200-, 206-, 209- AND 211-TYPE SELECTORS
VOLTAGE TESTS
USING NO. 35D OR 35F TEST SET OR VOLTMETER

1. GENERAL

1.01 This section describes methods of applying potentials used in testing and exercising 200-, 206-, 209- and 211-type selectors using a No. 35D or No. 35F test set or a voltmeter. However, the procedures are not applicable to selectors in those circuits which control advance of the selector by means of a relay rather than by self interruptions; in these cases voltage tests are not usually required.

1.02 This section is reissued for the following reasons:

(a) To revise 1.01 to indicate that the section applies only to selectors in circuits which allow the selector to advance under self interruptions.

(b) To revise the list of apparatus.

(c) To revise the information on tests of dry cells.

(d) To make minor changes in the text.

Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.

1.03 The electrical values and adjusting procedures for 200-, 206- and 209-type selectors are covered in the sections covering this apparatus and the particular test set preparation to be applied in making the electrical tests is given on the circuit requirement table.

1.04 In general selectors are tested as outlined in Part 3 but where the current through the selector exceeds .750 milliamperes or where the No. 35D test set is not provided the tests outlined in Part 4 should be used instead of those in Part 3.

1.05 Auxiliary battery is used to facilitate providing the required voltage across the selector circuit. Provision is made for connecting dry cells into the selector circuit so they may either aid or oppose the office battery voltage. The condition of the dry cells in the auxiliary battery should be checked at the start of the tests as described in the section covering tests of dry cells and as often thereafter as required to insure that the dry cells are in satisfactory condition for testing the selectors.

2. APPARATUS

Common to Parts 3, 4 and 5

2.01 KS-6542 dry cells as required.

Used in Part 3

2.02 Two W2W cords 6 feet long equipped with 1 No. 310 (or No. 110) plug and 1 No. 360B tool and 1 No. 360C tool (2W17A) and 2 No. 365 tools.

2.03 One P2P cord 10 feet long equipped with 1 No. 309 (or No. 109) plug with black shell and 1 No. 310 (or No. 110) plug with black shell (2P10B).

2.04 No. 35D or No. 35F test set.

Used in Part 4

2.05 Four No. 893 cords 6 feet long equipped with No. 360 tools (1W13B) and 1 No. 364 tool and 1 No. 365 tool.

2.06 Weston Model No. 281 dc volt-ammeter with 150-60-3 scale (or the replaced Weston Model No. 280 dc volt-ammeter).

3. USING NO. 35D OR NO. 35F TEST SET

Preparation

3.01 ***Connection of Central Office Battery and Ground:*** Connect central office battery and ground to the test set shown in Fig. 1 for G/V preparation, Fig. 2 for B/V preparation or

Fig. 3 for F/V preparation. On F/V preparation also remove the circuit fuse associated with the circuit being checked.

Note: To avoid possible grounding of the battery supply lead, connect the cord to the test set first and when disconnecting, remove the cord from the test set last.

3.02 ***Connection of Selector to Test Set to Check Voltage and Step-by-Step Operation:*** Plug a W2W cord into the TEST T & R jack of the test set and connect the cord as follows:

For G/V preparation (See Fig. 1) — connect the black (ring) conductor to the interrupter spring wired to the magnet.

For B/V preparation (See Fig. 2) — connect the white (tip) conductor to the interrupter spring wired to the magnet.

For F/V preparation (See Fig. 3) — connect the black (ring) conductor to the interrupter spring wired to the magnet and the white (tip) conductor to the other terminal of the magnet.

3.03 ***Connection of Selector to Test Set to Check Running Operation:*** Plug a W2W cord into the TEST T & R jack of the test set and connect the cord as follows.

For G/V and F/V preparation (Figs. 1 and 3) — connect the black (ring) conductor to the interrupter spring that is not wired to the magnet.

For B/V preparation (Fig. 2) — connect the white (tip) conductor to the interrupter spring that is not wired to the magnet.

