TRANSFORMERS Nos. 1032, 1033, 1032M and 1232

'Multi-Control' transformers described in this section are all similar in appearance and mechanical design and differ only in the winding of the coil and amount of iron in the lamination stack, in order either to change their wattage rating, or to make them suitable for operation with power lines having various voltage and frequency ratings.

NO. 1032 TRANSFORMER

No. 1032 'Multi-Control' Transformer is rated at 75 watts and is suitable for operating on 110-115 volt, 60-cycle alternating current power lines.

With 115 volt input, the open circuit output voltages of this transformer are: Posts A-B, 5 volts; posts B-C, 11 volts; posts A-C, 16 volts. The two variable voltage ranges are: Posts B-U, 0-11 volts; posts A-U, 5-16 volts. The compensating winding switched in automatically by the whistle controller is 5 volts.

As in all transformers the useable wattage delivered by transformer will diminish as it becomes heated through continuous use. Not more than 50 watts should be taken from this transformer continuously and the continuous current load should not exceed 4-4.5 amperes.

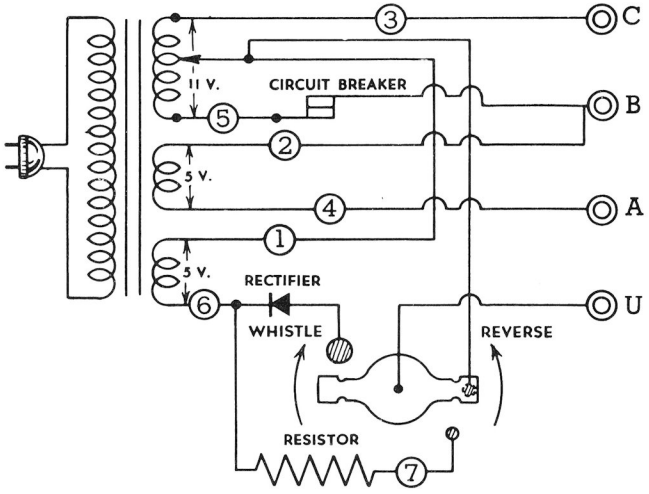
The circuit breaker is set to carry 4 amperes continuously but will hold a slight overload when the transformer is cool.

In order to meet delivery schedules most of No. 1032 transformers made in 1948 were assembled with the heavier 1033-2 coil and laminations, and are thus, in effect, 90-watt No. 1033 transformers.

NO. 1033 TRANSFORMER

No. 1033 'Multi-Control' transformer is similar to the 1032 except that the wattage rating is 90 watts, enabling it to carry a heavier load. This transformer can supply approximately 60 watts continuously with continuous current load of 5 amperes.

SCHEMATIC WIRING DIAGRAM OF TRANSFORMERS Nos. 1032, 1033, 1032M and 1232



Note: The numbered wire leads correspond with the numbered leads on the Pictorial Wiring Diagram of these transformers on Page 3 of this Section.

NO.1032M TRANSFORMER

No. 1032M transformer is rated at 75 watts, but is designed to operate on 50-cycle, 125-volt power lines found in Mexico and elsewhere. The wattage and the output voltage rating of this transformer are obtained with a 125 volt input and will, of course, be proportionately less with a 110 or 115 volt line.

NO.1232 TRANSFORMER

This transformer is also rated at 75 watts and is designed to operate on 220-volt lines with a frequency of either 50 or 60 cycles. The wattage and output voltage ratings of this transformer are the same as of other transformers in this series but are obtained with 220-volt input.

SERVICE HINTS

CIRCUIT BREAKER

The circuit breakers in these transformers are factory set to break in 7 to 8 seconds when terminals A and C are completely shorted. However, breakers which have become overheated by remaining under short circuit conditions for a long time will sometimes lose their calibration, and either take a longer time to break or fail to open altogether. Adjustment is made by means of a set screw found on top of the circuit breaker. To increase current-carrying capacity of the breaker (for a slower break) turn screw clockwise; to decrease current-carrying capacity (for a faster break) turn screw counter-clockwise. A turn of 180° is roughly equivalent to 2 amperes carrying capacity. After readjusting, seal screw in place using *Sauereisen* No. 63 Electric Heater Cement.

The circuit breaker assembly should be absolutely tight. If it shows signs of having been loosened through overheating it should be tightly re-riveted, or, preferably, replaced entirely.

Replacement circuit breakers are pre-set at the factory and the adjustment screw is sealed to prevent loosening. Although the same circuit breakers are used in all transformers of this type the settings will vary depending on the transformers with which they are to be used and their part numbers will therefore be different. Be sure to use the proper circuit breaker for each transformer.

