In 1984, Sony developed a high speed video duplication system, "Sprinter," utilizing unprecedented technology to provide consistent high quality volume VHS duplication as a cost effective alternative to conventional real time duplication. This earned Sony recognition as a leader in the VHS duplication industry.

To meet the rapidly increasing demand for video software, Sony further improved the Sprinter and in 1991 successfully designed the world’s first horizontal vibrating tape feed system. This innovation allowed the mother tape to be used in an endless loop and significantly increased production throughput. In 1995, Sony enhanced the printing speed up to 240 times real time for NTSC-SP and 342 times for PAL/SECAM.

Recognized all over the world for exceptional quality and reliable performance, the Sprinter is currently in operation in twenty three nations throughout North and South America, Europe, and Asia. Due to continued worldwide industry growth, Sony is introducing the HSP800C that further optimizes productivity, reduces operational cost, and continues to be the most advanced technology in VHS duplication.
HIGH PICTURE QUALITY
MIRROR-IMAGE
MOTHER TAPE PRODUCER

Uses a specially developed head. Produces high
picture quality mirror image mother tape that is used
in the fast printing by Sony High-Speed Printers.

Mirror-Image Recording
The Mirror Mother VTR records the signals from the
master VTR as a mirror-image to produce mirror-
mother tape, which is used in the following high-
speed contact print.

High Picture Quality
Enhanced 3-Line Digital Y/C Separator, selectable
Video Frequency Response and new Dynamic
Chroma Emphasis optimize frequency response,
overshoot, ringing and cross color.

Dolby HX Pro/Dolby B
Dolby HX Pro improves the frequency response in
high-frequency range. Dolby B mode is also available.

Fully Synchronized Operation with Master VTR
Remote control of a Sony master VTR is possible
from the mirror mother VTR.

Hi-Fi Recording
Audio signals are recorded on the conventional
audio track and the video track for hi-fi recording.

Convenient Front Panel Operation
All operation switches and controls as well as main
switches and controls for all circuit boards are
conveniently arranged on a front panel.

Cleaning Blade
Saphire made cleaning blade reduces an occurrance
of drop-out caused by adhesion of dust on mother
tape surface during tape transportation.
FURTHER IMPROVED RELIABILITY AND DURABILITY
Using the horizontal vibrating feed method Sony developed, the HSP800C has made high-speed endless duplication possible, with minimum damage to the mother tape, increasing the life of the mother tape dramatically.

- The tape storage/feed unit has a high rigidity, with the exterior panels made of steel sheets that hold down sound and vibrations, resulting in increased durability of the unit.
- AGC-Controlled Vibration
  The AGC system is used to control the vibration for the horizontal vibration feed system to guarantee stable vibration.
- Six Direct Drive Motors
  Brushless motors are provided to directly drive the takeup and supply reels, transfer drum, and capstans, ensuring high reliability and durability over a long period of time.

INCREASED PRODUCTIVITY
With the endless mother tape, the HS800C is capable of a high-speed transfer (8m/s), with a duplicating speed of 240 (342) times the real time rate with NTSC-SP VHS (PAL/SECAM), greatly increasing the productivity.

- New Servo Control
  A transfer speed of 8 m/s and a controlled stable tension are achieved by the combined software/hardware servo control.
- Horizontal Vibrating Feed System
  The newly developed horizontal vibrating feed system has enabled an endless mother tape ranging in length from 10 m to 260 m to be used.
- Reduced Dropout
  The tracking adjustment guides have been replaced with newly developed guides of self-rotated type and a vacuum cleaner is additionally provided at the inlet of the transfer drum to reduce dropout.

ENHANCED OPERABILITY
After setting the tapes, most of the printing operations can be performed by pressing just one command key. During the printing, the display shows the production data, which can only be altered after selecting the data setting mode first to prevent erroneous operations.

