28 AND 35 ANSWER-BACK UNIT

INSTALLATION

CONTENTS PAGE

1. GENERAL

1.01 This section provides instructions for unpacking, installing, and connecting the answer-back unit.

1.02 The answer-back unit is mechanically independent of any other equipment. Only electrical connections for power and control circuits are required.

1.03 References made to left or right, up or down, and front or rear apply to the answer-back unit as viewed from the side with the answer-back mechanism to the left and the motor to the right.

UNPACKING

1.04 Open shipping carton carefully. Be sure the carton is resting top side up. Clip any strapping and carefully cut or slit paper tape or fiber carton seals to avoid damage to finished surfaces of the equipment.

2. COMPONENTS

2.01 The answer-back unit consists of the cover, base, motor, answer-back mechanism, terminal block, fuse, fuse-holder, and capacitor.

2.02 The answer-back unit is shipped completely assembled with the exception of the speed change gears which are ordered separately for the desired operating speed. Gear sets are available for both 5- and 8-level operation as shown below:

LEVEL	UNIT CODE	SPEED WORDS PER MINUTE	GEAR SET
5	7.42	60 100	TP305047 TP305048
5	7.5	60 66 75 100	TP194808 TP199096 TP194809 TP194815
8	11.0	100	TP194815

2.03 The answer-back unit may be placed on any hard, flat horizontal surface, or on a cabinet, rack or shelf. A soft surface or pad should not be used since the free flow of exhaust air will be restricted. The louvered end of the unit should be placed at least one inch from the wall or any other obstructing area which might restrict the air intake.

2.04 The answer-back mechanism is the principle electromechanical component, and may be mounted in the answer-back unit, or 35 Automatic Send-Receive (ASR), Keyboard Send-Receive (KSR), or Receive-Only (RO) Teletypewriter Set.

2.05 The answer-back mechanism, when mounted in 35-type equipment, is normally factory assembled and installed as a part of the base.

3. INSTALLATION

SPEED CHANGE GEARS

3.01 Loosen the cover fastening screws and remove the cover. Remove the screw from the motor shaft and install the pinion.

Remove the three gear mounting screws from the clutch sleeve and install the drive gear. Apply a thin coat of grease on the gears.

3.02 Make the gear mesh adjustment as given in the appropriate section which covers the answer-back unit and mechanism adjustments.

POWER AND CONTROL CIRCUITS

3.03 All electrical connections are made to the terminal block on the base plate. Connections to this block are made with spade-type terminal lugs inserted under the screws on the block. Consult the following wiring diagrams for the 5- and 8-level answer-back units:

(a) 5-level unit -- WD4728

(b) 8-level unit -- WD6378

4. CODING ANSWER-BACK DRUM

4.01 Figures 1 and 2 illustrate the coding of the answer-back drum. To remove the drum, proceed as follows: Lift the answer-back brace, by means of its extension, to deflect all contact wires and the detent away from the code drum. Hold the feed pawl away, and slip the code drum out. Do not overextend the feed pawl spring.

4.02 The code drum, prior to coding, is identical in either 5- or 8-level operation. As can be seen in Figure 1, three levels are not used when coding the drum for 5-level operation. The tines in these three levels may be left intact, since no contact wire springs sense these positions. When coding the drum for 8-level operation, all levels on the drum are used. See Figure 2.

4.03 The drum is coded in a counterclockwise direction (viewed from the numbered end), beginning with the start (ST) row 1. Code the drum by breaking and removing the tines as designated in Figure 1 or 2. Either of the two following methods may be used for breaking off tines:

(a) Method 1: Use a screwdriver to remove each tine. Place the end of the screwdriver blade at the base of the tine to be removed. While applying pressure against the base of the adjacent tine, press the side of the blade against the top of the tine to be removed until it breaks. If both tines adjacent to the tine to be removed have been broken off, apply the end of the screwdriver to the stub of either one in breaking off the unwanted tine. This method of removing a tine is indicated in the illustration showing the tine rows in Figures 1 and 2. In the illustration, pressure is being applied to the base of row 20 tine and against the top of an adjacent tine in row 19 to break it off.

