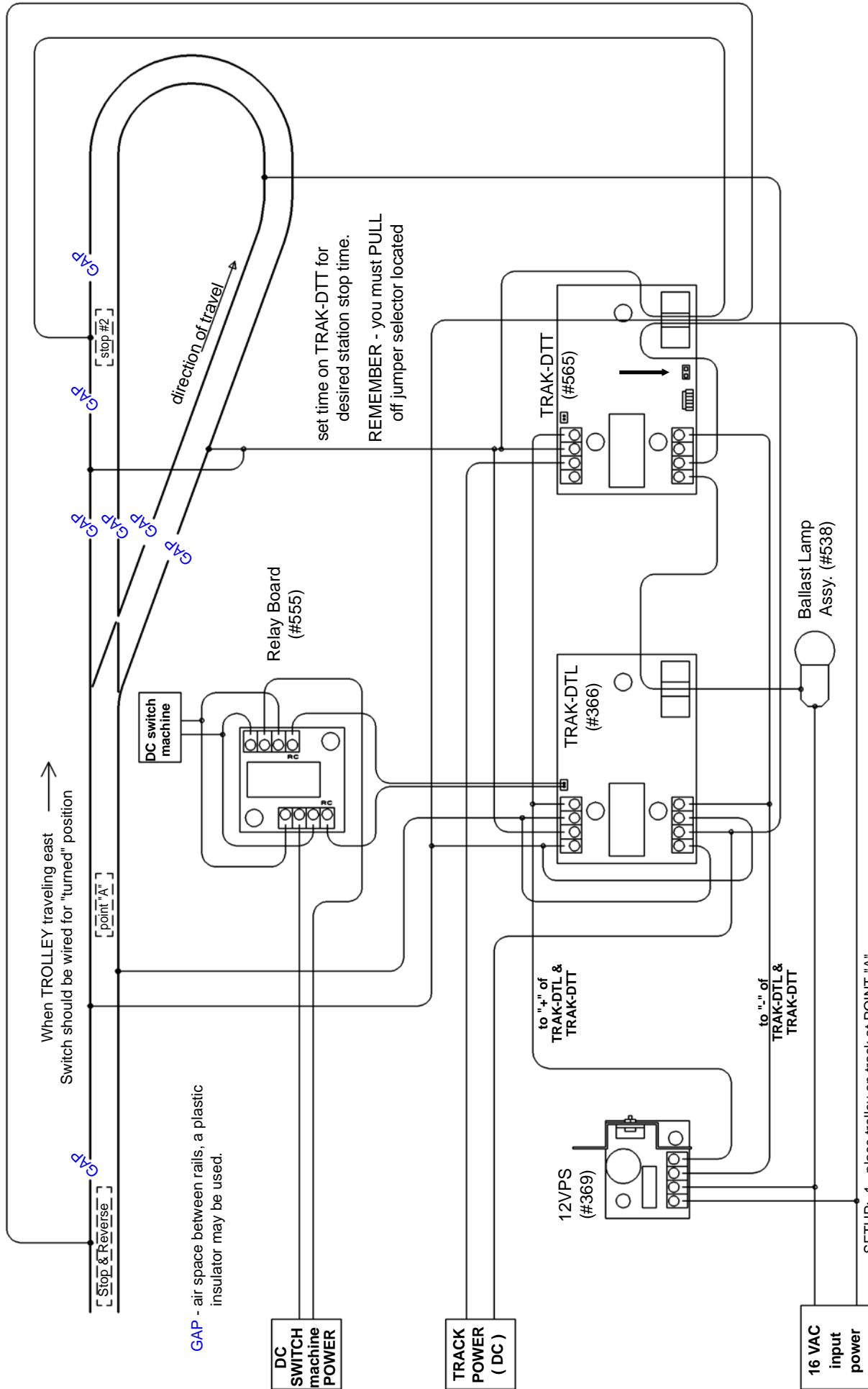


Automatic Reverse with Turning Loop & Station Stop within loop



AUTOMATIC BACK-N-FORTH

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 (for AC back-n-forth operation, see pages 50 & 51).

Three types of back-n-forth systems are available. The simplest merely times out a user set time which reverses polarity when that time is up. This means that your locomotive must get to the end section before the set time function is up, otherwise it will reverse before it gets there. To have a timed stop at the end, the user merely adjusts the time setting to a higher time than that of the locomotive traversing the track. A time range from 20 seconds to 2 minutes is typical for these units. They are available in 1 ampere and 5 ampere versions. The basic wiring is shown below.

The second type of back-n-forth actually senses when the locomotive gets to the end section. At that time, the stop time starts as well as the track polarity reverse. The following is an in depth explanation of how this works. The TRAK-DTRL will change the state of its double pole double throw relay to the proper setting according to the sense coil activated at the time of sensing. The TRAK-DTT2 also senses current flow, but in this case from both ends and causes a timed stop by removing the power to the track. The relay contacts of the TRAK-DTRL are wired as a polarity reversing switch and the end rail sections are insulated and wired through the appropriate detection coil of the TRAK-DTRL. When the locomotive or trolley reaches the end rail section, current flow is sensed, changing the state of the relay, reversing polarity of the DC track power and therefore causing a change in direction of motion. In addition to that, the TRAK-DTT2 removes track power to create a timed stop. When the rail section at the other end is reached, current flow is again sensed in both units, activating the stop time, changing the relay polarity and again, direction of motion. Because we are depending on current flow it is important that both the rail and the wheels be kept reasonably clean. It is also necessary that the track length between the ends be long enough, or the operating speed be slow enough, so that there will be at least a few seconds running time to allow the timer circuitry to reset itself.

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-DTT2 to the circuit wiring one for each end. It is also possible to include intermediate stops at any location provided the distance between stops is adequate to allow a few seconds running time so that the timer circuit of the TRAK-DTT2 can reset. If the time frame of the intermediate stop is the same as at the ends the original TRAK-DTT2. The inclusion of the intermediate stop in the circuitry is shown on page 39 and 41 with momentum. If it is desired that the intermediate stops have a different time frame, a TRAK-DTT2 are used for each time frame.

The third type of back-n-forth is similar to the second but this one utilizes the MO-1, momentum board. Thus as the name implies, gradual acceleration and deceleration is achieved at each stopping point. Longer lengths of track are necessary for longer momentum settings.

In one application, 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-DTT with ballast lamp and one TRAK-DT. The actual installation involved four separate time frames so there were four TRAK-DTT2 units utilized for the intermediate stops.

