ORDVAC MANUAL

Volume TWO

Circuit and Logical Diagrams

1952

UNIVERSITY OF ILLINOIS
for
BALLISTIC RESEARCH LABORATORIES

LIST OF DRAWINGS

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130	Clear Driver	
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192	Clear Driver Driver RI	
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382	Fast Input BC Enable	
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362	RIII Register 2^{-10} to 2^{-19}	
363	RIII Register 2^{-20} to 2^{-29}	
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372	Slave Tube	
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189	Shift Control	A
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345	Start and Print Relay Chassis	
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341	Store Operation Sequence	
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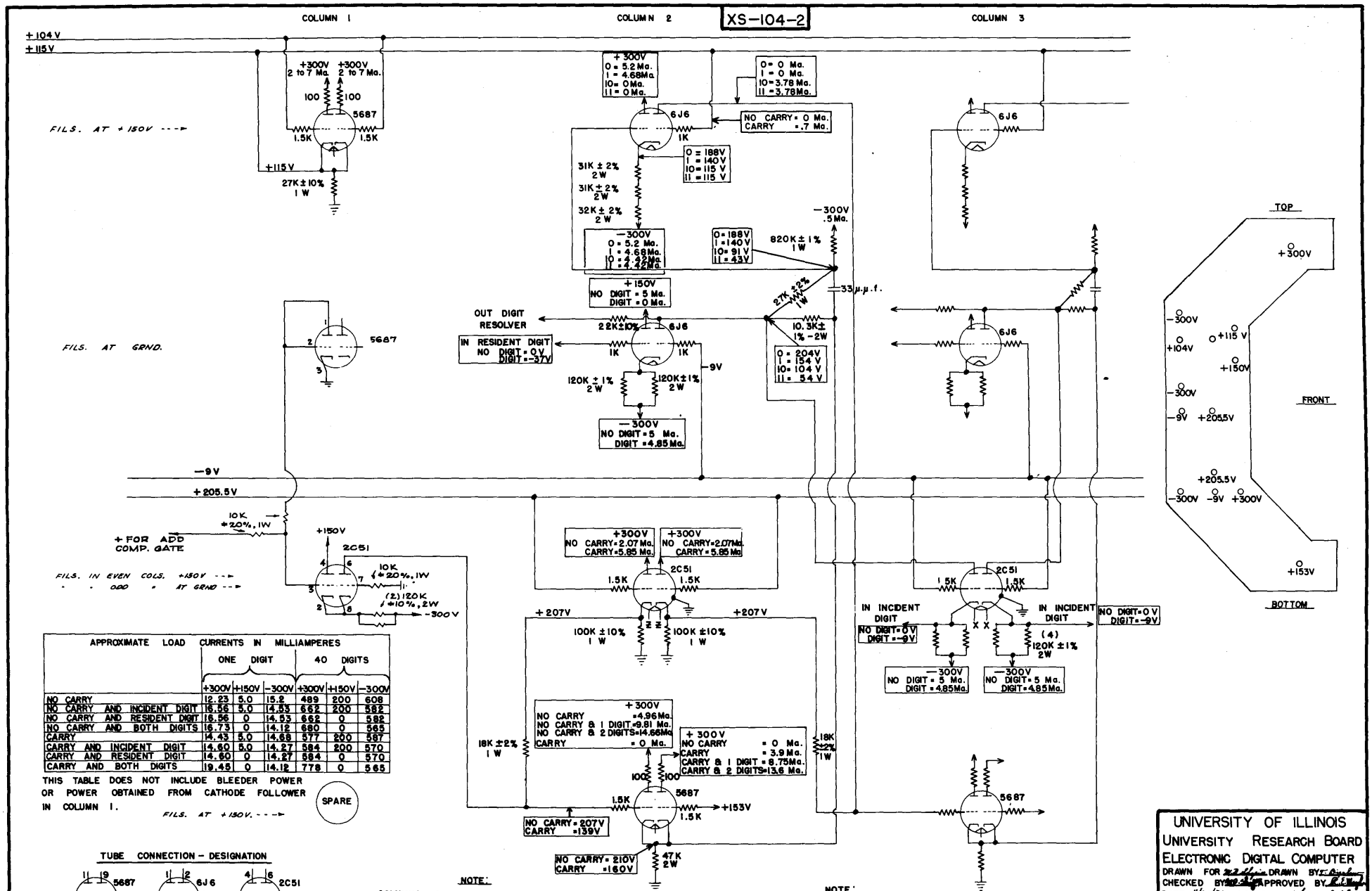
159	Verifier Circuit Revised	
196	Video Amplifier and Williams Tube Control	W
370	WIV Clock	
261	Williams IB Pulse Cathode Follower	
209	Wiring-15 Type Perforator	
314	Yellow Gate Sequence	



APPROXIMATE LOAD CURRENTS IN MILLIAMPERES

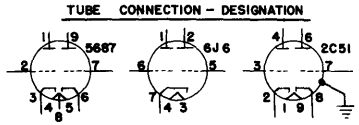
	ONE DIGIT			40 DIGITS		
	+300V	+150V	−300V	+300V	+150V	−300V
NO CARRY	12.23	5.0	15.2	489	200	608
NO CARRY AND INCIDENT DIGIT	16.56	5.0	14.53	662	200	582
NO CARRY AND RESIDENT DIGIT	16.56	0	14.53	662	0	582
NO CARRY AND BOTH DIGITS	16.73	0	14.12	680	0	565
CARRY	14.43	5.0	14.68	577	200	587
CARRY AND INCIDENT DIGIT	14.60	5.0	14.27	584	200	570
CARRY AND RESIDENT DIGIT	14.60	0	14.27	584	0	570
CARRY AND BOTH DIGITS	19.45	0	14.12	778	0	565

THIS TABLE DOES NOT INCLUDE BLEEDER POWER OR POWER OBTAINED FROM CATHODE FOLLOWER IN COLUMN 1.

FILS. AT +150V. ---→

SPARE

TUBE CONNECTION – DESIGNATION

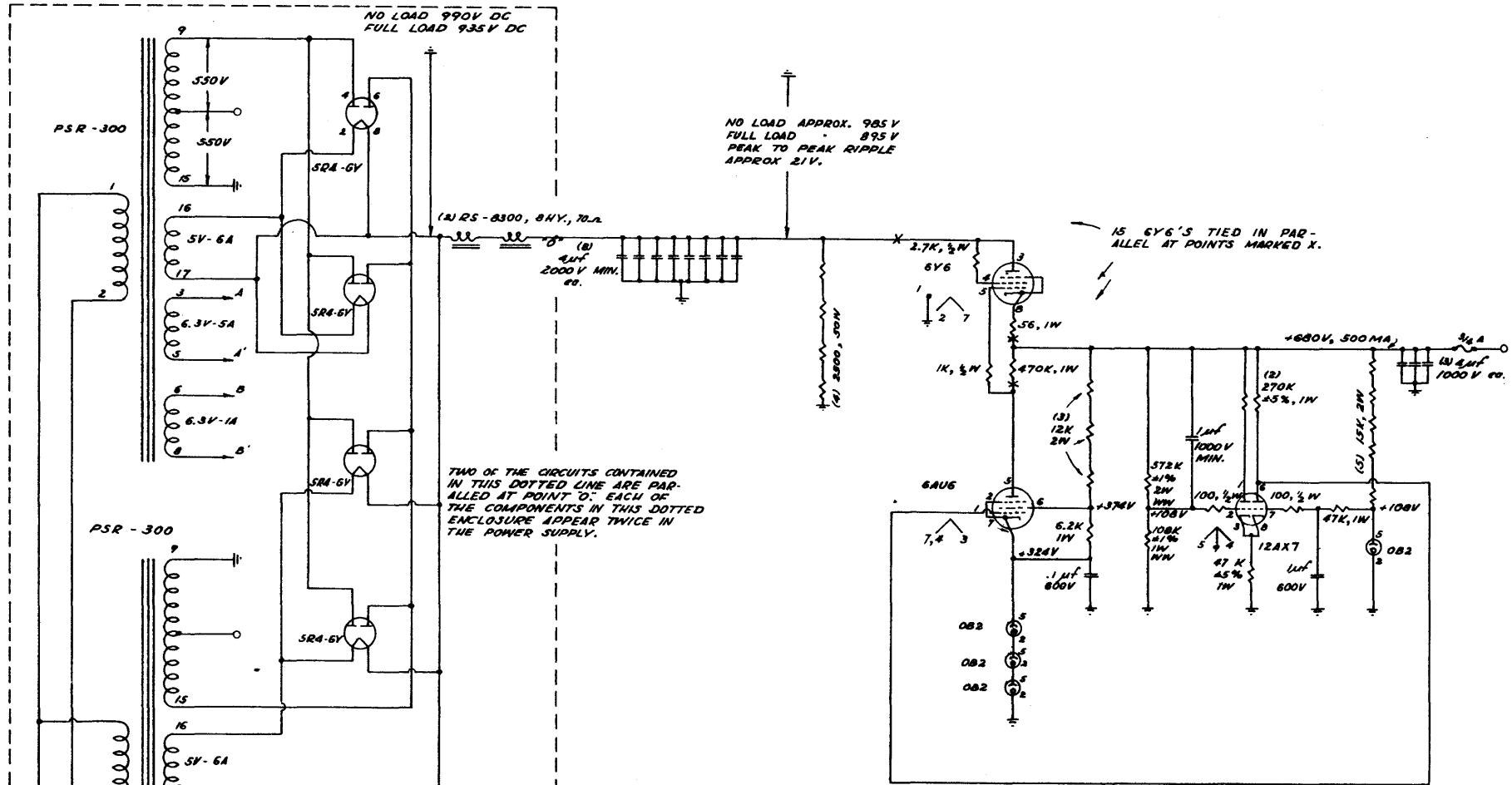


NOTE:
COLUMNS 2-4-6-8-10 ARE IDENTICAL.
COLUMNS 3-5-7-9-11 ARE IDENTICAL.

NOTE:
RESISTORS — ±20%, ½ WATT, UNLESS SPECIFIED.
CONDENSERS — ±20%, 600 V.

REVISED 10-24-51

UNIVERSITY OF ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR [illegible] DRAWN BY: [illegible]
CHECKED BY [illegible] APPROVED BY R.F. Mag
DATE 11/21/51 LOCATION [illegible]
TITLE ADDER CIRCUIT
DWG. NO. XS-104-2



~ NOTES ~

1. A-A' SUPPLIES 4 6Y6 FILAMENTS.
   B-B' " 12AX7 DIF. AMPLIFIER TUBE FILAMENTS.
   C-C' " 4-6Y6 FILAMENTS.
   D-D' " 6AU6 CONTROL TUBE FILAMENTS.
2. THREE OF PSP-300 6.3V-5A WINDINGS FURNISH FILAMENT CURRENT FOR 4 OF THE 6Y6 SERIES ELEMENTS AND THE FOURTH PSP-300, 6.3V-5A WINDING SUPPLIES 3 6Y6'S
3. REDRAWN FROM DRWG. OF SAME NO. DATED JAN. 3, 1950.

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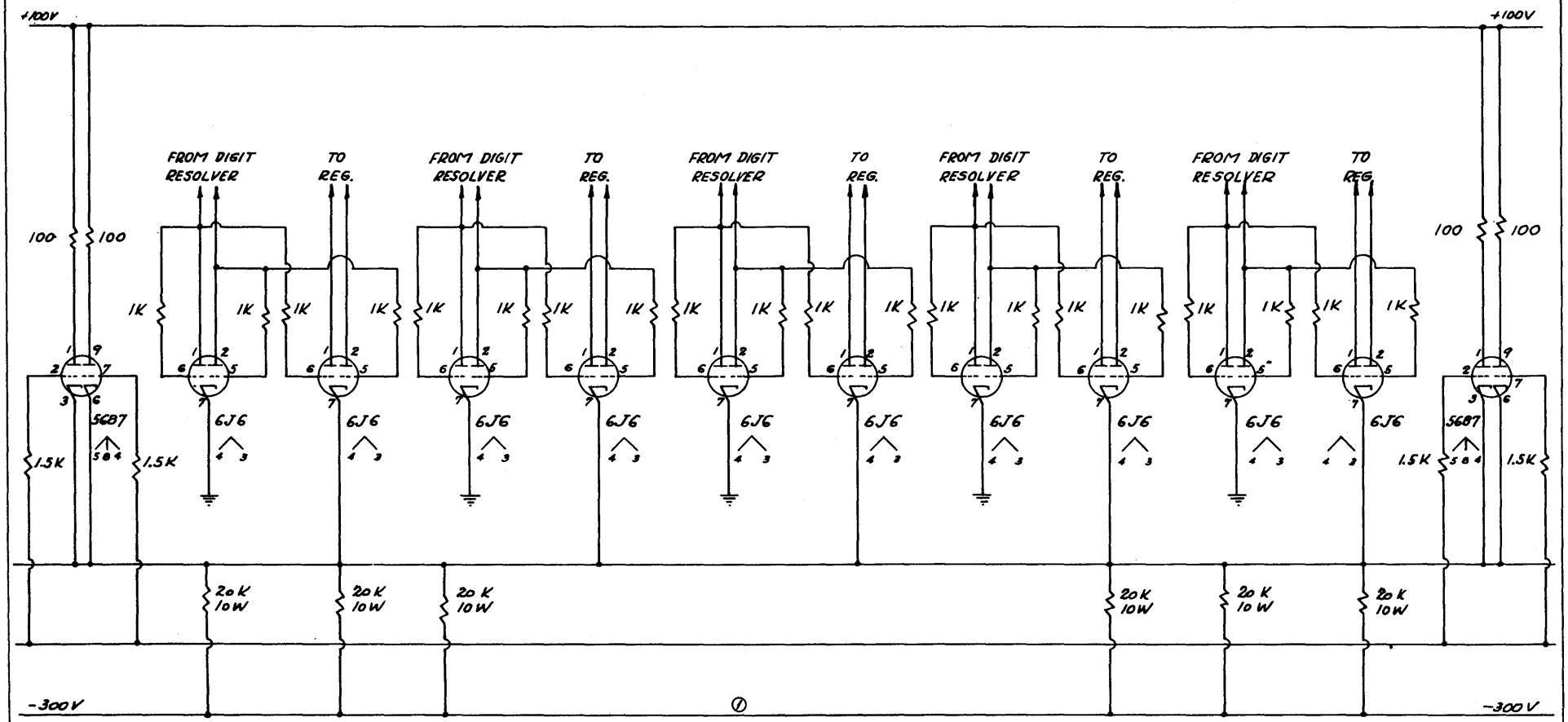
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR J.W. DRAWN BY HANK W.
CHECKED J.M.W. APPROVED R.E. Meagher
TITLE REGULATED POWER SUPPLY #7, +680V
DATE DEC. 4, 1950

M-126



~ NOTE ~
ALL RESISTORS NOT SPECIFIED ARE ½W, ± 20%.
ALL FILAMENTS AT GROUND.

REDRAWN FROM "DRWG. #127 - 1-5-50."

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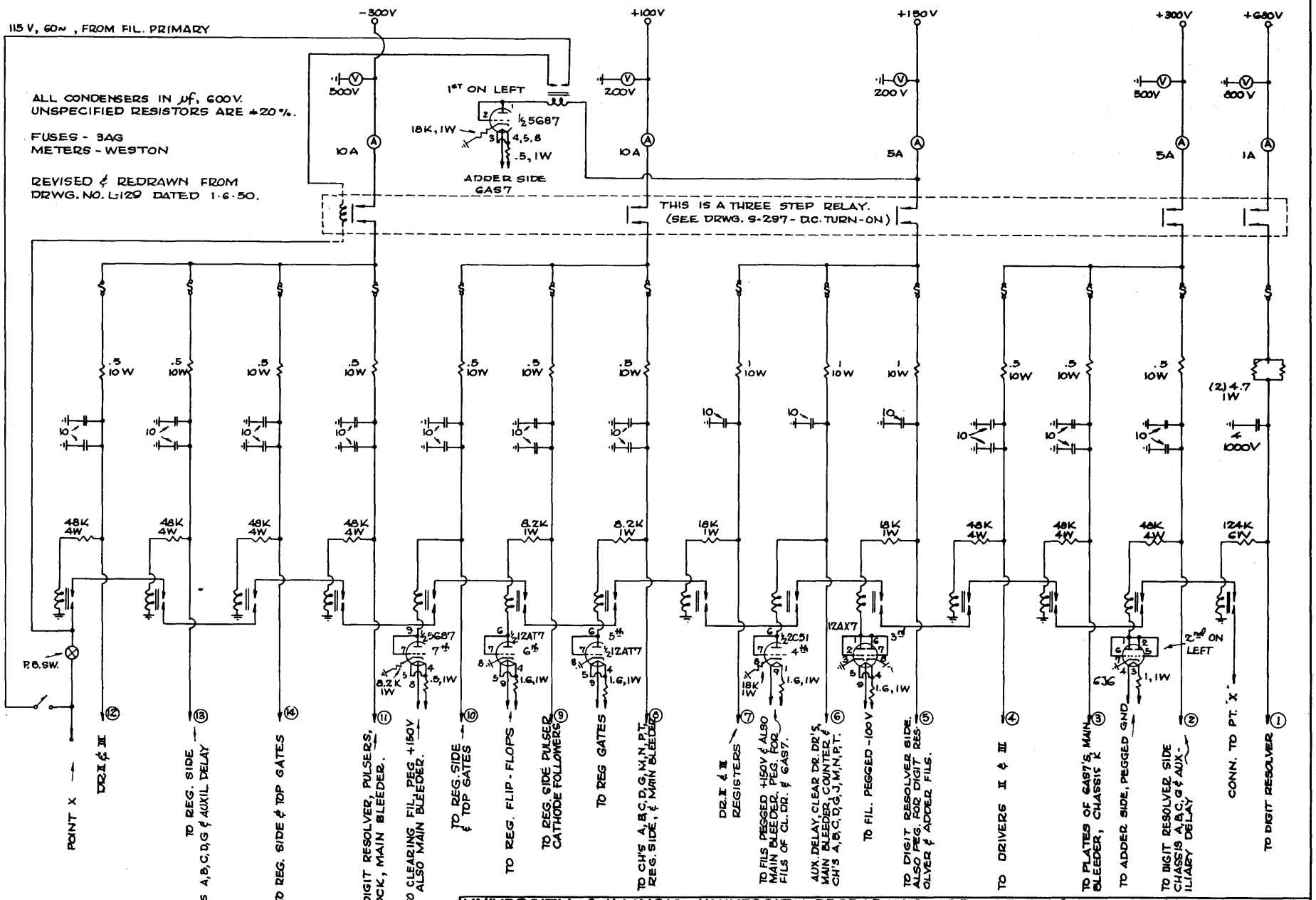
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR W. Jones DRAWN BY H.M.W
CHECKED BY W. Jones APPROVED BY R.E. Wagner
TITLE GREEN GATE CHASSIS
DATE 8-11-50
M-127



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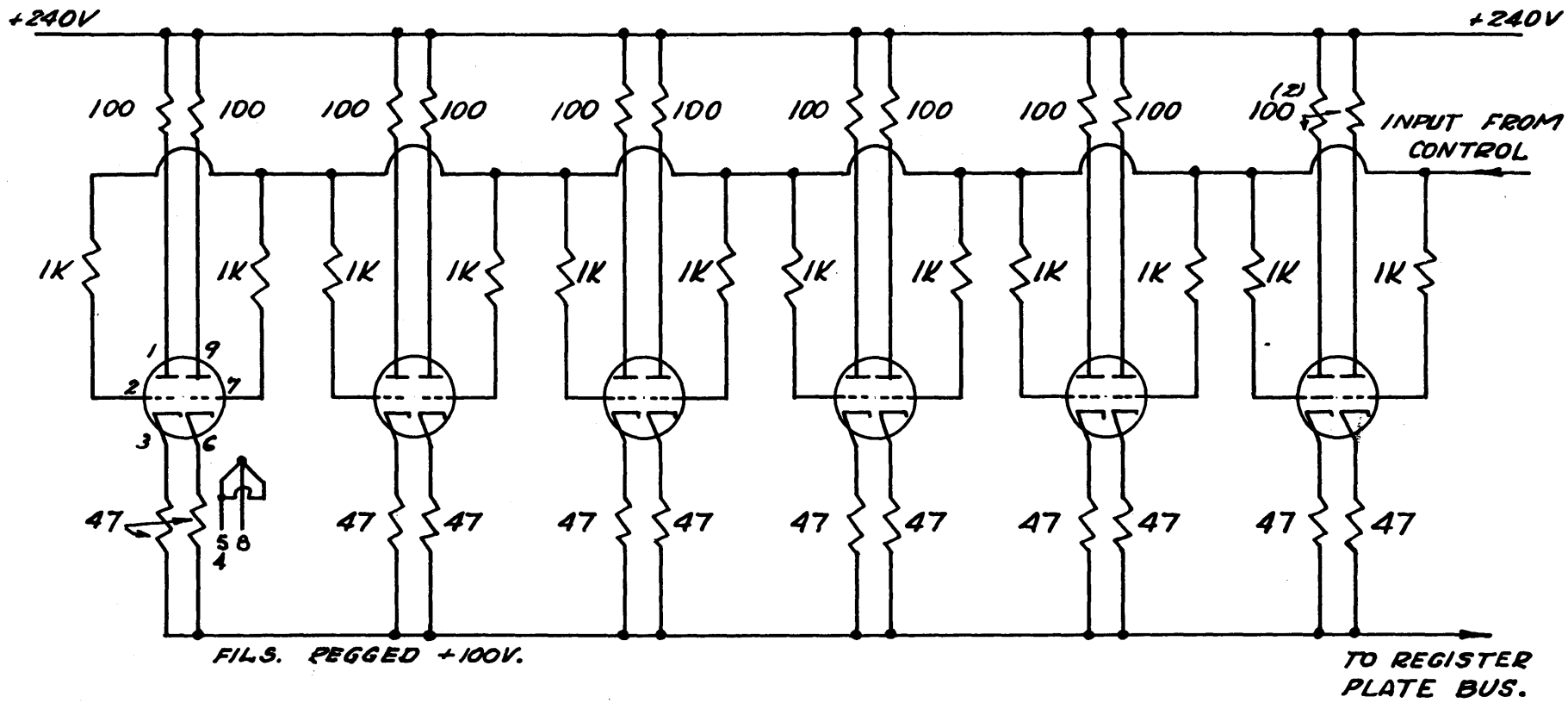
FOR WEJ BY HMW CHECKED W.E.J. APPROVED R.E. Meagher DATE 11-13-51

TITLE – D. C. CONTROL & DISTRIBUTION FOR ORDVAC

M-129



~NOTES~

1. ALL RESISTORS ARE ½ W ℄ ±
2. ALL TUBES ARE 5687'S.
3. ALL FIL. CONN. TO 6.3V AS SHOWN ON FIRST TUBE.

REDRAWN FROM DRWG. #130 DATED 1-9-50 BY T.B.

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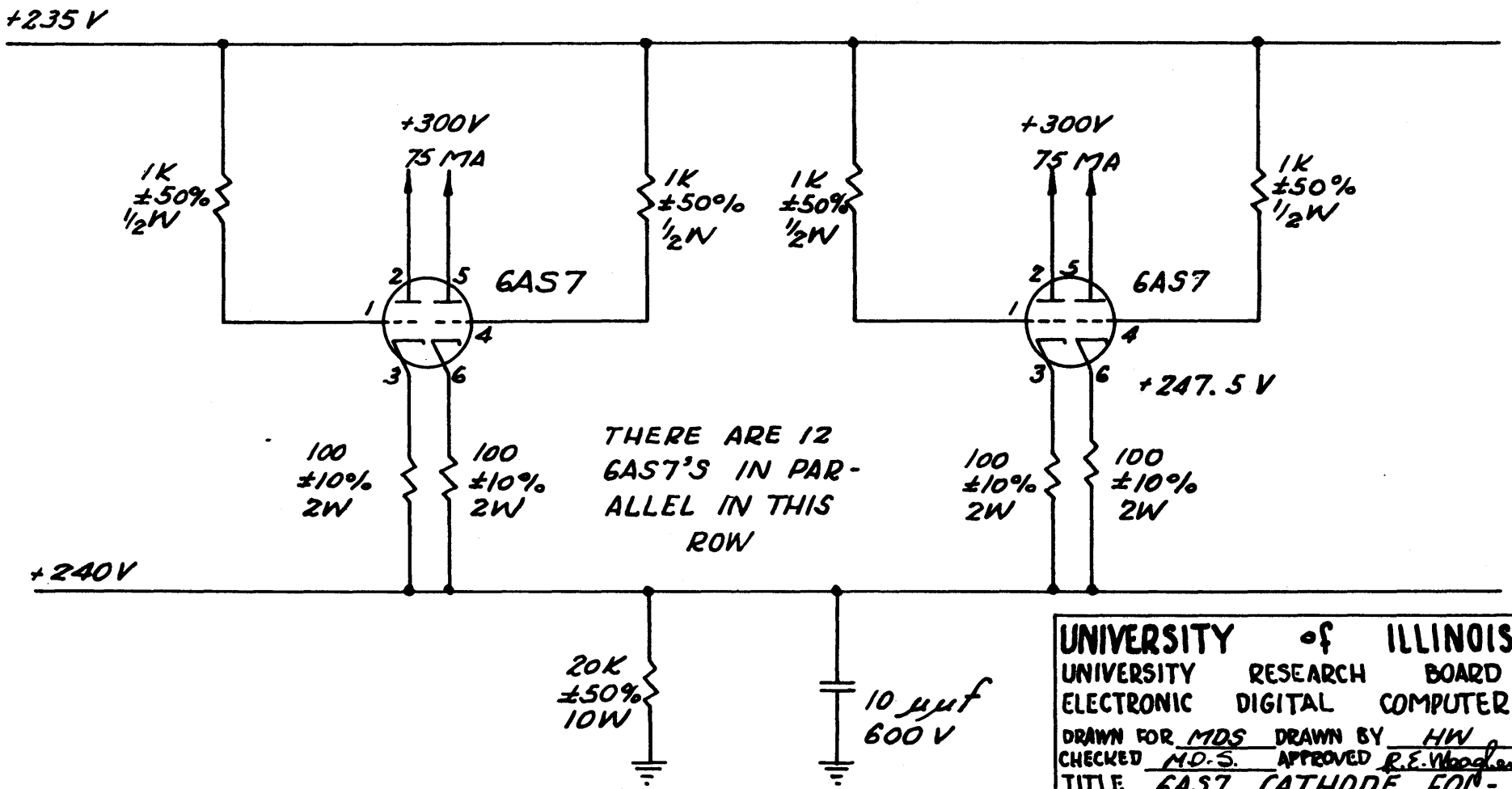
DRAWN FOR W.J. DRAWN BY HW
CHECKED W.J. APPROVED R.E. Meagher

TITLE CLEAR DRIVER

DATE 8-11-50 DRWG. Nº 130

REDRAWN FROM DRWG. Nº 139 DATED 3-7-50



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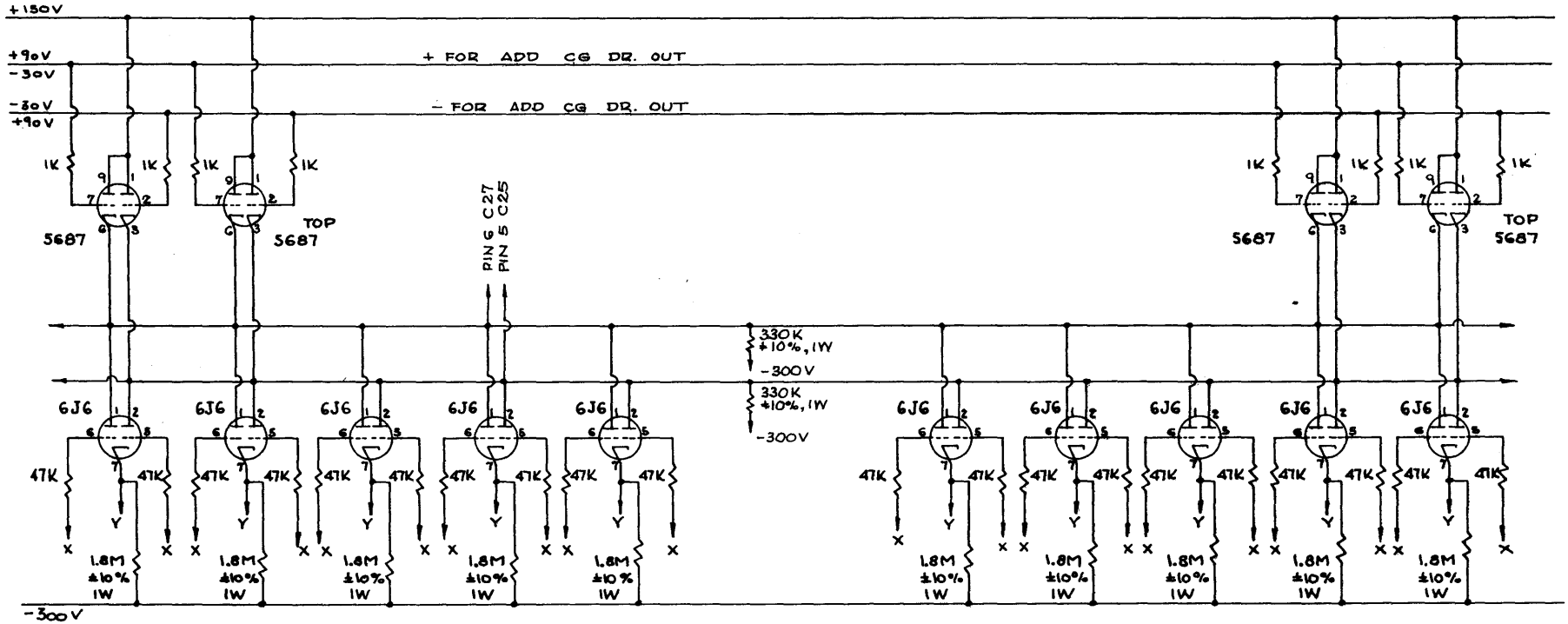
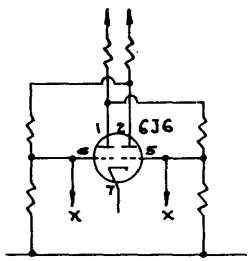
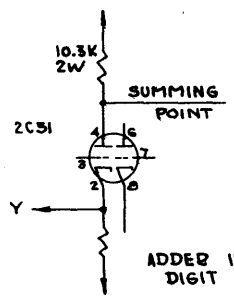
DRAWN FOR MDS DRAWN BY HW
CHECKED M.D.S. APPROVED R.E. Woodley
TITLE 6AS7 CATHODE FOL-
LOWER, ±240 V SUPPLY
DATE 8-14-50 DRWG. Nº 138





REGISTER TOGGLE



ADDER INCIDENT DIGIT GATE

~NOTES~

1. RESISTORS NOT SPECIFIED ARE ½W, ± 20%.
2. REDRAWN FROM DRWG. No. 155 DATED 4-12-50.
3. ALL FILS. AT GROUND.

★REVISED 1-3-52

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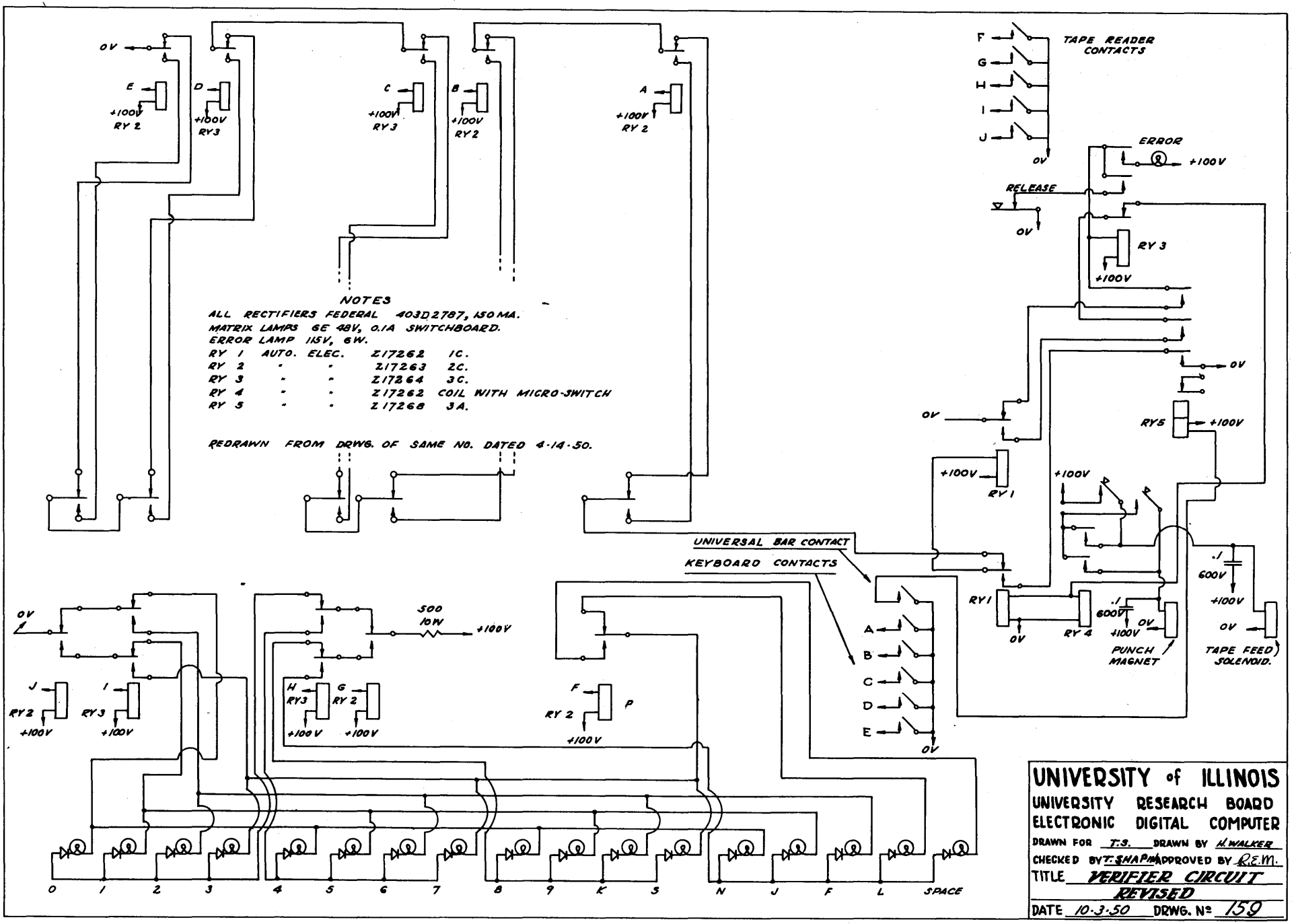
DRAWN FOR M.D.S. DRAWN BY H.W.
CHECKED BY M.D.S. APPROVED BY R.E. Meagher
TITLE COMPLEMENT GATE
DATE 8-14-50
M-155



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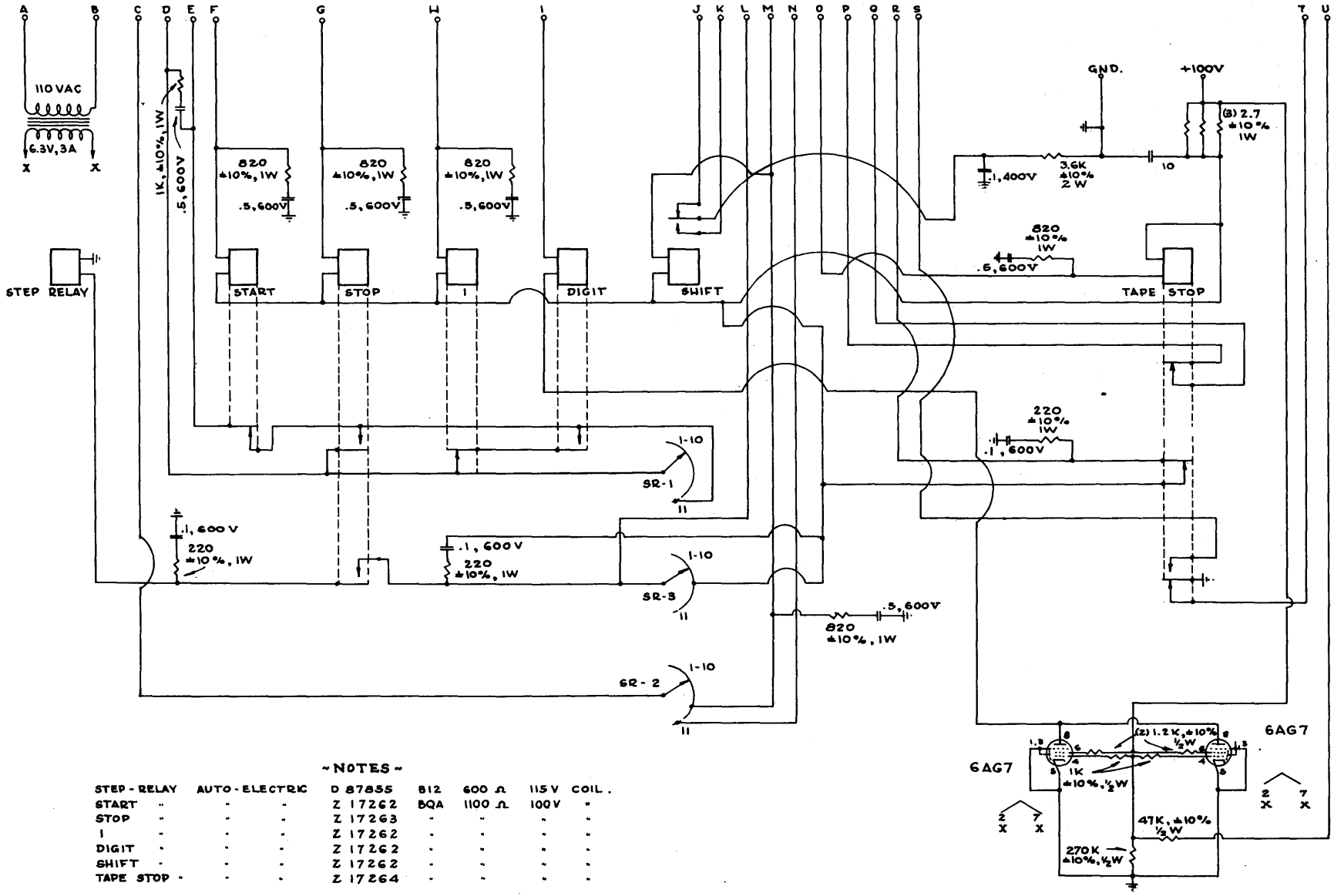
DRAWN FOR T.S. DRAWN BY H. WALKER
CHECKED BY T. SHAPIRO APPROVED BY R.E.M.

TITLE VERIFIER CIRCUIT REVISED

DATE 10-3-50 DRWG. Nº 159



~NOTES~

STEP-RELAY	AUTO-ELECTRIC	D 87855	B12	600 Ω	115 V	COIL.
START "	- -	Z 17262	BQA	1100 Ω	100V	"
STOP "	- -	Z 17263	-	"	-	-
1 -	- -	Z 17262	-	-	-	-
DIGIT -	- -	Z 17262	-	-	-	-
SHIFT -	- -	Z 17262	-	-	-	-
TAPE STOP -	- -	Z 17264	-	-	-	-

• REVISED & REDRAWN FROM DRWG. OF SAME NO. DATED 5-23-50.

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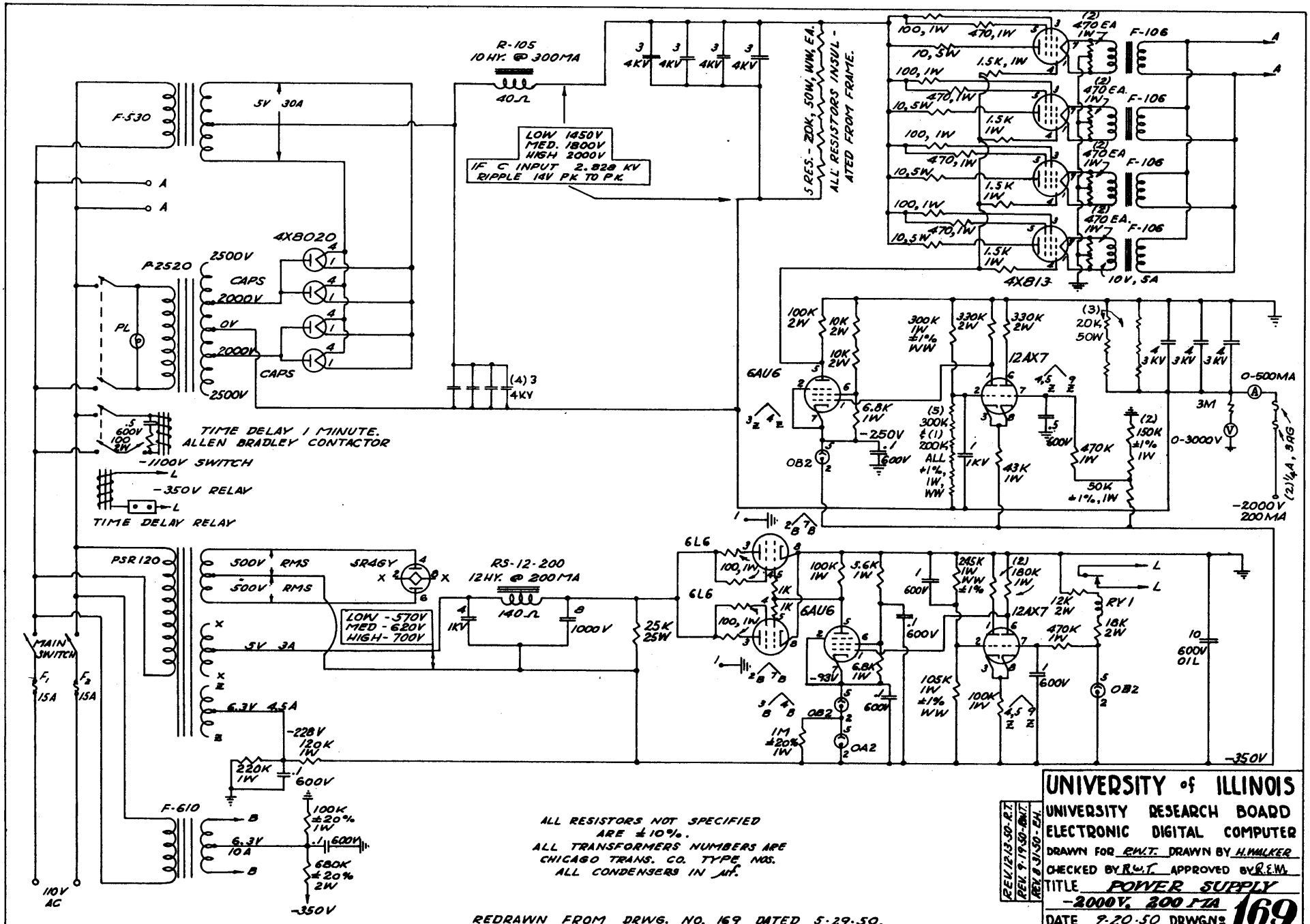
FOR T. S. BY H.M.W. CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 5-8-51

TITLE - INPUT-OUTPUT RELAY CIRCUIT

M-167



ALL RESISTORS NOT SPECIFIED ARE ±10%.
ALL TRANSFORMERS NUMBERS ARE CHICAGO TRANS. CO. TYPE NOS.
ALL CONDENSERS IN μf.

REDRAWN FROM DRWG. NO. 169 DATED 5-29-50.

REV. 12-13-50-R.T.
REV. 9-19-50-R.W.T.
REV. 8-31-50-E.H.

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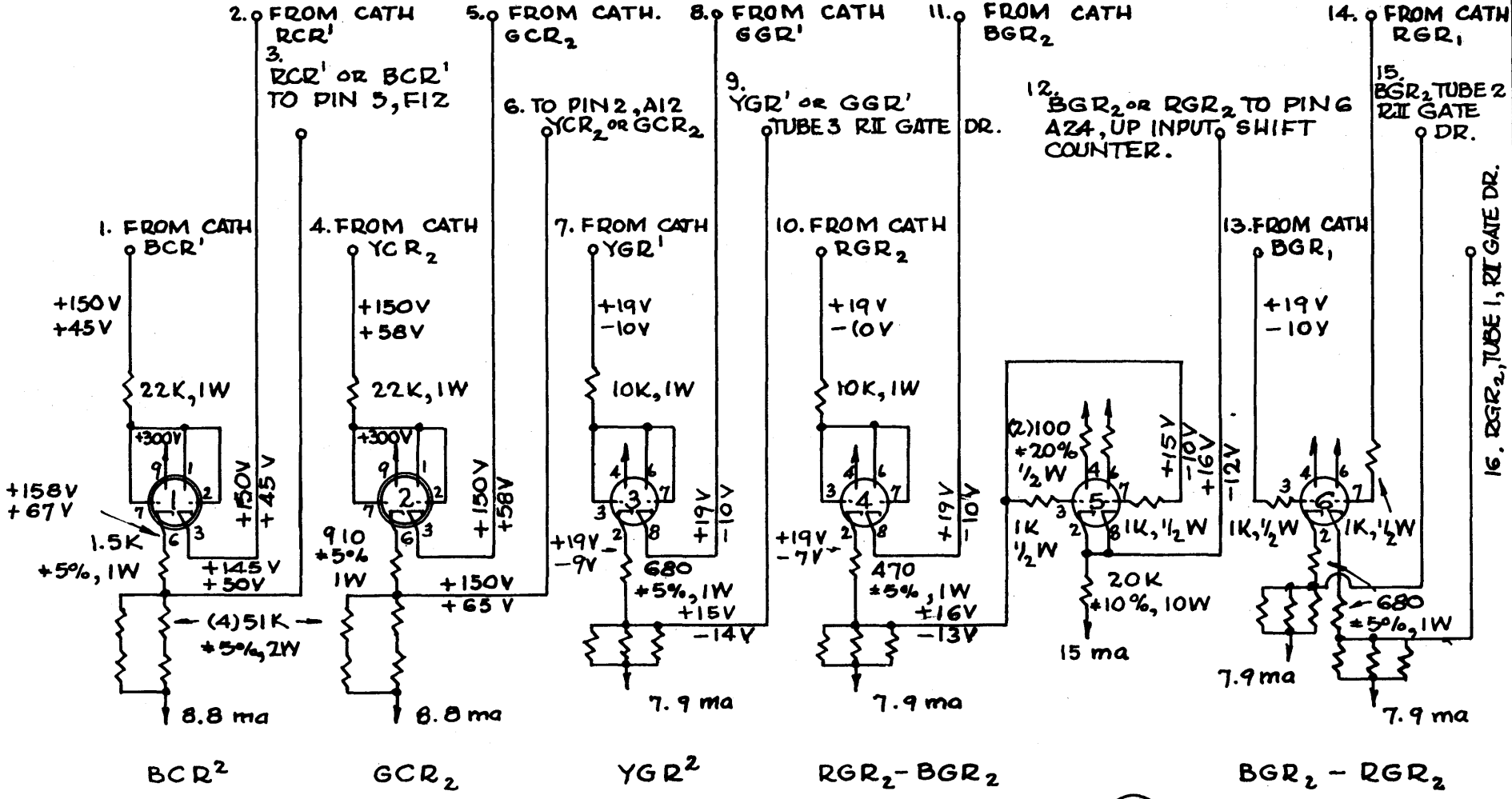
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR R.W.T. DRAWN BY H.WALKER
CHECKED BY R.W.T. APPROVED BY R.F.W.
TITLE **POWER SUPPLY -2000V, 200 MA**
DATE 9-20-50 DRWG.№ **169**



WHEN NOT SPECIFIED:

1. UP VOLTAGES ARE +100V.
2. DOWN " " −300V.
3. CATH. RESISTORS ARE 120K, ±5%, 2W.
4. GRID RESISTORS ARE ±10%.

INDICATES 5687

INDICATES 2C51

E

- FILAMENTS OF V1 & V2 AT +100V.
- ALL OTHER FILAMENTS AT GND.
- REVISED 11.14.51.
- REVISED & REDRAWN FROM DRWG OF SAME NO. DATED 8.3.50

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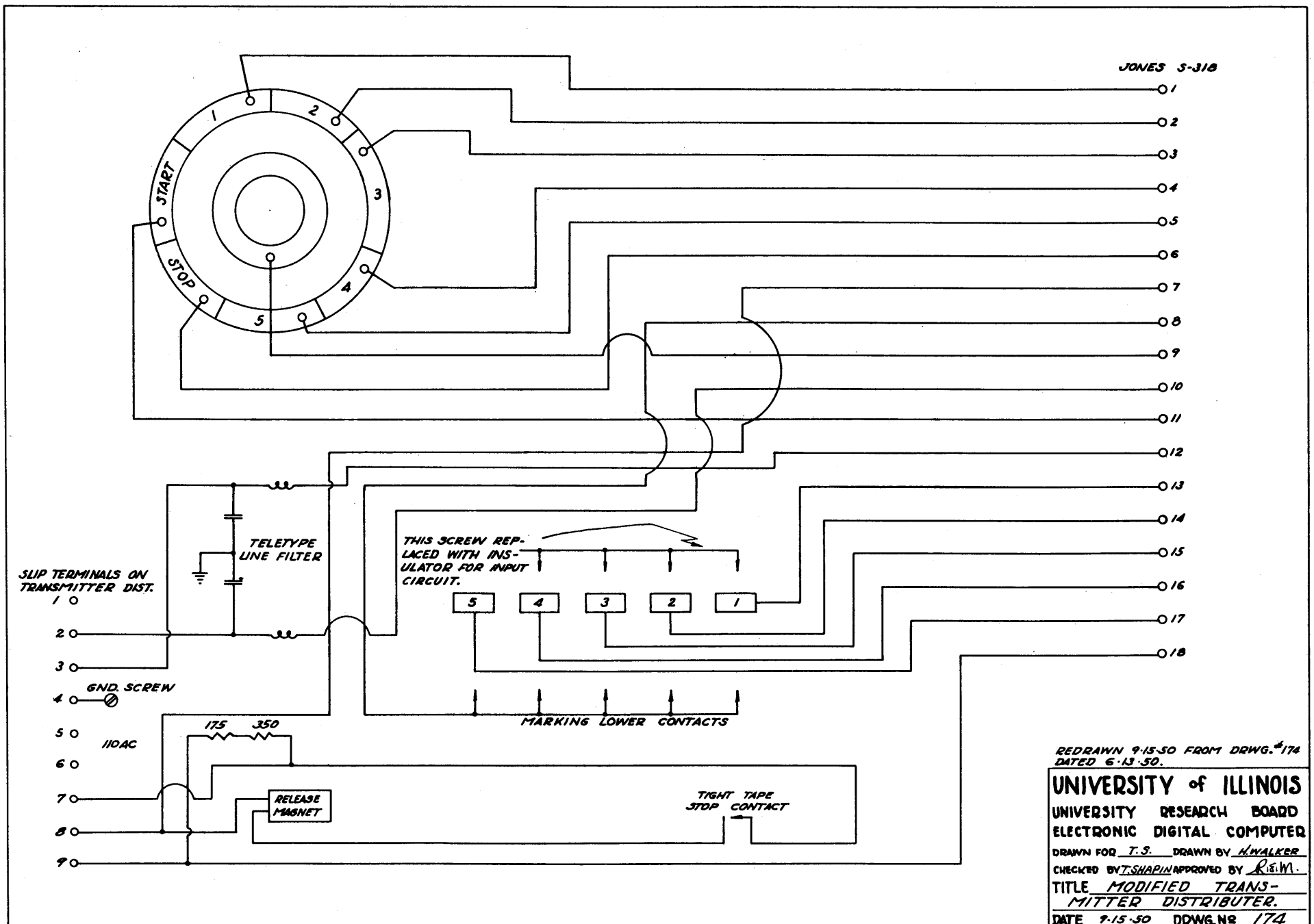
FOR JPN BY HMW CHECKED JMash APPROVED R.E. Meagher DATE 6.19.51

TITLE ~ DRIVER III CHASSIS

S·171



REDRAWN 9-15-50 FROM DRWG. #174 DATED 6-13-50.

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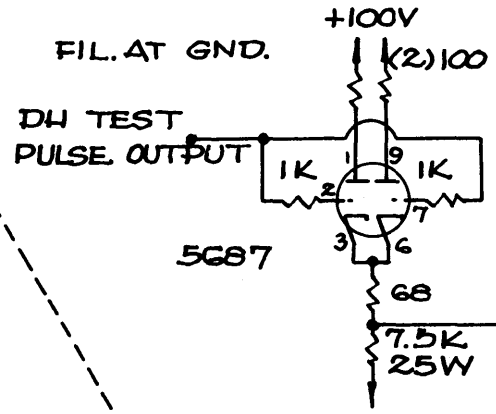
DRAWN FOR T.S. DRAWN BY H.WALKER
CHECKED BY T.SHAPIN APPROVED BY R.I.&W.

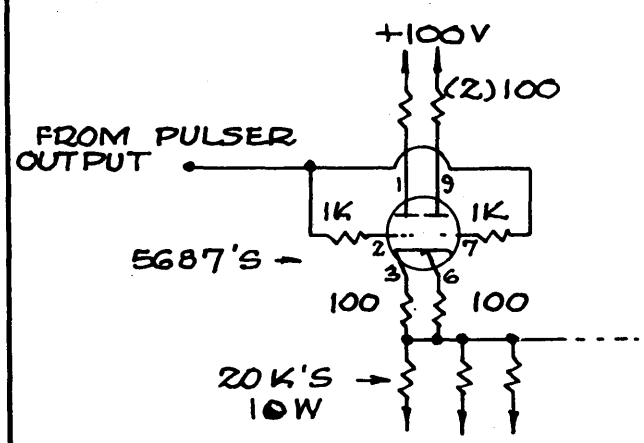
TITLE MODIFIED TRANSMITTER DISTRIBUTER.

DATE 9-15-50 DRWG. NO. 174

PLATE & GRID RESISISTORS ARE ±20%, ½W.



ISOLATION CATHODE FOLLOWER FOR DASH TEST PULSE.



ALL 1K & 100 Ω RESISTORS ARE ± 20%, ½W.
ALL FILAMENTS AT GROUND.

