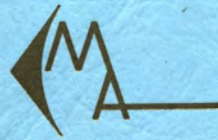


# INSTRUCTION MANUAL

MODEL SCD-8  
SUBCARRIER DEMODULATOR



MOSELEY ASSOCIATES, INC.

SANTA BARBARA RESEARCH PARK  
GOLETA, CALIFORNIA 93017

INSTRUCTION MANUAL



MODEL SCD-8  
SUBCARRIER DEMODULATOR

MOSELEY ASSOCIATES, INC.  
Santa Barbara Research Park  
111 Castilian Drive  
Goleta, California 93017

May, 1974

1917

THE STEAM POWERED RADIO COMPANY  
111 WEST 14TH STREET  
NEW YORK, N. Y.

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2000

DATE OF COMPLETION

## INSTRUCTION MANUAL

### MODEL SCD-8

### SUBCARRIER DEMODULATOR

#### I. INTRODUCTION

The Model SCD-8 Subcarrier Demodulator is a modern all solid-state device designed especially to demodulate the subcarrier generated by the Moseley Associates Model SCG-8 Subcarrier Generator.

The unit features small size, excellent stability and quality together with thorough shielding and simplicity of operation. The environment in which the equipment must function and the operator using it have been carefully considered. High input impedance and sensitivity enable operation with most types of interconnecting equipment. The operational controls have been reduced to a minimum, and are accessible through the front panel. The carrier bandpass filter and audio low-pass filters are of plug-in construction. A front-panel meter is switchable to read subcarrier input level or peak deviation. De-emphasis is adjustable to enable a flat response with the matching generator. All electronic squelch circuitry smoothly mutes the program audio output in the absence of input signal. The design includes six integrated circuits and nineteen transistors, all silicon.

## II. SPECIFICATIONS

Input Impedance	Greater than 25K ohms, Type BNC connector
Input Level	Adjustable sensitivity; minimum subcarrier level 0.1 volt peak-to-peak; subcarrier amplitude greater than 5% of total input signal
Output Impedance	600 ohms nominal, barrier strip connector
Output Level	+10 dBm; adjustable over $\pm 3$ dB range
Subcarrier Frequency	As specified in 26 to 185 kHz range
Audio Frequency Response	$\pm 1$ dB, 50 Hz to 10 kHz; replaceable audio filter determines upper response limit
Signal-to-Noise Ratio	Better than 65 dB below 100% modulation (6.7 kHz at 67 kHz)
Distortion	Less than 0.8% at 400 Hz, 100% modulation
De-emphasis	75 $\mu$ s nominal, adjustable to match generator
Operational Controls	Input Level, Audio Output Level
Metering	Front-panel meter reads subcarrier input level or peak deviation of subcarrier
Program Squelch	All electronic; senses subcarrier level and audio noise level
Subcarrier Envelope	10 millisecond minimum fall time
Operating Temperature Range	-20 to +60°C
Power Requirements	120/240 VAC, 50/60 Hz, 10 watts
Semiconductor Complement	6 integrated circuits, 19 transistors, 22 diodes, all silicon
Size	1-3/4" H (4.5 cm) x 19" W (48.4 cm) x 10" D (25.4 cm)
Weight	8 pounds (3.6 kg)
Domestic Shipping Weight	11 pounds (5 kg)

SCD-8

-2-

### III. UNPACKING

The SCD-8 should be carefully unpacked and inspected for any shipping damage. Keep all packing material in case a claim is to be made against the carrier for damages. Should the inspection reveal any damage, immediately file a claim with the carrier.

The top plate should be removed for a brief internal inspection. Be sure the printed circuit boards are secure, the integrated circuits and transistors are seated in their sockets, and that the fuseholder on the rear of the equipment is installed. The top plate may be replaced.

### IV. INSTALLATION

The SCD-8 will generally be located somewhere in the vicinity of a Studio-Transmitter Link (STL) or other radio receiver. The power cord will be connected to any source of 120 VAC, 50/60 Hz. The unit may be connected to 240 VAC if the fuse is changed and the power transformer is rewired for the new voltage. This is discussed under "Field Modifications and Adjustments."

The composite or multiplex output from the driving receiver is connected via a shielded line to the Subcarrier Input connector on the rear of the SCD-8. The input impedance of the SCD-8 is in the region of 25K ohms, and the subcarrier level at this point should be in the range of 0.2 to 2 volts peak-to-peak.

The program audio output from the SCD-8 is connected to the affiliated equipment. This will frequently be an SCA generator or limiting amplifier. The program output from the SCD-8 has an internal impedance of about 600 ohms, and delivers approximately +10 dBm.

### V. OPERATION

When connections have been made to the SCD-8, it is ready for operation. There is no power switch.



It should be evident that the SCD-8 cannot be correctly adjusted until the interconnecting radio link is operating satisfactorily. This means that the radio link must be installed, and the subcarrier is applied and correctly modulating the link.

When the radio link is operational and the subcarrier is on the link, operate the front-panel switch on the SCD-8 to read the incoming subcarrier level. Adjust the INPUT LEVEL control for a front-panel meter reading of "0" dB. Operate the meter switch to the Deviation position. The meter is now reading modulation on the subcarrier, and it should be in agreement with the modulation meter on the SCG-8 or equivalent generator. If necessary, the OUTPUT LEVEL control may be readjusted to provide slightly more or less level to the following equipment. Notice that this control does not affect the panel meter deviation reading. Further, notice that if this control is set for an excessive output level, that the program output may be clipped.

This completes the adjustment of the SCD-8.

## VI. THEORY OF OPERATION

The following discussion refers to the schematic diagram for the SCD-8, 91C6712, sheets 1 and 2. The component layout drawings are 20A2439 and 20B2436.

The input signal for the SCD-8 is applied to the Subcarrier Input connector on the rear of the unit. This signal may be merely a subcarrier, or more likely it will be that subcarrier along with other signal components. These other components are typically stereophonic signals, other subcarriers, or in some cases, control signals. In any case, the signal is routed through RF filtering to the front-panel INPUT LEVEL control. Here the signal amplitude is set to the correct level and applied to the demodulator proper.

The input circuitry consists of a low-gain linear amplifier with high input impedance. This stage is formed by Q2 and Q3 along with the associated biasing and gain-determining components.

The output of this stage is applied to the bandpass filter, FL1. The Moseley Associates, Inc. part number for this filter is 2-1382-X, where the X is the subcarrier frequency in kHz. This filter selects and passes only the desired subcarrier and its important sidebands. Other signals are rejected.

