# Sanyo VM-EX70P Adjustment Manual

8 mm camcorder

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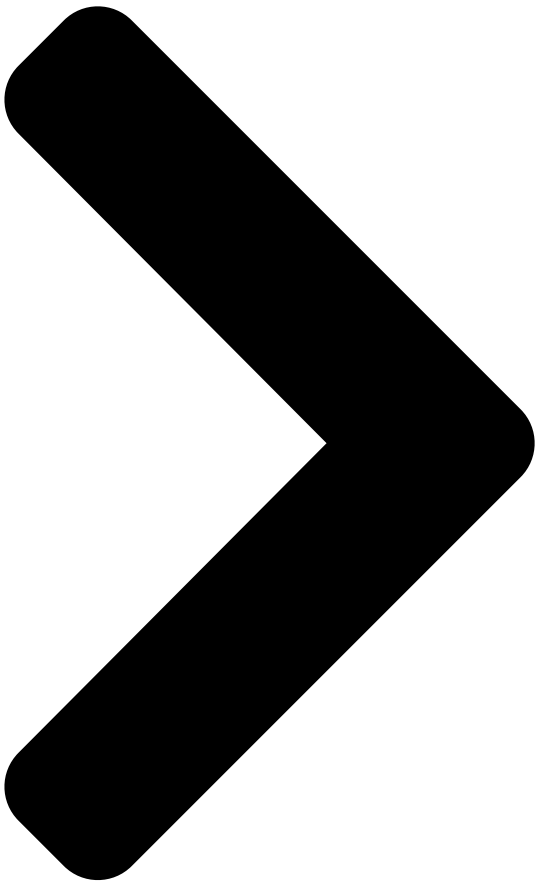
Bookmarks



# ADJUSTMENT MANUAL

CC

## Specifications

PAL,

R

Televialon ayatem

I

Rotating 2-head, helical-scan

Video recording

system

ayatem

Rotating head,

Audio recording

ayatem

8 mm video cassette tape

CaHette type

S P : approx. 20.051 mm/sec.

Tape apeed

L P: approx. 1 0.058 mm/sec.

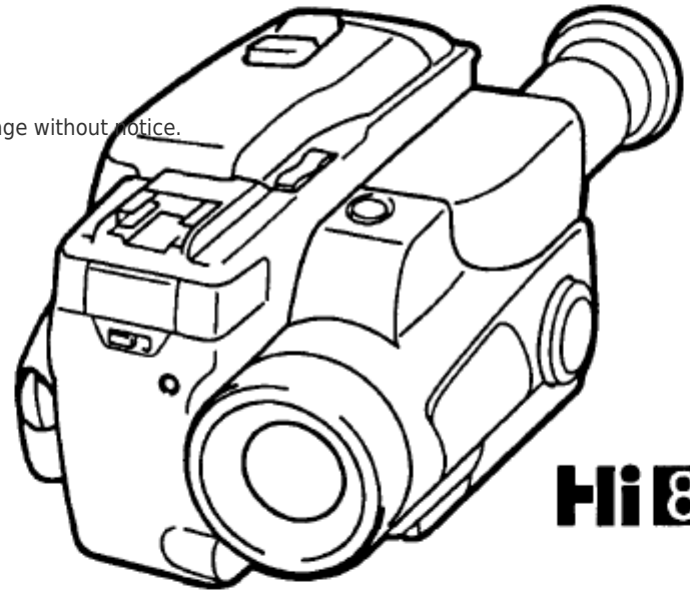
90 minutes (P5-90 cassette) SP mode

Maximum recording
. CCD
1 8 0 minutes (P5-90 cassette) LP mode
time
Approx. 6.5 minutes
Faat forward/
(PS-90 cassette)
Rewind time
solid-state type (470,000 pixels)
Image aenaor
0 . 6 inch electronic viewfinder
Viewfinder
{black and white)
1 2X power zoom lens F 1 .8
Lena
(f= 5.0 to 60 mm)
49 mm
Filter diameter
Fuzzy logic auto focus
Focua
Full auto fuzzy logic
White balance
Fuzzy logic auto iris
Iria
3 lux (Low light mode)
Minimum subject
illumination

•Specifications and external appearance are subject to change without notice.

ER315P/EX, ER315P/A

# 8 mm Camcorder



Hi 8 PA

Subject illumination
range
Recommended
aubject illumination
system
FM
Power aupply
Power conaumptlon
Operating
temperature range
Storage temperature
range
X
{W)
(H)
Dimenaiona
Weight
Microphone
Video output
terminal
Audio output
terminal
S-Video output
terminal
3 - 1 00,000 lux
300 lux or more
W
6
V : battery pack
6.5 V : AC adaptor/charger
o
6.4
during camera recording
'C
'C
- 40
(32 'F - 1 04 ' F)
'C

'C
'F)
-20
60
-
x
x
( -4 'F - 1 40
x
(0)
1 2 1
1 1 1
208 mm
Approx. 830 g
(excluding the battery pack and tape)
Electret condenser type
(omnidirectional)
Video output 1 Vp-p, 75 ohms
unbalanced, negative sync
Audio output - 7 dBs,
C
2.2 kohms or less
Y signal: 1 Vp-p, 75 ohms unbalanced,
negative sync
signal: 0.288 Vp-p, 75 ohms
unbalanced

\ 4- \re

No.

# VM-EX70P

(EUROPE)

(AUSTRALIA)

(NEW ZEALAND)

VM-EX70P

PRODUCTION CODE No.

126 032 05 (EUROPE)

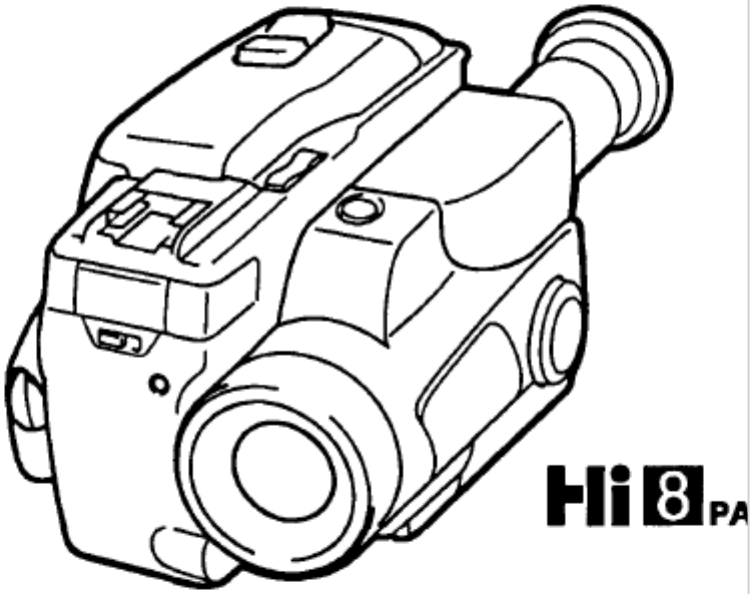
1 26 032 06 (AUSTRALIA)

(NEW ZEALAND)

126 032 00 (GERMANY)

NO. AM 550010

REFERENCE



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# Related Manuals for Sanyo VM-EX70P

Camcorder Sanyo VM-ES88P Instruction Manual

8 mm camcorder (45 pages)

Camcorder Sanyo VM-ES88P Instruction Manual

8 mm camcorder (44 pages)

Camcorder Sanyo VM-EX400P Service Manual

8 mm camcorder (64 pages)

Camcorder Sanyo VM-EX410P Instruction Manual

8mm (22 pages)

Camcorder Sanyo VM-EX220P Adjustment Manual

8 mm (88 pages)

Camcorder Sanyo VM-EX370P Instruction Manual

8 mm camcorder (22 pages)

Camcorder Sanyo VM-EX30P Instruction Manual

8mm camcorder (32 pages)

Camcorder Sanyo VM-EX25P Instruction Manual

8 mm camcorder (28 pages)

Camcorder Sanyo VM-EX26P Instruction Manual

8 mm camcorder (24 pages)

Camcorder Sanyo VM-EX33P Instruction Manual

8 mm camcorder (28 pages)

Camcorder Sanyo VM-EX20P Instruction Manual

8mm camcorder (28 pages)

Camcorder Sanyo VM-LC100P Instruction Manual

8mm camcorder (24 pages)

Camcorder Sanyo VM-D66P Instruction Manual

8mm camcorder (25 pages)

Camcorder Sanyo VM-PS12 Instruction Manual

8 mm camcorder (17 pages)

Camcorder Sanyo VM-D6P Instruction Manual

8 mm camcorder (38 pages)

Camcorder Sanyo VM-RZ1P Training Manual

8 mm camcorder (56 pages)

# Summary of Contents for Sanyo VM-EX70P

Page 1 \ 4- \re VM-EX70P ADJUSTMENT MANUAL 8 mm Camcorder (EUROPE) (AUSTRALIA) (NEW ZEALAND) Specifications VM-EX70P PAL, 3 - 1 00,000 lux Televialon ayatem Subject illumination PRODUCTION CODE No. range Rotating 2-head, helical-scan Video recording 126 032 05 (EUROPE) 300 lux or more...

