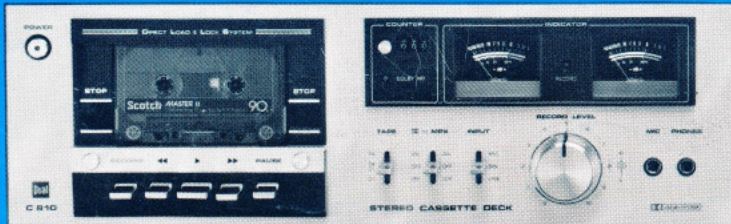
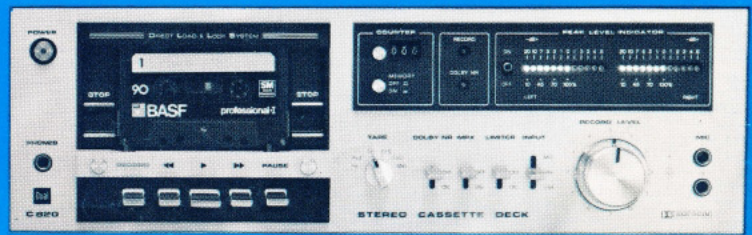
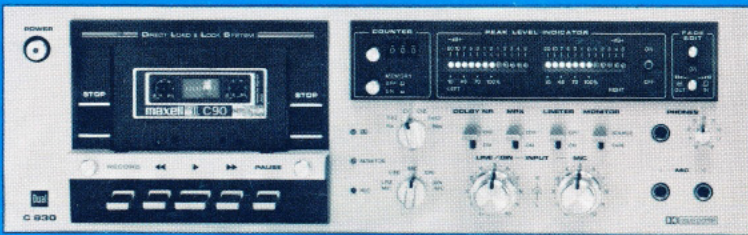
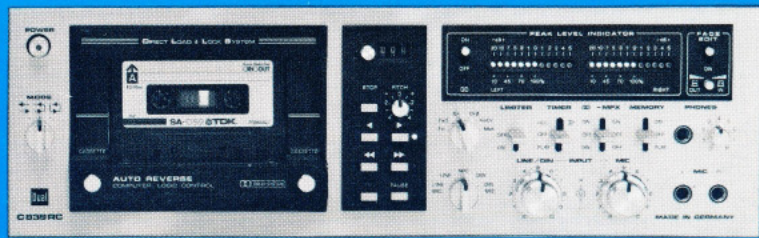
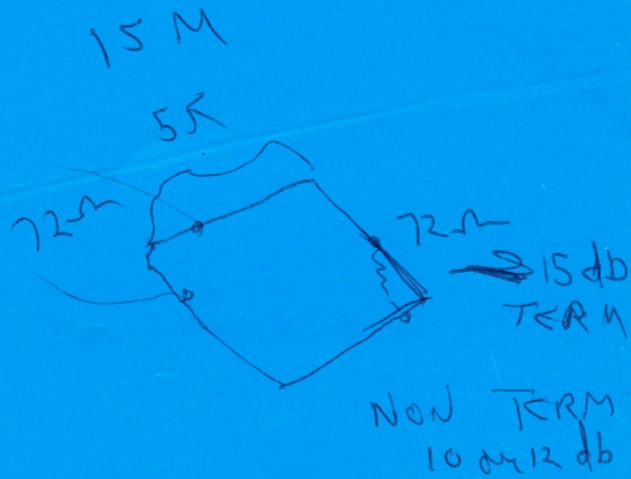


Consider
 what it would
 be like
 to own
 one of the
 new
 Dual
 cassette
 decks.



Dual

A cassette deck is unlike any other component in a high fidelity system...

A cassette deck is the one component that allows you to have a creative role. And chances are you'll be more actively involved with it than any other component. (Every tape you play back took you at least the same amount of time to record.) That's why you should give considerable thought to your next cassette deck. And to the company that designed and manufactured it.

Dual has been making precision electro-mechanical products in the Black Forest of West Germany for nearly eighty years. Our dedication to craftsmanship works hand-in-hand with a strong sense of innovation. And unusual in this world of impersonal conglomerates, Dual remains a family-owned company. The third generation of the founding family now heads it with the same concern for quality, reliability and advanced technology that has made Dual internationally respected for so many years.

