MODEL
TM14-80RH
TM20-80RH
TM20-90RH

COLOR MONITOR

OPERATION MANUAL

Ikegami

2

CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**

SA 1965   SA 1966

CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

SA 1965

The lightning flash with arrowhead within a triangle is intended to tell the user that parts inside the product may cause the risk of electric shock to persons.

SA 1966

The exclamation point within a triangle is intended to tell the user that important operating and servicing instructions are in the papers with the equipment.

WARNING : FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS (REFER TO SERVICE LITERATURE).

WARNING : TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR WATER.

INFORMATION TO USER FOR FCC

Warning

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications.
It has been tested with a class A computing device and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.
Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

IMPORTANT SAFETY INSTRUCTION

1. General

1. Read all of these instructions.

2. Save these instructions for later use.

3. Follow all warnings and instructions marked on the television equipment.

4. 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.

5. 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.

6. Do not use attachments not recommended by the television equipment manufacturer as they may result in the risk of fire, electric shock, or injury to persons.

7. This television monitor has been adjusted to meet the respective broadcasting standard signals. So, it cannot be used with the signals of different broadcasting standards.

8. When keeping or transporting the unit for a long time, pack it in the supplied carton or equivalent.

9. This monitor is heavy.
   When taking out of or putting it into a carton box, or setting, do not move or carry it by a person. You may drop it on your foot, or hurt your waist.

⚠ WARNING

HEAVY !
Do not carry by a person.

2. Power Supply

1. This television equipment 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.

2. This television equipment is provided with a three-wire grounding type plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.
   Do not defeat the safety purpose of the grounding-type plug.

3. When connecting and disconnecting the power cable, be sure to hold the plug.

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

5. For added protection for this television equipment 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 damage to the equipment due to lightning and power-line surges.

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

IMPORTANT SAFETY INSTRUCTION

3. Usage and Location

1. Do not use this television equipment near water - for example, near a bath tub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, or the like.

2. Do not place this television equipment on an unstable cart, stand, or table. The television equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Use only with a cart or stand recommended by the manufacturer, or sold with the television equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
Television equipment and cart combination should be moved with care.
Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.

3. Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to ensure reliable operation of the 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 equipment on a bed, sofa, rug, or other similar surface. (This television equipment should never be placed near or over a radiator or heat register.) This television equipment monitor should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.

4. Avoid operating or placing (keeping) in hot (+40 degrees Celsius or over) and cold (less than 0 degrees Celsius), excessively vibratory, or dusty place. And avoid operating or placing (keeping) in the places exposed to the direct sunlight. Otherwise the cabinet may deform or the phosphor of the CRT surface may deteriorate.

5. If an image of extremely high brightness is displayed on the screen for a long time, the CRT may cause burning.

4. Cleaning

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

2. Do not use thinner or benzine for cleaning. Otherwise, the cabinet may deform or the paint may peel away.

5. Repair

1. 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 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 monitor exhibits a distinct change in performance - this indicates a need for service.

2. 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 injury to persons.

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

4. For repair service, contact **Ikegami**'s authorized sales representative or **Ikegami** service window directly.

Precautions for Operation

1. Never let this unit fall nor give it a strong shock. Otherwise, it will be damaged.

2. Do not detach the cabinet unless otherwise necessary. High-voltage parts are contained in the cabinet and they are very dangerous if you touch them. Only the qualified service engineers are allowed to adjust the inside of the cabinet.

3. This color monitor has been adjusted to the signals conforming to each broadcasting standard.
   So, it cannot be used for signals of different broadcasting standards.
   Be sure to operate the color monitor within the voltage range marked on its back.

4. If the cabinet or screen is stained, wipe with soft cloth. At this time, avoid using benzine or thinner. Otherwise, the paint may peel away.

5. Note that, if video signals with high luminance are monitored on the CRT for long, the CRT may suffer from sticking.

6. Avoid using and storing this unit in the following places;

   • Hot (+40 degrees Celsius or more) or cold (0 degrees Celsius or less) places.
     Especially in a place where this unit is exposed to the direct rays of the sun, the cabinet may deform and the fluorescent screen of the CRT may be deteriorated.

   • Humid and dusty places.

   • Places where there is much vibration.

   • Places where strong magnetism is generated.

   • Places exposed to rain or water.

   • When storing this unit for long or transporting it, pack it up in the supplied carton or equivalent beforehand.

   • Even if no picture can be monitored by performing daily adjustment or something seems to be wrong with this unit, do not dismantle this unit by yourself. In such a case, contact the service department of Ikegami.

Guarantee

Should this unit fail within one year after your acceptance, it will be repaired free of charge unless such a trouble is not caused by operator's mishandling or misuse.
However, the CRT and fuses are not covered by the warranty.

The specifications and appearance of this unit may be changed for further improvement without prior notice.

TM14-80RH
TM20-80RH
TM20-90RH

OPERATION MANUAL

CONTENTS

1.   OUTLINE

1.1   General

This 14-inch type (TM14-80RH)/20-inch type (TM14-80RH,TM20-90RH) color monitor has been designed taking into consideration as well as the combined use of the NTSC/PAL-B formats, and also active use in all kinds of spaces such as sub-control rooms, editing rooms, monitor wall, transmission control desks, OB Van, etc.

This monitor is the NTSC/PAL-B (including options) to deal with diversifying broadcasting formats and system needs. It can also be connected easily with current analog component and composite inputs as well as serial digital inputs.

The monitor adopts a plug-in module method which enables the system to be changed or expanded by simply plugging in the module without opening the cover. This color monitor for professional use also takes into account ease of expandibility and maintenance.

1.2   Features

Rich variety of remote control functions

The monitor can be remote-controlled with the use of three remote control functions. Depending on the place of installation and type of operation, a parallel/infra-red/serial mode remote controller can be used.

In addition to the conventional parallel remote control, the monitor also comes equipped as a standard serial remote input interface which enables remote control with just one BNC coaxial cable. By connecting various monitors (17/18/20/30 series and HTM series monitors) by the loop-through method, up to 99 types of monitors can each be remote-controlled individually using the serial remote controller **SRC-301A**.

The infrared wireless remote controller **RCT-20A** is also available as an option.

Digital control

Digital data is processed by 10-bits. The rotary encoder equipped enables easy adjustments and changes of the data. The screen size and position as well as side pin compensation can also be controlled remotely, thus allowing flexible compatibility with various signal formats.

Memorization of 4 types of color temperatures

This monitor can store three color temperature in addition to the factory setting.

This means quicly and easily select the white balance setting best for the state of the input image and the usage objective.

BFS (Beam feedback system)

By adopting a BFS circuit for detecting CRT cathode current, stable white balance can be obtained for a long period of time even when the CRT emission is changed.

Built-in 3-line comb filter (NTSC)

During NTSC analog composite signal input, the decoder module which mounts a 3-line comb filter circuit realizes a broad VIDEO area by the digital delay driving method using 8 fsc clocks.

The Faroudja format 3-line comb filter used for Y/C separation reproduces high picture quality images with minimum cross color and cross luminance.

Rich variety of built-in test signals

The monitor is equipped with a variety of useful test signals for adjustments such as the cross hatch, flat field (50%), window (100%), character, and staircase waveform with pluge.

The format of the test signal can also be selected from 525/625 by MENU settings.

Built-in markers

4:3 markers can be displayed in 16:9 display.
80%, 88%, 90%, 93%, 100% and other markers can be
displayed for the 4:3/16:9 aspects in NTSC.

Shadow function

The monitor is equipped with a function which dis

plays 4:3 image during 16:9 aspect display and cre-

ates shadows (contrast of shadow: 0%, or 40%) at

the remaining image portion, enabling 4:3 images

to be created instantaneously while monitoring

16:9 images.

As this shadow function can be turned on and off by

remote control, prompt switching is realized.

Degauss timer function

The degauss timer function sets the timer so that

auto degauss operations are performed automatically

about 4 seconds after the power is turned ON.

The timer can be set for each monitor at intervals of

0.5 seconds from 0 and 4.5 seconds.

This minimizes the rush current flowing when the

power of a system comprised of multiple monitors

is turned on at once.

Structure with enhanced maintenance and expandability

The signal processing module, including the optional module,
is of the plug-in type which can be easily disconnected and
connected from the back without the need to remove any
cover, thus allowing easy maintenance.
In addition to the standard equipped SDTV YPbPr (VIDEO
PROC) module,up to four optional modules can be expanded.

Use of high performance in-line gun CRT

The monitor uses an inline gun dot mask high-detail CRT.
The dot mask pitch is a fine 0.31mm for the TM14-80, 0.43mm
for the TM20-80, and 0.28mm for the TM20-90.

The CRT shadow mask sharply improves doming

(deviation of beam due to thermal distortion of the

shadow mask) when brightness is increased.

Luminance compensation function by image size

In the case of the CRT monitor, when the image size is
reduced from normal to under-scan, or from 4:3 to 16:9 scan
image size, the current density increases. Therefore, general
monitors, the luminance increases by about 40% in image
size reduction from 4:3 to 16:9. Consequently, the image size
also changes when the aspect is switched. This monitor thus
performs luminance compensation so that the luminance
remains constant even when any of the four image sizes is
changed.

High-performance High Voltage Regulation Circuit

This monitor employs a regulation circuit that controls high
voltage by pulses for each scanning line in the high voltage
circuit. That makes response speed high, image distortion
minimum even if video with high light images is input, and
image stability high.

Auto setup function (Under development)

Use of the auto setup probe ASP-15 or ASP-80 (optional)
enables automatic adjustment of the color temperature easily.
When the operator sets the desired color temperature to the
monitor, any number of monitors can be automatically
adjusted to this color temperature.

2. SPECIFICATIONS

2.1 Common Specifications

(1) General

1. Power

AC single phase, 50/60Hz

100V areas : 100V-120V ±10%

200V areas : 200V-240V ±10%

Approx. 160W

2. Ambient Temperature

0 to +40 degrees Celsius

3. Humidity

90% or less (no condensation)

4. Dimensions and Weight

TM14-80RH:	450 (W) x 265 (H) x 515 (D) mm
	About 28kg
TM20-80RH:	450 (W) x 399 (H) x 515 (D) mm
	About 38kg
TM20-90RH:	450 (W) x 399 (H) x 515 (D) mm
	About 38kg

5. Accessory

Power cable, remote connector, operation manual×1 each

6. Operation

Continuity

7. X-ray Radiation

0.1mR/H or less

(anywhere at 50mm away from outside of this monitor)

(2) Video Signal System

1. Frequency Response

• NTSC (composite input)

60Hz to 10MHz +1/-3dB

10MHz or over descendant characteristics

2. Sag

±1% or less

3. Stability of Black Level

1% or less in change of APL 10% to 90%

4. Aperture

With subcawier trap on, 2T pulse overshoot is symmetrical.

5. Noise

Synchronous noise	-46dB or more
Ham noise	-55dB or more
Others	-55dB or more

(3) Brightness and Contrast

1. CRT

TM14-80RH:	Dot trio pitch 0.31mm
TM20-80RH:	Dot trio pitch 0.43mm
TM20-90RH:	Dot trio pitch 0.28mm

2. Horizontal Resolution

(when screen center is 120 cd/m²)

TM14-80RH: Above 700TV lines

TM20-80RH: Above 700TV lines

TM20-90RH: Above 900TV lines

3. Preset Contrast

120cd/m² at shipment

4. Maximum Brightness

TM14-80RH: Above 240 cd/m²

TM20-80RH: Above 170 cd/m²

TM20-90RH: Above 170 cd/m²

(100% window signal input, brightness: PRESET, contrast: MAX)

(4) Deflection and Sync Systems

1. 16:9 Displaying Size

TM14-80RH: W 259 x H 146 mm

TM20-80RH: W 400 x H 225 mm

TM20-90RH: W 400 x H 225 mm

2. Scanning

a) NORMAL SCAN (4:3/16:9)

b) UNDER SCAN (4:3/16:9)

3. Deflection Distortion

±1% or less of screen height

(deflection linearity and raster distortion)

4. Sync Stability

When input signal is under the following condition, this monitor works well.

Internal sync   : ±6dB of the rated value for video input level

External sync : 0.3 to 8Vp-p for external sync input level

5. High Voltage

• **Generated voltage**   : 25kV ±1kV

• **High voltage fluctuation**

±3% or less in a range of 0 to 300μA of beam current as reference of 100μA

6. Convergence

• Center

TM14-80RH	: 0.2mm
TM20-80RH	: 0.2mm
TM20-90RH	: 0.15mm

• Within 80% circle of screen height

TM14-80RH	: 0.3mm
TM20-80RH	: 0.3mm
TM20-90RH	: 0.3mm

• Other than above

TM14-80RH	: 0.5mm
TM20-80RH	: 0.5mm

(5) Functions

1. Marker Function

a) Center marker

ON/OFF set by the menu

b) Safe title

The following markers appear in accordance with the state of aspect (4:3/16:9).

Figure in the parentheses shows aspect ratio at which the marker appears.

Types

- 80% + 100% (4:3/16:9)
- 88% + 100% (4:3/16:9)
- 90% + 100% (4:3/16:9)
- 93% + 100% (4:3/16:9)
- 5-partition cross hatch (4:3/16:9)
- 10-partition cross hatch (4:3/16:9)
- Cross (4:3/16:9)
- 100% area of 14:9 (16:9)
- 100% area of 13:9 (16:9)
- 4:3 marker (16:9)
- 4:3 marker + 80%(4:3) marker (16:9)

2. Shadow function

The following 4:3 shadow is created in the 16:9 mode.

Types

- 4:3 marker + Shadow
- 4:3 marker + 80% (4:3) marker + Shadow
- Shadow only

3. Auto setup (Under development)

The white balance can automatically be adjusted using the auto setup probe ASP-15 or ASP-80(option).

4. Remote Control

a) Parallel remote control

Channel COMPOSITE/AUX/SD-SDI, RGB/YPbPr, COLOR/MONO, SYNC INT/EXT, 4:3/16:9, 4:3 MARKER ON/OFF, 4:3 SHADOW ON/OFF, TALLY ON/OFF

b) Serial remote control

Input interface is equipped with as normal equipment so that you can control most of functions using the optional remote controller SRC-301A.

c) Infrared remote controller RCT-20A (Optional)

5. Internal test signal

The format can be switched by MENU settings

Types

- Cross hatch
- 50% flat field
- 100% window
- Character
- Stepped waves with pluge signal

6. Beam Feedback System (BFS)

7. Menu Assist

- Setting of input signal format
- Setting of RGB/YPbPr selection
- Setting of TEST signal format
- Setting of center-cross marker indication ON/OFF
- Setting of color marker
- Setting of remote ID number
- Setting of DEGAUSS timer
- % indication for each preset data
- Setting of password

(6) Memory

1. Used Memories

ROM   64K byte programmable ROM

RAM   32K byte static RAM

2. Battery Backup

Memory retaining period   10 years or more

Used Battery   Lithium battery
(BR2330-1HF)

(7) Application

1. Safety Standard

In accordance with UL1950

2. Electric Wave Noise Standard

FCC Class-A

3. X-ray Radiation Standard

DHHS

2.2 Individual Specifications

Only YPbPr/RGB 1-input module as normal equipment.

(1) YPbPr/RGB Input Module

- Attached YPbPr/RGB 1-input module(standard mounted)
- DCH-501 dual component module
  (for extension of YPbPr/RGB 1-input)

1. Input/Output Terminal

a) YPbPr/RGB 1-input module (standard)

YPbPr/RGB   : BNC 1-input (loop-through)

Sync   : BNC 1-input (loop-through)

b) DCH-501

YPbPr/RGB   : BNC 1-input (loop-through)

2. Input Signal Format (YPbPr/RGB)

a) SDTV

- 525i/59.94
- 625i/50

3. Input Level

a) NTSC (SMPTE/EBU N10)

- RGB input   VS : 1.0Vp-p   positive

                     V   : 0.7Vp-p   positive

When R, G and B signals have sync signal, when only G signal has sync signal, or when R, G and B signals do not have sync signal.

