

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office.....

5 JUL 1928

Date of writing Report *23<sup>rd</sup> June 1928* When handed in at Local OfficePort of *Copenhagen*No. in Survey held at *Copenhagen*Date, First Survey *11<sup>th</sup> April* Last Survey *14<sup>th</sup> June 1928*

Reg. Book.

#1885 on the *Steel Tonn Screw Motor Vessel MARIE MÆRSK*

(Number of Visits.....)

Tons { Gross *8271*

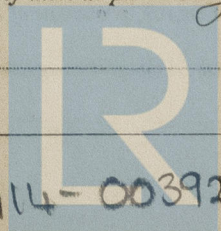
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Built at *Copenhagen*By whom built *Msk. Bunnester, Wain's Masking Skibbygger* Yard No. *187*When built *1928. 6*Owners *Msk. Bunnester, Wain's Masking Skibbygger*Port belonging to *Fredericia*Electric Light Installation fitted by *Msk. Bunnester, Wain's Masking Skibbygger* Contract No. When fitted *1928*System of Distribution *Direct Current Two conductor insulated system*Pressure of supply for Lighting *110* volts, Heating *220* volts, Power *220* volts.Direct or Alternating Current, Lighting *Direct current* Power *Direct current*

If alternating current system, state frequency of periods per second

Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off *yes*Generators, do they comply with the requirements regarding rating *yes*, are they compound wound *yes*are they over compounded 5 per cent. *0 per cent*, if not compound wound state distance between each generatorWhere more than one generator is fitted are they arranged to run in parallel *yes*, is an adjustable regulating resistance fitted in series with each shunt field *yes*Are all terminals accessible, clearly marked, and furnished with sockets *yes*, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched *yes*Position of Generators *In the machinery space*is the ventilation in way of the generators satisfactory *yes*, are they clear of all inflammable material *yes*if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the generators *Not installed near any woodwork or combustible material*, are the generators protected from mechanical injury and damage from water, steam or oil *yes*are their axes of rotation fore and aft *yes*Earthing, are the bedplates and frames of the generating plant efficiently earthed *yes*, are the prime movers and their respective generators in metallic contact *yes*Main Switch Boards, where placed *At the forward end of the machinery space*If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard *yes*Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes *yes*are they protected from mechanical injury and damage from water, steam or oil *yes*, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards *Not installed near unprotected woodwork or combustible material*are they constructed wholly of durable, non-ignitable non-absorbent materials *yes*, is all insulation of high dielectric strength and of permanently high insulation resistance *yes*if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework *yes*and is the frame effectively earthed *yes*. Are the fittings as per Rule regarding:— spacing or shielding of live parts *yes*, accessibility of all parts *yes*, absence of fuses on back of board *yes*, proportion of omnibus bars *yes*individual fuses to voltmeter, pilot or earth lamp *yes*, connections of switches *yes*

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

For each generator: *A three pole circuit breaker with overload and reversed current trips*For each outgoing circuit: *A double pole switch and a double pole fuse*Instruments on main switchboard *5* ammeters *4* voltmeters *yes* synchronising device for paralleling purposes.Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system *One Voltmeter is provided with Ohm scale and the switchboard is provided with 2 sets of earth testing lamps*Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules *yes*Joint Boxes Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule *yes*

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*Main cables Single*

**Cables:** Single, twin, concentric, or multicore *Bruch* are the cables insulated and protected as per Tables IV or V of the Rules *✓*

**Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load *About 5 Volts*

**Cable Sockets and other connections,** are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets *ye.*

**Paper Insulated Cables.** If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *No paper insulated cables used*

**Cable Runs,** are the cables fixed as far as possible in accessible positions not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage *ye.*

**Support and Protection of Cables,** state how the cables are supported and protected *The cables are supported by iron clips as per Rule*  
*Lead covered and steel wire armoured cables used, and where necessary protected by steel wire casings or tubes*  
 If cables are run in wood casings, are the casings and caps secured by screws *✓*, are the cap screws of brass *✓*, are the cables run in separate grooves *✓*. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII *yes.*

**Refrigerated Chambers,** if fitted, are the cables and fittings in accordance with the special requirements *ye.*

**Joints in Cables,** state if any, and how made, insulated, and protected *No joints in cables.*

**Watertight Glands and Deck Tubes,** are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands *ye.*

**Bushes in Beams and Non-watertight Partitions,** where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed *ye.* state the material of which the bushes are made *lead.*

