

K-LINE® SWITCHES

K-LINE® REMOTE CONTROL SWITCHES

WITH AUTOMATIC NON-DERAILING FEATURE

Railroad track switches, also known to railroaders as "turn-outs", 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:

1. K-LINE® remote control switch
2. Lamp housing
3. Switch controller

Envelope:

- 2 Screws to attach lamp house
- 1 Red lamp and 1 Green lamp
- 2 Insulator (plastic) pins
- 4 SOLID Steel 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 three steel pins into the "closed" end of the switch where the curve and the straight sections come together; see Figure 1.

RIGHT HAND SWITCH (RHS): four steel pins are used, two each in the curved end and in the straight end. Care must be used to insure that pins are placed exactly where indicated in Figure 1.

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

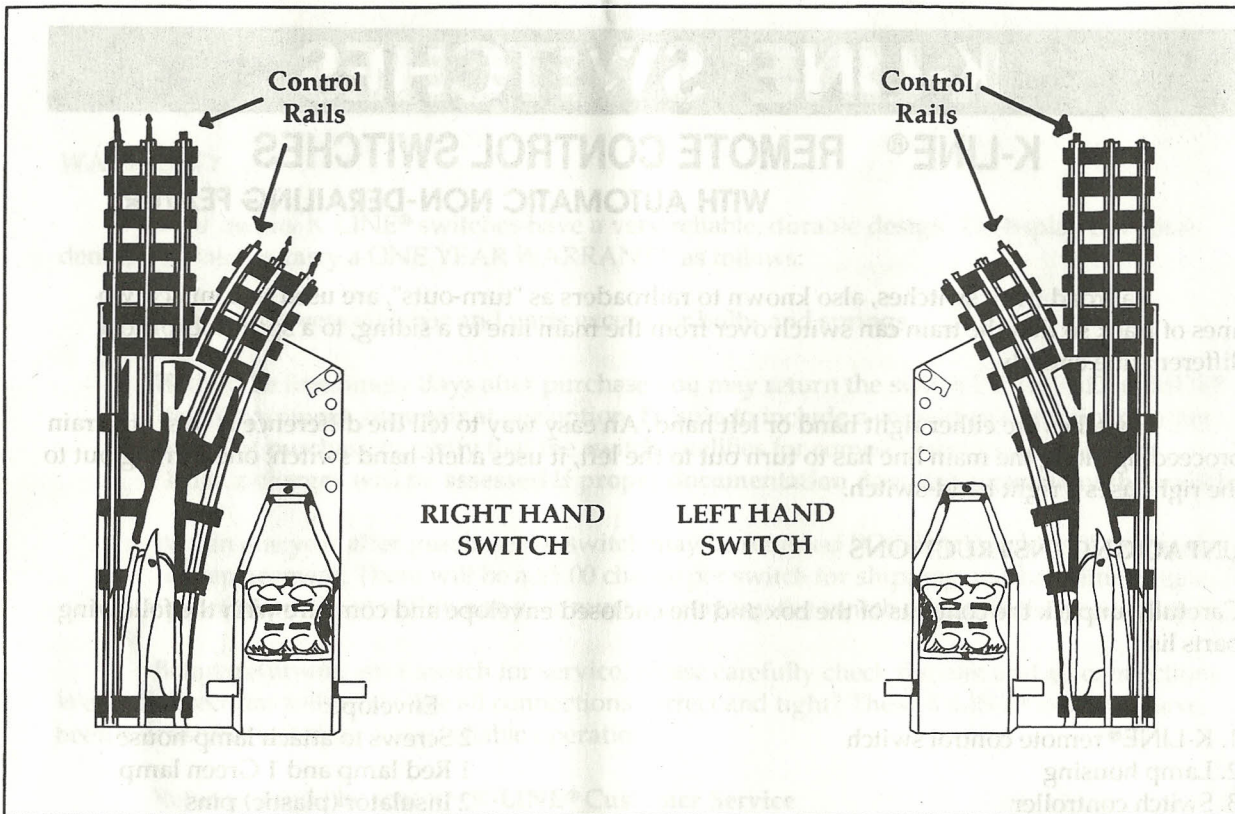


Figure 1. Location of steel and insulator pins in K-LINE® Switches

Insertion of insulator (plastic) pins into "control" rails:

BOTH 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 also, 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 or grease.**

Inserting insulator pins into the ends of the "control" rails prevents activating the switch coils at the wrong time. Be sure to remove the corresponding steel pin 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:

TRACK

"0" GAUGE

K-LINE® 42" Wide Radius Switches are made to match all brands of "0" gauge track. The straight section is 14 3/8" long, equal in length to K-LINE®'s K-342 0-72 straight.

