

INSTALLATION AND OPERATING INSTRUCTIONS

CONRAC[®]

TELEVISION MONITOR

MODEL CNB8

CONRAC

Covina, California

A DIVISION OF CONRAC CORPORATION

2362
Walshman

INSTALLATION AND OPERATING INSTRUCTIONS

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TELEVISION MONITOR

MODEL CNB8

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CONRAC

Covina, California

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MODEL CNB8/C, FRONT VIEW

TECHNICAL SUMMARY

ELECTRICAL SPECIFICATIONS

Input Power:	120/240 volts, 50/60 Hz, 130 watts, fused with 1½ Ampere Slo-Blo fuse.
Video Signal Required:	0.25 volt peak (minimum for 50 volts at kinescope cathode); 2 volts maximum, sync negative.
Video Input Impedance:	1. High impedance for bridging, approximately 470K in parallel with 15 pF. 2. 75 ohm terminating resistance with switch on rear apron.
Video Frequency Response:	Flat ± 1 dB to 10 MHz.
External Sync Input:	High impedance, 3-8 volts peak-to-peak, sync negative.
Linearity:	Within 2% of picture height.

MECHANICAL SPECIFICATIONS (Dimensions Include Handles, Knobs, Feet and Connectors)

MODEL	WIDTH	HEIGHT	LENGTH	NET WEIGHT	SHIPPING WEIGHT
CNB8/C (Cabinet)	9-1/4"	11-1/8"	18"	41 Lbs.	53 Lbs.
CNB8/N (Chassis)	8-1/2"	9-1/4"	18"	29 Lbs.	39 Lbs.
CNB8/2R (Rack)	19"	10-1/2"	18"	72 Lbs.	87 Lbs.

Finish: Deep Umber Gray, Baked Enamel

TUBE COMPLEMENT

V1	6AU6	1st Video Amplifier
V2	6CB6	2nd Video Amplifier
V3	12BY7	3rd Video Amplifier
V4	8NP4	8" Kinescope
V401	12AU7	DC Restorer, External Sync Amplifier
V402	6BY6A	Sync Separator
V403	6C4	Phase Splitter
V404	6AL5	Horizontal Phase Detector
V501	6CG7	Vertical Oscillator
V502	6AQ5A	Vertical Amplifier
V601	6CG7	Horizontal Oscillator
V602	6JB6	Horizontal Amplifier
V603	6DW4	Horizontal Damper
V604	1B3GT	High Voltage Rectifier

SILICON DIODES:

D301 to D304	1N3254	Low Voltage Rectifier
D401	1N3254	Clamp Diode

CONRAC CNB8 MONITOR

The CNB8 monitor is a complete self-contained unit which may be operated (a) from a line containing composite video and sync, or (b) from separate lines, one carrying video and one carrying composite sync.

UNPACKING

As soon as the monitor is received, it should be unpacked and examined for damage which may have occurred in shipment. Should any damage be found, file a claim with the carrier immediately, stating the extent of the damage. Before operating the CNB8, the shipping pallet should be removed to provide sufficient ventilation.

INITIAL ADJUSTMENTS

Plug a source of composite video into the INPUT jack, J1 or J2. The line may be terminated by switching S1 to 75 ohms. It should now be possible to see a picture on the screen.

CENTERING

Using a standard test pattern, set the height and vertical linearity so that the top and bottom halves of the picture are similar. Center the picture by repositioning the centering tabs on the rear cover of the deflection yoke.

WIDTH

The monitor is normally connected at the factory for "full scan", and the width is adjusted to just fill the screen. To operate the unit at "REDUCED WIDTH" so that all corners of the picture may be seen, move the red wire from terminal 10 of the horizontal output transformer to terminal 6, and the white wire from terminal 3 to terminal 1. Do not attempt to operate the monitor at reduced scan with the horizontal output transformer connected for full scan.

EXTERNAL SYNC

Parallel connected external sync jacks are provided on the rear apron. A composite sync source from 3-8 volts should be connected to J401 or J402. S402, sync switch, must be operated to "EXT" position.

PIN CUSHION CORRECTION

Four small magnets are provided to correct the "pin cushion" effect produced by the wide angle deflection system and flat-faced kinescope employed in the CNB8. To adjust these magnets, first move them as far from the kinescope as possible. With a grating bar pattern on the screen, move the two side magnets toward the side of the kinescope until the vertical bars near the sides of the picture are nearly straight. Then move the top and bottom magnets toward the picture tube until the horizontal lines near the top and bottom of the picture are straight. Keep the magnets as far from the kinescope as practical.

OPERATION FROM A 240-VOLT SOURCE

If the monitor is to be operated from a 240 volt, 60 Hz, power line, it will be necessary to restrap the terminal strip mounted just forward of the power transformer, as shown on the schematic diagram, page 11, and to change the fuse to 3/4 ampere Slo-Blo.

CIRCUIT DESCRIPTION

VIDEO

Two input jacks, J1 and J2, are wired in parallel to facilitate multiple connection of monitors. A switch, S1, is provided on the rear apron to terminate these jacks with a 75 Ω non-inductive resistor, wired inside the chassis apron. The first and second video stages employ a type 6AU6 and a 6CB6 tube with series-shunt peaking. The third stage employs a type 12BY7 tube with series-shunt peaking, and drives the kinescope cathode. Four of the six video peaking coils are adjustable.

DC RESTORATION

V401B/ $\frac{1}{2}$ 12AU7 is diode connected as a DC restorer. A switch, S401, is provided on the rear apron which will eliminate the DC restoration if the unit is to be used on non-standard sync where the amplitude of the sync pulses is too great for normal operation of a DC restorer.

