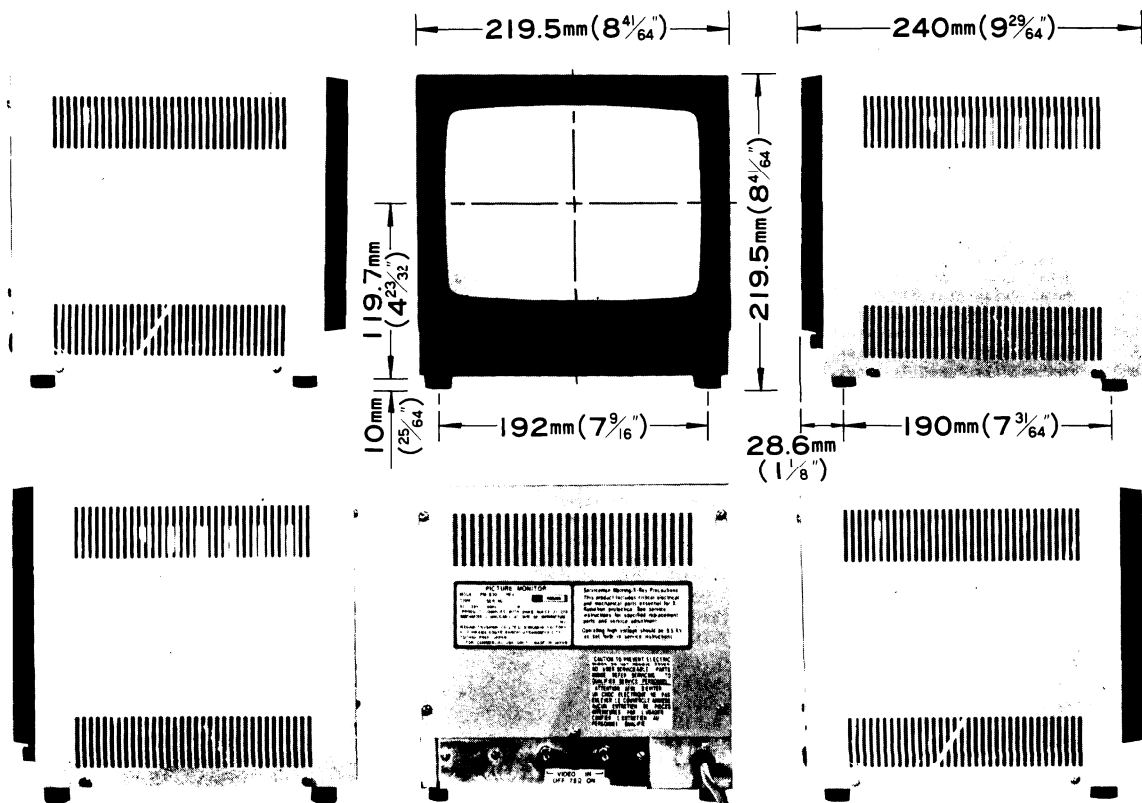
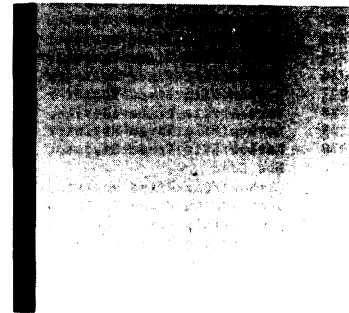


Ikegami

# OPERATING INSTRUCTIONS & SERVICE MANUAL

9" CCTV PICTURE MONITOR

Model **PM-930**



OUTDOOR USE WARNING

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



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.

## PRELIMINARIES

PM-930 incorporates a 9" diagonal CRT. This solid state design, utilizing top quality integrated circuits and silicon semiconductors, assures an excellent picture with long term reliability. The simple circuit design and compact construction present this unit as an economical device.

This manual contains initial set up procedures, operating instructions and service informations for PM-930.

Please note that the PM-930 picture monitor is a 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 this monitor.

Although this picture monitor is a solid-state, modular unit using mainly low-voltage circuitry at nonhazardous energy levels, power supply voltages are 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 voltages can be LETHAL!

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

## 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 any heat sources, high-powered lights, especially strong magnetic fields (such as power transformers), which may cause picture swing or distortion.

Excessive 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. Checking of the connectors for full insertion and tightness is also recommended, especially where the same set up is used for a long time.

## 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 polarized alternating-current line plug (a plug having one blade wider than the other). 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 damaged to the receiver due to lightning 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 or 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 on water.

