

GLASGOW REPORT No. 48950

MESSRS. ALEX. STEPHEN & SONS, LTD.

NO. 5 1 9

MACHINERY SPARE GEAR.

NOTE:- Spare Gear for Windlass, Capstan, Steer. Gear, Telemeter, Refrigerator, Austin Generators, Laundry, Ventilating Fans, Emergency Dynamo etc. are for Shipyard A/c. and are not included here.

for Main Turbines etc.

- ✓ 10% of turbine buckets.
- ✓ 10% of bucket spacers.
- ✓ 2 Bolts and nuts for each size of bearing.
- ✗ 1 Bearing liner for each size of turbine bearing.
- ✗ 1 " " " " " " " Alternator bearing.
- ✗ 1 " " " for the motor.
- ✓ 4 Sets of Carbon gland packings.
- ✓ 1 escape valve spring for each size fitted.
- ✓ 20 Oil cooler tubes.
- ✓ 40 " " ferrules.
- ✓ 20 Air cooler tubes.
- ✓ 40 " " ferrules.
- ✓ 6 Thermometers.
- ✓ 1 Set gauges.
- ✓ 1 Set governor springs.
- ✓ 1 Set Main control gear wearing parts.
- ✓ 1 Contactor solenoid of each size fitted.
- ✓ 1 Set motor slipring brushes.
- ✓ 1 Set alternator slipring brushes.
- ✓ 1 Set Brush holders for the motor.
- ✓ 1 " " " " " alternator.
- A quantity of assorted bolts and nuts.
- ✓ 1/20th of the total number of bolts and nuts for each turbine casing joint.
- ✗ 1 Sieve for forced lubrication oil pump strainer.

For Turning Gear Motors.

- X 1 Armature.
- X 1 Set brushes.

For Main Condensers.

- X 200 Tubes.
- X 400 Ferrules.
- X 400 Crane packings.

For Shafting etc.

- X 1 Tail shaft complete with nut and stop, stowed as specified.
- X 2 Extra keys for same, 1/8" wider than those fitted.
- X 9 Coupling bolts and nuts, 1/16" larger than working ones.
- X 1 Set woods for bottom half of stern tube bushes (End grain)
- X 2 Port Propeller blades.
- X 2 Starboard propeller blades.

For Water Tube Boilers.

- X 20 Boiler tubes, longest length of each size fitted.
- X 4 Superheater tubes of each length fitted.
- X Boiler door joints, sufficient for two boilers.
- X 10 Boiler Tube stoppers for each size of tube fitted.
- X 3 Valves and pistons for main feed check valves.
- X 3 spindles for ditto.
- X 3 Valve lids for auxiliary feed check valves.
- X 6 safety valve springs.

For Multitubular Boilers.

- 1 Set manhole and mudhole doors for one boiler, with studs and dogs complete.
- 50 Plain tubes (parallel type)
- 10 Common tube stoppers.
- 1 Drain plug for boiler bottom with ring spanner for same.
- 2 Main feed check valves and spindles.
- 2 Auxiliary feed check valves and spindles.
- 2 Safety Valve springs.



For Howden's Forced Draught.

- 1 Furnace door with mountings complete.
- 4 Portable air gauges.
- 6 W.I. handles and levers for top valves.
- 30 Mica Plates.
- 15 Stay tube retarders.
- 30 plain " "
- 3 Small hooks for pulling out retarders.
- 1 Armature and set of brushes for 5 H.P. motor.
- 1 Complete rotor consisting of main armature, regulating motor armature, ball and roller bearings complete for 21 B.H.P. C.C. motors.
- 24 Brush holders for main and regulating motors.
- 96 Carbon brushes for ditto.

For Yarrow Boiler Oil Fuel Installation.

- 30 Burners.
- 30 Burner Diaphragms.
- 90 Burner Nozzles.
- 6 Burner spanners.
- 15 Firebrick quarls.
- 12 thermometers.

