

# SERVICE MANUAL

# BA-5 CHASSIS

<u>MODEL NAME</u>	<u>REMOTE COMMANDER</u>	<u>DESTINATION</u>	<u>CHASSIS NO.</u>
<b>KV-27FS13</b>	RM-Y180	USA	SCC-S40NA
<b>KV-27FS13</b>	RM-Y180	CND	SCC-S41LA
<b>KV-27FS17</b>	RM-Y181	USA	SCC-S40PA
<b>KV-27FV17</b>	RM-Y181	USA	SCC-S40MA
<b>KV-27FV17</b>	RM-Y181	CND	SCC-S41KA
<b>KV-29FV17</b>	RM-Y181	E	SCC-S38XA
<b>KV-29FV17C</b>	RM-Y181	E	SCC-S38YA
<b>KV-32FS13</b>	RM-Y180	USA	SCC-S40QA
<b>KV-32FS13</b>	RM-Y180	CND	SCC-S41MA
<b>KV-32FS17</b>	RM-Y181	USA	SCC-S40RA
<b>KV-34FS13C</b>	RM-Y180	E	SCC-S56DA
<b>KV-34FS17</b>	RM-Y181	E	SCC-S56JA



KV-27FV17



KV-27FS17




RM-Y181

TRINITRON® COLOR TELEVISION

# SONY®

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## SPECIFICATIONS

	KV-27FV17/ 29FV17	KV-29FV17C	KV-27FS13	KV-27FS17	KV-32FS13	KV-34FS13C	KV-32FS17/ 34FS17
<b>Power requirements</b>	120V, 60 Hz	220V, 50 Hz	120V, 60 Hz	120V, 60 Hz	120V, 60 Hz	220V, 50 Hz	120V, 60 Hz
<b>Number of inputs/outputs</b>							
Video <sup>1)</sup>	3	3	3	3	3	3	3
S Video <sup>2)</sup>	2	2	1	1	1	1	1
Audio <sup>3)</sup>	3	3	3	3	3	3	3
Audio Out <sup>4)</sup>	1	1	1	1	1	1	1
Y, P <sub>B</sub> , P <sub>R</sub> <sup>5)</sup>	1	1	1	1	1	1	1
Monitor Out	1	1	--	--	--	--	--
<b>Speaker output(W)</b>	15W x 2	15W x 2	7.5W x 2	7.5W x 2	10W x 2	10W x 2	10W x 2
<b>Power Consumption(W)</b>							
In use(Max)	220W	210W	170W	180W	195W	195W	205W
In standby	1W	1W	1W	1W	1W	1W	1W
<b>Dimensions(W/H/D)</b>							
(mm)	762 x 604 x 519 mm	762 x 604 x 519 mm	700 x 632 x 512 mm	762 x 604 x 519 mm	800 x 704 x 582 mm	700 x 632 x 512 mm	762 x 604 x 519 mm
(in)	30 x 23 <sup>7/8</sup> x 20 <sup>1/2</sup> in.	30 x 23 <sup>7/8</sup> x 20 <sup>1/2</sup> in.	27 <sup>5/8</sup> x 25 x 20 <sup>1/4</sup> in.	30 x 23 <sup>7/8</sup> x 20 <sup>1/2</sup> in.	31 <sup>1/2</sup> x 27 <sup>3/4</sup> x 23 in.	27 <sup>5/8</sup> x 25 x 20 <sup>1/4</sup> in.	30 x 23 <sup>7/8</sup> x 20 <sup>1/2</sup> in.
<b>Mass</b>							
(kg)	49 kg.	49 kg.	47 kg.	49 kg.	75 kg.	75 kg.	75 kg.
(lbs)	108 lbs.	108 lbs.	103 lbs. 10 oz.	108 lbs.	163 lbs.	163 lbs.	163 lbs.