PULSE	5687'S	20K RESISTORS
DOT	3	2
DH TEST	22	50
DH. END	10	20

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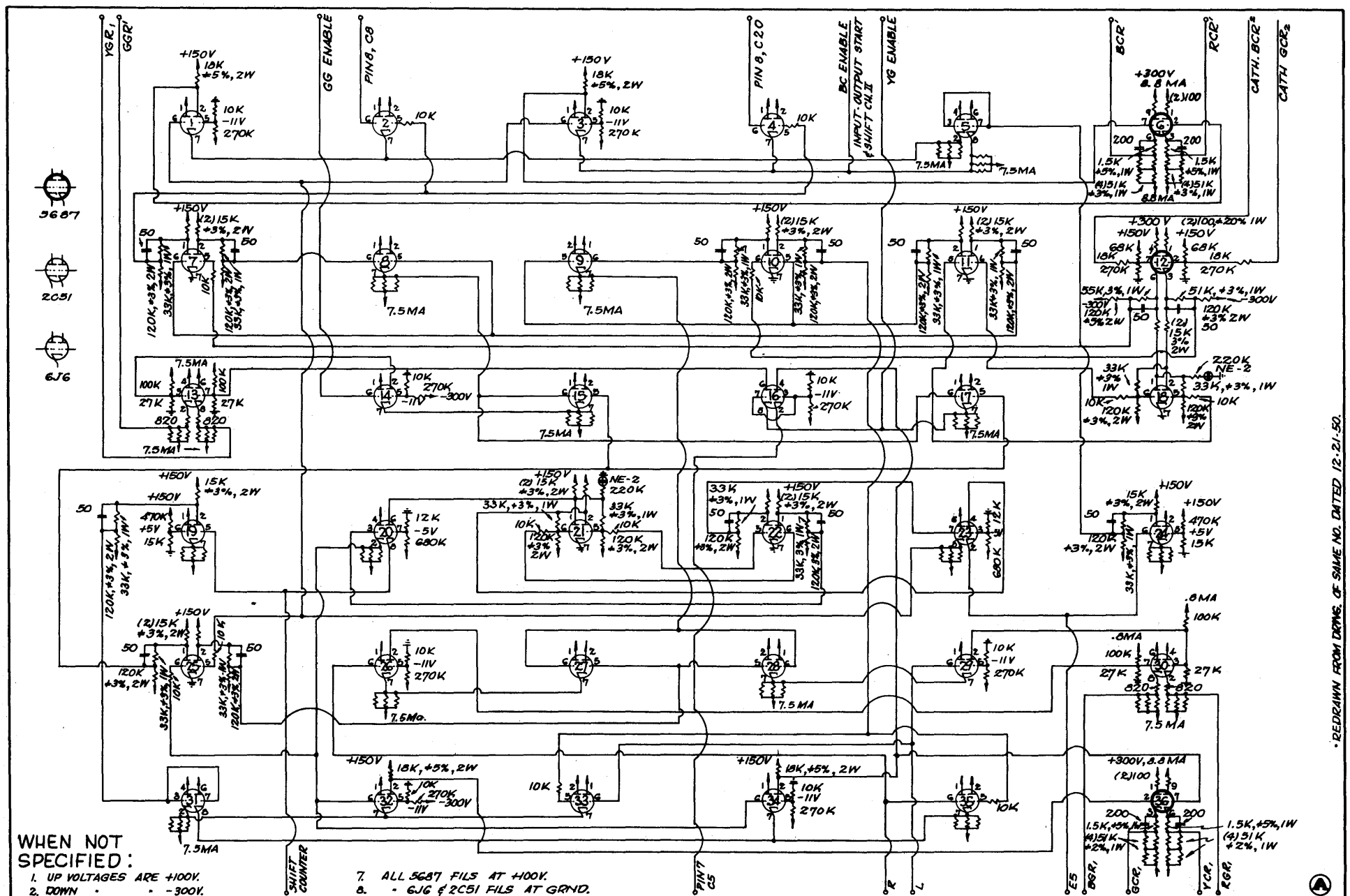
FOR JMW BY HMW CHECKED J. M. W. APPROVED R. E. Meagher DATE 11-20-51 S-176

TITLE ~ PULSER CATHODE FOLLOWER CHASSIS



WHEN NOT SPECIFIED:

1. UP VOLTAGES ARE +100V.
2. DOWN · · -300V.
3. CATHODE RESISTORS ARE 120K, ±10%, 2W.
4. BLEEDERS ARE ±5%, 1W.
5. OTHER RESISTORS ARE ±20%, ½W.
6. CONDENSERS ARE IN μμf.
7. ALL 5687 FILS AT +100V.
8. · 6J6 & 2C51 FILS AT GRND.

· REDRAWN FROM DRWG. OF SAME NO. DATED 12-21-50.

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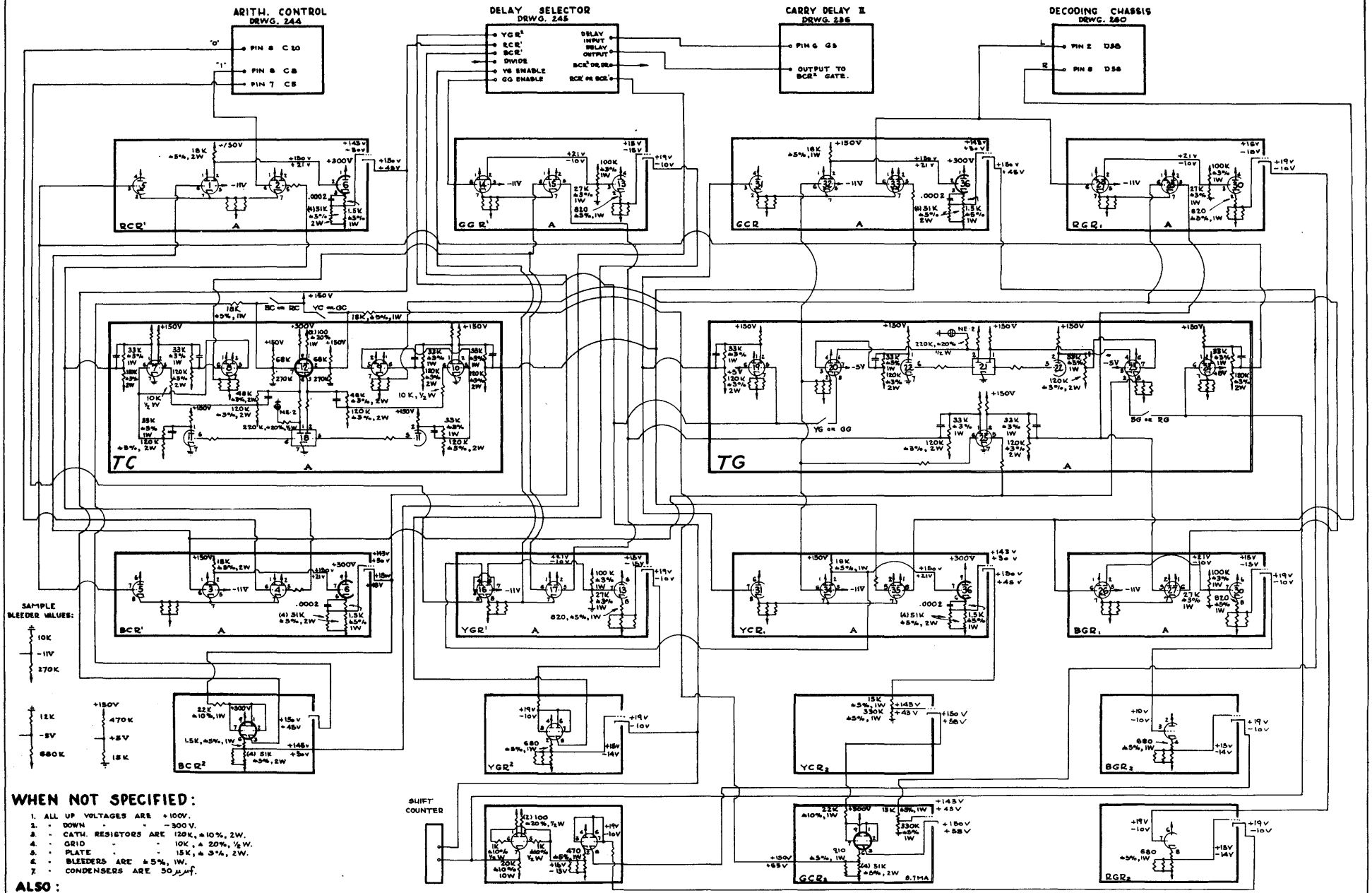
FOR WEJ BY HMW CHECKED RWR APPROVED R. E. Meagher DATE 12-7-51

TITLE - SHIFT SEQUENCING CHASSIS

M-181



WHEN NOT SPECIFIED:

1. ALL UP VOLTAGES ARE +100V.
2. " DOWN " " −300 V.
3. " CATH. RESISTORS ARE 120K, ±10%, 2W.
4. " GRID " " 10K, ± 20%, ½ W.
5. " PLATE " " 15K, ± 3%, 2W.
6. " BLEEDERS ARE ±5%, 1W.
7. " CONDENSERS ARE 50 μμf.

ALSO:

1. ALL 5687 FILS. AT +100V. ALL 2C51 FILS. AT GRND.
2. COMPONENTS IN SHIFT SEQUENCING CH. ARE INDICATED BY 'A' ON THIS DRWG.
3. GRIDS SHOWN AT RIGHT HAND SIDE OF BOXES ARE CLEAR DR. DR. & GATE DR. DR. GRIDS. CATHODES SHOWN AT RIGHT HAND SIDE OF BOXES ARE CLEAR AND GATE CATHODES IN REGISTERS.

REVISED & REDRAWN FROM DRWG. OF SAME NUMBER DATED 7-11-50. REVISED 11-14-51.

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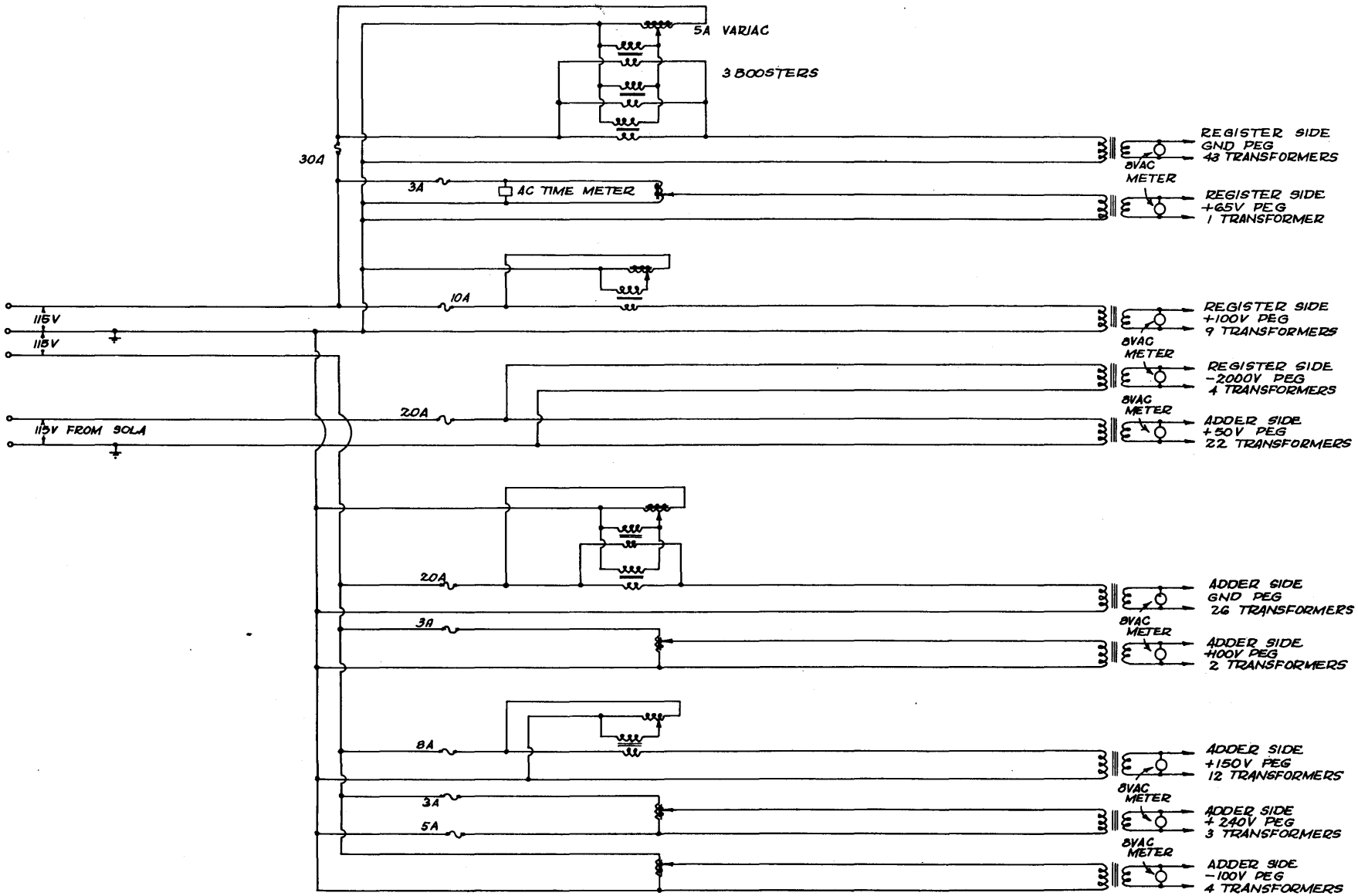
FOR JPN. BY HMW CHECKED APPROVED DATE 2-14-51

TITLE SHIFT CONTROL

L·189



~ NOTES ~

1. ALL 6.3V FILAMENT TRANSFORMERS ARE THORDARSON D161987.
2. ALL VARIACS GENERAL RADIO TYPE V-5MT.

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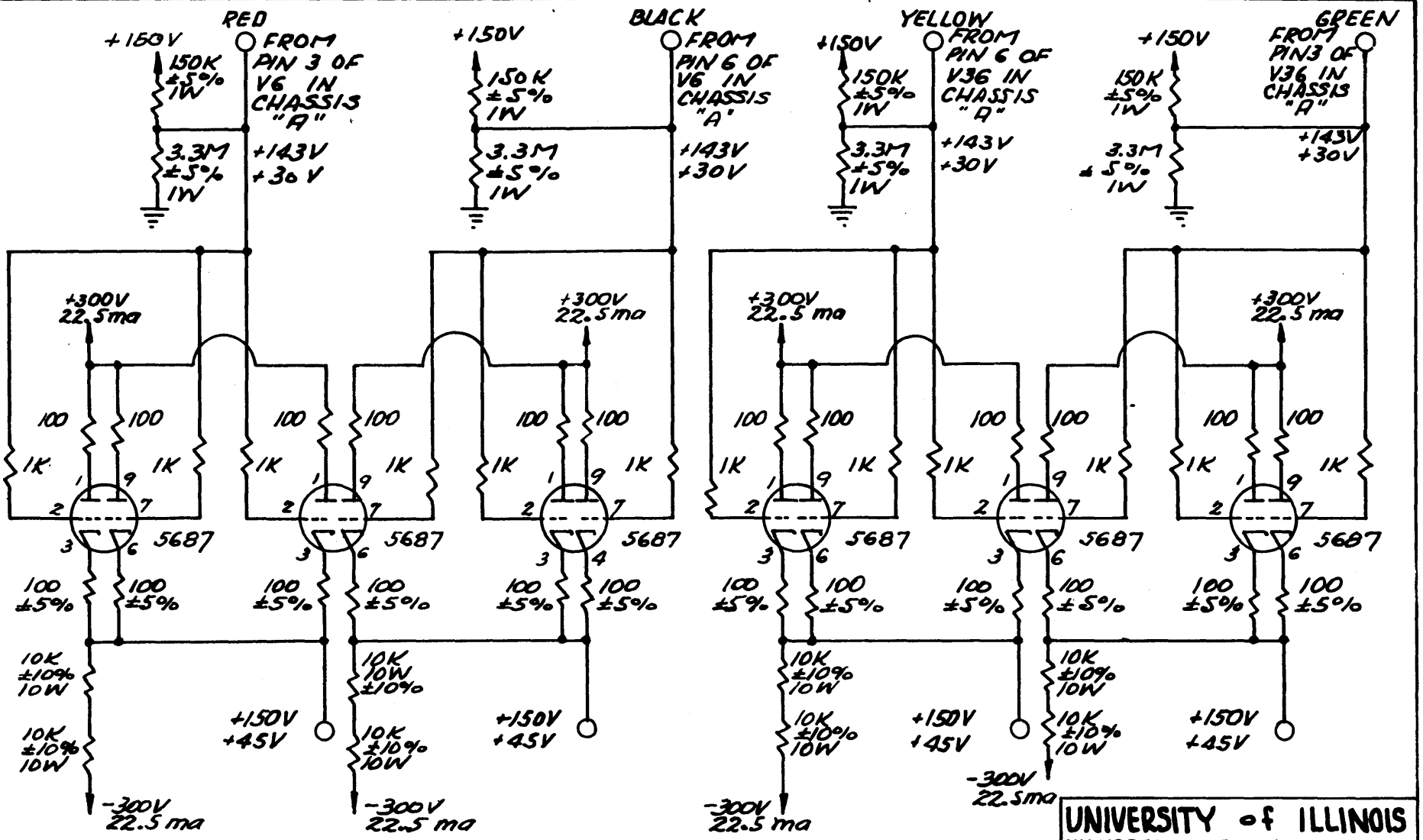
FOR WEJ BY HMW CHECKED W. JONES APPROVED R. E. Meagher. DATE 3-8-52

TITLE ~ A.C. DISTRIBUTION FOR FILAMENT TRANSFORMERS

M-190



~ NOTES ~

1. UNLESS OTHERWISE SPECIFIED RESISTORS ARE ½W, ±20%.
2. FILAMENTS AT +100V.

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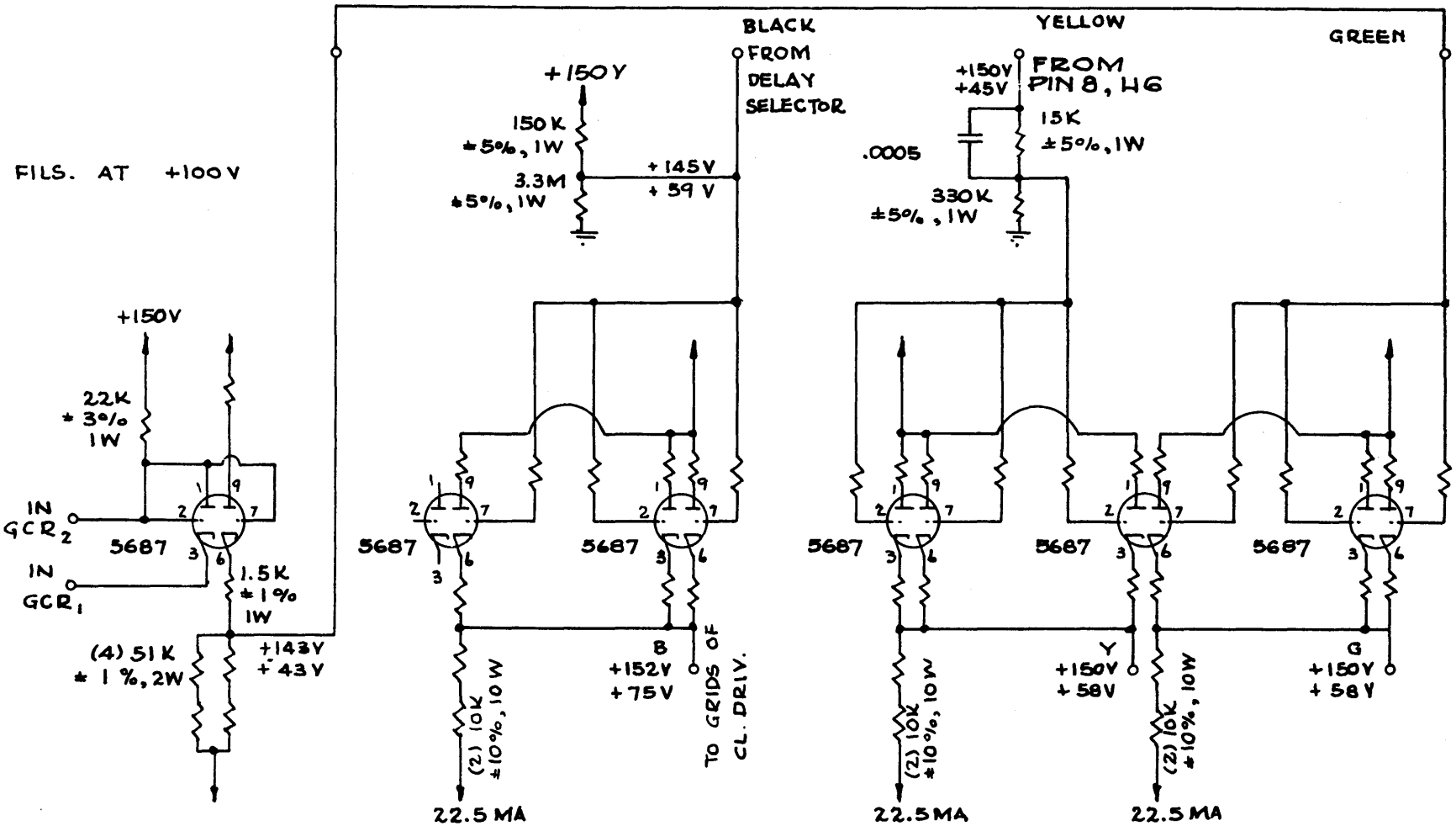
DRAWN FOR J.P.N. DRAWN BY H.M.W.
CHECKED JPN APPROVED R.E.M.

TITLE CLEAR DRIVER
DRIVER R I

DATE 7-21-50 DRWG. No 192



WHEN NOT SPECIFIED

1. UP VOLTAGES ARE +300V.
2. DOWN " " -300V.
3. PLATE RESISTORS ARE 100, ± 20%, 1/2W.
4. GRID " " 1K, ± 20%, 1/2W.
5. CATH. " " 100, ± 5%, 1/2W.

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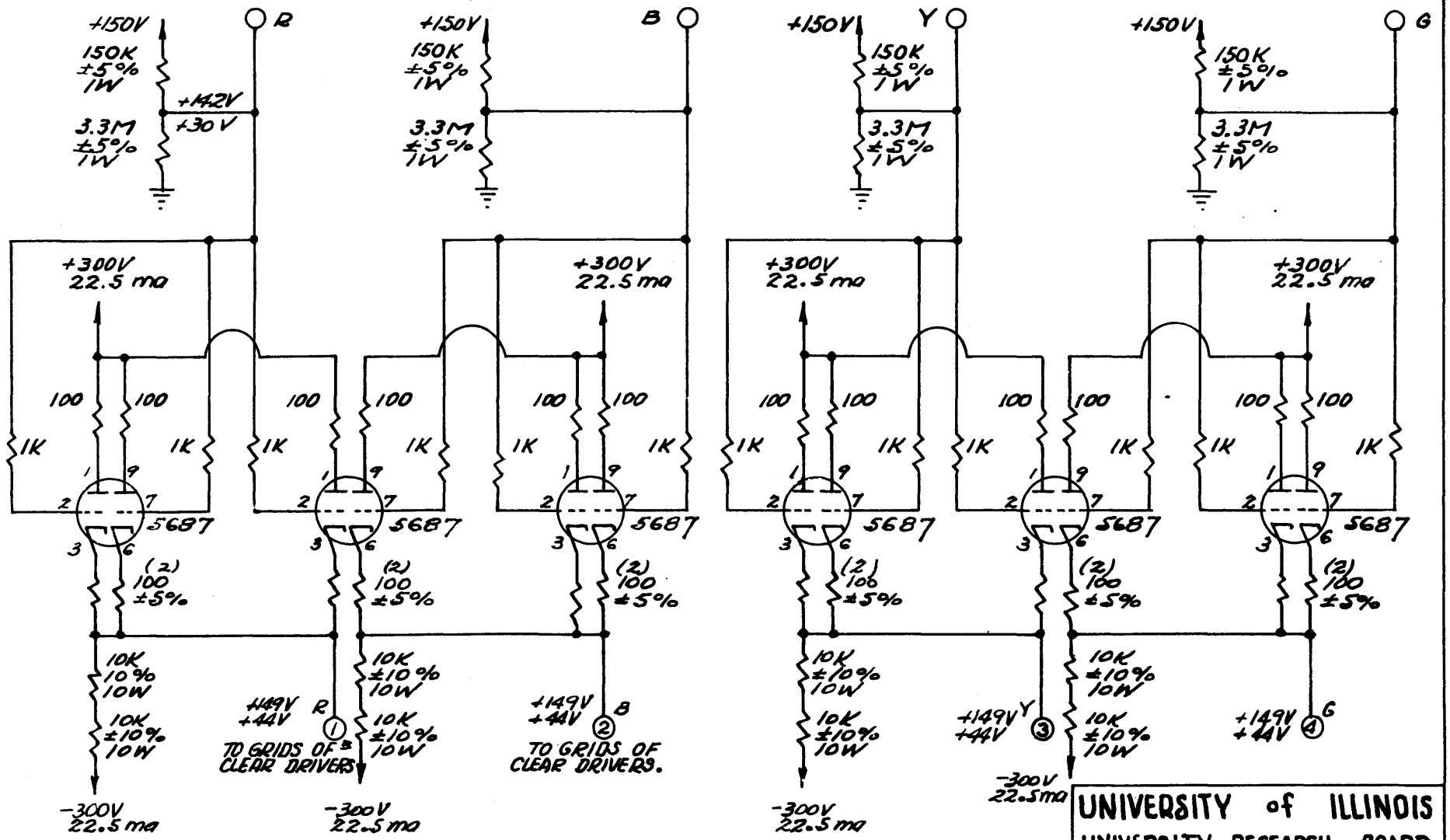
FOR ELH BY NMW CHECKED ELH APPROVED R. E. Meagher DATE 4-18-51

TITLE · CLEAR DR. DR. RII

S-193



NOTES

1. FILAMENTS AT +100V.
2. UNLESS OTHERWISE SPECIFIED, RESISTORS ARE ½ W, ± 20 %.

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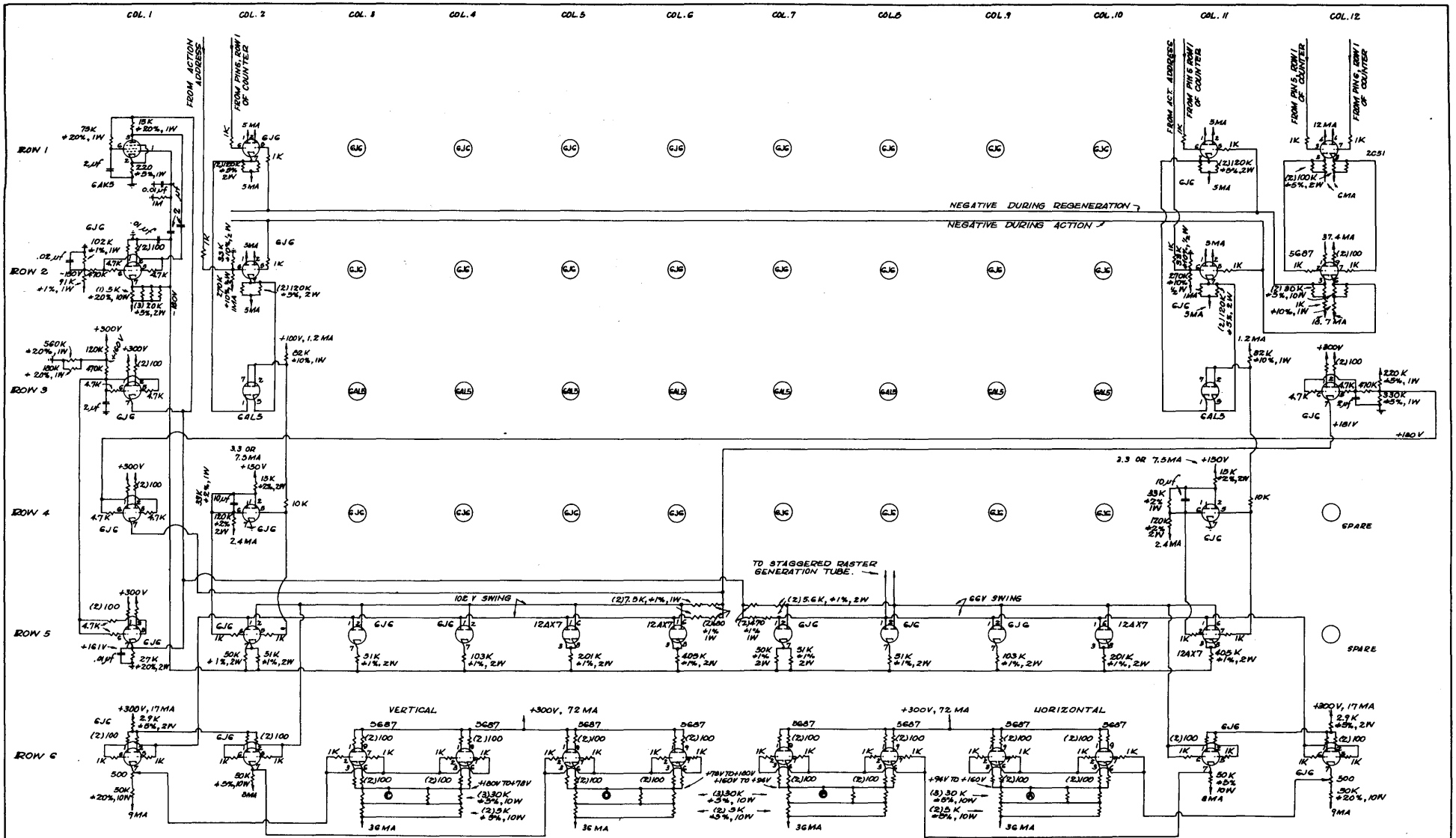
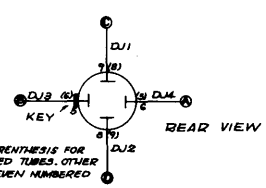
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR REM DRAWN BY H.M.W.
CHECKED R.E.M. APPROVED R.E.M.
TITLE CLEAR DR. DR. R III
DATE 7-18-50 DRWG. Nº 194



ROW	+100V	GRND	-150V
1		COL'S 1-12	
2		COLS 2-12	COL. 1
3	COL'S 1 & 6	COL'S 2-5, 7-12	
4	COL. 1	COL'S 2-12	
5	COL. 1	COL'S 2-12	
6	COL'S 1-12		

FILAMENT PEG VOLTAGES.



* PIN NOS. IN PARENTHESIS FOR ODD NUMBERED TUBES. OTHER PIN NOS. FOR EVEN NUMBERED TUBES.

WHEN NOT SPECIFIED:

1. ALL UP VOLTAGES ARE +100V.
2. " DOWN " " -300V.
3. " RESISTORS ARE ±20%, ½W.
4. COLS. 3 THRU 10 ARE IDENTCAL TO COL'S. 2 & 11.

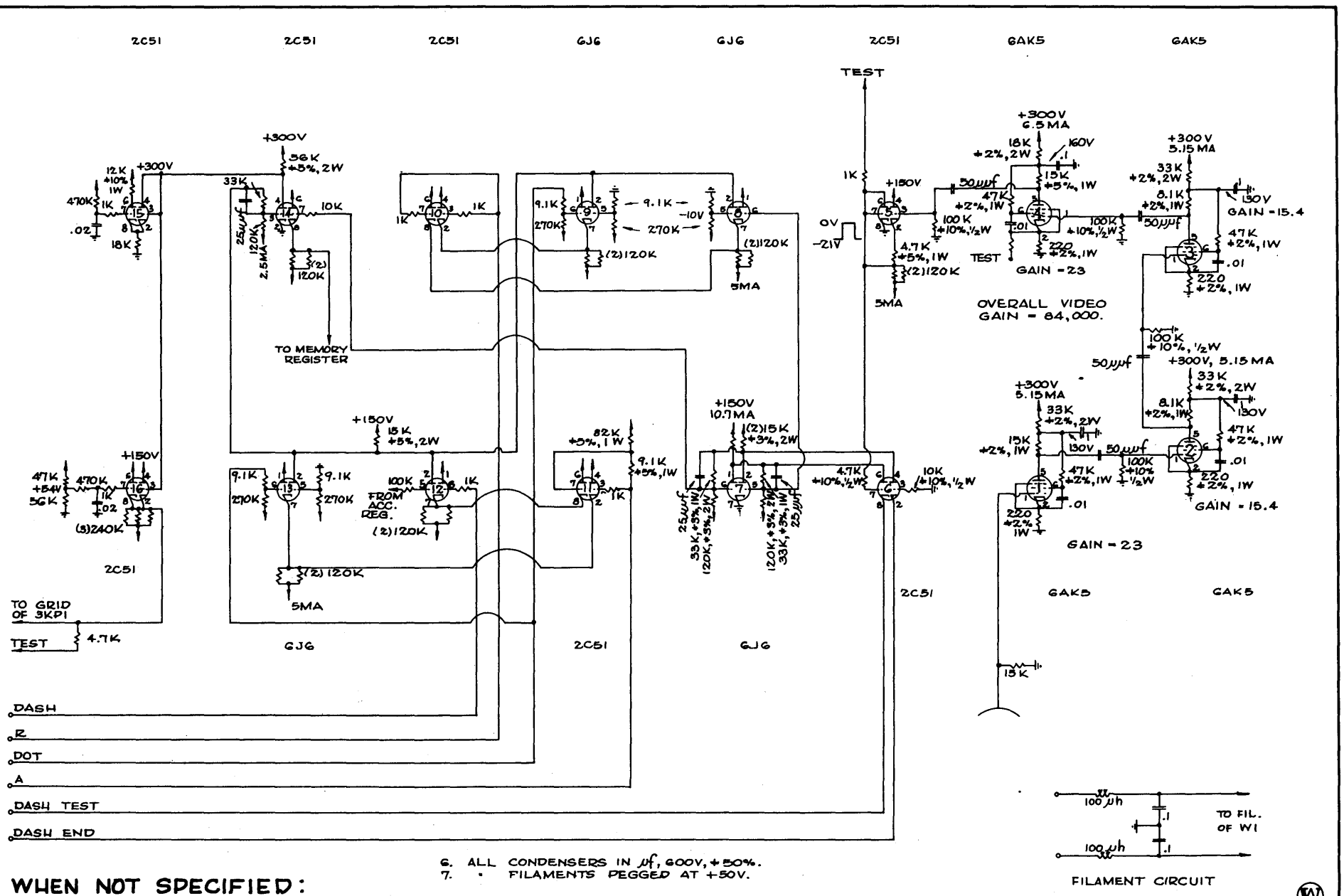
* REVISED & REDRAWN FROM DRWG. OF SAME NO. DATED 7-27-50.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR JMW BY HMW CHECKED APPROVED R. E. Meagher DATE 12-3-51

TITLE ADDRESS GENERATOR

L-195



WHEN NOT SPECIFIED:

1. ALL 1K, 4.7K, 10K, 100K, 470K RES'S ARE ±20%, ½W.
2. " BLEEDER RESISTORS ARE ±3%, 1W.
3. " CATHODE " " ±5%, 2W.
4. " UP VOLTAGES ARE +100V.
5. " DOWN " " −300V.
6. ALL CONDENSERS IN μf, 600V, ±50%.
7. " FILAMENTS PEGGED AT +50V.

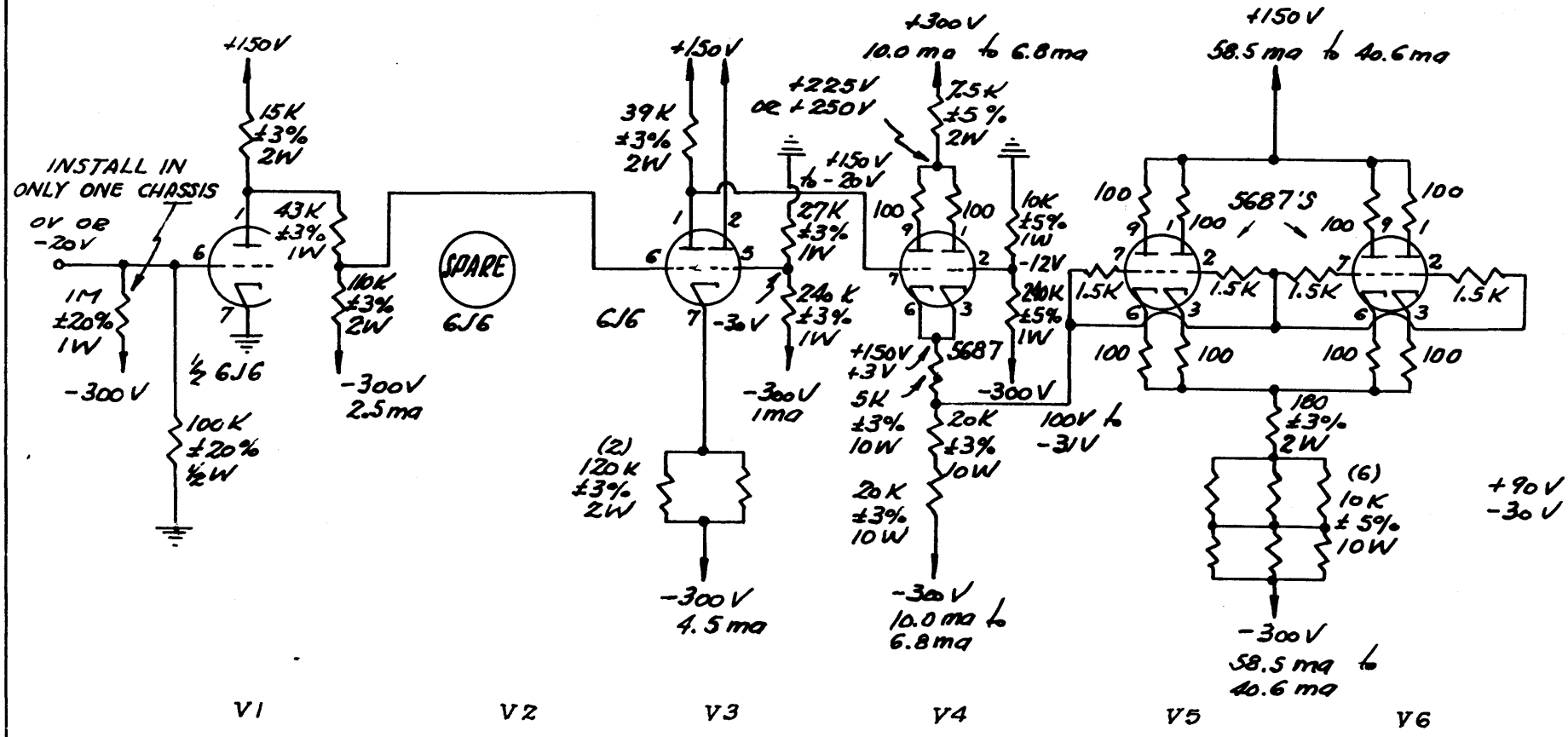
• REVISED & REDRAWN FROM DRWG. OF SAME No. DATED 8-2-50.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR JMW BY HMW CHECKED J.M.W. APPROVED R.E. Meagher DATE 12-5-51

TITLE ~ VIDEO AMPLIFIER & WILLIAMS TUBE CONTROL #3

M-196



~ NOTES ~

1. FILAMENTS OF V1 & V3 AT GRND.
2. " " V4, V5, V6 AT +65V.
3. UNLESS OTHERWISE SPECIFIED RESISTORS ARE ½W, ± 20%.
4. MAKE TWO PER ARITHMETIC UNIT.

K

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UNIVERSITY RESEARCH BOARD

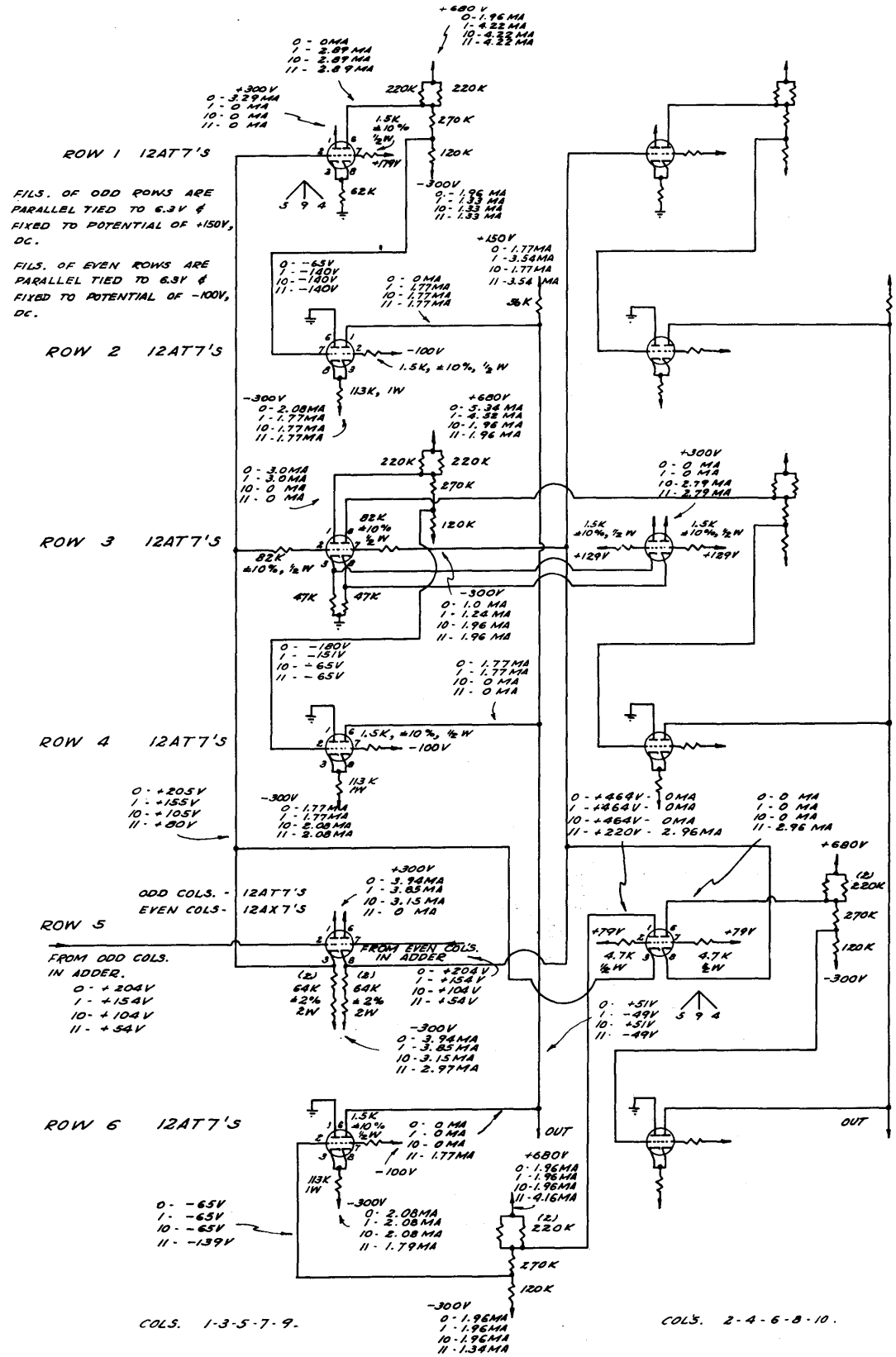
ELECTRONIC DIGITAL COMPUTER

DRAWN FOR REM DRAWN BY HMW

CHECKED R.E.M. APPROVED R.E. Meagher

TITLE COMPLEMENT GATE DRIVER

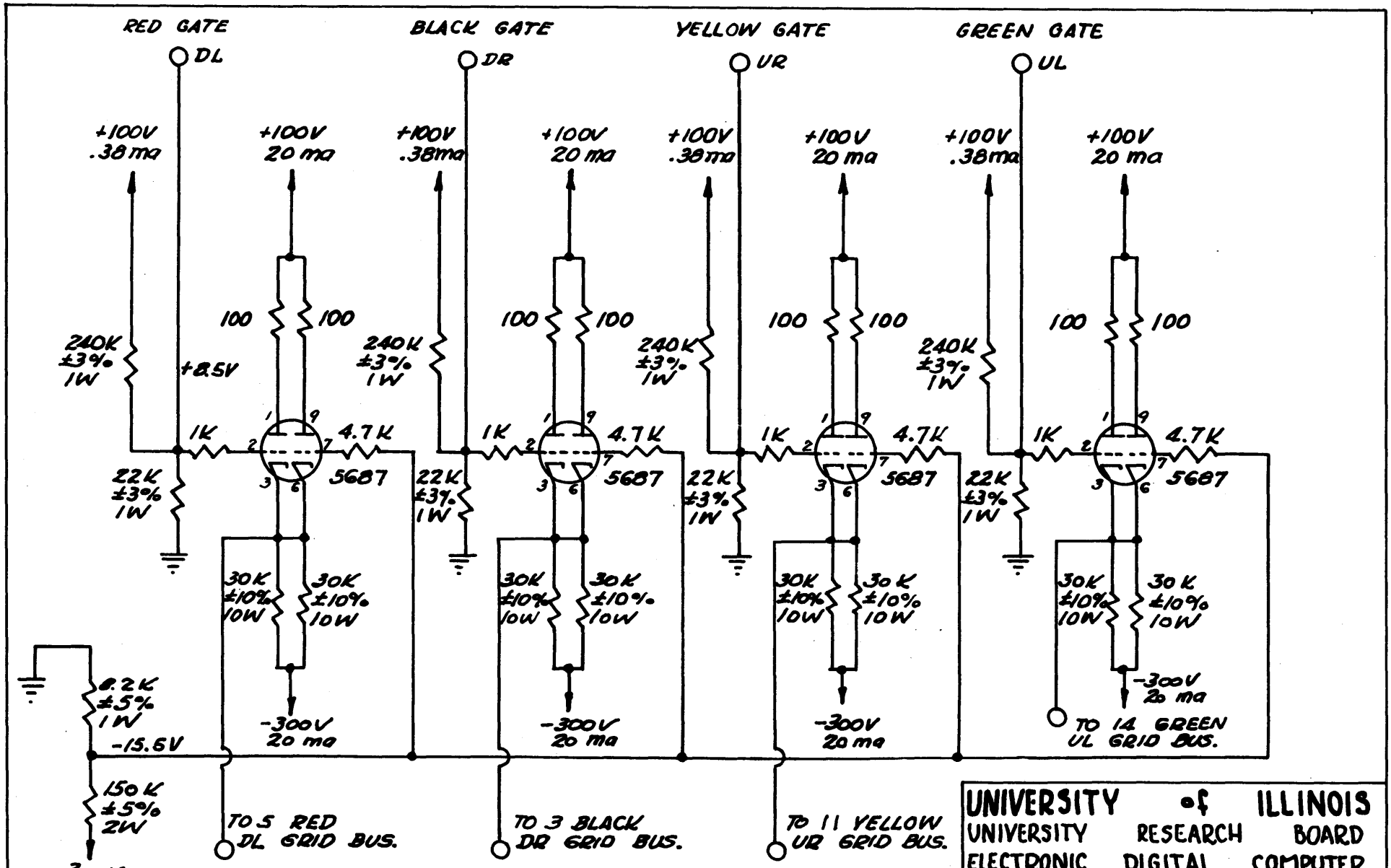
DATE 8·3·50 DRWG. N° 198



REDRAWN FROM DRWG. OF SAME NO. DATED 8-10-50.

ALL RESISTORS NOT SPECIFIED ARE 2W, ±2%.

DRAWN FOR M123	UNIVERSITY of ILLINOIS
DRAWN BY HANK WALKER	UNIVERSITY RESEARCH BOARD
CHECKED	ELECTRONIC DIGITAL COMPUTER
APPROVED R. E. Wagner	
DATE OCT. 28, 1950	
TITLE DIGIT RESOLVER	M-200

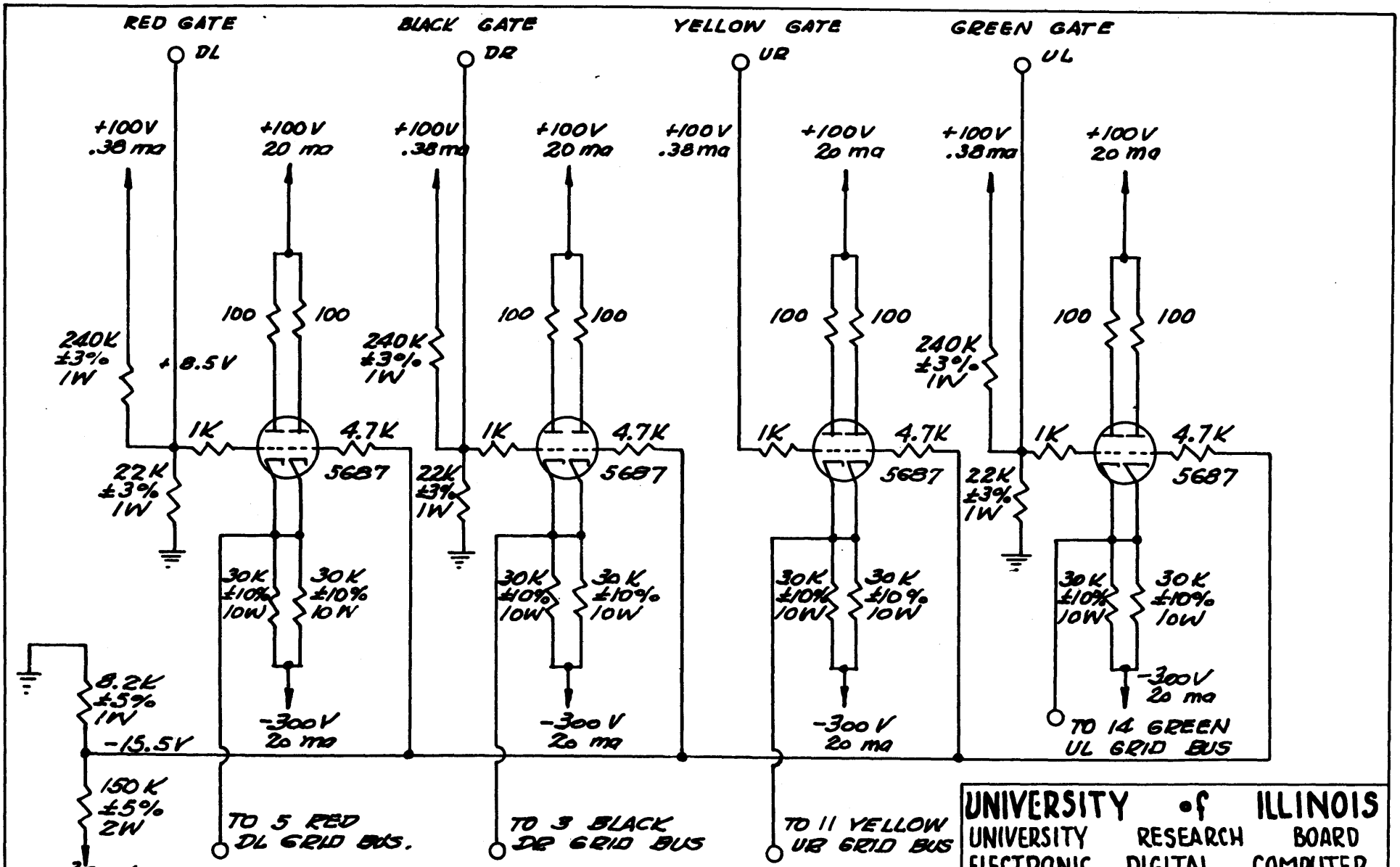


~ NOTES ~

1. RESISTORS NOT SPECIFIED ARE ½W. ± 20%.
2. ALL FILAMENTS AT GRND.
3. ONE REQ'D. PER REGISTER.

REDRAWN FROM DRWG. # 158 DATED 3-7-50.

UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR REM DRAWN BY HW
CHECKED R.E.M. APPROVED R.E.M.
TITLE GATE DRIVER R1
DATE 8-16-50 DRWG. Nº 201

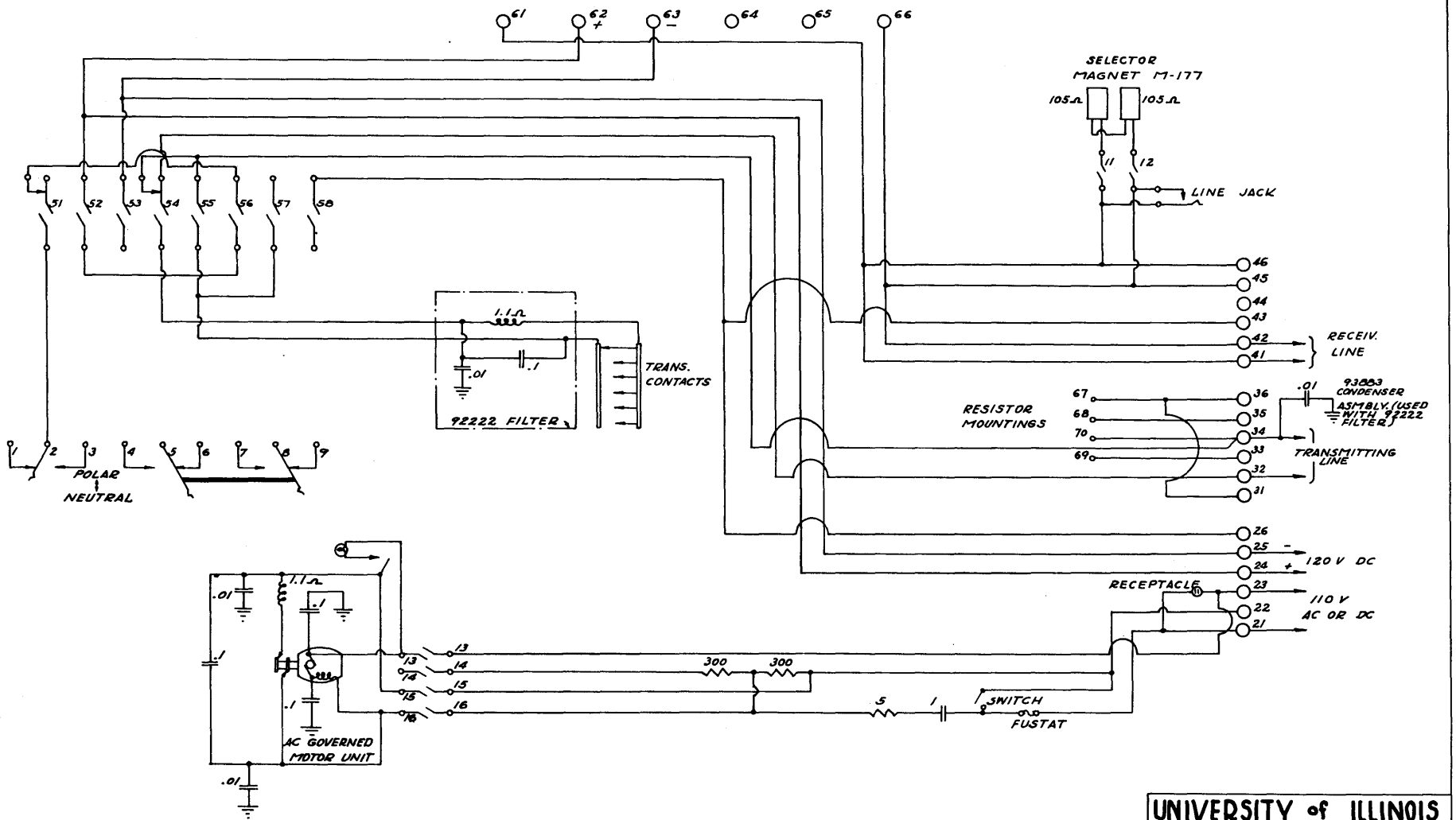


~NOTES~

1. RESISTORS NOT SPECIFIED ARE 1/2 W, ± 20 %.
2. ALL FILAMENTS AT GRND.
3. ONE REQ'D. PER REGISTER.

REDRAWN FROM DRWG. #158 DATED 3-7-50.

