ITC

ITC. PM-910 REV 1.

ITC IKEGAMI

OPERATING INSTRUCTIONS & SERVICE MANUAL

PRELIMINARIES

PM-910 is a 9"(23cm) diagonal CRT used reliable picture monitor for monochrome video program. Full solid-state with top quality integrated circuits and silicon semi-conductors design assure high quality picture for a long time. Simple circuitry design and compact construction present this monitor as an economical device. The PM-910T external sync driven picture monitor with DC restoration is optionally available for higher class applications.

This manual contains initial set up procedures, operating instructions and service informations for both types, PM-910 and PM-910T.

Please note that the PM-910 picture monitor is finely adjusted precision piece of equipment. To be assured of trouble-free operation, full performance capability and a long service life, we strongly recommend that you check these instructions completely before attempting to assemble, install or operate the monitor.

Although this picture monitor is a solid-state, modular unit using mainly low-voltage circuitry at non-hazardous energy levels, power supply voltages present on certain parts of the interior. Such parts are not accessible in normal use, but while carrying out maintenance or repair, EXTREME CARE should be taken. Mains voltage can be LETHAL!

It is strongly recommended not to move them unless really necessary, and in such cases, always follow the procedure given in these instructions, and use appropriate tools. And note that the inside adjustment or repair should only be made by a fully qualified technician.

CARE IN HANDLING

Careful handling of the monitor and accessories should be practiced at all times, avoiding unnecessary physical shocks and similar rough handling.

The monitor should always be set up in a well-ventilated area, and shielded from heat sources, high-powered lights, especially strong magnetic fields (such as power transformers), which may cause picture swing or distortion.

Excessively moisture-, gas- or salt-laden atmospheres should be avoided as much as possible, since circuitry components and connector contacts may be adversely affected.

Dust accumulation should be avoided, since many parts of the unit will be adversely affected in time, and the service-life will be shortened.

Regularly check the connection cables, which are prone to damage, especially in outdoor use. The cable should always be handled with care, kept free from sharp bends and kinks, and relieved from strain near the connectors. And checking of the connectors for full insertion and tightness is also recommended, especially where the same setup is used for a long time.

NAMES OF SECTIONS

1. Carrying handle
2. Upper case
3. Front escutcheon
4. Picture tube (CRT)
5. Power switch
6. Power lamp
7. V. Hold (Driver control)
8. H. Hold (Driver control)
9. Brightness
10. Contrast
11. Video input connectors (bridged)
12. Video termination switch (75-ohm ON/OFF)
13. Blind plate for optional unit (For EXT sync/DC restore unit)
14. EXT Sync/DC restore unit
15. DC restoration switch (ON/OFF)
16. Sync termination switch (75-ohm ON/OFF)
17. Sync mode switch (Internal/External)
18. Sync input connectors

SET UP & OPERATION

Position the picture monitor in the desired location and connect the power cord to an AC outlet. And make sure that the monitor is installed securely, in a stable condition.

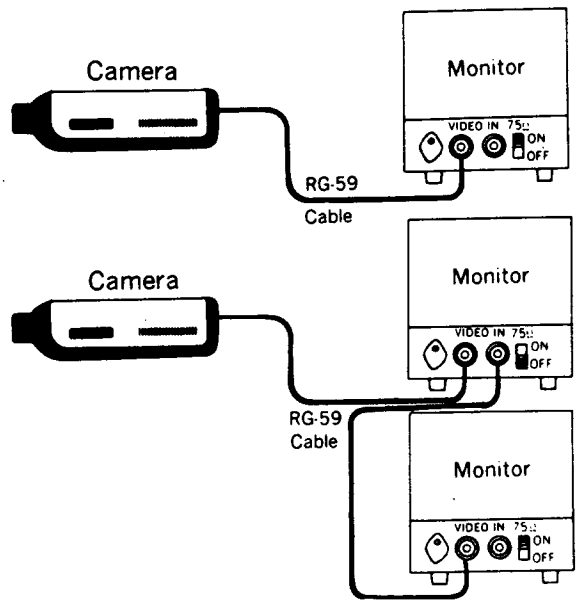
Make the coaxial-cable connection for video signal between the picture monitor and the signal source (video camera or-VTR etc.). And make certain that all connectors are properly and fully mated, and the locking rings are securely tightened.

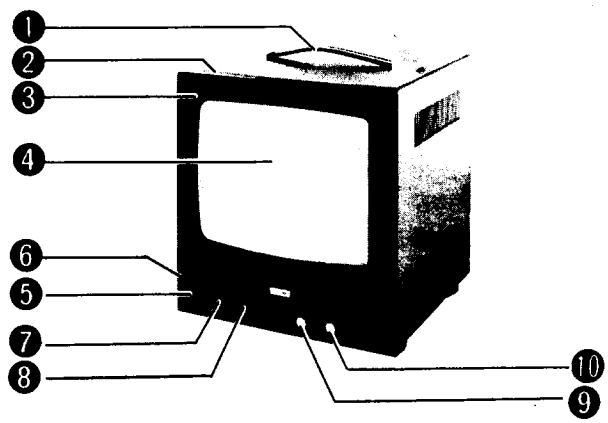
Set the video termination switch to 75-ohm (if more than one monitor is to be used, see below).

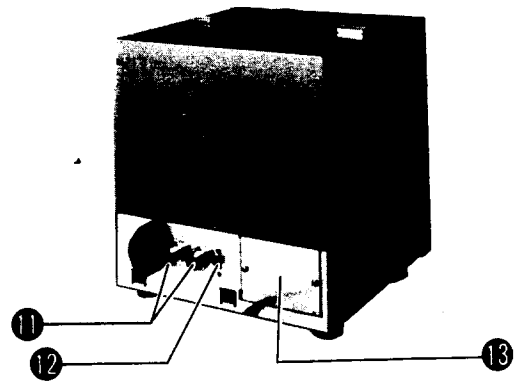
If provided, set the sync internal/external switch to internal (if applicable).

After switching on the monitor and setting up the raster, adjust the brightness and contrast controls for the most pleasing picture.

BASIC CONNECTION





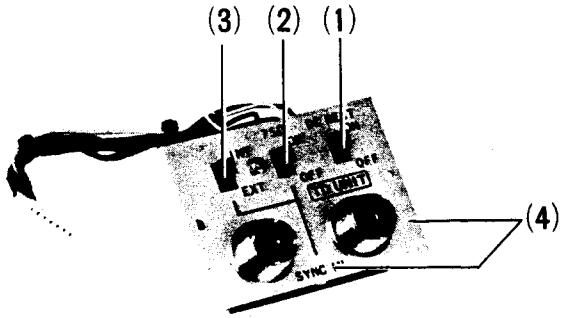


EXTERNAL SYNC DRIVE & DC RESTORATION UNIT

An optional external sync drive & DC restoration unit is available for PM-910. An external sync drive provision is for synchronous operation with other video equipment and DC restoration is for high fidelity reproduction of signals bright or dark signal referred to black level.

