

SERVICE MANUAL SERVICE MANUAL

SERVICE MANUAL 39 LTD



COBRA COMMUNICATIONS
PRODUCTION GROUP
DYNASCAN CORPORATION
6460 W. CORTLAND ST.
CHICAGO, ILLINOIS 60635

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GENERAL39LTD UNIT SPECIFICATION & FREQUENCY LISTING

Channels: 40
Frequency Range: 26.965 to 27.405 MHz
Frequency Control: Phase Lock Loop (PLL) synthesizer.
Frequency Tolerance: 0.005%
Microphone: Condenser
Input Voltage: 13.8V DC nom. (positive or negative ground).
Current Drain: Transmit: AM full mod., 1.5A. (maximum) @ no signal 150ma @ 10% signal 600ma
Crystals: 1
Size: 219mm (W) x 60mm (H) x 162.4mm (D) [8-5/8"W x 2-3/8"H x 6-3/8"D]
Weight: 3 pounds.
Antenna Connector: RCA phono Type.
Semiconductors: 11 transistors, 12 diodes, 3 integrated circuits.
Meter: None.
Indicators: Channel number LED.

TRANSMITTER

Power Output: 4 watts.
Modulation: High- and low-level, Class B amplitude modulation.
Frequency Response: 300 - 3000 Hz.
Output Impedance: 50 ohms, unbalanced.

RECEIVER

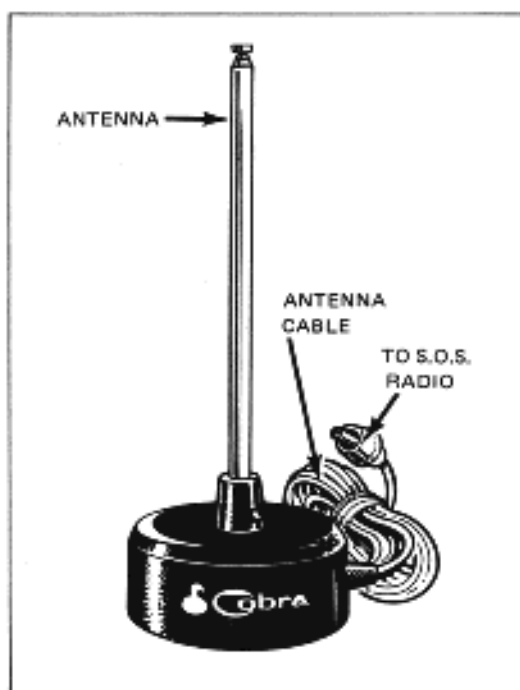
Sensitivity: Less than 1 microvolt for 10dB (S+N)/N.

Selectivity: 55dB @ 10KHz.
Image Rejection: 1st IF 70dB, 2nd IF 60dB
Adjacent-Channel Selectivity: 55dB (10KHz) /
Squelch: Adjustable; threshold less than 1 microvolt.
Frequency Response: 300 - 3000 Hz.
Built-in Speaker: 8 ohms.

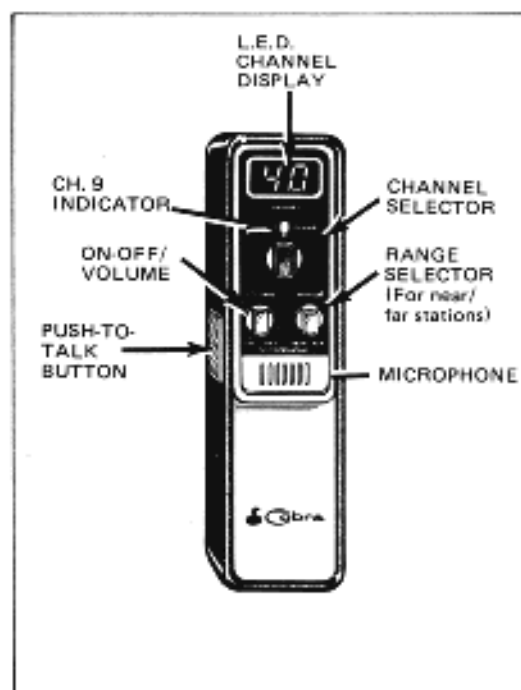
CLASS D CB CHANNELS

Channel	MHz	Channel	MHz	Channel	MHz
1	26.965	15	27.135	28	27.285
2	26.975	16	27.155	29	27.295
3	26.985	17	27.165	30	27.305
4	27.005	18	27.175	31	27.315
5	27.015	19	27.185	32	27.325
6	27.025	20	27.205	33	27.335
7	27.035	21	27.215	34	27.345
8	27.055	22	27.225	35	27.355
9	27.065	23	27.255	36	27.365
10	27.075	24	27.235	37	27.375
11	27.085	25	27.245	38	27.385
12	27.105	26	27.265	39	27.395
13	27.115	27	27.275	40	27.405
14	27.125				

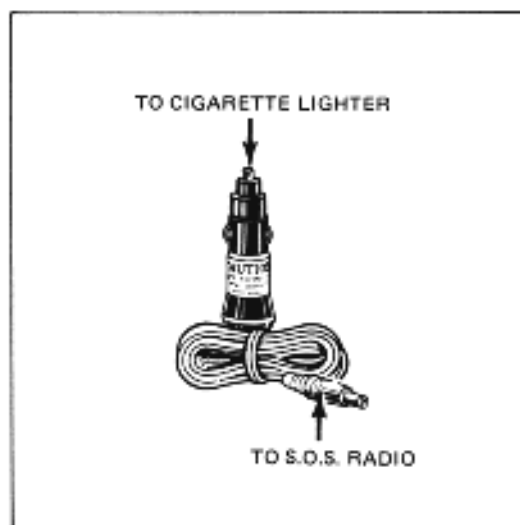
Cobra "S.O.S." Emergency 2-Way Radio



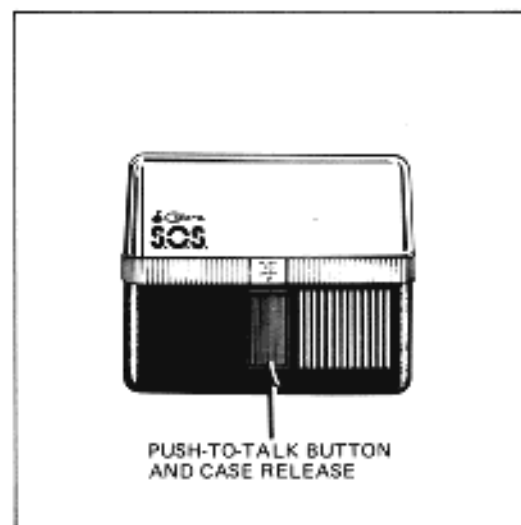
1. Antenna.



2. S.O.S. Radio.



3. Power Cable.



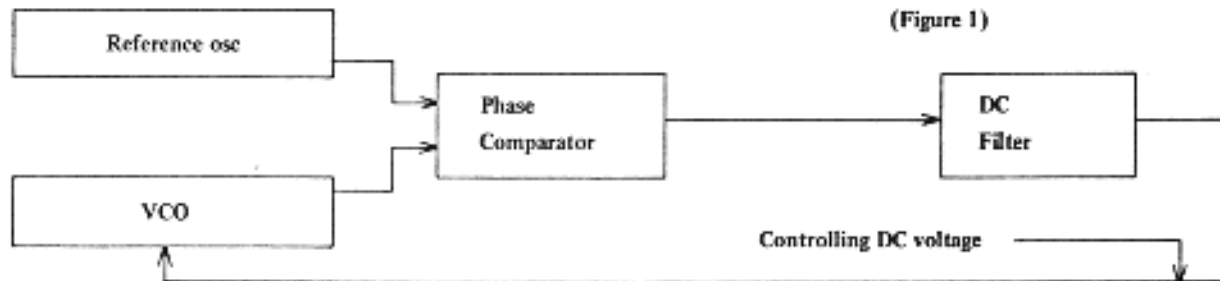
4. Case (closed).

OPERATING THEORY OF PLL FREQUENCY SYNTHESIZER

1. Fundamental theory of PLL Circuitry

The purpose of PLL (Phase Locked Loop) circuit is to generate multiple number programable frequencies from a signal reference frequency with quartz crystal accuracy.