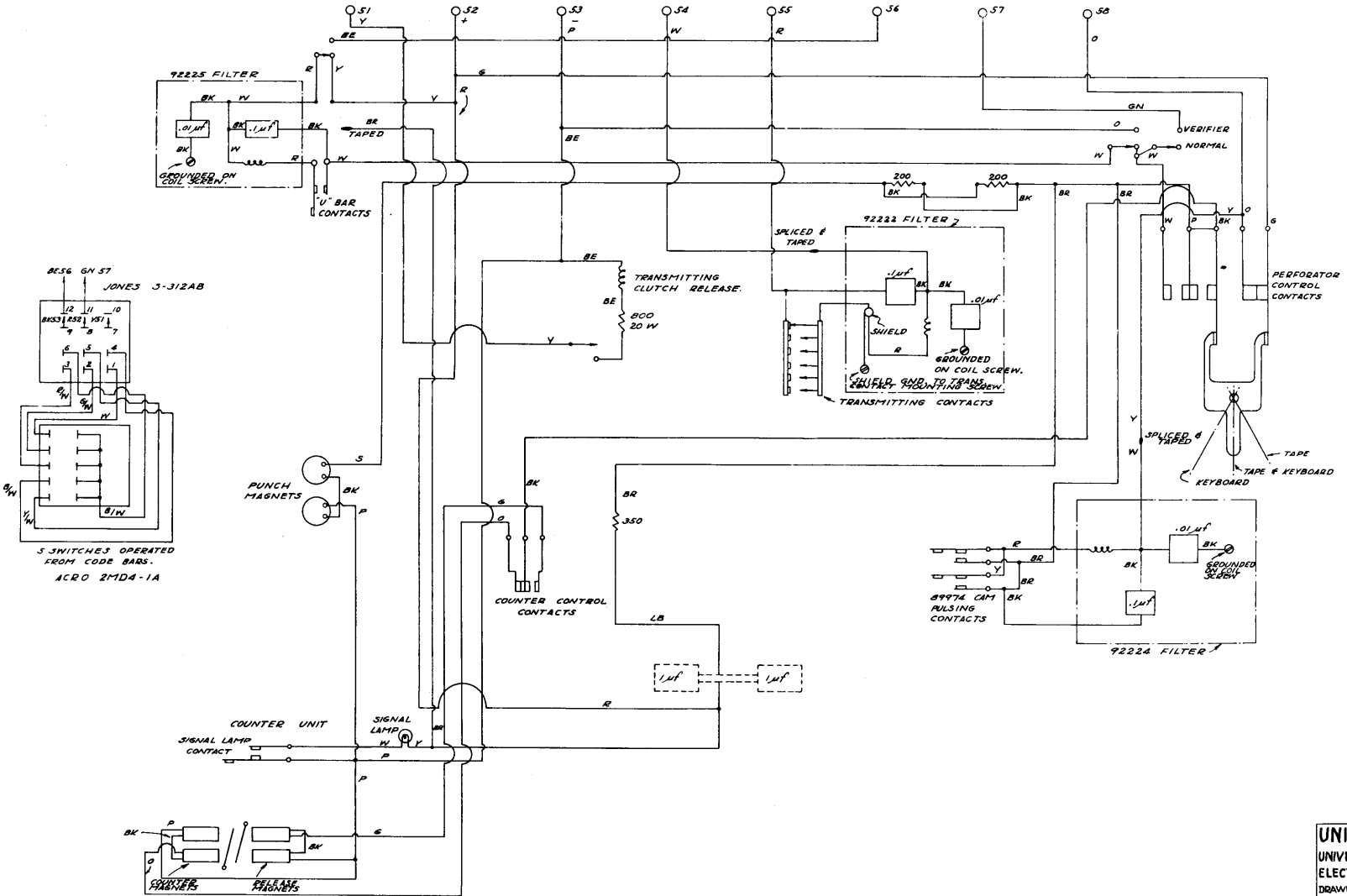
UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR REM DRAWN BY HW
CHECKED R.E.M. APPROVED R.E.M.
TITLE GATE DRIVER RII
DATE 8-16-50 DRWG. Nº 202



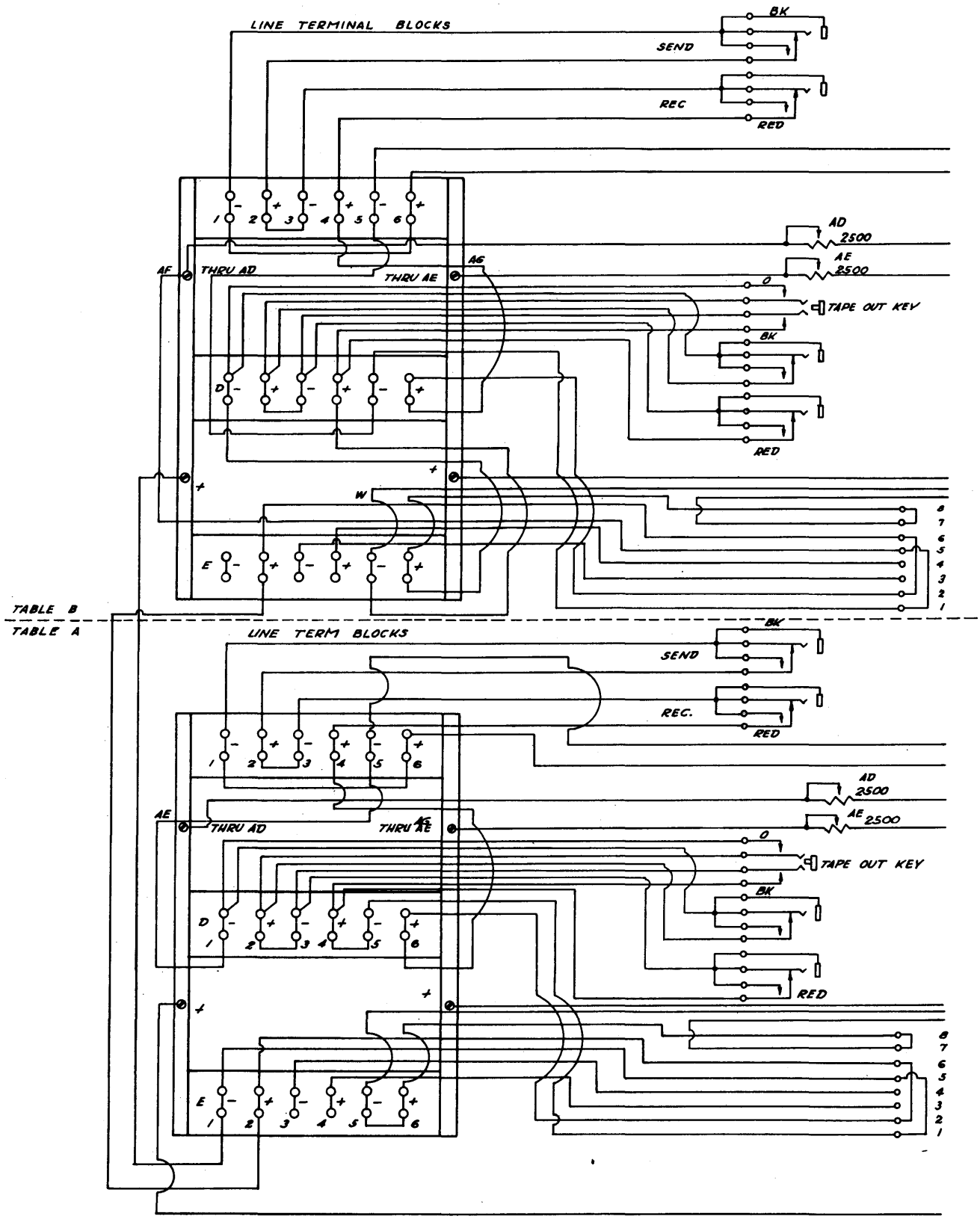
UNIVERSITY of ILLINOIS

UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER

DRAWN FOR T.S. DRAWN BY H.WALKER
CHECKED BY SHAPIN APPROVED BY R.E. Meagher
TITLE MODIFIED SCHEMATIC - 15 PRINTER SET WITH KEYBOARD
DATE 9-13-50 DRWG. Nº 208

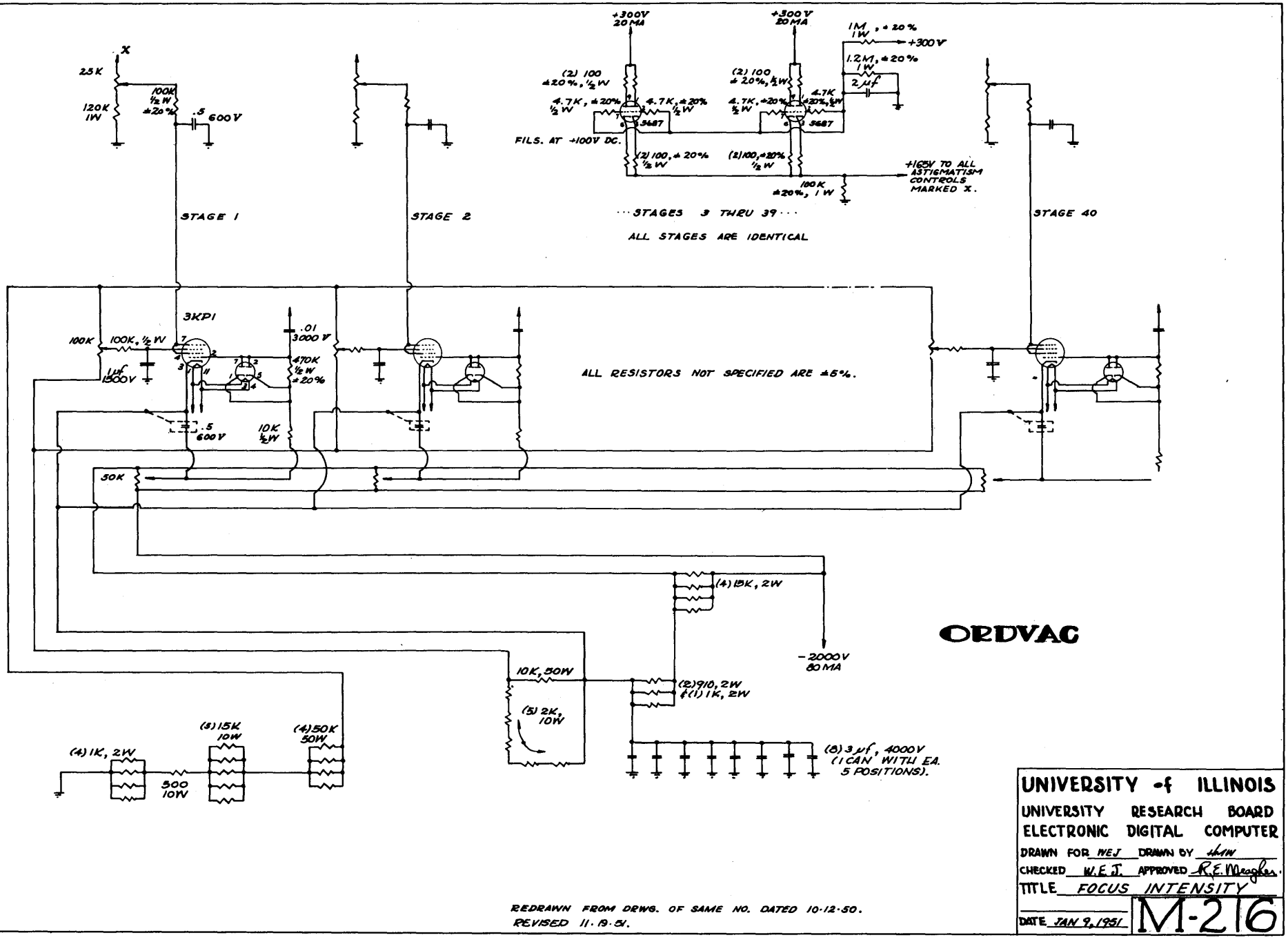


UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR T.S. DRAWN BY H.W.
CHECKED T. KHANN APPROVED A. E. W.
TITLE WIRING - IS TYPE PERF. TRANS. MOD. FOR VERIFIER
DATE 9-14-50 DRWG. Nº 209



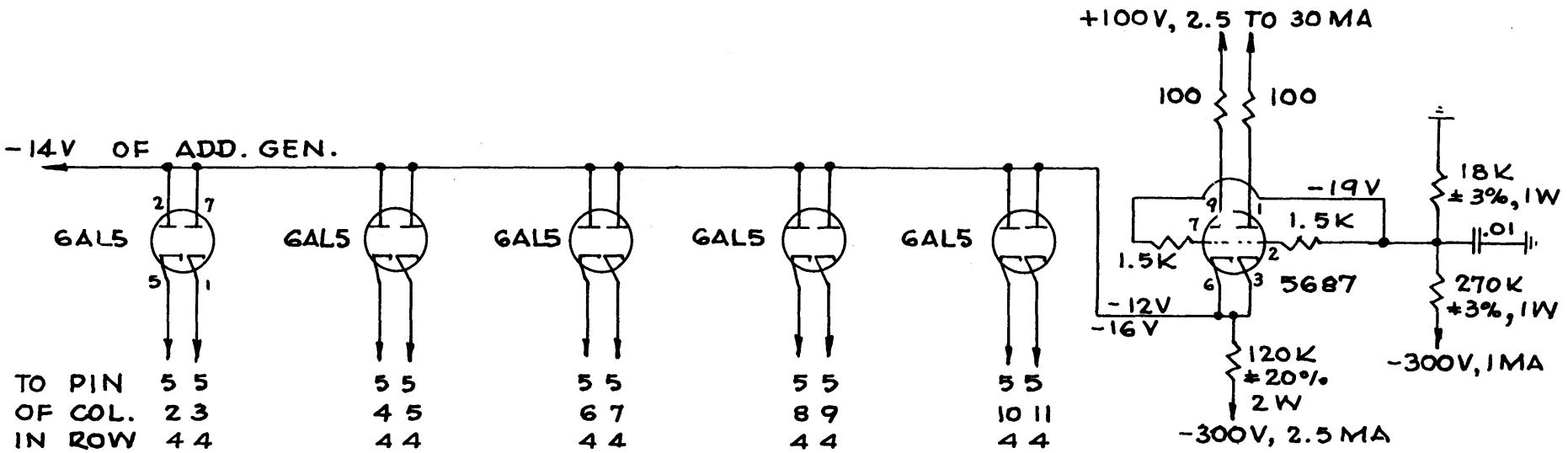
REFER TO DRWG. WD 2161-6 FOR ALL WIRING NOT SHOWN.

UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR T. S. DRAWN BY H. WALKER
CHECKED T. SHAPIN APPROVED R. E. Meagher
TITLE MODIFICATION OF TELE-TYPE TABLE DRWG. WD 2161-G
DATE 7-19-50 DRWG. Nº 210



REDRAWN FROM DRWG. OF SAME NO. DATED 10-12-50.
REVISED 11-19-51.

UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR WEJ DRAWN BY HWN
CHECKED W.E.J. APPROVED R.E. Meagher
TITLE FOCUS INTENSITY
DATE JAN 9, 1951
M-216



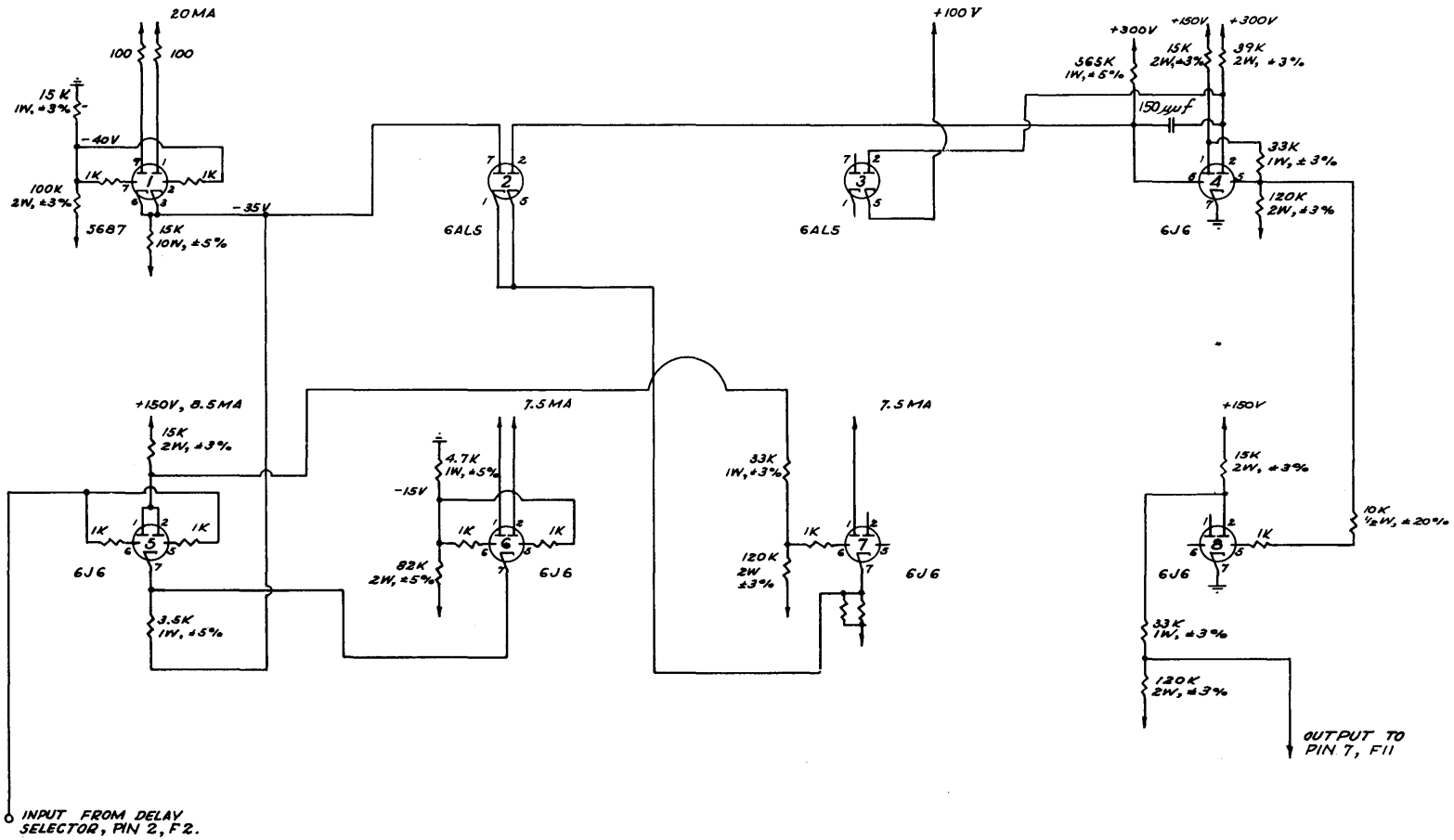
RESISTORS NOT SPECIFIED ARE ±20%, ½ W.

REDRAWN FROM DRWG OF SAME NO. DATED 11·10·50.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

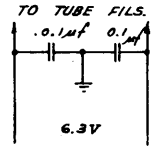
FOR WEJ BY HMW CHECKED W. JONES APPROVED R. E. Meagher. DATE 6·25·51 S·231

TITLE ~ DIODE CHASSIS FOR ADDRESS GENERATOR

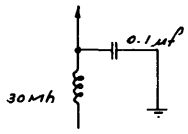


WHEN NOT SPECIFIED:

1. ALL UP VOLTAGES ARE +100V.
2. - DOWN - - -300V.
3. - RESISTORS ARE 120K, 2W, ± 10 %.
4. - TOLERANCES ARE ½W, ± 50 %.
5. - FILAMENTS AT GROUND.



FILTER FOR FILAMENT VOLTAGES



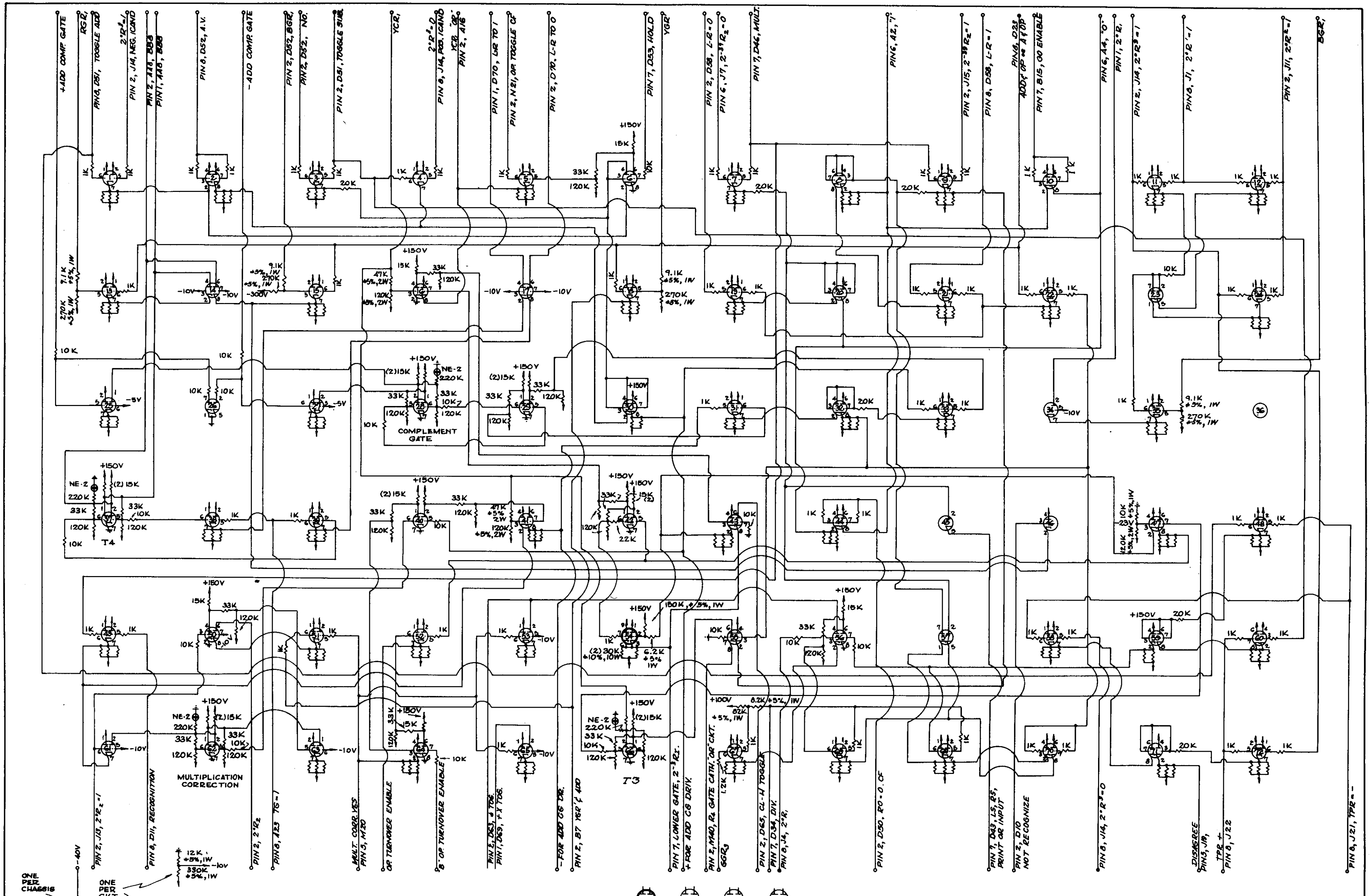
FILTER FOR DC. VOLTAGES.

REVISED 1-8-50 JAWW

UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER

DRAWN FOR J. W. DRAWN BY HANK W.
CHECKED J. M. M. APPROVED R. E. Meagher.
TITLE CARRY DELAY II
DATE DEC. 18, 1950

M-236



WHEN NOT OTHERWISE SPECIFIED:

1. ALL UP VOLTAGES ARE +100V.
2. ALL DOWN " " -300V.
3. " CATHODE RESISTORS ARE 120K, ±10%, 2W & " OTHER 120K " " ±3%, 2W.
4. " 15K RESISTORS ARE ±3%, 2W.
5. ALL 33K RESISTORS ARE ±3%, 1W.
6. " 1K, 1.2K, 10K, 20K, & 220K RESISTORS ARE ±20%, 1/2 W.

★ REVISED 1·15·52
• REDRAWN FROM DRWG. OF SAME Nº. DATED 3·22·51

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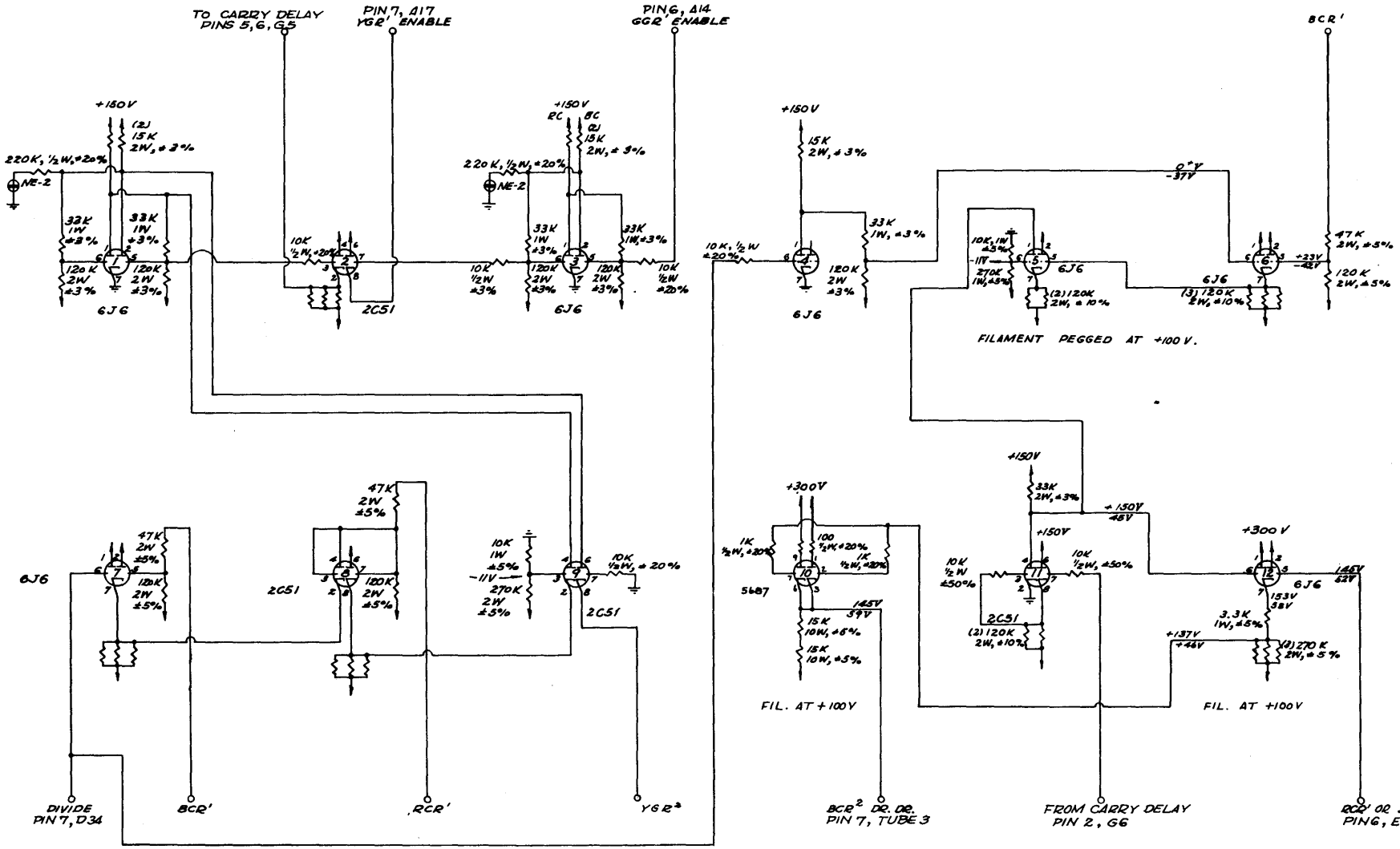
FOR JPN BY HMW CHECKED Jonash APPROVED R. E. Meagher DATE NOV. 23, 1951

TITLE ARITHMETIC CONTROL

L·244



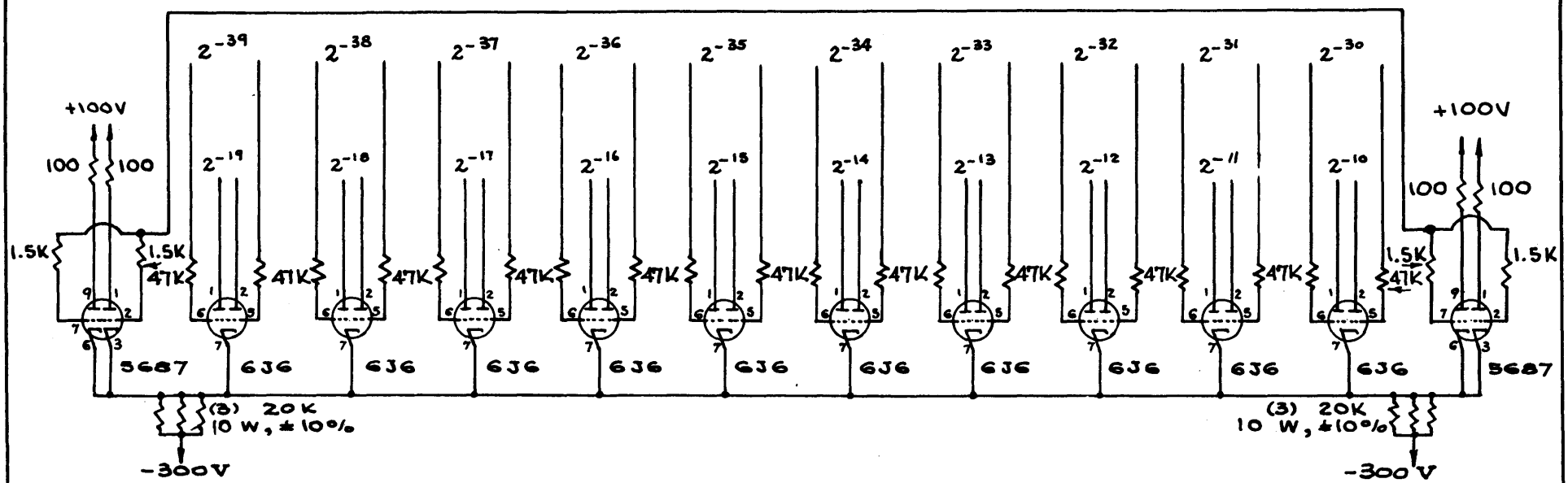
WHEN NOT SPECIFIED:

1. ALL RESISTORS ARE 120K, 2W, ±10%.
2. ALL UP VOLTAGES ARE +100V.
3. " DOWN " ARE -300V.
4. FIL. AT GND.

REDRAWN FROM DRWGS. #237 & 238.

UNIVERSITY of ILLINOIS
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR JMW DRAWN BY EDMW
CHECKED J.M.W. APPROVED R.E. Meagher
TITLE DELAY SELECTOR CHASSIS
DATE 1-8-51 DRWG. NO 245

F



ORDVAC !

~ NOTES ~

1. PLATES CONNECT TO SAME PLATES OF R_3 FLIP-FLOPS WHOSE NUMBERS ARE SHOWN.
2. GRIDS COME FROM SAME GRIDS OF R_3 FLIPFLOPS WHOSE NUMBERS ARE SHOWN.
3. 5687 GRIDS CONNECT TO ODD ADDRESS GATE DRIVER
4. ALL FILAMENTS AT GROUND.
5. RESISTORS NOT SPECIFIED ARE ½W, ± 20 %.

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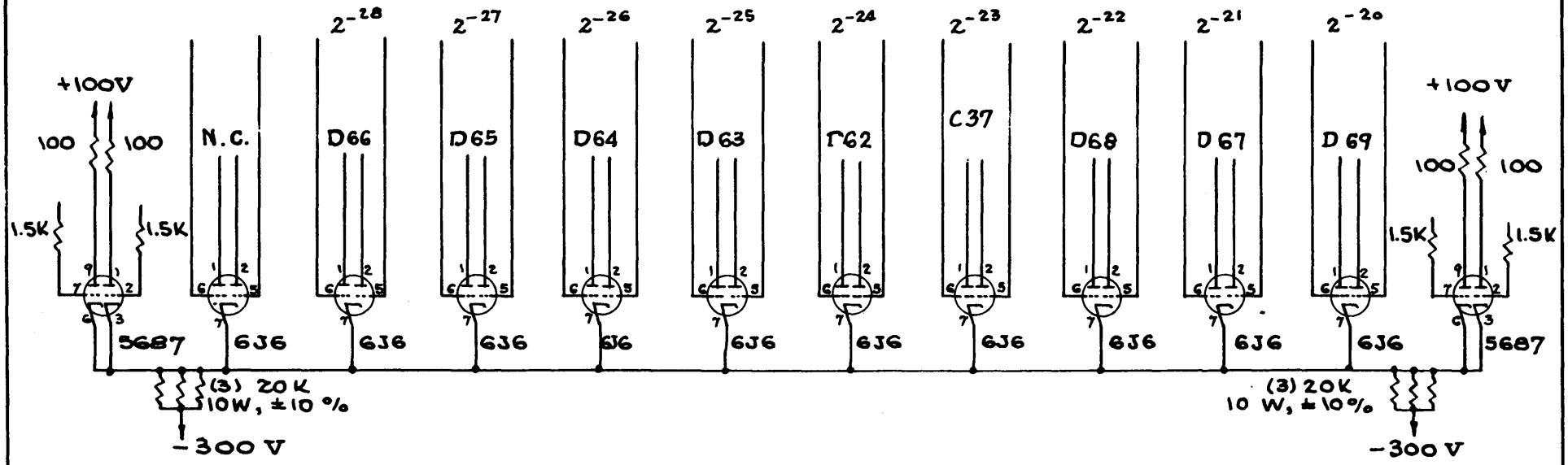
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR J.P.N. DRAWN BY H.M.W.
CHECKED J.P.N. APPROVED R.E. Meagher
TITLE ODD ADDRESS GATE CHASSIS
DATE 1-16-51 DRWG. Nº 249



ORDVAC !

~ NOTES ~

1. PLATES CONNECT TO SAME PLATES OF DECODING CHASSIS FLIPFLOPS WHOSE NUMBERS ARE SHOWN.
2. GRIDS COME FROM SAME GRIDS OF R_3 FLIPFLOPS WHOSE NUMBERS ARE SHOWN.
3. 5687 GRIDS CONNECT TO ODD ORDER GATE DRIVER
4. ALL FILS. AT GROUND.
5. RESISTORS NOT SPECIFIED ARE $\frac{1}{2}$W, ± 20%.

BB

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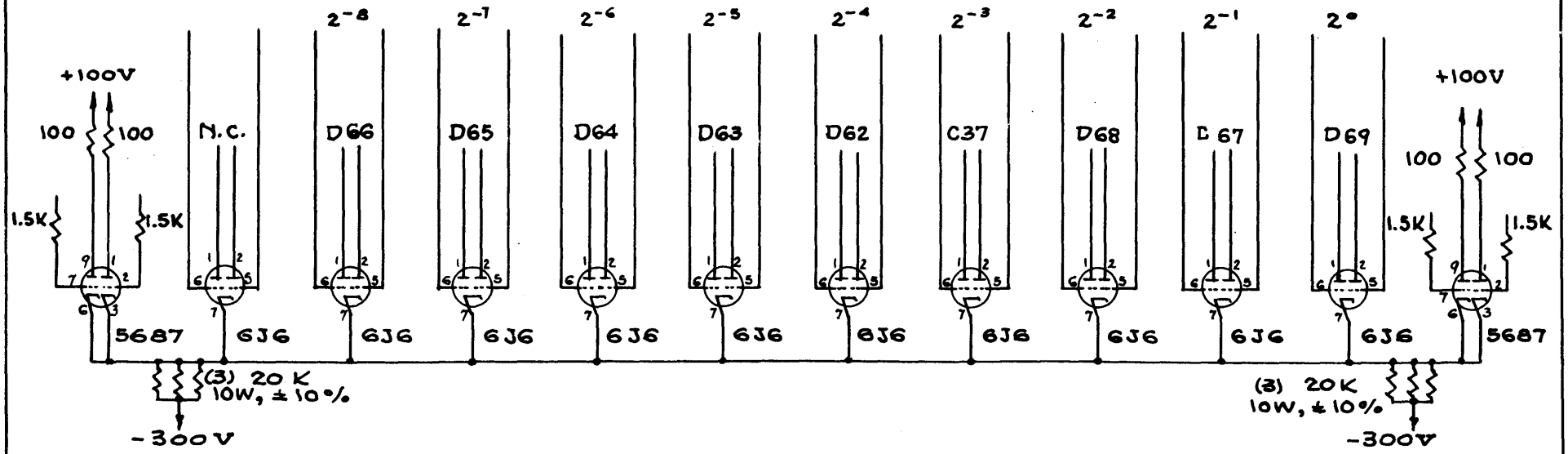
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR J.P.N. DRAWN BY H.W.W.
CHECKED JPN APPROVED R.E. Meagher
TITLE ODD ORDER GATE CHASSIS.
DATE 1-16-51 DRWG. NO. 250



ORDVAC!

~NOTES~

1. PLATES CONNECT TO SAME PLATES OF DECODING CHASSIS FLIP-FLOPS WHOSE NUMBERS ARE SHOWN.
2. GRIDS COME FROM SAME GRIDS OF R_3 FLIPFLOPS WHOSE NUMBERS ARE SHOWN.
3. 5687 GRIDS CONNECT TO EVEN ORDER GATE DRIVER.
4. ALL FILAMENTS AT GROUND.
5. ALL RESISTORS NOT SPECIFIED ARE 1/2 W, ± 20%.

A-A

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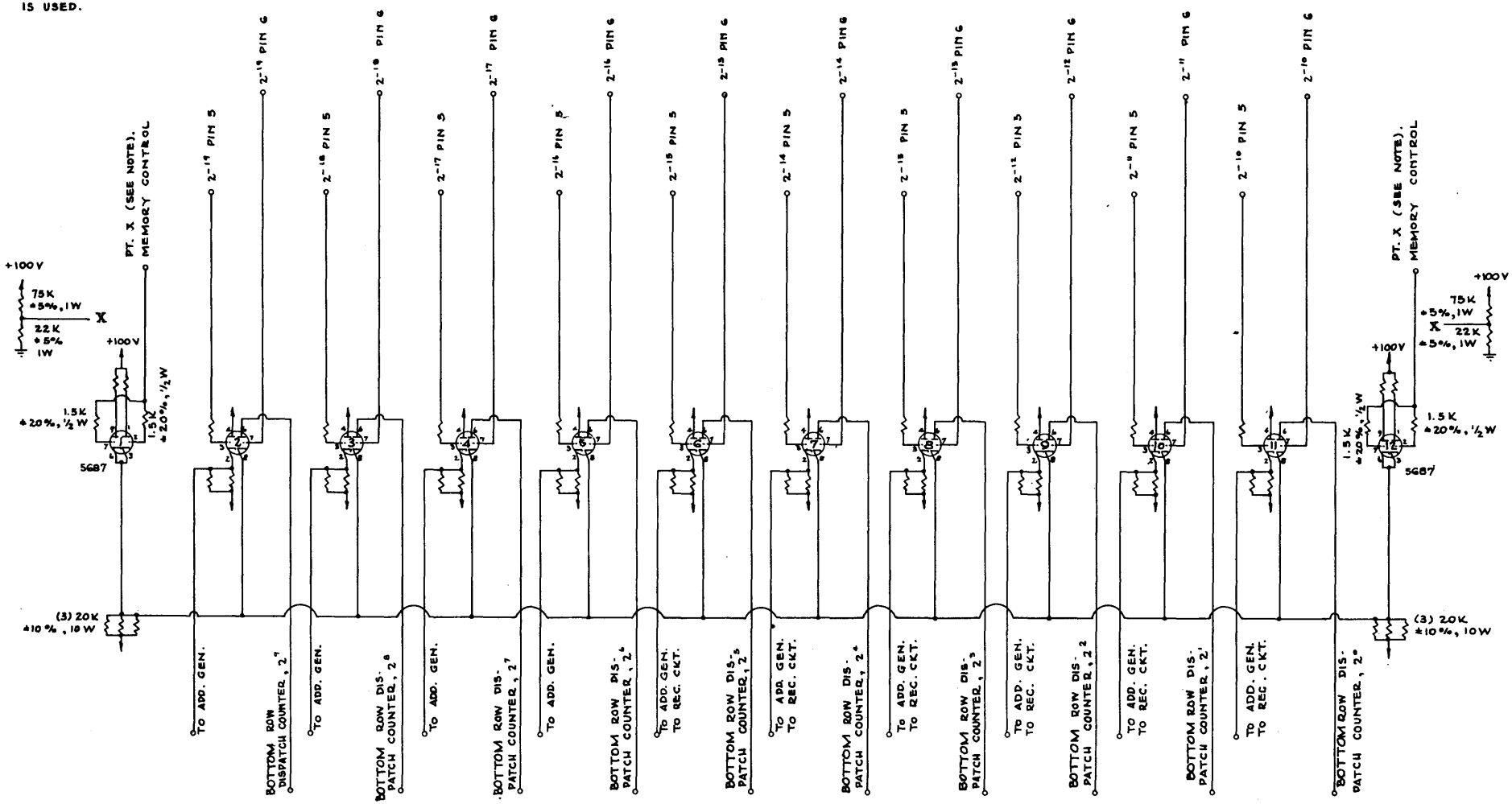
UNIVERSITY RESEARCH BOARD
ELECTRONIC DIGITAL COMPUTER
DRAWN FOR JPN DRAWN BY HMW.
CHECKED JPN APPROVED R.E. Meagher
TITLE EVEN ORDER GATE CHASSIS
DATE 1·16·51 DRWG. Nº 251



WHEN NOT SPECIFIED:

1. ALL PLATE RESISTORS ARE 100, ± 20%, ½ W.
2. " GRID RESISTORS ARE 10K, ± 20%, ½ W.
3. " CATHODE " " 120K, ± 10%, 2W.
4. " UP VOLTAGES ARE +150V.
5. " DOWN " ARE −300V.
6. " TUBES ARE 2C51's.

ORDVAC!

(DD)

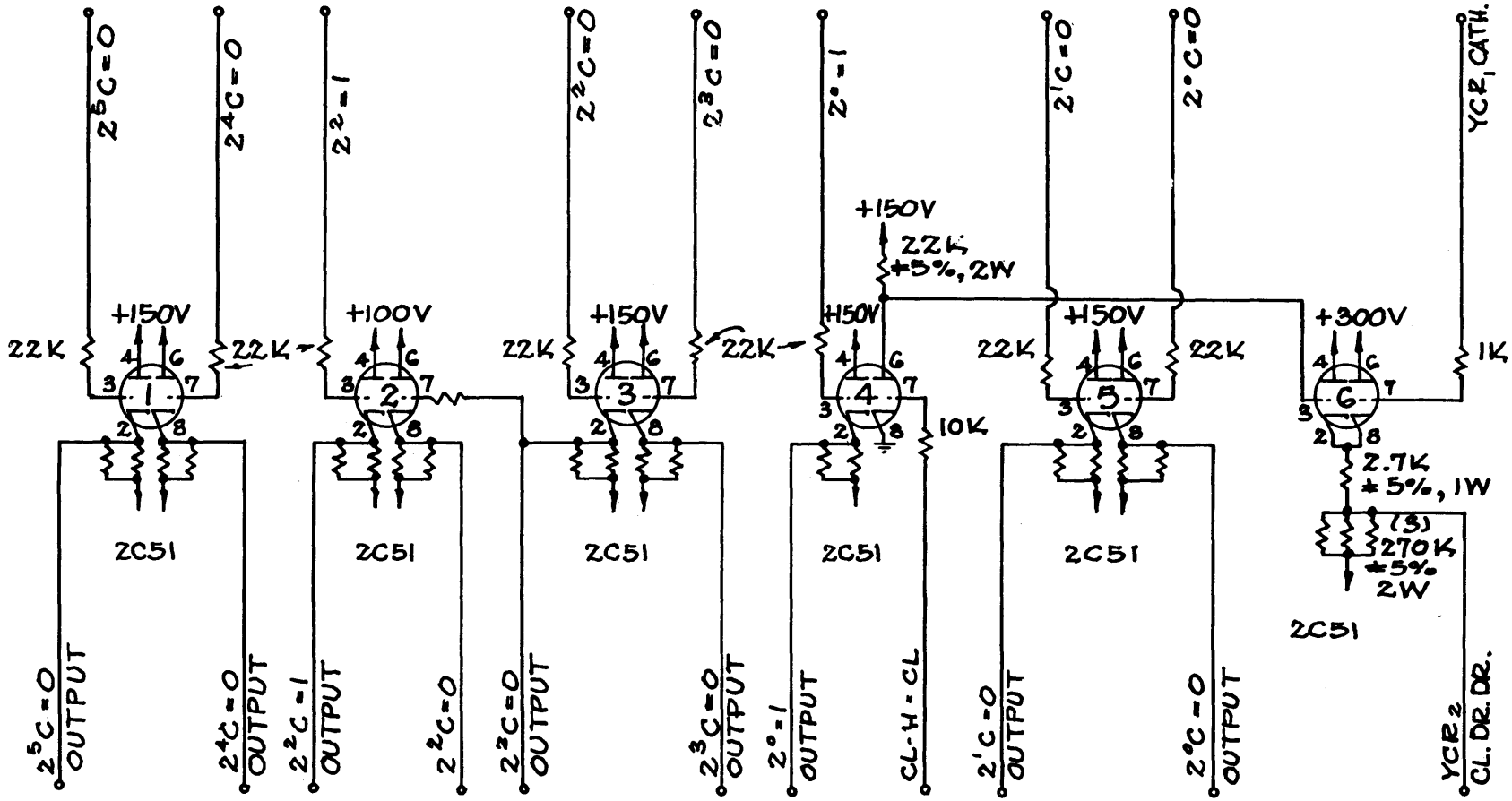
REVISED & REDRAWN FROM DRWG. OF SAME NO. DATED 1-17-51.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR J.P.N. BY W.M.W. CHECKED J.P.Nash APPROVED R.E.Meagher DATE 4-12-51

TITLE - EVEN ADDRESS CATHODE FOLLOWER CHASSIS

M-252



WHEN NOT SPECIFIED:

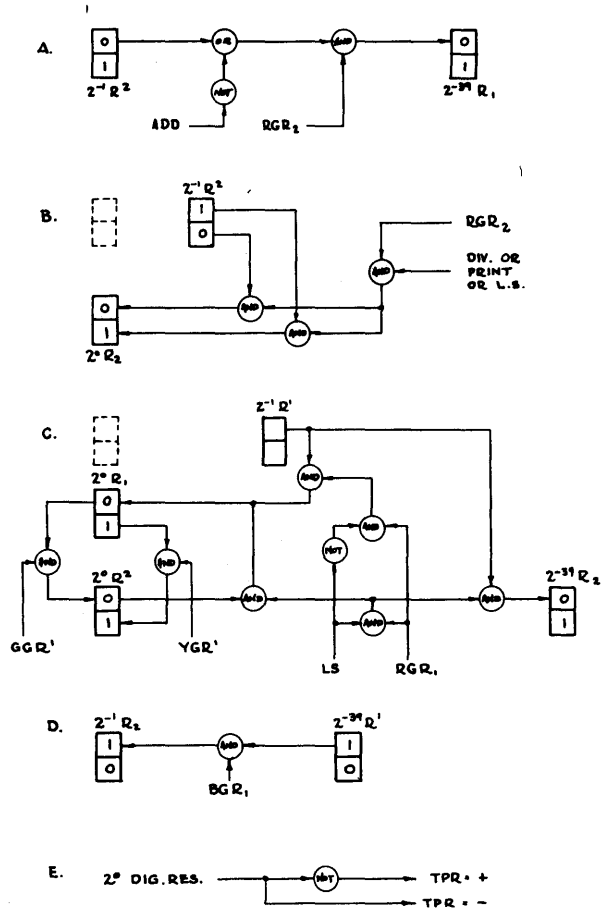
1. ALL DOWN VOLTAGES ARE −300V.
2. " CATH. RESISTORS ARE 1'20K, ±10%, 2W.
3. " OTHER " " ±20%, ½W.
4. FILS OF V6 AT +100V. ALL OTHER FILS AT GRND.

• REDRAWN FROM DRWG. OF SAME NO. DATED 2·1·51.

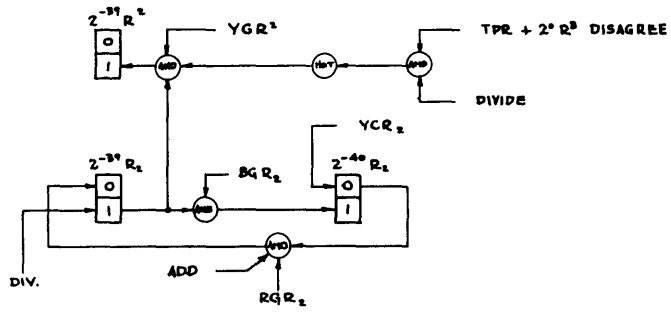
UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR JMW BY HMW CHECKED R.E. Meagher. APPROVED R.E. Meagher. DATE 2·29·52 S·253

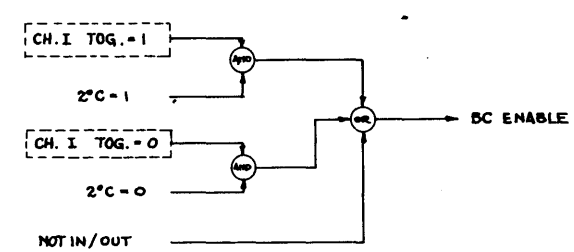
TITLE ~ COUNTER OUTPUT CHASSIS



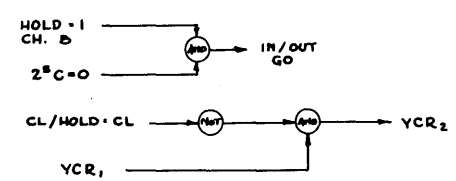
END CONNECTIONS



END CONNECTIONS



IN/OUT START & SHIFT CHASSIS II



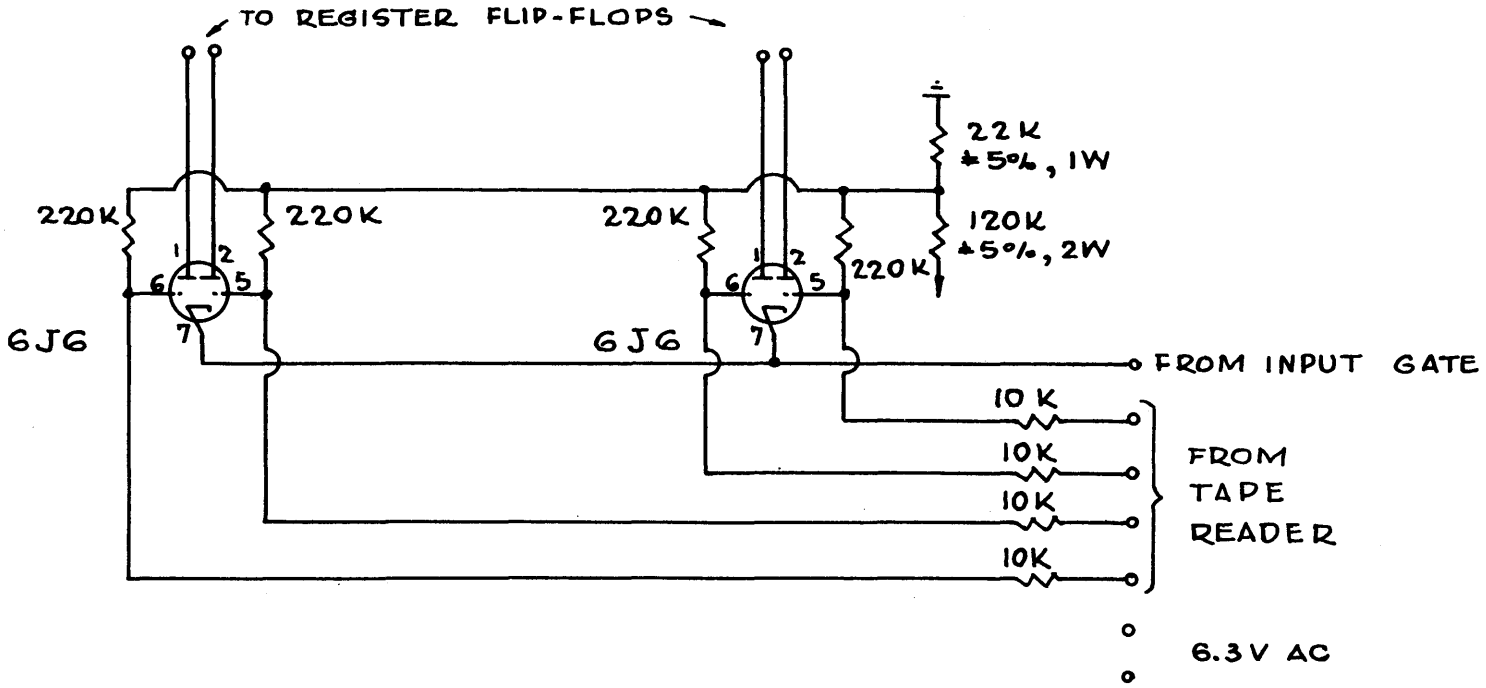
COUNTER OUTPUT CHASSIS

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR E.L.H. BY W.M.W. CHECKED APPROVED R. E. Meagher DATE 4-18-51

TITLE – END CONNECTION LOGIC

M · 257



ALL RESISTORS NOT SPECIFIED ARE ± 20%, 1/2 W.

