Presenting

Spotmaster

World's Leading Brand of Tape Cartridge Equipment

BROADCAST ELECTRONICS, INC.
— A FILMWAYS COMPANY —

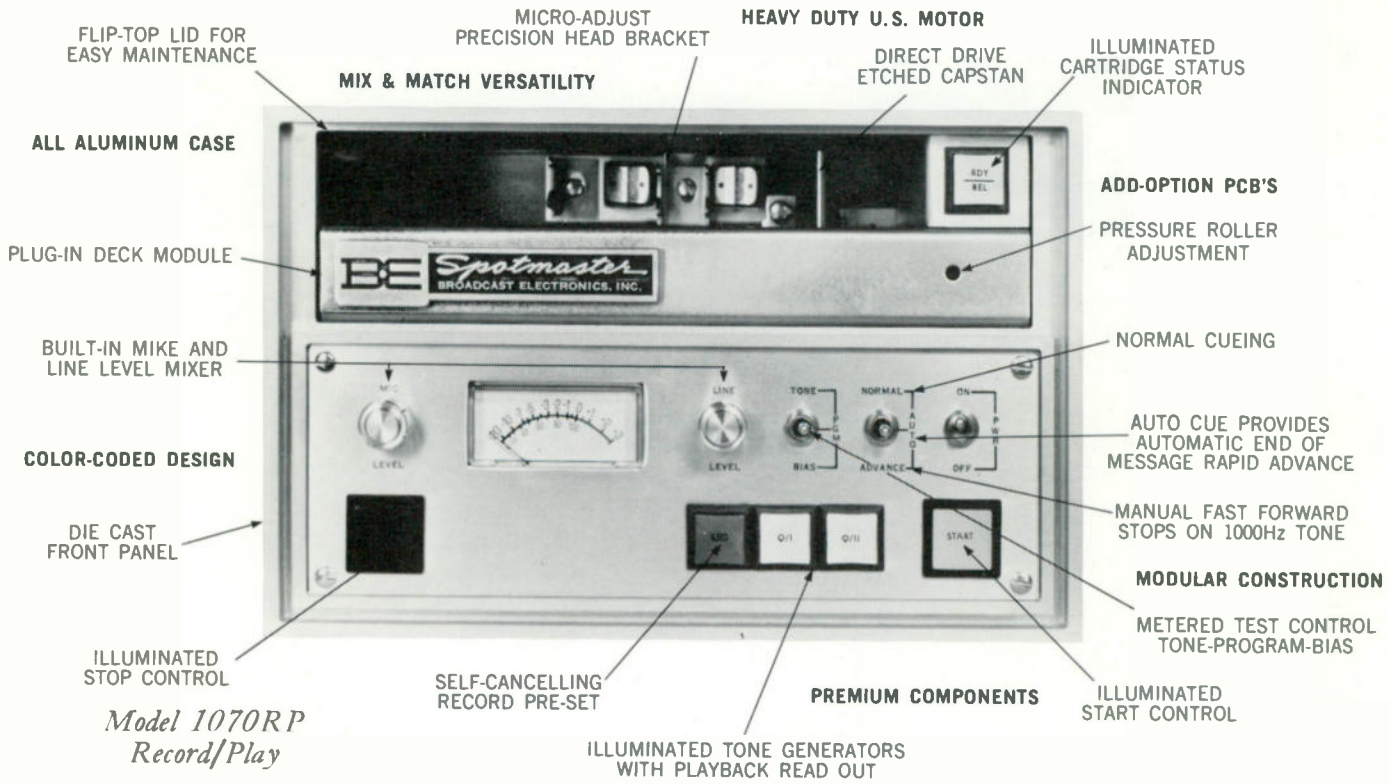
8810 BROOKVILLE ROAD • SILVER SPRING, MD. 20910

PHONE 301 - 588-4983 • CABLE "SPOTMASTER"

Spotmaster

Incomparable ten/70

Bold new standard for tape cartridge excellence



Model 1070RP Record/Play

SPOTMASTER + TEN/70 - NEW FORMULA FOR SUCCESS

Every new concept in tape cartridge engineering has been incorporated into the Ten/70 line. Spotmaster's long years of leadership and specialization have created the ultimate in equipment design. These rugged, versatile models represent the superior at sensible prices. Full year warranty.

SPECIFICATIONS

Equalization: NAB Standard
Frequency Response: 50-15,000Hz ±2db
30-18,000Hz ±4db
Distortion: 1% or less @ 0 VU 400Hz
Signal to Noise: −57db or better
Wow & Flutter: 0.2% or better
Cross Talk: Cue/Program −55db or better
Output: −10dbm/0dbm/+8dbm Switchable
Adjustable 10dbm each position to maximum +18dbm
Output Impedance: 600 ohms balanced
Alternate strapping for 150 ohms
Speed: 7.5 IPS accurate 0.2% or better. Fast Forward to 22.5 IPS (Other speeds optional)
Motor: Direct Drive Hysteresis Synchronous
Cue Tones: Primary – 1,000Hz (Stop/Re-Cue)
Tertiary – 8kHz (Auxiliary) (Optional)
Secondary – 150Hz (End of Message) (Optional)
Cueing Accuracy: 0.1 second

Capacity: Size A or B NAB Standard Cartridge
*Input: Line −24dbm to 0dbm or 0dbm to +30dbm Switchable @ 10,000 ohms bridging balanced
Mike 0.1mv @ 150 ohms balanced (Optional)
Power Requirement: 105-125V ac/60Hz/50W (50Hz Optional @ 125V or 220V)
Controls: Start, Stop, On–Off, *VU Meter, Cartridge Release, *Record Preset, *Line Level, *Mike Level, Advance
Optional: Cue I (150Hz) Generator*/Sensor
Cue II (8kHz) Generator*/Sensor
Auto Cue Automatic Advance
Size: 5-3/8"H, 8½"W, 11"D
Shipping Weight: 15 lbs.
*Applies to RP Models Only

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MODEL 1070P
PLAYBACK

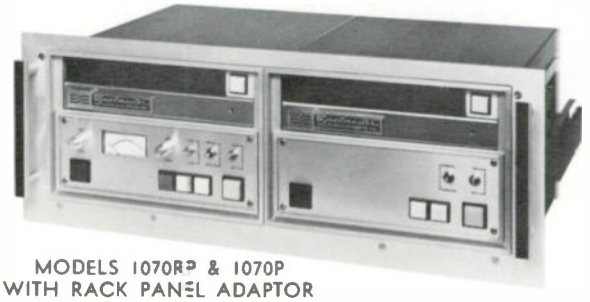
This top-of-the line playback model, like all Ten/70 units features compact and lightweight silhouette styling . . . Stack them, rack them, or use alone where space is critical. All Ten/70 models offer manual fast forward enhanced by optional Auto-Cue providing automatic high speed advance to next message. Optional tone sensors, too, for versatile auxiliary switching.

MODEL 1070RP-DL
RECORD/PLAY/DELAY

Our pioneering concept to offer three units in one is retained in this model . . . Use it as a recorder . . . switch to play only . . . or flip a switch for DL Mode allowing for delayed programming of 5-sec. to 16-min. Ideal for telephone talk shows . . . Censor objectionable material instantly with Mute control.

MODEL 1070RP-S
STEREO RECORD/PLAY

Stereo's an old word at SPOTMASTER . . . we've built more of these for broadcasters than all others combined. Ten/70 meets the most demanding needs of today's FM programming and does it all in half the space of a standard rack unit! The full range of Ten/70 options is available in this unit, too.



MODELS 1070RP & 1070P
WITH RACK PANEL ADAPTOR

Here's where Ten/70 leaves the others behind. Take any two units, add our exclusive rack panel adaptor and you have a pair ready for instant rack-mounting. No cutting, drilling or expensive modification. Chassis rolls out for easy service and you can add or remove a unit instantly.

MODEL 1070RP WITH RACK
PANEL ADAPTOR & RM-10 CARTRIDGE RACK

Want rack-mounted convenience in odd numbers? Add the RM-10 storage rack to any Ten/70 model, install in a rack panel adaptor and you have built-in storage convenience for 10 Series 300 Cartridges all in just 7-inches vertical space.

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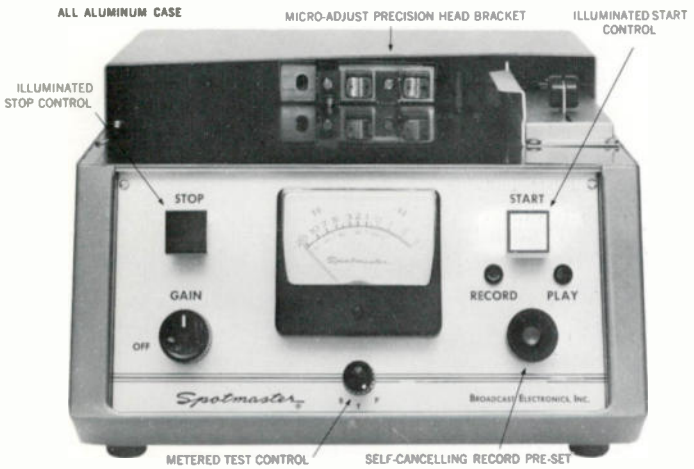
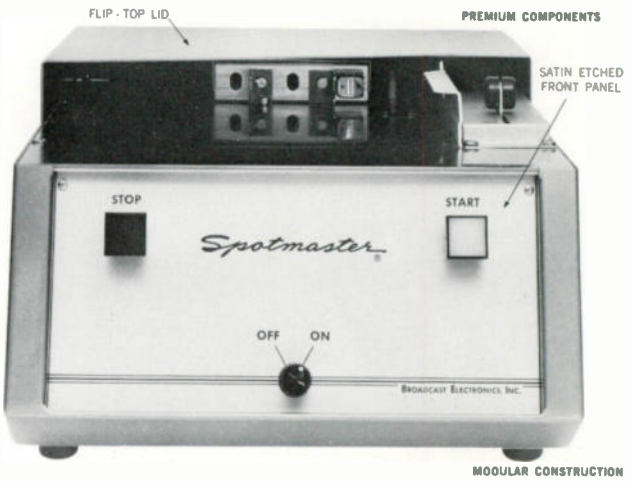
The COMPACT 500 Series

Model C . . . Traditional Favorite . . . Moderately Priced



THE SPOTMASTER 500 C
Combination Recorder-Playback Unit



THE SPOTMASTER 505 C
Companion Playback Unit

C MODELS . . . MEET OR EXCEED NAB SPECIFICATIONS

Model C equipment includes models to match every programming need: record-playback and play-back-only . . . compact and rack-mount. Specifications and performance equal or exceed NAB requirements. Features include new styling and ease of operation, all silicon solid-state modular design, choice of 1, 2 or 3 automatic electronic cueing tones, separate record and play heads, with adjustable headmounts, A-B monitoring, biased cue recording, triple zener controlled power supply, transformer output, automatic record pre-set. Full Year Guarantee.

SPECIFICATIONS

Equalization: NAB Standard.
Frequency Response: ±2 db 50–12,000 Hz @ 7.5 IPS.
±3 db 40–15,000 Hz @ 7.5 IPS.
Distortion: 2% or less @ O VU recording level.
Signal to Noise Ratio: 50 db or better.
Wow and Flutter: 0.2% or less @ 7.5 IPS.
Tape Speed: 7.5 IPS.
*Input (Line): 0.1 Volt (Bridging)
*Input (Microphone, 150 ohms): 0.5 mv. (compact models only)
Output: +4 dbm @ 600 ohms. (Transformer output)
Cue-Tones: Primary–1,000 Hz (stop)
Cue-Trip #1– 150 Hz (optional)
Cue-Trip #2–8,000 Hz (optional)
Cueing Accuracy: 0.1 second.
Starting Time: 0.05 second.
Power Requirement: 105-125 V ac, 60 Hz, 50 watts (115/220 ac, 50 Hz optional extra).
Playing Time: 1 second to 31 minutes @ 7.5 IPS.
Motor: Hysteresis Synchronous (Heavy Duty U.S. Made)
Controls: *Gain
*Automatic Record Pre-set
*VU Meter Selector
Start Switch
Stop Switch
Output Level
On-Off
Size: 10-1/4"W, 12-3/4"L, 6-5/8"H.
Weight: 18 lbs. (model 500) 15 lbs. (model 505)
Finish: Silver Gray and satin etched aluminum panel.
**Applies to Model 500 combination Record/Play units only.*

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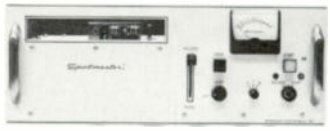


MODEL 500CR
RECORDER/PLAYBACK

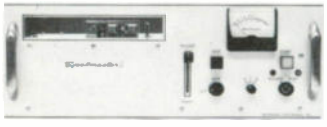
500 Series rack-mounted models offer the same dependable feature found in compact units in a handy roll-out version 19" wide by 7" high. Heavy-duty chassis slides mount to standard equipment rack allowing unit to be removed for routine maintenance . . . Model 500CR specifications same as compact model 500C except for dimensions, weight 23 pounds and optional mike pre-amp.

MODEL 505CR
PLAYBACK

This rack-mounted playback unit, identical in size and mechanical make-up to the 500CR, features front panel load lever for operating convenience as well as other standard SPOTMASTER features . . . Series C rack units handle all NAB cartridge sizes for maximum playback capacity.

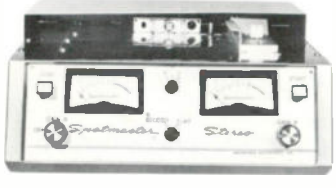
MODEL 500CDL
RECORDER/PLAYBACK/DELAY

The SPOTMASTER DL concept makes use of standard cartridges of pre-determined lengths to record, store and playback any type of programming material . . . The unit also converts immediately at the flip of a switch to a standard recorder/playback . . . No need to buy a unit which will only perform the delay function . . . SPOTMASTER gives you this feature for only slightly more than the cost of a regular cartridge machine.



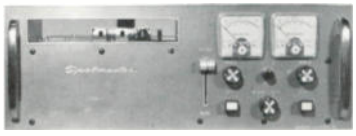
MODEL 500CRDL
RECORDER/PLAYBACK/DELAY

Here's the 500CR-DL offering the versatility of delayed programming in the 500 series rack-mounted chassis . . . Instant front panel access to muting and conversion controls . . . A unit built to be your station's work horse at a common sense price.



MODEL 500BS
RECORDER/PLAYBACK/STEREO

For the stereo-minded station here's familiar SPOTMASTER compact styling . . . Big enough to do the job . . . small enough to fit just about any situation . . . Two large easy-to-monitor VU meters and dual channel gain controls add to the feature-packed front panel . . . 22 lbs. . . . Playback stereo only on the 505B-S, same size as Model 505C.



MODEL 500BRS
RECORDER/PLAYBACK/STEREO

Full rack mounted stereo record/play features in the same space as the mono counterpart . . . The 500BR-S offers the full range of SPOTMASTER features completely within NAB specifications. Rack mounted stereo playback available, too in Model 505BR-S.

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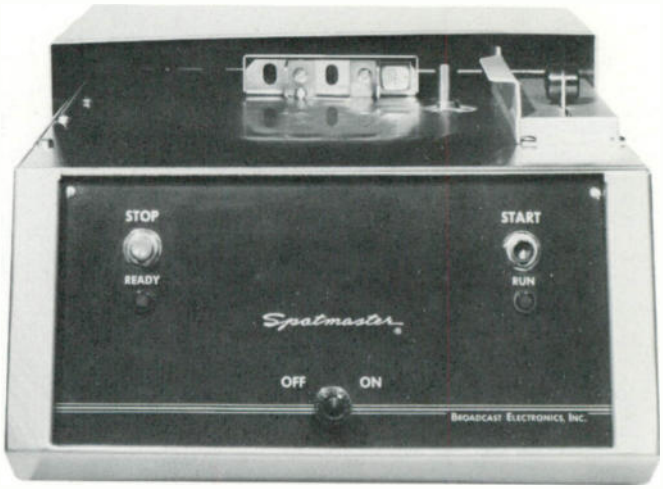
The COMPACT 400 Series

Dependability at lowest possible cost

THE SPOTMASTER 400 A
Combination Recorder-Playback Unit



THE SPOTMASTER 405 A
Companion Playback Unit

TRADITIONAL SPOTMASTER PERFORMANCE FOR THE ECONOMY-MINDED STATION

Don't let their low price fool you. These all-silicon solid state SPOTMASTER 400's are built up to a standard not down to a price. Offered in record-playback (Model 400) and playback-only (Model 405) versions, even the smallest station can enjoy SPOTMASTER pushbutton broadcasting. Now supplied with adjustable head mounts at no extra cost. All units carry a 90-day parts and labor guarantee.

SPECIFICATIONS

Equalization: NAB Standard.
Frequency Response: ±2 db 50–12,000 Hz @ 7.5 IPS.
Distortion: 2% or less @ 0 VU recording level.
Signal to Noise Ratio: 50 db or better.
Wow and Flutter: 0.2% or less @ 7.5 IPS.
Tape Speed: 7.5 IPS.
*Input (Line): 0.1 Volt (Bridging) (Mike input optional)
Output: —10 dbm @ 600 ohms. (Transformer output optional extra.)
Cue-Tones: Primary—1,000 Hz (stop)
Cue-Trip #1— 150 Hz (optional)
Cueing Accuracy: 0.1 second.
Starting Time: 0.1 second.
Playing Time: 1 second to 31 minutes @ 7.5 IPS.
Power Requirement: 105-125 V ac, 60 Hz, 45 watts (115/220 ac, 50 Hz optional extra).
Power Supply: Zener Controlled. Bridge Rectifier.
Motor: Hysteresis Synchronous (Heavy Duty U. S. Made)
Controls: *Gain
*Record/Play/Switch
Start Switch
Stop Switch
Output Level
On-Off
Size: 10-1/4"W, 12-3/4"L, 6-5/8"H.
Weight: 18 lbs. (model 400A) 15 lbs. (model 405A)
Finish: Silver gray with ebony panel.
**Applies to Model 400 combination Record/Play units only.*

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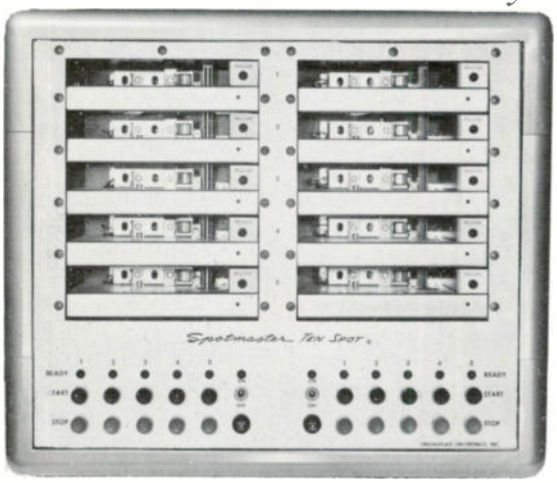
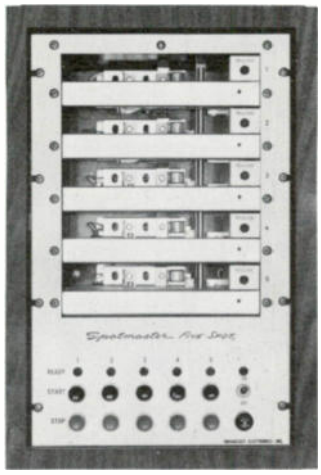
TEN SPOT. *Multiple Cartridge Playback Systems* FIVE SPOT.



MODEL 610B



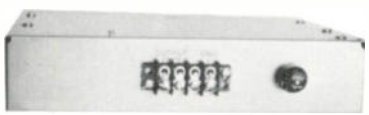
MODEL 605B

SPOTMASTER TEN•SPOT and FIVE•SPOT multiple cartridge units are capable of manual operation or may be incorporated into programmed automation systems making use of one, two or three NAB standard cueing tones.

A flywheel loaded common capstan supplies tape motive force, the flywheel in turn being driven by a heavy duty hysteresis synchronous motor. Individual power supplies are provided for each solenoid thereby making each deck independent of the other and, in the TEN•SPOT, each module of five decks is completely separate and independent of the other five deck module both mechanically and electronically. Each reproduce channel is separately equipped with cueing amplifier/s and a program amplifier with the output level adjustable to +4 dbm by means of locking type controls. The amplifier power supply is transistorized and zener regulated.

Facilities are provided on the rear panel for remote control and for inter connections between channels so as to permit automatic sequencing from channel to channel. All amplifiers are plug-in modular units. Enclosed plug-in relays are used throughout.

OPTIONAL ACCESSORIES



SW 5A AUDIO SWITCHER

Provides a single balanced output automatically muting non-active channels.

MRM 600 RECORDING MODULE

Remove one playback deck insert MRM 600 for instant conversion to record capability.

BE 106 REMOTE CONTROL

Illuminated Start/Stop switches plus "electronic bookmark" sequence indicator.

SPECIFICATIONS

Equalization: NAB Standard

Frequency Response: ±2 db 50 - 12,000 Hz
±4 db 50 - 15,000 Hz

Distortion: 2% or less @ Normal recording level

Signal to Noise Ratio: 55 db, ref. 3% THD

Wow and Flutter: .2% or less (RMS)

Tape Speed: 7½ ips (3¾ ips available)

Output Level: Adjustable to +4 dbm @ 600 ohms

Output Load Impedance: 600 Ohms (emitter follower)
*600/150 Ohms (transformer output)

Cueing Accuracy: .1 second

Cueing Tones: Primary - 1,000 Hz (Stop/Re-Cue)
*Cue Trip #1 - 150 Hz (end of message)
*Cue Trip #2 - 8,000 Hz (auxiliary)

**Optional Features*

Playing Time: 1 sec. to 16 mins. per deck @ 7½ ips using NAB type A & B cartridges

Capacity: FIVE•SPOT - 5 type A or B cartridges
TEN•SPOT - 10 type A or B cartridges

Circuitry: All silicon solid state

Power Supply: Transistor filtered, zener regulated

Power Requirement: 108-125 VAC, 60 Hz,
75 watts - FIVE•SPOT
150 watts - TEN•SPOT

Dimensions: FIVE•SPOT - 9-13/16" W X 15" D X 15¾" H
TEN•SPOT - 19" W X 15" D X 15¾" H

Mounting: TEN•SPOT - 19" rack (Model 610B)
FIVE•SPOT - Walnut Formica Cabinet (Model 605B)
FIVE•SPOT - In 19" rack panel with cartridge storage cubicle (Model 605BR)

Weight: FIVE•SPOT - 44 pounds
TEN•SPOT - 89 pounds

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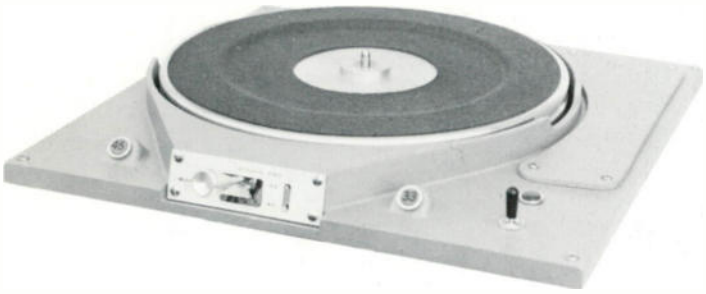
BROADCAST ELECTRONICS TURNTABLES



STUDIO-PRO B — 2 SPEED

- Precision engineered for rugged, quiet dependable operation.
- Solid cast aluminum chassis and turntable.
- Illuminated speed indicators.
- Tightest cue potential in the industry.
- "Direct Drive" . . . no belts

SPECIFICATIONS

Dimensions: 15½" x 15½" Weight: 20 lbs.
Wow & Flutter: Less than .2% Motor: Hysteresis
Rumble: 38 db below NAB level @ 33 and 45 RPM
Bearings: Bronze Oilite throughout
Power Requirement: 110V AC 60Hz (50Hz Available)

ALSO FEATURING A COMPLETE LINE OF GRAY AND REK-O-KUT TONE ARMS.

ELECTRO-VOICE MICROPHONES

635A Broadcast Dynamic
Popular light-weight mike for hand or stand use. Omnidirectional pattern with 80-13,000Hz response. Low impedance. Comes with clamp and neck cord.

654A Slim Trim
An omnidirectional dynamic microphone with excellent 50-15,000Hz response. Use on stand, hand-held or lavalier. Comes with clamp and neck cord.

RE 15 Super Cardiod
Offers virtually identical response at any pattern position. A rugged professional mike for the most exacting requirements.

RE 10 Super Cardiod
Similar to RE15 but with less rigid specs. Response 80-13,000 Hz. Weighs only 6 oz. hand held. Comes with case and standard stand clamp.

RE55 Wide-Range Dynamic
This great new mike offers wide smooth response 40-20,000Hz, low sensitivity to shock and is one of the most versatile omnidirectional models in the E-V line. Every station needs at least one.

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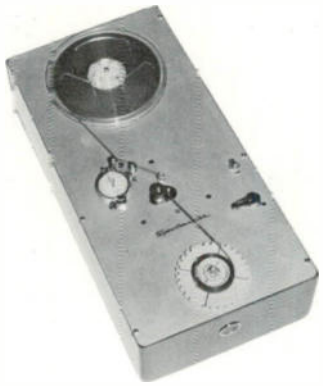
TPIB TAPE CARTRIDGE WINDER



The Spotmaster Tape Cartridge Winder is a rugged, dependable and field tested tape cartridge winder which fills a need in every station using cartridge equipment. It is no longer necessary to limit your cartridge operation by using only stock sizes or to tie up your conventional tape equipment to load tape cartridges. The Spotmaster Winder, will handle all reel sizes and runs at 22½" per second. Worn tape in old cartridges is easily replaced. New or old cartridges may be wound to any length. TP60B Tape Timer installed, optional.

SPECIFICATIONS:

Size: 10" W x 20" L x 6¾" H
Weight: 9½ lbs.
Power Requirements: 117 v ac, 50/60 Hz, 30 watts
Winding Speed: 22½ IPS
Drive Motor: 4 pole induction
Take Up Reel: Up to 7 1/4" Dia.
Capacity: Handles supply reel up to 3600' 1 mil lubricated tape.

TT20B EQUALIZED TURNTABLE PREAMPLIFIER

TT-20B
(Equalized Turntable Preamplifier)

PR-4C
(Power Supply)

SPECIFICATIONS: (TT-20B)

SIZE:	2 1/2" x 2 1/2" x 5 1/2" overall
WEIGHT:	8 ounces
POWER REQUIREMENTS:	Min. 6 volts DC @ 3.75 ma Max. 20 volts DC @ 20 ma
INPUT:	Variable Reluctance Pickup Cartridge (VRII, Hi Z)
INPUT LEVEL:	45 mv max
OUTPUT:	500 ohms or higher (emitter follower)

with transformer output, optional extra

OUTPUT LEVEL:	−12 dbm (15 db peak factor)
DISTORTION:	Less than 1%
NOISE LEVEL:	Better than 65 db below rated output.
FREQUENCY RESPONSE:	± 2 db30–15000 Hz (NAB Test record, VRII Hi Z pickup cartridge

The Model PR-4C transistor power supply is available for use with the TT-20B, if desired. Four individually filtered 18 volt DC power sources are provided to power up to four TT-20B preamplifiers.

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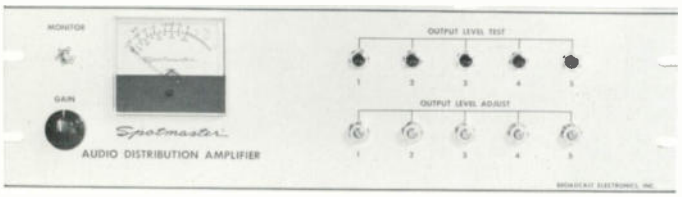
AD1B AUDIO DISTRIBUTION AMPLIFIER



The SPOTMASTER Audio Distribution Amplifier is specifically and meticulously designed for the purpose of distributing audio signals to multiple points within a studio system or to telephone lines. Therefore, this unit is readily adaptable to AM, FM, and TV broadcast stations plus recording and audio studios.

Visual (VU meter) and aural (headphone jack) monitoring of the input signal at the output of the line amplifier is also provided, as well as separate monitoring and level controls for each output.

The five highly isolated output channels of the AD1B are expandable up to 25 output channels by the addition of AD1B-X Extenders, which also contain the same aural monitoring facilities as the AD1B.

Both units are available with either optional output transformers or standard unbalanced emitter follower output, with an input transformer common to both. Input circuitry may be operated either, bridging or matching and balanced or unbalanced.

SPECIFICATIONS

Input Impedance: Matching: 600Ω, Bridging: 10KΩ
AD1B-X: 10KΩ, unbalanced
Output Load Impedance: 600Ω (optional 150/600Ω)
Input Level: Max: +30dbm, AD1B-X: +5dbm
Min: Matching −26dbm, Bridging −10dbm
Output Level (per channel): +4dbm (+14dbm peak)
Gain: Matching: 30db, Bridging: 14db
AD1B-X: Unity
Frequency Response: ±1db @ 30-15KHz, ±2db @ 20-20 KHz
Distortion: Less than 1%
Noise: 65db or better, below rated output.
Channel Separation: 60db
Ambient Temp.: (Max.) 55°C
Power: 115 VAC, 50/60 Hz, 50 watts, AD1B-X: 40 watts
Dimensions: 19"W X 5¼"H X 7⅛"L
Weight: 9½ lbs., AD1B-X: 8 lbs.
Finish: Clear anodized brushed aluminum, with black lettering.
Controls: 1 gain, 5 output level, 5 meter monitor (momentary)
AD1B-X: 5 output level; 5 momentary meter switch
Connections: Rear panel barrier strips.

Programming Accessories

REMOTE CONTROL UNITS

BE 101 & 102 are designed to externally control up to three single deck units. BE-101 offers start function only on convenient desk-top panel with 15-feet of cable. BE-102 adds stop controls.

BE-105 is exclusively designed for TEN•SPOT or FIVE•SPOT Systems. Completely illuminated start and stop controls in handsome console.

BE-106 adds sequence indicators for logic memory of next deck scheduled.

TELCO TELEPHONE ANSWERING UNITS

TELCO III A

All SPOTMASTER playback units can be adapted for automatic telephone response. Install the Telco IIIA between the unit and a standard Bell System Recorder Coupler. Allows pre-recorded messages, advertising, audio reports, etc. to automatically respond to incoming calls. Add the TC-4 Counter for automatic registration of all calls. SPOTMASTER also builds complete telephone response systems. Call or write for specific information concerning special requirements.

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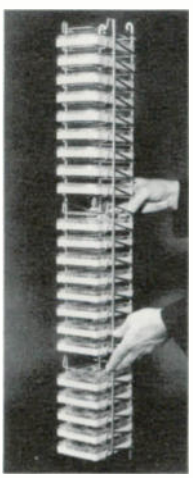
TAPE CARTRIDGE STORAGE EQUIPMENT

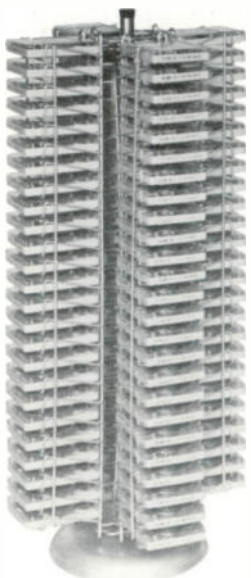
WIRE UNITS

LS-200

LS-200 LAZY SUSAN
Holds 200 cartridges on rotating stand. Ideal for large storage situations requiring mobility. Equipped with 4 heavy-duty casters and constructed of rugged steel rod finished bright zinc. Each individual RS-25 section is removable 51¼" high, 20½" diameter.



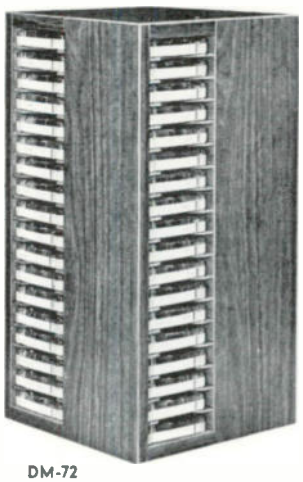
RS-25 RACK SECTION



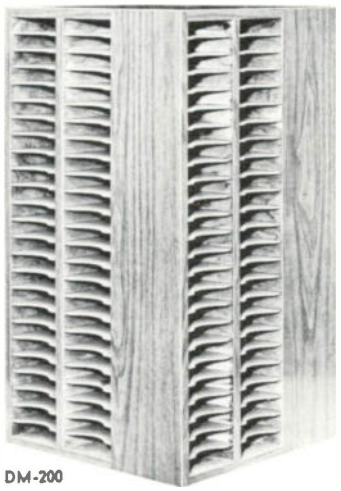
LS-100

LS-100 LAZY SUSAN
Designed for table top use. Holds 100 cartridges with 4 removeable RS-25 sections. Weighted base. Ball bearing rotating stand. 39" high, 15" diameter.

MODULAR UNITS

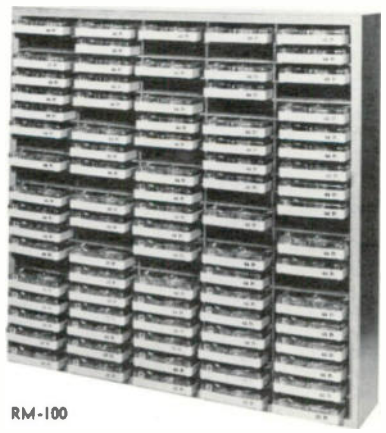


DM-72



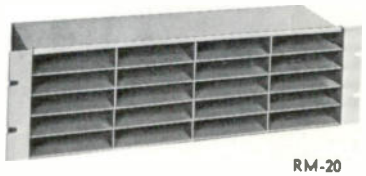
DM-200

DESK MOUNT MODULES — Rotating racks present four-sided storage in attractive Walnut Formica. DM-72 holds 72 cartridges, measures only 22" x 11" x 11". DM-200 provides 200 storage slots. 29½" x 15¾" x 15¾"



RM-100

RM-100 WALL MOUNT RACK — Holds 100 series 300 cartridges in minimum space. Walnut Formica trim. 2' x 2' x 4-3/8".



RM-20

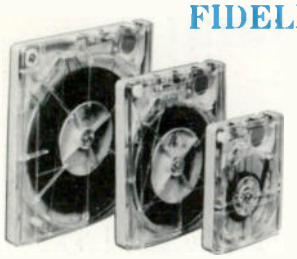
RM-20 is designed for standard 19" rack installation. Put vacant rack space to good use. Holds 20 series 300 cartridges in only 5¼" vertical space. Made of aluminum.

BROADCAST ELECTRONICS, INC.

8810 Brookville Road, Silver Spring, Md. 20910, Phone 301—588-4983

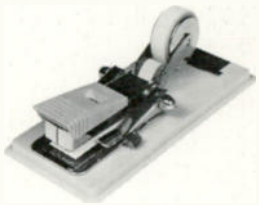
Spotmaster

FIDELIPAC CARTRIDGES



Series 300, 600, 1200 available empty or in assorted pre-loaded sizes . . . Custom winding provided . . . Complete stock of cartridge replacement parts. No minimum orders.

TAPE SPLICER



Model TS7S by Robins is ideal for cartridge splicing . . . Two-position cutting assembly cuts tape on 45° bias then shifts for "Gibson-Girl" trim . . . Comes complete with tape . . . Extra splicing tape, too, in two convenient sizes.

LUBRICATED TAPE

World-renowned Scotch Recording Tape type 156 specifically recommended by Spotmaster for tape cartridge use . . . A heavy-duty tape featuring a special lubricated surface for cleaner, longer tape life . . . 1800 feet/7-inch reel or 3600 feet/NAB Hub.

BE-903 CLEANING FLUID

Our exclusive special blend was developed to meet stringent broadcaster requirements . . . Quickly dissolves accumulated tape oxides . . . Will not harm heads or rubber parts . . . Safe to use . . . 4 oz. bottles, 16 and 32 oz. cans.