RECTIFIERS

The direct current for operating the whistle is supplied by the rectifier disc. Although copper oxide rectifiers used in Lionel transformers can withstand considerable overload the oxide surface may become ruptured through abuse. In this case the rectifier disc has to be replaced.

The function of the nichrome resistance wire across the rectifier is to regulate the 'holding' voltage applied to the whistle relay. Its resistance should measure 1.5 ohms. Lower resistance means a proportionately lower d.c. 'holding' voltage. A higher resistance means a greater load on the rectifier disc. If the resistance wire is loose or broken the entire output voltage of the transformer is applied to the rectifier whenever the whistle is blown. This condition will quickly overheat the rectifier and will result in permanent damage to the disc. Check the resistance wire carefully for poor connections.

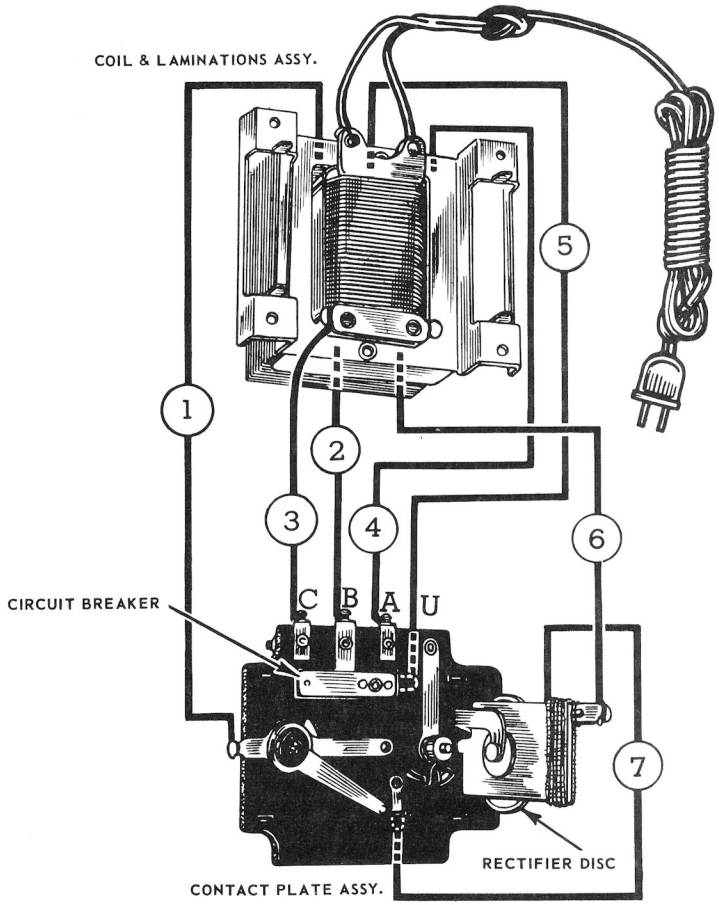
Since some types of nichrome wire are exceedingly difficult to solder the ends of the wire used in production are first copper-plated and tinned to facilitate soldering. In making repairs using resistance wire from rolls crimp the end of the resistance wire to a solder lug, then solder the lug to proper place.

COIL & LAMINATIONS

In transformers of this type the coil and laminations are assembled together in one unit and cannot be easily separated. In case of a burned out coil the entire coil and laminations assembly must be replaced. The assembly is held to the base by means of rivets which can be drilled out through the holes in the base.

