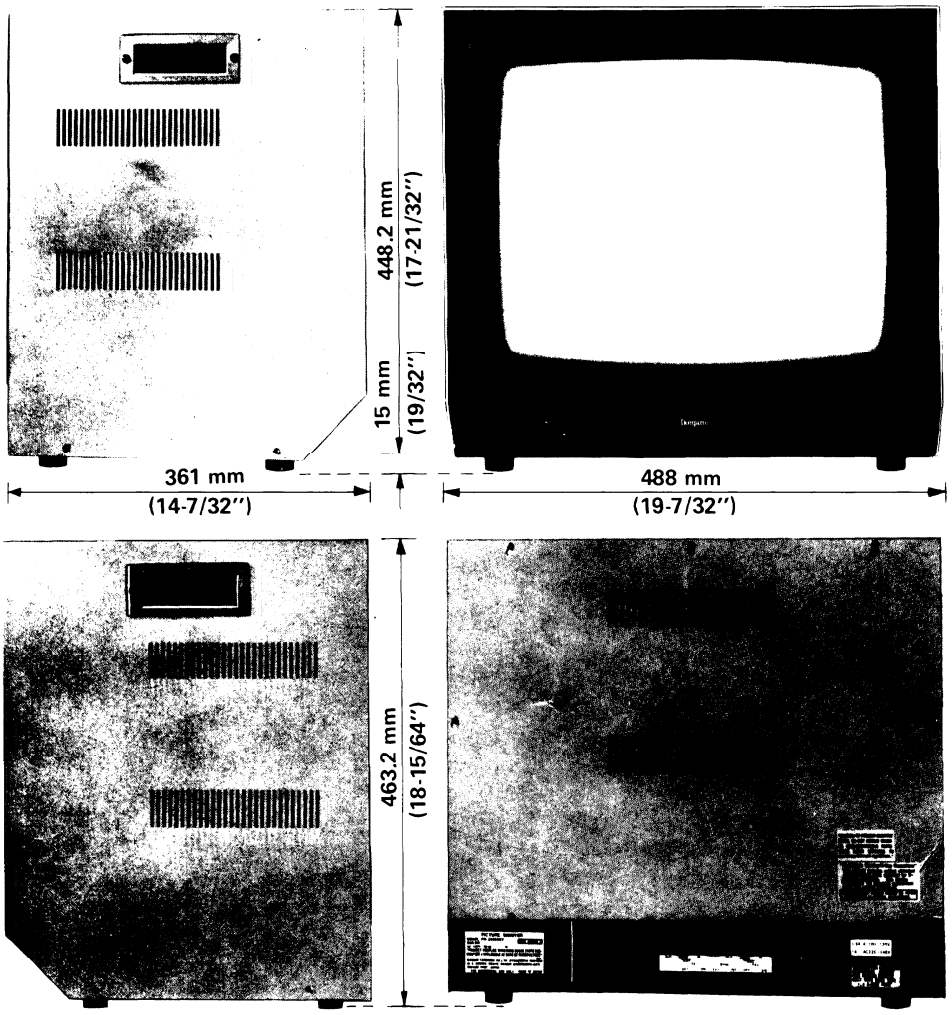
Ikegami

OPERATING INSTRUCTIONS & SERVICE MANUAL

Model PM-205A CCTV PICTURE MONITOR



OUTDOOR USE WARNING:

WARNING—TO PREVENT FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CONTENTS

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT SAFEGUARDS

* Read all of these instructions.

* Save these instructions for later use.

* Unplug this television monitor from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

* Do not use attachments not recommended as they may cause hazards.

* Do not use this television monitor near water-for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.

* Do not place this television monitor on an unstable cart, stand, or table. The television monitor may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart or stand recommended, or sold with the television monitor. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved.

* Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to ensure reliable operation of the television monitor and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the television monitor on a bed, sofa, rug, or other similar surface. This television monitor should never be placed near or over a radiator or heat register. This television monitor should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.

* This television monitor should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your television dealer or local power company. For television monitor designed to operate from battery power, refer to this operating instructions.

* This television monitor is equipped with a 3-wire grounding-type plug (a plug having a third grounding pin). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

* Do not allow anything to rest on the power cord. Do not locate this television monitor where the cord will be abused by persons walking on it.

* Follow all warnings and instructions marked on the television monitor.

* For added protection for this television monitor during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damages to the receiver due to lighting and powerline surges.

* Do not overload wall outlets and extension cords as this can result in fire or electric shock.

* Never push objects of any kind into this television monitor through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television monitor.

* Do not attempt to service this television monitor yourself as opening on removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

* Unplug this television monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions.

  a. When the power cord or plug is damaged or frayed.

  b. If liquid has been spilled into the television monitor.

  c. If the television monitor has been exposed to rain or water.

  d. If the television monitor does not operate normally by the follwing operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television monitor to normal operation.

  e. If the television monitor has been dropped or the cabinet has been damaged.

  f. When the television receivers exhibits a distinct change in performance-this indicates a need for service.

* When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

* Upon completion of any service or repairs to this television monitor, ask the service technician to perform routine safety check to determine that the television is in safe operating condition.

* An appliance and cart with the below symbol, that is specified in UL standard UL-1410, should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

INTRODUCTION

Model PM-205A 20-inch Picture Monitor incorporates a number of the latest technologies for picture monitoring. Except for the CRT, the entire circuits are packaged in IC's, or are all silicon semiconductor devices. The Model is of rugged construction to resist vibration and shock, and is a highly reliable performance monitor.

To facilitate handling and operation, all circuits of this monitor are mounted on one main printed-circuit board, which is easily dismounted or remounted.

The frame and signal grounds are separately provided.

In terms of the electrical performance, aiming at reproducing high-quality pictures, a wide band video amplification circuit for 15 MHz $^{+1}_{-6}$ dB or less assures a horizontal center resolution of better than 1000 lines. It features excellent performance of linearity restricting deflection distortion and raster distortion.

For ease of operation, the front control panel has only two control knobs - one for brightness and the other for contrast. H and V synchronous control is adjusted by the driver so that they are not changed by any error.

Additionally, front control panel is equipped with the power supply switch, LED lamps, and tally lamp panel (optional provision). The black front panel suppresses undesired reflection and glare, and the outward appearance is in keeping with the high performance picture monitor model PM-205A.

As standard, internal-external switchable synchronization and DC restoration are provided.

Optional provisions are: a tally function; audio unit.

Full precautionary measures have been incorporated to satisfy DHHS standards regarding X-ray radiation from the CRT.

As described, although the monitor is well designed and constructed regarding safety, there is high voltage in certain sections. Always turn off the power supply, or be very careful if the power cannot be turned off, when inside of the equipment is accessed for servicing or repair.

FEATURES

(1) The highly reliable design, with abundant use of IC's and silicon transistors, promises to reduce failures to the minimum. The stable circuits always assure high-quality pictures without requiring adjustment for power supply voltage or temperature variations.

(2) An external synchronizing signal input terminal on the unit permits operation of the unit not only by the video composite synchronizing signal (VS), but also by different type video signals and by synchronizing signal (SYNC).

(3) A BP clamp is used in the DC restoration circuit, and no change in black level results from any difference in synchronizing signal level, thus resulting in high-quality pictures.

(4) The CRT is a 20-inch thick-neck 114° deflection type for clearer pictures.

(5) The system provides for use of several monitors connected in parallel.

(6) The equipment body has a rugged metal cabinet providing ample strength and safety.

(7) The equipment is of the floating earth system to provide high safety against electric shock.

(8) The design is similar to those used for CRT display monitors employed in computer systems ensuring pictures of high reliability and quality.

(9) High picture quality is further enhanced by the wider frequency response of the video AMP and superior linearity of the deflection system, and by other features.

(10) Safety standard, such as CRT X-ray radiation, has fully been considered to meet the safety requirements of the equipment.

(11) The built-in video limit circuit suppresses white level during peak time and prevents an excessive cathode current.

(12) The ABL circuit limits CRT cathode current even when a video signal of increased brightness is supplied.

(13) The built-in picture size stabilization circuit suppresses picture size drift to the minimum during brightness changes.

RATINGS

Input Level	
Video:	VS 1.0 V_{p-p} or V 0.7 V_{p-p} (positive)
Synchronizing:	4 V_{p-p} (negative)
Input Impedance	
Video:	High-impedance bridge connection and 75Ω termination
Synchronizing:	High-impedance bridge connection and 75Ω termination
Video Output Level:	40 V_{p-p}
CRT	
Model:	500TB4, or equivalent
Screen Size:	20" (diagonal)
Neck Diameter:	28.6ø
Explosion protection:	Tension band with mounting lugs
Phosphor:	P4
Effective Display Area:	308.0 x 393.7 mm, or larger
Light Transmission:	44% approx. (at center)
Scanning Frequency:	Horizontal 15.75 kHz vertical 60 Hz, or Horizontal 15.625 kHz vertical 50 Hz (according to specification)
Power Requirement:	100 V AC 50/60 Hz, 120 V AC 60 Hz, 220 V AC 50 Hz, 240 V AC 50 Hz (according to specification)
Connectors:	BNC type
Power Consumption:	Less than 65 W
Environmental Temperature:	-10° to +45°C

CONSTRUCTION

External Dimensions:	488 (W) x 463.2 (H) x 361 (D) mm
Weight:	Approx. 20.5 kg (Standard Type)

PERFORMANCE

General Performance

Resolution:	More than 1000 lines horizontal (at center)
Brightness:	More than 30FL continuously variable against rated input white signal
Power Supply Voltage: Variation	Satisfactory operation shall be assured even when the input voltage varies ±10% of rated value during operation.
Spot Killer:	Prevents spot burn-in of CRT with loss of power
Isolation:	More than 50 MΩ when measured by 500 V Megger between the AC input terminal and cabinet.
Voltage Withstanding:	There shall be no abnormality after impressing AC 1500 V for one minute between the AC input plug and cabinet.
Vibration:	No parts shall loosen by dropping, or damaging after vibrating the equipment in an operating state at 1000 cps (16.7 Hz) at an acceleration of 2 G for 30 minutes vertically and horizontally.

