

Model 3180

REVERB UNIT

Owner's Manual



Fostex[®]

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SAFETY INSTRUCTIONS

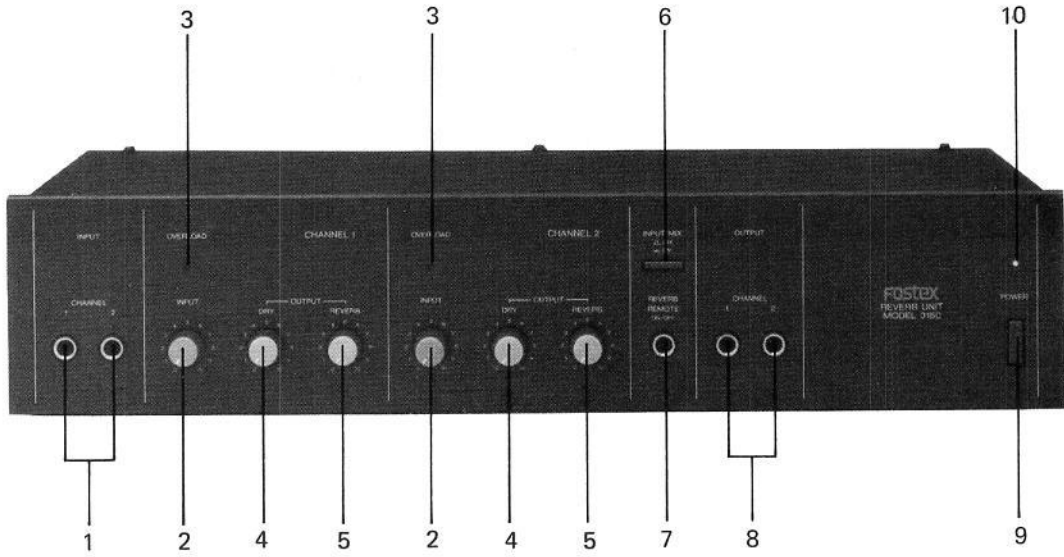
WARNING

“READ BEFORE OPERATING”

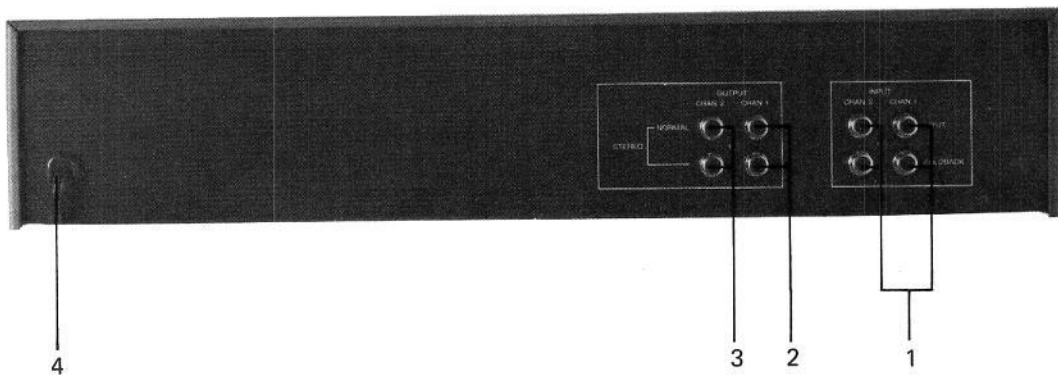
1. Read Instructions—All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions—The safety and operating instructions should be retained for future reference.
3. Heed Warnings—All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions—All operating and use instructions should be followed.
5. Water and Moisture—The appliance should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. Ventilation—The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
7. Heat—The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
8. Power Sources—The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
9. Power-Cord Protection—Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
10. Cleaning—The appliance should be cleaned only as recommended by the manufacturer.
11. Nonuse Periods—The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
12. Object and Liquid Entry—Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
13. Damage Requiring Service—The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
14. Servicing—The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

WARNING: To avoid possible electric shock hazard, do not expose this appliance to rain or moisture. There are no user serviceable parts inside. Refer servicing to qualified service personnel.