(b) Method 2: Use a TP161686 tine tool or a pair of long-nosed pliers to remove each unwanted tine. Place the unwanted tine into slot of the tine tool, or grasp the unwanted tine firmly with the long-nosed pliers, and then, with the tool or the pliers held stationary, rotate the drum back and forth until the unwanted tine breaks off near its base. Use care not to damage adjacent tines.

4.04 The procedures described in the following paragraphs may be altered to suit a particular system or application. Where one character delay is required after the answer-back is tripped off and before the coded message begins, the character suppression tine should be removed in the (ST) start row of the code drum to provide the delay. If the first character suppression is not used, message coding starts on the rows shown coded with character suppression in Figures 1 and 2.

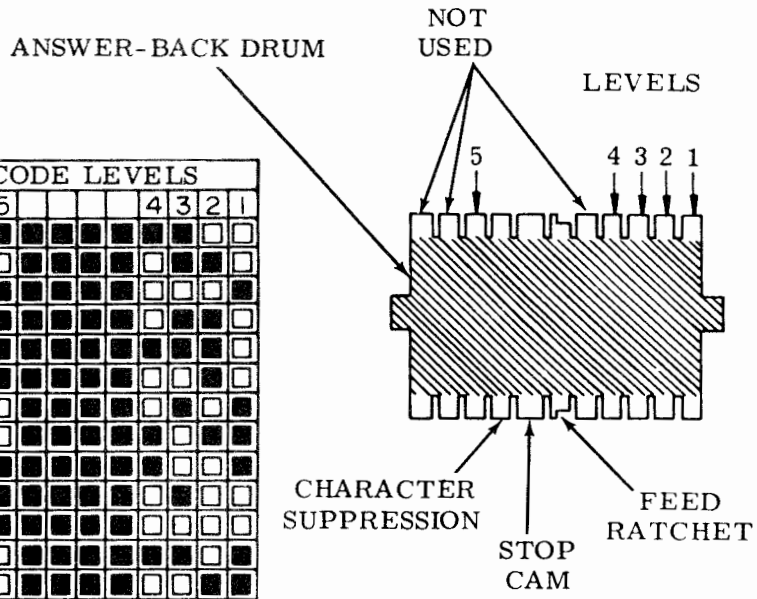
4.05 Normally, a coded message should contain CR (carriage return) and LF (line feed) near the beginning and again near the end of the message. This assures that the transmitted message will appear at the beginning of a line on the receiving Teletypewriter Set, and that overprinting of the message will not occur. In 5-level operation, the coded message should also contain the "letters" code combination at the beginning of a message to place each Teletypewriter Set in the unshift position.

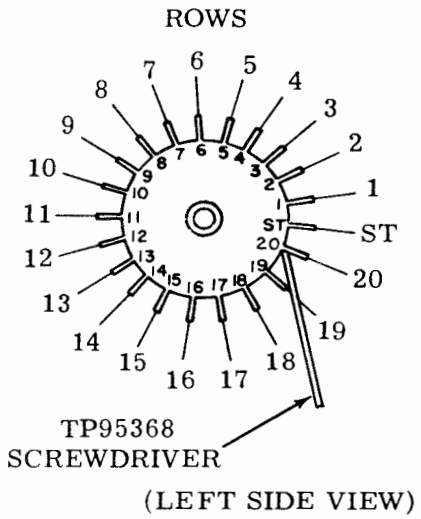
4.06 If the suppression tine is not removed in the ST row, the coded message may contain 21 characters for one-cycle operation, 10 characters for two-cycle operation, and 7 characters for three-cycle operation. Unused message coding rows should be coded using the suppression level.

4.07 If the suppression tine is removed, in the ST row, the message length is reduced by one character. The text of the message is further reduced by the number of func-