SYNCHRONIZATION

V402/6BY6A is used as a sync clipper. Positive sync is fed to this tube and a bias level is established proportional to the signal amplitude. Negative sync pulses, which are virtually free of video, appear in the plate circuit. Both top and bottom of the sync pulses are clipped, which produces constant level output pulses over a wide range of input levels. The clipped sync is fed to a phase splitter, V403/6C4, which in turn drives the phase detector, V404/6AL5, and the vertical integrator.

VERTICAL

The vertical scanning generator consists of V501/6CG7 connected as a multivibrator. The vertical output amplifier, V502/6AQ5A, is pentode connected. Linearity is adjusted by a rheostat in the cathode circuit. Excellent linearity is obtained by employing a degenerative feedback loop around the output tube to compensate for component variation. Compression or stretch at the extreme top is controlled by adjusting the vertical feedback control, P503, located on the top of the chassis at the side of V501.

HORIZONTAL

From V403/6C4, negative and positive sync pulses are supplied to pin 1 and pin 2, respectively, of the horizontal phase detector, V404/6AL5. Pins 5 and 7 are fed a sawtooth comparison voltage from the isolation transformer, T602, which is excited by the current through the horizontal deflection yoke coils. The output from the phase detector is fed through an integrating network to the grid, pin 7, of the horizontal oscillator tube, V601/6CG7. With the system in proper adjustment, the output of the phase detector is very nearly zero. If, for any reason, the horizontal oscillator, V601, starts to drift out of sync, the phase detector develops a voltage of proper polarity and magnitude to restore the oscillator to synchronism.

A type 6JB6 tube is used as the horizontal output amplifier and is grid leak biased. A high efficiency auto-transformer type deflection system is used, the kinescope ultor voltage being derived from the flyback pulse.

POWER SUPPLY

Four silicon rectifiers, type 1N3254, are used in a conventional full-wave, bridge-type power supply. On each half of the cycle, R302 (10 ohm, 5 watt resistor) limits the peak charging current to a value which is safe for the rectifiers.

SERVICE ADJUSTMENTS

HORIZONTAL FREQUENCY

Set the horizontal hold control near the center of its range. Ground the grid (pin 6) of V403/6C4. Adjust L601, horizontal frequency control so that the picture is upright and nearly stationary.

HORIZONTAL LINEARITY

Supply the monitor with a video signal which will produce a grating bar test pattern on the screen. Allow the monitor to warm up for a period of at least 15 minutes before making adjustments. Adjust the width coil, L602, to produce the desired width. If the unit is to be operated at "reduced scan", ascertain that the yoke is connected as outlined on page 7.

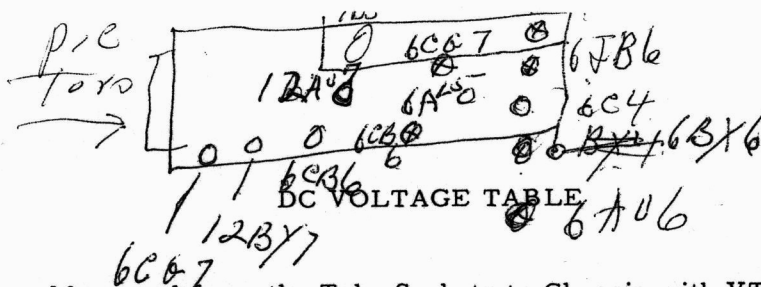
Place a transparent overlay of the grating bar test pattern in front of the picture tube screen. If such overlay is not available, attach a piece of pressure-sensitive tape, such as Scotch masking tape, to the picture tube face, along the horizontal or vertical axis for the entire diameter of the screen. Rule off equally spaced marks on the tape, corresponding to the number of bars in the grating pattern. After the tape is ruled off and in place, adjust the controls on the monitor to make the grating lines on the raster coincide with the marks on the paper tape, as outlined below.

Adjust the linearity coil, L603, for maximum picture width; then turn adjustment counterclockwise one-half to two turns to find the position of best linearity.

An alternate method of finding the position of best linearity is to remove the 3/10 Ampere fuse mounted on the rear apron. Connect a 0-150 mA meter in place of the fuse. Adjust the horizontal linearity coil for minimum current. Turn the linearity coil adjustment counterclockwise one-half to two turns to find the position of best horizontal linearity. Remove the meter and replace the fuse.

HORIZONTAL DRIVE

Applying a grating bar signal to the monitor, turn the horizontal drive control, P603, counterclockwise until a horizontal compression is noted in the squares just to the right of the center of the screen. Turn P603 clockwise until the compression disappears.

