

Time-Delay Low Voltage Push Buttons

Class 15-010, Type 2A15 Push Button & Class 15-010, Type 2D15 Shipper-Rod-Operated

INSTRUCTIONS

These push-buttons provide the usual START-STOP features, but in addition give adjustable time low voltage protection. That is, the control circuit is maintained from 1 to 4 seconds after the voltage fails. The motor or other device is thus unaffected by momentary fluctuations in line voltage.

Connections

Refer to Fig. 1 and Fig. 2 for push-button connections and to Fig. 3 for shipper-rod-operated push-button connections.

Installation

The switch should be mounted on a vertical surface as free from vibration as possible, with the START button or operating lever at the top.

Check the voltage and frequency stamped on the nameplate of the push-button with that of the panel to which it is to be connected; they must be the same. These switches are designed for alternating-current circuits only.

Adjustments

These push-buttons are adjusted in the factory and under ordinary conditions the time adjustment will be satisfactory and need not be disturbed. However, if this time interval is not correct, it can be changed by loosening nut (A), Fig. 4 and moving pin (F) down for increased time or up for decreased time.

On the shipper-rod-operated push-button, the position of the operating arm may be adjusted to any angle by loosening the nut on the clamping screw and turning the screw. The shipper rod should be disconnected from the operating arm when making this adjustment. After the operating arm position is set, turn the screw down so that the head is snug (not tight) against the operating arm and hold it with a screw driver

while tightening the nut with a wrench. The threads on the shaft and clamping screw will be damaged if: (a) Screw is tightened with a screw driver. (b) Nut is tightened without head of screw snug against operating arm. (c) Arm is not securely clamped to shaft. The shipper-rod should be attached to the operating lever and adjusted so that the switch will not be operated beyond the normal START and STOP positions against the stops.

Operation

Class 15010, Type 2A15 Push-button

Operating the START button closes the contacts (B), Fig. 5, and energizes the coil of the magnetic switch. The interlock on the magnetic line switch energizes the solenoid coil (C) of the master switch which lifts plunger (D) and closes the contacts at (E) which completes the holding circuit for the magnetic switch.

Upon failure or reduction of line voltage the controller line contactor and interlock open, and solenoid coil (C) is de-energized. Plunger (D) starts to drop, but is retarded by the engagement of the rack and pinion of the escapement mechanism. As the rack nears the end of its travel, it drops off the pinion and releases the arm, opening contacts (E). This opens the holding circuit of the magnetic line switch, and it will not reclose until the START button is again operated.

If the line voltage returns to normal before the arm releases, the magnetic line switch will reclose before the motor or other device is affected. At the same time solenoid coil (C) is re-energized, lifting plunger (D) and the rack while the bottom contacts (E) remain closed and maintain the holding circuit for the magnetic line switch.

Pushing the STOP button at any time mechanically releases the arm and disengages the rack from the pinion, causing plunger (D) to drop instantly and open contact (E), and de-energizes the magnetic line switch.

Class 15010, Type 2D15 Shipper-rod-operated Time-delay Push-button

START and STOP on the nameplate indicates the direction of travel of the operating lever for these functions. The lever may be adjusted so its travel is either to the right or left of the nameplate.

Moving the operating lever to the START position closes contacts (G), Fig. 4, energizing the shunt coil on the magnetic line switch and releasing the solenoid plunger mechanism (H). The interlock on the magnetic line switch energizes the solenoid coil (C) on the master switch; this draws the plunger to its upper position and completes the holding circuit to the magnetic line switch. Mechanism (H) is now free to operate on failure or reduction of line voltage.

The operation on failure or reduction of the line voltage is the same as described for the Class 15010, Type 2A15 push-button station. After failure or reduction of line voltage the operating lever must be returned to the STOP position to reclose contacts (E).

Moving the operating lever to the STOP position opens circuit to the magnetic line switch coil, but contacts (E) remain closed.

