SECTION 592-811-400
Issue 2, August 1969
AT&TCo Standard

"DATASPEED®" TAPE SENDER

WITH ERROR DETECTION AND CORRECTION

TYPE 4A

SCHEMATIC WIRING DIAGRAMS

CONTENTS PAGE

1. GENERAL

1.01 This section provides the schematic wiring diagrams, including circuit boards, for the DATASPEED Tape Sender 4A. Refer to the appropriate related sections for descriptive information and diagrams concerning the tape reader (DX type) or optional feature units used. It is reissued to include engineering changes and additions indicated by marginal arrows in the wiring diagram index.

1.02 The attached material consists of Teletype Corporation diagrams. Part 2 WIRING DIAGRAM INDEX lists the title in the first column, the number of control and diagram sheets in the second column, the diagram number in the third column, and the last column lists either the current issue number of the control sheet covering all sheets of the diagram or the issue number of any diagram that does not have an issue control sheet.

Prepared for American Telephone and Telegraph Company
by Teletype Corporation
Printed in U. S. A.

2. WIRING DIAGRAM INDEX

TITLE	TOTAL CONTROL AND DIAGRAM SHEETS	DIAGRAM NUMBER	CONTROL SHEET OR DIAGRAM ISSUE
SCHEMATIC WIRING DIAGRAMS			
Transmitter Control Assembly No. 302728 (HSEDC, Module A)	1 and 9	7056WD	2
Multivoltage Power Supply Assembly No. 302720	1	7058WD	2
Sender Tape Transport Assembly No. 309642 (Module P)	1	7065WD	4
Controls Assembly No. 302790 Sender & Receiver (Module N)	1	7070WD	1
Sender Station Control Assembly No. 308461 (Module G)	1 and 5	7402WD	1
Transmitter Distributor Assembly No. 308500 (Module C)	1 and 5	7410WD	4
48 V Power Supply Assembly No. 308451	1	7414WD	2
Send-Receive Terminal ("Y" Cable), Optional Feature, Assembly No. 308514 for Single Data Set Operation (Module X)	1	7419WD	2
Discrete Calling Recognizer, Optional Feature, Assembly No. 308513 (Module W)	1 and 2	7421WD	2
DX4 Tape Reader (Module L)	1	8070WD	1
Electronic Magnet Driver Assembly No. 318800	1	8234WD	1
CIRCUIT BOARDS			
Terminal Board TB181	1	149181	3
EC327 Truncated N Distributor with Reset Stop Element	1	172327	7
EC332 PNP "EFs" (2)	1	172332	5
EC352 Fan-Out ("OR" Gate without Biasing Resistor, for Reset Pulses	1	172352	3
EC353 Ring Driver Amplifier and Ring Driver Reset Amplifier	1	172353	3
EC354 "IPs"	1	172354	2

TITLE	TOTAL CONTROL AND DIAGRAM SHEETS	DIAGRAM NUMBER	CONTROL SHEET OR DIAGRAM ISSUE	
EC356 "INH" Gates (4)	1	172356	4	
EC357 Inverters (4)	1	172357	1	
EC380 Diodes (12) "OR" Gate	1	172380	7	
EC383 Pulse Amplifiers (2)	1	172383	5	
EC428 Filters, Capacitive (4)	1	172428	2	←
EC441 "IPS"	1	172441	2	
EC457 Fixed One-Shot, 2 ms	1	172457	6	
EC501 "AND" Gate (1), "OR" Gates (2)	1	177501	3	
EC502 "AND" Gate (1), "OR" Gates (2)	1	177502	4	
EC503 "AND" Gates (4)	1	177503	4	
EC504 "OR" Gates (4)	1	177504	3	
EC512 NPN Inverters (2)	1	177512	1	
EC516 "PP," 9 u sec Power Pulser	1	177516	9	←
EC527 NPN "EFs" (6)	1	177527	4	
EC528 NPN "EFs" (6)	1	177528	4	
EC546 Gated Osc. Amp., Adjustable from 4 to 45 ms	1	177546	5	←
EC547 Integrators (5)	1	177547	1	
EC581 Power Amplifiers (2)	1	177581	5	
EC589 Fixed One-Shot, 200 u sec	1	177589	5	
EC597 Fixed One-Shot, 1 ms	1	177597	5	←
EC104 "IPS"	1	303104	4	
EC119 "FF"	1	303119	1	
EC121 Pulse Amplifiers (4)	1	303121	2	←
EC138 "IPS"	1	303138	1	

TITLE	TOTAL CONTROL AND DIAGRAM SHEETS	DIAGRAM NUMBER	CONTROL SHEET OR DIAGRAM ISSUE
EC600 "INHs" (16;8 sections)	1	303600	3
EC606 "EFs", NPN (8) and PNP (8)	1 and 1	303606	3
→ EC618 Resistors 5.1 K (31)	1	303618	1
→ EC641 Diode Matrix, "AND" Gate Detectors (5)	1	303641	1
EC671 "EFs" (3), Regenerative Ring	1	303671	1
EC680 "OR" Gates (7), Vertical Parity Logic Tree (optional feature)	1	303680	1
EC682 Contact Signal Shaper (8)	1 and 1	303682	2
EC683 "INHs" or Inverters (10)	1	303683	1
EC684 "AND" Gates (2) and "OR" Gates (6)	1	303684	1
→ EC695 Ten-Circuit Station Control Logic	2	303695	4 & 1
→ EC696 Six-Circuit Sender Station Control Logic	2	303696	2 & 1
→ Transmitter Start Recognizer Logic	2	303735	2 & 1
→ Magnet Driver Control Card (DX Reader)	1	318810	4

NO.	NOTES
1.	PAGE NUMBERS FOLLOWED BY A "B" DESIGNATION INDICATES WIRING BEFORE CHANGES WERE MADE. PAGE NUMBERS FOLLOWED BY AN "A" DESIGNATION INDICATES WIRING AFTER CHANGES WERE MADE.

SUPPORTING INFORMATION	
CATEGORY	NO.

CONTENTS

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																		
3																		
4 B	X																	
5																		
6 B	X																	
7																		
4 A	X																	
6 A	X																	

REVISIONS APPLYING TO THIS CONTROL RECORD

ISSUE	DATE	AUTH. NO.
1	6-27-67	18364-R
2	3-28-68	95228

7056 WD

ISSUE CONTROL
SHEET 1 OF 1

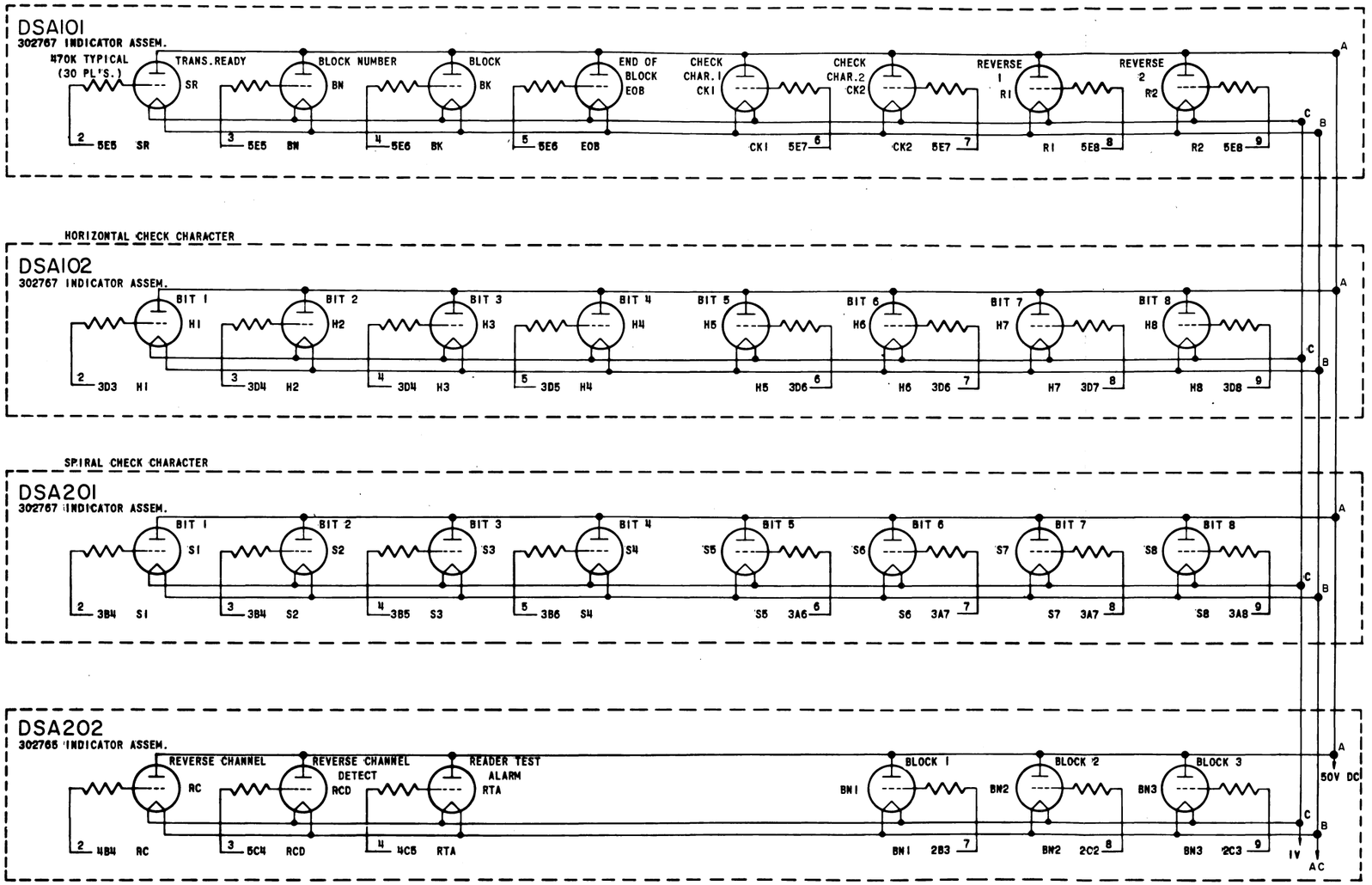
SCHEMATIC
TRANSMITTER CONTROL
ASSEMBLY NO. 302728
(HSEDC)
(MODULE A)

WD NUMBER 7056WD	
DRAWN	CHKD.
ENGD. I.S.K.	APPD.

TELETYPE
CORPORATION

7056 WD

NO.	NOTES
1.	ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
2.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE FOR REFERENCE AND NOT MARKED ON COMPONENTS.
3.	ALL RESISTORS 1/2 WATT AND RESISTANCE VALUES IN OHMS, CAPACITORS IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
4.	⟩—— INDICATES FEMALE TERMINAL AND ——⟩ INDICATES MALE TERMINAL ON CONNECTOR ○ DESIGNATES TERMINALS ON SWITCHES ▽ DESIGNATES GROUND ⏚ DESIGNATES FRAME GROUND
5.	WIRING LEGEND: 3B5/ZA509-E CONNECTOR PIN OR CIRCUIT ELEMENT HORIZONTAL POSITION VERTICAL ROW POSITION MODULE LETTER COMPONENT DESIGNATION AREA OF SCHEMATIC SCHEMATIC SHEET NO.
7.	REFER TO 7057 WD FOR ACTUAL WIRING DIAGRAM.
8.	SPARE CIRCUITS AVAILABLE: 3-EMITTER FOLLOWERS, ZA107, EC528; -INTEGRATORS ZA123, EC547-1 SPECIAL INHIBIT GATE ZA207, EC600 1- POWER AMPLIFIER ZA513, EC581 1-"8" GATE, ZA407 EC503 1-RING DRIVER ZA413 EC353; 2-EMITTER FOLLOWERS, ZA509 EC527
9.	○— INDICATES VOLTAGE POINT OR TEST POINT.
10.	EC327, POSITIONS ZA416 AND ZA417 HAS FUNCTIONAL IDENTIFICATION INCLUDED WITHIN CIRCUIT SYMBOL.
11.	ZA413A, EC353, IS CONNECTED AS A HOLD AMPLIFIER.
12.	ZA205, EC641, IS CONNECTED AS A FAN-OUT GATE. NO + 6 VOLTS BIAS IS SUPPLIED.
13.	REFERENCE SPECIFICATIONS FOR TELETYPE CORPORATION EMPLOYEES ONLY.



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

7056 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. **SHEET 1**

INDICATORS

TRANSMITTER CONTROL
(HSEDC)
ASSEM. NO. 302728
(MODULE A)

APPROVALS

D AND R	E OF M
WK	

E-NUMBER

PROD. NO. 7056WD

DATE 9-28-64

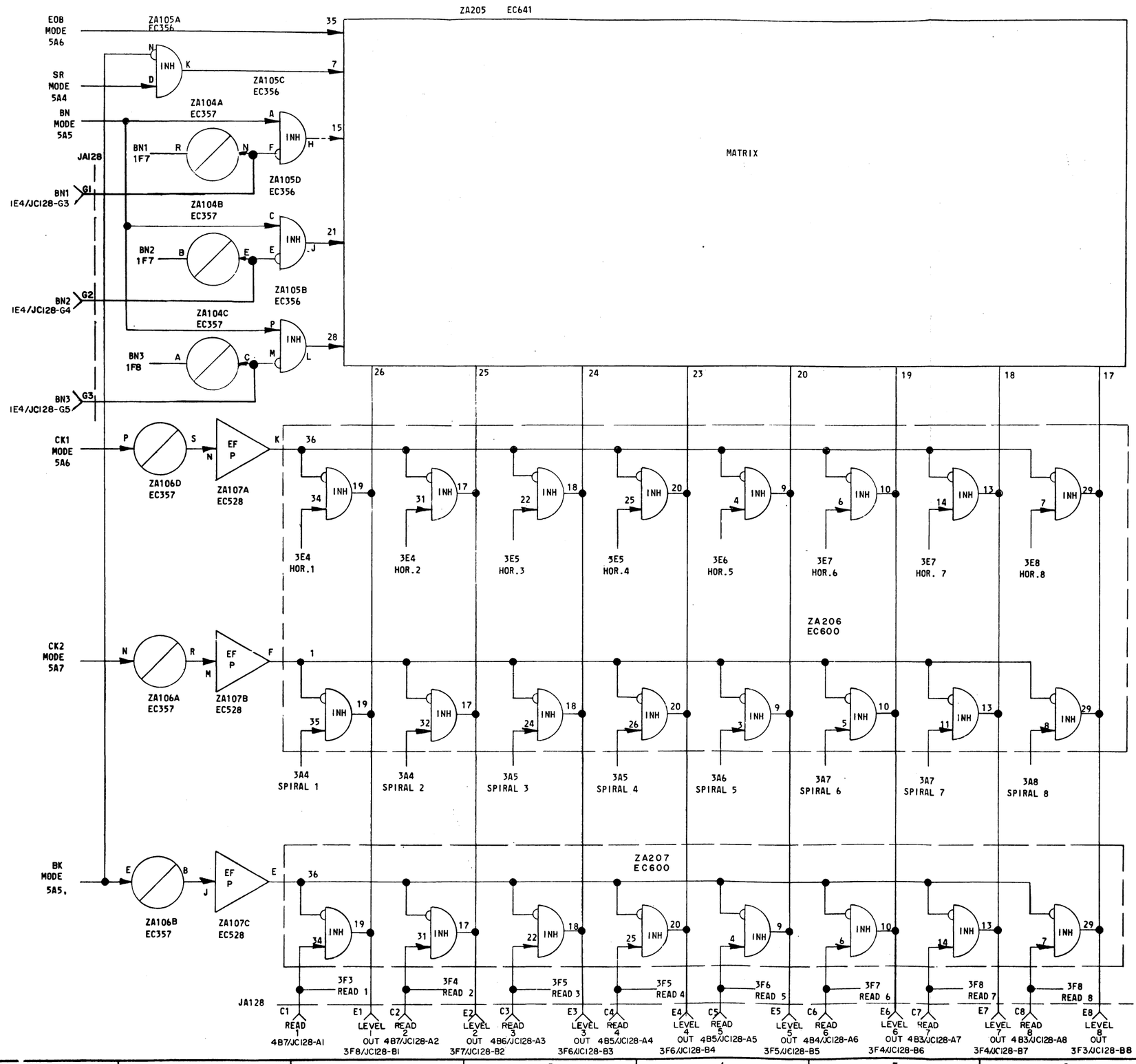
P.D. FILE NO. 2-96.13M.18MA

DRAWN G.R.S. CHKD

ENGD. H.S.K. APPD.

TELETYPE CORPORATION

7056 WD



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

7056 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 2

FIXED CHARACTER GENERATOR AND CHARACTER SELECTION GATES

TRANSMITTER CONTROL (HSEDC) ASSEMBLY NO. 302728 (MODULE A)

APPROVALS

D AND R	E OF M
HJK	

E-NUMBER

PROD. NO. 7056WD

DATE 9/28/64

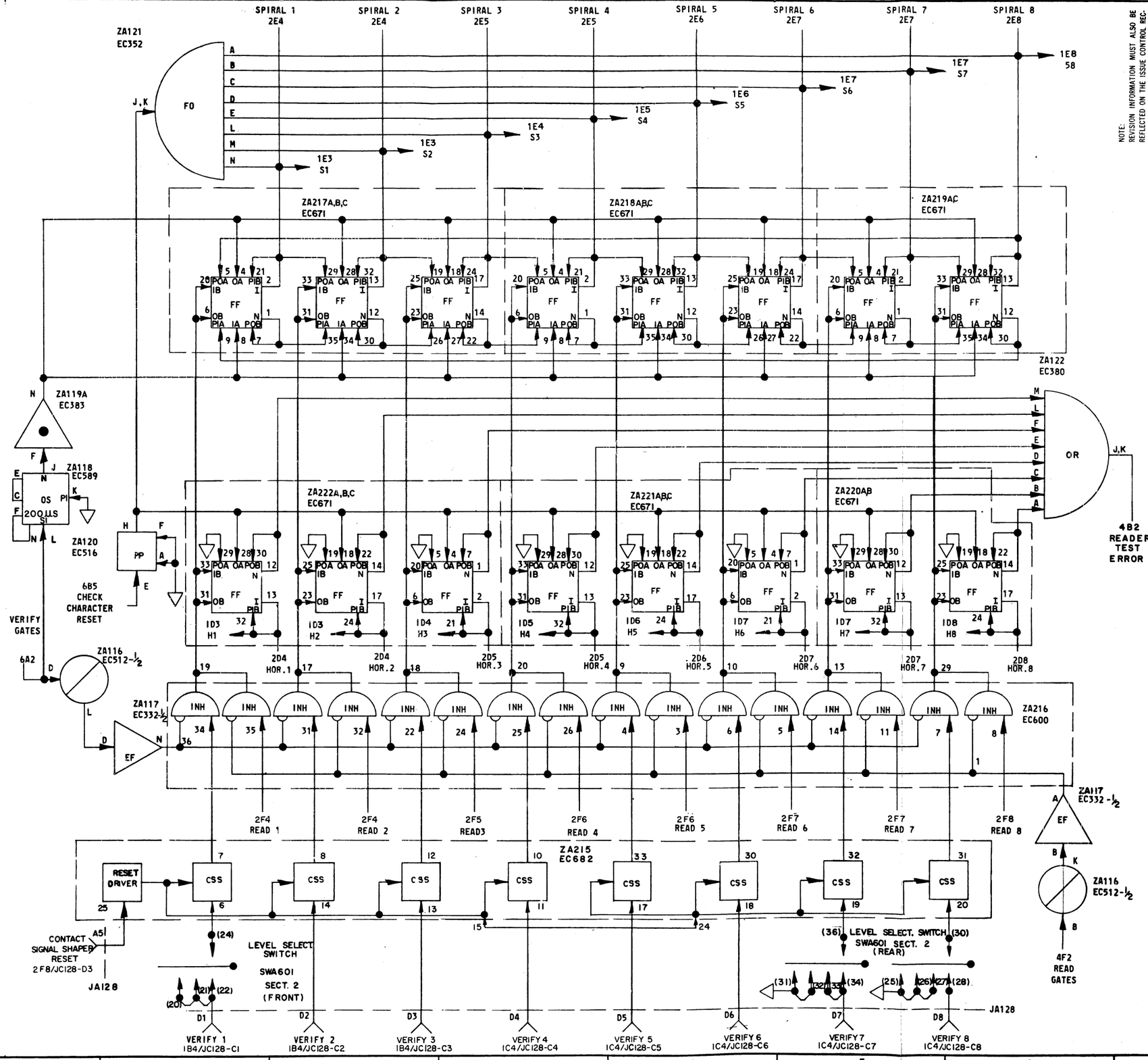
P.D. FILE NO. 2-96.134.184A

DRAWN G.J.M. CHKD.

ENGD. I.S.K. APPD.

TELETYPE CORPORATION

7056 WD



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

7056 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 3

CHECK CHARACTER GENERATOR

TRANSMITTER CONTROL (HSEDC)

ASSEMBLY NO. 302728

(MODULE A)

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 7056WD

DATE 9/28/64

P.D. FILE NO. 2.96.134.184A

DRAWN G.J.M. CHKD

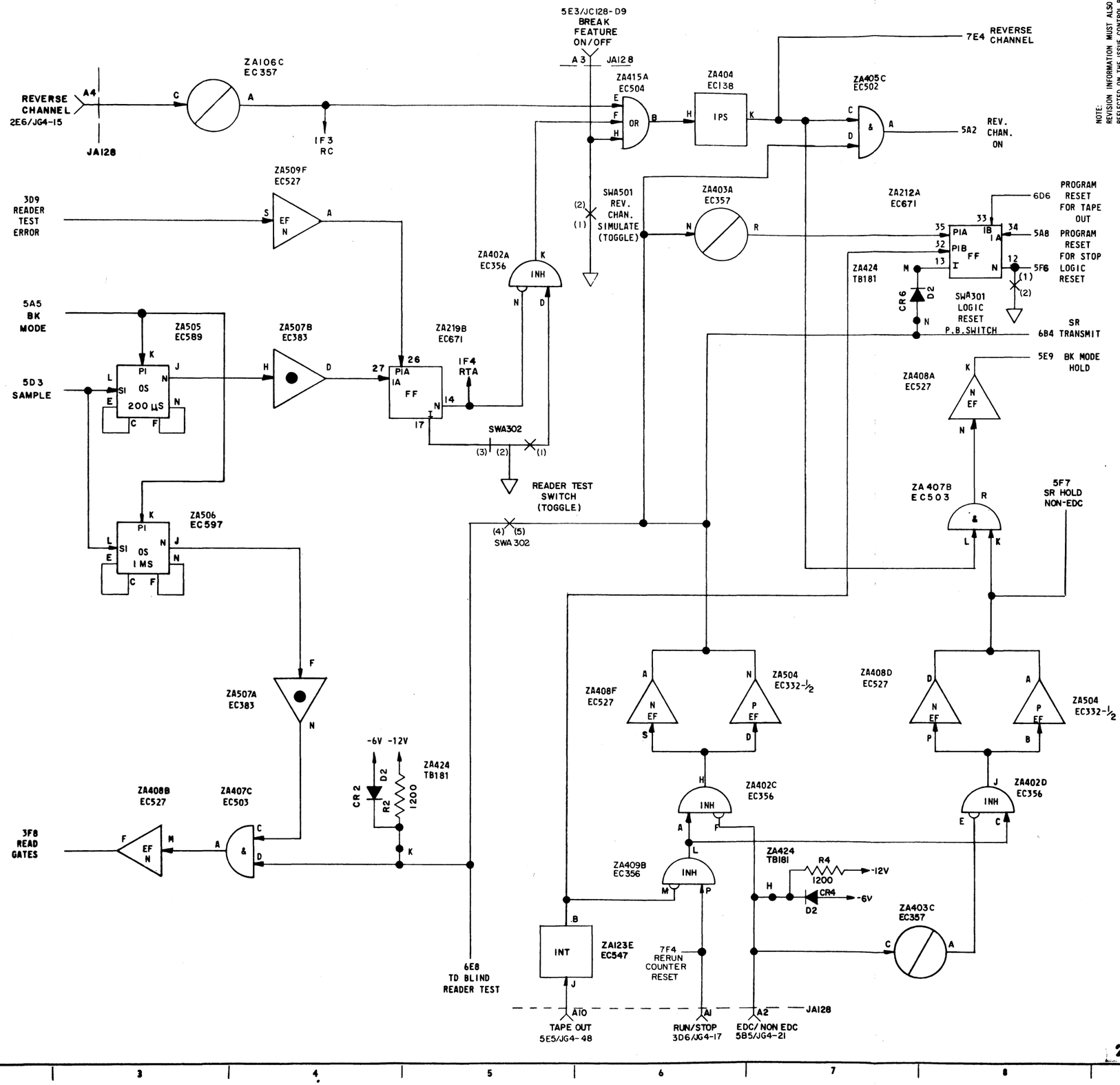
ENGD. I.S.K. APPD.

TELETYPE CORPORATION

7056 WD

TC 434 (3-68)

SHEET NOTE: AREA D3 SHOWS WIRING PRIOR TO CHANGE NOTED ON PAGE 4A.



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

7056WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-27-67	18364-R
2	4-2-68	95228

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 4B

READER TEST AND REVERSE CHANNEL RECOGNITION

TRANSMITTER CONTROL (HSEDC) ASSEMBLY NO. 30872 (MODULE A)

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 7056WD

DATE 9/28/64

P.D. FILE NO. 2-96.134 .184A

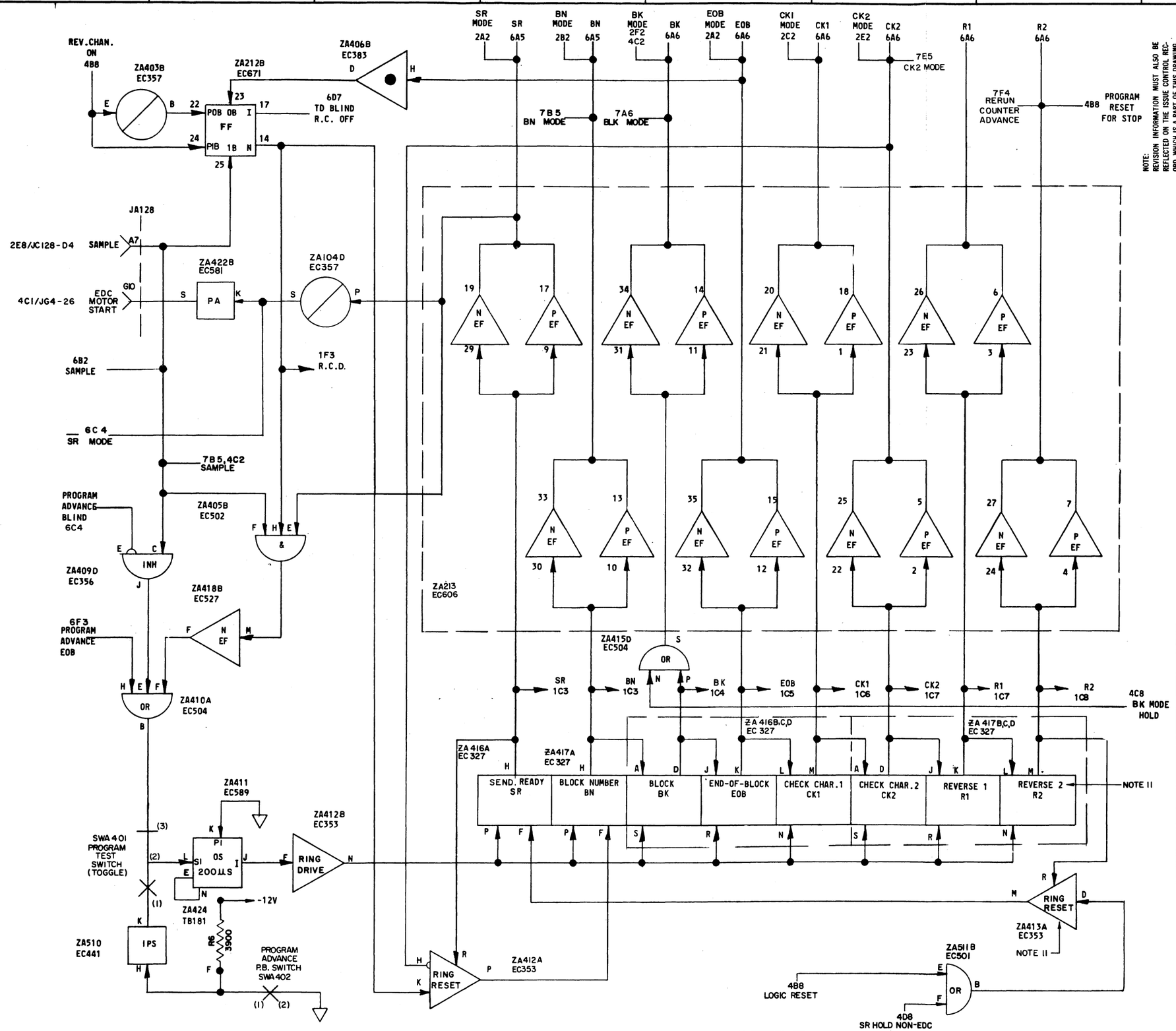
DRAWN G.J.M.	CHKD.
ENGD. I.S.K.	APPD.

TELETYPE CORPORATION

7056WD

2

TC 464 (5-68)



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

7056 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 5

PROGRAMMER AND PROGRAMMER DRIVE

TRANSMITTER CONTROL (HSEDC) ASSEMBLY NO. 302728 MODULE A

APPROVALS

D AND R	E OF M
HAK	CJ

E-NUMBER

PROD. NO. 7056WD

DATE 9/28/64

P.D. FILE NO. 2-96.134.184A

DRAWN G.J.M. CHKD.

ENGD. I.S.K. APPD.

TELETYPE CORPORATION

7056WD

SHEET NOTE: AREA E4 SHOWS DESIGN PRIOR TO CHANGE NOTED ON PAGE 6A.

VERIFY GATES 3E2

ZA418A EC527

ZA409A EC356

ZA212C EC671

CHECK CHARACTER RESET 3D3

SR 5A5

BN 5A5 BK 5A6 EOB 5A6 CK1 5A7 CK2 5A7 R1 5A7 R2 5A8

ZA512 EC104

ZA421 EC380

ZA402B EC356

4C8 SR TRANSMIT

5C2 SAMPLE

ZA414 EC589

ZA419B EC503

ZA509A EC527

7B4 FEED DETECT DRIVE

ZA405A EC502

PROGRAM ADVANCE 5D2 BLIND

ZA508 EC354

SR MODE 5C2

ZA410B,C EC504

ZA418C EC527

GATED OSC.

-6V

ZA420 EC546

ZA511A EC501

ZA511C EC501

TBA518

C2 100µF

ZA410D EC504

ZA419D EC503

5B4 TD BLIND R.C.OFF

A6 JA128

READER DRIVE IN 2C8/JC128-D5

ZA418D EC527

JA128

A8

T.D. START 2B2/JC128-B9

ZA115 EC428

FILTER

M -12

P -6

R +6

S GRD.

ZA509C EC527

ZA406A EC383

ZA408E EC527

ZA418F EC527

4B8 PROGRAM RESET FOR TAPE OUT

7A5 READER DRIVE DETECT

ZA419A EC503

ZA418E EC527

TD BLIND READER TEST 4F5

ZA415B EC504

ZA415C EC504

KA520 AG24

RI 1200 CRI

-12V

-6V

D2

ZA424 TB181

ZA419C EC503

ZA422A EC581

ZA403D EC357

TBA518

R3 68Ω

R2 68Ω

ZA503 EC457

ZA423 EC546

R1 400

C1 100µF

-48V

CRA-1 IN682

SR KA520 AG24

1050

R7 1000

ZA424 TB181

-48V

JA128

H1 FRAME GRD.

H2 GRD.

+6V H4 +6V

-6V H5 -6V

-12V H6 -12V

-48V H7 -48V

+50V H8 +50V

1VAC H9 1VAC

1VAC H10 1VAC

JA128

KA520 AG24

G7 JA128 G8

FORWARD 1E4/JC128-G7

REVERSE 1E4/JC128-G8

END OF BLOCK INDICATION

5E2 PROGRAM ADVANCE E08

INTERLOCK RETURN 1F4/JC128-E9

RETRACTOR INTERLOCK 1F4/JC128-E10

READER REVERSE 4E5/JG4-27

G4 JA128

READER DRIVE OUT 1F4/JC128-D6

REVERSE SIGNAL IN 5E5/JG4-28

A9 JA128

TD BLIND 2E8/JC128-G1

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

7056WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364-R
2	4-2-68	95228

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 6B

TRANSMITTER DISTRIBUTOR CONTROL AND READER DRIVE CONTROL

TRANSMITTER CONTROL (HSEDC) ASSEMBLY NO. 302728 (MODULE A)

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 7056 WD

DATE 9/28/64

P.D. FILE NO. 2-96.134.184A

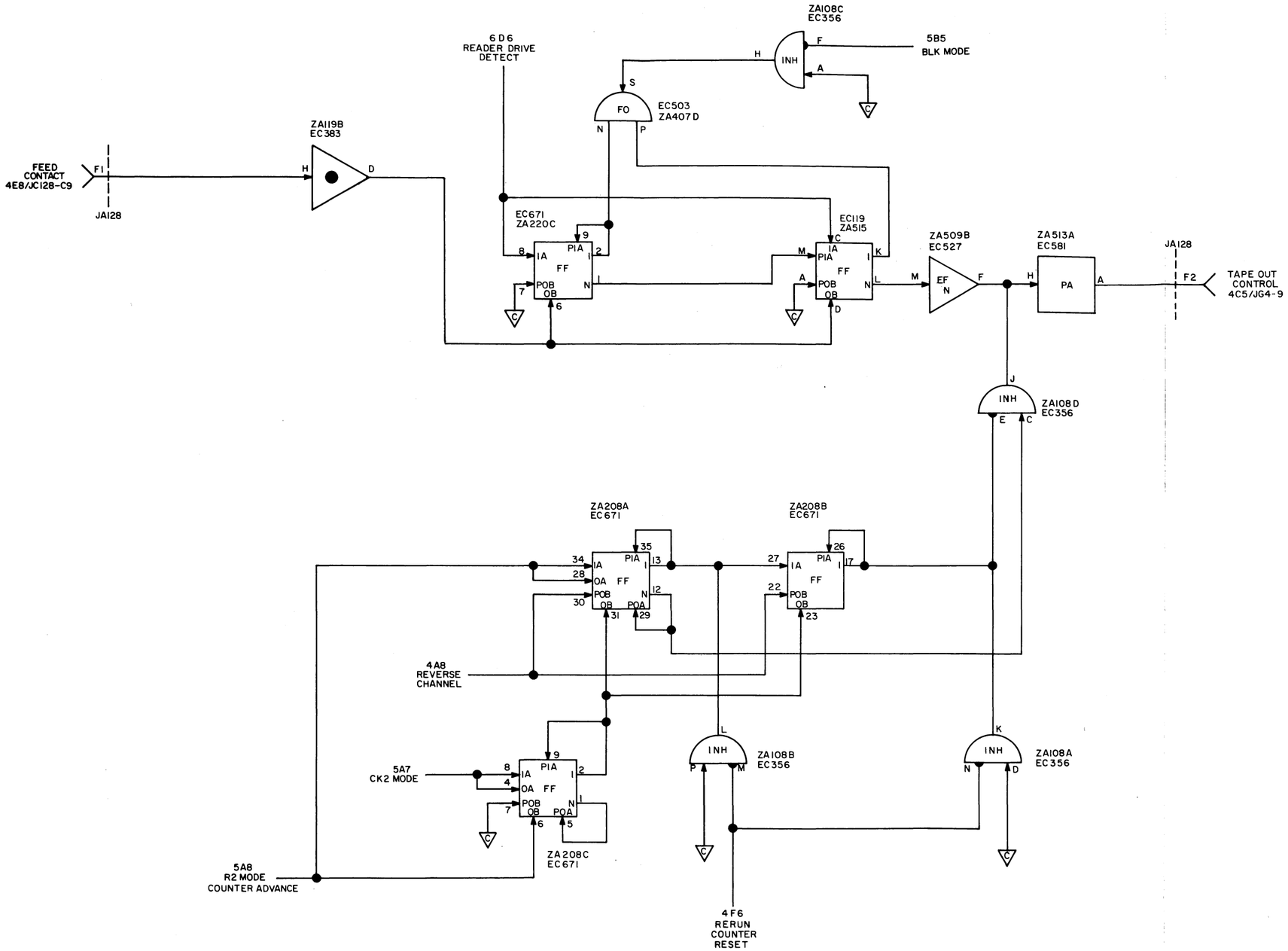
DRAWN G.J.M.	CHKD.
ENGD. I.S.K.	APPD.

TELETYPE CORPORATION

7056WD

2

TC 404 (6-68)



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

7056 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 7

READER FEED DETECTION
AND
RERUN COUNTER

TRANSMITTER CONTROL(HSEDC)
ASSEMBLY NO.302728
(MODULE A)

APPROVALS

D AND R	E OF M
HJK	

E-NUMBER

PROD. NO. 7056 WD

DATE 6-4-65

P.D. FILE NO. 2-96.134.184A

DRAWN T.R | CHKD. [illegible]

ENGD. I.S.K. | APPD. PGW

TELETYPE
CORPORATION

7056WD

TC 434 (8-68)

SHEET NOTE: DESIGN IN AREA D3 CHANGED TO IMPROVE READER TEST TIMING

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

7056 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-27-67	18364-R
2	4-2-68	95228

5E3/JC128-D9 BREAK FEATURE ON/OFF

A3 JA128

7E4 REVERSE CHANNEL

REVERSE CHANNEL 2E6/JG4-15

A4 JA128

ZA106C EC357

IF3 RC

ZA415A EC504 OR

ZA404 EC138 IPS

ZA405C EC502 &

5A2 REV. CHAN. ON

ZA509F EC527 EF N

309 READER TEST ERROR

SWA501 REV. CHAN. SIMULATE (TOGGLE)

ZA403A EC357

ZA212A EC671 FF

6D6 PROGRAM RESET FOR TAPE OUT

5A8 PROGRAM RESET FOR STOP LOGIC RESET

5F6

ZA424 TB181

CR6 D2

SWA301 LOGIC RESET P.B. SWITCH

SR TRANSMIT 6B4

ZA402A EC356 INH

5A5 BK MODE

ZA505 EC589

ZA507B EC383

ZA219B EC671

IF4 RTA

5D3 SAMPLE

SWA302

READER TEST SWITCH (TOGGLE)

SWA 302

5E9 BK MODE HOLD

ZA408A EC527 EF N

ZA407B EC503 &

5F7 SR HOLD NON-EDC

ZA507A EC383

ZA408F EC527

ZA504 EC332-1/2

ZA408D EC527

ZA504 EC332-1/2

-6V -12V

ZA424 TB181

CR2 D2 R2 1200

ZA408B EC527

ZA407C EC503

3F8 READ GATES

ZA402C EC356 INH

ZA402D EC356 INH

ZA424 TB181

R4 1200 -12V

CR4 D2 -6V

ZA409B EC356 INH

ZA403C EC357

ZAI23E EC547 INT

7F4 RERUN COUNTER RESET

6E8 TD BLIND READER TEST

JA128

A10 TAPE OUT 5E5/JG4-48

A1 RUN/STOP 3D6/JG4-17

A2 EDC/NON EDC 5B5/JG4-21

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 4A

READER TEST AND REVERSE CHANNEL RECOGNITION

TRANSMITTER CONTROL (HSEDC) ASSEMBLY NO. 30872 (MODULE A)

APPROVALS	
D AND R	E OF M

E-NUMBER	
PROD. NO. 7056WD	
DATE 9/28/64	
P.D. FILE NO. 2-96.134.184A	
DRAWN G.J.M.	CHKD.
ENGD. I.S.K.	APPD.

TELETYPE CORPORATION

7056 WD

SHEET NOTE: DESIGN IN AREA E3 CHANGED TO IMPROVE READER TEST TIMING.

VERIFY GATES 3E2

ZA418A EC527 — N EF

ZA409A EC356 — INH

ZA212C EC671 — FF (PIA, PIB, OA, POA)

CHECK CHARACTER RESET 3D3

4C8 SR TRANSMIT

5C2 SAMPLE

ZA414 EC589 — 200µS

SR 5A5

BN 5A5 BK 5A6 EOB 5A6 CK1 5A7 CK2 5A7 R1 5A7 R2 5A8

ZA512 EC104 — IPS

ZA421 EC380 — OR — J,K

ZA402B EC356

ZA419B EC503 — INH

ZA509A EC527 — EF N

ZA419C EC503 — &

7B4 FEED DETECT DRIVE

ZA405A EC502 — OR

PROGRAM ADVANCE 5D2 BLIND

ZA410B,C EC504 — OR

ZA418C EC527 — EF N

ZA508 EC354 — IPS 500 MS

SR MODE 5C2

ZA511A EC501 — &

ZA511C EC501 — OR

ZA418D EC527 — EF N

ZA420 EC546 — GATED OSC — -6V

JA128 A8 — T.D. START 2B2/JC128-B9

TBA518 C2 100µF

ZA410D EC504 — OR

ZA419D EC503 — &

5B4 TD BLIND R.C.OFF

A6 JA128 — READER DRIVE IN 2C8/JC128-D5

ZA115 EC428 — FILTER

M -12, P -6, R +6, S GRD.

ZA509C EC527 — EF N

ZA123C EC547 — INT

ZA406A EC383

ZA418E EC527 — EF N

ZA418F EC527 — EF N

KA520 AG24 — R1 1200 CR1 — -12V, -6V — D2

ZA424 TB181

4B8 PROGRAM RESET FOR TAPE OUT

7A5 READER DRIVE DETECT

TD BLIND READER TEST 4F5

ZA415B EC504 — OR

ZA415C EC504 — OR

HI FRAME GRD. H2 GRD.

+6V H4, -6V H5, -12V H6, -48V H7, +50V H8, 1VAC H9, 1VAC H10

JA128

ZA503 EC597 — OS IMS SI

ZA422A EC581 — PA

ZA403D EC357

TBA518 R3 68Ω, R2 68Ω

TBA518 R1 400, C1 100µF

ZA423 EC546 — GATED OSC

KA520 AG24 — SR — 1050

ZA424 TB181 — R7 1000

JA128 G4 — READER DRIVE OUT 1F4/JC128-D6 — CRA-1 IN682

JA128 G7 — FORWARD 1E4/JC128-G7

JA128 G8 — REVERSE 1E4/JC128-G8

END OF BLOCK INDICATION

5E2 PROGRAM ADVANCE EOB

E9 — INTERLOCK RETURN 1F4/JC128-E9

E10 — RETRACTOR INTERLOCK 1F4/JC128-E10

G5 — READER REVERSE 4E5/JG4-27

G6 — REVERSE SIGNAL IN 5E5/JG4-28

JA128 A9 — T.D. BLIND 2E8/JC128-G1

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

7056WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-28-67	18364-R
2	4-2-68	95228

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 6A

TRANSMITTER DISTRIBUTOR CONTROL AND READER DRIVE CONTROL

TRANSMITTER CONTROL (HSEDC) ASSEMBLY NO. 302728 (MODULE A)

APPROVALS

D AND R	E OF M
HJK	

E-NUMBER

PROD. NO. 7056WD

DATE 9/28/64

P.D. FILE NO. 2-96.134.184A

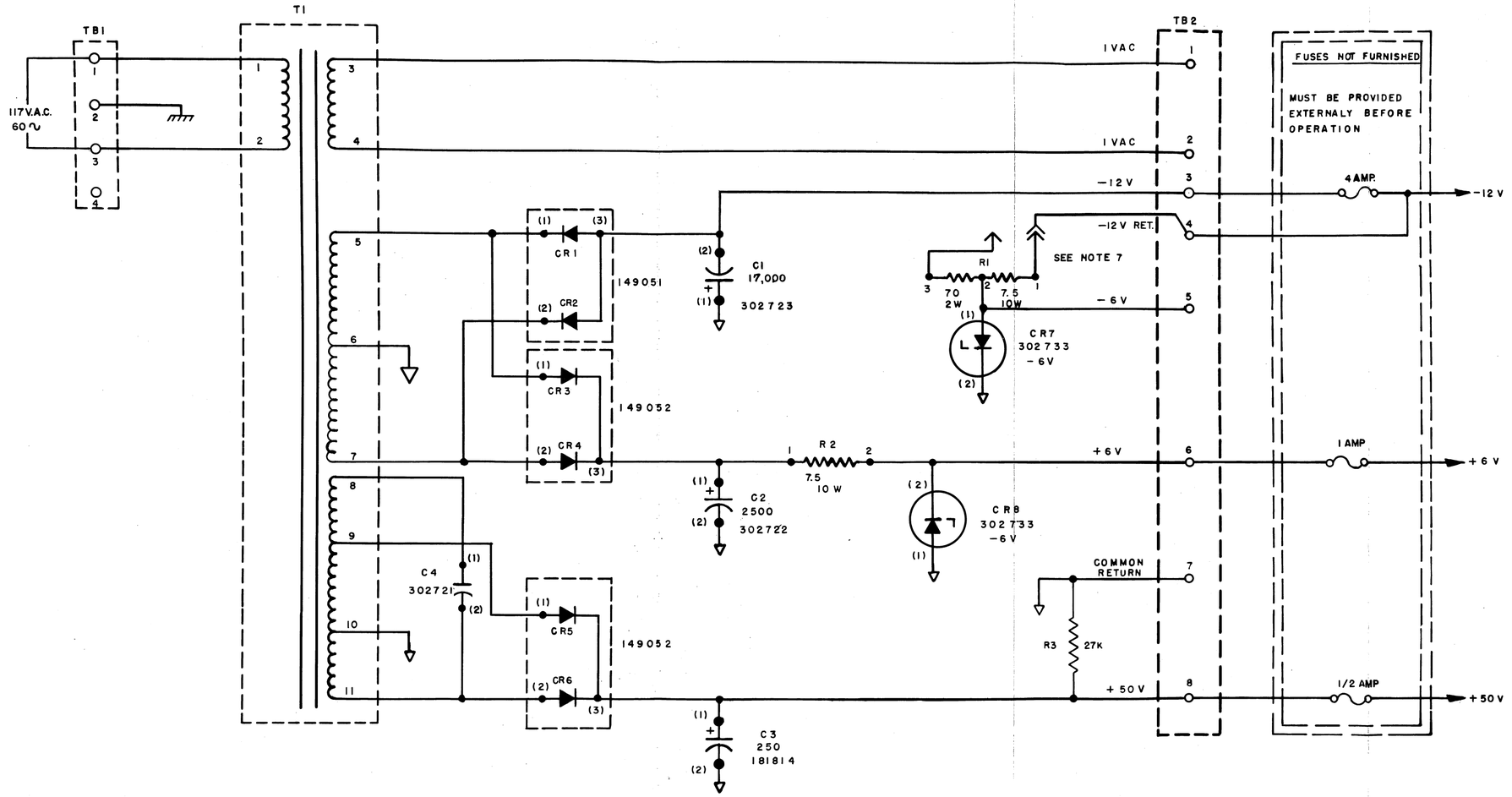
DRAWN G.J.M. CHKD.

ENGD. I.S.K. APPD.

TELETYPE CORPORATION

7056WD

NO.	NOTES
1.	ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
2.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE FOR REFERENCE AND NOT MARKED ON COMPONENT.
3.	ALL RESISTORS 1/2 WATT AND RESISTANCE VALUE IN OHMS UNLESS OTHERWISE SPECIFIED.
4.	ALL CAPACITANCE VALUES IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
5.	REFER TO SPECIFICATION TO DETERMINE PROPER VALUE REQUIRED
6.	→ INDICATES MALE TERMINALS ON RESISTOR R1
7.	⟩— INDICATES FEMALE TERMINALS.
8.	REFER TO 7059 WD FOR ACTUAL WIRING DIAGRAM.



REVISIONS		
ISSUE	DATE	AUTH. NO.
1	6-25-64	15624-R
2	10-29-64	83567

SPEC. NO

SCHEMATIC WIRING DIAGRAM FOR MULTI-VOLTAGE POWER SUPPLY

ASSEM NO. 302720

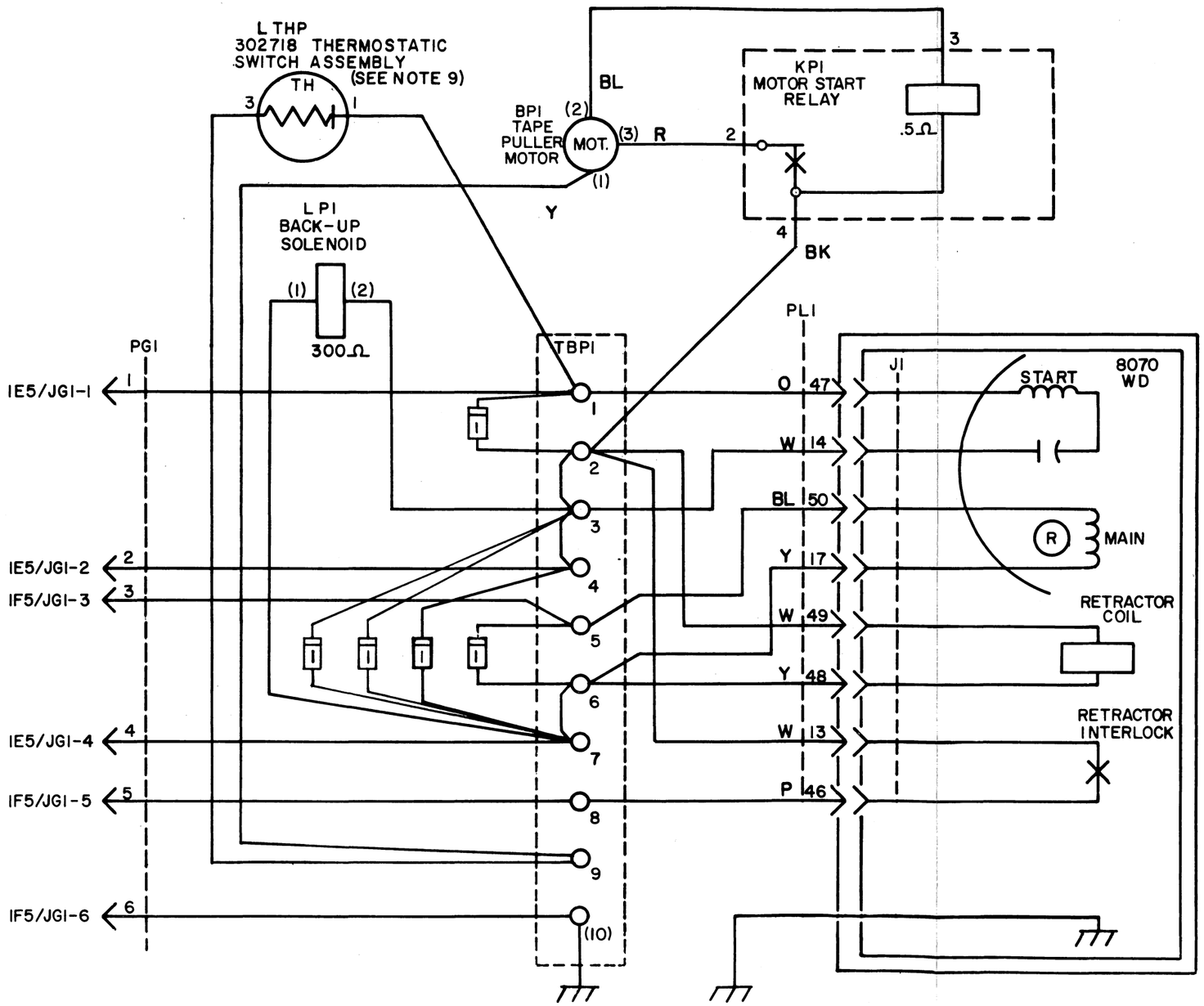
APPROVALS	
D AND R	E OF M
E – NUMBER	
PROD. NO. 7058 WD	
DATE 3-18-64	
P.D. FILE NO. 2-96,134,184 A	
DRAWN G.J.M.	APPD.
ENGD. F.K.H.	CHKD.

TELETYPE CORPORATION

7058 WD

7058 WD

	NOTES
1.	REFER TO 7066 WD FOR ACTUAL WIRING DIAGRAM.
2.	FOR TELETYPE CORP. EMPLOYEES REFERENCE ONLY.
3.	ALL VOLTAGES AC UNLESS OTHERWISE SPECIFIED.
4.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESIS ARE FOR REFERENCE AND ARE NOT MARKED ON THE COMPONENT.
5.	REPRESENTS A 165027 NETWORK WITH 120Ω IN SERIES WITH .30μf CAPACITANCE.
6.	INDICATES MALE AND INDICATES FEMALE TERMINALS ON CONNECTORS. INDICATES TERM. ON TERMINAL BOARD. DESIGNATES FRAME GROUND.
7.	CROSS REFERENCE AND CIRCUIT LOCATION: IE5/JGI-1 — CONNECTOR PIN OR CIRCUIT ELEMENT; COMPONENT POSITION.; MODULE LETTER; COMP. DESIGNATION; AREA OF SCHEMATIC; SCHEMATIC SHEET NO.
8.	ASSOCIATED CABLE ASSEMBLIES: 302787 — READER; 302786 — STATION CONTROL
9.	THERMOSTATIC SWITCH ASSEMBLY NOT INCLUDED ON SOME SETS. WHEN SWITCH IS OMITTED, LEAD (1) OF BPI TAPE PULLER MOTOR IS CONNECTED TO TBPI-1 INSTEAD OF TBPI-9



SENDER TAPE TRANSPORT ASSEMBLY 309642

MODULE "P"

REVISIONS		
ISSUE	DATE	AUTH. NO.
1	6-27-67	18364-R
2	2-6-68	94972
3	3-8-68	95397
4	3-26-68	95402

APPROVALS	
D AND R	E OF M
HJK	

E-NUMBER

PROD. NO. 7065 WD

DATE: 11-17-66

P.D FILE NO.

