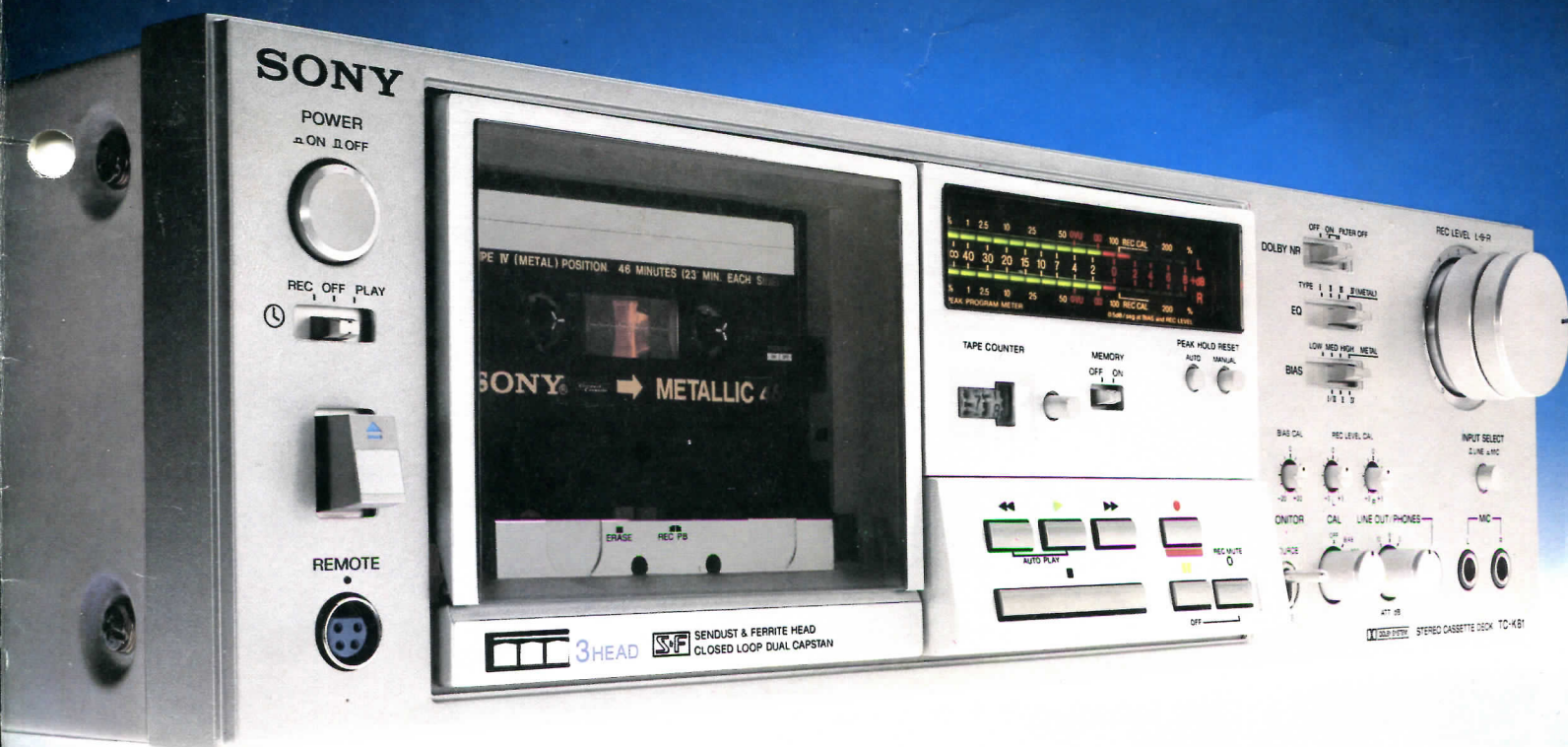


# SONY

# Cassette Decks



Sony achievements in every aspect of audio and video reproduction are legendary. The company's success in these fields is no accident, nor is it recent. It arises from three sources. First, the Sony research and engineering facilities, among the most sophisticated in the world. Second, the application of 'total-system technology' in the design of every product. And third, a commitment to translating this approach into advanced instruments for the home—at a cost within the reach of the user. Sony's eight new stereo cassette decks are outstanding expressions of Sony leadership.

Unique to Sony is the ability to create each link in the tape recording chain, from microphones and electronics, to motors, tape heads, and even the tape itself. As heirs to Sony's 30 years of excellence in tape recording, these new cassette decks offer the latest in magnetic, mechanical, and electronic technology. The result is solid reliability, superb convenience, and unadulterated reproduction of musical sound.

Every one of the Sony cassette decks described in this brochure is compatible with the new metal particle tapes. Metal tape offers distinct sonic advantages over even the finest conventional tape. Metal can accept very strong signals, especially at high frequencies, where conventional tape often dulls or muffles musical transients. Thus, metal tape recordings provide wider dynamic range, for greater impact. And high-frequency transients are reproduced crisply and cleanly.

While conventional cassette decks can play back metal tapes, they cannot erase or record metal effectively. The limiting factors in such decks are usually the tape heads. Sony has applied its vast experience in tape recording to produce a new generation of Super-High Density (SD), and Sendust and Ferrite (S & F) heads. The superior performance of these Sony heads will benefit all your recordings, regardless of tape formulation or brand. But these heads are especially well suited to erasing, recording, and playing back metal particle tape.

Another feature all eight decks have in common is Dolby noise reduction. The Dolby system provides a substantial reduction in the most irritating type of noise in cassette recording: high-frequency tape hiss. In these Sony decks, Dolby NR works to suppress tape hiss by up to 10dB at frequencies of 5kHz and above. Thus, your recordings are made against a background of silence.

Beyond the shared features of metal tape capability and Dolby noise reduc-

tion, these eight Sony cassette decks have distinct personalities. The model lowest in price, the TC-K22 provides remarkable performance and operating convenience. As you move up the line, there are additional features, as well as greater control flexibility. The TC-K44, for example, has the fast, accurate response of Sony's Peak Program Meters, with sixteen light-emitting diodes (LEDs) per channel.

The more expensive TC-K61, K71, K81, K65, and K77R boast the stability and accuracy of Sony's two-motor tape drive system, with solenoid operation and microprocessor control. Simply touch a function pushbutton to send your command to the logic IC where it is checked for proper sequencing and executed. With this system, you can enter commands rapidly, in any sequence, without harm to the tape or the machine. And the IC-logic system makes timer operation and remote control possible.

Both the TC-K71 and K81 incorporate three separate heads: erase, record, and play. In addition to off-the-tape monitoring, the three-head system offers exceptional sound quality. The deluxe TC-K81 features user-adjustable bias and Dolby calibration, for perfect compatibility with every tape formulation you use.

Sony technology has produced a control system that automatically plays a cassette's musical selections in any order you choose. This is the extraordinary Random Music Sensor (RMS) of the TC-K65. With RMS, the K65 can play up to fifteen selections in a programmed sequence, including selection replays.

