NTSC/PAL/SECAM

1-inch Videocorder, SMPTE/EBU Type C Format

BVH-3000/3100 series

(Non-sync)

Sony Broadcast

SONY

Ever since the announcement of Type "C" format VTRs in 1976, "Sony BVH machines" have become very well-known as reliable and user-oriented 1-inch VTRs. The BVH-2000 has won great appreciation from users worldwide for its technological excellence and its easy-to-use, operator oriented design.

While offering the best in conventional 1-inch VTR operation, Sony has also developed variations in the BVH range in response to market demands. The Emmy Award winning Delta t BVH-2500, for still frame recording, and Super Motion BVH-2700, which offers the ultimate in picture quality in slow motion picture recording, are two examples of Sony's commitment to meeting user demands. Most recently, the BVH-2800 was unveiled to provide a combination of PCM audio and 1-inch VTR picture quality on a single tape.

Sony now introduces the BVH-3000 and its non-sync head variation, the BVH-3100, which have been designed as a new concept for Type "C" Format VTR's with their "all-in-one" construction—the basic time base corrector (TBC) factory supplied as a standard function operating in combination with the one board type TBC processor. Users have a choice of two TBC processors—the Standard TBC Processor or the High Quality TBC Processor—according to their requirements. While the Standard TBC Processor provides picture quality equal to conventional Sony TBCs, the High Quality TBC Processor offers the highest picture quality possible from a 1-inch VTR equipped with an internal TBC.

In addition, various new mechanisms have been adopted in the BVH-3000/3100 in order to provide a maximum of operational ease and tape protection. An air threading system which minimizes the manual handling of the tape has also been developed for these VTRs.

Special attention to construction has been paid to ease service and maintenance. The circuity of each of the main function controls are centralized in one circuit board, thus configuring a one-board/one-function construction. In addition, the connectors on the rear side are categorized into four functional blocks which can each be detached separately.

Main Features

- New air threading technology limits tape handling to a minimum for ease of operation and tape protection
- Easy manual tape threading with new wide moveable guide system
- Time base corrector function supplied as a standard to operate with an optional TBC processor
- Two types of time base corrector processors available—Standard TBC Processor or High Quality TBC Processor
- High Quality TBC Processor provides a steady DT* playback picture
- Dolby Noise Reduction System (optional)
- New self-aligning DT system for Dynamic Tracking playback within a DT range of −1 to +3 times normal playback speed
- Separate SC-H phase meters for tape SC-H phase and reference signals provided
- Serviceability improved with the sophisticated one-circuit-board/one-function design
- Full scale built-in editing facility
- Video/audio confidence playback
- Versatile system interface available for system expandability
- Compact, lightweight, and 19-inch rack mountable
- Two hour recording and playback
- Computer controlled servo system including sophisticated self-diagnostics
- Ergonomically designed front panel layout

**Dynamic Tracking is a registered trademark of Sony Corporation.*

BVH-3000

BVH-3100

**Side panels and tapes are optional*

Easy Operation

User Oriented Control Panel Mounting

The control panel is detachable with

BKH-3090 (option)

Color Framing Display

The BVH-3000/3100, for the first time in Type "C" VTRs, provides separate SC-H meters, one for the off tape signal and one for the input or reference signal.
By comparing the two meters, the SC-H status of the two signals can be determined at a glance, thus enabling the operator to execute matched frame edits.

Multicue Function

Up to ten cue points can be registered with the BVH-3000/3100. Successive cue entry or point-by-point entry/modification is possible to allow the marking of edit points during editing or the setting of cue points during live telecasting.

21-key Operation

The 21-key keypad section is used for two purposes—menu operation and time code data setting during editing operations such as the setting of time code data, timer data, duration, etc.

Menu Driven Setup

In the BVH-3000/3100 all of the setup selections including the test mode of self-diagnostics are accessed by the 21-keys via the menu. The menu driven setup eliminates the troublesome operation of DIP switches mounted on internal circuit boards which is necessary in conventional equipment.

The menu consists of three main blocks—the Initial Setup Menu, Operation Mode Select Menu, and the Test Mode Menu. Up to nine of the most frequently used parameters within the Operation Mode Select Menu can be preselected as the Pre Select Menu which can be called up with the single stroke of one of the numeric keys (0—8) in the 21-key keypad area. All of the setup parameters will be displayed in the display area.

Display Area

The two line (40 character per line) dot matrix display area provides various information to the operator. When the menu operation is activated, the menu number, available parameters, and the selected item are displayed in the lower line. In normal operation, alphanumeric data of time code, timer, user bits, tape speed, error messages, etc. are displayed. The time code data, user bits data, and error messages can be superimposed onto the picture monitor.

Error Messages

As a part of the self-diagnostic functions, the VTR status indications—such as SYS ERROR (system error), SRV ERROR (servo error), etc.—will appear if abnormal operation should occur.

Recording/Playback Level Preset and Manual Control

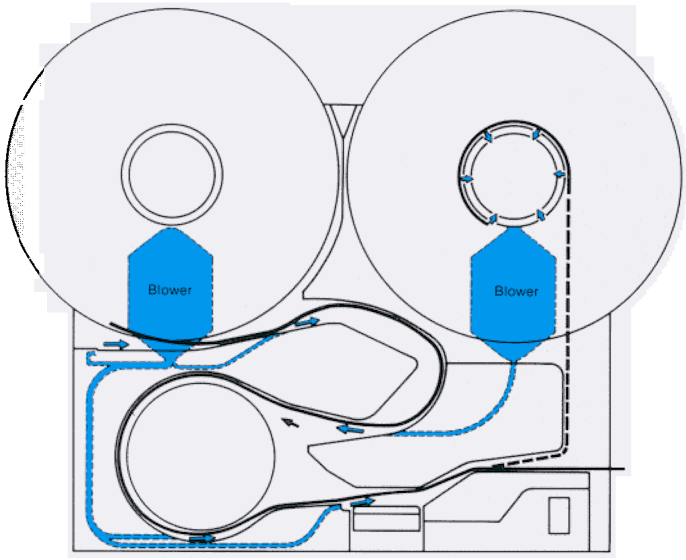
The audio recording level and audio playback level can be preset to the standard level of each individual user or broadcast station. It is also possible to adjust the audio leve manually by pulling out the control knobs.

