

DC/DCC Automatic Reversing Unit

Installation Instructions

- Please read directions completely before beginning your installation.
- Use ONLY 12 volts DC in this operation.
- **DO NOT** use the variable output of a throttle control.

The *DC/DCC Automatic Reversing Unit* is intended to be used for reversing the polarity of DCC on your model railroad track in a "reverse loop" or "Y". See Figure 1. It is also intended to be used for reversing the polarity of DC on a linear track for a back and forth motion system. See Figure 2.

The *DC/DCC Automatic Reversing Unit* was developed to simplify the wiring of reversing loops on two-rail DC layouts using NMRA Digital Command Control by allowing you to operate your trains through a reversing section/loop without manually changing locomotive direction or track polarity.

Common Problems with Reversing Loops

Anyone who has had experience with such loops may have noticed that there is a problem with this setup. Including a reversing loop in a 2-rail DC layout leads to a short where the reversing loop ties into the main line.

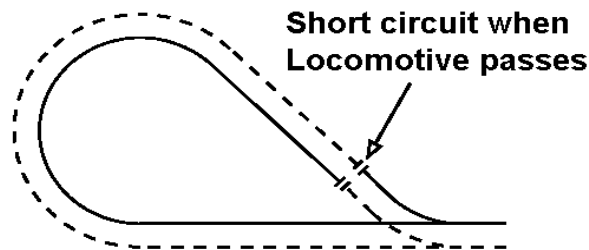


Figure 1

Figure 1: Basic Reversing Loop

- To prevent this short circuit, insulate both sides of the track. A two-rail gap is not enough, since a passing engine will short the rail through the electrical pick-up on both sides of the gap. Therefore, the track has to be gapped on both sides of the reversing loop. One still has to ensure that the rails are not short circuited upon entry or exit of the reverse loop.
- The polarity is selected such that there is no short circuit upon entry into the loop. While the train is in the loop, the polarity is changed, so that there is no short circuit at the exit of the loop.
- On conventional layouts, this leads to a problem: Changing the polarity in the reversing loop will change the direction of the train, since it is dependent on the polarity. Therefore, the direction has to be changed at the power pack, too, so that the train keeps moving in the same direction. In any case, the train has to be stopped while traversing the loop.
- On NMRA DCC digitally operated layouts, however, the direction of the train is independent from the polarity on the track, therefore, the polarity of the reversing loop can be changed without stopping the train or changing its direction.

The *DC/DCC Automatic Reversing Unit* adjusts the polarity in the reversing section automatically for the passing train.

For DCC operation, positioning sensors in a specific location on a reverse loop or "Y", the polarity can automatically be controlled. As a train rolls over a sensor (a *Sensa-Trak II*[™]) it will send a signal to the control unit to throw a relay that will change the track polarity instantly. The *Sensa-Trak II*[™] is normally positioned just before the entrance into the loop or "Y" and just before exiting the loop or "Y". (See Figure 2)