- Command key
  All the tape operations of set-rewind, load, print and unload can be performed at a press of one, consistent command key. LEDs indicate which tape operation is now being performed.
- Push Button Entry
  The data can be directly entered by pushing the alpha numeric keys for easier, error-free operation.
- Automatic Tape Top/End Feed
  The tape top/end feed length can be set in 1 m steps, the minimum being 3 m. Once the setting is made, just pressing the print start switch will automatically start the printing procedure.
- Automatic Splice
  A simply designed mechanism automatically performs the splicing quickly and with precision.
- Threading
  A back-tension control works when threading the copy tape, which is most often replaced, to prevent tape slack.
- Tape Holder
  When threading the copy tape, the tape holder keeps the tape from being wound up by the reel.
- CTL Phase Corrector
  Instead of adjusting tape guides, entering numerical values corrects the tracking position.
- Interpolation of Missing CTL Pulse
  Upon detecting a missing CTL pulse, automatic interpolation is carried out to complete the pulse.
MAGNETIC CONTACT PRINTING
In Magnetic Contact Printing, a blank tape and a mother tape are threaded around the transfer drum with their magnetic coating surfaces opposing each other. Compressed air is blown onto them to keep them hard pressed to the drum while a proper amount of bias field is applied as the mirror-image signal on the mother tape is accurately transferred to the blank tape as a normal image. A smooth, high-speed tape run is ensured for mother and blank tapes by the drum driven system whereby the transfer drum is free from wear and the mother tape enjoys a long life.

MIRROR MOTHER TAPE
For the transfer to occur with the magnetic coating surface of mother tape and blank tape opposing each other, the mirror mother tape has recorded on it a mirror-image of the normal track pattern as illustrated. The mirror mother VTR has a head drum capable of recording a mirror-image of the standard format.
To keep the mirror mother tape from losing its magnetic recording when the bias field is applied in the recording pattern transfer process, the mirror mother tape uses magnetic substance with a coercivity of three times that of blank tapes.
It is an unprecedented system by which a tape standing on its edge on a horizontal disk is fed forward by fine vibration applied from a diagonal direction. The vibration is applied to a piezoelectric actuator and amplified by mechanical oscillation. The vibration oscillates the whole tape storage/feed unit, causing the tape to be fed forward.

The horizontal feed structure where the tape is free from the effect of its own weight enables a wide range of mother tape to be accommodated and fed at high speed.

EASIER MAINTENANCE WITH HIGHER RELIABILITY

Various functions can be checked on the operation panel for reliable and easy service and maintenance. Error messages are given in an easy-to-recognize letter display.

- **Operation Panel**
  Basic data such as production data can be easily entered with the function keys and numeral keys. The display switches to the alarm display when the printing stopped halfway through or when a trouble occurred, giving a caution or specifying the error.

- **Function Check**
  The function can be checked with the function keys and the display provided on the operation panel for the maintenance purposes.

- **Checking the Independent Operation of Individual Parts**
  The copy/mother tape can be made to run alone by manual operation. Basic function can be checked automatically by using the self-check function.

- **Cleaning Mode**
  Cleaning of the drum and capstans has been made easier by the newly added cleaning mode in which the drum and capstans are turned to facilitate cleaning.

IMPROVED ECONOMY

The productivity has increased dramatically while the power consumption remains almost the same (compared with the preceding model).

- **Saving on Power Consumption**
  Magnetic contact printing method does not require any tape heating or cooling equipment, leading to saving on power.

- **The magnetic transfer is possible with most of the commercially available pancakes.**

- **Multiple-Format Duplication Capability**
  The system is compatible with NTSC (SP/LP/EP) PAL/SECAM color television system.

- **Vacuum cleaning method reduces consumption of cleaning tapes, saving on the running cost.**

- **Saves on production/inspection procedure.**

- **Saves on installation/material storage space.**

- **Quickly fills quantity orders and additional orders for small lots.**

- **Optimized MMT Life**
  The behavior of the mirror mother tape as it is fed into the loop bin is monitored to prevent its clogging at the inlet of the loop bin. (The life of the mirror mother tape has been increased by 50%* on average over the preceding HSP800 Series.)