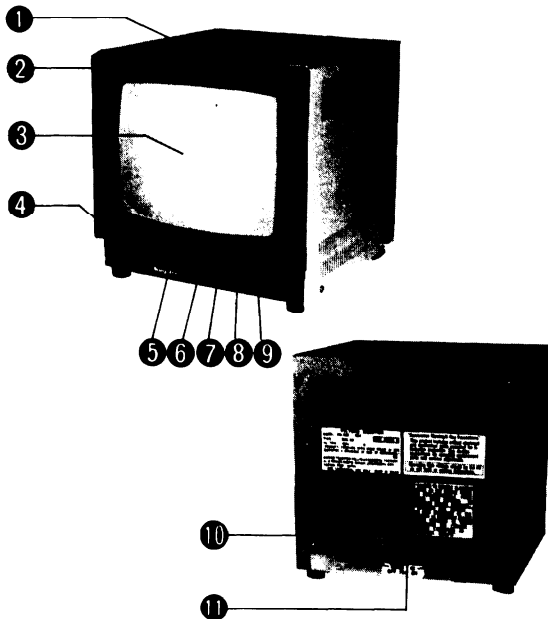
- d. If the television monitor does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to 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 checks to determine that the television is in safe operating condition.

## FUNCTION LOCATIONS

- Upper case
- Front escutcheon
- Picture tube (CRT)
- Power switch
- Power lamp
- V. Hold (Driver control)
- H. Hold (Driver control)
- Brightness
- Contrast
- Video input connectors (bridged)
- Video termination switch (75-ohm ON/OFF)



## 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.

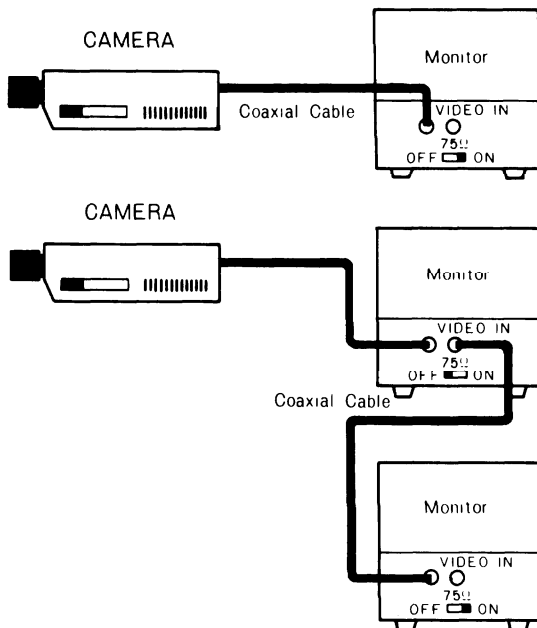
Set the video termination switch to 75-ohm if one monitor is to be used. (See below)

In case one camera and several monitors are to be used, switch off the 75-ohm termination switches of all monitors except the last one in the train.

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



## 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 two adjustments on the monitor main board.

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

**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.

## MAINTENANCE

Although PM-930 picture monitor is designed to withstand long continuous service, it is recommended to conduct periodical inspections for longer satisfactory service with full performance.

Check the following points periodically,

- (1) The knobs and adjustments for correct positions and connections.
- (2) Connectors for good contact.
- (3) Input and output circuits for short-circuit.
- (4) Internal temperature drift.
- (5) Soldering portions.

And keep the monitor interior clean as much as possible.

# PARTS LIST

- ◆ MARKED VALUES ARE SUBJECT TO CHANGE WITHOUT NOTICE
- ★ MARKED PARTS ARE CRITICAL COMPONENT OF X-RAY RADIATION

Components identified by the  $\Delta$  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 or 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.

## (1) MAIN CHASSIS

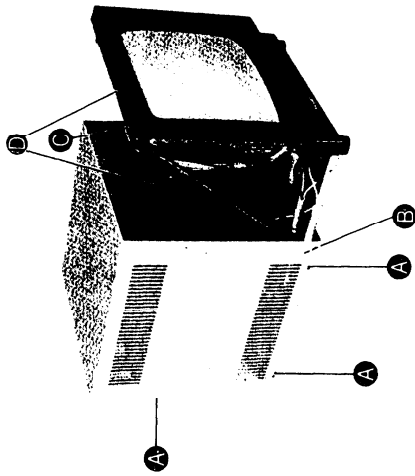
| NO.              | DESCRIPTION                |               |          |
|------------------|----------------------------|---------------|----------|
| $\Delta$ PC101   | Power Cord with Plug       | SPT-2         | VMO228AP |
| $\Delta$ SW101   | Slide Switch               | ESD-275       | DUS      |
| * $\Delta$ T101  | Power Transformer          | ST4-B27058-B4 |          |
| $\Delta$ F101    | Fuse                       | 0.25A         | 250V     |
| $\Delta$ F101-a  | Fuse Holder                | X-N1161#01    |          |
| * $\Delta$ V101  | Cathode Ray Tube           | 230BDB4       |          |
| * $\Delta$ DY101 | Deflection York            | ST4-B0350     |          |
| R101             | Carbon Film Fixed Resistor | 10 ohms       | 1/4W     |
| C101             | Polyester Film Capacitor   | 0.01 $\mu$ F  | 50WV     |
| CN101            | Connector Housing          | 171R22-6      |          |
| CN102            | Connector Housing          | W-A5002-1N#02 |          |
|                  | Insulock Tie               | BK-1          |          |
|                  | Insulock Tie               | T-30R         |          |

