Point Motors

This is a very basic look at Point Motors just to get you started.

Point Motors are used to power track points, un-couplers and signals on your layout. The first thing you must know is that there are two types of Point motors.

1) The most common point motors are in fact not motors they are Solenoids. This is important to know because if you supply power continuously they will burn out. They are actually 2 separate solenoids with a metal rod between them.

2) Then there are the electric motor type of the slow motion style. Many are stall type too. That is the power for these motors remains on all the time and the point motor when reaching the end of its travel goes into an electrical stall situation and draws a tiny amount of power from the supply feeding them. Such motors are most commonly known as Tortoise. These often are fed with 9 to 12 volts dc power. If these are used then the points over centre spring is removed too.

Point Motors are either surface mounted on the baseboard, or on the underside of the baseboard.

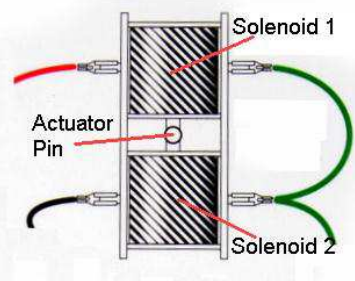**We will start with the most common type of Point Motor (Solenoids)**

As you can see from the drawing the motor consists of 2 solenoids 1 & 2 with a steel bar running through the centre. In the middle of this bar is the actuator pin which is connected to the points lever.

The Green wire is the common negative 0v from the power source.

The Red wire actuates solenoid 1 which will pull the Actuator pin toward Solenoid 1. The Black wire actuates solenoid 2 which will pull the Actuator pin Toward Solenoid 2.

Both these actions require a short pulse of power of no more than one or two seconds.
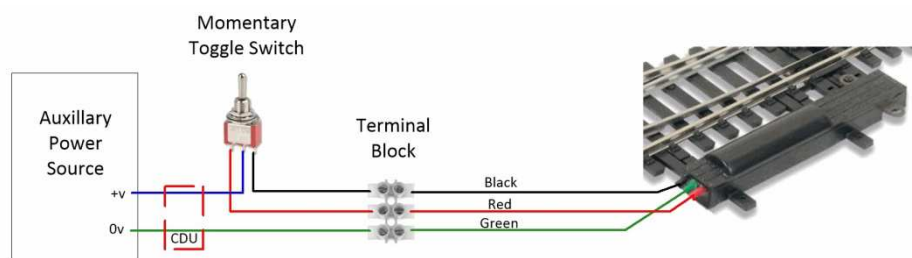
The Actuator pin in turn moves the points in or out.

Surface Mounted Point Motors.

Each Manufacturer have their own surface mounted points in different shapes Shown here are a few examples. The first image shows a Peco PL-11 Side Mounted Turnout Motor. The colour Code for wiring.

Green = 0v Negative, Black = Solenoid 1, Red = Solenoid 2
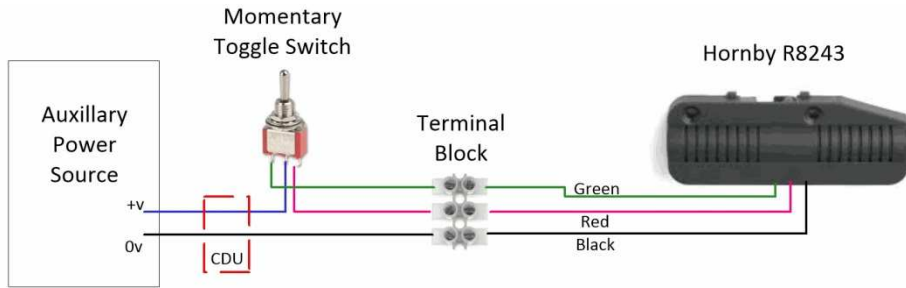