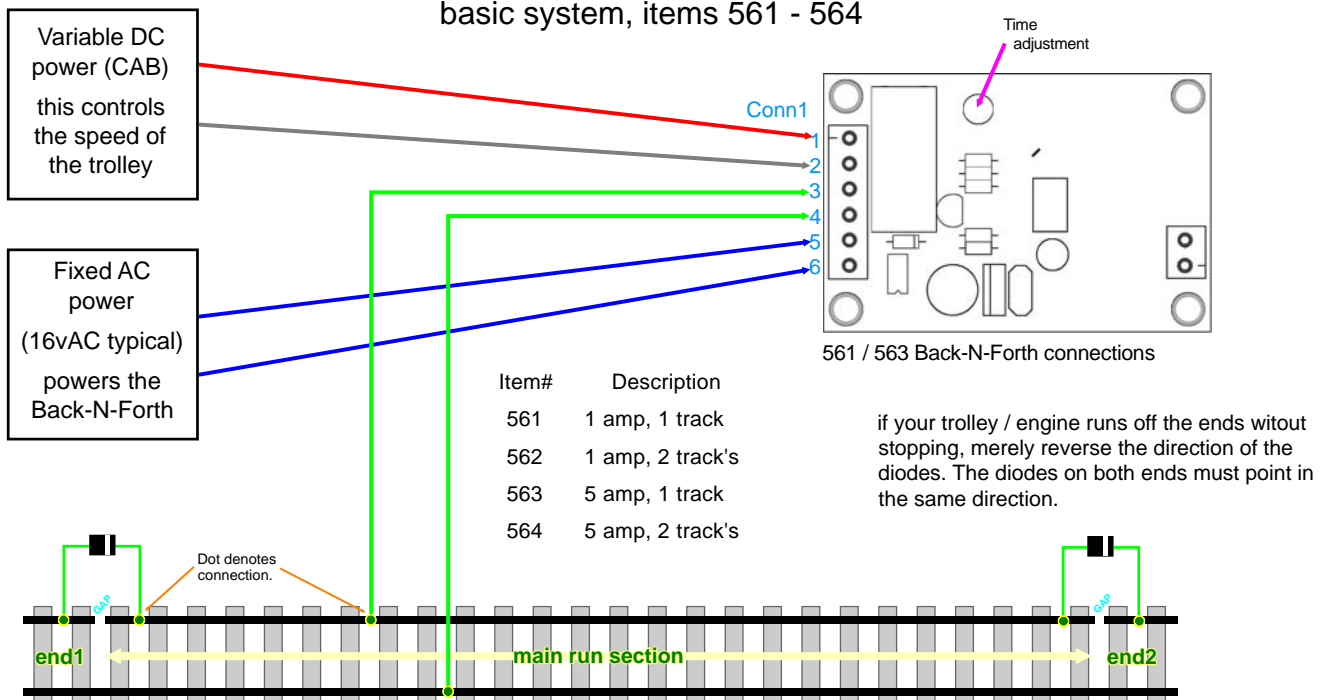
Pages 38 to 41 show additional back-n-forth examples with the MO-1, momentum board, utilized in the later two pages.

A variation of straight ended back-n-forth operation is shown on page 34. This back-n-forth utilizes a turning loop at the one end and not the other.

Combination packages containing all of the units necessary for the drawings on pages 38 and 40 is available as item #609, with momentum (pages 39 and 40) is item #610.

AUTOMATIC BACK-N-FORTH with TIMED STOP at ENDS

basic system, items 561 - 564



AUTOMATIC REVERSE with TIMED STOP AT ENDS with reverse memory.

Standard wiring practices:
 All wires crossing each other only connect when a DOT / CIRCLE is shown. Dashes & other line patterns are used to clarify different wires used.

If "G" gauge, reverse the "+" and "-" of the TRACK POWER's DC (Not that of the 12VPS).

all Back-N-Forth operations:

require DC (polarity reverse) track operation. are best to start running in the middle.

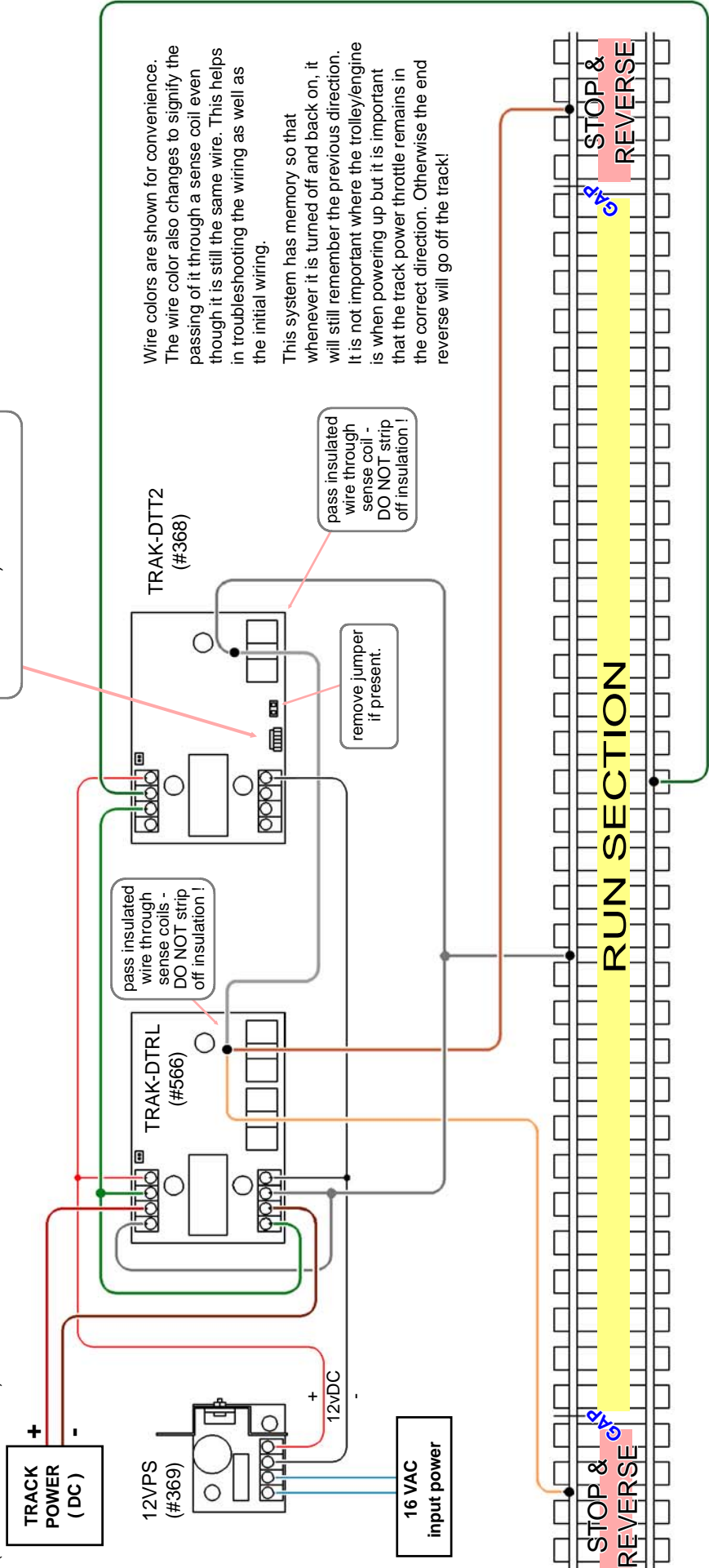
require a few seconds (5 or better) of time from leaving one stop location and arriving at the next stop location!

long lengths of track between locations does not affect the operation, very short lengths that transverse in a short time are not recommended.

install stranded wires by stripping insulation back 3/16", place wire in hole, run screw down to clamp in position. Make sure wires do not short to adjacent terminals!

The time adjust should be set to approx. 10 O'Clock (a few seconds) or more.

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".



AUTOMATIC REVERSE with TIMED STOP AT ENDS & BETWEEN with reverse memory.

Standard wiring practices:

- All wires crossing each other only connect when a DOT / CIRCLE is shown.
- Dashes & other line patterns are used to clarify different wires used.

