

BELL SYSTEM PRACTICES
Teletypewriter and Manual
Telegraph Station and P.B.X.
Installation and Maintenance

SECTION P35.464
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AT&T Co Standard

INSTALLATION OF MECHANICAL END OF LINE INDICATORS ON NO. 14 TYPE TELETYPEWRITERS

1. GENERAL

1.01 This section furnishes information for the installation of the 89960M and 88099M mechanical end of line indicators on No. 14 teletypewriters not so equipped. These indicators unlike the electrical end of line indicator do not require a source of direct current; the lamp associated with the indicators operates from the same power supply as the motors.

1.02 This section is reissued to include information for typing symbols on the carriage return and line feed selections for machines operating at teletypewriter switchboards and for the omission of such typing on customers' machines if typing on these selections is not desired. A few other changes of a minor nature have also been made.

1.03 The 88099M indicator parts differ from the older 87593M indicator parts for which installation information was given in Issue 1 of this section in not being provided with the indicator lamp and housing and are employed where a machine equipped with the older electrical end of line indicator is to be converted to be equipped with the mechanical indicator. The 89960M parts differ from the older 87593M parts in that they include all the 87593M parts with the following in addition:

- 82491M Guard
- 82492M Connection Strip
- 82624M Guard
- 92619M Terminal Block

The 89960M parts are required where the machine has no indicator of any kind.

1.04 The mechanical end of line indicators are furnished on all present operators' teletypewriters and those coded for TWX use. Older machines such as the 14DA, 14DB, 14DD, 14DE and 14DF machines equipped with electrical end of line indicators may require conversion to incorporate the mechanical indicator. Machines for private wire use may also be converted to include an indicator if desired. The parts required for equipping machines with the mechanical indicator depend on what particular parts are already furnished on the machines. For the various cases covered in this section the parts required are listed in the following three paragraphs.

1.05 For private wire machines with six slip connectors between typing unit and base, the following parts will be required.

**With typing on
CR and LF**

89960M SET OF PARTS
6692M PULLBAR
83898M TYPEBAR WITH
PALLET
7634M SPRING (2 Req.)

**Without typing on
CR and LF**

89960M SET OF PARTS
87643M PULLBAR
(Discard 89233M Pullbar
and 83897M Typebar)

1.06 For older TWX machines equipped with electrical end of line indicators (14DA and 14DB) with eight slip connectors between typing unit and base, the following parts will be required:

**With typing on
CR and LF**

88099M SET OF PARTS
6692M PULLBAR
83898M TYPEBAR WITH
PALLET
7634M SPRING (2 Req.)

**Without typing on
CR and LF**

88099M SET OF PARTS
87643M PULLBAR
7634M SPRING (1 Req.)
(Discard 89233M Pullbar
and 83897M Typebar)

1.07 For older TWX machines equipped with electrical end of line indicators (14DD, 14DE and 14DF) with six slip connectors between typing unit and base, the following parts will be required.

**With typing on
CR and LF**

88099M SET OF PARTS
82491M GUARD
82492M CONNECTION
STRIP
82624M GUARD
82619M TERMINAL
BLOCK
6692M PULLBAR
83898M TYPEBAR WITH
PALLET
7634M SPRING (2 Req.)

**Without typing on
CR and LF**

88099M SET OF PARTS
82491M GUARD
82492M CONNECTION
STRIP
82624M GUARD
82619M TERMINAL
BLOCK
87643M PULLBAR
7634M SPRING (1 Req.)
(Discard 89233M Pullbar
and 83897M Typebar)

Note 1: Switchboard operators' teletypewriters are usually desired with typing symbols on CR and LF.

Note 2: Subscriber station teletypewriters ordinarily may not be desired with typing symbols on CR and LF.

2. METHOD OF MOUNTING PARTS ON BASE

2.01 If the base is equipped with parts for the older electrical end of line indicator, these parts, except the signal lamp assembly, should be removed. The old cable for the indicator should also be removed.