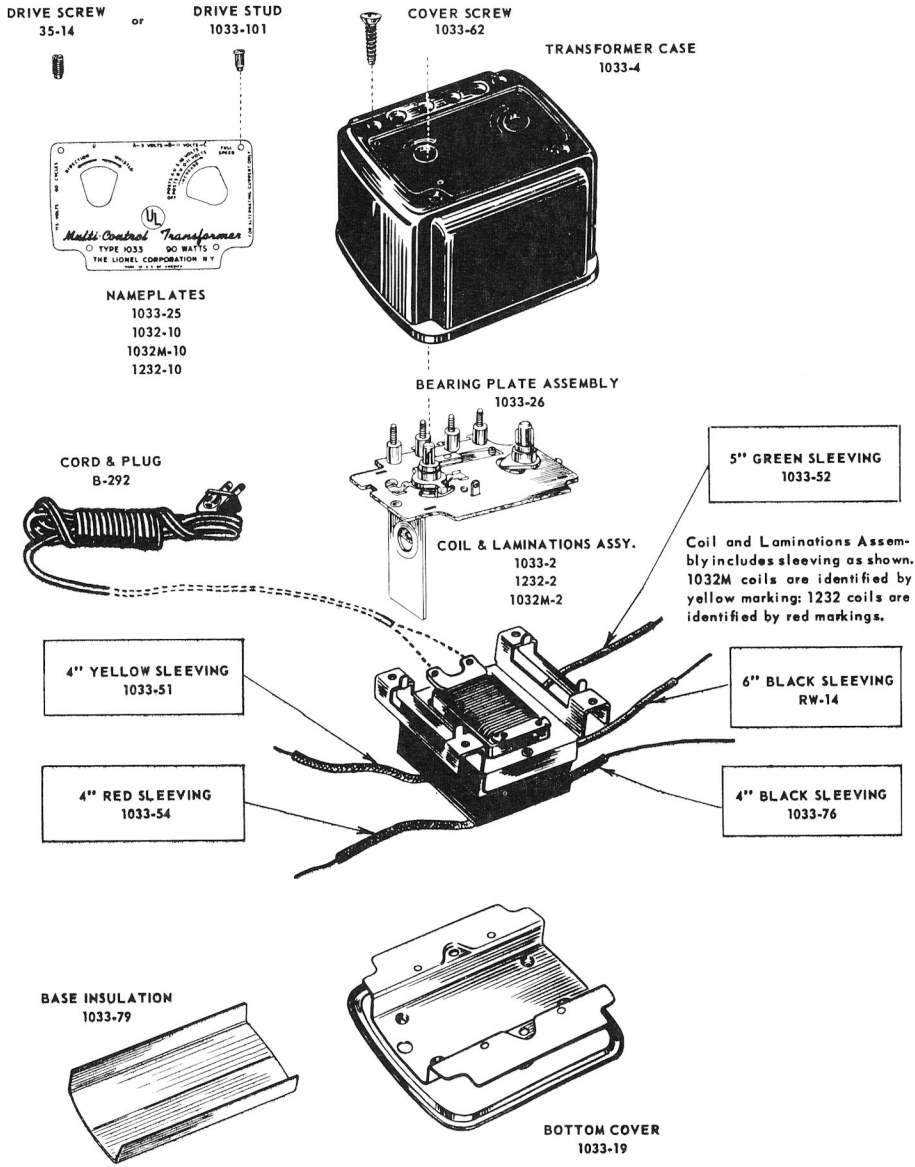
Since it is impossible to replace the base without at the same time destroying the rivets which hold it to the coil and lamination assembly, the base is not sold separately. If the spot welds holding the base plate to the bottom lamination bracket should separate drill through the weld locations and fasten plate by means of a sheet metal screw.

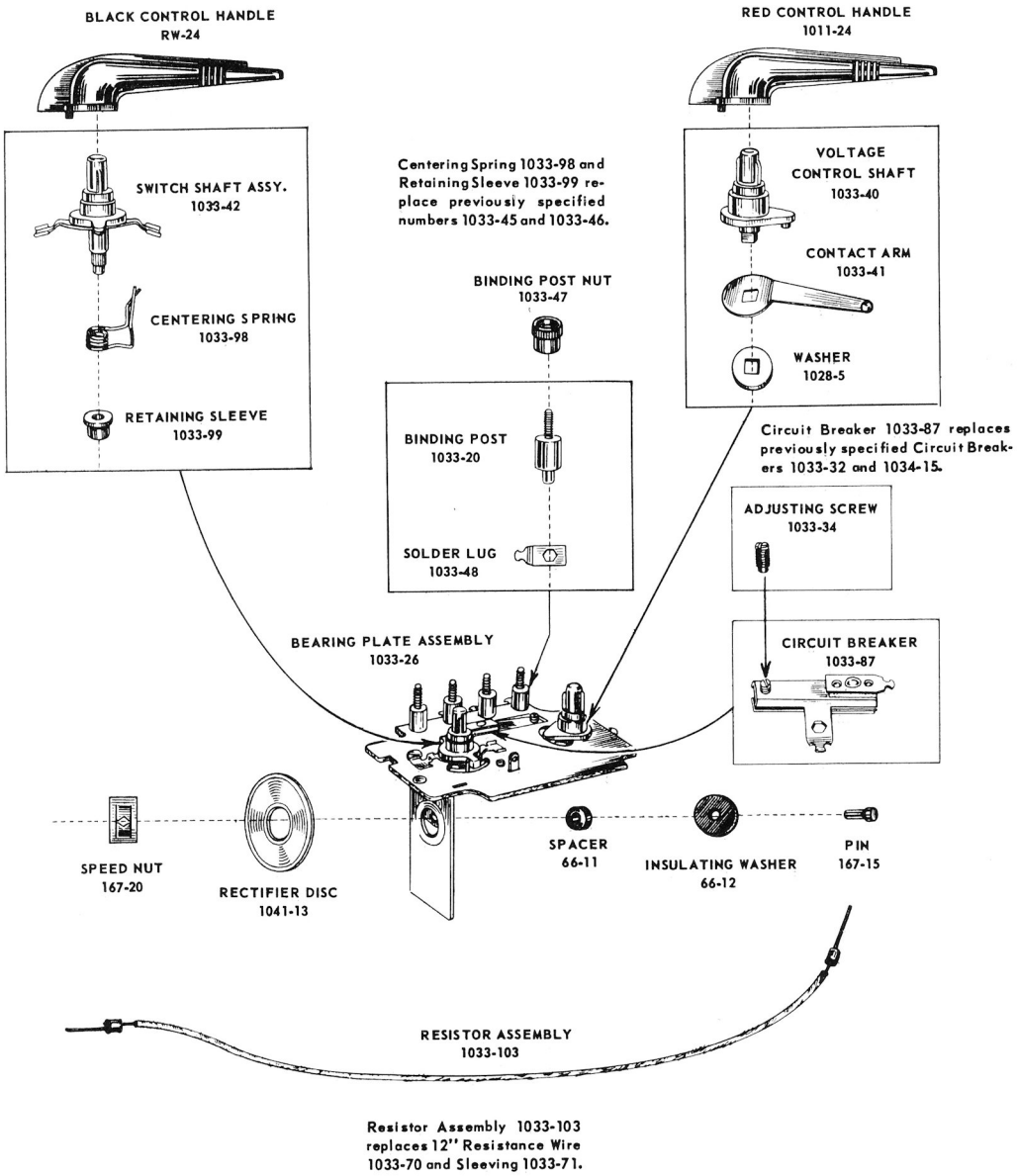
PICTORIAL WIRING DIAGRAM OF TRANSFORMERS NOS. 1032, 1033, 1032M and 1232