200C/220C

300C

TAPE ERASERS

Handy bulk erasers essential for cartridge users . . . Assures clean, noiseless tape . . . Model 200C hand held, easy to use with 6-foot cord and pushbutton thumb switch . . . Model 220C same at 230VAC for overseas use . . . Model 300C heavy duty table-top unit with spindle . . . Erases cartridges and all reels up to 10½ inches diameter, 1-inch wide.

HEAD DEMAGNETIZER

Indespensable for proper head maintenance to insure maximum frequency response, low tape noise . . . Special finished pole piece will not damage head surface . . . High impact molded epoxy case . . . 117VAC-50/60Hz.

TAPE TAGS

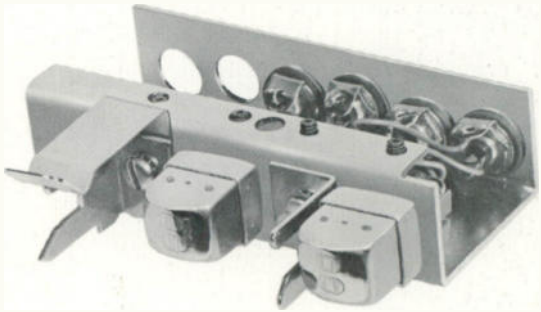
Handy self-adhesive labels especially die-cut and color-coded for cartridge cataloging . . . and is easy to remove . . . Room for three typewritten lines . . . Sheets of 8 tags each . . . Eight distinctive colors.

ALIGNMENT TAPES

Specially pre-recorded cartridges contain 10 kHz alignment tones . . . Available mono or stereo . . . NAB Test Tape No. 3 contains complete program test frequencies consistent with NAB cartridge specifications.

TP 60-B TAPE TIMER

Precise tape or speed measuring device . . . Scale calibrated in minutes and seconds at 7½ or 3¾ IPS . . . Features reset knob and strobe disc for speed checks . . . Use with reel-to-reel or cartridge units.



ADJUSTABLE HEAD BRACKET

The Spotmaster Adjustable Head Bracket makes quick work of head alignment . . . Fits all Spotmaster models and uses standard rear-mount heads. . . Specify one or two head mounts when ordering.

BROADCAST ELECTRONICS, INC.

8810 Brookville Road, Silver Spring, Md. 20910, Phone 301—588-4983

PRINTED IN U.S.A. 8M/3-71

BROADCAST ELECTRONICS INC.

DURA TRAK 90™

Rugged, Reliable Performance

DURA TRAK 90...


DURA TRAK 90
DURA TRAK 90
DURA TRAK 90
5.5 MIN. 207 FT
DURA TRAK 90
DURA TRAK 90
CHANNEL 1
CHANNEL 2
CHANNEL 3
10S250

DURABILITY FOR THE LONG RUN

DURA TRAK 90™

What are the most important criteria in selecting a broadcast cartridge machine? Ask a air personality or programmer and the answer will probably be "audio quality" or "ease of use". Ask an engineer and you'll surely hear "durability and easy maintenance". And the front office is naturally concerned with the bottom line.

Broadcast Electronics—with thirty years of experience in broadcast cartridge machine design and production—is proud to present the cartridge machines that satisfy all these requirements: the Dura Trak 90.

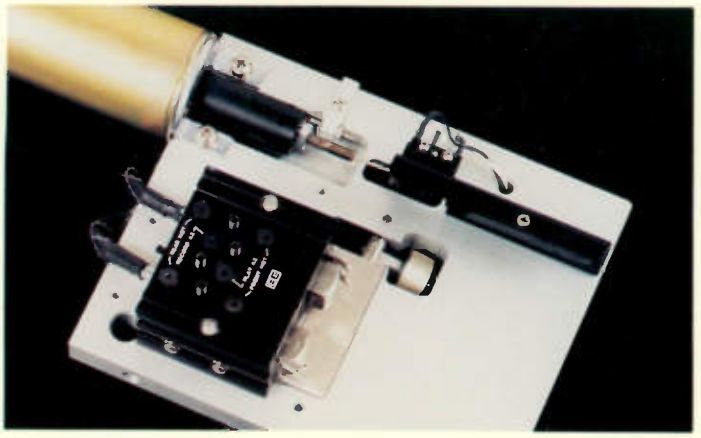
Available in record/play and playback configurations, Dura Trak 90 cart machines offer sparkling audio performance to meet the demands of today's higher-quality audio sources, and today's more demanding listener expectations.

Dura Trak 90 gives you all the features broadcasters need most, at a most affordable price. And perhaps most important in the non-stop world of radio and television, Dura Trak 90 is built to deliver long term durability. Its ultra-rugged mechanical design is derived from Broadcast Electronics Phase Trak 90—the most advanced cartridge machine ever made.

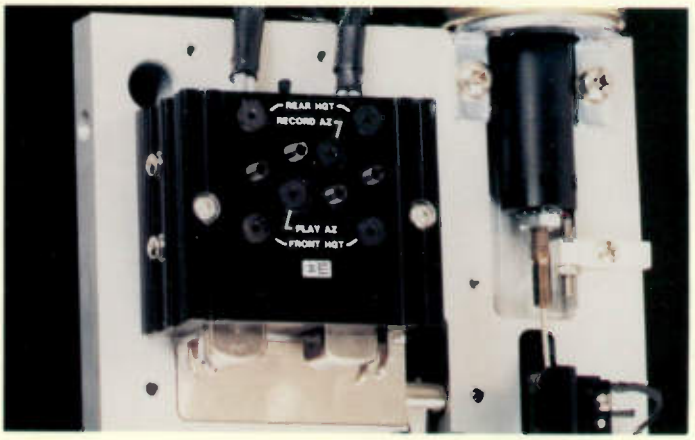
FEATURES

- Superior Cartridge Guidance System
- Excellent Audio Performance
- Rugged Direct Drive Motor
- Phase Lok V Head Block
- Machined ½"-Thick Aluminum Deck Plate
- Rugged Glass Epoxy PC Board Construction
- Low Voltage, Current Regulated Solenoid
- Fast Forward Standard
- Three Cue Tone Sensing Standard
- Cart-Previously-Played Lockout
- Toroidal Power Transformer
- Instrumentation-Quality Balanced Inputs
- Fully Floating Active Balanced Outputs
- Automatic Audio Mute Switching
- Front Panel 1 kHz Record Defeat
- Auxiliary Start Pulse
- Pressure Roller Cleaning Mode

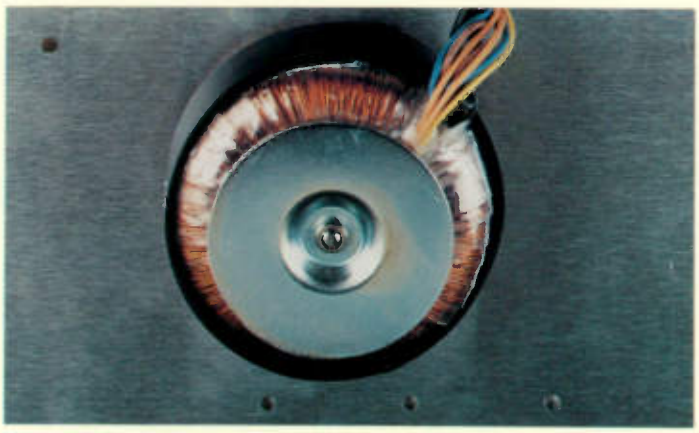
DURA TRAK 90...



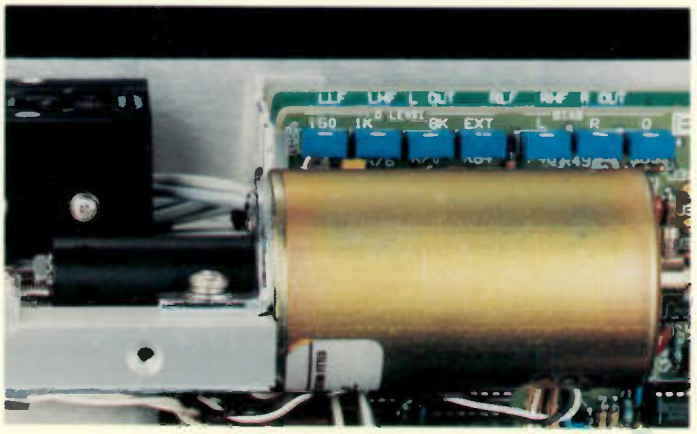
Cartridge Guidance System—Right and left side guides make contact with the cartridge as it enters the deck and apply proper positioning. Two spring loaded top guides provide downward pressure on the sidewalls of the cart, not the cover, thus preventing top cover deformation. Cart insertion is ultra-smooth and positive.



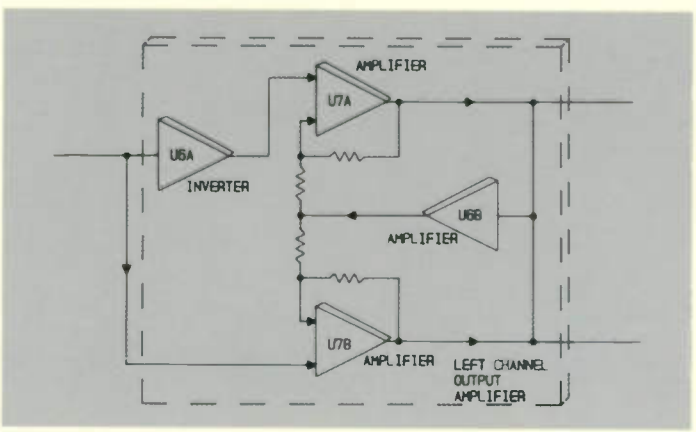
Phase Lok V Head Block—The Phase Lok V head block's locking azimuth adjustment is independent of the height and zenith adjustment. Perfect head alignment can be easily and quickly maintained over time.



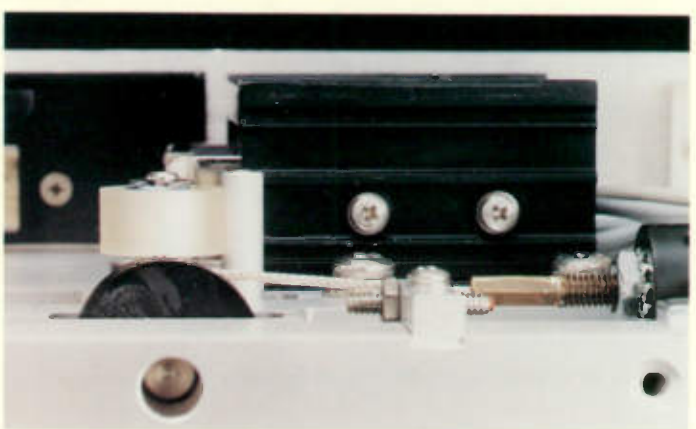
Toroidal Power Transformers—BE engineers specified toroidal power transformers instead of standard frame transformers for the Dura Trak 90. Benefits of this approach include cooler operation for longer component life and reduction of stray magnetic fields for superior signal-to-noise performance.



Low Voltage, Current Regulated Solenoid—The pressure roller solenoid is a frequent trouble spot in many cartridge machine designs. BE eliminated potential problems with careful design: The driver circuits "pulse" the solenoid coil for quick, strong pull and then relax to a lower regulated holding current. The result: Two-thirds less heat generation than many other machines.



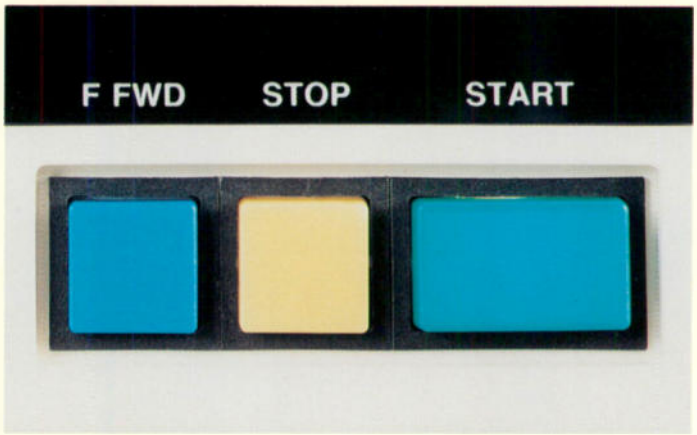
Active Balanced Inputs and Outputs—The Dura Trak 90 uses instrumentation amplifier-quality active balanced inputs and outputs, which provide excellent common mode rejection without the sonic limitations of transformers. The units' low driving impedence of 70 ohms accommodates long lines.



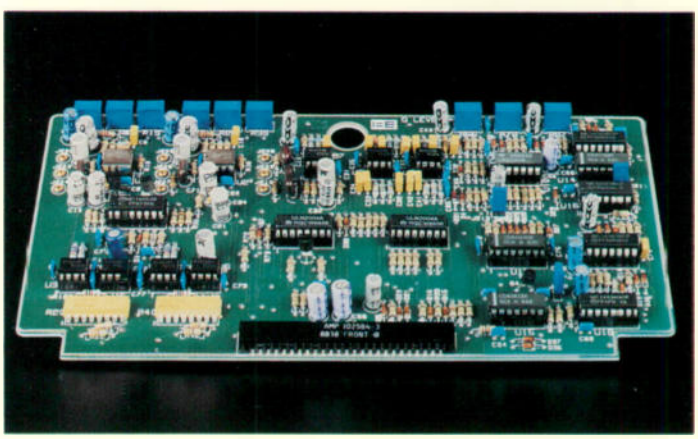
Safely Pulls Any Tape—Modern cartridge designs and "hot" tape formulations require significantly stronger tape pulling capability. Dura Trak 90's direct drive motor, optimized solenoid and pressure roller deliver a full 1.25 pounds of tape pull, maintaining a comfortable safety factor against tape slippage even with "tight" carts.

RUGGED, RELIABLE PERFORMANCE

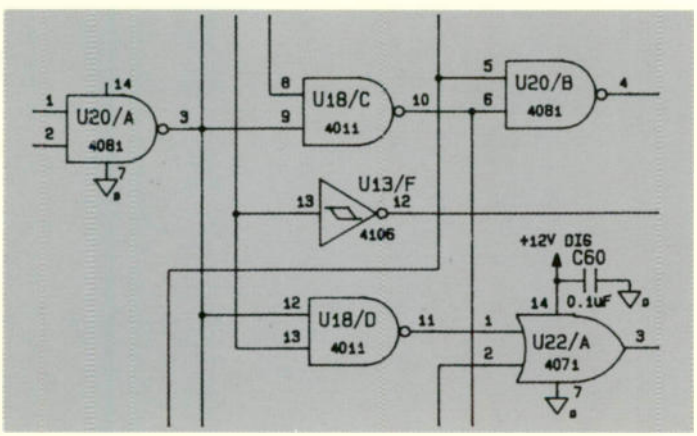
■ **Rugged Construction**—The Dura Trak chassis is constructed with .125 inch anodized aluminum throughout—more than twice the thickness found in some competitors' units—and the deck plate is a full ½ inch thick. What's more, the front panel is a solid metal casting to take everything an energetic DJ can dish out.



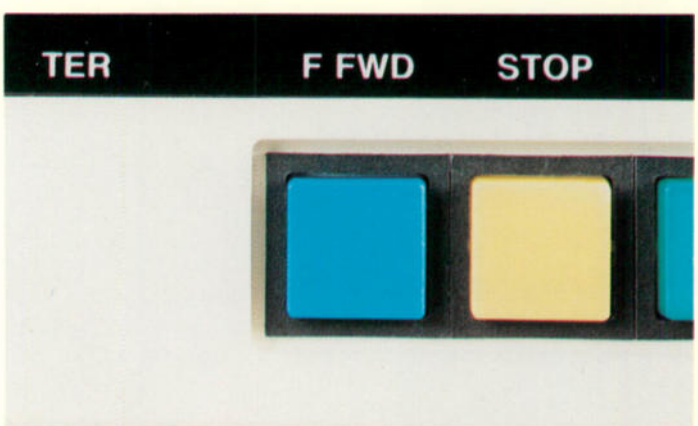
■ **Hall Effect Switches**—For added reliability, the START, STOP and FAST FORWARD pushbuttons are Hall effect switches that provide positive response with no physical contacts for reliable, silent day-in/day-out operation.



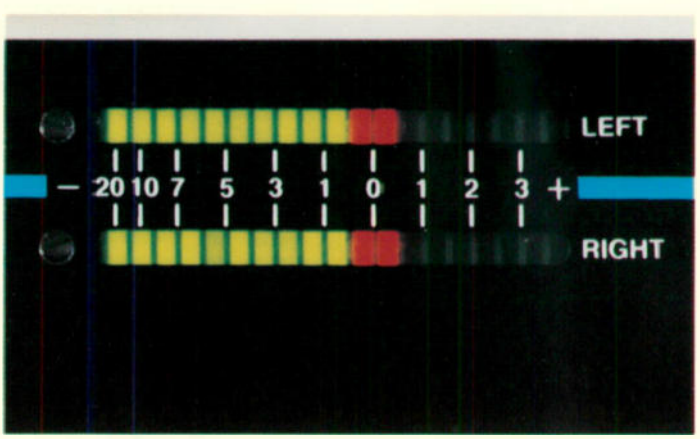
■ **G-10 Glass Epoxy PC Boards**—All board connectors have gold-to-gold pin and socket contacts, the most reliable type available. And to make trouble-shooting easy, all component legends are silk-screened on the board and all IC's are socketed throughout.



■ **Proven CMOS Logic**—Our CMOS logic circuits are straightforward designs that use standard off-the-shelf components. By avoiding TTL IC's, BE engineers significantly reduced heat dissipation, and noise immunity is improved 300%.



■ **Fast Forward Standard**—Busy operators usually need to "clear the deck" as soon as possible after a cart is played. The Dura Trak's standard Fast Forward feature can reduce the wait for a cart to cue by as much as 300%.



■ **Auto-Switching VU Meters**—The Dura Trak record/play unit's large, easy to read LED meters offer true VU ballistics for accurate level setting and switch automatically between record input level and play audio output.

DURA TRAK 90...

.125 Inch Anodized Aluminum Chassis

Phase Lok V Head Block

Long Life Heads

Smooth, Secure Cartridge Guides

Fast Forward Standard

Toroidal Power Transformer

Low Voltage Current Regulated Solenoid

Solid Front Panel Casting

Auto Switching VU Meters

Hall Effect Switches

MANUALS...SCHEMATICS ARE JUST THE BEGINNING

You'll find the technical manual supplied with the Dura Trak 90 to be as well thought out as the equipment itself. This superbly detailed, accurate, well organized and complete manual gives the technician or engineer all the reference data required to perform complete — and easy — maintenance on the units. Included are complete layouts, parts lists with descriptions, troubleshooting guide, setup and adjustment information, complete technical circuit descriptions and specifications.

Durability For The Long Run

No other cart machines combine all these critical factors in the way that Dura Trak 90 does. Because no other manufacturer can match Broadcast Electronics' combination of real-world broadcast experience and problem-solving innovation. Since 1959, when we developed the first magnetic tape cartridge machine for use by radio stations, BE engineers have continually researched methods of improving all aspects of cart machine design. The results, embodied in the present generation of BE cart machines, are setting new standards in radio stations around the world.

Whether you're a DJ looking for smooth, simple operation, an engineer concerned with reliability and ease of maintenance, a programmer interested in improving audio quality, or station management concerned with return on investment, Dura Trak 90s are the right choice. With sophisticated yet straight-forward designs, and rugged, built-to-last construction, the Dura Trak 90 family of cart machines is ready to deliver the quality you and your listeners demand, and to keep on delivering it, day after day, year after year. That's the Broadcast Electronics performance promise.

Splice Trak Completes Your Dura Trak System

For optimum performance in any system, every cart needs to be prepared before recording: The cart should be deep-erased and the tape splice located and positioned *before* the start of audio. For fast, reliable erasure and splice detection, you can't beat the ST-90 Splice Trak. Running at 27.5 ips (23 ips at 50 Hz) it zips through your carts. Yet it provides a minimum of 85 dB of audio erasure with any NAB standard cart. The splice detector is virtually 100% accurate because it actually senses the thickness of the splice itself, rather than using the less-reliable photocell method used by other devices. The sensor is so sensitive, it can detect a variation in tape thickness of as little as 0.0005″. And Splice Trak handles tape every bit as well as a BE cart machine. It's the perfect companion to your Dura Trak 90 System.

SPECIFICATIONS

Power
105V to 132V or 210V to 264 VAC, 50 or 60 Hz.
Tape Speed
Standard: 7.5 IPS with 22.5 IPS Fast Forward.
Factory Installed Option: 3.75 IPS with 11.25 IPS Fast Forward.
Solenoid
Low voltage, constant current solenoid with highly increased pulling power.
Wow and Flutter
Maximum 0.12% DIN. WTD. at 7.5 IPS.
Audio Output Configuration
Transformerless: True electronic balanced and floating.
Audio Output Level
+20 dBm before clip.
Audio Output Impedances
Transformerless: 600 ohm termination
Less than 75 ohm source.
Audio Input Configuration
Transformerless: True instrumentation amplifier input.
Audio Input Impedance
600 ohms.

Audio Input Level
Continuously adjustable −18 to +20 dBm.
Distortion
(see Notes 1 and 2)
Reproduce Amplifier—Less than 0.5% THD.
Record/Play System: Less than 1.5% THD (tape dependent).
Signal to Noise
Measured with reference to 250 nWb/m and a bandwidth of 30 Hz to 20 kHz.
Pulling Tape
−54 dB Mono −52 dB Stereo
No Tape
−56 dB Mono −54 dB Stereo
Crosstalk
Limited to −50 dB between any two adjacent channels.
Frequency Response
(see Note 3)
±2 dB, 40 Hz to 16 kHz.
Transport Stop Time
80 mSec maximum at 7.5 IPS.
Transport Start Time
120 mSec.
Bias Oscillator
128 kHz.

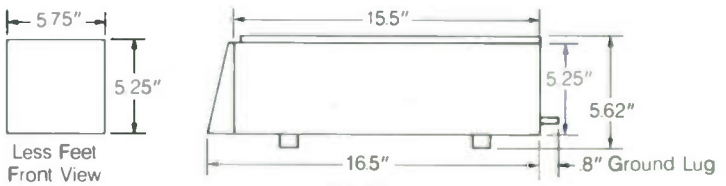
Equalization
(Playback and Record) 1975 NAB standard.
CCIR/IEC and 1964 NAB optional and field adjustable.
Cartridge Size
A and AA.
Ambient Operating Temperature
0 to 50 degrees C (32 to 122 F).
Remote Control
All front panel indicators and controls (except metering).
Mounting
Table top with optional rack mount also available.
Dimensions (see drawings below)
Table Top: 5.25"H x 5.75"W x 16.5"D
Rack Mount: 7"H x 5.75"W x 16.5"D
Weight
30 lbs. R/P 28 lbs. Playback.
Note 1: Reference 1 kHz at 250 nWb/m
Note 2: Using Capital Magnetics SGS-4 tape
Note 3: Specification measured using the 1975 NAB Standard.
Note 4: Above specifications referenced to 7.5 IPS

ORDERING INFORMATION

Model	Stock No.	Description
DT90P	900-9100-000	Mono Playback Only 117 V, 60 Hz
DT90RP	900-9101-000	Mono Record/Playback 117 V, 60 Hz
DT90PS	900-9102-000	Stereo Playback Only 117 V, 60 Hz
DT90RPS	900-9103-000	Stereo Record/Playback 117 V, 60 Hz
DT90P	900-9100-300	Mono Playback Only 220 V, 50 Hz
DT90RP	900-9101-300	Mono Record/Playback 220 V, 50 Hz
DT90PS	900-9102-300	Stereo Playback Only 220 V, 50 Hz
DT90RPS	900-9103-300	Stereo Record/Playback 220 V, 50 Hz
DT90P	900-9100-310	Mono Playback Only 117 V, 50 Hz
DT90RP	900-9101-310	Mono Record/Playback 117 V, 50 Hz
DT90PS	900-9102-310	Stereo Playback Only 117 V, 50 Hz
DT90RPS	900-9103-310	Stereo Record/Playback 117 V, 50 Hz

Options and Accessories

900-9013	Rack Shelf for 19" EIA, 7"H
900-9014	Rack Shelf Filler Panel ⅓ Rack for 9013
941-0017	Test Extender
597-9100	Service Manual for Dura Trak 90 (one manual shipped with each unit)
970-0102	Tape Head and Tape Guide Alignment Gauge Kit
970-0103	Motor Alignment Gauge Kit
900-0010	PC-1 Telephone Interface

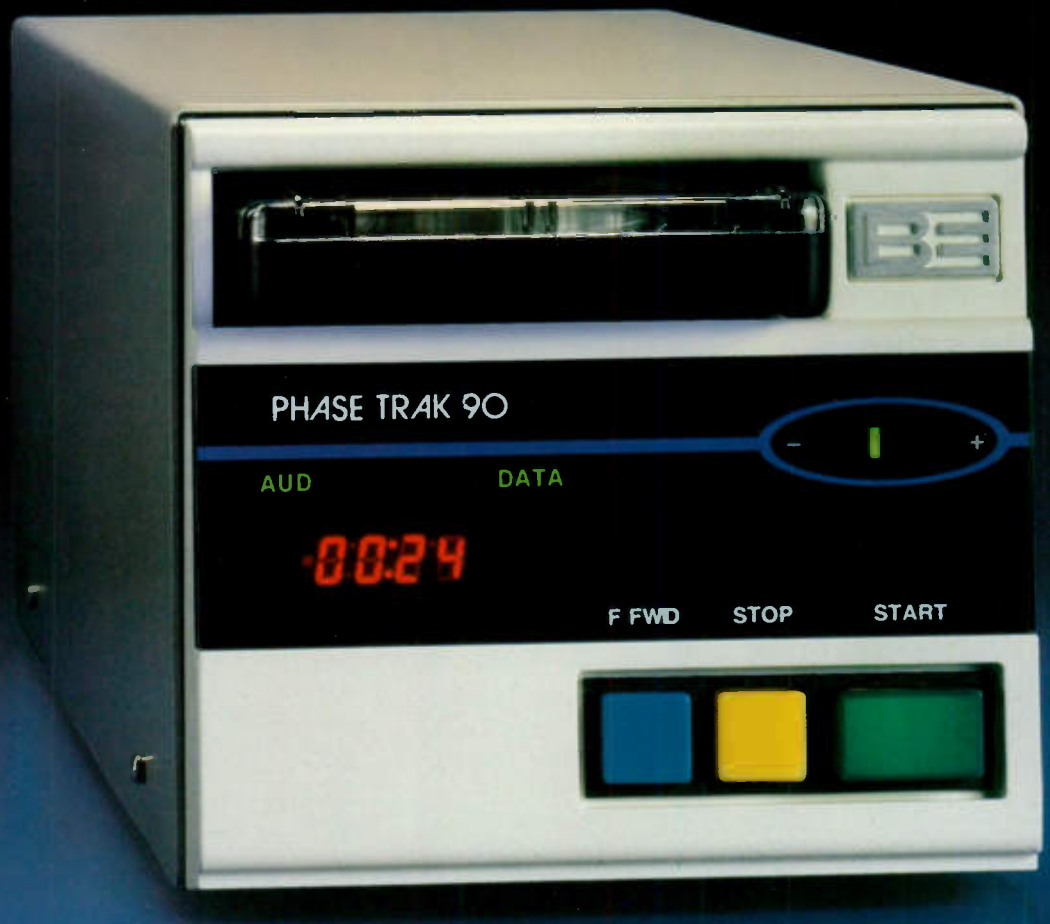


Dura Trak 90 Record/Play and Playback

BROADCAST ELECTRONICS INC.
4100 N. 24th ST., P.O. BOX 3606, QUINCY, IL 62305-3606 U.S.A., PHONE (217) 224-9600, TELEX 250142, FAX (217) 224-9607

PHASE TRAK 90™

The Stereo Solution for Every Cartridge



BROADCAST ELECTRONICS INC.

series 9000

PHASE TRAK 90™

Continuous Electronic Phase Correction

Model PT-90PS

- Automatic Stereo Phase Correction*
- Superb Audio Performance
- Dynafex® Noise Reduction
- Non-repeat Lockout
- Automatic Audio Muting
- Phase Lok V Precision Adjustment Head Block
- Innovative Cartridge Guidance System
- True Modular Design With Plug-In Assemblies
- All Cue Tones Standard - Including FSK Detection
- Reliable DC Servo Motor
- Hall Effect Switches
- Optional Digital Timer

*Patent Pending

Broadcast Electronics Sets A New Standard In Cartridge Machines!

The Phase Trak 90™ is a completely integrated electronic package specifically designed to meet the changing needs of today's broadcast professional. Features that are optional or unavailable in other cart machines are **standard equipment** in the Phase Trak 90.

Automatic Non-encoding Phase Correction

The phase correction circuit of the Phase Trak 90 continually monitors and corrects the phase relationship between the playback audio of the right and left channels. The output of ANY cartridge will undergo automatic phase correction when it is played through the Phase Trak 90 - **regardless of what machine was used to produce the cartridge originally**.

The phase correction capability of the Phase Trak 90 is essentially invisible to the operator, requiring no user adjustments. (A front panel LED bar-graph indicator is provided to show the amount of relative phase correction taking place during the play cycle.)

Excellent Audio Performance

The Phase Trak 90 boasts a Signal to Noise Ratio of better than 80 dB (stereo, with Dynafex® noise reduction operational). At ±2 dB, 40 Hz to 16 kHz, the excellent frequency response of the Phase Trak 90 delivers "audiophile" quality in any application. Wow and Flutter specifications are also outstanding at less than .12%.

Operational Features

Automatic high/low level sensing: Provides automatic level switching for cartridges recorded at higher levels (typically 250 nW/m) through the application of optical sensing tabs on the front of the cartridge.

Automatic audio muting: No outboard audio switcher is required for multi-machine applications. When a particular machine is started, all others in the chain are automatically muted.

Four standard cue circuits: The Phase Trak 90 comes equipped with four standard digital cue sensor circuits including an FSK (3.5 kHz) decoder which provides an RS-232 compatible data output for automatic logging.

Non-repeat lockout: After a cartridge has played and has re-cued, the STOP indicator will begin to flash at a rate of one flash per second. The machine will not start again until the operator removes and replaces the cartridge, or resets the lockout mode by pressing the STOP switch.

Cart-not-cued lockout: If a cartridge is stopped before it can re-cue, the STOP indicator will flash twice per second to warn the operator. The cartridge cannot be started again until the lockout mode is reset in the manner mentioned above.

Automatic/manual fast forward: One depression of the Fast Forward switch will lock the machine into the fast forward mode until the cartridge re-cues or is manually stopped.

"Clean" function: Momentarily pressing both the **stop** and **start** switches will activate the motor and pull the pinch roller into position for cleaning. Pressing the STOP switch alone will turn on the motor for about 90 seconds for easy cleaning of the capstan shaft.

Tape Cartridge Playback Machine

BROADCAST ELECTRONICS INC.

Modular Construction

The Phase Trak 90 is completely modular for the ultimate in servicing convenience. All modules are easily removed from the back of the cabinet. Test points and adjustments are reached by removing the top cover. In addition, all modules feature gold-to-gold pin and socket contacts to enhance long term reliability.

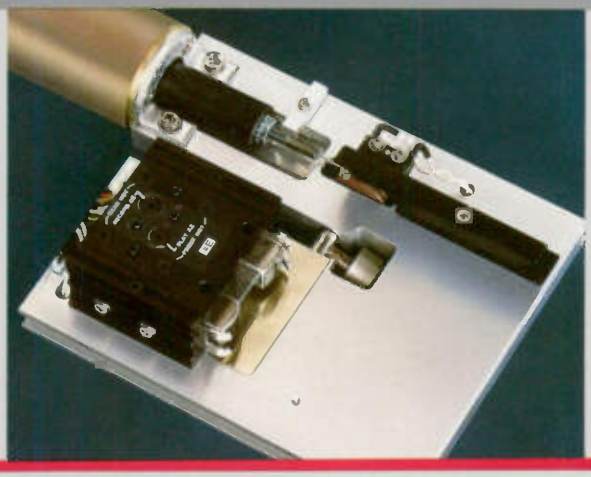
A rear panel headphone jack is provided for independent monitoring.

Reliable DC Servo Motor

The Phase Trak 90 features a crystal-controlled, brushless DC servo motor. This provides dependable operation with low wow and flutter, high efficiency and low acoustic noise. Through the Vari Speed control it is possible to adjust the motor speed ±10% with an external oscillator.

Air Damped Solenoid

Firm pinch roller pressure is ensured through the use of a powerful, air damped solenoid. This solenoid features electronic current regulation for superior reliability. It applies sufficient pressure to pull virtually any type of tape while maintaining cool, silent operation.



Cartridge Guidance System

Right and left side guides grip the cartridge as it enters the deck and applies just enough force to ensure proper positioning. At the same time, two spring loaded top guides apply downward pressure. The result is silky-smooth cartridge insertion and excellent positioning regardless of variations in cartridge size!

Phase Lok V Head Block

The Phase Lok V head block utilized in the Phase Trak 90 is one of the only head assemblies in the industry to offer a locking azimuth adjustment that is independent of the height and zenith adjustments. This allows the user to achieve near-perfect head alignment quickly and easily.

Optional Timer

An optional timer is available for the Phase Trak 90. This count-up timer is always synchronized to the motor speed for an accurate reading of "tape time" regardless of the actual elapsed "real time". The timer will re-set to zero whenever a cartridge is inserted and will stop counting when the cartridge stops playing. The display can also be set to freeze when an EOM (End of Message) tone is detected. This allows the operator to determine the actual length of the message.

Model PT90RPS

Need Record Capability in your Phase Trak 90?

Try The New Phase Trak 90 Record/Play Cartridge Machine

Available soon from Broadcast Electronics!

Technical Specifications - Phase Trak 90

All specifications referenced to standard speed of 7.5 IPS

Power
105V to 132V or 210V to 264 VAC, 50 or 60 Hz

Tape Speed
Standard: 7.5 IPS with 22.5 IPS Fast Forward
Optional: (1) 3.75 IPS with 11.25 IPS Fast Forward (2) 15 IPS with no Fast Forward

Motor
DC servo with a hard chromed stainless steel non-magnetic shaft

Solenoid
Low voltage, constant current solenoid with highly increased pulling power.

Speed Accuracy
±.2%

Wow and Flutter
Maximum 0.12% DIN. WTD. at 7.5 IPS

Audio Output Configuration
Transformerless: True electronic balanced and floating.

Audio Output Level
+24 dBm before clip.

Audio Output Impedances
Transformerless: 600 ohm termination
Less than 75 ohm source

System Distortion
(see notes 1 and 2) Reproduce Amplifier:
Less than 0.5% THD Playback System:
Less than 1.5% THD (tape dependent)

Signal to Noise
Measured with reference to 250 nW/m and a bandwidth of 30 Hz to 20 kHz

Pulling Tape:	−56 dB Mono −54 dB Stereo
No Tape:	−60 dB Mono −58 dB Stereo
With Dynafex:	−80 dB Mono −80 dB Stereo
Squelch Noise:	−80 dB (without Dynafex)

Crosstalk
Limited to −50 dB between any two adjacent channels

Frequency Response
(see note 3) ±2 dB, 40 Hz to 16 kHz.

Transport Stop Time
80 mSec maximum at 7.5 IPS

Transport Start Time:
120 mSec (minimum damping with servo motor operating when start command is initiated)

Equalization
1975 NAB standard.
I.E.C. CCIR (customer specified options)

Cartridge Size
A and AA

Ambient Operating Temperatre
0 to 50 degrees C (32 to 122F)

Remote Control
All front panel indicators and controls (except timer)

Mounting
Table top with optional rack mount also available

Dimensions
Table Top: 5.62″H x 5.875″W x 15.5″D (14.3 x 14.9 x 39.4 cm)

Rack Mount
7″H x 5.75″W x 15.5″D

Weigth
28 lbs. (packed), 12.7 Kgs.