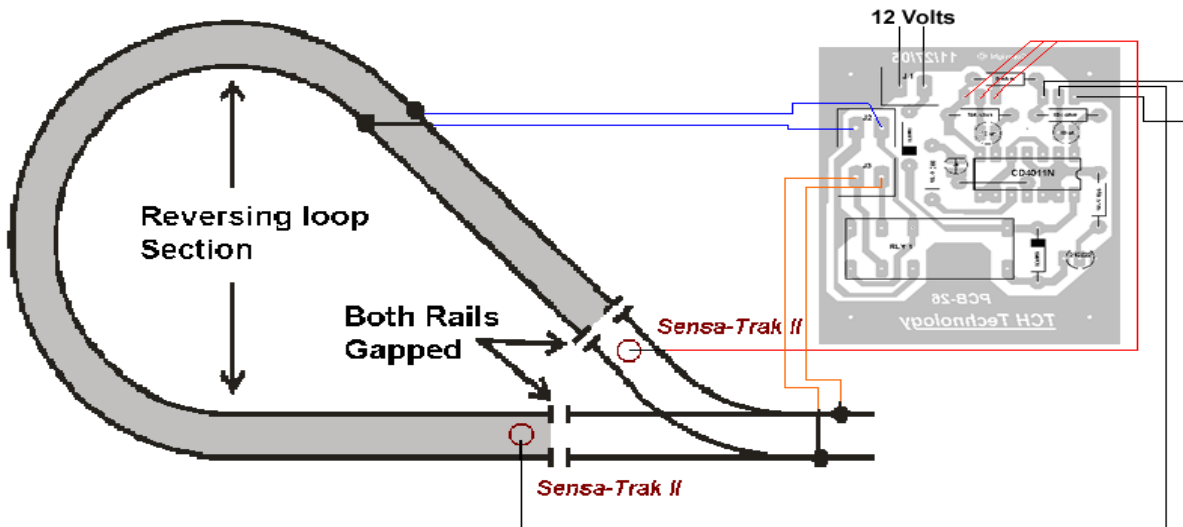


Figure 2

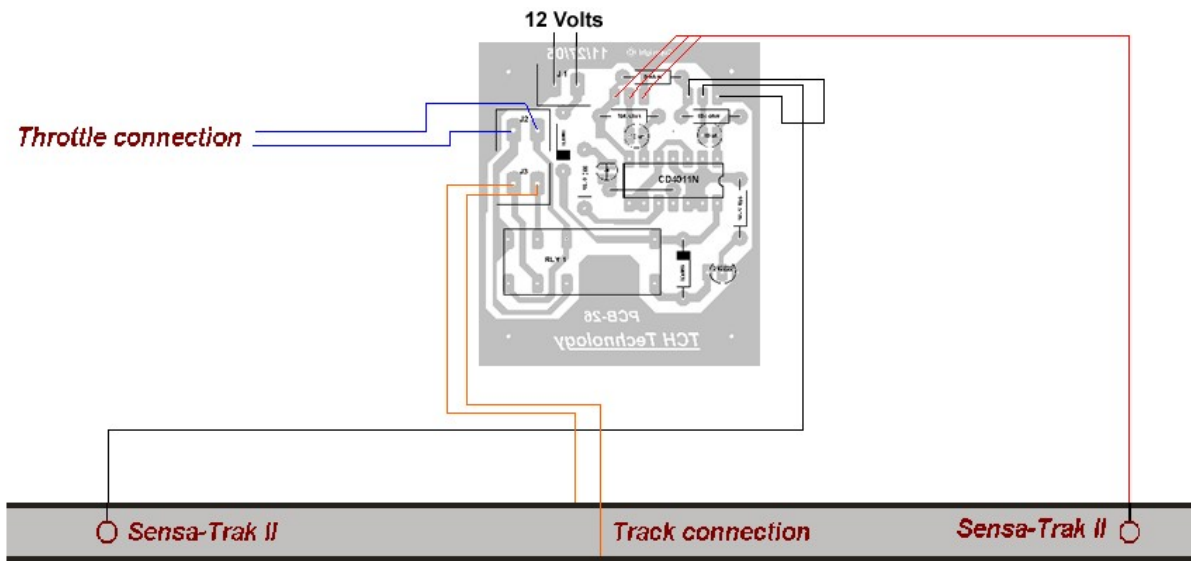


Figure 3

Figure 3 shows DC on a linear track for a back and forth motion system.

