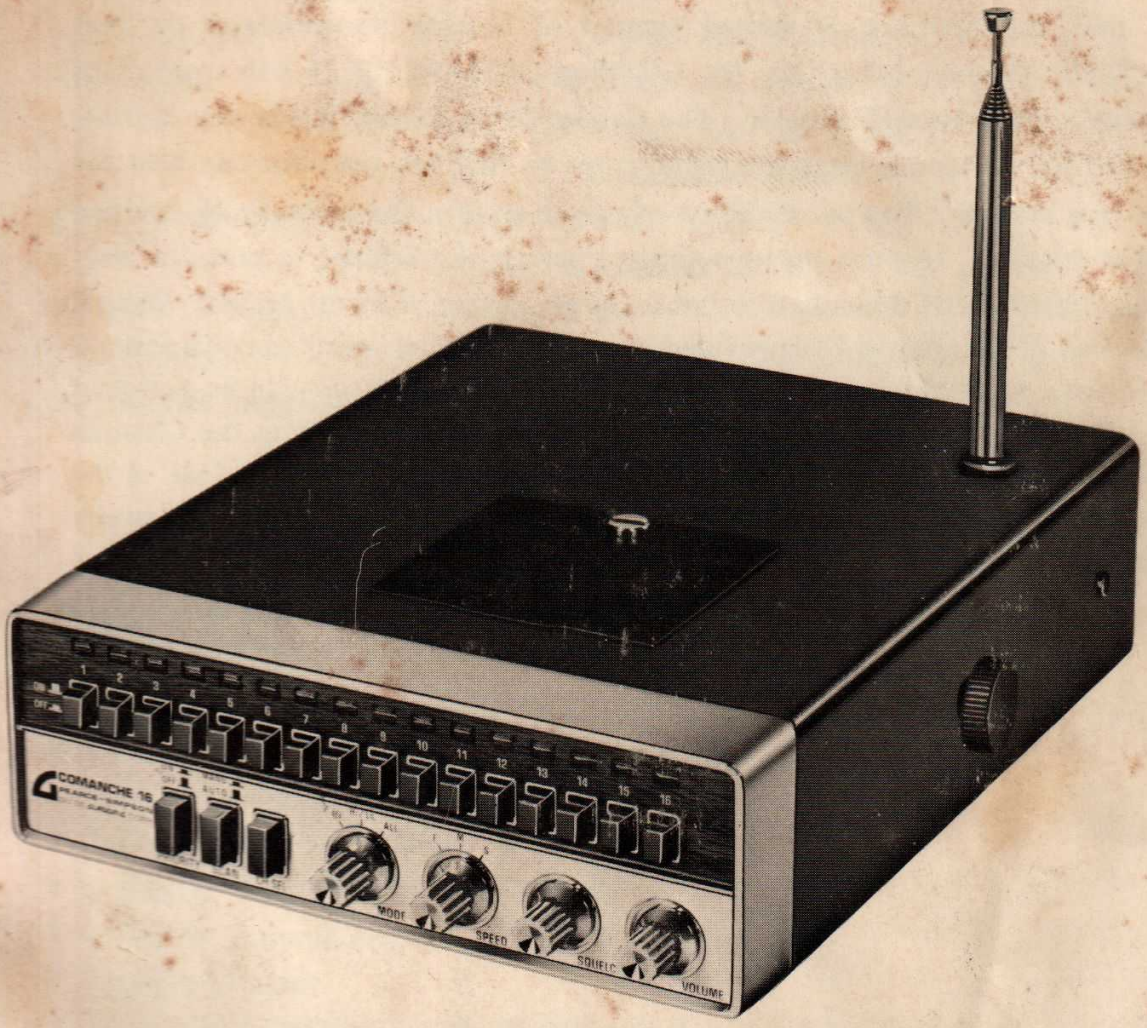
OWNER'S MANUAL

PEARCE-SIMPSON
DIVISION OF GLADDING CORPORATION



MODEL GLADDING COMANCHE 16 AUTOMATIC SCANNING VHF-FM HIGH AND LOW MONITOR RECEIVER

GENERAL DESCRIPTION

The Gladding COMANCHE 16 is a completely solid state, double conversion, narrow-band VHF-FM High & Low band receiver capable of automatically switching in sequence 16 crystal-controlled channels. 16 crystal sockets 8 channels (#1–8ch.) High-band only and the other 8 channels (#9–16ch.) Low-band and High-Low combination. An electronically regulated dual-purpose power supply permits the user to transfer the receiver from base to mobile installation easily. A Priority channel (#1 channel) is provided so that the operator is always assured of hearing transmissions on that particular channel; otherwise, the Gladding COMANCHE 16 will scan all 16 channels in a normal manner. The Carrier-Delay feature holds any channel locked for 2 seconds after the signal stops so that the operator can hear the replying station. Any combination of one to sixteen channels can be scanned automatically. 16 push buttons control permit the listener to monitor only those channels of immediate interest, or all sixteen if he so desired, Manual selection of channels is also provided in case the listener wants to continuously monitor a particular channel. The automatic scanning feature can be switched to "MANUAL"; any channel may then be selected by pushing the Channel Selector switch. The noise-free squelch system is independent of all of the above features and provides very smooth listening and quiet switching between channels.

SPECIFICATIONS

Frequency Range:	HIGH	150–170 MHz
	LOW	30– 50 MHz
Maximum Channel Separation:	10MHz	
Sensitivity:	1.0μV for 20db quieting	
	0.5μV for 12db SINAD	
Squelch Sensitivity:	0.5μV minimum	
Modulation Acceptance:	±5KHz	
Audio Output:	1.0 watt into 8 ohms	
Scan speed:	15 chan./sec. (Fast)	
	10 chan./sec. (Medium)	
	5 chan./sec. (Slow)	
Power Consumption:	4 watts at 13.8V DC	
	8 watts at 117V AC	
Weight:	3 lbs	
Dimensions:	7-3/4"(W) x 2-5/8"(H) x 8-1/2"(D)	
Accessories Supplied:	Mounting Bracket, AC Power Cord,	
	DC Power Cord. Instruction Manual	

GENERAL

* Transistors-48
* Diodes-61
* Integrated circuit (IC)-4
* Self-contained speaker-6¼" x 2¼"
* Operates from 13.8V DC, 117V AC
* ON-OFF Volume control
* Squelch control
* Scan-speed FAST-MEDIUM-SLOW switch
* Mode selector switch (Hi/Hi-Lo/ALL)
* Manual channel selector switch
* Individual channel selector switches (1–16)
* Priority ON-OFF switch
* Scan AUTO-MANU switch
* AC Power connector
* DC Power connector
* Antenna connector
* Under-dash mounting bracket, Whip antenna

INSTALLATION

ELECTRICAL

Set controls as follows, with Power cord removed:

(1) Power switch: OFF
(2) Squelch: Minimum
(3) Volume: Minimum
(4) Scan: AUTO
(5) Priority: OFF
(6) Individual channel selector switches: ON position
(7) Insert desired crystals in proper positions
(8) Connect antenna cable
(9) Plug in the proper power cord and connected to voltage source (either 13.8V DC or 117V AC)

For Mobile operation the DC Power cord can be wired for negative ground. Turn the Squelch control to the minimum position. Turn power switch to "ON". Turn the volume control towards maximum. A rushing sound will be heard in the speaker; advancing the volume control towards maximum will increase loudness of noise.

When the squelch control is slowly turned towards maximum, a point will be reached where the background noise will disappear. This indicates normal squelch operation and this is the proper position for scanning.

MOBILE INSTALLATION

A. A mounting bracket and hardware is provided so that the unit may be conveniently mounted under the dashboard of any car or truck. Refer to figure 2 for UNDER-DASH BOARD MOUNTING.

B. The Gladding COMANCHE 16 is designed for use in Negative Ground Vehicle.

Connect the red fused wire of the power cord to the "hot" side of the ignition switch, or directly to the positive terminal of the battery. Connect the black wire to any convenient chassis ground.

MOBILE ANTENNA

The mobile antenna represents an electrical quarter-wave length at the operation freqeuncy, or physically represents about 19" at 150MHz. Shorter equivalents are the "loaded" type of antenna, and are usually placed in the center of the roof for maximum effectiveness.

MOBILE NOISE SUPPRESSION

Mobile noise is present in all automobiles but can be reduced if desired by using standard ignition, suppression and bonding techniques.

MARINE ANTENNA AND INSTALLATION

The antenna system for a boat should be a ground plane type antenna. The common name for such antenna is coaxial or ground plane antenna.
The same bonding and ignition suppression techniques may be appied to a boat as to an automobile.