Note 1: Reference 1 kHz at 250 nWb/m
Note 2: Using Capital Magnetics SGS-4 tape
Note 3: Specification measured using the 1975 NAB Standard

Ordering Information

Model	Stock No.	Description
PT90 P	900-9000-000	Phase Trak 90 Playback - Mono, (A and AA cartridges)
PT90PS	900-9002-000	Phase Trak 90 Playback - Stereo, (A and AA cartridges)

Options and Accessories

900-9013	Rack Shelf for 19″ EIA rack, 7″ H
900-9014	Rack Shelf Filler Panel, ⅓ rack for 9013
900-9015	Rach Shelf Filler Panel, ½ rach for 9013
900-9113	Rack Shelf for 19″ EIA rack, 5¼″ H
900-9114	Rack Shelf Filler Panel, ⅓ rack for 9113
900-9115	Rack Shelf Filler Panel, ½ rack for 9113
910-9007	Test Extender PC Board
900-9016	Tape Timer, 4 digit, factory installed
970-0099	Tape Sensor Foil Tab Kit (package of 100)
900-5409-001	Record Amplifier, Mono, with cues
900-5410-001	Record Amplifier, Stereo, with cues
970-0087	Adapter Cable Kit for PT90P/PS to 5409/5410 record amplifier
970-0088	Record Head Connector kit for PT90P/PS when used with record amplifier
597-9000	Service Manual for Series 9000 (One manual shipped with each unit)

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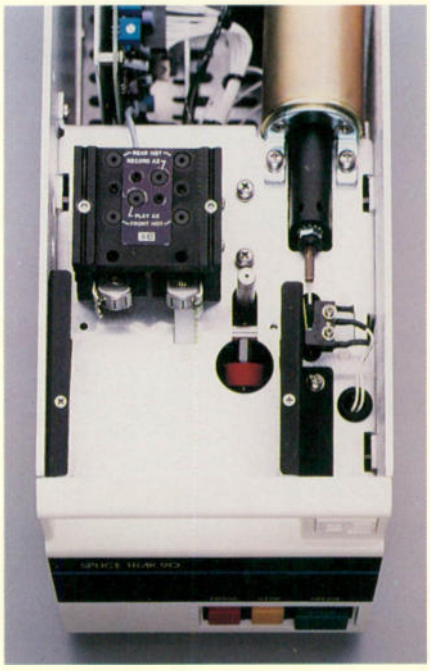
4100 N. 24th ST., P.O. BOX 3606, QUINCY, IL 62305–3606 U.S.A., TELEX 250142, CABLE: BROADCAST, PHONE (217) 224-9600

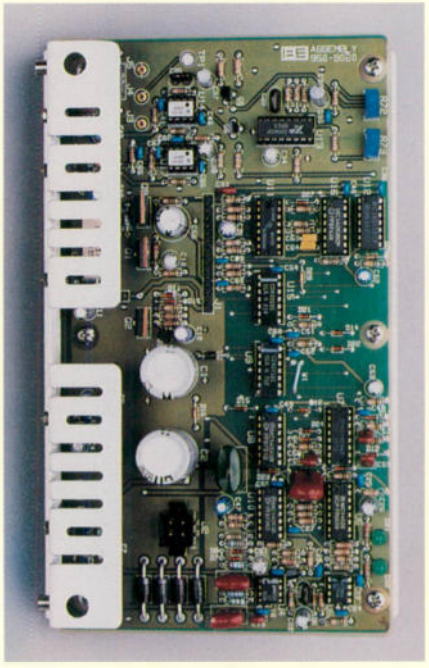
SPLICE TRAK 90™

FEATURES

- Dual Erase Heads typically deliver 90 dB audio erasure below 1kHz saturated (3% THD) signal level
- Splice Detector senses differences in tape thickness as small as 0.5 mil for virtually 100% accuracy
- High Speed Operation at 27.5 ips
- Smooth Tape Handling with solid state motor control—pressure roller engages capstan at less than one-fourth speed, then accelerates
- BE's Exclusive Hall Effect Switches provide positive response without noisy, wear-prone physical contacts
- Proven CMOS Logic circuits are dependable and easy to troubleshoot
- Cool Operation—the motor runs only when the Start button is depressed, and stops as soon as the splice is located
- Low Acoustic Noise



Splice Trak employs the same efficient low-voltage solenoid, Phase Lok V head block and positive, accurate cart guidance system developed for Broadcast Electronics highly successful cart machines.



Like all BE cartridge equipment, the ST-90 is designed for reliability and built for long life, with rugged components and construction methods like this silk screened, solder masked PC board. For safe, easy servicing, the PC board contains no line voltage.

COMPLETE YOUR CARTRIDGE PRODUCTION FACILITY

As a leading manufacturer of broadcast cartridge recorders and players that extract every bit of performance from the cart format, Broadcast Electronics is especially conscious of the need for proper cart preparation. To guarantee that every cart you record is performing at its best, BE engineers have developed the Splice Trak 90 using many of the same advanced components in our Phase Trak 90 and Dura Trak 90 cart machines. So you know it's BE-quality, BE-rugged, BE-dependable. There's no better companion to Broadcast Electronics' sophisticated, reliable cart machines than the fast and accurate Splice Trak 90 for uniform thorough erasure and positive splice detection.

Operational Specifications

Erase Depth: 85 dB below tape saturation @ 1 kHz using any NAB standard cartridge (90 dB typical)
Splice Detection Sensitivity: 0.5 mil change in tape thickness
Tape Speed: 27.5 ips @ 60 Hz (approx. 23 ips @ 50 Hz)
Cartridge Types: NAB size "A" or "AA"

Ordering Information

Model	Part No.	Description
ST-90	900-9120-000	ST-90 Splice Finder/Tape Eraser 117 volt, 50/60 Hertz
ST-90	900-9120-300	ST-90 Splice Finder/Tape Eraser 230 volt, 50/60 Hertz

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SPLICE TRAK 90™

SPLICE FINDER/ERASER

THE FIRST STEP IN OPTIMIZING CART PERFORMANCE

■ It takes proper cart preparation to get the best performance from any broadcast tape cartridge system. Before recording, every cart must be deep-erased. The tape splice should also be located and positioned before the start of audio.

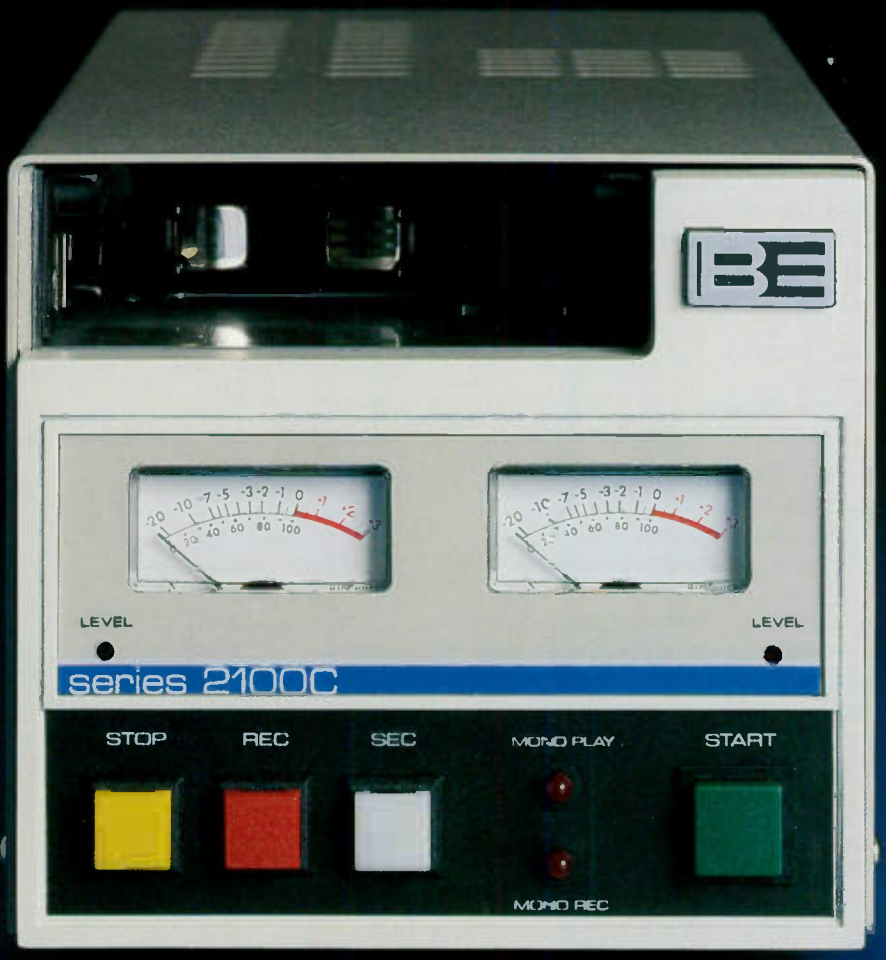
■ Previous generations of broadcast equipment made this job more difficult than it should be. Standard bulk tape erasers can leave audible thumps that remain even after new audio is recorded. Optical-sensor splice finders can get confused by variations in tape coloration.

■ Now Broadcast Electronics' ST-90 makes proper cart preparation fast, easy and reliable! Running at 27.5 ips (23 ips at 50 Hz), it zips through your carts. Yet its dual erase heads thoroughly erase any NAB standard cart to a typical depth of 90 dB — uniformly and without adding noise of its own. After erasure, the ST-90's splice detector automatically positions the splice and stops the tape —it's virtually 100% accurate because it actually senses the thickness of the splice itself instead of using the less-reliable photocell method.

BE® BROADCAST ELECTRONICS INC.

series 2100C
Tape Cartridge Machines

BROADCAST ELECTRONICS INC.



series 2100C

2100CRPS

2100CRP

2100CP

- **Two Cue Tones Standard (1 kHz and 150 Hz)**
- **Exclusive Mono/Stereo Switching**
- **New Precision Adjust Phase Lok V Head Block**
- **New Flat Response, Long Life Heads**
- **Precision Machined Deck with Improved Cartridge Guidance System**
- **Direct Drive Transport**
- **Modular Construction**
- **Low Voltage Air-Damped Solenoid**
- **Advanced Electronics - Meets or Exceeds 1975 NAB Standards**

The Series 2100C's are the most effective professional tape cartridge machines in the industry today. No other cart machine combines the value and economy of the 2100C's. For example, the Series 2100C's include two cue tones (1 kHz and 150 Hz) as standard features. The construction is modular for easy maintenance. New flat response, long life heads offer superb performance and the direct drive transport ensures maximum reliability. Even the styling has been enhanced for a more attractive appearance.

Durability and Excellent Styling

Nothing was spared to make the 2100C the most durable and attractive cart machine in the industry. The front panels feature crisp, clean graphics under a laminated polycarbonate overlay. This tough protective surface makes it virtually impossible to scratch or wear the lettering.

All front panel controls have been positioned for easy, error free operation. The professional elegance of the 2100C Series styling reflects Broadcast Electronics' careful attention to proven design principles.

Phase Lok V Head Assembly

The Series 2100C features the new Broadcast Electronics Phase Lok V head block. The Phase Lok V offers a locking azimuth adjustment that is independent of the height and zenith adjustments. With the Phase Lok V, precise head positioning is possible through an azimuth adjustment that can be easily manipulated without affecting height and zenith. This permits quick, accurate positioning with a minimum of difficulty. (For correct stereo tracking, a dummy head is included in each playback model.)

The head assembly includes extensive shielding to prevent AC pickup. The underside of the deck is also covered with a steel plate. Additional shielding is provided by a mu-metal plate which is located directly under the head itself.

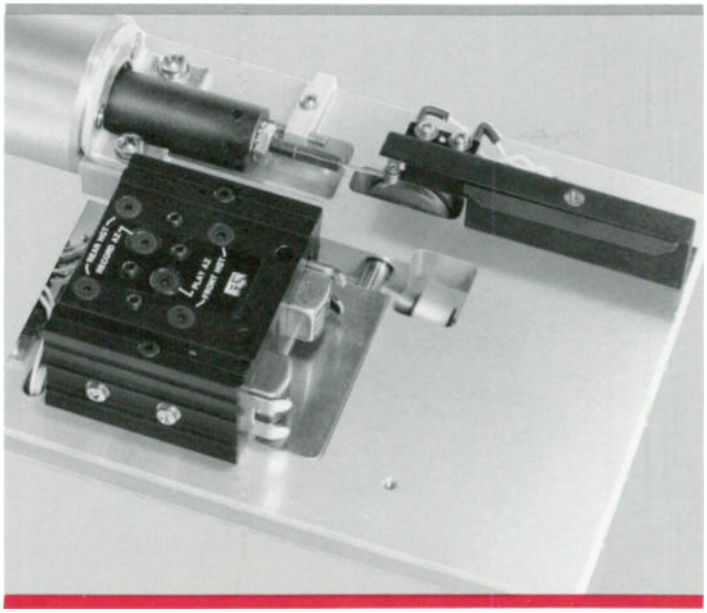
Tape Cartridge Machines

BROADCAST ELECTRONICS INC.

Precision Transport and Deck Assembly

The 2100C tape transport features a powerful, direct drive hystersis synchronous motor, a large air damped solenoid and a ½ inch thick aluminum deck.

The solenoid control circuit applies 36 volts at the beginning of the start cycle (for a fast, sure start) and then drops to 18 volts. Unlike cart machines that utilize a 110 volt solenoid, the low voltage design of the 2100C ensures cooler, transient-free operation.



The improved cartridge guidance system permits very precise cart positioning. The cartridge is directed to the head block area by right and left side guides (left hand guide not shown in photo). In addition, two spring loaded top guides apply firm pressure to hold the cart in place. The result is smooth, positive cart insertion regardless of variations in cartridge thickness.

Mono/Stereo Switching

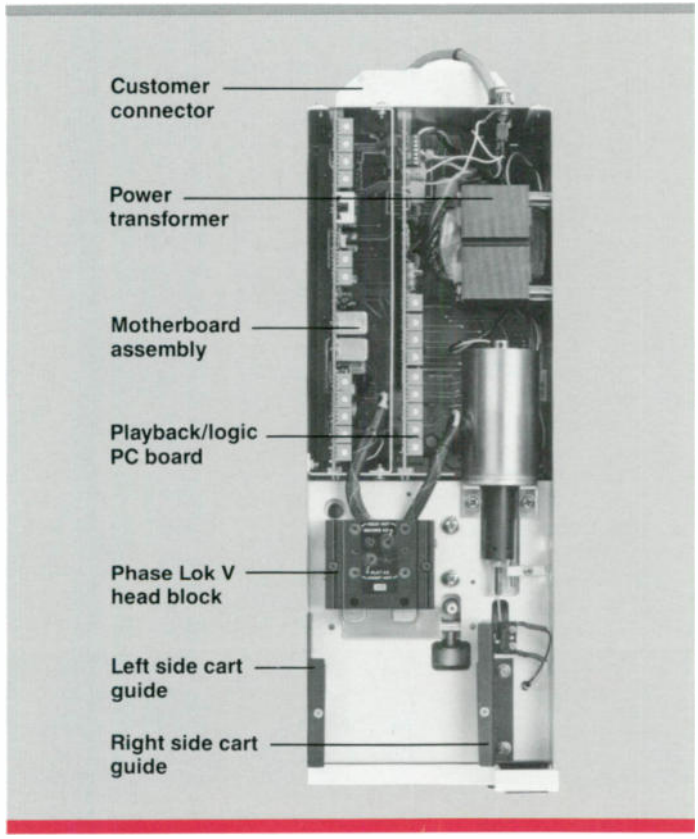
The Series 2100C's employ Broadcast Electronics' exclusive mono/stereo switching system. This innovative feature allows mono cartridges (which have been previously recorded on another machine) to play on a 2100C stereo machine with program material available at both the left and right channel outputs. The switching will take place automatically if the cartridge has a 150 Hz and a 1 kHz cue tone recorded simultaneously at the beginning of the message.

Modular Construction

Modular construction is utilized throughout the 2100C to simplify field maintenance. The playback and record circuitry are located on two individual PC boards that plug into a main motherboard assembly. The motherboard provides the interconnection, power supply, and solenoid drive circuitry. The motor, solenoid, power transformer, and front/rear panels all plug into the motherboard.

Playback Circuitry

The playback amplifier consists of wideband IC operational amplifiers, advanced analog switching, and differentially balanced output amplifiers. The program amplifiers have an exceptionally wide equalization adjustment range to compensate for head wear. The output amps will deliver +20 dBm before clipping to minimize potential distortion at high signal levels. The improved response characteristics of the playback circuitry meets or exceeds 1975 NAB standards.



Record Circuitry

The record circuitry features differently balanced inputs followed by high performance operational amplifers. This input design permits an extremely wide dynamic operating range. In fact, the 2100C can handle a greater range of signals than any competitive machine. This superior signal handling capabiltiy, which is inherent throughout the design, contributes significantly to the excellent reproduction quality of the 2100C. Like the playback circuitry, the response characteristics of the 2100C record electronics meet or exceed the 1975 NAB standards.

The stereo 2100C's can be used to record carts that will be compatible with mono machines. A front panel LED indicates when the machine is in the mono recording mode. In the mono mode, the left and right channels are summed together and recorded on the left channel. In addition, the mono encode tone (150 Hz and 1 kHz) is recorded on the cue track.

VU Meters are automatically switched between playback and record modes.

Model 2100CPA

Model 2100CPA Monitor/Playback

The model 2100CPA is a special playback unit with its own self-contained monitoring capability. It features the same outstanding mechanical and electronic performance of the other Series 2100C machines.

The 2100CPA incorporates a built-in amplifier, front panel speaker, volume control, and headphone jack - everything necessary to monitor any pre-recorded NAB A or AA sized cart!

The 2100CPA has a variety of applications. It can be used in virtually any location since it does not require an external mixer, amplifier, or other production equipment.

Technical Specifications

Power
105V to 125V or 210V to 240 VAC, 50 or 60 Hz (as specified)

Wow and Flutter
Playback: maximum 0.15% DIN. WTD. at 7.5 IPS
Record/Playback: maximum 0.15% DIN. WTD. at 7.5 IPS

Audio Output Configuration
Active Balanced (Transformerless) 600 ohms selectable impedance.

Audio Output Level
(see Note 1) Continuously variable from −20 dBm to +10 dBm (clip level +20 dBm)

System Distortion
(see notes 1 and 2) Record/Play system distortion including tape is less than 2%

Noise
(see notes 1 and 3) Hum and noise with no tape running: 54 dB Mono, −52 dB Stereo. Squelch noise −70 dB or better.

Crosstalk
Limited to −50 dB or better, program to program or cue to program at 1,000 Hz. (see note 1)

Frequency Response
(see note 3) ±2 dB, 50 Hz to 15 kHz.

Equalization
1975 NAB standard.
I.E.C. CCIR (customer specified options)

Audio Input Level
Line input: −20 dBm to +20 dBm

Audio Input Configuration
75K ohm active balanced bridging input.

Cartridge Size
A and AA

Cue Signals
Relay contact closure for external control (150 Hz) External cue input/output available at remote control for other control functions.

Ambient Operating Temperature
0 to 50 degrees C (32 to 122 F)

Remote Control
All front panel indicators and controls (except metering)

Standard Tape Speed
Record/Play, 7.5 IPS
3.75 IPS optional (other parameters affected)

Mounting
Table top with optional rack mount also available

Dimensions
5.25″H x 5.875″W x 15.5″D (13.5 x 14.9 x 39.4 cm) Allow three inches for connectors at the rear of the machine. Allow an additional 3/8″ in height for rubber feet.

Weight
28 lbs. (packed), 12.7 Kgs.

Note 1: Reference 1 kHz at 250 nWb/m
Note 2: Using Capital Magnetics SGS-4 tape
Note 3: Specification measured using the 1975 NAB Standard

Ordering Information

Model	Stock No.	Description
2100CP	900-2110-001	Mono, playback only for A or AA cartridges 115 V, 60 Hz
2100CRP	900-2111-001	Mono, record/playback for A or AA cartridges 115 V, 60 Hz
2100CPS	900-2112-001	Stereo, playback only for A or AA cartridges 115 V, 60 Hz
2100CRPS	900-2113-001	Stereo, record/playback for A or AA cartridges 115 V, 60 Hz
2100CPA	900-2114-001	Mono, playback only with audition speaker/amplifier for A or AA cartridges 115 V, 60 Hz
2100CP	900-2110-301	Mono, playback only for A or AA cartridges 220 V, 50 Hz
2100 CRP	900-2111-301	Mono, record/playback for A or AA cartridges 220 V, 50 Hz
2100CPS	900-2112-301	Stereo, playback only for A or AA cartridges 220 V, 50 Hz
2100CRPS	900-2113-301	Stereo, record/playback for A or AA cartridges 220 V, 50 Hz
2100CPA	900-2114-301	Mono, playback only with audition speaker/amplifier for A or AA cartridges 220 V, 50 Hz

Accessories

Stock No.	Description
900-2013	Rack mount shelf for EIA 19″ rack
900-2010	Top cover for rack shelf shown above
900-2014	Rack shelf filler panel 1/3 rack
900-2016	Rack shelf filler panel 2/3 rack
900-2100	Extender PC boards

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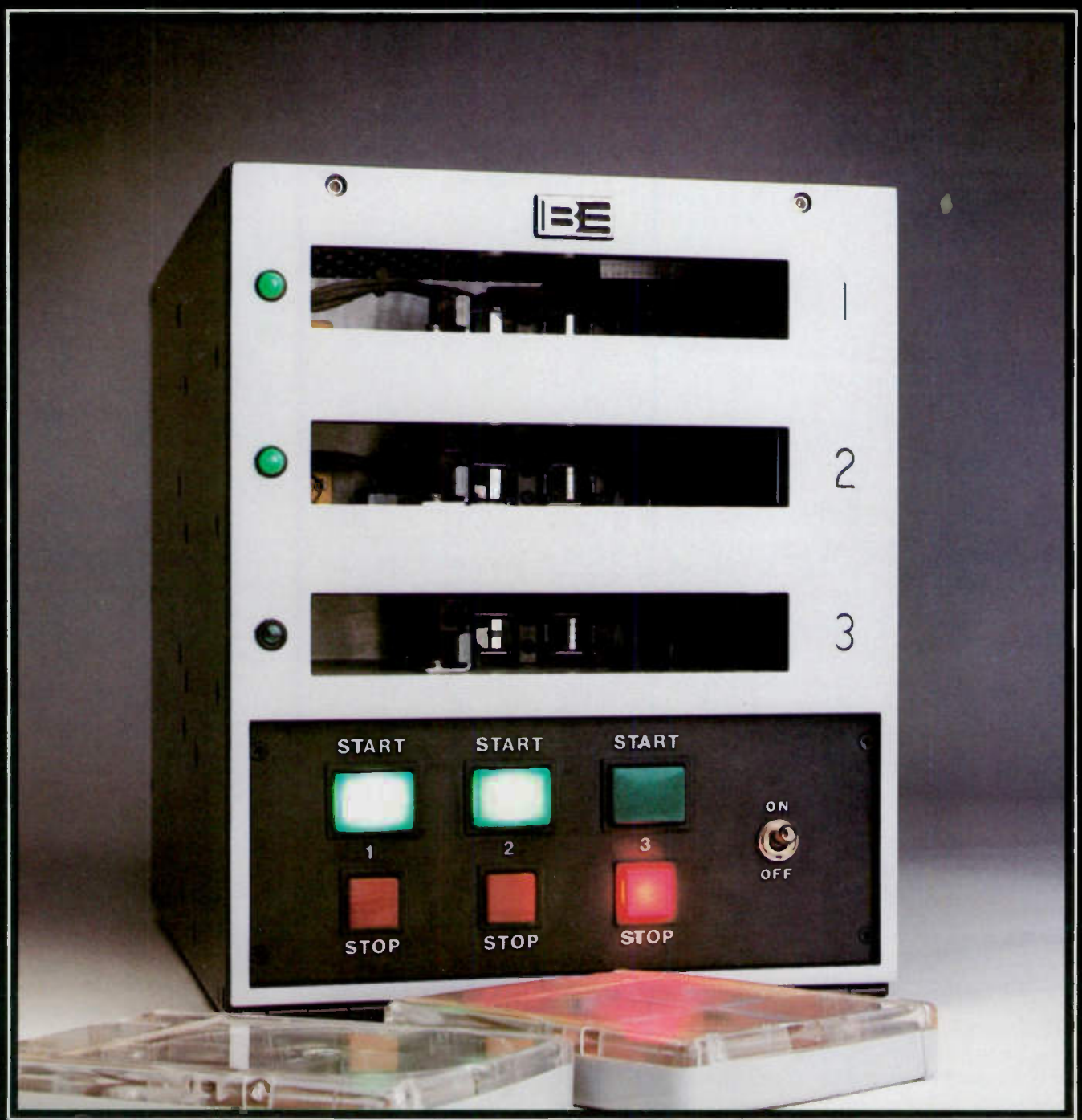
BROADCAST ELECTRONICS INC.

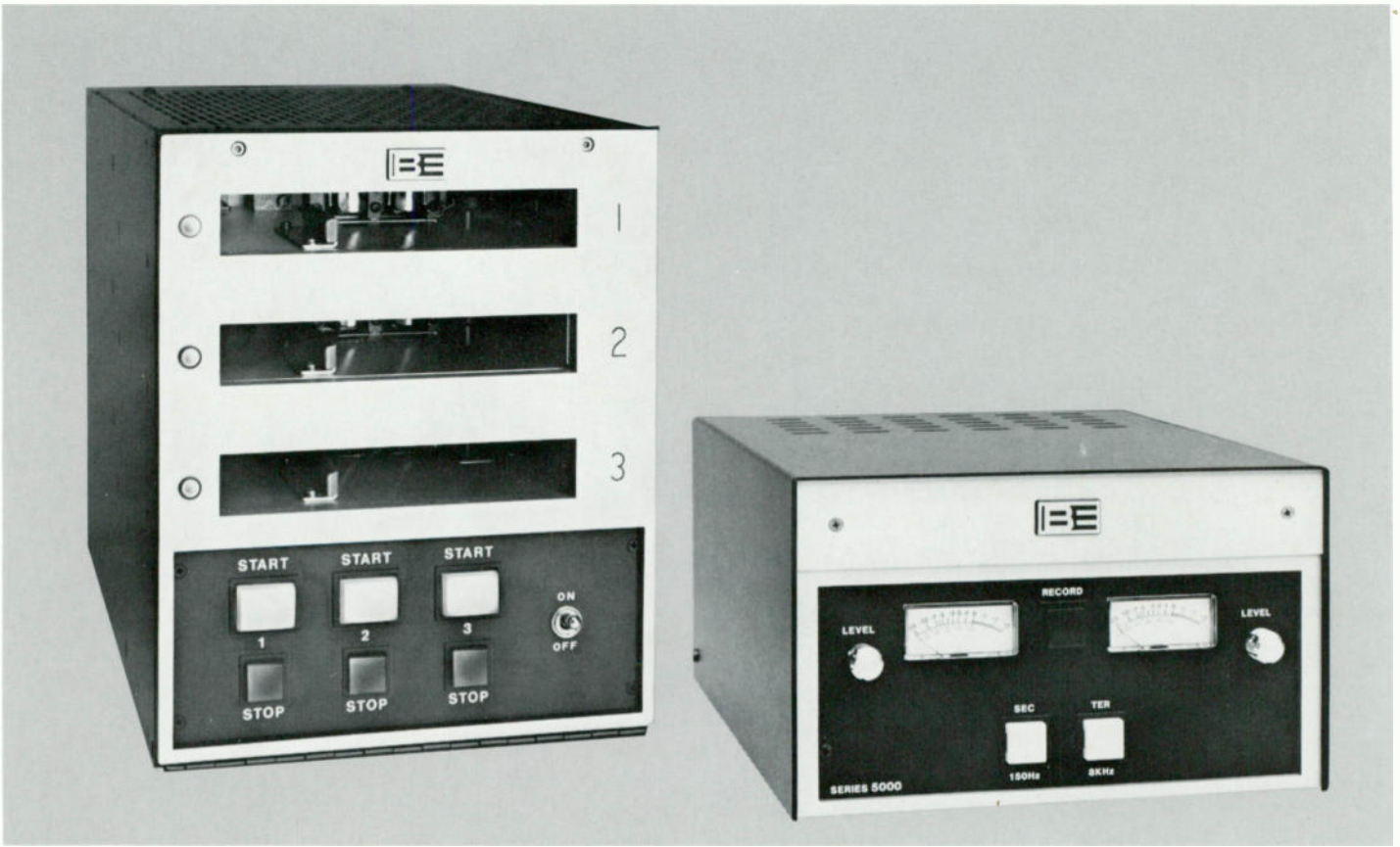
5300B

Plug-In Multi-Deck Cartridge Machines

With Long-Life Heads



5300B Plug-In Multi-Deck with Companion Recorder Amplifier by BE



Professional Quality Three Deck Machines . . .

Over 1500 In Use

The Model 5300B: This top of the line professional three deck cartridge machine features all solid-state/ integrated circuits, a direct-drive hysteresis synchronous motor, quiet air damped solenoid and a one-half inch thick machined aluminum decks.

Every Model 5300B machine incorporates the Phase Lok IV head bracket with totally independent azimuth setting and top quality long life heads for superb response and performance.

Features unique to this multi-deck design are plug-in decks, all ribbon cable wiring and rear panel LED service aids. Run lights are adjacent to each deck.

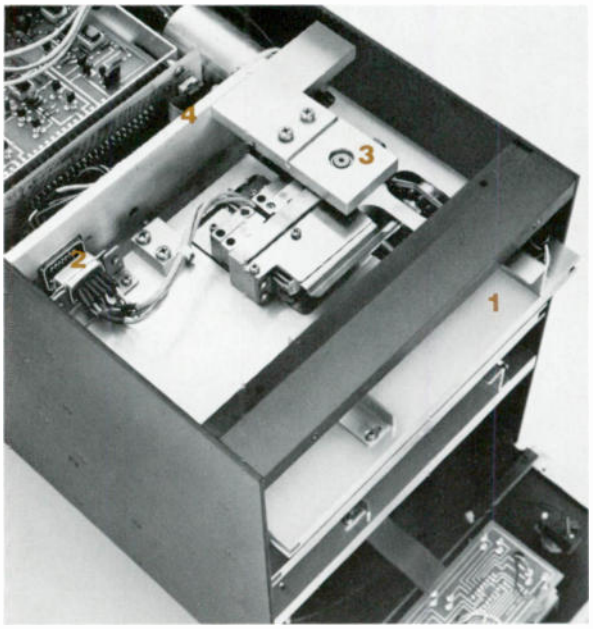
Unique Mechanical Design: The Model 5300B has an internal structural bulkhead design which insures stable and accurate deck and capstan positioning. The top capstan bearing is mechanically supported by the sturdy aluminum bulkhead insuring consistent mechanical alignment independent of front panel reference. This design eliminates problems found with other three deck machines.

Cool Operation: The solenoid control circuit utilizes solid-state switching and a low-voltage regulated current source. With this circuit, solenoid operation is smooth and quiet and is unaffected by ac line variations. Heat dissipation is reduced and the combination of low voltage and solid-state switching significantly enhances reliability.

Advanced Electronics: A characteristic of the 5300B is exceptionally wide dynamic operating ranges which contribute to high quality reproduction. The companion recorder input circuits and the 5300B output circuits will accept and deliver, without introducing distortion, a greater range of signals than any competitive machine. Balanced transformer output with FET switching permits paralleling of machines.

Recording Unit: The optional recording amplifier (mono Model 5309 or stereo Model 5310) is available for recording on deck # 3 independent of the other two decks. Thus, the 5300 can operate as three separate machines; a record/playback deck and two playback only decks. Another optional unit is an audio switcher which automatically provides a balanced output from the last started deck while muting the other decks.

Design/Operational Features

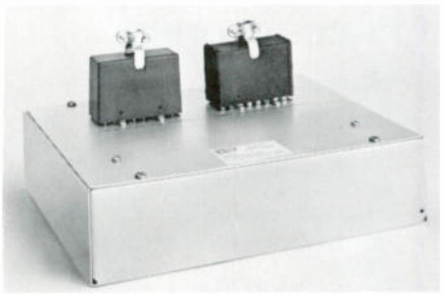


Removable Decks

Removing a Broadcast Electronics deck couldn't be easier. The front panel is hinged, **1** the top two decks pull out, and all electrical connections to all decks are made through a connector **2** that is a part of the deck.

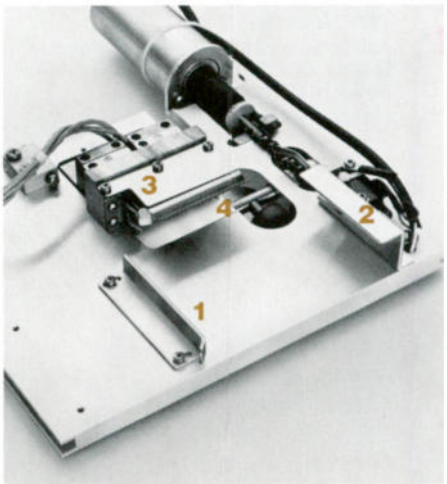
This photograph shows the top bearing support **3** and aluminum bulkhead **4** which provides the mechanical reference for the motor, decks and capstan.

Audio Switcher
(Multiple Machines)



Provides a single balanced output. Switchers can be tied together to provide a single balanced output from up to three 5300B machines. Selects last deck started and mutes other decks. If a wrong deck is started, pressing another start button will immediately mute the first deck and put the newly started deck on the output. The first deck started will continue to run, and will re-cue itself.

Unique Cartridge Guidance System



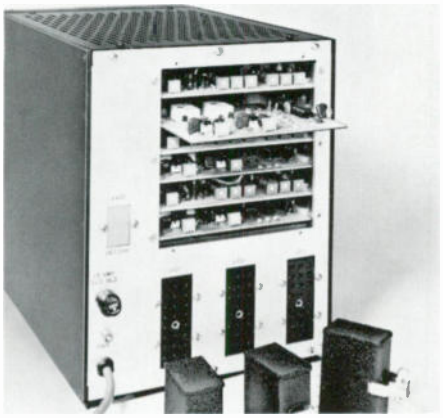
A simple yet extremely effective system for positive and accurate cartridge positioning.

The left side guide **1** is straight forward. The guide on the right **2** has a tapered overlap which directs the cartridge into the head.

Directly above the head **3** a nickel-silver clamp locks the cartridge into place. The force provided by this clamp insures positive locking regardless of variations in cartridge size. Also mounted above the nickel-silver clamp is a Mu metal shield to protect the head from stray electrostatic fields.

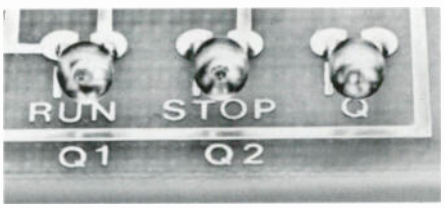
Mu metal shielding **4** is also located directly under the head and is recessed into the deck for the most effective location.

Plug-In PC Cards



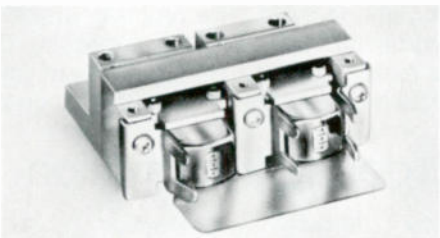
Deck electronics are on individual plug-in pc cards with all gold to gold connections for high reliability. Also shown are mating connectors which are supplied with the machine.

LED Status Lamps



Servicing the equipment at the rear panel is simplified by LED lamps located on the pc cards. These provide a visible indication of the function being performed by the machine.

Phase Lok IV Head Bracket



For optimum adjustment of stereo phasing, these machines have the Phase Lok IV Head Bracket.

