REPLACING PAGE ADDENDUM
Filing Instructions:

1. **REMOVE FROM THE SECTION THE PAGES NUMBERED THE SAME AS THOSE ATTACHED TO THIS PINK SHEET.**
2. **INSERT THE ATTACHED PAGES INTO THE SECTION IN THEIR PLACE.**
3. **PLACE THIS PINK SHEET AHEAD OF PAGE 1 OF THE SECTION.**

DISCRETE CALLING GENERATOR (TP308512) FOR "DATASPEED"* TAPE RECEIVER 4B

1. GENERAL

1.001 This addendum, which supplements Section 592-812-102, Issue 1, is issued to incorporate engineering changes and to add coverage on the Disc Coding and Timing Diagrams. Arrows in the margin indicate changes and additions.

1.002 Insert the attached pages in accordance with the filing instructions above.

Attached:
Page 5 dated April 1973, reissued
Page 6 dated April 1973, revised
Page 7 dated April 1973, revised
Attachment 7029WD, added
Attachment 7030WD, added

*Trademark of AT&TCo

DISCRETE CALLING GENERATOR (TP308512)

FOR

"DATASPEED"* TAPE RECEIVER 4B

CONTENTS PAGE

1. GENERAL

1.01 This section provides description, operation, installation, coding and testing information for the discrete calling generator (TP308512) used with the "DATASPEED" Tape Receiver 4B in the Type 4 Tape-to-Tape System.

1.02 The discrete calling generator (Figures 1, 2, and 3) generates a discrete character necessary to start an unattended Tape Sender 4A that is equipped with the discrete calling recognizer (TP308513).

1.03 The unit is used with the TP308514 send-receive feature to establish an unattended send-receive terminal.

1.04 The discrete calling generator consists of a discrete calling generator logic assembly and a signal generator assembly mounted on an accessory module frame. The module is installed, as module V, in the space provided for an accessory module in the lower part of the Tape Receiver 4B cabinet.

1.05 The unit is installed in either the factory or the field. No mechanical or electrical changes are required to perform the installation.

1.06 The wiring diagram for the unit (7420WD) is included at the end of this section.

2. METHOD OF OPERATION

2.01 The following procedure is used by an attended receiver to call an unattended sender. The receiver may be in either the EDC or NON-EDC mode, depending on the sender mode of operation.

2.02 Place a call to an unattended sender. When the unattended sender goes into the data mode (at the completion of the 2025 Hz tone), depress the DATA button on the data set at the receiving terminal to establish the data mode of operation. Then depress the SENDER STOPPED — PUSH TO START button on the receiver control panel. This will start the discrete calling sequence and data will be received at the receiver terminal after a delay of three seconds, provided the sender and receiver have been coded identically.

3. PRINCIPLES OF OPERATION

3.01 The discrete calling generator logic is located on signal generator ZV221 and discrete calling logic ZV227. Refer to 7420WD. The signal generator generates a three-second start-stop identification signal which is used as the transmitter start signal. The discrete calling logic consists mainly of four relays: TS (Transmit Start), MS (Motor Start), CL (Clutch) and SD (Send Data).

3.02 Relay TS is used to initially control the MS and CL Relays. Relay MS is used to apply power to the signal generator motor (3.03). Relay CL is used to control the motor clutch, the Request-to-Send lead, the Send Data lead and the receiver distributor. Relay SD is used to pulse the Send Data lead, depending on the signal generator programming.

* Trademark of AT&TCo

Prepared for American Telephone and Telegraph Company by Teletype Corporation

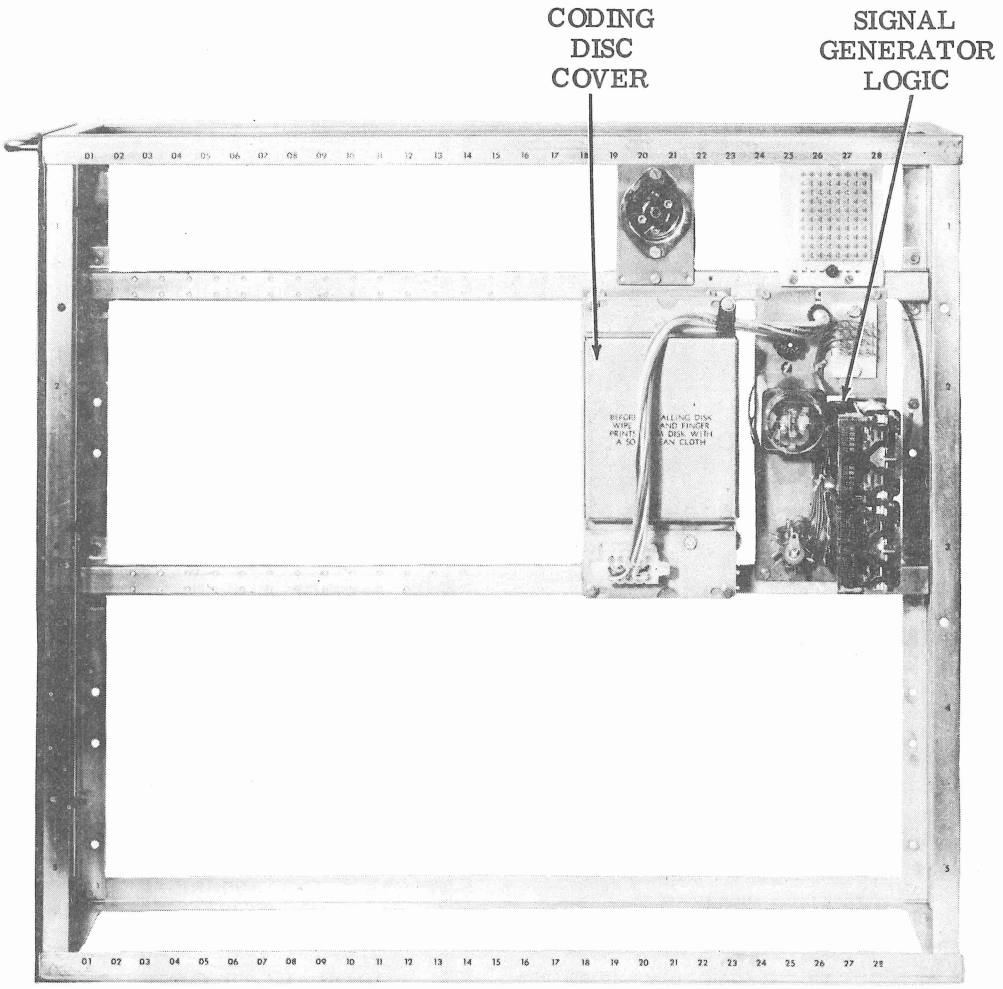


Figure 1 - Discrete Calling Generator (TP308512) — Right Side View

3.03 Refer to Figures 4 and 5 for timing diagrams of the control logic.

3.04 The receiver signal generator ZV221 consists of an ac synchronous motor which drives a codeable etched circuit board commutator (coding disc). Contact is made to the coding disc by stationary contacts brought out and used for timing. The speed of the motor is 20 rpm. The motor clutch is actuated by 55 v dc controlled by relay CL.