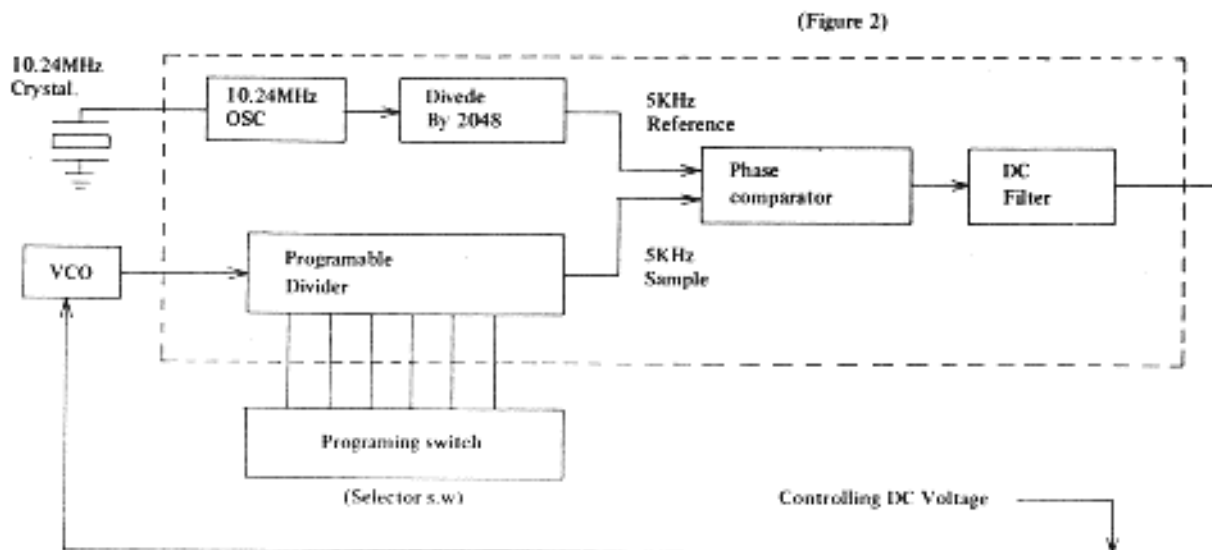
A basic PLL circuitry consists of reference oscillator, VCO, phase comparator and DC filter (low pass filter).



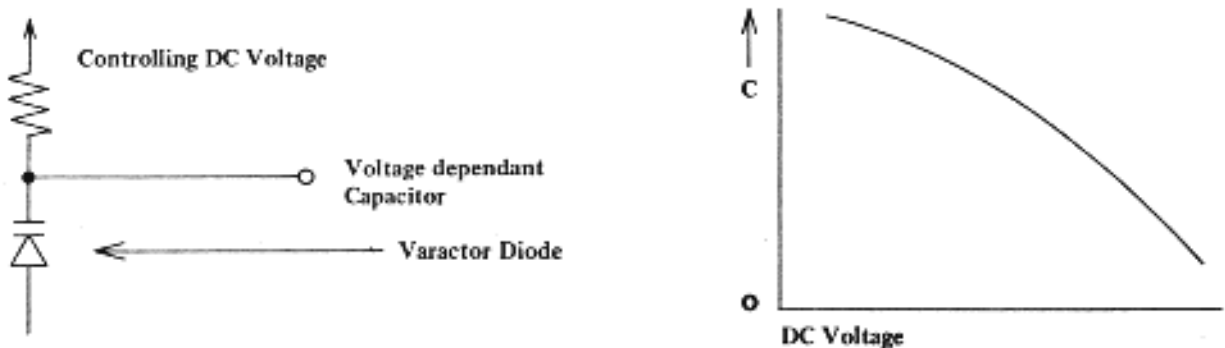
With the above circuit the VCO (Voltage Controlled Oscillator) Frequency is effectively locked to the reference oscillator, and its accuracy is as good as the reference oscillator.

Since the CB radio's adjacent channel spacing is 10KHz (or multiple of 5KHz), our purpose should be to produce multiple of programable frequencies that are spaced apart by 10KHz.

Therefore the basic PLL circuitry is expanded as follow:



The most important part of VCO circuitry is a voltage controlled variable capacitor called varicap or varactor diode whose capacitance depends on DC voltage applied to its cathode.



The varactor diode is responsible for setting VCO frequency, and once set it regulates the VCO frequency against the reference.

The VCO frequencies are chosen in 16 to 17MHz range as shown on table 1.

To obtain transmitt signal the VCO is mixed with 10.24MHz. As an example for channel 1:

$$10.24 + 16.725 = 26.965\text{MHz}$$

For receiver mode the VCO is used as a first local oscillator

channel 1:

$$26.965 - 16.27 = 10.695\text{MHz}$$

The above first IF of 10.695MHz is mixed again with 10.24MHz crystal oscillator frequency which serves as the second local oscillator.

$$10.695 - 10.24 = 0.455\text{MHz}$$

As can be seen above the VCO frequency shifts from 16.725 to 16.27MHz when changed from transmitt to receive for the same channel 1.

The shift is accomplished by "read only memory" incorporated inside the PLL IC-1 between the selector switch and the VCO divider (programmable).

When transmitt logic signal is applied to the IC-1 through pin 19, the programmable divider will divide incoming VCO frequency by 3345 to produce 5KHz sampling signal.

$$16.725 \div 3345 = 5\text{KHz}$$

For the receiver mode the programmable divider will automatically change to divide the VCO frequency by 3245.

$$16.27 \div 3254 = 5\text{KHz}$$

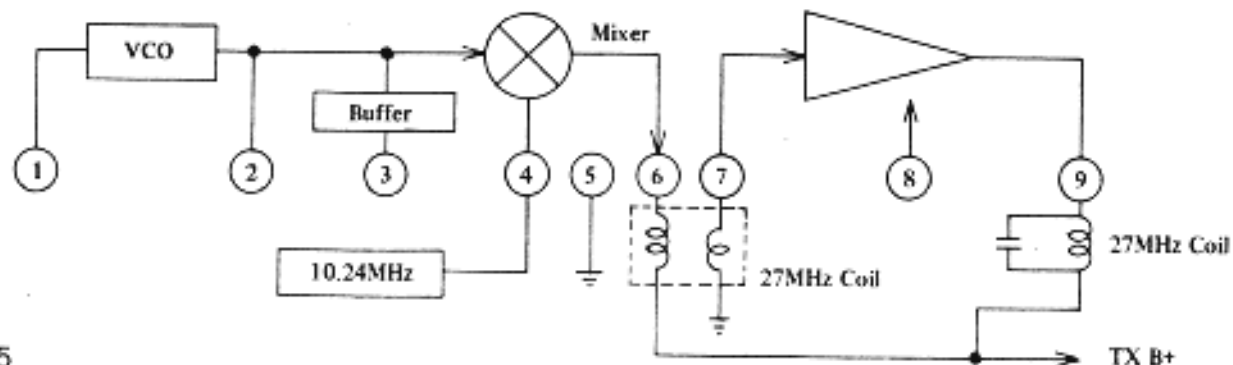
Note that the reference frequency of 5KHz is obtained by dividing the 10.24MHz by 2048 times. (5KHz reference is used instead of 10KHz for division convenience).

See table 1 for transmit/receive mode VCO frequencies.

2. Transmitter Circuit

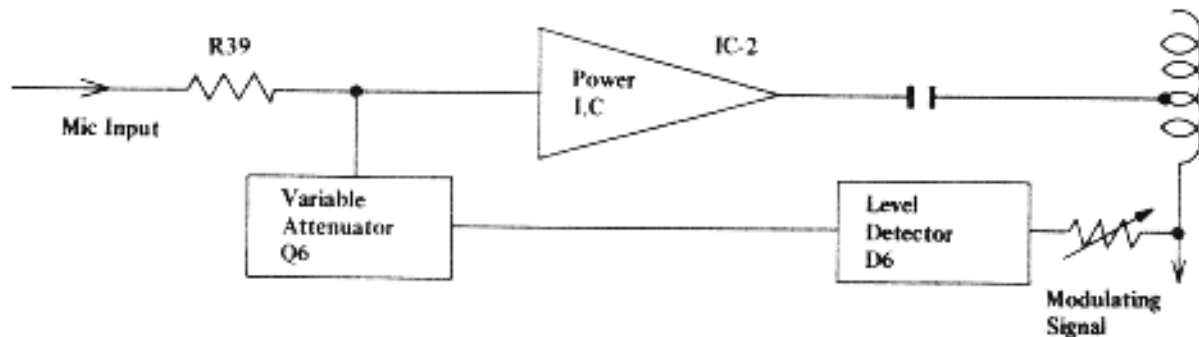
IC-1 (PLL LSI), VCO section of IC-3 (pin 1, 2 and 3) are operational regardless of the receive or transmit mode. When the radio is set to the transmit mode, mixer/amplifier section of IC-3 (Pin 4, 6, 7 and 9), Q12, Q8, Q9 and Q10 are activated. The VCO frequency selected by the channel selector switch is mixed with 10.24MHz to generate desired transmit frequency. The mixing is done by a balanced mixer circuit located inside the IC3.

Equivalent Circuit of IC203



The resulting transmit frequency from pin 9 of IC-3 is filtered by T2 and T3. Q8 is an amplifier/switch circuit. When VCO frequency is out of "Lock" condition pin 14 of IC-1 pulls down bias voltage of Q8 to ground disabling Q8 from passing possible illegal frequencies. Q9 is a RF power driver circuit and Q10 is the final RF power amplifier.

A modulating audio signal is applied to the collectors of Q9 and Q10 through a audio power transformer T10. The audio signal (mic input) applied by a single power IC-2. The modulation limiting is accomplished by a automatic level control circuit which is as follow:



L5 and C81 are series resonator, and L6, L7, C82, C83 and C84 make up pie-low pass filter. C77 is factory selected and limits the RF output power level to within the FCC limit of 4 watts.