Phase Lok IV is the only head bracket to have a non-locking azimuth adjustment which is completely independent of the height and zenith adjustments.

Specifications

MODEL 5300B, THREE DECK

Power
A. 105V to 125V or 210V to 240 VAC
B. 50 Hz or 60 Hz (As specified)

Wow and Flutter
A. Playback: maximum
0.15% DIN. WTD. at 7.5 IPS
0.08% typical
B. Record/Play (With Model 5309 or Model 5310 Recorder) maximum
0.15% DIN. WTD. at 7.5 IPS

Audio Output Configuration
Transformer coupled, selectable for 600 Ohm or 150 Ohm impedance

Audio Output Level (See note 1)
Continuously variable from −20 dBm to +10 dBm
(Clip level +20 dBm)

System Distortion (See notes 1, 2 and 4)
Record/Play system distortion (including tape) less than 2%

Noise (See notes 1 and 3)
A. Hum and noise, no tape running
Mono −54 dB Stereo −52 dB
B. Squelch Noise −70 dB or better

Crosstalk
−50 dB or better, program to program or cue to program at 1000 Hz

Frequency Response (See note 3)
±2dB 50 Hz to 15 kHz, exclusive of head contour effect

Equalization
A. 1964 NAB standard
B. I.E.C., CCIR (Customer specified options)

Audio Input Level (See note 4)
Line input: −20 dBm to +20 dBm
With built-in microphone input: −70 dBm to −24 dBm

Audio Input Configuration (See note 4)
A. Line-transformer coupled, 50K Ohm balanced bridging input
B. Microphone −150 Ohm balanced transformer input

Cartridge Size
A, AA, B, BB NAB Cartridge

Cue Signals (See note 4)
Relay contact closure for external control (150 Hz, 8 kHz) External cue input/output available at remote control for other control functions.

Ambient Operating Temperature
0 degrees to 55 degrees C (32 to 132 F)

Remote Controls
All front panel indicators and controls (except metering)

Standard Tape Speed
A. Record/Play, 7.5 IPS
B. 3.75 IPS optional (other parameters affected)

Mounting
A. Table Top
B. Rack Mount (optional)

Dimensions
A. Model 5300B Three Deck:
10⅝"H x 8⅝"W x 13⅜"D
(27 x 22 x 34 cm)
Allow 3" for connectors at the rear of the machine. Allow an additional ⅜" in height for rubber feet.
B. Model 5309 or 5310 Recorder:
5¼"H x 8⅝"W x 13½"D
(13.3 x 22 x 34 cm)

Weight
A. Model 5300B Three Deck
42 lbs. (packed), 19 Kgs
B. Model 5309 or 5310 Recorder:
16 lbs. (7.25 Kgs)

Note 1 - Reference 700 Hz at 815 n Wb/m
Note 2 - Using Capital Magnetics Q17-HOLN Tape
Note 3 - Specification measured using the 1964 NAB Standard Equalization
Note 4 - With Model 5309 or Model 5310 Recorder

Additional Features

The 5300B is available in four basic models as shown under Ordering Information. The secondary and tertiary cue tones are made available by changing a PC card. Thus, a unit originally purchased with only the primary (1 kHz) cue tone can be field modified by simply replacing the PC card.

A separate sensitivity control is provided for each cue sensor in the 5300B.

The recorder amplifier is available in either mono or stereo. Each unit has the standard 1 kHz cue tone. Secondary (8 kHz) and tertiary (150 Hz) tones are available for the recorder as an option.

The standard recorder has two input circuits: a high level 50K ohm balanced transformer and a low level microphone input. The recorder amplifier has an automatic meter switching capability. During recording the meter indicates the record level and in playback the meter indicates the playback level on deck number 3.

Options and Accessories

Model	Stock No.	Description
	906-5309	Recorder, Mono for 3 Decker, without Q Trip Option
	906-5310	Recorder, Stereo for 3 Decker, without Q Trip Option
SW5E	904-5000	Audio Switcher for 3 Decker
5300	927-0047	Remote Control Panel for 5300A/B Series
5300	927-0048	Remote Control Panel for 5300A/B Series with Companion Record Amplifier
	906-5311A	Secondary (150 Hz) and Tertiary (8kHz) Q Trips for Mono Recorder
	906-5311B	Secondary (150 Hz) and Tertiary (8kHz) Q Trips for Stereo Recorder
	906-5306	Rack Mount (1) Unit
	906-5307	Rack Mount (2) Units
	906-5308	Additional cost for 220/50 Hz Power Source for 5309 Mono Recorder or for 5310 Stereo Recorder
	919-1806	Extender PC Board

Ordering Information

Model	Stock No.	Description
5301B	906-5301B	Mono Playback (A & B Size)
5302B	906-5302B	Mono Playback (A & B Size) with Cue Tones
5303B	906-5303B	Stereo Playback (A & B Size)
5304B	906-5304B	Stereo Playback (A & B Size) with Cue Tones

BROADCAST ELECTRONICS INC.

B155 RP2.5M 1083 4100 N. 24th ST., P.O. BOX 3606, QUINCY, IL 62305-3606, (217)224-9600, TELEX: 25-0142

series 3000A

TAPE CARTRIDGE MACHINES

BROADCAST ELECTRONICS INC.

series 3000A

Features:

- **New Phase Lok V Head Block**
- **Improved Cartridge Guidance System**
- **More Powerful, Air Damped Solenoid**
- **Direct Drive Hysteresis Synchronous Motor**
- **Gold to Gold Contacts**
- **New Flat Respons Long Life Heads**
- **Automatic/Manual Fast Forward - Standard**
- **Three Cue Tones Standard**

Introducing the Series 3000A

The new Series 3000A retains the features that made its predecessor famous and adds new improvements and extra features that all users are sure to appreciate. These new improvements include the addition of the Phase Lok V head block, an innovative cartridge guidance system, a powerful air damped solenoid, and flat response long life heads. In addition, automatic/manual fast forward and three cue tones are now standard in the Series 3000A. The styling has changed also to include a new front panel layout.

Phase Lok V Head Block

The Phase Lok V head block is unique in the world of tape cartridge machines. No other head block assembly offers this type of precise head adjustment. The azimuth adjustment, for example, is completely independent of the height and zenith adjustments. This allows extremely precise control for the most perfect head alignment possible. The Phase Lok V features superb electromagnetic shielding and is completely removable for easy cleaning or service.

Capstan Motor

Every Series 3000A cartridge machine is driven by a powerful, direct drive hysteresis-synchronous capstan motor. This outstanding motor provides increased torque, low wow and flutter and long term speed stability. A chrome finished, vapor-honed capstan shaft assures positive torque transfer between the motor and the tape.

Gold to Gold Contacts

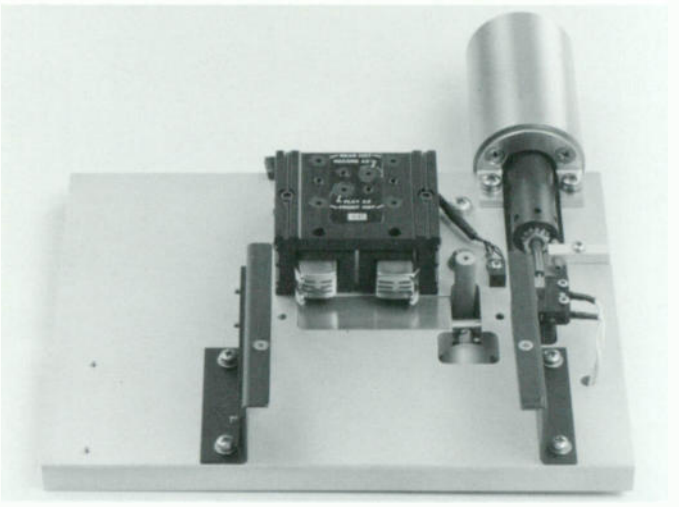
Gold-to-Gold contacts provide low contact resistance to all PC board edge connections throughout the Series 3000A. Plug-in IC's and single turn potentiometers aid serviceability.

Cartridge Guidance System

Cartridge positioning is absolutely critical to playback quality. However, in many cart machines a compromise has been made between the desire for easy cartridge insertion and the need for firm, correct positioning.

Not in the 3000A.

The 3000A's unique cartridge guidance system features right and left hand tension guides to keep the cart in exact horizontal position as it enters the head block area. At the same time, two spring loaded top guides apply even downward pressure to hold the cartridge in place. The result is silky, smooth insertion and accurate positioning - every time.



Precision Machined Deck

Each Series 3000A tape deck is made of solid aluminum, precision machined and protected by a clear anodized finish. This half inch thick deck provides rigid support and creates a stable reference for head mounting and cartridge positioning. A mu-metal plate inlaid in the deck surface, as well as other additional shielding, helps isolate the heads from stray magnetic fields.

Powerful Air Damped Solenoid

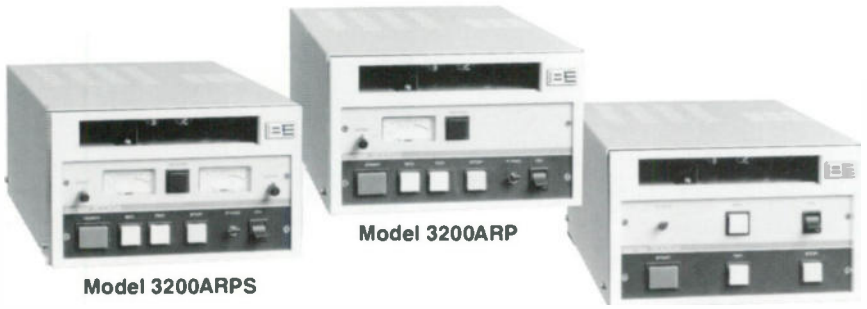
The Series 3000A employs a new air damped solenoid that is much more powerful than its predecessor. Even so, the solenoid features silent, cool operation. It is controlled by a current regulated low-voltage DC source which reduces current after initial turn-on. This guarantees firm pressure roller engagement while reducing power consumption, radiated noise and heat build-up.

Tape Cartridge Machines

BROADCAST ELECTRONICS INC.

Fast Forward And All Cue Tones Standard In Every Series 3000A!

Model 3100APS



Model 3200ARPS

Model 3200ARP

Model 3200APS

Model 3100A Slim Line: For use with NAB A and AA cartridges. Available in mono and stereo playback models. Three units can mount side-by-side in a 19 inch rack shelf.

Model 3200A Compact: For use with NAB A, AA and B cartridges. Available in mono or stereo record/playback and playback only models. Two 3200A units can mount side-by-side in a 19 inch rack shelf.

Model 3400A Rack Mount: (not shown) The 3400A's come standard as rack mount units with no shelf or filler panels necessary. The 3400A's have all the features of the standard Series 3000A cartridge machines and handle all cart sizes.

Delay Machines - Models 3200A RP/DL and 3400A RP/DL: (not shown) In addition to providing normal playback and record functions, delay units allow the use of the machine whenever a delay might be required. From a six minute delay (for live talk show editing) to a 30 minute network programming delay, these machines can handle any delay length required. The time span of the delay is determined by the length of the tape in the cartridge.

Automatic/Manual Fast Forward - Standard

Automatic or manual operation is provided as a standard feature in all Series 3000A's. In the automatic mode, detection of the end-of-message (150 Hz) cue tone causes the machine to automatically advance (at three times the normal speed) to the next stop tone. Audio is muted during automatic advancement.

Secondary and Tertiary Cue Tones - Standard

Every Series 3000A machine comes equipped with all three standard cue tones, including the 150 Hz Secondary and the 8 kHz Tertiary (commonly utilized for auxiliary switching functions).

Voltage Option

60 Hz Models - 208 to 230 Volts 50 Hz Models - 120 to 150 Volts and 208 to 230 Volts (Standard voltage is 105 to 120 Volts, 50 Hz)

Equalization Option

NAB or CCIR/IEC

Tape Speed Option

7.5 ips (19.05 cm/s Standard
3.75 ips (9.53 cm/s) Optional

Rack Mounting

Two different rack mounting arrangements are available for the Series 3000A machines. Through the use of a rack shelf or filler panels, virtually any combination of units can be adapted to a rack mount configuration. The 3400A cart machine is manufactured ready to mount in a standard 19 inch rack as shipped from the factory.

Audio Switcher

Switchers are available in two versions: three input (SW5E) and five input (SW5F). The three input model accommodates three Series 3000A machines. The five input model accommodates up to five audio input signals from all machines and provides a single balanced output from the last started unit.

Starting a new machine automatically deletes audio from the previously played unit and turns on the audio from the newly started cartridge. Up to three switchers may be used in cascade to provide a single audio output from up to 15 cart machines.

Remote Controls

Audio and remote connections are quick and each with our rugged Cinch-Jones connectors. Available in four models, optional remote panels duplicate all essential front panel controls.

Technical Specifications

POWER
105V to 125V or 210V to 240 VAC, 50 or 60 Hz (as specified)

WOW AND FLUTTER
Playback: maximum 0.15% DIN. WTD. at 7.5 IPS
Record/Playback: maximum 0.15% DIN. WTD. at 7.5 IPS

AUIDO OUTPUT CONFIGURATION
Transformer coupled, selectable 600 ohms or 150 ohms impedance

AUDIO OUTPUT LEVEL
(see Note 1) Continuously variable from −54 dB to +10 dBm (clip level +18 dBm)

SYSTEM DISTORTION
(see notes 1 and 2) Record/Play system distortion is less than 2% (tape limited)

NOISE
(see notes 1 and 3) Hum and noise with no tape running: −54 dB Mono, −52 dB Stereo. Squelch noise −70 dB or better

CROSSTALK
limited to −50 dB or better, program to program or cue to program at 1,000 Hz

FREQUENCY RESPONSE
(see note 3) ±2 dB, 50 Hz to 15 kHz

EQUALIZATION
1965 NAB standard
I.E.C. CCIR (Customer specified options)

AUDIO INPUT LEVEL
Line input: −20 dBm to +20 dBm

AUDIO INPUT CONFIGURATION
Line transformer coupled 50K ohm balanced bridging input

CARTRIDGE SIZE
Model 3100: A, AA
Model 3200: A, AA, B, BB
Model 3400: All NAB cartridge sizes

CUE SIGNALS
Relay contact closure for external control (150 Hz)
External cue input/output available at remote control for other control functions

AMBIENT OPERATING TEMPERATURE
0 to 50 degrees C (32 to 122 F)

REMOTE CONTROL
All front panel indicators and controls (except metering)

STANDARD TAPE SPEED
Record/Play, 7.5 IPS
3.75 IPS optional (other parameters affected)

MOUNTING
A. Table Top Models (3100, 3200)
B. Rack Mount Models (optional for all models except 3400)
C. Rack Mount Only (3400)

Note 1: Reference 1 kHz at 185 nWb/m
Note 2: Using Capital Magnetics SGS-4 tape
Note 3: Specification measured using the 1965 NAB Standard

Ordering Information

STOCK NO.	MODEL/DESCRIPTION
(STANDARD MODELS. 117 VAC/60 Hz)	
900-3100-001	3100AP Mono, Playback, A sized cartridges
900-3102-001	3100APS Stereo, Playback, A sized cartridges
900-3200-001	3200AP Mono, Playback, A & B sized cartridges
900-3201-001	3200ARP Mono, Rec/Play, A & B sized cartridges
900-3202-001	3200APS Stereo, Playback, A & B sized cartridges
900-3203-001	3200ARPS Stereo, Rec/Play, A & B sized cartridges
900-3400-001	3400AP Mono, Playback only, rack mount, A, B & C sized cartridges
900-3401-001	3400ARP Mono, Rec/Play, rack mount, A, B & C sized cartridges
900-3402-001	3400APS Stereo, Playback only, rack mount, A, B & C sized cartridges
900-3403-001	3400ARPS Stereo, Rec/Play, rack mount, A, B & C sized cartridges

STOCK NO.	MODEL/DESCRIPTION
(STANDARD MODELS. 220 VAC/50 Hz)	
900-3100-301	3100AP Mono, Playback, A sized cartridges
900-3102-301	3100APS Stereo, Playback A sized cartridges
900-3200-301	3200AP Mono, Playback, A & B sized cartridges
900-3201-301	3200ARP Mono, Rec/Play, A & B sized cartridges
900-3202-301	3200APS Stereo, Playback, A & B sized cartridges
900-3203-301	3200ARPS Stereo, Rec/Play, A & B sized cartridges
900-3400-301	3400AP Mono, Playback only, rack mount, A, B & C sized cartridges
900-3401-301	3400ARP Mono, Rec/Play, rack mount, A, B & C sized cartridges
900-3402-301	3400APS Stereo, Playback only, rack mount, A, B & C sized cartridges
900-3403-301	3400ARPS Stereo, Rec/Play, rack mount, A, B & C sized cartridges

NOTE: FACTORY OPTIONS CANNOT BE INSTALLED AFTER EQUIPMENT HAS BEEN MANUFACTURED OR SHIPPED.

FACTORY INSTALLED OPTIONS

900-3002	Adustment of Equalization to IEC/CCIR Specifications, Mono
900-3003	Adjustment of Equalization to IEC/CCIR Specifications, Stereo
900-3004	Mono, Delay programmer, Factory installed.

NOTE: Delay programmer machines are standard with 1 kHz and 150 Hz cue tones and cannot be supplied with 8 kHz cue tone. Delay machines cannot be used for stereo operation.

900-3009	Additional cost for alternate 3.75 IPS tape speed

ACCESSORIES

900-3013	Rack Mount Shelf for EIA 19" rack
900-3010	Top Cover for 906-3013 shelf

NOTE: If Series 3000A machines are to be mounted in 900-3013 Rack Shelf, order machines less Top Covers and order Rack Shelf 900-3010 top cover. Deduct price of cover from price of each machine ordered for rack mounting.

900-3014	Rack Shelf filler panel, 1/3 rack
900-3015	Rack Shelf filler panel, 1/2 rack
919-1504	Extender, PC Boards

Model	Width	Depth	Height	Shipping	Weight (packed)
3100	5.87"	15.5"	5.25"*	28 lbs.	(12.7 kg)
3200	8.75"	15.5"	5.25"*	38 lbs.	(15.0 kg)
3400	17"	15.5"	5.25"*	42 lbs.	(19.0 kg)

*add .375 inch for rubber feet

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series

5400C

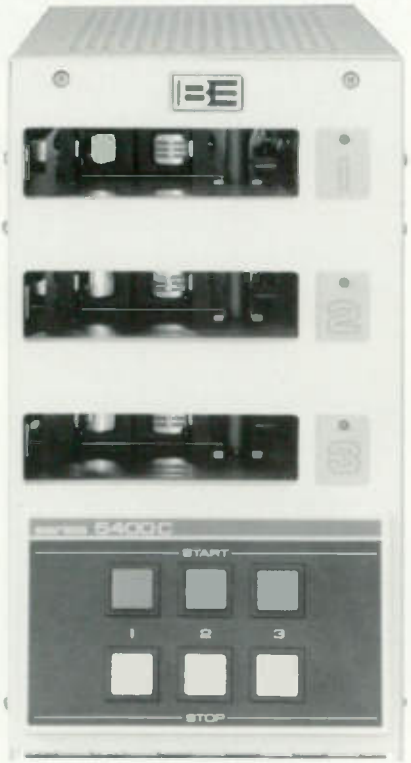
Tape Cartridge Machines

Plug-In Multi-Deck With Long-Life Heads

BROADCAST ELECTRONICS INC.

series 5400C

Plug-In Multi-Deck with Companion Recorder Amplifier



Model 5400C

Model 5410C

- **Non-Repeat Lockout**
- **Advanced Electronics** (meets 1975 NAB Specifications)
- **Improved Cartridge Guidance System**
- **Heavy Duty Solenoid**
- **Torodial Transformer**
- **New Phase Lok V Head Block**

Clean sound reproduction and smooth, consistent performance are just two of the reasons why the Broadcast Electronics 5400C is one of the most trusted cart machines in the industry today. The 5400C is designed for the user who requires the utmost in long term reliability and ease of operation. As a three deck cart machine, the 5400C will fit perfectly in any production or on-air studio environment.

Careful attention has been given to the maintenance and installation aspects of this excellent cart machine. The 5400C is fully equipped with plug-in decks and PC cards for quick, easy servicing. The trim line design of the 5400C's makes it easy to rack mount as many as three machines side by side.

Innovative Design Features

Non-Repeat Lockout - Non-Repeat Lockout prevents any tape cartridge from being played more than once unless the operator resets the "lockout mode" by pressing the flashing STOP button or by removing and re-inserting the cart. This feature substantially reduces the possibility of on-air mistakes during commercial breaks! The Non-Repeat Lockout mode can be disabled through an internal jumper connection if desired.

Torodial Transformer - The new 5400C incorporates a torodial transformer in the primary power supply for cool, efficient operation with a significant reduction in stray magnetic fields.

Phase Lok V Head Assembly - The removable Phase Lok Five head assembly provides precise alignment control with a locking azimuth adjustment independent of height or zenith adjustments.

Powerful, Air Damped Solenoid - The 5400C utilizes a new air damped solenoid that guarantees reliable cartridge engagement. The solenoid control circuit utilizes solid-state switching and a regulated current source for cool, quiet operation.

Advanced Electronics - The state-of-the-art circuit design of the 5400C is immediately evident in it's exceptional dynamic range. (±2 dB 40 Hz to 16 kHz) Stereo signal to noise ratio is better than 56 dB. With its improved electronic design, the 5400C meets or exceeds 1975 NAB specifications.

Recording Unit

The optional recording amplifier (mono model 5409C or stereo model 5410C) is available for recording on deck three independent of the other remaining decks. This allows the 5400C to be utilized as a three deck playback only machine, or as a two deck playback with record/play capability on deck three.

Each unit has the standard 1 kHz cue tone as well as the Secondary (8 kHz) and Tertiary (150 Hz) tones. The standard recorder has a single high level 50K ohm balanced transformer input.

Cool Drive System

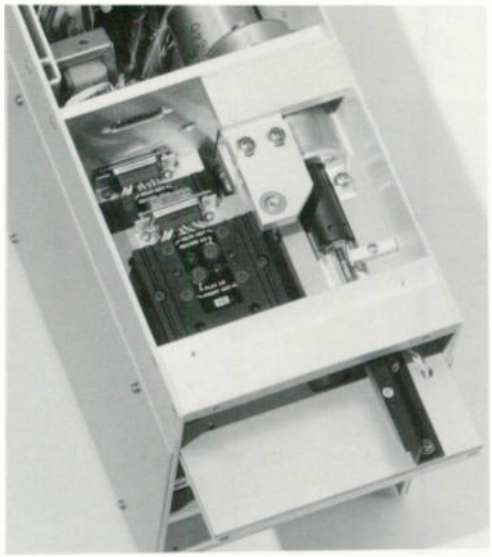
The 5400C uses a super-quiet, direct drive hysteresis/synchronous motor for low wow and flutter, long term reliability, and cool operation without the use of troublesome fans. Operating speed in the hysteresis/synchronous motor is established and maintained by the stable AC power line frequency.

Design/Operational Features

BROADCAST ELECTRONICS INC.

Phase Lok V Head Block

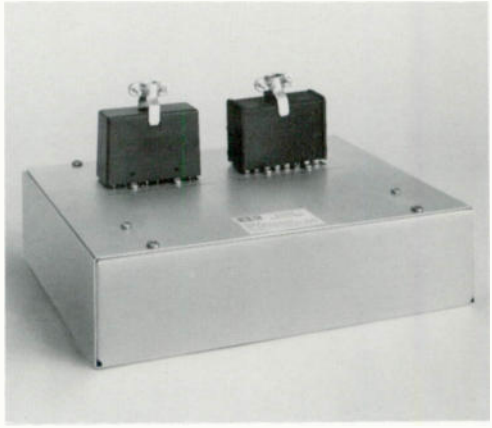
The model 5400C features the unique Phase Lok V head block. The Phase Lok V provides precise head alignment through the use of a locking azimuth adjustment that is independent of the height or zenith adjustments. Its superior mechanical design ensures excellent long term stability.



Plug-In Decks

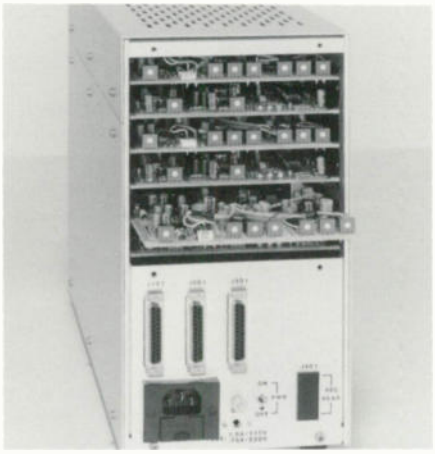
Maintaining the 5400C couldn't be easier. The front panel is hinged, the top two decks slide out, and all electrical connections are made through a connector that is part of the deck unit itself.

Audio Switcher



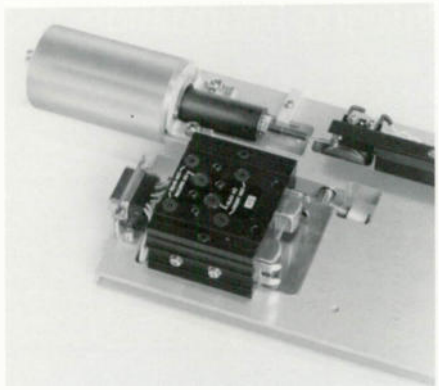
The optional model SW5E audio switcher selects the last deck started and mutes the other decks automatically. This is a handy feature for on-air studios. If one of the decks has been activated incorrectly (out of sequence, wrong cart, etc.), the operator can press another start button which will instantly mute the undesired deck and place the newly started deck on the output. The first deck will continue to run and will re-cue itself. Upon re-cueing, the operator can remove the cart completely or reset the lockout mode for later play. The SW5E switchers can be tied together to provide a single balanced output for up to three 5400C machines.

Plug-In Boards With Gold to Gold Contacts



Deck electronics are mounted on individual plug-in PC cards with gold to gold connectors for maximum reliability. Also shown are mating connectors which are supplied with the machine. Gold to gold contacts are utilized on the deck connectors as well. Service is simplified through the use of LED status indicators located on the PC cards. These provide an indication of the function being performed by the machine when the front panel is not visible.

Cartridge Guidance System



The left and right cartridge guides aid in securing the cart in position horizontally (right hand guide shown above). In addition, two spring loaded top guides apply firm, even pressure to seat the cart precisely within the deck. Cartridge insertion is always extremely smooth regardless of variations in cartridge size.

Technical Specifications

Power
105V to 125V or 210V to 240 VAC, 50 ro 60 Hz (as specified)

Wow and Flutter
Playback: maxium 0.15% DIN. WTD. at 7.5 IPS
Record/Playback: (With 5409 or 5410 recorder) maximum 0.15% DIN. WTD. at 7.5 IPS

Audio Output Configuration
Transformer coupled, 600 ohms impedance

Audio Output Level
(see Note 1) Continuously variable from −20 dBm to +10 dBm (clip level +17 dBm)

System Distortion
(see notes 1, 2, and 4) Record/Play system distortion including tape is less than 2%

Noise
(see notes 1 and 3) Hum and noise with no tape running: −58 dB Mono, −56 dB Stereo. Squelch noise −70 dB or better

Crosstalk
limited to −50 dB or better, program to program or cue to program at 1,000 Hz (see note 1)

Frequency Response
(see note 3) ±2 dB, 40 Hz, to 16 kHz

Equalization
1975 NAB standard
I.E.C. CCIR (customer specified options)

Audio Input Level
(see note 4) Line input: −20 dBm to +20 dBm

Audio Input Configuration
(see note 4) Line input: transformer coupled, 50K ohm balanced bridging input

Cartridge Size
AA NAB Cartridge

Cue Signals
(see note 4) Relay contact closure for external control (150 Hz/8 kHz) External cue input/output available at remote control for other control functions

Ambient Operating Temperature
0 to 50 degrees C (32 to 122 F)

Remote Control
All front panel indicators and controls (except metering)

Standard Tape Speed
Record/Play, 7.5 IPS
3.75 IPS optional (other parameters affected)

Mounting
Table top with optional rack mount also available

Dimensions
Model 5400C Three Deck: 10⅝"H × 5¾"W ×17"D (27 × 14.6 × 43. 2 cm) Allow three inches for connectors at the rear of the machine. Allow an additional ⅜" in height for rubber feet
Model 5409C or 5410C Recorder: 5¼"H × 5¾"W × 17"D (13.3 × 14.6 × 43.2 cm)

Weight
Model 5400C Three Deck: 42 lbs. (packed), 19 Kgs
Model 5409C or 5410C Recorder: 16 lbs. (packed), 7.25 Kgs

Note 1: Reference 1 kHz at 250 nWb/m
Note 2: Using Capital Magnetics AA-4 carts with HOLN tape
Note 3: Specification measured using the 1975 NAB Standard
Note 4: With model 5409C or model 5410C recorder

Additional Features

The 5400C is available in four basic models as described under Ordering Information. The secondary and tertiary cue tones are made available by changing a PC card. Thus, a unit originally purchased with only the primary (1 kHz) cue tone can be field modified by simply replacing the PC logic cards. Also, a separate sensitivity control is provided for each cue sensor in the 5400C.

Ordering Information

(117 VAC/60 Hz)

Model	Stock No.	Description
5401C	900-5401-001	Mono Playback
5402C	900-5402-011	Mono Playback with Cue Tones
5403C	900-5403-001	Stereo Playback
5404C	900-5404-011	Stereo Playback with Cue Tones

(220 VAC/50 Hz)

Model	Stock No.	Description
5401C	900-5401-301	Mono Playback
5402C	900-5402-311	Mono Playback with Cue Tones
5403C	900-5403-301	Stereo Playback
5404C	900-5404-311	Stereo Playback with Cue Tones

Options and Accessories

Model	Stock No.	Description
5409C	900-5409-011	Recorder, Mono with Cue I and II for 5400C Series, 117V, 60 Hz
5410C	900-5410-011	Recorder, Stereo with Cue I and II for 5400C Series, 117V 60 Hz
5409C	900-5409-311	Recorder, Mono with Cue I and II for 5400C Series, 220V, 50 Hz
5410C	900-5410-311	Recorder, Stereo with Cue I and II for 5400C Series, 220V, 50 Hz
	900-5406	Rack shelf for mounting 1 to 3 units
	900-5408	⅓ filler panel for 5406 shelf
	900-5405	Four position cart storage rack for 5406 rack shelf
	900-5407	Ten position cart storage rack for 5406 rack shelf
SW5E	904-5000	Audio switcher
	919-1806	Test extender PC board

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CP 2K 387

BROADCAST ELECTRONICS

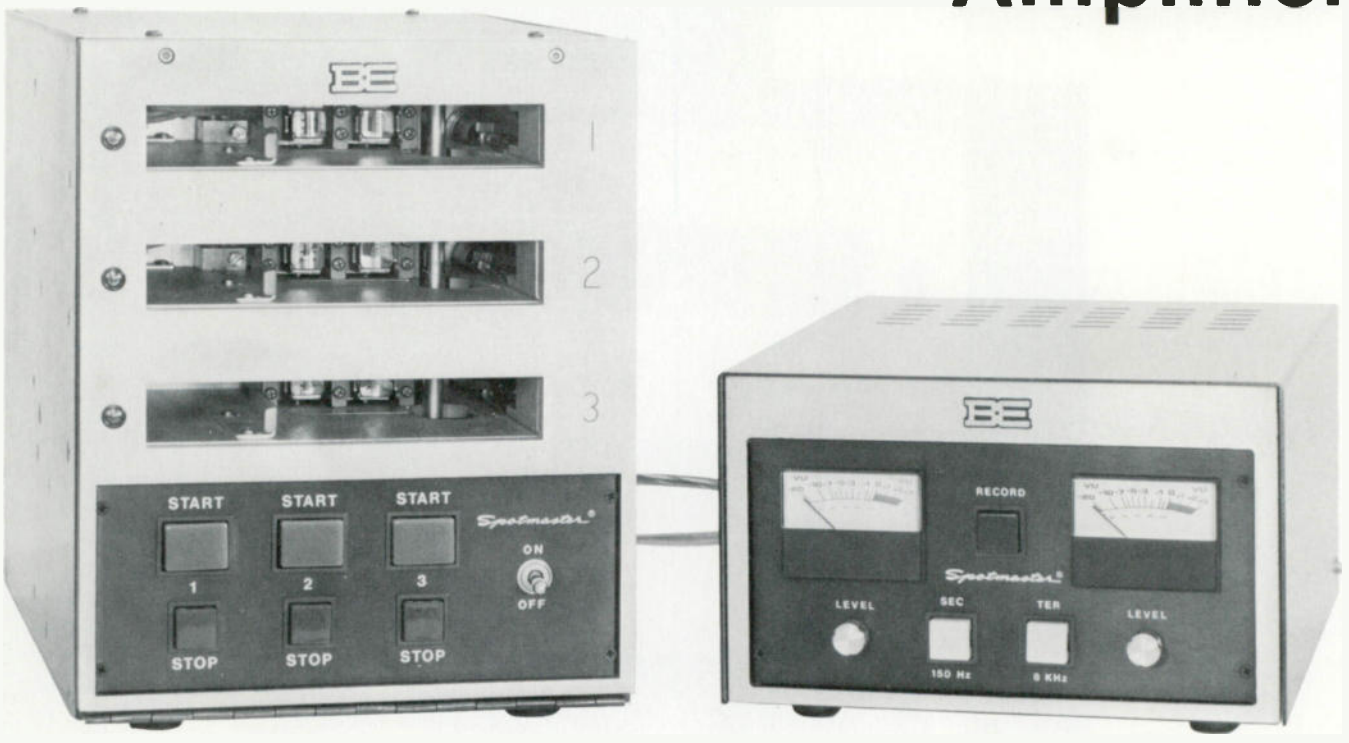
5300B Plug-In Multi-Deck

NOW WITH NORTRONICS® DURACORE™ HEADS

a FILMWAYS company

Broadcast Electronics, Inc.

The 5300B Plug-In Multi-Deck with Companion Recorder Amplifier



THE MODEL 5300B is the most advanced multi-deck cartridge machine on the market. It is a top-of-the-line professional machine which features: solid-state/integrated circuit design, a direct-drive hysteresis synchronous motor, air damped solenoid, and a one-half inch thick machined aluminum deck.

Long life Nortronics® Duracore™ Heads are now a standard component in all Broadcast Electronic Series 5300 B Tape Cartridge Machines.

Features unique to this multi-deck design are plug-in decks, computer ribbon cabling, rear panel LED service aids, and run lights adjacent to each deck.

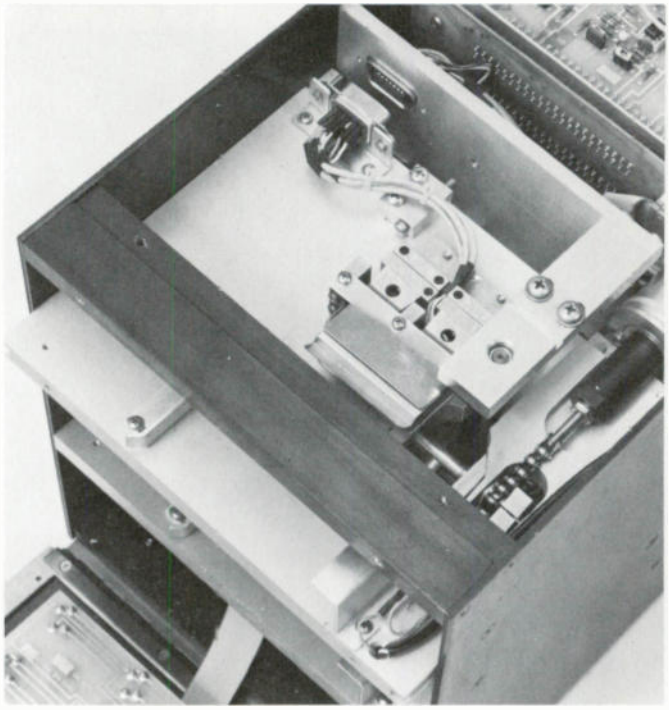
NEW MECHANICAL DESIGN – The Model 5300B has a new internal mechanical design which insures stable and accurate deck and capstan positioning. The motor mounting and the top capstan bearing mounting are mechanically supported by a sturdy aluminum bulkhead insuring consistent mechanical alignment independent of front panel reference.