2.02 If the base is not provided with an indicator lamp or mounting holes for such a lamp two holes should be drilled and the side of the casting notched as shown in Fig. 1. A drill fixture 82775M may be used if desired, for locating the holes. A hole for mounting the cable clamp should also be drilled and tapped as shown in Fig. 1.

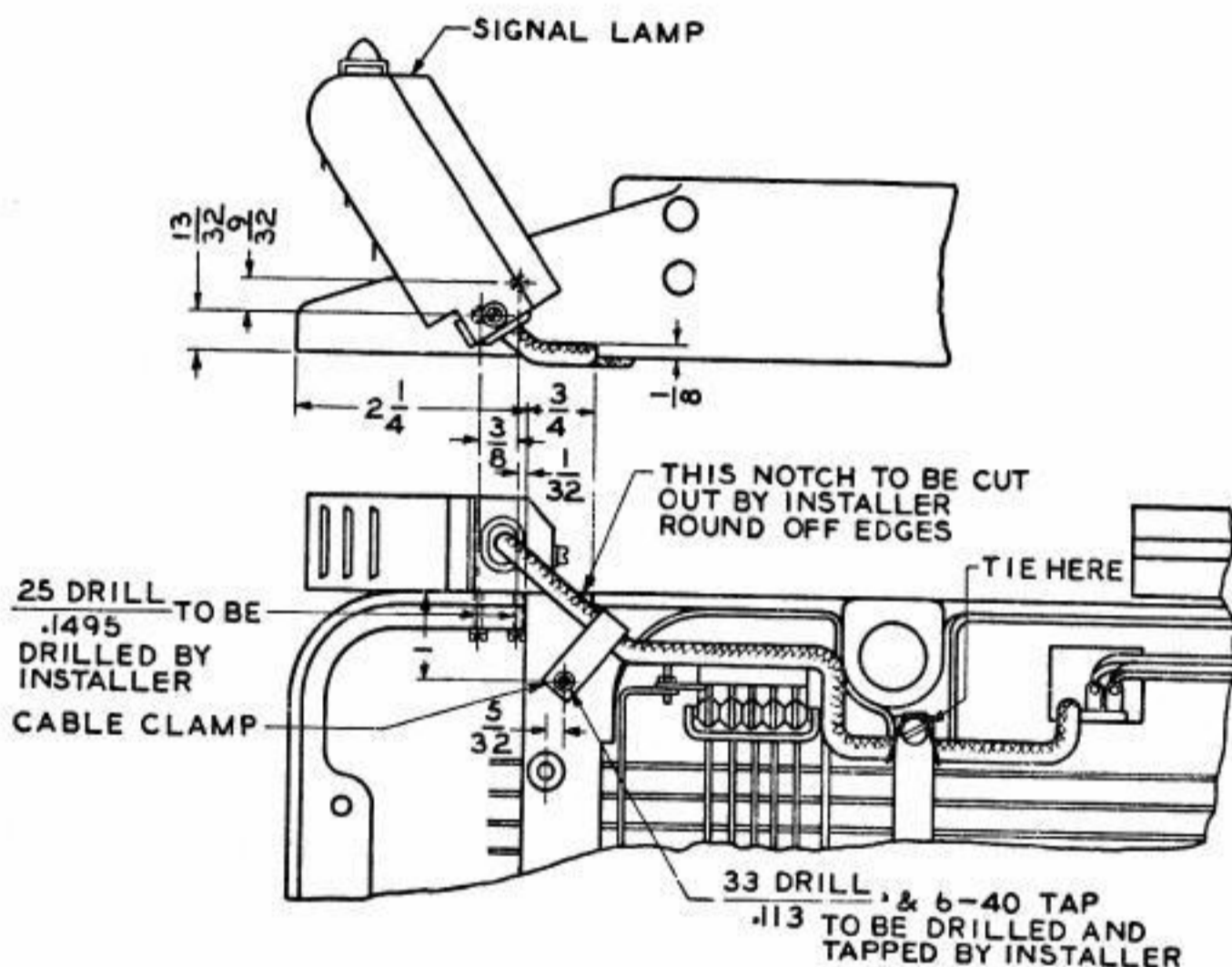
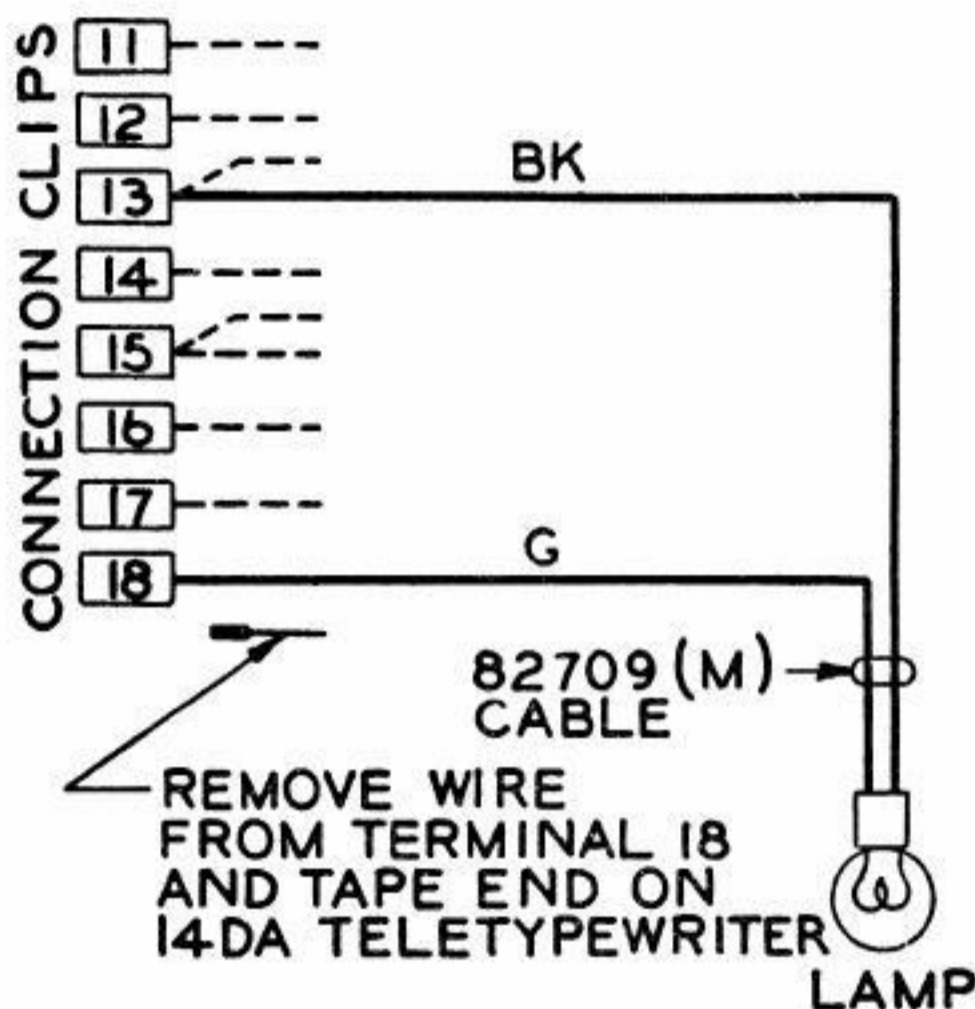


FIG 1

2.03 If the base is equipped with a slip connection strip having only six slip connection springs, it should be modified to provide springs 17 and 18. To do this remove the six connection springs from the old connection strip, discard the old strip, and remount the springs on the 82492M slip connection strip assembly and mount the assembly on the base. (This may be done without unsoldering the wires.)