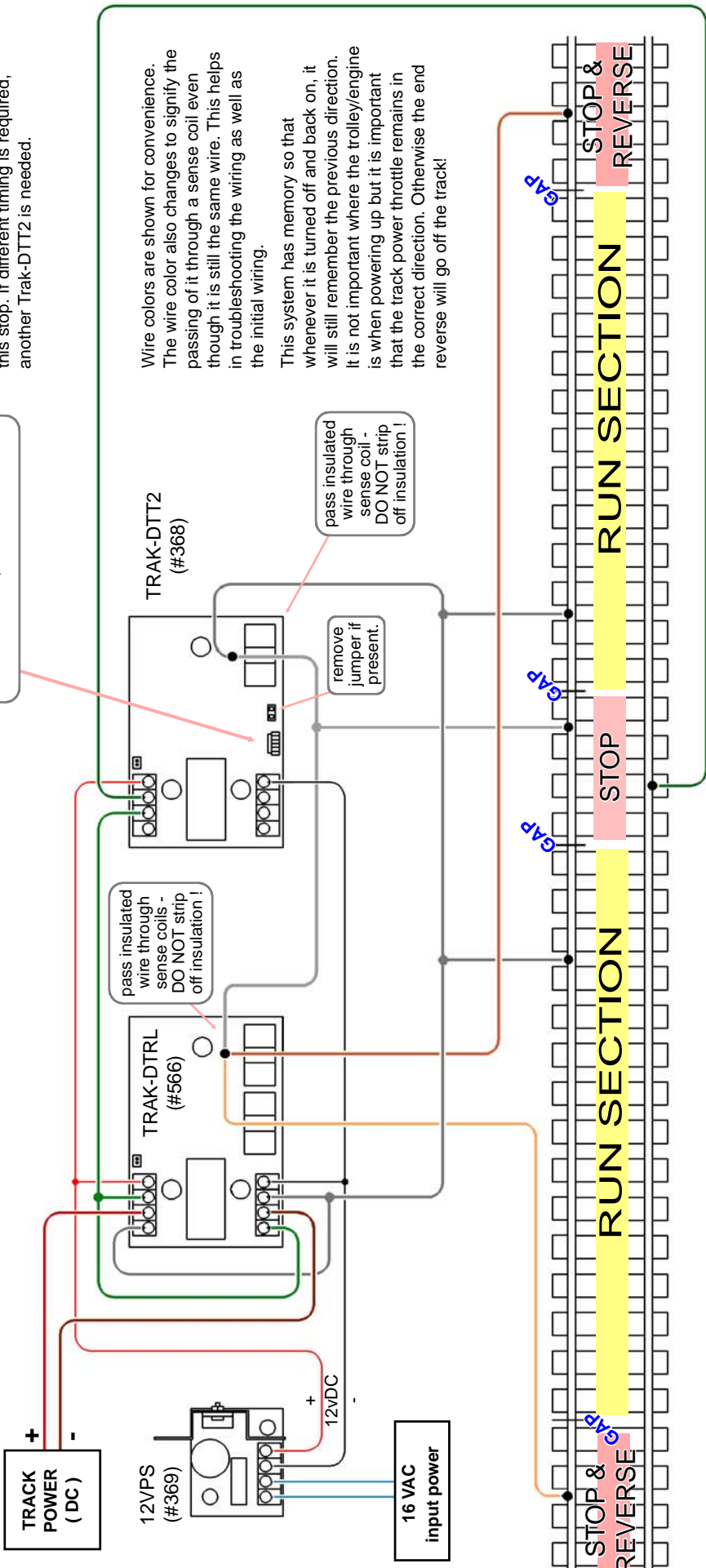
all Back-N-Forth operations:

- require DC (polarity reverse) track operation.
- are best to start running in the middle.
- require a few seconds (5 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 time adjust should be set to approx. 10 O'Clock (a few seconds) or more.

If "G" gauge, reverse the "+" and "-" of the TRACK POWER's DC (Not that of the 12VPS).

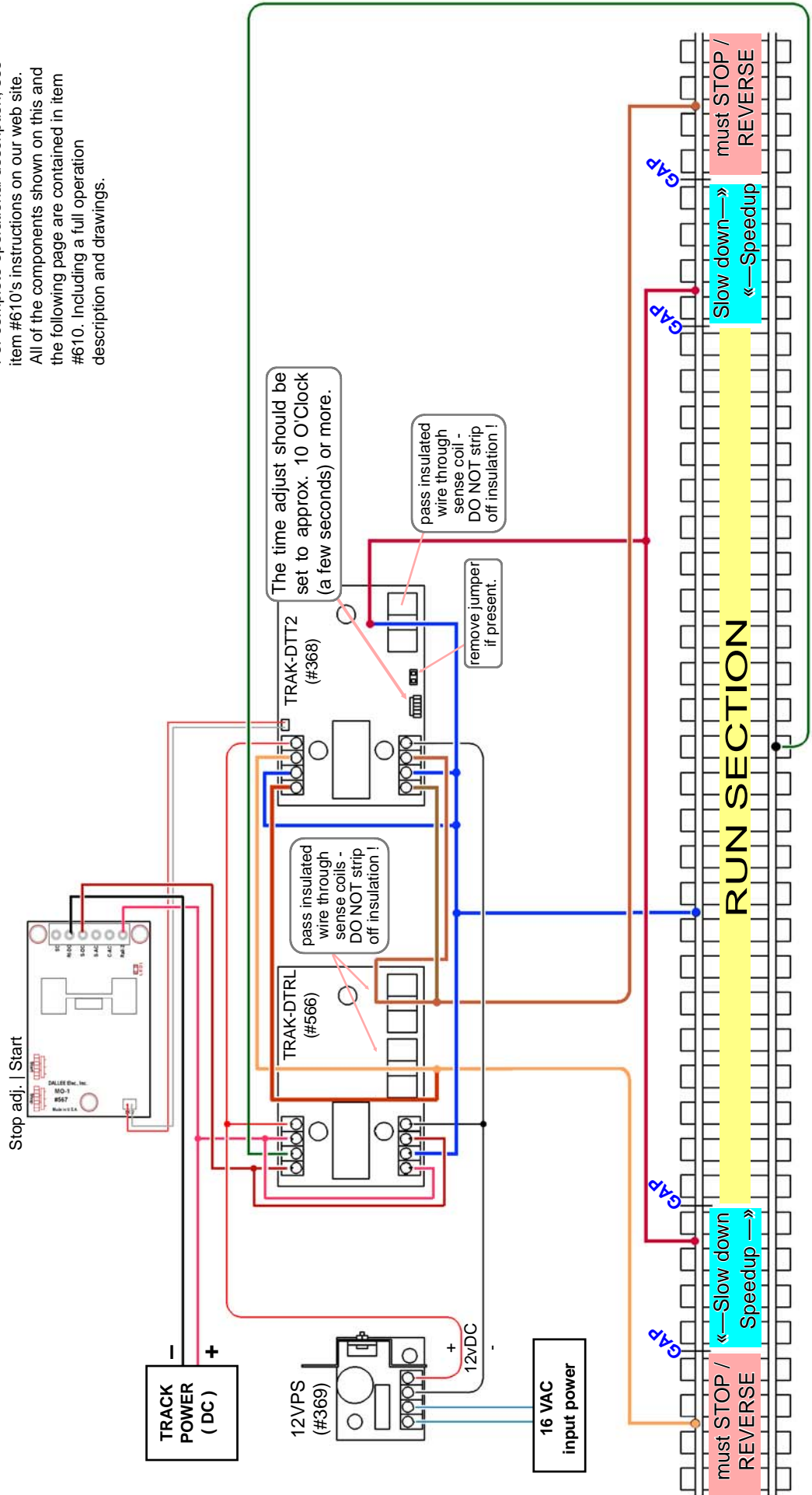


Wire colors are shown for convenience. The wire color also changes to signify the passing of it through a sense coil even though it is still the same wire. This helps in troubleshooting the wiring as well as the initial wiring.

This system has memory so that whenever it is turned off and back on, it will still remember the previous direction. It is not important where the trolley/engine is when powering up but it is important that the track power throttle remains in the correct direction. Otherwise the end reverse will go off the track!