Page 2 Please see other materials with Reference No. given in table below. Materials Model Name Reference No. Parts List and PL 550010 VM-EX70P Circuit Diagram RS MECHANISM MM 550005 Mechanism Manual RS MECHANISM MS 550001 ( Revision AC Adaptor/charger VAR-S15 SM 550008...

Page 4 ABBREVIATION S [A] AID Analog-To-Digital [H] H (HORIZ) Horizontal [V] V. CENTER Video Center A. MUTE Audio Mute Horizontal Drive V. MUTE Video Mute Audio H H K Half Horizontal Killer V (VERT) Vertical Automatic Chrominance H H S Half Horizontal Shift Video Killer High-pass Filter...

Page 5 2. LEADLESS CO M PON ENT 2-1 . IDENTIFICATION Identification With Two Letters and One Numeral Leadless Transistors Use this code and the chart for component identification. The identification numbers for leadless transistors are Letter Transistor Number indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two 2SA174S numerals, one letter and four numerals, or three letters and...

Page 6 Leadless Diodes Code M6, ES6, ES7, B7, Code L6, ZR, FS, BR (2SC408 BR (2SB1218A), The identification numbers for leadless diodes are indicated BL, FL, FR by a code on the surface, using one letter and one numeral, one letter, two letters, two letters and one numeral or three numerals.

Page 7 Leadless Tantalum (1) Leadless Resistors The resistor value is indicated on the surface of the com ponent, using a three-digit number. Identification for Three Digit Numbers Read the code following the same procedure used as when reading the color code of a discrete resistor. Working Voltage code Example: Code...

Page 8 2-2. REMOVAL 3. Installing leadless components Replacement procedure for Leadless (Chip) Components a. Presolder the contact points of the circuit board. The following procedures are recommended for the replacement of the leadless components used in this unit . 1 . Preparation for replacement a.

Page 9 3. DISASSEM B LY 3-1 . SCREW/WASHER IDENTIFICATION Abbreviation Name Shape ® No symbol Special type Type of head Type of threaded section Pan head • Diameter (D) Binding head Length (L) Abbreviation Name Shape =::: :: :I No symbol Machine screw Symbol Configuration...

Page 10 3-2. REMOVAL OF TOP LID 1 . Lift up the viewfinder CD , and then press the EJECT To install the top lid ® , place it on top of the mechanism • button @ to open the cassette holder ® . assembl y @ , and then slide it away from you while 2.

Page 11 3-3. REMOVAL OF CASSETTE LID AND TERMINAL COVER 2. Remove the two screws ® , and then remove the 1 . Press the cassette lid CD to close the cassette holder, and cassette lid CD . then lower the mechanism assembly @ . 3.

Page 12 3-4. REMOVAL OF FRONT CABINET AND CABINET ASSEMBLY (RIGHT) 1 . Remove the three screws CD and @ . The two connectors @ (for the microphone) and @ (for the • ® 2. Grasp the lens section @ with one hand and the front accessory shoe) should be disconnected at this time also.

Page 13 3-5. REMOVAL OF CABINET ASSEMBLY (LEFT) ® AND VIEWFINDER 3. Pull out the eye - piece ® fully, and then push it back 1 . Remove the four screws CD and and then remove the cabinet assembly (left) ® . slightly.

Page 14 3-6. REMOVAL OF PW1 BOARD, CAMERA BLOCK ® ASSEMBLY AND STAND ASSEMBLY 1 . Disconnect the connector CD and the two screws ® , and 3. Remove the two screws and then remove the stand "5. ELECTRICAL AD then remove the PW1 board ® . assembly ®...

Page 15 3-7. REMOVAL OF CP1 BOARD AND MECHANISM ASSEMBLY 3. Disconnect the four FPCs @ , @ , @ and (J) , disconnect 1 . Remove the three screws CD , and then remove the FPC (Flexible Printed Circuit) the two ground lead wires ® and ® which are soldered to the shield case of the CP1 board ®...

Page 16 3-8. REMOVAL OF CAMERA LENS BLOCK, CP2 BOARD AND M□ROPHONE UNIT ® 1 . Remove the FPC and connector CD , and then while Remove the screw @) , and then remove the microphone pushing the hooks (A) , remove the CP2 board @ . holder @ and , two microphones , AD2 board @ and...

Page 17 4. B LOCK DIAGRAM AN D N EW CIRCUIT DESCRIPTION 4-1 . BOARD LOCATION TB2 board AD1 BOARD: AUDIO CIRCUIT AD2 BOARD: MICROPHONE CIRCUIT & CA2 BOARD: CCD

IMAGE CIRCUIT CP1 BOARD: SERVO/SYSTEM CONTROL CIRCUIT VIDEO CIRCUIT CP2 BOARD: CAMERA CIRCUIT PW1 BOARD: POWER CIRCUIT TB2 BOARD: TERMINAL CIRCUIT...

Page 18 .i::. !'> < VIEWFINDER 1 (VF 1) BOARD " C> > s::: Video " C> > G N D s::: DRIVE ◆ H . D E F G G G H 2 3 K IC971 BA7149F C R T '- - - - - - - - - - - - - _J...

Page 19 2. CAMERA BLOCK DIAGRAM CAMERA BLOCK DIAGRAM CCD !MAGER BLOCK IC951 ICX059AK CXAI391R IC914...

Page 20 C936 LA6358NM ZOOM CAMERA FEATURE CTC-A) BLOCK <TO CPD CN93I ENCffiDER SCK I so 2 CN933 CAM CS 16 P ROM <TO CPD I RIS CN933...

Page 21 CXA1391R IC914 IC914 CAM ADJ!◆ IRIS 18 CAM ADJ2 A.fZ.. DET 16 CAH ADJ3 <TO PWD CN911 -8.SV◆ CAMERA SIGNAL PROCESS CVC-A) t.NEG SVCS) GNl 7 GNl • 5YCl1> JC913 CXL15i7N IC9!9 CXL5504 - 4-3 -...

Page 23 . 3. SERVO/SYSTEM CONTROL BLOCK DIAGRAM SERVO/SYSTEM CONTROL BLOCK DIAGRAM IC351 S/S 5V CP1 BOARD NICRO PROCESSOR 03581 TALLY LED A. VDD A L+5V AVREF TALLY LED UNREG REMOCON ON REMOCON WIRE IN Q3202 LCD ON LCD VDD Q3203 !C3 9 2C 1/2) IC342 F ADE OSO CONTROLLER...

Page 24 IC351 S/S 5V IC352 NICRO PROCESSOR BATTERY 03581 CN321 BACK UP TALLY LED MP 5V VOLTAGE REG. LITHIUM BATTERY MECHANISM BLOCK CN334 LOADING MOTOR MODE SW DEW SENSOR SUPPLY REEL SENSOR TAKEUP REEL SENSOR VIDEO CENTER Q350l TAPE TOP/END SENSOR IC345 SYNC SEPARATOR...

Page 25 ◆w JO G H O----------._ l!'--- - - _J LCD JOG H 1nCRA REC CHA REC CHB F E P CAP FG A. MUTE A. MUTE ◆ V. M ◆ E V. MUTE RF SW! MC-f/R RB_Wi ◆ SIG DET H I8 D ET OUT HI 8 DET COMP SYNC...