LETTERS	FIGURES TYPICAL ARRANGEMENT		CODE LEVELS 5 4 3 2 1
A	-	-	■ ■ □ □ □
B	5/8	?	■ ■ □ ■ □
C	WRU	:	■ ■ ■ □ □
D	$	+	■ ■ □ ■ □
E	3	3	■ ■ □ ■ ■
F	1/4	$	■ ■ □ □ ■
G	&	&	■ ■ ■ □ □
H		#	■ ■ ■ □ □
I	8	8	■ ■ □ □ ■
J	,	BELL	■ ■ ■ □ □
K	1/2	(	■ ■ ■ □ □
L	3/4	)	■ ■ ■ □ □
M	.	.	■ ■ ■ □ □
N	7/8	,	■ ■ □ □ □
O	9	9	■ ■ □ □ ■
P	0	0	■ ■ □ ■ ■
Q	1	1	■ ■ □ ■ □
R	4	4	■ ■ □ ■ ■
S	BELL	'	■ ■ □ ■ □
T	5	5	■ ■ ■ □ □
U	7	7	■ ■ □ □ □
V	3/8	;	■ ■ ■ □ □
W	2	2	■ ■ ■ □ ■
X	/	/	■ ■ ■ □ □
Y	6	6	■ ■ ■ □ ■
Z	"	"	■ ■ ■ □ ■
CARRIAGE RETURN			■ ■ □ ■ ■
LINE FEED			■ ■ ■ □ □
LETTERS SHIFT			■ ■ □ □ □
FIGURES SHIFT			■ ■ □ □ ■
SPACE			■ ■ ■ □ ■
BLANK			■ ■ ■ ■ ■
1 CYCLE OPER - ROW 6			■ ■ ■ □ ■
1 CYCLE OPER - ROW ST			■ ■ ■ ■ □
2 CYCLE OPER - ROWS 6&17			■ ■ ■ □ □
2 CYCLE OPER - ROWS ST&11			■ ■ ■ ■ □
3 CYCLE OPER - ROWS 6,13,&20			■ ■ ■ □ □
3 CYCLE OPER - ROWS ST,7,&14			■ ■ ■ ■ □

