

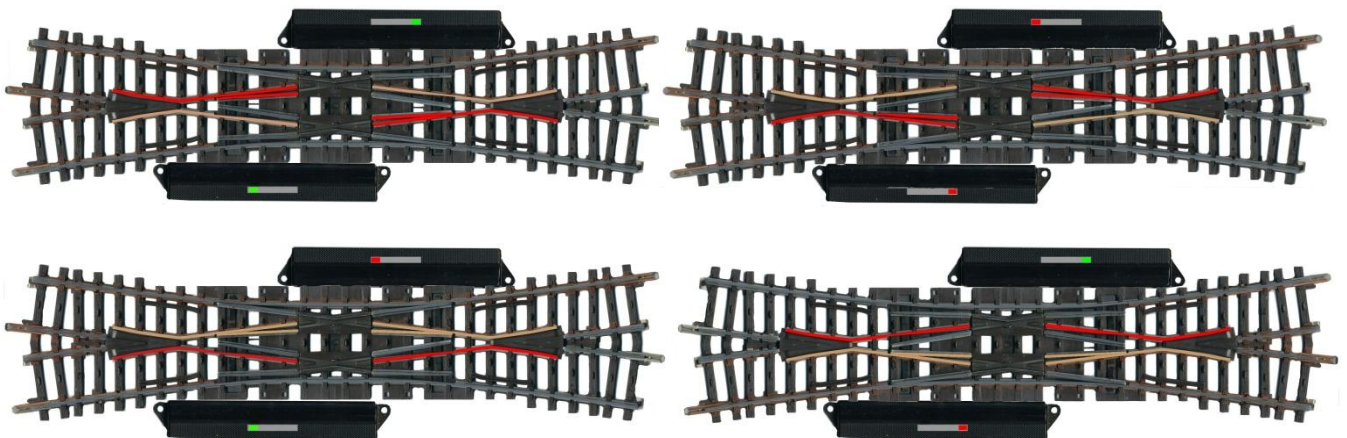
Tip: 2275 Track Power Improvement

Date: 09-12-2013 Correction 24-02-2019

Hi All,

I have one double slip (**2275**) on the layout where the Cargo Sprinter train set 37090 would hesitate/jerk when travelling across the double slip in a straight direction. To overcome this problem I wired one of the isolated rails to ground and this worked for many years.

In the last two months I have started adding LED lighting to my passenger coaches and to my surprise as the train came into the station and slowed down to a very slow speed the collector shoe at the end of the train would create a short circuit with the isolated track I had connected to ground as it was using the opposite diagonal straight direction. When the trains ran fast over this section I didn't notice I had a problem. It was time to make a permanent fix where the polarity of the rails would change with the required route direction.



The four possible arrangements above show the brown rails connected to ground and the red rails connected to B connection in the same circuit as the centre rail contacts of the double slip, this maintains power to locomotives with short collector shoes and locomotives that only have four wheels like the Rail Bus.