3. Receiver Circuit

In the receiver mode of operation, Q12 transistor is turned off. Also bias voltage is applied to Q4 and a proper bias and AGC voltage is established to Q1, Q2, and Q4.

Q1 is a 27MHz RF input amplifier, and any excessive input signal is limited by diodes D1 and D2. The amplified 27MHz is mixed with VCO frequency selected by channel switch. For channel 1 VCO is set at 16.27MHz. The resulting first IF is $26.965 - 16.27 = 10.695\text{MHz}$.

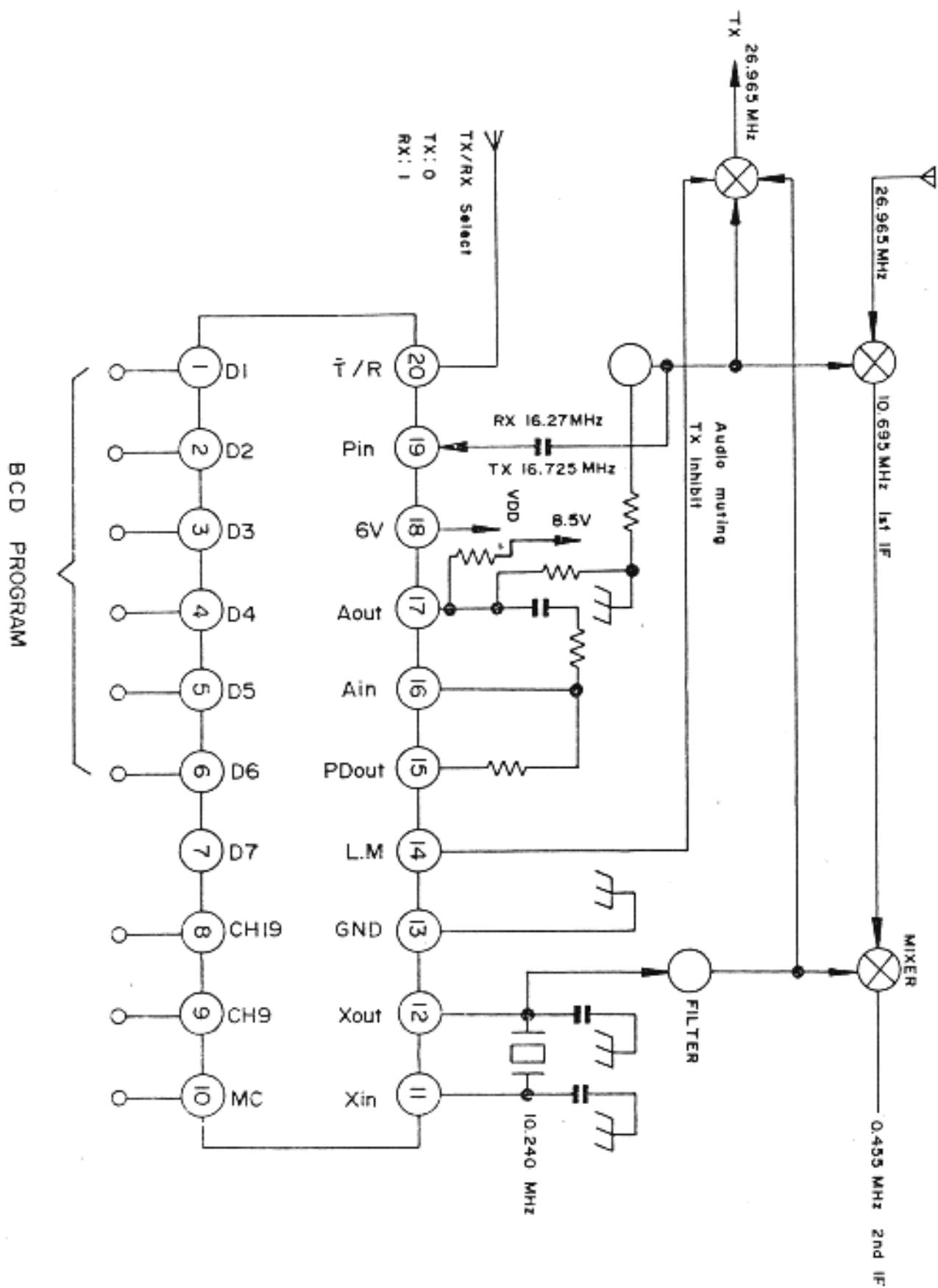
Q2 is the first converter, and the 10.695MHz is sharply filtered by T7 and a ceramic filter CF-1. The first IF is again mixed with a second local oscillator of 10.24MHz. $10.695 - 10.24 = 0.455\text{MHz}$.

Q3 is the second converter and the 455KHz. Second IF is filtered by a razor sharp ceramic filter of CF-2 coupled with T8.

Q4 is a first 455KHz amplifier, and the Q5 being the last amplifier.

D3 is a detector diode which produces audio signal as well as a negative DC voltage for AGC action. The negative voltage also provides forward biasing to the cathode of ANL clipping diode of D4. The biasing voltage has a time constance determined by R28 and C22. Therefore any sharp negative going pulse from D3 will back bias D4 and be clipped.

PLL Block Diagram



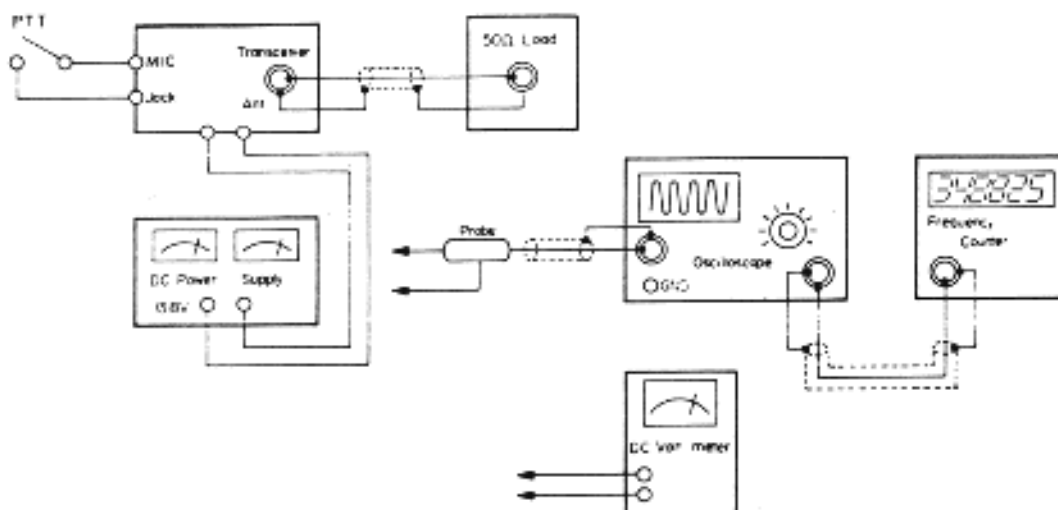
Frequency Chart

(Table 1)

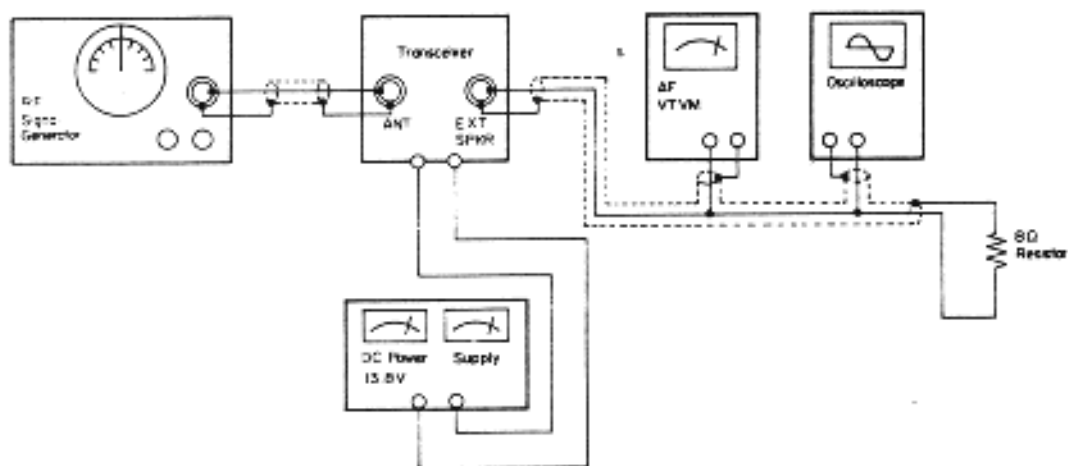
CH NO	CHANNEL FREQ (MHz)	CRYSTAL OSC	VCO	
			TX	RX
1	26.965	10.24	16.725	16.27
2	26.975	"	16.735	16.28
3	26.985	"	16.745	16.29
4	27.005	"	16.765	16.31
5	27.015	"	16.775	16.32
6	27.025	"	16.785	16.33
7	27.035	"	16.795	16.34
8	27.055	"	16.815	16.36
9	27.065	"	16.825	16.37
10	27.075	"	16.835	16.38
11	27.085	"	16.845	16.39
12	27.105	"	16.865	16.41
13	27.115	"	16.875	16.42
14	27.125	"	16.885	16.43
15	27.135	"	16.895	16.44
16	27.155	"	16.915	16.46
17	27.165	"	16.925	16.47
18	27.175	"	16.935	16.48
19	27.185	"	16.945	16.49
20	27.205	"	16.965	16.51
21	27.215	"	16.975	16.52
22	27.225	"	16.985	16.53
23	27.255	"	17.015	16.56
24	27.235	"	16.995	16.54
25	27.245	"	17.005	16.55
26	27.265	"	17.025	16.57
27	27.275	"	17.035	16.58
28	27.285	"	17.045	16.59
29	27.295	"	17.055	16.60
30	27.305	"	17.065	16.61
31	27.315	"	17.075	16.62
32	27.325	"	17.085	16.63
33	27.335	"	17.095	16.64
34	27.345	"	17.105	16.65
35	27.355	"	17.115	16.66
36	27.365	"	17.125	16.67
37	27.375	"	17.135	16.68
38	27.385	"	17.145	16.69
39	27.395	"	17.155	16.70
40	27.405	"	17.165	16.71

