

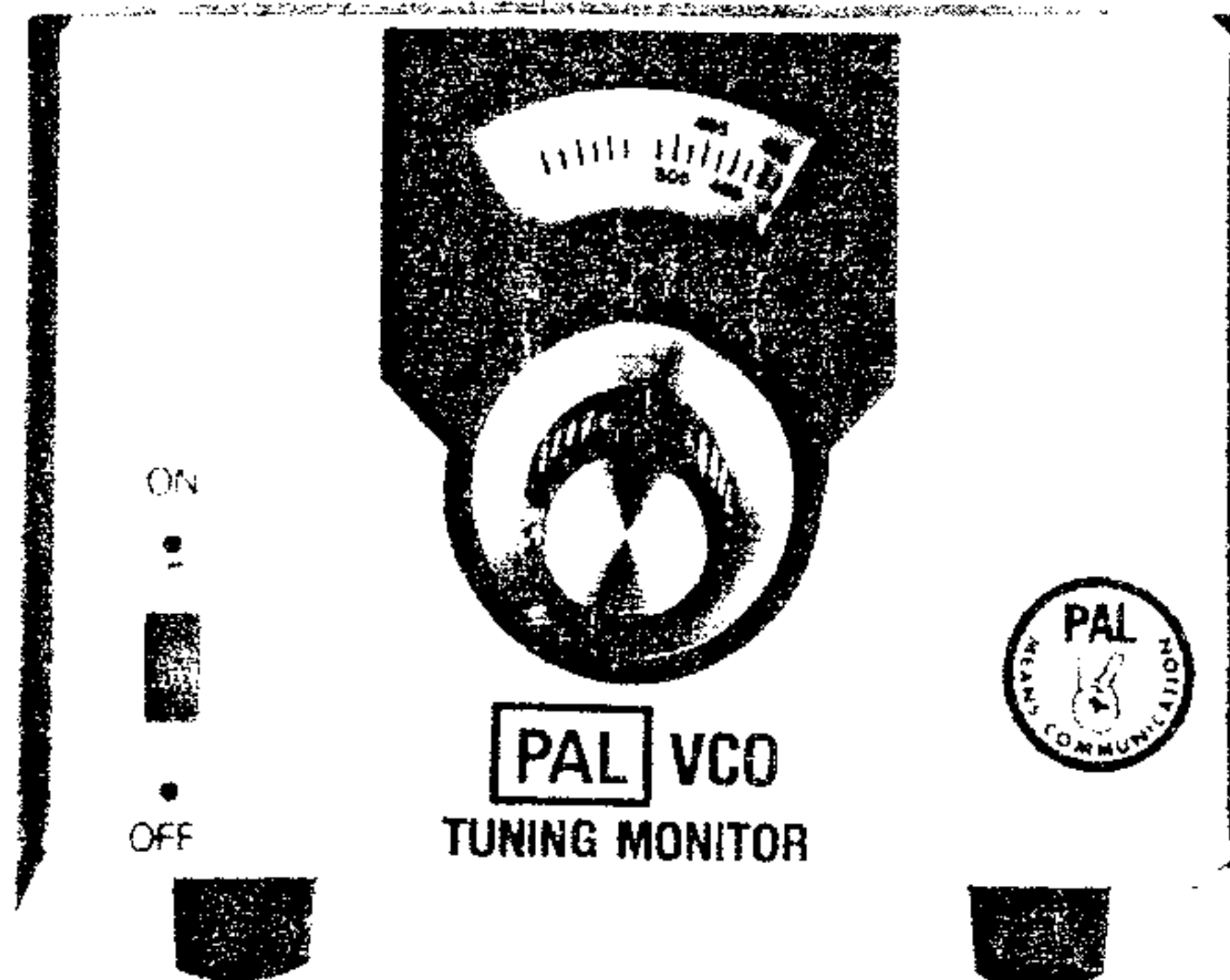
# NEW **PAL** VCO TUNING MONITOR Made in U.S.A.