DRAWN T.R. | CHKD

ENGD. I.S.K. | APPD

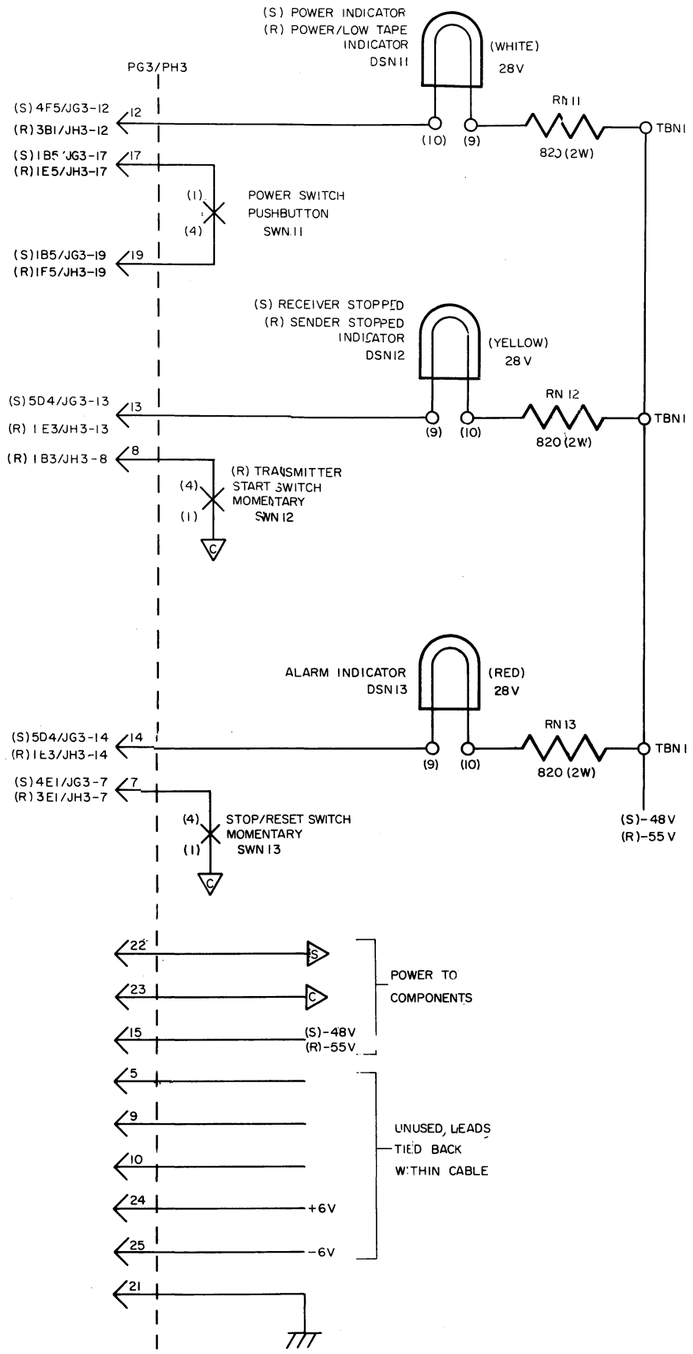
TELETYPE CORPORATION

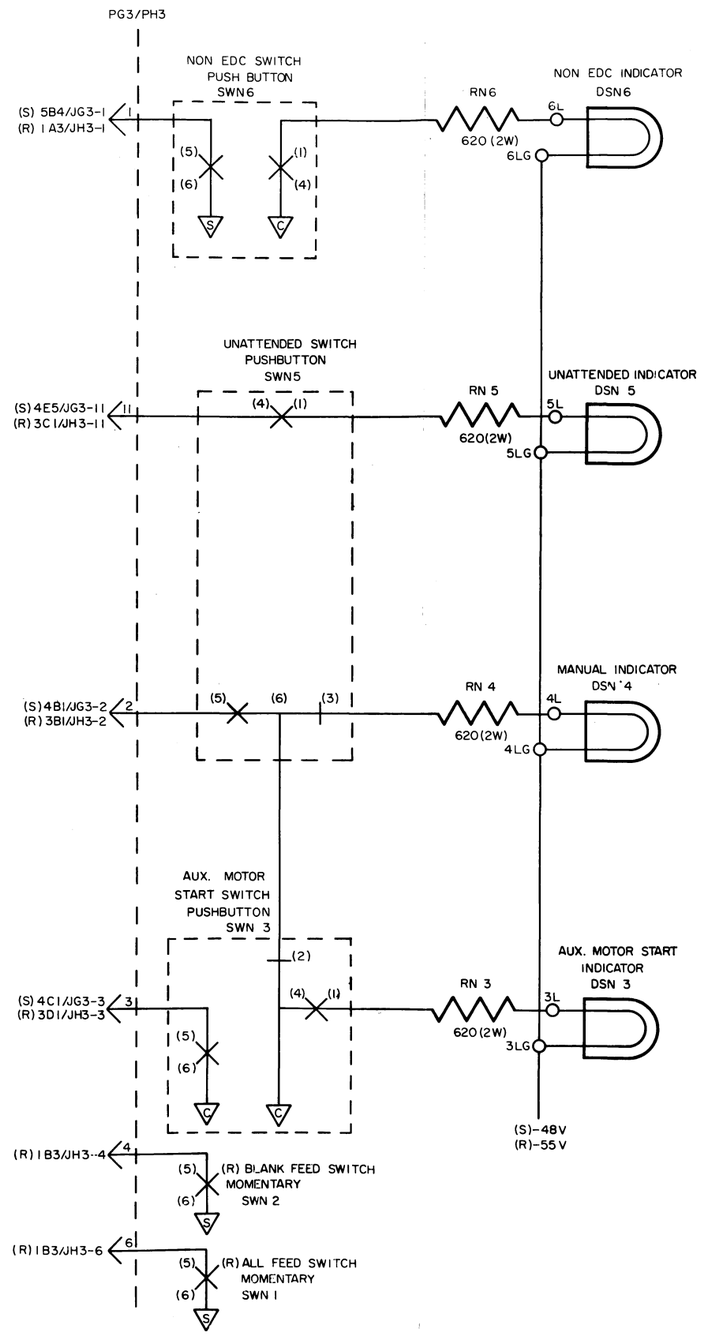
7065 WD

4

ETIG8147
TC255(11-64)

NO.	NOTES
1.	REFER TO 302790 FOR ACTUAL WIRING DIAGRAM.
2.	CROSS REFERENCE AND CIRCUIT ELEMENT LOCATIONS: 1B3/JH3 - 8 8 — CONNECTOR PIN 3 — COMPONENT POSITION J — MODULE LETTER H — COMPONENT DESIGNATION 1 — SCHEMATIC AREA B — SCHEMATIC SHEET AREA
3.	← DESIGNATES MALE TERMINALS ON CONNECTOR. (S) DESIGNATES SIGNAL GROUND (C) DESIGNATES CIRCUIT GROUND DESIGNATES FRAME GROUND
4.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE FOR REFERENCE AND ARE NOT MARKED ON COMPONENT.
5.	ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
6.	ALL RESISTORS ARE 2 WATT AND IN OHMS.
7.	ALL INDICATORS ARE WHITE UNLESS OTHERWISE SPECIFIED.
8.	(S) PRECEDING A NAME, VOLTAGE, OR CROSS REFERENCE APPLIES USE ONLY WHEN MODULE N IS USED AS PART OF THE SENDER. (R) PRECEDING A NAME, VOLTAGE, OR CROSS REFERENCES APPLIES USE ONLY WHEN MODULE N IS USED AS PART OF THE RECEIVER. WHEN NEITHER (S) OR (R) APPEARS, NAME OR VOLTAGE IS COMMON TO BOTH SENDER AND RECEIVER.





7070 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-27-67	18363-R

CONTROLS ASSEMBLY
SENDER AND RECEIVER
ASSEMBLY NO 302790
(MODULE N)

APPROVALS

D AND R	E OF M
HJR	

E-NUMBER

PROD. NO. 7070 WD

DATE

P.D. FILE NO. 5-A148/134AA

DRAWN D.B.	CHKD.
ENGD. W.R.F.	APPD.

TELETYPE
CORPORATION

7070 WD

ISSUE CONTROL RECORD

7402 WD

NO.	NOTES

SUPPORTING INFORMATION	
CATEGORY	NO.

CONTENTS	SHEET NO.
AC CONTROL	1
DATA SET INTERFACE	2
START CONTROL	3
CONTROL LOGIC	4
CONTROLS INTERFACE	5

ISSUE	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

REVISIONS APPLYING TO THIS CONTROL RECORD

ISSUE	DATE	AUTH. NO.
1	6-27-67	18363-R

ISSUE CONTROL SHEET 1 OF 1

SENDER STATION
CONTROL
ASSEMBLY NO 308461
(MODULE G)

WD NUMBER	7402WD
DRAWN D.B.	CHKD.
ENGD. W.R.F	APPD.

TELETYPE
CORPORATION

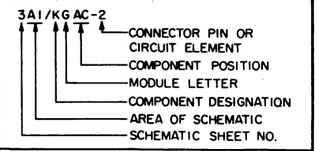
7402 WD

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

NOTES

1. REFER TO 7403WD FOR ACTUAL WIRING DIAGRAM.

2. CROSS REFERENCE AND CIRCUIT ELEMENT LOCATIONS:



3.
- INDICATES MALE AND INDICATES FEMALE TERMINAL ON CONNECTOR.
- ○ DESIGNATES TERMINALS ON TERMINAL BOARD TB2, FUSE F1, FLASHER FL, AND RELAYS UA, TO AND DC.
- (S) DESIGNATES SIGNAL GROUND.
- (C) DESIGNATES CIRCUIT GROUND AND IS THE RETURN FOR THE -48V LEAD.
- ⏚ DESIGNATES FRAME GROUND.

4. TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE FOR REFERENCE AND ARE NOT MARKED ON COMPONENT

5. ALL VOLTAGES DC, UNLESS OTHERWISE SPECIFIED.

6. ALL RESISTORS ARE 1/2 WATT AND IN OHMS UNLESS OTHERWISE SPECIFIED.

7. TOGGLE SWITCH IS SHOWN IN ITS UN-OPERATED STATE WHICH IS;
   SW1 - OPERATE POSITION.

8. (A) DESIGNATES SERVICE OPTIONS.

9. THIS UNIT CONTAINS FOUR STRAPPING OPTIONS THESE OPTIONS ARE LOCATED ON TERMINAL BOARD TB1

OPTIONS

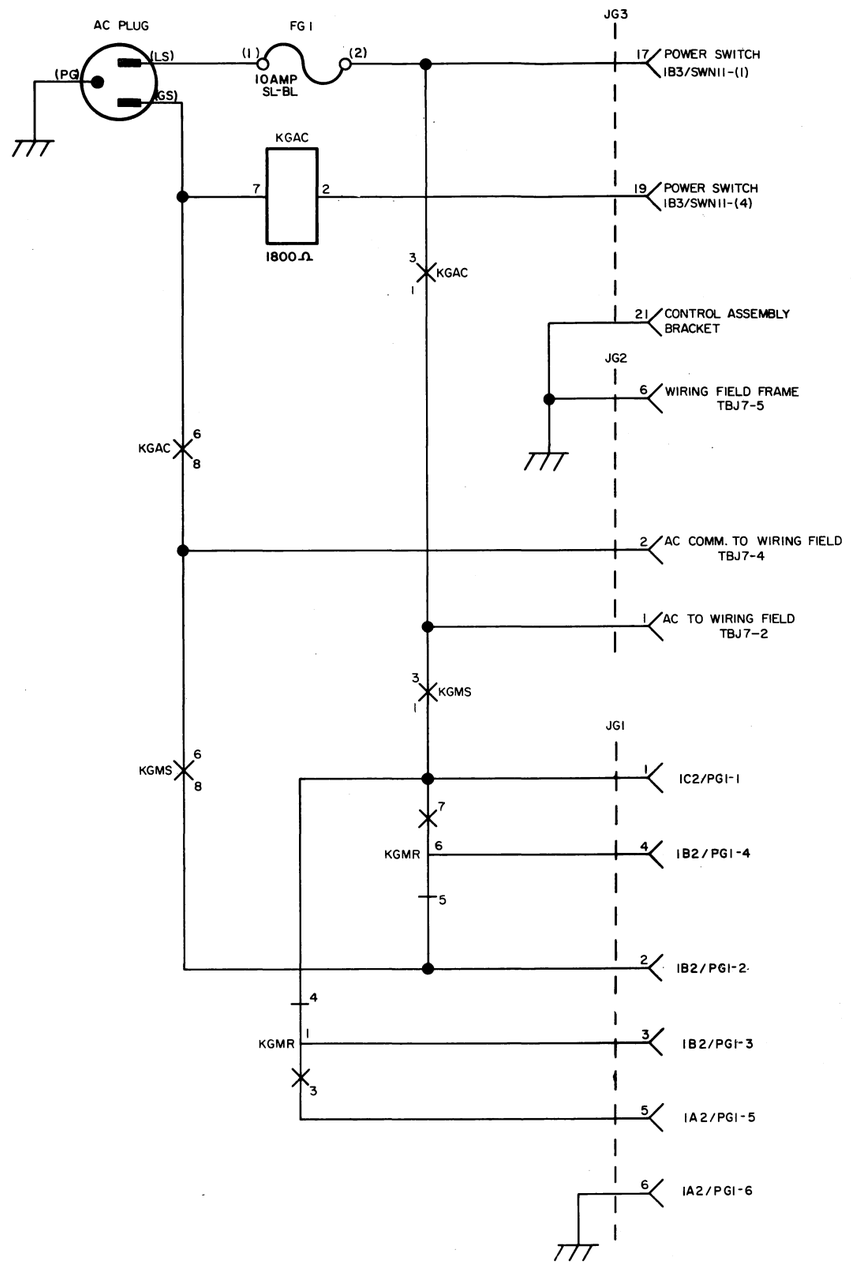
FEATURE	OPTION	SHT DESIG.	PROVIDE
UNATTEND ANSWER	KEY CONTROL	5 A1	1 PER STN.
	KEY, TAPE-OUT CONTROL	3, A2	
	NO ANS	REMOVE A1 AND A2	

10. CIRCUITRY ON TERMINALS JG4-31,32,33,34, 35 AND 36 WITH CONTACT INTERFACE ARE AVAILABLE FOR FUTURE APPLICATION WITHIN THE TERMINAL. CIRCUITRY ON TERMINALS 29, 30, 39, 40, 49 AND 50 WITH DRY CONTACT INTERFACE ARE AVAILABLE FOR USE BY THE TELEPHONE COMPANY.

11. INTERFACE DESIGNATIONS ON RECEPTACLES J3 AND J4 ENCLOSED IN PARENTHESES REFER TO INTERFACE DESIGNATIONS AS FOLLOWS

DESIG.	DESCRIPTION
(AC)	AC POWER
(V)	DC VOLTAGE
(P)	POLAR, EIA +3 TO +25V & -3V TO -25V
(N)	NORMAL, 0V AND -6V, NOMINAL
(C)	CONTACT, GROUND AND OPEN CIRCUIT
(D)	DRY CONTACT

ALL DRY CONTACT CIRCUITS CONSIST OF TWO LEADS, THE SECOND LEAD IS THE RETURN (RTN.) FOR THE CIRCUIT



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

7402 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
- 1	8-27-67	18363-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 1

AC CONTROL

SENDER STATION CONTROL ASSEMBLY NO 30846 (MODULE G)

APPROVALS

D AND R	E OF M
492'	

E-NUMBER

PROD. NO. 7402 WD

DATE 10-27-66

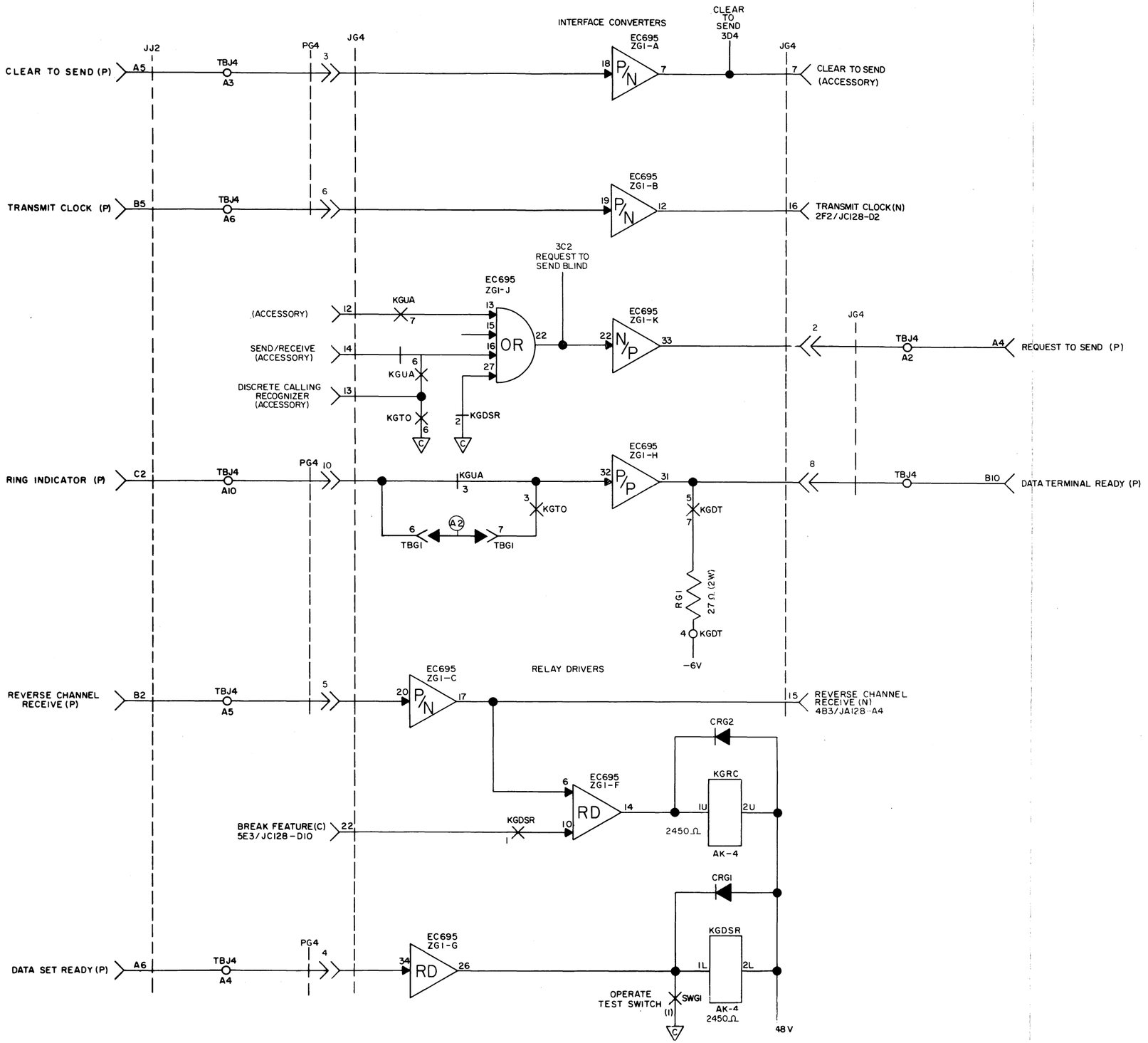
P.D. FILE NO. 5-A148/134AA

DRAWN	D.B	CHKD.
ENGD.	W.R.F.	APPD.

TELETYPE CORPORATION

7402 WD

TC 484 (5-62)



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

7402 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-27-67	18363-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 2

DATA SET INTERFACE

SENDER STATION CONTROL
ASSEMBLY NO 308461
MODULE G

APPROVALS

D AND R	E OF M
HJK	

E-NUMBER

PROD. NO. 7402 WD

DATE 11-4-66

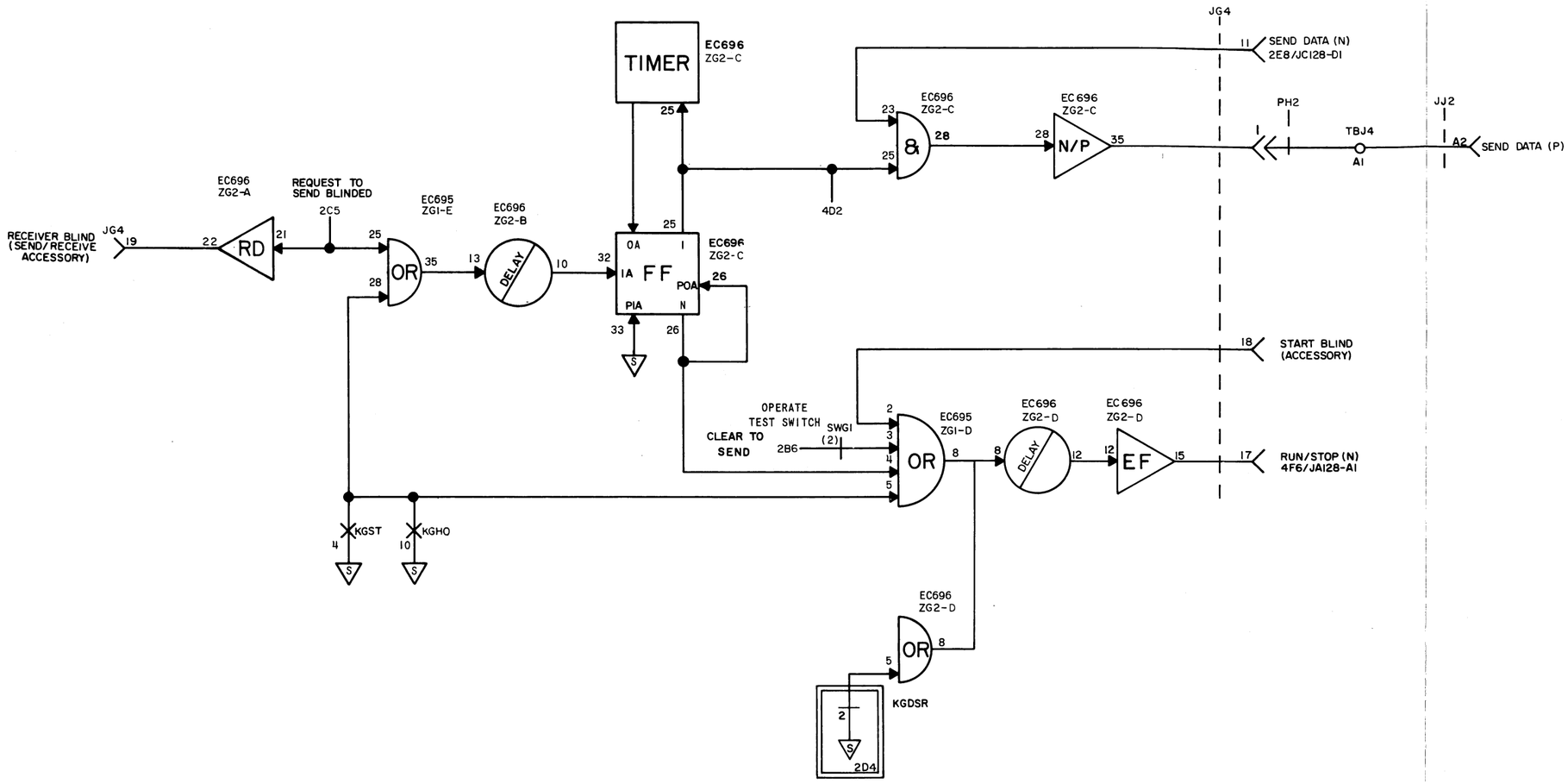
P.D. FILE NO. 5-A148 134AA

DRAWN | CHKD. HJK

ENGD. W.R.F. | APPD. RGW

TELETYPE CORPORATION

7402 WD



REVISIONS		
ISSUE	DATE	AUTH. NO.
1	6-27-67	18363-R
2	3-8-68	95415

7402 WD

SHEET 3

START CONTROL

SENDER STATION CONTROL
ASSEMBLY NO. 308461
(MODULE G)

APPROVALS	
D AND R	E OF M
AR	

E-NUMBER

PROD. NO. 7402WD

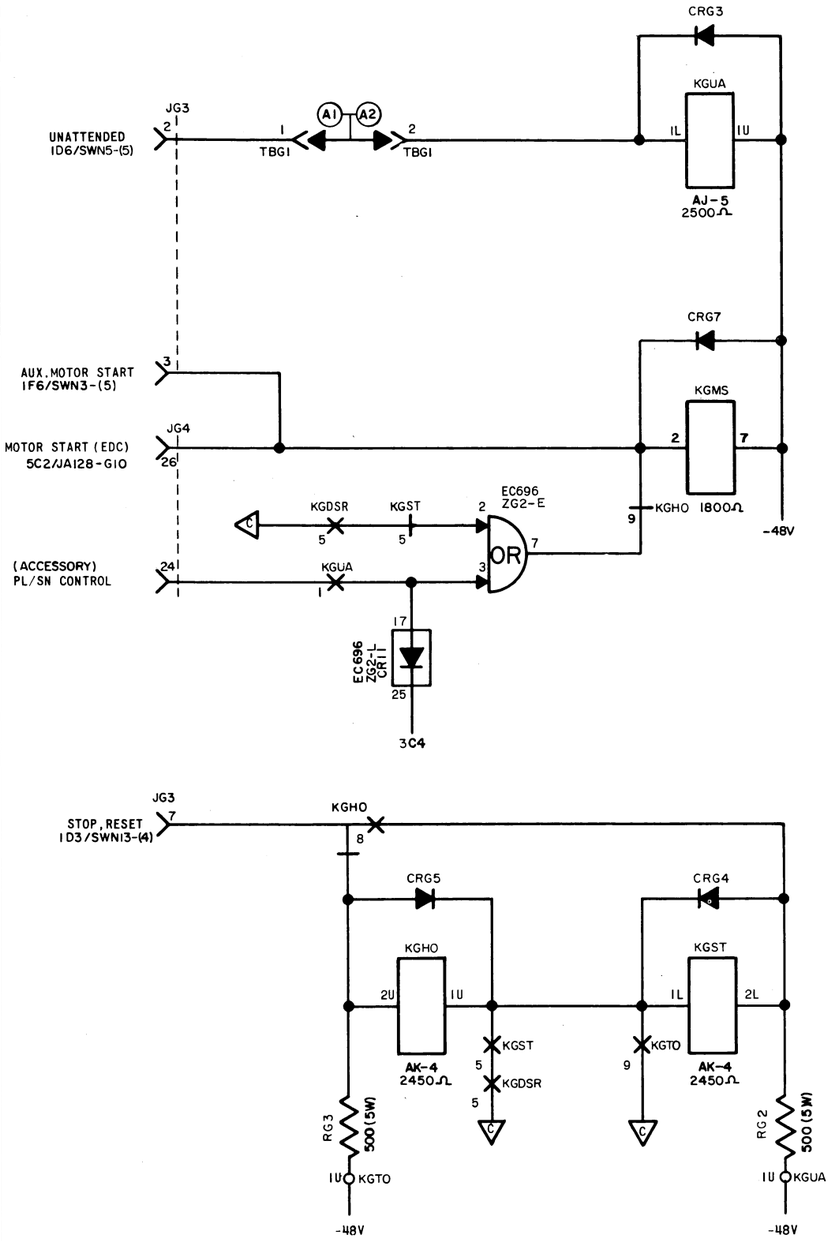
DATE 4-1-65

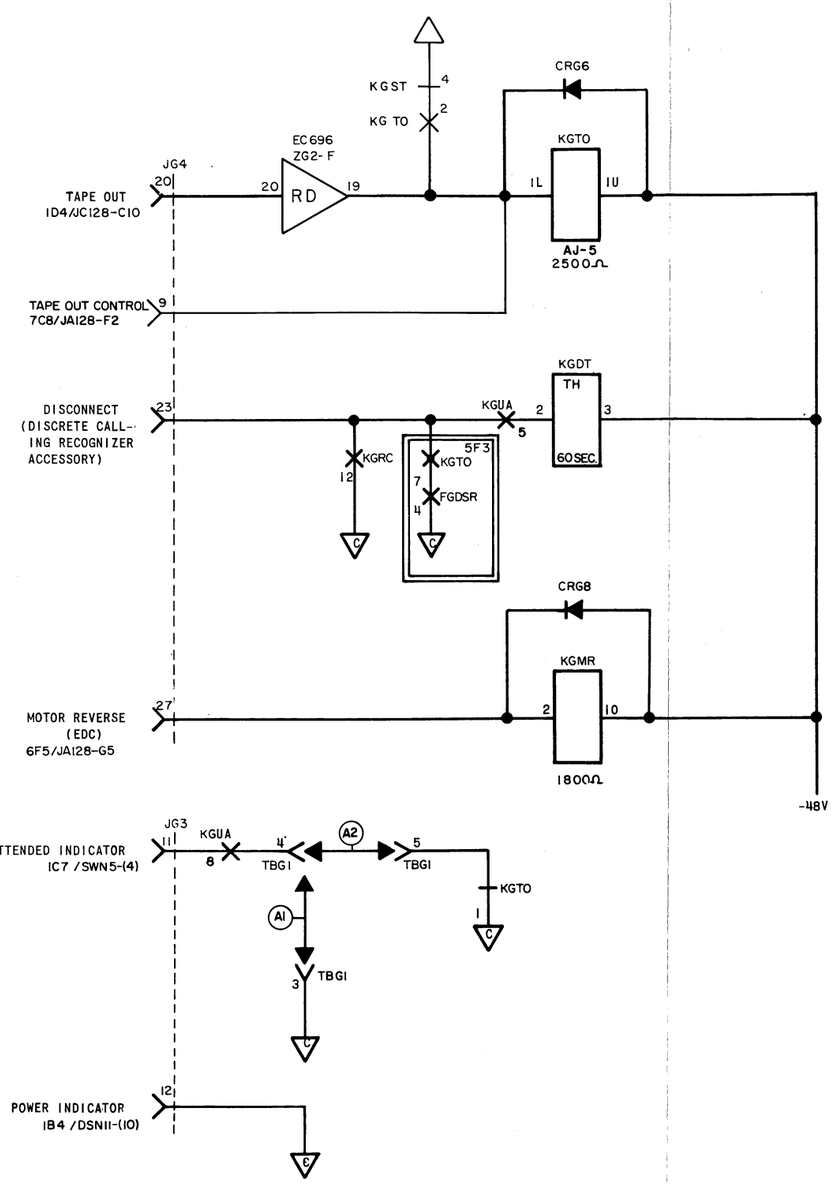
P.D. FILE NO. 5-A1148/134AA

DRAWN P.S.D.	CHKD.
ENGD. W.R.F.	APPD.

TELETYPE CORPORATION

7402 WD





NOTE: REVISION INFORMATION MUST ALSO BE REFLECTED ON THE ISSUE CONTROL RECORD, WHICH IS A PART OF THIS DRAWING.	7402 WD		
	REVISIONS		
	ISSUE	DATE	AUTH. NO.
	1	6-27-67	18363-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 4

CONTROL LOGIC

SENDER STATION CONTROL
ASSEMBLY NO. 308461
(MODULE G)

APPROVALS	
D AND R	E OF M

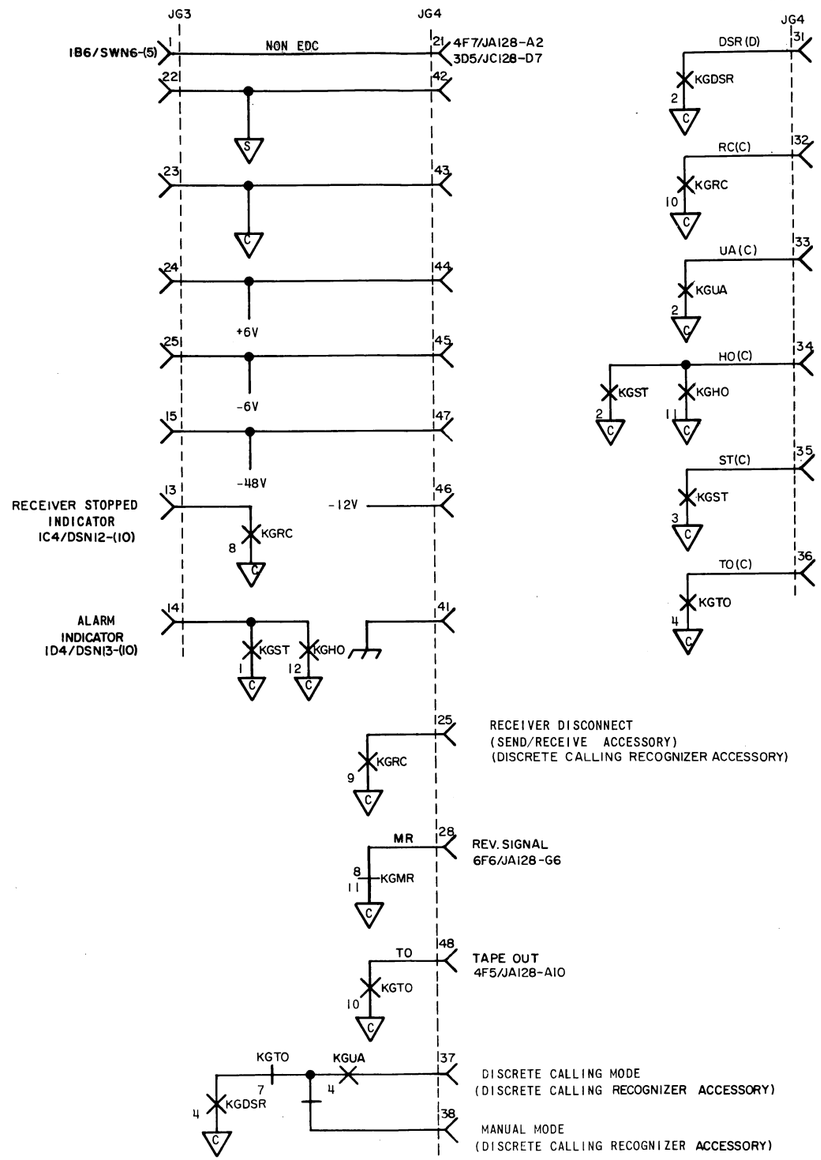
E-NUMBER	
PROD. NO.	7402WD
DATE	4-1-65
P.D. FILE NO.	5-A1148/134AA
DRAWN E.A.R.	CHKD
ENGD. W.R.F.	APPD.

TELETYPE CORPORATION

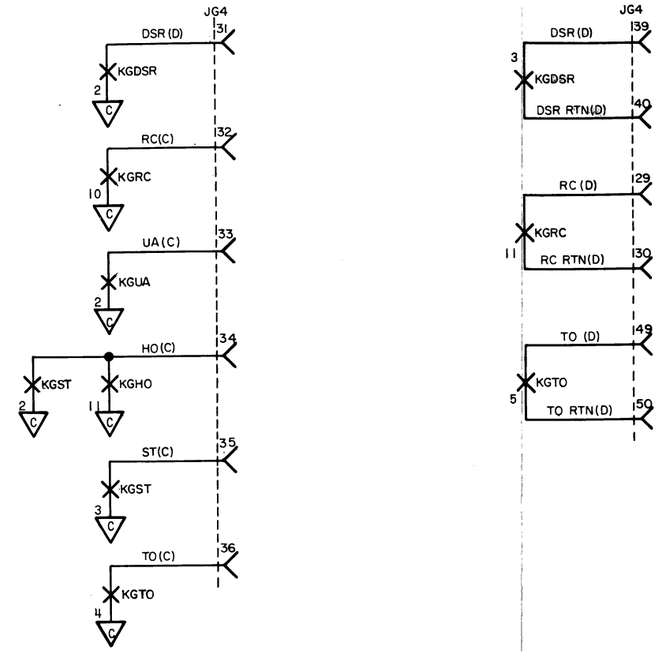
7402 WD

TC 484 (3-68)

CONTROLS



SPARE CIRCUITS



SPARE CIRCUITS

REVISIONS		
ISSUE	DATE	AUTH. NO.
1	6-27-67	18363-R

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

7402 WD

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 5

CONTROLS INTERFACE

SENDER STATION CONTROL
ASSEMBLY NO. 308461
(MODULE G)

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 7402WD

DATE 4-1-65

P.D. FILE NO. 5-A148/134AA

DRAWN E.A.R.	CHKD.
ENGD. W.R.F.	APPD.

TELETYPE CORPORATION

7402 WD

NO.	NOTES

SUPPORTING INFORMATION	
CATEGORY	NO.

CONTENTS

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	X	X	X															
2	X	X	X															
3																		
4	X																	
5	X																	

7410 **WD**

REVISIONS APPLYING TO THIS CONTROL RECORD

ISSUE	DATE	AUTH. NO.
1	7-5-67	18365-R
2	12-11-67	95095-A
3	12-14-67	94943-D
4	1-30-68	95177

ISSUE CONTROL SHEET 1 OF 1

SCHEMATIC
TRANMITTER DISTRIBUTOR

ASSEMBLY NO. 308500
(MODULE C)

WD NUMBER 7410 WD	
DRAWN G.R.S.	CHKD. G.D.B
ENGD. T.W.L.	APPD. D.G.W.

TELETYPE
CORPORATION

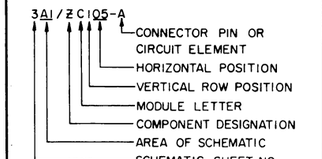
7410 **WD**

4

NOTES

1. REFER TO 7411WD FOR ACTUAL WIRING DIAGRAM.

2. CROSS REFERENCE AND CIRCUIT ELEMENT LOCATIONS:



3.
- DESIGNATES FEMALE TERMINALS AND
- DESIGNATES MALE TERMINALS ON ON CONNECTER.
- DESIGNATES TERMINALS ON SWITCHES SWC1 AND SWC2.
- DESIGNATES SIGNAL GROUND
- DESIGNATES CIRCUIT GROUND
- DESIGNATES FRAME GROUND

4. TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE FOR REFERENCE AND ARE NOT MARKED ON COMPONENT.

5. ALL VOLTAGES DC, UNLESS OTHERWISE SPECIFIED.

6. ALL RESISTORS ARE 1/2 WATT AND IN OHMS UNLESS OTHERWISE SPECIFIED.

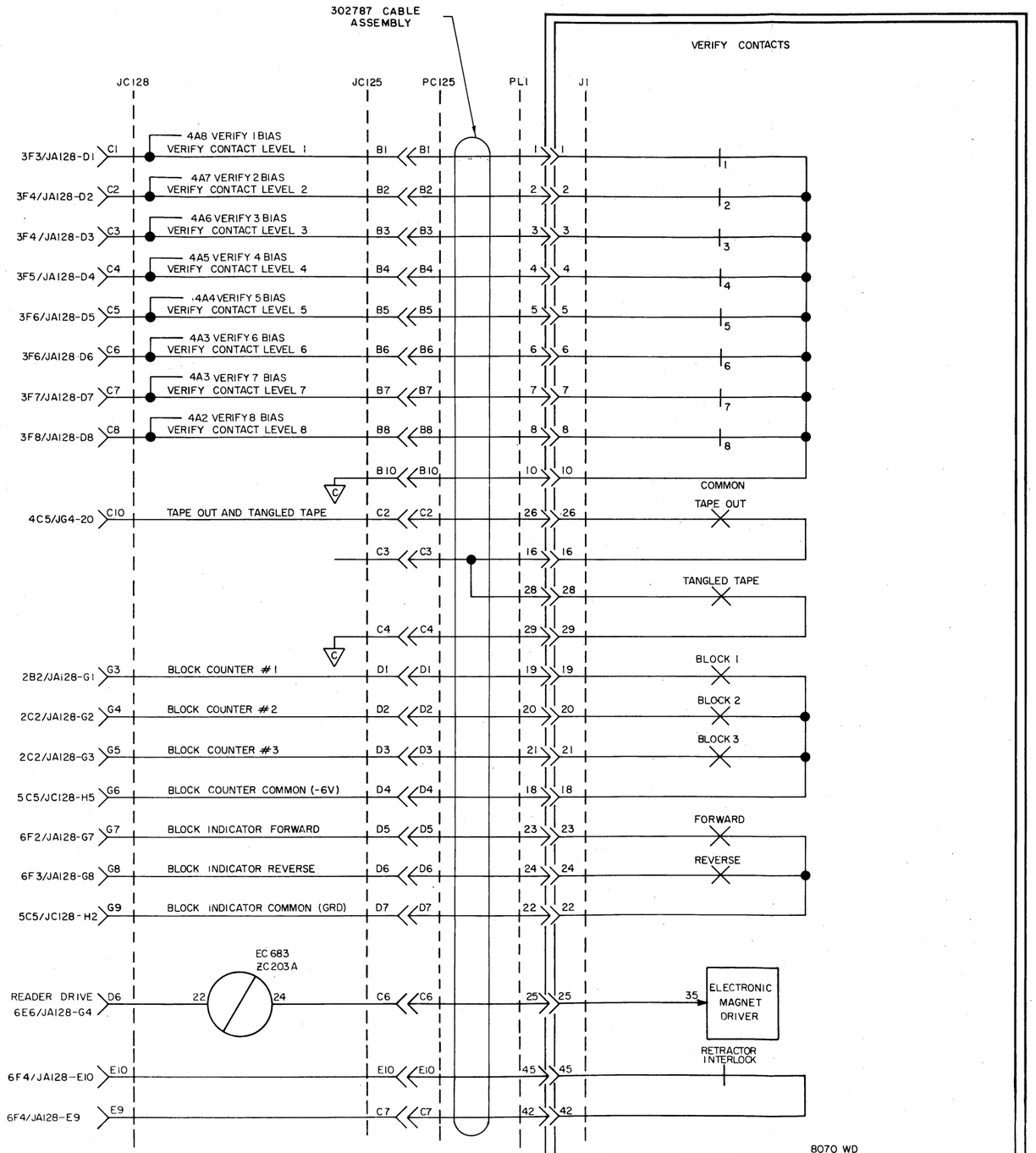
7. TOGGLE SWITCH IS SHOWN IN ITS UNOPERATED STATE WHICH IS AS FOLLOWS:
   SWC 103 - 1050 BAUD POSITION

8. SWITCH SWC2 AND ONE CARD CONNECTOR XZC211 ARE PROVIDED AND WIRED FOR THE VERTICAL PARITY FEATURE SHOWN ON SHEET 5. THE CIRCUIT CARD LOGIC FOR THIS FEATURE IS NOT INCLUDED IN THIS MODULE. THE 308510 VERTICAL PARITY KIT PROVIDES THE CIRCUIT CARD AS AN ACCESSORY.

9. SPARE CIRCUITS

EC121 - ZC108-B,C,D - PULSE AMP
EC606 - ZC202-G - EF-N
EC606 - ZC202-Q,R - EF-P

EC671 - ZC206-B FF



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

7410WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	7-5-67	18365-R
2	12-11-67	95095-A
3	12,14-67	94943-D
4	1-30-68	95177

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 1

READER INTERFACE

TRANSMITTER DISTRIBUTOR

ASSEMBLY NO. 308500
(MODULE C)

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 7410 WD

DATE 6/1/65

P.D. FILE NO. 5-A148/134AA

DRAWN E.A.R	CHKD.
ENGD. W.R.F.	APPD.

TELETYPE CORPORATION

7410WD

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

7410 WD		
REVISIONS		
ISSUE	**DATE**	**AUTH. NO.**
1	7-5-67	18365-R
2	12-11-67	95095-A
3	12-14-67	94943-D
4	1-30-68	95177

EC683 ZC203J

EC683 ZC203K

T.D. START 6C8/JA128-A5

JC128

EC606 ZC202H -12V

T.D. CYCLE (TEST)

EC684 ZC204E

387 START

EC683 ZC203C

EC503 ZC107B

EC503 ZC107A

EC671 ZC205C

PSD

EC671 ZC205B

SB

EC684 ZC204A

EC121 ZC109A

READER DRIVE 6D6/JA128-A6

EC683 ZC203H

EC671 ZC206A

DR

385 $\overline{6S}$

EC683 ZC203G

EC121 ZC108A

387 PULSE START

3C2 ADVANCE

CSR

EC671 ZC206B

FF

EC683 ZC203B

EC683 ZC203F

5B5/JG4-21 NON EDC

EC121 ZC108B

3E2 HB CLOCK

1050 BAUD CLOCK

ZC106

OSC 1050 CPS

EC683 ZC203D

EC684 ZC204C

OR

EC606 ZC202B&K

EF N&P

SEND DATA 3B6/JG4-11

BLIND 6F7/JA128-A9

BAUD SWITCH SWC103

3B7 9 SPACES

BAUD SWITCH SWC103

EC683 ZC203A

EC503 ZC107C

EC121 ZC108C

EC606 ZC202 C & L

SAMPLE 5B2/JA128-A7

3D2 SAMPLE

TRANSMIT CLOCK 2000/2400 BAUD DATASET CLOCK 2C4/JG4-16

EC503 ZC107D

EC671 ZC205A

SA

3D8 10 SPACES

EC121 ZC108D

EC606 ZC202D,M

RESET 3F2/JA128-A5

4D1 RESET PULSE

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. **SHEET 2**

DISTRIBUTOR CONTROL

TRANSMITTER DISTRIBUTOR

ASSEMBLY NO. 308500 (MODULE C)

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 7410WD

DATE 6/1/65

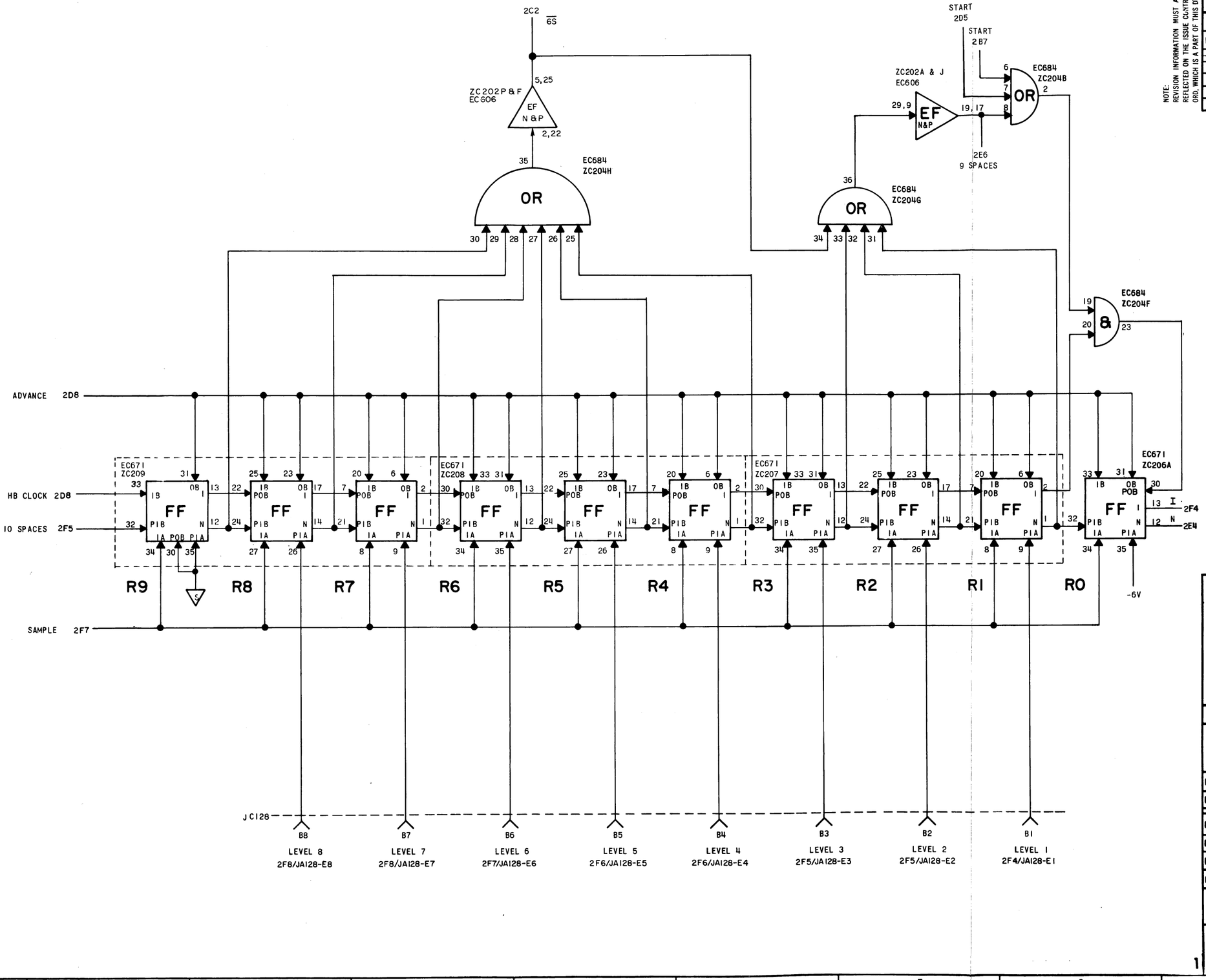
P.D. FILE NO. 5-A148/134AA

DRAWN E.A.R.	CHKD.
ENGD. W.R.F.	APPD.

TELETYPE CORPORATION

7410 WD

4



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

7410 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	7-5-67	18365-R

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 3

SHIFT REGISTER

TRANSMITTER DISTRIBUTOR

ASSEMBLY NO. 308500
(MODULE C)

APPROVALS

D AND R	E OF M
HJK	

E-NUMBER

PROD. NO. 7410WD

DATE 6/1/65

P.D. FILE NO. 5-A145/134AA

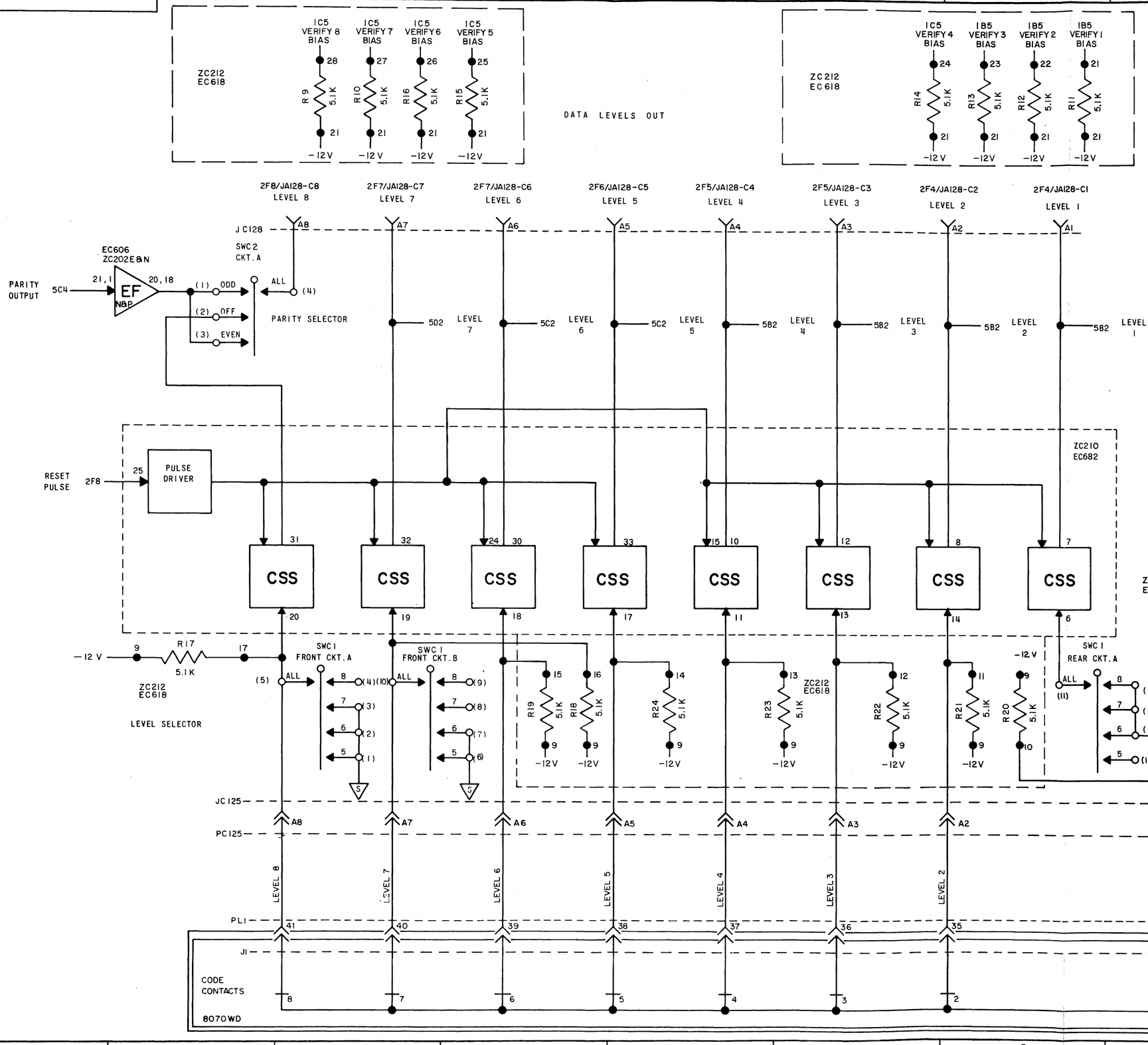
DRAWN GRS	CHKD.
ENGD. TWL	APPD.

TELETYPE CORPORATION

7410 WD

1

TC 454 (3-68)



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

7410WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	7-5-67	18365-R
2	12-14-67	94943-D

INTEGRATORS

TRANSMITTER DISTRIBUTORR

ASSEMBLY NO. 308500 (MODULE C)

APPROVALS

D AND R	E OF M
HRR	C.M

E-NUMBER

PROD. NO. 7410WD

DATE 6/1/65

P.D. FILE NO. 5 A148 134AA

DRAWN E.A.R.	CHKD.
ENGD. W.R.F.	APPD.

