

INSTRUCTIONS FOR INSTALLING THE 193646 MODIFICATION KIT TO CONVERT A MODEL 28 SELECTIVE CALLING KEYBOARD SEND-RECEIVE SET EQUIPPED WITH STUNT BOX ARRANGEMENT "AFQ" (OR OTHER "AN" BASED ARRANGEMENT) FOR USE WITH TELETYPE AUTOMATIC SWITCHING PACKAGE (TASP) - 60 WPM OPERATION ONLY

1. GENERAL

a. The 193646 Modification Kit, when installed on a Model 28 Selective Calling Keyboard Send-Receive Set equipped with stunt box arrangement "AFQ" (or other "AN" based arrangement) converts the set so as to make it usable with Teletype Automatic Switching Package (TASP). The kit is intended for 60 WPM operation only.

b. After installation of the kit in the printer set, the stunt box will have facilities to perform the following functions differing from the normal functions in the selective calling printer set:

(1) Keyboard lock on sequence "Blank-Blank-any character or function" instead of "double Blank".

(2) Signal bell on sequence "Blank-Blank-any character or function" in addition to "print" condition upper case "S".

c. The suppression code bar shift mechanism contains a slide bar capable of being operated by either of two sequences of double character CDC's instead of by a maximum of four single-character CDC's including the group call directing character "U".

d. The signal generator contacts and the signal line break switch contacts in the keyboard are shunted momentarily by stunt box contacts on sequence "Blank-Blank-any character or function".

e. A switch assembly, equipped with one normally closed and two normally open contact arms, is installed in the stunt box. This assembly provides for the operation of the momentary keyboard shunt, signal bell and extinguishing the busy light on "Line Break". A normally open contact arm replaces a normally closed contact arm in the existing switch assembly to allow for operation of the ready light.

f. All functions performed by the stunt box are facilitated without allowing more than eight function bars to operate at any one time. The signal bell contacts in the stunt box are provided with spark suppression.

g. The kit provides a 60 volt lamp, a lamp socket and resistor with cable and necessary mounting hardware to mount a "Ready Light" on the left forward lamp bracket of the LAC Cabinet. The left forward indicator light red lens is replaced with a yellow lens. The "Blank" keylever is removed from the keyboard and replaced with a button plug.

h. The 162224 Modification Kit, included in the subject kit, provides lock bar contacts for Model 28 Keyboards LK6 and up. When the 162224 Kit is used in conjunction with the subject kit, operation is as described in Specification 50030S (furnished with 162224 Kit) except that the electrical keyboard lock contacts cause the signal line break key as well as the signal generator to be shunted without mechanically locking the keyboard.

i. The 193646 Modification Kit consists of:

2	2191	Washer, Lock	4	153440	Bar, Function (Universal)
2	3598	Nut	2	153604	Pawl
5	4703	Spring, Function Bar	1	154197	Plug, Button
2	5816	Washer, Insulating	6	154613	Latch
2	7002	Washer, Flat	3	154689	Strap
5	72522	Wick, Felt	1	155100	Bar, Func. (Select A)
7	90517	Spring, Lever	1	155106	Bar, Func. (Select G)
1	102092	Screw	1	155597	Lens, Yellow
1	117608	Nut, Speed	3	155751	Sleeve, Insulating
1	121245	Clamp, Cable	1	155948	Slide
1	151558	Nut, Speed	1	157105	Cable Assembly
1	151631	Screw	1	157159	Plate
1	152089	Latch	1	157206	Lever
4	152121	Lever	1	157207	Lever
3	152298	Lever	5	157240	Spring, Pawl
3	152653	Pawl	1	157887	Arm, Contact
3	152669	Bar, Function (Blank)	1	162224	Mod. Kit, Locking Bar
2	152704	Bar, Function (Any Char. or Func.)	1	172552	Contacts Switch Assembly
1	153400	Lamp, Incandescent (60 volt)	1	178535	Network w/Terminals
			1	193647	Cable Assembly
			1	193648	Cable Assembly

j. For parts referred to, other than those included in the modification kit, see Teletype Model 28 Page Printer Set Parts Bulletin 1149B.

## 2. INSTALLATION (Figures 1, 2, and 7)

a. Install the 162224 Locking Bar Contacts Modification Kit in accordance with Specification 50030S furnished with the kit except:

- (1) Connect the brown wire of the 162335 Cable Assembly to terminal

F1 of the keyboard connector as shown in Figure 3.