0-27 GAUGE

K-LINE® 42" Wide Radius Switches are made to match all brands of 0-27 gauge track. The 13 3/4" long straight section is equal in length to K-LINE®'s K-232 straight plus K-234 one-half straight.

The curve forms 1/12th of a circle (30 degrees) and is equal to 1 section of either K-312 "0" gauge or K-212 0-27 gauge 42" curves.

K-LINE® Switches are designed to operate in the range of 12 volts to 18 volts AC. For best possible operation use 12 to 14 volts. The switch operates very well in this range and the bulbs will have a long life.

TRANSFORMER CONNECTIONS:

It is recommended that switches be operated via the fixed 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 or 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).

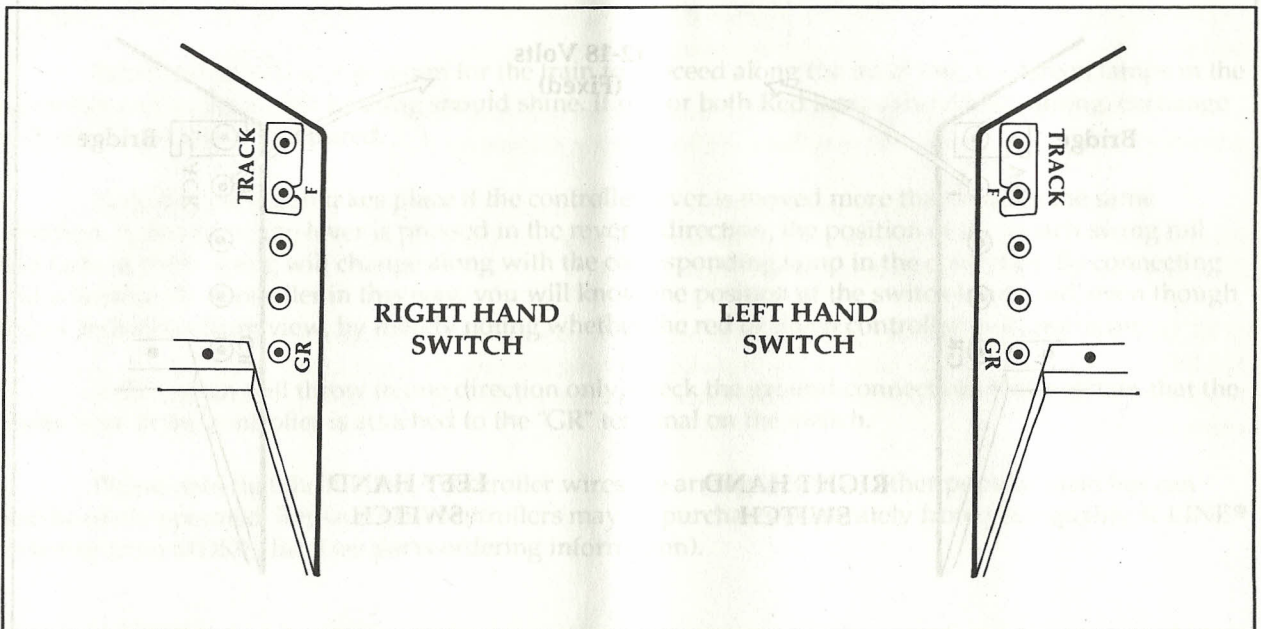


Figure 2. Shorting bar position for track voltage operation.

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 (12 volts AC to 18 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.

A side 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 reliable K-LINE® switches to your layout there will be a continuity of appearance.

The controller is connected by a 3-wire cable to the three binding posts closest to the motor housing (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 lamp in 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 lamps in the housing to alternately light.