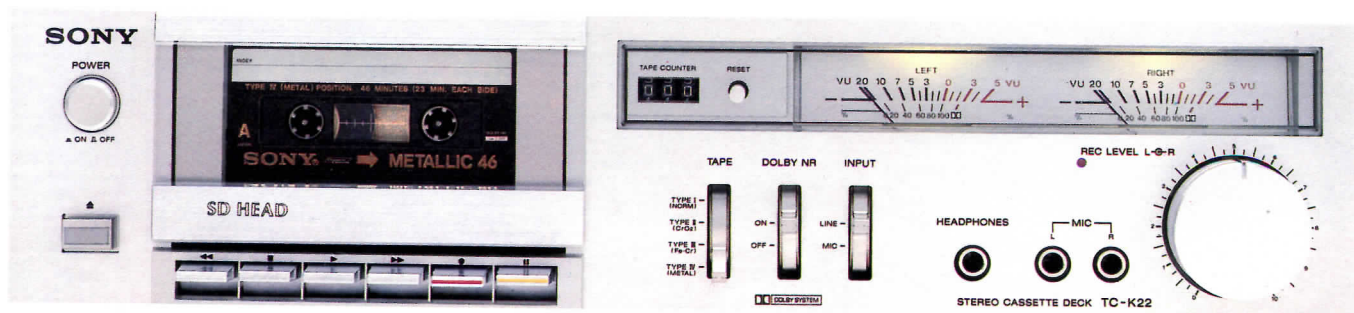
For those who prefer the extended play and enhanced convenience of automatic reverse, Sony offers the TC-K77R. With the K77R, when tape motion reverses, so do the Roto-Bilateral heads. You get consistent, outstanding performance in both record and play, forward and reverse.

The battery-powered TC-D5M completes Sony's line of stereo cassette decks. Slim and handsome, weighing only 3 pounds, 12 ounces, with batteries, this portable machine performs on a level comparable to home units of the highest quality.

Each of these eight Sony cassette decks expresses the energy, intelligence, and inspiration of Sony engineering. The following pages provide an in-depth look at how these models perform, and how they satisfy the tape recording needs of music lovers the world over.



# Sony TC-K22



## Metal Tape Capability and Excellent Value

The Sony TC-K22 Stereo Cassette Deck provides the essentials of high-fidelity performance at a surprisingly attractive price. Incorporating Sony's advanced magnetic, mechanical, and electronic technology, the K22 achieves accurate reproduction of musical sound.

### Super-High-Density Head

Tape deck performance begins with the record/play head. The K22 incorporates Sony's Super-High-Density (SD) permalloy head. The SD head provides high maximum flux density, for wide dynamic range when recording. High flux density is particularly important for the best performance with metal particle tape. In playback, the SD head's excellent linearity with small signals assures low distortion. Unlike conventional permalloy heads, Sony's SD formulation is remarkably resistant to wear.

In addition to the SD record/playback head, the TC-K22 boasts a newly-developed four-gap ferrite erase head. The four-gap design produces a strong, focused erasing field that penetrates the tape coating. The result is more complete erasure than the conventional, single-gap erase head, even with the difficult-to-erase metal tapes.

### Dolby Noise Reduction

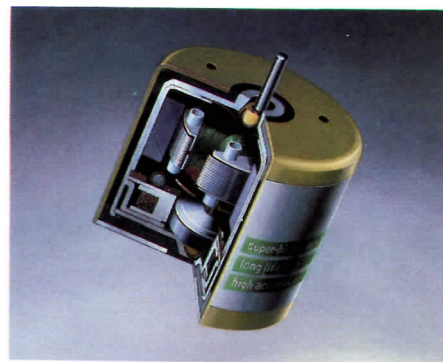
As you would expect, the K22 incorporates the Dolby noise reduction system, providing signal-to-noise ratio improvement of up to 10dB at 5kHz and above. A built-in filter prevents the standard 19kHz FM pilot signal from interfering with the Dolby system when you record FM stereo broadcasts.

### DC Servo Tape Drive

Because constant tape speed is vital to sonic clarity, the TC-K22 incorporates Sony's Tri-Duty DC Servo Motor. As the motor turns, a voltage generator reports any speed variations to servo-control electronics, which provides instantaneous correction. Thus, the K22 is less susceptible to the speed drift that commonly occurs as a cassette deck warms up. And the K22 maintains correct speed, even when the mechanical load

on the drive system varies. In these respects, the TC-K22 is superior to many comparably-priced cassette decks.

The Tri-Duty motor is carefully sheathed in aluminum, steel, and rubber to dampen vibrations that might interfere with smooth tape travel. The motor, together with DC servo control and an oversize, dynamically balanced flywheel, assure stable tape travel, with wow and flutter of only 0.07% (WRMS).



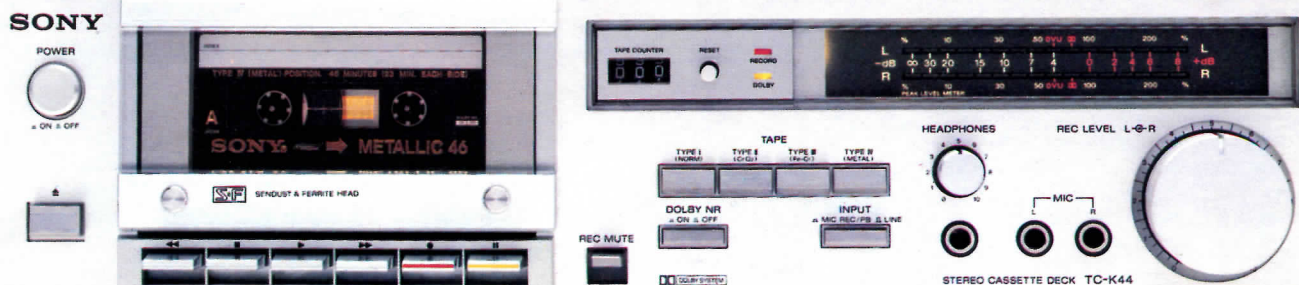
*Sony's stable, durable Tri-Duty DC Servo Motor.*

For smooth transition to fast-forward and rewind modes, the Tri-Duty motor works in conjunction with a magnetic clutch assembly. Using the K22, you may go from play or fast-forward directly into rewind, and from rewind directly to fast-forward, without damage to the deck or the tape.

### Precise Controls, Convenient Features

The layout and design of the TC-K22 permit simple, direct control of recording and playback. A four-position tape selector switch gives you the proper bias, record and playback equalization for each type of cassette, including the new metal particle tapes. Dual-concentric controls provide for quick adjustment of record levels. Levels are displayed on large, well-lit meters, accurately calibrated from -20 to +5 VU. At the end of tape, a motion sensor triggers the All-Mode Auto-Stop system, which disengages the heads, pinch roller, and drive capstan to protect the tape and mechanism.

# Sony TC-K44



## Precision, Performance, and Value

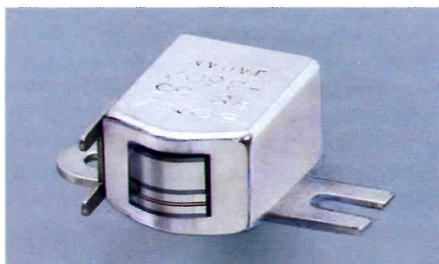
The Sony TC-K44 incorporates many of the outstanding features of the TC-K22, including metal tape capability, Dolby noise reduction, and the Tri-Duty DC servo motor. To these, the K44 adds a frequency generator (FG) servo system, for even better tape speed stability, and two other significant features: the Sendust and Ferrite head and LED Peak Program Meters. All told, the TC-K44 is a machine of superior performance capabilities. Yet its price makes it readily accessible to the music lover.

### Sendust and Ferrite Head

Sony created the new Sendust and Ferrite (S & F) head to meet a primary requirement of metal tape: increased flux density. The outstanding characteristic of sendust is its maximum flux density, the highest of any head material. Sendust also exhibits extreme hardness for long head life. Yet sendust has drawbacks that disqualify it from use throughout the head. Two characteristics important for high-frequency response, specific resistance and permeability, are quite low. And permeability is lower still when metal alloys are added to offset sendust's tendency to rust.