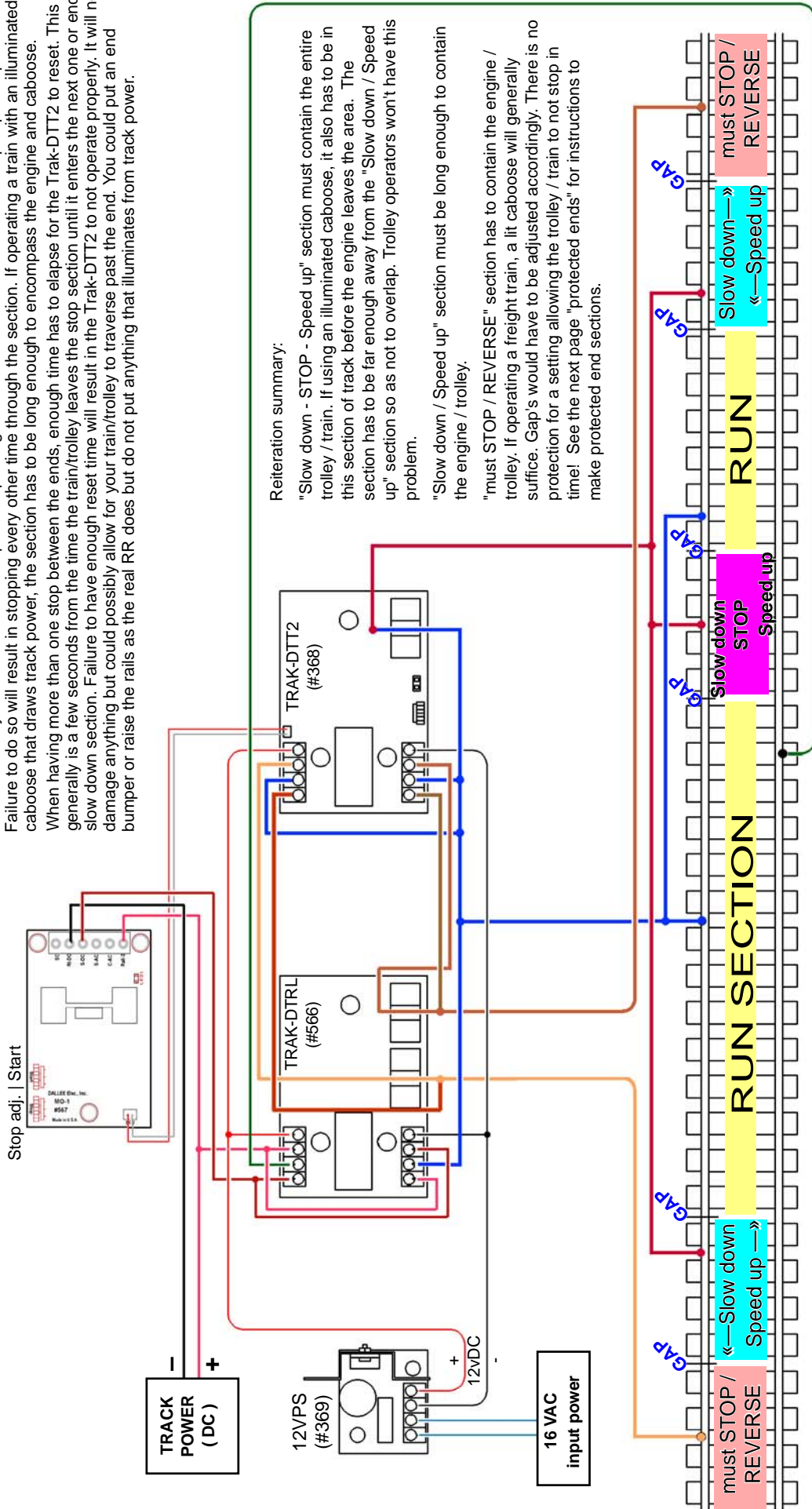
AUTOMATIC REVERSE with TIMED STOP AT ENDS with Memory & Momentum Start/Stop.

For complete operational description, see item #610's instructions on our web site. All of the components shown on this and the following page are contained in item #610. Including a full operation description and drawings.

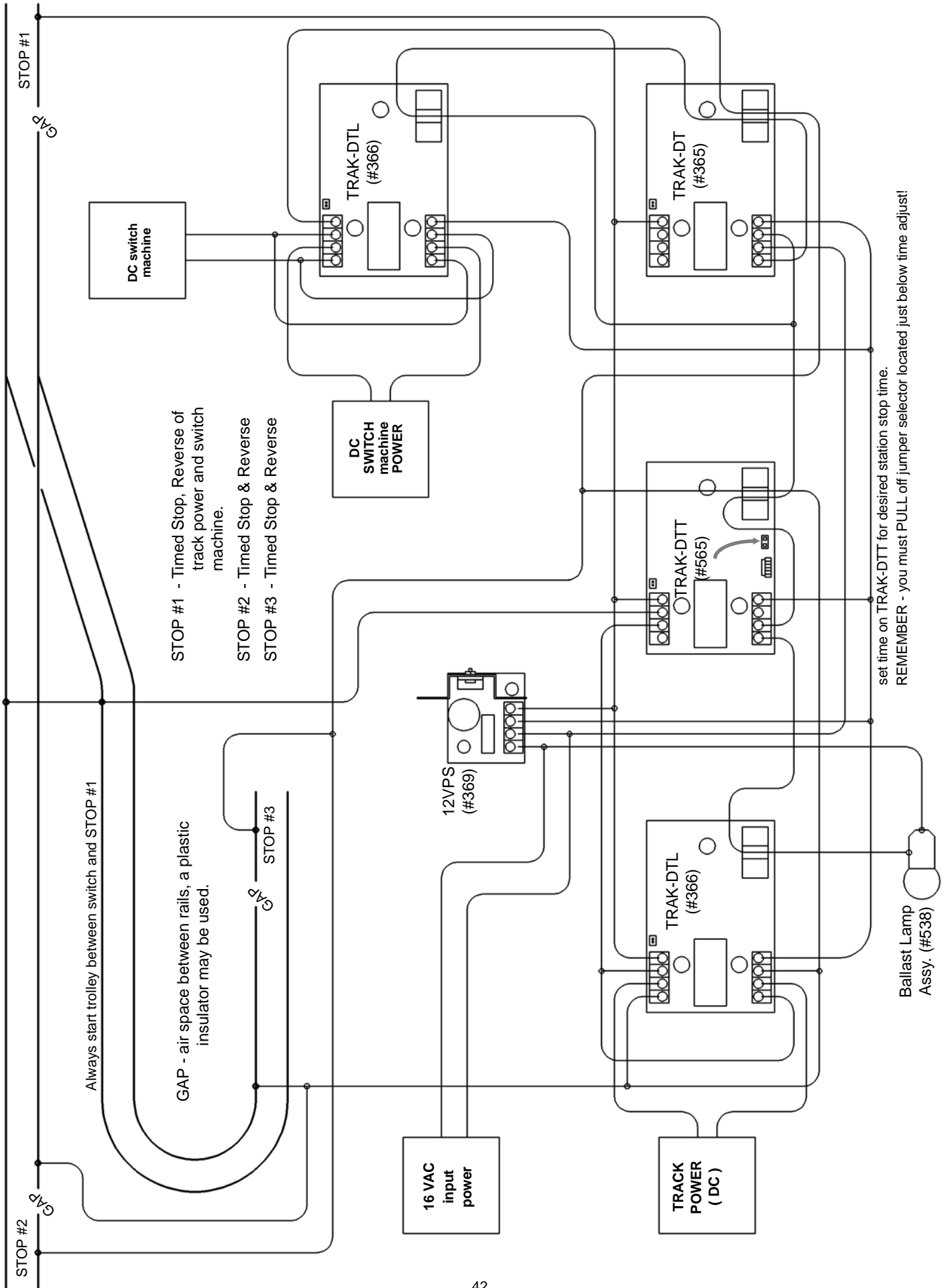


AUTOMATIC REVERSE with TIMED STOP AT ENDS with Memory & Momentum Start/Stop and Momentum Start/Stop between ends.

