

APH ToD: **679.6** CDL: **6.563**

APH ToT: **0.8828** 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 (default)**  
Minimum weight **305 kg \*when applied**  
Non Manual Power **No**  
Crew Arm Extension

**SAIL AREAS (m²)**

	Measured	Rated
Mainsail	<b>14.79</b>	<b>14.92</b>
Headsail Luffed	<b>24.99</b>	<b>24.99</b>
Headsail Flying		
Symmetric	<b>48.07</b>	<b>48.07</b>
Asymmetric		

**STORM SAIL AREAS (m²)**

Trysail	<b>4.74</b>
Storm Jib	<b>5.16</b>
Heavy Weather Jib	<b>13.91</b>

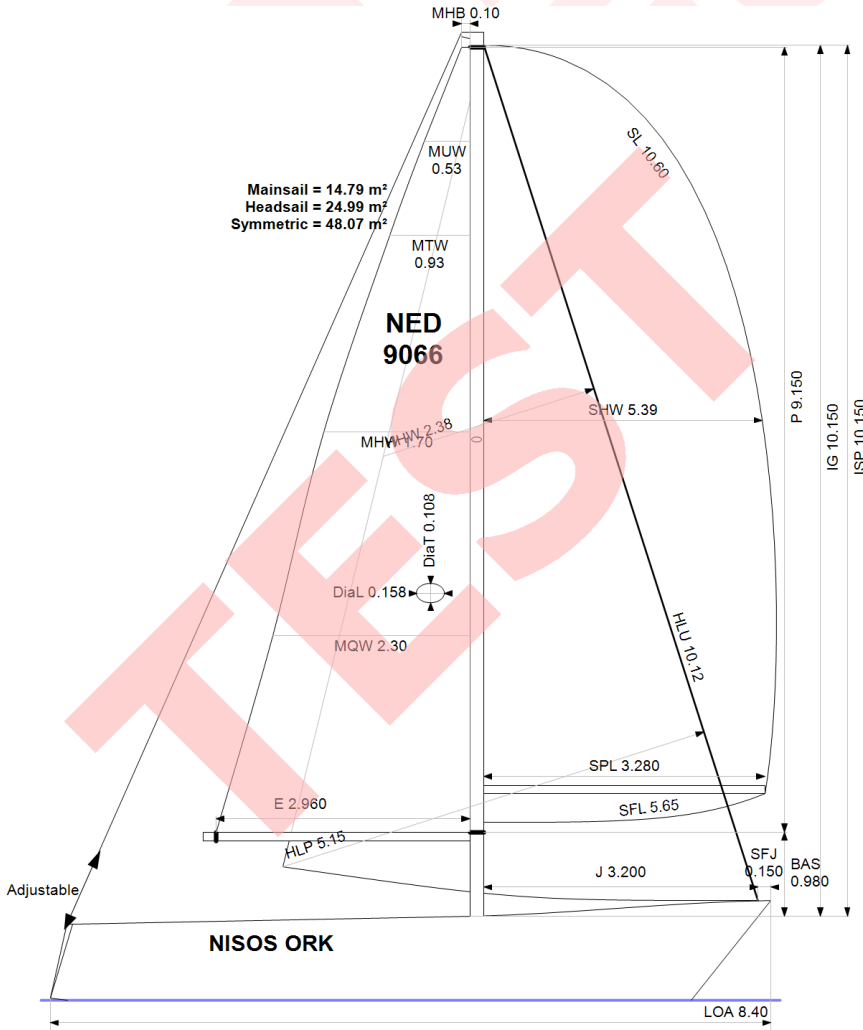
**SAIL LIMITS**

Headsails	<b>5</b>
Spinnakers	<b>4</b>

**STABILITY**

Righting Moment	<b>N/A</b>
Stability Index	<b>N/A</b>

*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	24 kt
Beat Angles	43.5°	41.5°	40.4°	39.3°	38.5°	38.2°	38.2°	39.2°
Beat VMG	2.78	3.37	3.79	4.12	4.32	4.40	4.44	4.36
52°	4.23	5.01	5.53	5.85	6.04	6.15	6.20	6.20
60°	4.44	5.22	5.71	5.99	6.17	6.29	6.37	6.39
75°	4.55	5.34	5.85	6.13	6.32	6.46	6.64	6.71
90°	4.46	5.34	5.94	6.25	6.42	6.52	6.79	6.98
110°	4.50	5.45	6.04	6.37	6.62	6.83	7.14	7.33
120°	4.37	5.32	5.96	6.33	6.59	6.84	7.28	7.68
135°	3.93	4.89	5.66	6.12	6.43	6.69	7.19	7.74
150°	3.39	4.33	5.12	5.76	6.15	6.43	6.91	7.40
Run VMG	2.94	3.76	4.46	5.08	5.62	6.03	6.55	7.00
Gybe Angles	147.4°	151.2°	154.1°	159.7°	172.7°	177.7°	179.0°	179.0°