For Scotch Boilers Oil Fuel Installation.

- 6 Burners.
- 6 Burner Diaphragms.
- 18 Burner Nozzles.
- 2 Discharge strainer cages.
- 2 Suction " "

For Yarrow Boilers, Oil Fuel Pressure Pumps.

- 1 Pump bucket with rings complete.
- 1 Pump rod with nuts complete.
- 1 Motor pinion.
- 1 Set suction and delivery valve seats with valves, springs, etc.



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Yarrow Boilers, Oil Fuel Pressure Pumps (Contd)

- 1 Armature.
- 1 Set Bearing Liners for one motor.
- 1 Line of Brush Holders.
- 1 Set brushes for one motor.

Scotch Boilers Oil Fuel Roto-Plunge Pump.

- 1 Armature.
- 1 Set motor bearing liners.
- 1 Set brushes and brush holders.

Oil Fuel Transfer Pump.

- 1 Pump rod and bucket.
- 1 Set suction and delivery valve seats with valves, guards and springs.
- 1 Pinion for motor gear.
- 1 Armature (10 B.H.P.)
- 1 Set bearing liners for one motor.
- 1 Set brushes and holders for one motor.

Oil Bilge Pump.

- 1 Pump rod and bucket.
- 1 Set Suction and delivery valve seats with valves and springs.
- 1 Pinion for motor gear.
- 1 Armature (2½ B.H.P.)
- 1 Set Bearing liners.
- 1 Set brushes and brush holders.

Main Circulating Pumps.

- 1 Impeller and shaft complete with nut.
- 1 Armature (250 H.P. motor)
- 1 Set brushes.

losed Feed System.

- 1 Set impellers for one extraction pump.
- 1 Pump spindle.
- 1 Armature for 20 H.P.DC Motor.



Feed System (Contd)

- 1 Set Motor Brushes.
- 2 Sets steam nozzles with nozzle holders.
- 2 Valves, guards, studs and nuts for non-return valves.
- 10% of tubes for drain cooler.
- 10% of ferrules for drain cooler.
- 10% of packing for drain cooler.
- 10% of tubes for ejector condenser.
- 10% of ferrules for ejector condenser.
- 10% of packing for ejector condenser.
- 1 Valve for supplementary feed valves.
- 1 Float pan for supplementary feed valves.

Low Pressure Surface Feed Heater.

- 10% of tubes.
- 10% of ferrules.
- 10% of packing.

High Pressure Surface Feed Heater.

- 25% of heater tubes.

P. Surface Feed Heater.

- 25% of heater tubes.

Low Pressure 40 ton Evaporator.

- 10% of tubes.
- 10% of ferrules.
- 10% of bushes.

High Pressure 40 ton Evaporator.

- 1 Set Evaporator Coils.

Main Feed Pumps.

- 1 Turbine Disc with spindle complete,
- 1 Pump disc with packing ring.
- 2 Sets of carbon packing for each set fitted.



For 6" x 8 $\frac{1}{2}$ " x 13" Auxiliary Feed Pump.

- 1 Bucket with rings complete.
- 1 Pump rod and piston^{rod} with crosshead and nuts complete.
- 1 Set rings for steam piston.
- 1 Set Suction and delivery valve seats with valves, guards and springs.

For 6" x 8 $\frac{1}{2}$ " x 18" Auxiliary Feed Pump.

- 1 Bucket with rings complete.
- 1 Pump rod and piston rod with crosshead and nuts complete.
- 1 Set rings for steam piston.
- 1 Set suction and delivery valve seats with valves, guards, and springs.

For Main Bilge Pump.

- 1 Pump rod and nuts.
- 1 Pump bucket with rings complete.
- 1 Set suction and delivery valves complete.
- 1 pinion for motor gear.
- 1 Main armature for 35 B.H.P. Austin Motor.
- 1 Regulating motor armature with ball and roller bearings mounted complete on shaft.
- 1 Set main brushes.
- 1 Set R.M. brushes.