Page 26 IC361 LCD JOG H CAPSJ/fvffTOR CAPSTAN MOTOR CAPSTAN SENSOR A.MUTE V.MUTE SP/D5 RB_Wi SIG DET HI8 DET OUT COMP SYNC HI8 OUT HIB*MP+LP ORl//fu'filf / R IC381 SEPA REC DRUM MOTOR DRUM PG ◆◆◆◆ HI8 MP REC DRUM FG SCAN IN 0 SCAN IN 1 SCAN IN SCAN IN 3...

Page 27 4. VIDEO B LOCK DIAGRAM BLOCK DIAGRAM I Lal VIDEO CN102 2 -1-+- AUDIO GND AUD IO L OUT AUD ID R OUT 4 ,___._◆ INE IN/OUT 6 ---+- -- --. 1 ---+- - S Y OUT e 1--- -+-◆ S C OUT s --+-- NOT USED...

Page 28 5. AUDIO BLOCK DIAGRAM AD2 BOARD AD1 BOARD CIRCUIT REC LEVER INT MIC _i:_ DEV ADJ 1.5MHZ DEV ADJ STEREO REC A MATRIX IC291 1. 7MHZ 1. 5MHZ SMHZ LA7471M DEMOD WIND ON/O FF PB RF 1. 7MHZ DE MOD TB2 BOARD 1.

Page 29 6. CAMERA LENS BLOCK DIAGRAM ---------- ----- ------- Camera Lens Block Zoom position sensor CN931 Z. PRE F Iris motor HALL IN+ Z. P5V HALL OUT + HALL IN - HALL OUT - 7 CONT - ◆ CONT+ DRIVE- eria switch DRIVE+ ◆...

Page 30 4-3. CIRCUIT DESCRIPTION GENERAL This is a new model of a high - grade (Hi8 type) 8 mm camcorder which has been designed to be both compact and lightweight. The features are as follows: 1 ) A CCD (interline type) with 470,000 picture elements is 8) High Speed Shutter used to provide high resolution and high sensitivity Even when a fast-moving subject is recorded, slow or...

Page 31 2. CAMERA CIRCUIT DESCRIPTION [Characteristics] Field accumulation system with high movement resolution 2-1 . CCD IMAGE DEVICE Low darkness current, high sensitivity sensor Ye, Cy, Mg, G complementary colour mosaic filter Horizontal register and pre - charge gate V direct drive 2-1 -1 .

Page 32 2-1-2. Terminal Voltages of CCD Imager The terminal voltages of the CCD imager are given in Table XV1 to XV4 are the vertical transfer clock. In order to obtain 2-1 . a 3-value pulse, XSG1 and XSG2 are overlapped on XV1 In order to input a signal that has the specified timing and and XV3.

Page 33 Pin Description Pin Description Symbol Symbol CCD sensor electric charge readout Inverter output terminal for oscillation OSCO XSG2 pulse output terminal Inverter input terminal for oscillation OSCI Clock pulse output terminal for CCD vertical register drive Error compensation data input method setting terminal (with pull-up resistor) S hould not be connected...

Page 34 2-1 -3. Shooting Method The colour filter arrangements that are used for the CCD in this system are shown in Fig. 2-4. The arrangement of 8 picture elements enclosed by the bold line becomes one block. That block is lined horizontally and vertically. This FIELD system mixes 2 adjacent picture elements in the vertical direction when reading signal charges.

Page 35 2-3. IC91 7 (Fig. 2-1 7.) Next, the CDS output is input to the AGC amplifier and the 2-3-1 . CDS Circuit The video signal output from the CCD is input to Pin ® and high luminance detection circuit. The CDS output is fed from Pin @ to the auto iris circuit Pin @ of IC91 7 (CXA 1 390AR).

Page 36 2-4. IC91 3, IC91 4 AND IC91 9 (Fig. 2-8) 2-3-2. AGC Circuit This circuit controls the gain so that the output level of the AGC amplifier becomes constant. The AGC circuit amplifies 2-4-1 .Chroma Synchronisation the gain by approximately 1 8 dB under the minimum The chroma separated outputs F1 and F2 are fed through Pins @ and ®...

Page 37 IC914 - - - - - - - - - - - - - - - RYG. 6YG. RHUE 6HUE IC91 9 Fig. 2-8. IC914, IC91 3 and IC919 Block Diagram (2R - G ) , (G - 26), (2R - G), (G - 26), (2R - G ) , (G - 26),...

Page 38 2-5. IC91 2 (Fig. 2-1 1 ) 2-4-3. White Balance Matrix Gamma Compensation • • The 2R-G and G-28 signals obtained by MPX are corre lated with Y (=Yo+Y1 ) to generate the r, g and b signals as 2-5-1 . Y Signal Processing mentioned in 2-1 -3.

Page 39 AGC CONT FADER MODE FADE + DATE (CONTROL VOLTAGE) Fig. 2-1 1 . IC91 2 Block Diagram -:r- 2-5-2. C SIgnal Processing The R-Y and B-Y signals from Pins CD and @ are clamped, ---- --n- -- --1- - a burst flag pulse is added to them, and then they pass through the sub-carrier modulation and blanking circuits respectively, after which they are added to each other and level controlled at the GC block.

Page 40 2-6. IC91 5 (CXD1 159Q) Pin @ of IC91 5 (CXD1 1 59Q) receives the 1 4 MHz clock from Pin @ of IC91 6 (CXD1 256R) and generates various sync signals. The block diagram, timing chart and pin functions are shown in Fig. 2-1 3, 2-1 4 and 2-1 5 and Table 2 - 4 respectively.

Page 41 H OO 7.5H SYNC BLKO BFO( Ill - IV ) BFO( I - I I ) LALT( Ill - IV ) LALT( I - I I ) 1 «H FIELD I , Ill SYNC BLKO BFO( IV - I ) BFO( 1 1 - 111 ) LALT( IV - I ) LALT( I I - Ill )

Page 42 H DO HSYNC B LKO (SYNC) 1 . 0 1 (SYNC) VSYNC (SYNC) 28 . 5 5 17 . 6 9 LALT [ µ s ] Fig. 2-1 5. H Direction Timing Chart Pin No. Pin Symbol Pin Description Burst flag pulse Horizontal reset input Vertical reset input (iNI I...

Page 43 2-7. IC91 1 (MSM6524GS) IC91 1 (MSM6524GS) is a serial input IC which consists of a During adjustment, IC91 1 (MSM6524GS) communicates 96-bit EEPROM and a 1 2 - channel D/A converter. It with the service adjustment controller. The block diagram converts non - volatile data which is stored in the EEPROM and pin functions are shown in Fig .

Page 44 Pin No. Pin Symbol Pin Description Analogue GND G N DA A0 5 8-bit D/A output A01 0 A0 1 1 Analogue power VDDA Logic power 8-bit D/A output A0 1 2 Test terminal 2 TST2 Test terminal 1 TST1 Monitor terminal LSB bit data output of 8-bit shift register Load pulse input terminal to load data of 8-bit shift register to latch...

Page 45 2-8. DIGIT AL AF OPERATION 2-8-1 . Operation Instructions The IRIS signal output from Pin @ of IC91 7 (CXA1 390AR) The IRIS signal is detected by 09322 and input to Pin @ of is amplified by 09302 after increasing the low luminance IC935 (NJM341 4M), and is then compared with the refer...

Page 46 3. EVF CIRCUIT OPERATION 3-1 . SYNC SEPARATOR (SYNC SEPA) 3-6. VERTICAL DRIVE CIRCUIT (V. DRIVE) This extracts the sync component from the signal input to This circuit, which is provided with a built-in operation amplifier, drives the vertical deflecting coil. An

inverted Pin @ of IC971 (BA71 49F}, and then sends this signal sawtooth waveform voltage is generated from Pins ®...

Page 47 4. VI DEO SIG NAL PROCESSING 4-3. Hi8 DISCRIMINATION 4-1 . INPUT/OUTPUT SWITCHING Signals are input to the video signal processing circuit by During playback, it is necessary to determine whether the the following three routes. signals being recorded are in Hi8 or normal mode. This is called "Hi8 Discrimination,"...

Page 48 [OTL (Over Trap Limiter) recording system] Previously, when the FM luminance signal which has been The FM-modulated signal is first input to the phase FM modulated and the low band conversion carrier chroma inversion circuit. The inversion frequency from this phase signal were mixed and recorded, a frequency trap which inversion circuit is set to the frequency which was initially matched the low band conversion carrier chroma signal...

