

 **KENWOOD**

KX-10000D

KX-900

KX-70

Sales Manual with Special Operation Guide



CASSETTE DECK

Product Policy

The rapid rise to full hi-fi status of the cassette deck must be one of the modern miracles of the audio world. Aided by improvements in tape performance, including the introduction of metal tape and equivalent improvements in mechanical performance, the cassette deck is now capable of sound reproduction that was hardly imagined only a few years ago. Now, Kenwood introduces three new decks that are designed to fill a broad range of needs, priorities and budgets.

So far as performance is concerned, the KX-1000D, KX-900 and KX-70 can display specs that were once the main advantage of open-reel decks. With meticulously designed dual-drive logic-controlled systems and metal tape capability enhanced by newly designed Amorphous Alloy heads (KX-900 and KX-70) or 3-head design (KX-1000D), the Kenwood decks can easily hold their own against the competition. Moreover, there's another important benefit derived from their excellent performance. Now, more than ever before, the possibilities exist for superb sound reproduction quality inside the car, with master tapes incorporating both audiophile sound quality and a personalized choice of music programs.

But there is more to the cassette deck than performance. One of the criticisms often levelled at cassette decks is

that they lack the flexibility of track selection offered by the turntable. Now, Kenwood engineers have utilized microprocessor technology to introduce versatility and fingertip operation that many users may well find more satisfying and more fun than anything offered by conventional turntables. For example, the KX-900's RAM microprocessor can perform a whole range of automated memory program and play operations, while the KX-70 is not far behind with its own highly effective program-access system. In both cases, all operations are designed to be as easy as possible for the user, without complex and confusing switch control panels.

The KX-1000D, KX-900 and KX-70 are designed to attract a broad spectrum of potential customers — those to whom audio performance is the only concern; those who desire to have unrestricted access to music on tape and who would like to play specially selected programs of recorded selections from tapes; and those who are looking for the best possible deal in terms of performance, program flexibility and cost.

In this Sales Manual, you'll find several pages devoted exclusively to detailing the memory-program operating aspects of the KX-900 and KX-70, to help you get a total grasp on the full potential of these outstanding decks.



Sales Points

KX-1000D

- **Dual DC motor direct-drive system with FG servo control**
Provides accuracy, stability, low noise.
- **Advanced IC logic control**
Permits direct interchange between drive modes. Professional type solenoid action.
- **3-head system with monitoring**
Uses Kenwood ideal dual-combination 3-head design.
- **Metal tape capability**
- **Easy tape selection with Bias Adjust**
Automatic equalization and biasing for each tape type. Precision fine-tuning of bias.
- **Fluorescent Peak-Hold meter**
- **Double Dolby* NR circuit with Dolby HX operation**
- **Auto-rewind and full repeat**
For continuous rewind and repeat, or rewind and stop.
- **Automatic lead-in**
Instantly locates magnetic start of tape after leader, or provides a few seconds space after previous recorded passage.

KX-900

- **Dual DC motor drive system**
With electronic torque control. Provides accurate, stable tape travel.
- **Full logic control**
Permits direct interchange between drive modes. Professional type solenoid action.
- **Amorphous Alloy magnetic head**
New, non-crystalline material optimizes metal tape performance.
- **15-program Random Access Memory**
- **Easy program search by microprocessor**
- **Many versatile RAM functions**
(see Operating Features)
- **Metal tape capability**
- **Easy tape selection with Bias Adjust**
Automatic equalization and biasing for each tape type. Fine-tuning of bias.
- **Fluorescent Peak-Hold meter**

KX-70

- **Dual DC motor drive system**
With electronic torque control. Provides accurate, stable tape travel.
- **Full logic control**
Permits direct interchange between drive modes. Instant response electronic touch-keys.
- **Amorphous Alloy magnetic head**
New, non-crystalline material optimizes metal tape performance.
- **Direct Program Search System**
Access to any music selection on tape, using normal controls. Useful and easy-to-read panel display of DPSS.
- **Metal tape capability**
- **Easy tape selection**
Automatic equalization and biasing at 3 tape selectors.
- **Two-color LED peak level meter**
- **Single-selection and full-side repeat**
- **Re-recording stand-by**

Key Specs

KX-1000D

- Wow-and-flutter **0.035%** (WRMS)
- Frequency response **20 — 20kHz** (Metal)

- S/N ratio **70 dB**
(Metal, Dolby NR on, over 5 kHz)

KX-900

- Wow-and-flutter **0.04%** (WRMS)
- Frequency response **20 — 19kHz** (Metal)

- S/N ratio **68 dB**
(Metal, Dolby NR on, over 5 kHz)

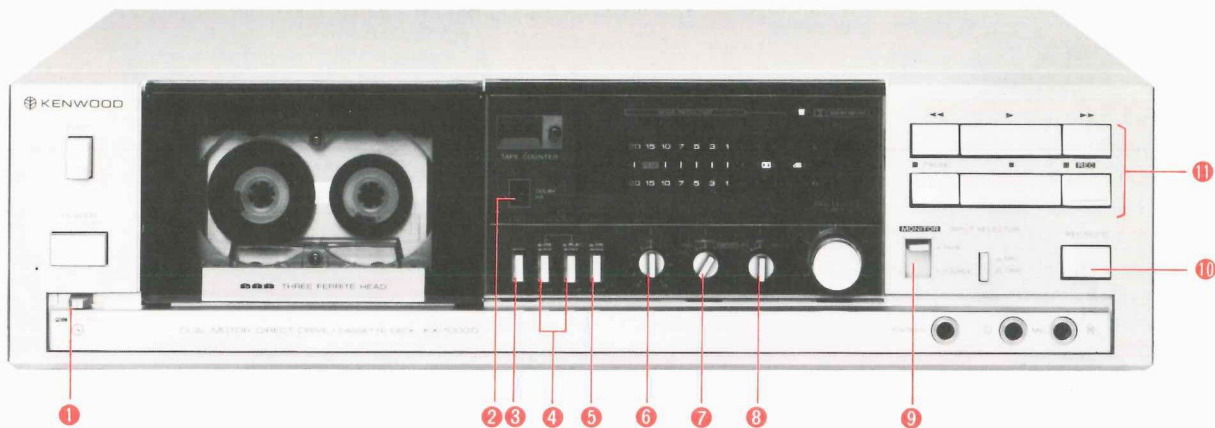
KX-70

- Wow-and-flutter **0.04%** (WRMS)
- Frequency response **20 — 18kHz** (Metal)

