



Automation in the garden: Part 2 — the station stop



PHOTOS BY THE AUTHOR

A train leaving the station is one of the iconic scenes on any railroad. Here, we see Woodland Railway 2-8-0 N° 14 as it slowly pulls out of Tall Oaks depot on Jim Strong's Woodland Railway in suburban Washington DC.

"All aboard!" It's difficult to think of a more iconic phrase in all of railroading. Each of us has likely imagined what it would be like to stand on the station platform and climb aboard the trains that run through our gardens. After all, it's largely that sense of escapism that draws many of us to the hobby. It's the start of the journey to another place and time. So, if we're going to have some kind of automation in the garden, it's fitting that one aspect would be the automatic station stop, where the train approaches the station, stops, then departs again.

Lots of things can happen when a train pulls into a station. It can stop, then resume the journey in the same direction; it can stop, reverse, then proceed the other way; it could stop and another train could pull out; or it could even stop and wait for a second train on the same track to leave the next station before the first train left

Table 1: Comparison of features

Product	Momentum decel/accel	Multiple station stops	Track sensors	Turnout control	Sound/light trigger
Dallee momentum	Yes	Yes	Gap	Yes*	Yes*
Split-Jaw 200-B1	No	Yes	Gap	Undocumented	Undocumented**
Ram-Track Ram-85	No	Yes	Magnet	No	Yes
RR-Concepts YardMaster	No	Yes	Magnet	Yes	Yes
RR-Concepts StationMaster	Yes	Yes	Magnet or gap	Yes	Yes

*Requires purchase of additional control boards

**The Split-Jaw controller has an auxiliary accessory output that, according to the manufacturer, can be adapted to control turnouts or lights. However, its operation is not covered by the documentation that came with the unit.

its station. The possibilities are plentiful and there are products that support many of these operations.

In this article I'll be looking at four manufacturers' products: Ram-Track's

Ram-85 Station Stopper module, Split-Jaw's 200-B1 reverser with station-stop control (which can be used just for station stops without triggering the reverser), Dallee's various components, and RR-

Concepts' YardMaster and StationMaster controls (see table 1). First, there are a couple of things to consider when looking at automated station stops.

Considerations

What kind of train will you be running?

