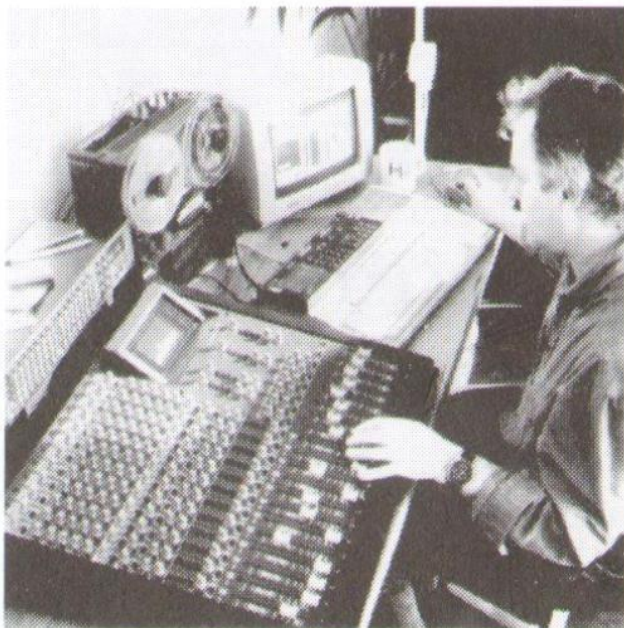


# Fostex

## ACCESSORIES AND INSTALLATIONS



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A mixer and multitrack are just the cornerstones of a studio. Wiring them to the monitoring and effects is the first step. And often today, linking and synching to other recorders or computers is an essential part of setting up a system.

Your setup will vary depending on whether it's for live or sequenced music, AV or post production.

It's the choices made at the outset which will determine how easily and economically the system can be built and expanded later.

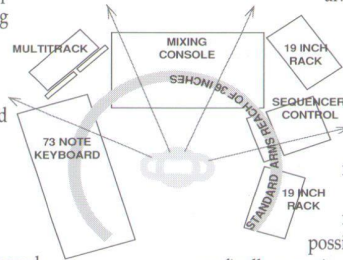
## STARTING OUT WITH THE RIGHT CONNECTIONS.

What follows, applies to all-in-one multitrackers just as well as to any standard mixer/recorder packages.

For those working alone, a semicircular layout is ideal. Or you may adopt the classic studio/control room split and set up against the dividing

window. Whichever way you choose, equipment should be kept close together and within arms reach.

Apart from sheer convenience, keeping cable runs as short as possible is important especially with unbalanced signals. Not all manufacturers strictly maintain a low impedance on their signal outputs. What happens, is that a natural characteristic of screened cable, capacitance, affects (literally 'short out') high frequencies over longer runs. It's an effect that hi-fi buffs have perhaps romanticised to an extreme - however a sensible choice of cable prevents such loss of top end, ensuring signal clarity.



Whilst there is nothing electrically wrong with a rat's nest of cables, things tend to get complicated when you need to trace wires or move things around. Sensible colour coding (many colours, not just endless red and black) and grouping of wires is always useful.

Follow through with one of the recommended 'system hook-ups' suggested in the manual that came with your recording equipment.

Getting up and running and identifying possible alternatives before you finally commit can save endless hours.

Determine that the layout and inter-connection will provide the flexibility you'll need for your productions. Of course, once you've thought through all the potential ways your equipment can work for you, you will no doubt end up realising that you need a central 'telephone exchange' for all your inputs and outputs. Here's where the system patchbay comes into its own.



### 8000 SERIES CABLES

These Fostex studio 'snakes' are made up from individually screened, extra low capacity cables, ensuring the minimum of high frequency loss.