## (2) P.W.B. UNIT

| NO.            | DESCRIPTION                        |                 |         |           |
|----------------|------------------------------------|-----------------|---------|-----------|
| C1             | Electrolytic Capacitor             | 100 $\mu$ F     | 16WV    |           |
| C2             | Electrolytic Capacitor             | 100 $\mu$ F     | 16WV    |           |
| C3             | Ceramic Capacitor                  | 100pF           | 50WV    |           |
| C4             | Electrolytic Capacitor             | 470 $\mu$ F     | 16WV    |           |
| C5             | Electrolytic Capacitor             | 220 $\mu$ F     | 10WV    |           |
| C6             | Ceramic Capacitor                  | 560pF           | 50WV    |           |
| C7             | Ceramic Capacitor                  | 1000pF          | 50WV    |           |
| C8             | Electrolytic Capacitor             | 10 $\mu$ F      | 160WV   |           |
| C9             | Metalized Polyester Film Capacitor | 0.22 $\mu$ F    | 200WV   |           |
| C10            | Polyester Film Capacitor           | 0.047 $\mu$ F   | 100WV   |           |
| C11            | Electrolytic Capacitor             | 1 $\mu$ F       | 50WV    |           |
| C12            | Polyester Film Capacitor           | 0.022 $\mu$ F   | 50WV    |           |
| C13            | Electrolytic Capacitor             | 100 $\mu$ F     | 16WV    |           |
| C14            | Polyester Film Capacitor           | 0.022 $\mu$ F   | 50WV    |           |
| C15            | Polyester Film Capacitor           | 0.01 $\mu$ F    | 50WV    |           |
| C16            | Tantalum Capacitor                 | 0.33 $\mu$ F    | 35WV    |           |
| C17            | Tantalum Capacitor                 | 4.7 $\mu$ F     | 16WV    |           |
| C18            | Tantalum Capacitor                 | 4.7 $\mu$ F     | 16WV    |           |
| C19            | Electrolytic Capacitor             | 10 $\mu$ F      | 50WV    |           |
| C20            | Electrolytic Capacitor             | 33 $\mu$ F      | 16WV    |           |
| C21            | Electrolytic Capacitor             | 1000 $\mu$ F    | 16WV    |           |
| C22            | Electrolytic Capacitor             | 220 $\mu$ F     | 16WV    |           |
| C23            | Electrolytic Capacitor             | 1000 $\mu$ F    | 16WV    |           |
| C24            | Electrolytic Capacitor             | 10 $\mu$ F      | 50WV    |           |
| C25            | Not Used                           |                 |         |           |
| C26            | Polyester Film Capacitor           | 0.1 $\mu$ F     | 200WV   |           |
| $\Delta$ C27   | Electrolytic Capacitor             | 2200 $\mu$ F    | 35WV    | 35VP2200  |
| C28            | Electrolytic Capacitor             | 470 $\mu$ F     | 25WV    |           |
| C29            | Polyester Film Capacitor           | 0.01 $\mu$ F    | 50WV    |           |
| C30            | Electrolytic Capacitor             | 1 $\mu$ F       | 50WV    |           |
| C31            | Not Used                           |                 |         |           |
| C32            | Ceramic Capacitor                  | 100pF           | 50WV    |           |
| C33            | Not Used                           |                 |         |           |
| C34            | Polyester Film Capacitor           | 0.022 $\mu$ F   | 50WV    |           |
| C35            | Polyester Film Capacitor           | 0.022 $\mu$ F   | 50WV    |           |
| C36            | Electrolytic Capacitor             | 4.7 $\mu$ F     | 50WV    |           |
| C37            | Polyester Film Capacitor           | 0.01 $\mu$ F    | 50WV    |           |
| C38            | Electrolytic Capacitor             | 1000 $\mu$ F    | 16WV    |           |
| C39            | Polypropylene Film Capacitor       | 0.0039 $\mu$ F  | 50WV    |           |
| C40            | Polyester Film Capacitor           | 0.001 $\mu$ F   | 50WV    |           |
| C41            | Polyester Film Capacitor           | 0.01 $\mu$ F    | 50WV    |           |
| C42            | Polyester Film Capacitor           | 0.01 $\mu$ F    | 50WV    |           |
| * $\Delta$ C43 | Polypropylene Film Capacitor       | 0.047 $\mu$ F   | 400WV   | ECQF4473K |
| * $\Delta$ C44 | Polypropylene Film Capacitor       | 0.047 $\mu$ F   | 400WV   | ECQF4473K |
| C45            | Electrolytic Capacitor             | 1000 $\mu$ F    | 16WV    |           |
| C46            | Electrolytic Capacitor             | 3.3 $\mu$ F     | 350WV   |           |
| C47            | Polypropylene Film Capacitor       | 0.01 $\mu$ F    | 630WV   |           |
| C48            | Electrolytic Capacitor             | 10 $\mu$ F      | 25WV BP |           |
| C49            | Electrolytic Capacitor             | 1 $\mu$ F       | 50WV    |           |
| C50            | Polyester Film Capacitor           | 0.033 $\mu$ F   | 50WV    |           |
| C51            | Electrolytic Capacitor             | 1 $\mu$ F       | 50WV    |           |
| C52            | Electrolytic Capacitor             | 100 $\mu$ F     | 16WV    |           |
| D1             | LED                                | LN25RCP         |         |           |
| D2             | Silicon Diode                      | RM-1Z           |         |           |
| D3             | Silicon Diode                      | 1S1588          |         |           |
| D4             | Silicon Diode                      | RU-1A           |         |           |
| D5             | Silicon Diode                      | 1SS81           |         |           |
| D6             | Silicon Diode                      | RU-1A           |         |           |
| $\Delta$ D7    | Silicon Diode                      | S4VB10 or RB401 |         |           |
| D8             | Silicon Diode                      | 1SS81           |         |           |
| D9             | Not Used                           |                 |         |           |
| D10            | Silicon Diode                      | 1S1588          |         |           |
| IC1            | Integrated Circuit                 | AN5763          |         |           |
| * IC2          | Integrated Circuit                 | AN5753          |         |           |
| * $\Delta$ IC3 | Integrated Circuit                 | SI-3122P        |         |           |