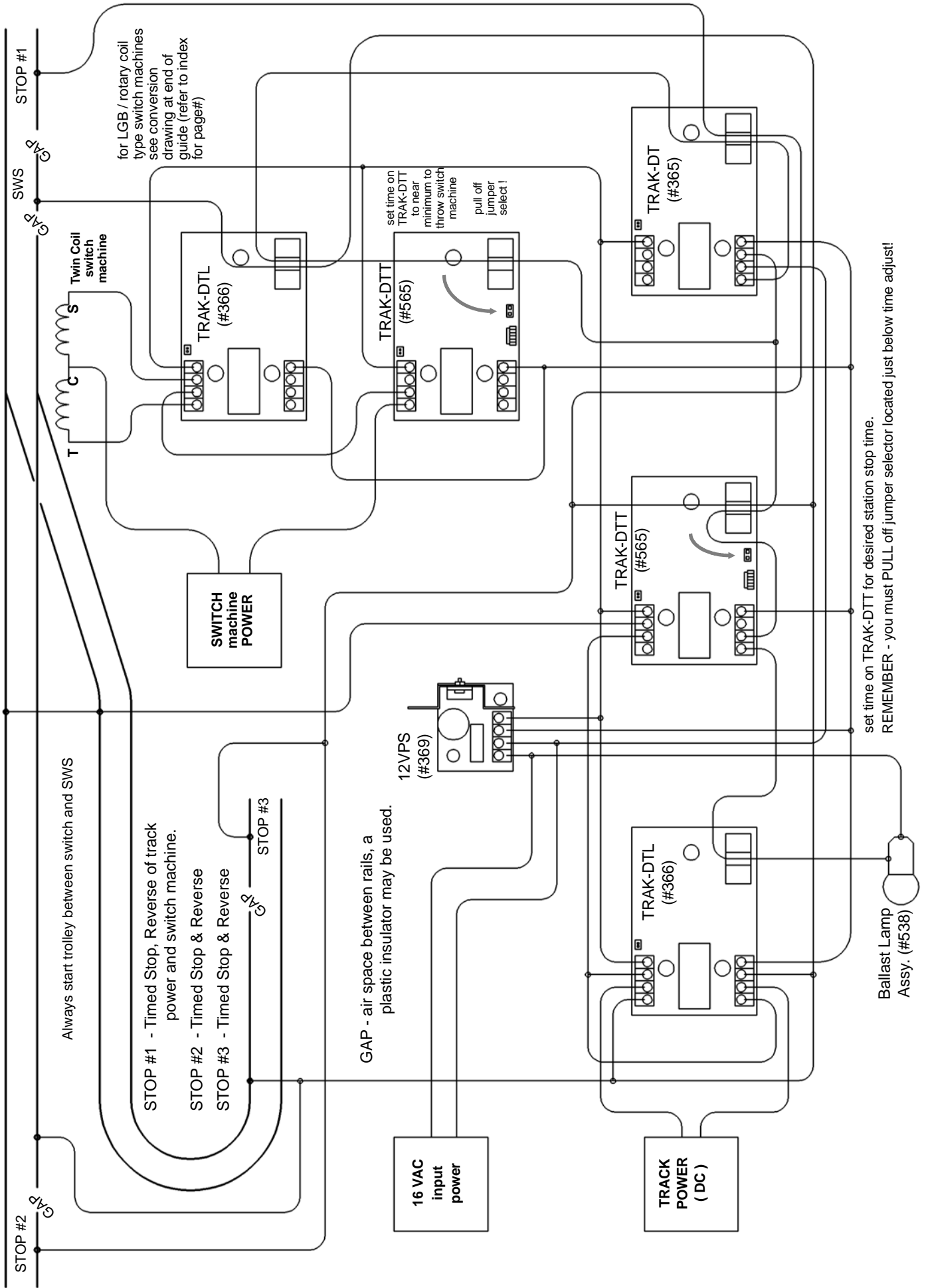
All connections and explanations as found on the first main page apply to this drawing.
 Although only one stop between has been shown, multiple can be made in the same way.
 The train/trolley has to come to a complete stop being contained within the "slow down - stop - speed up" section.
 Failure to do so will result in stopping every other time through the section. If operating a train with an illuminated caboose that draws track power, the section has to be long enough to encompass the engine and caboose.
 When having more than one stop between the ends, enough time has to elapse for the Trak-DTT2 to reset. This generally is a few seconds from the time the train/trolley leaves the stop section until it enters the next one or end slow down section. Failure to have enough reset time will result in the Trak-DTT2 to not operate properly. It will not damage anything but could possibly allow for your train/trolley to traverse past the end. You could put an end bumper or raise the rails as the real RR does but do not put anything that illuminates from track power.



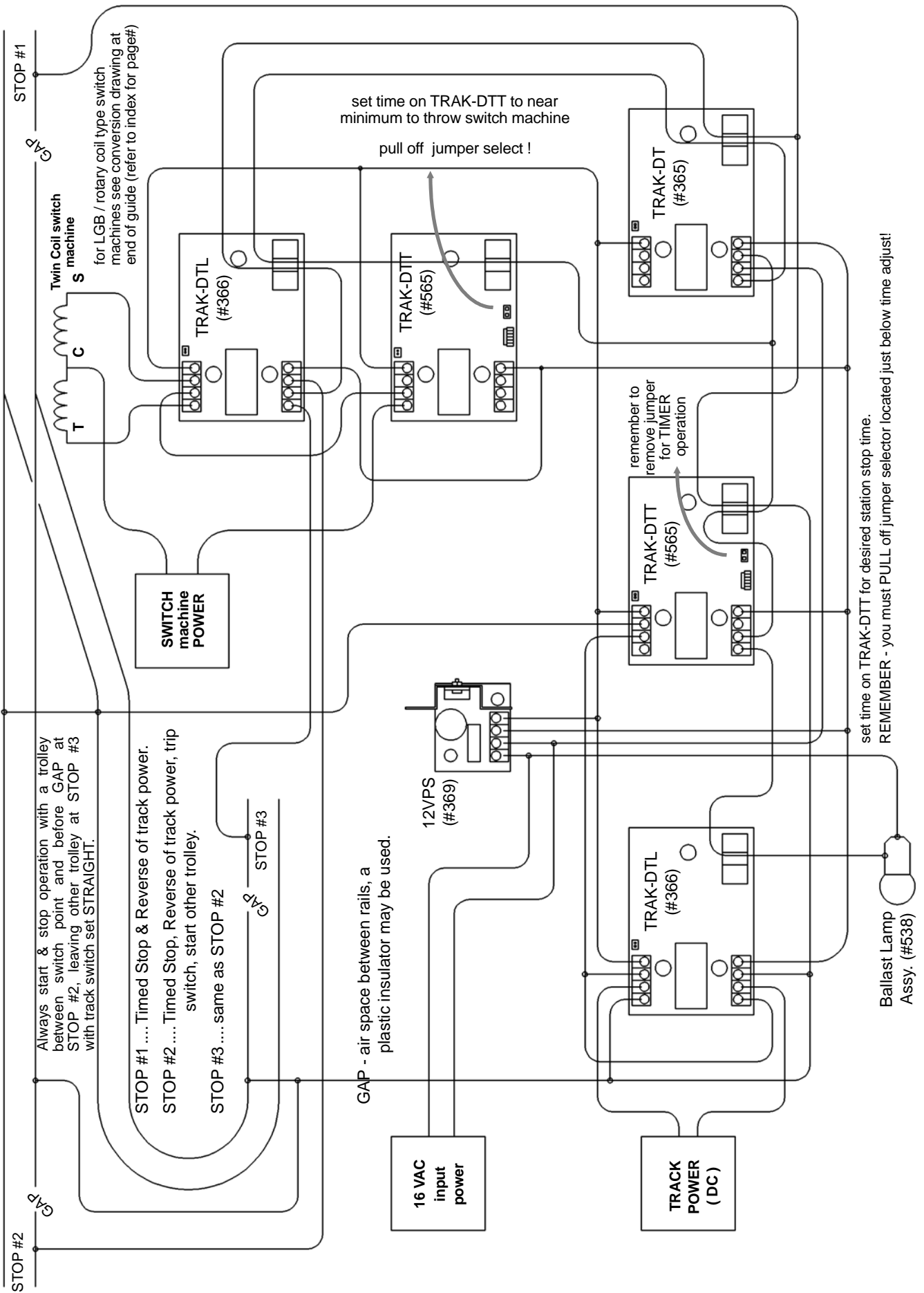
Automatic Back-N-Forth with different destinations