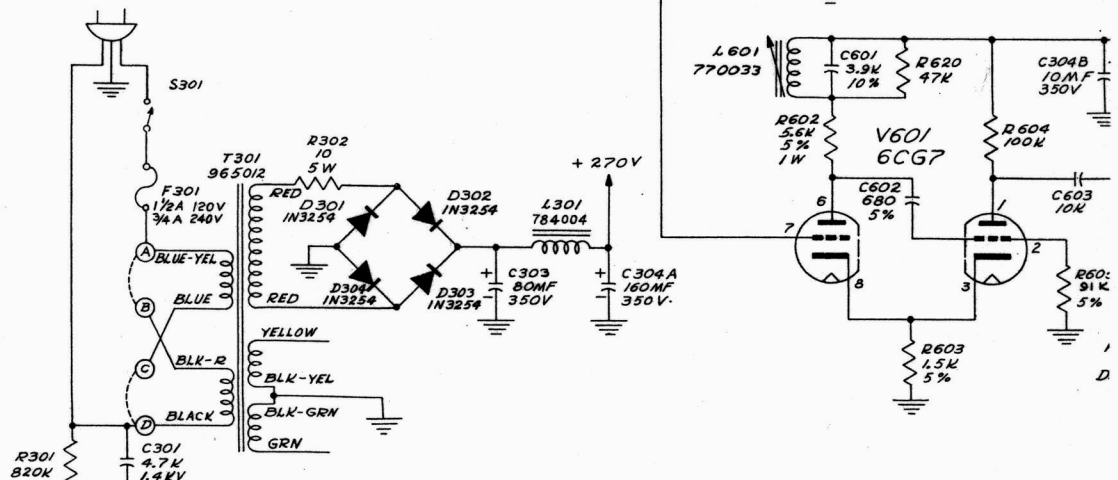
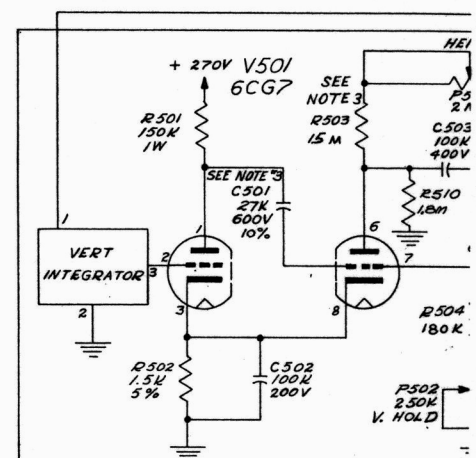
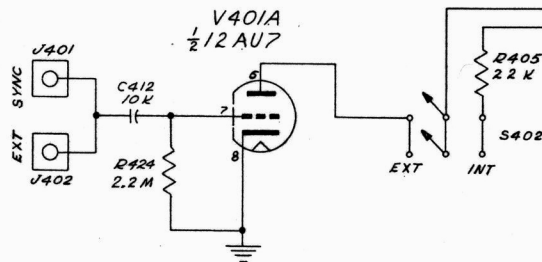
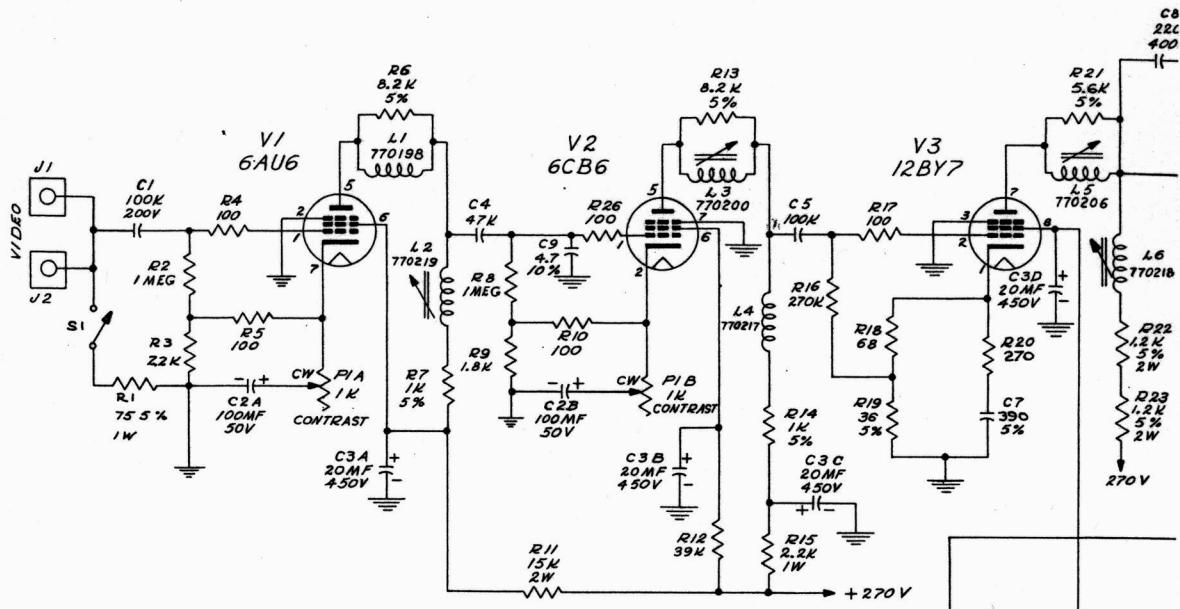


Measured from the Tube Sockets to Chassis with VTVM
 Normal Picture, Line Voltage 117 Volts, 60 Hz
 DC Restoration Switch in 0% Position