- YPbPr input   positive
  Y signal   WHITE   : 700mVp-p
              SET UP : 0mVp-p
              SYNC   : 300mVp-p
              Pb, Pr signal : 525mVp-p
              (100/0/75/0 COLOR BAR)
- Sync input   0.3V to 6Vp-p negative

4. Input Impedance

High-impedance bridge connection or 75Ω termination
(75Ω termination plugs are optional.)

5. Return Loss

46dB or more (10MHz)

(2) SD-SDI Input module

- DK-801A (4:2:2 digital component module)
- DK-802N (4Fsc digital composite module)
- DK-8012 (4:2:2/4Fsc digital module)

The upper module cannot be installed at the some time.
NTSC decorder module (DK-801A) is required when
inputting a digitalcomposite into DK-802N or DK-8012.

1. Input/Output terminal

BNC 2 lines (active through) See page 14.

2. Input signal format

a)DK-801 :   SDI 4:2:2 digital component signal
              (525i/59.94, 625i/50)
b)DK-802N: SDI 4FSC digital composite signal
              (NTSC)
c)DK-8012:   2 formats is selected with automatically
- SDI 4:2:2 digital component signal (525i/59.94, 625i/50)
- SDI NTSC digital composite signal

3. Input/Output level

Scrambled NRZI system Rated 800mVp-p±10%
(at terminated with 75Ω)

4. Transmitting speed

- DK-801 :   270Mb/s
- DK-802N: 143Mb/s
- DK-8012:   143MHz/270Mb/s

5. Quantum bit number

10bit

6. Input/Output impedance

75Ω

7. Return loss

Above 15dB (270MHz)

(3) DECODER Input Module (optional)

- DE-801 NTSC 3line comb decoder module

1. Input/Output Terminal

BNC 3-input (loop-through)

2. Input Signal Format

NTSC composite signal

3. Input Level

VS : 1.0Vp-p   positive
V : 0.7Vp-p   positive

4. Input Impedance

High-impedance bridge connection or 75Ω termination
(75Ω termination plugs are optional.)

5. Return Loss

46dB or more (10MHz)

2.3 Option

1. **DK-801**
   D1 digital component 2 input module
2. **DK-802N**
   D2/D3 4FSC digital composite 2 input module (NTSC)
3. **DK-8012**
   D1/D2/D3 4FSC digital compatible 2 input module (NTSC)
4. **DE-801**
   NTSC 3 line comb decoder module
5. **DE-802**
   PAL comb decoder module (Under development)
6. **DC-801**
   Dual component input module
   (For YPbPr/RGB input expansion)
7. **SRC-301A**
   Serial remote controller
8. **RCT-20A**
   Infrared remote controller
9. **EX-801**
   Extender board for adjustment
10. **ASP-80**
    Auto setup probe (Under development)
10. **ASP-15**
    Auto setup probe (Under development)
11. **RS-1420S**
    14-type rack mount adapter
12. **RS-2020S**
    20-type plug mount adapter

2.4 External Appearance

2.4.1 TM14-80RH External Appearance

TM14-80RH
External Appearance

2.4.2 TM20-80RH/TM20-90RH External Appearance
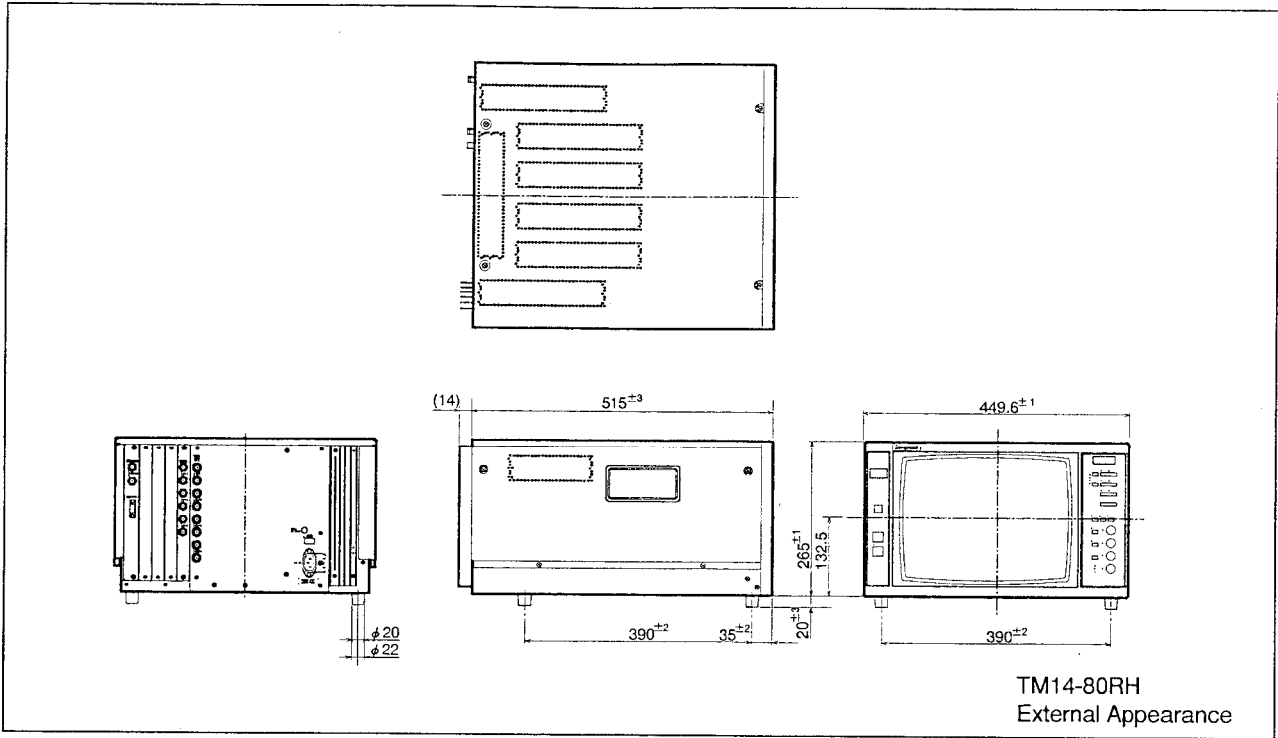
TM20-80RH
TM20-90RH
External Appearance
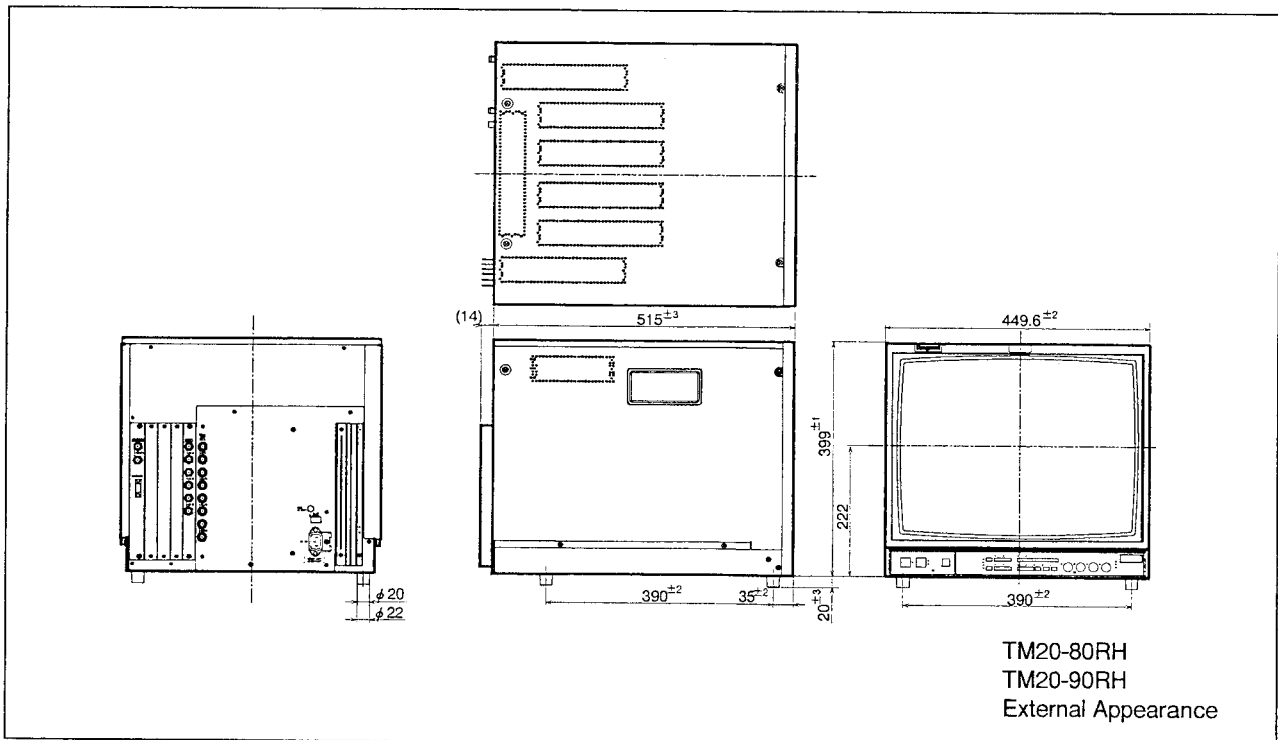
3. CONNECTION

⚠ CAUTION
For safety, turn off power before connection.

3.1 Connection with External Equipment

(1) Normal Module (MPU,VIDEO PROCESS)

① MPU module
②~⑤ Option module
⑥ VIDEO PROCESS module

YPbPr/RGB A channel input

Input here an RGB signal or YPbPr srgnal
Input foamats
• 525i/59.94
• 625i/50

Switch RGB/YPbPr at the MENU 1-4 item

If not adopting the loop through connection method,
connect the terminated plug

2-channel input can be performed by mounting
the optional DC-801

EXT SYNC signal input

If inputting the RGB/YPbPr signal or component signal by
external sync, input the external sync signal here.
If not adopting the loop through connection method,
connect the terminated plug

PARALLEL REMOTE signal input

Connect the remote connector provided here.
For details on pin connection, refer to 3.2.

SERIAL REMOTE signal input

Connect the BNC cable from the serial remote controller SRC-301A here.
By adopting the loop through connection method, up to 99 monitors can be
controlled individually or together.
If not adopting the loop through connection method, connect the terminated plug.
Set the monitor ID number at the MENU screen.

(2) SD-SDI INPUT Module

SD-SDI INPUT Module (optional)

There are three types of SD-SDI modules. The display differs according to the module.

| SDI 4:2:2 | D1 digital component module(DK-801) |

| SDI 4FscN | D2/D3 NTSC digital composite module (DK-802N) |

| SDI 4:2:2 4FscN | D1/D2/D3 digital module (DK-8012) |

SD-SDI A/B Input

• Input the SD-SDI signal here according to the following module.
  ①DK-801 : 4:2:2 serial digital component signal
  ②DK-802N: NTSC serial digital composite signal
  ③DK-8012 : Correspondence with both ① and ② signals (format is automatically detected)

SD-SDI A Output

• The SD-SDI signal input to A-ch is output from here.

SD-SDI B (MONITOR) Output

• The SD-SDI signal input to B-ch is output from here.
• Setting of the connector in this module enables signal whose channel is selected to be output from here.

<Setting Method>

NORMAL(at shipping)

EL102 EL101

MONITOR OUT

EL102 EL101

(3) NTSC 3 LINE Decoder Module(DE-801)

NTSC 3 LINE Decoder Module (optional)

NTSC Analog Composite Input

• The NTSC analog composite signal is input here.
• If not adopting the loop through connection method, connect the terminated plug.
• When using in the external sync mode, input the external sync signal into the (1)SYNC input.

(4) DUAL COMPONENT Module(DC-801)

DUAL COMPONENT Module (optional)

YPbPr/RGB B Channel Input

- Input the RGB signal or YPbPr signal here.

- Input formats
  ①525i/59.94
  ②625i/50
- The signal format needs to be set at the MENU 1-2. SDTV item.

- Switch RGB/YPbPr at the MENU 1 item.

- If not adopting the loop through connection method, connect the terminated plug.

- When using in the external sync mode, input the external sync signal into the (1)SYNC input.

3.2 Parallel Remote Connection

(1) Pin Function

[Rear View of Monitor]

PARALLEL

[Wiring of Remote Connector]

GND	1
CH-B ON	2
CH-C ON	3
G TALLY ON	4
RGB/YPbPr ON	5
SD-SDI ON	6
MONO ON	7
RGB ON	8
EXT-SYNC ON	9
16:9 ON	10
N.C	11
MARKER ON	12
SHADOW ON	13
R TALLY ON	14
N.C	15

Pin Function

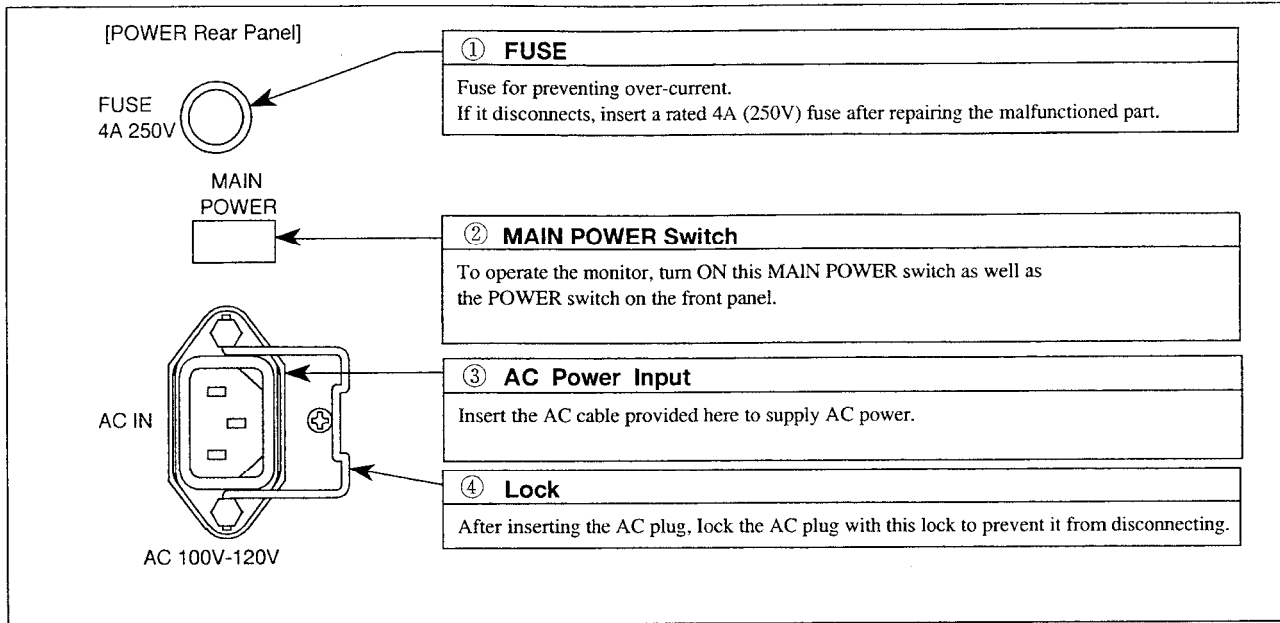| Pin No.	Name	Function
1	GND	Connecting remote terminals to this pin enables ON control.
2	CH-B ON	Connect to Pin 1 to switch the selected input to the B channel. •When both pins 2 and 3 are OPEN, the A channel will be selected.
3	CH-C ON	Connect to Pin 1 to switch the selected input to the C channel. •When both pins 2 and 3 are OPEN, the A channel will be selected.
4	G TALLY ON	Connect to Pin 1 to set G TALLY to ON.
5	RGB/YPbPr ON	Connect to Pin 1 to select the RGB/YPbPr input. Use together with Pin 2 to switch between channels A and B.
6	SD-SDI ON	Connect to Pin 1 to select the SD-SDI input. Use together with Pin 2 to switch between channels A and B.
7	MONO ON	Connect to Pin 1 to switch the COLOR/MONO setting to MONO.
8	RGB ON	Connect to Pin 1 to switch the RGB/YPbPr setting to RGB.
9	EXT-SYNC ON	Connect to Pin 1 to switch the analog input sync to external sync (EXT SYNC).
10	16:9 ON	Connect to Pin 1 to switch the SDTV signal aspect (4:3/16:9) setting to 16:9.
11	N.C	Empty pin.
12	MARKER ON	Connect to Pin 1 to set 4:3 MARKER to ON.
13	SHADOW ON	Connect to Pin 1 to set SHADOW to ON.
14	R TALLY ON	Connect to Pin 1 to set R TALLY to ON.
15	N.C	Empty pin.