### Television system

American TV Standard/NTSC

### Channel coverage

VHF: 2-13/ VHF: 14-69/ CATV: 1-125

### Picture tube

Flat Trinitron<sup>®</sup> tube

### Visible screen size

27-inch picture measured diagonally (KV-27FS13/27FS17/27FV17/29FV17/29FV17C ONLY)

32-inch picture measured diagonally (KV-32FS13/32FS17/34FS13C/34FS17 ONLY)

### Actual screen size

29-inch measured diagonally (KV-27FS13/27FS17/27FV17/29FV17/29FV17C ONLY)

34-inch measured diagonally (KV-32FS13/32FS17/34FS13C/34FS17 ONLY)

### Antenna

75 ohm external terminal for VHF/UHF

### Supplied Accessories

Remote Commander RM-Y180 (KV-27FS13/32FS13/34FS13C ONLY)

Remote Commander RM-Y181 (KV-27FS17/27FV17/29FV17/29FV17C/32FS17/34FS17 ONLY)

Size AA (R6) batteries (2)

### Optional Accessories

Connecting cables: VMC-810S/820S, VMC-720M,

YC-15V/30V, RK74A

U/V mixer EAC-66

TV Stand: SU-27FD4 (KV-27FS13/ 27FS17/ 27FV17 ONLY)

TV Stand: SU-27FD3 (KV-29FV17/ 29FV17C ONLY)

TV Stand: SU-32FD3 (KV-34FS17/34FS13C ONLY)

TV Stand: SU-32FD4 (KV-32FS13/ 32FS17 ONLY)

### (●) SRS (SOUND RETRIEVAL SYSTEM)

The (●) SRS (SOUND RETRIEVAL SYSTEM) is manufactured by Sony Corporation under license from SRS Labs, Inc. It is covered by U.S. Patent No. 4,748,669. Other U.S. and foreign patents pending.

The word 'SRS' and the SRS symbol (●) are registered trademarks of SRS Labs, Inc. BBE and BBE symbol are trademarks of BBE Sound, Inc. and are licensed by BBE Sound, Inc. under U.S. Patent No. 4,638,258.

## WARNINGS AND CAUTIONS

### CAUTION


Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield, or carbon painted on the CRT, after removing the anode.

### WARNING!!

An isolation transformer should be used during any service to avoid possible shock hazard, because of live chassis. The chassis of this receiver is directly connected to the AC power line.



### SAFETY-RELATED COMPONENT WARNING!!

Components identified by shading and  mark on the schematic diagrams, exploded views, and in the parts list are critical for safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in supplements published by Sony. Circuit adjustments that are critical for safe operation are identified in this manual. Follow these procedures whenever critical components are replaced or improper operation is suspected.


### ATTENTION!!

Après avoir déconnecté le cap de l'anode, court-circuiter l'anode du tube cathodique et celui de l'anode du cap au châssis métallique de l'appareil, ou la couche de carbone peinte sur le tube cathodique ou au blindage du tube cathodique.

Afin d'éviter tout risque d'électrocution provenant d'un châssis sous tension, un transformateur d'isolement doit être utilisé lors de tout dépannage. Le châssis de ce récepteur est directement raccordé à l'alimentation du secteur.



### ATTENTION AUX COMPOSANTS RELATIFS A LA SECURITE!!

Les composants identifiés par une trame et par une marque  sur les schémas de principe, les vues explosées et les listes de pièces sont d'une importance critique pour la sécurité du fonctionnement. Ne les remplacer que par des composants Sony dont le numéro de pièce est indiqué dans le présent manuel ou dans des suppléments publiés par Sony. Les réglages de circuit dont l'importance est critique pour la sécurité du fonctionnement sont identifiés dans le présent manuel. Suivre ces procédures lors de chaque remplacement de composants critiques, ou lorsqu'un mauvais fonctionnement suspecte.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

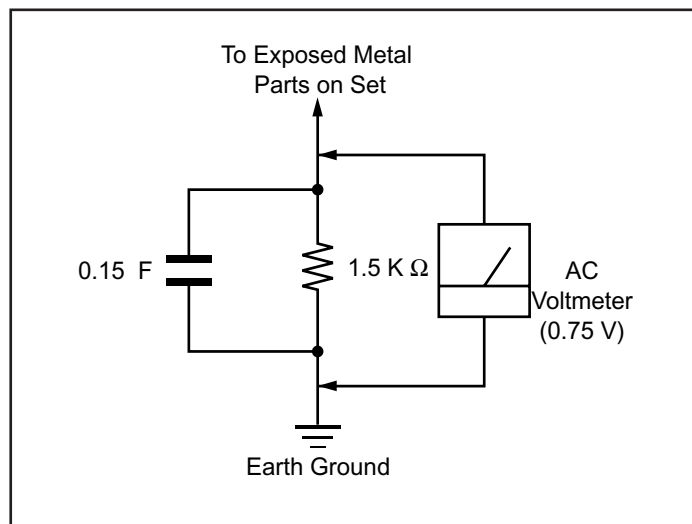


Figure A. Using an AC voltmeter to check AC leakage.

### Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63TRD are examples of passive VOMs that are suitable. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable (see Figure A).

### How to Find a Good Earth Ground

A cold-water pipe is a guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms.

If a cold-water pipe is not accessible, connect a 60- to 100-watt trouble-light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential (see Figure B).

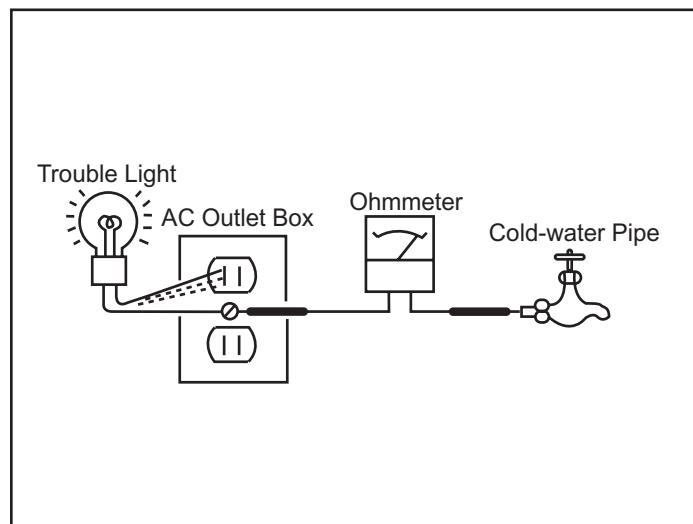


Figure B. Checking for earth ground.

## SELF-DIAGNOSTIC FUNCTION



The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER LED will automatically begin to flash. The number of times the LED flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER LED flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the Remote Commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

### Diagnostic Test Indicators

When an error occurs, the STANDBY/TIMER LED will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the LED will identify the first of the problem areas.

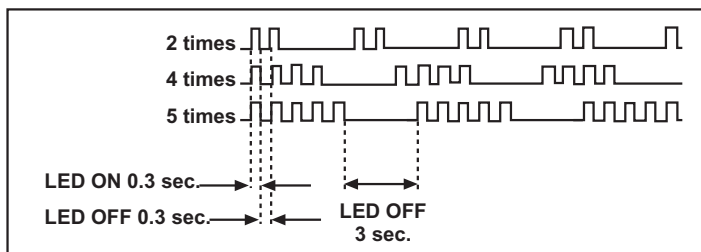
Results for all of the following diagnostic items are displayed on screen. No error has occurred if the screen displays "0".

Diagnostic Item Description	No. of times STANDBY/ TIMER lamp flashes	Self-Diagnostic Display/ Diagnostic Result	Probable Cause Location	Detected Symptoms
Power does not turn on	Does not light	—————	<ul style="list-style-type: none"> <li>Power cord is not plugged in.</li> <li>Fuse is burned out (F601). (A Board)</li> </ul>	<ul style="list-style-type: none"> <li>Power does not come on.</li> <li>No power is supplied to the TV.</li> <li>AC Power supply is faulty.</li> </ul>
+B overcurrent (OCP)*	2 times	2:0 or 2:1	<ul style="list-style-type: none"> <li>H.OUT (Q502) is shorted. (A Board)</li> <li>IC702 is shorted. (CA Board)</li> </ul>	<ul style="list-style-type: none"> <li>Power does not come on.</li> <li>Load on power line is shorted.</li> </ul>
I-Prot	4 times	4:0 or 4:1	<ul style="list-style-type: none"> <li>+13V is not supplied. (A Board)</li> <li>IC502 is faulty. (A Board)</li> </ul>	<ul style="list-style-type: none"> <li>Has entered standby state after horizontal raster.</li> <li>Vertical deflection pulse is stopped.</li> <li>Power line is shorted or power supply is stopped.</li> </ul>
IK (AKB)	5 times	5:0 or 5:1	<ul style="list-style-type: none"> <li>Viedo OUT (IC502) is faulty. (A Board)</li> <li>IC301 is faulty. (MA Board)</li> <li>Screen (G2) is improperly adjusted.**</li> </ul>	<ul style="list-style-type: none"> <li>No raster is generated.</li> <li>CRT Cathode current detection reference pulse output is small.</li> </ul>

\*If a +B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously. The symptom that is diagnosed first by the microcontroller is displayed on the screen.

