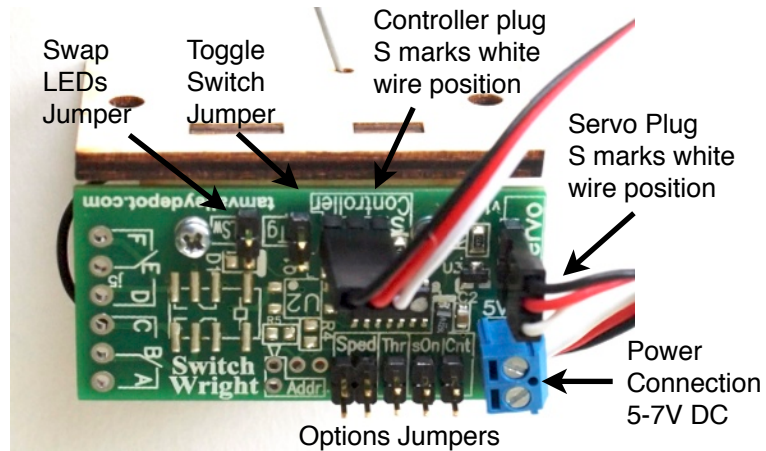
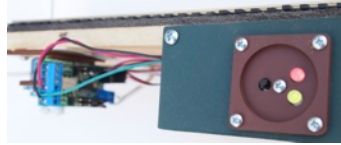


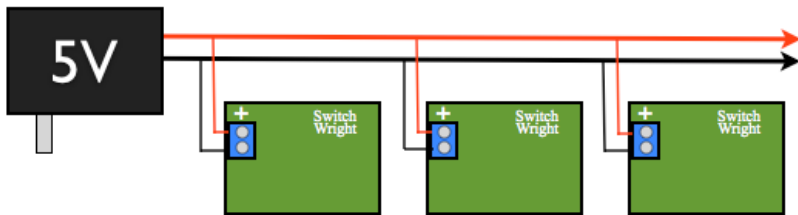
Tam Valley Depot SwitchWright Switch Machine Manual

Preliminaries - The SwitchWright is an under-the-roadbed switch machine. It requires a 3/8" hole be drilled in the roadbed under the throw-bar. It is better to make this hole larger than you think, as the number one issue with under the roadbed mounts is the wire touching the sides of the hole before the turnout is fully thrown. If the thickness of the roadbed is above 2" you may need a 1/2" hole. A small hole is needed in the throw-bar of the turnout for the actuating wire to fit through. Most commercial turnouts have one already. If not, a #56 drill, or something close, can be used to drill a hole.



Installation

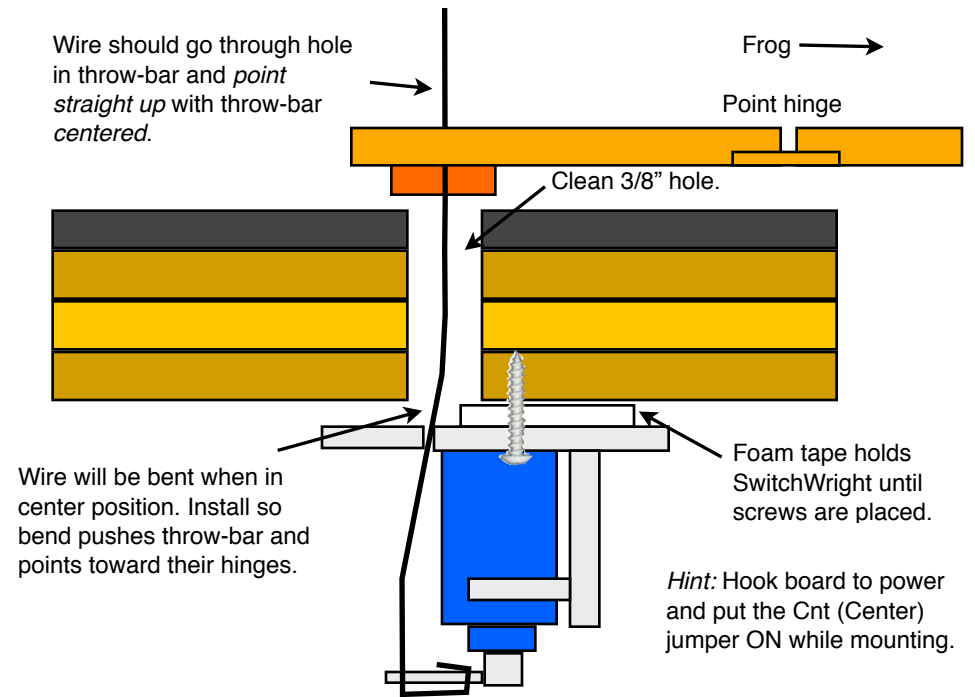
Caution: Damage may occur if a hot DCC wire touches the board.