This unit is provided with DC restoration circuit and related switch, and with Ext. sync drive circuit with two sync input connectors and necessary switches.

An installation of this unit can be made easily so that the PM-910 basic monitor can be easily converted to PM-910T external drivable monitor with DC restoration. With this unit, required sync input level is 4.0V (p-p) negative polarity sync of 75-ohm impedance.



PROVISIONS

(1) DC REST switch

This is an on/off switch for DC restoration. When DC restoration is not required, set this switch off position.

(2) SYNC IN connectors

Two sync input connectors are provided in a bridge connection for several monitors synchronous operation.

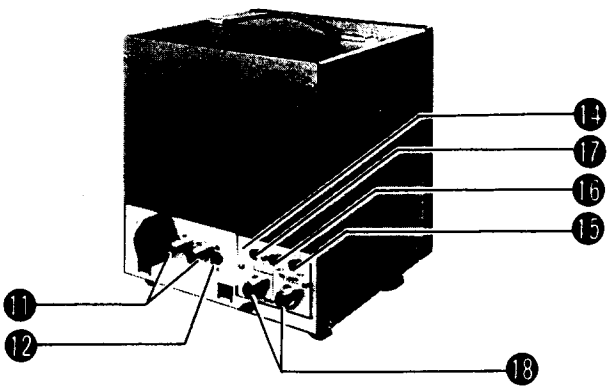
(3) 75-ohm switch (Sync termination)

This is a sync termination switch with 75 ohms. In the case of several monitors operation, set this sync termination switch off, except last monitor in the train.

(4) EXT/INT switch

This is a sync mode switch for external sync drive. In the case of external sync drive, set this switch to EXT position.

PM-910/T Rearview



INSTALLATION OF THE EXT SYNC/DC REST UNIT

(1) Take out the 3 screws Ⓐ from rear cover, and remove the cover.

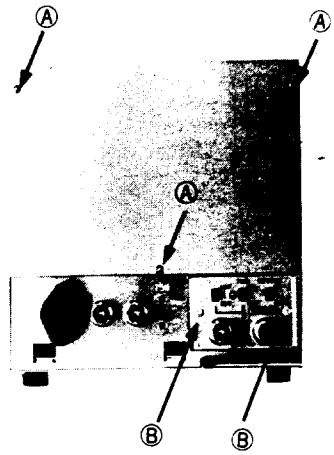
(2) Take out the 2 screws Ⓑ from the rear blind panel and remove the blind panel.

(3) Install the EXT SYNC/DC REST unit with 2 screws Ⓑ .

(4) Pull out the jumper plug (7P) putting on a monitor main board.

(5) Connect the EXT SYNC/DC REST unit to the monitor main board by 7P mini-connector.

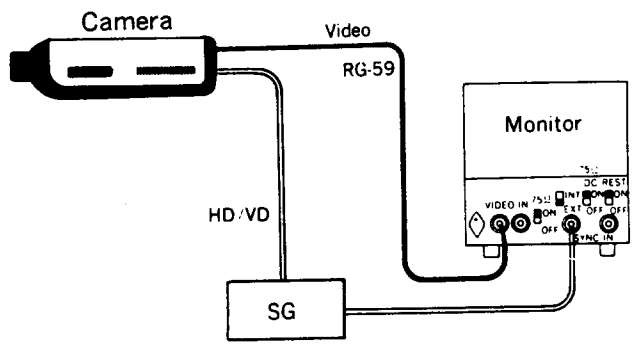
(6) Fix the rear cover as it was, with the 3 screws Ⓐ .



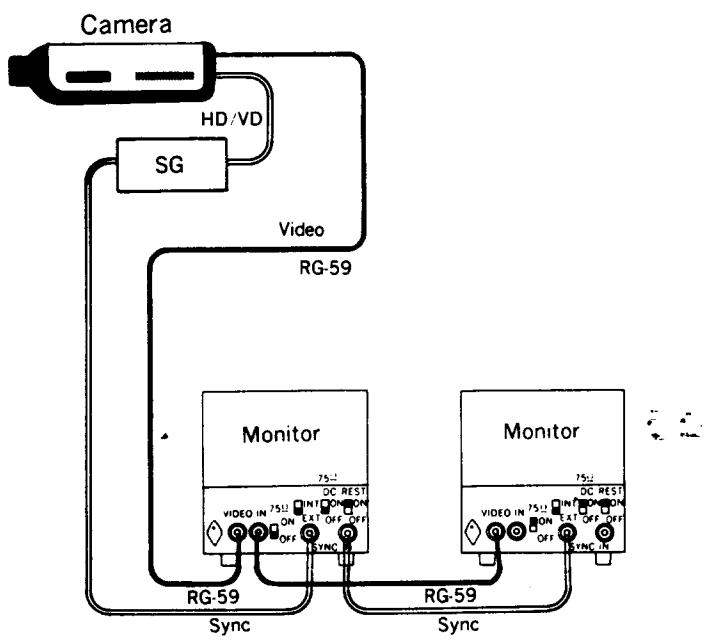
Note that the jumper plug (7P mini-plug) should be on the monitor main board in the case of operation without EXT SYNC/DC REST unit. Without this jumper plug, a monitor never be operated.

EXTERNAL SYNC DRIVE CONNECTION

(1) ONE CAMERA, ONE MONITOR



(2) MULTIPLE MONITORS WITH EXTERNAL SYNC DRIVE



SPECIFICATIONS

PICTURE TUBE	: 9" (23cm) diagonal CRT Implosion protective Type 230BLB4 or Equiv.
VIDEO INPUT LEVEL & IMPEDANCE	: VS 1.0V (p-p), 75 ohms
SCANNING RATES	
HORIZONTAL	: 15.75KHz or 15.625KHz
VERTICAL	: 60Hz or 50Hz
VIDEO FREQUENCY RESPONCE	: 5.5MHz or more (±3dB)
VIDEO OUTPUT LEVEL	: 30V(p-p)
HORIZONTAL RESOLUTION	: 550 lines or better at center
SIGNAL-TO-NOISE RATIO (Sync noise excluded)	: 55dB or better
LINEARITY	: Maximum 2% (of height)
AMBIENT TEMPERATURE	: -10°C ~ +45°C
POWER REQUIREMENT	: 100/120VAC, 60Hz or 220/240VAC, 50Hz
POWER CONSUMPTION	: Approx. 24 watts
DIMENSIONS (WHD)	: 218.5 X 226 X 230 (in mm)
WEIGHT	: 6.0Kg

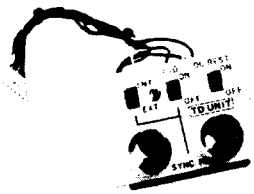
RATINGS FOR OPTIONAL UNIT (PM-910T only)

SYNC INPUT LEVEL	: 4.0V(p-p) Negative polarity
SYNC INPUT IMPEDANCE	: 75-ohm or High (Switchable)
DC RESTORATION	: Built-in (On/off switchable)

OPTIONAL ACCESSORIES

Following optional accessories & unit are available for PM-910 monitor.