2.04 Mount the 80825M signal lamp assembly on the outside of the base casting (unless the base is so equipped) using the screws and washers furnished with the lamp assembly.

2.05 Remove the cover of the signal lamp assembly, unscrew the socket shell, and connect the 82709M cable to the socket terminals as shown on the attached wiring diagram, Fig. 2. Replace socket shell and cover.



BASE

FIG. 2

2.06 Run the cable inside the casting and tie it as shown in Fig. 1. Then push the cable through the hole in the casting adjacent to the line contact and tie it to the keyboard cable near the slip connections so that there will be no interference with the keyboard shaft or other parts. Secure the cable by means of the 92204M cable clamp furnished, mounting it by the 1169M screw, 2191M lockwasher and 7002M washer as shown in Fig. 1.

2.07 Connect the other ends of the cable as shown on the wiring diagram in Fig. 2. (On the 14F teletypewriter base of the 14DA teletypewriter the wire originally connecting to slip connection No. 18 should be removed and taped.)

2.08 Mount the 82491M contact guard over the connection springs. On bases with line relay brackets the guard should be mounted on top of the bracket so as to extend further forward.

2.09 On 14DF and 14DD machines run a black wire from terminal 17 to the 300 ohm lamp resistance in the base. This wire may be spliced to the old wire from this resistance if desired. (The other side of this resistance connects to terminal 22.)

3. METHODS OF MOUNTING PARTS ON TYPING UNIT

3.01 For machines where no typing of symbols is desired on carriage return and line feed selections, remove the line feed and carriage return typebars and pullbars if these have not already been removed, and install an 87643M pullbar in the carriage return (comma) position using a standard pullbar spring (7634M).

3.02 For machines where typing of a line and an arrow on carriage return and line feed selections is desired, install the 89233M pullbar and the 83897M typebar with pallet, furnished with the indicator parts, in the carriage return (comma) position. Also install a 6692M line feed pullbar and an 83898M typebar with pallet in the line feed position (period). Both these pullbars require the standard 7634M pullbar spring.

