YAMAHA K-520/K-320

Natural Sound Stereo Cassette Decks

2-Motor Microcomputer Controlled Transport

Dolby B-C Noise Reduction*

Music Search, Forward and Reverse Intro Scan

4-Digit Linear Real Time Counter (K-520)

Zero to Memory Repeat Play, Full Repeat Play (K-520)

Auto Fader, Remaining Tape Time Indication (K-520)

Behind the Superior Yamaha Sound

Yamaha's foundation as a manufacturer spans more than a hundred years in a number of specialized fields. Since the company began as a producer of reed organs, it has expanded steadily until today, Yamaha music instruments, sound reinforcement gear, music education and popularization programs, motor products, sports equipment, and of course, audio products, are renowned worldwide for their highly refined performance.

Naturally, the many years spent in intensive research and development in all these fields has resulted in a vast and varied store of technology. Moreover, the finely balanced interrelationship between the many Yamaha in-house technologies, production facilities and product groups creates a highly efficient network that makes it possible to achieve optimum quality and performance in every product. Yamaha audio know-how, however, does not stop at technology. Each and every new audio product must face the most demanding challenge imaginable: the critical ears of Yamaha music instrument designers. Unless the reproduced sound is exactly like the real thing, the product is not considered finished. Yamaha gives you vast technology tamed by musical sensitivity—a claim no other audio manufacturer can honestly make.

The K-320 and K-520 are also available in the standard Yamaha silver front panel finish, for a choice of stylistic compatibility with any audio system, and any listening environment.

AN EMPHASIS ON BASIC REPRODUCTION EXCELLENCE WITH ADDED RECORDING AND PLAYBACK VERSATILITY

The most important consideration in any cassette deck is the quality of basic reproduction performance it offers. Clean, accurate and undistorted music reproduction, with the widest possible frequency response and dynamic range, is essential to quality recording. If a cassette deck can't guarantee these basic performance requirements, then it can't do justice to the music you listen to. That's the design emphasis behind both the K-320 and K-520 cassette decks. Excellence where it counts the most – the transport, motors, heads and electronics – excellence in those areas most critical to reproduction quality. In addition to satisfying these important musical requirements, the K-320 and K-520 also offer a surprising number of versatile recording and playback features that provide greater precision, flexibility and creative control, making both decks an exceptional value in cost/performance.

