

# Back-N-Forth

5 ampere, Single Track (DC Track Power) Item #563

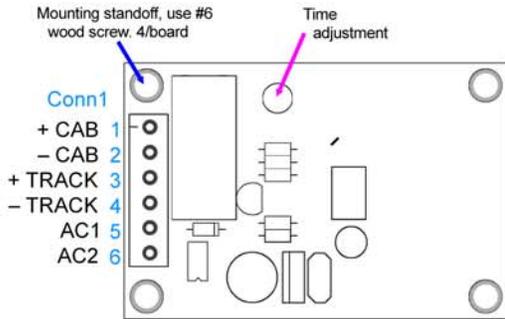


Fig 1: Back-N-Forth connections

AC1 / AC2.....fixed power from power pack.  
Needs to be 14 - 20 volts AC or DC.

+CAB / - CAB.....throttle variable DC.

+TRACK / -TRACK...output to track.

install wires by stripping insulation back 3/16", place wire in hole, run screw down to clamp in position.



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## Operational Notes:

If the fixed power is being provided from a small power pack, it must have sufficient power to not only power the trolley / engine but also the electronics. If this is insufficient, the unit will not function correctly. If sufficient power, other than the power pack is required, Item # 690 provides plenty of power for the Back-N-Forth but also for many other items as well.

## Operation:

The trolley / train can be started at any location with the Back-N-Forth. If it is in one of the ends that requires the time to expire before reversing, then nothing will happen until then. Otherwise the trolley / train will start operating as soon as track power is applied. If utilizing a train, the one end stop has to be extended far enough to encompass the engine with cars while the other end only needs to contain the engine.

If the timed reverse is not long enough for the length of track desired, you will need to use item #609. The 609 back-n-forth package utilizes track sense for operation which requires the trolley / train to get to the end before the reverse operation is performed. This way an infinite length of track can be used as well as any speed or time required to get to the opposite end before reversing occurs.

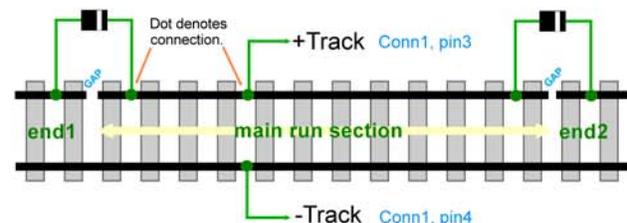
The Back-N-Forth works on the principle of reversing track power in a predetermined amount of time. In order to have the appearance of timed stops, the time before reversing has to be longer than the time it takes the trolley car / engine to achieve the opposite end. Otherwise a reverse will occur without a timed stop or achieving the opposite end. Fixed AC or DC power is required to power the Back-N-Forth properly.

## Installation:

Find a convenient location to place the Back-N-Forth board. By using four #6 wood screws, the Back-N-Forth can be mounted securely. Connections are shown for Conn1 and Conn2, merely follow the connections as shown on the main diagram, Fig 1 and Fig 2 as applies. The fixed power connects to terminals 5 and 6. While the polarity of the input and output track / cab power is shown, it is not important only for reference to the wiring. CAB terminals are 1 and 2 as shown. These are the input power to the Back-N-Forth from the variable DC output power of the power pack utilized. This is normally labeled as CAB output or Variable DC. Terminals 3 and 4 connect to the track as shown in the wiring diagrams. It is then necessary to isolate one rail and install the directional diodes as shown in Fig 2. These can be either soldered to the underside of the rail or installed beneath the layout with wires attached to each.

Fig 3 shows a block diagram of the basic installation.

Fig 2: Standard track wiring



GAP - insulated section via an air gap or nylon rail insulator/joiner

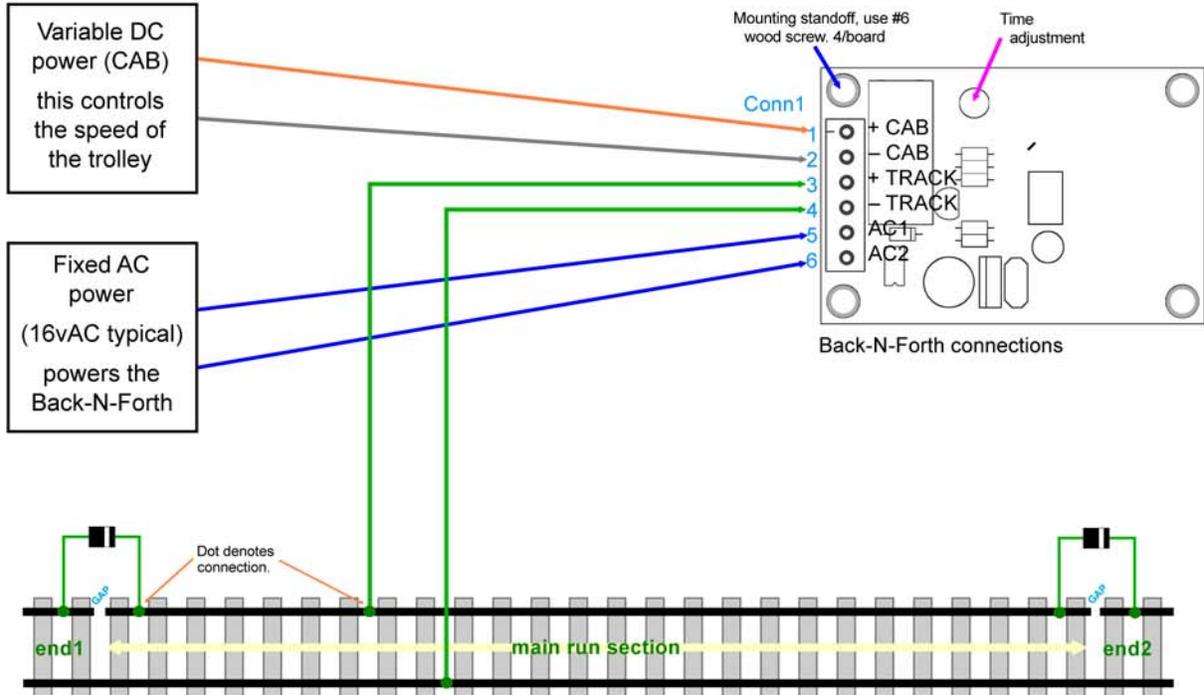
Extra diodes, Item #375

Diodes can be placed on the far or near rail but must be in the proper direction. If you run off the end without stopping, you have to reverse the direction of the diodes. They must also both point in the same direction.

## Attention G operators:

All "G" gauge engines are wired reverse of NMRA/American standards. You have to install the diodes shown above in the opposite direction as shown in the diagram. Otherwise you will run off the end without stopping!

Fig 3: Block wiring diagram



if your trolley / engine runs off the ends without stopping, merely reverse the direction of the diodes. The diodes on both ends must point in the same direction.