CTR30 Series
Mono and Stereo 3-Deck Recorder/Reproducers

A 3-deck player with the recorder built in as standard equipment. The bottom deck records, as well as plays. Utilizes CTR10 electronics. All plug-in circuit boards are interchangeable with those used in CTR10 Series machines.

- All decks have 3 cue tone sensors and dedicated indicators for flexibility and ease of operation

- Exclusive cleaning switches make maintenance easy

- An advanced, trouble free motor requires no adjustments

- All decks are removeable for service without disabling the machine

- Azimuth-independent head bridges and self aligning pressure rollers on all decks

- Audio switcher and mixer are included to permit connection to a single console input

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DYNAMAX CTR10 and CTR30 Specifications:

1. **Power**
   A. 117 VAC ± 10%
   B. 60 Hz
   C. Other voltages and frequencies on request
   D. 70 VA maximum

2. **Tape Speed**
   A. 7.5 ips (19 cm/s)
   B. High speed recue at 22.5 ips (57 cm/s) (CTR10 Series only)

3. **Capstan Motor Drive System**
   A. Direct drive capstan
   B. AC hysteresis synchronous motor
   C. Electrolyzed stainless-steel non-magnetic capstan
   D. Permanently lubricated ball-bearings

4. **Wow and Flutter**
   A. CTR10: 0.12% DIN WTD maximum at 7.5 ips
   B. CTR30: 0.15% DIN WTD maximum at 7.5 ips

5. **Speed Accuracy**
   Better than ± 0.2%

6. **Audio Output and Source Impedance**
   Differentially balanced, source impedance 440 Ω ; RF bypassed

7. **Audio Output Level**
   +20 dBm into 600 Ω before clipping

8. **Distortion**
   A. Reproduce amplifier: 0.1% or less THD max at +18 dB above 250 nWb/m
   B. System distortion (tape limited): 1.0% or less THD; 0.5% or less 2nd or 3rd harmonic, 1 kHz at 250 nWb/m

9. **Noise**
   A. S/N measured with bias/no signal at 7.5 ips
      Mono — 57 dB (or better)
      Stereo — 55 dB (or better)
   B. Hum and Noise — no tape running
      Mono — 60 dB (or better)
      Stereo — 58 dB (or better)
   C. Squelch noise — 70 dB (or better)
   D. Noise measured over a 20-20 kHz bandwidth reference 250 nWb/m at 1 kHz

10. **Crosstalk**
    50 dB minimum separation between program channels at 1 kHz

11. **Frequency Response**
    ± 2 dB from 50 Hz-16 kHz

12. **Equalization**
    A. 1975 NAB EQ standard
    B. IEC EQ on request (pot adjustment)
    C. Field strappable for 1964 NAB EQ
    D. Adjustable low and high frequency playback EQ
    E. Adjustable high frequency record EQ

13. **Head Configuration**
    NAB, mono/stereo

14. **Cue Signals**
    A. NAB primary cue 1 kHz
    B. NAB secondary cue 150 Hz with front panel indicator (200 Hz optional)
    C. NAB tertiary cue 8 kHz with front panel indicator
    D. Normally open relay contacts available for secondary and tertiary cue detection

15. **Logging Signals**
    A. Not internal to machine
    B. Cue audio input, cue audio output and cue bias available via remote control connector
    C. Output level 0.5V nominal from a logging signal of 35 nWb/m tape fluxivity
    D. Logging output impedance 1 kΩ
    E. Cue audio input 0.5V nominal
    F. Input impedance 47 kΩ

16. **Audio Input Level**
    A. − 17 dBm minimum
    B. + 20 dBm maximum

17. **Audio Input Configuration**
    Differentially balanced bridging 10 kΩ

18. **Metering**
    A. Audio metering, switch selectable
       1. Auto 1—monotors record input level when machine is in RECORD mode, automatically switches to output level at all other times
       2. Auto 2—monitors record input level when machine is in RECORD and STOP (ready) mode, automatically switches to output level at all other times
    B. Test Metering
       1. Bias—left program bias displayed on left meter; right program bias displayed on right meter
       2. Cue—Cue bias displayed on left meter; cue audio displayed on right meter

19. **Bias Oscillator**
    120 kHz

20. **Tape Capacity**
    NAB sizes A and AA

21. **Start Time**
    100 ms typical (dependent upon solenoid air damping adjustment)

22. **Stop Time**
    100 ms typical (dependent on type and length of cartridge)

23. **Ambient Operating Temperature**
    10-50° C (50° to 122° F)

24. **Remote Control Signals**
    A. All front panel switches and indicators (except input level controls and VU meters)
    B. Cue track input, output, and bias control
    C. Automation Ready, Audio Switcher Interlock

25. **External Connectors**
    A. Audio—9 pin "D"
    B. Remote Control—50 pin "D"
    C. Plug-in line cord with IEC type connector
    D. All mating connectors supplied

26. **Mounting**
    A. Table top
    B. Rack mount (requires optional mounting hardware)

27. Ordering Information and Dimensions

MODEL NO.	DESCRIPTION	DIMENSIONS		
		HEIGHT	WIDTH	DEPTH
CTR 11	Mono Play	14.29 cm 5.625 in.	15.24 cm 6 in.	40.64 cm 16 in.
CTR 12	Stereo Play	"	"	"
CTR 13	Mono Record/Play	"	"	"
CTR 14	Stereo Record/Play	"	"	"
CTR 33	3-Deck Mono Record/Play	27.94 cm 11 in.	14.61 cm 5.75 in.	43.18 cm 17 in.
CTR 34	3-Deck Stereo Record/Play	"	"	"

28. Shipping Information

SERIES	SHIPPING WEIGHT		SHIPPING VOLUME	
	POUNDS	KG.	CU. FT.	CU. ML.
CTR 10	32	14.52	1.4	0.04
CTR 30	42	19.05	1.8	0.05

DISTRIBUTED BY:

DYNAMAX®
BROADCAST PRODUCTS BY FIDELIPAC®

DYNAMAX®

Broadcast Products by Fidelipac

The DYNAMAX CTR10 Series features all of the mechanical advantages introduced in the world famous CTR100 Series and many of the electronic and operational features as well. Broadcasters worldwide have agreed that the CTR10 Series offers performance and features unmatched by any other machine in its price range.

Plug-in circuit boards with gold plated contacts for high reliability and ease of service

Constant current record circuitry assures flat response

Micrometer adjustable tape guide height for precise tape positioning

Long life heads with improved frequency response and noise immunity

Oversize power supply supports external lamps and accessories

2-inch diameter low voltage air damped solenoid for cool, quiet, instantaneous operation

Trouble free stainless steel capstan

Optical cart-in-place sensor eliminates troublesome microswitches

Ball bearing pressure roller assures correct tape tracking for best phase uniformity

Head shield, card cage cover and cartridge sensor limit bracket removed for illustration

Cleaning switch (accessible through cartridge opening)

The DYNAMAX CTR10 and CTR30 Series incorporate the same rugged, reliable tape transport Fidelipac developed for its top-of-the-line CTR100 Series. A unique 4-point cartridge hold-down system assures repeatable cartridge positioning. And the geometrically correct head assembly makes head alignment easy and precise.

Flashing Stop lamps warn operators of played cartridges. START switches can be disabled when STOP lamp is flashing to prevent accidental replay.

All decks are individually removeable for ease of adjustment, cleaning and maintenance.
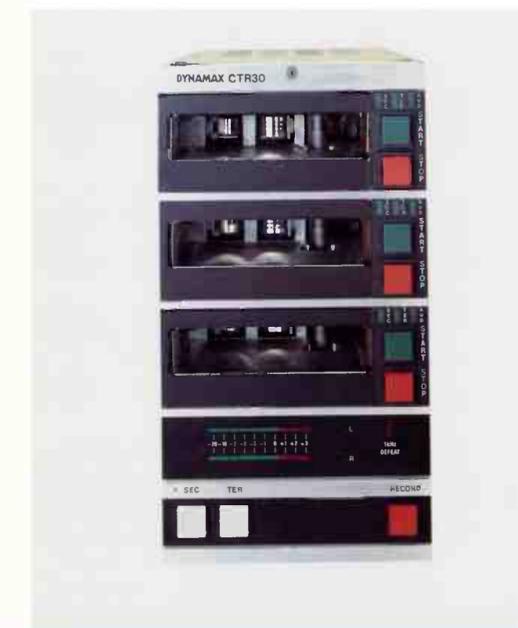
The following features are standard on the DYNAMAX CTR10 and CTR30 Series:

Three Cue Tones
Recorders generate and Players detect Primary (1 kHz), Secondary (150 Hz*), and Tertiary (8 kHz) cue tones. Automatic recording of the Primary cue tone (used to stop the tape) may be manually defeated to permit easy editing of multiple-element cartridges. Secondary and Tertiary tones may be manually recorded at any time to initiate external functions, fast forward, and mute audio.
* 200 Hz on request

Automatic Fast Forward (CTR10 only)
May be activated at the beginning or end of the Secondary cue tone, or entered manually from any other mode. Audio is muted during Fast Forward operation, but may be unmuted for Audio Search by holding the Fast Forward button.

State-of-the-Art Head Bridge Assembly
Geometrically correct non-interacting height and azimuth adjustments, integral tape guide adjustments and no-mar cartridge reference surface help to insure accurate, long-lasting alignment.

Unique Cartridge Hold-down System
Four rubber rollers hold the cartridge down against the deck surface. The cartridge is held by its edges, thus eliminating the possibility of deforming the cartridge and upsetting the tape path with resulting loss of stereo phase.

Cleaning Switch
Allows the pressure roller to be activated without inserting a cartridge, permitting easy cleaning even when machines are stacked and top access is not available. Also permits diagnostics, set up and measurement.

Flashing Cartridge Played Indicator
The Stop lamp flashes to indicate that the cartridge has re-cued or has been manually stopped. A jumper may be installed to inhibit the Start function when the Stop lamp is flashing, thus preventing a cartridge from being replayed accidentally.

Recorder Metering Functions
Complete metering functions and diagnostics are provided. Two automatic audio modes selectively display audio input or output. Program bias, cue tone levels and cue bias are readily available at the touch of a switch.

Audio Switcher and Mixer
Permits multiple machines to be connected to a single console input with no increase in noise or loss of quality. Starting any machine can mute the output of other interconnected machines. A front panel indicator shows machine with audio gate open.

