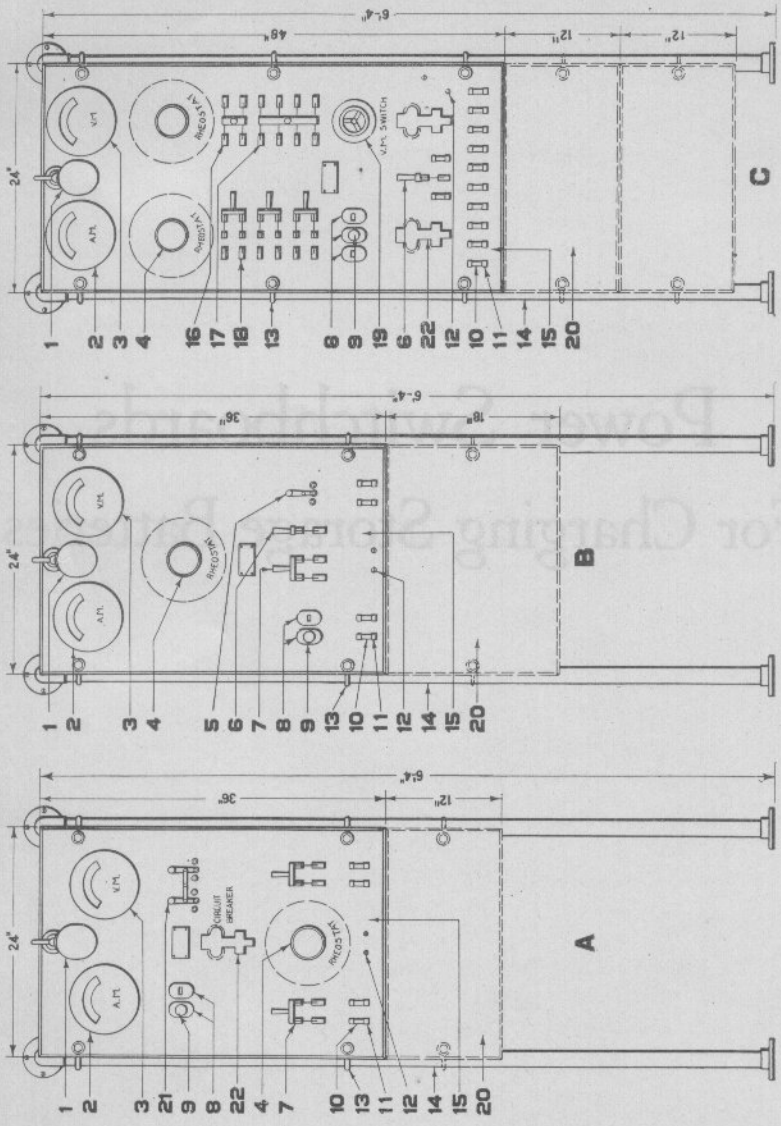

Power Switchboards

March 1923 GENERAL RAILWAY SIGNAL COMPANY

Power Switchboards

For Charging Storage Batteries

Switchboards as listed below are used in connection with charging storage batteries and to control the power delivered through the operating switchboard to the interlocking machine.

They are equipped with the following apparatus:

Ammeter, Voltmeter, Ammeter Jack, Voltmeter Switch, Fuses, Terminals, Switches, Starting Panels to suit conditions, and no-voltage Reverse Current Circuit Breakers except where A. C.-D. C. motor generators are started from D. C. end.

The Ammeter and Voltmeter are arranged to give readings on charging or discharging circuits.

The field rheostat regulates the generator voltage.

The reverse current circuit breaker opens in case the voltage of the generator falls below that of the battery. This circuit breaker is not required when A. C.-D. C. Motor Generator Sets are started from the D. C. end.

Motor Generator Sets with A. C. Motors above five horse power require compensators when started from A. C. end. Compensators are usually mounted independent of switchboards.

Scale of meters, rating of rheostats, switches, fuses, etc., are chosen to meet requirements unless otherwise specified.

When ordering Power Switchboards, it is necessary to specify the following:

1—Type, Ampere Hour Capacity and Voltage of main and auxiliary batteries or give information from which this may be determined.