Audio Ch-4 Capability (PAL/SECAM version only)

The BVH-3000/3100 (A4) is provided with audio Ch-4 capability in addition to Audio Ch-1, Ch-2, and Ch-3.
Specifications, such as S/N, frequency response, distortion, and crosstalk are equal to those of the other audio tracks.
Special consideration has been paid, in the BVH-3000/3100 (A4), to the cancellation of crosstalk between audio Ch-4 and CTL track/Ch-3.

New Tape Transport Mechanism

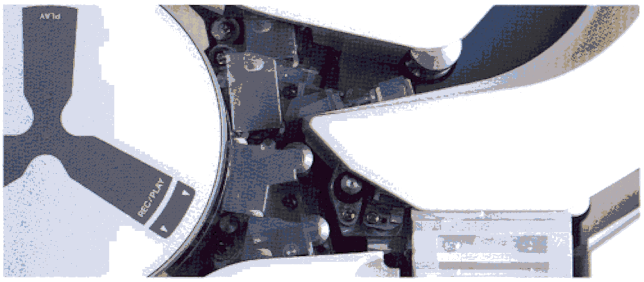
The BVH-3000/3100 features an ideal tape transport design which assures ease in tape threading and a maximum of tape protection.



Take-up Reel R1-11VA

New Moveable Guide System

An advanced moveable guide system has been incorporated in the BVH-3000/3100 to enhance tape threading ease. The new assembly offers a wide clearance of 88mm between the entrance/exit posts because each guide post moves 44mm. This wide movement has been realized by the adoption of the linear bearing system which ensures accurate and reliable movement.



Air Threading

With the BVH-3000/3100's air threading technology, tape handling has been reduced to the minimum which offers maximum tape protection and makes the threading process easy. During the air threading process, the tape is loaded through the tape path and around the drum by the gentle air flow generated by two small blowers. Then, by simply moving the tape end towards the newly designed take-up reel's hub, the tape end will automatically adhere to the hub by air suction. Standard 1-inch tape can be used and no alteration or addition of special leaders are required to use air threading.

TBC Function Equipped as a Standard with Selectable Processor

The "All-In-One" Concept

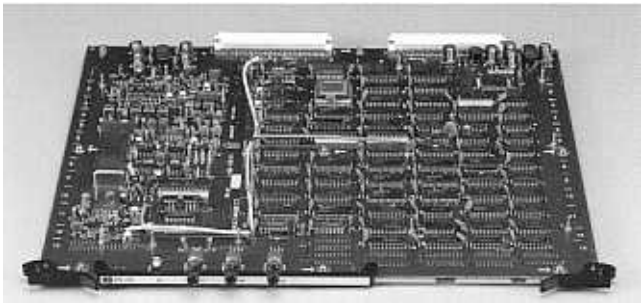
Sony introduces a new era for Type "C" VTRs with the BVH-3000/3100 by supplying the basic time base corrector function as a standard. Having the TBC function and VTR packed into one unit not only contributes to the reduction of size, weight, and power consumption in the total system but also provides extremely good cost performance when compared to using external TBCs.

Selectable TBC Processor

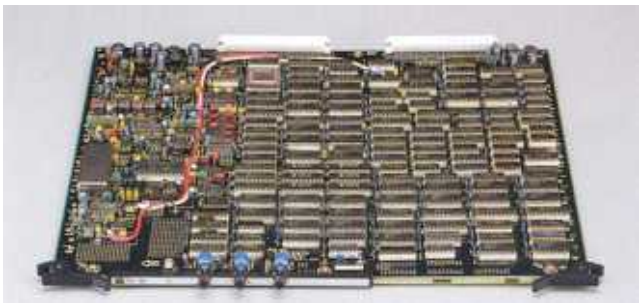
There is a choice of two TBC processor boards which are fitted into the main VTR electronics compartment. To provide maximum flexibility, Sony has prepared these two types of TBC processors—the Standard TBC Processor, BKH-3010 (NTSC)/BKH-3020 (PAL/SECAM) and the High Quality TBC Processor, BKH-3050 (NTSC)/BKH-3060 (PAL/SECAM). The BVH-3000/3100 main deck with either of the TBC processors provides broadcast quality color playback over the full DT range of reverse normal to three times normal speed and recognizable monochrome pictures in the search mode at up to ±50 times normal speed.

TBC Processor Performance

While the combination of the **BVH-3000/3100 and the BKH-3010 (NTSC)/BKH-3020 (PAL/SECAM)** provides performance equivalent to that of conventional Sony TBCs such as the BKH-2150/2350, the combination of the **BVH-3000/3100 and the BKH-3050 (NTSC)/3060 (PAL/SECAM) combination** offers a steadier picture during DT playback and the Program Play (time compression/expansion) Mode by adopting such new technology as adaptive comb filtering (NTSC only), an improved high order Y-Add system, and a new dropout compensator, all of which provide improved resolution during the DT mode with more life-like picture reproduction than was available previously. In addition to the improvement in slow motion picture quality this new dropout compensator system provides exceptional protection against random dropout effects during normal playback.