Operational
- Fast Forward (CTR10 only)
- Secondary and tertiary cue tones
- Audio switcher and mixer
- Flashing cart played indicators
- Strappable repeat play disable
- Secondary tone control of audio muting
- Audio search mode (CTR10 only)
- Selectable high speed recue (CTR10 only)
- All front panel switches illuminated
- Secondary and tertiary tones displayed on front panel
- Ultra-long life front panel indicators
- Front panel 1 kHz defeat with dedicated indicator
- Versatile switch-selectable audio test metering
- Bar graph LED VU meters
- Cue track access for data recording and playback

Mechanical
- Compact size: 1/3 rack width
- 1/2 inch nickel plated aluminum deck plate
- Removable head bridge assembly with precision reference surfaces
- Geometrically correct, independent azimuth and height adjustments
- Repeatable four point cartridge hold-down system
- Low voltage 2-inch air-damped solenoid (CTR10 only)
- Self-aligning ball bearing pressure rollers
- Micro-adjustable tape guides
- Convenient pressure roller cleaning switch
- Long-life premium quality switches with bifurcated wiping contacts
- Polycarbonate legend overlay panels for durability and ease of cleaning
- Detachable line cord for easy removal from studio

Electrical
- State-of-the-art audio performance
- Transformerless audio inputs and outputs
- High performance heads for flat response and long life
- Active bias and signal mixing (recorders only)
- True constant current recording (recorders only)
- Fully regulated DC power supplies
- Complete remote control
- Component designations silkscreened on all circuit boards
- All ICs socketed for ease of service

The DYNAMAX CTR100 Series from Fidelipac

For thirty years, we've been waiting for a machine like this.

In 1954, Fidelipac cartridges were recorded and played on very basic equipment: four-pole motors with belt driven flywheels, pinch rollers engaged by hand and actuated by electromagnet, single cue tones, and response within 6 dB from 100 to 8,000 cycles.

Since then, we've watched the cartridge machine evolve to become the primary source of audio programming in the world today. Modern cartridge machines offer DC servo motors for lower flutter, air-damped solenoids with better tape pulling capacity, three cue tones for increased versatility, and improved response within 4 dB from 50 to 16,000 Hertz.

But today's cartridge machines have a lot in common with their predecessors. They still record and play at only one bias, equalization and level setting, prohibiting the intermix of different types of tape. Cue tone detectors function at only fixed tape speeds, preventing playback of cartridges at non standard speeds, or synchronization with other audio or video equipment.

Digital clocks, if available, measure the passage of time, rather than the passage of tape, resulting in erroneous readings when in FAST FORWARD. And, in keeping with tradition, even the latest design cartridge machines are difficult or impossible to keep clean.

Introducing the DYNAMAX CTR100 Series from Fidelipac. The inventor of the tape cartridge has re-invented the cartridge machine.

We just couldn't wait any longer.
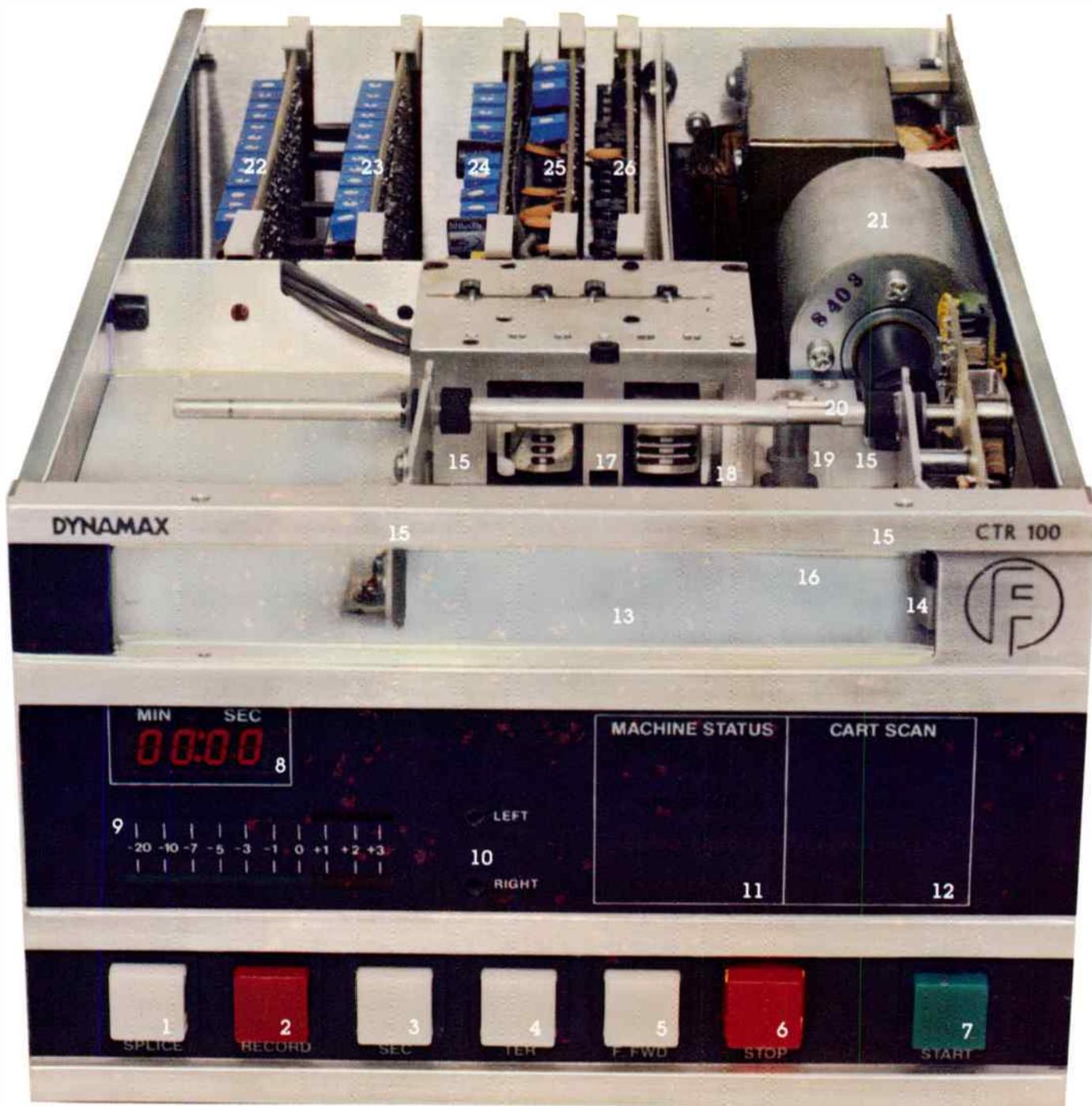
1. SPLICE FINDER
2. RECORD SET
3. SECONDARY
4. TERTIARY
5. FAST FORWARD
6. STOP
7. START

8. Real Time Tape Counter
9. LED VU Meters
10. Recessed Input Level Controls
11. Machine Status Display
12. CARTSCAN™ Status Display
13. Half-inch Tool Plate Deck

14. Cleaning Switch
15. Cartridge Steering & Hold Down Rollers
16. Self-Aligning Pressure Roller
17. Positive Reference Head Bridge
18. Flat Response Long Life Heads
19. Variable Speed DC Servo Motor

20. Cartridge Position Sensor
21. Constant Current Solenoid
22. Record Amplifier
23. Tone Generator
24. Play Amplifier
25. Tone Sensor
26. Logic

CARTSCAN™

The world's most advanced cartridge preparation system.™

The DYNAMAX CARTSCAN System allows cartridges recorded at elevated level, mono and matrix stereo to be intermixed with carts recorded in standard level and discrete stereo formats. It also provides a method of coding cartridges so that insertion of specific cartridges into the machine will activate an external function, such as noise reduction, tally lights, EBS equipment, etc.
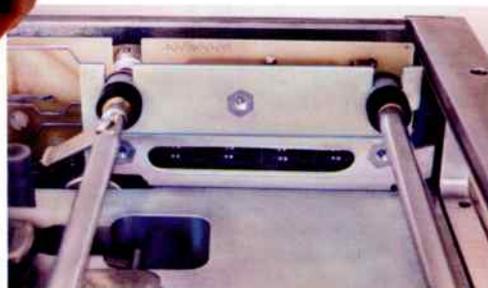
When the CARTSCAN Status Display is not illuminated, stereo machines record and reproduce the standard NAB stereo format at normal record and reproduce levels.
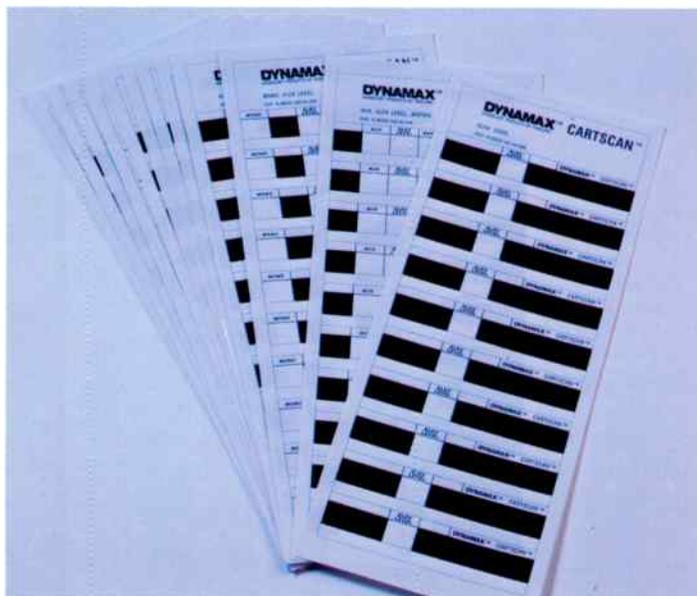
CARTSCAN labels are preprinted on adhesive-backed thin-film Mylar.® An appropriate label is selected and affixed to the right edge of each cartridge prior to recording. Optically coded reflective areas of the label are read by infra-red sensors in the DYNAMAX CTR100 Record and Playback machines. CARTSCAN labels automatically switch the CTR100 to the preselected format. Unlabeled cart-ridges are recorded and played normally.

Label sheets are available for all functions, as well as combinations of functions. CARTSCAN labels are semi-permanent; they will not come off in normal use but can be removed if the cartridge is to be re-recorded in a different format.

ELEVATED LEVELS

CTR100 Series recorders contain two separate sets of bias, equalization and level controls. Playback electronics contain corresponding normal and elevated level output attenuators.

Typically, the normal set of controls would be set for standard level, bias and equalization recording on standard tape. In this manner, unlabeled cartridges would be recorded at 160 nanoWeber per meter fluxivity (1975 NAB Standard Reference Level) when the front panel VU meters read 100 per cent.

Cartridges tagged with an ELEVATED LEVEL label cause the machine to switch to elevated level format. The elevated set of controls are optimized for the newer High-Output Low-Noise tapes. To utilize the full benefit of these improved tape formulas, recordings may be made at up to 8 dB higher levels while VU meters read normally.

