INSTRUCTION MANUAL

TR-1 TV TRANSMITTER

Signals of Distinction

ELDICO OF NEW YORK INCORPORATED

MANUFACTURERS-ELECTRONIC EQUIPMENT

ELDICO OF NEW YORK, INC.

E. 72 Second Street, Mineola, L. I., N. Y.

Ploneer 6-5212

RADIO ENG. LAB., INC
29-01 BARDEN AVE
L. I. CITY, N.Y.

RETMA MEMBER RADIO-ELECTRONICS-TELEVISION MANUFACTURERS ASSOCIATION

RETMA STANDARD WARRANTY

Eldico of New York warrants this product manufactured by Eldico to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to us intact, for our examination, with all transportation charges prepaid to our factory, within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own improper installation, or use in violation of instructions furnished by us, nor extend to units which have been repaired or altered outside of our factory, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by Eldico of New York without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

TO OUR CUSTOMER

Eldico has carefully designed, engineered and assembled the amateur kit you have purchased. Complete instructions, photographs, circuit diagrams and parts list is included with this Instruction Manual.

In the event that you have questions on the design or construction, or if you find shortages between the parts you received and the enclosed parts list, please communicate directly with:

Eldico of New York
72 East Second Street
Mineola, New York
Attention: Harry Breese, W2UXY

This will save time because if the matter is referred to the dealer from whom you purchased the kit, it will be necessary for him to forward your request to us.

TR-1TV R. F. Section

The TR-1TV transmitter has a frequency range of 80, 40, 20, 15 and 10 meter amateur bands and is capable of 300 watts input on both phone and C. W. It is completely shielded but a perforated bottom plate and cover assures adequate ventilation. The 4E27A/5-125B tube is cooled by a heat radiating plate cap and a specially ventilated socket.

All leads entering and leaving the shielded compartment are filtered and by-passed by a pi-section filter in all power lines and a low pass filter in the R. F. output circuit.

The unit is provided with complete bandswitching on the front panel. One switch (SW-3) controls the exciter, and another (SW-4) controls the final section. Both of these must be in the same position for correct operation. Metering is accomplished by two meters - one indicates the final cathode current and the other various grid currents when switched to proper position.

Sufficient frequency multiplication is provided so that quartz crystals or a VFO ranging from 3500 to 4000 KC can be used on all bands. This transmitter is designed to operate with "Tubeless" type VFO requiring no power. Only a tuned circuit consisting of a coil and condensor is needed. Eldico plans to have such a unit available in the near future, but in the meantime a VFO of conventional type may be used by simply disconnecting one side of C2.

The voltages required are as follows:

1250-1500V DC at 230 ma.
750V DC supplied by 1500V through 30K ohm 100 watt resistor
350-400V DC at 80 ma.
300-340V DC at 25 ma.
110V AC at approximately 1 amp.

CIRCUIT DESCRIPTION

Looking at the front panel, the left meter (M-1) is controlled by meter switch SW6. Position 1 (5 ma full scale) measures grid current to V-2 and is used only on 10 meters. Position 2 (also 5 ma full scale) shows grid current to V-3 (driver) and is used on all bands. Position 3 (10 ma full scale) measures grid current to the final amplifier and is used on all bands. The right meter (M-2) measures amplifier cathode current. Approximately 20 ma should be subtracted from meter reading to obtain amplifier plate current, as (cathode current) the meter reading is composed of grid, screen and plate currents.

The transmitter uses a type 6CL6 (V1) crystal oscillator connected so that the crystal frequency may be multiplied by one or two times in the plate circuit as required. A second type 6CL6 (V2) is used as a frequency doubler and is connected only when operating in the 10 meter band. Another type 6CL6 (V3) tube acts as a buffer amplifier to drive the type 4E27A/5-125B

(V5) final amplifier. (V3) amplifies straight through on 80, doubles on 40, 20, and 10, and triples on 15.

A 6AU5-GT (V4) is used as a clamp tube and reduces screen voltage to near zero when no excitation is applied to the final amplifier (V5). This will reduce final plate current, when no excitation is applied, to approximately 50 ma idling current.

The R. F. driver circuits are of the broad band type and the following description of their use will be helpful in understanding the operation of this transmitter. A four-section, five-position switch (SW3-A, B, C, D,) one to cover each amateur band is provided for exciter band switching and a separate five-position switch is provided for final band switching. Both of these switches must be in the proper position for correct operation. The following is what happens in each of the frequency band positions:

80 Meters: For 80 meter operation, the crystal oscillator tube V1 is untuned, does not multiply, and an R. F. choke is connected in its plate circuit. The R. F. voltage is fed to the grid of V3 through condenser C13 and the 80 meter coil (L6) is connected in the plate of this tube.

40 Meters: When the band switch is in the 40 meter position, the coil L1 is connected in the plate circuit of the oscillator (V1). This circuit operates at 80 meters and is tuned to 3575 KC, which is one half of 7150 KC. The coil L7 in the plate circuit of V3 is tuned to 7150. The 4E25A/5-125B serves as the power amplifier for 40 meter operation.

20 Meters: On 20 meters the oscillator tube doubles. The coil is tuned to 1/2 the center frequency of the 20 meter band (7. 1M. C.) and the coil L8 is tuned for 14. 2 M. C. The 4E25A/5-125B (V-5) works straight through as a power amplifier for 20 meter operation.

15 Meters: For 15 meter operation, the oscillator tube doubles, the coil L3 is tuned to 7075 KC, and L9 is tuned to 21. 2 M. C. The power amplifier is switched to 15 meters and works straight through.

10 Meters: For 10 meter operation the oscillator doubles with the coil L4 tuned to 7. 2 M. C. R. F. voltage is fed through to the grid of tube (V-2) through coupling condenser C10 and the plate of this tube is tuned to 14. 4 M. C. by means of coil L5. The doubler coil L10 is tuned from 28 through 30 M. C. by C46 and the entire band may be covered by a slight adjustment of C46. Note that SW3-D shorts L5 on all bands except this band.

ASSEMBLY: (Exciter Section)

We recommend a subassembly of some parts before mounting them into chassis "A". Refer to drawing RF7. Mount by-pass condensers, resistors and meter switch leads around the tube sockets with short leads. Refer to drawing RF2. The first assembly on the chassis starts by mounting the crystal sockets and rotary switch and connecting them together. Mount

the tube sockets into the chassis, making sure you have followed exactly the pictorial diagram, and have placed the key of the sockets in the right direction. One side of the filaments is grounded. The "hot" side should be wired with the hook-up wire furnished. Distinguish the meter leads by using different colored wire.

The next step is to mount the coils. Follow pictorial diagrams RF2 and 3, and mount them in the chassis. The 3.5 M.C. coils L1 and L6 use the big forms, and all others use the smaller forms. Since one side of the oscillator coils and one side of the driver coils are connected together, line up the terminal in one way.

The next step in assembly is to mount the band switch in the chassis. (Refer to the pictorial diagram RF2 and 3.) Before placing the band switch into position, short all contacts on "B" and "D" wafers, except the contacts that are going to be used for the 10 meter band doubler coil. Make sure you rotate the band switch in the right direction so that you will have the shortest leads. Connect the coils, and place keyer jacks in after providing them with by-pass condensers. Mount the VFO-crystal switch, and the coax connector on the back of the chassis and make the connections.

Now you can put the remaining parts in: filament transformer, final tube socket and by-pass condenser for the final tube. Be sure these leads are made as short as possible. Condenser C46 should be mounted on its bracket and then the assembly mounts by #4 flat head screws. C49 neutralizing plate is next mounted on feed through insulator pictured in drawing RF2. After connecting these parts into the circuit, the wiring of the exciter is completed.

ASSEMBLY: (Final Section)

Mount parts as shown on drawing RF4, 5 and 7, to bottom of chassis "B". (Condensers C34 through 45, 28 and 29, RF chokes RFC5 through 11, low pass filter and variable tank capacitors C26 and 27.)

Construct line filter section and mount part "H" (see RF7) after all inside wiring is completed.

Mount parts and wire front panel as per drawing RF-6. Coil connections are made to switch SW4, after coil is mounted. Next, fasten the panel to both the exciter and the final chassis.

Mount the coil (L-11), keep it in the center of the space provided between chassis side, RFC 5, C26 and 27 and switch SW4. Mount parts and wire low pass filter as pictured on right side of drawing RF-5. Wire any points not specifically mentioned. This now completes the wiring of the RF Section.

Testing:

Apply 110V to exciter terminal strip and check to see that all filaments operate. Use either crystal or VFO (suggest crystal) to check all stages for operation.

After all stages are operating, a VFO or a wide range of crystals are needed to correctly align the slug tuned coils. The best method of tuning these slug-coils is as follows:

Set C46 (10 meter grid tuning) to about 25% of full capacity (2 1/2 on dial) for tuning of 80, 40 and 20 meters. On 80 meters, set exciter band switch (SW3) to 80 meters and meter switch (SW6) to position C. Tune the VFO or select a crystal near the middle of the 80 meter band (3750). Tune L6 until a maximum indication on M1 is reached. This should be in the vicinity of, or slightly under 10 ma. On 40 meters switch (SW3) to the 40 meter position and (SW6) to position "B". Tune the VFO or select a crystal near 3550KC (one half 7100 KC). Tune L1 until a maximum is reached on M1. This will be approximately 1.5 ma. Change VFO or crystal frequency to approximately 3600 (one half 7200) and switch (SW6(to "C". Tune L7 until a maximum is reached on M1. This will be around 9 or 10 ma.

Care should be taken not to tune to the wrong harmonic. It is possible with the slug "all out" or "all in" coil, for instance, that coil L8 might tune to (14 plus 3.5) 17.5 mc or (14-3.5) 10.5 mc. All coils L2, 3, 4, 5, 7, 8, should tune in about mid range, 5-6 revolutions clockwise. To be sure which frequency the coil is tuning, a near-by receiver, which has an "S" meter, can be observed while tuning. Swing the receiver dial to the possible harmonics, and when a maximum deflection of meter is observed, you are tuned to that frequency.

When the same procedure is followed and completed on the other frequency bands, the exciter portion is completed.

Final Amplifier Testing:

Connect a 300 watt lamp load (either 3-100 watt or 4-75 watt lamps, in parallel) to the output of the transmitter.

Switch SW3 (Band Switch) and SW4 (P. A. Band Switch) to the band to be tested, SW5 (P. A. Loading) to position 1 (maximum capacity). Apply voltage and quickly tune C26 (P. A. Plate Tuning) to resonance as indicated by a dip (minimum deflection) on meter M2. This should be about 50 ma. There should be a slight indication of illumination in the lamp bulbs. Advance SW5 (P. A. Loading), each time retuning C41 to resonance until at resonance, meter M2 indicates approximately 200 ma. C42 is a fine tuning control of SW5.

After all slugs are tuned and set, drive to the final can be adjusted simply by tuning C46. This will not usually need to be adjusted within the band except on 10 meters but should be adjusted when switching from band to band.

The output connector J4 can be fed directly into any 52-72 ohm load or antenna, such as a dipole for the band to be operated. Should balanced output or a higher impedance (300-600 ohms) be desired, Eldico's A-300 antenna tuner should be inserted between the transmitter and antenna feed line.

SLUG TUNED COIL SPECIFICATIONS

L1 & 6	3.5MC	84 turns	#32 wire
L2, 3, 4 & 7	7.0 "	42 "	#32 "
L5 & 8	14 "	21 "	#24 "
L9	21 "	14 "	#20 "
L10	28 "	9 "	#20 "

GRID DRIVE CHART

	80			40			20			15			10		
Meter Pos.	Lo	Mid	Hi	Lo	Mid	Hi	Lo	Mid	Hi	Lo	Mid	Hi	2.8	28.5	29
1.	0	0	0	0	0	0	0	0	0	0	0	0	.4	.6	.5
2.	only slight indication			1.9	2.3	1.8	.6	.7	.6	.6	.7	.6	.7	1.1	1.0
3.	9	10	9	10	10	10	8.5	9	8.5	7.5	8	7.5	8	8.5	8

Resistance and Voltage Measurements

All measurements are taken with 20K ohm per volt test meter between point of reference and ground. SW6 in postion 3. SW3 in 10 meter position. Plugs removed from J1 and J2. On resistance measurements, TS-1 not connected to power supply. On voltage measurements, power supply of correct voltage connected. Voltages indicated by asterisk (*) are measured with an R. F. choke in series with test meter lead and all voltages are indicated as positive DC unless otherwise indicated.

