
**INSTALLATION, OPERATION
AND
MAINTENANCE MANUAL
FOR
HM-4119 SERIES COLOR MONITORS**

For Service Manuals
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8 Cherry Tree Road, Chinnor
Oxfordshire, OX9 4QY.
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Fax (01844) 352554



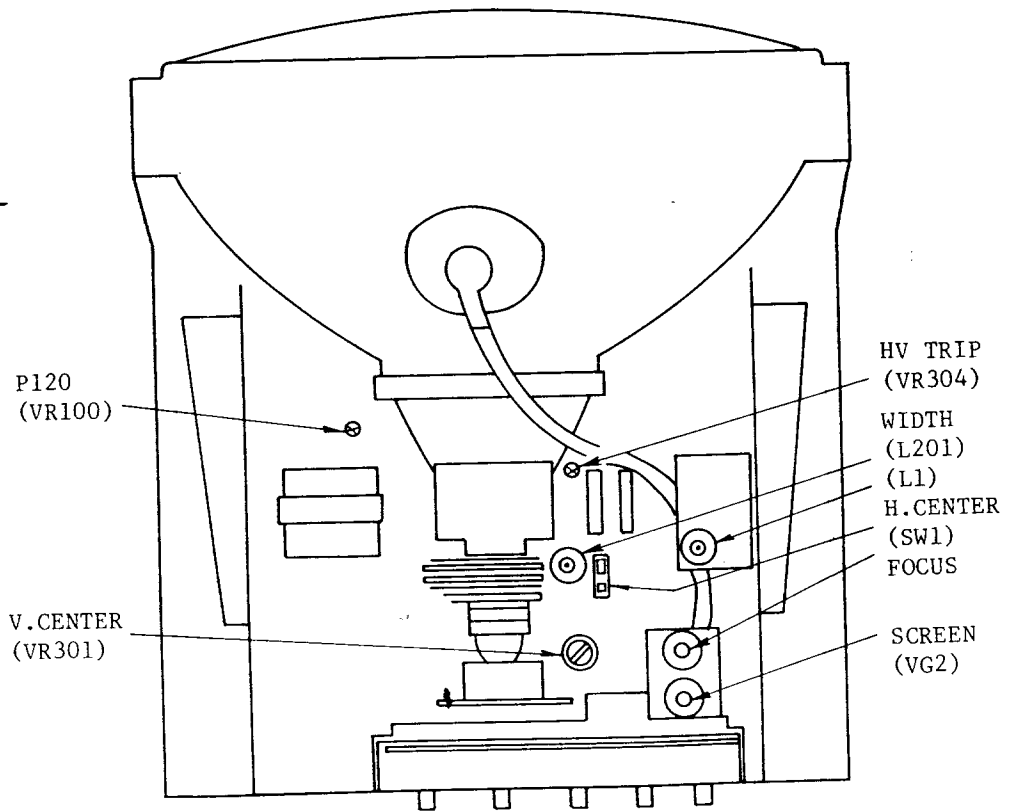
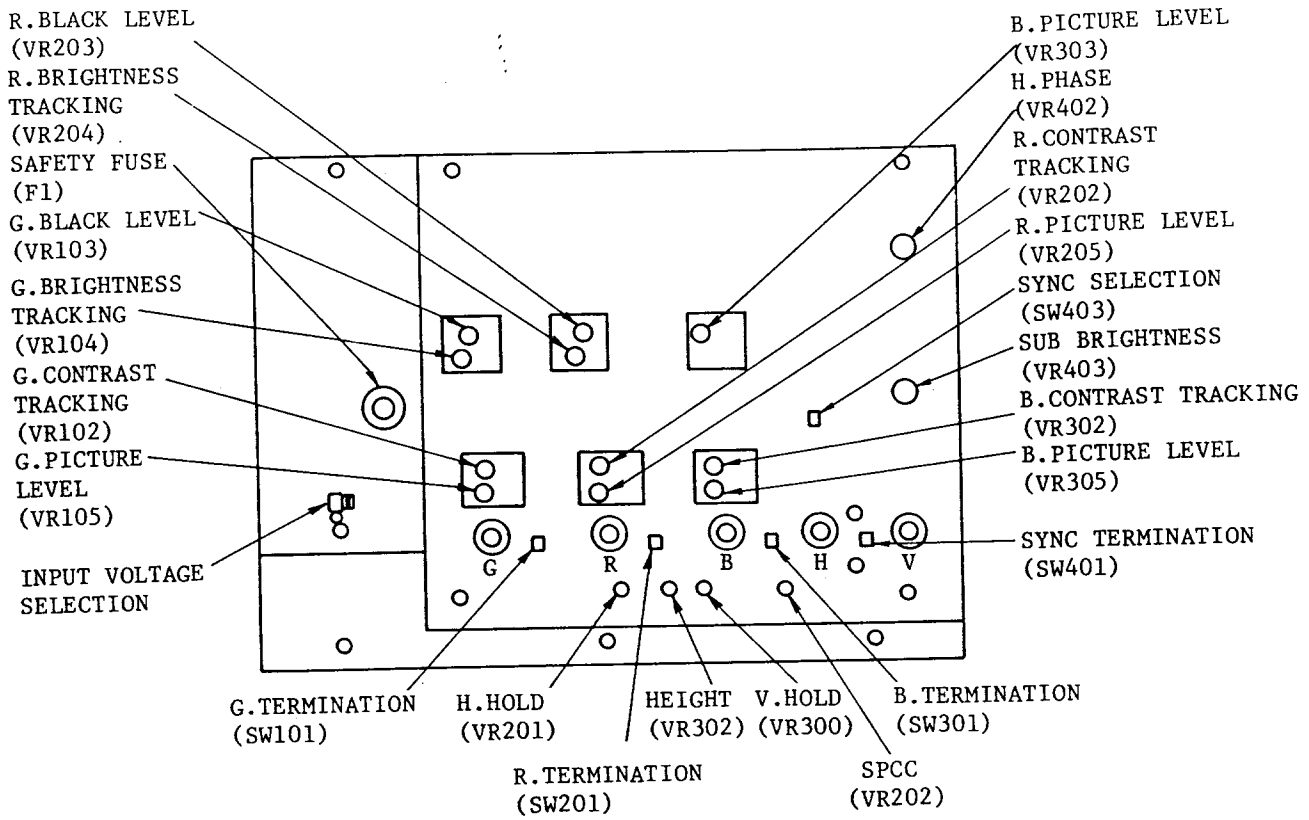


Fig. 4-1

Adjustment Procedure

- (1) Adjust WIDTH COIL so that horizontal picture width may be 340 mm (for 64 KHz version) or 360 mm (for 50 KHz version).
- (2) Adjust HEIGHT VR so that vertical picture height may be 270 mm.

4.4.5 Brightness and White Balance Adjustment

Adjusting Potentiometers and Switches

VG2	:	FDF410
SUB BRIGHTNESS	:	FVD410/411 VR403
R.G. BRIGHTNESS TRACKING	:	FVD410/411 VR104(G) VR204(R)
R.G.B. BLACK LEVEL	:	FVD410/411 VR103(G) VR203(R) VR303(B)
R.G.B. PICTURE LEVEL	:	FVD410/411 VR105(G) VR205(R) VR305(B)
R.G.B. CONTRAST TRACKING	:	FVD410/411 VR102(G) VR202(R) VR302(B)
BRIGHTNESS	:	OPERATOR CONTROL PANEL
CONTRAST	:	OPERATOR CONTROL PANEL

Condition

Display pattern	:	Full size white
Warm up time	:	20 Minutes min

Adjustment procedure

- (1) Set R.G. BRIGHTNESS TRACKING VR, R.G.B. PICTURE LEVEL VR to min value, R.G.B. BLACK LEVEL VR and R.G.B. CONTRAST TRACKING VR, BRIGHTNESS VR, CONTRAST VR and SUB BRIGHTNESS VR to max value. Disconnect the video input signals in order to display back raster only.
- (2) Adjust VG2 BIAS VR so that back raster may be displayed just before erased.
- (3) Adjust R.G.B. BLACK LEVEL VR from max to min value so that raster may be white of less than 1 FtL. Connect the video input signals to display the picture.
- (4) Adjust R.G.B. PICTURE LEVEL VR from min to max value so that picture may be white of about 25 FtL. If picture cannot be adjusted to 25 FtL, set CONTRAST VR to counter clockwise slightly, and readjust picture to about 25 FtL.
- (5) Set BRIGHTNESS VR to min value. If picture is too dark to adjust, turn BRIGHTNESS VR to clockwise slightly. Then control R.G. BRIGHTNESS TRACKING VR from min to max value so that picture may be white.
- (6) Set BRIGHTNESS VR to max value. Adjust SUB BRIGHTNESS VR from max to min so that raster may be just visible or appropriate luminance.
- (7) Set CONTRAST VR to max value. Then adjust R.G.B. PICTURE LEVEL VR so that picture may be white of 25 FtL.
- (8) Set CONTRAST VR to min value. Then adjust R.G.B. CONTRAST TRACKING VR from max to min value so that picture may be white of about 10 FtL.

4.4.6 Focusing

Control the FOCUS VR so that best focus may be obtained over the entire display area.