Picture Amplification Circuit

Maximum Gain:	44 dB ±2 dB
Frequency Characteristic:	Refer to 100 kHz. 60 Hz to 15 MHz Within $^{+1}_{-6}$ dB Below 60 Hz over 15 MHz: falling down characteristic
Waveform Distortion:	Sag: Less than 5% (against 60 Hz square wave) Overshoot: Under 10% (against 250 kHz square wave) Ringing greater than 15 MHz shall be excluded.
Linearity:	±5% or below (by DG method)
Signal to Noise:	Refer to input signal. Output signal is as follows. Hum noise: Less than -60 dB Synchronous noise: Less than -40 dB
DC Restoration:	Fluctuations of DC components at APL 10 to 90% shall be less than 3% of rated output.

Deflection Circuit

Synchronous Stability:	Stable within input signal range of: Internal Synchronizing VS 0.5 to 2.0V_{p-p} External Synchronizing S 2.0 to 6.0 V_{p-p}
Raster Distortion:	Less than 2% on effective screen amplitude
Deflection Distortion:	By the interval variation index method: Horizontal Below 7% Vertical Below 5%
Blanking Time:	Horizontal Approx. 11.5 µs Vertical Less than 1 ms
Deflection Amplitude:	5% and over

Power Supply Circuit

High Voltage:	Less than 17 kV

Others

X-Ray Radiation:	Less than 0.5 mR/HR
Ground:	Frame ground and video ground shall connect at 0.0047 µF and 1 MΩ.

* Design and specifications are subject to change for improvement without notice.

HANDLING PRECAUTIONS

(1) This equipment can be installed in any position. Monitoring of good pictures will be possible by paying attention to the following:

   (a) There should be no nearby source to cause vibration.

   (b) The surface of the CRT is free from direct sunshine and light.

   (c) When using adjacent to other equipment, ensure good ventilation by keeping a space greater than 50 mm in all directions between the monitor and other equipment.

   (d) Avoid moisture as much as possible.

   (e) Avoid dusty locations.

   (f) There is no equipment nearby generating a strong magnetic field.

   (g) Extremes of hot and cold temperature should be avoided.

(2) The picture disappears when the contrast (CONT) and brightness (BRIGHT) controllers are rotated fully counterclockwise. However, this is not a unit failure.

(3) The equipment comes suitable to both 50 and 60 Hz in supply frequency. Vertical amplitude changes when a combination with different frequencies is used.

(4) A high voltage, 16 kV, is generated inside the equipment, and persons except servicing staff should not open the case.

(5) Regularly check the connection cables which are prone to damage. 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.

SETUP AND OPERATION

(1) Power Supply

Connect the power supply (single phase, AC within 10% of the specified voltage) to the AC plug. A picture appears on the screen within 30 seconds after turning on the power supply switch.

(2) Video and Synchronizing Signals

A. Connections between one monitor unit and one camera unit

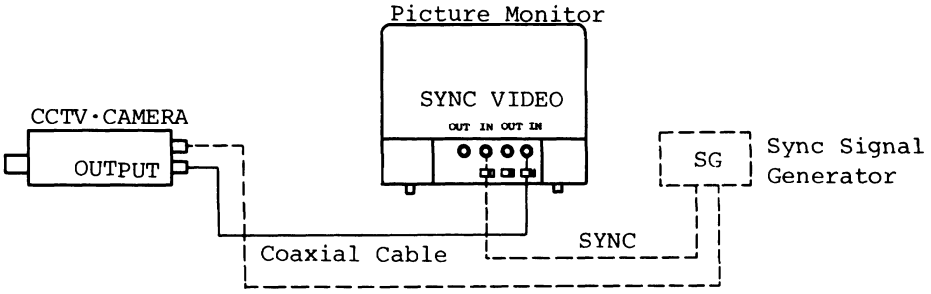


Fig. 1 Connections Between Monitor Unit and Camera

* Connect the camera OUTPUT BNC connector and VIDEO IN BNC connector by a 75-Ω coaxial cable.

* Set the monitor VIDEO 75Ω-OFF at 75Ω.

* Set SYNC INT-EXT at INT.

* Set the monitor SYNC INT-EXT at EXT and SYNC 75Ω-OFF at 75Ω when using the monitor in the external synchronization mode. Connect SYNC OUT on the synchronizing signal generator and BNC connector at SYNC IN on the monitor to the 75Ω coaxial cable.

* There are two input connectors each for VIDEO and SYNC. Be sure to connect to the IN side when supplying signals.

B. Connections between one monitor unit and several cameras

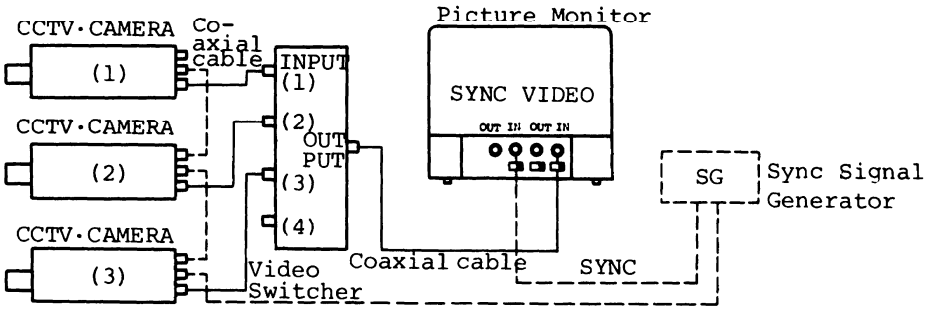


Fig. 2 Connections Between Monitor and Several Cameras

* When monitoring pictures from several cameras on one monitor by sequentially switching them, a video switcher shall be used.

* Connect the BNC connector at camera OUTPUT and BNC connector at INPUT on the video switcher by a 75-Ω coaxial cable.

* Connect the BNC connector at OUTPUT on the video switcher and BNC connector at VIDEO IN on the monitor by a 75-Ω coaxial cable.

* Set monitor VIDEO 75Ω-OFF at 75Ω.

* Set monitor SYNC INT-EXT at INT.

* When using the monitor in the external synchronization mode, set monitor SYNC INT-EXT at EXT and SYNC 75Ω-OFF at 75Ω. Connect SYNC OUT on the synchronizing signal generator and BNC connector at SYNC IN on the monitor by a 75-Ω coaxial cable.

C. Connection of several monitors and one camera

C1. Bridge connection of monitors

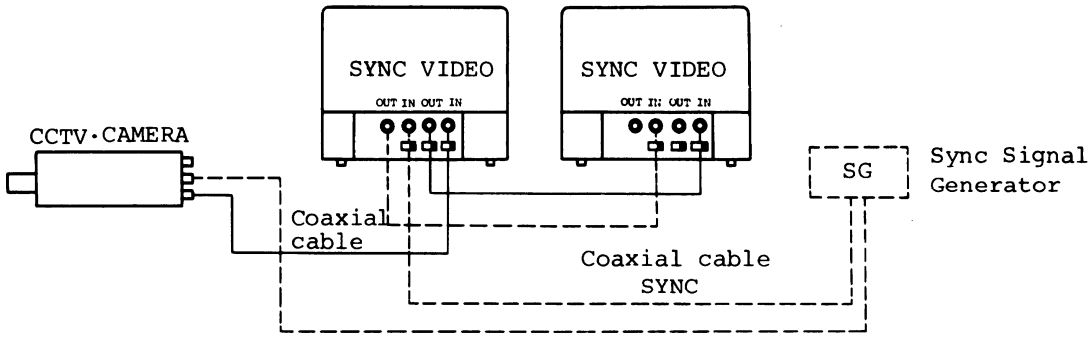


Fig. 3 One Camera and Bridge Connection of Several Monitors

* Connect the BNC connector at OUTPUT of the camera and BNC connector at VIDEO IN on the monitor (1) by a 75-Ω coaxial cable.

* Connect a 75Ω-coaxial cable to VIDEO OUT on the monitor (1) and to VIDEO IN on the monitor (2).

* Set VIDEO 75Ω-OFF on the monitor (1) at OFF and that on the monitor (2) at 75Ω.

* When connecting more than two monitors, connect sequentially in series beginning with the first monitor, setting the last monitor at 75Ω and setting all the other monitors at OFF.

* Set SYNC INT-EXT on the monitor at INT.

* When using the monitors in external synchronous mode, connect SYNC OUT on the synchronizing signal generator and SYNC IN on the minotor. Set SYNC 75Ω-OFF on the last monitor at 75Ω, setting all the other monitors at OFF.