Following the carrier bandpass filter is another amplifier, using Q4 and its associated components. The output of this stage is routed to two different circuits: one is a carrier-level measuring and sensing system, and the other is a limiter and detector system.

Discussing first the detector, the first stage in this chain is a high-gain limiter, using IC2. The output of this stage is a square wave at the subcarrier frequency. At high impedance, it is buffered and brought down to a low impedance by transistor Q5. Then it is differentiated (changed to narrow spikes) and the positive spike is passed by diode CR6 to monostable multivibrator Q6/Q10. This circuit generates a single pulse of uniform amplitude and height for each cycle of the incoming subcarrier. Two isolated outputs are available from this circuit; one is used for a noise sensor and the other for audio recovery.

Buffer Q11 is driven by the monostable and applies the pulse to audio low-pass filter FL2A. The Moseley Associates number for this filter is 2-1383-X, where the X is the audio cutoff frequency in kHz.

Delivered from the low-pass filter is an audio signal, corresponding to the modulation on the subcarrier, and a DC voltage, corresponding to the subcarrier center frequency. The DC voltage is not used in this unit, and is removed by a blocking capacitor.

Immediately following the low-pass filter is a series FET gate, Q12. This gate is opened when the output is to be muted (due to insufficient subcarrier level or excessive noise on the signal), and it is closed or conducting when the subcarrier signal is satisfactory.

After the gate is a linear amplifier using IC3. This stage has variable gain, adjusted by front-panel control R61, labeled OUTPUT LEVEL.

Between IC3 and the output amplifier is a passive de-emphasis network using R62, R63, C34 and the associated components. It is here that the frequency response is trimmed to match the associated subcarrier generator.

The output amplifier, using transistors Q13 through Q17, increases the signal level and allows coupling to the output transformer T2. Between the amplifier and the transformer is a divider or pad consisting of resistors R72 and R73. Should the level need to be reduced, these resistors may be changed. This is covered under Field Modifications.

The carrier output from transistor Q4 is applied to the amplifier stage using transistor Q7. Here the subcarrier is amplified and applied to the rectifier circuit using diodes CR7 through CR9. The DC signal from CR7 is used to drive the front-panel meter via the meter switch, and it is also used to operate Q8. Without signal, the collector of Q15 idles at about +11 volts; with a subcarrier, Q15 conducts and its collector voltage drops to about 1 volt. This signal is applied to transistor Q19 via diode CR16.

The output of the monostable is applied to buffer Q9 and then to noise bandpass filter FL2B. This filter is a part of the audio low-pass assembly 2-1383-X. The output of the noise bandpass is a noise component, centered about one octave above the low-pass filter cutoff frequency. There will be little signal at this point unless the subcarrier is very noisy (or missing). Should there be a noise signal, it will be amplified by transistor Q18 and rectified by diodes CR14 and CR15. CR15 will develop a positive signal if the subcarrier is noisy.

Note that the transistor Q19 will conduct if the subcarrier is noisy or if the subcarrier has insufficient level. With noise, CR15 develops a positive signal and with low level, CR16 develops a positive signal.

If Q19 conducts, series gate Q12 is opened up. If Q19 does not conduct, Q12 will pass the audio signal.

The output of the gate (Q12) not only drives the audio output amplifier, but it also drives a metering system to read subcarrier

deviation. This metering circuit uses IC4 as a linear amplifier, and IC5 as a phase inverter. The outputs of these two stages are full-wave rectified by diodes CR19 and CR20, and are applied to timing and shortage capacitor C52. IC6 then interfaces this point to the low-impedance meter, and it also provides a means of accelerating the meter movement.

The power supply for the SCD-8 is very straightforward, providing +16 volts DC, electronically regulated.

## VII. STANDARDS FOR SUBCARRIER SERVICE

Certain industry standards have evolved for subcarrier operation. These are the result of both legal and engineering considerations. They will be discussed here as they relate to the operation of the SCD-8 Subcarrier Demodulator.

The most common use for the SCD-8 will be for program sub-carrier demodulation. Two general areas will be mentioned: demodulating the subcarrier from an "off-air" receiver (SCA); and using it as a means of conveying a secondary program signal to another specific point (via an STL).

Using the SCD-8 as an SCA demodulator, the most common frequencies involved are 39, 41, and 67 kHz. The sub-carrier modulates the FM transmitter about 9%. This modulation is commonly termed "injection." Then the subcarrier itself is modulated with program material, such as background music. This modulation of the subcarrier itself is commonly called "deviation." The usual amount of deviation is 4 to 6 kHz peak. Just as the standard FM transmitter uses pre-emphasis (treble boost), subcarrier systems also commonly use pre- and de-emphasis networks to enhance the signal-to-noise ratio.

Operation of the SCD-8 over an aural STL is similar to FM broadcast service. When the STL is designed for composite stereo transmission, the deviation is generally about 16 kHz peak, at a center frequency of 185 kHz. For monaural STL service, the center frequency is usually 67 kHz.

When the SCD-8 is used in broadcast service, telemetry (metering) signals may be applied to the subcarrier along with the program. If these signals are in the 20 to 40 Hz region, they are referred to as "subaudible" telemetry signals. Signals in the 300 to 3000 Hz range are considered "audible" telemetry signals.

When the telemetry signals are in the audible range, programming may not simultaneously be applied to the subcarrier; the telemetry signals would interfere with the program and, by the same token, the program would interfere with the telemetry. However, the entire modulation capability of the subcarrier system may be used for telemetry, increasing both the data rate and the signal-to-noise ratio of the data. It is suggested that deviation of the subcarrier be maintained at 3 kHz peak in this service.

When the telemetry signals are in the subaudible range, programming may simultaneously be applied to the subcarrier. The telemetry signals are held to an upper limit of 40 Hz, and program signals below 80 Hz should be rolled off to prevent interference with the telemetry. At the receiving end, a low-pass filter is used to extract the low-frequency telemetry and reject normal programming. In this system, the telemetry and the programming share the modulation capability of the subcarrier system. It has been found in practice that the telemetry signals are easily separated from the programming if they are not less than 10% of the amplitude of the programming. It has been found that an upper limit of 20% should be observed. By maintaining the telemetry between these two limits, freedom from interference to the telemetry by the programming, and also freedom from interference to the programming by the telemetry may be achieved. It is suggested that an 80 Hz high-pass filter be used on the program line into the subcarrier generator to clear out any low-frequency components so they do not interfere with the telemetry. Such a filter is contained in an assembly available from Moseley Associates, the Model MIU-1 Metering Insertion Unit.