BASE ANTENNA AND INSTALLATION

To install this receiver in a base installation, screw in Telescopic whip antenna (accessory) into the hole of cabinet, simply connect the AC power cord to the rear panel connector and plug the cord into a 110–120 volts AC 60Hz power source. For best operation a permanent type antenna is recommended. Wire the antenna coax lead-in to a RCA type Phone plug and insert this in the antenna jack on the rear panel. The base antenna should be as high as possible and can be of the ground-plane variety.

FRONT PANEL CONTROLS

A. ON-OFF POWER SWITCH

Turn power switch to "ON" position.

B. VOLUME CONTROL

Turn the volume control clockwise and advance the volume control until you hear a rushing noise. Then adjust this control to a comfortable listening level.

C. SQUELCH

The squelch restricts the background noise output until a signal is received. Slowly turn the control clockwise (making sure there is no station transmitting on the frequency) until the background niose just disappears. If the control is increased past this point, it will take a much stronger signal to override the squelch, thereby not permitting weaker signals to be heard.

D. SCAN CONTROL

The SCAN control switch from automatic to manual scanning, in which case the "CHANNEL SELECTOR" switch must be used to switch channels.

E. SCAN SPEED CONTROL

Rotate the Scan speed control enables a choice of scanning speed.

F. CHANNEL SELECT

Push the channel selector switch to obtain your desired channels (#1 ~ #16 ch.). Scan control switch must be in the Manual position.

G. PRIORITY

Channel 1 is always the priority channel.

Note that regardless of which channel (from 2 thru 16 inclusive) is in operation, the UNIT will always search Channel 1 every 2 seconds for a duration of only 40 milliseconds.

Should a signal be present on Channel 1 during searching, Channel 1 will lock-in, regardless of the fact that a signal is being received on another channel at that time; at the same time, the Carrier Delay feature will not allow further scanning until any carrier on Channel 1 is absent for more than 2 seconds. The priority feature is operational during both "AUTO" and "MANUAL" Scan. The significance of the Priority feature is pointed out by the fact that in any given area there is usually one channel much more important than the others. By inserting the most important frequency crystal in the channel 1 position, the operator is assured of always hearing transmissions of that freqeuncy, regardless of the activity on the other channels.

H. INDIVIDUAL CHANNEL SELECTOR SWITCHES

These push-buttons allow individual channel selection for programing either the automatic or manual scanning operation.

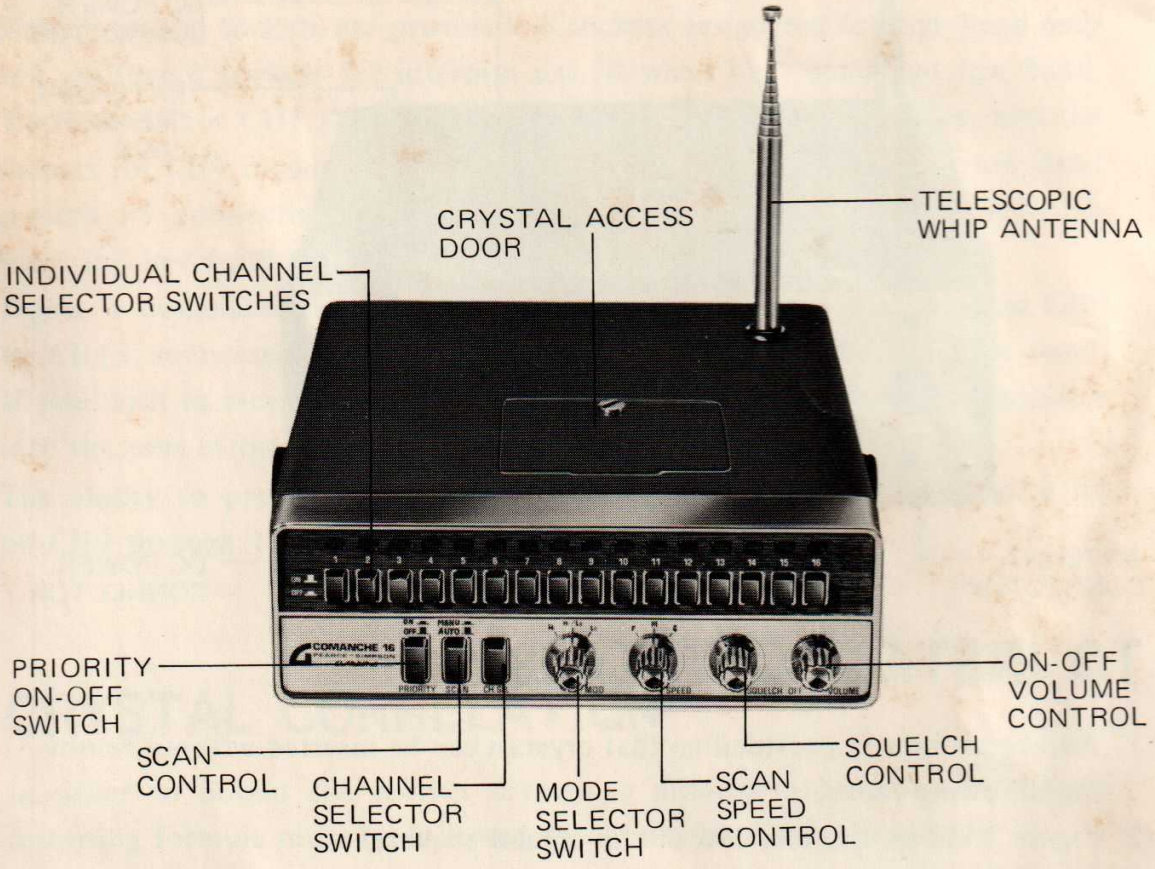
I. MODE SWITCH

Rotate the mode switch to obtain your desired modes. In the mode marked "Hi", this unit scanning from channel 1 to channel 8. Marked "Hi/Lo", scanning from channel 9 to channel 16 in these channels, High and Low combination. Marked "ALL" scanning from channel 1 to channel 16.

J. BYPASS

This feature prevents the scanner from being locked on a busy frequency. Any one or more channels may be bypassed by releasing the corresponding channel switches.

Front view



REAR PANEL CONNECTORS

A. ANTENNA CONNECTOR

An antenna connector is provided for the antenna input. Connect the antenna wire to the antenna connector.

B. AC POWER CONNECTOR

Insert the AC power plug into the socket. Note: Disconnect DC power socket. Observe polarity slotting.

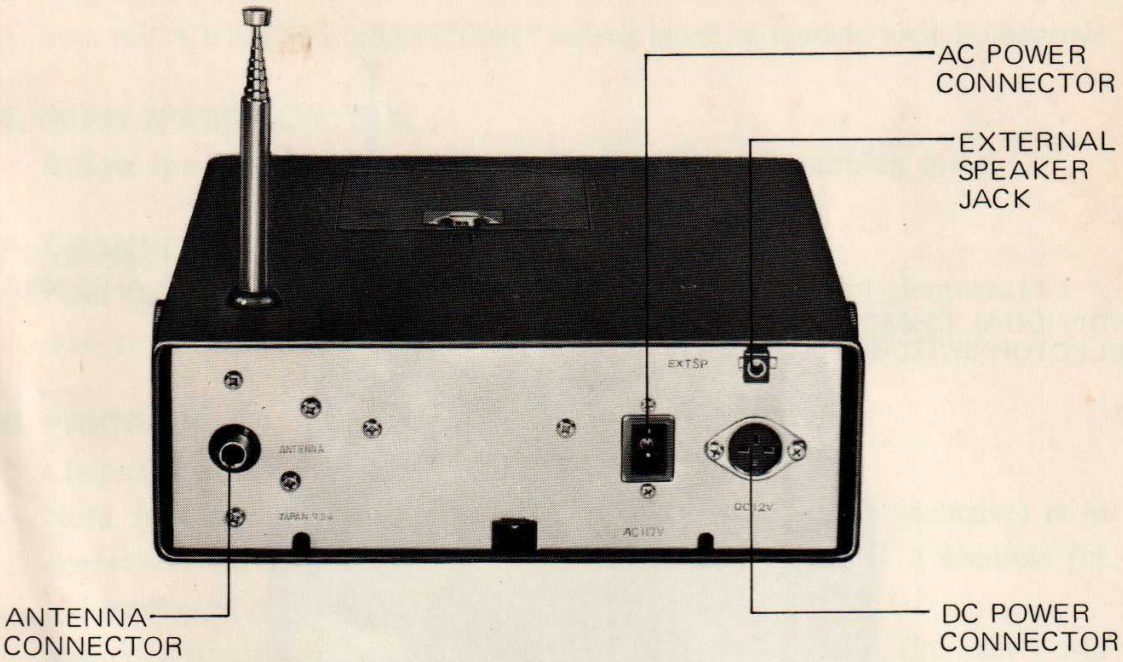
C. DC POWER CONNECTOR

Connect the DC power plug into the socket. Power cord is marked black(-) and Red (+). Note: Disconnect AC power cord.

