

# MANUAL KEY SWITCHING

## ARRANGEMENTS FOR DATA SERVICES

### INSTALLATION AND CONNECTION DIAGRAMS

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**1. GENERAL**

**1.01** This section contains information for various manually operated key switching arrangements as a standard for data services. These arrangements are primarily intended for Bell System-provided data sets.

**1.02** Reference to a specific data set will not be found in this section unless required for special applications.

**1.03** The power supply and mounting arrangements will not be found in this practice. Only the equipment operating voltages, if applicable, will be shown on the drawings. Identification, installation, and connections for the various keys involved with these arrangements will be found in other sections of the 590-YYY-ZZZ division.

**1.04** Provisions for relay switching and supervision of data set arrangements will be found in Sections 590-YYY-ZZZ.

**1.05** A brief description of the circuit and both the wiring application (actual connections) and functional block (simplified schematic) diagram will be shown in the following parts of this practice.

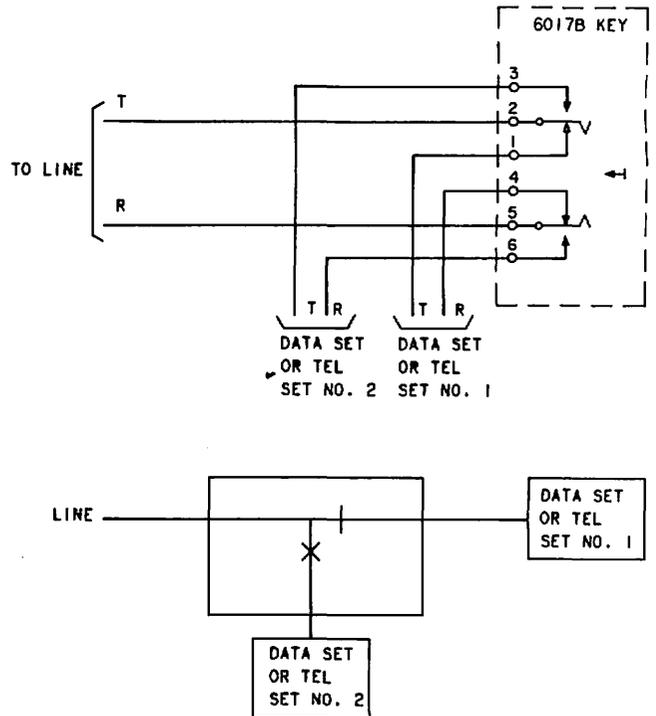
**1.06** In this practice, the word "termination" or "station apparatus" would normally be referring to a data set or telephone. It can, however, be used to cover a combination data

set/telephone plus any other type of equipment or apparatus used on a telephone line.

**2. CIRCUIT DESCRIPTION**

**A. Manual Transfer—One Line to Either of Two Stations**

**2.01** Figure 1 provides an alternate switched termination of two data stations to one line. The line is normally terminated by data set number one. When the 6017B-type key is operated, the line is then terminated by data set number two.



**Fig. 1—Manual Transfer—One Line to Either of Two Stations**

2.02 Apparatus requirement: Key, 6017B

B. Manual Transfer—Two Lines to Two Stations—Reversed Operation

2.03 Figure 2 provides dual termination of two lines with line transfer capabilities between the two data sets. Line 1 is normally terminated by data set number one, and Line 2 is normally terminated by data set number two. The operation of the 6017J-type key transfers the termination of Line 1 to data set two, and Line 2 is then terminated by data set one.

