155-405-301

GENERATORS

RINGING AND COIN CONTROL - P TYPE

1. GENERAL

1.01 This section describes the method of operating the P-type ringing and coin control generators per KS-5028 and KS-5030, and outlines the general troubles which may be encountered in the operation of these machines.

1.02 Reference should be made to the Section covering Apparatus Requirements and Adjusting Procedures for information necessary for the proper maintenance of apparatus referred to herein.

2. OPERATION

Preparation for Starting

2.01 Before starting go over the generator and driving member carefully to see that they are clean, that no parts are loose and that no tools or other objects will interfere with their operation.

2.02 Check the height of the oil in the motor and generator bearings and gear case oil wells and replenish it necessary.

Starting

One-Motor Set With Automatic Transfer

2.03 To start the line-driven generator set close the associated starting switch.

2.04 To start the battery-driven generator set close the associated switch to the START position.

One-Motor Set Without Automatic Transfer

2.05 To start the line-driven generator set close the associated starting switch.

2.06 To start the battery-driven generator set close the associated starting switch.

Two-Motor Set

Caution: The two-motor set must be started from the d-c. end.

2.07 To start a set, close the line switch of the battery-driven motor.

2.08 When the alarm bell rings close the a-c. line switch.

Running

2.09 After starting, inspect the oil rings to see that they are turning on the shaft and delivering oil to the shaft and bearings. On long continuous runs over extended periods of a month or more, examine the oil in the bearing oil wells periodically and add oil if necessary.

Power Failure

One-Motor Set With Automatic Transfer

2.10 When a power failure occurs causing the line-driven generator set to stop, no action is required as the battery-driven set will automatically start and the load will be automatically transferred to the same. Upon restoration of the power service the load will be automatically restored to the line-driven generator set and the battery-driven generator set will automatically shut down.

2.11 Should it be desired to prevent the transfer after restoration of the power service throw the "Ring Transfer Switch" to the MANUAL position.

One-Motor Set Without Automatic Transfer

2.12 When a power failure occurs causing the line-driven generator set to stop, it will be necessary to manually start the battery-driven generator set. When the machine comes up to speed, the load has to be transferred manually by throwing the transfer switches.

Two-Motor Set

2.13 When a power failure occurs on the line-driven motor, the battery-driven motor is automatically connected to the battery supply and continues the generator in operation. As soon as the a-c. power supply is restored, the line-driven motor is automatically connected to the a-c. power supply, continuing the generator in operation and disconnects the battery-driven motor. If the a-c. line switch has been opened in correcting the cause of failure it will be necessary to close this switch before the linc-driven motor will again be connected to the a-c. power supply.

Transfer of Load

Caution: Before transferring load check the voltage of the incoming generator and correct as required.

One-Motor Set With Automatic Transfer

2.14 To transfer the load from the line-driven generator set to the battery-driven generator set, start the battery-driven generator set by throwing its associated switch to the START position.

2.15 Stop the bell alarm by pressing the "Trns-A" (transfer alarm) key.

2.16 Throw the "Ring Transfer Switch" to the MANUAL position.

2.17 To transfer the load from the battery-driven generator set to the line-driven generator set see that the line-driven generator set is running.

2.18 Throw the "Ring Transfer Switch" to the AUTO position.

2.19 Throw the battery-driven generator set "Ring M-2 Start Switch" to the NORMAL position.

One-Motor Set Without Automatic Transfer

2.20 To transfer the load from the line-driven generator set to the battery-driven generator set, start the battery-driven generator set by closing its associated starting switch.

2.21 Throw the transfer switches to the battery-driven generator set.

2.22 To transfer the load from the battery-driven generator set to the line-driven generator set, see that the line-driven generator set is running.

2.23 Throw the transfer switches to the line-driven generator set.

Two-Motor Set

2.24 To transfer the load from the running set to the spare set, start the spare set.

2.25 Throw the transfer switches to the spare generator set.

2.26 To transfer the load from the spare set to the regular set, see that the regular set is running.

2.27 Throw the transfer switches to the regular generator set.

Stopping

Caution: Before stopping any generator set take the necessary steps for maintaining service.

One-Motor Set With Automatic Transfer

2.28 To stop the line-driven generator set open the associated line switch.

2.29 To stop the battery-driven generator set throw the "Ring M-2 Start Switch" to the NORMAL position.

One-Motor Set Without Automatic Transfer

2.30 To stop the line-driven generator set open the associated line switch.

2.31 To stop the battery-driven generator set open the associated battery switch.

Two-Motor Set

2.32 Open the a-c. and then the d-c. line switches.

3. GENERAL TROUBLES

3.01 **No Field**

Cause	Action
Defective armature winding	Repair or replace armature
Defective field circuit	Repair
Poor connections	Repair or tighten
Poor contact of brushes with commutator	Clean and adjust brushes

3.02 **Overheating of Bearings**

Cause	Action
Bent shaft	Replace armature, and shaft
Dirt or grit in oil	Clean out bearings and lubricate with fresh oil
Improper alignment	Realign set
Improper grade of oil	Clean out bearings and lubricate with proper oil
Improper fitting, lining too tight	Refit or replace bearings
Insufficient oil	Add oil
Oil rings not functioning	Adjust or replace oil rings
Rough bearing surface	Smooth or replace bearing

3.02 (Continued)

Note: If a hot bearing develops, the load should be removed from the machine immediately. The bearing should then be flushed with dynamo oil until cool. The set should, in no case, be stopped until the bearing is cool, unless there is danger of the armature striking a polepiece. Stopping a machine with a hot bearing before the bearing has cooled may result in the shaft adhering to the bearing lining and making the replacement of the bearing more difficult. After cooling the bearing, the set should be shut down and an inspection made to determine the cause of the heating, and the condition corrected before again placing a load on the generator.