(2) Connectors used (Standard accessories)

D-sub 15-pin(male) mini type

3.3 Power supply

[POWER Rear Panel]

FUSE
4A 250V

MAIN
POWER

AC IN

AC 100V-120V

① FUSE

Fuse for preventing over-current.
If it disconnects, insert a rated 4A (250V) fuse after repairing the malfunctioned part.

② MAIN POWER Switch

To operate the monitor, turn ON this MAIN POWER switch as well as
the POWER switch on the front panel.

③ AC Power Input

Insert the AC cable provided here to supply AC power.

④ Lock

After inserting the AC plug, lock the AC plug with this lock to prevent it from disconnecting.

3.4 Names and Functions of Front Left Panel Parts

[TR14-80RH Front Left Panel]

WARNING
DEGAUSS
O POWER

① Infrared sensor

Infrared sensor of the optional wireless remote controller RCT-20A.

② NO BURST LED

LED which operates only when the composite signal input is selected.
If the selected composite signal has no burst (black and white signal), or if the color killer
circuit is operating, the LED lights up.

③ OVER LOAD LED

This LED lights up when the ABL circuit operates (when the luminance is higher than necessary).
Using the monitor is a way which causes this LED to light up continuously for a long time will
deteriorate the CRT. Therefore use the monitor with the luminance lowered.

④ DEGAUSS switch

When the power is turned ON, CRT demagnetization will be performed automatically.
This switch allows demagnetization to be performed at one-touch.
As pressing this switch continuously has no effect, release and press again 2 to 3 minutes later.

⑤ POWER switch, LED

Switch for turning the monitor power ON/OFF.
Always turn ON the MAIN POWER switch on the rear panel when starting the monitor.
Normally turn ON/OFF using this switch.

[TR20-80/TR20-90RH Front Left Panel]

⑤ POWER switch, LED
④ DEGAUSS switch
③ OVER LOAD LED
② NO BURST LED
① Infrared sensor

POWER   DEGAUSS   WARNING
OVER LOAD
NO BURST

4. DAILY ADJUSTMENT

4.1 Names and Functions of Front Panel Section

[TM20-80RH/TM20-90RH Front Panel]

1. INPUT SELECT Switch	8. DELAY Switch	15. MARKER Switch
2. DIGITAL Switch	9. FILE LED	16. COMB Switch
3. YPbPr/RGB Switch	10. CONTRAST Manual Control	17. TEST Switch
4. MONO (SPLIT) Switch	11. BRIGHTNESS Manual Control	18. 2nd SLOT Switch
5. APT Switch	12. CHROMA Manual Control	19. EXT SYNC LED
6. ASPECT Switch	13. HUE Manual Control	
7. SCAN Switch	14. SCREENS Switch	

[TM14-80RH Front Panel]
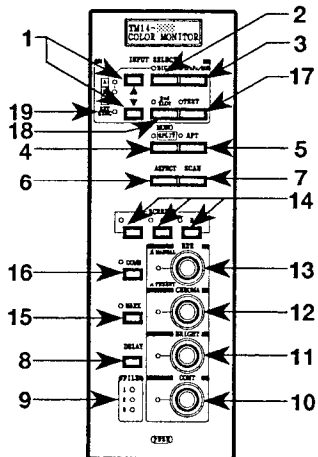
The following left-sided terms are used in this manual. They mean the right-sided signal formats.
- SDTV   : 525i, 625i
- SD-SDI : SDI for SDTV (525i, 625i)

1. INPUT SELECT switch
- Use the ▲ and ▼ switches to switch the input channels A, B, and C of each module.
- As the SYNC INT/EXT setting is memorized by channel (ch A, ch B, ch C, YPbPr/RGB ch A, YPbPr/RGB ch B) for analog inputs, it is switched automatically together with the channel.
- As the ASPECT 4:3/16:9 setting is memorized by channel (ch A,ch B, ch C, YPbPr/RGB ch A, YPbPr/RGB ch B, SD-SDI ch A,SD-SDI ch B), it is switched automatically together with the channel.

2. DIGITAL switch
- Set to ON when selecting the SD-SDI module.
- The switching method differs as follows according to the mounting state of the SDI module.
a) When only one SDI module is mounted.
  Set the DIGITAL switch to ON.
- As the ASPECT 4:3/16:9 setting is memorized by channel(SD-SDI ch A, SD-SDI ch B) for SD-SDI, it is switched automatically together when the DIGITAL switch is switched.

3. Y Pb Pr/RGB switch
- Set to ON when selecting the YPbPr/RGB input.
- Switch between YPbPr and RGB at the MENU 1-4 item.
- As the SYNC INT/EXT setting is memorized by channel (ch A, ch B) for YPbPr/RGB, it is switched automatically together with the YPbPr/RGB switch.
- As the ASPECT 4:3/16:9 setting is memorized by channel (YPbPr/RGB ch A, YPbPr/RGB ch B), it is switched automatically together when the DIGITAL switch is switched.

4. MONO (SPLIT) switch
- Set the MONO switch to ON when the color signal is in the black/white state.
- When the MONO switch is ON, turn ON the FORCED switch in the drawer panel to set the wide band MONO state.
  [Wide Band MONO]
  When the analog/digital NTSC composite signal is selected, the luminance signal will be subjected to either the COMB or TRAP filter processing in the normal MONO mode.
  In the case of wide band MONO, the luminance signal will have full flat frequency response not subjected to either filter processing.
- When the MONO switch is pressed for 2 to 3 seconds, the split screen (upper half of the screen is color, while the lower half is black/white) mode will be set.

← Color picture
← B/W picture
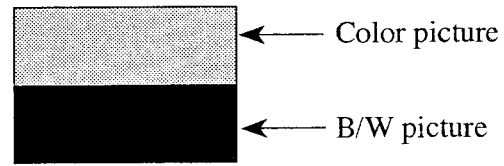
5. APT switch
- Turn ON the APT switch when correcting aperture.
- The aperture function does not function for the YPbPr/RGB input composite signal and SD-SDI D1 format signal.

6. ASPECT switch
- Switch the SDTV format between 4:3 and 16:9 using the ASPECT switch.
- The 4:3/16:9 state is individually set to all input channels for SDTV. This switch need not be set each time the input channel and signal format are switched.
  The ASPECT settings are memorized in the following seven input channels.
      Analog composite inputs ch/A/B/C
   YPbPr/RGB inputs ch/A/B
      SD-SDI inputs ch/A/B
  For example, by setting the A channel to 4:3 and B channel to 16:9 once, the ASPECT will be switched automatically each time the A/B channel is switched.

7. SCAN switch
- Use the SCAN switch to switch between normal SCAN and under SCAN.

8. DELAY switch
- By pressing this switch, the states of the horizontal and vertical plug in period states can be observed as shown in the following figure.

DELAY
a) H. DELAY   b) V. DELAY
c) H&V DELAY
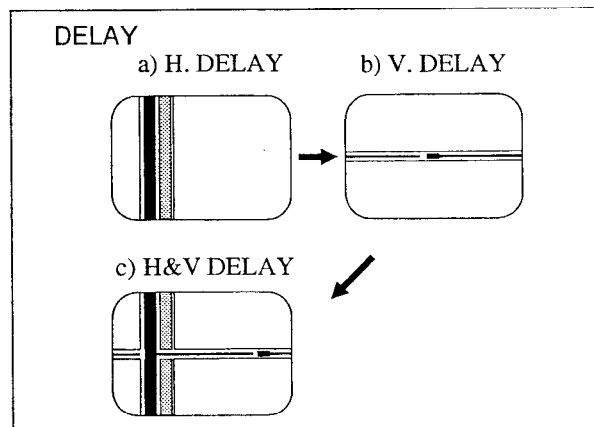
9. FILE LED
- Pressing the FILE 1 to FILE 3 switches in the pull-out panel switches FILE.
  The state is indicated by the lighting of the LED here.
  The REFERENCE state is when all the FILES are OFF.

10. CONTRAST Manual Control

- This control serves as a CONTRAST MANUAL/PRESET data selection switch as well as a manual data variable control. The control pops out and is switched to the MANUAL state with each press (the LED lights).
- By rotating the control in this state, the manual data can be varied.

11. BRIGHTNESS manual control

- This control serves as a BRIGHTNESS MANUAL/PRESET data selection switch as well as a manual data variable control. The control pops out and is switched to the MANUAL state with each press (the LED lights).
- By rotating the control in this state, the manual data can be varied.

12. CHROMA manual control

- This control serves as a PRESET data selection switch, and manual data variable control. The control pops out and is switched to the MANUAL state with each press (the LED lights).
- By rotating the control in this state, the manual data can be varied.

13. HUE manual control

- This control serves as a MANUAL/PRESET data selection switch as well as a manual data variable control. The control pops out and is switched to the MANUAL state with each press (the LED lights).
- By rotating the control in this state, the manual data can be varied.
- HUE operates only for the analog/digital NTSC composite signal.

14. SCREENS switch

- When displaying the R,G,B SCREEN color displays, turn ON the respective SCREENS switches for R,G, and B. When all the switches are ON, all the LEDs will be OFF.
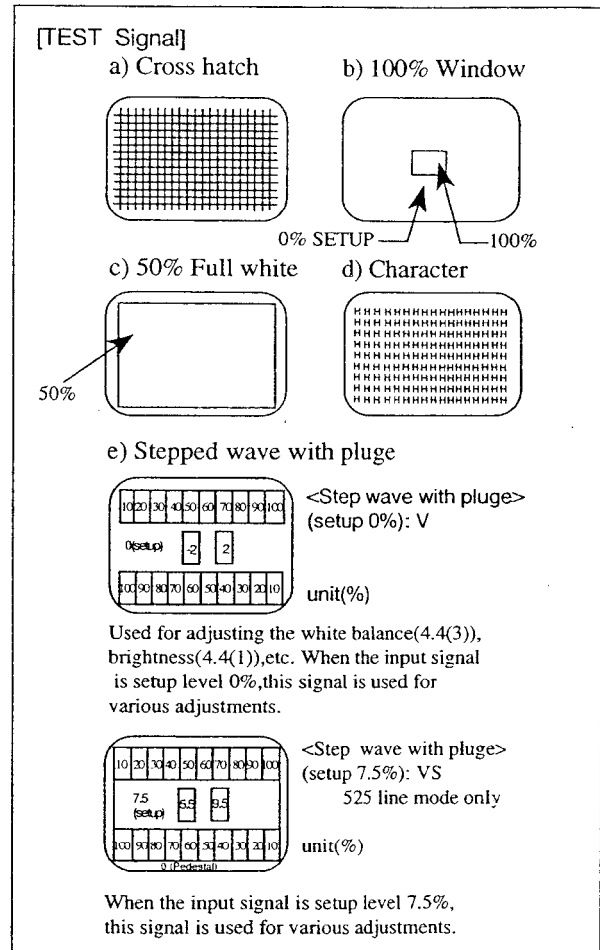
15. MARKER switch

- Turn ON the MARKER switch to display the various markers.
- The markers are switched in the order shown in [Fig.Markers] by pressing this switch continuously. Finally set it to OFF. By pressing it for 2 to 3 seconds before turning it OFF, it can be turned OFF.
- This switch also functions as the 4:3 shadow switch. The three shadow functions shown in [Fig.Markers (12), (13) and (14)] are available.
- It can not shadow in analogue component/RGB input.

16. COMB switch

- To operate the 3-line comb filter circuit, turn ON the COMB switch. To operate the trap circuit, turn it OFF.
- The 3-line comb filter circuit and trap filter circuit are mounted in the DE-801.
  They operate only for the analog/digital NTSC composite signal.

17. TEST switch

- Turn ON to switch to the internal TEST signal.
- The following standard TEST signal formats are provided. Switch the format at the MENU 1-5 item.
- As the ASPECT 4:3/16:9 setting is memorized when the TEST signal is SDTV, it is switched automatically together when the TEST switch is switched.
- Pressing this switch continuously outputs the following five signals.

[TEST Signal]
a) Cross hatch   b) 100% Window

0% SETUP ———/   \———100%
c) 50% Full white   d) Character

50%

e) Stepped wave with pluge

<Step wave with pluge>
(setup 0%): V

unit(%)

Used for adjusting the white balance(4.4(3)), brightness(4.4(1)),etc. When the input signal is setup level 0%,this signal is used for various adjustments.

<Step wave with pluge>
(setup 7.5%): VS
525 line mode only

unit(%)

When the input signal is setup level 7.5%, this signal is used for various adjustments.
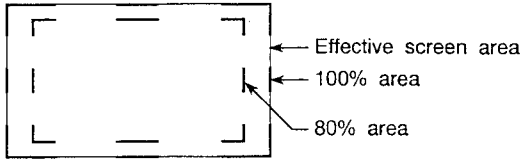
18. 2nd SLOT switch

- When there are two decoder modules (example: DE-801 + DE-802), switch the second slot using the 2nd SLOT switch.
For decoder module:
  The DE-802 is assigned to the 2nd SLOT.
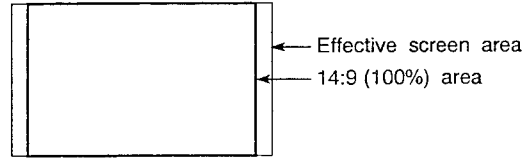
19. EXT SYNC LED

- Switch SYNC INT/EXT using the SYNC switch in the pull-out panel. This LED indicates the state.
- Switching is performed using the EXT SYNC switch in the drawer panel.
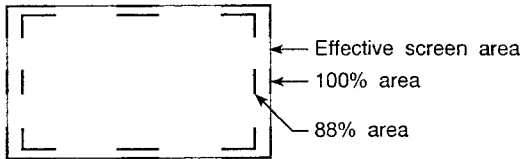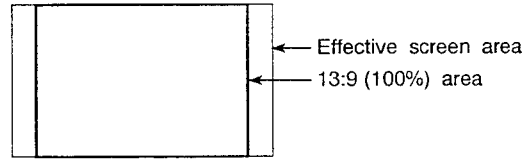
[Markers]

(1) 80% marker

— Effective screen area
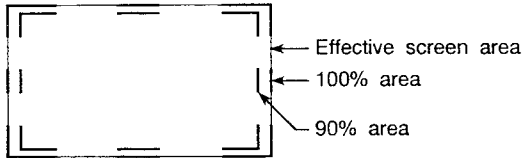— 100% area
— 80% area

(2) 88% marker

— Effective screen area
— 100% area
— 88% area

(3) 90% marker

— Effective screen area
— 100% area
— 90% area

(4) 93% marker

— Effective screen area
— 100% area
— 93% area

(5) 5-partition cross hatch

— Effective screen area

(6) 10-partition cross hatch

— Effective screen area

(7) Cross marker

— Effective screen area

(8) 14:9 (100%) marker

— Effective screen area
— 14:9 (100%) area

(9) 13:9 (100%) marker

— Effective screen area
— 13:9 (100%) area

(10) 4:3 marker

— Effective screen area
— 4:3 marker
4:3 area

(11) 4:3 marker + 80% (4:3)