FRONT PANEL



REAR PANEL



1. LOCATION OF CONTROLS (Front panel)

(1) Input Jacks

Each channel is accessible from either front-panel standard phone jacks or rear-panel standard pin jacks. When both are connected, signal from the front panel input has priority; the rear panel input then has a no signal status.

(2) Input Level Control

When this control is open (full CW position), the minimum level required to drive the unit adequately is -30dBV (30 mV). Normal operation requires a nominal adjustment to match the input signal level to that required by the drive circuit of the spring unit. (-10dBV is considered normal line level.)

(3) Overload Indicator

This LED ignites at limiter threshold indicating an overload signal status just prior to the drive circuit. As a limiter is provided, program material with relatively few fast transients will be processed accurately, even though the LED occasionally blinks. With predominant fast transient program material, however, the input level should be adjusted if the LED blinks frequently.

(4) Output - Dry

Controls the output level of the unprocessed signals.

(5) Output - Reverb

Controls the output level of the processed signals. As the 3180 features a stereo effect return, a single shaft two-ganged pot is used for the output control. The signals at the output jacks will be a mix of dry-to-reverb, as determined by the settings of these controls.

NOTE: For those occasions when you want to control the dry-to-reverb mix at the console, simply turn the Dry Output control fully CCW.

(6) Input Mix On/Off

Off will be your normal position for processing stereo signals. On will be the position to select when you want to mix two input channels or split one input to two channels.

(7) Reverb Remote On/Off Jack

This jack accepts the Fostex Model 8030 remote foot pedal

control, or equivalent. When in use, this optional accessory allows you to turn the reverberation processing on and off as the dry signal is either allowed to pass (PA) or not allowed (mixdown). See Application Notes, page 9 .

(8) Output Jacks

Each channel is accessible from either front panel standard phone jacks or rear panel standard pin jacks, wired in parallel. NOTE: When the output level controls are at maximum, there is a 1 V output present at these jacks.

(9) Power Switch

When depressed, an LED (10) will ignite to indicate power on.

(10) Power Indicating LED

2. LOCATION OF CONNECTIONS (Rear panel)

(1) INPUT/FOLDBACK

The INPUT jack and the FOLDBACK jack are wired in parallel.

Wiring between the front panel phone type INPUT jacks and these jacks on the rear panel are such that priority is given to the front panel jacks which means that signals to the rear panel INPUT jacks will be cut off when anything is plugged into the front panel INPUT jacks.

(2) Output - Norm

These are the normal reverb outputs of the Model 3180 and are wired in parallel with the front panel output jacks.

(3) Output - Stereo Effect

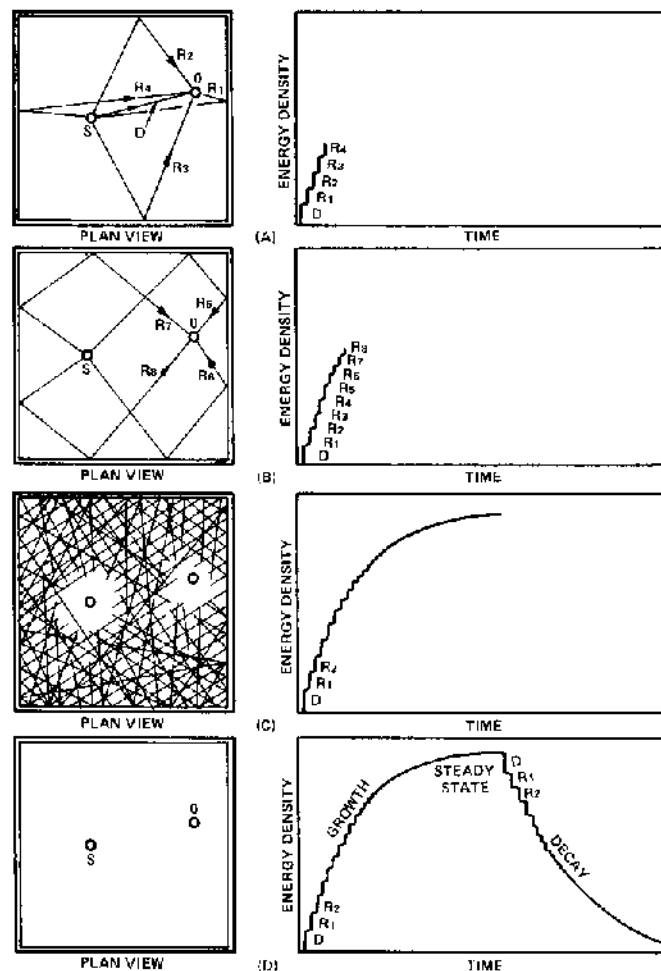
These are the additional output jacks to use when the stereo effect is desired. Since the Model 3180 has two independent channels, two independent mono signals may be processed with the stereo effect simultaneously.

