

NEAL

Studio
Cassette
Recorders

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Archiv Michael-Otto*

Sound reasons for choosing the

NE



102/102V



103

The N.E.A.L. design aim with the 102 was to produce a recorder which above all else would enable the highest quality recording to be made on cassette tapes easily, consistently, reliably and without deterioration through years of service. This model is presented in an attractive black and silver styling with a complete wrap around wooden sleeve. The control layout is the result of careful ergonomic study. The location and shape of the controls were chosen to give precise operation even in darkness. The open cassette well gives ready access to the heads for cleaning and facilitates rapid cassette changing. When the recorder is not in use it can be protected against dust by the perspex cover supplied. The model 102V incorporates the exclusive 'Varitape' facility, not provided on any other cassette recorder, but otherwise is the same as the 102.

Like the 102V the model 103 also incorporates 'Varitape'. At the press of a button the bias can be displayed directly on the peak reading meters, and set to the requirements of any make of tape, by an adjustable control. A calibration oscillator is built in to provide a 500 Hz signal for record calibration and level setting, an invaluable addition for tape copying and Dolby level setting. These features allow virtually instant 'line up' of the machine to suit any tape, a facility not available on many professional reel to reel machines.

Another important feature of the 103 is input mixing. This is achieved by incorporating completely separate amplifiers for each of the three inputs, to give optimum performance from any signal source. The output from each amplifier is fed to a dual concentric potentiometer to provide three input stereo or six input mono mixing.

The model 103 is presented in an attractive new European styling, with all black fascia and polished teak sides.

Common features of all N.E.A.L. Studio Cassette Rec

HEAVY DUTY MECHANISM

Engineered round the patented bi-peripheral drive, with its unique wear compensating facility, the mechanical assembly ensures high quality and long life. The massive flywheel of 91.4 mm diameter drives a glass hard capstan of 3.2 mm diameter, specially finished to give perfect traction. A self aligning pinch roller, and a powerful mains driven motor combine with these to produce a transport with exceptionally low wow and flutter figures (-0.9% DIN weighted rms) and the reliability demanded by our professional users.

HIGH SPEED WIND

Winding tapes on slow decks is a bore. The N.E.A.L. will wind a C60 cassette in 45 seconds to give the least interruption to your enjoyment.

CASSETTE GUARDIAN

The Guardian protects your valuable tapes by a system that constantly monitors the tape motion. In the event of any snag or snarl, and normally at the end of the tape, the machine automatically returns to 'stop'. The heads and the pinch roller are withdrawn so that no flats are produced on the pinch roller, even if the machine is left unattended.

PERMALLOY HEADS

The ultimate in sound quality has been achieved by choosing hard super Permalloy heads which avoid the distortion and temperature effects associated with the use of ferrite heads.

NOISE REDUCTION

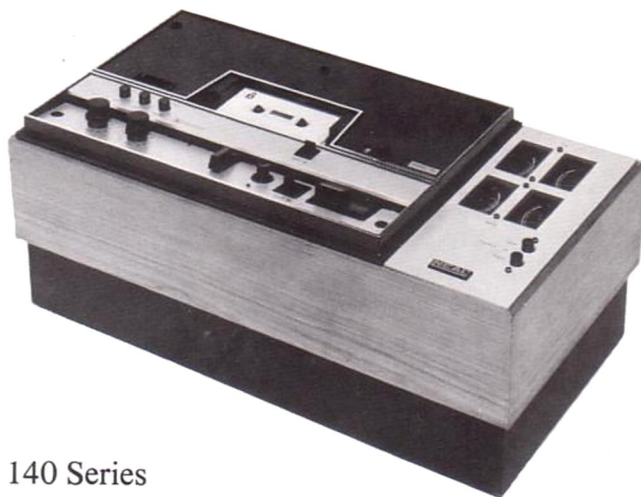
The Dolby B Noise Reduction System is fitted using close tolerance discrete components to ensure maximum performance and calibration accuracy.



range of Studio Cassette Recorders



104



140 Series

The 104 is a high quality heavy duty replay machine. It has been designed to provide long life, reliable service and superb performance when subjected to extremely hard use. Stripped of all unnecessary complications the model 104 is aimed at the public entertainment and particularly the 'disco' type application where nothing but the most robust construction is acceptable.

The controlled output is at 2 V from a 3 contact jack, suitable for headphone monitoring with headphones of more than 200 ohms impedance. This is also paralleled to a phono socket high level line output.

The model 104 is presented in an attractive black and silver styling very similar in appearance to the model 102. The dust cover is not normally supplied with this machine but can be obtained as an accessory.

This new range of cassette recorders enables four channels of information to be recorded simultaneously. Utilising a 4 track, in line, full tape width record/playback head, various options are available.