— Effective screen area
— 4:3 marker
— 80% (4:3) area
4:3 area
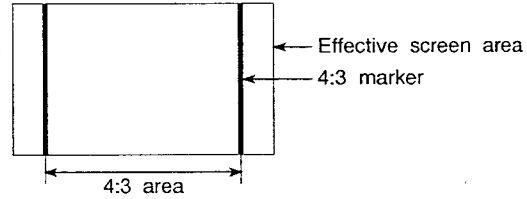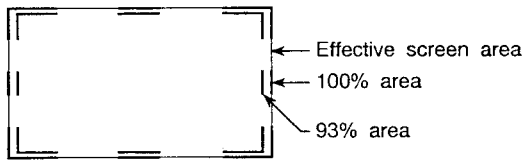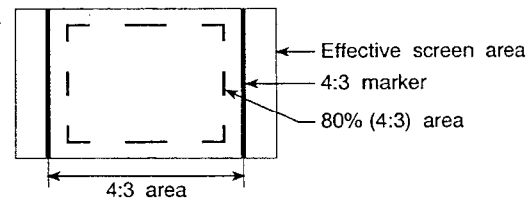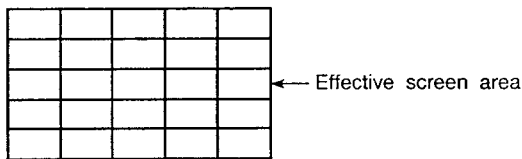
(12) 4:3 marker + shadow

— Effective screen area
— 4:3 marker
— Shadows
4:3 area
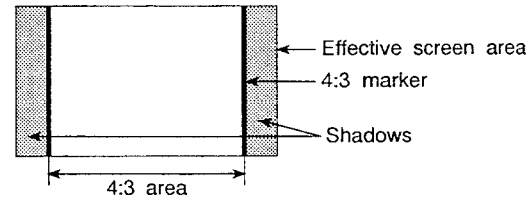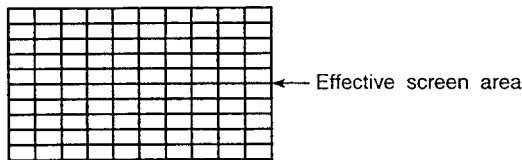
(13) 4:3 marker + 80% (4:3) + shadow

— Effective screen area
— 4:3 marker
— 80% (4:3) area
— Shadows
4:3 area

(14) 4:3 shadow

— Effective screen area
— Shadows
4:3 area
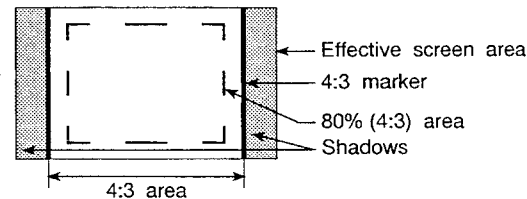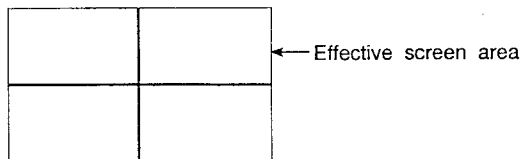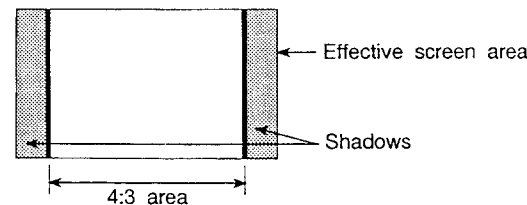
4.2   Names and Functions of Drawer Panel Parts

[TM20-80RH/TM20-90RH]
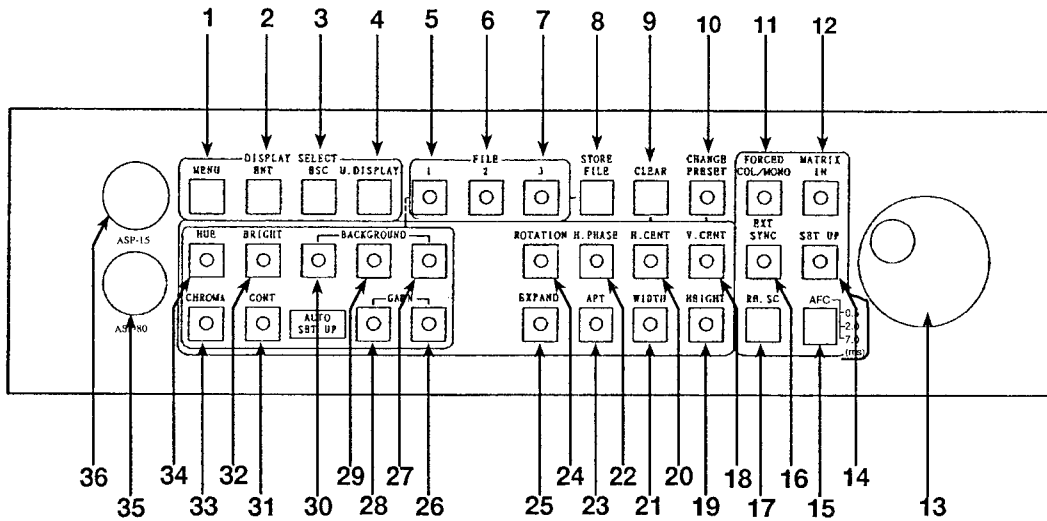
[TM14-80RH]

1. MENU switch
2. ENT switch
3. ESC switch
4. U.DISPLAY switch
5. FILE1 switch
6. FILE2 switch
7. FILE3 switch
8. STORE FILE switch
9. CLEAR switch
10.CHANGE PRESET switch
11.FORCED COL/MONO switch
12.MATRIX IN switch
13.Rotary encoder
14.SET UP switch
15.AFC switch
16.EXT SYNC switch
17.RE.SC switch
18.V.CENT switch
19.HEIGHT switch
20.H.CENT switch
21.WIDTH switch
22.H.PHASE switch
23.APT PRESET switch
24.ROTATION switch
25.EXPAND switch
26.B.GAIN switch
27.B.BACKGROUND switch
28.G.GAIN switch
29.G.BACKGROUND switch
30.R.BACKGROUND switch

31.CONT PRESET switch
32.BRIGHT PRESET switch
33.CHROMA PRESET switch
34.HUE PRESET switch
35.ASP-80 input
36.ASP-15 input

1. MENU switch

Switch to recall various menus.

2. ENT switch

Switch to execute MENU operations.

3. ESC switch

Switch to return from MENU operations.

4. U.DISPLAY switch

Not available in this version.

5. FILE 1 switch

Set this switch to ON to output or store data in FILE1.

6. FILE 2 switch

Set this switch to ON to output or store data in FILE2.

7. FILE 3 switch

Set this switch to ON to output or store data in FILE3.

8. STORE FILE switch

- Switch for copying the current color temperature data to FILEs 1 to 3.
- FILE1 to FILE3 blink when the switch is pressed.
  Press the FILE switch corresponding to the file to be copied. The selected FILE switch lights up and the file is copied.
- The PRESET data of the FILE copied consists of the following nine types of data enclosed in a white frame on the panel. HUE, CHROMA, BRIGHT, CONT, R/G/B.BKG, G/B.GAIN

9. CLEAR switch

- While changing any preset data (before stored it into memory), press this switch to return to the data had before changed it and clear the new change data.
- This switch enables to temporarily change preset data without changing the data stored in memory.

10. CHANGE PRESET switch

- Press this switch to change or memorize the PRESET data.
- When pressed, all the PRESET LEDs in the frame start to blink.
  Select the blinking PRESET switch. When the LED stops blinking and lights up, the data can be changed using the rotary encoder.
  Press another PRESET switch to change another data.
- Each PRESET data has the following individual data.

PRESET	FILE	FORMAT	SCAN	DATA No.
HUE	O	X	X	4
CHROMA	O	X	X	4
BRIGHT	O	X	X	4
CONT	O	X	X	4
G,B,GAIN	O	X	X	4
R,G,B BKG	O	X	X	4
HEIGHT	X	O	O	12(14)
WIDTH	X	O	O	12(14)
H. CENT	X	O	X	4(5)
V. CENT	X	O	X	4(5)
H. PHASE	X	O	X	4(5)
TRAPEZOID	X	O	X	4(5)
SIDE PIN	X	O	X	4(5)
RATATION	X	X	X	1
APT	X	X	X	1

FILE : REFERENCE, FILE 1, FILE 2, FILE 3
FORMAT : 525i, 625i(Type 1)
SCAN : 4:3 normal,4:3 under,16:9 normal,16:9 under
( ) : No. of data for type 1

In other words, there is only one type of ROTATION and APT data respectively, but there are five types of FORMAT data for HEIGHT and WIDTH, 2 types of SCAN data for SDTV consequently a total of 8 types (4×2). The refore when changing the PRESET data, do not switch the SCAN and ASPECT channels.

- The PRESET LED data does not blink nor light up in the following states.

a) **APT PRESET** switch

When the APT switch on the front panel is OFF.
→ Set the APT switch to ON when changing the APT PRESET data.

b) **HUE PRESET** switch

When the HUE MANUAL switch is ON.
→ Set the HUE PRESET switch to PRESET.
When signals other than the NTSC composite signal is selected.

c) **CHROMA PRESET** switch

When the HUE MANUAL switch is ON.
→ Set the CHROMA PRESET switch to PRESET.

d) **BRIGHT PRESET** switch

When the BRIGHT MANUAL switch is ON.
→ Set the BRIGHT PRESET switch to PRESET.

e) **CONT PRESET** switch

When the CONT MANUAL switch is ON.
→ Set the CONT PRESET switch to PRESET.

11. FORCED COL/MONO switch

(Functions only when the NTSC decoder is mounted)

- The function of this switch differs as follows according to the state of the MONO switch on the front panel. This switch functions only when analog/digital composite signals are input.

| FORCED	MONO	Function
OFF	OFF	<AUTO COLOR> Switches the COLOR/MONO circuit operations of the decoder automatically according to whether burst is added to the composite signal.
ON	OFF	<FORCED COLOR> The color circuit is operated forcibly of whether burst is added to the composite signal.
OFF	ON	<NORMAL MONO> Means the normal MONO state. In the case of the composite signal, either the COMB or TRAP filter circuit operates according to the state of the COMB switch for composite signals.
ON	ON	<WIDE BAND MONO> Both the COMB and TRAP filter circuits do not operate in the above MONO state, and the frequency characteristics of the luminance signal are in the full-flat state.

12. MATRIX IN switch

- Switch for changing the matrix ratio of the luminance signal and color difference signal.
- The regular matrix is used when the LED is ON,the home television matrix is used.

13. Rotary encoder

Used for changing the PRESET data in the pull-out panel and selecting the MENU mode.

14. SET UP switch

- For switching between OPERATE and SET UP.
- When set to the OPERATE side (LED is OFF), ordinary operations are performed. When set to the SET UP side (LED is ON), the vertical deflection is reduced, facilitating adjustments of the white balance (R/G/B BACKGROUND).

Beam Feedback line

SET UP line for reducing vertical deflection
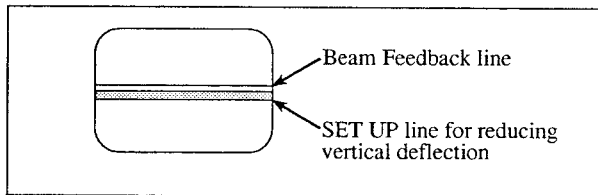
15. AFC switch

This is the AFC 0.5/2/7 ms switch. Pressing this switch switches the time constant to the next one in the sequence 0.5, 2, 7 ms (shown on screen).
Here is how to select the best time constant.

- 0.5 msec
Select this time constant when simple VTR or other sync signals are unstable.
- 2 msec
Select this time constant for ordinary usage.
- 7 msec
Select this time constant when the camera line out, broadcast VTR or other sync signal is stable.

16. EXT SYNC switch

- Switch for switching between SYNC INT/EXT. Set this switch to "ON" when externally synchronizing the signal selected.
- As this switch is memorized in each input channel, it will be switched automatically after it has been set once.
It however does not function when the DIGITAL input channels are selected.

17. RE. SC switch

(Functions only when the NTSC decoder is mounted)

- Use the RESIDUAL SUBCARRIER ON/OFF switch to check if the subcarrier is leaking to the signal input.
Press this switch while observing the screen.
If the phase (HUE) changes, it means that the subcarrier is leaking into the feedback line area.
Releasing the switch automatically sets it to OFF.

18. V.CENT switch

- Switch for adjusting the vertical position of the active screen for each signal input format.
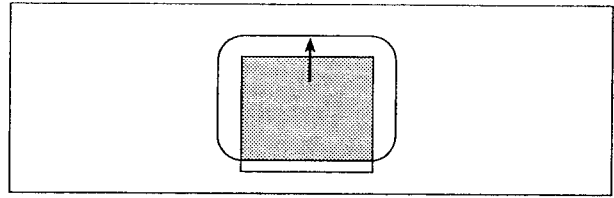
19. HEIGHT switch

Switch for adjusting the height of the active screen by signal input format, scan size, and aspect.
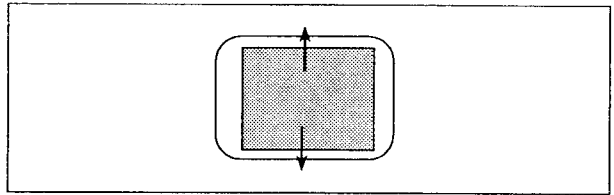
20. H.CENT switch

- Switch for adjusting the horizontal position of the active screen for each signal input format.
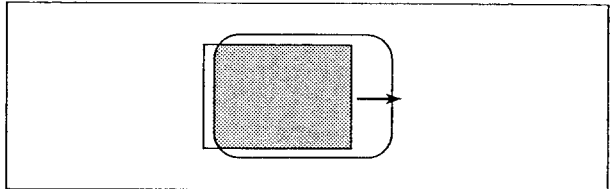
21. WIDTH switch

- Switch for adjusting the width of the active screen by signal input format, scan size, and aspect.
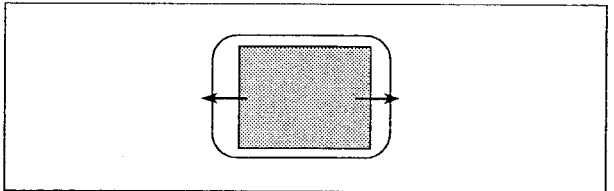
22. H. PHASE switch

- Switch for adjusting the horizontal direction phase of images by signal input format.
- Display the 100% marker and adjust so that the image fits inside the 100% frame.
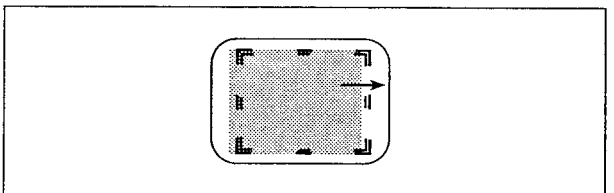
23. APT PRESET switch

- Switch for adjusting the aperture. This switch will not function unless the APT switch on the front panel is set to ON (LED lights up) beforehand.

24. ROTATION switch

- Switch for correcting deviation of PURITY due to terrestrial magnetism effects when the monitor is rotated.
- Set the screen to one color using the SCREEN switch and adjust so that the entire screen becomes one even color.
  In uses where the monitor is rotated constantly such as in a OB van, set the EL bit connector (EL561) on the DEF board to OFF to inactivate the ROTATION switch.
- This connector is set to ON at shipment.