WIRE NO. 1	YELLOW TUBING
WIRE NO. 2	RED TUBING
WIRE NO. 3	NO TUBING
WIRE NO. 4	GREEN TUBING
WIRE NO. 5	BLACK TUBING
WIRE NO. 6	BLACK TUBING
WIRE NO. 7	RESISTANCE WIRE

NOTE: In the later models of these transformers the resistance wire in the whistle controller assembly (7) is not wound on the rectifier plate but is a separate assembly enclosed in a heat-proof asbestos covering and soldered between the contact solder lug and the eyelet holding the rectifier plate to the contact plate assembly.


DRIVE SCREW
35-14
or
DRIVE STUD
1033-101
COVER SCREW
1033-62
TRANSFORMER CASE
1033-4
Multi Control Transformer
TYPE 1033 90 WATTS
THE LIONEL CORPORATION N.Y.
NAMEPLATES
1033-25
1032-10
1032M-10
1232-10
BEARING PLATE ASSEMBLY
1033-26
CORD & PLUG
B-292
5" GREEN SLEEVING
1033-52
COIL & LAMINATIONS ASSY.
1033-2
1232-2
1032M-2
Coil and Laminations Assembly includes sleeving as shown. 1032M coils are identified by yellow marking: 1232 coils are identified by red markings.
4" YELLOW SLEEVING
1033-51
6" BLACK SLEEVING
RW-14
4" RED SLEEVING
1033-54
4" BLACK SLEEVING
1033-76
BASE INSULATION
1033-79
BOTTOM COVER
1033-19


BLACK CONTROL HANDLE
RW-24
RED CONTROL HANDLE
1011-24
SWITCH SHAFT ASSY.
1033-42
CENTERING SPRING
1033-98
RETAINING SLEEVE
1033-99
Centering Spring 1033-98 and Retaining Sleeve 1033-99 replace previously specified numbers 1033-45 and 1033-46.
BINDING POST NUT
1033-47
BINDING POST
1033-20
SOLDER LUG
1033-48
VOLTAGE CONTROL SHAFT
1033-40
CONTACT ARM
1033-41
WASHER
1028-5
Circuit Breaker 1033-87 replaces previously specified Circuit Breakers 1033-32 and 1034-15.
ADJUSTING SCREW
1033-34
CIRCUIT BREAKER
1033-87
BEARING PLATE ASSEMBLY
1033-26
SPEED NUT
167-20
RECTIFIER DISC
1041-13
SPACER
66-11
INSULATING WASHER
66-12
PIN
167-15
RESISTOR ASSEMBLY
1033-103
Resistor Assembly 1033-103 replaces 12" Resistance Wire 1033-70 and Sleeving 1033-71.