

AUTOMATIC BACK AND FORTH for AC powered trains - requires 3 position "E" UNIT.

AUTOMATIC BACK AND FORTH provides a simple means of testing locomotives on a workbench or having action on the layout that does not require an operator. This can be useful in the operation of a trolley line that would otherwise be merely scenery. This action enhances the overall motion that would normally occur during operation and adds to the illusion of activity.

This automation can be accomplished simply, using DALLEE ELECTRONICS components, in any gauge or scale. This package provides for a timed stop at each end. We also have components for DC operators desiring to do an automatic BACK-N-FORTH.

The overall AC operation is as follows:

View page 2 for the basic setup. Starting with the TRAK-DTT on the right (sequence controller), when current flow is sensed by a locomotive, trolley, or an illuminated car reaching the end rail section, will activate its relay for an adjustable time frame and then do nothing further. The relay contacts are wired to remove power from the track, sequencing the "E" unit. The relay must also simultaneously illuminate a ballast lamp whose power is also routed through the detection coil of the other TRAK-DTT ("STOP" / NEUTRAL timer). In this way current flow is used to trip the other TRAK-DTT during the stop. The neutral TRAK-DTT is wired to remove track current from flowing thru the sense coil of the first TRAK-DTT (sequence controller) routing it directly to the ends. This allows for the sequence TRAK-DTT to reset and get ready for the next trip. When the time frame has elapsed of the neutral TRAK-DTT, the relay relaxes, turning off the power to the ballast lamp and restoring track power thru the sequence TRAK-DTT sense coil. In doing so the sequence TRAK-DTT trips again thus interrupting track power which sequences the "E" unit. Since electronic "E" unit's require next to no track current it is necessary to have something drawing power within the trolley or locomotive. This is why we suggest adding a lamp if you do not already have one on when in neutral. If you do not want to see the light from a lamp then we suggest to paint it black.

SETUP:

The "SEQUENCE TIME" should be short to simulate when you manually interrupt track power to sequence the engine. To start with, set this potentiometer full CCW and then move it slightly CW but not much. This will give you a short on/off of the track power which should make the engine sequence. If this is too short the engine will not sequence. If it is too long, then the engines "E" unit might reset to a power startup position. Typically, 1 to 2 seconds is ideal.

The stop time should be set to mid range (the arrow on the front of the potentiometer will point straight up). This can be increased or decreased depending on how long you would like the engine to sit in neutral at the end section. You should NEVER set this to a short time like the sequence timer.

Intermediate stops would require adding another TRAK-DTT with a ballast lamp and a resistor in series with the track power to hold the "E" unit in neutral. This is shown on page 3. Since current draw of each engine is so drastically different it is difficult to tell you what works exactly with each unit. In the early years it was appropriate to place a 5 to 10 ohm 10 watt resistor in series with the track. In this case you would connect the resistor across the "C" and "N/C" contacts, the same two that the outside rail wire would be connected to, so that when the TRAK-DTT trips the power to the track becomes placed in series with the resistor. It may be necessary to place more in series for the newer equipment to prevent it from creeping. Only experimentation will tell what is necessary for your exact needs.

If more than one stop of equal time is required then you need to only add more sense sections for the additional TRAK-DTT and ballast lamp. If different stop times are required then each different time requires an additional TRAK-DTT and ballast lamp.

Tips for good operation:

Make sure you have read the "SETUP" section above. It is imperative to understand how to set the "SEQUENCE" time to a correct setting for your engine / trolley. Failure to properly set this time will result in the engine to never sequence when entering the end section or reset to a "forward" direction due to too long of a time setting (electronic E-Units feature a rapid reset to forward). The "STOP" time must always be set for longer than the sequence time. Preferably to at least 5 or more seconds!

Because we are depending on current flow it is important that both the rail and the wheels be kept reasonably clean so that the possibility of faulty sensing is minimized. The ballast lamps also aid in eliminating faulty rail sensing by switching sense current to current flow thru the lamp. It is also necessary that the track length between the ends be long enough that there will be at least several seconds running time to allow the circuitry to reset itself so that further detection can be made.

There have been very few problems with this automation. The main problem is a lack of adequate power from some power packs, you need at least 20VA of power to properly power the electronics. If you have inadequate power intermittent operation will be experienced. A suggestion to cure this problem is to either run the 12VPS (electronics) on one power pack or wall transformer, such as item #690, and run the trolley on another transformer. When other problems have occurred it has been almost universally due to poor electrical contact causing loss of motion or a double activation and therefore, no reverse. As a precaution, with respect to a possible double activation situation, we have suggested that totally non powered sections of track be included at each end beyond the sensing rails. Should a double activation occur the locomotive or trolley would run into the non powered section and stop. You also need a non failing "E" unit with proper track pickups.

DO NOT place illuminated bumpers on the end. If you want to use them, then make another gap in the rail so that they are powered by a totally separate power feed. Otherwise the back-n-forth will not be able to sense when the trolley / train gets into the end section since the light bulb will read as a constant power flow.

When first powering up, have the engine between the ends. Power the electronics first and then a few seconds later you can apply track power. If your engine starts in neutral, you will have to first sequence it to get it started. Then it will do so automatically. Turning power to the electronics off and then on in a short amount of time, will result in the Trak-DTT's to energize. Then you should wait for their RED LED to go out before starting operation (the ballast lamps will also be on when the RED LED is on as well).