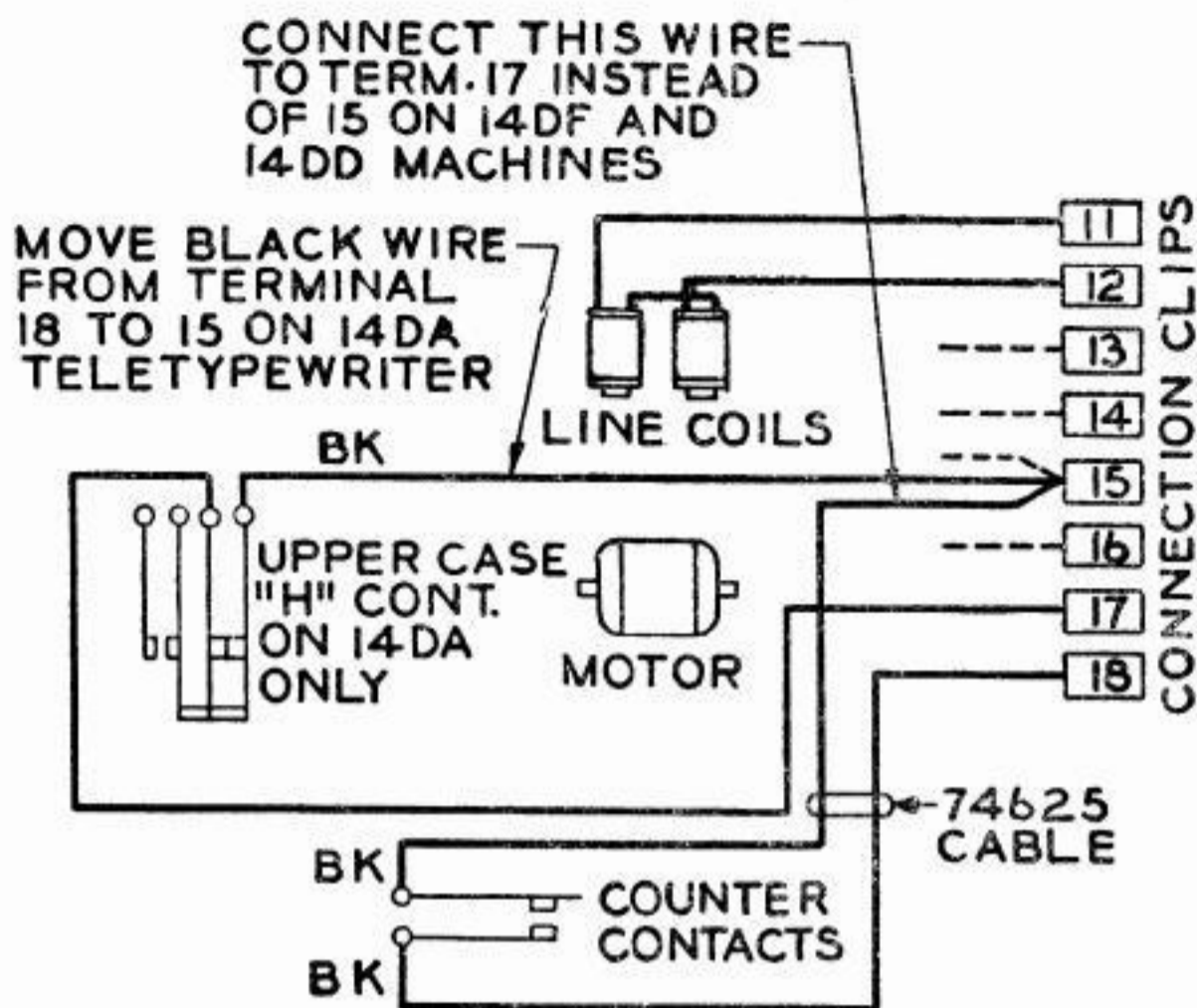
3.03 Remove and discard the right handle (if provided), and the terminal block guard.

3.04 If the typing unit is equipped with a terminal block having only six terminals it should be replaced by the 82619M terminal block. The terminals to which the wires are soldered may be transferred to the new block to avoid soldering.

3.05 Loosen the right hand 7044M reverse arm at the reverse arm shaft and unhook the 3610M locking lever spring. Remove the entire ribbon spool bracket and replace with the 87594M counter unit using the old front mounting screw, nut and lockwasher, and spring bracket. The rear mounting screw is assembled with the counter unit. Replace the locking lever spring and the reverse arm.

3.06 The wires to the teletypewriter magnet should be tied securely so as not to interfere with the bracket or set screws on the bevel gear and collar.

3.07 Connect the 74625M cable as shown in Fig. 3, running it from the contacts downward to the right of the worm shaft, under the counter unit to the terminals. Fasten it in place with the cable clamp on the counter unit



TYPING UNIT
FIG. 3

so that the cable will not interfere with any moving parts. (On the typing unit for the 14DA teletypewriters the black wire originally running to terminal No. 18 should be moved over and connected to terminal No. 15.)

3.08 Install the 82624M guard and fasten the 80400M spring bracket under the front mounting screw of the terminal block guard so that the spring hole lines up with the spring hole of the release bail on the counter unit. Attach the 41974M spring.

3.09 Fasten the 87644M spring bracket to the new handle by means of the 1187M screw and 2669M lockwasher and attach the new 87641M handle with the two 6810M screws and 2669M lockwashers. Attach the new 33038M spring to the spring bracket and the cam lever.

4. INITIAL LUBRICATION

4.01 All moving parts and bearings should be lubricated sparingly with oil except the cam roller, detent drag spring, worm and feed ratchet, which should be greased sparingly at points of contact.