

MOTOR-DRIVEN INTERRUPTERS AND TONE MACHINES

1. GENERAL

1.01 The motor-driven interrupter and tone machines as described herein are manufactured in accordance with specifications KS-5131, KS-5132, KS-5187, KS-5188 or KS-5313.

1.02 These machines may be divided into three classes, e.g., motor-driven tone machines consisting of a high speed interrupter, per KS-5132 and KS-5188, KS-5188 being the present standard, which provides high and low tone for signalling; motor-driven howler interrupter per KS-5313 which provides high tone for howler signals; and motor-driven interrupter and tone machine consisting of a high and low speed interrupter per KS-5131 and KS-5187, KS-5187 being the present standard, which provides high and low tones for signalling.

1.03 Each machine is driven by a direct current shunt motor suitable for starting when thrown directly across a 24, 37, or 48 volt bat-

tery. Each machine is mounted on a base having a metal case around all four sides and top. The top of the case is provided with a glass window to observe the operation of the machine. The machines are arranged for mounting on a vertical panel with their shafts horizontal, and when so mounted the glass is in the front of the case.

2. DESCRIPTION

Connections

2.01 Leads from the machine are brought out in a single cable with the exception of the KS-5187 machine which has two cables. Each lead has a separate color combination as shown in Figures 2, 3 and 4. Figure 2 is the schematic wiring diagram of connections for KS-5131 and KS-5187 machines. Figure 3 is the schematic wiring diagram of connections for KS-5132 and KS-5188 machines. Figure 4 is the schematic wiring