* When more than ten monitors are to be used for one camera, use a video distributor.

* A synchronizing distributor is recommended to be used when SYNC is to be used by several monitors.

C2. Use of video distributor

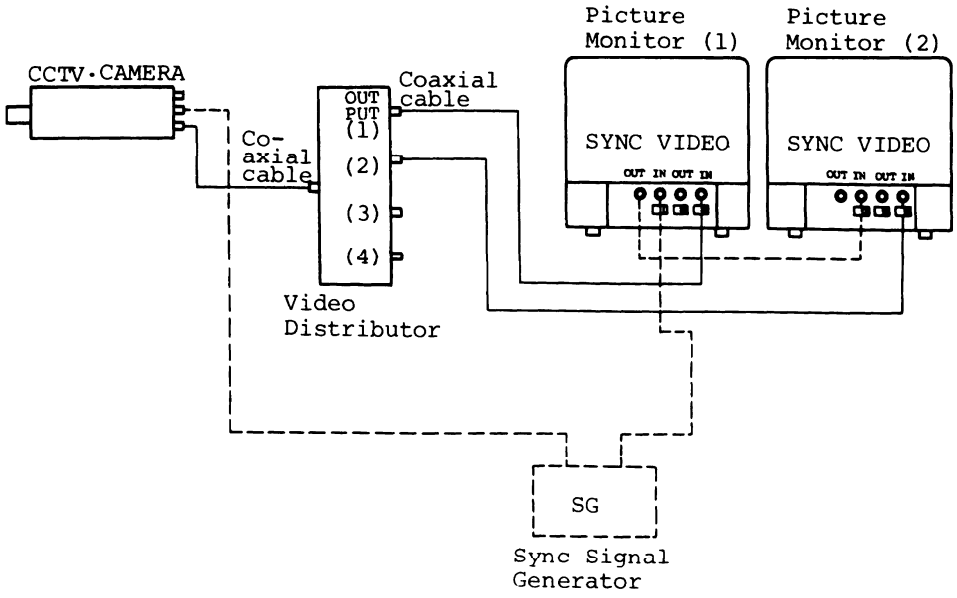


Fig. 4 Use of Video Distributor

* When connecting a camera and several monitors, a video distributor is used in addition to the bridge connection described in C1.

  In this method, the picture shown on the monitors near the end of the bridge connection does not degrade compared with that on monitors connected nearer the camera. The distributor corrects picture characteristics so that all are the same, and pictures of equal quality can be watched on all monitors.

* Connect the BNC connector at OUTPUT on the camera and that at INPUT on the video distributor by a 75-Ω coaxial cable.

* Connect the BNC connector at OUTPUT on the video distributor and that at VIDEO IN on the monitor by a 75-Ω coaxial cable.

* Set VIDEO 75Ω-OFF on all monitors at 75Ω.

* Set SYNC INT-EXT on monitors at INT.

* When using the monitors in external synchronizing mode, connect SYNC INT-EXT on the monitors to SYNC OUT on the EXT synchronizing signal generator and BNC connector at SYNC IN on the monitors by a 75-Ω coaxial cable sequentially in series beginning with the first monitor. Set SYNC 75Ω-OFF on the last monitor at 75Ω, setting at OFF on all the remaining monitors.

* A synchronizing distributor is recommended to be used when utilizing SYNC by several monitors.

NAME OF EACH SECTION

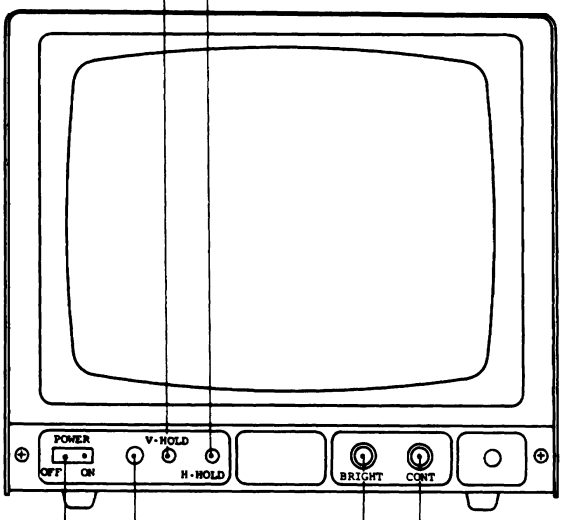
(1) Front Panel Operation

V. HOLD

The control knob to adjust vertical synchronization. The oscillation frequency increases by turning the knob clockwise when the pictures flow from top to bottom and vice versa.

H. HOLD

The control knob to adjust horizontal frequency. The screen flows towards the right when knob is turned clockwise.



LED Lamp

Lights when the power supply is turned on

POWER

The on-off switch for the power supply

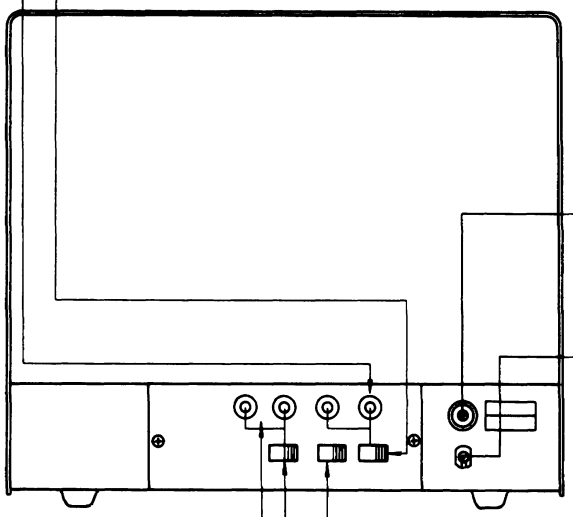
CONTRAST

The control knob for contrast adjustment. Contrast intensifies when knob is turned clockwise.

BRIGHTNESS

The control knob to adjust the brightness. Screen brightens when knob is turned clockwise.

(2) Rear Panel Operation



VIDEO IN, OUT

The video signal input and output connector. Connect input signals to IN. When bridge-connecting monitors, connect from the OUT side to IN on the next monitor.

VIDEO Termination Switch

The termination switch for video signals. Set the switch at 75Ω except when bridge-connecting the monitors.

Fuse Holder

Always use the specified fuse when making replacement.

Power Supply Cord

Connect to the specified power supply.

SYNC IN, OUT

Input and output connector for external synchronizing signals. Connect input signals to IN. When bridge-connecting monitors, connect from the OUT side to IN on the next monitor.

SYNC Termination Switch

The termination switch for the external synchronizing signal.

EXT-INT Selector Switch

The switch to select monitor synchronizing signals. Set at EXT when using the monitors in the external synchronizing mode and at INT, when using in the internal synchorizing mode.

SERVICE AND MAINTENANCE

(1) Overall Description

The equipment has been designed to provide fully continuous operation. To assure satisfactory performance, attention should be given to the following items, and periodic inspection is necessary.

(a) Check for knob positions and bad contacts.

(b) Check for connector connections.

(c) Check for short circuits in input and output circuits.

(d) Be careful about any rise in internal temperature.

(e) Check for soldering.

(f) Clean inside the equipment.

(2) General Precautions

(a) Do not disconnect or reconnect connectors while the power is switched on.

(b) Dust on the monitor CRT anode will easily cause discharge. After cleaning, apply an insulating silicone oil.

(c) In many instances, high voltage is present at the anode and anode cap. The monitor CRT should always be exchanged only after discharging it.

(3) Precautions When Handling Transistors

With the exception of the CRT, all active devices used in the equipment are transistors. Compared with conventional vacuum tubes, the following items require precautions:

(a) Transistors, which are very strong against mechanical shock, are weak to electrical shock. Carefully inspect the circuits when an inspection has to be made with the equipment in operation. Do not cause short-circuiting by tips of test leads, etc.

(b) Do not dismount or remound circuit components without switching the power off.

(c) Do not connect a capacitor to a circuit in operation by error. (Large-capacitance capacitors require particular attention)

Connecting a large-capacitance capacitor which is not charged, not only transistors on that particular printed circuit board, but also in other circuits may be damaged.

(d) Be careful not to transmit unnecessary heat when soldering transistors.

(e) Under no circumstance should a soldering iron with an AC leak be used.

(f) When using an oscilloscope to check waveforms, a high-impedance terminal should always be used.

(g) When measuring various sections in a transistor circuit, it is preferred to use a vacuum tube voltmeter instead of a tester.

(h) When there is a possibility a transistor may have been damaged by error, forward and inverse resistances between the collector and emitter should be measured by using a tester to obtain approximate details, or ICO shall be measured by a transistor checker.

CAUTIONS

(1) The face of the picture tube is a part of a high vacuum. Score, scratch or applying undue pressure may result in implosion of the picture tube, and serious personal injury may be caused.

(2) The components marked with ★ in parts list and schematic diagram are critical ones of X-ray radiation. Replacement of these critical components should be made by confirmation anode voltage 17 kV or less.

(3) This monitor provides integral protection type picture tube against implosion and X-ray radiation. Use the same type picture tube in case of replacement.