When a subcarrier is used for programming in FM broadcast service, its sidebands must not interfere with the stereo subchannel region. To accomplish this, both the deviation and the upper audio frequency limit must be restricted. The deviation should be held to about

4 kHz, and the upper audio frequency should be held to about 5 kHz. More deviation may be used if the upper audio frequencies are reduced in amplitude.

In television telemetry service, the subcarrier must be used only for metering. Programming is not allowed in this service.

## VIII. FIELD MODIFICATIONS AND ADJUSTMENTS

### A. Typical Applications

<u>Subcarrier Frequency</u>	<u>Audio Response</u>	<u>Typical Applications</u>
26 kHz	3 kHz	Control signal transmission over STL
39 kHz	3 kHz	Data signal return over aural carrier in TV
41 kHz	5 kHz	Program transmission in FM
67 kHz	5 kHz	Program transmission in FM
67 kHz	10 kHz	Program transmission over monaural STL
185 kHz	10 kHz	Program transmission over composite stereo STL.

### B. 120/240 Volt Wiring

<u>Voltage</u>	<u>Fuse</u>	<u>Connection</u>
120	0.25 A	Black to white: connect to C5 Red-black to black-white: connect to C6
240	0.1 to 0.2 A	Connect black to C5 Connect black-white to C6 Connect red-black to white

### C. De-emphasis

The de-emphasis on the SCD-8 is adjustable to enable system frequency response to be optimized using a particular subcarrier generator. In some applications the de-emphasis may need to be

altered to the extent that the adjustments no longer are effective. The de-emphasis may be increased or decreased (or removed) by altering (or removing) capacitor C34. It is suggested that C34 be removed for data or telemetry reception.

#### D. Carrier Frequency Change

The operating frequency of the SCD-8 may be changed by changing the plug-in filter FL1. This filter carries Moseley Associates, Inc. part number 2-1382-X, where the "X" indicates the carrier frequency.

Notice that the demodulator timing capacitor, C24, must also be changed. The correct value is shown on the schematic, 91C6712.

#### E. Audio Frequency Bandwidth Change

The audio bandwidth of the SCD-8 is determined by the plug-in filter FL2. This filter carries Moseley Associates, Inc. part number 2-1383-X, where the X indicates the cutoff frequency.

#### F. Frequency Response Adjustment

The frequency response of the SCD-8 is adjustable to correct for various minor deficiencies in the subcarrier system. Two controls are provided; one (R62) affects frequency response in the 2 kHz region, and the other (R64) affects frequency in the 5 kHz region and above.

To adjust these controls, apply a test tone at 200 Hz to the companion subcarrier generator at a level 10 dB below normal. Measure the output level from the SCD-8 Subcarrier Demodulator. Increase the tone frequency to 2000 Hz. If necessary, adjust R62 for a flat response between 200 and 2000 Hz. Now, increase the test tone to 5000 Hz, or the upper frequency of the system (determined by the low-pass filters in the generator and demodulator). Adjust R64 for a flat response at the upper audio frequencies. These controls interact somewhat, and may have to be slightly readjusted if either is reset.

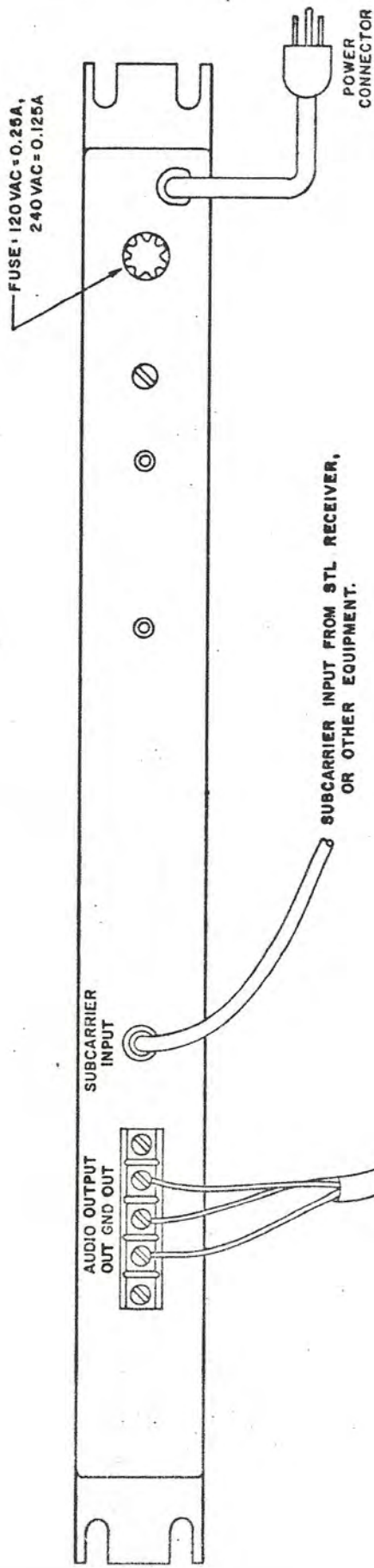
### G. Metering

Remove the subcarrier input to the SCD-8. Operate front-panel switch SW-1 to the MODULATION position. Adjust meter zero control R100 for zero meter deflection on the SCD-8 front-panel meter. Apply a test tone at a low audio frequency such as 400 Hz to the companion subcarrier generator. Adjust meter calibration control R85 so that the panel meter reads 0 dB when the subcarrier generator is deviated correctly. If an SCG-8 Subcarrier Generator is used, set R85 on the demodulator so that the demodulator panel meter agrees with the SCG-8 panel meter. Reducing and suddenly increasing the audio level on the generator manually, adjust the meter overshoot control R97 on the SCD-8 for a 0.5 dB overshoot. The SCG-8 carrier should be left on for these tests, after which it may be returned to its normal mode.

### H. Carrier Bandpass Filter Tuning

The carrier filter should never require readjustment unless a component has been replaced. Should retuning be required, observe the following procedure. Apply a 1.5 volt peak-to-peak modulated subcarrier of the correct frequency to the input BNC connector. Modulation should be  $\pm 10\%$  at 400 Hz; see drawing 15A1009. Operate the front-panel meter switch to the INPUT LEVEL position. Tune the carrier bandpass filter for maximum meter reading.





PROGRAM AUDIO OUTPUT TO SUBCARRIER GENERATOR, LIMITER, OR OTHER LOAD.

