



SERVICE MANUAL

COLOUR TELEVISION

BASIC CHASSIS

CG

AV-21EM AV-21EM(s)

This service manual mainly consists of the following items:

- The items which differ from those for the AV-21AT service manual.
- The initial value for each setting item.

For details other than those described in this manual, please refer to the following service manual.

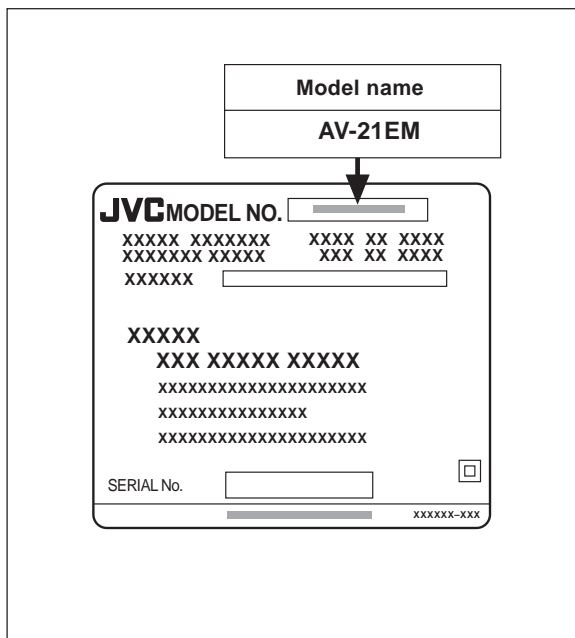
Reference Service Manual: AV-21AT Service Manual (No. 56013, May 2000)

Note: The page in parentheses shows the one for the AV-21AT service manual (No. 56013, May 2000).

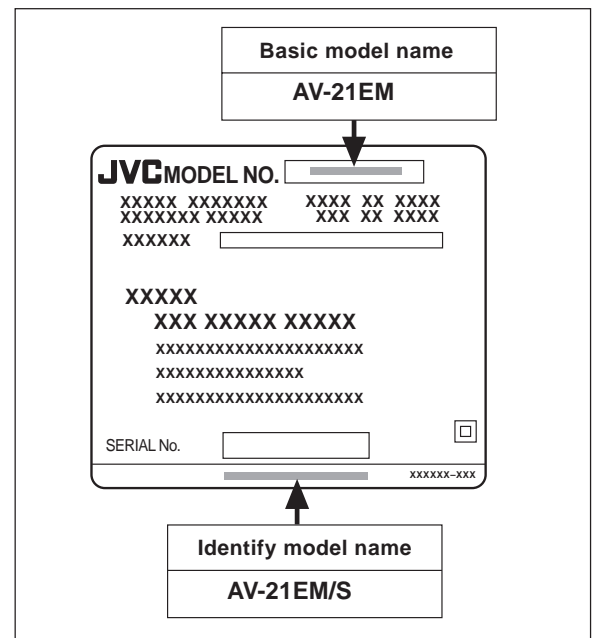
HOW TO IDENTIFY MODEL

While referring to the illustration given below, identify model name on the rating label affixed to the rear cover.

● For AV-21EM



● For AV-21EM(s)