(2) Before replacing the keyboard hood which is removed to replace the "KBD LOCK" and "KBD UNLK" keytops, remove and discard the "Blank" keylever assembly and install, in its place, the 154197 Button Plug; secure with the 117608 Speed Nut.

(3) Do not replace the typing unit.

b. Remove the stunt box from the typing unit in accordance with disassembly instructions in Teletype Model 28 Page Printer Set Adjustment Bulletin 217B (Bell System refer to standardized information).

c. Remove and discard the 121243 Cable Clamp from the 157151 Bracket. Retain its mounting screw, nut, and washers.

d. Remove the auxiliary connector from the 157151 Bracket.

e. Remove and discard or retain, and install parts in the designated slots of the stunt box as specified in the TABLE (Figure 1). Also, see Figure 7.

f. Mount the 172552 Switch Assembly in the stunt box over slots 33 to 36 using the screws and washers furnished with the switch. Discard the two nuts furnished with the switch, which are used for handling only.

g. Rewire the stunt box as shown in Figure 3 using the 157105 Cable Assembly and 154689 Straps. Place a 155751 Insulating Sleeve on each of the three loose leads at the auxiliary connector before soldering; slip the insulating sleeves over the connections after soldering.

h. Remove and discard the 155941 Slide Bar in the print condition shift mechanism. Install the 155948 Slide Bar in its place.

i. Remove and discard the 157899 Normally Closed Contact Arm over slot 26 in the stunt box. Install the 157887 Normally Open Contact Arm in its place.

j. Replace the stunt box in the typing unit by reversing the procedure used in removing it.

k. Route the 157105 Cable Assembly along with the 157104 Stunt Box Cable. Place them both into the 121245 Cable Clamp and secure to the 157151 Bracket using the screw, nut and washers (retained in Paragraph 2. c.) previously used with the smaller cable clamp.

l. Reinstall the auxiliary connector on the 157151 Bracket.

m. Route the 193647 Cable Assembly along with the 162370 Cable Assembly from the auxiliary cabinet terminal blocks to the cabinet terminal blocks. Connect the green wire from terminal C11 to C59, and connect the black wire from terminal C9 to C58, as shown in Figure 4.

n. Remove and discard the red 155083 Lens and speed nut over the left forward lamp mounting bracket. Replace them with the yellow 155597 Lens and 151558 Speed Nut.

o. Mount the 153455 Resistor (part of 193648 Cable Assembly) to the 157159 Plate using the 102092 Screw, two 5816 Insulating Washers, a 7002 Washer, a 2191 Lock Washer and a 3598 Nut. See Figure 2.

p. Mount the 157159 Plate and lamp socket (part of 193648 Cable Assembly) to the left forward cabinet lamp socket bracket, using the 151631 Screw, 7002 Washer, 2191 Lock Washer and 3598 Nut (see Figure 2). The holes in the 157159 Plate are not centered; mount the plate so that the distance from the holes to the dome is maximum.

q. Place a 153400 Lamp into the lamp socket. Position the socket so that the lamp filament is directly beneath the yellow lens and the lamp approximately 1/16 inch from the lens.

r. Route the 193648 Cable alongside of the 157158 Cable (part of the 157157 Busy Light Modification Kit) to the standard and auxiliary cabinet terminal blocks. Tie the 193648 Cable as necessary. Connect the white lead to terminal C40, and connect the purple lead to terminal C45, as shown in Figure 4.

s. Connect the 178535 Network to terminals C29 and C30. See Figure 4.

t. Replace the typing unit.

u. Connect cabinet terminal C13 to C11 instead of to C9. See Figure 4.

### 3. WIRING (Figures 3 through 6)

Refer to Figures 3 through 6. Bell System refer to standardized wiring plans.

### 4. ADJUSTMENTS AND LUBRICATION

#### NOTE

Unless specified otherwise, refer to Teletype Model 28 Printer Set Adjustment Bulletin 217B for adjustment and lubrication procedures. Bell System refer to standardized adjustment and lubrication information.

a. 162224 Locking Bar Contacts Modification Kit - Refer to Specification 50030S furnished with the kit.

b. Spring tension requirements and lubrication of the shift slide and the function bars, levers, and pawls with their springs.

c. Suppression Code Bar Shift Mechanism.

d. Refine Blocking Bail Adjustment, if necessary.

