

**VISUALLY IMPAIRED ATTENDANT SERVICE—  
990A LIGHT SENSOR AND 87A CONTROL  
UNIT USED WITH PBX CONSOLES—  
DESCRIPTION, INSTALLATION, AND METHOD  
OF OPERATION**

**1. GENERAL**

**1.01** This section provides information for the description, installation, and operation of the 990A light sensor and 87A control unit used by visually impaired attendants at PBX consoles (Fig. 1) other than DIMENSION® PBX consoles. Visually impaired attendant service for use with DIMENSION PBX attendant consoles is described in Section 554-191-170 and operating procedures are described in Section 554-191-112.

**1.02** When this section is reissued, the reasons for reissue will be listed in this paragraph.

**1.03** The 990A light sensor and 87A control unit provide a method of identifying and locating lighted lamps at the PBX console. An audible tone is heard at the attendant headset when the light sensor passes over a lighted console lamp.

**1.04** The 87A control unit is battery operated and requires battery replacement once a year (6 months if unit is left on 24 hours a day).

**1.05** Refer to Section 534-413-502 for maintenance and trouble locating information.

**2. DESCRIPTION**

**990A Light Sensor**

**2.01** The 990A light sensor is a black, pen-like, hand-held probe approximately 5 inches long and 3/8 inch in diameter. It has a 6-foot flexible cable attached to the top of the sensor with a miniature phone plug at the other end. It is entirely portable and plugs into the 87A control

unit. The sensor will detect both lamps and light emitting diodes (LEDs). The sensitivity is low with green LEDs.

**87A Control Unit**

**2.02** The 87A control unit utilizes the same plastic housing as the 758A loudspeaker. It is 3-3/4 inches wide by 2-3/4 inches deep by 2-1/2 inches high and has a nonskid pad on the bottom. The control unit is available only in black and weighs approximately 1/2 pound.

**2.03** The control unit circuitry is housed in the case along with two 1.5-volt batteries, three jacks on the front, and a 616D modular jack on the side. One jack on the front is for the 990A light sensor and the other two are for the attendant headset. The 616D modular jack on the side of the unit is used to connect the control unit to the console headset jack.

**2.04** The control unit consists of a 900- to 1000-Hz (approximately) oscillator connected to the attendant headset and console, and is controlled by the 990A light sensor. The circuit is arranged to produce a tone in the attendant headset whenever the light sensor detects a lighted console lamp. A volume control is provided but cannot turn the tone off completely.

**2.05** The volume control is accessible through a .150-inch hole (use a 1/8 inch or smaller blade screwdriver) on the right side of the control unit. Turning the control clockwise increases the volume.

**NOTICE**

Not for use or disclosure outside the  
Bell System except under written agreement

