

Signal Training Bulletin



**COMMITTEE G: Education & Training
Communication & Signal Division, AAR**

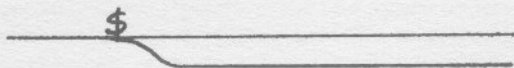
A-8 Spring Switch

Approved November 1981

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A spring switch is an ordinary hand-throw switch equipped with a spring device which forces the points back to their original position after a trailing move has been made on either track and holds the closed point under spring compression.

Symbol:



Description: The spring switch consists basically of a cylinder containing a spring, a rod and piston and oil to delay the return of the piston to the original position after the points have been forced over by a trailing move.

Purpose and Application: The spring switch permits trailing movements to either track, at normal turnout speed, eliminating the need for stopping to line the switch. Spring switches are often installed at one end of a passing track, the exit track of a yard or where two districts join. Their principal purpose is to expedite the movement of trains.

A switch equipped with this spring device can be lined in either position like any hand-throw switch. A certain amount of resistance is felt after the switch point contacts the stock rail and the spring is compressed.

Switch points should return to normal position in 10 to 12 seconds after a trailing move is completed. The operation of the mechanism can be tested by closing the point on a four-inch block of wood, knocking out the block with a hammer and timing the interval until the point closes. Closing time, when making the obstruction test, should be 8 to 10 seconds.

Figure 1 illustrates typical circuits for a two-position dwarf signal, a wayside signal with a lunar white light added as a switch point indicator, using a polar relay to control the lighting circuit, and a signal controlled by a home and a distant relay.

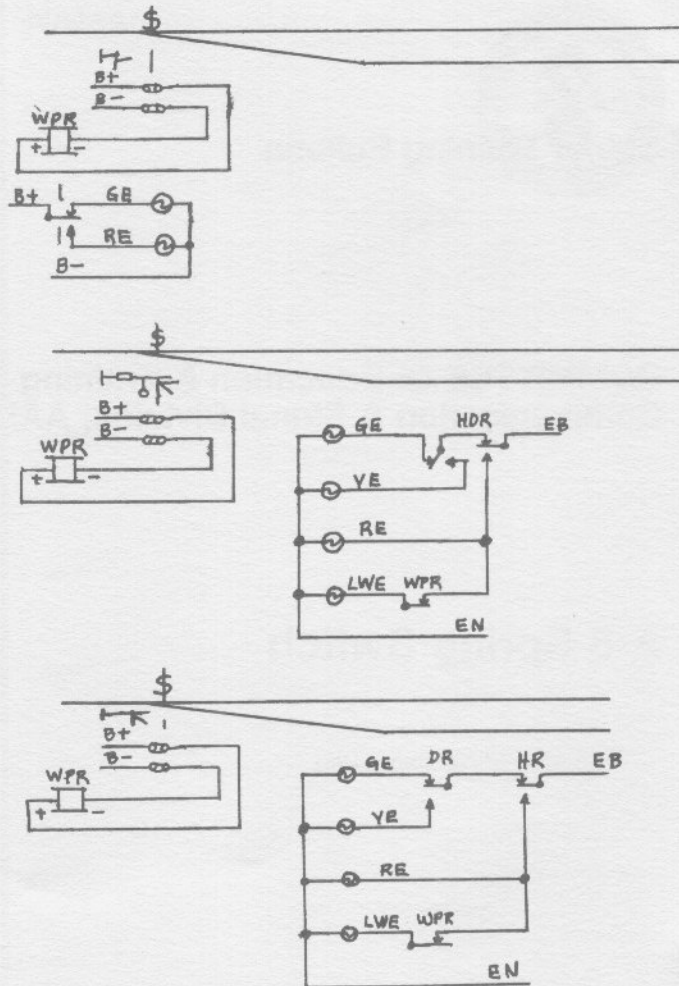


Figure 1—Typical circuits for signal control at spring switch locations.

The mechanism should be connected to the normally closed point, if possible, but it may be connected to the open point. See Figure 2.