Page 49 [Feedback-type soft limiter] The band which is b oosted can be limited by the positive high, the circuit characteristics become almost flat. With any drop in the input level, peaking characteristics occ u r feedback-type soft limiter, with the result that signal inver centring around a frequency which is deter 1ni ned by the sion can be prevented.

Page 50 5. AUDIO CIRCUIT DESCRIPTION 5-1 . OUTLINE There are four types of audio recording systems. Of the above four types, FM Audio (monaural) is the only 1 . FM Audio (monaural) one which is indispensable, while FM (stereo) , PCM and 2.

Page 51 Input level [Noise reduction characteristics] (dB) -- 40 - 60 - 20 - 20 LC: Linearity tolerance during recording (compressor) ± 1 .5 dB _§! - 40 LE: Linearity tolerance during playback (expander) ° ± 3.0 dB - 60 5-2. RECORDING SYSTEM 5-2-1 .

Page 52 5-3. PLAYBACK SYSTEM 5-2-2. Monitor Output The input signal selected (microphone input signal only in The playback RF signals have the 1 .5 M Hz and 1 .7 MHz the case of PAL) passes through the ALC circuit (23 dB full components taken out respectively by the T2001 and T21 01 gain), fade circuit (fade controlled by the control signal from band pass filters, after which they are input to Pins @ and...

Page 53 6. SYSTEM CONTROL CI RCUIT 6-1 . OUTLINE 6-1 -1 . Composition and Functions 9. Servo control : Servo control for drum motor and tape For the composition of the whole of the system control, refer travel control by means of capstan motor to the block diagram.

Page 54 HI8 . . . 0N NTSC For NTSC or PAL PAL. . . OFF For Japan or North America RCA / NORMAL RCA remote control format or Sanyo codes Sanyo . . . OFF ® DIGITAL NORMAL Digital camera compatible or normal camera Digital ...

Page 55 6-2-4. LANC Operation During Program Editing When carrying out program editing using the 8 mm VTR superimposed onto the video signal in the video circuit. camcorder, control of the external commander cannot be The video signal (VF VIDEO) is input to Pin @ of IC345 and carried out by the LANC terminal described in 6-2-3.

Page 56 6-3-2. Clock Function The main controller contains a built-in clock function. The In addition, AUTO/MANUAL focus and blackback screen clock is provided with its own crystal oscillator (32.768 kHz). information for the camera is also transmitted to the camera The time and date are read and displayed by reading the by a serial bus.

Page 57 When the power is on, voltage is supplied to the VTR turns OFF and the camcorder operates in accordance with the WIRE IR signal from the monitor remote controller. (The section and to the camera section from a DC/DC converter. WIRE IR signal is the same as the remote controller signal When the battery is removed, a backup voltage only is in 6 - 2 - 2.)

Page 58 6-7. MECHANISM CONTROL Mechanism control includes cassette tape loading and The standby operations are explained later. unloading control, tape travel speed control by means of the For details on mechanism operation, refer to the chapter on capstan motor, ON/OFF control, direction control and drum mechanism.

Page 59 A mode detection switch is provided to detect the position of the mechanism during tape loading and unloading. The table below shows the relationship between the mode switch and the mechanism. For further details, refer to the "Mechanism Manual." MODE SW Mechanism

Position Mechanism Condition Mechanism Operation...

Page 60 Fleld No. Capstan Speed NTSC - x 3 Speed 1 1 2 1 1 2 x 1 Speed RPF1 x 1 Speed RPF2 Over-writing x 1 Speed Table 6-5. Continuous Shooting Control 6-8. STANDBY OPERATIONS AND POWER SAVING MODE IN THE EVENT OF AN ABNORMALITY In some cases, it may not be possible to continue in normal PAUSE POWER OFF...

Page 61 6-8-1 . Reel Rotation Check 6-8-2. Dew Check The reel rotation is detected by the pulse from the photo The dew sensor normally has a low value of below 20 k sensors which are mounted on the reel bases at the take-up but the resistance value changes to a value of 1 20 k side and supply side.

Page 62 6-8-4. Tape End!Top Check The centre of the cassette table is equipped with an LED The signals from the photo sensors on both sides are input element for detecting the top and the end of the tape. to the analogue input terminal of IC351 (Pin @ for tape end Both ends of the cassette base are also equipped with a side/Pin @ for tape top side).

Page 63 6-1 0. SCREEN DISPLAY SPECIFICATIONS The various status characters which are displayed in the viewfinder of the deck and on the screen of the external are as follows. :: : :: : : : : :I A: Operation mode B: Tape speed C: Counter D: Preset mode/Operation mode/Editing program No.

Page 64 SERVO SYSTEM DESCRIPTION 7-1 . OUTLINE 7-2. CONFIGURATION In the VTR, the rotation of the drum motor and the capstan For the configuration of the servos, refer to the block motor is controlled by the servo circuit. diagram. Both servo systems can be basically divided into •...

Page 65 IC3 8 1 L B 1 8 8 5 PU LSE/REV. (360 ° ) 3 0 DEG 360 DEG DEG : Degree fl ( Hz ) f2 ( Hz ) N TSC 33.4 3 6 0 40.0 Fig. 7-1 . 7-3-2.

Page 66 7-3-3. Drum Motor Drive A 3-phase brushless motor is used as the drum motor. (Refer to Fig. 7-3.) UN REG A3001 PW-1 BOAD IC351 CXP80724 DRUM VS POWER DRIVE S/S 5 V S/S 5 V UN REG IC381 LB1 885 DRUM MOTOR Fig.

Page 67 7-4. CAPSTAN SERVO SYSTEM 7-4-1 . Sensors and Amplifier As explained previously, the capstan servo controls the tape A magnetic resistance sensor (MR sensor) is used as the speed in recording mode and the tracking in playback rotation detection sensor for the capstan motor, so that a 384 - cycle sine wave can be obtained from each rotation.

Page 68 7-4-2. Speed and Phase Detection and Servo Signal 7-4-3. Capstan Motor Driver The LB1 857M (IC361 ) is used as the capstan drive IC. Generation Detection of the phase and speed and processing of the servo signal are carried out by CXP80724 in the same 7-4-4.

Page 69 7-5. ATF METHOD For 8 mm video, an ATF (Automatic Track Finding) method [ Recording] has been adopted for tracking. The four pilot signals are generated by dividing the 1 1 .8 In this method, four types of pilot signals are recorded onto MHz output from the crystal oscillator (X3501 ) .

Page 70 5. ELECTRICAL ADJUSTMENT 1 -2. EQUIPMENTS 1 . Vectorscope 1 . CAME RA B LO C K ADJ USTME N T 2. Oscilloscope 1 -1 . TABLE FOR SERVICING TOOLS 3. Color monitor Ref. No Name Part code 4. Digital voltmeter J -1 Color viewer 5, 1 OOK 5.

Page 71 1 -4. SETUP AND CONNECTION Refer to to remove the cabinet and NOTES: "3. DISASSEMBLY" each board. • Open or ground the test pin J 9001 CD [CAM ADJ . 3], 1 . Set the camera block assembly to the tool J-7 as J9001 @ [CAM ADJ.1 ] and J9001 ®...

Page 72 1 -7. ADJUSTMENT CONTROLLER 1 -5. NOTES 1 . Perform the adjustment after aging for ten minutes or For this camera, the semi-fixed resistors used formerly more. decrease to four and the EVR (electronic volume) IC is used 2. As a rule, perform the adjustment in the order as shown instead.

Page 73 1 -8. ADJUSTING SPECIFICATION 2. Focus Position Adjustment 1 . Oscillation Frequency Adjustment [Connection] [Connection] TP902 CT901 CJ CJ a a a a a a a [Adjustment] [Adjustment] Measuring Point Measuring Equipment Condition Measuring Point Measuring

Equipment Condition TP902 Frequency counter CAMERA EE J9001 ®' Digital voltmeter...

Page 74 3. Zooming Curve Adjustment 4. CCD Driving Voltage Adjustment [Connection] [Connection] CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ [Adjustment] [Adjustment] ® Measuring Point Measuring Equipment Condition Measuring Point Condition Measuring Equipment Digital voltmeter CAMERA EE...