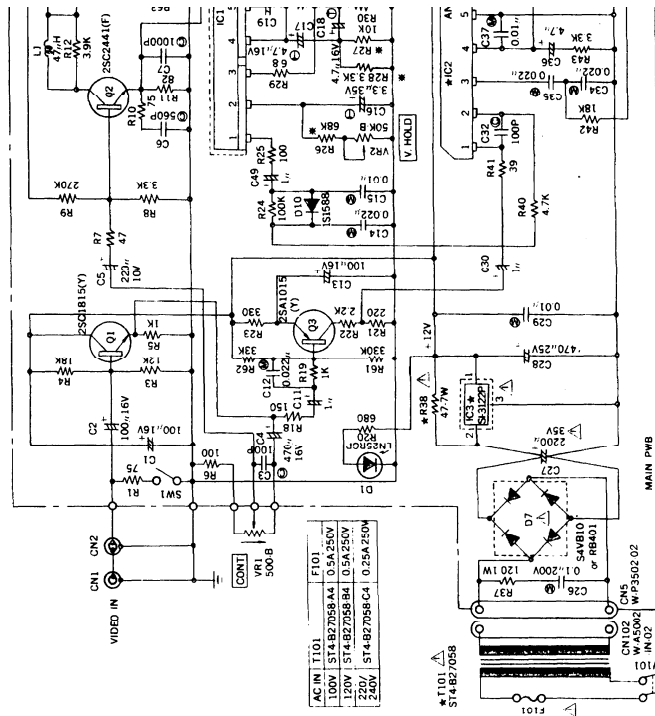
|         |                                 |                               |                       |
|---------|---------------------------------|-------------------------------|-----------------------|
| L1      | Peaking Coil                    | 47WH                          |                       |
| * L2    | H. Width Coil                   | ST4-B0360                     |                       |
| * L3    | H. Linearity Coil               | ST4-B0338-C                   |                       |
| Q1      | Silicon Transistor              | 2SC1815(Y)                    |                       |
| Q2      | Silicon Transistor              | 2SC2441(F)                    |                       |
| Q3      | Silicon Transistor              | 2SA1015(Y)                    |                       |
| Q4      | Silicon Transistor              | 2SD1069 or 2SC3174            |                       |
| R1      | Carbon Film Fixed Resistor      | 75 ohms                       | 1/4W                  |
| R2      | Not Used                        |                               |                       |
| R3      | Carbon Film Fixed Resistor      | 12K ohms                      | 1/4W                  |
| R4      | Carbon Film Fixed Resistor      | 18K ohms                      | 1/4W                  |
| R5      | Carbon Film Fixed Resistor      | 1K ohms                       | 1/4W                  |
| R6      | Carbon Film Fixed Resistor      | 100 ohms                      | 1/4W                  |
| R7      | Carbon Film Fixed Resistor      | 47 ohms                       | 1/4W                  |
| R8      | Carbon Film Fixed Resistor      | 3.3K ohms                     | 1/4W                  |
| R9      | Carbon Film Fixed Resistor      | 270K ohms                     | 1/4W                  |
| R10     | Carbon Film Fixed Resistor      | 75 ohms                       | 1/4W                  |
| R11     | Carbon Film Fixed Resistor      | 82 ohms                       | 1/4W                  |
| R12     | Carbon Film Fixed Resistor      | 3.9K ohms                     | 1/4W                  |
| R13     | Metal Oxide Film Fixed Resistor | 5.6K ohms                     | 1W                    |
| R14     | Carbon Film Fixed Resistor      | 390K ohms                     | 1/4W                  |
| * R15   | Carbon Film Fixed Resistor      | 47K ohms                      | 1/4W                  |
| R16     | Carbon Film Fixed Resistor      | 56K ohms                      | 1/4W                  |
| △ R17   | Carbon Film Fixed Resistor      | 4.7 ohms                      | 1/4W RD25S 4.7 ohms J |
| R18     | Carbon Film Fixed Resistor      | 150 ohms                      | 1/4W                  |
| R19     | Carbon Film Fixed Resistor      | 1K ohms                       | 1/4W                  |
| R20     | Carbon Film Fixed Resistor      | 680 ohms                      | 1/4W                  |
| R21     | Carbon Film Fixed Resistor      | 220 ohms                      | 1/4W                  |
| R22     | Carbon Film Fixed Resistor      | 2.2K ohms                     | 1/4W                  |
| R23     | Carbon Film Fixed Resistor      | 330 ohms                      | 1/4W                  |
| R24     | Carbon Film Fixed Resistor      | 100K ohms                     | 1/4W                  |
| R25     | Carbon Film Fixed Resistor      | 100 ohms                      | 1/4W                  |
| * R26   | Carbon Film Fixed Resistor      | 68K ohms                      | 1/4W                  |
| * R27   | Carbon Film Fixed Resistor      | 10K ohms                      | 1/4W                  |
| * R28   | Carbon Film Fixed Resistor      | 3.3K ohms                     | 1/4W                  |
| R29     | Carbon Film Fixed Resistor      | 6.8 ohms                      | 1/4W                  |
| R30     | Carbon Film Fixed Resistor      | 1 ohms                        | 1/2W                  |
| R31     | Not Used                        |                               |                       |
| R32     | Carbon Film Fixed Resistor      | 68K ohms                      | 1/4W                  |
| △ R33   | Carbon Film Fixed Resistor      | 4.7 ohms                      | 1/2W R50A 4.7 ohms J  |
| R34     | Carbon Film Fixed Resistor      | 12K ohms                      | 1/4W                  |
| R35     | Carbon Film Fixed Resistor      | 100 ohms                      | 1/4W                  |
