

KEY EQUIPMENT  
DELAYED RINGING CONTROL CIRCUIT

1. GENERAL

1.01 This Section describes the operation of, and provides information for installing the "Key Equipment - Delayed Ringing Control Circuit."

1.02 The "Delayed Ringing Control Circuit" is an arrangement that involves transfer of ringing and/or lamp signal after a predetermined number of rings to an alternate answering position. This allows the bell and/or lamp signal to operate at the primary answering position only for two or three rings, and if not answered, will signal at the alternate position also.

1.03 This service feature is provided for the 1A1 and 1A2 Key Telephone Systems.

1.04 Delayed ringing is accomplished by the use of an 1102B KTU. See Fig. 1 and 2 for connections.

2. CIRCUIT DESCRIPTION

2.01 The timing circuit consists of the (TM) relay, (TM) transistor, (TM) potentiometer, and the (TM) condenser. When relay (ST) operates, the shunt path around capacitor (TM) is opened and negative 24 volt battery is connected to the (TM) capacitor. When the capacitor charges to approximately 58% of the applied voltage, the (TM) transistor fires and the capacitor discharges through the (TM) relay causing it to operate.

2.02 The timing cycle may be stopped by either the operation of relay (SP) or the release of relay (ST). In either case, the negative battery supply to the (TM) capacitor is broken and the capacitor is discharged through the 100 ohm (A) resistor shunt

path. The (TM) capacitor will discharge in approximately 10 milliseconds, and therefore may be considered to be instantaneous in reset.

2.03 The timing interval is controlled by the (TM) potentiometer for fine adjustment and by options W, X, Y, and Z for coarse adjustments. The timing interval can be varied from .5 seconds to 200 seconds.

2.04 The (TM) potentiometer calibrated scale (in seconds) on the 1102B KTU is to be used as a guide only in determining the time interval setting. However, the scale should not vary more than  $\pm 10\%$ . Precise time intervals must be made by recording the time intervals and varying the (TM) potentiometer until the desired interval is reached.

3. METHOD OF ADJUSTING TIME INTERVAL

3.01 The timing range is controlled as follows:

A. W option (strap), Min .5 sec. to Max 50 secs.

B. X option (E resistor, 499,000 ohms)  
Min. 50.5 secs. to Max 100 secs.

C. Y option (F resistor, 1,000,000 ohms)  
Min 100.5 secs. to Max 150 secs.

D. Z option (G resistor, 1,500,000 ohms)  
Min. 150.5 secs. to Max 200 secs.

To adjust the timing interval proceed as follows:

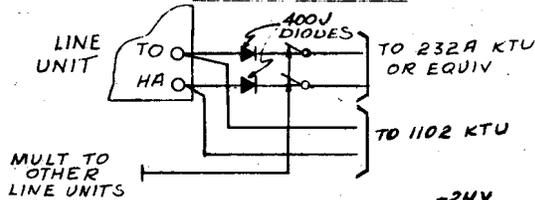
A. Determine the timing interval required.

B. Connect option W, X, Y, or Z as required by sub paragraph (A).

- C. Adjust the (TM) potentiometer to approximate time interval desired.
- D. Manually operate relay (ST).
- E. Record the length of time required for the (TM) relay to operate.
- F. After relay (TM) operates, release relay (ST).
- G. Continue steps C, D, E, and F until desired time interval is obtained.