Connections (Figure 4)

- J1 12 volts
- J2 Reverse Loop Connection
- J3 DC throttle or DCC booster
- J4 Sensa-Trak II Connection
- J5 Sensa-Trak II Connection

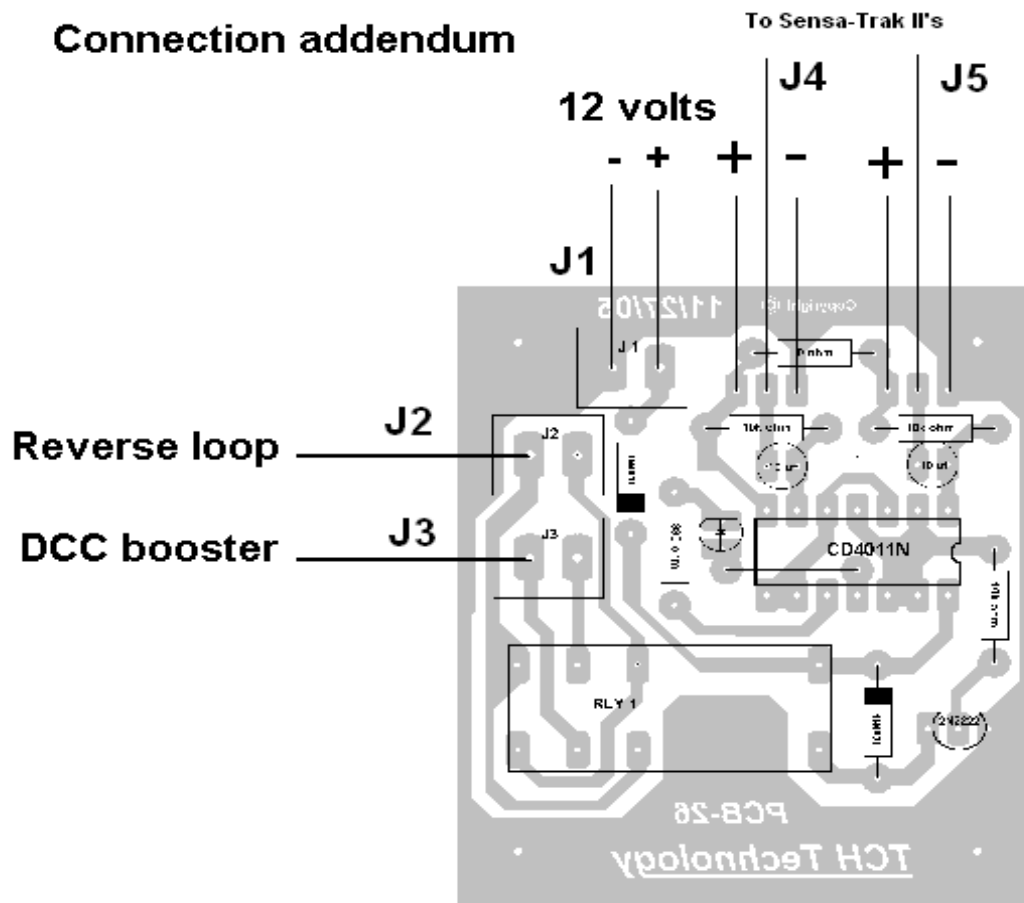
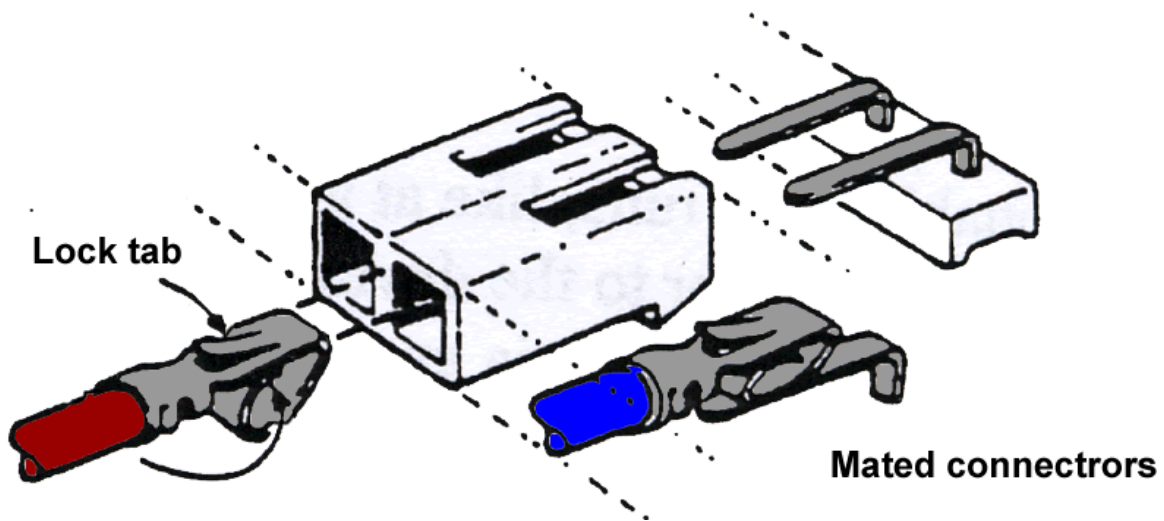
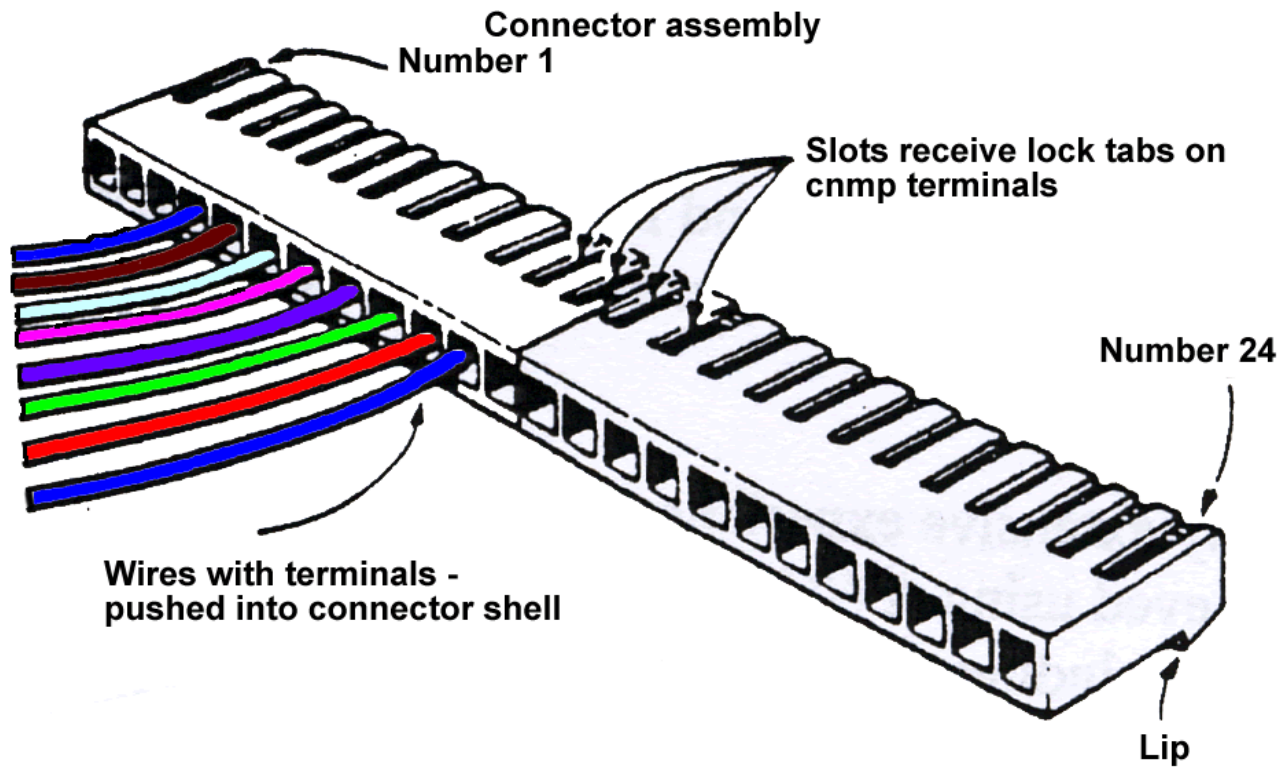
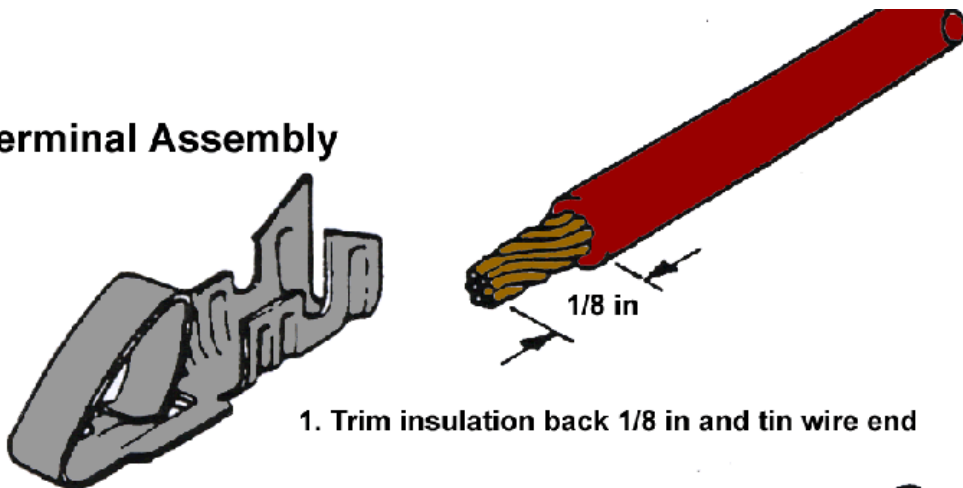