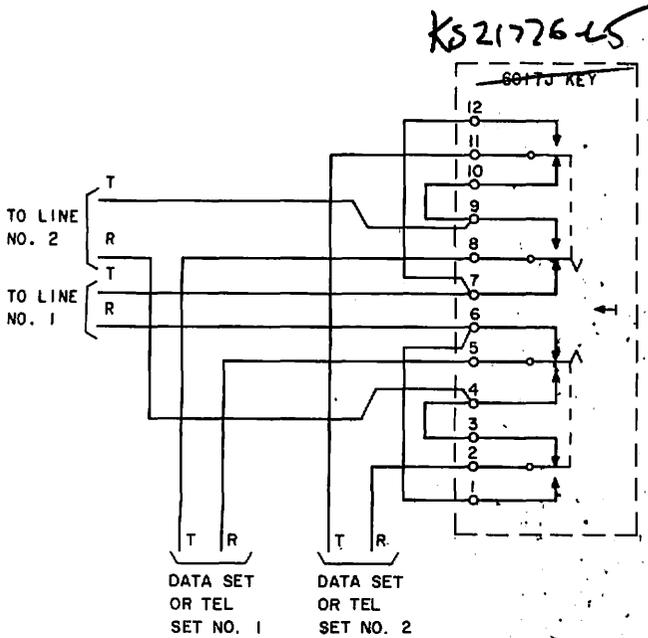


Fig. 2—Manual Transfer—Two Lines to Two Stations—Reversed Operation

2.04 Apparatus requirement: Key, 6017J

C. Manual Exclusion

2.05 Figure 3 provides for a talk-data capability over a single line with exclusion of all other stations. The operation of the key excludes other stations from the line.

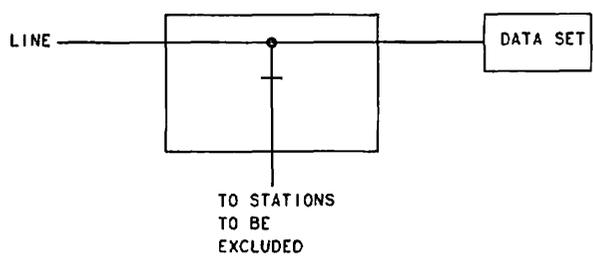
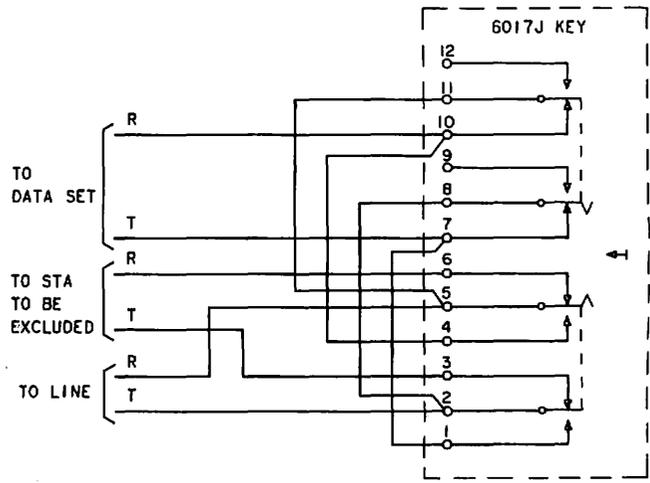


Fig. 3—Manual Exclusion

2.06 Apparatus requirement: Key, 6017J

D. Full-Duplex Operation Using Two 2-Wire Lines

2.07 The arrangement shown in Fig. 4 provides for full-duplex operation of a 4-wire data set utilizing two 2-wire lines. There are no provisions made for automatic answering and reversing the transmit and receive channels. In addition, there is no provision for the control of the data set ready (DSR) interface lead. All established connections must be verified, especially when the trunk hunt feature of the central office is used on consecutively numbered lines.

2.08 The two lines are normally used for regular manual or dial-type voice communications. All data connections are first established by voice communication means. The transfer key is then operated, transferring the two voice lines to the 4-wire data set through two repeat coils. Data-type communication is then established. The 120H repeat coils are inserted in the two lines for isolation purposes, thereby removing CO or PBX