3.05 When power to the terminal is turned on, the receiver signal generator coding disc may not be in its "home" position. When this condition exists, the receiver homing identifier control contact is closed to ground and both the CL and MS relays are energized to allow the motor to rotate the disc until it reaches "home." At that time, the homing identifier contact opens, both relays de-energize and the signal generator is primed for the proper sequence of operation.

3.06 The TS (Transmit Start) relay is initially operated by the momentary closure of the transmit start switch SWN12 on the receiver control assembly. The TS relay is latched through its contact 8M, and the homing recognizer control contact on the signal generator. Contact 12 of the TS relay allows the MS and CL relays to energize, applying power to the B1001 synchronous motor and energizing the clutch to begin the coded disc rotation. At the same time, contact 3 of the CL relay applies +6 v to the Request-to-Send lead to control that lead of the data set. Through contact 2 closure on the CL relay, +6 v is applied on the Send Data lead to put a space on line to disable the echo suppressors.

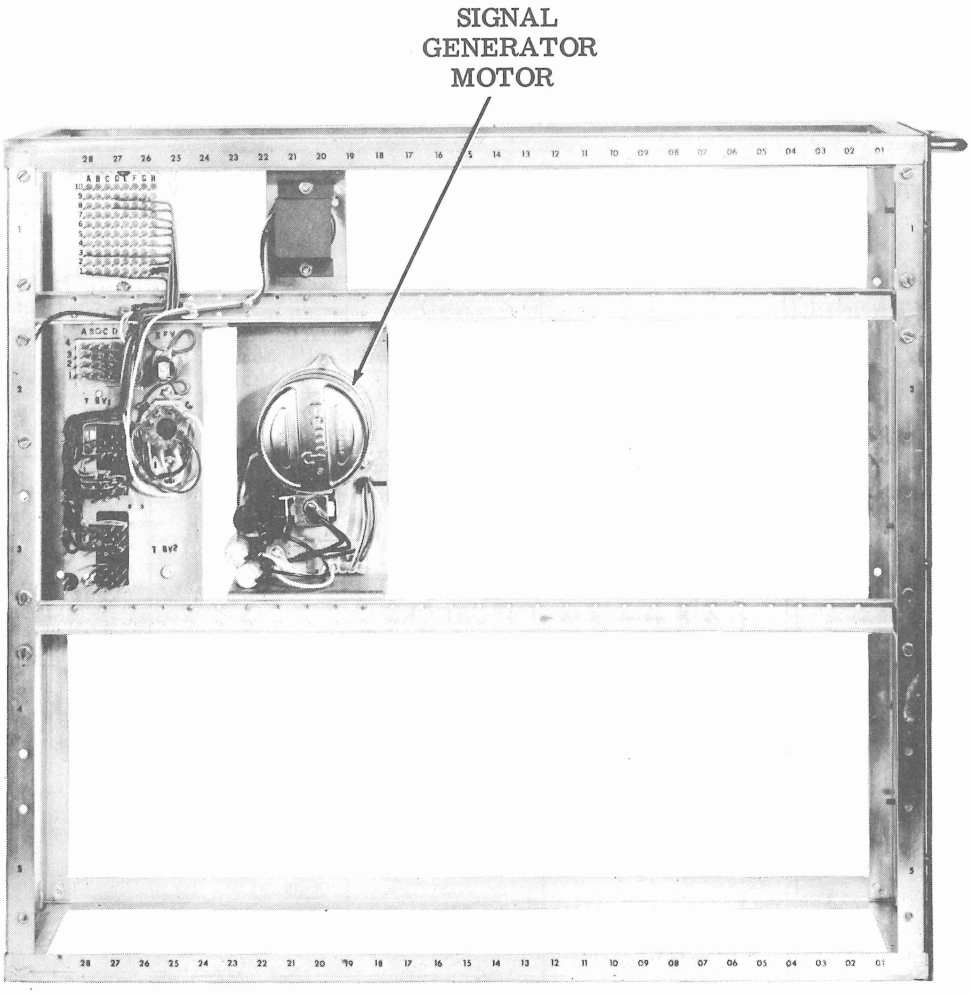


Figure 2 - Discrete Calling Generator (TP308512) — Left Side View

3.07 Approximately 42 ms after the disc begins to rotate, the receiver homing generator (identifier) control contact closes to ground. This applies another ground lead to the CL and MS relays. Approximately 400 ms after the disc begins to rotate the homing recognizer control contact opens and de-energizes the TS relay.

3.08 A 15-bit transmitter start signal is generated by the local signal contact of the signal generator. The transmitter start signal consists of a long spacing stop bit (350 ms), followed by a marking start pulse and 14 mark or space coding bits. A marking local signal is generated when continuity exists with the common signal lead (ground) of the signal generator. Marking local signals cause relay SD to operate. When relay SD operates, +6 v is removed from the Send Data lead by contact 8B of the SD relay, and the data set generates a mark signal.

3.09 During the generation of the transmitter start signal, the receiver distributor and punch are blinded. This is done by presenting a 0-volt input signal to the punch blind OR gate in the receiver distributor through the 4M contact closure on the CL relay.

3.10 After the 15-bit transmitter start signal is generated, the signal generator reaches "home." The control contact, homing identifier, opens and de-energizes the MS and CL relays, which in turn drop power to the motor and clutch, unblind the punch and present -6 v to the Request-to-Send and Send Data leads.

