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Craig L102 Service Manual

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SERVICE MANUAL

CRAIG®

L102

DELUXE 40 CHANNEL MOBILE CB TRANSCEIVER



SPECIFICATIONS

GENERAL

Channels: 40
 Frequency Range: 26.965 to 27.405 MHz
 Frequency Tolerance: $\pm 0.005\%$ from -30 C to +50 C
 Frequency Stability: $\pm 0.001\%$
 Microphone: Dynamic with Press-to-talk switch and coiled cord.
 Power source: 13.8V DC \pm ground.
 Current Drain: Receive:
 1.0A Maximum audio output
 0.5A Standby (no signal)
 Transmit: 1.5A
 Meter: Illuminated. Indicates relative power output, received signal strength and SWR.

TRANSMITTER

RF power output: 4.0 Watts
 Modulation Capability: 100%
 Spurious Attenuation: 60dB Minimum
 Output Impedance: 50 Ohms

RECEIVER

Sensitivity: 0.5uV for 10dB (S+N)/N
 Bandwidth: ± 3 kHz @ -6dB
 AGC: Change in audio output less than 12dB from 10uV to 0.5 Volt.
 Squelch: Adjustable. Threshold less than 0.5uV. Tight, more than 250uV.
 Power output: 4.0W at 10% THD
 Image Rejection: Better than 60dB
 IF Rejection: Better than 60dB
 Adjacent Channel Rejection: Better than 60dB
 IF Frequency: 1st IF: 9.785 MHz
 2nd IF: 455 kHz
 Noise Blanker: RF parallel gate type

P.A. SYSTEM

Power output: 4.0 Watts.

WARNING

Replacement or substitution of IC's, crystals, transistors, regulator diodes, or any other part of a specialized nature with parts other than those recommended by Craig may cause the operator to be in violation of the Type Acceptance requirements of Part 2 of the Rules.

FCC Rules require that ALL transmitter section adjustments, other than those supplied by Craig as front-panel operating controls, be made by or under the immediate supervision of the holder of an FCC First or Second Class Radio-Telephone Operator's License.

A PRODUCT OF CRAIG CORPORATION

CHOKES, COILS, FILTERS, TRANSFORMERS & CRYSTALS

REF. NO.	CRAIG KEY NO.	DESCRIPTION	LIST PRICE	REF. NO.	CRAIG KEY NO.	DESCRIPTION	LIST PRICE
T306	L102641	Modulation Transformer	2.95	L306,307			
L317	L102670	Choke Coil	1.50	308	L102674	TX Coil 27MHz	1.50
L104,303	3513077	Inductor,100uH	.55	L311	L102676	Driver Coil	1.30
L105	L102671	Coil, 5.6uH	.65	L313	L102677	Matching Coil	1.30
L304,T301				L314,315			
T302,T307	4201058	IPT Coil, 10.7MHz	1.35	316	L102678	Filter Coil	1.30
L310,312	4201069	RF Choke Coil	1.25	L102,103	L102679	PLL Coil, 36MHz	1.50
T303	L600644	IPT, 455kHz (Yellow)	1.05	L101	L102680	VCO Coil	1.50
L301	L102672	Antenna Coil	1.50	R155	L102590	Res. Block, 10kX8	1.50
L302	L102673	RF Coil	1.50	X301	L102722	Crystal, 10.24MHz	6.15
T304	L102642	AM IPT (White)	1.10	X302	L102723	Crystal, 9.785MHz	6.15
T305	L102643	AM IPT (Black)	1.10	X101	L102724	Crystal, 11.8233MHz	6.15
L309	L102675	Buffer Coil	1.60	CF301	L102681	Ceramic Filter	5.15
R306,376	L102591	Semi-Var Res, 2k Ohms	.60	R154,313	T281027	Semi-Var Res, 10k Ohms	.60
R348,408				R414	L600593	Semi-Var Res, 50k Ohms	.65
415	L600592	Semi-Var Res, 20k Ohms	.60	R501	L102592	Semi-Var Res, 200 Ohms	.65

CAPACITORS

C309,377,395	Mica, 5pF/50V	C102,115,120	Ceramic, 22pF/50V
C275,401	" 10pF/50V	C125,301	" 27pF/50V
C372	" 15pF/50V	C136,114,119,412	" 33pF/50V
C336,419	" 22pF/50V	C117	" 47pF/50V
C316,366,371,378	" 33pF/50V	C116,128,129,132	" 100pF/50V
C306,319,370,422	" 47pF/50V	134	" 120pF/50V
C305,308,339,346	" 100pF/50V	C383	" 220pF/50V
368,381		C133	" 680pF/50V
C328,338,386,389	" 120pF/50V	C384	Electrolytic, 100uF/10V
394	" 150pF/50V	C357	" 3.3uF/16V
C335	" 180pF/50V	C391	" 10uF/16V
C387	" 220pF/50V	C341,345,399,410	" 33uF/16V
C308,340,369,392	" 240pF/50V	406,201	" 47uF/16V
393	" 330pF/50V	C348,373,411,420	" 100uF/16V
C390	Ceramic, 0.001uF/50V	127	" 1000uF/16V
C358,361		C360,400	" 1uF/50V
C310,312,314,374		C409,106,108,109	" 0.001uF/50V
C103,104,105,107		C141	" 0.0033uF/50V
110,121,122,123		C397	" 0.01uF/50V
126,130,131,137		C331,203,332,347	" 0.015uF/50V
140,142,143,146		363,417,423	" 0.018uF/50V
302,303,304,307	Ceramic, 0.01uF/50V	C111,330	" 0.022uF/50V
311,313,315,317		C414	" 0.047uF/50V
318,322,354,365		C202,333,342,344	" 0.068uF/50V
376,379,380,382		349,351,353,356	Tantalum, 6.8uF/6.3V
385,388,396,398		C113	" 0.22uF/35V
402,416,421,424		C343	" 1uF/35V
501,502		C352	
C321,324,425,327	Ceramic, 0.04uF/50V	C320,323,326,329	
407	" 0.047uF/50V	350	
C145	" 5pF/50V	C359,362	
C101,118,124,138	" 10pF/50V	C355,418	
C135,405	" 15pF/50V	C112	
C403,404,334		C144	