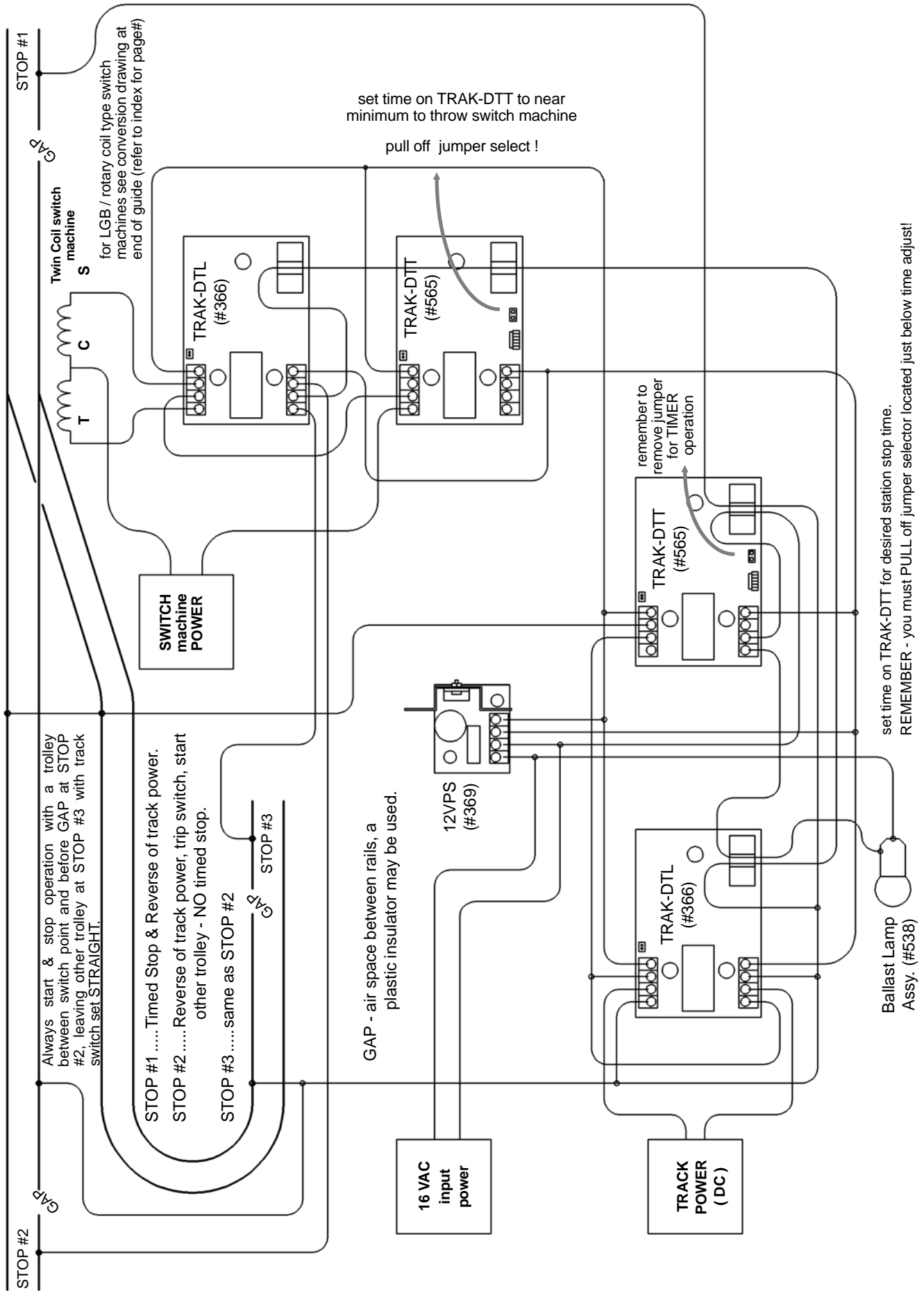
Automatic Back-N-Forth with different destinations & Twin Coil Switch machines.



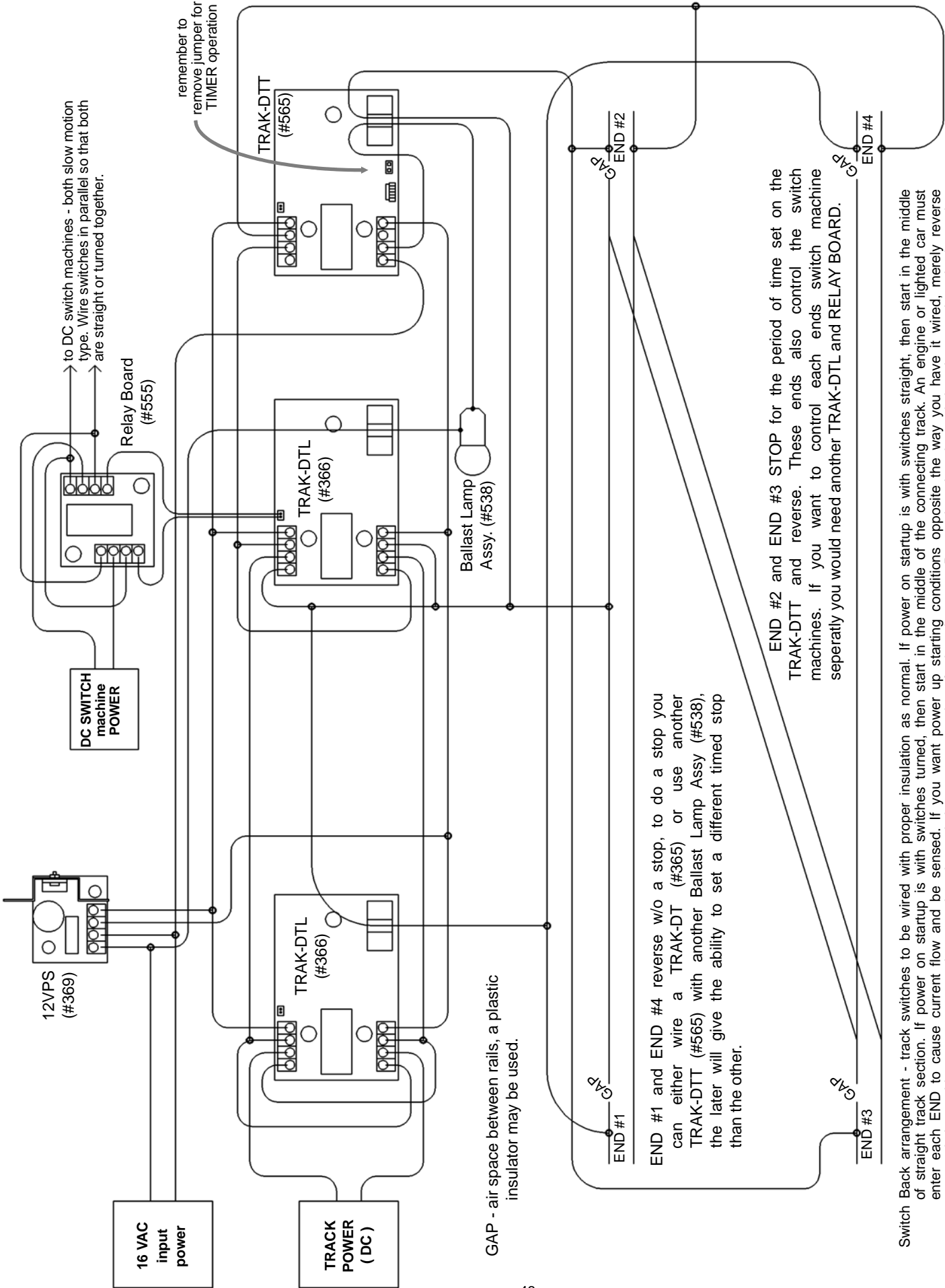
Automatic Back-N-Forth with 2 trollies, alternate destinations & Twin Coil Switch machines.



