



Production Mastering

Recording and production are rapidly merging. The latest studio techniques put new demands on the way that sound is recorded.

The challenges are clear. Greater control for rapid overdub and sound assembly. Faster and easier operation. Locking more tracks for video. And the need for enhanced audio quality.

In response, we introduce the Fostex E-Series recorders. Four master machines, one philosophy.

Designed and engineered an experienced team with a reputation for innovation and quality.

Up to date formats. Economic multitrack and exceptional analog mastering. Smarter and quicker. Built to survive constant studio use.

In every way the Fostex E-Series satisfies the new requirements of production recording.

Fostex[®]

Fostex E Series - Transport Mechanics

All formats are built on the same rugged transport.

Three direct drive DC motors, mounted directly to a precision engineered alloy plate, are the basis of this stable design.

Studio proven mechanics and intelligent, microprocessor based electronics work to control tape motion precisely.

The efficient design of this integrated transport wins many ways.

Less operating links and arms mean power can be used much more efficiently.

The latest design of motors and solenoids consume less current, so a more compact power unit is possible. There's less heat and less weight.

Throughout this entire tape transport benefits of such an innovative design approach are very apparent.

An efficient and stable design that's both cost effective and keeps its specifications.

In the Fostex tradition.

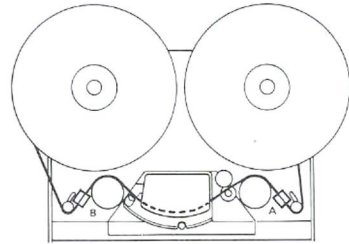
The Tape Path

The new demands of multitrack and production work on tape transports are severe.

Constant shuttling, spooling and searching. It can all put strain on the tape's plastic base film.

Positive, yet very careful tape movement is essential.

The tape path employed for the E Series ensures constant tension in every mode. Sensor arms detect changes and constantly control the two direct drive reel servo motors.



Failsafe safety measures, to protect tapes are also included.

A photosensor and band brakes bring the machine to a smooth stop in case of power failure or during stop 'parking'.

From the supply reel tension arm sensor, the tape passes over a tacho roller, tape guides and heads, and emerges to the capstan, flutter roller, second tension arm and takeup spool.

Threading the E Series is very fast and straightforward.

All tape path components are rigidly mounted on a machined plate of alloy, to ensure long term stability.

System Control

It follows that in a design which has less moving parts, less power is needed to move the tape efficiently.

Reel motors are heavy duty DC servo motors are ironless rotor type, producing strong torque yet consuming very little power. Tape lift and brake solenoids operate with simpler mechanics than ever before.

Electromechanical components are controlled from a master printed circuit board, located at the rear of the machine.

Motion and tension sensing, servo control, tachometer and audio switching all interface to a central microprocessor. Proprietary Fostex software provides the 'intelligence' for the recorder. It ensures the operator can move quickly while keeping tape safe.

Direct Drive Capstan

To ensure constant, accurate speed and rapid response in synchronised applications, the capstan motor drives the tape directly.

A quartz oscillator generates a reference frequency. The capstan motor itself generates another signal proportional to it's speed. An error detection circuit within the feedback loop of the motor drive amplifier compares these two frequencies and varies the motor current whenever erratic motion occurs.

As this correction takes place, the two frequencies are locked together such that their phase relationship is identical. Even the slightest irregularity of the motor is detected and compensation results.

This is the frequency generated servo controlled phase locked loop motor. It's the textbook design for rock solid speed control.

And because it's inertia is lower, it responds and locks up faster with synchroniser or other control.

Real Time Counter

The five digit display is calibrated in hours, minutes and seconds, and permits accurate logging of positive or negative elapsed time in play and wind modes. This microprocessor

based counter is driven by the right hand low mass, low slip tacho roller.

Local zero reset permits exact time measurement from any point on tape.

The pitch control, also located here on the transport accesses this display. When the 'pitch' switch is depressed, capstan speed may be varied for creative or timing reasons. An LED blinks to indicate this mode. The pitch control knob is dual concentric, permitting coarse and fine pitch adjustment. It is also touch sensitive, and causes the display to indicate the deviation from standard speed in percentage terms.

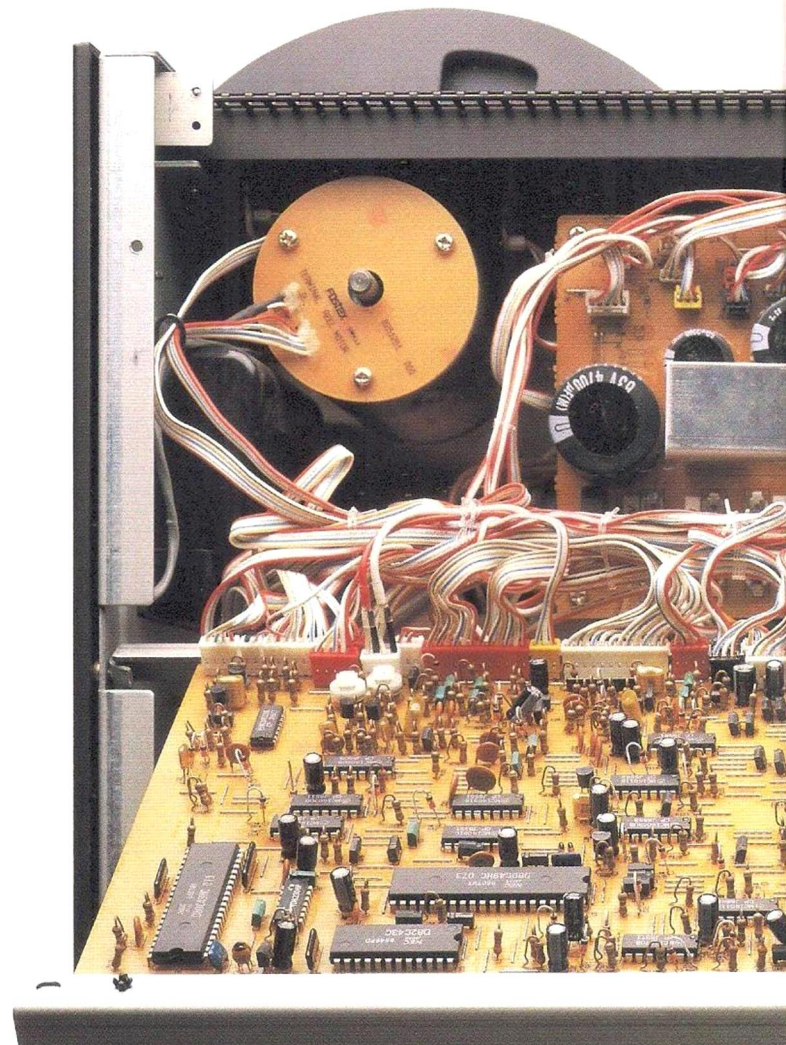
Autolocate functions

Operation is further enhanced by the incorporation of both search and repeat functions for busy operators.