## 5. THEORY OF OPERATION

### NOTE

Only arrangement and operation of typing unit components differing from those required for selective calling are described below.

a. The latch release bail is operated on receipt of the "End of Message" signal "Line Break" sensed as double blank instead of on receipt of the sequence "FIGURES-H".

b. Two sets of normally closed contacts, wired in series and arranged to operate the busy light, are mounted in the stunt box.

(1) The circuit is broken, extinguishing the busy lamp, on receipt of the "End of Message" signal "Line Break" sensed as the sequence "Blank-Blank-any character or function" instead of on receipt of the sequence "FIGURES-H". No "LETTERS" function bar associated with a self-blocking function lever is used.

(2) The function lever associated with the "ANY CHARACTER OR FUNCTION" function bar remains latched so the light remains out until the operator contacts TASP again. He does this by depressing the "SEND" key, thereby removing the shunt from the "LINE BREAK" key and then depressing the "LINE BREAK" key. The light turns on momentarily and shuts off until he receives a "GA" (go ahead) light from TASP. It then remains on until the "Line Break-End of Message" signal is transmitted.

(3) The other set of normally closed contacts, wired in series with the above contacts, are operated upon the receipt of a "Space" code combination. When the contacts associated with the "Line Break" sequence are closed, the busy lamp will flicker upon the receipt of every "Space" combination.

c. The non-latching normally open contact in the stunt box, wired in parallel with the "print" condition upper case "S" contact, operates on the "Start of Message" or "End of Message" signal "Line Break" sensed as the sequence "Blank-Blank-any character or function". This sequence rings the

signal bell as well as upper case "S".

d. The non-latching normally open Stunt Box contact, wired in parallel with the keyboard shunt lock bar contacts in the 162224 Modification Kit, operates to momentarily shunt the keyboard on the same "End of Message" signal "Line Break" sensed as the sequence "Blank-Blank-any character or function" that operates the lock bar contacts. This contact is necessary to correct a time lag in response of the mechanical linkage to the lock bar contacts.

e. The normally open stunt box contact that controls the ready light operates when the typing unit is in the "select" condition on the sequence "GA" (go ahead). The function lever associated with the "Select A" function bar stays latched and the lamp remains lit until the stripper blade unlatches the function lever during the blades next operation.

f. The ready light indicator lamp is a 60 volt, 6 watt bulb. It is wired in series with a 600 OHM resistor so that it can be operated by a normally open stunt box contact from 110 volts without drawing more than 100 milliamperes.

g. Operation of the 162224 Modification Kit to Add Lock Bar Contacts is the same as described in Specification 50030S except:

(1) Motion of the lock bar to the left when the "SEND" key is depressed operates the normally closed contact to remove the shunt from the "LINE BREAK" key in addition to the signal generator.

(2) Motion of the lock bar to the right, when the "REC" key is depressed or when the keyboard lock sequence (a "line break" sensed as the sequence "Blank-Blank-any character or function") is transmitted, allows the contact to close placing a shunt on the "LINE BREAK" key in addition to the signal generator.

h. The only way a "BLANK" code combination may be transmitted shall be for the "BREAK" key to be depressed. This is assured by the removal of the "BLANK" key.

i. Schematic wiring for a typical outlying station Model 28 KSR set stressing features included by this conversion is provided in Figures 5 and 6.

j. When motor control relay is used, the line shunt relay is controlled from the power switch only.

k. The line shunt relay line shunt contacts shunt the signal line break switch in the keyboard and the signal generator contacts as well as the line relay operating winding.

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TABLE

SLOT	OPERATION	LATCH OR SPRING PLATE	FUNCTION LEVER	LEVER SPRING 90517	FUNCTION BAR	BAR SPRING 4703	FUNCTION PAWL	PAWL SPRING 157240 WICK 72522
6	Discard				155120			
	Retain	152089	152298					
	Install	154613	152121		153440 for CDC			
7	Install	152089 from 6	152298 from 6	90517	153440 for CDC	4703	152653	157240 72522
8	Install	154613	152121	90517	153440 for CDC	4703	152653	157240 72522
9	Install	152089	152298	90517	153440 for CDC	4703	152653	157240 72522
10	Discard				152666			
	Install				152669			
11	Discard				152673			
	Install				152669			
15	Remove & Retain	152660	152641	90517	152669	4703	152653	157240 72522
24	Install	154613	152121	90517	155106	4703	152653 from 15	157240 72522
25	Retain	152660	152641		153437			
	Install	154613 from 26	152298		155100			
26	Discard		154646		152665			
	Retain	154613						
	Install	152660 from 25	152641 from 25		153437 from 25			
29	Install	152660 from 15	152641 from 15	90517 from 15	152669 from 15	4703 from 15	153604	72522 157240 FROM 15
30	Discard				152666			
	Retain					4703	152653	157240 72522
31	Discard				152673			
	Retain						152653	
	Install				152669		153604	
32	Install	154613	152121	90517				
33	Install	154613	152298	90517	152704	4703 from 30	152653 from 30	72522 157240 FROM 30
34	Install	154613	152121 from 35	90517	152669 from 36	4703	152653 from 31	157240 72522
35	Retain		152121					
	Install		157207					
36	Discard		152642					
	Retain				152669			
	Install		157206		152704			