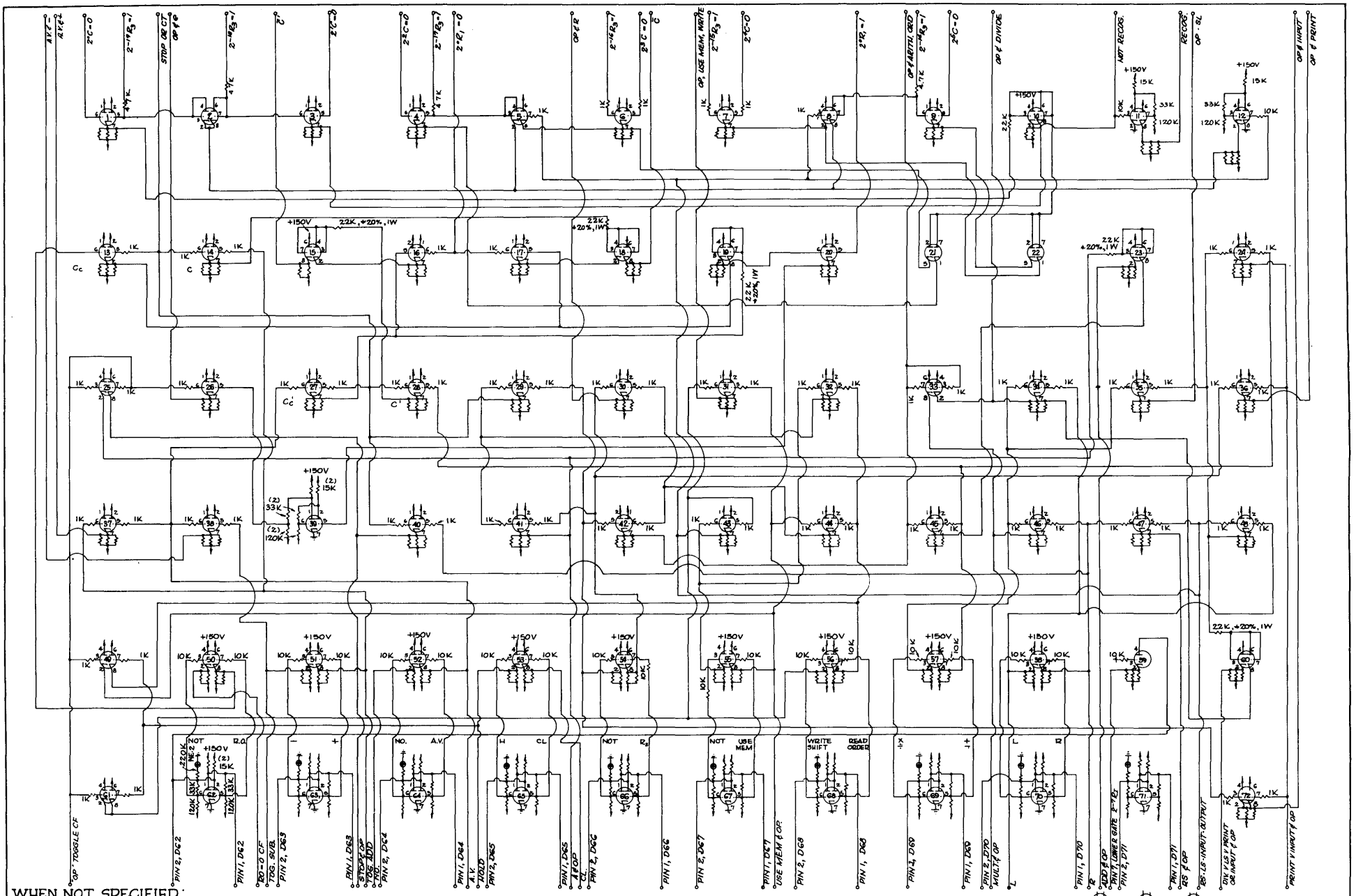
REDRAWN FROM DRWG OF SAME NO. DATED 1.22.51.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR T.S. BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher. DATE 6.25.51

TITLE ~ INPUT GATES FOR INPUT CIRCUIT

S·259

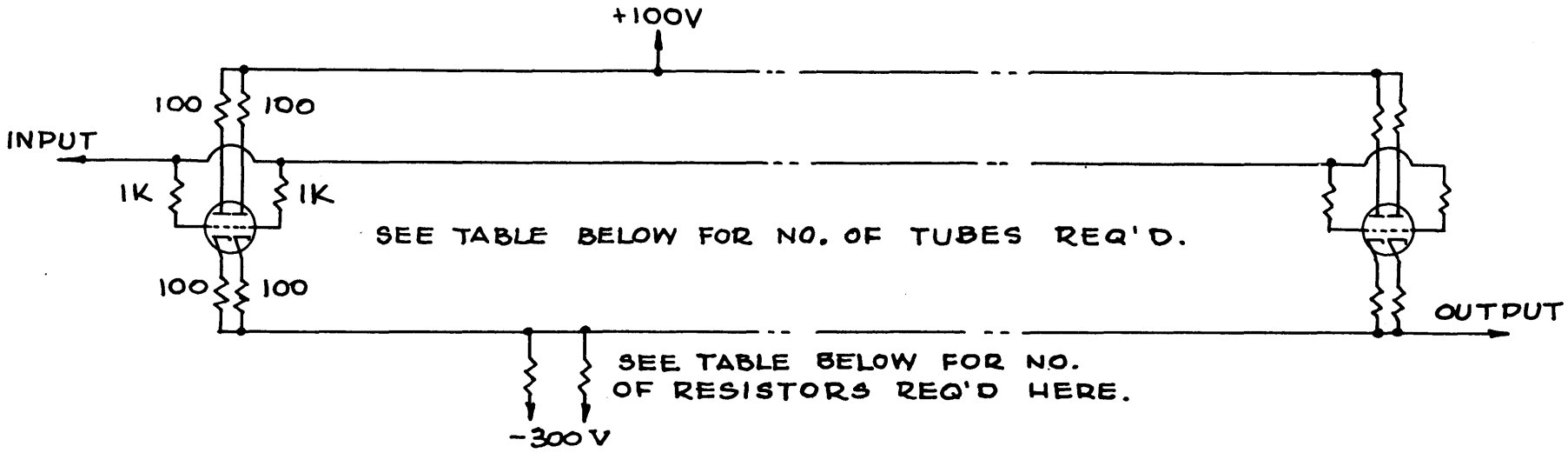


WHEN NOT SPECIFIED:

1. ALL 15K RESISTORS ARE ± 3%, 2W.
2. " 33K " " ± 3%, 1W.
3. " CATHODE REGISTORS ARE 120K, ± 10%. 2W BUT OTHER 120K'S ARE ± 3%, 2W.
4. ALL 1K, 1.2K, 4.7K & 10K' RESISTORS ARE ± 20%, ½W.
5. ALL UP VOLTAGES ARE +100V.
6. " DOWN " " −300V.
7. TUBES 63 THRU 71 ARE STANDARD FLIPFLOPS & ARE WIRED SAME AS "62.

·REVISED & REDRAWN FROM DRWG. OF SAME N° DATED 1-25-51

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER					
FOR JPN	BY WMW	CHECKED	APPROVED R E Meagher	DATE NOV. 27, 1951	L-260
TITLE ~ DECODING CHASSIS					



THREE SECTIONS REQUIRED:

SECT I - DASH TEST	22 TUBES	50 - 20K, ±10%, 10W RESISTORS
SECT. II - DASH END	10 "	20 " " " "
SECT. III - DOT	3 "	3 " " " "

ALL TUBES ARE 5687'S. RESISTORS NOT SPECIFIED ARE ±20%, $\frac{1}{2}$W.

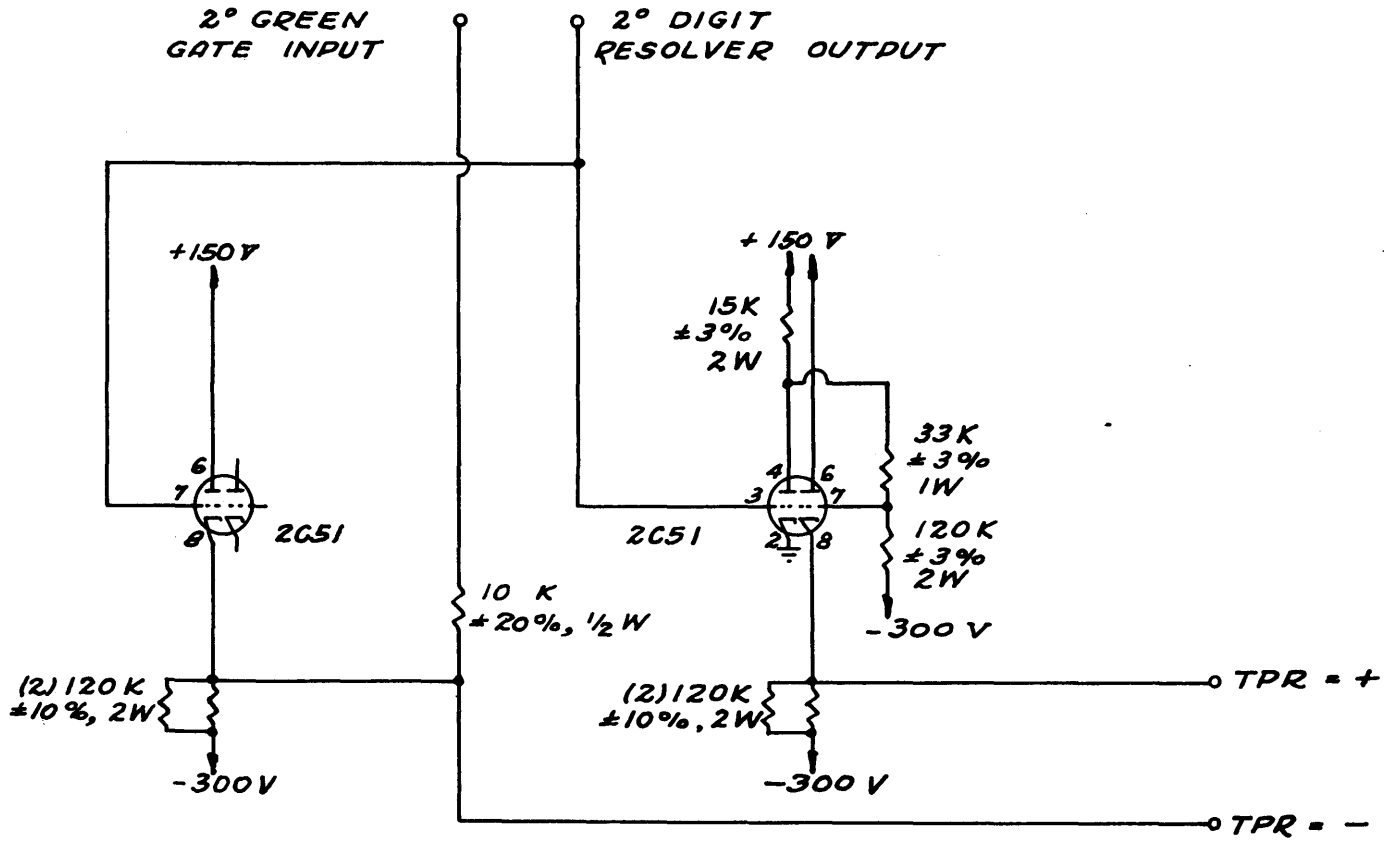
REDRAWN FROM DRWG. OF SAME NO. DATED 1-26-51.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR ELH BY HMW CHECKED W. JONES APPROVED R. E. Meagher DATE 6-25-51

TITLE ~ WILLIAMS IV PULSE CATHODE FOLLOWERS

S-261



ALL FILS. AT GROUND.

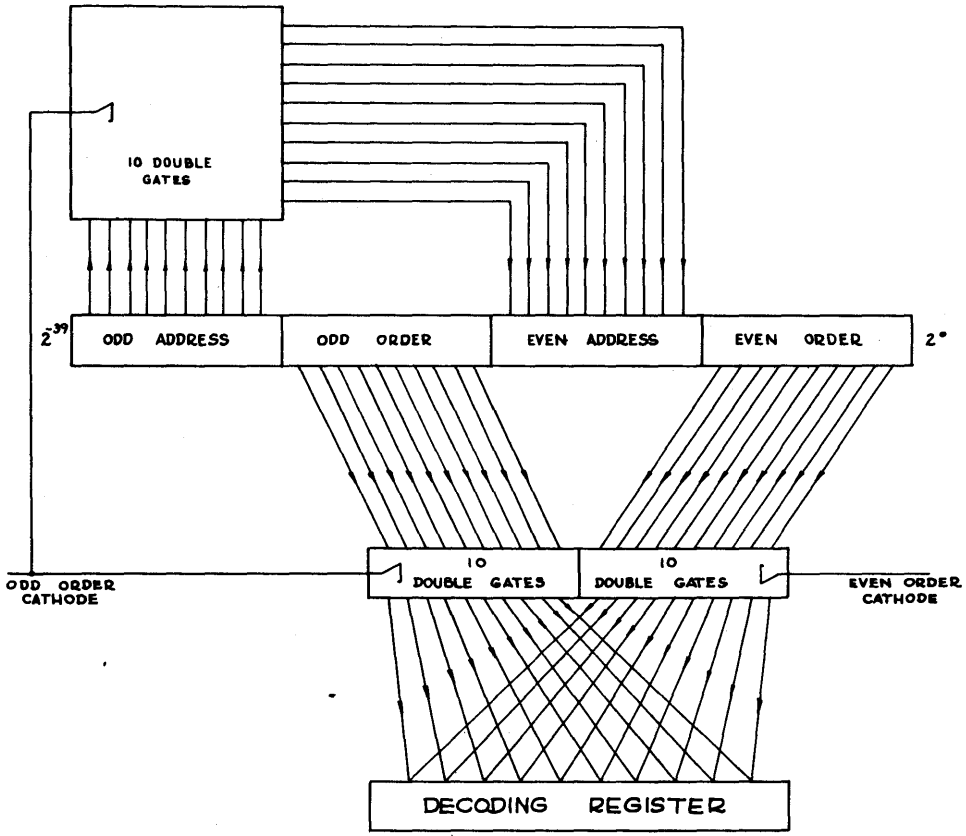
REDRAWN FROM DRAWG. OF SAME NO. DATED 2.6.51.

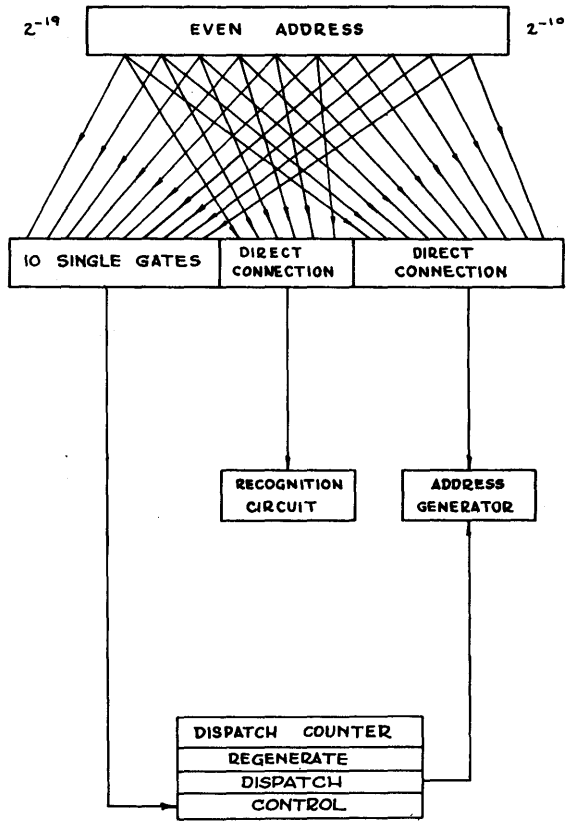
UNIVERSITY of ILLINOIS • UNIVERSITY RESEARCH BOARD • ELECTRONIC DIGITAL COMPUTER

FOR E.L.H. BY H.M.W. CHECKED [illegible] APPROVED R.E. Meagher DATE 3.19.51

TITLE TPR OUTPUT CONNECTIONS

S·265





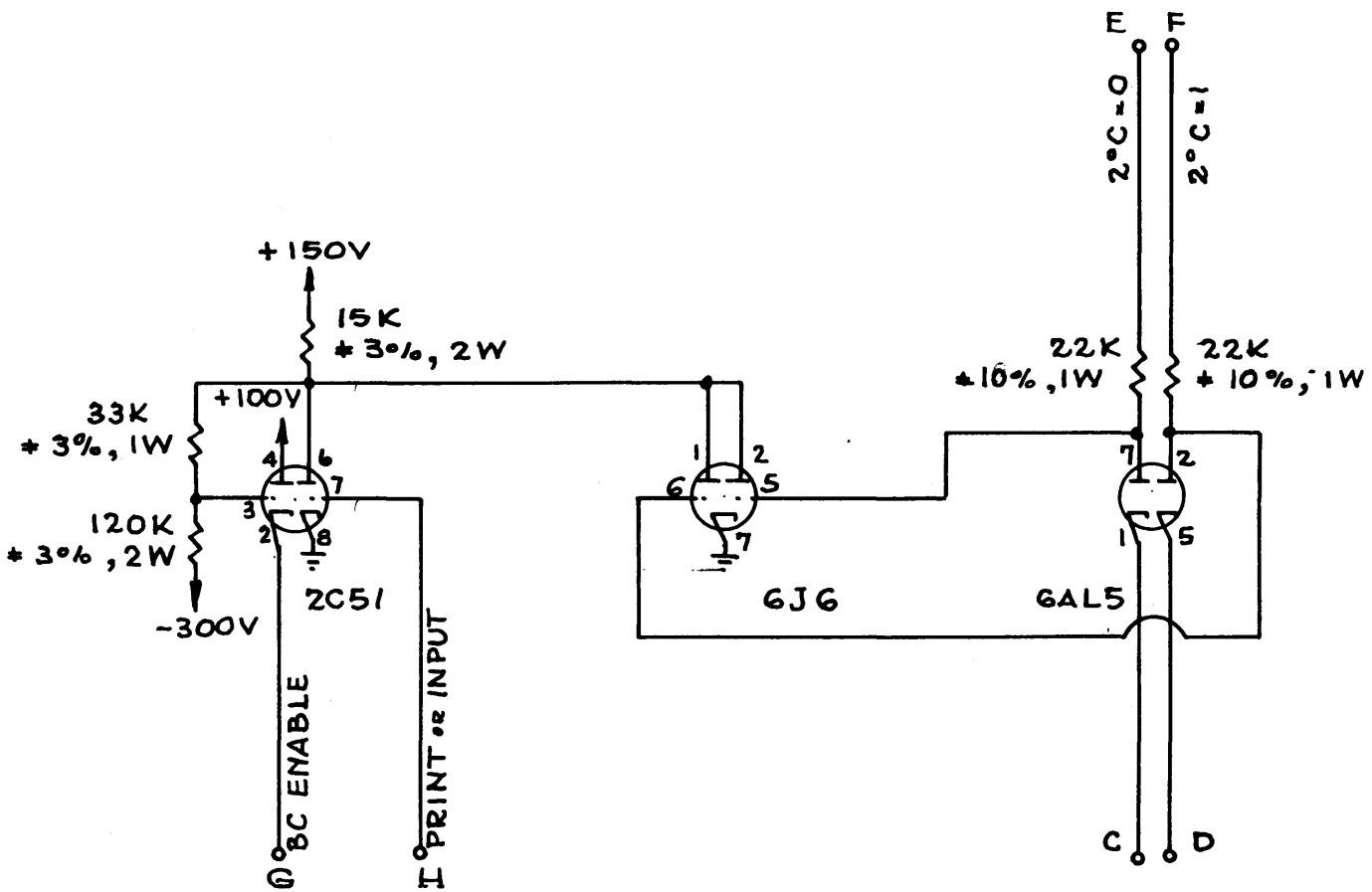
REVISED ~ 7·5·51 · JPN

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR JPN BY HMW CHECKED J.P.Nash APPROVED R.E.Meagher DATE 2·21·51

TITLE GATING FROM R_2

M-266



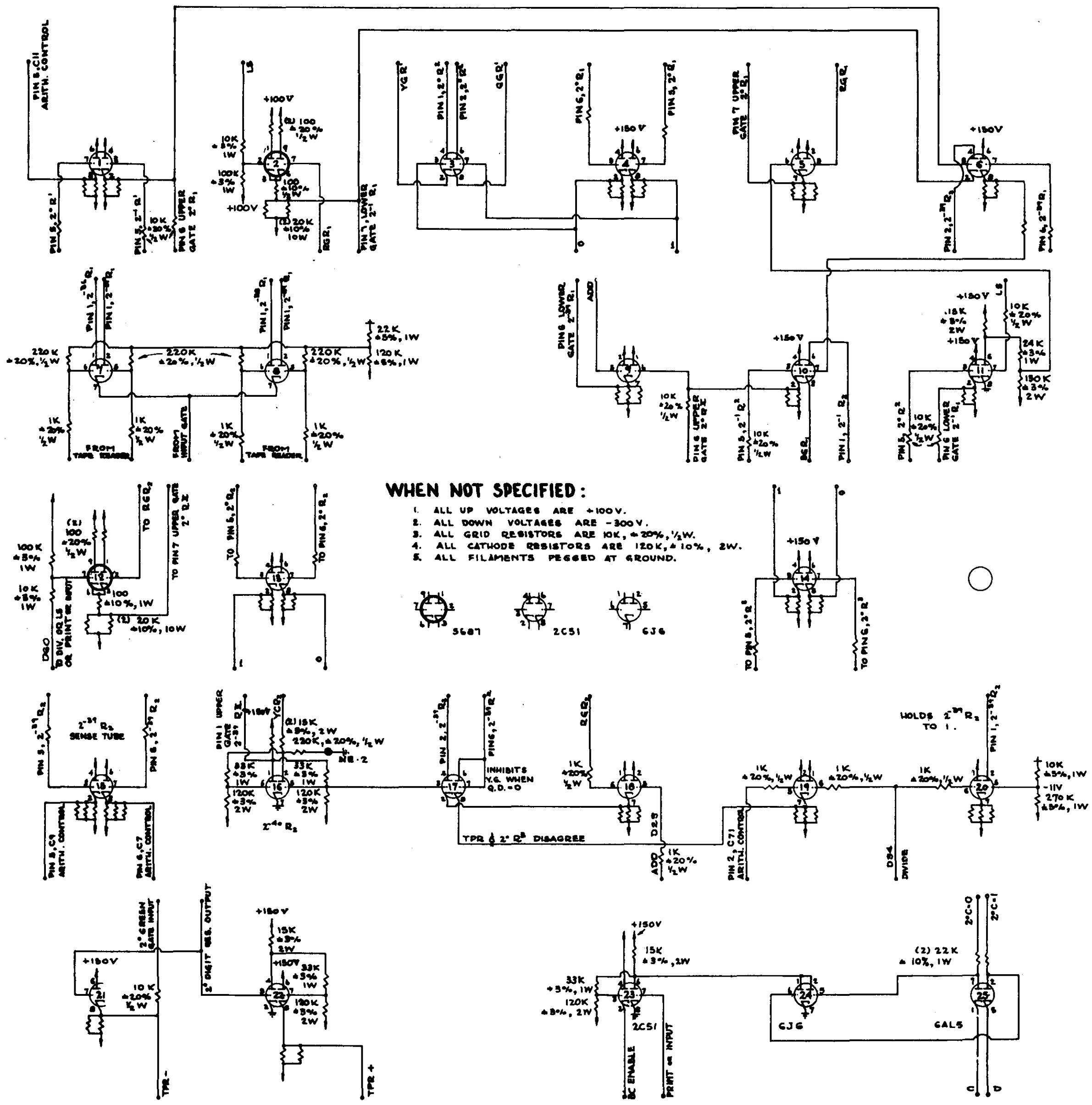
REDRAWN 6·12·51

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR J.P.N. BY HMW CHECKED JPMash APPROVED R. E. Meagher DATE 6·12·51

TITLE INPUT-OUTPUT START & SHIFT CHASSIS II

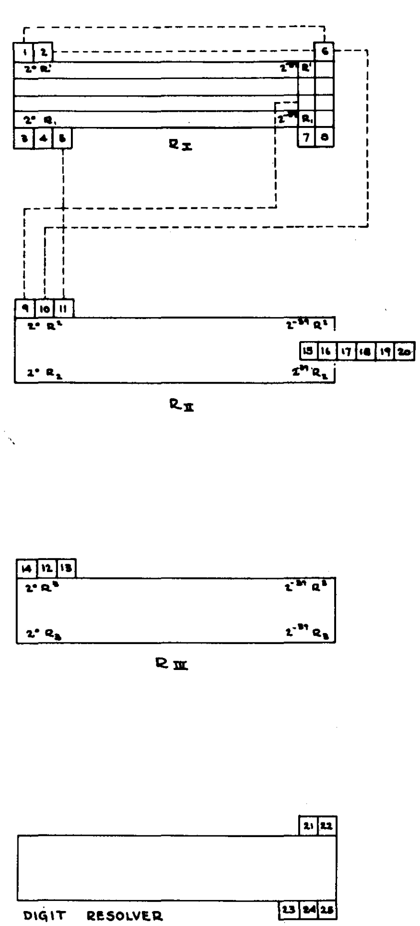
S·271



WHEN NOT SPECIFIED:

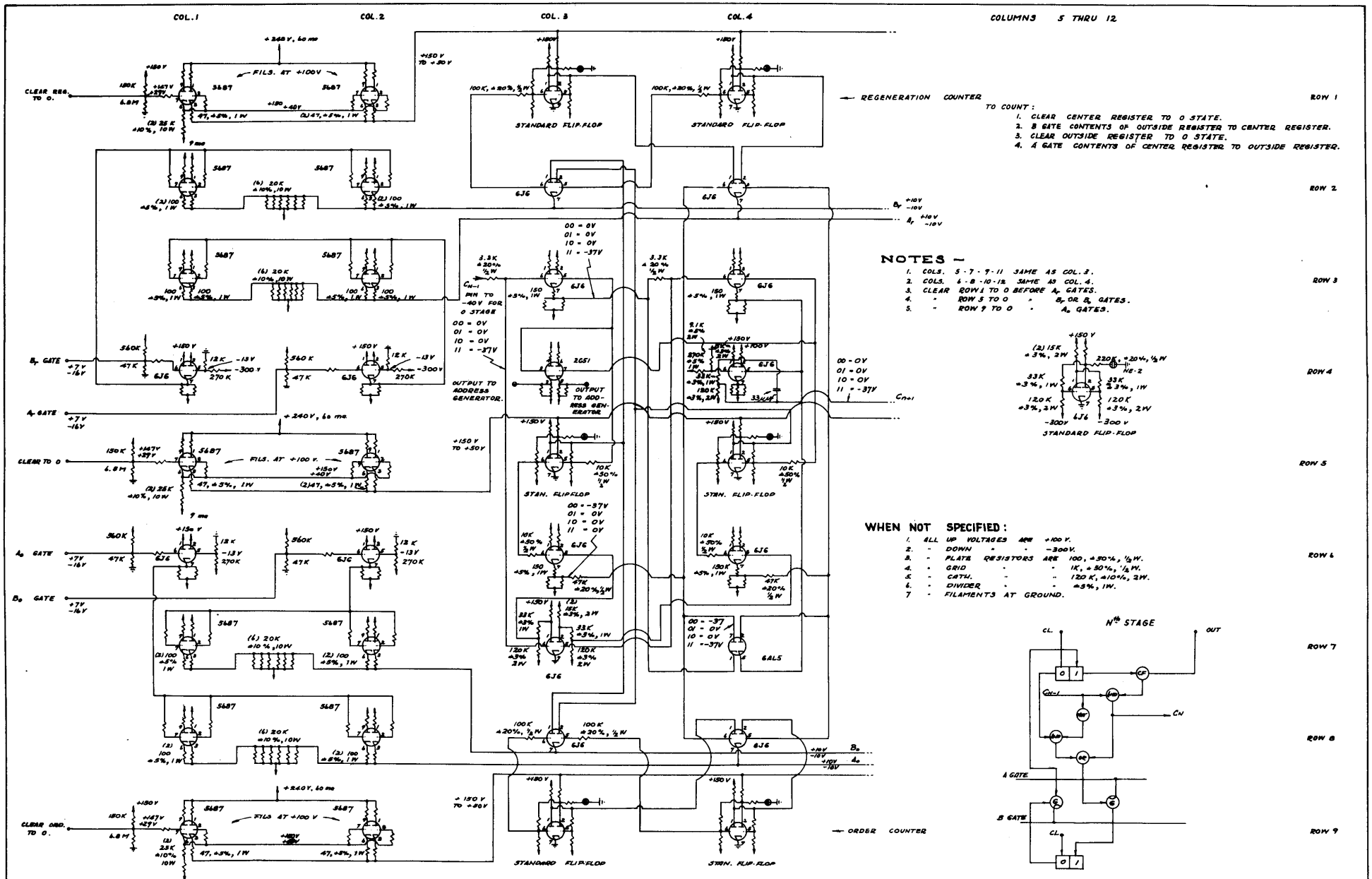
1. ALL UP VOLTAGES ARE +100V.
2. ALL DOWN VOLTAGES ARE -300V.
3. ALL GRID RESISTORS ARE 10K, ±20%, ½W.
4. ALL CATHODE RESISTORS ARE 120K, ±10%, 2W.
5. ALL FILAMENTS PEGGED AT GROUND.

END CONNECTION CHASSIS ARRANGEMENT



REDRAWN FROM DRWG. NO. 263 DATED 1-29-51. REVISED 6-12-51

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER	L-273
TITLE: END CONNECTION CIRCUITS	

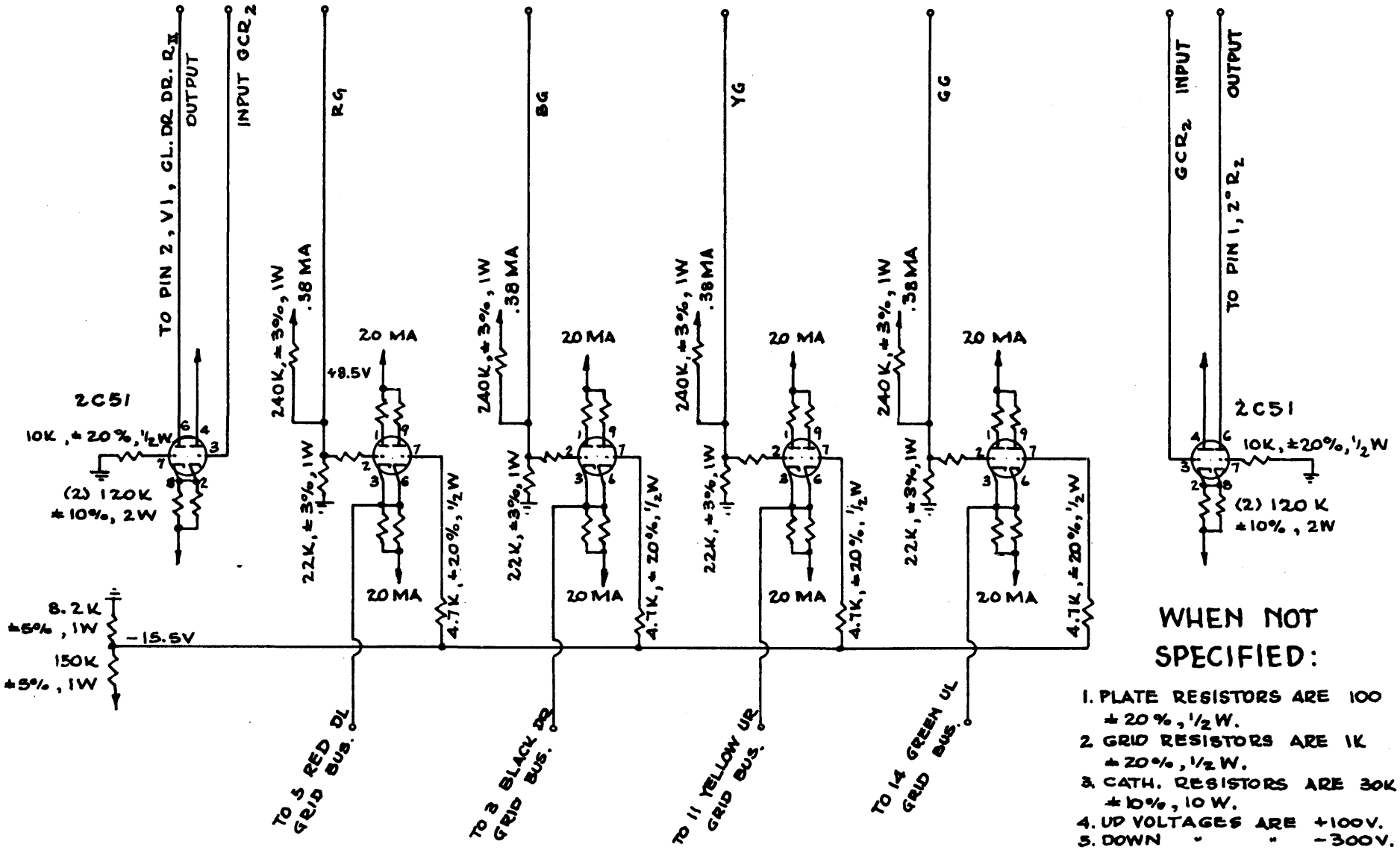


UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR ____ BY ____ CHECKED ____ APPROVED ____ DATE ____

TITLE DISPATCH COUNTER

L-274



WHEN NOT SPECIFIED:

1. PLATE RESISTORS ARE 100 ± 20%, ½W.
2. GRID RESISTORS ARE 1K ± 20%, ½W.
3. CATH. RESISTORS ARE 30K ± 10%, 10W.
4. UP VOLTAGES ARE +100V.
5. DOWN " " -300V.
6. ALL TUBES ARE 5687'S.

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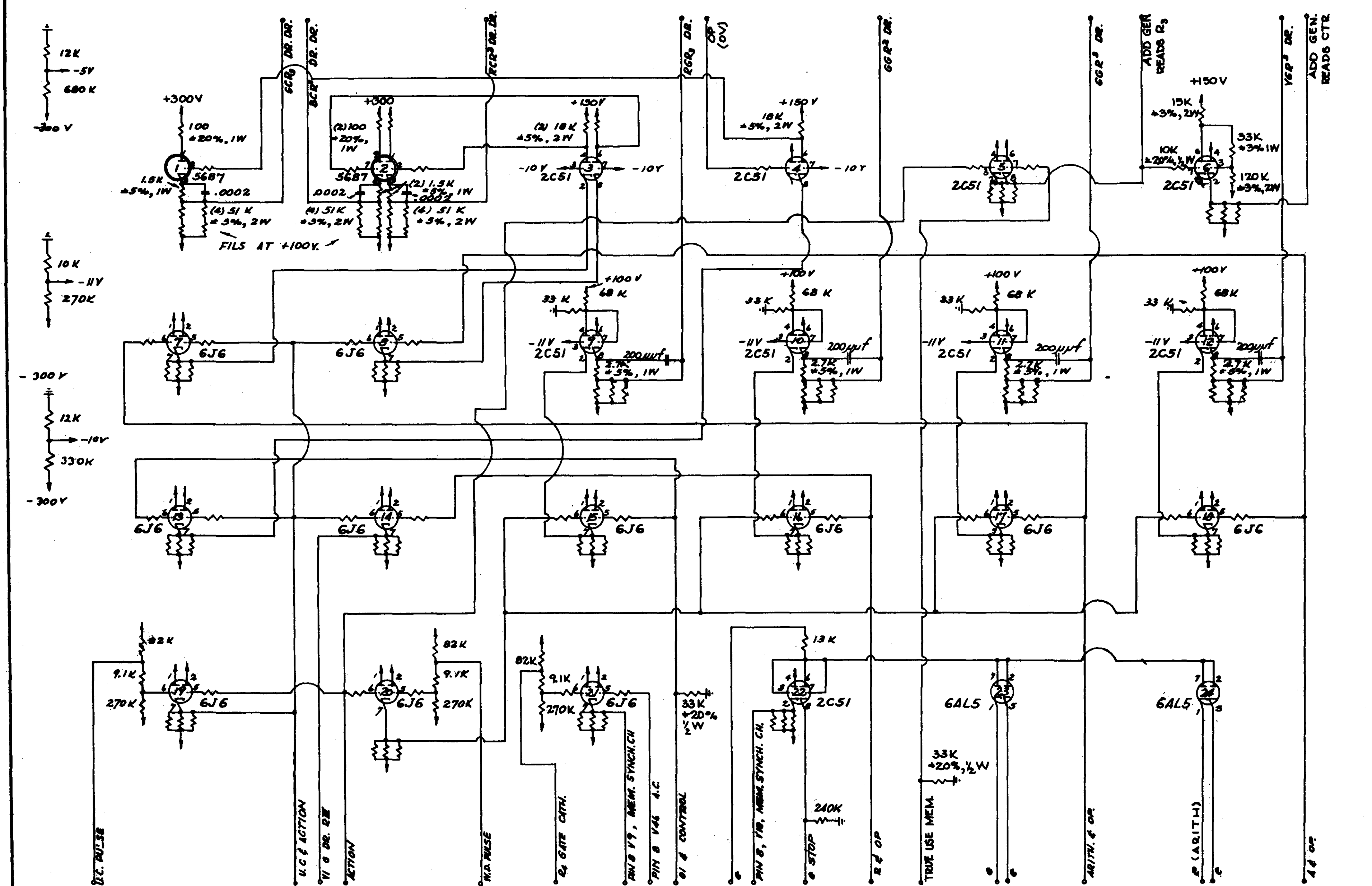
FOR E.L.H. BY H.M.W. CHECKED E.L.H. APPROVED R. E. Meagher DATE 4.19.51

TITLE · GATE DRIVER RIII

S · 280



WHEN NOT SPECIFIED:
1. UP VOLTAGES ARE +100 V.
2. DOWN " " -300 V.
3. GRID RESISTORS ARE 1.2K, ±20%, ½W.
4. CATH. " 120K, ±10%, 2W
5. OTHER " NOT SPECIFIED ARE ±3%, 1W.
6. FILS. AT GRND.

LATEST REVISION DATE ~ 8·2·51.

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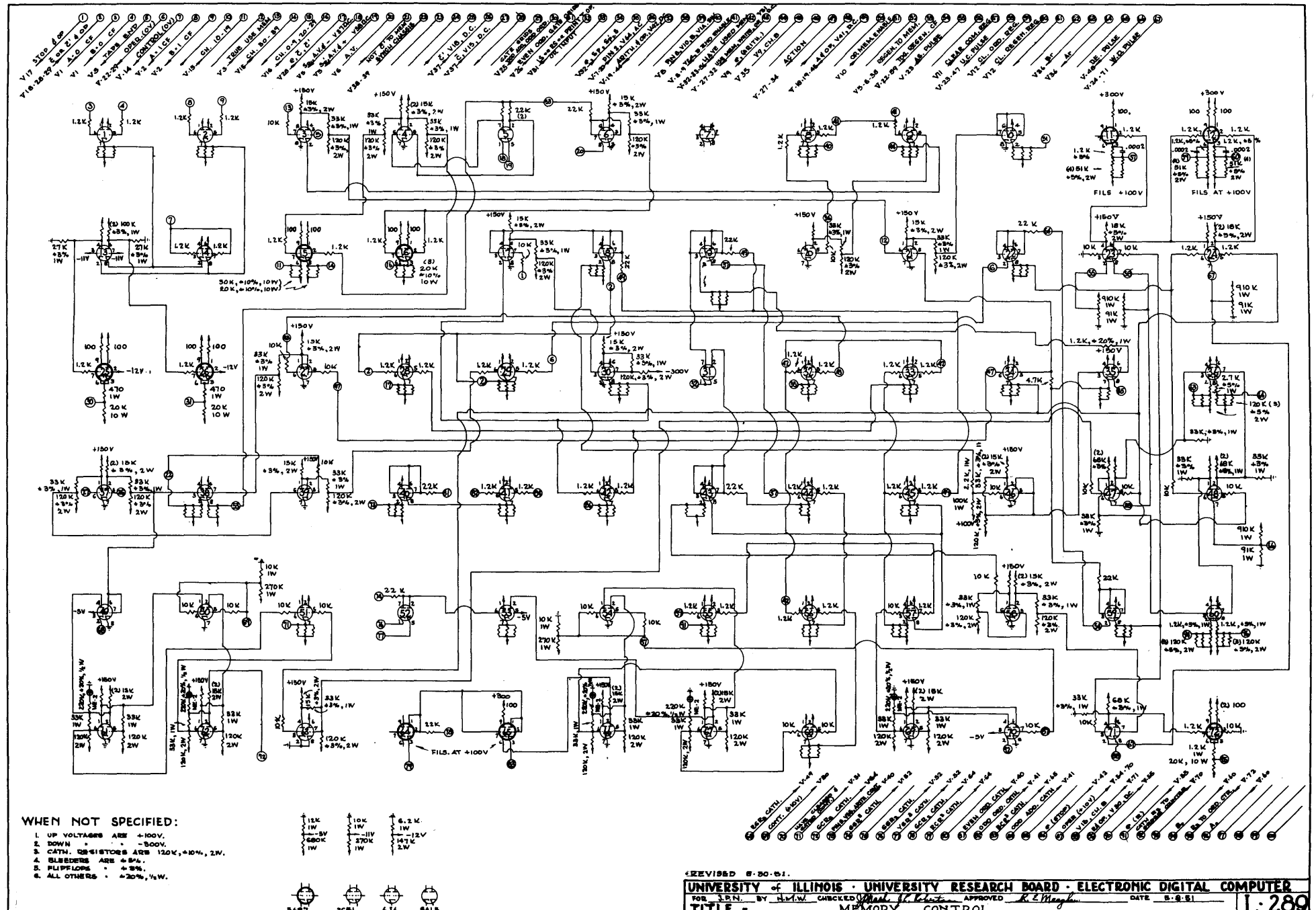
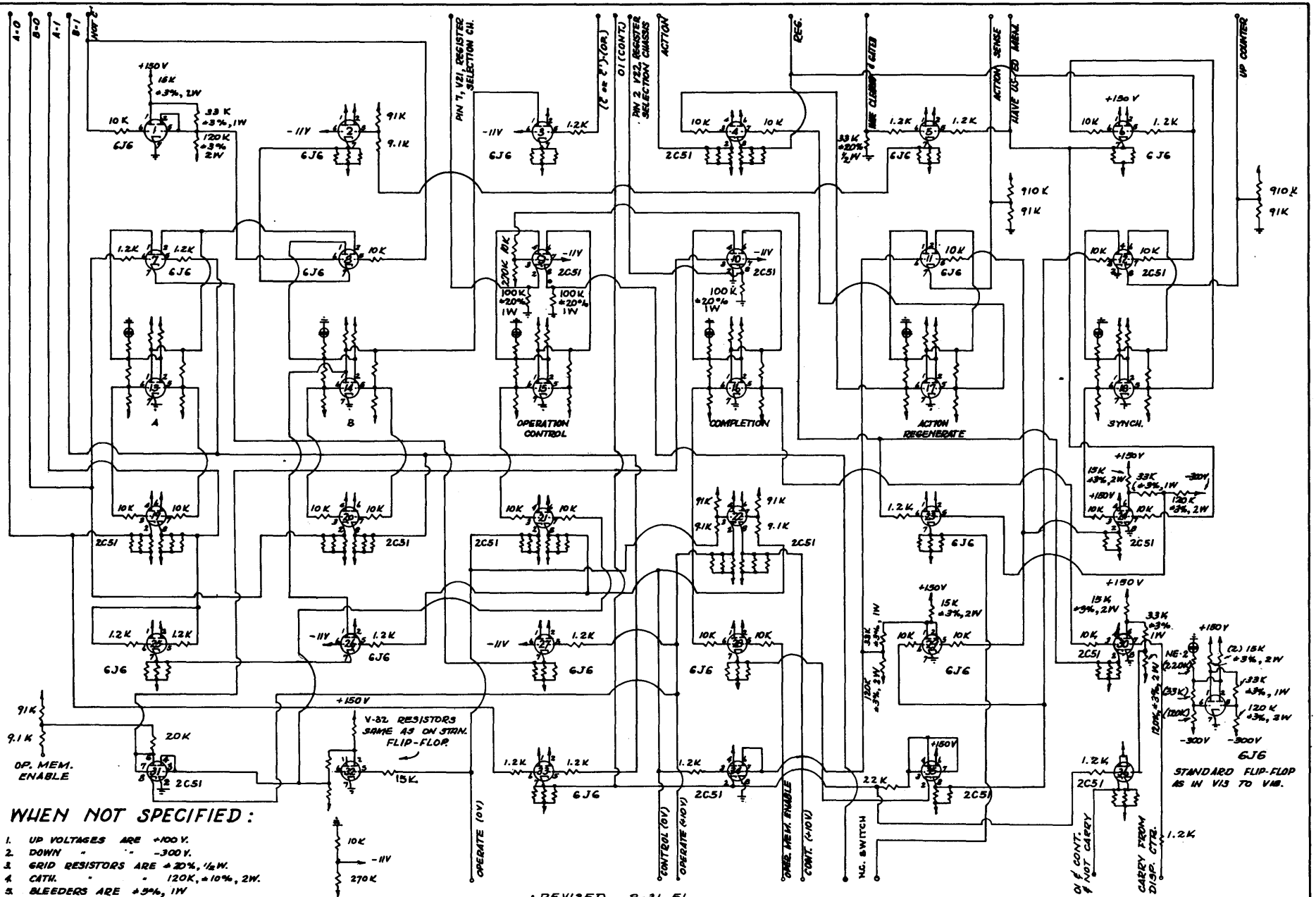
FOR J.P.N. BY H.M.W. CHECKED J. Nash APPROVED R. E. Meagher DATE 4·30·51

TITLE REGISTER SELECTION CHASSIS

M·288


WHEN NOT SPECIFIED:
1. UP VOLTAGES ARE +100V.
2. DOWN " " -300V.
3. CATH. RESISTORS ARE 120K, ±10%, 2W.
4. BLEEDERS ARE ±5%.
5. FLIPFLOPS " ±3%.
6. ALL OTHERS " ±20%, ½W.
5687
2C51
6J6
6AL5
REVISED 8-30-51.
UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER
FOR I.P.N. BY H.W.W. CHECKED APPROVED DATE 8-9-51
TITLE - MEMORY CONTROL
L-289



WHEN NOT SPECIFIED:

1. UP VOLTAGES ARE +100 V.
2. DOWN " " -300 V.
3. GRID RESISTORS ARE ±20%, 1/2 W.
4. CATH. " " 120K, ±10%, 2W.
5. BLEEDERS ARE ±5%, 1W

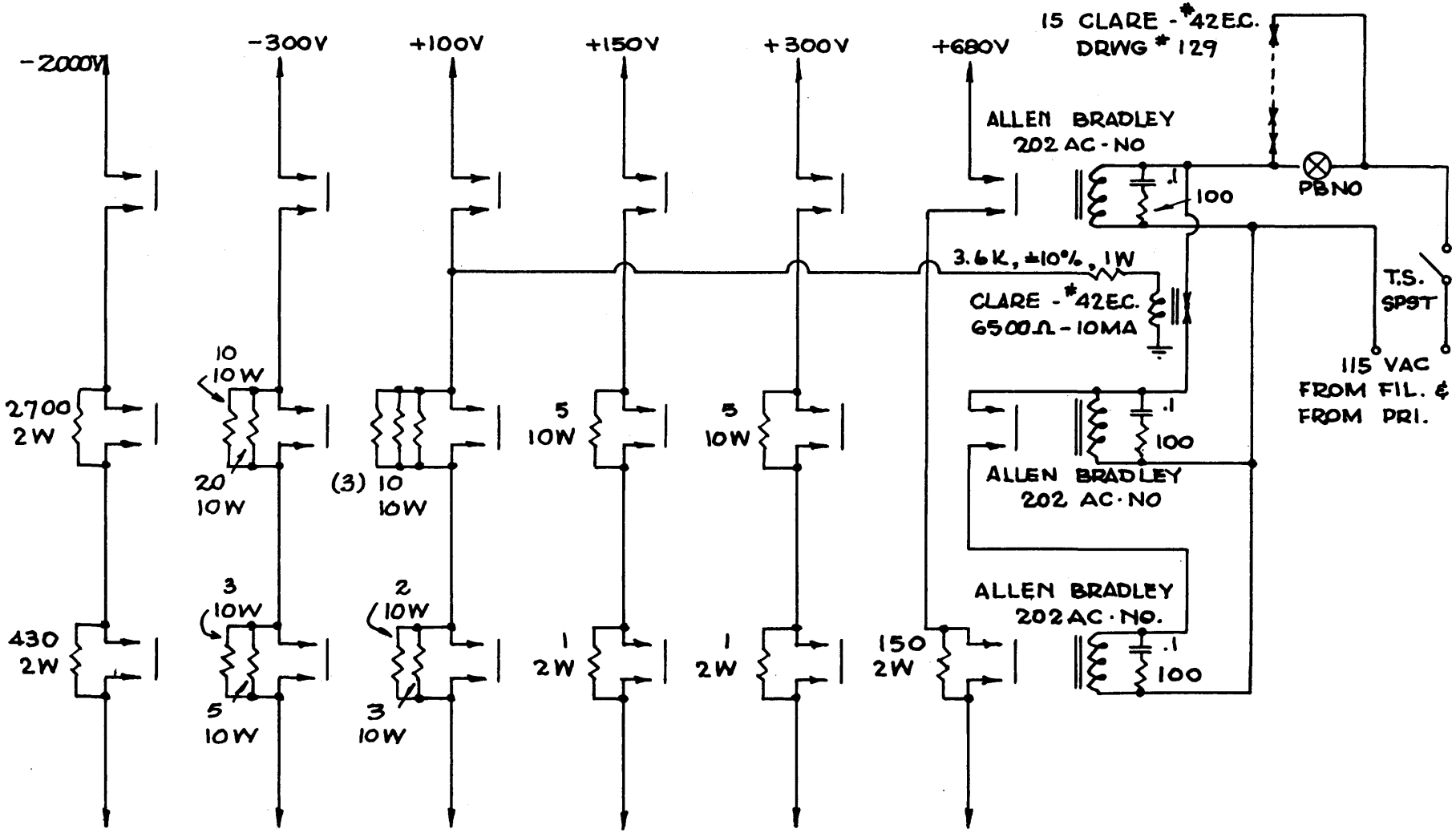
· REVISED 8-31-51.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR IAS. BY H.H.W. CHECKED J.P.Nash APPROVED R.E. Meagher DATE 5-2-51

TITLE MEMORY SYNCHRONIZATION CHASSIS

M-290



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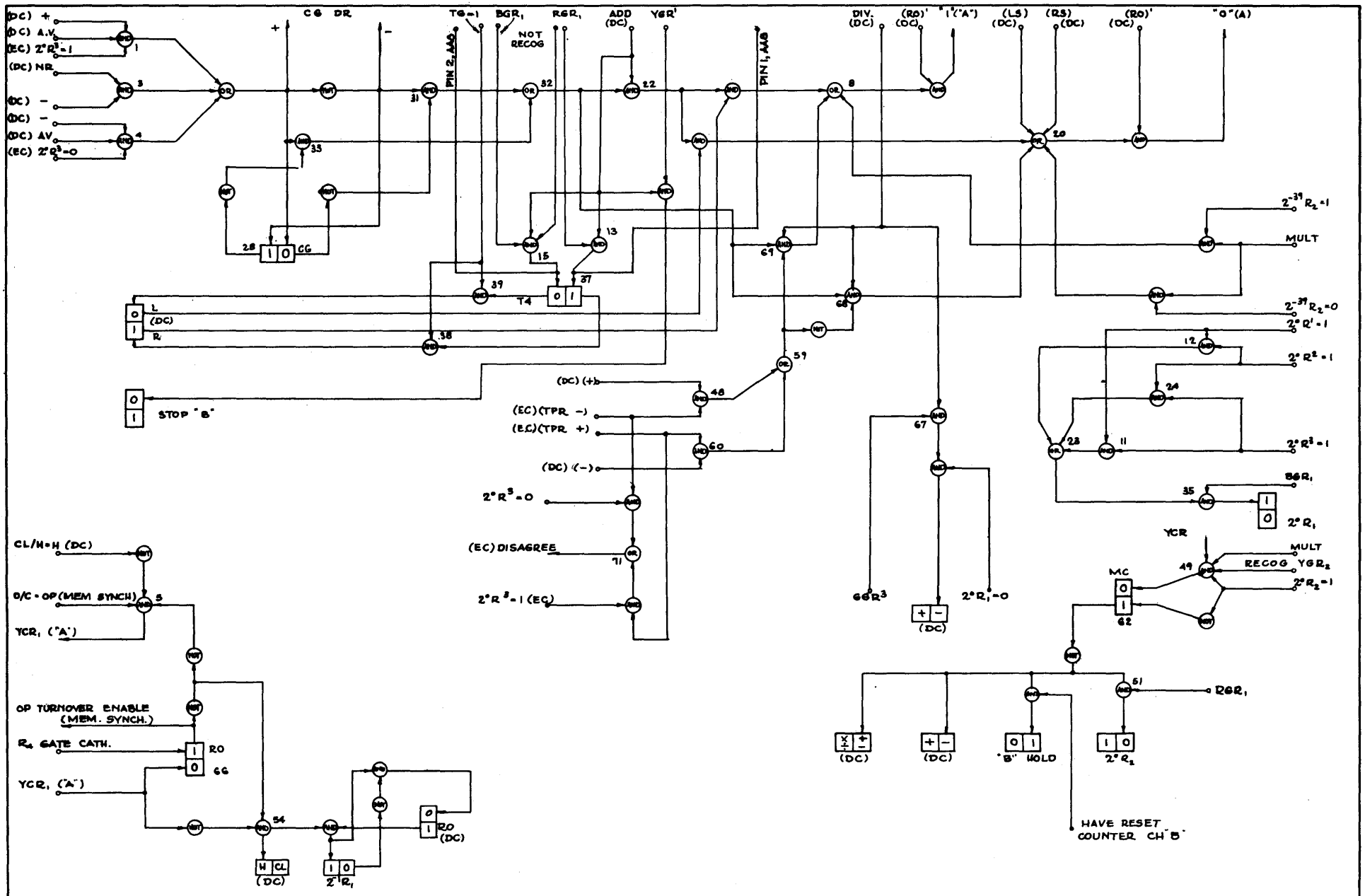
FOR KWB BY HMW CHECKED K.W. Bartlett APPROVED R. E. Meagher DATE 6·14·51

TITLE ~ D. C. TURN-ON

S·297



LATEST REVISION ~ 9·10·51

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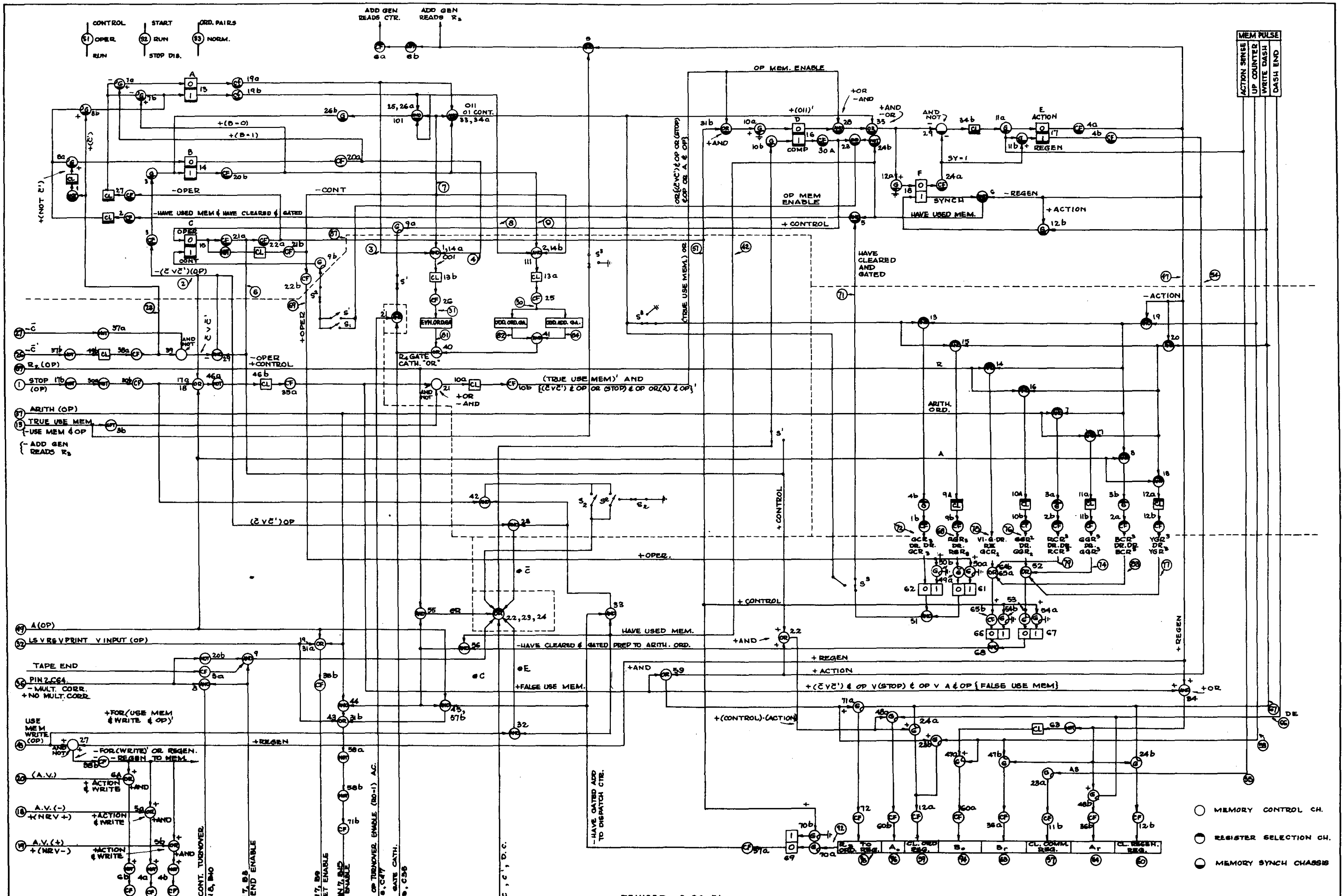
FOR E.L.H. BY HW CHECKED [illegible] APPROVED R. E. Meagher DATE 5·31·51

TITLE ~ LOGICAL DIAGRAM OF ARITHMETIC CONTROL

M·300



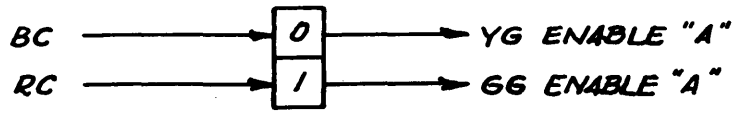
REVISED 8·30·51.