Memory Buttons Two push buttons are provided to capture any two tape locations. From a stationary mode or 'on the run'.

Search Buttons Two are provided, offering search in rewind or forward modes to either counter zero or to the Memory 1 position.

Repeat 1442 When activated this function automatically rewinds tape to the 1 location whenever memory location 2 is reached.





punch in out, a musician can more easily engineer his own recordings.

These are all powerful features, indispensable for the serious user.

Editing Convenience

Further features are incorporated with professional editing in mind.

a. The hum shield retracts totally with simple push-push action to reveal excellent working access to the heads, for ease of marking and for maintenance.

b. There's also an edit mode that's available when you press the 'stop' key twice. This releases the 'parking' brakes, maintaining servo controlled reel tension. One handed, accurate shuttling is possible.

c. Positive locking NAB hubs, permit easy grip for shuttling during editing. (These may be easily removed to accommodate 'cine' type spools).

d. A manual cueing lever is provided enabling off-tape monitoring during fast wind or stop modes. The lever locks if required.

e. The head cover flips up for even better head access.

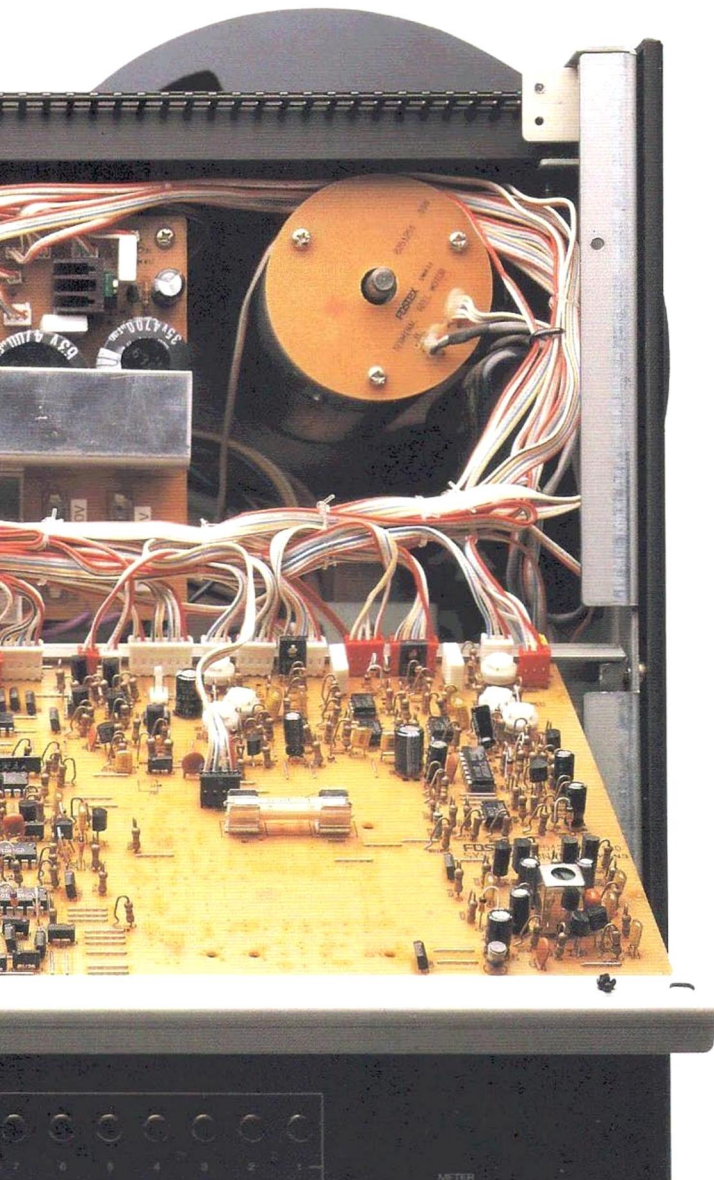
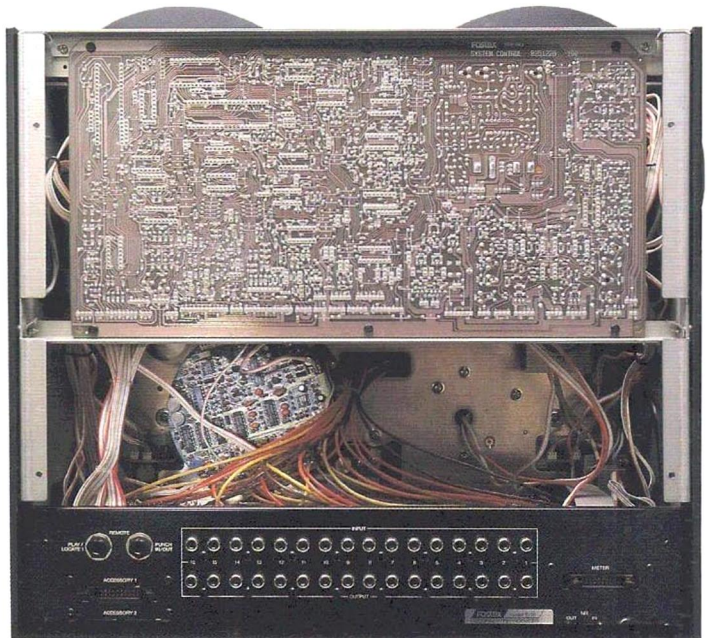
More transport features

The edit mode is only one of the extra 'second level' features available via the transport control buttons.

Autoplay When activated this causes the transport to enter the play mode when a memory position is reached. Used in conjunction with the 'Repeat' function, convenient loops, permitting rehearse overdub.

These autolocate functions are also on the remote control.

A footswitch can also be used to activate the search to memory 1 and play. In combination with the remote



If either 'fast wind' button is held down during tape wind, the transport slows down to a speed approximating play speed. This allows easy recognition of signal recorded on tape, without entering the play mode.

Or if both 'play' and 'fast wind' are pressed to start tape motion, the transport winds at approximately half normal speed, permitting neater, more accurate tape stacking on the reels. Hence less opportunity of damage to the edges of the tape.