FIGURE 1.

50173S

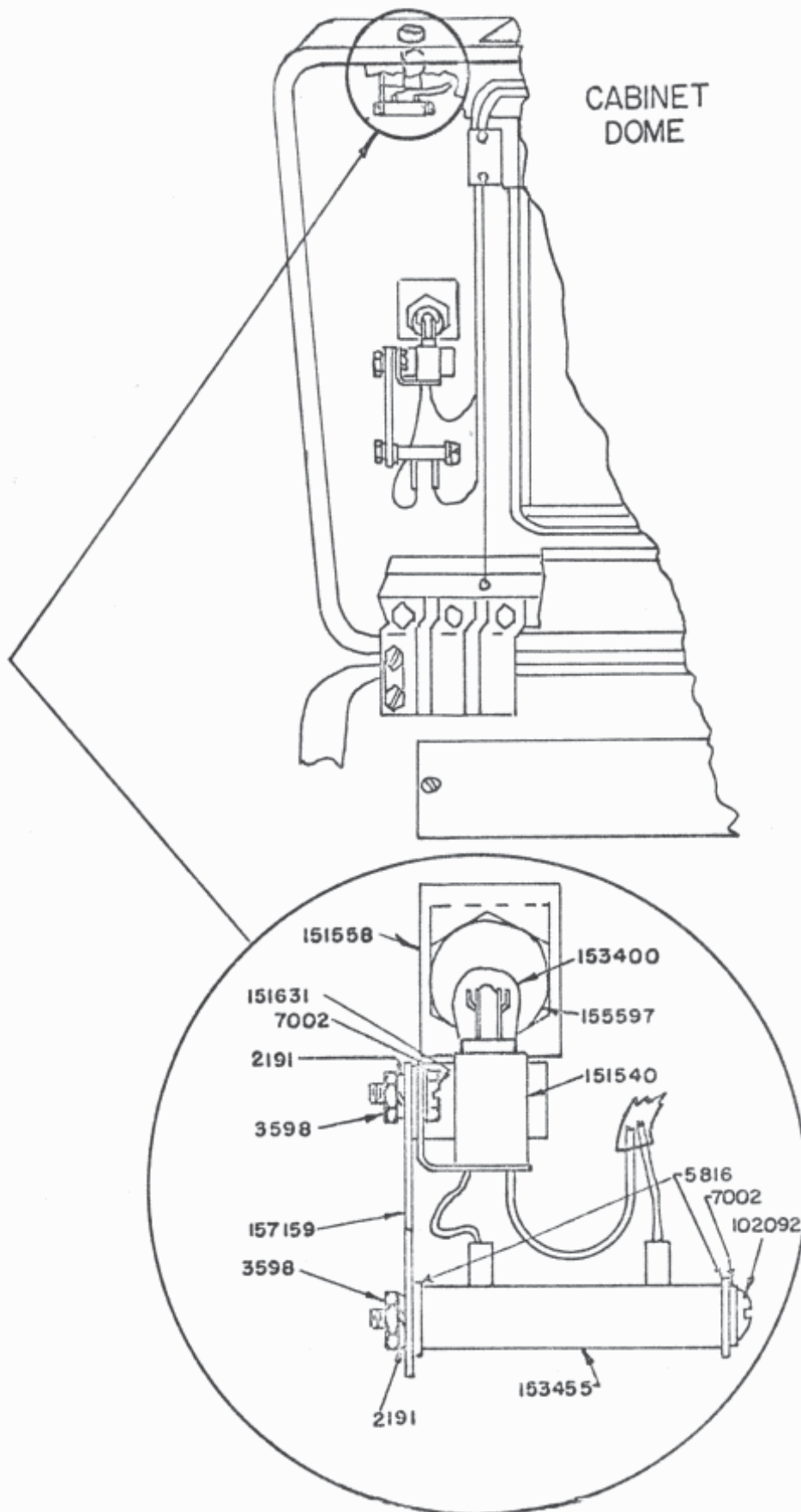


FIGURE 2.