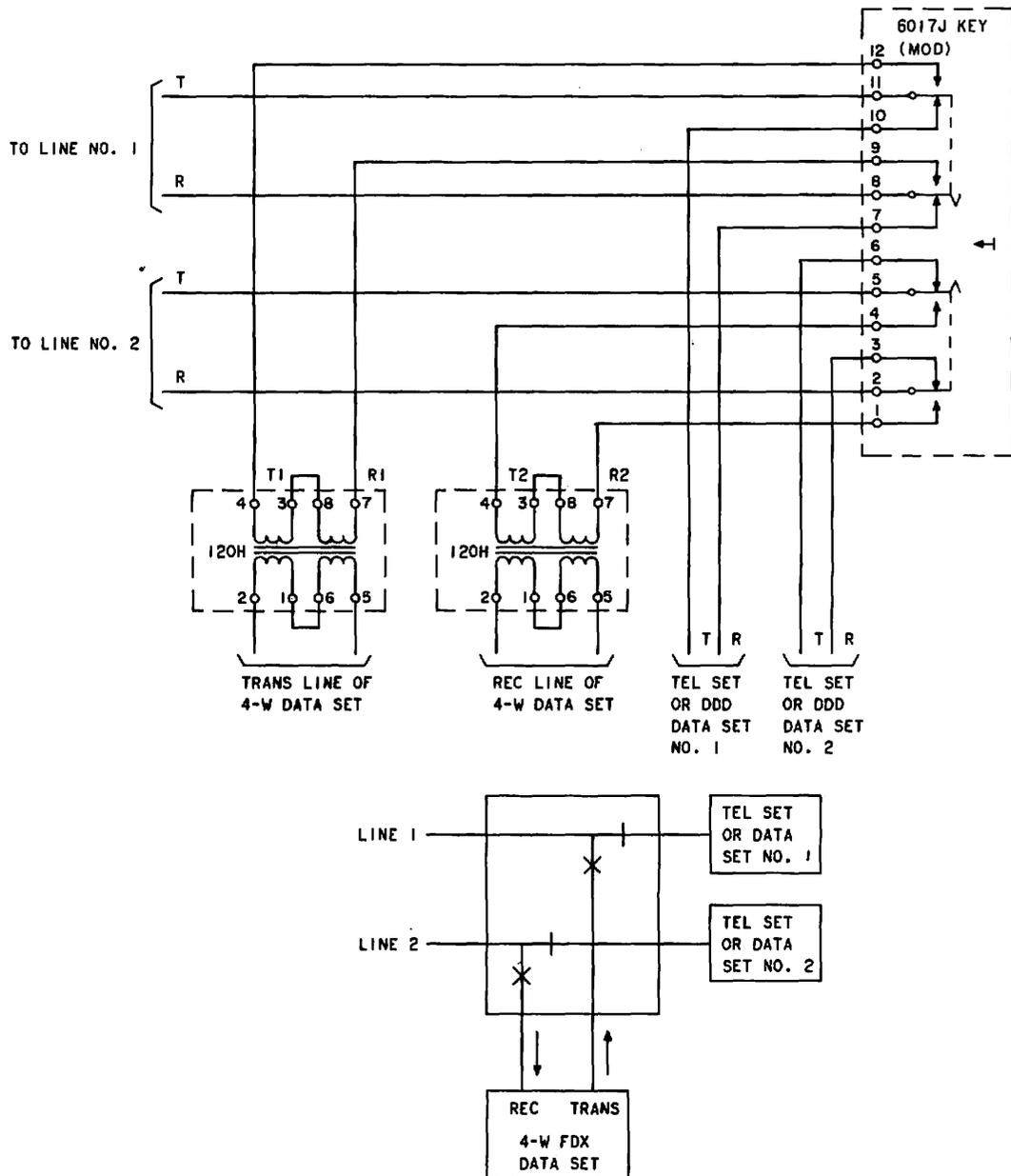


Fig. 4—Full-Duplex Operation Using Two 2-Wire Lines

battery from the data station apparatus and holding the CO or PBX equipment in the off-hook condition.

2.09 The handsets are placed in the on-hook condition while in the data mode.



*The 6017J key contacts must be modified to provide a make-before-break type operation. This may be accomplished with a spring-bending*

*tool. This is required to hold up the CO or PBX equipment established by the voice communication connection until the repeat coils are placed across the line in the data mode.*

2.10 At the completion of the data transmission cycle, the key *must* be returned to the normal position thereby releasing all CO and PBX equipment.