25. EXPAND switch

Switch for adjusting the SIDE PIN, TRAPEZOID.
Pressing it once allows adjustments of TRAPEZOID.
Pressing it another time allows adjustments of SIDE PIN.
Each press of the switch switches between the two.
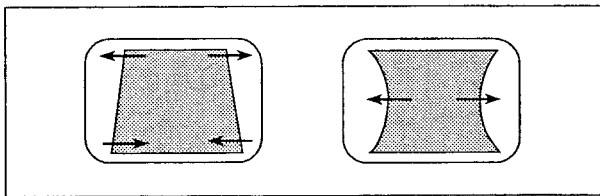
26. B.GAIN switch

- Switch for adjusting the high light white balance (blue components).
- For details of the adjustment, refer to Fig.4-4-3.

27. B.BACKGROUND switch

- Switch for adjusting the low light white balance (blue components).
- For details of the adjustment, refer to Fig.4-4-3.

28. G.GAIN switch

- Switch for adjusting the high light white balance (green components).
- For details of the adjustment, refer to Fig.4-4-3.

29. G.BACKGROUND switch

- Switch for adjusting the low light white balance (green components).
- For details of the adjustment, refer to Fig.4-4-3.

30. R.BACKGROUND switch

- Switch for adjusting the low light white balance (red components).
- For details of the adjustment, refer to Fig.4-4-3.

31. CONT PRESET switch

- Switch for adjusting the CONTRAST PRESET data.
- For details of the adjustment, refer to Fig.4-4-2.

32. BRIGHT PRESET switch

- Switch for adjusting the BRIGHTNESS PRESET data.
- This circuit does not operate in the DELAY state.
- For details of the adjustment, refer to Fig.4-4-1.

33. CHROMA PRESET switch

- Switch for adjusting the CHROMA PRESET data.
- For details of the adjustment, refer to Fig.4-4-4.

34. HUE PRESET switch

- Switch for adjusting the HUE PRESET data.
- This circuit operates only when the NTSC decoder module DE-801 is mounted and the analog/digital NTSC composite signal input is selected.
- For details of the adjustment, refer to Fig.4-4-4.

35. ASP-80 input

- Input connector for connecting the optional auto setup probe ASP-80 (under development).

36. ASP-15 input

- Input connector for connecting the optional auto setup probe ASP-15.

4.3 Storage and Change Data in the Memory

(1) Storage and Change of PRESET Data

<Example 1> Changing the H. PHASE, H. CENT, V. CENT, WIDTH, HEIGHT, TRAPEZOID, SIDE PIN.

1		Set the SCAN size to the UNDER SCAN state using the SCAN switch, and display the 10-divided cross hatch switch using the MARKER switch.
2		Press the CHANGE PRESET switch. Each PRESET switch starts to blink.
3		<Changing the screen phase> Set the H.PHASE switch to ON. Change the phase using the encoder so that the screen fits inside the marker frame.
4		<Changing the centering> Set the H.CENT switch to ON, and move the horizontal position of the screen to the center using the encoder. Use the V.CENT switch for vertical direction.
5		<Changing the size> Set the WIDTH switch to ON, and change the amplitude size of the screen using the encoder. Use the HEIGHT switch for changing the size of the screen height.
6		<Changing the trapezoid distortion> Set the EXPAND switch to ON and change the trapezoid distortion (TRAPEZOID) using the encoder.
7		<Changing the side pin> Set the EXPAND switch to ON again. The SIDE PIN mode is set. Change the side pin using the encoder.
8		<Storing data> After changing the data, press the CHANGE PRESET switch, and store the changed data.
9		<Clearing data> Before storing the above data, pressing the CLEAR switch clears all data changed until now, and returns to the before data.

⚠ CAUTION

•The HEIGHT, WIDTH, H.PHASE, H.CENT, V.CENT, TRAPEZOID, SIDE PIN data are stored as separate data for each signal format.
•For HEIGHT and WIDTH, the data is stored by scan size and aspect.
•Performing the following switching while changing a data clears the data changed until now.
•To change to a different format or scan size, store the data first before switching.
   [INPUT SELECT switch] [SCAN switch] [ASPECT switch]

<Example 2> Changing APT

1		Set the APT switch to ON.
2		Press the CHANGE PRESET switch. Each PRESET switch starts to blink.
3		Set the APT PRESET switch to ON, and change the aperture correction amount.
4		<Storing data> After changing the data, press the CHANGE PRESET switch to store the changed data. Pressing the CLEAR switch before storing the data returns the before data.

(2) Changing and storing the FILE

<Example 3>When copying the REFERENCE (FILE off state) data to FILE 3 and changing the color temperature.

1		<Storing FILE> Press the STORE FILE switch. FILE 1 to FILE 3 blink.
2		Press the FILE 3 switch. The data of the current FILE is copied to FILE 3.
3		Press the CHANGE PRESET switch. Each PRESET switch starts to blink.
4		Set the R.BACKGROUND switch to ON and change the data using the encoder. Then press another PRESET switch and change the color temperature.
5		<Storing data> After changing the data, press the CHANGE PRESET switch to store the changed data.
6		<Clearing data> Before storing the above data, pressing the CLEAR switch clears all data changed until now, and returns to the before data.

4.4 Adjustment

> <Before beginning>
> • The following adjustments will be more precise the dimmer the monitoring environment.
> • Read "4.3. Storage and Change of PRESET Data" once thoroughly before beginning the following adjustments.
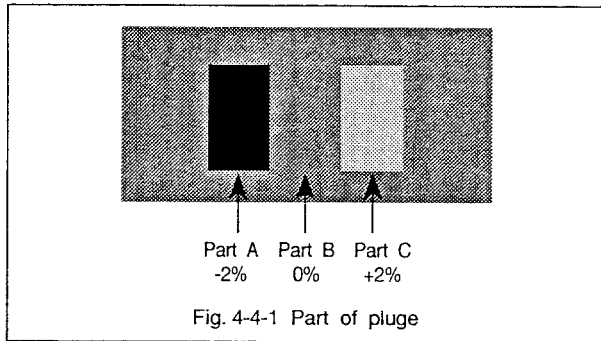
(1) Adjusting the brightness

a) BRIGHTNESS

BRIGHTNESS is a control for setting the appropriate black level. It must be adjusted according to the brightness of the environment in which the monitor is used so that the black level is not too high or low.

b) Adjusting procedure

① Input signal

Select the gray scale with pluge using the internal TEST signal.

Part A　Part B　Part C
-2%　　0%　　+2%

Fig. 4-4-1 Part of pluge

② Adjusting BRIGHTNESS

While taking note of the pluge portion (see figure above) at the center of the signal, decrease BRIGHTNESS gradually until the brightness of Part A (-2%) and Part B (0%) in the figure cannot be visually differentiated.
Also check that Part C (+2%) is illuminated slightly.
If this cannot be confirmed, it means that the black level has been decreased excessively.
Raise BRIGHTNESS until Part C illuminates slightly.

(2) Adjusting the contrast

a) Contrast

At shipment, the contrast of the monitor is adjusted to the optimum state for monitoring images.

b) Precautions

Leaving the monitor in the bright state (where the OVER LOAD LED is lit) for a long period of time will shorten the life of the CRT.
Therefore adjust the PRESET value to one of the following values.

c) Adjusting procedure

① Input signal

Input the window signal (100%) as the input signal or select the Internal TEST signal (window signal).

② Measure the luminance value of the window using a measuring instrument which can measure the luminance value, and adjust the contrast to the following value.

> • TM14-80RH : 120nit(cd/m2), 35fL
> • TM20-80RH : 120nit(cd/m2), 35fL
> • TM20-90RH : 120nit(cd/m2), 35fL

(3) Adjusting the white balance

a) White balance

The monitor has four files to store white balance data.
The white balance can be adjusted using an analyzer or the optional ASP-15 (under development) for automatic adjustments.
If you are not used to color temperature adjustments, use the FILE 3 USER file.

b) Precautions

To stabilize the black level over a long period of time, this monitor adopts the beam feedback clamp method which detects beam currents to perform clamping.
Therefore one line (Part A in Fig. 4-4-2) is displayed on the CRT.
Consequently, if the BACK-GROUND is lowered excessively so that Part B in Fig. 4-4-2 becomes invisible, the line at Part A in Fig. 4-4-2 disappears, disabling the detection of the beam current, and only the images of the color reduced will disappear.
Pay careful attention when adjusting BACKGROUND.

c) Adjusting procedure 1 (Adjusting visually)

① Input signal

Input the color bar signal as the input signal or select the internal TEST signal (gray scale with pluge).

② Setting the file

Select the file whose white balance you want to change.
Adjust BRIGHTNESS and CONTRAST before adjusting the white balance.

③ Settings before adjusting BACKGROUND

Set the MONO switch on the front panel to ON for color bar signals and set the black/white screen.
Set the SET UP switch in the drawer panel to ON and set as follows.

Part A
Beam feedback line

Part B
SET UP line with vertical deflection shrunk

Fig. 4-4-2 SET UP on state

④ Initial adjustment of low light

• Set only the R.SCREEN switch to ON (red screen only), adjust the R. BACKGROUND data so that the red line at Part B in the figure illuminates slightly.

• Set only the G.SCREEN switch to ON (green screen only), adjust the G. BACKGROUND data so that the green line at Part B in the figure illuminates slightly.

- Set only the B.SCREEN switch to ON (blue screen only), adjust the B. BACKGROUND data so that the blue line at Part B in the figure illuminates slightly.
- If anyone of the above cannot be adjusted, move the SCREEN control on the flyback transformer of the H.V OUT board slightly, and adjust the BACKGROUND again.

⑤ Adjusting the high light portion

Return the SET UP and SCREEN switches to their original settings (OFF).

Pay attention to the high light portion of the step wave, and adjust the G/B.GAIN to the desired color temperature.

⑥ Adjusting the low light portion

Pay attention to the low light portion of the step wave, and adjust the R/G/B.BACKGROUND to the desired color temperature.

⑦ As the ⑤ and ⑥ adjustments interfere with each other, repeat them until the desired color temperature is acquired from low light to high light.

c) Adjusting procedure 2
(using the color analyzer)

To adjust the color temperature of the monitor using a commercially available color analyzer, adjust the GAIN and BACK GROUND of the monitor so that the chromaticity points (x, y) measured with the color analyzer become the following values.

CIE Chromaticity Points (x, y) in Respect to the Color Temperature.

Color temperature	X	Y
6500K	0.313	0.329
9300K	0.283	0.297

① Input signal

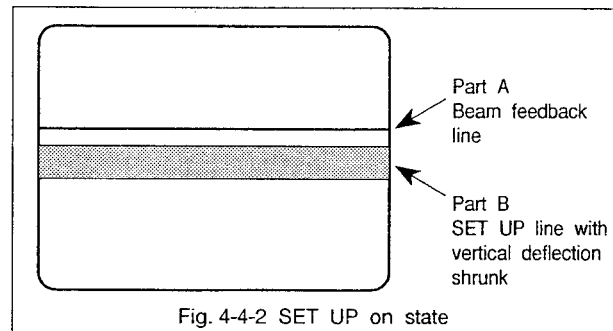Input the window signal as the input signal or select the internal TEST signal (window signal).

② Setting the file

Select the file whose white balance you want to change. Adjust BRIGHTNESS and CONTRAST before adjusting the white balance.

③ Adjusting R.BACKGROUND

To adjust the white balance based on red, set the R. BACKGROUND as follows.

- Set the SET UP switch in the pull-out panel to ON, and set the Fig. 4-4-2 state.
- Set only the R.SCREEN switch to ON (red screen only), adjust the R.BACKGROUND data so that the red line at Part B in the figure illuminates slightly.
- Return the SET UP and SCREEN switches to their originalsettings (OFF), and do not move R.BACKGROUND thereafter.

④ Setting CONTRAST MANUAL

Set CONTRAST to MANUAL, and touch the probe to the center of the window signal displayed on the screen. Preset the luminance using MANUAL beforehand so that the luminance becomes 5 nit (cd/m^2) or about 1.5 fL beforehand.

The MANUAL luminance set here changes when the white balance is displayed.

Therefore check it each time when adjusting the low light portion, and adjust it again when it deviates. However a deviation of about ±2 nit (±0.5 fL) is negligible.

⑤ Setting the chromaticity points (x, y) during highlight

Set contrast to PRESET, and set the chromaticity points (x, y) in the high light portion as follows using G, B GAIN.

- First adjust B. GAIN so that the chromaticity point x becomes the specified value.
- Next adjust G. GAIN so that the chromaticity point y becomes the specified value.
- Repeat adjusting the chromaticity points (x, y) until they settle to one specified value.

Adjusting the next low light portion causes the chromaticity point to deviate during high light. Therefore adjust the next low light portion after a value close to that specified has been obtained to a certain extent in the initial adjustment stage.

⑥ Setting the chromaticity points (x, y) during low light

Set CONTRAST to MANUAL, and set the chromaticity points (x, y) during low light as follows using G, B.BACKGROUND.

- First, adjust so that the chromaticity point x becomes the specified value using B.BACKGROUND.
- Next, adjust so that the chromaticity point y becomes the specified value using G.BACKGROUND.
- Repeat adjusting the chromaticity points (x, y) until they settle to one specified value.

Adjusting the next low light portion causes the color temperature to deviate during high light. Therefore adjust the next high light portion ⑤ after a value close to that specified has been obtained to a certain extent in the initial adjustment stage.

⑦ End adjustments when the chromaticity points of both the low light and high light portions settle at the specified values.

(4) Adjusting the color balance
a) Color balance

- For the component signal (YPbPr/RGB), adjust the color balance using CHROMA only.
- For NTSC composite signal, adjust the color balance using HUE/CHROMA.

b) Adjusting procedure (NTSC composite signal)

① Input signal

Input the SMPTE color bar signal or a NTSC 75% color bar signal close to it.
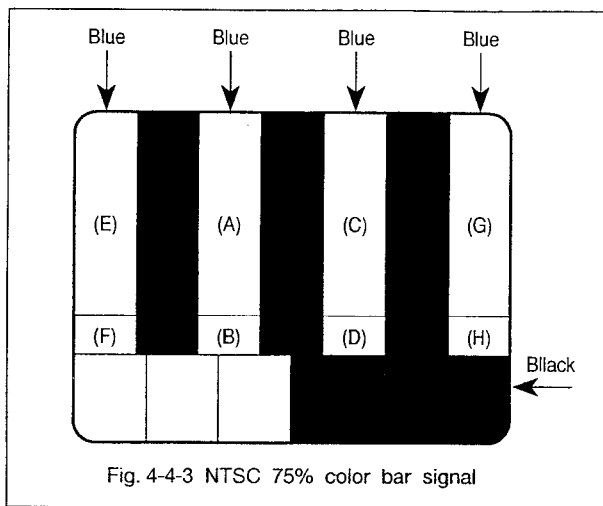
Fig. 4-4-3 NTSC 75% color bar signal

② Initial settings

Set the screen to the blue signal only state using the SCREEN switch.

As the luminance difference is difficult to judges if the screen is bright, dim the surrounding as much as possible, and decrease BRIGHTNESS (MANUAL state) until the blue signal is slightly visible for settings to be more accurate.

③ Adjusting HUE

Adjust HUE so that parts (A) to (D) in Fig. 4-4-3 become the same brightness.

If they do not become the same brightness, set to the optimum state, and adjust the next CHROMA.

④ Adjusting CHROMA

Adjust CHROMA so that parts (E) to (H) in Fig. 4-4-3 become the same brightness.

If they do not become the same brightness, set to the optimum state, and adjust the HUE as described at step 3.

⑤ Repeat adjustments ③ and ④ until (A) to (H) become the same brightness.

c) Adjusting procedure (PAL Composite signal)

① Input signal

Input 75% color bar signal as the video signal.

② Initial settings

Set the screen to the blue signal only state using the SCREEN switch.

As the luminance difference is difficult to judges if the screen is bright, dim the surrounding as much as possible, and decrease BRIGHTNESS (MANUAL state) until the blue signal is slightly visible for settings to be more accurate.