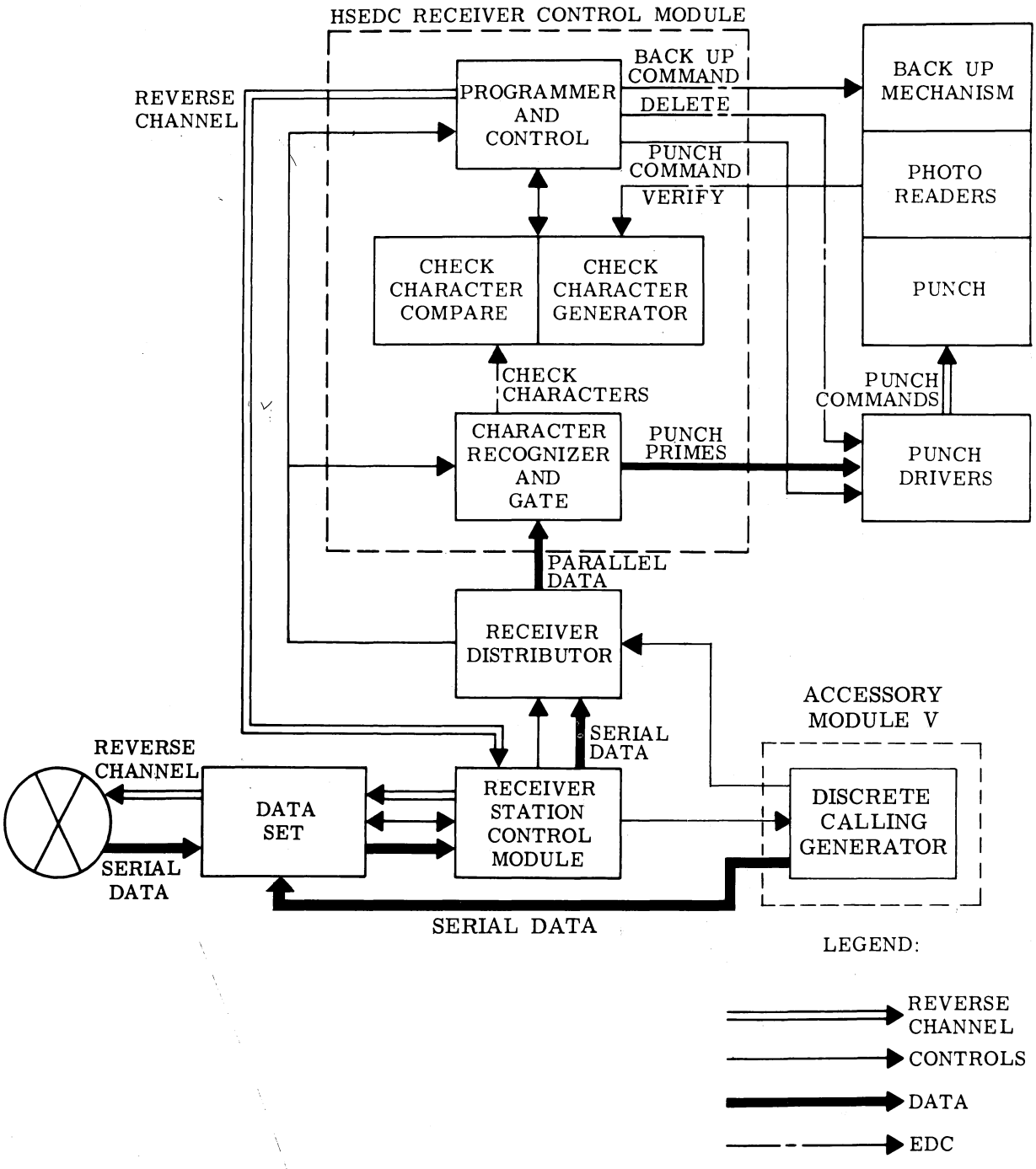


Figure 3 - Block Diagram of Tape Receiver 4B

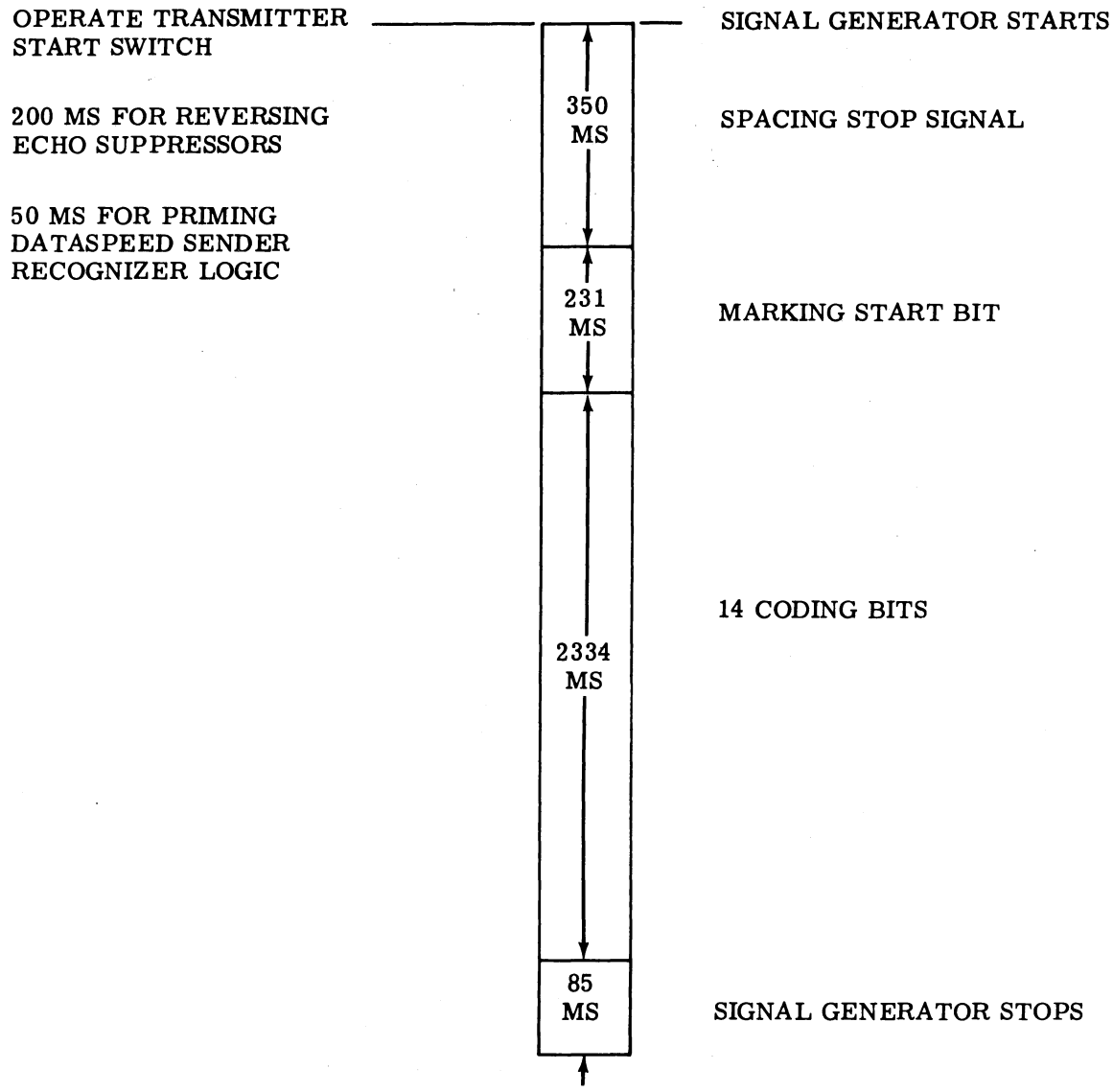


Figure 4 - Timing Diagram for Discrete Calling Generator

3.11 If the sender and receiver were coded identically and the Sender starts transmission, Data Set Carrier will be detected ON, the CD (Carrier Detect) relay will de-energize and open contact 11M of the CD relay in the receiver station control assembly of the receiver. This open lead prevents the momentary Transmit Start switch from recycling the discrete calling generator if it is depressed. If transmission was not initiated due to differently coded discs, Data Set Carrier will be detected OFF, and the CD relay will be energized to keep Contact 11M closed. Depressing the Transmit Start switch will recycle the discrete calling generator.