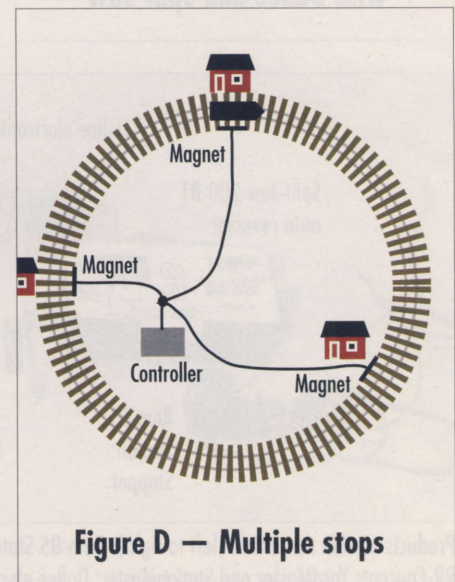
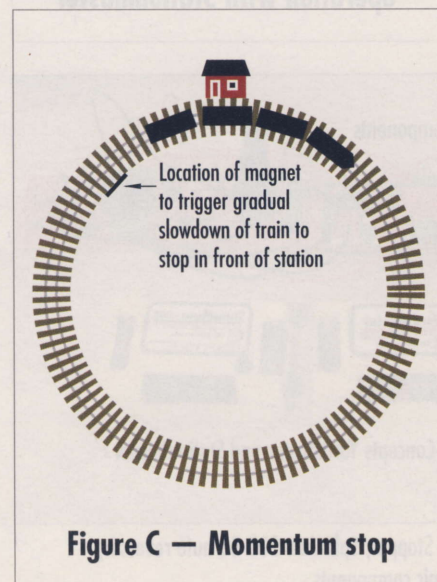
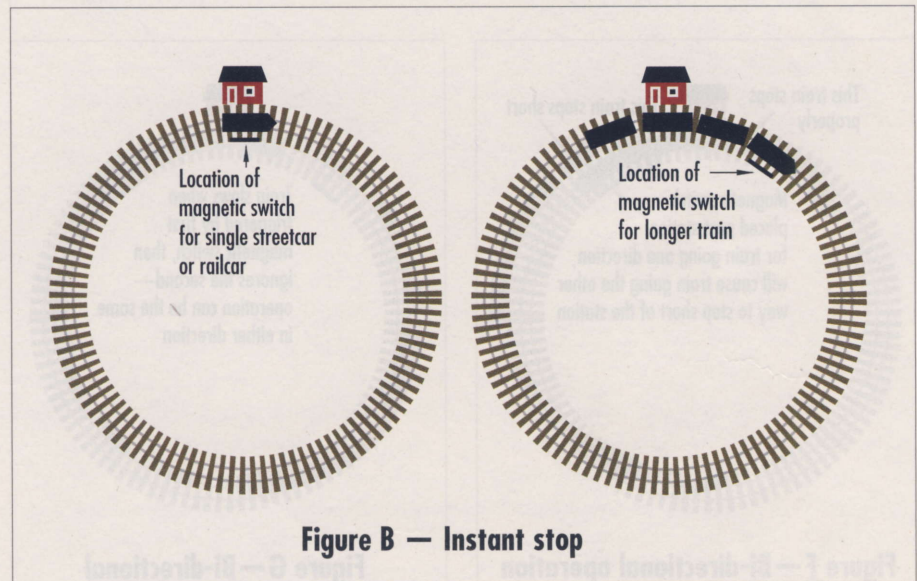
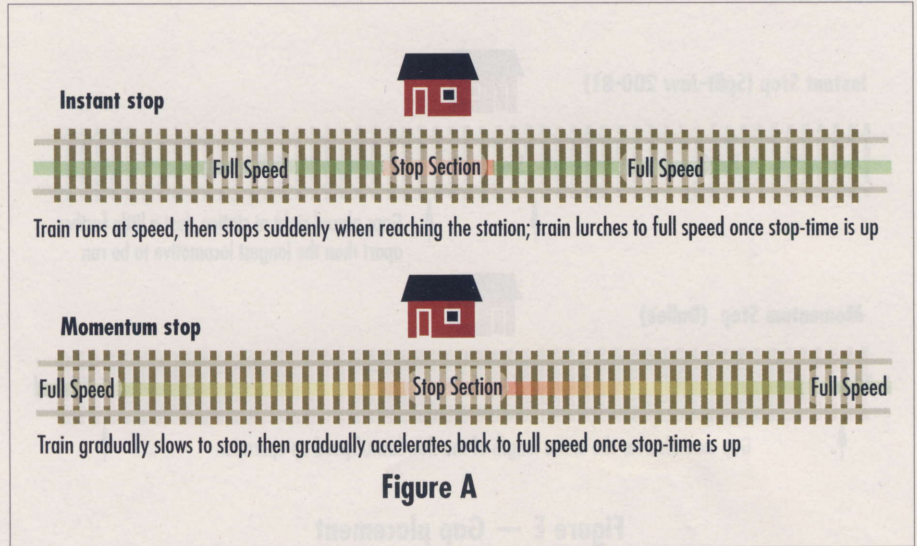
This affects many aspects of the installation. Do you need one of the more expensive systems that allows for gradual slowing and speeding up? If you're running a streetcar or self-powered railcar, maybe not. If you're pulling a string of passenger cars or a freight train, it would not only look more realistic to see the train gradually slow to a stop, but it's easier on the locomotive's moving parts and also mitigates the chances for derailments due to sudden stops. Slowing to a stop looks good with streetcars and railcars, too (figure A).

What's your track configuration? Do you have a simple loop with one or more station stops or are you adding stops to an out-and-back line, as I described in the last installment? These considerations weigh into what kind of system you might want to use and how and where to place your sensors to trigger the station stops.

Operation

We'll start with the most basic operation—a loop with a single station stop on it (figure B). Many of our railroads consist of one or more simple loops of track, and chances are there's at least one station on that loop. The key to stopping at that station is sensing when the train is in front of the station. I'll start with the systems that use magnets to detect the location of the train; these are the Ram-Track Ram-85 Station Stopper and RR-Concepts' YardMaster and StationMaster controls.

The Ram-85 and YardMaster controls are fairly simple. You put a magnetic sensor where you want the train to stop. When the locomotive passes over the sensor, the train stops immediately (no momentum, figure B). If you're running a single streetcar or railcar, you'd likely put the sensor directly in front of the station. If you're pulling a train, you'd want to put the sensor a little beyond the station so that the passengers don't have to walk very far. (You might also consider putting it in front of a water tower.) As long as you're