| R36     | Carbon Film Fixed Resistor      | 15K ohms                      | 1/4W                  |
| R37     | Metal Oxide Film Fixed Resistor | 120 ohms                      | 1W                    |
| * △ R38 | Cement Filled Fixed Resistor    | 47 ohms                       | 7W MPS07N 470K        |
| R39     | Carbon Film Fixed Resistor      | 15K ohms                      | 1/4W                  |
| R40     | Carbon Film Fixed Resistor      | 4.7K ohms                     | 1/4W                  |
| R41     | Carbon Film Fixed Resistor      | 39 ohms                       | 1/4W                  |
| R42     | Carbon Film Fixed Resistor      | 18K ohms                      | 1/4W                  |
| R43     | Carbon Film Fixed Resistor      | 3.3K ohms                     | 1/4W                  |
| R44     | Carbon Film Fixed Resistor      | 27K ohms                      | 1/4W                  |
| R45     | Carbon Film Fixed Resistor      | 220 ohms                      | 1/4W                  |
| R46     | Carbon Film Fixed Resistor      | 2.2K ohms                     | 1/4W                  |
| R47     | Carbon Film Fixed Resistor      | 68K ohms                      | 1/4W                  |
| R48     | Carbon Film Fixed Resistor      | 220 ohms                      | 1/4W                  |
| R49     | Carbon Film Fixed Resistor      | 1.5K ohms                     | 1/4W                  |
| △ R50   | Carbon Film Fixed Resistor      | 75 ohms                       | 1/4W RD25S 75 ohms J  |
| △ R51   | Carbon Film Fixed Resistor      | 10 ohms                       | 1/4W RD25S 10 ohms J  |
| R52     | Carbon Film Fixed Resistor      | 47 ohms                       | 1/4W                  |
| R53     | Carbon Film Fixed Resistor      | 1K ohms                       | 1/2W                  |
| R54     | Carbon Film Fixed Resistor      | 3.3K ohms                     | 1/2W                  |
| △ R55   | Metal Oxide Film Fixed Resistor | 10 ohms                       | 1W RSF1B 10 ohms J    |
| R56     | Metal Oxide Film Fixed Resistor | 2.7K ohms                     | 1W                    |
| R57     | Carbon Film Fixed Resistor      | 1M ohms                       | 1/4W                  |
| R58     | Carbon Film Fixed Resistor      | 680K ohms                     | 1/4W                  |
| R59     | Carbon Film Fixed Resistor      | 680 ohms                      | 1/4W                  |
| R60     | Carbon Film Fixed Resistor      | 1.5M ohms                     | 1/4W                  |
| R61     | Carbon Film Fixed Resistor      | 330K ohms                     | 1/4W                  |
| R62     | Carbon Film Fixed Resistor      | 33K ohms                      | 1/4W                  |
| R63     | Carbon Film Fixed Resistor      | 47K ohms                      | 1/2W                  |
| VR1     | Variable Resistor               | 500 ohms                      | lin. taper            |
| VR2     | Variable Resistor               | 50K ohms                      | lin. taper            |
| VR3     | Variable Resistor               | 100K ohms                     | lin. taper            |
| VR4     | Variable Resistor               | 1K ohms                       | lin. taper            |
| VR5     | Variable Resistor               | 1K ohms                       | lin. taper            |
| VR6     | Variable Resistor               | 300K ohms                     | lin. taper            |
| T1      | H. Drive Transformer            | ST-603431                     |                       |
| * △ T2  | Flyback Transformer             | ST4-B0326                     |                       |
| TH1     | Thermistor                      | TD5-C310                      |                       |
| SW1     | Switch, Slide                   | SLP-2-1022                    |                       |
| CN1     | Receptacle                      | BNC                           |                       |
| CN2     | Receptacle                      | BNC                           |                       |
| CN3     | Connector Plug                  | 171825-6                      |                       |
| CN4     | Connector Housing               | S7-502B-59                    |                       |
| CN5     | Connector Plug                  | W-P3002-#02<br>or W-P3502-#02 |                       |
| E1      | Printed Wiring Board            | PWP-93-11                     |                       |