Page 75 5. PLL Voltage Provisional Adjustment Auto Iris Level Adjustment [Connection] [Connection] CJ CJ CJ CJ CJ CJ CJ CJ QCH2 [Adjustment] [Adjustment] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition J9001 @ TP903 Digital voltmeter CAMERA EE Oscilloscope CAMERA E E TP901 (G ND)

Page 76 7. AGC Level Adjustment 8. V Level Adjustment [Connection] [Connection] o TP143 TP1 41 CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ CJ O CH2 0CH2 [Adjustment] [Adjustment] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment...

Page 77 1 0. Hue and Chroma Level Adjustment 9. Chroma Balance Adjustment [Connection] [Connection] O TP1 43 O TP143 TP1 41 CJ Cl Cl CJ Cl Cl CJ Cl Cl CJ Cl Cl CJ Cl Cl CJ Cl Cl [Adjustment] [Adjustment] Measuring Point Measuring Equipment Condition...

Page 78 1 1 . 5,1 00K AWB Adjustment 1 2. 2,800K AWB Adjustment [Connection] [Connection] O TP143 O TP1 43 TP1 41 TP1 41 CJ CJ CJ CJ CJ CJ CJ CJ [Adjustment] [Adjustment] Measuring Equipment Condition Measuring Point Measuring Equipment Condition Measuring Point Vectorscope...

Page 79 1 3. PLL Voltage Adjustment [Vectorscope display] [Connection] 9. Chroma Balance Adjustment TP903 " r- 111 0 $• TP901 1 0. Hue and Chroma Level Adjustment [Adjustment] Measuring Point Measuring Equipment Condition TP903 Digital voltmeter CAMERA EE TP901 (GND) Subject No designation 5, 1 OOK AWB Adjustment ADJ.

Page 80 2. VTR B LOCK ADJUSTME NT 2-2. ALIGNMENT TAPE 2-1 . EQUIPMENTS 1 . Monitor For video frequency characteristics adjustment 2. Oscilloscope 2 phenomena, band 1 MHz or wider, (WR5-7CE) : Part code; 96-7995-1 8 delay mode. (Use 1 O 1 probe unless otherwise speci-...

Page 81 2-3. SETUP AND CONNECTION VTR block Clamp onto J1 005 J-9 Circuit board connecting tool [Removing the AD1 board] (Video circuit adjustment pattern generator Input signal connecting method) J1 005 NOT USED RF SW1 PB RF RF SW2 CCD ON NOT USED 1 00 µF/6.3V Y+ C IN...

Page 82 2-4. SETUP FOR ADJUSTMENT 2-5. ADJUSTMENT ITEM AND ORDER For adjustment of the VTR section, the video signal from [Servo/System Control Circuit] the pattern generator is used as the adjustment signal. 1 . ON-screen character position adjustment Therefore, it is necessary that this video output signal is 2.

Page 83 2-6. SERVO/SYSTEM CONTROL CIRCUIT 2. Video Center Adjustment 1 . On-screen Character Position Adjustment [Connection] [Connection] • CT341 VR351 TP1 51 • [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition Recording J1 005 @ (C H 1 ) Oscilloscope Playback Viewfinder...

Page 84 2-7. VIDEO CIRCUIT 2. Flying Erase Check 1 . Playback Frequency Characteristics Adjustment [Connection] [Connection] VR191 VR1 92 QCH2 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition J 1 005 @ (CH 1 ) Oscilloscope Playback TP1 92 (CH 1 )

Page 85 4. Trap Adjustment 3. SYNC AGC Adjustment [Connection] [Connection] • TP TPl 05 c • VR1 01 VR1 07 TP1 01 TP1 03 TP1 41 TP1 41 QCH2 QCH2 [Adjustment I Check] [Adjustment I Check] Measuring Equipment Condition Measuring Point Measuring Point Measuring Equipment Condition...

Page 86 5. Comb Filter Phase Adjustment 6. Comb Filter Level Adjustment [Connection] [Connection] • VR1 02 • TPl 05 VR1 1 1 TP1 02 TP1 02 TP1 41 TP141 QCH2 QCH2 [Adjustment I Check] [Adjustment I Check] Condition Measuring Point Measuring Equipment Condition

Measuring Point Measuring Equipment...

Page 87 7. PB LINE OUT Level Adjustment (Normal) 8. PB LIN E OUT Level Adjustment (Hi8) [Connection] [Connection] TP1 05 TP105 TP1 51 VRHS • O TP141 VR176 • O TP1 41 O CH2 0CH2 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition...

Page 88 9. Y FM Carrier Frequency Adjustment (Normal) 1 o. Y FM Deviation Adjustment (Normal) [Connection] [Connection] TP1 05 VR1 03 VR104 TP1 91 TP1 41 TP1 41 QCH2 [Adjustment I Check] [Adjustment I Check] Measu ring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition...

Page 89 1 1 . Y FM Carrier Frequency Adjustment (Hi8) 1 2. Y FM Deviation Adjustment (Hi8) [Connection] [Connection] TP1 05 TP1 51 VR1 05 VR1 06 • • TP1 91 TP1 41 TP1 41 0 CH2 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition...

Page 90 1 3. REC Y Recording Current Adjustment 14. REC C Recording Current Adjustment [Connection] [Connection] TP1 05 VR1 81 • TP1 91 TP1 41 TP1 41 TP1 32 • VR1 31 QCH2 QCH2 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point...

Page 91 1 5 . REC AFM Recording Current Check 1 6. REC ATF Recording Current Check [Connection] [Connection] TP1 33 TP1 41 TP1 41 O CH2 0 CH2 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition Oscilloscope...

Page 92 2-8. AUDIO CIRCUIT 2. PB Separation Adjustment 1 . Deviation Adjustment [Connection] [Connection] AD1 board m vR 20 1 m vR21 1 AD1 board [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition Playback Audio output Oscilloscope...

Page 93 3. REC Separation Adjusdtment 4. Overall Level Check [Connection] [Connection] [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition Oscilloscope Record and TP21 1 Oscilloscope Record Audio output MP type tape playback (SP) terminal Input Signal Alignment Tape...

Page 94 5. Overall S/N Check [Connection] [Adjustment I Check] Measuring Point Measuring Equipment Condition Audio level meter Record and Audio output MP type tape playback (SP) terminal Input Signal / Alignment Tape Short-circuited at the external micro phone jack : No signal ADJ.

Page 95 2-9. VIEWFINDER CIRCUIT 2. Viewfinder Provisional Adjustment 1 . Horizontal Oscillation Frequency Adjustment [Adjusting Location] [Adjusting Location] VR974 VR975 VR972 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition IC971 @, Frequency counter Stop Viewfinder Playback...

Page 96 & 3. Centering Adjustment 4. Horizontal Size Viewfinder S lant Adjustment [Adjusting Location] [Adjusting Location] Centering magnet Yoke clamp Deflection coil [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition Viewfinder Playback Viewfinder Playback Input Signal Alignment Tape...

Page 97 5. Vertical Size Adjustment 6. Brightness Adjustment [Adjusting Location] [Adjusting Location] VR972 VR975 [Adjustment I Check] [Adjustment I Check] Measuring Point Measuring Equipment Condition Measuring Point Measuring Equipment Condition Viewfinder Playback Viewfinder Playback Input Signal Alignment Tape Input Signal Alignment Tape (WR5-5CSP) : For operation check, (WR5-5CSP): For operation check, monoscope portion...

Page 98 7. Focus Adjustment [Adjusting Location] VR974 [Adjustment I Check] Measuring Point Measuring Equipment Condition Viewfinder Playback Input Signal Alignment Tape (WR5-5CSP): For operation check, monoscope portion ADJ. Location ADJ. / Check Value VR974 Preparation: • POWER switch: "PLAYER" Adjustment: Adjust VR97 4 so as to optimize resolution of the mono scope pattern.

Page 99 6. WAVEFOR M 6-1 . CAMERA CIRCUIT (CP2 BOARD) IC9 1 7-6 700mVp-p IC9 14-64 320mVp-p 09501 BBOmVp-p 0.2V/20µ s/div. 0. 1 V /20µ s/div. 0.2V / 20 µ s/div. [Gray Scale Chart] [Gray Scale Chart] [Gray Scale Chart] © IC9 12-22 BBOmVp-p IC914-5 1 1 00mVp-p...