RESISTANCE

Tube No.	Tube Type	Pin #1	#2	#3	#4	#5	#6	#7	#8	#9
V1	6CL6	50	100K	INF.	0	0	INF.	0	INF.	100K
V2	6CL6	680	72K	INF.	0	0	INF.	0	INF.	72K
V3	6CL6	390	72K	INF.	0	0	INF.	0	INF.	72K
V4	6AU5-GT	27K	0	0	**	INF.	INF.	0	INF.	
V5	4E27A/5-125B	0	0	INF.	27K	0	INF.	0		

** tie point for meter shunt. Do not measure with ohmmeter.

VOLTAGE

Tube No.	Tube Type	Pin #1	#2	@3	#4	#5	#6	#7	#8	#9
V1	6CL6	*1	*-25	120	0	6.3AC	*340	0	120	*-25
V2	6CL6	13	*-70	175	0	6.3AC	*400	0	175	*-70
V3	6CL6	18	*-120	120	0	6.3AC	*400	0	120	*-120
V4	6AU5-GT	*-220		0	0	700	0	6.3AC	700	
V5	4E27A/5 125B	2.5AC	0	700	*-220	0	700	2.5AC		

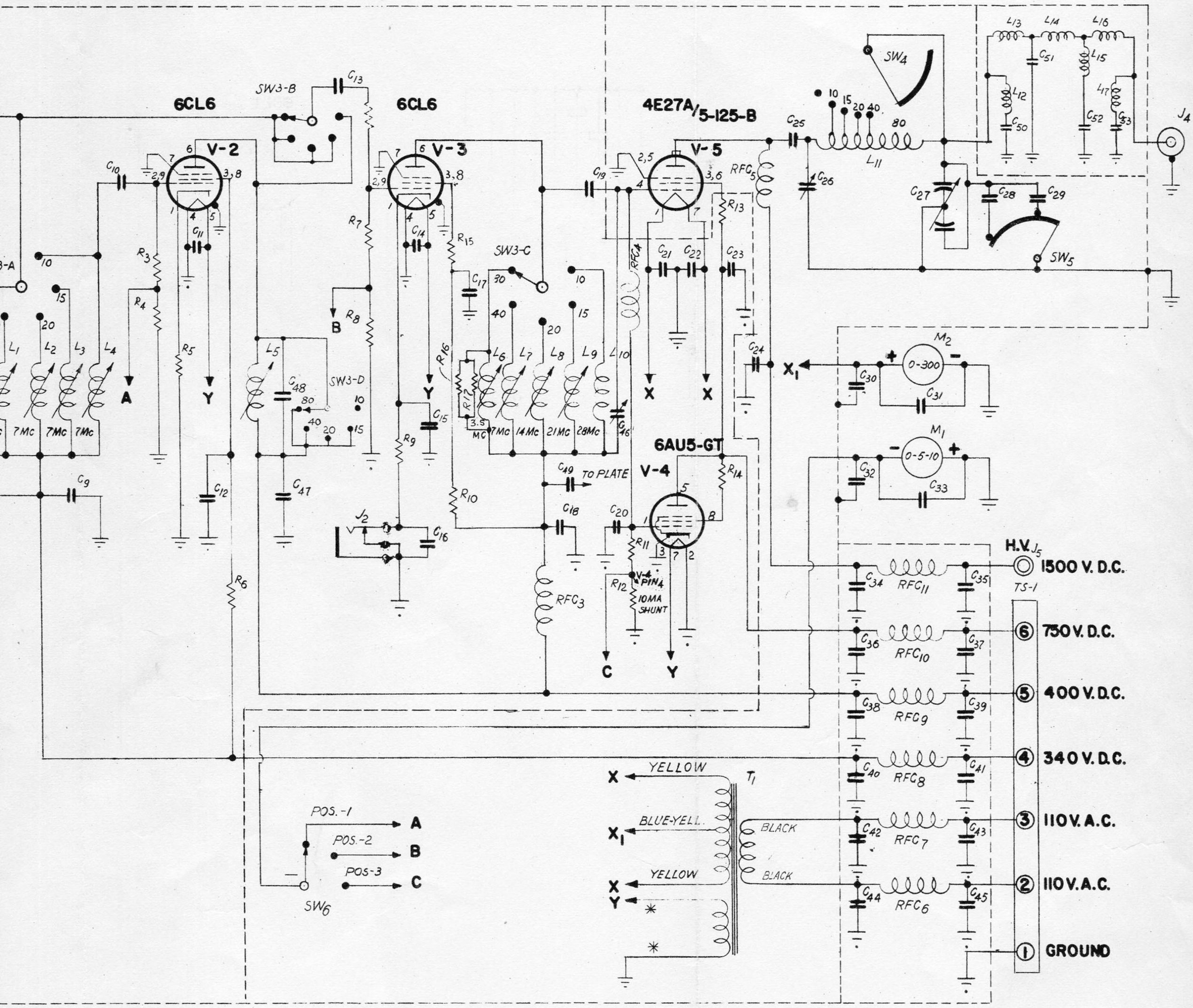
TR-1TV 1 R. F. Exciter Final

Parts

Item No.	Qty	Part Number	Description	Check
1	1	A	Sub Chassis, Exciter (refer to dwg. RF-7)	
2	1	B	Sub Chassis, final	
3	1	C	Panel 101/2"	
4	1	D	Side, left	
5	1	E	Side, right	
6	1	F	Shield and cover, meter	
7	1	G	Bracket, C26 mounting	
8	1	H	Shield & Cover, line filter	
9	1	I	Sub chassis, low pass filter	
10	1	J	Shield cover	
11	1	K	Bottom plate, exciter	
12	3	C1, 2, 19	Condenser, 470 mmfd silver mica 500V D. C.	
13	1	C3	Condenser, 130 mmfd silver mica 500V D. C.	
14	16	C4, 7, 8, 9, 11, 12, 14, 15, 16 17, 20, 21, 22 31, 33, 47	Condenser .0047 mfd disc ceramic 500V D. C.	
15	1	C5	Condenser, 100 mmfd ceramic 500V D. C.	
16	1	C6	Condenser, 10 mmfd ceramic 500V D. C.	
17	2	C10, 13	Condenser, 25 mmfd ceramic 500V D. C.	
18	1	C18	Condenser, 260 mmfd mica 500V D. C.	
19	5	C23, 34, 35 36, 37	Condenser, 500 mmfd ceramic 5000V D. C.	
20	1	C24	Condenser, .001 mfd mica 4500 V D. C.	
21	1	C25	Condenser, .002 mfd mica 3500V D. C.	
22	1	C26	Condenser, 100 mmfd variable air	
23	1	C27	Condenser, 180 mmfd per section variable air	
24	2	C28, 29	Condenser, .0004 mfd mica 3000V D. C.	
25	2	C30, 32	Condenser, 50 mmfd ceramic feed thru 500V D. C	
26	8	C38, 39, 40, 41, 42, 43 44, 45	Condenser, 500 mmfd ceramic button 500V DC	
27	1	C46	Condenser, 35 mmfd miniature variable air	
28	1	C48	Condenser, 5 mmfd ceramic 500V D. C.	
29	1	C49	Condenser, special plate for neutralizing	
30	3	C50, 52, 53	Condenser, 50 mmfd ceramic 5000V D. C.	
31	1	C51	Condenser 150 mmfd ceramic 5000V D. C.	
32	2	J1, 2	Jack, closed circuit key	
33	2	J3, 4	Jack, coaxial chassis connector	

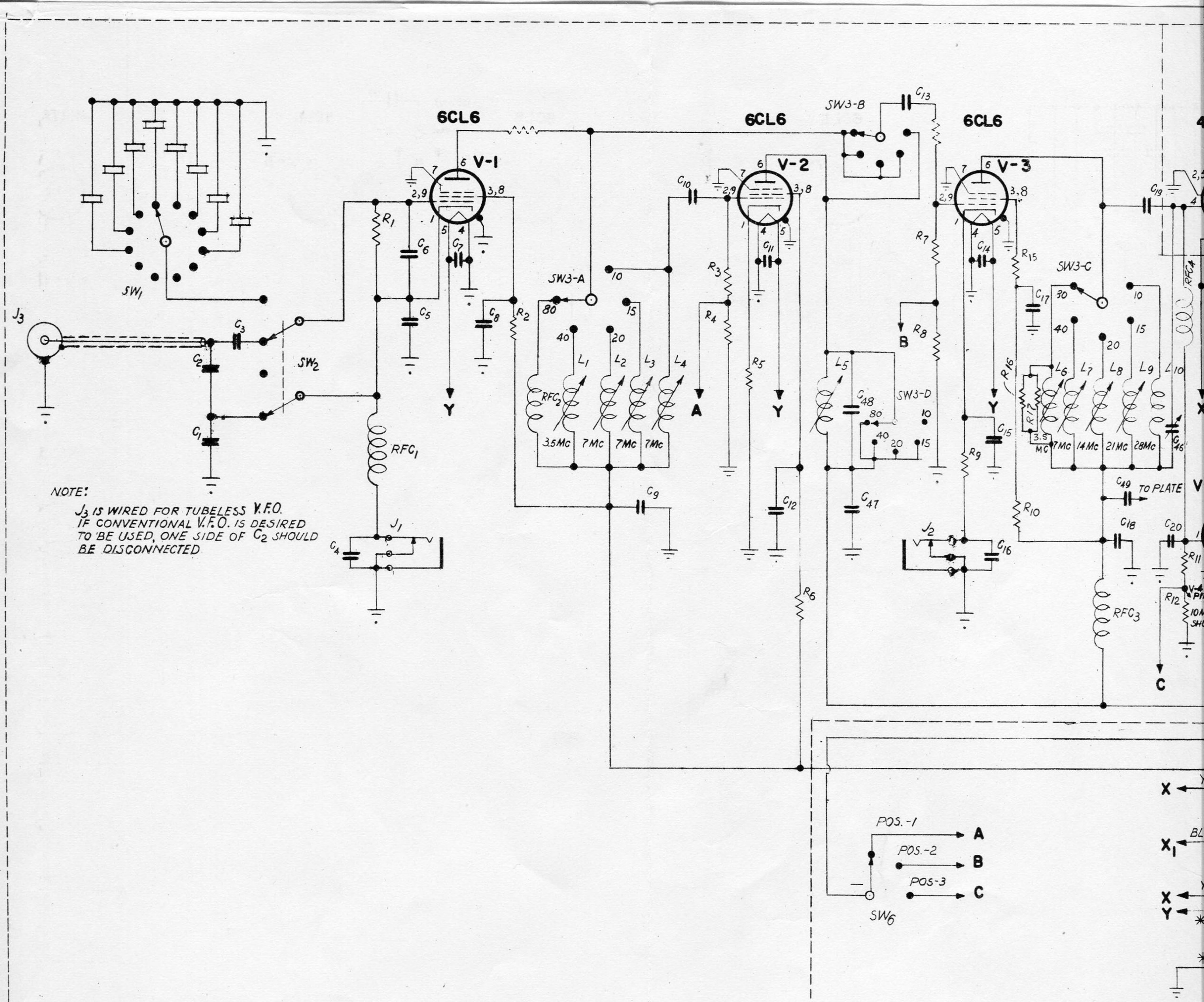
TR-1TV 1 R. F. Exciter Final
Parts (continued)

Item No	Qty	Part Number	Description	Check
34	1	J5	Jack, high voltage safety connector	
35	10	L1-10	Inductor, Exciter Coils pre-wound	
36	1	L11	Inductor, final tank tapped	
37	2	L12, 17	Inductor, 4T 1/2" I. D., low pass filter	
38	2	L13, 16	Inductor, 6T, 5/8" I. D., low pass filter	
39	1	L14	Inductor, 7T, 5/8" I. D., low pass filter	
40	1	L15	Inductor, 4T 5/16" I. D., low pass filter	
41	1	M1	Meter, 0-5-10 ma and 10 ma shunt (R12)	
42	1	M2	Meter 0-300 ma	
43	1	R1	Resistor, 100K ohm 1/2 watt carbon	
44	1	R2	Resistor, 100K ohm 1 watt carbon	
45	3	R3, 6, 7	Resistor, 68K ohm 1/2 watt carbon	
46	2	R4, 8	Resistor, 3.9K ohms 1/2 watt carbon	
47	1	R5	Resistor, 680 ohms 1 watt carbon	
48	1	R9	Resistor, 390 ohm 1 watt carbon	
49	1	R10	Resistor 15K ohm 2 watt carbon	
50	1	R11	Resistor 27K ohm 2 watt carbon	
51	1	R12	Resistor, 10 ma spec. meter shunt (packed with meter)	
52	2	R13, 15	Resistor, 33-47 ohm 1 watt carbon	
53	1	R14	Resistor, 100 ohm 1 watt carbon	
54	2	R16, 17	Resistor, 120Kohm 2 watt carbon	



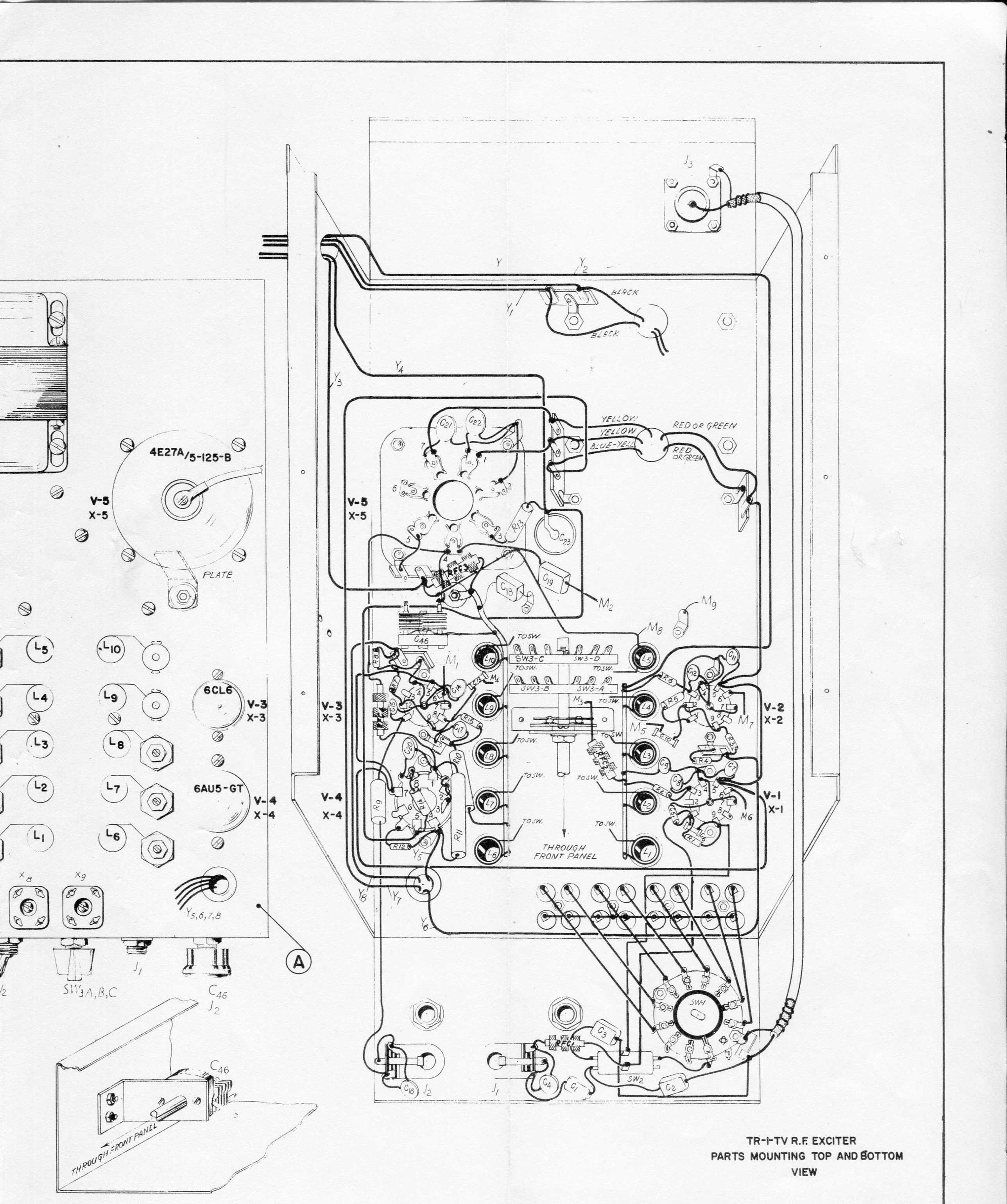
* { RED ON – 20D4707 TRANSFORMER
GREEN ON – ET 5/6.3 TRANSFORMER