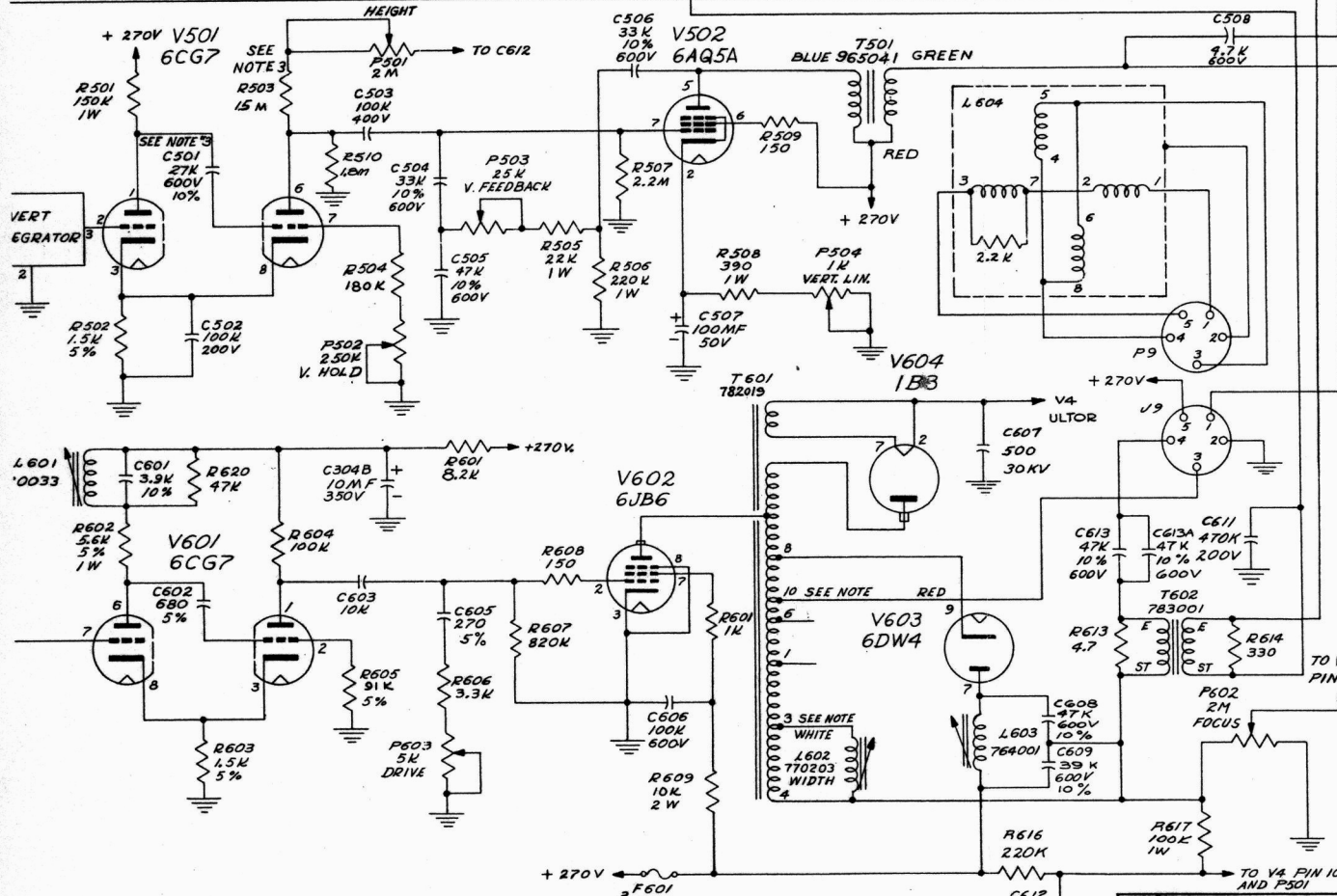
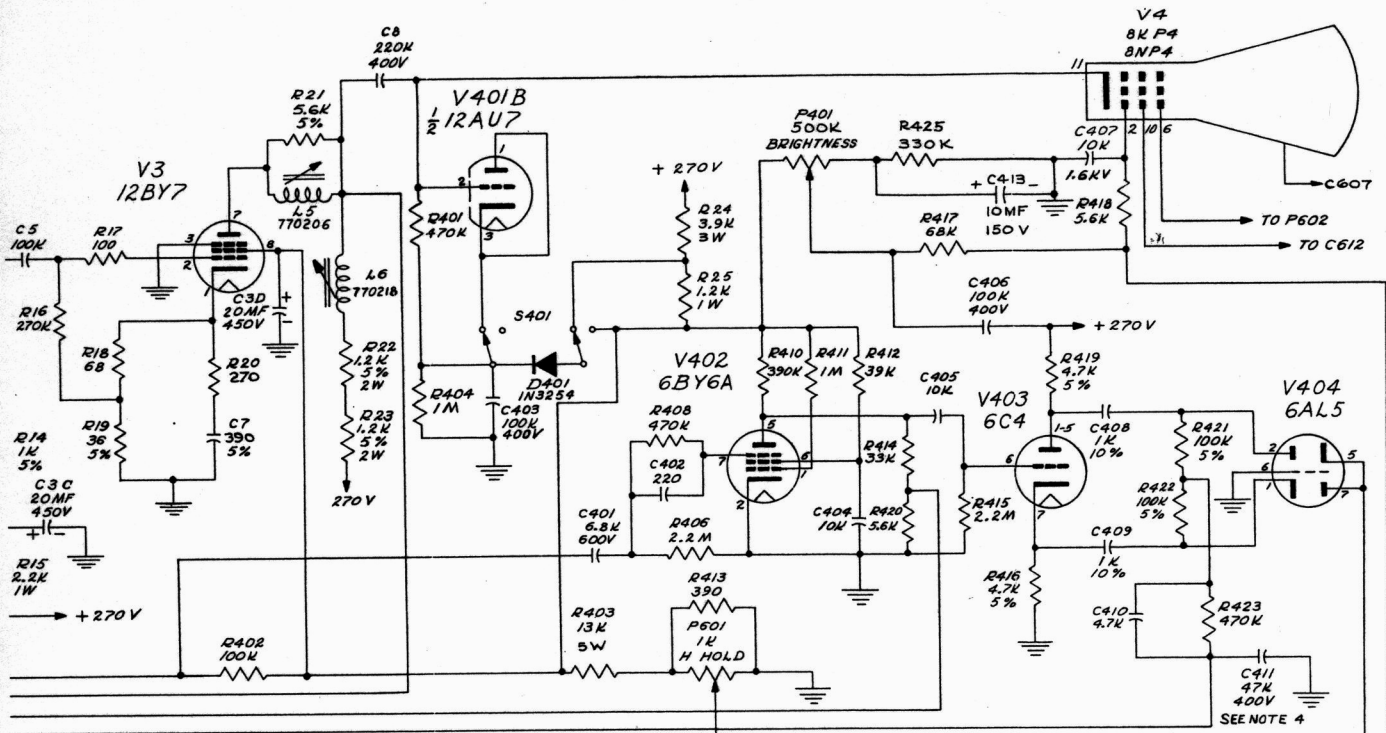
PIN	1	2	3	4	5	6	7	8	9
V1/6AU6	16.5	G	Fil	Fil	134	139	18	-	-
V2/6CB6	22	23.5	Fil	Fil	230	141	G	-	-
V3/12BY7	3	1	G	Fil	Fil	Fil	200	148	NC
V401/12AU7	170	160	170	Fil	Fil	-3	-1.5	G	Fil
V402/6BY6	0	G	Fil	Fil	13	15	-10	-	-
V403/6C4	250	NC	Fil	Fil	250	0	13	-	-
V404/6AL5	8	-5	Fil	Fil	0 to 3 ^b	G	0 to 3 ^b	-	-
V501/6CG7	68	0	2.4	Fil	Fil	22 to 72 ^c	-12 to -16 ^d	2.4	G
V502/6AQ5	0.1	17 to 28 ^e	Fil	Fil	265	270	0.1	-	-
V601/6CG7	145	-6	10	Fil	Fil	225	1.6	10	G
V602/6JB6	155	-45	G	Fil	Fil	-45	155	G	NC
V603/6DW4	NC	270	NC	Fil	Fil	NC	270	NC	f
V604/1B3	19.5 KV				19.5 KV				