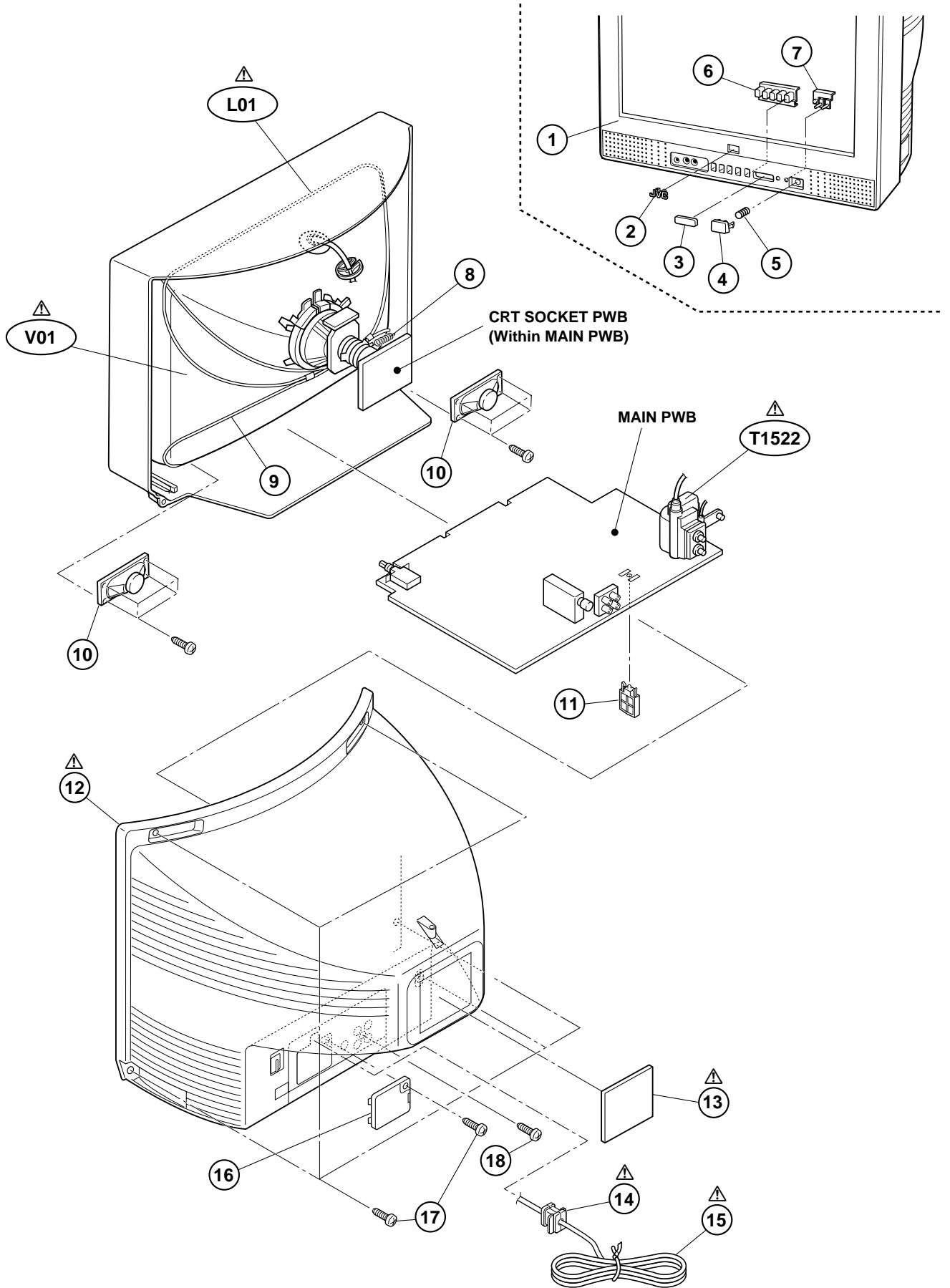
PARTS LIST

EXPLODED VIEW PARTS LIST

● For AV-21EM/AV-21EM(s)

| △ Ref.No. | Part No. | Part Name | Description | Local |
|-----------|-----------------|---------------|------------------|-------|
| △ V01 | A51JSY63X15/CR/ | PICTURE TUBE | ITC type | |
| △ L01 | QQW0076-001 | DEG COIL | | |
| △ T1522 | QQH0069-001 | H.V. TRANSF. | | |
| 1 | GG10048-003A-C | FRONT CABINET | | |
| 2 | CM43094-006-H | JVC MARK | | |
| 3 | GG30007-001B-C | E. E. WINDOW | | |
| 4 | GG30005-001B-C | POWER KNOB | | |
| 5 | CM35235-001-H | SPRING | | |
| 6 | GG20002-001B-C | CONTROL KNOB | | |
| 7 | GG30006-001B-C | LED LENS | | |
| 8 | A48457-4-S | SPRING | | |
| 9 | CHGB0016-0B | BRAIDED ASSY | | |
| 10 | CEBSS09D-05KJ2 | SPEAKER | (x2)SP01 | |
| 11 | CM48144-003-C | PB STOPPER | | |
| △ 12 | GG10049-002A-C | REAR COVER | | |
| △ 13 | LC20748-001A-C | RATING LABEL | | |
| △ 14 | CM23167-A01-H | CORD CLAMP | | |
| △ 15 | QMP40D0-200J5 | POWER CORD | or QMP40D0-200J3 | |
| 16 | CM36617-B01-H | BACK BOARD | | |
| 17 | QYSBFG4016Z | TAPPING SCREW | (x6) | |
| 18 | QYSBSF3010Z | TAPPING SCREW | | |