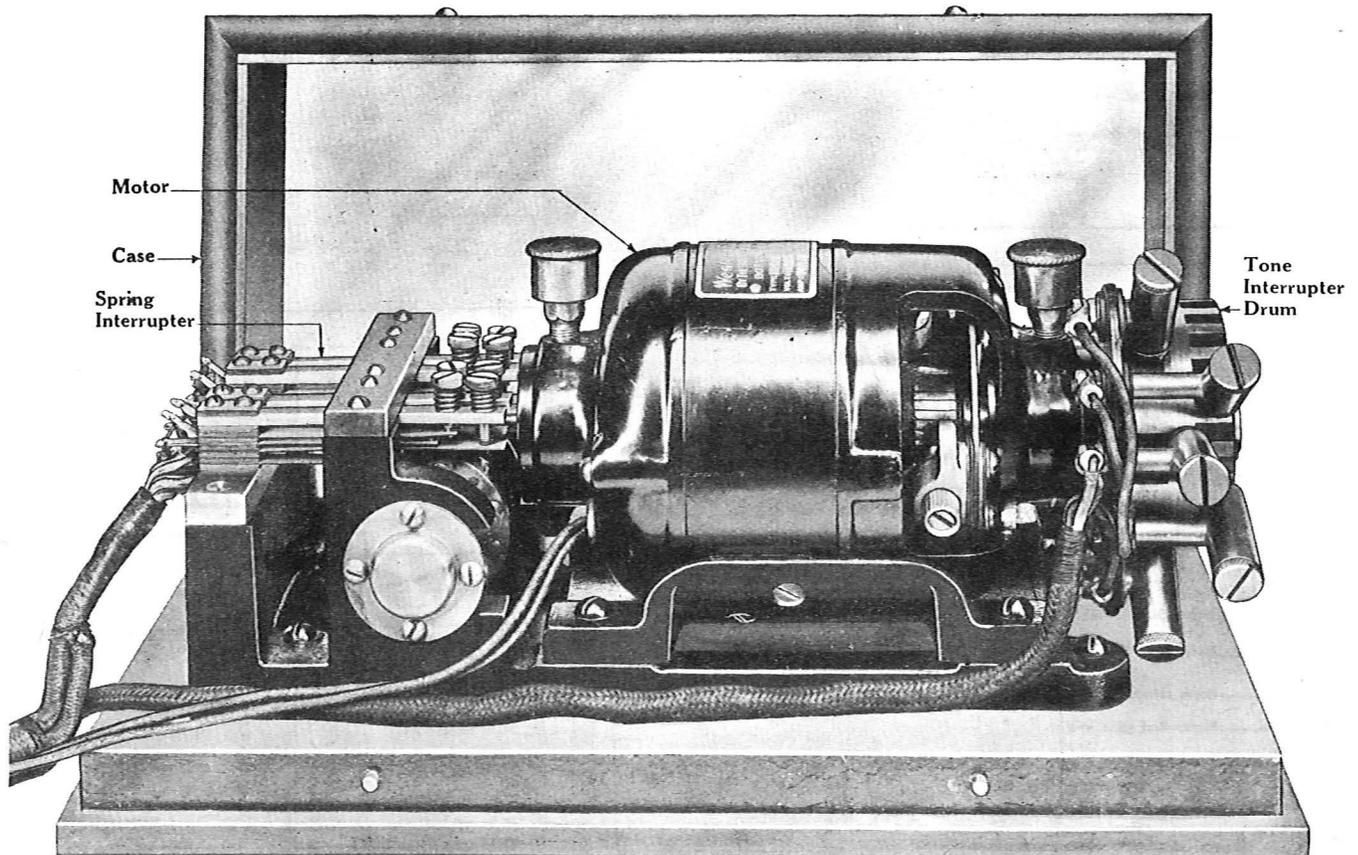


Fig. 1—Motor-Driven Interrupter and Tone Machine—KS-5187

Body Power

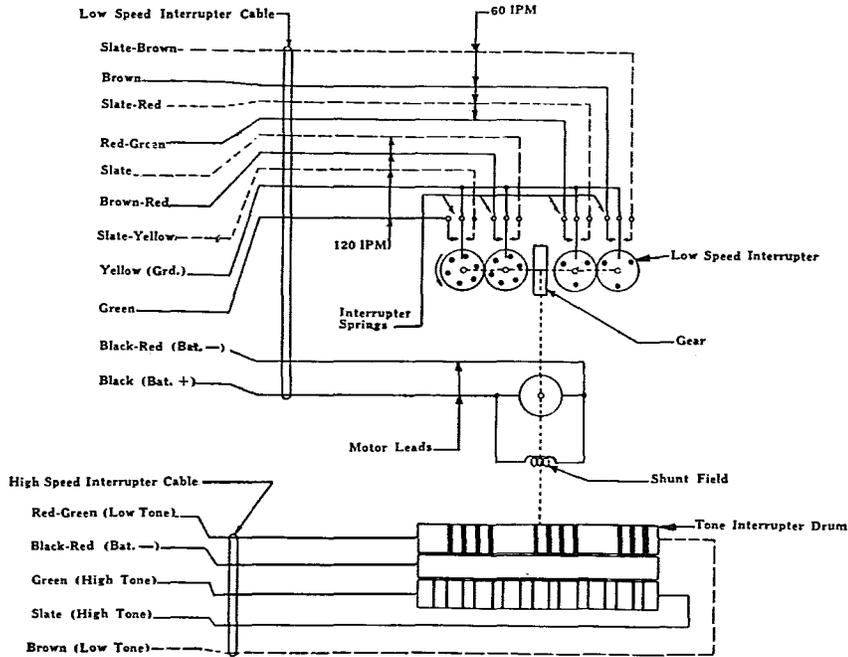


Fig. 2—Schematic Wiring Diagram—Interrupter and Tone Machines—KS-5131 and KS-5187

(NOTE: The dotted leads, springs and colored cables were not supplied with the earlier type machines per KS-5131.)

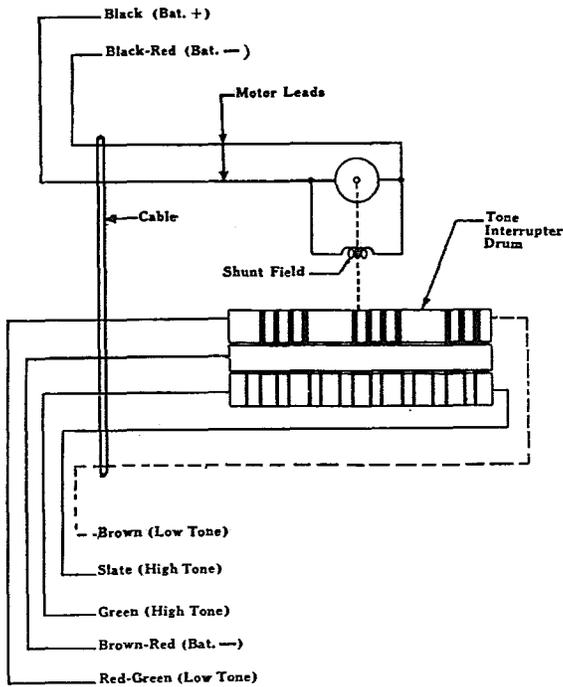


Fig. 3—Schematic Wiring Diagram—Tone Machines—KS-5132 and KS-5188

(NOTE: The dotted lead and colored cables were not supplied with the earlier type machines per KS-5132.)

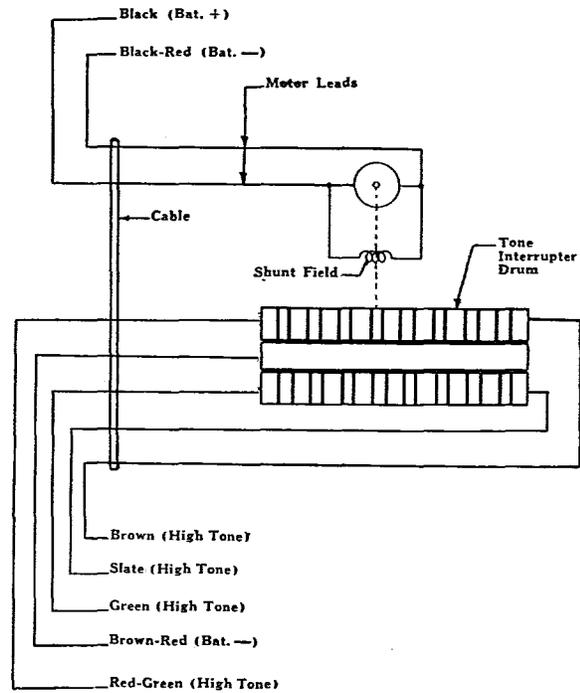


Fig. 4—Schematic Wiring Diagram—Howler—KS-5313

2.01 Continued

diagram of connections for the KS-5313 machine. Some of the earlier machines were not provided with cables, connections being made at the machine.