ADVANCED ELECTRONICS—This machine has all the latest Broadcast Electronics features: ultra-reliable, low-voltage solenoid switching, wide dynamic operating ranges, Phase Lok III head bracket, accurate cartridge positioning and modular design.

The solenoid control circuit utilizes solid-state switching and a low-voltage regulated current source. With this circuit, solenoid operation is smooth and unaffected by ac line variations, heat dissipation is reduced, and the combination of low voltage and solid-state switching significantly enhances reliability.

A characteristic of this machine is exceptionally wide dynamic operating ranges which contribute to high quality reproduction. The companion recorder input circuits and the 5300B output circuits will accept and deliver, without introducing distortion, a greater range of signals than any competitive machine. Balanced transformer output with FET switching permits parallelling of machines.

RECORDING UNIT – The optional recording amplifier (mono Model 5309 or stereo Model 5310) is available for recording on deck # 3 independent of the other two decks. Thus, the 5300 can operate as three separate machines; a record/playback deck and two playback only decks. Another optional unit is an audio switcher which automatically provides a balanced output from the last started deck while muting the other decks.

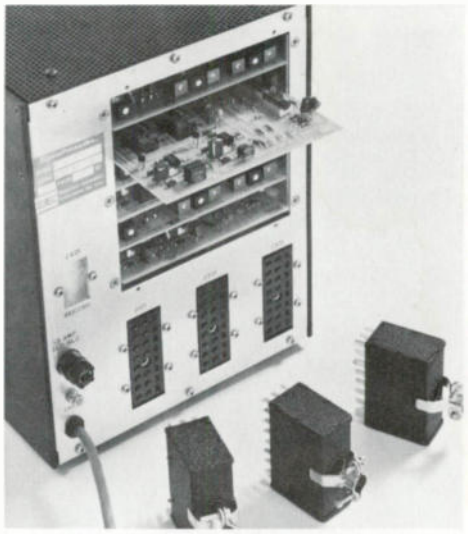


Removable Decks

Removing a Broadcast Electronics deck couldn't be easier. The front panel is hinged, the decks pull out, and all electrical connections are made through a connector that is a part of the deck.

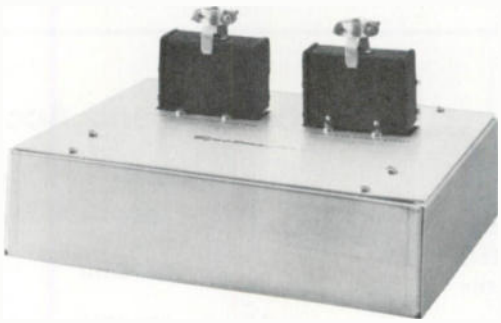
This photograph shows the top bearing support and aluminum bulkhead which provides the mechanical reference for the motor and the decks.

Plug-In PC Cards



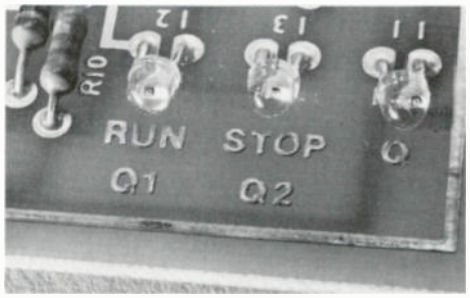
Electronics for the decks are on individual plug-in pc cards. Also shown above are the mating connectors which are supplied with the machine. The record connector is in place (above the fuse holder) behind a protective shield.

Audio Switcher
(Multiple Machines)



Provides a single balanced output. Switchers can be tied together to provide a single balanced output from up to three 5300B machines. Selects last deck started and mutes other decks. If a wrong deck is started, pressing another start button will immediately mute the first deck and put the newly started deck on the output. The first deck started will continue to run, and will re-cue itself.

LED Status Lamps



Servicing the equipment at the rear panel is simplified by LED lamps located on the pc cards. These provide a visible indication of the function being performed by the machine.

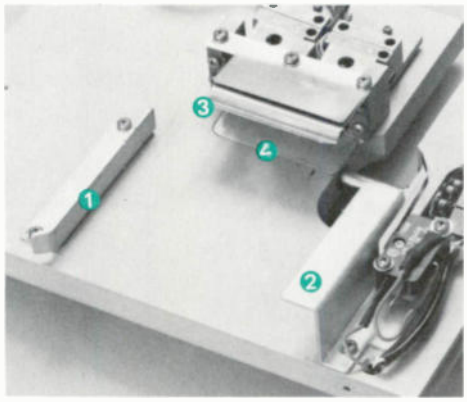
Unique Cartridge Guidance System

A simple yet extremely effective system for positive and accurate cartridge positioning.

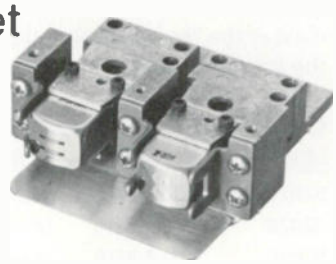
The left side guide ❶ is straight forward. The guide on the right ❷ has a tapered overlap which directs the cartridge down into the head.

Directly above the head a highly tensile beryllium clamp ❸ locks the cartridge into place. The tension provided by this clamp insures positive locking regardless of variations in cartridge machines.

Even the head shielding ❹ located under the head is recessed into the deck to provide a perfectly flat surface for optimum cartridge seating.



Phase Lok III Head Bracket



For optimum adjustment of stereo phasing, these machines have the Phase Lok III Head Bracket. Phase Lok III is the only head bracket to have an azimuth adjustment which is completely independent of the height and zenith adjustments.

Specifications

5300B

Tape Speed:
7.5 ips (19.05 cm/s) ± 0.1%.

Tape Start/Stop Time:
0.1 second maximum.

Wow and Flutter:
0.15% peak weighted,
0.2% RMS unweighted.

Noise (Reproducer):
Monophonic: 62 dB or better below reference of 400 Hz at 3% THD; 54 dB below 160 n Wb/m at 1 kHz.
Stereophonic: 60 dB or better below reference of 400 Hz at 3% THD; 52 dB below 160 n WB/m at 1 kHz.

Distortion:
2% or less record to playback at 160 n Wb/m at 1 kHz.

Equalization:
NAB, IEC, CCIR as specified.

Frequency Response:
±2 dB from 50 Hz to 15 kHz exclusive of head contour effect.

Crosstalk (magnetic head limited):
50 dB or better.

Audio Output:
Maximum adjustable level +8 dBm from 160 n Wb/m at 1 kHz; 600 ohms (transformer) balanced.

Peak Output Level:
+20 dBm before clipping.

Cartridge Size:
A and B.

Cue Signals:
Relay contact closure for external control (150 Hz, 8 kHz). External cue input/output available at remote control for other control functions.

Ambient Operating Temperature:
0^{o} to 55^{o}C (32^{o} to 132^{o}F).

Power Requirements:
105 to 125V or 210 to 230V, 60 Hz.
105 to 125V or 210 to 230V, 50 Hz (optional).
120 watts maximum.

Mounting:
Desk top standard. Adaptors for rack mounting optional.

Dimensions:
10-5/8" H x 8-5/8" W x 13-3/8" D
(27 x 22 x 34 cm).

Weight:
42 lbs. (packed). 19 Kgs.

RECORDER AMPLIFIER

Input Impedance:
Microphone; 150 ohms (transformer) balanced floating
Line; 50 K ohms (transformer) balanced floating

Input Levels:
Microphone; −70 to −24 dBm
Line; −24 to +20 dBm (50 mV to 7.7 V)

Power Requirements:
105 to 125 V/210 to 230 V; 50 or 60 Hz

Dimensions:
5¼" H x 8-5/8" W x 13½" D
(13.3 x 22 x 34 cm)

Weight (uncrated):
16 lbs. (7.25 kgs.)

Additional Features

The 5300B is available in four basic models as shown under Ordering Information. The secondary and tertiary cue tones are made available by changing a PC card. Thus, a unit originally purchased with only the primary (1 kHz) cue tone can be field modified by simply replacing the PC card.

A separate sensitivity control is provided for each cue sensor in the 5300B.

The recorder amplifier is available in either mono or stereo. Each unit has the standard 1 kHz cue tone. Secondary (8 kHz) and tertiary (150 Hz) tones are available for the recorder as an option.

The standard recorder has two input circuits: a high level 50K ohm balanced transformer and a low level microphone input. The recorder amplifier has an automatic meter switching capability. During recording the meter indicates the record level and in playback the meter indicates the playback level on deck number 3.

Ordering Information

Model	Stock No.	Description
5301B	906-5301B	Mono Playback (A & B Size)
5302B	906-5302B	Mono Playback (A & B Size) with Cue Tones
5303B	906-5303B	Stereo Playback (A & B Size)
5304B	906-5304B	Stereo Playback (A & B Size) with Cue Tones

Options and Accessories

Model	Stock No.	Description
	906-5309	Recorder, Mono for 3 Decker, without Q Trip Option
	906-5310	Recorder, Stereo for 3 Decker, without Q Trip Option
SW5E	904-5000	Audio Switcher for 3 Decker
5300	927-0047	Remote Control Panel for 5300A/B Series
5300	927-004B	Remote Control Panel for 5300 A/B Series with Companion Record Amplifier
	906-5311A	Secondary (150Hz) and Tertiary (8kHz) Q Trips for Mono Recorder
	906-5311B	Secondary (150Hz) and Tertiary (8kHz) Q Trips for Stereo Recorder
	906-5306	Rack Mount (1) Unit
	906-5307	Rack Mount (2) Units
	906-530B	Additional cost for 220/50Hz Power Source
	919-1806	Extender PC Board

NOTE: All Series 5300B Models are supplied with long life Nortronics® Duracore™ Heads.

BROADCAST ELECTRONICS, INC.

4100 NORTH 24th STREET — QUINCY, ILLINOIS 62305
Telephone: (217) 224-9600 — Telex: 25-0142 — Cable: "BCST ELECT QUI"

B101R CP 1K 1181

5400 3-Deck Trim-Line "AA"-Size Cartridge Machine

FEATURES:

- Silent Cool Operation
- Clean Sound
- Direct Drive Hysteresis Synchronous Motor
- Plug-In Machined Decks
- Unique Phase Lok IV Head Bracket Assemblies
- Gold to Gold Contacts

BROADCAST ELECTRONICS INC

BROADCAST ELECTRONICS INC

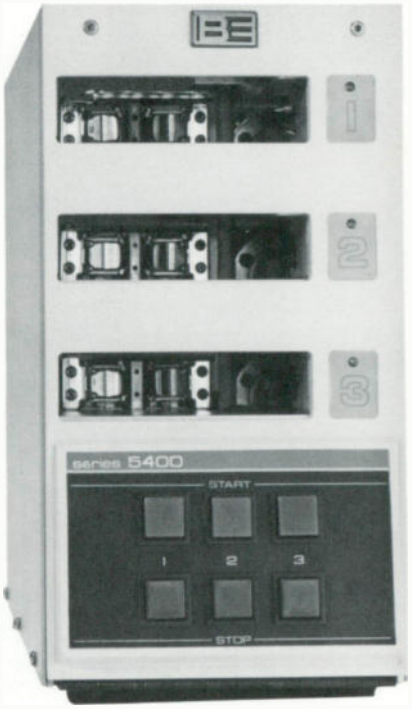
5400 Plug-In 3-Deck Cart Machine

New Compact "AA" Size, 3-Deck: Clean sound can come only from fine equipment like Broadcast Electronics' new Model 5400.

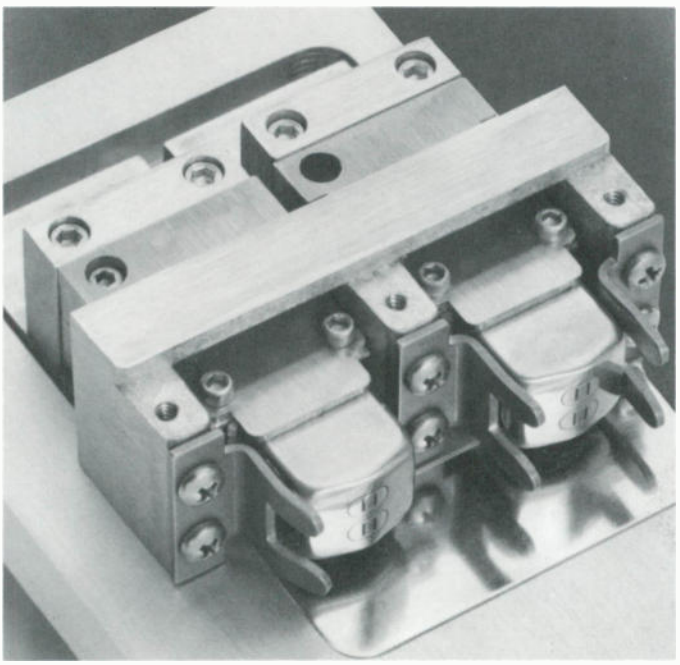
The superb electronics is designed for the purist. Clean sound is because of the low wow and flutter from the direct drive synchronous motor, the 52 dB stereo S/N, the Phase Lok IV head bracket for optimum stereo phasing and the solid ½ inch aluminum precision machined deck for stable cartridge positioning.

The new Model 5400 three-deck machine is a meld of ruggedness, reliability and outstanding performance. Inside this new three deck, construction follows the rugged mechanical design acclaimed by thousands of users of the field proven Model 5300B. Access to electronics and mechanical assemblies is superb. Plug-in decks and PC cards make maintenance and servicing a snap.

Clean and practical design attention has produced the coolest running, best sounding, multideck cart tape equipment you can buy today. And, the trim line design permits three machines to be rack mounted side-by-side.



Operational Features



Phase Lok IV Head Assembly: The Model 5400 Three-Deck uses the Phase Lok IV head brackets for optimum adjustment of stereo phasing. Phase Lok IV is the only cart machine head bracket to have a non-locking azimuth adjustment which is completely independent of the height and zenith adjustments.

Rugged die-cast parts provide the stability needed for tight control and alignment repeatability. The one piece tape guide support assures the proper tape guide alignment and head penetration necessary for high quality recording and reproduction.

Unique Mechanical Design: The Model 5400 utilizes an internal structural bulkhead design which insures stable and accurate deck and capstan positioning. The top capstan bearing is mechanically supported by the sturdy aluminum bulkhead insuring consistent mechanical alignment independent of front panel reference.

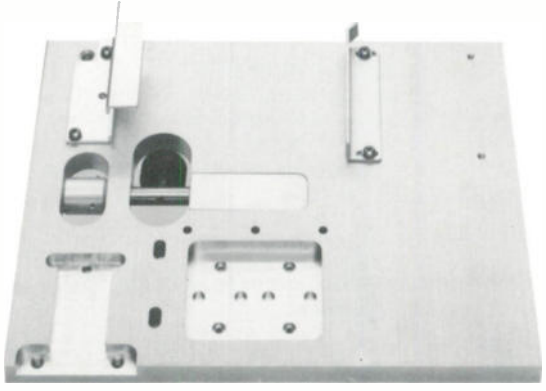
Cool, Quiet Operation: The large air-damped solenoid used in the Model 5400 is carefully controlled by a current regulated low-voltage DC source which reduces current after initial turn on. This design reduces power consumption as well as radiated noise while preventing heat build-up. Silent, cool operation is a key feature of the Model 5400 Three-Deck. Additional reliability is achieved by the use of solid state components for audio switching and all other internal control functions.

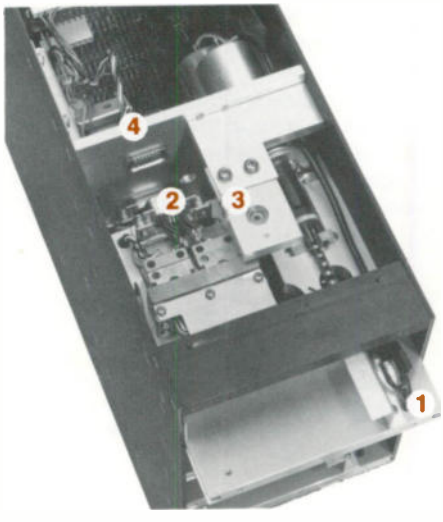
Advanced Electronics: A characteristic of the 5400 is exceptionally wide dynamic operating ranges which contribute to high quality reproduction. The companion recorder input circuits and the 5400 output circuits will accept and deliver, without introducing distortion, a greater range of signals than any competitive machine. Balanced transformer output with FET switching permits paralleling of machines.

Recording Unit: The optional recording amplifier (mono Model 5409 or stereo Model 5410) is available for recording on deck #3 independent of the other two decks. Thus, the 5400 can operate as three separate machines or as a record/playback deck and two playback only decks. Another optional unit is an audio switcher which automatically provides a balanced output from the last started deck while muting the other decks.

Precision Machined Deck

Each Model 5400 tape deck is made of solid aluminum, precision machined and protected by a clear anodized finish. This ½-inch thick deck provides rigid support and creates a stable reference for head mounting and cartridge positioning. A Mu-metal plate inlaid in the deck surface (beneath the heads) and shielding underneath the deck and above the heads, helps isolate the heads from any stray magnetic fields.



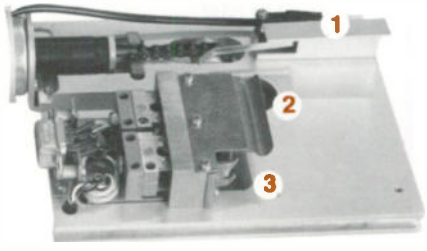


Plug-In Decks

Removing a Broadcast Electronics deck couldn't be easier. The front panel is hinged. **1** the top decks pull out, and all electrical connections are made through a connector **2** that is a part of the deck.

This photograph shows the top bearing support **3** and aluminum bulkhead **4** which provides the mechanical reference for the motor, decks and capstan.

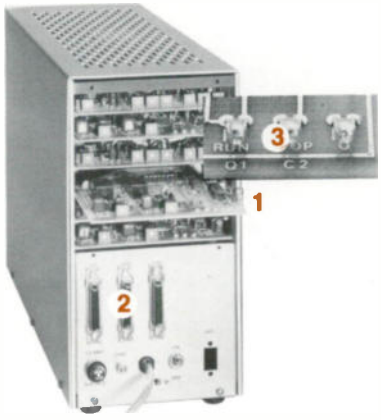
Cartridge Guidance System



The left cartridge guide (not shown) aids in guiding the cart into position horizontally. A deflection spring at the end of the run assures the cartridge is moved to the right to proper position against the right hand cartridge guide **1**.

Directly above the head **2** a nickel-silver clamp locks the cartridge into place. The force provided by this clamp insures positive locking. Also mounted above the nickel-silver clamp is a Mu metal shield to protect the head from stray electrostatic fields.

Mu metal shielding **3** is also located directly under the head and is recessed into the decks for maximum effectiveness.



Gold to Gold Contact, Plug-In PC Cards

Deck electronics are on individual plug-in pc cards **1** with all gold to gold connections for high reliability. Deck connectors **2** of the type with gold to gold contacts match separately supplied mating connectors.

Servicing the equipment at the rear panel is simplified by LED's **3** located on the pc cards. These provide a visible indication of the function being performed by the machine.

Cool Drive System

The 5400 uses a super-quiet, direct drive hysteresis-synchronous motor for increased torque, low wow and flutter, long term speed stability and cool operation. No fan is required for cooling. Motor speed is established and maintained by the highly precise AC power line frequency, eliminating the need for complicated tachometer sensing and reference frequency generating schemes used in dc servo drive systems. The latter require high heat generating voltage regulators to maintain critical motor operating voltages. This in turn frequently involves fan cooling to insure safe enclosure operating temperatures.

When it comes to cartridge tape, the 5400 plays it cool!

Specifications

Model 5400

Power
A. 105V to 125V or 210V to 240 VAC
B. 50 Hz or 60 Hz (As specified)

Wow and Flutter
A. Playback: maximum 0.12% DIN. WTD. at 7.5 IPS
B. Record/Play (With Model 5409 or Model 5410 Recorder) maximum 0.15% DIN. WTD. at 7.5 IPS

Audio Output Configuration
Transformer coupled, 600 ohm impedance

Audio Output Level (See note 1)
Continuously variable from −20 dBm to +10 dBm
(Clip level +20 dBm)

System Distortion (See notes 1, 2 and 4)
Record/Play system distortion (including tape) less than 2%

Noise (See notes 1 and 3)
A. Hum and noise, no tape running
Mono −54 dB Stereo −52 dB
B. Squelch Noise −70 dB or better

Crosstalk
−50 dB or better, program to program or cue to program at 1000 Hz

Frequency Response (See note 3)
±2 dB 50 Hz to 15 kHz, exclusive of head contour effect

Equalization
A. 1964 NAB standard
B. I.E.C., CCIR (Customer specified options)

Audio Input Level (See note 4)
Line input: −20 dBm to +20 dBm
With built-in microphone input: −70 dBm to −24 dBm

Audio Input Configuration (See note 4)
A. Line-transformer coupled, 50K ohm balanced bridging input
B. Microphone −150 ohm balanced transformer input

Cartridge Size
AA NAB Cartridge

Cue Signals (See note 4)
Relay contact closure for external control (150 Hz, 8 kHz) External cue input/output available at remote control for other control functions.

Ambient Operating Temperature
0 degrees to 55 degrees C (32° to 132°F)

Remote Controls
All front panel indicators and controls (except metering)

Standard Tape Speed
A. Record/Play, 7.5 IPS
B. 3.75 IPS optional (other parameters affected)

Mounting
A. Table Top
B. Rack Mount (optional)

Dimensions
A. Model 5400 Three Deck:
10⅝"H × 5¾"W × 17"D
(27 × 14.6 × 43.2 cm)
Allow 3" for connectors at the rear of the machine. Allow an additional ⅜" in height for rubber feet.
B. Model 5409 or 5410 Recorder:
5¼"H × 5¾"W × 17"D
(13.3 × 14.6 × 43.2 cm)

Weight
A. Model 5400 Three Deck
42 lbs. (packed), 19 Kgs
B. Model 5409 or 5410 Recorder:
16 lbs. (7.25 Kgs)

Note 1 - Reference 700 Hz at 185 n Wb/m
Note 2 - Using Capital Magnetics Q17-HOLN Tape
Note 3 - Specification measured using the 1964 NAB Standard Equalization
Note 4 - With Model 5409 or Model 5410 Recorder

Additional Features

The 5400 is available in four basic models as shown under Ordering Information. The secondary and tertiary cue tones are made available by changing a PC card. Thus, a unit originally purchased with only the primary (1 kHz) cue tone can be field modified by simply replacing the PC card.

A separate sensitivity control is provided for each cue sensor in the 5400.

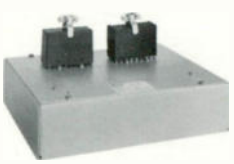
The recorder amplifier is available in either mono or stereo. Each unit has the standard 1 kHz cue tone. Secondary (8 kHz) and tertiary (150 Hz) tones are available for the recorder as an option.

The standard recorder has two input circuits: a high level 50K ohm balanced transformer and a low level microphone input. The recorder amplifier has an automatic meter switching capability. During recording the meter indicates the record level and in playback the meter indicates the playback level on deck number 3.

Ordering Information

Model	Stock No.	Description
5401	900-5401	Mono Playback
5402	900-5402	Mono Playback with Cue Tones
5403	900-5403	Stereo Playback
5404	900-5404	Stereo Playback with Cue Tones

Audio Switcher
(Multiple Machines)



Model SW5E

Switchers can be tied together to provide a single balanced output from up to three 5400 machines. Selects last deck started and mutes other decks. If a wrong deck is started, pressing another start button will immediately mute the first deck and put the newly started deck on the output. The first deck started will continue to run, and will re-cue itself.

Options and Accessories

Model	Stock No.	Description
	906-5409	Recorder, Mono for 3 Decker, without Q Trip Option
	906-5410	Recorder, Stereo for 3 Decker, without Q Trip Option
SW5E	904-5000	Audio Switcher for 3 Decker
RC5300	927-0047	Remote Control Panel for 5400 Series
RC5300	927-0048	Remote Control Panel for 5400 Series with Companion Record Amplifier
	906-5411A	Secondary (150 Hz) and Tertiary (8 kHz) Q Trips for Mono Recorder
	906-5411B	Secondary (150 Hz) and Tertiary (8 kHz) Q Trips for Stereo Recorder
	906-5406	Rack Mount, (1) to (3) Units
	906-5407	⅓ Rack Filler Panel
	906-5408	Additional cost for 220/50 Hz Power Source for 5409 Mono Recorder or for 5410 Stereo Recorder
	919-1806	Extender PC Board

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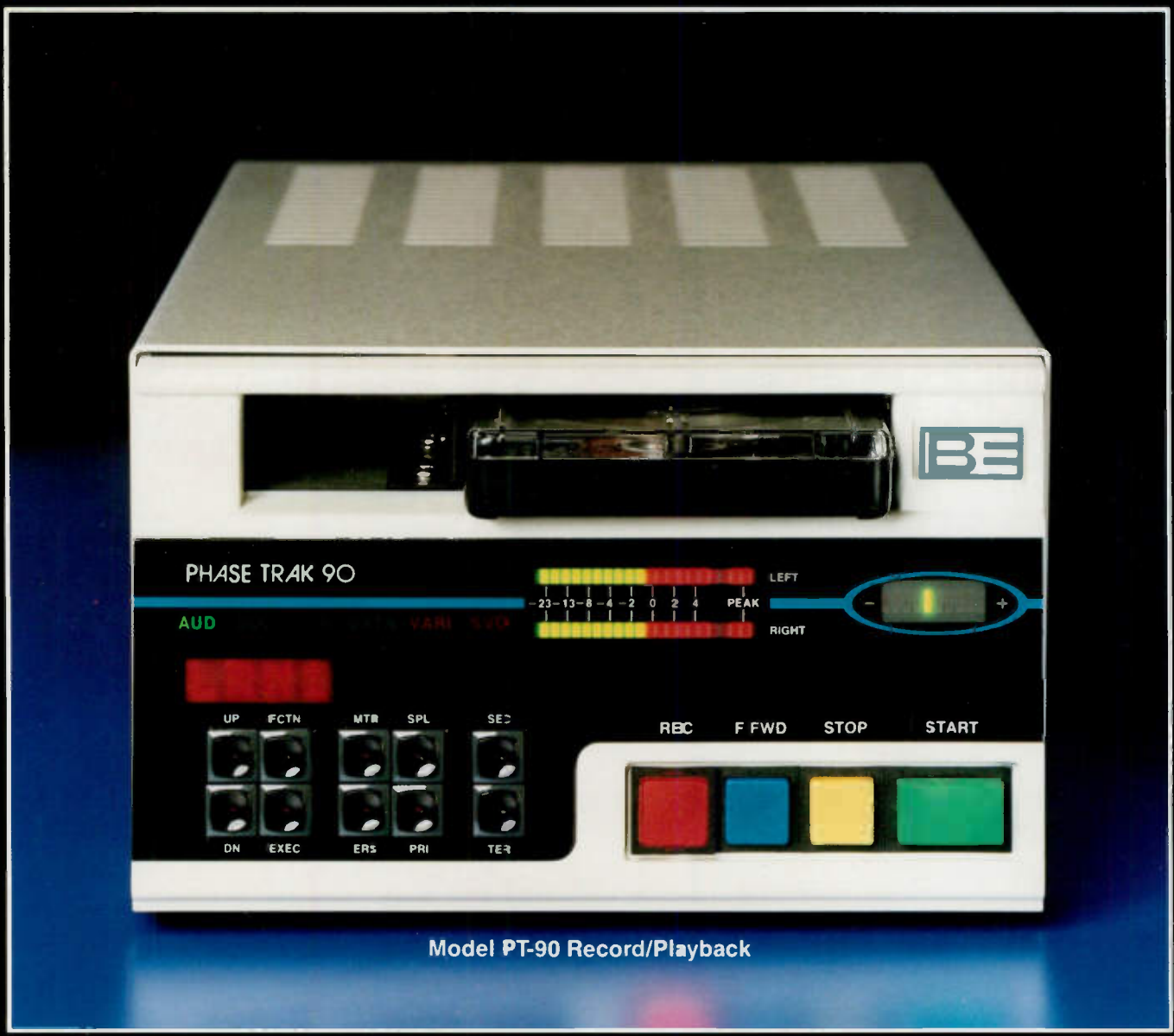
PHASE TRAK 90™

THE INTELLIGENT CARTRIDGE MACHINE . . . NOW THE INDUSTRY STANDARD!

BROADCAST ELECTRONICS INC.®



Model PT-90 Record/Playback

"FROM THE PEOPLE WHO KNOW RADIO"

THE INTELLIGENT CARTRIDGE MACHINE . . . NOW THE INDUSTRY STANDARD!

With more standard features than any other cart machine

The Phase Trak 90 Record/Playback was designed to meet the most demanding production and performance standards of today's broadcast professional. With such standard features as Tape Analysis with a "Learn Mode" and Electronic Phase Correction, the Phase Trak 90 is changing the standards of the industry.

- Tape Analysis System with "Learn Mode"
- Electronic Non-encoding Phase Correction*
- Positive Search Splice Finder
- Superior Audio Performance
- Latest Technological Advancements
- Selectable Three Level Control Capability on microprocessor-based functions: Normal, Learn and Manual
- Built-in FSK Encoder
- Left & Right Channel LED Meters with true VU ballistics for the meter section
- Front Panel Cue Record & Erase Controls
- Cue Track Metering
- Front Panel Digitally Synthesized Tone Oscillator facilitates maintenance
- Easy-to-read Digital Timer synchronized to the motor speed for accurate tape time readings
- Four Playback Cue Circuits - Including an FSK decoder
- True, Modular Slide-Out Assemblies
- Pressure Roller Cleaning Mode
- Automatic/Manual Fast Forward
- Automatic Audio Muting
- Built-in Audio Switcher for Multiple Machine Applications
- Backlit Front Panel Status Indicators
- Reliable DC Servo Motor with Vari-Speed Control
- Optical Tape Level Sensing Tab for tapes recorded at higher levels
- Selectable Non-Encoded Noise Reduction
- Non-Repeat Lockout
- Cart-Not-Cued Lockout
- 1 kHz Record Defeat
- Newly designed, Air Damped Solenoid features electronic current regulation
- Solid Die Cast Front Panel
- Machined ½" Thick Aluminum Deck
- Full Remote Control Capability

For more information contact Tim Bealor at Broadcast Electronics or your B.E. Distributor.

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OUT OF STATE 1-800-558-0222

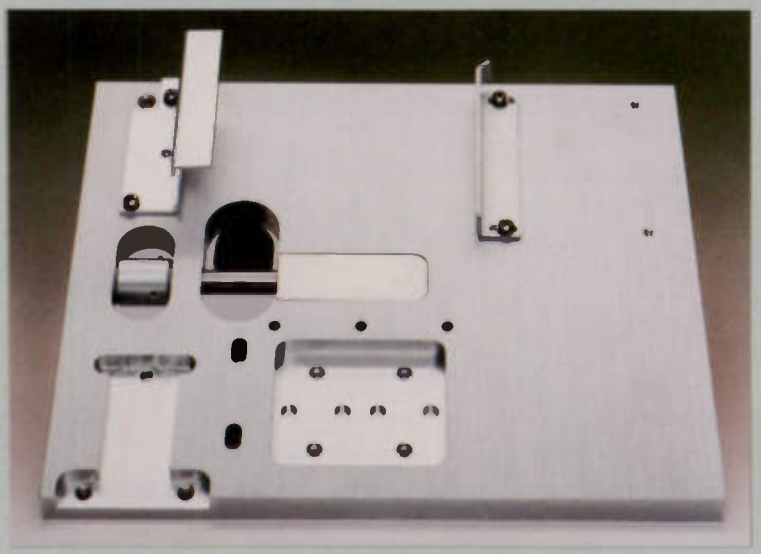
BROADCAST
ELECTRONICS INC.

series 3000

Tape Cartridge Machines

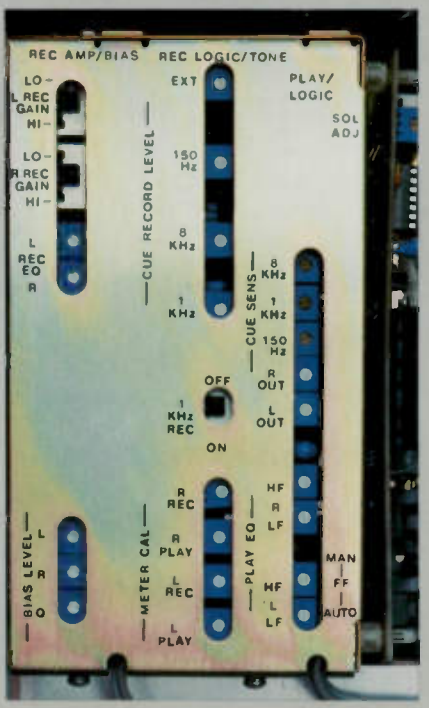
Precision Machined Deck

Each Series 3000 tape deck is made of solid aluminum, precision machined and protected by a clear anodized finish. This ½-inch thick deck provides rigid support and creates a stable reference for head mounting and cartridge positioning. A Mu-Metal plate inlaid in the deck surface (beneath the heads) and shielding underneath the deck and above the heads, helps isolate the heads from any stray magnetic fields.



Convenient Adjustments

Access to electronic circuitry is easy and convenient in every Series 3000 machine. All common user adjustment controls are accessible through cage cover openings. Labeling of the circuit board card cage assures quick identification and location of circuit boards and controls. Complete access to the plug-in circuit boards is achieved by removing the cage cover.



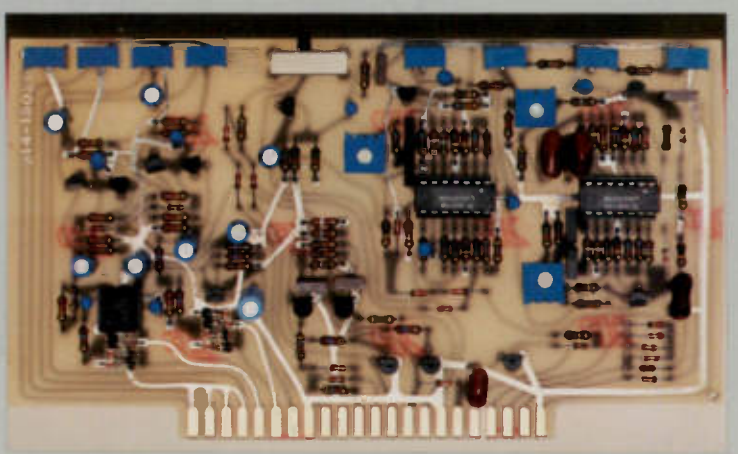
Capstan Motor

Every Series 3000 Cartridge machine is driven by a powerful direct-drive hysteresis-synchronous capstan motor.

This outstanding motor provides increased torque, low wow and flutter and long term speed stability. A chrome finished, vapor-honed capstan shaft assures positive torque transfer between the motor and the tape.

Gold to Gold Contacts

Gold-to-gold contacts provide low contact resistance to all PC board edge connections throughout the Series 3000. Plug in ICs and single turn potentiometers aid serviceability. Advanced assembly techniques and rigid quality control standards assure maximum dependability through error-free construction.



BROADCAST ELECTRONICS INC.

series 3000

FEATURES:

- Silent Cool Operation
- Low Voltage Air Damped Solenoid
- Direct Drive Hysteresis Synchronous Motor
- Unique Phase Lok IV Head Bracket Assembly
- High Memory Pressure Roller
- Gold to Gold Contacts
- Modern Integrated Circuits

The Most Dependable Cart Machine You Can Buy!