TR-1-TV TRANSMITTER
R.F. SECTION SCHEMATIC



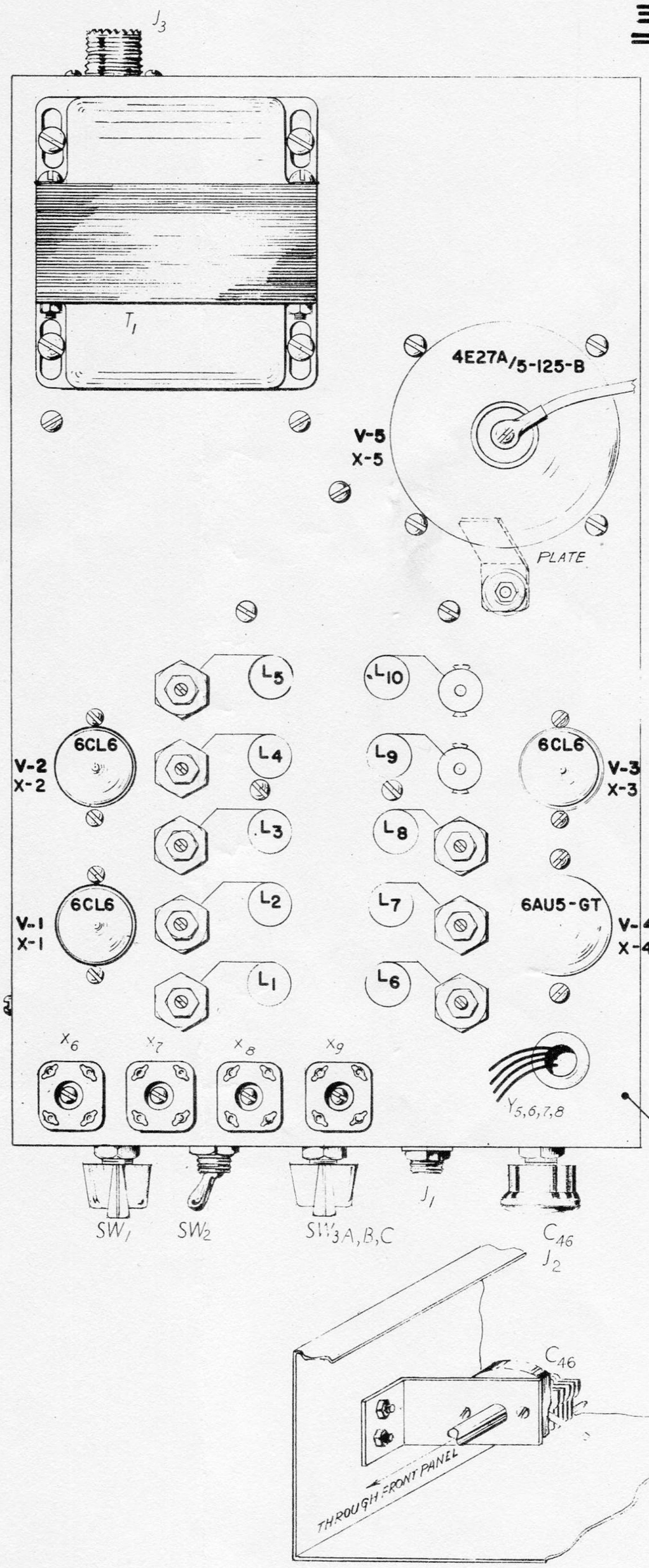
NOTE:

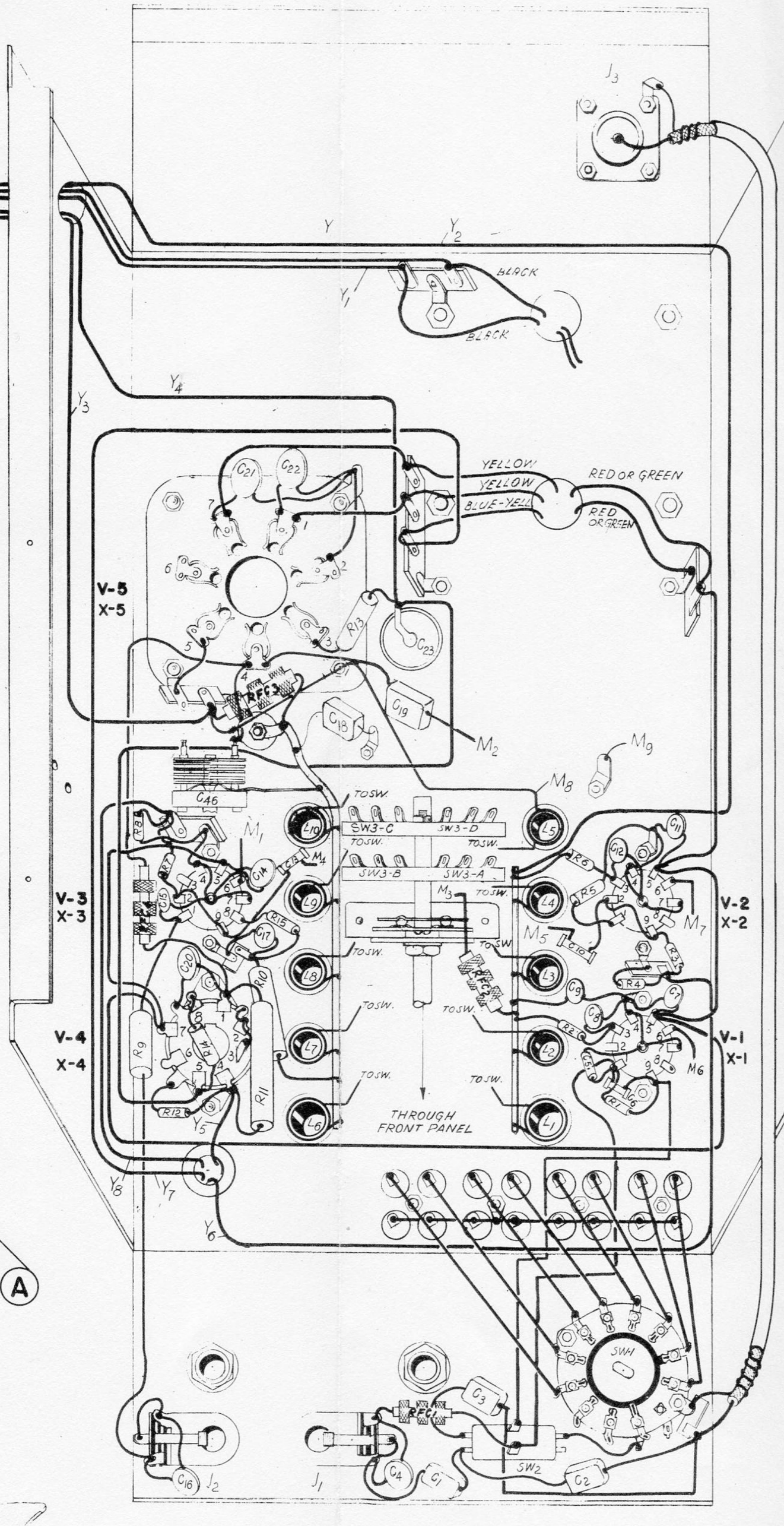
J_3 IS WIRED FOR TUBELESS V.F.O.
IF CONVENTIONAL V.F.O. IS DESIRED TO BE USED, ONE SIDE OF C_2 SHOULD BE DISCONNECTED



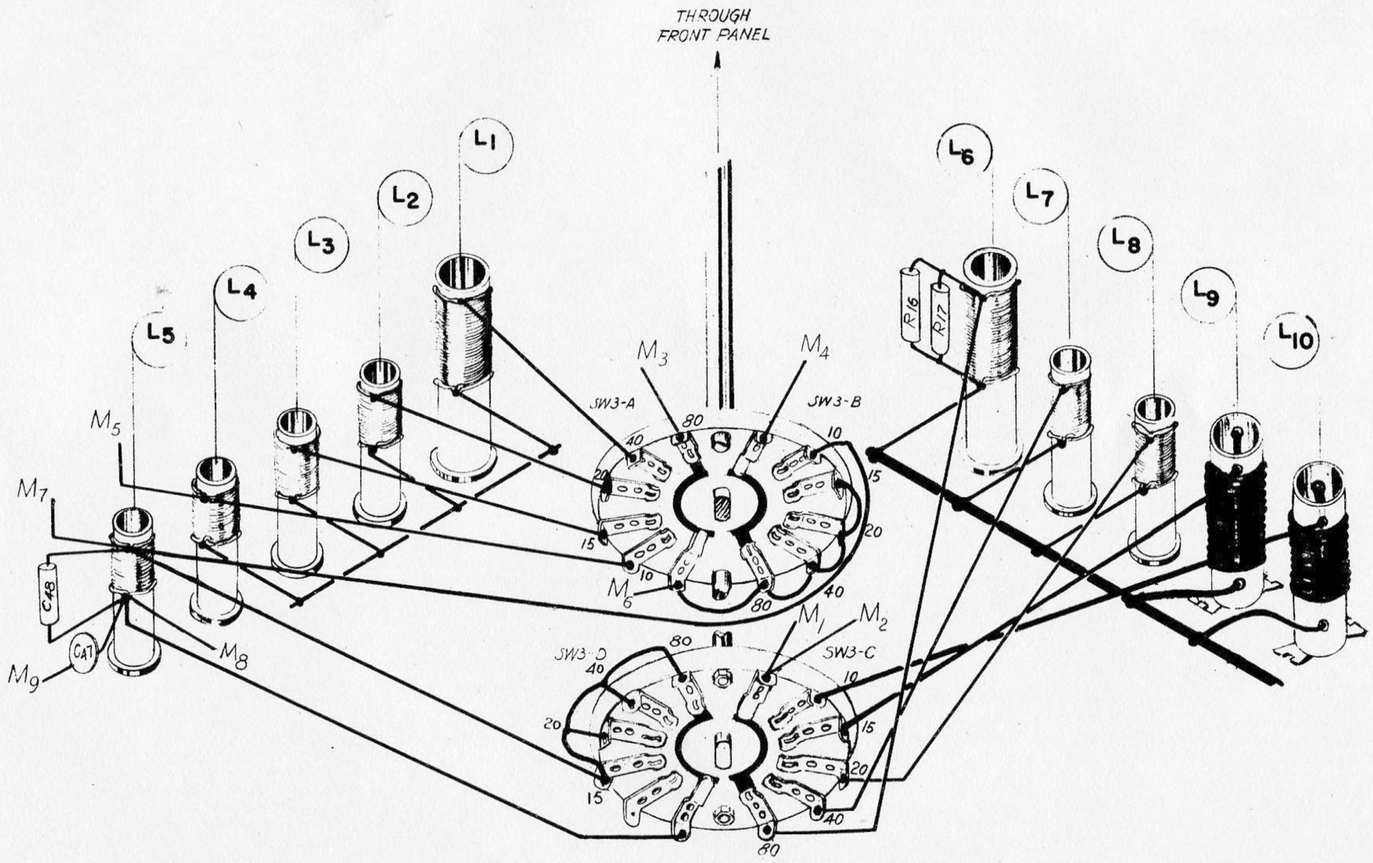
TR-I-TV R.F. EXCITER
PARTS MOUNTING TOP AND BOTTOM
VIEW