Figure 4



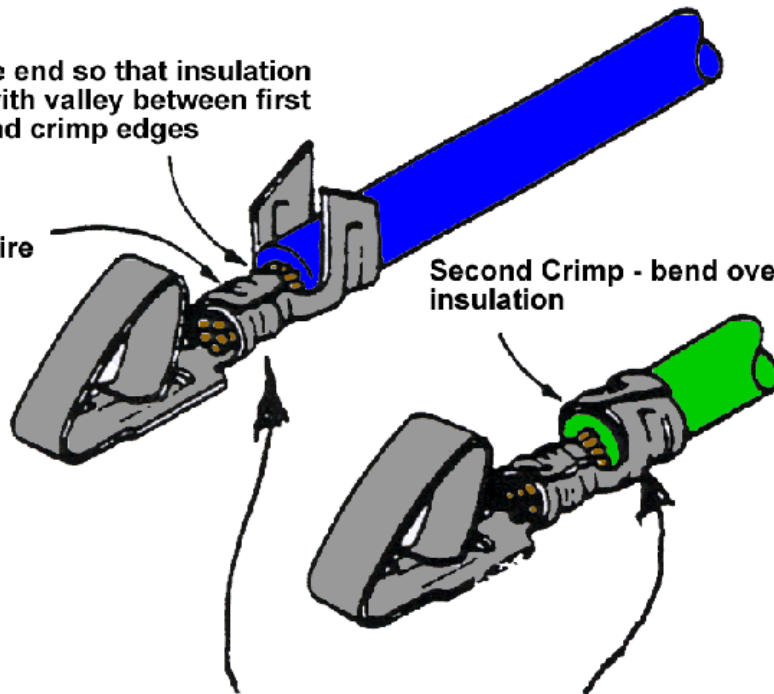
Terminal Assembly



2. Insert wire end so that insulation lines up with valley between first and second crimp edges

First Crimp - Bend over wire

Second Crimp - bend over insulation



Note: If train stalls when crossing the gapped rails, the wire connections at the reversing loop need to be turned around. One way to check this is to run your hand above the *Sensa-TrakII*[™] and at the same time using a VOM to check the voltage polarity. Make sure it is the same. If there is a difference in potential, the wires are crossed and need to be changed.