CHARACTER SUPPRESSION
STOP CAM
FEED RATCHET





■ LEAVE TINE

□ REMOVE TINE

Figure 1 - Coding of Answer-Back Drum - 5-Level Teletypewriter Code

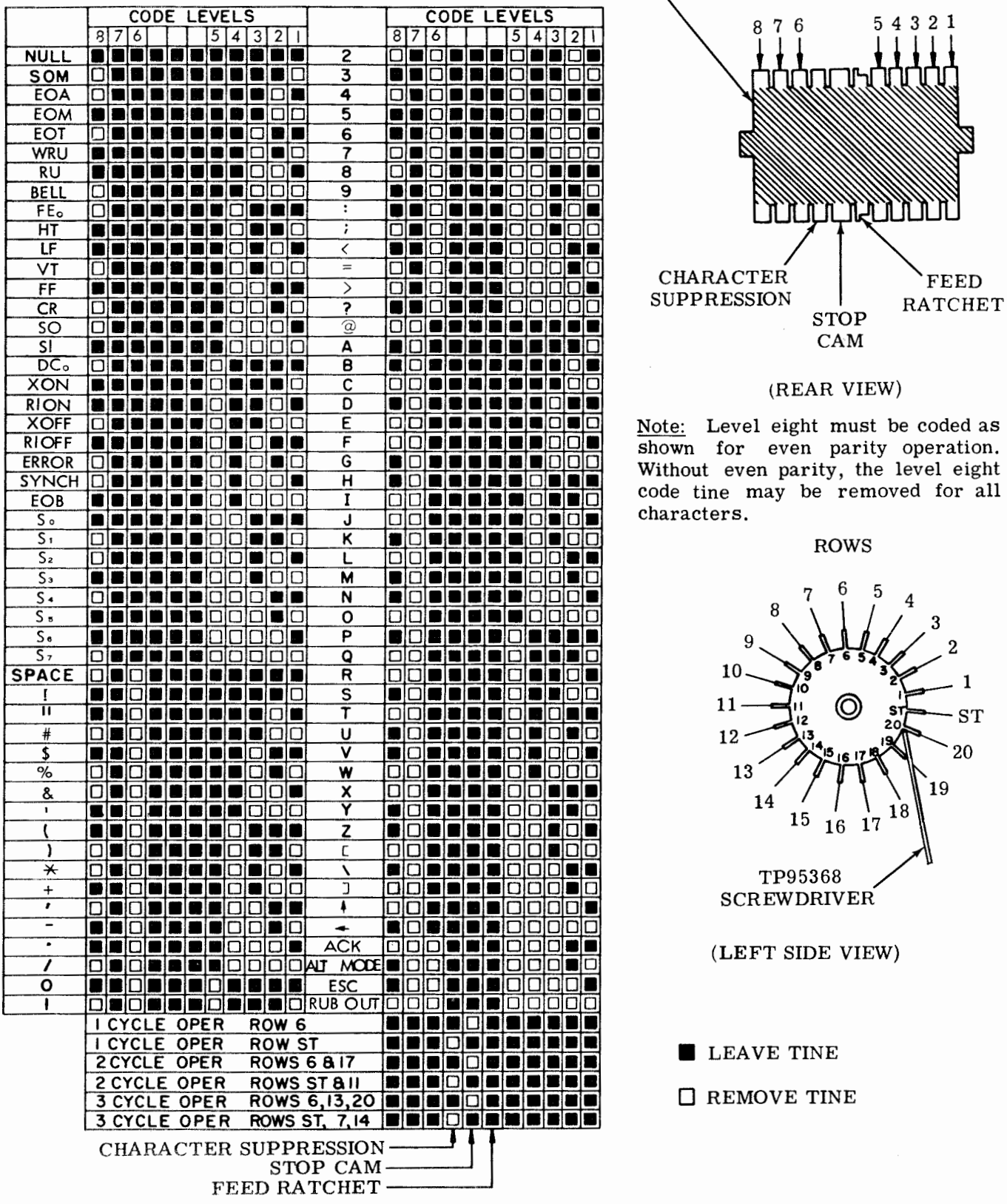


Figure 2 - Coding of Answer-Back Drum - 8-Level ASCII Teletypewriter Code

tions which are peculiar to each system or application. With the suppression tine removed, a station identification message will contain no more than 20 characters, including spaces and nonprinting functions.

4.08 The length of an answer-back sequence can be varied either by removing the characters suppression level tine and/or the stop cam level tine. These two code drum levels, stop cam and character suppression, must always be coded in the same relationship to each other. (See Figures 1 and 2.)

4.09 A one-, two-, or three-cycle operation can be obtained by removing the appropriate tines from the stop cam level. Use two- or three-cycle operation for short messages and one-cycle for longer sequences. With the suppression tine removed, two-cycle operation permits 9 characters to be coded in each half of the drum. Three-cycle operation allows 6 characters to be coded in each third.

Note: Another use which can be made of the character suppression level tines is the elimination of coding errors. If a coding error is made, or for some reason it is necessary to suppress (erase) characters from the code drum, remove the character suppression tine from the rows affected.

CODING EXAMPLES

4.10 In each particular system or application, different methods of coding may be used. In the following two examples, specific coding for particular applications are given:

(a) Example 1: (Switched Network Service Application)

(1) Stations capable of answering automatically are equipped with multicharacter identification (WRU).

(2) The multicharacter identification answer-back equipped station provides a specific answer back. The station identifier for single cycle operation may not exceed 12 characters, including spaces and nonprinting functions. The drum should be coded as follows:

SUP-CR-LF-RO and then the 12 character company identification followed by CR-LF-XON-SUP-SUP, where:

CR = Carriage Return
LF = Line Feed
RO = Rub Out
SUP = Suppress
XON = Transmitter On

(b) Example 2:

(1) SUP-CR-LF-RO
ROBERTS, AMES, — CR-LF-XON-
COMPANY CITY, SUP-SUP
Station Identification
(Maximum - 12 characters)

If the station identifier is less than 12 characters in length, then the remaining positions must be filled up with the SUPPRESSION character shown below:

(2) SUP-CR-LF-RO
ERIE, SP BOST, — CR-LF-
COMPANY CITY, XON-SUP-
Station Identification SUP-SUP-
(Less than maximum SUP-SUP
number of characters)

It will be noted that for this application, the XON character code combination must be the final significant character, and may be followed by the suppress code only.

4.11 To replace the coded answer-back drum, hold the feed pawl and answer-back brace out of the way. Slide the drum in place, and release the answer-back brace and feed pawl. Rotate the drum against the contact springs and detent lever until the shaft drops over the rear of the contact block on the right and left sides. Lower the drum until the shaft seats into the right and left slots. Rotate the drum against its detent to assure proper seating of the associated parts. Check that the contact springs are located in their proper slots.