TEST EQUIPMENT SET-UP 19X

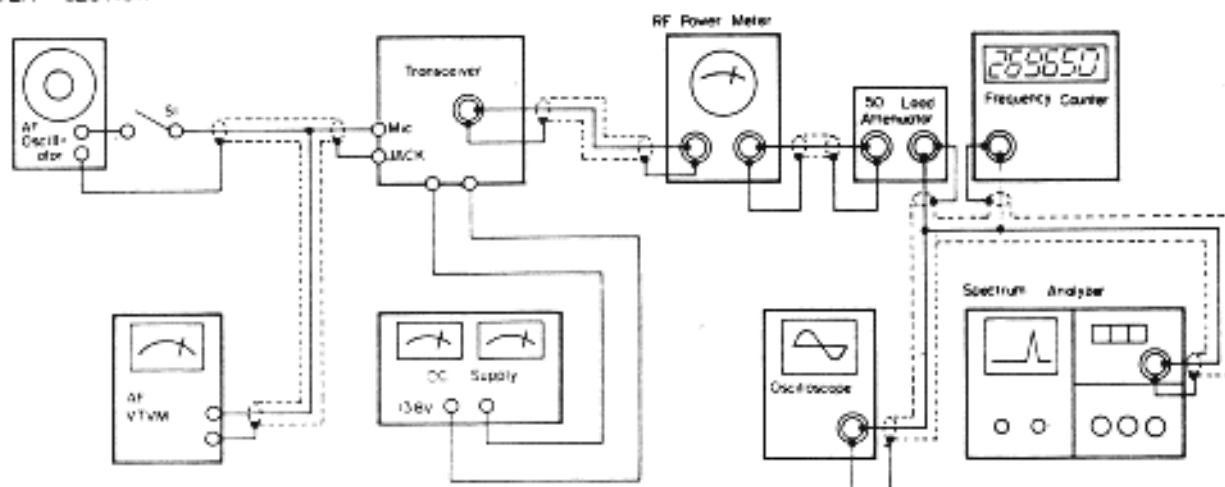
FLL AND CARRIER SECTION



RECEIVER SECTION



TRANSMITTER SECTION



ALIGNMENT PROCEDURES

39TLD

ALIGNMENT INSTRUCTIONS

Caution: Use isolation transformer or observe polarity when connecting test equipment. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Adjustments made with a 13.8 volt DC input. Connect low sides of test equipment to ground unless specified otherwise. Connect a 50-ohm dummy load or antenna before keying transmitter. Connect microphone.

SYNTHESIZER ALIGNMENT

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to pin 12 of IC 1.	Channel 19	CT-1, if necessary	Check for 10.240 Mhz, $\pm 100\text{Hz}$.
Input of DC meter between TP-1 and ground Pin 17 of IC 1	Channel 40 Transmit	T 1	Adjust for 5.0 V DC.
Input of DC meter between TP-1 and ground.	Channel 1 Receive		Check for approx. 1.5 VDC on ch. 1.

TRANSMITTER ALIGNMENT

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector. NOTE: Be sure to check transmit frequency and power on all active channels after alignment of transmitter.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of oscilloscope to the base of Q 8 and ground.	Channel 19 Transmit	T 2, T 3, T 4	Adjust for maximum amplitude on oscilloscope.
Input of oscilloscope to the collector of Q 8 and ground.	Channel 19 Transmit	T 4	Adjust for maximum amplitude on oscilloscope.
Input of RF wattmeter to antenna input.	Channel 19 Transmit		Adjust for maximum output.
Input of RF wattmeter to antenna input.	Channel 19 Transmit	L 6	Adjust for 4.0 watts output maximum.
Input of RF wattmeter to antenna input	Channels 1 & 40 Transmit		Check for balance of power out on channel 1 & 40.

ALIGNMENT PROCEDURES CONT'D 39LTD

TRANSMITTER ADJUSTMENTS

Connect an RF wattmeter and 50-ohm, 25-watt dummy load to antenna connector.
NOTE: Be sure to check transmit frequency and power on all active channels after adjustment of transmitter.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Input of frequency counter to the antenna load.	All channels Transmit		Check for proper frequency on all channels.
Input of oscilloscope to antenna output. Apply a 20mV, 1000hz to the microphone input circuit.	Channel 19 Transmit	RV 1	Adjust for 85% modulation.

RECEIVER ALIGNMENT

Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Set generator output low enough to prevent AGC limiting. Preset controls as follows unless otherwise noted: Range control in Near position.

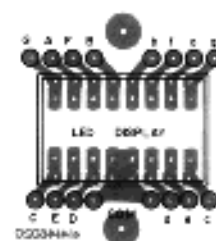
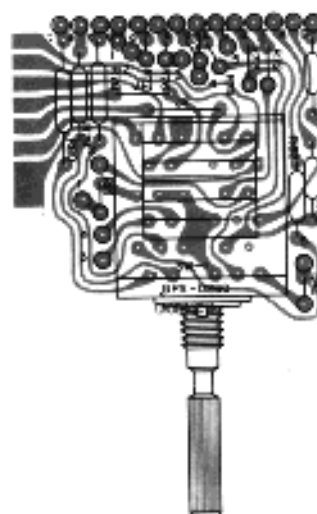
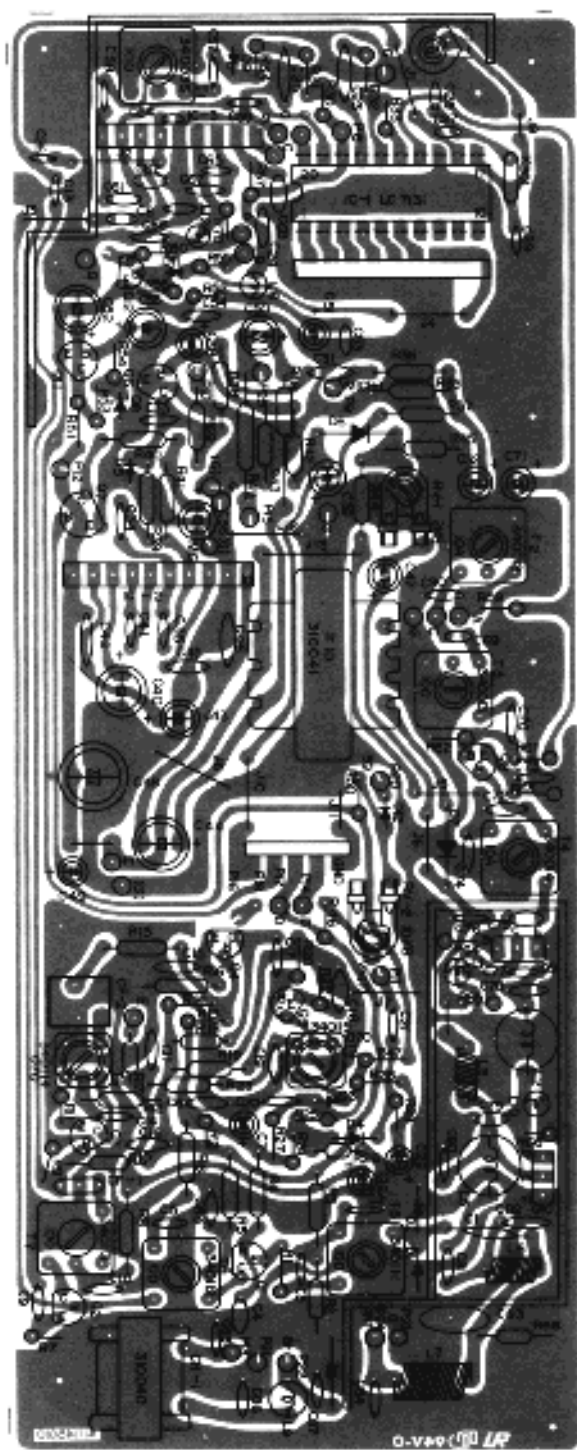
TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator thru .01uf capacitor to input of L-014, 455 khz, 1000hz @ 30% modulation.	Channel 19 Receive - range control in Far position.	L-104, L-105, L-106, L-107 T-6, T-7, T-8 T-9	Adjust for maximum output.
Output of signal generator to antenna input. 27.185Mhz, 1000hz @ 30% modulation.	Channel 19 Receive - range control in Far position.	T-5, T-6, T-7	Adjust for maximum output.