RESISTORS (ALL RESISTORS ARE CARBON, OHMS, 1/4W, ±10%, 25¢ EACH OR NOTED)

R362,363		R119,125		R410	" 220 "	1/4W
369	Carbon, 2.4k Ohm	134,137		R360	" 270 "	
R332,361	" 2.7k "	380,383		R307,333	" 330 "	
R204,129		392,153	" 33k "	398	" 390 "	
130,382		R365	" 43k "	R309,355	" 430 "	
388,431		R357	" 56k "	R435		
343	" 3.3k "	R323,329		R302,303		
R367,395	" 3.9k "	337,413	" 68k "	347,330		
R349,322		R117,139		335,406		
372,377		320,334		394,324	" 470 "	
379,402		308,336		R126	" 510 "	
407,417		339,422	" 100k "	R359,433	" 560 "	
421,430	" 4.7k "	R319,354	" 330k "	R132,389	" 820 "	
R387	" 5.6k "	R305,310		R111,112		
R115	" 6.8k "	311	" 1M "	128,135		
R102,107		R138	" 2.2M "	142,146		
108,118		R109,400	Carbon, 10 Ohm	346,384		
122,131		R399	" 10 "	393,327		
140,144		R401	" 22 "	403,412		
147,148		R318	" 33 "	425,428		
150,152		R397	" 47 "	203,204	" 1k "	
205,344		R419	" 68 "	R127,315		
325,391		R381,385		317,390	" 1.5k "	
427,434		411,420		R104,106		
115	" 10k "	133,136	" 100 "	114,116		
R371,375	" 12k "	R418	" 100 "	145,149		
396,409		R312,374	" 150 "	151,156		
R331,353		R202	" 180 "	157,158		
356,404		R304,386		159,160		
416,423	" 15k "	405,424		161,321		
R141,153		426,103		326,328		
301,378		105,113		370,432	" 2.2k "	
366	" 22k "	120,124	" 220 "			
R358,373	" 27k "					

ALIGNMENT PROCEDURES

EQUIPMENT REQUIRED:

- 1- Regulated DC power supply. (13.8V, 2A)
- 2- Frequency Counter.
- 3- RF Output Meter. (50 Ohms terminated type)
- 4- Signal Generator.
- 5- Audio Level Meter.
- 6- Dummy Load. (8 Ohms, 5W)

GENERAL ALIGNMENT CONDITIONS:

- 1- Warm up the unit and test equipment at least 15 minutes before starting alignment.
- 2- Coupling to Frequency Counter should be as loose as possible.
- 3- Non-Metallic tools should be used for all adjustments.

STEP	CIRCUIT	CONNECTIONS		CHANNEL SELECT.	ADJUST	ADJUST FOR
		INPUT	OUTPUT			

PLL

1	Receive Mode.	NO SIGNAL	Connect Frequency Counter to TP-1	Any Channel	C 337	10.24 MHz ± 100 Hz
2	Transmit Mode.	NO MODULATION	Connect Frequency Counter to TP-2		R 154	36.97 MHz ± 100 Hz
3	Receive Mode.	NO SIGNAL Set Delta Tune Cont. at Center position			CH-19	R414

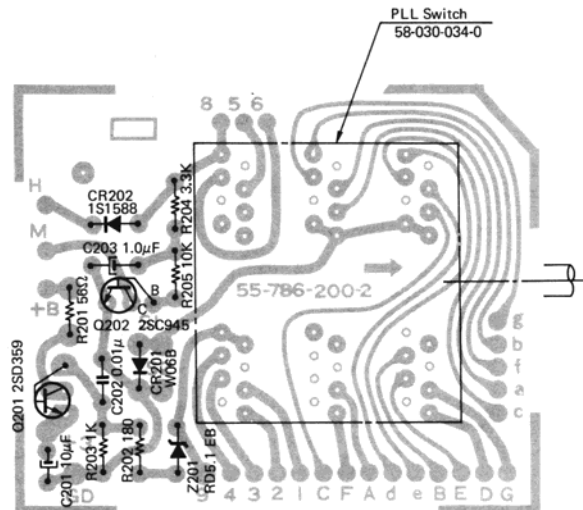
TRANSMITTER

1	Transmit Mode.	NO MODULATION	- Frequency Counter to TP-f. - RF Output meter to ANT. Connector.	CH-19	C367	9.785 MHz ± 100 Hz
2			RF Output Meter to ANT. Connector.		L306,L307,L308 L309,L311,L313 L314,L315,L316	Maximum on RF Output meter.
3	Repeat above steps to obtain maximum sensitivity.					