RF-2





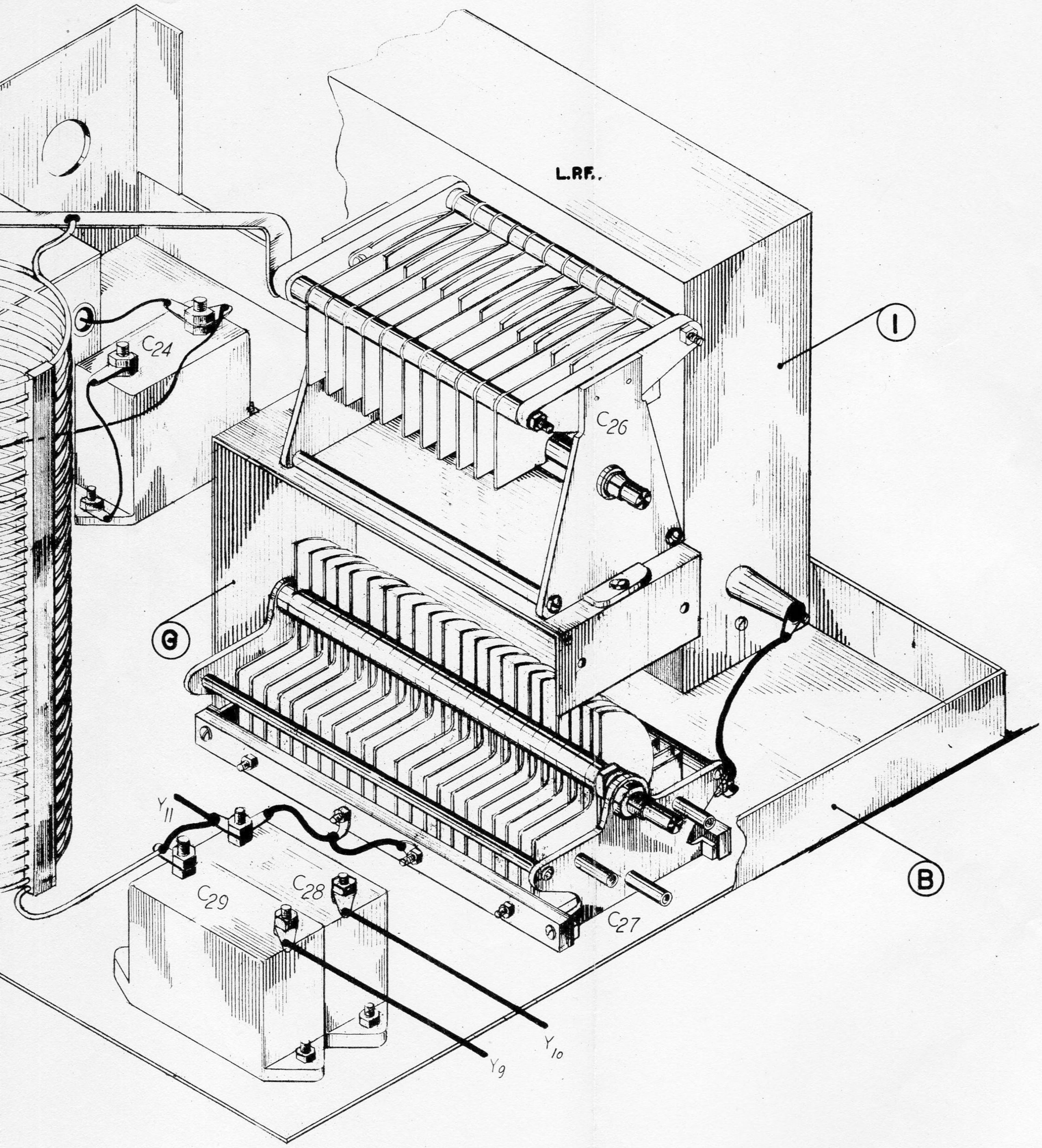
TR-I-TV R.F. EXC
PARTS MOUNTING TOP
VIEW



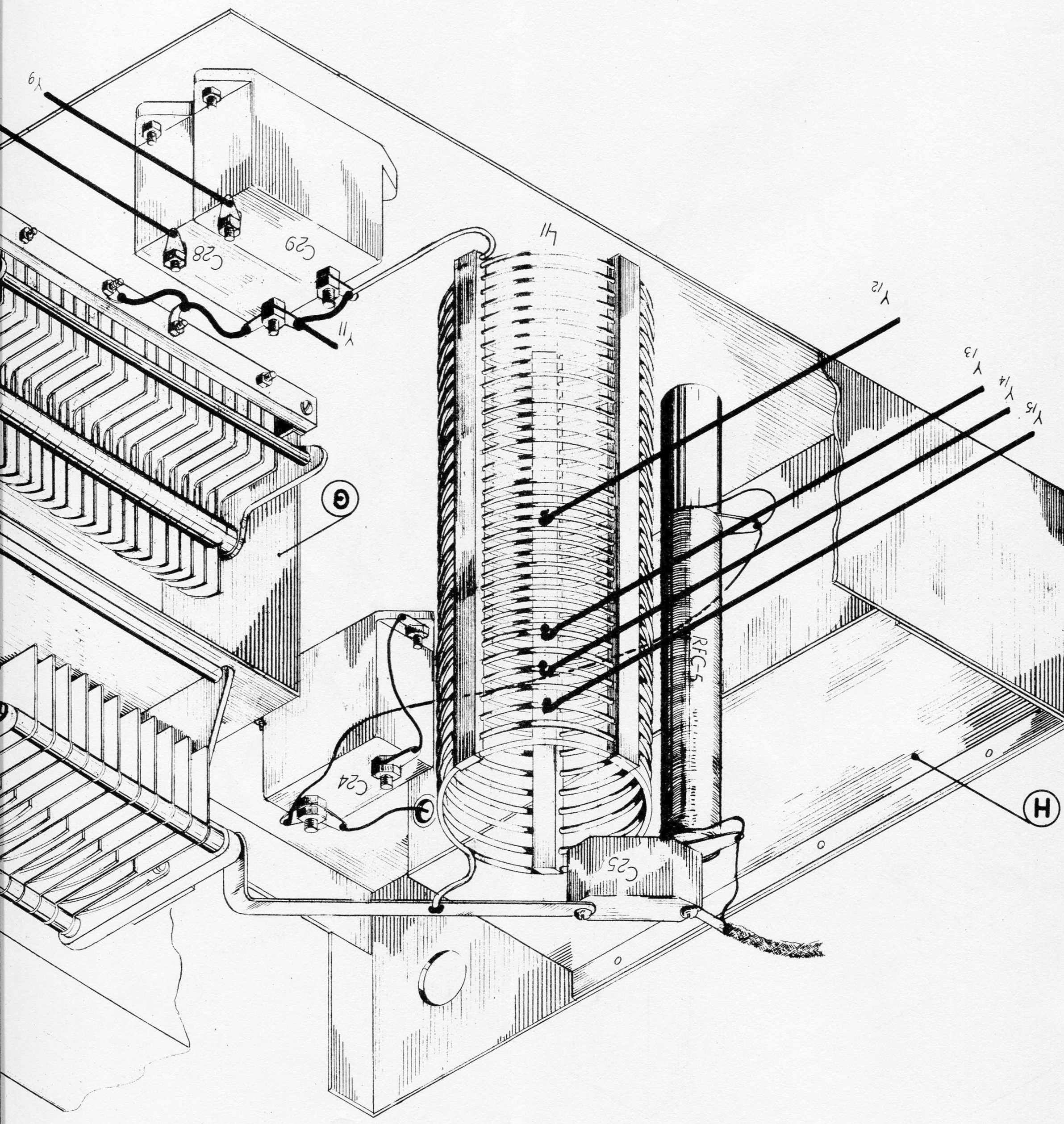
SWITCH SHOWN IN 80 METER POSITION

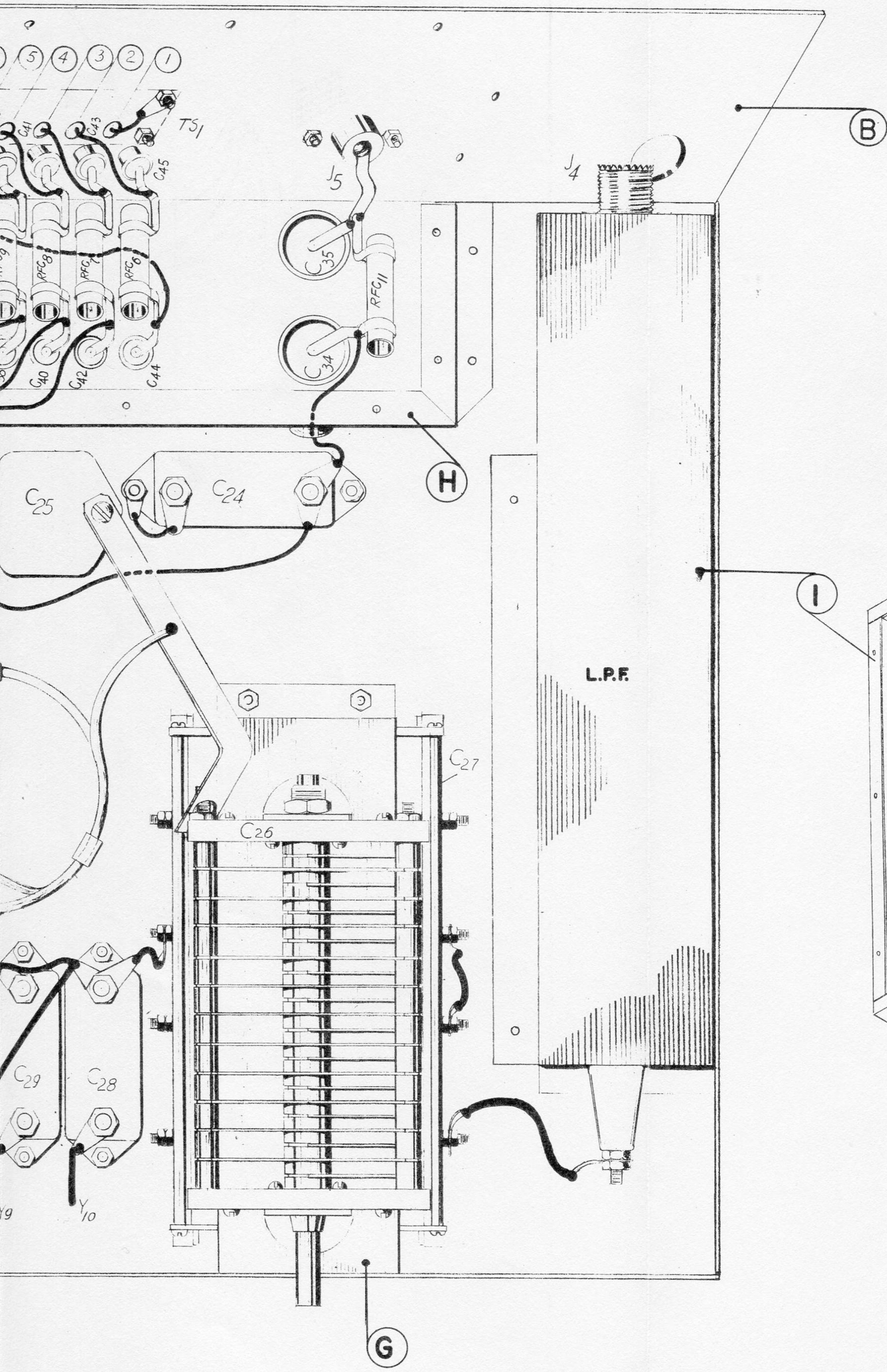
TR-1-TV R.F. SECTION
EXCITER COIL DRAWING