SCD-8  
REAR VIEW

**MOBELEY ASSOCIATES, INC.**  
SANTA BARBARA RESEARCH PARK  
GOLETA, CALIFORNIA 93017

REAR CONNECTIONS  
SCD-8

TOL: FRACT. ± 1/32, .XX ± .030, .XXX ± .010, < ± 1/2°

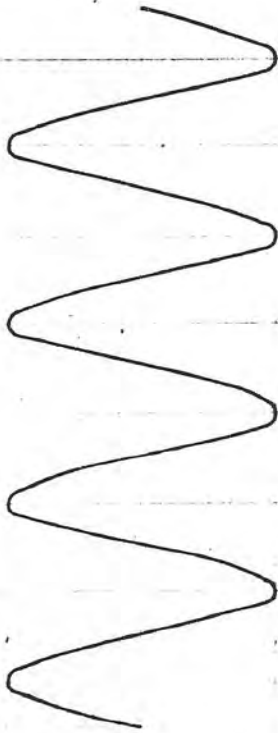
DWN	REB	16/APR/74	SCALE:
CHK	FX Y	17 APR 74	
ENG	JCT	17 APR 74	21A 2466

MGMT. APPR. \_\_\_\_\_ DATE \_\_\_\_\_

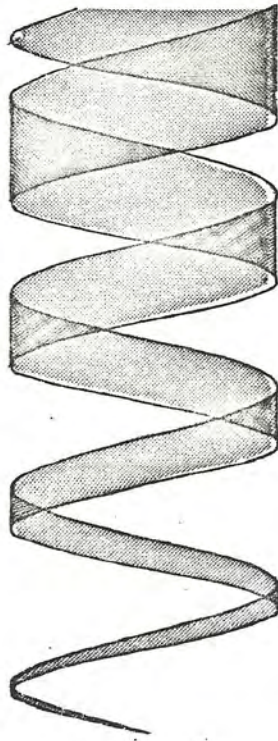
REVISIONS \_\_\_\_\_

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UNMODULATED SUBCARRIER



SUBCARRIER DEVIATED  $\pm 9.166\%$  OF CENTER FREQUENCY

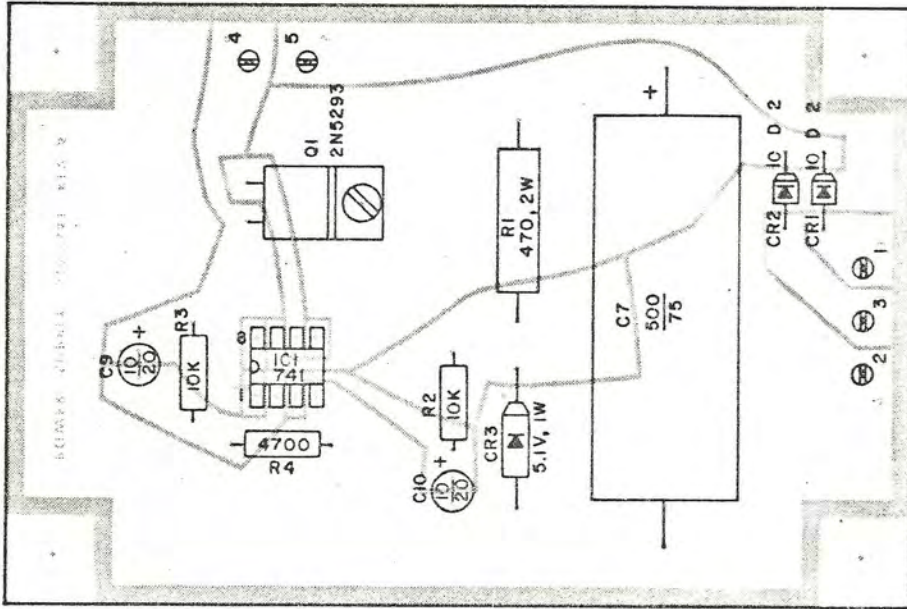


SUBCARRIER FREQUENCY	DEVIATION USING STANDARD PATTERN
26 KHz	2.36 KHz
39 KHz	3.575 KHz
41 KHz	3.756 KHz
67 KHz	6.142 KHz
185 KHz	16.96 KHz

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<b>MOBELEY ASSOCIATES, INC.</b> SANTA BARBARA RESEARCH PARK GOLETA, CALIFORNIA 93017			
METER CALIBRATION SUBCARRIER GENERATOR			
TOL: FRACT. $\pm 1/32$ , .XX $\pm .030$ , .XXX $\pm .010$ , $< \pm 1/2$			
DWN	REB	17/APR/74	SCALE:
CHK	JCT	17/APR/74	15A 1009
ENG			A
MGMT. APPR.			
REVISIONS			
DATE			
REDRAWN, 17/APR/74 REB			



NOTES:

- 1 UNLESS OTHERWISE SPECIFIED  
RESISTOR VALUES ARE IN OHMS, 1/2W, 10%  
CAPACITOR VALUES ARE IN MICROFARADS.
- 2 P.C. BOARD 5IA 5541.
- 3 SCHEMATIC 9IC 6712.



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GOLETA, CALIFORNIA 93017

**COMPONENT LAYOUT**  
**SCD-8 SUBCARRIER DEMOD. P.S.**

TOL: FRACT. ± 1/32, .XX ± .030, .XXX ± .010, < ± 1/2"

DWN	REB	21/MAR/74	SCALE:
CHK	FXY	16 APR 74	
ENG	JCP	17 APR 74	

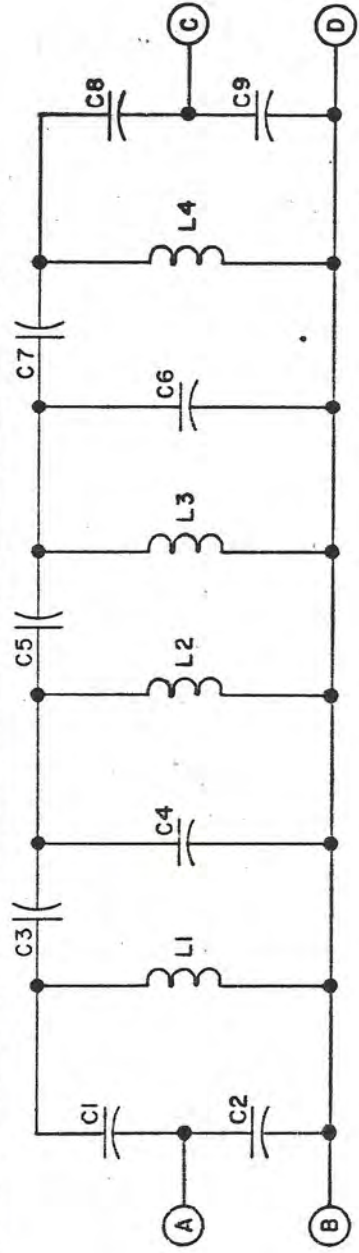
20A 2439 A

REVISIONS DATE

NETWORK REV. A 4/JUNE/74 REB.

