

# SHEET INDEX

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DWG. NO.	RECORD NO.	DATE	Drawn	APP.
1	1	7-7-59	WJC	GRT
20	20	4-20-60	RJK	LNA

## SHEET INDEX NOTES

1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

## SUPPORTING INFORMATION

CATEGORY	NO.

REPLACING SD-66510-01

SD-69360-01

Station Systems  
ORDER TURRET NO. 4  
Attendant Key And  
Telephone Circuit

AT&TCO  
STANDARD

SD-69360-010

4 SHEETS

BELL TELEPHONE LABORATORIES  
INCORPORATED

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## CIRCUIT NOTES:

101.	DESIG	AMP	POTENTIAL FUSED	OPTION	ONE PER
		1-1/3	-20V TALKING	X	ORDER
			-38V TALKING	W	TURRET
			-48V TALKING	Y	POS
BATTERY SYMBOL			VOLTAGE RANGE		
		-20			14-26V
		-38			32-46V
		-48			44-50

102.	FEATURE OR OPTION			PROVIDE			
			FIG.	APP OR WIR	QUANTITY		
KEY CKT	WHEN THE LEADS BETWEEN THIS CKT AND THE SUPV CAB. ARE IN THE SAME CABLE WITH OTHER TALK CKTS AND THE LENGTH OF THE LEADS IS:	200 FT OR LESS	1	Z	1 PER ATT POS		
		MORE THAN 200 FT		V			
		14-26 VOLTS		X			
		32-46 VOLTS		W			
	BATTERY VOLTAGE	44-50 VOLTS		Y			
DIAL CKT			2		1 PER ATT POS		
TEL, RING AND HOLD CKT	BATTERY VOLTAGE	14-26 VOLTS	3	X	1 PER ATT POS		
		32-46 VOLTS		W			
		44-50 VOLTS		Y			
TEL JACK CKT			4		1 PER ATT POS		
HEAD TEL SET			5		1 PER ATT POS		

NETWORK VALUES			
NETWORK		RESISTANCE IN OHMS	CAPACITANCE IN UF
NO.	CODE		

RECORD OF FIGURES, WIRING AND APPARATUS CHANGES						
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				STD	A&M	MD

105. TO OBTAIN SOMEWHAT LONGER LAMP LIFE IN INSTALLATIONS WITH AVERAGE VOLTAGE NEAR 26 VOLTS, THE TELEPHONE COMPANY MAY REPLACE A3 LAMPS WITH A1 LAMPS IF THE ILLUMINATION FROM THE A1 LAMPS IS SATISFACTORY.
106. NOT MORE THAN 20 LAMPS SHALL BE CONNECTED TO THE L LEAD OF FIGURE 1.

## CIRCUIT NOTES: (CONT)

107. WHEN PBX AND ORDER TURRET BATTERY SUPPLIES ARE CONNECTED TO THE SAME GROUND, GRD A AND GRD B OF FIGURE 4 MAY BE OBTAINED FROM THE SAME SOURCE. WHEN PBX AND ORDER TURRET BATTERY SUPPLIES ARE CONNECTED TO SEPARATE GROUNDS, GRD A SHALL BE OBTAINED FROM THE ORDER TURRET BATTERY SUPPLY AND GRD B SHALL BE OBTAINED FROM THE PBX BATTERY SUPPLY.
108. ADJUST (2W) KEY SO THAT CONTACT b SHALL MAKE BEFORE EITHER CONTACT a BREAKS. NONCLICK REQUIREMENTS ON CONTACTS c AND d.
109. ADJUST (0G) AND (INC) KEYS SO THAT CONTACT c SHALL MAKE BEFORE EITHER CONTACT b BREAKS. ADJUST (0G) KEY SO THAT CONTACT d SHALL BREAK AFTER BOTH CONTACTS c HAVE MADE.

## INFORMATION NOTE:

301. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS.