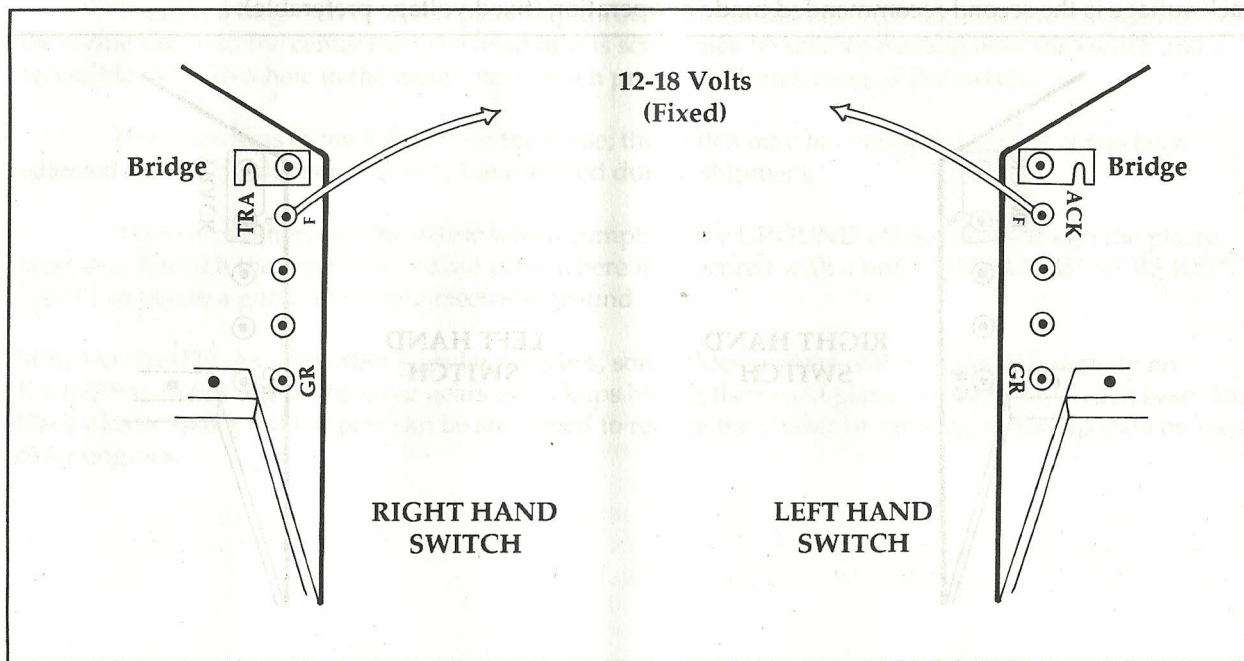


Figure 3. Transformer connection for fixed voltage operation.

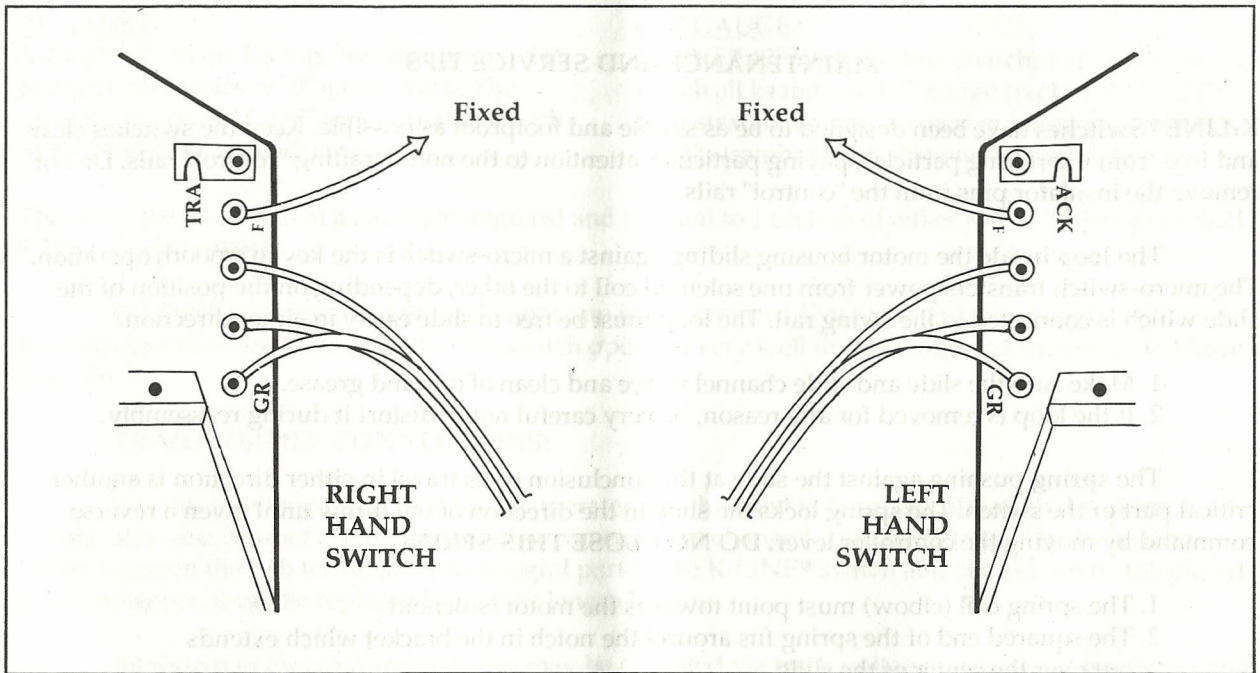


Figure 4. How to connect controllers to K-LINE® switches.