Attach Power. Power input is 5-7 volts filtered and regulated DC. AC will not work. Poorly regulated DC will not work. The best power is a 5V switching wall wart. Do not exceed 7V. Do NOT use an old "DC Power Pack" - these do not produce clean DC! Under normal loads the board should use about 20 mA (0.02 Amps) at idle and 200 mA when driving. A 4-cell battery makes an ideal power source for testing and installation.

Install Centering Jumper. The centering jumper is used to put the servo in the precise center. You will want to familiarize your self with this one jumper as properly centering the servo before mounting is the key to a good installation.

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The jumper is ON when it covers both pins. If it is on one pin or no pins, it is OFF.

Place SwitchWright. Remove the protective covering on the foam tape and put it on the bottom of the SwitchWright. Thread the wire up through the hole and in to the hole in the throw-bar (this is by far the hardest part!). Move the SwitchWright such that the wire is straight up and down with the throw-bar centered. The wire will be bent when in the proper, straight-up, position. Press the tape against the roadbed to hold the SwitchWright in place. Drill 2 pilot holes for the mounting screws and then tighten these in to place to hold the SwitchWright. Remove the centering jumper. You can now check the installation by throwing the SwitchWright back and forth.

Mounting Options - You may want to remove the PC board and mount it nearby. Just remove the 2 small screws holding the PC board on to the bracket. The base can be trimmed if needed to make it fit tight spaces. You may also drill holes for the mounting screws in alternate locations if needed.

Button and LED Indicators - Fascia Controllers



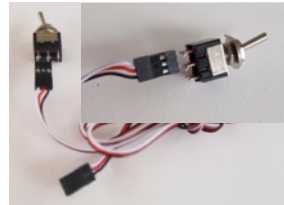
Fascia controllers can be used for manual operation of the SwitchWright. The controllers use the same cables as servos. Connect the cable to the Controller plug such that the white/signal wire is near the S. To change the position of a servo press the button briefly. The LEDs flash while the SwitchWright is driving.

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LSwp Jumper - this jumper swaps the LEDs on the controller. Use to align the controller with the direction of the points after mounting.



Toggle Switch - You can also use a toggle switch to control the SwitchWright by putting on the Tgl Jumper as shown. A SPST (on-off) toggle will do, although if you use a DPDT as illustrated you can use the extra contacts to wire the frog power. Attach the switch across the two Controller end posts (signal and ground) skipping the middle post. If you want to have LEDs indicators they can be wired as shown in the schematic.



Cable Extensions - If the wire is too short to reach the mounting position, servo extension cables in various lengths are available from Tam Valley Depot or at your



local R/C hobby shop. Alternatively you can splice in extra lengths of wire.

Y Extensions - Two fascia controllers can be connected to the same port with a "Y" cable. Three controllers can be connected with two Ys. If two controllers are on a Y then both will show the same indication and, if either button is pushed, the turnout will switch.