5.3 TROUBLESHOOTING GUIDE

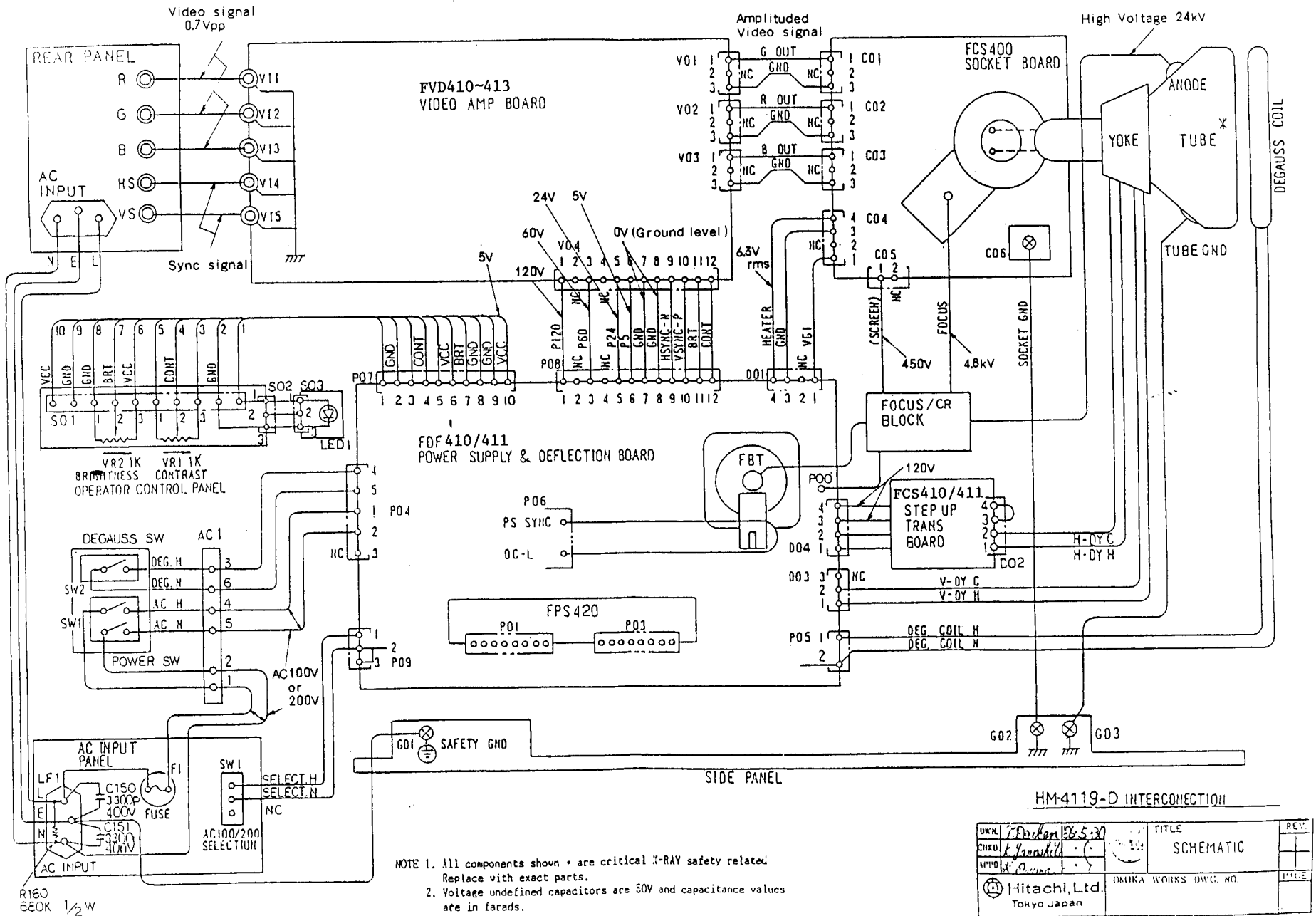
TROUBLE SHOOTING MAP

TROUBLE SHOOTING PROCEDURE

- 1 FIND THE SYMPTOM FROM THE LEFT COLUMN.
- 2 FOLLOW THE LINE END NOTE "O" AREAS WHERE PROBLEM COULD CAUSE SYMPTOMS.
- 3 USE THESE REMEDIES, EXECUTING THE ITEMS ON THE RIGHT SIDE OF THE PAGE FIRST.

PICTURE QUALITY SYMPTOMS

ITEM	MONITOR INSTALLATION				PROTECTIONS AND MONITOR SETTINGS			INTERNAL MONITOR ADJUSTMENTS	MODULE DEFECTIVE				
	POSSIBLE CAUSE	INCORRECT AC RANGE SETTING OR POWER SOURCE	INCORRECT SIGNAL WIRING OR TERMINATION SWITCH POSITION	SIGNAL LEVEL OR TIMING MISMATCH	MAGNETIC FIELD FROM OTHER MONITORS OR OTHER SOURCES	AC FUSE OPEN	OVER LOAD PROTECTION CAUSED BY NOISE	BRIGHTNESS CONTROL SET TO MINIMUM	ADJUSTMENT IS INCORRECT	POWER SUPPLY AND DEFLECTION MODULE	VIDEO AMP. MODULE	CRT SOCKET BOARD	CRT TUBE AND YOKE
CORRECTIVE ACTION	APPLY RATED AC INPUT	SET TO CORRECT CONDITION	APPLY RATED WAVEFORM	KEEP AWAY FROM MAGNETIC SOURCE	INSTALL RATED FUSE	TURN POWER SW OFF WAIT 1 MIN, THEN TURN ON	SET TO THE OPTIMUM RANGE	REFER TO THE ADJUSTMENT DESCRIPTION LISTED AND READJUST	REPLACE THE MODULE				
PICTURE ROLLS OR NO SYNCHRONIZATION		<input type="radio"/>	<input type="radio"/>					V-HOLD VR-300	<input type="radio"/>	<input type="radio"/>			
PICTURE TOO NARROW			<input type="radio"/>					WIDTH COIL L201	<input type="radio"/>				
PICTURE TOO WIDE			<input type="radio"/>					WIDTH COIL L201	<input type="radio"/>				
PICTURE TOO SHORT			<input type="radio"/>					HEIGHT VR VR302	<input type="radio"/>				
PICTURE TOO TALL			<input type="radio"/>					HEIGHT VR VR302	<input type="radio"/>				
PICTURE NOT CENTERED ON SCREEN			<input type="radio"/>					H-CENTER SW SW1	<input type="radio"/>				
ditto			<input type="radio"/>					H-PHASE VR VR402	<input type="radio"/>				
ditto			<input type="radio"/>					V-CENTER VR VR301	<input type="radio"/>				
PICTURE TOO DARK	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PICTURE TOO LIGHT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
VERTICAL LINES NOT STRAIGHT					<input type="radio"/>			HEIGHT VR VR302	<input type="radio"/>				
VERTICAL LINE PITCH IS UNEQUAL					<input type="radio"/>			WIDTH COIL L201	<input type="radio"/>				
COLOR BALANCE IS INCORRECT			<input type="radio"/>					PERFORM WHITE BAL ADJ		<input type="radio"/>			
ONE OF 3 COLORS IS MISSING								" " " "		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
COLOR PURITY IS BAD			<input type="radio"/>	<input type="radio"/>			<input type="radio"/>	DEGAUSS WITH SW		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
FOCUS IS NOT SHARP	<input type="radio"/>		<input type="radio"/>				<input type="radio"/>	ADJ FOCUS POT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
NO PICTURE-POWER LIGHT IS ON						<input type="radio"/>	<input type="radio"/>	ADJ BRIGHTNESS CONTROL	<input type="radio"/>	<input type="radio"/>			
OVERSHOOT OR SMEAR APPEARS			<input type="radio"/>	<input type="radio"/>						<input type="radio"/>			
PICTURE NOISE OPTICAL FLUCTUATION	<input type="radio"/>	<input type="radio"/>						PERFORM WHITE BALANCE		<input type="radio"/>			
NO POWER TO INDICATOR LIGHT	<input type="radio"/>					<input type="radio"/>	<input type="radio"/>			<input type="radio"/>			
SCREEN COLORS CHANGE WHEN BRIGHTNESS IS CHANGED			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			ADJ WHITE BALANCE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
ARCING NOISE FROM CRT	<input type="radio"/>							ADJ HI VOLTAGE POT	<input type="radio"/>			<input type="radio"/>	