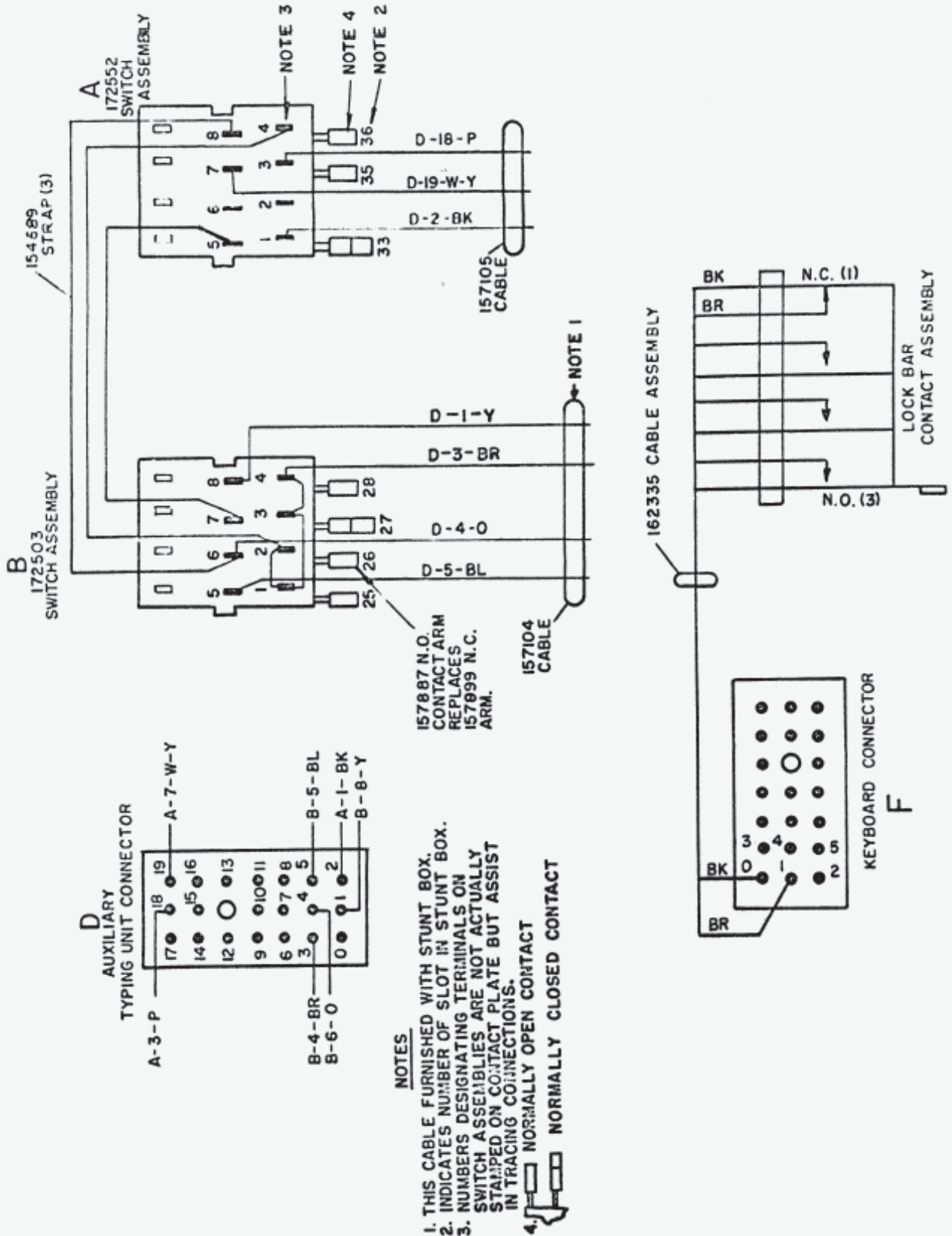
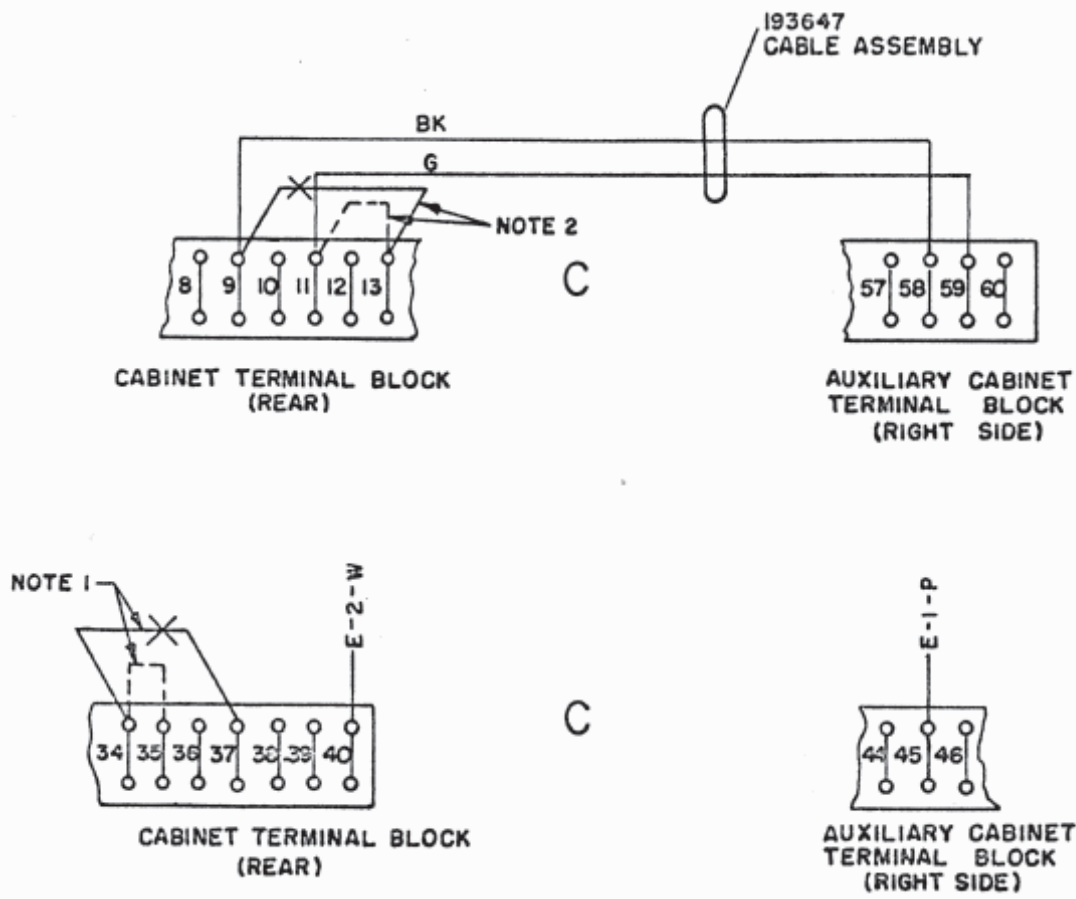