(4) Power Cord

3. INTRODUCTION - Why Reverberation?

Reverberation is an important part of our everyday experience of sound. Without the natural ambience caused by multiple reflections and gradually decaying sound sources, music, especially, would sound flat, empty.

Figure 1 shows a typical response -- growth and decay -- of sound in a room.



A two-dimensional version of the growth and decay of the sound in a room. Here, S is the source of sound and O the observation point. (A) The direct sound energy D and the reflected sound energy R_1 , R_2 , R_3 , and R_4 , from the four walls. (B) The addition of the second reflections R_5 , R_6 , R_7 , and R_8 . (C) A large number of reflections which approximate steady-state conditions. (D) The decay of sound energy after the source has stopped.

Source: Journal of the Audio Engineering Society, Vol. 6, No. 1.
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Fig. 1.

Since all reverberation devices are designed to simulate the natural characteristics of rooms, it would seem logical to design a room specifically for reverberation purposes.

"Chambers", as they are called, are still very much in use today. But they are enormously impractical for most people because of custom construction (non-parallel surfaces) and special materials (lead or concrete for true isolation).

The need for artificial reverberation devices grew dramatically with the advent of multitrack recording techniques. Close-micing techniques, highly absorbent rooms, even isolation booths were all developed to help the engineer isolate individual instruments on separate tracks during the recording process. Each track would be as "tight" and sonically pure as possible in order to have almost limitless flexibility during the mixdown process, where the final version is rendered.

The enhancement of reverberation added selectively, track by track, gave the engineer more control over the overall mix. And by varying the reverb effect dynamically, a sound could be made to move closer or further away, as well as left and right across the stereo panorama.

Today, of course, there are many elaborate (and expensive) reverberation devices. There are also a few simple (and cheap sounding) reverberation units. Your Fostex Model 3180 is a shining example of how modern technology has achieved a remarkably natural reverb sound at a remarkably reasonable price.

It was clear that springs were perfectly capable of generating a natural reverberant characteristic or quality. It was also known that the size, mass and material of the springs were determining factors in the quality of the sound.

4. INSTALLATION

(1) Placement

Be sure that your 3180 is positioned away from other transducers, especially loudspeakers. This is a mechanically sensitive

device which is susceptible to transmission of loud sounds in the immediate acoustic environment.

NOTE: The 3180 has magnets inside, so avoid putting tapes, especially, on top of the unit.

(2) Power

It is advisable to turn the power switch on in advance of using the unit, and to avoid contact with the chassis while in use. Sudden power surges and accidental bumps will be audible as unwanted "pings" and "boings".

NOTE: Long cable runs (more than ten or twelve feet) are notoriously susceptible to interference, and are therefore not recommended.