EXPLODED VIEW

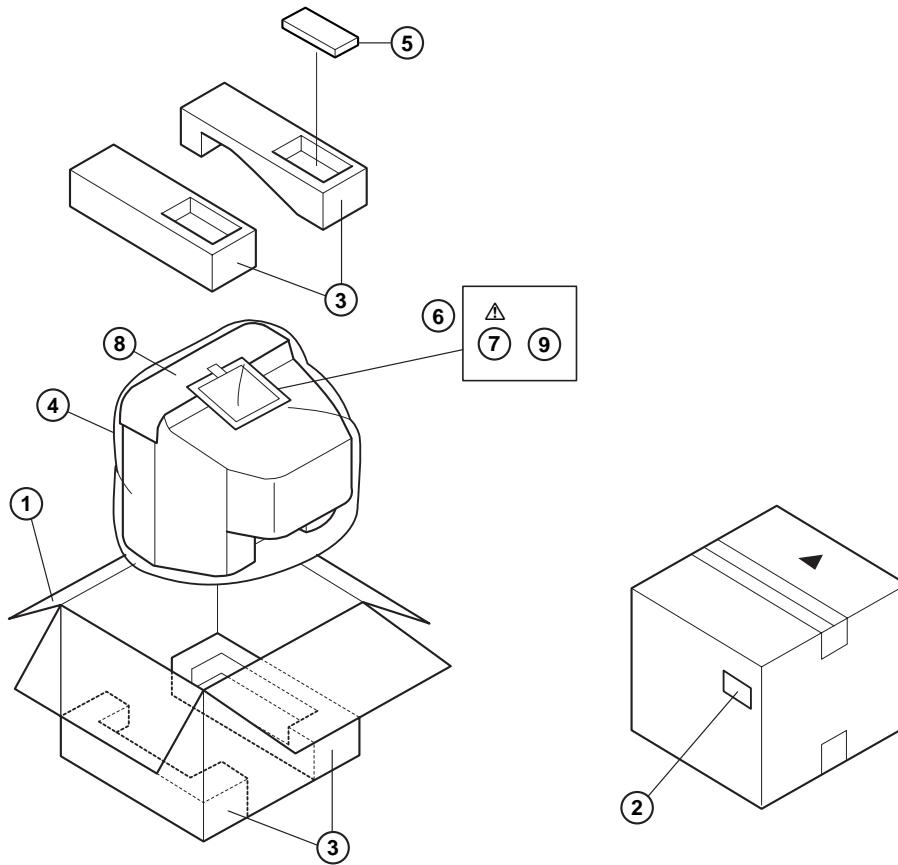


PACKING PARTS LIST

● For AV-21EM/AV-21EM(s)

| △ Ref.No. | Part No. | Part Name | Description | Local |
|-----------|----------------|------------------|-----------------|-------|
| 1 | LC10660-006A-C | PACKING CASE | | |
| 2 | LC40830-001A-C | POS/SERIAL LABEL | | |
| 3 | GG10117-001B-C | CUSHION ASSY | 4 pcs. in 1 set | |
| 4 | LC31224-001A-C | POLY BAG | | |
| 5 | RM-C364-1H | REMOCON UNIT | | |
| 6 | LC31262-001A-C | POLY BAG | | |
| △ 7 | LCT0907-001A-C | INST BOOK | | |
| 8 | CP30992-001-C | TOP COVER | | |