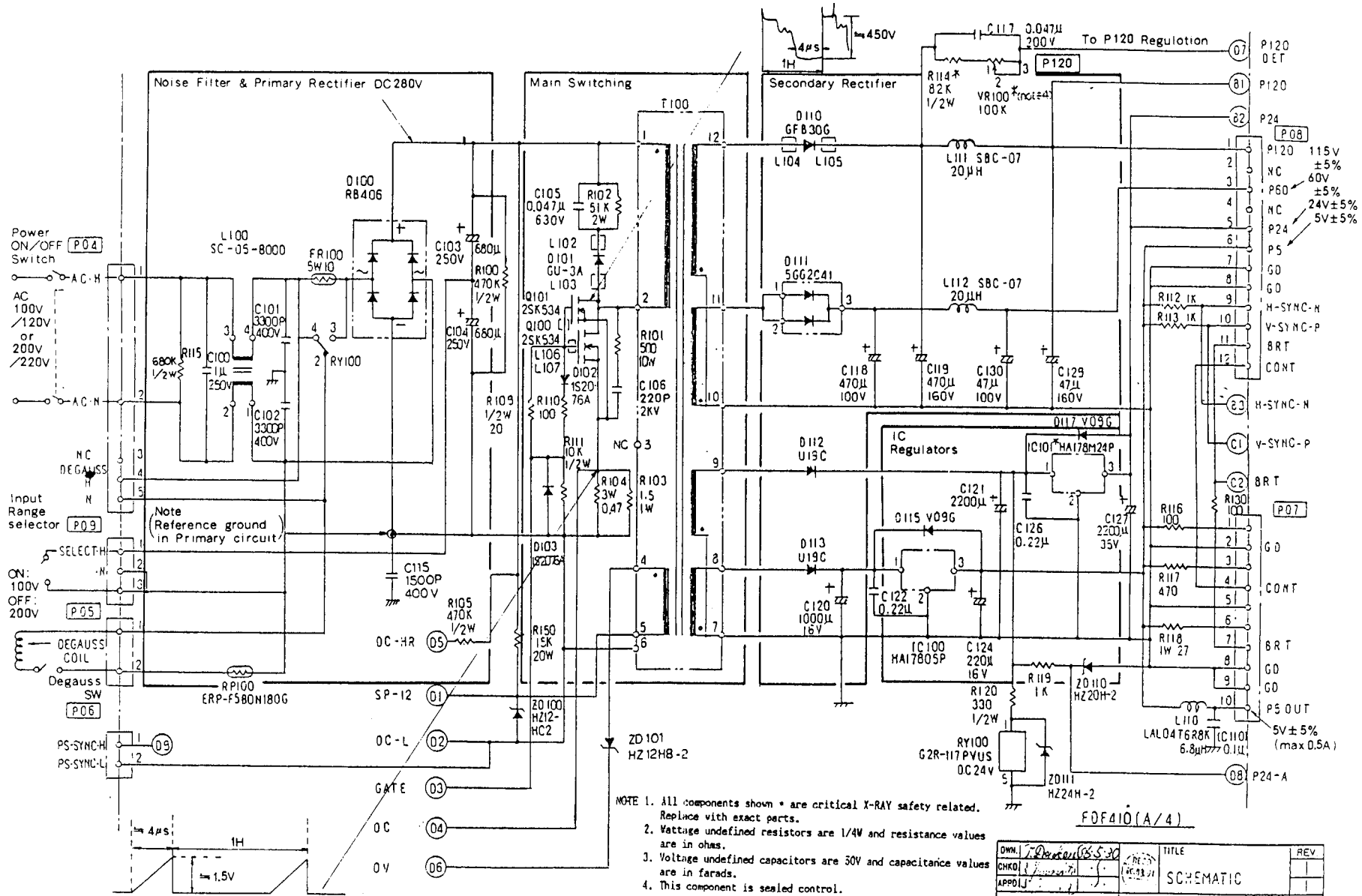


NOTE 1. All components shown are critical X-RAY safety related. Replace with exact parts.
 2. Voltage undefined capacitors are 50V and capacitance values are in farads.

HM-119-D INTERCONNECTION

CHKD	<i>T. Doi</i>	DATE	1965.5.27	TITLE	SCHMATIC	REV.	
APPD	<i>K. Yamashita</i>						
	<i>H. Otsuka</i>						
Hitachi, Ltd.				OKIKA WORKS DWG. NO.		DATE	
Tokyo Japan							

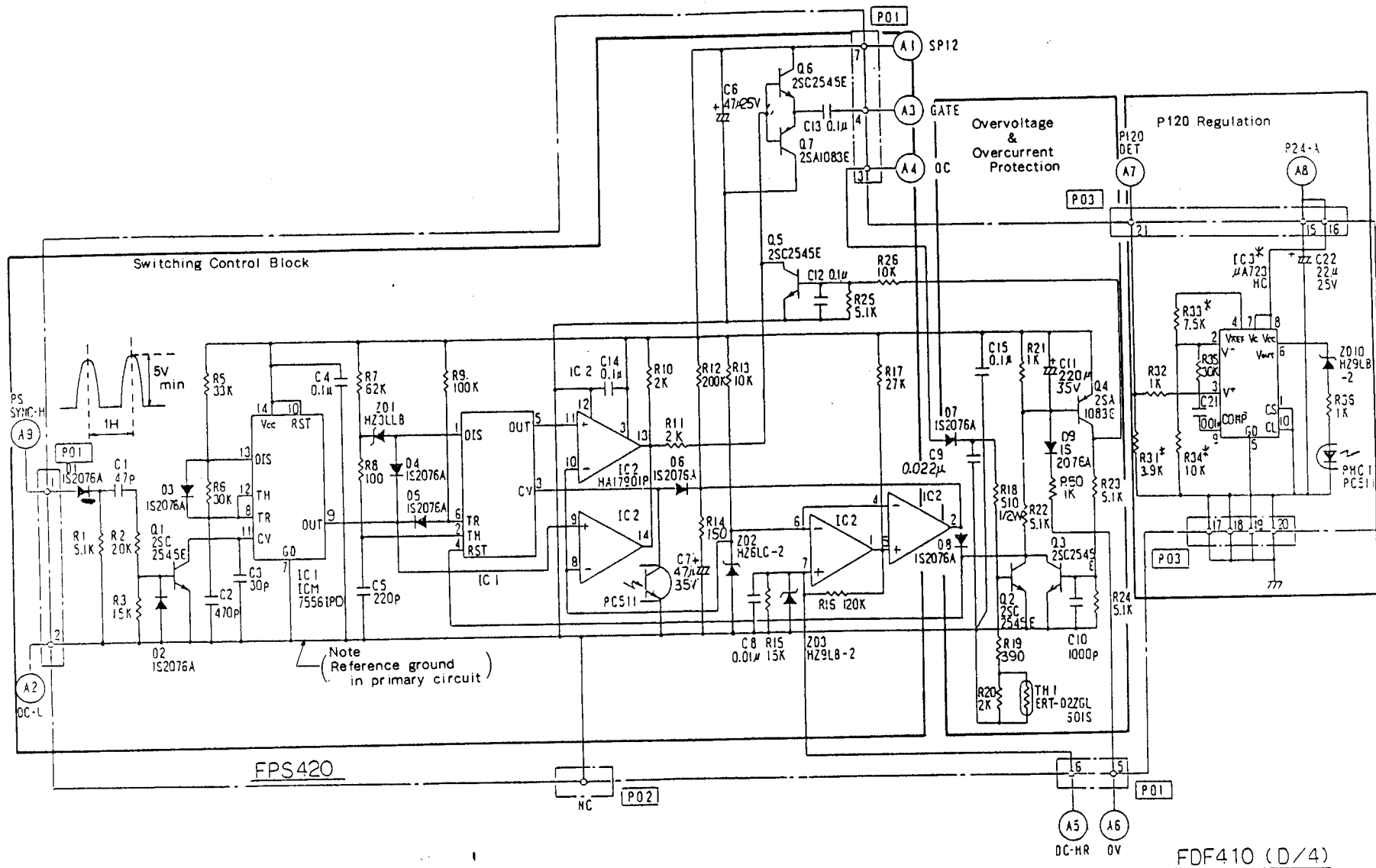
FIG. 7-2



- NOTE 1. All components shown * are critical X-RAY safety related. Replace with exact parts.
 2. Wattage undefined resistors are 1/4W and resistance values are in ohms.
 3. Voltage undefined capacitors are 30V and capacitance values are in farads.
 4. This component is sealed control.

FOF410(A/4)

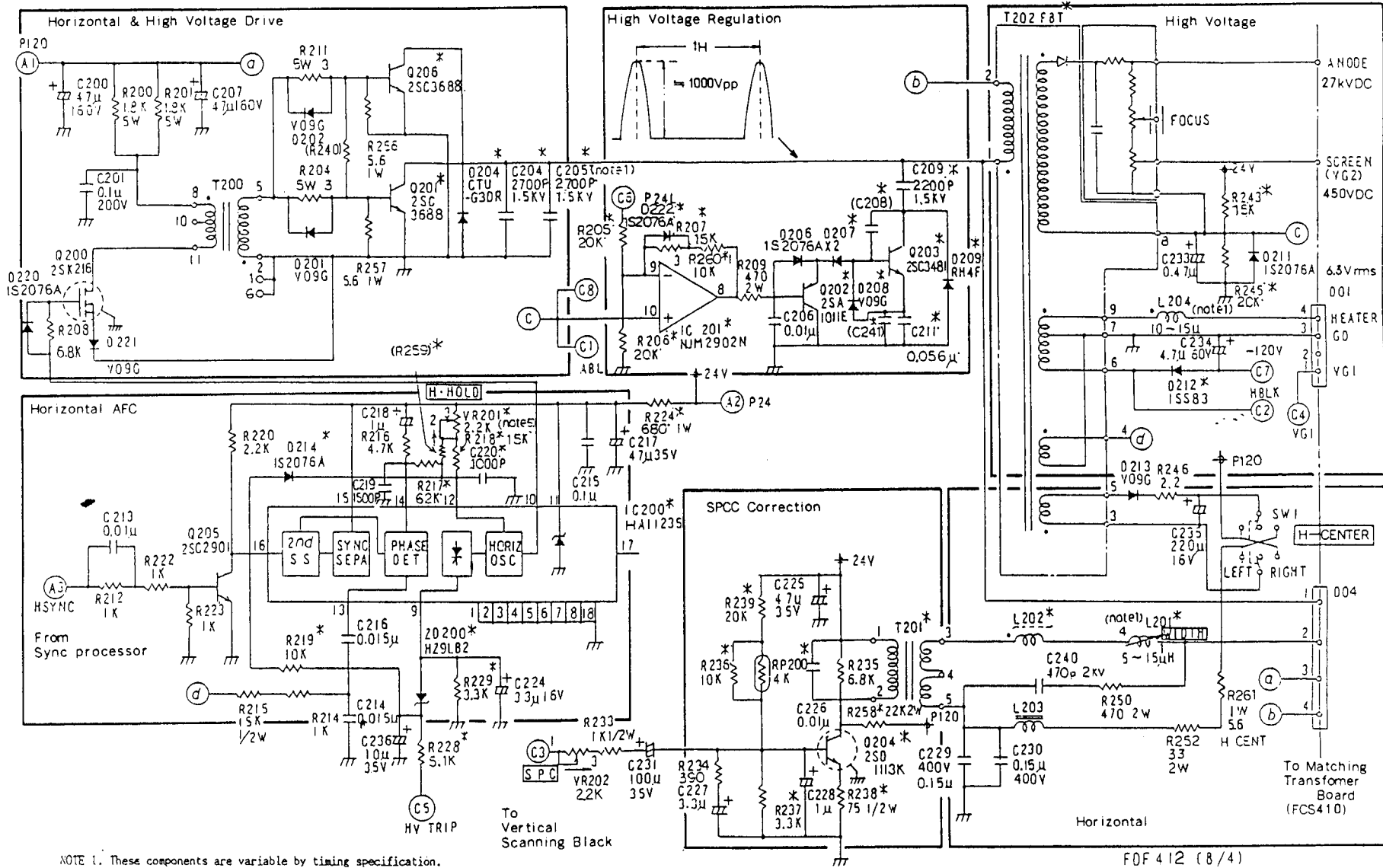
OWN. <i>T. Oshida</i>	TITLE	REV.
CHKD. <i>1/22/71</i>	SCHEMATIC	
APPR. <i>1/22/71</i>		
Hitachi, Ltd.	OMIKA WORKS DWG. NO.	PAGE
Tokyo Japan		



Note
Reference ground
in primary circuit

- NOTE 1. All components shown * are critical X-RAY safety related. Replace with exact parts.
2. Voltage undefined resistors are 1/4W and resistance values are in ohms.
3. Voltage undefined capacitors are 50V and capacitance values are in farads.

