



246 W. Main St.  
Leola, PA 17540  
(717) 661-7041

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 provided DC power is applied to the track and the device operating can respond to polarity reversing. This package provides for a timed stop at each end, in addition to the track polarity being reversed. We also package components for AC automatic BACK-N-FORTH.

The overall operation is as follows: The TRAK-DTT, when current flow is sensed by a locomotive or trolley reaching the end rail section, will activate its relay for an adjustable time frame and then do nothing further as long as current continues to flow. When the relay contacts are wired to remove power from the track, a stop occurs. The relay must also simultaneously illuminate the ballast lamp whose power is also routed through the detection coil of the TRAK-DTL. In this way current flow is maintained in the TRAK-DTT during the stop. When the time frame has elapsed, the relay relaxes, turning off the power to the ballast lamp and restoring track power. If the wires to the end rails are routed through the detection coil of the TRAK-DTT a stop will occur at each end and if we then wire the power to the ballast lamp through the detection coil of the TRAK-DTL, polarity will be reversed during each stop. This circuit is shown on page 2. The TRAK-DTL will change the state of its double pole double throw relay every time it senses current flow. The relay contacts are wired as a polarity reversing switch. The end rail sections are insulated and wired through the detection coil of the TRAK-DTT.

Including a timed stop at each end as above assumes that the time frame for each stop is the same. This would be the normal usage. If you should desire to have a different time frame at each end it will be necessary to add another TRAK-DTT and ballast lamp to the circuit. It is also possible to include intermediate stops at any location provided the distance between stops is adequate to allow several seconds running time so that the time circuit of the TRAK-DTT can reset. If the time frame of the intermediate stop is the same as at the ends the original TRAK-DTT and ballast lamp can be utilized with a TRAK-DT for the intermediate stop. The TRAK-DT routes ballast lamp power around the TRAK-DTL so that polarity does not reverse during an intermediate stop. The inclusion of the intermediate stop in the circuitry is shown on page 3. If it is desired that the intermediate stops have a different time frame, a TRAK-DTT and a ballast lamp are used for each time frame and the TRAK-DT would not be needed.

In one application we have done, on an automated trolley line, there were a total of nine stops, including the end stops. If all stops had been of equal time, the automation could have been accomplished with only one TRAK-DTL, TRAK-DTT, TRAK-DT, and a ballast lamp. The actual installation involved four separate time frames so there were four TRAK-DTT units with ballast lamps.

Tips for good operation: 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. 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 5 VA of power. If you have inadequate power, your trolley will travel so far back and then reverse again before running the full length. A suggestion to cure this problem is to either run the 12VPS (electronics) on one power pack and run the trolley on another. Another solution is to use Item #690 to power the electronics. 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.

If you would like to do the wiring on page 3, you will need a TRAK-DT. This item can be obtained from your dealer or direct.

# AUTOMATIC REVERSE with TIMED STOP AT ENDS

## Standard wiring practices:

all wires crossing each other only connect when a DOT or CIRCLE is shown.

all Back - N - Forth operations:

require DC (polarity reverse) track operation. are best to start running in the middle. require a few seconds (10 or better) of time from leaving one stop location and arriving at the next stop location! long lengths of track between locations does not affect the operation, very short lengths that transverse in a short time are not recommended.

GAP - a "GAP" (cut rail to provide an air "GAP" or use insulated plastic rail joiners, wood is not recommended) is placed on one rail as shown to form the "SIGNALLED SECTION". In this case the "SIGNALLED SECTION" is the section labeled "STOP & REVERSE" and also "STOP".

The jumper selector must be removed to make the TRAK-DTT a TIMER instead of an adjustable timed detector. The time adjust should be set to approx. 10 O'Clock (a few seconds) or more.

pass insulated wire through sense coil - DO NOT strip off insulation!

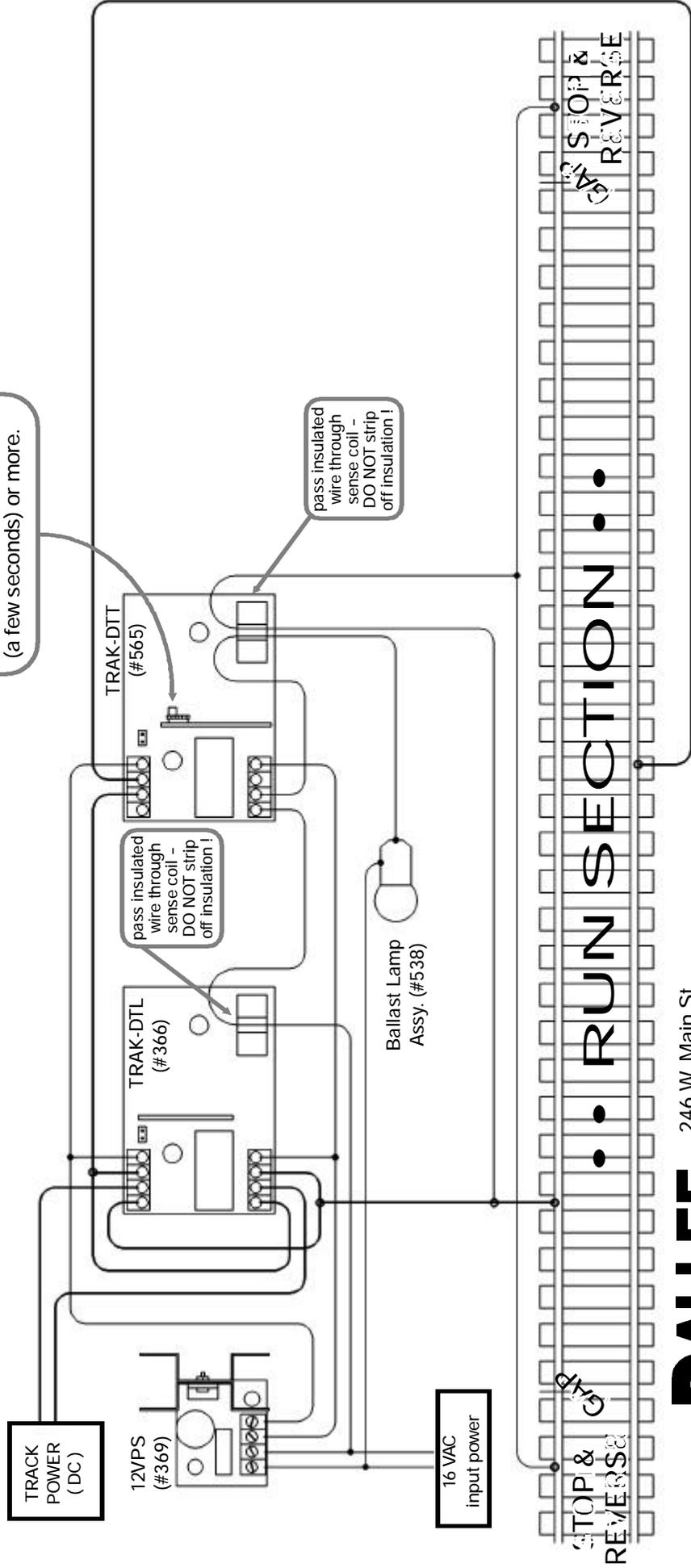
TRAK-DTT (#565)