On playback, elevated level carts are attenuated by an amount equal to the record level boost, providing uniform output level when intermixing normal and elevated level tapes.

Benefits of using ELEVATED LEVEL Recording in conjunction with HOLN tapes
- Wider dynamic range
- Lower distortion component
- Multigeneration production capability now possible by mastering on cartridge

NORMAL RECORDING & PLAYBACK
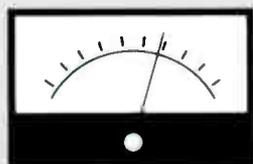
= 160 nWb/m

ELEVATED LEVELS

= 400 nWb/m

CUE/BIAS SIG
NORMAL — S1
PROGRAM BIAS

AUTO II
AUTO I
RECORD — S2
PLAY

TAPE/OUTPUT
INPUT/OUTPUT — S3

-10
OFF
0 — S4, TEST OSC.

TEST OSC. FREQ.

1 - 50Hz
2 - 63Hz
3 - 120Hz
4 - 250Hz
5 - 500Hz
6 - 1kHz
7 - 2kHz
8 - 4kHz
9 - 8kHz
10 - 10kHz
11 - 12.5kHz
12 - 16kHz

RECORD AMP
CUE RECORD
CUE BIAS
AUX CUE
L. NORMAL EQ.
L. ELEV. EQ.
L. ELEV. BIAS
L. NORMAL BIAS
R. NORMAL BIAS
R. ELEV. BIAS
R. ELEV. EQ.
R. NORMAL EQ.
L. ELEV. GAIN
R. ELEV. GAIN

TONE GENERATOR
L. REC TAPE
CUE BIAS
L. REC. BIAS
L. PLAY
METER ADJ.
L. REC. IN
R. REC. TAPE
CUE OUT
R. REC. BIAS
R. REC. IN.
R. PLAY
TEST OSC. LEV.
TEST OSC. FREQ.

PLAY AMP.
OUTPUT LEVEL

TONE SENSOR
L. NORMAL
L. ELEV.
R. NORMAL
R. ELEV.
R. LOW FREQ.
R. HIGH FREQ.
L. LOW FREQ.
L. HIGH FREQ.

LOGIC
150HZ
1KHZ
8KHZ

PLAY EQ

Internal trimmers and switches –
CTR100 stereo recorders.

CARTSCAN Functions

MONO

Tagging a cartridge with a MONO label tells a stereo recorder to mix left and right inputs and record them on the left tape track.

On playback, the left track is fed to both left and right playback outputs providing a perfect mono signal, totally free of phase errors.

RECORDING

STEREO OR MONO SOURCE

■ LEFT CHANNEL
■ RIGHT CHANNEL
■ L+R

LEFT TRACK
RIGHT TRACK
CUE TRACK

CTR100 RECORD SWITCHING

PLAYBACK

LEFT TRACK
RIGHT TRACK
CUE TRACK

CTR100 PLAYBACK SWITCHING

CONSOLE INPUT
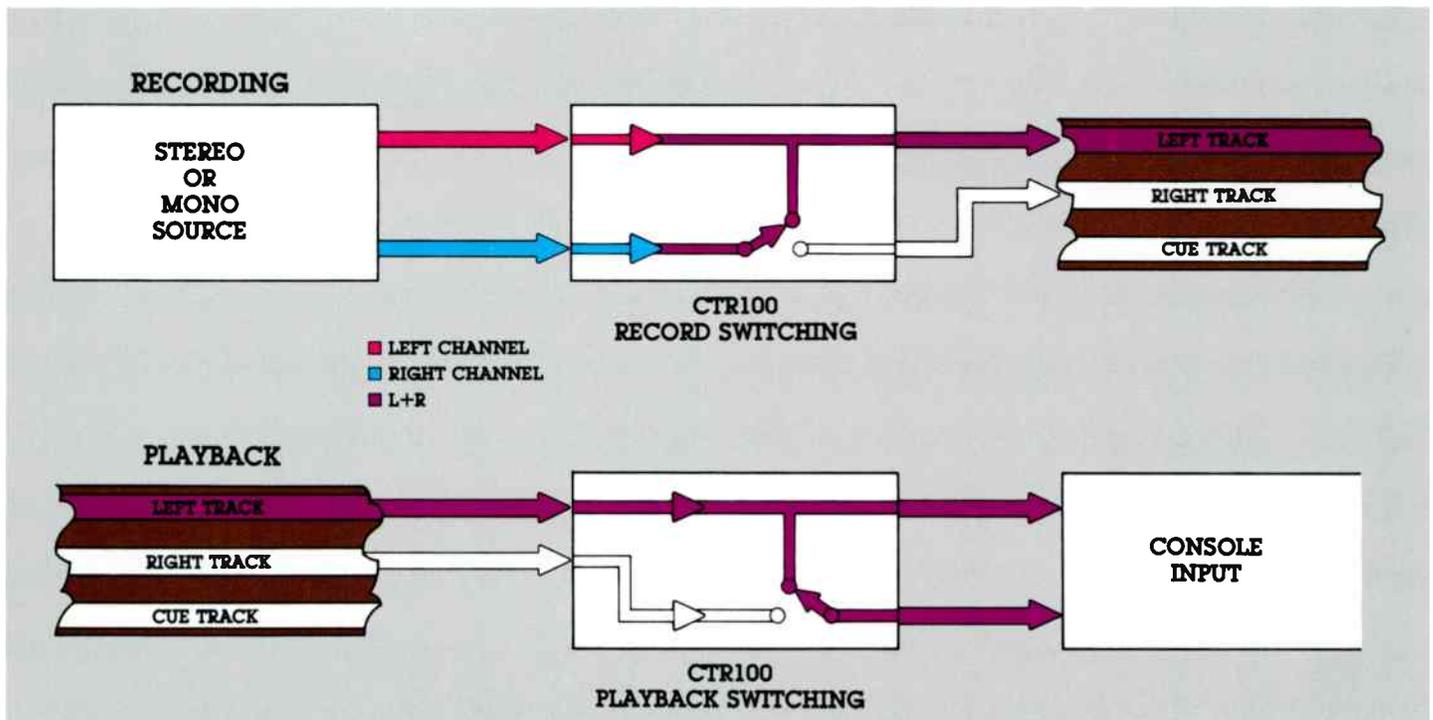
Typical MONO CARTSCAN Benefits
- Permits continued use of a mono library during conversion to stereo
- Permits stereo material to be recorded for playback on mono equipment
- Allows mono source material to be intermixed with stereo programming on same machine with no possible phase cancellation
- Eliminates need for second mono recorder in production room

CARTSCAN Functions

MATRIX

The matrix system is currently being used for stereo recordings in television in which perfect mono recombination is a primary requirement. Stereo CTR100 recorders and players are equipped with on-board matrix encode and decode circuitry activated by the MATRIX CARTSCAN label. In matrix recording, the mono sum of left and right stereo channels (L+R) is recorded on the left tape track, and the difference (L−R) is recorded on the right track. On playback, the sum and difference channels are used to reconstruct a discrete stereo signal. Cartridge induced phase errors, when present, are eliminated.

AUXILIARY

Cartridges tagged with an AUX CARTSCAN label trigger a collector-to-ground output at the remote plug, allowing a wide range of external functions to occur when an AUX-labeled cartridge is inserted.

RECORDING

STEREO SOURCE

CTR100 STEREO RECORDER

LEFT TRACK
RIGHT TRACK
CUE TRACK

L TRK: L+R
R TRK: L−R

■ LEFT CHANNEL
■ RIGHT CHANNEL
■ L+R
□ L−R

PLAYBACK

LEFT TRACK
RIGHT TRACK
CUE TRACK

CTR100 STEREO PLAYBACK

CONSOLE INPUT
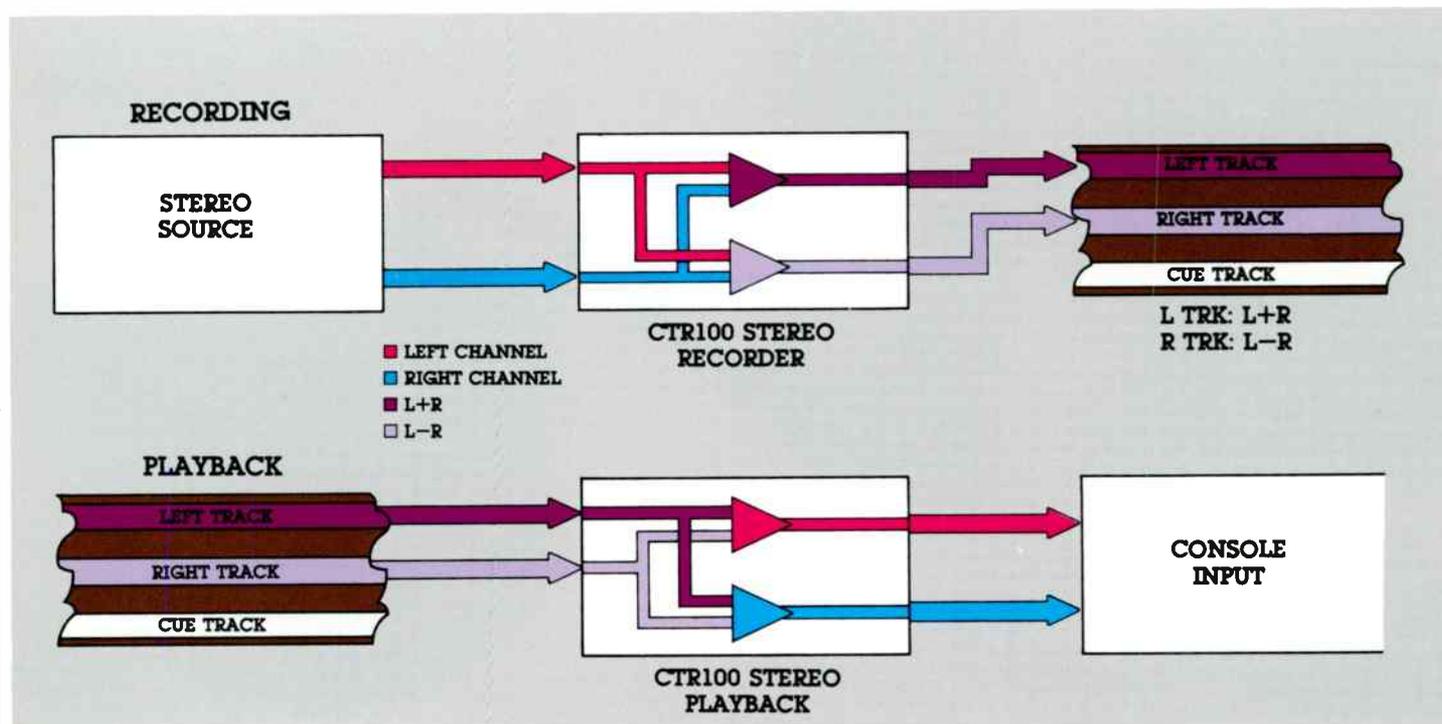
Typical MATRIX CARTSCAN Benefits
- Eliminates cartridge-induced phase errors.
- Matrix format cartridges can be played on conventional mono playback equipment
- Matrix format cartridges can not be reproduced on conventional stereo machines unless an external decoder is used, preventing unauthorized cartridge use

Typical AUX CARTSCAN Uses
- Activate Dolby® or dbx noise reduction equipment
- Activate EBS equipment
- Activate tally lights
- Automatic enable of VARY SPEED mode

Vary Speed

Variable speed playback from

The DYNAMAX CTR100 is equipped with a variable speed DC Servo Motor. Although capable of running at fixed speeds of 3.75, 7.5 and 15 i.p.s., the motor can be externally controlled to operate precisely at speeds within 30 per cent of the preselected speed.

