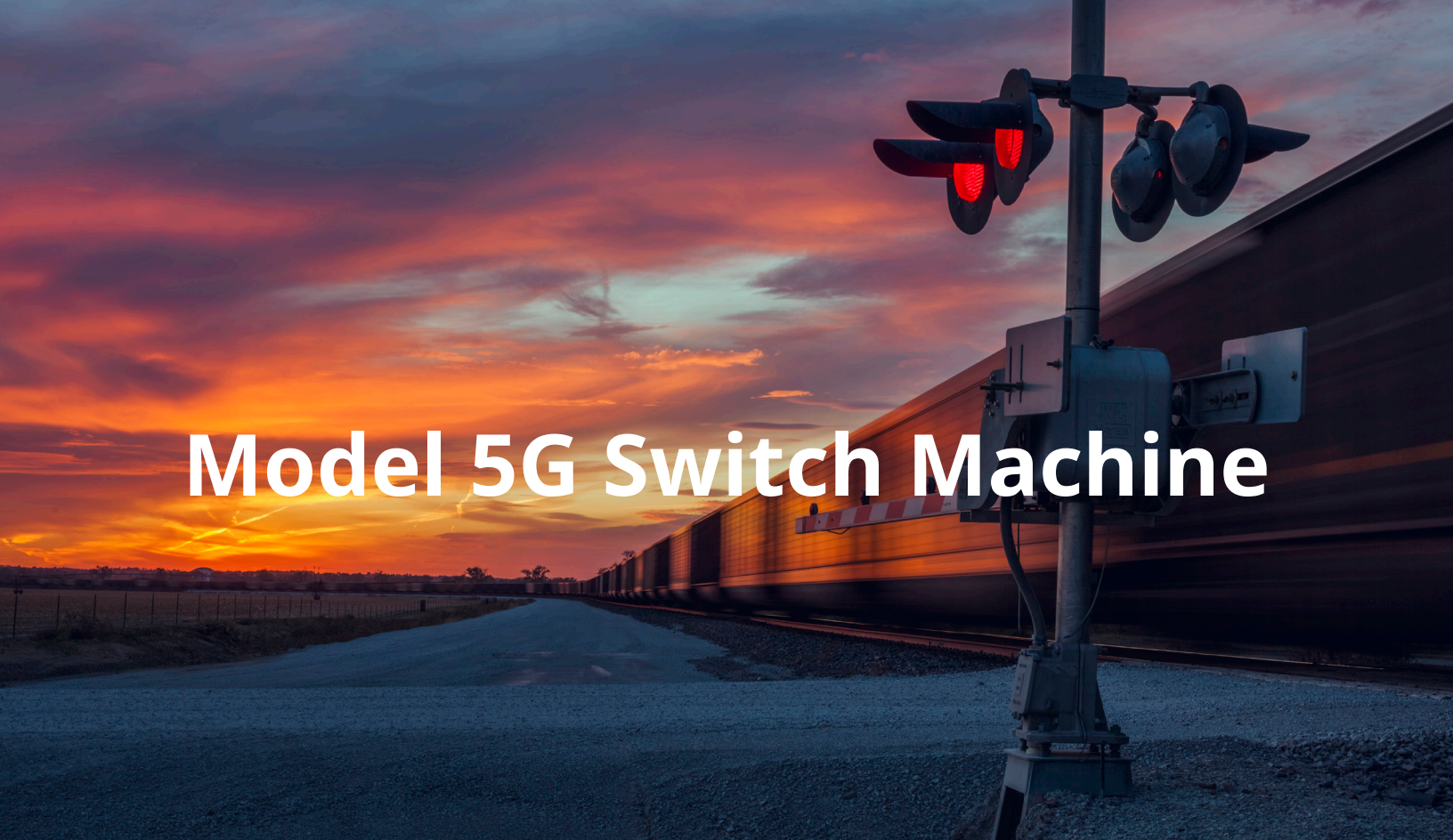




# Model 5G Switch Machine

## Electric Switch Machine

The Model 5G Electric Switch Machine is a comprehensive and efficient solution for railroads, featuring a single control mechanism, hand-crank capability, a biased-neutral controller, a rugged motor, integrated heaters, and an overload friction clutch. These features provide reliable and customizable performance, while delivering additional benefits such as frost protection and dynamic snubbing.



**KB SIGNALING™**

# Model 5G Switch Machine

## General Description

The Model 5G Electric Switch Machine features a single control mechanism that allows the machine to be operated under power. It consists of an electrically operated switch and lock movement with a lock rod, point detector rod, and built-in contacts. These contacts verify that the machine is fully over and locked in both the normal and reverse positions. The Model 5G can also be hand-cranked to make and check adjustments or for emergency switch operation in the event of a power interruption.

The unit includes a built-in biased-neutral controller operated by a low-voltage DC, two-wire polarized line circuit. The operating time is approximately 3 seconds for 110-volt machines and 8 to 10 seconds for 24-volt machines. The controller applies either 24 VDC or 110 VDC to the motor, and the control voltage can be easily adjusted in the field from 24 to 10 volts to meet railroad requirements. A permanent magnet holding device maintains the motor in position once the end of the stroke is reached. This magnetic detent secures the motor armature and vastly reduces interference from vibration and stray electrical currents. Dynamic snubbing ensures the machine comes to rest smoothly without shock at the completion of the stroke, with additional internal snubbing provided through contacts in the biased-neutral controller.