* EXTERNAL SYNC DRIVE & DC RESTORATION UNIT



For external sync operation system, an external sync drive unit of plug-in type is available.

This unit includes DC restoration.

* SCREEN HOOD

Functionally styled snap-on hood of durable material is provided.

* DOUBLE-UNIT RACK PANEL

This fine-finish metal panel accepts two PM-910 or 910T for standard 19" rack. Control panel cover included.

Inexpensive type without panel cover is also provided.

* Design and specifications are subject to change for improvement.

IKEGAMI

IKEGAMI TSUSHINKI CO.,LTD.

Head Office & Export Department/
5-6-16 Ikegami, Ohta-ku, Tokyo TELEX 2466738 IKETSU J
PHONE TOKYO (03) 754-2121 CABLE ADDRESS IKETSU TOKYO

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INTERNAL ADJUSTMENTS

All internal controls are factory set and locked at the optimum position. Adjustment should not be undertaken except by a qualified service technician, and only when absolutely necessary. This information is provided only as a source of reference for the qualified service technician.

There are five adjustments on the monitor main board.

HORIZONTAL FREQUENCY : This is a screwdriver adjustment to control picture horizontal position when the H. Hold cannot follow.

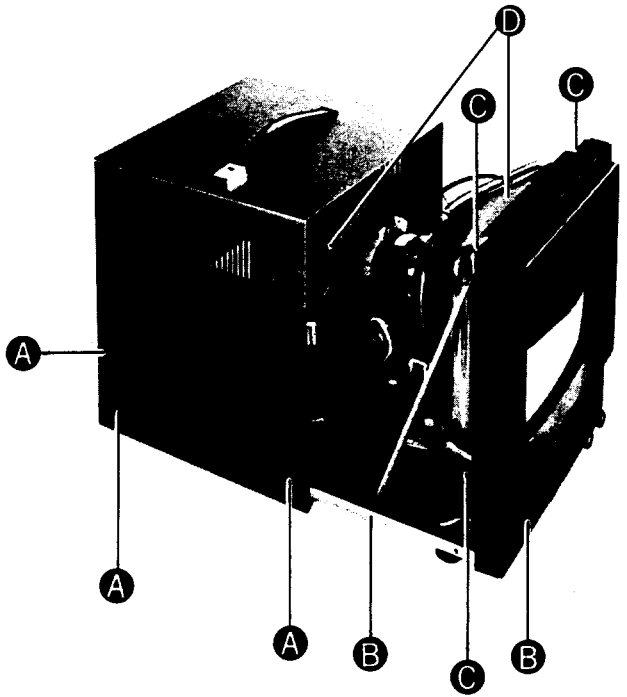
FOCUS : This is a screwdriver adjustment to make a correct focus when the picture is blurred.

VERTICAL BIAS : This is a screwdriver adjustment to control bias of the video output circuit and IC 1. Turn this control when overlapped pictures or shrinked pictures are on the screen.

VERTICAL LINEARITY : This is a screwdriver adjustment to control V. linearity when the picture is distorted in upper or lower part on the screen.

VERTICAL HEIGHT : This is also a screwdriver adjustment to correct a height when the center circle of the test pattern is oblong vertically or horizontally.

PICTURE TUBE (CRT) REPLACEMENT



(1) Switch off the power and unplug the power cord.

In the case of tube replacement, making sure that the monitor has been switched off for several minutes to allow the tube anode to discharge.

(2) Take out the five screws Ⓐ from a top cover, and remove the cover.

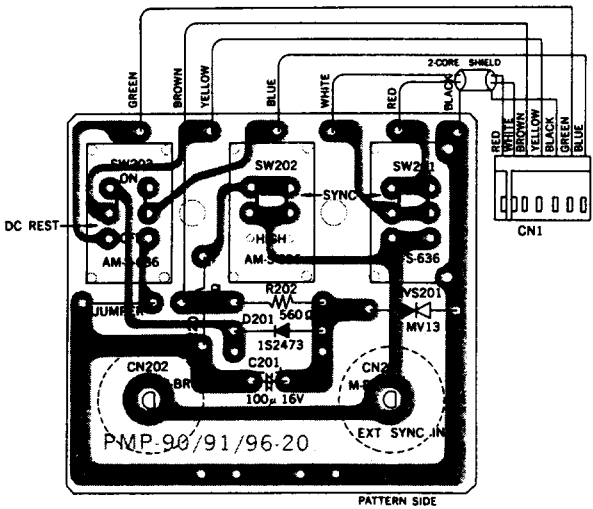
(3) Take out the 2 screws Ⓑ from a CRT support bar.

(4) Carefully remove CRT socket, connector to the deflection coil assembly and anode cap. Ⓓ

(5) Take out the 4 screws Ⓒ and remove old CRT.

(6) Put new CRT for replacement, and observe reverse sequence in assembling the cover.

Note that the picture tube (CRT) must be replaced only with identical part number.

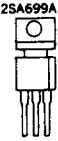


2SC1012A

(BOTTOM VIEW)

1 Emitter
2 Base
3 Collector

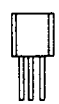
2SC1226A
2SA699A



(BOTTOM VIEW)

1 Emitter
2 Collector
3 Base

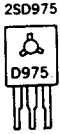
2SC1815
2SA564
2SC1317



(BOTTOM VIEW)

1 Emitter
2 Collector
3 Base

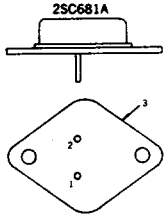
2SD975



(BOTTOM VIEW)

1 Base
2 Collector
3 Emitter

2SD469
2SC681A



(BOTTOM VIEW)