4. INSTALLATION

4.01 A screwdriver is the only tool required to install the discrete calling generator in Tape Receiver 4B.

4.02 To install the unit, remove the rear panel of the cabinet. Lift out the 80-pin connector labeled PF128 and the ac cord (with male plug) labeled PF121 from the bottom of the cabinet. Guide these two cables through the center open area to the front of the cabinet. Remove the protective shield from the PF128 connector and discard. Plug both connectors into the ap-

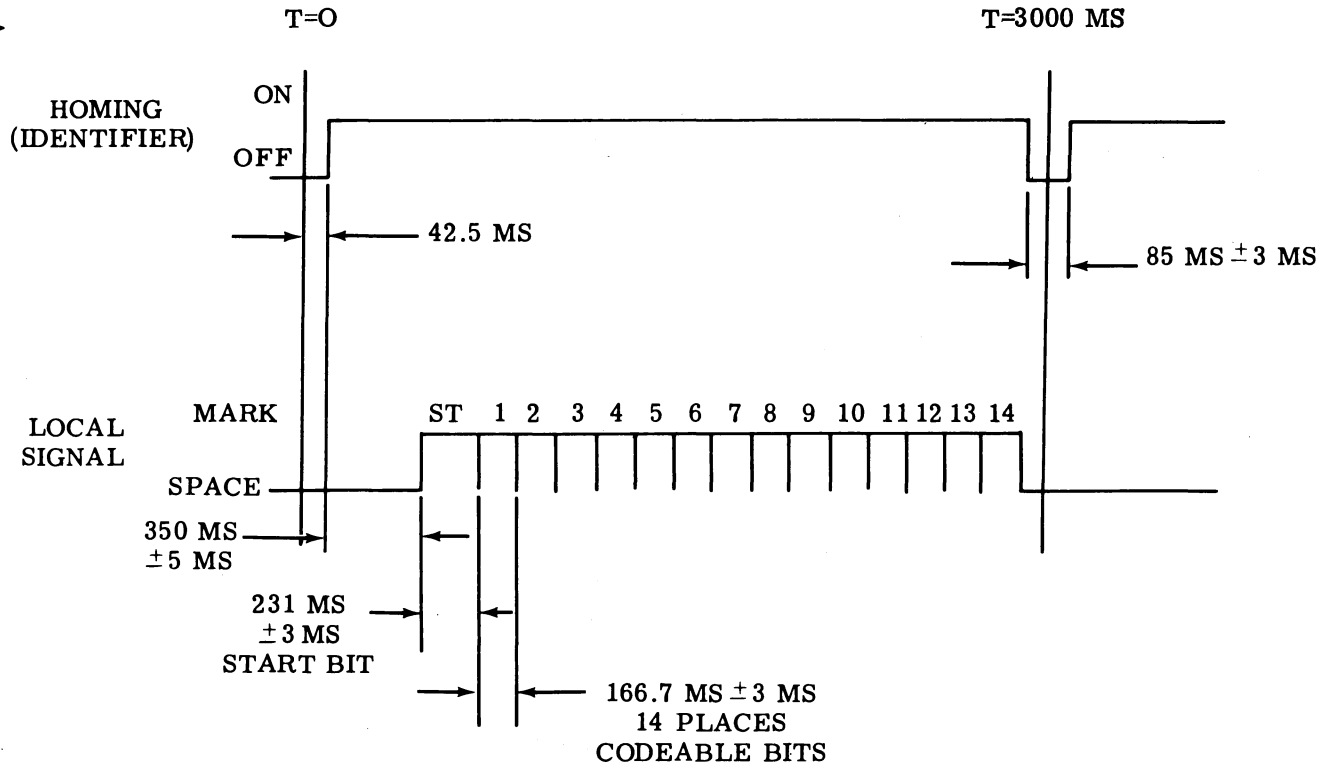


Figure 5 - Timing Diagram of Signal Generator as an Identifier

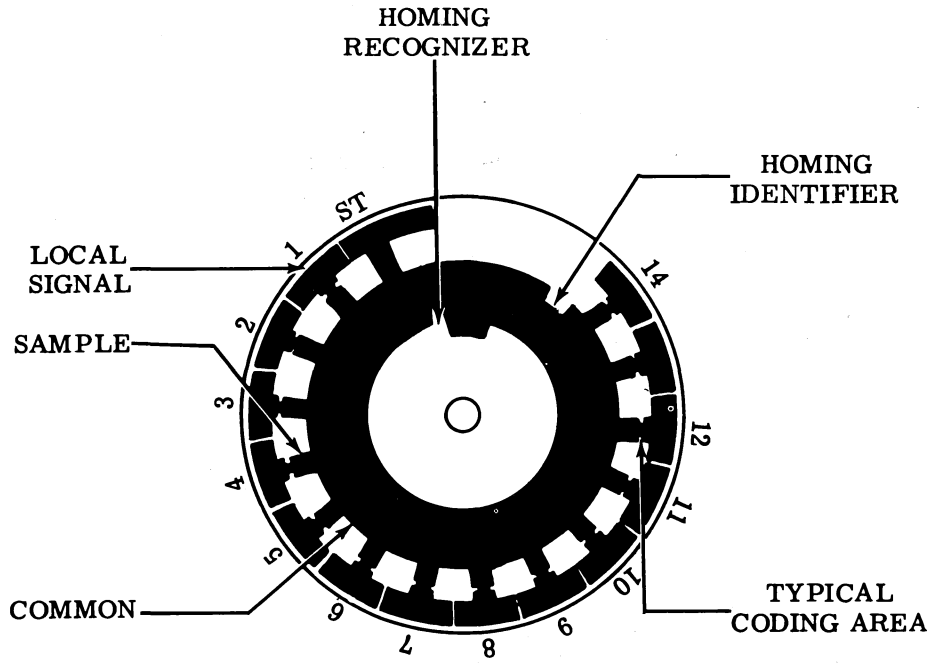


Figure 6 - Discrete Calling Generator Coding Disc (TP199580)