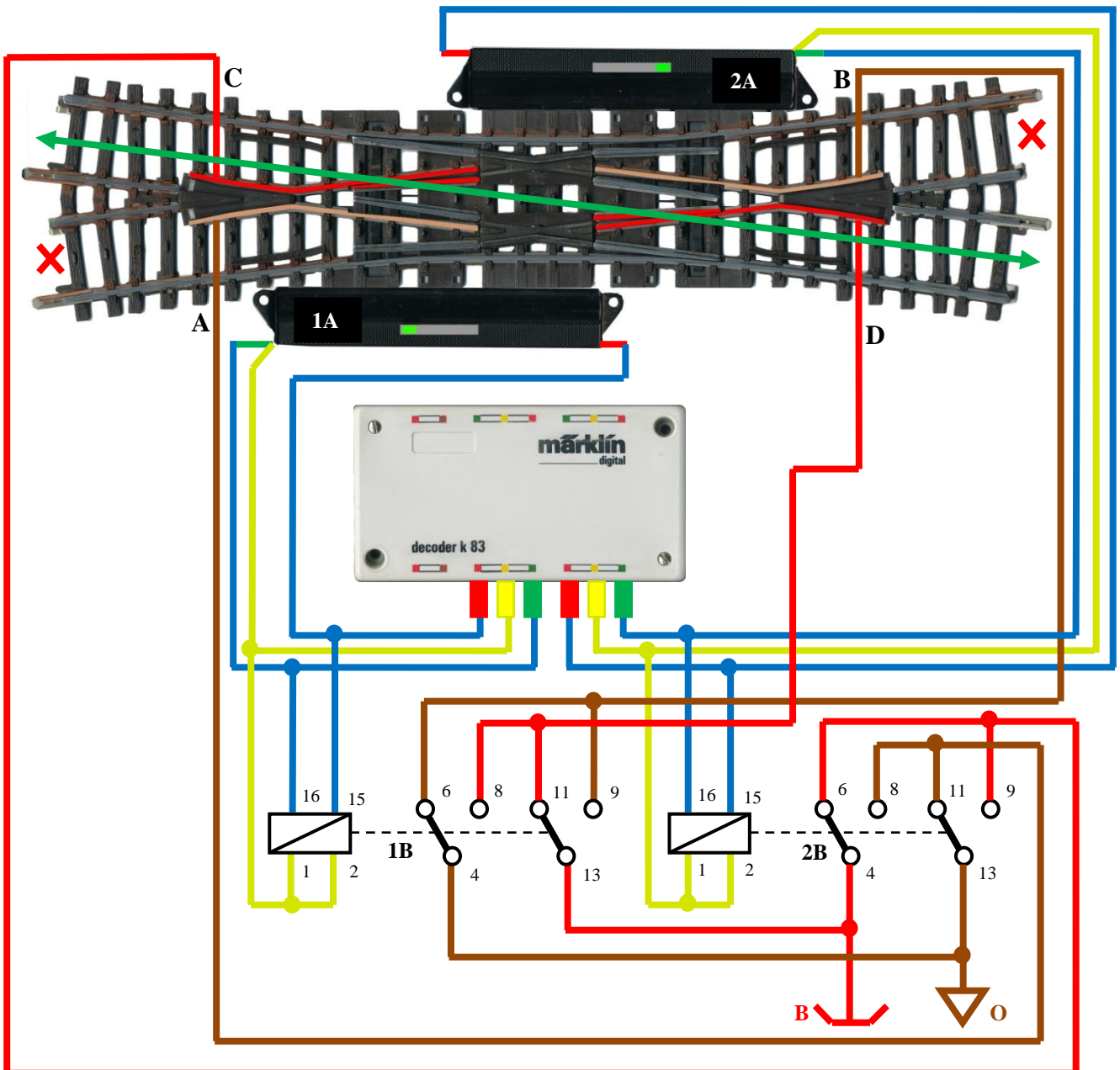
I purchased two latching relays with two change-over contacts per relay, part number **SY4060** from Jaycar electronics store here in Australia. The other part required is Machined Pin IC Socket strips Part number **PI4670** to plug the relays into. See **wiring diagram page 2** and **Hardware wiring page 6**.

Tip: 2275 Track Power Improvement

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Version 1 Green – Green Straight

The point motor actuators show the switched position of the motors and the latching relays 1B and 2B coils are wired in parallel with the point motors 1A and 2A respectively. The change over contacts of the relays must switch the polarity of the rails at the opposite end to the switching point motor. The long green arrow shows the route and the red crosses indicate that trains must not enter at this position.



Please note that the k83 power/digital signal (red/brown) hasn't been shown but is required for the k83 to work.

The **Red B** connection to 1B-13 and 2B-4 must be connected to the same circuit as the centre rail of the double slip being used.