3.03 **Overheating of Commutator**

Cause	Action
Overload	Reduce load
Excessive brush tension	Reduce tension
Excessive sparking	See paragraph 3.05
Defective commutator or winding trouble	Repair or replace armature

Note: If the commutator appears excessively heated the load should be removed, the machine stopped at once, the temperature checked with a thermometer and the condition corrected if necessary, before replacing load on the generator.

3.04 **Overheating of Generator Windings**

Cause	Action
Overload	Reduce load
Short-circuited or grounded armature windings	Repair or replace armature

3.05 **Excessive Sparking**

Cause	Action
Brushes not properly seated	Refit brushes
Brushes too short	Replace brushes
Incorrect brush tension	Adjust tension or replace brush and spring as required
Oily or dirty commutator, collector or interrupter rings	Clean commutator, collector rings, interrupter or brush surfaces
Rough or pitted commutator, collector or interrupter rings	Smooth commutator, collector ring or interrupter surfaces
High, low or loose commutator bars	Repair or replace armature
Defective armature winding such as an open or short-circuit	Repair or replace armature

3.06 **Excessive Noise and Vibration**

Cause	Action
Armature striking pole-piece	Replace armature if windings are loose or replace bearings
Bent shaft	Replace armature and shaft
Improper end play	Adjust
Loose commutator segments	Replace armature
Loose bolts and nuts	Tighten bolts and nuts.
Loose coupling	Tighten or replace worn parts
Rough commutator, collector or interrupter rings	Smooth commutator, collector rings or interrupter surfaces
Worn bearings	Replace bearings

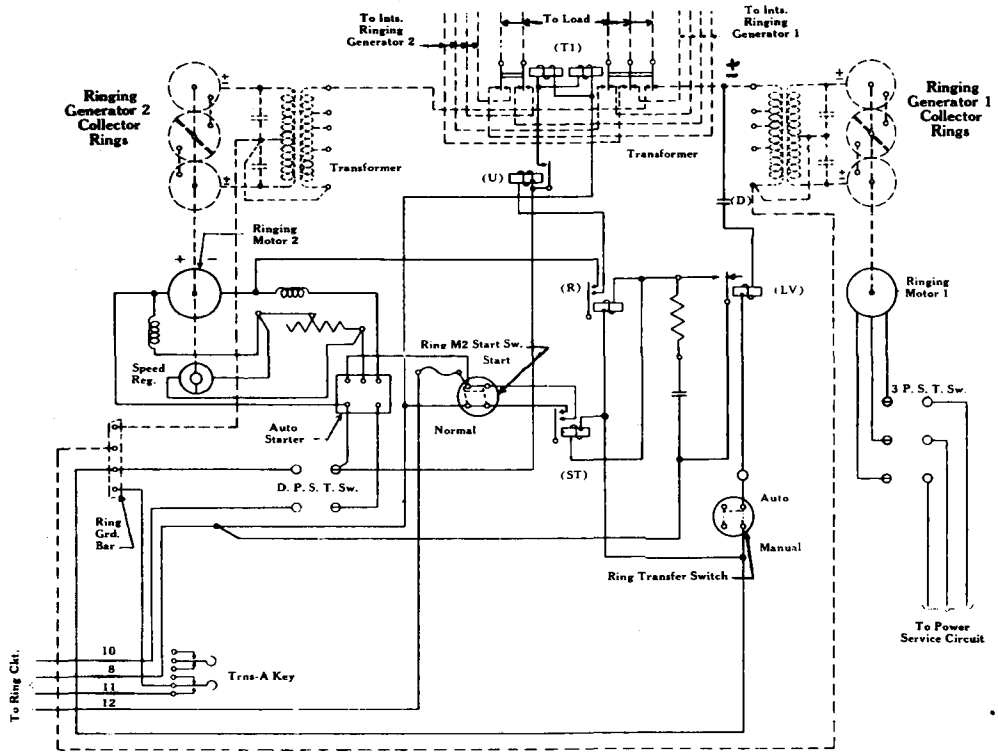

Fig. 1—Schematic Diagram for Automatically Transferring the Ringing Machine Load from the Line-Driven to the Battery-Driven Set on a One-Motor Ringing and Coin Control Set.

DETAILED DESCRIPTION OF FIG. 1

Assume an interruption in ringing voltage from ringing generator 1 due to a power or brush failure. The (LV) relay, which is connected to the ± lead through the (D) condenser and to ground through the normally closed "Ring Transfer Switch," will release, putting 24 volt battery from lead 8 on the windings of the (R) and (ST) relays. Their windings being grounded these relays operate, the (R) relay connecting the winding of the (U) relay to the negative armature terminal of the ringing motor 2 and the (ST) relay causing the "Automatic Starter" to operate. (The Ring M2 Start Switch in parallel with the contact of the (ST) relay is normally open.) The operation of the "Automatic Starter" starts the motor from battery on lead 10, limiting the current during starting and excites the shunt field.

When the motor comes up to speed, the (U) relay operates. It is connected across the armature through the contacts of the (R) relay referred to above, and the "DPST Switch." The (T1) relay is then operated through the contacts of the (U) relay transferring the load to the battery-driven generator set.

When power is restored the (LV) relay operates causing the (ST) and (R) relays to release. The release of the (R) relay in turn causes the (U) and (T1) relays to release restoring the load to the line-driven generator set. The release of the (ST) relay causes the starter to release stopping the battery-driven generator set.

When the (ST) relay or "Ring M2 Start Switch" is operated as covered above, battery is placed on lead 12 which brings in an alarm. The operation of the "Trns-A Key" (transfer alarm) will cut off the alarm bell when desired.

APPROVED:

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