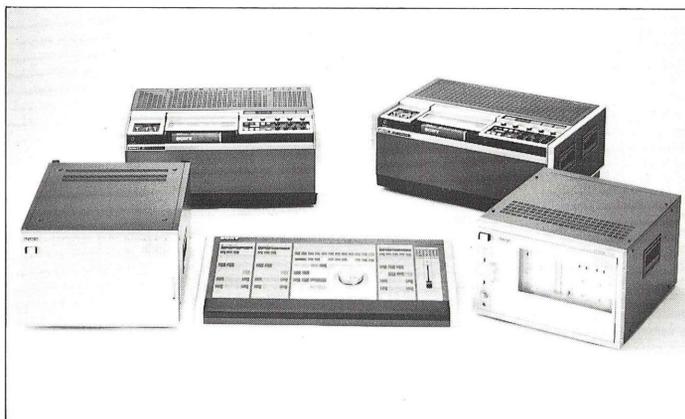


**SONY®**

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DIGITAL AUDIO SYSTEMS  
OF THE  
PRESENT AND FUTURE



● THE DAWNING OF THE DIGITAL AUDIO AGE ...

After a century of sound recording history, we are entering a new era. Millions of phonograph records have been produced since Edison's first crude wax cylinders. Recorded music has not only enriched people's lives, but has become so woven into our culture that we can no longer live without it.

Enormous progress in sound reproduction has been made in recent years, but we seem to have at last reached the reproduction of sound where there is literally no more room for improvement.

Digital audio technology offers us a totally new approach to sound reproduction which eliminates the noise and distortion inherent in analog systems and offers a series of possibilities unimaginable a few years ago.

Compact digital audio discs less than half the diameter of a standard LP record but capable of holding a whole symphony on a side will be on the market in 1982.

Control signals will be recorded on the disc to allow almost instant access to any point and a number of other functions which should revolutionize our way of using discs.

This brochure outlines various digital systems which you can now construct and build on. Join Sony in preparing for the compact disc revolution!



## ● HISTORY OF DEVELOPMENT OF DIGITAL AUDIO EQUIPMENT AT SONY

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### **Oct. 1974**

- First stationary-head digital audio recorder, the X-12DTC, 12-bit, 2-channel, using 2-inch tape.

### **Sep. 1976**

- FM-format 15" digital audio disc read by laser. Playing time: 30 minutes at 1800 rpm. 12-bit, 2-channel.

### **Oct. 1976**

- First digital audio processor 12-bit, 2-channel, designed to be used in conjunction with a VTR.

### **Jun. 1977**

- Professional digital audio processor PAU-1602, 16-bit, 2-channel, purchased by NHK (Japan Broadcasting Corporation).

### **Sep. 1977**

- World's first consumer digital audio processor PCM-1, 13-bit, 2-channel.
- 15" digital audio disc read by laser. Playing time: 1 hour at 900 rpm.

### **Mar. 1978**

- Professional digital audio processor PCM-1600.

### **Apr. 1978**

- Stationary-head digital audio recorder X-22 DTC, 12-bit, 2-channel, using 1/4-inch tape.
- World's first digital audio network broadcast.

### **Oct. 1978**

- Long-play digital audio disc read by laser. Playing time: 2 1/2 hours at 450 rpm.
- Professional multi-channel stationary-head audio recorder PCM-3224, 16-bit, 24-channel, using 1-inch tape.
- Professional digital audio mixer DMX-800, 8-channel input, 2-channel output, 16-bit.
- Professional digital reverberator DRX-1000, 16-bit.

### **May 1979**

- Professional digital audio processor PCM-100 and consumer digital audio processor PCM-10 designed to EIAJ (Electronics Industry Association of Japan) standard.
- Digital Audio Editor DEC-1000 whose program was recorded by a PCM-1600 or a PCM-100.

### **Oct. 1979**

- Professional stationary-head multi-channel digital audio recorder PCM-3324, 16-bit, 24-channel, using 1/2 inch tape.
- Professional stationary-head digital audio recorder PCM-3204, 16-bit, 4-channel, using 1/4 inch tape.

### **May 1980**

- Willi Studer of Switzerland agrees to conform to Sony's digital audio format on stationary-head recorders.

### **Jun. 1980**

- Compact disc digital audio system mutually developed by Sony and N.V. Philips of the Netherlands.