BKH-3010 (NTSC) Standard TBC Processor



BKH-3050 (NTSC) High Quality TBC Processor

Built-in Time Code Generator/Reader

Based on Sony's understanding that time code is an indispensable feature of 1-inch VTRs, the time code generator/reader function comes as a standard in the BVH-3000/3100. The factory supplied time code generator/reader is capable of generating, reading, and displaying the VITC (Vertical Interval Time Code) and LTC (Longitudinal Time Code) of the SMPTE/EBU standards at any of the VTR's operating speeds.

Accurate Reading

The combined use of VITC and LTC makes accurate reading of time codes possible at all tape speeds from −50 to +50 normal speed including still frame. The time code being read will be displayed on the video monitor as well as on the function control panel via menu operation.

Easy Character Display Adjustment

All controls for position, size, and mode of the display are accessed via the menu.

User Bits

In addition to the time code display, user bits can be displayed, preset, and replaced with other data.

Slave Lock Function

Both VITC and LTC can be slave-locked to an external source or to the off tape time code during assemble editing.

Power Down Memory Time Code

When the VTR power is turned off, the backup power incorporated with the VTR permits TIMER-1, TIMER-2, and character data to be retained for approximately 96 hours.

Advanced DT System

Dynamic Tracking System

The innovative DT system provides full broadcast quality playback pictures at speeds within the full range of reverse normal to three times normal speed while offering such additional features as:

The **DT Variable Memory Function**, which memorizes the tape motion within the DT range with the capability to rehearse and repeat as many times as required.

The **Program Jog Mode**, in which portions of a program may be replayed within the preselected DT speed range and then returned to normal play at the desired point.

The **Program Play Mode**, which is the time expansion/compression mode in which the whole program can be run in a playback speed other than normal speed within the range of ±20% normal speed in increments of 0.1%.

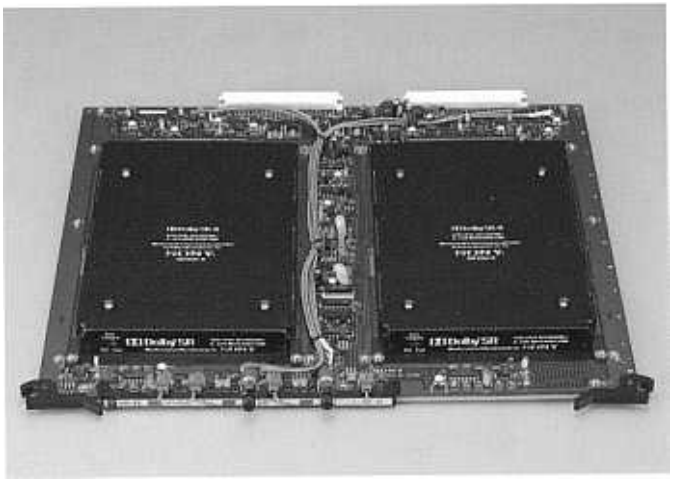
Advanced DT Circuit Technology

The BVH-3000/3100 DT head control system is based on a large amount of data detected from the status signals and the video output signal. This data is given to the CPU, processed, and the resulting control signal is fed back to the DT head to provide the optimum control of DT head motion. This circuit is self optimizing so no adjustments are required to achieve continuous optimum results.

Improved Audio Quality (with the optional BKH-3080)

The BVH-3000/3100 can provide superior audio performance with the optional BKH-3080 Audio Processor Board. The BKH-3080 is a single plug-in type module which offers Dolby* A or Dolby SR Noise Reduction Systems for the BVH-3000/3100. It will fit into the slot of BVH-3000/3100 compartment which was already prepared for this board. Users can easily set Dolby A, Dolby SR, or Dolby off mode via the select switch located on the front of the board. When Dolby A is activated, a better than 67dB signal-to-noise ratio is obtained, and when Dolby SR is activated, a better than 80dB signal-to-noise ratio is obtained.

**Dolby is a trademark of the Dolby Laboratories Licensing Corporation.*



Improved Serviceability

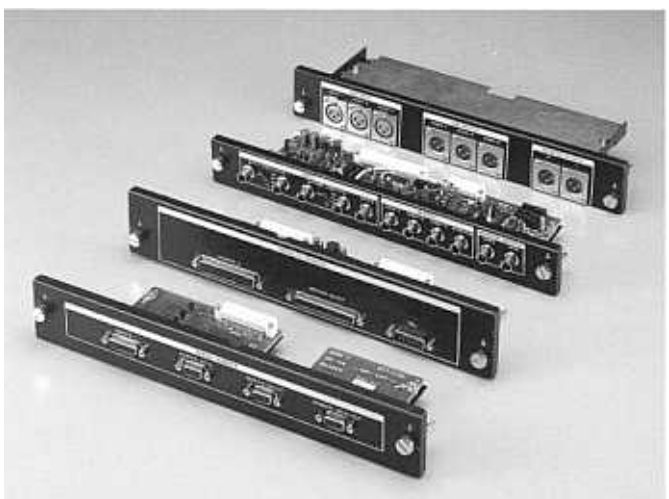
The BVH-3000/3100 is designed to provide maximum ease and time saving for service and maintenance purposes.

One-Board/One-Function Construction

Each of the main function controls, such as video, audio, servo, and system control, is centralized into one circuit board and, therefore, each of the boards can be serviced independently. The audio circuitry can be removed from the front by pulling out the audio level meter panel and the other boards can be accessed when the control panel position is shifted. All main circuit boards use DIN-type connectors for reliability.

