



**BROADCAST
ELECTRONICS INC.**

series

3000

**Tape Cartridge
Machines**



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.

**Rugged Construction
Precision Workmanship
Unmatched Reliability
Superb Audio Performance**

Tilt-Up Cover

Phase Lok IV
Head Bracket

High Quality
Long Life Heads

Unique Cartridge
Guidance System

Extensive Electro-
Magnetic Shielding

Low Voltage
Solenoid

Automatic
Meter Switching

Fast Forward
(Option)

Model 3200 RPS Stereo Record Playback

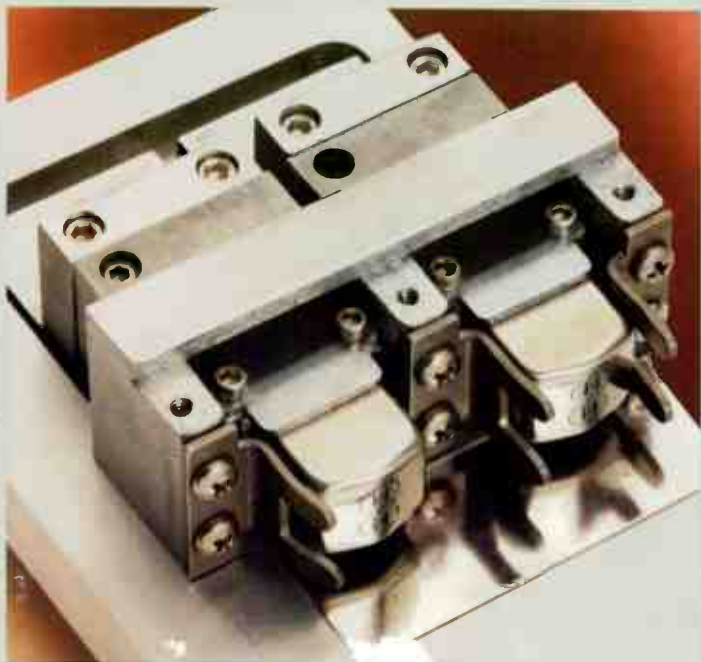


series **3000** Professional Quality Cartridge Machines

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.



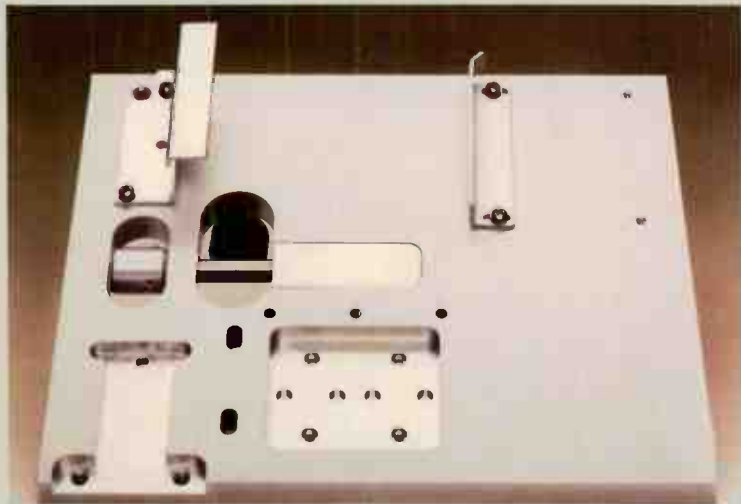
Low Voltage Air Damped Solenoid

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.



Precision Machined Deck

Each Series 3000 tape deck is made of solid aluminum, precision machined and protected by a clear anodized finish. This 1/2-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.



Capstan Motor

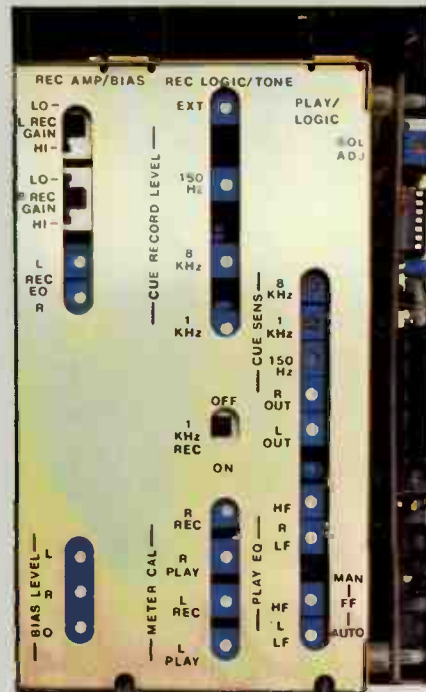
Every Series 3000 Cartridge machine is driven by a powerful direct-drive hysteresis-synchronous capstan motor.

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.



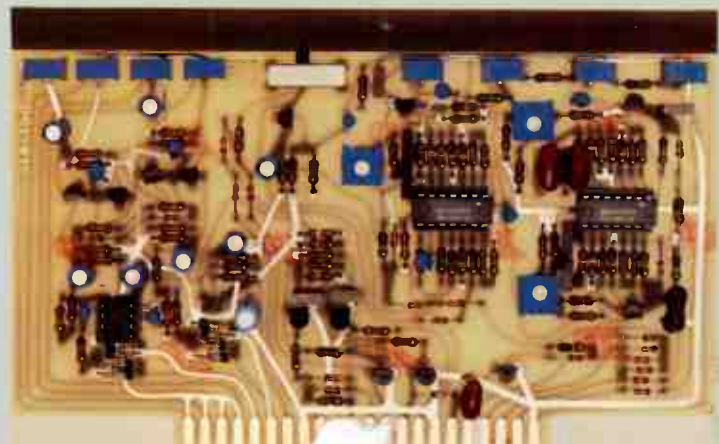
Convenient Adjustments

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.



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.



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 and 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 (150 Hz) 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 (150 Hz) or secondary cue tone is normally used for end of message detection. The (8 kHz) 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 -24 dB. A headphone monitoring jack is standard with all units.

Voltage Option

60 Hz Models-208 to 230 Volts.
50 Hz Models-150 to 120 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 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.

Product Specifications

POWER

- A 105 V to 125 V or 210 V to 240 Vac
- B 50 Hz or 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 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 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 -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 IEC, CCIR (Customer specified options)

AUDIO INPUT LEVEL

Line input -20 dBm to +20 dBm
With optional microphone input
-70 dBm to -24 dBm

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 cartridge sizes

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 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)
- 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

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 kHz 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 117 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, 1/3 Rack
906-3015	Rack Shelf Filler Panel, 1/2 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)

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



**BROADCAST
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