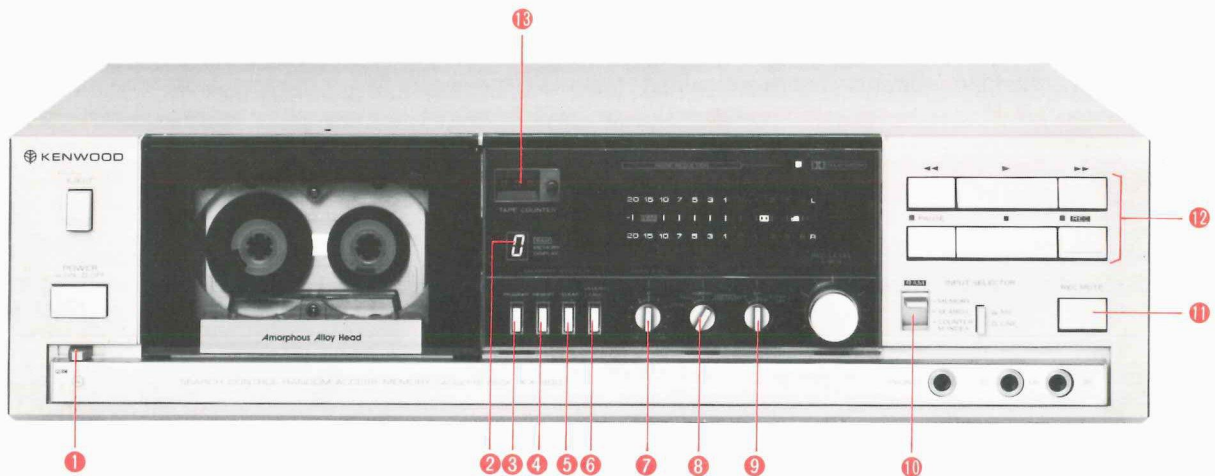
- S/N ratio **68 dB**
(Metal, Dolby NR on, over 5 kHz)

Operating Features

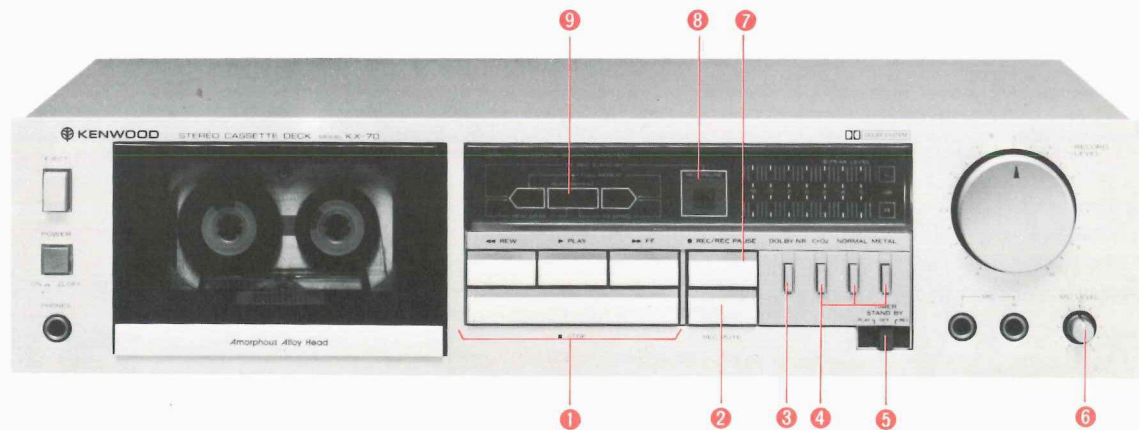
KX-1000D



KX-900



KX-70



- ① **Timer Stand-by in record or play modes**
- ② **Dolby HX indicator**
- ③ **Auto Lead-in**
Press once to provide a few seconds space. Useful for locating tape start after the leader.
- ④ **Auto Rewind system**
For repeat play or stop after rewind.
- ⑤ **MPX filter switch**
Use when recording FM stereo programs with Dolby NR circuit.

- ⑥ **Bias Adjust control**
- ⑦ **4-position tape selector**
- ⑧ **Dolby NR switch**
Separate position for HX circuit.
- ⑨ **Tape monitor switch**
To monitor at record or playback heads.
- ⑩ **Rec Mute key**
Press and hold for a patch of silence while recording. For long periods, press PAUSE key.
- ⑪ **Electronic, solenoid-operated full logic controls**

- ① **Timer Stand-by in record or play modes**
- ② **RAM memory digital display panel**
"11" is displayed as 1 plus a small mark denoting 10.
- ③ **Program key**
Press repeatedly to reach desired selection number which is then memory-stored by MEMORY key. Up to 15 selections can be programmed in this way.
- ④ **Memory key**
Press to key individual program selections into memory bank.

- ⑤ **Clear key**
Press to clear memory of individual program selections.
- ⑥ **Memory Call key**
Press to display programmed sequence in small panel above.
- ⑦ **Bias Adjust control**
- ⑧ **4-position tape selector**
- ⑨ **Dolby NR switch**
With automatic MPX filter "off" position.
- ⑩ **Random Access Memory (RAM) switch**
With positions for MEMORY, SEARCH, COUNTER MEMORY INDEX.