MGMT. APPR.

	C1	C2	C3	C4	C5	C6	C7	C8	C9	L1-4
ITEM 1 (26KHz)	1200pf	1200pf	200pf	470pf	150pf	470pf	200pf	1200pf	1200pf	47mH
ITEM 2 (39KHz)	1500pf	820pf	270pf	470pf	150pf	510pf	120pf	1800pf	1100pf	22mH
ITEM 3 (41KHz)	1200pf	910pf	180pf	390pf	120pf	390pf	180pf	1200pf	910pf	22mH
ITEM 4 (67KHz-8)	1200pf	560pf	180pf	270pf	110pf	390pf	68pf	1500pf	750pf	10mH
ITEM 5 (67KHz-10)	1670pf	510pf	200pf	270pf	130pf	270pf	200pf	1670pf	510pf	10mH
ITEM 6 (185 KHz)	3300pf	240pf	150pf	75pf	220pf	47pf	47pf	4700pf	330pf	2.2mH
ITEM 7 (20 KHz)	.015mf	1800pf	1000pf	910pf	680pf	910pf	1000pf	.015mf	1800pf	33mH
ITEM 8 (110 KHz)	2240pf	300pf	180pf	160pf	110pf	270pf	68pf	3300pf	430pf	4.7mH
ITEM 9 (8.5KHz)	.033mf	3600pf	2700pf	1500pf	1800pf	1500pf	2700pf	.033mf	3600pf	100mH



**NOTES:**

- 1 UNLESS OTHERWISE SPECIFIED CAPACITOR VALUES ARE IN PICOFARADS.
- 2 ALL PARTS ARE FREQUENCY DEPENDENT, SEE CHART.
- 3 P.C. BOARD 51A 5560.
- 4 COMPONENT LAYOUT 20A 2444.

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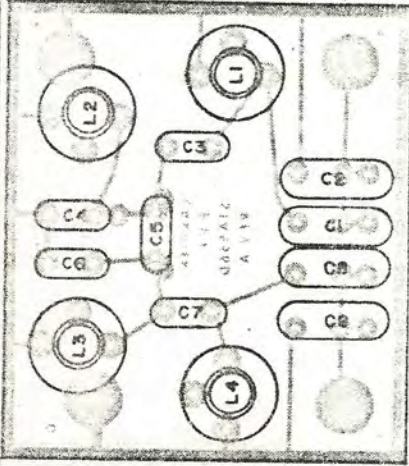
**SCHEMATIC**  
 SCD-8 CARRIER B.P.F.

ADD ITEM	DATE	REVISIONS
B	14 APRIL 77	ADD ITEM 8 & 9. 23 JUNE 77 J.M.

TOL: FRACT. ± 1/32, .XX ± .030, .XXX ± .010, < ± 1/2°
DWN REB 29/MAR/74
CHK FXY 16 APR 74
ENG JH
MGMT. APPR.

ITEM 1 (26KHz)  
 ITEM 2 (39KHz)  
 ITEM 3 (41KHz)  
 ITEM 4 (67KHz-8)  
 ITEM 5 (67KHz-10)  
 ITEM 6 (185KHz)  
 ITEM 7 (20KHz)

C1	C2	C3	C4	C5	C6	C7	C8	C9	L1-4
1200pf	1200pf	200pf	470pf	150pf	470pf	200pf	1200pf	1200pf	47mH
1500pf	820pf	270pf	470pf	150pf	510pf	120pf	1800pf	1100pf	22mH
1200pf	910pf	180pf	390pf	120pf	390pf	180pf	1200pf	910pf	22mH
1200pf	560pf	180pf	270pf	110pf	390pf	89pf	1500pf	750pf	10mH
1670pf	510pf	200pf	270pf	130pf	270pf	200pf	1670pf	510pf	10mH
3300pf	240pf	150pf	150pf	75pf	220pf	47pf	4700pf	330pf	2.2mH
.015mf	1800pf	1000pf	910pf	680pf	910pf	1000pf	.015mf	1800pf	33mH



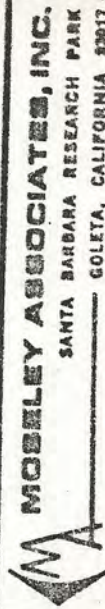
ITEM 6 (110KHz)	2240pf	300pf	180pf	160pf	110pf	270pf	68pf	3300pf	430pf	4.7mH
ITEM 8 (8.5KHz)	.033mf	3600pf	2700pf	1500pf	1800pf	1500pf	2700pf	.033mf	3600pf	100mH

NOTES:

- UNLESS OTHERWISE SPECIFIED CAPACITOR VALUES ARE IN PICOFARADS.
- P.C. BOARD 51A 5560.
- SCHEMATIC 91A 6718.
- ALL PARTS ARE FREQUENCY DEPENDENT, SEE CHART.
- PARTS SHOWN ARE FOR ITEM 1, ITEM 2-7 DIFFER IN SHAPE AND SIZE.

