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

SECTION P35.580
Issue 1, May, 1935
AT&T Co. Standard

NO. 14 AND NO. 20 TYPE TRANSMITTER-DISTRIBUTORS

LOCATING AND CLEARING TROUBLE

1. GENERAL

1.01 This section describes certain troubles which may occur in connection with the No. 14 and No. 20 types transmitter-distributors and outlines means for overcoming them. Each point is discussed in detail below.

1.02 Errors resulting from faulty transmission of signals will normally not be apparent at a sending station unless receiving equipment is associated with the transmitter-distributor. Trouble in the transmitter-distributor may, therefore, be evident only when errors are typed at receiving stations which are remote from the transmitter-distributor.

2. FOREIGN MATERIAL ON THE FACE

2.01 Faulty transmission of signals may result from the presence of foreign material, particularly oil or grease, on the face. This may usually be determined by inspection.

2.02 Difficulty resulting from oil or grease on the face may be minimized by carefully following the instructions for the lubrication of the No. 14 transmitter-distributor.

2.03 An additional means of preventing oil or grease from reaching the face is the installation of the 84759(M) Transmitter-Distributor Gear Guard. Transmitter-distributors now being manufactured are equipped with this guard.

3. CROSSES BETWEEN SEGMENTS ON THE FACE

3.01 Particles of metal, such as brush material breaking off in service, may lodge between segments on the face and cause crosses between the segments. Usually a cross of

this nature is of short duration but it may cause serious errors in the transmitted signals.

3.02 When a cross between segments does not clear itself immediately, it may be located by the following procedure:

(a) Remove the transmitter-distributor from the mounting plate.

(b) Insert a piece of blank tape in order to depress the tape pins.

(c) Test adjacent segments and between each segment and the common ring for a cross, using any readily available means of checking continuity.

3.03 Difficulty from crosses between segments will be reduced to a minimum by careful trimming of the brush at each inspection and adjustment to meet the requirements and procedures for transmitter-distributors.

3.04 An additional procedure which is recommended on all transmitter-distributors sending neutral (open and close) signals is to disconnect and tape the wire between the upper contact block and the start segment. Transmitter-distributors now being manufactured have this wire removed and taped at one end.

3.05 Crosses may occur between the inner ring on the transmitter-distributor face and the stop segment because of metallic particles which may be brushed into the scored line on the face during cleaning of the face. In order to prevent difficulty of this nature a 3/16" hole should be drilled in the bakelite portion of the face midway between the rings with the center of this hole on the scored line. This will produce a break in the path of any conducting material which may lodge in the scored line. Transmitter-distributors now being manufactured have this hole drilled in the face.

4. BRUSH BOUNCE

4.01 With the specified brush adjustments brush bounce should not occur while the brush arm is rotating continuously. When the tape becomes taut and raises the auto stop lever the stop arm is released by the stop magnet and stops the brush arm rotation somewhat abruptly. When this takes place brush bounce may occur with worn or improperly adjusted brushes, which results in the transmission of a momentary open during the stop signal. This may cause a false start of the receiving teletypewriter equipment. As a result of this a single false character or as many as 10 or 12 may be typed by the receiving equipment, depending on whether the tape remains

stopped or has started to feed again immediately due to the perforation of additional characters.

4.02 Errors caused by brush bounce of this nature are likely to be infrequent at stations where the perforator operator keeps well ahead of the transmitter-distributor. However, where the operator keeps barely ahead of the transmitter-distributor so that the auto stop lever is frequently operated, errors from this cause may be more frequent. They are usually difficult to locate since the trouble is evident only through the reception of errors and is immediately cleared by readjustment of the brushes, which is the first step usually taken by a repairman in connection with reported trouble on a transmitter-distributor. Difficulty of this nature may not be traced to the transmitter-distributor unless observers are located at both the transmitting and receiving stations.

4.03 Reconditioning of the brushes and checking their adjustment will eliminate trouble from brush bounce of this nature temporarily on machines using any but the latest type of brush holder.

4.04 Where this difficulty is frequently encountered it may be eliminated by installing the latest type of brush arm which mounts the brushes 3/16″ nearer to the distributor face and consequently reduces the angle between the brush and the face. The new brush holder may be used on transmitter-distributors already in the field and will be provided on units manufactured in the future. Brushes without stiffeners should be used.

4.05 The new parts required to modify an existing transmitter-distributor are

86815(M) Brush Holder Arm
86816(M) Bushing
86819(M) Collar