Behind every Series 3000 machine there is over 24 years of continuous cartridge machine manufacturing experience - longer than any other company in the world! During this time, Broadcast Electronics has produced more than 35,000 tape cartridge machines. Rigid quality control standards and a long record of reliability have earned the Series 3000 machines world wide user acceptance.

Reliability Plus

Series 3000 cartridge machines provide the kind of reliability broadcasters need. Starting with the highest quality components available, Broadcast Electronics has done everything possible to insure these machines perform, today, tomorrow and in the years ahead.

The durability of the 3000 Series design has been demonstrated in life cycle testing programs which have repeatedly cycled this machine through two million operations during which the Series 3000 machine performed without failure.

Cool, Quiet Operation

A low voltage solenoid design allows very cool operation. Some models draw as little as 45 watts. This low power consumption makes a major contribution to the long term reliability of the 3000 Series over competitive models. Additional reliability is achieved by the use of solid state components for audio switching and all other internal control functions. The 3000 Series machines run quietly too, thanks also to the solenoid design.

Superb Design

The up-to-date electronic design of the Series 3000 makes extensive use of reliable integrated circuits. High quality Dialco switches and long life heads are used exclusively.

Every major assembly in the machine can be removed and/or replaced without unsoldering a single wire. Modular PC board design, plug-in IC's and high-reliability single-turn potentiometers further simplify serviceability.

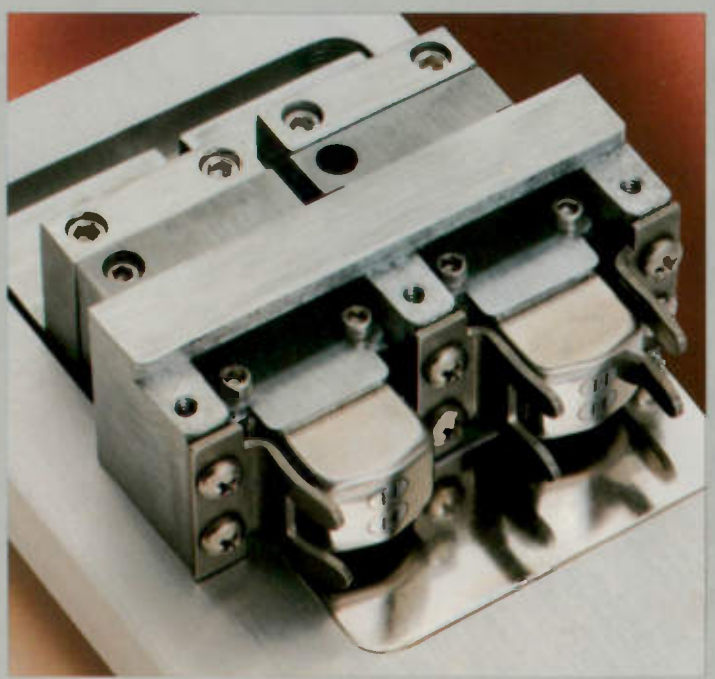
BROADCAST ELECTRONICS INC.

series 3000 Professional Quality Cartridge Machines

Phase Lok IV Head Assembly

Series 3000 cartridge machines have the Phase Lok IV head brackets for optimum adjustment of stereo phasing. Phase Lok IV is the only cart machine head bracket to have a non-locking azimuth adjustment which is completely independent of the height and zenith adjustments.

Rugged die-cast parts provide the stability needed for tight control and alignment repeatability. The one piece tape guide support assures the proper tape guide alignment and head penetration necessary for high quality recording and reproduction.



Pressure Roller

The Series 3000 pressure roller is made from a high memory Nitrile™, a copolymer compound well suited for magnetic tape drives. Nitrile™ copolymer has excellent resistance to wear and moisture absorption and is unaffected by lubricants used on magnetic tape. Although urethane compounds are commonly used for roller applications, many are hydroscopic and can be affected by tape lubricants.

Low Voltage Air Damped Solenoid

The large air-damped solenoid used in the Series 3000 is carefully controlled by a current regulated low-voltage DC source which reduces current after initial turn on. This design reduces power consumption as well as radiated noise while preventing heat build-up. Silent, cool operation is a key feature of the Series 3000 machines.

Product Specifications

POWER
A. 105V to 125V to 240VAC
B. 50 Hz to 60 Hz as specified

WOW AND FLUTTER
A. Record/Play maximum
0.15% DIN. WTD. at 7.5 IPS
B. Playback maximum
0.15% DIN. WTD. at 7.5 IPS
0.08% typical

AUDIO OUTPUT CONFIGURATION
Transformer coupled, selectable from 600 Ohm or 150 Ohm impedence

AUDIO OUTPUT LEVEL (See note 1)
Continuously variable from −20dBm to +10dBm (Clip level +20dBm)

SYSTEM DISTORTION (See notes 1 and 2)
Record/Play system distortion (including tape) less than 2%

NOISE (See notes 1 and 3)
A. Hum and noise, no tape running
Mono −54dB Stereo −52dB
B. Squelch Noise −70dB or better

CROSSTALK
−50dB or better, program to program or cue to program at 1000Hz

FREQUENCY RESPONSE (See note 3)
+ −2dB 50Hz to 15KHz, exclusive of head contour effect

EQUALIZATION
A. 1964 NAB standard
B. I.E.C., CCIR (Customer specified options)

AUDIO INPUT LEVEL
Line input: −20dBm to +20dBm
With optional microphone input:
−70dBm to −24dBm

AUDIO INPUT CONFIGURATION
A. Line-transformer coupled, 50K Ohm balanced bridging input
B. Microphone (optional) −150 Ohm balanced transformer input

CARTRIDGE SIZE
A. Model 3100 - A, AA
B. Model 3200 - A, AA, B, BB
C. Model 3300, 3400 - All NAB cartridges sizes

CUE SIGNALS
Relay contact closure for external control (150Hz, 8KHz). External cue input/output available at remote control for other control functions.

AMBIENT OPERATING TEMPERATURE
0 degrees to 55 degrees C (32 to 132F)

REMOTE CONTROLS
All front panel indicators and controls (except metering)

STANDARD TAPE SPEED
A. Record/Play, 7.5 IPS
B. 3.75 IPS optional (other parameters affected)
C. Fast forward, 22.5 IPS (Optional)

MOUNTING
A. Table Top Models (3100, 3200, 3300)
B. Rack Mount (optional all models except Model 3400)
C. Rack mount only, Model 3400

DIMENSIONS
A. Model 3100 5¼"H x 5 7/8"W x 15½"D
B. Model 3200 5¼"H x 8¾"W x 15½"D
C. Model 3300 5¼"H x 11¾"W x 15½"D
D. Model 3400 5¼"H x 17"W x 15½"D
Allow 3" for connectors at the rear of the machine.
Allow an additional 3/8" height for rubber feet.

WEIGHT
A. Model 3100 28 lbs. (12.7Kg)
B. Model 3200 33 lbs. (15Kg)
C. Model 3300 37 lbs. (16.8Kg)
D. Model 3400 42 lbs. (19Kg)

Note 1 - Reference 700Hz at 185nWb/m
Note 2 - Using Capital Magnetics Q17-HOLN tape
Note 3 - Specification measured using the 1964 NAB Standard Equalization

Ordering Information

STOCK NO.	MODEL & DESCRIPTION
906-3100	3100P Mono, Playback, A Size Cartridges
906-3101	3100PS Stereo, Playback, A Size Cartridges
906-3200	3200P Mono, Playback, A & B Size Cartridges
906-3201	3200RP Mono, Record/Playback, A & B Size Cartridges
906-3202	3200PS Stereo Playback, A & B Size Cartridges
906-3203	3200RPS Stereo, Record/Playback, A & B Size Cartridges
906-3204	3200RP/DL Mono, Delay Programmer, A & B Size Cartridges
906-3300	3300P Mono, Playback, A, B, & C Size Cartridges
906-3301	3300RP Mono, Record/Playback, A, B, & C Size Cartridges
906-3302	3300PS Stereo, Playback, A, B, & C Size Cartridges
906-3303	3300RPS Stereo, Record/Playback, A, B, & C Size Cartridges
906-3304	3300RP/DL Mono, Delay Programmer, A, B, & C Size Cartridges
906-3400	3400P Mono, Playback only, rack mount, A, B, & C Size Cartridges
906-3401	3400PS Stereo, Playback only, rack mount, A, B, & C Size Cartridges
906-3402	3400RP Mono, Record/Playback, rack mount, A, B, & C Size Cartridges
906-3403	3400RPS Stereo, Record/Playback, rack mount, A, B, & C Size Cartridges
906-3404	3400RP/DL Mono, Delay Programmer, rack mount, A, B, & C Size Cartridges

NOTE: Delay Programmer machines are standard with 1 Kz and 150 Hz cue tones and cannot be supplied with 8 KHz cue tone. Automatic/Manual fast forward can be added without 8 kHz. Delay machines cannot be used for stereo operation.

NOTE: FACTORY OPTIONS CANNOT BE INSTALLED AFTER EQUIPMENT HAS BEEN MANUFACTURED OR SHIPPED.

FACTORY INSTALLED OPTIONS (must be ordered with machine)

906-3000	Q Trip I & II (150 Hz and 8 kHz), Playback Only Models
906-3001	Q Trip I & II (150 Hz and 8 kHz), Record/Playback Models
906-3002	Adjustment of Equalization to IEC/CCIR Specifications, Mono
906-3012	Adjustment of Equalization to IEC/CCIR Specifications, Stereo
906-3003	Microphone Input Option, Mono Record/Playback Models
906-3004	Microphone Input Option, Stereo Record/Playback Models
906-3006	Automatic and Manual Fast Forward, Playback Only Models with Q Trip I and II (150 Hz and 8 kHz)
906-3007	Automatic and Manual Fast Forward, Record/Playback Models with Q Trip I and II (150 Hz and 8 kHz)
906-3029	Additional cost for 220/240 VAC/50 Hz
906-3008	Additional cost for 220/240 VAC/50 Hz
906-3009	Additional cost for alternate 3.75 IPS tape speed

ACCESSORIES

906-3013	Rack Mount Shelf for EIA 19" Rack
906-3010	Top Cover for 906-3013 Shelf

NOTE: If series 3000 machines are to be mounted in 906-3013 Rack Shelf, order machines less Top Covers, and order Rack Shelf 906-3010 Top Cover. Deduct price of cover from price of each machine ordered for rack mounting.

906-3014	Rack Shelf Filler Panel, ⅓ Rack
906-3015	Rack Shelf Filler Panel, ½ Rack
919-1504	Extender, P.C. Boards
906-3016	RC3000 Remote Control Panel, Start for 5 units for Series 3000
906-3019	RC3000 Remote Control Panel, Single Record/Playback for Series 3000
906-3020	RC3000 Remote Control Panel, Single Playback (with cue tones) for Series 3000
906-3021	RC3000 Remote Control Panel, Single Playback (without cue tones) for Series 3000
906-3028	RC3000 Remote Control Panel with start/stop and fast forward switches for 5 Series 3000

Model	Width	Depth	Height	Shipping	Weight (packed)
3100	5.87 in.	15.5 in.	5.25 in.*	28 lbs.	(12.7 kg)
3200	8.75 in.	15.5 in.	5.25 in.*	83 lbs.	(15.0 kg)
3300	11.75 in.	15.5 in.	5.25 in.*	37 lbs.	(16.8 kg)
3400	17 in.	15.5 in.	5.25 in.	42 lbs.	(19.0 kg)

(*add 0.375 inch for rubber feet)

BROADCAST ELECTRONICS INC.

4100 N. 24th St., P.O. BOX 3606, QUINCY, IL 62305, U.S.A., (217)224-9600, TELEX: 25-0142, CABLE: BROADCAST

Space Saving Designs For All Size Cartridges

Model 3100 Slim Line

For use with NAB A and AA cartridges. Available in mono and stereo playback models. Three units can mount side-by-side in a 19-inch rack shelf.

Model 3200 Compact

For use with NAB A, AA and B, BB size cartridges. Available in mono or stereo record/playback only models. Two Model 3200 units can mount side-by-side in a 19-inch rack shelf.

Model 3300 Compact

For use with all NAB standard size cartridges. Available in mono, stereo, record/playback, and playback only models. A single 3300 model can be mounted side-by-side with a single model 3100 in a 19-inch rack shelf.

Model 3400 Rack Mount

The Model 3400 comes standard as a rack mount unit with no shelf or filler panels necessary. The 3400 has all the features of the standard 3000 Series cartridge machine and handles all size cartridges.

Delay Machines-Models 3200 RP/DL, 3300 RP/DL, 3400 RP/DL

In addition to providing normal playback and record functions, delay units allow the use of the machine whenever a delay might be required. From a six second delay (for live talk show editing) to a 30 minute network programming delay, these machines can handle any length delay required. The time span of the delay is determined by the length of the tape in the cartridge.

series 3000

Options and Accessories

Automatic/Manual Fast Forward

Automatic or manual operation is provided by this option which detects the end-of-message (150Hz) cue tone and automatically advances at three times the normal speed to the next stop tone. Audio is muted during automatic advancement and this option includes the cue tone.

Secondary and Tertiary Cue Tones

The Series 3000 cue tone option provides two auxiliary cue tones. The (150Hz) or secondary cue tone is normally used for end of message detection. The (8kHz) is used for an auxiliary switching function.

Microphone Options

For recording flexibility a microphone input is available for both mono and stereo units. The 150 Ohm balanced transformer input accepts input levels from -70 to -24dB. A headphone monitoring jack is standard with all units.

Voltage Option

60Hz Models-208 to 230 Volts.
50Hz Models-105 to 120 Volts and 208 to 230 Volts. (Standard voltage is 105 to 120 volts, 50Hz).

Equalization Option

NAB or CCIR/IEC

Tape Speed Option

7.5 ips (19.05 cm/s). Standard
3.75 ips (9.53 cm/s). Optional.

BROADCAST ELECTRONICS INC.

Rack Mounting

Two different rack mounting arrangements are available for Series 3000 machines. Through the use of a rack mount shelf or filler panels, virtually any combination of units such as the two Model 3200RPS shown above can be adapted to a rack-mount configuration. The 3400 cart machine is manufactured ready to mount in a standard 19-inch rack as shipped from the factory.

Audio Switcher

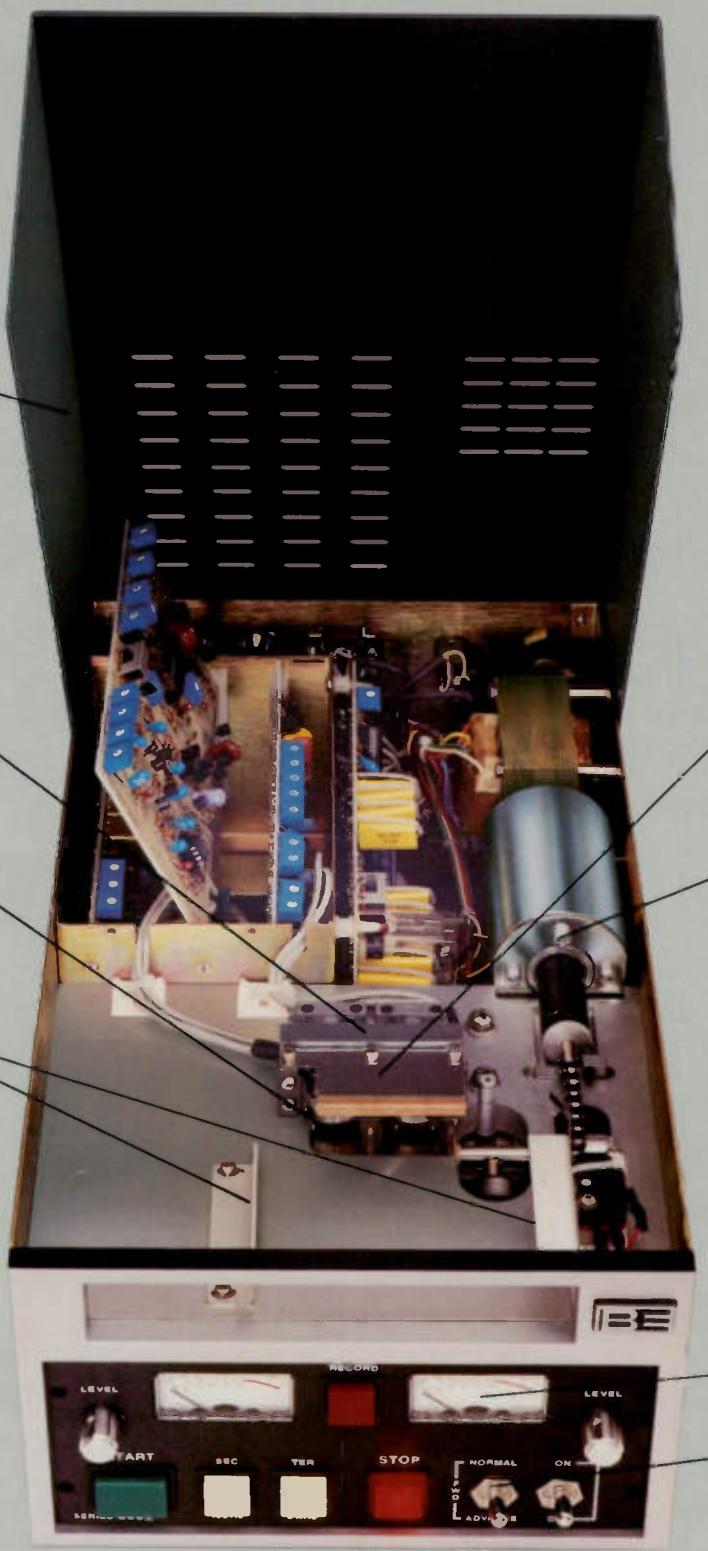
Switchers are available in two versions - three input (SW5E) and five input (SW5F) models. The three-input model accommodates three Series 3000 machines. The five-input model accommodates up to five audio input signals from all machines and provides a single balanced output from the last started unit.

Starting a new machine automatically deletes audio from the previously played unit and turns on the audio from the newly started cartridge. Up to three switchers may be used in cascade to provide a single audio output from up to 15 cart machines.

Remote Controls

Audio and remote connections are quick and easy with our rugged Cinch-Jones connectors. Available in four models, optional remote panels duplicate all essential front panel controls.

Rugged Construction
Precision Workmanship
Unmatched Reliability
Superb Audio Performance



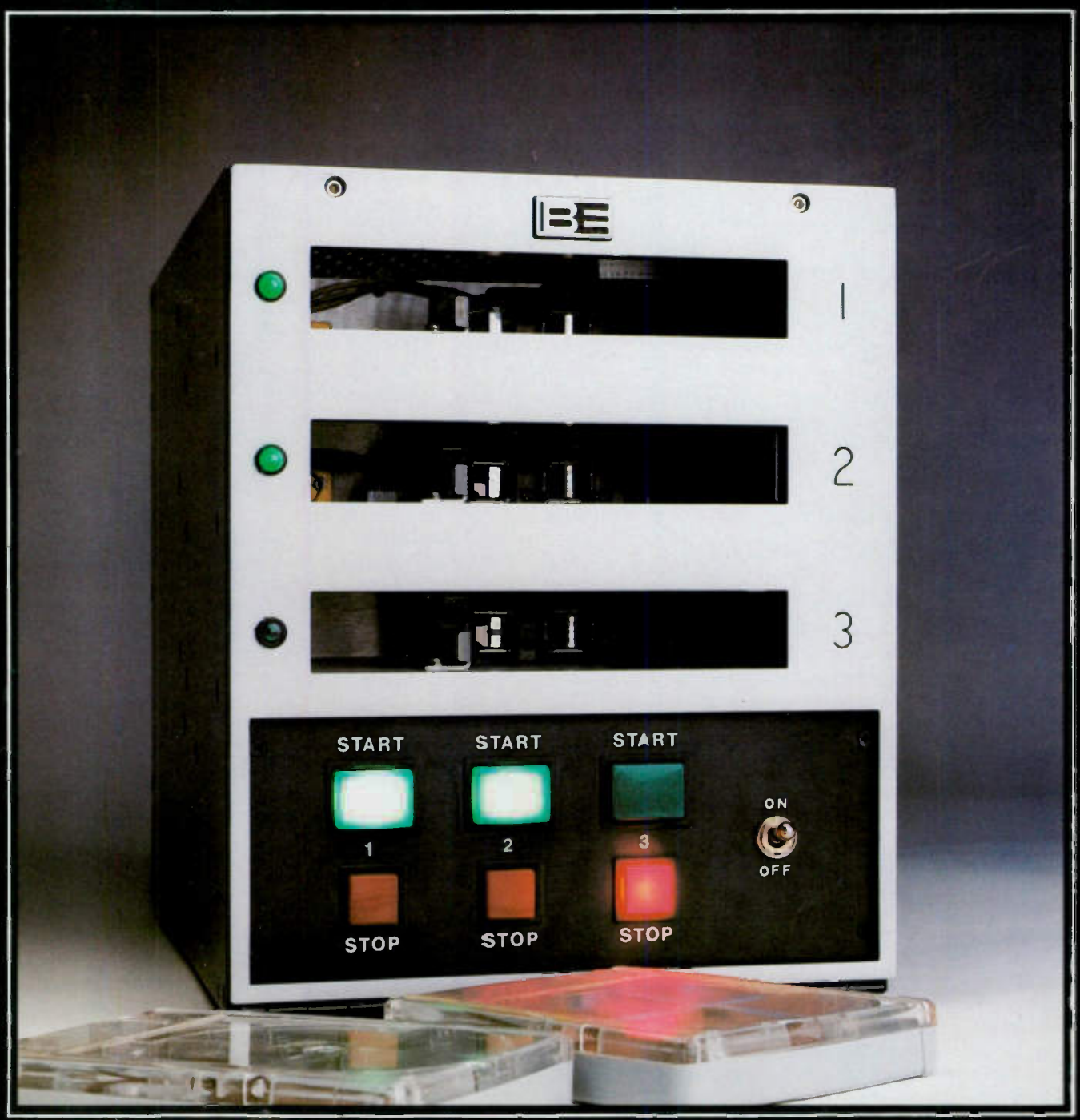
Model 3200 RPS Stereo Record Playback

BROADCAST ELECTRONICS INC.

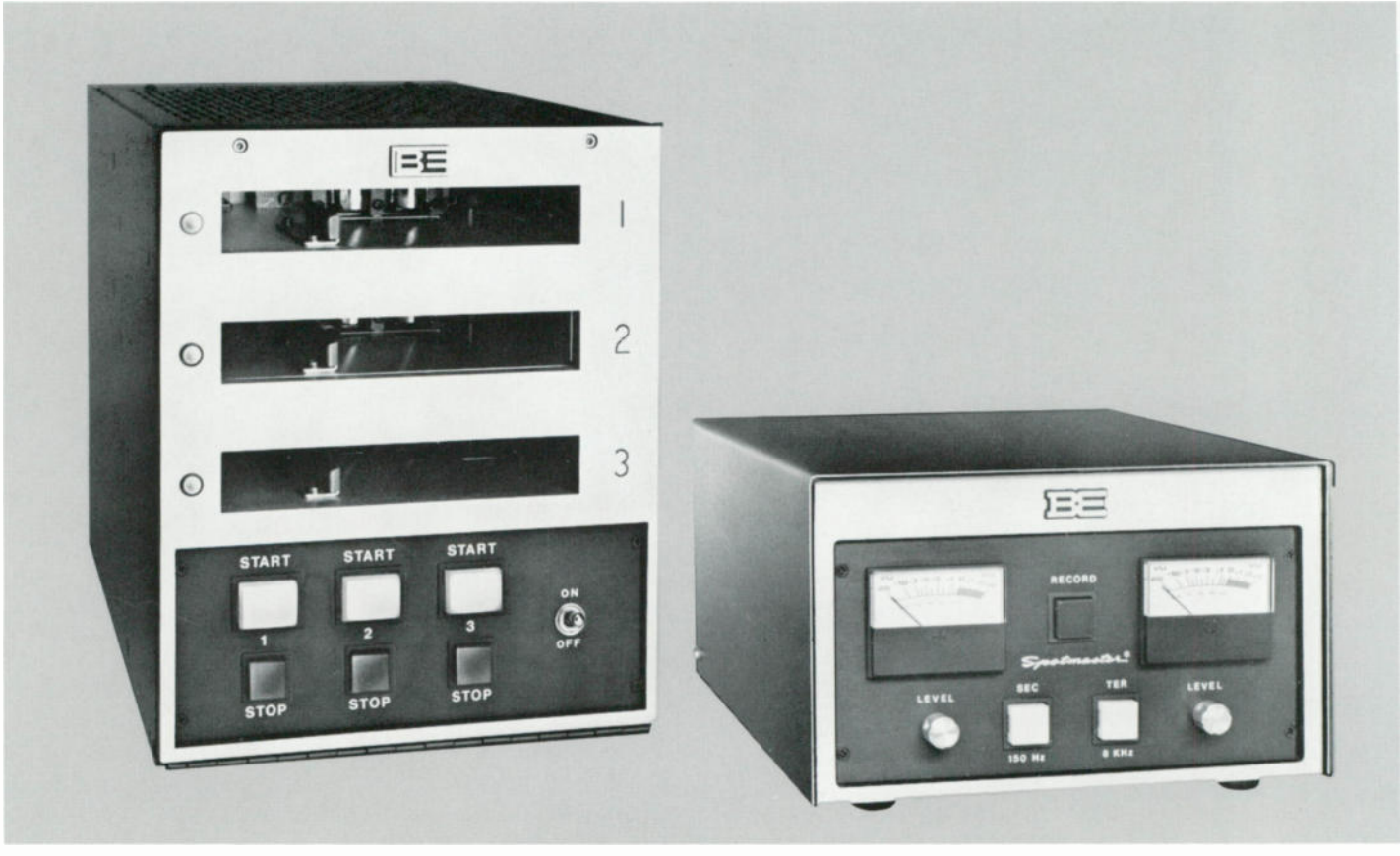
5300B

Plug-In Multi-Deck Cartridge Machines

With Long-Life Heads



5300B Plug-In Multi-Deck with Companion Recorder Amplifier by BE



Professional Quality Three Deck Machines . . .

Over 1500 In Use

The Model 5300B: This top of the line professional three deck cartridge machine features all solid-state/ integrated circuits, a direct-drive hysteresis synchronous motor, quiet air damped solenoid and a one-half inch thick machined aluminum decks.

Every Model 5300B machine incorporates the Phase Lok IV head bracket with totally independent azimuth setting and top quality long life heads for superb response and performance.

Features unique to this multi-deck design are plug-in decks, all ribbon cable wiring and rear panel LED service aids. Run lights are adjacent to each deck.

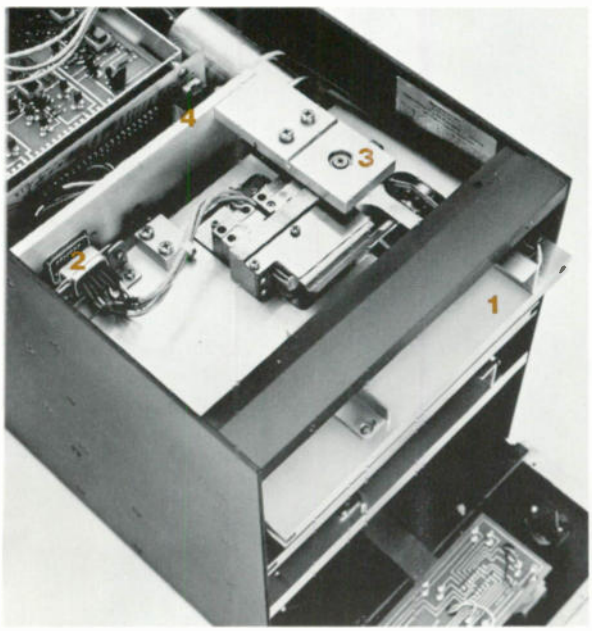
Unique Mechanical Design: The Model 5300B has a sturdy internal bulkhead mechanical design which insures stable and accurate deck and capstan positioning. The top capstan bearing mounting is mechanically supported by the sturdy aluminum bulkhead insuring consistent mechanical alignment independent of front panel reference. This design eliminates problems found with other three deck machines.

Cool Operation: The solenoid control circuit utilizes solid-state switching and a low-voltage regulated current source. With this circuit, solenoid operation is smooth and quiet and is unaffected by ac line variations. Heat dissipation is reduced and the combination of low voltage and solid-state switching significantly enhances reliability.

Advanced Electronics: A characteristic of the 5300B is exceptionally wide dynamic operating ranges which contribute to high quality reproduction. The companion recorder input circuits and the 5300B output circuits will accept and deliver, without introducing distortion, a greater range of signals than any competitive machine. Balanced transformer output with FET switching permits paralleling of machines.

Recording Unit: The optional recording amplifier (mono Model 5309 or stereo Model 5310) is available for recording on deck # 3 independent of the other two decks. Thus, the 5300 can operate as three separate machines; a record/playback deck and two playback only decks. Another optional unit is an audio switcher which automatically provides a balanced output from the last started deck while muting the other decks.

Design/Operational Features

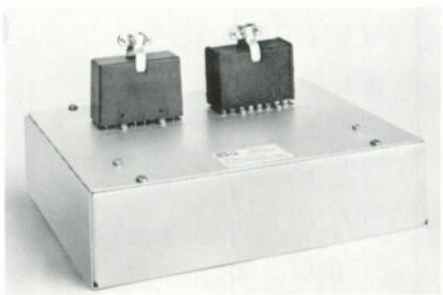


Removable Decks

Removing a Broadcast Electronics deck couldn't be easier. The front panel is hinged, **1** the decks pull out, and all electrical connections are made through a connector **2** that is a part of the deck.

This photograph shows the top bearing support **3** and aluminum bulkhead **4** which provides the mechanical reference for the motor, decks and capstan.

Audio Switcher
(Multiple Machines)



Provides a single balanced output. Switchers can be tied together to provide a single balanced output from up to three 5300B machines. Selects last deck started and mutes other decks. If a wrong deck is started, pressing another start button will immediately mute the first deck and put the newly started deck on the output. The first deck started will continue to run, and will re-cue itself.

Unique Cartridge Guidance System

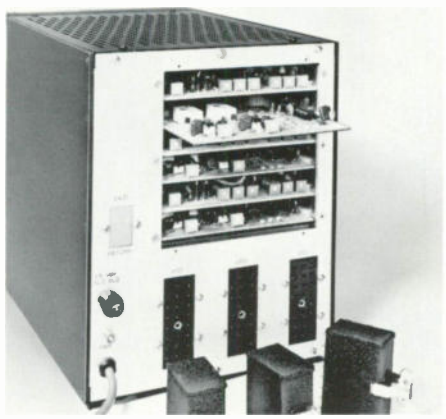
A simple yet extremely effective system for positive and accurate cartridge positioning.

The left side guide **1** is straight forward. The guide on the right **2** has a tapered overlap which directs the cartridge into the head.

Directly above the head **3** a beryllium clamp locks the cartridge into place. The force provided by this clamp insures positive locking regardless of variations in cartridge size. Also mounted above the beryllium clamp is a Mu metal shield to protect the head from stray electrostatic fields.

Mu metal shielding **4** is also located directly under the head and is recessed into the deck for the most effective location.

Plug-In PC Cards

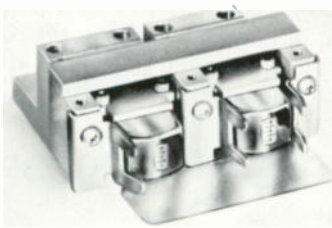


Deck electronics are on individual plug-in pc cards with all gold to gold connections for high reliability. Also shown are mating connectors which are supplied with the machine. The record connector is in place (above the fuse holder) behind a protective shield.

LED Status Lamps

Servicing the equipment at the rear panel is simplified by LED lamps located on the pc cards. These provide a visible indication of the function being performed by the machine.

Phase Lok IV Head Bracket



For optimum adjustment of stereo phasing, these machines have the Phase Lok IV Head Bracket.

Phase Lok IV is the only head bracket to have a non-locking azimuth adjustment which is completely independent of the height and zenith adjustments.

Specifications

5300B

Tape Speed:
7.5 ips (19.05 cm/s) ± 0.1%.

Tape Start/Stop Time:
0.1 second maximum.

Wow and Flutter:
0.15% peak weighted,
0.2% RMS unweighted.

Noise (Reproducer):
Monophonic: 62 dB or better below reference of 400 Hz at 3% THD; 54 dB below 160 n Wb/m at 1 kHz.
Stereophonic: 60 dB or better below reference of 400 Hz at 3% THD; 52 dB below 160 n Wb/m at 1 kHz.

Distortion:
2% or less record to playback at 160 n Wb/m at 1 kHz.

Equalization:
NAB, IEC, CCIR as specified.

Frequency Response:
±2 dB from 50 Hz to 15 kHz exclusive of head contour effect.

Crosstalk (magnetic head limited):
50 dB or better.

Audio Output:
Maximum adjustable level +8 dBm from 160 n Wb/m at 1 kHz; 600 ohms (transformer) balanced.

Peak Output Level:
+20 dBm before clipping.

Cartridge Size:
A and B.

Cue Signals:
Relay contact closure for external control (150 Hz, 8 kHz). External cue input/output available at remote control for other control functions.

Ambient Operating Temperature:
0° to 55°C (32° to 132°F).

Power Requirements:
105 to 125V or 210 to 230V, 60 Hz.
105 to 125V or 210 to 230V, 50 Hz (optional).
120 watts maximum.

Mounting:
Desk top standard. Adaptors for rack mounting optional.

Dimensions:
10⅝" H x 8⅝" W x 13⅜" D
(27 x 22 x 34 cm).

Weight:
42 lbs. (packed). 19 Kgs.

RECORDER AMPLIFIER

Input Impedance:
Microphone; 150 ohms (transformer) balanced floating
Line; 50 K ohms (transformer) balanced floating

Input Levels:
Microphone; −70 to −24 dBm
Line; −24 to +20 dBm (50 mV to 7.7 V)

Power Requirements:
105 to 125 V/210 to 230 V; 50 or 60 Hz

Dimensions:
5¼" H x 8⅝" W x 13½" D
(13.3 x 22 x 34 cm)

Weight (uncrated):
16 lbs. (7.25 kgs.)

Additional Features

The 5300B is available in four basic models as shown under Ordering Information. The secondary and tertiary cue tones are made available by changing a PC card. Thus, a unit originally purchased with only the primary (1 kHz) cue tone can be field modified by simply replacing the PC card.

A separate sensitivity control is provided for each cue sensor in the 5300B.

The recorder amplifier is available in either mono or stereo. Each unit has the standard 1 kHz cue tone. Secondary (8 kHz) and tertiary (150 Hz) tones are available for the recorder as an option.

The standard recorder has two input circuits: a high level 50K ohm balanced transformer and a low level microphone input. The recorder amplifier has an automatic meter switching capability. During recording the meter indicates the record level and in playback the meter indicates the playback level on deck number 3.

Ordering Information

Model	Stock No.	Description
5301B	906-5301B	Mono Playback (A & B Size)
5302B	906-5302B	Mono Playback (A & B Size) with Cue Tones
5303B	906-5303B	Stereo Playback (A & B Size)
5304B	906-5304B	Stereo Playback (A & B Size) with Cue Tones

Options and Accessories

Model	Stock No.	Description
	906-5309	Recorder, Mono for 3 Decker, without Q Trip Option
	906-5310	Recorder, Stereo for 3 Decker, without Q Trip Option
SW5E	904-5000	Audio Switcher for 3 Decker
5300	927-0047	Remote Control Panel for 5300A B Series
5300	927-0048	Remote Control Panel for 5300A B Series with Companion Record Amplifier
	906-5311A	Secondary (150 Hz) and Tertiary (8kHz) Q Trips for Mono Recorder
	906-5311B	Secondary (150 Hz) and Tertiary (8kHz) Q Trips for Stereo Recorder
	906-5306	Rack Mount (1) Unit
	906-5307	Rack Mount (2) Units
	906-5308	Additional cost for 220 50 Hz Power Source
	919-1806	Extender PC Board

BROADCAST ELECTRONICS INC.