FIGURES AND OPTIONS ON THIS DWG		
CKT FIG.	APP OR WIRING	
1	Z	
2	Y	
3	X	
4	W	
5	V	

ORDER TURRET NO. 4

SD-69360-011

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## DRAWING

ISSUE

1

2D

AJK

FIG.1  
KEY CKT

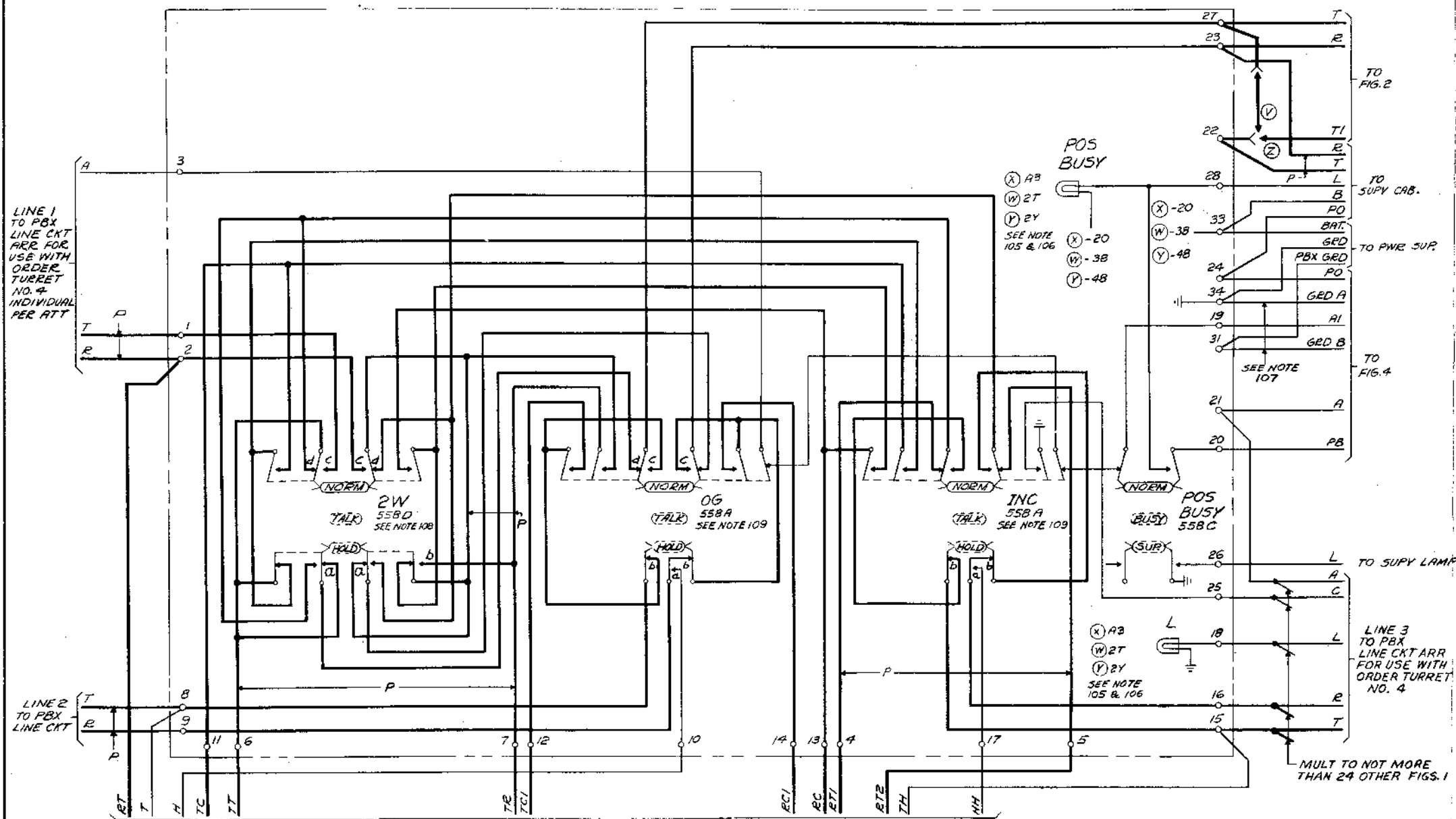


