

LIONEL SERVICE MANUAL

TYPE 'KW' MULTI-CONTROL TRANSFORMER

Lionel Type 'KW' Multi-Control Transformer, first built in 1950, is rated at 190 watts input and is able to supply continuously approximately 140 watts of useful power, or approximately 10 amperes of current, at normal operating voltage. The circuit breaker which protects the principal circuits is set to carry that amperage. The 'KW' transformer is designed for use with 115-volt 60-cycle alternating current power line only.

As illustrated in schematic diagram on Page 2, the secondary of this transformer consists of three separate windings: a fixed 6-volt winding and a 5-volt compensating winding which are wound over the primary and a 14-volt rectangular wire winding placed on the opposite leg of the transformer core. The two carbon contact rollers riding upon the bared surface of the 14-volt winding provide two independently controllable track circuits which may be varied from 6 to 20 volts.

As implied by its 'Multi-Control' designation the 'KW' transformer is equipped with built-in controls for reversing the locomotive and operating the horn and whistle relays. Each of the two track circuits has its own set of controls although the two whistle controls have a common control handle as well as a common rectifier, resistor and compensating winding so that whistles of two trains operating on separate layouts, can be operated selectively, but not simultaneously, by moving the control handle either to the right or to the left.

The operation of the whistle control is similar in principle to all other 'Multi-Control' transformers and is described elsewhere. As illustrated below, the normal position of the whistle control switch (Position 1) permits the track current to reach its outlet terminal directly through contacts 5, 4, 7 and 1. Moving the switch clockwise connects the rectifier and the compensating winding in series with the track circuit allowing a momentary high d.c. 'pickup' voltage to reach the track. (Position 2). The contacts are made through rivets 5, 6, 2 and 1. In the final position of the switch (Position 3) a resistor is shunted across the rectifier through contact rivet 3 to provide lower d.c. 'holding' voltage.

Two 'Reverse' buttons are provided for interrupting either of the two track circuits in order to activate the locomotive-reversing E-Unit.

SERVICE HINTS

Because the aluminum coil brackets tend to become work-hardened, the tabs which hold down the coil and lamination assembly may break off after repeated bending and straightening. In this case it is possible to repair the damage without replacing the entire bracket by holding down the lamination stack with a No. 6-32 x 1" round head machine screw screwed into the side of the bracket. The hole for the screw should be located on the side of the bracket 1-3/8" below the top. (See illustration on Page 4)

OPERATION OF 'KW' WHISTLE CONTROLLER