2.11 **Apparatus requirements:** Key, 6017J (Mod) and Coil 120H, 2 required

**E. Manual Transfer—Three Stations to One Line**

2.12 The transfer of one CO or PBX line to any one of three data sets or other station apparatus is shown in Fig. 5.

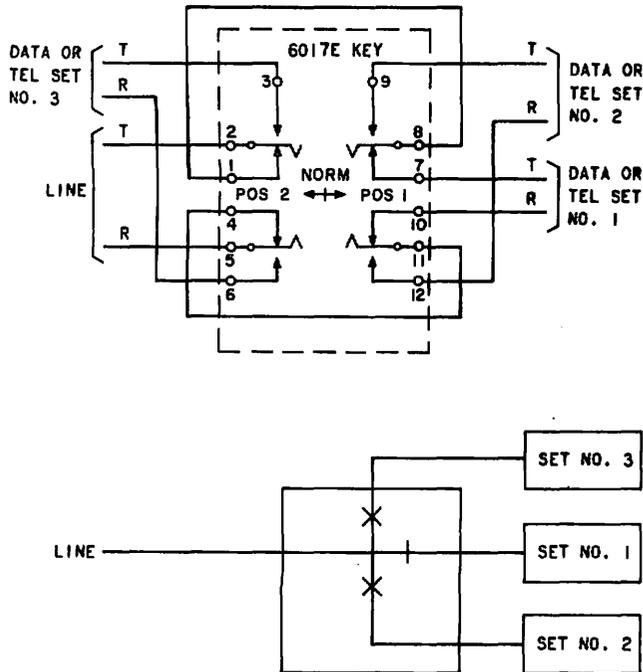


Fig. 5—Manual Transfer—Three Stations to One Line

2.13 The line is normally terminated by the station apparatus at data or telephone set one with the key in its center position or normal. When the key is moved to position one, the line is then terminated by station apparatus at data or telephone set two. When the key is moved to position two, the line is then terminated by apparatus shown at data or telephone set three.

2.14 **Apparatus requirement:** Key, 6017E

**F. Manual Transfer Arranged for Alternate Use of a Third Data Set on Either of Two Lines**

2.15 Figure 6 provides access of a third data station or apparatus to either of two normally terminated lines.

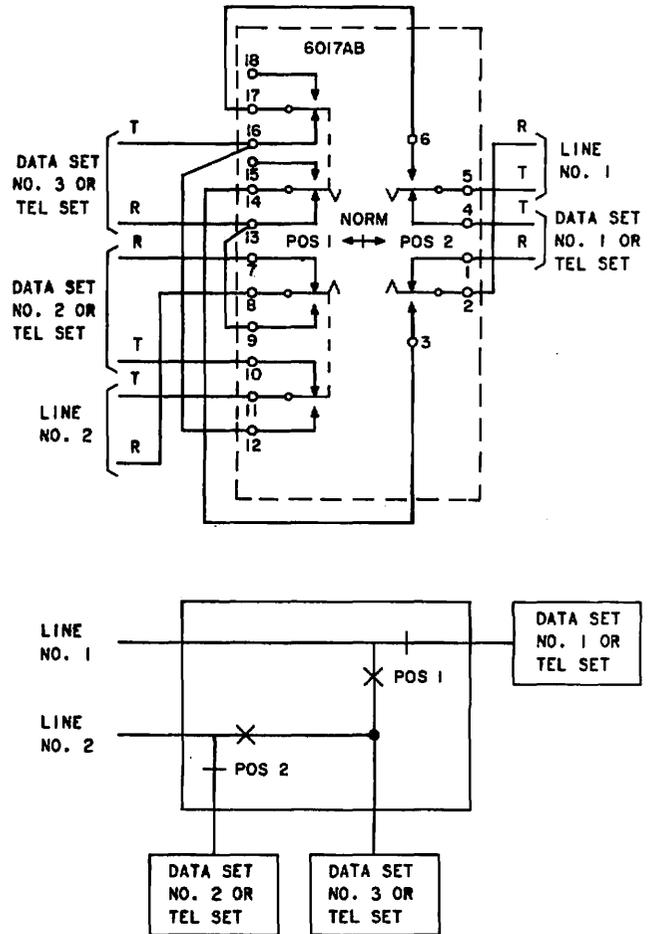


Fig. 6—Manual Transfer—Alternate Stations to Two Lines

2.16 In the center position, the two lines are terminated by two individual data stations or apparatus. By operating the key to either position one or two, the third station may use either line one or two, respectively.