OWN.	TITLE	REV.
OWN. <i>L. D. ...</i>	SCHEMATIC	
CHKD. <i>L. D. ...</i>		
APP'D. <i>L. D. ...</i>		
Hitachi, Ltd. Tokyo Japan	OMIKA WORKS (INC.)	



- NOTE 1. These components are variable by timing specification.
 2. All components shown * are critical X-RAY safety related. Replace with exact parts.
 3. Voltage undefined resistors are 1/4W and resistance values are in ohms.
 4. Voltage undefined capacitors are 50V and capacitance values are in farads.
 5. This component is sealed control.

OWN: 17825/10/10/5-2	TITLE: SCHEMATIC	REV:
CHKD: A. Yamada	DATE:	APPD:
Hitachi, Ltd. Tokyo Japan		OMIKA WORKS DWG NO: PAGE:

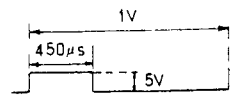
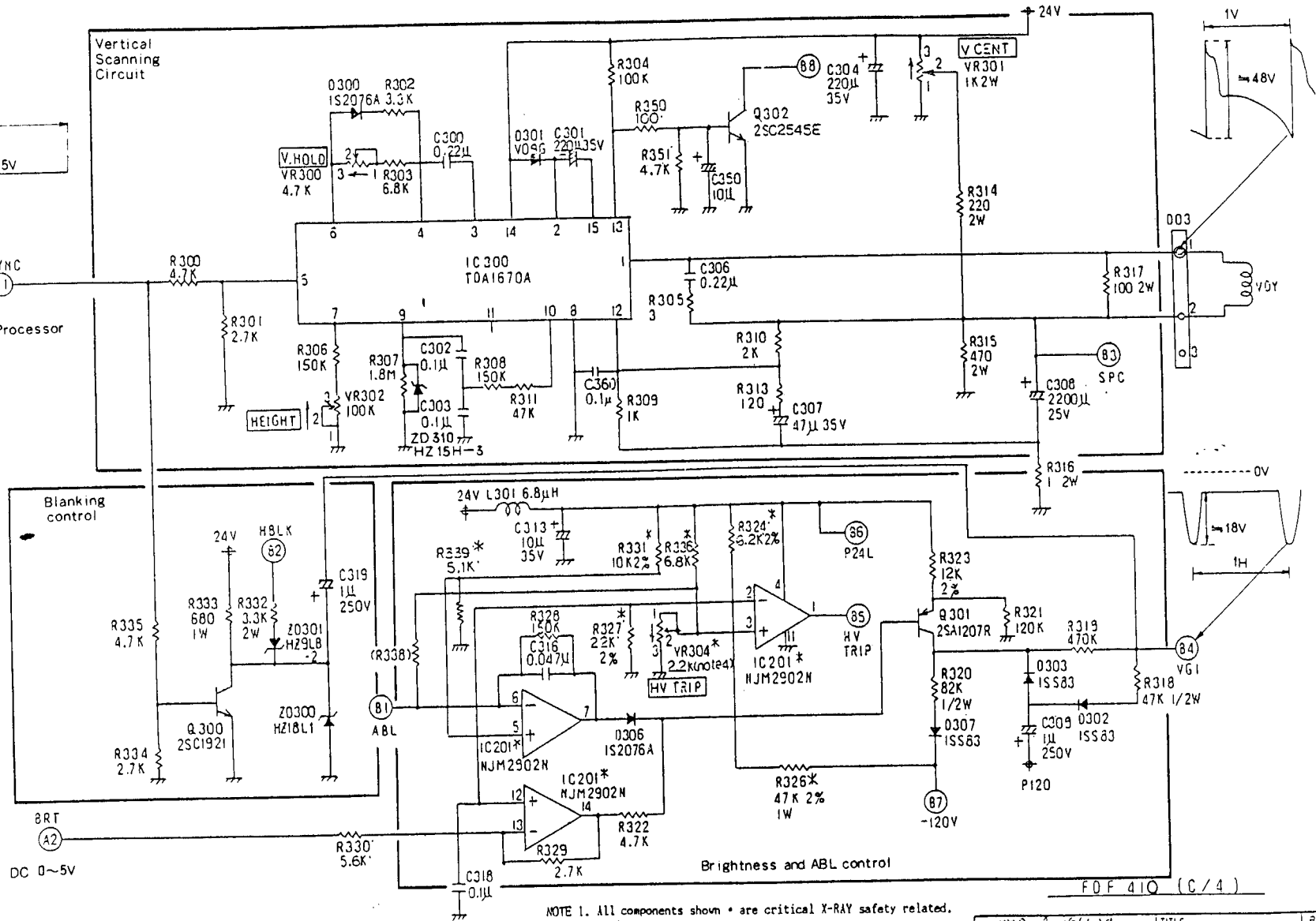


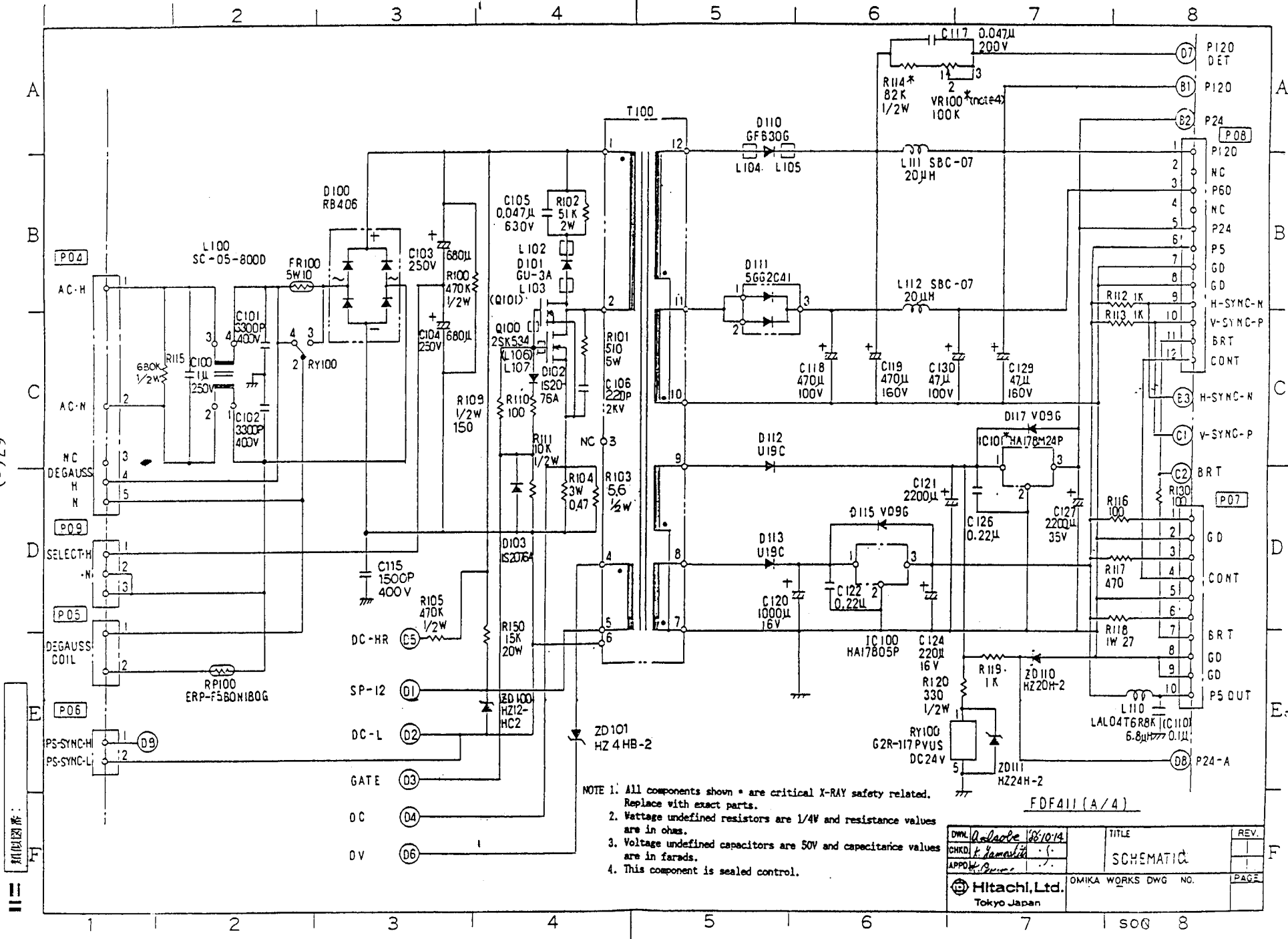
Fig. 7-5



- NOTE 1. All components shown * are critical X-RAY safety related. Replace with exact parts.
 2. Voltage undefined resistors are 1/4W and resistance values are in ohms.
 3. Voltage undefined capacitors are 50V and capacitance values are in farads.
 4. This component is sealed control.