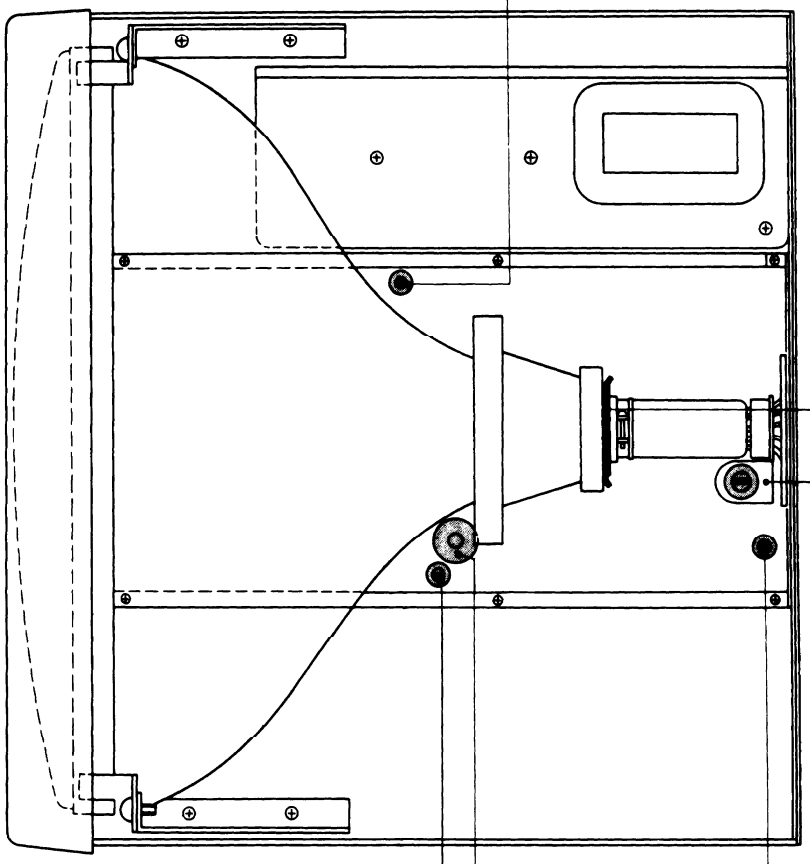
(4) In case that the following parts are replaced by new ones, make sure that the +B voltage is set within +110 V ±1 V.

· IC101 ..... Integrated circuit

INTERNAL ADJUSTMENTS LOCATION

V HEIGHT Control VR3

The control knob to adjust vertical amplitude. Amplitude increases by turning clockwise.



Center Ring Magnet

A magnet ring to adjust raster position.

FOCUS Control VR7

The control knob to adjust the CRT focal point. Voltage increases by turning clockwise, and the peripheral focal point is adjusted. The center matches when turned counterclockwise.

H FREQ Control VR5

The control knob to adjust horizontal frequency. Frequency increases by turning clockwise, and the picture moves towards right.

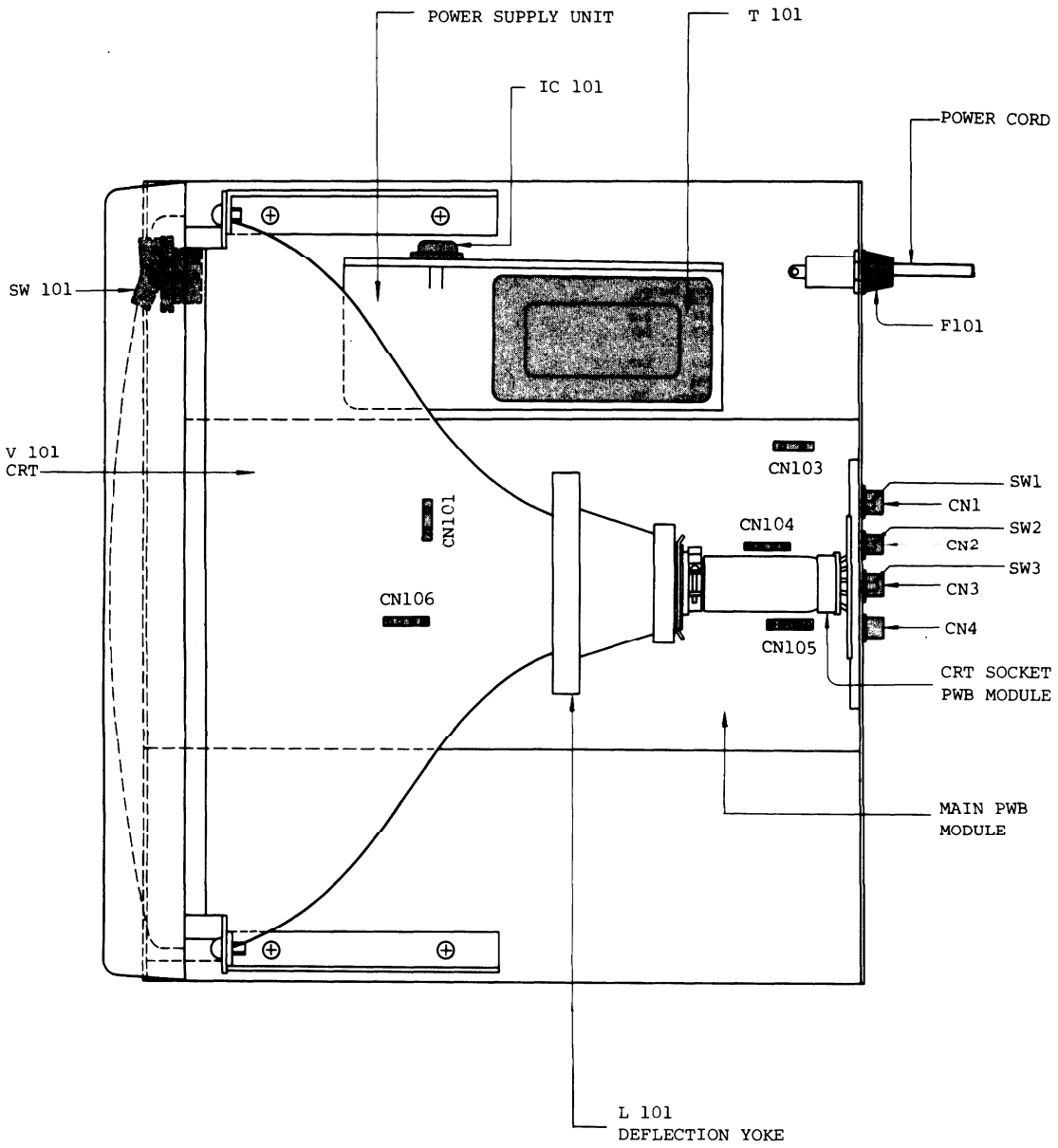
SUB BRIGHT Control VR6

An auxiliary control for the BRIGHT control knob. Brightness intensifies when turned clockwise.

WIDTH L2

The coil for horizontal amplitude decreases when the core is insered in the coil.

MAIN COMPONENTS LOCATION



MODEL PM-205A PICTURE MONITOR
MAIN PARTS LOCATION

MAIN CHASSIS

★⚠	V101	CRT	500TB4 or equivalent
★⚠	L101	Deflection Yoke	ST4-B49008-1
⚠	SW101	Power Switch	SDA-1S for Domestic, SDE-3S for USA, Europe
★⚠	T101	Transformer	ST4-B82046
★⚠	IC101	Integrated circuit	STR370
	D201	Diode luminescence	GL-MD31AR (red)
	CN101	Connector	171822-2
		2P receptacle	170038-2
	CN102	Faston Tab	43031-2
	CN103	Connector	WA-5002-1N-02
		2P receptacle	W-T0504
	CN104	Connector	WA-5004-1N-02
		4P receptacle	W-T0504
	CN105	Connector	WA-5005-1N-02
		5P receptacle	W-T0504
	CN106	Connector	WA-5004-1N-02
		4P receptacle	W-T0504
	CN107	Connector	WA-5001-1N-02
		1P receptacle	W-T0504
⚠	PC101	Power cord	SPT-1 for Domestic, SJT-3 for USA, CEE-3 for Europe
	F101	Fuse holder	SN1301
⚠		Fuse	MGC 1.5A/250V for Domestic & USA, MGC 1.0A/250V for Europe