TRAK-DTL (#366)

12VPS (#369)

16 VAC input power

Ballast Lamp Assy. (#538)



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**DALLEE**  
ELECTRONICS, Inc.

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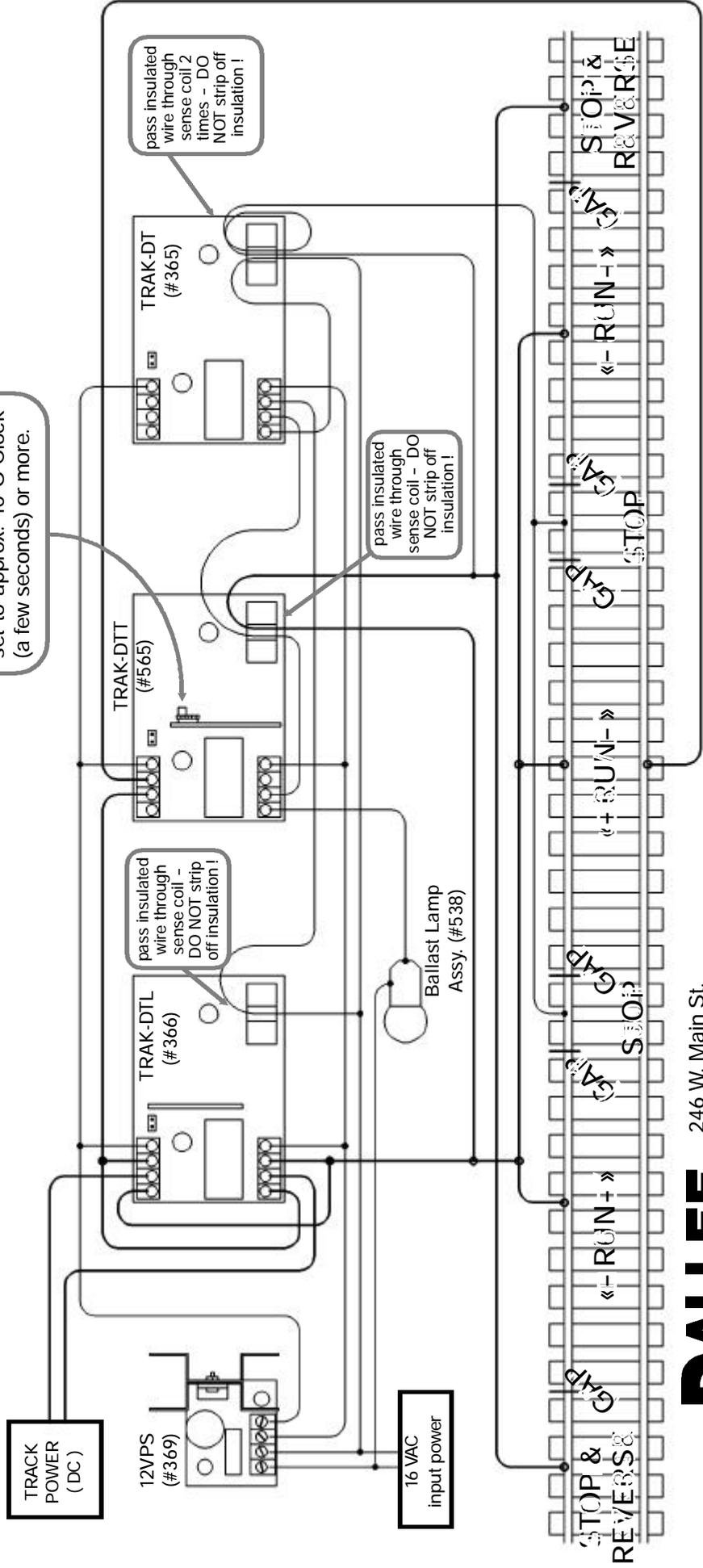
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