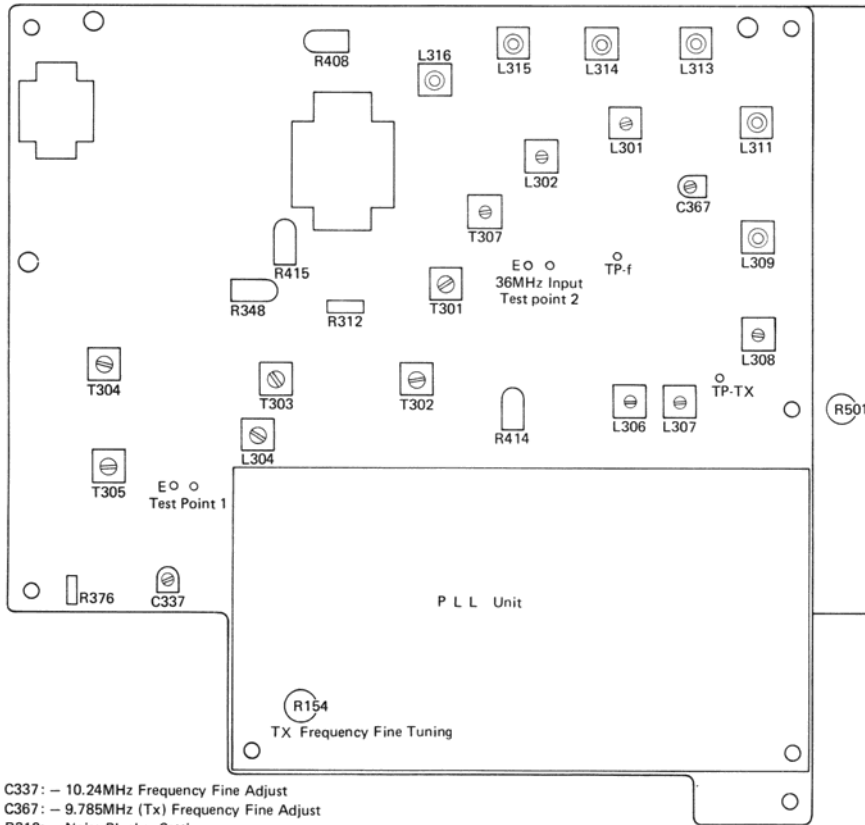
RECEIVER

1	Receive Mode.	Connect Signal Gen. to Antenna connector. Set Signal Gen. at 27.185 MHz ± 1kHz. 30% modulation.	Connect Audio Level meter to EXT SP. jack thru Dummy load.	CH-19	L301,L302,L304 T301,T302,T303 T304,T305,T307	Maximum on Audio Level meter.
2	Repeat above step to obtain maximum sensitivity.					

CHANNEL SELECTOR P.C.B. (Bottom View)