MAIN PWB

★	IC1	Integrated circuit	HA11235
	IC2	Integrated circuit	HD14011BP
	Q1	Transistor	2SC1815(Y)
	Q2	Transistor	2SA1015(Y)
	Q3	Transistor	2SC1815(Y)
	Q4	Transistor	2SC1815(Y)
	Q5	Transistor	2SC1815(Y)
	Q6	Transistor	2SC1973(NC)
	Q7	Transistor	2SC1505(K)
	Q8	Transistor	2SD1138(C or D)
	Q9	Transistor	2SD1138(C or D)
	Q10	Transistor	2SC2899
⚠	Q11	Transistor	2SD900B
★	Q12	Transistor	2SC1815(Y)
★	Q13	Transistor	2SC1815(Y)
★⚠	Q14	Transistor	2SD1390(C or D)
	Q15	Transistor	2SC1815(Y)
	D1	Diode	1S1588
	D2	Diode	1S1588
	D3	Diode	1S1588
	D4	Diode	RU-1A
	D5	Zener diode	HZ-3D-2
	D6	Zener diode	HZ-3D-2
	D7	Diode	1S1588
	D8	Zener diode	HZ-5C-2
	D9	Diode	1S1588
	D10	Zener diode	HZ-6C-2
	D11	Zener diode	HZ-6C-2
	D12	Diode	1S1588
	D13	Diode	1S1588
	D14	Diode	1S1588
	D15	Diode	1S1588
	D16	Diode	RH-1C
★	D17	Zener diode	HZ-7C-2
	D18	Diode	1S1588
	D19	Diode	RF-01F
	D20	Diode	RU-1A
	D21	Diode	RF-01F
	D22	Diode	RU-1A
	D23	Diode	RU-1A
	D24	Diode	RM-1A
	D25	Diode	RM-1A
	D26	Diode	RM-1A
	D27	Diode	RM-1A
	D28	Diode	RM-1A
	D29	Diode	1S1588
	D30	Diode	RU-1A
	D31	Diode	GH-3F
	D32	Diode	1S1588
	D33	Diode	RU-1A
	D34	Diode	RU-1A
★	D35	Zener diode	HZ-7C-2
	R1	Carbon film resistor	1/4W 75 ohms
	R2	Carbon film resistor	1/4W 68k ohms
	R3	Carbon film resistor	1/4W 12k ohms
	R4	Carbon film resistor	1/4W 1k ohms
	R5	Carbon film resistor	1/4W 91 ohms
	R6	Carbon film resistor	1/4W 330 ohms
	R7	Carbon film resistor	1/4W 150 ohms
	R8	Carbon film resistor	1/4W 3.3k ohms
	R9	Carbon film resistor	1/4W 22 ohms
	R10	Carbon film resistor	1/4W 47 ohms
	R11	Carbon film resistor	1/4W 33k ohms
	R12	Carbon film resistor	1/4W 15k ohms
	R13	Carbon film resistor	1/4W 1k ohms
	R14	Carbon film resistor	1/4W 6.8k ohms
	R15	Carbon film resistor	1/4W 22k ohms
	R16	Carbon film resistor	1/4W 150 ohms
	R17	Carbon film resistor	1/4W 5.6k ohms
	R18	Not used	
	R19	Carbon film resistor	1/4W 470 ohms
	R20	Not used	
	R21	Metal oxide film resistor	2W 22k ohms
	R22	Carbon film resistor	1/4W 1.5k ohms
✱	R23	Carbon film resistor	1/4W 15 ohms
	R24	Carbon film resistor	1/4W 47 ohms
✱	R25	Carbon film resistor	1/4W 1k ohms
	R26	Carbon film resistor	1/4W 1.8k ohms
	R27	Carbon film resistor	10W 2.2k ohms
	R28	Carbon film resistor	1/4W 10k ohms
	R29	Carbon film resistor	1/4W 820k ohms
	R30	Carbon film resistor	1/4W 75 ohms
	R31	Carbon film resistor	1/4W 1k ohms
	R32	Carbon film resistor	1/4W 10k ohms
	R33	Carbon film resistor	1/4W 15k ohms
	R34	Carbon film resistor	1/4W 10k ohms
	R35	Carbon film resistor	1/4W 39k ohms
	R36	Carbon film resistor	1/4W 3.3k ohms
	R37	Carbon film resistor	1/4W 10k ohms
	R38	Carbon film resistor	1/4W 22k ohms
	R39	Carbon film resistor	1/4W 68k ohms
	R40	Carbon film resistor	1/4W 4.7k ohms
	R41	Carbon film resistor	1/4W 3.9k ohms
	R42	Carbon film resistor	1/4W 4.7k ohms
	R43	Carbon film resistor	1/4W 3.3k ohms
	R44	Carbon film resistor	1/4W 2.2k ohms
	R45	Carbon film resistor	1/4W 2.2k ohms
	R46	Carbon film resistor	1/4W 10k ohms
	R47	Carbon film resistor	1/4W 100k ohms
	R48	Carbon film resistor	1/4W 10k ohms
	R49	Carbon film resistor	1/4W 22k ohms
	R50	Carbon film resistor	1/4W 12k ohms
	R51	Carbon film resistor	1/4W 100 ohms
✱	R52	Carbon film resistor	1/4W 33k ohms
	R53	Carbon film resistor	1/4W 1.5k ohms
	R54	Metal oxide film resistor	1W 4.7 ohms
✱	R55	Not used	
✱	R56	Carbon film resistor	1/4W 47k ohms
	R57	Carbon film resistor	1/2W 2.2k ohms
	R58	Carbon film resistor	1/2W 2.2k ohms
	R59	Carbon film resistor	1/2W 10 ohms
	R60	Carbon film resistor	1/2W 2.7 ohms
	R61	Metal oxide film resistor	1W 3.3k ohms
	R62	Cement film resistor	7W 330 ohms
	R63	Carbon film resistor	1/4W 2.2k ohms
	R64	Carbon film resistor	1/4W 5.6k ohms
	R65	Carbon film resistor	1/2W 820 ohms
	R66	Carbon film resistor	1/4W 5.6k ohms
	R67	Carbon film resistor	1/4W 10k ohms
	R68	Carbon film resistor	1/2W 1k ohms
	R69	Metal oxide film resistor	3W 5.6k ohms
	R70	Carbon film resistor	1/4W 22k ohms
	R71	Carbon film resistor	1/4W 56k ohms
	R72	Metal oxide film resistor	1W 470 ohms
	R73	Carbon film resistor	1/4W 1k ohms
	R74	Metal oxide film resistor	3W 6.8k ohms
	R75	Carbon film resistor	1/2W 560 ohms
	R76	Carbon film resistor	1/4W 18k ohms
	R77	Carbon film resistor	1/4W 47k ohms
	R78	Carbon film resistor	1/4W 470 ohms
	R79	Carbon film resistor	1/4W 4.7k ohms
★⚠	R80	Carbon film resistor	1/4W 2.2k ohms
	R81	Carbon film resistor	1/4W 100k ohms
	R82	Carbon film resistor	1/4W 120k ohms
	R83	Carbon film resistor	1/4W 18k ohms
	R84	Carbon film resistor	1/4W 470k ohms
	R85	Carbon film resistor	1/4W 10k ohms
	R86	Carbon film resistor	1/4W 10k ohms
	R87	Carbon film resistor	1/4W 7.5k ohms
	R88	Carbon film resistor	1/2W 10 ohms
	R89	Metal oxide film resistor	3W 1k ohms
	R90	Metal oxide film resistor	1W 3.3k ohms
	R91	Carbon film resistor	1/2W 10k ohms
	R92	Metal oxide film resistor	1W 1 ohm
	R93	Not used	
★	R94	Carbon film resistor	1/4W 2.2k ohms
	R95	Carbon film resistor	1/2W 4.7M ohms
	R96	Metal oxide film resistor	2W 3.3 ohms
	R97	Carbon film resistor	1/4W 220 ohms
⚠	R98	Metal oxide film resistor	1W 2.2k ohms
	R99	Carbon film resistor	1/2W 1M ohms
	R100	Carbon film resistor	1/2W 2.2M ohms
	R101	Carbon film resistor	1/2W 1M ohms
	R102	Carbon film resistor	1/2W 470k ohms
	R103	Carbon film resistor	1/2W 2.2k ohms
	R104	Metal oxide film resistor	1W 22 ohms
⚠	R105	Carbon film resistor	1/2W 1 ohm
	R106	Carbon film resistor	1/4W 47k ohms
	R107	Carbon film resistor	1/2W 1M ohms
	R108	Carbon film resistor	1/4W 10k ohms
	R109	Carbon film resistor	1/4W 12k ohms
	R110	Carbon film resistor	1/4W 18k ohms
	R111	Carbon film resistor	1/4W 47 ohms
	R112	Carbon film resistor	1/4W 220k ohms