- ⑪ **Rec Mute key**
Press once for 5 seconds silence while recording. Pause is then activated. Use for making auto blank space between recordings for RAM system.
- ⑫ **Electronic, solenoid-operated full logic controls**
Normal use of controls is possible during RAM mode. Full repeat, quick bypass or repeat of current selection and mute-search are among the facilities offered by these controls.
- ⑬ **Tape counter**
Coordinates with RAM for access to any spot on tape.

- ① **Electronic full logic controls**
DPSS system utilizes these controls to effect search and play operations. Controls are simply pressed one or more times according to function.
- ② **Rec Mute key**
Press and hold for a patch of silence while recording. For long periods, press REC PAUSE key.
- ③ **Dolby NR switch**
- ④ **Tape selectors for CrO₂, Normal, Metal**

- ⑤ **Timer Stand-by in record or play modes**
- ⑥ **Mic Level control for mixing**
- ⑦ **Record and Record Pause key**
- ⑧ **REC/PAUSE indicator**
- ⑨ **Direct Program Search System (DPSS) display panel**
Rewind and Fast-Forward DPSS, Play/Repeat, Full Repeat, Re-recording Stand-By indications.

STEP BY STEP GUIDE TO THE KX-900 AND KX-70 PROGRAM FUNCTIONS

KX-900

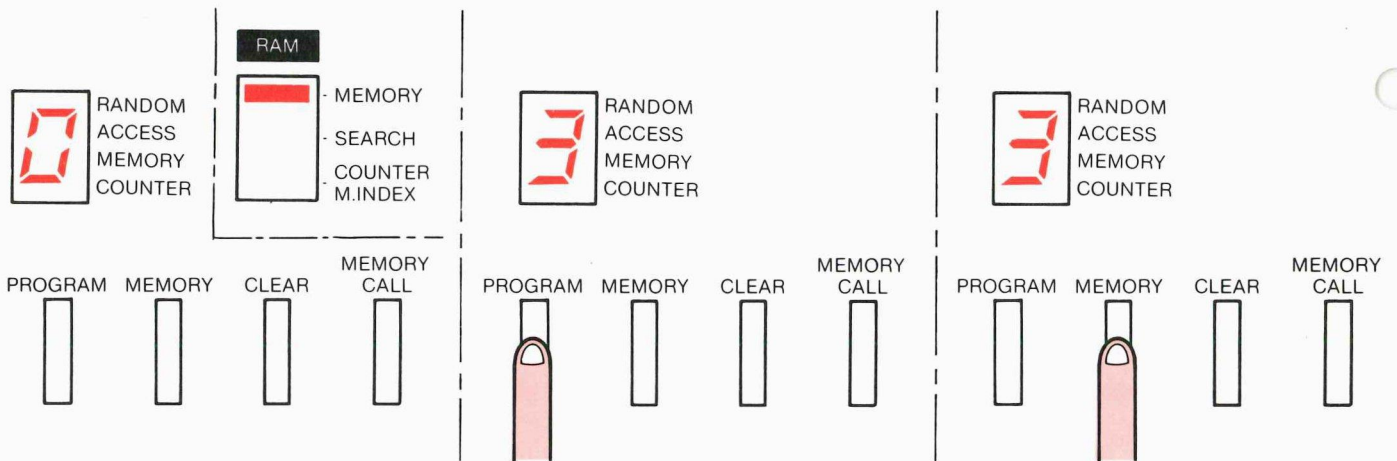
OPERATIONS WHEN IN RAM MEMORY POSITION

[1] RAM Memory Programming

(1) Put the **RAM** switch to **MEMO-RY** position. (RAM Memory Display indicates "0".)

(2) Press the **PROGRAM** key by the number of programs needed to reach the desired one. Example: press 3 times for the third program from the start of tape. Check that the display indicates "3".

(3) When the number on display reaches the desired program, key into memory using the **MEMORY** key.
(4) Operation (3) above is possible for up to 15 music programs.



[2] Checking the Program Sequence

Press and hold the **MEMORY CALL** key to display the registered sequence. Example: display indicates 2→3→5→1 for the second, third, fifth, first programs.

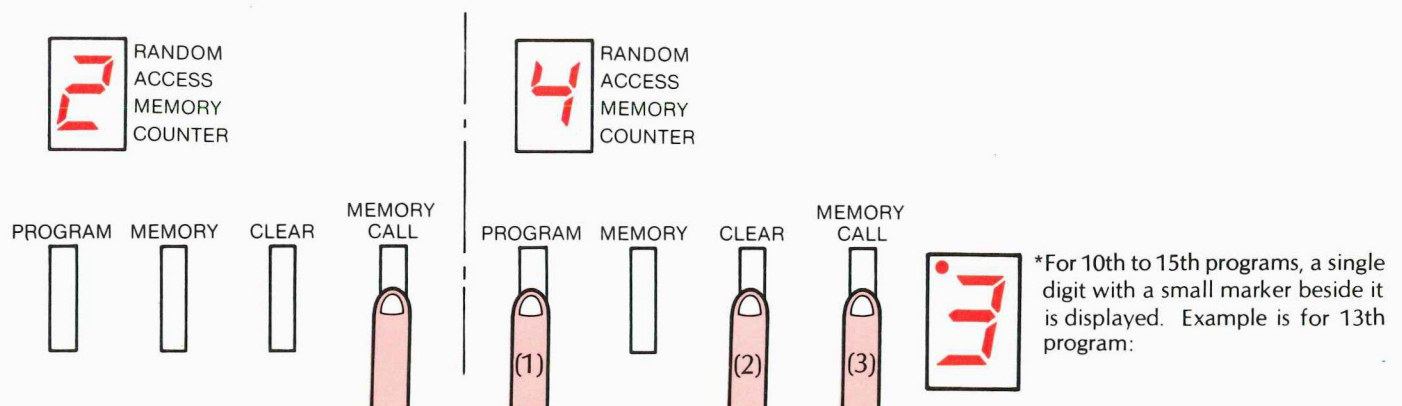
*When this key is released the last-shown number remains displayed.