Interface Access

A primary design consideration was the application of the Fostex E Series to new recording requirements of external control and synchronising.

All transport commands are controlled and distributed by the on-board microprocessor - whether from the remote, front panel or an external synchroniser. There is no chance of error or tape damage.

'Accessory 1' socket accepts the full function remote Model 8316.

The multipin on the rear panel marked 'Accessory 2' carries the full function control, tally-backs, and tachometer data for standard SMPTE based controllers and other

synchronisers. It interfaces directly to the Fostex 4030 and 4035.

This fast, responsive transport is ideal for all lock-up applications.

Maintenance Access

The E Series Recorders are built in the Fostex tradition of accessibility for regular maintenance, checks and repair.

A clutter free layout is apparent once the master control board at the rear of the machine is flipped down.

There's instant access to the remainder of the transport parts, by simple removal of the front panel dress plate.

Built to last

The efficient design of the transport, under total microprocessor control means less parts, and less likelihood of them going wrong as a result of untrammelled movement. All parts, are selected for longevity.

Separate power supplies for motors and logic ensure minimal interaction under all conditions.

This highly evolved transport is the very stable basis for four specialist recorders which fulfill all the latest production requirements.

Removing the back panel and two screws, allows the rear control circuit board to be flipped down. This contains the custom microprocessor which controls all the transport functions. All wired connections are plug socket type - making rapid replacement very simple, should anything, ever, fail. There is also a board mounted elapsed hour meter, monitoring the total play time.

Fostex E Series - Noise Reduction

Fostex pioneered the use of Dolby C type noise reduction for use in multitrack recording.

This latest system has been developed at Dolby Laboratories, specifically for use with narrow gauge recording techniques.

Not only does Dolby C offer the highest sonic integrity, but there are also side benefits which provide a noise reduction system that's easier to work with.

The side effects of wide band compansion do not occur, and very clear, tight recordings are achieved without difficulty.

The highly acclaimed audio quality of the E-Series multitracks is possible due to this outstanding noise reduction system.

What is Dolby C?

The basic principles of Dolby noise reduction are firmly established in recording. Low level, and selected frequency bands (or band) are boosted before being recorded on tape. During tape playback, these signals are detected and lowered to their original level. As a result, tape noise is also pushed down, resulting in much quieter overall performance.

The latest Dolby C type system provides a total of 20dB of noise reduction in this way.

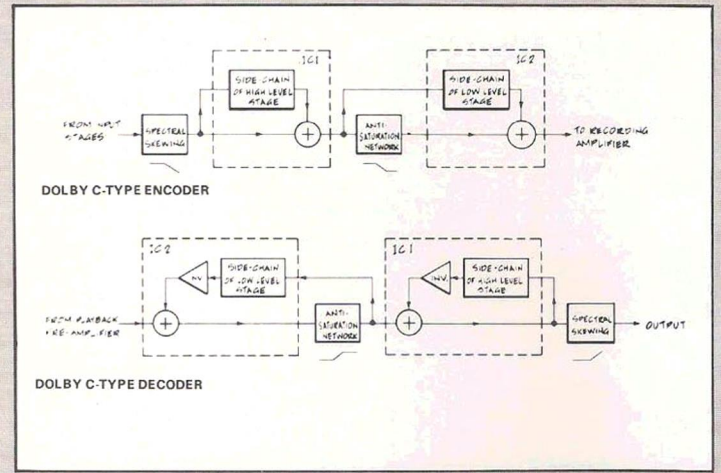
How is it different?

Providing noise reduction on silence is not all that difficult. For very many years, conventional companders have been around which dramatically reduce noise - between selections on a tape or record.

Yet it is just as important to have noise reduction when there is music playing. While music will mask the noise part of the time, there are times when it wont.

A bass drum note for example, cannot hide tape hiss, no matter how loud the drum is; the ear can detect both simultaneously.

The conventional wide-band compansion systems affect noise reduction at the time of playback by turning down the volume when there is little or no music present. This turns down the noise as well. But they also turn the volume back up again on louder music and so turn the noise back up at the same time. Thus the bass drum note is accompanied by a burst of tape hiss - tape hiss which is audible if there is no music present at higher frequencies to hide it.



This problem is commonly known as noise modulation. It means that with any conventional wide band compander, the noise level is constantly shifting up and down with changes in the level of music. Dolby noise reduction on the other hand is free of noise modulation on virtually any type of music.

Unlike conventional wide band companders, the Dolby C type noise reduction operates over a constantly changing or sliding band of frequencies. The band extends low enough to provide very effective noise reduction on silence. But in the presence of music, the band slides up just out of the way of the music, so that any noise at frequencies above the music is almost as effectively reduced as if the music wasn't there.

The presence of music does not prevent noise reduction from occurring where it is still needed.

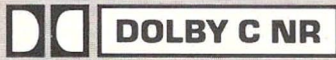
Sound improvements

In addition noise reduction that does not get in the way of the music, Dolby C achieves two further improvements.

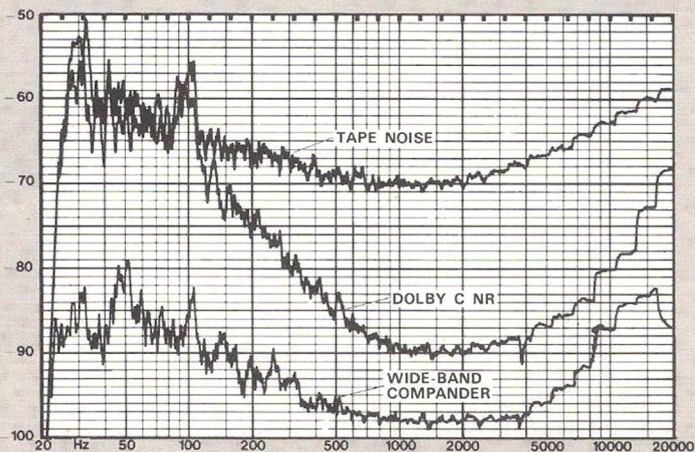
There's the 'anti-saturation' circuit that helps to prevent high frequency tape saturation.

And spectral skewing which reduces the possibility of encode decode errors due to normal variations in tape formulation.

Incorporation of Dolby C in the Fostex E-Series multitracks results in clear, tight sound recordings that are easy to achieve.