R113	Carbon film resistor	1/2W 1k	ohms
★R114	Carbon film resistor	1/4W 56k	ohms
★R115	Carbon film resistor	1/4W 1.2k	ohms
R116	Not used		
★R117	Carbon film resistor	1/4W 68	ohms
R118	Carbon film resistor	1/4W 47k	ohms
C1	Electrolytic capacitor	16V	100μF
C2	Ceramic capacitor	50V	10pF
C3	Electrolytic capacitor	16V	470μF
C4	Electrolytic capacitor	25V	220μF
C5	Electrolytic capacitor	16V	100μF
C6	Electrolytic capacitor	25V	100μF
C7	Electrolytic capacitor	50V	3.3μF
C8	Polyester film capacitor	50V	0.01μF
C9	Electrolytic capacitor	16V	10μF
C10	Electrolytic capacitor	25V	100μF
C11	Electrolytic capacitor	35V	100μF
C12	Ceramic capacitor	50V	1200pF
C13	Ceramic capacitor	50V	560pF
C14	Ceramic capacitor	50V	1200pF
C15	Electrolytic capacitor	160V	47μF
C16	Electrolytic capacitor	160V	22μF
C17	Metallized film capacitor	100V	0.47μF
C18	Ceramic capacitor	50V	56pF
C19	Electrolytic capacitor	16V	100μF
C20	Tantalum capacitor	25V	1.5μF
C21	Electrolytic capacitor	16V	470μF
C22	Polyester film capacitor	50V	0.01μF
C23	Polyester film capacitor	50V	0.01μF
C24	Polyester film capacitor	50V	0.01μF
C25	Polyester film capacitor	50V	0.022μF
C26	Polyester film capacitor	50V	0.0047μF
C27	Ceramic capacitor	50V	470pF
C28	Electrolytic capacitor	160V	100μF
C29	Electrolytic capacitor	160V	100μF
C30	Electrolytic capacitor	160V	1μF
C31	Electrolytic capacitor	50V	10μF
C32	Electrolytic capacitor	160V	3.3μF
C33	Electrolytic capacitor	160V	3.3μF
C34	Electrolytic capacitor	50V	10μF
C35	Polyester film capacitor	200V	0.033μF
C36	Polyester film capacitor	50V	0.0068μF
C37	Ceramic capacitor	2kV	100pF
C38	Metallized film capacitor	400V	0.15μF
C39	Metallized film capacitor	400V	0.15μF
C40	Polyester film capacitor	50V	0.1μF
C41	Ceramic capacitor	50V	22pF
C42	Electrolytic capacitor	50V	3.3μF
C43	Ceramic capacitor	50V	120pF
C44	Polyester film capacitor	50V	0.033μF
C45	Electrolytic capacitor	50V	1μF
C46	Electrolytic capacitor	16V	220μF
C47	Electrolytic capacitor	10V	100μF
C48	Polyester film capacitor	50V	0.0022μF
C49	Polypropylene film capacitor	50V	0.0027μF
C50	Polyester film capacitor	50V	0.01μF
C51	Tantalum capacitor	35V	1μF
C52	Electrolytic capacitor	50V	1μF
C53	Polyester film capacitor	50V	0.047μF
C54	Polyester film capacitor	50V	0.1μF
C55	Polyester film capacitor	50V	0.1μF
C56	Electrolytic capacitor	16V	100μF
C57	Ceramic capacitor	1kV	680pF
C58	Electrolytic capacitor	160V	33μF
C59	Metallized polyester film capacitor	1.2kV	0.1μF
C60	Metallized polyester film capacitor	1.2kV	0.1μF
★⚠C61	Metallized polypropylene film capacitor	1.2kV	0.0012μF
★C62	Polypropylene film capacitor	630V	0.01μF
★⚠C63	Metallized polypropylene film capacitor	1.2kV	0.0012μF
★⚠C64	Metallized polypropylene film capacitor	1.2kV	0.0012μF
C65	Electrolytic capacitor	160V	22μF
C66	Polyester film capacitor	600V	0.1μF
C67	Polyester film capacitor	200V	0.1μF
C68	Electrolytic capacitor	25V	100μF
C69	Ceramic capacitor	125VAC	0.0047μF
⚠C70	Electrolytic capacitor	200V	470μF
C71	Electrolytic capacitor	160V	33μF
C72	Electrolytic capacitor	160V	100μF
C73	Polyester film capacitor	50V	0.33μF
★C74	Ceramic capacitor	2kV	82pF
★⚠C75	Metallized polypropylene film capacitor	1.2kV	0.0022μF
★✖C76	Ceramic capacitor	2kV	100pF
C77	Not used		
C78	Electrolytic capacitor	160V	100μF
C79	Electrolytic capacitor	25V	100μF
L1	Peaking coil	10μH	
★L2	Width coil	ST4-B49007-3	
★L3	Linearity coil	ST4-B49067-2	
L4	Peaking coil	ST-602958-1	
VR1	Variable resistor carbon film	B-500	ohms
VR2	Variable resistor carbon film	B-1k	ohms
VR3	Variable resistor metal film	B-100	ohms
VR4	Variable resistor carbon film	B-10k	ohms
VR5	Variable resistor metal film	B-2k	ohms
VR6	Variable resistor metal film	B-100k	ohms
VR7	Variable resistor cermet film	B-1M	ohms
VR8	Variable resistor carbon film	B-100k	ohms
★VR9	Variable resistor metal film	B-2k	ohms
★VR10	Variable resistor metal film	B-1k	ohms
VS1	Varistor	MV-13	
VS2	Varistor	ERZ-C07DK241	
⚠T1	Transformer horizontal drive	TLH6431	
★⚠T2	Transformer F.B.T.	ST4-B49009-5	
SW1	Slide switch	SLP-2-1022F	
SW2	Slide switch	SLP-2-1022F	
SW3	Slide switch	SLP-2-1022F	
CN1	Connector coaxial receptacle	BNC-BR-D	
CN2	Connector coaxial receptacle	BNC-BR-D	
CN3	Connector coaxial receptacle	BNC-BR-D	
CN4	Connector coaxial receptacle	BNC-BR-D	
CN5	Connector 1P plug	W-P3001-02	
CN6	Connector 4P plug	W-P3504-02	
CN7	Connector 5P plug	W-P3505-02	
CN8	Connector 2P plug	W-P3502-02	
CN9	Connector 2P plug	171825-2	
CN10	Connector 4P plug	W-P3504-02	
CN11	Faston receptacle	170037-2 or 170038-2	
CN12	Connector 3P plug	171825-3	
F1	Fuse holder	85BN0806	
⚠	Fuse	MGC 1A/250V	
★TH1	Thermistor	TD5-A130D	

CRT SOCKET PWB

D201	Diode	RU-1A	
D202	Diode	RF-01F	
R201	Carbon film resistor	1/4W 100	ohms
C201	Metallized film capacitor	100V	1μF
C202	Polyester film capacitor	600V	0.01μF
C203	Polyester film capacitor	600V	0.01μF
SG201	Spark gap	3GD-626-1kV	
SG202	Spark gap	GD-626-300V	
CN201	Connector	S8-503B-03 (CRT socket)	

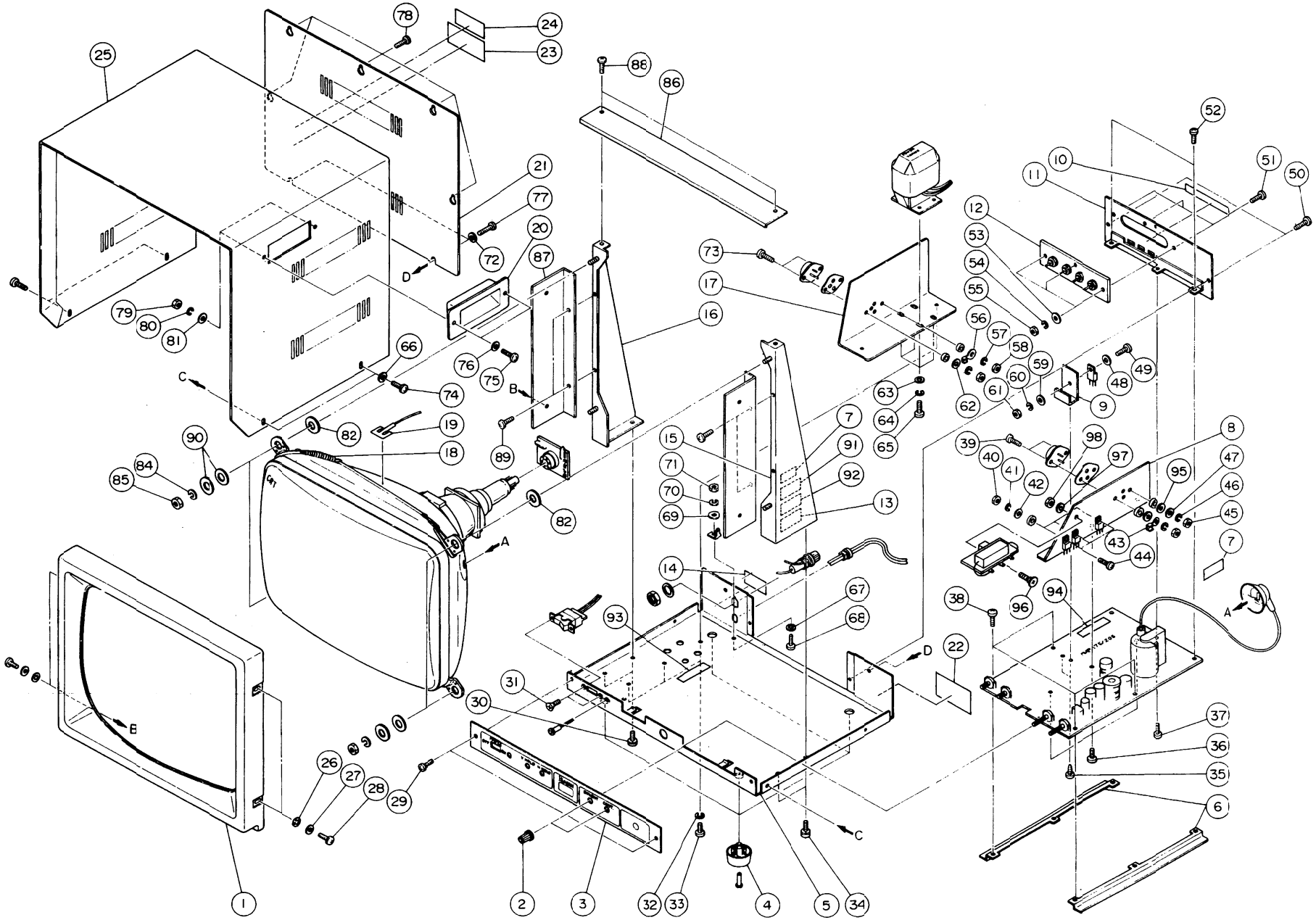
Note: ✖marked value is subject to change by adjustment.
★marked parts are critical components of X-ray radiation.