### **Oct. 1980**

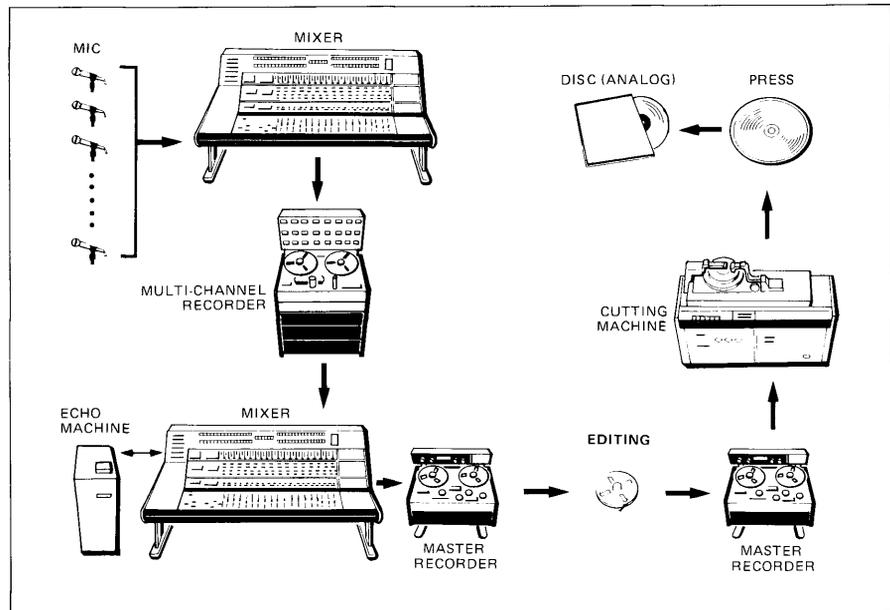
- Compact disc digital audio demonstration with N.V. Philips at Japan Audio Fair in Tokyo.

### **Feb. 1981**

- The Digital Audio Mastering System including Digital Audio Processor PCM-1610, Digital Audio Editor DAE-1100 and Digital Reverberator DRE-2000.

● THE DEVELOPMENT OF AUDIO RECORD PRODUCTION SYSTEMS

1. THE CONVENTIONAL ANALOG RECORD PRODUCTION SYSTEM



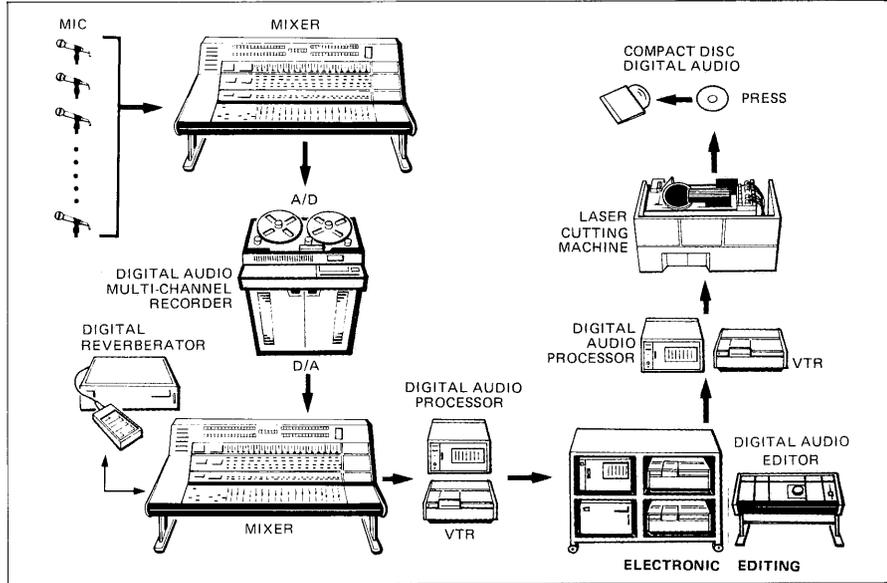
The system comprises:

- **Microphone** 2 or more
- **Mixer** input: 4 to 48 channels  
output: 1 to 32 channels
- **Multi-channel recorder** 4 to 32 channels
- **Echo machine** mechanical type
- **Master Recorder** 2 to 4 channels

In addition, the system generally includes a noise reduction unit, a compressor and an expander.

## 2. THE STATE-OF-THE-ART DIGITAL AUDIO EDITING AND RECORD PRODUCTION SYSTEM

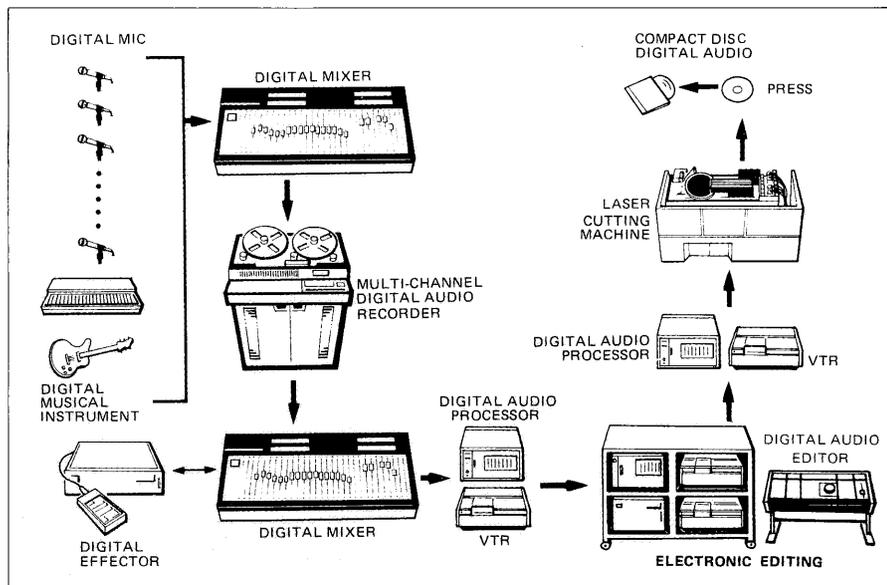
The units in the shaded portion of the illustration below are digital units which take the place of the analog units on the preceding page.