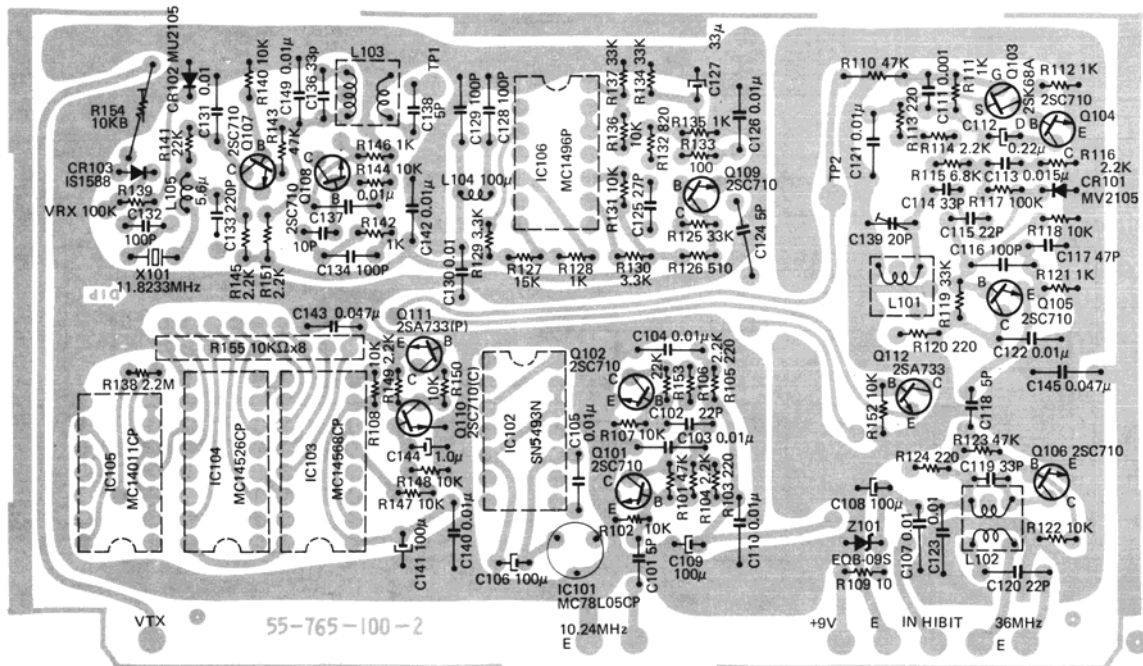


ALIGNMENT POINTS DIAGRAM

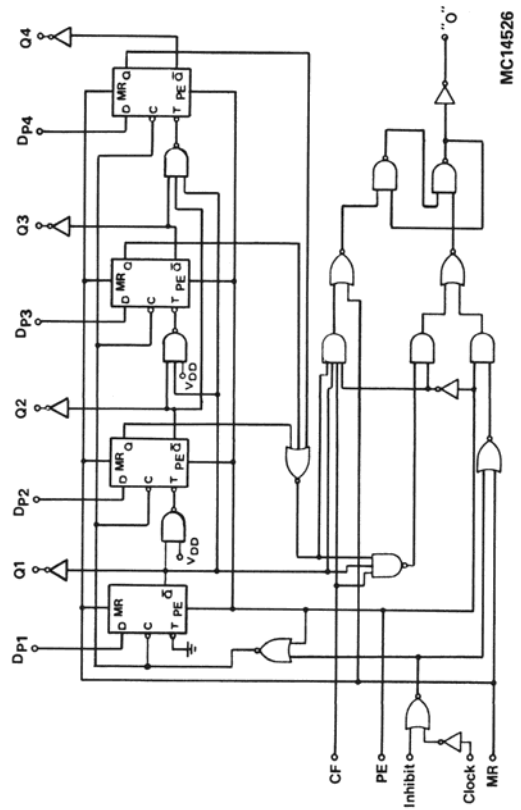
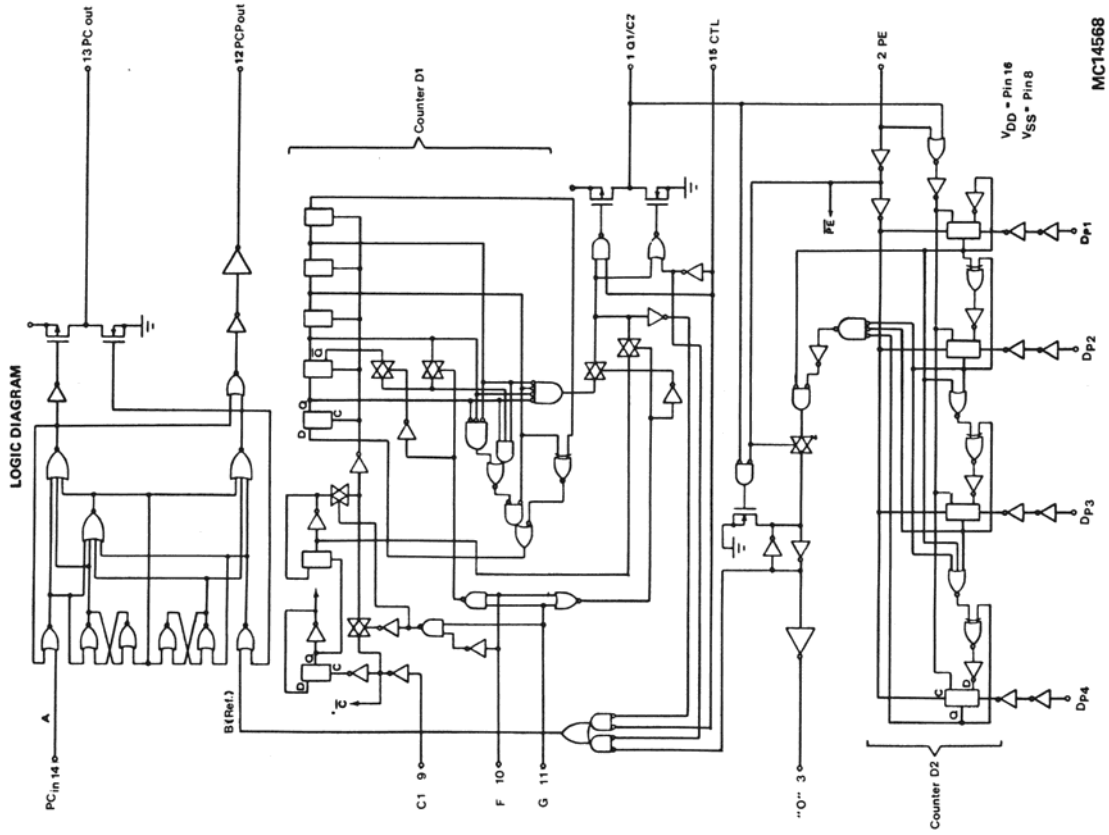
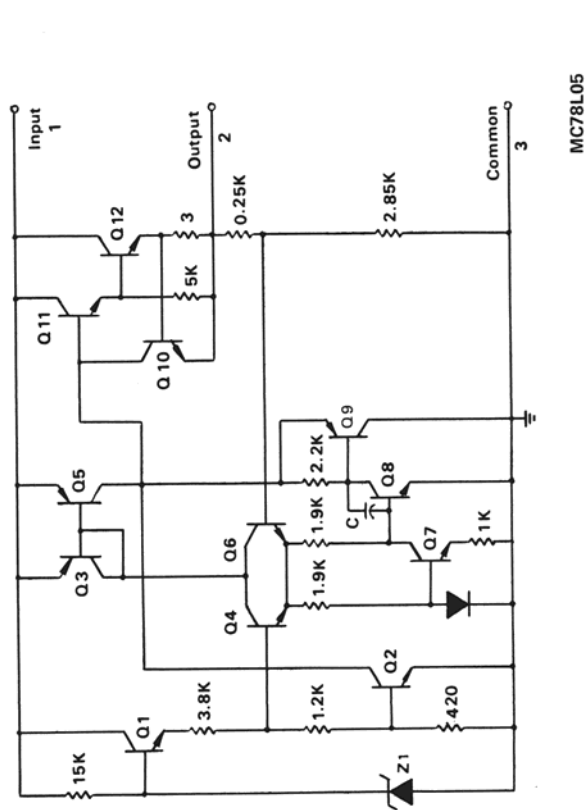


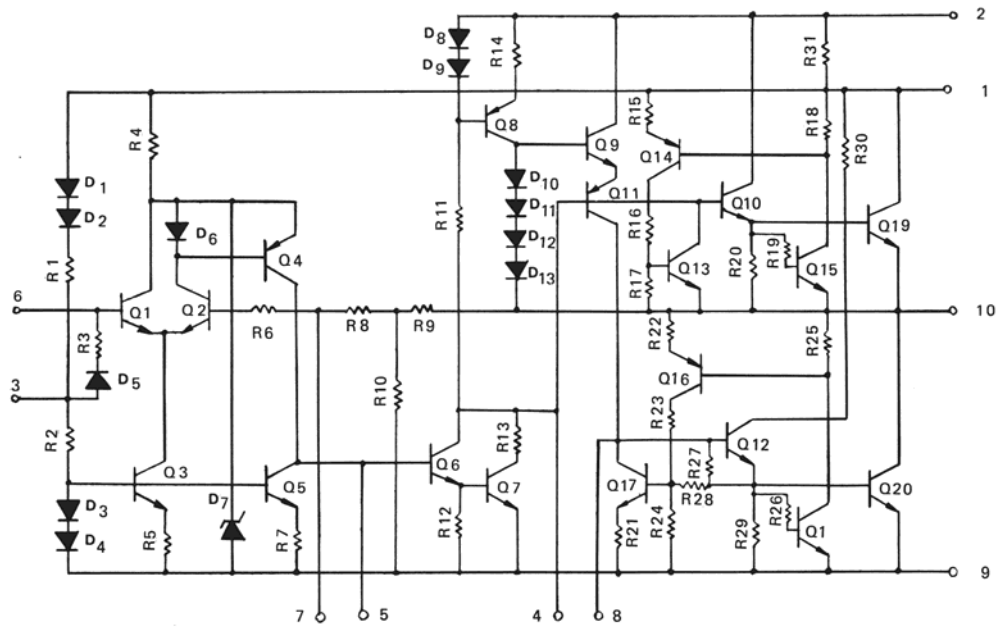
- C337: - 10.24MHz Frequency Fine Adjust
- C367: - 9.785MHz (Tx) Frequency Fine Adjust
- R312: - Noise Blanker Setting
- R348: - Modulation Limiter Setting
- R376: - S-meter Setting
- R408: - Tx Power Indicator Setting
- R414: - Delta Tune Frequency Fine Adjust
- R415: - Tight Squelch Setting
- R501: - SWR = 1 Setting

