

## INTERRUPTERS ROTARY MERCURY TYPE DESCRIPTION

### 1. GENERAL

1.01 This section covers rotary mercury-type interrupters consisting of one or more interrupter units mounted on the low-speed shafts of interrupter mountings, which provide a reduction gearing, and are arranged to be driven by a ringing machine.

1.02 This section is reissued to bring the list of coded interrupter mountings up to date and to make minor clarifications and revisions in the text.

1.03 The rotary mercury-type interrupter is furnished with the P-type ringing generator having a tone alternator to provide ringing and signaling interruptions in manual, panel, step-by-step, and crossbar offices and replaces the drum-type low-speed interrupter.

1.04 The following types of interrupters are furnished:

Code No. of Interrupter Mounting	Interrupters	
	No. of Interrupter Units *10 RPM	*60 RPM
1D	10 Double	
1E	11 Double	
2A	3 Double	2 Double 3 Single
2B	6 Double	2 Double 3 Single
2C	9 Double	2 Double 3 Single
2D	10 Double	2 Double 3 Single
2E	11 Double	2 Double 3 Single
3A	3 Double 1 KS-5746,L3) Code ringing 1 KS-5746,L4) Type (cam operated)	
3B	6 Double 1 KS-5746,L3) Code ringing 1 KS-5746,L4) Type (cam operated)	

Code No. of Interrupter Mounting	Interrupters	
	No. of Interrupter Units *10 RPM	*60 RPM
1A	3 Double	
1B	6 Double	
1C	9 Double	

\*A single interrupter unit is composed of two discs and one channel. A double interrupter unit is composed of three discs and two channels.