V4/8NP4 Kinescope Socket: Pin 1 - Fil
 Pin 2 - 60 to 150^a
 Pin 6 - 0 to 680
 Pin 10 - 540
 Pin 11 - 160
 Pin 12 - Fil

- a Varies with Brightness Setting
- b Varies with Horizontal Hold Setting
- c Varies with Vertical Linearity and Height Settings
- d Varies with Vertical Hold Setting
- e Varies with Vertical Linearity Setting
- f DO NOT MEASURE, Pulses Present



1. 120 VOLTS - STRAP A TO B AND C TO D
2. 240 VOLTS - STRAP B TO C
3. FOR 50 HERTZ VERT. C501 = 33K 10% 600V
R503 = 1.8 M 1/2 W 10%
4. FOR FAST HORIZONTAL TIME-CONSTANT, CHANGE C411 TO 4.7K



TO 4.7K

FOR NARROW SCAN
MOVE RED WIRE TO #6
AND WHITE WIRE TO #1

CONRAC DIVISION
 SOUTHERN CALIFORNIA ELECTRONIC CORPORATION
 SCHEMATIC
 CNB8 MONITOR
 DATE: 2-25-63
 (Approved by: 7-2) 452065 R

REPLACEABLE PARTS - MODEL CNB8

SYMBOL	DESCRIPTION	PART NO.	MFR.*
CAPACITORS			
C1	Paper, 100,000 pF, 10%, 200 V	67P10492	SP
C2	Electrolytic, 100 x 100 mfd, 50 V	UPT 215	CD
C3	Electrolytic, 20 x 20 x 20 x 20 mfd, 450 V	UP 222245	CD
C4	Paper, 47,000 pF, 20%, 400 V	160P47304	SP
C5	Paper, 100,000 pF, 10%, 400 V	67P10494	SP
C7	Mica, 390 pF, 5%, 500 V	CM20C391J	ELM
C8	Paper, 220,000 pF, 10%, 400 V	160P22494	SP
C9	Ceramic Tubular, 4.7 pF, 10%, 500 V, NPO	315-NPO	ER
C301	Ceramic Disc, 4700 pF, 1400 V, GMV		DI
C303	Electrolytic, 80 mfd, 350 V	UPE 8035	CD
C304	Electrolytic, 160-10 mfd, 350 V	UPT 16135	CD
C401	Paper, 6800 pF, 10%, 600 V	160P68296	SP
C402	Mica, 220 pF, 20%, 500 V	CM20C221M	ELM
C403	Paper, 100,000 pF, 10%, 400 V	67P10494	SP
C404	Ceramic Disc, 10,000 pF, 500 V, GMV		DI
C405	Ceramic Disc, 10,000 pF, 500 V, GMV		DI
C406	Paper, 100,000 pF, 10%, 400 V	67P10494	SP
C407	Ceramic Disc, 10,000 pF, 1600 V, GMV	DD16-103	CRL
C408	Mica, 1000 pF, 10%, 500 V	CM20C102K	ELM
C409	Mica, 1000 pF, 10%, 500 V	CM20C102K	ELM
C410	Ceramic Disc, 4700 pF, 20% G.R., 500 V, GMV		DI
C411	Paper, 47,000 pF, 20%, 400 V	160P47304	SP
C412	Ceramic Disc, 10,000 pF, 500 V, GMV		DI
C413	Electrolytic, 10 mfd, 150 V	BBR 10-150	CD
C501	Paper, 27,000 pF, 10%, 600 V (60 Field Operation)	160P27396	SP
C501	Paper, 33,000 pF, 10%, 600 V (50 Field Operation)	160P33396	SP
C502	Paper, 100,000 pF, 10%, 200 V	160P10492	SP
C503	Paper, 100,000 pF, 10%, 400 V	67P10494	SP
C504	Paper, 33,000 pF, 10%, 600 V	73P33396	SP
C505	Paper, 47,000 pF, 10%, 600 V	73P47396	SP
C506	Paper, 33,000 pF, 10%, 600 V	73P33396	SP
C507	Electrolytic, 100 mfd, 50 V	BR 100-50T	CD
C508	Paper, 4700 pF, 10%, 600 V	160P47296	SP
C601	Mica, 3900 pF, 10%, 500 V	CM30C392K	ELM
C602	Mica, 680 pF, 5%, 500 V	CM20C681J	ELM
C603	Ceramic Disc, 10,000 pF, 500 V, GMV		DI
C605	Mica, 270 pF, 5%, 500 V	CM20C271J	ELM
C606	Paper, 100,000 pF, 10%, 600 V	160P10496	SP
C607	Ceramic High Voltage, 500 pF, 30,000 V	TM300T5	CD
C608	Paper, 47,000 pF, 10%, 600 V	73P47396	SP
C609	Paper, 39,000 pF, 10%, 600 V	160P39396	SP
C611	Paper, 470,000 pF, 10%, 200 V	67P47492	SP
C612	Paper, 22,000 pF, 10%, 1000 V	160P223010	SP
C613	Paper, 47,000 pF, 10%, 600 V	73P47396	SP
C613A	Paper, 47,000 pF, 10%, 600 V	73P47396	SP