③ Adjusting CHROMA

Adjust CHROMA so that parts (A) to (D) in Fig. 4-4-4 become the same brightness.

If the input signal is 75% color bar signal ((A) is 100% white and parts of (B),(C),(D) are 75%), adjust CHROMA so that (B) and (C) become the same brightness.

d) Adjusting procedure (Component signal)

① Input signal

Input the 100% color bar signal to the YPbPr input.
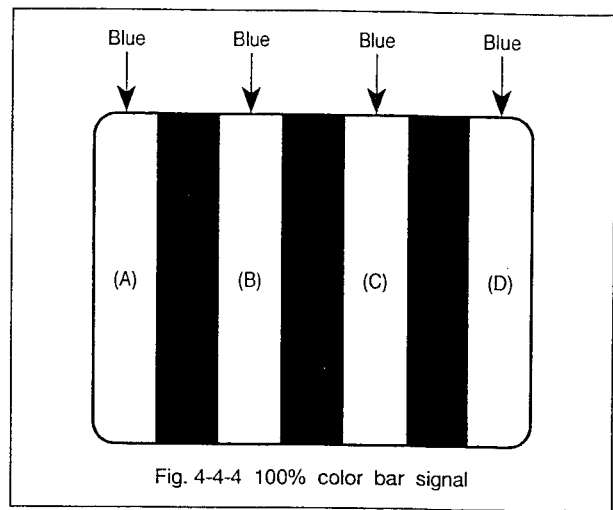
Fig. 4-4-4 100% color bar signal

② Initial settings

Set the screen to the blue signal only state using the SCREEN switch.

As the luminance difference is difficult to judges if the screen is bright, dim the surrounding as much as possible, and decrease BRIGHTNESS (MANUAL state) until the blue signal is slightly visible for settings to be more accurate.

③ Adjusting CHROMA

Adjust CHROMA so that (A) to (D) in Fig. 4-4-4 become the same brightness.

If the input signal is 75% color bar signal ((A) is 100% white and parts of (B),(C),(D) are 75%), adjust CHROMA so that (B) and (C) become the same brightness.

(5) Adjusting the focus

a) Focus

Fig. 4-4-5 Flyback transformer
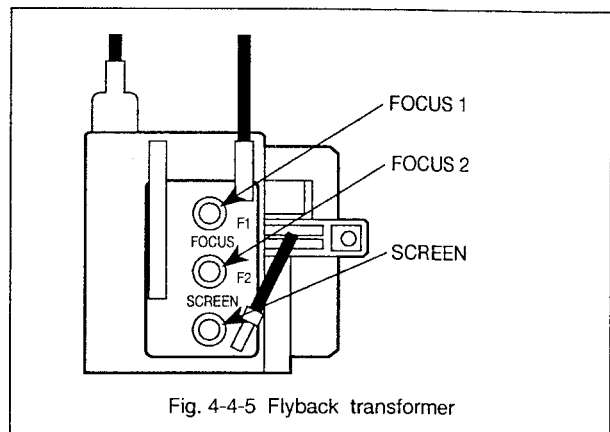
The TM20-80RH and TM20-90RH adopts the dynamic focus CRT and is thus able to adjust focus with both FOCUS 1 (dynamic focus) and FOCUS 2 (static focus).

b) Precautions

As the flyback transformer generates high voltage of 25KV to be supplied to the CRT, no one other than servicemen should touch it. During adjustments, be extremely careful not to touch parts other than the adjustment parts.

c) Adjusting procedure

① Before beginning

Turn OFF the POWER and remove only the top cover of the monitor.

Turn ON the power again and run it for about 20 minutes.

② Input signal

Select a fine signal which can display the character on the whole screen or the internal TEST signal (character signal).

③ Adjusting the focus

Adjust the focus at the center of the screen using FOCUS 2 in the figure. Adjust the focus of the corners using FOCUS 1. As FOCUS 1 and 2 affect each other, adjust the two focus controls alternately until the whole screen is optimized.

(6) Adjusting the rotation

a) Rotation

ROTATION is a control for correcting changes in the purity caused by terrestrial magnetism effects of the CRT which occur when the monitor is rotated.

Perform this adjustment when installing the monitor somewhere else.

b) Adjusting procedure

① Before beginning

Press the DEGAUSS switch and demagnetize the CRT.

② Input signal

Select an approximately 50% white signal with which the whole screen becomes white evenly or the internal TEST signal (50% full-flat).

③ Adjusting ROTATION

- Press the R.SCREEN and set the screen to red only.
- Adjust ROTATION to the optimum purity of the screen (evenly white).
- Repeat for green and blue.

(7) Adjusting the screen center

a) Screen center

Use the following three controls to adjust the screen to the center.

Different data can be set for the respective signal formats.

- H. PHASE

Control for adjusting the position of the image in respect to the starting position of the horizontal deflection of the CRT. Adjust so that the image and 100% marker phase match.

- H. CENT

Control for adjusting the horizontal deflection position in respect to the escutcheon (CRT frame) frame. Adjust the horizontal direction so that the marker comes to the center of the whole screen.

- V. CENT

Control for adjusting the vertical deflection position in respect to the escutcheon (CRT frame) frame.

Adjust the vertical direction so that the marker comes to the center of the whole screen.

b) Precautions

For the H.PHASE and H/V.CENT controls, as different data is stored for each signal format, do not perform the following while changing data.

• Switch channels
• Change the format of input signals
• Switch SCAN
• Switch ASPECT

Performing any one of the above switchings will call data with a different format as that currently set and clear the data currently being changed. Therefore be careful not to execute these switchings while changing H. PHASE, H/V. CENT data until the data has been stored.

c) Adjusting procedure

Perform the following adjustment once for each signal format.

① Input signal

First, check that the MENU 1 format is set properly to the signal format to be changed to. For details on setting format, refer to section 4.5 (3) of this manual.

For the input signal, (monoscope signal, etc.) which can display the video components on the whole active screen area.

② Adjusting H.CENT, V.CENT

- Set the size to NORMAL SCAN using the SCAN switch.
- Set the MARKER switch to ON, and display the 10-divided cross hatch.
- Adjust the horizontal direction of the marker using H.CENT and vertical direction using V.CENT so that the top, bottom, left, and right sides become the same.
- Before switching to UNDER SCAN using the SCAN switch in the following adjustment ③, press the CHANGE PRESET switch to store the data.

< NG >   < OK >
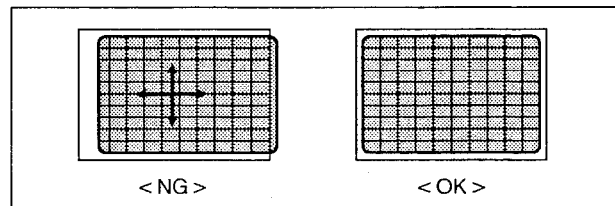
③ Adjusting H.PHASE

- Set to UNDER SCAN using the SCAN switch, and display the 100% marker using the MARKER switch.
- Set the H.PHASE switch to ON, and adjust the phase so that the frame of the image matches the 100% marker as shown in the figure below.
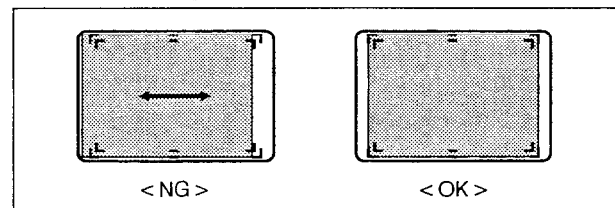
< NG >   < OK >

④ Before performing the adjustments and changes in ② and ③ for a different format, store the data changed first and then switch the signal to a different format.

(8) Adjusting the screen distortion

a) Screen distortion

The SIDE PIN and TRAPEZOID controls are provided for adjusting screen distortion.

Pressing the EXPAND switches and executes these adjustments alternately.

Like the adjustment in section (7), these two preset data can be set differently for each signal format.

b) Precautions

Like section (7), for the SIDE PIN and TRAPEZOID controls, as different data is stored for each signal format, do not perform the following while changing data.

> • Switch channels
> • Change the format of input signals
> • Switch SCAN
> • Switch ASPECT

Performing any one of the above switchings will call data with a different format as that currently set and clear the data currently being changed. Therefore be careful not to execute these switchings while changing the SIDE PIN and TRAPEZOID data until the data has been stored.

c) Adjusting procedure

① Input signal

First, check that the MENU 1 format is set properly to the signal format to be changed to. For details on setting format, refer to section 4.5(3) of this manual.

For the input signal, input a crosshatch signal or select the Internal TEST signal (crosshatch).

② Adjusting trapezoid

Set the EXPAND switch to ON. The TRAPEZOID adjustment mode is set. Adjust the trapezoid as shown in the figure below.
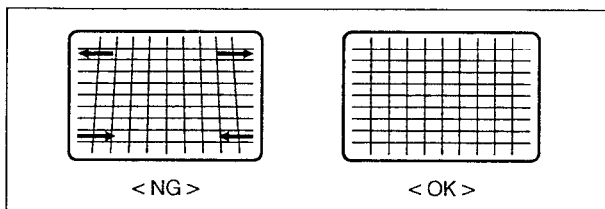
③ Adjusting SIDE PIN

Set the EXPAND switch to ON again. This sets the SIDE PIN adjustment mode. Correct the side pin distortion as shown in the following figure.
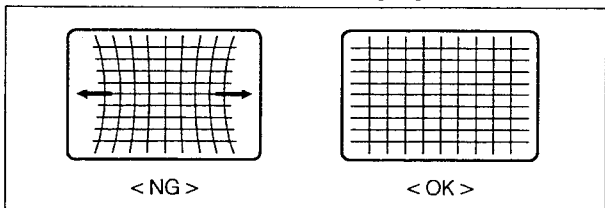
④ Before performing the adjustments and changes in ② and ③ for a different format, store the data changed first and then switch the signal to a different format.

(9) Adjusting the screen size

a) Screen size

Set the screen size using HEIGHT and WIDTH.

The following four sizes can be set for these two data per signal format.

Individual data is also provided for all formats which can be input for the following sizes.
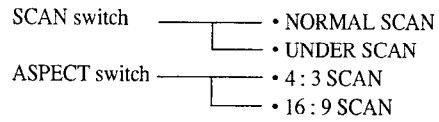
b) Precautions

For the HEIGHT and WIDTH functions, as different data is stored for each signal format, do not perform the following while changing data.

> • Switch channels
> • Change the format of input signals
> • Switch SCAN
> • Switch ASPECT

Performing any one of the above switchings will call data with a different format as that currently set and clear the data currently being changed. Therefore be careful not to execute these switchings while changing the HEIGHT and WIDTH data until the data has been stored.

Perform the following adjustment once for each signal format. Before the adjustment, perform the adjustments in section (7) and section (8).

c) Adjusting procedure 1

Adjust HEIGHT and WIDTH for UNDER SCAN as follows.

① Input signal

First, check that the MENU 1 format is set properly to the signal format to be changed to. For details on setting format, refer to section 4.5 (3) of this manual.

For the input signal, which can display video components on the whole active area (monoscope signal displaying circles, etc.).

Perform the 4:3 adjustment for the 525/625 format only.

② Adjusting HEIGHT and WIDTH

• Set the desired ASPECT using the ASPECT switch, and set UNDER SCAN using the SCAN switch.

• Set the MARKER switch to ON, and select the marker to display 100%.

• Adjust WIDTH and HEIGHT so that the 100% marker size becomes the UNDER SCAN size in the following table.

• To adjust to another SCAN size, be sure to first press the CHANGE PRESET switch to store the current size first.

<UNDER SCAN Sizes>

Type	ASPECT	HEIGHT	WIDTH
TM14-80	4:3	202mm	270mm
	16:9	152mm	270mm
TM20-80/TM20-90	4:3	285mm	380mm
	16:9	214mm	380mm

< 4 : 3 (UNDER) size>

< 16 : 9 (UNDER) size>
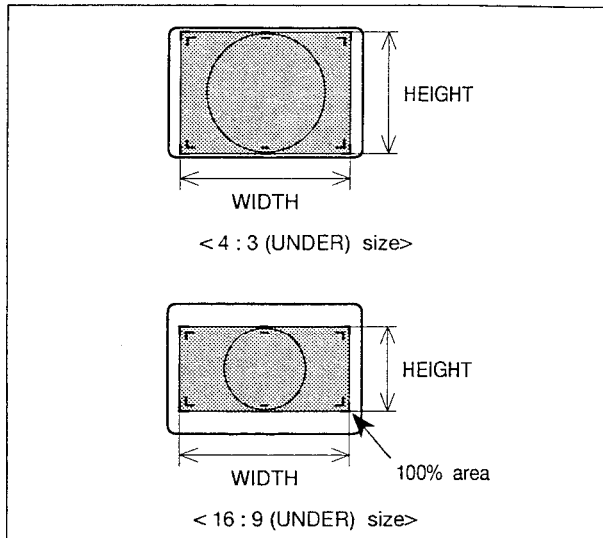
d) Adjusting Procedure 2 (SDTV NORMAL SCAN)

Adjust the SDTV NORMAL SCAN as follows.

① Input signal

Same as section c) in Adjusting Procedure 1.

② Adjusting HEIGHT and WIDTH (UNDER SCAN)

• Set to the desired ASPECT using the ASPECT switch.
  Set to NORMAL SCAN using the SCAN switch.

• Set the MARKER switch to ON, and select the 100% + 93% marker.

• Adjust WIDTH and HEIGHT so that the size of the 93% marker becomes the UNDER SCAN size in the following table.

• To adjust to another SCAN size, be sure to first press the CHANGE PRESET switch to store the current size first.

Type	ASPECT	HEIGHT	WIDTH
TM14-80	4:3	202mm	270mm
	16:9	152mm	270mm
TM20-80/TM20-90	4:3	285mm	380mm
	16:9	214mm	380mm

*This table shows the 93% marker size.

< SDTV 16 : 9 (NORMAL) size>

< SDTV 4 : 3 (NORMAL) size>

4.5 MENU Functions

(1) List of MENUs

All functions can be executed at the MENU screen.