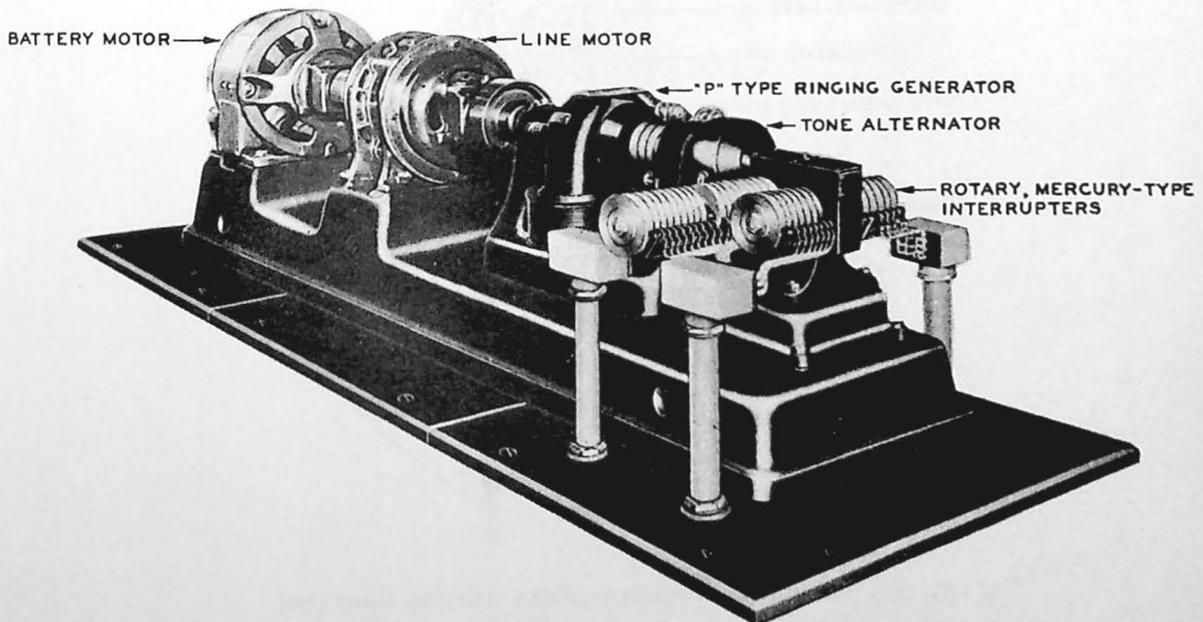


Fig. 1 - General Assembly of Interrupter With Ringing Machine

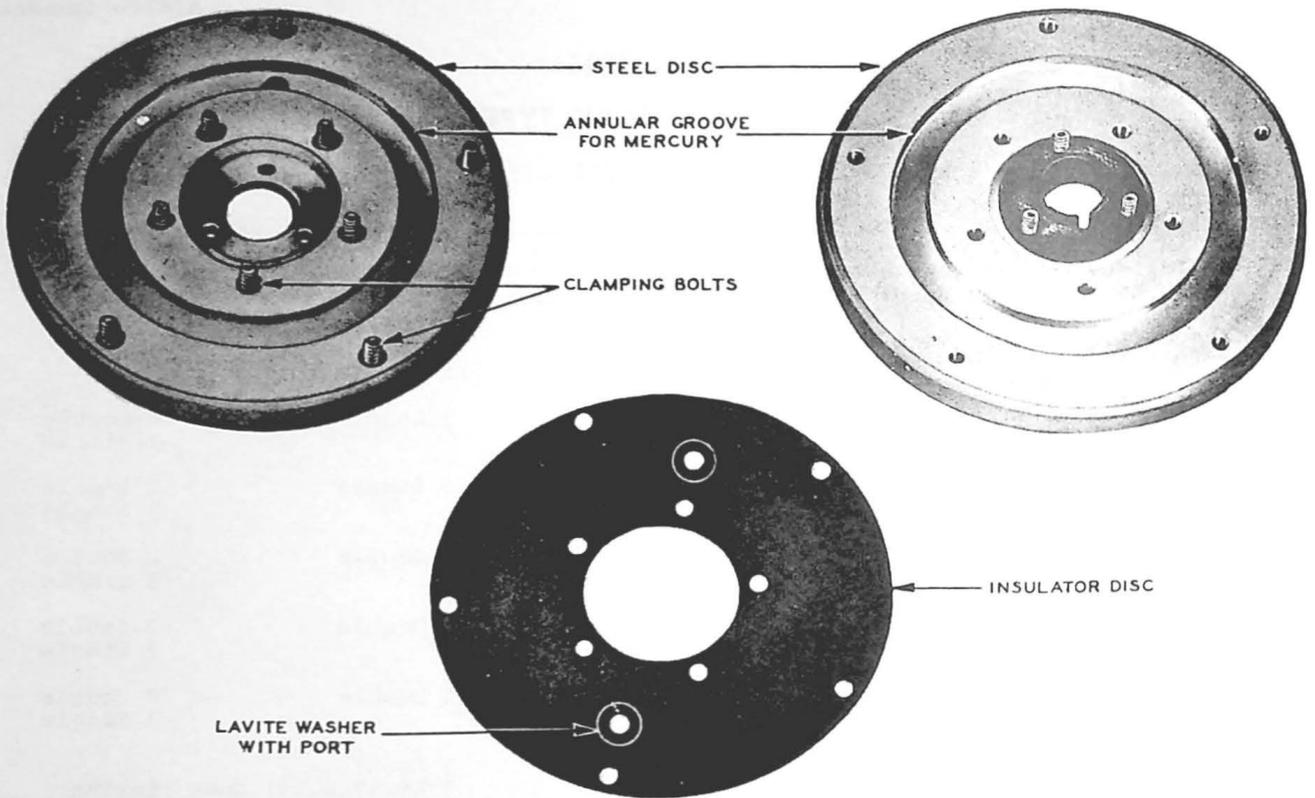


Fig. 2 - Single Interrupter Unit

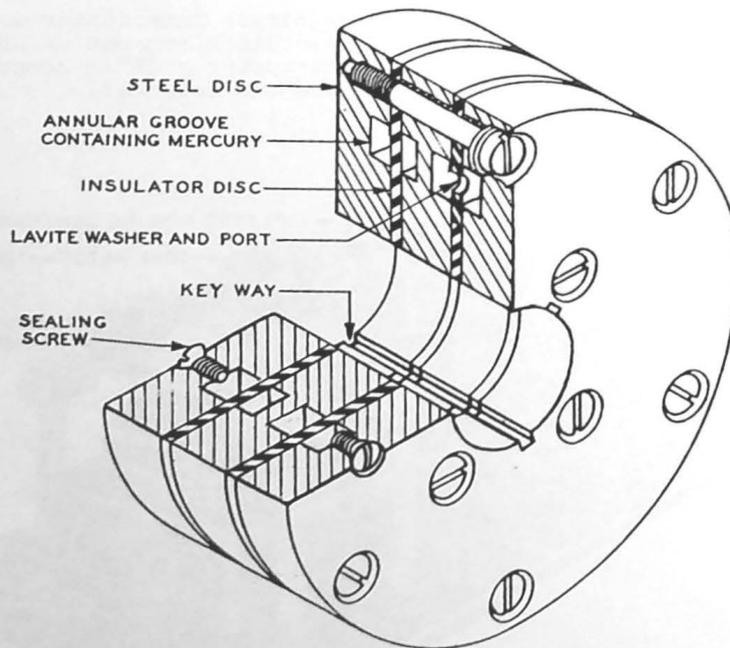


Fig. 3 - Double Interrupter Unit (Cross Section)

2. DESCRIPTION OF APPARATUSRotary Mercury-type Interrupter Units

2.01 The rotary mercury-type interrupter units consist of either two or three steel discs, separated by insulators placed between the discs and the whole clamped tightly together. Annular grooves or channels are cut in one side of the discs and the interrupter units are so assembled that the channel of one disc is adjacent to the channel of the next disc with the insulator separating the discs. On interrupter units having three discs, channels are cut on both sides of the center disc. The insulators have one or more openings or ports connecting adjacent channels. The openings are provided with Lavite washers to withstand the arcing during operation.

2.02 When the interrupter units are partially filled with mercury and rotated on a horizontal axis, contact is made from one disc to the other disc by means of the mercury only when a port of the insulator dips into the pool of mercury. As the interrupter units are hermetically sealed, the air trapped in the mercury channels during sealing will be used up after the interrupter unit has been in operation a short time, leaving the channel with a partial vacuum having nitrogen gas. This tends to suppress the arc (when the current is interrupted) and lessens any burning of the Lavite washer. The number of ports, their spacing around the insulators, the amount of mercury in the channels, and the speed of rotation determine the timing of the interrupter. As the weight of the mercury is large and its frictional effect is small, it remains at the bottom of the unit which acts as a switch when the latter is rotated.

Speed Reduction Unit

2.03 A speed reduction unit with either one or two low-speed shafts is provided. On interrupters having two low-speed shafts, the shafts of all except the 3A and 3B interrupter mountings revolve at different speeds in order to take care of the wide difference in timing between the ringing and signaling interruptions. The low speeds are secured from the same high-speed shaft by means of two worm and worm wheel reductions. The high-speed shaft is connected to the rotor of the tone alternator through a flexible coupling.

2.04 The worm wheels dip into a pool of oil, thereby providing lubrication. Oil is thrown from the worms to a trough on one side and near the top of the gear case. This trough then carries the oil to the two ball bearings which support the high-speed shaft. The ball bearings for the low-speed shafts are lubricated by the oil carried up by the worm wheels. On interrupters having a large number of interrupter units, the low-speed shaft is supported by an additional self-aligning ball bearing. This ball bearing is lubricated separately with grease.

Brush Rigging

2.05 Metal carbon brushes in brush holders similar to the Baylis reaction type are mounted so that the brushes slide on the rims of the discs to maintain connections with external circuits. The type of brush used requires very little maintenance as it is longer wearing than the softer carbon brush used on the old segment-type interrupter and no current is interrupted at the brush.