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CHKD BY	SCHEMATIC	
APPROVED BY		
Hitachi, Ltd. Tokyo Japan	OMIKA WORKS DWG NO	PAGE

- 67 (a) -



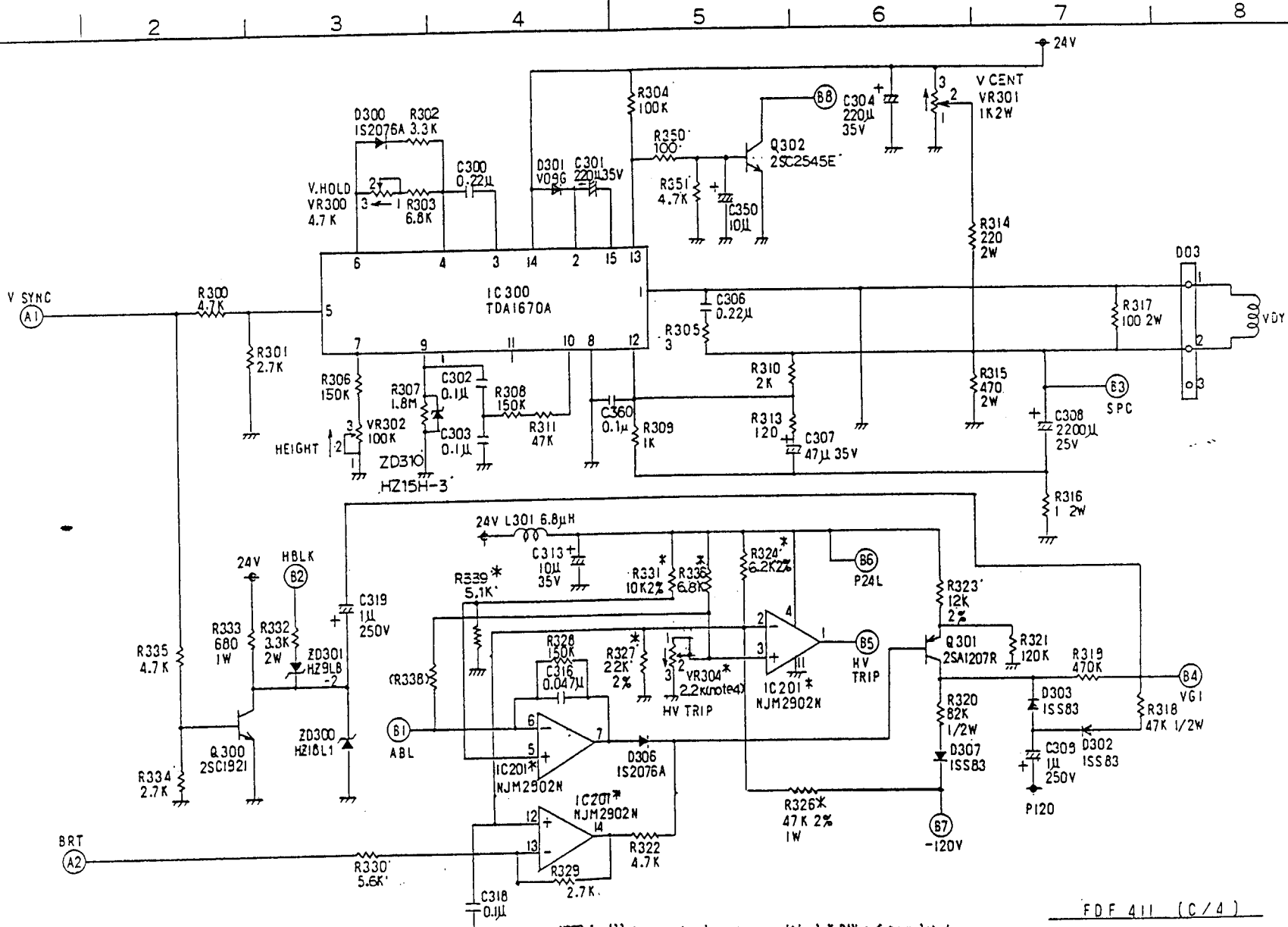
NOTE 1. All components shown * are critical X-RAY safety related. Replace with exact parts.
 2. Voltage undefined resistors are 1/4W and resistance values are in ohms.
 3. Voltage undefined capacitors are 50V and capacitance values are in farads.
 4. This component is sealed control.

FDF411 (A/4)

DRAWN	<i>U. Sato</i> 10/10/14	TITLE		REV.	
CHECKED	<i>K. Yamashita</i>		SCHEMATIC		
APPROVED	<i>H. Banno</i>				
Hitachi, Ltd. Tokyo Japan		OMIKA WORKS DWG. NO.		PAGE	

類似図番:

- (67) (C) -

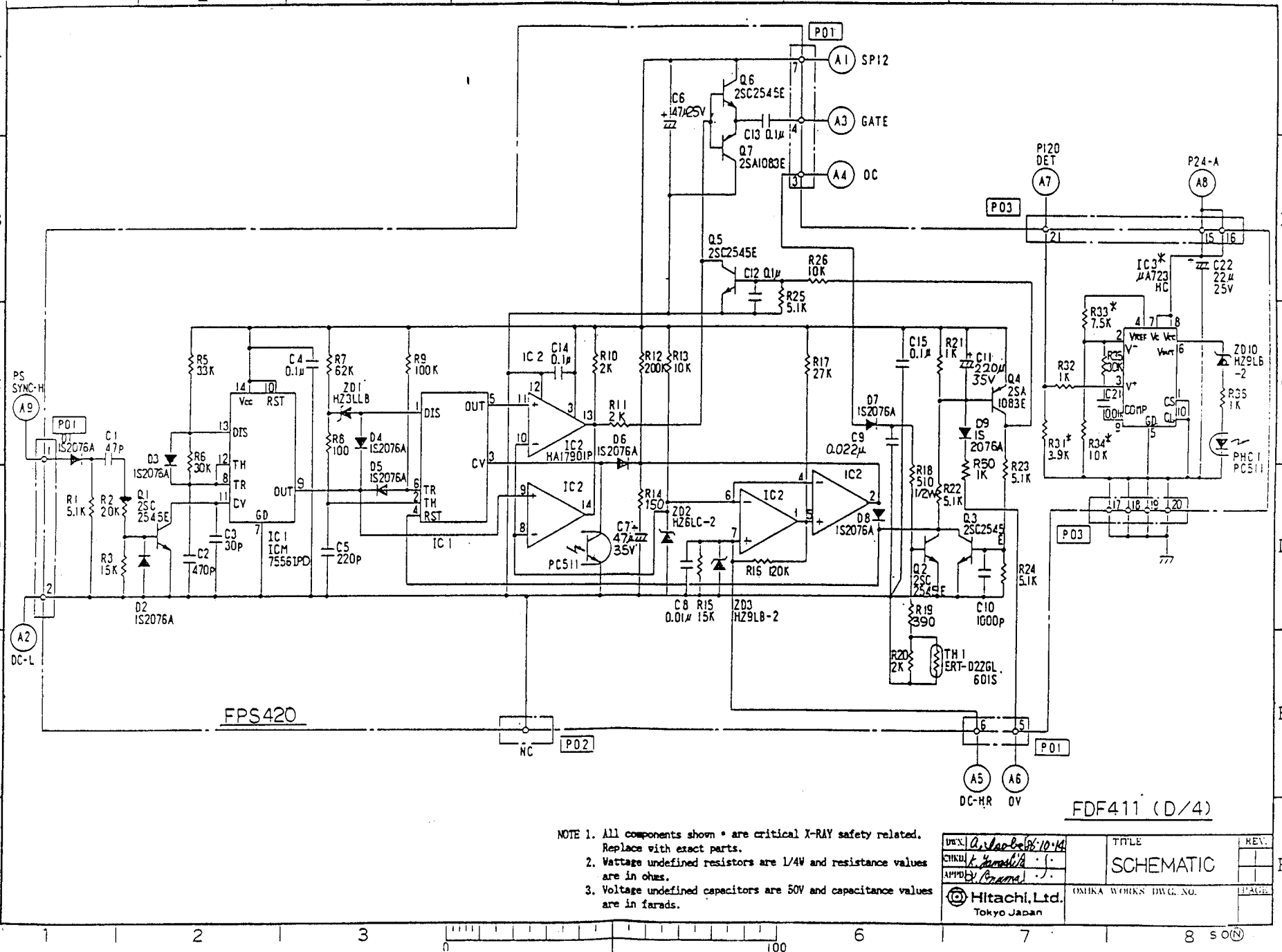


- NOTE 1. All components shown * are critical X-RAY safety related. Replace with exact parts.
 2. Wattage undefined resistors are 1/4W and resistance values are in ohms.
 3. Voltage undefined capacitors are 50V and capacitance values are in farads.
 4. This component is sealed control.

FDF 411 (C/4)

DWG: <i>Q. Adachi 86/10/14</i> CHKD: <i>K. Yamada</i> APPD: <i>K. Iwano</i>	TITLE SCHEMATIC	REV.
Hitachi, Ltd. Tokyo Japan	OMIKA WORKS DWG NO.	PAGE

- 67 (D)