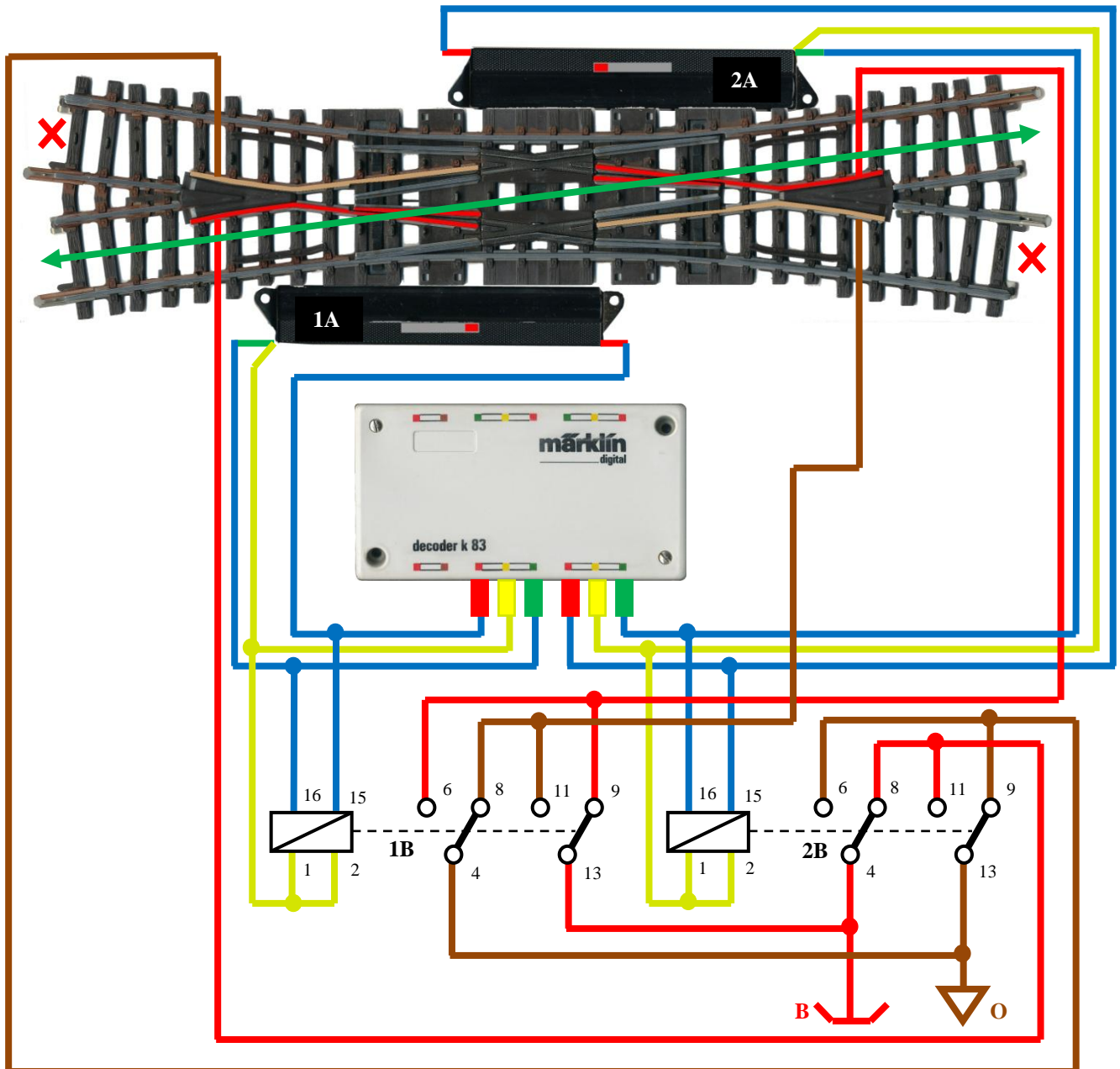
Please note that the wiring of the latching relays only has to be done once as the following diagrams will show all possible positions for the relays and the double slip. As the relay and double slip polarity changes the connections to the double slip will also change colour.

Tip: 2275 Track Power Improvement

Date: 09-12-2013 Correction 24-02-2019

Version 2 Red – Red Straight

The point motor actuators show the switched position of the motors and the latching relays 1B and 2B coils are wired in parallel with the point motors 1A and 2A respectively. The long green arrow shows the route and the red crosses indicate that trains must not enter at this position.



