

# PARTICULARS OF BOILERS.

Shipbuilder *Messrs Hawthorn Leslie*  
 Yard No. *421*  
 Engineer *Wallend Slipway & Eng Co Ltd*  
 Yard No. *186B*

Shaft as per Rule.....  
 Size of Cyls.....  
 Stroke .....

Total heating surface..... *1000*  
 Grate Surface, 1 boiler.....  
 Working pressure..... *180 lbs per sq*  
 No. of Boilers..... *one*  
 Descrip. & Material..... *Cylindrical Steel*  
 Diameter..... *11-0 outside*  
 Length..... *10-6 mean*

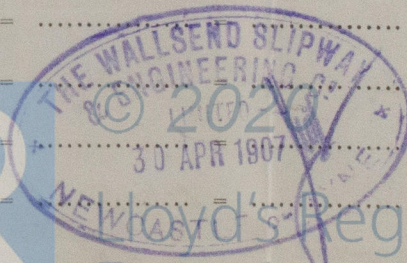
## CALCULATIONS.

SHELL	Plate	$\frac{P-D}{P}$	$\frac{6.75-9.375}{6.75}$	$= 86.1\%$
	Rivet	$\frac{P}{a \times m}$	$\frac{5 \times 69 \times 85 \times 1.75}{6.75 \times 8.75}$	$= 86.8\%$
		$\frac{P \times T}{C \times T \times B}$	$\frac{2.3 \times 178 \times (4-2) \times 86.1}{130 \times 2.5}$	$= 182.5 \text{ lbs}$
		$\frac{D}{C \times (T-2) \times B}$	$\frac{89,600}{T^2}$	$= 192.3 \text{ lbs}$
Furnace	$\frac{L \times D}{C \times (T-2)}$	$\frac{1254 \times (8.5-2)}{42.5}$	$= 186.5 \text{ lbs}$	
Combs, at sides	$\frac{D}{C \times T}$	$\frac{135 \times 10.5^2}{79.88}$	$= 229 \text{ lbs}$	
	$\frac{P}{A \times C}$	$\frac{2.03 \times 9000}{9 \times 8.875}$	$= 194 \text{ lbs}$	
Stays, for ditto	$\frac{P^2}{G \times T^2}$	$\frac{2.03 \times 9000}{9 \times 8.875}$	$= 238 \text{ lbs}$	
Comb, at backs	$\frac{P^2}{A \times C}$	$\frac{135 \times 10.5^2}{79.88}$	$= 180 \text{ lbs}$	
Stays, for ditto	$\frac{P^2}{C \times T^2}$	$\frac{175 \times 17.5^2}{5.03 \times 10.400}$	$= 187.8 \text{ lbs}$	
Comb, at tops	$\frac{P^2}{G \times T^2}$	$\frac{135 \times 14^2}{134.125}$	$= 197 \text{ lbs}$	
Top end plate	$\frac{P^2}{D}$			
Stays for ditto				
Back bottom				

Stays at water space at back	$\frac{A \times C}{p^2}$	$\frac{2.31 \times 9000}{11.5 \times 8.5}$	$= 212 \text{ lbs}$
	$\frac{140 \times T^2}{p^2}$	$\frac{140 \times 12^2}{78.78}$	$= 256 \text{ lbs}$
Tube Plate	$\frac{p^2}{C \times T^2}$	$\frac{140 \times 16^2}{13.75^2}$	$= 189.5 \text{ lbs}$
	$\frac{p^2}{G \times (T+\frac{1}{2})^2}$		
Stay tubes, top row	$\frac{P \times W \times D}{1,600 \times (D-d)}$	$\frac{1750 \times (4.5-2.93) \times 12}{27.71 \times 4.5}$	$= 265 \text{ lbs}$
	$\frac{A \times C}{p^2}$	$\frac{2.17 \times 7500}{75}$	$= 313.8 \text{ lbs}$
side	$\frac{A \times C}{p^2}$	$\frac{2.17 \times 7500}{75}$	$= 217 \text{ lbs}$
	$\frac{p^2}{A \times C}$	$\frac{2 \times 2.17 \times 7500}{147.3}$	$= 221 \text{ lbs}$
corners	$\frac{p^2}{G \times d^2 \times T}$	$\frac{10,660 \times 7.5 \times 1.5}{(27.75-9) \times 9 \times 27.75}$	$= 191 \text{ lbs}$
Girders	$\frac{(L \times P) \times D \times L}{p^2}$		

## DOVE.

SHELL	Plate	$\frac{P-D}{P}$	
	Rivet	$\frac{P}{A \times N}$	
		$\frac{P}{C \times T \times B}$	
		$\frac{D}{C \times (T-2) \times B}$	



Foundation

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2.75  
25  
2.537

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