The CTR100 Vary Speed system is unique. The cue tone detectors and the tape timer are synchronized to the motor tachometer, thus providing reliable cue tone sensing, as well as accurate timekeeping, at any tape speed.

Vary Speed allows music cartridges to be played uptempo, and spots to be shortened or lengthened. Special effects can be pitch controlled.

The Vary Speed system uses 9,600 Hz as a reference frequency. This frequency is fast becoming the international standard for audio and video synchronization. Vary Speed enables the cartridge machine to be interlocked with other machines using a SMPTE controller or a 9,600 Hz-based synchronizer.
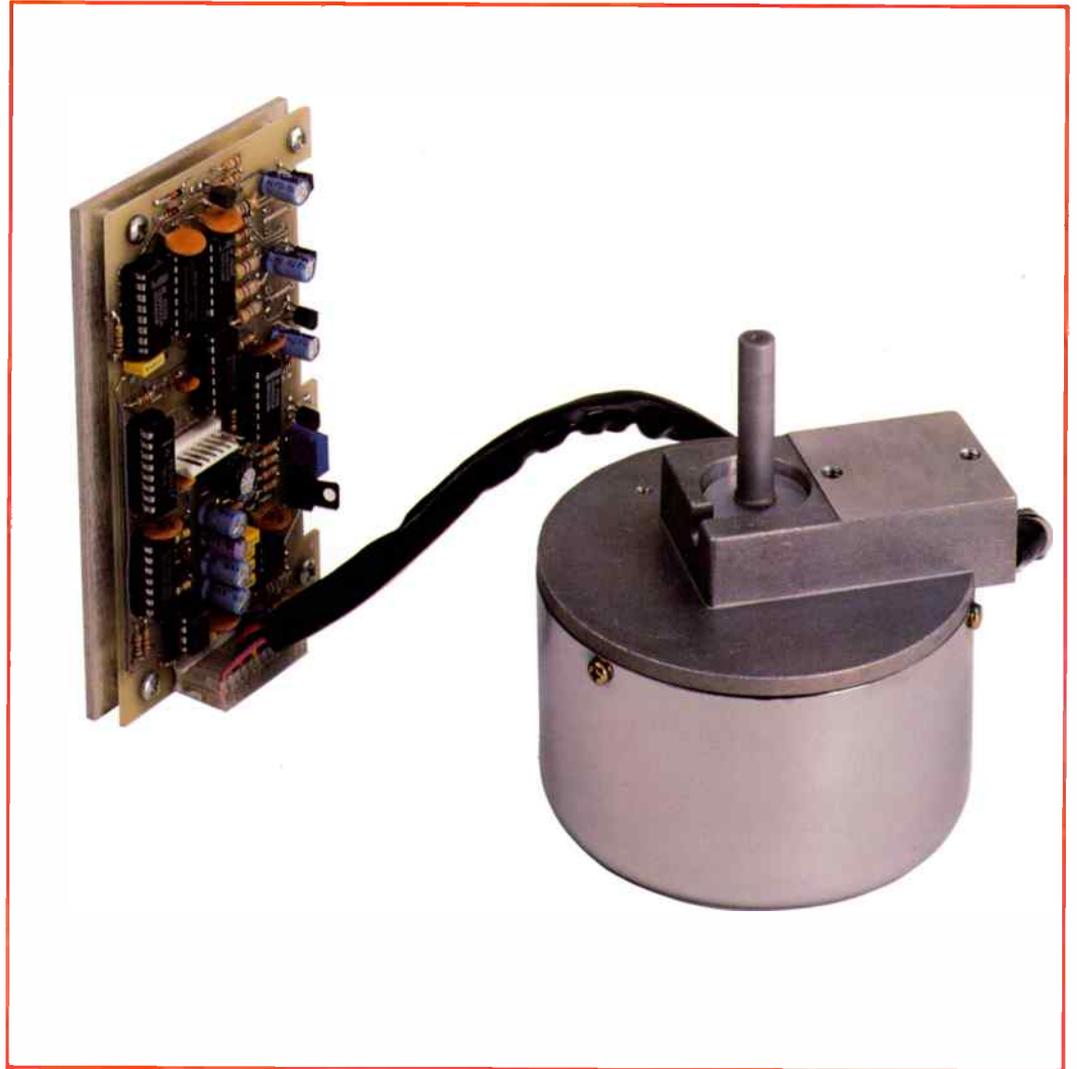
FAST FORWARD is standard on the CTR100. When the motor is strapped for 3.75 and 7.5 i.p.s., FAST FORWARD is three times normal speed. When the motor is strapped for 15 i.p.s., FAST FORWARD is automatically limited to 30 i.p.s.

cartridges. A practical working system.

VIDEO APPLICATIONS

Slaved to a VTR using SMPTE Time Code
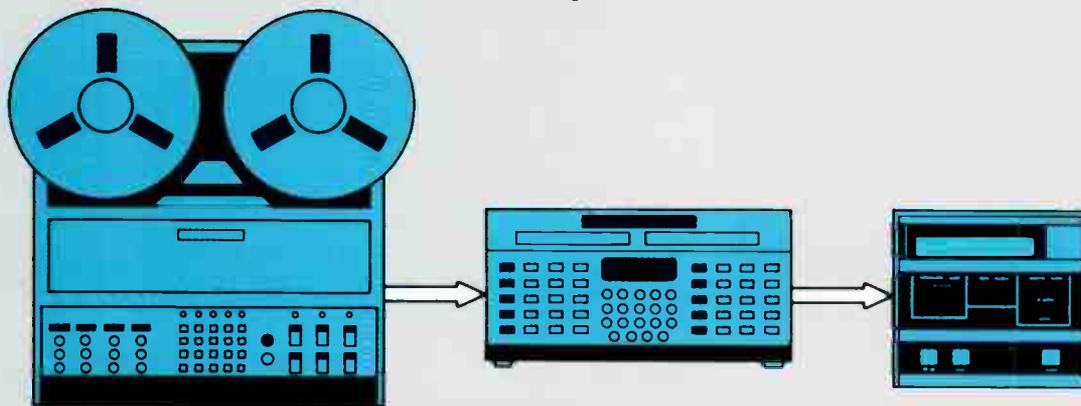
VIDEO APPLICATIONS

Post Production Sweetening
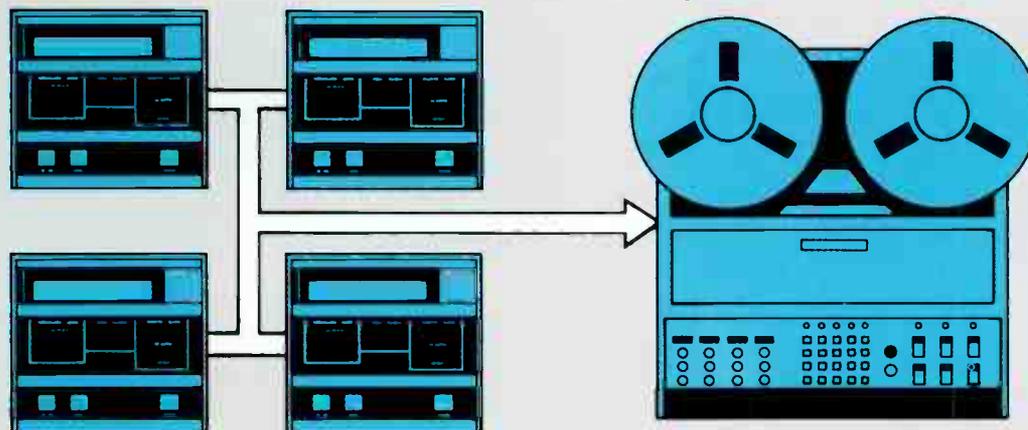
AUDIO PRODUCTION APPLICATIONS

Audio Oscillator
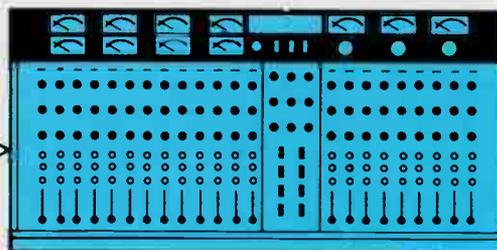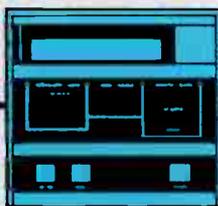
9,600 Hz center frequency yields on-speed operation. Varying oscillator frequency within 30 percent varies motor speed.

Blackout Status Panels

Only what you need to know

Under normal conditions, the CTR100 front panel is blacked out, avoiding needless distraction to the operator. In the recorder, only the timer is illuminated displaying the time of the last cartridge played.
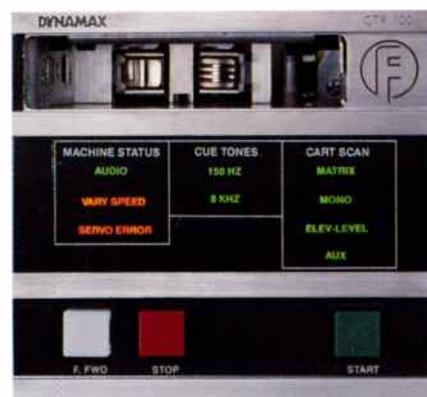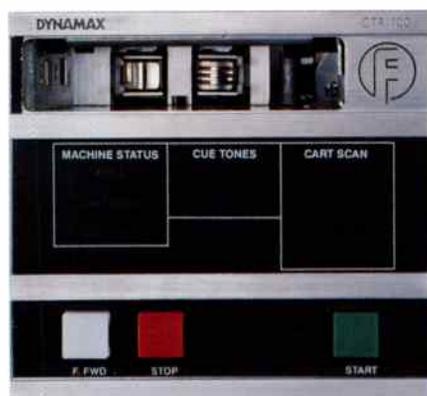
All Status Lamps illuminated for identification

MACHINE STATUS

AUDIO
Identifies machine with audio gate open. Audio gates of all machines may be interconnected so that the last machine started mutes audio from all other machines. This feature is especially useful when more than one machine is paralleled into the same console input. Audio mutes when in FAST FORWARD, except when FAST FORWARD button is held in. Audio gate can be turned off on leading or trailing edge of 150 Hz Secondary tone.

