14	2.38	3.72	5.15	10.12	No	No	24.99	10/07/2019	

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>
ORC1	10.60	10.60	10.60	5.39	5.65	48.07	10/07/2019	