propriate receptacles on the accessory module. Screw the PF128 connector tightly into its receptacle. Insert the module into the center area of the cabinet. During this process, make sure that the cables in the rear of the cabinet do not obstruct the module insertion and that the module can slide completely in the cabinet.

5. DISC CODING AND TESTING

5.01 To code the coding disc, remove the two 6-40 screws holding the TP199577 cover to the TP199570 signal generator assembly (Figure 1).

5.02 Remove the thumb nut and pull off the TP199580 coding disc.

5.03 Prepare the TP199580 coding disc by coding bits 1 thru 14 in the desired sequence (Figure 6).

5.04 A marking bit identifies a bit which has continuity from the local signal to the common (Figure 6). Conversely, a spacing bit does not have continuity to the common signal. The coding disc is manufactured with all bits marking. Therefore, continuity must be broken for spacing bits.

5.05 The use of combinations of all marks, all spaces, single marks, single spaces, and single transitions must be avoided.

5.06 To make a bit spacing, remove the etched circuit board material in the corresponding code area (Figure 6) by scraping it with the edge of a sharp screwdriver or a pocket knife.

5.07 Install the coding disc on the signal generator using the thumb nut.

5.08 Install the TP199577 signal generator cover (Figure 1).

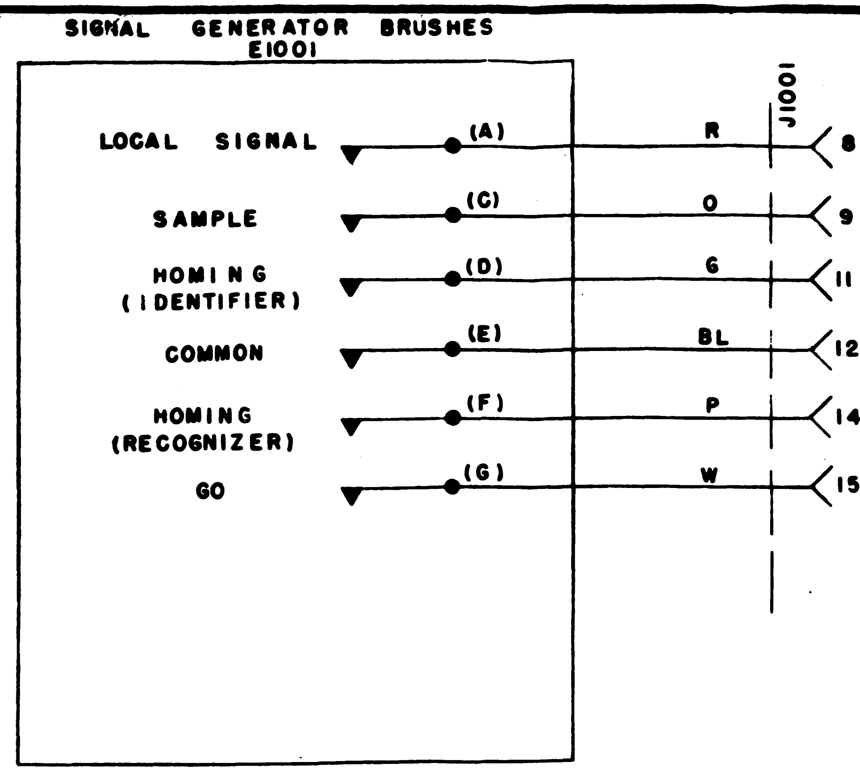
5.09 To properly test the discrete calling generator it is necessary to call a Tape Sender 4A equipped with a TP308513 discrete calling recognizer and identically coded.