VARY SPEED
Indicates that motor is under external speed control. VARY SPEED is locked out in RECORD mode, eliminating the possibility of recording a cartridge at the wrong speed.

SERVO ERROR
Illuminates during transition from normal speed to FAST FORWARD, or vice versa, or whenever motor is out of servo lock.

1 KHZ DEFEAT
Indicates that automatic recording of primary cue tone has been disabled. 1 KHZ DEFEAT is achieved by pressing the RECORD button twice prior to recording. It is cancelled by pressing the STOP button or removing the cartridge. Normally, the timer resets when a cartridge is restarted; however, the timer does not reset when in 1 KHZ DEFEAT, permitting the total time of the produced cartridge to be measured.

CUE TONES

150 HZ and 8 KHZ
Illuminate during cue tones. On Record/Play machines, buttons illuminate. Tones can be recorded at any time during either RECORD or PLAY, and may be recorded singly or in combination. Normally open relay contacts are standard for each tone.

1 KHZ
The primary cue tone can be manually recorded while in RECORD or PLAY by pressing the RECORD button. Tone duration is automatically set in accordance with NAB Standards.

Additional Operating Features

The DYNAMAX CTR100 is the only fully equipped cartridge machine available in the world today. Additional operating, diagnostic and convenience features are described, several of which are unique.
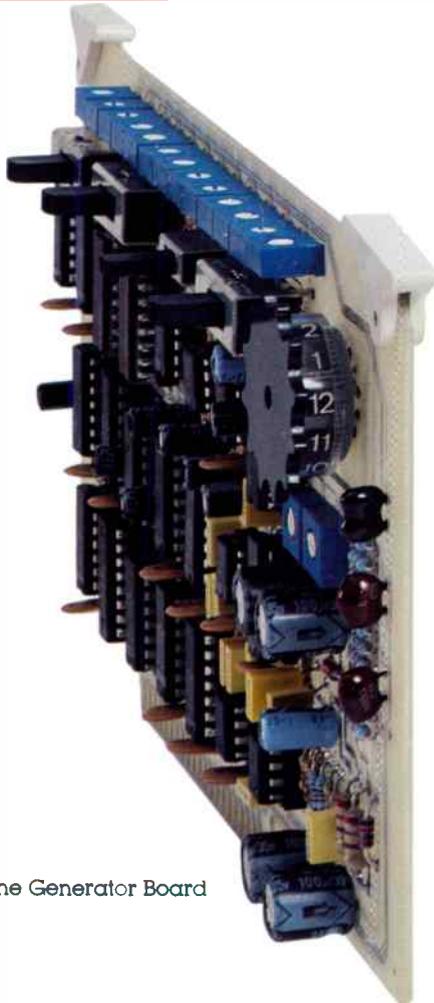
Tone Generator Board

SPLICE FINDER – a thickness-sensitive splice finder is standard in all Record/Play machines. The splice finder operates at the programmed FAST FORWARD speed. SPLICE FIND mode can be entered from any other machine mode. Because the timer measures elapsed tape time at any speed, SPLICE FIND mode is useful for determining the total tape time of unknown cartridges.

TWO SPEED PLAYED INDICATOR WITH PLAY RESTART DISABLE – STOP lamp flashes at slow rate to indicate cartridge has re-cued. Flashes fast when cart has been manually stopped. START function may be disabled during fast, slow, or both flashing states.

ON-BOARD TEST TONE GENERATOR – recorders are equipped with a 12-tone generator which produces all tones found on the NAB Standard Spot Frequency Test Tape. Tones are switchable for either zero or −10 VU.

FAST FORWARD –can be entered manually from any other mode, or automatically by either leading or trailing edge of 150 Hz tone. Audio is normally muted during FAST FORWARD operation but can be manually unmuted by holding the FAST FORWARD button.

CLEANING SWITCH – allows activation of pressure roller without inserting a cartridge. Makes cleaning the pressure roller easy, especially when machines are rack mounted and top access is unavailable. Operation without cartridge inserted also facilitates set up, diagnostics and measurement.

CLOCK FUNCTIONS
- Clock is synchronized to motor tachometer and always indicates tape position
- Clock can be strapped to freeze at beginning or end of Secondary cue tone
- Clock retains last elapsed time until new cartridge is inserted or same cartridge is restarted

METERING FUNCTIONS
- Can be frozen to continuously read audio output
- Can be frozen to continuously read audio input
- Auto I – automatically switches to audio input when the machine is in the RECORD mode, meters audio output at all other times.
- Auto II – monitors audio input when the machine is in the RECORD and STOP mode, meters audio output at all other times. This mode allows the recording level to be present and then automatically switches to give an off-the-tape indication during the recording process
- The VU meters may also be used to monitor program record bias, cue record bias and cue audio in addition to program record and output audio
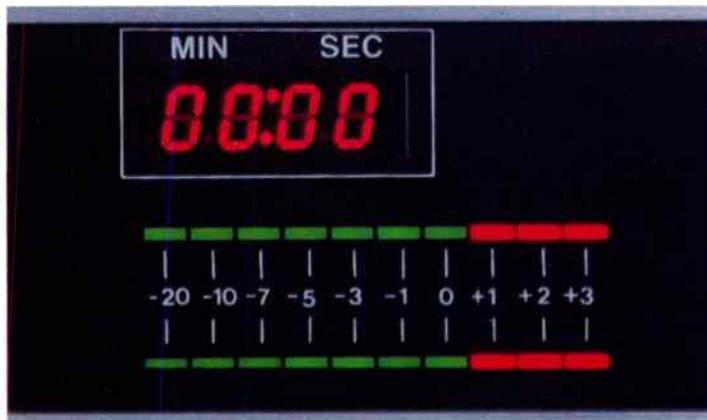
Cartridge Deck Architecture

An intelligent cartridge interface.
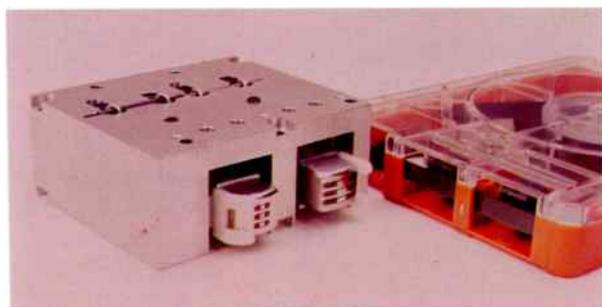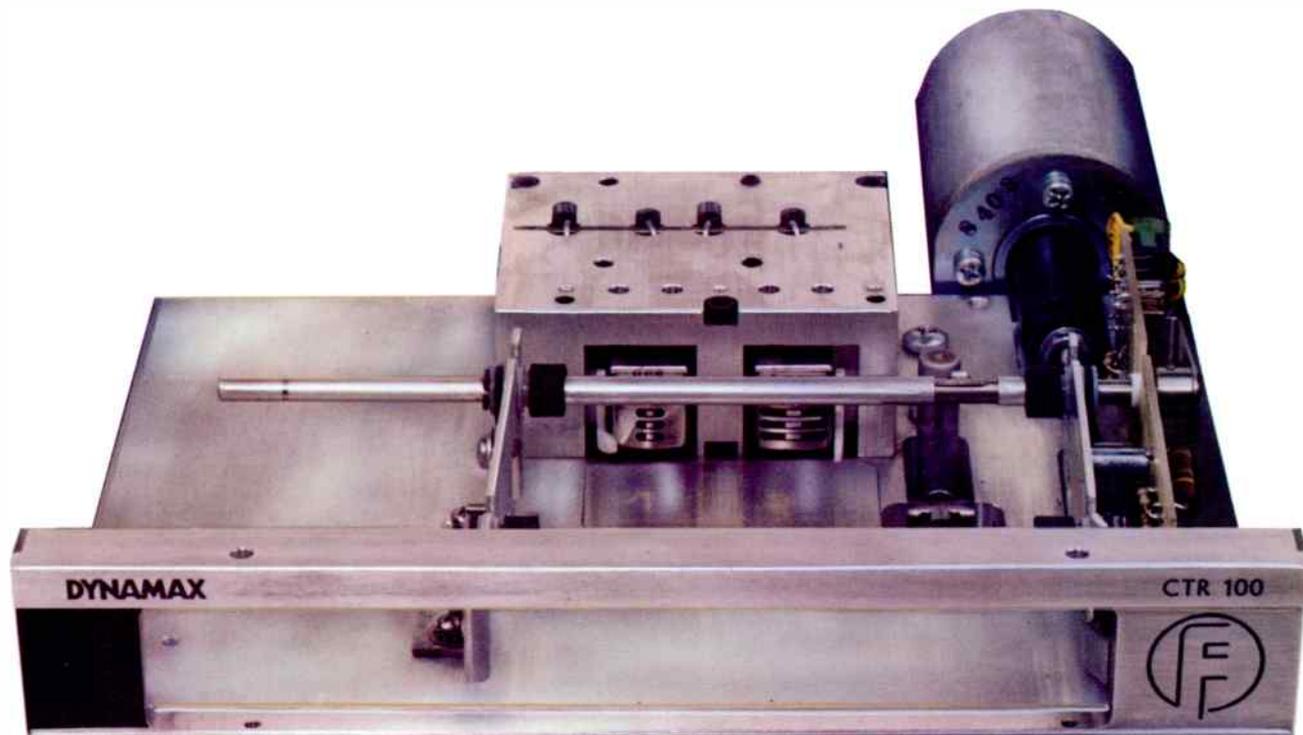
REMOVABLE HEAD BRIDGE WITH POSITIVE REFERENCE SURFACES – unmarred by screw heads or other projections which can damage cartridge surfaces and destroy repeatable positioning.

MICRO ADJUSTABLE TAPE GUIDES – mounted in vertical guide channels.

Height is adjustable with vernier self-locking screws.

HEAD HEIGHT, AZIMUTH and ZENITH INDEPENDENTLY ADJUSTABLE – height and zenith remain locked while azimuth adjustment is made.

CANTED HOLD-DOWN ROLLERS – rubber rollers hold carts firmly at edges while urging cartridge to right edge guide during cartridge insertion.

SELF ALIGNING PRESSURE ROLLER – integrated ball-bearing race assures perpendicularity of roller and capstan.

