

Type R Transformer

LIONEL Electric Trains operate on low voltage, usually 8 to 18 volts depending upon the locomotive and the number of cars used. Outfits with whistle require 3 or 4 volts more than outfits without whistle. *Trainmaster* Transformers reduce the house current (usually 115 volts) to the required low voltage.

CONTINUOUS VOLTAGE CONTROL

The two control knobs on the panel regulate the track voltage in quarter-volt steps so that any train speed may be obtained. Trains can be gradually accelerated and slowed down in realistic fashion without stopping or reversing as the flow of current is uninterrupted regardless of the voltage applied.

HOW THE VOLTAGE CONTROL KNOBS OPERATE

Each control knob operates independently and regulates the voltage output of a pair of binding posts. By selecting the pair to be used, according to the specifications on the name-plate for each knob, the desired range of voltage may be obtained. Two binding posts must always be used in order to obtain current.

For example, if you use posts "A" & "F", a range of 14—24 volts is obtained controllable by the left hand knob. Posts "B" & "F", using the same knob, will deliver a range of only 6—16 volts. Similar ranges are obtainable from the right hand knob but the "A" & "C" or "B" & "C" binding posts are used.

The range of voltage which you use will depend upon the size of your train outfit. A small size train would operate satisfactorily on 6—16 volts, while a large train with a whistle would require 14—24 volts.

One knob must be used to control your train. For those who have two train outfits, the other knob may be used to control the second train either on a sectionalized track layout or on a separate layout. Full information on how to operate two trains simultaneously on the same layout is given in the booklet, "Instructions for Assembling and Operating Lionel Trains". If you do not have one, write for it. It is free.

If the second knob is not used for operating a train, it may be used for illuminated or automatic accessories by setting the knob at the correct voltage required by the accessory. Care must be taken that the voltage is not increased to a point greater than that specified for the lamps or the life will be considerably shortened.

HOW TO CONNECT TRANSFORMER

In order to reverse the train, a simple control switch known as the No. 88 Controller is included in each non-whistle outfit. For whistle outfits either a No. 166 or No. 167 Controller is supplied.

After you have selected the two posts required to operate train, connect transformer and controller to the track Lockon as indicated by Figure 1. Although a No. 167 Whistle Controller is illustrated, No. 88 Controller is connected in the same way.

Push the plug at the end of your transformer cord into a wall outlet.