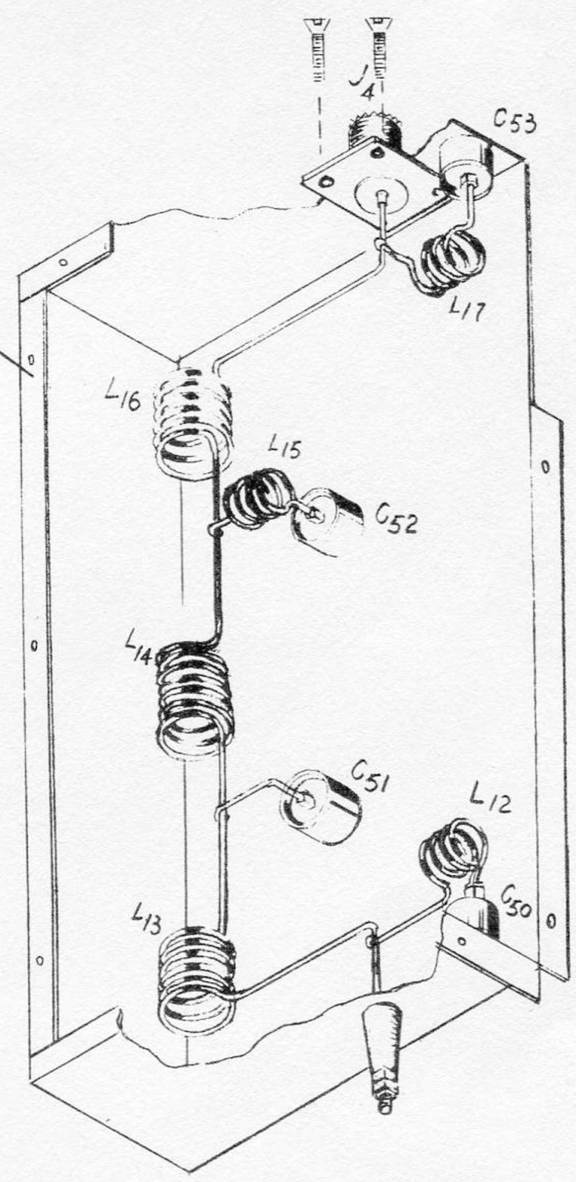
RF-3



TR-1-TV R.F. SECTION
FRONT VIEW WIRING PANEL REMOVED

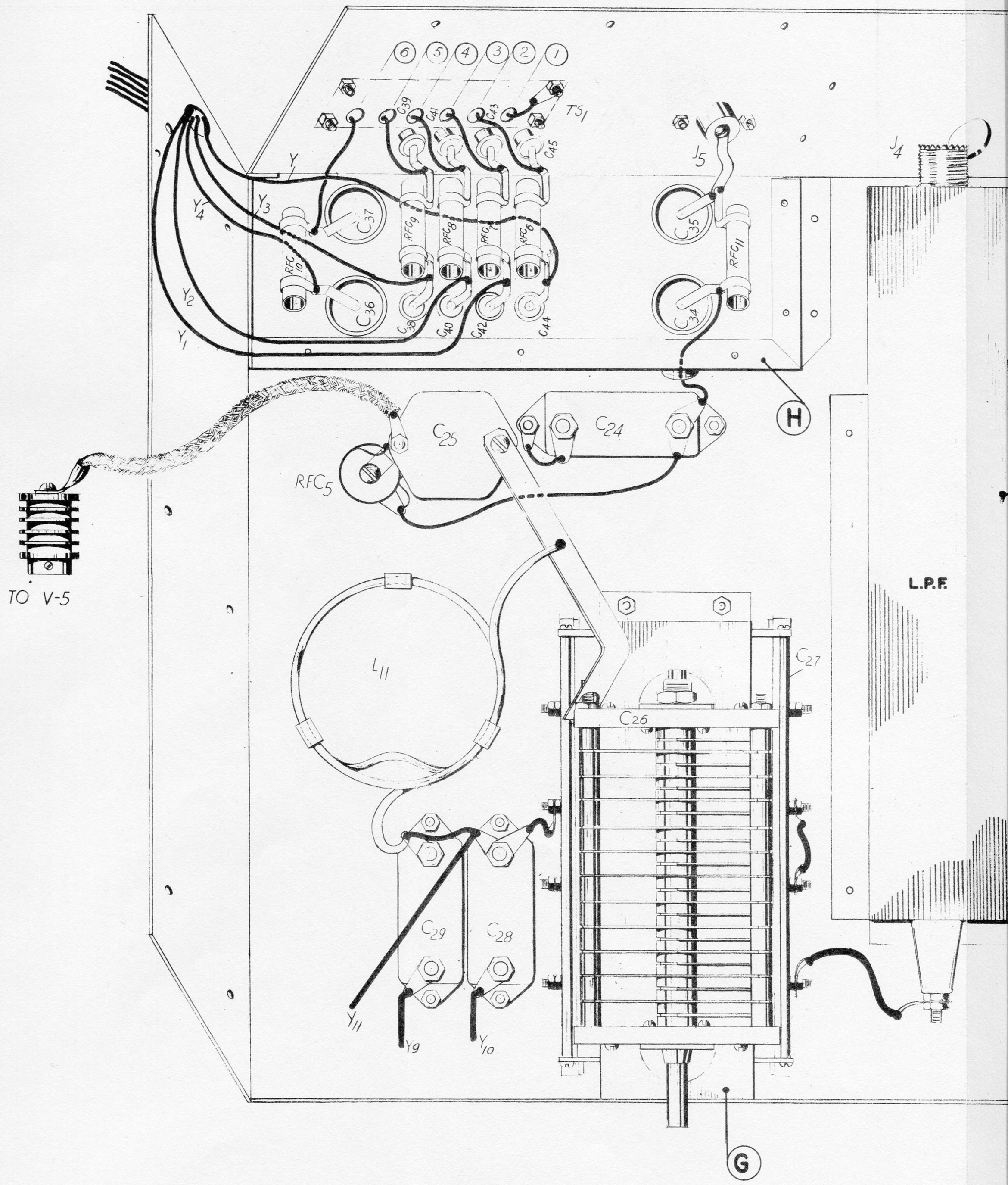

6人
C29
C28
Y11
G
C24
L11
RFC-5
Y12
Y13
Y14
Y15
C25
H

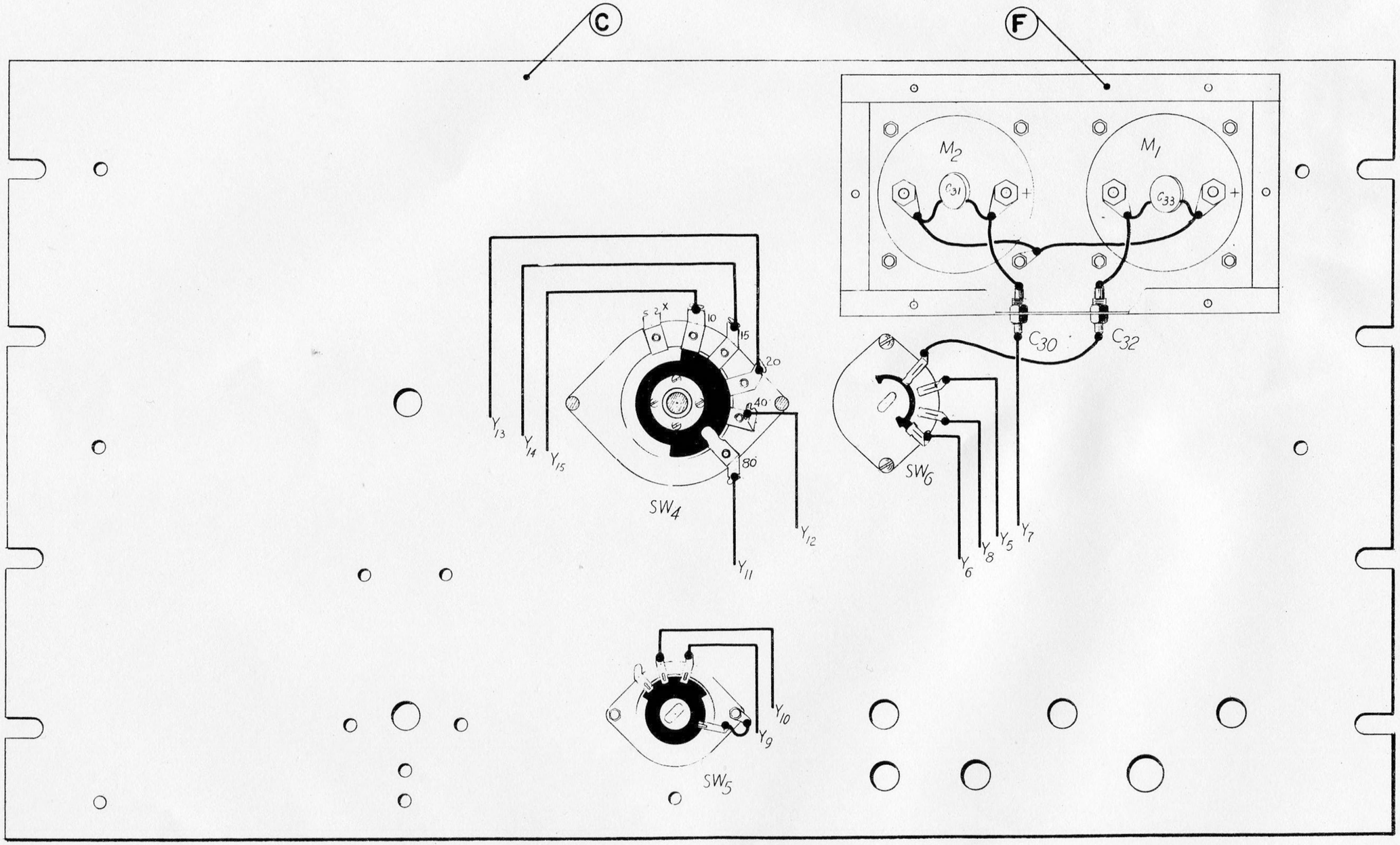




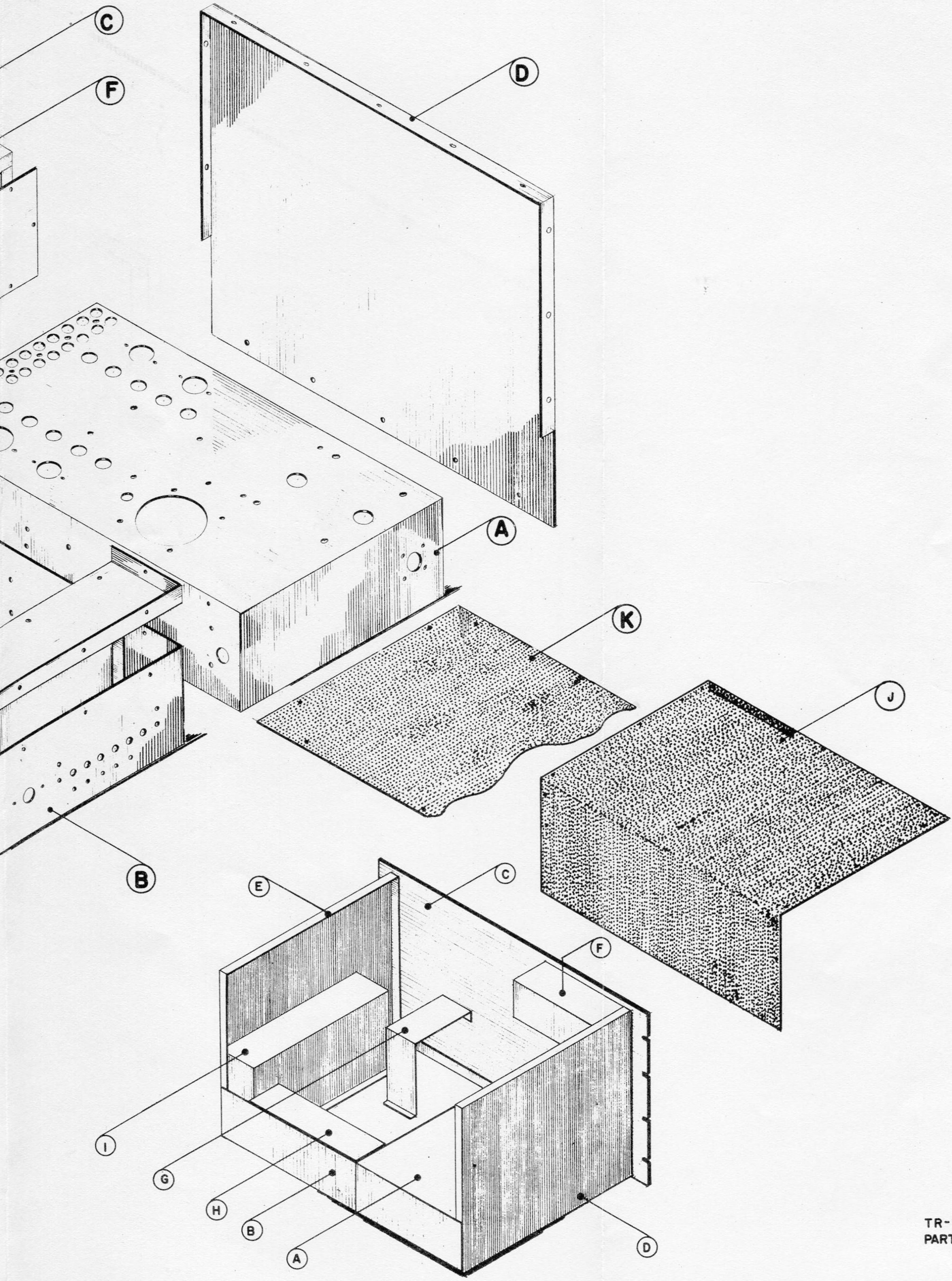
TR-1-TV R.F. SECTION
TOP VIEW WIRING

RF-5

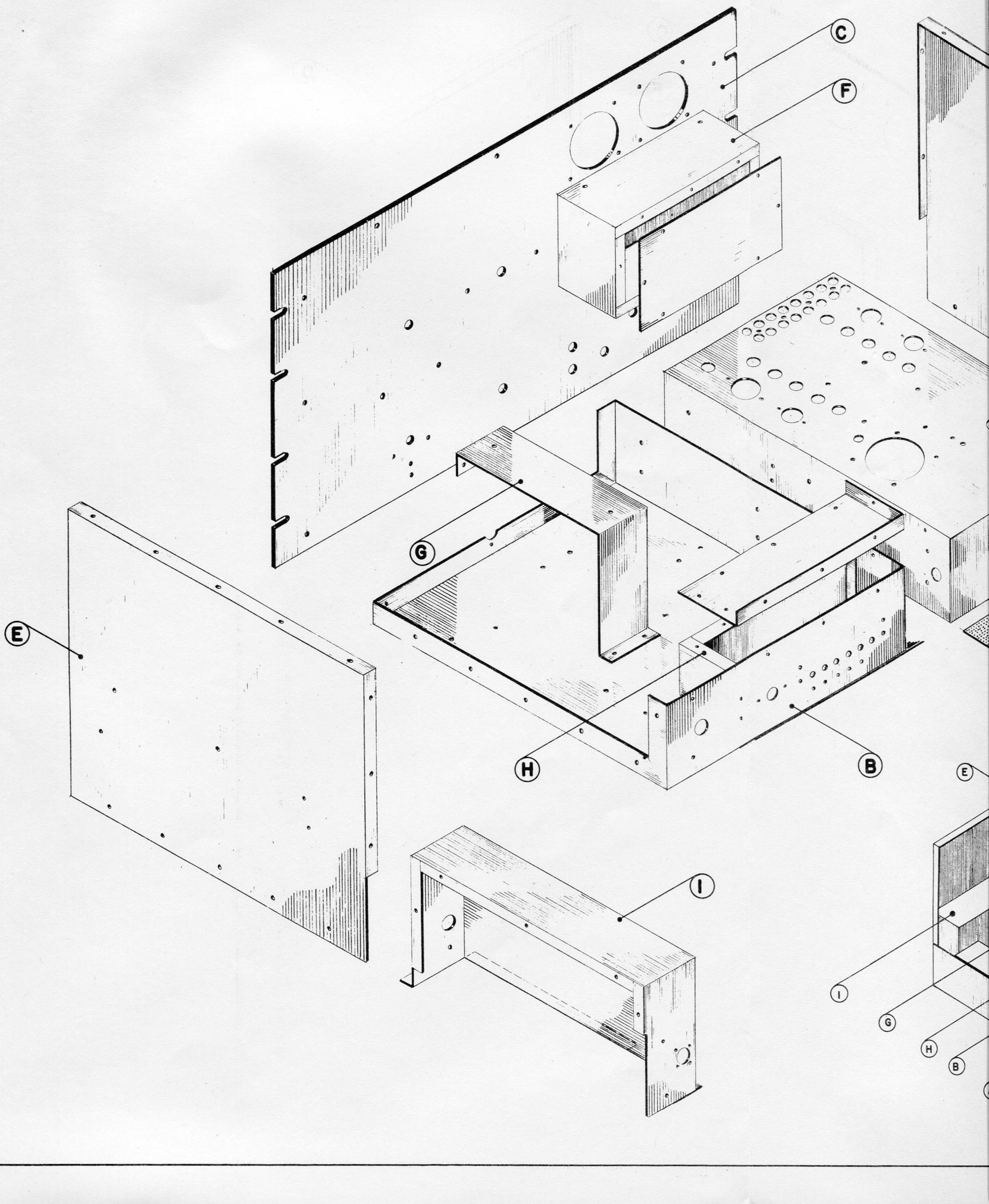

6
5
4
3
2
1
C39
C41
C43
C45
TS1
Y1
Y3
Y4
Y2
Y1
C37
C36
RFC 10
RFC9
RFC8
RFC7
RFC6
C38
C40
C42
C44
J5
J4
C35
C34
RFC11
H
C25
C24
RFC5
TO V-5
L11
L.P.F.
C27
C26
C29
C28
Y11
Y9
Y10
G



TR-1-TV R.F SECTION
REAR VIEW PANEL WIRING



TR-I-TV R.F. CABINET
PARTS DETAILS VIEW


C
F
G
E
H
B
I
E
I
G
H
B

ELDICO'S TR-1TV MODULATOR

GENERAL:

The TR-1TV Modulator is especially designed for use with the Eldico TR-1TV transmitter. This Class B AM modulator is designed for modulation of a single 4E27A/5-125-B but can be used with other equivalent tubes of the same power ratings. The modulator furnishes the audio stages necessary to modulate both the screen and the plate of the TR-1TV final amplifier or its equivalent. This is accomplished by a modulation transformer having two separate secondary windings - one matching the screen and the other the plate of the final amplifier.