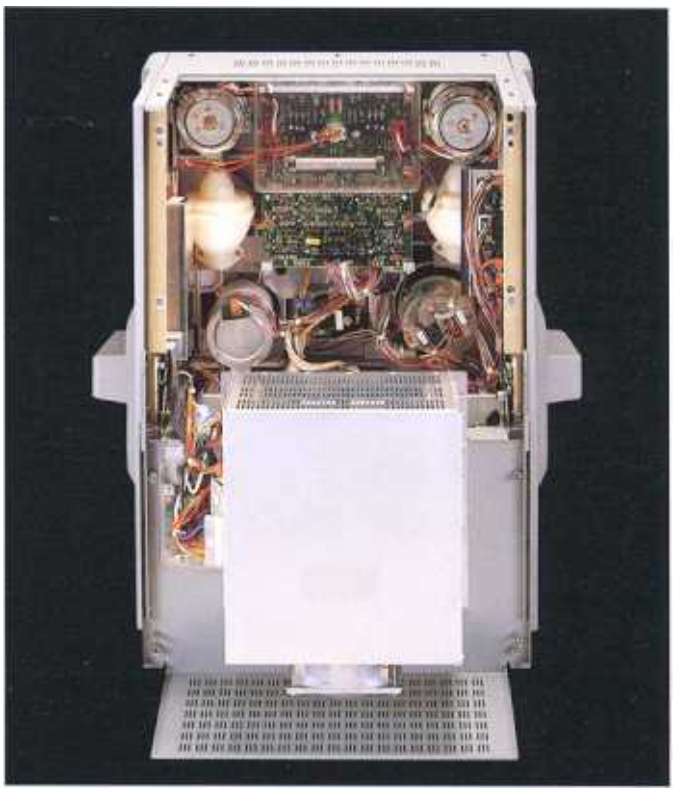
Plug-in Type Module

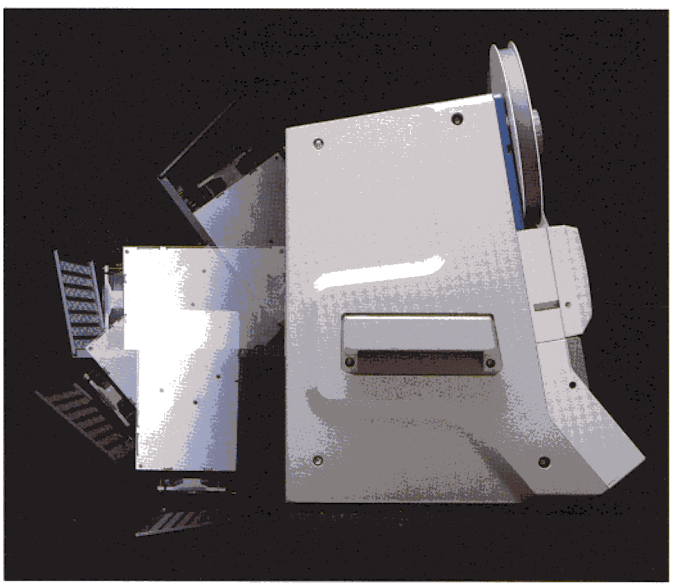
When looking at the VTR main unit from the rear side, the user will find four connector panel blocks. Each block is independently plugged into the mother board in the VTR main deck electronics. This construction results in the elimination of harnesses, connectors, and cables.



Easily Accessible Rear Side Design

The rear panel of the BVH-3000/3100 can be hinged downwards in two positions to create a wide open space in the rear which enables access to the interior mechanisms and circuit boards.





Self-diagnostics

The self-diagnostics system of the BVH-3000/3100 is designed to help avoid errors in the VTR itself or in the system and to optimize the VTR facilities under all circumstances. The BVH-3000/3100 self-diagnostics not only find and indicate errors, but compensate for them as well. In addition, a complete VTR check, including adjustment of servo and system control, can be performed easily without any special measuring equipment.

System Flexibility

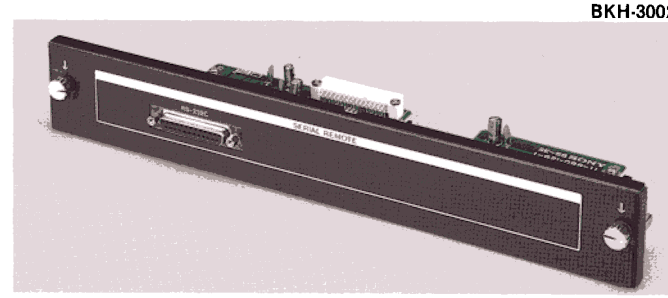
The BVH-3000/3100 has a built-in microprocessor to provide a full range of editing functions. By connecting two BVH-3000/3100 VTRs via a 9-pin (RCC-G series) cable, it is possible to control all of the Player VTR's functions from the Recorder VTR.

RS-422 serial operation enables both manual and automatic editing with any combination of BVH-2000/3000 series, BVU-800 series, and BVW series units without an external edit controller unit. Of course, the controls available will be limited by the capability of these VTRs.

To provide a wide range of operational flexibility with other machines and control systems, the BVH-3000/3100 employs four connector panel blocks.

