

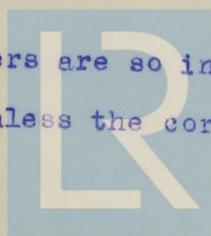
CONTROL EQUIPMENT.

The Main Switchboard is of the dead front type.

For each propulsion generator a $2/3$ pole change-over switch operated through gearing by a handwheel is fitted. These switches are situated at the back of the panel and operated by rotating the handwheel. The switches connect the main generators either to the propulsion feeders or to the engine room auxiliary bus bars. Any one generator can be connected to the auxiliary power bars at a time. Mechanical interlocks are fitted to prevent more than the one being switched to these bars.

All main generators can be run on the propulsion circuit connected in series by means of the same switches but connected on the opposite side to the auxiliary feed. The field switches of each generator are interlocked with the main set up switches and alarm bells are fitted giving due warning when any propulsion field circuit is open. These main set up switches are interlocked with the field controller so that the main switch cannot be operated unless the corresponding field controller is in the off position., thus preventing the main switch being broken while a current is flowing.

The field controllers are so interlocked that they cannot be thrown to propulsion unless the corresponding main



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Main Switch is in the propulsion position and also cannot be thrown to the auxiliary power bars unless the corresponding Main Switch is in the auxiliary power position.

The second, or auxiliary generators, which are connected to the same shaft as the main generators are used for excitation purposes. The field circuits of the propulsion motor and the main generators are separately excited, off these auxiliary generators. The auxiliary generator fields are being self excited. One auxiliary generator may also be switched to the auxiliary power bus bars. The switching of these generators is so interlocked that only one generator may be connected to excitation and only one to auxiliary power at a time. When the cargo pumps or windlass is working it is necessary to use one of the main generators on these bars as the load is more than the auxiliary generator can cope with.

Automatic contactors are fitted in the field circuits of the propulsion motor to prevent the field circuit being broken with full field current flowing. A discharge resistance is inserted when these contactors operate and so prevent an induced current flowing in the fields at the moment of breaking contact.

Electrical/



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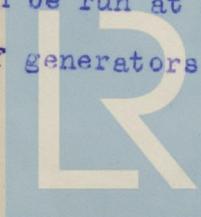
Electrical protective relays or contactors are provided for main engine protection, and so arranged that when any engine is reduced in speed by 30% the generator is automatically cut out of the circuit, thus preventing the generator being driven as a motor by the other generator and also preventing a reverse torque on the engines. In connection with this automatic device there are connected to it electric alarm bells to notify the operator and, in the event of a reduction in speed of any one engine to the extent of 30%, as already stated, this device will open the generator field, thus immediately relieving the load and will stay in this position until the set up switch on the generator, which has slowed down, is turned to the off position, at which time other protective devices will operate and thus permit of propulsion in the normal way.

The four generator field rheostats are combined in one unit (the propulsion rheostat) and are connected up in the "Ward Lennord" system and can be operated direct from the Navigating Bridge of the vessel or by hand at the Main Switchboard.

The propulsion motor can be run at any speed from 1 to 95 R.P.M. according to the number of generators in circuit.

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