

## SERVICE MANUAL

### TRANSFORMERS TYPES "VW" and "ZW"

Types "VW" and "ZW" Multi-Control Transformers, built in 1948, are similar to other Multi-Control transformers in the principle of operation but differ from them in their general appearance and in having a double set of whistle and reversing controls so that two separate layouts can be operated independently by the same transformer.

Type "VW" transformer, rated at 150 watts, can supply continuously 110 watts, or approximately 8 amperes at the working track voltage. This transformer can be used with power lines of 110-125 volts, 50-60 cycles.

Type "ZW" transformer, rated at 250 watts, can supply continuously 180 watts at 14 amperes. The "ZW" transformer can be used with power lines of 110-125 volts 50 cycles only.

As illustrated in the schematic diagram below, these transformers have a fixed secondary winding of 8 volts in series with a variable secondary winding of 12 volts. This makes it possible for each of the four rolling contacts to supply from 8 to 20 volts. The two 5-volt compensating windings are normally

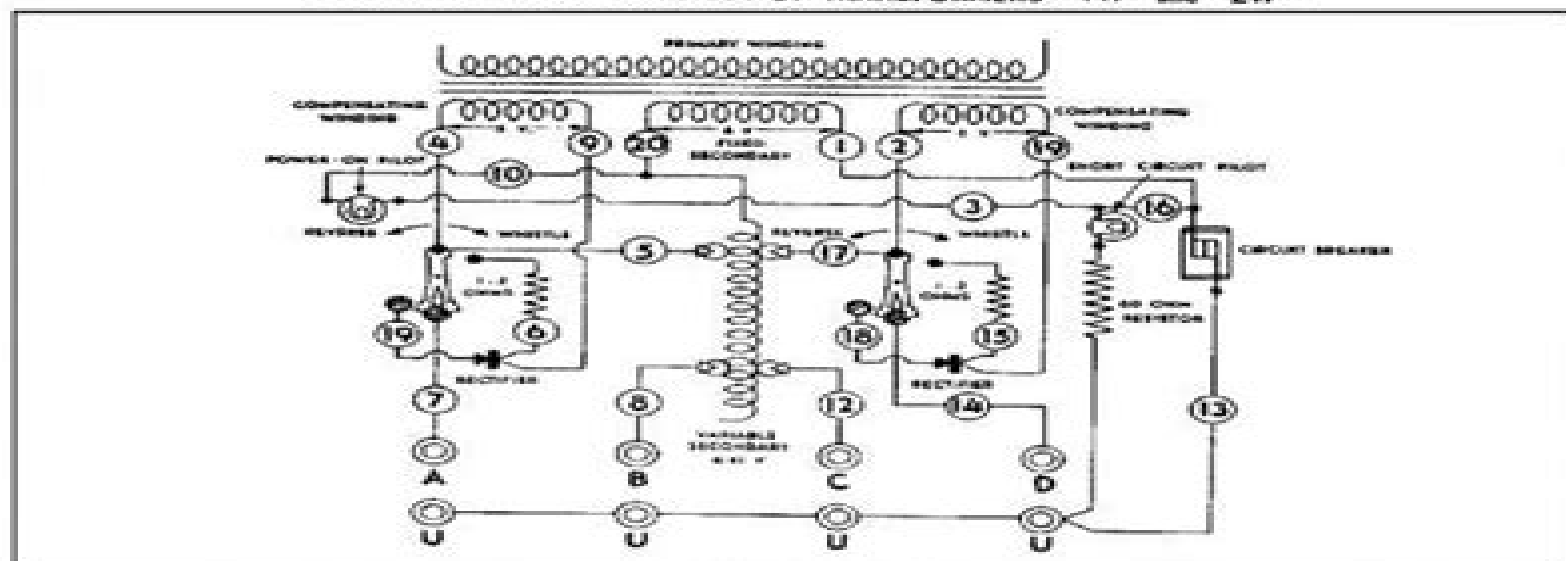
out of the circuit but are switched in series with the circuit whenever the whistle controller is operated to compensate for the voltage drop in the rectifier and the additional load of the whistle motor.

The three fixed secondary windings are wound directly on the primary, while the variable secondary winding is wound separately on a bakelite form and assembled on the opposite leg of the iron core.

The transformers are equipped with a pilot "power on" light placed across the fixed 8 volts winding, and a "short circuit" pilot placed across the circuit breaker. The 60-ohm resistor in series with the short circuit pilot limits the voltage placed across that lamp when the circuit breaker opens.

Note: Because circuit breakers of correct value could not be obtained for the "VW" transformers built in 1948, a length of resistance wire in insulating sleeving was wound around the circuit breaker and served as a heater to decrease its breaking time in case of short circuits.

SCHEMATIC WIRING DIAGRAM OF TRANSFORMERS "VW" and "ZW"



# Lionel Zw Transformer Repair Manual

**Huangqi Zhang**



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