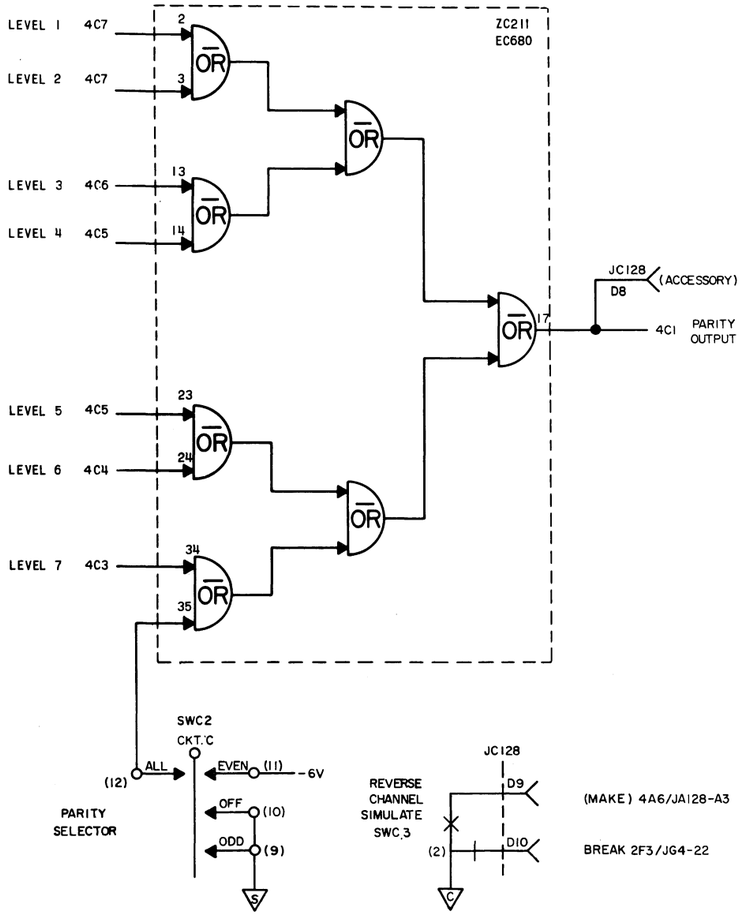
TELETYPE CORPORATION

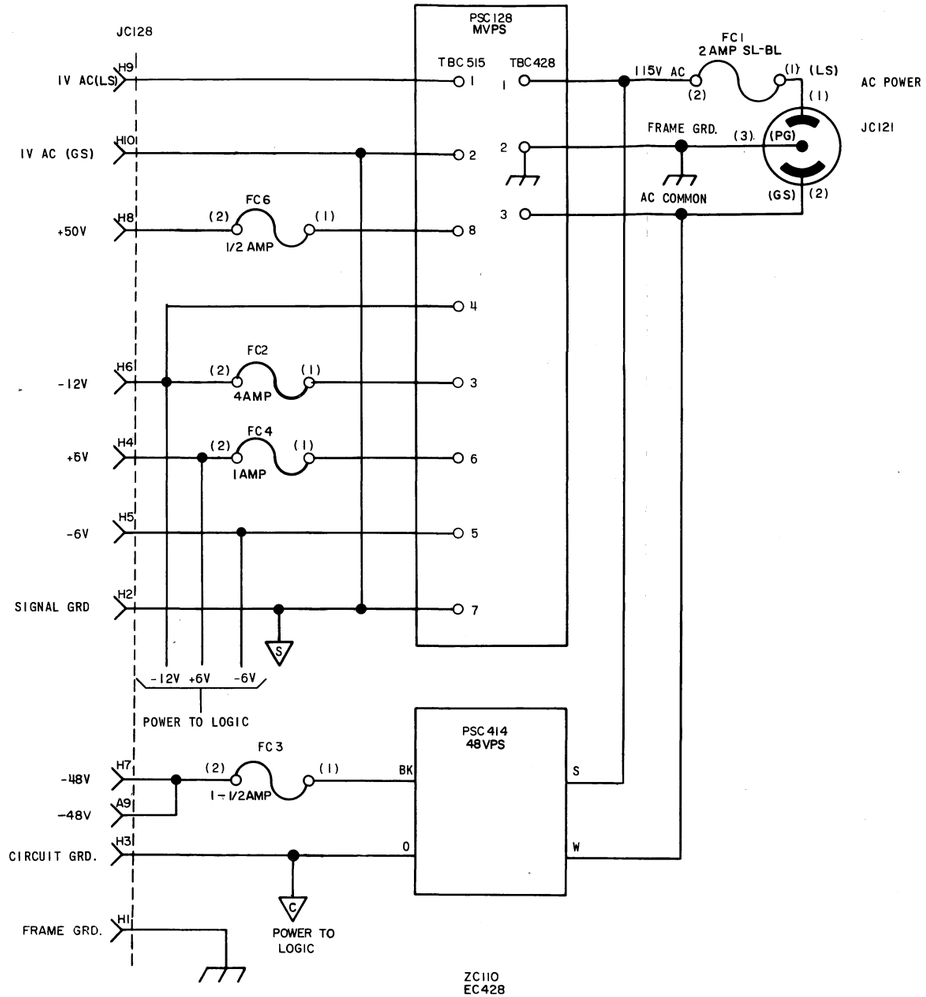
7410WD

2

TC 434 (3-68)

PARITY LOGIC





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

7410WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	7-5-67	18365-R
2	12-15-67	94943-D

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D. SHEET 5

PARITY LOGIC
VOLTAGE REFERENCE
AND
READER STEP

TRANSMITTER DISTRIBUTOR

ASSEMBLY NO. 308500
(MODULE C)

APPROVALS

D AND R	E OF M
492	C-1

E-NUMBER

PROD. NO. 7410WD

DATE 6/1/65

P.D. FILE NO. 5-A148/134AA

DRAWN E.A.R.	**CHKD.**
ENGD. W.R.F.	**APPD.**

TELETYPE CORPORATION

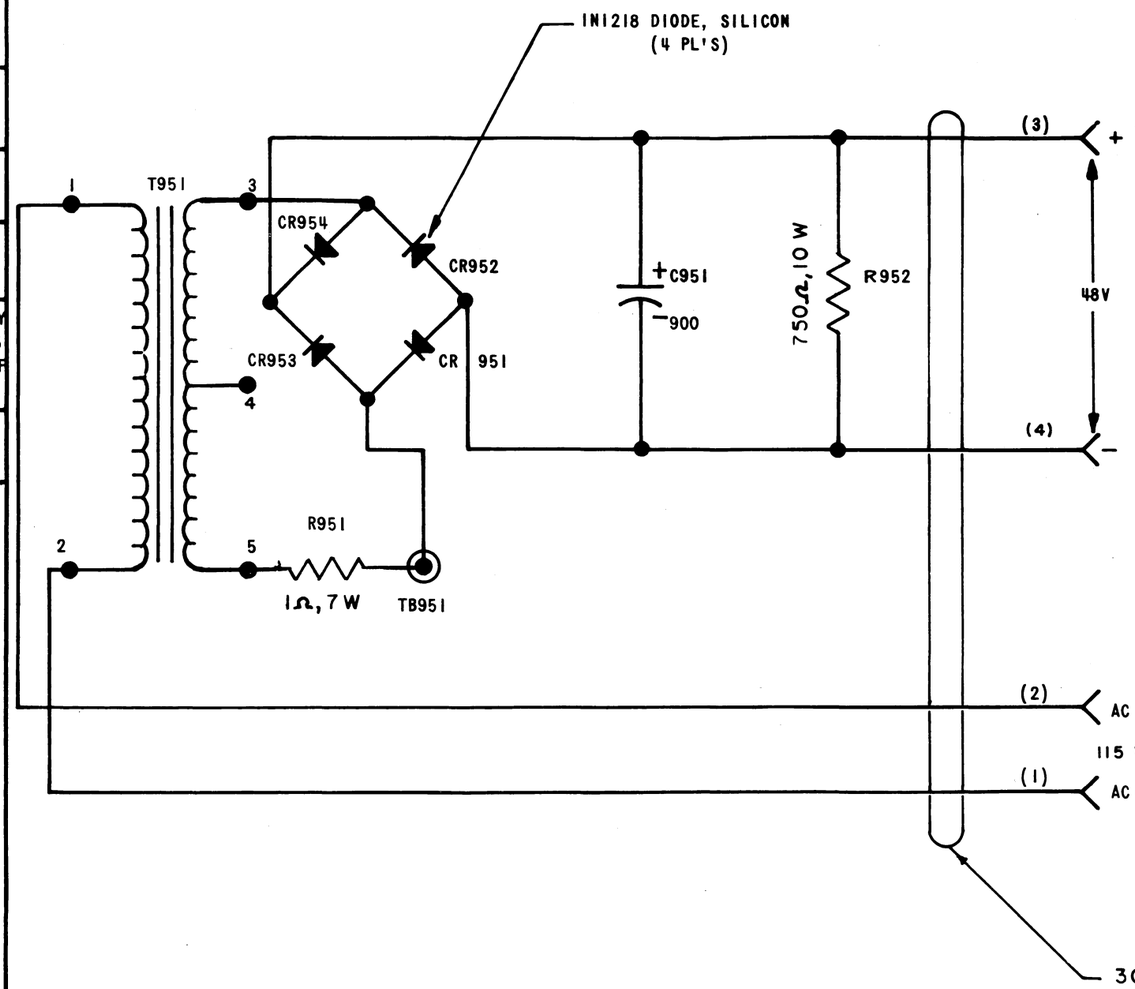
7410 WD

2

TC 484 (3-68)

NO.	NOTES
1.	REFER TO 7415WD FOR ACTUAL WIRING DIAGRAM.
2.	ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
3.	RESISTANCE VALUES OF WINDINGS ON TRANSFORMER T951.
4.	PARENTHESES INDICATE TERMINAL DESIGNATIONS FOR REFERENCE ONLY. NOT MARKED ON COMPONENTS.
5.	ALL RESISTORS 1/2 WATT AND RESISTANCE VALUES IN OHMS, UNLESS OTHERWISE SPECIFIED.
6.	ALL CAPACITANCE VALUES IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
7.	THIS UNIT MUST BE FUSED EXTERNALLY BY CONNECTING A FUSE NOT LARGER THAN 1.5 AMPERES IN SERIES WITH THE HOT LEG OF OF THE OUTPUT.
8.	REFERENCE SPECIFICATION FOR TELETYPE CORPORATION EMPLOYEES ONLY:

BETWEEN TAPS	RESISTANCE
1 & 2	4 Ω
3 & 4	0.526 Ω
4 & 5	0.6 Ω



7414 WD		
REVISIONS		
ISSUE	DATE	AUTH. NO.
1	6-27-67	18364-R
2	12-15-67	94943-D

SCHEMATIC
WIRING DIAGRAM
FOR
48 VOLT
POWER SUPPLY
ASSEM. NO. 308451

APPROVALS	
D AND R	E OF M

E-NUMBER	
PROD. NO.	7414WD
DATE:	4/12/65
P.D. FILE NO.	5-A148/134AA
DRAWN. GJM	CHKD.
ENGD. TWL	APPD.

TELETYPE CORPORATION

7414 WD

2

ET168147
TC255 (6-54)

K+E ALBANENE 198L ® TRACING PAPER

NO.	NOTES
1.	REFER TO 303053 FOR ACTUAL WIRING.
2.	ALL VOLTAGES DC.
3.	ALL RESISTORS 1/2 WATT AND RESISTANCE VALUES IN OHMS.
4.	← INDICATE TERMINAL ON PLUG DS, PK2 AND PJ2
5.	COLOR CODE: W- WHITE BK- BLACK P- PURPLE S- SLATE O- ORANGE R- RED BL- BLUE G- GREEN BR- BROWN Y- YELLOW
6.	TERMINAL DESIGNATION ENCLOSED IN PARENTHESES REFER TO TERMINAL ON THE S-R SWITCH. THE TERMINAL DESIGNATIONS ARE FOR REFERENCE AND ARE NOT MARKED ON THE S-R SWITCH.
7.	THIS SECTION REQUIRES SHORTING TYPE CONTACTS.
8.	SWITCH POSITIONS: S — SEND ONLY R — RECEIVE ONLY S-R — SEND OR RECEIVE L — LOCAL (SEND & RECEIVE) S&R — SEND & RECEIVE (NOT USED) SWITCH POSITION S (SEND ONLY) AS VIEWED FROM FRONT OF SWITCH IN EXTREME COUNTER-CLOCKWISE POSITION.

7419 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	9-19-67	18818-R
2	2-28-68	95381

STRAP	TIE POINTS TERMINALS	COLOR
A	33 — 40	Y
B	52 — 12	G
C	94 — 75	O

DATASET	DESIGN
201A3	A B C
202C1B 202C2B 202D1B 202D2B	C
201A1 201B1	A B

SCHEMATIC WIRING DIAGRAM FOR TELESPEED 1200 "Y" CABLE ASSEMBLY

ASSEM. NO.

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 7419 WD

DATE 3-29-67

P.D. FILE NO.

DRAWN T.R. CHKD.

ENGD. E.F.R. APPD.

TELETYPE CORPORATION

7419 WD

2

TC 434 (8-63)

NO.	NOTES

SUPPORTING INFORMATION	
CATEGORY	NO.

CONTENTS

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	X																	
2	X																	

7421 WD

REVISIONS APPLYING TO THIS CONTROL RECORD

ISSUE	DATE	AUTH. NO.
1	8-14-68	18998-R
2	4-14-69	99119

ISSUE CONTROL SHEET 1 OF 1

SCHEMATIC
WIRING DIAGRAM
FOR
DISCRETE CALLING RECOGNIZER
TYPE 4 DATASPEED
SENDER

ASSEMBLY NO. 308513 (MODULE 4)

WD NUMBER 7421WD	
DRAWN C.J.R.	CHKD.
ENGD. E.F.R.	APPD.

TELETYPE CORPORATION

7421 WD

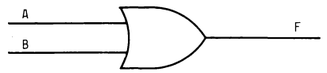
NOTES

1. REFER TO 7423WD FOR ACTUAL WIRING DIAGRAM.
2.
3. → INDICATES MALE TERMINAL ON CONNECTOR
   ← INDICATES FEMALE TERMINAL ON CONNECTOR
   ○ DESIGNATES TERMINALS ON WIRE-WRAP FIELD ASSEM. AND TERMINAL BOARD.
   (S) DESIGNATES SIGNAL GROUND
   (C) DESIGNATES CIRCUIT GROUND AND -48 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. TELETYPE NO.
   1 — 120 — 165027 — 0.35
8. B1001, C1001 AND TB1001 ARE ASSOCIATED WITH PART NUMBER 199570, 7029WD AND 7030WD.
9. RELAY DT IS NOT SUPPLIED WITH THE 308513 ASSEMBLY. RELAY TP303073 MAY BE USED: IT IS A FIXED 60 SECOND DELAY ON ENERGIZATION. A RELAY SIMILAR TO 303073 MAY BE USED IF A VARIABLE DELAY IS DESIRED. **WHEN RELAY IS USED STRAP TBJ4-C5 TO TBJ2-A9.**
10. REFER TO 303735 (EC735) FOR DESCRIPTION AND THEORY OF OPERATION OF THIS CIRCUIT CARD ASSEMBLY.
11. REFERENCE WIRING DIAGRAMS:

SENDER DISTRIBUTOR MODULE	7410WD
SENDER STATION CONTROL MODULE	7402WD
SENDER WIRING FIELD ASSEMBLY	7C71WD

12. PART OF THE 308559 CABLE ASSEMBLY.

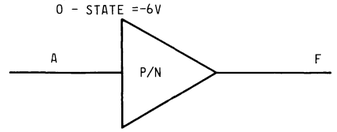
LOGIC DESIGNATIONS
1-STATE = 0V
0-STATE = -6V



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

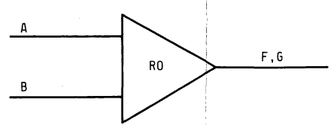
NOTE: THE SAME PRINCIPLE APPLIES TO "4" INPUT "OR" GATES.

INPUT LOGIC DESIGNATIONS
1 - STATE =+6V
0 - STATE =-6V
OUTPUT LOGIC DESIGNATIONS
1 - STATE =0V
0 - STATE =-6V

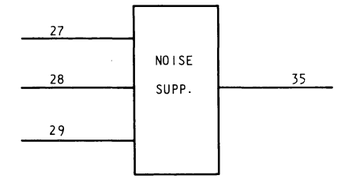


A	F
1	0
0	1

LOGIC DESIGNATIONS
1 - STATE = 0V
0 - STATE = -6V OPEN

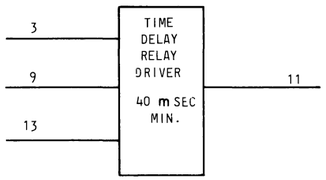


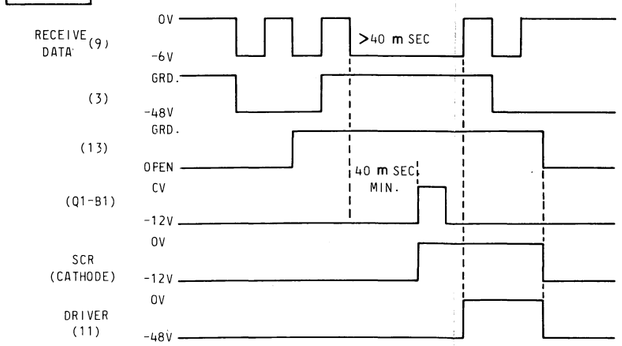
A	B	F	A	B	G
0	1	0	0	1	0
1	1	1	0	1	1
0	0	0	0	0	0
1	0	0	1	0	0



NOTE: THIS CIRCUIT WILL PREVENT NOISE SPIKES GREATER THAN -48V FROM AFFECTING THE RELAYS.

TIMING DIAGRAM FOR





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

7421 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-14-68	18998-R
2	4-14-69	99119

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

SHEET 1

SCHEMATIC
WIRING DIAGRAM
FOR
DISCRETE CALLING RECOGNIZER
TYPE 4 DATASPEED
SENDER

ASSEMBLY NO. 308513
(MODULE W)

APPROVALS

D AND R	E OF M
MK	L 7

E-NUMBER

PROD. NO. 7421WD

DATE 6/24/68

P.D. FILE NO. 2-96.134.184AA

DRAWN CJR/RS	CHKD.
ENGD. EFR	APPD.

TELETYPE CORPORATION

7421WD

TC 434 (5-68)

7421 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-14-68	18998-R
2	4-14-69	99119

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

SEE ISSUE CONTROL RECORD FOR COMPLETE LIST OF SHEETS COMPRISING THIS W.D
SHEET 2

SCHEMATIC DIAGRAM

DISCRETE CALLING RECOGNIZER
TYPE 4 DATASPEED
SENDER

ASSEMBLY NO. 308513
(MODULE W)

APPROVALS

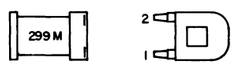
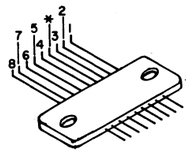
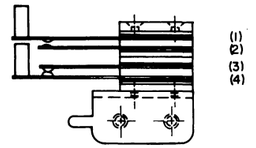
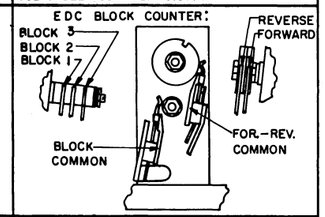
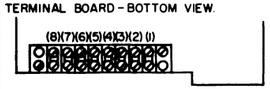
D AND R	E OF M

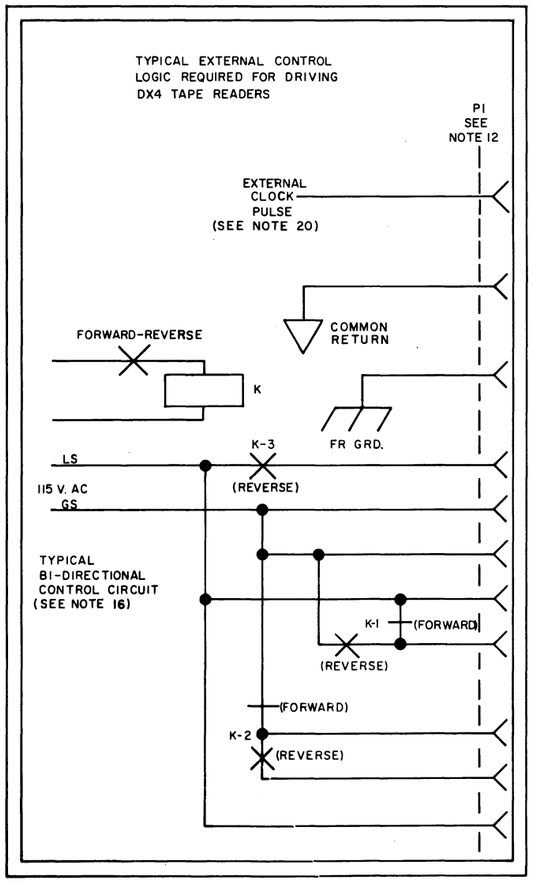
E-NUMBER	
PROD. NO.	7421 WD
DATE	8-7-67
P.D. FILE NO.	2-96.134.184 A
DRAWN CJR	CHKD.
ENGD. EFR	APPD.

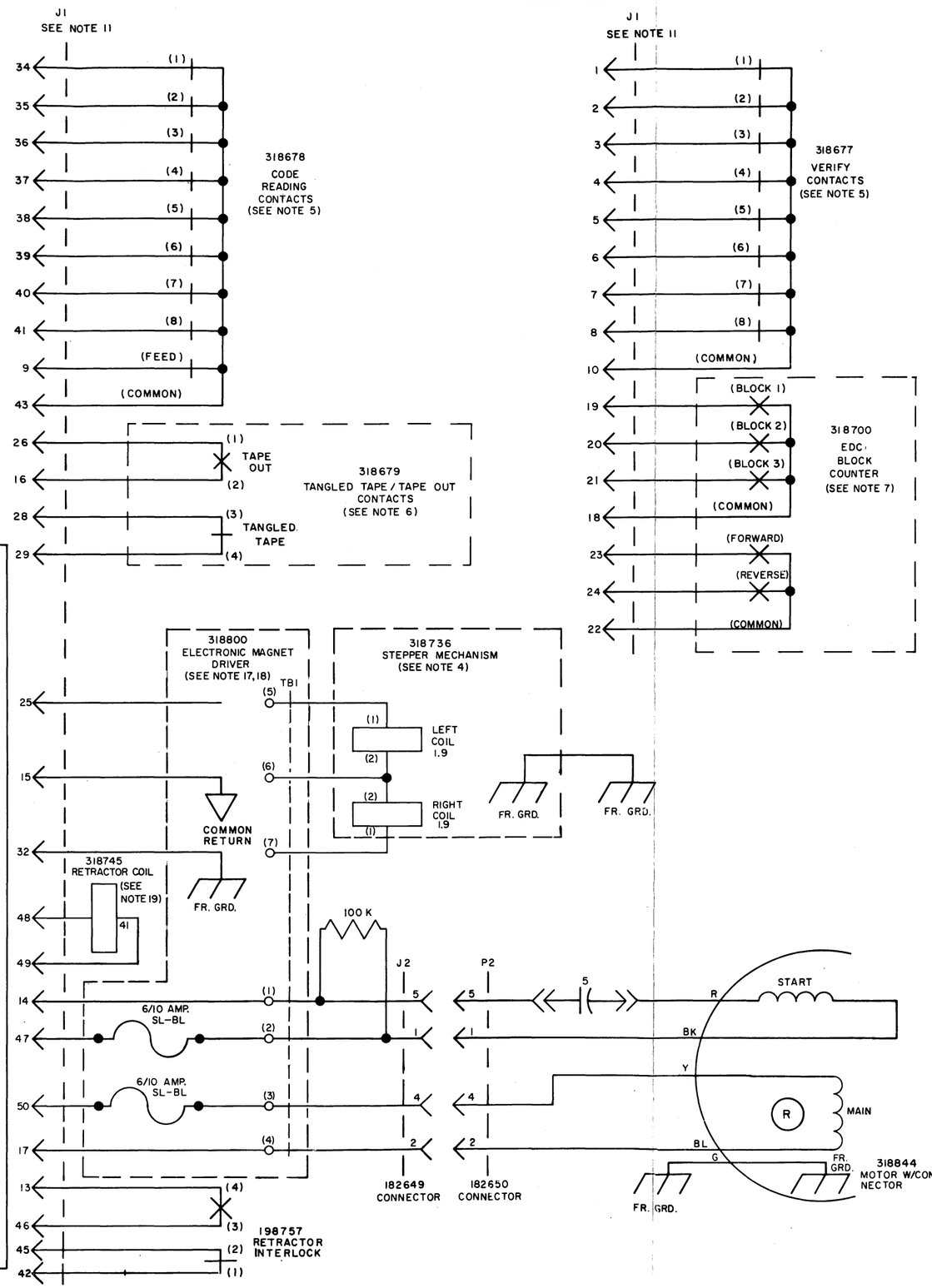
TELETYPE CORPORATION

7421 WD

TC 484 (8-62)

NO.	NOTES
1.	REFER TO 8069WD FOR ACTUAL WIRING DIAGRAM.
2.	REFERENCE SPEC. FOR TELETYPE CORPORATION EMPLOYEES ONLY
3.	TERMINAL DESIGNATIONS SHOWN IN PARENTHESES ARE FOR REFERENCE AND ARE NOT MARKED ON COMPONENT.
4.	REFERENCE TO LEFT AND RIGHT COILS IS AS VIEWED FROM THE FRONT OF THE UNIT. 
5.	 * "FEED" ON 318678 ASSEMBLY OMIT ON 318677 ASSEMBLY
6.	TANGLED TAPE/TAPE OUT CONTACTS:  USE CABLE ASSEMBLY 318714
7.	
8.	WIRE COLOR CODE: R-RED BK-BLACK Y-YELLOW BL-BLUE G-GREEN
9.	ASSOCIATED CABLE ASSEMBLY FOR STEPPER MECHANISM AND MOTOR: 318846
10.	←INDICATES FEMALE AND → INDICATES MALE TERMINAL
11.	J1 CONSISTS OF A 173685 CONNECTOR WITH 173715 TERMINALS AND IS PART OF THE 318800 ELECTRONIC MAGNET DRIVER.
12.	P1 CONSISTS OF A 192014 RECEPTACLE WITH 173716 TERMINALS.
13.	ALL RESISTANCE VALUES IN OHMS.
14.	ALL CAPACITANCE VALUES IN MICROFARADS.
15.	ALL CONTACTS ARE SHOWN IN THEIR NORMAL CONDITION WITH TAPE REMOVED FROM THE READING HEAD.
16.	THE CONTACTS K1 AND K2 MUST BE FORM C, BREAK BEFORE MAKE.
17.	SEE 8234WD – SCHEMATIC WIRING DIAGRAM FOR THE 318800 ELECTRONIC MAGNET DRIVER.
18.	TERMINAL DESIGNATIONS ON THE 318800 DRIVER ARE PART OF A 310752 TERMINAL BOARD. TERMINAL BOARD – BOTTOM VIEW. 
19.	THE 318745 RETRACTOR COIL IS EQUIPPED WITH A THERMAL CUT-OUT DEVICE INTENDED TO OPEN AT 90°C.
20.	THE EXTERNAL CLOCK PULSE REQUIRED IS A NEGATIVE TRANSITION BETWEEN 6 AND 50 VOLTS WITH A MAXIMUM RISE TIME OF 3 MICROSECONDS AT 6 VOLTS AND A PULSE WIDTH OF 0.01 TO 2.0 MILLISECONDS.





8070WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-4-67	18627-R

SCHEMATIC WIRING DIAGRAM FOR DX4 TAPE READER

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 8070 WD

DATE 9-19-66

P.D. FILE NO. 6-47/58.138 AA

DRAWN A.F.R. CHKD.

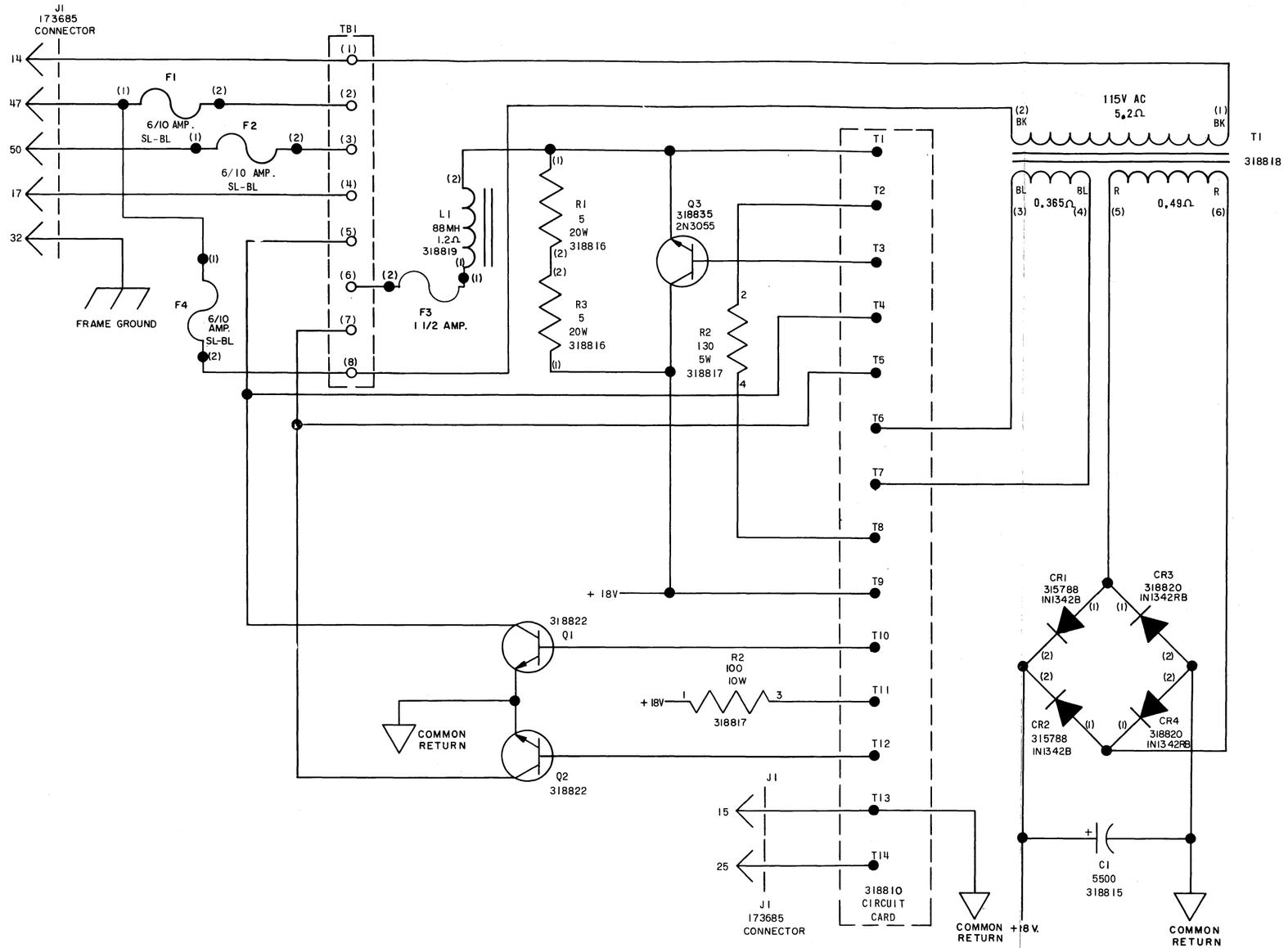
ENGD. R.R.S. APPD.

TELETYPE CORPORATION

8070WD

TG 484 (8-66)

NO.	NOTES
1.	REFER TO 8233WD FOR ACTUAL WIRING DIAGRAM.
2.	REFERENCE SPECIFICATION FOR TELETYPE CORPORATION EMPLOYEES ONLY,
3.	TERMINAL DESIGNATIONS ENCLOSED IN PARENTHESES ARE REFERENCE AND ARE NOT MARKED ON COMPONENTS.
4.	ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
5.	ALL CAPACITANCE VALUES IN MICROFARADS UNLESS OTHERWISE SPECFIED.
6.	ALL INDUCTANCE VALUES IN MILLIHENRIES UNLESS OTHERWISE SPECIFIED.
7.	→ INDICATES MALE TERMINAL ON CONNECTOR J1, 173685
8.	WIRE COLOR CODE: BK - BLACK, BL - BLUE BR - BROWN, R - RED O - ORANGE, Y - YELLOW W - WHITE, S - SLATE G - GREEN, P - PURPLE
9.	ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
10.	SL-BL INDICATES SLOW BLOWING



8234 WD

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-2-67	18412 R

SCHEMATIC
WIRING DIAGRAM
FOR
318800
ELECTRONIC MAGNET
DRIVER

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 8234WD

DATE 12-5-66

F.D. FILE NO. 6-47/58138AA

DRAWN R.F.	CHKD.
ENGD. R.R.S	APPD.

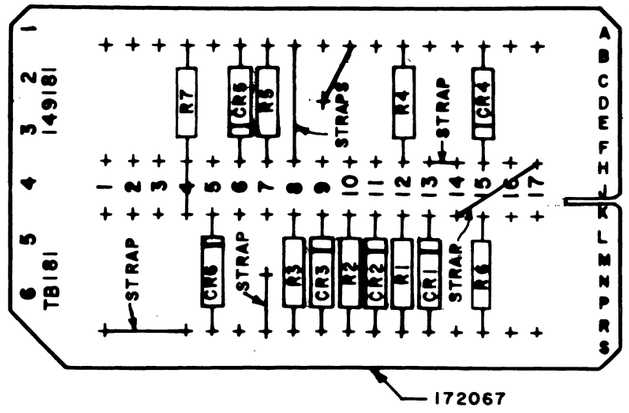
TELETYPE
CORPORATION

8234 WD

TERMINAL BOARD TB181

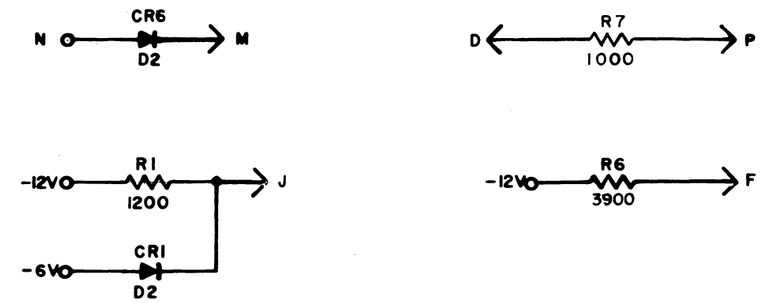
TB181

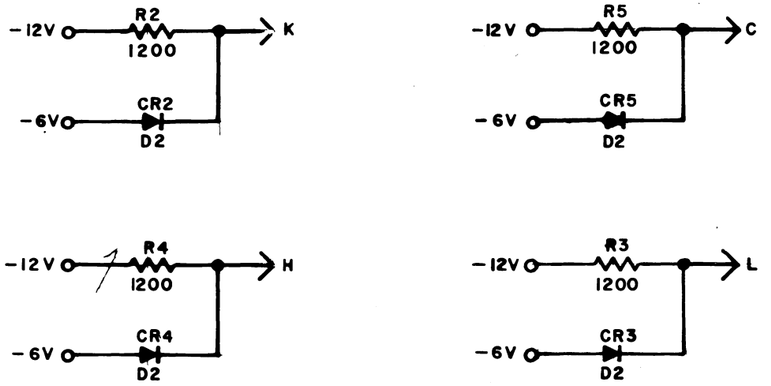
149181

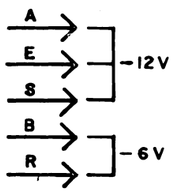


NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION
R1	137441	5	RESISTOR, FIXED 1200 OHMS
R2			SAME AS R1
R3			"
R4			"
R5			"
R6	143667	1	RESISTORS, FIXED 3900 OHMS
CR1	177108	6	DIODE, D2
CR2			"
CR3			"
CR4			"
CR5			"
CR6			"
TB	172067	1	CIRCUIT CARD, ETCHED
		6	STRAPS, BARE 24 AWG
R7	137440	1	RESISTOR, FIXED 1000 OHMS







NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH NO
1	5-20-64	[illegible]-R
2	6-28-65	87284
3	1-3-66	88252

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 149181

DATE: 11-22-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W. CHKD

ENGD I.S.K. APPD

TELETYPE CORPORATION

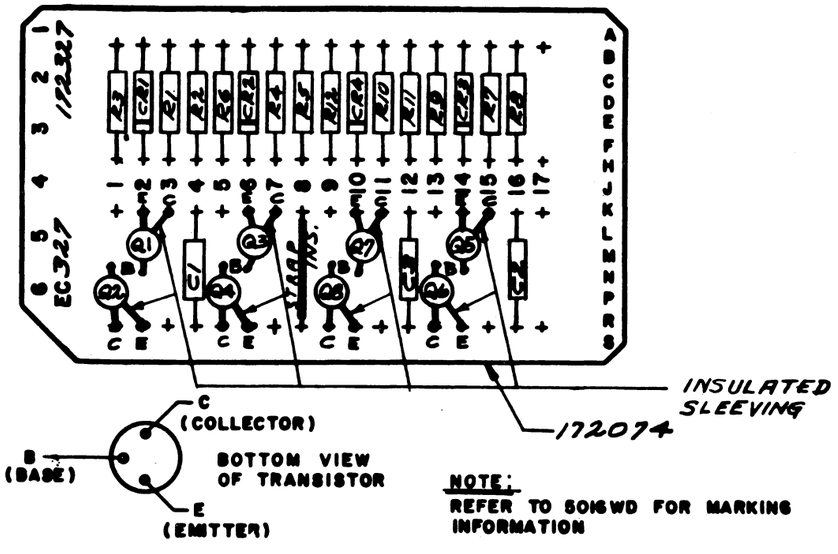
149181

EFH

ET 04 47
TC2551 6-541

EC 327

172327



NOTE:
REFER TO 5015WD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C 1	181618	3	CAPACITOR, TUBULAR .01 MF	PRIMING
C 2			SAME AS C1	"
C 3			SAME AS C1	"
		24	INSULATED SLEEVING	
CR1	177108	4	DIODE D2	CLAMP
CR2			SAME AS CR1.	"
CR3			" " "	"
CR4			" " "	"
R1	143667	3	RESISTOR FIXED, 3900 OHMS	EMITTER LOAD
R2	129852	4	" " 2200 OHMS	COLLECTOR LOAD
R3	137439	4	" " 820 "	" "
R4	129851	1	" " 3300 "	EMITTER LOAD
R5			SAME AS R2	COLLECTOR LOAD
R6			SAME AS R3	" "
R7			SAME AS R1	EMITTER LOAD
R8			SAME AS R2	COLLECTOR LOAD
R9			SAME AS R3	" "
R10			SAME AS R1	EMITTER LOAD
R11			SAME AS R2	COLLECTOR LOAD
R12			SAME AS R3	" "
	144138	31	EYELETS	
Q1	177106	4	TRANSISTOR N-33	DXTR ELEMENT
Q2	177105	4	TRANSISTOR P-22	" "
Q3			SAME AS Q1	" "
Q4			SAME AS Q2	" "
Q5			SAME AS Q1	" "
Q6			SAME AS Q2	" "
Q7			SAME AS Q1	" "
Q8			SAME AS Q2	" "
EC	172074	1	CIRCUIT CARD, ETCHED	
		1	STRAP, 24AWG INSULATED	WITH SLEEVE
	144495	8	PAD, TRANSISTOR	

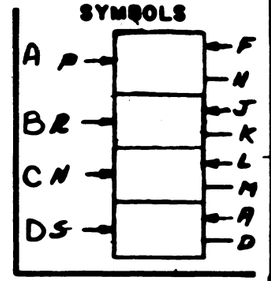
TC-473 (6-66)

TRUNCATED-N DISTRIBUTOR WITH RESET STOP ELEMENT

CIRCUIT BOARD EC 327

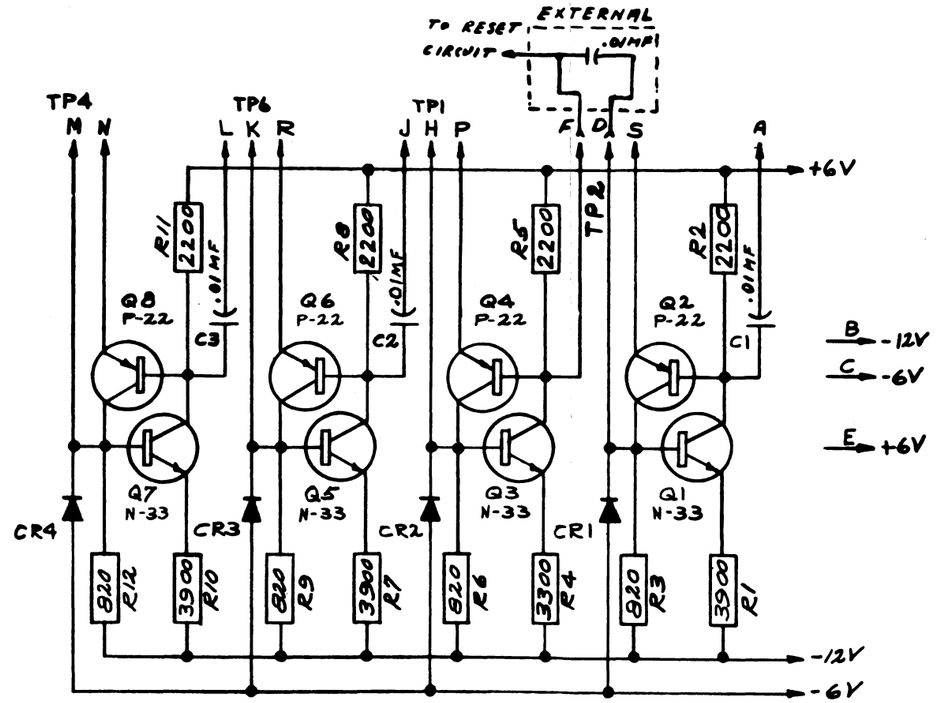
172327

SYMBOLS



REVISIONS

ISSUE	DATE	AUTH. NO.
2	12-26-62	75429
3	2-15-63	76006
4	4-23-63	76667
5	9-3-64	83680
6	5-27-66	91127
7	2-6-68	97266



ALL DIODES D-2
ALL CAPACITORS .01 MF.

NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

APPROVALS

R AND D	E OF M
[signature]	[signature]

E-NUMBER.

PROD. NO. 172327

DATE 5-5-62

FILE NO. I-A148/134-53A

DRAWN. SW CHKD. JM

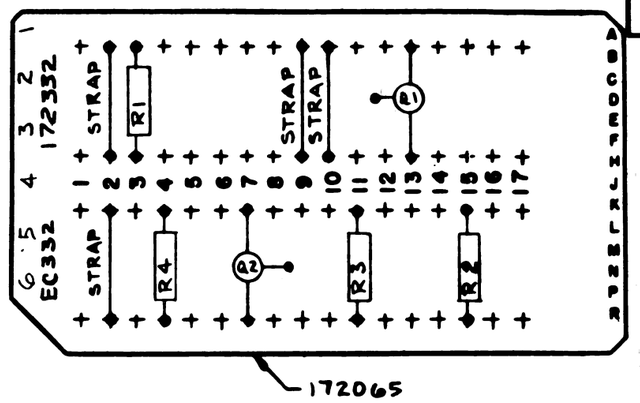
ENGD. JMQ APPD. RSM

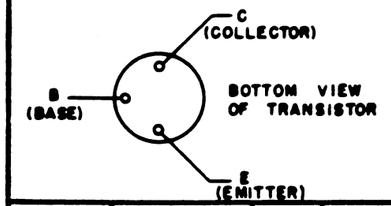
TELETYPE CORPORATION

172327

EC 332

172332





NOTE:
REFER TO 5016 WD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118146	2	Resistor, Fixed 4700 Ohms	Emitter Load
R2	137438	2	Resistor, Fixed 100 Ohm	Collector Dropping
R3			Same as R2	" "
R4			Same as R1	Emitter Load
Q1	177105	2	Transistor, P-22	Amplifier
Q2			Same as Q1	"
EC	172065	1	Circuit Card, Etched	
		4	Straps, 24 AWG, Bare Wire	
	144495	2	PAD, TRANSISTOR	

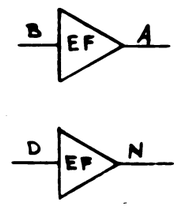
ET 09147
TC255(6-54)

(PNP) EMITTER FOLLOWER (2)

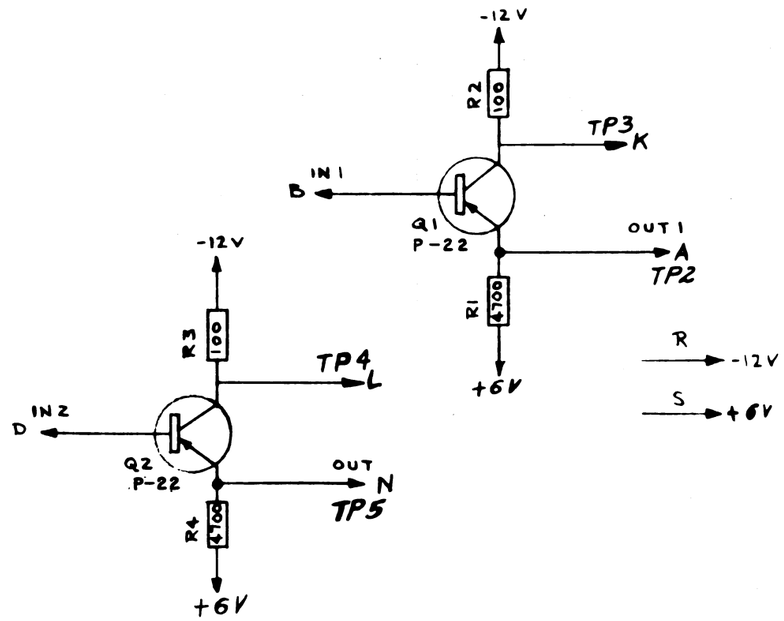
CIRCUIT BOARD EC 332

172332

SYMBOLS



This circuit is a general purpose emitter follower used to provide current gain with no inversion or change in the input signal level. With zero volts at the base, zero volts appears at the emitter. With -6 V applied, -6 appears at the emitter. The PNP emitter follower is used to provide low output impedance (high current gain) on the negative going voltage transition (0 to -6 volts).



NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH. NO.
2	6-30-58	NS-1040
3	9-8-59	NS-1139
4	10-28-59	NS-1234
5	5-26-61	69892

APPROVALS

D AND R	E OF M

ENGINEER

PROD. NO. 172332

DATE:

P.D. FILE NO.

DRAWN. R.X. CHKD.

ENGD. S.S. APPD.

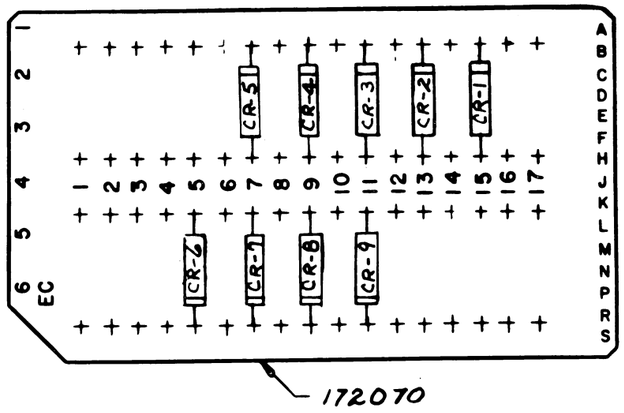
TELETYPE CORPORATION

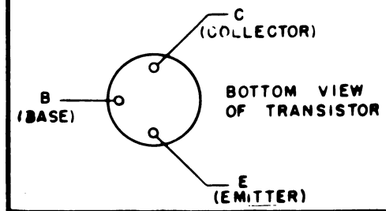
172332

ET-1314691

EC 352

172352





NOTE
REFER TO 5016WD FOR MARKING INFORMATION.

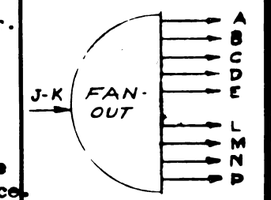
REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	9	DIODE D-2	GATE
CR2			SAME AS CR1	"
CR3			" " "	"
CR4			" " "	"
CR5			" " "	"
CR6			" " "	"
CR7			" " "	"
CR8			" " "	"
CR9			" " "	"
EC	172070		CIRCUIT CARD, ETCHED	

TC-473 (6-66)

CIRCUIT BOARD EC352

172352

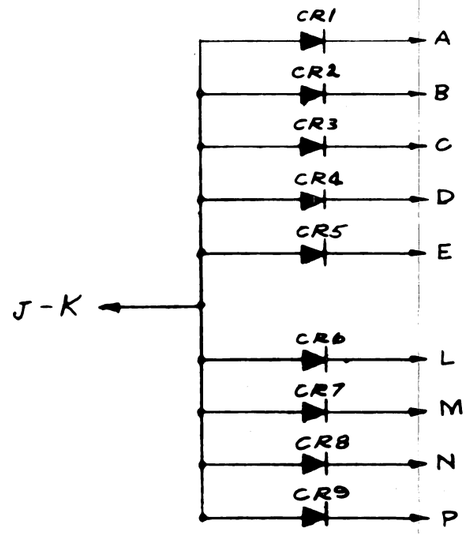
SYMBOLS



This circuit designated as fan-out is, in a sense, an "OR" gate without a biasing resistor.

The gate is used in this manner. When 0 or more positive voltage, i.e. +1.5 volts, is applied to terminal J and K the output terminals A,B,C,D,E,L,M,N and P will all go to +1.5 volts. **When the switch is open the outputs A,B,C, etc. are floating unless J-K is clamped by an external source.**

The circuit is used to apply reset pulse or signal to a number of circuits, the diodes provide isolation between these circuits.



ALL DIODES ARE D-2

NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

REVISIONS

ISSUE	DATE	AUTH. NO.
2	10-16-61	59392-3
3	11-14-64	71604

APPROVALS

R AND D	E or M
H	~

E-NUMBER.

PROD. NO. 172352

DATE 10-MAR.-60

FILE NO. 1-122,134AA

DRAWN S.W. | CHKD.

ENGD. E.H.P. | APPD.

TELETYPE CORPORATION

172352

EC353

172353

RING DRIVER (I) PLUS RING DRIVER RESET AMP (I)

CIRCUIT BOARD EC353

172353

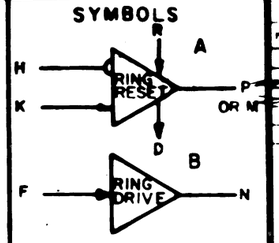
THIS CARD CONSISTS OF TWO COMMON EMITTER AMPLIFIERS, ONE CONNECTED AS A RING DRIVER AND THE OTHER CONNECTED EITHER AS A RESET AMPLIFIER OR A HOLD AMPLIFIER.

Q2 IS CONNECTED TO OPERATE AS A PULSE INHIBIT GATE. WITH AN INCIDENCE OF 0 VOLTS AT THE EMITTER, PIN K, AND A NEGATIVE GOING 6V TRANSITION AT THE BASE, PIN H, Q2 IS SATURATED, PRODUCING A POSITIVE GOING 6V PULSE AT THE COLLECTOR.

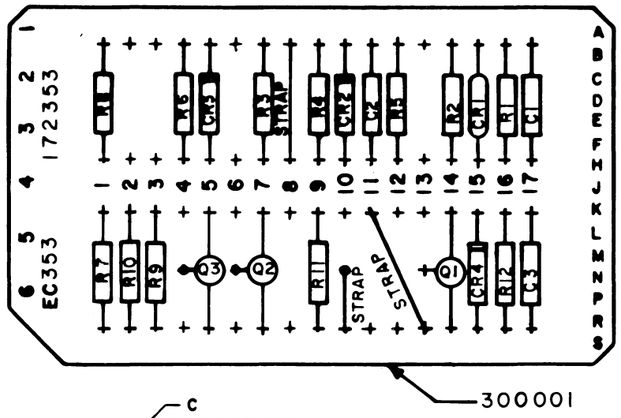
WITH A POSITIVE 6V PULSE APPLIED TO THE BASE OF Q1, EITHER FROM THE COLLECTOR OF Q2 OR FROM THE INPUT, PIN D, Q1 IS DRIVEN INTO SATURATION, CAUSING THE COLLECTOR TO BE AT -6V FOR THE DURATION OF THE PULSE APPLIED TO THE BASE. WHEN CONNECTED AS A RESET AMPLIFIER, PIN P IS USED. WHEN CONNECTED AS A HOLD AMPLIFIER, PIN M IS USED. A NEGATIVE GOING TRANSITION AT PIN R WILL ALSO PRODUCE A NEGATIVE GOING PULSE AT PIN P OR PIN M.

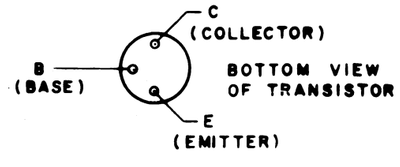
WITH A POSITIVE GOING 6V TRANSITION AT PIN F, Q3 IS CUTOFF, PRODUCING A NEGATIVE GOING 6V PULSE AT PIN N.