*See Manufacturer List, Page 16.

REPLACEABLE PARTS - MODEL CNB8

SYMBOL	DESCRIPTION	PART NO.	MFR.*
DIODES			
D301, 302	Low Voltage Rectifier	1N3254	RCA
D303, 304	Low Voltage Rectifier	1N3254	RCA
D401	Clamp Diode	1N3254	RCA
COILS			
L1	Peaking	770198	CONRAC
L2	Peaking	770219	CONRAC
L3	Peaking	770200	CONRAC
L4	Peaking	770217	CONRAC
L5	Peaking	770206	CONRAC
L6	Peaking	770218	CONRAC
L301	Filter Choke	784004	CONRAC
L601	Horizontal Ringing	770033	CONRAC
L602	Width	770203	CONRAC
L603	Linearity	764001	CONRAC
L604	Deflection Yoke	994031	CONRAC
POTENTIOMETERS			
P1	Composition, 1000 ohms, $\frac{1}{2}$ w (Contrast)	928213	CONRAC
P401	Composition, 500,000 ohms, $\frac{1}{2}$ w (Brightness)	928171	CONRAC
P501	Composition, 2 megohms, $\frac{1}{2}$ w (Height)	928172	CONRAC
P502	Composition, 250,000 ohms, $\frac{1}{2}$ w (Vertical Hold)	928173	CONRAC
P503	Composition, 25,000 ohms, $\frac{1}{2}$ w (Vertical Feedback)	928159	CONRAC
P504	Wirewound, 1000 ohms, 2 w (Vertical Linearity)	928174	CONRAC
P601	Wirewound, 1000 ohms, 2 w (Horizontal Hold)	928174	CONRAC
P602	Composition, 2 megohms, $\frac{1}{2}$ w (Focus)	928158	CONRAC
P603	Composition, 5000 ohms, $\frac{1}{2}$ w (Drive)	928035	CONRAC
RESISTORS			
R1	Composition, 75 ohms, 5%, 1 w		AB
R2	Composition, 1 megohm, 10%, $\frac{1}{2}$ w		AB
R3	Composition, 2200 ohms, 10%, $\frac{1}{2}$ w		AB
R4	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R5	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R6	Composition, 8200 ohms, 5%, $\frac{1}{2}$ w		AB
R7	Composition, 1000 ohms, 5%, $\frac{1}{2}$ w		AB
R8	Composition, 1 megohm, 10%, $\frac{1}{2}$ w		AB
R9	Composition, 1800 ohms, 10%, $\frac{1}{2}$ w		AB
R10	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R11	Composition, 15,000 ohms, 10%, 2 w		AB
R12	Composition, 39,000 ohms, 10%, $\frac{1}{2}$ w		AB
R13	Composition, 8200 ohms, 5%, $\frac{1}{2}$ w		AB
R14	Composition, 1000 ohms, 5%, $\frac{1}{2}$ w		AB
R15	Composition, 2200 ohms, 10%, 1 w		AB
R16	Composition, 270,000 ohms, 10%, $\frac{1}{2}$ w		AB

*See Manufacturers List, Page 16.