Page 100 IC914-46 140mVp-p IC913-14 100mVp-p IC9 14-19 400mVp-p 50mV /20µ s/div. 50mV / 20µ s/div. 0.2V / 20µs/div. [Color Bar Chart] [Color Bar Chart] [Color Bar Chart] • IC9 14-20 700m Vp-p IC912-16 960mVp-p IC9 12-18 540mVp-p 0.2V / 20µ s/div. 0.2V / 20µs/div.

Page 101 OV ---'> OV ---'> IC951-15 4.9Vp-p IC951-16 4.9Vp-p IC9 1 7-13 5.0Vp-p 1 . 0 V /50ns/div. 1 . 0 V /50ns/div. 1.0V /20µ s/div. OV ---'> OV ---'> IC9 1 7-14 4.BVp-p IC9 1 7-36 4.BVp-p IC9 1 7-34 5.0Vp-p 1.0V / 20µ...

Page 102 ov • ov • @> IC914-4 1 4.BVp-p IC912-5 4.9Vp-p •C912-9 4.BVp-p 1.0V /20µs/div. 1 . 0V /20µs/div. 1 . 0V /20µ s/div. ov • IC912- 1 0 4.9Vp-p IC9 12-1 1 4.9Vp-p IC912-4 720mVp-p 1.0V /20µs/div. 1.0V /20µ s/div. 0.2V /50ns/div.

Page 103 Q V --7 Q V --7 IC9 1 6-57 5.0Vp-p IC9 16-63 5. 0Vp-p IC9 1 5-6 3.2Vp-p 1. OV /50ns/div. 1. OV /50ns/div. 1.0V /50ns/div . av • IC9 1 6-3 1 4.8Vp-p IC91 6-30 4.8Vp-p IC9 16-33 4.BVp-p 1.0V / 20µ...

Page 104 IC9 14-2 250mVp-p IC914-53 250mVp-p IC913-9 1 50mVp-p 50mV / 20µ s/div. 50mV /20µs/div. 50mV /20µ s/div. [Gray Scale Chart] [Gray Scale Chart] [Gray Scale Chart] (CP2 BOARD TC-A BLOCK) IC93 1-30 4.8 1 Vp-p IC93 1-7 4.97Vp-p IC93 1-27 5.47Vp-p 2.0V / 20ns/div.

Page 105 /C93 1-51 43.5mVp-p /C93 1-52 2.26Vp-p IC93 1-55 4.8Vp-p 50mV /5ms/div. 0. 5V / 20ms/div. 2. OV /5ms/div. @> 09302-6 277mVp-p 09305-2 58.2mVp-p 09306-2 42.4mVp-p 0. 1 V / 5ms/div. 20mV /5ms/div. 20mV /5ms/div. 09332-2 69.BmVp-p 0933 1-2 70. 0mVp-p CN933-1 4.95Vp-p 20mV / 20µ...

Page 106 6-2. SERVO/SYSTEM CONTROL CIRCUIT <D IC351-46 4.8Vp-p /C351-49 4.4Vp-p IC351-47 4.6Vp-p 1.0V /5ms/div. 1 . 0V /5ms/div. 1.0V /500ms/div. {REC] IC351-62 3 1 0mVp-p IC351-68 4.9Vp-p IC351-50 4.3Vp-p 1.0V /500ms/div. 1.0V /5ms/div. 1.0V /20ms/div. {REC/PLA Y] {REC] [PLA Y] ('!) IC351-70 4.9Vp-p IC351-75 4.6Vp-p IC351-69 4.9V p-p...

Page 107 @> IC351-66 2.4Vp-p IC342-1 5 4. 0Vp-p IC342-16 4.8Vp-p 1.0V /5ms/div. 1.0V /5ms/div. 1.0V /20µ s/div. IC342-7 4.2Vp-p /C371-9 4.8Vp-p IC371-10 4.BVp-p 1.0V /20µ s/div. 1 . 0V /10ms/div. 1.0V /20ms/div. [PLA Y] [PLA Y] IC371-26 4.8Vp-p /C371-5 2.6Vp-p IC38 1-1 •2•36 1 . 3Vp-p 1 .

Page 108 6-3. VIDEO CIRCUIT TP1 03 500mVp-p TP1 03 500mVp-p TP 101 500mVp-p 0. 1 V /10µ s/div. 0. 1 V /10µ s/div. 0. 1 V /10µs/div. [REC] [PLA Y] [REC] TP 102 15.0mVp-p TP1 06 500mVp-p IC101-17 500mVp-p 50mV /1 0µ s/div. 0.

Page 109 /C1 0 1-50 500mVp-p /C1 0 1-52 330mVp-p /C1 0 1-45 360mVp-p 0. 1 V /10µ s/div. 0. 1 V /10µ s/div. 0.2V/5ms/div. [PLA Y] [REC] [PLA Y] • /C1 0 1-52 280mVp-p IC1 0 1-57 600mVp-p IC121-4 140mVp-p 0. 1 V /10µ s/div. 0.

Page 110 /C121-40 500mVp-p /C121-12 330mVp-p IC121-42 1 80mVp-p 0. 1 V /10µ s/div. 50mV /10µs/div. 0. 1 V /1 OOns/div. [REC] [PLAY] [REC] IC101-43 4 1 0mVp-p /C101-43 440mVp-p /C191-1 200mVp-p 0. 1 V/50ns/div. 0. 1 V/50ns/div. 0.2V /5ms/div. [REC] [PLA Y] [REC] TP132 200mVp-p IC161-10 3.0Vp-p...

Page 111 J1 005-3 320mVp-p J1 005-4 4.2Vp-p CN105-12 680m V p-p 0.2V /5ms/div. 2. 0V /5ms/div. 0.2V /10µ s/div. [PLA Y] [PLAY] [REC] CN105-14 1.0Vp-p CN103-3 1.0Vp-p TP1 9 1 1 70mVp-p 0.2V /10µ s/div. 0.2V /10µs/div. 0. 1 V /50ns/div. [REC] [REC] [REC]...

Page 112 6-5. VIEWFINDER CIRCUIT IC971- 1 6 2. 0Vp-p IC971- 1 1 0.98Vp-p CN972-1 1.5Vp-p 1 . 0V /20µs/div. 0.2V /20µs/div. 1.0V /5ms/div. © ® FBT-4 60. 0V p-p 09701 Cathode 1 1. 5Vp-p 20. 0V /20µs/div. 2.0 V /20µ s/div. - 6-1 4 -...

Page 113 VOLTAGE CHART 7-1 . CAMERA CIRCUIT (CP-2 BOARD TC-A BLOCK) MODE CAMERA MODE CAMERA MODE CAMERA MODE CAMERA CAMERA CAMERA CAMERA CAMERA STOP PIN

NO. STOP PIN NO. STOP PIN NO. STOP PIN NO. 4. 8 IC931 4. 8 0. 1 IC935 0.

Page 114 MODE CAMERA CAMERA MODE CAMERA CAMERA STOP PIN NO. PIN NO. STOP Q9322 Q9306 2. 1 Q9323 Q93 1 1 4. 8 2. 1 Q9324 0. 1 2. 1 Q9313 Q9331 6. 1 6. 1 Q9315 2. 1 Q9332 Q9320 Q9321 2.

Page 115 7-2. SERVO/SYSTEM CONTROL CIRCUIT SERVO SYSTEM CONTROL SERVO SYSTEM CONTROL REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE IC321 IC341 IC334 IC342 1 .0 4. 5 2. 1 2. 1 2.

Page 116 SERVO SYSTEM CONTROL SERVO SYSTEM CONTROL REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE 2. 5 0.0/0.0 5.0/5.0 0.0/5.0 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 0. 1 0.

Page 117 SERVO SYSTEM CONTROL SERVO SYSTEM CONTROL REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE 2. 5 IC353 4. 9 IC361 4.3/4.4 2.8/3.5 IC372 2. 3 4. 9 4. 9 IC381 1.

Page 118 SERVO SYSTEM CONTROL SERVO SYSTEM CONTROL REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY PLAY STOP F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE Q3203 0. 1 0. 1 0. 1 0. 1 0. 1 Q3301 2. 3 2. 3 4.3/4.4 2.8/3.5 Q3302 3.