1 Base
2 Emitter
3 Collector

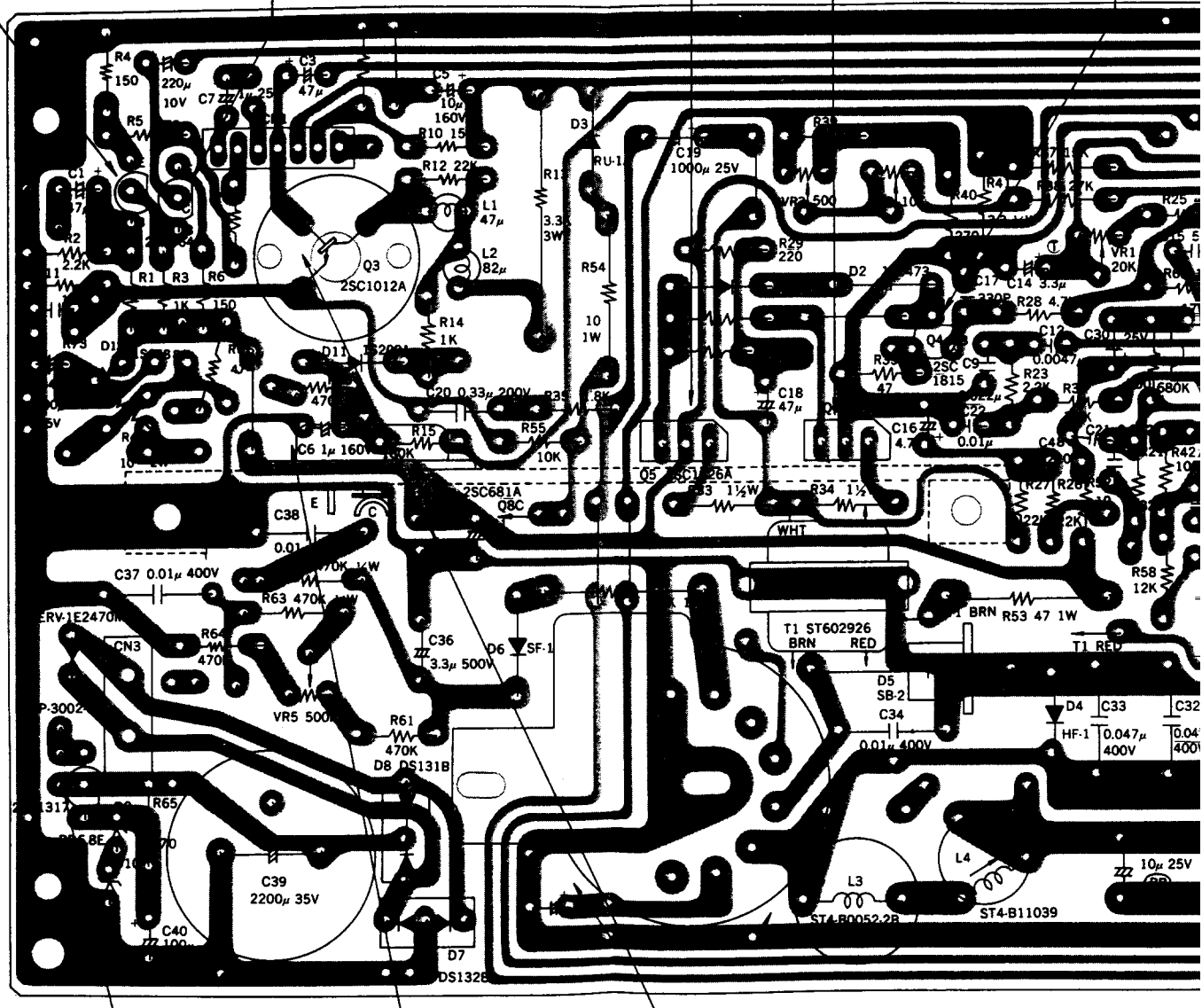
Q1	DC V	AC VP	
B	3.4	1.0	
C	9.1	1.4	
E	2.8	1.0	

Q2	DC V	AC VP	
B	9.1	1.4	
C	6.8	2.4	
E	9.8	1.3	

Q5	DC V	AC VP	
B	8.0	10	
C	12.0	–	
E	7.5	12.0	

Q6	DC V	AC VP	
B	6.5	12.0	
C	–	–	
E	7.3	12.0	

Q4	DC V
B	0.98
C	6.5
E	0.35



Q9	DC V	AC VP	
B	13.5	–	
C	16.5	2.0	
E	12.8	–	

Q8	DC V	AC VP	
B	–	2.5	
C	11.9	100	
E	–	–	

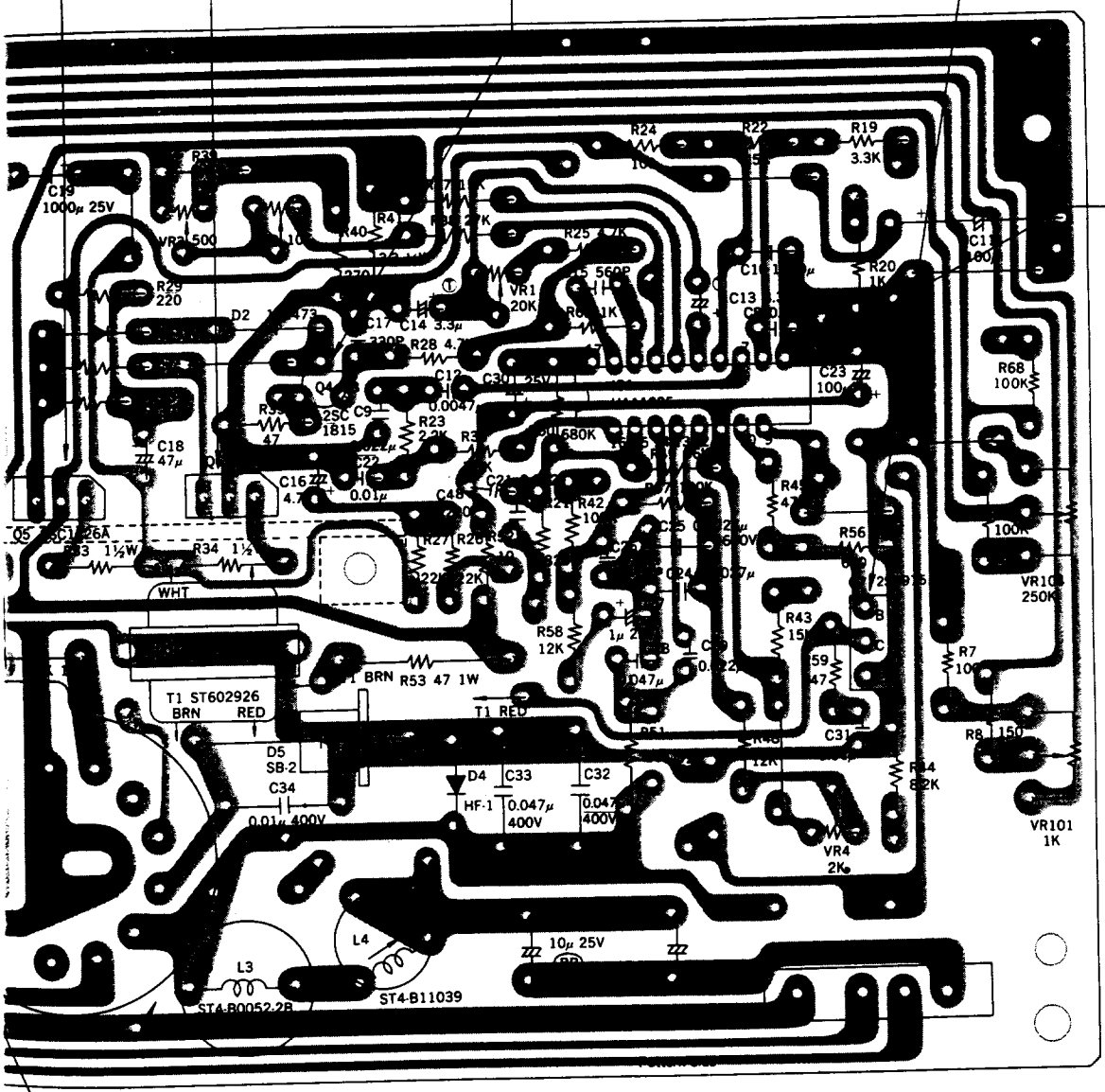
Q3	DC V	AC VP	
B	1.8	1.2	
C	49	30	
E	1.2	0.7	