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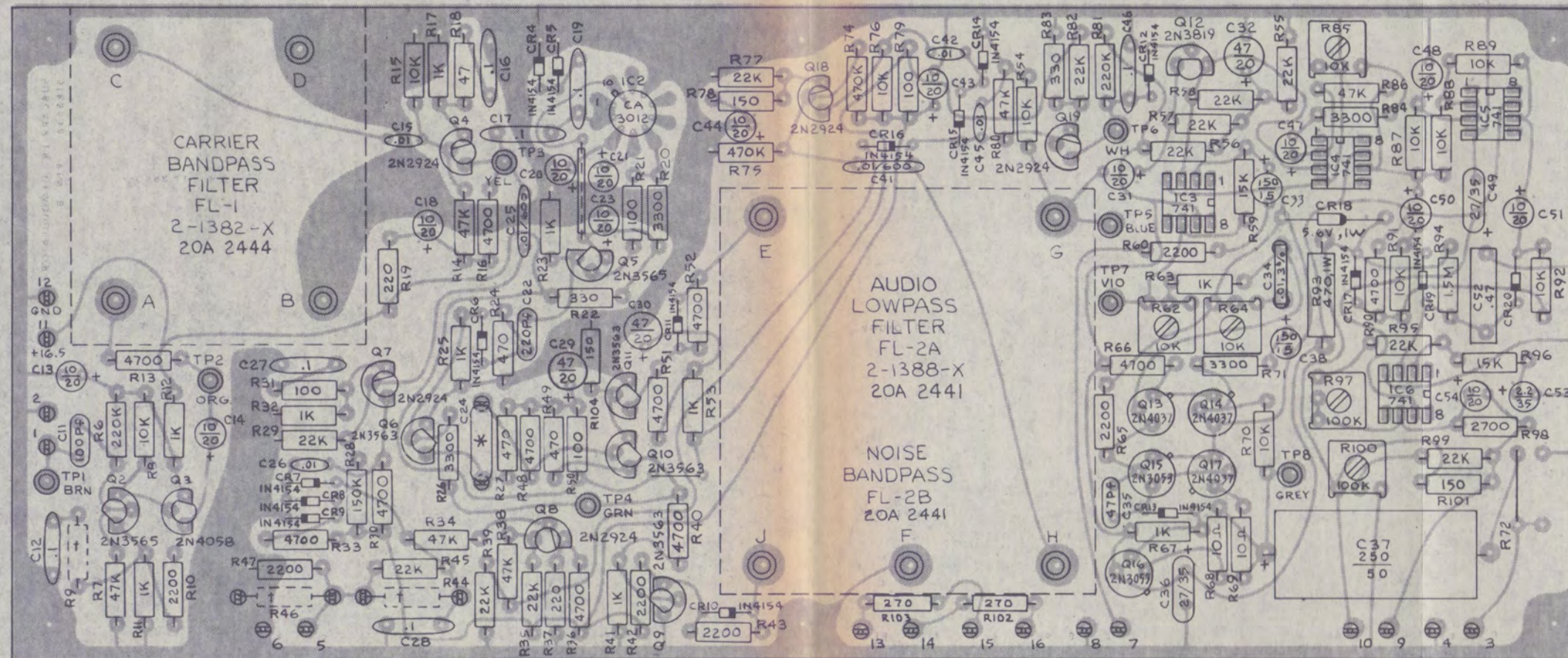
**MOBBLEY ASSOCIATES, INC.**  
 SANTA BARBARA RESEARCH PARK  
 GOLETA, CALIFORNIA 93017

**COMPONENT LAYOUT**  
 SCD-8 CARRIER B.P.F.

YOL: FRACT. ± 1/31, .XX ± .030, .XXX ± .018, < ± 1/2"	REV	26/MAR/74	SCALE:
OWN	REB	16 APR 74	
CHK	PXY	JCP	
ENR	JCP	JCP	

20A 2444 C

NO.	DESCRIPTION	DATE
1	ADD ITEM 7	14 APR 74
2	ADD ITEM 8	23 JUNE 77
3	ADD ITEM 7	14 APR 74
4	ADD ITEM 8	23 JUNE 77
5	ADD ITEM 7	14 APR 74
6	ADD ITEM 8	23 JUNE 77
7	ADD ITEM 7	14 APR 74
8	ADD ITEM 8	23 JUNE 77
9	ADD ITEM 7	14 APR 74
10	ADD ITEM 8	23 JUNE 77



C24	
ITEM 1 (26KHz)	.0062
ITEM 2 (39KHz)	.0043
ITEM 3 (41KHz)	.0039
ITEM 4 (67KHz)	.0024
ITEM 5 (185KHz)	910pf

NOTES:

- 1 UNLESS OTHERWISE SPECIFIED RESISTOR VALUES ARE IN OHMS, 1/2W, 10% CAPACITOR VALUES ARE IN MICROFARADS.
- 2 P.C. BOARD 51B 5538.
- 3 SCHEMATIC 91C 6712.
- 4 \* DENOTES FREQUENCY DEPENDENT PART, SEE CHART.
- 5 ⊙ DENOTES STIMPSON GS 4-6 (INSTALL FROM THIS SIDE, SOLDER FAR SIDE)
- 6 + DENOTES OPTIONAL PART NOT NORMALLY INSTALLED.

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REV	DATE	DESCRIPTION
I	17 FEB 76	R71 WAS 2200, R72 & R73 WAS 120, R102 & 103 WAS WIRE. ECO 922 232AN7B JAM.
II	17 FEB 76	MOVED + SIGN C55
III	17 FEB 76	R5B WAS 4700A PER E.C.O 781 12-16-75 GJM
F	1000/25	C 37 250/50 WAS
E	18 MARCH 75	L.I. CHANGED C 38, C 33 & C 24 CHART VALUES. 9 DEC 74 E.C.O 697 L.I.
D		ADDED NOTE 6 WITH "+" ON R9, R44, R46 KF 51MV74
C		REVISE CHART. REF ECO 660. R18 WAS 47K BJUL74 F.X.Y.
B		CHANGE VALUES C22, R26, 27, 48, 49, Q6, 9, 10, 11. 9 MAY/74 REB.
A		R-26 ER-40 WERE 220C NOW 4700 JHM 4-29-74