All of the components are mounted on the special 7" x 15" x 3" chassis provided, which is dish mounted to standard 7" x 19" panel in Eldico's grey hammertone finish. This type of construction is used to prevent any R. F. getting into the front end of the modulator and thereby causing R. F. feedback.

The input is designed for either a crystal or dynamic high impedance microphone. The first tube is a 12AT7 dual triode voltage amplifier. The second tube is a 6AQ5 pentode which is transformer coupled to the grids of the push pull 811/811A Class B modulators. These are in turn coupled to the special dual secondary modulation transformer mentioned above.

The voltage requirements are: Negative 9 volts bias, positive 340 volts and positive 1250 or 1500 volts for amplifier and modulator plates. A series resistor is incorporated to reduce B plus for the amplifier screen. This voltage is then also modulated by the special dual secondary modulation transformer.

TESTING:

The TR-1TV modulator can be tested in the conventional fashion. For those who are not familiar with the operation of AM modulators, reference to the ARRL Handbook, Chapter on Amplitude modulation will be extremely helpful.

TR-1 TV MODULATOR

The final adjustment for modulation of the TR-1TV transmitter should be done with the use of an oscilloscope as explained in the chapter on Amplitude Modulation, "Checking AM Phone Operation."

Low voltage (300-350 DC) from Eldico TR-1TV power supply or any other convenient source should be applied. Connect a high impedance crystal or dynamic microphone and advance audio gain about 50% clockwise.

With a .01 mfd 400 volt condenser in series with a pair of headphones connect across pins 3 and 6 of the audio interstage transformer and monitor the quality of modulation. This should be clear and relatively free from hum.

The next step is to load the R. F. amplifier to be modulated to 1500V @ 200 MA or any other ratio to give approximately the same impedance. High voltage can be then applied and the entire modulator tested. Do not attempt to monitor the high voltage modulation with headphones. The best method is to monitor the modulated carrier by means of a receiver with the antenna input temporarily shorted or by means of an oscilloscope as stated above.

WARNING:

High voltage to the modulator must not be applied without appropriate R. F. load for both the plate and screen winding of the modulation transformer, as this will cause serious damage to the modulation transformer and void guarantee of same.

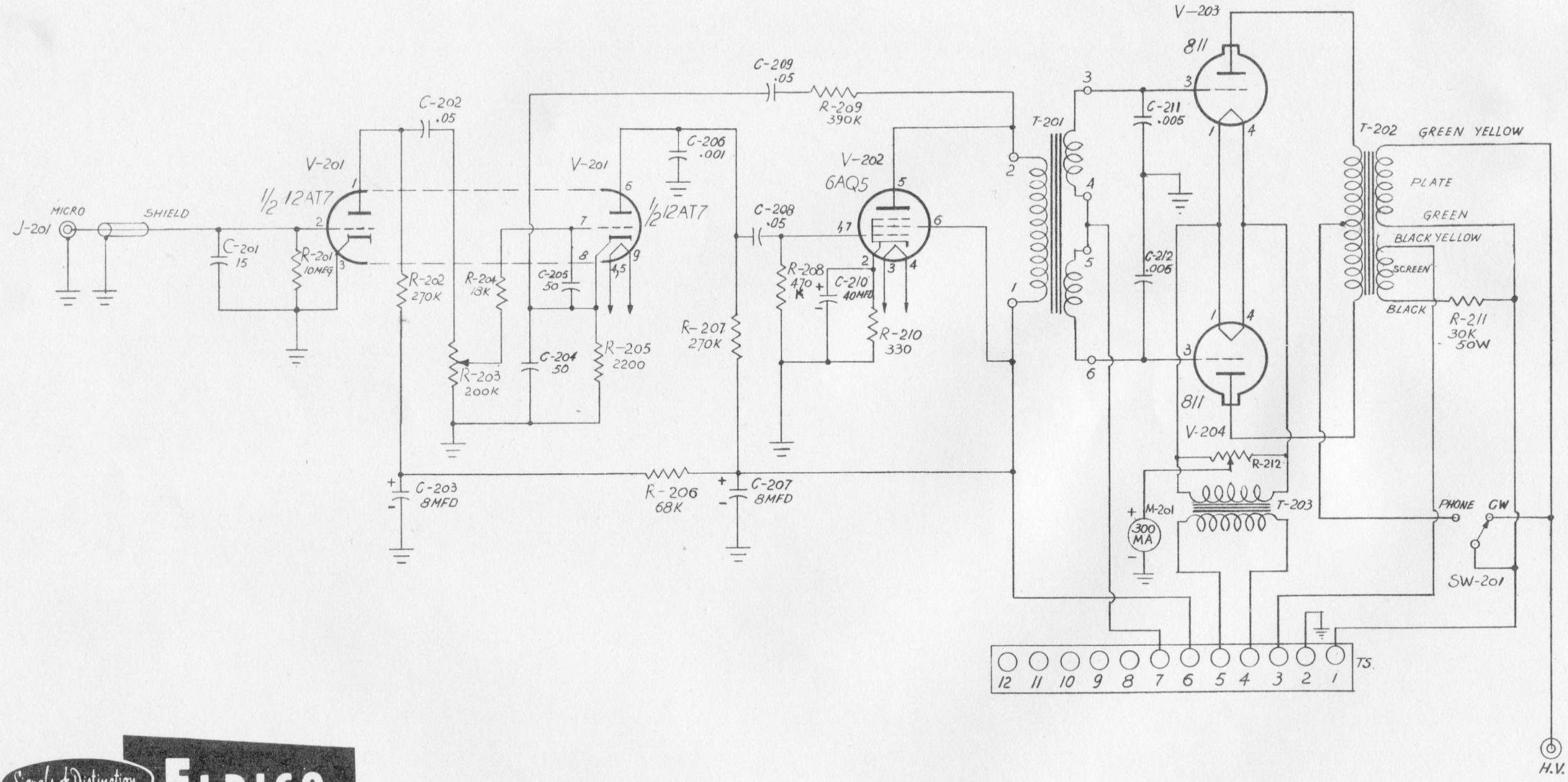
Note:

Some units are furnished with a center tapped filament transformer (T-203). Should this be the case, the center tapping resistor (R-212) is not needed and lead connecting to center of this resistor is then connected to the center tap of the transformer.

TR-1TV MODULATOR

PARTS LIST

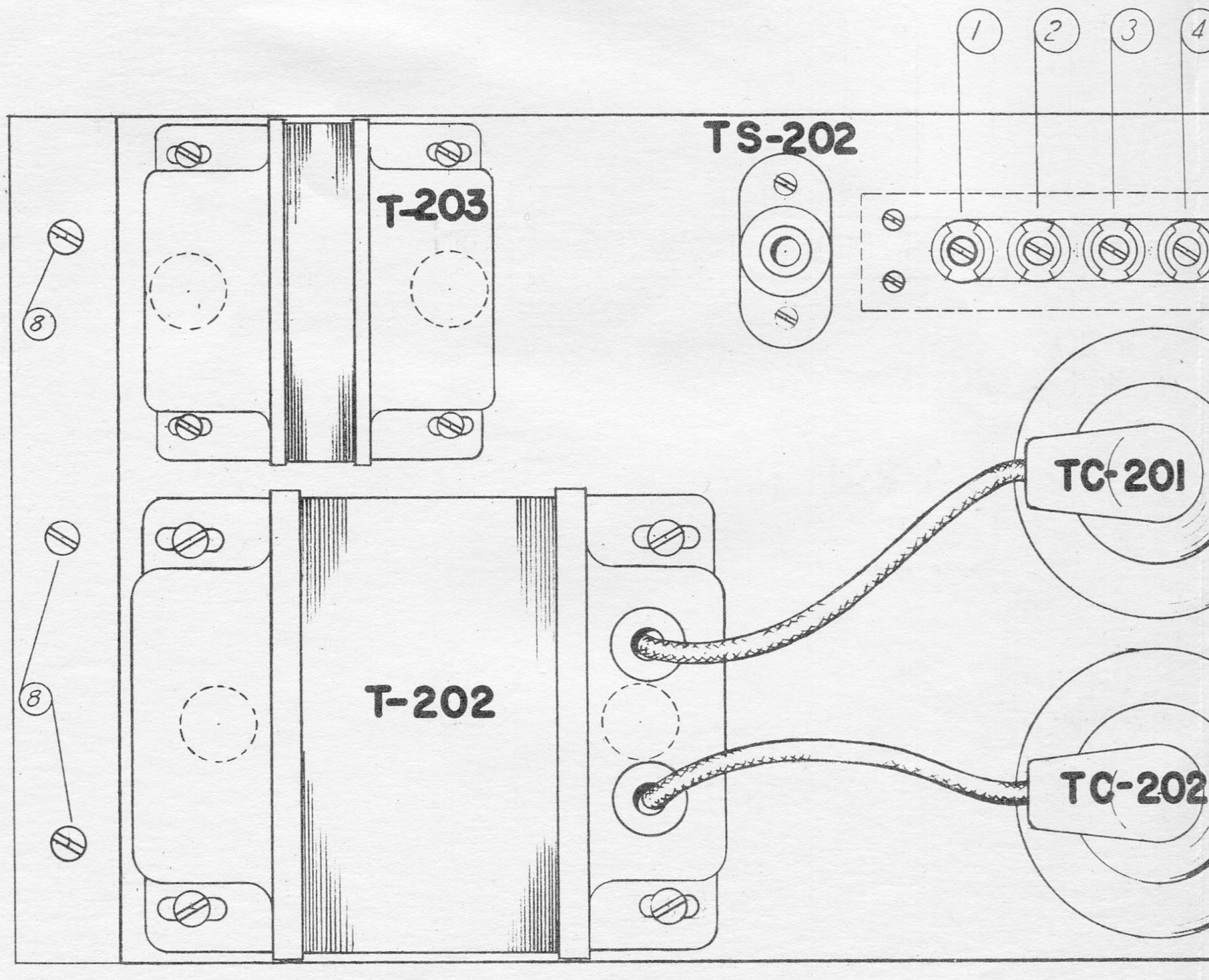
Item	Part No.	Qty	Description	Check
1		1	Chassis 7" x 15" x 3" pre-fabricated	
2		1	Panel 7" x 19"	
3	T-201	1	Transformer Audio Interstage	
4	T-202	1	Transformer Audio Modulation	
5	T-203	1	Transformer Modulator Filament 6.3V 8A.	
6	V-201	1	Vacuum tube 12AT7	
7	V-202	1	Vacuum tube 6AQ5	
8	V-203, 4	2	Vacuum tube 811/811A	
9	X-201	1	Tube Socket, 9 pin miniature w/shield	
10	X-202	1	Tube socket, 7 pin miniature	
11	X-203, 4	2	Tube Socket, 4 pin Medium	
12	SW-201	1	Switch, high voltage SPDT	
13	M-201	1	Meter 0-300 ma	
14	TS-201	1	Terminal strip 12 term Feed-thru	
15	TS-202	1	Terminal Strip high voltage safety	
16	TS-203, 4	2	Terminal mounting strip 4 terminals	
17	TC-201, 2	2	Tube cap 9/16" inner diameter	
18	C-201	1	Condenser, 15 mmfd ceramic or mica	
19	C-202, 8, 9	3	Condenser .05 mfd 400 paper	
20	C-203, 7	2	Condenser 8 mfd 400V electrolytic	
21	C-204, 5	2	Condenser 50 mmfd ceramic or mica	
22	C-206	1	Condenser .001 mfd ceramic or mica	
23	C-210	1	Condenser 40 mfd electrolytic	
24	C-211, 2	2	Condenser .005 mfd ceramic or mica	
25	R-201	1	Resistor 10 meg ohms 1/2 watt carbon	
26	R-202, 7	2	Resistor 270K ohms 1/2 watt carbon	
27	R-203	1	Resistor 250K ohms carbon potentiometer	
28	R-204	1	Resistor 18K ohms 1/2 watt carbon	
29	R-205	1	Resistor 2.2K ohms 1/2 watt carbon	
30	R-206	1	Resistor 68K ohms 1/2 watt carbon	
31	R-208	1	Resistor 470K ohms 1/2 watt carbon	
32	R-209	1	Resistor 390K ohms 1/2 watt carbon	
33	R-210	1	Resistor 330 ohms 1 watt carbon	
34	R-211	1	Resistor 30K ohms 50 watt wirewound	
35	R-212	1	Resistor 50 ohms 25 watt wirewound	
36	J-201	1	Jack, microphone	
37	K-201, 2	2	Knobs, Pointer	
		1	Bag necessary hardware	
		1	Bag special wire	