They are multi-colour coded for rapid identification;

#### Eight way (bundled cables)

8044	5ft	RCA Pin-RCA Pin
8045	10ft	RCA Pin-RCA Pin
8046	5ft	RCA Pin-Phone
8047	10ft	RCA Pin-Phone
8048	15ft	RCA Pin-Phone

#### Four way (side by side)

8041A	4ft	RCA Pin-RCA Pin
8042A	1.5ft	RCA Pin-RCA Pin
8043A	10ft	RCA Pin-RCA Pin

## WHY BEYOND THE BASICS YOU'LL NEED A PATCHBAY.

A patchbay typically mounts into a rack, along with signal processing equipment.

All inputs and outputs are brought to the patch bay. Those from mixers (including insertion points), recorders and effects.

Usually, corresponding inputs and outputs are located above each another. In a normalised system, pairs of sockets are switched together by contacts on the sockets.

So for example, mixer outputs are connected to the multitrack's inputs, and its outputs to the tape inputs of the mixer UNLESS a plug is inserted, allowing the signal path to be interrupted, and re-routed to another piece of equipment, e.g. to include an equaliser in the echo/aux return path.

The days of 'hard wired' patchbays are all but gone. Ready made cables mean that installation is as quick as wiring in other equipment. And everything can be changed around fast to suit the system as it grows.



### 3013 NORMALLED Phone/Phone PATCHBAY

Features sixteen pairs of phones front and back. Each of the upper sockets will loop automatically to the lower ones until a patch cord is inserted to re-route the signal. A white scribble strip provides easy marking and so identification for the 'holes'. Mounts and takes up only 1U in any standard 19" rack. Uniquely, the patchbay may be easily reversed on its front plate, for unnormalised, straight through operation.



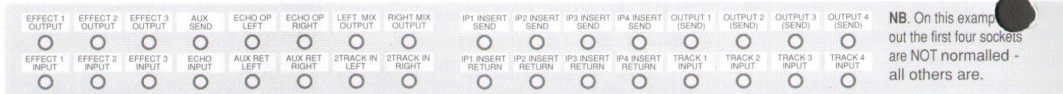
### 3012 NORMALLED RCA Pin/Phone PATCHBAY

As above, but featuring RCA Pin sockets one side, phones on the other.



### 3011 NORMALLED RCA Pin/RCA Pin PATCHBAY

As above, but featuring RCA Pin type sockets both sides.



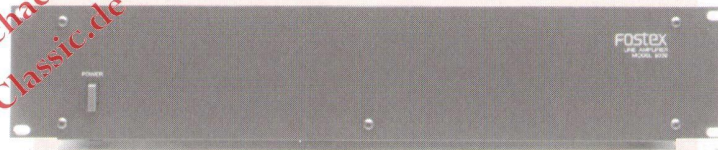
## SOME FACTS ON THE LEVEL.

Compatible impedances and levels are important when connecting for best performance. This was recognised early in the days of telephones, and the '600 ohm' standard was born. Transformers isolated the signal from 'ground' preventing earth currents and therefore hum loops.

An excellent solution - but expensive, one connection can cost as much as a good microphone. And as it was originally developed for use over hundred of miles of

cable, in contemporary studios, many of these advantages are wasted. Audio circuits work just as well at lower levels and higher impedances, so cost conscious equipment opts for a different standard. Quality is never compromised, as long as low-Z (impedance) outputs drive high-Z inputs.

There are however instances where it is mandatory to interface with the 600 ohm standard. Connection to older style mixers or recorders, or plugging into an existing system. Some kind of interface is needed.



### 5030 LINE AMPLIFIER

Allows for instant interface of multitrack equipment (RCA Pin sockets, -10dBV, 10kOhms, unbalanced) with broadcast and studio equipment (XLR male/female connectors, +4dBu, 600Ohms, bal.). This 2U high, rack mounting, AC powered unit includes 8 channels of line amplification and 8 channels of line padding, converting both 'in' and 'out' signals. Signal to noise ratio is better than 90dB, Distortion is better than 0.02% at 1kHz. Amplifiers will drive up to +25dBu. XLR grounding convention is switchable.