THE ONLY VCO THAT USES A CRYSTAL FOR NO DRIFT STABILITY  
TUNES VARIABLE 1 KC AT A TIME FROM 27.115 TO 27.505 PLUS

"SOLID AS A ROCK"  
WITH  
2-6 & 36 TO 1 VERNIER  
DUAL TUNING  
"NO DRIFT"  
"SUPERIOR QUALITY"

Size: 4" High, 5 1/2" Wide,  
5 3/4" Deep

Operates both 12 Volts DC  
(Neg. Ground)  
and 117 AC



**NOW \$89<sup>95</sup>**

This PAL VCO is great for monitoring stations in the USA and foreign countries now on 11 Meters. Will operate on any of the 23 Channel AM or SSB crystal synthesized transceivers that are listed below.

Great for testing CB gear on a dummy load!

## Variable Controlled Oscillator

**PAL** Products warranted for 1 year parts — 1 year labor.

ALL PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

ILLEGAL TO USE VCO FOR TRANSMITTING PURPOSES IN THE U.S.A.

### VCO MODELS BY FREQUENCY:

A-1...11.0035	A-5...11.855	B-2...16.385	C-2...23.480	D-3...33.150
A-2...11.150	A-6...11.890	B-3...16.420	C-3...23.4875	D-4...35.121
A-3...11.750	A-7...11.955	B-4...17.115	D-1...32.850	D-5...37.750
A-4...11.850	B-1...16.115	C-1...23.440	D-2...32.995	

ABOVE FREQUENCIES ARE FOR CHANNEL 13 AND WILL FIT MANY OTHER RADIOS WITH SAME FREQUENCY.

BROWNING--23 Ch's	DEMCO--23 Ch's	LAFAYETTE--23 Ch's
Brownie A-5	Satellite D-5	Com-Phone 23 & Mark II D-5
LTD B-1	-----	Comstat 23 & Mark VI B-4
Mark II & Mark III B-3	GEMTRONIX--23 Ch's	Comstat 25B & 35 (Tube) C-1
SST B-4	GTX-23 & GTX-36 D-5	HB-525E & HB-625A C-1
-----	GTX-2300 C-1	Micro 723, Telstat 925 D-5
COBRA--23 Ch's	GTX-2325 A-5	Micro 923 D-3
19, 21, & 29 C-1	GTX-3000 D-3	SSB-50A & SSB-75 C-2
20, 28A, & 880 B-4	-----	Telstat 25A & Telstat 100 C-2
132A, 132B, & 135B B-1	HYGAIN--23 Ch's	HB-700 & Telstat 1023 D-5
135* & 85 A-5	Hy-Range I (670 & B) C-1	-----
138A & 139 A-1	Hy-Range II (671 & B) C-1	
Cam 89 C-1	Hy-Range III (672 & B) C-1	
135 B-1	Hy-Range IV (673) C-1	
-----	Hy-Range V (674) C-2	
COURIER--23 Ch's	-----	
Cadet 23 & Caravelle II C-1	JOHNSON--23 Ch's	
Centurion A-2	Messenger 122, 123A&123B D-1	
Classic II & Comet 23 D-5	Messenger 123 SJ & 130A D-1	
Classic III & Rebel 23+ C-1	Messenger 132 & 250 D-1	
Conqueror II C-1	Messenger 223 (Tube) D-1	
Crusier D-5	Messenger 124M, 323M & A D-2	
Gladiator 23 A-2	Messenger 351 A-3	
Redball D-5	Viking 352 A-4	
Spartan SSB A-7	-----	