D. EXTERNAL SPEAKER JACK

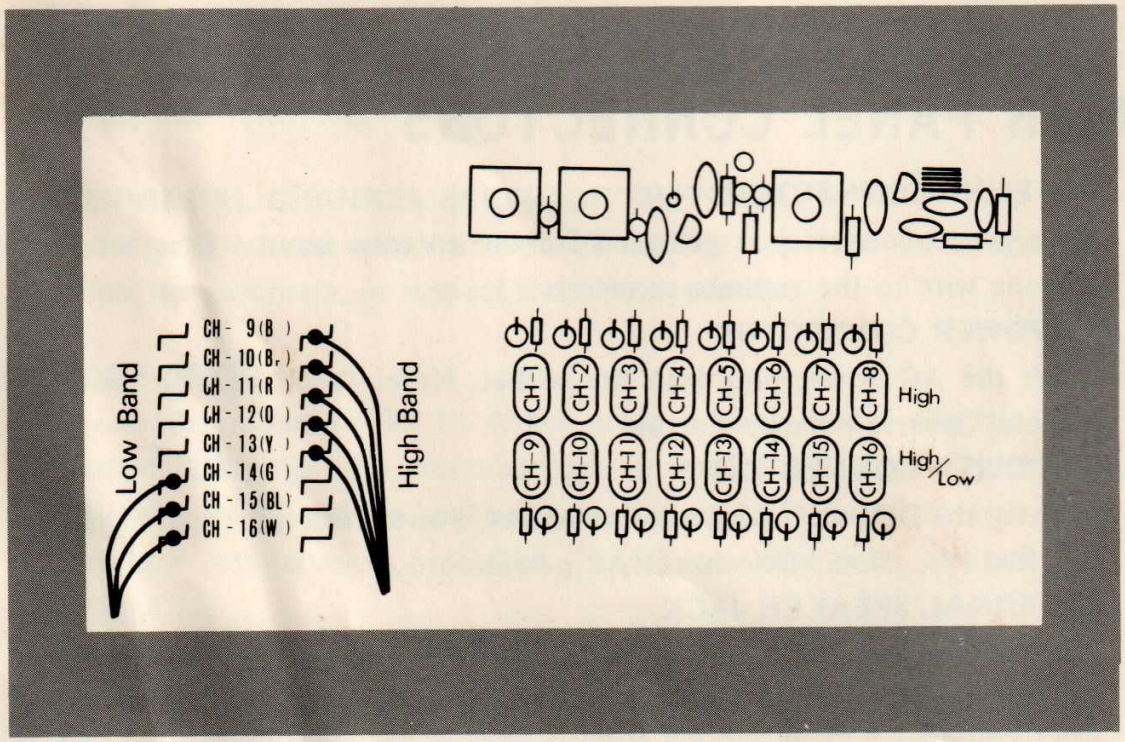
The speaker jack, which is normally closed is for use with an 8 ohms external speaker. When a plug is inserted in the jack, the internal speaker will be disabled.

Back view



TO INSTALL CRYSTALS

1. An access door is provided so that crystals can be inserted without removing the entire cabinet.
2. Figure 1 shows the location of the crystal sockets.
3. Insert the crystals into the sockets.



CRYSTAL SOCKET LAYOUT

Figure 1

CRYSTAL INSTALLATION

Sixteen crystal sockets are provided—8 sockets designated for high band only and another 8 sockets for intermix use between high band and low band. The sockets for CH1 through CH8 are for high band crystals only, and the sockets for CH9 through CH16 can be used either for high band or low band crystals by connecting jumper connectors to the pins designated for high band and low band respectively.

Figure 1 designated factory inserted jumper connectors, that is, from CH9 to CH13 connected High band and from CH14 to CH16 did Low band. If you wish to receive another band, you should insert the jumper connector into the pins in the desired band corner (High or Low).

The ability to program any channels to operate on low band or high band on CH9 through 16 at will gives you great flexibility.

CRYSTAL CORRELATION

In order to obtain the correct crystal to monitor a specific channel the following formula must be followed to obtain the crystal frequency.

HIGH BAND

1. CRYSTAL FREQUENCY = $\frac{\text{DESIRED CHANNEL FREQUENCY} - 10.7\text{MHz}}{3}$

   Example:

   Crystal Frequency = $\frac{162.55 - 10.7}{3} = \frac{151.85}{3} = 50.6166\text{MHz}$

2. Holder is an HC-25/U (Plug-in type)
3. Series resonance – 450Hz; 3rd overtone
4. Maximum series resistance of 35 ohms
5. Maximum drive of 2 milliwatts
6. Freqeuncy tolerance of ±.001%

LOW BAND

1. CRYSTAL FREQUENCY = DESIRED CHANNEL FREQUENCY + 10.7MHz

   Example:

   Crystal Frequency = 40.0 + 10.7 = 50.7 MHz

2. Holder is an HC-25/U (Plug-in type)
3. Series resonance – 450Hz; 3rd overtone
4. Maximum series resistance of 35ohms
5. Maximum drive of 2 milliwatts
6. Frequency tolerance of ±.002%

REMEMBER: When ordering crystals from your dealer always give the model number of the unit, crystal freqeuncy, and specify crystal holder HC-25/U.

In special cases where interference is encountered from strong adjacent stations, the formula is changed by substituting a positive sign (+) for the negative sign (–) or vice versa. These crystals are available on special order. Crystals certificates purchased from Pearce-Simpson can be obtained from your dealer. Fill in the operating frequency on the certificate, send to address listed, and crystals will be sent to you by return mail, Pearce-Simpson is not responsible for poor operation when crystals of another manufacturer are used.

Every police, fire and other municipal department, civilian defense or federal department, etc., broadcasts on specific frequencies. These frequencies will differ in each town or city. Your local dealer or town-hall can tell you the frequencies being used in your area.

FREQUENCY COVERAGE

HIGH BAND

GLADDING COMANCHE 16 possesses an inherent high rejection of unwanted signals due to the selectivity of the R.F. Stage. Many times it is necessary to cover a wide frequency range in a strong signal area.

THE CHART indicates the sensitivity for 20db quieting when a channel is removed from center frequency (where the receiver has been peak tuned at 160MHz). When the receiver is peak tuned at 160 MHz, sensitivity is within 6 decibels from 155MHz to 165MHz.

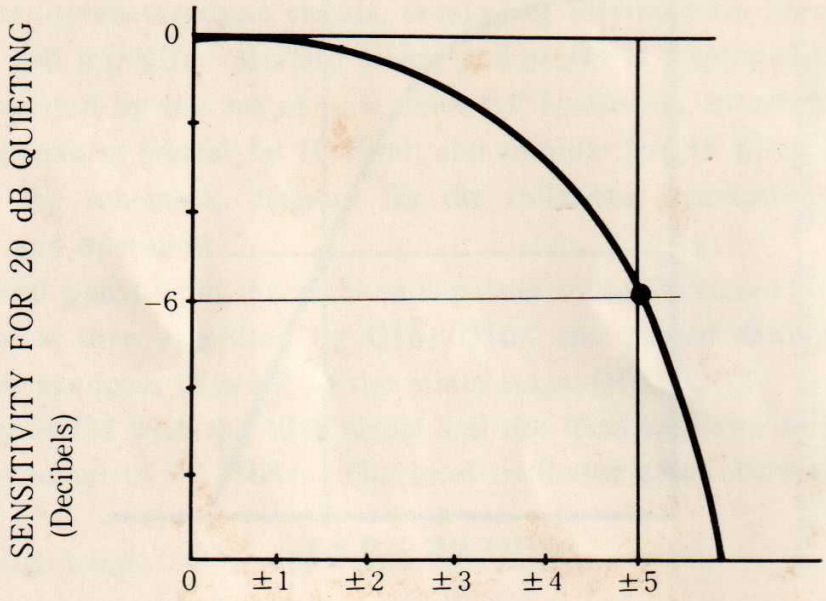
If you want to change the tuned channel higher or lower, you must adjust by the following method.

Adjust L101, L102, L103 and L104 for Maximum sensitivity.

Coil numbers are printed on the printed circuit board.

If you wish to change to another frequency range, you should adjust via the same method.