*Varies with the operating conditions.
**MASTERING PROCESS**

With a mirror mother VTR connected to a master VTR that supplies a program, a mirror mother tape is produced by fully automated operation. The mirror mother tape, with its mirror image track pattern, is comparable to the block copy used in printing presses.

**DUPICATING PROCESS**

The mirror mother tape and blank tapes are placed together on the high-speed printer and allowed to run on the transfer drum with their respective magnetic surfaces in air-pressurized contact with each other. As the tapes run, bias field is applied, transferring the pattern recorded on the mother tape onto the blank tape. The duplicate tape is wound into a pancake and goes on to the loading process.
Faster and more economical.... Sony's state-of-the-art high-speed video duplicating system that meets the current needs.
<table>
<thead>
<tr>
<th>MODEL</th>
<th>VHS SP</th>
<th>VHS LP</th>
<th>VHS EP</th>
<th>VHS PAL/SECAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMV800-D</td>
<td></td>
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<td></td>
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<tr>
<td>MMV830-D</td>
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<tr>
<td>MMV810-D</td>
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<tr>
<td>MMV802-D</td>
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</tbody>
</table>

- **Power requirements**: 100V to 240V AC ±10%, 50/60 Hz (90V to 130V for USA)
- **Power consumption**: 190W
- **Operating temperature**: 10°C to 30°C
- **Humidity**: 40% to 60%
- **Mass**: Approx. 42Kg
- **Recording format**: VHS mirror image pattern
- **Color TV system**: NTSC, NTSC, NTSC, PAL/SECAM
- **Audio system Hi-Fi**: Stereo, Stereo, Stereo
- **Audio system linear**: Stereo, Monaural, Monaural, Stereo
- **DOLBY System (linear audio)**: HX Pro/B type noise reduction system

<table>
<thead>
<tr>
<th>Tracks</th>
<th>Video</th>
<th>Hi-Fi audio</th>
<th>Linear audio</th>
</tr>
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<table>
<thead>
<tr>
<th>Control</th>
<th>Cue</th>
</tr>
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<td>1</td>
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</tbody>
</table>

- **Reel size**: 7-inch real (NAB)
- **Tape speed**: 33.35mm/s, 16.67mm/s, 11.12mm/s, 23.39mm/s
- **Recording time (using V-2/1-400N)**: 3h, 6h, 9h, 4h 20min
- **Servo lock time**: Less than 5 s
- **FFWD/REW transfer time**: Less than 4 min 20s (400-m tape)
- **Video input**: BNC type connectors 1.0V ± 0.3V (p-p), 75Ω
- **Gray video input**: BNC type connectors 1.0V ± 0.3V (p-p), 75Ω
- **Audio input**: XLR connectors, 8 dBm, 600Ω
- **Remote input**: 15-pin D-sub connector
- **Test input**: BNC type connector
- **Video output**: BNC type connectors 1.0V ± 0.1V (p-p), 75Ω
- **Audio monitor output**: Phone jack, -10 dB
- **Headphone output**: Phone jack, 8Ω, unbalanced, level adjustable
- **Remote output**: 15-pin D-sub connector to connect Mirror Mother VTR, 15-pin CCJ type connector to connect BVH-1000 Series VTR, 25-pin D-sub connector to connect BVH-2000/3000 Series VTR, 9-pin D-sub connector for serial remote control via RS-422A
- **Supplied accessories**: Audio monitor head (housed behind the tape stopper panel) (1), 7-inch reel (1), extension PC board (1), operation manual (1), power cord (1), L-shaped headphone plug (1)

*"DOLBY," the double-D symbol , and "HX Pro" are trademarks of Dolby Laboratories Licensing Corporation

