

DEC -5 1939

# Lloyd's Register of Shipping.

## SURVEYS FOR FREEBOARD.

(COMPUTATION FOR STEAMER, SAILING SHIP, TANKER.)

Ship's Name <b>SINGLE SCREW TUG "KARL" Empire Benckman</b>	Official Number <b>167402</b>	Nationality and Port of Registry <b>SWEDISH GOTHENBURG. London</b>	Gross Tonnage <b>243.</b>	Date of Build <b>1939.</b>	Port of Survey <b>HULL.</b>
Moulded Dimensions: Length <b>105.0'</b> Breadth <b>26.5'</b> Depth <b>13.0'</b>					Date of Survey <b>WHILE BUILDING.</b>
Moulded displacement at moulded draught = 85 per cent. of moulded depth <b>503</b> tons <b>5.22 T.P.I.</b>					Surveyor's Signature <b>N. Lockhart.</b>
Coefficient of fineness for use with Tables <b>.68 (actual .57)</b>					Particulars of Classification <b>* 100 A.1. FOR TOWING SERVICES. (CONTEMPLATED)</b>

Depth for Freeboard (D).	Depth correction.	Round of Beam correction.
Moulded depth ... <b>13.0'</b>	(a) Where D is greater than Table depth (D - Table depth) R = <b>(13.0' - 7.00) .808 = + 4.98"</b>	Moulded Breadth (B) <b>26.5'</b>
Stringer plate ... <b>.32'</b>	(b) Where D is less than Table depth (if allowed) (Table depth - D) R = <b>6.08"</b>	Standard Round of Beam = $\frac{B \times 12}{50} =$ <b>6.36"</b>
Sheathing on exposed deck <b>SEE SKETCH 5' x 2 1/2" TEAK.</b>		Ship's Round of Beam = <b>7.5"</b>
$T \left( \frac{L-S}{L} \right) = .21 \times \frac{2929}{105} =$ <b>.41</b>	If restricted by superstructures <input checked="" type="checkbox"/>	Difference <b>Excess</b> <b>1.14"</b>
Depth for Freeboard (D) = <b>13.0'</b>		Restricted to
		Correction = $\frac{\text{Diff}^o}{4} \times \left( 1 - \frac{S_1}{L} \right) = \frac{1.14}{4} = -28"$

## DEDUCTION FOR SUPERSTRUCTURES.

	Mean Covered Length (S)	Equivalent Enclosed Length (S <sub>1</sub> )	Height	Height Correction	Effective Length (E)	
Poop enclosed ...						Standard Height of Superstructure <input checked="" type="checkbox"/>
" overhang ...						" " R.Q.D. <input checked="" type="checkbox"/>
R.Q.D. enclosed ...						Deduction for complete superstructure <input checked="" type="checkbox"/>
" overhang ...						Percentage covered $\frac{S}{L} =$ <input checked="" type="checkbox"/>
Bridge enclosed ...						" $\frac{S_1}{L} =$ <input checked="" type="checkbox"/>
" overhang aft ...						" $\frac{E}{L} =$ <input checked="" type="checkbox"/>
" overhang forward ...						Percentage from Table, Line A. <input checked="" type="checkbox"/>
F'cle enclosed ...						(corrected for absence of forecastle (if required))
" overhang ...						Percentage from Table, Line B. <input checked="" type="checkbox"/>
Trunk aft ...						(corrected for absence of forecastle (if required))
" forward ...						Interpolation for bridge less than .2L (if required)
Tonnage opening aft ...						Deduction = <input checked="" type="checkbox"/>
" " forward ...						
Total ...						

## SHEER CORRECTION.

Station	Standard Ordinate	S	M	Product	Actual Ordinate	Effective Ordinate	S	M	Product	
A.P. ...	20.50	1		20.50	36 1/4"	36.25	1		36.25	Mean actual sheer aft = <b>Excess</b>
1/2 L from A.P. ...	9.12	4		36.48	14 3/4"	17.75	4		71.00	Mean standard sheer aft
3/4 L " ...	2.26	2		4.52	6"	6.00	2		12.00	Mean actual sheer forward = <b>Excess</b>
Amidships ...	-	4		-	NIL.	-	4		-	Mean standard sheer forward
3/4 L from F.P. ...	4.51	2		9.02	4 1/4"	4.25	2		8.50	Length of enclosed superstructure forward of amidships =
1/2 L " ...	18.24	4		72.96	23 3/4"	23.75	4		95.00	" " aft of " =
F.P. ...	41.00	1		41.00	60"	60.00	1		60.00	
Total ...				184.48					282.75	

Correction =  $\frac{\text{Difference between sums of products}}{18} \left( \frac{75-S}{2L} \right) = \frac{98.27}{18} \times .75 = -4.09$

If limited on account of midship superstructure. ☒

If limited to maximum allowance of 1 1/2 ins. per 100 ft. **YES 1.57"**

Deduction for Tropical Freeboard.  
Addition for Winter and Winter North Atlantic Freeboard.