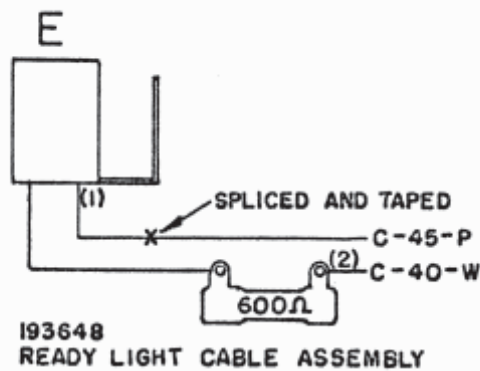
FIGURE 3.



NOTES:

1. WHEN MOTOR CONTROL RELAY IS USED, CONTROL LINE SHUNT RELAY FROM POWER SWITCH ONLY. ADD DASHED(---) CONNECTION AND OMIT CONNECTION MARKED (-X-) AT CABINET TERMINALS C34, C35 & C37

2. SIGNAL LINE SHUNTING CIRCUIT CONNECTION TO C13 MUST BE MOVED FROM C9 MARKED (-X-) TO C11 SHOWN DASHED(---)



178535 NETWORK W/TERMINALS

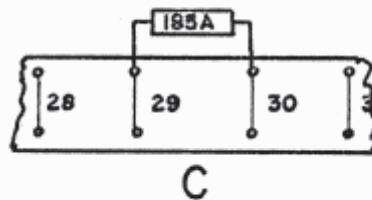


FIGURE 4.