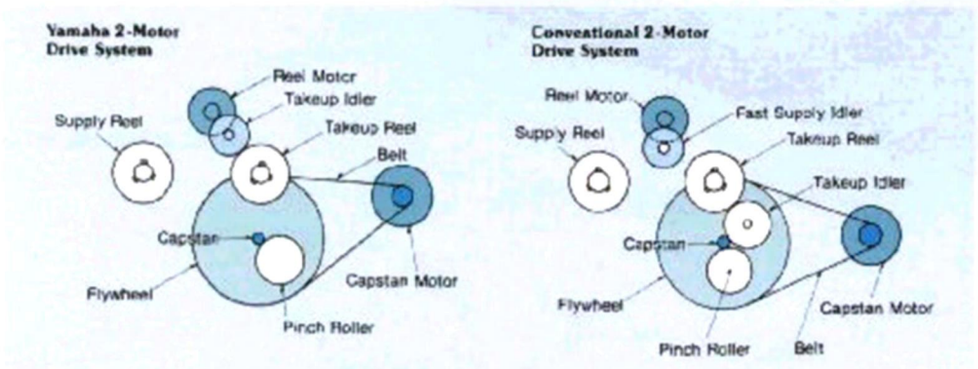
BECAUSE QUALITY COMES FIRST, NO COMPROMISES ARE MADE

Tape Travel is Extremely Accurate and Stable

The tape transport mechanism is one of the most critical sound-influencing factors in any cassette deck, and both the K-320 and K-520 incorporate an original Yamaha transport mechanism which ensures the highest possible tape travel accuracy and stability with a two-motor transport design. The main advantage of a two-motor transport is that independent motors can be used for separate capstan and reel drive, eliminating the excess load placed on the capstan motor—and the resulting tape travel irregularities—with a single motor system. But most two-motor systems rely on the takeup reel motor only for fast wind operations, forcing the capstan motor to drive the takeup reel via an idler during normal recording and playback. This still places excess load on the capstan motor, leading to tape travel irregularities which adversely influence recording and playback performance. With the Yamaha two-motor transport system, however, the takeup reel is driven by an independent DC motor not only for fast wind operations, but for normal recording and playback as well. This relieves the capstan motor—with the K-520 and K-320's high stability DC servo motor—of excess load, resulting in extremely accurate, stable tape travel from beginning to end with every tape. The specs show remarkably low wow and flutter, and musically, this unique system provides a clean, accurate, almost transparent sound rivalling that of many higher priced decks.

Microcomputer Control Makes Everything Smooth and Simple

While the Yamaha two-motor transport maintains consistently accurate tape travel, microcomputer logic governs all transport operations with smooth, silent precision. Individual transport modes are selected from a single, flat panel control by touching the appropriately coded section for stop, play, fast forward or rewind. The selected mode is engaged with fast, positive response, and direct switching between any two modes ensures that even if you select the wrong mode by mistake, nothing can go wrong with the tape. Controlling your tape deck is as simple as possible, so you can concentrate on the fine music it gives you.



Hard Permalloy Head (K-320)

Ordinary Permalloy exhibits excellent magnetoelectric characteristics, making it an excellent choice for use as a recording head material, but low resistance to abrasion is a drawback which prevents full utilization of the benefits of Permalloy. Yamaha has developed a special new type of hard Permalloy which eliminates this drawback, permitting outstanding frequency response and dynamic range characteristics with sufficiently high resistance to abrasion. The performance of the hard Permalloy record/playback head is further enhanced by careful attention to quality in the deck's supporting electronics, guaranteeing the lowest possible distortion for clean, accurate, long-lasting reproduction quality.

Pure Sendust Head (K-520)

Sendust is generally preferred as a recording head material because of its ideal magnetic characteristics and its durable, wear-resistant properties. Yamaha Sendust, however, is even better, developed through an original process which yields a Sendust ingot virtually free of impurities. The pure Sendust ingot is then precision machined into a special tape head core which provides extremely high

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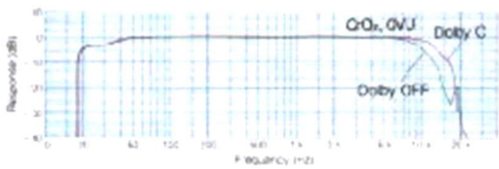
maximum flux density, greater permeability, and exceptionally high resistance to wear. Low harmonic distortion, wide dynamic range, and improved channel separation are the most notable performance characteristics of the Pure Sendust head. Reproduction electronics are also carefully designed to ensure the highest performance with the lowest possible noise and distortion, adding up to the finest natural sound performance possible in a combination recording/playback head.

Pure Sendust Head

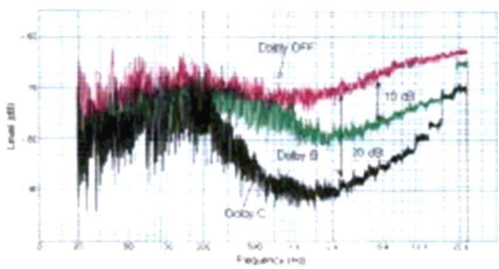
Maximizing the Benefits of Dolby C Noise Reduction

Although the superior performance of Dolby C is now widely offered on cassette decks in all categories, not all decks offering it are good enough to bring out the full performance it offers. Because unless the basics of cassette deck performance are ensured—sufficiently wide, flat frequency response and low-noise, low-distortion reproduction—Dolby C won't live up to its potential. These decks, however, offers this kind of capacity for accurate operation of the critical Dolby C circuit, delivering the full benefits of this superior system. Dolby C exhibits a full 20 dB of noise reduction down to the 1 kHz level, and your ears will confirm what the numbers merely reflect—tape noise is virtually inaudible, for the cleanest, most accurate recordings you've ever heard. Dolby B is also provided for playback compatibility with previously B-encoded tapes.