[3] Clearing an unwanted program after it has been entered in memory

(1) Press either **PROGRAM** or **MEMORY CALL** keys to reach the unwanted program number displayed.

(2) Press the **CLEAR** key to clear the program on display. Other programs will remain intact.

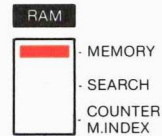
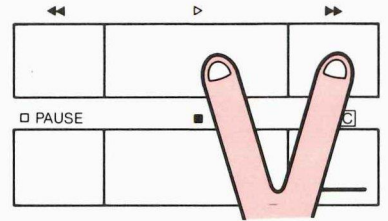
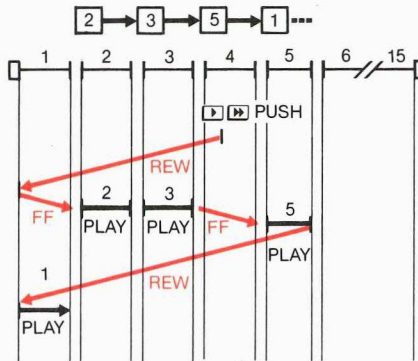
(3) Use the **MEMORY CALL** key to check that the undesired program has been cleared from the program sequence.



HOW A PROGRAM SEQUENCE IS PLAYED

[1] Example of program sequence playback for the 2nd-3rd-5th-1st programs entered in memory When you press the FF and PLAY keys simultaneously:

- (1) The tape rewinds completely.
- (2) The tape goes into fast-forward to the first program in memory (i.e. Program 2) and begins playback.
- (3) The second selection (i.e. Program 3) continues in playback.
- (4) Since the sequence then jumps to Program 5, the tape goes into fast-forward to the third selection and begins playback.
- (5) Since the sequence jumps back to Program 1, the tape rewinds for the fourth selection and begins playback.
- (6) After the program sequence is completed, it repeats until ordered to stop.

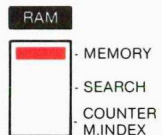
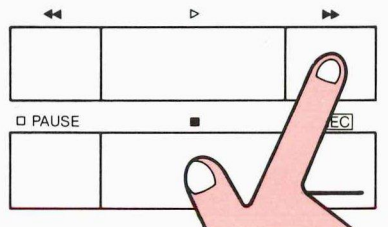
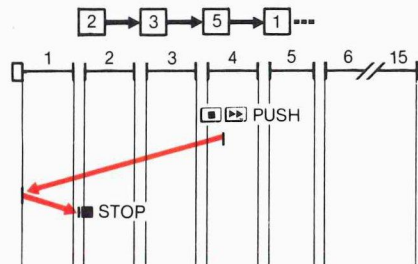


[2] How to stop at the start of the first program in the sequence






When you press the FF and STOP keys simultaneously:

(Programming is the same as before: 2nd-3rd-5th-1st)

- (1) The tape rewinds completely.
- (2) The tape then goes into fast-forward and stops at the start of the 2nd program.



[3] What happens when you use the following keys during RAM playback

 PAUSE	Program temporarily stops while RAM remains active.	 REW  PLAY  STOP	RAM is non-operative.
 FF	Fast-forward to the next designated program. RAM remains active.	REC REC MUTE	

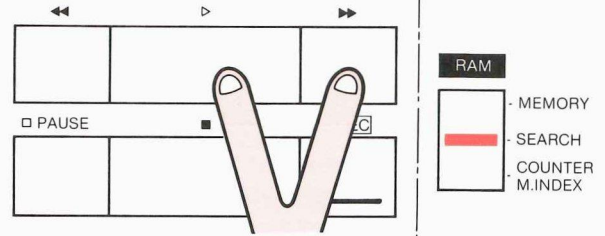
OPERATION WHEN IN RAM-SEARCH POSITION

[1] Forward search and playback

When you press the FF and PLAY keys simultaneously:

- The tape goes into fast-forward to the start of the next program and begins playback.

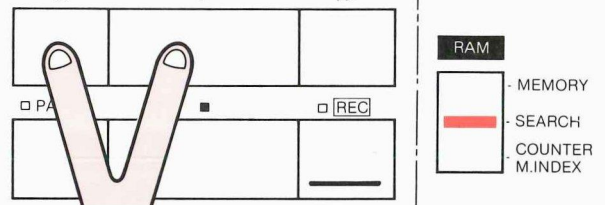
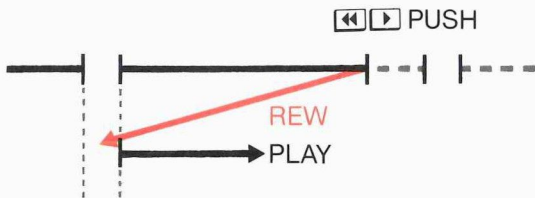
(Note that a minimum 5 seconds unrecorded space is needed between programs for RAM-SEARCH to be operative.)