**MOSELEY ASSOCIATES, INC.**  
SANTA BARBARA RESEARCH PARK  
GOLETA, CALIFORNIA 93017

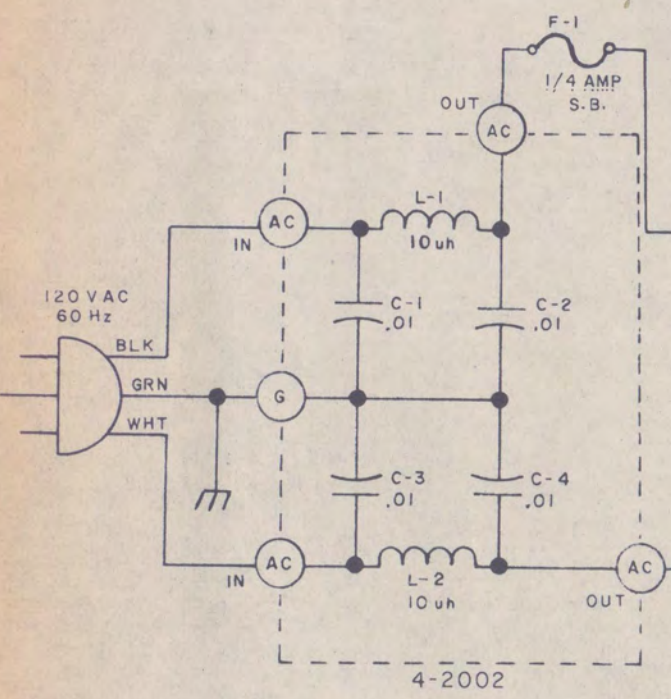
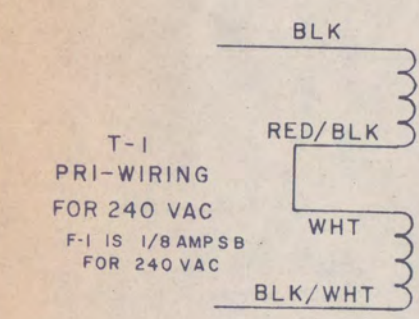
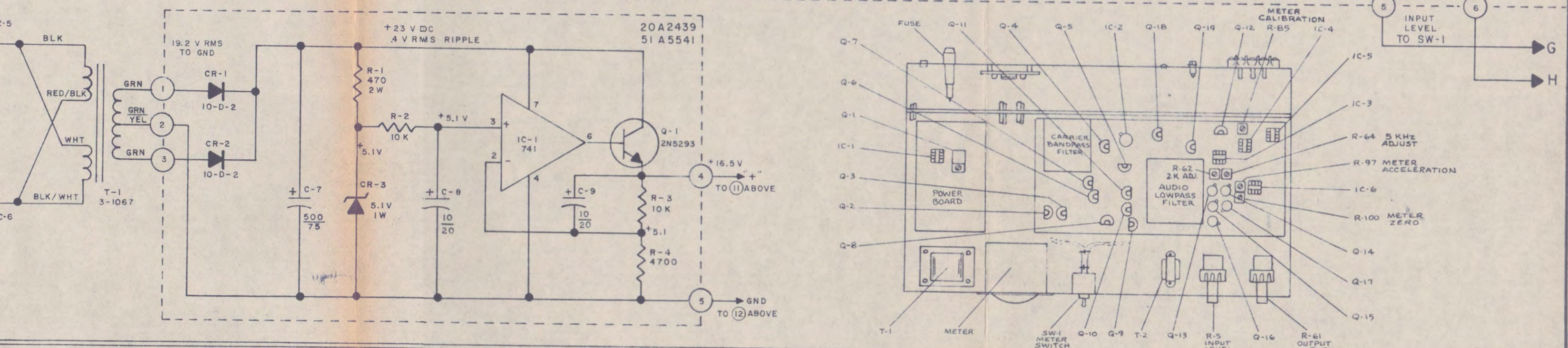
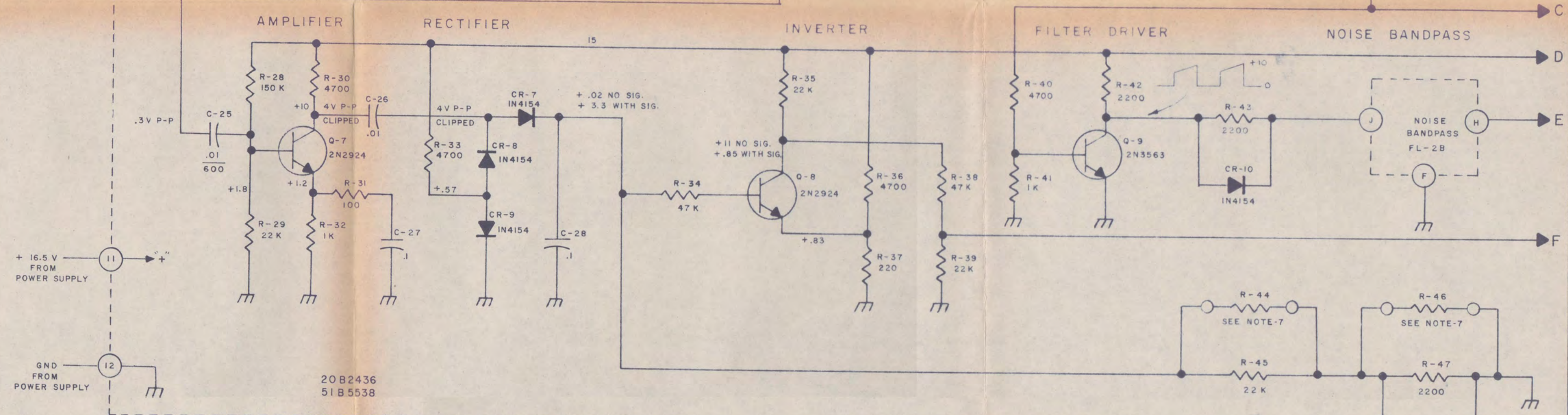
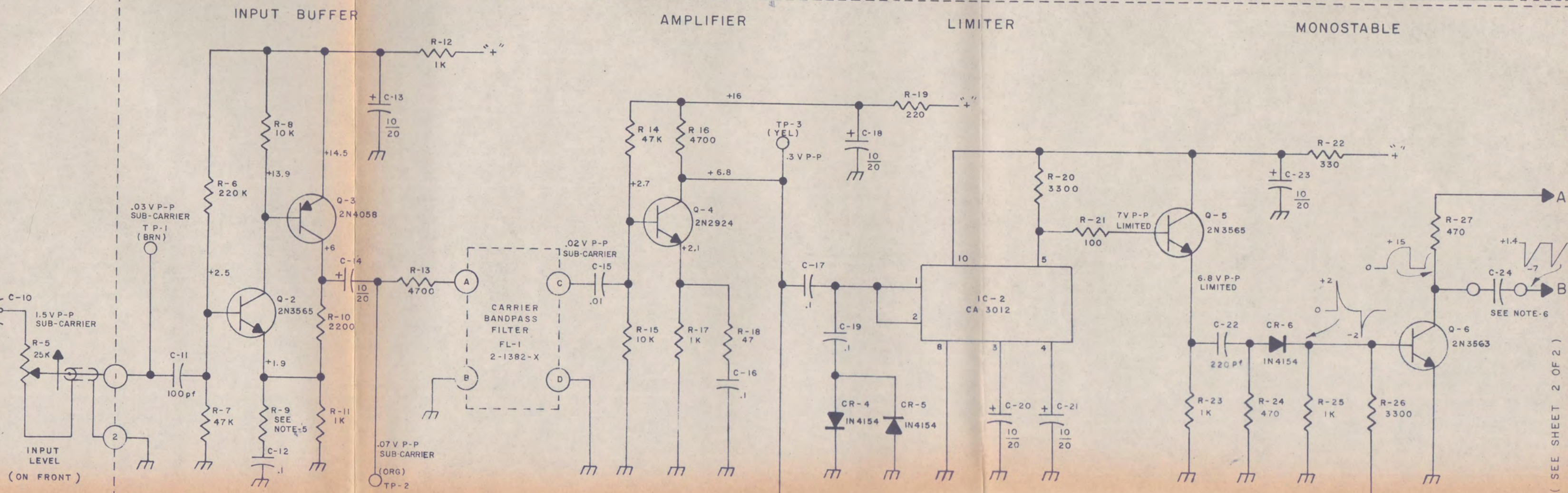
**COMPONENT LAYOUT**  
**SUBCARRIER DEMODULATOR SCD-8**