SEE ADDITIONAL MODELS

ON OTHER SIDE →

\* Special Serial Number beginning with 9 and containing 6 digits

MIDLAND--23 Ch's		REALISTIC--23 Ch's		SHARP--23 Ch's	
852, 853, & 857	C-1	TRC 49 & 50B		CBT 58 & CB 500 UB	C-1
862, 862B, 863, & 864	D-5	TRC 30A, 24B, & 24C		CB 700	C-1
869 & 870 D	D-5	TRC 46, 47, & 48		-----	
871 & 881B	B-4	TRC 52 & 56		SILTRONIX--23 Ch's	
873, 878, & 880 B	A-5	TRC 55		AM 1 & AM 2	B-4
879B & 887	D-5	TRC 68		SSB 23 & SSB 23 A	A-5
882B, 883, & 886	C-1	-----		-----	
885	A-5	REGENCY--23 Ch's		SONAR--23 Ch's	
894	C-2	CR 123 & 123B	A-7	FS 23 & FS 3023**	B-3
893 & 895	A-1	CR 142, 185, & 186	D-5	-----	
896 & 898 B	C-2	CR 202	C-1	SURVEYOR--23 Ch's	
-----		CR 230	C-2	2100 & 2300	D-5
PACE--23 Ch's		Imperial II (Tube)	A-2	2400 & 2600	D-5
CB 76 & 2376 B	D-4	Range Gain II (Tube)	A-2	-----	
CB 162	D-5	-----		TEABERRY--23 Ch's	
CB ST 23	A-5	ROBYN--23 Ch's		Big "T", 5 X 5	D-5
DX 2300B	D-4	SSB 747B	A-5	Mighty T, "T" (Tube)	C-1
123A & 133	D-5	SX101 & T 123	D-5	T Control, T Charlie	C-1
145	B-4	TR 123B (Tube)	C-1	T Scout, Tele T	C-1
CB 1023 & CB 1023B	A-4	TRC 123C & XL Two	D-5	-----	
CB 143 & CB 144	D-5	-----		TRAM--23 Ch's	
-----		ROYCE--23 Ch's		Diamond 40	B-4
PAL---23 Ch's		1-402, 600B, & 602A	D-5	Diamond 60	B-1
Coyote SSB	A-5	603, 605A, 606, & 620	D-5	XL	A-5
Roadrunner	B-4	624 & 650	D-5	-----	
-----		630 & 635	C-3	UNIMETRICS--23 Ch's	
PALOMAR--23 Ch's		631 & 640	C-2	Dolphane & Mako I	D-5
Skipper 73 (Tube)	B-2	-----		Marlin I	D-5
-----		SBE--23 Ch's		Porpoise I	D-5
PEARCE-SIMPSON--23 Ch's		Brute (34)	D-5	Sea Horse I	D-5
Alleycat 23 & Cougar	C-1	Catalina II (22)	D-5	Stingray II	D-5
Bearcat 23C	D-5	Catalina III (29)	B-4	-----	
Guardian (Tube)	D-3	Console II (16)*	A-4	UTAC--23 Ch's	
Bobcat 23 C & 23 E	D-5	Coronado II (10)	B-4	Micro Mini 23	D-5
Cheetah SSB & Simba SSB	A-2	Cortez (21)	B-4	Studio 4000	D-5
Cougar 23 B & Lynx 23	D-5	Sidebender II (12)	A-3	Super Tiny 23	D-5
Panther & Bengal	A-7	Super Console(14)*	A-5	TR-18M & TRX-30	D-5
Puma 23 B & Pussycat 23	D-5	Trinidad (11)	D-5	-----	
Super Lynx & Tiger 23 C	D-5	Trinidad II (30)	B-4	XTAL--23 Ch's	
Tomcat 23	C-1	6 CB & 8 CB	A-5	XCB 5, 6, & 7	D-5
Tomcat 23 B	B-4			XCB 11, 12, & 28	D-5

\* Special--Installation Instructions Available Upon Request.

\*\* Special--Tuned to 16.350.

## CONGRATULATIONS

You have just purchased the new Pal VFO "PLUS" designed to monitor as high as 27.505 plus. By removing one crystal your transceiver will now monitor 25 channels above the CB band. By being crystal controlled for stability and frequency drift, it is the finest VFO made.

Please follow instructions for best performance.

### PRELIMINARY PROCEDURE

1. Check your transceiver schematic with your dealer to determine the particular type of oscillator circuit used.
2. Remove the crystal which operates channels 13 thru 16 or in some cases 13-17-21-23.

### VFO INSTALLATION

1. If your crystal oscillator uses crystals which are grounded to the chassis, then the special coax cable can be inserted into the crystal holder. Be sure the center of the cable is on the HOT side and the shield on the GROUND side. Make firm connections.
2. If your crystal oscillator circuit has a floating ground, then the center of cable should be inserted in the HOT side of the crystal holder and the shield connected to the closest chassis ground.