The digital units now available are:

- PCM-1610 Digital Audio Processor
- BVU-200B Professional Video Tape Recorder
- DAE-1100 Digital Audio Editor
- DRE-2000 Digital Reverberator
- PCM-3324 Digital Multi-channel Recorder

## 3. THE SONY ALL-DIGITAL AUDIO RECORD PRODUCTION SYSTEM SCHEDULED TO BE AVAILABLE BY 1986

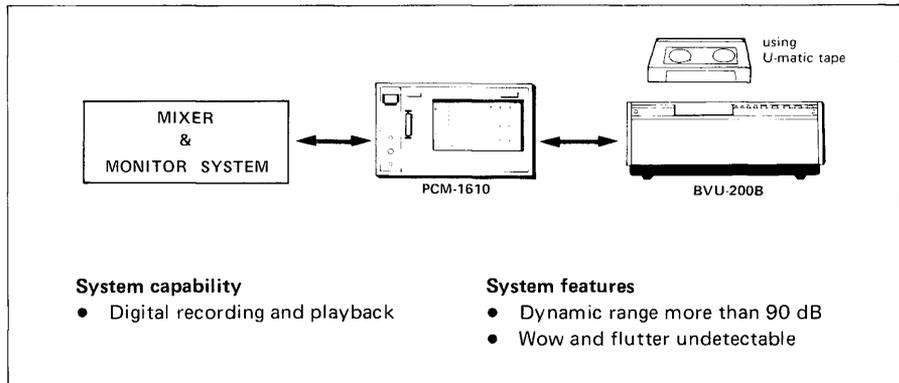


This system in which all signals will be digital includes:

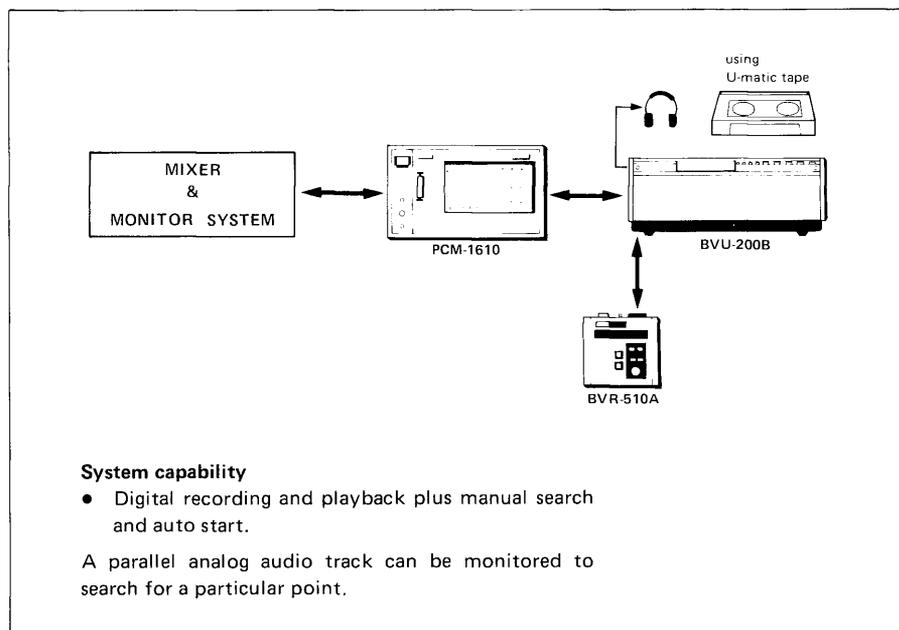
- Digital Microphones
- Digital Mixers

● DIGITAL AUDIO RECORDING AND PLAYBACK SYSTEMS

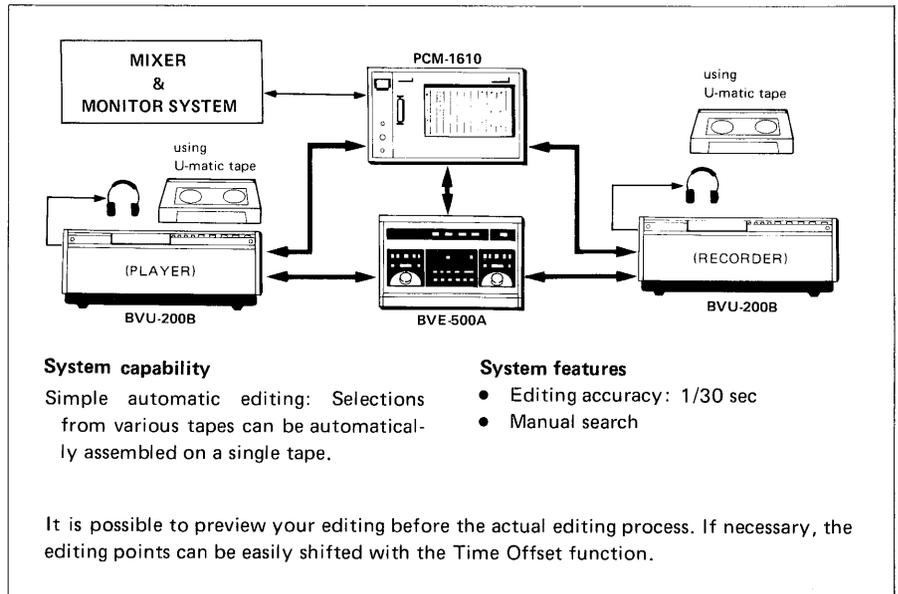
1 BASIC PROFESSIONAL RECORDING AND PLAYBACK SYSTEM



