

indicates that there is no necessity for the application of a mechanical facing-point lock separate from the switch stand on facing point switches in automatic block-signal and train-control

territory. However, it is essential that the throw rod be forged from one piece of metal, i.e., the rod should be one continuous piece without a weld.



## Inspecting Switch Circuit Controllers

*"On main-line automatic-block signal territory, how frequently should switch circuit controllers, connections, and the circuits affected, be tested and inspected?"*

### Monthly Report Made

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On the Burlington, switch boxes are inspected thoroughly and all necessary adjustments made during the last week of each month. At the end of the month a report is rendered to the effect that "all switch boxes have been inspected and adjustments are correct." The fact that "all fouling sections have been tested and are o.k." is reported at the same time.

Maintenance men make inspections of operating rods, fittings, etc., each time they are around a switch between these detail monthly inspection periods.

### Inspect Every 30 Days

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Assuming that the track in the immediate vicinity of a switch is reasonably well maintained, it is my opinion that a switch circuit controller in automatic signal territory should be inspected and readjusted, if necessary, at least once every 30 days. Of course, proper track maintenance includes consideration of alinement, surfacing, gage, rail creepage, condition of switch points, braces and plates, etc.

The performance of switch circuit controllers and circuits in continuous train-control territory, where the circuits are so installed that the opening of a contact will remove train-control energy from the track section in which the switch is located, clearly demonstrates that not infrequently switch points will open under a train sufficiently to cause a circuit interruption.

For other answers to this question see page 442 of the August issue.

However, when carrying no load, the points seem to be in proper and safe condition. Unquestionably, such opening, if occurring during a facing-point movement, might result in serious consequences.

The same condition with respect to opening under passing trains will exist in non-train-control territory, but it may not so readily be brought to light by reason of the difference in the functioning of the circuits. An inspection at least once each 30 days is necessary in order that such improper condition of switches or switch circuit controllers might be discovered and proper corrective measures initiated.

### How to Avoid Switch Troubles

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The best way to avoid troubles resulting from switch circuit controllers being out of adjustment is to make weekly inspections of all switches. The inspection should include operation of the switch several times so as to detect lost motion in the fittings, examination of the electrical connections, and the maintenance of a 3/16-in. switch-point adjustment of the contacts. At every inspection the fouling circuit at the siding should be tested by shunting at the clearance point. A voltmeter connected across the main track should be used to determine the effectiveness of the shunt. Rails in reasonably good condition, having good bracing and heel blocks at switches, are necessary if signal failures are to be prevented.

Section men should not be allowed to do any track work at main line switches without first notifying the signal maintainer of what is to be done. Such work as raising track, installing new heel blocks, ties or switch connections that may change the gage of the points and track, alining and respiking switches, changing insulation such as that of joints, gage rods or head rods, should not be done except in the presence of the signal

maintainer, who can make proper adjustments after the work is completed. The section men are the signal maintainer's best friends, and close co-operation between the track and signal forces goes far in the elimination of hazardous conditions and train delays.

Of course, the traffic density to a great extent determines the frequency of switch box and fouling inspection. However, accidents have happened in light-traffic territories, as a result of improper or too infrequent inspection of track and signal apparatus.



## Circuit for Flashing Light Signals

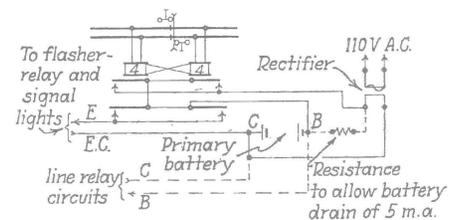
*"What circuit arrangement can be devised for use at flashing-light crossing-signal installations so that, without the use of a power-off relay, the standby primary battery and rectifier are both on a normally-open circuit?"*

### Output Circuits Normally Open

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The accompanying sketch illustrates a simplified circuit arrangement for a flashing-light signal using primary battery for standby power. The rectifier is adjusted to the operated load, the output circuit being run through two pairs of back contacts in the interlocking relay in a parallel-



Details of crossing-signal circuit—Dotted lines show optional variation

series arrangement. The primary battery is connected between the two pairs of relay contacts making the rectifier and the battery operate in parallel, only while the signal is in operation, both being normally on open circuit.

The dotted lines refer to a second-

Note: For another answer on this subject see page 380 of the July issue.

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