The Model 5G circuit controller includes two normal contacts, two reverse contacts, two motor control contacts, and two shunt contacts. The machine also contains an electromagnetically operated pole changer, with motor control contacts that directly carry and break the motor current. For cold-weather operation, the Model 5G has optional 110-volt heaters located in the motor, controller, and contact compartments to reduce condensation. The machine is available in both right-hand and left-hand configurations.

## Customer Benefits

### Point Detector

The over-and-locked type circuit controller has two normal, two reverse, two shunt, and two motor control contacts. The normal and reverse contacts check to confirm when the proper distance is achieved between the switch points and stock rail and then lock while indicating the same. The motor control contacts work with the biased-neutral controller to regulate the motor operating circuit.

### Biased-Neutral Controller

The machine contains two mechanically interlocked biased neutral contactors, a blocking rectifier, and an overload relay. Each contactor consists of a permanent magnet blowout (arc suppression) and a single dependent front-back contact. Dynamic motor braking is provided by a snubbing contact at the stroke's end. Armature cannot operate until the voltage of the proper polarity is applied across the coils due to the magnetic structure.

### Overload Friction Clutch

Absorbs shocks that are typically encountered during switch operation and comes factory-adjusted to slip at 12-14 Amperes for 110 Volt machines and 18-20 Amperes for 24 Volt machines, in the motor operating current.



### Rugged Motor

Provides rugged, reliable service. It has series, split connected, epoxy-coated, insulated field coils and an epoxy coated armature. Dynamic snubbing limits motor overrun at the end of the stroke, and a simple magnetic detent holding device then locks the motor armature. Magnetic holding is frictionless and virtually maintenance-free.

### Heaters

Provided in the motor, controller and point detector compartments.

### Removeable Hand Crank

Available for maintenance and emergency use.

# Model 5G Switch Machine

## Specifications

|                       |                                                                                                                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applications          | Single Switch, Single-Slip Switch, Double-Slip Switch, Derail                                                                                                                                                                                                                   |
| Motor Voltage         | 24-VDC or 110-VDC                                                                                                                                                                                                                                                               |
| Control Scheme        | 4-wire control, 10 or 24-VDC control voltage                                                                                                                                                                                                                                    |
| Operating Temperature | -40°C to 70°C                                                                                                                                                                                                                                                                   |
| Mounting Requirements | Requires only two ties for mounting                                                                                                                                                                                                                                             |
| Thrust                | 2,500 lbs. ( 1,136.7 kg) meets requirements of AAR Load Curve 1457                                                                                                                                                                                                              |
| Weight                | 1065 lbs. (484.1 kg)                                                                                                                                                                                                                                                            |
| Motor Type            | Series-wound DC motor; Magnetic detent holds motor against vibration and stray electrical currents at end of stroke. Dynamic snubbing circuit prevents motor overrun at high speeds.                                                                                            |
| Operating Time        | 3 seconds for 110 Volt machines, 8-10 seconds for 24 Volt machines                                                                                                                                                                                                              |
| Operating Current     | 12-14 Amps for 110 Volt machines, 18-20 Amps for 24 Volt machines                                                                                                                                                                                                               |
| Contacts              | Provided for lock rod, point detector rod, and locked in normal and reverse positions through contacts in the point detector. (Point detector contacts: 2 normal, 2 reverse, 2 motor control, 2 shunt contacts. Motor control contacts carry and break motor current directly.) |
| Throw Bar Stroke      | 6.0 Inches (15.2 cm)                                                                                                                                                                                                                                                            |
| Hand Crank            | Option for maintenance and emergency use; with automatic cutout contact and cut out feature to protect operator.                                                                                                                                                                |
| Frost Protection      | Optional 110 Volt heaters for motor, controller and contact compartments. If heaters are not used, a frost shield and felt commutator cover should be installed in motor. The point detector contacts feature a long wipe to help prevent frost buildup on the contacts.        |

## Ordering Information

| Model 5G Electric Switch Machine – Right-Hand Layouts |                              |                               |         |                |
|-------------------------------------------------------|------------------------------|-------------------------------|---------|----------------|
| Application                                           | Lock Rod                     | Motor                         | Control | Drawing Number |
| Single Switch                                         | RH Wide-Notch Threaded End   | 110 Volt with 110 Volt Heater | 3-Wire  | 54504-015-26   |
| Single Switch                                         | R/LH Narrow-Notch Spade End  | 110 Volt with 110 Volt Heater | 3-Wire  | 54504-015-30   |
| Single Switch                                         | R/LH Narrow-Notch Thread End | 110 Volt with 110 Volt Heater | 3-Wire  | 54504-015-51   |

| Model 5G Electric Switch Machine – Left-Hand Layouts |                             |                               |         |                |
|------------------------------------------------------|-----------------------------|-------------------------------|---------|----------------|
| Application                                          | Lock Rod                    | Motor                         | Control | Drawing Number |
| Single Switch                                        | R/LH Narrow-Notch Spade End | 110 Volt with 110 Volt Heater | 3-Wire  | 54504-015-31   |
| Single Switch                                        | R/LH Wide-Notch Thread End  | 110 Volt with 110 Volt Heater | 3-Wire  | 54504-015-54   |
| MPF                                                  | R/LH Wide-Notch Thread End  | 110 Volt with 110 Volt Heater | 3-Wire  | 54504-015-22   |

The Model 5G includes a hand crank. For Model 5G configurations not shown in this table, please contact us.

Contact your KB Signaling Business Development Manager  
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