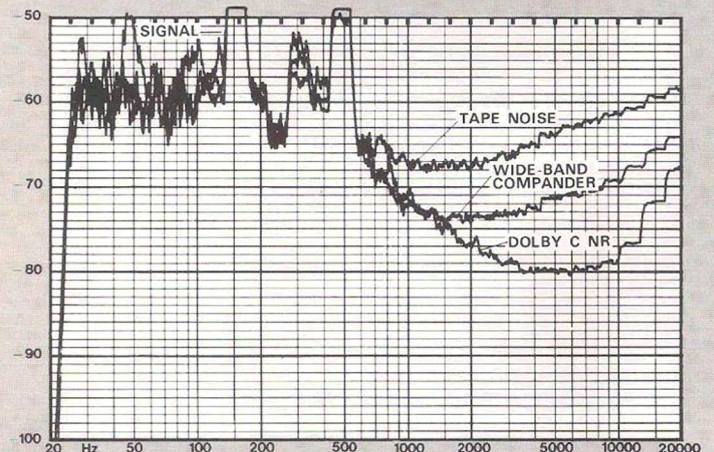
'Dolby' and the Double-D symbol are the registered trademarks of Dolby Laboratories



Noise reduction in absence of music

Noise signal from biased tape without any noise reduction, the effects of Dolby C, and a wide-band compander are shown in the absence of signal*. The Dolby C's noise reduction effect results in an overall perceived level well below the ambient

noise of many listening rooms, even at higher playback levels. In the absence of any signals, the conventional wide band compander provides still more electrical noise reduction. (but usually there is no more audible noise reduction).



Noise reduction in presence of music

In the presence of a signal (148Hz, D below middle C on the piano), in all cases noise in the region of the signal will be masked by it. However, at higher frequencies, especially between 2kHz and 10kHz where tape hiss is clearly audible, Dolby provides

almost as much noise reduction as if the signal was not there, while the compander allows the noise to increase to much higher level than with Dolby C.

*Weighted to reflect ear sensitivity to sound.

Fostex E Series - Audio Electronics

Innovation in the audio circuits of the E-Series recorders does not stop at superior audio quality.

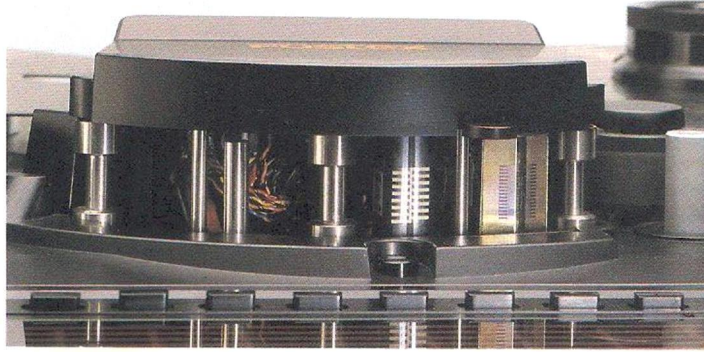
Extreme care was taken at the system design stage to ensure that the status of all channels could be switched and seen with ease.

So it's not at all surprising that these recorders offer unique operating advantages.

Progress in electronic design is already at a stage where poor quality, drift and breakdown are all but a thing of the past.

Innovation today is in building equipment that's faster and easier to use and to own.

The Fostex E Series achieves all these goals of quality.

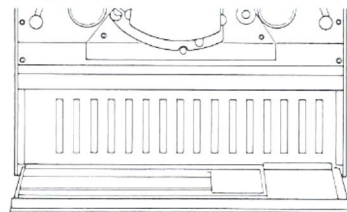


Sound Assembly

All audio amplifiers are built onto rigid plug in circuit boards.

These boards plug into a 'mother board', and present separate bias, signal level and record and playback equalisation controls for easy access from the front (multitrack) or base (stereo versions) of the recorder.

Thus access for periodic line up is excellent.



Fewer wired connections, and the use of ribbon cabling ensure that reliability and accessibility are improved.

Silent operation

Specifications speak for themselves.

FET type semiconductors are used at the first stage pre-amplifier for Sync/Repro head. This optimises the head loading and so the signal-to-noise ratio at this critical point.

State of the art analog audio quality is delivered by the stereo two track machines. Multitrack dynamic range is enhanced by incorporation of Dolby C.

Very high headroom, ten times the normal operating level, is maintained throughout the audio path.

Whilst the magnetic tape medium itself will 'saturate' considerably below this, high overload capacity in all the associated amplifiers reduces the chance of unpleasant 'clipping' noises if signal levels get somewhat out of hand.

Phase compensation circuitry is incorporated in the record amplifiers. This results in superior transient response in both play and sync modes.

The ever increasing demands for silent performance include silent entry and exit from the record mode. Integral circuitry avoids a 'silent gap' occurring at punch-out.

A delay circuit between the 'turn off' of the erase current and the record bias prevents a 'blank' section across the distance from the record head to the record head at the 'punch-out' position. This is a feature mandatory for demanding audio and video post production applications.

Electronic switching

In keeping with the philosophy of fast operation, all audio switching is electronic and click free.

All audio switching is achieved with electronic or mechanical latching DC control switches. There are no switch contacts to corrode and affect in the signal path. Reliability is increased by a factor.

All versions feature one touch switching and logic for all record and monitor select functions.

Head Assembly

Tape heads are naturally the most critical part of the audio chain. These are precision transducers which transform high quality audio to a magnetic field - and then back again.

The Fostex team pioneered the new technology of narrow gauge multitrack on open reel. The heads used for both stereo and multitrack are built to exacting specifications.

High-hardness permalloy is employed, with a core design which reduces head bump effects to less than 1dB.

As a result, the low frequency compensation (equalisation) needed is less severe. Less correction in the circuitry means a cleaner signal path and results in clearer bass signal.

Crosstalk on all machines has also been minimised through careful and experienced design.

On the multitracks, the figure is only 55dB at 1kHz - easily matching that of conventional machines using tape of twice the width. It is more on par with recorders using tape four times the width.