AC	VP
10	
–	
12.0	

Q6	DC	AC	VP
B	6.5	12.0	
C	–	–	
E	7.3	12.0	

Q4	DC	AC	VP
B	0.98	1.3	
C	6.5	12.0	
E	0.35	0.7	

Q7	DC	AC	VP
B	0.32	0.8	
C	10.2	18	
E	–	–	

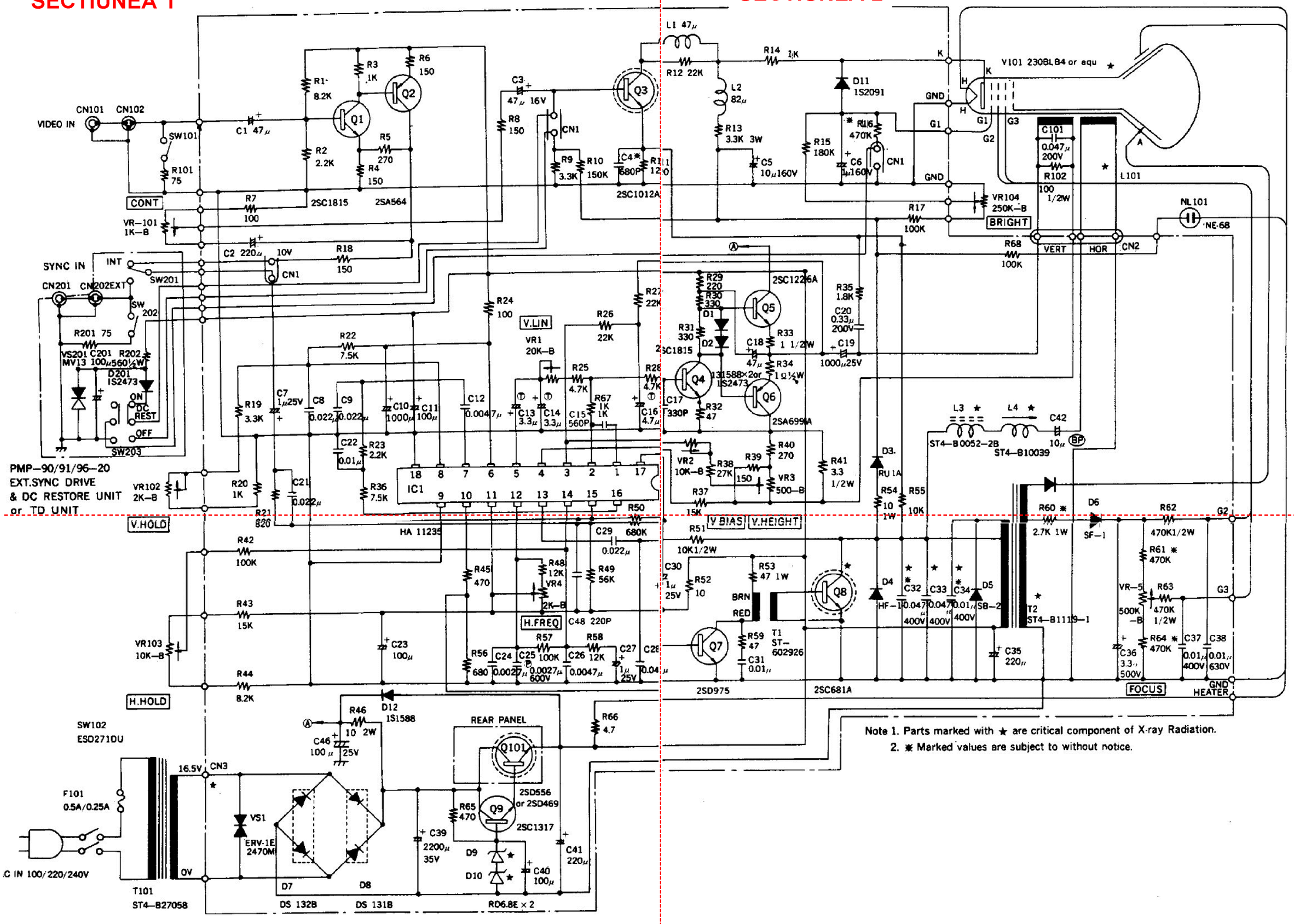


IC1	DC	AC	VP
1	3.2	1.8	
2	1.2	2.1	
3	3.1	1.1	
5	7.2	2.3	
6	11.4	–	
7	5.1	4.0	
8	5.2	2.5	
10	1.6	4.0	
12	6.4	5.0	
13	3.4	1.4	
15	12.8	2.3	
16	1.25	11.0	
17	4.1	0.45	