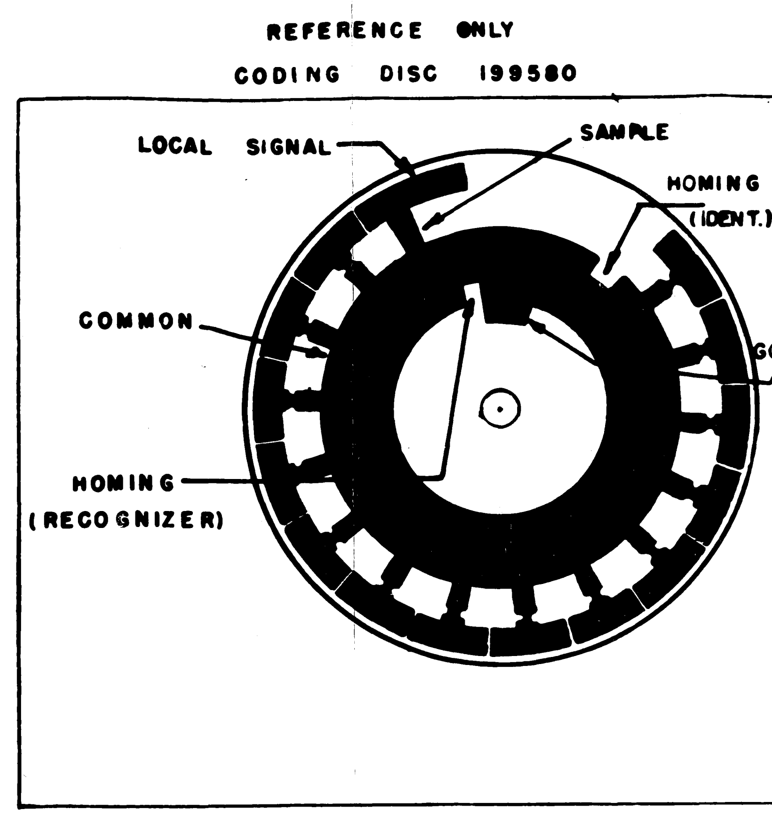
6. ATTACHMENT INDEX

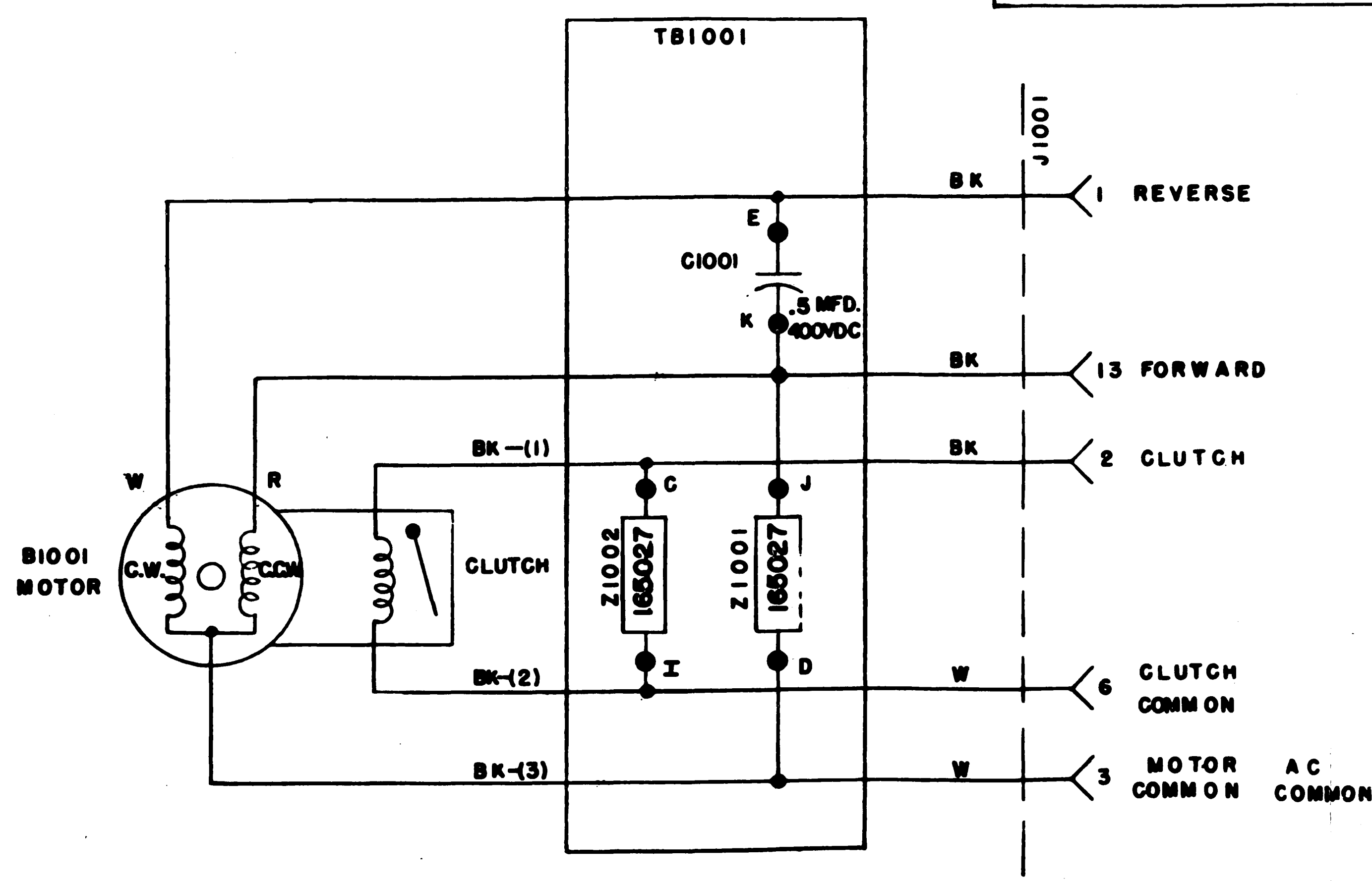
TITLE	DIAGRAM NUMBER
Discrete Calling Generator Type 4 Receiver	7420
Signal Generator Schematic (No. 199570)	7029WD
Signal Generator Actual (No. 199570)	7030WD

NO.	NOTES
1.	REFER TO 7030WD FOR ACTUAL WIRING DIAGRAM.
2.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE NOT MARKED ON THE COMPONENT.
3.	≻— INDICATES TERMINAL ON RECEPTACLE J1001.
4.	COLOR CODE: W— WHITE; P— PURPLE; O— ORANGE; BL— BLUE; BK— BLACK; R — RED; G — GREEN
5.	J1001 TERMINAL VOLTAGES MAY VARY WITH APPLICATION AS FOLLOWS: A -117 VAC; B-AC COMMON; C-+6VDC; D- GRD; E- -6VDC; F —-12VDC; G — -28VDC; H — -48VDC; I-NOT USED

ASSEMBLY USED ON	TERMINAL 1	2	6	8	9	11	12	13	14	15
199552	I	A	B	G	I	G	G	A	I	I
199555	I	A	B	G	G	I	G	A	G	G







REVISIONS		
ISSUE	DATE	AUTH. NO.
2	8-18-65	87498
3	9-10-65	87498-2
4	4-14-69	99119

SPEC. NO. 60824S

SCHEMATIC DIAGRAM FOR SIGNAL GENERATOR ASSEM.
ASSEM. NO. 199570

APPROVALS

D and R | E of M

E-NUMBER

PROD. NO. 7029 WD

DATE: 11-16-63

P.D. FILE NO. 1-A148/134AA

DRAWN. G.J.M. | CHKD.

ENGD. W.R.F. | APPD.

TELETYPE CORPORATION

7029 WD

NO.	NOTES
1.	REFER TO 7029 WD FOR SCHEMATIC.
2.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE NOT MARKED ON THE COMPONENT.
3.	WIRE CONNECTOR J1001 ACCORDING TO TABLE.