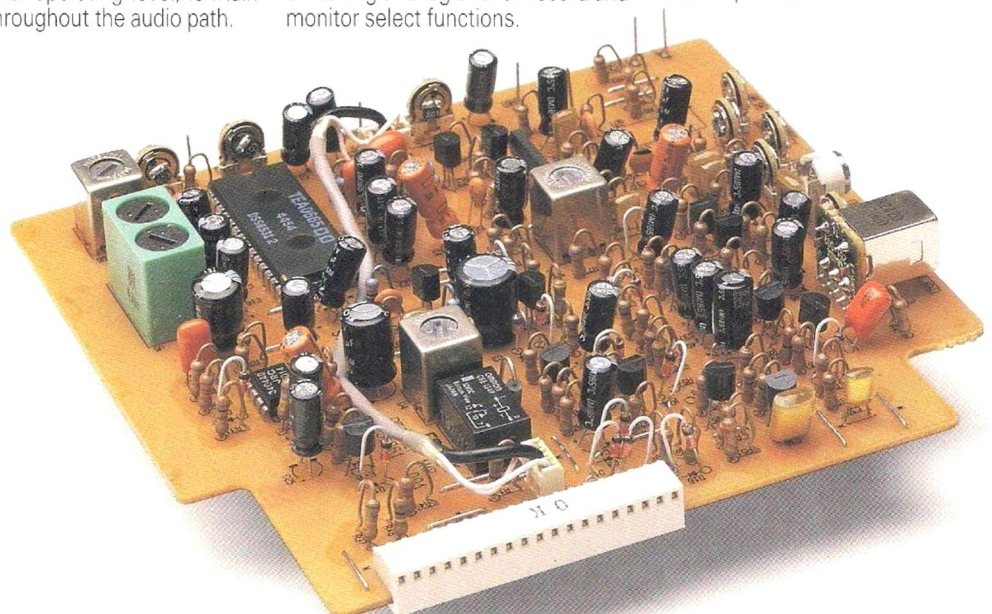
On the stereo machines, taking into account the need to isolate from the centre time code track, the figure exceeds 74dB on all channels in the record mode.

The precision staggered erase head reduces fringing effects whilst ensuring complete erasure of all of the signal between tracks.

Heads are in all cases bridge mounted for accessible azimuth adjustment.

Sync quality on all machines is as good as playback - full frequency response for dubbing or bouncing the audio tracks.

Each element in the audio path, from heads, through amplifiers and switching to the compatible outputs, is designed to offer the very highest integrity signal path and present the easiest operation.



The record play electronics printed circuit board from the multitrack series. This includes the latest Dolby 'C' noise reduction. Access to presets is along one edge for rapid line up.



Fostex

Fostex

Fostex

POWER

PITCH

ON

OFF

CRS-FINE

SPEED

LOW

HIGH

METER

CAL

LINE OUT

BIAS 2

DUMP EDIT

ON

OFF

8:31:19



- READY
- SAFE
- L
- INPUT
- SYNC
- REPRO
- READY
- SAFE
- R
- INPUT
- SYNC
- REPRO
- READY
- SAFE
- CUE
- INPUT
- SYNC
- REPRO

- RESET 0
- AUTO PLAY
- AUTO FITN 1
- RECORD
- MEMORY 1
- LOCATE
- REWIND
- STOP
- MEMORY 2
- LOCATE
- F FWD
- PLAY

Fostex E Series - Stereo Mastering Recorders

Production needs are changing. The requirement is for faster, more efficient production and stereo recording.

The E Series Master recorders offer advanced facilities to anyone mastering for production.

The mastering two track, two channel formats are now being supplemented by a third, cue channel, located in the centre of the tape, intended for recording and playback of SMPTE time code.

This feature, coupled with full synchroniser compatibility, puts all of the potential of advanced production techniques into the hands of the user.

The proven cost benefits of the compact Fostex transport, and the incorporation of up to date facilities opens up a new range of opportunities in recording.

Until now, synchronisation of SMPTE and MIDI, of music and video, was reserved for select, top of the market studio operations.

Now Fostex puts this link to the future within reach of every working studio facility.

Compatibility.

The E2 runs at 19/38cms, the E22 at 38/76cm/s. The E2 offers high quality stereo, quarter inch mastering. The E22 delivers exceptional quality from half inch. Otherwise, these two recorders are identical.

Industry Outputs

Whereas multitracks usually work within a dedicated mixer/recorder system - two tracks are expected to interface with the outside world. Which means long cables, long runs and often high levels.

The E Series two tracks offer compatibility with both kinds of application. The -10dB studio standard on pin jacks and the +4dBm standard on XLRs.

These latter inputs and outputs are balanced electronically. They eliminate the need for transformers yet provide isolation and cancel out induced hum.

There is none of the limited response or 'slew rate' normally associated with transformers. Fast rising signal peaks are passed through the input stage without damping or attenuation. Signals are cleaner, tighter.

The Third Track

Whilst a third, 'cue' track is still in the realms of a special requirement for most tape recorder manufacturers, Fostex recognise the need to provide this facility as standard for anyone involved in mastering audio.

This signal, usually SMPTE time code - but practically any sync pulse - is recorded alongside the audio for precise, repeatable timing and interlock. The standard that has evolved and is used by major manufacturers such as Nagra and Studer, is to record this signal in the guard band between the two standard audio tracks already on tape.



As a result of custom head design, crosstalk is at an absolute minimum and there is no loss in stereo audio performance.

The cue channel has all the same functions of record play and sync as the stereo - total versatility in a fast production applications.



Bias Selection

E Series recorders are normally biased for high level Ampex 456 or Scotch 226 tape to ensure optimum performance. However, there is selection of two user adjustable bias voltages.

Once the second set of voltages are adjusted, selection is a matter of depressing a switch behind the front panel.

Now tapes can be switched without having to spend time recalibrating the machine.

A warning light illuminate when tape other than Ampex 456/Scotch 226 is used.

Calibration

Both input and output level controls feature a calibrate position to allow rapid signal level matching.

A front panel switch changes the meter circuits between between standard level and line out.

The VU style meters indicate average level, whilst rapid acting LEDs show the presence of signal peaks and fast transients that may saturate tape.

All Electronic Switching

Separate switches are provided to select the mode of the two audio channels and the cue track.

Record ready mode is entered either by preselecting individual channels or the master record button (record LED blinks green). Record is effected by pressing record or the channel button respectively. (record LED steady red). Exit is either via channel select buttons or stop.

Monitoring of input/sync/play is also selectable by one touch switches. Local LED indicators show status at all times.

More Editing Features

An edit dump mode is included. This switches off the take up motor, allowing tape to play off the machine. When in the edit mode, the transport will not go into any mode other than play and stop.

Even more editing convenience on this precision designed transport.

Alternative mountings

All E Series machines work vertically or horizontally. Optionally, the over-bridge kit may be used to mount the meter and level control panel over the transport. This also includes a headphone amplifier and is particularly useful in broadcast applications.



Fostex E Series - The Multitracks

Fostex pioneered the technology of narrow gauge multitrack on open reel.

The formats of eight track on quarter inch and sixteen on half inch are now firmly established.