Care of Contacts

In general, the contacts do not require attention during their normal life. However, if copper beads form on the surfaces of the copper contacts, or if the tips turn a dark color due to overheating, the contact surface should be dressed with a fine file. The silver contacts must be replaced before they are

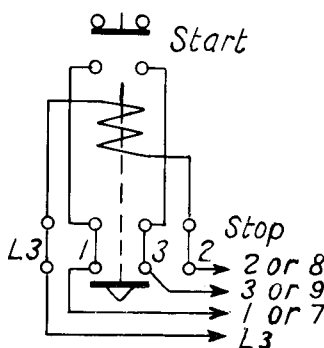


FIG. 1—CONNECTIONS FOR SINGLE PUSH-BUTTON STATION

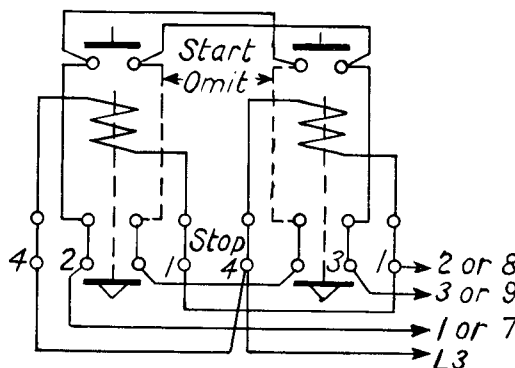


FIG. 2—CONNECTIONS FOR TWO OR MORE PUSH-BUTTON STATIONS

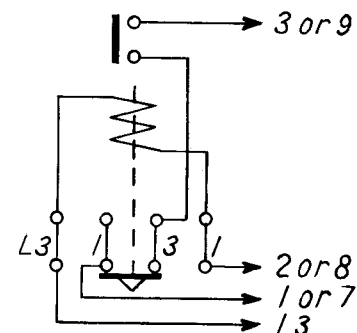


FIG. 3—CONNECTIONS FOR SHIPPER-ROD-OPERATED PUSH-BUTTON

Time-Delay Low Voltage Push Buttons (Continued)

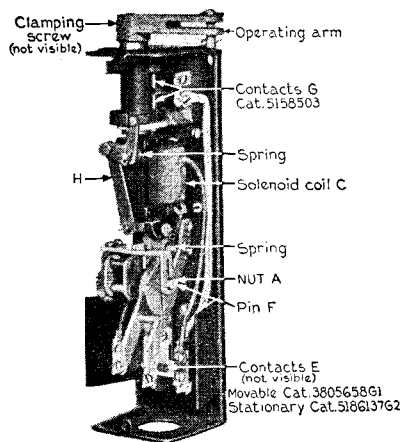


FIG. 4—SHIPPER-ROD-OPERATED TIME-DELAY MASTER SWITCH, WITH COVER REMOVED

completely worn to their supports. The renewal contacts consist of the silver tips assembled on their supports.

The switch is lubricated in the factory with a special lubricant and should require no further lubrication during its life.

Renewal Parts

The principal renewal parts are given in Fig. 4 and 5. For any other parts refer to the nearest Sales Office of the Westinghouse Electric and Manufacturing Company, giving the complete name-plate rating of the device and describing the part in detail. Order renewal coil by Cat. No. stamped on the coil.

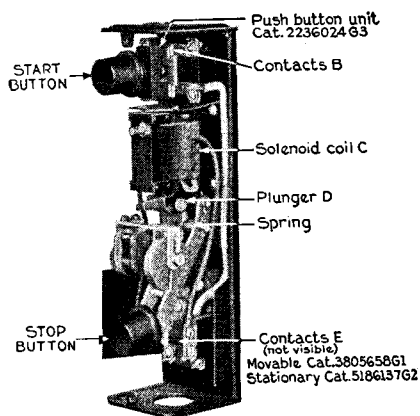


FIG. 5—PUSH-BUTTON-OPERATED TIME-DELAY MASTER SWITCH, WITH COVER REMOVED

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