Comparison of Frequency Response



Playback Noise Level (Dolby C/B/OFF, CrO_2)



MORE WAYS TO ENJOY THE MUSIC

Intro Scan, for 2-Way Playback Sampling

Intro Scan is an extremely useful playback feature that lets you find your favorite selections on a tape with one touch of a button. Intro Scan seeks out each individual selection on the tape, plays the first ten seconds for sampling, and moves on to the next selection for sampling until you've found the one you want. And the Yamaha Intro Scan feature works in both the forward and reverse directions, so you can start from any point on the tape and sample each selection through to the end, or back to the beginning. When you find the selection you want to hear, just push the Play button before the ten second sample is finished, and normal playback takes over automatically from there. Intro Scan eliminates the frustration of "hit or miss" manual searching, and gives you added control over the playback process.

Music Search Finds it For You

Music Search is another big convenience feature that takes the guesswork out of fast-wind searching. Push the Search button while in the fast forward mode, and the tape will stop automatically at the beginning of the next selection on the tape. Push the Search button while in the rewind mode, and the tape will stop automatically at the beginning of the current selection on the tape. Playback then takes over automatically from there.

Auto Source Change Keeps the Music Coming

Here's a feature you won't find on many other cassette decks, but it's one you'll really enjoy. With a normal cassette deck, changing sources from deck to tuner after

tape playback has ended must be done with the amplifier's input selector. The K-320 and K-520, however, can do this for you automatically. If the tuner signal (for example) is routed to the deck's line input terminals while tape playback is being monitored, the tuner signal will automatically be switched to when the tape stops at the end of a side. And with the K-520, the new source will fade in automatically. That way, after tape playback is finished, you'll be automatically switched to a new listening source without even moving from your chair.

Peak Level Meters Facilitate Optimum Level Setting

Signal level meters are important in obtaining good recording results, and these decks provide the fast, accurate response and high visibility you need in a level metering system. 7-segment LED bar graphs, one for each channel, are aligned horizontally on a wide-ranging scale from −20 to +6 dB.
The meters are color-coded, so any signal above 0 dB in level will be displayed in red. With these meters, setting the optimum record level is fast and easy, for the best possible signal-to-noise ratio when recording.

EXTRA QUALITY, EXTRA CONVENIENCE WITH THE K-520

Real-Time Linear Counter

Knowing just how much time has elapsed—and exactly how much time is left on a tape—is a real bonus when recording, editing, or simply searching through a tape. That's why the K-520 features the Yamaha Linear Counter, for a precise digital readout of elapsed tape time in minutes and seconds. Although many cassette decks boast real-time counters, the time display they provide can actually vary widely from the actual amount of time elapsed due to inconsistencies in the rotational speed of the takeup reel. The Yamaha Linear Counter, however, makes use of a built-in microcomputer to keep track of supply reel rotational speed, permitting compensation for variations in reel speed that would "fool" a conventional counter into non-linear operation. Elapsed time displays are thus consistently accurate, from the beginning to the end of every tape in your collection. Minus figures are also displayed when a tape is rewound past the "00.00" position.

Remaining Time Display with Auto Fade-Out

The Yamaha Linear Counter is also equipped to give a remaining tape time display. By pressing the Remaining Time/Auto Fade Out button at any time while in the stop mode, the tape is automatically advanced to the end of the side, then rewound back to a point just following the last recorded portion on the tape. The amount of time remaining on the tape is then calculated and displayed in minutes and seconds by the Linear Counter, so you'll know exactly how much room is left on the tape for your music. When recording is resumed from that point, the display counts down the amount of remaining time for you, so you can avoid all the guesswork, retakes, and wasted blank space at the end of a side you'd otherwise have. In addition, the Auto Fade-Out function is automatically engaged whenever recording resumes after a remaining time display. As the tape nears the end of the side, the signal fades out smoothly, avoiding a sudden break in the music with programs that take up a full side of the tape.

