

12



INTERNATIONAL TWELVE METRE CLASS

Yacht's Name Lionheart

National letters and Sail Number K 18 Club New York Yacht Club

Designer Ian Howlett

Builder Joyce Marine Building Year 1978

Owner Harry H Graves

Owner's Address 2825 Pond Run Rd.
Cincinnati, OH 45157 USA

Lloyds R class certificate (Number or Date) _____

RATING CERTIFICATE

This yacht has been measured by measurer(s) appointed by the International Twelve Metre Association and has been found to rate not more than 12.000 metres.

This certificate is dated: July 1, 2019

Measurer A Williams Signature Ander

Valid until July 1, 2021


Supersedes 7-Jul-08

Is this an **Appendix E** Certificate? Y / N **Yes**

Was **Appendix F** used for Measurement? Y / N **No**

Signature [Signature]
ITMA Technical Director

Stamp of Authority of the
International Twelve Metre Association



RATING CALCULATION

OVERALL LENGTH

Overhang Forward to FGS
 Overhang Aft to AGS
 Total Overhang (Subtract)

1.860
2.060
3.920

19.451

MEASURED LENGTH (L_{BG})

Girth at Bow
 Twice vertical Height at Bow (Subtract)
 Girth Difference at FGS
 Add 1.5 x Girth Difference at FGS (min 0.540 m)
 Girth at Stern
 Twice vertical Height at Stern (Subtract)
 Girth Difference at AGS
 Add 1/3 Girth Difference at AGS (min 0.400 m)
 Add any penalty (Beam or Displacement)
 Sum of Length and Girth Corrections

1.460
1.200
0.260
0.540
3.205
1.802
1.403
0.468

15.531

Age/Design Correction Factor (ADCF)(see page 3)

0.9867

16.539

LENGTH (L)

Skin IM to d1 Port
 Chain IM to d1 Port
 d Port
 Skin IM to d1 Starboard
 Chain IM to d1 Starboard
 d Starboard
 Add d

2.100
2.100
0.000
2.099
2.099
0.000
0.000

16.319

Add GIRTH 2 d

0.000

Mean Freeboard Bow
 Mean Freeboard Midship
 Mean Freeboard Stern
 Sum of Freeboards

Datum Sta.	Actual Sta.	Rating FB
	1.212	1.367
	1.139	1.139
	1.081	1.000
		3.506

Limit used

Limit used

Subtract FREEBOARD, F

1.169

Add SAIL AREAS (Square root)

13.290

TOTAL OF MEASUREMENTS

28.440

PENALTY (Draft or Tumblehome)

0.000

0

RATING

12.000

Date and Place of Measurement

1-Jul-19

Measurer's Name(s)

A Williams

Signature



Yacht's name : Lionheart		Date	1-Jul-19
Range Measurement (Yes or No)	no	Date:	

PENALTIES

Overhang Forward to MWL	2.450		
Overhang Aft to MWL	2.555		
Subtract from overall length	5.005		
Difference of immersion from salt to fresh water	Meas. Density		0.000
WATERLINE LENGTH (LWL)			14.446
Minimum Displacement for Zero Penalty [m3]	28.072		
Minimum Weight for Zero Penalty [ton] (Water of sg 1.025)	28.774		
WEIGHT [tonne] Actual weight			29.219
Equivalent LWL (for Displ. < min.)	14.524		
Difference	0.000		
DISPLACEMENT PENALTY (add to L)			0.000
Displacement Determination Method			
DRAFT (actual)	2.810		
Max. Draft for Zero Penalty	2.811		
Difference (if positive)			
DRAFT PENALTY (add to Rating)	Appendix E		0.000
BEAM (Min)	3.602		
Max Beam at 1/3 of Midship Freeboard	0.000		
Difference (if positive)	0.000		
BEAM PENALTY (add to L)			0.000
Tumblehome Max. (2 x 2% of Extr. Beam)	0.000		
Extreme Beam	3.605		
Beam at deck	3.605		
Difference (if positive)	0.000		
TUMBLEHOME PENALTY (add to Rating)			0.000

Date and Place of Measurement	1-Jul-19		
Measurer's Name(s)	A Williams	Signature	

Design/Age Correction Factor Calculation			
Age Date	1978		
ADCF (Table E-2)	0.9867		
Hull Alteration Scope and Date			
Appendage Change Scope and Date			
Change/Alteration Correction ADCF			
Accommodation Deficiency Ballast			

Yacht's name : **Lionheart**

Date

1-Jul-19**SAIL PLAN**

Max Height of Sail Plan =	<input type="text" value="25.000"/>	J=	<input type="text" value="7.340"/>	I =	<input type="text" value="18.750"/>
Boom above Mast Datum =	<input type="text" value="1.237"/>	P=	<input type="text" value="23.763"/>	E=	<input type="text" value="9.755"/>
Rated Mainsail Area	<input type="text" value="115.904"/>	Spi boom=	<input type="text" value="7.620"/>	√S=	<input type="text" value="13.290"/>
J used for Rating			<input type="text" value="7.620"/>		
Rated Foretriangle Area	<input type="text" value="60.722"/>	Propeller allowance			<input type="text" value="1.000"/>
TOTAL RATED SAIL AREA (S)	<input type="text" value="176.626"/>	Corrected sail area			<input type="text" value="176.626"/>

SAIL LIMITS

Mainsail max girth:	1/2 height (68% of E)	<input type="text" value="6.633"/>	3/4 height (41% of E)	<input type="text" value="4.000"/>
Genoa:	max. foot length (J + 4.8m)	<input type="text" value="12.140"/>		
Spinnaker:	1/2 foot max breadth (125% J)	<input type="text" value="9.525"/>	max. luff length=	<input type="text" value="18.691"/>

Spar Measurement

MAST (material)	<input type="text" value="Aluminium"/>	Mast Weight	<input type="text" value="517"/>	CG pos.	<input type="text" value="10.480"/>
	Deck	Half-Height	Jib-Halyard	Head	
Mast dimensions [mm]	<input type="text" value="363 x 248"/>	<input type="text" value="361 x 244"/>	<input type="text" value="302 x 199"/>	<input type="text" value="199 x 121"/>	
Sections area [cm ²]	<input type="text" value="707"/>	<input type="text" value="691"/>	<input type="text" value="452"/>	<input type="text" value="189"/>	
Mast CG Correction (if applicable) Wt & CG	<input type="text" value=""/>	@	<input type="text" value=""/>	Mk ^c	<input type="text" value=""/>

Engine/Propeller Installation

Engine and propeller weight	<input type="text" value="NA"/>	Propeller diameter =	<input type="text" value=""/>
Minimum boat speed with engine	<input type="text" value=""/>	Propeller position =	<input type="text" value=""/>
Propeller Type (folding feathering fixed pitch etc.), no of blades	<input type="text" value=""/>		<input type="text" value=""/>
Propeller Skew	<input type="text" value=""/>		<input type="text" value=""/>

Flotation

Internal Ballast	Amount	Location aft of bow
4 lead pigs	105 kg	8.5m
16 lead pigs	421kg	9.25m
2 lead pigs	48 kg	12.1

Measurer's Notes

- 1 Freeboards per 1976 rule
- 2 2009 New Boom

Date and Place of Measurement

1-Jul-19

Measurer's Name(s)

A Williams

Signature

Ander