SYMBOLS



ISSUE	DATE	AUTH NO
1	6-2-66	93621-R
2	11-5-66	97669
3	2-6-68	97266

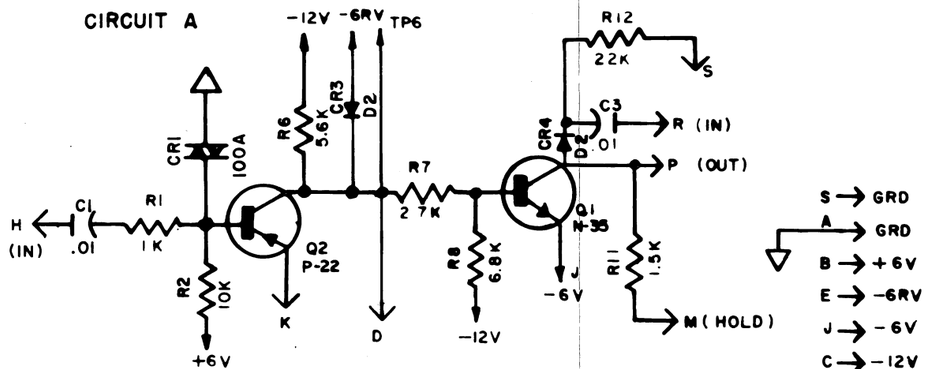


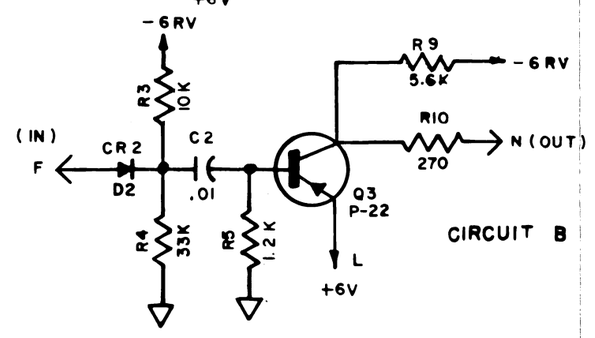


NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	181618	3	CAPACITOR, TUBULAR .01 MFD	COUPLING
C2			SAME AS C1	"
C3			" " "	"
CR1	178844	1	VARISTOR, 100A	BIAS
CR2	177108	3	DIODE D-2	COUPLING
CR3			SAME AS CR2	CLAMP
CR4			" " "	COUPLING
R1	137440	1	RESISTOR, FIXED 1K OHM	LIMITING
R2	118180	2	RESISTOR, FIXED 10K OHMS	BIAS
R3			SAME AS R2	"
R4	118153	1	RESISTOR, FIXED 33K OHMS	"
R5	137441	1	RESISTOR, FIXED 1.2K OHMS	"
R6	118186	2	RESISTOR, FIXED 5.6K OHMS	COLLECTOR LOAD
R7	118144	1	RESISTOR, FIXED 2.7K OHMS	LIMITING
R8	118147	1	RESISTOR, FIXED 6.8K OHMS	BIAS
R9			SAME AS R6	COLLECTOR LOAD
R10	118725	1	RESISTOR, FIXED 270 OHMS	LIMITING
R11	137442	1	RESISTOR, FIXED 1.5K OHMS	"
R12	118177	1	RESISTOR, FIXED 22K OHMS	PRIMING
Q1	193134	1	TRANSISTOR, N-35	AMPLIFIER
Q2	177105	2	TRANSISTOR, P-22	"
Q3			SAME AS Q2	"
EC	300001	1	CIRCUIT CARD, ETCHED	
		2	STRAP, BARE 24 AWG	
	144495	3	PAD, TRANSISTOR	

CIRCUIT A





CIRCUIT B

NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 172353

DATE 8-26-63

PD FILE NO

DRAWN R.W.V. CHKD

ENGD J.M.G. APPD

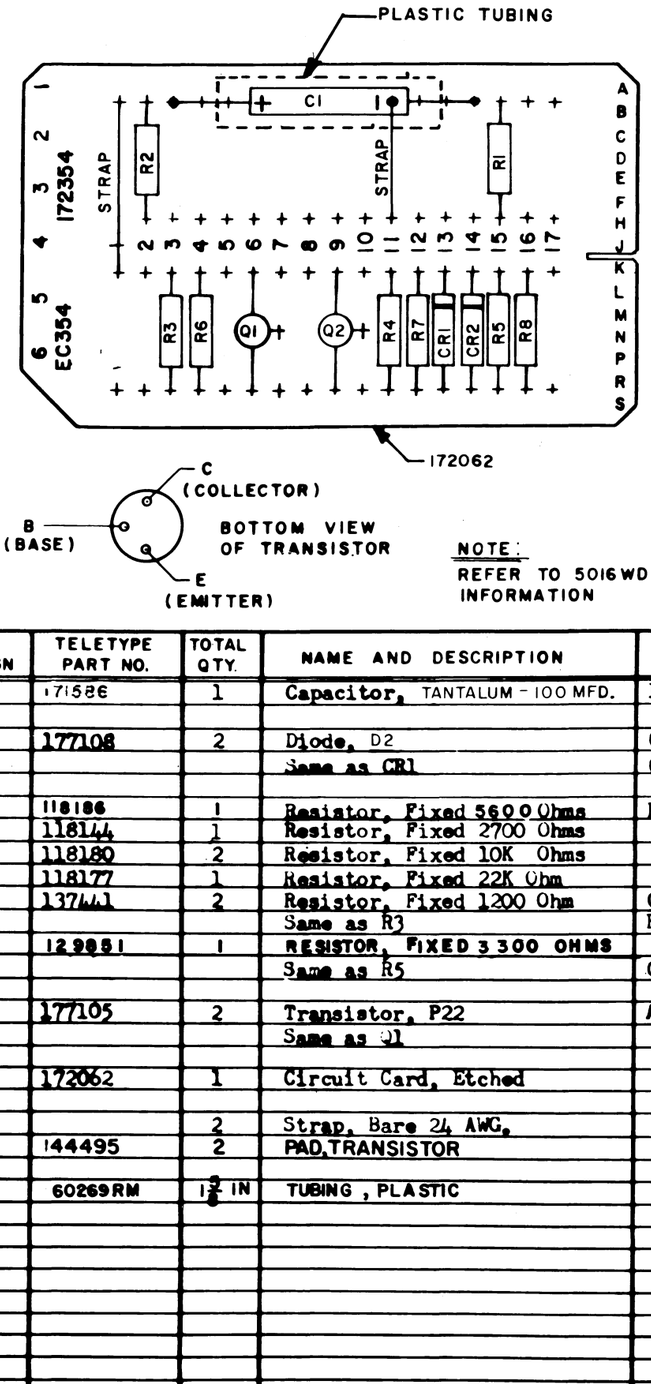
TELETYPE CORPORATION

172353

ET-131481

EC354

172354



NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

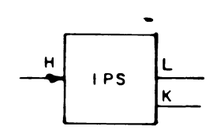
REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	171586	1	Capacitor, TANTALUM - 100 MFD.	Integration Cap.
CR1	177108	2	Diode, D2	Clamp
CR2			Same as CR1	Clamp
R1	118186	1	Resistor, Fixed 5600 Ohms	Base Bias
R2	118144	1	Resistor, Fixed 2700 Ohms	" "
R3	118180	2	Resistor, Fixed 10K Ohms	" "
R4	118177	1	Resistor, Fixed 22K Ohm	" "
R5	137411	2	Resistor, Fixed 1200 Ohm	Collector Load
R6			Same as R3	Base Bias
R7	129851	1	RESISTOR, FIXED 3300 OHMS	" "
R8			Same as R5	Collector Load
Q1	177105	2	Transistor, P22	Amplifier
Q2			Same as Q1	"
EC	172062	1	Circuit Card, Etched	
		2	Strap, Bare 24 AWG,	
	144495	2	PAD, TRANSISTOR	
	60269RM	1 3/8 IN	TUBING, PLASTIC	

ET 04-47
TC255-6 541

INTEGRATED PULSE SHAPER

CIRCUIT BOARD EC354

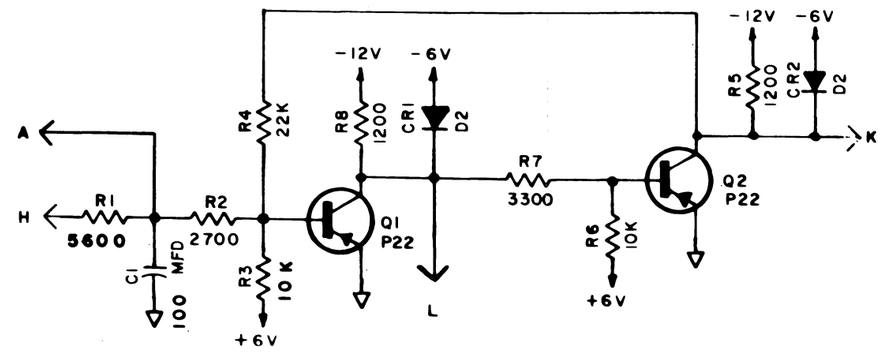
SYMBOLS

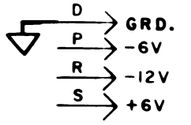


The purpose of this circuit is to reject noise pulses of 500 MILLISECONDS or less in time duration, and to pass pulses having longer time duration. The circuit produces a normal or inverted output which is delayed approximately 500 MILLISECONDS.

R1, R2 and C1 are connected to function as an integration circuit, while Q1, Q2 and associated circuitry reshape signals which are passed by the integration circuit. Normally the input at H is either 0 or -6 volts. If zero, Q1 is non-conducting, and if -6 V, Q1 is saturated, bias current supplied through R1 and R2. Q1 and Q2 form a regenerative amplifier which sharpens up the integrated input signal. Normal and inverted outputs are available at "K" and "L".

THE NORMAL OUTPUT, K, HAS A RISE TIME OF LESS THAN 8 MICROSECONDS. THE INVERTED OUTPUT IS NOT USEABLE BECAUSE OF ITS LONG RISE TIME.





NOTES:

1. TERMINAL "A" MAY BE CONNECTED TO AN EXTERNAL COMPONENT FOR LONGER TIME DELAY.
2. CARD CONNECTIONS ARE REPRESENTED BY LETTERS TEST POINTS ARE REPRESENTED BY NUMBERS

172354

ISSUE	DATE	AUTH NO
1	7-2-65	16998-R
2	7-3-67	94162

APPROVALS

D AND R	E OF M
G.K.	

E NUMBER

PROD NO 172354

DATE 6-3-65

PD FILE NO 2-96.134.184 A

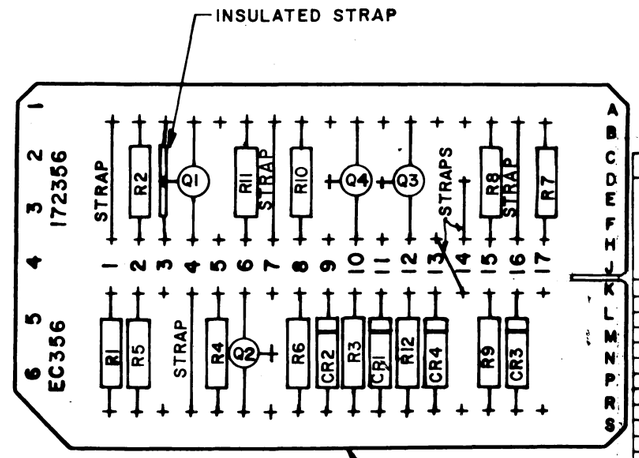
DRAWN	CHKD
ENGD I.S.K.	APPD

TELETYPE CORPORATION

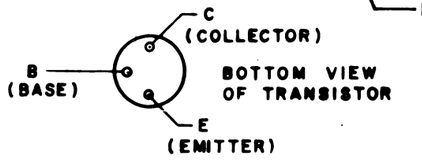
172354

EC356

172356



ALPHA NUMERIC CONVERSION CHART		
STAMPING ON CIRCUIT BOARD	NUMERICAL CONVERSION FOR 15 PT. CARDS WHEN USED WITH 36 PT. CONNECTOR	
	WHEN INSERTED IN UPPER HALF OF CONNECTOR	WHEN INSERTED IN LOWER HALF OF CONNECTOR
A	1	22
B	2	23
C	3	24
D	4	25
E	5	26
F	6	27
H	7	28
J	8	29
K	9	30
L	10	31
M	11	32
N	12	33
P	13	34
R	14	35
S	15	36



BOTTOM VIEW OF TRANSISTOR

NOTE:
REFER TO 5016WD FOR MARKING AND MFG. INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118186	4	Resistor Fixed 5600 Ohms	Base Current Limiting
R2	118151	4	Resistor Fixed 18K Ohms	Base Bias
R3	143665	4	RESISTOR FIXED 5100 OHMS	Collector Load
R4			Same as R1	Base Current Limiting
R5			Same as R2	Base Bias
R6			Same as R3	Collector Load
R7			Same as R1	Base Current Limiting
R8			Same as R2	Base Bias
R9			Same as R3	Collector Load
R10			Same as R1	Base Current Limiting
R11			Same as R2	Base Bias
R12			Same as R3	Collector Load
CR1	177108	4	Diode D2	Clamp
CR2			Same as CR1	"
CR3			Same as CR1	"
CR4			Same as CR1	"
Q1	177105	4	Transistor P22	Gate
Q2			Same as Q1	"
Q3			Same as Q1	"
Q4			Same as Q1	"
PC	172067	1	Circuit Card, Etched	
	144495	4	Pad, Transistor	
		4	Strap 24 AWG Bare	
		1	Strap 24 AWG Insulated	
	300116		TRANSISTOR CAPS	

ET-104-67
TC255(8-54)

INHIBIT GATE (4)

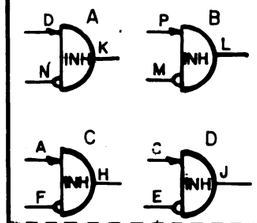
CIRCUIT BOARD EC356

172356

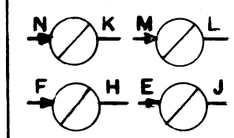
THIS CARD PROVIDES FOUR IDENTICAL COMMON EMITTER AMPLIFIERS WHICH EACH MAY BE CONNECTED TO FUNCTION AS INHIBIT GATES.

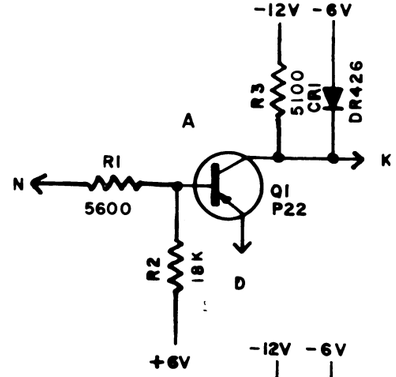
THE BASE AND EMITTER POTENTIALS VARY FROM -6V TO 0V INDEPENDENTLY. IN ORDER FOR A TRANSISTOR TO CONDUCT, THERE MUST BE A COINCIDENCE OF -6V APPLIED AT ITS BASE INPUT AND 0V APPLIED AT THE EMITTER INPUT. WHEN THE TRANSISTOR CONDUCTS, THE COLLECTOR OUTPUT SWITCHES FROM -6V TO THE EMITTER POTENTIAL, 0V. THE DIODES CLAMP THE RESPECTIVE COLLECTOR OUTPUTS TO -6V WHEN THE TRANSISTOR IS NON-CONDUCTING.

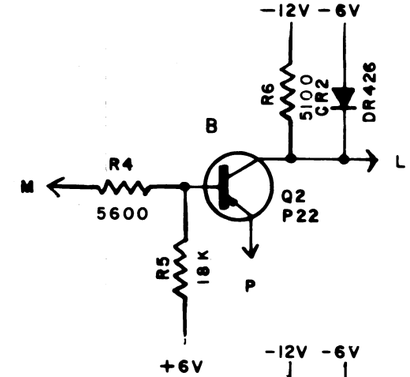
SYMBOLS

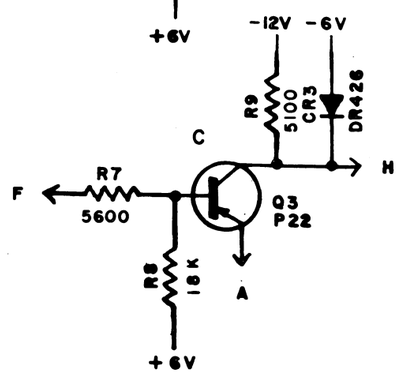


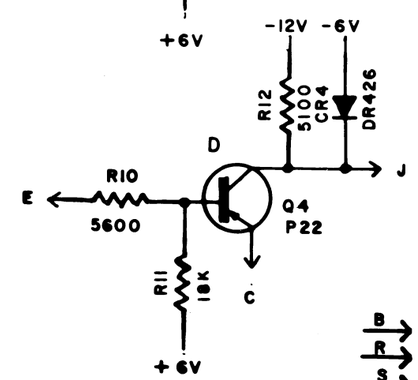
OR INVERTER SYMBOL USED WHEN EMITTER IS GROUNDED

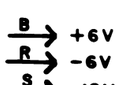












NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH NO
2	5-6-64	82085
3	2-10-66	90288
4	2-28-66	90219

WDP

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 172356

DATE 9-9-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W.	CHKD
ENGD J.C.T.	APPD

TELETYPE CORPORATION

172356

ET-1314(9)

CIRCUIT BOARD EC357

EC357

172357

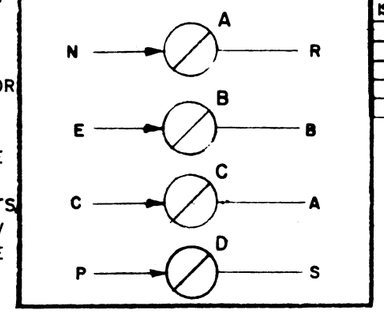
172357

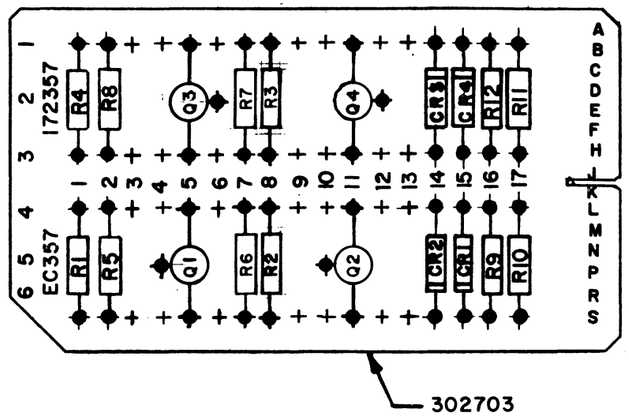
ISSUE	DATE	AUTH. NO.
1	6-2-64	15621-R

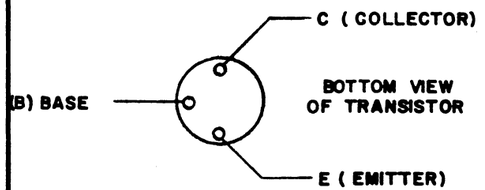
INVERTER (4)

THIS CARD CONSISTS OF FOUR IDENTICAL PNP COMMON EMITTER AMPLIFIERS WHICH PROVIDE INVERTED OUTPUTS.

WHEN THE INPUT TO A TRANSISTOR IS OPEN OR AT OV, THE TRANSISTOR IS NON-CONDUCTING AND THE COLLECTOR OUTPUT POTENTIAL IS CLAMPED TO -6V BY THE ASSOCIATED DIODE. WITH A NEGATIVE 6 VOLT SIGNAL APPLIED AT THE INPUT, THE TRANSISTOR IS DRIVEN INTO SATURATION, CONDUCTS, AND THE COLLECTOR POTENTIAL SWITCHES FROM -6V TO OV REMAINING THERE FOR THE DURATION OF THE -6V INPUT SIGNAL.

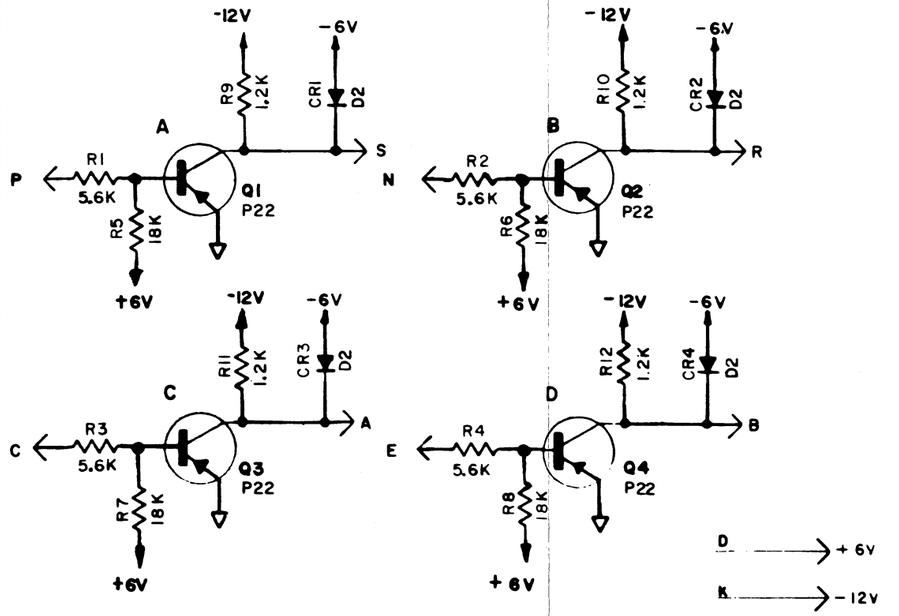






NOTE: REFER TO 5016WD FOR MARKING INFO.

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118186	4	RESISTOR, FIXED 5600 OHMS	INPUT
R2			SAME AS R1	"
R3			SAME AS R1	"
R4			SAME AS R1	"
R5	118151	4	RESISTOR, FIXED 18K OHMS	BIAS
R6			SAME AS R5	"
R7			SAME AS R5	"
R8			SAME AS R5	"
R9	137441	4	RESISTOR, FIXED 1.2K	COLLECTOR LOAD
R10			SAME AS R9	" "
R11			SAME AS R9	" "
R12			SAME AS R9	" "
CR1	177108	4	DIODE, D-2	-6V CLAMP
CR2			SAME AS CR1	" "
CR3			SAME AS CR1	" "
CR4			SAME AS CR1	" "
Q1	177105	4	TRANSISTOR P-22	INVERTER ACTIVE ELEMENT
Q2			SAME AS Q1	" " "
Q3			SAME AS Q1	" " "
Q4			SAME AS Q1	" " "
EC	302703	1	CIRCUIT CARD, ETCHED	
	144495	4	PAD, TRANSISTOR	



APPROVALS	
D AND R	E OF M

E-NUMBER 132241

PROD. NO. 172357

DATE: 8-29-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W. | CHKD

ENGD J.C.T. | APPD

TELETYPE CORPORATION

172357

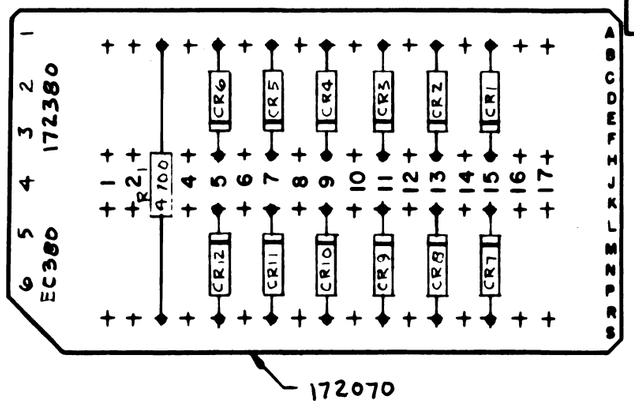
ET 109147
TC 235 (6-64)

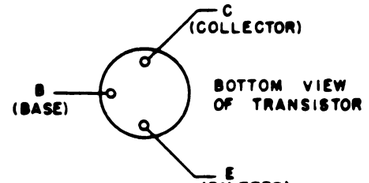
H-E ALBANENE 150L

LFM

EC 380

172380





NOTE:
REFER TO 5016 WD FOR MARKING INFORMATION

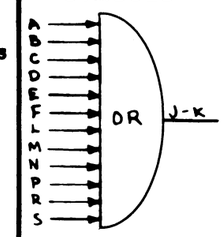
REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	12	Diode, D-2	Gate
CR2			Same as CR1	"
CR3			" " "	"
CR4			" " "	"
CR5			" " "	"
CR6			" " "	"
CR7			" " "	"
CR8			" " "	"
CR9			" " "	"
CR10			" " "	"
CR11			" " "	"
CR12			" " "	"
R1	118146	1	Resistor, Fixed 4700 Ohms	Bias Resistor
EC	172070	1	Circuit Card, Etched	

DIODE GATE (12)

CIRCUIT BOARD EC 380

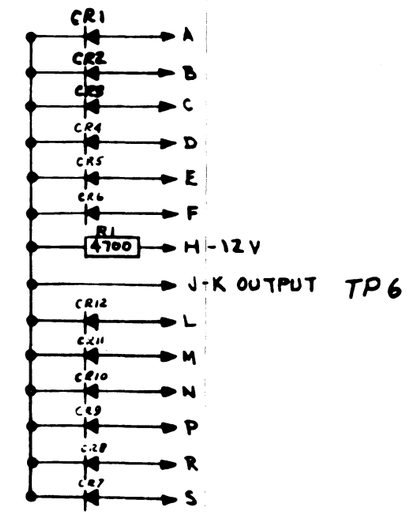
172380

SYMBOLS



This card consists of one "OR" gate. Diodes CR1 through CR12 together with R1 comprise the "OR" gate.

When 0 volts is applied to any or more of the inputs to an "OR" gate (A, B, C, D, E, F, H, L, M, N, P, R and S), the output of that gate is 0 volts (J and K). When negative 6 volts is applied to all the inputs of an "OR" gate, the output is negative 6 volts.



ALL DIODES D-2

NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH. NO.
2	7-31-59	MS-1072
3	9-8-59	MS-1138
4	10-28-59	MS-1238
5	5-26-61	69892
6	8-2-61	70507
7	4-9-63	AIDS 33376

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 172380

DATE:

P.D. FILE NO.

DRAWN | CHKD.

ENGD | APPD

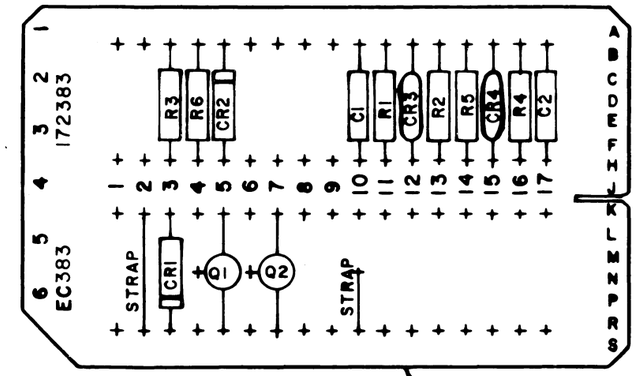
TELETYPE CORPORATION

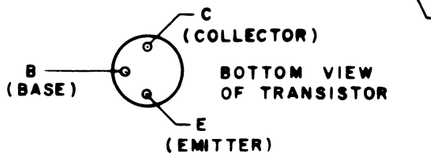
172380

ET-124491

EC383

172383





NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	143688	2	Capacitor Ceramic, .002 mfd	Coupling
C2			Same as C1	"
CR1	177108	2	Diode D2	Clamp
CR2			Same as CR1	"
CR3	178844	2	Varistor 100A	Bias
CR4			Same as CR3	"
R1	137440	2	Resistor Fixed 1000ohms	Bias
R4			Same as R1	"
R2	118180	2	Resistor Fixed 10K ohm	"
R5			Same as R2	"
R3	137441	2	Resistor Fixed 1200 ohms	Collector Lead
R6			Same as R3	" "
Q1	177105	2	Transistor P22	Amplifier
Q2			Same as Q1	"
EC	300001	1	Circuit Card Etched	
		2	Strap 24 AWG Bare	
	144495	2	Pad Transistor	

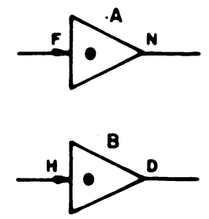
PULSE AMPLIFIER (2)

CIRCUIT BOARD EC383

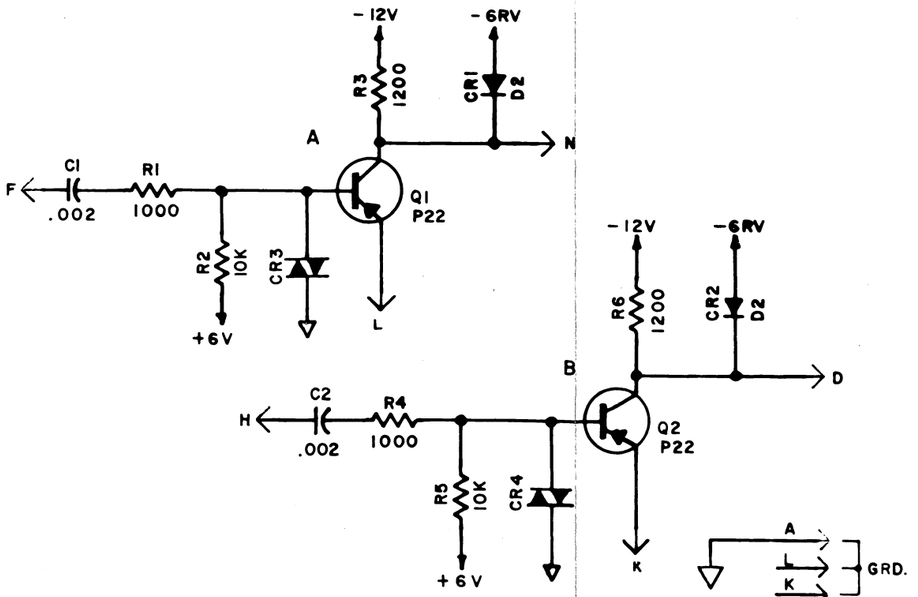
172383

This card consists of two common emitter amplifier circuits used to generate narrow pulses having a rapid rise time. The +6V at the base applied through R2 holds Q1 normally cut-off. CR1 clamps the collector at -6V. With a negative going 6V transition applied at F, base current flows driving Q1 into saturation, causing the collector potential to be at 0 V for the duration of the pulse applied at the base. The theory of operation for Q2 is identical to Q1.

SYMBOLS



ISSUE	DATE	AUTH NO
5	6-5-64	82454



NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 172383

DATE 9-17-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W. CHKD

ENGD F.K.H. APPD

TELETYPE CORPORATION

172383

ET 131481

EC 428

172428

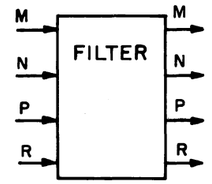
FILTER (4)

CIRCUIT BOARD EC

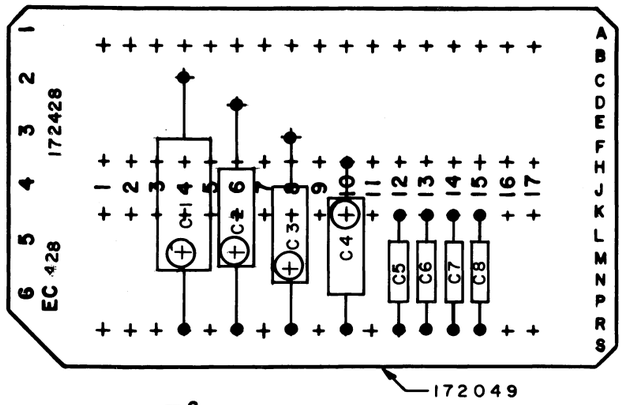
172428

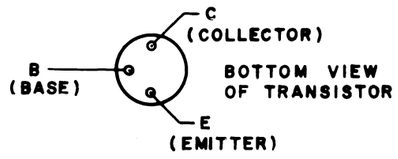
THIS CARD CONSIST OF FOUR CAPACITIVE FILTERS UTILIZED IN FILTERING POWER SUPPLY VOLTAGES.

SYMBOLS



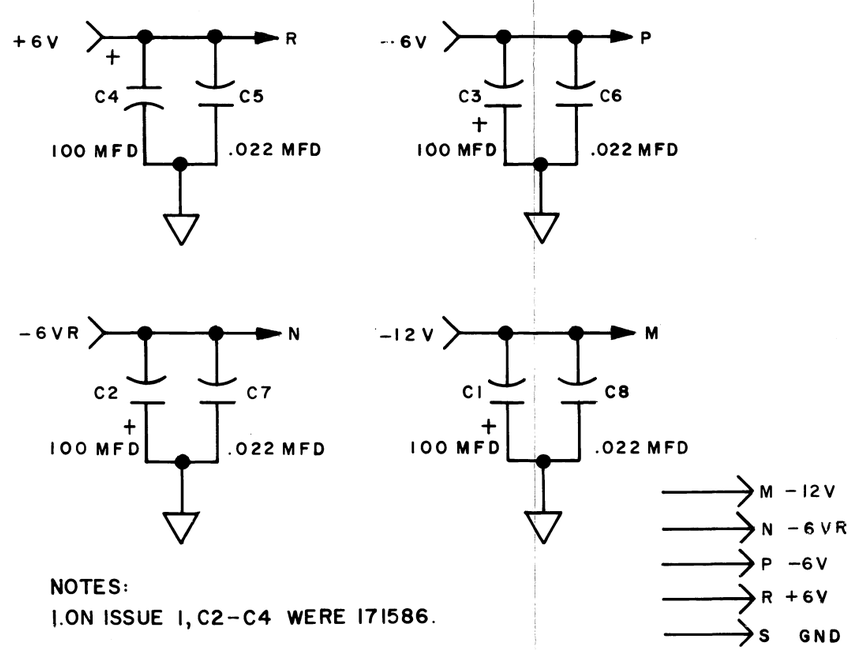
ISSUE	DATE	AUTH. NO.
2	2-18-69	98242





NOTE
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	177412	1	CAPACITOR 100MFD 25VDC	
C2-C4	181665	3	CAPACITOR 100 MFD 10 VDC	SEE NOTE 1
C5-C8	178860	4	CAPACITOR .022MFD 100VDC	



NOTES:
1. ON ISSUE 1, C2-C4 WERE 171586.

NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 172428

DATE: 2-28-64

P.D. FILE NO. G-A.353.219A

DRAWN. R.W.V. CHKD.

ENGD. E.H.P. APPD.

TELETYPE CORPORATION

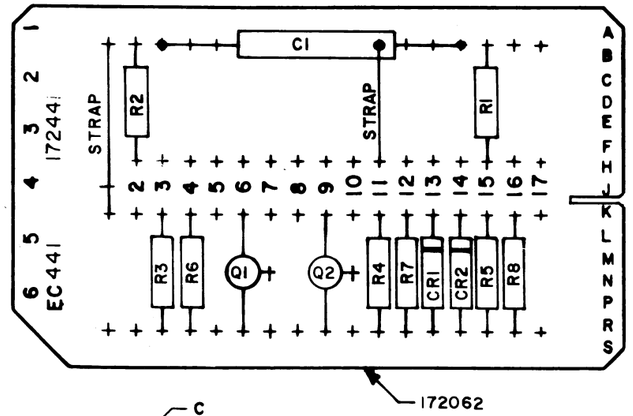
172428

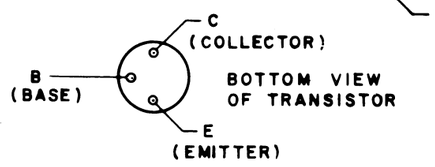
ET-181491

ET:108147
TC2351(6-64)

EC441

172441





NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	171579	1	Capacitor, Mylar .47 MF	Integration Cap.
CR1	177108	2	Diode, [illegible]	Clamp
CR2			Same as CR1	Clamp
R1	137442	1	Resistor, Fixed 1500 Ohms	Base Bias
R2	118144	1	Resistor, Fixed 2700 Ohms	" "
R3	118180	2	Resistor, Fixed 10K Ohms	" "
R4	118177	1	Resistor, Fixed 22K Ohm	" "
R5	137441	2	Resistor, Fixed 1200 Ohm	Collector Load
R6			Same as R3	Base Bias
R7	129851	1	Resistor, Fixed 3300 Ohm	" "
R8			Same as R5	Collector Load
Q1	177105	2	Transistor, P22	Amplifier
Q2			Same as Q1	"
EC	172062	1	Circuit Card, Etched	
		2	Strap, Bare 24 AWG.	
	144495	2	PAD, TRANSISTOR	

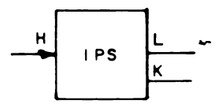
ET-104-47
TC255(6-54)

INTEGRATED PULSE SHAPER

CIRCUIT BOARD EC441

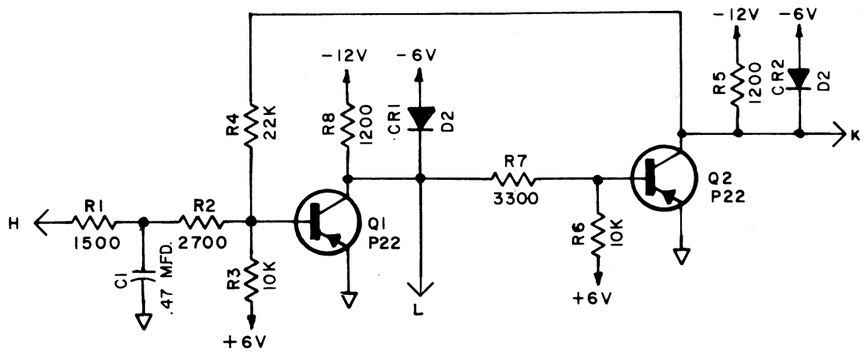
172441

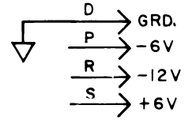
SYMBOLS



The purpose of this circuit is to reject noise pulses of 500 microseconds or less in time duration, and to pass pulses having longer time duration. The circuit produces a normal or inverted output which is delayed approximately 500 microseconds.

R1, R2 and C1 are connected to function as an integration circuit, while Q1, Q2 and associated circuitry reshape signals which are passed by the integration circuit. Normally the input at H is either 0 or -6 volts. If zero, Q1 is non-conducting, and if -6 V, Q1 is saturated, bias current supplied through R1 and R2. Q1 and Q2 form a regenerative amplifier which sharpens up the integrated input signal. Normal and inverted outputs are available at "K" and "L", HOWEVER ONLY "K", THE NORMAL OUTPUT SHOULD BE USED WHEN A FAST RISE TIME IS DESIRED.





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH NO
1	6-2-64	15621-R
2	5-1965	8752

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 172441

DATE 10-14-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W. | CHKD

ENGD F.K.H. | APPD

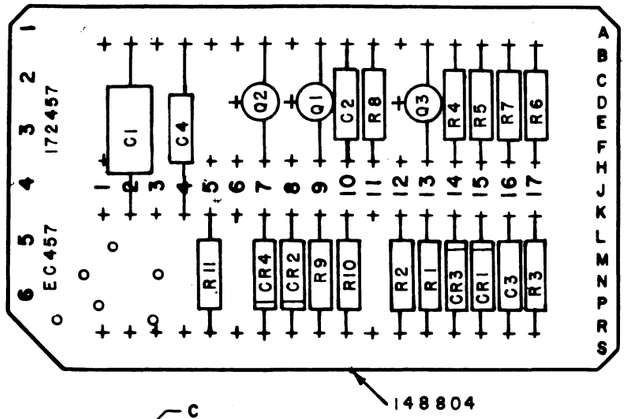
TELETYPE CORPORATION

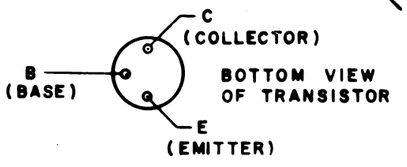
172441

FT 131481

EC 457

172457





NOTE:
REFER TO 5016WD FOR MARKING AND MFG. INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION		LOCATING FUNCTION
R1	137441	2	Resistor	1200 ohms	Collector Load
R2			Resistor	1200 ohms	Collector Load
R3	118177	3	Resistor	22K ohms	Gate
R4			Resistor	22K ohms	Base Bias
R5			Resistor	22K ohms	Base Bias
R6	129851	3	Resistor	3300 ohms	Collector Load
R7			Resistor	3300 ohms	Inverter Input
R8			Resistor	3300 ohms	Crossover
R9	129852	2	Resistor	2200 ohms	Capacitor Recharge
R10			Resistor	2200 ohms	Collector Load
R11	118150	1	Resistor	15K ohms	Timing
Q1	177105	3	Transistor	P22	Switch
Q2			Transistor	P22	Switch
Q3			Transistor	P22	Inverter
C1	171585	1	Capacitor	.22 mfd.	Timing
C2	177332	2	Capacitor	.002 mfd.	Speedup
C3			Capacitor	.002 mfd.	Coupling
C4	181617	1	Capacitor	1.0 mfd.	Filter
CR1	300102	1	Diode D4		Coupling
CR2	177108	2	Diode D2		Gate
CR3			Diode D2		Clamp
CR4	177611	1	Diode 1N682		Noise Blocking
	144495	3	Transistor Pad		
EC	148804	1	Circuit Card, Etched		

ET-04147
TC25516-541

FIXED ONE-SHOT - 2 MS

CIRCUIT BOARD EC457

172457

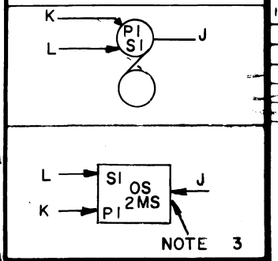
This circuit provides a two millisecond output in response to a positive going pulse. In the quiescent state Q1 is ON and Q2 is OFF. If pin K is 0 volts, a positive input signal at pin L will turn off Q1, making its collector go to -6 volts. This will turn on Q2. The collector of Q2 then goes from -6 volts to 0 volts. This positive transition is coupled to the base of Q1, keeping it off for a time period determined by R11 and C1. If pin K is -6 volts, the circuit will not respond to a positive transition at pin L.

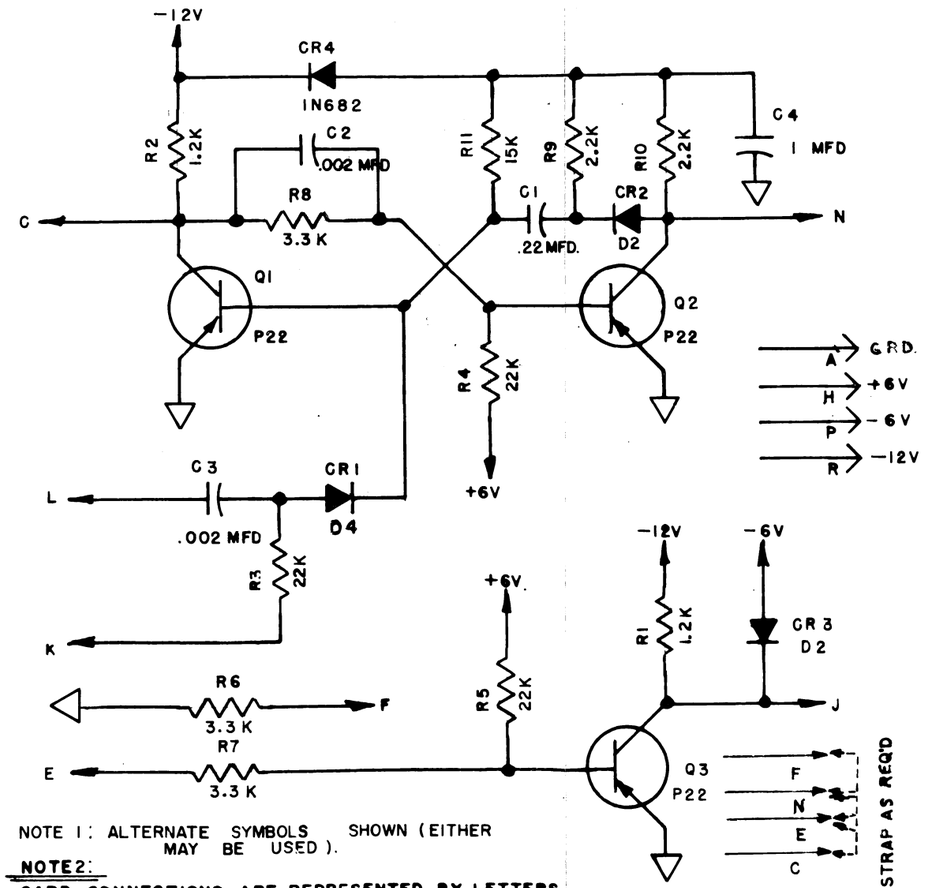
The output of the one shot should be isolated by the inverter formed with transistor Q3. A 0 volt input at pin E will make pin J -6 volts. A -6 volt input will make pin J go to 0 volts.

Resistor R6 is used as a collector load for Q2 when it is not loaded by the input resistor R7. This keeps the time out of the circuit two milliseconds regardless of which side of the one shot is used for an output signal.

The input is always at pin L, the output is at pin J. For a normal (0 volt) output pulse, pin E is strapped to pin C and pin F is strapped to pin N. For an inverted (-6 volt) output pulse, pin N is strapped to pin E.

SYMBOLS (NOTE 1)





NOTE 1: ALTERNATE SYMBOLS SHOWN (EITHER MAY BE USED).

NOTE 2:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

NOTE 3: LABEL OUTPUT N OR I (NORMAL OR INVERTED) TO SHOW OUTPUT STRAPPING COMBINATION USED.

ISSUE	DATE	AUTH NO
2	1-31-64	80194
3	2-6-64	80243
4	3-26-65	83968
5	5-21-66	91121
6	4-20-67	93138

APPROVALS	
D AND R	E OF M

E-NUMBER

PROD. NO. 172457

DATE: 11-5-63

P.D. FILE NO. 2-35.136AA

DRAWN G.J.M.	CHKD
ENGD E.W.S.	APPD RVR

TELETYPE CORPORATION

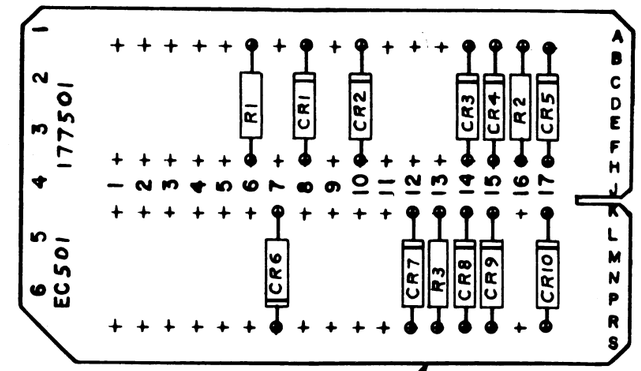
172457

ET-131481

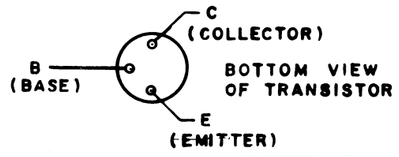
EFH

EC 501

177501



177499



NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	10	DIODE D2	GATE
CR2			SAME AS CR1	"
CR3			" " "	"
CR4			" " "	"
CR5			" " "	"
CR6			" " "	"
CR7			" " "	"
CR8			" " "	"
CR9			" " "	"
CR10			" " "	"
R1	129851	2	RESISTOR FIXED 3300 OHMS	BIAS RESISTOR
R2			SAME AS R1	" "
R3	118180	1	RESISTOR FIXED 10K OHMS	" "
EC	177499	1	CIRCUIT CARD, ETCHED	

TC-473 (6-66)

DIODE GATES

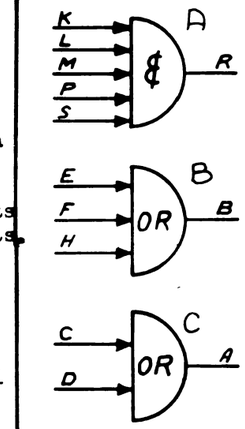
CIRCUIT BOARD EC 501

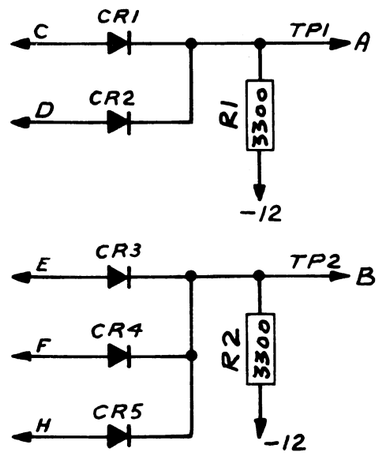
This card consists of one "AND" gate and two "OR" gates. Diodes CR6 through CR10 combine together with R3 to form a five input "AND" gate. CR1 and CR2 combine with R1 to form a two input "OR" gate while CR3, CR4 and CR5 combine with R2 to form a three input "OR" gate.

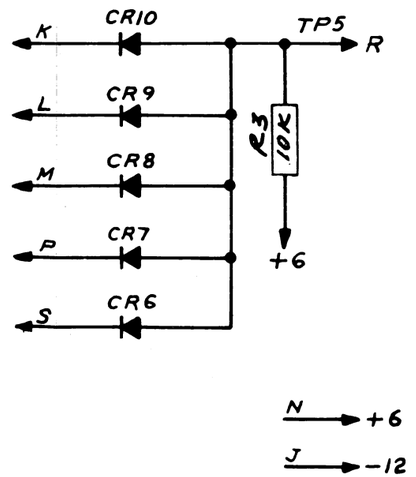
When 0 volts is applied to any of the inputs of an or gate (C or D), the output (A) will be 0 volts. When -6 volts is applied to all of the inputs, the output will be -6 volts.

When -6 volts is applied to any of the inputs of an "AND" gate (K,L,M,P or S) the output (R) will be -6 volts. When 0 volts is applied to all of the inputs, the output will be 0 volts.

SYMBOLS







NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

177501

REVISIONS

ISSUE	DATE	AUTH. NO.
2	10-23-63	77918
3	5-27-67	91127

APPROVALS

R AND D	E OF M

E-NUMBER.

PROD. NO. 177501

DATE 1-11-61

FILE NO. 24-A25134AA

DRAWN. | CHKD.

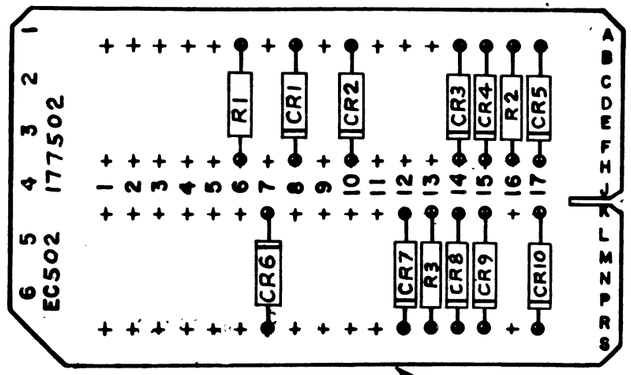
ENGD. A.R. | APPD.

TELETYPE CORPORATION

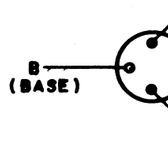
177501

EC502

177502



177499



BOTTOM VIEW OF TRANSISTOR

NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	10	DIODE D2	GATE
CR2			SAME AS CR1	"
CR3			" " "	"
CR4			" " "	"
CR5			" " "	"
CR6			" " "	"
CR7			" " "	"
CR8			" " "	"
CR9			" " "	"
CR10			" " "	"
R1	118180	2	RESISTOR, FIXED 10K OHMS	BIAS RESISTOR
R2			SAME AS R1	" "
R3	129851	1	RESISTOR, FIXED 3300 OHMS	" "
EC	177499	1	CIRCUIT CARD, ETCHED	

TC-473 (8-66)

DIODE GATES

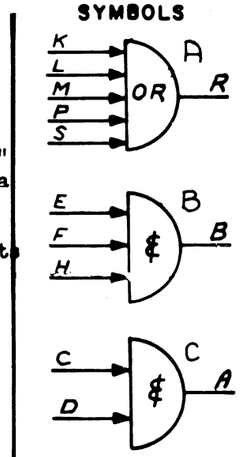
CIRCUIT BOARD EC502

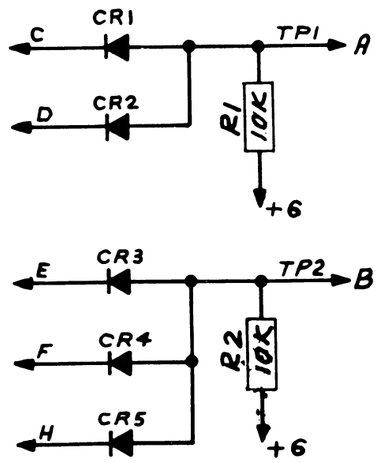
This card consists of one "OR" gate and two "AND" gates. Diodes CR6 through CR10 combine together with R3 to form a five input "OR" gate. CR1 and CR2 combine with R1 to form a two input "AND" gate while CR3, CR4 and CR5 combine with R2 to form a three input "OR" gate.

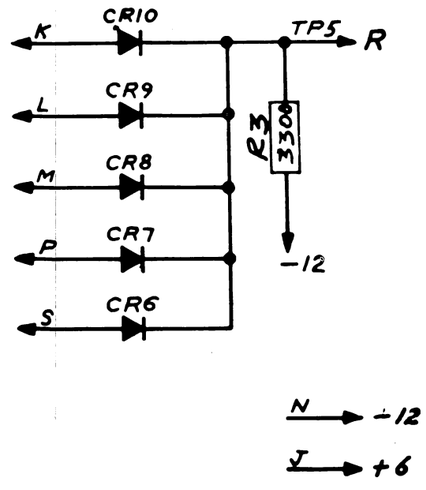
When 0 volts is applied to all of the inputs of an "AND" gate (C and D), the output (A) will be 0 volts. When -6 volts is applied to any of the inputs, the output will be -6 volts.

When -6 volts is applied to all of the inputs of an "OR" gate (K,L,M,P or S) the output (R) will be -6 volts. When 0 volts is applied to any of the inputs, the output will be 0 volts.

SYMBOLS







NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

177502

REVISIONS

ISSUE	DATE	AUTH. NO.
2	10-31-61	71472
3	10-23-63	77918
4	5-27-66	91127

APPROVALS

R AND D	E OF M

E-NUMBER.

PROD. NO. 177502

DATE 1-11-61
FILE NO. 24-A25/134AA
DRAWN. CHKD. M.G.
ENGD. A.R. APPD.

TELETYPE CORPORATION

177502

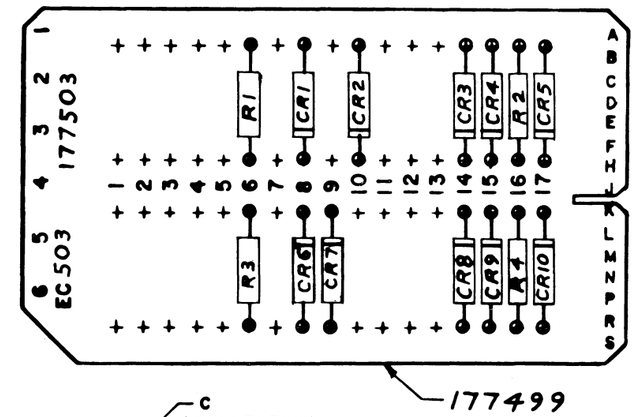
EC 503

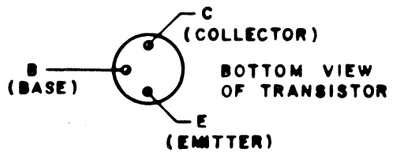
177503

DIODE GATES

CIRCUIT BOARD EC503

177503





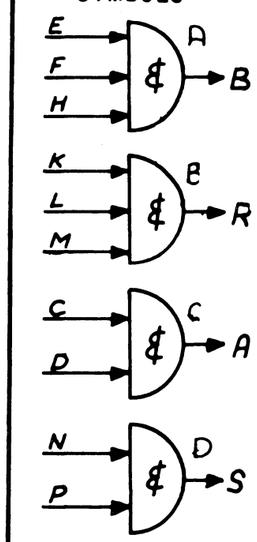
NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

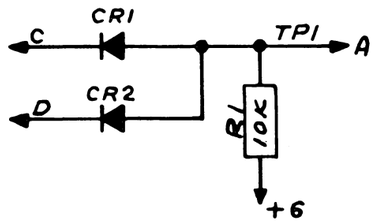
REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	10	DIODE, D2	GATE
CR2			SAME AS CR1	"
CR3			" " "	"
CR4			" " "	"
CR5			" " "	"
CR6			" " "	"
CR7			" " "	"
CR8			" " "	"
CR9			" " "	"
CR10			" " "	"
R1	118180	4	RESISTOR FIXED 10K OHMS	BIAS RESISTOR
R2			SAME AS R1	" "
R3			" " "	" "
R4			" " "	" "
EC	177499	1	CIRCUIT CARD, ETCHED	

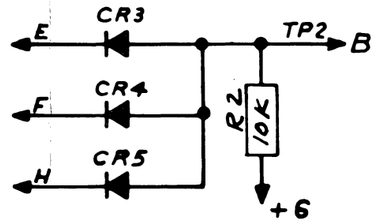
This card consists of four "AND" gates. CR3 through CR5 combine with R2 and CR8 through CR10 combine with R4 to form two separate three input "AND" gates. CR1 and CR2 combine with R1 while CR6 and CR7 combine with R4 to form two separate two input "AND" gates.