**Dimensions (mm/inch)**

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MMV SERIES

SPECIFICATIONS

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Dimensions (mm/inch)
DUPLICATING TIME AND SPEED

a. Time that elapses from the push of the print start button to the start of duplication (excl. time for top feed)
b. Accelerating period
c. Constant speed running
d. Decelerating period
e. Time it takes to stop (excl. time for end feed)

CYCLE TIME PER PANCAKE

Blank tape length: 5010m
Program length: 120min
Max.mother tape loading times: 20

<table>
<thead>
<tr>
<th></th>
<th>NTSC-SP</th>
<th>NTSC-LP</th>
<th>NTSC-EP</th>
<th>PAL/SECAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplication time per pancake(s)</td>
<td>632</td>
<td>634</td>
<td>638</td>
<td>624</td>
</tr>
<tr>
<td>Cassette output per pancake</td>
<td>20</td>
<td>40</td>
<td>59</td>
<td>28</td>
</tr>
<tr>
<td>Copy speed (times normal)</td>
<td>240</td>
<td>480</td>
<td>720</td>
<td>342</td>
</tr>
<tr>
<td>Production efficiency (times real-time systems)</td>
<td>203</td>
<td>400</td>
<td>588</td>
<td>267</td>
</tr>
</tbody>
</table>

Note: These figures were obtained in the test we made and may vary with the operating conditions.

SPECIFICATION

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Power requirements</td>
<td>100V to 120V AC±10%, 220V to 240V AC±10%, 50/60Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>600 W</td>
</tr>
<tr>
<td>Supplied air pressure</td>
<td>54×10<del>8 to 88×10</del>5Pa (5.5 to 9kg/cm²) (dry, clean air)</td>
</tr>
<tr>
<td>Air flow amount used</td>
<td>Approx. 300 l/min.(ANR) max. [Approx.300N l/min.max.]</td>
</tr>
<tr>
<td>Operating environment</td>
<td>Temperature: 20 to 28°C (recommended: 22±2 °C)</td>
</tr>
<tr>
<td></td>
<td>Humidity: 55 to 75% (recommended: 65±5%)</td>
</tr>
<tr>
<td></td>
<td>Cleaness: Class 10,000</td>
</tr>
<tr>
<td>Mass</td>
<td>Approx. 450kg</td>
</tr>
<tr>
<td>Transfer method</td>
<td>Magnetic transfer</td>
</tr>
<tr>
<td>Transfer speed</td>
<td>8 m/s</td>
</tr>
<tr>
<td>Usable reels and tapes</td>
<td>Mother tape: Mother tape produced on the Mirror Mother VTR (max. 7&quot; NAB reel, metal tape 21/2&quot; thick, 1/2&quot; wide)</td>
</tr>
<tr>
<td></td>
<td>Blank tape: max. 16&quot; pancake (1/2&quot; wide)</td>
</tr>
<tr>
<td>Standard supplied</td>
<td>AC power cord, hoseband, air joint, empty reel, reel collars(2), cleaning tapes(2), splice tape, cutter blades(2), base plates(4), reel adapter sheet, spare balance weights, extension PC board, dust cover, operation manual, maintenance manual.</td>
</tr>
</tbody>
</table>

MOTHER TAPE PROGRAM LENGTH LOADABLE IN HSP800C

<table>
<thead>
<tr>
<th></th>
<th>NTSC-SP</th>
<th>NTSC-LP</th>
<th>NTSC-EP</th>
<th>PAL/SECAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>The maximum length of MMT (depends on the tape loading capacity of the loop-bin)</td>
<td>260.0</td>
<td>255.3</td>
<td>255.0</td>
<td>258.0</td>
</tr>
<tr>
<td>The minimum length of MMT (depends on the program length between cues)</td>
<td>PAL/SECAM 11.3 ~ 14.7</td>
<td>NTSC-SP 11.6 ~ 15.0</td>
<td>NTSC-SP 10.0</td>
<td></td>
</tr>
</tbody>
</table>

Examples

Air Compressor System

Clean Hood

Dimensions (mm/inch)

Design and specifications subject to change without notice.