2—Source of power, whether gasoline engine, Direct Current or Alternating Current. If Direct Current give voltage, if Alternating Current give voltage, frequency and number of phases.

3—Number of Motor Generators to be controlled from switchboard.

When ordering parts for replacements on existing switchboards give all information shown on name plate of apparatus, name of interlocking plant where switchboard is installed and thickness of slate.

Specifications covering source of power, type and size of battery determine type and size of motor generator sets, which we furnish to meet every condition.

(Continued on following page)

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Power Switchboards

For Charging Storage Batteries

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
A	Power Switchboard, thickness of slate 1½ inches, Complete as shown, arranged for charging one set of storage batteries from a generator driven by a gasoline or oil engine. Includes Ammeter, Voltmeter, Ammeter Jack, Voltmeter Switch, Reverse Current Circuit Breaker, Field Rheostat, two 2 P. S. T. Switches, Fuses, Terminals, Lamp, etc. (1-1, 1-2, 1-3, 1-4, 2-7, 2-8, 1-9, 4-10, 8-11, 2-12, 4-13, 2-14, 1-15, 1-21, 1-22)	25290-1
A1	as above, except equipped with sub-panel Plate F0301 Fig. F arranged for charging one set of storage batteries from motor generator driven by Direct Current Power	
A2	same as Fig. A, except equipped with Sub-panel Plate F0301 Fig. G, arranged for charging one set of storage batteries from a generator driven by a three phase A. C. Motor, the Motor Generator Set being started from the A. C. end.	
A3	same as Fig. A, except thickness of slate is 1 inch	
A4	same as Fig. A1, except thickness of slate is 1 inch	
A5	same as Fig. A2, except thickness of slate is 1 inch	
B	Power Switchboard, thickness of slate 1½ inches, Complete as shown, equipped with Sub-panel Plate F0301 Fig. D arranged for charging one set of storage batteries from a generator driven by a single phase A. C. motor, the motor generator set being started from the D. C. end. Includes Ammeter, Voltmeter, Ammeter Jack, Voltmeter Switch, Field Rheostat, one 2 P. S. T. Switch, one 1 P. S. T. Switch, Fuses, Terminals, Lamp and Starting Panel Complete. (1-1, 1-2, 1-3, 1-4, 1-5, 1-6, 1-7, 2-8, 1-9, 4-10, 8-11, 2-12, 4-13, 2-14, 1-15, 1-20)	

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Power Switchboards

For Charging Storage Batteries

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Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
B1	as above, except Switchboard is equipped with Sub-panel Plate F0301 Fig. E arranged for charging one set of storage batteries from a generator driven by a three phase A. C. motor, the motor generator set being started from the D. C. end	
B2	same as Fig. B except thickness of slate is 1 inch	
B3	same as Fig. B1, except thickness of slate is 1 inch	
C	Power Switchboard, thickness of slate 1½ inches, Complete as shown, equipped with two Reverse Current Circuit Breakers, arranged to charge either one of duplicate sets of low voltage batteries in series with 110 volt battery or to charge 110 volt battery alone from either of two generators driven by gasoline or oil engines. Includes Ammeter, Voltmeter, three Ammeter Jacks, Voltmeter Switch, two Field Rheostats, one 1 P. S. T. Switch, three 2 P. D. T. Switches, one 2 P. D. T. End Cell Switch, one 4 P. D. T. Special Switch, two Reverse Current Circuit Breakers, Fuses, Terminals, Lamp, etc. (1-1, 1-2, 1-3, 2-4, 1-6, 3-8, 1-9, 12-10, 24-11, 1-12, 6-13, 2-14, 1-15, 1-16, 1-17, 3-18, 1-19, 2-22)	
C1	as above, except equipped with two Sub-panels Complete, as shown on Plate F0301 Fig. F, arranged for starting either of two Motor Generators driven by D. C. power. Includes same equipment as listed under Fig. C and in addition two Sub-panels (2-20)	
C2	same as Fig. C except equipped with two Sub-panels Complete, as shown on Plate F0301 Fig. G, arranged for starting either of two generators driven by three phase A. C. Motors, the motor generator sets being started from the A. C. end. Includes same equipment as listed under Fig. C and in addition two Sub-panels (2-20)	