Sony has produced a corrosion-resistant sendust formulation without sacrificing permeability. And Sony has applied sendust only where its draw-

backs are less important, and its maximum flux density is most important: at the tip of the head, surrounding the gap. The majority of the magnetic core is composed of ferrite, a material with high specific resistance and high permeability, for extended high-frequency response. Thus, the Sendust and Ferrite head combines all the performance advantages of both ferrite and sendust, without the disadvantages of either.



Sony's Sendust and Ferrite record/play head.

It is often overlooked that the head's mechanical construction is just as important as its chemical composition. For example, the physical stress on the head core during fabrication can degrade audio performance. Many organic bonding agents used in conventional heads allow slippage over the years, causing the head gaps to spread or 'scatter'. Left and right channels can be subject to signal phase shift. Also the core of the head can twist and the gap filler can buckle, deforming the critical point of tape-to-head contact.

Sony overcomes these problems through careful head design and fabrication. Inorganic bonding materials are used throughout, for their superior strength. Quartz gap filler—applied by vapor deposition—provides an ideal match for Sendust's excellent hardness. And special low-stress manufacturing techniques are used to form and polish the magnetic materials. The result is a head that delivers the full performance of sendust and ferrite, and continues to deliver this performance over many years of use.

### LED Peak Program Meters

Recording levels on the K44 can be monitored on bright, sixteen-segment, light-emitting diode (LED) Peak Program Meters. Because LEDs have no mechanical inertia to overcome, they can follow the transient peaks of music with outstanding accuracy.

Calibrated across a broad range from -30 to +8dB, the meters feature an expanded scale in the critical range around 0dB. Above 0dB, the LED segments are red, to indicate the onset of potential tape overload. Because the meters are arranged in two parallel lines, you can evaluate left/right channel balance at a glance. Also, with automatic peak-hold, the highest peak indication remains lit for 2.5 seconds, or until a higher peak is established. Automatic peak hold is particularly useful when you first set recording levels.

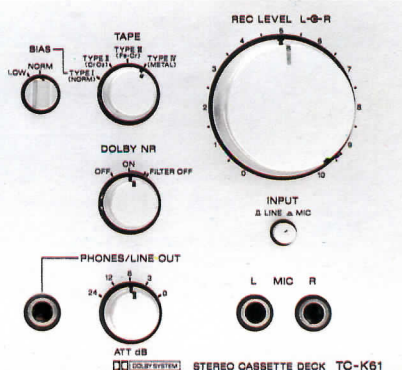
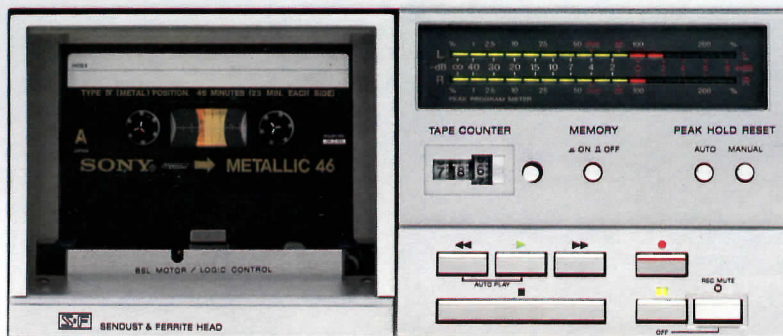


### Additional Features

The K44 has the same complement of convenient controls and operating features as the K22, plus three additions. First is 'punch-in' recording, the ability to go from the Play mode directly into the Record mode, without first pressing Stop. Punch-in recording permits more professional results when taping material onto a previously recorded track. Second, the Record Mute allows you to blank out broadcast commercials and other interruptions, while remaining in the Record mode. Third, and finally, the K44 incorporates a volume control for manual adjustment of the headphone output levels.

# Sony TC-K61

SONY



## Superb Performance and Responsive Control

The Sony TC-K61 is an outstanding expression of Sony's ability to deliver the latest and best in tape technology. The K61 provides the superlative speed constancy of Sony's two-motor drive system, controlled by a logic microprocessor IC. The microprocessor, which receives commands via feather-touch pushbuttons, executes them via transport solenoids. The result is smoother operation, greater flexibility, and the capabilities for timer operation and remote control. Moreover, the K61 incorporates Sony's exceptional Sendust and Ferrite (S & F) record/play head, four-gap erase head, LED Peak Program Meters, and a host of electronic refinements. Yet for all its sophistication, the TC-K61 remains easy to operate—and reasonable in price.

### Low-Distortion Electronics

Sony's attention to detail is evident in the electronic design of the TC-K61. For example, the critical playback head amplifier uses a unique, patented, direct-coupled design, which improves phase linearity and lowers distortion. The power supply employs an FET-buffer circuit for constant-current drive, even when the household voltage itself varies. And the K61 provides a switch for low and normal Type I bias, in addition to a four-position tape selector switch.

Even the selection of electronic parts reflects Sony's commitment to the best possible sound. The power supply incorporates fast-recovery diodes that minimize noise. The equalization amplifier uses expensive metal film resistors and polypropylene capacitors. Finally, the headphone/line output control uses a stepped attenuator, with discrete, potted resistors for the lowest noise possible.

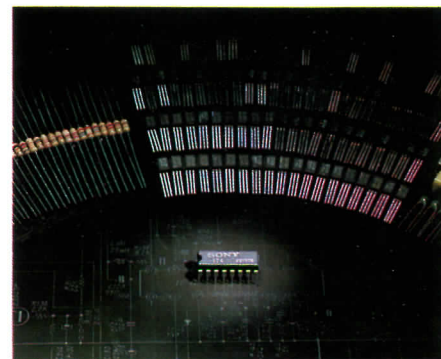
### Sony Dolby IC

A high-quality Dolby noise reduction circuit typically requires about 100 separate parts, including transistors,

resistors, and capacitors. Sony has replaced all of these parts with the newly-developed Sony Dolby IC, the CX-174.

Made with Sony's unique 'Process V' wafering technique, the Dolby IC exhibits exceptionally pure chemical composition. This helps the CX-174 realize lower distortion, wider dynamic range, and better tracking linearity.

In addition, conventional Dolby circuits use a record/playback slide switch, which can introduce noise. In contrast, the CX-174 works in conjunction with a relay switch that is quieter and more reliable than the conventional slide switch.

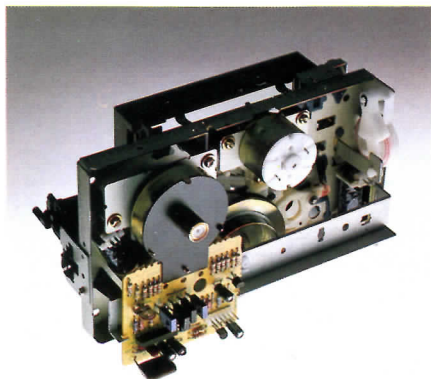


The Sony Dolby IC, shown with some of the separate parts it replaces.

To further maintain this recording accuracy, the TC-K61 incorporates a switchable multiplex filter. When you record FM stereo broadcasts, the filter can be switched on to prevent the standard 19kHz FM pilot signal from interfering with the Dolby system. At all other times, the filter can be defeated for optimum high-frequency response.

## Two-Motor System

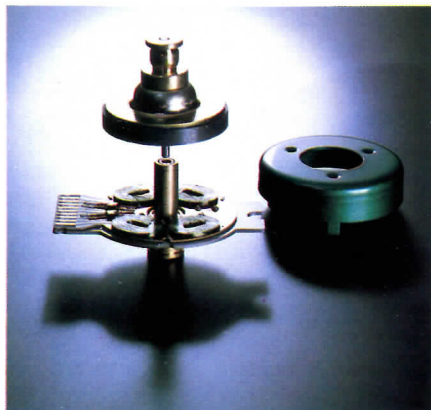
Because tape speed irregularity can be heard as wavering sound, unvarying tape drive is essential to high-fidelity cassette recording. For this reason, the Sony TC-K61 uses two discrete DC motors to move the tape across the heads. This division of labor eliminates any irregularities caused by variations in tape supply tension, and reduces the number of mechanical linkages needed in the transport mechanism.