C	VAC	VP
.8	1.2	
49	30	
.2	0.7	

SECTIUNEA 1

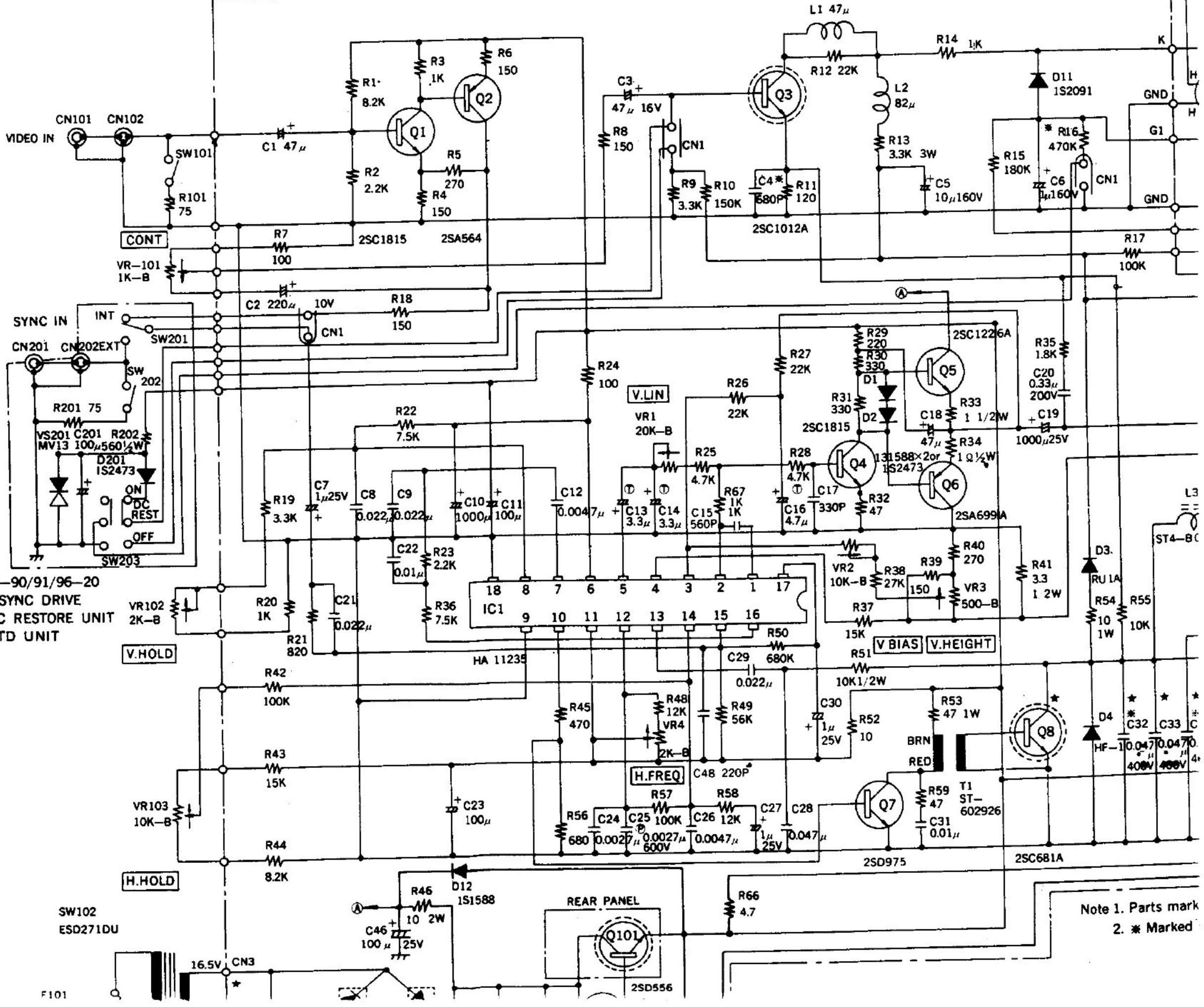
SECTIUNEA 2

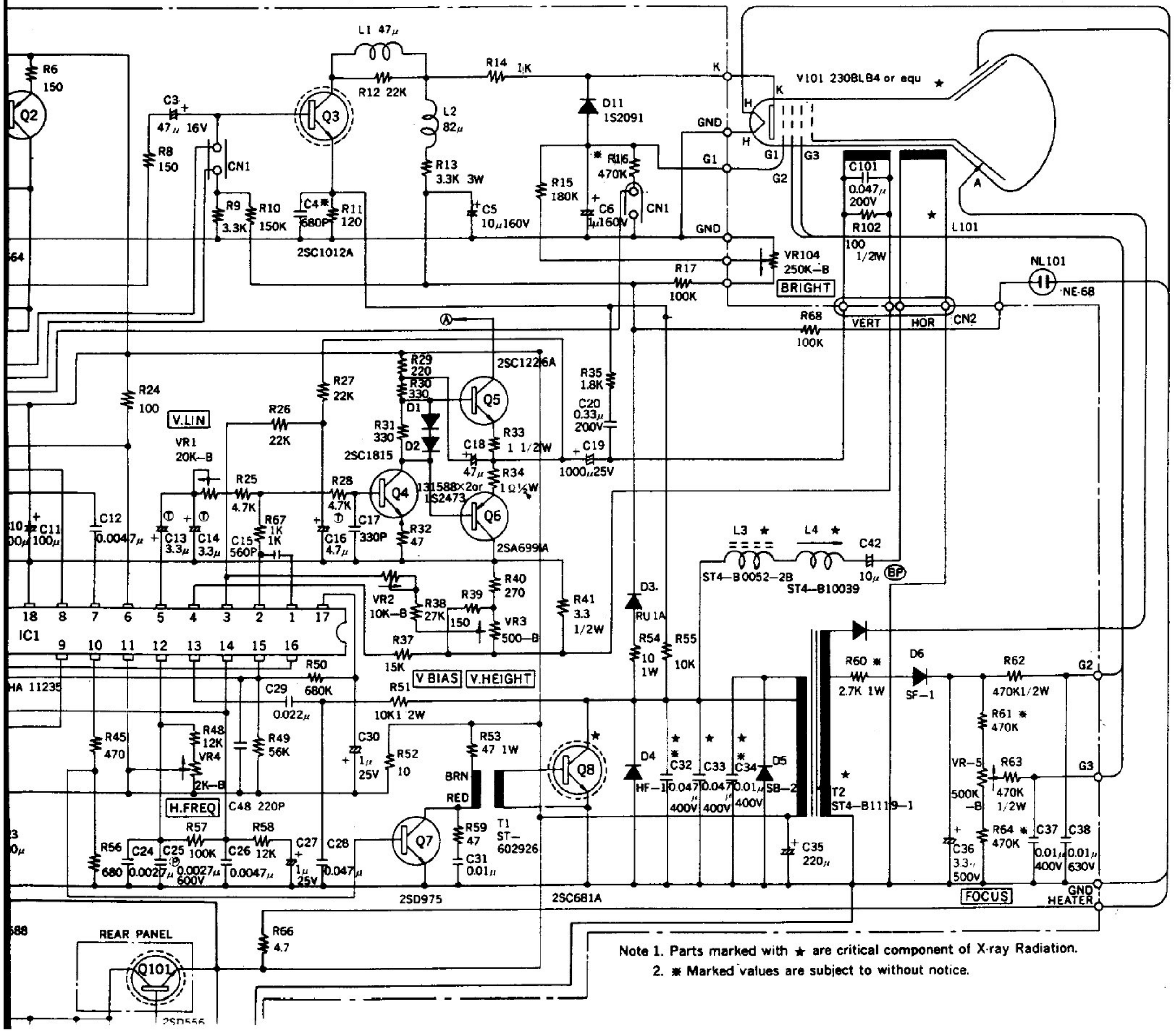


Note 1. Parts marked with ★ are critical component of X-ray Radiation.
2. ✱ Marked values are subject to without notice.