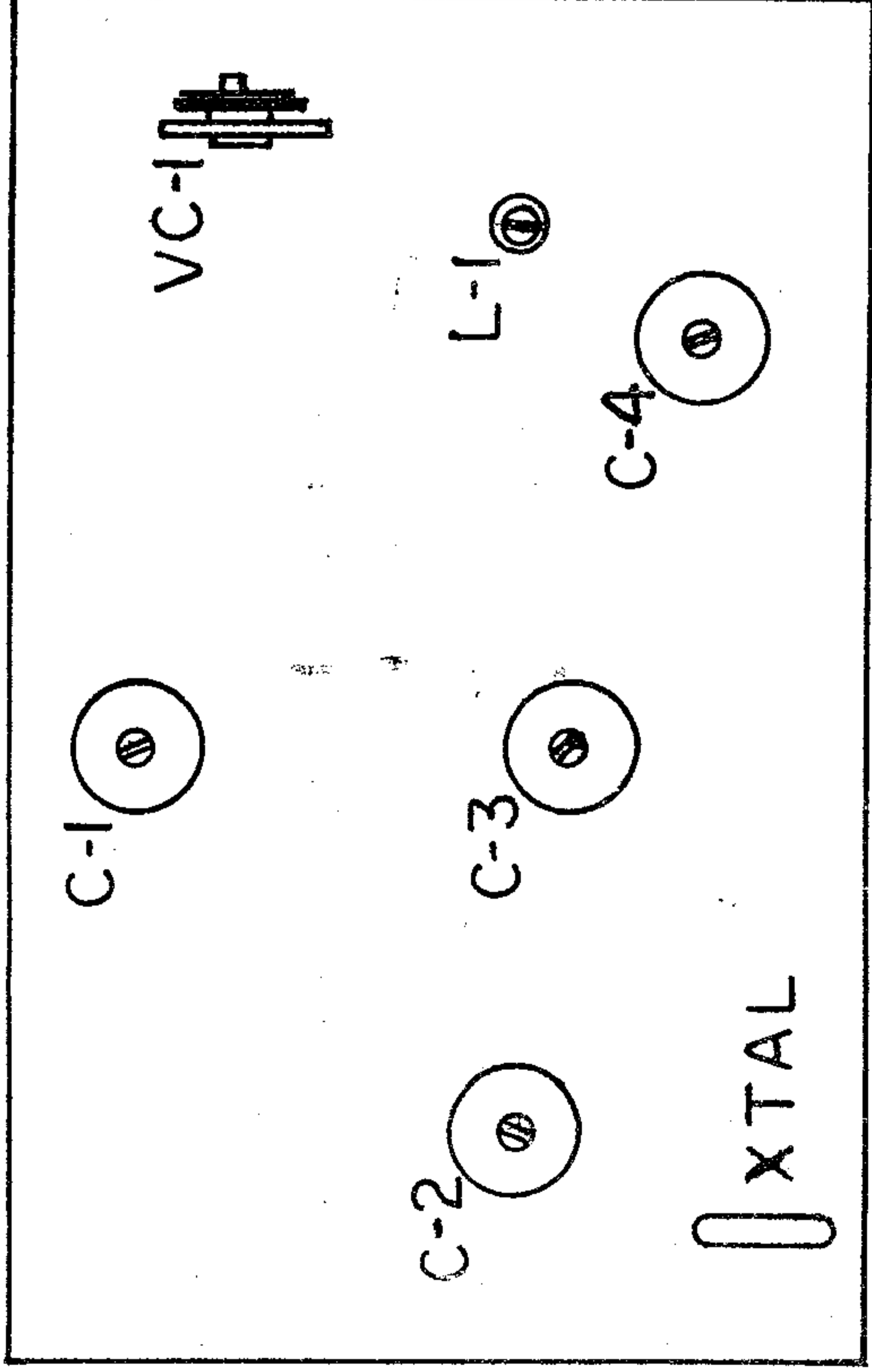
### ADJUSTMENT OF VFO VARIABLE OUTPUT CONTROL

1. Remove cover from the VFO.
2. Set your receiver to any channel showing a strong signal on the front panel meter.
3. Reset your receiver to channel 13, now on VFO, and tune the VFO dial to the same channel as in step 2.
4. Adjust the variable output control so that the needle swing is the same as in step 2. This is very important to minimize harmonics. The variable output control is a yellow, blue or white thumbwheel located near rear end of circuit board standing out about 3/4 inch on right side. Replace cover.