SENSITIVITY VS FREQUENCY COVERAGE



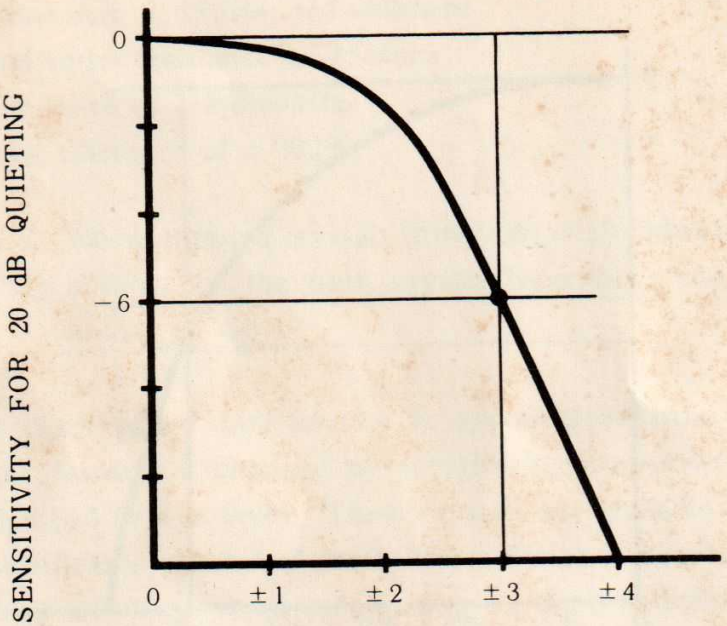
LOW BAND

GLADDING COMANCHE 16 possesses an inherent high rejection of unwanted signals due to the sensitivity of the R.F.Stage. THE CHART indicates the sensitivity for 20 db quieting when a channel is removed from center frequency (where the receiver has been peak tuned at 40MHz).

When the receiver is peak tuned at 40MHz, sensitivity is within 6 decibels from 37MHz to 43MHz. If you want to change the tuned channel higher or lower, you must adjust for Maximum sensitivity at a DESIRED CHANNEL FREQUENCY within the specified band coverage (30—50MHz).

Adjust L109, L110, L111 and L112 for Maximum sensitivity. Coil numbers are printed on the printed circuit board.

SENSITIVITY VS FREQUENCY COVERAGE



UNDER-DASHBOARD MOUNTING

A mounting bracket and hardware is provided to enable this unit to be convently mounted under the dashboard of any car or truck.
Refer to Figure 2 for mounting instructions.

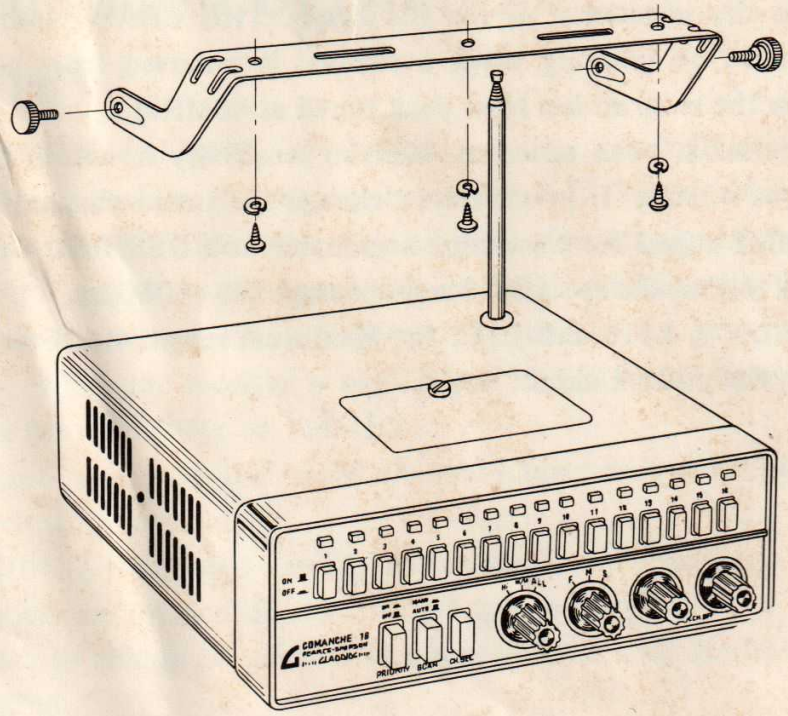


Figure 2

THEORY OF OPERATION-RECEIVER(HIGH/LOW)

The COMANCHE 16 VHF-FM Monitor receiver is a conventional double conversion superheterodyne circuit, employing Intermediate Frequencies of 10.7MHz and 455KHz. Modern design philosophy is employed throughout as demonstrated by the use of Low noise RF transistors, integrated circuits, monolithic quartz crystal 1st IF filter, and ceramic 2nd IF filter.

Refer to the schematic diagram for the following description of circuit functions and operation.

The received signal from the antenna is passed to a dual tuned input circuit. The signal is then amplified by Q101/Q106 and passed through another dual tuned bandpass network to the mixer stage, Q102/Q107.

The mixer is fed with the VHF signal and the local oscillator to provide an IF output signal of 10.7MHz. The local oscillator uses following formula.

$$\text{High band} \cdots\cdots fo = \frac{fs - 10.7\,\text{MHz}}{3}$$

fs ; channel frequency

$$\text{Low band} \cdots\cdots fo = fs + 10.7\,\text{MHz}$$

The mixer output is passed through a monolithic quartz filter to obtain a high degree of adjacent channel rejection. The use of the monolithic quartz crystal filter in the 1st IF stage provides greater suppression to intermodulation and spurious than conventional LC networks.

Intermediate frequency signal of 10.7MHz is fed to the 1st IF amplifier Q301. Q302, the second mixer has an output of 455KHz which is coupled to ceramic filter HF302. Local oscillator injection voltage for the second mixer is obtained from the 10.245MHz crystal controlled oscillator, Q305.

The output of the second mixer is passed through a 455KHz IF ceramic filter to the IF amplifier/limiter IC (LA1201) which brings the signal to a level sufficient to operate the detector and squelch circuits.

The ceramic filter which is connected to the output of the second mixer, provides a very narrow band-width and can be obtained greater suppression of adjacent channel and inter-modulation.

A Foster Seely detector, composed of T303, T304, D301 and D302 are used to receiver the frequency modulated audio.

The output from the Foster Seely detector is amplified in a conventional manner by Q701 and Q702. The output from Q702 is directly coupled to the push-pull audio output stages, Q703 and Q704.

The DC output from the squelch detector, emitter of Q304 is amplified by Q501 and Q502. Q502 also serves as a DC amplifier to provide the squelch voltage to Q701.

DIGITAL SCANNING SECTION

The digital switching circuit is composed of IC's sequencially selecting the sixteen crystal controlled frequencies in the local oscillator circuit of the receiver. Sequential selection by this electronic switching circuitry is called "scanning". Scanning signal generator Q507 and 508 are in the form of a conventional free-running astable multivibrator. The scanning signal is added to the gate circuit of the crystal oscillators through frequency divider IC501 and IC502, and nand gate (D506–D513).

When a signal input developes in the tuner, scanning is stopped instantly. It is that signal added to the scanning signal generator Q507 and 508 that stop tha scanning through IF amplifier, IC301, squelch circuits (Q501 and Q502) and carrier delay networks (Q503, Q504 and Q505). Thus the operation of the multivibrator is stopped and locked in to the signal incoming channel. The signal incoming channel light is also turned on. This scanning operation can be manually controlled by pushing a channel selecting button.

HIGH AND LOW BAND INTERMIX SYSTEMS

Each of the 8 channels (#9–16 ch.) in this model can be used for either the High or Low band as desired.

Insert the jumper connector into the desired channel terminal in the High band corner if the crystal is for the High band or in the Low band corner if the crystal is for the Low band.

PRIORITY

IC503 is priority search signal generator.

When the priority switch is placed in the "ON" position, the unit will always search channel 1 every 2 seconds for a duration of only 40 milliseconds. If priority channel signal is received, stop the priority search signal generator IC503 and lock in to the priority channel.

TROUBLE-SHOOTING HINTS

No power in radio

* AC power supply cord not connected.
* Jumper lead to ON-OFF switch not connected.
* Defective fuse.
* Defective Q705.
* C711 electrolytic capacitor shorted.
* Defective power transformer.

No reception

* Antenna not connected correctly.
* Crystal is not firmly seated in its socket.
* Radio is over-squelched.
* First or second local oscillator circuit not operating.
* Scanning circuit not operating.
* Defective indicator lamp.

No sound

* Power plug not connected.
* Over squelched.
* Jumper leads to speaker not connected.
* Jumper leads to volume control not connected.
* Defective audio circuit especially power amplifier.
* Defective detector diodes.
* Defective mini pot R706.
* Defective electrolytic capacitor C708.
* Switch terminal of external speaker jack opened.

Low sensitivity

* Defective RF amplifier transistor.
* Defective first IF transistor, second IF transistor or IC.

