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Remote Control Switches with Automatic Non-Derailing Feature

Railroad track switches, also known to railroaders as turnouts, are used to connect two lines of track so that the train can switch over from the main line to a siding, to a spur line, or to a different line entirely.

Switches are either right hand or left hand. An easy way to tell the difference is this: if a train proceeding along the main line has to turn out to the left, it uses a left hand switch; one turning out to the right uses a right hand switch.

UNPACKING INSTRUCTIONS

Carefully unpack the contents of the box and the enclosed envelope and compare with the following parts list:

- Remote Control Switch
- Switch Controller
- 4 Solid STEEL Pins
- 2 Insulator (plastic) Pins

Remove the protective packaging in the switch. Check the small hole in the swing rail to confirm that there is a pin extending up through this opening. If the pin has shifted, locate the swing rail so the pin goes through the hole.

ASSEMBLY INSTRUCTIONS

Insertion of Steel Pins:

LEFT HAND SWITCH (LHS): Insert two steel pins in the center and outside rails of the straight track, and two steel pins in the center and inside rails of the curve track. Care must be used to ensure that the pins are placed exactly as indicated in Figure 1.

RIGHT HAND SWITCH (RHS): Insert two steel pins in the center and outside rails of the straight track, and two steel pins in the center and inside rails of the curve track. Care must be used to ensure that the pins are placed exactly as indicated in Figure 1.

DO NOT PLACE STEEL PINS into the control rails, the shortest of the straight and curved rails. These control rails have been electrically insulated from the cross ties and from the other rails of the switch and **MUST NOT CONTAIN STEEL PINS.**