**NOTE:** Electronic circuits these days are designed to be very accommodating. Wide input gain (or trim) will often accept a wide range of high level signals without distortion - or boost if the signals too low. There is no harm in making a trial connection and aurally checking the results. *But never, ever, connect the output of a power amplifier into anything but a speaker.*



### TT-15 TEST TONE GENERATOR

A battery powered 5 frequency sine wave oscillator (40Hz, 400Hz,

1kHz, 10kHz and 15kHz) at three selectable output levels (-30, -10 and 0dBV). It's ideal for checking frequency system response, and compatibility, calibrating mixers to tape recorders and other level matching jobs.

## CHOOSING & USING MIKES.

No one microphone is perfect for all applications - over time you should aim to build up a selection of different types.

Dynamics (like a speaker in reverse) are the most popular - they don't need a power supply like condenser models.

An omnidirectional microphone will pick up everything around, whereas a uni-directional or cardioid pattern is 'heart-shaped, and can cancel indirect sounds.

Every recordist develops his own methods for miking up equipment. By varying positions, distances and mikes, different sounds can be achieved. Here are some of the basic techniques;

**VOCALIST** - A mike an inch or less away from the singers mouth produces a present, breathy sound. At one to six inches away crackling and breathing noises are reduced. A pop windshield may be useful.

**VIOLIN & VIOLA** - Typically several feet above the instrument or, close up, aiming at the F-holes for a scratchier sound..

**DRUMS** - Use one microphone for each drum with the tom-tom mike high enough to pick up the cymbals, using a separate microphone for the hi-hat. Remove the front

head of the bass drum and place the mike inside the drum off centre. There are more overtones to the sides of the drum than in the centre. One or two mikes may be used for the snare drum, a bottom mike gives the snare extra snap.

**ACOUSTIC GUITAR** - Aim the mike into the hole of the guitar or place it over the neck where it joins the body of the guitar.

**UPRIGHT PIANO** - Place the mike behind the soundboard or over the open top of the piano, at the high strings end.

**HORNS** - Place the mike close to the bell watching out for wind noise, or two to three feet (80cm to 100cm) away for a fuller sound.

**ELECTRONIC AMPLIFIER** - Aim the mike at the centre of the cone for a bright sound or off centre for a fuller sound.

**OBOE, CLARINET & FLUTE** - Place a mike over the finger holes.

**PERCUSSION INSTRUMENTS** - Place a mike two to six feet away. Experiment with different positions. It's often a better way of achieving the sound you want than resorting to equalisers.

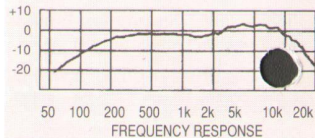
Because so much music is hacked out by direct connection only, good acoustic recordings can really make a difference.



### M201 MICROPHONE

A unidirectional (cardioid) dynamic with switch and the economy of an attached cord and fitted with a standard quarter inch plug.

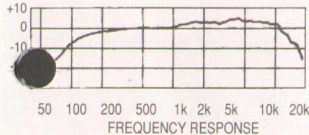
A reliable design that's ideal for basic vocals and instrument overdubs. Body colour is dark grey. Head colour is silver. Impedance 600Ω, with a high sensitivity of -56dB. (0dB=1V/Pa)



### M301 MICROPHONE

Very similar technical specs to the M201 except that the body includes a male XLR connector.

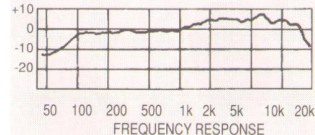
The integral metal mesh windscreen overcomes typical popping problems for close up vocal miking. Comes with XLR to phone jack lead and stand adaptor.



### M501 MICROPHONE

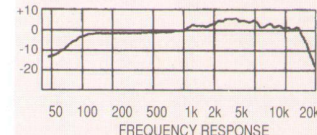
This dynamic cardioid features a capsule with a mid frequency peak. This adds 'presence' to a sound make it particularly easy to bring forward in a mix. Body colour is dark grey and the head colour is gold.