The second image shows a Hornby R8243 surface mounted point motor. Designed to be positioned either side of any Hornby point, this surface mounted point motor also can be used on the un-coupler track. It may not be suitable for use with points which are incorporated into certain track configurations.
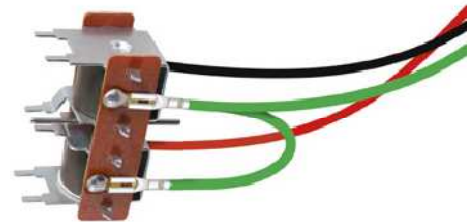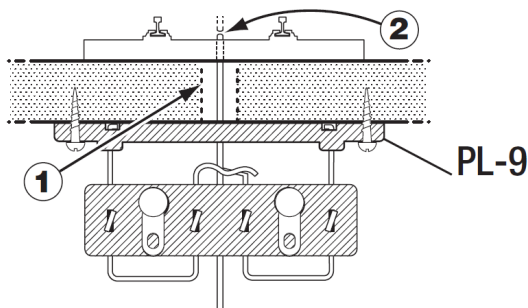
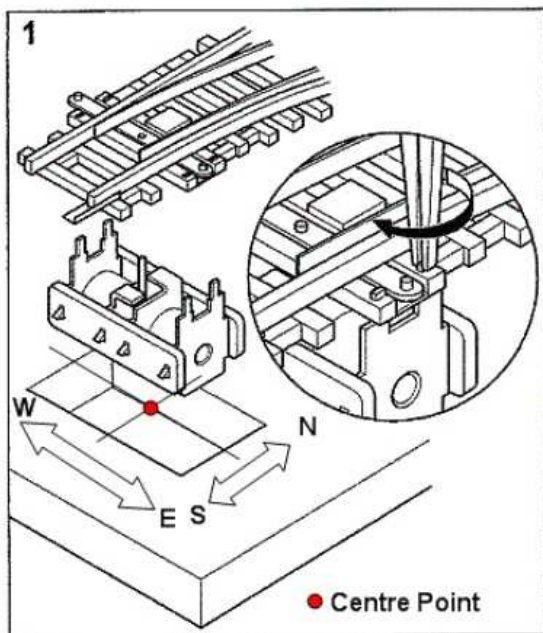Black = 0v Negative, Green = Solenoid 1, Red = Solenoid 2

Under Baseboard Point Motors.

In this example a Peco PL-10 Motor is being used. A PL-9 Motor base is used to secure the motor to the underside of the baseboard. (1) is a 10mm hole drilled through the baseboard, the centre being the hole in the tiebar of the track switch. Position the motor so that the motor pin goes through the tiebar (2) cut off any excess pin length. Ensure the motor is moving the points correctly before fixing the motor to the underside.

The wiring of this motor is the same as the Peco motor above.
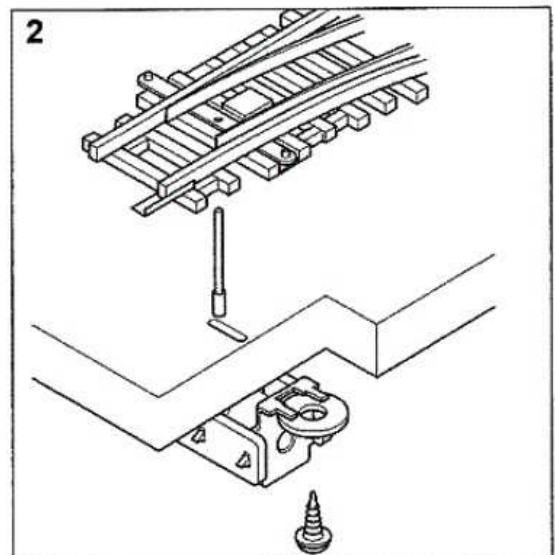

Fitting the Hornby to the underside of the baseboard is very similar to the Peco. Either a complete hole the size of the motor can be made and the motor in then fixed to the points, as in figure 1. A slot or 10mm hole drilled in the baseboard and the motor screwed to the underside as in figure 2, or using the R8015 base only with a 10mm hole through the baseboard.

The wiring is the same as the Hornby points above.