Option Jumpers - The SwitchWright will work fine without these jumpers. However the jumpers provide access to some nice features.



Sped (Speed) - These are 2 jumpers that control the speed

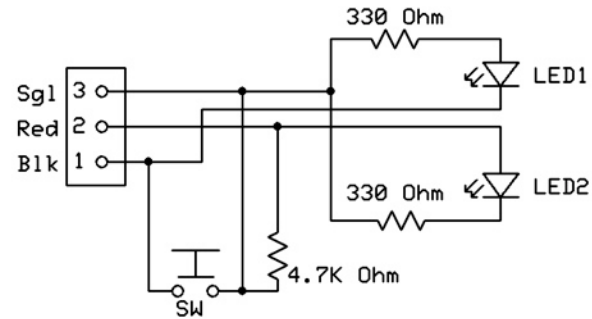
of the servo. No jumpers is the slowest speed and both jumpers on is the fastest. One jumper is medium. Note: the servo has the same amount of torque at all speeds.

Thr (Amount of Throw) - This controls the total throw from side-to-side of the wire. Off is full throw and on is one-half throw. If the points are being pushed hard against the stock rails you may want to put this jumper on.

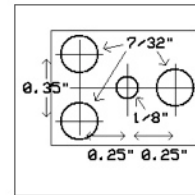
sOn (Stay On) - The servo normally turns off at the end of the throw. In some cases the servo may not be able to hold unless powered continuously. This will greatly increase the amount of current draw and may cause the servo to buzz (not harmful but annoying).

Cnt (Center) - Puts the servo in the precise center and holds it there. Useful when mounting the SwitchWright to align it in the optimum position.

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Fascia Controller Schematic for Single Color LEDs. 4.7K resistor is optional but will increase noise rejection. The switch can either be a pushbutton or a toggle.



Fascia Controller Drilling Template

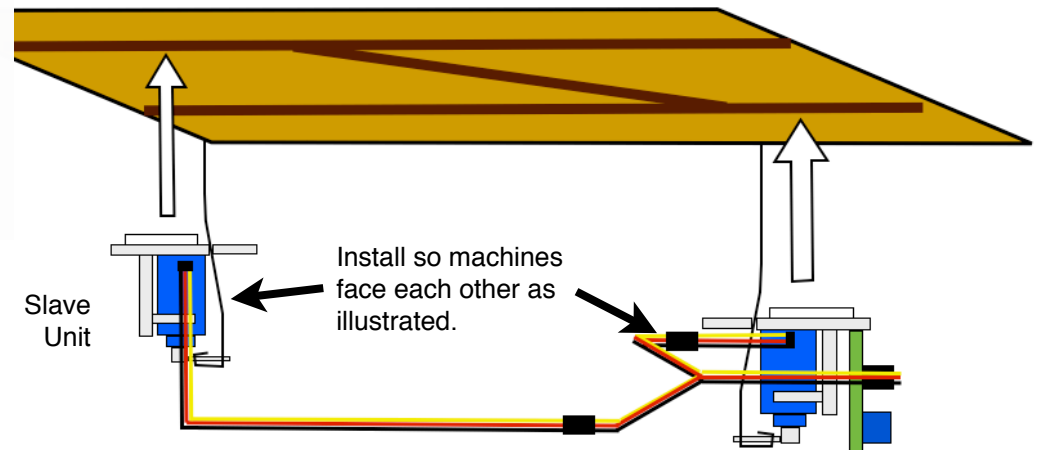
You may also want to use these precision laser-cut fascia controller mounts. They fit in to a 1 3/8" hole which can be drilled with a hole saw or a Forstner bit.



More Help

If you need more help or have any suggestions/comments please email dmcree@tamvalleyrr.com. Also see our website at www.tamvalleydepot.com

Wiring a crossover with a slave unit and a Y



Install so machines face each other as illustrated.

Unplug the servo from the SwitchWright and replace it with a Y keeping the wire colors in the orientation. Replug the servo in to one arm of the Y and a slave unit in to the other arm.