This year, Dual introduces four entirely new cassette decks that serve as solid examples of what you would expect from such a company. Detailed descriptions of their many design and operating features are on the following pages, but before you turn to them we'd like to point out the thinking that went into them.

Notice the new system for inserting and removing cassettes. We've done away with the door that has stood so long between you and the cassette itself. We call this system "Direct Load and Lock" (DLL) and you'll quickly appreciate how it will add to your convenience.

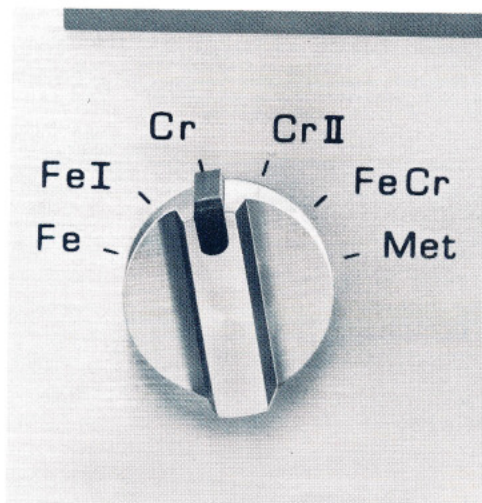
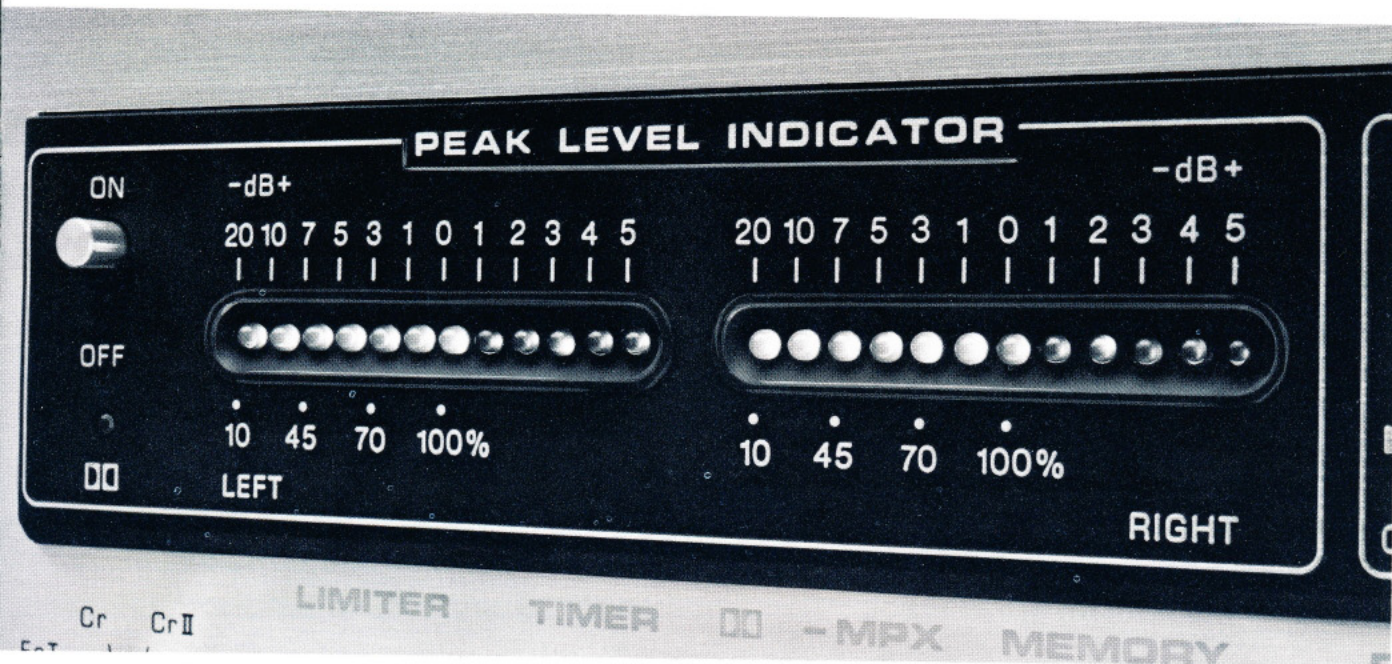
Our record-level metering system is also distinctive in a way which is not readily apparent to the eye, but is very apparent to the ear. Our meters are "equalized": they indicate the high-frequency boost that all cassette decks add to the incoming signal but only equalized meters read. It's more expensive to do it our way, but we think you should know—not guess—what is actually being recorded on the tape.