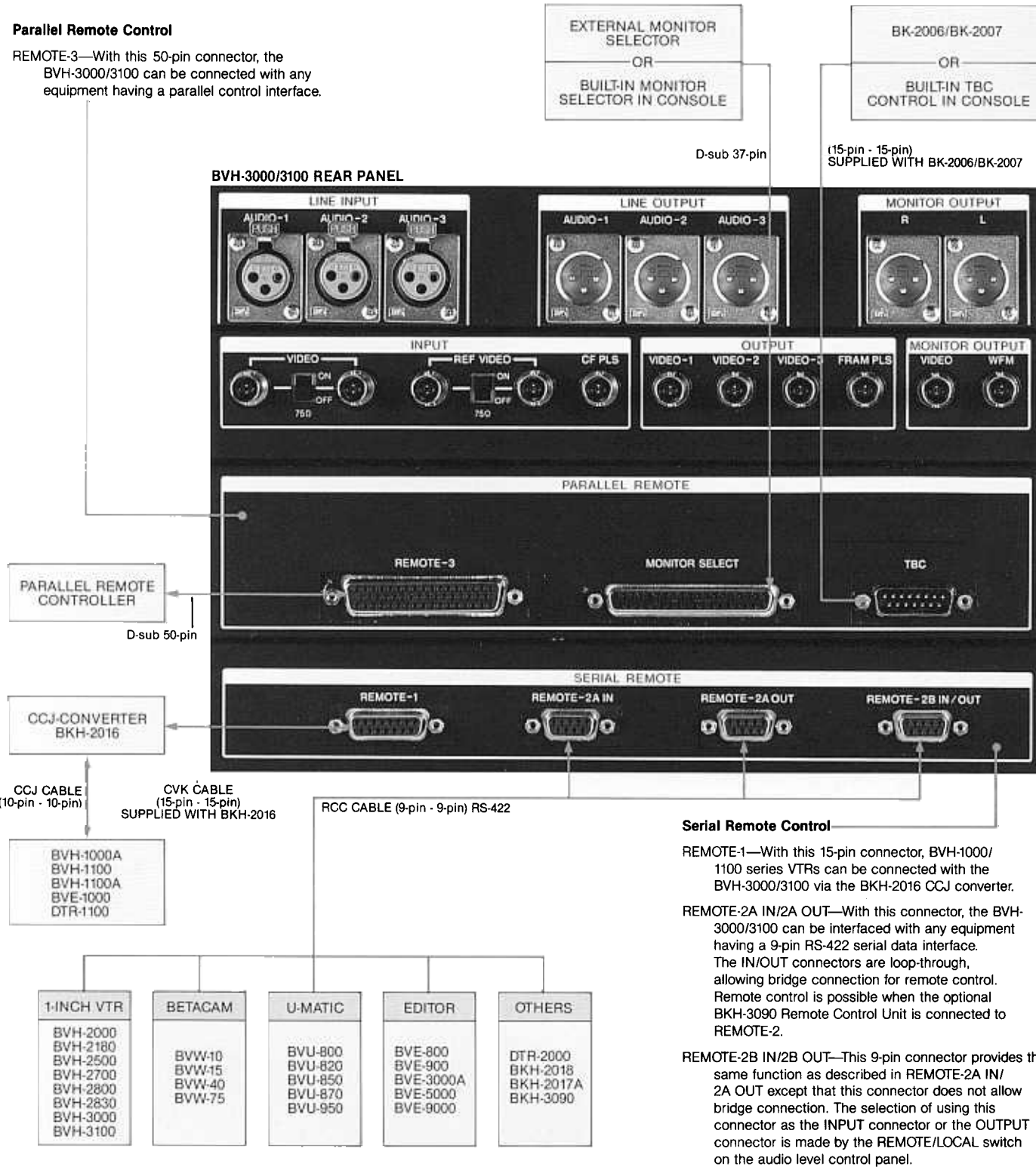
Communication via an RS-232C port is also available as an alternative to the RS-422 when using the optional BKH-3002 RS-232C Interface Kit.

BKH-3002



Parallel Remote Control

REMOTE-3—With this 50-pin connector, the BVH-3000/3100 can be connected with any equipment having a parallel control interface.



Serial Remote Control

REMOTE-1—With this 15-pin connector, BVH-1000/1100 series VTRs can be connected with the BVH-3000/3100 via the BKH-2016 CCJ converter.

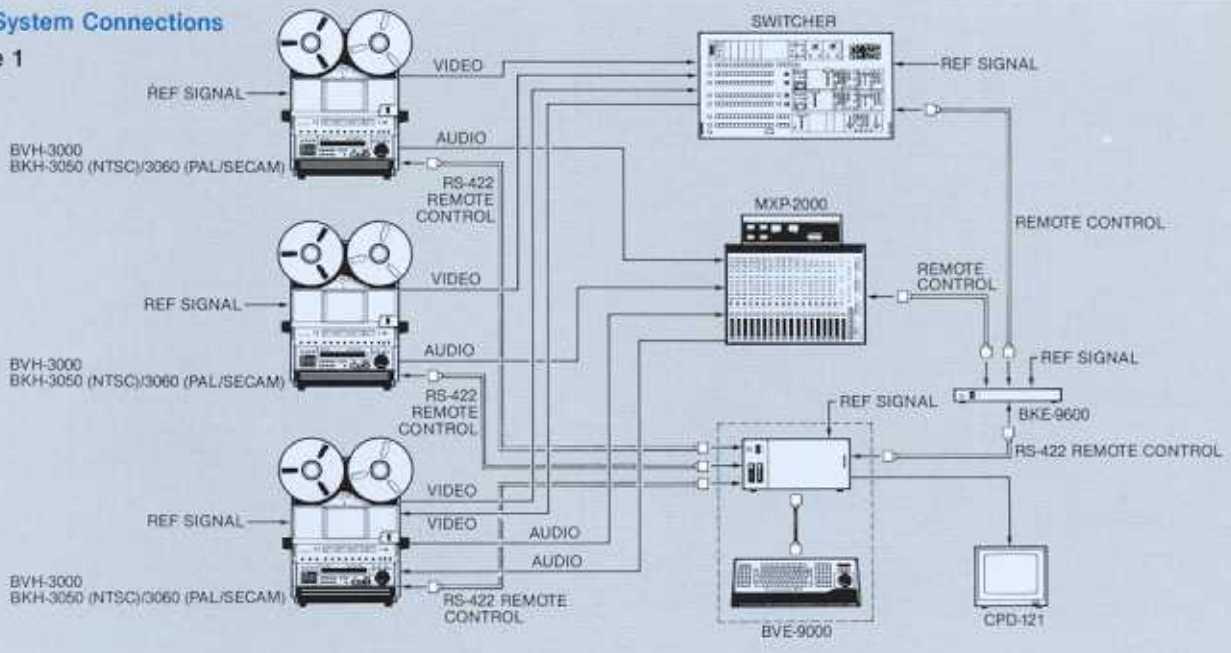
REMOTE-2A IN/2A OUT—With this connector, the BVH-3000/3100 can be interfaced with any equipment having a 9-pin RS-422 serial data interface. The IN/OUT connectors are loop-through, allowing bridge connection for remote control. Remote control is possible when the optional BKH-3090 Remote Control Unit is connected to REMOTE-2.