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Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
C3	same as Fig. C except without Reverse Current Circuit Breakers and equipped with two Sub-panels as shown on Plate F0301 Fig. D1 arranged for starting either of two generators driven by single phase A. C. Motors, the motor generator sets being started from the D. C. end. Except for the omission of two Reverse Current Circuit Breakers (2-22) and the addition of two Sub-panels (2-20) the list of equipment included is the same as shown under Fig. C.....	
C4	same as Fig. C, except without Reverse Current Circuit Breakers and equipped with two Sub-panels as shown on Plate F0301 Fig. E1, arranged for starting either of two generators driven by three phase A. C. motors, the motor generator sets being started from the D. C. end. Except for the omission of two Reverse Current Circuit Breakers (2-22) and the addition of two Sub-panels (2-20) the list of equipment included is the same as shown under Fig. C.....	
C5	same as Fig. C, except thickness of slate is 1 inch.....	
C6	same as Fig. C1, except thickness of slate is 1 inch.....	
C7	same as Fig. C2, except thickness of slate is 1 inch.....	
C8	same as Fig. C3, except thickness of slate is 1 inch.....	
C9	same as Fig. C4, except thickness of slate is 1 inch.....	
1	Lamp Complete as shown, for illuminating Switchboard. Includes Mounting Bracket, Socket, Shade and Lamp. Specify thickness of Slate. For detail, see Plate F0509, Fig. E.....	16590-1
2	D. C. Ammeter, back connected, Complete. Scale as specified or as required. For detail, see Plate F0401, Fig. A.....	
3	D. C. Voltmeter, back connected Complete. Scale as specified or as required. For detail, see Plate F0401, Fig. B.....	

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Power Switchboards

For Charging Storage Batteries

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Fig No.	Name	Drawing Reference
	Order by plate, figure number and name	
4	Field Rheostat Complete with screws for mounting, for use in regulating generator voltage. Rating as specified or as required. Specify thickness of Slate. For detail, see Plate F0509, Fig. A	
5	Voltmeter Switch, 1 Pole, two circuit complete as shown for mounting on 1½ inch Slate. For detail, see Plate F0503, Fig. B	1981
5a	as above, except for mounting on 1 inch Slate	1981
6	Knife Switch, 1 pole, single throw, back connected complete as shown. Rating as specified or as required. For detail, see Plate F0505, Fig. 1	
7	Knife Switch, 2 pole, single throw complete as shown. Rating as specified or as required. For detail, see Plate F0505, Fig. 2	
8	Ammeter Jack Complete (Plug for Ammeter Jack not included). Specify thickness of Slate. For detail, see Plate F0503, Fig. E	10247
9	Plug for Ammeter Jack as shown, thickness of Slate 1½ inches. For detail, see Plate F0503, Fig. F	17375
9a	as above, except thickness of slate is 1 inch	17375
10	Fuse, cartridge type. Rating as specified or as required. For details, see Plate F0509, Figs. F and H	
11	Fuse Clip Complete, for Fuse Fig. 10. Rating as specified or as required. Specify thickness of Slate. For detail, see Plate F0509. Figs. G and J	33451
12	Terminal Post Complete for terminaling wires on back of switchboard. Specify thickness of Slate. For detail, see Plate F0509, Fig. K	33453
13	Bracket Complete as shown, for mounting 1½ inch Slate Panel to Standard A. R. A. Pipe Frame. For detail see Plate F0501 Fig. B	50755