Sony's two-motor tape drive system.

The spooling motor drives the reel hubs and provides fast winding. This high-torque motor works in conjunction with the magnetic clutch assembly to provide not only quick fast-forward and rewind, but also extremely gentle tape handling.

The second motor, which drives the capstan, incorporates Sony's famous brushless and slotless (BSL) design for uncommonly even delivery of torque. As a conventional motor turns, the torque increases and decreases as a result of spaces—'slots'—between the electromagnets. This wavering-force effect is called 'cogging'. Sony has eliminated cogging with the remarkable BSL motor. There are no brushes, no slots, and the



Sony's unique BSL motor eliminates the cogging of conventional drive systems.

magnetic force is smooth and constant. As an additional benefit, the absence of motor brushes makes the BSL motor unusually quiet and trouble-free.

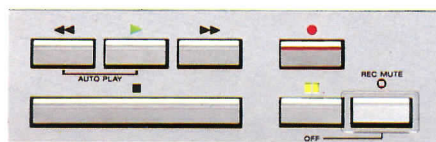
As with the TC-K44, the K61 uses a frequency-generator (FG) servo system. In the K61, a tiny FG has been incorporated into the BSL motor. As the motor turns, the generator produces an AC signal whose frequency is proportional to the motor's speed. In this way, the FG reports any speed irregularities to the servo control electronics, which in turn, governs the motor speed. Thus, even slight speed variations are corrected—before they can affect the sound.

This advanced drive system is completed by an oversize, dynamically-balanced, anti-resonant flywheel. The die-cast, zinc flywheel incorporates a nonmetallic compound to dampen resonance, and thus helps to minimize modulation noise caused by the transport mechanism.

As a result of these precautions, the K61 can maintain smooth tape travel under a wide variety of temperature and mechanical load conditions. The audible proof of the system's excellence is clear, unwavering sound, and a measured wow and flutter of only 0.04% (WRMS).

## Microprocessor-Controlled Transport

The sophisticated two-motor transport is, in turn, controlled by a microprocessor-IC logic system. Feather-



Transport logic control provides sensitive and precise tape handling and facilitates remote control with the optional RM-50.



touch pushbuttons provide convenient, foolproof mode selection. You can go quickly from one mode to another, without going through Stop. The logic circuit checks each command for proper sequencing, and protects the tape and mechanism from undue stress.

The logic circuit also facilitates 'punch-in' recording of new material onto a previously recorded track. End-of-side sensing for All-Mode Auto-Stop can be accomplished with Sony's non-contact Luminous Sensor.

## Auto-Space/Record Mute

To provide absolute silence between recorded selections, the TC-K61 incorporates a unique Auto-Space/Record Mute control. The control can be used to automatically attain a timed, four-second space between selections. And you can replace unwanted program material, such as FM commercials, with four seconds of silence, or insert longer or shorter gaps, as desired.

## Auto Play and Memory Cue

Another convenience of the K61's transport is Auto Play. Auto Play allows you to preset the deck to transfer from rewind into play at the beginning of the tape, by simply touching the rewind and play buttons simultaneously.

With the memory feature selected, the K61 can be put into rewind and it will stop automatically when the tape counter reads '999'. Or with Memory Cue, you can touch the rewind and play buttons simultaneously to have the deck rewind to '999' and transfer into the Play mode automatically.

## Timer Operation

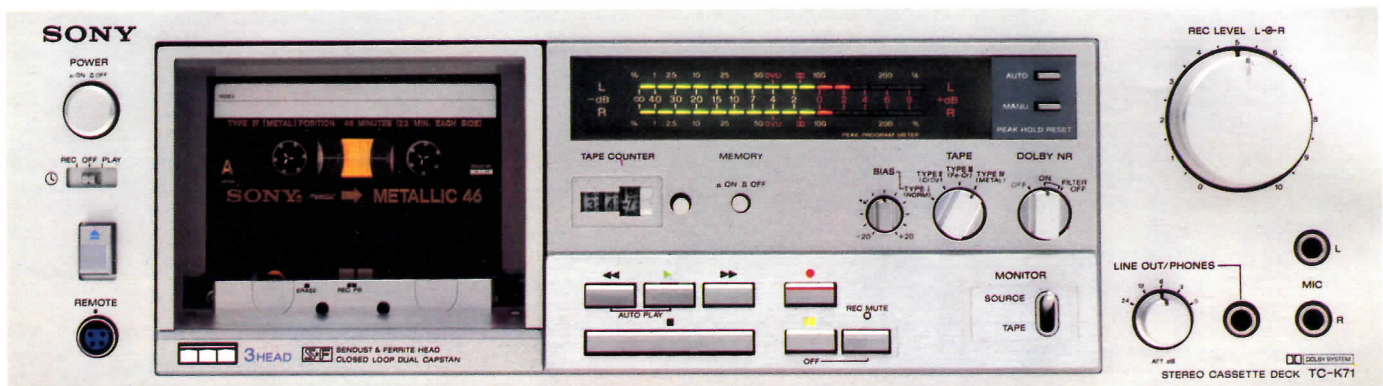
With an external timer, the K61 can be set to record or play back automatically, at a predetermined time. You can have the K61 record FM broadcasts in your absence, or even wake to music from your high fidelity system. Unlike other timer provisions, the number of recording or playback operations in the unattended period is limited only by the capacity of the timer.

## LED Meters with Two Types of Peak Hold

Like the TC-K44, the K61 incorporates Sony's sixteen-segment LED Peak Program Meters, whose parallel-bar arrangement shows channel balance at a glance. In the K61, however, the meters' range is calibrated from -40 to +8 dB, and there are two methods of holding the highest-peak indication. In the automatic mode, the peak-hold re-sets after 2.5 seconds, or when a higher peak is established. Or, if you wish, you can set the meters for manual hold, at the touch of a button.



# Sony TC-K71 and TC-K81



## The Professional-Grade Performance of Three-Head Design

The Sony TC-K71 and TC-K81 are outstanding examples of advanced technology in the service of music. Both machines provide the exceptional sound quality of Sony's Independent-Suspension three-head design, and the absolute precision of Closed-Loop Dual Capstan drive. The K71 offers variable bias for Type I tapes. The K81 provides full bias calibration, with a built-in 8kHz test tone oscillator, as well as record calibration with a built-in 400Hz oscillator. Of course, these decks retain the outstanding features of the K61, including two-motor tape drive with BSL capstan motor and FG servo system, Sony's Dolby IC for greater dynamic range and lower distortion, microprocessor logic control with remote and timer capabilities, LED Peak Program Meters with double indication peak-hold, and selected electronic parts for superior performance. The resulting machines meet the expectations of their designers, and the needs of the most demanding audiophiles.

### Three-Head Design

Many audiophiles prefer three-head decks—with separate erase, record, and playback heads—because this format permits them to monitor the tape an instant after it has been recorded. In this way, the user can compare the quality of the recorded music with the original source. Tape monitoring is convenient, and in demanding applications, the monitored sound can be an invaluable recording tool. But three heads yield significant performance advantages, too.