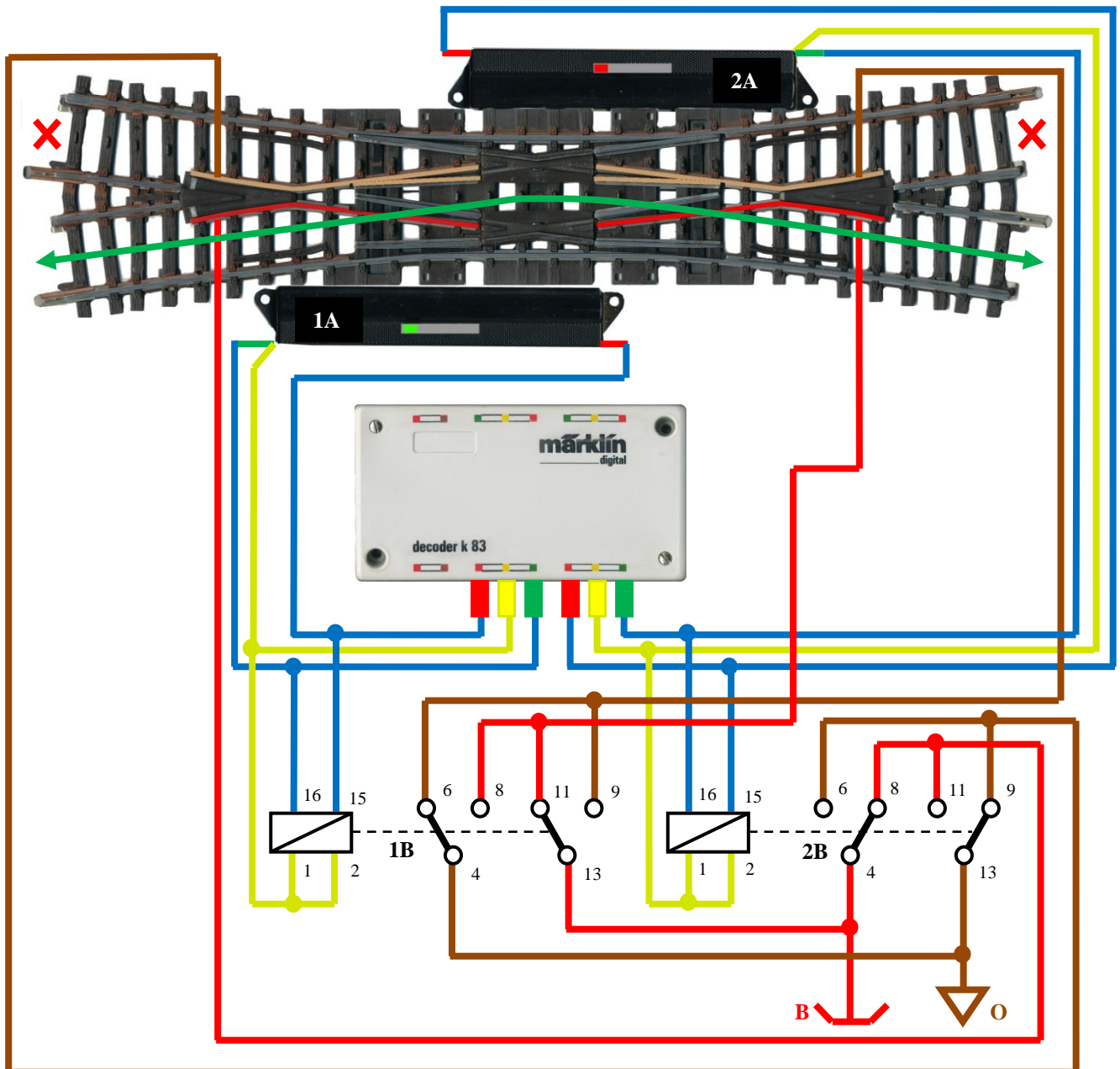
The **Red B** connection to 1B-13 and 2B-4 must be connected to the same circuit as the centre rail of the double slip being used.

Tip: 2275 Track Power Improvement

Date: 09-12-2013 Correction 24-02-2019

Version 3 Green – Red Curve

The point motor actuators show the switched position of the motors and the latching relays 1B and 2B coils are wired in parallel with the point motors 1A and 2A respectively. The long green arrow shows the route and the red crosses indicate that trains must not enter at this position.