Automatic Back-N-Forth with 2 trolleys, alternate destinations & Twin Coil Switch machines with no timed stop before releasing other trolley.



Automatic Back-N-Forth - SWITCH BACK

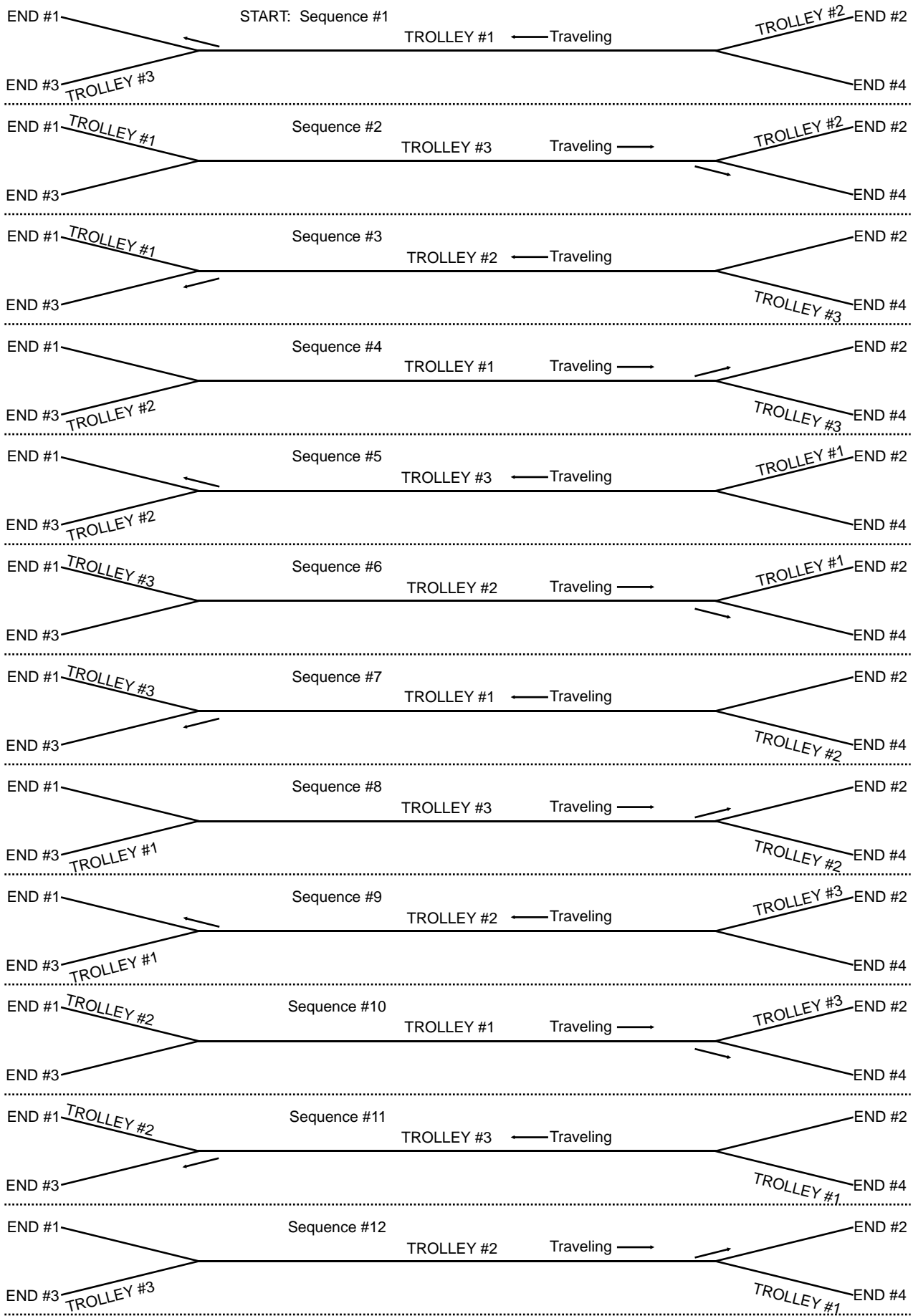


END #1 and END #4 reverse w/o a stop, to do a stop you can either wire a TRAK-DT (#365) or use another TRAK-DTT (#565) with another Ballast Lamp Assy (#538), the later will give the ability to set a different timed stop than the other.

END #2 and END #3 STOP for the period of time set on the TRAK-DTT and reverse. These ends also control the switch machines. If you want to control each ends switch machine seperately you would need another TRAK-DTL and RELAY BOARD.

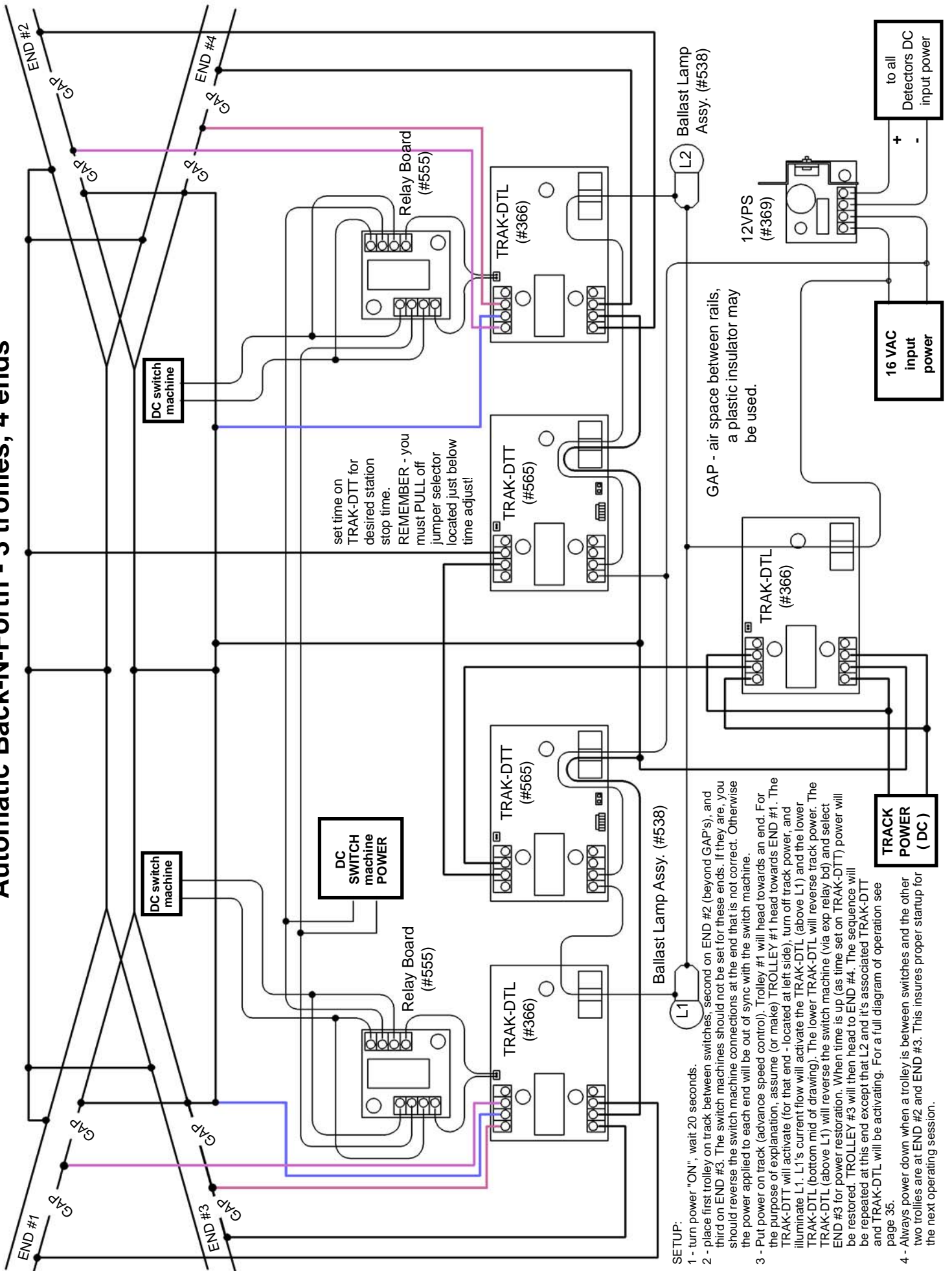
Switch Back arrangement - track switches to be wired with proper insulation as normal. If power on startup is with switches straight, then start in the middle of straight track section. If power on startup is with switches turned, then start in the middle of the connecting track. An engine or lighted car must enter each END to cause current flow and be sensed. If you want power up starting conditions opposite the way you have it wired, merely reverse your switch machine motor connections so that the switches start opposite of what they are. Remember that the switches have to be wired together (parallel) and operate straight/turn together.