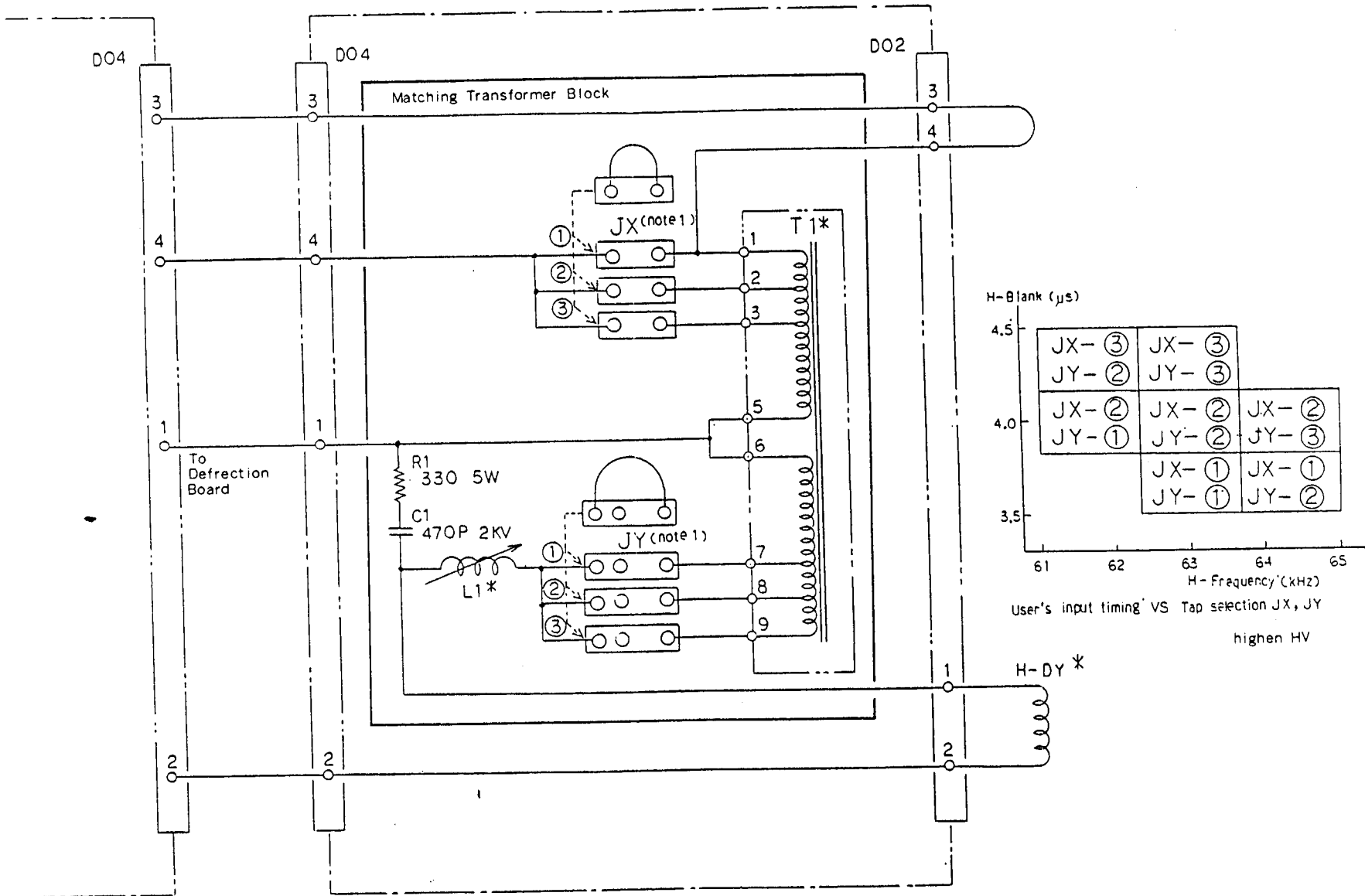
FPS420

FDF411 (D/4)

- NOTE 1. All components shown * are critical X-RAY safety related. Replace with exact parts.
 2. Wattage undefined resistors are 1/4W and resistance values are in ohms.
 3. Voltage undefined capacitors are 50V and capacitance values are in farads.

DES. <i>A. Saito</i> 10/4	TITLE	REV.
CHKD. <i>A. Saito</i>	SCHEMATIC	
APPD. <i>B. Saito</i>		
Hitachi, Ltd. Tokyo, Japan	OMIKA WORKS DWG. NO.	PAGE

Fig. 7-6

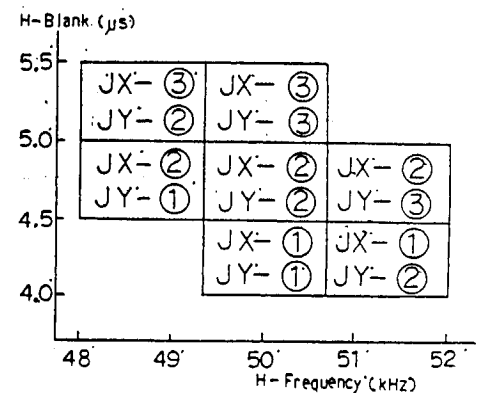
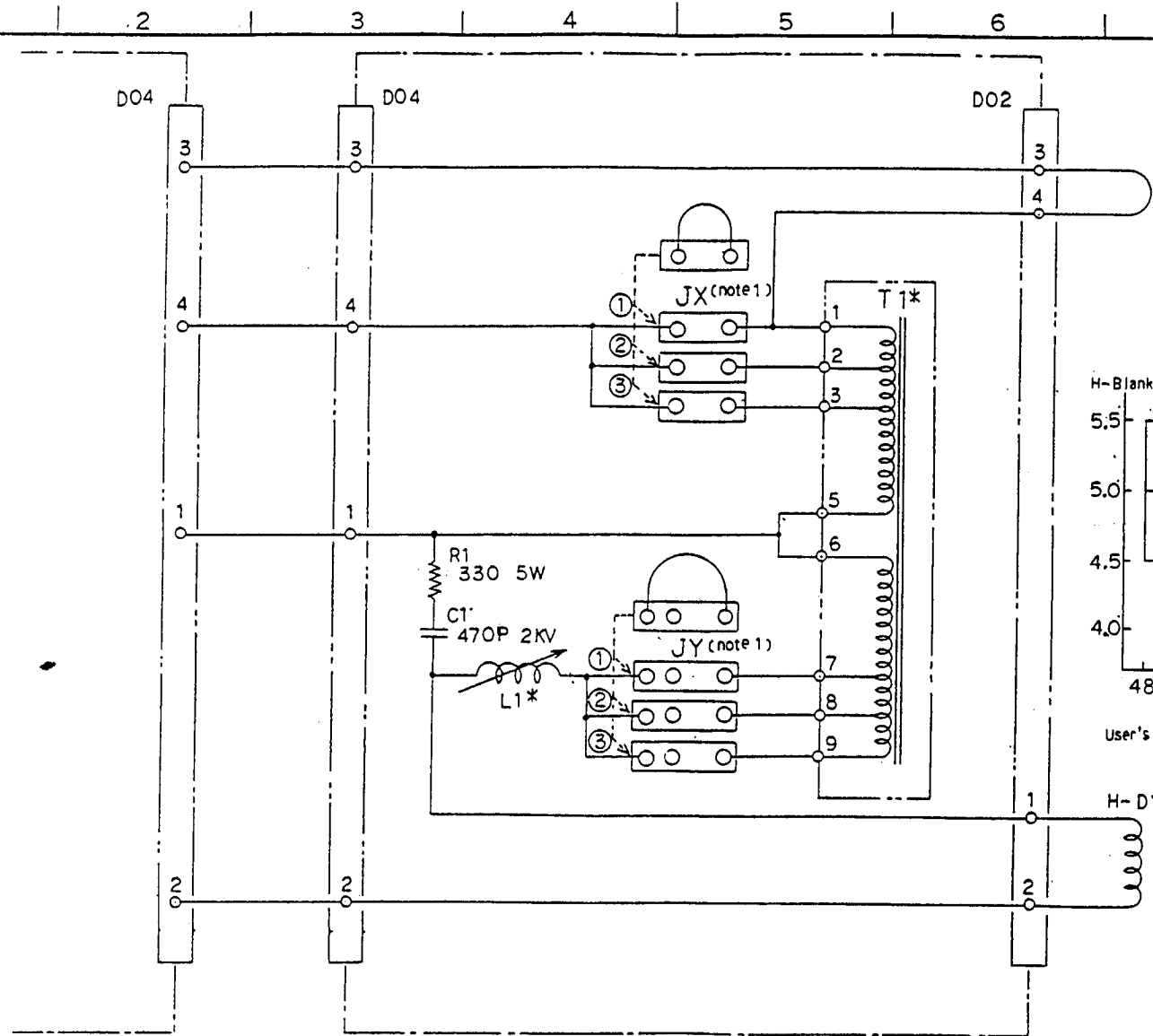


NOTE 1. These components are variable by timing specification.
 2. All components shown * are critical X-RAY safety related.
 Replace with exact parts.

FCS410

DWG. <i>T. Dukes</i> 106-5-30 CHKD. <i>...</i> APPD. <i>...</i>	TITLE SCHEMATIC	REV. 1 2
Hitachi, Ltd. Tokyo Japan	OMIKA WORKS DWG. NO.	PAGE

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User's input timing VS Tap selection JX, JY

NOTE 1. These components are variable by timing specification.
 2. All components shown * are critical X-RAY safety related.
 Replace with exact parts.