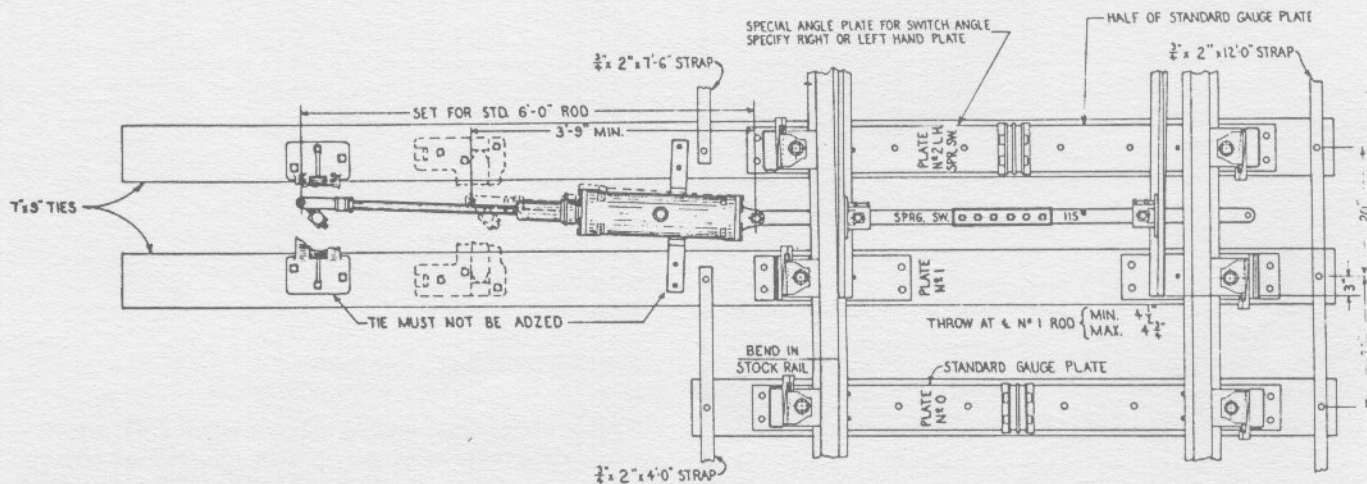


Figure 2—Typical plan of a spring switch layout. Note: Mechanical Switchman is a copyright name for a patented spring switch mechanism manufactured by the Pettibone Corp.

The operation of the mechanism when connected to the closed point and the operation when connected to the open point are illustrated in Figure 3.