REPLACEABLE PARTS - CNB8

SYMBOL	DESCRIPTION	PART NO.	MFR.*
RESISTORS (Continued)			
R17	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R18	Composition, 68 ohms, 10%, $\frac{1}{2}$ w		AB
R19	Composition, 36 ohms, 5%, $\frac{1}{2}$ w		AB
R20	Composition, 270 ohms, 10%, $\frac{1}{2}$ w		AB
R21	Composition, 5600 ohms, 5%, $\frac{1}{2}$ w		AB
R22	Composition, 1200 ohms, 5%, 2 w		AB
R23	Composition, 1200 ohms, 5%, 2 w		AB
R24	Wire Wound, 3900 ohms, 10%, 3 w, Val-3		TO
R25	Composition, 1200 ohms, 10%, 1 w		AB
R26	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R301	Composition, 820,000 ohms, 10%, $\frac{1}{2}$ w		AB
R302	Wire Wound, 10 ohms, 10%, 5 w, X60		TO
R401	Composition, 470,000 ohms, 10%, $\frac{1}{2}$ w		AB
R402	Composition, 100,000 ohms, 10%, $\frac{1}{2}$ w		AB
R403	Wire Wound, 13,000 ohms, 10%, 5 w, Val-5		TO
R404	Composition, 1 megohm, 10%, $\frac{1}{2}$ w		AB
R405	Composition, 22,000 ohms, 10%, $\frac{1}{2}$ w		AB
R406	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R408	Composition, 470,000 ohms, 10%, $\frac{1}{2}$ w		AB
R410	Composition, 390,000 ohms, 10%, $\frac{1}{2}$ w		AB
R411	Composition, 1 megohm, 10%, $\frac{1}{2}$ w		AB
R412	Composition, 39,000 ohms, 10%, $\frac{1}{2}$ w		AB
R413	Composition, 390 ohms, 10%, $\frac{1}{2}$ w		AB
R414	Composition, 33,000 ohms, 10%, $\frac{1}{2}$ w		AB
R415	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R416	Composition, 4700 ohms, 5%, $\frac{1}{2}$ w		AB
R417	Composition, 68,000 ohms, 10%, $\frac{1}{2}$ w		AB
R418	Composition, 5600 ohms, 10%, $\frac{1}{2}$ w		AB
R419	Composition, 4700 ohms, 5%, $\frac{1}{2}$ w		AB
R420	Composition, 5600 ohms, 10%, $\frac{1}{2}$ w		AB
R421	Composition, 100,000 ohms, 5%, $\frac{1}{2}$ w		AB
R422	Composition, 100,000 ohms, 5%, $\frac{1}{2}$ w		AB
R423	Composition, 470,000 ohms, 10%, $\frac{1}{2}$ w		AB
R424	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R425	Composition, 330,000 ohms, 10%, $\frac{1}{2}$ w		AB
R501	Composition, 150,000 ohms, 10%, 1 w		AB
R502	Composition, 1500 ohms, 5%, $\frac{1}{2}$ w		AB
R503	Composition, 1.5 megohms, 10%, $\frac{1}{2}$ w (60 Field Operation)		AB
R503	Composition, 1.8 megohms, 10%, $\frac{1}{2}$ w (50 Field Operation)		AB
R504	Composition, 180,000 ohms, 10%, $\frac{1}{2}$ w		AB
R505	Composition, 22,000 ohms, 10%, 1 w		AB
R506	Composition, 220,000 ohms, 10%, 1 w		AB
R507	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R508	Composition, 390 ohms, 10%, 1 w		AB
R509	Composition, 150 ohms, 10%, $\frac{1}{2}$ w		AB
R510	Composition, 1.8 megohms, 10%, $\frac{1}{2}$ w		AB
R601	Composition, 8200 ohms, 10%, $\frac{1}{2}$ w		AB
R602	Composition, 5600 ohms, 5%, 1 w		AB
R603	Composition, 1500 ohms, 5%, $\frac{1}{2}$ w		AB
R604	Composition, 100,000 ohms, 10%, $\frac{1}{2}$ w		AB
R605	Composition, 91,000 ohms, 5%, $\frac{1}{2}$ w		AB

*See Manufacturers List, Page 16.

REPLACEABLE PARTS - CNB8

SYMBOL	DESCRIPTION	PART NO.	MFR.*
RESISTORS (Continued)			
R17	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R18	Composition, 68 ohms, 10%, $\frac{1}{2}$ w		AB
R19	Composition, 36 ohms, 5%, $\frac{1}{2}$ w		AB
R20	Composition, 270 ohms, 10%, $\frac{1}{2}$ w		AB
R21	Composition, 5600 ohms, 5%, $\frac{1}{2}$ w		AB
R22	Composition, 1200 ohms, 5%, 2 w		AB
R23	Composition, 1200 ohms, 5%, 2 w		AB
R24	Wire Wound, 3900 ohms, 10%, 3 w, Val-3		TO
R25	Composition, 1200 ohms, 10%, 1 w		AB
R26	Composition, 100 ohms, 10%, $\frac{1}{2}$ w		AB
R301	Composition, 820,000 ohms, 10%, $\frac{1}{2}$ w		AB
R302	Wire Wound, 10 ohms, 10%, 5 w, X60		TO
R401	Composition, 470,000 ohms, 10%, $\frac{1}{2}$ w		AB
R402	Composition, 100,000 ohms, 10%, $\frac{1}{2}$ w		AB
R403	Wire Wound, 13,000 ohms, 10%, 5 w, Val-5		TO
R404	Composition, 1 megohm, 10%, $\frac{1}{2}$ w		AB
R405	Composition, 22,000 ohms, 10%, $\frac{1}{2}$ w		AB
R406	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R408	Composition, 470,000 ohms, 10%, $\frac{1}{2}$ w		AB
R410	Composition, 390,000 ohms, 10%, $\frac{1}{2}$ w		AB
R411	Composition, 1 megohm, 10%, $\frac{1}{2}$ w		AB
R412	Composition, 39,000 ohms, 10%, $\frac{1}{2}$ w		AB
R413	Composition, 390 ohms, 10%, $\frac{1}{2}$ w		AB
R414	Composition, 33,000 ohms, 10%, $\frac{1}{2}$ w		AB
R415	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R416	Composition, 4700 ohms, 5%, $\frac{1}{2}$ w		AB
R417	Composition, 68,000 ohms, 10%, $\frac{1}{2}$ w		AB
R418	Composition, 5600 ohms, 10%, $\frac{1}{2}$ w		AB
R419	Composition, 4700 ohms, 5%, $\frac{1}{2}$ w		AB
R420	Composition, 5600 ohms, 10%, $\frac{1}{2}$ w		AB
R421	Composition, 100,000 ohms, 5%, $\frac{1}{2}$ w		AB
R422	Composition, 100,000 ohms, 5%, $\frac{1}{2}$ w		AB
R423	Composition, 470,000 ohms, 10%, $\frac{1}{2}$ w		AB
R424	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R425	Composition, 330,000 ohms, 10%, $\frac{1}{2}$ w		AB
R501	Composition, 150,000 ohms, 10%, 1 w		AB
R502	Composition, 1500 ohms, 5%, $\frac{1}{2}$ w		AB
R503	Composition, 1.5 megohms, 10%, $\frac{1}{2}$ w (60 Field Operation)		AB
R503	Composition, 1.8 megohms, 10%, $\frac{1}{2}$ w (50 Field Operation)		AB
R504	Composition, 180,000 ohms, 10%, $\frac{1}{2}$ w		AB
R505	Composition, 22,000 ohms, 10%, 1 w		AB
R506	Composition, 220,000 ohms, 10%, 1 w		AB
R507	Composition, 2.2 megohms, 10%, $\frac{1}{2}$ w		AB
R508	Composition, 390 ohms, 10%, 1 w		AB
R509	Composition, 150 ohms, 10%, $\frac{1}{2}$ w		AB
R510	Composition, 1.8 megohms, 10%, $\frac{1}{2}$ w		AB
R601	Composition, 8200 ohms, 10%, $\frac{1}{2}$ w		AB
R602	Composition, 5600 ohms, 5%, 1 w		AB
R603	Composition, 1500 ohms, 5%, $\frac{1}{2}$ w		AB
R604	Composition, 100,000 ohms, 10%, $\frac{1}{2}$ w		AB
R605	Composition, 91,000 ohms, 5%, $\frac{1}{2}$ w		AB