PHASE-LOCKED LOOP P.C.B. (Bottom View)

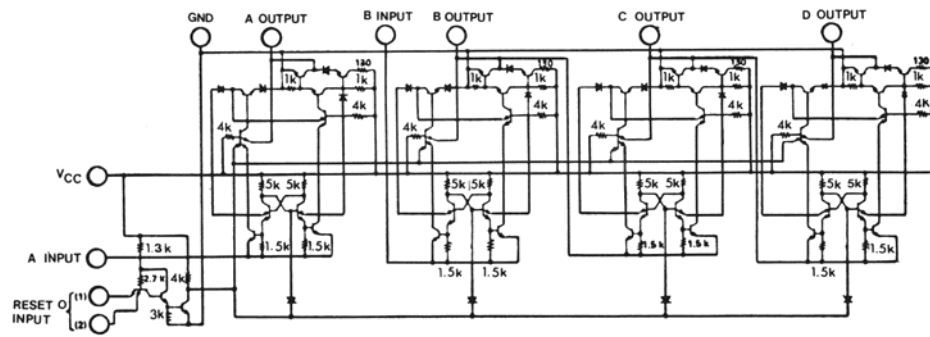


I.C. INTERNAL DIAGRAMS

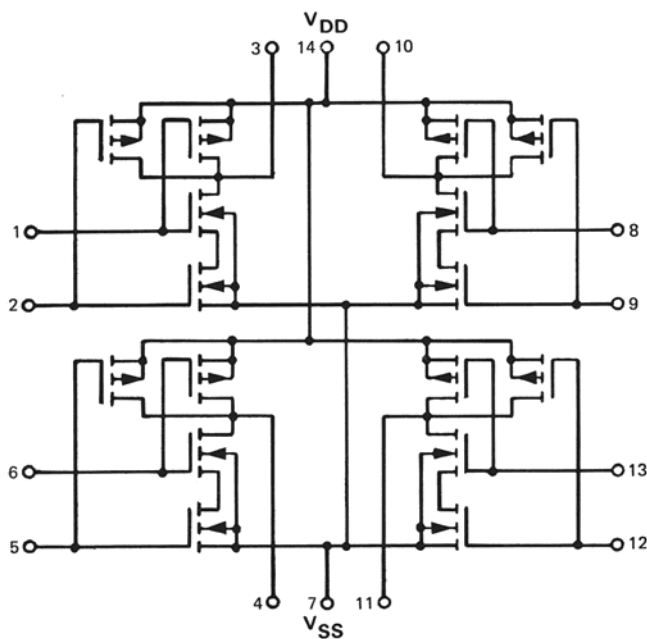




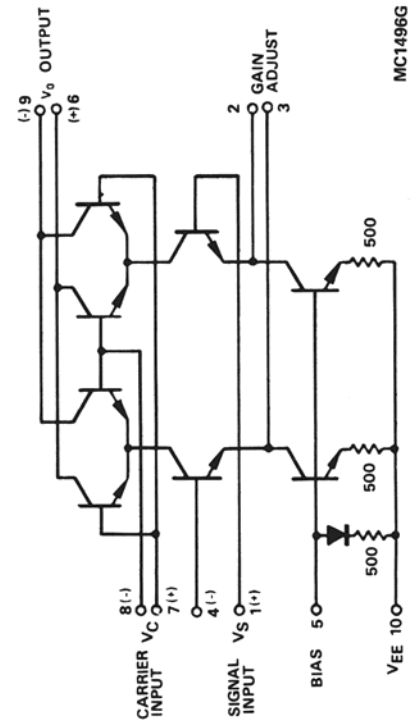