SECTIUNEA 3

SECTIUNEA 4


CN101
CN102
VIDEO IN
SW101
R101 75
CONT
C1 47μ
R1 8.2K
R2 2.2K
R3 .1K
R4 150
R5 270
R6 150
Q1
Q2
2SC1815
2SA564
R7 100
VR-101 1K-B
C2 220μ 10V
CN1
R18 150
SYNC IN
INT
SW201
CN201
CN202EXT
SW 202
R201 75
VS201 C201 R202
MV13 100μ560Ω 1/4W
D201 1S2473
ON
DC REST
OFF
SW203
PMP-90/91/96-20
EXT.SYNC DRIVE
& DC RESTORE UNIT
or TD UNIT
VR102 2K-B
V.HOLD
R20 1K
R21 820
C21 0.022μ
R19 3.3K
C7 1μ25V
C8 0.022μ
C9 0.022μ
C10 1000μ
C11 100μ
C12 0.0047μ
C22 0.01μ
R23 2.2K
R36 7.5K
R22 7.5K
R24 100
IC1
18 8 7 6 5 4 3 2 1 17
9 10 11 12 13 14 15 16
HA 11235
C3 47μ 16V
R8 150
CN1
R9 3.3K
R10 150K
C4* 680P
R11 120
2SC1012A
Q3
L1 47μ
R12 22K
L2 82μ
R13 3.3K 3W
C5 10μ160V
R14 1K
D11 1S2091
R15 180K
* R16 470K
C6 1μ160V
CN1
K
H
GND
G1
GND
R17 100K
V.LIN
VR1 20K-B
R26 22K
R27 22K
R25 4.7K
R67 1K
C15 560P
C13 3.3μ
C14 3.3μ
C16 4.7μ
C17 330P
R28 4.7K
R29 220
R30 330
D1
D2
R31 330
2SC1815
Q4
Q5
2SC1226A
C18 47μ
R33 1 1/2W
R34 1Ω 1/2W
1S1588×2or 1S2473
Q6
2SA699A
R35 1.8K
C20 0.33μ 200V
C19 1000μ25V
R32 47
R40 270
R39 150
VR3 500-B
R38 27K
VR2 10K-B
R41 3.3 1 2W
R37 15K
V BIAS
V.HEIGHT
R50 680K
R51 10K1/2W
C29 0.022μ
R42 100K
R43 15K
R44 8.2K
H.HOLD
R45 470
R48 12K VR4 2K-B
R49 56K
C30 1μ 25V
R52 10
R53 47 1W
BRN
RED
Q8
D4
HF-10
C32 0.047μ 400V
C33 0.047μ 400V
C48 220P
H.FREQ
R57 100K
R58 12K
R56 680
C24
C25 0.0027μ
C26 0.0047μ
C27 1μ 25V
C28 0.047μ
C23 100μ
VR103 10K-B
Q7
R59 47
C31 0.01μ
T1 ST-602926
2SD975
2SC681A
D12 1S1588
R46 10 2W
C46 100μ 25V
SW102
ESD271DU
16.5V
CN3
F101
REAR PANEL
Q101
2SD556
R66 4.7
ST4-B
D3
RU 1A
R54 10 1W
R55 10K
Note 1. Parts mark
2. * Marked



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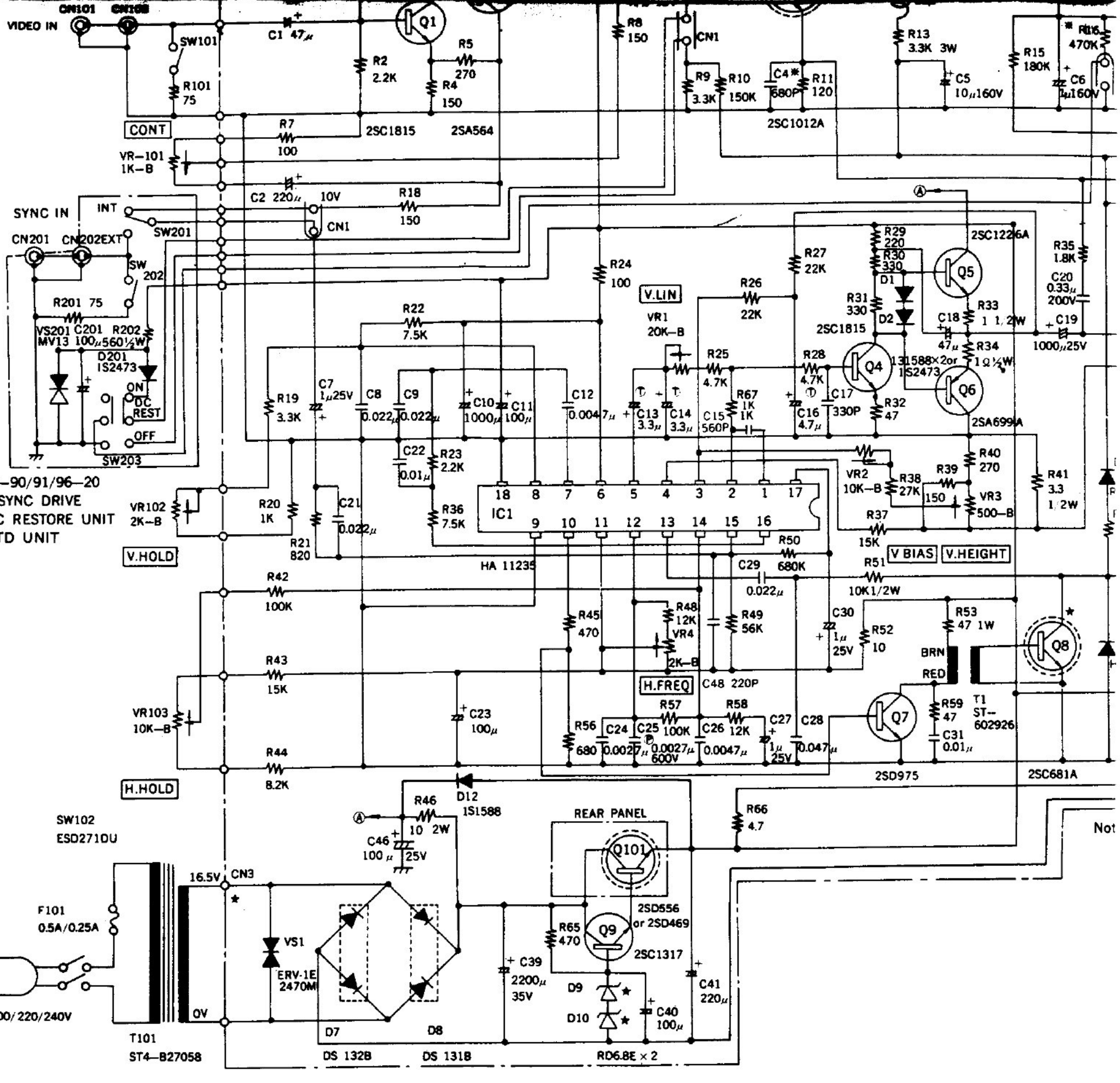
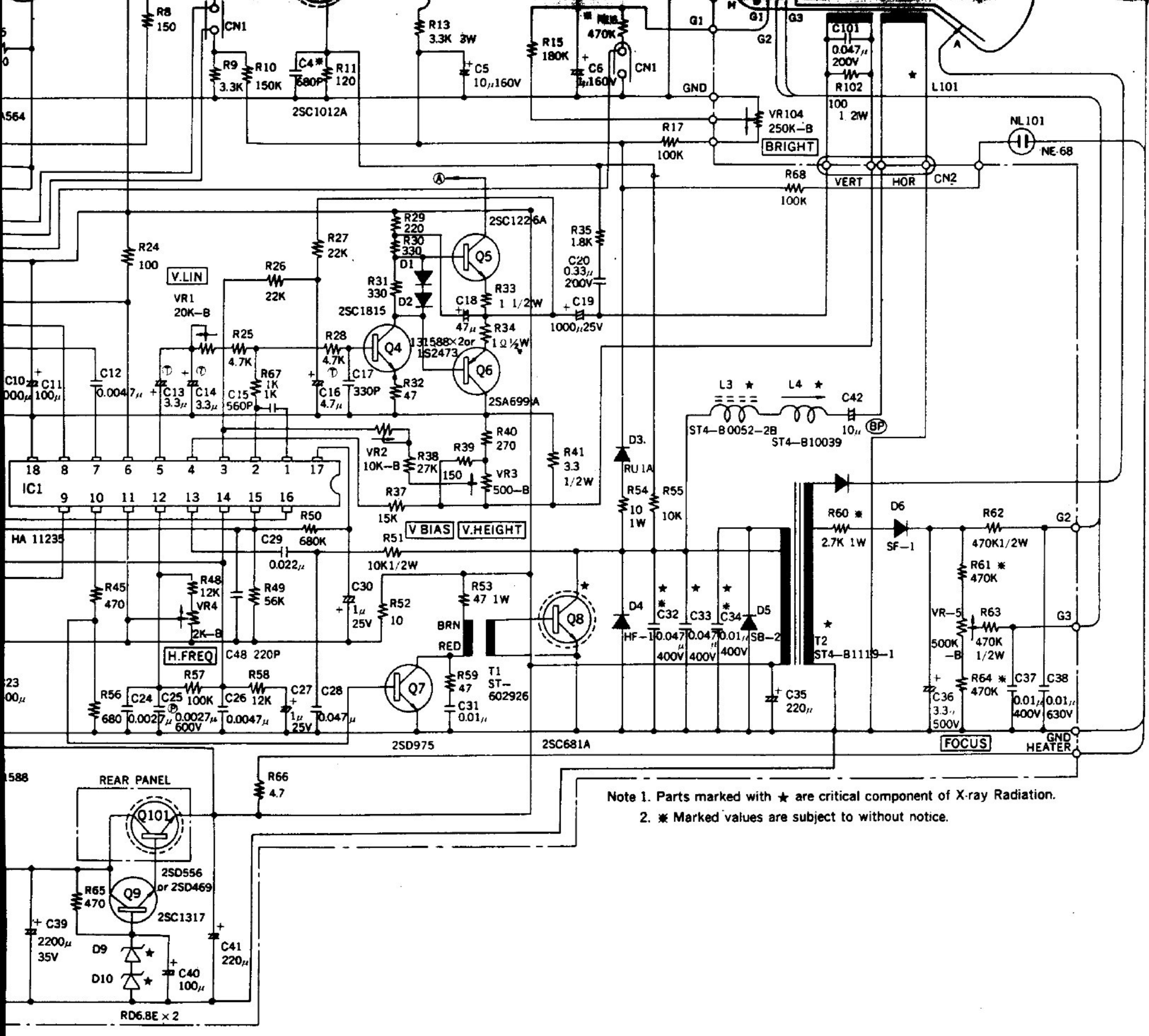