You can fit the point motor directly to the underside of the point (in which case you need a hole 40mm x 25mm in the baseboard to accomodate the body of the motor).
Use thin-nosed pliers to twist the end of each point motor leg just a few degrees once the legs are in position (to lock the motor in place).
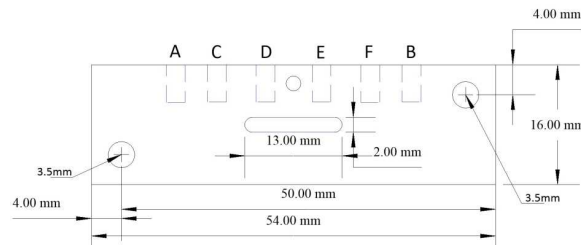
You can also mount the point motor on the underside of the baseboard, connecting motor to point by means of the metal extention rod that is included in this pack. Bend the point motor's legs outwards at right angles for screw fixing as shown. Cut the extension rod as necessary to suit the thickness of your baseboard, track underlay, etc.

You can also mount the point motor above or below the baseboard using Point Motor Housing R8015.

Brimal Consultants Ltd trading as BRIMAL COMPONENTS.
60 Lawson Road, Seaton Carew, Cleveland, TS25 1AL
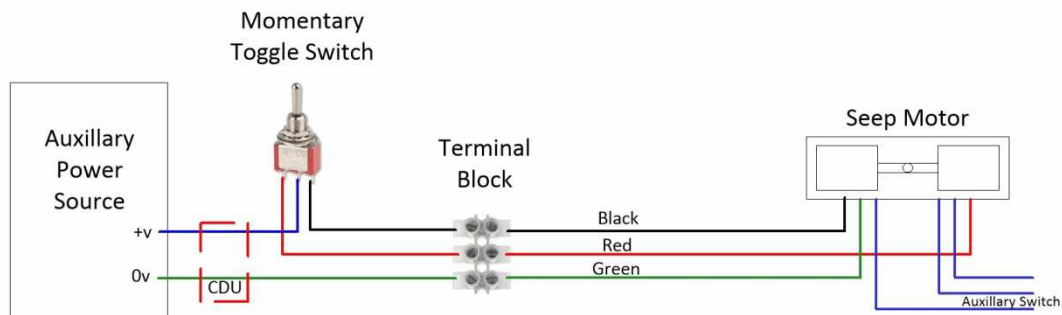Telephone: 01429 297 277. Email Andrew@brimal.co.uk

Fitting a Seep motor on the underside of the baseboard.

Use this template to mark the position of the fixing holes and the slot. The slot could be a 10mm hole, again the centre would be the pin hole in the tiebar when the tie bar is central to the points.

If using the template from the top then drill the fixing holes right through the baseboard with a 2mm drill, then you will have the correct positions when fitting the motor from the underside.

The seep motors do not come with wires fitted so you will have to solder wires to the printed circuit board. Please be careful not to damage the coil insulation of leave the soldering iron on a tab too long as you may unsolder the coil wires.

This by no means covers all the motors available, but gives a basic idea of how to wire them and how to install them. For further details see the individual manufacturers installation instructions.

Switching Points.

All manufactures have their own Point Motor switch called a 'Passing Contact Switch'. The drawback to these switches is they have to pass a contact to make the next contact which can cause the points to chatter.

A good alternative is the centre OFF mini toggle switch, this switch is pushed up or down to activate the points, and when released springs back to the centre OFF position. The disadvantage to this type of switch is that you do not know where the points are, because the switch is now in the centre. There is a remedy for this in the form of a 'Momentary Switch Indicator'. This is a relay that drives 2 LED's, one for straight and one for turnout (or a single dual colour LED). The relay remains in the last state even when the whole system is switched off. So the next day when power is returned to your layout all the indicators will show the exact state of each set of points.

As you will see from most point manufacturers they do supply switches to attach to the motors so that you can control indicators, signals and isolations. All these can be done by the MR204 circuit.

Wiring Points.

Most points are supplied with a short length of wire. These need to be terminated in a terminal block (chocolate block), from there it is advisable to run 16/0.2mm wire to your switches, power source, etc. The basic reason for this is that the larger the cable the less likely you are to get voltage drop, and it is capable of handling higher currents. In the case of the 0V this does not have to go back to the control panel each time so can be commoned under the base board. This is a case for a 0v (Black) bus bar (**see section on Bus bars**).

Brimal Consultants Ltd trading as BRIMAL COMPONENTS.
60 Lawson Road, Seaton Carew, Cleveland, TS25 1AL
Telephone: 01429 297 277. Email Andrew@brimal.co.uk