ILLUSTRATIONS BY MARC HOROVITZ

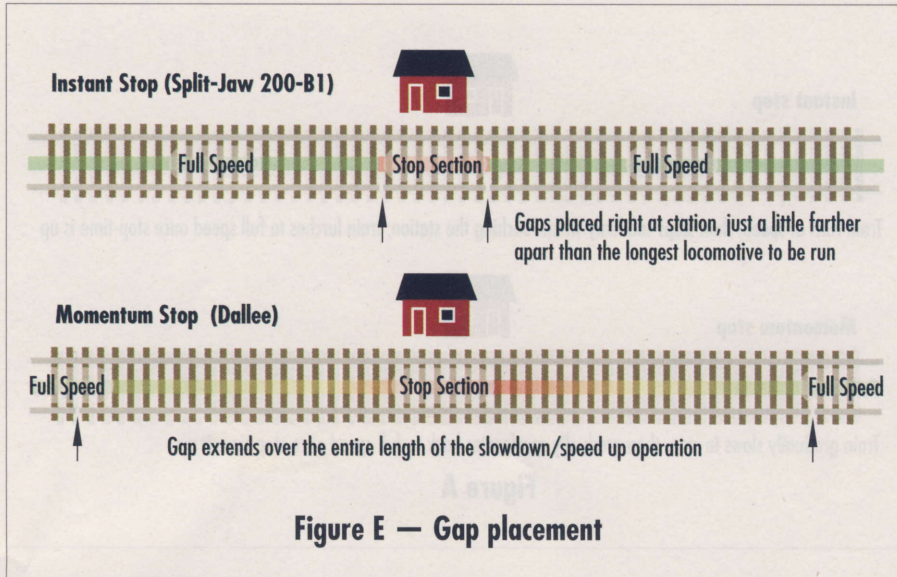


Figure E — Gap placement

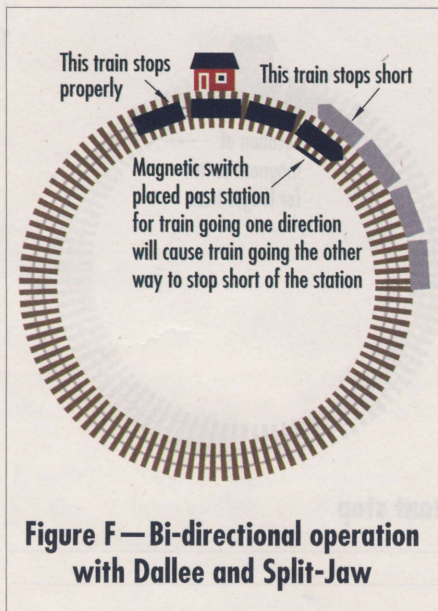


Figure F — Bi-directional operation with Dallee and Split-Jaw

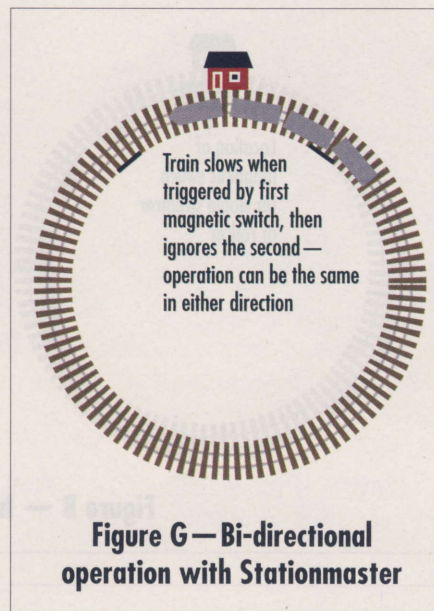
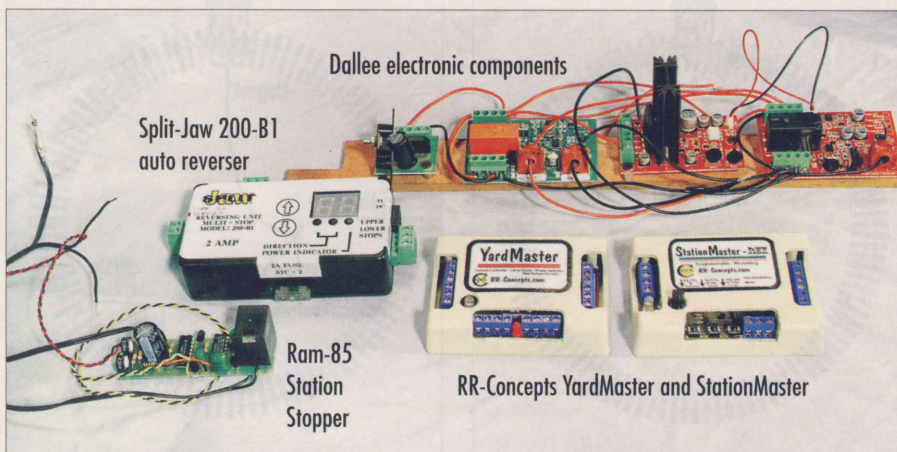


Figure G — Bi-directional operation with Stationmaster



Products used in this article (left to right): Ram-85 Station Stopper; Split-Jaw 200-B1 auto reverser; RR-Concepts YardMaster and StationMaster; Dallee electronic components.

always running in the same direction, the train will always stop in the right place. The Ram-85 has a secondary output that can trigger their “All aboard” sound module, so that you hear that sound prior to the train leaving. The YardMaster can control lighted signals to add a bit of visual animation to the process.