A conventional cassette deck, with a combined record/play head different physical requirements from playback. Recording is a high-energy process, involving signal levels some 40dB higher than playback. For good recording dynamic range, the head gap should be wide—three to five microns. Yet for playback high-frequency re-

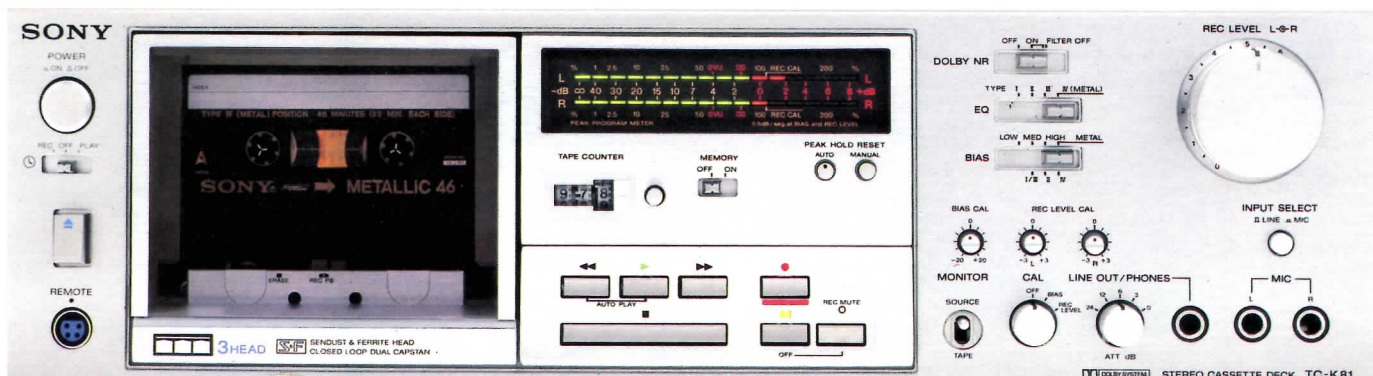
sponse, the gap should be narrow—no more than one micron. Any combined record/play head must necessarily represent a compromise between these two requirements.

The Sony TC-K71 and TC-K81 circumvent this compromise. These decks have separate record and play heads, each optimized to its particular function. The playback head has a narrow, 0.9 micron gap for response out to 18,000Hz. And the record head has a wide, 4.5 micron gap for superb dynamic range. In fact, the high-energy capabilities of the record head easily meet the requirements of the most demanding tape formulations, including metal particle tape.

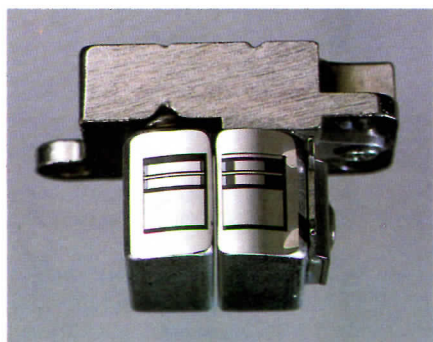
### Independent-Suspension Heads

With their superior performance and enhanced operating flexibility, three-head machines are obviously attractive. But there are several problems particular to the design of three-head cassette decks. For example, it is no simple matter to fit three heads into the cassette shell's openings. Fitting each head into a different opening raises the problem of tape skewing between the heads, which causes azimuth error. Even slight azimuth error can result in audible high-frequency losses. Thus, decks that insert each head through its own opening often require the user to re-adjust head azimuth before recording each side of each cassette.

However, placing the record and playback heads through the same opening can cause improper contact with the cassette's pressure pad, as well as interference between the two heads. In this configuration, bias leakage and magnetic cross-feed can degrade the monitored sound during recording, when both heads are active. Sony, with its long experience in three-head recording, has solved these problems with a unique, new head configuration: Independent Suspension.



Unlike the vast majority of three-head cassette decks, the Sony TC-K71 and K81, with Independent Suspension, use physically distinct, individually-shielded record and playback heads. Separate shielding reduces magnetic cross-feed and bias leakage dramatically. While physically distinct from each other, both the record and playback heads still fit into the cassette's center opening. In fact, the two head gaps are intentionally brought close together—less than 3.1 millimeters apart. As a result, both gaps make proper contact with the cassette's pressure pad. And the gaps are so close together that skewing error is reduced to the vanishing point. There is no need for user-adjustable azimuth.



The Independent-Suspension Sendust and Ferrite (S & F) heads of the TC-K71 and TC-K81.

Sony's Independent-Suspension three-head design ensures that the frequency response of these machines is not only extended, but also extremely stable. You can expect good results on each cassette, from the beginning of the tape to the end, on side A as well as side B.

Of course, the record and playback heads of these decks boast Sony's Sendust and Ferrite head formulation (as described for the TC-K44 and K61). The S & F design provides high permeability, low specific resistance, unsurpassed maximum flux density, and exceptionally long service life.

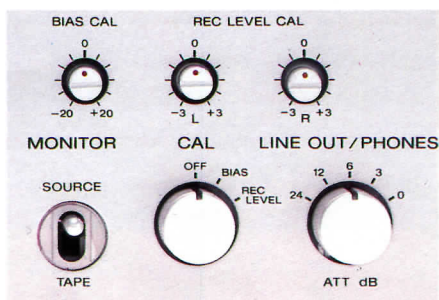
### Variable Bias for Type I

Slight variations in bias requirements from one brand to another can result in overly 'bright' or 'dull' high frequency response, and excess distortion. The problem is most serious for Type I tapes, which have the widest range of bias need. For this reason, the TC-K71 variable bias for Type I cassettes. To use the bias control, you record sample material and switch back and forth between Tape and Source, correcting the bias for proper tonal balance.

### Bias and Record Calibration

The TC-K81 incorporates even more sophisticated adjustments for each tape formulation. Bias and record calibrations permit the K81 to be hand-tailored to suit the requirements of each tape. Built-in test-tone oscillators, the monitoring capability of the three-head format, and the deck's own Peak Program Meters combine to make calibration quick, simple, and precise.

The bias calibration procedure of the TC-K81 establishes flat frequency response by obtaining equal output for a 400Hz and an 8000Hz test tone. These tones are recorded and played back together, and displayed on the deck's meters. To make the adjustment, you simply turn the Bias Cal Knob for equal readings on both meters. Because switching to the calibration mode automatically increases meter sensitivity, the adjustment is accurate to within 0.5dB.

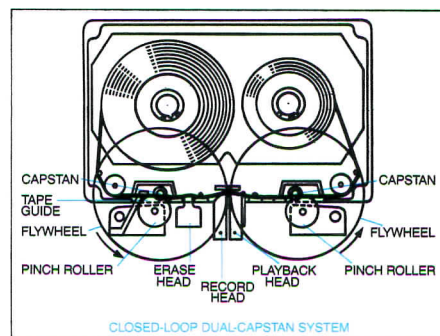


The result is flat high-frequency response and low-distortion recording with any tape you use.

In addition, the K81 provides record level calibration with the 400Hz tone. You make adjustments with the left and right controls, setting the meters to the Rec Cal reference marks. When set, Dolby noise reduction tracking in encode and decode will be precise, resulting in accurate high-frequency sound during both loud and soft passages.