3.04 ***Preparation of Keys, Switches and Sliders:***

For G/V preparation (Fig. 1) — operate the "G" knife switch to "GRD" and the BAT & GRD CO Key.

For B/V and F/V preparation (Figs. 2 and 3) — do not operate any key or switch at this time.

Move the sliders of the No. 3 and No. 4 rheostats to the extreme left so as to remove all resistance.

3.05 ***Connection of Auxiliary Battery to Cord and Jack:***

For high voltage — connect the black (ring) conductor to the positive (+) terminal of the auxiliary battery and insert the cord into the TEST EXT KEY 3R jack.

For low voltage — connect the black (ring) conductor to the negative (−) terminal of the auxiliary battery and insert the cord into the TEST EXT KEY 4W jack.

Connect the white (tip) conductor to the other terminal of the auxiliary battery (negative (−) in the case of high voltage and positive (+) in the case of low voltage). It may be necessary to later shift this conductor from cell to cell to obtain the proper voltage.

Method

3.06 ***G/V, B/V and F/V, Stepping and Running — High Voltage:*** With the test set and selector connected as outlined in 3.01, 3.02 and 3.04 and with the auxiliary battery connected as covered in 3.05 for checking on high voltage, operate the VM, 75 VOLTS and No. 3 key and read the voltage. With the No. 3 key released shift the white conductor on the dry cell terminals as required until the voltage is equal to or not more than 1.5 volts more than the specified high voltage. Reoperate the No. 3 key and adjust the sliders of the No. 3 rheostat as required to obtain the exact voltage. Operate and release the No. 3 key several times. The selector should step on each release of the key. With the No. 3 key released, change the connection of the W2W cord as outlined in 3.03. Operate and hold the No. 3 key or close the locking switch and the selector should rotate under control of its interrupter contact.

3.07 ***G/V, B/V and F/V Stepping and Running — Low Voltages:*** With the test set and selector connected as outlined in 3.01, 3.02 and 3.04 and with the auxiliary battery connected as outlined in 3.05 for checking on low voltage, operate the VM, 75 VOLTS and the No. 4 key and read the voltage. With the No. 4 key released shift the white conductor on the dry cell terminals as required until the voltage is equal to or not more than 1.5 volts more than the specified low voltage. Reoperate the No. 4 key and adjust the sliders of the No. 4 rheostat as required to obtain the exact voltage. Operate and release the

No. 4 key several times. The selector should step on each release of the key. With the No. 4 key released, change the connection of the W2W cord as outlined in 3.03. Operate and hold the No. 4 key or close the locking switch and the selector should rotate under control of its interrupter contacts.

4. USING VOLTMETER

Preparation

Connection of Voltmeter to Selector, Central Office Battery and Ground

4.01 Connect the voltmeter by means of No. 893 cords connected to No. 364 and No. 365 tools to the selector and central office battery and ground as follows:

G/V preparation (See Fig. 4) — Connect the end of a No. 893 cord equipped with a No. 365 tool to the central office battery and connect the No. 364 tool attached to the same cord to the 60 volt negative (−) terminal of the Model 281 voltmeter. Connect the No. 365 tool attached to one end of another No. 893 cord to the interrupter spring wired to the selector magnet. Connect the other end of this cord which is connected to a No. 364 tool to the positive (+) terminal of the voltmeter.

B/V preparation (See Fig. 5) — Connect the end of a No. 893 cord equipped with a No. 365 tool to ground and connect the No. 364 tool attached to the same cord to the positive (+) terminal of the Model 281 voltmeter. Connect the No. 365 tool attached to one end of another No. 893 cord to the interrupter spring wired to the selector magnet. Connect the other end of this cord which is connected to a No. 364 tool to the negative (−) terminal of the voltmeter.

F/V preparation (See Fig. 6) — Connect the end of a No. 893 cord equipped with a No. 365 tool to ground and connect the No. 364 tool attached to the same cord to the positive (+) terminal of the Model 280 voltmeter. Connect the No. 365 tool attached to one end of another No. 893 cord to the terminal of the magnet which is not wired to the interrupter spring. Connect the other end of this cord which is connected to a No. 364 tool to the negative (−) terminal of the voltmeter.

