



KURZ-KASCH INC.
ELECTRONICS DIVISION
2271 ARBOR BLVD.
DAYTON, OHIO 45439

Operating Instructions

For Model TF-650-5B

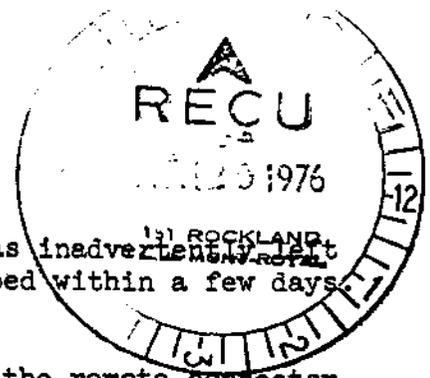
	SL2			START 2		SR2		5V					
LLP	SL1	X	SL3	LRP	X	X	RLP	SR1	X	SR3	RRP	ON	OFF
		SL5			START 1			SR5					
X	X	X	X	X	X	X	X	X	X	X	X		
		SL4						SR4					
	SL6	X	SL7		COIN		SR6	X	SR7		POWER		
	X		X		X		X		X	X		ON	OFF

* **WARNING:** When using AC/DC monitor be sure it is isolated from ground.

* **WARNING:** Check power diodes on game boards before insertion.

1. Remove two red head screws from bottom of fixture.
2. Place fixture on work board, formica side up. Attach board to fixture with 4 each 8 X 32 X 1 1/2" screws, washers and lock washers thru the 4 holes in board.
3. Connect braid (with mini-gator clip) to monitor ground, red wire to video, and black wire to audio. This is the 3 wire cable from fixture.
4. Insert fuse (2 amp - 130V) into fuse cap and then into fuse holder in fixture.
5. Insert proper program card for P.C. board to be tested into proper program connector (Example - Card 121A into "Program A" connector and 121B into "Program B" connector).
6. Insert P.C. edgeboard connector into green connector on front of fixture. Be SURE EDGE BOARD CONNECTOR IS LINED UP WITH SOLID LINE ON FIXTURE.
7. Turn power switch "on" only after all above has been done. If internal 5V power is required turn on "5V" switch. Internal 5V is also available at red terminal.
8. Each program card has instructions which must be followed for each game.
9. Keep work board clean of metal particles.
10. Turn off power before before removing P.C. board.
11. Regulator will get hot enough to burn you when testing a high current game so watch-it.

SERVICE BULLETIN
TF-650-5A



1. #171
When your program card #171 was shipped the "C" card was inadvertently left out of some of the packages. These cards will be shipped within a few days.
2. #122
On the tank card set, the analogue ground was left off the remote connector. Pins 1 & 2 of the remote connection should be tied together per attached sketch. Without this jumper, the audio will not be right.
3. #116
The tilt circuit was not included in the programming for Williams Paddle Ball. Most games will not start unless the base of Q-3 is grounded. To check this circuit, ground Q-3 base and start game. Open the ground and game should revert to attract mode.
4. #132
Most games consume 5 amps or less of 5V DC. The TF-650-5A is capable of delivering 10 amps of 5V DC with plug in card regulator supplementing the internal 5 amps.

Tankers/Bi-Plane draws around 7 amps of 5V so KK dusted off the extra 5 amp card for this game.

the 132 card set includes a 90° card to make it possible to work on the game. An extender can't be used due to noise pickup so we had to devise another means.

I guess what all the above adds up to, is that Tankers/Bi-Plane is an unusual but excellent piece and this adds up to a program card set that costs more than you or I originally envisioned. This set sells for \$75.00. Remember, you can use the extra power card to supply a total of 10 amps DC and should another high current game come along, it will be used there also.

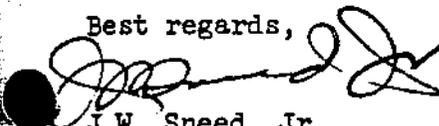
5. #185
Many cowboys have been shot and Gunfight is on it's way to being the best piece in a long time. We have devised a program scheme which will result in a long range savings to you. The 185 B & C cards are called "8080 Computer Board". These two cards will be used on all future Midway games using the 8080 Mother Board. So far Sea Wolf and later games only the "A" card will be required.