For Ballast Pump.

- 1 Pump rod and nuts.
- 1 Pump bucket complete with rings.
- 1 Set suction and delivery valves complete.
- 1 Pinion for motor gear.

(No armature, motor is same size as bilge pump).

For Emergency Bilge Pump.

- 1 Armature.
- 1 Set brushes.

For Reserve Lubricating Oil Pump.

- 1 Armature (3 B.H.P.)
- 1 Set brushes.



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Sanitary & Bath Pumps.

- 1 Impeller and spindle complete with nut.
- 1 Armature (31 H.P. motor)
- 1 Set brushes.

Swimming Bath Pump.

- 1 Impeller and spindle.
 - 1 Set Air pump discharge valves and springs..
 - 1 Set Air pump piston rings.
 - 1 Set Float gear spares with float.
- (No armature, same as Water Extraction Pumps)

Fresh Water Pumps & Hot Salt Water Pump.

- 1 Impeller and spindle.
- 1 Armature (9 H.P. motor)
- 1 Set brushes.

Auxiliary Circulating Pump.

- 1 Impeller and spindle complete with nut.
- 1 Armature (16½ H.P. motor)
- 1 Set brushes.

Auxiliary Air Pump.

- 2 Sets rings for one pump bucket.
- 1 Pump rod and nuts.
- 1 Set crosshead brasses.
- 1 Pump bucket complete.
- 1 Set Crankpin brasses.
- 1 Foot valve complete.
- 1 Head " "
- 1 Set Gearing comprising one wheel and one pinion.
- 1 Pinion.
- 1 Armature (15 B.H.P.)
- 1 Set brushes and brush holders.
- 1 Set bearing liners for armature.



For Main Feed Water Pressure Filter.

1 Set grids and cloths.

For Auxiliary Pressure Filter.

1 Set grids and cloths.

For Oil Purifiers.

1 Armature and set brushes of each size

For 2" Kent Oil Meters.

1 Working Chamber.

For Auxiliary Turbo Generators.

- 1 Armature.
- 1 Bearing for generator.
- 1 Set shunt and series field coils.
- 1 Line of brush holders.
- 2 Sets of brushes.
- 1 Set governor spare parts.
- 1 Set gear box bearings.
- 1 Set turbine bearings.
- 1 Set carbon packing for glands.

For Diesel Engine Generators.

- 2 Fuel valves complete.
- 1 Set piston rings for one piston.
- 1 Set studs and nuts for one cylinder head.
- 1 Gudgeon pin.
- 2 Crank pin bearing bolts and nuts.
- 2 Main bearing bolts and nuts.
- 1 Fuel pump complete.
- 4 Ignition tubes.
- 10% of all sizes of bolts and nuts fitted.
- 1 Armature.
- 1 Set of brushes.
- 1 Holder for generator.
- 1 bearing for generator.



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For Winches.

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|------------|---|
| 5 Ton size | Same size motor as aft Capstan Rotor. Therefore no spares. |
| 3 Ton size | One Rotor. One Set Main Brushes. One Set R.M. Brushes. |
| 2 Ton size | One Rotor. One Set Main Brushes. One Set R.M. Brushes. |

Templets etc.

- 1 Templet suitable for right and left hand propeller blade, showing exact position of bolt holes relative to fore and aft centre line of shaft.
 - 1 Templet for propeller cones.
 - 4 Templets (2 male and 2 female) for propeller keys.
 - 1 Templet for shaft couplings, giving the exact size of bolt holes.
 - 2 Templets (male and female) for bevel of propeller blade flanges.
 - 1 Wooden box for above templets.
- Each templet to be distinctly typed with name of ship, date, what it is for, and, where necessary, the manner and position in which it is to be applied.
- 1 Gauge for testing height or wear-down of rotors.
 - 1 Gauge for testing fore and aft position of shafting.
 - 1 Set of gauges for testing the truth of the rotor.
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