Connecting Central Office Battery and Ground and Auxiliary Battery to Selector

4.02 ***To Check High Voltage and Step-by-Step Operation:*** Connect No. 893 cords to the central office battery and ground and auxiliary battery and the selector as follows:

G/V preparation (See Fig. 4) — Connect No. 893 cords equipped with No. 364 and No. 365 tools as follows. Connect the No. 365 tool of one cord to ground and the other end of the same cord equipped with a No. 364 tool to the negative (−) terminal of the auxiliary battery. Connect the No. 364 tool of another No. 893 cord to the positive (+) terminal of the auxiliary battery and the No. 365 tool of the same cord to the interrupter spring wired to the magnet.

B/V preparation (See Fig. 5) — Connect No. 893 cords equipped with No. 364 and No. 365 tools as follows. Connect the No. 365 tool of one cord to central office battery and the other end of the same cord equipped with a No. 364 tool to the positive (+) terminal of the auxiliary battery. Connect the No. 364 tool of another No. 893 cord to the negative (−) terminal of the auxiliary battery and the No. 365 tool of the same cord to the interrupter spring wired to the magnet.

F/V preparation (See Fig. 6) — Remove the circuit fuse associated with the circuit being checked. Connect No. 893 cords equipped with No. 364 and No. 365 tools as follows. Connect the No. 365 tool of one cord to central office battery and the other end of the same cord equipped with a No. 364 tool to the positive (+) terminal of the auxiliary battery. Connect the No. 364 tool of another No. 893 cord to the negative (−) terminal of the auxiliary battery and the No. 365 tool of the same cord to the terminal of the magnet which is not wired to the interrupter spring.

4.03 ***To Check Low Voltage and Step-by-Step Operation:*** Make the connections as outlined in 4.02 except reverse the connections to the auxiliary battery.

4.04 ***To Check Running Operation:*** Make the connections outlined in 4.02 for high voltage or 4.03 for low voltage except that the No.

365 tool connecting the cord to the interrupter spring wired to the magnet shall be connected to the interrupter spring that is not connected to the magnet.

Method

4.05 ***G/V, B/V and F/V, Stepping and Running-High Voltage:*** With the voltmeter and selector connected as outlined in 4.01, and 4.02 read the voltage. Shift the connections on the dry cells as required until the voltage is not over 1/2 volt less or one volt more than the high voltage specified. Disconnect and reconnect the connection to the terminal of the selector several times in order to test the stepping operation of the selector. To check the running operation of the selector change the connection to the selector as outlined in 4.04.

4.06 ***G/V, B/V and F/V Stepping and Running-Low Voltage:*** With the voltmeter and selector connected as outlined in 4.01, and 4.03 read the voltage. Shift the connections on the dry cells as required until the voltage is not over 1/2 volt more or one volt less than the low voltage specified. Disconnect and reconnect the connection to the terminal of the selector several times in order to test the stepping operation of the selector. To check the running operation of the selector change the connection to the selector as outlined in 4.04.