Can not select channels

* Scanning is not set in MANUAL position, but in AUTO position.
* Priority is in operation.
* Any one of jumper leads to channel select switch is disconnected.
* Defective IC502.

Can not adjust squelch control

* Readjust mini pot R504.
* Defective diode D504.
* Defective transistor Q304, Q501 and Q502.

Abnormal scanning

* Defective IC, transistor or diode in digital circuit.
* Scanning is not set to "AUTO".
* Squelch not adjusted to quieting.

REPLACEMENT PARTS LIST

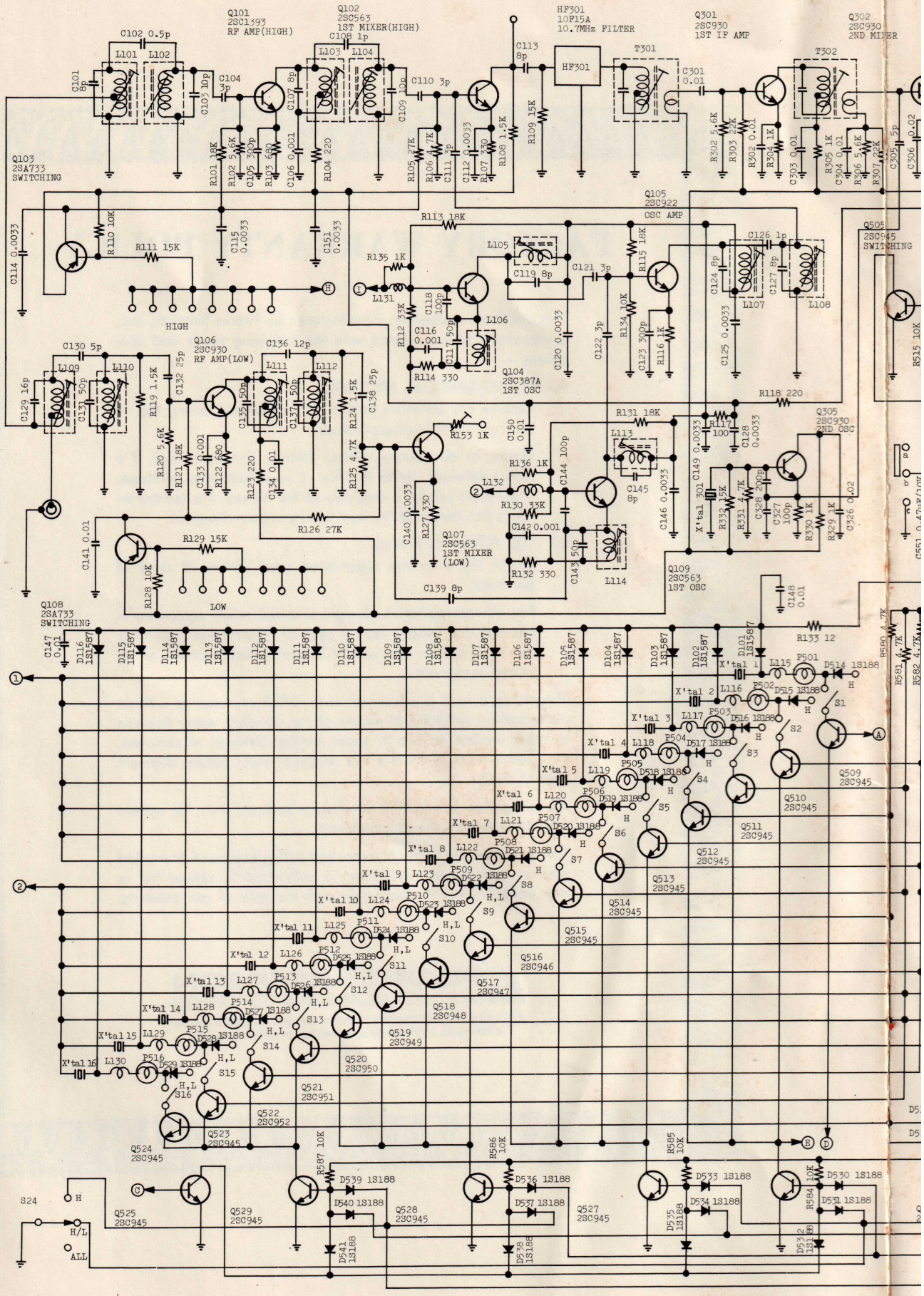
Symbol No.	Pearce-Simpson Stock No.	Description	Part No.
		MISCELLANEOUS	
(Main)			
R706	5008-048	Miniature trimmer control	4-222R002
R504	5008-049	Miniature trimmer control	4-222T031
R502	5008-025	Squelch control, 50KB	4-222R505
HF-302	5023-009	Ceramic filter CFM-455D	4-253R906
R703		Volume control, 10KD	4-222R508
	5009-031	Push switch	4-231R804
	5010-036	Antenna terminal	4-235R151
	5010-029	AC power connector	4-235R14971
	5010-030	DC power connector	4-235R124
		External speaker socket	4-235R185
	5010-031	DC power plug	4-236R116
	5010-032	Antenna plug	4-236R122
	5015-009	AC power cord assembly	4-243R11401
	5015-009	Socket	4-245R125
	5015-009	Cord	
	5015-009	Plug	4-236R117
		Fuse 1.5A	4-234R102
		Terminal	123-2-382R00291
		Terminal	123-2-382R00292
		Lug, for wiring	123-2-472R006
		Fuse holder	123-2-383R101
	5003-075	Crystal, 10.245 MHz HC-18U	4-225R802
	5021-038	Plastic screw driver	2-197R101
(Sub 1)			
R153		Miniature trimmer control	R-R110514
HF301	5023-010	X'tal Filter, 10FA15A	4-253R903
R153	5009-035	Push switch	4-231R806
	5010-002	Crystal socket	4-235R131
		Terminal, for intermix systems	123-2-474R002
		Tip, for intermix systems	123-2-382R006A
	5013-021	Pilot lamp	4-612R11878
	5013-022	Pilot lamp	4-612R11879
	5021-037	Rod antenna	4-244R181
(Sub 2)			
	5009-033	Rotary switch	4-231R503

Symbol No.	Pearce-Simpsom Stock No.	Description	Part No.
		COILS AND TRANSFORMERS	
(Main)			
T303, 304	5006-100	IFT	4-256R224
T302	5006-175	IFT	4-256R903
T305		IFT	4-256R735
T701	5007-019	Power transformer	4-251R13591
L701		Choke coil	4-255R807
	5012-007	Speaker, 8 ohms 1 watt	4-151R138
(Sub 1)			
L101	5006-183	Ant. coil	4-257R805
L102, 104	5006-184	RF coil	4-258R806
L103	5006-185	RF coil	4-259R815
L109	5006-186	Ant. coil	4-257R806
L110, 112	5006-179	RF coil	4-259R807
L111	5006-187	RF coil	4-259R814
L105, 107, 108, 113	5006-173	OSC coil	4-258R807
L106, 114	5006-174	VHF coil	4-265R127
L115~130	5006-177	RF choke coil	4-253R701
L131, 132		VHF coil	4-265R014
T301	5006-176	IFT	4-256R138
		SEMI CONDUCTORS	
(Main)			
Q301~305	5001-061	2SC930 Transistor	2SC930 D
Q501~505	5001-038	2SC945 Transistor	2SC945 R
Q701		2SC536 Transistor	2SC536 F
Q702		2SC536 Transistor	2SC536 E
Q704		2SA473 Transistor (One pair)	2SC473 O
Q703		2SC1173 Transistor (One pair)	2SC1173 O
Q705	5001-064	2SC1096 Transistor	2SC1096 L
(Sub 1)			
Q101	5001-065	2SC1393 Transistor	2SC1393 L
Q102, 107	5001-059	2SC563 Transistor	2SC563 L
Q105		2SC1674 Transistor	2SC1674 L
Q104,106,109	5001-061	2SC930 Transistor	2SC930 D
Q103, 108	5001-066	2SA733 Transistor	2SA733 Q
(Sub 2)			
Q506~508, 509~529	5001-038	2SC945 Transistor	2SC945 Q
D701	5001-137	1S1212 Diode	1S1212
D301,302,504	5001-108	1S188 Diode	1S188 FM
D501,502	5001-138	DS442 Diode	DS-442
D702	5001-112	1S1211 Diode	1S1211
D704		DS131 Diode	DS131
D703	5001-140	RD11E Diode	RD11E