Signals of Distinction

ELDICO OF NEW YORK INCORPORATED

TR-1 TV MODULATOR
CIRCUIT DIAGRAM

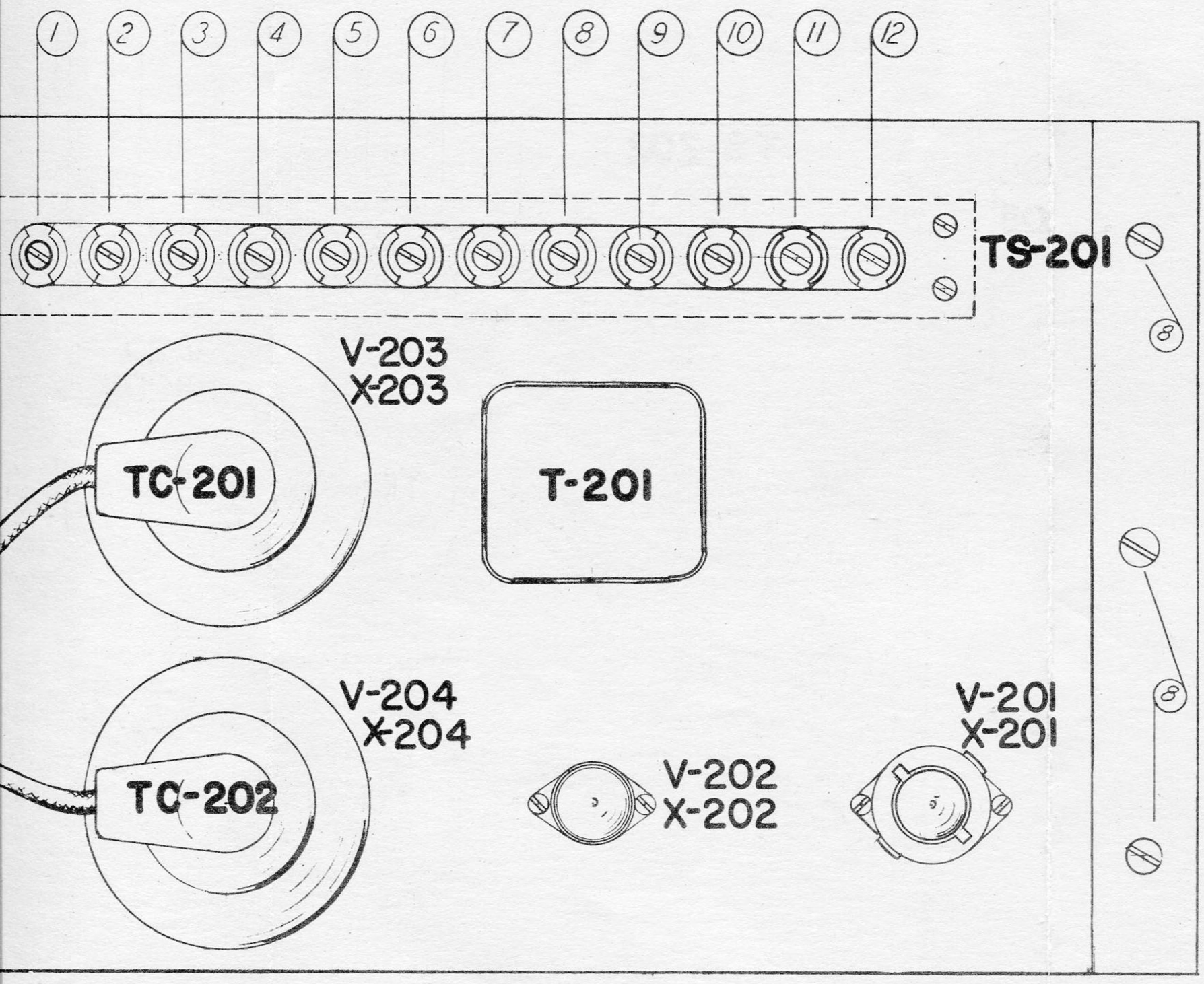


Signals of Distinction

ELDICO

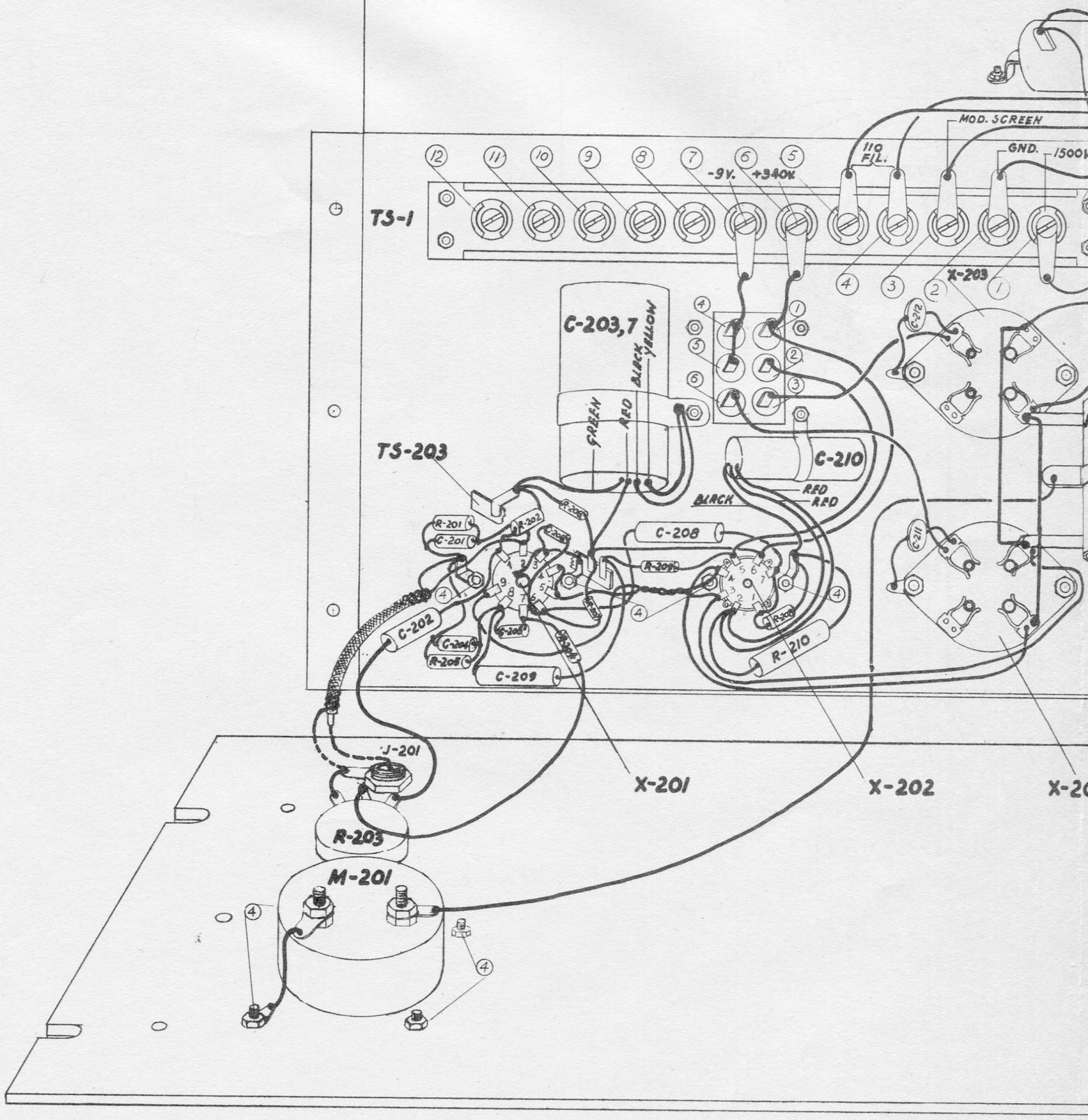
OF NEW YORK

INCORPORATED



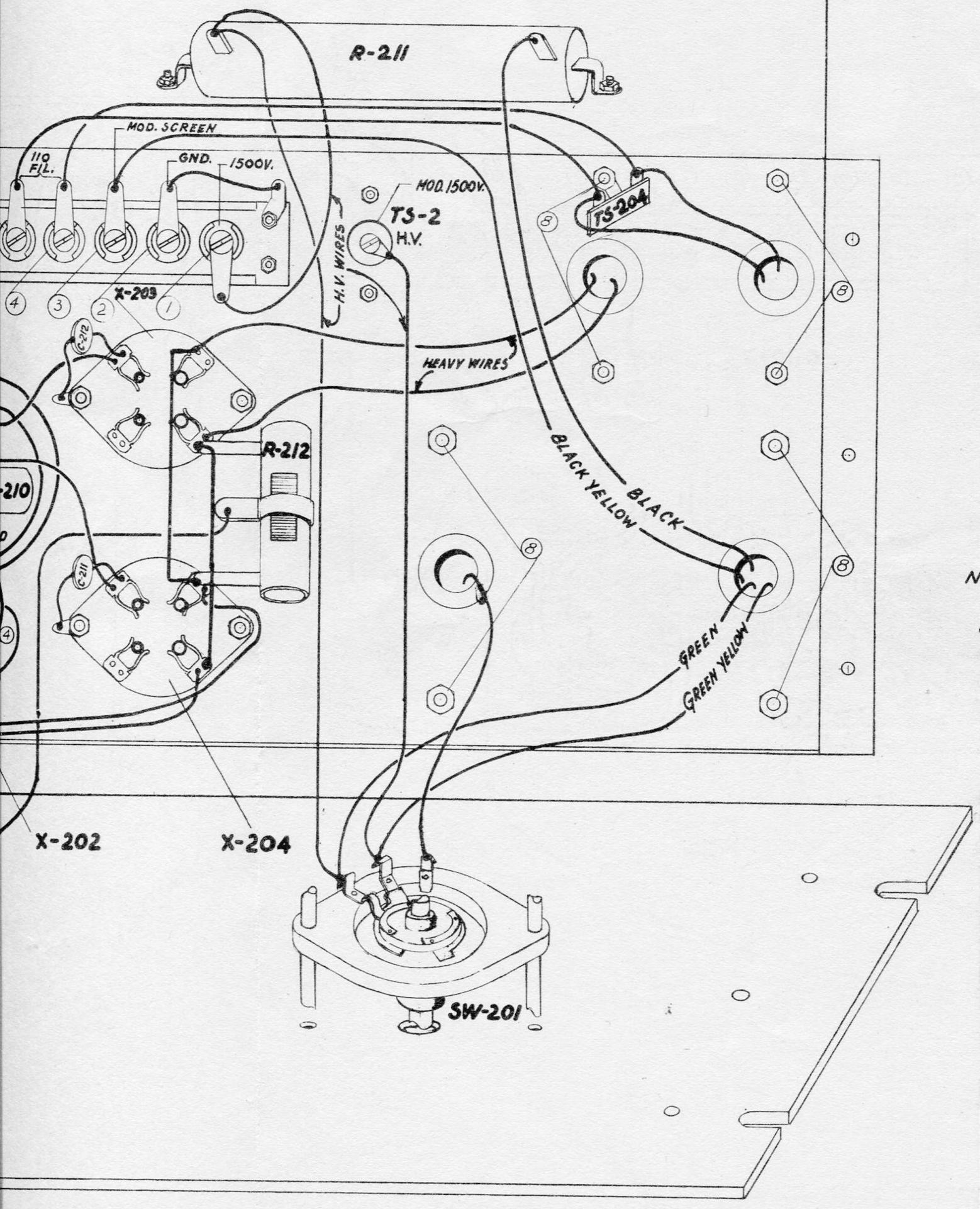
TR-1 TV MODULATOR

TOP VIEW M-2



Signals of Distinction

ELDICO
OF NEW YORK
INCORPORATED



NOTE

ALL SCREWS & NUTS No. 6-32
UNLESS OTHERWISE INDICATED

TR-1 TV MODULATOR

BOTTOM VIEW M-3

ELDICO'S TR-1TV POWER SUPPLY

GENERAL:

The Eldico TR-1TV Power Supply was especially designed for use with the Eldico TR-1TV transmitter. It supplies all of the voltages needed for plate and filament operation of the transmitter. The supply furnishes 1500 volts DC for amplifier and modulator plates, 400 volts for R. F. multiplier stages, 340 volts adjustable for R. F. oscillator and audio speech stages and the necessary negative bias for the 811 tubes in the companion TR-1TV modulator.

The power supply is contained on a 13" x 17" x 2 1/2" chassis provided. A standard 8 3/4 x 19" panel furnished in Eldico standard grey hammertone is used. All fabrication for mounting of the components, both on the panel and chassis, has been done.

On the front panel of the power supply there are three switches for the three controlled circuits; filament, low voltage and high voltage. Each of these are fused at the rear panel. Pilot lamps are provided to indicate when filament and high voltage are on. The high voltage is interlocked with the low voltage so that the low voltage switch may act as a transmit receive switch, as well as to prevent high voltage being turned on prior to the low voltage. There is also provided on the rear terminal strip TS-101 two terminals (9 and 12) for an external control to facilitate a remote control send/receive switch. If an antenna change over relay is used, the relay coil should be connected across terminals 11 and 12.

ASSEMBLY:

The assembly of the TR-1TV Power Supply is straight forward and no difficulty should be encountered. Reference to pictorial diagram P-2 (top view) and P-3 (bottom and wiring view) should show clearly the placement of parts and method of mounting. Since all of the fabrication has been done on the chassis, it is necessary to mount all of the components exactly as shown. Distortion in the placement of the leads has been shown in diagram P-3 for easy identification. Therefore, the exact placement of the wiring need not be followed. It is much neater to run parallel leads and then cable them together in the corner of the chassis.

OPERATION:

After the power supply is completely assembled and wired, it should be tested in conventional manner. It is not possible to adjust the various voltages unless the unit is connected to the transmitter.

Looking at the front panel, SW-101 is the filament switch and is the first switch in line starting at the left side. This switch controls not only the filament of the power supply, but the filaments of the entire transmitter.

The other switches should remain in the "off" position at least one minute until after SW1 is placed in the "on" position.

(Note: It is suggested that the first time the power supply is connected and the 866's plugged into their sockets at least five minutes of preheat be allowed before the high voltage is applied. This will allow complete distribution of the mercury in the 866's)

The second switch is SW-102 and controls all of the low voltage. The third switch is SW-103 and controls the high voltage. Reference to the circuit diagram will show that it is not possible to turn on the high voltage unless SW-101 and SW-102 are already in the "on" position. For operation of the transmitter after tune up, it is possible to leave SW-101 filament switch and SW-103 high voltage switch in the "on" position and use SW-102 as the send-receive switch. This switch, because of the interlock circuit, will control both low and high voltage.

For wiring, heavy black flexible stranded wire is furnished to connect T-101. The lead running from the common side of the line cord to the common side of T-101, and the lead running from the other side of the line cord through the switches F-103 and to the other side of T-101 should be of this heavy wire mentioned.