FIG.2  
DIAL CKT

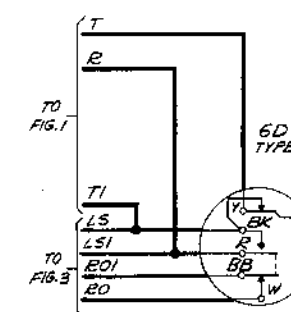


FIG.5  
HEAD TEL SET

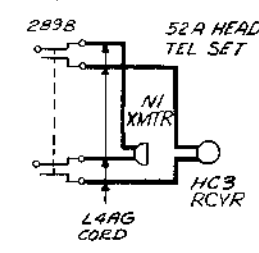


FIG.4  
TEL JACK CKT

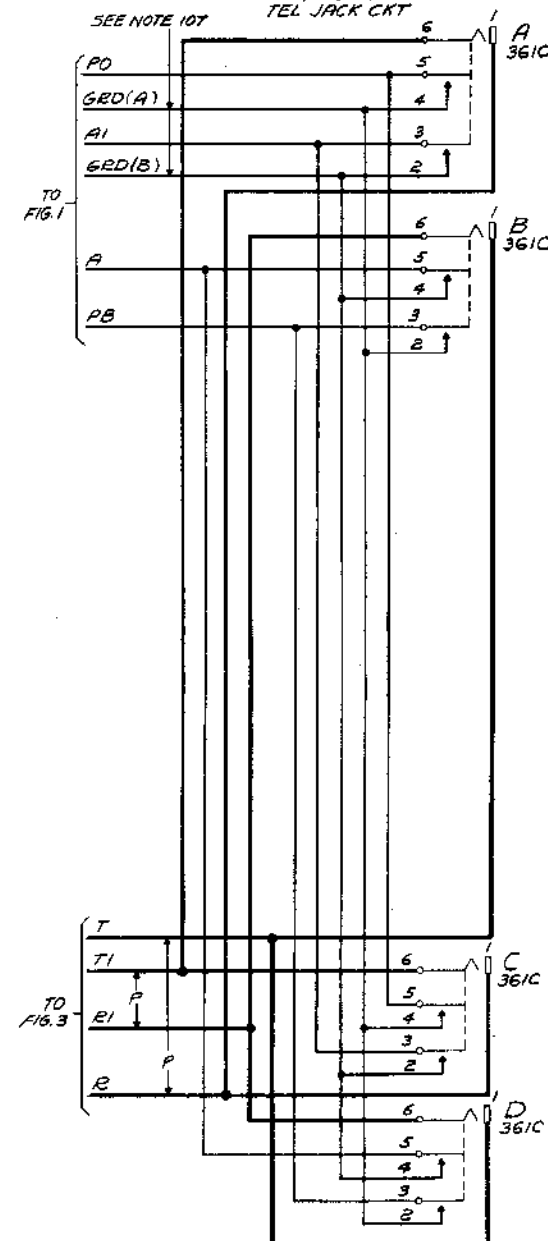
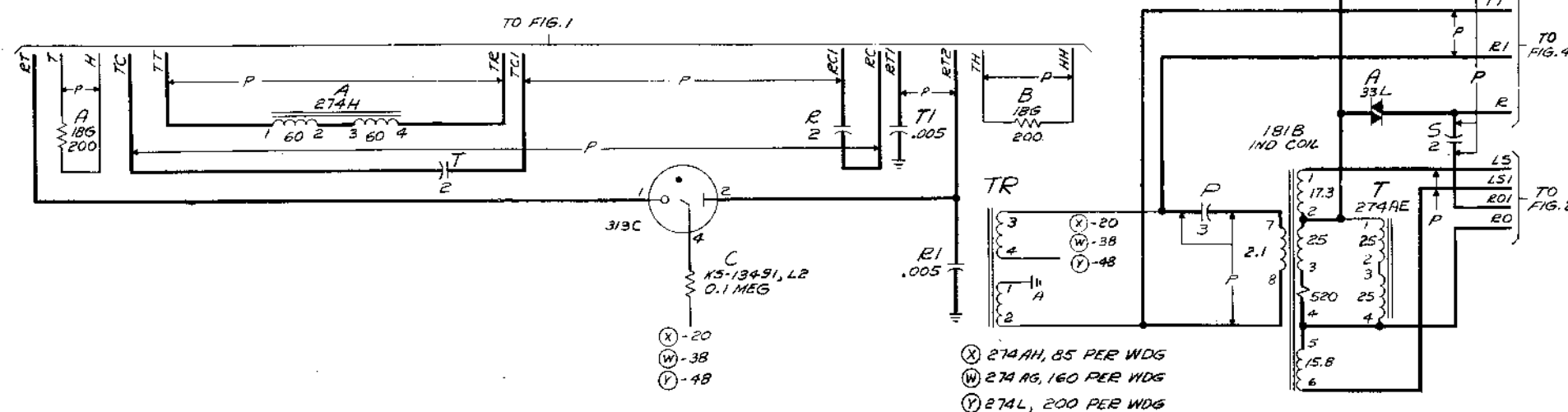