REMOTE-2B IN/2B OUT—This 9-pin connector provides the same function as described in REMOTE-2A IN/2A OUT except that this connector does not allow bridge connection. The selection of using this connector as the INPUT connector or the OUTPUT connector is made by the REMOTE/LOCAL switch on the audio level control panel.

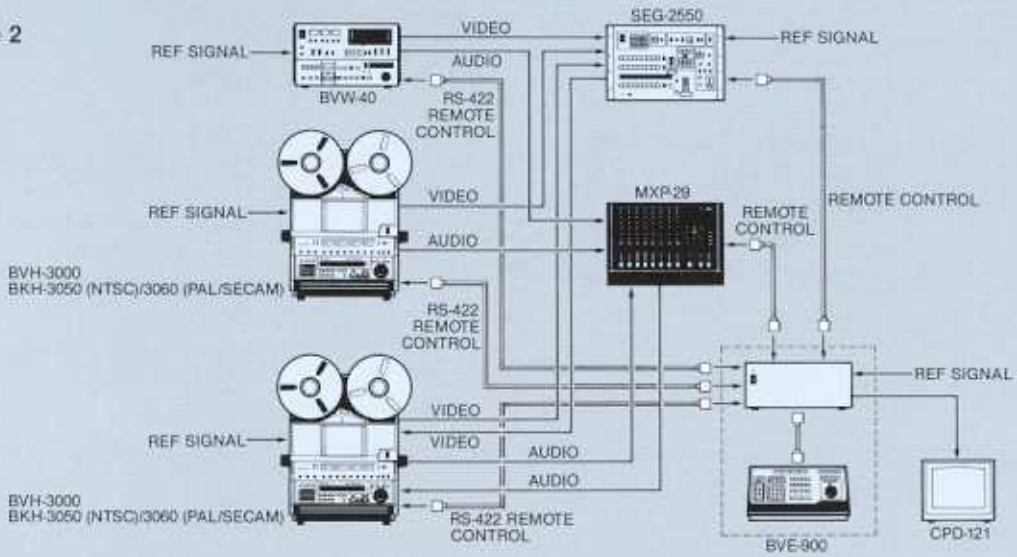
System Configurations

Typical System Connections

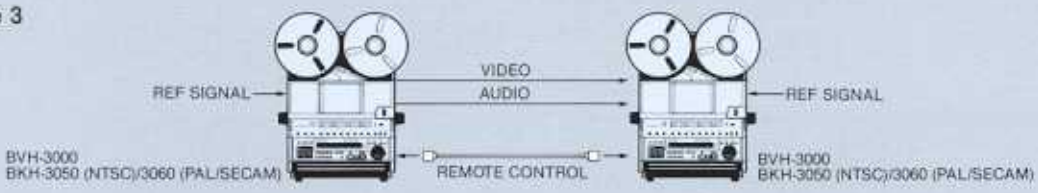
Example 1



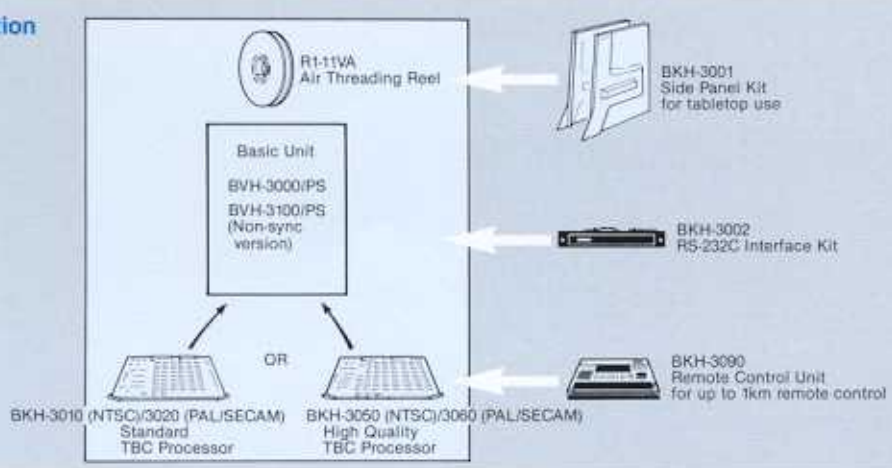
Example 2



Example 3



Product Configuration



Exclusive Optional Accessories

BKH-3001 Side Panel Kit

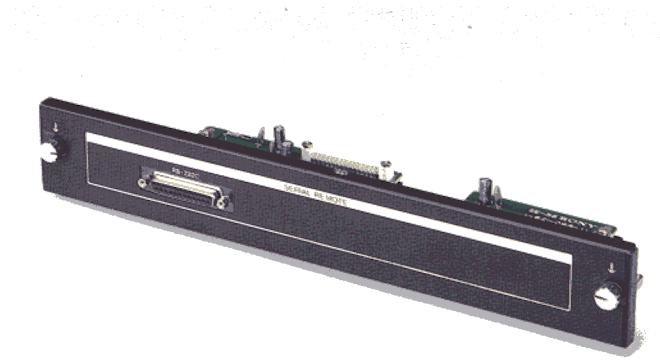
Required when the BVH-3000/3100 is used as a tabletop unit.