[2] Repeat playback

When you press the REW and PLAY keys simultaneously:

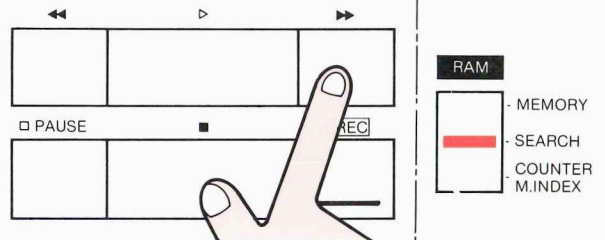
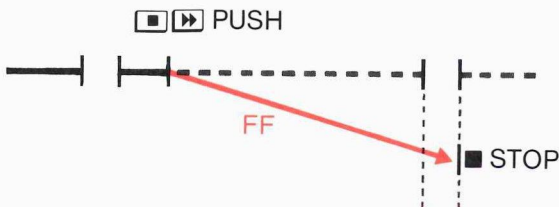
- The tape rewinds to the start of the program currently in playback and begins repeat-play until ordered to stop.



[3] Search and stop

When you press the FF and STOP keys simultaneously:

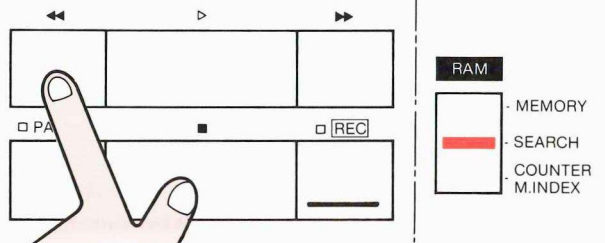
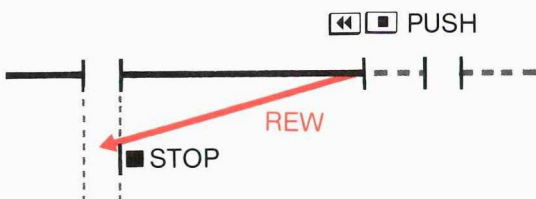
- The tape goes into fast-forward to the start of the next program and stops there.



[4] Rewind to the start of the program and stop

When you press the REW and STOP keys simultaneously:

- The tape rewinds to the start of the program currently in playback and stops there.

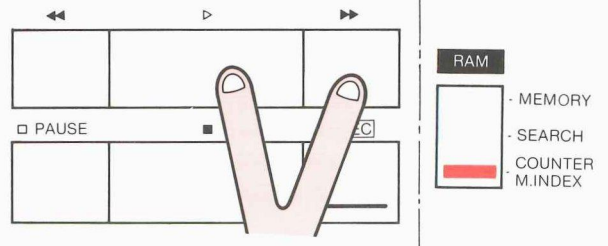
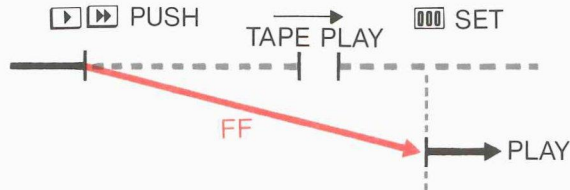


OPERATIONS WHEN IN RAM-COUNTER MEMORY INDEX POSITION

[1] Search to Tape Counter "000" and playback

When you press the FF  and PLAY  keys simultaneously:

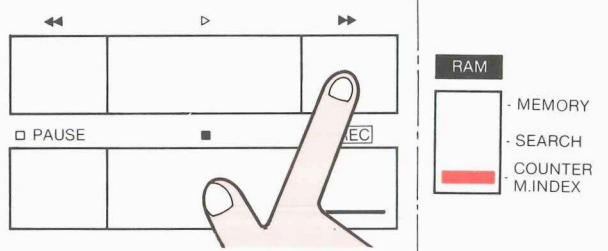
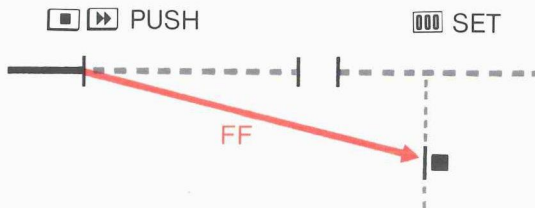
- The tape goes into fast-forward until the tape counter reads "000". From that point, playback begins.



[2] Search to Tape Counter "000" and stop

When you press the FF  and STOP  keys simultaneously:

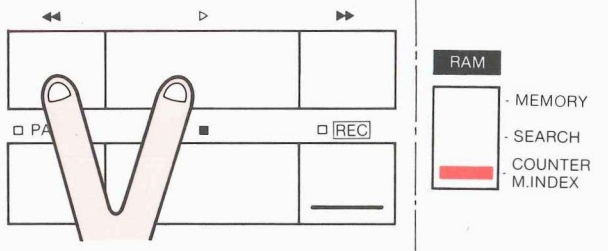
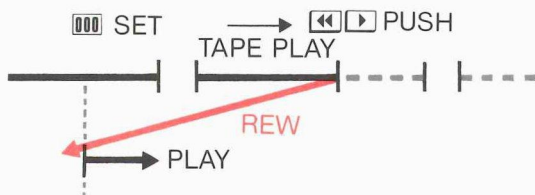
- The tape goes into fast-forward until the tape counter reads "000". At that point the tape stops.



[3] Rewind to Tape Counter "999" and playback

When you press the REW  and PLAY  keys simultaneously:

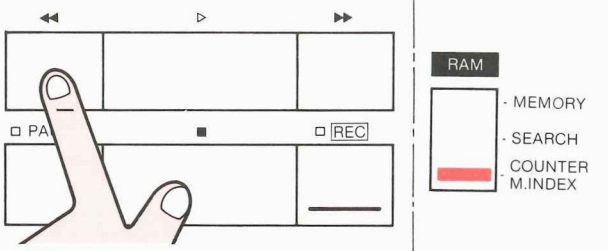
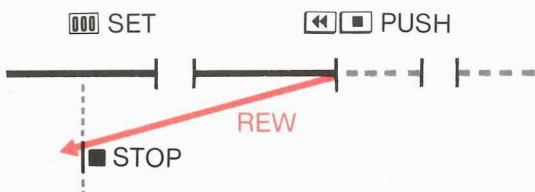
- The tape rewinds until the tape counter reads "999". From that point playback begins.



