

of Antwerp Date of First Survey 4. Survey June 1905
on the Iron or Steel S.S. "Ben Clack" going to Leith
Book 86. Built at Leith. By whom Ramage & Ferguson, Ltd. When built 1901.
W. Thomson & Co. Owners Address Leith.
No. 174. Electric Light Installation fitted by Sunderland Forge & Engineering Co. Ltd. When fitted 1905

9900-114710-104710

DESCRIPTION OF DYNAMO, ENGINE, ETC.

Inverted Vertical Single cylinder open type engine direct coupled to
Multipolar Compound Round dynamo

Capacity of Dynamo 100 Amperes at 100 Volts, whether continuous or alternating current continuous

Where is Dynamo fixed in Valve recess

Position of Main Switch Board near Dynamo having switches to groups four of lights, &c., as below

Positions of auxiliary switch boards and numbers of switches on each
1 in Steering Engine Recess (2 switches) 1 in chart room, 2 in Saloon Recess
1 for engine room.

If cut outs are fitted on main switch board to the cables of main circuit yes and on each auxiliary switch boards to the cables of auxiliary circuits yes and at each position where a cable is branched or reduced in size yes and to each lamp circuit yes

If cessel is wired on the double wire system are cut outs fitted to both flow and return wires or cables of all circuits including lamp circuits Yes

Are the cut outs of non-oxidizable metal yes and constructed to fuse at an excess of 100 per cent over the normal current

Are the cut outs fitted in easily accessible positions yes Are the fuses of standard dimensions yes If wire fuses are used

Are permanent instructions fitted on or near each switch board giving particulars of proper size of fuse for each circuit Yes

Are all switches and cut-outs constructed of incombustible materials and fitted on incombustible bases yes

Total number of lights provided for 136 arranged in the following groups:—

A	45	lights each of	16	candle power requiring a total current of	27	Amperes
B	42	lights each of	16	candle power requiring a total current of	25.2	Amperes
C	43	lights each of	16	candle power requiring a total current of	25.8	Amperes
D	2	lights each of	3000	candle power requiring a total current of	15	Amperes
E		lights each of		candle power requiring a total current of		Amperes
2	Mast head light with 1 lamp each of	32	candle power requiring a total current of	2.4	Amperes	
2	Side lights with 1 lamp each of	32	candle power requiring a total current of	2.4	Amperes	
9	Cargo lights of 5-16 included in circuit "A"		candle power, whether incandescent or arc lights	incandescent		

If are lights, what protection is provided against fire, sparks, &c. Strong glazed lanterns fitted.

Where are the switches controlling the masthead and side lights placed in chart room.

DESCRIPTION OF CABLES.

Main cable carrying	100	Amperes, comprised of	19	wires, each	14	L.S.G. diameter, .1 square inches total sectional area
Branch cables carrying	13	Amperes, comprised of	7	wires, each	18	L.S.G. diameter, .073 square inches total sectional area
Branch cables carrying	7	Amperes, comprised of	7	wires, each	20	L.S.G. diameter, .007 square inches total sectional area
Leads to lamps carrying	6	Amperes, comprised of	1	wires, each	18	L.S.G. diameter, .001 square inches total sectional area
Cargo light cables carrying	3	Amperes, comprised of	138	wires, each	30	L.S.G. diameter, .005 square inches total sectional area

DESCRIPTION OF INSULATION, PROTECTION, ETC.

Wires insulated with pure and vulcanized india rubber, taped, and lead covered.

How made, insulated, and protected No joints used. wiring carried out on the Distribution system.

Are all the joints of cables thoroughly secured as a flux Are all joints made in bunkers, cargo spaces, or stores, or bare used for carrying cargo, stores, or bare



What special protection has been provided for the cables near galleys or oil lamps or other sources of heat *do do*

What special protection has been provided for the cables near boiler casings *do do*

What special protection has been provided for the cables in engine room *do do*

How are cables carried through beams *holes bushed for lead covered wires through bulkheads, &c. Watertight glands used.*

How are cables carried through decks *Watertight deck tubes used.*

Are any cables run through coal bunkers *no* or cargo spaces *no* or spaces which may be used for carrying cargo, stores, or baggage *yes*

If so, how are they protected *Lead covered and armoured wires used*

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage *no*

If so, how are the lamp fittings and cable terminals specially protected _____

Where are the main switches and cut outs for these lights fitted _____

If in the spaces, how are they specially protected _____

Are any switches or cut outs fitted in bunkers _____

Cargo light cables, whether portable or permanently fixed *Portable* How fixed _____

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel _____

How are the returns from the lamps connected to the hull _____

Are all the joints with the hull in accessible positions _____

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and cut-outs fitted in positions not liable to the accumulation of petroleum vapour or gas _____

Are any switches, cut outs, or joints of cables fitted in the pump room or companion _____

How are the lamps specially protected in places liable to the accumulation of vapour or gas _____

The installation is _____ supplied with a voltmeter ~~and~~ _____ an amperemeter, fixed on switchboard

The copper used is guaranteed to have conductivity of *98* per cent. that of pure copper.

Insulation of cables is guaranteed to have a resistance of not less than *600* megohms per statute mile after 24 hours' immersion in seawater.

The foregoing statements are a correct description of the Electric Light installation fitted by us on this vessel and we declare that it is at this date in good order and safe working condition.

THE SUNDERLAND FORGE & ENGINEERING CO., LTD.

R. W. G. M.

Electrical Engineers

Date *7 Jan 1905*

PASSES.

Distance between dynamo or electric motors and standard compass *160 feet*

Distance between dynamo or electric motors and steering compass *160 feet*

Nearest cables to the compasses are as follows:—

A cable carrying <i>6</i> Amperes <i>on</i> feet from standard compass <i>on</i> feet from steering compass
A cable carrying <i>5</i> Amperes <i>10</i> feet from standard compass <i>14</i> feet from steering compass
A cable carrying _____ Amperes _____ feet from standard compass _____ feet from steering compass

Have the compasses been adjusted with and without the electric installation at work at full power *See master's letter etc.*

The maximum deviation due to electric currents, etc., was found to be *nil* degrees on *18* course in the case of the standard compass and *nil* degrees on _____ course in the case of the steering compass.

Builder's Signature _____ Date _____

GENERAL REMARKS.

The fittings & workmanship are good and in accord with the Rules. The vessel is now ready in my opinion for service.

Electric light fitted.

24/2.2.0

*Surveyor Dept
10/1/05*



THE SURVEYORS ARE REQUESTED NOT