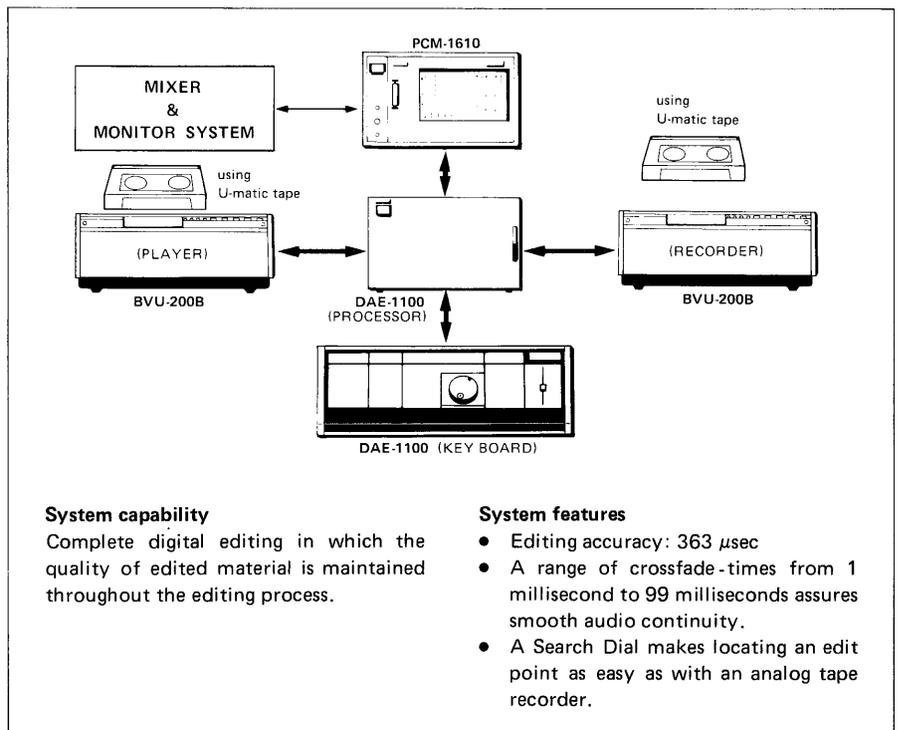
2 BASIC SYSTEM PLUS REMOTE CONTROLLER



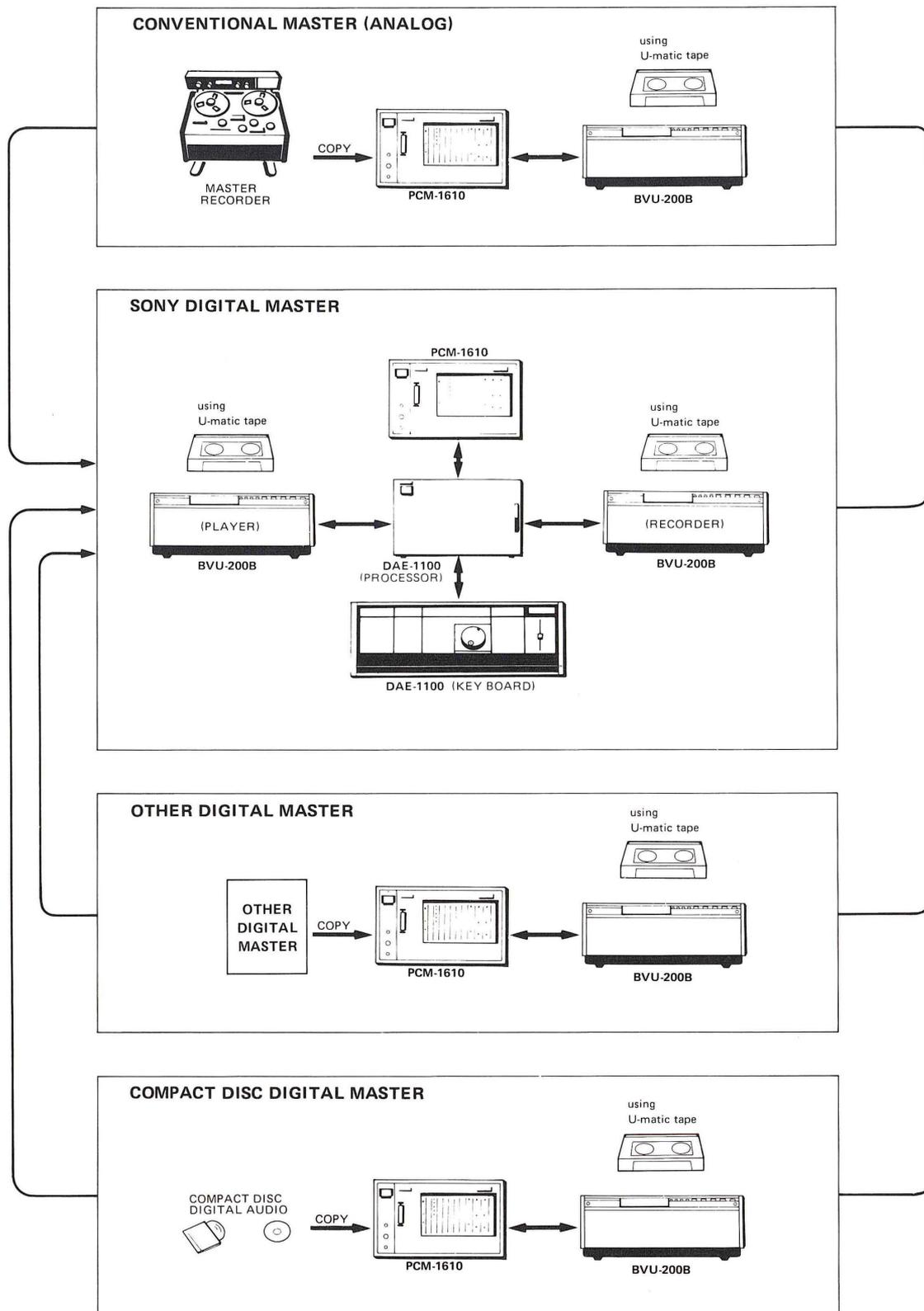
**3 BASIC SYSTEM PLUS VIDEO EDITOR AND AN ADDITIONAL VTR**



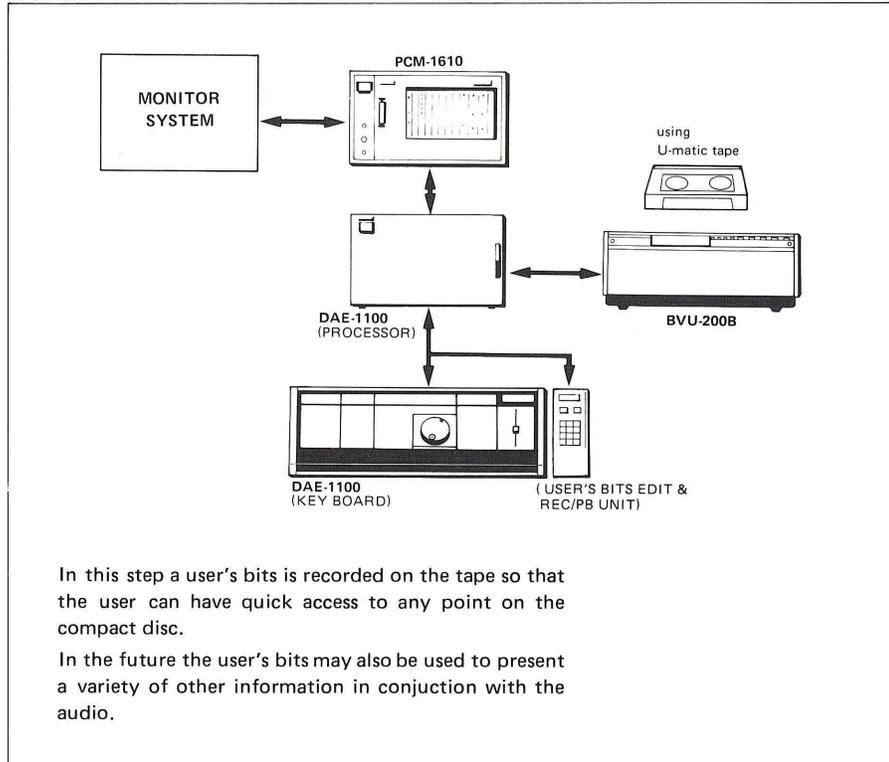
**4 FULLY AUTOMATIC DIGITAL-TO-DIGITAL RECORDING, PLAYBACK AND EDITING SYSTEM**



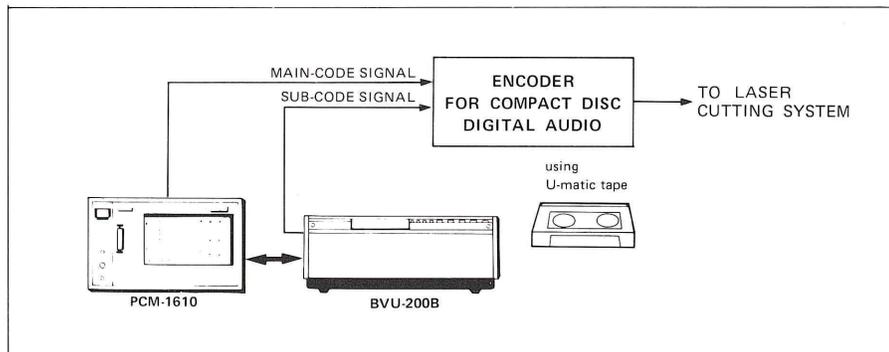