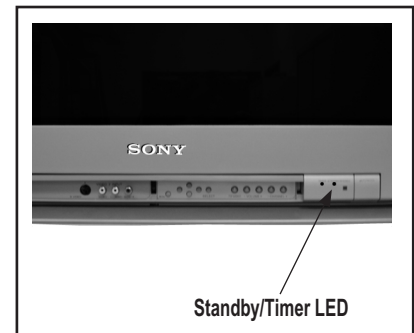
\*\*Refer to Screen (G2) Adjustments in Section 2-4. of this manual.

### Display of Standby/Timer LED Flash Count



Diagnostic Item	Flash Count*
+B Overcurrent	2 times
I-Prot	4 times
IK (AKB)	5 times

\*One flash count is not used for self-diagnostic.



### Stopping the Standby/Timer LED Flash

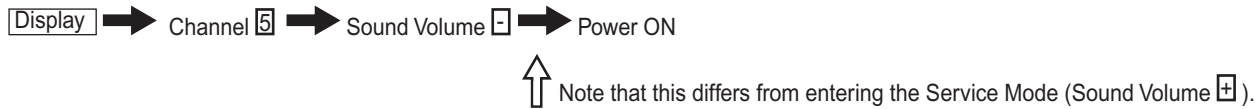
Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER LAMP from flashing.

### Self-Diagnostic Screen Display

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurrences of failure on the screen for confirmation.

#### To Bring Up Screen Test

In standby mode, press buttons on the Remote Commander sequentially, in rapid succession, as shown below:



### Self-Diagnostic Screen Display

SELF DIAGNOSTIC
2: 000
3: N/A
4: 000
5: 001
101: N/A

Numeral “0” means that no fault was detected.  
Numerical “1” means a fault was detected one time only.

### Handling of Self-Diagnostic Screen Display

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

#### Clearing the Result Display

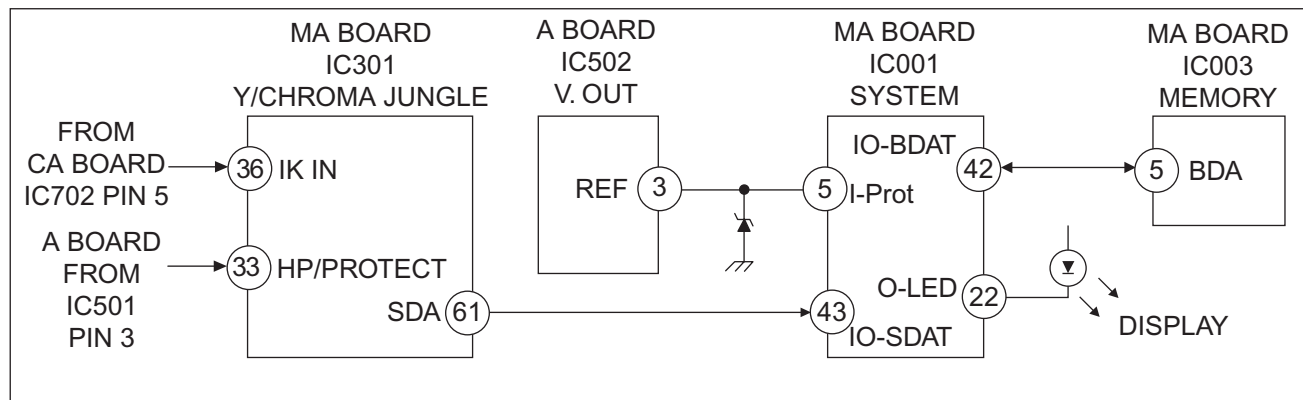
To clear the result display to “0”, press buttons on the Remote Commander sequentially when the diagnostic screen is displayed, as shown below:



#### Quitting the Self-Diagnostic Screen

To quit the entire self-diagnostic screen, turn off the power switch on the Remote Commander or the main unit.

### Self-Diagnostic Circuit



#### +B overcurrent (OCP)

Occurs when an overcurrent on the +B (135V) line is detected by pin 33 of IC301 (MA Board). If the voltage of pin 33 of IC301 (MA Board) is less than 1V when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.

#### I-Prot

Occurs when an absence of the vertical deflection pulse is detected by pin 5 of IC001 (MA Board). Power supply will shut down when waveform interval exceeds 2 seconds.

#### IK (AKB)

If the RGB levels\* do not balance within 2 seconds after the power is turned on, this error will be detected by IC301 (MA Board). TV will stay on, but there will be no picture.

\*(Refers to the RGB levels of the AKB detection Ref pulse that detects 1K).