B155 RP10M 1282 4100 N. 24th ST., P.O. BOX 3606, QUINCY, IL 62305-3606, (217)224-9600, TELEX: 25-0142

SERIES 2100 TAPE CARTRIDGE MACHINES

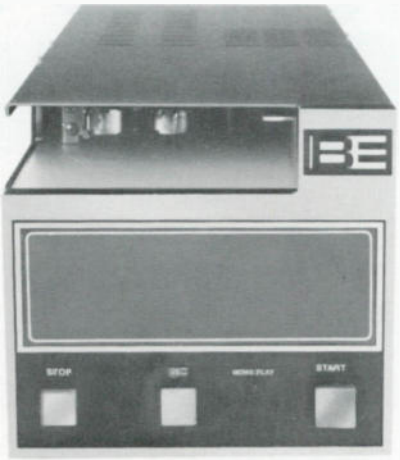
Features

- Top Quality at an Economical Price
- Accepts A, B or C size Carts
- Two Cue Tones Standard (1 kHz and 150 Hz)
- Exclusive Mono/Stereo Switching
- Direct Drive Transport
- Modular Construction
- Quality Heads
- New Phase Lok IV Head Assembly
- Low Voltage Air Damped Solenoid
- ½ Inch Aluminum Deck

BROADCAST ELECTRONICS INC.

BE SERIES 2100

Loaded with features, yet economically priced.



MODEL 2100P. Mono Playback (Model 2100PS, Stereo Playback, looks identical with cover on).

MODEL 2100RP. Mono record/playback.

MODEL 2100RPS. Stereo record/playback.

Broadcast Electronics' 2100 family of tape cartridge machines combines versatile operation, quality components and top specifications, all at an economical price. There's more value in the 2100 series than ever found before in any professional cart machine. The combination of advanced engineering design and Broadcast Electronics' cost saving production methods produces a cart machine with double value for the most quality minded users and for those who can now afford the best.

The 2100 series has numerous benefits making it just right for nearly any application: Flexibility in size of carts accepted - A, B or C; Two cue tones (1 kHz and 150 Hz) are standard; Modular construction for easy field maintenance; Top quality heads for exceptional performance; Direct drive transport and ½ inch aluminum deck for rugged, reliable operation; New Phase Lok IV head assembly for azimuth adjustment independent of height and zenith adjustments; Exclusive Mono/Stereo switching to aid in future conversions from mono to stereo broadcasting.

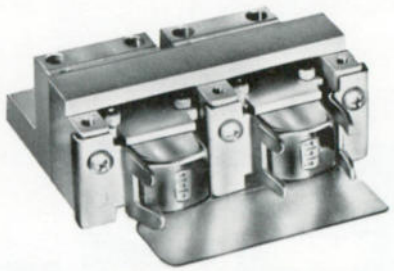
Both Stereo and Monaural Models

Whether for monaural or stereo, the series 2100 is a complete new line of cartridge machines. Playback only or Record/Playback are the same physical size and offered in stereo or monaural versions.

Phase Lok IV Head Assembly

The head assembly features high quality heads and the new Phase Lok IV head bracket. This head bracket has an azimuth adjustment which is independent of height and zenith, and provides the most precise head positioning possible. Head shielding to prevent AC pickup is extensive. The underside of the deck is covered with a steel plate. Above the head is a mu-metal shield, which has an extremely high rejection of

Phase Lok IV Head Bracket



In the Phase Lok IV head bracket height and zenith adjustments are not affected by azimuth adjustment. This assures extremely tight control of stereo phasing.

Power supplies are all regulated and are thermally as well as overload protected. All logic in the 2100 series is provided by buffered CMOS devices.

Playback Circuitry

The playback amplifier consists of wideband IC operational amplifiers, advanced analog switching and differentially balanced output amplifiers. The amplifiers have an exceptionally wide equalization adjustment range to compensate for head wear, a feature which prolongs useful head life. The solid-state output amplifiers will deliver output levels up to +20 dBm before clipping thereby minimizing the potential for distortion with high level signals.

Record Circuitry

The record circuitry has differentially balanced inputs followed by high performance IC operational amplifiers. These input circuits have extremely wide dynamic operating ranges which allow them to cleanly handle a greater range of signals than any competitive machine. This high level of signal handling ability, which is inherent throughout the design, contributes significantly to the high quality of reproduction which is characteristic of the 2100 series.

Stereo 2100 series machines can be used to record carts compatible with mono machines. A front panel LED indicates when the machine is in the mono record mode. At this time the left and right inputs are summed together and recorded on the left channel. In addition, the mono encode tone (150 Hz + 1 kHz) is recorded on the cue track.

The 150 Hz secondary cue tone and logging information can be recorded in either the record or playback mode, as full bias switching is incorporated into this machine. External inputs and outputs, and bias switching are available on the cue track.

VU meters are automatically switched between the playback and record modes.

Durability, Elegant Styling

Nothing has been spared to make the 2100 series cartridge machine rugged, reliable and professional in every way. Front panels feature crisp, clean graphics under a laminated polycarbonate overlay. This tough protective surface makes it virtually impossible to scratch or wear the lettering away. Users will quickly appreciate the durability of the nomenclature despite constant use. This expensive process is a big improvement over ordinary silk screening.

All front panel controls have been laid out with human engineering in mind for easy, error free operation. The elegance of the 2100 series reflects the talents of professional industrial styling and Broadcast Electronics' attention to detail.

Space Saving Design

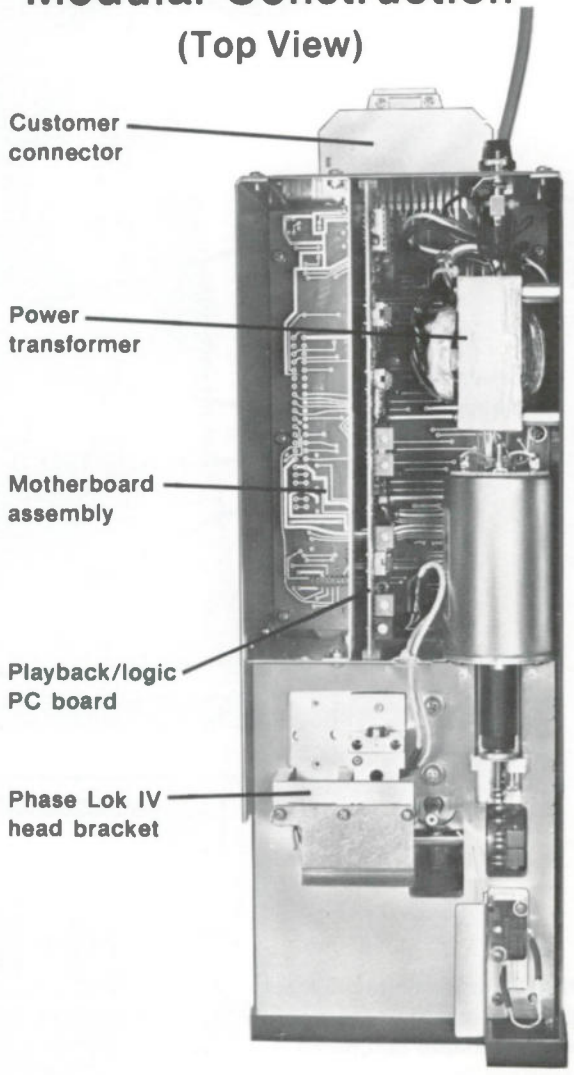
The space saving design of the Series 2100 permits side by side mounting of three 2100's in a 19-inch rack. Each machine is only 5.875" wide, 5.5" high and 15.5" deep.

Typical Configuration

Three 2100 units side by side can be mounted in 5.25" vertical rack space with an accessory rack mounting shelf. Each unit occupies ⅓ rack space.

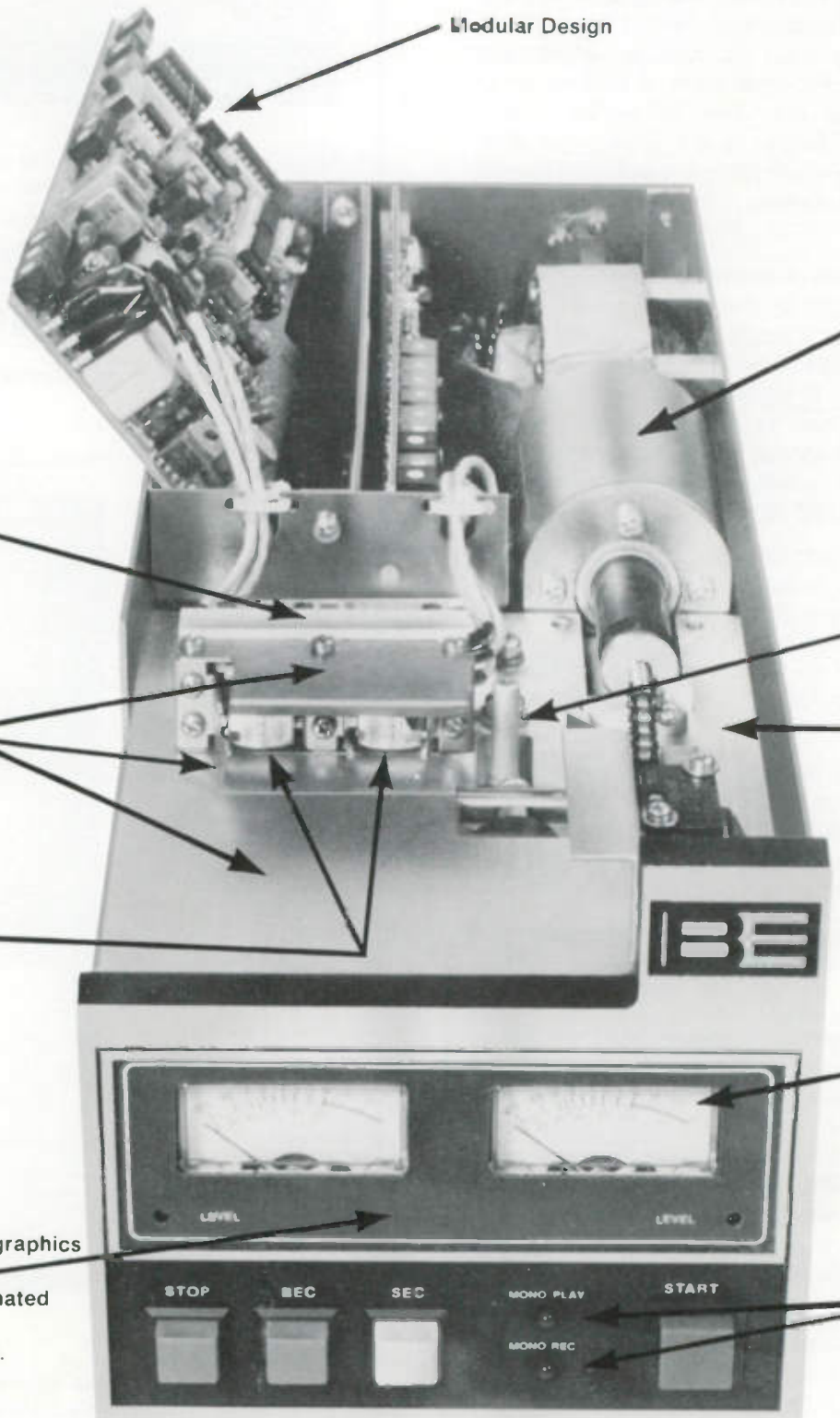
Modular Construction

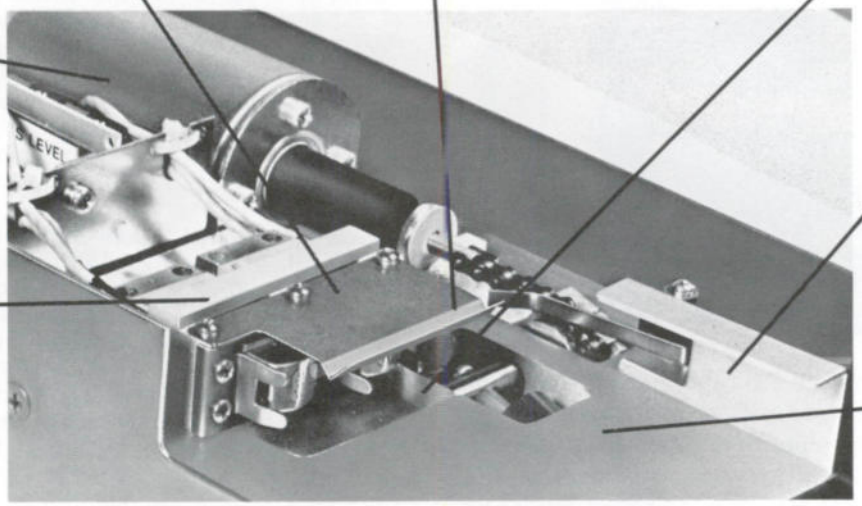
(Top View)



The 2100 series uses modular construction throughout for compactness and easy field maintenance. The top view of the 2100 playback machine (above) shows how the playback/logic PC board plugs into the motherboard assembly, which provides interconnection, power supply and solenoid drive circuitry.

The Series 2100





2100 Series Tape Transport

magnetic flux. Additional shielding is provided by a steel plate located directly under the head recessed into the deck.

Tape Transport/Cool Operation

The tape transport features a powerful, direct-drive hysteresis synchronous motor, a large air damped solenoid with a teflon coated plunger, and a ½ inch thick precision aluminum deck.

The 2100 series of cart machines uses Broadcast Electronics' exclusive cut away top cover design which allows an "A" size machine to accommodate A, B, & C size cartridges.

Another key feature of the 2100 design is the solenoid control circuit which applies 36 volts at the beginning of the start cycle for a fast, sure start and then drops to 18 volts. This results in safer, cooler, transient-free operation, which is usually not found in machines using 110 volt solenoids.

The overall reliability inherent in this design has been demonstrated in life cycle testing programs which have, on a number of occasions, cycled this machine through two million operations without failure.

The cartridge guidance system provides very precise positioning. The cartridge is directed down into the head by a tapered side guide and locked in place by a beryllium-copper clamp which insures positive locking regardless of variations in cartridge thickness. The tensile strength of this clamp is exceptional and it will retain this strength throughout many years of use.

Mono/Stereo Switching

The model 2100 employs Broadcast Electronics' exclusive automatic mono/stereo switching. This allows mono cartridges that have been previously recorded on any other tape cartridge machine to be played on a 2100 stereo machine with program material available from the left and right outputs.

This is accomplished by automatically recording a 150 Hz cue tone along with the normal 1 kHz cue tone at the beginning of the message.

When the machine detects both tones together the left channel preamp output is substituted for the right channel preamp output. This offers full compatibility to mono users who wish to convert their operation to stereo since all previously recorded cartridges can easily be encoded with the mono control signal (150 Hz + 1 kHz tones). A front panel LED indicates when the machine is in the mono play mode.

In addition to the standard 1 kHz tone, a 150 Hz tone sensor is included in the series 2100. This sensor provides information to the mono/stereo control circuit as well as closing a pair of relay contacts for external use. When both the 1 kHz and 150 Hz tones are detected together (mono detection) the relay contacts do not close. These detectors use active RC filters which provide very precise detection.

Modular Construction

Modular construction is used throughout the 2100 cart machine to allow simple field maintenance. The playback and record electronics are located on two individual PC boards that plug into a motherboard, which provides inter-connection, power supply and solenoid drive circuitry. The motor, solenoid, power transformer, and front and rear panels all plug into the motherboard.

SERIES 2100

MODEL 2100PA MONITOR/PLAYBACK

MODEL 2100PA—The model 2100PA is a playback unit with full monitoring capabilities. It features the same outstanding mechanical and electronic performance as the rest of the Series 2100 cartridge tape machines.

The 2100PA incorporates a built-in amplifier, front panel speaker, volume control and headphone jack—everything necessary to monitor the content of pre-recorded NAB size A, B and C carts in a single compact unit.

The versatile 2100PA has a variety of applications. It can be used in virtually any location since it does not have to be interfaced with audio mixers, amplifiers or other production equipment.

ORDERING INFORMATION

MODEL	STOCK NO.	DESCRIPTION
2100P	907-2100	Mono, Playback only, A, B, and C size Cartridges, 115 V, 60 Hz
2100RP	907-2111	Mono, Record/Playback, A, B, and C size Cartridges, 115 V, 60 Hz
2100PS	907-2112	Stereo, Playback only, A, B, and C size Cartridges, 115 V, 60 Hz
2100RPS	907-2113	Stereo, Record/Playback, A, B, and C size Cartridges, 115 V, 60 Hz
2100PA	907-2124	Mono Playback only with Audition Speaker/Amplifier, A, B, and C size Cartridges, 115 V, 60 Hz
2100P	907-2120	Mono, Playback only, A, B, and C size Cartridges, 220 V, 50 Hz
2100RP	907-2121	Mono, Record/Playback, A, B, and C size Cartridges, 220 V, 50 Hz
2100PS	907-2122	Stereo, Playback only, A, B, and C size Cartridges, 220 V, 50 Hz
2100RPS	907-2123	Stereo, Record/Playback, A, B, and C size Cartridges, 220 V, 50 Hz
2100PA	907-2125	Mono, Playback only with Audition Speaker/Amplifier, A, B, and C size Cartridges, 220 V, 50 Hz

ACCESSORIES

STOCK NO.	DESCRIPTION
907-2114	Rack Mount Shelf for EIA 19" Rack
471-2101	Top cover for shelf above
503-2124	Rack Shelf Filler Panel, ⅓ Rack
503-2123	Rack Shelf Filler Panel, ⅔ Rack
919-2100	Extender, P.C. Boards

SERIES 2100 PRODUCT SPECIFICATIONS

Tape Speed:
7.5 ips (19.05 cm/s)
Timing Accuracy (at 7.5 ips):
0.1%
Wow and Flutter:
0.15% peak weighted; 0.2% RMS unweighted
Noise (Reproducer):
Monophonic; 62 dB or better below reference of 400 Hz at 3% THD; 54 dB below 160 nWb/m at 1 kHz
Stereophonic; 60 dB or better below reference of 400 Hz at 3% THD; 52 dB below 160 nWb/m at 1 kHz
Distortion:
2% or less record to playback at 160 nWb/m at 1 kHz
Equalization:
NAB, IEC, CCIR as specified
Frequency Response:
±2 dB from 50 Hz to 15 kHz (exclusive of head contour effect)
Crosstalk (magnetic head limited):
Cue channel to program channel, monophonic
150 Hz: −50 dB or better
1000 Hz: −55 dB or better
Input Impedance (Recorder):
78 k ohms, balanced bridging
Input Levels: Line, −18 to +20 dBm (100 mV to 7.7 V)
Audio Output:
Maximum adjustable level +8 dBm from 160 nWb/m at 1 kHz, 600 ohms, balanced
Peak Output Level:
+20 dBm before clipping
Bias Oscillator Frequency:
100 kHz
Cue Signals:
Relay contact closure for external control (150 Hz)
External cue input/output available at remote control for other control functions
Ambient Operating Temperature:
0° to 55° C (32° to 132° F)
Power Requirements:
105 to 125 V or 210 to 230 V, 50 or 60 Hz, as specified
Power Consumption:
40 W continuous
Mounting:
Desk top standard. Adaptors for rack mounting optional
External Connectors:
Mating plugs furnished
Dimensions:
5.25" H, 5.875" W, 15.5" D
13.3 cm H, 14.9 cm W, 39.4 cm D; (Add 0.375" to H for rubber ft.)
Weight (packed); all models
28 lbs. (12.7 kg)

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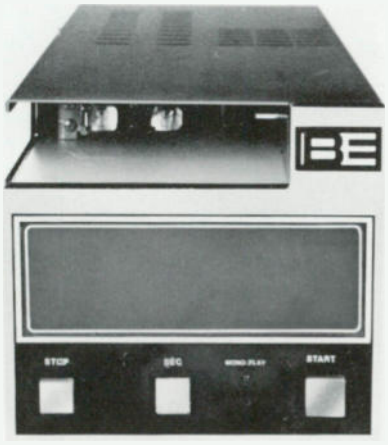
B118B 1K CP 382

Series 2100
Tape Cartridge Machine

BROADCAST ELECTRONICS INC.

BE Series 2100

Loaded with features, yet economically priced.



MODEL 2100P. Mono Playback (Model 2100PS, Stereo Playback, looks identical with cover on).

MODEL 2100RP. Mono record/playback.

MODEL 2100RPS. Stereo record/playback.

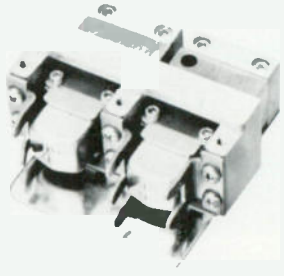
Broadcast Electronics' 2100 family of tape cartridge machines combines versatile operation, quality components and top specifications, all at an economical price. There's more value in the 2100 series than ever found before in any professional cart machine. The combination of advanced engineering design and Broadcast Electronics' cost saving production methods produces a cart machine with double value for the most quality minded users and for those who can now afford the best.

The 2100 series has numerous benefits making it just right for nearly any application: Flexibility in size of carts accepted - A, B or C; Two cue tones (1 kHz and 150 Hz) are standard; Modular construction for easy field maintenance; Top quality heads for exceptional performance; Direct drive transport and ½ inch aluminum deck for rugged, reliable operation; Phase Lok IV head assembly for azimuth adjustment independent of height and zenith adjustments; Exclusive Mono/Stereo switching to aid in future conversions from mono to stereo broadcasting.

Phase Lok IV Head Assembly

The head assembly features high quality heads, the exclusive Broadcast Electronics Phase Lok IV head bracket. This head bracket has an azimuth adjustment which is independent of height and zenith, and provides the most precise head positioning possible. For correct stereo tracking a dummy head is included in each stereo playback model. Head shielding, to prevent ac pickup, is extensive. The underside of the deck is covered with a steel plate. Above the head is a mu-metal shield, which has an extremely high rejection of

Phase Lok IV Head Bracket



In the Phase Lok IV head bracket height and zenith adjustments are not affected by azimuth adjustment. This assures extremely tight control of stereo phasing.

Power supplies are all regulated and are thermally as well as overload protected. All logic in the 2100 series is provided by buffered CMOS devices.

Playback Circuitry

The playback amplifier consists of wideband IC operational amplifiers, advanced analog switching and differentially balanced output amplifiers. The amplifiers have an exceptionally wide equalization adjustment range to compensate for head wear, a feature which prolongs useful head life. The solid-state output amplifiers will deliver output levels up to +20 dBm before clipping thereby minimizing the potential for distortion with high level signals.

Record Circuitry

The record circuitry has differentially balanced inputs followed by high performance IC operational amplifiers. These input circuits have extremely wide dynamic operating ranges which allow them to cleanly handle a greater range of signals than any competitive machine. This high level of signal handling ability, which is inherent throughout the design, contributes significantly to the high quality of reproduction which is characteristic of the 2100 series.

Stereo 2100 series machines can be used to record carts compatible with mono machines. A front panel LED indicates when the machine is in the mono record mode. At this time the left and right inputs are summed together and recorded on the left channel. In addition, the mono encode tone (150 Hz and 1 kHz) is recorded on the cue track.

The 150 Hz secondary cue tone and logging information can be recorded in either the record or playback mode, as full bias switching is incorporated into this machine. External inputs and outputs, and bias switching are available on the cue track.

VU meters are automatically switched between the playback and record modes.

Durability, Elegant Styling

Nothing has been spared to make the 2100 series cartridge machine rugged, reliable and professional in every way. Front panels feature crisp, clean graphics under a laminated polycarbonate overlay. This tough protective surface makes it virtually impossible to scratch or wear the lettering away. Users will quickly appreciate the durability of the nomenclature despite constant use. This process is a big improvement over ordinary silk screening.

All front panel controls have been laid out with human engineering in mind for easy, error free operation. The elegance of the 2100 series reflects the talents of professional industrial styling and Broadcast Electonics' attention to detail.

Space Saving Design

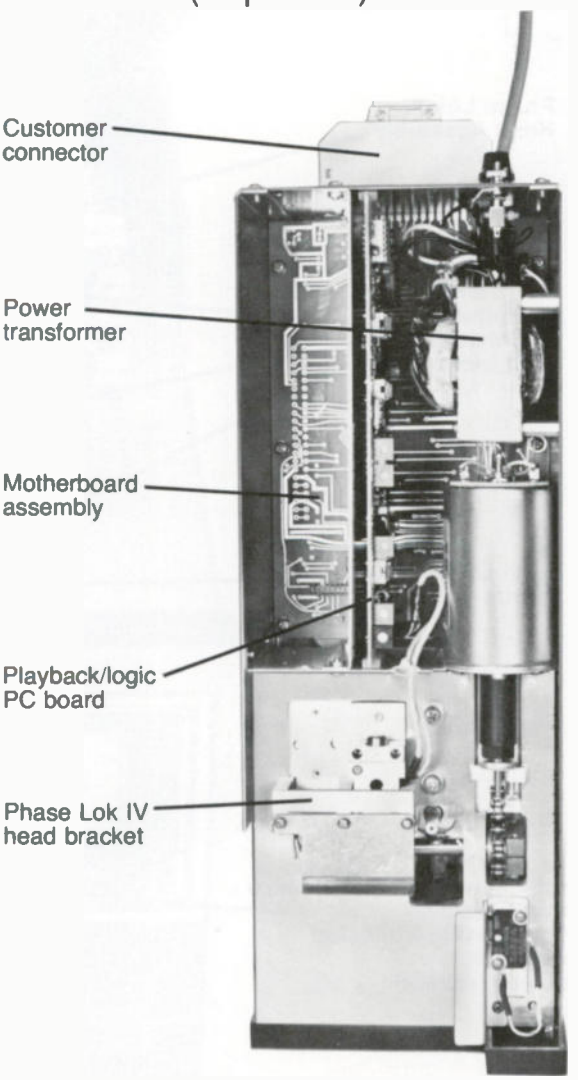
The space saving design of the Series 2100 permits side by side mounting of three 2100's in a 19-inch rack. Each machine is only 5.875″ wide, 5.5″ high and 15.5″ deep.

Typical Configuration

Three 2100 units side by side can be mounted in 5.25″ vertical rack space with an accessory rack mounting shelf. Each unit occupies ⅓ rack space.

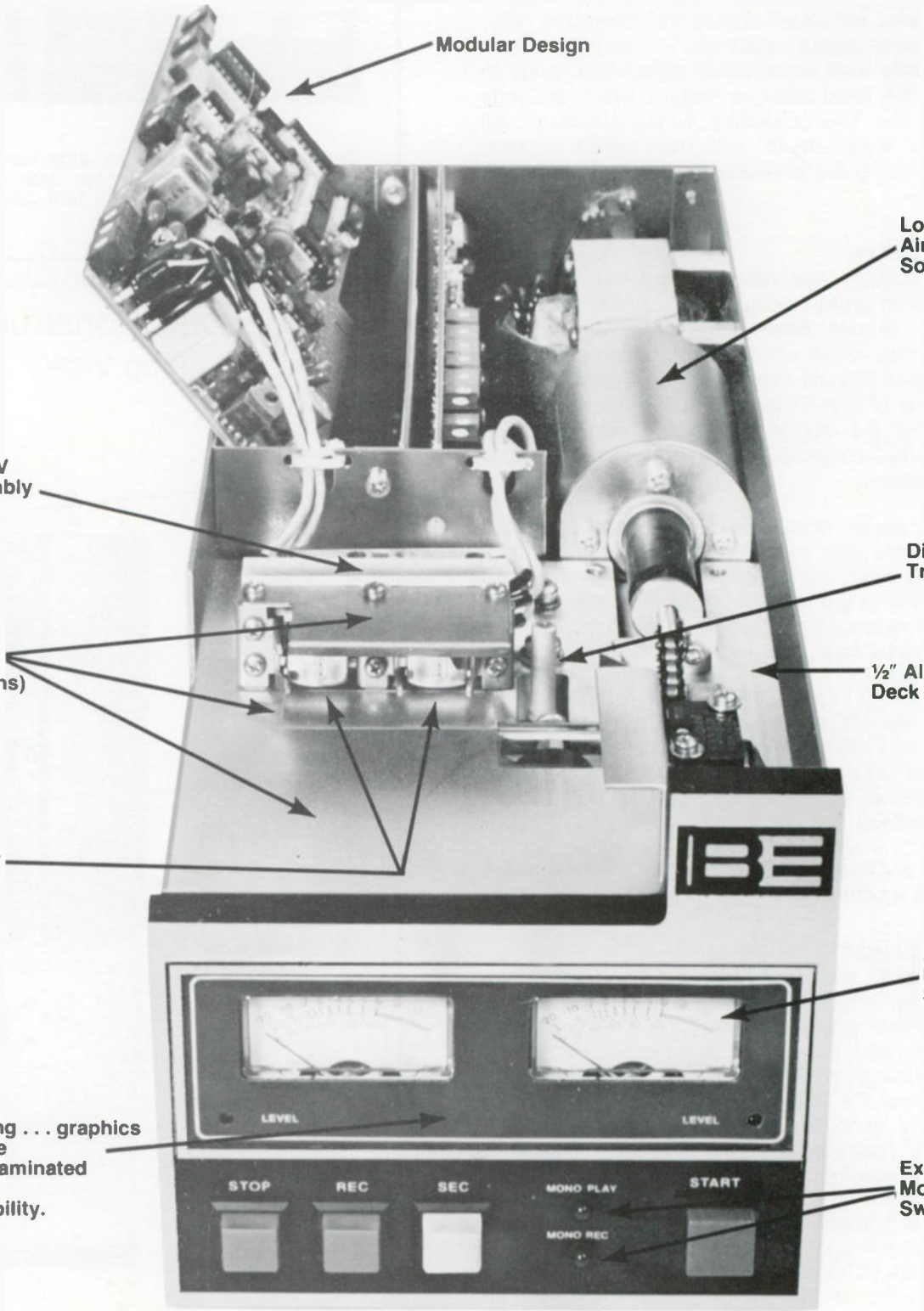
Modular Construction

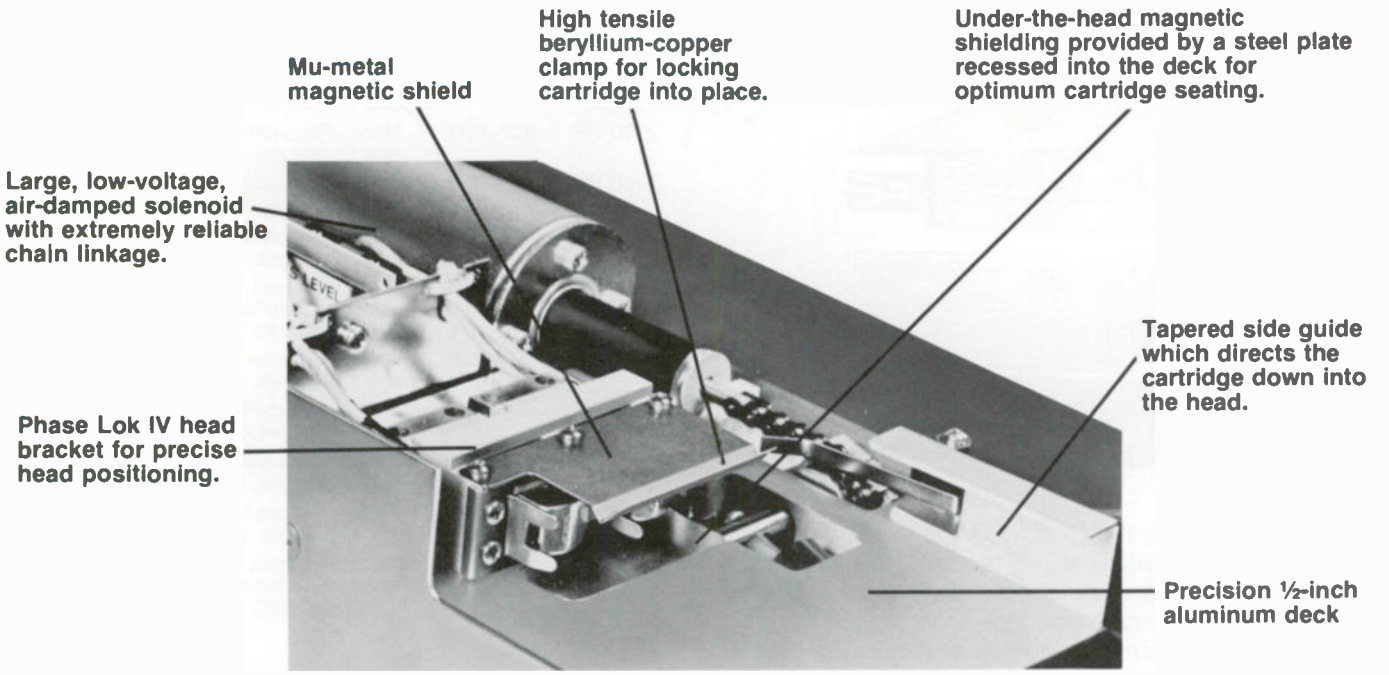
(Top View)



The 2100 series uses modular construction throughout for compactness and easy field maintenance. The top view of the 2100 playback machine (above) shows how the playback/logic PC board plugs into the motherboard assembly, which provides interconnection, power supply and solenoid drive circuitry.

The Series 2100





2100 Series Tape Transport

magnetic flux. Additional shielding is provided by a mu-metal plate located directly under the head recessed into the deck.

Tape Transport/Cool Operation

The tape transport features a powerful, direct-drive hysteresis synchronous motor, a large air damped solenoid with a teflon coated plunger, and a ½ inch thick precision aluminum deck.

The 2100 series of cart machines uses Broadcast Electronics' exclusive cut away top cover design which allows an "A" size machine to accommodate A, B, & C size cartridges.

Another key feature of the 2100 design is the solenoid control circuit which applies 36 volts at the beginning of the start cycle for a fast, sure start and then drops to 18 volts. This results in safer, cooler, transient-free operation, which is usually not found in machines using 110 volt solenoids.

The overall reliability inherent in all BE cart machine designs has been proven in many field testing programs, some cycling the machines through two million operations without failure.

The cartridge guidance system provides very precise positioning. The cartridge is directed down into the head by a tapered side guide and locked in place by a beryllium-copper clamp which insures positive locking regardless of variations in cartridge thickness. The tensile strength of this clamp is exceptional and it will retain this strength throughout many years of use.

Mono/Stereo Switching

The model 2100 employs Broadcast Electronics' exclusive automatic mono/stereo switching. This allows mono cartridges that have been previously recorded on any other tape cartridge machine to be played on a 2100 stereo machine with program material available from the left and right outputs.

This is accomplished by automatically recording a 150 Hz cue tone along with the normal 1 kHz cue tone at the beginning of the message.

When the machine detects both tones together the left channel preamp output is divided to feed left and right channel preamp output. This offers full compatibility to mono users who wish to convert their operation to stereo since all previously recorded cartridges can easily be encoded with the mono control signal (150 Hz and 1 kHz tones). A front panel LED indicates when the machine is in the mono play mode.

In addition to the standard 1 kHz tone, a 150 Hz tone sensor is included in the series 2100. This sensor provides information to the mono/stereo control circuit as well as closing a pair of relay contacts for external use. When both the 1 kHz and 150 Hz tones are detected together (mono detection) at the beginning of the tape the relay contacts do not close. These detectors use active RC filters which provide very precise detection.

Modular Construction

Modular construction is used throughout the 2100 cart machine to allow simple field maintenance. The playback and record electronics are located on two individual PC boards that plug into a motherboard, which provides inter-connection, power supply and solenoid drive circuitry. The motor, solenoid, power transformer, and front and rear panels all plug into the motherboard.