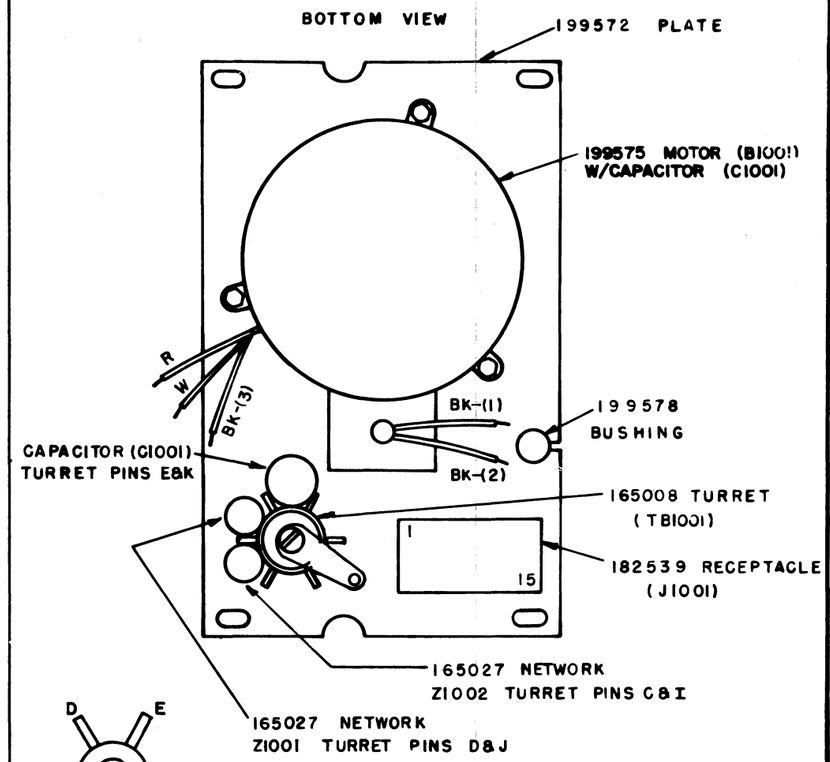
TERMINAL	WIRE
1	31880 RM
2	31880 RM
3	31881 RM
6	31881 RM
8	31906 RM
9	31901 RM
11	31905 RM
12	31902 RM
13	31880 RM
14	31904 RM
15	31798 RM

4.	COLOR CODE: BL — BLUE BK — BLACK O — ORANGE R — RED P — PURPLE W — WHITE G — GREEN
5.	J1001 TERMINAL VOLTAGES MAY VARY WITH APPLICATION AS FOLLOWS: A-117 VAC E--6VDC I-NOT USED B-AC COMM.F--12VDC C--+6VDC G--28VDC D-GRD H---48VDC

ASSEM. USEDON	J1001 TERMINALS 1 2 6 8 9 11 12 13 14 15
199552	I A B G I G G A I I
199555	I A B G G I G A G G

COMP.	MODULE CONN.	CONTACT ASSEM.	MOTOR ASSEM.	TURRET
COMP. DESIG.	J1001	E1001	B1001	TB1001
ASSOC. ASSEM.				
COMP. NO.	182539	199576	199573	165008

AC COMMON	1	BK		E
	2	BK		C
	3	W		D
	6	W		I
	8	R	(A)	
	9	O	(C)	
	11	G	(D)	
	12	BL	(E)	
	13	BK		K, J
	14	P	(F)	
	15	W	(G)	
			BK-(1)	C
			BK-(2)	I
			R	K
			W	E
			BK-(3)	D



7030 WD

REVISIONS

ISSUE	DATE	AUTH NO
2	8-18-65	87498
3	4-14-69	95119

ACTUAL WIRING DIAGRAM FOR SIGNAL GENERATOR ASSEMBLY

ASSEM. NO. 199570

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 7030WD

DATE. 11-16-63

P.D. FILE NO. I-A148/134 AA

DRAWN. G.J.M.	CHKD
ENGD. W.R.F.	APPD RVR

TELETYPE CORPORATION

7030 WD

NO.	NOTES	SUPPORTING INFORMATION		CONTENTS
		CATEGORY	NO.	

ISSUE CONTROL RECORD

SHEET NO.	ISSUE 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1																		
2																		

7420 WD

REVISIONS APPLYING TO THIS CONTROL RECORD

ISSUE	DATE	AUTH. NO.
1	8-14-68	18998-R

ISSUE CONTROL SHEET 1 OF 1

SCHEMATIC
WIRING DIAGRAM
FOR
DISCRETE CALLING GENERATOR
TYPE 4 DATASPEED
RECEIVER

ASSEMBLY NO. 308512 (MODULE V)

WD NUMBER	7420WD
DRAWN C.J.R.	CHKD.
ENGD. E.F.R.	APPD.

TELETYPE CORPORATION

7420 WD

1

TC 482 (1-66) SEE R&D ROUTINE #5 FOR USE OF THIS FORM

NO.	NOTES
1.	REFER TO 7422WD FOR ACTUAL WIRING DIAGRAM.
2.	
3.	→ INDICATES MALE TERMINAL ON CONNECTOR ← INDICATES FEMALE TERMINAL ON CONNECTOR ○ DESIGNATES TERMINALS ON WIRE-WRAP FIELD ASSEMBLY AND TERMINAL BOARD. (S) DESIGNATES SIGNAL GROUND (C) DESIGNATES CIRCUIT GROUND AND -55 VOLTS RETURN DESIGNATES FRAME GROUND
4.	TERMINAL DESIGNATIONS ARE FOR REFERENCE AND ARE NOT MARKED ON COMPONENTS.
5.	ALL VOLTAGES DC, UNLESS OTHERWISE SPECIFIED.
6.	ALL RESISTORS ARE 1/2 WATT AND IN OHMS UNLESS OTHERWISE SPECIFIED.
7.	NETWORK NO. 1 — TELETYPE NO. 165027 120 Ω, 0.35 µF
8.	B1001, C1001 AND TB1001 ARE ASSOCIATED WITH PART NUMBER 19957~~0~~, 7029WD AND 7030WD.
9.	REF. WIRING DIAGRAMS: RECEIVER STATION CONTROL MODULE 7406WD RECEIVER DISTRIBUTOR MODULE 7412WD RECEIVER WIRING FIELD 7072WD
10.	PART OF THE 308559 CABLE ASSEMBLY.

LOGIC DESIGNATIONS

1 - STATE = 0

0 - STATE = -6V

A	B	F
0	0	0
1	0	1
0	1	1
1	1	1

NOTE: THE SAME PRINCIPLE APPLIES TO "4" INPUT "OR" GATES

NOTE:
REVISION INFORMATION MUST ALSO BE REFLECTED ON THE ISSUE CONTROL RECORD, WHICH IS A PART OF THIS DRAWING.

7420 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-14-68	18998-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D.