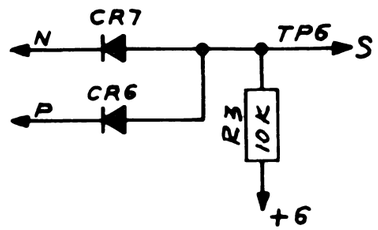
When -6 volts is applied to any of the inputs of an "AND" gate (E, F or H), the output (B) will be -6 volts. When 0 volts is applied to all of the inputs, the output will be 0 volts.

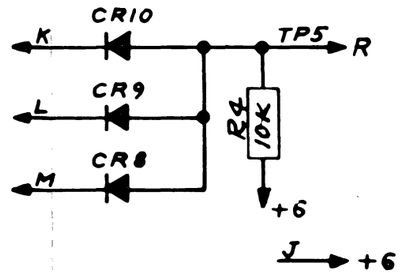
SYMBOLS











NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

177503

REVISIONS

ISSUE	DATE	AUTH. NO.
2	1-17-62	72205
3	10-23-63	77918
4	5-27-66	91127

APPROVALS

R AND D	E OF M

E-NUMBER

PROD. NO. 177503

DATE 1-11-61

FILE NO. 24-A25134AA

DRAWN. | CHKD.

ENGD. AA | APPD.

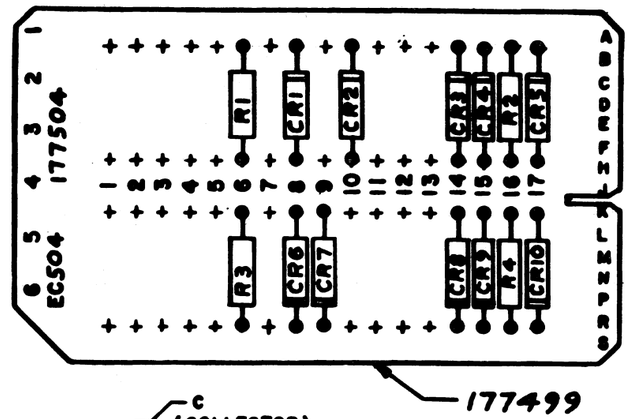
TELETYPE CORPORATION

177503

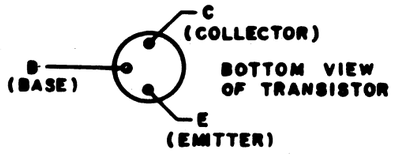
TC-473 (6-66)

EC 504

177504



177499



NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	10	DIODE D2	GATE
CR2			SAME AS CR1	"
CR3			" " "	"
CR4			" " "	"
CR5			" " "	"
CR6			" " "	"
CR7			" " "	"
CR8			" " "	"
CR9			" " "	"
CR10			" " "	"
R1	129851	4	RESISTOR FIXED 3300 OHMS	BIAS RESISTOR
R2			SAME AS R1	" "
R3			" " "	" "
R4			" " "	" "
EC	177499	1	CIRCUIT CARD, ETCHED	

TC-473 (6-60)

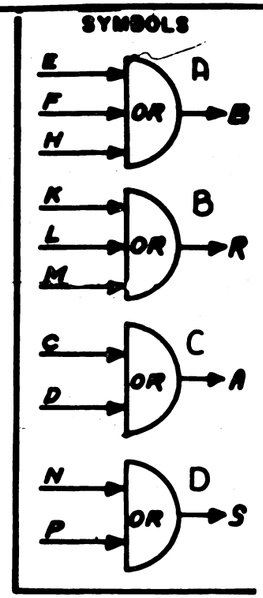
DIODE GATES

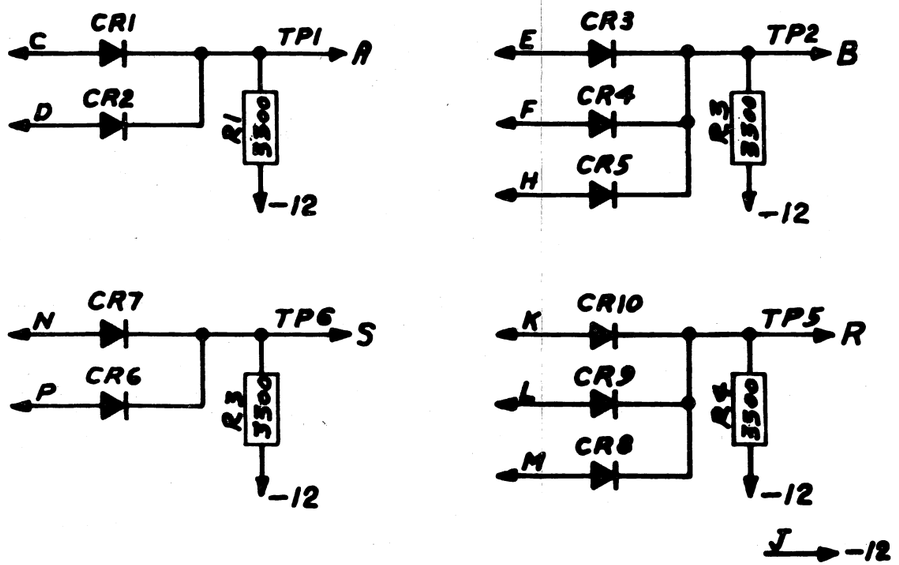
CIRCUIT BOARD EC 504

This card consists of four "OR" gates. CR3 through CR5 combine with R2 and CR8 through CR10 combine with R4 to form two separate three input "OR" gates. CR1 and CR2 combine with R1 while CR6 and CR7 combine with R4 to form two separate two input "OR" gates.

When 0 volts is applied to any of the inputs of an "OR" gate (E,F or H), the output (B) will be 0 volts. When -6 volts is applied to all of the inputs, the output will be -6 volts.

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

177504

REVISIONS

ISSUE	DATE	AUTH. NO.
2	10-23-65	77918
3	5-2-66	91127

APPROVALS

R AND D	E or M
JDB	~

E-NUMBER

PROD. NO. 177504

DATE 1-12-61

FILE NO. 24-A125/134AA

DRAWN. AR | CHKD. MA

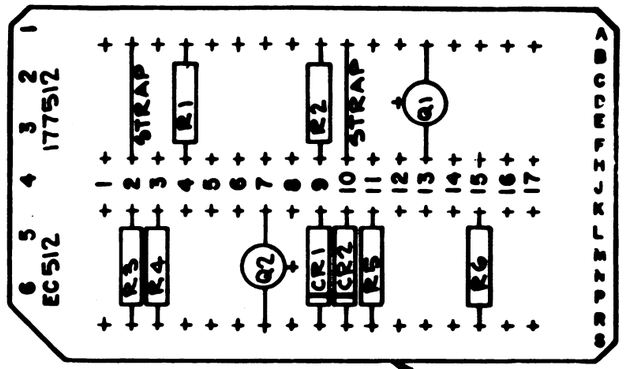
ENGR. AR | APPD. JDB

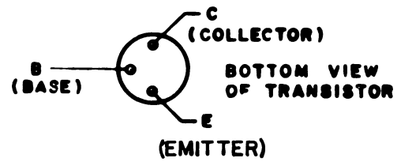
TELETYPE CORPORATION

177504

EC512

177512





NOTE:
REFER TO SOIGWD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	2	DIODE D2	CLAMPING DIODE
CR2			SAME AS CR1	" "
R1	118150	2	RESISTOR FIXED 15K OHMS	BASE BIAS
R2	118186	2	" " 5600 "	SIGNAL INPUT
R3			SAME AS R2.	" "
R4			SAME AS R1	BASE BIAS
R5	137441	2	RESISTOR FIXED 1200 OHMS	COLLECTOR LOAD
R6			SAME AS R5	" "
Q1	177106	2	TRANSISTOR N-33	INVERTER
Q2			SAME AS Q1	"
	172065	1	CIRCUIT CARD, ETCHED	
	144495	2	PAD, TRANSISTOR	

TC-473 (6-60)

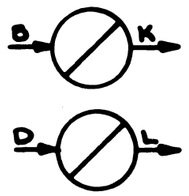
(NPN) INVERTER (2) — CIRCUIT BOARD EC512

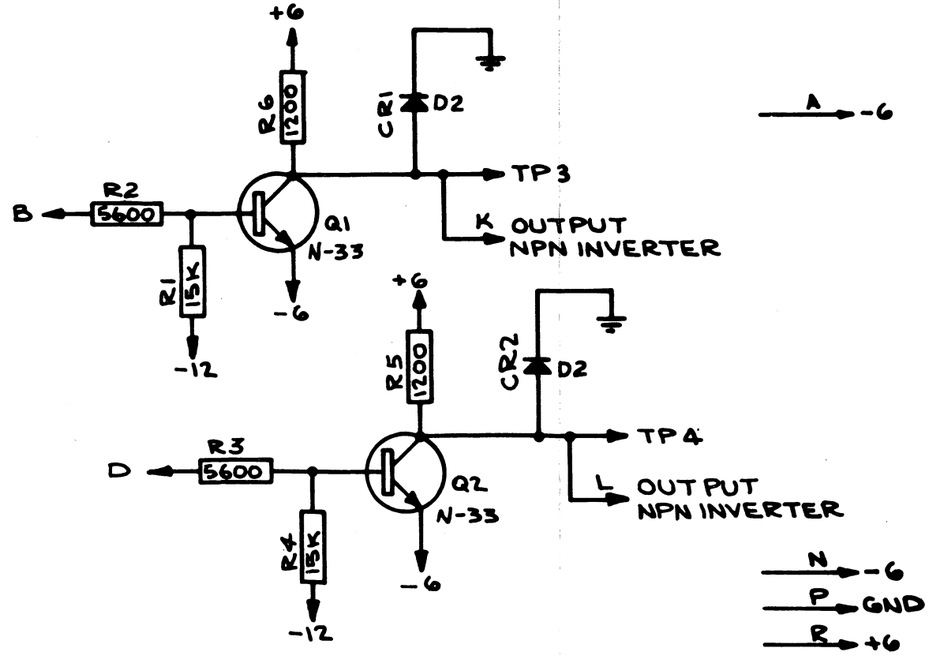
177512

This card consists of two identical NPN common emitter amplifiers which provide an inverted output signal.

Q_1 and Q_2 has a reverse bias of approximately -6 volts, the collectors of Q_1 and Q_2 are clamped at ground potential by CR_1 and CR_2. With a 0 volt signal applied at point B and D, Q_1 and Q_2 are driven into saturation, causing the collector potentials to become -6 volts for the duration of the input signal.

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

REVISIONS

SERIAL	DATE	AUTH. NO.

APPROVALS

R AND D	E OF M
[illegible]	~

E-NUMBER

PROD. NO. 177512

DATE 5-8-61

FILE NO. 24-A25/134 AA

DRAWN. V.E.S	CHKD. M.G
ENGD. E.W.S	APPD.

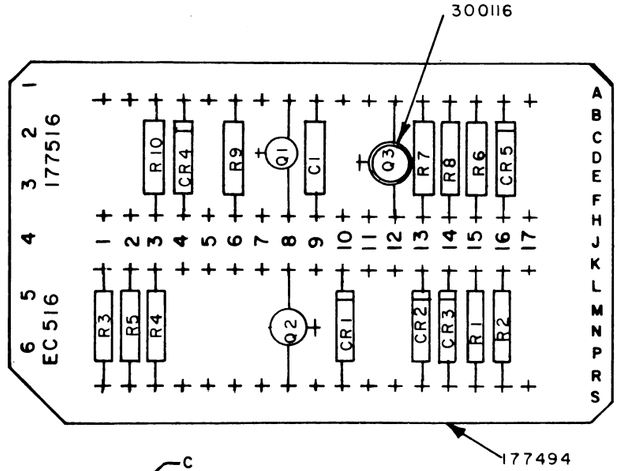
TELETYPE CORPORATION

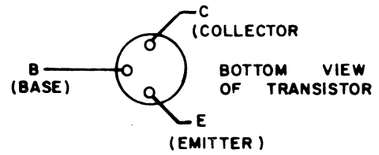
177512

CIRCUIT BOARD EC 516

EC 516

177516





NOTE:
REFER TO 5016 WD FOR MARKING IMFORMATION.

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118180	1	RESISTOR FIXED 10K OHMS	BASE BIAS
R2	143659	3	RESISTOR FIXED 560 OHMS	COLLECTOR DROPPING
R3	129851	1	RESISTOR FIXED 3300 OHMS	BASE BIAS
R4	177122	1	RESISTOR FIXED 56 OHMS	BASE INPUT
R5		-	SAME AS R2	BASE BIAS
R6	118186	1	RESISTOR FIXED 5600 OHMS	DIODE BIAS
R7			SAME AS R2	COLLECTOR DROPPING
R8	137601	1	RESISTOR FIXED 68 OHMS	COLLECTOR DROPPING
R9	129854	1	RESISTOR FIXED 10K OHMS	DIODE BIAS
C1	181618	1	CAPACITOR FIXED .01	INPUT CAPACITOR
Q1	177105	2	TRANSISTOR P-22	INVERTER
Q2		-	SAME AS Q1	EMITTER FOLLOWER
Q3	300052	1	TRANSISTOR 2N2001	AMPLIFIER
CR1	177109	2	DIODE SGI308	COUPLING DIODE
CR2	177108	3	DIODE D-2	CLAMP DIODE
CR3			SAME AS CR1	CLAMP DIODE
CR4			SAME AS CR2	GATE
EC	177494	1	CIRCUIT CARD ETCHED	
	144495	3	PAD TRANSISTOR	
R10	118177	1	RESISTOR, FIXED 22K OHMS	DIODE BIAS
CR5			SAME AS CR2	GATE
	300116	1	COVER, INSULATING	

TC-473 (8-66)

POWER PULSER

THIS CIRCUIT IS USED TO PROVIDE A HIGH CURRENT 15-35 μ SEC. PULSE UPON RECEIPT OF A 6 VOLT POSITIVE TRANSITION AT PIN E.

NORMALLY Q1 IS ON AND Q3 IS OFF AND THE EMITTER OF Q2 IS SLIGHTLY POSITIVE WITH RESPECT TO GROUND. WHEN A -6V TO 0V TRANSITION OCCURS AT PIN E. Q1 IS TURNED OFF MAKING ITS COLLECTOR GO TO -6 VOLTS. THIS CAUSES THE EMITTER OF Q2 TO BECOME -6 VOLTS, TURNING ON Q3.

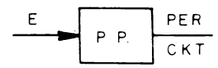
THREE ALTERNATE OUTPUTS ARE AVAILABLE FROM Q3.

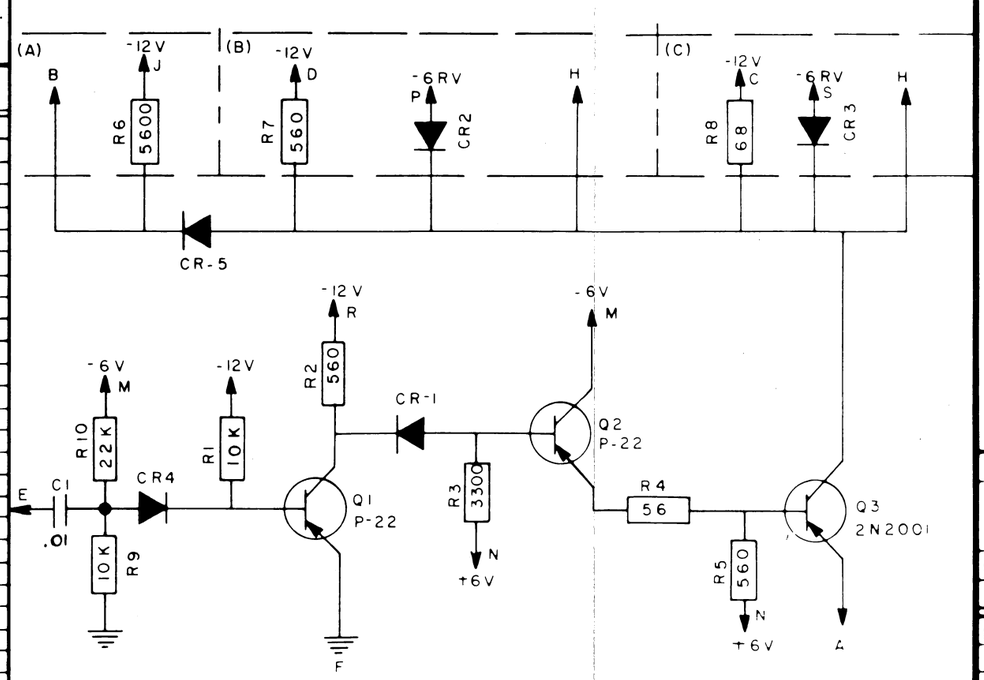
A. WHEN THE OUTPUT IS TAKEN FROM PIN B. DIODE CR-5 PREVENTS ANY POSITIVE PULSES ON THE LINE FROM APPEARING ON PIN H. THE TIME AND AMPLITUDE OF THE OUTPUT PULSE WILL BE IN ACCORDANCE WITH CASES B OR C.

B. IF CONNECTED AS SHOWN IN B. THE OUTPUT AT H IS A 6 VOLT POSITIVE PULSE THAT CAN BE USED TO TRIGGER 40 FLIP-FLOPS AT A REPETITION RATE OF 3 KC.

C. THE THIRD ALTERNATIVE PROVIDES A 6 VOLT POSITIVE PULSE AT A REPETITION RATE OF 3 KC WHEN OPERATING INTO A 2 MFD CAPACITIVE INPUT.

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

177516

REVISIONS

ISSUE	DATE	AUTH. NO
2	3-15-62	72786
3	10-14-64	84270
4	8-11-65	84543
5	4-4-67	93089
6	5-8-67	93136
7	11-27-67	94692-B
8	12-28-67	94692-1
9	2-6-68	97266

APPROVALS

R AND D	E OF M
HJK	~

E-NUMBER.

PROD. NO.

DATE 4 8 6

FILE NO. 24 A25, 24 AA

DRAWN. D F CHKD M S

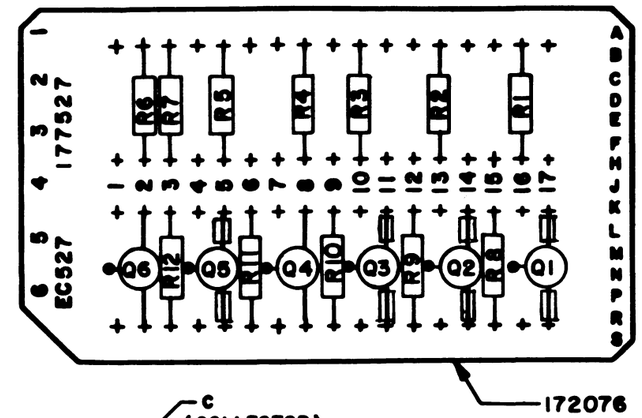
ENGD. E W S APPD P L B

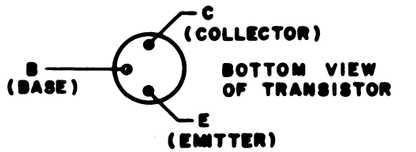
TELETYPE CORPORATION

177516

EC527

177527





NOTE:
REFER TO 501GWD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118146	6	RESISTOR FIXED 4700 OHMS	EMITTER LOAD
R2	"		" " " "	" "
R3	"		" " " "	" "
R4	"		" " " "	" "
R5	"		" " " "	" "
R6	"		" " " "	" "
R7	118724	6	RESISTOR FIXED 220 OHMS	COLLECTOR LOAD
R8	"		" " " "	" "
R9	"		" " " "	" "
R10	"		" " " "	" "
R11	"		" " " "	" "
R12	"		" " " "	" "
Q1	193134	6	TRANSISTOR (NPN) N35	EMITTER FOLLOWER
Q2	"		" "	" "
Q3	"		" "	" "
Q4	"		" "	" "
Q5	"		" "	" "
Q6	"		" "	" "
	144138	19	EYELETS	
EC	172076	1	CIRCUIT CARD, ETCHED	
RM	60263	-	SLEEVING AS REQUIRED	
	144495	6	PAD, TRANSISTOR	

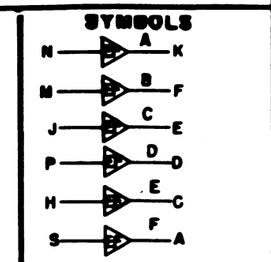
TE-473 (6-66)

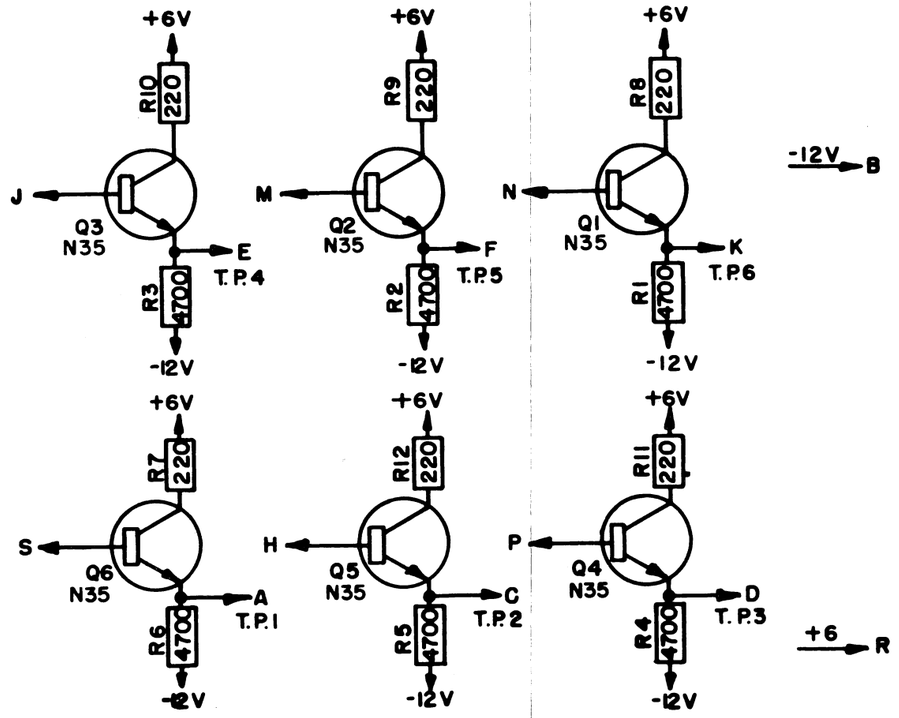
NPN EMITTER FOLLOWER (6)

CIRCUIT BOARD EC527

This card consists of six medium power emitter followers used to provide current gain with no inversion or change in the input signal level. With zero volts applied at the base, zero volts appears at the emitter. With -6 V applied, -6 V appears at the emitter. The NPN Emitter follower is used to provide low output impedence (high current gain) on the positive going voltage transition (-6 to 0 volts.)

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

177527

REVISIONS

ISSUE	DATE	AUTH. NO.
2	1-7-63	75582
3	1-15-64	79993
4	5-27-66	91127

APPROVALS

R AND D	E or M
[illegible]	[illegible]

E-NUMBER.

PROD. NO. 177527

DATE 2-21-61

FILE NO. 19-A25.AA

DRAWN. E.E. | CHKD. D.S.

ENGD. C.J.R. | APPD. R.J.K.

TELETYPE CORPORATION

177527

EC528

177528

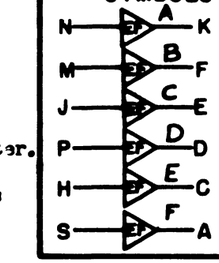
PNP EMITTER FOLLOWER (6)

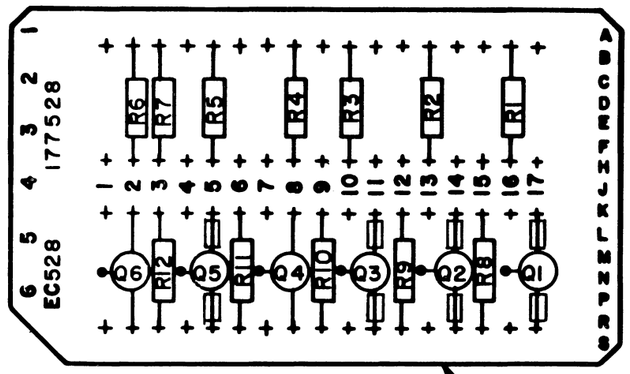
CIRCUIT BOARD EC 528

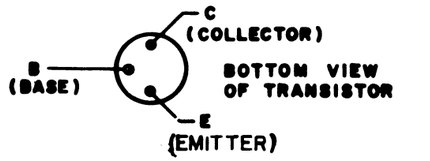
177528

This circuit consists of six medium power PNP emitter followers used to provide current gain with no inversion or change in the input signal level. With zero volts at the base, zero volts appears at the emitter. With -6 V applied, -6 V appears at the emitter. The PNP emitter follower is used to provide fast rise times for the negative going transitions (0 to -6V) also to provide low output impedance (high current gain).

SYMBOLS

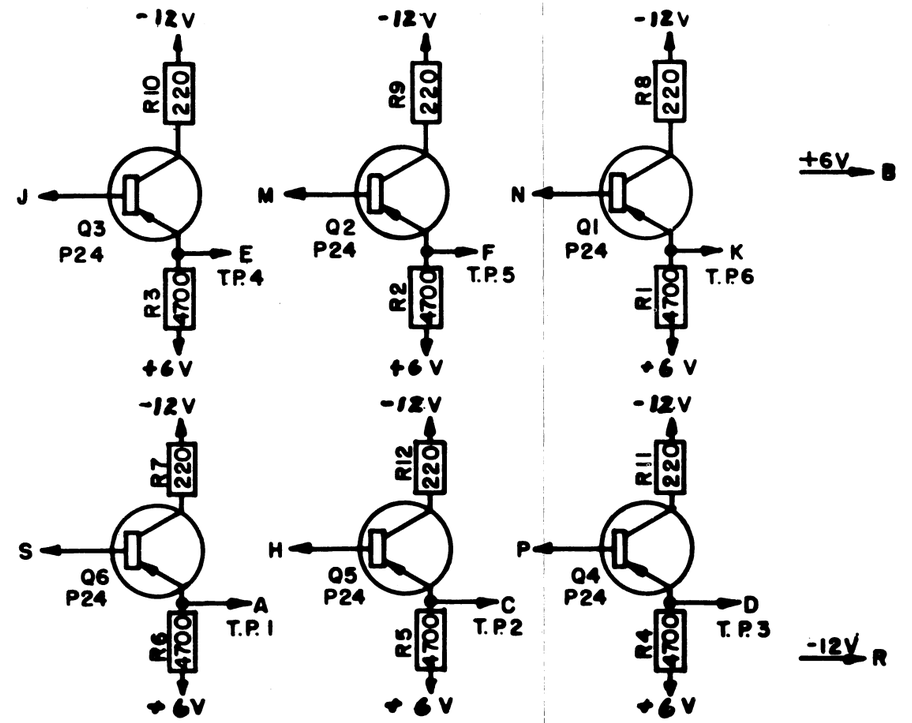






NOTE:
REFER TO SOIGWD FOR MARKING INFORMATION

REF. DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118146	6	RESISTOR, FIXED 4700 OHM.	EMITTER LOAD
R2	"		" " " "	" "
R3	"		" " " "	" "
R4	"		" " " "	" "
R5	"		" " " "	" "
R6	"		" " " "	" "
R7	118724	6	RESISTOR FIXED 220 OHM.	COLLECTOR LOAD
R8	"		" " " "	" "
R9	"		" " " "	" "
R10	"		" " " "	" "
R11	"		" " " "	" "
R12	"		" " " "	" "
Q1	193135	6	TRANSISTOR (P.NP) P24	EMITTER COLLECTOR
Q2	"		" " "	" "
Q3	"		" " "	" "
Q4	"		" " "	" "
Q5	"		" " "	" "
Q6	"		" " "	" "
	144138	19	EYELETS	
EC	172076	1	CIRCUIT CARD, ETCHED	
RM	60263	-	SLEEVING AS REQUIRED	
	144495	6	PAD, TRANSISTOR	



NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS.

REVISIONS

ISSUE	DATE	AUTH. NO.
2	1-7-63	75582
3	1-15-64	79993
4	5-27-66	91127

APPROVALS

R AND D	E or M
2DS	

E-NUMBER.

PROD. NO. 177528

DATE 2-21-61

FILE NO. 19-A25.AA

DRAWN. E.E. | CHKD. D.S.

ENGR. C.J.R. | APPD. R.R.

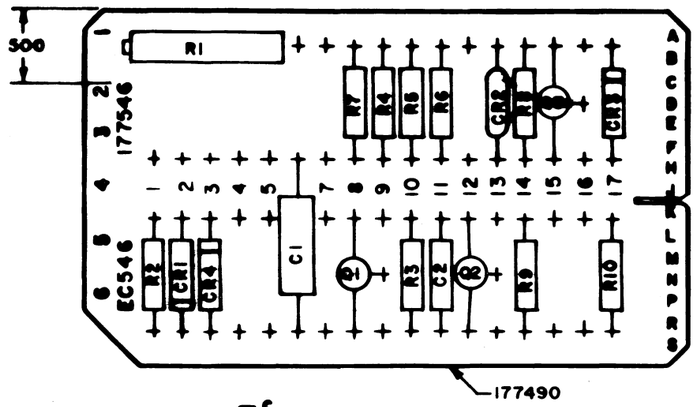
TELETYPE CORPORATION

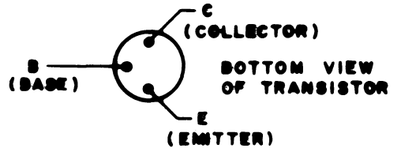
177528

TE-473 (6-001)

EC546

177546





NOTE

REFER TO 501GWD FOR MARKING INFORMATION, EXCEPT FOR POSITION OF PART NUMBER.

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	300022	1	RESISTOR, VARIABLE 500K OHMS	TIMING
R2	118177	1	RESISTOR, FIXED 22K OHMS	TIMING
R3	143669	1	" " 360 OHMS	VOLTAGE DROPPING
R4	137441	2	" " 1.2K OHMS	COLLECTOR LOAD
R5	118156	2	" " 56K OHMS	BASE BIAS
R6	118144	1	" " 2.7K OHMS	CURRENT LIMIT
R7			SAME AS R4	COLLECTOR LOAD
R8			SAME AS R5	BASE BIAS
R9	118186	1	RESISTOR, FIXED 5.6K OHMS	CURRENT LIMIT
R10	137602	1	" " 470 OHMS	TEMP. COMPENSATION
C1	171829	1	CAPACITOR, MYLAR .15MF	TIMING
C2	181618	1	" " .01MF	CLAMP
CR1	177404	1	DIODE, ZENER 15V	REGULATOR
CR2	178844	1	VARISTOR 100A	BASE BIAS
CR3	177108	1	DIODE, D2	CLAMP
CR4	177611	1	DIODE, IN682	COUPLING
Q1	177105	2	TRANSISTOR P22	CONTROL
Q2	177610	1	UNIJUNCTION	OSCILLATOR
Q3			SAME AS Q1	
	177490	1	BOARD, ETCHED CIRCUIT	
	144495	3	PAD, TRANSISTOR	

ET-108147
TC25516-941

GATED OSCILLATOR

CIRCUIT BOARD EC546

177546

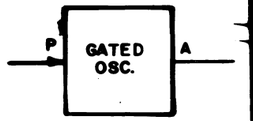
THIS CARD CONSISTS OF A CONTROL, OSCILLATOR, AND AMPLIFIER CIRCUIT.

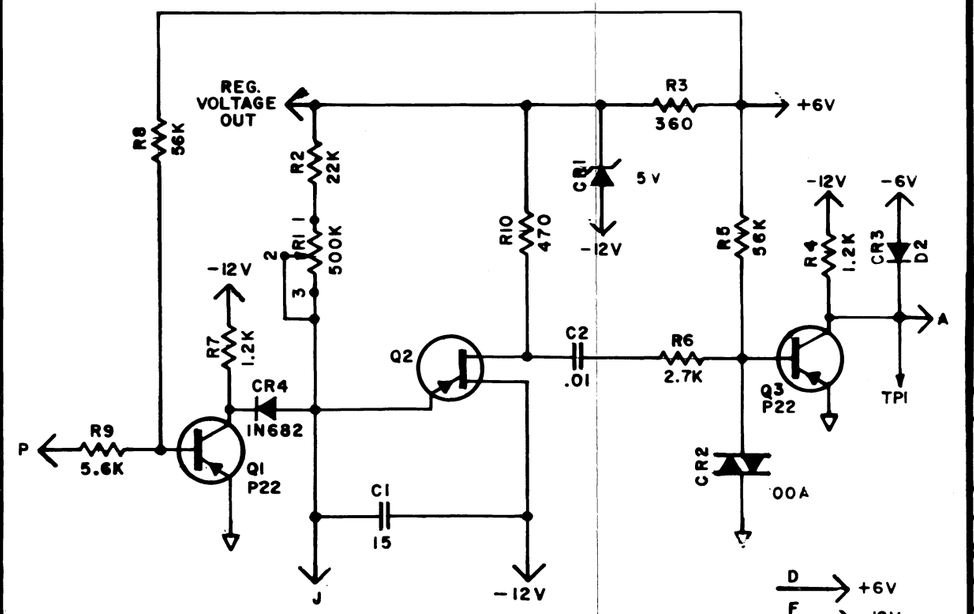
WITH ZERO VOLTS AT "P" CONTROL CIRCUIT Q1 IS BACK BIASED AND NON CONDUCTING. CR4 IS FORWARD BIASED PUTTING C1 AT -12V AND CLAMPING THE EMITTER OF Q2 SO THE CIRCUIT WILL NOT OSCILLATE. THEREFORE, THE OUTPUT AT "A" IS A CONSTANT -6 VOLTS.

WITH -8V AT "P", Q1 IS FORWARD BIASED ALLOWING CONDUCTION, THEREFORE, CR4 IS BACK BIASED. Q2 CIRCUIT WILL NOW OSCILLATE. THE OUTPUT OF Q2 IS FED TO THE AMPLIFIER WHICH HAS AN OUTPUT OF -6 TO 0 VOLT PULSES.

THIS CIRCUIT HAS AN OUTPUT ADJUSTABLE FROM 4 TO 45 M.S.

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH NO
1	5-20-64	56620-R
2	5-7-65	36758
3	11-25-65	89780
4	7-5-67	94162
5	2 6 68	97266

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 177546

DATE 11-19-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W. CHKD

ENGD I.S.K. APPD

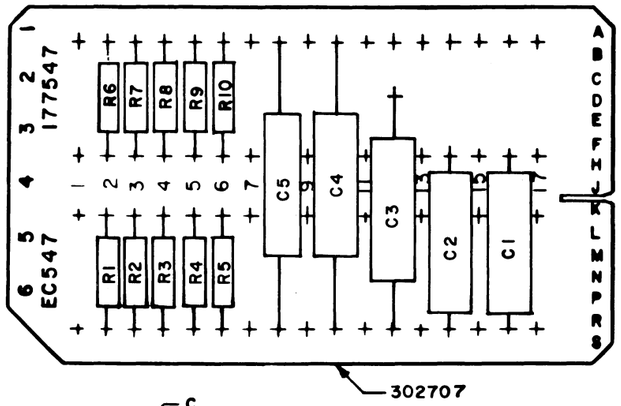
TELETYPE CORPORATION

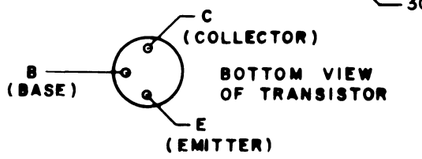
177546

EFH ET-181491

EC547

177547





NOTE
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	137440	5	RESISTOR, FIXED 1000 OHMS	BIAS
R2			SAME AS R1	"
R3			"	"
R4			"	"
R5			"	"
R6	137603	5	RESISTOR, FIXED 510 OHMS	INTEGRATING RESISTOR
R7			SAME AS R6	"
R8			"	"
R9			"	"
R10			"	"
C1	171579	5	CAPACITOR, MYLAR .47 MFD.	INTEGRATING CAPACITOR
C2			SAME AS C1	"
C3			"	"
C4			"	"
C5			"	"
EC	302707	1	BOARD, ETCHED CIRCUIT	

ET-00147
TC25516-B41

INTEGRATOR (5)

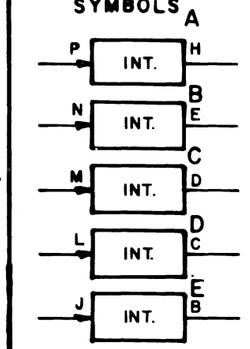
CIRCUIT BOARD EC547

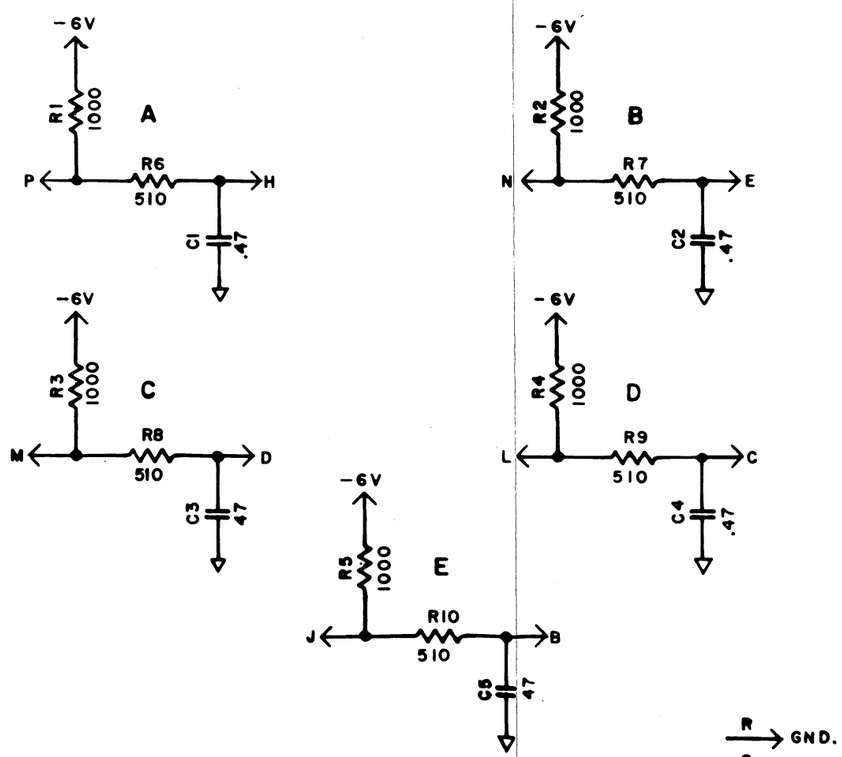
THIS CARD CONSISTS OF FIVE IDENTICAL INTEGRATOR CIRCUITS.

THE INPUT SIGNALS ARE APPLIED AT TERMINALS P, N, M, L AND J FROM MECHANICALLY OPERATED CONTACTS WHEN THE INPUT IS OPEN, THE OUTPUT IS AT -6 VOLTS. WHEN 0 VOLTS IS APPLIED TO THE INPUT, THE OUTPUT IS AT 0 VOLTS. THE LEADING EDGE OF THE INPUT SIGNAL WILL BE DELAYED DUE TO THE TIME CONSTANT OF THE CAPACITOR AND THE 510 OHM RESISTOR. THE TRAILING EDGE TO THE INPUT SIGNAL WILL BE DELAYED DUE TO THE TIME CONSTANT OF THE CAPACITOR, 510 OHM RESISTOR AND 1000 OHM RESISTOR.

THE PURPOSE OF THIS CIRCUIT IS TO PREVENT NOISE FROM CONTACT BOUNCE TO GET INTO SUCCEEDING STAGES.

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

177547

ISSUE	DATE	AUTH NO
1	5-20-64	15620-R

APPROVALS

D AND R	E OF M

E-NUMBER

PROD NO. 177547

DATE 11-20-63

P.D. FILE NO 2-96.134.184A

DRAWN S.W.	CHKD
ENGD I.S.K.	APPD

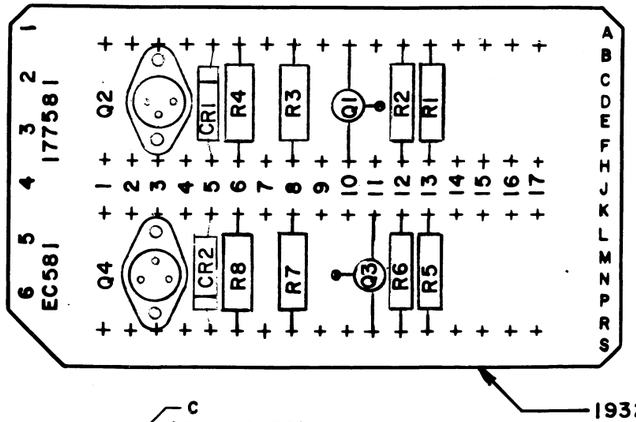
TELETYPE CORPORATION

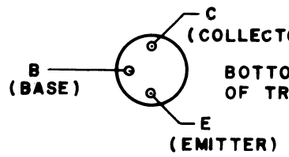
177547

ET-131401

EC 581

177581





NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	137442	2	RESISTOR FIXED, 1500 OHMS	CURRENT LIMIT
R2	118146	2	RESISTOR FIXED, 4700 OHMS	BIAS RESISTOR
R3	129852	2	RESISTOR FIXED, 2200 OHMS	COLLECTOR LOAD
R4	118725	2	RESISTOR FIXED, 270 OHMS	CURRENT LIMIT
R5			SAME AS R1	
R6			SAME AS R2	
R7			SAME AS R3	
R8			SAME AS R4	
Q1	177106	2	TRANSISTOR N-33	AMPLIFIER
Q2	193250	2	TRANSISTOR 2N3213	AMPLIFIER
Q3			SAME AS Q1	
Q4			SAME AS Q2	
	144495	2	PAD, TRANSISTOR	
	193217	1	CIRCUIT CARD, ETCHED	
CR1	181619	2	DIODE, IN482	CLAMP
CR2			SAME AS CR1	"

ET-108147
TC255(6-54)

POWER AMPLIFIER (2)

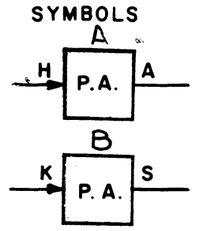
CIRCUIT BOARD EC 581

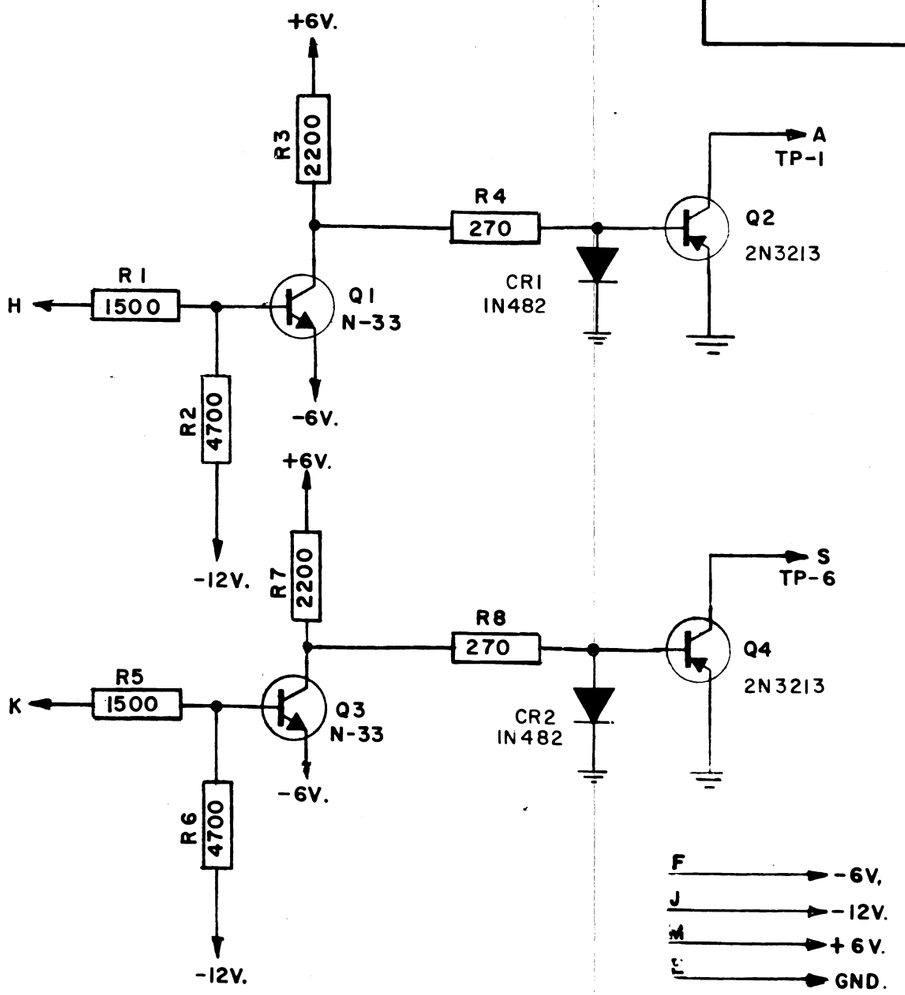
177581

THIS CARD CONSISTS OF TWO IDENTICAL TWO-STAGE COMMON EMITTER AMPLIFIERS. THE OUTPUT TRANSISTOR IS A MEDIUM POWER TYPE CAPABLE OF DELIVERING A LOAD CURRENT OF UP TO .25 AMPERES.

WITH -6 VOLTS APPLIED AT THE INPUT (H,K), THE INPUT TRANSISTOR (Q1,3) IS CUT OFF APPLYING A +6 VOLT TO CUT OFF THE OUTPUT TRANSISTOR (Q2,4). WHEN 0 VOLTS IS APPLIED TO THE INPUT, THE INPUT TRANSISTOR IS FORWARD BIASED DRIVING THE INPUT OF THE OUTPUT TRANSISTOR NEGATIVE TO SATURATE IT. THIS CARD CAN BE USED WITH LOADS CONNECTED TO POWER SUPPLY VOLTAGES UP TO A NOMINAL 48 VOLTS.

SYMBOLS





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH. NO.
2	10-28-63	78979
3	12-30-63	79876
4	5-14-64	79847
5	5-27-66	81127

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 177581

DATE: 8-15-63

P.D. FILE NO. 33-A25AA

DRAWN N.A.R. CHKD.

ENGD. R.E.P. APPD. RTR

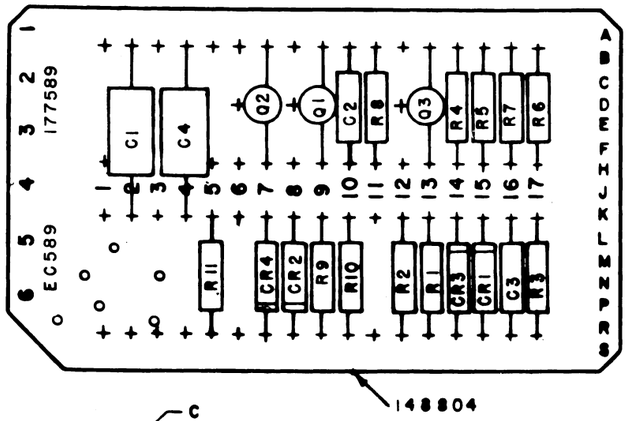
TELETYPE CORPORATION

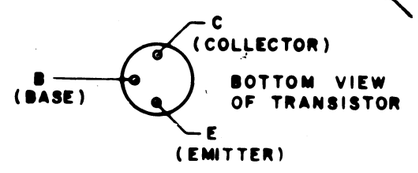
177581

ET-131481

EC589

177589





NOTE:
REFER TO 5016WD FOR MARKING AND MFG. INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION		LOCATING FUNCTION
R1	137441	2	Resistor	1200 ohms	Collector Load
R2			SAME AS R1		Collector Load
R3	118177	3	Resistor	22K ohms	Gate
R4			SAME AS R3		Base Bias
R5			SAME AS R3		Base Bias
R6	129851	3	Resistor	3300 ohms	Collector Load
R7			SAME AS R6		Inverter Input
R8			SAME AS R6		Crossover
R9	129852	2	Resistor	2200 ohms	Capacitor Recharge
R10			SAME AS R9		Collector Load
R11	118150	1	Resistor	15K ohms	Timing
Q1	177105	3	Transistor	P22	Switch
Q2			SAME AS Q1		Switch
Q3			SAME AS Q1		Inverter
C1	306371	1	Capacitor	.022 MFD.	Timing
C2	177332	2	Capacitor	.002 mfd.	Speedup
C3			SAME AS C2		Coupling
C4	148831	1	Capacitor	1.0 mfd.	Filter
CR1	300102	1	DIODE, D4		Coupling
CR2	177108	2	DIODE, D2		Gate
CR3			SAME AS CR2		Clamp
CR4	177611	1	Diode 1N682		Noise Blocking
	144495	3	Transistor Pad		
EC	148804	1	Circuit Card, Etched		

ET 29 47
MC255 6 54

FIXED ONE-SHOT - 200 μs

CIRCUIT BOARD EC589

177589

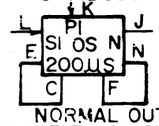
This circuit provides a 200 MICROSECOND output in response to a positive going pulse. In the quiescent state Q1 is ON and Q2 is OFF. If pin K is 0 volts, a positive input signal at pin L will turn off Q1, making its collector go to -6 volts. This will turn on Q2. The collector of Q2 then goes from -6 volts to 0 volts. This positive transition is coupled to the base of Q1, keeping it off for a time period determined by R11 and C1. If pin K is -6 volts, the circuit will not reapond to a positive transition at pin L.

The output of the one shot should be isolated by the inverter formed with transistor Q3. A 0 volt input at pin E will make pin J -6 volts. A -6 volt input will make pin J go to 0 volts.

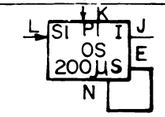
Resistor R6 is used as a collector load for Q2 when it is not loaded by the input resistor R7. This keeps the time-out of the circuit 200 MICROSECONDS regardless of which side of the one shot is used for an output signal.

The input is always at pin L, the output is at pin J. For a normal (0 volt) output pulse, pin E is strapped to pin C and pin F is strapped to pin N. For an inverted (-6 volt) output pulse, pin N is strapped to pin E.