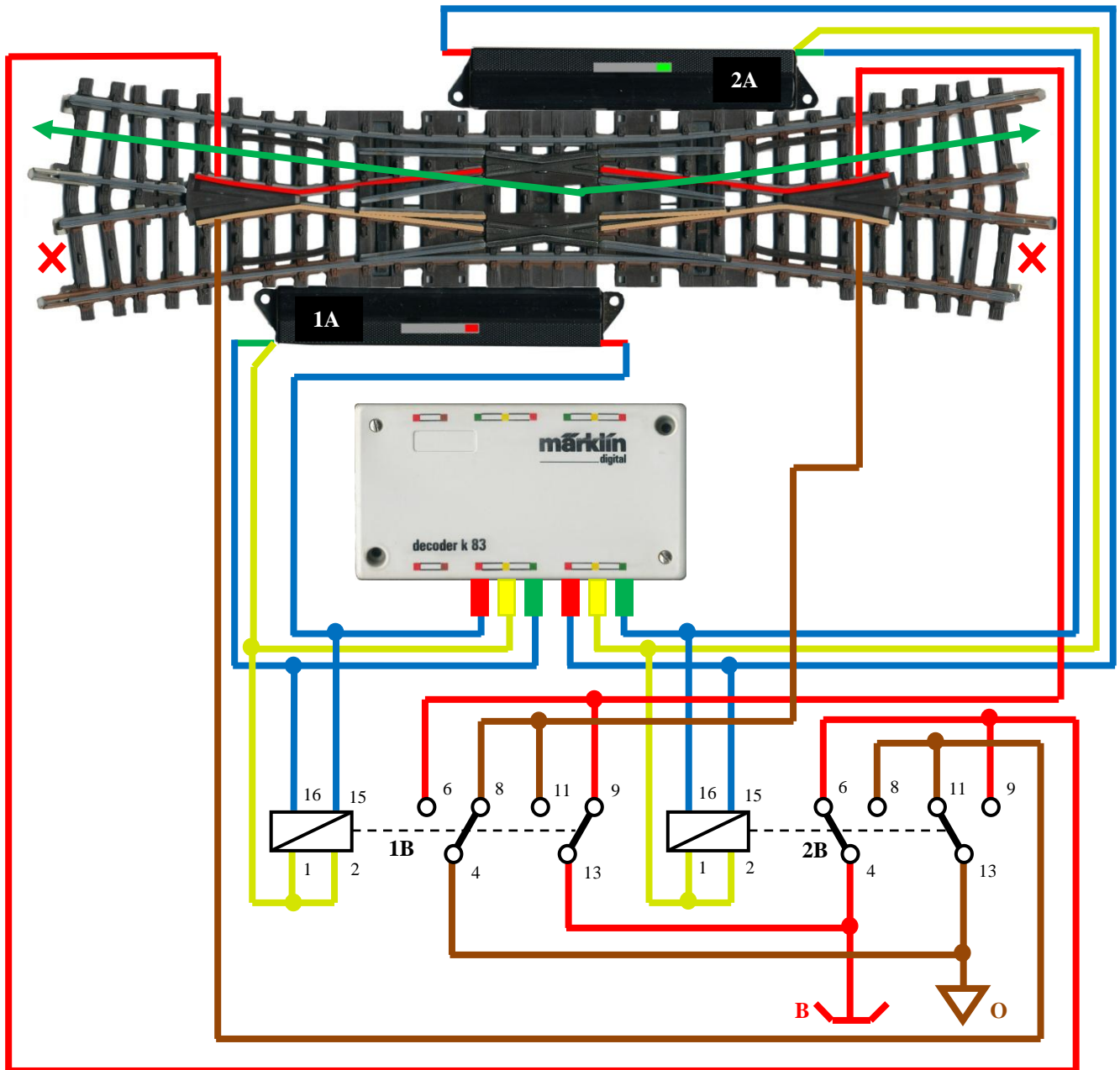
The **Red B** connection to 1B-13 and 2B-4 must be connected to the same circuit as the centre rail of the double slip being used.