# PICTURE TUBE (CRT) REPLACEMENT



- (1) Switch off the power.
  - In the case of tube replacement, the monitor has been switched off to allow the tube anode to cool.
  - (2) Take out the five screws marked A, B, C, D, and E from the cover.
  - (3) Take out the 2 screws marked A and B from the deflection coil assembly.
  - (4) Carefully remove CRT from the deflection coil assembly.
  - (5) Take out the 4 screws marked C, D, E, and F from the picture tube.
  - (6) Put new CRT for replacement in the sequence in assembly.
- Note that the picture tube and deflection coil assembly are with identical part numbers.

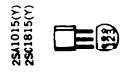
## SCHEMATIC



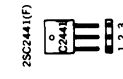
- NOTE
1. RESISTORS ARE IN OHMS, 1/4 W UNLESS OTHERWISE SPECIFIED.
  2. CAPACITORS ARE IN FARADS, 50WV UNLESS OTHERWISE SPECIFIED.
  3. PARTIAL IN CAP. @ POLYESTER FILM CAP.
  4. POLYPROPYLENE FILM CAP. @ CERAMIC CAP.
  5. ELECTROLYTIC CAP. @ METALIZED POLYESTER FILM CAP.
  6. MARKED VALUES ARE SUBJECT TO CHANGE WITHOUT NOTICE.
  7. \* MARKED PARTS ARE CRITICAL COMPONENT OF X-RAY RADIATION.