When the switch is in position for the train to proceed along the main line, the Green lamps in the controller and in the switch housing should shine. If one or both Red lamps should be shining, exchange with the Green lamp as required.

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 switch swing rail and light in the housing will change along with the corresponding lamp in the controller. By connecting and adjusting the 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" terminal on the switch.

Please note that the K-LINE® controller wires are arranged so that other popular switches can also be easily operated. Replacement controllers may be purchased separately from your quality K-LINE® dealer or from MDK®, Inc. (see parts ordering information).

MAINTENANCE AND SERVICE TIPS

K-LINE® Switches have been designed to be as simple and 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 up 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 plate 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 the 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 pick-up shoe on these older engines.

K-LINE® MANUAL CONTROL SWITCHES

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

K-LINE® **Wide Radius Switches** are made to match all "0" or 0-27 Gauge track and mate with K-LINE® 42" curves.

"0" Gauge: the straight section of the switch is equal in length to K-LINE®'s 0-72 Straight (K-342). The curved section of the switch is equivalent to one K-LINE® 42" curve (K-312). For this reason an extra one-half 42" curve section (K-314) has been included to allow for smooth hook-up with K-LINE® curves.

0-27 Gauge: the straight section of the switch is equal in length to a regular straight section (K-232) plus a one-half straight section (K-234); a total of 13-3/4". The curved section of the switch is equivalent to K-LINE 42" curves (K-212) and, as with the "0" switch, an extra one-half curve (K-214) is included.

Switches are installed in a train layout in the same manner as a piece of track. After inserting the track pins included with your K-LINE® switch, carefully line up the switch track with the adjoining track sections and press the track firmly to the switch. Note that you may have to remove some of the pins to match up with your existing track.

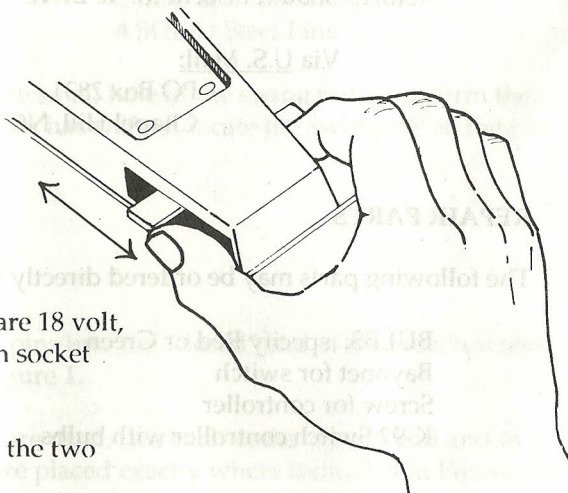
ADVANCING THE SWITCH

For easiest operation, push the tabs extending out on both sides of the motor cover with the thumb and forefinger of one hand. This allows for smooth travel of the swing rail, and changing of the light from red to green, or vice-versa.

LIGHTS and LIGHT COVER

The colored bulbs included with your K-LINE® switch are 18 volt, miniature bayonet type. Insert by pressing one into each socket and turning slightly to the left.

The light cover is then attached to the motor cover with the two silver phillips-head screws included.



K-LINE® ELECTRIC TRAINS

WARRANTY

Your quality K-LINE® switches have 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 the switch POSTPAID to MDK® for replacement or repair at our option. Be sure to include a copy of 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 all directions followed? Are all connections correct and tight? These K-LINE® switches have been extensively tested for long, reliable operation.

Returns should be sent to: **K-LINE® Customer Service**

Via U.S. Mail:

PO Box 2831
Chapel Hill, NC 27515

Via UPS:

Rt. #3
Hillsborough, NC 27278

REPAIR PARTS

The following parts may be ordered directly from MDK® , Inc.:

BULBS: specify Red or Green	
Bayonet for switch	ea. \$1.00
Screw for controller	ea. \$1.00
K-92 Switch controller with bulbs	ea. \$9.00

Add \$3.50 shipping and handling for each parts order.

K-LINE CUSTOMER SERVICE 1-800-866-9986