**MASTER SOURCES**



### USER'S BITS EDIT

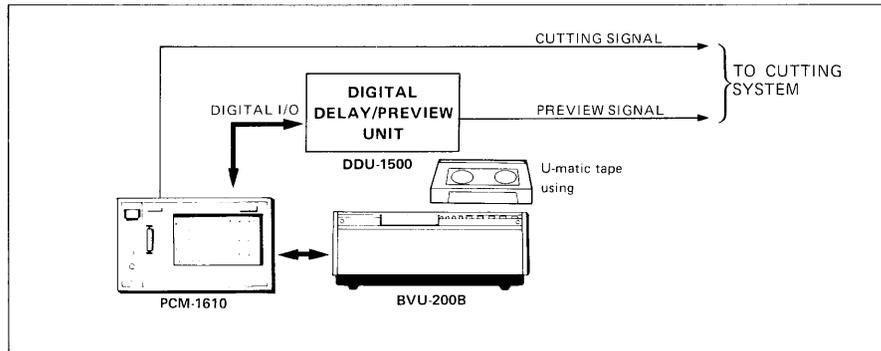


### LASER CUTTING MASTER

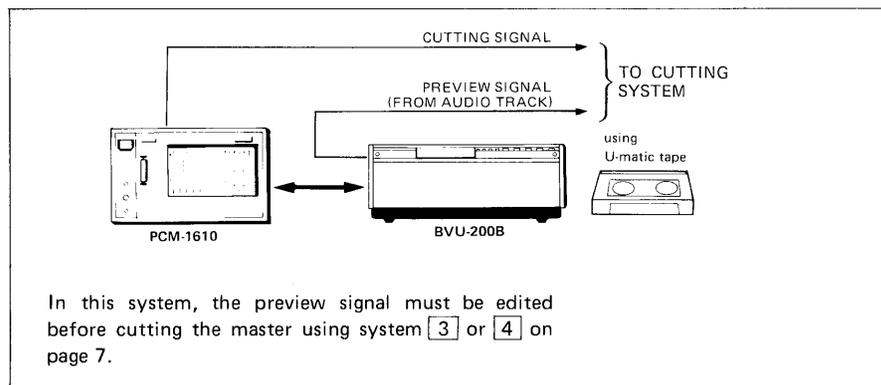


● SYSTEMS FOR CUTTING ANALOG DISCS USING A DIGITAL MASTER SOURCE

**1 WITH DIGITAL DELAY/PREVIEW UNIT**



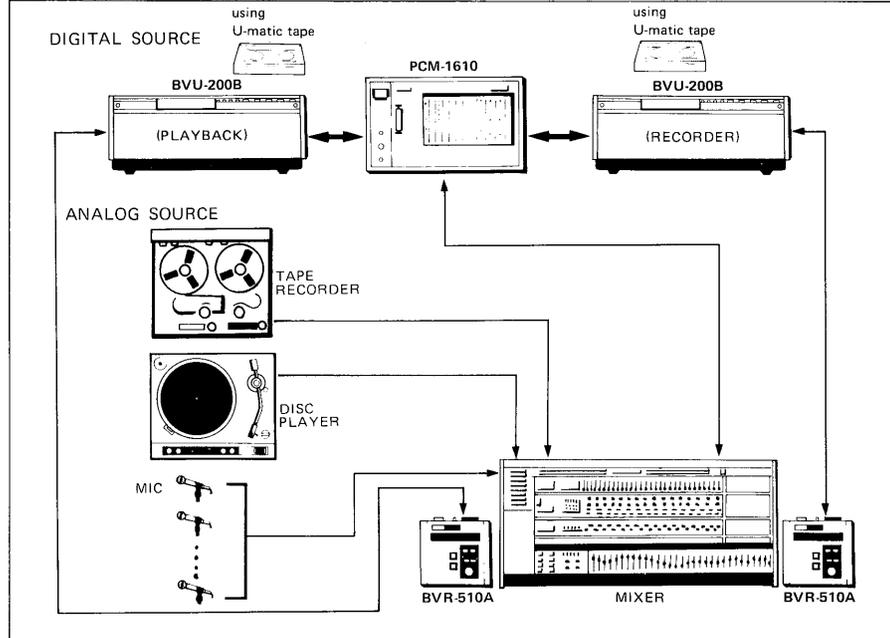
**2 WITHOUT DIGITAL PREVIEW UNIT**



● BROADCASTING SYSTEMS

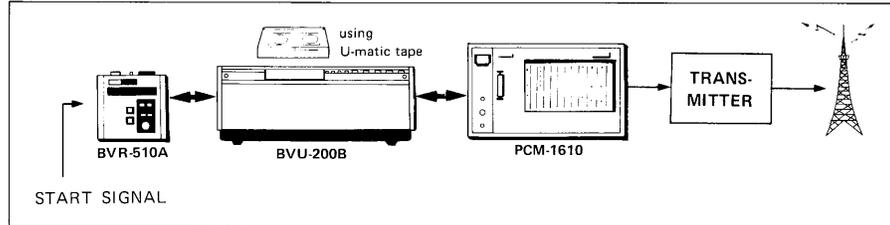
**1 STEREO PROGRAM MASTERING SYSTEM**

This system allows recording of both analog and digital sources. A single PCM-1610 is capable of recording one program while playing back another.