[4] Rewind to Tape Counter "999" and stop

When you press the REW  and STOP  keys simultaneously:

- The tape rewinds until the tape counter reads "999". At that point the tape stops.



OPERATIONS OF THE DIRECT PROGRAM SEARCH SYSTEM (DPSS)

[1] To rewind to the start of a previous program and playback from that point

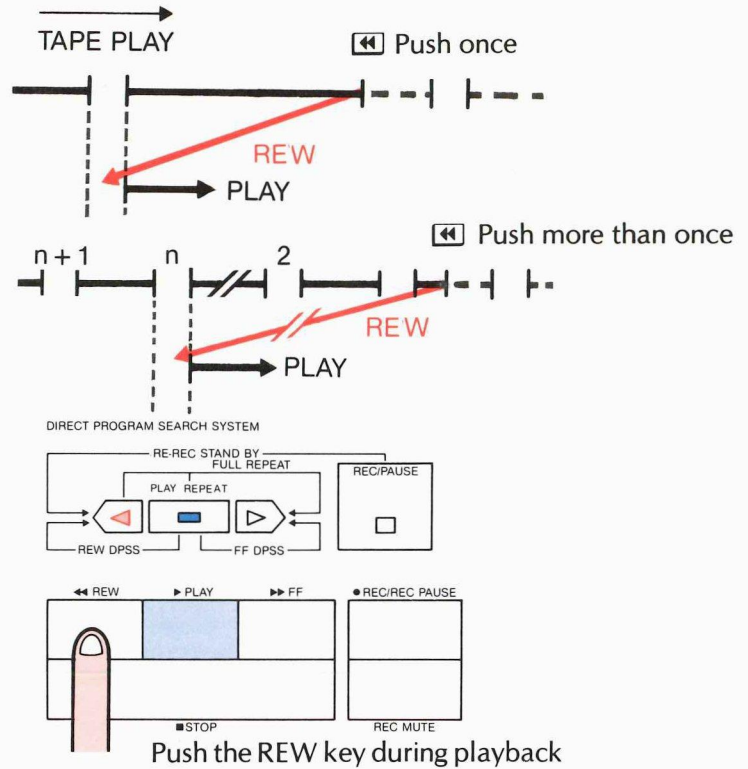
When you press the REW  key during playback:

- Pressing once — rewinds the tape to the start of the current program for repeat play.
- Pressing more than once — rewinds the tape to the start of any desired program before the one currently in playback for repeat play. (Current program is counted as one)

Example: for playback from the start of the program located 9 programs before the one currently in playback, press the REW key 9 times (8 + 1 = 9) during playback.

Note: Rewind and repeat play in this way are possible for up to 14 programs on a cassette side. The minimum 5 seconds gap between recorded passages is detected as one program portion (see also [2] following).

Note: For normal use of controls, press STOP key first.



[2] For fast-forward to any subsequent program and playback from that point

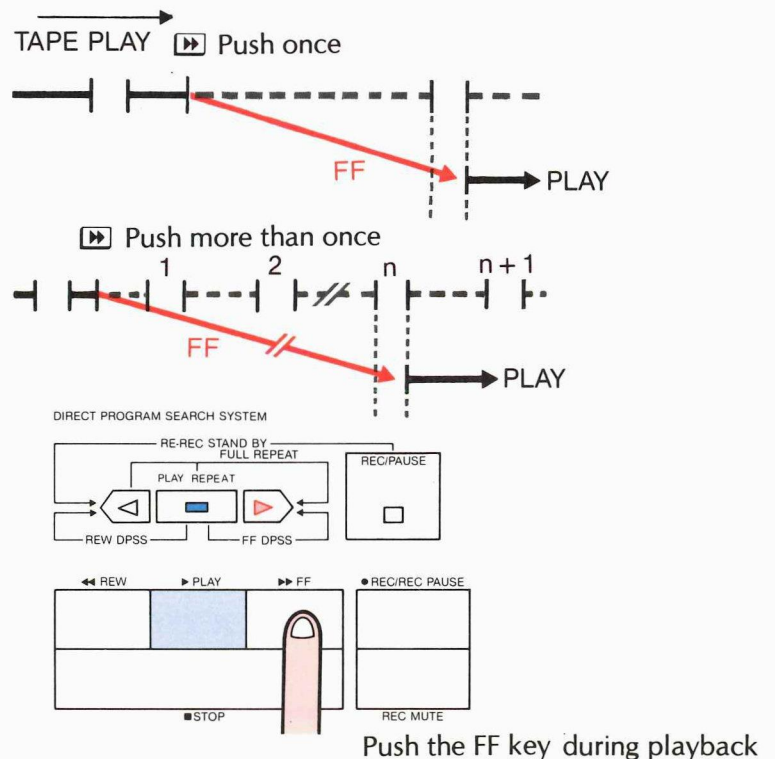
When you press the FF  key during playback:

- Pressing once — plays from the start of the program next to the one currently in playback.
- Pressing more than once — plays from the start of the program according to number of times pressed.

Example: for playback from the start of the program 8 programs after the one currently in playback, press the FF key 8 times during playback.

Note: Fast-forward and play in this way is possible for up to 14 programs on a cassette side.

Important: The DPSS will not detect any unrecorded gap between recorded passages of less than 4 seconds. Ideally, 5 seconds or more should be left. This can easily be done by using the REC MUTE key during recording.