**Earthing Connections,** state what earthing connections are fitted and their respective sectional areas *No earthing connections*  
 are their connections made as per Rule *✓*

**Alternative Lighting,** are the groups of lights in the propelling machinery space arranged as per Rule *yes.*

**Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven *✓*

**Navigation Lamps,** are these separately wired *yes.*, controlled by separate switch and separate fuses *ye.*, are the fuses double pole *ye.*  
 are the switches and fuses grouped in a position accessible only to the officers on watch *yes.*  
 has each navigation lamp an automatic indicator as per Rule *ye.*

**Secondary Batteries,** are they constructed and fitted as per Rule *✓*

**Fittings,** are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight *yes*  
 are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected *No.*  
 are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected *In the cargo pump room and in the pump room in the forehold gaslight fittings used, protected with metal guards. are the cables led The wiring enclosed in gaslight tubes.*  
 where are the controlling switches situated *gaslight double pole switches placed outside these rooms*

**Searchlight Lamps, No. of** *None*, whether fixed or portable *✓*, are their fittings as per Rule *✓*

**Are Lamps,** other than searchlight lamps, No. of *None*, are their live parts insulated from the frame or case *✓*, are their fittings as per Rule *✓*

**Motors,** are their working parts readily accessible *ye.*, are the coils self-contained and readily removable for replacement *ye.*  
 are the brushes, brush holders, terminals and lubricating arrangements as per Rule *ye.*, are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material *ye.*  
 are they protected from mechanical injury and damage from water, steam or oil *ye.* are their axes of rotation fore and aft *ye. ✓*  
 if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type *Not situated near unprotected woodwork or combustible material if not of this type, state distance of the combustible material horizontally or vertically above the motors. ✓ and ✓*

**Control Gear and Resistances,** are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule *yes.*

**Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule *✓*

**Ships carrying Oil having a Flash Point less than 150° F.** Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings *ye. ✓*  
 If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *ye. ✓*

PARTICULARS OF GENERATING PLANT.									
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.		
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.	
MAIN ...	3	100	220	455	400	Gas oil Engine	Gas oil	about 150° F.	
AUXILIARY ...		66	220	300	400	" " " "	" " "	" " "	
EMERGENCY ...		33	220	150	400	" " " "	" " "	" " "	
ROTARY TRANSFORMER	1	15	220/110	130	1700	Electro-motor			

LIGHTING AND HEATING CONDUCTORS.									
Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor.	COMPOSITION OF STRAND.		Total Maximum Current.	Approximate Length. (Lead and Return.)	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR...	2	185	37	2.52	455	20	Unarmoured rubber	Lead covered and braided.
	EQUALISER CONNECTIONS ...	1	185	37	2.52		10	" "	" "
	MAIN GENERATOR ...	2	95	19	2.52	300	20	" "	" "
	AUXILIARY GENERATOR ...	1	95	19	2.52		10	" "	" "
	EMERGENCY GENERATOR ...	1	95	19	2.52		10	" "	" "
	ROTARY TRANSFORMER...	1	95	19	2.52	130	26	" "	Lead covered and steel wire armoured.
	AUXILIARY SWITCHBOARDS ...								
	ENGINE ROOM ...	1	4	7	0.85	14	20	" "	" "
	BOILER ROOM ...								
	ACCOMMODATION ...								
	MAIN GENERATOR ...	2	95	37	1.80	150	38	" "	Lead covered and braided.
	EQUALISER CONNECTION ...	1	70	37	1.55		19	" "	" "
	NAVIGATION ...	1	2.5	7	0.67	4	160	" "	Lead covered and steel wire armoured.
	SALOON HOUSEMAIN ...	1	10	7	1.35	20	140	" "	" "
	OFFICERS' AFT ...	1	2.5	7	0.67	14	20	" "	" "
	CREW AFT ...	1	2.5	7	0.67	15	30	" "	" "
	WIRELESS ...	1	10	7	1.35	17	170	" "	" "
	SEARCHLIGHT ...								
	MASTHEAD LIGHT...	1	1.5	1	1.38	0.5	140	" "	" "
	SIDE LIGHTS ...	1	1.5	1	1.38	0.5	30	" "	" "
	COMPASS LIGHTS ...	1	1.5	1	1.38	0.2	10	" "	" "
	POOP LIGHTS ...	1	1.5	1	1.38	0.3	22.5	" "	" "
	CARGO LIGHTS ...	1	1.5	flexible		1.1	8	" "	" "
	ARE LAMPS ...	1	50	19	1.83	98	140	" "	" "
	HEATERS ...	1	2.5	7	2.13	62	20	" "	" "
	CREW AFT ...	1	2.5	7	2.13	57	30	" "	" "