Symbol No.	Pearce-Simpson Stock No.	Description		Part No.	
		SEMI CONDUCTORS			
D503	5001-141	MA-26	Diode	MA-26	
D514~529	5001-108	1S188	Diode	1S188	FM
D101~116	5001-139	1S953	Diode	1S953	
D506~513 530~541	5001-108	1S188	Diode	1S188	FM1
IC301	5002-005	LA1201	Integrated Circuit (IC)	LA1201	B2
IC501,502,503		TD1065P	Integrated circuit (IC)	TD1065P	
		RESISTORS			
(Main)					
R713,714	5019-007	0.5 ohm	±10% ¼W	R-R0050KB	
R507		47 ohm	±10% ¼W	R-R470KB	
R326		120 ohm	±10% ¼W	R-R121KB	
R711		150 ohm	±10% ¼W	R-R151KB	
R328		180 ohm	±10% ¼W	R-R181KB	
R709		270 ohm	±10% ¼W	R-R271KB	
R705		330 ohm	±10% ¼W	R-R331KB	
R710		470 ohm	±10% ¼W	R-R471KB	
R323,333,715		680 ohm	±10% ¼W	R-R681KB	
R312,316		820 ohm	±10% ¼W	R-R821KB	
R304,305,308,329, 330,708	2025-102	1 Kohm	±10% ¼W	R-R102KB	
R509,712		1.2 Kohm	±10% ¼W	R-R122KB	
R310,320,322		1.5 Kohm	±10% ¼W	R-R152KB	
R309		1.8 Kohm	±10% ¼W	R-R182KB	
R318,319,321		2.2 Kohm	±10% ¼W	R-R222KB	
R501,702		3.3 Kohm	±10% ¼W	R-R332KB	
R313,314,317,325, 331		4.7 Kohm	±10% ¼W	R-R472KB	
R302,306,503,510		5.6 Kohm	±10% ¼W	R-R562KB	
R311		6.8 Kohm	±10% ¼W	R-R682KB	
R506,515		10 Kohm	±10% ¼W	R-R103KB	
R512,514		12 Kohm	±10% ¼W	R-R123KB	
R332,505,511,513, 704		15 Kohm	±10% ¼W	R-R153KB	
R508,701		18 Kohm	±10% ¼W	R-R183KB	
R303,307,315,707		22 Kohm	±10% ¼W	R-R223KB	
R324,327		68 Kohm	±10% ¼W	R-R683KB	
(Sub 1)					
R133		12 ohm	±10% ¼W	R-R120KB	
R117		100 ohm	±10% ¼W	R-R101KB	
R104,118,123		200 ohm	±10% ¼W	R-R201KB	
R107,114,127,132		330 ohm	±10% ¼W	R-R331KB	
R103,122		680 ohm	±10% ¼W	R-R681KB	
R116		1 Kohm	±10% ¼W	R-R102KB	

Symbol No.	Pearce-Simpson Stock No.	Description				Part No.
		RESISTORS				
R108,119,124		1.5 Kohm	±10%	¼W		R-R152KB
R106,125		4.7 Kohm	±10%	¼W		R-R472KB
R102,120		5.6 Kohm	±10%	¼W		R-R562KB
R110,128,134		10 Kohm	±10%	¼W		R-R103KB
R109,111,129		15 Kohm	±10%	¼W		R-R153KB
R101,113,115,121, 131		18 Kohm	±10%	¼W		R-R183KB
R105,126		22 Kohm	±10%	¼W		R-R223KB
R112,130		33 Kohm	±10%	¼W		R-R333KB
(Sub 2)						
R553,562,588		100 ohm	±10%	¼W		R-R101KB
R551		150 ohm	±10%	¼W		R-R151KB
R562		330 ohm	±10%	¼W		R-R331KB
R575,576		470 ohm	±10%	¼W		R-R471KB
R556,561,572		1 Kohm	±10%	¼W		R-R102KB
R552,554		2.2 Kohm	±10%	¼W		R-R222KB
R557,560		3.3 Kohm	±10%	¼W		R-R332KB
R573,574,577,578		3.9 Kohm	±10%	¼W		R-R392KB
R580,581,582,583		4.7 Kohm	±10%	¼W		R-R472KB
R558,559		6.8 Kohm	±10%	¼W		R-R682KB
R555,563~571, 584~587		10 Kohm	±10%	¼W		R-R103KB
R579		12 Kohm	±10%	¼W		R-R123KB
		CAPACITORS				
(Main)						
C305	5017-018	5 pfd	±0.25%	50V	Ceramic	R-CKD050C
C320, 324	0401-065	50 pfd	±10%	50V	Ceramic	R-CKD500K
C319	5017-022	60 pfd	±10%	50V	Ceramic	R-CKD600K
C321, 322, 337	5017-023	100 pfd	±10%	50V	Ceramic	R-CKD101K
C327	5017-022	100 pfd	±5%	50V	Ceramic	R-CKD101J
C328	5017-024	200 pfd	±5%	50V	Ceramic	R-CKD201J
C336		500 pfd	±5%	50V	Ceramic	R-CKD501J
C323		0.001 mfd	±20%	50V	Mylar	R-CQS102M
C706		0.004 mfd	±20%	50V	Mylar	R-CQS402M
C712, 713		0.01 mfd	±80%-20%	50V	Ceramic	R-CKD103Z
C302, 303, 304, 309, 311, 314, 315, 325, 331, 332, 334		0.01 mfd	±20%	50V	Mylar	R-CQS103M
C306, 312, 326, 335, 502		0.02 mfd	±20%	50V	Mylar	R-CQS203M
C308, 310, 313, 321 333, 501, 502		0.04 mfd	±20%	50V	Mylar	R-CQS403M
C711	5018-020	470 mfd	25V		Electrolytic	R-C9844
C708	5018-024	470 mfd	16V		Electrolytic	R-C9874

Symbol No.	Pearce-Simpson Stock No.	Description				Part No.
		CAPACITORS				
C710	5018-023	220 mfd	16V		Electrolytic	R-C9877
C707, 503	5018-022	100 mfd	10V		Electrolytic	R-C9200
C703		33 mfd	10V		Electrolytic	R-C9934
C704	5018-004	10 mfd	6.3V		Electrolytic	R-C9205
C701	5018-006	10 mfd	10V		Electrolytic	R-C9244
C504, 709	5018-030	1 mfd	10V		Electrolytic	R-C9203
C330	5018-028	4.7 mfd	6.3V		Electrolytic	R-C9882
C329, 505		2.2 mfd	10V		Electrolytic	
C702		0.47 mfd	10V		Electrolytic	
C705		0.22 mfd	10V		Electrolytic	
(Sub 1)						
C102	5017-015	0.5 pfd	±0.25pfd	50V	Ceramic	R-CKD0050C
C108, 126	5017-016	1 pfd	±0.25pfd	50V	Ceramic	R-CKD010C
C104, 110, 111, 121, 122	5017-017	3 pfd	±0.25pfd	50V	Ceramic	R-CKD030C
C130	5017-018	5 pfd	±0.5pfd	50V	Ceramic	R-CKD050D
C101, 107, 109, 113, 124, 127, 139, 145	5017-007	8 pfd	±0.5pfd	50V	Ceramic	R-CKD080D
C103, 109	0401-061	10 pfd	±10%	50V	Ceramic	R-CKD100K
C136	5017-027	12 pfd	±10%	50V	Ceramic	R-CKD120K
C132, 138	5017-020	25 pfd	±10%	50V	Ceramic	R-CKD250K
C117, 131, 135, 137, 143	0401-065	50 pfd	±10%	50V	Ceramic	R-CKD500K
C129	5017-028	60 pfd	±10%	50V	Ceramic	R-CKD600K
C118, 144	5017-023	100 pfd	±10%	50V	Ceramic	R-CKD101K
C105, 123	5017-029	300 pfd	±10%	50V	Ceramic	R-CKD301K
C106, 116, 133, 142		0.001 mfd	±20%	50V	Ceramic	R-CKD102M
C112, 114, 115, 120, 125, 128, 140, 146, 149, 151		0.0033 mfd	±20%	50V	Ceramic	R-CKD332M
C134, 141, 147, 148, 150, 301		0.01 mfd	±20%	50V	Ceramic	R-CKD103M
(Sub 2)						
C565~568, C561, 562		200 pfd	±10%	50V	Ceramic	R-CKD201K
C563, 564		0.001 mfd	±20%	50V	Ceramic	R-CKD102M
C552, 554		0.0033 mfd	±20%	50V	Ceramic	R-CKD332M
C572, 573		0.01 mfd	±20%	50V	Ceramic	R-CKD103M
C560		0.01 mfd	±20%	50V	Mylar	R-CQS103M
C570, 571		220 mfd	10V		N.P.	
C557		22 mfd	10V		N.P.	
C556, 558, 569		10 mfd	10V		N.P.	
C555		4.7 mfd	10V		N.P.	
C559		4.7 mfd	10V		Electrolytic	
C551, 553		0.47 mfd	10V		Electrolytic	