RECEIVER ADJUSTMENTS

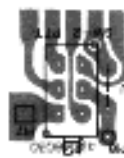
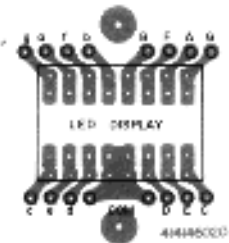
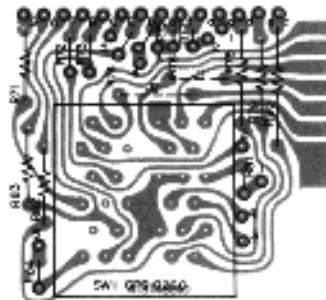
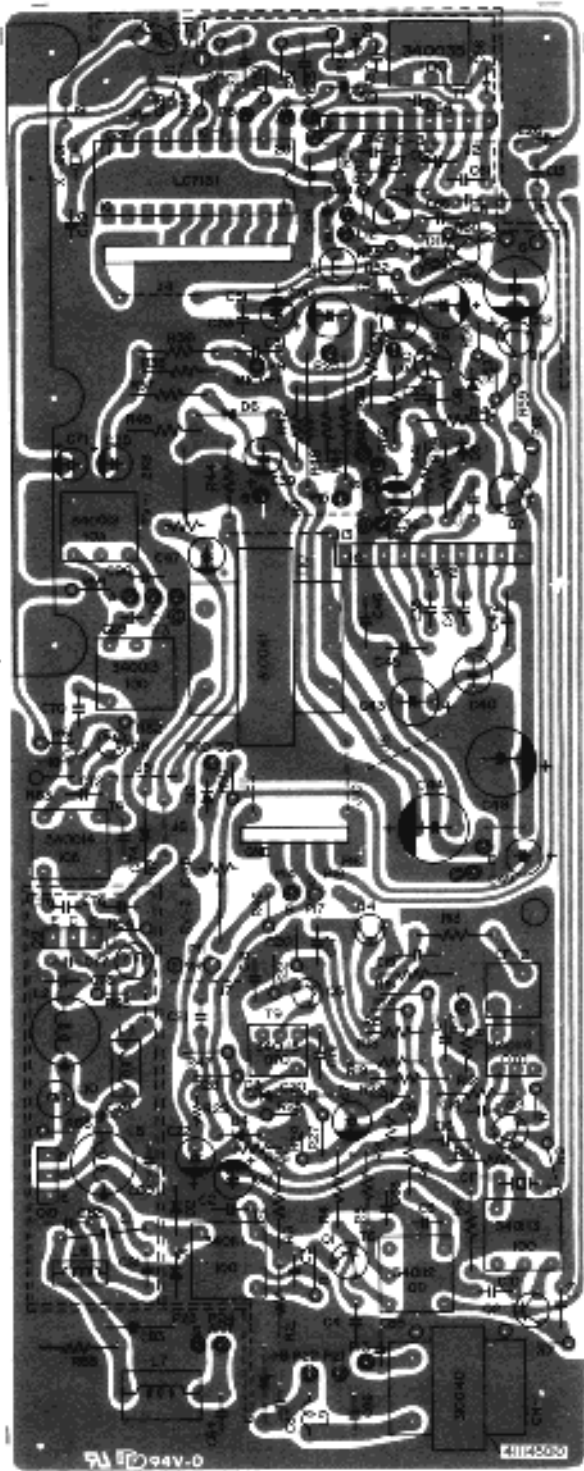
Connect an AC VTVM or AF wattmeter across speaker voice coil. Adjust volume control to obtain a suitable indication. Preset controls as follows, unless otherwise noted: Squelch MINIMUM, ANL off.

TEST EQUIPMENT	TRANSCIVER	ADJUST	REMARKS
Output of signal generator to antenna input. 27.185Mhz, 1000hz @ 30% modulation, 1000uV.	Channel 19 Receive - in Near position.	RV 2	Adjust so that squelch just breaks.

Parts Layout. (Component Side)



Parts Layout. (Pattern Side)



TRANSISTOR VOLTAGE CHART (DC)

CONDITIONS
MEASURED ON 19CH
NO SIGNAL
NO MODULATION

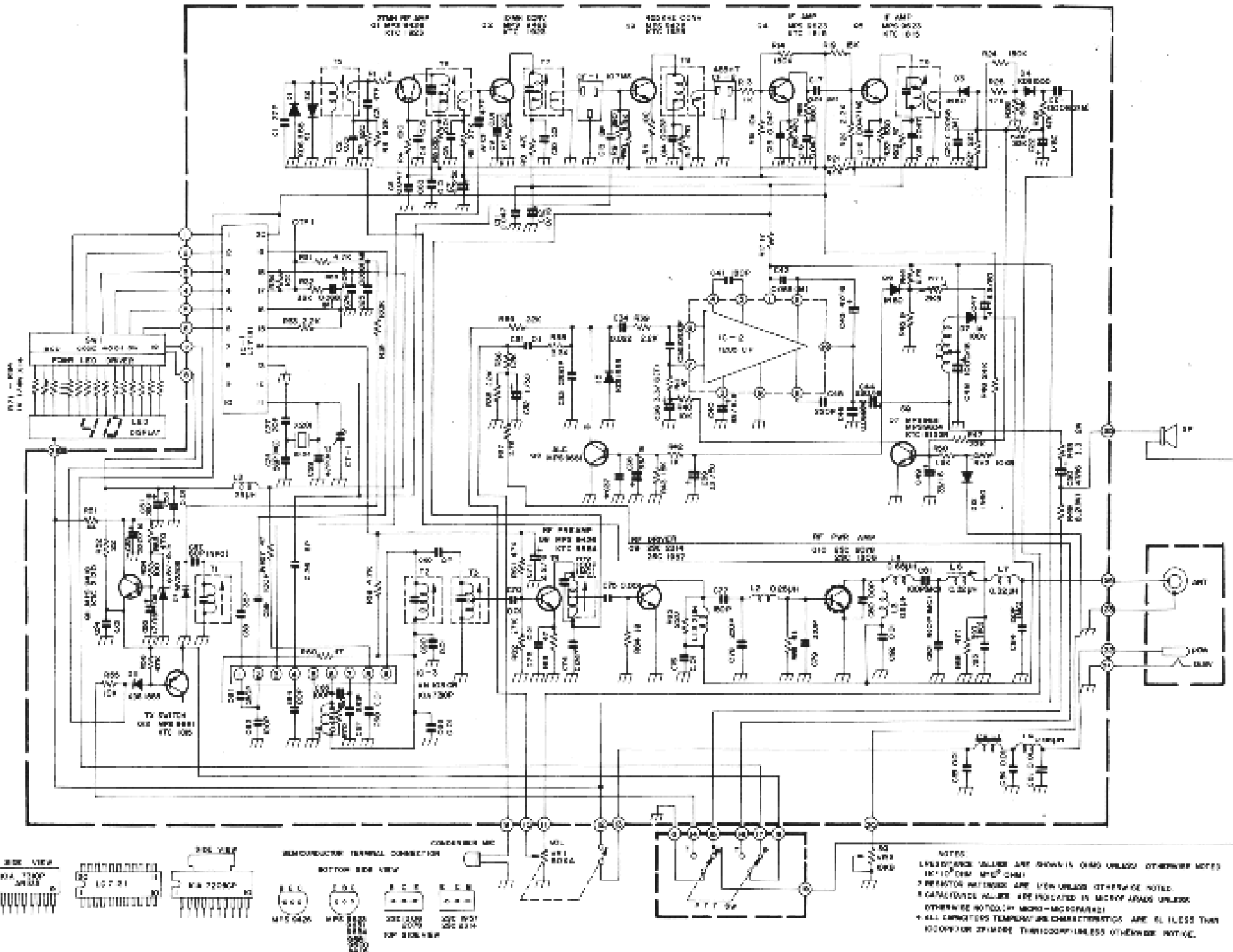
TR NO	1		2		3		4		5		6		7		8		9		10		11		12	
	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX		RX	TX	RX	TX	RX	TX	RX	TX	RX	TX
													MIN	MAX										
B	1.7	0.2	1.3	0.3	0.6	0.05	1.9	0.3	0.9	0.07	0.06	0.05	0.02	0.6	0.3	1.1	0	0.01	0	1.1	7.2	7.2	6.6	5.8
C	6.4	0.6	11.6	13.0	6.4	0.6	4.9	0.6	13.5	12.9	0.03	0.02	3.4	0.02	13.7	13.5	13.3	12.0	13.3	13.0	12.8	12.9	1.3	6.5
E	0.3	5.8	0.9	0	0.02	0	1.2	0	0.02	0	0.03	0	0	0	0	0.5	0	0	0	0	6.6	6.6	6.6	6.5

IC VOLTAGE CHART (DC)