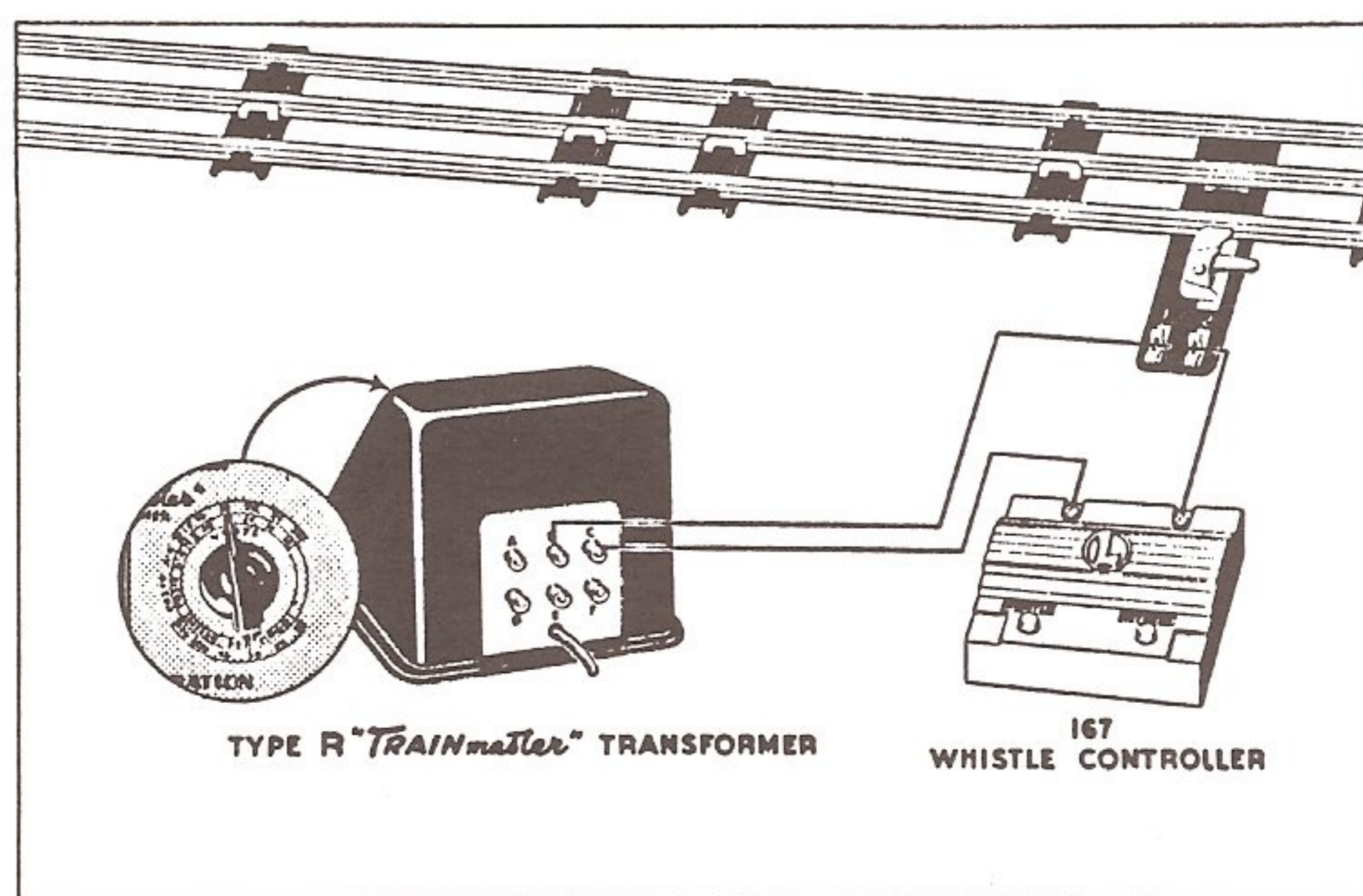


Figure 1—Type "R" Trainmaster Transformer connected to No. 167 Whistle Controller.

The green pilot light should now be on indicating that current is flowing into the transformer.

This light must be on before train can be started.

If the red pilot light is blinking at approximately 20-second intervals, it indicates a *short circuit* somewhere in the layout which must be corrected before train can be started. Be sure that all wheels of locomotive and car are properly set on the rails. A derailment of the wheels usually causes a short circuit.

HOW BUILT-IN CIRCUIT BREAKER OPERATES

All *Trainmaster* Transformers have built-in thermostatic circuit breakers which reset automatically. In approximately 20 seconds after the current has been shut off, the circuit breaker automatically resets. If the short circuit still exists, it breaks again after about 20 seconds more and this sequence will continue without harm to your transformer until the cause of the short circuit has been removed.

Inasmuch as this action is entirely automatic, it enables you to check your layout for the short circuit without having to go continually to the transformer and reset the circuit breaker by hand to see if the trouble has been corrected. You merely note from the flashing of the red jewel warning light whether or not the trouble has been corrected.

HOW TO REPLACE LAMPS

If the bulbs in the pilot lights burn out, you may replace the lamps yourself.

To do this, remove the jeweled cap by prying off with a small knife blade or other small tool, then take out lamp by pushing down and turning counter-clockwise.

Replace with Lionel No. Q-90, 8-volt lamp, which may be obtained from your dealer.