DCC/Relay Option

If you have the DCC/Relay option you will be able to use DCC to throw the SwitchWright and the relay can be used to power the frog and/or provide feedback for a signal system and/or power accessories.

The decoder responds to accessory (stationary decoder) commands and ignores commands meant for locomotives (i.e. mobile decoders). See your DCC system manual if you are unsure how to send an accessory command with your DCC system. Your throttle may call accessories “switches”.

There are no CVs to set on the unit. The only DCC parameter to be set is the address which is done by teaching the unit while the **Addr** jumper is on (see below). There is never any need to connect the unit to the programming track or to use “Ops mode/Programming on the Main” nor will the unit respond to these commands.

Teaching the DCC Address

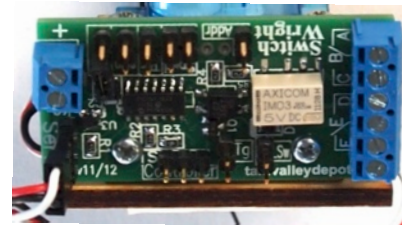
To teach/set the DCC address connect inputs A and C to the DCC bus as in the diagram on the left. If you are not powering your frog with the SwitchWright, leave the green wire connected to B off. Note that inputs D and F are not connected to the DCC input circuitry of the SwitchWright so you must use A and C for the DCC connection.

Once the DCC is connected you can check the connection by issuing a switch throw command at address 1 - the factory default address. If the unit does not respond it may already be thrown so try the close command.

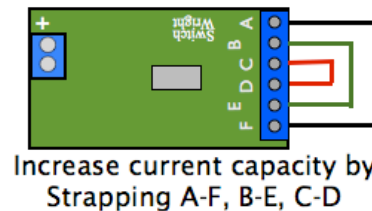
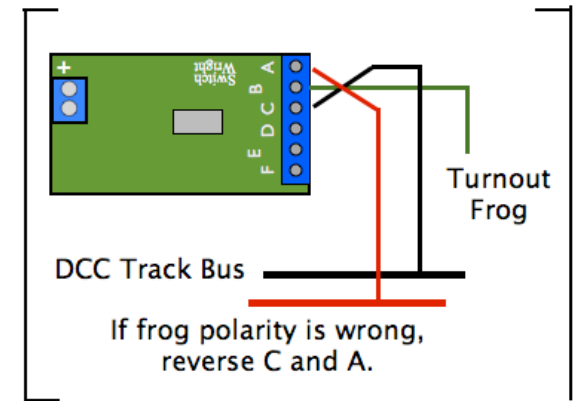
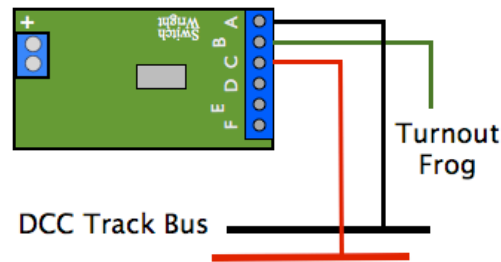
To program the DCC address, place the jumper across the two **Addr** pins to put the SwitchWright in learning mode (fascia controller LEDs will flash to indicate it is ready) and then issue an accessory command exactly as you would to throw a turnout. If the turnout is thrown issue a throw command and if it is closed issue a closed command as the decoder uses this to set the sense of throw/close (note that this makes it easy to reverse throw/close if you wish). The decoder will store the address and the throw/close sense and stop flashing the fascia controller to indicate it has been successfully programmed. **Be sure to remove the jumper when finished programming.** It can be stored on a single pin.

Reset the Address

If you forget the address of the SwitchWright you can set it back to 1 by putting on the jumper and then turning the 5V power off and on.



The DCC/Relay version has the 6-pin blue connector and the white relay added.



Wiring diagrams for the relay on the SwitchWright