[List of MENUS]

MENU   MENU 1   ①RGB/YPbPr ‑‑‑‑‑‑‑‑‑ Setting the RGB/YPbPr of RGB/YPbPr Inputs
       < SYSTEM >
                  ②YPbPr CHROMA ‑‑‑ Setting the YPbPr mode

                  ③V/VS(525I) ‑‑‑‑‑‑‑‑‑ Setting Clamp Level of each Input CHANNEL

                  ④V.BLK MASK ‑‑‑‑‑‑‑ Setting the V.BLK MASK ON/OFF

                  ⑤TEST SIG. FM ‑‑‑‑‑‑ Setting the FORMAT of internal TEST Signals

       MENU 2   ①CENT. MARKER ‑‑‑‑ Setting the Center Cross ON/OFF of MARKER
       < MODE >
                  ②MARKER COLOR ‑‑‑ Setting the Color of MARKER

                  ③SHADOW LEVEL ‑‑‑ Setting SHADOW LEVEL 0%/40%

                  ④CLOSED CAPT. ‑‑‑‑ Setting CLOSED CAPTION ON/OFF

                  ⑤USER DISPLAY ‑‑‑‑ Setting Title DISPLAY Method for Channels

                  ⑥REMOTE NO. ‑‑‑‑‑‑ Setting the Remote ID Numbers (1 to 99)

                  ⑦DEGAUSS TM. ‑‑‑‑‑‑ Setting the Degauss ON Timer (0 to 9)

       MENU 3   ①SELECT FILE ‑‑‑‑‑‑‑ Selecting FILE (REF/FILE1/2/3)
       < CHANGE FILE>
                  ②STORE FILE ‑‑‑‑‑‑‑ Transmitting FILE (ALL/REF/FILE1/2/3)

       MENU 4   ①STATUS ‑‑‑‑‑‑‑‑‑‑‑ Displaying Status Information of Each Data
       < STATUS >

       MENU 5   ①PASSWORD ‑‑‑‑‑‑‑ Setting the Data Password Lock
       < LOCK >

(2) Flow of MENU Operations

MENUs can be switched as follows using the MENU switch.

```
                    ┌──────────────────────┐
                    │   < Normal Screen >   │
                    └──────────────────────┘
                              │ MENU switch ON
                              ▼
            ┌────────────────────────────────┐
            │ MENU1 <SYSTEM>->525I/60         │
            │ 1. ->RGB/YPbPr   YPbPr          │          < Brief >
            │ 2. YPbPr CHROMA  SMPTE          │          Setting of input signal format
            │ 3. V/VS(525I)    V(0%)          │
   ESC      │ 4. V.BLK MASK    OFF            │
 switch ON  │ 5. TEST SIG.FM   525I/60        │
            │                                 │
            │ NEXT   →(MENU)                  │
            │ SELECT→(ENT) EXIT(ESC)          │
            └────────────────────────────────┘
                              │ MENU switch ON
                              ▼
            ┌────────────────────────────────┐
            │ MENU2 <MODE>   VER:00.0         │
            │ 1.CENT.MARKER    OFF            │
            │ 2.MARKER COLOR   ■              │          < Brief >
            │ 3.SHADOW LEVEL   0%             │          Setting of modes
            │ 4.CLOSED CAPT.   ---            │
   ESC      │ 5.USER DISPLAY                  │
 switch ON  │ 6.REMOTE NO.     01             │
            │ 7.DEGAUSS TM.    0              │
            │                                 │
            │ NEXT   →(MENU)                  │
            │ SELECT→(ENT)   EXIT→(ESC)       │
            └────────────────────────────────┘
                              │ MENU switch ON
                              ▼
            ┌────────────────────────────────┐
            │ MENU3 <CHANGE FILE>             │
            │ 1.SELECT FILE    REF.           │
            │ 2.STORE FILE     ALL   ↵        │          < Brief >
            │                                 │          Switch of FILE and transmission of data
   ESC      │                                 │          from FILE to FILE
 switch ON  │                                 │
            │                                 │
            │ NEXT   →(MENU)                  │
            │ SELECT→(ENT)   EXIT→(ESC)       │
            └────────────────────────────────┘
                              │ MENU switch ON
                              ▼
            ┌────────────────────────────────┐
            │ MENU4 <STATUS> (REF.)           │
            │ HUE     50.0 HEIGHT   50.0      │
            │ CHROMA  50.0 WIDTH    60.4      │
            │ BRIGHT  60.1 H.CENT   60.1      │
            │ CONT    61.0 V.CENT   63.5      │          < Brief >
            │ G.GAIN  62.5 ROTAT.   60.0      │          Display of data by percent indication
            │ B.GAIN  61.2 H.PHASE  45.1      │
   ESC      │ R.BKG   50.2 H.CONV   ----      │
 switch ON  │ G.BKG   52.4 V.CONV   ----      │
            │ B.BKG   48.5 TRAPE.   45.2      │
            │ APT     OFF  SIDE P.  40.3      │
            │ NEXT→(MENU) EXIT→(ESC)(%)       │
            └────────────────────────────────┘
                              │ MENU switch ON
                              ▼
            ┌────────────────────────────────┐
            │ MENU5 <LOCK> (UNLOCK)           │
            │ -ENTER PASSWORD-                │
            │ ABCDEFGHIJKLMNOPQRSTUVWX        │
            │ YZ123456789                     │          < Brief >
            │                                 │          Setting of password for data lock
            │ PASSWORD  ****                  │
   ESC switch ON                     MENU switch ON
            │                                 │
            │ NEXT   →(MENU)                  │
            │ SELECT→(ENT)   EXIT→(ESC)       │
            └────────────────────────────────┘
```

(3) Explanation of MENU 1

- The[/60] indicating the vertical deflection frequency in the MENU means both 60Hz and 59.94Hz.

```
MENU1 <SYSTEM>->525I/60  ◄───── a.
1. ->RGB/YPbPr   YPbPr    ◄─────── b.
2. YPbPr CHROMA  SMPTE    ◄─────── c.
3. V/VS(525I)    V(0%)    ◄─────── d.
4. V.BLKMASK     OFF      ◄─────── e.
5. TEST SIG. FM 525I/60   ◄─────── f.



NEXT  →(MENU)
SELECT→(ENT)   EXIT→(ESC)
```
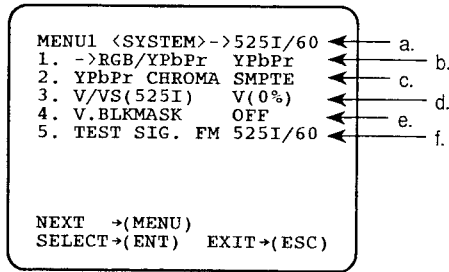
a. Indication of selected signal format
b. Setting of RGB/YPbPr for RGB/YPbPr input
c. YPbPr mode setting
d. Setting of Clamp Level
e. Setting of V.BLK MASK
f. Format setting of internal TEST signal

a. Indication of selected signal format

This indicates selected signal format.

b. Settings of RGB and YPbPr for RGB/YPbPr input

- Set the RGB/YPbPr input signal to RGB or YPbPr.

c. YPbPr Mode setting

- Chroma level for the analog component input is set up. As shown in below thera are 3 kinds of setting, SMPTE and BTA are adjusted as chroma level becomes proper with 50% on the circuit.
  USER are able to setting the chroma level optionally.
  SMPTE(incl. MII, N10)
  BETA
  USER

d. Setting of Clamp level

- Set up clamp level(black level) of the monitor in each channal in conformity to the set up level of input signal.
- If there are input signals that the set up level of 7.5% and of 0% to different channels, you can monitor constant black level screen by setting the V/VS in each channel.(NTSC only)
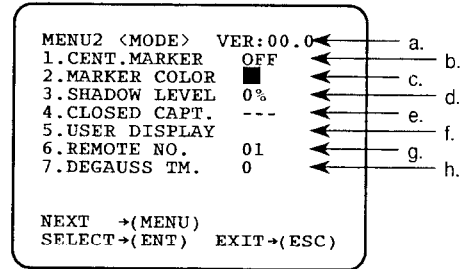
e. Setting of V.BLK MASK

- The information(VITS) that is made mix to V-Blanking. This setting is done by memory every each input.
  It becames off automatically, when input signal is selected SDI and internal TEST signal.

f. Format setting of internal TEST signal

- Set the format of the internal TEST signal of the monitor.
- The following formats are provided as standard :
 525i/60 and 625i/50.

(4) Explanation of MENU 2

```
MENU2 <MODE>    VER:00.0 ◄─── a.
1.CENT.MARKER    OFF    ◄───── b.
2.MARKER COLOR    ■     ◄───── c.
3.SHADOW LEVEL    0%    ◄───── d.
4.CLOSED CAPT.   ---    ◄───── e.
5.USER DISPLAY          ◄───── f.
6.REMOTE NO.      01    ◄───── g.
7.DEGAUSS TM.     0     ◄───── h.


NEXT  →(MENU)
SELECT→(ENT)   EXIT→(ESC)
```

a. Indication of program version
b. Setting of CENT. MARKER'S cross
c. Setting of MARKER color
d. Setting of Shadow Level
e. Setting of Closed Caption ON/OFF
f. Setting of User Display
g. Setting of Remote ID numbers (1 to 99)
h. Setting of DEGAUSS ON Timer (0 to 9)

a. Indication of program version

This indicates program version.

b. Setting of CENT. MARKERS cross

- Set whether or not the center markers cross is displayed.
- Setting to "ON" displays center cross for all markers as shown in the figure below.
- This setting is set to "OFF" at shipment.

< OFF >   < ON >
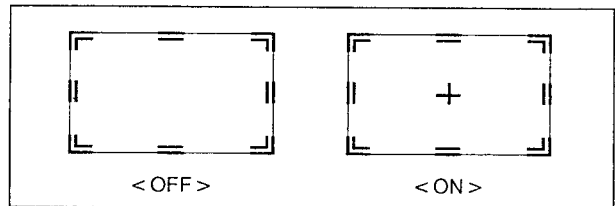
c. Setting of MARKER color

- Set the MARKER color to a color from one of the seven colors available.
- Display color : White,Red,Green,Blue,Yellow,Magenta, Cyan.
- This is set to green at shipment.

d. Setting of Shadow Level

- The brightness of shadow at the time of 4:3's Maker is set up.

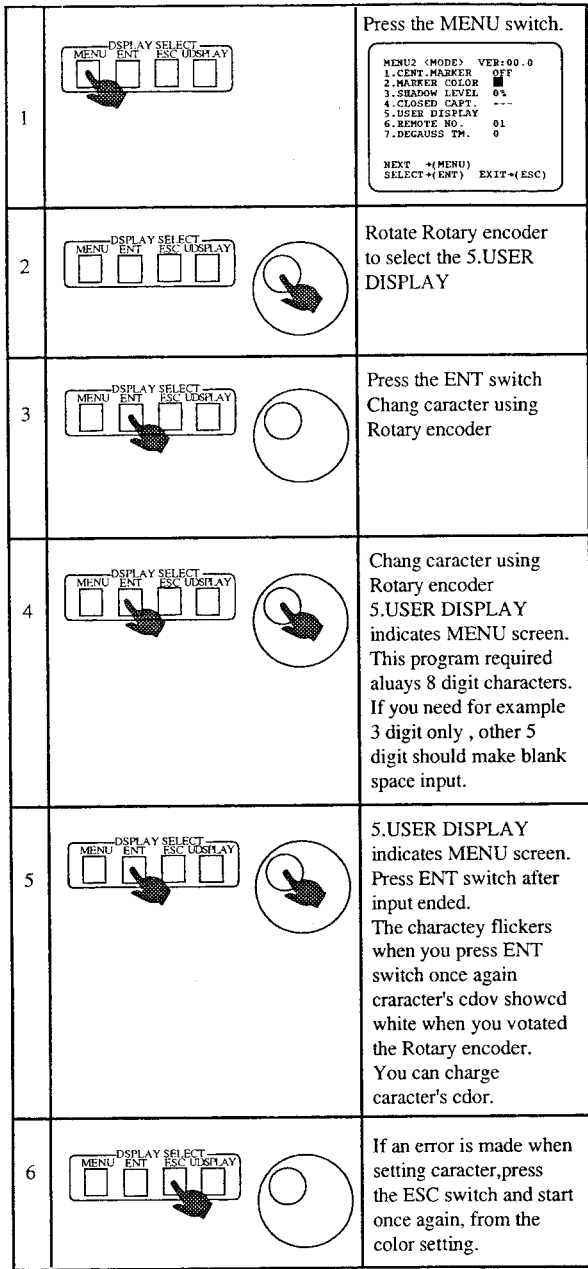### e. Setting of Closed Caption ON/OFF

- When mounted to optional board(under development) on the Decoder Board is set up.

f. Setting of User Display

- Setting of the title display of each channel.
- A title of up to eight charactera can be disolayed for each crannel.
  In addition to this the color of the characters can also be selected.
  By pressing the U.DISPLAY switch on the drawer panel, the display of the titles set here canbe switched ON and OFF.

1		Press the MENU switch. MENU2 <MODE> VER:00.0 1.CENT.MARKER OFF 2.MARKER COLOR ■ 3.SHADOW LEVEL 0% 4.CLOSED CAPT. --- 5.USER DISPLAY 6.REMOTE NO. 01 7.DEGAUSS TM. 0 NEXT →(MENU) SELECT→(ENT) EXIT→(ESC)
2		Rotate Rotary encoder to select the 5.USER DISPLAY
3		Press the ENT switch Chang caracter using Rotary encoder
4		Chang caracter using Rotary encoder 5.USER DISPLAY indicates MENU screen. This program required aluays 8 digit characters. If you need for example 3 digit only , other 5 digit should make blank space input.
5		5.USER DISPLAY indicates MENU screen. Press ENT switch after input ended. The charactey flickers when you press ENT switch once again craracter's cdov showcd white when you votated the Rotary encoder. You can charge caracter's cdor.
6		If an error is made when setting caracter,press the ESC switch and start once again, from the color setting.

g. Setting of Remote ID numbers (1 to 99)

• Set monitor's identity number among 1 to 99 for remote control.

• When performing remote control operations using the wireless remote controller (RCT-20A) and serial remote controller (SRC-301A), monitors can be remote controlled individually by assigning numbers 1 to 99 to the monitors.

h. Setting of DEGAUSS ON timer (0 to 9)

• Set the operating time of the degauss (demagnetization) function which operates automatically when the power is turned ON between 0 to 9.

• By setting in groups 0 to 9, the rush current which flows when the power of each device of the system is turned ON together can be minimized.

• Timer operating time
When set to 0, the degauss function will automatically start to operate about 4 seconds after the power is turned

ON. This time will increase by 0.5 seconds each time the setting is increased by 1.

The following shows the time the degauss function starts to operate after the power is turned ON. The times shown are approximates.

| Setting	Starting time	Setting	Starting time
0	4.0 sec.	5	6.5 sec.
1	4.5 sec.	6	7.0 sec.
2	5.0 sec.	7	7.5 sec.
3	5.5 sec.	8	8.0 sec.
4	6.0 sec.	9	8.5 sec.

(5) Explanation of MENU 3
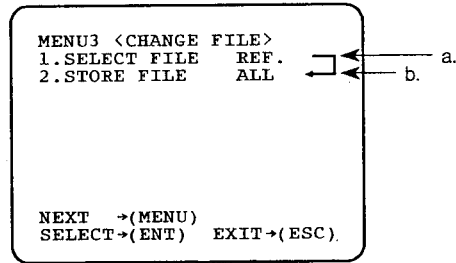
a. Selection of FILE
b. Setting of FILE at desination

a. Selection of FILE

• Set REFERENCE, FILE1, FILE2 and FILE3.

• These four types of files memorize the following 9 types of data.
HUE
CHROMA
BRIGHTNESS
CONTRAST
G.GAIN
B.GAIN
R.BACKGROUND
G.BACKGROUND
B.BACKGROUND

b. Setting of FILE at destination

• Set to transfer (overwrite) all files set at the a. to the b. file.
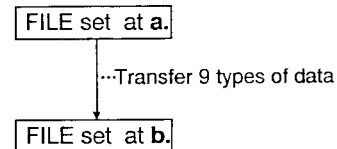
• When set to ALL, files set at the a. will be trnsferred to the all files (REFERENCE, FILE 1, FILE 2, FILE 3).

(6) Explanation of MENU 4

```
MENU4 <STATUS> (REF.)            ◄──── b.
HUE      50.0 HEIGHT  50.0
CHROMA 50.0 WIDTH    60.4
BRIGHT 60.1 H.CENT   60.1
CONT     61.0 V.CENT   63.5
G.GAIN 62.5 ROTAT.   60.0      ◄──── a.
B.GAIN 61.2 H.PHASE 45.1
R.BKG  50.2 H.CONV   ----
G.BKG  52.4 V.CONV   ----
B.BKG  48.5 TRAPE.   45.2
APT      OFF  SIDE P.  40.3
NEXT→(MENU) EXIT→(ESC)(%)
```

a. Data display
b. FILE set

a. Data display

Digital data are displayed in the range between 0 to 100%
(0.1% resolution).

b. FILE set

Displays the currently selected file name.

(7) Explanation of MENU 5

```
MENU5 <LOCK> (UNLOCK)◄────────── a.
-ENTER PASSWORD-
ABCDEFGHIJKLMNOPQRSTUVWX
YZ123456789                      ◄──── b.

PASSWORD  ****◄─────────────── c.



NEXT  →(MENU)
SELECT →(ENT)  EXIT→(ESC)
```

After setting the 4-digit password,
set ENT switch to ON.

```
MENU5 <LOCK> (UNLOCK)
-ENTER PASSWORD-
ABCDEFGHIJKLMNOPQRSTUVWX
YZ123456789

PASSWORD  ABCD◄────────────── c.
MODE        ALL LOCK◄────────── d.



NEXT  →(MENU)
SAVE   →(ENT)  EXIT→(ESC)
```

a. Indication of set LOCK MODE
b. Selectable characters
c. Entry of password
d. Setting of LOCK MODE

a. Indication of set LOCK MODE

This displays selected locking mode.