Impedance is 600Ω, with a high sensitivity of -54dB. (0dB=1V/Pa)



### M801 MICROPHONE

A uni-directional microphone with a particularly flat frequency response off axis. Ideal for vocal work as well as any multi-mike technique where spillage from other local instruments cannot be avoided. Impedance is 250Ω, with a high sensitivity of -54dB. (0dB=1V/Pa)



## THE CASE FOR THE BEST 'PHONES YOU CAN BUY.

Monitoring by definition is listening to the sound. There is no such thing as the perfect combination of amp and speakers - it is all a matter of individual preference. Studio monitors are highly accurate speaker systems, but even these may give false results if acoustics are incorrect.

Headphones are an alternative to look at seriously. The 'privacy' is not just useful for doing overdubs. Because there are no acoustics get in the way of what you hear, you are assured of consistent results from day to day or room to room. And if you invest in a pair that delivers flat, accurate sound with good stereo imaging, you'll be rewarded with better sounding recordings.

**WATTS IN YOUR EARS:** Beware how much power you feed into your 'phones. The direct coupling to the ear can create hazardous levels with a minimum of input level. Permanent damage can occur easily. There's a classic case of one engineer who returned a top performing set of 'phones because they distorted. It turned out that his 'phones were fine, but he had damaged his hearing. Above 110dB you can calculate the amount of damage that occurs with a stopwatch.

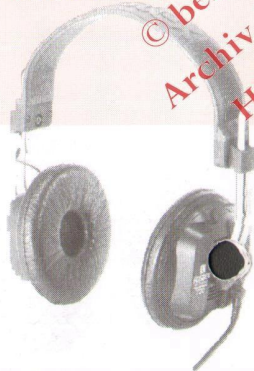
### T10 HEADPHONES

Fostex own a patented technology known as Regulated Phase. Instead of typical 'mini speakers', the driving coil is actually printed on the ultra lightweight diaphragm. Lows are dynamic and highs are natural. There's low distortion and so low fatigue. T10's are the budget version. Frequency response from 20-25 kHz. Impedance 50Ω. Maximum sound level 114dB.



### T20RP HEADPHONES

This is a semi-open type and vocals in particular are smoothly expressed. There are firm lows and extended, delicate highs with excellent stereo imaging. The connection cord detaches from the earpiece, so it may be replaced easily if damaged through the usual abuse in a studio. Response 20-30kHz. Impedance 50Ω. Maximum sound pressure level 119dB.



### T40RP HEADPHONES

Top of the range, closed-ear, RP headphones. The correct amount of side pressure is applied by the pads which allow many long hours of comfortable listening. The effective containment of sound prevents feedback into the microphone during overdubbing sessions. Impedance 50Ω. Frequency response 25-20kHz. Maximum sound pressure level 116dB.



## NEAR FIELD MONITORING

The coveted title of monitor is bestowed on very few speakers. These are systems that the studio industry knows and uses to check and compare the recordings they produce. However, the sound that large multi-driver enclosures create, is not what the typical listener's playback system will sound like. That's why major studios also use a pair of mixdown monitors. A small but accurate pair of speakers that let you listen intimately to the sound.

Get up close to a pair of speakers and an uncanny effect occurs. Suddenly room acoustics play less of a role in what you are listening to. Stereo separation improves and you are closer to the original sound, hearing subtleties you may have missed before. It's just like sitting inside a very large pair of headphones.

What you choose will depend on how loud, how low and how accurate you wish the reproduction to be. Also on how much you are prepared to spend!

When you go to choose and compare, take along a tape you know inside out. Your own ears are the final authority. But to play it safe, pick a speaker that's got a reputation.