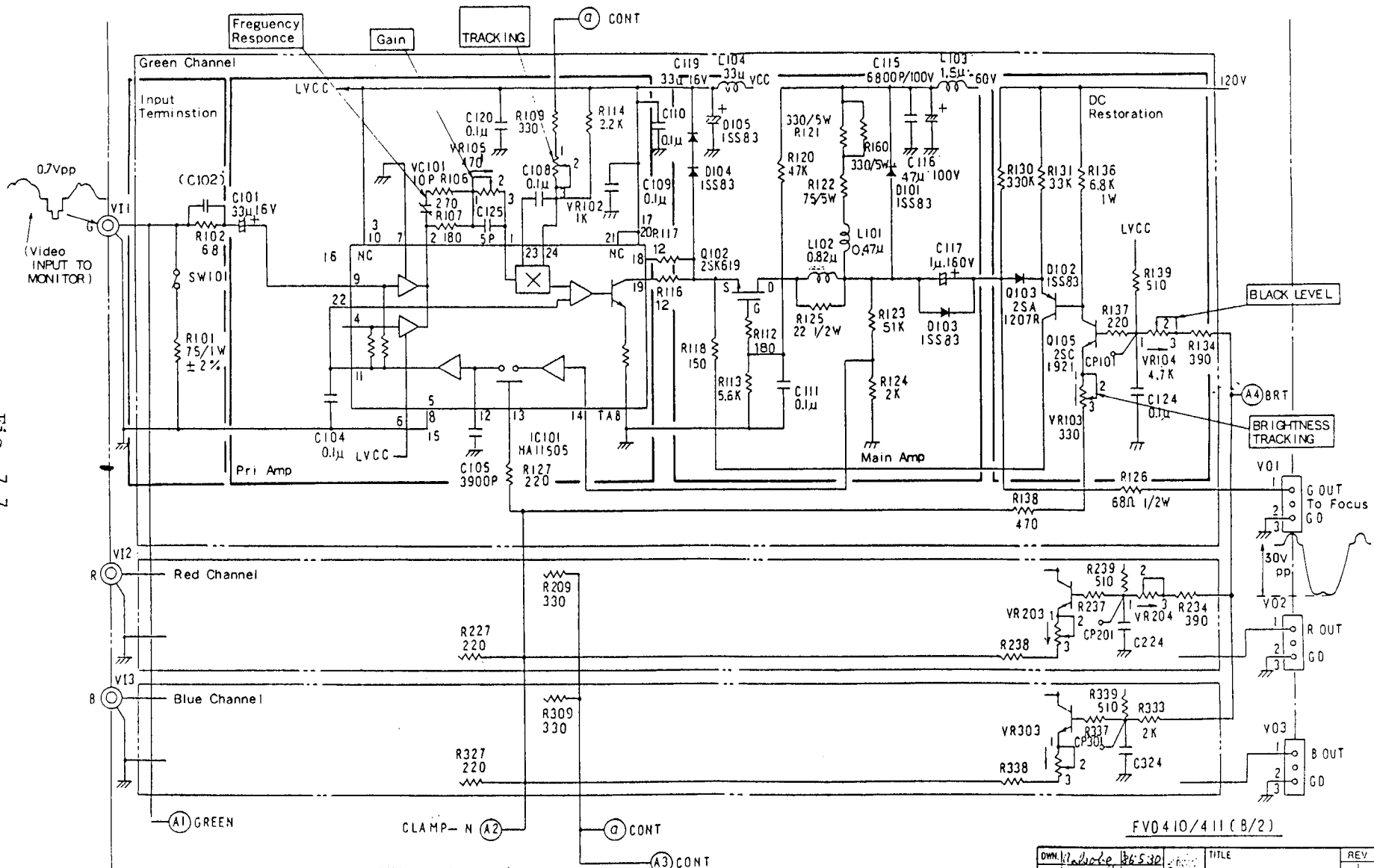
FCS411

DWX: <i>Asakabe</i> 68-10-14	TITLE	REV.
CHKD: <i>S. Yamashita</i>	SCHEMATIC	
APPR: <i>S. Yamashita</i>		
Hitachi, Ltd. Tokyo, Japan	OMIKA WORKS DWG. NO.	PAGE

製図番号:

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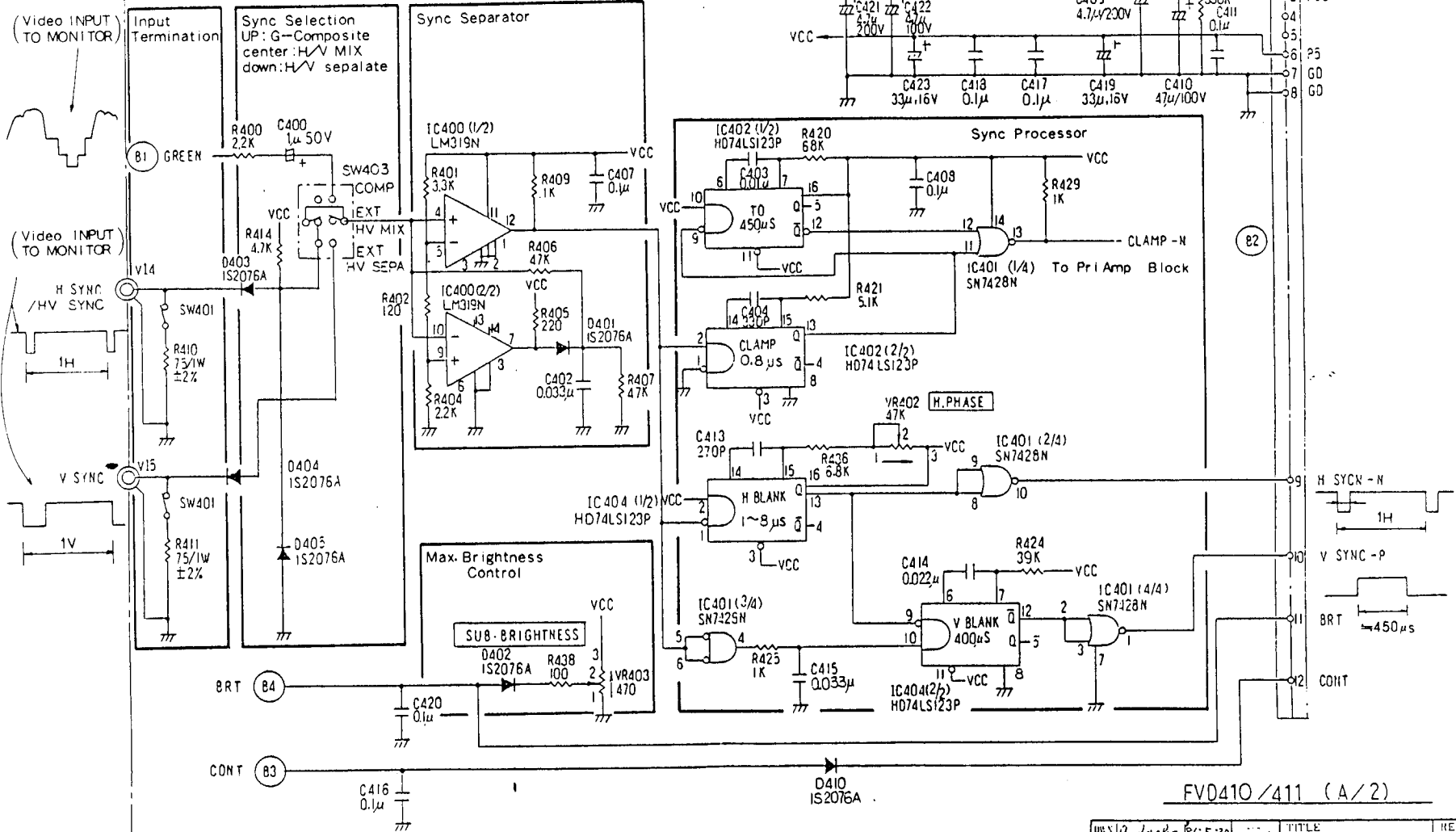
FIG. 7-7



NOTE 1. Voltage undefined resistors are 1/4W and resistance values are in ohms.
 2. Voltage undefined capacitors are 50V and capacitance values are in farads.

OWN: 17-1-10-166530		TITLE	REV
CHKD: 17-1-10-166530	DATE: 1973.11.10	SCHEMATIC	
APPR: 17-1-10-166530			
Hitachi, Ltd. Tokyo, Japan		OMIKA WORKS DWG. NO.	PAGE

Fig. 7-8

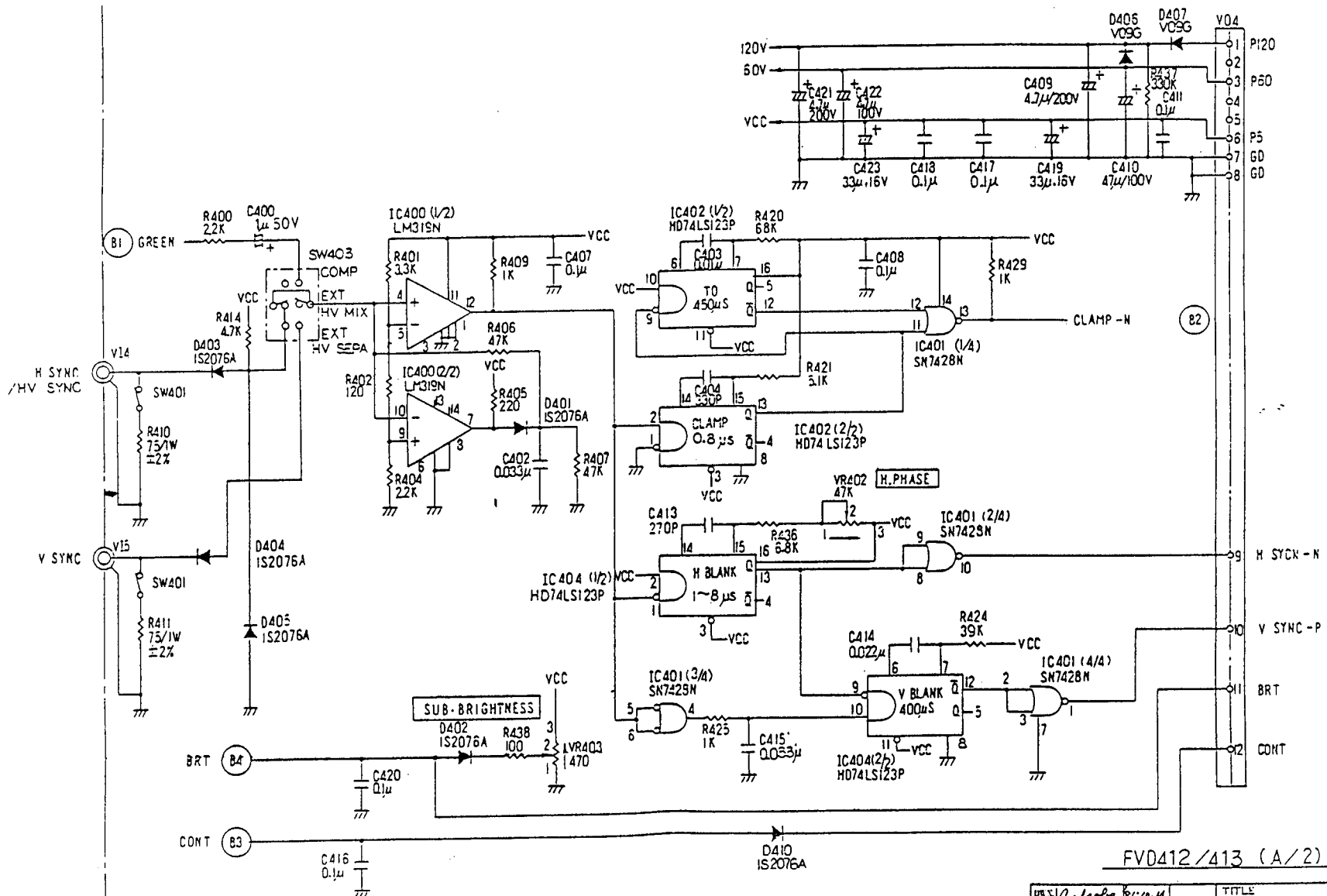


FVD410/411 (A/2)

NOTE 1. Wattage undefined resistors are 1/4W and resistance values are in ohms.
 2. Voltage undefined capacitors are 50V and capacitance values are in farads.