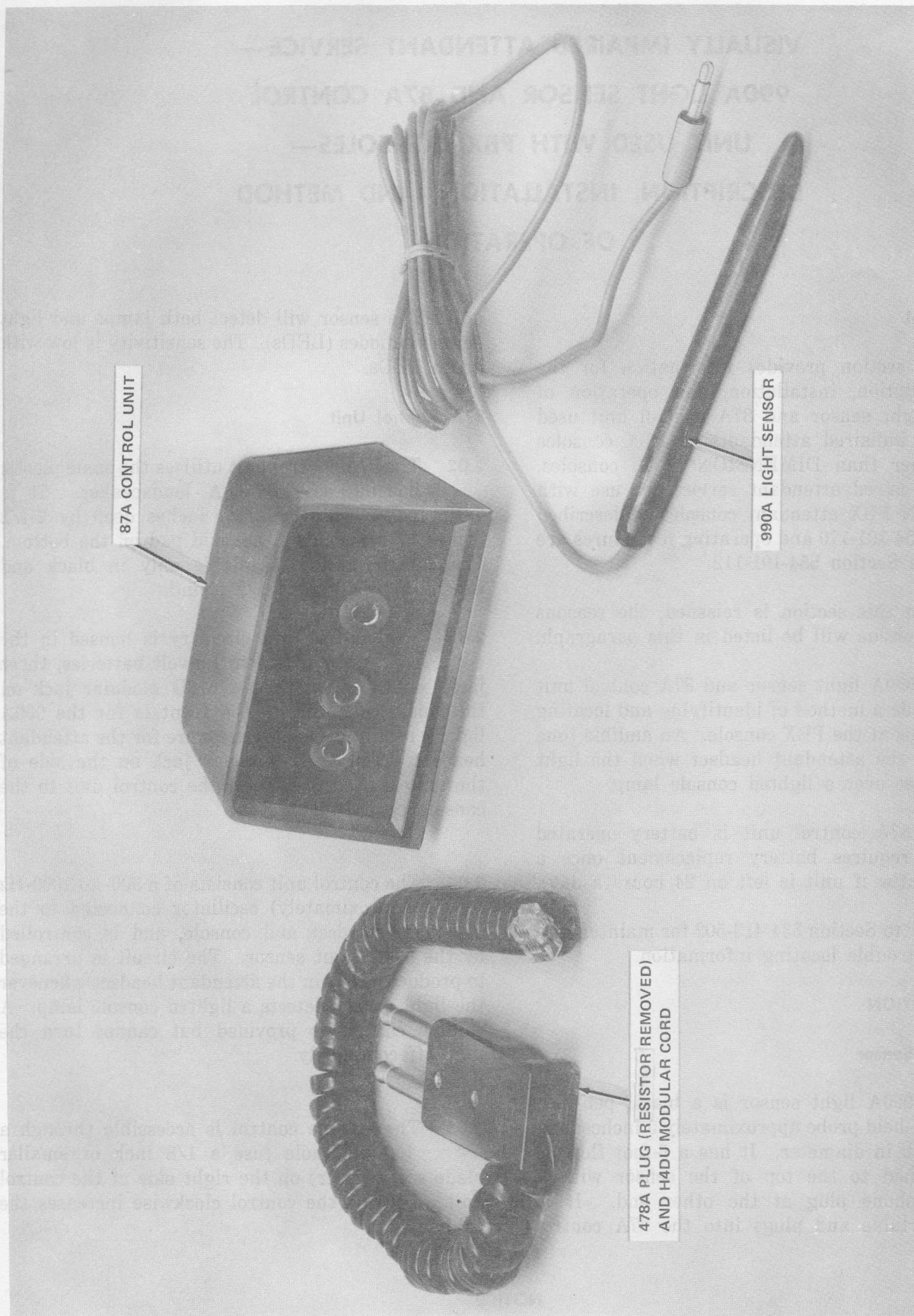


Fig. 1—Control Unit, Light Sensor, and Cord Assembly

### 3. ORDERING

**3.01** The following equipment is required for use at each attendant position used by visually impaired attendants.

ONE ATTENDANT POSITION	
QUANTITY	DESCRIPTION
1	87A Control unit
1	990A Light sensor
1	H4DU Modular cord
1	478A Plug

### 4. INSTALLATION

**4.01** The 87A control unit may be placed in any convenient location near the console with which it will be used. The connecting cord assembly (an H4DU modular cord and 478A plug) is connected between the console headset jacks and the 616D modular jack on the control unit. The attendant headset is plugged into the left two jacks on the control unit.

**4.02** Remove the 100-ohm resistor from the 478A plug. To remove the 100-ohm resistor from the 478A plug, remove the two screws (using a 1/8 inch blade screwdriver or equivalent) on the case and disassemble. Using wire cutters, clip the resistor

leads at the plugs center conductors. Remove the resistor and reassemble the case.

**4.03** Plug the 990A sensor connecting cord into the right jack on the control unit. This turns the control unit on, and the sensor and control unit are ready for use.

**4.04** Attach (as required) the 990A light probe cable to the attendant headset plug (using tape, etc) to prevent the light probe cable from becoming unplugged without the attendant's knowledge.

### 5. METHOD OF OPERATION

**5.01** When ringing is heard for an incoming call, the attendant guides the 990A light probe along the console lamps and hears a steady tone for a lighted lamp, or a beeping tone for a flashing lamp (sensitivity is low with green LEDs). If the tone level is incorrect, the tone may be adjusted (paragraph 5.03).

**5.02** The 87A control unit may be left in the headset circuit when in use by sighted attendants (paragraph 4.01). The 990A light sensor should be removed to shut off battery power to the 87A control unit. The control unit does not affect normal telephone use.

#### Volume Adjustment

**5.03** The tone volume may be adjusted to the attendant's personal level by holding the probe near a lighted lamp (LED) as the adjustment is made. Using a 1/8 inch or smaller blade screwdriver, turn the volume control clockwise to increase volume.

**5.04** The 990A light sensor plug should be removed when the unit is not in use to extend battery life (paragraph 1.04).