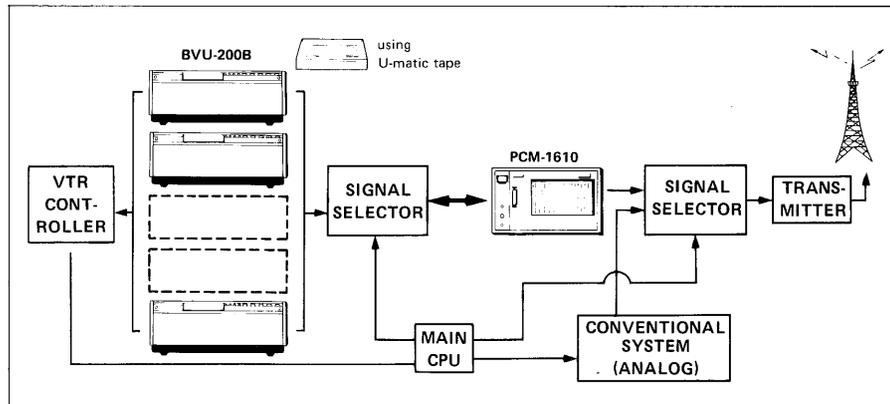


**2 DIGITAL STEREO BROADCASTING SYSTEMS**

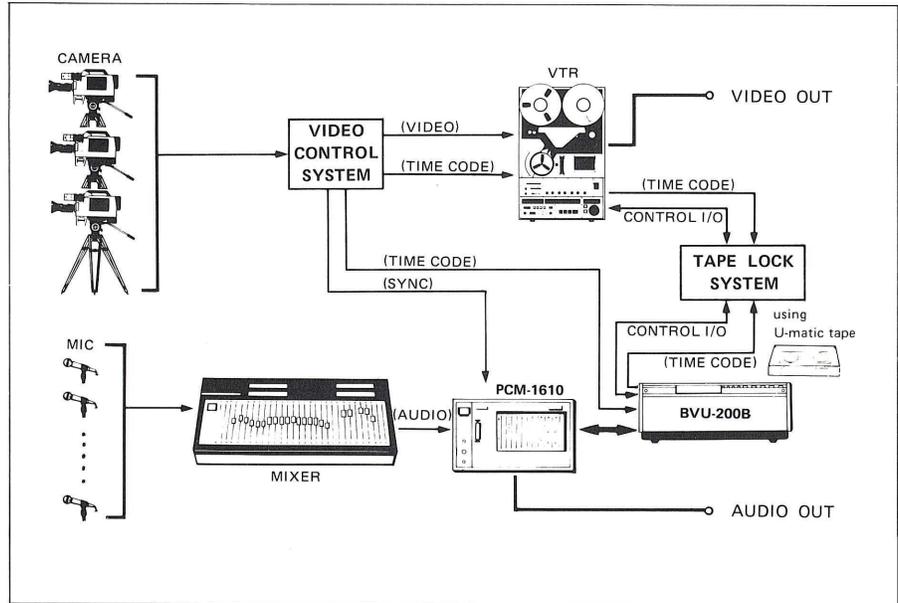
**2-1. BASIC SYSTEM**



**2-2. TOTALLY AUTOMATIC DIGITAL SYSTEM IN COMBINATION WITH CONVENTIONAL SYSTEM**

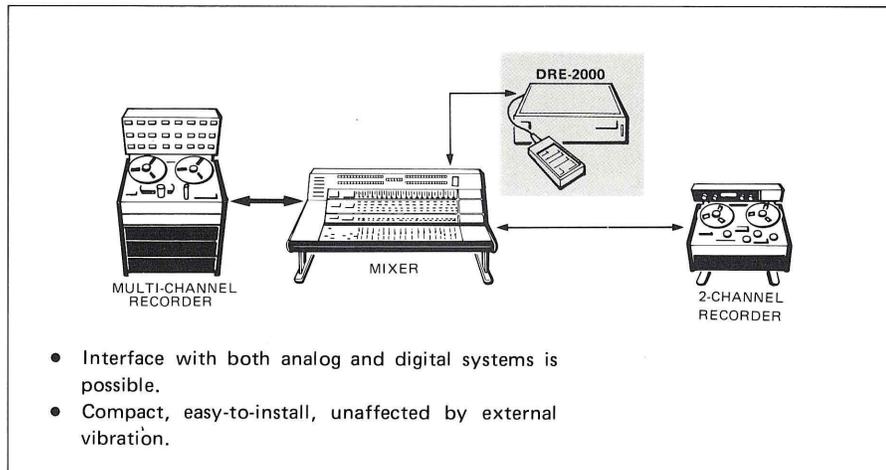


**3** DIGITAL MULTIPLEX AUDIO AND VIDEO BROADCASTING SYSTEM

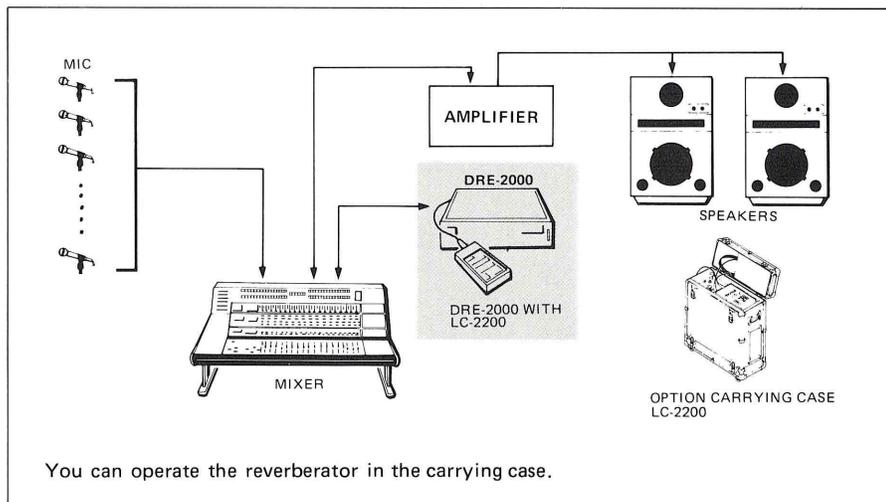