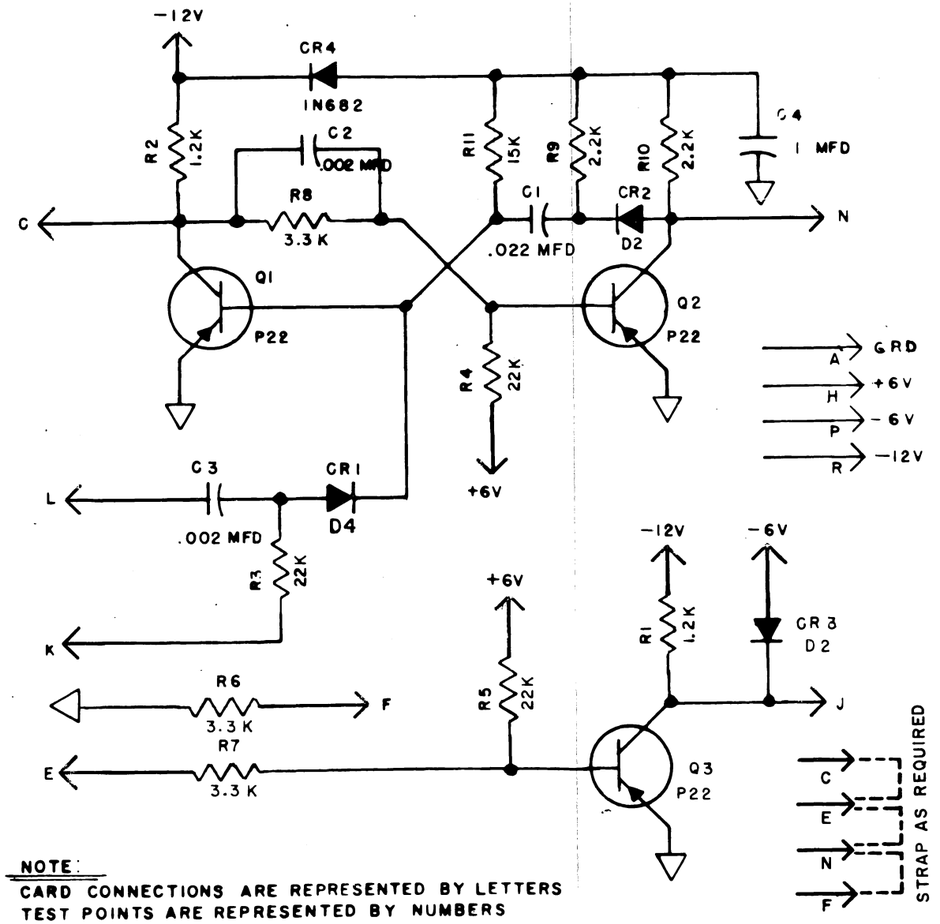
SYMBOLS



NORMAL OUTPUT



INVERTED OUTPUT



NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

ISSUE	DATE	AUTH NO
1	5-20-64	15620-R
2	3-26-65	83969
3	5-7-65	86758
4	5-14-65	86533
5	7-3-67	94162

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO 177589

DATE 2-7-64

P.D. FILE NO 2-96.134.184A

DRAWN S.W. | CHKD

ENGD F.K.H. | APPD

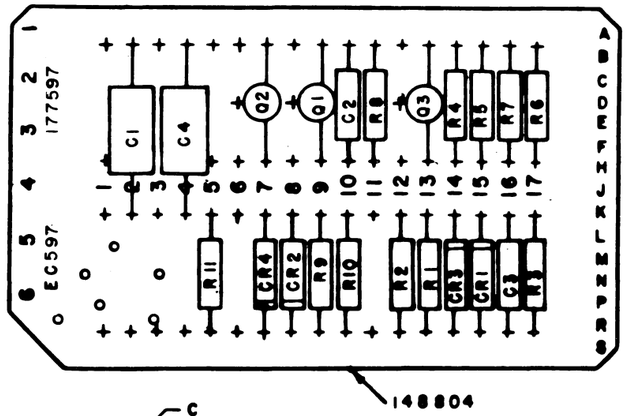
TELETYPE CORPORATION

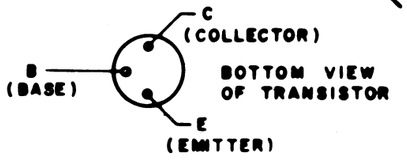
177589

ET 131481

EC597

177597





NOTE:
REFER TO 501GWD FOR MARKING AND MFG. INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY	NAME AND DESCRIPTION		LOCATING FUNCTION
R1	137441	2	Resistor	1200 ohms	Collector Load
R2			Resistor	1200 ohms	Collector Load
R3	118177	3	Resistor	22K ohms	Gate
R4			Resistor	22K ohms	Base Bias
R5			Resistor	22K ohms	Base Bias
R6	129851	3	Resistor	3300 ohms	Collector Load
R7			Resistor	3300 ohms	Inverter Input
R8			Resistor	3300 ohms	Crossover
R9	129852	2	Resistor	2200 ohms	Capacitor Recharge
R10			Resistor	2200 ohms	Collector Load
R11	118149	1	Resistor	12K ohms	Timing
Q1	177105	3	Transistor	P22	Switch
Q2			Transistor	P22	Switch
Q3			Transistor	P22	Inverter
C1	192938	1	Capacitor	.15 MFD.	Timing
C2	177332	2	Capacitor	.002 mfd.	Speedup
C3			Capacitor	.002 mfd.	Coupling
C4	148831	1	Capacitor	1.0 mfd.	Filter
CR1	300102	1	Diode D4		Coupling
CR2	177108	2	Diode D2		Gate
CR3			Diode D2		Clamp
CR4	177611	1	Diode 1N682		Noise Blocking
	144495	3	Transistor Pad		
EC	148804	1	Circuit Card, Etched		

FIXED ONE-SHOT - 1 MS

CIRCUIT BOARD EC597

177597

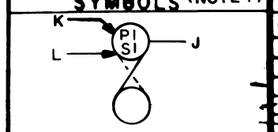
This circuit provides a 1 MILLISECOND output in response to a positive going pulse. In the quiescent state Q1 is ON and Q2 is OFF. If pin K is 0 volts, a positive input signal at pin L will turn off Q1, making its collector go to -6 volts. This will turn on Q2. The collector of Q2 then goes from -6 volts to 0 volts. This positive transition is coupled to the base of Q1, keeping it off for a time period determined by R11 and C1. If pin K is -6 volts, the circuit will not reespond to a positive transition at pin L.

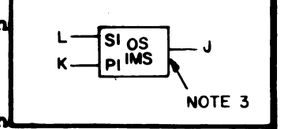
The output of the one shot should be isolated by the inverter formed with transistor Q3. A 0 volt input at pin E will make pin J -6 volts. A -6 volt input will make pin J go to 0 volts.

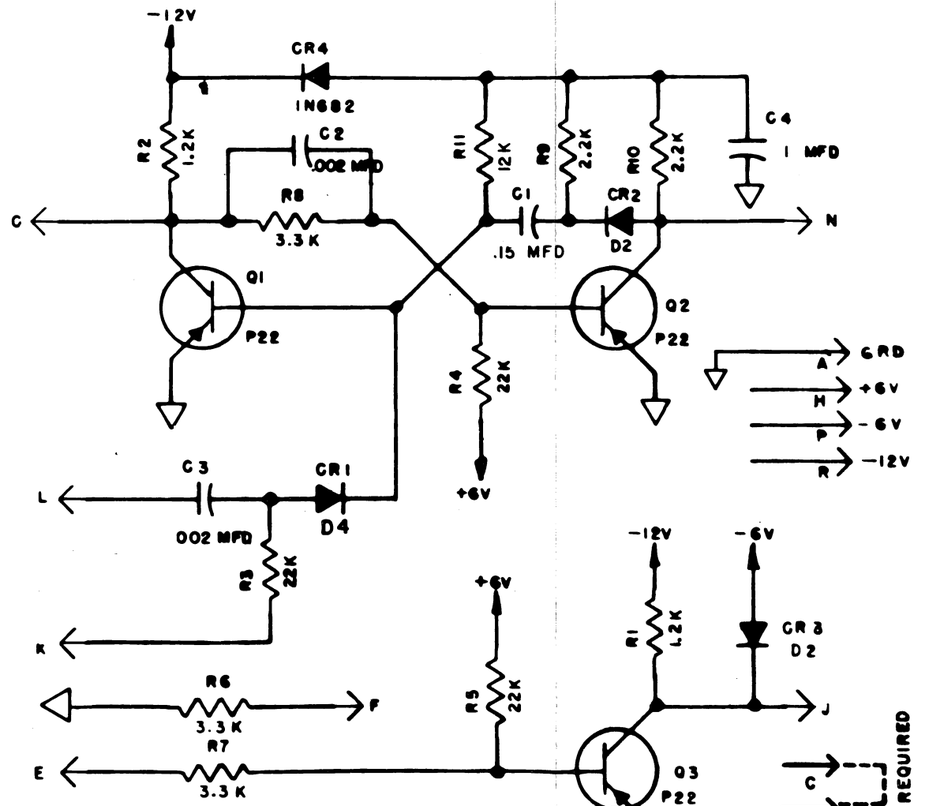
Resistor R6 is used as a collector load for Q2 when it is not loaded by the input resistor R7. This keeps the time out of the circuit 1 MILLISECOND regardless of which side of the one shot is used for an output signal.

The input is always at pin L, the output is at pin J. For a normal (0 volt) output pulse, pin E is strapped to pin C and pin F is strapped to pin H. For an inverted (-6 volt) output pulse, pin N is strapped to pin E.

SYMBOLS (NOTE 1)







NOTE 1: ALTERNATE SYMBOLS SHOWN (EITHER MAY BE USED).

NOTE 2:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

NOTE 3: LABEL OUTPUT N OR I (NOMAL OR INVERTED) TO SHOW OUTPUT STRAPPING COMBINATION USED.

ISSUE	DATE	AUTH NO
1	6-10-64	15626-R
2	3-26-65	83969
3	6-18-65	88175
4	5-27-66	91127
5	5-21-68	97625

APPROVALS

D MGR R	E OF M

E. NUMBER

PROD NO 177597

DATE 4-17-63

PD FILE NO 2-96.134184A

DRAWN G.R.S. CHKD

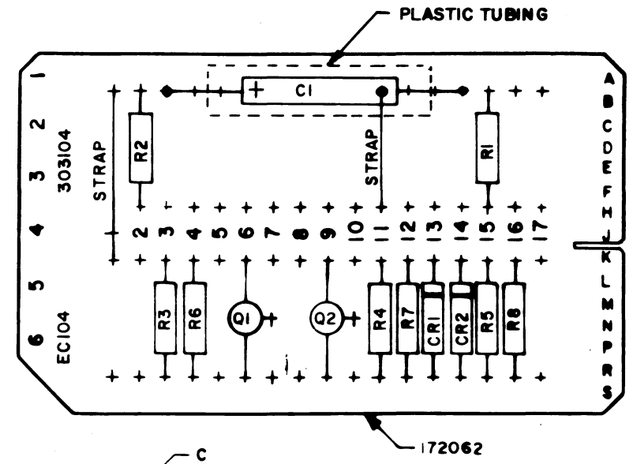
ENGD F.K.M. APPD

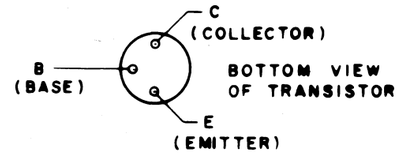
TELETYPE CORPORATION

177597

EC104

303104





NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

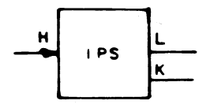
REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	143682	1	Capacitor, 4 MFD.	Integration Cap.
CR1	177108	2	Diode, D2	Clamp
CR2			Same as CR1	Clamp
R1	129851	2	Resistor, Fixed 3300 Ohms	Base Bias
R2	118144	1	Resistor, Fixed 2700 Ohms	" "
R3	118180	2	Resistor, Fixed 10K Ohms	" "
R4	118177	1	Resistor, Fixed 22K Ohm	" "
R5	137441	2	Resistor, Fixed 1200 Ohm	Collector Load
R6			Same as R3	Base Bias
R7			SAME AS R1	" "
R8			Same as R5	Collector Load
Q1	177105	2	Transistor, P22	Amplifier
Q2			Same as Q1	"
EC	172062	1	Circuit Card, Etched	
		2	Strap, Bare 24 AWG,	
	144495	2	PAD, TRANSISTOR	
	60288 RM	1 3/4 IN.	TUBING, PLASTIC	

INTEGRATED PULSE SHAPER

CIRCUIT BOARD EC104

303104

SYMBOLS

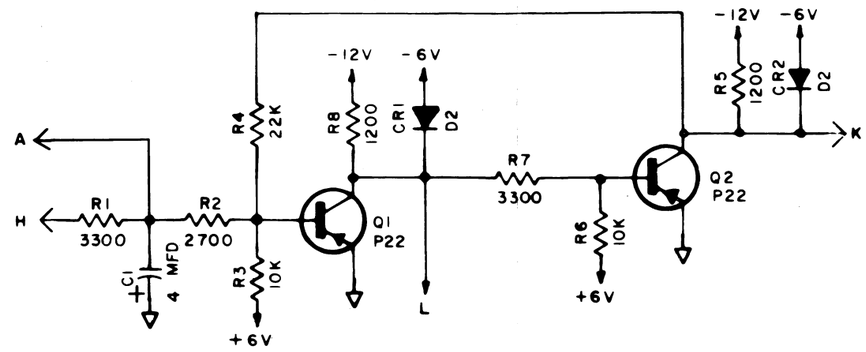


ISSUE	DATE	AUTH NO
1	11-27-64	16125-R
2	8-13-65	88603
3	3-3-66	8827
4	7-3-67	94162

The purpose of this circuit is to reject noise pulses of 6 MILLISECONDS or less in time duration, and to pass pulses having longer time duration. The circuit produces a normal or inverted output which is delayed approximately 6 MILLISECONDS.

R1, R2 and C1 are connected to function as an integration circuit, while Q1, Q2 and associated circuitry reshape signals which are passed by the integration circuit. Normally the input at H is either 0 or -6 volts. If zero, Q1 is non-conducting, and if -6 V, Q1 is saturated, bias current supplied through R1 and R2. Q1 and Q2 form a regenerative amplifier which sharpens up the integrated input signal. Normal and inverted outputs are available at "K" and "L".

THE NORMAL OUTPUT, K, HAS A RISE TIME OF LESS THAN 8 MICROSECOND. THE INVERTED OUTPUT IS NOT USEABLE BECAUSE OF ITS LONG RISE TIME.



NOTES:

1. TERMINAL "A" MAY BE CONNECTED TO AN EXTERNAL COMPONENT FOR LONGER TIME DELAY.

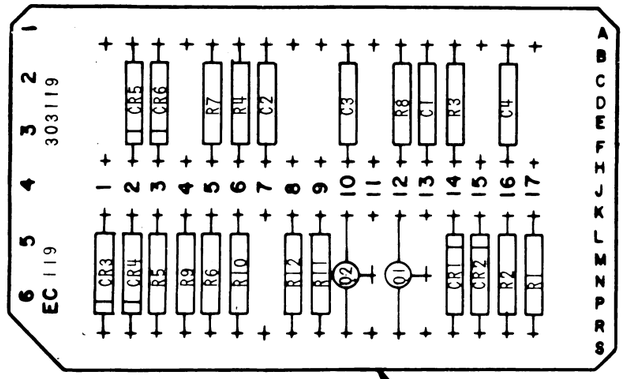
2. CARD CONNECTIONS ARE REPRESENTED BY LETTERS TEST POINTS ARE REPRESENTED BY NUMBERS

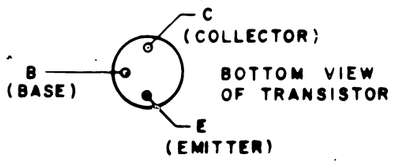
APPROVALS	
D AND R J. KK	E OF M
E-NUMBER	
PROD NO 303104	
DATE 10-1-64	
PD FILE NO 2-96.134.184A	
DRAWN G.R.S.	CHKD
ENGD I.S.K	APPD

TELETYPE CORPORATION

303104

EC119
303119





NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1 TO C4	177332	4	CAPACITOR, CERAMIC .002 MFD	DIFFERENTIATING COUPLING
CR1 TO CR6	177108	6	DIODE, D2	CLAMP AND GATING
R1 TO R2	137441	2	RESISTOR, FIXED 1.2K	COLLECTOR LOAD
R3 TO R8	118177	6	RESISTOR, FIXED 2.2K	PRIME AND BIAS
R9 TO R10	137604	2	RESISTOR, FIXED 620	BASE BIAS
R11 TO R12	129851	2	RESISTOR, FIXED 3.3K	CROSS COUPLING
Q1 TO Q2	177105	2	TRANSISTOR, P22	SWITCH
	144495	2	PAD, TRANSISTOR	
EC	302713	1	CIRCUIT CARD, ETCHED	

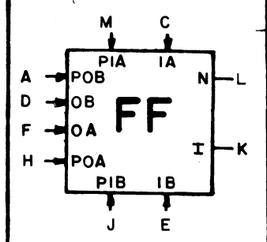
FLIP-FLOP

CIRCUIT BOARD EC119

THE FLIP-FLOP CONSISTS OF A REGENERATIVE RING OF TWO TRANSISTORS, WITH THE OUTPUT OF THE FIRST CONNECTED TO THE INPUT OF THE SECOND, AND VICE VERSA. WITH THIS ARRANGEMENT WHEN ONE TRANSISTOR IS CONDUCTING, THE OTHER IS CUT OFF. THE COLLECTOR VOLTAGE OF THE "OFF" TRANSISTOR IS CLAMPED TO -6V BY THE CLAMP DIODE AND THE COLLECTOR OF THE "ON" TRANSISTOR WILL HAVE A POTENTIAL OF -.3V.

THE STATE OF THE FLIP-FLOP IS CHANGED BY APPLYING A POSITIVE PULSE TO A SET INPUT OF THE CONDUCTING TRANSISTOR, PROVIDING A PRIMING VOLTAGE IS PRESENT. THIS POSITIVE PULSE IS DIFFERENTIATED AND USED TO TURN THE "ON" TRANSISTOR OFF. A -6V APPLIED TO THE PRIMING RESISTOR WILL INHIBIT THE POSITIVE PULSE FROM REACHING THE BASE OF THE TRANSISTOR, BY PREVENTING THE CONDUCTION OF THE GATING DIODE.

SYMBOLS



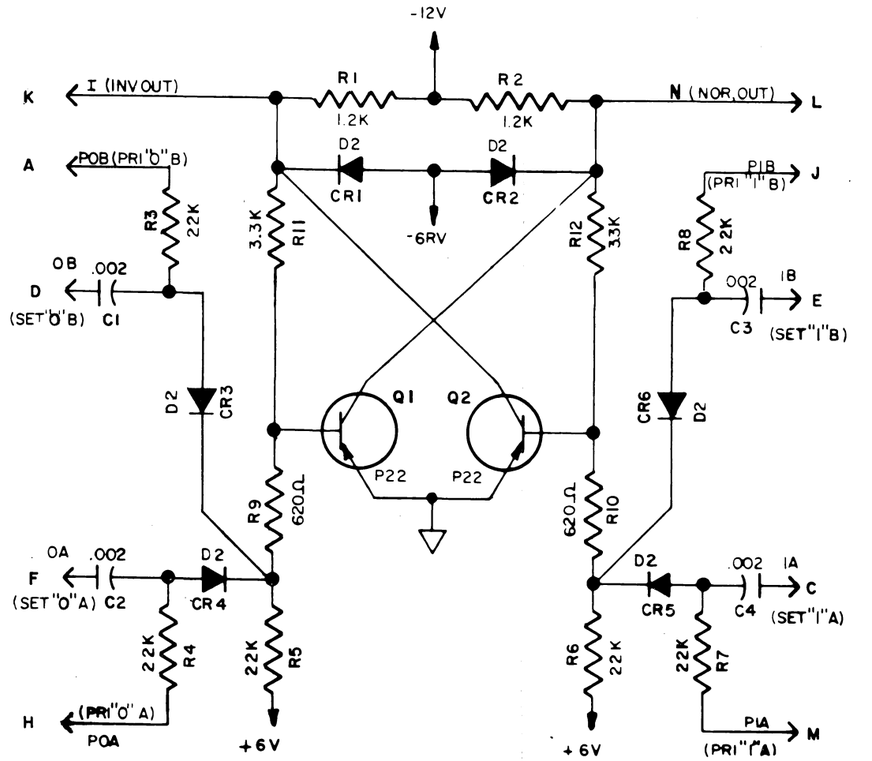
OPERATING CHARACTERISTICS

CONDITIONS: VOLTAGE NOMINAL, PRIME INPUTS GROUNDED, ONE MICRO-SECOND RISE TIME FOR THE INPUT SET PULSE AND A 2000 OHM LOAD RESISTOR FROM THE COLLECTORS TO GROUND.

RESULTS: THE MINIMUM SET PULSE FOR OPERATION WILL BE IN THE RANGE FROM 2 TO 3.5 VOLTS.

CONDITIONS: VOLTAGE NOMINAL, SET PULSE 6 VOLTS (-6 TO 0), ONE MICRO-SECOND RISE TIME FOR THE SET PULSE AND A 2000 OHM LOAD RESISTOR FROM THE COLLECTORS TO GROUND.

RESULTS: THE MINIMUM PRIME VOLTAGE WILL BE IN THE RANGE FROM -2 TO -3.5 VOLTS.



NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS

N → GRD
P → -6V
R → -12V
S → +6V

REVISIONS		
ISSUE	DATE	AUTH NO
1	4-8-65	16795-R

APPROVALS	
D AND R	E OF M
E-NUMBER	
PROD NO 303119	
DATE 1-21-65	
PO FILE NO 1-A134/132AA	
DRAWN G.R.S	CHKD
ENGD FHK	APPD

TELETYPE CORPORATION

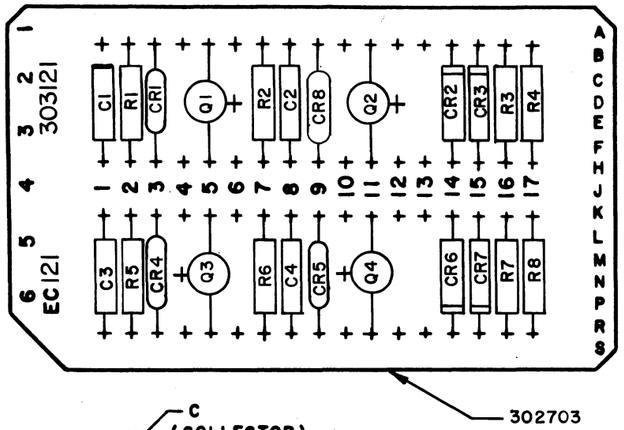
303119

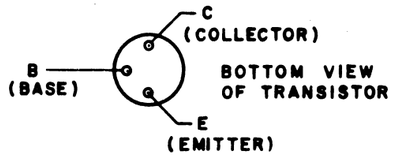
EFH

ET 131481

EC 121

303121





NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1-C4	181618	4	CAPACITOR, .01 MFD	DIFFERENTIATION
CR1	178844	4	VARISTOR, 100A	BIAS
CR2	177108	4	DIODE D2	CLAMP
CR3			SAME AS CR2	CLAMP
CR4			SAME AS CR1	BIAS
CR5			SAME AS CR1	BIAS
CR6			SAME AS CR2	CLAMP
CR7			SAME AS CR2	CLAMP
CR8			SAME AS CR1	BIAS
R1	118177	4	RESISTOR, FIXED 22K	BIAS
R2			SAME AS R1	BIAS
R3	137441	4	RESISTOR ,, FIXED 1200	COLLECTOR LOAD
R4			SAME AS R3	
R5			SAME AS R1	
R6			SAME AS R1	
R7			SAME AS R3	
R8			SAME AS R3	
Q1-Q4	177105	4	TRANSISTOR, P22	AMPILFIER
EC	302703	1	ETCHED CIRCUIT	
	144495	4	PAD, TRANSISTOR	

TC-473

4 PULSE AMPLIFIERS

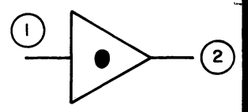
CIRCUIT BOARD EC 121

303121

THIS CIRCUIT IS A CAPACITIVE COUPLED PULSE AMPLIFIER WHICH CONVERTS A NEGATIVE GOING TRANSITION APPLIED TO INPUT (1) INTO A NARROW POSITIVE OUTPUT PULSE AT (2) (10μSEC ±2μSEC DURATION).

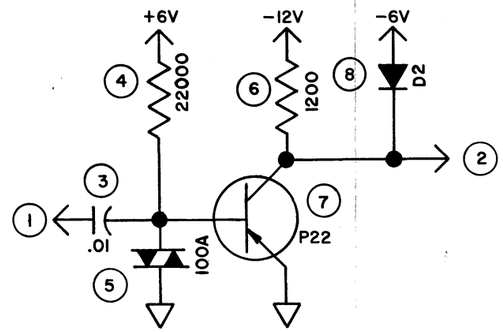
IN THE STATIC CONDITION, WITH 0 VOLTS APPLIED TO INPUT (1), THE OUTPUT (2) IS CLAMPED AT -6 VOLTS.

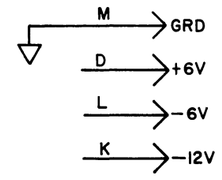
SYMBOLS



ISSUE	DATE	AUTH. NO
1	8-23-67	18728-R
2	2-6-68	97266

CIRCUITS A THRU D





CIR.	1	2	3	4	5	6	7	8
A	C	A	C1	R1	CR1	R3	Q1	CR3
B	E	B	C2	R2	CR8	R4	Q2	CR2
C	P	S	C3	R5	CR4	R7	Q3	CR7
D	N	R	C4	R6	CR5	R8	Q4	CR6

NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

APPROVALS

D AND R	E OF M
HRK	

E-NUMBER

PROD. NO. 303121

DATE: 12-8-65

P.D. FILE NO. 2-96,134,184A

DRAWN PSD	CHKD
ENGD. WRF	APPD

TELETYPE CORPORATION

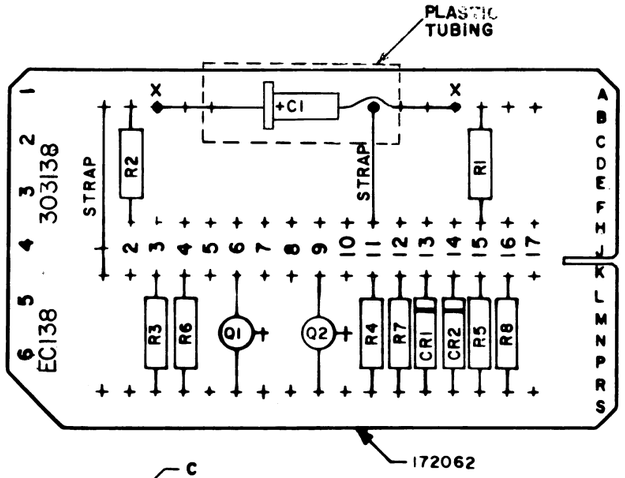
303121

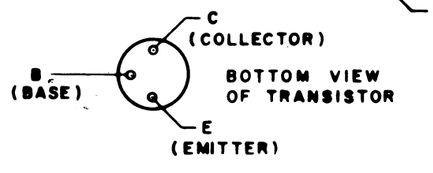
ET-131481

NOTE:
X-HOLE
TO BE REDRILLED TO
.068 DIA. (2 PLS)

EC 138

303138





BOTTOM VIEW
OF TRANSISTOR

NOTE:
REFER TO 5016WD FOR MARKING INFORMATION

ALPHA NUMERIC CONVERSION CHART		
STAMPING ON CIRCUIT BOARD	NUMERICAL CONVERSION FOR 15 PT. CARDS WHEN USED WITH 36 PT. CONNECTOR	
	WHEN INSERTED IN UPPER HALF OF CONNECTOR	WHEN INSERTED IN LOWER HALF OF CONNECTOR
A	1	22
B	2	23
C	3	24
D	4	25
E	5	26
F	6	27
H	7	28
J	8	29
K	9	30
L	10	31
M	11	32
N	12	33
P	13	34
R	14	35
S	15	36

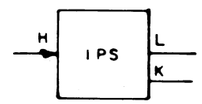
REF. DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1	137312	1	Capacitor, 10MF POLARIZED TANTALUM	Integration Cap.
CR1	177108	2	Diode, D2	Clamp
CR2			Same as CR1	Clamp
R1	137442	1	Resistor, Fixed 1500 Ohms	Base Bias
R2	118144	1	Resistor, Fixed 2700 Ohms	" "
R3	118180	2	Resistor, Fixed 10K Ohms	" "
R4	118177	1	Resistor, Fixed 22K Ohm	" "
R5	137441	2	Resistor, Fixed 1200 Ohm	Collector Load
R6			Same as R3	Base Bias
R7	129851	1	Resistor, Fixed 3300 Ohm	" "
R8			Same as R5	Collector Load
Q1	177105	2	Transistor, P22	Amplifier
Q2			Same as Q1	"
EC	172062	1	Circuit Card, Etched	
		2	Strap, Bare 24 AWG,	
	144495	2	PAD, TRANSISTOR	

ET ON-47
TC255:8 541

INTEGRATED PULSE SHAPER

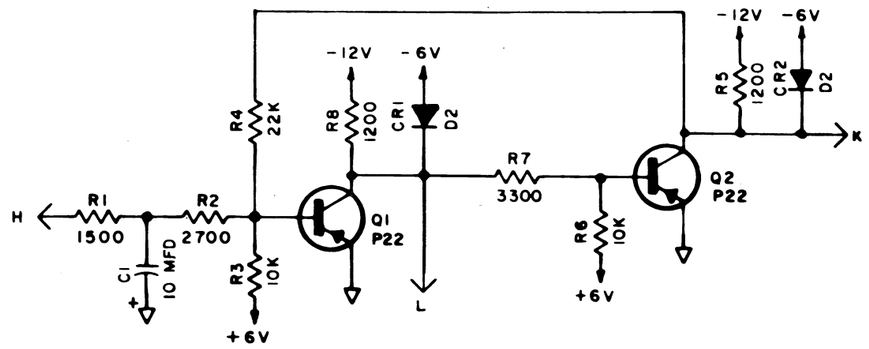
CIRCUIT BOARD EC 138

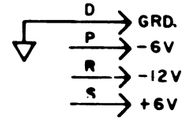
SYMBOLS



The purpose of this circuit is to reject noise pulses of 20 MILLISECONDS or less in time duration, and to pass pulses having longer time duration. The circuit produces a normal or inverted output which is delayed approximately 20 MILLISECONDS

R1, R2 and C1 are connected to function as an integration circuit, while Q1, Q2 and associated circuitry reshape signals which are passed by the integration circuit. Normally the input at H is either 0 or -6 volts. If zero, Q1 is non-conducting, and if -6 V, Q1 is saturated, bias current supplied through R1 and R2. Q1 and Q2 form a regenerative amplifier which sharpens up the integrated input signal. Normal and inverted outputs are available at "K" and "L", HOWEVER ONLY "K", THE NORMAL OUTPUT SHOULD BE USED WHEN A FAST RISE TIME IS DESIRED.





NOTE:
CARD CONNECTIONS ARE REPRESENTED BY LETTERS
TEST POINTS ARE REPRESENTED BY NUMBERS

303138

ISSUE	DATE	AUTH NO
1	1-6-66	17002-R

APPROVALS

D AND R	E OF M

E-NUMBER

PROD NO 303138

DATE 11-11-65

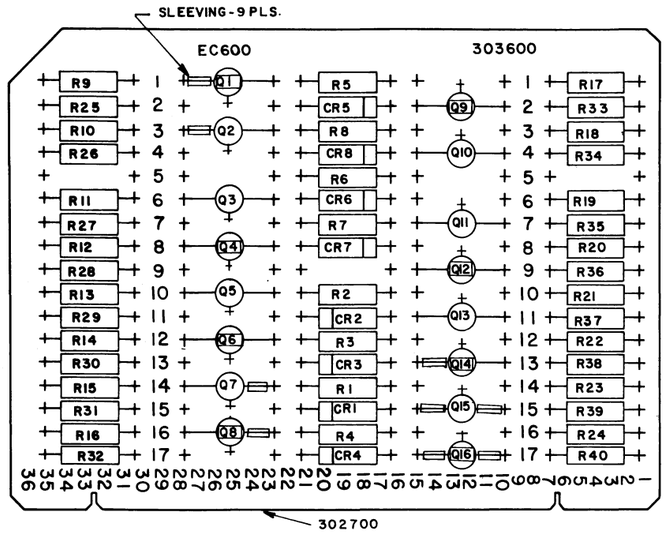
PD FILE NO 2-96.134.184A

DRAWN GRS	CHKD
ENGD ISK	APPD

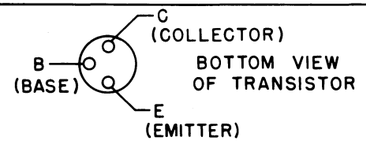
TELETYPE CORPORATION

303138

INHIBIT GATE (16)
SPECIAL PURPOSE



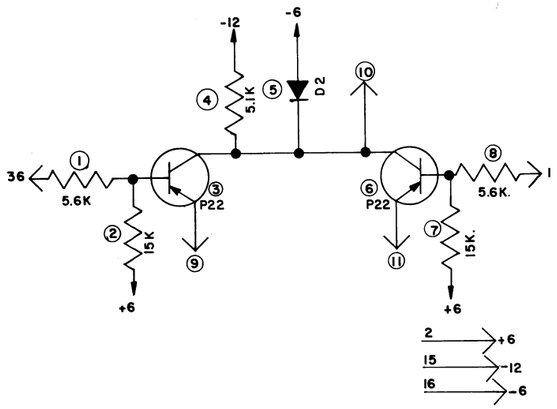
NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION



SIXTEEN INHIBIT GATES ARE COMBINED INTO TWO SETS OF EIGHT GATES EACH. THE BASES TO EACH SET ARE COMMON, THEREBY PROVIDING TWO DRIVE INPUTS. THE COLLECTORS ARE COMBINED IN PAIRS, ONE FROM EACH SET, PROVIDING EIGHT "OR" GATES. THE INPUT TO EACH EMITTER IS SEPERATE.

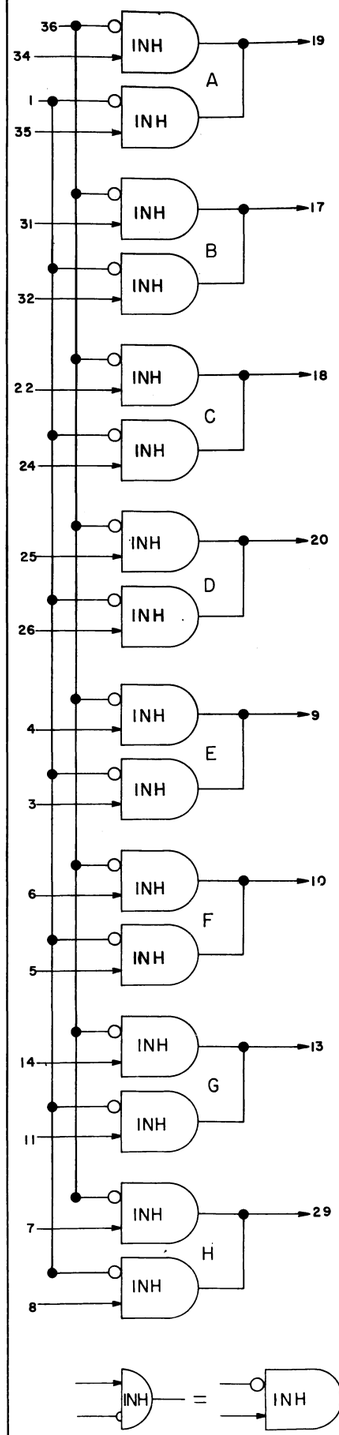
A COINCIDENCE OF -6V ON THE BASE INPUT AND 0V ON ONE OR THE OTHER EMITTER INPUT FOR EACH PAIR WILL RESULT IN TURNING ON THE RESPECTIVE TRANSISTOR CHANGING THE ASSOCIATED COLLECTOR OUTPUT FROM -6V TO 0V.

EACH DIODE CLAMPS THE COLLECTOR OUTPUT TO -6V WHEN THE ASSOCIATED TRANSISTOR IS NOT CONDUCTING.



	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
A	R9	R25	Q1	R1	CR1	Q2	R26	R10	34	19	35
B	R11	R27	Q3	R2	CR2	Q4	R28	R12	31	17	32
C	R13	R29	Q5	R3	CR3	Q6	R30	R14	22	18	24
D	R15	R31	Q7	R4	CR4	Q8	R32	R16	25	20	26
E	R17	R33	Q9	R5	CR5	Q10	R34	R18	4	9	3
F	R19	R35	Q11	R6	CR6	Q12	R36	R20	6	10	5
G	R21	R37	Q13	R7	CR7	Q14	R38	R22	14	13	11
H	R23	R39	Q15	R8	CR8	Q16	R40	R24	7	29	8

SYMBOLS



CIRCUIT BOARD EC 600

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	143665	8	RESISTOR, FIXED 5.1K	COLLECTOR LOAD
R2			SAME AS R1	COLLECTOR LOAD
R3			SAME AS R1	COLLECTOR LOAD
R4			SAME AS R1	COLLECTOR LOAD
R5			SAME AS R1	COLLECTOR LOAD
R6			SAME AS R1	COLLECTOR LOAD
R7			SAME AS R1	COLLECTOR LOAD
R8			SAME AS R1	COLLECTOR LOAD
R9	118186	16	RESISTOR, FIXED 5.6K	CURRENT LIMITER
R10			SAME AS R9	CURRENT LIMITER
R11			SAME AS R9	CURRENT LIMITER
R12			SAME AS R9	CURRENT LIMITER
R13			SAME AS R9	CURRENT LIMITER
R14			SAME AS R9	CURRENT LIMITER
R15			SAME AS R9	CURRENT LIMITER
R16			SAME AS R9	CURRENT LIMITER
R17			SAME AS R9	CURRENT LIMITER
R18			SAME AS R9	CURRENT LIMITER
R19			SAME AS R9	CURRENT LIMITER
R20			SAME AS R9	CURRENT LIMITER
R21			SAME AS R9	CURRENT LIMITER
R22			SAME AS R9	CURRENT LIMITER
R23			SAME AS R9	CURRENT LIMITER
R24			SAME AS R9	CURRENT LIMITER
R25	118150	16	RESISTOR, FIXED 15 K	BASE BIAS
R26			SAME AS R25	BASE BIAS
R27			SAME AS R25	BASE BIAS
R28			SAME AS R25	BASE BIAS
R29			SAME AS R25	BASE BIAS
R30			SAME AS R25	BASE BIAS
R31			SAME AS R25	BASE BIAS
R32			SAME AS R25	BASE BIAS
R33			SAME AS R25	BASE BIAS
R34			SAME AS R25	BASE BIAS
R35			SAME AS R25	BASE BIAS
R36			SAME AS R25	BASE BIAS
R37			SAME AS R25	BASE BIAS
R38			SAME AS R25	BASE BIAS
R39			SAME AS R25	BASE BIAS
R40			SAME AS R25	BASE BIAS
CR1	177108	8	DIODE, D2	CLAMP
CR2			SAME AS CR1	CLAMP
CR3			SAME AS CR1	CLAMP
CR4			SAME AS CR1	CLAMP
CR5			SAME AS CR1	CLAMP
CR6			SAME AS CR1	CLAMP
CR7			SAME AS CR1	CLAMP
CR8			SAME AS CR1	CLAMP
Q1-Q16	177105	16	TRANSISTOR P22	GATE
EC	302700	1	BOARD, ETCHED CIRCUIT	
	144495	16	PAD, TRANSISTOR	
	144138	24	EYELET	
	300116	8	COVER, INSULATING	
	60340RM		SLEEVING	

303600

REVISIONS

ISSUE	DATE	AUTH. NO.
1	6-2-64	15621-R
2	5-7-65	86758
3	9-8-65	88959

APPROVALS

R AND D	E OF M
H.I.K.	

E-NUMBER 133412

PROD NO. 303600

DATE 8-30-63

R&D FILE 2-96.134.184 A

DRAWN S.W.	CHKD. W.B.M.
ENGD. J.C.T.	APPD.

TELETYPE
CORPORATION

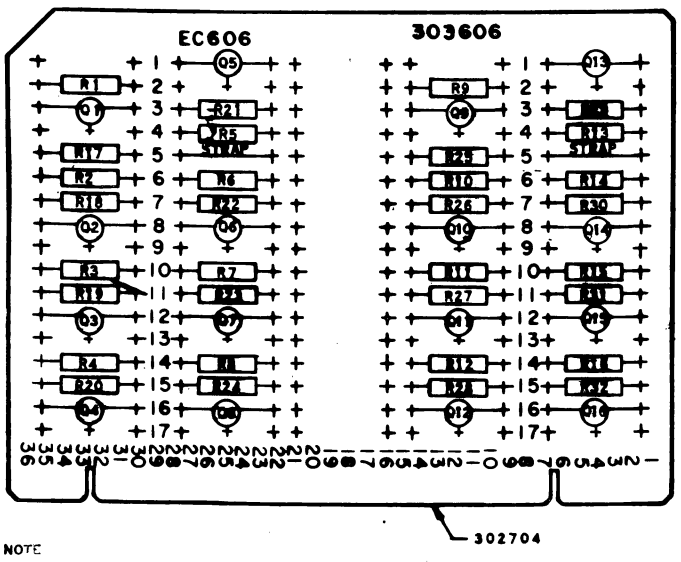
303600

EC606

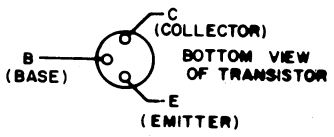
EMITTER FOLLOWER 8 NPN PLUS 8 PNP

CIRCUIT BOARD EC606

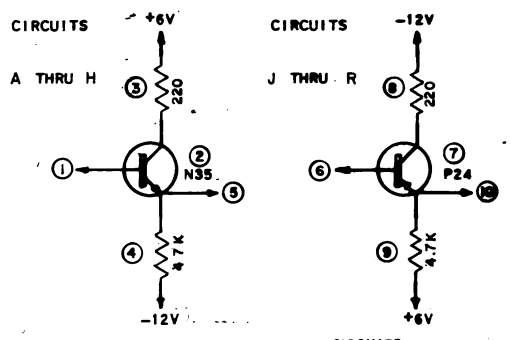
303606



NOTE
REFER TO 6050WD FOR BASIC MARKING INFORMATION



THIS CARD CONTAINS EIGHT NPN AND EIGHT PNP MEDIUM POWER EMITTER FOLLOWERS USED TO PROVIDE CURRENT GAIN WITH NO INVERSION OR CHANGE IN THE INPUT SIGNAL LEVEL. WITH ZERO VOLTS APPLIED AT THE BASE, ZERO VOLTS APPEARS AT THE EMITTER. WITH -6V APPLIED AT THE BASE, -6V APPEARS AT THE EMITTER. THE NPN EMITTER FOLLOWER IS USED TO PROVIDE LOW OUTPUT IMPEDANCE (HIGH CURRENT GAIN) ON THE POSITIVE GOING VOLTAGE TRANSITION (-6 TO 0 VOLTS) AND THE PNP EMITTER FOLLOWER IS USED TO PROVIDE LOW OUTPUT IMPEDANCE (HIGH CURRENT GAIN) ON THE NEGATIVE GOING TRANSITION (0 TO -6 VOLTS).

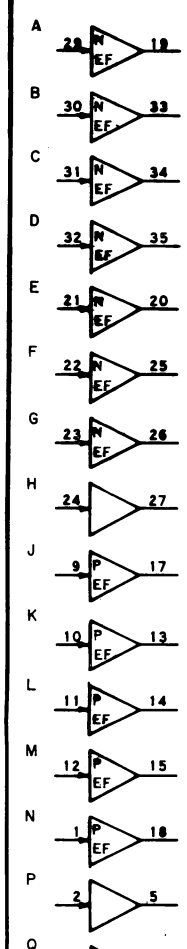


NOTE:
CIRCLED NUMBERS DESIGNATE COMPONENTS OR INPUT AND OUTPUT TERMINALS ON MULTIPLE CIRCUITS.

	①	②	③	④	⑤
A	29	Q1	R1	R17	19
B	30	Q2	R2	R18	33
C	31	Q3	R3	R19	34
D	32	Q4	R4	R20	35
E	21	Q5	R5	R21	20
F	22	Q6	R6	R22	25
G	23	Q7	R7	R23	26
H	24	Q8	R8	R24	27

	⑥	⑦	⑧	⑨	⑩
J	9	Q9	R9	R25	17
K	10	Q10	R10	R26	13
L	11	Q11	R11	R27	14
M	12	Q12	R12	R28	15
N	1	Q13	R13	R29	18
P	2	Q14	R14	R30	5
Q	3	Q15	R15	R31	6
R	4	Q16	R16	R32	7

SYMBOL



REVISIONS

ISSUE	DATE	AUTH NO
2	1-3-64	7[illegible]3
3	2-14-64	176-113

REF DESIGN.	TELETYPE PART NO.	TOTAL QTY	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118724	16	RESISTOR, FIXED 220 OHMS	COLLECTOR LOAD
R2			SAME AS R1	"
R3			"	"
R4			"	"
R5			"	"
R6			"	"
R7			"	"
R8			"	"
R9			"	"
R10			"	"
R11			"	"
R12			"	"
R13			"	"
R14			"	"
R15			"	"
R16			"	"
R17	118146	16	RESISTOR, FIXED 4700 OHMS	EMITTER LOAD
R18			SAME AS R17	"
R19			"	"
R20			"	"
R21			"	"
R22			"	"
R23			"	"
R24			"	"
R25			"	"
R26			"	"
R27			"	"
R28			"	"
R29			"	"
R30			"	"
R31			"	"
R32			"	"
Q1	193134	8	TRANSISTOR (NPN) N35	EMITTER FOLLOWER
Q2			SAME AS Q1	"
Q3			"	"
Q4			"	"
Q5			"	"
Q6			"	"
Q7			"	"

REF DESIGN.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
Q8			SAME AS Q1	EMITTER FOLLOWER
Q9	193135	8	TRANSISTOR (PNP) P24	EMITTER FOLLOWER
Q10			SAME AS Q9	"
Q11			"	"
Q12			"	"
Q13			"	"
Q14			"	"
Q15			"	"
Q16			"	"
EC	302704	1	BOARD, ETCHED CIRCUIT	
	144495	16	PAD, TRANSISTOR	
		2	STRAP, 24 AWG BARE	

APPROVALS

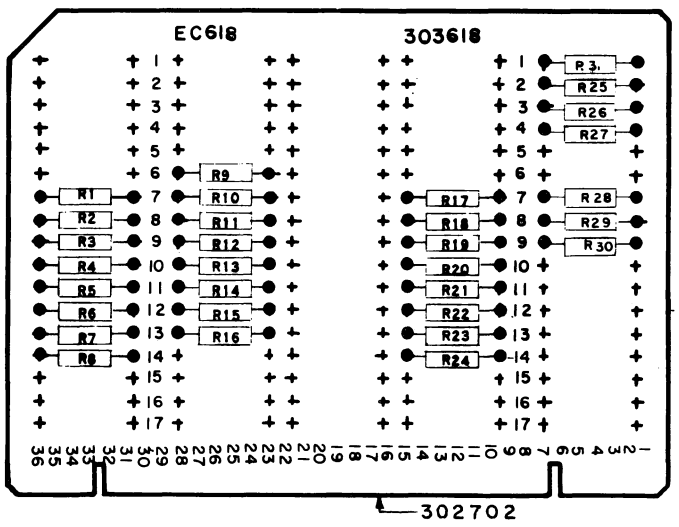
D AND R	E OF M

E-NUMBER
PROD NO 303606
DATE 10-25-63
PD FILE NO G-A.353.219A
DRAWN S.W. | CHKD J.M.G.
ENGD J.C.T. | APPD

TELETYPE CORPORATION

303606

EC618
303618



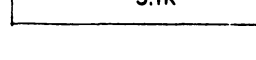
NOTE:
REFER TO 6050 WD FOR BASIC MARKING INFORMATION

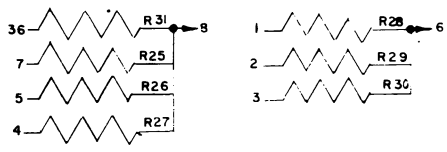
RESISTOR CARD

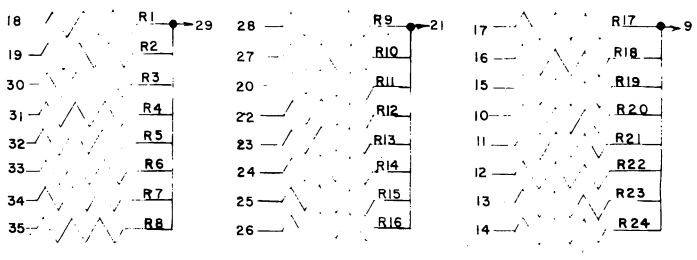
CIRCUIT BOARD EC618

303618

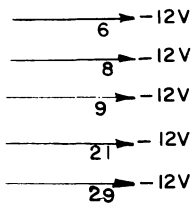
SYMBOL







NOTE: IN USE, REPLACE A IN SYMBOL WITH TERMINAL NUMBER OF CIRCUIT ELEMENT USED.



REVISIONS

ISSUE	DATE	AUTH. NO.
1	3-10-65	6478 R

APPROVALS

D AND R	E OF M

E-NUMBER
PROD. NO. 303618
DATE
P.D.FILE NO. G-A.353.219A
DRAWN | CHKD.
ENGD. M.M.H. | APPD.

TELETYPE CORPORATION

REF DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION	REF DESIGN	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1-R31	143665	31	5.1K RESISTOR						
EC	302702	1	CIRCUIT CARD, ETCHED						

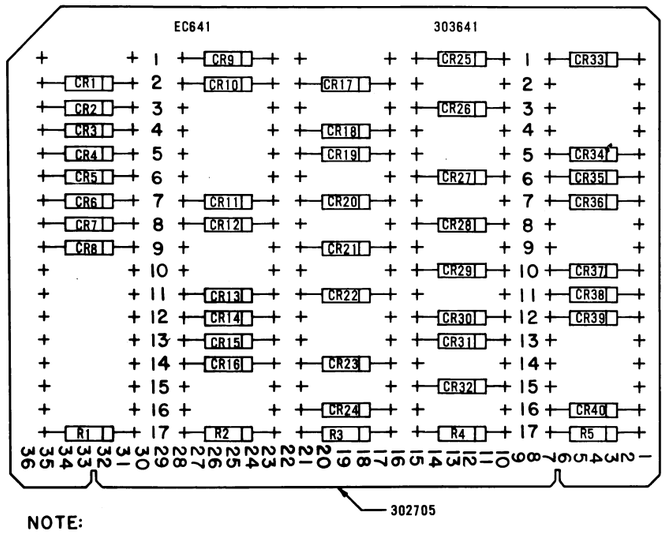
APPROVALS

D AND R	E OF M
3/10/65	

E-NUMBER
PROD. NO. 303618
DATE 5-28-64
P.D.FILE NO. G-A353-219A
DRAWN J.M. | CHKD.
ENGD. L.K.C. | APPD.

TELETYPE CORPORATION

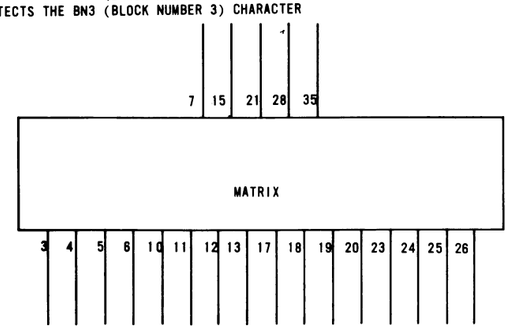
303618



NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION

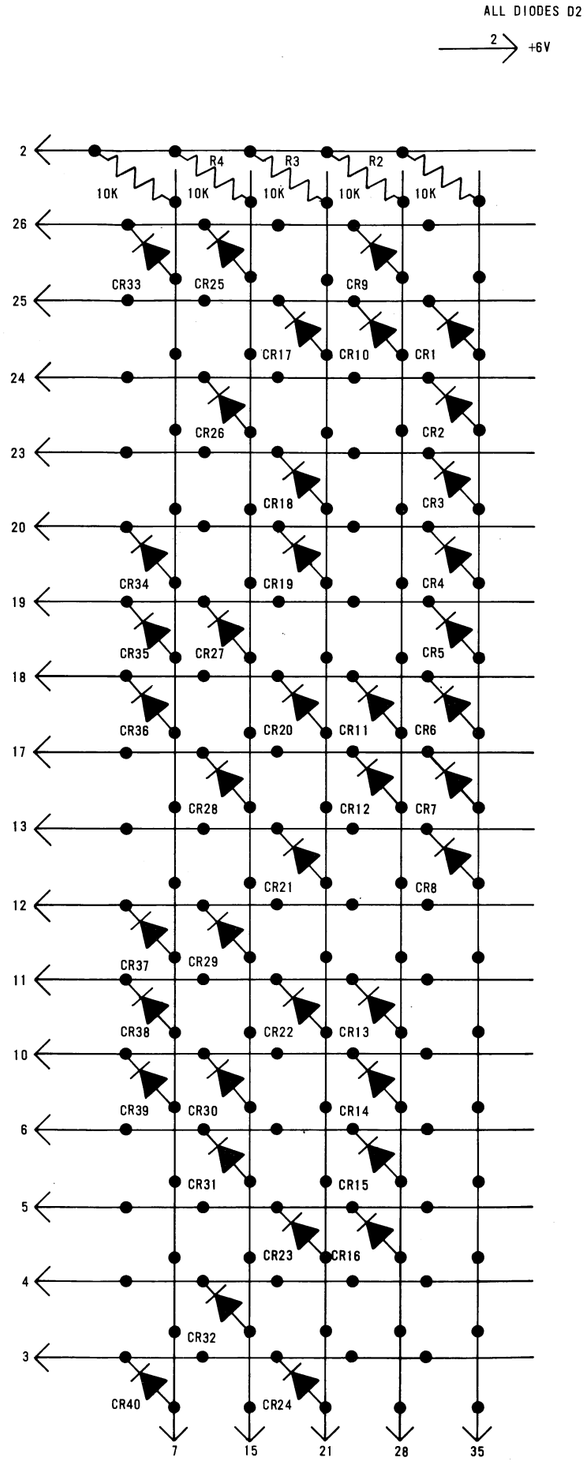
THIS CARD CONTAINS FIVE "AND" GATES ARRANGED TO DETECT 5 OF THE 256 POSSIBLE CHARACTERS IN AN EIGHT LEVEL CODE. IT IS USED IN THE DATASPEED TYPE 4 SYSTEM TO DETECT THE FIVE REPEATED INTERBLOCK CHARACTERS

PIN 7 DETECTS THE XR (TRANSMITTER READY) CHARACTER
PIN 15 DETECTS THE BN1 (BLOCK NUMBER 1) CHARACTER
PIN 21 DETECTS THE BN2 (BLOCK NUMBER 2) CHARACTER
PIN 28 DETECTS THE BN3 (BLOCK NUMBER 3) CHARACTER
PIN 35 DETECTS THE EOB (END OF BLOCK) CHARACTER



SYMBOL

DIODE MATRIX



CIRCUIT BOARD EC 641

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	118180	5	RESISTOR, FIXED 10K OHMS	BIAS RESISTOR
R2			SAME AS R1	BIAS RESISTOR
R3			SAME AS R1	BIAS RESISTOR
R4			SAME AS R1	BIAS RESISTOR
R5			SAME AS R1	BIAS RESISTOR
CR1	177108	40	DIODE, D2	GATE
CR2			SAME AS CR1	GATE
CR3			SAME AS CR1	GATE
CR4			SAME AS CR1	GATE
CR5			SAME AS CR1	GATE
CR6			SAME AS CR1	GATE
CR6			SAME AS CR1	GATE
CR7			SAME AS CR1	GATE
CR8			SAME AS CR1	GATE
CR9			SAME AS CR1	GATE
CR10			SAME AS CR1	GATE
CR11			SAME AS CR1	GATE
CR12			SAME AS CR1	GATE
CR13			SAME AS CR1	GATE
CR14			SAME AS CR1	GATE
CR15			SAME AS CR1	GATE
CR16			SAME AS CR1	GATE
CR17			SAME AS CR1	GATE
CR18			SAME AS CR1	GATE
CR19			SAME AS CR1	GATE
CR20			SAME AS CR1	GATE
CR21			SAME AS CR1	GATE
CR22			SAME AS CR1	GATE
CR23			SAME AS CR1	GATE
CR24			SAME AS CR1	GATE
CR25			SAME AS CR1	GATE
CR26			SAME AS CR1	GATE
CR27			SAME AS CR1	GATE
CR28			SAME AS CR1	GATE
CR29			SAME AS CR1	GATE
CR30			SAME AS CR1	GATE
CR31			SAME AS CR1	GATE
CR32			SAME AS CR1	GATE
CR33			SAME AS CR1	GATE
CR34			SAME AS CR1	GATE
CR35			SAME AS CR1	GATE
CR36			SAME AS CR1	GATE
CR37			SAME AS CR1	GATE
CR38			SAME AS CR1	GATE
CR39			SAME AS CR1	GATE
CR40			SAME AS CR1	GATE
EC	302705	1	CIRCUIT CARD, ETCHED	
	144138	85	EYELETS	

303641

REVISIONS

ISSUE	DATE	AUTH. NO.
1	5-20-64	15620-R

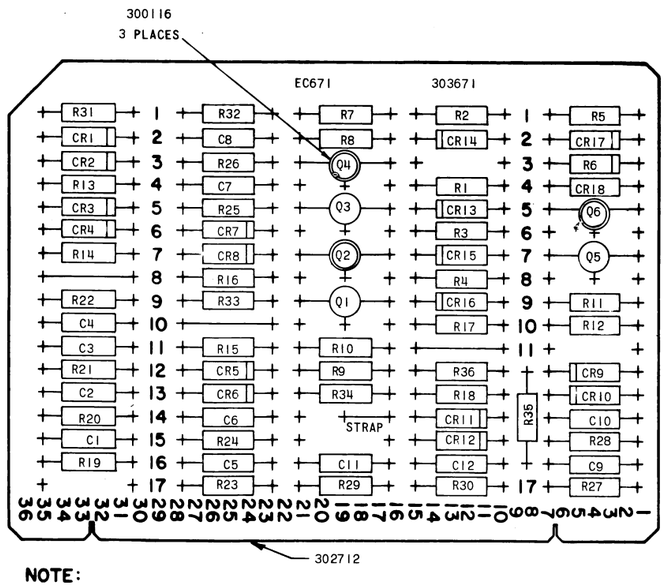
APPROVALS

R AND D	E OF M
HJK	

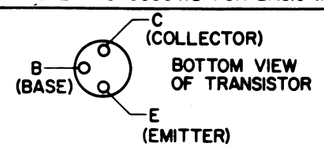
E-NUMBER
PROD NO. 303641
DATE 7-6-67
R&D FILE 2-96.134.184A
DRAWN S.W. D.S. | CHKD. W.B. MC.
ENGD. I S.K. | APPD. B.G.G.