NOTE: Many synthesized transceivers move up 10 kc's each on ch-14 & 15 and 20 kc's on ch-16.

With this VFO installed and it is covering such a high range in frequency, possibly your transceiver should be aligned at the top end of the band, or channel 23. This is to increase sensitivity across the new range of frequencies received.

Good luck with your new Pal VFO and happy monitoring.

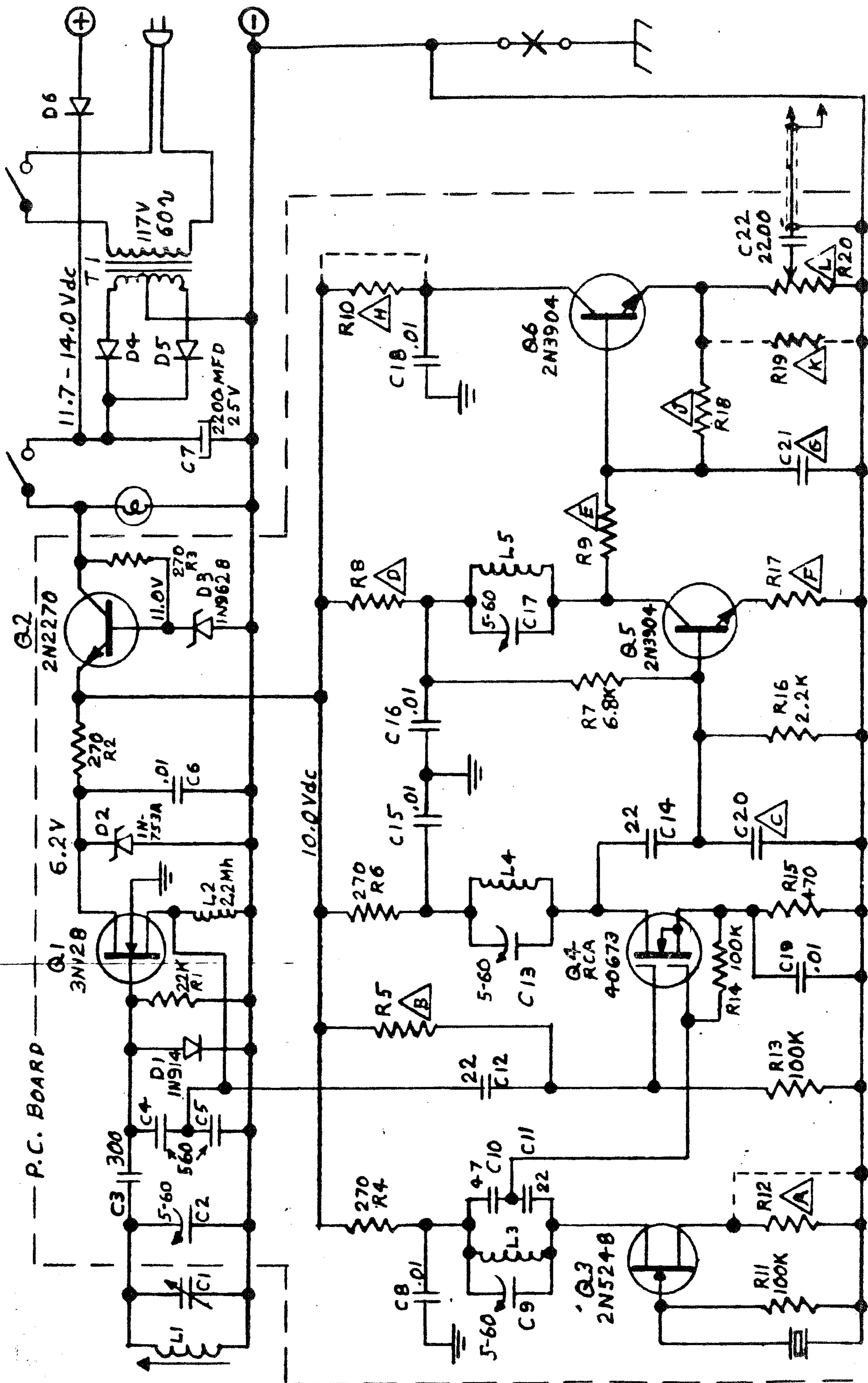


### ALIGNMENT INSTRUCTIONS - VFO DIAL

1. Adjust VFO dial to channel 13.
2. Set coil, L-1, to transceiver channel 13 crystal frequency. Clockwise lowers & counterclockwise raises.
3. Readjust VFO dial to channel frequency 27.435. (Dial reads 435) which remains through steps 4. through 8.
4. Frequency on counter should read 320 kHz above transceiver crystal frequency.
5. If the counter reads low, multiply the difference of step 4. by 9 and add to the counter reading.
6. If counter reads high, multiply difference of step 4. by 9 and subtract from the counter reading.
7. Adjust C-1 to read the compensating error frequency calculated in step 5. or 6.
8. Adjust L-1 to read the correct frequency, 320 kHz above the transceiver crystal frequency.
9. Repeat above steps until the VFO dial properly tracks, completing the alignment.
10. Adjust C-3 and C-4 for maximum output signal near mid-band dial setting. Typical output is near 4 volts P-P with VC-1 set to max.

\* \* \* NOTE \* \* \*

The above alignment is to be done only by qualified and properly equipped dealers and technicians.



PAL VCO

PAL VCO-3

FREQUENCY - COMPONENT PROGRAM

REV. 2-24-77