RR-Concepts’ StationMaster control adds momentum to the station stop, so the train gradually slows down and speeds up. With this system, you need to put the magnetic trigger where you want the train to start slowing down, which will be before the station (figure C). As an added feature, the Stationmaster has a “smart” mode, in which you put one sensor where you want the train to begin slowing and another where you want it to stop. After a few passes, the controller automatically programs the rate of deceleration so the train stops where it’s supposed to. This is convenient for trains that run at different speeds. All of these systems allow for multiple station stops on the same loop, simply by adding additional sensors (figure D). The StationMaster also gives you the ability to skip station stops, so you can make multiple laps without stopping at the station.

The other method of stopping the train is to use gaps in the rail to detect when the train is at the station. For this, I looked at the Split-Jaw 200-B1 reverser and Dallee Electronics’ line of products. Both of these controls are designed to be used in a back-and-forth setting, but can be used on a simple loop as well by not using the end-of-track reverse sections. (More on the back-and-forth in a bit.)

These two systems operate a bit differently from each other. Because Split-Jaw’s doesn’t have a momentum setting, the isolated section of rail should be only a little longer than the locomotive. Once the box senses the locomotive in the isolated section, it stops the engine and starts a counter. The train then starts again, continuing to the next station along the route.

Dallee’s system uses momentum to slow and speed up the train. Because of the way it senses the current in the isolated section, this section must be much longer—the distance it takes the train to slow down and speed back up (figure E). Note

that, on both of these systems, a lighted caboose would draw sufficient power to trigger these events so, if you're running lights in the cars, you might want them to take power from the locomotive instead of the track to avoid operational issues. (The StationMaster controller also allows for automatic station stops using gaps but is limited to one train and can only be used in one direction.)

Back and forth

So, what about those back-and-forth lines? That's where things get a little tricky. As mentioned, Dallee's and Split-Jaw' systems are designed for out-and-back installations, so it would follow that they'd operate well in that environment. But go back to the part about placing the sensors so that the train stops in the right spot. If you've got a long train that stops in front of the station going one direction, it will stop well short of the station going the opposite direction because of the location of the isolated section of track (figure F). The Dallee system is less susceptible to this because the isolated section extends so far to either side of the station. Chances are good that the train will stop somewhere near where it "should" regardless of its direction.

With their magnetic systems, neither the Ram-85 nor the YardMaster are good options for out-and-back lines with station stops, so you're better off with the StationMaster, which uses different sensor inputs into the controller for station stop

Sources and parts list			
Manufacturer	Product(s) used	Price	
Ram-Track	Ram-85 Station Stopper	\$34.95	
Dallee Electronics	Back-and-forth with momentum (Also can be used for multiple station stops on a loop) #369 12 v. regulated power supply	\$19.95	
	#368 Trak-DTT2	\$34.95	
	#566 Trak-DTRL	\$49.95	
	#MO-1 Momentum Control	\$49.95	
Split-Jaw Products	Model 200-B1 (w/intermediate stops)	\$185.00	
RR Concepts	YardMaster	\$55.00	
	StationMaster	\$89.00	

Contact information for product sources:			
Ram-Track	Dallee Electronics	Split-Jaw Products	RR Concepts
229 E. Rollins Rd. Round Lake Beach IL 60073 847-740-8726 <i>www.ramrcand ramtrack.com</i>	246 W. Main St. Leola PA 17549 717-661-7041 <i>www.dallee.com</i>	PO Box 90146 Portland OR 97290 877-762-4822 <i>www.splitjaw.com</i>	1357 Hodges Rd. Oceanside CA 92056 <i>www.rr-concepts.com</i>

vs. end-of-the-line stops, and uses two sensors at each intermediate station stop, one on each side of the station. When the train is traveling in one direction between the two ends, the first sensor will trigger the station stop, and the unit is then programmed to ignore the second one (figure G). Of course, few people run long trains in back-and-forth operations, so consider the trains you'll be running before worry-

ing too much about this.

I mentioned above some of the more complex operations, like alternating trains out of a passing siding. I ran out of space this time to go too deeply into that, so I'll visit using controls to throw switches and change trains in and out of passing sidings in a future installment. Next on the agenda, though, is how to deal with the dastardly reverse loop. ▀

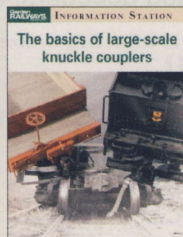
Find more articles by **Kevin Strong** in our Information Station store:



Lighting your garden railway



Videotaping your garden railway



Basics of knuckle couplers



Project railroad series: Build the Tuscarora Railroad



Project railroad series: Build the Middleboro Railroad

To order, visit www.GardenRailways.com and click on "Shop."