Audio quality, enhanced by the incorporation of Dolby-C is a real challenge to the wider, more expensive formats, and has been acclaimed for many professional applications.

Now the E8 and E16 recorders offer all the advantages of these formats to both the recording and production industries.

Versatile enough to use in any application and location. Light enough for one man to carry. Yet affordable for a working musician to own and use.

Their development and the outstanding audio quality were made possible by advances in basic component technologies, all skillfully employed by Fostex engineers.

Being both cost effective and compact, the E Series opens up new possibilities in all areas of sound and music production.

The working producer, arranger or musician has the full facility of sixteen track scaled for a personal studio environment.

The mobile recording service can truly offer a go anywhere, eight or sixteen track facility.

The commercial studio can offer more competitive rates and more tracks, more economically.

Many more post production houses can now consider the investment in audio sweetening.

And industrial engineers in fields outside of the entertainment industry now have economic eight and sixteen track within reach.

Direct Connection

There are no front panel sensitivity or level controls. Both machines will interface at the standard -10dBV level. The back panel has two rows of sixteen (or eight) phono jacks. The inputs and outputs. An optional 8 way line amplifier is available for an XLR interface at the +4dBm level.

Further sockets accept a remote record punch in and out footswitch and the 'Return to memory 1' facility.

Laid out for speed

Here are multitrack recorders where everything is where you would expect for fast operation.

Metering, monitoring, record selection and status are located as individual control strips.

Cross reference between any channel's status and level is instant, in this way minimising the possibility of error when working fast or alone.

There's much more of a chance to concentrate on the truly creative side of multitrack.

A minimum of switches

Optimised design has resulted in a recorder that's easier and so much faster to use.

There are single switches above the channel meters, which select playback, record, or monitor for each channel.

Normally you monitor playback (line out) unless you are in record. Or hit the 'all' switch and you hear the input signals to all channels. Or touch 'record' only (not rec/play which enters the transport into the record mode) and you hear only the channels which are selected to record ready.

If you preselect record, the appropriate channel number flashes, record ready, (below the switch), until you enter record on the machine, the remote or by footswitch. And monitoring will automatically change from sync playback to input monitor.

Normally, switching of the built in Dolby-C circuitry is automatic, though this may be bypassed by a single rear panel switch.

The operating system is obvious to master, it is quick and logical to use.



Hinged Meter Panel

The bright, two colour, twelve point bar-graphs are accurately calibrated in dB's and follow the signal level and source at the output of the recorder.

They are peak reading types, which will capture, hold and display, fast transients.

This meter panel swings down by releasing just two screws, and so presents eight or sixteen clearly identified rows of presets for rapid level and EQ line-up of the recorder.

The panel may also be remoted for use directly over a console.

Mounting Possibilities

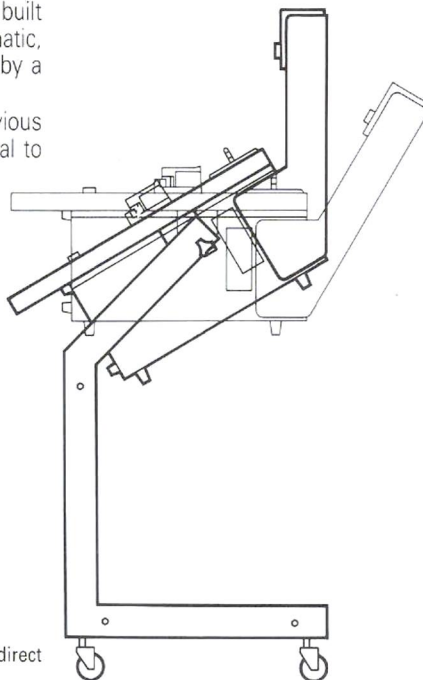
The very compact dimensions of the E-Series recorders, permit mounting in a variety of convenient ways.

The transports will operate in either a horizontal or vertical mode. Rack mounting flanges, are to the international nineteen inch standard. Again these may be used in either plane.

A castor rolling console is also available for studio use.

At all times, the meter panel may be remoted from the E16.

A mounting kit provides all the hardware to build a bridge over the reels - offering all the convenience of horizontal operation combined with that of easily seen vertical meters.



Fostex E Series - Remote possibilities

Fostex recognise that the future of music recording is closely tied to links with vision.

Having brought multitrack within reach, the same is being done for post production.

Taking full command of a recording session means having all of the most important controls at your fingertips.

Connecting the compact 8316 controller increases many remote possibilities by a factor.

Each motion and function select feature is duplicated and it adds an indispensable locator facility.

Yet that's just the start of the remote possibilities.

Now there's a total SMPTE and MIDI synchronisation system available - brought within reach by the Fostex engineering team.

Footswitches

The first accessory to plug into any of the E Series is a footswitch.

The remote punch in/out socket allows any preselected 'record ready' state to be entered and exited by subsequent operation of the footswitch. This is particularly useful during tricky overdubs when all hands are needed on the console, or for a performing engineer/artist.

Further, connection to the play/locate socket allows search to the 'memory 1' location and subsequent operation causes play to engage.

Used together, a hands-free overdub cycle may be created.

Most compact controller

The 8316 remote control is the size of a paperback book, and sits flat, wherever you're working.

Alternatively an adaptor fixes this lightweight unit to the stem of a normal microphone stand.

A single switch transfers control from the recorder to the remote, so there is no chance for operational misunderstandings to occur.

Every essential function of any of the E Series may be commanded from this remote.

Motion control for a start

A pad of a dozen keys duplicates the motion controls on the front panel of the E Series. There's also a local bright digit counter, plus reset.

Then there are two other remote possibilities to make overdub faster and easier.

Remote function select

Sixteen push switches and associated LED's duplicate those on the E Series. Depressing any one, puts that channel into the record ready mode.

Alternatively, if the monitor mode is selected, individual tracks may be checked before recording.

These remote possibilities will extend the ease of use of the Fostex E Series for fast production and for personal use by performers and musicians.

Rack Mount Synchroniser.

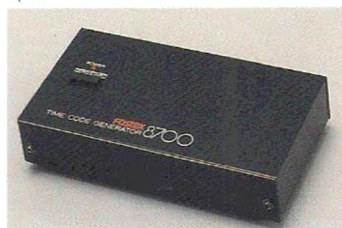
The 4030 SMPTE Synchroniser is just 1U high.

A pair of front panel switches allow you to enable chase and lock programmes. Three indicators at the extreme left indicate master code, slave code and locked status. Further front panel switches allow an offset to be established.

This unit simply locks two machines together. Slave follows the master.