### 6301B POWERED MONITOR

You'll find this ten year old classic design in mobiles, and major audio and video studios throughout the world. A built in AC powered 10 watt amplifier provides a big sound from these small versatile monitors. Accepts line level signal so they are useful for instruments, remotes, video production etc. Includes a power switch, LED indicator, volume control and amplifier link. Connectors are quarter inch phone jacks. The **6301BX**, developed at the request of the broadcast industry, has balanced XLR input and output connectors.



## STRETCHING THE MIX WITHOUT BREAKING THE BANK.

There's one thing you can count on when producing audio. At some point you are going to need an extra mix. For a musician's foldback, for a special echo effect, or a stereo PA mix when recording.

When making masters depended on mikes in front of a live band and effects were few, one echo send was really enough.

Today, a system grows from day one.

### MN-50 MIXER/COMPRESSOR

Mono mixer featuring four Hi-Z line inputs plus a selectable mic/line input with variable compressor.

The 'tight' 6:1 compression factor holds difficult signals without manual gain riding. Vocals become punchier. Bass guitars sound tighter. And a piano turns rock solid. LED indicators show how much control is taking place.

A variable 'release' time control adapts for any kind of vocal, or musical programme material. Difficult signals no longer clip or overload. Especially useful for ping-ponging tracks with a multitracker - it frees up sections of the built-in mixer to bring in other effects an sources.

Battery operation is standard but the MN-50 may be powered externally.

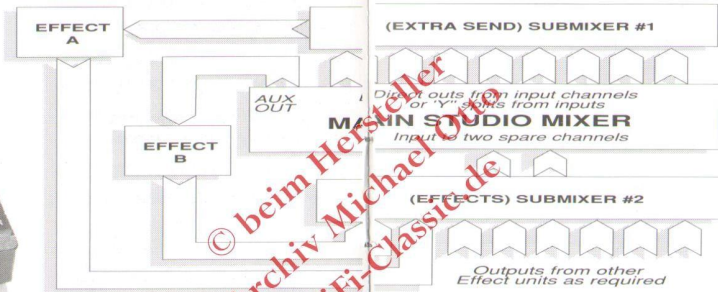


Working with multitrack, sequencers and the latest techniques of bouncing and virtual tracks, it's no surprise that the mixing facilities you invested in yesterday, will need adding to tomorrow.

Fortunately, these days equipment is built with this progress in mind. Most mixers have direct outs or insert points to access signals coming and going. It is just a matter of 'sniffing' the signal and routing it to another device.

There are several guidelines for choosing such an add-on mixer.

Firstly, it should have a reasonably high input impedance so that it does not 'load' the signal unduly. If this is so, then several may be connected in parallel with 'Y' split leads.



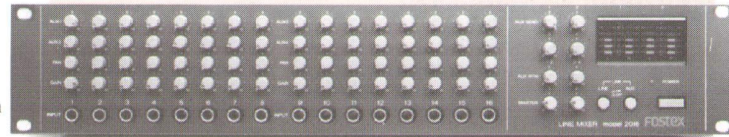
Secondly, it does not need 'frills'.

The whole point of extra mixes is simply to get signals to another effects device or pair of headphones. And thirdly, it should be quiet. Adding more signal paths always adds noise at the same time - this has to be minimised if it's not to affect the final master mix. So a basic line level mixer, with perhaps stereo and aux send and return facilities is all that's needed.

Now extra mixes can be created at will. For example, an extra, differently mixed foldback (cue) send may be needed on stage or in the studio. A piano player will need to hear more of the bass guitarist and visa versa - especially if there's live percussion.

Or consider when you run out of 'aux' sends. There's a trend to create a 'reverb' field, using several units to build a better impression of space. The extra 'aux' send is easily connected. In fact you can easily utilise another supplementary mixer to combine all the outputs returns. back to the main mix!

No manufacturer will ever put 'enough' on a mixer for the enterprising engineer. A versatile add-on line mixer is the answer.



### 2016 LINE MIXER

The Fostex 2016 is the solution to an endless array of mixing dilemmas. Two stereo line level mixers in one, that extend your production possibilities. Each mixer features level, pan and two post 'fader' aux sends.