Time Allowances in secs/NM								
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat VMG	1292.7	1069.0	949.0	874.5	834.3	818.2	811.1	825.8
52°	850.1	718.7	650.5	614.9	595.8	585.6	580.3	581.0
60°	811.5	689.9	630.6	600.5	583.2	572.6	565.1	563.2
75°	791.5	673.8	615.6	587.3	569.9	557.4	542.1	536.3
90°	808.0	674.3	606.4	576.4	560.3	551.8	529.9	515.9
110°	799.3	660.7	595.7	564.9	543.9	527.2	503.9	491.2
120°	823.3	676.9	603.7	569.1	546.0	526.6	494.5	468.7
135°	915.3	736.3	636.4	588.0	560.3	538.4	500.5	465.0
150°	1062.1	830.6	702.6	625.5	585.1	560.0	521.0	486.8
Run VMG	1226.4	958.2	807.8	708.3	640.7	597.1	549.3	514.3
Selected Courses								
Windward / Leeward	1259.6	1013.6	878.4	791.4	737.5	707.7	680.2	670.1
All purpose	978.5	800.8	706.4	652.5	621.2	602.9	580.9	569.2

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	829.7	0.7231
All purpose	679.6	0.8828

### Custom scoring options for Netherlands

Scoring Option	Time On Time
Triple Number Coastal/Long Distance Low	0.6744
Triple Number Coastal/Long Distance Medium	0.8889
Triple Number Coastal/Long Distance High	1.0013
Triple Number Windward/Leeward Low	0.5279
Triple Number Windward/Leeward Medium	0.7269
Triple Number Windward/Leeward High	0.8513
Coastal/Long Distance	0.8121
Predominantly Upwind	0.8158
Predominantly Downwind	0.8681

### For information

General Purpose Handicap (GPH)	766.1
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Data in meters/kilograms (Metric)

**HULL AND APPENDAGES (Lightship Trim)**

Class	<b>Friendship 28</b>	LOA	<b>8.400</b>	VCGD	<b>0.043</b>
Measurement	<b>10/07/2019</b>	Max. Beam	<b>2.714</b>	VCGM	<b>0.007</b>
HIN		Draft	<b>1.669</b>	RM Rated (kg·m)	<b>50.5</b>
Plan review		Displacement	<b>3,653</b>	Limit of positive stability(°)	<b>N/A</b>
Hull construction	<b>Solid</b>	Wetted area	<b>17.08</b>	Stability Index	<b>N/A</b>
Carbon Rudder	<b>No</b>	IMS L	<b>7.295</b>	Default crew weight	<b>435</b>
Light stanchions	<b>No</b>	LSM0	<b>7.245</b>	Declared crew weight	<b>N/A</b>
Trim tab	<b>No</b>	Acc. length	<b>8.400</b>		
		Sink (kg/mm)	<b>11.88</b>		

**PROPELLER**

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

**RIG**

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

**FLOTATION AND STABILITY**

Calculation method	<b>RM estimated</b>
Flotation Date	<b>20/04/2022</b>

**INVENTORY**

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



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

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**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	

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**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	

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**CRUISER/RACER REQUIREMENTS\***

Accommodation length	<b>8.4 m</b>	Table area	<b>0.33 m<sup>2</sup></b>	Headroom	<b>1.40 m</b>
Minimum number of berths	<b>3</b>	Personal gear stowage	<b>0.12 m<sup>3</sup></b>	Fresh water capacity	<b>36 l</b>
Minimum number of seats in cockpit	<b>3</b>	Food stowage	<b>0.18 m<sup>3</sup></b>	Fuel capacity	<b>20 l</b>

\* This list refers to the calculated requirements. See IMS Appendix 1 for the complete list of requirements.