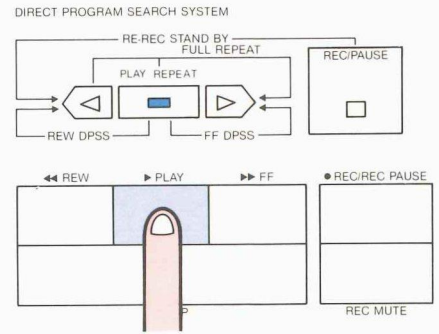
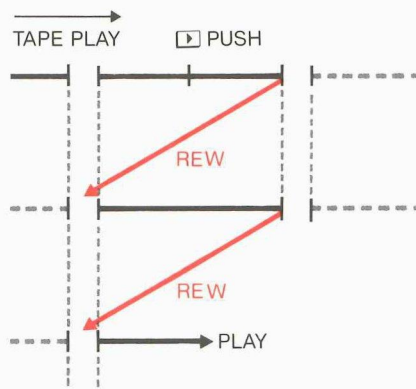


[3] For repeat playback of the current program

When you press the PLAY key during playback:

- (1) Current program repeats indefinitely (one program only).
- (2) Indefinite repeat play (1) can be terminated by pressing the STOP key.

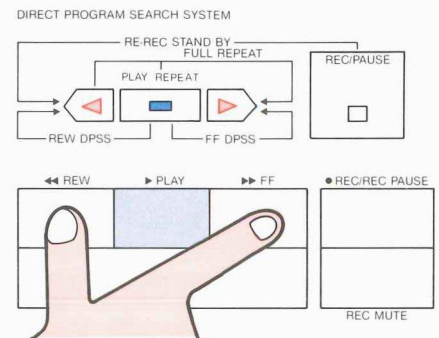
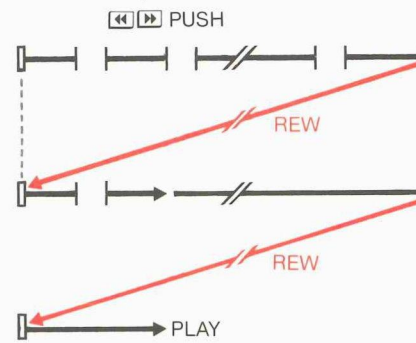
Note: Pressing the PLAY key more than once has the same effect as pressing once. (The same applies to [4] below.)



[4] For repeat playback from tape start to tape end

When you press the REW and FF keys simultaneously either during playback or when stopped:

- (1) Full repeat of an entire tape side is effected (i.e. indefinite repeat-play and rewind)
- (2) Full repeat (1) can be terminated by pressing the STOP key

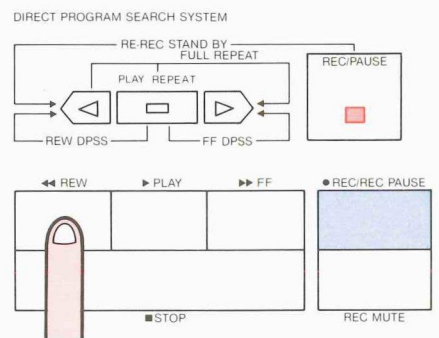
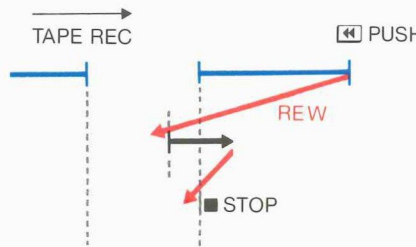


[5] For rerecording after a test or mistake

When you press the REW key during recording, following occurs:

- (1) Instantly rewinds to review mis-recorded section
- (2) Detects blank tape just prior to mis-recorded section
- (3) Moves forward to detect former recording point
- (4) Adjusts tape position to locate record head at exact point
- (5) Stops and stands by for recording (using REC key)

Note: Pressing the REW key more than once has the same effect as pressing once.



***Special**

A specially prepared, 15-selection Demonstration Tape for KX-900 and KX-70 is available as an optional-extra sales aid.