# PARTS LOCATION

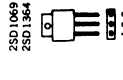
| IC3       | 1    | 2    | 3   | WAVE FORM |
|-----------|------|------|-----|-----------|
| DC V      | 12.0 | 18.5 | 0.0 |           |
| AC Vpp    | 0    | 1.8  | 0.0 |           |
| WAVE FORM |      |      |     | GND       |



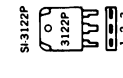
(BOTTOM VIEW)  
1 Emmitter  
2 Collector  
3 Base



(BOTTOM VIEW)  
1 Emmitter  
2 Collector  
3 Base

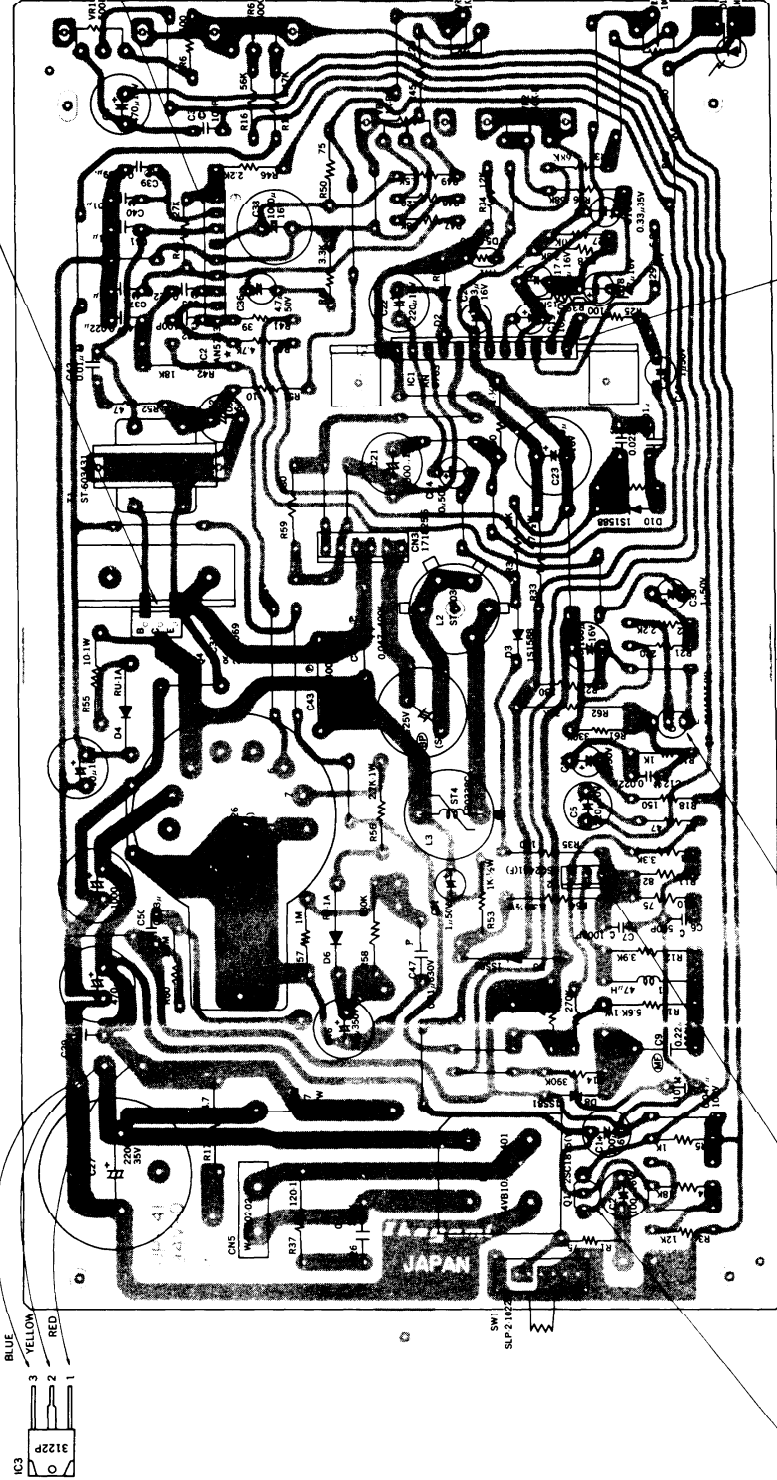


(BOTTOM VIEW)  
1 Emmitter  
2 Collector  
3 Base



(BOTTOM VIEW)  
1 Emmitter  
2 Collector  
3 Base

| Q4        | B   | C     | E   | WAVE FORM |
|-----------|-----|-------|-----|-----------|
| DC V      | —   | 20.0  | 0.0 |           |
| AC Vpp    | 3.0 | 100.0 | 0.0 |           |
| WAVE FORM |     |       |     |           |



| Q2 | DC V | AC Vpp | WAVE FORM |
|----|------|--------|-----------|
| 1  | —    | 0.8    |           |
| 2  | 7.2  | 8.4    |           |
| 3  | 7.2  | 1.4    |           |
| 4  | 2.3  | 0.4    |           |
| 5  | 0    | 0      | GND       |
| 6  | 10.9 | 0      |           |
| 7  | 11.3 | 20.0   |           |
| 8  | 6.5  | 2.9    |           |
| 9  | 2.7  | 0      |           |