Tip: 2275 Track Power Improvement

Date: 09-12-2013 Correction 24-02-2019

Version 4 Red – Green Curve

The point motor actuators show the switched position of the motors and the latching relays 1B and 2B coils are wired in parallel with the point motors 1A and 2A respectively. The long green arrow shows the route and the red crosses indicate that trains must not enter at this position.



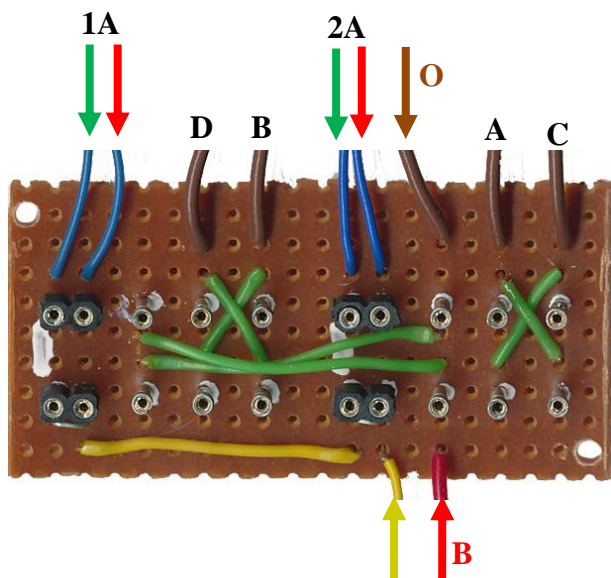
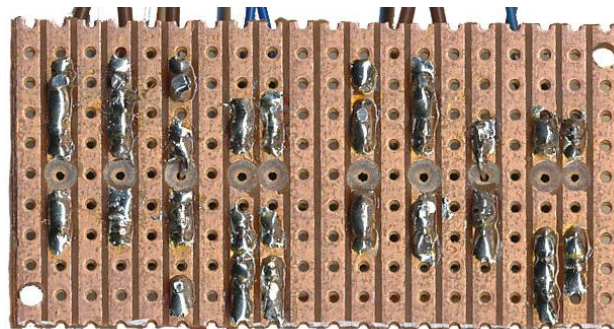
The **Red B** connection to 1B-13 and 2B-4 must be connected to the same circuit as the centre rail of the double slip being used.

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Hardware Wiring

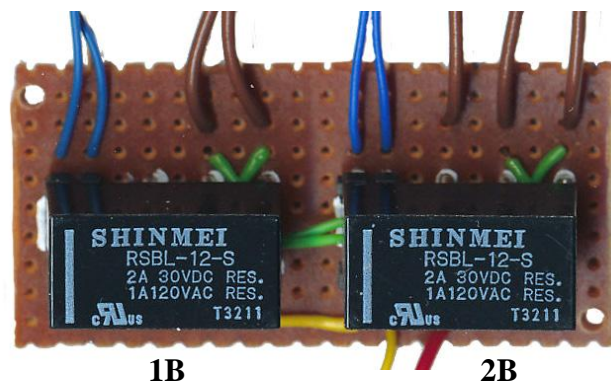
I used Vero board 20 foils across x 11 holes, then I soldered the IC sockets to match the layout of the relays. The foils were cut between the relay pins using a 3mm drill as shown at the right. The two large 2.0mm holes are for the PCB mounting.



The blue wires **1A** and **2A** (green/red arrow) are the k83 connections. The yellow wire only requires one connection to the k83 as the rest is wired on the Vero board. Note links on pins 1 and 2 for each relay. The brown wires (**D**, **B**, **A**, **C**) are soldered to the insulated tracks on the double slip, see wiring diagram **page 2**. The brown (**O**) and red **B** connections are the track power for the double slip. The green wires show the relay and change-over contact crossovers.

Final view shows the relays plugged into the sockets labelled as 1B and 2B.

Finally connect the relay module to the point motors.



Testing

Switch each point motor to the red then green switched position this will get the relays in sync with the point motors. Now use a digital meter to make sure the required rails are wired correctly. If you find the rail polarity incorrect, swap the red/green connection for each relay.

Results

With the relay module wired up to the double slip and controlling k83 decoder, trains that hesitated before the modification now travel over the double slip at very slow speeds in any direction without stopping.

As always enjoy your model trains.