Components identified by the ⚠ symbol have special characteristics for safety.

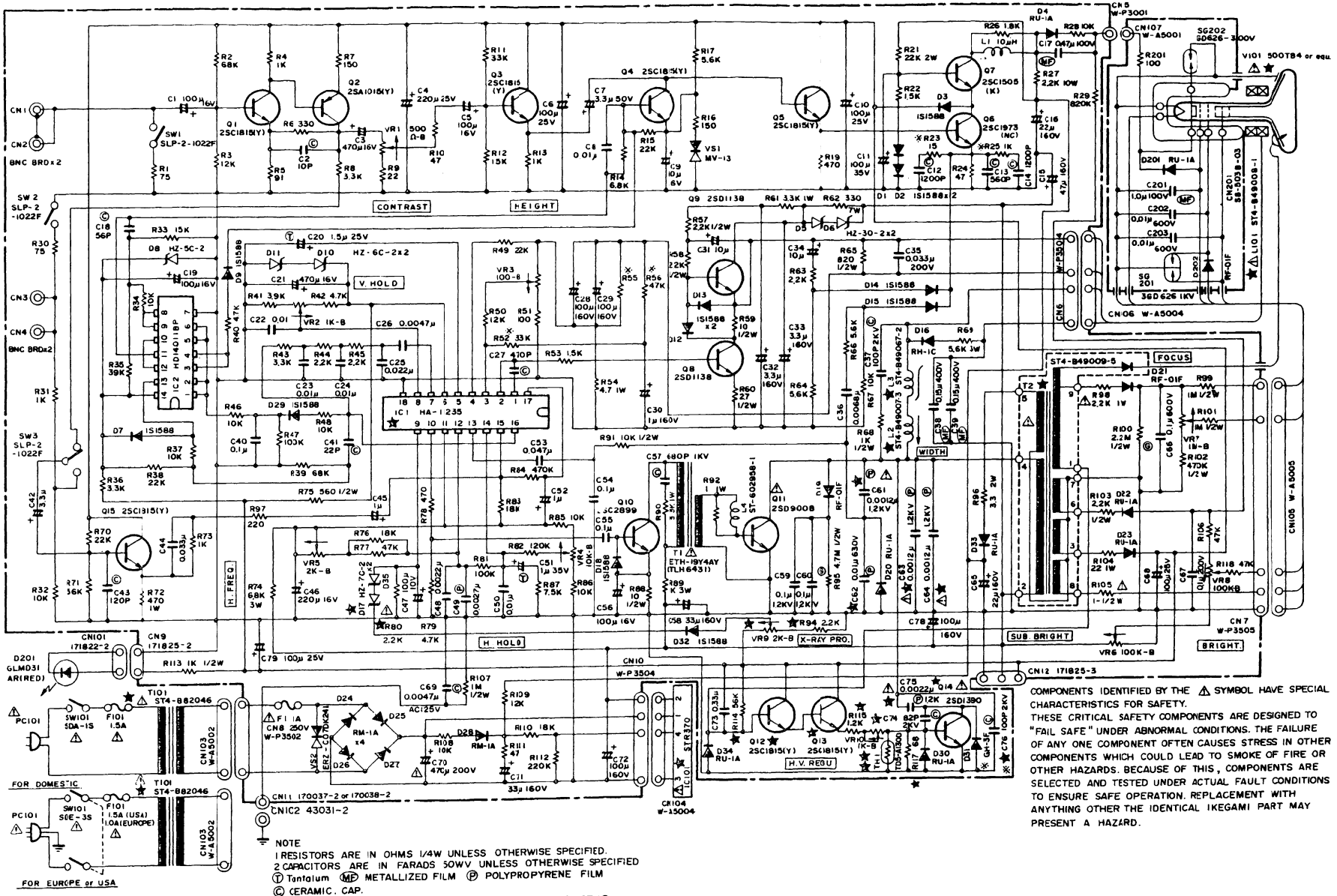
These critical safety components are designed to "fail safe" under abnormal conditions. The failure or any one component often causes stress in other components which could lead to smoke of fire or other hazards. Because of this, components are selected and tested under actual fault conditions to ensure safe operation. Replacement with anything other than the identical Ikegami part may present a hazard.

MECHANICAL COMPONENTS
(Refer to the exploded view)

①	Escutcheon	2B6204100	
②	VR. Knob	4B0021700	
③	Front Ornamental Panel	3B8204300	
④	Leg	4Z0132500	
⑤	Chassis	2B6203700	
⑥	Frame	3B4907900	
⑦	High Voltage Warning Label	4B0511400	
⑧	Heat Sink	3B8100100	
⑨	Heat Sink (2)	4B0029700	
⑩	Indicate Label	4B4908000	
⑪	PWB Support Metal	3B4907700	
⑫	BNC Connector Plate	4B4902800	
⑬	CRT Warning Label	4B0031900	
⑭	FUSE Exchange Label	4B0032100	
⑮	Side Plate (Right)	2B8200100	
⑯	Side Plate (Left)	2B8200200	
⑰	Regulator Heat Sink	3B4907800	
⑱	Spring	4B5501000	
⑲	Grounding Terminal	4B0020200	
⑳	Handle	4F0800500	
㉑	Rear Panel	3B6203600	
㉒	DHHS Name Plate	4B8203300	
㉓	Serviceman Warning Label	4B4907100	
㉔	Caution Label (1)	4B0031700	
㉕	Upper Case	2B6203500	
㉖	Toothed Lock Washers	4kW	
㉗	Plain Washers	3W	ZMC
㉘	Machine Screws	B+3x6	BNiM
㉙	Machine Screws	T+3x6	ZMBK
㉚	Machine Screws	SN+4x10	ZMC
㉛	Machine Screws	S+3x8	BNiM
㉜	Spring Lock Washers	3SW	ZMC
㉝	Machine Screws	B+3x6	BNiM
㉞	Machine Screws	SN+4x10	ZMC
㉟	Machine Screws	BrTP+3x8	ZMC
㊱	Machine Screws	B+3x6	BNiM
㊲	Machine Screws	B+3x6	BNiM
㊳	Machine Screws	B+3x6	BNiM
㊴	Machine Screws	N+3x12	BNiM
㊵	Nuts	3N	BNiM
㊶	Spring Lock Washers	3SW	BNiM
㊷	Plain Washers	3W	BNiM
㊸	Rag	3D	BNiM
㊹	Machine Screws	N+3x12	BNiM
㊺	Nuts	3N	BNiM
㊻	Spring Lock Washers	3SW	BNiM
㊼	Plain Washers	3W	BNiM
㊽	Plain Washers	3W	BNiM
㊾	Machine Screw	N+3x10	BNiM
㊿	Machine Screws	B+3x6	BNiM
(51)	Machine Screws	N+3x12	BNiM
(52)	Machine Screws	B+3x6	BNiM
(53)	Plain Washers	3W	ZMC
(54)	Spring Lock Washers	3SW	ZMC
(55)	Nuts	3N	ZMC
(56)	Rag	3D	BNiM
(57)	Spring Lock Washers	3SW	BNiM
(58)	Nuts	3N	BNiM
(59)	Plain Washers	3W	BNiM
(60)	Spring Lock Washers	3SW	BNiM
(61)	Nuts	3N	BNiM
(62)	Plain Washers	3W	BNiM
(63)	Plain Washers	3W	ZMC
(64)	Spring Lock Washers	3SW	ZMC
(65)	Machine Screws	N+3x12	BNiM
(66)	Toothed Lock Washers	3KW	
(67)	Toothed Lock Washer	3KW	
(68)	Machine Screws	N+3x12	BNiM
(69)	Plain Washers	3W	ZMC
(70)	Spring Lock Washers	3SW	ZMC
(71)	Nuts	3N	ZMC
(72)	Toothed Lock Washers	3KW	
(73)	Machine Screws	N+3x12	BNiM
(74)	Machine Screws	B+3x6	BNiM
(75)	Machine Screws	B+3x12	BNiM
(76)	Plain Washers	3W	BNiM
(77)	Machine Screw	B+3x6	BNiM
(78)	Machine Screws	BTP+3x6	BNiM
(79)	Nuts	3N	ZMC
(80)	Spring Lock Washers	3SW	ZMC
(81)	Plain Washers	3W	ZMC
(82)	Toothed Lock Washers	8KW	
(83)			
(84)	Spring Lock Washers	6SW	ZMC
(85)	Nuts	6N	ZMC
(86)	Beam	3B6204000	
(87)	Escutcheon Fixing Metal	4B6204300	
(88)	Machine Screws	B+3x6	BNiM
(89)	Machine Screws	B+3x6	BNiM
(90)	CRT Washers	4B0204000	
(91)	Caution Lavel	4B3910100	
(92)	CRT Caution Label	4B0032000	
(93)	FUSE Exchange Label (1)	4B8109100	
(94)	FUSE Exchange Label (2)	4B8109000	
(95)	Washers	4B0042400	
(96)	Machine Screws	SN+3x10	ZMC
(97)	Spring Lock Washers	3SW	ZMC
(98)	Nuts	3N	ZMC