From time to time you may find yourself with a cassette that spills or jams. All our decks have an electronic tape-motion sensor that stops the transport instantly at the first hint of a problem.

While you may never have occasion to look inside your deck, if you do you'll see clear evidence of our meticulous engineering. Plug-in modular circuit boards with a minimum of wiring make assembly and testing more precise for us and the product more reliable for you. And easier to service too.

All the features we've described are shared by all four models. There are additional features and refinements that each deck provides as you move up from the lowest-priced to our most advanced model. For example: LED record-level indicators, full metal-particle record/playback capability, electronic fade/edit, three-head monitoring, pitch control and optional wireless remote control.

But you'll find no difference in Dual thinking, engineering or reliability. We intended that each of these models will represent Dual at its very finest.



TOP: Equalized LED record-level indicators:
Fastest-reacting system of them all. Twelve bright LEDs per channel. Peak-reading and equalized—they read the full processed signal including high-frequency boost. Prevents over-saturation. (820, 830, 839)

LEFT: Direct Load and Lock system (DLL):
No doors in the way, no guessing how to put the cassette in. Simply insert cassette and it locks in perfect alignment. (All models)

CENTER: Six-position bias/equalization:
Assures optimum performance with all available tape types—including metal. (820, 830, 839)

RIGHT: Electronic fade/edit:
Eliminates unwanted clicks, pops and commercials from previously recorded tapes... smoothly, professionally, automatically. It's all done during playback, so you can listen while you edit. (830, 839)

810

Designed for high performance with total reliability at the lowest possible price for such quality.

The 810 includes every important feature that directly contributes to fine performance and total reliability, with little that might be considered "frills." In short, you'll find the 810 the perfect deck if you're looking for your first recorder or if you're simply looking for great value.

Among the many features the 810 shares with the higher-priced Dual cassette decks are the Direct Load and Lock system (DLL), high-torque DC servo-control motor with integral frequency generator, twin-belt drive system, equalized peak reading meters, logic-controlled intermode switching and foolproof tape protection.

The DLL system is one of those features that will make you wonder why it hasn't been thought of before. Instead of a door that's always in the way of the cassette, you have direct, unimpeded access to the cassette compartment. The necessary protection for the tape heads is provided by a shield that swivels out of the way the moment you switch the machine on. Then you simply place the cassette into the compartment, where it locks in perfect alignment.

To remove or replace the cassette, you just reach for it and pull it out. You can even do that while the tape is in fast forward! The instant your fingers touch the side of the cassette they activate auxiliary stop switches.

The one area where no cassette deck can afford compromise is in its drive system. If that's not reliable, nothing else matters. The 810's drive system has two precision-ground belts in a vibration-isolating system, plus a high-speed direct-gear rewind and fast forward. Precise speed control is assured by a high-torque

DC servo-control motor whose speed is constantly monitored and instantaneously corrected by feedback from an integral frequency generator.

If a faulty cassette should ever jam or spill, an electronic tape motion sensor automatically stops the transport. So if you've ever been annoyed with such problems, you can now forget them.

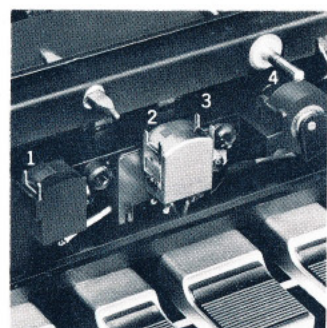
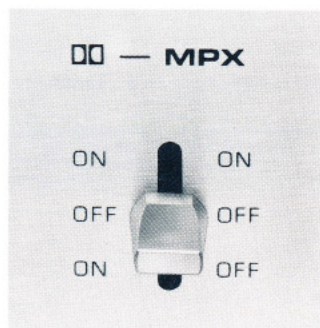
Thanks to the logic-controlled switching you can go from mode to mode—even to or from fast wind—without going through stop.