BKH-3090 Remote Control Unit

Offers a maximum distance of 1000 meters of remote control of the BVH-3000/3100.

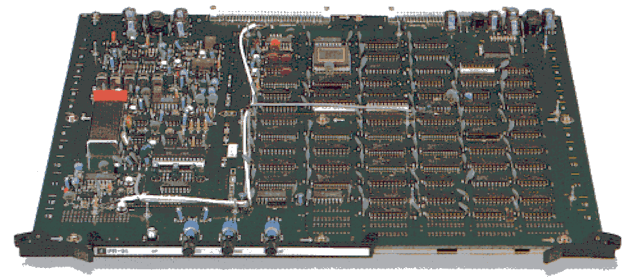
R1-11VA Air Threading Take-up Reel

Designed for BVH-3000/3100 air threading.
One R1-11VA is supplied with the BVH-3000/3100.



BKH-3002 RS-232C Interface Kit

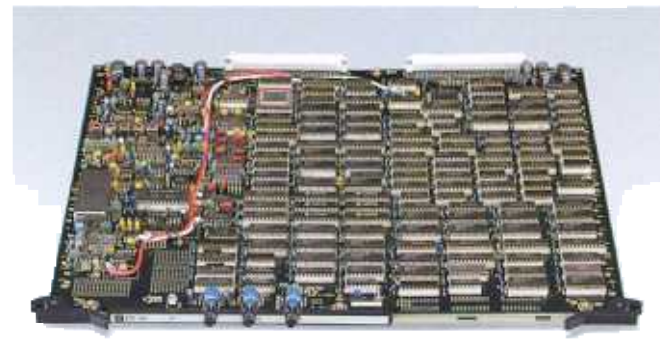
Allows the BVH-3000/3100 to be controlled via the RS-232C interface. This interface replaces the RS-422 interface board.



BKH-3010/3020 Standard TBC Processor

(NTSC) (PAL/SECAM)

A one-board, plug-in type TBC processor which provides TBC output picture quality equal to conventional Sony TBCs providing full DT playback pictures. It can be used with both the BVH-3000 and BVH-3100.



BKH-3050/3060 High Quality TBC Processor

(NTSC) (PAL/SECAM)

A high quality version TBC Processor to work in combination with either the BVH-3000 or the BVH-3100 to provide a superior quality DT playback picture.

BKH-3080 Audio Processor Board

A one board, plug-in type audio processor for the BVH-3000/3100, which offers a high quality noise reduction system (Dolby A/Dolby SR).

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SONY


TBC REMOTE CONTROL
VIDEO
CHROMA
SET UP
PRESET
MANUAL
PRESET
MANUAL
PRESET
MANUAL
HUE
SYNC
SC


TBC REMOTE CONTROL
VIDEO
CHROMA
BLACK LEVEL
PRESET
MANUAL
PRESET
MANUAL
PRESET
MANUAL
BURST/CHROMA
SYNC
SC
MANUAL

Specifications

General

Power requirements	AC 100 to 120V/220 to 240V ±10%, 50/60Hz	
	500Wmax.	
	5°C to 40°C (41°F to 104°F)	
	10 to 90% (non-condensing)	
	Approx. 67 kg (147 lb 11 oz)	
	SMPTE/EBU TYPE-C, high band FM recording	
	BVH-3000/PS	BVH-3100/PS
Tracks		1 Video track
	2 Audio tracks	2 Audio tracks
	1 Audio-3 track (time code and cue)	1 Audio-3 track (time code and cue)
	1 Control track	1 Control track
Tape speed	24.4cm/sec (NTSC) 23.98cm/sec (PAL/SECAM)	
Writing speed (Relative speed)	25.59m/sec (NTSC) 21.39m/sec (PAL/SECAM)	
Recording time	126min. with 11 3/4-inch reel (NTSC) 128min. with 11 3/4-inch reel (PAL/SECAM)	
Time base stability	Within 3 μsec p-p	
Servo lock time		
NTSC	Approx. 2 sec (with frame capstan mode from standby mode)	
PAL/SECAM	Approx. 3 sec (with 4-field lock mode from standby mode)	
Tape timer accuracy	±1 frame (with continuous control signal)	
Fast forward/Rewind time (Transfer time)	Within 110 sec (with 1 hour tape)	
Recommended tapes	Sony's One-inch High Density Tape or equivalent	
Reel size	NAB Standard or 6 1/2 to 11 3/4-inch type	

Video (TBC output: Using BKH-3010/3020/3050/3060)

Video bandwidth	Flat to 4.2MHz: ±0.5dB 4.5MHz: −3dB	(NTSC, TBC output)
	Flat to 5MHz: ±0.5dB 5.5MHz: −3dB	(PAL/SECAM, TBC output)
S/N ratio NTSC	Better than 49dB (unweighted) self recording (Demodulator output), with Sony V1-K tape <peak-to-peak composite video to rms noise measured with a Rohde & Schwarz noise meter>	
PAL/SECAM	Better than 45dB (unweighted) self recording (Demodulator output), with Sony V1-K tape <peak-to-peak composite video to rms noise measured with a Rohde & Schwarz noise meter >	
Differential gain	Less than 4% (TBC output)	
Differential phase	Less than 4° (TBC output)	
"K" factor (2T pulse)	Less than 1% (TBC output)	
Tilt (Hor. & Vert.)	Less than 1% (TBC output)	
Moire	NTSC: Less than −40dB (75% color bars) PAL/SECAM: Less than −35dB (75% color bars), less than −32dB (100% color bars)	
Chrominance/ Luminance delay	Less than 20ns (NTSC, TBC output) Less than 20ns (PAL/SECAM, TBC output)	
Low frequency linearity	Less than 2%	
Output SC-H phase	[illegible]	