TA7205P



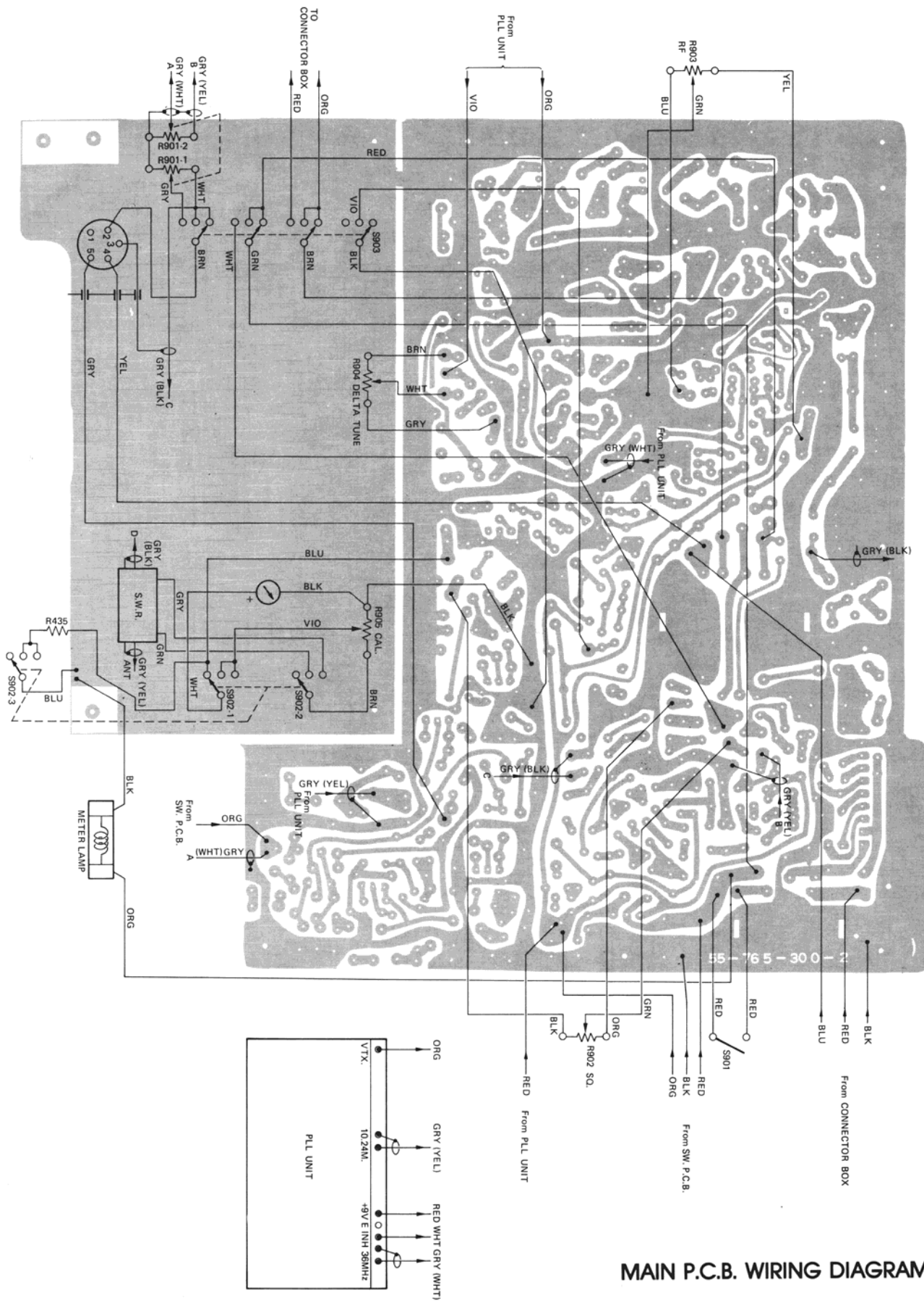
SN5493N



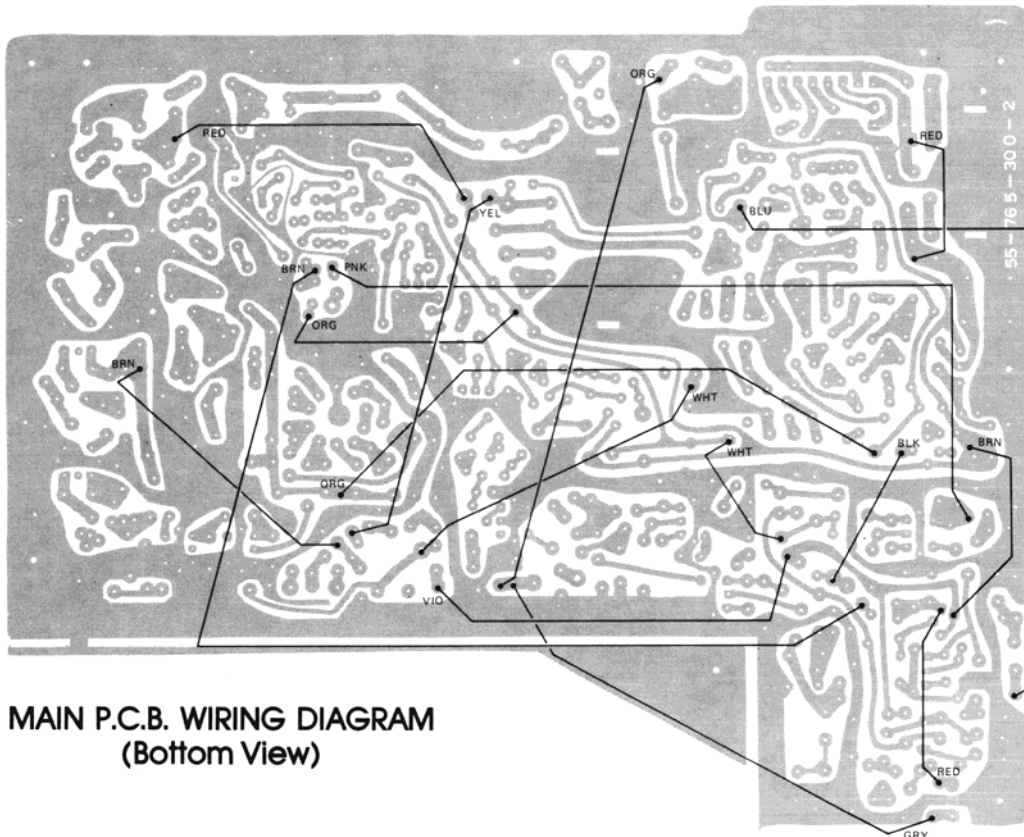
MC14011



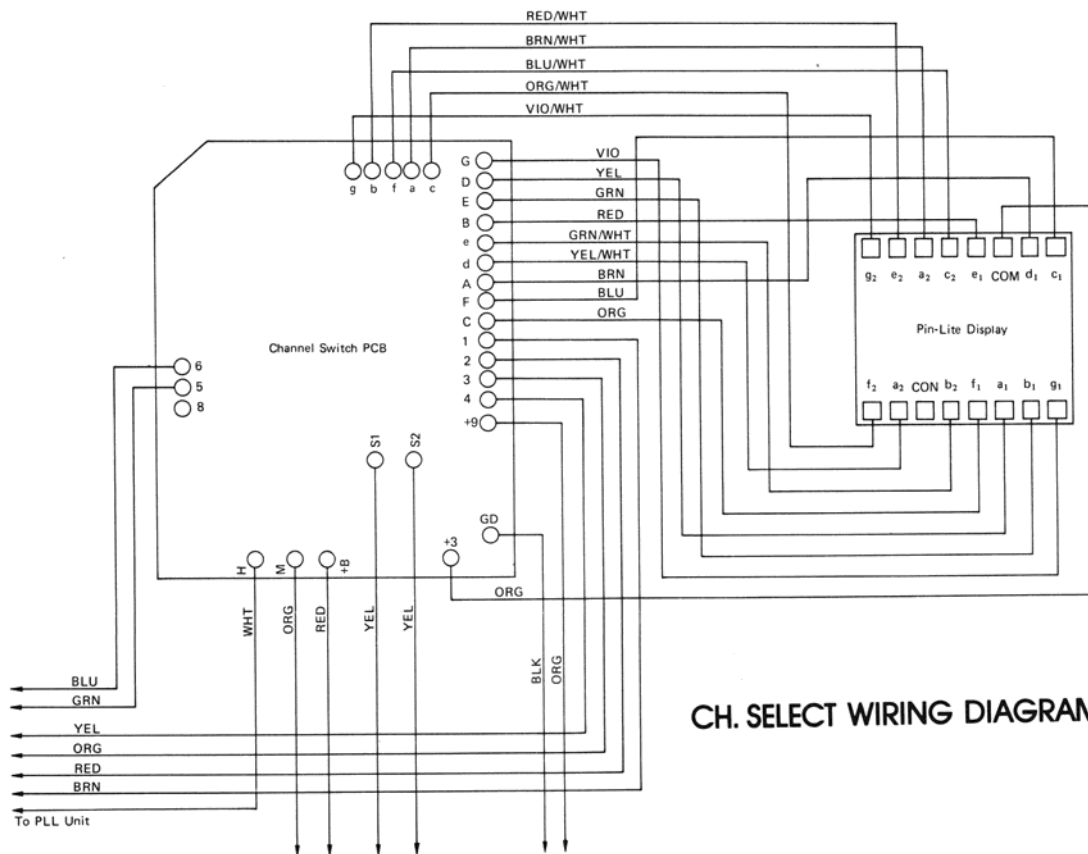
MC1496G