< LOCK MODE >

• UNLOCK

This setting allows you to change all data as LOCK is released.

• ALL LOCK

This setting forbids you to change all data and switch files.

• PRESET & FILE LOCK

This setting forbids you to change all data, but allows you to switch files.

b. Selectable characters

When you enter password at the item c., select characters among these with rotary encoder.

c. Entry of password

When you set the LOCK mode to ALL LOCK or PRESET & FILE, or when you release the LOCK mode (UNLOCK), enter your password with 4 digits by selecting characters.
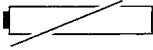
Note

If you should forget your password, contact your sales representative to ask the secret password.

d. Setting of LOCK MODE

After you finish entering your password and then press the ENT switch, you can select the LOCK mode with rotary encoder. If you press the ENT switch, selected mode will be set. If you press the ESC switch, previous mode will be set.

4.6 Messages Displayed on the Screen

Messages	Explanation
ALL LOCK	It is displayed in the case that pushcd each switch of CHNGE PRESET, STORE FILE, or FILE 1 to FILE 3 , when the setting (Refer to section 4.5 (7)) of the LOCK mode is becoming ALL LOCK Prease operate after it does the LOCK mode to "UNLOCK".
PRESET&FILE LOCK	This message is displayed when the CHANGE PRESET or STORE FILE switches are pressed, when the LOCK mode setting (Refer to section 4.5 (7)) is on "PRESET & FILE LOCK" state.
CHANGE PRESET → ON	This message is displayed when each PRESET switch is prcssed, when the CHNGE PRESET switch is "OFF". Operate after turning the CHANGE PRESET switch "ON".
CHANGE PRESET → OFF	This message is displayed when the STORE FILE, and FILE 1 to FILE 3 switches are presscd when the CHANGE PRESET switch is "ON". Operate after turning the CHANGE PRESET switch "OFF".
DELAY → OFF	This message is displayed when the BRIGHT PRESET switch is pressed in the DELAY state. Operate after canceling the delay state. The brightness for the delay state is adjusted with Menu Item 2.
ATP → ON	This message is displayed when the APT PRESET switch is pressed, when the APT switch is "OFF". Operate after turning the APT switch "ON ".
STORE FILE → OFF	This message is displayed when the CHANGE PRESET switch is pressed, when the FILE 1 to FILE 3 are blinking, by pressing the STORE FILE switch. Operate after pressing the STORE FILE switch and FILE 1 to FILE 3 stop blinking.
MANUAL → PRESET	This message is displayed when any MANUAL controls are thc "MANUAL" state, and when selecting the PRESET. Operate after canceling the "MANUAL" state.
MENU → OFF	This message is displayed when the CHANGE PRESET switch is pressed, in the "MENU" state. Operate after leaving the menu.
NO SYNC	It is wrong operation, or operation is invalid. Operate exactly.
ENTER COR CT PASSWORD	This message is displayed when an error is made in PASSWORD input, when the MENU 5 operation is set in the LOCK mode. Input the PASSWORD correctly.
	This mark is displayed when the lithium battery is empty, for data backup in MPU BOARD. Exchange batteries quickly. Refer to the service manual for the exchange method.

5. INSTALLATION OF OPTIONS
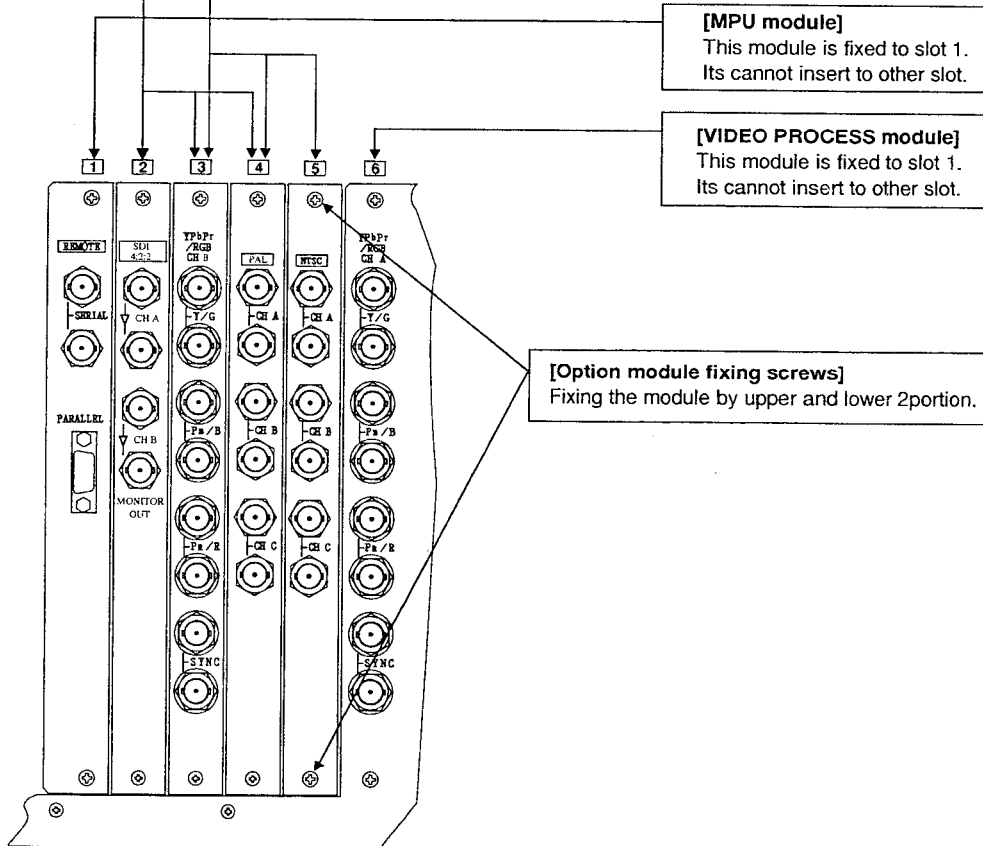
5.1 Installation of Optional Modules

<Note>

• The insertion position was beforehand decided by module. Insert in the position as a foliowing figure.
• Slot N0.2-5 is the position which can insert option module.
• Slot No.1 and slot N0.6 are fixed modules. Don't attachment of other module.
• Attach module after removing a blank panel.
• Be sure to fix modules with an attachment screw (two upper and lower sides).
  If the screw is loosening, modules will separate or it will become the cause that contact is poor.

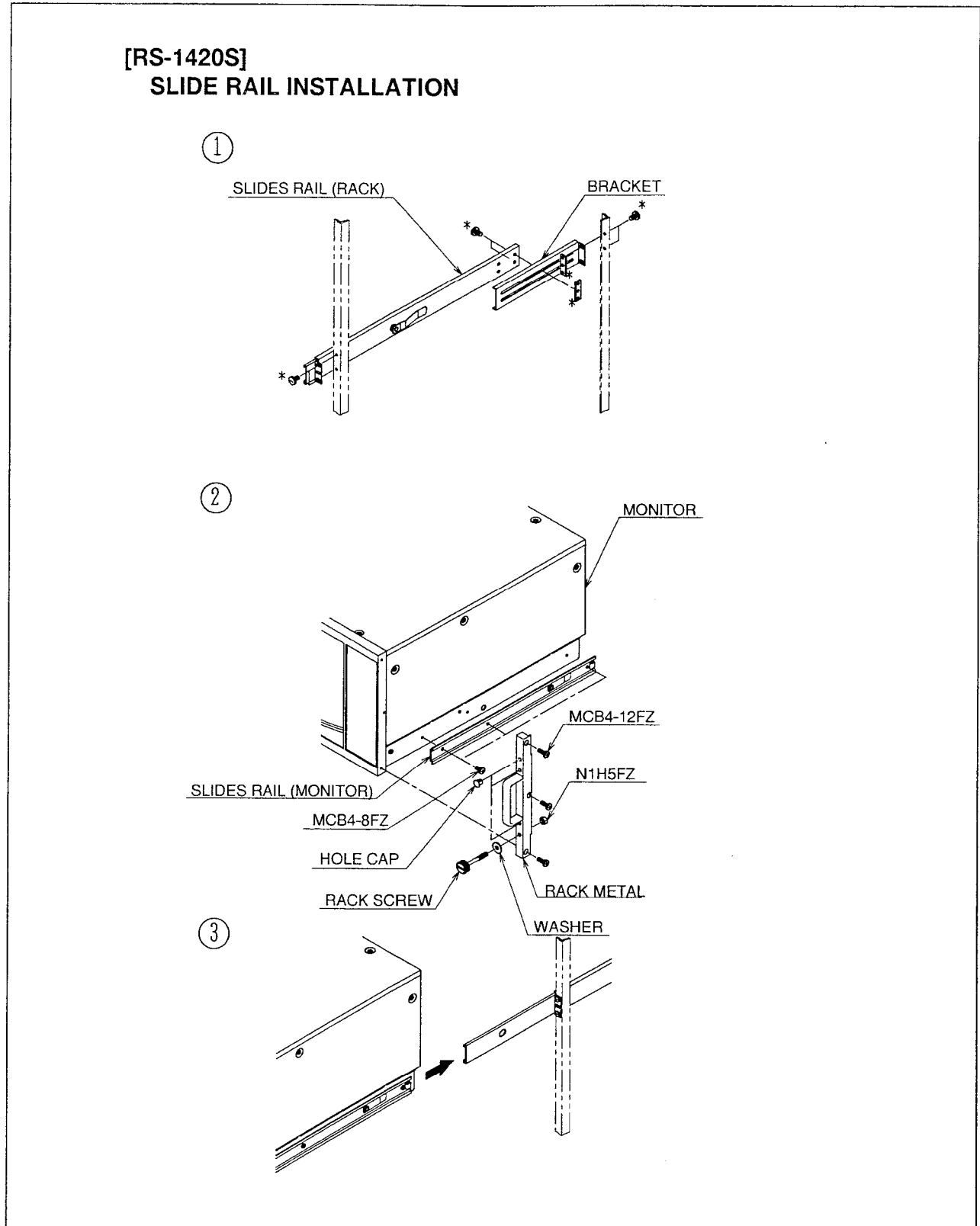| MODEL No.	MODULE NAME	SLOT WIDTH
DK-801	4 : 2 : 2 Digital Component Module	1 slot
DK-802N	4 Fsc Digital Composite Module	1 slot
DK-8012	4 : 2 : 2/4 Fsc Digital Module	1 slot

MODEL No.	MODULE NAME	SLOT WIDTH
DE-801	NTSC 3 LINE Decoder Modul	1 slot
DE-802	PAL Decoder Modul	1 slot
DC-801	DUAL COMPONENT Module	1 slot

[MPU module]
This module is fixed to slot 1.
Its cannot insert to other slot.

[VIDEO PROCESS module]
This module is fixed to slot 1.
Its cannot insert to other slot.

[Option module fixing screws]
Fixing the module by upper and lower 2portion.

5.2 Installation of Optional Rack Mount

(1) RS-1420S

Rack Mount Adaptor for TM14-80RH

[RS-1420S]
SLIDE RAIL INSTALLATION

① SLIDES RAIL (RACK)   BRACKET

② MONITOR
MCB4-12FZ
N1H5FZ
SLIDES RAIL (MONITOR)
MCB4-8FZ
HOLE CAP
RACK SCREW
RACK METAL
WASHER

③

(2) RS-2020S

Rack Mount Adaptor for TM20-80RH and TM20-90RH

[RS-2020S]
SLIDE RAIL INSTALLATION

① SLIDE RAIL (RACK)   BRACKET

② MONITOR

MCB4-12FN

N1H5FN

SLIDE RAIL (MONITOR)

MCB4-8FN   HOLE CAP
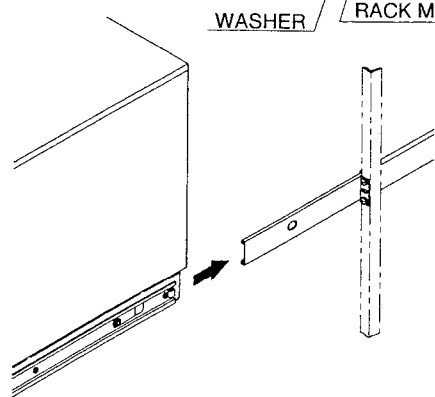
③   RACK SCREW   RACK MOUNT METAL

WASHER
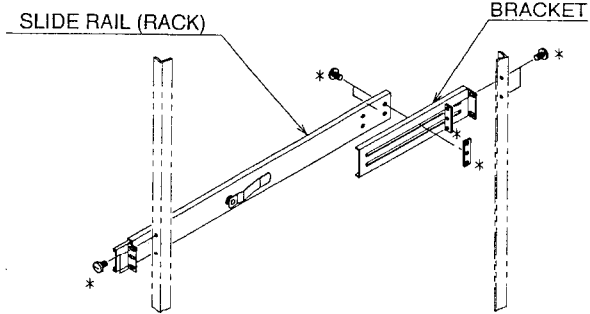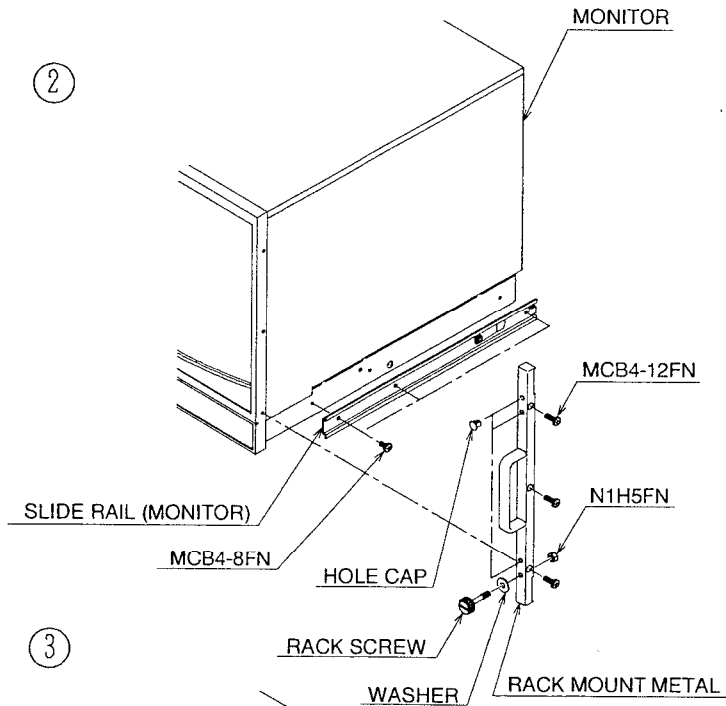
* point of attach

6.   MEMO

We recommend that you write down preset data in the table below.
If you should change data accidentally, it helps you to restore data.

DATA	REF.	FILE1	FILE2	FILE3
HUE				
CHROMA				
BRIGHT				
CONT.				
G. GAIN				
R. GAIN				
R. BKG				
G. BKG				
B. BKG				
APT				
ROTATION				

DATA		525i	625i	( )	( )
WIDTH	4:3 UNDER				
	4:3 NORMAL				
	16:9 UNDER				
	16:9 NORMAL				
HEIGHT	4:3 UNDER				
	4:3 NORMAL				
	16:9 UNDER				
	16:9 NORMAL				
H. PHASE					
H. CENT					
V. CENT					
TRAPEZOID					
SIDE PIN					

TM14-80RH
TM20-80RH
TM20-90RH
COLOR MONITOR

OPERATION MANUAL

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