PACKING



REMOTE CONTROL UNIT PARTS LIST (RM-C364-1H)

| △ Ref.No. | Part No. | Part Name | Description | Local |
|-----------|----------------|---------------|-------------|-------|
| | 3139 224 20073 | BATTERY COVER | | |

PARTS DIFFERENCE TABLES

● For AV-21EM

The different parts between AV-21AT and AV-21EM are described below:

| ▲ | REF. NO. | AV-21AT | AV-21EM | PART NAME | DESCRIPTION |
|---|----------|--------------|---------------------|---------------|-------------------|
| | | PART No. | PART No. | | |
| ■ PRINTED WIRING BOARD PARTS LIST [MAIN PWB ASSY] (Page 30-) | | | | | |
| | — | SCG-1247A-H2 | SCG-1020A-F2 | MAIN PWB ASSY | |
| | R1904 | — | QRL03EJ-151X | OM R | 150Ω 3W J |
| | C1317 | NCB31EK-473X | — | CH C CAP. | 0.047μF 25V K |
| | | — | NCS21HK-473X | CH C CAP. | 0.047μF 50V K |
| | C1354 | NDC31HJ-271X | — | CH C CAP. | 270pF 50V J |
| | | — | NCS21HJ-271X | CH C CAP. | 270pF 50V J |
| | C1355 | NDC31HJ-221X | — | CH C CAP. | 220pF 50V J |
| | | — | NCS21HJ-221X | CH C CAP. | 220pF 50V J |
| | C1356 | NDC31HJ-331X | — | CH C CAP. | 330pF 50V J |
| | | — | NCS21HJ-331X | CH C CAP. | 330pF 50V J |
| | C1525 | QFZ0200-103 | — | MPP CAP. | 0.01μF 1.5kVH ±3% |
| | | — | QFZ0200-972 | MPP CAP. | 9700pF 1.5kVH ±3% |
| | C1527 | QFZ0199-224 | — | MPP CAP. | 0.22μF 250V J |
| | | — | QFZ0199-274 | MPP CAP. | 0.27μF 250V J |
| | C1582 | QFZ0199-224 | — | MPP CAP. | 0.22μF 250V J |
| | | — | QFZ0199-204 | MPP CAP. | 0.2μF 250V J |
| | C1651 | QTNC1HM-105Z | — | BP E CAP. | 1μF 50V M |
| | | — | QENC1HM-225Z | BP E CAP. | 2.2μF 50V M |
| | C1653 | QETN1HM-474Z | — | E CAP. | 0.47μF 50V M |
| | | — | QFV71HJ-334Z | TF CAP. | 0.33μF 50V J |
| | C1909 | QEZ0199-127 | — | E CAP. | 120μF 400V M |
| | | — | QEZ0476-127 | E CAP. | 120μF 400V M |
| | C1949 | NDC31HJ-471X | — | CH C CAP. | 470pF 50V J |
| | | — | NCS21HJ-471X | CH C CAP. | 470pF 50V J |
| | L1551 | QQLZ018-430 | QQLZ018-460 | HEATER CHOKE | |

● For AV-21EM(s)

The different parts between AV-21AT and AV-21EM(s) are described below:

| ▲ | REF. NO. | AV-21AT | AV-21EM(s) | PART NAME | DESCRIPTION | | |
|---|----------|--------------|----------------------|-------------------|-------------|--------|-----|
| | | PART No. | PART No. | | | | |
| ■ PRINTED WIRING BOARD PARTS LIST [MAIN PWB ASSY] (Page 30-) | | | | | | | |
| | — | SCG-1247A-H2 | SCG-1271A-H2 | MAIN PWB ASSY | | | |
| | R1904 | ——— | QRL03EJ-151X | OM R | 150Ω | 3W | J |
| | C1525 | QFZ0200-103 | ——— | MPP CAP. | 0.01μF | 1.5kVH | ±3% |
| | | ——— | QFZ0200-972 | MPP CAP. | 9700pF | 1.5kVH | ±3% |
| | C1527 | QFZ0199-224 | ——— | MPP CAP. | 0.22μF | 250V | J |
| | | ——— | QFZ0199-274 | MPP CAP. | 0.27μF | 250V | J |
| | C1582 | QFZ0199-224 | ——— | MPP CAP. | 0.22μF | 250V | J |
| | | ——— | QFZ0199-204 | MPP CAP. | 0.2μF | 250V | J |
| | C1651 | QTNC1HM-105Z | ——— | BP E CAP. | 1μF | 50V | M |
| | | ——— | QENC1HM-225Z | BP E CAP. | 2.2μF | 50V | M |
| | C1653 | QETN1HM-474Z | ——— | E CAP. | 0.47μF | 50V | M |
| | | ——— | QFV71HJ-334Z | TF CAP. | 0.33μF | 50V | J |
| | C1909 | QEZ0199-127 | ——— | E CAP. | 120μF | 400V | M |
| | | ——— | QEZ0476-127 | E CAP. | 120μF | 400V | M |
| | L1551 | QQLZ018-430 | QQLZ018-460 | HEATER CHOKE | | | |
| ■ PACKING PARTS LIST (Page 34) | | | | | | | |
| | — | ——— | CP20527-00K-H | PACKING CASE ASSY | | | |

SPECIFICATIONS (Page 2)

| Item | | Content |
|-------------------------------------|-------------|--|
| Dimensions (W × H × D) | | 497mm × 454mm × 478.5mm |
| Mass | | 21kg |
| TV RF System | | B / G, I, D / K, K1 |
| Colour System | TV Mode | PAL / SECAM |
| | VIDEO Mode | PAL / SECAM / NTSC3.58 / NTSC4.43 |
| Receiving Frequency | VHF (VL) | 46.25MHz ~ 168.25MHz |
| | VHF (VH) | 175.25MHz ~ 463.25MHz |
| | UHF | 471.25MHz ~ 863.25MHz |
| | CATV | ● Cable TVs of Mid (X-Z, S1-S10) Super (S11-S20) & Hyper (S21-S41) bands receivable |
| Intermediate Frequency | VIF Carrier | 38.0MHz |
| | SIF Carrier | 31.5MHz (6.5MHz) |
| | | 32.0MHz (6.0MHz) |
| | | 32.5MHz (5.5MHz) |
| 33.5MHz (4.5MHz) | | |
| Colour Sub Carrier Frequency | | PAL (4.43MHz) SECAM (4.40625MHz / 4.25MHz) NTSC (3.58MHz / 4.43MHz) |
| Aerial Input Terminal | | 75Ω Unbalanced |
| Power Input | | AC110 ~ 240V, 50 / 60Hz |
| Power Consumption | | 105W (Max.)/68W (Avg.) |
| Picture Tube | | Visible size : 51cm measured diagonally |
| High Voltage | | 26.5kV ± 1.5kV (at zero beam current) |
| Speaker | | 5cm × 9 cm Oval type × 2 |
| Audio Output | | 5W (Monaural) |
| Input | Video | 1Vp-p, 75Ω |
| | Audio | 500mVrms (-4dBs), High impedance |
| Output | Video | 1Vp-p, 75Ω |
| | Audio | 500mVrms (-4dBs), Low impedance |
| Headphone Jack | | Stereo mini jack (3.5ø) |
| Remote Control Unit | | RM-C364-1H (Battery size : AA/R06/UM-3 × 2) |

Design & specifications are subject to change without notice.

SPECIFIC SERVICE INSTRUCTIONS

SETTING OF SYSTEM CONSTANT SET (Page 7)