On its own, the 4030 can be used to synchronise a pair of audio recorders or audio to video.

The only thing needed other than the interface cables for the chosen machines, is SMPTE time code on spare tracks of both recorders.



Time code generator

The Fostex 8700 is a pocket sized, battery operated SMPTE generator, switchable to SMPTE 30fps, SMPTE drop frame, 29.97fps, EBU 25fps and Film 24fps. All the international time code standards.

Such compact size, permits 'striping' in any location.

Virtually any recorder, mains or battery can record time code signal on one track along with audio on the others. This can later be transferred to a recorder that will lock to the required audio visual format. Using the Fostex range of synchronisers this track may be played in perfect sync with any other recording made at the time.

Synchroniser Controller.

The 4035 is a powerful accessory for use with the 4030. It permits full motion control over the master and up to three slave recorders. (One 4030 synchroniser is required for each slave).

Machines are selected and controlled with the buttons at the right hand end of the unit. Status is shown at all times in the display window.

The hex display can be switched to read the position of the master or slave or offset at any time.

Further controls duplicate and override those of the 4030 - chase and lock. In fact, three kinds of lock are provided. Frame Lock achieves matching of time codes to within 10-20 microseconds. Sync Lock allows a displacement in the time codes but keeps this constant. And finally Auto Lock, which allows for discontinuous time code - edited tapes etc - switching between Frame and Sync Lock automatically.

Further pushbuttons allow offsets to be entered.

Operational Features

An operating zone may be defined by simple keystroke entry. This saves overrunning in fast wind. Pre-roll may also be entered and set.

Precise locations may be defined and the machine will search and stop or autoplay as required. Alternatively auto return may be switched in at a cue point. Up to ten positions may be memorised, directly entered through the keyboard, or captured 'on the run'.

An auto record mode can also be enabled, permitting automatic punch in/out. Combined with all the other auto functions this feature is ideal to prepare for difficult drop ins. There's even a rehearse mode for checking.

Interfaces are available for all Fostex A, B and E Series recorders and certain VHS and Betamax video recorders. Presently, cables for Otari, Soundcraft, and Studer will be available.



Fostex 8316 Remote Controller. Full function control for all E Series Recorders.



It repeats many of the functions that have been identified on the 4035 controller described earlier.

The 4050 will search to any cue point entered as a real time or as a musical step. In addition, if pre-roll is loaded into memory, it will provide a two bar accented metronome count to the required point.

There's an automatic record 'drop in/drop out' function that can either be loaded directly, or caught and memorised 'on the run'. Again the electronic count in is provided.

The ten locate memories again translate into bars or real time and a working zone can also be defined.

Stretching Multitrack

The ability to lock sequencer and recorder provides extra tracks that are played 'live' at the final remix stage. This flexibility allows for a whole new creative freedom.

The E-Series machines will now lock to one another, video machines and now even sequencers.

Locking up the Future

These latest Fostex synchronisation products offer a breakthrough and new opportunities in music and dialogue production techniques.

The synchroniser brings SMPTE and the possibilities of budget post production into reality. Thirty track recording also comes within reach.

The Fostex E Series and these lock up products offer a new creative freedom within music production - with technology which interfaces to the way music is being made today.

MIDI in Context

When MIDI first appeared on the scene a few years ago, there was much scepticism as to whether the standard could be accepted. Without a doubt, over the past year it has proved to be the case. There are very few serious electronic instruments which ignore this interface.

MIDI allows the music control signals to pass between equipment. Without going into details here - though all you need to know is yours on request - suffice to say that MIDI is note control information.

Most recently, a device known as a MIDI sequencer has swept the market. This in effect is a digital (RAM memory) recorder which captures MIDI information in real time. A degree of editing is possible with

many of these as well as overdub and pitching facilities.

The sequencer has the ability to capture, correct and overdub any performance, then reproduce it 'live' with sequenced MIDI control of synthesisers and rhythm machines.

You effectively perform multi-track recording of control signals - an ideal way of maintaining high signal integrity. Plus it costs considerably less than analogue recording!

Forging the Link

The 4050 will synchronise an analog recorder with a MIDI sequencer. It is totally self contained, including an integral SMPTE time code generator for 'striping' tape. Tape runs under strict SMPTE control, the sequencer with strict Tempo. Tempo clock and signature are entered directly.

The large display reads in real time or translate this into musical bars and beats. Wherever you are you can instantly switch from one display to the other.

The synchroniser locks the tape to the sequencer. The pad of control buttons at bottom right of the panel permit you to wind forward or back and play, either the tape machine or the sequencer. One at a time or locked together.

In addition, top right of the panel there are sixteen illuminated record select buttons, wired to remote the Fostex E or A Series recorders.

Autolocation

In addition to performing MIDI/SMPTE lockup and full machine remote, the 4050 is a very powerful autolocator.



Fostex 4030 Autolocator and 4035 Controller. These may be used independently if required

Fostex E Series - Specifications

Model E2 Stereo Master Recorder

Format	2 track, 2 channel w/centre channel, 1/4" tape, 1.5 mil base
Head	Three in-line heads (Erase, Rec/Play and Play)
Line Inputs (x3)	+4dBm nominal, balanced and floating, load 40kohms (max input level +24dBm) -10dBV/0.3Vnom, load 40kOhm, unbalanced
Line Outputs (x3)	+4dBm nominal, balanced and floating, imp. 40ohms (max output level +24dBm, 600ohm load) -10dBV/0.3Vnom, load 10kOhm, unbalanced
Frequency Response	38cm/s (SYNC/REPRO) 30Hz-26kHz, ± 3 dB 19cm/s (REPRO) 30Hz-20kHz, ± 3 dB 19cm/s (SYNC) 30Hz-12.5kHz, ± 3 dB 19/38cm/s (CUE SYNC) 50Hz-12.5kHz, ± 3 dB
Equalisation Standard	19/38cm/s, NAB (3180 + 35 μ S)
S/N Ratio	38cm/s (SYNC/REPRO); 69dBwtd., 66db unwtd. 19cm/s (SYNC/REPRO); 70dBwtd., 67db unwtd. 19/38cm/s (CUE SYNC); 62dBwtd., 58db unwtd.
T.H.D	Less than 1% at 1kHz/0VU.
Crosstalk	CUE to L,R track, better than 77dB at 1kHz from max peak recording level (all tracks in REC mode)
Erase Depth	Better than 70dB at 1kHz
Record Level Calibration	0VU referenced to 250nWb/m tape flux
Fast Wind Time	140 Secs for 762m (2500ft) tape
Starting Time	0.5 Secs or less
Tape Speed	19cm/s & 38cm/s (7.5 & 15 ips) $\pm 0.1\%$
Wow and Flutter	38cm/S $\pm 0.05\%$ peak (IEC/ANSI wtd.) $\pm 0.1\%$ (unwtd.) 19cm/S $\pm 0.08\%$ peak (IEC/ANSI wtd.) $\pm 0.12\%$ (unwtd.)
Variable Speed Control	$\pm 15\%$ of selected speed
Remote Control	34 pin plug to 8316 remote full control of motion
Synchroniser	20 pin plug to Synchroniser 4030
Power Requirement*	220/250VAC 50Hz, 115W
Mechanical	430 x 463 x 303mm., 30kg(standard version)