There are front panel input phone jacks as well as rear panel RCA Pin jacks. The output section features a master aux and stereo level control and a stereo aux return too. Accurate, five point LED bargraphs constantly monitor the main outputs.

You have the option of using these 8 by 2 mixers separately or combine the line and/or aux busses creating a 16 input device.

There are further rear panel sockets which may be used to connect or cascade further 2016's into any of the eight busses. And because a full send and return effects system is incorporated, the mixer may be used for stand-alone 'keyboard' mixing as well as augmenting existing mixers such as the Fostex 812, 820 and 2412.

The 2016 is AC powered and extremely compact, taking up only 2U in a standard 19" rack. Inputs and Outputs are standard -10dBV level with a signal to noise ratio of over 80dB and distortion below 0.01% at 1kHz.

You'll discover that its problem solving abilities are endless.

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## SYNCHING & LINKING TO COMPUTERS & MIDI.

A decade ago, the narrow gauge tape formats freed multitrack. They put the costly techniques of major studios within reach of working musicians.

Today, sequencers and synchronisers have become an essential part of almost every studio, as the audio and video industries converge.

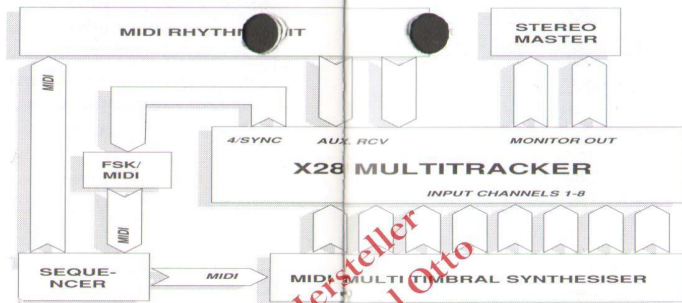
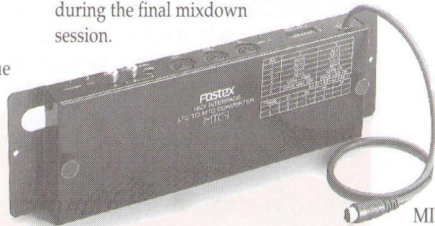
These meteoric advances in technique are apparent at every level. Bouncing

### MTC-1 MIDI TIMECODE INTERFACE

The MTC-1 attaches to the back of the R8. One lead gets power and motion information. Two RCA Pin jacks link one track to an internal timecode reader/generator for precise tape location information. Three 5 pin DIN sockets accept the MIDI connection. That's all there is to it. Running an ATARI (or MAC) with software from the likes of C-Lab or Steinberg, you need never touch the R8's front panel again. In fact, because sequencer and multitrack run as one, in perfect sync, the recorder becomes 'invisible'. Audio tracks appear like MIDI tracks on the screen. You run the sequencer and command every function by just pointing and clicking. (G Series integral synchroniser/MTC board 8330 is available).

up to nine live takes with four track, is now in the repertoire of every novice recordist.

Multitrackers deliver more when worked in conjunction with sequenced music electronics. It's typical for a production to be 'recorded' on a variety of media. Analogue tape for multitrack. Floppy disks for sequences and samples to be played 'live' during the final mixdown session.



Synchronisation is at the heart of all these changes.

In the music studio environment, MIDI is the most obvious protocol to adopt. MTC (Midi Time Code) is the extension of the MIDI 'language' which allows sequencers to 'talk' to multitracks.

From 4 to 24 tracks, it is now possible to control tape machines directly with sequencing software. And as more and more manufacturers update their software packages to include all the tape machine controls, this is rapidly becoming the most productive way to work. MTC now brings sequencers and multitracks together as one.

In the production studio, broadcast standard SMPTE time code is often more appropriate. Here again, a synchronising link can be made between tape machines. At its simplest, time code recorded on one track of the first recorder is compared to that on one track of the second. Accurate speed control is applied to the second machine's transport by the synchroniser.

