

List of Spare Gear for the Machinery

designated "FURNESS 1"

Messrs. Burmeister & Wain's Main Engines No. 1633 & 1634

" " Aux. " No. 1635 & 1636,

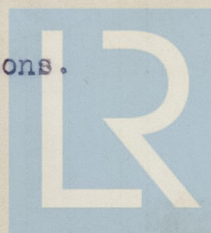
proposed for the vessel Yard No. 158 being built by

Messrs. Furness Shipbuilding Co. Ltd., Middlesbrough.

Copenhagen Report No.

Main Diesel oil engines:-

- 1 cylinder cover complete with studs and nuts for fastening of valves, cylinder liner, water jacket etc.
- 1 set of studs and nuts complete for one cylinder cover.
- 1 cylinder liner.
- 1 cylinder liner cooling water jacket.
- 1 safety valve for cylinder cover complete with spring etc. ready for use.
- 1 safety valve disc.
- 1 " " seat.
- 1 " " spring.
- 1 piston with piston rings complete and studs and nuts for fastening of piston rods.
- 1 piston without piston rings and studs.
- 3 sets of piston rings.
- 3 " of piston scraping rings.
- 2 telescopic cooling pipes for pistons.
- 1 scraping ring for piston rod.



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2.

Oil fuel injection valves:-

8 oil fuel injection valves complete with springs and filter etc.

ready for use.

4 push spindles complete.

10 valve spindles with liners and spindle pipes.

12 atomizer discs.

6 springs.

2 spindles for overflow valves.

Air inlet valves:-

3 air inlet valves complete with springs etc. ready for use.

1 " " " spindle with disc combined.

12 springs.

Exhaust valves:-

12 exhaust valves complete with springs etc. ready for use.

4 " " discs.

4 bottom pieces.

16 springs.

1 guide roller with bolt for the valve lifting levers.

6 springs for same.

3 thermometer fastening pieces.

Starting air valves:-

3 starting air valves complete with springs etc. ready for use.

16 springs.

1 guide roller with bolt for the valve lifting levers.

3 safety caps.



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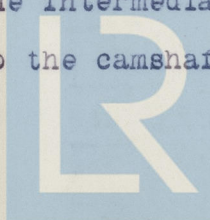
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3.

Oil fuel injection pumps:-

- 1 oil fuel injection pump complete with manometer valve etc.  
ready for use.
- 12 pump pistons with bushes complete.
- 3 slide valves with bushes and levers complete.
- 6 suction valves complete.
- 6 non-return valves for the oil fuel return piping.
- 3 oil fuel pressure pipes with flanges complete, from the fuel  
pumps to the injection valves.
- 6 springs for the suction valves.
- 6 " " " non-return valves.
- 6 " " " manometer valves.
- 12 " " " pump levers.
- 2 oil fuel filters complete.
- 1 guide roller with bolt and ball bearing for the pump levers.
- 1 pair of main bearing brasses.
- 2 main bearing studs and nuts.
- 2 crank pin bearing top brasses.
- 1 " " " bottom brass.
- 2 crank pin bearing bolts and nuts.
- 2 crosshead bearing top brasses.
- 3 " " " bottom brasses.
- 2 crosshead bearing bolts and nuts.
- 10 coupling bolts and nuts for one crank shaft coupling.
- 8 " " " " for one intermediate shaft coupling.
- Some chain links for the chain to the camshaft gearing.



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4.

Engine bilge and sanitary pumps:-

- 1 suction valve disc.
- 1 delivery valve disc.
- 1 escape valve spring.

A number of springs suitable for various sizes used.

A number of rubber packing rings suitable for the various sizes used.

Auxiliary Diesel oil engines:-

- 1 combined cylinder cover with liner complete with studs and nuts for fastening valves, water jackets etc.
- 1 set of studs and nuts complete for one cylinder cover.
- 1 safety valve for the cylinder covers complete.
- 3 safety valve springs.
- 4 pistons complete with crosshead gudgeon pins.
- 3 sets of piston rings.
- 3 " of piston scraping rings.

Oil fuel injection valves:-

- 5 oil fuel injection valves complete with springs and filters etc. ready for use.
- 3 push spindles complete.
- 3 valve spindles with liners and spindle pipes.
- 6 atomizers.
- 3 springs.

Air inlet valves:-

- 2 air inlet valves complete with springs etc. ready for use.
- 6 springs.