### Closed-Loop Dual-Capstan Drive

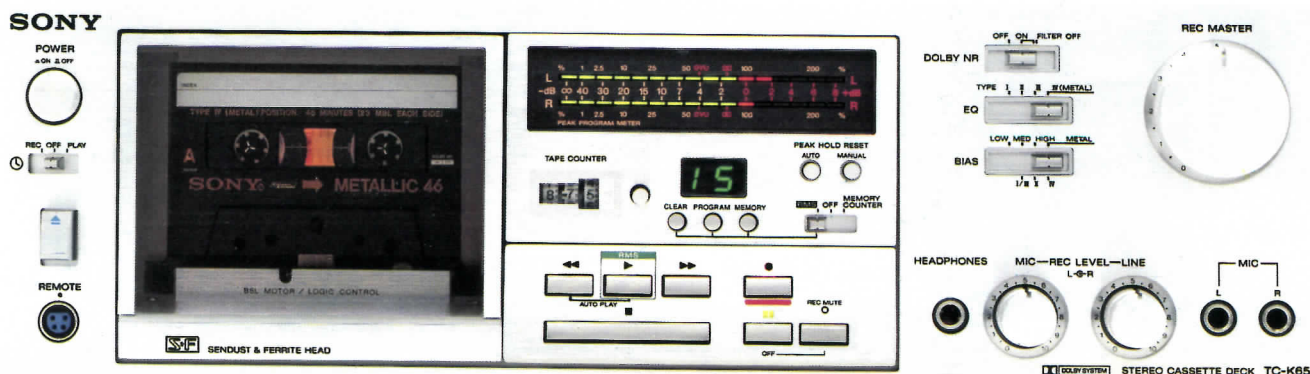
Conventional cassette decks use a single drive capstan, engaging a single pinch roller, to drive the tape. While



single-capstan drive often yields good performance, dual-capstan drive—using two capstans and two pinch rollers—is a superior system. The TC-K71 and K81 incorporate dual-capstan drive. Both capstans are driven from the BSL motor by the same belt, in a closed-loop configuration. The capstans are located on either side of the head assembly, for better control of tape tension, and minimum modulation noise.

Combining this drive system with a separate spooling motor, and two over-size, anti-resonant flywheels, the K71 and K81 achieve clear, unwavering sound, even during sustained notes.

# Sony TC-K65



## The Convenience of Sony's Random Music Sensor

The Sony TC-K65 shares much in common with the TC-K61. Both decks incorporate Sony's smooth, two-motor tape transport, with BSL capstan motor and high-torque spooling motor. Both machines have the Sendust and Ferrite record/playback head for superior dynamic range and low distortion. And the K65 has the same microprocessor logic function sequencing and the same LED Peak Program Meters as the K61. What distinguishes the K65 are two important operating modes: mic/line mixing in record, and Sony's extraordinary Random Music Sensor (RMS) in playback. With these features, the K65 achieves a new level of versatility and convenience.

### Mic/Line Mixing

For recording flexibility, the microphone and line-level inputs of the K65 can be mixed. Thus, you can record simultaneous music and narration, or add your own musical material to recordings of broadcasts and discs. The K65 facilitates input mixing with independent level controls for left and right 'mic' and line inputs, along with a convenient master record level control.

### Random Music Sensor

The TC-K65 incorporates Sony's Random Music Sensor (RMS), a system that can be programmed to automatically locate and play individual selections of music. Working in conjunction with the transport microprocessor, the RMS al-

lows you to hear a cassette's musical selections in any sequence you choose. For example, you can listen to the third selection, and then the ninth, and then the second, automatically.

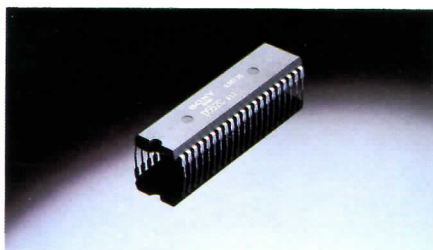
You enter the desired sequence into the RMS using the 'program' and 'memory' buttons. With RMS, the deck automatically fast-forwards or rewinds, locates the selection, and plays. The numeral display glows to indicate each selection. RMS can distinguish up to fifteen selections on a single cassette side. And you can program up to sixteen instructions, including selection replays.



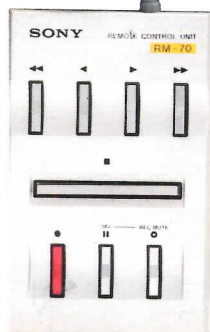
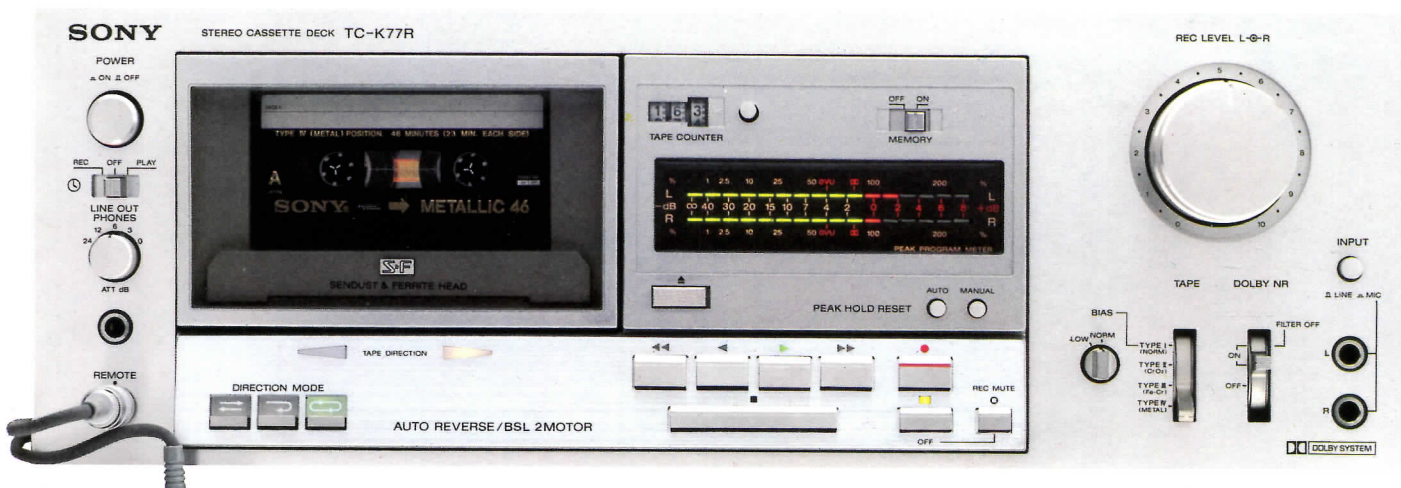
*You can program the RMS to play the selections of your choice, in the order of your choice, automatically.*

You can also take advantage of the Random Music Sensor without programming. RMS provides the ability to 'skip' back to the beginning of a selection, or 'skip' forward to the beginning of the next selection.

These responsive functions of the RMS, along with Auto Play, Memory Stop and Memory Play, timer operation, and remote control capability, make the Sony TC-K65 exceptionally convenient and effortless to use. With the K65, it is easier than ever before to hear exactly the music you want to hear, exactly when you want to hear it.



# Sony TC-K77R

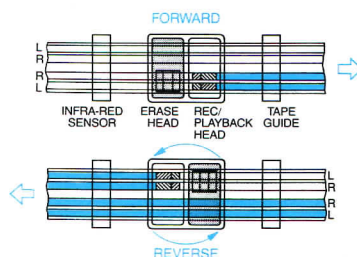


## Auto Reverse for Uninterrupted Music

The Sony TC-K77R provides the hours of uninterrupted listening pleasure that only an automatic reverse cassette deck can give. Unlike some other auto reverse machines, the K77R can record as well as play in both directions. A combination of infra-red and motion-detecting sensors makes the reversing action remarkably fast. And Sony's Roto-Bilateral Sendust and Ferrite head maintains exceptional sound quality, in forward and reverse.

### Roto-Bilateral Heads

When the K77R reverses direction, the erase and record/playback heads, mounted on the same assembly, actually retract from the cassette, rotate 180°, and are reinserted. This Roto-Bilateral head system is unlike conventional designs, which use separate heads for forward and reverse, or separate gaps on the same head. Because the K77R uses the same gaps of the same heads for both directions, you get uniform, high performance in forward and reverse, for erase, record, and play.