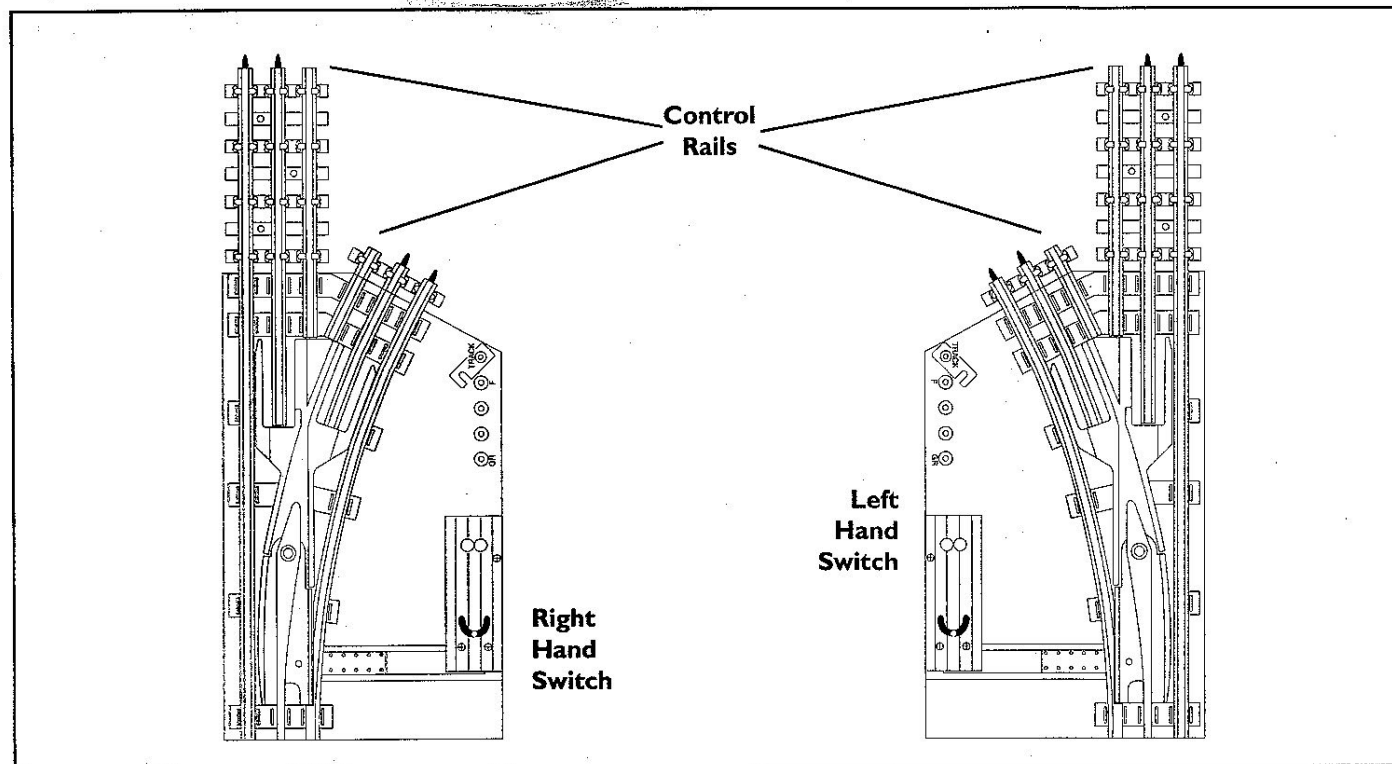


Figure 1: Location of steel and insulator pins

Insertion of Insulator (plastic) Pins into Control Rails:

Both the Left Hand and Right Hand Switches require insulator pins in each of the control rails. As illustrated in Figure 1 and described above, the control rails are the shortest straight rail and the shortest curved rail on the switch. The control rails are electrically insulated from the other rails of the switch and are part of the automatic non-derailing feature.

The control rails are connected internally to the switch coils. As the locomotive approaches an open switch, its wheels and axles bridge one of the control rails to the opposite outside rail. This action completes the electrical circuit of the proper switch coil and throws the swing rail of the switch to the correct position for the train to pass through. For good operation keep the control rails clean and free of rust and grease.

Inserting insulator pins into the ends of control rails prevents activating the switch coils at the wrong time. Be sure to remove the corresponding steel pins from any section of track connected to these open ends of the switch.

BE SURE THE INSULATOR PINS ARE IN THE CORRECT POSITIONS

SWITCH INSTALLATION

O Gauge

K-LINE 42" Wide Radius Switches are made to match all brands of O Gauge track. The straight section is 14 3/8" long, equal in length to K-LINE's K-0342 O-72 Straight. The curve forms 1/12th of a circle (30 degrees) and is equal to 1 section of K-0312.

O-27 Gauge

K-LINE 42" Wide Radius Switches are made to match all brands of O-27 Gauge track. The 13 3/4" long straight section is equal in length to K-LINE's K-0232 straight plus K-0234 half straight. The curve forms 1/12th of a circle (30 degrees) and is equal to 1 section of K-0212 O-27 Gauge 42" curves. The 27" Switches are 9" long (K-0232) with a standard (K-0202) curve.

K-LINE Switches are designed to operate in a range of 10 volts to 12 volts AC. For best possible operation use 10 to 12 volts. The switch operates very well in this range.

TRANSFORMER CONNECTIONS

It is recommended that switches be operated via the voltage tap, although direct track voltage may also be used. Your new switches can easily be changed from fixed to track voltage. The bridge between the two terminals is an integral part of the K-LINE switch and should not be misplaced. If lost, however, it can be replaced by a short length of wire.

As shown in Figure 2, the switches may be operated via track voltage using the same connection for Right Hand and Left Hand switches. Leaving the metal shorting bar (bridge) in place allows the switch to operate on the same voltage as the train. However, please remember that powering the switches with track voltage is the second recommended mode of operation (fixed voltage preferable).

Figure 3 illustrates the connection for fixed voltage operation. The uniquely attractive aspect of this feature is that there is no plug to lose. The shorting bar merely pivots away from the F terminal and is secured there while current is brought to the fixed voltage post. Connect a fixed voltage transformer tap (10 volts AC to 12 volts AC) to the F switch terminal; secure it well. Also, be certain that the fixed voltage tap you are using has the same ground reference as the running voltage for the train. If not, tie the two grounds together either at the transformer or at the track.