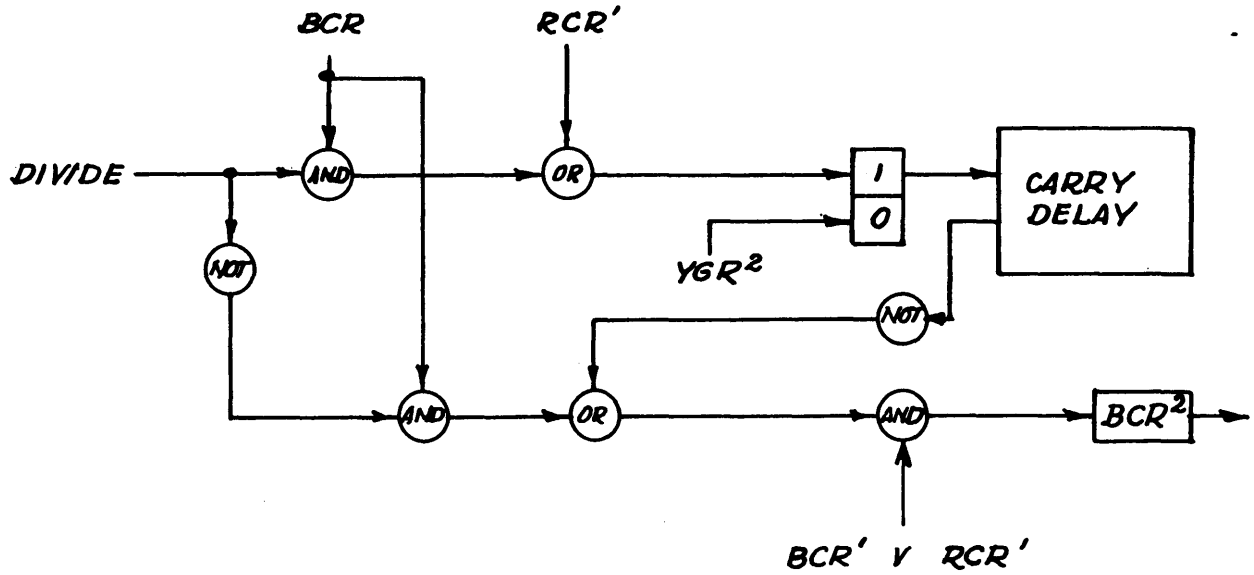
UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR JER BY HMW CHECKED Jonas APPROVED R. E. Meagher DATE 8·10·51

TITLE ~ LOGICAL DIAGRAM OF THE INTERPLAY CONTROL

L-301





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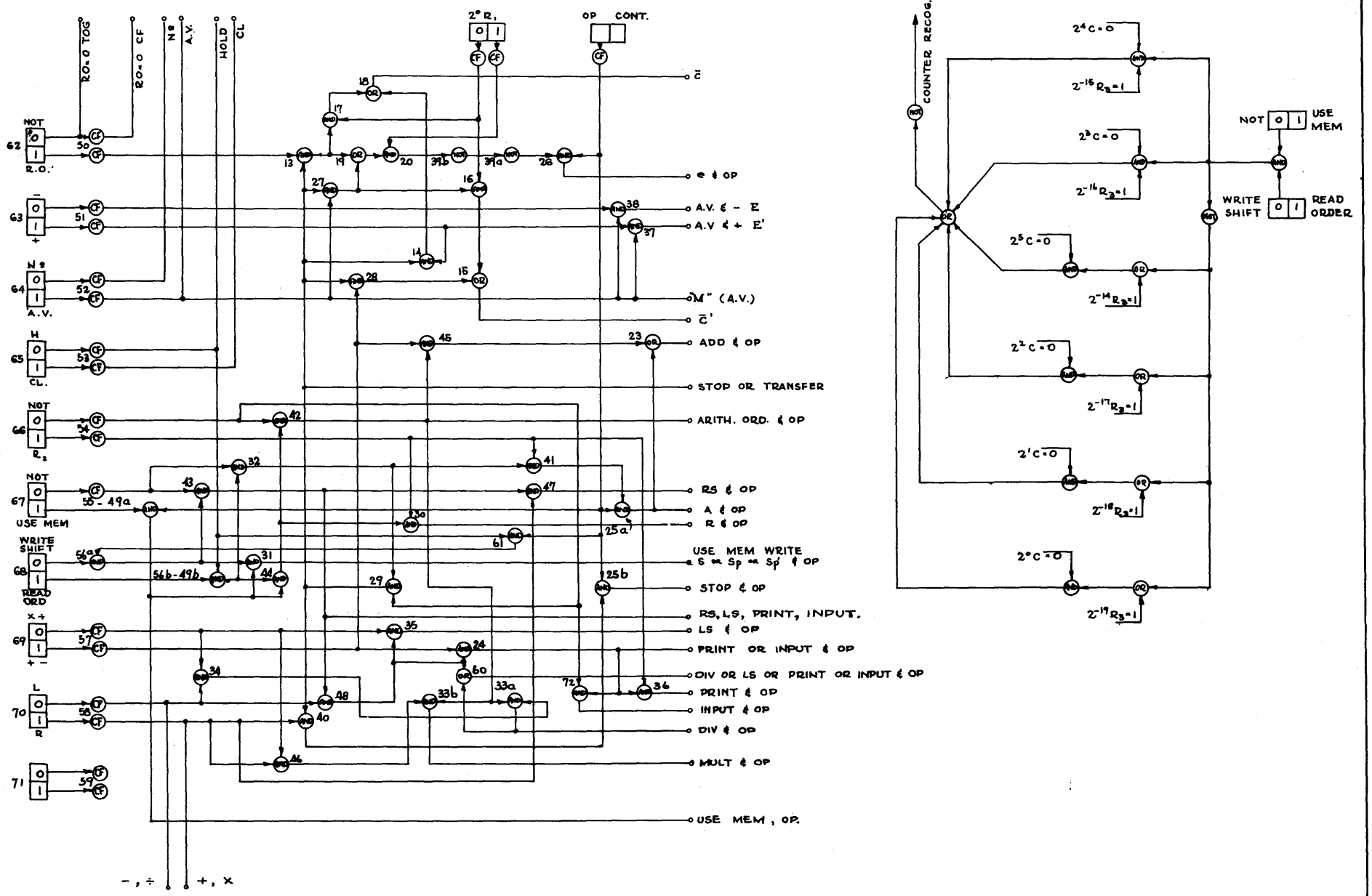
FOR ELH BY HMW CHECKED L L H APPROVED R. E. Meagher DATE 6·6·51

TITLE ~ LOGICAL DIAGRAM OF DELAY SELECTOR

S·302



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FOR JPN BY HMW CHECKED J.P.Nash APPROVED R.E.Meagher DATE 6-11-51

TITLE ~ DECODING LOGIC & RECOGNITION CKT.

M·305

DECODING REGISTER CODE

FLIPFLOP	G2	G3	G4	G5	G6	G7	G8	G9	70	71
1	ROUND OFF	+	A.V.	CLEAR	R_2	USE MEM	READ ORD.	+ −	R	
0	NOT	−	NO.	HOLD	NOT	NOT	WRITE SHIFT	X ÷	L	
+	0	1/0	1/0	1/0.	0.	1.	1.	1.	1	−
X	1/0	1	0	1/0.	0.	1.	1.	0.	1.	−
÷	0	1	1	1/0.	0.	1.	1.	0.	0.	−
→	1/0	−	−	1/0.	−	0.	0.	−	1.	−
←	1/0	−	−	1/0.	−	0.	0.	0.	0.	−
R	0	−	−	1/0.	1.	1.	1.	1	−	−
A	0	1/0	1/0	1/0.	1.	0.	1.	−	1	−
U'	0	0	0	1/0.	0.	0.	1.	1.	−	−
C'	0	0	1.	1/0.	0.	0.	1.	0	−	−
U	0	1.	0	0.	0.	0.	1.	0	−	−
C	1.	0	0	0.	0.	0.	1.	0	−	−
M	1/0	−	0.	1/0.	−	1.	0.	−	−	−
E	1/0	1.	1.	1/0.	−	1.	0.	−	−	−
E'	0	0.	1.	1/0.	−	1.	0.	−	−	−
Z	0	0	0	1/0.	0.	0.	1.	0	1.	−
P	−	−	−	−.	1.	0.	0.	1.	0.	
T	−	−	−	−.	0.	0.	0.	1.	0.	

FLIPFLOPS MARKED ARE SENSED, OTHERS MERELY SET.

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FOR JPN BY HMW CHECKED APPROVED J.P.Nash DATE 6·12·51

TITLE~ DECODING REGISTER CODE S·306

ORDER REGISTER CODE

FLIPFLOP	2^{0}	2^{-1}	2^{-2}	2^{-3}	2^{-4}	2^{-5}	2^{-6}	2^{-7}	2^{-8}	2^{-9}
1	+ −	USE MEM.	READ ORD.	R	ROUND OFF	+	ABS. VAL.	CL.	R_2	
0	X ÷	NOT	WRITE SHIFT	L	NOT	−	Nº	H	NOT	
+	1.	1.	1.	1	0	1/0	1/0	1/0.	0.	
X	0.	1.	1.	1.	1/0	1	0	1/0.	0.	
÷	0.	1.	1.	0.	0	1	1	1/0.	0.	
→	−	0.	0.	1.	1/0	−	−	1/0.	−	
←	0.	0.	0.	0.	0	−	−	1/0.	−	
R	1	1.	1.	−	0	−	−	1/0.	1.	
A	−	0.	1.	1	0	1/0	1/0	1/0.	1.	
U'	1.	0.	1.	−	0	0	0	1/0.	0.	
C'	0	0.	1.	−	0	0	1.	1/0.	0.	
U	0	0.	1.	−	0	1.	0	0.	0.	
C	0	0.	1.	−	1.	0	0	0.	0.	
M	−	1.	0.	−	1/0	−	0.	1/0.	−	
E	−	1.	0.	−	1/0	1.	1.	1/0.	−	
E'	−	1.	0.	−	0	0.	1.	1/0.	−	
Z	0	0.	1.	1.	0	0	0	1/0.	0.	
P	1.	0.	0.	0.	−	−	−	1/0.	1.	
T	1.	0.	0.	0.	−	−	−	1/0.	0.	

FLIPFLOPS MARKED ARE SENSED. OTHERS MERELY SET.

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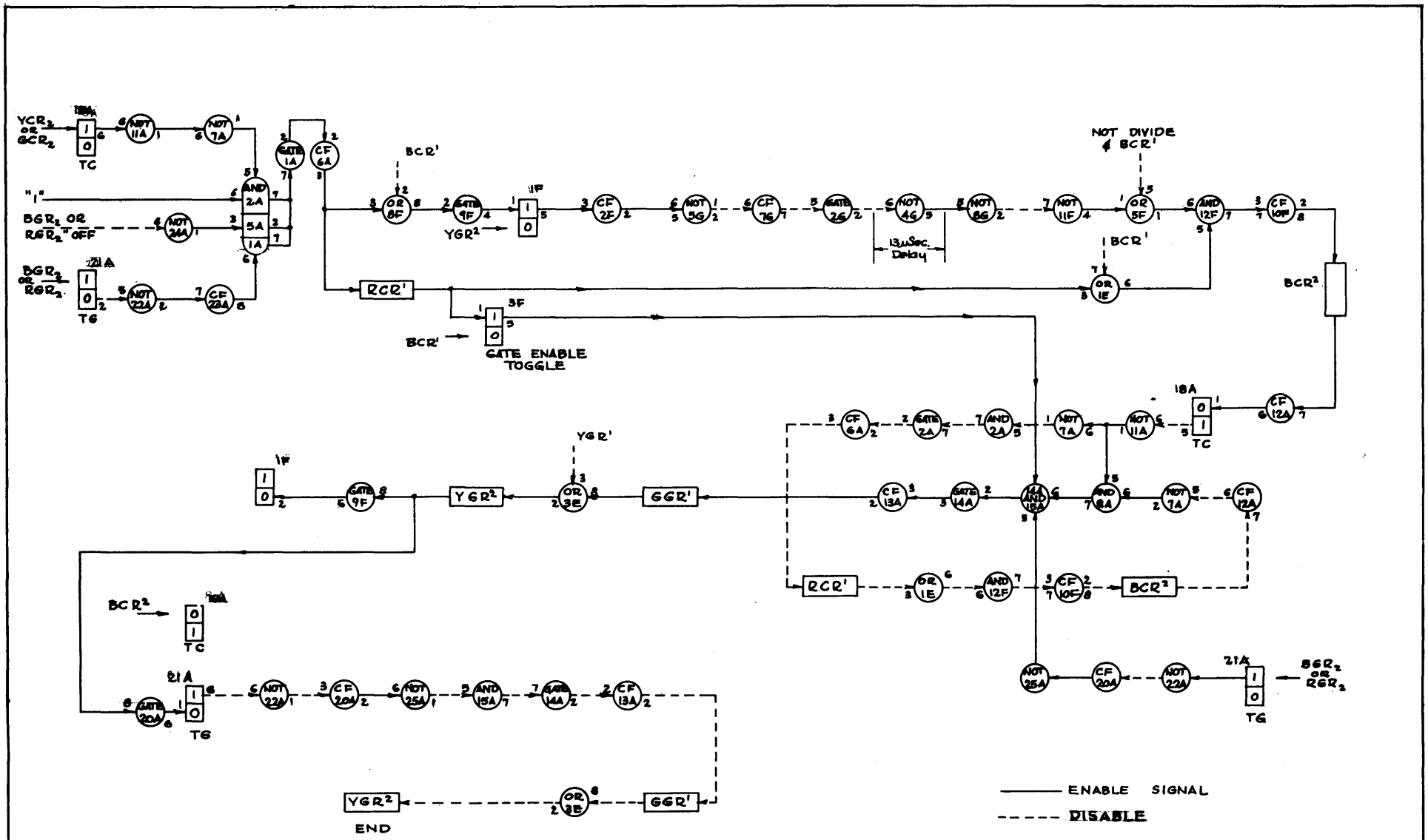
FOR JPN BY HMW CHECKED APPROVED J. Nash DATE 6·12·51

TITLE~ ORDER REGISTER CODE S·307.



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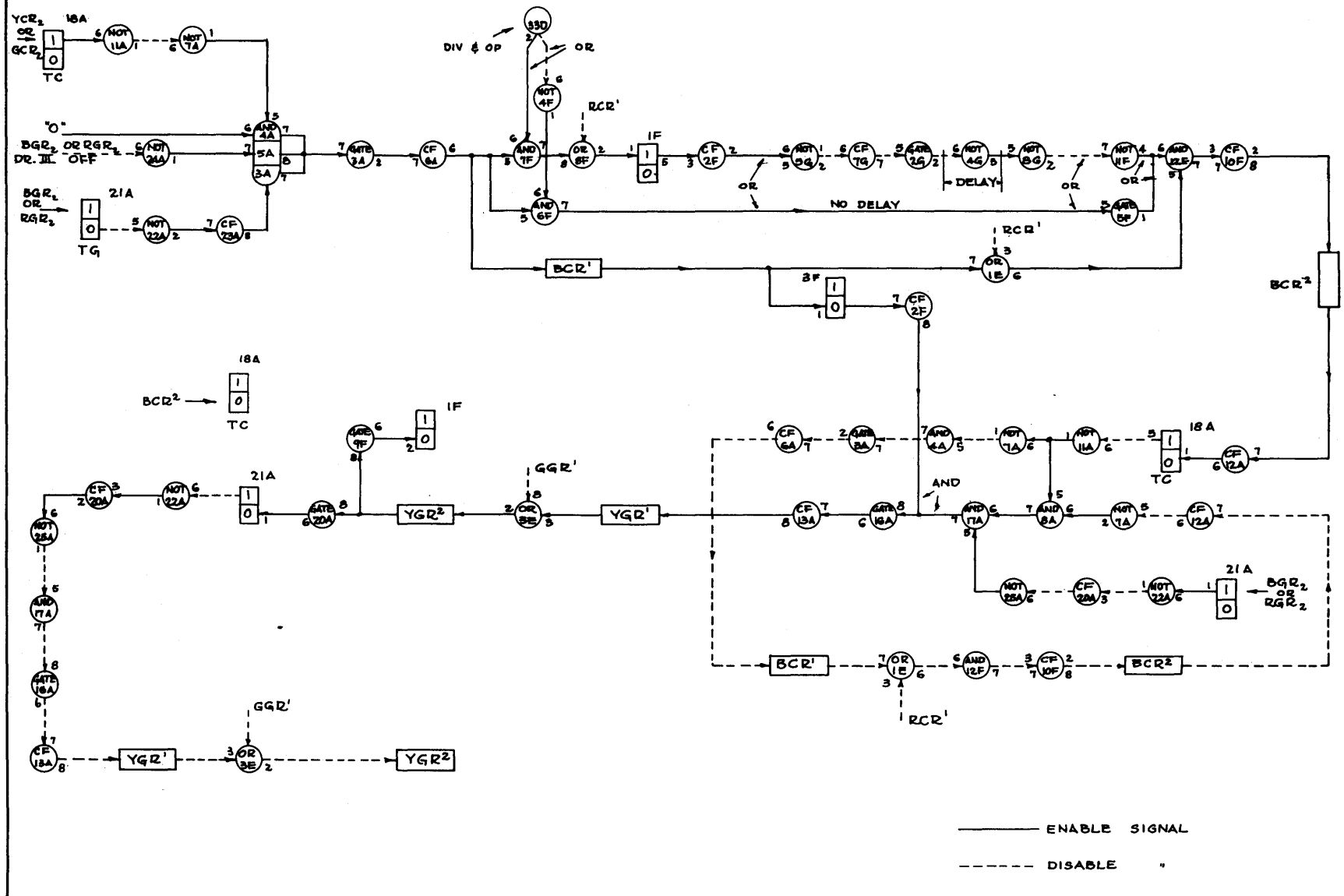
FOR JMK BY HMW CHECKED JMK APPROVED J. P. Nash DATE 7-6-51

TITLE ~ GREEN GATE SEQUENCE

M-312



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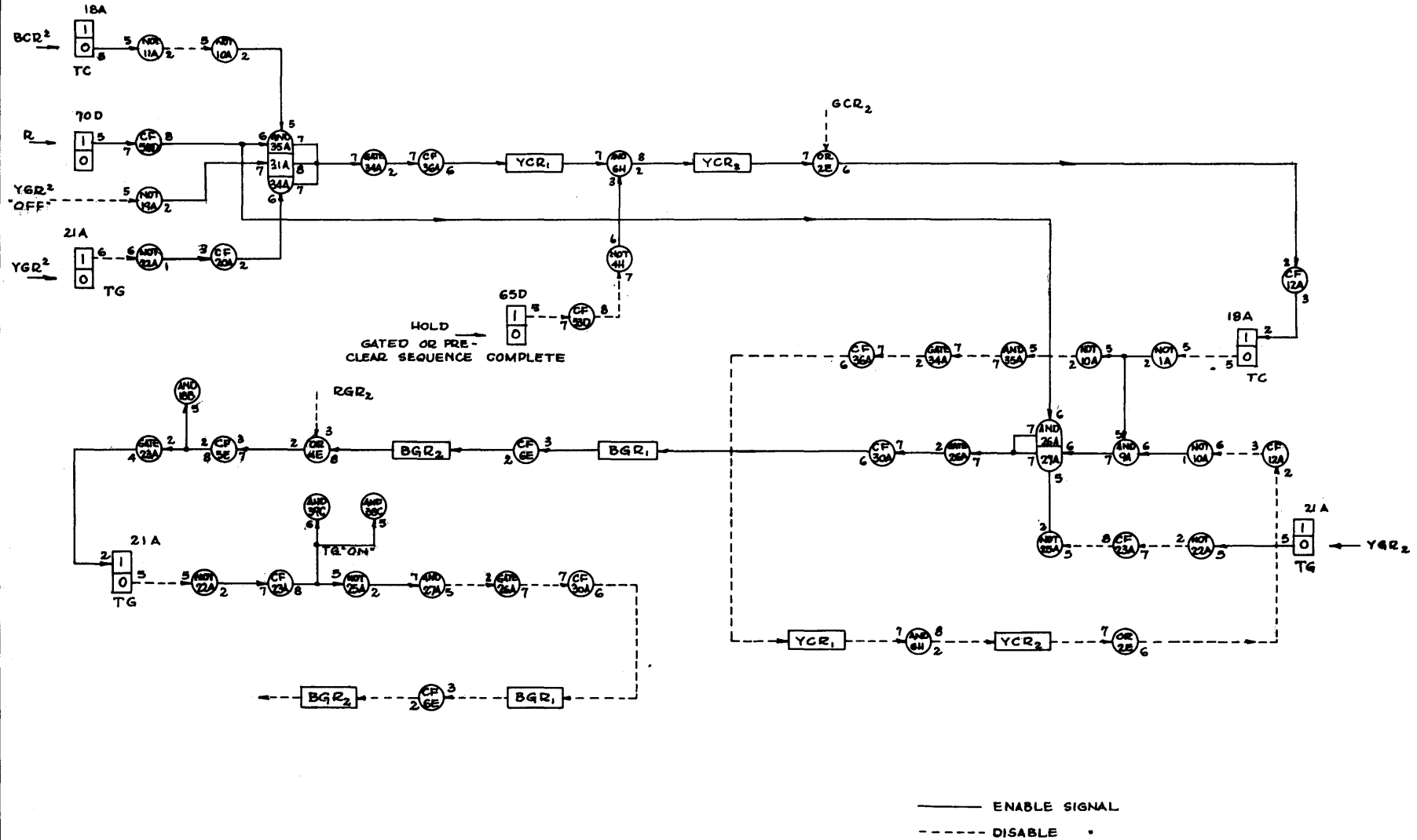
FOR PMK BY HMW CHECKED PMK APPROVED DATE 7.10.51 M-314

TITLE ~ YELLOW GATE SEQUENCE



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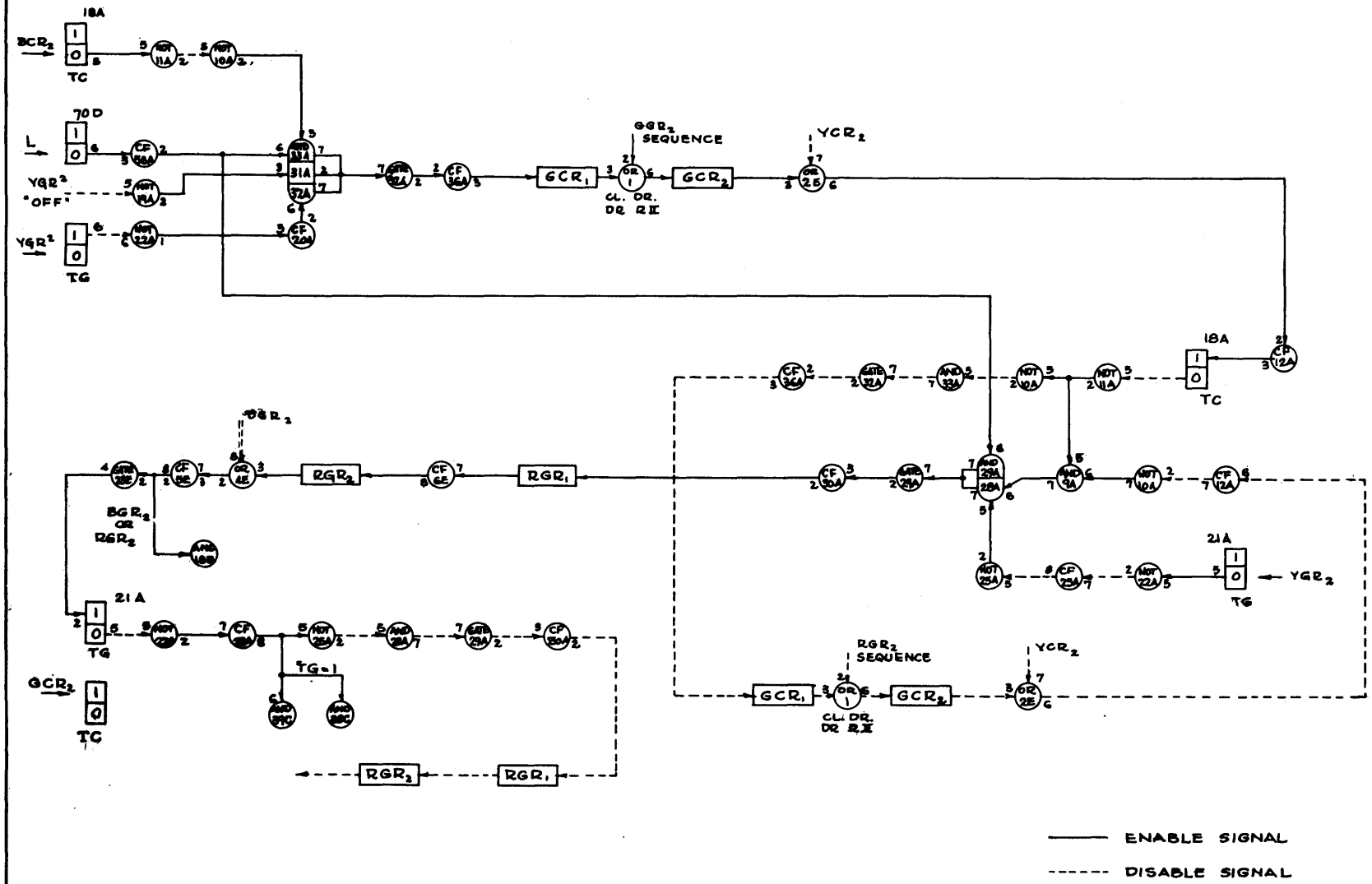
FOR PMK BY HMW CHECKED PMK APPROVED DATE 7-10-51

TITLE ~ BLACK GATE RI SEQUENCE

M-315



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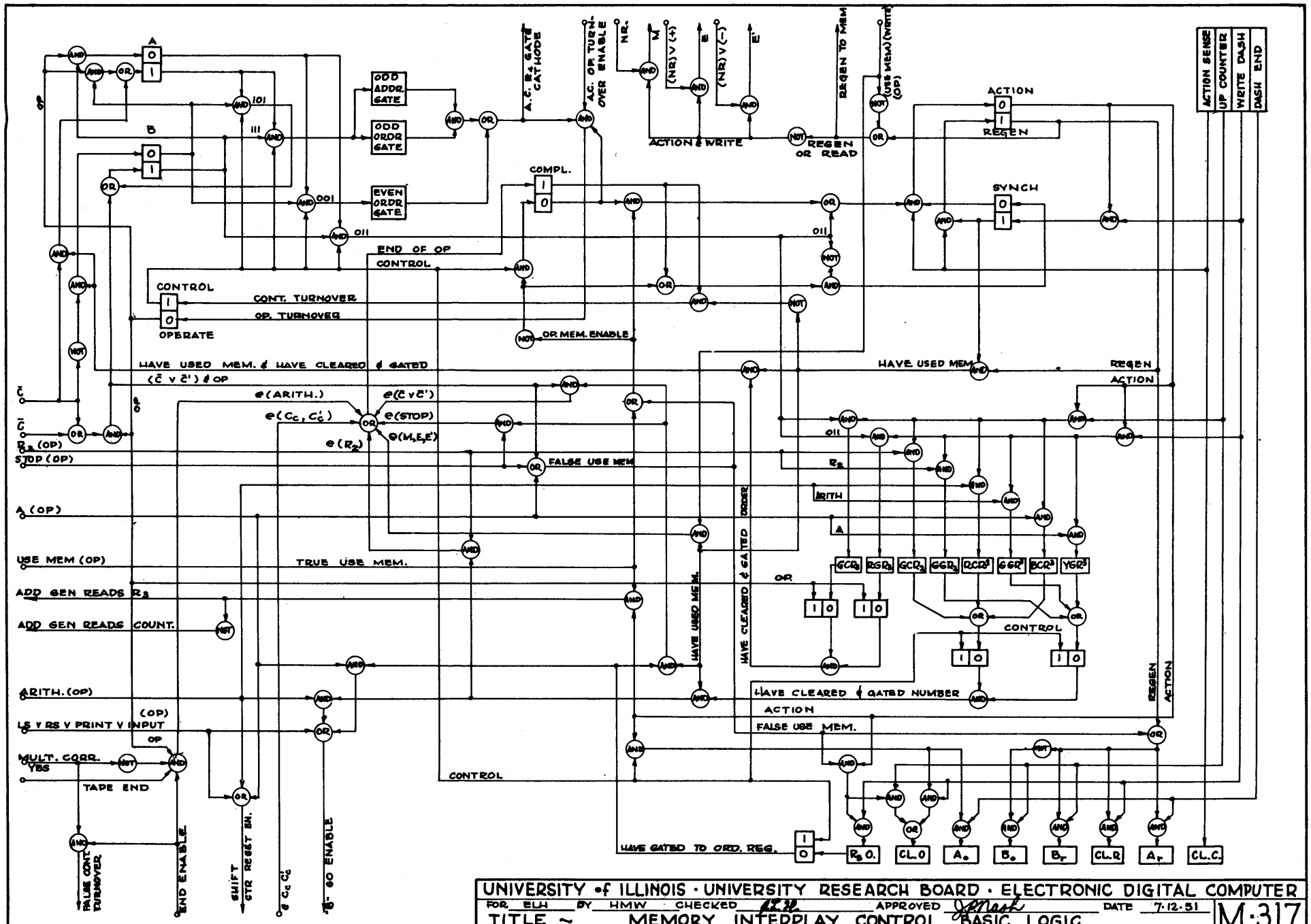
FOR PMK BY HMW CHECKED PMK APPROVED JHMash DATE 7-11-51

TITLE ~ RED GATE RI SEQUENCE

M-316



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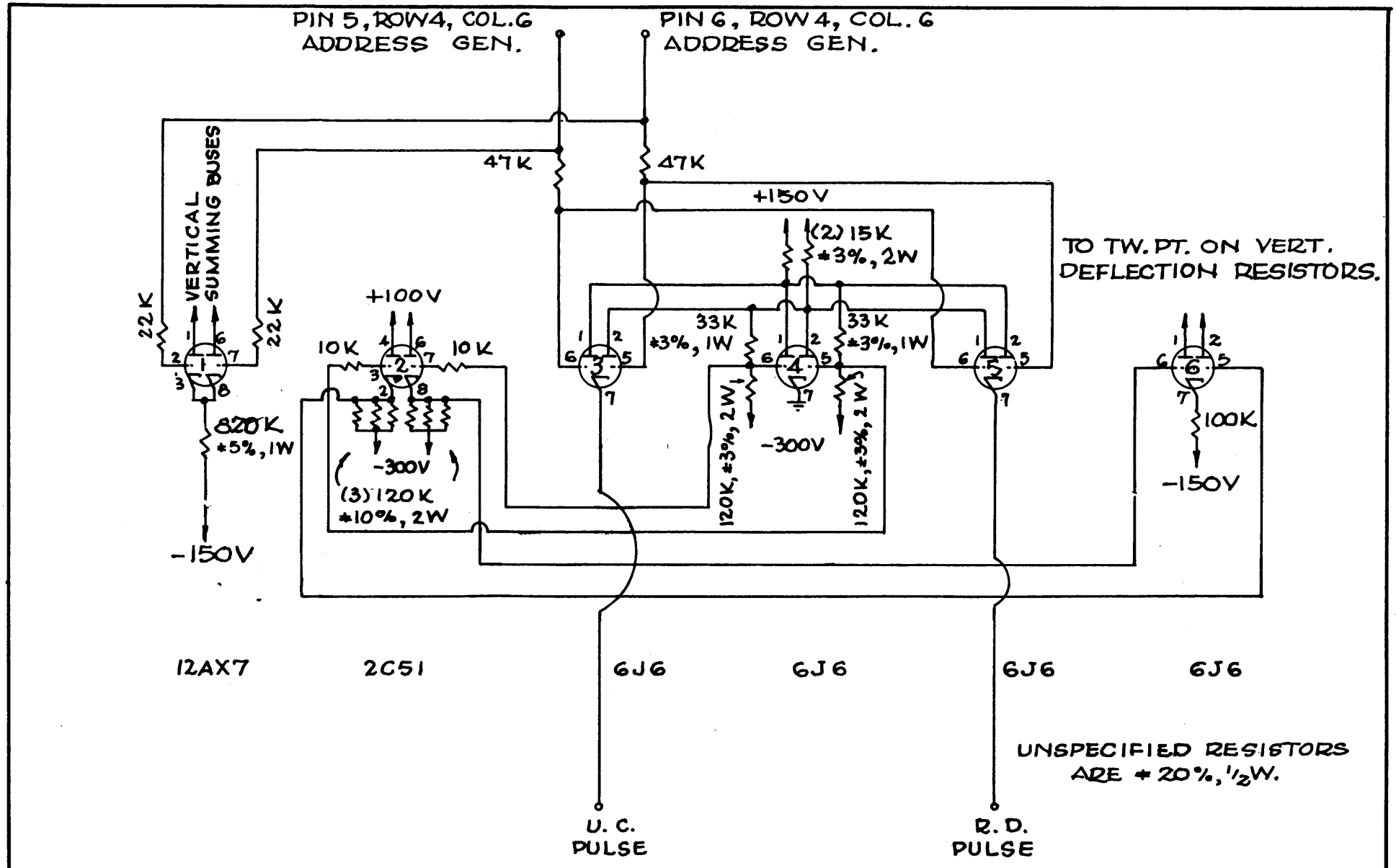
FOR ELH BY HMW CHECKED RRR APPROVED JHMash DATE 7-12-51

TITLE ~ MEMORY INTERPLAY CONTROL, BASIC LOGIC

M-317



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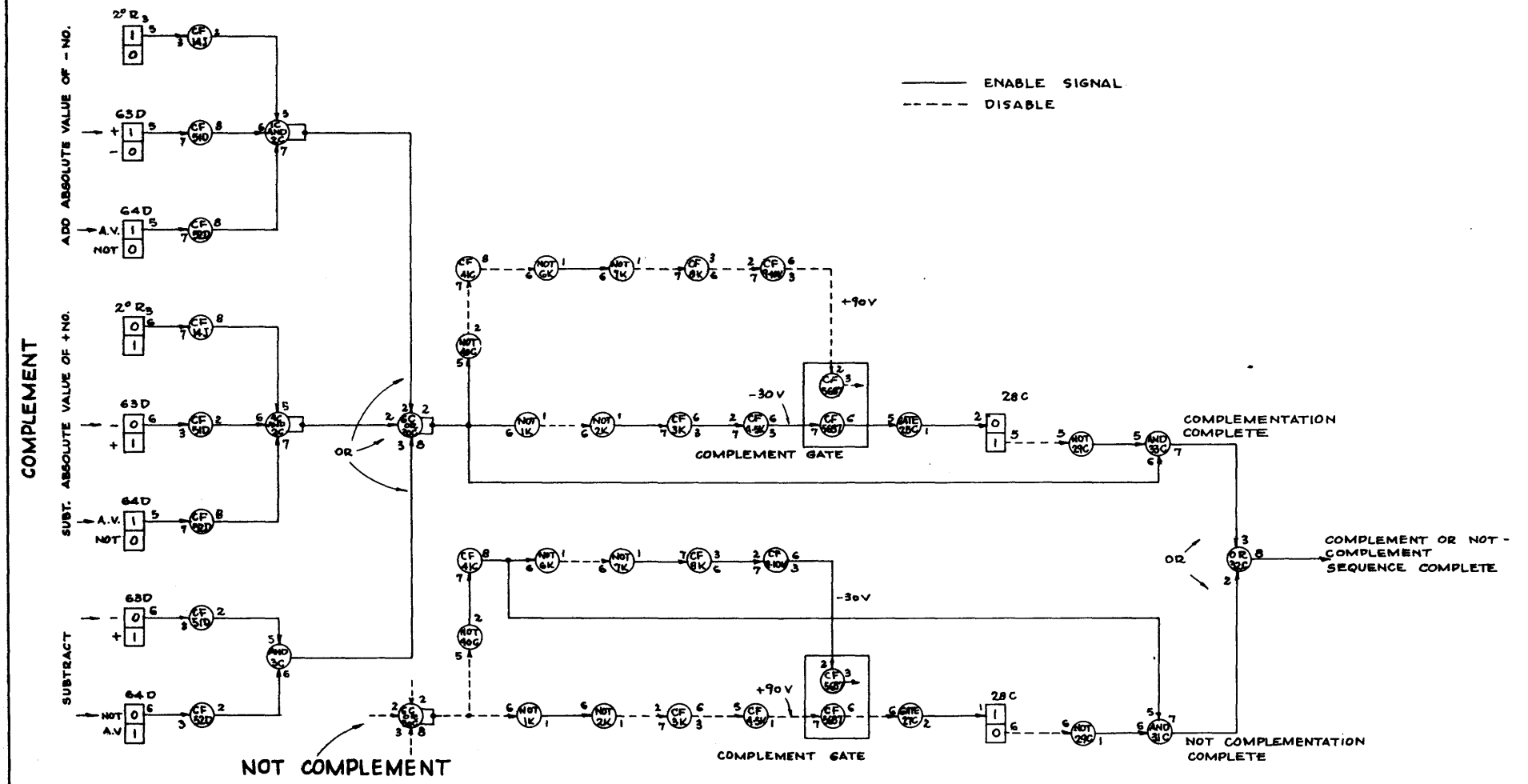
FOR JMW BY HMW CHECKED J.M.W. APPROVED J.P.Nash DATE 7-13-51

TITLE ~ REVERSED TWITCH STAGGER COL'S. GENERATOR

S-318



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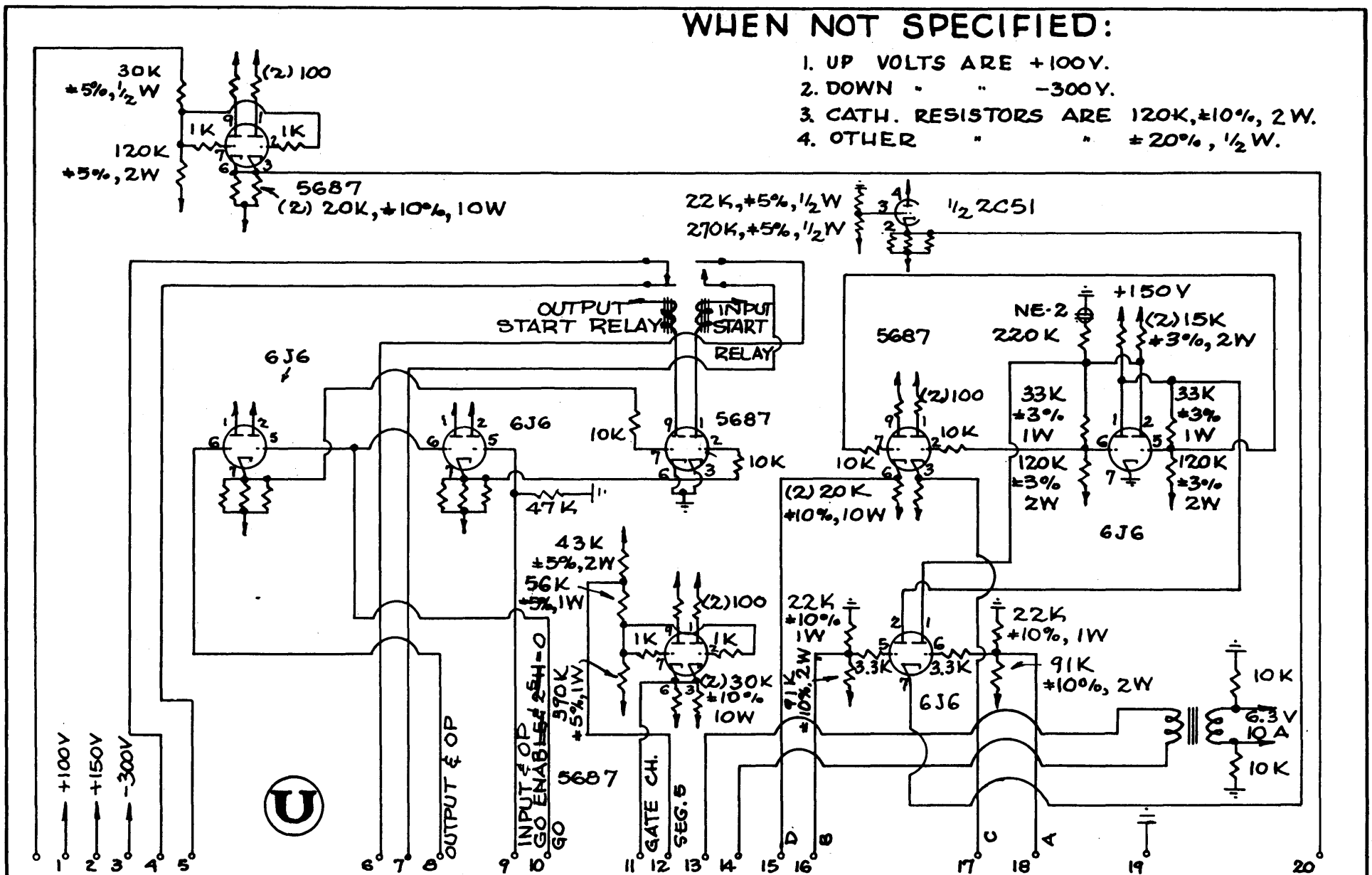
FOR PMK BY HMW CHECKED GMK APPROVED JPWash DATE 7-16-51

TITLE ~ COMPLEMENT OR NOT COMPLEMENT SEQUENCE

M-319



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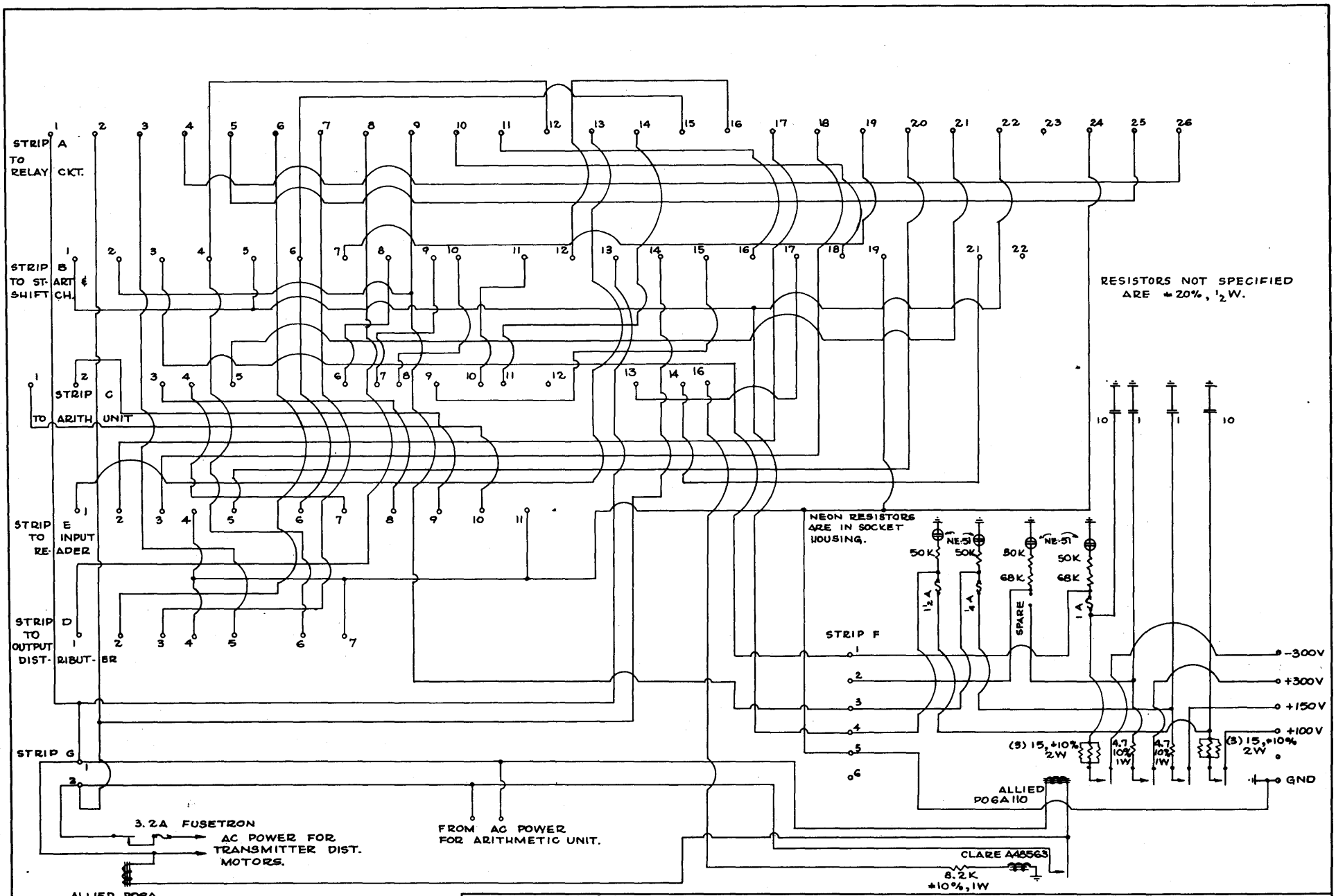
FOR T.S. BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 7-25-51

TITLE ~ INPUT OUTPUT START & SHIFT CHASSIS I

S-326



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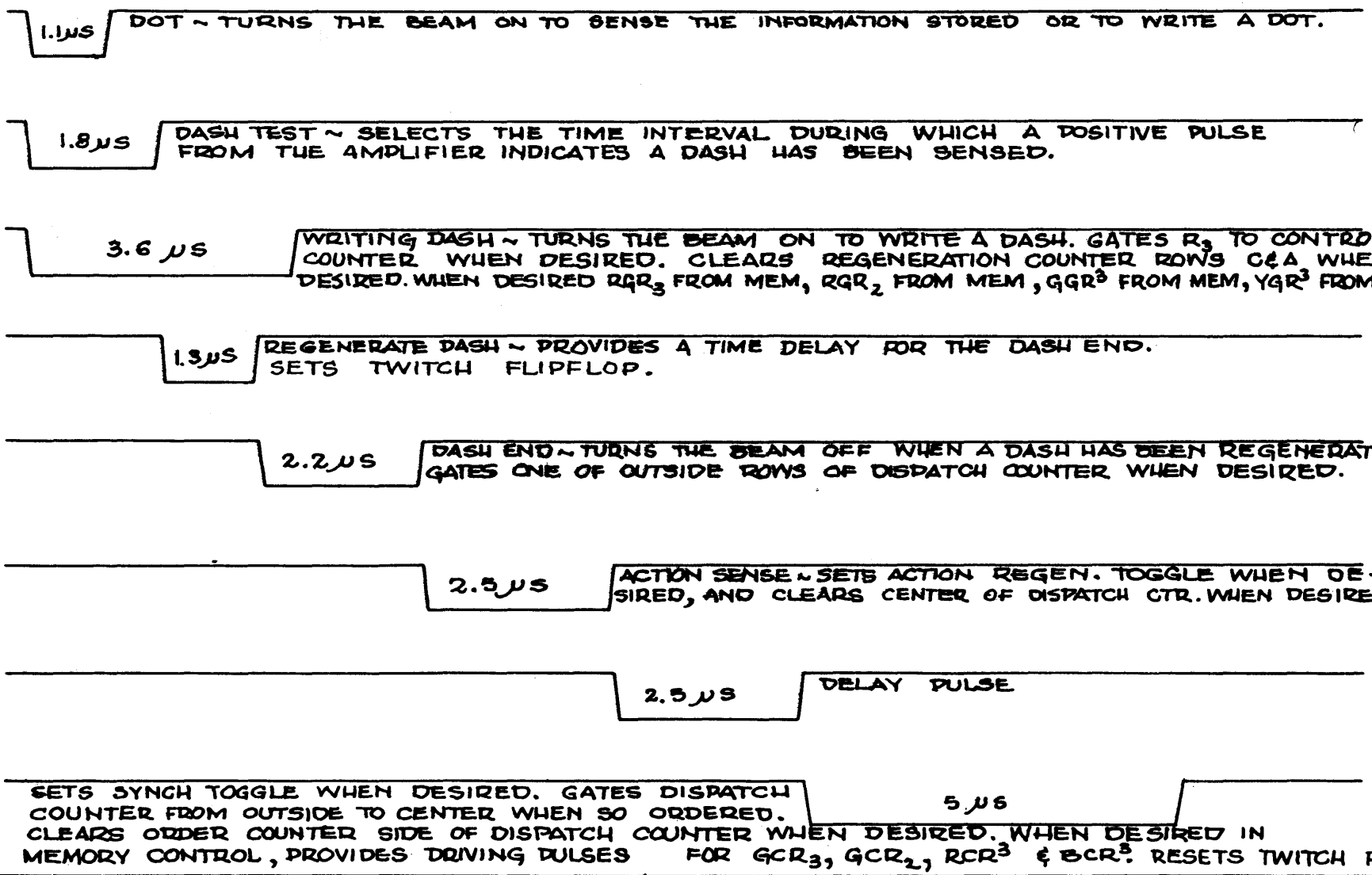
FOR TS BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 7-27-51

TITLE – INTERCONNECTION CHASSIS

M-327

~ ALL PULSES GO FROM +10V TO −10V.