Automatic Back-N-Forth - 3 trolleys, 4 ends - OPERATION DIAGRAM



next sequence takes you back to the start - TROLLEY #1 leaves heading for END #1

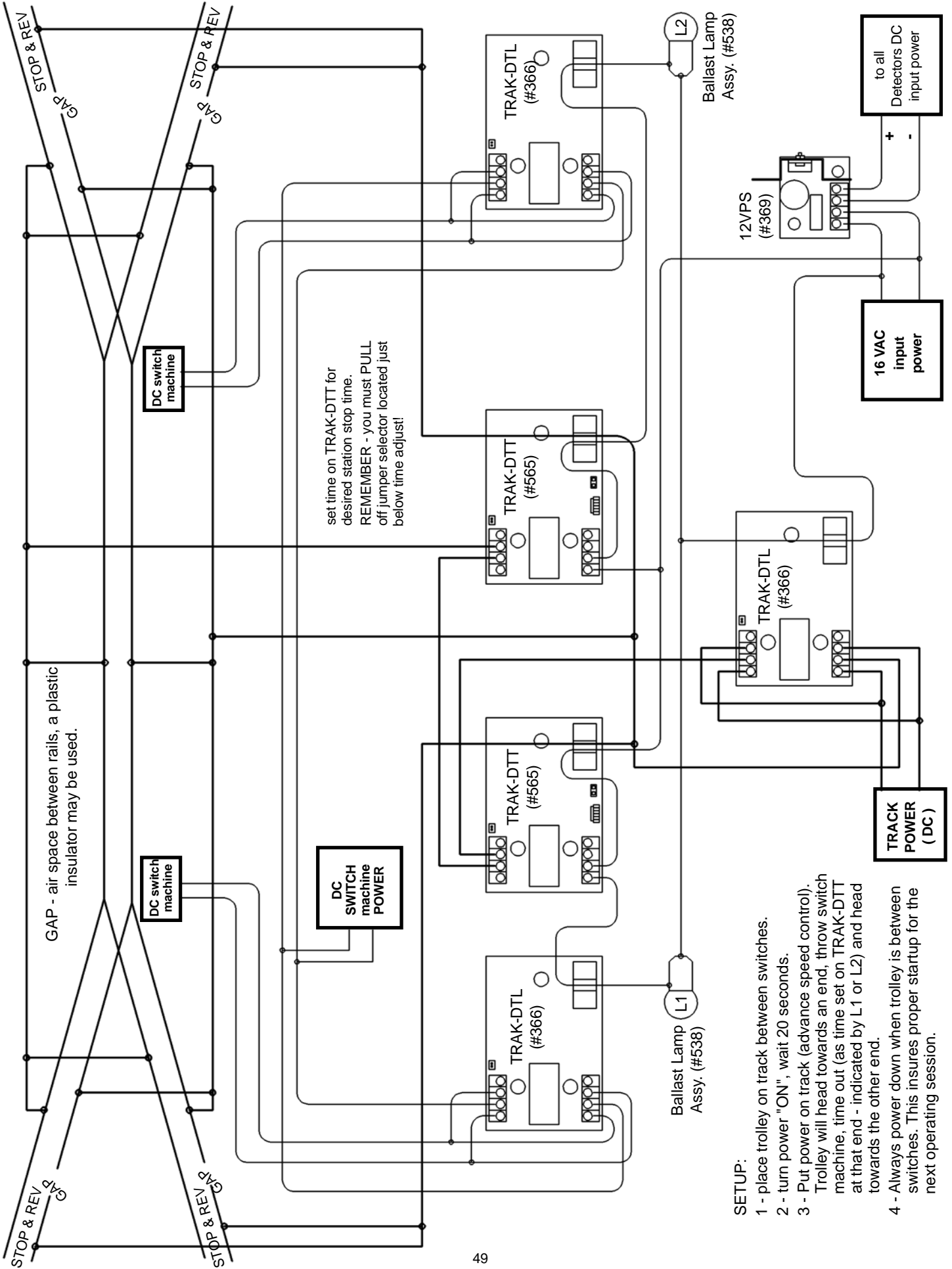
Automatic Back-N-Forth - 3 trolleys, 4 ends



set time on TRAK-DTT for desired station stop time. REMEMBER - you must PULL off jumper selector located just below time adjust!

- SETUP:**
- 1 - turn power "ON", wait 20 seconds.
 - 2 - place first trolley on track between switches, second on END #2 (beyond GAP's), and third on END #3. The switch machines should not be set for these ends. If they are, you should reverse the switch machine connections at the end that is not correct. Otherwise the power applied to each end will be out of sync with the switch machine.
 - 3 - Put power on track (advance speed control). Trolley #1 will head towards an end. For the purpose of explanation, assume (or make) TROLLEY #1 head towards END #1. The TRAK-DTT will activate (for that end - located at left side), turn off track power, and illuminate L1. L1's current flow will activate the TRAK-DTL (above L1) and the lower TRAK-DTL (bottom mid of drawing). The lower TRAK-DTL will reverse track power. The TRAK-DTL (above L1) will reverse the switch machine (via exp relay bd) and select END #3 for power restoration. When time is up (as time set on TRAK-DTT) power will be restored. TROLLEY #3 will then head to END #4. The sequence will be repeated at this end except that L2 and it's associated TRAK-DTT and TRAK-DTL will be activating. For a full diagram of operation see page 35.
 - 4 - Always power down when a trolley is between switches and the other two trolleys are at END #2 and END #3. This insures proper startup for the next operating session.

Automatic Back-N-Forth - 1 trolley, 4 ends



SETUP:

- 1 - place trolley on track between switches.
- 2 - turn power "ON", wait 20 seconds.
- 3 - Put power on track (advance speed control). Trolley will head towards an end, throw switch machine, time out (as time set on TRAK-DTT at that end - indicated by L1 or L2) and head towards the other end.
- 4 - Always power down when trolley is between switches. This insures proper startup for the next operating session.