# ● APPLICATIONS OF THE DRE-2000 DIGITAL REVERBERATOR

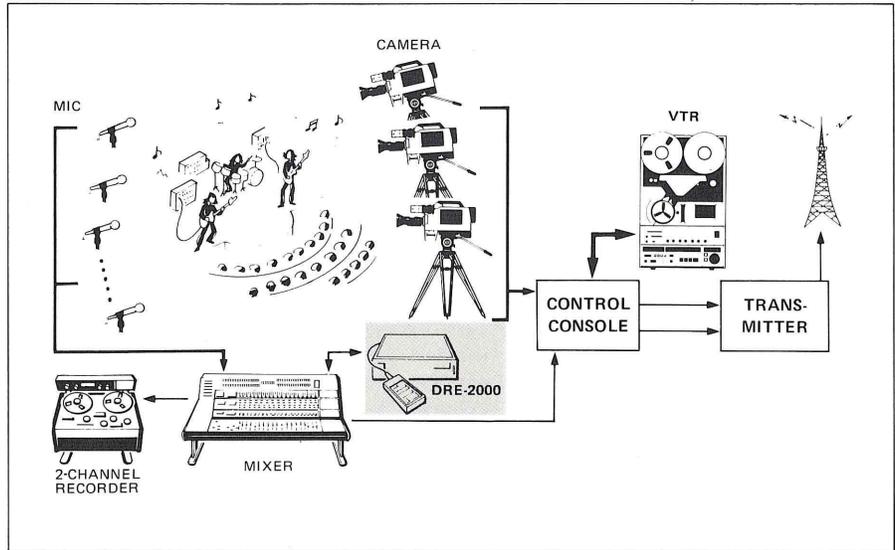
## 1 MASTERING SYSTEM



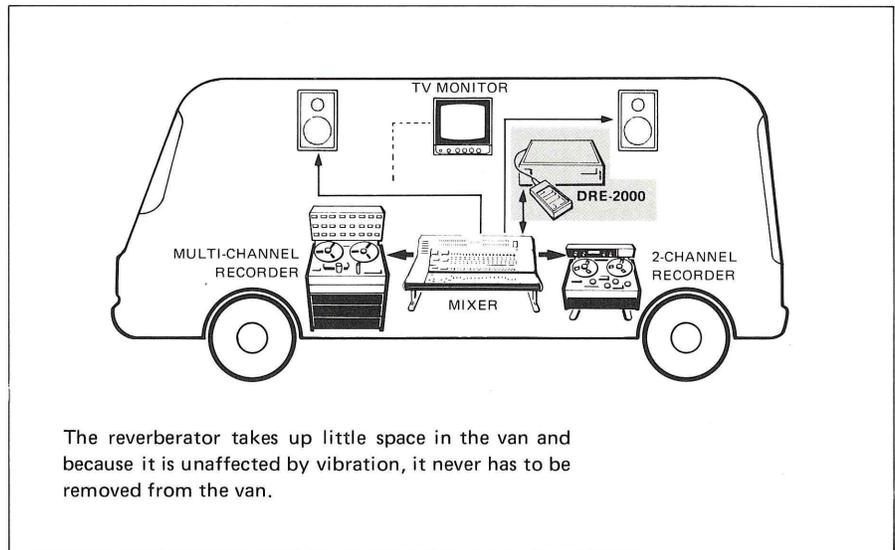
## 2 SOUND REINFORCEMENT SYSTEM



### 3 BROADCASTING SYSTEM



### 4 LIVE-RECORDING VAN



MEMO

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