Another way the 810 excels in its price class is in its specifications. We invite you to compare them with the specs of decks selling for considerably more. For example, wow and flutter is 0.045 percent (WRMS) and frequency response extends from 20 Hz to 17 kHz, ± 3 dB. One of the reasons for the excellent high end response even with the Dolby system operating is the switchable multiplex filter. When recording off the air from stereo FM stations, the filter is needed to suppress the high frequency sub-carrier which is part of the multiplex process. When recording from other sources, you want to be able to switch out that filter, thus extending high frequency response beyond FM limitations.

Signal-to-noise is better than 66 dB, and harmonic distortion is less than 0.5 percent at full recording levels. Other specs, such as erasure factors, cross-talk and fast-wind times, are identical to those of the higher-priced Dual decks.

Now you know what we mean when we describe the 810 as offering "high performance with total reliability" and a very attractive price.

- Direct Load and Lock system (DLL) with automatic head protection
- High-torque DC servo-control motor with integral frequency generator
- Twin-belt drive system
- Equalized peak-reading meters
- Hard Permalloy record/playback head
- Three-way bias/equalization
- Logic-controlled intermode switching
- Electronic tape-motion sensor-protector
- Dolby® noise reduction
- Headphone output
- Microphone input
- Switchable multiplex filter
- Four-point tape guidance system
- Easy access to tapeheads for cleaning



LEFT: Direct Load and Lock system (DLL): No doors in the way, no guessing how to put the cassette in. Simply insert cassette and it locks in perfect alignment. (All models)

CENTER: Switchable multiplex filter suppresses high frequency sub-carrier of stereo FM broadcasts, extends high frequency response when recording from discs and mics.

RIGHT: Four-point tape guidance system assures perfect tape-to-head and azimuth alignments.

820

A versatile performer that features equalized LED peak-level indicators, six-way bias/equalization and full metal capability.

With the 820, you step right into the metal tape age, ready to take advantage of that advanced formulation's greater dynamic range and resistance to high-frequency saturation. You're also assured of getting the most out of all regular tapes, thanks to the 820's six-way bias/equalization selector, which accommodates two ferric types, two chrome types plus ferrichrome, in addition to metal.

The 820's record-level meters are actually bright LED arrays. Since they have no inertia, they can react instantaneously. They're bright enough to read from across the room. And because they are equalized, you get a true reading of the actual record signal which includes the high-frequency boost going onto the tape.

Another way the 820 helps avoid distorted recordings is with the switchable overload limiter. You'd probably want to switch it in whenever recording music of unknown dynamic range. Unlike ordinary limiters, Dual's doesn't compress dynamic range, but goes into action only when there's a sudden overload. Its action is also coordinated with the record-level settings—the higher they are, the more the amount of limiting that takes place.

Important as such features are, the drive system is even more fundamental to cassette deck performance. The Dual drive system begins with a high-torque DC

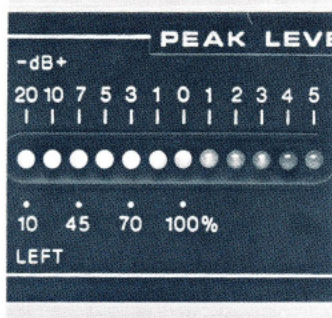
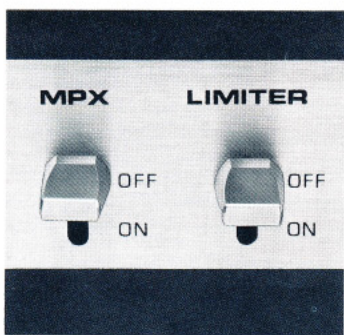
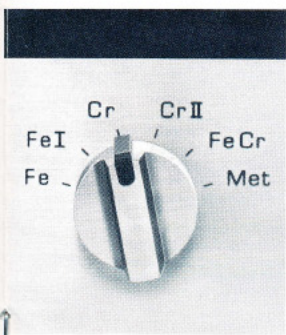
servo-motor with precision-ground flat belts and dynamically-balanced flywheel. An integral frequency generator provides instantaneous corrections of any deviation from accurate speed. Perfect tape-to-head alignment is assured by the four-point guidance system. And the electronic tape motion sensor constantly monitors the tape tension so that any deviation instantaneously stops the transport.

For extra convenience in tape movement, the 820's memory stop functions in both directions. And, of course, all the "basics" are included: headphone output, microphone inputs and Dolby noise reduction system.