MODEL	FREQUENCY GROUP	A	B	C	D	E	F	G	H	J	K	L
A-	11.000	R-12	R-5	C-20	R-8	R-9	R-17	C-21	R-10	R-18	R-19	R-20
	12.000	2200	470K	47PF	150	1500	150	22PF	100	270	220	500
	16.000	270	470K	47PF	270	1000	150	15PF	100	220	220	500
	17.500	100	470K	47PF	270	560	150	10PF	100	120	-0-	100
	23.000	JUMPER	1.5M	22PF	100	470	100	5PF	JUMPER	100	-0-	100
	25.000											
	33.000											
	38.000											
	CRYSTAL RANGE	OUTPUT FREQUENCY RANGE	X TAL. OSC. CORE/TURNS	MIXER CORE/TURNS	DRIVER CORE/TURNS							
			BLK	YEL	BLK	YEL	BLK	YEL				
A-1	6.000	11.0035	13		7		7					
		↓	↓		↓		↓					
A-7	6.805	11.955	13		7		7					
		↓	↓		↓		↓					
B-1	10.965	16.115	7			22		22				
	↓	↓	↓			↓		↓				
B-4	11.965	17.115	7			22		22				
	↓	↓	↓			↓		↓				
C-1	18.300	23.440	5			16		16				
	↓	↓	↓			↓		↓				
C-3	18.300	23.4875	5			16		16				
	↓	↓	↓			↓		↓				
D-1	27.700	32.850		13		11		11				
	↓	↓		↓		↓		↓				
D-3	28.000	33.150		13		11		11				
	↓	↓		↓		↓		↓				
D-4	29.971	35.121		12		10		10				
	↓	↓		↓		↓		↓				
D-5	32.600	37.750		11		9		9				
	↓	↓		↓		↓		↓				

NOTE: TOROID CORES  
BLK = P/N 32-03  
YEL = P/N 32-02

WIND ALL TOROIDS TIGHT  
AROUND CORE WITH  
SYMMETRICAL SPACING  
BETWEEN TURNS.

DEC 29, 1976

MODEL	REPLACES XTAL	VCO CRYSTAL	OLD VFO MODEL
1	11.0035	6.000	A-1
2	11.150	6.000	A
3	11.750	6.705	NEW
4	11.850	6.705	B
5	11.855	6.705	C
6	11.890	6.705	C-3
7	11.955	6.805	C-1
1	16.115	10.965	H
2	16.385	11.270	NEW
3	16.420	11.270	C-2
4	17.115	11.965	I
1	23.440	18.300	D
2	23.480	18.300	E
3	23.4875	18.300	NEW
1	32.850	27.700	E-1
2	32.995	27.895	F
3	33.150	28.000	J
4	35.121	29.971	J-1
5	37.750	32.600	G