2.17 **Apparatus requirement:** Key, 6017AP

**G. Transfer and Warning Light—Arrangement Provides Connection to One Line and PBX Termination**

2.18 The arrangement shown in Fig. 7 provides regular data service over the normal line one. The second line may be a WATS, FX, or other type line terminating in a PBX or other station apparatus. The external telephone set is not terminated.

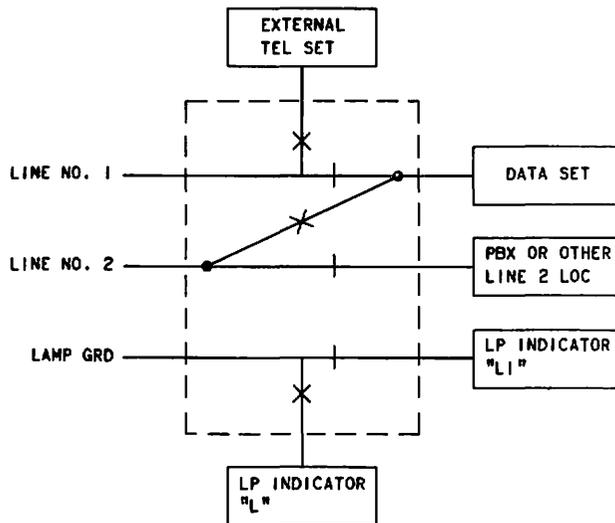
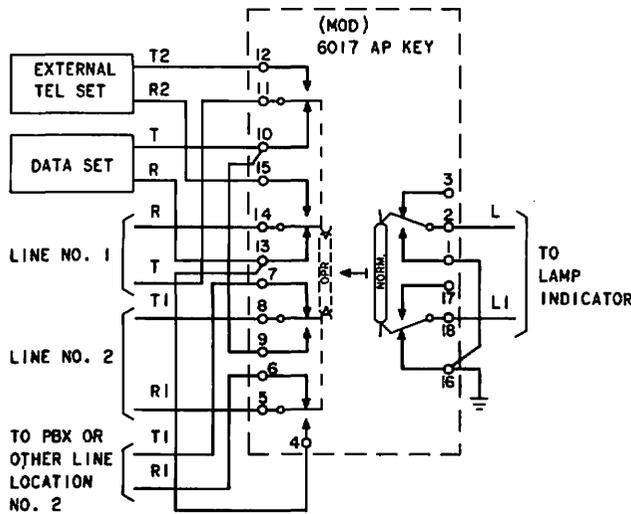


Fig. 7—Transfer and Warning Light—Arrangement Provides Connections to One Line and PBX Termination

2.19 In the operated condition, line one is now terminated by the telephone set or station apparatus. The data set is transferred to line two, thereby extending the coverage to the PBX circuits.

2.20 A lamp indicator circuit is also provided to give a status indication of each line.

2.21 Modification in the 6017AP must be made in the following manner:

- ⊙ Remove resistors between terminals 6 and 9, 4 and 18, 12 and 17, 13 and 18, and 10 and 15.
- ⊙ Remove strap between terminals 7 and 12.
- ⊙ Place a strap between terminal 16 and the upper right spring, number 3, of the key.

2.22 **Apparatus requirement:** Key, 6017AP (Mod)

3. REFERENCES

3.01 For additional information pertaining to manual key switching arrangements for data services, refer to the following section and schematic drawing (SD):

- ⊙ 512-210-101—Separately Mounted Keys—6017 and 6026 Lever-Type—Identification, Installation, and Connection
- ⊙ SD-69160-01—Station Systems Equipment Units