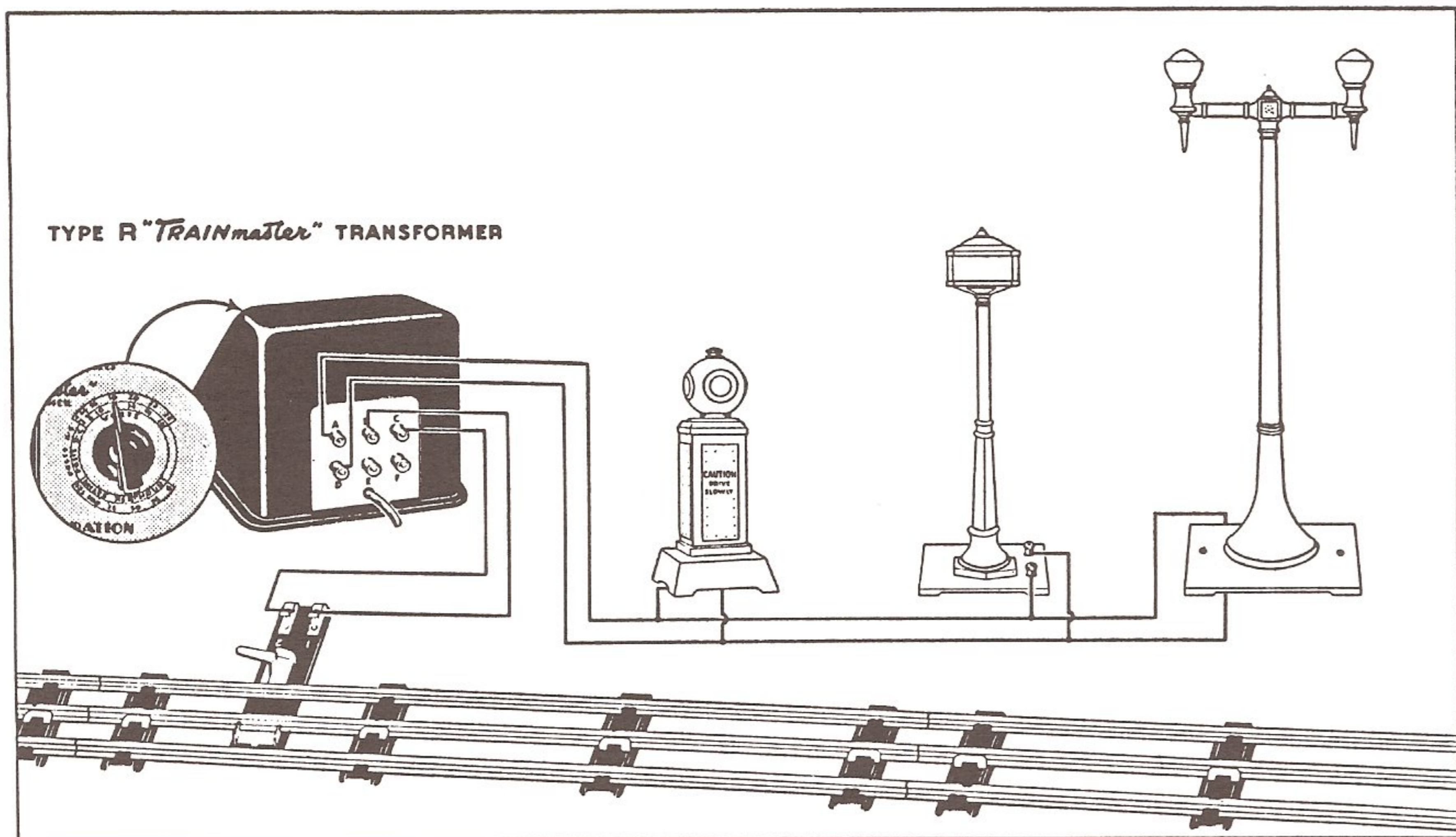


Figure 2—Type "R" Trainmaster Transformer connected to three Illuminated Accessories.

HOW TO CONNECT ACCESSORIES TO TRANSFORMER

A wide variety of illuminated Lionel accessories such as lamp posts, traffic signals, stations, platforms, tunnels, villas and bungalows, diners and other realistic pieces for your model railroad are available.

Any number of these accessories may be used up to the capacity of the transformer. All illuminated accessories, and many automatic accessories, should be wired directly to the transformer for best results.

On Type "R" there are four binding posts delivering fixed voltage for accessories. These posts are identified by the letters "A", "B", "D" and "E" on the terminal plate at the rear of the transformer. Four different fixed voltages are obtainable, as indicated, depending upon the combination of posts used. Fixed voltage is so-called because the output remains constant irrespective of the position of the voltage control knobs. For example, if you connect a lamp post to binding posts "A" & "D", 14 volts are obtained. The voltage required for illuminated accessories depends upon the lamp used. This information is given in the Lionel catalogue.

Most Lionel automatic accessories operate best at approximately 12 volts.

After you have found what voltage is required by your accessory, select the two binding posts on your transformer and connect these two posts with the two terminals on the accessory. In the event you have 2 or 3 accessories requiring the same voltage, it is possible to use the same binding posts. A simple method for wiring a number of accessories to the transformer is shown in Figure 2. Two feeders to the transformer and individual leads from the feeders to each accessory eliminate unnecessary wiring. If your railroad is being operated on a table or platform, the feeders may be concealed by attaching them underneath and boring small holes for leads to each accessory.

Remember that if two or more 12-volt accessories are wired together, as in Figure 2, the connection must still be made to posts which give approximately 12 volts on transformer and not to posts which give the sum total required by the individual lamps.

Automatic accessories using the No. 41 Contactor should be connected as illustrated by Figure 3.