SHEET 1

SCHEMATIC
WIRING DIAGRAM
FOR
DISCRETE CALLING GENERATOR
TYPE 4 DATASPEED
RECEIVER
ASSEMBLY NO. 308512 (MODULE V)

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 7420WD

DATE 6/24/68

P.D. FILE NO. 2-96.134.184A

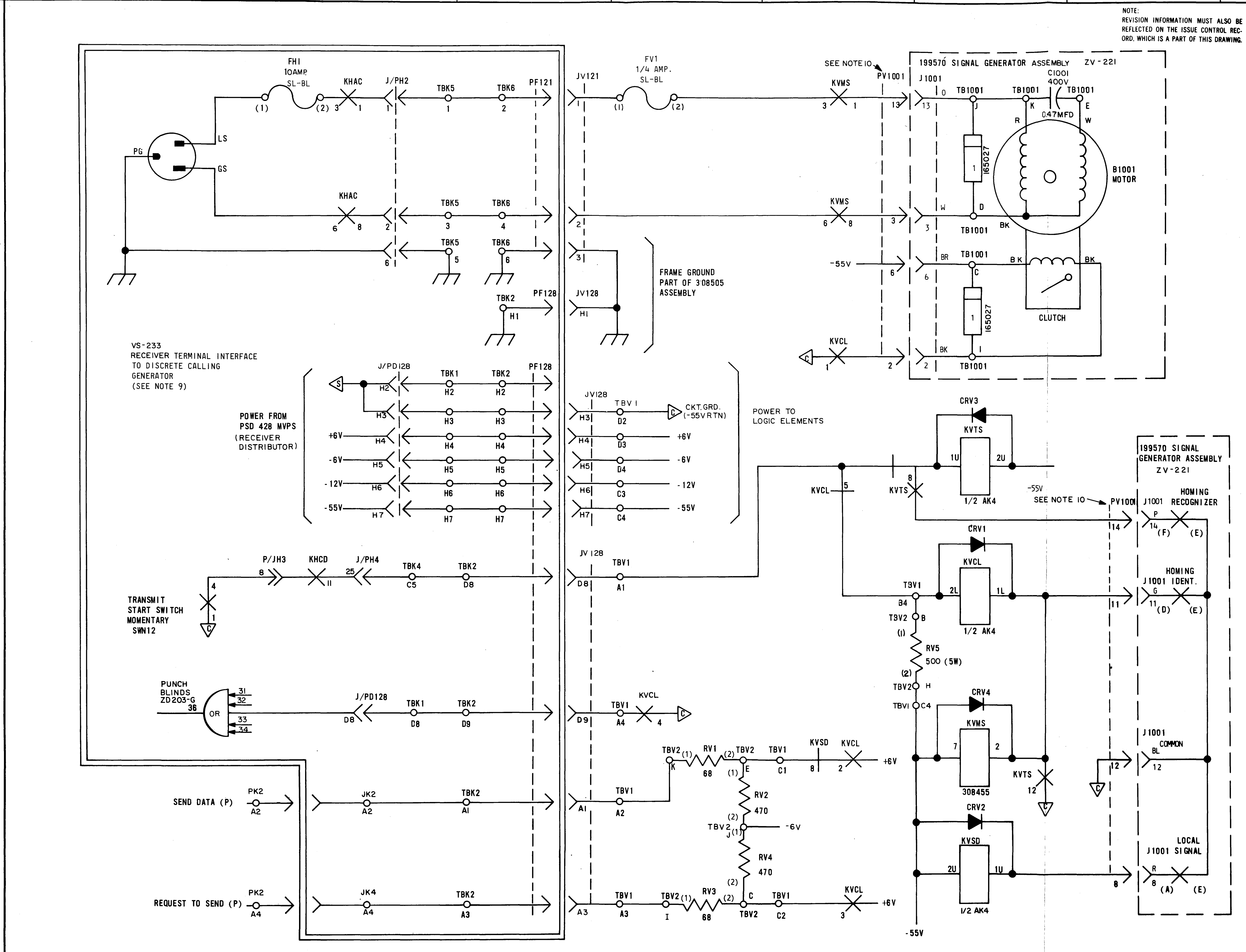
DRAWN CJR/RS	CHKD.
ENGD. EFR	APPD.

TELETYPE CORPORATION

7420WD

1

TC 434 (2-63)


NOTE:
REVISION INFORMATION MUST ALSO BE REFLECTED ON THE ISSUE CONTROL RECORD, WHICH IS A PART OF THIS DRAWING.
FH1
10AMP
SL-BL
KHAC
J/PH2
TBK5
TBK6
PF121
JV121
FV1
1/4 AMP.
SL-BL
SEE NOTE 10
PV1001
KVMS
199570 SIGNAL GENERATOR ASSEMBLY ZV-221
J1001
TB1001
C1001
400V
0.47MFD
165027
B1001
MOTOR
CLUTCH
PG
LS
GS
FRAME GROUND
PART OF 308505
ASSEMBLY
TBK2
PF128
JV128
-55V
KVCL
VS-233
RECEIVER TERMINAL INTERFACE
TO DISCRETE CALLING
GENERATOR
(SEE NOTE 9)
J/PD128
TBK1
POWER FROM
PSD 428 MVPS
(RECEIVER
DISTRIBUTOR)
+6V
-6V
-12V
-55V
TBV1
CKT.GRD.
(-55VRTN)
POWER TO
LOGIC ELEMENTS
CRV3
KVTS
1/2 AK4
199570 SIGNAL
GENERATOR ASSEMBLY
ZV-221
HOMING
RECOGNIZER
CRV1
HOMING
IDENT.
P/JH3
KHCD
J/PH4
TBK4
TRANSMIT
START SWITCH
MOMENTARY
SWN12
TBV2
RV5
500 (5W)
PUNCH
BLINDS
ZD203-G
OR
CRV4
308455
COMMON
RV1
68
RV2
470
KVSD
CRV2
LOCAL
SIGNAL
RV4
470
RV3
68
SEND DATA (P)
REQUEST TO SEND (P)
PK2
JK2
JK4

ISSUE	DATE	AUTH. NO.
1	8-14-68	18998-R

7420 WD

REVISIONS

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D.

SHEET 2

SCHEMATIC DIAGRAM
DISCRETE CALLING GENERATOR
TYPE 4 DATASPEED
RECEIVER

ASSEMBLY NO. 308512
(MODULE V)

APPROVALS

D AND R	E OF M
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E-NUMBER
PROD. NO. 7420 WD
DATE 8-7-67
P.D. FILE NO. 2-96.134.184A
DRAWN C.J.R. CHKD.
ENGD. E.F.R. APPD.

TELETYPE
CORPORATION

7420 WD

1