MAIN P.C.B. WIRING DIAGRAM



**MAIN P.C.B. WIRING DIAGRAM
(Bottom View)**

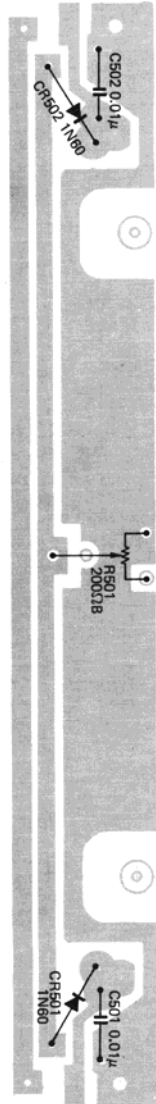


CH. SELECT WIRING DIAGRAM

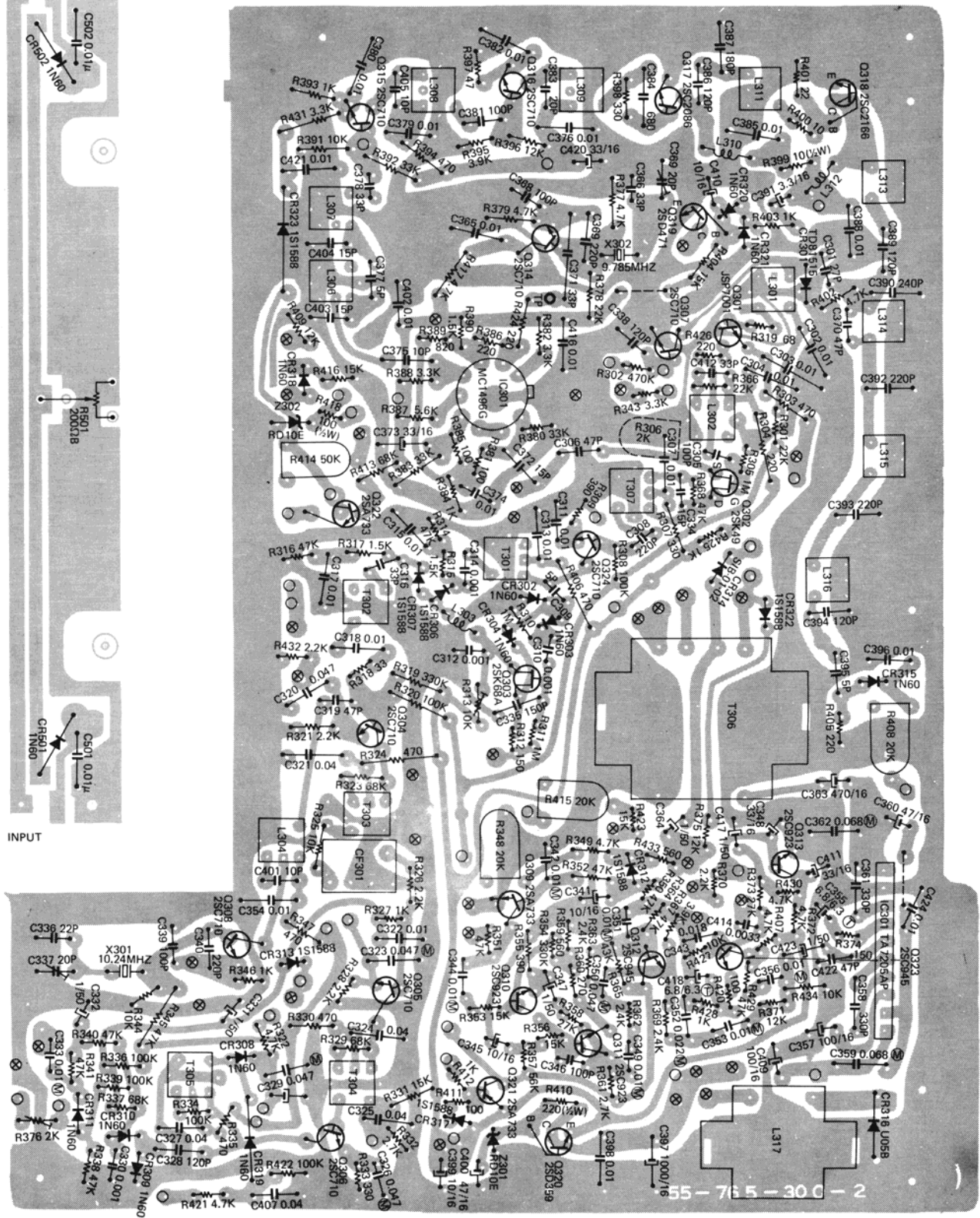
SWR P.C.B.