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Power Switchboards

For Charging Storage Batteries

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
13a	as above, except for mounting 1 inch Slate Panel to Pipe Frame	50755
14	Pipe Frame A. R. A. Standard for mounting Switchboards. Two required. For details see Plate F0501 Fig. A	44248-1
15	Slate Panel, 24″ wide, length as specified or as required. Drilled for mounting brackets and for equipment as specified or as required. For detail see Plate F0501 Fig. D	
16	Knife Switch, end cell battery, 2 pole, double throw, back connected, Complete as shown. Rating as specified or as required. For detail see Plate F0505, Fig. 9	
17	Knife Switch, special, 4 pole, double throw, back connected, Complete as shown. Rating as specified or as required. For detail see Plate F0505, Fig. 10	
18	Knife Switch, 2 pole, double throw, back connected, Complete as shown. Rating as specified or as required. For detail see Plate F0505, Fig. 6	
19	Voltmeter Switch Complete for mounting on back of Switchboard, operated by Indicating Handle on front of board, as shown, for 4, 8, 12, 16 and 20 circuits as specified or as required. For detail see Plate F0503, Fig. A	
20	Sub-panel Complete, thickness of Slate 1½ inches, for use as starting panel on power switchboards. Furnished as specified or to suit conditions. See Plate F0301, Figs. D, E, F and G	
20a	as above, except thickness of Slate is 1 inch	
21	Voltmeter Switch, double pole, two circuit, Complete as shown for mounting on 1½ inch Slate. For detail see Plate F0503, Fig. C	1983
21a	as above, except for mounting on 1 inch Slate	1983

(*Continued on following page*)

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For Charging Storage Batteries

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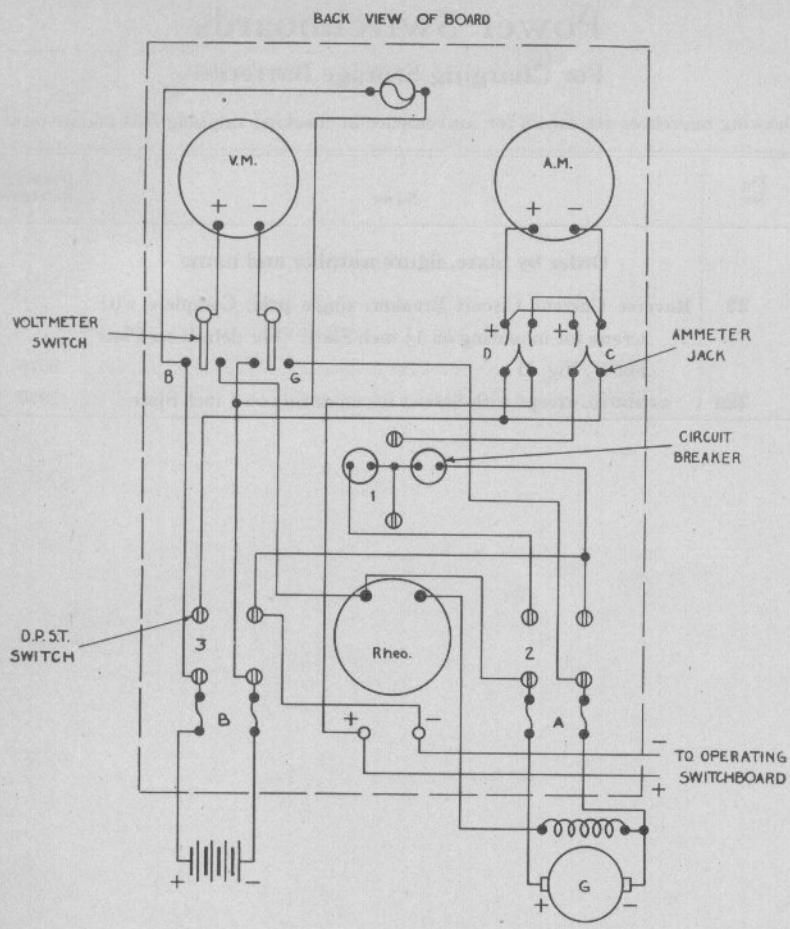
Fig. No.	Name	Drawing Reference
	Order by plate, figure number and name	
22	Reverse Current Circuit Breaker, single pole, Complete with screws for mounting on 1½ inch Slate. For details see Plate F0507, Fig. D	2070
22a	as above, except with Screws for mounting on 1 inch Slate	2070



MANIPULATION CHART				
FROM	FUNCTION	THROW SWITCHES		
Generator	Charge Battery & Serve Plant	2 Up	1 Up	3 Up
Generator	Serve Plant	2 Up	1 Up	
Battery	Serve Plant			3 Up
To read charging amperes		Plug Ammeter Jack C		
To read discharge amperes		" " " D		
To read Generator volts		Voltmeter Switch to G		
To read Battery volts		" " " B		

Wiring Diagram for Power Switchboard Shown on Plate F0201 Fig. A