Model E8 Eight Channel Multitrack Track Recorder

Format	8 track, 8 channel, 1/4" tape, 1.5 mil base.
Head	Two in-line heads (Erase and Rec/Play)
Line Inputs (x8)	-10dBV/0.3Vnom, load 30kOhm, unbal.
Line Outputs (x8)	-10dBV/0.3Vnom, load 10kOhm, unbal.
Frequency Response	(SYNC/REPRO) 40Hz-18kHz, ± 3 dB
Equalisation Standard	IEC-1 (infinite + 35 μ S)
S/N Ratio	80dBwtd., 60db unwtd.(with built in Dolby-C)
T.H.D	Less than 1% at 1kHz/0VU.
Crosstalk	Better than 55dB at 1kHz (all tracks in REC mode)
Erase Depth	Better than 70dB at 1kHz
Record Level Calibration	0dB ref. to 320nWb/m tape flux
Fast Wind Time	140 Secs for 762m (2500ft) tape
Starting Time	0.5 secs or less,
Tape Speed	38cm/s (15 ips) $\pm 0.2\%$
Wow and Flutter	$\pm 0.05\%$ peak (wtd.) $\pm 0.1\%$ (unwtd.)
Variable Speed Control	$\pm 15\%$ of selected speed
Remote Control	34 pin plug to 8316 remote control
Synchroniser	20 pin plug to Synchroniser 4030
Power Requirement*	220/250VAC 50Hz, 120W
Mechanical	430 x 445 x 235mm., 30kg (standard version)

Model E22 High Speed Stereo Master Recorder

Format	2 track, 2 channel, w/centre track. 1/2" tape, 1.5 mil base.
Head	Three in-line heads (Erase, Rec/Play and Play)
Line Inputs (x3)	+4dBm nominal, balanced and floating, load 40kohms (max input level +24dBm) -10dBV/0.3Vnom, load 40kOhm, unbalanced
Line Outputs (x3)	+4dBm nominal, balanced and floating, imp. 40ohms (max output level +24dBm, 600ohm load) -10dBV/0.3Vnom, load 10kOhm, unbalanced
Frequency Response	76cm/s (SYNC/REPRO) 40Hz-30kHz, ± 3 dB 38cm/s (REPRO) 30Hz-26kHz, ± 3 dB 38/76cm/s (CUE SYNC) 50Hz-12.5kHz, ± 3 dB
Equalisation Standard	76cm/s, AES/IEC-2 (infinite + 17.5 μ S) 38cm/s, IEC-1 (infinite + 35 μ S)
S/N Ratio	38/76cm/s (REPRO); 74dBwtd., 70db unwtd. 38/76cm/s (SYNC); 74dBwtd., 68db unwtd. 38/76cm/s (CUE SYNC); 64dBwtd., 58db unwtd.
T.H.D	Less than 1% at 1kHz/0VU.
Crosstalk	CUE to L,R track, better than 80dB at 1kHz from max peak recording level (all tracks in REC mode)
Erase Depth	Better than 70dB at 1kHz
Record Level Calibration	0VU referenced to 250nWb/m tape flux
Fast Wind Time	140 Secs for 762m (2500ft) tape
Starting Time	38cm/s, 0.5 secs or less, 76cm/s, 1 sec or less
Tape Speed	38cm/s & 76cm/s (15 & 30 ips) $\pm 0.1\%$
Wow and Flutter	38cm/S $\pm 0.05\%$ peak (IEC/ANSI wtd.) $\pm 0.1\%$ (unwtd.) 76cm/S $\pm 0.05\%$ peak (IEC/ANSI wtd.) $\pm 0.08\%$ (unwtd.)
Variable Speed Control	$\pm 15\%$ of selected speed
Remote Control	34 pin plug to 8316 remote full control of motion
Synchroniser	20 pin plug to Synchroniser 4030
Power Requirement*	220/250VAC 50Hz, 115W
Mechanical	430 x 463 x 313mm., 30kg (standard version)

Model E16 Sixteen Channel Multitrack Recorder

Format	16 track, 16 channel, 1/2" tape, 1.5 mil base.
Head	Two in-line heads (Erase and Rec/Play)
Line Inputs (x16)	-10dBV/0.3Vnom, load 30kOhm, unbal.
Line Outputs (x16)	-10dBV/0.3Vnom, load 10kOhm, unbal.
Frequency Response	(SYNC/REPRO) 40Hz-18kHz, ± 3 dB
Equalisation Standard	38cm/s, IEC-1 (infinite + 35 μ S)
S/N Ratio	80dBwtd., 60db unwtd.(with built in Dolby-C)
T.H.D	Less than 1% at 1kHz/0VU.
Crosstalk	Better than 50dB at 1kHz (all tracks in REC mode)
Erase Depth	Better than 70dB at 1kHz
Record Level Calibration	0dB ref to 320nWb/m tape flux
Fast Wind Time	140 Secs for 762m (2500ft) tape
Starting Time	0.5 secs or less,
Tape Speed	38cm/s (15 ips) $\pm 0.2\%$
Wow and Flutter	$\pm 0.05\%$ peak (wtd.) $\pm 0.1\%$ (unwtd.)
Variable Speed Control	$\pm 15\%$ of selected speed
Remote Control	34 pin plug to 8316 remote control
Synchroniser	20 pin plug to Synchroniser 4030
Power Requirement*	220/250VAC 50Hz, 155W
Mechanical	430 x 445 x 235mm., 30kg (standard version)



FOSTEX CORPORATION, 3-2-35 MUSASHINO, AKISHIMA, TOKYO, JAPAN 196
FOSTEX CORPORATION OF AMERICA, 15431 BLACKBURN AVENUE, NORWALK, CA 90650 U.S.A. © PRINTED IN JAPAN 1989