Depth to Freeboard Deck = **13.03'**  
Summer freeboard = **1.272'**  
Moulded draught (d) = **11.7681'**

Deduction for Tropical freeboard and addition for Winter freeboard =  $\frac{d}{4}$  inches = **2.95" = 8"**  
Addition for Winter North Atlantic Freeboard (if required) = **2" + 3" = 5" = 12 1/2" m**

Deduction for Fresh Water.

Displacement in salt water at summer load water line  
 $\Delta = 557$   
Tons per inch immersion at summer load water line  
 $T = 5.42$   
Deduction =  $\frac{\Delta}{40 T}$  inches = **2.57"**  
MLO. DRAFT. EXT. DISP. T.P.I. **68 1/2**  
**11'-4 1/2" 529. 5.3**  
**10'-4 1/2" 466. 5.09**  
**9'-4 1/2" 405. 4.9**

TABULAR FREEBOARD corrected for Flush Deck (if required)

Correction for coefficient

Depth Correction ... **4.98"**  
Deduction for superstructures ... **-**  
Sheer correction ... **1.57"**  
Round of Beam correction ... **.28"**  
Correction for Thickness of Deck amidships ... **.48"**  
Other corrections, scantlings, etc. ... **0**

Summer Freeboard = **15'-14 1/4"**

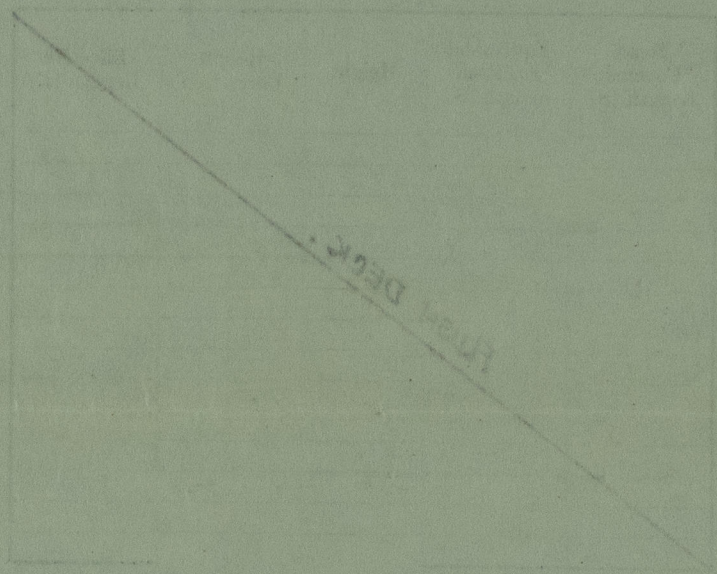
SUMMER FREEBOARD amidships from Centre of Disc to top of Deck Line, Wood, Steel, Deck:

Tropical Fresh Water Line above Centre of Disc **5 1/2"** **140 1/39 m** Tropical Fresh Water Freeboard ... **233 " 232 = 0'-9 1/4"**  
Fresh Water Line " **2 1/2"** **65 1/39 "** Fresh Water " **309 " 307 = 1'-0 1/4"**  
Tropical Line " **3"** **75 7/6 "** Tropical " **296 " 297 = 0'-11 3/4"**  
Winter Line below " **3"** **75 7/6 "** Winter " **448 " 447 = 1'-5 3/4"**  
Winter North Atlantic Line " **5"** **125 1/27 "** Winter North Atlantic " **499 " 497 = 1'-7 3/4"**



A new form should be prepared if any alterations that affect the freeboard have been made. If no such alterations have been made, the Surveyor should endorse the form on this side with his signature and the date.

1938  
KARL  
GOTHENBURG  
SWEDISH  
1050  
265  
150  
200  
2-22-38  
FOR TOWING SERVICES  
(NOT MATED)



60"
23 1/2"
4 1/2"
1 1/2"
6"
1 1/2"
26 1/2"

Trade of ship.....

Names of sister ships.....

Builder's name and yard number.....

Owners.....

Fee £.....



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