Page 119 7-3. VIDEO CIRCUIT VIDEO VIDEO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD F.FWD PAUSE PAUSE PAUSE PAUSE IC101 2. 1 2. 1 2 . 1 2. 1 2. 1 2. 1 2. 1 2. 1 2.

Page 120 VIDEO VIDEO REV/ REV/ PLAY REW/ PLAY REW/ SEARCH SEARCH PLAY STOP PLAY STOP F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE IC 1 2 1 IC152 2. 5 2. 1 2. 1 2. 1 2. 1 2. 1 2. 1 2. 1 2. 1 IC181 4.

Page 121 VIDEO VIDEO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY PAUSE PAUSE F.FWD PAUSE PAUSE F.FWD 3. 0 0. 1 0. 1 2. 9 4. 1 4. 1 D1501 4. 7 IC191 3. 3 3. 0 D1502 Q I OO I 4.

Page 122 VIDEO VIDEO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE 2. 1 2. 1 Q1010 Q1 162 Q I O I I Q 1204 4. 8 QI012 Q1301 Q1302 Q1013 4.

Page 123 VIDEO VIDEO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE 2. 4 Q1350 QI41 1 Q135 1 1. 5 Q1501 2. 1 2. 1 2. 1 Q1352 Q I502 0. 4 Q1401 1 .

Page 124 VIDEO VIDEO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE Q1546 0. 1 0. 1 0. 1 0. 1 Q1570 1 . 1 1 . 1 1 . 1 1 . 1 1 .

Page 125 VIDEO VIDEO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE Q1706 Q 1758 4. 7 4. 8 4. 5 4. 8 Q1707 4. 9 4. 9 Q 1759 4. 8 4.

Page 126 7-4. AUDIO CIRCUIT VIDEO AUDIO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY STOP PLAY PAUSE PAUSE F.FWD F.FWD PAUSE PAUSE Q1904 IC201 4. 9 4. 9 Q1905 0. 1 0. 1 Q1906 Q1981 4. 9 4. 9 4.

Page 127 AUDIO AUDIO REV/ REV/ REW/ PLAY REW/ PLAY SEARCH SEARCH STOP PLAY PLAY STOP F.FWD PAUSE PAUSE F.FWD PAUSE PAUSE Q2203 4. 9 0. 1 0. 1 0. 1 Q2204 Q2205 Q2206 IC291 5. 0 Q2207 1 .6 3. 1 3.

Page 128 7-5. VIEWFINDER CIRCUIT MONOSCOPE AUDIO VIEWFINDER MODE TAPE PLAYBACK REV/ CAMERA REW/ PLAY SEARCH PLAY PIN NO. OPEN STOP F.FWD PAUSE PAUSE Q2601 IC971 1 . 1 1 . 1 2. 1 2. 1 - 40 - 37 - 37 Q9701 Q9702 - 30...

Page 129 TROUBLESHOOTING GUIDE SUBINDEX PAGE .....Auto-focus Inoperative .

Page 130 8-1 . CAM E RA C I RC U IT NO PICTURE SET POWER SW TO "CAMERA" REFER TO IRIS" REFER TO "NO RECORD VIDEO" CHECK IC91 6 , CHECK Q9501 IC918,Q9 1 6 1 , 09162 CHECK IC95! CHECK T9I90, T91 0 1 CHECK IC9 !4 - 8-2 -...

Page 131 NO PICTURE (Continued) CHECK IC91 9 CHECK T9040, T9041 CHECK IC91 4 CHECK T9020 CHECK IC9 1 2 - 8-3 -...

Page 132 NO COLOR CHECK JC9! 4 REFER TO "NO CHECK R9027, RECORD CHROMA" R9028, L9021 , C9028 CHECK IC91 3, IC9! 6 CHECK C91 15, Q9123 CHECK IC91 5 CHECK IC91 2 - 8 - 4 - ...

Page 133 POWER ZOOM INOPERATIVE SET POWER SW TO "CAMERA" STANDBY SW TO "STANDBY" PRESS HOLD T or W B UTTON CHECK ZOOM MOTOR REFER TO "SERIAL CHECK 09313, INTERFACE 0931 6, 0931 7 CHECK" NO AF/ MF CHANGE AND POWER ZOOM INOPERATIVE (SERIAL INTERFACE CHECK) SET POWER SW TO "CAMERA"...

Page 134 INCORRECT AUTO IRIS SET POWER SW TO "CAMERA" STANDBY SW TO "STANDBY" REFER TO "SERIAL CHECK AF DATA IRIS CHANGE INPUT BLOCK READJUSTMENT ILLUMINATION Q9301-Q9306 CHECK IRIS MOTOR COIL IN LENS CHECK IC932 ASSEMBLY REFER TO "NO CHECK IC935 CHECK IC931 PICTURE"...

Page 135 AUTO-FOCUS INOPERATIVE INCORRECT AUTO WHITE BALANCE SET POWER SW TO SET POWER SW TO "CAMERA" "CAMERA" STANDBY SW TO STANDBY SW TO "STANDBY" "STANDBY" STOP CHECK IC9 1 4 REFER TO "SERIAL NTERFACE CHECK" CHECK LENS CHECK CONNECTOR, ADJUSTMENT 09331 , 09332 MOTOR, LENS CHECK AF DATA CHECK IC93 1 ,...

Page 136 8-2. S E RVO/SYSTEM CONTROL CIRCUIT RECORD MODE INOPERATIVE CAMERA MODE (TAPE IN) REFER TO "POWER LOSS / POWER SWITCH" INOPERATIVE CHECK CN335 MECHANISM TAPE END PRESS REC CHECK CN335,R35 1 7 START/STOP A N D MECHANISM BUTTON CHECK IC35 1 CHECK CHECK CN337, CN301...

Page 137 DRUM DOES NOT ROTATE CAPSTAN DOES NOT ROTATE TEST MODE : TEST MODE : PLAY PLAY Short Pin @ and Short Pin @ and (TEST MODE) (TEST MODE) Pin @ of 1 1005 Pin @ of J1005 HIGH HIGH CHECK CHECK FPC AND IC35 1 13801...

Page 138 EJECT INOPERATIVE WADING INOPERATIVE REFER TO "POWER REFER TO "POWER LOSS / POWER LOSS / POWER SWITCH SWITCH INOPERATIVE" INOPERATIVE" HIGH CHECK PRESS EJECT SW MECHANISM CHECK WAIT UNTIL IT SY! ASSY DRIES UP EJECT SW REFER TO CHECK IC351 ROTATE"...

Page 139 POWER LOSS POWER SWITCH INOPERATIVE NORMAL POWER SWITCH POWER SAVE STAND-BY SW STANDBY etc. CHECK F3001 POWER SUPPLY CHECK IC35 1 CHECK L3501 CHECK JC352, R3523 CHECK S3003, RB356, RB357, IC351 CHECK IC35 1 CHECK A3001 - 8-1 1 -...

Page 140 ON-SCREEN DISPLAY INOPERATIVE CHECK R34 1 3 CHECK CHECK IC345 03402, 03403 PART CHECK CHECK VIDEO L3401 ,C3404, CT341 CIRCUIT CHECK IC35 1 CHECK IC325 CHECK IC342 CHECK VIDEO CIRCUIT - 8-1 2 -...

Page 141 PLAY MODE INOPERATIVE PLAY TEST MODE : Short Pin @ and Pin @) of 11005 TEST MODE REFER TO "POWER LOSS / POWER SWITCH INOPERATIVE" PRESS PLAY BUTTON CHECK S Y I ASSY SW CHECK IC35 1 TAPE END CHECK CN335 R35 1 7 and MECHANISM CHECK LOADING...

Page 142 TRACKING INOPERATIVE PLAY TEST MODE CHECK IC35 ! CHECK IC35 1 CHECK IC371 CHECK R37 1 2 CHECK IC35 1 CHECK IC35 1 CHECK IC371 CHECK IC35 1 CHECK VIDEO - 8-1 4 -...

Page 143 8-3. VID E O CI R C U IT NO EE-CHROMA SET POWER SW TO "CAMERA" CHECK CHROMA INPUT CIRCUIT CHECK CAMERA CHECK IC152-2 CHECK IC35 1 CHECK ICIOI CHECK C I 026, 0 1 502, 0 1 503, R I502, R I 503, CN I OZ NORMAL - 8-1 5 -...