DO NOT OVERLOAD YOUR TRANSFORMER

One of the frequent questions directed to Lionel engineers is: "How many trains and accessories will a transformer carry?" The rating of all electrical devices is determined by the heating. Small transformers will safely carry any load which does not cause the case or enclosure to become uncomfortably warm to the touch. If your transformer becomes unduly warm it is being overloaded and the number of accessories should be decreased or the load on the transformer otherwise lightened. If operated at moderate temperature, a transformer should last indefinitely.

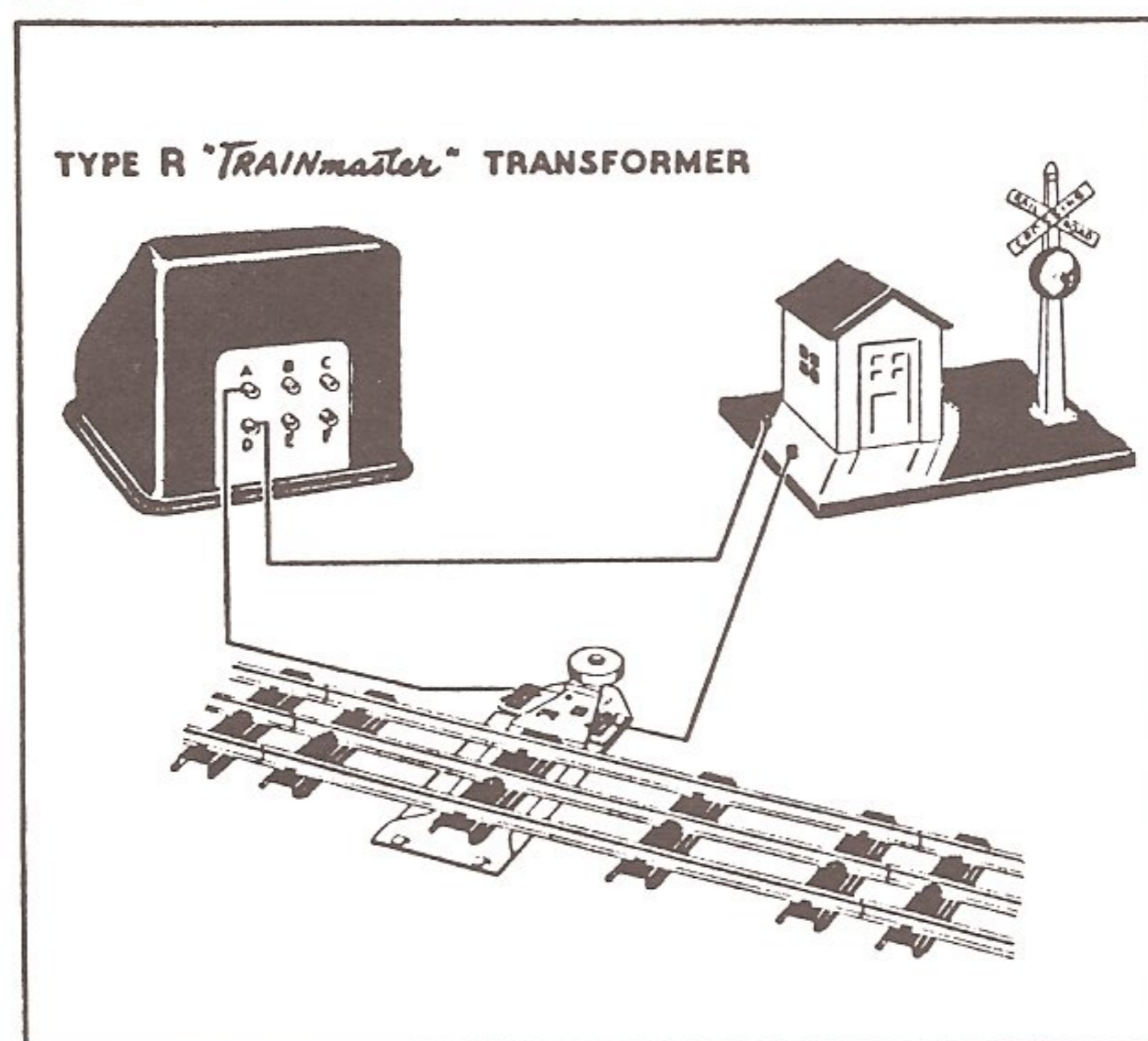


Figure 3—Type "R" Trainmaster Transformer connected to No. 76 Warning Bell and Shack using No. 41 Contactor.