CN101 CN102
VIDEO IN
SW101
R101 75
C1 47μ
Q1
R2 2.2K
R5 270
R4 150
R8 150
CN1
R9 3.3K
R10 150K
C4* 680P
R11 120
2SC1012A
R13 3.3K 3W
C5 10μ160V
R15 180K
R16* 470K
C6 1μ160V
CONT
R7 100
2SC1815
2SA564
VR-101 1K-B
C2 220μ 10V
R18 150
CN1
SYNC IN
INT
SW201
CN201 CN202EXT
SW 202
R201 75
VS201 MV13
C201 100μ560½W
R202
D201 IS2473
ON
DC REST
OFF
SW203
R24 100
R22 7.5K
V.LIN
VR1 20K-B
R26 22K
R27 22K
R29 220
R30 330
D1
D2
2SC1226A
Q5
R31 330
2SC1815
R33 1 1/2W
C18 47μ
R34 1Ω½W
Q4
1S1588×2or 1S2473
Q6
2SA699A
R35 1.8K
C20 0.33μ 200V
C19 1000μ25V
R25 4.7K
R28 4.7K
R67 1K
C15 560P
C16 4.7μ
C17 330P
R32 47
R19 3.3K
C7 1μ25V
C8 0.022μ
C9 0.022μ
C10 1000μ
C11 100μ
C12 0.0047μ
C13 3.3μ
C14 3.3μ
C22 0.01μ
R23 2.2K
R36 7.5K
IC1
18 8 7 6 5 4 3 2 1 17
9 10 11 12 13 14 15 16
HA 11235
VR2 10K-B
R38 27K
R39 150
R40 270
VR3 500-B
R41 3.3 1/2W
R37 15K
V BIAS
V.HEIGHT
R50 680K
C29 0.022μ
R51 10K1/2W
VR102 2K-B
R20 1K
R21 820
C21 0.022μ
V.HOLD
R42 100K
R43 15K
R44 8.2K
VR103 10K-B
H.HOLD
C23 100μ
R45 470
R48 12K
VR4 2K-B
H.FREQ
C48 220P
R49 56K
C30 1μ 25V
R52 10
R53 47 1W
BRN
RED
T1 ST-602926
Q8
R57 100K
R58 12K
R56 680
C24 0.0027μ
C25 0.0027μ 600V
C26 0.0047μ
C27 1μ 25V
C28 0.047μ
Q7
R59 47
C31 0.01μ
2SD975
2SC681A
SW102
ESD271DU
R46 10 2W
D12 1S1588
C46 100μ 25V
REAR PANEL
Q101
R66 4.7
Not
F101 0.5A/0.25A
AC IN 100/220/240V
T101 ST4-B27058
16.5V
CN3
0V
VS1 ERV-1E 2470M
D7
D8
DS 132B
DS 131B
C39 2200μ 35V
R65 470
Q9
2SD556 or 2SD469
2SC1317
D9
D10
C40 100μ
C41 220μ
RD6.8E × 2
PMP-90/91/96-20
EXT.SYNC DRIVE
& DC RESTORE UNIT
or TD UNIT



Note 1. Parts marked with ★ are critical component of X-ray Radiation.

2. ✱ Marked values are subject to without notice.