Q101 2SC1393 RF AMP(HIGH)
Q102 2SC563 1ST MIXER(HIGH)
HF301 10F15A 10.7MHz FILTER
Q301 2SC930 1ST IF AMP
Q302 2SC930 2ND MIXER
Q103 2SA733 SWITCHING
Q105 2SC922 OSC AMP
Q505 2SC945 SWITCHING
HIGH
Q106 2SC930 RF AMP(LOW)
Q104 2SC387A 1ST OSC
Q305 2SC930 2ND OSC
Q107 2SC563 1ST MIXER (LOW)
LOW
Q109 2SC563 1ST OSC
Q108 2SA733 SWITCHING
X'tal 1
X'tal 2
X'tal 3
X'tal 4
X'tal 5
X'tal 6
X'tal 7
X'tal 8
X'tal 9
X'tal 10
X'tal 11
X'tal 12
X'tal 13
X'tal 14
X'tal 15
X'tal 16
Q509 2SC945
Q510 2SC945
Q511 2SC945
Q512 2SC945
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Q514 2SC945
Q515 2SC945
Q516 2SC946
Q517 2SC947
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Q522 2SC952
Q523 2SC945
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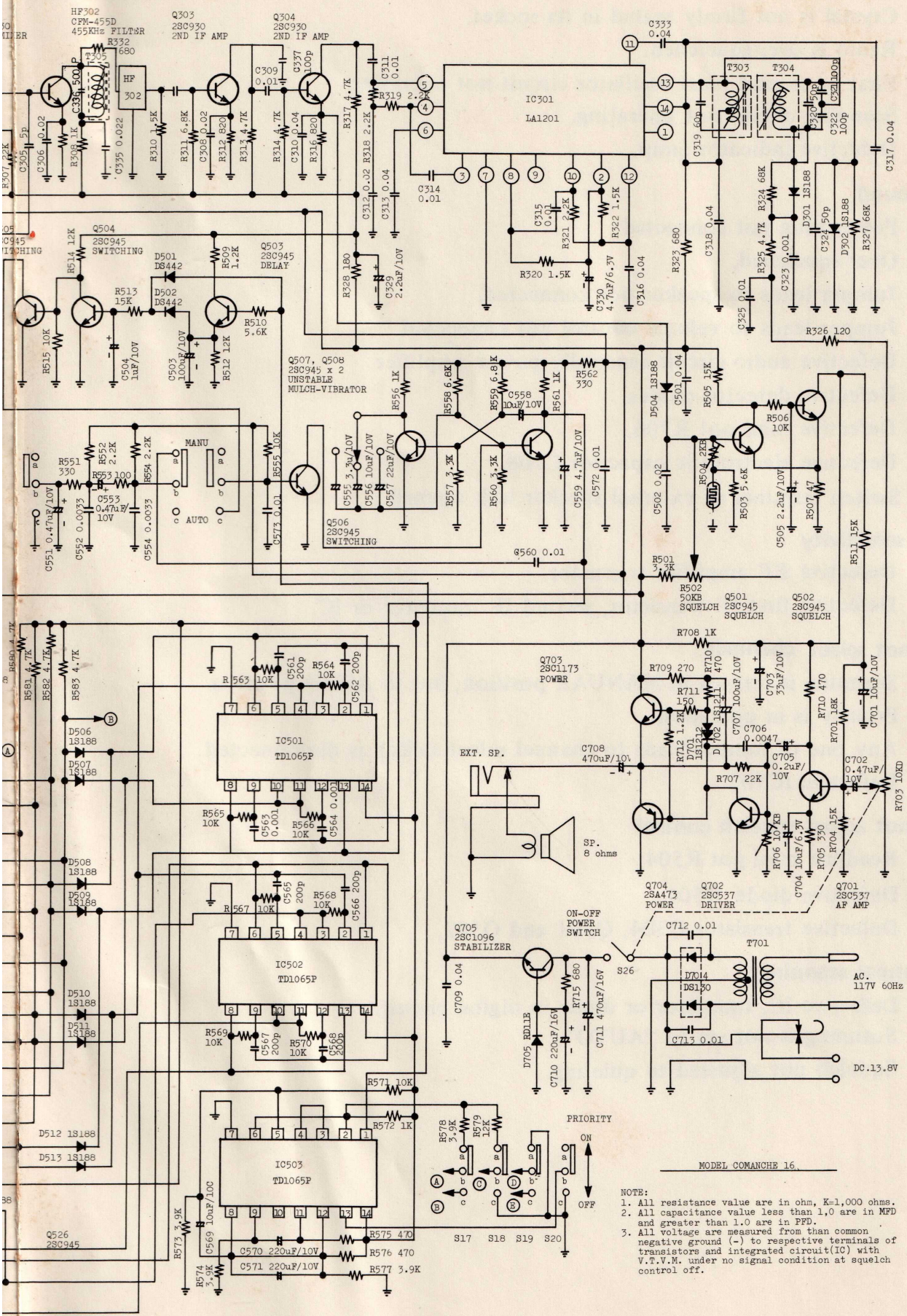
Q525 2SC945
Q529 2SC945
Q528 2SC945
Q527 2SC945
S24
H/L
ALL