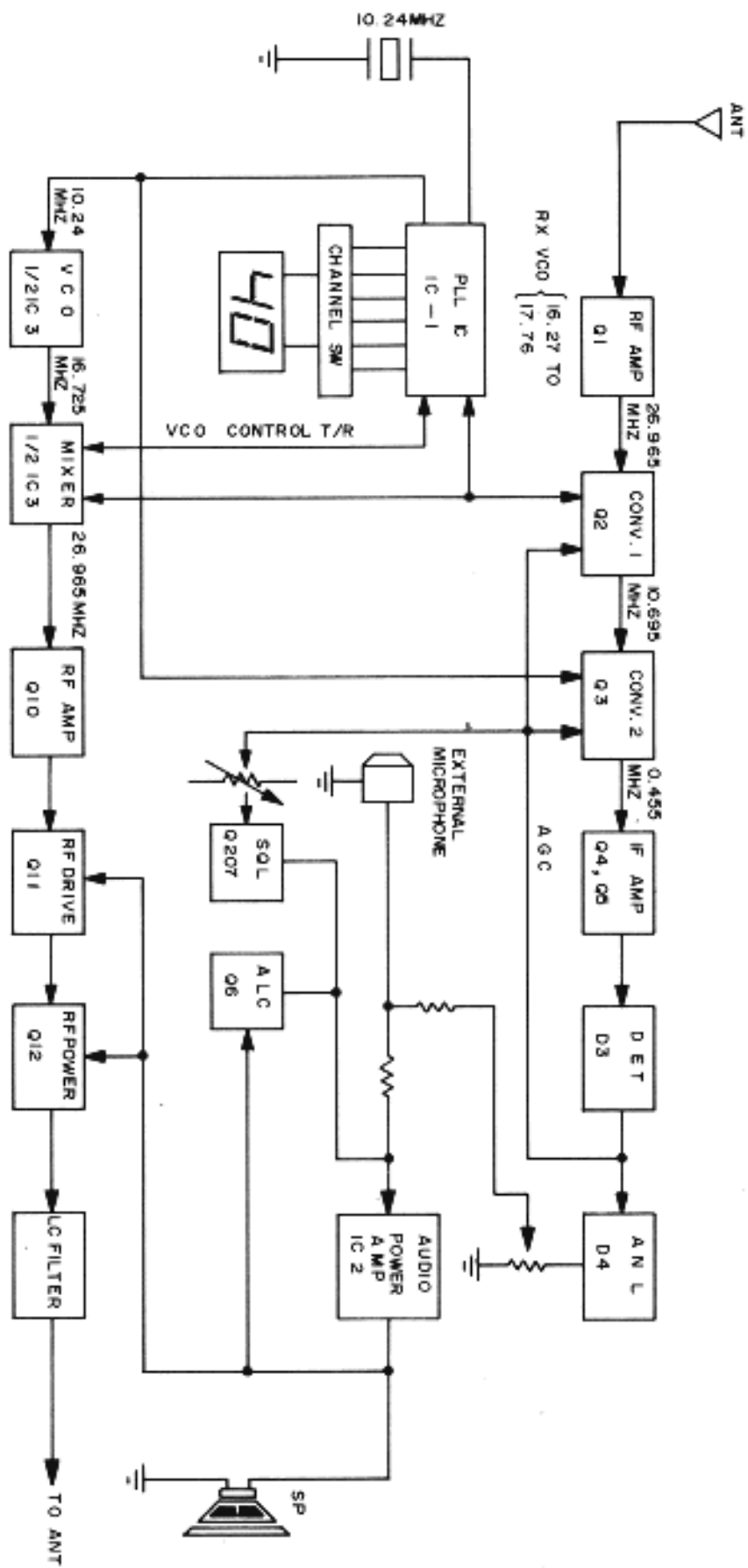
CONDITIONS
MEASURED ON 19CH
NO SIGNAL
NO MODULATION

IC NO	IC PIN NO	RX	TX
1	1	5.95V	6.0V
	2	0.03V	0.03V
	3	0.02V	0.02V
	4	5.96V	6.0V
	5	5.96V	6.0V
	6	0.02V	0.02V
	7	0.02V	0.03V
	8	0.02V	0.02V
	9	0.02V	0.02V
	10	0.33V	0.03V
	11	2.8V	2.8V
	12	3.0V	3.0V
	13	0V	0V
	14	0.8V	3.6V
	15	1.6V	1.4V
	16	1.6V	1.4V
	17	1.7V	3.4V
	18	6.0V	6.0V
	19	2.9V	2.9V
	20	6.6V	0.6V
2	1	13.7V	13.1V
	2	12.6V	12.0V
	3	4.0V	3.9V
	4	8.1V	7.8V
	5	1.4V	1.3V
	6	3.4V	3.3V
	7	3.4V	3.3V
	8	1.4V	1.2V
	9	0V	0V
	10	6.8V	6.5V
3	1	2.6V	2.6V
	2	2.0V	2.0V
	3	1.4V	1.4V
	4	1.8V	2.7V
	5	0V	0V
	6	1.3V	6.1V
	7	2.1V	2.1V
	8	5.0V	5.2V
	9	1.3V	6.1V

NOTES



Functional Block Diagram



LOGIC TABLE FOR I. C.'S

0 = 0

1 = 8

CHANNEL	PIN #					
	1	2	3	4	5	6
1	1	0	0	0	0	0
2	0	1	0	0	0	0
3	1	1	0	0	0	0
4	0	0	1	0	0	0
5	1	0	1	0	0	0
6	0	1	1	0	0	0
7	1	1	1	0	0	0
8	0	0	0	1	0	0
9	1	0	0	1	0	0
10	0	0	0	0	1	0
11	1	0	0	0	1	0
12	0	1	0	0	1	0
13	1	1	0	0	1	0
14	0	0	1	0	1	0
15	1	0	1	0	1	0
16	0	1	1	0	1	0
17	1	1	1	0	1	0
18	0	0	0	1	1	0
19	1	0	0	1	1	0
20	0	0	0	0	0	1
21	1	0	0	0	0	1
22	0	1	0	0	0	1
23	1	1	0	0	0	1
24	0	0	1	0	0	1
25	1	0	1	0	0	1
26	0	1	1	0	0	1
27	1	1	1	0	0	1
28	0	0	0	1	0	1
29	1	0	0	1	0	1
30	0	0	0	0	1	1
31	1	0	0	0	1	1
32	0	1	0	0	1	1
33	1	1	0	0	1	1
34	0	0	1	0	1	1

LOGIC TABLE for IC'S CONT'D

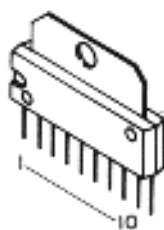
0 = 0

1 = 8

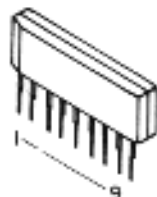
CHANNEL	PIN #					
	1	2	3	4	5	6
35	1	0	1	0	1	1
36	0	1	1	0	1	1
37	1	1	1	0	1	1
38	0	0	0	1	1	1
39	1	0	0	1	1	1
40	0	0	0	0	0	0

Integrated Circuits

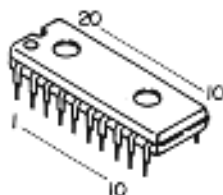
KIA 7205CP



TA7310P or AN103



LC7131



TRANSISTORS

MP59623
MP59631
MP59634
MP59681
MP59418



MP59426



2SC1957 or 2SC2314



2SC2078 or 2SC1306

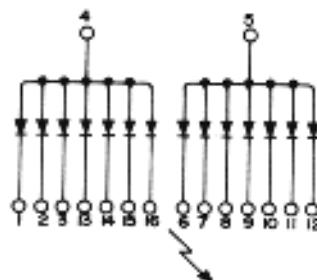
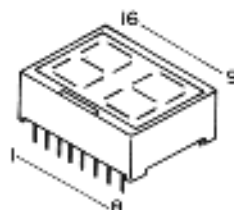


DIODES

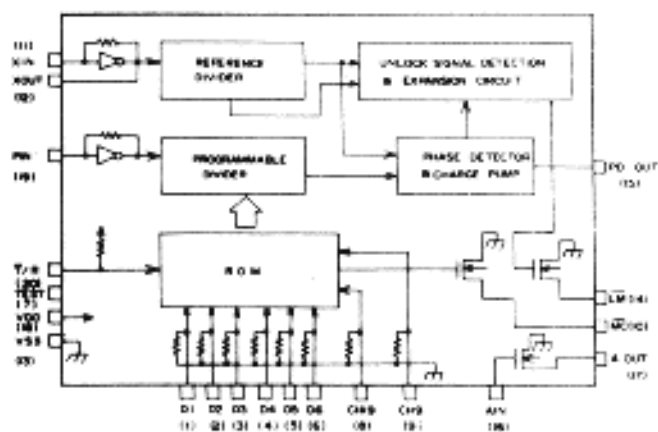
1N 2473
1N 4002
MA 150
1S953
1S34
MA 1091