SPECIFICATIONS

KX-1000D

KX-900

KX-70

Type	Front Loading Stereo Cassette Deck with Dolby NR + HX System	Front Loading Stereo Cassette Deck with Dolby NR System	Front Loading Stereo Cassette Deck with Dolby NR System
Track System	4-Track 2-Channel Stereo/Mono Record/Playback	4-Track 2-Channel Stereo/Mono Record/Playback	4-Track 2-Channel Stereo/Mono Record/Playback
Recording System	AC Bias (Bias Frequency: 105kHz)	AC Bias (Bias Frequency: 105kHz)	AC Bias (Bias Frequency: 105kHz)
Erasing System	AC	AC	AC
Tape Speed	4.76 cm/sec. (1-7/8 ips)	4.76 cm/sec. (1-7/8 ips)	4.76 cm/sec. (1-7/8 ips)
Heads	Three Ferrite Heads, Record/Playback Combination Head & Ferrite Erase Head	Amorphous Alloy Record/Playback Head, Double Gap Ferrite Erase Head	Playback Head, Double Gap Ferrite Erase Head
Motors	FG Servo Direct Drive Motor (for Capstan Drive) DC Motor (for Reel Drive)	Electronically Controlled DC Motor (for Capstan Drive) DC Motor (for Reel Drive)	Electronically Controlled DC Motor (for Capstan Drive) DC Motor (for Reel Drive)
Fast Winding Time	Approx 85 seconds with C-60 tape	Approx 90 seconds with C-60 tape	Approx 90 seconds with C-60 tape
Frequency Response			
Normal Tape	20Hz to 19kHz (20Hz to 18kHz, ±3dB)	20Hz to 17kHz (25Hz to 16kHz, ±3dB)	20Hz to 17kHz (30Hz to 16kHz, ±3dB)
CrO ₂ Tape	20Hz to 19kHz (20Hz to 18kHz, ±3dB)	20Hz to 18kHz (25Hz to 17kHz, ±3dB)	20Hz to 17kHz (30Hz to 16kHz, ±3dB)
FeCr Tape	20Hz to 19kHz (20Hz to 18kHz, ±3dB)	20Hz to 18kHz (25Hz to 17kHz, ±3dB)	
Metal Tape	20Hz to 20kHz (20Hz to 19kHz, ±3dB)	20Hz to 19kHz (25Hz to 18kHz, ±3dB)	20Hz to 18kHz (30Hz to 17kHz, ±3dB)
Signal to Noise Ratio			
Dolby ON (Over 5kHz)	67dB (Normal), 69dB (CrO ₂ /FeCr), 70dB (Metal)	67dB (Normal), 67dB (CrO ₂ /FeCr), 68dB (Metal)	67dB (Normal), 67dB (CrO ₂), 68dB (Metal)
Dolby OFF	57dB (Normal), 59dB (CrO ₂ /FeCr), 60dB (Metal)	57dB (Normal), 57dB (CrO ₂ /FeCr), 58dB (Metal)	57dB (Normal), 57dB (CrO ₂), 58dB (Metal)
Harmonic Distortion	Less than 0.3% (at 1kHz, 0VU with Metal Tape)	Less than 0.8% (at 1kHz, 0VU with Metal Tape)	Less than 1.0% (at 1kHz, 0VU with Metal Tape)
Wow & Flutter	0.035% (WRMS) ±0.145% (DIN)	0.04% (WRMS) ±0.15% (DIN)	0.04% (WRMS) ±0.15% (DIN)
Input Sensitivity/Impedance			
Line ×2	77.5mV/50k ohms	77.5mV/50k ohms	77.5mV/50k ohms
DIN ×1	0.1mV/k ohms (Europe, Scandinavia & U.K. models)	0.1mV/k ohms (Europe, Scandinavia & U.K. models)	0.1mV/k ohms (Europe, Scandinavia & U.K. models)
Microphones ×2	0.25mV/10 kohms	0.25mV/10k ohms	0.19mV/10k ohms
Output Level/Load Impedance			
Line ×2	390mV (0VU)/100k ohms	390mV (0VU)/100k ohms	0.19mV/10k ohms
DIN ×1	390mV (0VU)/100k ohms (Europe, Scandinavia & U.K. models.)	390mV (0VU)/100k ohms (Europe, Scandinavia & U.K. models.)	390mV (0VU)/100k ohms (Europe, Scandinavia & U.K. models.)
Headphones ×1	50mV/8 ohms	50mV/8 ohms	48.9mV/8 ohms
Additional Features	Dolby Noise Reduction + HX System with LED Indicators, Four-Position Tape Selector (Normal-FeCr-CrO ₂ -Metal) Fine Bias Adjustment Control, Full Auto Shut-off Mechanism in all modes, Full Repeat Mechanism, Auto-Lead in/ Rewind Mechanism, Recording Mute/Tape Monitor, LED Recording/Play/Pause Indicators, Timer Stand-by Mechanism, Auto Peak Hold Fluorescent Level Meter, Remaining Tape Illumination Indicator, Three-Digit Tape Counter, Two Microphone Jacks, Headphone Jack	Dolby Noise Reduction System with LED Indicator, Four-Position Tape Selector (Normal-FeCr-Chrome Metal) Fine Bias Adjustment Control, Full Auto Shut-off Mechanism in all modes, Random Access Memory System, Quick Music Search Control System, Counter Memory Index, Auto Recording Mute, LED Recording/Pause/Play Indicators, Timer Stand-by Mechanism, Auto Peak Hold Fluorescent Level Meter, Remaining Tape Illumination Indicator, Three-Digit Tape Counter, Two Microphone Jacks, Headphone Jack	Dolby Noise Reduction System, Three-Position Tape Selector (Normal- CrO ₂ - Metal), Full Auto Shut-off Mechanism in all modes, DPSS (Direct Program Search System) by Microprocessor (FF/REW DPSS, Full Repeat & One Music Repeat, Re-Rec Stand-by) Play/Repeat, DPSS, Full-Repeat/One Music Repeat, Re-Rec Stand-by Indicators, Timer Stand-by Mechanism, 7-LED Peak Level Meter, Two Microphone Jacks, Headphone Jack, Line Mic Mixing with Level Volume
Power Requirements	AC 120V, 60Hz (U.S.A. & Canada models) AC 120V/220 - 240V (Switchable), 50/60Hz (Other Countries)	AC 120V, 60Hz (U.S.A. & Canada models) AC 120V/220 - 240V (Switchable), 50/60Hz (Other Countries)	AC 120V, 60Hz (U.S.A. & Canada models) AC 120V/220V - 240V (Switchable), 50/60Hz (Other Countries)
Power Consumption	25 watts	25 watts	26 watts
Dimensions (W × H × D)	440 × 123 × 373mm (17-5/16" × 4-13/16" × 14-11/16")	440 × 123 × 373mm (17-5/16" × 4-13/16" × 14-11/16")	440 × 109 × 273mm (17-5/16" × 4-5/16" × 10-3/4")
Weight	7.1kg (16.7 lbs)	6.9kg (15.2 lbs)	5.2kg (11.5 lbs)
Supplied Accessories	Head Cleaning Set, Audio Connection Cord × 2	Head Cleaning Set, Audio Connection Cord × 2	Head cleaning Set, Audio Connection Cord × 2
*Reference Tape	Normal... MAXELL XLI C-60 CrO ₂ ... TDK SA C-60 FeCr... SONY Ferri-Chrome C-60 Metal... TDK MA C-60	Normal... MAXELL XLI C-60 CrO ₂ ... TDK SA C-60 FeCr... SONY Ferri-Chrome C-60 Metal... TDK MA C-60	Normal... MAXELL XLI C-60 CrO ₂ ... TDK SA C-60 FeCr... SONY Ferri-Chrome C-60 Metal... TDK MA-R C-60

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

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