CONSTANT CURRENT LOW VOLTAGE SOLENOID – insensitive to power line voltage changes or solenoid temperature variations. Solenoid receives high current pulse to start, then current is reduced to hold solenoid in.

TROUBLE FREE STAINLESS CAPSTAN – easily cleaned. Will not accumulate tape oxide or soak up cleaning fluid as in ceramic capstans. Provides positive electrostatic grounding to help inhibit formation of static charges in certain tapes.

12

Audio Performance

Specifications don't always tell the whole story of a product's audio performance. Often, what happens within plus or minus 2 dB limits can have an audible effect on the overall sound.

The CTR100 utilizes premium heads and state-of-the-art devices throughout. Herewith, we present the following performance graphs.
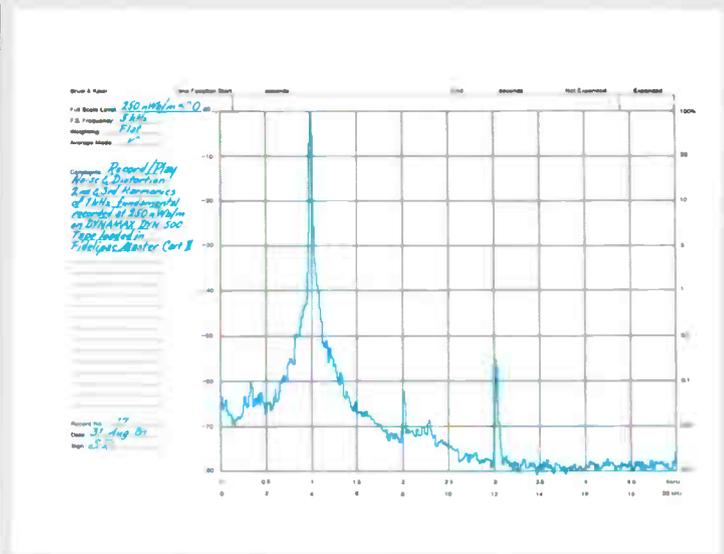
RECORD/PLAYBACK FREQUENCY RESPONSE
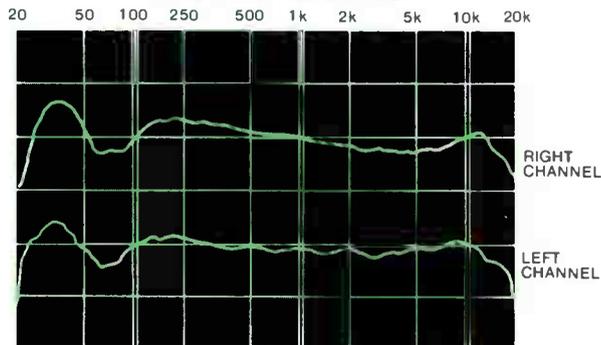
2dB/Div.

PLAYBACK FREQUENCY RESPONSE FROM TEST TAPE
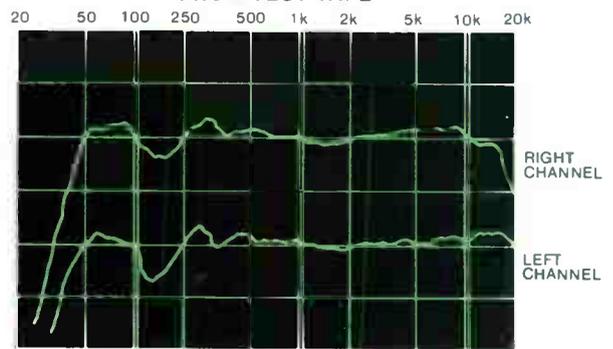
2dB/Div.

RECORD/PLAY SQUARE WAVE RESPONSE
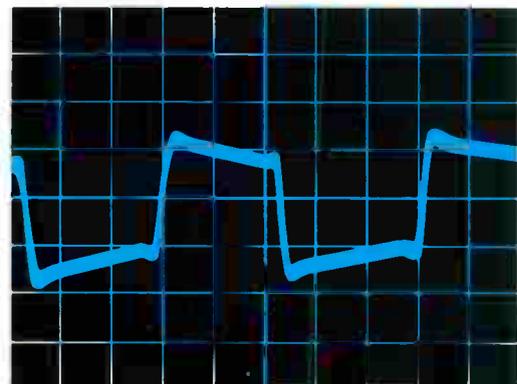
1 kHz Square Wave
200 microseconds per horizontal division, 0.2 volts per vertical division
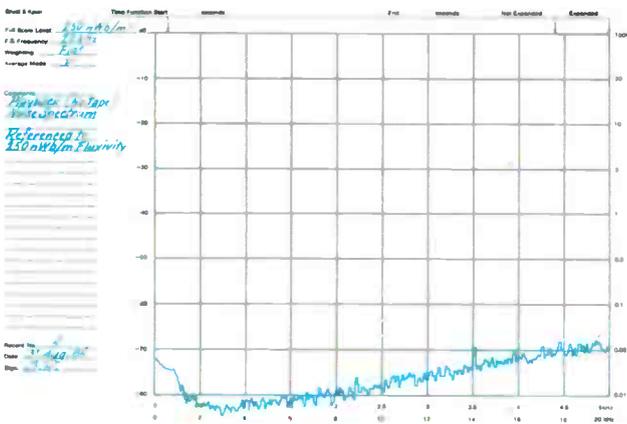
CTR100 Features

All features listed below are standard

Operational

- CARTSCAN™ System – automatic activation of ELEVATED LEVEL, AUX. MONO* and MATRIX* modes
- Vary Speed – motor speed continuously variable from 1.875 to 30 i.p.s. from external reference
- Cue tone tracking within ±30 per cent of preselected speed
- SMPTE interface for synchronization using 9,600 Hz international reference
- Real time digital tape timer accurate at any tape speed
- Splice finder
- Blackout status display
- Front panel diagnostics
- All front panel switches illuminated
- Fast forward
- Secondary and tertiary cue tones
- Front panel 1 kHz add and defeat
- Selectable multi-speed high speed recue
- Two speed played flashing indicator with multi-machine flash synchronization
- Played restart disable
- Audio Switcher and Mixer
- 150 Hz control of audio gate
- Fully switchable metering with automatic changeover functions
- Bar graph LED level indicators
- Improved heads for flat low frequency response and long life
- On-board test oscillator

Mechanical

- Compact size:
  Playback units – 1/3 rack width
  Record/Play units – 1/2 rack width
- 1/2 inch anodized tool plate deck
- Removable head bridge with positive reference surfaces
- Micro-adjustable tape guides
- Geometrically correct azimuth adjustment, independent of height & zenith
- Canted hold-down cartridge positioning system
- Low voltage constant current air damped solenoid with multi-level electronic current control
- Self aligning ball bearing pressure roller
- Brushless variable speed 3 phase DC servo motor with electrolyzed non-magnetic stainless steel shaft and permanently lubricated ball bearings, strappable for 3.75, 7.5 and 15 i.p.s.
- Polycarbonate legend overlay panels for durability and ease of cleaning
- Extensive mumetal shielding
- Long-life premium quality switches with bifurcated wiping contacts
- Servo motor electronics removable without removing motor permitting adjustment while playing a cartridge
- Service access to all internal components without destroying outside finish
- Cleaning switch

Electrical

- State-of-the-art audio utilizing a combination of discrete and integrated devices, such as LM394, 5500 and LF series operational   amplifiers
- Audio Transformerless circuitry
- Group delay compensation
- Active bias and signal mixing
- Constant current recording with record head incorporated in feedback loop

- Crystal controlled reference for all internal functions
- 144 kHz bias oscillator
- ICs socketed
- Component designations on all circuit boards
- All power supplies regulated
- Full remote controls including lamps, motor tachometer, and function pulses
- Detachable line cord
- 110/220V 50-60 Hz operation

*Stereo machines only

CTR100 Specifications

1. Power
  A. 117 vac ±10% / 234 vac ±10%
  B. 50/60 Hz
  C. 85 watts maximum

2. Tape Speeds

A. Standard	Fast Forward	Comment
7.5 i.p.s. (19 cm/s)	22.5 i.p.s. (57 cm/s)	Set by Factory
3.75 i.p.s. (9.5 cm/s)	11.25 i.p.s. (28.5 cm/s)	Strappable
15 i.p.s. (38 cm/s)	30 i.p.s. (76 cm/s)	Strappable

  B. Vary speed 1.875 to 30 i.p.s. as controlled by external oscillator
  C. 9600 Hz external reference will produce standard selected speed
  D. Cue tone sensors track motor speed (as varied by external oscillator) within ±30% of selected standard speed
  E. Vary speed feature is locked out in record mode
  F. Front panel vary speed indicator

3. Capstan Motor Drive System
  A. Direct drive capstan
  B. Brushless 3 phase DC servo motor
  C. Electrolyzed stainless steel shaft/capstan non-magnetic
  D. Permanently lubricated ball-bearings
  E. Crystal referenced phase locked loop control
  F. Dynamic breaking from fast forward to normal speed
  G. Front panel servo error indicator

4. Wow & Flutter
  Record/Play maximum
  0.12% DIN WTD at 7.5 i.p.s.

5. Speed Accuracy
  Better than ±0.2%

6. Audio Output and Source Impedance
  Differentially balanced, source impedance 440 ohms; RF bypassed

7. Audio Output Level
  +20 dBm into 600 ohms before clipping

8. Distortion
  Reproduce amplifier:
  0.05% THD max. 18dB above 250 nWb/m
  System distortion, tape limited:
  0.5% max 2nd or 3rd harmonic, 1 kHz, at 250 nWb/m
  1.0% THD max at 1 kHz

9. Noise
  A. Signal/noise measured with bias/no signal at 7.5 i.p.s.
    Mono – 55 dB (minimum)
    Stereo – 53 dB (minimum)

B. Hum and Noise – no tape
   Mono – 61 dB (minimum)
   Stereo – 59 dB (minimum)
C. Squelch noise −70 dB (minimum) measured over a 20 –
   20 kHz bandwidth, reference 250 nWb/m at 1 kHz

10. Cross Talk
Within 50 dB minimum separation between program
channels at 1 kHz

11. Frequency Response
±2 dB 50Hz – 16 kHz

12. Equalization
A. 1975 NAB EQ Standard normally supplied 7.5 i.p.s.
B. IEC Standard on request (pot adjustment) 7.5 i.p.s.
C. Field strappable for 1964 NAB EQ
D. Adjustable low and high frequency playback EQ
E. Adjustable high frequency record EQ