Full Repeat, Zero to Memory Repeat Play

Repeat playback of any programmed segment of the tape is possible with the K-520. The Zero to Memory repeat function lets you set up a loop between any "00.00" counter position and a Memory position. This makes it possible to program automatic repeat playback of an entire side of a tape for continuous background music, a group of selections, a single selection, or even a portion of a selection. The programmed tape segment is repeated 8 times, and then the repeat function is automatically disengaged.

Auto Fader, for Professional Recording Results

Extra creative control over the recording process is provided with the Auto Fader function. With one touch of the Fader button as you begin to record, a smooth, professional sounding fade-in will be made on the tape. Touch the Fader button again at any time during recording, and a fade-out will made to end your recording.

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Auto Tape Selector

When a tape is loaded into the K-520's cassette compartment, the deck automatically determines the type of tape and selects the appropriate bias and EQ settings for either Normal, Chrome, or Metal tape. The type of tape being used is then indicated with a front panel LED. More than just a convenience feature, it eliminates the possibility of recording with the wrong bias and EQ settings—a simple oversight that even the most experienced audiophiles sometimes make.

Separate Rec Level and Rec Balance Controls

Separate controls for Rec Balance and Rec Level, instead of independent left and right level controls, give you an extra measure of accuracy when making a recording. After the Rec Balance is set, left and right channel signal level can be set with a single control, avoiding the level imbalance that often results with independent controls. Further, the Rec Level control on the K-520 is a sliding bar type control—easier to operate, and visually coordinated with the horizontally aligned peak level meters for less confusion when setting levels.

Other K-320/K-520 Features

- Auto Rec Mute
- Timer Rec/Play
- Headphones Jack
- L/R Microphone Jacks
- 3-Way Tape Selector (K-320)
- Combined Rec Balance/Level Control (K-320)

Optional Remote Control (RS-11)

The K-520 can be enjoyed even more when operated with the RS-11 remote control unit. Fingertip control over recording and all tape travel modes lets you direct the deck from the comfort of your favorite listening chair.

K-520/K-320 SPECIFICATIONS

	K-520	K-320
Track Configuration	4 track, 2 channel stereo	←
Motor	DC servo motor (capstan), constant torque	←
	DC motor (reel)	←
Heads	Pure 4-deck	Super Sendust/Permalloy
	record/playback head, double-gap ferrite	← record/playback head, double-gap ferrite
	erase head	erase head
Tape Speed	4.75 cm/sec	←
(F. Fwd/Rew Time)	70 sec	←
Wow & Flutter		
WRMS	0.05%	←
W Peak	±0.08%	←
Signal-to-Noise-Ratio		
(Dolby off, CrO_2 tape)	Better than 58 dB	←
(Dolby B on, CrO_2 tape)	Better than 66 dB	←
(Dolby C on, CrO_2 tape)	Better than 74 dB	←
Frequency Response (–20 dB)		
Normal Tape	30—16,000 Hz ±3 dB	30—16,000 Hz ±3 dB
CrO_2 Tape	30—17,000 Hz ±3 dB	30—16,000 Hz ±3 dB
Metal Tape	30—19,000 Hz ±3 dB	30—16,000 Hz ±3 dB
Total Distortion	Less than 1%	←
Input Sensitivity/Impedance		
Mic	0.35 mV/5 k-ohms	←
Line	55 mV/50 k-ohms	←
Output Level		
Line	30 mV/47 k-ohms	←
Phones	60 mV/8 ohms	←
Power Supply	Matched to supply voltage and	←
	frequency of each area	
Power Consumption	20 W	←
Dimensions (W×H×D)	435×112×274 mm	435×112×277 mm
	17-1/8"×4-3/8"×10-3/4"	17-1/8"×4-3/8"×10-7/8"
Weight	4.2 kg (9 lbs. 7 oz.)	←

Specifications subject to change without notice

**TM Dolby laboratories Licensing Corp*

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