*See Manufacturers List, Page 16.

REPLACEABLE PARTS - MODEL CNB8

SYMBOL	DESCRIPTION	PART NO.	MFR.*
RESISTORS (Continued)			
R606	Composition, 3300 ohms, 10%, $\frac{1}{2}$ w		AB
R607	Composition, 820,000 ohms, 10%, $\frac{1}{2}$ w		AB
R608	Composition, 150 ohms, 10%, $\frac{1}{2}$ w		AB
R609	Composition, 10,000 ohms, 10%, 2 w		AB
R610	Composition, 1000 ohms, 10%, $\frac{1}{2}$ w		AB
R613	Composition, 4.7 ohms, 10%, $\frac{1}{2}$ w		AB
R614	Composition, 330 ohms, 10%, $\frac{1}{2}$ w		AB
R616	Composition, 220,000 ohms, 10%, $\frac{1}{2}$ w		AB
R617	Composition, 100,000 ohms, 10%, 1 w		AB
R620	Composition, 47,000 ohms, 10%, $\frac{1}{2}$ w		AB
TRANSFORMERS			
T301	Power	965012	CONRAC
T501	Vertical Output	965041	CONRAC
T601	Horizontal Output	782019B	CONRAC
T602	Horizontal AFC	783001	CONRAC
MISCELLANEOUS			
	Cap: Socket (1B3)	269001	CONRAC
	Connector: Anode (Neoprene Cap and Button)	886060/349021	CONRAC
	Connector: Power Cable Adapter	886059	CONRAC
J1, J2	Connector: UHF Receptacle	886028	CONRAC
J401, J402	Connector: UHF Receptacle	886028	CONRAC
P9	Connector: 5-Pin, Male (Yoke)	886012	CONRAC
	Cord: Line	987013-3	CONRAC
	Feet	314004	CONRAC
F301	Fuse: $1\frac{1}{2}$ Ampere Slo-Blo (120-Volt Operation)	209025	CONRAC
F301	Fuse: $3/4$ Ampere Slo-Blo (240-Volt Operation)	209020	CONRAC
F601	Fuse: $3/10$ Ampere Slo-Blo	209010	CONRAC
	Handle: Cabinet	361006	CONRAC
	Holder: Fuse	935030	CONRAC
	Insulator: Polyethylene (CRT Anode Button)	349023	CONRAC
N501	Integrator: Vertical	844022	CONRAC
	Knob: Control, Black	361026-1	CONRAC
	Knob: Control Panel Cover	361003	CONRAC
	Knob: Secondary Control, Black	361024	CONRAC
	Mask	390033	CONRAC
	Safety Glass	335021-1	CONRAC
	Socket: 1B3	938001	CONRAC
J9	Socket: 5-Pin (Yoke)	935024	CONRAC
	Socket: 9-Pin, Novar	935008	CONRAC
S1	Switch: Slide D. P. D. T.	950036-1	CONRAC
S301	Switch: Toggle S. P. S. T.	950030	CONRAC
S401, S402	Switch: Slide D. P. D. T.	950036-1	CONRAC

*See Manufacturer List, Page 16.

MANUFACTURERS OF REPLACEABLE PARTS

CODE	MANUFACTURER	LOCATION
AB	Allen-Bradley Company	Milwaukee, Wisconsin 53204
CD	Cornell-Dubilier Electronics	Newark, New Jersey 07101
CONRAC	Conrac Division of Conrac Corporation	Covina, California 91722
CRL	Centralab	Milwaukee, Wisconsin 53201
DI	Dilectron Division of Bestran Corporation	Monrovia, California 91016
ELM	Electro-Motive Manufacturing Co., Inc.	Willimantic, Connecticut 06226
ER	Erie Technological Products, Inc.	Erie, Pennsylvania 16512
RCA	Radio Corporation of America	Camden, New Jersey 08102
SP	Sprague Electric Company	* North Adams, Massachusetts 01248
TO	Tru-Ohm Products, Division of MEMCOR	Chicago, Illinois 60618

WARRANTY

CONRAC CORPORATION warrants each new broadcast and industrial product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to us or to our authorized dealer or wholesaler from whom purchased, intact, for our examination, with all transportation charges prepaid to our factory, within one year from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extend to units which have been altered outside of our factory, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio and television products.

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