TELETYPE CORPORATION

303641



NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION



FLIP-FLOP

THE FLIP-FLOP CONSISTS OF A REGENERATIVE RING OF TWO TRANSISTORS, WITH THE OUTPUT OF THE FIRST CONNECTED TO THE INPUT OF THE SECOND, AND VICE VERSA. WITH THIS ARRANGEMENT WHEN ONE TRANSISTOR IS CONDUCTING, THE OTHER IS CUT OFF. THE COLLECTOR VOLTAGE OF THE "OFF" TRANSISTOR IS CLAMPED TO -6V BY THE CLAMP DIODE AND THE COLLECTOR OF THE "ON" TRANSISTOR WILL HAVE A POTENTIAL OF -.3V.

THE STATE OF THE FLIP-FLOP IS CHANGED BY APPLYING A POSITIVE PULSE TO A SET INPUT OF THE CONDUCTING TRANSISTOR, PROVIDING A PRIMING VOLTAGE IS PRESENT. THIS POSITIVE PULSE IS DIFFERENTIATED AND USED TO TURN THE "ON" TRANSISTOR OFF A -6V APPLIED TO THE PRIMING RESISTOR WILL INHIBIT THE POSITIVE PULSE FROM REACHING THE BASE OF THE TRANSISTOR, BY PREVENTING THE CONDUCTION OF THE GATING DIODE.

OPERATING CHARACTERISTICS

CONDITIONS: VOLTAGE NOMINAL, PRIME INPUTS GROUNDED, ONE MICRO-SECOND RISE TIME FOR THE INPUT SET PULSE AND A 2000 OHM LOAD RESISTOR FROM THE COLLECTORS TO GROUND.

RESULTS: THE MINIMUM SET PULSE FOR OPERATION WILL BE IN THE RANGE FROM 2 TO 3.5 VOLTS.

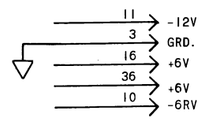
CONDITIONS: VOLTAGE NOMINAL, SET PULSE € VOLTS (-6 TO 0), ONE MICRO-SECOND RISE TIME FOR THE SET PULSE AND A 2000 OHM LOAD RESISTOR FROM THE COLLECTORS TO GROUND.

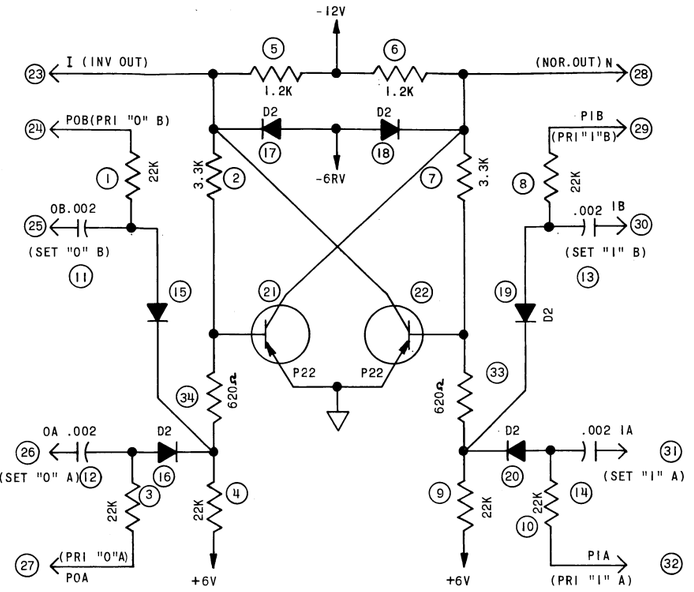
RESULTS: THE MINIMUM PRIME VOLTAGE WILL BE IN THE RANGE FROM -2 TO -3.5 VOLTS.

FLIP-FLOP (3)
CIRCUITS A,B&C

NOTE:

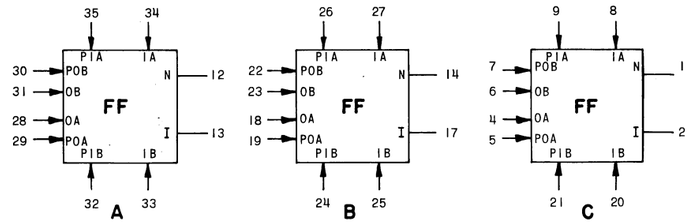
CIRCLED NUMBERS DESIGNATE COMPONENTS OR INPUT AND OUTPUT TERMINALS ON MULTIPLE CIRCUITS. SEE TABLE BELOW.





NOTE:
INPUT AND OUTPUT TERMINALS NEED NOT APPEAR IN ORDER SHOWN. UNUSED TERMINALS MAY BE OMITTED.

SYMBOLS



TABLE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
A	R19	R7	R20	R13	R1	R2	R8	R21	R14	R22	C1	C2	C3	C4	CR1	CR2	CR13	CR14	CR3
B	R23	R9	R24	R15	R3	R4	R10	R25	R16	R26	C5	C6	C7	C8	CR5	CR6	CR15	CR16	CR7
C	R27	R11	R28	R17	R5	R6	R12	R29	R18	R30	C9	C10	C11	C12	CR9	CR10	CR17	CR18	CR11

	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34				
A	CR4	Q4	Q3	13	30	31	28	29	12	32	33	34	35	R31	R32				
B	CR8	Q1	Q2	17	22	23	18	19	14	24	25	27	26	R33	R34				
C	CR12	Q6	Q5	2	7	6	4	5	1	21	20	8	9	R35	R36				

CIRCUIT BOARD EC 671

REF DESIG	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1-C12	177332	12	CAPACITOR, .002 MFD	DIFFERENTIATING & COUPLING
CR1- CR18	177108	18	DIODE, D2	GATING AND CLAMP
R1-R6	137441	6	RESISTOR, FIXED 1200 OHMS	COLLECTOR LOAD
R7-R12	129851	6	RESISTOR, FIXED 3300 OHMS	CROSS COUPLING
R13-R30	118177	18	RESISTOR, FIXED 22K OHMS	BIAS AND PRIMING
R31-R36	137604	6	RESISTOR, FIXED 620 OHMS	BIAS
Q1-Q6	177105	6	TRANSISTOR P22	SWITCH
	144495	6	PAD, TRANSISTOR	
EC	302712	1	CIRCUIT CARD, ETCHED	
	300116	3	COVER, INSULATING	
		4	STRAP, BARE 24 AWG	

303671

REVISIONS

ISSUE	DATE	AUTH. NO.
1	4-8-65	16795-R

APPROVALS

R AND D	E OF M

E-NUMBER

PROD. NO. 303671

DATE 1-20-65

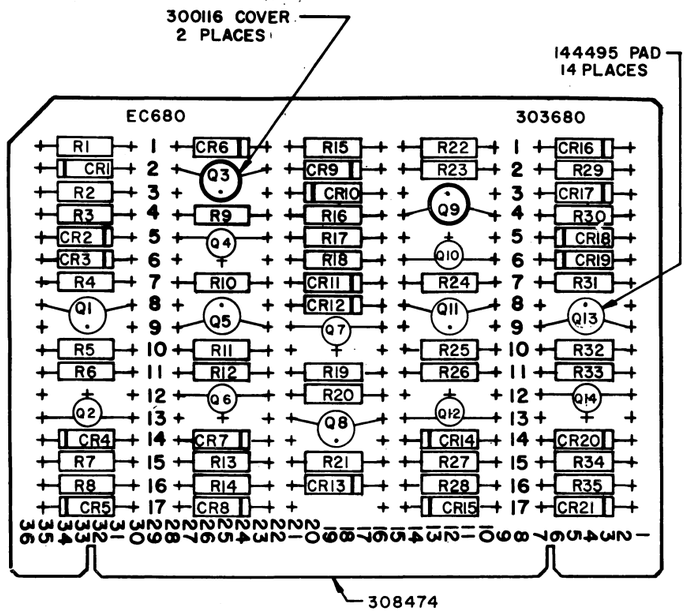
R&D FILE 1-A134 132AA

DRAWN G.R.S. CHKD.

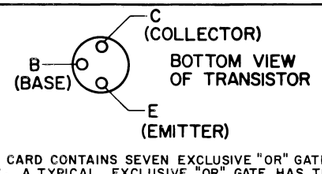
ENGD. F.E.M. APPD.

TELETYPE CORPORATION

303671



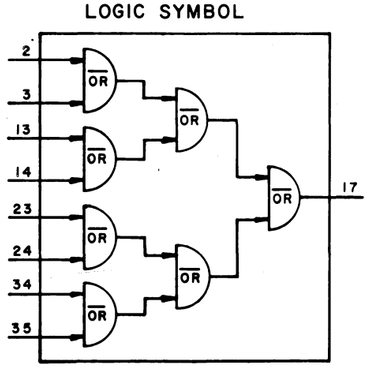
NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION



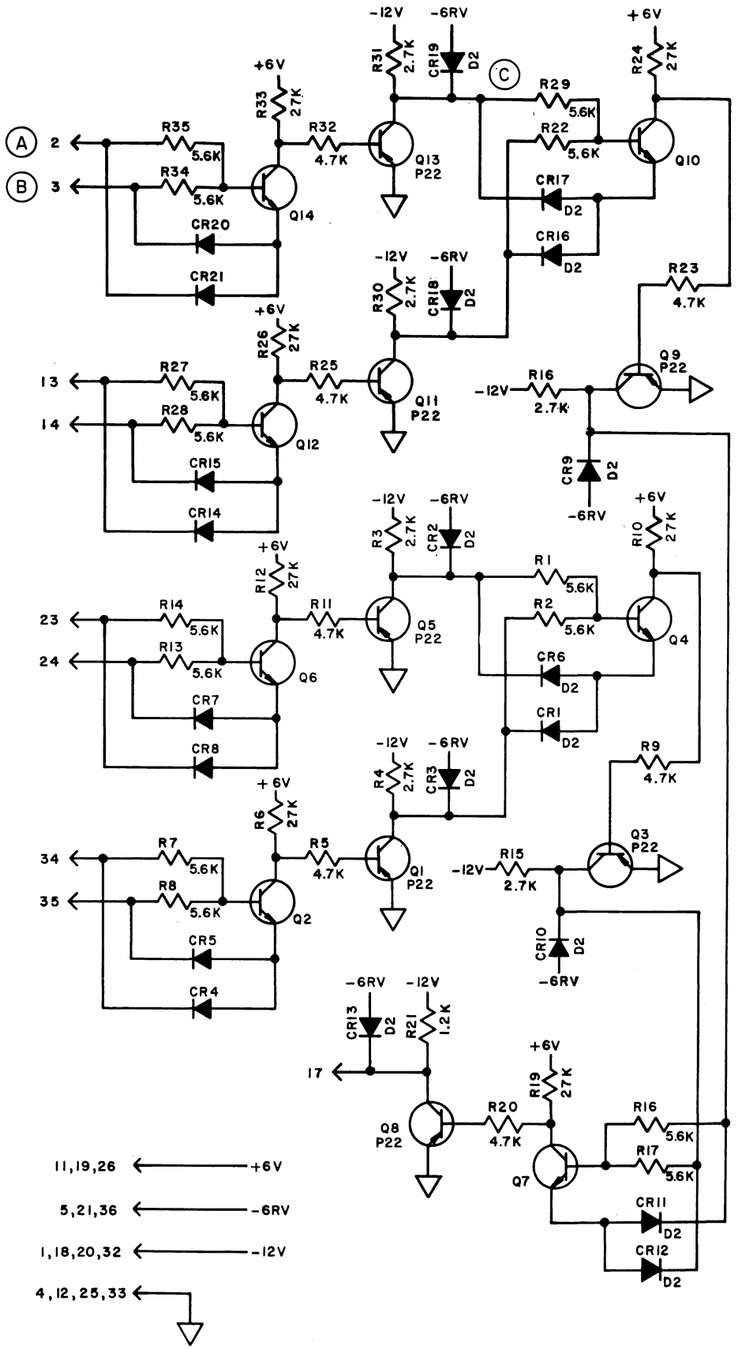
THIS CARD CONTAINS SEVEN EXCLUSIVE "OR" GATES CONNECTED TOGETHER TO FORM A PARITY TREE. A TYPICAL EXCLUSIVE "OR" GATE HAS THE FOLLOWING TRUTH TABLE (SEE TABLE BELOW) WITH INPUTS Ⓐ & Ⓑ BOTH AT 0 VOLTS OR AT -6 VOLTS, TRANSISTOR Q14 IS BIASED "OFF" AND THE COLLECTOR OF Q14 IS CLAMPED AT +6 VOLTS TO BIAS TRANSISTOR Q13 "OFF". THE OUTPUT Ⓒ IS CLAMPED AT -6 VOLTS. WITH INPUT Ⓐ AT 0 VOLTS AND INPUT Ⓑ AT -6 VOLTS OR INPUT Ⓐ AT -6 VOLTS AND INPUT Ⓑ AT 0 VOLTS, TRANSISTOR Q14 IS BIASED "ON". THE COLLECTOR OF Q14 WILL BE CLAMPED AT -6 VOLTS AND BIAS TRANSISTOR Q13 "ON". THE OUTPUT Ⓒ WILL BE CLAMPED AT 0 VOLTS. THE PARITY TREE CIRCUIT CONTAINS EIGHT INPUTS AND ONE OUTPUT. IF AN ODD NUMBER OF INPUTS IS AT 0 VOLTS, THE OUTPUT WILL BE CLAMPED AT 0 VOLTS. IF AN EVEN NUMBER OF INPUTS IS AT 0 VOLTS OR -6 VOLTS, THE OUTPUT WILL BE CLAMPED AT -6VOLTS.

INPUTS Ⓐ	INPUTS Ⓑ	OUTPUT Ⓒ
0 V	0V	-6V
-6V	-6V	-6V
0 V	-6V	0V
-6V	0V	0V

LOGIC SYMBOL



PARITY LOGIC



CIRCUIT BOARD

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1-R2	118186	14	RESISTOR, 5,600 OHMS	GATE INPUT
R3-R4	118144	6	RESISTOR, 2,700 OHMS	COLLECTOR LOAD
R5	118146	7	RESISTOR, 4,700 OHMS	BASE INPUT
R6	118187	7	RESISTOR, 27000 OHMS	COLLECTOR LOAD
R7-R8			SAME AS R1	GATE INPUT
R9			SAME AS R5	BASE INPUT
R10			SAME AS R6	COLLECTOR LOAD
R11			SAME AS R5	BASE INPUT
R12			SAME AS R6	COLLECTOR LOAD
R13-R14			SAME AS R1	GATE INPUT
R15-R16			SAME AS R3	COLLECTOR LOAD
R17-R18			SAME AS R1	GATE INPUT
R19			SAME AS R6	COLLECTOR LOAD
R20			SAME AS R5	BASE INPUT
R21	137441	1	RESISTOR, 1,200 OHMS	COLLECTOR LOAD
R22			SAME AS R1	GATE INPUT
R23			SAME AS R5	BASE INPUT
R24			SAME AS R6	COLLECTOR LOAD
R25			SAME AS R5	BASE INPUT
R26			SAME AS R6	COLLECTOR LOAD
R27-R29			SAME AS R1	GATE INPUT
R30-R31			SAME AS R3	COLLECTOR LOAD
R32			SAME AS R5	BASE INPUT
R33			SAME AS R6	COLLECTOR LOAD
R34-R35			SAME AS R1	GATE INPUT
CR1-CR3	177108	13	DIODE, D2	CLAMP
CR4-CR5	181619	8	DIODE, IN482	GATE
CR6			SAME AS CR1	CLAMP
CR7-CR8			SAME AS CR4	GATE
CR9-CR13			SAME AS CR1	CLAMP
CR14-CR15			SAME AS CR4	GATE
CR16-CR19			SAME AS CR1	CLAMP
CR20-CR21			SAME AS CR4	GATE
Q1	177105	7	TRANSISTOR, P22	SWITCH
Q2	300455	7	TRANSISTOR, 2N697	SWITCH
Q3			SAME AS Q1	SWITCH
Q4			SAME AS Q2	SWITCH
Q5			SAME AS Q1	SWITCH
Q6-Q7			SAME AS Q2	SWITCH
Q8-Q9			SAME AS Q1	SWITCH
Q10			SAME AS Q2	SWITCH
Q11			SAME AS Q1	SWITCH
Q12			SAME AS Q2	SWITCH
Q13			SAME AS Q1	SWITCH
Q14			SAME AS Q2	SWITCH
	308474	1	CIRCUIT CARD, ETCHED	
	144495	14	PAD, TRANSISTOR	
	300116	2	COVER, INSULATING	

303680

REVISIONS

ISSUE	DATE	AUTH. NO.
1	10-18-67	18769-R

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 303680

DATE 8-17-67

P.D. FILE NO. 4-A156.237A

DRAWN M.J.N. CHKD.

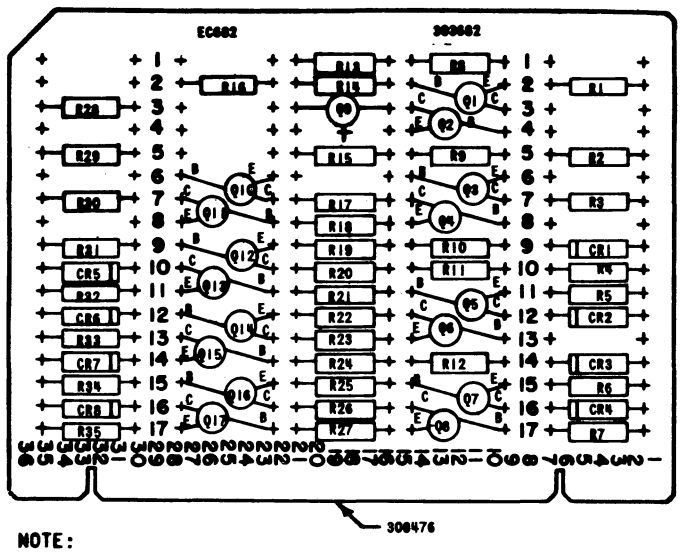
ENGD. W.R.F. APPD.

TELETYPE CORPORATION

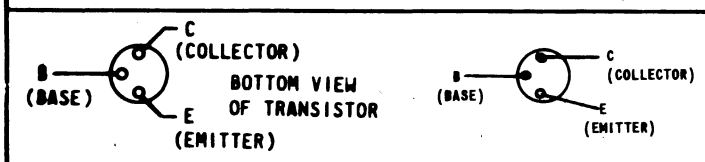
303680

TC 474 (11-65)

EC 682
303682



NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION.



THIS CIRCUIT CARD CONTAINS EIGHT CONTACT SIGNAL SHAPING CIRCUITS. ELEMENTS A-H AND ONE RESET CIRCUIT. ELEMENT J, PRIMAILY FOR USE WITH A SET OF EIGHT CODE READING DRAG SENSE CONTACTS.

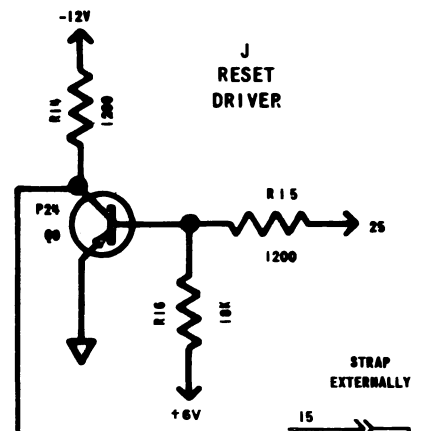
THE CONTACT SIGNAL SHAPER CIRCUITS (CSS) ARE BISTABLE CIRCUITS WHOSE PRIMARY INPUT ACCEPTS CONTACT CLOSURES TO GROUND. THE CIRCUIT STORES THE CONTACT CLOSURE UNTIL THE SECONDARY INPUT IS DRIVEN NEGATIVE BY THE RESET DRIVER AND THE CIRCUIT REVERTS TO ITS INITIAL STATE. THE OPERATION OF CIRCUIT ELEMENT A WILL BE DESCRIBED. ELEMENTS B-H OPERATE IN THE SAME MANNER.

THE BASE OF TRANSISTOR Q1 IS NORMALLY HELD AT -12 VOLTS THROUGH RESISTOR R13. THE TRANSISTOR IS CUTOFF AND THE OUTPUT PIN 7, IS -6VOLTS. THE +6 VOLTS ON THE COLLECTOR OF Q1 HOLDS TRANSISTOR Q2 CUTOFF WHICH HELPS TO KEEP Q1 CUTOFF.

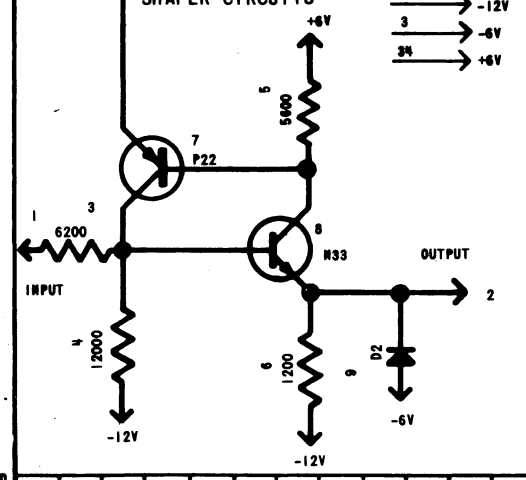
IF A CONTACT CLOSURE TO GROUND OCCURS AT PIN 6 THE BASE OF Q1 WILL BE DRIVEN POSITIVE WITH RESPECT TO THE EMITTER AND Q1 WILL CONDUCT. AS IT CONDUCTS, THE POTENTIAL AT THE COLLECTOR GOES TO -.5 VOLTS AND THE POTENTIAL IS APPLIED TO THE BASE OF Q2 WHICH CAUSES IT TO CONDUCT. THE COLLECTOR POTENTIAL OF Q2 FOES TO -.2 VOLTS WHICH HOLDS Q1 IN CONDUCTION EVEN WHEN THE CONTACT AT PIN 6 HAS OPENED. THE OUTPUT AT PIN 7 WILL BE -.5 VOLTS AND IT CAN SUPPLY 20 MA TO GROUND AND 5 MA TO -6 VOLTS, THE CSS CIRCUIT WILL ACCEPT A MINIMUM CONTACT CLOSURE 2 uS IN DURATION. THE OUTPUT POTENTIAL WILL NOT BE MORE NEGATIVE THAN -1 VOLTS WHEN TRANSISTORS Q1 AND Q2 ARE CONDUCTING. THE CIRCUIT WILL ALWAYS TRIGGER IF THE RESISTANCE BETWEEN THE INPUT AND THE CONTACT TO GROUND IS LESS THAN 1400 OHMS. IT WILL NEVER TRIGGER IF THIS RESISTANCE IS GREATER THAN 10K OHMS.

THE RESET DRIVER, CIRCUIT ELEMENT J, IS USED TO RESET THE CSS CIRCUITS. THE INPUT TO THE RESET CIRCUIT, PIN 25, REQUIRES A STANDARD TELETYPE POSITIVE PULSE, 10 US IN DURATION. THE PULSE MUST OCCUR AFTER THE CONTACTS AT THE INPUTS TO THE CSS CIRCUIT HAVE OPENED. TRANSISTOR Q9 IS NORMALLY CONDUCTING, PRESENTING 0 VOLTS TO THE EMITTERS OF TRANSISTORS 7 . DURING THE TIME THE PULSE IS PRESENT AT PIN 25, TRANSISTOR Q9 WILL BE CUTOFF ALLOWING THE CSS CIRCUITS TO RESET.

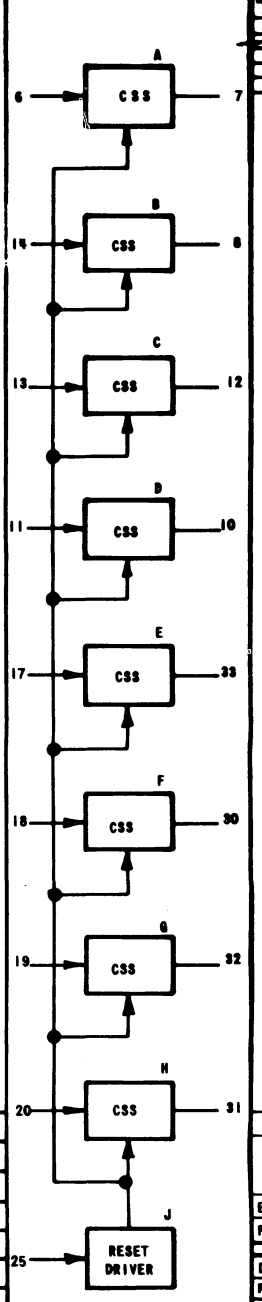
CONTACT SIGNAL SHAPER CIRCUITS



A-H CONTACT SIGNAL SHAPER CIRCUITS



	1	2	3	4	5	6	7	8	9		
A	6	7	R8	R13	R1	R7	Q2	Q1	CR4		
B	14	8	R9	R17	R2	R6	Q4	Q3	CR3		
C	13	12	R10	R18	R4	R11	Q6	Q5	CR2		
D	11	10	R12	R27	R3	R5	Q8	Q7	CR1		
E	17	33	R26	R19	R31	R32	Q10	Q11	CR5		
F	18	30	R25	R20	R28	R35	Q16	Q17	CR8		
G	19	32	R24	R21	R30	R33	Q12	Q13	CR6		
H	20	31	R23	R22	R29	R34	Q14	Q15	CR7		



CIRCUIT BOARD 303682

REVISIONS

LETTER	DATE	AUTHOR
1	7-7-65	6597-R
2	8-22-67	5418-S A

APPROVALS

R AND D	E OF M
HJK	

E-NUMBER
PROD.NO. 303682
DATE: 1-13-66
R. & D. FILE NO. 5-A148/139AA
DRAWN PSD CHKD
ENGD. ISK APPD

TELETYPE CORPORATION

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1-CR8	177108	8	DIODE, D2	CLAMP
R1-R4	118186	8	RESISTOR, FIXED 5600 OHMS	BIAS
R5-R7	137441	10	RESISTOR, FIXED 1200 OHMS	EMITTER LOAD
R8-R10	143663	8	RESISTOR, FIXED 6200 OHMS	INPUT
R11			SAME AS R5	EMITTER LOAD
R12			SAME AS R8	INPUT
R13	118149	8	RESISTOR, FIXED 12000 OHMS	BIAS
R14			SAME AS R5	COLLECTOR LOAD
R15			SAME AS R5	INPUT
R16	118151	1	RESISTOR, FIXED 18K OHMS	BIAS
R17-R22			SAME AS R13	BIAS
R23-R26			SAME AS R8	INPUT
R27			SAME AS R13	BIAS
R28-R31			SAME AS R1	BIAS
R32-R35			SAME AS R5	EMITTER LOAD
Q1	177106	8	TRANSISTOR, N33	
Q2	177105	8	TRANSISTOR, P22	
Q3			SAME AS Q1	
Q4			SAME AS Q2	
Q5			SAME AS Q1	
Q6			SAME AS Q2	
Q7			SAME AS Q1	
Q8			SAME AS Q2	
Q9	193135	1	TRANSISTOR, P24	
Q10			SAME AS Q2	
Q11			SAME AS Q1	
Q12			SAME AS Q2	
Q13			SAME AS Q1	
Q14			SAME AS Q2	
Q15			SAME AS Q1	
Q16			SAME AS Q2	
Q17			SAME AS Q1	
EC	308476	1	ETCHED CIRCUIT BOARD	
	144495	17	TRANSISTOR PAD	

APPROVALS

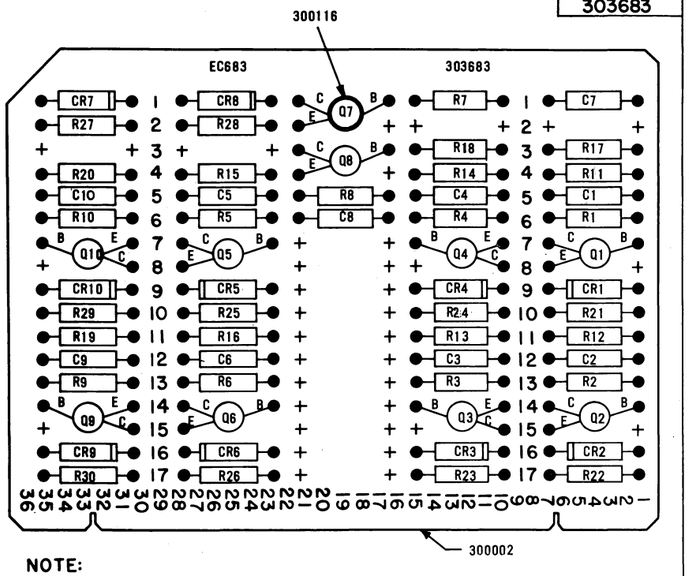
R AND D	E OF M
HJK	

E-NUMBER
PROD.NO. 303682
DATE: 1-13-66
R. & D. FILE NO. 5-A148/139AA
DRAWN PSD CHKD
ENGD. ISK APPD
TELETYPE CORPORATION

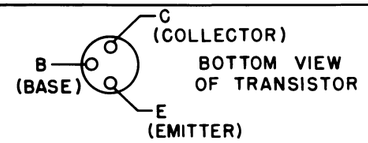
303682

TC479

EC683
303683



NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION



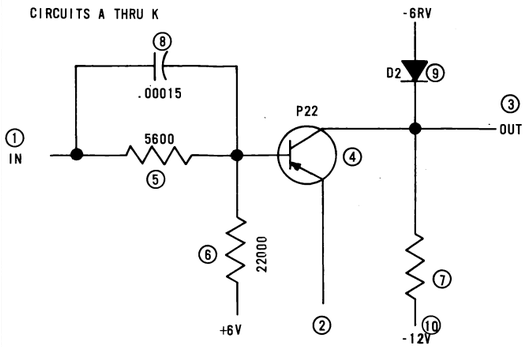
THIS CARD CONSISTS OF TEN IDENTICAL CIRCUITS. WHEN TERMINALS (2) ARE TIED TO 0 VOLTS, THE CIRCUIT ACTS AS AN INVERTER. WHEN TERMINALS (2) ARE USED AS INPUTS, THE CIRCUIT ACTS AS AN INHIBIT GATE.

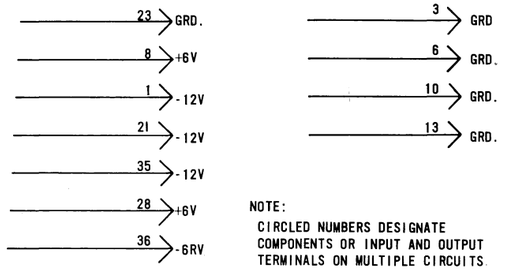
INVERTER OPERATION: WHEN 0 VOLTS IS APPLIED AT INPUT TERMINAL (1) TRANSISTOR (4) IS IN CUT-OFF CAUSING OUTPUT TERMINAL (3) TO BE CLAMPED AT -6 VOLTS. WHEN -6 VOLTS IS APPLIED AT INPUT TERMINAL (1) TRANSISTOR (4) SATURATES CAUSING OUTPUT TERMINAL (3) TO BE APPROXIMATELY -0.3 VOLTS, SPEED-UP CAPACITOR (8) IMPROVES OUTPUT SIGNAL RISE TIME.

INHIBIT GATE OPERATION: INPUT TERMINALS (1) AND (2) VARY BETWEEN 0 VOLTS AND -6VOLTS. WHEN INPUT TERMINAL (2) IS AT -6 VOLTS, TRANSISTOR (4) IS IN CUT-OFF CAUSING TERMINAL (3) TO BE CLAMPED AT -6 VOLTS. INDEPENDENT OF VOLTAGE AT INPUT TERMINAL (1). WHEN INPUT TERMINAL (2) IS AT 0 VOLTS, THE CIRCUIT DESCRIPTION IS THE SAME AS THE INVERTER DESCRIBED ABOVE.

THE COLLECTOR VOLTAGE (-12V) IS BROUGHT OUT AT THREE SEPARATE TERMINALS AS SHOWN TO THE RIGHT. THIS WILL ENABLE DELETING COLLECTOR VOLTAGES ON CERTAIN INVERTERS OR INHIBIT GATES, SO THAT MULTIPLE CIRCUITS CAN BE TIED TOGETHER AT THEIR OUTPUTS WITHOUT EXCESSIVE LOADING

INHIBIT GATE OR INVERTER (10)



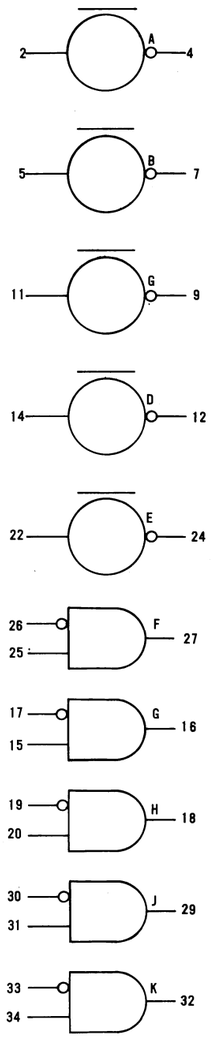


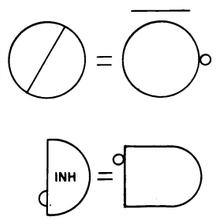
NOTE:
CIRCLED NUMBERS DESIGNATE COMPONENTS OR INPUT AND OUTPUT TERMINALS ON MULTIPLE CIRCUITS.

TABLE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A	2	3	4	Q1	R1	R11	R21	C1	CR1	1
B	5	6	7	Q2	R2	R12	R22	C2	CR2	1
C	11	10	9	Q3	R3	R13	R23	C3	CR3	1
D	14	13	12	Q4	R4	R14	R24	C4	CR4	1
E	22	23	24	Q5	R5	R15	R25	C5	CR5	21
F	25	26	27	Q6	R6	R16	R26	C6	CR6	21
G	15	17	16	Q7	R7	R17	R27	C7	CR7	35
H	20	19	18	Q8	R8	R18	R28	C8	CR8	35
J	31	30	29	Q9	R9	R19	R29	C9	CR9	35
K	34	33	32	Q10	R10	R20	R30	C10	CR10	35

SYMBOLS





CIRCUIT BOARD EC 683

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
C1-C10	300010	10	CAPACITOR .00015 MFD	SPEED-UP
CR1-10	177108	10	DIODE	CLAMP
Q1-Q10	177105	10	TRANSISTOR, P-22	AMPLIFIER
R1-R10	118186	10	RESISTOR 5600 OHMS	LIMITING
R11-20	118177	10	RESISTOR 22000 OHMS	BIAS
R21-25	137441	5	RESISTOR 1200 OHMS	COLLECTOR LOAD
R26-30	143665	5	RESISTOR 5100 OHMS	COLLECTOR LOAD
EC	300002	1	ETCHED CIRCUIT BOARD	
	144495	10	PAD, TRANSISTOR	
	300116	1	COVER, INSULATING	

303683

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-23-67	18728-R

APPROVALS

R AND D	E OF M

E-NUMBER

PROD NO. 303683

DATE 2-26-65

R&D FILE 1-A148/134

DRAWN J R. CHKD

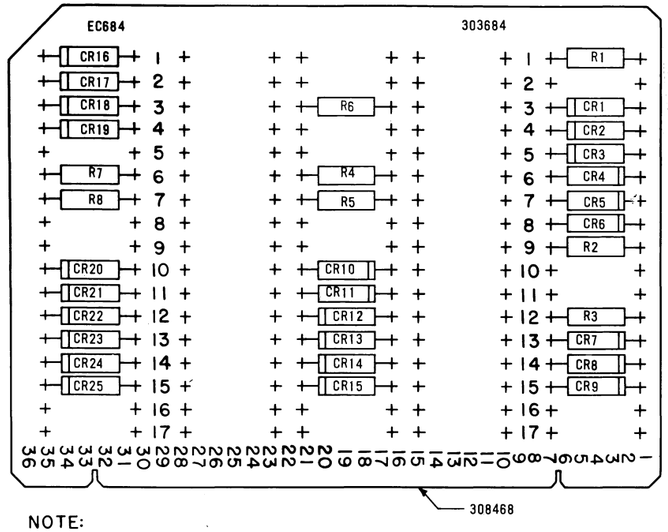
ENGD. T W L APPD

TELETYPE
CORPORATION

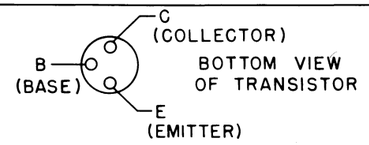
303683

TC 474 (1-66)

EC684
303684



NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION



THIS CARD CONSISTS OF SIX "OR" GATES AND TWO "AND" GATES.

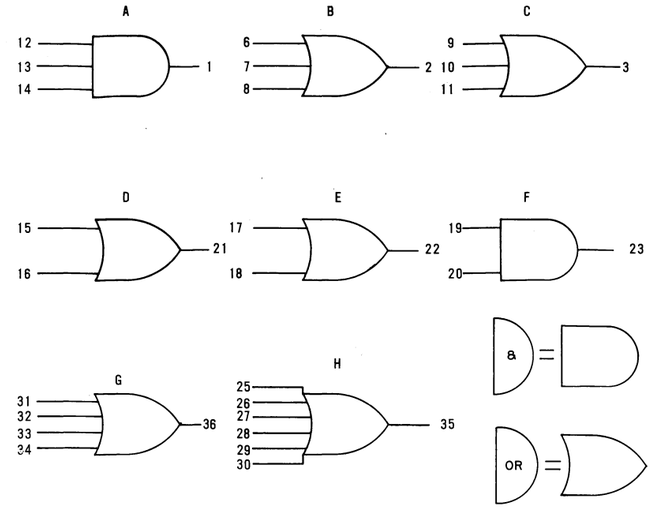
WHEN 0 VOLTS IS APPLIED TO ALL OF THE INPUTS OF AN "AND" GATE, THE OUTPUT WILL BE 0 VOLTS. WHEN -6 VOLTS IS APPLIED TO ANY OF THE INPUTS, THE OUTPUT WILL BE -6 VOLTS.

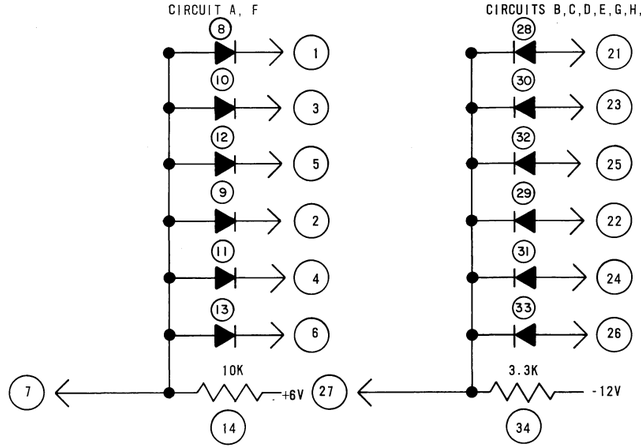
WHEN -6 VOLTS IS APPLIED TO ALL OF THE INPUTS OF AN "OR" GATE, THE OUTPUT WILL BE -6 VOLTS WHEN 0 VOLTS IS APPLIED TO ANY OF THE INPUTS, THE OUTPUT WILL BE 0 VOLTS.

"AND" GATE

CIR.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	12	13	14				1	CR3	CR2	CR1				R1
F	19	20					23	CR11	CR10					R6

AND GATE (2)
OR GATE (6)





NOTE. CIRCLED NUMBERS DESIGNATE COMPONENTS OR INPUT AND OUTPUT TERMINALS ON MULTIPLE CIRCUITS AS FOLLOWS:

"OR" GATE

CIR.	21	22	23	24	25	26	27	28	29	30	31	32	33	34
B	6	7	8				2	CR7	CR8	CR9				R3
C	9	10	11				3	CR6	CR5	CR4				R2
D	15	16					21	CR14	CR15					R4
E	17	18					22	CR13	CR12					R5
G	31	32	33	34			36	CR19	CR18	CR17	CR16			R7
H	25	26	27	28	29	30	35	CR20	CR21	CR22	CR23	CR24	CR25	R8

CIRCUIT BOARD EC 684

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1	129854	2	RESISTOR 10K	BIAS
R2	129851	6	RESISTOR 3.3K	BIAS
R3	129851		SAME AS R2	BIAS
R4	129851		SAME AS R2	BIAS
R5	129851		SAME AS R2	BIAS
R6	129854		SAME AS R1	BIAS
R7	129851		SAME AS R2	BIAS
R8	129851		SAME AS R2	BIAS
CR1-25	177108	25	DIODE, D2	GATE
EC	308468	1	ETCHED CIRCUIT BOARD	

303684

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-23-67	18728-R

APPROVALS

R AND D	E OF M

E-NUMBER

PROD NO. 303684

DATE 6-16-67

R&D FILE 2-96.134.184A

DRAWN J.R. CHKD.

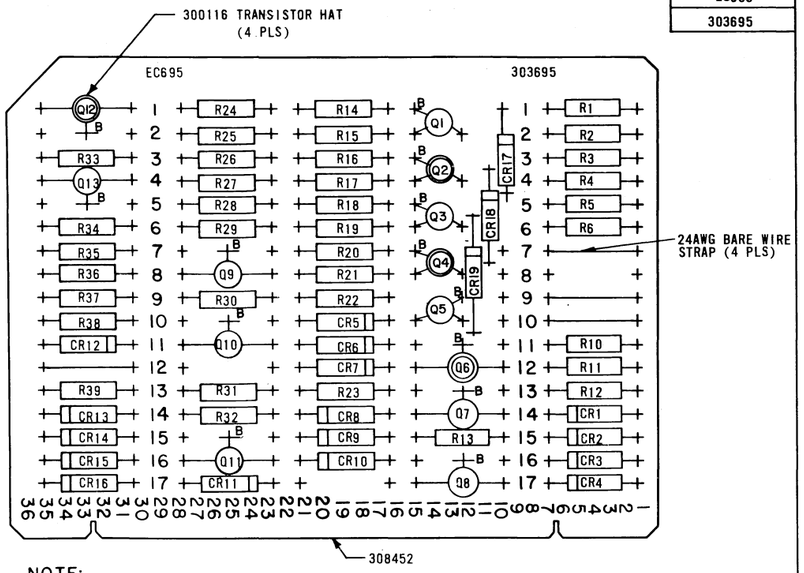
ENGD. W.R.F. APPD.

TELETYPE
CORPORATION

303684

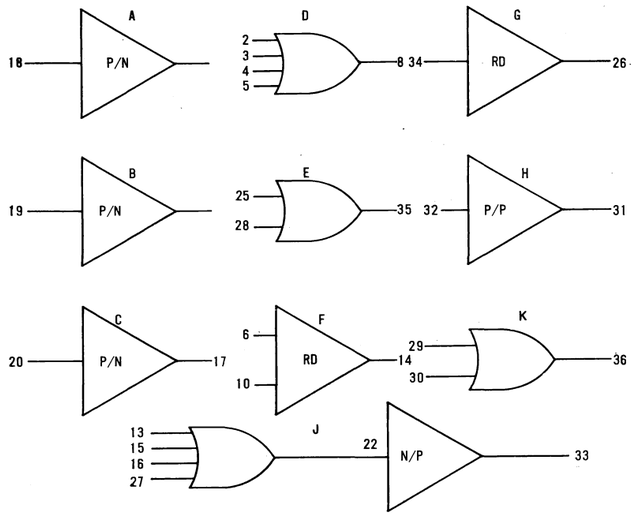
TC 474 (1-66)

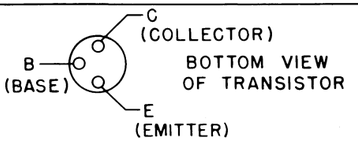
EC695
303695

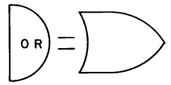


NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION

SPECIAL LOGIC FOR HIGH SPEED
TYPE IV STATION CONTROL ASSEMBLY







THIS CARD CONSISTS OF TEN CIRCUITS.

CIRCUITS A, B & C. POLAR TO NORMAL SIGNAL CONVERTER. THE INPUTS (1) WILL CONVERT POSITIVE AND NEGATIVE EIA RS232B INTERFACE SIGNALS TO -6V AND OV OUTPUT (11) RESPECTIVELY. TRANSISTOR (4) IS USED TO AMPLIFY POSITIVE SIGNALS WHICH CUT OFF SIGNAL INVERTER AMPLIFIER TRANSISTOR (9). RESISTOR (6) BIASED TO -12V WILL SUPPLY BASE CURRENT IN ORDER TO SATURATE TRANSISTOR (9) WHEN NEGATIVE SIGNALS ARE APPLIED TO THE INPUTS (1). AN OPEN CIRCUITED INPUT (1) WILL CAUSE TRANSISTOR (9) TO CONDUCT, THEREBY GENERATING A OV OUTPUT SIGNAL AT (11).

CIRCUIT D: FOUR INPUT OR GATE. THE OUTPUT 8 WILL BE AT OV WHEN ANY OF THE INPUTS ARE OV. THE OUTPUT WILL BE -6V ONLY WHEN ALL OF THE INPUTS ARE -6V. EACH INPUT IS ISOLATED WITH A DIODE. THE CATHODES OF THE DIODES ARE BIASED TO -12V THROUGH RESISTOR R12

CIRCUIT E: TWO INPUT OR GATE. THE OUTPUT 35 WILL BE AT OV WHEN ANY OF THE INPUTS ARE OV THE OUTPUT WILL BE -6V ONLY WHEN BOTH INPUTS ARE -6V EACH INPUT IS ISOLATED WITH A DIODE. THE CATHODES OF THE DIODES ARE BIASED TO -12V THROUGH RESISTOR R39.

CIRCUIT F. POLAR RELAY DRIVER: THE RELAY DRIVER OPERATES ON POSITIVE AND NEGATIVE EIA INPUT RS232B INTERFACE SIGNALS. A POSITIVE SIGNAL ON 6 WILL CAUSE BOTH Q7 AND Q8 TO CONDUCT THE COLLECTOR OUTPUT 14 WILL BE OV TRANSISTOR Q8 IS CAPABLE OF WORKING WITH A 50 MA, -70V RELAY LOAD. A NEGATIVE INPUT SIGNAL WILL CUT OFF BOTH Q7 AND Q8. AN OPEN CIRCUITED INPUT WILL RESPOND SIMILARITY. IN ORDER TO ENABLE THE RELAY DRIVER, INPUT 10 MUST BE GROUNDED. THE DRIVER IS DISABLED IF INPUT 10 IS OPEN CIRCUITED. AN OPEN CIRCUITED INPUT WILL CAUSE THE RELAY DRIVER NOT TO OPERATE.

CIRCUIT G: POLAR RELAY DRIVER. THE RELAY DRIVER OPERATES ON POSITIVE AND NEGATIVE EIA RS232 B INTERFACE SIGNALS. A POSITIVE INPUT 34 WILL CUT OFF TRANSISTOR Q10 CAUSING 11 TO CONDUCTOR. THE COLLECTOR OUTPUT OF Q11 WILL BE OV. TRANSISTOR Q11 IS CAPABLE OF WORKING WITH A 50 MA, -70V RELAY LOAD. A NEGATIVE INPUT SIGNAL WILL CAUSE TRANSISTOR Q10 TO CONDUCT, TURNING OFF Q11, TURNING OFF THE RELAY DRIVER. A GROUNDED OV INPUT AND AN OPEN CIRCUITED INPUT WILL CAUSE THE RELAY DRIVER TO RESPOND IN A SIMILIAR MANNER.

CIRCUIT H: POLAR SIGNAL INVERTER: EIA RS232B INTERFACE SIGNALS ON 32 ARE INVERTED. OUTPUT 31 IS CAPABLE OF GENERATING EIA RS232B INTERFACE SIGNALS. A POSITIVE SIGNAL IS AMPLIFIED BY THE EMMITTER FOLLOWER TRANSISTOR Q12, AND WILL CAUSE SIGNAL INVERTER TRANSISTOR Q13 TO CONDUCT. THE COLLECTOR OUTPUT OF Q13 WILL BE NEGATIVE WITH A NEGATIVE INPUT 32. TRANSISTOR Q13 WILL NOT CONDUCT, MAKING THE OUTPUT 31 POSITIVE RESISTOR 34 IS USED TO PROTECT TRANSISTOR Q13 AGAINST SHORT CIRCUITED OUTPUTS.

CIRCUIT J. FOUR INPUT OR GATE AND NORMAL TO POLAR SIGNAL CONVERTER. THE OUTPUT CONVERTER GENERATES EIA RS232B INTERFACE SIGNALS ANY OV INPUT TO THE OR GATE WILL CAUSE TRANSISTOR Q9 TO CONDUCT THE COLLECTOR OUTPUT OF Q9 WILL BE NEGATIVE WHEN ALL OF THE OR GATE INPUTS ARE AT -6V, TRANSISTOR Q9 WILL BE CUT OFF MAKING THE OUTPUT POSITIVE RESISTOR R36 PROTECTS TRANSISTOR Q4 AGAINST SHORT CIRCUITED OUTPUTS. THE INPUTS OF THE OR GATE ARE ISOLATED BY DIODES; THE CATHODES OF THE DIODES ARE BIASED TO -12V THROUGH RESISTOR R29

CIRCUIT K. TWO INPUT OR GATE THE OUTPUT OF THE GATE 36 WILL BE AT OV WHEN ANY OF THE INPUTS ARE OV THE INPUTS ARE ISOLATED BY DIODES THE CATHODES OF THE DIODES ARE BIASED BY THEIR NEGATIVE EXTERNAL LOAD

CIRCUIT BOARD EC 695

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	13	DIODE, D2	GATE
CR2			DIODE, D2	GATE
CR3			DIODE, D2	GATE
CR4			DIODE, D2	GATE
CR5			DIODE, D2	CLAMP
CR6			DIODE, D2	CLAMP
CR7			DIODE, D2	CLAMF
CR8			DIODE, D2	GATE
CR9			DIODE, D2	GATE
CR10			DIODE, D2	GATE
CR11			DIODE, D2	GATE
CR12	177611	6	DIODE, IN682	COUPLING
CR13			DIODE, D2	GATE
CR14			DIODE, D2	GATE
CR15			DIODE, IN682	GATE
CR16			DIODE, IN682	GATE
CR17			DIODE, IN682	CLAMP
CR18			DIODE, IN682	CLAMP
CR19			DIODE, IN682	CLAMP
R1	118159	4	RESISTOR, 150K	BIAS
R2	118146	4	RESISTOR, 4700	LOAD
R3			RESISTOR, 150K	BIAS
R4			RESISTOR, 4700	LOAD
R5			RESISTOR, 150K	BIAS
R6			RESISTOR, 4700	LOAD
R7	129851	7	RESISTOR, 3300	COUPLING
R8			RESISTOR, 3300	COUPLING
R9			RESISTOR, 3300	COUPLING
R10	118149	1	RESISTOR, 12000	BIAS
R11			RESISTOR, 4700	INPUT
R12			RESISTOR, 3300	BIAS
R13	137443	1	RESISTOR, 1800	COUPLING
R14	118180	3	RESISTOR, 10000	COUPLING
R15	118724	4	RESISTOR, 220	BIAS
R16			RESISTOR, 10000	COUPLING
R17			RESISTOR, 220	BIAS
R18			RESISTOR, 10000	COUPLING
R19			RESISTOR, 220	BIAS
R20	137441	4	RESISTOR, 1200	LOAD
R21			RESISTOR, 1200	LOAD
R22			RESISTOR, 1200	LOAD
R23	118151	1	RESISTOR, 18000	BIAS
R24			RESISTOR, 150K	BIAS
R25	129852	1	RESISTOR, 2200	BIAS
R26			RESISTOR, 220	BIAS
R27	137602	2	RESISTOR, 470	LOAD
R28			RESISTOR, 470	LOAD
R29	143667	1	RESISTOR, 3900	BIAS
R30	139143	1	RESISTOR, 43000	BIAS
R31	118187	1	RESISTOR, 27000	BIAS
R32			RESISTOR, 1200	COUPLING
R33	137442	1	RESISTOR, 1500	COUPLING
R34	137601	2	RESISTOR 68	OUTPUT
R35			RESISTOR, 3300	INPUT
R36			RESISTOR, 68	OUTPUT
R37	118147	1	RESISTOR, 6800	INPUT
R38			RESISTOR, 3300	BIAS
R39			RESISTOR, 3300	BIAS
Q1	177422	4	TRANSISTOR, N39	EMITTER FOLLOWER
Q2			TRANSISTOR, N39	EMITTER FOLLOWER
Q3			TRANSISTOR, N39	EMITTER FOLLOWER
Q4	177105	4	TRANSISTOR, P22	CONVERTER
Q5			TRANSISTOR, P22	CONVERTER
Q6			TRANSISTOR, P22	CONVERTER
Q7	177106	3	TRANSISTOR, N33	RELAY DRIVER
Q8	177224	2	TRANSISTOR, P41	RELAY DRIVER
Q9			TRANSISTOR, N33	CONVERTER
Q10			TRANSISTOR, P22	RELAY DRIVER
Q11			TRANSISTOR, P41	RELAY DRIVER
Q12			TRANSISTOR, N39	EMITTER FOLLOWEF
Q13			TRANSISTOR, N33	CONVERTER
	308452	1	CIRCUIT CARD, ETCHED	
	144495	13	PAD TRANSISTOR	
	300116	4	HAT, TRANSISTOR	

303695

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-23-67	18728-R
2	3-26-68	95435
3	8-8-68	97642
4	10-25-68	96269

SHEET 1

APPROVALS

R AND D	E OF M

E-NUMBER

PROD NO. 303695

DATE 6-1-65

R&D FILE 5-A148/134AA

DRAWN JER | CHKD

ENGD. W.R.F. | APPD.

