Switch Machine Reference Guide - Part 1 - Overview

Walthers Controls offers components for your layout that are high quality, ready to use, and feature plug-in installation. Our products incorporate the latest technology so you can spend less time under your layout, and more time running your trains.

Walthers Control System switch machines and related products bring you a low-cost solution for easy turnout control for HO, N, Z, S, and O Scale layouts. The system is expandable at any time to grow with your layout, and can be used on layouts using both DCC- or DC-power. The system components use servo-style wiring with assembled connectors for plug-and-play easy installation. No soldering is required. Two styles of cables are available separately to expand your wiring as needed. User-friendly instructions are included with all items, and drilling templates for easy mounting on your layout or fascia are included as appropriate. The Reference Guides are an overall reference for the installation and operation of each of the components shown below.

For additional information on new products and updates refer to the link below:

walthers.com/products/walthers-control-system

Switch Machines and Accessories



942-101 Switch Machine
- Fully assembled servo driven slow motion
- Includes integrated DCC accessory decoder
- Includes two auxiliary 5A rated switches



942-121 Turnout Controller
- Single pushbutton and dual bi-color LEDs
- Includes drilling template, connecting cable, and spacer adapters for 1/8” or 1/4” panels



942-110 12V 2A Filtered DC Power Supply
- Powers up to 16 switch machines
- Plugs into 942-111 Power Distribution Block



942-122 Crossover Controller
- Dual pushbuttons and bi-color LED indicators
- Includes drilling template, connecting cables, and spacer adapters for 1/8” or 1/4” panels



942-111 Power Distribution Block
- Matching connector for 942-110 Power Supply
- Includes 2 Extension Cables
- Terminal block for alternate external power in/out



942-123 Accessory Controller
- Single pushbutton and bi-color LED indicator
- Includes drilling template, connecting cable, and spacer adapters for 1/8” or 1/4” panels



942-112 Connecting Cable, 48”(1.2 m) pkg (5)
- Fully assembled with servo type connectors
- Socket to Socket for connecting extra switches, and external devices to switch machine.



942-113 Extension Cable, 48”(1.2 m) pkg (5)
- Fully assembled with servo type connectors
- Socket to plug used to extend connections to controllers or power distribution block



942-140 Drill Set
- Includes 3/16”, #43, and #57 drill bits
- Includes step drill matching pushbutton and indicator bezels

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1.0 Switch Machine Overview

The Walthers Switch Machine is a servo based slow motion device and includes microcontroller based electronics offering a flexible mix of control options allowing easy integration into control panels of virtually any design. The control circuitry may be powered from a 10 to18 volt filtered DC power supply or from a standard DCC booster output.

Both dual and single LED fascia controllers are available. Each controller features a symmetrical design both mechanically and electrically. The controllers may be installed in either direction and the electrical connection flipped to properly indicate for left and right handed turnouts. The single and dual controllers can also be combined for use with either left or right handed crossovers.

The switch machine may also use existing single or dual momentary pushbuttons, as well as SPST or SPDT toggle or rotary switches to control turnout position. If DC power is used, an option allows the machine to follow the DC power input polarity, allowing emulation of a standard stall motor device controlled via a DPDT reversing switch. When DCC power is used, accessory decoder commands may be used to control the turnout.

Digital logic compatible inputs and outputs are also available allowing integration with other layout control systems.

The switch machine also includes two integrated micro switches which can be dedicated to other functions such as switching frog power, signals or other layout feedback functions. These switches are independent from all switch machine electronics and can be used as a break-before-make circuit as the switch machine transits from the normal and reverse positions.

The design of the switch machine electronics allows any of the control options to be used with no reconfiguration required by the user. In many cases, multiple inputs may be used simultaneously and toggle switch or digital inputs will override the standard fascia controls and provide the ability to remotely disable local turnout control via the pushbutton inputs.

There are several user selectable options available to modify the switch machine behavior if needed:

- Power Route — Allows a DPDT switch in the DC power input to determine switch position in lieu of control switches or buttons.
- Lock Enable — Changes the POS IN terminal to LOCK IN, disabling local control inputs when active.
- Color Mode — Changes colors displayed for each turnout position on standard fascia controllers.
- Speed — Changes throw speed from default 1 second to 3 seconds. Optional resistor may be used to set speed to any value between 1/2 and 5 seconds.
- Swap — Exchanges switch machine normal and reverse positions, allowing the switch machine to be installed in either orientation to the turnout independent of left or right-handed operation.

The switch machine uses a self-locking mechanism to convert the servo rotation into linear actuator wire motion. Servo rotation is fixed and independent of the throw distance and tension adjustment. In addition the point tension is provided by the actuator wire, not from the servo, so the switch machine may be continuously operated into a jammed point without risk of damage or overload. Strong, self-lubricating Delrin is used for all plastic components allowing the switch machine to provide years of reliable trouble-free operation.

A complete system of fascia controls and indicators can be combined with the switch machines and power supply using pre-made cables and provide easy plug-and-play installation requiring no soldering, cutting or difficult wiring.

The switch machine and controllers include drilling templates and spacers to facilitate the design and construction of layout controls for ease of use and uniform clean appearance.

Each component is complete with connecting cables, mounting and drilling templates for easy installation. Extension cables are available to extend the connections to fascia controls and power supply if needed.

A drill set is available with all sizes needed to mount the switch machine to the layout benchwork and controller buttons and indicators to fascia control panels. The switch machine is designed to integrate seamlessly with other components of the Walthers Control System and provides a versatile system for both control panel design and turnout control.