| Q1        | B   | C    | E   | WAVE FORM |
|-----------|-----|------|-----|-----------|
| DC V      | 4.6 | 12.0 | 4.0 |           |
| AC Vpp    | 1.0 | 0.0  | 1.0 |           |
| WAVE FORM |     |      |     |           |

| Q2        | B   | C    | E   | WAVE FORM |
|-----------|-----|------|-----|-----------|
| DC V      | 1.3 | 46.0 | 1.0 |           |
| AC Vpp    | 1.0 | 30.0 | 1.0 |           |
| WAVE FORM |     |      |     |           |

| Q3        | B    | C    | E    | WAVE FORM |
|-----------|------|------|------|-----------|
| DC V      | 11.8 | 0.5  | 12.0 |           |
| AC Vpp    | 1.0  | 12.0 | 0.0  |           |
| WAVE FORM |      |      |      |           |

| IC1       | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8    | 9    | 10  | 11   | 12   |
|-----------|-----|-----|-----|-----|-----|-----|-----|------|------|-----|------|------|
| DC V      | 6.3 | 4.0 | 0.0 | 0.3 | 0.4 | 0.4 | 0.0 | 6.0  | 11.2 | 5.8 | 2.4  | 11.7 |
| AC Vpp    | 2.0 | 1.8 | 0.6 | 0.4 | 0.4 | 0.0 | 0.0 | 22.0 | 10.6 | 2.7 | 10.8 | 0.5  |
| WAVE FORM |     |     |     |     |     |     | GND |      |      |     |      |      |

## SPECIFICATIONS

|                          |   |                                      |  |
|--------------------------|---|--------------------------------------|--|
| PICTURE TUBE             | 23cm (9") diagonal<br>Implosion protected<br>Type 230BDB4 or equivalent   | DEFLECTION CIRCUIT<br>SYNC STABILITY | Operation stable within input<br>signal range of VS 0.5 ~ 2.0Vp-p              |
| VIDEO INPUT LEVEL        | VS 1.0Vp-p  | RASTER DISTORTION                    | Less than 3%   |
| VIDEO INPUT IMPEDANCE    | 75Ω or high (switchable)  | DEFLECTION DISTORTION                | H and V each less than 3%  |
| VIDEO OUTPUT LEVEL       | 30Vp-p  | BLANKING DURATION                    | H within 18%<br>V within 6%  |
| SCANNING RATES           |   | ENVIRONMENTAL TEMPERATURE            | -10°C ~ +45°C  |
| HORIZONTAL               | 15.75KHz or 15.625KHz   | CONNECTOR                            | BNC connector  |
| VERTICAL                 | 60Hz or 50Hz  | POWER REQUIREMENT                    | 100/120V 60Hz or 220/240V<br>50Hz  |
| VIDEO FREQUENCY RESPONSE | 6MHz (+1dB, -3dB)   | POWER CONSUMPTION                    | Less than 25W  |
| HORIZONTAL RESOLUTION    | 600 lines or better<br>(at center)  | DIMENSIONS (W.H.D.)                  | 219.5(W) x 219.5(H) x 240(D) mm.<br>8-41/64"(W) x 8-41/64"(H) x<br>9-29/64"(D) |
| SIGNAL-TO-NOISE RATIO    | 55dB or better<br>(except sync noise)   | WEIGHT                               | 4.9Kg (10.8 lbs) approximately   |
| LINEARITY                | 4% or less (of picture height)  |                                      |  |
| STABILITY                | ±10% of rated voltage   |                                      |  |
| SPOT KILLER              | Prevents spot burn-in of CRT<br>with loss of power.   |                                      |  |
| ISOLATION                | More than 50MΩ between AC<br>input terminal and Cabinet   |                                      |  |
| BRIGHTNESS               | More than 30FL continuously<br>variable against rated input<br>white signal   |                                      |  |
| VIDEO AMPLIFIER CIRCUIT  |   |                                      |  |
| MAXIMUM GAIN             | More than 33dB  |                                      |  |
| FREQUENCY CHARACTERISTIC | Refer to 100KHz<br>60Hz ~ 6MHz: within +1, -3dB<br>below 60Hz, over<br>6MHz: falling down<br>characteristic   |                                      |  |
| WAVEFORM DISTORTION      | Sag: less than 10% (against<br>60Hz square wave)<br>Overshoot: Under 10% (against<br>15KHz square wave)<br>Rise time: less than 60nS<br>(against 250KHz<br>square wave) |                                      |  |
| SIGNAL-TO-NOISE RATIO    | Refer to input signal,<br>output signal is as follows:<br>Hum noise: less than -55dB<br>Synchronous noise: less than<br>-35dB   |                                      |  |

\* Design and specifications are subject to change for improvement.



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