Table 1

| Setting item | Setting contents | Setting value | |
|--------------|--|---------------|------------|
| | | AV-21EM | AV-21EM(s) |
| COLOUR | <input type="checkbox"/> MULTI. <input type="checkbox"/> TRIPLE <input type="checkbox"/> PAL <input type="checkbox"/> | TRIPLE | ← |
| BILINGUAL | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | NO | ← |
| TUNER | <input type="checkbox"/> MU <input type="checkbox"/> MA <input type="checkbox"/> | MU | ← |
| ECO SENSOR | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | YES | ← |
| LANGUAGE | <input type="checkbox"/> E/R/C/U <input type="checkbox"/> E/R/C <input type="checkbox"/> E/R/U <input type="checkbox"/> E/C <input type="checkbox"/> | E/R/U | ← |
| B/B SOUND | <input type="checkbox"/> ON <input type="checkbox"/> OFF <input type="checkbox"/> | OFF | ← |
| LOCK | YES ↔ 10 ↔ 20 ↔ ... ↔ 230 ↔ 250 ↔ 240 ← | 180 | ← |
| COLOUR AUTO | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | NO | ← |
| QSS | <input type="checkbox"/> MINT <input type="checkbox"/> MQSS <input type="checkbox"/> | MINT | ← |
| ALC | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | NO | ← |
| TEXT RATE | 10 ↔ 20 ↔ 40 ↔ 80 | 20 | ← |
| AMP TUNER | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | NO | ← |
| VNR | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | YES | ← |
| EW-PIN IC | <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> | NO | ← |

USER SETTING VALUES (Page 7)

Table 2

| Setting item | Setting value | Setting item | Setting value |
|-------------------|--------------------------------|--------------------|---------------|
| SUB POWER | ON | PICTURE MODE (VSM) | BRIGHT |
| CHANNEL POSITION | 1 POSITION | VNR | OFF |
| CHANNEL PRESET | Refer to OPERATING INSTRUCTION | OFF TIMER | OFF |
| VOLUME | Appropriate sound volume | LANGUAGE | ENGLISH |
| TV/VIDEO | TV | AUTO SHUTOFF | OFF |
| ON SCREEN DISPLAY | POSITION NUMBER DISPLAY | ECO SENSOR | OFF |
| COLOUR SYSTEM | AUTO PAL | BLUE BACK | OFF |
| SOUND SYSTEM | B / G | ON TIMER | PR1 0:00 |
| | | CHILD LOCK | OFF |

SERVICE ADJUSTMENTS

■ Initial Setting Value


■ IF CIRCUIT ADJUSTMENT -- Adjustment of DELAY POINT (Page 15)

| Setting (Adjustment) Item | Variable range | Initial setting value |
|--------------------------------|----------------|-----------------------|
| DELAY POINT (AGC TAKE-OVER) | 0 ~ 127 | 43 |

■ V/C (VIDEO/CHROMA) CIRCUIT ADJUSTMENT (Page 15)

[SUB MENU 2. V/C]

| Setting item | Colour system | Variable range | Initial setting value | | | |
|-----------------------------|---------------|----------------|-----------------------|-------|-----------|-----------|
| | | | PAL | SECAM | NTSC 3.58 | NTSC 4.43 |
| 1. CUT OFF (R / G / B) | | -128 ~ +127 | -50 | ← | ← | ← |
| 2. DRIVE (R / B) | | -64 ~ +63 | 0 | ← | ← | ← |
| 3. BRIGHT | | -128 ~ +127 | 0 | ← | ← | ← |
| 4. CONT. | | -64 ~ +63 | 0 | ← | ← | ← |
| 5. COLOUR (P / S / N3 / N4) | | -64 ~ +63 | 0 | ← | ← | ← |
| 6. TINT (N3 / N4) | TV / VIDEO | -64 ~ +63 | — | — | 0 / +8 | 0 / 0 |
| 7. SECAM BL ADJUST | | -32 ~ +31 | 0 | ← | ← | ← |
| 8. SHARP | TV / VIDEO | -32 ~ +31 | -5 / +15 | ← | ← | ← |

 : Do not adjust.