# SCHEMATIC WIRING FOR TYPICAL OUTLYING STATION MODEL 28 KSR SET CONVERSION FOR USE WITH TASP

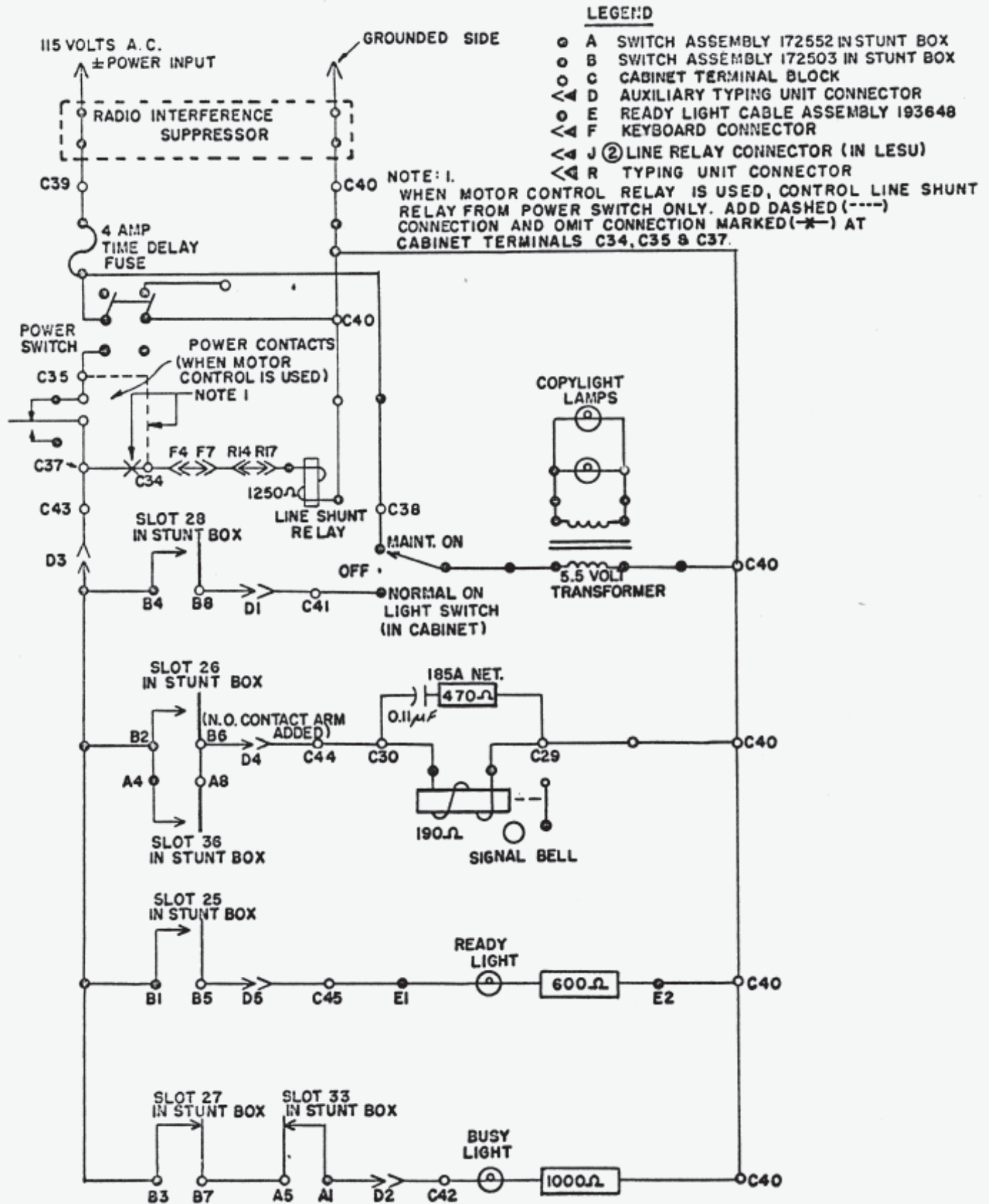


FIGURE 5.