13. Head Configuration
NAB, Mono/Stereo

14. Cue signals
A. NAB primary cue 1 kHz
B. NAB secondary cue 150 Hz with front panel indicators
C. NAB tertiary cue 8 kHz with front panel indicators
D. Open collector sinking signal (ground switching)
   available upon sensing secondary or tertiary cue tones,
   15 volts, 200 mA maximum, saturation less than 1v
   at 200 mA
E. Open relay contacts available upon sensing secondary
   or tertiary cue tones (contacts close with tone present)
F. Cue tone sensing over a ±30% speed variation in
   playback vary speed mode

15. Logging Signals
A. Not internal to machine
B. Cue audio input, cue audio output and cue track bias
   control available for external use
C. Output level .5v nominal from a logging signal of
   35 nWb/m tape fluxivity
D. Logging output impedance 1k ohms
E. Cue audio input .5v nominal
F. Input impedance 47k ohms

16. Audio Input Level
A. −17 dBm minimum input to record 160 nWb/m in
   normal mode, or up to 400 nWb/m in elevated level
   mode
B. +20 dBm maximum input level, unbalanced input
   connection
C. +26 dBm maximum input level, balanced input
   connection

17. Audio Input Configuration
Differentially balanced bridging 10k ohms

18. Metering
A. Audio Metering, switch selectable
   1. Play only – monitors output level
   2. Record only – monitors record input level
   3. Auto 1 – monitors record input level when machine is
      in RECORD mode, automatically switches to output
      level at all other times
   4. Auto 2 – monitors record mode when machine is in
      RECORD and STOP (ready) mode, automatically
      switches to output level at all other times

B. Test Metering
   1. Left program bias displayed on left meter;
      right program bias displayed on right meter
   2. Cue bias displayed on left meter;
      cue audio displayed on right meter

19. Bias Oscillator
144 kHz crystal generated

20. Tape Capacity
A. NAB sizes A and AA (CTR111 and CTR112)
B. NAB sizes A and AA, B and BB (CTR123 and CTR124)

21. Start Time
Typically 100 milliseconds (timing dependent upon
solenoid air damping adjustment)

22. Stop Time
Tape stop time typically 100 milliseconds (dependent on
type and length of cartridge)

23. Ambient Operating Temperature Range
10-50°C (50° to 122°F)

24. Remote Control Signals
A. All front panel controls and indicators (except record
   input controls and meters)
B. Vary speed control and reference
C. Cue track input, output and bias control
D. Start, Stop and Cartridge Sense pulses for external timer

25. External Connectors
A. 9 pin "D" audio connectors (mating connectors supplied)
B. 50 pin "D" – remote control
C. Plug-in line cord

26. Mounting
A. Table top standard
B. Rack mount (optional rack mount available)

27. Ordering Information and Dimensions

| Model No. | Description | Dimensions | | |
		Height	Width	Depth
CTR111	A Size Mono Play	14.29 cm 5.625 in.	15.24 cm 6 in.	40.64 cm 16 in.
CTR112	A Size Stereo Play	14.29 cm 5.625 in.	15.24 cm 6 in.	40.64 cm 16 in.
CTR123	B Size Mono Record/Play	14.29 cm 5.625 in.	22.23 cm 8.75 in.	40.64 cm 16 in.
CTR124	B Size Stereo Record/Play	14.29 cm 5.625 in.	22.23 cm 8.75 in.	40.64 cm 16 in.

28. Shipping Information

| Model No. | Shipping Weight | | Shipping Volume | |
	Pounds	kg.	cu. ft.	cu. m.
CTR111	32	14.5	1.4	0.04
CTR112	32	14.5	1.4	0.04
CTR123	36	16.3	1.8	0.05
CTR124	36	16.3	1.8	0.05

The specifications defined above may be subject to change
without prior notification by Fidelipac Corp.

DYNAMAX™
BROADCAST PRODUCTS BY FIDELIPAC®

Fidelipac Corporation ☐ P.O. Box 808 ☐ Moorestown, NJ 08057 ☐ U.S.A. ☐ 609-235-3900 ☐ TELEX: 710-897-0254 ☐ Toll Free 800—HOT TAPE

Distributed By

First NAB Showing!

Innovative New Ideas in Tape Cartridge Technology

DALLAS—Fidelipac Corporation, inventor of the NAB tape cartridge, will display nine new products designed to make your tape cartridges more useful and better sounding than ever before.

DYNAMAX® CTR10 SERIES

High performance at an affordable price. The CTR10 Series consists of four new A size tape cartridge recorders and reproducers. All machines come factory equipped at no extra cost with fast forward, secondary and tertiary cue tones, audio switcher and mixer, flashing cart played indicator, 150 Hz control of audio muting and fast forward, 1/2 inch aluminum deck plate, removeable head nest with precision reference surfaces, self-aligning ball bearing pressure roller, and a host of other convenience and performance features. These machines give you better audio performance than other machines costing much more, and are so reliable they carry a 2-year limited warranty.

DYNAMAX ESD10 ERASER/SPLICE DETECTOR

A *continuous duty* eraser/detector. Fidelipac engineers eliminated the bulky, heat-producing, high-current degaussing coil commonly used in devices of this type and installed dual high-precision erase heads instead. The professional reel-to-reel full-track erase heads assure 75 dB erase depth. A patented system guarantees reliable, automatic splice detection with no sensitivity adjustments. Operating at 27.5 i.p.s., the ESD10 will erase and splice-locate a 40-second cartridge in less than 22 seconds. 144 40-second carts can be processed in only an hour, an impossible feat with any other unit.

DYNAMAX CTR30 3-DECK RECORDER/REPRODUCER

Three-deck recorder/reproducers with record electronics *built-in as standard equipment* on every unit. Available in mono or stereo, CTR30 Three-deck Recorder/Reproducers utilize the same premium record and playback electronics as the CTR10 and offer many of the same features. The built-in record electronics make it possible to record one cartridge while simultaneously playing two others. And three CTR30 Three-deck Recorder/Reproducers fit easily in a single 19 inch rack.

DYNAMAX CTR100 SERIES WITH MAXTRAX™ PACKAGE

Available MAXTRAX heads and complementary circuitry yields signal-to-noise specs significantly better than those published by the best known advocate of this tape track format. The MAXTRAX package may be specified on stereo CTR100 players and recorders. You get compatibility with your MAXTRAX cart library as well as the CTR100's proven reliability and unique features.

For information on our NAB SPECIAL OFFER, see us in booth 3092.

DYNAMAX
BROADCAST PRODUCTS BY FIDELIPAC

FIDELIPAC®
BROADCAST TAPE PRODUCTS

Fidelipac Corporation
P.O. Box 808 • Moorestown, NJ 08057 • U.S.A.
Fax 609-235-7779 • Telex 710-897-0254
Phone 609-235-3900 • Toll Free 800-HOT TAPE

**PROFESSIONAL PRICE SCHEDULE
1 JULY 1988**

DYNAMAX® Tape Cartridge Machines, Eraser/Detector & Accessories

PART NUMBER	DESCRIPTION	UNIT PRICE
CTR100 Series:		
CTR111	A Size Mono Play	$2235
CTR112	A Size Stereo Play	2430
CTR123	B Size Mono Record/Play	3750
CTR124	B Size Stereo Record/Play	4080
CTR112MX	A Size Stereo Play w/MAXTRAX Head Package	2580
CTR124MX	B Size Stereo Record/Play w/MAXTRAX Head Package	4280
Options:	50 Hertz	N/C
	220 volts	N/C
	IEC Equalization	N/C
	3.75 or 15 ips	N/C
	RM-1S (w/purchase of 2 or more machines & cover exchange)	N/C
CTR10 Series:		
CTR11	A Size Mono Play	1575
CTR12	A Size Stereo Play	1745
CTR13	A Size Mono Record/Play	2495
CTR14	A Size Stereo Record/Play	2725
Options:	50 Hertz	50
	220 volts	N/C
	IEC Equalization	N/C
	RM-1S (w/purchase of 2 or more machines & cover exchange)	N/C
CTR30 Series:		
CTR33	Three Deck Recorder/Reproducer, Mono	4800
CTR34	Three Deck Recorder/Reproducer, Stereo	5250
Eraser/Detector:		
ESD10	Eraser/Splice Detector	1150
Accessories:		
RM-1S	19 inch Rack Mount Shelf for single-deck machines	100
RM-3S	19 inch Rack Mount Shelf for CTR30 Series	175
FP-2	Filler Panel, 1/2 Rack Width	20
FP-3	Filler Panel, 1/3 Rack Width	20
FP-6	Filler Panel, 1/6 Rack Width	20
FP-33	Filler Panel, 1/3 Rack Width, for use with RM-3S	25
TE-1	PC Board Test Extender	35
HG-1	Head Height/Zenith Gauge	40
RC-1	Record Cable, "D" to Male XLR	25
PC-1	Play Cable, "D" to Female XLR	25
	Cartscan Labels (10 labels per sheet—specify type when ordering)	1
	CTR100 Instruction Manual	40
	CTR30 Instruction Manual	40
	CTR10 Instruction Manual	40
	ESD10 Instruction Manual	30

Note: See NAB CARTRIDGES Price Schedule for other alignment equipment.

5% DISCOUNT FROM PRICES FOR PAYMENT ONE WEEK PRIOR TO SHIPMENT.
All prices are in U.S. Dollars, F.O.B. Fidelipac, Moorestown, NJ, U.S.A. Prices subject to change without notice.

Maintenance and Semiconductor & IC Kits for DYNAMAX Machines

Maintenance Kits contain replacement items such as rollers, lamps, tape guides and switches. Semiconductor & IC Kits include all IC's, transistors, diodes and voltage regulators. Complete parts lists are available from the factory.

Machine Model Number	Part Number and Unit Price	
	Maintenance Kit	Semiconductor & IC Kit
CTR111	M-CTR111 $81.66	S-CTR111 $139.44
CTR112 and CTR112MX	M-CTR112 $81.66	S-CTR112 $145.54
CTR123	M-CTR123 $122.25	S-CTR123 $199.33
CTR124 and CTR124MX	M-CTR124 $122.25	S-CTR124 $216.04
CTR11	M-CTR11 $41.20	S-CTR11 $48.57
CTR12	M-CTR12 $41.20	S-CTR12 $53.07
CTR13	M-CTR13 $40.05	S-CTR13 $88.84
CTR14	M-CTR14 $40.05	S-CTR14 $95.12
ESD10	M-ESD10 $37.30	S-ESD10 $48.01

Accessories (Cont.)