The 820's specifications are of the same high level as its operating features. Wow and flutter: ± 0.04 percent. Frequency response from 20 Hz to 19 kHz ± 3 dB (metal). Signal-to-noise better than 67 dB. Harmonic distortion less than 0.5 percent at full recording level.

All in all, a fine performer at a very reasonable price.

- Full metal record/playback capability
- Six-way bias/equalization
- Equalized LED peak-level indicators
- Sendust record/playback head
- Direct Load and Lock system (DLL) with automatic head protection
- High-torque DC servo-control motor with integral frequency generator
- Twin-belt drive system
- Electronic tape-motion sensor/protector
- Logic-controlled intermode switching
- Two-way memory stop
- Switchable overload protection (limiter)
- Switchable multiplex filter
- Dolby® noise reduction and switchable multiplex filter
- Four-point tape guidance system
- Easy access to tapeheads for cleaning



LEFT: Six-position bias/equalization assures optimum performance with all available tape types—including metal.

CENTER: Switchable multiplex filter (left) suppresses high frequency sub-carrier of stereo FM broadcasts, extends high frequency response of discs and mics. Limiter (right) prevents distortion from sudden overloads; doesn't compress dynamic range.

RIGHT: Equalized LED record-level indicators. Twelve bright LEDs per channel. Peak-reading and equalized—they read the full processed signal including high-frequency boost. Prevents over-saturation.

830

Technology, features and specifications to satisfy the most demanding audiophile. Offers three heads with off-the-tape monitoring, electronic fade/edit and full metal capability.

With its three heads and true source/tape monitoring ability, the 830 will have special appeal to the most serious recording enthusiast. The incoming signal can be instantly compared with the signal actually recorded on the tape.

The Direct Load and Lock (DLL) system begins the entire recording and playback process by assuring perfect cassette alignment. The four-point tape guidance system assures perfect contact between the tape and heads.

Recordings from discs, broadcasts and other tape recorders can be mixed with the microphone inputs—line and microphone each having its own record-level controls.

Headphone monitoring is made more convenient by an independent level control for this output.

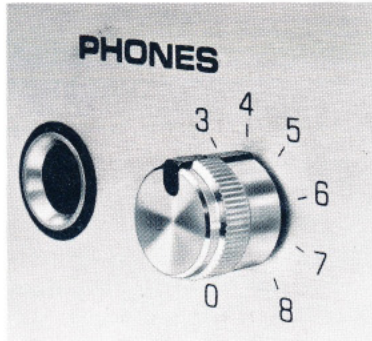
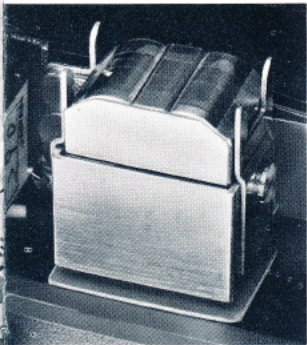
The drive system has an extra touch of precision—a phase-locked-loop in the servo control system which reduces wow and flutter to only 0.035 percent. An integral frequency generator provides instantaneous corrections of any deviation from accurate speed. Perfect tape-to-head alignment is assured by the four-point guidance system. And the electronic sensor constantly monitors the tape tension so that any deviation instantaneously stops the transport.

As you've probably learned from experience, no matter how careful you are when making recordings, especially off-the-air, there are occasional unexpected interruptions and abrupt endings. Since cassettes are not easily edited, you invariably have to live with those unwanted sounds or try to erase the tape at just the right points—assuming you can locate them.

Dual's electronic fade/edit system lets you fade out unwanted materials during playback—while you're listening to the tape. Guesswork and accidental erasure are avoided. And you'll have the satisfaction of knowing that the beginnings and endings of all your tapes are unmarred.

The 830's many other operating features include: six-way bias/equalization; equalized peak-reading LED record-level indicators; two-way memory stop; switchable multiplex filter; and Dolby noise reduction. In short, just about everything the demanding professional is likely to look for in an advanced design cassette deck.