MOTOR CONDUCTORS.									
Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor.	COMPOSITION OF STRAND.		Total Maximum Current.	Approximate Length. (Lead and Return.)	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP ...	1	10	7	1.35	35	30	Unarmoured rubber	Lead covered and steel wire armoured.
	MAIN BILGE LINE PUMPS ...								
	GENERAL SERVICE PUMP ...								
	EMERGENCY BILGE PUMP ...								
	SANITARY PUMP ...	1	10	7	1.35	35	26	" "	" "
	CIRC. SEA WATER PUMPS ...								
	CIRC. FRESH WATER PUMPS ...								
	AIR COMPRESSOR ...								
	FRESH WATER PUMP ...								
	ENGINE TURNING GEAR ...	2	6	7	1.05	20	12	" "	" "
	ENGINE REVERSING GEAR ...								
	COOLING WATER AND LUBRICATING OIL PUMPS ...	1	50	19	1.83	105	36	" "	" "
	OIL FUEL TRANSFER PUMP AND LUBRICATING OIL WINDLASS ...	1	2.5	7	2.13	56	28	" "	" "
	WINCHES, FORWARD ...								
	WINCHES, AFT ...								
	STEERING GEAR ...								
	(a) MOTOR GENERATOR ...	1	35	19	1.53	75	100	" "	" "
	(b) MAIN MOTOR ...	1	2.5	7	0.67	9	6	" "	" "
	WORKSHOP MOTOR ...								
	VENTILATING FANS ...								
	BLOWER FOR SUPERCHARGER ...	2	70	19	2.16	120	20	" "	" "
	LUBRICATING OIL SEPARATOR ...	1	2.5	7	0.67	8	39	" "	" "
	FUEL OIL PURIFIER ...	1	2.5	7	0.67	11	6	" "	" "
	REFRIGERATING MACH ...	1	6	7	1.05	24	90	" "	" "
	MOTOR IN THE GALLEY ...	1	1.5	1	1.38	1.6	12	" "	" "



All Conductors are of annealed copper conforming to British Standard Specification No. 7.

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description

AKTIESELSKABET  
BURMEISTER & WAINSKIN- OG SKIBBYGGER

Electrical Engineers.

Date 25<sup>th</sup> June 1928

#### COMPASSES.

Distance between electric generators or motors and standard compass about 70 meters

Distance between electric generators or motors and steering compass 70 "

The nearest cables to the compasses are as follows:—

A cable carrying 4 Amperes 6 feet from standard compass 8 feet from steering compass.

A cable carrying 0, 2 Amperes to lamp. in feet from standard compass to lamp. in 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. yes

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted yes None

The maximum deviation due to electric currents was found to be 0 degrees on all course in the case of the standard

compass, and 0 degrees on all course in the case of the steering compass.

AKTIESELSKABET  
BURMEISTER & WAINSKIN- OG SKIBBYGGER

Builder's Signature.

Date 25<sup>th</sup> June 1928

Is this installation a duplicate of a previous case. yes If so, state name of vessel S. Emma Mark of Nyborg, Burmeister and Wain's Yard No 184 except, that in this case an extra 1 cylinder auxiliary engine has been fitted.

General Remarks (State quality of workmanship, opinions as to class, &c.)

The whole electric lighting, power and heating installation as above described has been fitted in accordance with the requirements of the Rules, the approved plans, and the Secretary's letters E dated 4/10 1927, heating E dated 9/6 1927 to the builder.

The material used in the installation is of good quality and the workmanship is of good description in every respect.

The whole electric lighting and power and heating installation has been tested under full power working condition and found satisfactory.

It is submitted that  
this vessel is eligible for  
THE RECORD

Elec. Light

J.D.A. 4/7/28.

Total Capacity of Generators 199 Kilowatts.

The amount of Fee ... 36 £ 9 s 4 d :  
4 663, 39  
Travelling Expenses (if any) £ :  
When applied for, 3. 7. 1928  
When received, 17. 8. 1928

ac. Inspect. S. Clausen  
Surveyors to Lloyd's Register of Shipping.

Committee's Minute

TUES. 10 JUL 1928

Assigned

Elec Light



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