CARTRIDGE MACHINE PRECISION ALIGNMENT EQUIPMENT

PART NUMBER	DESCRIPTION	STANDARD PACKAGE	UNIT PRICE
452	Wow & Flutter Cartridge – 3150 Hz	1	35.60
455	Fast Sweep Cartridge — Monophonic	1	43.85
456	Fast Sweep Cartridge – Stereophonic	1	43.85
326	Height Gauge	1	28.00
328	Head Insertion Gauge	1	7.60
387	Right Angle Zenith Gauge	1	33.25
HG-1	Head Height/Zenith Gauge (for use with Dynamax Cartridge Machines)	1	40.00

CARTRIDGE MAINTENANCE AND TAPE ITEMS

PART NUMBER	DESCRIPTION	STANDARD PACKAGE	UNIT PRICE
TAS-431	Splicing Tape—7/32" wide x 100 feet long roll (2400 1/2" splices)	1	10.75
406	Professional Splicing Block, for 1/4" tape	1	26.40
310	Professional Splicing Kit for 1/4" tape	1	32.00
380-WA	Winding Adaptor for 558 Reel (used in Master Cart and Master Cart II)	1	3.50

CARTRIDGE LABELS—10 LABELS PER SHEET

PART NUMBER	DESCRIPTION	STANDARD PACKAGE	UNIT PRICE
403-Blue*		100*	.15
403-Orange*		100*	.15
403-Black*		100*	.15

DYNAMAX® Bulk 1/4" Back-Lubricated Tape

PART NUMBER	REEL SIZE	LENGTH (FEET)	LENGTH (METERS)	STANDARD PACKAGE	UNIT PRICE
SERIES 400X STANDARD TAPE (USED IN MODELS 300, 350, 600, 1200 & MASTER CART)					
DYN-400X*	10" Hub	3600	1097	10*	11.53
DYN-400X*	10" Hub	3600	1097	50*	8.67
DYN-401X*	7" Reel	1800	547	40*	7.07
SERIES 1000X COBALT TAPE (USED IN DYNAMAX COBALT)					
DYN-1000X*	10" Hub	3600	1097	10*	24.00
DYN-1000X*	10" Hub	3600	1097	50*	19.50
DYN-1001X*	7" Reel	1800	547	40*	10.50

NAB Plastic 1/4" Tape Reels and Boxes

PART NUMBER	DESCRIPTION	STANDARD PACKAGE	UNIT PRICE
PR7HD-B	7" Heavy Duty Reel, 2 1/4" Hub, Bulk Packed	180*	1.00
PR7HD	7" Heavy Duty Reel in box, Bulk Packed	40*	1.30

*Must be ordered in multiples of the standard package.

Fidelipac Professional NAB Endless Loop Tape Cartridges

PART NUMBER	LENGTH IN FEET	TIME AT 7½ IPS	UNIT PRICE	RECOMMENDED APPLICATION
DYNAMAX COBALT (NAB TYPE AA – CHARCOAL BASE, SMOKE GREY COVER) LOAD WITH DYNAMAX DYN-1000X COBALT TAPE				
1000-7	7	10 Second		
1000-13	13	20 Second		
1000-25	25	40 Second	5.15	
1000-44	44	70 Second		
1000-57	57	90 Second		
1000-63	63	100 Second		
1000-75	75	2 Minute		
1000-94	94	2.5 Minute		DYNAMAX COBALT is recommended for critical stereo applications requiring elevated recording levels and extended high frequency headroom.
1000-113	113	3 Minute	5.75	
1000-132	132	3.5 Minute		
1000-150	150	4 Minute		
1000-169	169	4.5 Minute		
1000-188	188	5 Minute		
1000-207	207	5.5 Minute		
1000-225	225	6.0 Minute	6.25	
1000-244	244	6.5 Minute		
1000-282	282	7.5 Minute		
1000-300	300	8 Minute		
1000-375	375	10 Minute	6.75	
1000-394	394	10.5 Minute		
MASTER CART (NAB TYPE AA - RED BASE) LOADED WITH DYNAMAX SERIES 400X STANDARD TAPE				
380-E*	Empty (100/Box, Bulk)	——	3.55	
380-C	Empty (10/Box - 10 Pack)	——	3.75	
380-7	7	10 Second		
380-13	13	20 Second		
380-25	25	40 Second	4.40	
380-44	44	70 Second		
380-57	57	90 Second		
380-63	63	100 Second		
380-75	75	2 Minute		
380-94	94	2.5 Minute		Master Cart is recommended for critical stereo applications requiring standard operating level.
380-113	113	3 Minute	4.85	
380-132	132	3.5 Minute		
380-150	150	4 Minute		
380-169	169	4.5 Minute		
380-188	188	5 Minute		
380-207	207	5.5 Minute		
380-225	225	6.0 Minute	5.25	
380-244	244	6.5 Minute		
380-282	282	7.5 Minute		
380-300	300	8 Minute		
380-375	375	10 Minute	5.75	
380-394	394	10.5 Minute		

TERMS: C.O.D. or payment with order. □ Allow for Shipping charges. □ All prices are U.S. Dollars, F.O.B. Fidelipac. □ Orders of less than $100 incur a $10 surcharge. □ Minimum order is $50.

PART NUMBER	LENGTH IN FEET	TIME AT 7½ IPS	UNIT PRICE	RECOMMENDED APPLICATION
MODEL 300 (NAB TYPE A) LOADED WITH DYNAMAX SERIES 400X STANDARD TAPE				
140-E*	Empty (100/Box, Bulk)	——	2.65	
140-C	Empty (100/Box, 10 Pack)	——	2.85	
140-7	7	10 Second		
140-13	13	20 Second		
140-25	25	40 Second		
140-44	44	70 Second	3.65	
140-57	57	90 Second		
140-63	63	100 Second		
140-75	75	2 Minute		
140-94	94	2.5 Minute		
140-113	113	3 Minute		Model 300 is recommended for general purpose monophonic use.
140-132	132	3.5 Minute	4.15	
140-150	150	4 Minute		
140-169	169	4.5 Minute		
140-188	188	5 Minute		
140-207	207	5.5 Minute		
140-225	225	6.0 Minute	4.55	
140-244	244	6.5 Minute		
140-282	282	7.5 Minute		
140-300	300	8 Minute		
140-375	375	10 Minute	5.00	
140-394	394	10.5 Minute		
MODEL 350 (NAB TYPE A) LOADED WITH DYNAMAX SERIES 400X STANDARD TAPE				
350-E*	Empty (100/Box, Bulk)	——	3.30	
350-C	Empty (10/Box, 10 Pack)	——	3.50	
350-25	25	40 Second		
350-44	44	70 Second	4.35	
350-57	57	90 Second		
350-63	63	100 Second		
350-94	94	2.5 Minute		Model 350 is recommended for critical stereo applications where tuneable stereo phase control is desired. All Model 350 cartridges are adjusted to within 10° of 0° phase at 10kHz prior to shipment.
350-113	113	3 Minute		
350-132	132	3.5 Minute	4.80	
350-150	150	4 Minute		
350-169	169	4.5 Minute		
350-188	188	5 Minute		
350-207	207	5.5 Minute		
350-225	225	6.0 Minute	5.20	
350-244	244	6.5 Minute		
350-282	282	7.5 Minute		
350-300	300	8 Minute		
350-375	375	10 Minute	5.65	
350-394	394	10.5 Minute		
MODEL 600 (NAB TYPE B)				
149-E*	Empty (40/Box, Bulk)	——	5.20	Extended play. Maximum recommended length of load is 750 feet (20 minutes @ 7.5 i.p.s.).
149-C	Empty (36/Box, 2 Pack)	——	5.33	
149-XXX	Loaded	——	Contact factory	

NOTE: For 140, 350 and 380 Cartridges loaded with Dynamax Series 500FX HOLN Tape, add-H to part number and increase cost by 15%.

*Must be ordered in multiples of the standard package.

PART NUMBER	DESCRIPTION	UNIT PRICE	RECOMMENDED APPLICATION
MODEL 1200 (NAB TYPE C)			
150-E*	Empty (25/Box, Bulk)	7.47	Extended play. Maximum recommended length of load is 1500 feet (40 minutes @ 7.5 i.p.s.).
150-EP*	Empty with Pads (25/Box, Bulk)	7.87	
150-C	Empty (24/Box, 2 Pack)	8.15	
150-CP	Empty w/Pads (24/Box, 2 Pack)	8.55	
150-XXX	Loaded	Contact factory	

PART NUMBER	DESCRIPTION	STANDARD PACKAGE	UNIT PRICE
DELAY CARTRIDGES			
140-5DL	Model 300, 8 seconds, Curved Pressure Pads and Special Reel Lubrication	10	7.35
140-6DL	Model 300, 10 seconds, as described above	10	7.35
149-5DL	Model 600, 8 seconds, Curved Pressure Pads and Special Reel Lubrication	2	8.75
149-6DL	Model 600, 10 seconds, as described above	2	8.75

Accessories

PART NUMBER	DESCRIPTION	STANDARD PACKAGE	UNIT PRICE
BULK TAPE ERASERS			
400	Magnetic Tape Eraser, Table Top (110 volt)	1	110.00
400-2	Magnetic Tape Eraser, Table Top (220 volt)	1	150.00
395	BLANK-IT, Bulk Eraser, Hand Held (110 volt)	1	60.00
395-2	BLANK-IT, Bulk Eraser, Hand Held (220 volt)	1	75.00
395-SW	Switch for Blank-It Eraser	1	9.00
395-FP	6-Pack Felt Pads for Blank-It Eraser	1	2.50
ESD10	DYNAMAX® Eraser/Splice Detector	1	1050.00
WORLD STANDARD STUDIO WARNING LIGHTS			
340	ON AIR	1	50.00
340-S	ON AIR in French, German, Greek, Japanese, Polish, Russian, Spanish and Swedish (Specify when ordering)	1	50.00
340-REC	RECORDING	1	50.00
340-REC-S	GRABANDO (RECORDING in Spanish)	1	50.00
340-CUS*	Warning Light with Custom Legend	6*	68.60
346-0A	Lens Assy. for ON AIR Light	1	16.00
346-REC	Len Assy. for RECORDING Light	1	16.00
346-S	Lens Assy., other Standard Legends (Specify when ordering)	1	16.00
346-CUS*	Lens Assy., Custom Legends (Specify when ordering)	6*	21.00
CARTRIDGE STORAGE RACKS FOR NAB TYPE A AND AA CARTRIDGES			
WR-25	Wall Rack—Holds 25	1	30.60
90-3	Extra Mounting Bracket for WR-25	1	.75
MRB-1	Mobile Rack Base—Holds 8 WR-25 Racks	1	74.20
MR-200	Mobile Cartridge Rack—Holds 200	1	319.00
TR-48	Table Top Cartridge Rack—Holds 48	1	91.00
TR-96	Table Top Cartridge Rack—Holds 96	1	162.75

CARTRIDGE PARTS

Replacement parts are available for all Fidelipac Tape Cartridges. Contact your authorized Fidelipac distributor.

*Must be ordered in multiples of the standard package.