Dolby noise reduction on all four channels is available and also provision for line or microphone inputs on each channel. Models in the 140 Series are available without Dolby on specified channels with specific input and output levels, with twice speed facility or remote pause operation. Thus these recorders are suitable for a wide range of applications including X4 Cassette to Cassette duplication, Audio Visual recording with Stereo Sound and two Sync Tracks and many forms of industrial data recording.

orders include:

ULTRA LOW NOISE

The Dolby processors are carefully matched to the ultra low noise recorder circuits. With circuitry so advanced that you can measure small differences in tape noise, no longer is the recorder the limiting factor in noise performance. The resulting CCIR weighted signal to noise ratios of ferric 62 dB and chrome 64 dB are figures that many reel to reel recorders cannot match.

UNIVERSAL OUTPUTS

The highly versatile output amplifiers will provide sufficient output to load any amplifier with or without its pre-amplifier, enable headphones to be driven at a controlled level, and will feed studio lines at +8 dBm. These facilities ensure that the machine will give optimum results with any combination of equipment.

PEAK READING METERS

Fine recordings first time, every time, but only because the vital role of correct recording level indication is appreciated in the design. The ultimate quality of the recording produced is highly dependent on monitoring the recording signal correctly. The machine shows the pre-emphasised signal in the recording head on peak reading meters, which respond to every audible transient. This system ensures that the optimum level is recorded without producing distortion due to over recording or noise due to under recording.

CORRECT CHROME PERFORMANCE

The best performance of chrome tape can only be realised by thorough design. Only recorders that switch the bias *and* the record equalisation *and* the replay equalisation can give the best results, and produce internationally standard tapes. The machine makes all these necessary adjustments by means of high reliability solid state switches.

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TECHNICAL SPECIFICATIONS

	102/102V	103	104	140
Recording Amplifiers				
Microphone ($\frac{1}{4}$ " Jacks)	500 μ V 2 K Ω	200 μ V 2 K Ω	Not fitted	500 μ V 2 K Ω
High level line (Phono)	50 mV 200 K Ω	80 mV 2 M Ω	Not fitted	50 mV 200 K Ω
Low level line (5 Pin DIN)	2.5 mV 10 K Ω	5 mV 10 K Ω	Not fitted	Not fitted
Replay Amplifiers				
Frequency Characteristic CrO ₂	70/3180 μ S	70/3180 μ S	70/3180 μ S	70/3180 μ S
FeO	120/3180 μ S	120/3180 μ S	120/3180 μ S	120/3180 μ S
Line Output (Phono)	600 mV 5 K Ω	600 mV 5 K Ω	2V 10 Ω	600 mV 5 K Ω
	Fixed	Fixed	Controlled	Fixed
DIN Output (5 Pin DIN)	600 mV 5 K Ω	600 mV 5 K Ω	Not fitted	Not fitted
	Fixed	Fixed		
Headphone/High level line ($\frac{1}{4}$ " Jack)	2.5 V 10 Ω	2.5 V 10 Ω	2.5 V 10 Ω	1.0 V 10 Ω
	Controlled	Controlled	Controlled	Fixed
Frequency Response				
(+1-3 dB) CrO ₂	35 Hz-15 kHz	35 Hz-15 kHz	From DIN Test tape	35 Hz-15 kHz
FeO	35 Hz-12 kHz	35 Hz-12 kHz	(45513/6) corrected to 3180 μ S \pm 1 dB	35 Hz-12 kHz
Crosstalk				
At 1 kHz	>40 dB	>40 dB	>40 dB	1-2, 3-4 >40 dB Others >50 dB
Signal to Noise Ratio				
CrO ₂ Dolby Off	55 dB	55 dB	55 dB	55 dB
FeO Dolby Off	53 dB	53 dB	53 dB	53 dB
CrO ₂ Dolby On	64 dB	64 dB	64 dB	64 dB
FeO Dolby On	62 dB	62 dB	62 dB	62 dB
Metering				
Peak Programme Meters.	2	2	Not fitted	4
Electronic time constants are 2 mS rise time and 100 mS fall time. Meters indicate true pre-emphasised recording signal and equalised playback.				
Varitape				
	Fitted (102V)	Fitted	Not fitted	Not fitted
Wow and Flutter				
	Less than 0.09% rms DIN weighted	Less than 0.09% rms DIN weighted	Less than 0.09% rms DIN weighted	Less than 0.09% rms DIN weighted
Tape Speed				
	1.875 ips	1.875 ips	1.875 ips	1.875 ips
Dimensions				
	14" x 9 $\frac{1}{2}$ " x 5"	13 $\frac{13}{16}$ " x 9 $\frac{7}{16}$ " x 5 $\frac{9}{16}$ "	14" x 9 $\frac{7}{16}$ " x 5"	18 $\frac{1}{8}$ " x 9 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ "
Weight				
	14 lb	14 lb	14 lb	16 lb

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Optional Facilities

All the above equipment can be supplied to special order fitted with a remote pause facility and/or converted to twice speed operation for use as a high quality duplicator. Other special features such as balanced inputs and outputs and special sockets, may also be fitted to some models to special order.

NEAL
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