Just a few years ago, any such connection could involve extensive expert surgery to make it work. Today, machines can have built in synchronisers and a simple one or two wire connection is all the installation work that's required.

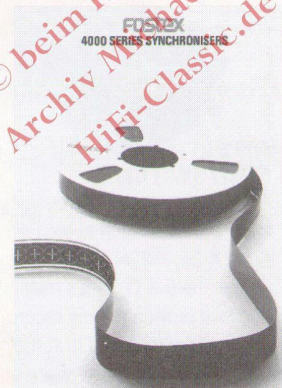
## FOSTEX SYNCHRONISERS

Based on long experience in tape recorder design, Fostex also manufactures a synchroniser system with extensive interfaces to a wide range of audio and video recorders from other manufacturers.

The 4030 is a fully fledged control synchroniser which will continue to be the heart of a system that expands to meet new demands.

The 4035 makes multi-machine control possible. It masters up to four machines centrally. The comprehensive keypad offers many second level features which permit precise setup of the system for individual machine characteristics. Memories, pre-roll, zone limits and auto functions are all included. Further system components add advanced lock-up features that you tackle the most complex tasks.

The 4010 time code reader and generator interfaces the system to every form of timecode signal, including bi-phase. It can also reshape and regenerate corrupt code. And most recently, the 4020 is an eight circuit event controller which can trigger or switch anything from audio through to lighting, locked up to time code.



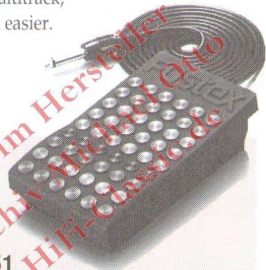
## FOSTEX CUSTOM ACCESSORY ROUNDUP

And finally, there are those accessories which do not fit into any particular category.

Some are specific to individual products.

Others can be used with various models.

All of them are designed to make the whole art of multitrack, so much easier.



### 8051 FOOTSWITCH

A heavy duty footswitch designed for direct connection to Models X-18, X-26, X-28H, 280, R8, as well as the E & G Series multi-tracks to provide remote record punch in and out, and in some cases, to operate zero return or rehearse.

### 9901-3 ADAPTOR

Mounts R8 Multitrack into a standard 19" Rack

### 9901-4 FILLER

19" Rack filler panel to adapt R8 to standard Rack height.

### 8544 EXTENSION CABLE

5 meter extension cable for the R8 and G Series control panel remotes.

### 8546 EXTENSION KIT

As above but including G Series front blinder panel.



### 3045 NR DECODER

A sixteen channel NR adaptor for use with the 16 track G Series Dolby S recorder, providing 16 channels of Dolby C noise reduction decoding.



### 9000 SERIES REELS

Whilst tape often comes on plastic reels, Fostex reels are manufactured from heavy gauge aluminium and will not warp.

- 9007B 7.00"Ø 1/4" reel, black
- 9012/B 10.5"Ø 1/2" reel, slv/blk
- 9014/B 10.5"Ø 1/4" reel, slv/blk
- 9010 10.5"Ø 1" reel, silver

### 9600 CLEANING KIT

Cleaning tape heads, capstan shaft and pinch roller, is an essential routine to maintaining quality recording and playback. As the tape moves across the tape path, oxide particles come off the tape and stick to these heads, shaft, rollers and guides. Eventually, as these deposits build up, the frequency response falls off and recordings suffer. The Fostex cleaning kit includes two bottles: Head Cleaner to dissolve deposits on metal surfaces (leaving no residue) and Rubber Cleaner to revitalise any hardened or glazed rubber surfaces. Swabs are provided.



For information on the full range of all Fostex Multitrack and Professional Sound Products please contact your local Dealer or the National Distributor.

In accordance with our policy of continual improvement we reserve the right to change any specifications without notice.

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