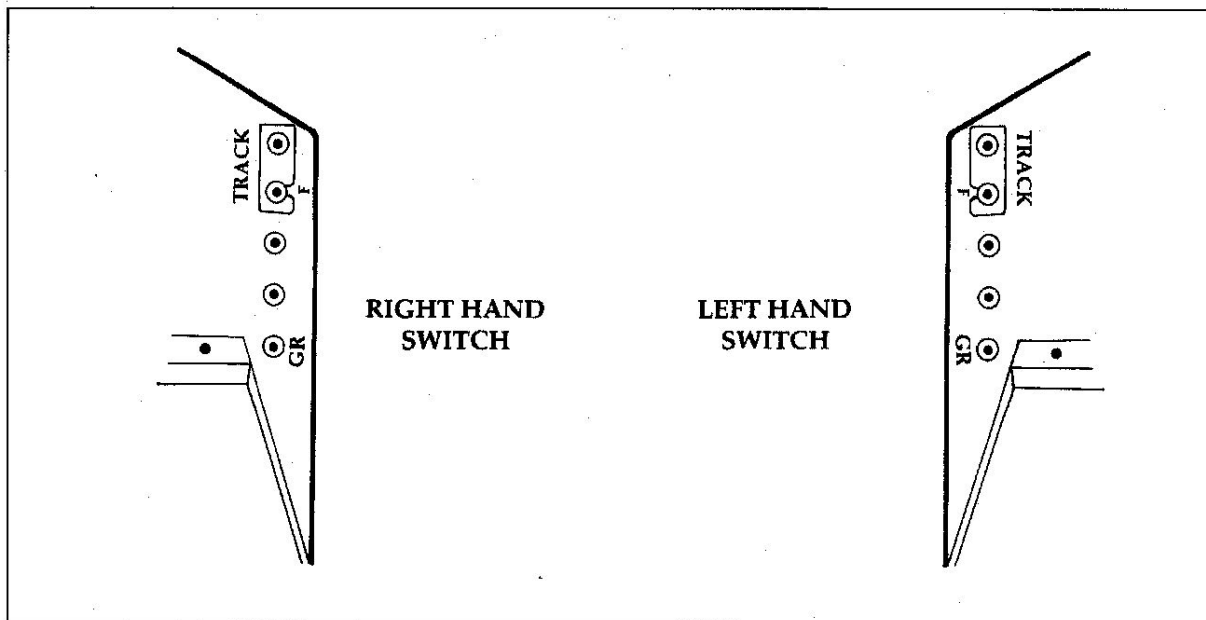


Figure 2: Shorting bar position for track voltage operation

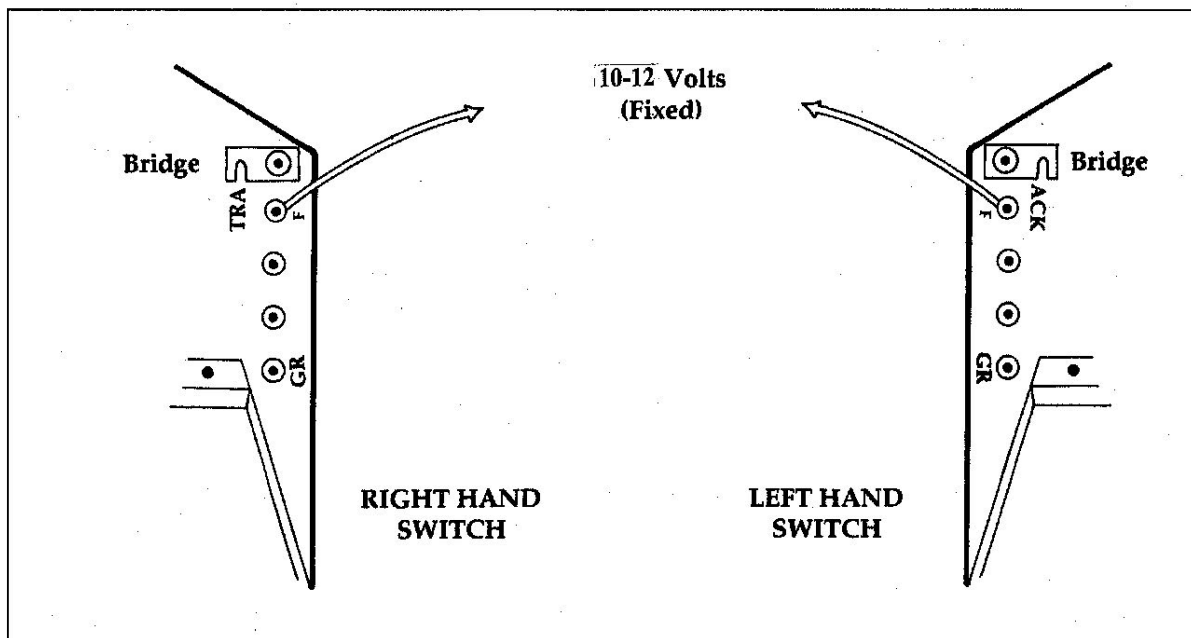


Figure 3: Transformer connection for fixed voltage operation

NOTE: The forward terminal of each switch can be used to deliver power to the layout as it is connected directly to the center rail of the switch. If the shorting bar/bridge is secured to both terminals and voltage is brought from the transformer to terminal F, the switch and the track will be powered simultaneously. This method of wiring K-LINE switches, therefore, can provide an additional track lockon.

CONTROLLER OPERATION

The K-LINE controller was designed to look like controllers that may already be on your layout's control panel. Therefore, as you add highly realistic K-LINE switches to your layout there may be a continuity of appearance.