2.02 The black and black-red leads come from the motor and are connected to a 24, 37 or 48 volt direct current supply, the black lead always being connected to the positive (ground) and the black-red lead to the negative (battery). The other leads are connected as indicated in the wiring diagram.

High Speed Interrupters

2.03 A drum type interrupter is mounted on an extension of the motor shaft and held firmly in place by means of a set screw or set screws. This drum interrupts current from the battery at the rate of 480 and 160 interruptions per second for the KS-5131, KS-5132, KS-5187 and KS-5188 machines to give a high and low tone, respectively. The interrupter on the KS-5313 machine interrupts battery at the rate of 480 interruptions per second. These interruptions are based on a motor speed of 1200 r.p.m.

2.04 Several types of interrupter drums are in use. The earliest type of drum had circular insulating segments of bakelite. These were followed by rectangular insulating segments of Masuron compound. The present standard is a commutator type segment insulated from the remainder of the drum by mica.

Low Speed Interrupter

2.05 On the KS-5131 and KS-5187 machines in addition to the drum type interrupter, four spring assemblies are provided for signalling. These spring assemblies are mounted on the opposite end of the motor from the high speed interrupters. These springs are actuated by cams rigidly fastened to an auxiliary shaft at right

angles to the motor shaft and driven by the motor shaft through a worm and worm wheel. The speed of the auxiliary shaft is such as to give either 60 or 120 interruptions per minute of the springs. Each spring assembly on the KS-5187 machine consists of two sets of contacts, the make and break periods for each set of contacts being approximately equal and for a duration of .5 or .25 second depending on whether they give 60 or 120 interruptions per minute.

2.06 Machines furnished per KS-5131 were provided with an eccentric bushing in the auxiliary shaft of the low speed interrupters permitting an adjustment of the depth of the mesh between the worm wheel and worm. Machines per KS-5187 have ball bearings on the auxiliary shaft and the only adjustment of the worm wheel is along the auxiliary shaft to permit lining up the axes of the worm and worm wheel in the same plane.

Spring Contacts

2.07 The contacts of the springs of the interrupter mechanism are of a platinum-iridium alloy. They are capable of continuous operation at full load without excessive burning or pitting.

Armature

2.08 The motor armature core is built up of sheet steel laminations pressed on a shaft made from a special grade of steel. The commutator is made of hard drawn copper segments insulated from each other and from ground by mica.

Machine Housing

2.09 The machine is semi-enclosed. The commutator end is open so that brush adjustment can readily be made or the commutator cleaned.

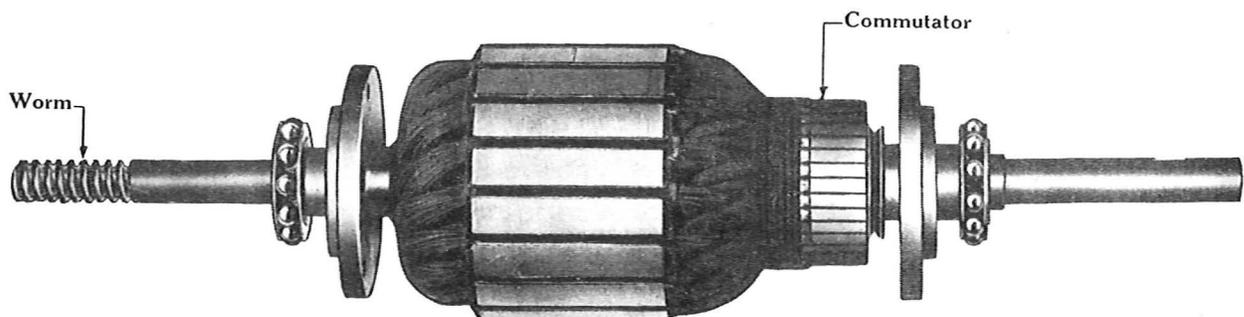


Fig. 5—Armature—KS-5187

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Bearings

2.10 The armature shaft has ball bearings on all types of machines. The bearing housings are provided with threaded grease holes, (the

earlier machines have grease cups) one in each main bearing, through which grease may be supplied to the bearing by means of a grease gun. A threaded plug is provided to keep out the dirt.

APPROVED:

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