TOL: FRACT. ± 1/32, .XX ± .030, .XXX ± .010, < ± 1/2°

MGMT. APPR.	DATE
DWN	18/MAR/74
CHK	FXY 17 APR 74
ENG	JLT 18 APR 74

20B 2436 I

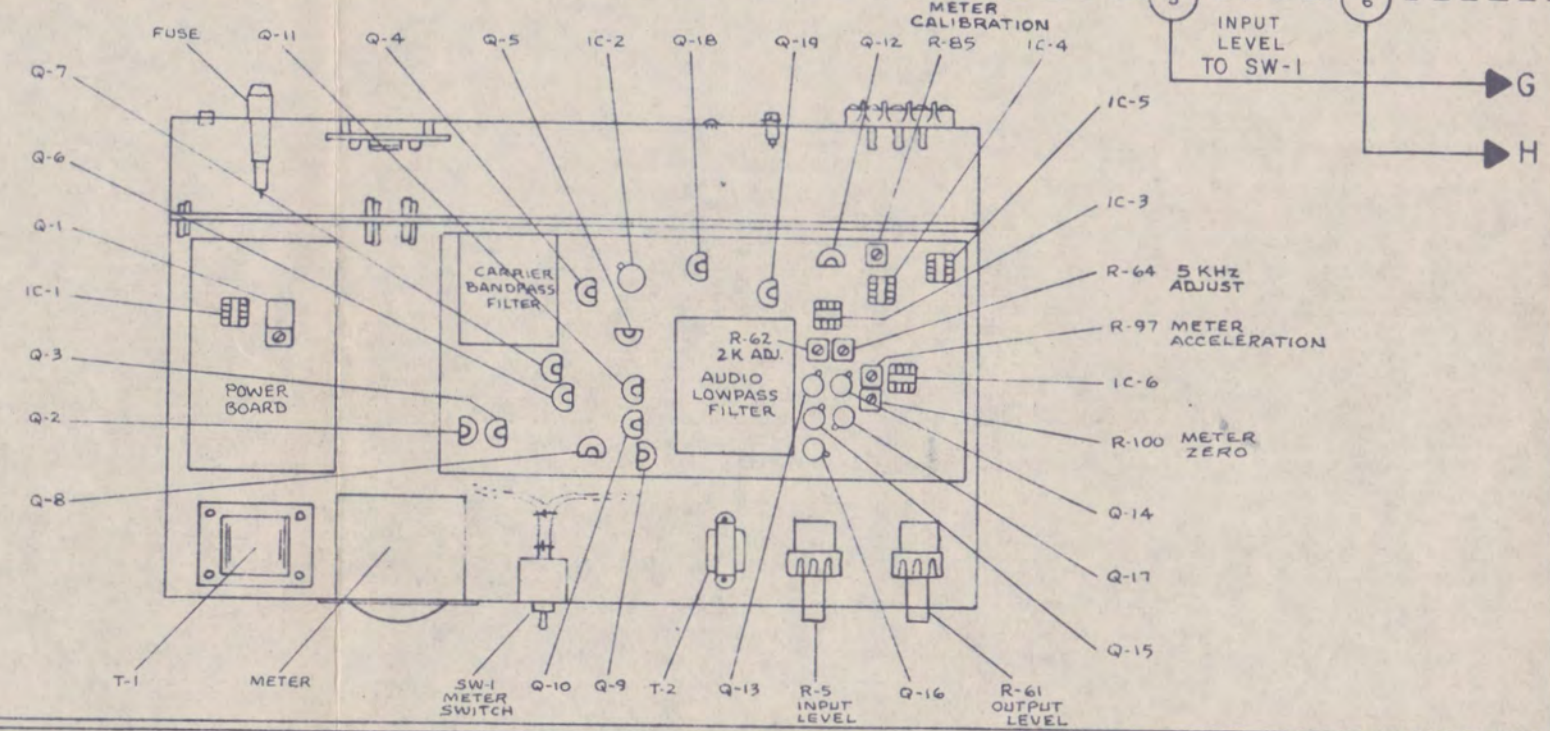
SUBCARRIER INPUT (ON REAR)



- NOTES:
- UNLESS OTHERWISE SPECIFIED RESISTOR VALUES ARE IN OHMS, 1/2W, 10%. CAPACITOR VALUES ARE IN MICROFARADS.
  - IC'S LISTED AS 741 ARE SN72741P
  - P.C. BOARD 51B5538
  - COMPONENT LAYOUT 20B2436
  - R-9 IS GAIN INCREASE OPTION, NOT NORMALLY INSTALLED.
  - C-24 IS FREQUENCY DEPENDENT. SEE CHART.
  - R-44 AND R-46 ARE METER SENSITIVITY TRIM, NOT NORMALLY INSTALLED.

FREQ	C-24
26 KHz	.0062 μf
39 KHz	.0043 μf
41 KHz	.0039 μf
67 KHz	.0024 μf
185 KHz	910 pf

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**SCHEMATIC**  
**SCD-8 SUB-CARRIER DEMODULATOR**

TOL: FRACT. ± 1/32, .XX ± .030, .XXX ± .010, < ± 1/2"

REV	DATE	BY	CHK
F			
E			
D			
C			
B			
A			

91C6712





## MOSELEY ASSOCIATES, INC.

SPARE PARTS LIST NO. SP-33MODEL SCD-8 SUBCARRIER DETECTOR

<u>PART</u>	<u>QUANTITY</u>	<u>STOCK LOCATION</u>		<u>PRICE</u>
10D2	2	19-202	@ .36	\$ .72
1N4154	2	19-144	@ .13	.26
1N4733A	1	19-163		1.02
1N4734A	1	19-164		1.30
2N2924	1	19-420		.74
2N3053	1	19-430		1.40
2N3563	1	19-450		.50
2N3565	1	19-452		.84
2N3819	1	19-494		.67
2N4037	1	19-520		1.65
2N4058	1	19-530		.60
2N5293	1	19-580		1.61
CA-3012	1	19-618		6.37
SN72741P	2	19-825	@ .88	<u>1.76</u>
Semi-conductors total:				\$ 19.44

Prices subject to change without notice.

Rev. 17 April 1979            ph