*Sony's Roto-Bilateral head system provides the same performance in both directions.*

The K77R uses Sony's Sendust and Ferrite record/play head, mounted together with a Ferrite-and-Ferrite erase head. This unique mounting system provides stable performance and reduced flux leakage.

The end-of-tape reversing sequence is triggered by an infra-red sensor. This

sensor detects the translucent leader tape and sends a signal to a transport control microprocessor, which initiates auto reverse. (For older cassettes that have opaque leader tape, a motion-detecting sensor can also trigger auto reverse.) Because the infra-red sensor is mounted close to the heads, the entire auto reverse sequence takes only 1.2 seconds, as compared to 2 to 3 seconds for conventional designs.

### Operating Flexibility

The auto reverse system of the TC-K77R has three operating modes, controlled by front-panel pushbuttons. First, in both record and playback, you can have the deck run to the end of each side and stop, as a conventional deck would. But with the K77R, you need never turn the cassette to play the second side. Second, you can have the machine reverse automatically at the end of the first side, and stop at the end of the second. And finally, you can select continuous reverse, to have the entire cassette played up to five times, without interruption. Of course you can use the feather-touch transport controls to reverse the direction at any time.

A remote control, the RM-70, is supplied with the K77R. The RM-70 duplicates the feather-touch buttons of the front panel, to provide full control of the deck in either direction.

The Sony TC-K77R offers Auto Play and Memory Cue, as in the TC-K61. But the flexibility of these features is enhanced by auto reverse. For example, you can fast-forward or rewind for automatic stop at '999' on the counter. And the deck provides four modes of Memory Cue, allowing you to fast-forward or rewind to '999' and automatically initiate play in forward or reverse. You can also rewind to the beginning of either side and initiate play automatically.

# Sony TC-D5M



## The Ultimate Portable Cassette Deck

The TC-D5M represents the application of Sony total-system technology to the demands of portable stereo cassette recording. Its innovative design provides steady, stable performance even in rigorous field use. Yet the D5M shares many features in common with Sony's home decks, including metal tape capability, FG servo control, and the Sendust and Ferrite head. Thus, the portable TC-D5M performs on a level comparable to fine home-use decks. In fact, when you are not using the D5M in the field, you can connect it to your home high fidelity system with excellent results.

### DC-to-DC Converter

For consistent recording quality, the electronics and drive system of any cassette deck must be provided with stable, high voltage. In a home-use machine, this is easily done. But for a portable cassette deck, running on battery power, this represents a difficult problem. The designer can always increase the voltage simply by adding more batteries. But this adds weight and bulk to the unit, making it difficult to carry around. Even with many batteries, the problem of supplying stable voltage remains, for battery voltage drops during the course of use.

Sony has solved these power supply problems with the DC-to-DC converter of the TC-D5M. This circuit not only provides higher voltage, it assures stable operation and the longest possible service life from only two "D" cell alkaline batteries, typically better than four hours.

### Coreless Motor

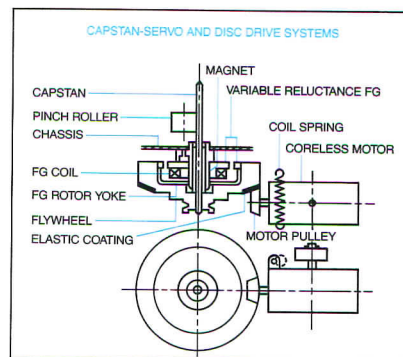
Sony developed an innovative coreless motor for the special requirements of portable cassette recording. With its cylindrical rotor and powerful, rare-earth magnet, the

coreless motor provides high torque and low power consumption, as well as reduced size.

### Capstan-Servo Disc Drive

The coreless motor drives the capstan assembly via an elastic flange on the flywheel. This transmission system is simple and rugged, for minimum torque loss, fast start-up, and steady speed, even when the D5M is being moved about. And the elastic flange absorbs motor vibrations that might contribute to flutter.

A frequency generator, built into the capstan assembly, reports the tape speed to servo control electronics. This FG servo system helps reduce the wow and flutter of the D5M to only 0.06% (WRMS).



### Convenient Features

The D5M also features a built-in monitor amplifier with choice of loudspeaker or stereo headphone output, record limiter switch, mic input attenuator, and three-way power source for professional-grade flexibility in record and playback.

# Features

	TC-K22	TC-K44	TC-K61	TC-K71	TC-K81	TC-K65	TC-K77R	TC-D5M
Number of Heads	Two	Two	Two	Three	Three	Two	Two	Two
Record/Play Head Type	SD	S&F	S&F	Rec: S&F Play: S&F	Rec: S&F Play: S&F	S&F	S&F Roto-Bilateral	S&F
Erase Head Type	4-Gap Ferrite	4-Gap Ferrite	4-Gap Ferrite	2-Gap Ferrite	2-Gap Ferrite	4-Gap Ferrite	2-Gap Ferrite Roto-Bilateral	4-Gap Ferrite
Metal Tape Capability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Switchable Tape/ Source Monitoring	—	—	—	Yes	Yes	—	—	—
Tape Selector Positions	Four	Four	Four	Four	Four	Four	Four	Four
Bias Adjustment	—	—	Two Position Switch for Type I	Variable for Type I	Variable for All Types, with 8kHz osc.	—	Two-Position Switch for Type I	—
Record Level Calibration	—	—	—	—	Yes, with 400Hz osc.	—	—	—
Patented Direct-Coupled Playback Amplifier	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dolby Noise Reduction with Fixed MPX Filter	Yes	Yes	—	—	—	—	—	Yes
Dolby Noise Reduction with Sony's Exclusive Dolby IC, Switchable MPX Filter	—	—	Yes	Yes	Yes	Yes	Yes	Yes
Selected Electronic Parts for Low Noise and Low Distortion	—	—	Yes	Yes	Yes	Yes	Yes	Yes
FET Buffer Power Supply	—	—	Yes	Yes	Yes	Yes	Yes	—
Drive Type	Belt	Belt	Belt	Belt	Belt	Belt	Belt	Disc
Servo Type	Voltage	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency
Number of Motors	One	One	Two	Two	Two	Two	Two	One
Motor Type	Tri-Duty	Tri-Duty	Capstan: BSL; Spooling: High-Torque	Capstan: BSL; Spooling: High-Torque	Capstan: BSL; Spooling: High-Torque	Capstan: BSL; Spooling: High-Torque	Capstan: BSL; Spooling: BSL	Coreless
Magnetic Clutch Assembly	Yes	Yes	Yes	Yes	Yes	Yes	—	—
Number of Capstans	One	One	One	Closed-Loop, Dual Capstans	Closed-Loop, Dual Capstans	One	One Forward; One Reverse	One
Dynamically Balanced Flywheel	—	—	Yes	Yes	Yes	Yes	Yes	—
Anti-Resonant Flywheel	—	—	Yes	Yes	Yes	—	Yes	—
Transport Control Type	Piano Key	Piano Key	Feather Touch	Feather Touch	Feather Touch	Feather Touch	Feather Touch	Piano Key
Punch-In Record	—	Yes	Yes	Yes	Yes	Yes	Yes	—
Record Mute	—	Manual	Auto-Space/ Rec Mute	Auto-Space/ Rec Mute	Auto-Space/ Rec Mute	Auto-Space/ Rec Mute	Auto-Space/ Rec Mute	—
Auto Play Repeat Control	—	—	Yes	Yes	Yes	Yes	Yes	—
Memory Cue Control	—	—	Yes	Yes	Yes	Yes	Yes	—
All-Mode Auto-Stop	Mech. Sensor	Mech. Sensor	Luminous Sensor	Luminous Sensor	Luminous Sensor	Luminous Sensor	Luminous Sensor	Mech. Sensor
Safety-Load Mechanism	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Meter Type	VU Ballistic	Peak LEDs 16 x 2	Peak LEDs 16 x 2	Peak LEDs 16 x 2	Peak LEDs 16 x 2	Peak LEDs 16 x 2	Peak LEDs 16 x 2	VU Ballistic with 1 Peak LED
Double-Indication Peak Hold	—	Auto Only	Yes	Yes	Yes	Yes	Yes	—
Dual-Concentric Record-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mic/Line Input Selector	Manual	Manual	Manual	Auto	Manual	Mic/Line Mixing	Manual	Auto
Mic Attenuator, Input Limiter, DC-to-DC Converter, Monitor Amplifier with Speaker	—	—	—	—	—	—	—	Yes
Line Outputs	Fixed	Fixed	Variable	Variable	Fixed and Variable	Fixed	Fixed and Variable	Fixed
Headphone/Line Output Attenuator	—	—	Yes	Yes	Yes	—	Yes	—
Full-Function Remote Control	—	—	RM-50 Optional	RM-50 Optional	RM-50 Optional	RM-50 Optional	RM-70 Supplied	—
Timer Operation	—	—	Yes	Yes	Yes	Yes	Yes	—
Oil-Damped Eject	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—
Cassette Back Lighting	—	Yes	Yes	Yes	Yes	Yes	Yes	—
Removable Well Cover	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—