ORDVAC

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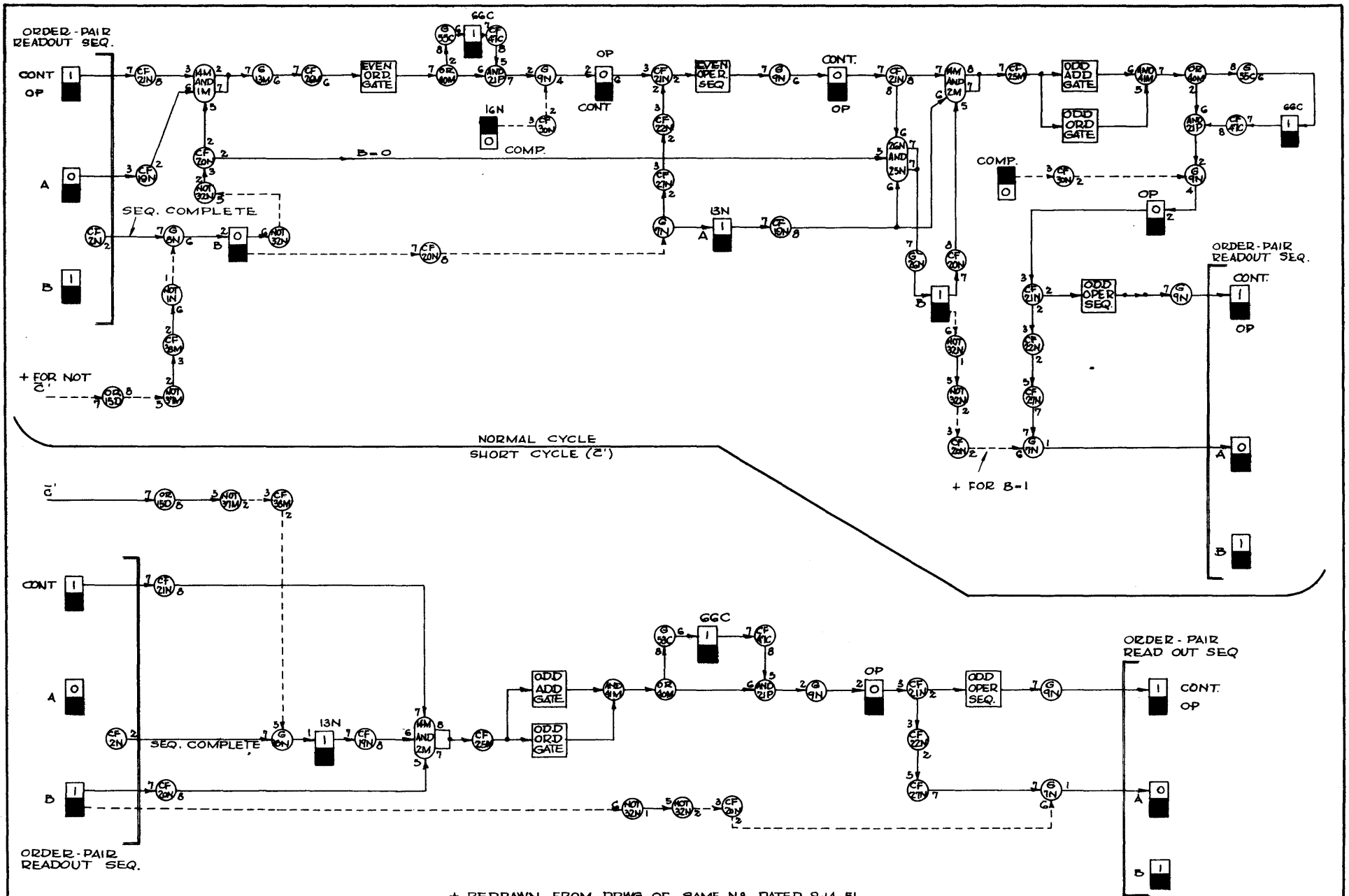
FOR JMW BY HMW CHECKED J.M.W. APPROVED R.E. Meagher DATE 8·16·51

TITLE IDEALIZED PULSES FOR MEMORY

S·333



★ REDRAWN FROM DRWG. OF SAME Nº DATED 9-14-51.

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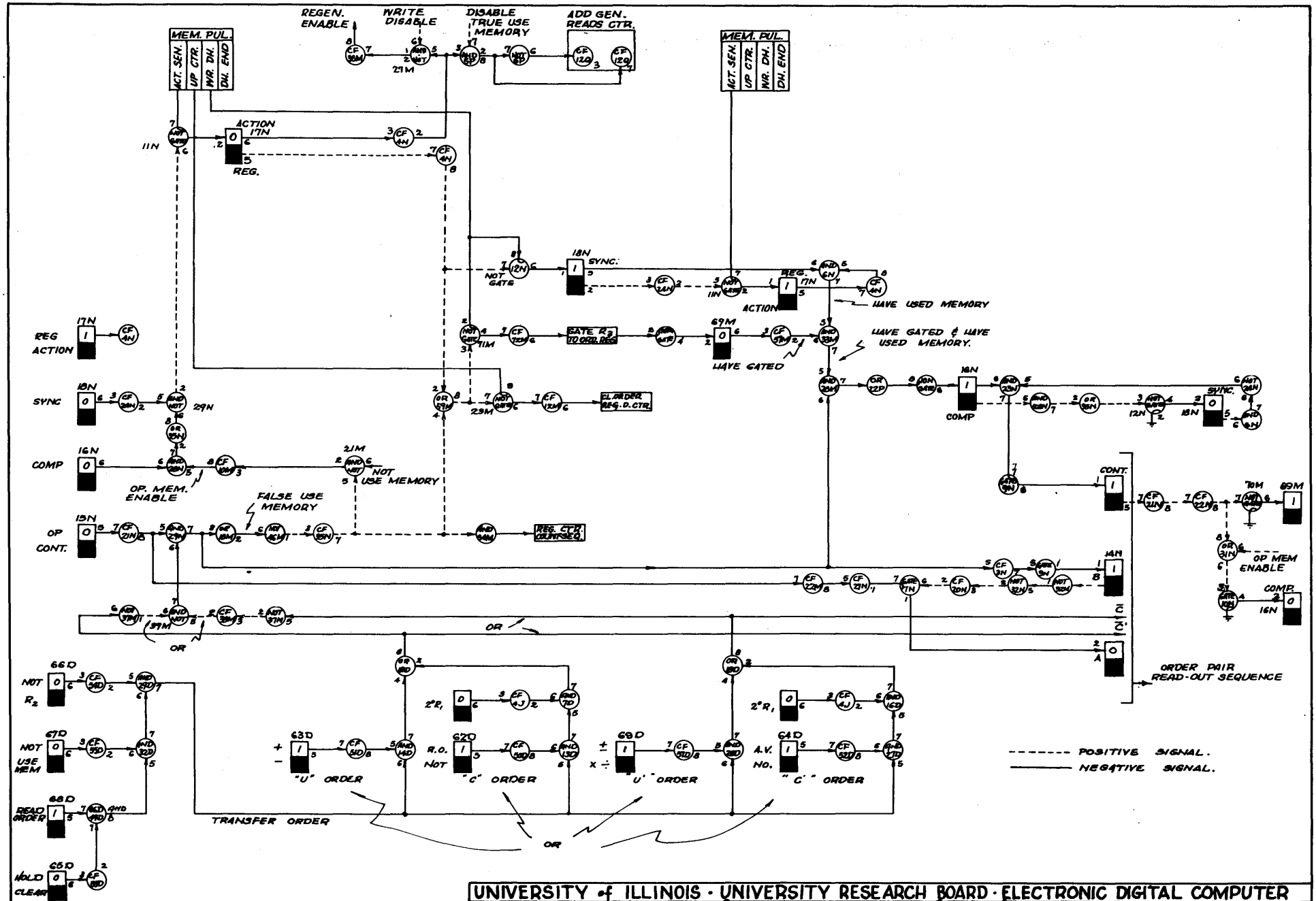
FOR PMK BY HMW CHECKED [illegible] APPROVED R. E. Meagher DATE 7-7-51

TITLE ~ BASIC CYCLE SEQUENCE

M-338



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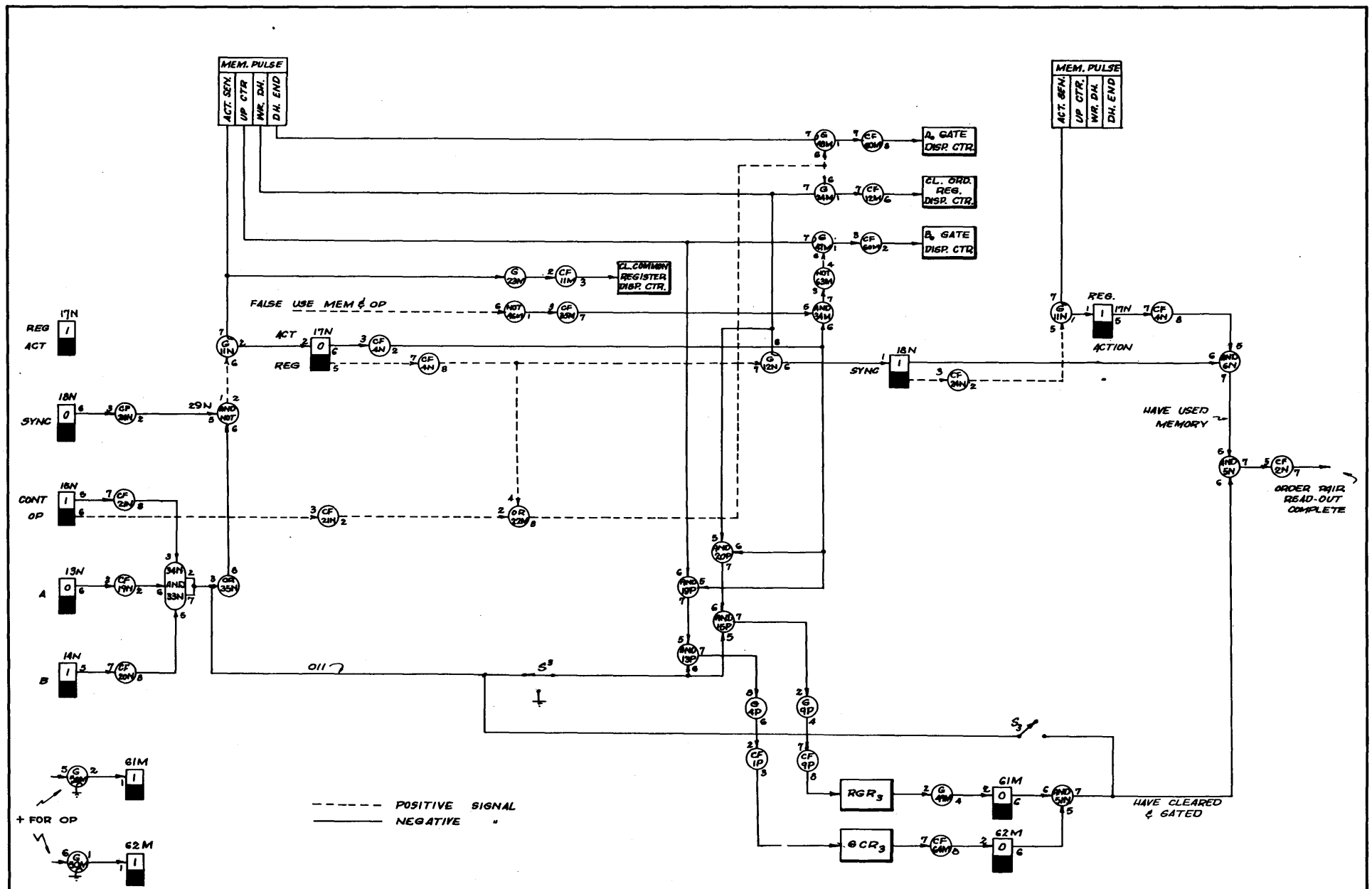
FOR PMK BY HMW CHECKED PMK APPROVED JWM DATE 9-17-51

TITLE TRANSFER CONTROL OPERATION SEQUENCE

M-339



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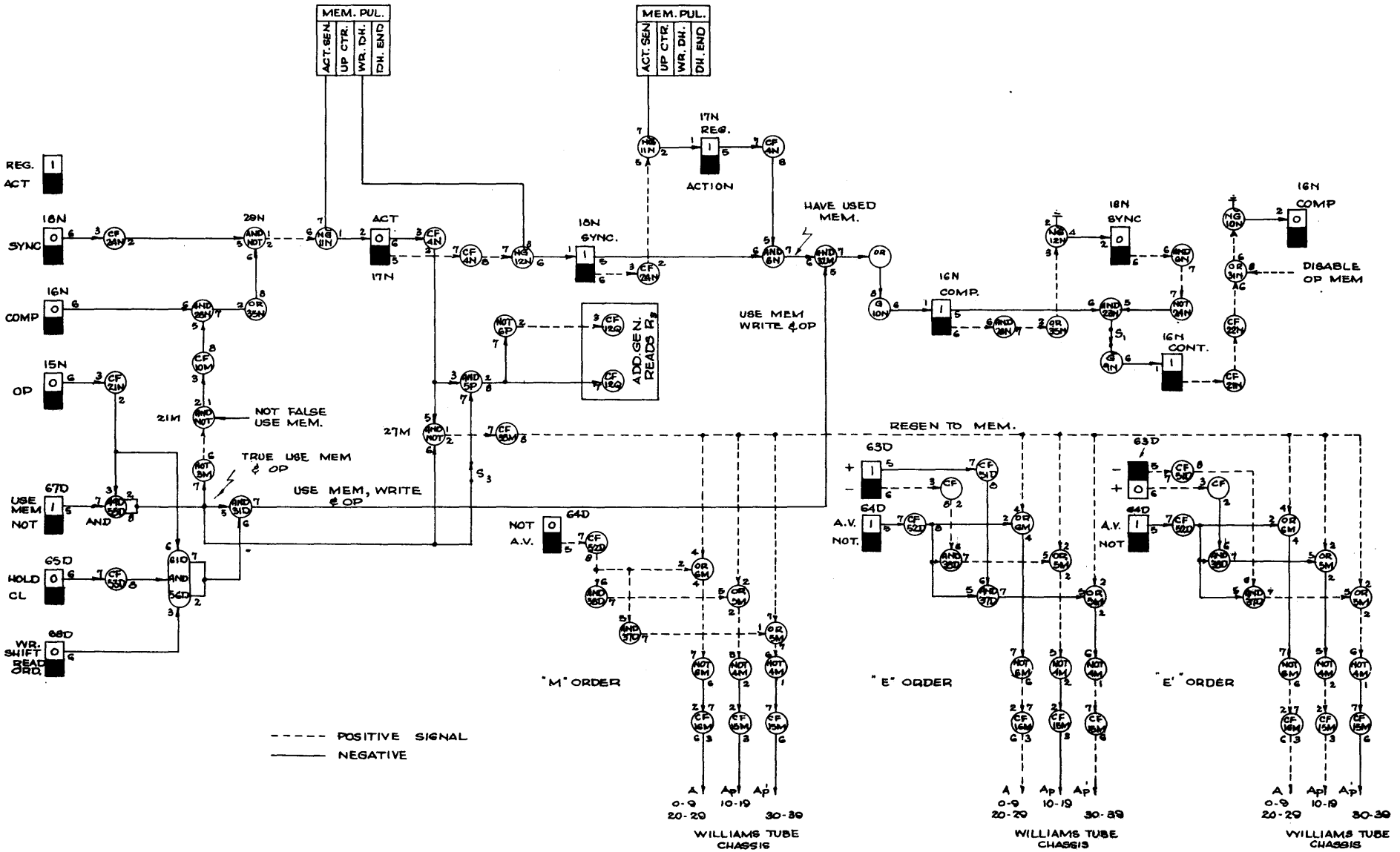
FOR PMK BY HMW CHECKED GAM IK APPROVED R. E. Meagher DATE 9-19-51

TITLE ~ ORDER PAIR READ-OUT SEQUENCE

M-340



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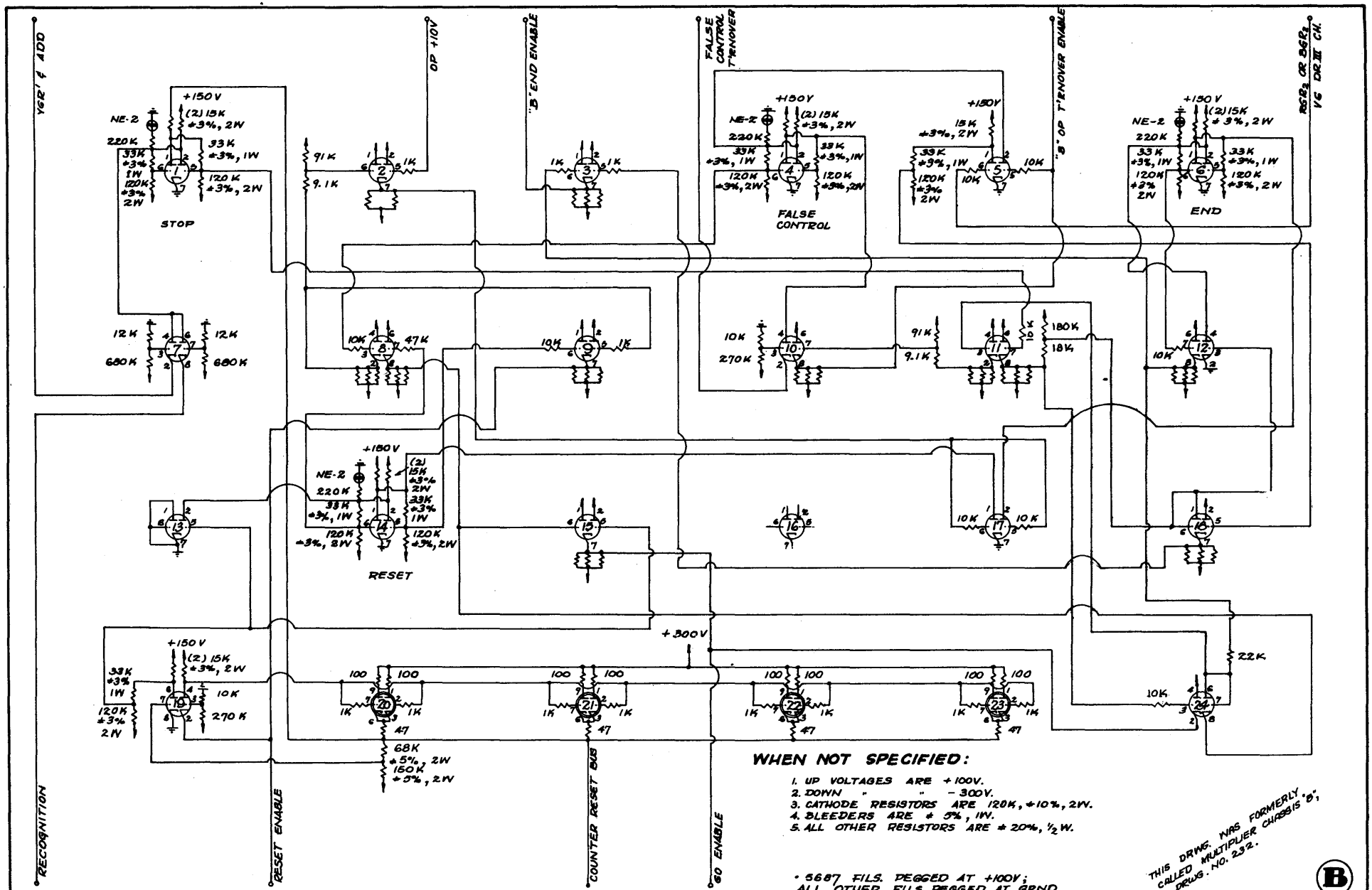
FOR PMK BY HMW CHECKED PMK APPROVED R. E. Meagher DATE

TITLE ~ STORE OPERATION SEQUENCE

M-341



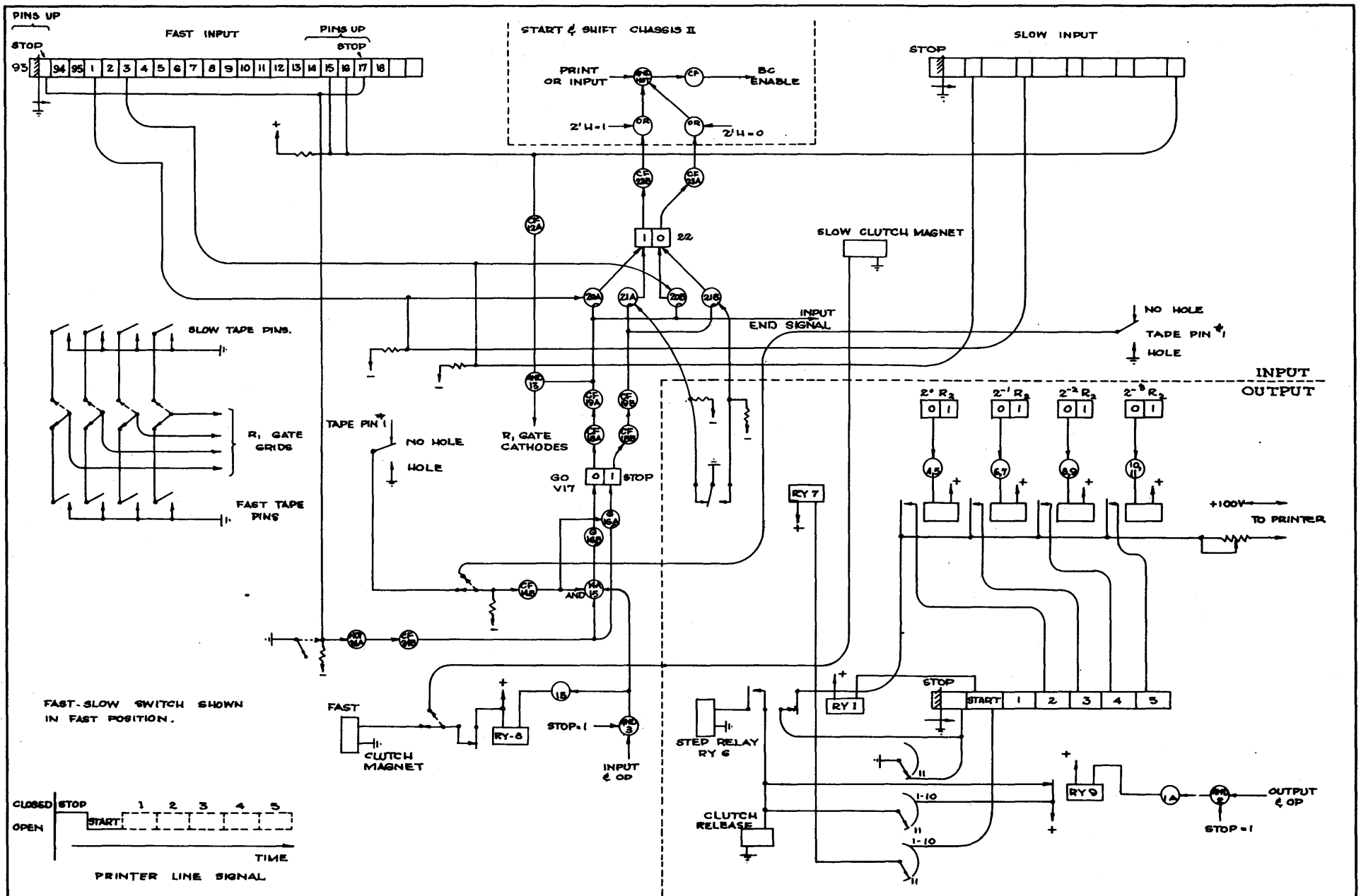
• REDRAWN FROM DRWG OF SAME NO. DATED 1-31-51. REVISED 9-21-51.

UNIVERSITY of ILLINOIS · UNIVERSITY RESEARCH BOARD · ELECTRONIC DIGITAL COMPUTER

FOR JPN BY HMW CHECKED J.P.Nash APPROVED R.E.Meagher DATE 9-5-51

TITLE — ARITHMETIC STOP CHASSIS

M-343



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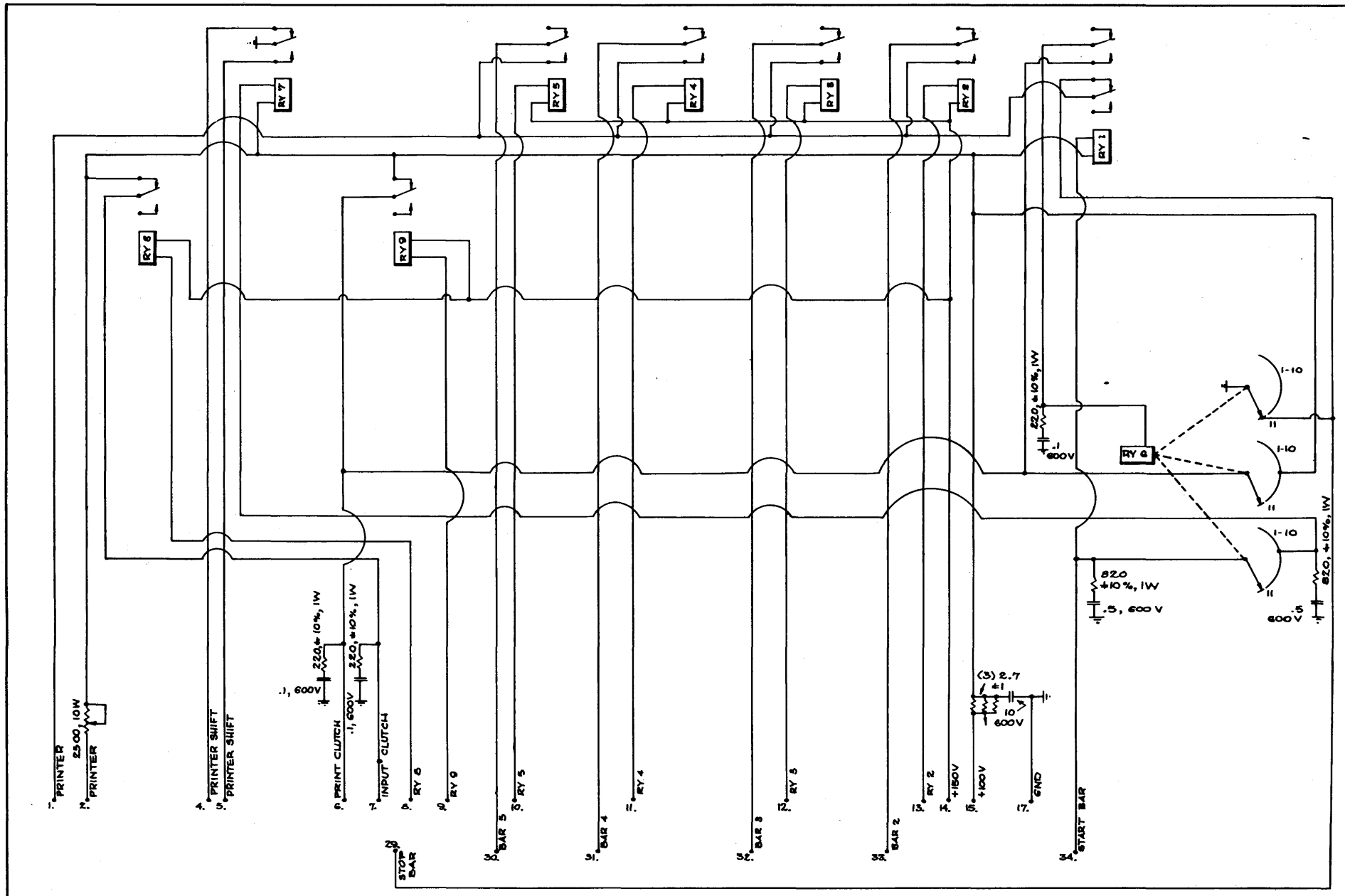
FOR T.S. BY HMW CHECKED T. SHAPIN APPROVED R.E. Meagher DATE 1-24-51

TITLE ~ INPUT - OUTPUT SCHEMATIC

M-344



RY 1:	AUTO-ELEC.	Z17263	BQA	1100 Ω	100V
RY'S 2-3-4-5 & 7:	AUTO-ELEC.	Z17262	BQA	1100 Ω	100V
RY 6	" "	D87655	B12	600 Ω	115V
RY'S 8,9	CLARE	A48563		6500 Ω	10MA

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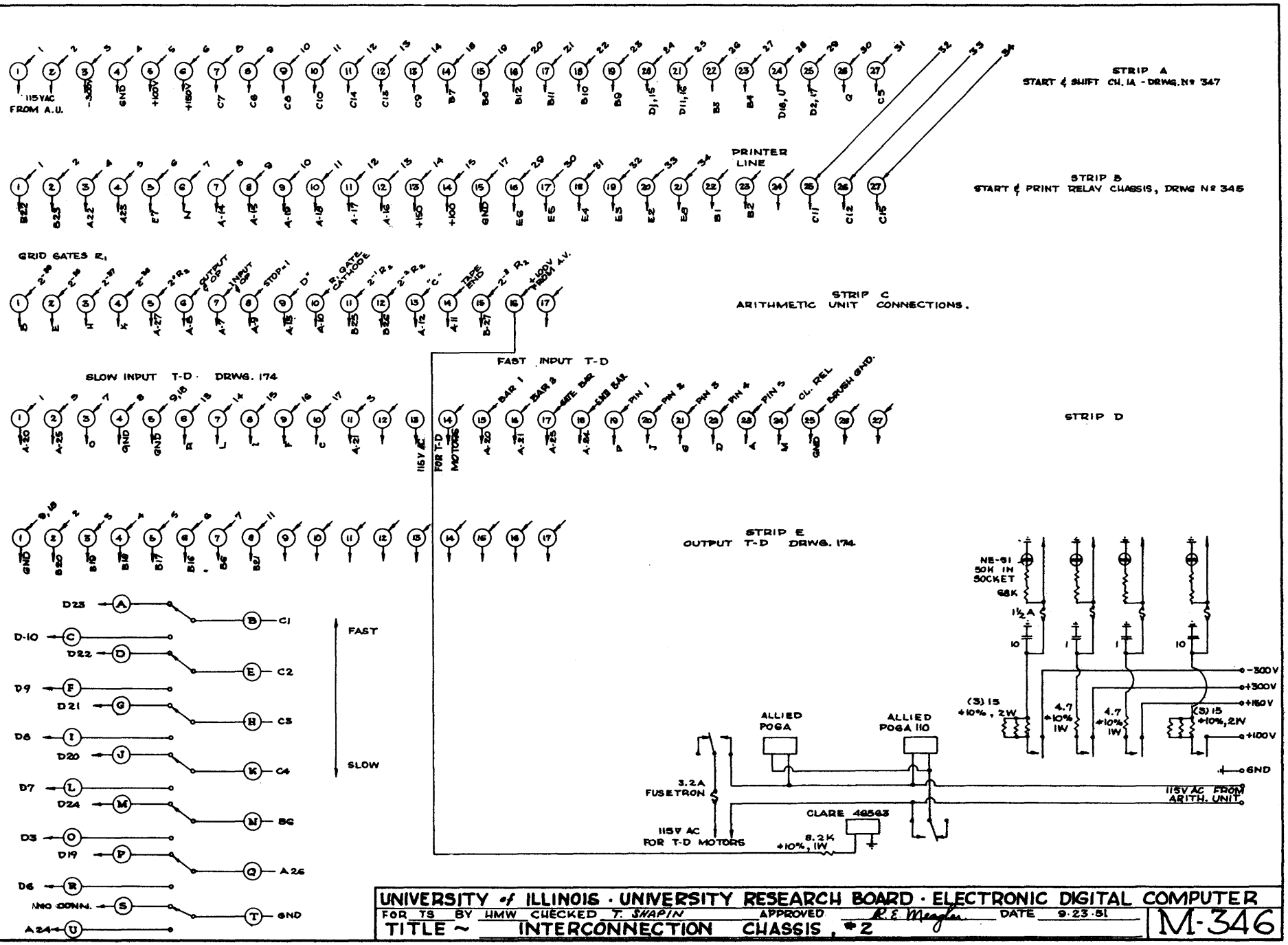
FOR T.S. BY HMN CHECKED T. SHAPIN APPROVED R.E. Meagher DATE 9-22-51

TITLE ~ START & PRINT RELAY CHASSIS

M-345



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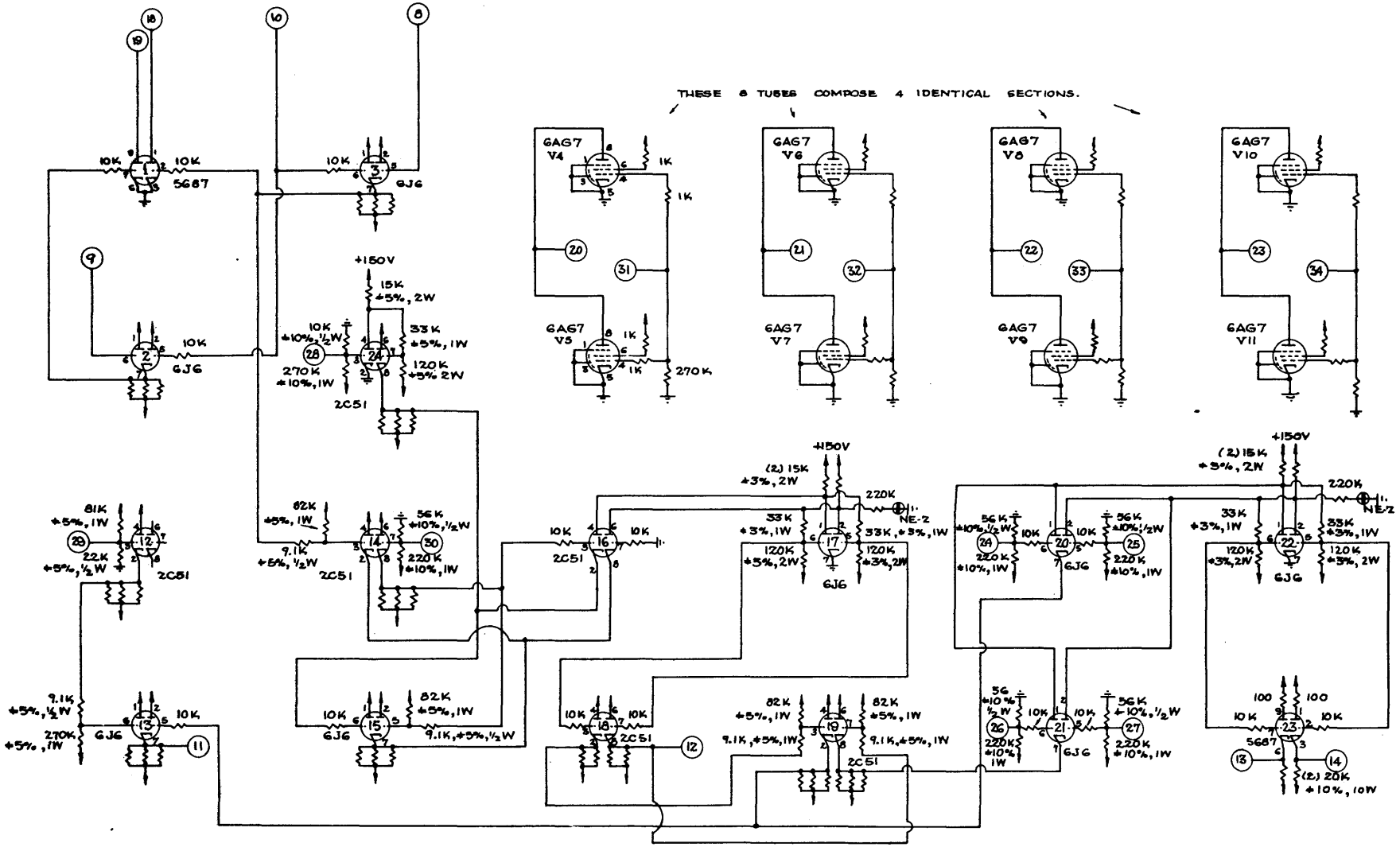
FOR TS BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 9-23-51

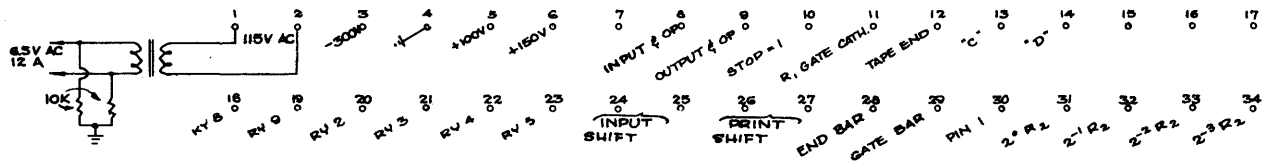
TITLE ~ INTERCONNECTION CHASSIS, #2

M-346



WHEN NOT SPECIFIED:

1. UP VOLTAGES ARE +100V.
2. DOWN - - -300V.
3. CATHODE RESISTORS ARE 120K, ±10%, 2W.
4. OTHER RESISTORS ARE ± 20%, ½W.



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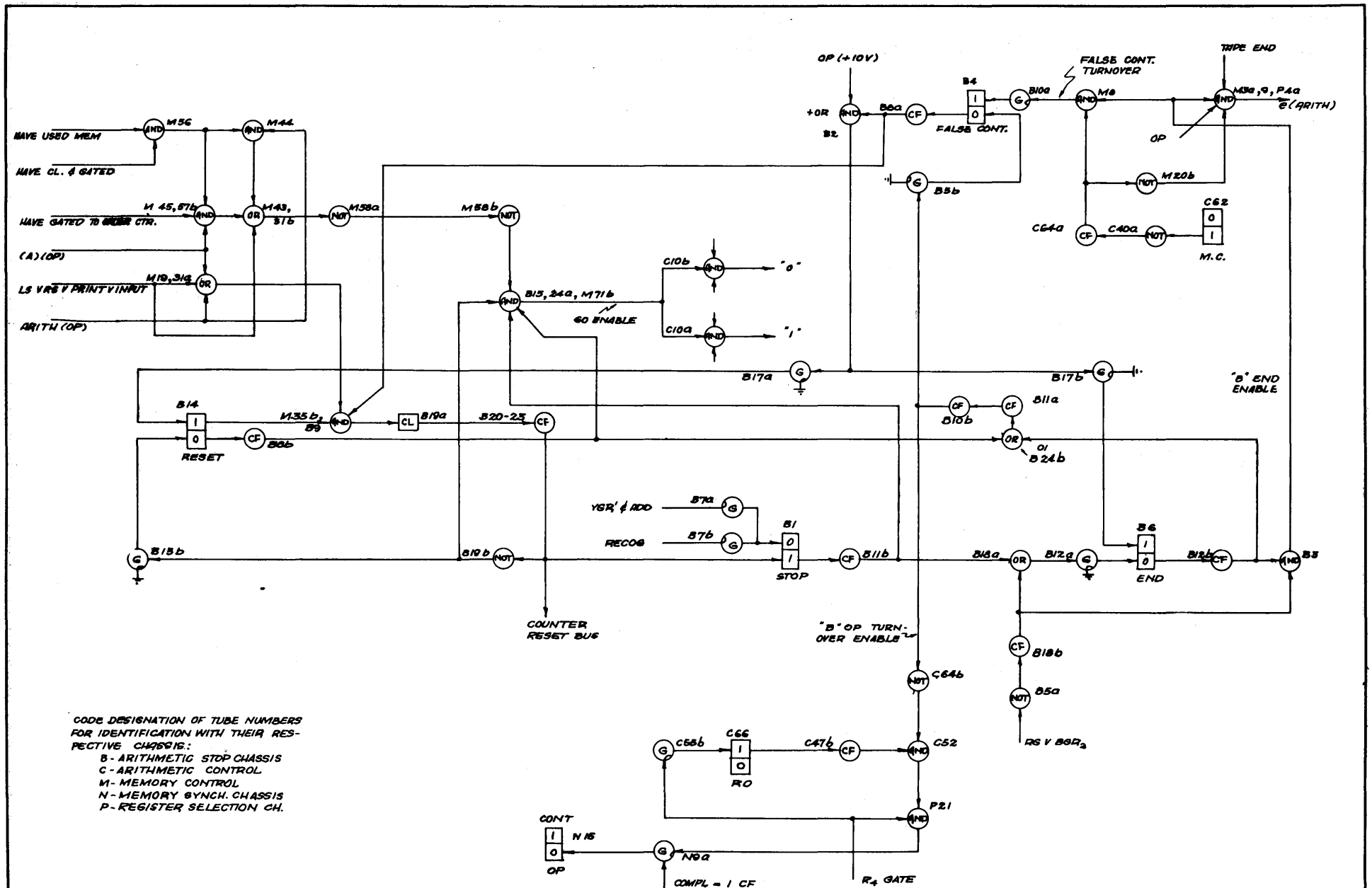
FOR TS BY HMW CHECKED T. SHARPIN APPROVED D. E. Meagher DATE 9-27-51

TITLE ~ START & SHIFT CHASSIS 1A

M-347



CODE DESIGNATION OF TUBE NUMBERS FOR IDENTIFICATION WITH THEIR RESPECTIVE CHASSIS:

B - ARITHMETIC STOP CHASSIS
C - ARITHMETIC CONTROL
M - MEMORY CONTROL
N - MEMORY SYNCH. CHASSIS
P - REGISTER SELECTION CH.

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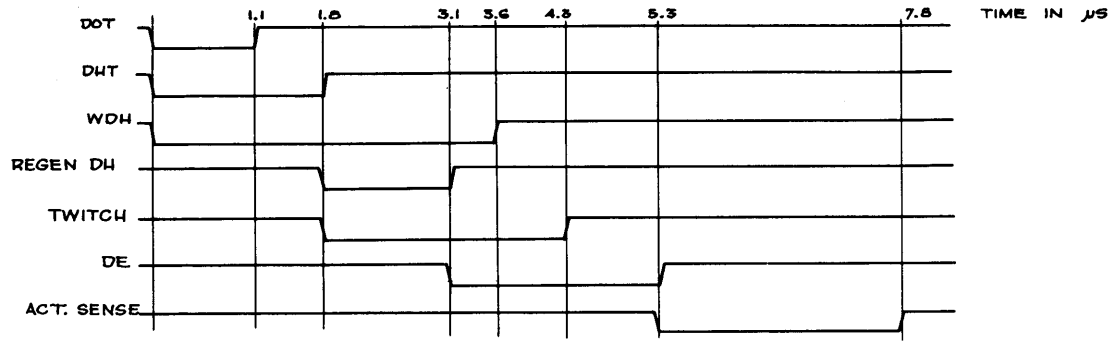
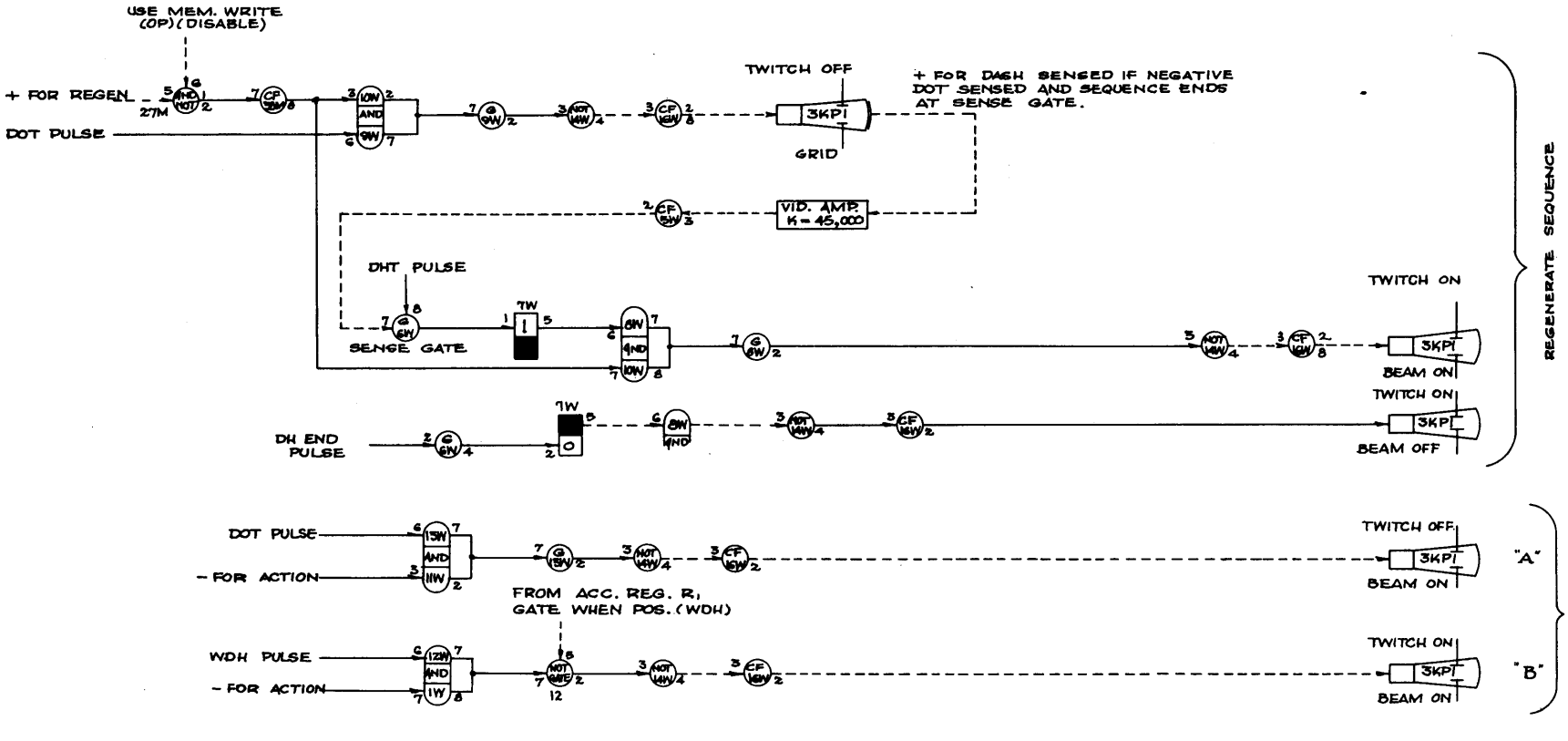
FOR JER BY HMW CHECKED J. E. Robertson APPROVED R. E. Meagher DATE 9-28-51

TITLE ~ LOGICAL DIAGRAM ~ ARITHMETIC STOP & START CONTROL

M-348





——— NEGATIVE SIGNAL.
- - - - - - - - POSITIVE SIGNAL.

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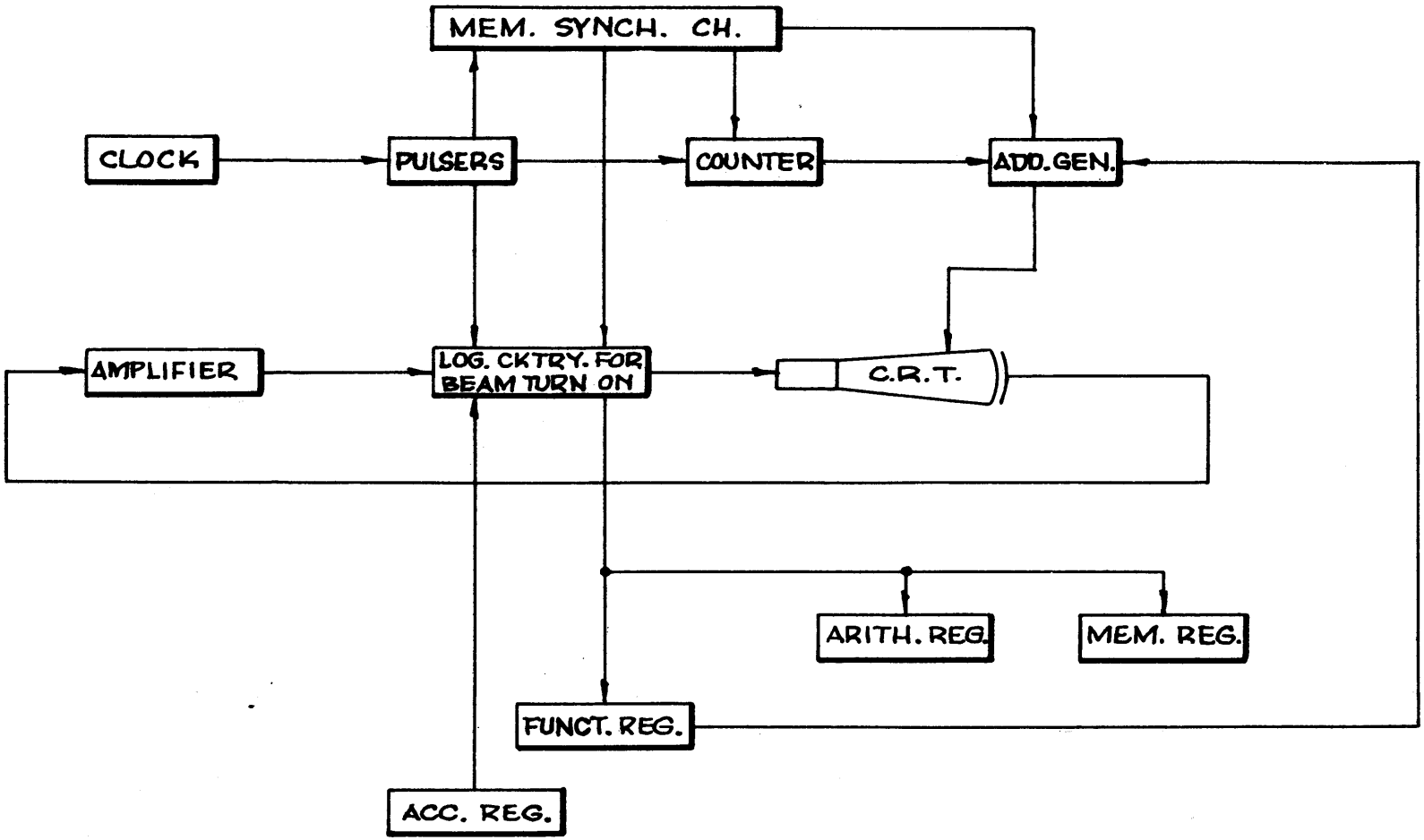
FOR PMK BY WALKER CHECKED PMK APPROVED R. E. Meagher DATE 10-1-51

TITLE MEMORY SEQUENCES

M-349



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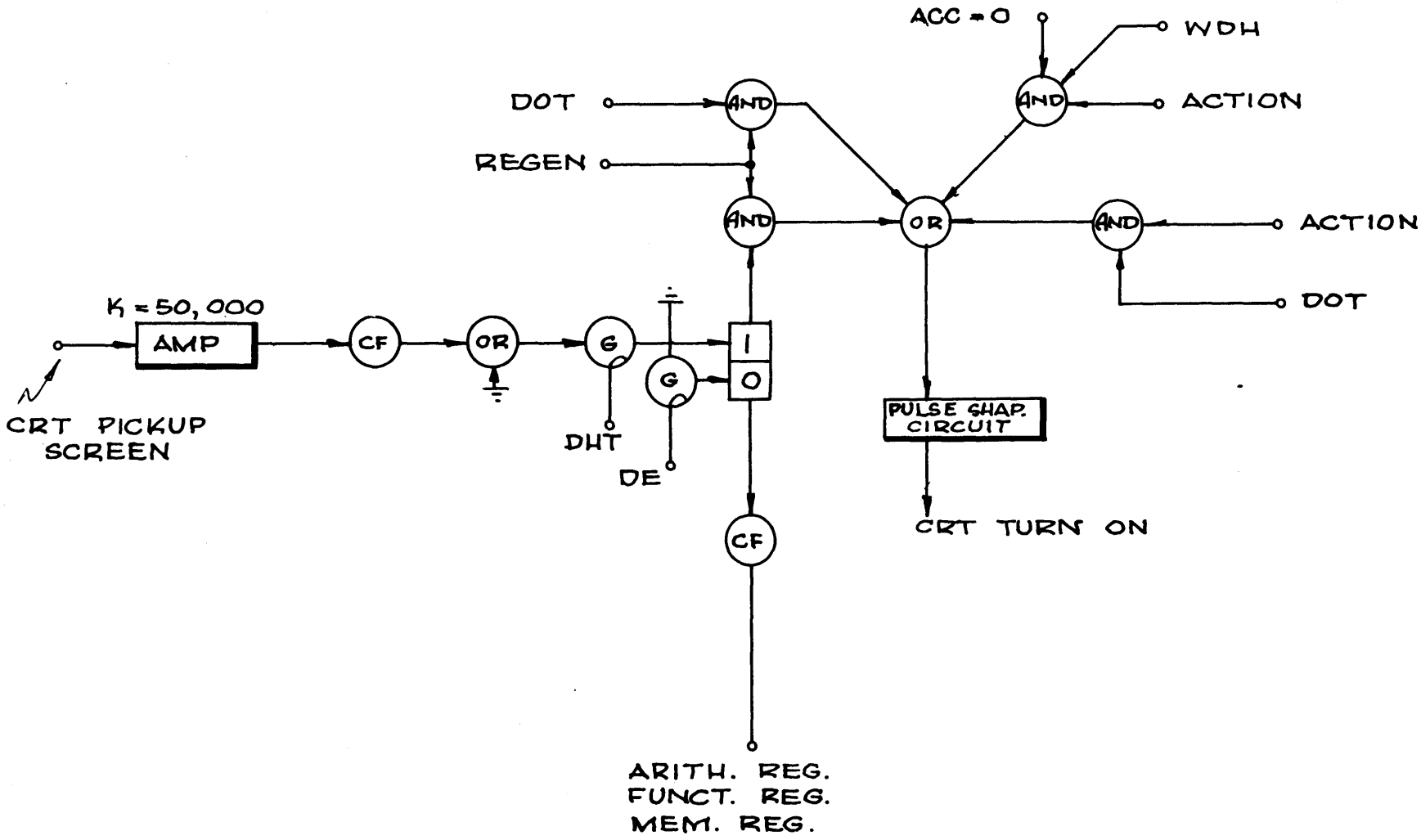
FOR JMW BY HMW CHECKED J.M.W. APPROVED R. E. Meagher DATE 10·1·51

TITLE – MEMORY BLOCK DIAGRAM

S·350



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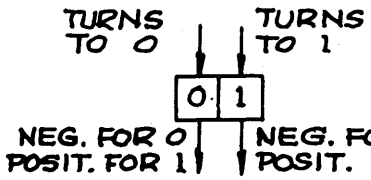
TITLE ~ MEMORY REGEN LOGIC

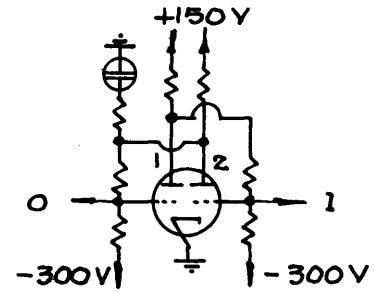
S·351

LOGICAL SYMBOL — CIRCUIT ELEMENT

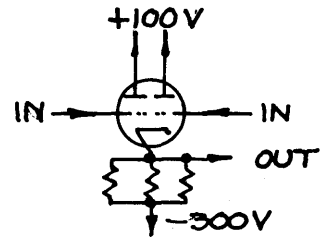
(ENABLING SIGNALS ARE NEGATIVE)

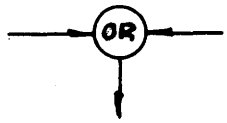


(1) FLIPFLOP

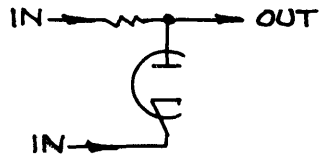


(2) AND CIRCUIT

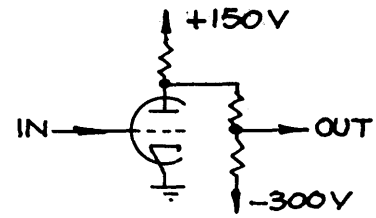




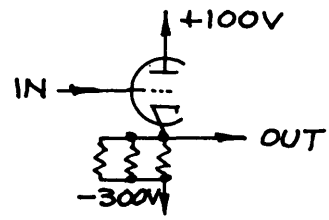
(3) OR CIRCUIT

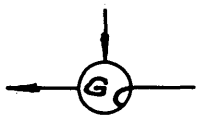


(4) NOT CIRCUIT (INVERTER)

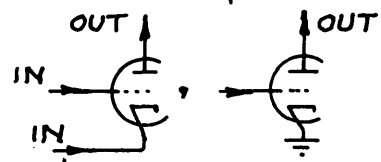


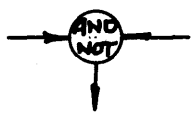
(5) CATHODE FOLLOWER



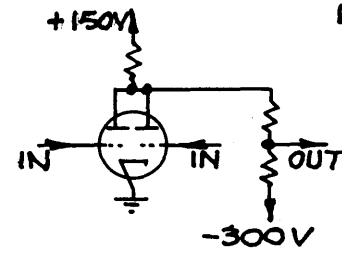


(6) GATE





(7) AND-NOT CIRCUIT



~ REVISED 10.9.51 ~

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FOR JFN BY HMW CHECKED APPROVED R.E. Meagher DATE 10·2·51

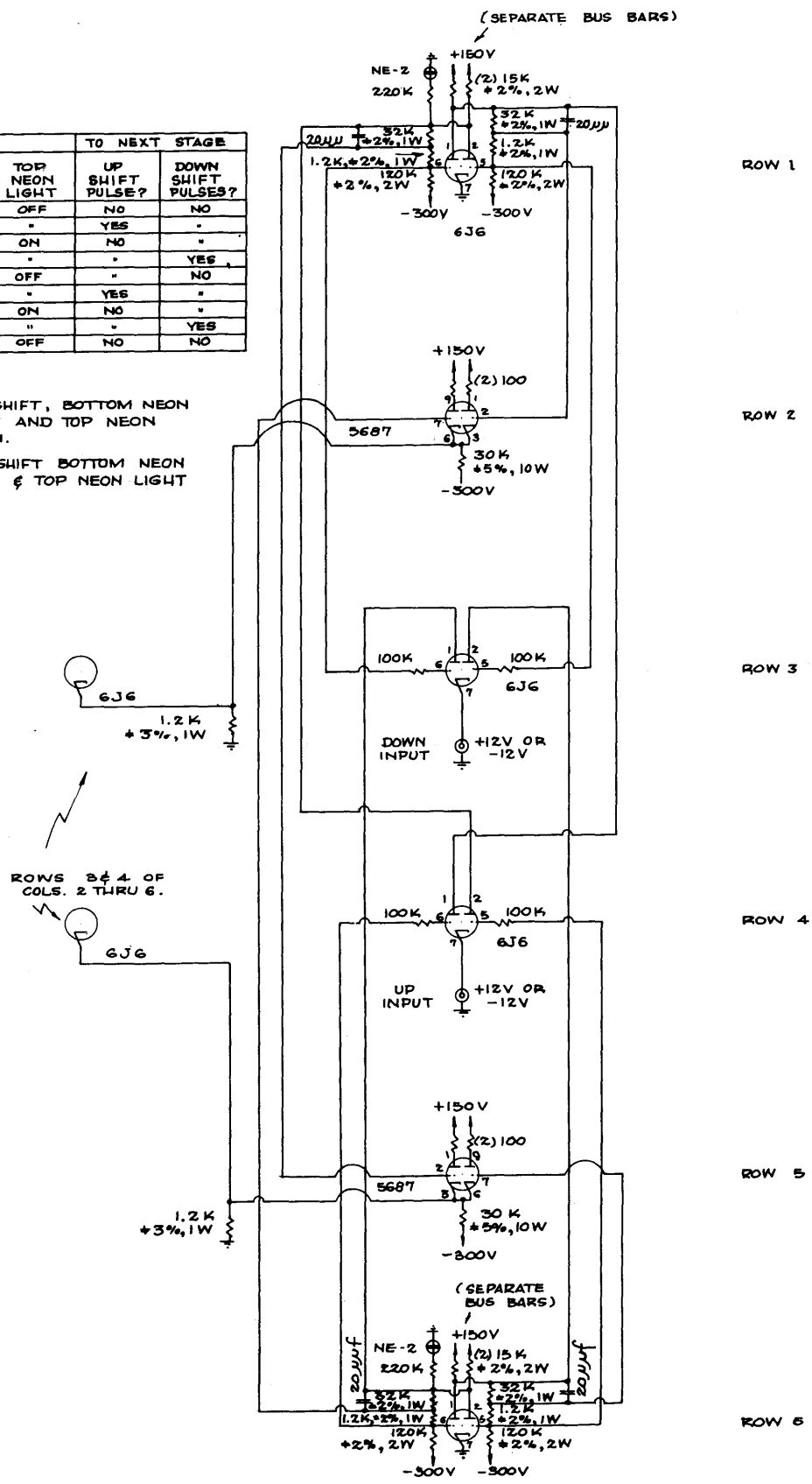
TITLE ~ LOGICAL SYMBOLS & USUAL CIRCUIT EQUIVALENTS

S-352

INPUT			TO NEXT STAGE	
	BOTTOM NEON LIGHT	TOP NEON LIGHT	UP SHIFT PULSE?	DOWN SHIFT PULSES?
UP PULSE	OFF	OFF	NO	NO
DOWN "	ON	"	YES	"
UP "	ON	ON	NO	"
DOWN "	OFF	"	"	YES
UP "	"	OFF	"	NO
DOWN "	ON	"	YES	"
UP "	ON	ON	NO	"
DOWN "	OFF	"	"	YES
UP "	OFF	OFF	NO	NO

TO GET A DOWN SHIFT, BOTTOM NEON LIGHT MUST BE OFF AND TOP NEON LIGHT MUST BE ON.