DWG. NO. <i>R2400P 86.5.30</i> CHKD. <i>K. Yoshida</i> APPR. <i>K. Yoshida</i>	TITLE SCHEMATIC	REV.
Hitachi, Ltd. Tokyo Japan	OMIKA WORKS DWG. NO.	PAGE

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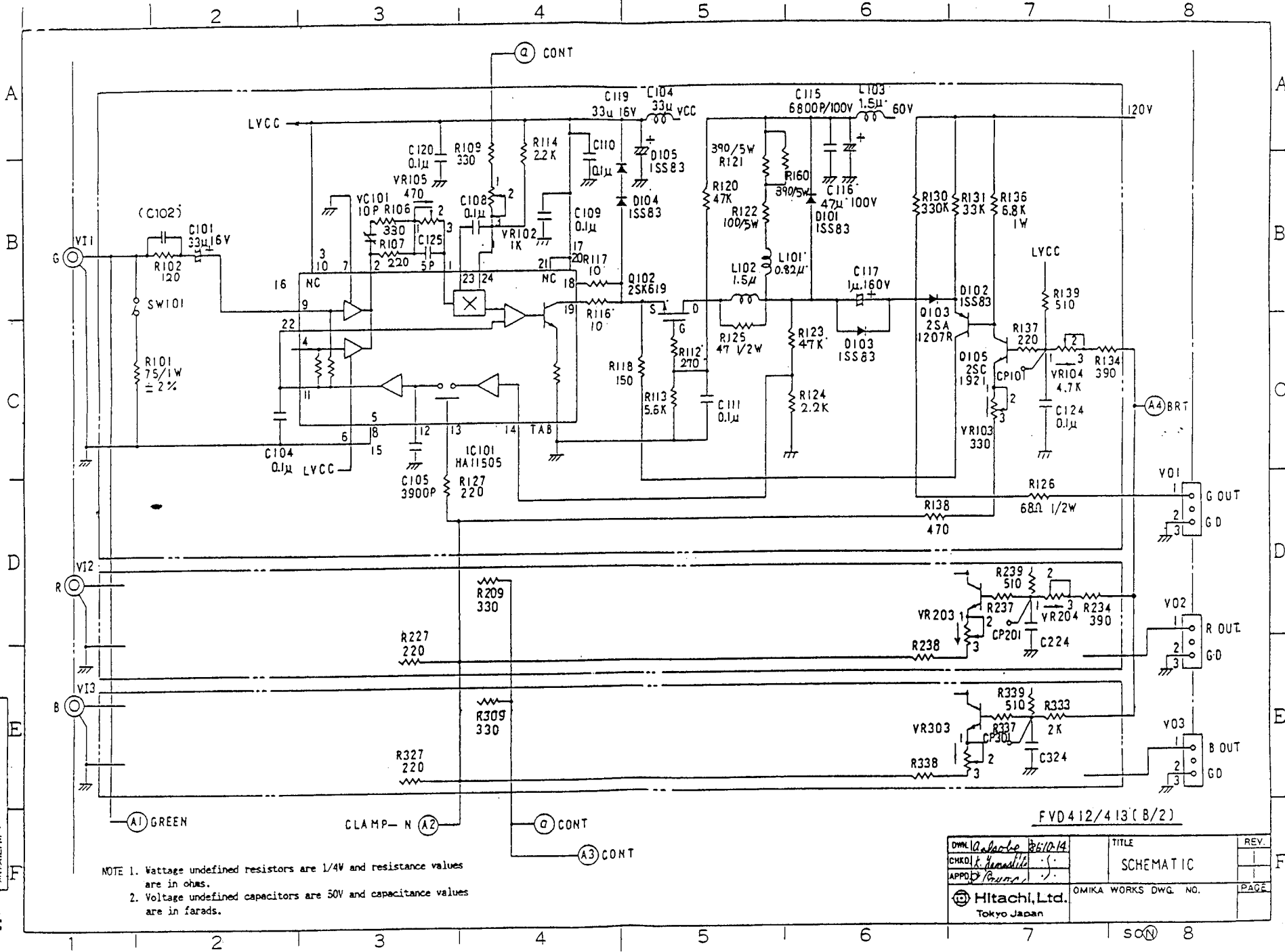
FVD412 / 413 (A / 2)

NOTE 1. Voltage undefined resistors are 1/4W and resistance values are in ohms.
 2. Voltage undefined capacitors are 50V and capacitance values are in farads.

DATE: 8/10/84	TITLE: SCHEMATIC	REV.:
DESIGNER: K. K.		
APPROVED: S. S.		
Hitachi, Ltd.		ONHKA WORKS DWG. NO.
Tokyo Japan		PAGE:

- 70(b) -

机内図番:



NOTE 1. Wattage undefined resistors are 1/4W and resistance values are in ohms.
 2. Voltage undefined capacitors are 50V and capacitance values are in farads.

DWG. <i>Q. A. A. 8510-14</i>		TITLE	REV.
CHKD. <i>K. Yamashita</i>		SCHEMATIC	
APPRD. <i>R. W. C.</i>			
Hitachi, Ltd. Tokyo, Japan		OMIKA WORKS DWG. NO.	PAGE

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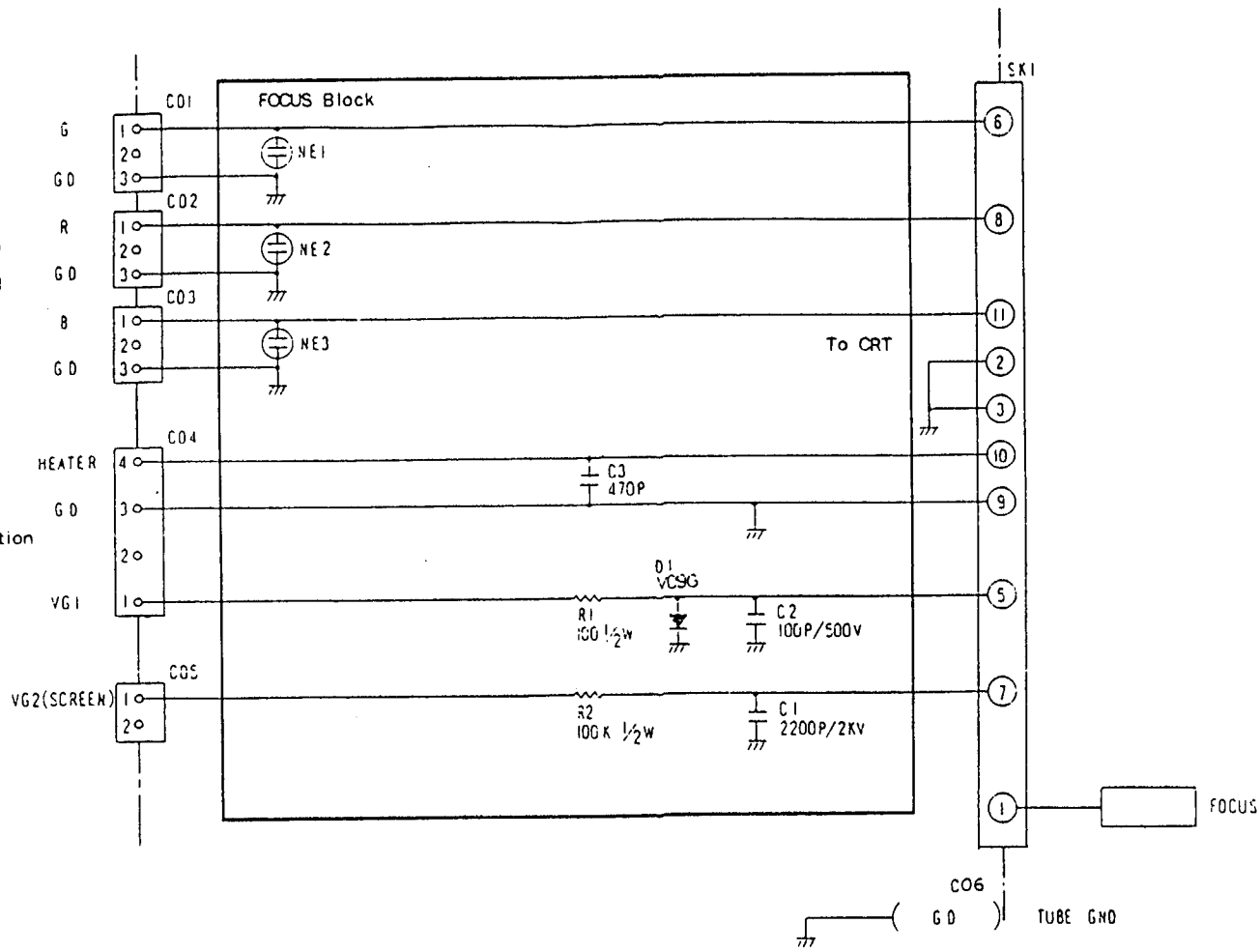


Fig. 7-9

- NOTE 1. Wattage undefined resistors are 1/4W and resistance values are in ohms.
 2. Voltage undefined capacitors are 50V and capacitance values are in farads.

FCS400

DRW: D. Y. K. 351024	DATE: 1970.10.24	FILE: SCHEMATIC	REV: 1
CHK: M. Y. K.	DATE: 1970.10.24		
APP: M. Y. K.	DATE: 1970.10.24		
Hitachi, Ltd. Tokyo Japan		ORDER NO. HCS 400	PRICE