MAIN P.C.B. LAYOUT (Bottom View)

OUTPUT

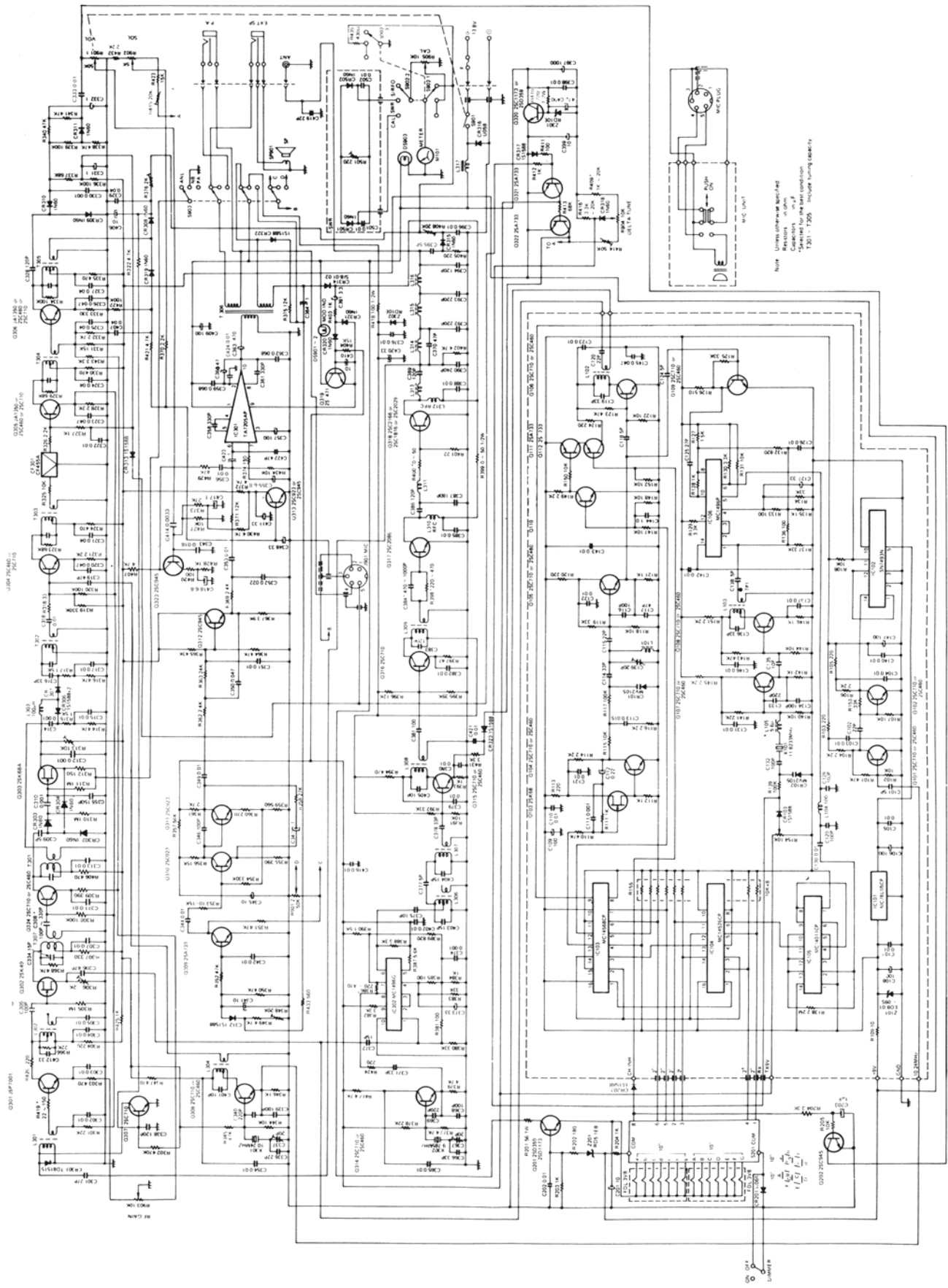


INPUT



55-765-300-2

CRAIG MODEL L102 SCHEMATIC CIRCUIT DIAGRAM



CABINET & CHASSIS