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5.

1 guide roller with bolt for the valve lifting levers.

Exhaust valves:-

9 exhaust valves complete with springs etc. ready for use.

3 " " discs.

6 springs.

1 guide roller with bolt for the valve lifting levers.

Starting air valves:-

2 starting air valves complete with springs etc. ready for use.

6 springs.

1 guide roller with bolt for the valve lifting levers.

Oil fuel injection valves:-

1 oil fuel pump complete with manometer valve etc. ready for use.

9 pump pistons with bushes and pump cylinders.

2 slide valves with valve chests, bushes and drawing spindle.

2 oil fuel pressure pipes with flanges complete from the fuel pump to the injection valves.

1 oil fuel filter complete.

2 springs for the suction valves.

2 " " " manometer valves.

4 " " " pump levers.

1 guide roller with bolt etc. for the pump levers.

Governors:-

2 ball bearings.

1 spring.



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6.

- 2 pair of main bearing brasses.
- 2 main bearing bolts and nuts.
- 1 pair of crank pin bearing brasses.
- 4 crank pin bearing bolts and nuts.
- 1 crosshead bearing gudgeon bush.
- Some links for the chain to the cam-shaft gearing.

Auxiliary starting air compressors:-

- 5 H.P. piston rings.
- 2 H.P. piston scraping rings.
- 4 L.P. piston rings.
- 1 H.P. suction valve complete ready for use.
- 2 H.P.       "       "       discs.
- 3 H.P.       "       "       springs.
- 3 H.P.       "       "       springy plates.
- 1 H.P. delivery valve complete, ready for use.
- 2 H.P.       "       "       discs.
- 3 H.P.       "       "       springs.
- 3 H.P.       "       "       springy plates.
- 2 L.P. suction valves complete, ready for use.
- 2 L.P.       "       valve discs.
- 4 L.P.       "       "       springs.
- 4 L.P.       "       "       springy plates.
- 2 L.P. delivery valves complete, ready for use.
- 2 L.P.       "       valve discs.
- 3 L.P.       "       "       springs.
- 3 L.P.       "       "       springy plates.



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7.

A number of springs suitable for various sizes used.

A number of rubber packing rings suitable for the various sizes used.

2 valve spindles suitable for the valves on the emergency starting air receiver.

1 spring for the safety valve on the starting air receivers.

A quantity of Krupp's, Palmetto, Klingeret, Fiber and Paragon packing material.

Various lengths of steel and copper pipes with unions, cone-ends, flanges etc. of the various sizes used at the main and auxiliary engines and air compressors.

A quantity of assorted bolts and nuts.

Ballast pump:-

One wing with guide blocks.

Cooling water pumps.

1 impeller shaft with nuts.

2 ball bearings.

Lubricating oil pumps:-

1 set of cog wheels.

1 roller bearing.

1 spring for safety valve.

2 filter baskets.

Bilge and Sanitary pump:-

1 set of suction and delivery valves.

1 escape valve spring.



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8.

Oil fuel transfer pump:-

- 1 set of cog wheels with shafts.
- 1 spring for safety valve.
- 2 filter baskets.
- 2 propeller shafts complete with nuts and keys
- 2 propellers.

100 K.W. Main Generators.

- 2 set of carbon brushes.
- $\frac{1}{2}$  " " brushholders.
- 1 ball bearing.

Electro motors:-

- 1 armature with shaft, 1 set of carbon brushes,  $\frac{1}{2}$  set of brush holders and 1 ball bearing for each of the following:-
- the 50 H.P. electro motor working the cooling water pumps and the lubricating oil pumps,
- the 15 H.P. electro motor working the ballast pump,
- |             |   |   |   |                                       |
|-------------|---|---|---|---------------------------------------|
| the 13 H.P. | " | " | " | the bilge and sanitary pump,          |
| the 5 H.P.  | " | " | " | the oil fuel transfer pump,           |
| the 8 H.P.  | " | " | " | the turning gear to the main engines. |



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List of Spare gear for  
the Diesel Oil Engines  
No 1833 & 1834  
designated "FURNESS I." by  
Messrs Burmeister & Wain,  
Copenhagen  
for Yard No 158 being built by  
Messrs Furness Shipbuilding Co., Ltd.,  
Middlesbrough.

Copenhagen Report No 8242.

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