TELETYPE
CORPORATION

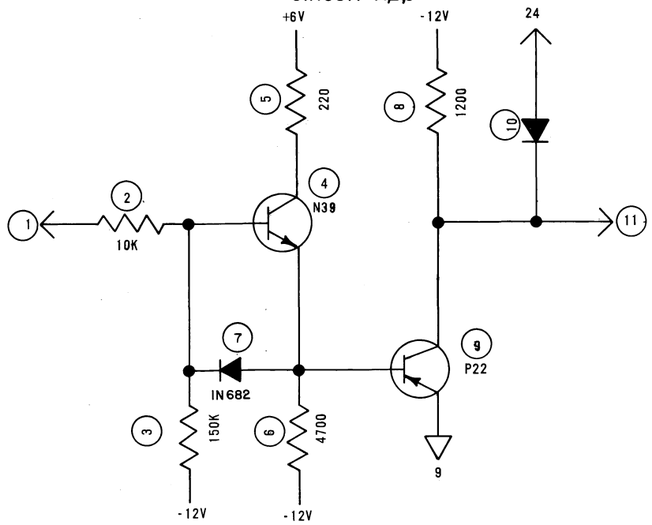
303695

CIRCUIT BOARD EC695

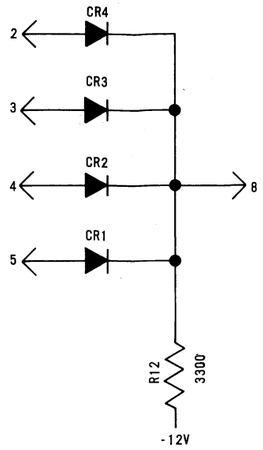
303695

REVISIONS		
ISSUE	DATE	AUTH. NO.
1	8-23-67	18726-R

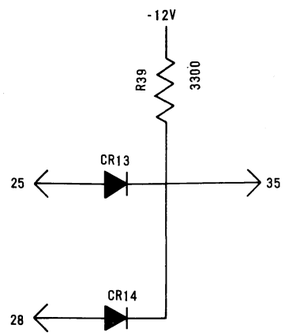
CIRCUIT A,B,C



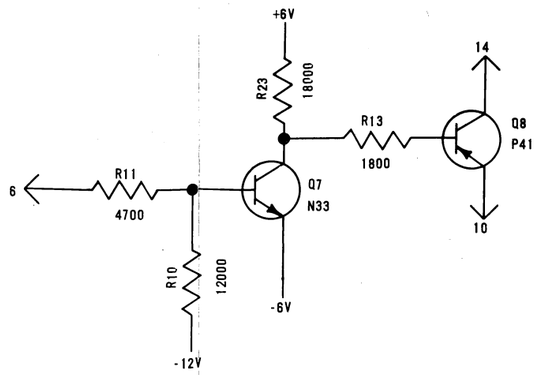
CIRCUIT D



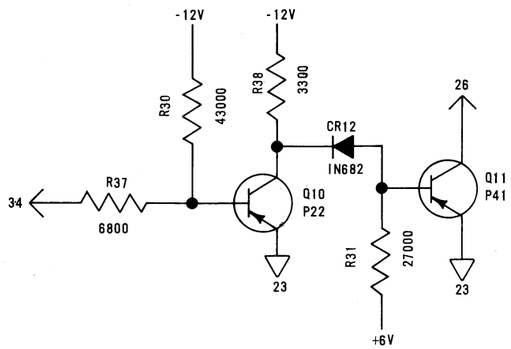
CIRCUIT E



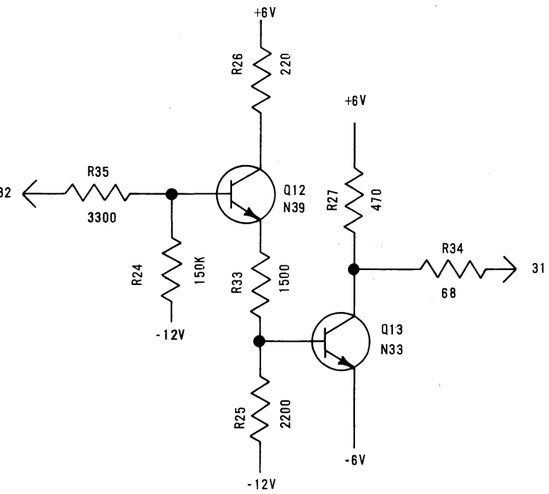
CIRCUIT F



CIRCUIT G



CIRCUIT H



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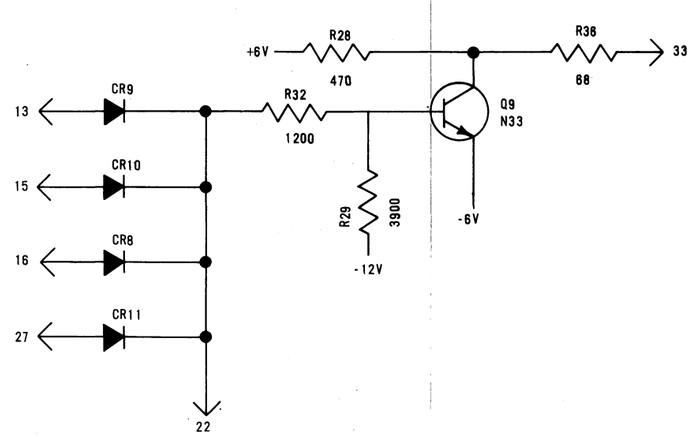
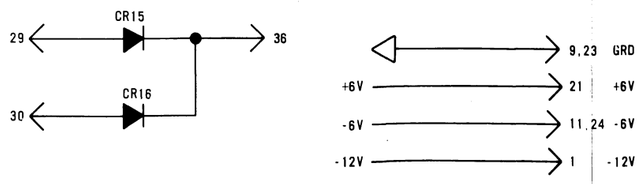


CIRCUIT K



NOTE::
CIRCLED NUMBERS DESIGNATE COMPONENTS OR INPUT AND OUTPUT TERMINALS ON MULTIPLE CIRCUITS.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
A	18	R14	R1	Q1	R15	R2	CR17	R21	Q4	CR6	7
B	19	R16	R3	Q2	R17	R4	CR18	R22	Q5	CR5	12
C	20	R18	R5	Q3	R19	R6	CR19	R20	Q6	CR7	17

SHEET 2

APPROVALS	
D. AND R	E OF M
HRK	

E-NUMBER

PROD. NO. 303695

DATE 6-12-67

P.D. FILE NO. 5-A148/134AA

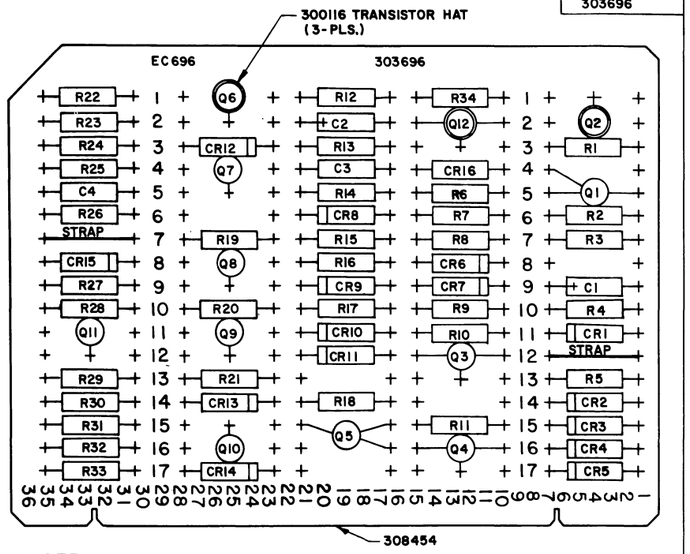
DRAWN J.R.	CHKD.
ENGD. W.R.F.	APPD.

TELETYPE CORPORATION

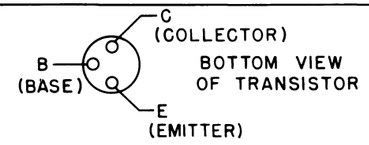
303695

TC 434 (2-63)

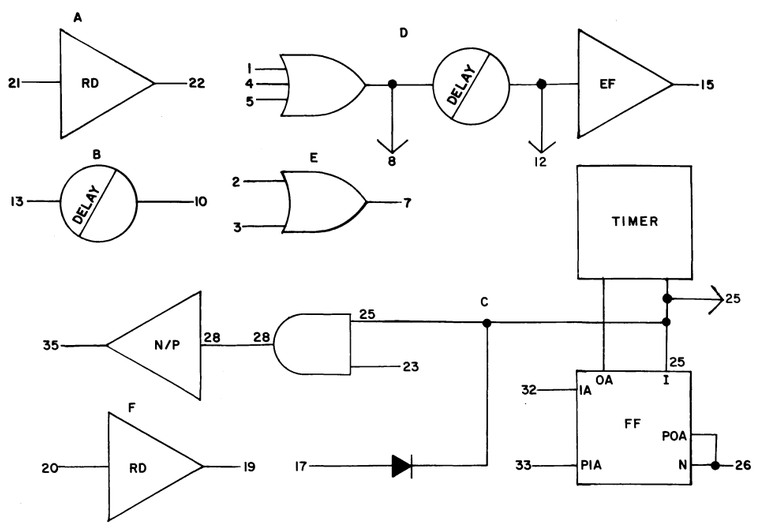
EC 696
303696

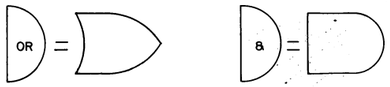


NOTE:
REFER TO 6050WD FOR BASIC MARKING INFORMATION



SPECIAL LOGIC FOR TYPE 4 SENDER STATION CONTROL





THIS CARD CONSISTS OF SIX CIRCUITS.

CIRCUIT A: RELAY DRIVER. A -6V INPUT SIGNAL ON 21 WILL CAUSE TRANSISTOR Q5 TO CONDUCT. THE COLLECTOR OUTPUT (22) WILL BE 0V. TRANSISTOR Q5 IS CAPABLE OF WORKING WITH A 20 MA, -12V RELAY LOAD. A 0V INPUT SIGNAL WILL CUT OFF Q5, TURNING OFF THE RELAY DRIVER.

CIRCUIT B: SIGNAL INVERTER: 0V AND -6V INPUT SIGNALS ON 13 ARE INVERTED BY TRANSISTOR Q2; THE COLLECTOR OUTPUT SIGNAL (10) BEING -6V AND 0V RESPECTIVELY.

CIRCUIT C: TWO SECOND ONE SHOT, TWO INPUT AND GATE, NORMAL TO POLAR SIGNAL CONVERTER, AND A COUPLING DIODE. GROUNDING 33, PIA WILL ENABLE THE ONE SHOT. THE ONE SHOT WILL TIME OUT 2 SECONDS (MIN.) WHEN SET BY A POSITIVE GOING -6V TO 0V SIGNAL. THE FLIP-FLOP USED IN THE ONE-SHOT CONSISTING OF Q8 AND Q9, IS NORMALLY IN A BINARY 0 STATE. THE COLLECTOR OF Q8, THE INVERTED OUTPUT OF THE ONE SHOT WILL BE AT 0V, AND THE COLLECTOR OF Q9 THE NORMAL OUTPUT WILL BE AT -6V. A POSITIVE TRANSITION ON THE SET INPUT (32) WILL CUT OFF Q8 AND CHANGE THE STATE OF THE FLIP-FLOP TO BINARY 1. Q9 WILL CONDUCT, CAUSING THE OUTPUTS OF THE ONE SHOTS TO BE : INVERTED OUTPUT (25) -6V; NORMAL OUTPUT (26) 0V. WHEN THE INVERTED OUTPUT OF THE ONE SHOT IS -6V, THE TIMER CIRCUIT CONSISTING OF Q6 AND Q7 WILL TIME OUT, GENERATING A POSITIVE PULSE AT BASE ONE OF THE UNIJUNCTION TRANSISTOR Q6. THIS PULSE WILL RESET THE FLIP-FLOP TO THE BINARY 0 STATE. Q6 OPERATES AS A RELAXATION OSCILLATOR. THE EMITTER OF Q6 IS NORMALLY CLAMPED TO -12V BY COUPLING DIODE CR12. WHEN THE ONE SHOT RESISTOR IS TRIGGERED, CAPACITOR C2 WILL BEGIN TO CHARGE POSITIVELY THROUGH RESISTOR R23. WHEN THE VOLTAGE AT THE EMITTER OF THE UIJJUNCTION TRANSISTOR Q6 REACHES APPROXIMATELY -2V, Q6 WILL FIRE, GENERATING A POSITIVE PULSE TO RESET THE FLIP-FLOP. THE INVERTED OUTPUT OF THE ONE SHOT IS CONNECTED TO A COUPLING DIODE, CR11 AND ONE INPUT TO A AND GATE (CR13-14 AND R31). GROUNDING THE ANODE INPUT 17 OF THE COUPLING DIODE WILL DISABLE THE ONE SHOT PREVENTING IT FROM CHANGING STATE. THIS ACTION WILL OVERRIDE THE INPUT CONDITIONS TO THE ONE SHOT. IF EITHER INPUT OF THE AND GATE ARE -6V SIGNALS, THE OUTPUT OF THE AND WILL BE -6V, CAUSING THE OUTPUT OF THE NORMAL TO POLAR SIGNAL CONVERTER TO BE POSITIVE. WHEN BOTH INPUTS OF THE GATE ARE 0V SIGNALS THE OUTPUT OF THE GATE WILL BE 0V. THE OUTPUT OF THE SIGNAL CONVERTER WILL BE NEGATIVE. THE SIGNAL CONVERTER CONSISTS OF AN EMITTER FOLLOWER TRANSISTOR Q11 AND SIGNAL CONVERTING TRANSISTOR Q10. 0V SIGNALS ON THE BASE OF Q11 WILL CAUSE Q10 TO CONDUCT. THE COLLECTOR OUTPUT (35) OF Q10 WILL BE NEGATIVE. A -6V SIGNAL AT THE BASE OF Q11, WILL CUT OFF Q10, CAUSING THE OUTPUT OF Q10 TO GO POSITIVE. THE OUTPUT OF THE NORMAL TO POLAR SIGNAL CONVERTER (35) IS CAPABLE OF GENERATING EIA RS232B INTERFACE SIGNALS.

CIRCUIT D: THREE INPUT OR GATE, AND DELAY INVERTER, ANY 0V INPUT TO THE OR GATE (CR1-3) WILL GENERATE A 0V OUTPUT (8). CATHODE BIAS FOR THE DIODE IS PROVIDED BY R12 ON ANOTHER CIRCUIT CARD 303695. (THE OUTPUT OF THIS OR GATE AND THE OUTPUT OF THE OR GATE, CIRCUIT D ON B03695 ARE CONNECTED TOGETHER IN ALL APPLICATIONS OF THIS CARD. THE OUTPUT OF THIS GATE WILL BE -6V WHEN ALL OF THE INPUTS ARE -6V. A 0V TO -6V SIGNAL TRANSITION AT THE OUTPUT OF THE OR GATE ARE DELAYED APPROXIMATELY 1.5 MS BY THE DELAY INVERTER Q1. A -6V SIGNAL WILL CHARGE CAPACITOR C1 NEGATIVELY UNTIL TRANSISTOR Q1 CONDUCTS. THE COLLECTOR OF Q1 WILL BE 0V, CAUSING THE OUTPUT 15 TO BE 0V. A 0V SIGNAL FROM THE OR GATE WILL CUT OFF Q1, CAUSING THE OUTPUT 15 TO BE -6V. TRANSISTORS Q3 AND Q4 FORM A SYMMETRICAL EMITTER FOLLOWER AMPLIFIER WHICH AMPLIFIES THE OUTPUT SIGNALS OF INVERTER TRANSISTOR Q1.

CIRCUIT E: TWO INPUT OR GATE. OUTPUT 7 WILL BE 0V WHEN ANY OF THE INPUTS AR 0V. THE INPUTS ARE ISOLATED BY DIODES. THE CATHODES OF THE DIODES ARE BIASED BY THEIR NEGATIVE EXTERNAL LOAD.

CIRCUIT F: RELAY DRIVER. WHEN THE INPUT (20) IS OPEN CIRCUITED, Q12 WILL CONDUCT. THE CCLLECTOR OUTPUT (19) WILL BE 0V. TRANSISTOR Q12 IS CAPABLE OF WORKING WITH A 50 MA, -70V LOAD. A 0V INPUT SIGNAL WILL CUT OFF Q1. CR16 IS USED TO BIAS THE EMITTER OF Q1 IN ORDER TO INSURE CUT-OFF WHEN THE BASE IS GROUNDED.

CIRCUIT BOARD EC 696

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
CR1	177108	10	DIODE,D2	GATE
CR2			DIODE,D2	GATE
CR3			DIODE,D2	GATE
CR4	177611	5	DIODE, IN682	GATE
CR5			DIODE, IN682	GATE
CR6			DIODE, D2	CLAMP
CR7			DIODE, D2	CLAMP
CR8			DIODE,IN682	GATE
CR9			DIODE,D2	CLAMP
CR10			DIODE,D2	CLAMP
CR11			DIODE,D2	GATE
CR12			DIODE, IN682	COUPLING
CR13			DIODE,D2	GATE
CR14			DIODE,D2	GATE
CR15			DIODE,IN682	GATE
CR16	178844	1	VARISTOR, 100A	BIAS
R1	118177	8	RESISTOR, 22000	BIAS
R2			RESISTOR, 22000	BIAS
R3	118144	1	RESISTOR, 2700	INPUT
R4	137442	1	RESISTOR, 1500	BIAS
R5	118724	3	RESISTOR, 220	LOAD
R6	118186	4	RESISTOR, 5600	INPUT
R7	143665	2	RESISTOR, 5100	LOAD
R8			RESISTOR, 5100	LOAD
R9			RESISTOR, 220	LOAD
R10			RESISTOR, 5600	BIAS
R11			RESISTOR, 22000	BIAS
R12	137438	1	RESISTOR, 100	LOAD
R13	137441	3	RESISTOR, 1200	LOAD
R14			RESISTOR, 22000	PRIME
R15	129851	3	RESISTOR, 3300	BIAS
R16			RESISTOR, 1200	LOAD
R17			RESISTOR, 1200	LOAD
R18			RESISTOR, 5600	INPUT
R19			RESISTOR, 5600	INPUT
R20			RESISTOR, 3300	COUPLING
R21			RESISTOR, 3300	COUPLING
R22	137602	2	RESISTOR, 470	BIAS
R23	118188	1	RESISTOR, 39000	BIAS
R24			RESISTOR, 22000	BIAS
R25			RESISTOR, 22000	BIAS
R26			RESISTOR, 22000	PRIME
R27			RESISTOR, 22000	BIAS
R28			RESISTOR, 220	BIAS
R29	129852	1	RESISTOR , 2200	INPUT
R30	143667	1	RESISTOR, 3900	BIAS
R31	118180	1	RESISTOR, 10000	BIAS
R32			RESISTOR, 470	LOAD
R33	137601	1	RESISTOR, 68	OUTPUT
R34	143663	1	RESISTOR, 6200	BIAS
C1	181617	1	CAPACITOR, TANTALUM 1.0MFD.	INTEGRATION
C2	306088	1	CAPACITOR, TANTALUM 68MFD	TIMING
C3	171567	1	CAPACITOR, .005MFD	COUPLING
C4	177332	1	CAPACITOR, .002 MFD	COUPLING
Q1	177105	6	TRANSISTOR, P22	INVERTER
Q2			TRANSISTOR, P22	INVERTER
Q3	193135	1	TRANSISTOR, P24	EMITTER FOLLOWER
Q4	193134	2	TRANSISTOR, N35	EMITTER FOLLOWER
Q5			TRANSISTOR, P22	AMPLIFIER
Q6	177610	1	TRANSISTOR, 2N1671	OSCILLATOR
Q7			TRANSISTOR, P22	INVERTER
Q8			TRANSISTOR, P22	FLIP-FLOP
Q9			TRANSISTOR, P22	FLIP-FLOP
Q10	177106	1	TRANSISTOR, N33	AMPLIFIER
Q11			TRANSISTOR, N35	AMPLIFIER
Q12	177224	1	TRANSISTOR, P41	AMPLIFIER
EC	308454	1	CIRCUIT CARD	
	144495	12	PAD, TRANSISTOR	
		2	STRAP, BARE 24 AWG.	
	300116	3	HAT, TRANSISTOR	

303696

REVISIONS

ISSUE	DATE	AUTH. NO.
1	8-23-67	18728-R
2	3-26-68	95435

SHEET 1

APPROVALS

R AND D	E OF M

E-NUMBER

PROD NO. 303696

DATE 6-15-67

R&D FILE . 5-A148/134AA

DRAWN RJP	CHKD.
ENGD. WRF	APPD.

TELETYPE CORPORATION

303696

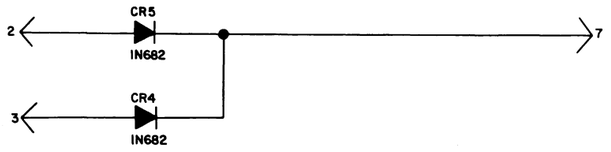
TC 474 (1-66)

CIRCUIT BOARD EC 696

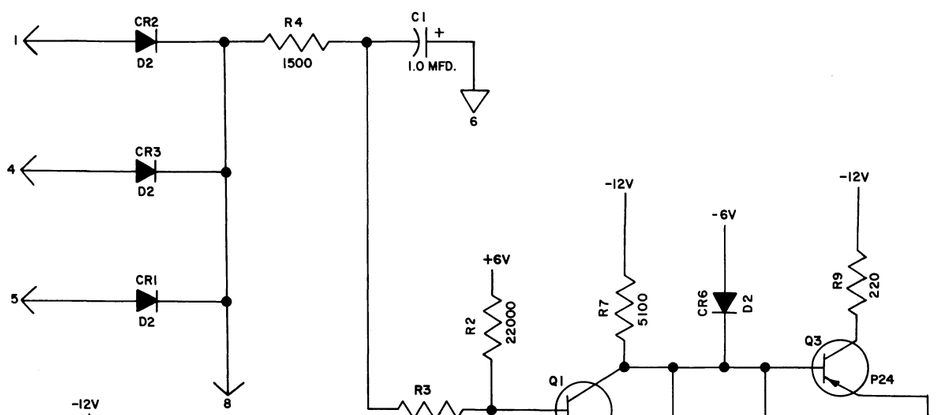
303696

REVISIONS		
ISSUE	DATE	AUTH. NO.
1	8-23-67	18728-R

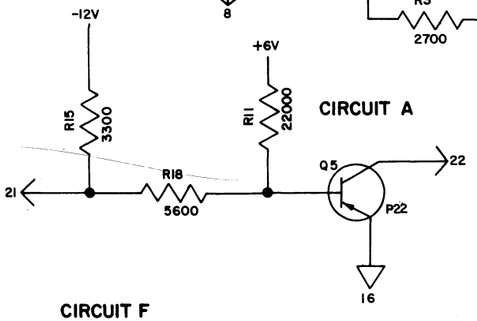
CIRCUIT E



CIRCUIT D



CIRCUIT A



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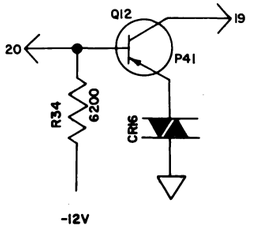
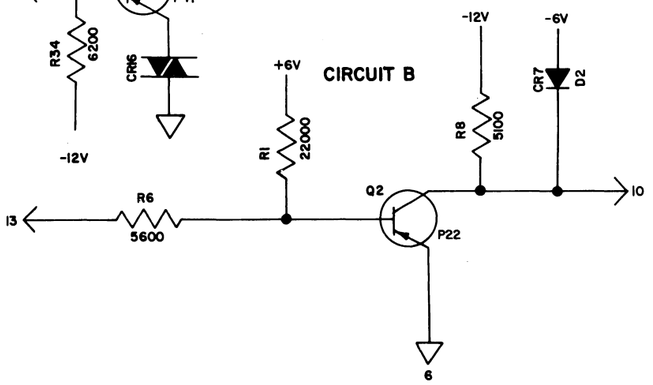
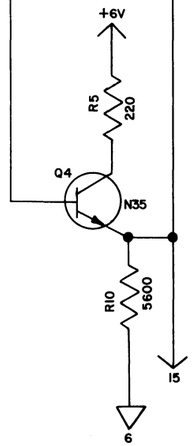


CIRCUIT B





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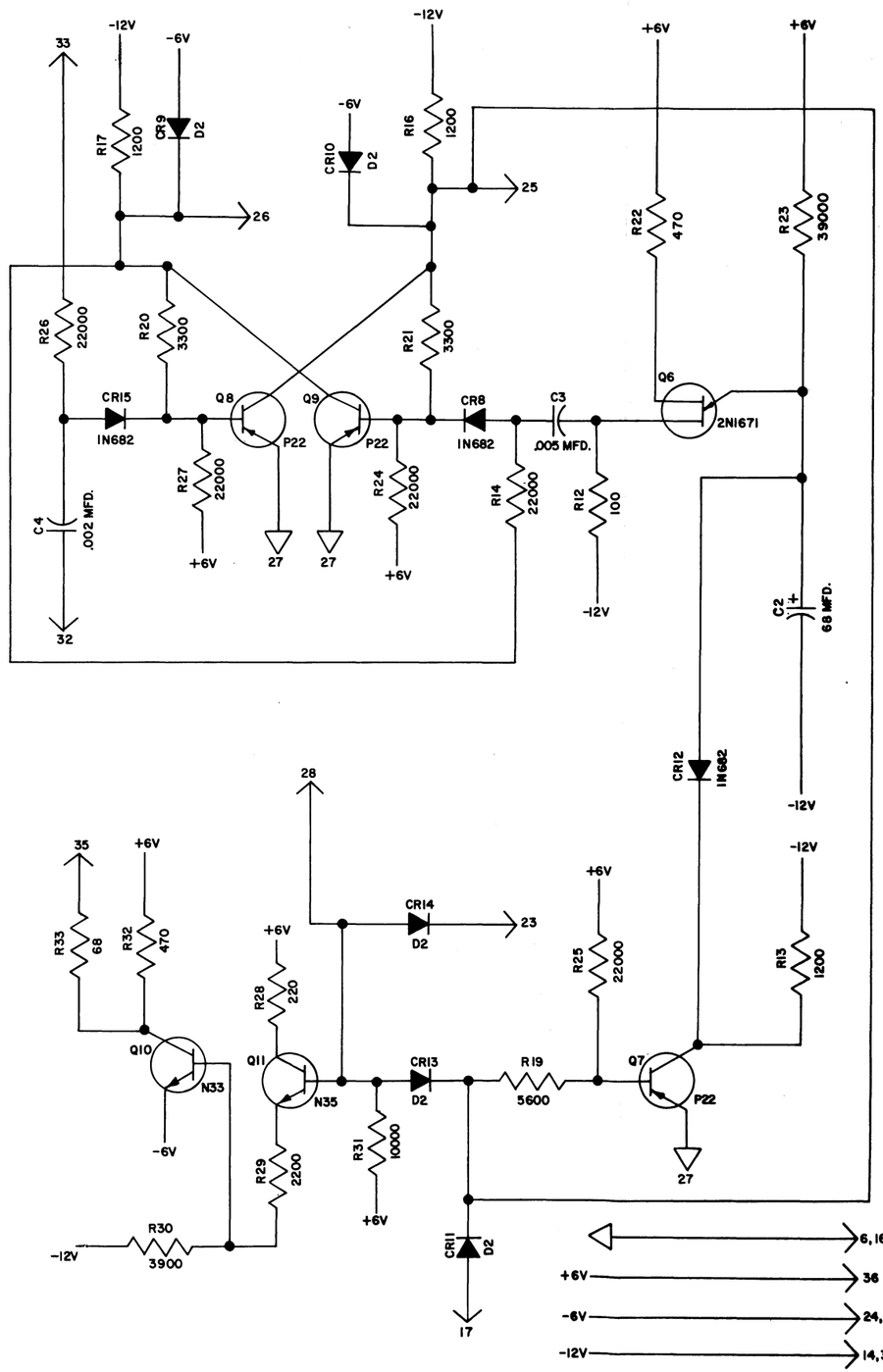


SHEET 2

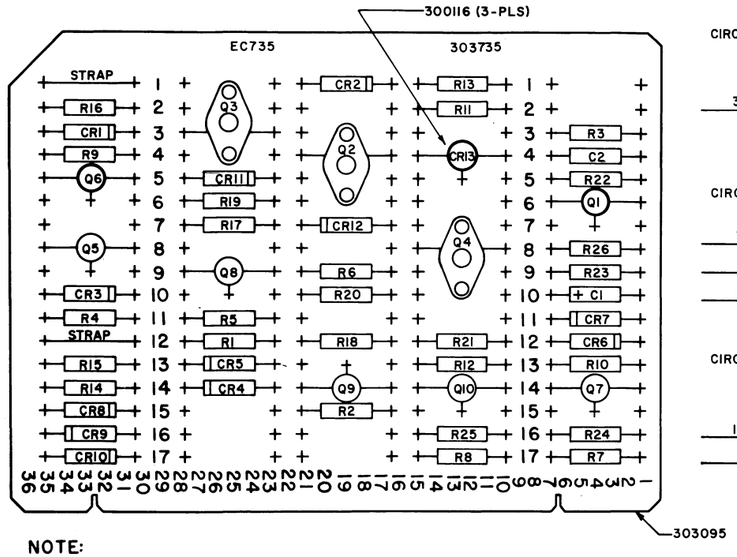
APPROVALS	
D AND R	E OF M

E-NUMBER	
PROD. NO. 303696	
DATE 6-15-67	
P.D. FILE NO. 5-A148/134A	
DRAWN RJP	CHKD.
ENGD. WRF	APPD. YGW

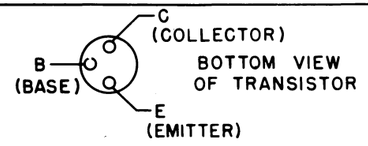
TELETYPE CORPORATION

303696

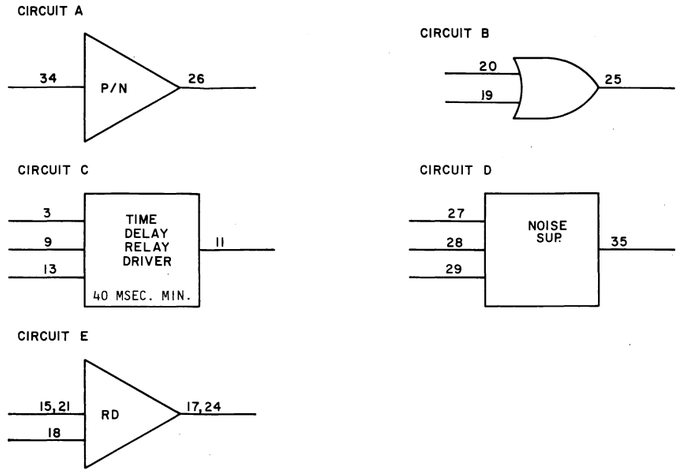
TC 484 (5-68)



NOTE:
REFER TO MR 2001 TYPE II FOR BASIC MARKING INFORMATION



TRANSMITTER START RECOGNIZER LOGIC FOR DATASPEED



THIS CARD CONSISTS OF FIVE CIRCUITS:

CIRCUIT A: POLAR TO NEUTRAL SIGNAL CONVERTER
THE INPUT, PIN 34, WILL CONVERT POSITIVE AND NEGATIVE EIA-RS-232-B INTERFACE SIGNALS TO -6V AND OV RESPECTIVELY AT OUTPUT PIN 26. TRANSISTOR Q5 IS USED TO AMPLIFY POSITIVE SIGNALS WHICH CUT OFF SIGNAL INVERTER AMPLIFIER TRANSISTOR Q6. RESISTOR R4 BIASED TO -12V WILL SUPPLY BASE CURRENT IN ORDER TO SATURATE TRANSISTOR Q6 WHEN A NEGATIVE SIGNAL IS APPLIED TO THE INPUT, PIN 34. AN OPEN CIRCUITED INPUT WILL CAUSE TRANSISTOR Q6 TO CONDUCT, THEREBY GENERATING A OV SIGNAL AT THE OUTPUT.

CIRCUIT B: TWO INPUT OR GATE
THE OUTPUT OF THE GATE, PIN 25 WILL BE OV WHEN ANY OF THE INPUTS ARE OV, THE INPUTS ARE ISOLATED BY DIODES. THE CATHODES OF THE DIODES ARE BIASED BY THEIR NEGATIVE EXTERNAL LOAD.

CIRCUIT C: TIME-DELAY CONTROLLED RELAY DRIVER
WITH INPUT PINS 3 AND 9 AT 0 VOLTS, TRANSISTOR Q7 IS CUT OFF AND ANY CHARGE ON THE TIMING CAPACITOR C1 DISCHARGES THROUGH CR6 AND R10 TO -12V. THE RELAXATION OSCILLATOR IS INHIBITED FROM OSCILLATING. TRANSISTOR Q10 IS SATURATED AND PRESENTS FORWARD BIAS TO THE DRIVER TRANSISTOR Q4. SINCE CR13 IS IN THE OFF CONDITION, THE RELAY LOAD ON Q4 IS DE-ENERGIZED. WHEN THE INPUT SIGNAL, PIN 9, GOES TO -6V, TRANSISTOR Q10 IS CUT-OFF. TRANSISTOR Q7 IS SATURATED AND GROUNDS THE CATHODE OF CR6, THE TIMING CAPACITOR BEGINS CHARGING THROUGH R23 TO +6V, AT A CHARGE OF -1V, THE UNIJUNCTION TRANSISTOR Q1 FIRES. THE OUTPUT AT BASE 1 IS 10 MS WIDE AND 12V HIGH, AND THE PERIOD OF OSCILLATION IS APPROXIMATELY 40 MS. THIS PULSE IS AC-COUPLED TO THE GATE OF SCR CR13. AT THE GATE THE PULSE IS 6V HIGH AND APPROXIMATELY 5 µS WIDE. IF INPUT, PIN 13, IS AT 0 VOLTS, THE SCR TURNS ON.
WHEN THE INPUT, PIN 9, GOES BACK TO 0 VOLTS, TRANSISTOR Q7 IS CUT-OFF, THE TIMING CAPCITOR C1 DISCHARGES AND THE UNIJUNCTION Q1 IS INHIBITED FROM OSCILLATING. THE SCR ELEMENT IS LEFT IN THE ON CONDITION. TRANSISTOR Q10 IS FORWARD BIASED TO SATURATE RELAY DRIVER Q4 AND ENERGIZE THE RELAY LOAD.
TO RESET THE RELAY-DRIVER AND TURN OFF THE SCR, OPEN-CIRCUIT INPUT PIN 13.
TO INHIBIT THIS RELAY-DRIVER OPERATION, OPEN-CIRCUIT (-48V) INPUT PIN 3.

CIRCUIT D: RELAY COIL NOISE SUPPRESSION
THESE THREE DIODES ARE USED FOR SUPPRESSION OF INDUCTIVE NOISE OF RELAY LOADS. DIODES CR8, CR9, AND CR10 PREVENT NOISE PULSES MORE NEGATIVE THAN -48 VOLTS FROM AFFECTING THE RELAY COILS.

CIRCUIT E: RELAY DRIVERS
THIS CIRCUIT CONSISTS OF TWO IDENTICAL TWO-STAGE COMMON EMITTER AMPLIFIERS. THE OUTPUT TRANSISTORS ARE A MEDIUM POWER TYPE CAPABLE OF DELIVERING A LOAD CURRENT OF UP TO 0.25 AMPERES AT -48 VOLTS.
WITH THE EMITTERS GROUNDED, AND -6V APPLIED AT THE INPUTS (PINS 21 AND 15), THE INPUT TRANSISTORS (Q8 AND Q9) ARE CUT OFF APPLYING +6V TO CUT OFF THE OUTPUT TRANSISTORS (Q3 AND Q2). WHEN OV IS APPLIED TO THE INPUTS, THE INPUT TRANSISTORS ARE FORWARD BIASED DRIVING THE INPUT OF THE OUTPUT TRANSISTORS NEGATIVE TO SATURATE IT.
WITH THE EMITTERS OPEN-CIRCUITED, THE OUTPUT TRANSISTORS WILL REMAIN CUT-OFF REGARDLESS OF INPUT SIGNALS.
THESE RELAY DRIVERS MAY BE USED INDEPENDENTLY OR IN COMBINATION.

CIRCUIT CARD EC 735

REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1-R3	137442	3	RESISTOR, 1500 OHMS	CURRENT LIMIT
R4-R6	118146	3	RESISTOR, 4700 OHMS	BIAS
R7-R8	118146	2	RESISTOR, 4700 OHMS	CURRENT LIMIT
R9-R12	137441	4	RESISTOR, 1200 OHMS	COLLECTOR LOAD
R13	137440	1	RESISTOR, 1000 OHMS	BIAS
R14	118180	1	RESISTOR, 10000 OHMS	CURRENT LIMIT
R15	118159	1	RESISTOR, 150000 OHMS	BIAS
R16	118724	1	RESISTOR, 220 OHMS	COLLECTOR LOAD
R17-18	129852	2	RESISTOR, 2200 OHMS	COLLECTOR LOAD
R19-21	118725	3	RESISTOR, 270 OHMS	CURRENT LIMIT
R22	137438	1	RESISTOR, 100 OHMS	BIAS
R23	120121	1	RESISTOR, 62000 OHMS	BIAS
R24	143664	1	RESISTOR, 7500 OHMS	BIAS
R25	118177	1	RESISTOR, 22000 OHMS	BIAS
R26	137602	1	RESISTOR, 470 OHMS	BIAS
C1	179529	1	CAPACITOR, 1 MFD	TIMING
C2	177332	1	CAPACITOR, .002 MFD	COUPLING
CR1-2	177108	2	DIODE, D2	CLAMP
CR3	177611	8	RECTIFIER IN682	CLAMP
CR4-7	177611		SAME AS CR3	STEERING
CR8-10	177611		SAME AS CR3	NOISE SUPPRESSION
CR11-12	181619	2	DIODE, IN482	CLAMP
CR13	303096	1	SILICON CONT. RECTIFIER	CONTROL
Q1	177610	1	TRANSISTOR, 2N1671	OSCILLATOR
Q2-4	193250	3	TRANSISTOR, 2N3213	RELAY DRIVER
Q5	177422	1	TRANSISTOR, N-39	EMITTER FOLLOWER
Q6-7	177105	2	TRANSISTOR, P-22	CONVERTER
Q8-10	177106	3	TRANSISTOR, N-33	AMPLIFIER
	303095	1	CIRCUIT CARD, ETCHED	
		2	STRAP, 24 AWG	
	144495	11	PAD, TRANSISTOR	
	300116	3	TRANSISTOR, CAPS	

303735

REVISIONS

ISSUE	DATE	AUTH. NO.
1	9-4-68	18998-R
2	3-27-69	98521

SHEET 1 OF 2

APPROVALS

R AND D	E OF M

E-NUMBER

PROD NO. 303735

DATE 6/20/68

R&D FILE 2-96.134.184A

DRAWN C.J.R.	CHKD.
ENGD. E.F.R.	APPD.

TELETYPE
CORPORATION

303735

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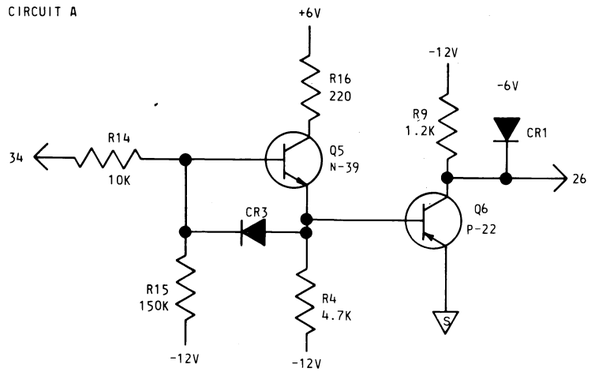
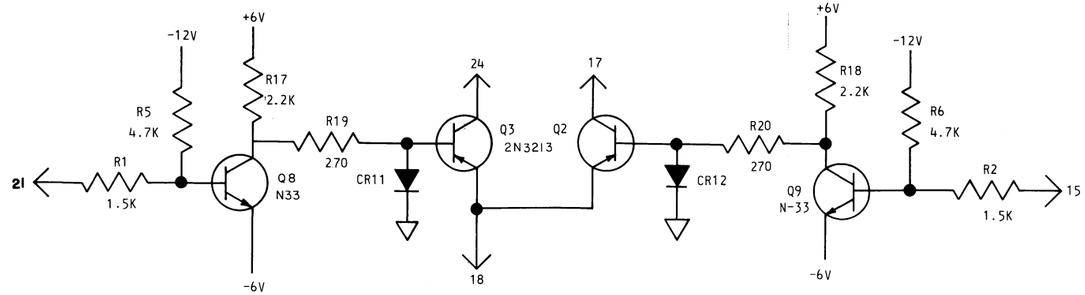
REVISIONS		
ISSUE	**DATE**	**AUTH. NO.**
1	9-4-68	18998-R

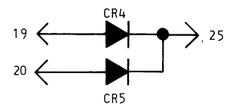
CIRCUIT A



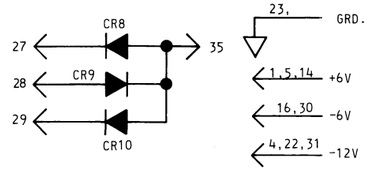
CIRCUIT E

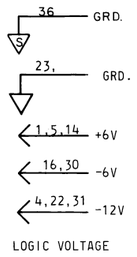


CIRCUIT B



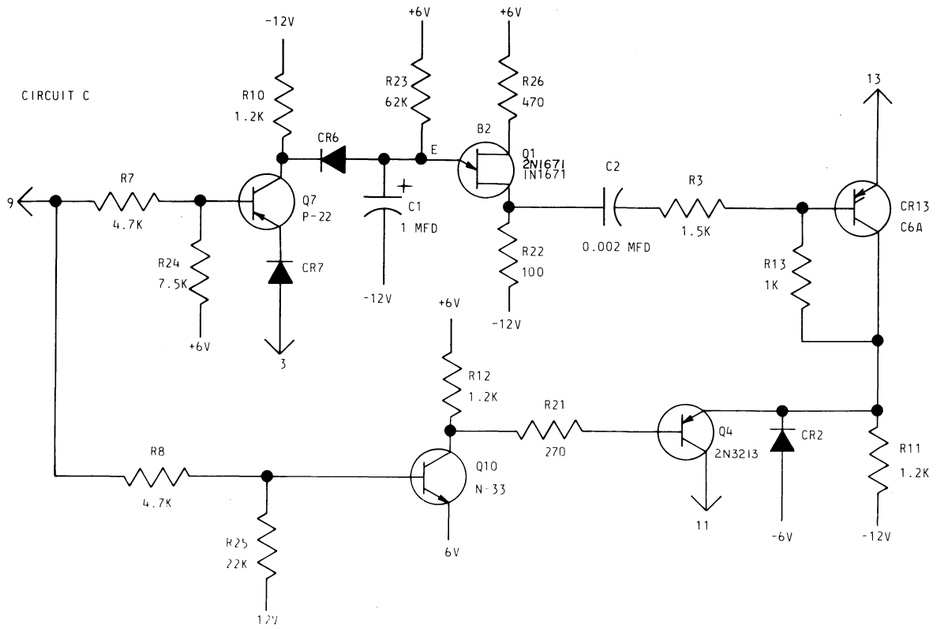
CIRCUIT D





LOGIC VOLTAGE

CIRCUIT C



SHEET 2 OF 2

APPROVALS	
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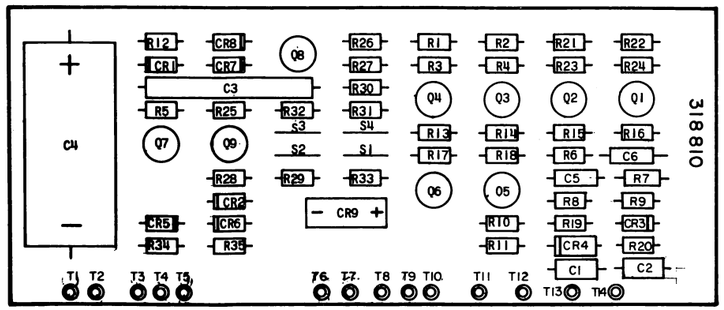
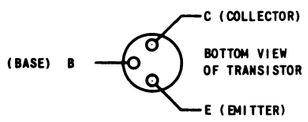
	C-1
E-NUMBER	
PROD. NO. 303735	
DATE 6-20-68	
P.D. FILE NO. 2.96.134.184A	
DRAWN CJR	CHKD.
ENGD. EFR	APPD.

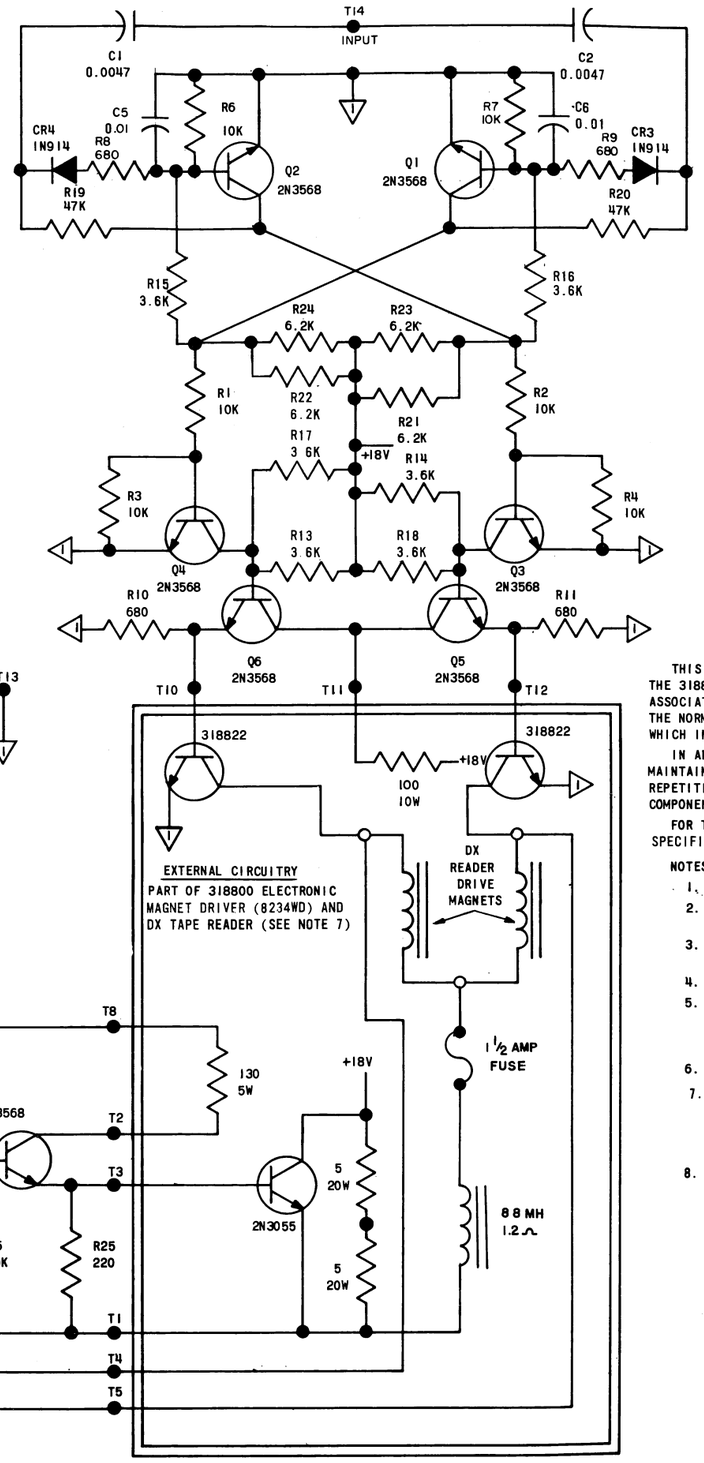
TELETYPE CORPORATION

303735

TC 434 (2-69)







CIRCUIT BOARD				
REF. DESIG.	TELETYPE PART NO.	TOTAL QTY.	NAME AND DESCRIPTION	LOCATING FUNCTION
R1-7	320275	7	RESISTOR 10K OHMS	
R8-11	315971	4	RESISTOR 680 OHMS	
R12-18	315958	7	RESISTOR 3.6K OHMS	
R19-20	318801	2	RESISTOR 47K OHMS	
R21-24	315986	4	RESISTOR 6.2K OHMS	
R25	318802	1	RESISTOR 220 OHMS	
R26-29	315953	4	RESISTOR 1.2K OHMS	
R30	321545	1	RESISTOR 12K OHMS	
R31	315959	1	RESISTOR 4.7K OHMS	
R32	318803	1	RESISTOR 2.4K OHMS	
R33	315951	1	RESISTOR 560 OHMS	
R34-35	321508	2	RESISTOR 100K OHMS	
C1-2	300384	2	CAPACITOR 0.0047 MFD	
C3	171579	1	CAPACITOR 0.47 MFD	
C4	318806	1	CAPACITOR 1300 MFD	
C5-6	181618	2	CAPACITOR 0.01 MFD	
CR1-4	197464	4	DIODE IN914	
CR5-6	181654	2	DIODE IN647	
CR7	182774	1	ZENER 4.7V±5%, 1WATT	
CR8	321161	1	ZENER IN748A	
CR9	181886	1	BRIDGE RECTIFIER	
Q1-9	315930	9	TRANSISTOR 2N3568	
S1-4		4	24 AWG BARE WIRE STRAP	
T1-14	137471	14	TERMINAL LUGS	
EC	318809	1	CIRCUIT CARD	

MAGNET DRIVER

THIS IS A MAGNET DRIVER CONTROL CARD DESIGNED TO WORK IN CONJUNCTION WITH THE 318800 ELECTRONIC MAGNET DRIVER FOR DX TAPE READERS. Q1 AND Q2 AND ASSOCIATED COMPONENTS FORM AN AC TRIGGERED (NEGATIVE GOING TRANSITION) BINARY. THE NORMAL AND INVERTED OUTPUTS DRIVE TRANSISTORS Q4,Q6 AND Q3,Q5, RESPECTIVELY, WHICH IN TURN ALTERNATELY DRIVE TWO EXTERNAL POWER TRANSISTORS.

IN ADDITION, AN AUXILIARY CONTROL CIRCUIT WITH POWER SUPPLY IS PROVIDED TO MAINTAIN A CONSTANT CURRENT TO THE READER DRIVE MAGNETS REGARDLESS OF THE INPUT REPETITION RATE. THIS CONTROL CIRCUIT CONSISTS OF Q7,Q8, AND Q9 AND ASSOCIATED COMPONENTS AND IS TRIGGERED BY EACH OPERATION OF THE READER MAGNETS.

FOR THE DETAILED DESCRIPTION AND THEORY OF OPERATION: REFERENCE SPECIFICATION FOR TELETYPE CORP. EMPLOYEES ONLY 61,243S.

NOTES:

1. ALL VOLTAGES DC UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS 1/4 WATT, ±5%, AND RESISTANCE VALUES IN OHMS UNLESS OTHERWISE SPECIFIED.
3. ALL CAPACITANCE VALUES IN MICROFARADS, ±10% UNLESS OTHERWISE SPECIFIED.
4. ALL INDUCTANCE VALUES IN MILLIHENRIES, ±15%.
5. THERE ARE TWO DIFFERENT COMMON RETURNS:
   THE SYMBOL ▽ REFERS TO THE 18V DC SUPPLY.
   THE SYMBOL ▽ REFERS TO THE 12.5V DC SUPPLY.
6. REFER TO 318809 FOR BASIC MARKING INFORMATION
7. REFERENCE WIRING DIAGRAMS FOR DX TAPE READERS:
   DX1 - 8068WD
   DX3 - 8051WD
   DX4 - 8070WD
8. STRAPS S1 TO S4 ARE TO BE CUT PER MANUFACTURING ADJUSTMENT ROUTINE.

318810

REVISIONS

ISSUE	DATE	AUTH. NO.
1	7-13-67	18412-R
2	9-21-67	93901C
3	7-5-68	95948
4	10-30-68	96207

MAGNET DRIVER CONTROL CARD

APPROVALS

D AND R	E OF M

E-NUMBER

PROD. NO. 318810

DATE 10-28-66

R.D. FILE NO. 6-47/68.138AA

DRAWN K.J.R. CHKD.

ENGD. J.M.G. APPD.

TELETYPE CORPORATION

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