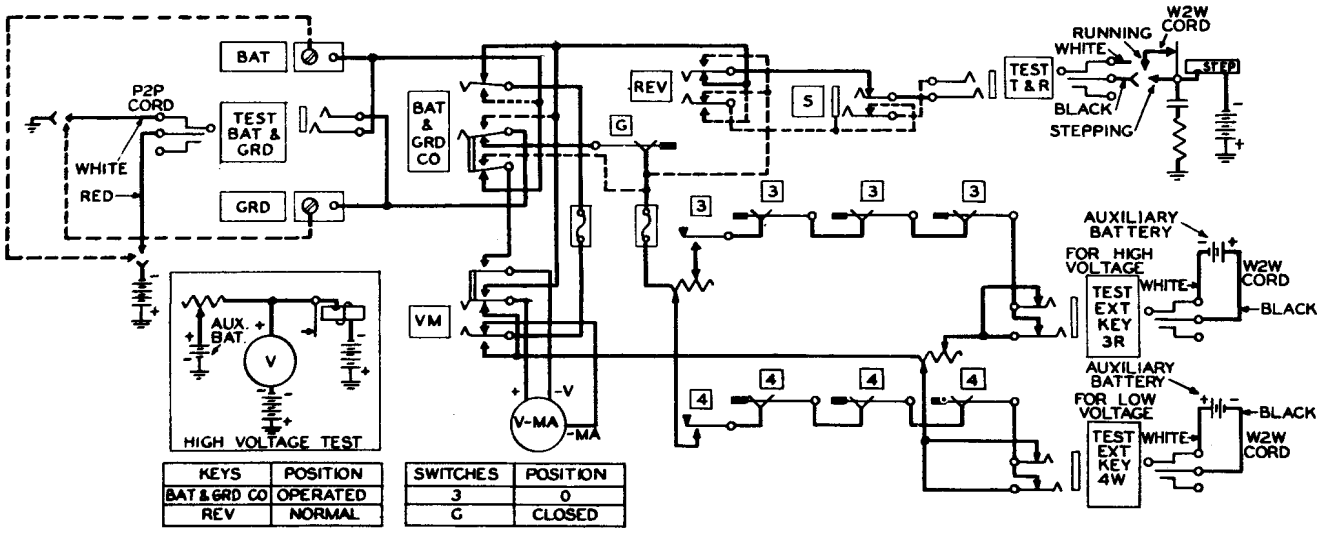

Fig. 1 – G/V Preparation — Using No. 35D Test Set

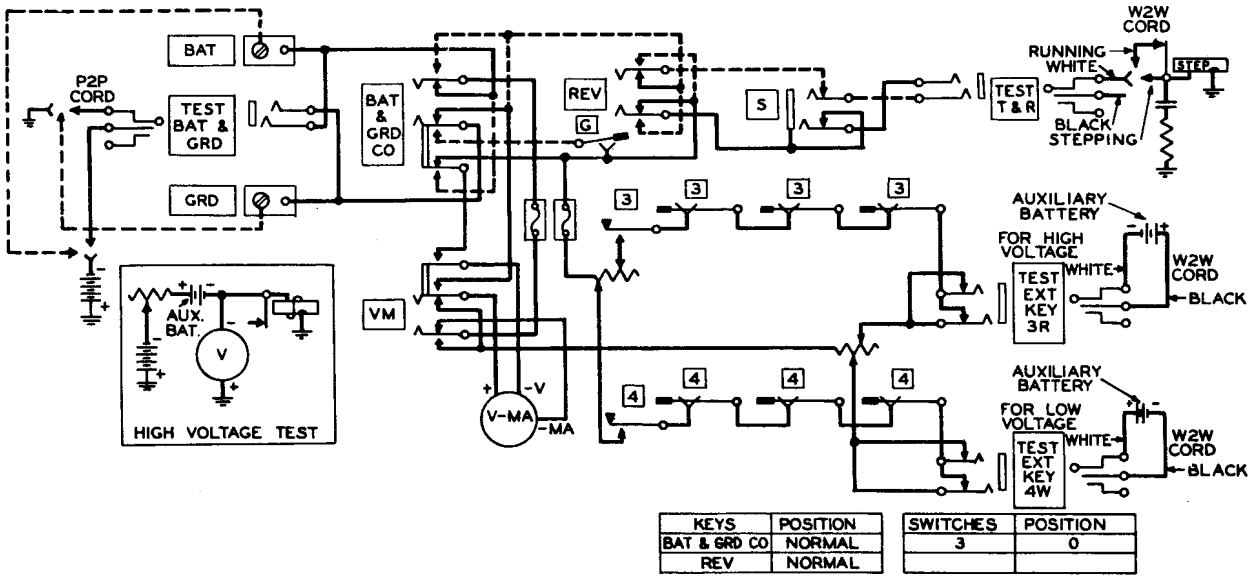

Fig. 2 – B/V Preparation — Using No. 35D Test Set

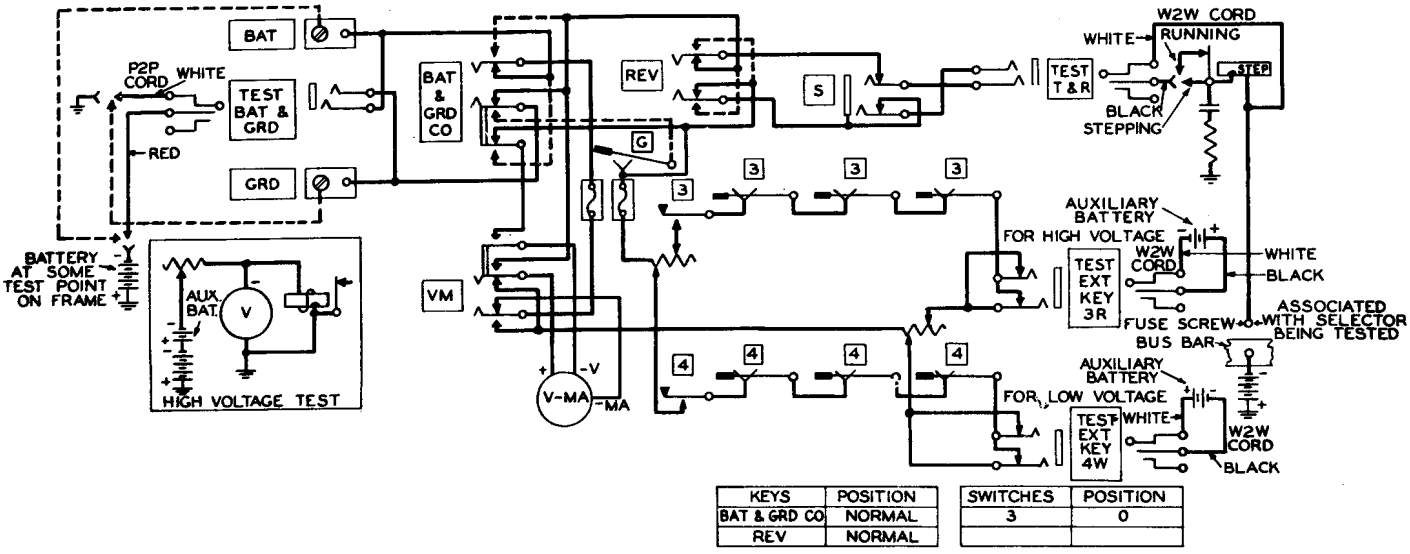

Fig. 3 – F/V Preparation — Using No. 35D Test Set

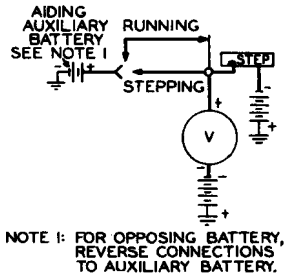

Fig. 4 – G/V Preparation — Using Voltmeter

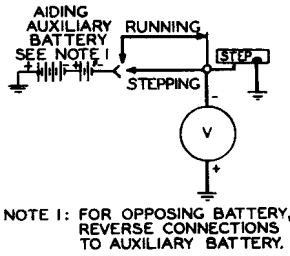

Fig. 5 – B/V Preparation — Using Voltmeter

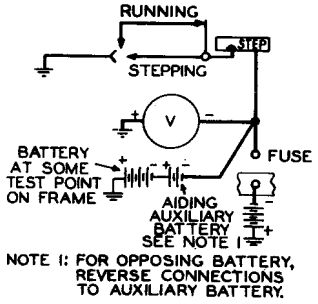

Fig. 6 – F/V Preparation — Using Voltmeter