The controller is connected by a 3-wire cable to the three binding posts closest to the motor housing (see Figure 4). After the switch is installed in the track layout, connect the center controller wire to the GR post of the switch. Then connect the outside wires to the adjacent two switch terminals, and turn on the power. One of the lamps on the switch and one of the lamps on the controller will light. Now, as the controller lever is moved forward or backward the indicator lamp in the controller will go out and the other will light instead. At the same time, the swing rail of the switch will snap from one side to the other causing the lights on the switch to alternately light.

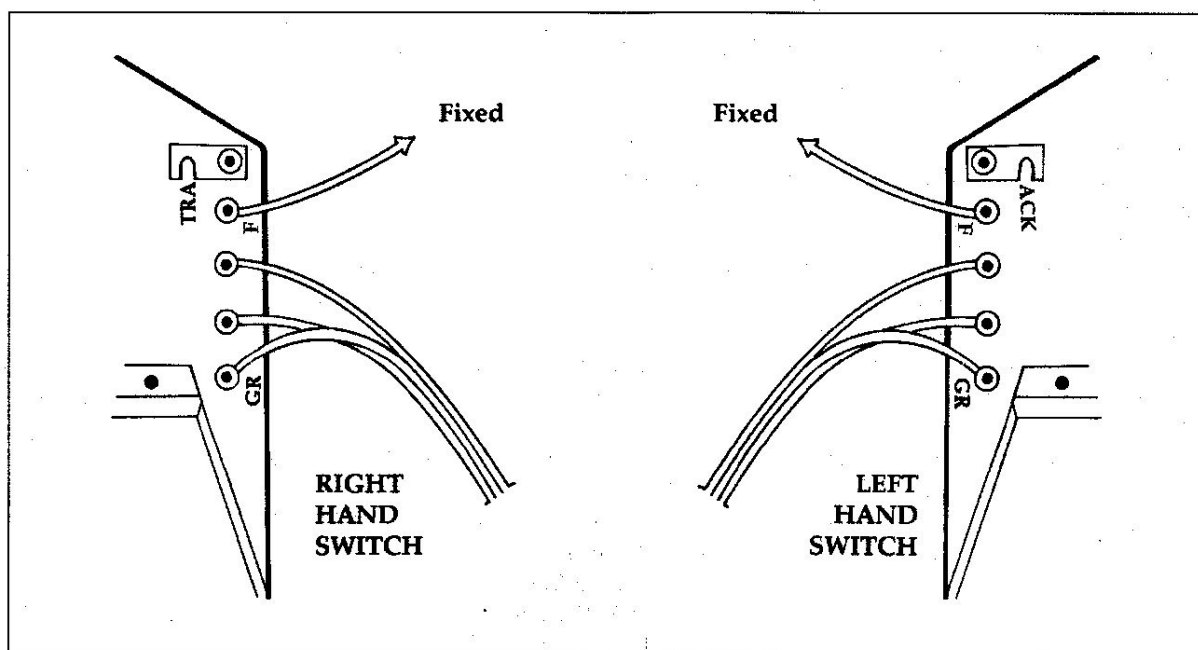


Figure 4: How connect controllers to switches

When the switch is in position for the train to proceed along the main line, the green lights in the controller and on the switch should shine.