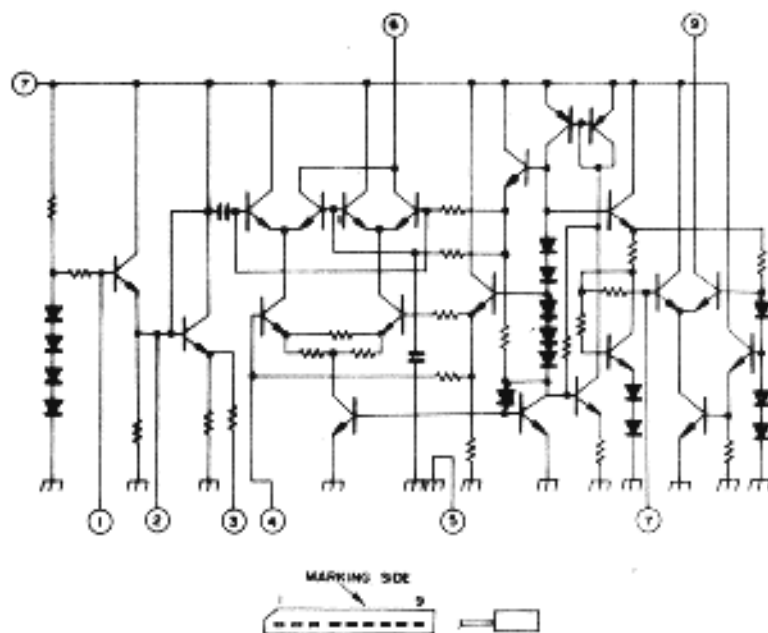
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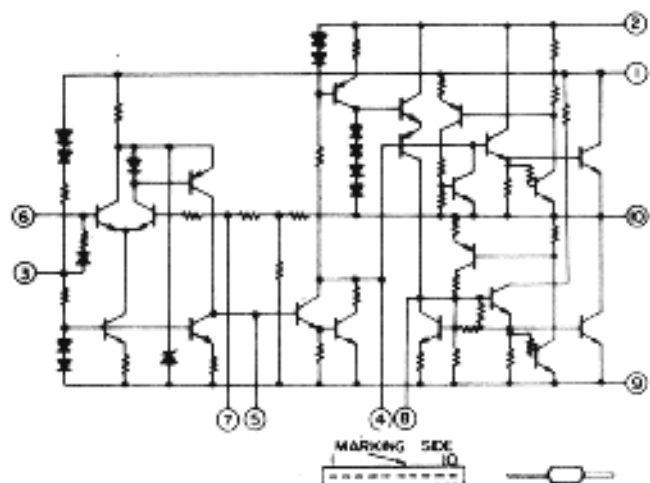
LC7131



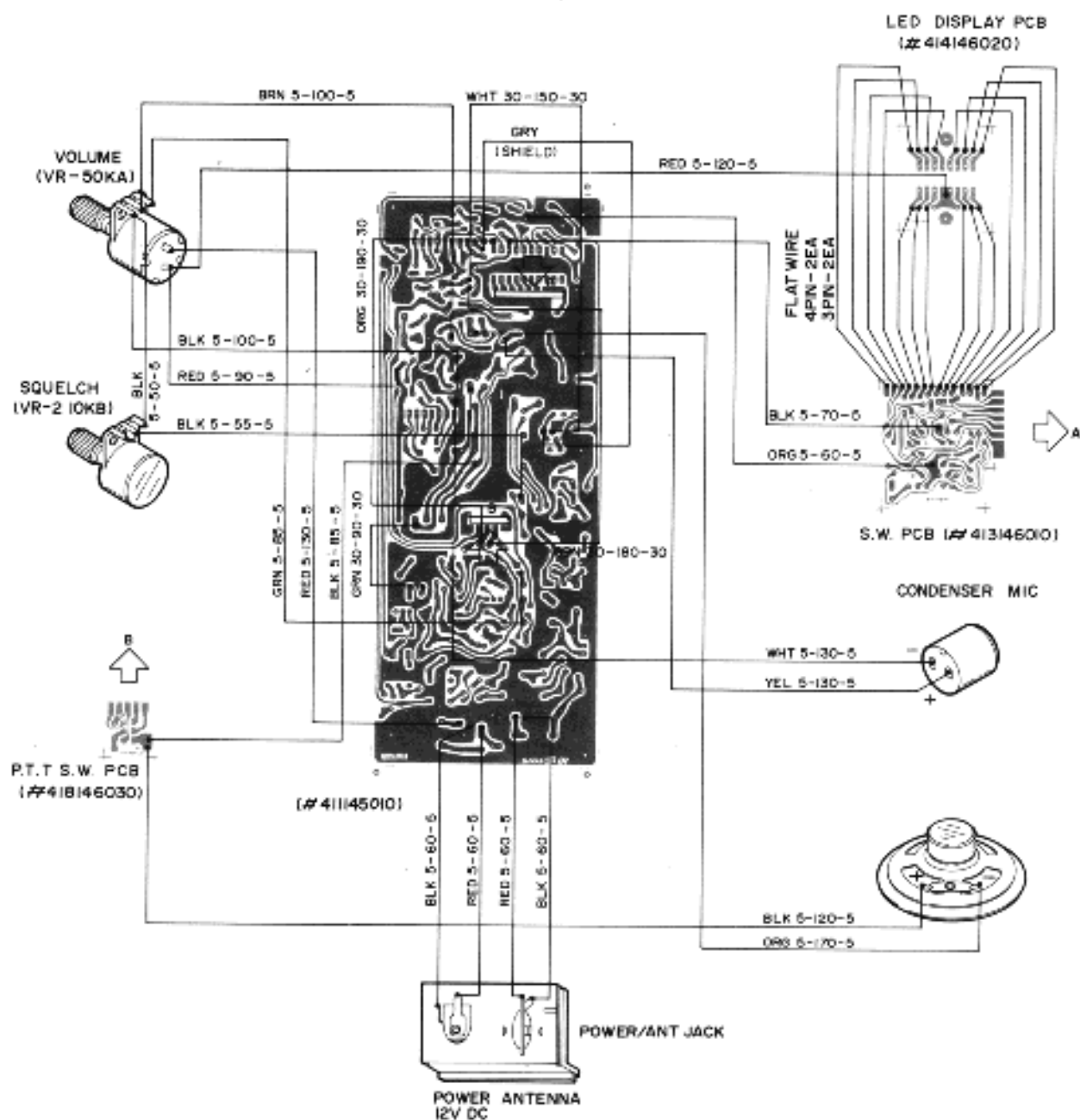
AN103



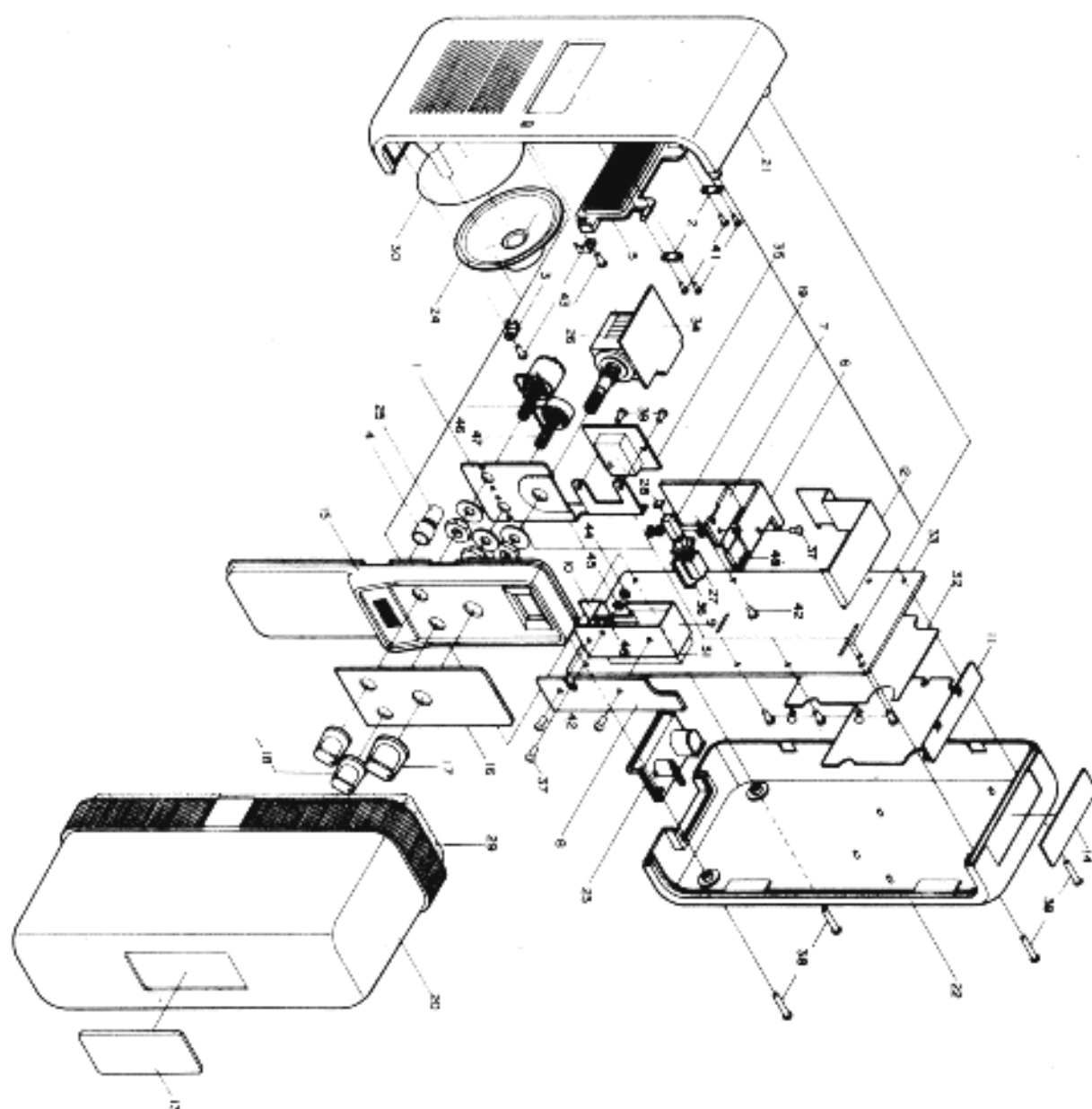
K1A7205CP



Wiring Diagram (Chassis and Microphone Pins)