TO GET AN UP SHIFT BOTTOM NEON LIGHT MUST BE ON & TOP NEON LIGHT MUST BE OFF.



~ NOTES ~

1. RESISTORS NOT SPECIFIED ARE ±20%, ½W.
2. ALL FILS. AT GROUND.
3. ALL SIX COLS. ARE IDENTICAL.
4. BOTTOM ROW OF COUNTER IS SENSED ROW.
5. DOWN PULSE IS FIRST PULSE OF PAIR.

REDRAWN FROM DRWG NO. 113 DATED 7-3-51

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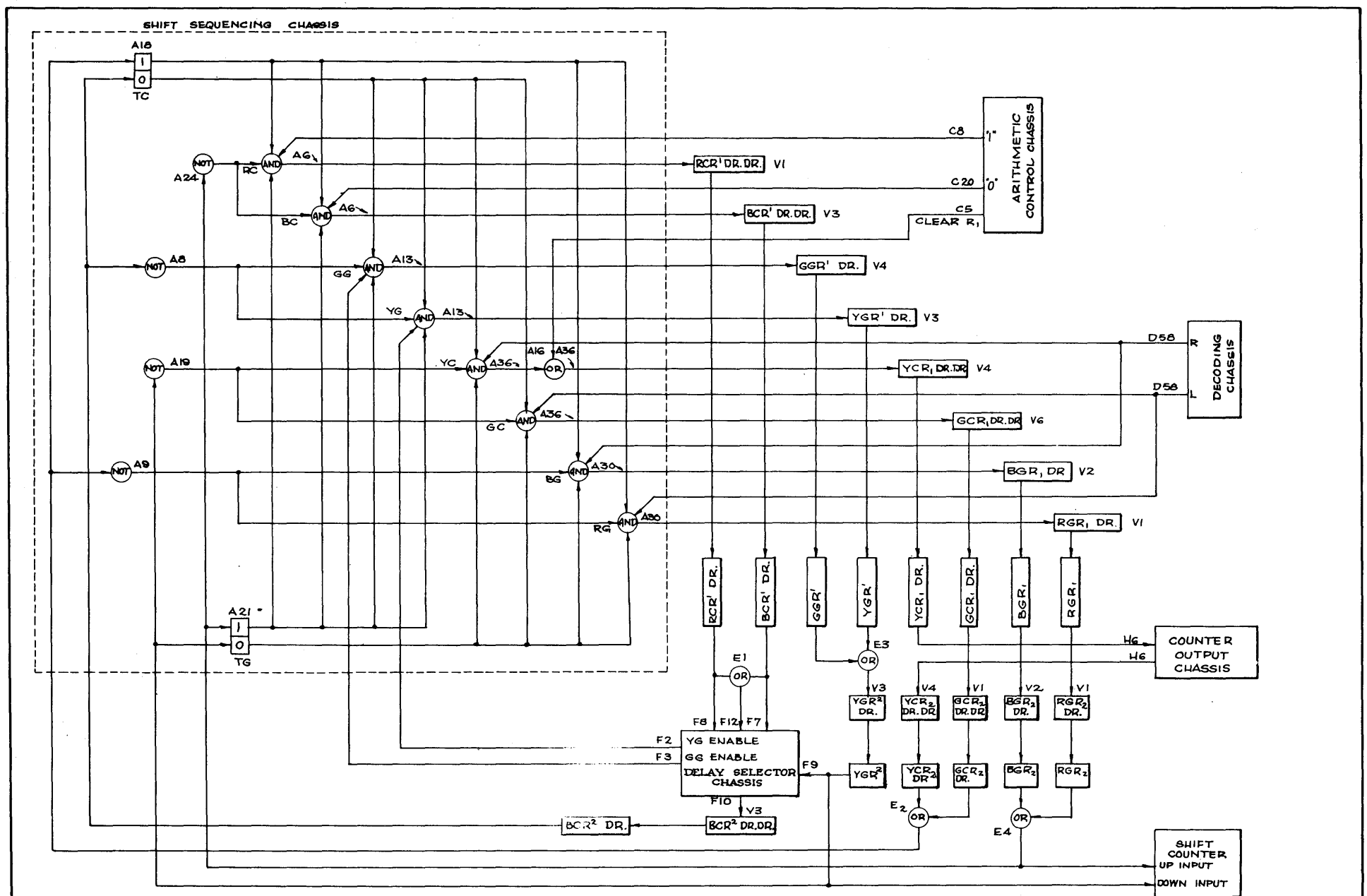
FOR JPN BY LMW CHECKED [signature] APPROVED R.E. Meagher DATE 10-1-51

TITLE ~ SHIFT COUNTER CIRCUIT

M-353



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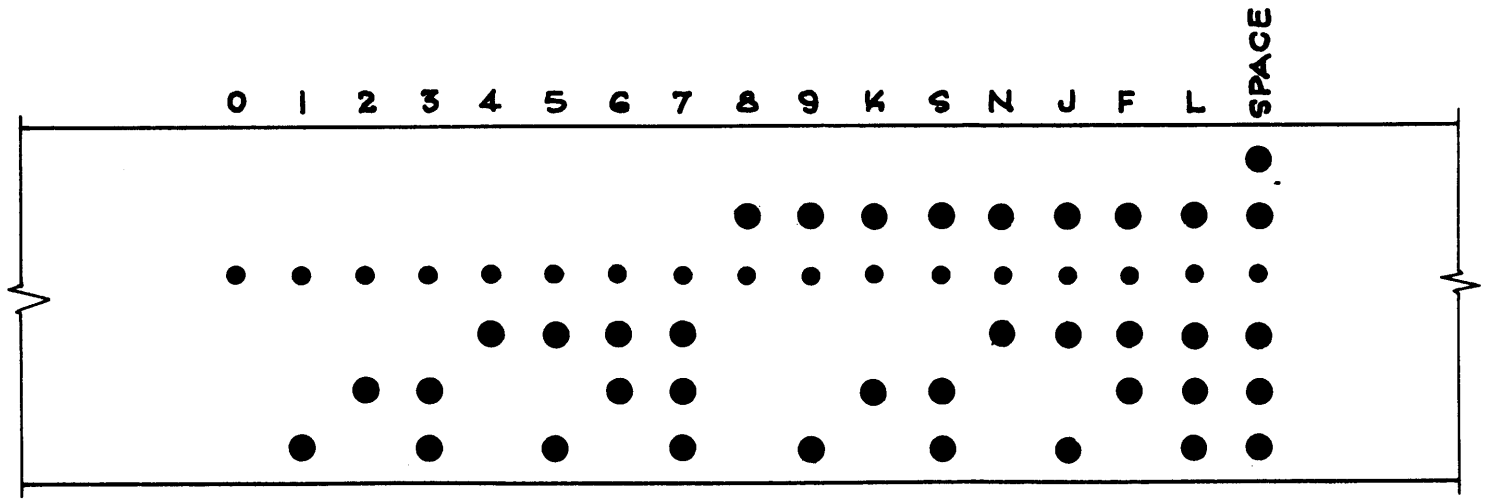
FOR JPN BY HMW CHECKED JPMash APPROVED R.E. Meagher DATE 10·4·51

TITLE ~ SHIFT CONTROL LOGIC

M-354



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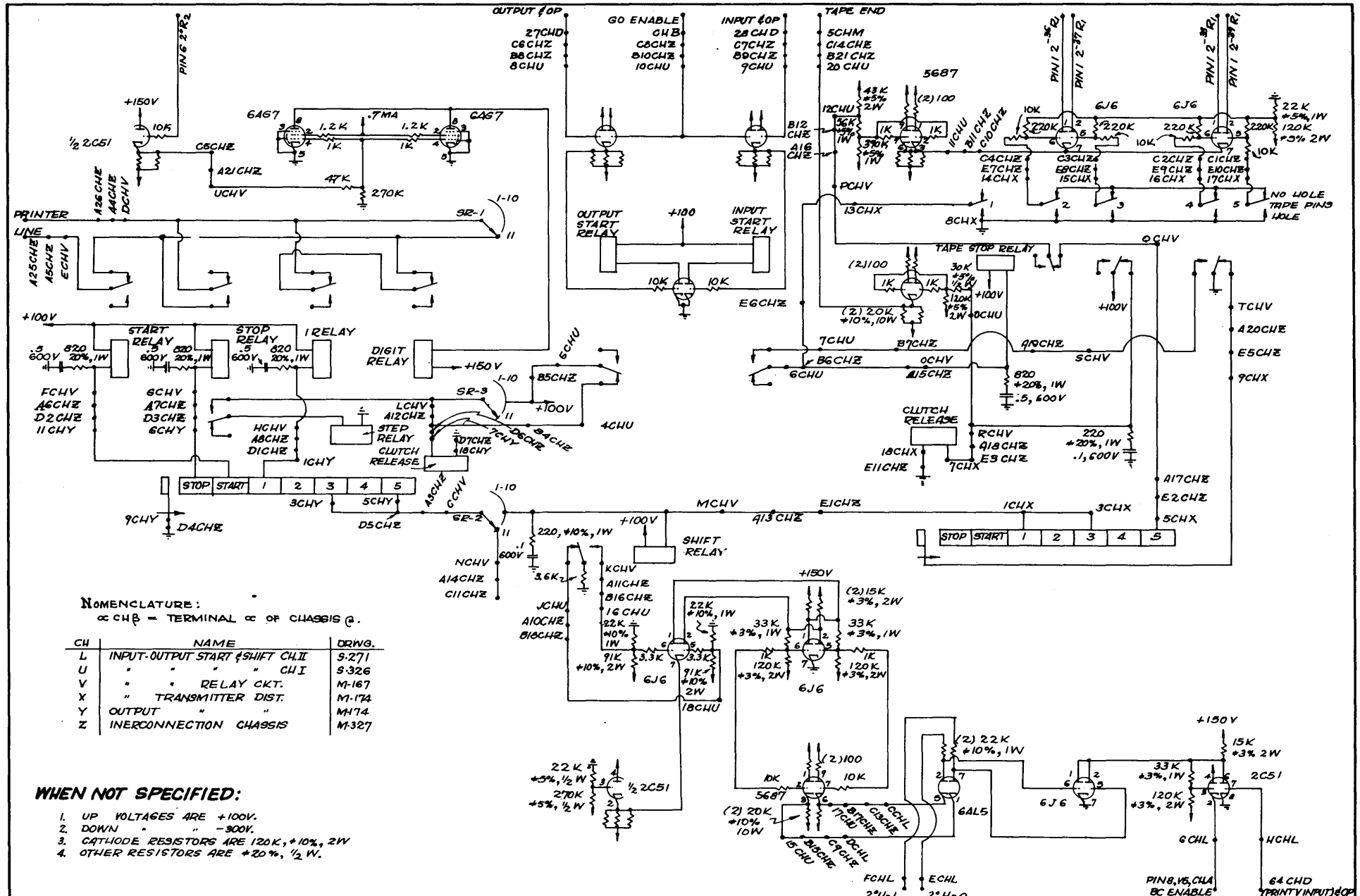
FOR TS BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 10-8-51

TITLE ~. PUNCHED TAPE SHOWING CODE USED

S-355



NOMENCLATURE:
αCHβ = TERMINAL α OF CHASSIS β.

CH	NAME	DRWG.
L	INPUT-OUTPUT START & SHIFT CH. II	S-271
U	" " " " CH. I	S-326
V	" " RELAY CKT.	M-167
X	" TRANSMITTER DIST.	M-174
Y	OUTPUT " "	M-174
Z	INTERCONNECTION CHASSIS	M-327

WHEN NOT SPECIFIED:

1. UP VOLTAGES ARE +100V.
2. DOWN " " −300V.
3. CATHODE RESISTORS ARE 120K, ±10%, 2W
4. OTHER RESISTORS ARE ±20%, ½ W.

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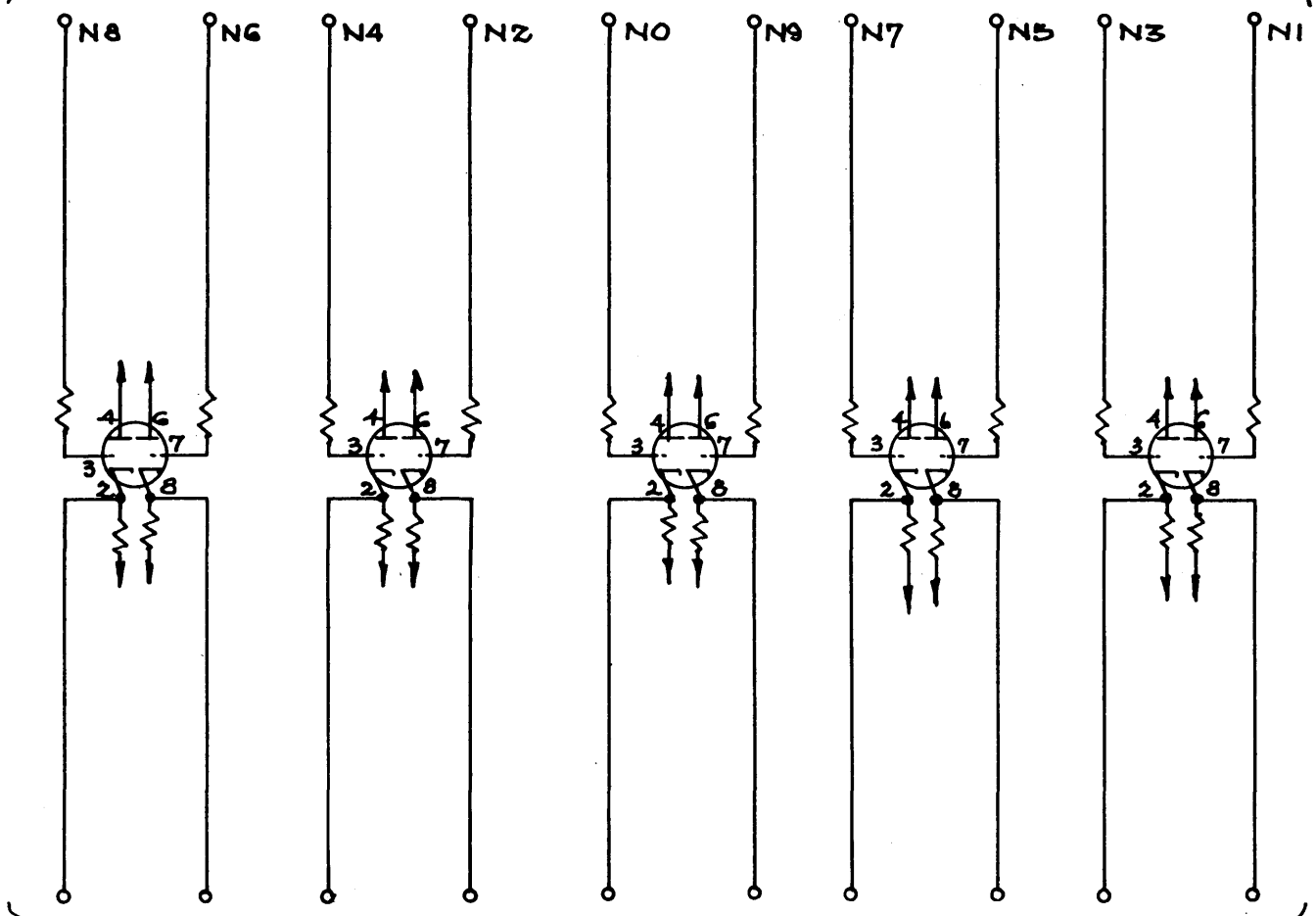
FOR TS BY HMV CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 10-10-51

TITLE ~ LOW SPEED INPUT-OUTPUT WIRING

M-356

FROM PIN 8, V16, DRWG. # 196

WHERE N=0, 1, 2, 3 POSIT. NUMBER DECADES.



TO 40 POSITION SWITCH
TO SLAVE TUBE.

- ALL TUBES ARE 2C51'S.
- PLATE VOLTAGES ARE +150V.
- CATHODE " " -300V.
- " RESISTORS • 120K, ±10%, 2W.
- GRID RESISTORS ARE 1.8K, ±20%, ½W.
- FILS AT +50V.

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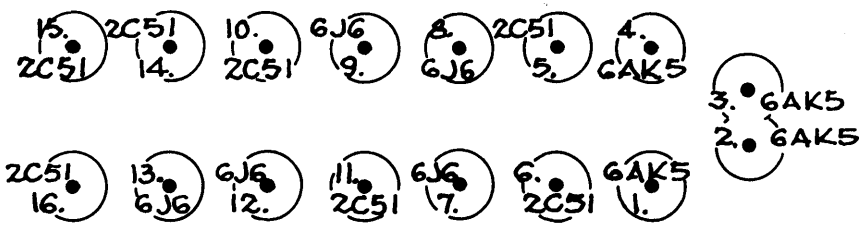
TITLE ~ SLAVE TUBE CATHODE FOLLOWERS

S-357



BASE DIAGRAM OF VIDEO AMPLIFIER & WILLIAMS TUBE CONTROL.

FRONT PINS OF VIDEO AMPLIFIER & WILLIAMS TUBE CONTROL:

- o TEST 1
- o TEST 2
- o MEM. REG.
- o ACC. REG.
- o NO CONN.

PLUG PIN DIAGRAM FROM REAR OF MACHINE:

oK FIL.	oE FIL.	
oL -300V	oF REGEN	oA GRID OF SLAVE CF
oM WHITE	oG ACT	oB DOT
oN +150V	oH WDH	oC 3KPIGRID
oO +300V	oI DHT	oD DE
oP GND	oJ GND	

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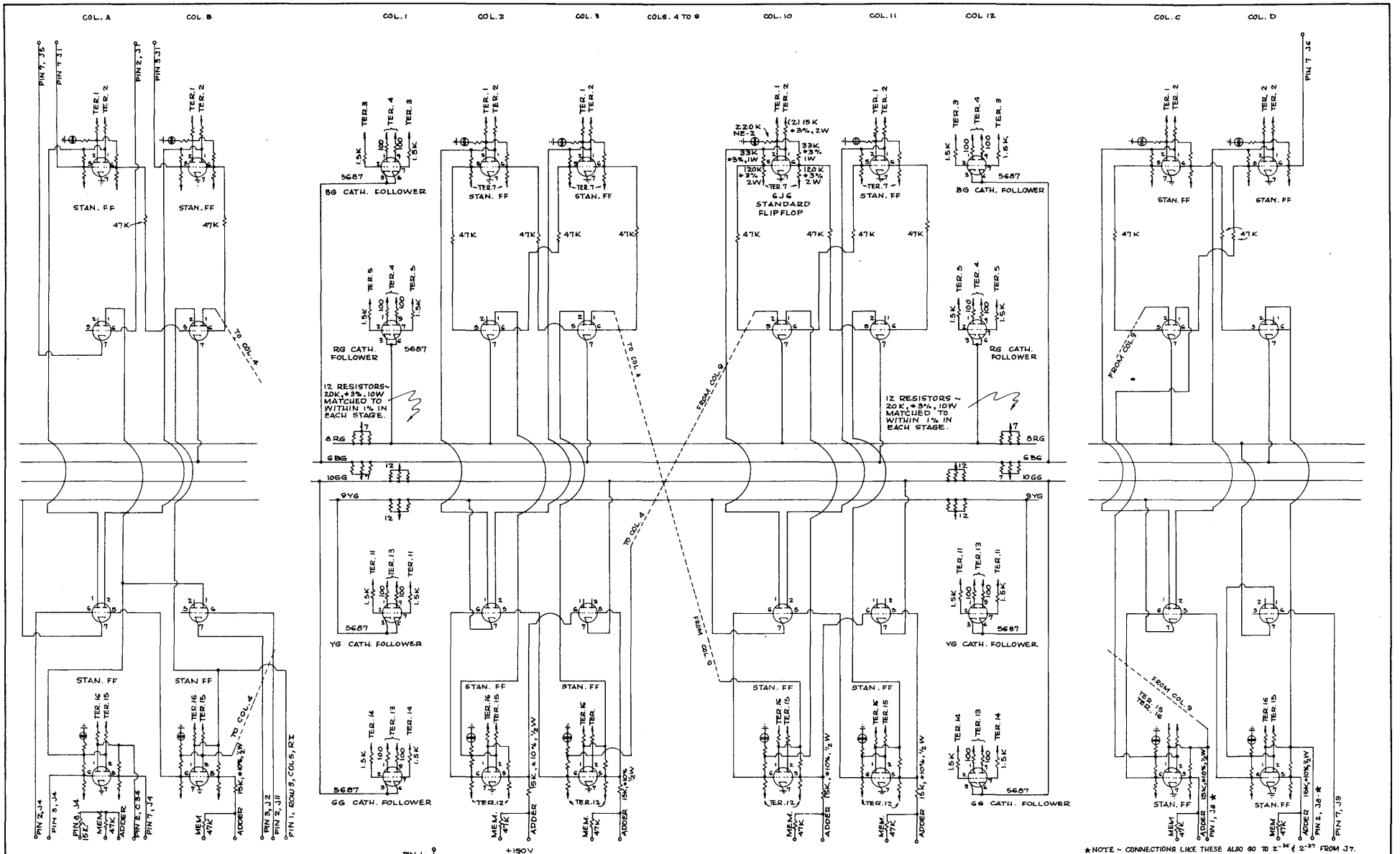
FOR JMW BY HMW CHECKED JMW APPROVED R.E. Meagher DATE 10·16·51

TITLE ~ PHYSICAL LAYOUT MEMORY CHASSIS

S·358



NOTES:

1. TUBES NOT SPECIFIED ARE 6J6'S.
2. RESISTORS NOT ~ ARE ±20%, ½W.
3. ALL FILS AT GND.
4. REDRAWN FROM DRWG. NO. 277 DATED 4-16-51.
5. WIRING OF COLS. 4, 6, & 8 IDENTICAL TO THAT OF COL. 2. WIRING OF COLS. 5, 7, & 9 IDENTICAL TO THAT OF COL. 3.
6. COLS. 1 THRU 12 REPRESENT THE STANDARD RI 10 DIGIT REGISTER.
   FOR DIGITS 2^{0} TO 2^{-9} SUBSTITUTE COLS. A & B FOR COLS. 2 & 3 IN THE STAN. REGISTER.
   FOR " 2^{-10} TO 2^{-19} & 2^{-20} TO 2^{-29} USE THE STANDARD REGISTER.
   FOR " 2^{-30} TO 2^{-34} SUBSTITUTE COLS. C & D FOR COLS. 10 & 11 IN THE STAN. REGISTER.
   FOR " 2^{0} TO 2^{-9} SUBSTITUTE INSERT FOR COLS 5, 7, 9, OF ROW 3 IN STAN. REG.

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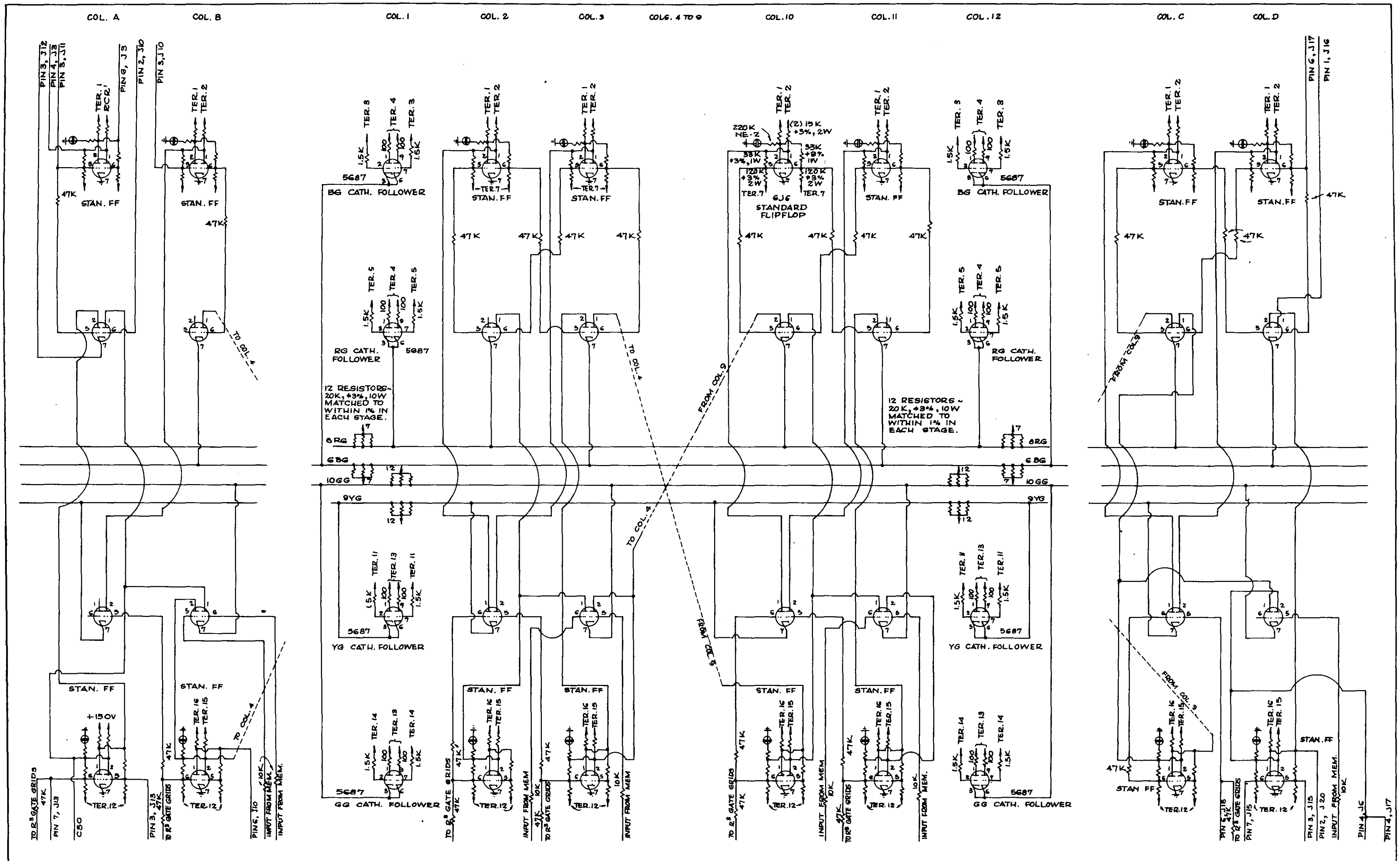
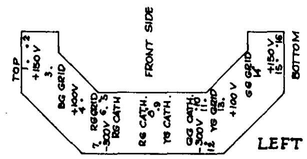
FOR JPN BY HMW CHECKED JMash APPROVED R.F. Mengler DATE

TITLE ~ RI REGISTER, 2^{0} TO 2^{-9}, 2^{-10} TO 2^{-19} & 2^{-20} TO 2^{-29}, 2^{-30} TO 2^{-35}

L-359





LEFT ELEVATION

NOTES:

1. TUBES NOT SPECIFIED ARE 6J6'S.
2. RESISTORS NOT " ARE ±20%, ½W.
3. ALL FILS AT GND.
4. REDRAWN FROM DRWG. NO. 278 DATED 4·18·51.
5. WIRING OF COLS. 4, 6, & 8 IDENTICAL TO COL. 2.
   " " " 5, 7, & 9 " " COL. 3.
6. COLS. 1 THRU 12 REPRESENT THE STANDARD RII 10 DIGIT REGISTER.
   FOR DIGITS 2^0 TO 2^{-9} SUBSTITUTE COLS. A & B FOR COLS. 2 & 3 IN THE STAN. REGISTER.
   FOR " 2^{-10} TO 2^{-19} & 2^{-20} TO 2^{-29} USE THE STANDARD REGISTER.
   FOR " 2^{-30} TO 2^{-39} SUBSTITUTE COLS. C & D FOR COLS. 10 & 11 IN THE STAN. REGISTER.

REVISED 2·27·52

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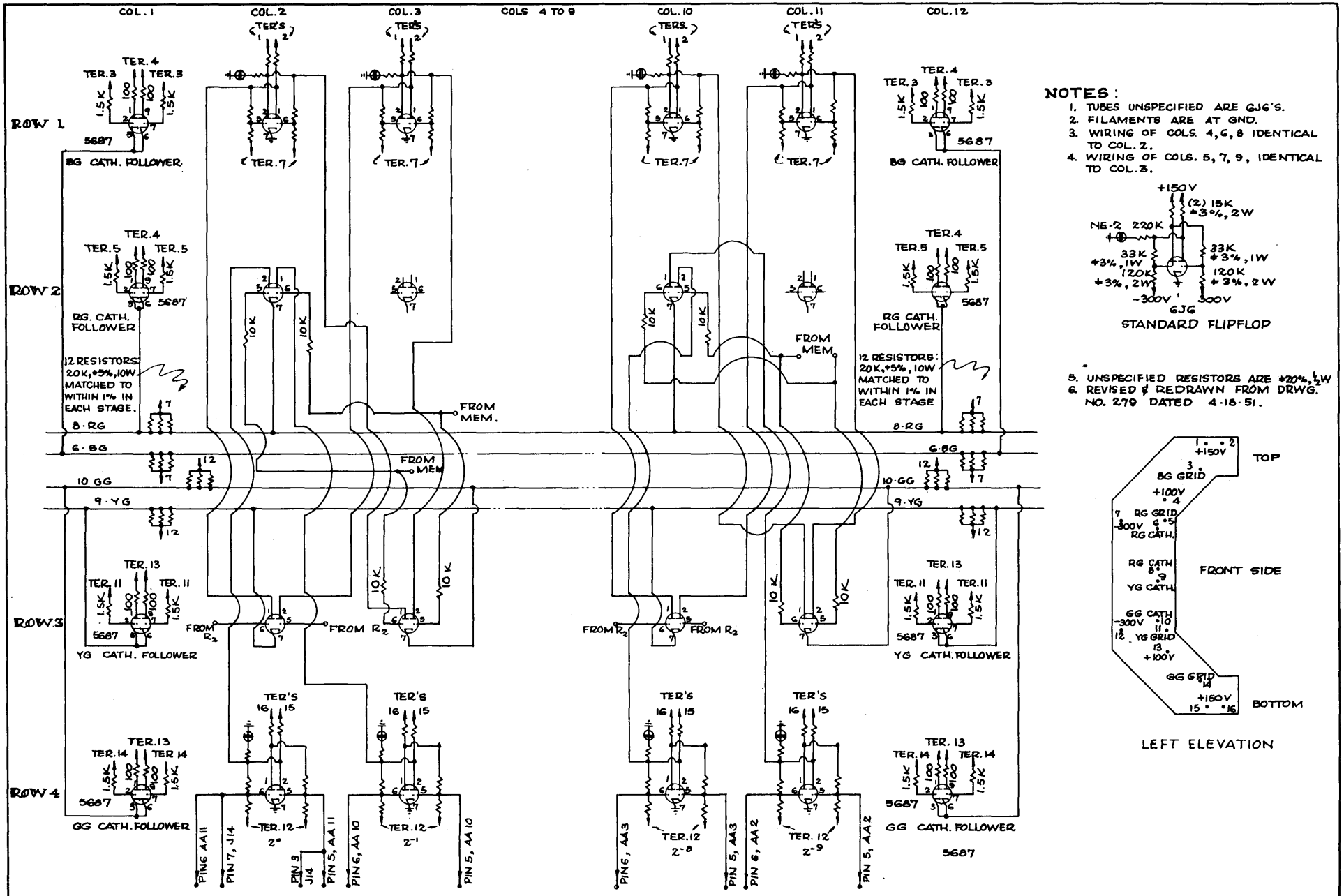
TITLE ~ RII REGISTER, 2^0 TO 2^{-9}, 2^{-10} TO 2^{-19} & 2^{-20} TO 2^{-29}, 2^{-30} TO 2^{-39}

L-360



NOTES:

1. TUBES UNSPECIFIED ARE GJG'S.
2. FILAMENTS ARE AT GND.
3. WIRING OF COLS. 4, 6, 8 IDENTICAL TO COL. 2.
4. WIRING OF COLS. 5, 7, 9, IDENTICAL TO COL. 3.

STANDARD FLIPFLOP

5. UNSPECIFIED RESISTORS ARE ±20%, ½W
6. REVISED & REDRAWN FROM DRWG. NO. 279 DATED 4-18-51.

LEFT ELEVATION

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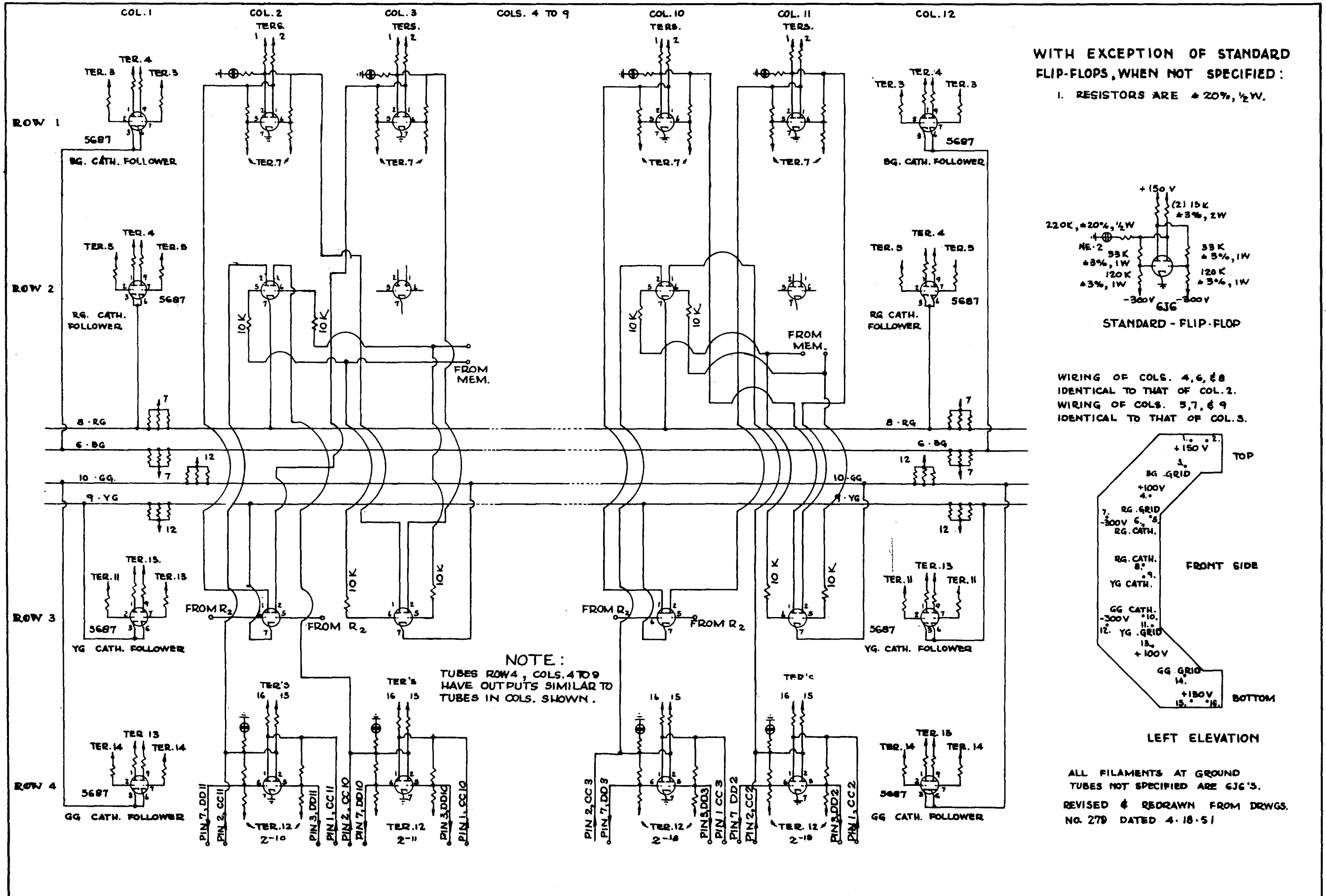
TITLE RIII REGISTER, 2° TO 2⁻⁹

M-361


COL. 1
COL. 2 TERS.
COL. 3 TERS.
COLS. 4 TO 9
COL. 10 TERS.
COL. 11 TERS.
COL. 12
ROW 1
ROW 2
ROW 3
ROW 4
BG. CATH. FOLLOWER
RG. CATH. FOLLOWER
YG CATH. FOLLOWER
GG CATH. FOLLOWER
5687
8 · RG
6 · BG
10 · GG
9 · YG
FROM MEM.
FROM R2
NOTE: TUBES ROW 4, COLS. 4 TO 9 HAVE OUTPUTS SIMILAR TO TUBES IN COLS. SHOWN.
WITH EXCEPTION OF STANDARD FLIP-FLOPS, WHEN NOT SPECIFIED:
1. RESISTORS ARE ±20%, ½W.
STANDARD - FLIP-FLOP
WIRING OF COLS. 4, 6, & 8 IDENTICAL TO THAT OF COL. 2.
WIRING OF COLS. 5, 7, & 9 IDENTICAL TO THAT OF COL. 3.
TOP
FRONT SIDE
BOTTOM
LEFT ELEVATION
ALL FILAMENTS AT GROUND
TUBES NOT SPECIFIED ARE 6J6'S.
REVISED & REDRAWN FROM DRWGS. NO. 279 DATED 4·18·51

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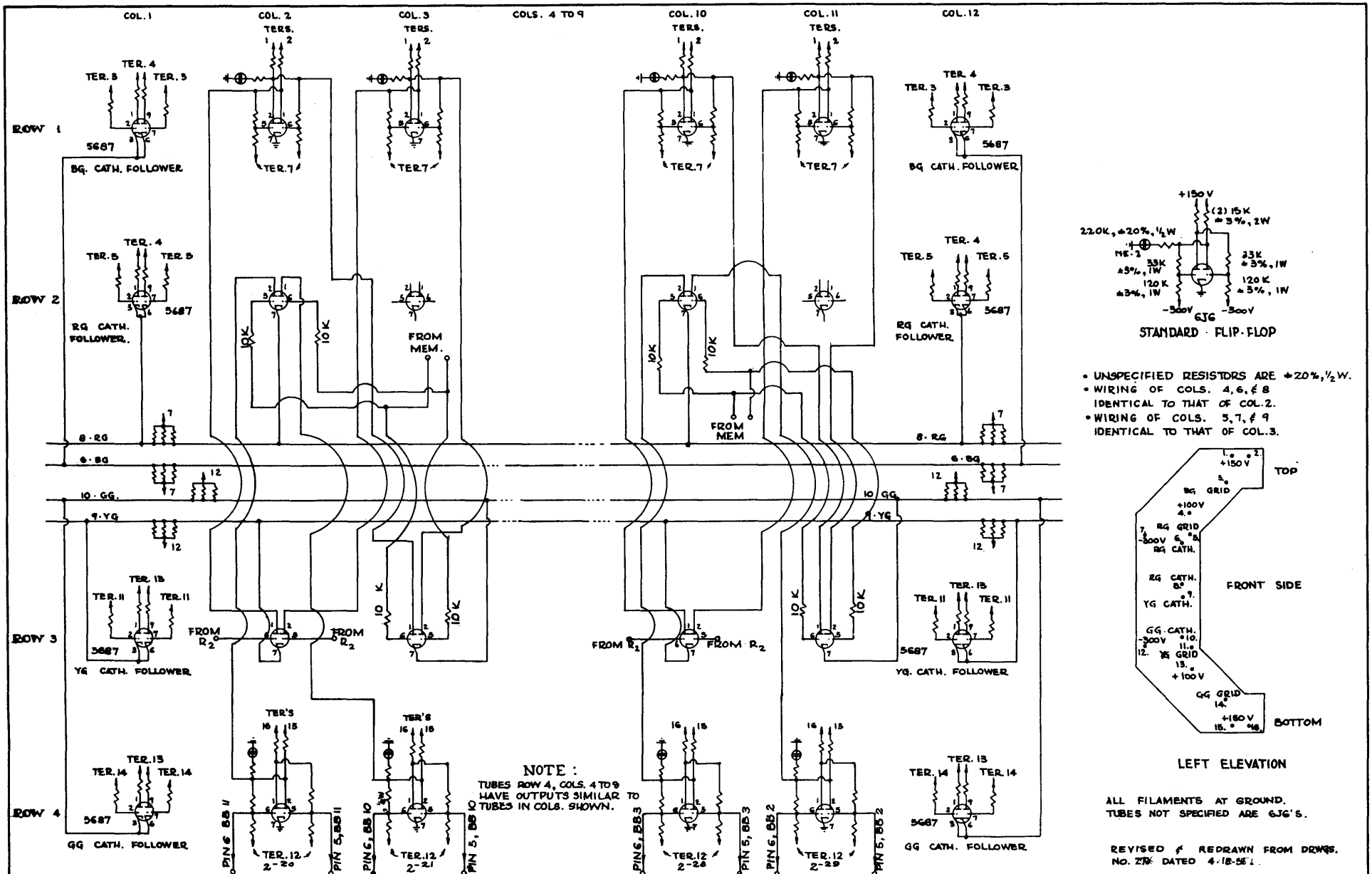
FOR J.P.N. BY H.M.W. CHECKED J. Nash APPROVED R. E. Meagher DATE 10·24·51

TITLE RIII REGISTER, 2^{-10} TO 2^{-19}

M·362



STANDARD · FLIP-FLOP

- UNSPECIFIED RESISTORS ARE ±20%, 1/2 W.
- WIRING OF COLS. 4, 6, & 8 IDENTICAL TO THAT OF COL. 2.
- WIRING OF COLS. 5, 7, & 9 IDENTICAL TO THAT OF COL. 3.

LEFT ELEVATION

ALL FILAMENTS AT GROUND.
TUBES NOT SPECIFIED ARE 6JG'S.

REVISED & REDRAWN FROM DRWG. NO. ZPK DATED 4-18-51.

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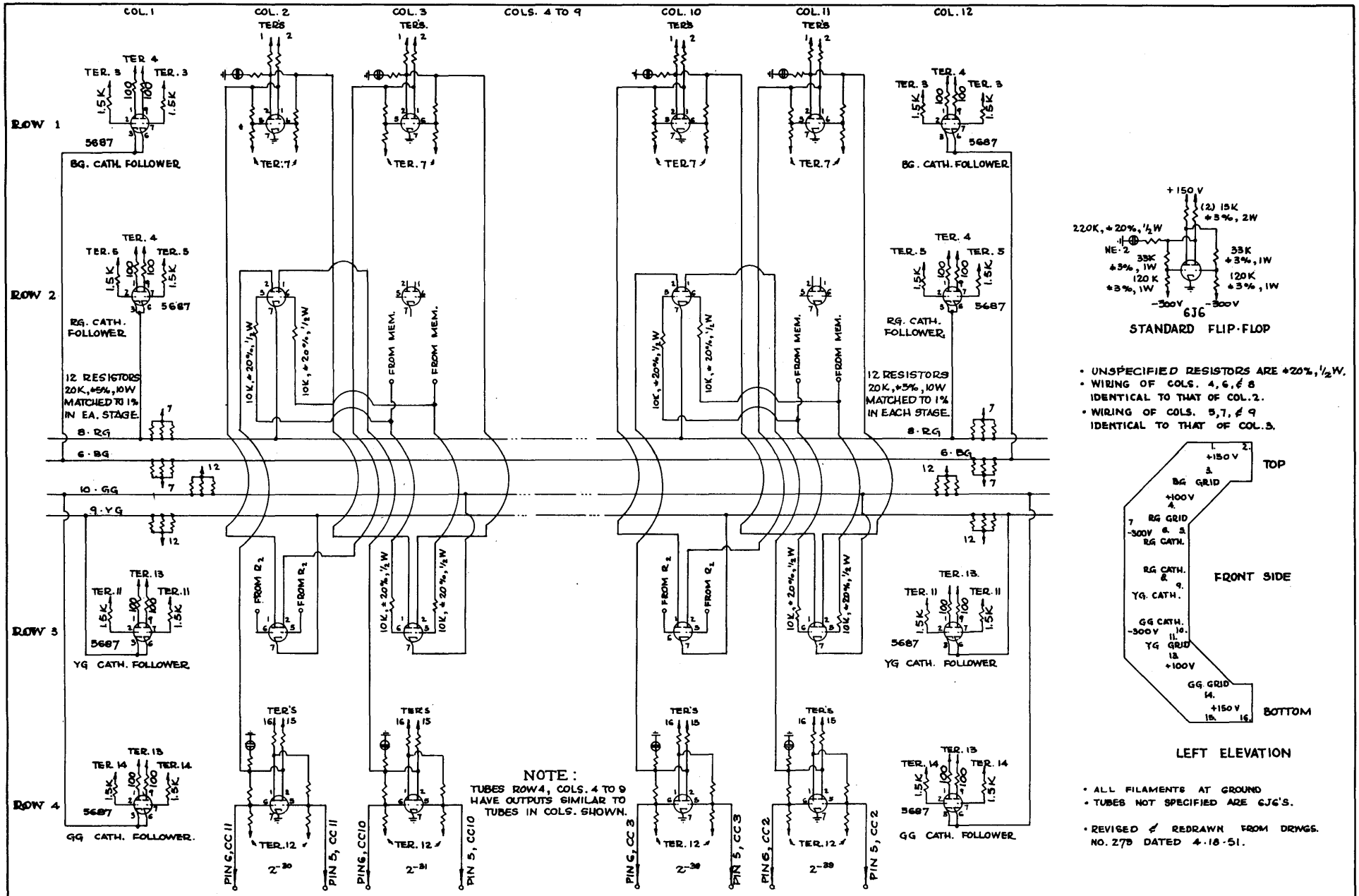
FOR J.P.N BY H.M.W. CHECKED APPROVED R.F. Meagher DATE 10.24.51

TITLE R III REGISTER, 2^{-20} TO 2^{-29}

M-363



STANDARD FLIP-FLOP

- UNSPECIFIED RESISTORS ARE ±20%, 1/2W.
- WIRING OF COLS. 4, 6, & 8 IDENTICAL TO THAT OF COL. 2.
- WIRING OF COLS. 5, 7, & 9 IDENTICAL TO THAT OF COL. 3.

LEFT ELEVATION

- ALL FILAMENTS AT GROUND
- TUBES NOT SPECIFIED ARE 6J6'S.
- REVISED & REDRAWN FROM DRWGS. NO. 279 DATED 4-18-51.