# SCHEMATIC WIRING FOR TYPICAL OUTLYING STATION MODEL 28 KSR SET CONVERSION FOR USE WITH TASP

## NOTES

1. FOR LEGEND SEE FIG. 5.
2. SIGNAL LINE SHUNTING CIRCUIT CONNECTIONS TO C13 MUST BE MOVED FROM C9 (MARKED ~~X~~) TO C11 (SHOWN DASHED-----)

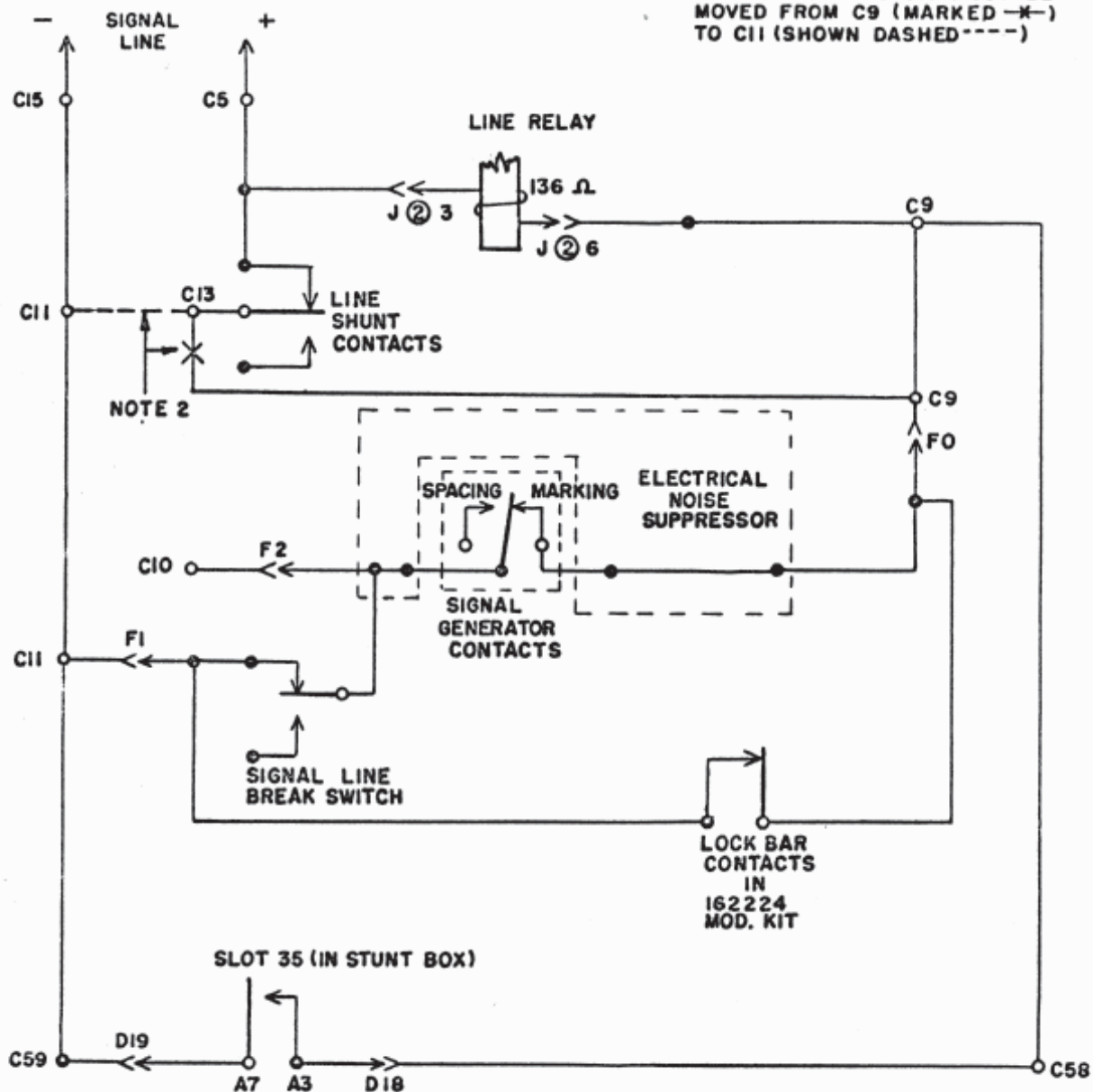


FIGURE 6.