# Specifications

	TC-K22	TC-K44	TC-K61	TC-K71	TC-K81	TC-K65	TC-K77R	TC-D5M
Fast-Forward/Rewind Time, C-60	90 sec.	90 sec.	80 sec.	80 sec.	80 sec.	80 sec.	90 sec.	150 sec.
Wow & Flutter, WRMS	0.07%	0.06%	0.04%	0.04%	0.04%	0.04%	0.05%	0.06%
DIN 45507	0.20%	0.17%	0.12%	0.12%	0.12%	0.12%	0.14%	0.17%
Frequency Response ( $\pm 3$ dB, Re: -20dB)								
Metallic Tape	30- 15,000Hz	30- 15,000Hz	30- 17,000Hz	30- 18,000Hz	30- 18,000Hz	30- 17,000Hz	30- 17,000Hz	30- 17,000Hz
FeCr Tape	30- 15,000Hz	30- 15,000Hz	30- 17,000Hz	30- 18,000Hz	30- 18,000Hz	30- 17,000Hz	30- 17,000Hz	30- 17,000Hz
EHF Tape	30- 14,000Hz	30- 14,000Hz	30- 16,000Hz	30- 17,000Hz	30- 17,000Hz	30- 16,000Hz	30- 16,000Hz	30- 15,000Hz
SHF Tape	30- 12,500Hz	30- 13,000Hz	30- 14,000Hz	30- 15,000Hz	30- 15,000Hz	30- 15,000Hz	30- 15,000Hz	30- 14,000Hz
Re: 0dB Metallic Tape	30- 12,500Hz	30- 13,000Hz	30- 13,000Hz	30- 13,000Hz	30- 13,000Hz	30- 13,000Hz	30- 13,000Hz	30- 13,000Hz
Signal-to-Noise Ratio (Dolby NR Off, Re: 3% THD, Peak, IHF-A Wtd.)								
Metallic Tape	58dB	58dB	59dB	60dB	60dB	59dB	59dB	59dB
FeCr Tape	58dB	58dB	59dB	60dB	60dB	59dB	59dB	59dB
EHF Tape	56dB	56dB	57dB	58dB	58dB	57dB	57dB	55dB
SHF Tape	52dB	52dB	52dB	54dB	54dB	53dB	53dB	53dB
(Improvement with Dolby NR On)	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above	Up to 5dB @ 1kHz, 10dB @ 5kHz or Above
Total Harmonic Distortion (1kHz, re: 0dB Record Level)								
Metallic Tape	1.0%	1.0%	1.0%	0.8%	0.8%	0.9%	1.0%	1.0%
FeCr Tape	1.0%	1.0%	1.0%	0.8%	0.8%	1.0%	1.0%	1.3%
Crosstalk (1kHz, tracks)	60dB	60dB	60dB	60dB	60dB	60dB	60dB	60dB
Separation (1kHz, channels)	35dB	35dB	35dB	35dB	35dB	35dB	30dB	30dB
Erase (400Hz, Incl. Metallic Tape)	60dB	60dB	60dB	60dB	60dB	60dB	60dB	60dB
Bias Frequency	105kHz	105kHz	105kHz	105kHz	105kHz	105kHz	105kHz	85kHz
Meter Range	-20- +5dB	-30- +8dB	-40- +8dB	-40- +8dB	-40- +8dB	-40- +8dB	-40- +8dB	-20- +3dB
Line Input: Sensitivity	77.5mV	77.5mV	77.5mV	77.5mV	77.5mV	77.5mV	77.5mV	77.5mV
Impedance	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms
Mic Input: Sensitivity	0.25mV	0.25mV	0.25mV	0.25mV	0.25mV	0.25mV	0.25mV	0.25mV
Impedance	Low	Low	Low	Low	Low	Low	Low	Low
Line Output: Level, Fixed	435mV	435mV	435mV	435mV	435mV	435mV	435mV	435mV
Level, Variable	—	—	27.5-435mV	27.5-435mV	27.5-435mV	—	27.5-435mV	—
Line Output: Load Impedance, Nominal	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms	50k Ohms
Load Impedance, Minimum	10k Ohms	10k Ohms	10k Ohms	10k Ohms	10k Ohms	10k Ohms	10k Ohms	10k Ohms
Headphone Output: Level	30.9mV	0-77.5mV	4.9-77.5mV	4.9-77.5mV	4.9-77.5mV	30.9mV	4.9-77.5mV	0-123mV
Nominal Headphone, Impedance	8 Ohms	8 Ohms	8 Ohms	8 Ohms	8 Ohms	8 Ohms	8 Ohms	8 Ohms
Power Requirements	AC-120V 60Hz 10W Max	AC-120V 60Hz 14W Max	AC-120V 60Hz 26W Max	AC-120V 60Hz 26W Max	AC-120V 60Hz 26W Max	AC-120V 60Hz 24W Max	AC-120V 60Hz 27W Max	DC-3V 5.5W Max
Dimensions (HxWxD)	4 $\frac{1}{8}$ x17x11 $\frac{3}{8}$ " 105x430x 290mm	4 $\frac{1}{8}$ x17x11 $\frac{3}{8}$ " 105x430x 290mm	5 $\frac{1}{8}$ x17x11 $\frac{3}{8}$ " 130x430x 290mm	5 $\frac{1}{8}$ x17x11 $\frac{3}{8}$ " 130x430x 290mm	5 $\frac{1}{8}$ x17x11 $\frac{3}{8}$ " 130x430x 290mm	5 $\frac{1}{8}$ x17x11 $\frac{3}{8}$ " 130x430x 290mm	6 $\frac{1}{8}$ x17x12 $\frac{3}{4}$ " 155x430x 325mm	1 $\frac{7}{8}$ x9 $\frac{3}{8}$ x6 $\frac{5}{8}$ " 48x237x 168mm
Weight	9 lbs, 15 oz. 4.5 kg	11 lbs 5.0 kg	12 lbs, 5 oz 5.6 kg	12 lbs, 5 oz 5.6 kg	13 lbs, 14 oz 6.3 kg	12 lbs, 9 oz 5.7 kg	18 lbs, 5 oz 8.3 kg	3 lbs, 4 oz 1.5 kg

Features and specifications subject to  
change without notice.

Cassette not included.

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