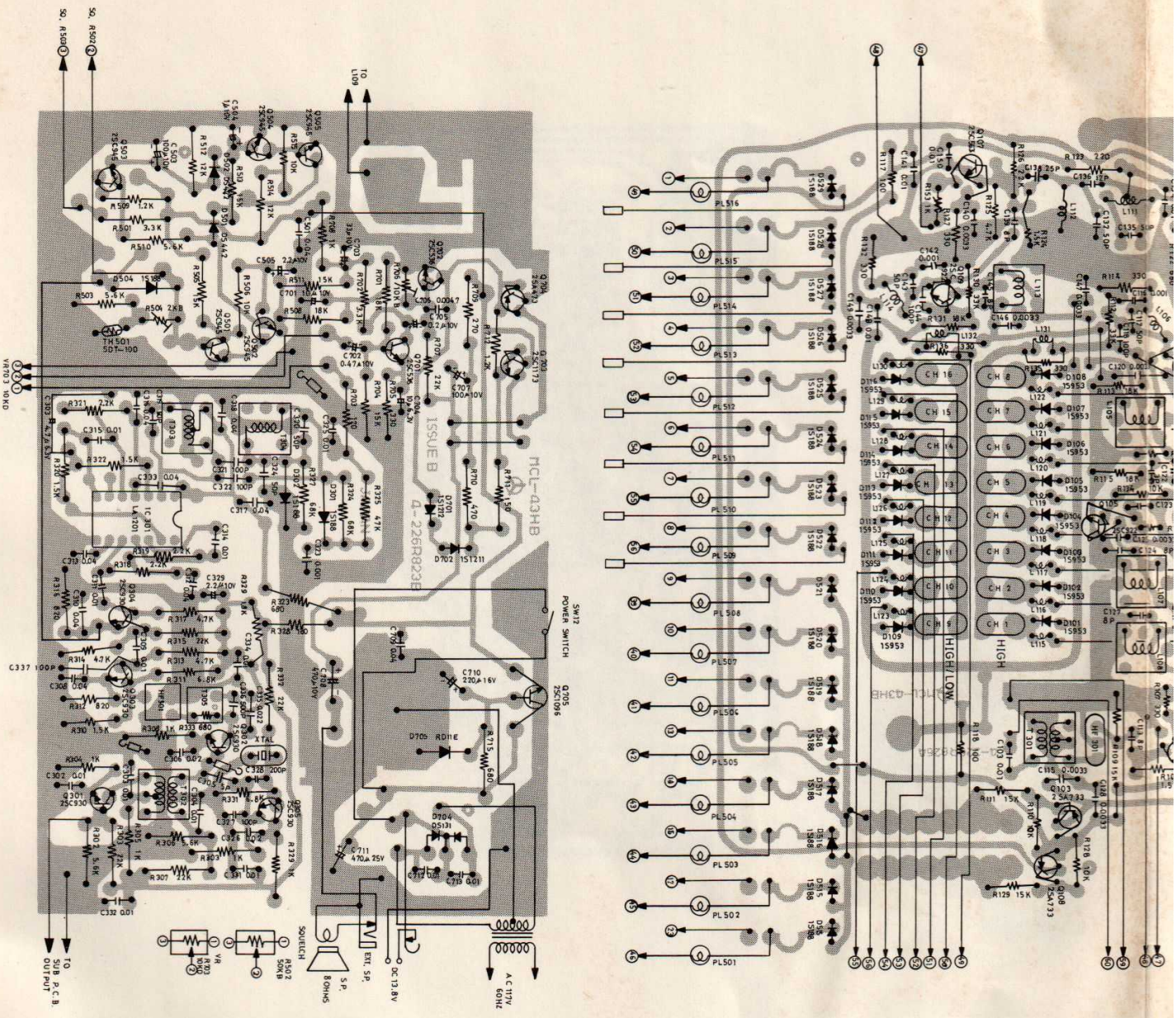
C DIAGRAM



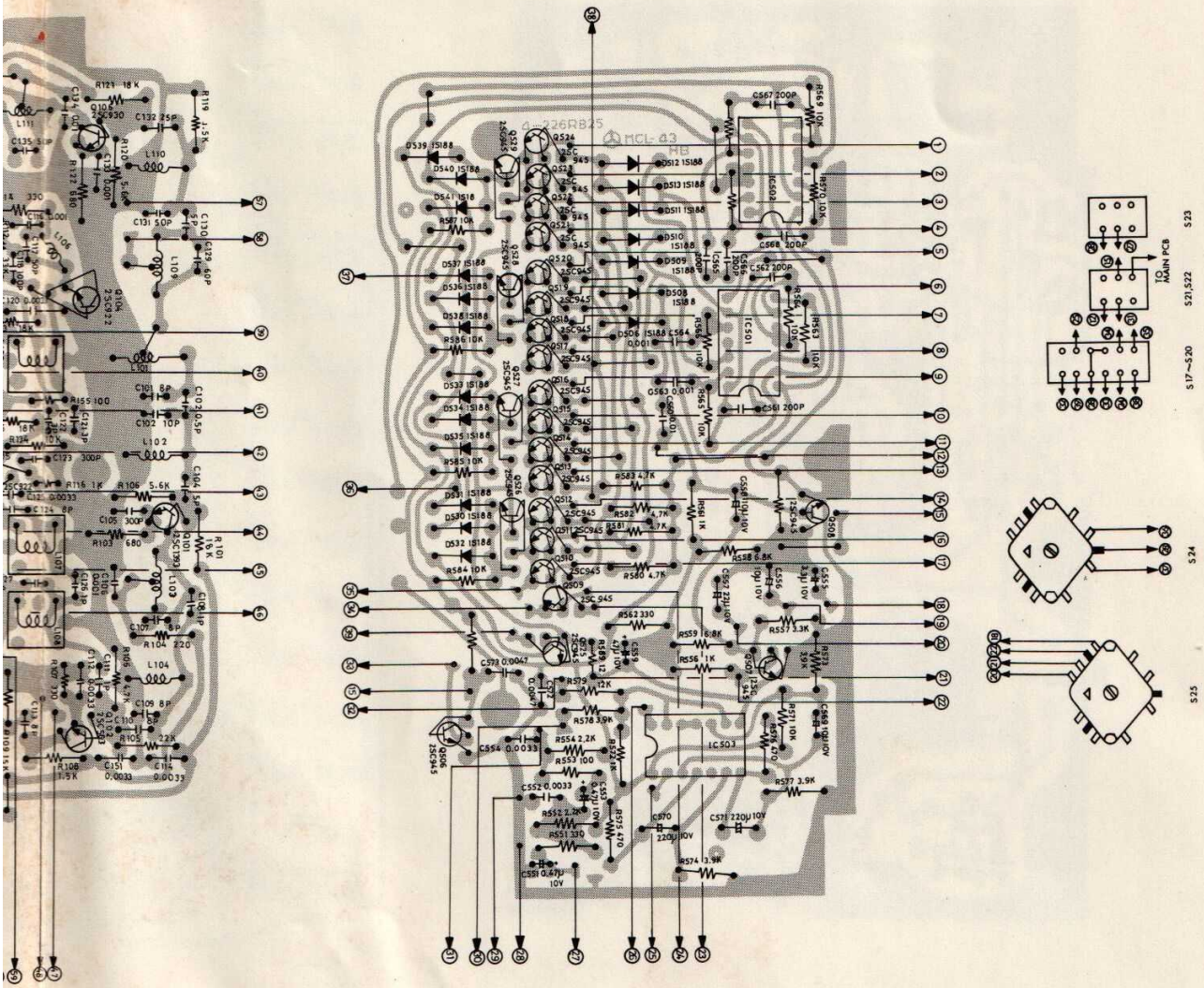
MODEL COMANCHE 16

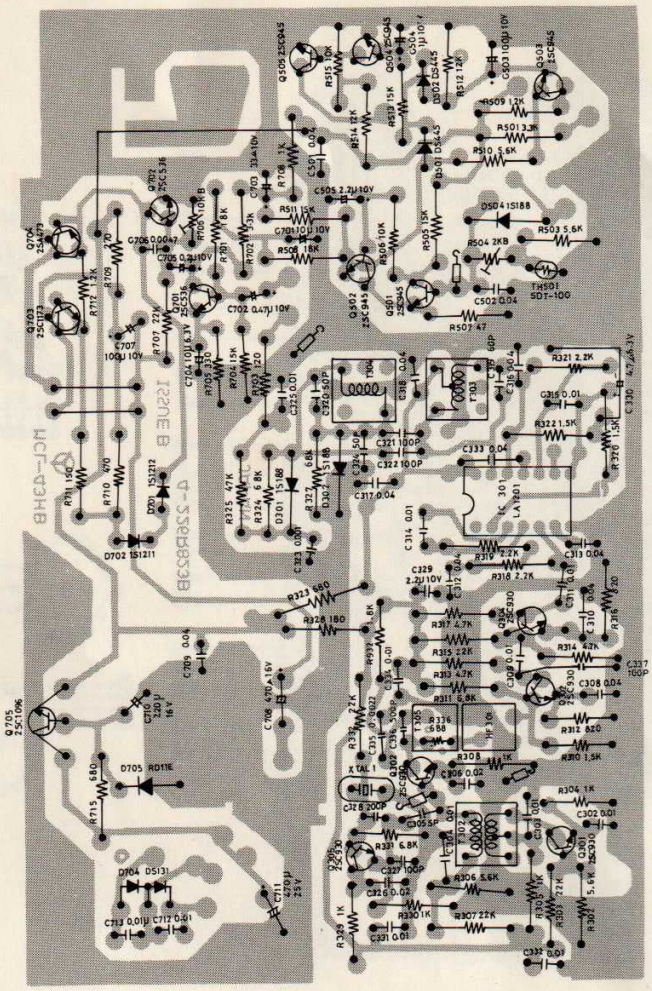
NOTE:
1. All resistance value are in ohm, K=1,000 ohms.
2. All capacitance value less than 1,0 are in MFD and greater than 1.0 are in PFD.
3. All voltage are measured from than common negative ground (-) to respective terminals of transistors and integrated circuit(IC) with V.T.V.M. under no signal condition at squelch control off.

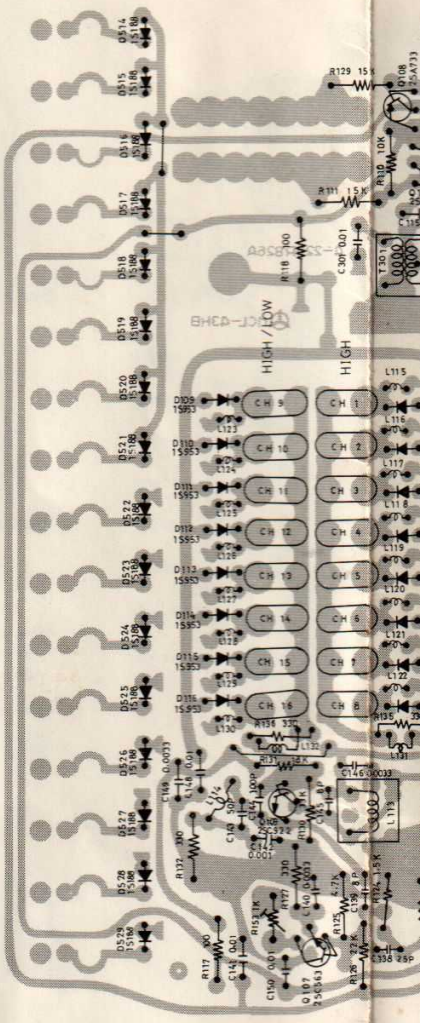
P.C. BOARD


MCL-43HB
ISSUE B
4-226R023B
HIGH/LOW
HIGH
SW12 POWER SWITCH
Q705 2SC1096
D705 RD11E
TO L109
TO SUB P.C.B OUTPUT
SQUELCH
8OHMS
S.P.
EXT. SP.
DC 13.8V
AC 117V 60HZ
VR703 10KΩ
PL516
PL515
PL514
PL513
PL512
PL511
PL510
PL509
PL508
PL507
PL506
PL505
PL504
PL503
PL502
PL501

ARD LAYOUT







ENT LAYOUT