TR-1TV POWER SUPPLY
PARTS LIST

Item	Parts No.	Qty	Description	Check
1.		1	Chassis, power supply 13"x 17"x2 1/2"	
2.		1	Panel, " " 8 3/4"x 19"	
3.		2	Bracket, Condenser	
4.	T-101	1	Transformer, High Voltage 1500V DC @350 ma.	
5.	T-102	1	Transformer, H. V. Rectifier Filament 2. 5V @ 10 amp.	
6.	T-103	1	Transformer Low Voltage 550-0-550V @ 220 ma.	
7.	T-104	1	Transformer L. V. Rectifier Filament 5V @3 amp	
8.	L-101, 2	2	Inductor, Filter 8 hy @ 350 ma.	
9.	L-103	1	Inductor, Filter 6 hy @ 220 ma.	
10.	C-101, 2, 6, 7	4	Condenser, Filter 4 mfd @ 1000 volts	
11.	C-103, 4	2	" " 7 mfd @ 600 volts	
12.	C-105	1	" Electrolytic 50 mfd @ 25V	
13.	X-101, 2	2	Tube sockets, 4 prong	
14.	X-103	1	" " octal	
15.	SW-101, 2, 3	3	Switch, Toggle SPST	
16.	F-101, 2, 3	3	Fuse, Extractor type	
17.	TS-101	1	Terminal strip, 12T Jones, Feed thru	
18.	R-101, 2	2	Resistor wirewound 10K ohm 120 watt	
19.	R-103	1	" " 5K " 50 "	
20.	R-104	1	" " 50 " 25 " adj.	
21.	R-105	1	" " 1K " 50 adj.	
22.		1	Line cord, Heavy Duty	
23.	V-101, 2	2	Vacuum tubes, 866A, high voltage rectifier	
24.	V-103	1	Vacuum tube 5U4G low voltage rectifier	
25.		3	Resistor mounting brackets for R-101, 2, 3, 5	
26.		2	Pilot lamps, 110 volt, and assembly	
27.	TS-102, 3, 4, 5	4	Tie points 2T and center ground	
28.		1	1/2" rubber grommet	
29.		5	3/8" " "	
30.		4	#8 fiber washers for porcelain sockets	
31.	F-101, 2	2	3AG5 fuses	
32.	F-103	1	3AG10 fuses	
33.		2	Plate caps 9/16" for 866's	
34.		1	Bag Special Wire	
35.		30"	Heavy hook-up Wire	
36.		1	Bag miscellaneous hardware	

12 11 10 9 8 7 6 5 4 3 2 1

R-102

-101

X-101
V-101

X-102
V-102

T-102

C-104

L-101

T-101

C-106

C-102

C-107

C-101

L-102

L-1

L-2

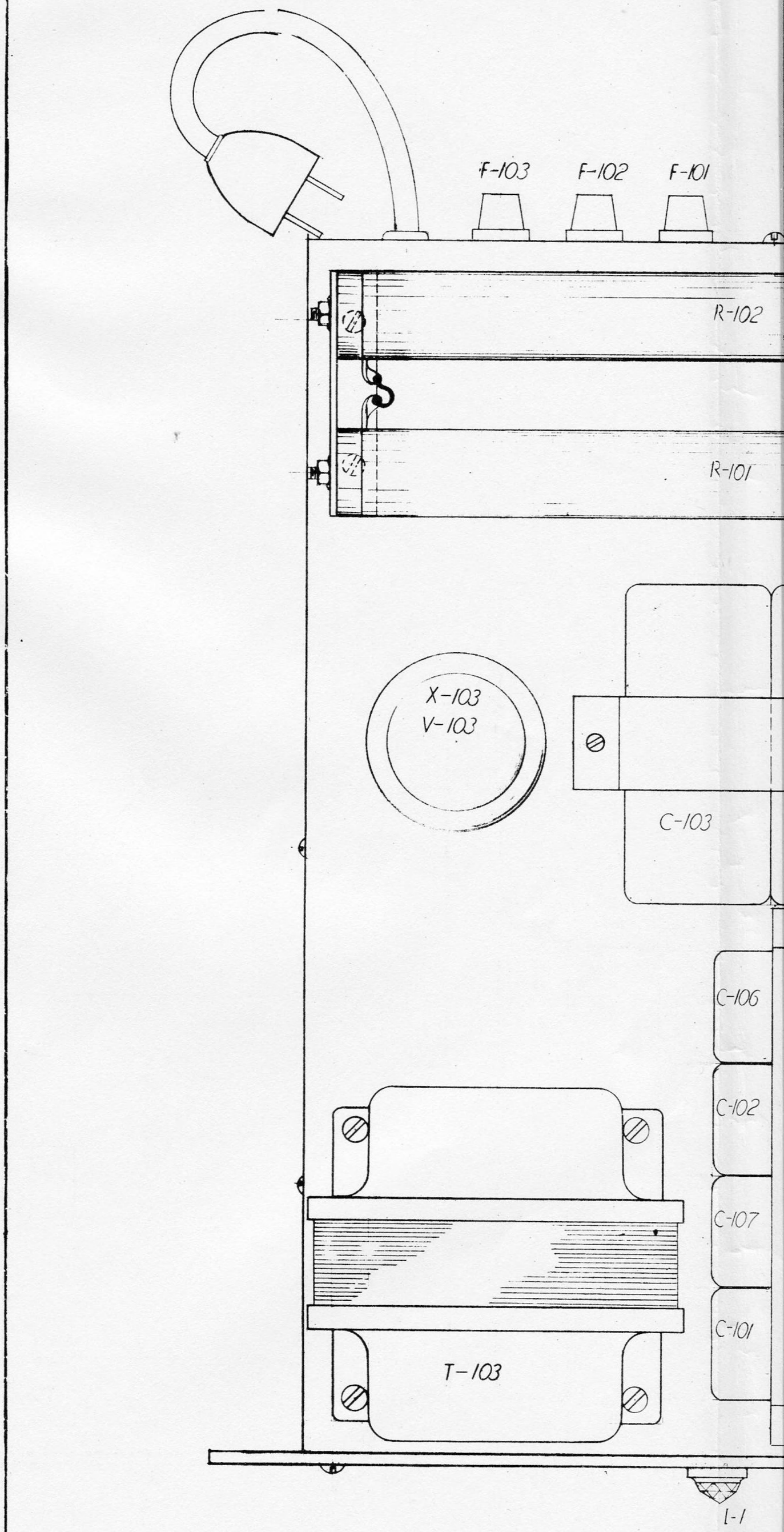
SW-101

SW-102

SW-103

TR-1 TV POWER SUPPLY
TOP VIEW P-2

DRAWING NO. 2218-C


F-103
F-102
F-101
R-102
R-101
X-103
V-103
C-103
C-106
C-102
C-107
C-101
T-103
I-I

ALL SCREWS AND NUTS
AS INDICATED AS FOLLOWS

(6) INDICATED 6-32 & NUT

(8) — " — 8-32 — " —

(10) — " — 10-32 — " —

4 5 6 7 8 9 10 11 12

F-101 F-102 F-103

TS-102

C-105

R-105

R-103

T-104

L-101

C-104 C-103

X-103

R-104

L-103

RED RED

RED-YELLOW

C-106

C-102

L-102

C-107

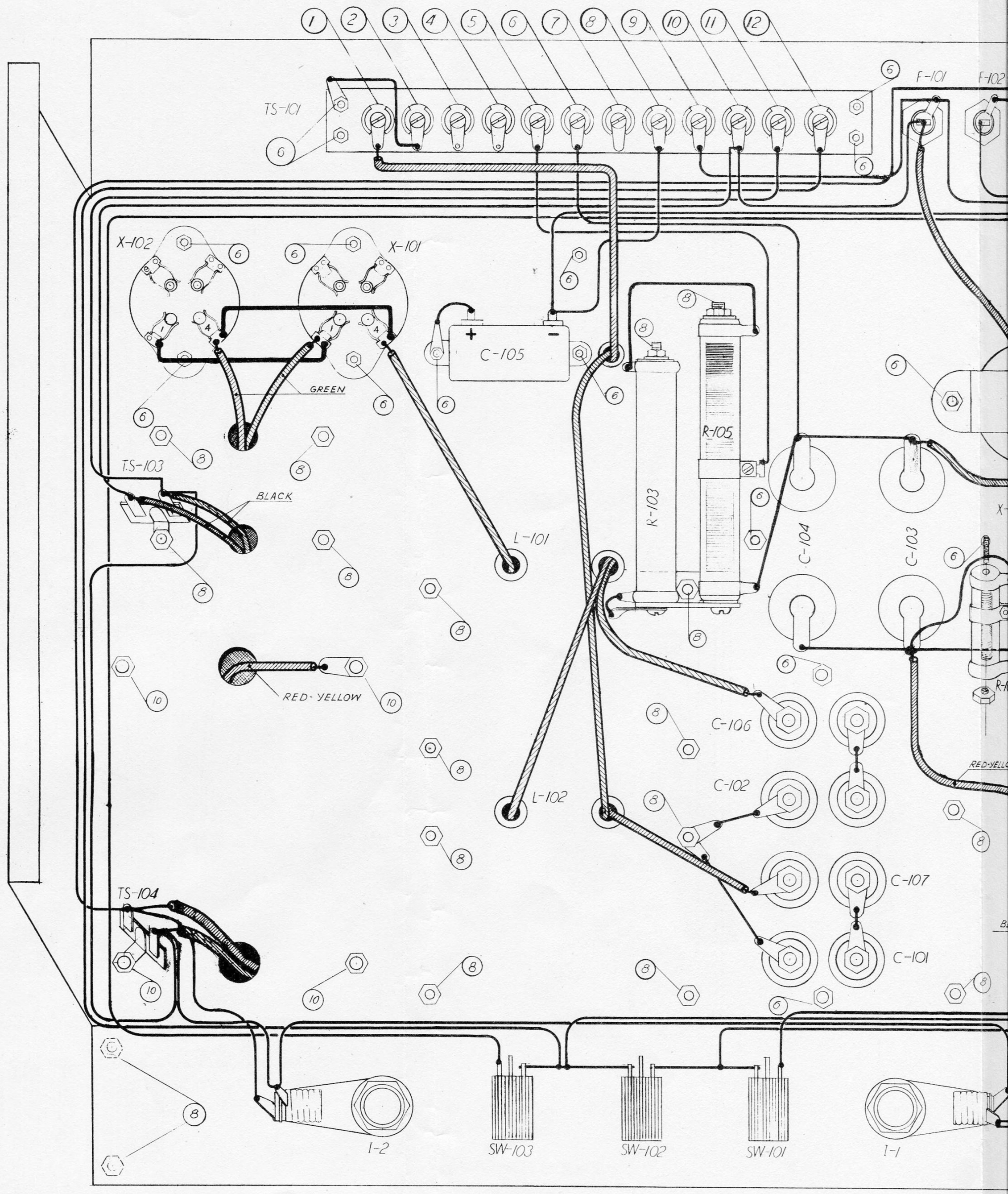
C-101

BLACK TS-105

SW-103 SW-102 SW-101 I-1

TR-1 TV POWER SUPPLY
BOTTOM VIEW P-3

DRAWING NO. 2219-C


1
2
3
4
5
6
7
8
9
10
11
12
TS-101
F-101
F-102
X-102
X-101
C-105
GREEN
T.S-103
BLACK
L-101
R-105
R-103
C-104
C-103
C-106
C-102
C-107
C-101
L-102
RED-YELLOW
TS-104
I-2
SW-103
SW-102
SW-101
I-1

EXT. PLATE SWITCH IF USED

TS-101

1 2 3 4 5 6 7 8 9 10 11 12

+150V. GND. +340V. +400V. -9V. FIL. A.C. COM RELAY

T-101 RED BLACK

RED-YELLOW

V-102
866-A

TC

RED YELLOW

T-103 BLACK RED

RED-YELLOW

BLACK RED

V-103
5R4GY OR 5U4G

4 6 2 8

1 4

T-102 T-104

LARGE WIRES

L-103
6 HY

C-103
7MFD

C-104
7MFD

R-104
50

R-103
5000

R-105
1000

C-105
50MFD
25V.

FIL.
F-101
5A.

L.V.
F-102
5A.

H.V.
F-103
10A.

FIL.
SW-101

TRANSMIT
L.V.
SW-102

H.V.
SW-103

I1 I2

TR-1 TV POWER SUPPLY
CIRCUIT DIAGRAM

TS-101

1

2

+1500V

GND.

L-102

L-101

6Hy

6Hy

R-101
10K

R-102
10K

C-107
4 MFD

C-101
4MFD

C-106
4MFD

C-102
4MFD

T-101

RED

BLACK

RED-YELLOW

RED

YELLOW

T-103

BLACK

RED

RED-YELLOW

BLACK

RED

V-101
866-A

V-102
866-A

TC

TC

1

4

1

4

4

6

2

8

V-103
5R4GY OR 5U4G

T-102

T-104

LARGE WIRES

L-103
6 HY

C-103
7MFD

FIL.
F-101
5A.

L.V.
F-102
5A.

H.V.
F-103
10A.

FIL.
SW-101

TRANSMIT
L.V.
SW-102

H.V.
SW-103

I_1

I_2

H.V.

1	2	3	4	5	6
GND	110 V. AC	110 V. AC	340 V.	400 V.	750 V.
A	B	C	D	E	F

R.F. SECTION

6 WIRES
A, B, C, D, E, F

H.V.

1	2	3	4	5	6	7	8	9	10	11	12
1500 V.	GND	750 V.	110 V. AC	110 V. AC	340 V.	-9 V.					
H	A	F	B	C	D	G					

5 WIRES
A, B, C, D, F

MODULATOR SECTION

E

6 WIRES
A, B, C, D, G, H

1	2	3	4	5	6	7	8	9	10	11	12
1500 V.	GND			340 V.	400 V.	-9 V.			110 V. AC	110 V. AC	
H	A			D	E		G		B	C	

POWER SUPPLY SECTION

7 WIRES
A, B, C, D, E, G, H

TR-1 TV TRANSMITTER
INTERCONNECTING CABLE DRAWING

DRAWING NO. 2215-A