FIG.3  
TELEPHONE, RING AND HOLD CKT



ORDER TURRET NO. 4

SD-69360-012



STATION SYSTEMS  
ORDER TURRET NO. 4  
ATTENDANT KEY AND  
TELEPHONE CIRCUIT

0. CHANGES

0.1 CHANGED AND ADDED FUNCTIONS

None.

0.2 CHANGES IN APPARATUS

None.

0.3 CHANGES IN CIRCUIT REQUIREMENTS  
(Not Associated with 0.2 Above)

None.

0.4 DESCRIPTION OF CIRCUIT CHANGES

- (a) In note 102, Fig. 1 and 3 the options have been changed to agree with schematic.
- (b) In Fig. 1 options have been changed to agree with fusing information.
- (c) In Fig. 2 the Y-BK contacts of dial are shown closed.

- (c) Extending the attendant telephone circuit to the line by means of a (TALK) key.
- (d) Signaling a PBX attendant.
- (e) Holding the incoming line by operating a (HOLD) key.
- (f) Originating a call to stations at the manual or dial PBX to which the order turrets are connected either when line 1 is or is not being held.
- (g) Establishing, when necessary, a conference circuit between the attendant and parties on lines 1 and 2 or between the attendant and parties on lines 2 and 3.
- (h) Lighting a (POS BUSY) lamp at the attendant position when the plug of the attendant telephone set is inserted in the telephone jack and the (POS BUSY) key is in the operated position.
- (i) Indicating to the attendant that a call is waiting on the overflow line 3.
- (j) Rendering the attendant position nonreceptive to incoming calls when the plug of the attendant telephone set is not fully inserted into the telephone jacks.
- (k) Connection to a supervisor jack for service observing.
- (l) Lighting a lamp at the supervisor cabinet to indicate that the plug of the attendant telephone set is inserted in the telephone jacks.
- (m) Lighting the supervisor lamp to signal the supervisor.
- (n) Answering calls on line 3 while line 1 is being held.

1. PURPOSE OF CIRCUIT

This circuit is used in connection with the No. 4 order turret as an Attendant Key and Telephone Circuit. Its use permits an attendant to establish connections for incoming or outgoing service with PBX attendants and permits the order turret attendant to originate calls to station at the manual or dial PBX to which the order turret is connected.

2. WORKING LIMITS

None.

3. FUNCTIONS

This circuit provides means for :

- (a) Making an attendant position receptive to incoming calls.
- (b) Giving the attendant a ringing tone as an indication that an incoming call has been connected to the position.

4. CONNECTING CIRCUITS

When this circuit is listed on a key sheet, the connecting information thereon is to be followed. The following are typical connecting circuits:

- (a) Order Turret No. 4 - Station Line Circuit.
- (b) Order Turret No. 4 - Supervisor Circuit.

(c) Standard Manual or Dial PBX Station Line Circuits.

## 5. DESCRIPTION OF OPERATION

### 5.1 POSITION OCCUPIED AND AWAITING CALLS

When the attendant inserts the plug of the telephone set into the telephone jacks, ground is connected to the "A" lead to line 1 to indicate to the PBX attendant that a particular order turret is occupied. Ground is connected to the "A" lead of line 3 to indicate to the PBX attendant that one or more order turrets in a common group are being occupied. Ground is also connected to the "PO" lead to the supervisor cabinet to indicate to the supervisor that the order turret attendant position is occupied. The attendant position is now in the condition to receive calls.