- Three heads with true monitoring capability
- Full record/playback metal capability
- Electronic fade/edit
- Six-way bias/equalization
- Sendust head
- Equalized LED peak-level indicators
- Direct Load and Lock system (DLL) with automatic head protection
- Phase-locked-loop DC servo-motor with integral frequency generator
- Twin-belt drive system
- Logic-controlled intermode switching
- Electronic tape-motion sensor/protector
- Switchable multiplex filter
- Four-point tape guidance system
- Easy access to tapeheads for cleaning
- Dolby® noise reduction
- Switchable overload protection (limiter)
- Headphone level controls
- Line/microphone mixing
- Two-way memory stop



LEFT: Provides switchable source/tape monitoring. Single housing maintains perfect azimuth and alignment settings for record and playback/monitoring heads.

CENTER: Electronic fade/edit eliminates unwanted clicks, pops and commercials from previously recorded tapes... smoothly, professionally, automatically. And it's all done during playback, so you can listen while you edit.

RIGHT: Level control for headphones lets you listen to any type of headphone at the level you desire.

839 RC

**Dual precision and versatility perfectly expressed.
Unrestricted auto/reverse in recording and playback, full metal
capability and optional wireless remote control.**

While the other three Dual cassette decks outperform competitive models, the 839 RC can be compared only with your own conception of the ideal deck. The 839 continues to add features after all other decks are finished.

For example, automatic reverse. When a C-90 cassette reaches the end of its first side—45 minutes later—that really is the end for other decks. For the 839 it's only the halfway point. Whether in recording or in playback, the tape automatically reverses and resumes the pre-set desired mode for another 45 minutes. And it can be set to play continuously.

Thanks to its computer-logic solenoid-activated controls, the convenience of the Direct Load and Lock system is extended further. If the tape is nearing the end and the music you're recording has no break, you can remove and replace the cassette in less than two seconds—and the record mode continues automatically. In fact, any operating mode—play or fast wind—resumes automatically when you change a cassette. Another fine touch: any slack in the tape is automatically taken up before the drive begins.

Variable pitch control adds another dimension of versatility. If you'd like to play a live instrument to tape accompaniment, you have an 8 percent tuning range for the tape. (That's a lot easier than tuning a piano.) And if a tape made on another deck sounds too flat or too sharp, the 839 can fix that, too.

For recording a program when you're away from the house, the 839 is designed for operation via an external timer. And to operate the deck while you're in the

house, but across the room, there's optional wireless remote control. The infra-red technology and PCM principles used prevent any interference with other electronic devices in the home.

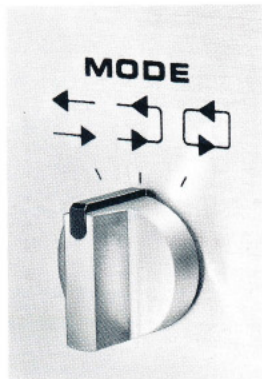
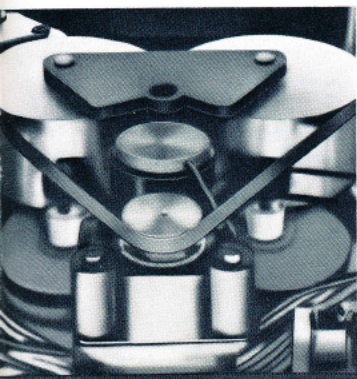
The 839's drive system employs two DC servo motors and dual capstans in a closed-loop drive system. This is one reason why the 839's performance is identical in both directions. Another is that the record/playback head has four gaps and does not change positions when drive reverses; it switches electronically.

Electronic fade/edit, variable headphone level, line/mic mixing, equalized peak-reading LED record-level indicators, six-way bias/equalization (including metal), switchable overload protection, switchable multiplex filter and two-way memory with automatic play—and Direct Load and Lock, of course—round out the 839's astonishing range of features.

But all these aren't quite as important as the quality of the results: how tapes sound when made and played back on the 839. The major specifications will give you a hint. Wow and flutter is ± 0.03 percent, about the limits of test instruments. Frequency response goes all the way ± 3 dB from 20 Hz to 20 kHz. Signal-to-noise is better than 69 dB.

We realize you have just read a lot of information about cassette decks. We hope we've described our four new models in a way that helps you decide which one best meets your requirements. Even so, we suggest you see and compare these decks with others your Dual dealer carries. Then you will be totally convinced that your next deck will be a Dual.