Exploded View



EXPLODED VIEW PARTS LIST

NO.	PART NAME	PART NUMBER	QTY.
1	Front Body	257-143-9-001	1
2	Holder (Lever MTG)	769-127-9-001	2
3	Holder (SPK MTG)	769-127-9-002	2
4	Holder (MIC MTG)	769-127-9-003	1
5	P.T.T. Lever	741-154-9-001	1
6	Heat Sink (B)	747-113-9-001	1
7	Heat Sink (A)	747-113-9-002	1
8	Heat Sink	747-113-9-003	1
9	Shield Housing	256-165-9-001	1
10	Shield Housing	256-165-9-002	1
11	Shield Plate (Bottom)	256-165-9-003	1
12	Shield Plate (Upper)	256-165-9-004	1
13	Back Plate	261-166-9-003	1
14	P.C.C. Name Plate	600-097-9-001	1
15	Escutcheon	380-444-9-001	1
16	Lens	380-444-9-002	1
17	Knob (Channel)	751-234-9-002	1
18	Knob (Control)	751-234-9-003	2
19	Cap (Lever)	380-444-9-005	1
20	Cabinet (Back)	271-129-9-001	1
21	Cabinet (Upper)	271-130-9-001	1
22	Cabinet (Bottom)	271-131-9-001	1
23	Power Ant. Ass'y	523-482-9-001	1
24	Speaker 2½" 8 ohm 0.5W	580-044-9-001	1
25	Condenser MIC	560-007-9-001	1
26	Rotary S.W 40 CH	083-284-9-001	1
27	P.T.T S.W	091-015-9-001	1
28	Sponge (P.T.T S.W)	381-110-9-001	1
29	Sponge (Cover)	381-110-9-002	1
30	Speaker Grill	769-127-9-009	1
31	Insulation Plate	342-098-9-001	1
32	Insulation Plate	342-098-9-002	1
33	Main P.C.B.	302-611-9-001	1
34	Channel S.W P.C.B.	302-613-9-001	1
35	L.E.D. Display P.C.B.	302-614-9-001	1

NO.	PART NAME	PART NUMBER	QTY.
36	P.T.T S.W P.C.B.	302-615-9-001	1
37	(+) Machine Screw (B.H) M3x8 (Black)	634-158-9-006	2
38	(+) Machine Screw (B.H) M3x15	634-159-9-002	4
39	(+) Machine Screw (R.H) M3x4	634-159-9-003	2
40	(+) Machine Screw (R.H) M3x6	634-159-9-004	3
41	(+) Tapping Screw (P.H) T2.6x5-1S	710-071-9-001	4
42	(+) Tapping Screw (P.H) T2.6x6-1S	710-071-9-002	3
43	(+) Tapping Screw (P.H) T3x8-1S	710-071-9-002	2
44	Nut (M3)	653-075-9-001	2
45	Spring Washer (M3)	724-053-9-001	2
46	V.R 50KA	008-436-9-002	1
47	V.R 10KA	008-436-9-001	1
48	T.R 2SC2078 (E)	172-062-9-001	1
49	I.C KIA 7205 CP	307-272-9-001	1

REPLACEMENT PARTS LIST COBRA 39 LTD

<u>CIRCUIT SYMBOL</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
Q 3	Transistor, MPS9426 (B)	177-052-9-001
Q 1, 2, 8	Transistor, MPS9426 (C)	176-115-9-001
Q 12, 16	Transistor, MPS9681 (T)	177-049-9-001
Q 11	Transistor, MPS9418A (T)	176-115-9-004
Q 4	Transistor, MPS9623 (H)	176-125-9-001
Q 5	Transistor, MPS9623 (I)	176-115-9-002
Q 7	Transistor, MPS9631 (T) NPN	176-132-9-001
Q 10	Transistor, 2SC2078 (E)	172-062-9-001
Q 9	Transistor, 2SC2314 (E)	176-120-9-001
IC 2	Integrated Circuit, KIA7205CP	307-272-9-001
IC 1	IC, LC7131 40 CH PLL	307-272-9-002
IC 3	IC, AN103	307-272-9-003
D 3, 6, 12	Diode, GE, IN60	150-001-9-005
D 8	Diode, Zener, UZ9.1B	152-114-9-001
D 1, 2, 4, 5, 11	Diode, SI, KDS1555	151-028-9-007
D 7	Diode, 1A100V	151-082-9-001
D 9	Diode, Varicap, SVC251Y	154-008-9-001
-----	LED Display, SL221 Grn.	158-047-9-001
X 201	Crystal, 10.240MHz HC 18/U	132-036-9-001
CF 1	Filter, Ceramic, SFE10.7MS2A	140-028-9-001
CF 2	Filter, Ceramic, CFU455HT	140-026-9-001
CT 1	Capacitor, Trimmer, 20PF TZ03R200E	028-068-9-001
CH 1	Transformer, Choke	063-008-9-001
T 10	Transformer, OPT	063-008-9-002
L 1	Coil, RF Choke, 2.2UH PC Type	047-002-9-001
L 8	Coil, RF Choke, 25UH PC	041-134-9-001
L 2	Choke Coil, 0.25UH Spring Type	047-002-9-002
L 7	Choke Coil, 0.32UH Spring Type	047-002-9-003
L 6	Choke Coil Wire, 0.6 & 2UEW, 0.32UH spring	047-002-9-004
L 12	Coil, RF Choke, 0.45UH PC Type	046-039-9-001
L 3	Choke Coil, 0.55UH Spring Type	047-002-9-005
L 5	Choke Coil, 0.65UH Spring Type	047-002-9-006
L 9	Choke Coil, 0.95UH Bobbin Type	047-002-9-007
T 2	Coil, AM, AMP 10M/M 27 MHZ A	046-039-9-008
T 3	Coil, AM, AMP 10M/M 27 MHZ C	046-039-9-009

REPLACEMENT PARTS LIST COBRA 39 LTD

<u>CIRCUIT SYMBOL</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
T 4	Coil, TX PRE 27MHZ	047-002-9-008
T 10	Coil, AM, VCO PLL	046-039-9-015
T 5	IFT Coil, 27MHZ RX ANT	047-002-9-009
T 6	IFT Coil, 27MHZ RF AMP (RX)	047-002-9-010
T 7	IFT Coil, 10.6MHZ RF 1ST MIXER (RX)	047-002-9-011
T 8	IFT Coil, 455KHZ A	047-002-9-012
T 9	IFT Coil 455KHZ B	047-002-9-013
L 11	ANT Tuning, 3-5900C	047-002-9-014
-----	PCB, Ant., 60x60x1.6T	302-612-9-001
-----	PCB, Channel SW, 41x41.5x1.6T	302-613-9-001
-----	PCB, Display, 30x34x1.6T	302-614-9-001
-----	PCB, PTT SW, 16x18.5x1.6T	302-615-9-001
-----	Ant. Stand Ass'y.	523-480-9-001
-----	Front Body, SPC ZN Plating 98x60x1T	257-143-9-001
-----	PTT Lever, ABS Blk. 7G	751-234-9-001
-----	Escutcheon, ABS Silver SPLAY 38G	380-444-9-001
-----	Lens, Acryl Smoke Silk Print 2Tx98x47	380-444-9-002
-----	DC Car Adapter Ass'y. 3-5900C 1500 +50 M/M w/fuse 2A 125V	523-481-9-001
-----	Speaker 18.5M/M 3-5900C 2½" 8 ohm 0.5W	580-044-9-001
-----	Condenser Mike, WM034AY 9.7 DIA x 6.7	560-007-9-001
-----	Rotary Sw., 40 Ch. w/LED cord GPS-0260 Shaft Length 20MM	083-284-9-001
-----	PTT Sw., ALPS S.W. (SPS-222ET)	091-015-9-001
-----	Storage Bag, Grabia Printing, Vinyl, Org. 297x278x0.12T	502-158-9-002

OPTIONAL

CA 40	Antenna adapter	536-440-0-000
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