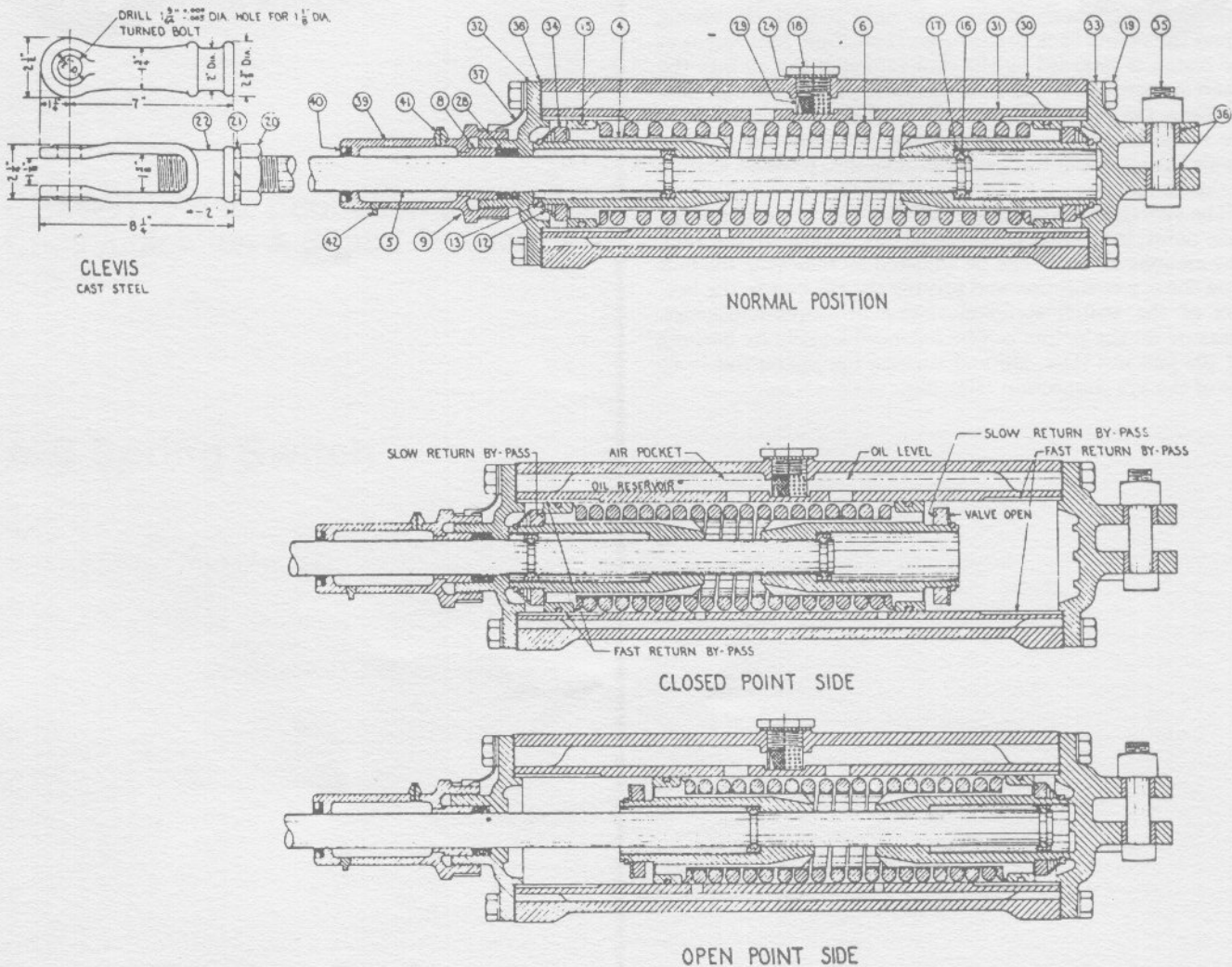


Figure 3—Shows the normal position of the spring switch mechanism, and also at the open point side and the closed point side.

General Information: The spring switch mechanism replaces the throw rod of a hand-throw switch. The switch stand is usually secured on the ties by bolts due to the thrust created when trailing moves are made.

In signal or non-signal territory, the switch point must be protected for facing point moves by a signal. The signal may be two position, capable of a green and red aspect, or it may be a special purpose signal (such as a lunar white light) mounted on the same mast, and in addition to, a wayside signal head.

A switch circuit controller is installed to detect the position of the switch points. A switch repeater relay is energized over the closed contacts of the switch circuit control-

ler.

The switch repeater relay contacts may be used to light the green lamp when energized, and light the red lamp when de-energized, if a two position signal is used.

The switch repeater relay contacts may be used to light a lunar white light (or equivalent) when energized.

Routing circuits may be provided if a polar relay, or normal and reverse switch repeater relays, are controlled by the position of the contacts in the switch circuit controller.

The mechanism should exert a pressure of 1000 to 1100 pounds on the closed point in either the normal or reverse position.

Detailed Operation: The mechanism operates essentially as follows: With the mechanism connected to the closed point, a trailing move against the closed point will force the housing to be pushed away. This compresses the spring, and the spring pressure is increased to about 1875 pounds. Oil from the reservoir is drawn into the housing behind the piston. After the wheels of the train have passed, the spring forces the points back to the original position. Movement of the piston is retarded by the slow return of the oil into the reservoir because of the slow return bypass. When the piston nears the starting position, the fast return bypass allows the remaining oil to be forced into the reservoir quickly, causing the point of the switch to snap into position against the stock rail.

The operation of the spring switch when connected to the open point, is essentially the same, but in reverse direction. The amount of throw can be adjusted by removing the bolt from the eye connection and turning the eye bolt in the bottom of the switch stand clockwise or counterclockwise. Pressure on the points can be balanced equally by backing off the jam nut (Det. 20) and turning the piston rod in or out of the eye connection (Det. 22).

Note: This Bulletin is for general information only. For specific applications consult the rules, standards and instructions published by your railroad.

Notes:

