

INSTRUCTIONS FOR OPERATING TYPE RW "Multi-Control" TRANSFORMER WITH BUILT - IN WHISTLE CONTROLLER

110 Watts 115 Volts — 60 Cycles

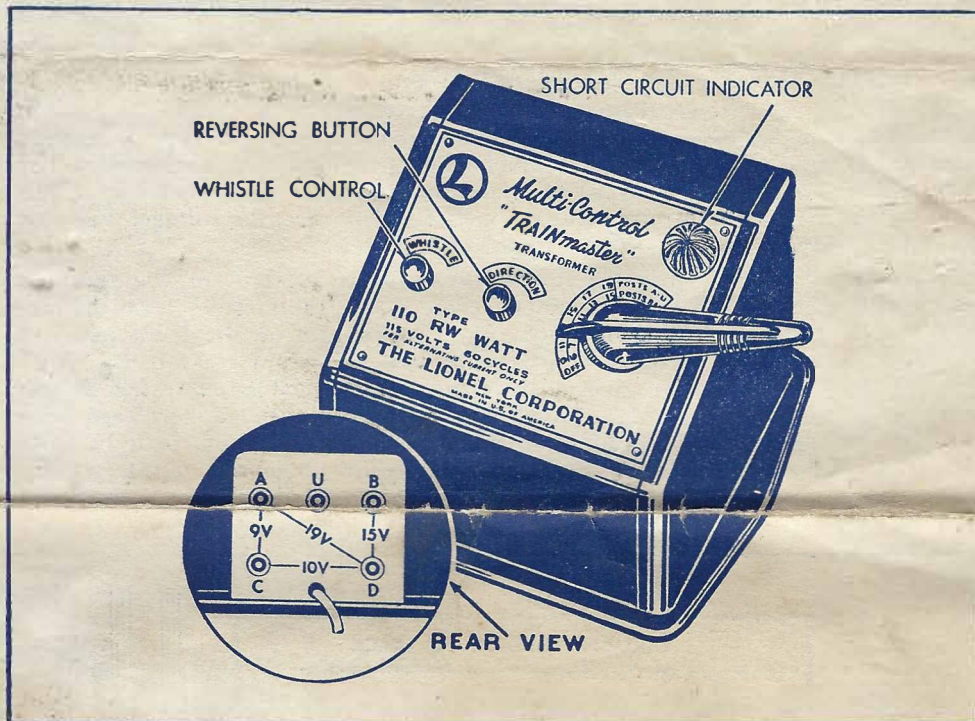


Figure 1 — Type "RW" Multi - Control Transformer

Lionel Electric Trains operate on low voltage, ranging from 8 to 18 volts, depending on the size and type of the locomotive and the number of cars used. Lionel Transformers reduce, or *transform*, the house voltage (usually 115 volts) to the low voltage required. The plug at the end of the transformer cord is plugged into any convenient wall outlet. The low voltage is then obtained from the output terminals at the rear of the transformer.

Type "RW" Multi-Control Transformer is made to operate on 115-volt 60-cycle alternating current, which is the normal house power supply used in the United States. The wattage rating of the "RW" Transformer is 110 watts. The wattage of a transformer is a measure of its capacity, or ability to furnish power. While your house current determines the rated voltage and frequency in cycles of the transformer, the wattage of the transformer that you need for your outfit is determined by the size of the train and the number of accessories you have in your model railroad system. The larger the train and the greater the number of accessories, the higher should be the wattage of the transformer. To assist you in planning your railroad system, the Instruction Booklet lists the wattage required by each Lionel locomotive and accessory.

CONTINUOUS VOLTAGE CONTROL

Like all Lionel Transformers, Type "RW" Transformer is provided with means of controlling voltage to the track so gradually that any train speed may be obtained. By turning the voltage control arm on the transformer panel the train can be gradually accelerated and retarded in realistic fashion without stopping or reversing the locomotive, as the flow of current remains uninterrupted while the voltage is being varied. Continuous voltage control is of particular advantage when operating trains with remote control couplers, operating cars, and accessories where precise train control is necessary.

HOW TO CONNECT TRANSFORMER

In order to get current from a transformer to the track, two of the output terminals of the transformer should be connected to the track. This connection is generally made by means of a track Lockon provided with each outfit. The Lockon is clipped onto a convenient section of track and is connected to a pair of transformer output binding posts which furnish variable voltage. Variable voltage is necessary to control the speed of the train.

Type "RW" Transformer has five binding posts located on the terminal plate at the rear of the transformer. Of these, "A-U" and "B-U" combinations furnish variable voltage for the track. The control arm on the front panel of the transformer simultaneously regulates the voltage output of both the "A-U" and the "B-U" combinations. The transformer dial indicates the voltage ranges of these two combinations. The "A-U" combination supplies any voltage from 9 to 19 volts. The "B-U" combination has a voltage range from 6 to 15 volts. In selecting the proper range of voltage for your particular outfit, try the "B-U" combination first. If the maximum train speed obtainable is not satisfactory, then try the "A-U" posts.

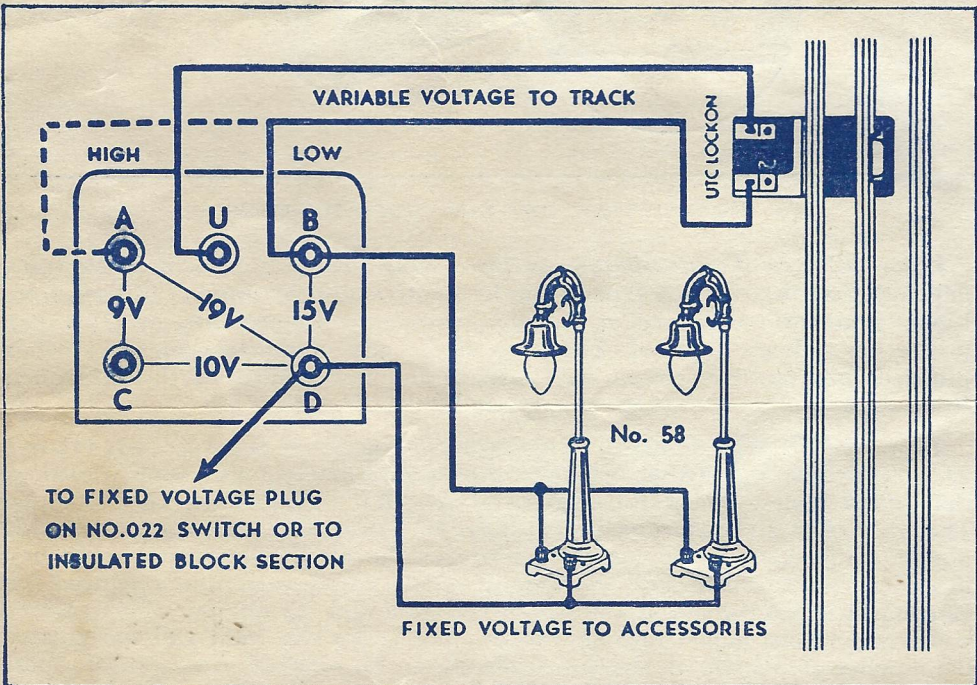


Figure 2 — Connections to "RW" Multi - Control Transformer

HOW THE CIRCUIT BREAKER WORKS

If the red pilot light is blinking on and off, 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 cars are properly set on the rails. A derailed car or locomotive is the most frequent cause of short circuits.

To protect the transformer from overheating and damage due to short circuits Trainmaster Transformers are equipped with built-in automatic circuit breakers. Whenever the current drawn from the transformer exceeds a certain limit the red warning light goes on and the circuit breaker opens, cutting off the output of the transformer. In a few seconds the circuit breaker automatically closes and the red light goes off. If, however, the short circuit which caused the circuit breaker to open up still exists, the red light will go on again and the circuit breaker will reopen. This sequence will continue without damage to the transformer until the cause of the short circuit has been removed.

The purpose of the circuit breaker is to protect the transformer. It operates *only if the transformer is overloaded*. It is possible, therefore, under certain conditions for the track to be "shorted" without causing the breaker to operate or the red light to flash. However, no injury can occur to the transformer in this event, because it is not being overloaded.

REMOTE CONTROL REVERSING

All Lionel locomotives have a remote control reversing unit which makes it possible to start, stop and reverse by pressing the "Reverse" button on the panel of the transformer. Pressing the button for an instant stops the flow of current to the track. When the flow of current is interrupted, the reversing unit automatically changes the action of the locomotive in the following sequence: forward, stop, reverse, stop, etc. For example, if the train is moving forward, pressing the button once will cause the train to stop, pressing it again will cause the train to move in the reverse direction, and so on.

HOW TO BLOW WHISTLE

The tender in your Lionel train outfit is equipped with a realistic-sounding whistle which can be sounded anywhere on the track whether the train is moving or standing still. To sound this whistle the "RW" Transformer is equipped with a built-in whistle controller. To blow the whistle press the "Whistle" button on the transformer panel. The whistle will sound as long as the button is held down. The official railroad signals are given below.

OFFICIAL WHISTLE SIGNALS

. means a short blast, — a long blast

- | | | | |
|---------|--|---------|--|
| • | Apply brakes. Stop. | • • • | When train is standing, back. |
| — | Release brakes. Proceed. | • • • • | Call for signals. |
| — • • • | Flagman go back and protect rear of train. | — • • | Approaching highway crossing at grade. |
| — — — — | Flagman return from west or south. | — — — — | Approaching stations, junctions and railroad crossings at grade. |
| — — — — | Flagman return from east or north. | — • | Approaching meeting point of trains, on a single-track road. |
| — — — | Train in motion has parted. | | |
| • • | Answer to any signal not otherwise provided for. | | |

A succession of short blasts is an alarm for persons or live stock on the track.

HOW TO CONNECT ACCESSORIES

A wide variety of illuminated accessories, such as lamp posts, block and crossing signals, stations and platforms, is available for your model railroad. Any number of these accessories may be used up to the capacity of the transformer, but too heavy an accessory load will cause the train to slow down.

In the event that you have several accessories requiring the same voltage it is possible to use the same transformer binding posts for all. A simple method for wiring a number of light accessories in "parallel" is shown in Figure 2. Two main "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 the platform and boring small holes for the leads to each accessory.

Remember that if two or more 14-volt accessories are wired together in "parallel", as in Figure 2, the connections are still made to transformer posts furnishing approximately 14 volts, regardless of whether two, three or more accessories are so connected.

While variable voltage posts are connected to the track in order to control the speed of the train, accessories work best with fixed voltage. Type "RW" Transformer provides four usable fixed voltage combinations which are not affected by the position of the voltage control knob. These voltages, printed on the terminal plate on the rear of the transformers, are: "A-C", 9 volts; "C-D", 10 volts; "B-D", 15 volts and "A-D", 19 volts.

The majority of Lionel operating and illuminated accessories work best at approximately 12-16 volts and should therefore be connected either to the "B-D" or the "A-D" terminals as shown in Figure 2.

If your outfit contains No. 022 Switches equipped with Fixed Voltage Sockets use terminal "D" for Fixed Voltage Plug connection.

SERVICE INFORMATION

This transformer was inspected at the Factory and is in perfect operating condition. Like all Lionel products it is guaranteed against defective material and workmanship to the extent that if any such defective transformer is returned to the Service Department or to any Lionel Approved Service Station within a year of the date of purchase it will be repaired or replaced. If in the future it should ever require servicing, you may either send it to the Factory Service Department or take it to your nearest Lionel Authorized Service Station listed in the Instruction Booklet.

If you decide to mail the transformer to us, be sure to pack it carefully to avoid damage in transit. Use the original box, if possible. A letter in a stamped envelope stating fully the service desired *must be pasted to the outside wrapper*, since postal regulations do not permit a letter or any written message to be placed inside the package.

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