Adjustment of SUB COLOUR-II (Page 18)

| Adjustment part | Description |
|------------------|--|
| 5. COLOUR | |
| PAL COLOUR | Value (A) in the figure: Set to +8V (W & G). |
| SECAM COLOUR | Value (A) in the figure: Set to +6V (W & G). |
| NTSC 3.58 COLOUR | Value (A) in the figure: Set to +8V (W & G). |

Adjustment of SUB TINT-II (Page 19)

| Adjustment part | Description |
|-----------------|---|
| 6. TINT | |
| NTSC 3.58 TINT | Value (B) in the figure: Set to +7V (W & Cy). |

■ DEFLECTION CIRCUIT ADJUSTMENT (Page 20)

[SUB MENU 3. DEF]

| Setting item | Adjustment name | Variable range | Initial setting value | |
|--------------------|--------------------|----------------|-----------------------|------|
| | | | 50Hz | 60Hz |
| 1. VER. POSITION | Vertical center | -4 ~ +3 | -1 | -3 |
| 2. HOR. POSITION | Horizontal center | -16 ~ +15 | +3 | +3 |
| 3. VER. HEIGHT | Vertical height | -64 ~ +63 | -35 | +1 |
| 4. VER. LINEARITY | Vertical linearity | -32 ~ +31 | +15 | -1 |
| 5. VER. SCURVE | Vertical scurve | -32 ~ +31 | -32 | 0 |
| 6. HOR. VCO ADJUST | Horizontal VCO | -64 ~ +63 | 0 | 0 |

: Do not adjust.

■ VSM PRESET ADJUSTMENT (Page 22)

[Setting Values for SUB MENU 4. VSM PRESET]

| VSM preset mode Setting item | BRIGHT | STANDARD | SOFT |
|---------------------------------|--------|----------|------|
| TINT SETTING VALUE | +15 | ← | ← |
| COLOUR SETTING VALUE | +15 | ← | ← |
| BRIGHT SETTING VALUE | +15 | ← | ← |
| CONT. SETTING VALUE | +30 | +15 | +11 |
| SHARP SETTING VALUE | +15 | +15 | +12 |

: Do not adjust.


■ PRESET ADJUSTMENT (Page 23)

[SUB MENU 5. PRESET]

| Colour system | | Initial setting value | | | |
|----------------------|-------|-----------------------|-------|-----------|-----------|
| | | PAL | SECAM | NTSC 3.58 | NTSC 4.43 |
| 1. C-TRAP FIX | | 1 | ← | ← | ← |
| 2. SHARP PEAK | | 0 | ← | ← | ← |
| 3. ABL | | 1 | ← | ← | ← |
| 4. GAMMA | | 0 | ← | ← | ← |
| 5. Y.DELAY TIME | TV | 0 | 2 | 2 | 3 |
| | VIDEO | 0 | 2 | 0 | 2 |
| 6. BLACK EXP START | | 3 | ← | ← | ← |
| 7. C-BPF | TV | 1 | ← | 0 | ← |
| | VIDEO | 1 | ← | ← | ← |
| 8. CW/SCP | | 0 | ← | ← | ← |
| 9. V.IF DET. LEVEL | | 0 | ← | ← | ← |
| 11. IF AGC MIN. | | 0 | ← | ← | ← |
| 12. V.IF AGC | | 0 | ← | ← | ← |
| 13. V.IF PMOD | | 0 | ← | ← | ← |
| 19. VNR | | 15 | ← | ← | ← |
| 20. RGB LIM. | | 1 | ← | ← | ← |
| 21. RGB LIMIT LEVEL | | 2 | ← | ← | ← |
| 23. TEXT H. POSITION | | -3 | ← | ← | ← |
| 24. READ DATA | | — | — | — | — |

 : Do not adjust.

| TV RF system | | Initial setting value | | | |
|---------------------------|--|-----------------------|---|-----|---|
| | | B/G | I | D/K | M |
| 10. S.IF DET. LEVEL | | 0 | ← | ← | ← |
| 14. S.IF BPF BW ADJUST | | 0 | ← | ← | ← |
| 15. S.IF TRAP FO ADJUST | | 0 | ← | ← | ← |
| 16. S.IF TRAP FO ADJUST 2 | | 0 | ← | ← | ← |
| 17. S.IF-TRAP | | 0 | ← | ← | ← |
| 18. S.IF-BPF | | 0 | ← | ← | 1 |
| 22. S.IF SW | | 1 | ← | ← | 0 |

 : Do not adjust.



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AV21EM-F #3
AV21EMS-SKF #3



CTH 0009
GRT