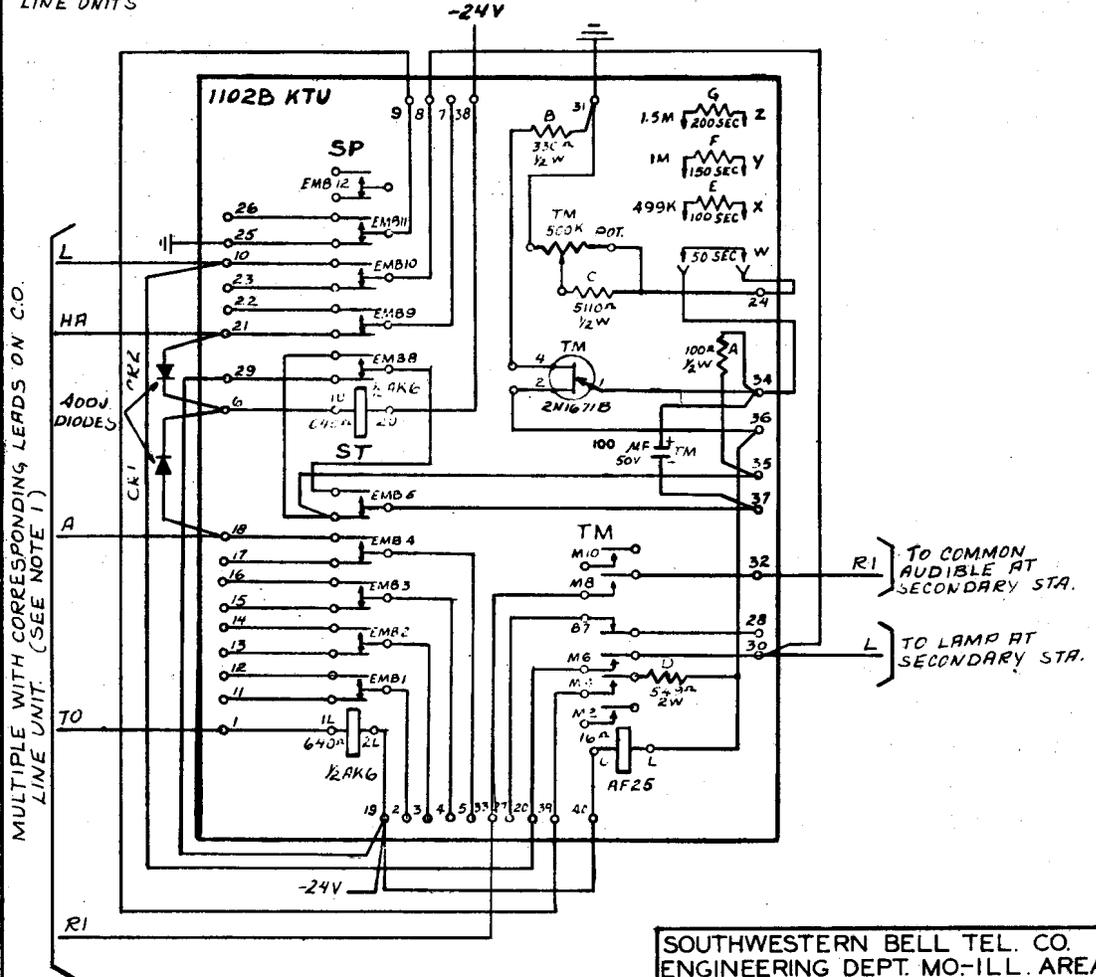
NOTES:  
 1. 230A, 238A & 239A KTU'S MUST HAVE INTERNAL STRAPPING CHANGED TO MAKE AVAILABLE THE "HA" & "TO" LEADS FOR EACH LINE. 202A, B, C, OR D KTU'S ARE RECOMMENDED.  
 IN EITHER CASE DIODES MUST BE CONNECTED IN THE "TO" & "HA" LEADS BEFORE MULTIPLYING WITH OTHER LINE CKT.

TYPICAL CIRCUIT (1A1)



ALTERATIONS			
ISS	DATE	DOWN	ENG. APP
1	5-27-63	BLS	[Signature]
KTU IN FIG. 2 CHANGED TO 1102B. ADDED STRIP BETWEEN PUNCHINGS 29 AND 19. ADDED DIODES CR1 & CR2.			
2	10-15-63	BLS	
3	3-7-66		

FIG. 1. (1A1K.E)



SOUTHWESTERN BELL TEL. CO.  
 ENGINEERING DEPT. MO-ILL. AREA

KEY TELEPHONE SYS.  
 DELAYED SIGNALING CIRCUIT  
 1102B KTU

MS 69000-01      NO. OF SHEETS 2