SERIES 2100

Model 2100PA Monitor/Playback

MODEL 2100PA—The model 2100PA is a playback unit with full monitoring capabilities. It features the same outstanding mechanical and electronic performance as the rest of the Series 2100 cartridge tape machines.

The 2100PA incorporates a built-in amplifier, front panel speaker, volume control and headphone jack—everything necessary to monitor the content of pre-recorded NAB size A, B and C carts in a single compact unit.

The versatile 2100PA has a variety of applications. It can be used in virtually any location since it does not have to be interfaced with audio mixers, amplifiers or other production equipment.

Ordering Information

MODEL	STOCK NO.	DESCRIPTION
2100 P	907-2100	Mono, Playback only, A, B, and C size Cartridges, 115 V, 60 Hz
2100 RP	907-2111	Mono, Record/Playback, A, B, and C size Cartridges, 115 V, 60 Hz
2100 PS	907-2112	Stereo, Playback only, A, B, and C size Cartridges, 115 V, 60 Hz
2100 RPS	907-2113	Stereo, Record/Playback, A, B, and C size Cartridges, 115 V, 60 Hz
2100 PA	907-2124	Mono, Playback only with Audition Speaker/Amplifier, A, B, and C size Cartridges, 115 V, 60 Hz
2100 P	907-2120	Mono, Playback only, A, B, and C size Cartridges, 220 V, 50 Hz
2100 RP	907-2121	Mono, Record/Playback, A, B, and C size Cartridges, 220 V, 50 Hz
2100 PS	907-2122	Stereo, Playback only, A, B, and C size Cartridges, 220 V, 50 Hz
2100 RPS	907-2123	Stereo, Record/Playback, A, B, and C size Cartridges, 220 V, 50 Hz
2100 PA	907-2125	Mono, Playback only with Audition Speaker/Amplifier, A, B, and C size Cartridges, 220 V, 50 Hz

Accessories

STOCK NO.	DESCRIPTION
907-2114	Rack Mount Shelf for EIA 19" Rack
471-2101	Top cover for shelf above
503-2124	Rack Shelf Filler Panel, ⅓ Rack
503-2123	Rack Shelf Filler Panel, ⅔ Rack
919-2100	Extender, P.C. Boards

Series 2100 Product Specifications

Tape Speed:
7.5 ips (19.05 cm/s)

Timing Accuracy (at 7.5 ips):
0.1%

Wow and Flutter:
0.15% Peak weighted; 0.2% RMS unweighted

Noise (Reproducer):
Monophonic; 62 dB or better below reference of 400 Hz at 3% THD; 54 dB below 160 nWb/m at 1 kHz

Stereophonic; 60 dB or better below reference of 400 Hz at 3% THD; 52 dB below 160 nWb/m at 1 kHz

Distortion:
2% or less record to playback at 160 nWb/m at 1 kHz

Equalization:
NAB, IEC, CCIR as specified

Frequency Response:
±2 dB from 50 Hz to 15 kHz (exclusive of head contour effect)

Crosstalk (magnetic head limited):
Cue channel to program channel, monophonic
150 Hz: −50 dB or better
1000 Hz: −55 dB or better

Input Impedance (Recorder):
78 k ohms, balanced bridging

Input Levels: Line, −18 to +20 dBm (100 mV to 7.7 V)

Audio Output:
Maximum adjustment level +8 dBm from 160 nWb/m at 1 kHz, 600 ohms, balanced

Peak Output Level:
+20 dBm before clipping

Bias Oscillator Frequency:
100 kHz

Cue Signals:
Relay contact closure for external control (150 Hz)
External cue input/output available at remote control for other control functions

Ambient Operating Temperature:
0° to 55° C (32° to 132° F)

Power Requirements:
105 to 125 V or 210 to 230 V, 50 or 60 Hz, as specified

Power Consumption:
40 W continuous

Mounting:
Desk top standard. Adaptors for rack mounting optional

External Connectors:
Mating plugs furnished

Dimensions:
5.25" H, 5.875" W, 15.5" D
13.3 cm H, 14.9 cm W, 39.4 cm D; (Add 0.375" to H for rubber ft.)

Weight (packed); all models
28 lbs. (12.7 kg)

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B161 RP 683

BROADCAST ELECTRONICS INC.

AIR TRAK 90™

LINEAR CONSOLES

PERFORMANCE - RELIABILITY - FLEXIBILITY

Whether you're playing rock in Rapid City, the classics in Cleveland or all talk in Tampa, performance, reliability and flexibility are crucial considerations in selecting an audio console. With more than 30 years experience dedicated to the design and production of radio equipment, Broadcast Electronics appreciates the demands of broadcasters. AIR TRAK 90, designed to meet the demanding requirements of a fully-featured linear console, represents Broadcast Electronics' world-wide reputation for exceptional quality and great performance. And, as with all Broadcast Electronics products, AIR TRAK 90 is backed by our 24-hour factory service 365 days per year, assuring immediate attention in case of emergency.

DESIGNED FOR EFFICIENCY

Broadcast Electronics' designers were given the objective of developing a broadcast console with infinite reliability and zero-maintenance; the result: AIR TRAK 90. Whether you decide upon the 6, 12, 18 or 24 channel AIR TRAK 90, each has been designed for smooth and efficient operation. Operator controls are all within easy reach, so you can create mixes without recruiting button-pushers from the other room. Frequently used controls are located nearest the operator, while input/output selectors are at the top of the board. Each AIR TRAK 90 control panel features crisp, clear graphics under a laminated polycarbonate overlay. This tough, protective surface maintains the AT90's great looks, even after years of use.

INSTALLATION AND MAINTENANCE EASE

Installation of the AIR TRAK 90 is a breeze; its table-top design requires no surface cut-out. The entire AT90 chassis is conveniently hinged to allow full and easy access to all internal electronic hardware and circuits. The Power Supply chassis is remote mounted. A complete array of LED status indicators are provided for diagnostic convenience. Through AIR TRAK 90's universal use of Voltage Controlled Amplifiers and electronic switching of all audio, maintenance has been virtually eliminated.

PERFORMANCE FEATURES

Though simple and straightforward in design, each AIR TRAK 90 incorporates many of the same performance features as its premium MIX TRAK 90 cousins — features not found in other consoles, but those you've grown to expect from a company like Broadcast Electronics.

- **Versatile Input Mixing:** The existence of a microphone on input A no longer means that B and C must serve as dedicated mic inputs. Versatile AIR TRAK 90 consoles allows B and C to function as independent line level inputs even when a mic input is carried on A. For example, the A input could be a microphone source, the B input a professional balanced source at OdB and the C input a consumer-type CD player.

- Electronic Switching: Each AIR TRAK 90 console features electronic switching for optimum noise-free performance and dependable operation. In the event of an unexpected power loss, AIR TRAK 90's CMOS logic has the capacity to recall the latest status settings several hours after the outage occured, effectively emulating any advantage of mechanical switching.

- **Mono Outputs Standard:** Built into every AIR TRAK 90 console are dedicated mono output busses for Program, Audition and Auxiliary (or mix-minus). With AT90, there's no need for costly or confusing add-on's.

- **Auxiliary Buss:** For on-air call-in shows, AIR TRAK 90 features an auxiliary buss which can be configured for mix-minus. Through the use of internal jumpers, this auxiliary buss is programmed for each channel. Placing these controls inside the console chassis reduces the chance of operator error when setting-up a mix-minus for call-in's — with AIR TRAK 90 it's all automatic.

- Independent Metering: AIR TRAK 90's meter bridge features two 3.5 inch wide standard VU meters on the 6 channel console, four on the 12 and 18 channel models and six on the 24 channel unit. In the 12, 18 and 24 channel AT90's, each of these meters, including Program and Audition Meters, is independent. All meters include an LED overload indicator. In addition to conventional metering, Audio Presence and Phase Integrity LED indicators are included for the Mono Program and Mono Audition, and Audio Presence indicators on the mix-minus busses.

- **VCA Audio Control:** Unlike most other audio consoles which use VCA's (Voltage Controlled Amplifiers) for just audio mixing, AIR TRAK 90 utilizes VCA's on all audio controls, including monitor and headphone gains. VCA's significantly extend the life of these heavily-used controls and reduce maintenance required on AIR TRAK 90. Extensive noise filtering surrounds each VCA so controls remain functional even if they become worn or dirty.

- **Monitor " Dim" Function:** AIR TRAK 90 features a Monitor "Dim" function, allowing the operator to conveniently listen to cue audio without manually lowering the volume of the control room monitor. The monitor has two preset levels: normal and dim. When a channel is placed in cue the monitor automatically dims. The actual amount of level reduction is fully adjustable.

- **Versatile Talkback System:** AIR TRAK 90 consoles are ideal for multiple studio stations. Incorporating a versatile intrastudio communications feature, AT90 accommodates a wide variety of talkback sources. Studio personnel can communicate mike-to-mike, console-to-console, mike-to-console or console-to-mike.

- Electronically Balanced: Inputs and outputs are electronically balanced to eliminate transformers. Transformerless input and output amplifiers offer an improved audio signal path and result in less phase shift, lower distortion, wider frequency response and less noise. Output busses are of the fully floating "servo" type, can be grounded on either side with no reduction to output levels and will not self-destruct.

- **Faders:** AIR TRAK 90 features, as standard equipment, the same Penny & Giles linear faders used in Broadcast Electronics' MIX TRAK 90 console series. These premium faders feature a detent drop-cue and over 4 inches of "throw" Other performance linear faders are available as an economical drop-in option.

- Clock/Timer: Standard in all AIR TRAK 90 consoles, the clock/timer displays hours, minutes and seconds, and can be synchronized to network audio. A "dual-timer" feature offers expanded timing capabilities through a single AUTO/MANUAL selector switch and shared display. As an option, multiple clock/timer's can be "slaved" to the AT90 clock/timer. An easy-to-read "count-up" timer automatically resets every time a source assigned to the same buss is started. Manual controls initiate START, STOP, RESET and AUTOMATIC. Battery back-up capabilities are included.

- ON/OFF Switches: ON (red) and OFF (amber) switches are Hall-Effect type, providing switching with no physical contacts for reliable, silent day-in-day-out operation. Unlike some other consoles, the AIR TRAK 90's ON/OFF Remote Control follows the A-B-C selector and is selectable for intermixed momentary or sustained types of source control.

Broadcast Electronics...
Recognized Leader in Radio Broadcast Technology.

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4100 N. 24th, P.O. Box 3606, Quincy, IL 62305-3606 USA
Phone (217) 224-9600, Telex: 250142, Fax: (217) 224-9607

BROADCAST ELECTRONICS

DISC TRAK

Digital Cart Machine

Using inexpensive 3-1/2 inch floppy disks as the removable media, Broadcast Electronics' Disc Trak Digital Cart Machine incorporates 16-bit linear digital technology to deliver superior audio quality matching that of CD, DAT and other digital sources.

Features/Benefits

- Delivers superior digital audio.
- Available in both record/playback and playback only configurations.
- Cueing is instantaneous. Up to 8 separate audio tracks can be placed on a single diskette.
- Rugged design and construction delivers years of dependable service.
- 3-1/2 inch floppy disks feature hard case and sliding gate for excellent protection of recorded material.
- Powerful playback options include single play, sequence and loop.
- Flexible user-defined system setup can be reconfigured easily.
- Automatic recognition of track sampling rate and stereo/mono selection.
- Recognizes standard console start/stop logic commands.
- 2 mega-byte and 4 mega-byte high quality "Verbatim" brand floppy disks available from Broadcast Electronics.
- Verbatim floppy diskettes carry a lifetime warranty.

®
BROADCAST ELECTRONICS INC.
4100 N. 24th St.
P.O. Box 3606
Quincy, IL 62305-3606

DISC TRAK SPECIFICATIONS

Audio Input Configuration: Balanced.

Input Impedance: Greater than 10,000 ohms.

Maximum Input Level: +16 dBu.

Input Connector: XLR female.

Audio Output Configuration: Balanced/floating.

Output Impedance: Less than 50 ohms.

Maximum Output Level: +16 dBu.

Output Connector: XLR male.

Sampling Rates:

Professional	48 kHz
CD	44.1 kHz
Broadcast	32 kHz
Voice	22.05 kHz

Frequency Response, +0.5dB:

Professional	40 Hz to 20 kHz
CD	40 Hz to 20 kHz
Broadcast	40 Hz to 15 kHz
Voice	40 Hz to 10 kHz

Recording Time:

4 MByte Disk	**Mono**	**Stereo**
Professional	149 sec	74 sec
CD	162 sec	81 sec
Broadcast	224 sec	112 sec
Voice	325 sec	162 sec
2 MByte Disk	**Mono**	**Stereo**
Professional	68 sec	34 sec
CD	73 sec	36 sec
Broadcast	102 sec	51 sec
Voice	147 sec	73 sec

Total Harmonic Distortion: Record/play, all sampling rates, less than 0.05% at 1 kHz.

Signal to Noise: Record/play, all sampling rates, greater than 80 dB, unweighted.

Wow and Flutter: Record/play, all sampling rates, unmeasurable.

Phase Error at 10 kHz: Record/play, all sampling rates, unmeasurable.

Recording Format: 16 bit linear, compressed.

Bit Rate Reduction: APT-X100, 4:1 reduction.

Additional Connectors:

9 Pin D—AES/EBU digital I/O
5 Pin DIN 180°—Keyboard
9 Pin D—RS232 interface
15 Pin D—Direct remote control
BNC—Fast communications

Floppy Drive System:

Mean Time Before Failure, greater than 20,000 hours.

Typical Replacement Time, less than 30 minutes.

Media: 3-1/2" standard floppy disk; HD type for 2 MByte; ED type for 4 MByte.

Format: Non DOS/digital audio use.

Disk Life: Greater than 3 x 10^6 passes per track.

Operating Temperature: +32 to +122° F (0 to +50° C).

Operating Altitude (AMSL): 10,000 feet (3048 meters), 60 Hz; 7,500 feet (2286 meters), 50 Hz.

DC-10 –Single Play Only Deck
Size: 5-1/2 in (13.97 cm) wide x 13-1/4 in (33.65 cm) deep x 3-1/4 in (8.25 cm) high.

Weight: 8 lbs (3.6 kg); 13 lbs (5.9 kg) packed.

DC-30 –Triple Play Only Deck
Size: 5-1/2 in (13.97 cm) wide x 12-1/4 in (31.11 cm) deep x 6-1/2 in (16.52 cm) high.

Weight: 11 lbs (5.0 kg); 16 lbs (7.3 kg) packed.

DC-300 –Triple Record/Play Deck
Size: 5-1/2 in (13.97 cm) wide x 12-1/4 in (31.11 cm) deep x 6-1/2 in (16.52 cm) high.

Weight: 11 lbs (5.0 kg); 16 lbs (7.3 kg) packed.

Specifications subject to change without notice.

Manufactured under license from Sonifex Ltd.

Broadcast Electronics... Recognized Leader in Radio Broadcast Technology.

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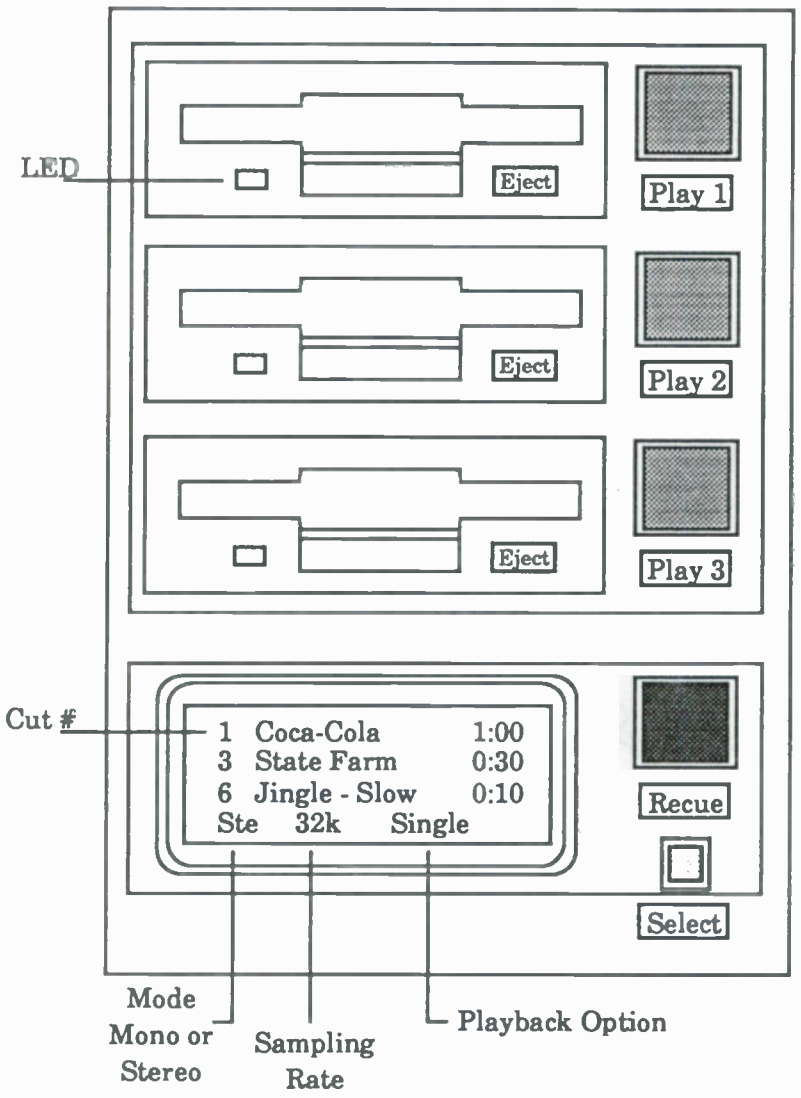
Phone: (217) 224-9600, Telex: 250142, Fax: (217) 224-9607

Printed in U.S.A.

The Disc Trak Digital Cart Machine from Broadcast Electronics

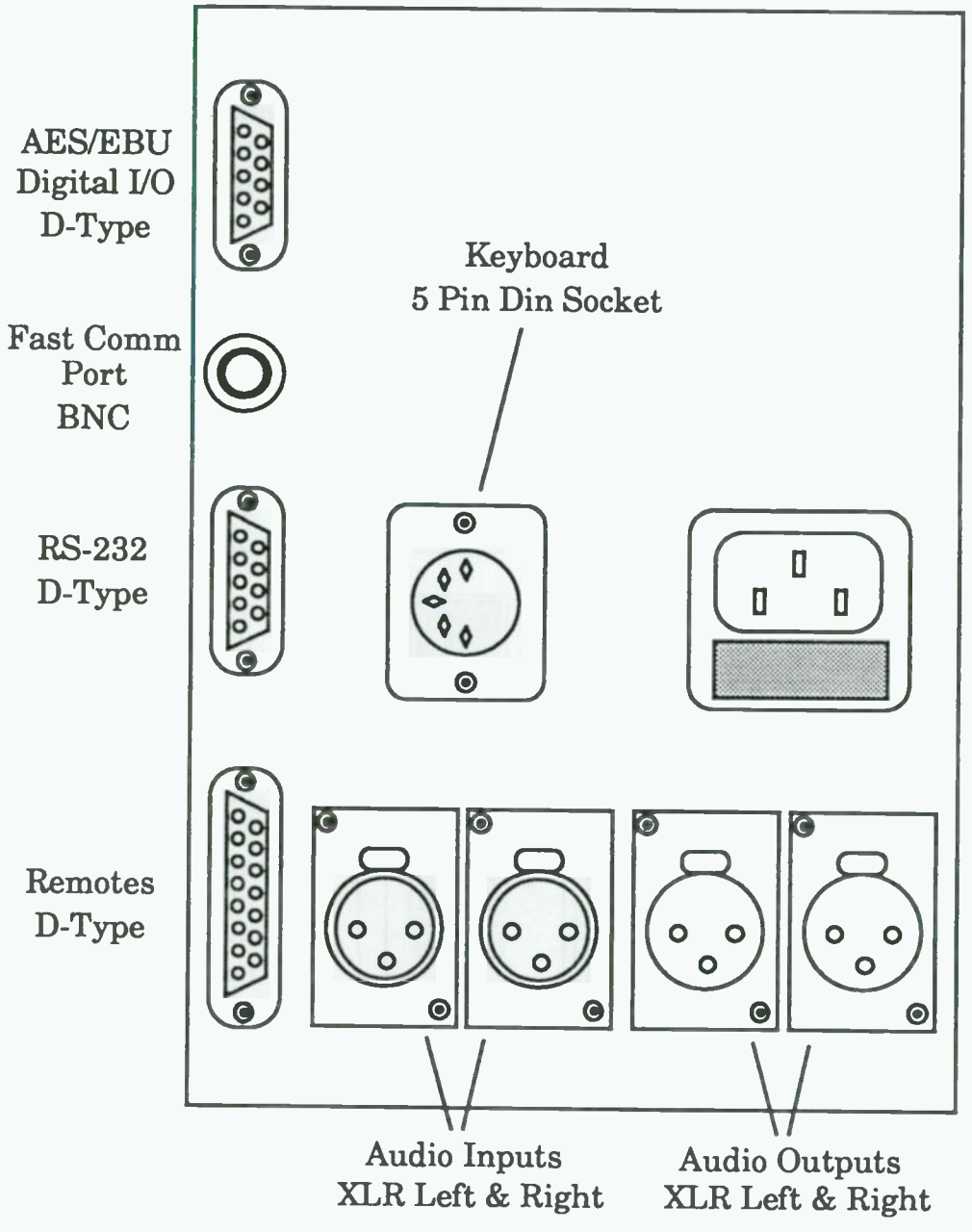
The Disc Trak is the latest advancement in removable broadcast audio media. The recording media is a standard 3.5 inch floppy disk in either the 2 Megabyte or 4 Megabyte storage capacity. The units are available in a triple deck record / playback version, a triple deck playback only version, and a single deck playback only version. A front panel LCD screen displays the particulars about the disk(s) or cut(s) cued in the machine. In addition, front panel PLAY, RECUE, and SELECT buttons provide access to these named features (and several more when used in combination). The design of the Disc Trak retains all the practicality of analog cart machines, but offers many more features to enhance your studio operation.



The DC-300 Record / Play Machine

The advantages of Disc Trak's digital control system are several very powerful yet flexible playback options. These options include: sequencing of disks or cuts; looping of disks or cuts; play one cut or disc (Single); and play all cuts or disks. The Disc Trak also features user selectable rotation of cuts on a disk even after the disk is removed between plays. This feature is advantageous when the traffic department requires the rotation of two or more cuts on the same disk. This is accomplished by a flag code which is saved onto the appropriate disk after every play. The Disc Trak also features analog or digital recording; selectable mono or stereo modes;

selectable track start / kill date lockout with play option; and selectable sampling rates of 48 kHz, 44.1 kHz, 32 kHz, or 22.05 kHz. These features plus others described later in this introduction provide operators with more creative approaches to audio playback than ever before.



The DC-300 Rear Panel

Technically, the Disc Trak offers all the convenience and features you've come to expect from well-designed audio source machines: All analog inputs and outputs are industry standard XLR connectors; All front panel command buttons are remote controllable utilizing standard console logic; Modular construction with silk screened PC boards for

easy maintenance; Plus stable and highly reliable machine components and removable media prolong overall equipment life.

The DC-300 Record / Playback Machine

Disc Trak operators will quickly learn to produce quality recordings from the analog domain and digital recordings using the AES-EBU connection. Operation of the record / playback deck is nearly as simple as a cart machine and a single disk can store up to eight separate audio tracks on one disk. Access to the majority of the extra Disc Trak recording features is by a keyboard which is included with each unit.

The record / playback machine has three disk drives, each usable for playback operations with the top drive also usable for recording and editing. Disc Trak disks are formatted differently than standard PC disks; however, a disk needs to be formatted only once for continuous operation. The record / playback machine, with its three drives, allows the operator to place three disks in the machine, set up the sequential format command, and walk away. Several minutes later, all disks will be formatted and ready for recording.

The Disk Trak recording features provide several new advantages over analog cart machines used currently in audio production. Operators can now utilize either a manual start or an automatic start on audio (with a selectable audio threshold). There is time based on-disk editing capability for all audio starts and endings. Duplication of recordings is done in the digital domain with no generation loss. Track erasure is only a keystroke, and second or third attempts to record a segment can be accomplished quickly without removing the disk from the drive. When using the HOME key to exit an erroneous recording, the audio is not saved onto the disk, therefore no erasure is required. The HOME key "stop" will also retain all billing and track information and quickly return the machine to the RECORD READY status. These new Disk Trak features will increase production efficiency immediately for your operation.

There are three different types of recording on the Disc Trak: Test Recording, Quick Recording, and Full Recording. Let's look at each type and uncover the differences between them.

Test Recordings do not require the external keyboard; instead, they use a combination of the front panel buttons. This recording method is designed to provide a quick test of levels for maintenance purposes and to provide easy access to the user-selectable recording default settings. A unique track numbering system is used so editing of title information can be done later.

To engage the RECORD READY mode, press RECUE and PLAY 1. The LCD display screen will change to show a Left & Right Scale PPM bar graph with an absolute peak at +16 dBu. The scale is in two dB increments with a 0 dBu marker. Test Recording uses the user selectable default sampling rate and mode. Upon the start of the audio source, the PPM meters provide a preview of the audio levels. Press PLAY 1 to commence recording. Alternatively, if a keyboard is connected, pressing the SPACE BAR will also

commence recording. The LCD display will provide the track number, run number, and elapsed time while the heading indicates AUDIO RECORDING.

At the end of the recording, press RECUE to stop the process. The machine will exit the recording mode and the disk is ready to play. The LCD Display will show the track number and the run number together with the running time, recording mode, and remaining time. Press PLAY 1 to review the audio track recording and if required, the operator can utilize the keyboard to indefinitely re-title the cut.

Quick Recording requires the external keyboard and provides audio recording using the user-selectable default standards. Defaults are set during the default set-up process and can be edited at any time.

The Quick Record process provides a screen to enter a title up to 13 characters for each recording (to continue press ENTER), and then follows the same procedure as Test Record.

Full Recording brings all the Disc Trak parameters to the screen for user selection. Full recording is by means of the keyboard provided with the unit. The process is as follows:

* Type in the track Title.

* Specify "A" for Analog or "D" for Digital Inputs, "M" for Mono or "S" for Stereo.

* Specify Sampling Frequency. Use Arrow Up or Down to select frequency.

* Specify "A" for Automatic or "M" for Manual Start.

* Specify Secondary Cue tone length in seconds (1.5 seconds is standard). At this time, pressing "L" and ENTER will place this track in the Automatic Loop Mode in all subsequent playbacks. This mode will only be attached to this particular track.

* Enter Billing Data of up to 40 ASCII characters which reproduced upon playback and sent to the RS232 port.

* Enter Start Date, if any. Enter Kill Date, if any.

[Note to go back to a previous screen, press PAGE UP.]

The machine will now enter the RECORD READY mode. The process is the same as the two previous methods described earlier. To exit the recording process altogether without saving the information, press ESCAPE on the keyboard. To abort the track recording without erasing the title and billing data, press HOME on the keyboard. The HOME key will return the Disk Trak to the RECORD READY status to re-record the audio track.

Once a recording is complete, the Disk Trak offers several advanced editing features to polish your audio track. These include:

Playback Last 10 Seconds
Insert or Remove Tertiary Tones
Insert or Remove Secondary Tones
Edit Secondary Cue Length
Edit Start Offset Time
Edit End Offset Time
Edit Title, Billing Data, & Kill Date
Copy Track
Copy Disk
Erase Last Track
Erase Disk
Format Disk

The Copy Track and Copy Disk features provide in-the-unit dubbing of either one or two copies of your original recording. Simply place your original disk in drive 1 and your destination disk in drive 2 (& drive 3 if two copies are required) and press the function key. The duplication process will then record the audio from the original disk or the track to the new disk(s).

An important note regarding the advanced editing features is that the operator must save any edits to the disk using the F7 SAVE key. In contrast, to erase any unwanted edits, press the ALT F7 CLEAR key. This feature allows operators the flexibility to review edits and either save or redo those same edits. Once an edit is saved, however, it is not possible to return to that original recording unless an original copy was made.

The DC-10 Playback Machine

Convenient digital audio playback in its simplest form, the DC-10 play only machine features a single disk drive; PLAY, RECUE, and SELECT front panel control buttons; and a LCD display screen. The unit is 5-1/2" wide and three units will fit side by side neatly in a standard 19" rack.

To play a track, simply place the disk in the drive. In less than two seconds, the unit will be ready to play as the LCD screen will display track 1's title, it's recording frequency, and its stereo or mono configuration. This recognition of a track's pertinent information is automatic, including Kill Date Lockout and other optional assignments. To start playback, the operator can depress the play button (or a start button on the console). To pause the playback, simply press PLAY again (press PLAY a third time to continue with playback). To stop and recue the cut, simply press RECUE. To select a different track, depress the PLAY and SELECT buttons simultaneously. This process will cycle through all the track selections available on the disk. To choose between the playback options, simply press the RECUE and SELECT buttons simultaneously. This will provide the operator with the ability to choose from the front panel between:

looping

play all cuts
play one cut then recue same track
play one cut then recue next track

These selections will remain in place until the unit is powered down or the selection is changed again.

The DC-30 Playback Machine

The companion triple deck player for the DC-300, the DC-30 play only machine features three disk drives; PLAY 1, PLAY 2, PLAY 3, RECUE, and SELECT front panel control buttons; and a LCD display screen. This unit will playback in the same fashion as the DC-10 and is ideal for situations which require multiple drives.

Much more than just a Digital Cart Machine

The Disk Trak is an extremely useful and time saving tool for today's broadcast studios. It's digital recording techniques on cost effective media will increase production efficiency, and reduce overall production & replacement media expenses. The high quality audio is also a feature you can depend upon playback after playback. If you have any questions, or would like additional information on any of our products, please contact Broadcast Electronics at 217-224-9600.

Broadcast Electronics, Inc.

Disc Trak

MODEL	STOCK NO.	DESCRIPTION	LIST
DC-300	904-1300	Disc Trak Digital Record/Play Cart Machine with One Record/Play Deck and Two Playback Decks. Variable Sampling rates. Storage Media is 3.5 inch 2 MB or 4 MB Standard Floppy disk. Single Stereo XLR Input and Output.	4,995.00
DC-30	904-1030	Disc Trak Digital Playback Cart Machine with Three Playback Decks. Variable Sampling rates. Storage Media is 3.5 inch 2 MB or 4 MB Standard Floppy disk. Single Stereo XLR Output.	3,450.00
DC-10	904-1010	Disc Trak Digital Playback Cart Machine with One Playback Deck. Variable Sampling rates. Storage Media is 3.5 inch 2 MB or 4 MB Standard Floppy disk. Single Stereo XLR Output.	2,800.00
2M Disk	579-0005	Standard 2 Mega-Byte Storage Disk	1.00
2M Disk	579-0005	Standard 2 Mega-Byte Storage Disk in Box of 10 with a Minimum of 100	.95
4M Disk	579-0004	Standard 4 Mega-Byte Storage Disk	5.50
4M Disk	579-0004	Standard 4 Mega-Byte Storage Disk in Box of 10 with a Minimum of 100	5.25
Rack Assy	954-1300	DC-300 / DC-30 Rack Mount Enclosure	300.00
Filler Panel	471-1730	DC-300 / DC-30 Blank Filler Panel	50.00
Filler / Socket	471-1731	DC-300 Blank Filler Panel with Socket for Keyboard and includes DIN keyboard jumper & connector.	65.00
Rack Assy	954-1010	DC-10 Rack Mount Enclosure	200.00
Filler Panel	471-1738	DC-10 Blank Filler Panel	30.00

Recording Time is:

	Mono	Stereo
48 kHz	68 sec	34 sec
44.1 kHz	73 sec	36 sec
32 kHz	102 sec	51 sec
22.05 kHz	147 sec	73 sec

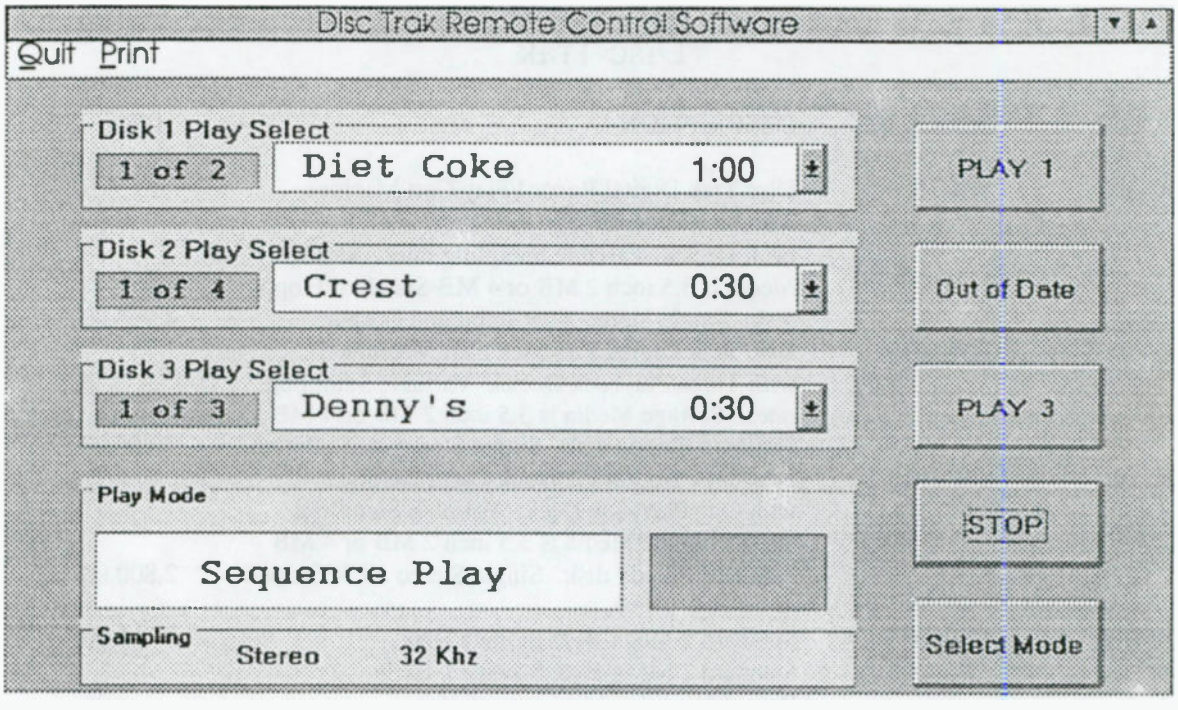
Box of 10 with a Minimum of 100

	Mono	Stereo
48 kHz	149 sec	74 sec
44.1 kHz	162 sec	81 sec
32 kHz	224 sec	112 sec
22.05 kHz	325 sec	162 sec

June 5, 1992
Prices subject to change without notice.

The Disc Trak Remote Control Software

Using the capabilities of the Disc Trak RS-232 & digital ports, several flexible options are now available to operators. One example of these options is the Windows based Remote Control Software as seen here:



This software program is written in Microsoft Visual Basic. The RS-232 port will provide the data to display and control the operational information of the Disc Trak. The three Disc Trak models will operate using a version of this Visual Basic program. All commands issued through the computer will operate the unit...even conditions like the *Out of Date* alarm will be displayed on the screen.

The software was written in Visual Basic to provide users with an interface for customization of the Disc Trak controls. This way, the program can be altered by the end user for special requirements faced in some applications (such as TV production). Visual Basic is the Microsoft Windows based version of the original, widely used Basic programming language. Although the Disc Trak operating program is currently in it's early development stages, new applications for the software will certainly develop which will further push the ability to remotely control the Disc Trak.

For an introductory period, the Disc Trak control software will be provided at no additional charge with the purchase of your Disc Trak. The Visual Basic .EXE software requires no royalty fee and can be used as public domain. The Visual Basic program required for program development purposes can purchased through your favorite computer software supplier.