### 5.2 ATTENDANT ANSWERS ON LINE 1

When the PBX attendant receives the indication that a particular order turret is occupied, incoming calls to the PBX will then be connected to line 1 when this attendant is desired. The PBX attendant rings on the line and the order turret attendant receives the ringing induction in the receiver through the (ET) tube and the (T1) and (R1) capacitors as an indication that a call is connected with line 1. When the (2W) key of line 1 is operated to the (TALK) position, ringing tone is removed from the operator's receiver, and a bridge is connected across the tip and ring through the (T) inductor and the 181B induction coil as an indication to the PBX attendant that the call has been answered. The attendant is now connected with the calling customer. The attendant may hold the calling customer by operating the (2W) key to the (HOLD) position. In this case, the (A) inductor is bridged across the tip and ring to hold the line. The attendant may signal the PBX operator by flashing the (2W) key from the (TALK) to the (NORMAL) position and back.

### 5.3 ATTENDANT ANSWERS CALL ON LINE 3

When the PBX attendant establishes a connection on line 3, the (L) lamp is lighted at all order turrets in the common group. The call is then answered by the first available attendant, who operates the (INC) key to the (TALK) position. A call can be answered when line 1 either is or is not being held. With this key operated, the (L) lamp is extinguished and the attendant is not connected with the calling customer. The attendant may hold the calling customer by operating the (INC) key to the (HOLD) position, in which case the (B) resistor is bridged across the tip

and ring of the line. The attendant may signal the PBX operator by operating the (POS BUSY) key to the (BUSY) position and flashing the (INC) key from (TALK) to (NORMAL) and back.

### 5.4 ATTENDANT ORIGINATES CALL TO PBX SWITCHBOARD

The attendant may originate a call to the PBX operator or through a dial PBX to a dial station. If a calling customer is connected with line 1, the attendant operates the (2W) key from the (TALK) to the (HOLD) position and bridges the (A) inductor across the line to hold the connection. If a calling customer is connected with line 3, the attendant operates the (INC) key from the (TALK) to the (HOLD) position and bridges the (B) resistor across line 3 to hold the connection. The attendant is now free to originate a call on line 2 by operating the (OG) key to the (TALK) position and passing the number to the operator. If, however, the call is to a dial PBX, the (OG) key is operated to the (TALK) position and, when dial tone is received, the position dial is operated. When the (OG) key is operated to the (TALK) position, the "A" lead to PBX line No. 1 is opened to indicate to the PBX attendant that the line is not receptive to incoming calls. When the dial is moved off normal, the 181B induction coil and the (T) inductor are short-circuited by the off-normal contacts of the dial, and the ring side of the operator's receiver is opened to prevent the attendant from hearing the make and break of the dial. After the called line has answered, the calling line and the attendant may be connected when the (2W) or (INC) key is again operated to the (TALK) position. It is possible to arrange a conference between lines 1 and 2 and between lines 3 and 2. If there is no call connected with line 1, the order turret attendant may make an outgoing call on this line by operating and releasing the (POS BUSY) key which opens and closes the "A" lead to line 1 and flashes the (A) lamp to signal the PBX attendant.

### 5.5 BUSY KEY

If the attendant wishes to perform other duties to the exclusion of the calling customer, the (POS BUSY) key is operated to the (BUSY) position. The operation of this key opens the "A" lead to line 1 at the PBX attendant position and retires the (A) lamp, indicating that the attendant position is not receptive to incoming calls. The operation of this key to the busy position also lights the (POS BUSY) lamp at the order turret as an indication to the order turret attendant that incoming calls have been blocked out. When the (POS BUSY) key is operated to the (SUP) position, the supervisory lamp lights to signal the floor supervisor.

#### 5.6 MONITORING

Monitoring on an attendant position is accomplished by connecting the tip and ring leads from the jack of the supervisor circuit directly to the tip and ring leads shown connected to the attendant telephone circuit. This feature applies only when dial monitoring is not required.

#### 5.7 CLICK REDUCTION

The (A) varistor is provided to reduce the intensity of the clicks in the operator's receiver. With normal talking voltage the resistance of the varistor is very high, but on an increase of voltage the resistance is reduced to a very low value which reduces the intensity of clicks heard in the operator's receiver.

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DEPT 5113-TET-LHA