Note that no action takes place if the controller lever is moved more than once in the same direction. If, however, the lever is pressed in the reverse direction, the position of the swing rail and the light will change along with the corresponding light in the controller. By connecting and adjusting controller in this way, you will know the position of the switch swing rail, even though it may be hidden from view, by merely noting whether the red or green controller indicator is on.

If the switch will throw in one direction only, check the ground connection. Make certain that the center wire of the controller is attached to the GR terminals on the switch.

Please note that the K-LINE controller wires are arranged so that other popular switches can also easily be operated. Replacement controllers may be purchased separately from your quality K-LINE retailer or from MDK, Inc.

MAINTENANCE AND SERVICE TIPS

K-LINE Switches have been designed to be as simple and as foolproof as possible. Keep the switches clean and free from interfering particles, paying particular attention to the non-derailing control rails. Do not remove the insulator pins from the control rails.

The loop inside the motor housing sliding against a micro-switch is the key to smooth operation. The micro-switch transfers power from one solenoid coil to the other, depending on the position of the slide which is connected to the swing rail. The loop must be free to slide easily in either direction.

1. Make sure the slide and slide channel is free and clean of dirt and grease.

2. If the loop is removed for any reason, be very careful not to distort it during reassembly.

The spring pushing against the slide at the conclusion of its travel in either direction is another critical part of the switch. The spring locks the slide in the direction of the throw until given a reverse command by moving the controller lever. **DO NOT LOSE THIS SPRING.**

1. The spring coil (elbow) must point towards the motor/solenoid.

2. The squared end of the spring fits around the notch in the bracket which extends out over the center of the slide.

3. The narrow end of the spring must be firmly located in the hole in the slide.

There is a large screw which passes through the switch base, through the pivoting portion of the swing rail, into the center rail. The head of this screw may be seen by turning over the switch and is accessible through a hole in the metal plate which protects the underside of the switch.

If this screw is either too tight or too loose, the switch may not operate properly. It has been adjusted during production, but may have shifted during shipment.

There is another, smaller screw which completes the GROUND connection through the plastic base, and through the metal motor base where it is secured with a nut. **THIS NUT MUST BE KEPT TIGHT** to insure a good, consistent electrical ground.

SPECIAL NOTE: As with other popular switches, some older engines will not operate properly on K-LINE switches due to large gears or pickups hitting the raised plastic areas of the switch base. The black plastic swing rail bar post can be shortened to reduce the chance of striking a pickup shoe on these older engines.

MANUAL SWITCH OPERATION

Slide the knob in the u-shaped channel from one side to the other. This allows for smooth travel of the swing rail, and the changing of the light from red to green, or vice-versa.

WARRANTY

Your quality K-LINE switch has a very reliable, durable design. To display our confidence, all switches carry a **ONE YEAR** warranty as follows:

Warranty covers all labor and parts except for bulbs and springs.

Within the first ninety days after purchase you may return your switch **POSTPAID** to MDK for repair or replacement, at our option. Be sure to include a copy of the sales receipt or other proof of purchase to verify that the switch qualifies for complete service at no charge. Repair charges will be assessed if proper documentation does not accompany the switch.

Within one year after purchase the switch may be returned **POSTPAID** to MDK for repair or replacement. There will be a \$5.00 charge per switch for shipping and handling. Again, proof of purchase within one year must accompany the switch or repair charges will apply.

Before returning your switch for service, please carefully check the unit and all connections. Were the directions followed? Are all the connections correct and tight? K-LINE switches have been extensively tested for long, reliable operation. Should service be required during the warranty period, return the defective item **POST PAID** to MDK®, Inc.

If you are sending by the U.S. Post Office:

K-LINE Customer Service

P.O. Box 2831

Chapel Hill, NC 27515

If you are sending the item by UPS or RPS:

K-LINE Customer Service

6909 Dodsons Crossroads

Hillsborough, NC 27278