Audio

Audio frequency response	CH-1, CH-2, CH-3 and CH-4*1 50Hz to 15kHz +1/3 -3/0dB 200Hz to 7.5kHz ±1.0dB
S/N ratio (at 1kHz, 3% distortion level)	CH-1, CH-2 and CH-4*1 Better than 56dB CH-3 Better than 50dB
	With BKH-3080 (Dolby on mode)*2 Dolby A on : Better than 67dB (CCIR/ARM weighted) Dolby SR on: Better than 80dB (CCIR/ARM weighted)
Distortion (at 1kHz, operating level)	CH-1, CH-2, CH-3 and CH-4*1 Less than 1%
	Less than 0.1rms (0.5 to 200Hz NAB unweighted) Less than 0.1% (CCIR weighted)
Crosstalk (at 1kHz)	Less than −60dB Between any two channels

Input Signal

General	
CF pulse input	TTL level 15Hz (NTSC) TTL level 6.25Hz (PAL/SECAM)
Video	
Video input	1.0 ±0.3Vp-p (75 ohms)
Ext reference input	1.0 ±0.3Vp-p (75 ohms), Video
Audio	
Audio line input	CH-1, CH-2, CH-3 and CH-4*1 +20 to −30dBm (600 ohms/10k ohms, balanced)
Audio-3 Mic input	CH-3 −60dBs (10k ohms, balanced)

Output Signal

General	
WFM select	Selected Video/CTL/RF Envelope
select	Input Video/Demod Out/TBC Out
Frame pulse	TTL level, Color Frame/Frame (selectable)
Audio monitor select	CH-1, CH-2, CH-3, CH-4*1 and CH-1/CH-2
	1.0Vp-p (75 ohms)
	CH-1, CH-2, CH-3 and CH-4*1 +8dBs nominal (output impedance 50 ohms, balanced)
Monitor output	L-CH & R-CH +8dBs (output impedance 50 ohms, balanced) variable level control
Headphones output	8 ohms, unbalanced, variable level control

TBC

Correction window	15Hp-p (NTSC) 30Hp-p (PAL/SECAM)
Residual error	Color—Less than ±2.5 nsec (NTSC) Less than ±3 nsec (PAL) SECAM or B/W—Less than ±15 nsec
Processor adjustable range using BKH-3010/BKH-3020/BKH-3050/ BKH-3060	
Output video Level	±3dB
Chroma level	±3dB
	±15 IRE (NTSC) ±100mV (PAL)
	±15° (NTSC)
	±10° (PAL)
System SC phase	More than 360°
System Sync phase	More than −1 to +3 μsec

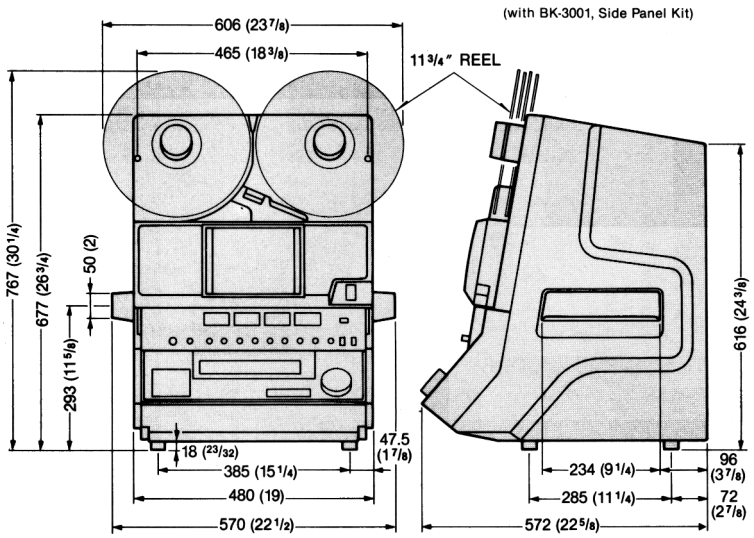
Others

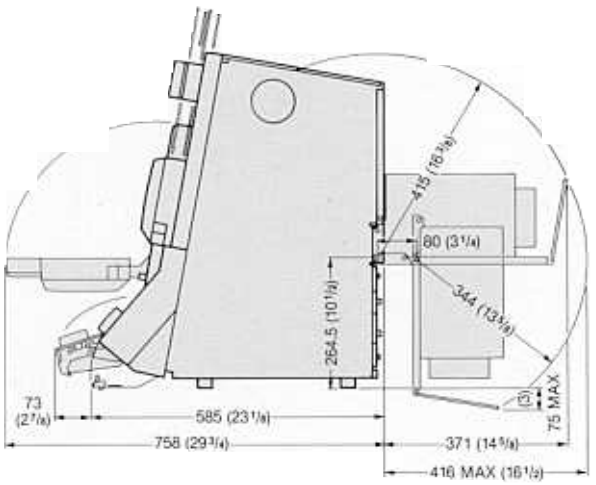
Remote-1	For CCJ Converter

Supplied Accessories

Extension board (EX-136)
Empty reel (R1-11VA)
37-pin D-sub connector
50-pin D-sub connector
Phone plug adaptor
Key ID label
Overlay sheet (printed)
Overlay sheet (blank)
Maintenance sheet
Screws and washers
Operation and maintenance manual

Dimensions





Unit: mm (inch)

Design and specifications subject to change without notice.
*1 The audio CH-4 option is available only for PAL/SECAM models.
*2 Dolby mode is available only on audio CH-1 and CH-2.

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BC-0015
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