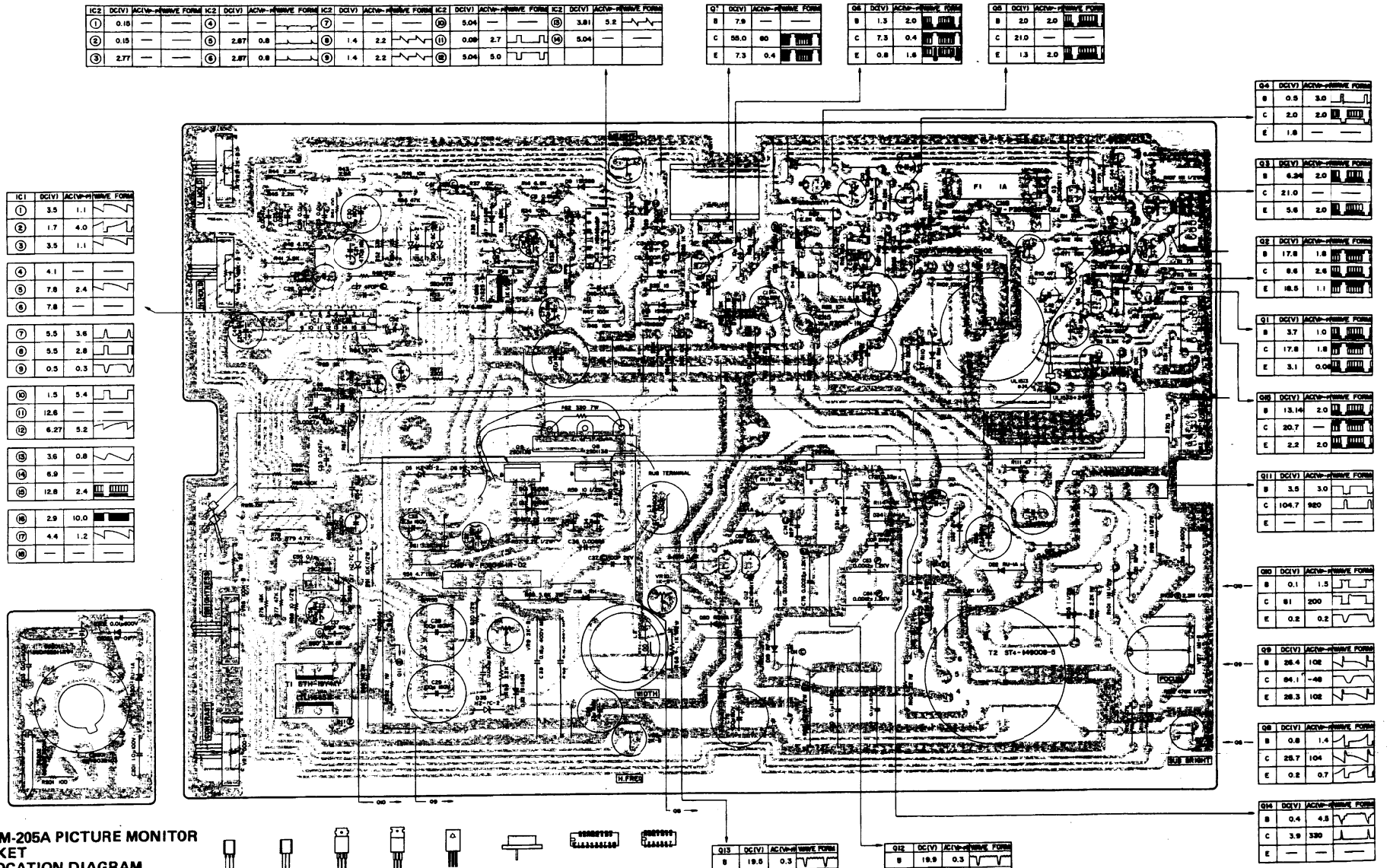
MODEL PM-205A PICTURE MONITOR
EXPLODED VIEW
DWG. NO. G3-882070



COMPONENTS IDENTIFIED BY THE ⚠ SYMBOL HAVE SPECIAL CHARACTERISTICS FOR SAFETY.
THESE CRITICAL SAFETY COMPONENTS ARE DESIGNED TO "FAIL SAFE" UNDER ABNORMAL CONDITIONS. THE FAILURE OF ANY ONE COMPONENT OFTEN CAUSES STRESS IN OTHER COMPONENTS WHICH COULD LEAD TO SMOKE OF FIRE OR OTHER HAZARDS. BECAUSE OF THIS, COMPONENTS ARE SELECTED AND TESTED UNDER ACTUAL FAULT CONDITIONS TO ENSURE SAFE OPERATION. REPLACEMENT WITH ANYTHING OTHER THE IDENTICAL IKEGAMI PART MAY PRESENT A HAZARD.

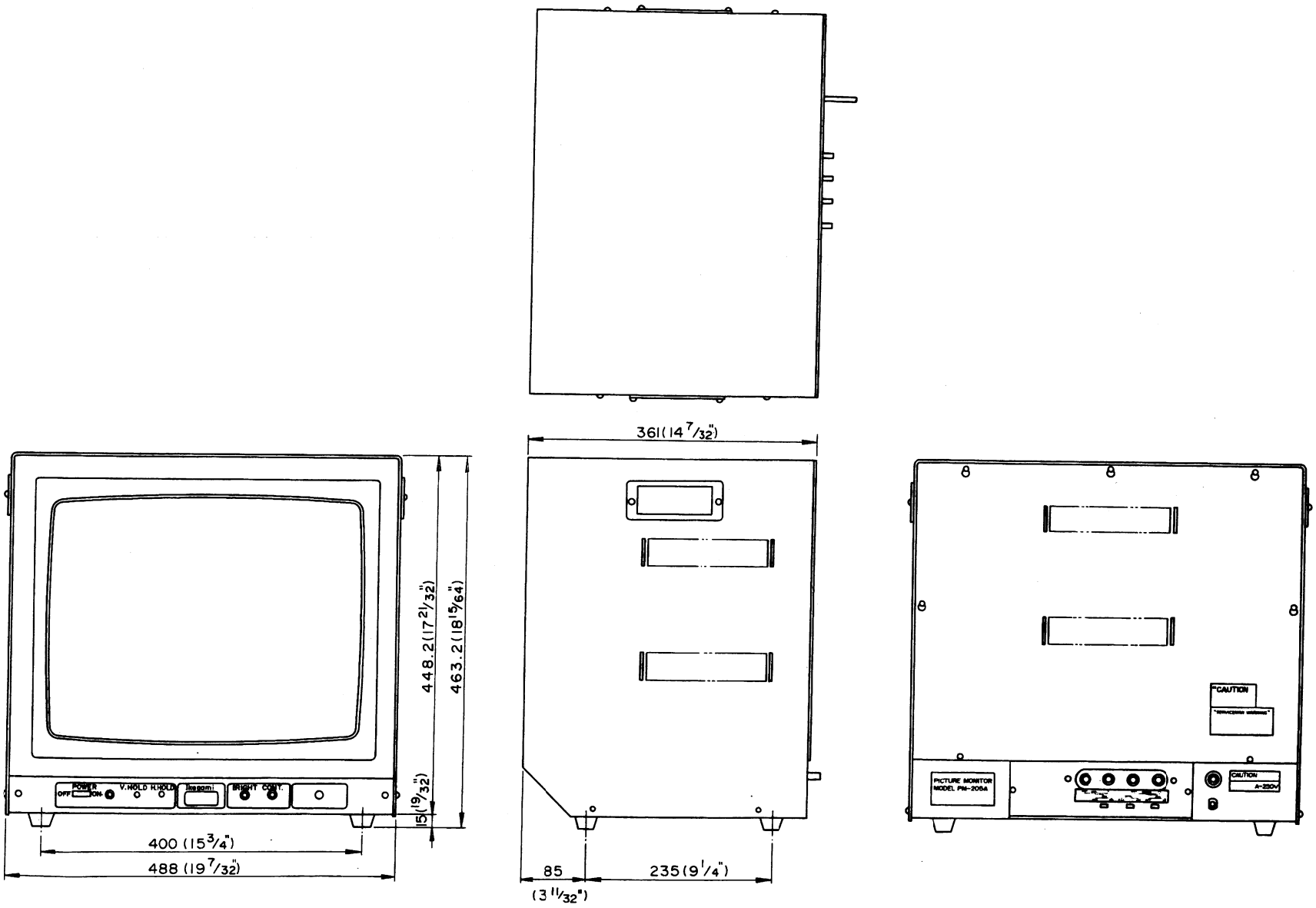
NOTE
1 RESISTORS ARE IN OHMS 1/4W UNLESS OTHERWISE SPECIFIED.
2 CAPACITORS ARE IN FARADS 50WV UNLESS OTHERWISE SPECIFIED
Ⓣ Tantalum (MF) METALLIZED FILM Ⓟ POLYPROPYRENE FILM
Ⓒ CERAMIC. CAP.
3 X-MARKED VALUES ARE SUBJECT TO CHANGE WITHOUT NOTICE.
4 ★MARKED PARTS ARE CRITICAL COMPONENT OF X-RAY RADIATION.

MODEL PM-205A PICTURE MONITOR
OVERALL SCHEMATIC DIAGRAM



MODEL PM-205A PICTURE MONITOR
CRT SOCKET
PARTS LOCATION DIAGRAM

MODEL PM-205A PICTURE MONITOR
MAIN PWB
PARTS LOCATION DIAGRAM



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