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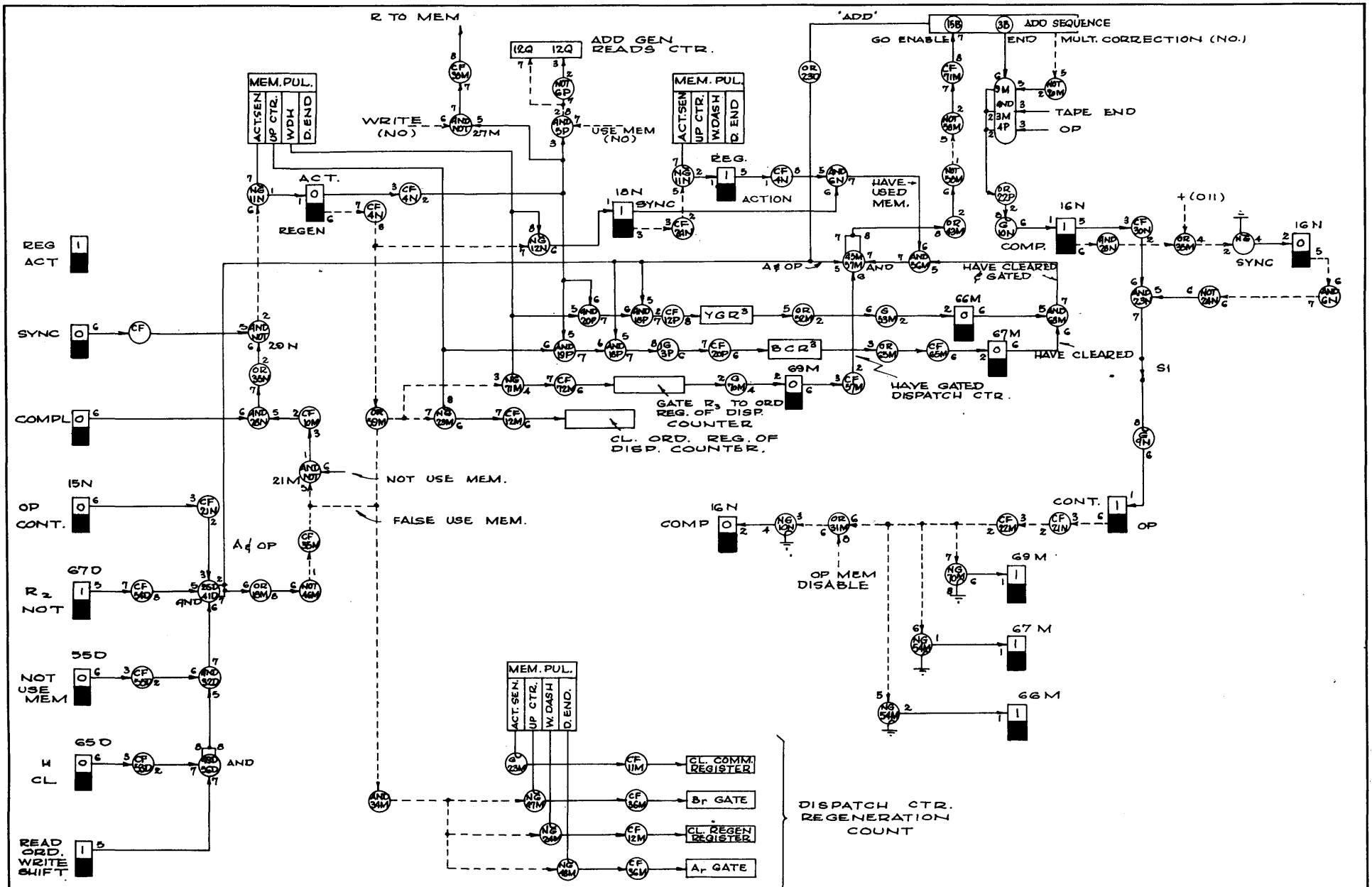
TITLE RIII REGISTER, 2^{-30} TO 2^{-39}

M·364



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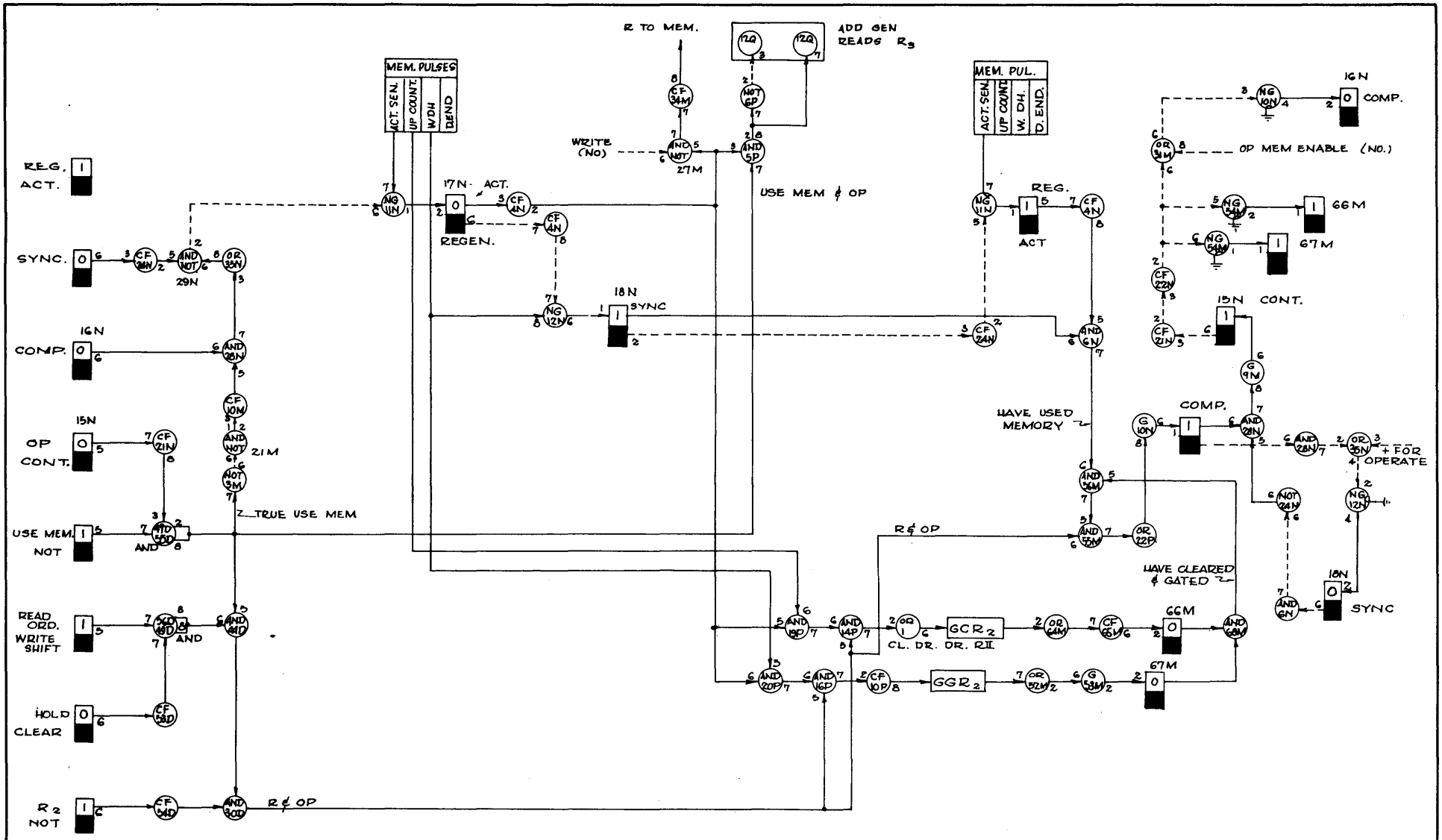
FOR PMK BY HMW CHECKED OK IK APPROVED R. E. Meagher DATE 10·28·51

TITLE ~ "A" OPERATION SEQUENCE

M-365



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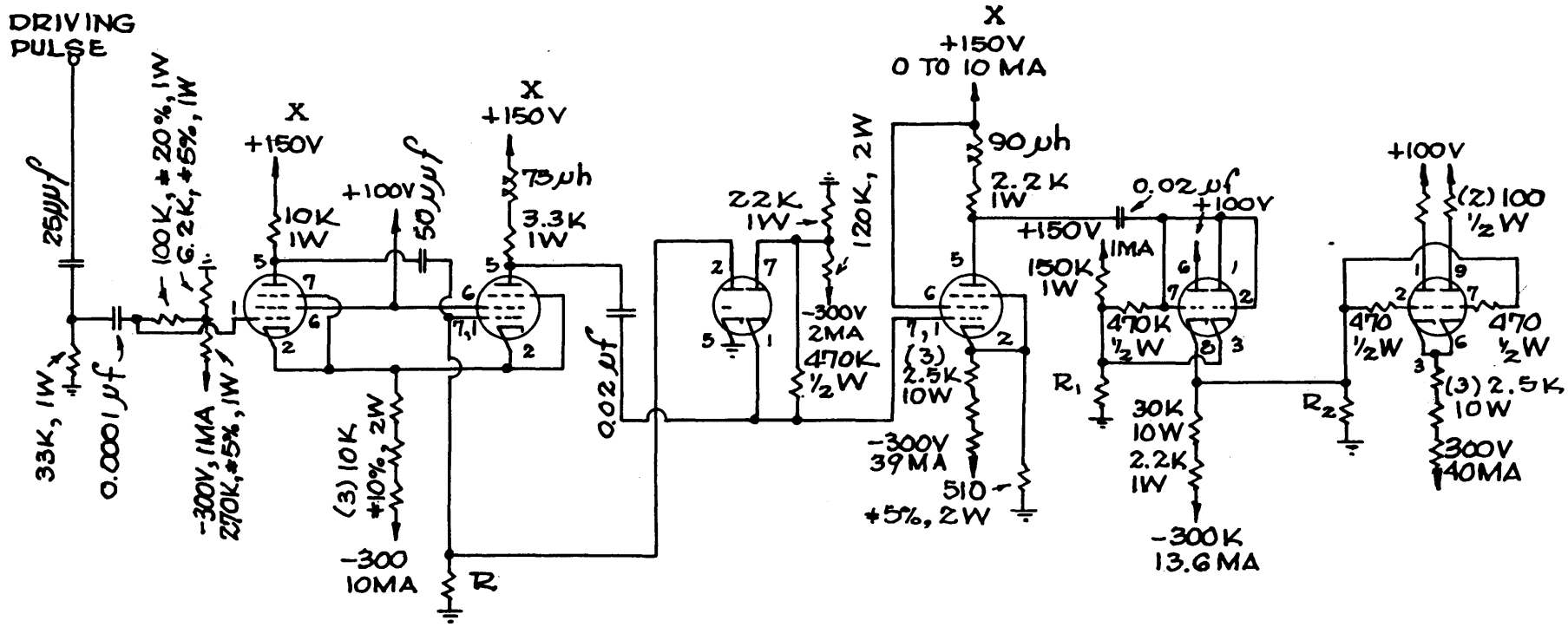
FOR PMK BY HMW CHECKED CMK APPROVED R. E. Meagher DATE 11-4-51

TITLE ~ "R" OPERATION SEQUENCE

M-366

6AK5 6AK5 6AL5 6AQ5 12AU7 5687



R IS APROXIMATELY 20K
R_1 " " 7.5K
R_2 " " 3K

RESISTORS NOT SPECIFIED ARE ±20%.
ALL FILAMENTS AT GND.

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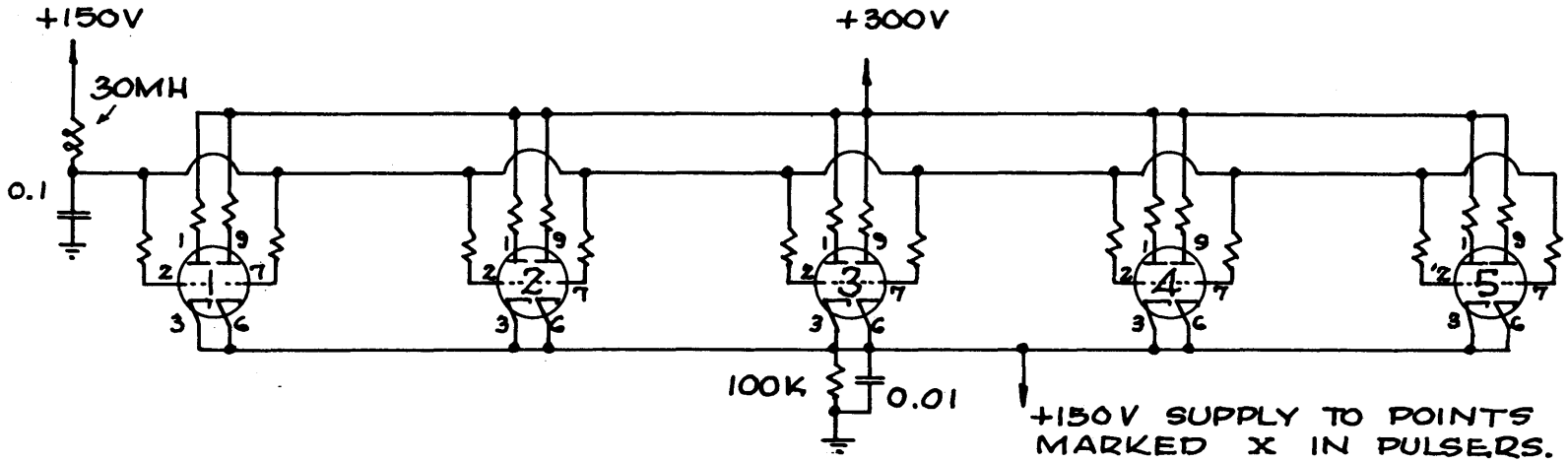
FOR JMW BY HMW CHECKED J. M. W. APPROVED R. E. Meagher. DATE 11·12·51 S·368

TITLE ~ MEMORY PULSER



ALL RESISTORS ARE ± 20%, ½W.
" PLATE RESISTORS ARE 100 Ω.
" GRID " " 1K.
" TUBES ARE 5687'S.
" FILS. PINNED AT +150V.

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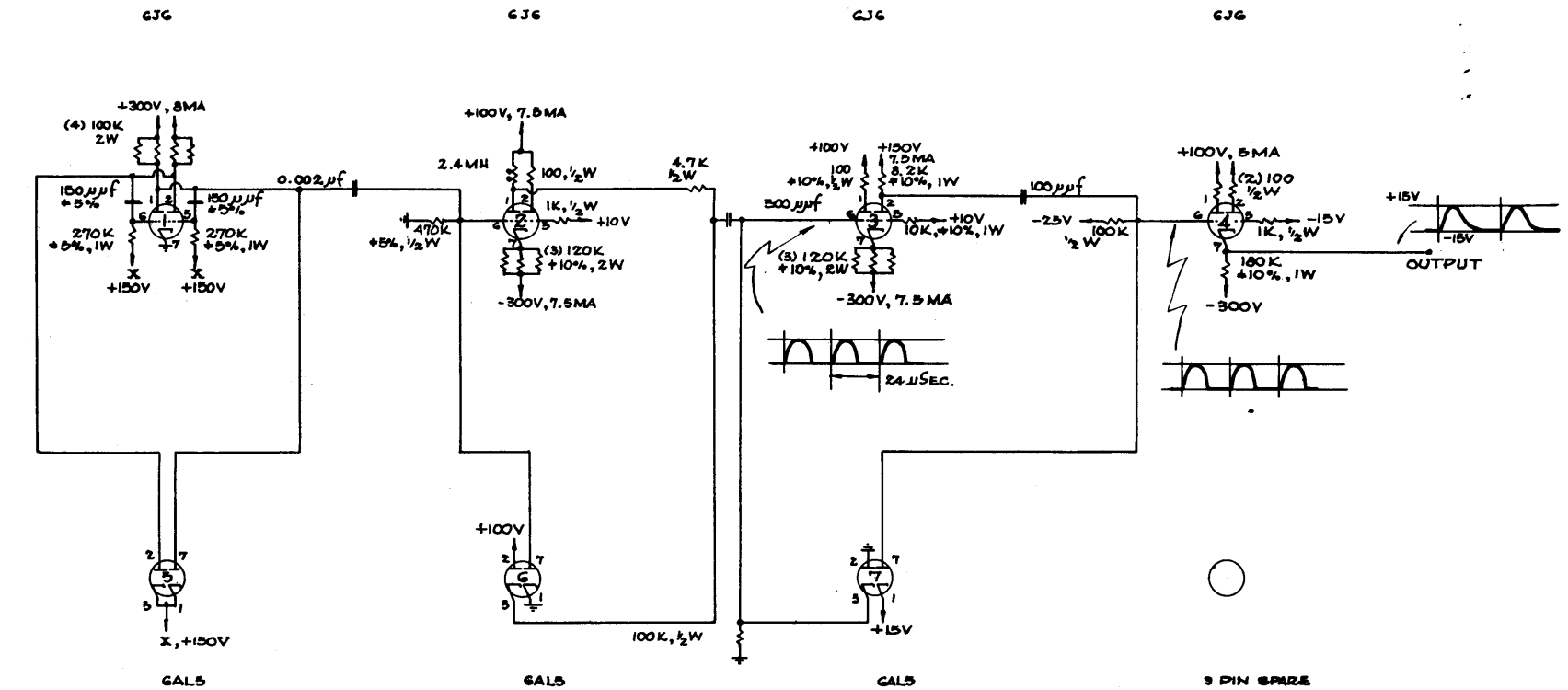
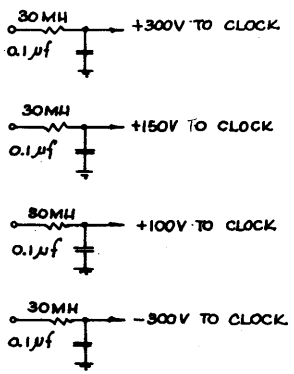
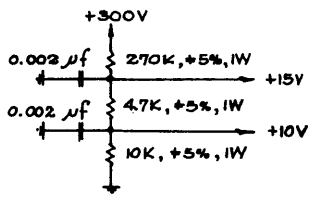
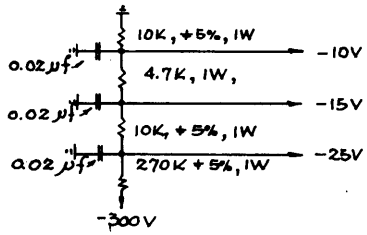
FOR JMW BY HMW CHECKED A.M.M. APPROVED R. E. Meagher. DATE 11·13·51 S·369

TITLE ~ PULSER SUPPLY CHASSIS









ALL RESISTORS NOT SPECIFIED ARE ± 20%.
ALL FILS AT GROUND.

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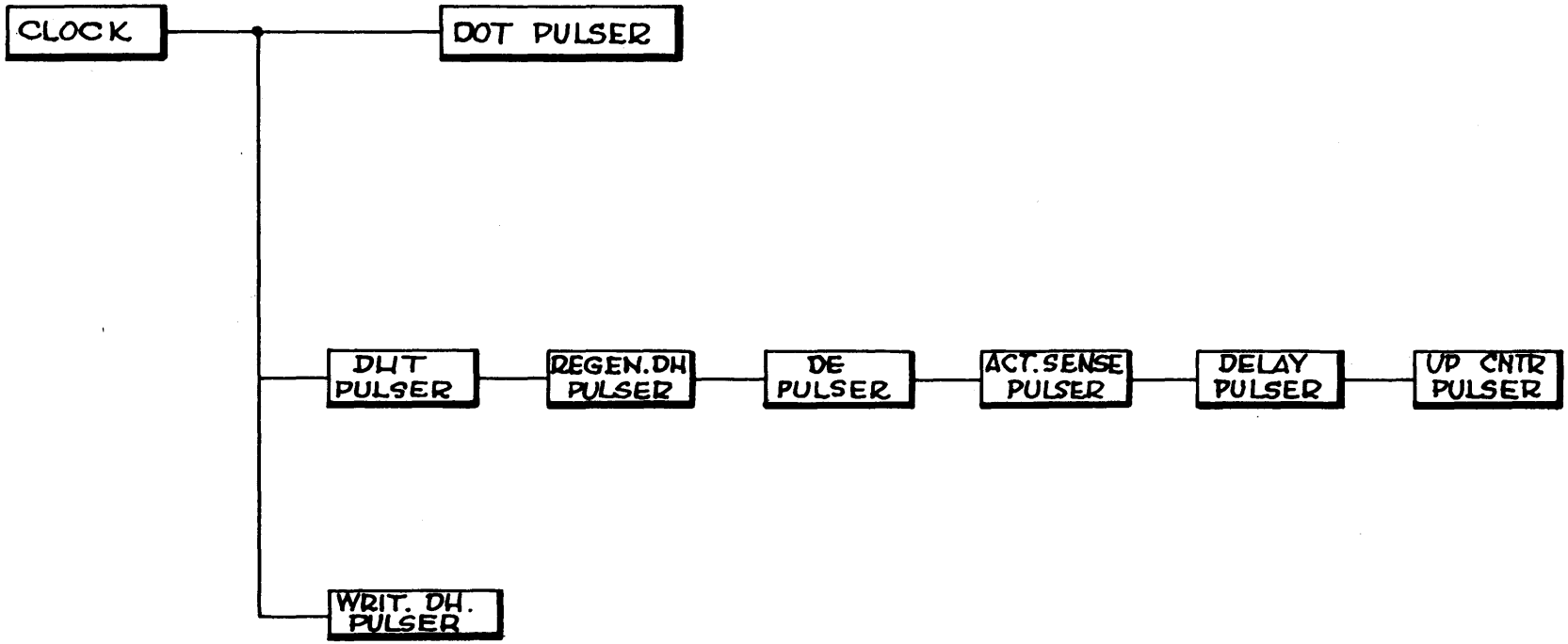
FOR JMW BY HMW CHECKED J. H. M. APPROVED K. E. Meagher DATE 10-19-51

TITLE ~ WIV CLOCK

M-370



PULSES ARE INITIATED UPON COMPLETION OF THE TRIGGERING PULSE.

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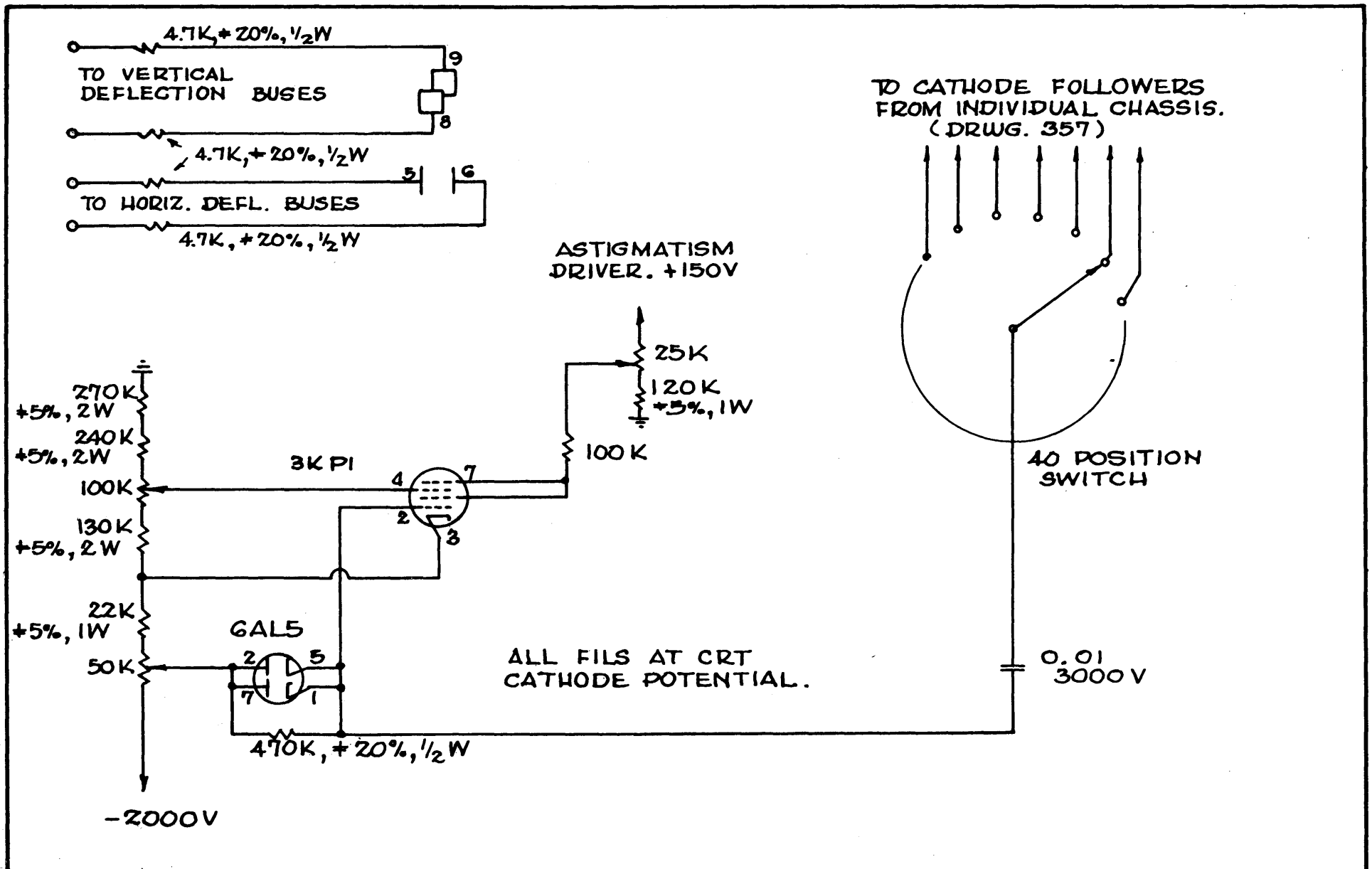
FOR JMW BY HMW CHECKED J. M. M. APPROVED R. E. Meagher DATE 11·19·51

TITLE ~ PULSER CONNECTIONS S·371



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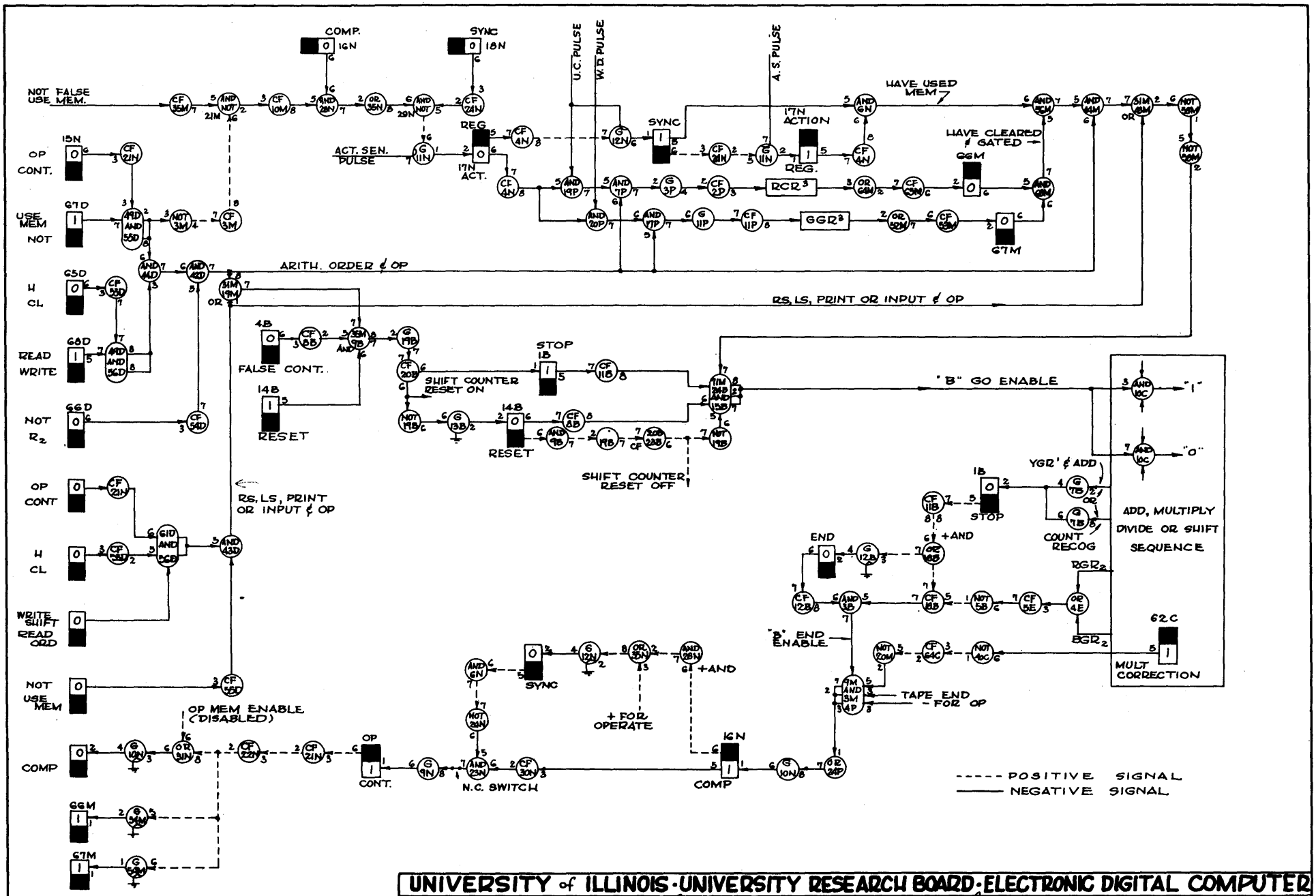
FOR JMW BY HMW CHECKED J.M.W. APPROVED R. E. Meagher DATE 11-29-51

TITLE ~ SLAVE TUBE

S-372



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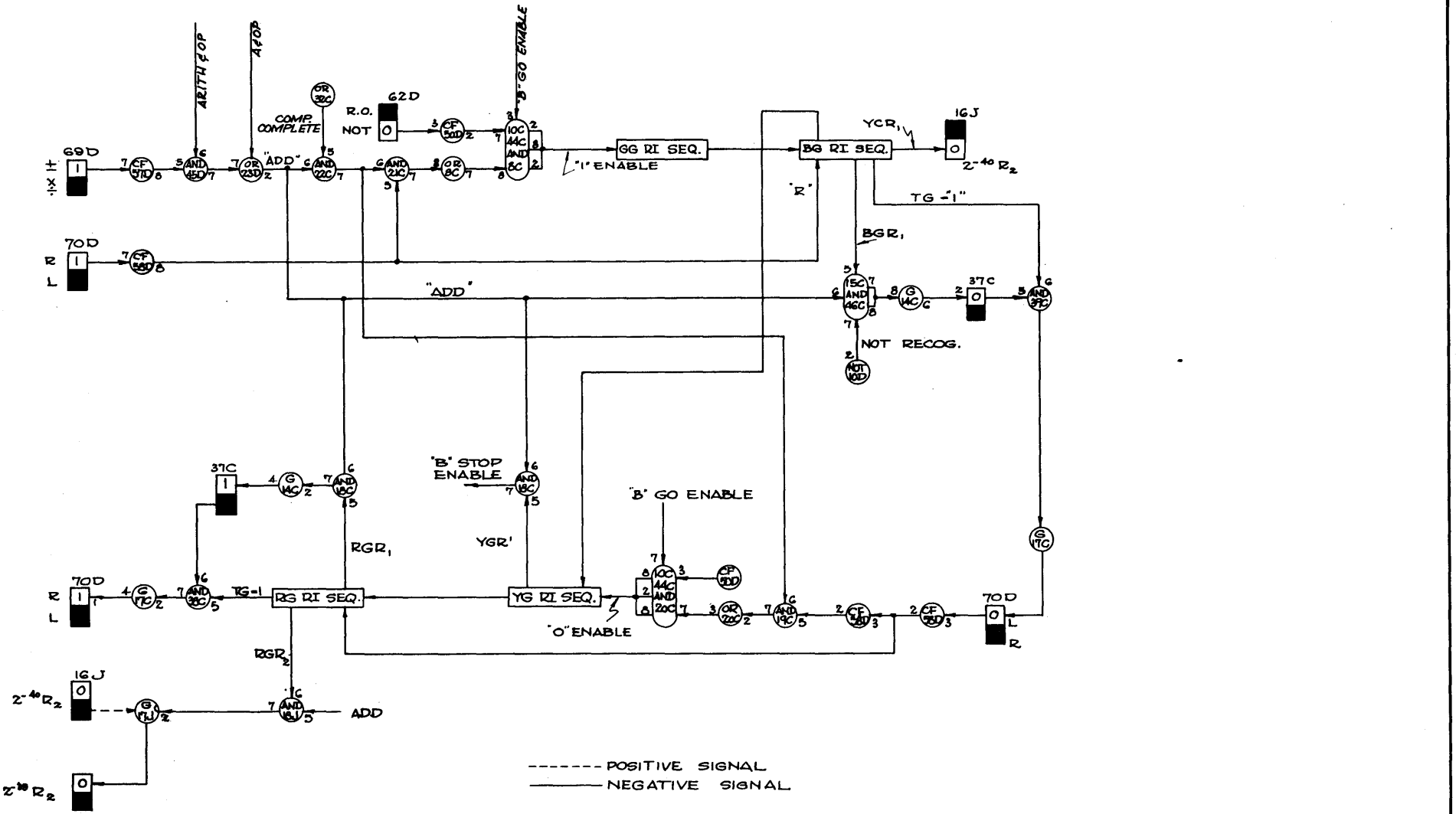
FOR PMK BY HMW CHECKED PMK APPROVED R.E. Meagher DATE 12-18-51

TITLE - ARITHMETIC OR SHIFT OPERATION SEQUENCE

M-374



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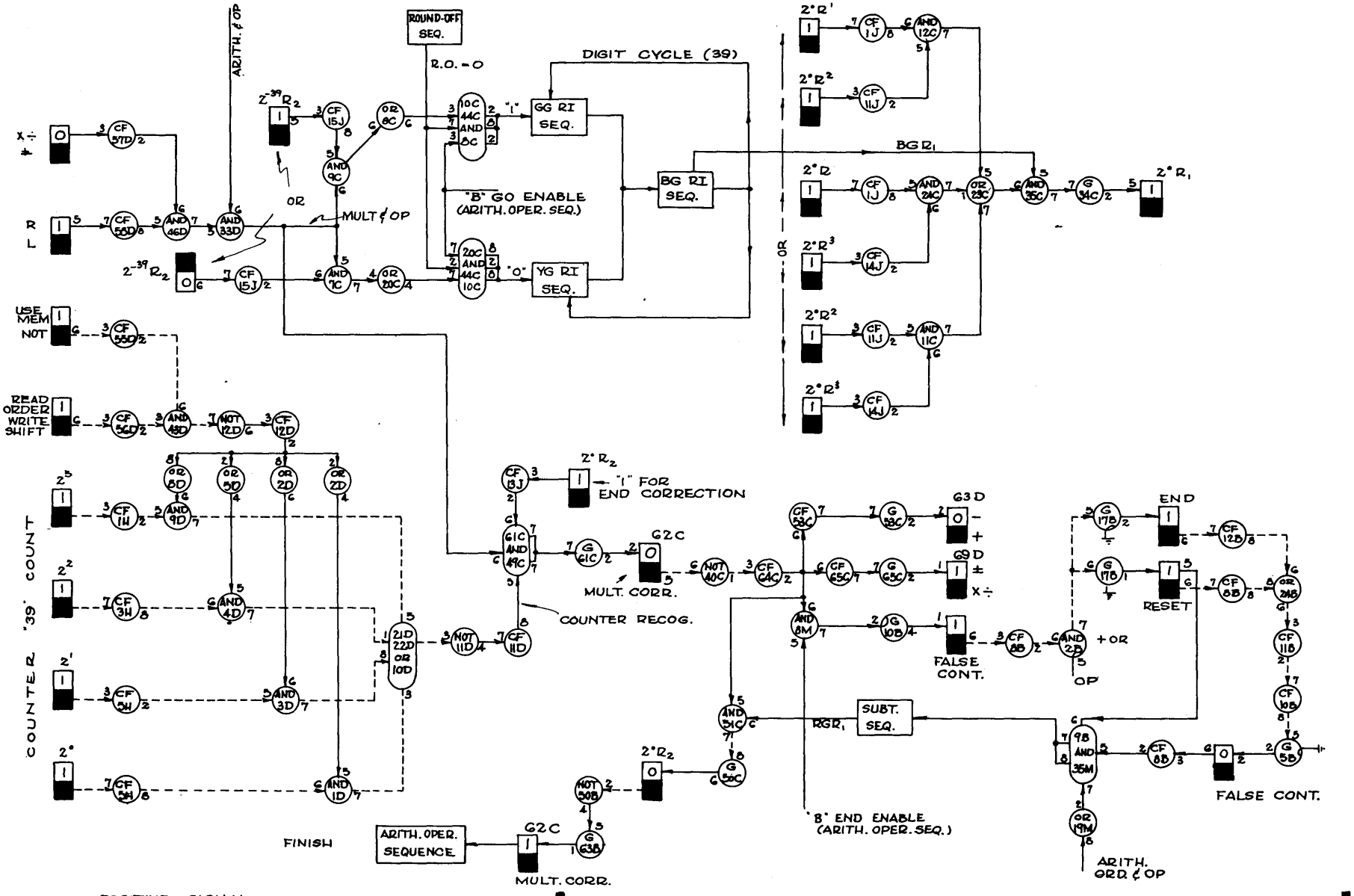
FOR PMK BY HMW CHECKED GMC APPROVED R. E. Meagher. DATE 1-2-52

TITLE — ADD OPERATION SEQUENCE

M-375



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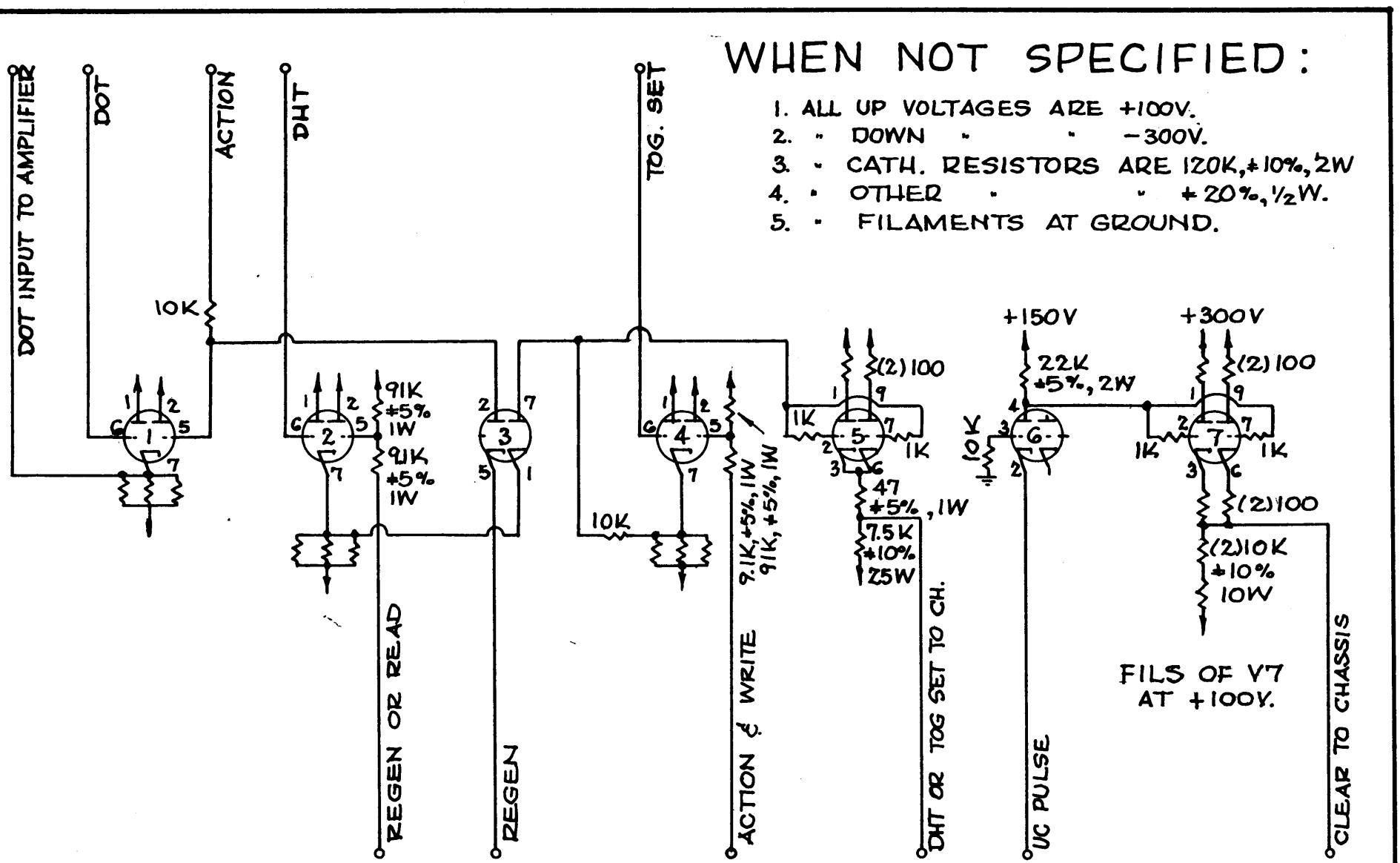
FOR PMK BY HMW CHECKED GMK APPROVED R.E. Meagher DATE 1·16·52

TITLE ~ MULTIPLICATION OPERATION SEQUENCE

M-376



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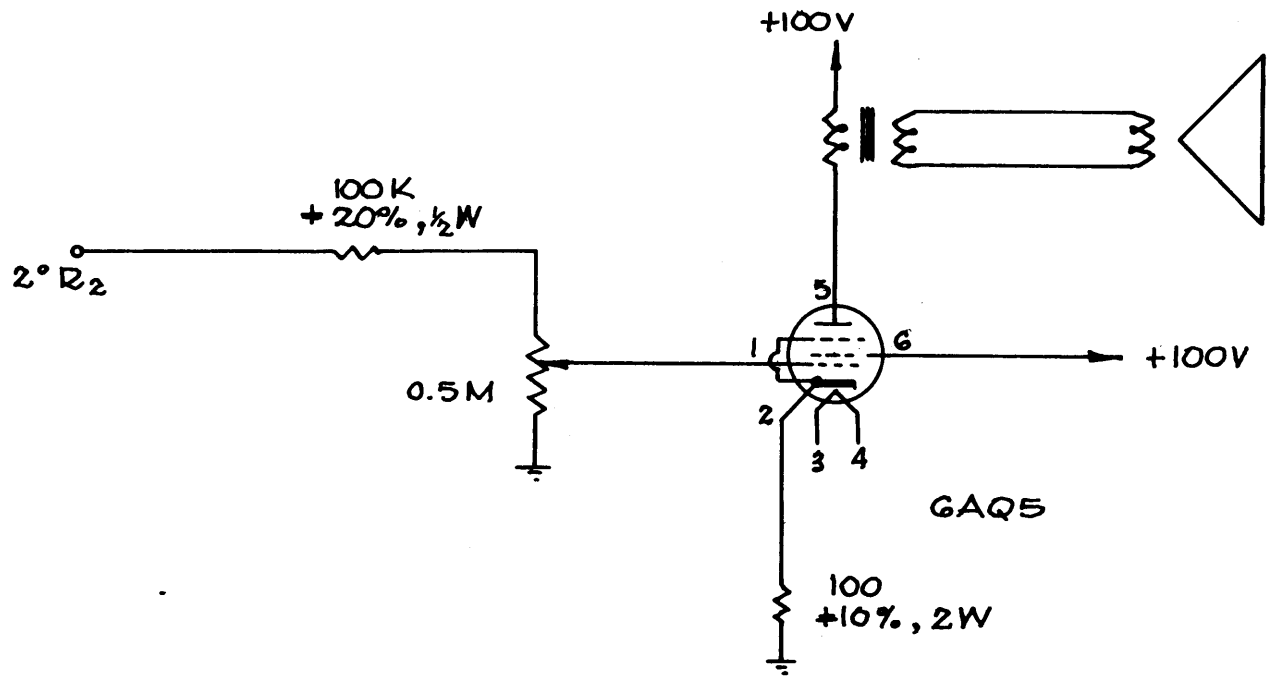
FOR JMW BY HMW CHECKED J.M.W. APPROVED R.E. Meagher DATE 1-1052

TITLE ~ MIXING CKTS. FOR PULSES ON WII +10

S-378



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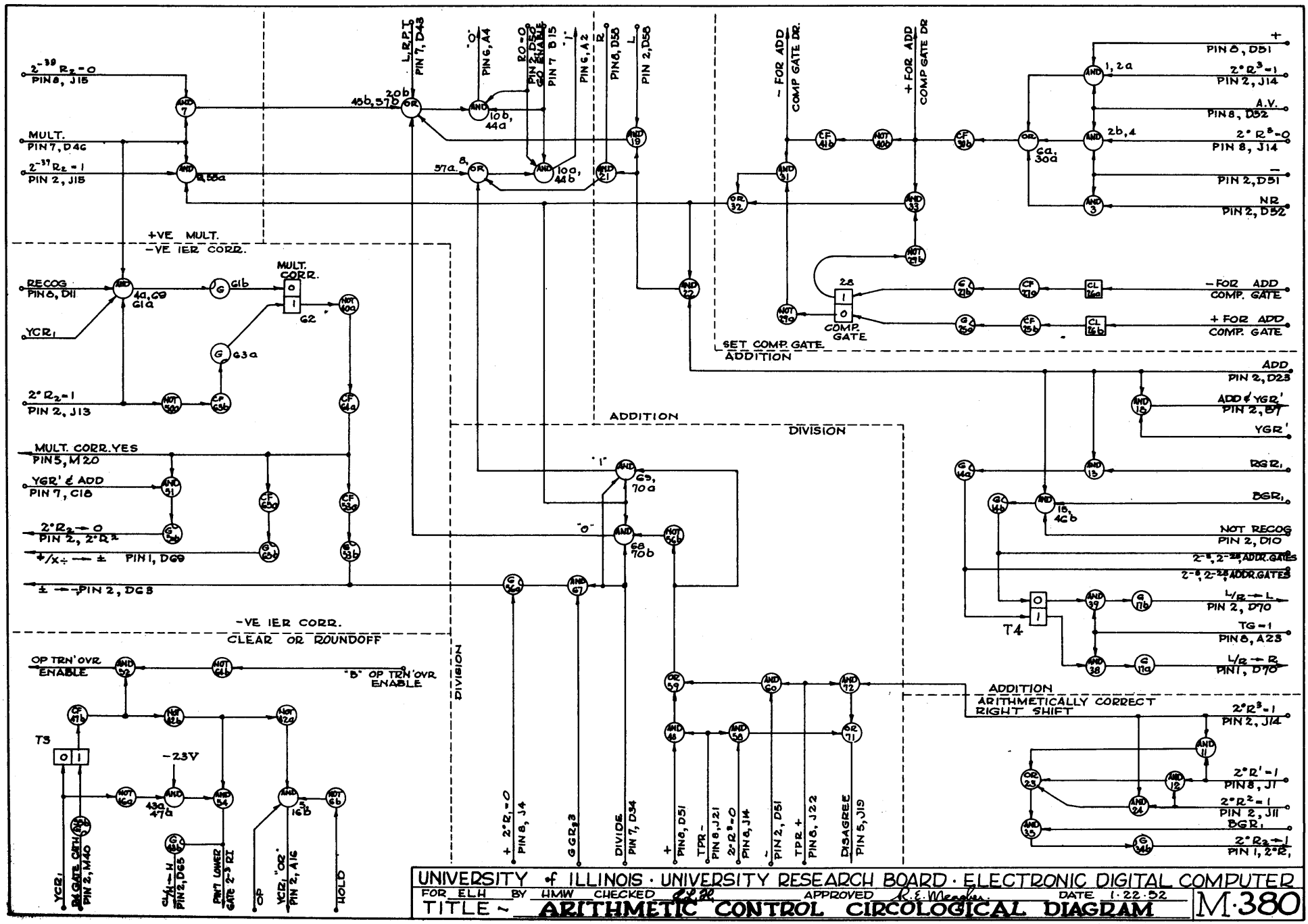
FOR TS BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 1-21-52 S-379

TITLE ~ LOUDSPEAKER CHASSIS


+VE MULT.
-VE IER CORR.
MULT. CORR.
SET COMP. GATE.
ADDITION
DIVISION
-VE IER CORR.
CLEAR OR ROUNDOFF
ADDITION
ARITHMETICALLY CORRECT
RIGHT SHIFT
COMP. GATE
T4
T5
-23V
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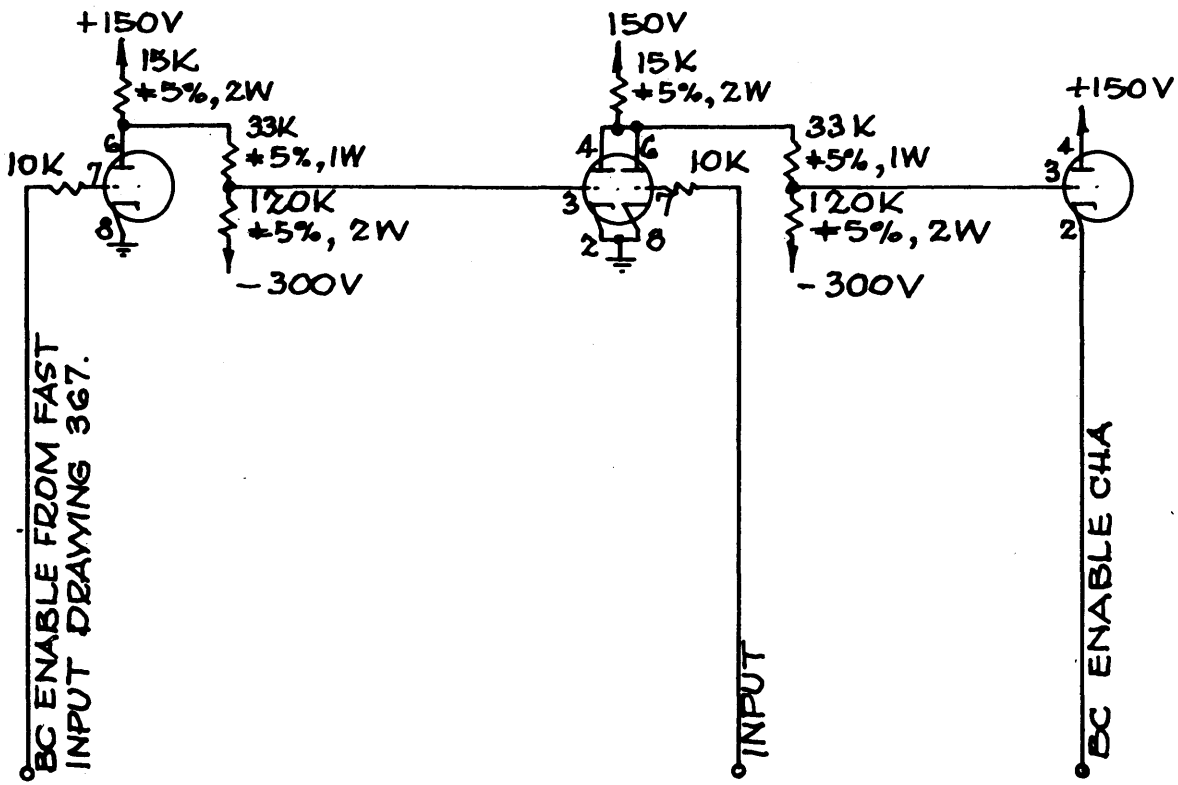
FOR ELH BY HMW CHECKED APPROVED R.E. Meagher DATE 1.22.52
TITLE ~ ARITHMETIC CONTROL CIRCOLOGICAL DIAGRAM
M-380

RESISTORS NOT SPECIFIED ARE ±20%, ½W.



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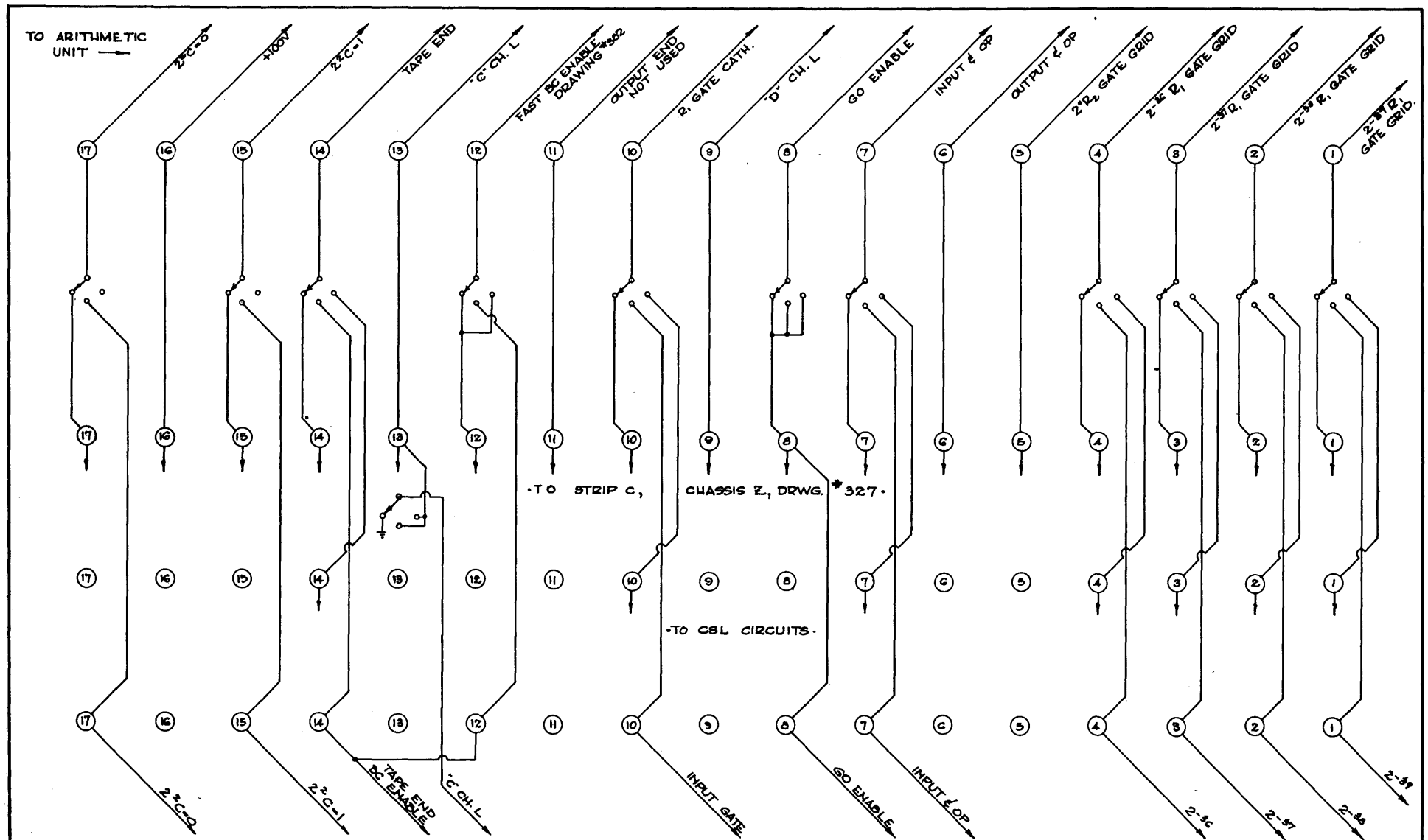
FOR T.S. BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher. DATE 1-25-52 S-382

TITLE ~ FAST INPUT BC ENABLE



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FOR TS BY HMW CHECKED T. SHAPIN APPROVED R. E. Meagher DATE 1-29-52

TITLE ~ INPUT SWITCH

M-383