- Auto/reverse in recording and playback
- Optional wireless remote control
- Full record/playback metal capability
- Two motor, dual capstan, twin belt closed loop drive system
- 8% variable pitch control
- Computer-logic solenoid controls
- Operable via external timer
- Electronic fade/edit
- Sendust record/playback head
- Direct Load and Lock system (DLL) with automatic head protection
- Equalized LED peak-level indicators
- Six-way bias/equalization
- Electronic tape-motion sensor/protector
- Automatic tape-slack prewind
- Headphone level controls
- Five-point tape guidance system
- Switchable overload protection (limiter)
- Two-way memory stop and play
- Line/microphone mixing
- Microphone inputs
- Switchable multiplex filter
- Dolby® noise reduction
- Line output level control
- Easy access to tapeheads for cleaning



LEFT: Two-motor, dual-capstan, twin-belt closed-loop drive system provides superb performance specifications in both directions.

CENTER: Records and plays back in both directions... automatically. Plays continuously too. Four-gap record/playback head switches electronically, never moves, assuring perfect tape-to-head alignment.

RIGHT: Wireless remote control of playback and fast wind in both directions, plus stop and pause. Infra-red and PCM technology prevents interference with other home electronic devices. (Same system also operates new Dual remote control turntable.)

Quick comparison of features and specifications

Specifications	810	820	830	839RC
Speed accuracy	<0.5%	<0.5%	<0.4%	<0.25%
Wow and flutter (WRMS)	± 0.045%	± 0.04%	± 0.035%	± 0.03%
Frequency response, ±3dB, w/MPX filter switched out				
with ferric oxide	20Hz-16kHz	20Hz-16kHz	20Hz-17kHz	20Hz-18kHz
with chromium dioxide	20Hz-16.5kHz	20Hz-17kHz	20Hz-18kHz	20Hz-19kHz
with ferrichrome	20Hz-17kHz	20Hz-18kHz	20Hz-19kHz	20Hz-19kHz
with metal	not applicable	20Hz-19kHz	20Hz-20kHz	20Hz-20kHz
Signal-to-noise, Dolby in				
with ferric oxide	>63dB	>64dB	>67dB	
with chromium dioxide	>63dB	>64dB	>67dB	
with ferrichrome	>66dB	>67dB	>69dB	
with metal	not applicable	>67dB	>69dB	
Harmonic distortion	<0.5%		<0.4%	
Erase @ 1kHz	>70dB			
Cross talk: in opposite direction	>70dB			
between stereo channels	>40dB			
Fast wind time (C-60)	65 sec.			
Dimensions (inches)	17 ³ / ₁₆ x 5 ³ / ₄ x 13 ³ / ₈			

Tape drive and heads

No. of heads	2		3	2
Head composition: record playback/erase	Permalloy, high flux		Sendust, high flux	
Motor type	High-torque DC servo		P.L.L. DC servo	Two motor, DC servo

Operating controls and features

Mic-input level control	yes			
Mic/line mixing	no		yes	
Fade/edit	no		yes	
Peak limiter	no		yes	
Bias/equalization selector	3-position		6-position	
FM multiplex filter	switchable			
Switchable Dolby® N.R.	yes			
Tape monitoring	no		yes	no
Memory stop	no		yes	
Remote control	no			yes*
Record level indicator	equalized peak-reading meters		equalized peak-reading LED display	

*w/optional Dual RC 152 transmitter and RE 120 receiver

Nearly eight decades of precision manufacturing

The highest standards of craftsmanship have been a way of life for nearly eighty years with the Dual people of the Black Forest. Today, the third generation of the founding family heads the company, with the same dedication to care and precision that has made Dual internationally respected.

Nowhere is this more evident than in the assembly and test lines. Every fifth assembly step is immediately followed by a quality-control check. One entire quality control department is dedicated to quality assurance for the motors alone. Fully assembled Duals then undergo three more quality-control check procedures. One is for mechanical operation; another for electrical and acoustical performance. Then, just before shipment, a separate group of quality control auditors randomly select one out of ten finished and packed models and inspect the *quality of the quality control*.

This is why you can select even the lowest-priced Dual and be confident of getting the finest performance and reliability. Every Dual cassette deck carries a one-year limited warranty.



© United Audio, 120 So. Columbus Ave., Mt. Vernon, NY, 10553.