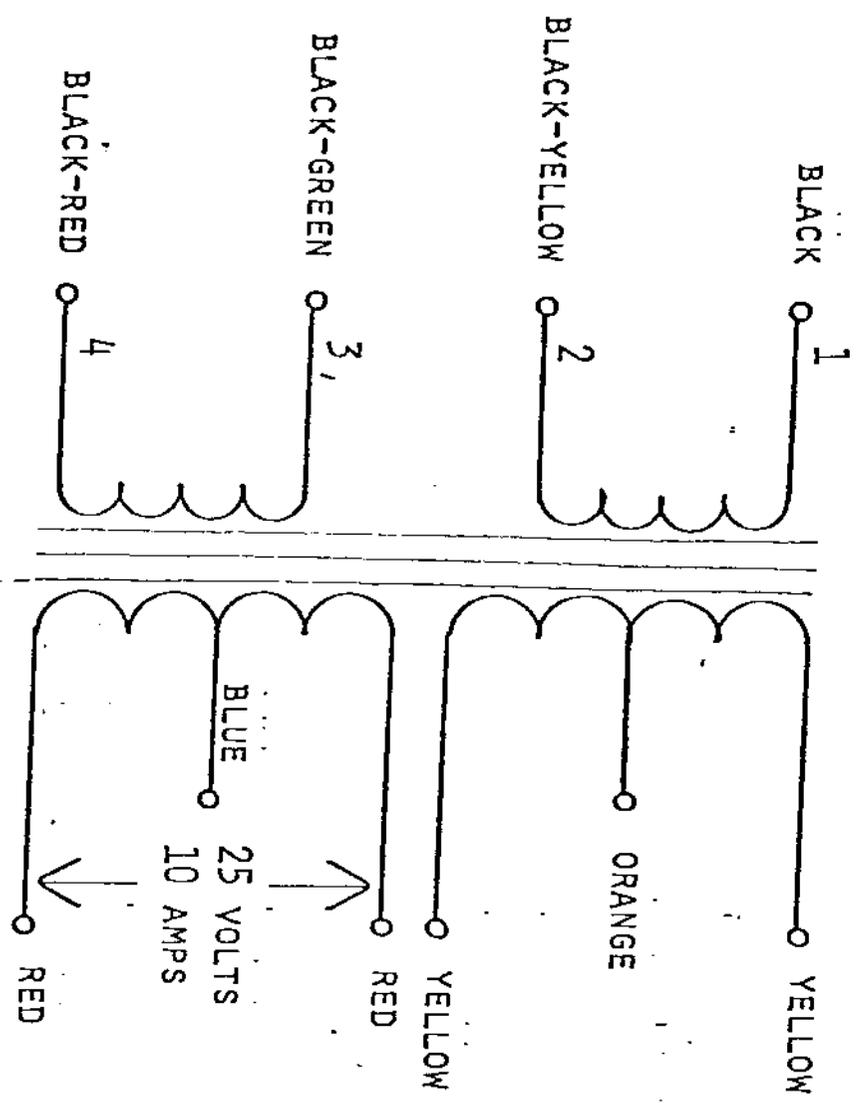
Pricing is:

185 B & C	8080 Computer Board	\$40.00
185 A	Gunfight	25.00
192 A	Seawolf	25.00

6. A new card list is enclosed. We have come a long way in a short time. More cards are on the way.

Best regards,


J.W. Sneed, Jr.
Sales Manager

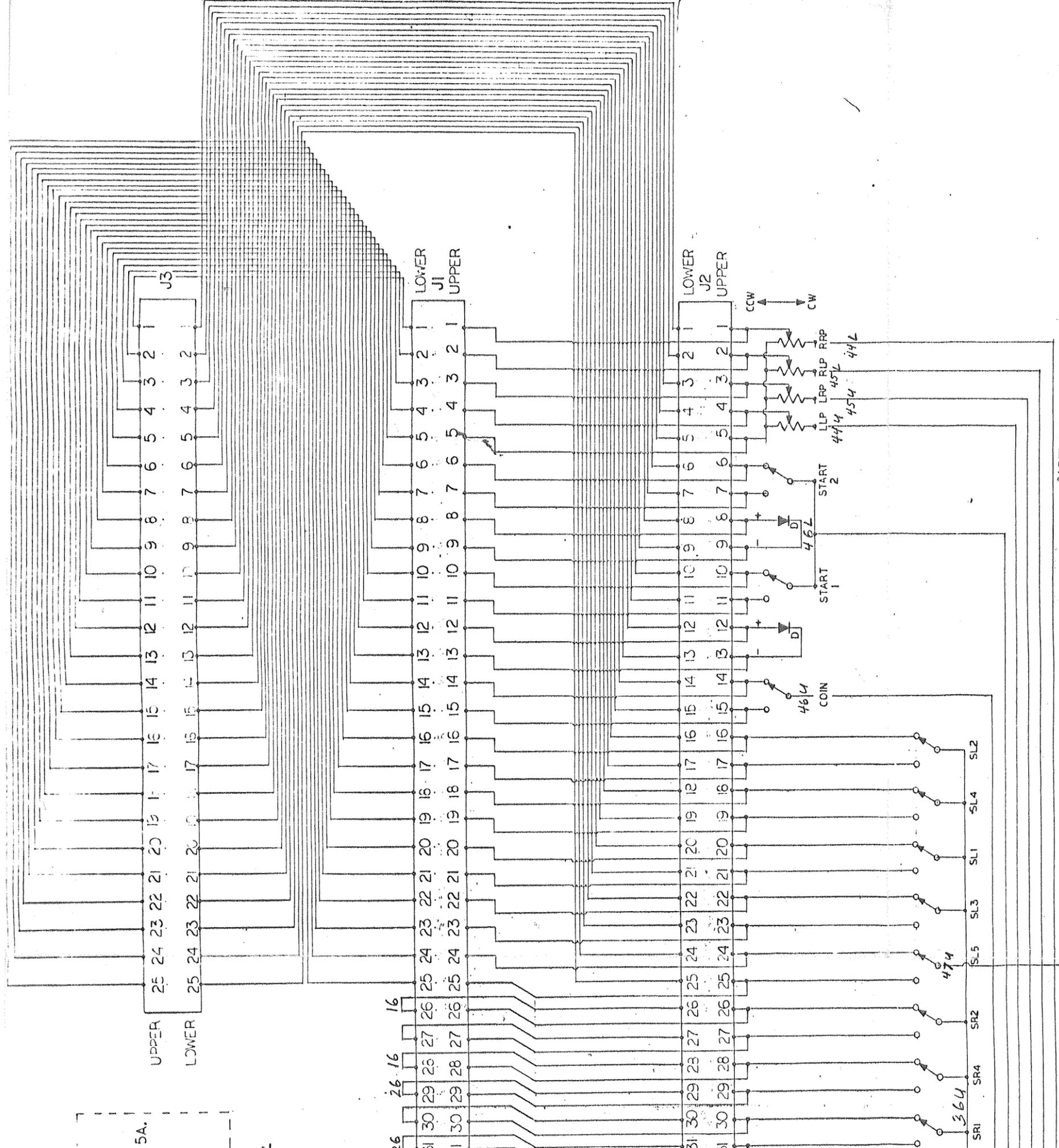


THE TF-650-5B CAN BE USED ON EITHER 110 VOLTS OR 220 VOLTS 50 OR 60 CYCLES. CONNECT PRIMARY AS FOLLOWS:

<u>110 VOLTS</u>	<u>220 VOLTS</u>
1 AND 3	2 AND 3
2 AND 4	
<u>INPUT</u>	<u>INPUT</u>
1 AND 2	1 AND 4

ELECTROSTATIC SHIELD

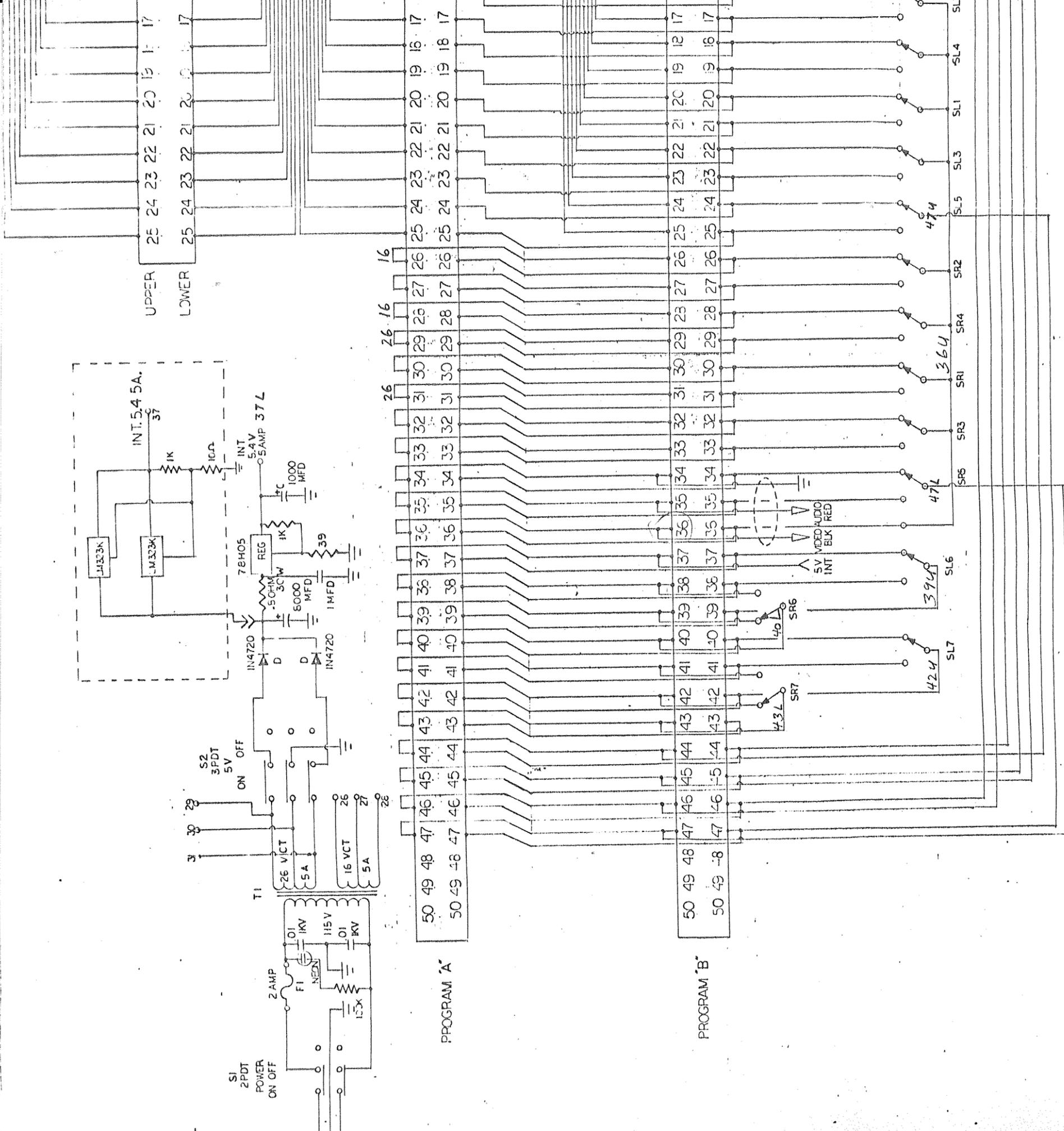
TF-650-5B
TRANSFORMER
SN 326 AND UP



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UPPER
LOWER

25 24 23 22 21 20 19 17
25 24 23 22 21 20 19 17

16 26 16
26 26 16

26 26 16
26 26 16

PROGRAM 'A'

PROGRAM 'B'

50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17

SL6
SL7
SR6
SR7
SR8
SR9
SR4
SR2
SL5
SL4
SL3
SL1

424
43L
47L
49L
47L
364
394

5V VIDEO AUDIO INT. BLK RED
5V INT.