Page 144 NO RECORD CHROMA REFER TO "NO EE-CHROMA" SET RECORD MODE CHECK C 1

224 HIGH CHECK IC 1 2 1 CHECK IC35 1 CHECK IC101 HIGH CHECK IC35 1 HIGH CHECK CHECK IC35 1 CHROMA LPF - 8 - 1 6 -...

Page 145 NO RECORD CHROMA (Continued) CHECK VA SV HIGH CHECK REC DAMPING BLOCK CHECK IC 1 9 1 CHECK IC35 1 NORMAL CHECK DRUM BLOCK CHECK IC I O I -25 NORMAL CHECK X i 20 1 CHECK IC I 2 1 CHECK X i 202 CHECK IC I 2 1 - 8- 1 7 -...

Page 146 NO PLAY CHROMA SET POWER SW "PLAYER" AND SET PLAY MODE SET POWER SW "CAMERA" NORMAL SET POWER SW "CAMERA" REFER TO "NO RECORD CHROMA" SET POWER SW "PLAYER" AND SET PLAY MODE CHECK LPF, PB AMP BLOCK CHECK Q I 403 CHECK 4.43 MHz CHECK IC I O I -25 BPF BLOCK...

Page 147 NO PLAY CHROMA (Continued) CHECK IC35 1 CHECK I C 1 2 1 CHECK IC351 CHECK I C I O I CHECK JOG AND DOP BLOCK CHECK I C 1 2 1 OTHER CHECK I C I O I NORMAL CHECK LPF BLOCK - 8 - 1 9 -...

Page 148 NO PLAY CHROMA (Continued) CHECK IC 1 2 1 CHECK X 1 202 CHECK IC 1 2 1 NORMAL CHECK X 1 20 1 NOISY PICTURE ONLY WHEN PRERECORDED (ALIGNMENT) TAPE IS PLAYED BACK REFER TO "NO RECORD LUMA" CHECK HEAD, DRUM, IC 1 9 1 CHECK REFER TO...

Page 149 NO EE-VIDEO MONITOR SET POWER SW TO "CAMERA" CHECK CAMERA C 1 5 1 0, R 1 5 1 4 HIGH CHECK IC342 HIGH CHECK SOLDER NO RMAL CHECK IC35 I N ORMAL CHECK IC35 1 CHECK CHECK I C I O I R 1 502, R 1 503, CN J 02 NORMAL - 8- 2 1 -...

Page 150 · REFER TO "NO EE-VIDEO MONITOR" CHECK REC SET POWER SW TO DAMPING BLOCK "CAMERA" AND SET RECORD MODE CHECK IC1 9 1 CHECK ICI O I CHECK DRUM EQ , BLOCK CHECK LPF, AMP BLOCK CHECK IC I O I HIGH CHECK CARRIER DEVIATION...

Page 151 NO PLAY VIDEO SET POWER SW "PLAYER" AND SET PLAY MODE SET POWER SW "CAMERA" NORMAL SET POWER SW "CAMERA" REFER TO "NO RECORD VIDEO" SET POWER SW "PLAYER" AND S ET PLAY MODE CHECK AFM, ATF, CHECK C J 908 CHROMA TRAP BLOCK CHECK IC J O I...

Page 153 NO PLAY VIDEO (Continued) NO PICTURE I N EVF REFER TO " NO EE-VIDEO MONITOR" CHECK VF OUT B LOCK CHECK IC I O J CHECK EVF CHECK C 1 026, QI502, Q J 503, RI502, R J 503, CN 1 02 NORMAL ON-SCREEN D ISPLAY INOPERATIVE REFER TO "NO...

Page 154 8-4. AUDIO CIRCUIT NO EE - AUDIO SET POWER SW TO "CAMERA" CHECK CN106 (CPI ) APPLY AUDIO SIGNAL CHECK (lkHz/-66.0dBs) TO C2902, C2952 CN294 (ADZ) CHECK IC291 CHECK CHECK MICROPHONE CHECK IC201 ADZ BOARD ASSY - 8-26 -...

Page 155 NO RECORD AUDIO NO PLAY AUDIO REFER TO REFER TO "NO EE-AUDIO" "NO EE-AUDIO" REFER TO REFER TO "NO RECORD "NO RECORD VIDEO" AUDIO" APPLY AUDIO REFER TO SIGNAL (l kHz/-66.0dBs) TO "NO PLAY VIDEO " CN294 (ADZ) CHECK IC201 (ADI ) CHECK T200 1 , T2 1 0 1 CHECK CN I 06...

Page 156 8-5. VIEWFINDER CIRCUIT NO EVF RASTER LINE CHECK DY CHECK L9702 CHECK Q9701 CHECK IC971 CHECK IC971 CHECK Q9702 CHECK IC971 CHECK T970 1 * T9701 2.2kY CHECK CRT 300V CHECK DY BRIGHT ADJ 400Y - 8 -28 -...

Page 157 I <( ...

Page 158 SANYO Ltd. Osaka, Japan Electric Co., / '93/ Aug. 2,450 Printed in Japan...

Page 159 N ote 2 : The ASSY, BRAKE CAPSTAN No. 6 has been eliminated d uring production. When replacing a set including this part, please change it for a different one. See next on this back page REFERENCE No. M M 550005 - 01 Feb./'93/3400 Ml Printed in Japan SANYO ELECTRIC Co., Ltd.

Page 160 MECHAN ISM 1 MECHAN ISM 2 Note : In Parts List page 5 - 2 the illustration of location No.9 , 1 0 were misprinted.  1 35 ADDED)  IDLER  ASSY, ARM (CHANGED) MECHAN ISM 4 MECHAN ISM 4 Note : In Parts List page 5 - 4 the i llustration of location No.2 ,3

were misprinted.

Page 161 - 0 4 ( S P ) M M 550005-02 - 0 6 REFERENCE No. - 0 6 ( B L ) - 0 0 - 0 7 ( U K ) SANYO ELECTRIC Co., Ltd. Jul./ '93/3,400 Ml Printed in Japan...

Page 162 :::::; CD :::::; ..A" -! CD CD CD ..□ s: -c O :J: O C. CD □ - ..,.., □ □ g □ □ - J:ll ..:::I ..:::::; !:!: O' (ii "...

Page 163 A4 . . . RF SW2 A1 1 . . . G N D See t h e reverse s i d e o f t h i s notice Sep./ '93/3,400 Ml Printed in Japan SANYO ELECTRIC Co., Ltd. M M 550005-03 REFERENCE No.

Page 164 [ N EW ] 1 3 1 5 17 19 2 1 1 2 1 4 1 6 1 8 20 22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Pi n layout on terminal board 2-4.

Page 165 (U . K.) [VM-RZ2P] 1 26 035 04 (U . K. ) [VM-D90P] 1 26 035 05 [VM-RZ2R] [VM-EX70P] 1 26 032 05 (EU ROPE) 1 26 032 06 (AUSTRALIA) [VM-D90R] 1 26 043 04 (U . K. ) 043 0 8...

Page 166 S PACER, HEAD DRUM No. Model H EAD DRUM UPPER DRUM VM-EX30P 636 043 1 201 636 042 8522 VM-EX20P 636 043 1 201 636 042 8522 VM- EX25P 636 043 1 20 1 636 042 8522...

Page 167 In Parts List the illustration of location l'fo . 9, N o . 1 0 and No. 1 1 were mispri nted . Please correct as shown below. Prod.Code (VM-EX70P) 1 26 032 05 (EUFiOPE) 1 26 032 06 (AUSTRP,LIA) SANYO Electric Co., Ltd.

Page 168 PWB, C P-1 ) N ew 645 004 8562 OSC, CERAMIC 2.00MHZ es with Old (AUSTRALIA) Prod.Code : (VM-EX70P) 1 26 032 05 (EUROPE) 1 26 032 06 REFERENCE : No. 55001 May/ '94/2450 Ml Printed in Japan SANYO Electric Co., Ltd .

Page 169 Please add this notice to the manual listed below. Date : 1 8/Apr./'H5 Category : Bmm CAMCORDER Model : VM-EX70P Effective from : Se1rial No. Issue Number Destinati on : EUROPE , AUSTRA LIA REF : No. PL 5500 1 0 •...

## This manual is also suitable for:

126 032 05126 032 06126 032 00