(3) Hook-up

As a general rule for a fixed application like mixdown, if you connect the rear panel jacks to a patchbay (like the Fostex Model 3010) you'll have the most flexible access to the unit. Then you can use jumper cables like assign switches and be able to patch and re-patch the 3180 wherever you want it in the signal path. See Figure 2.

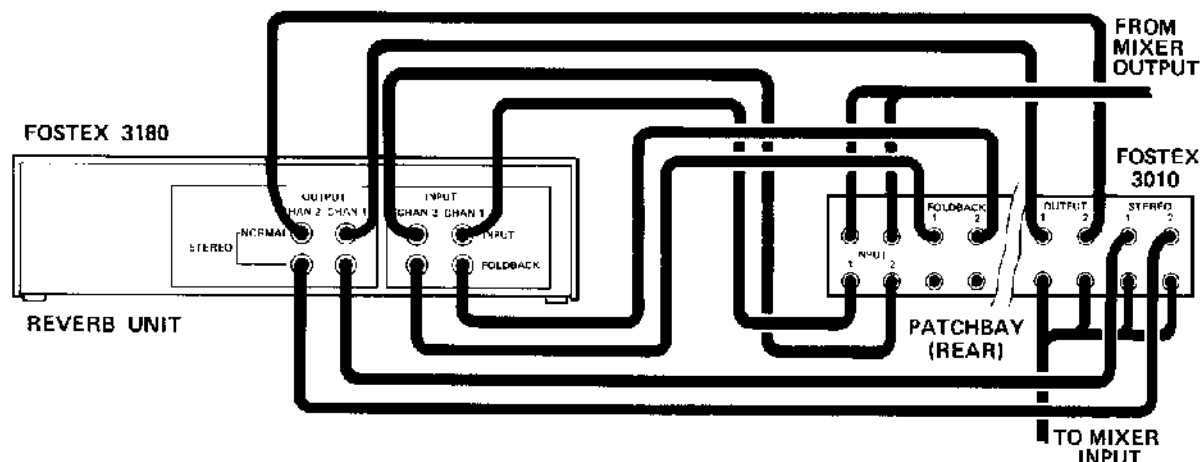


Fig. 2. All inputs and outputs of the 3180 connected to a patchbay.

In the absence of a patchbay, but presuming a mixer, you will probably want to connect your mixer's echo send (aux send/effects send/aux out) to the 3180's line in. Then connect the 3180's line out to the mixer's echo return (echo receive/aux in/buss in) as shown in Figure 3.

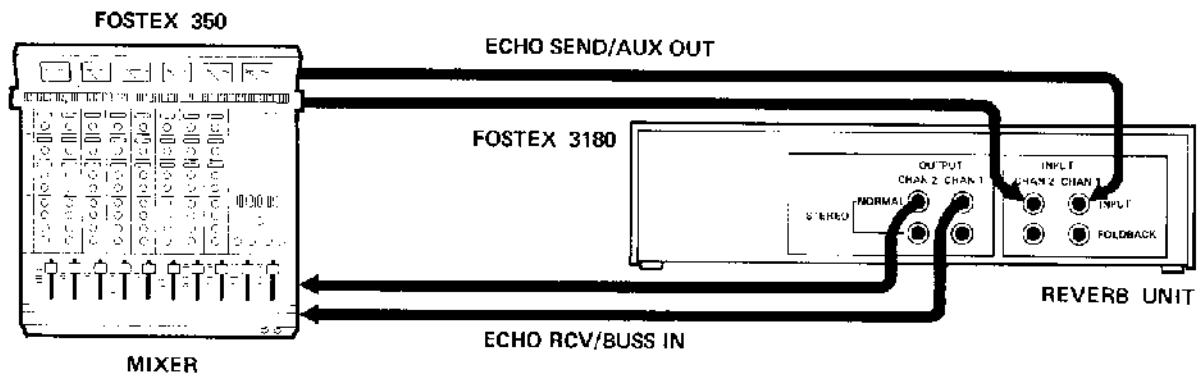


Fig. 3. Typical hook-up with a mixer.

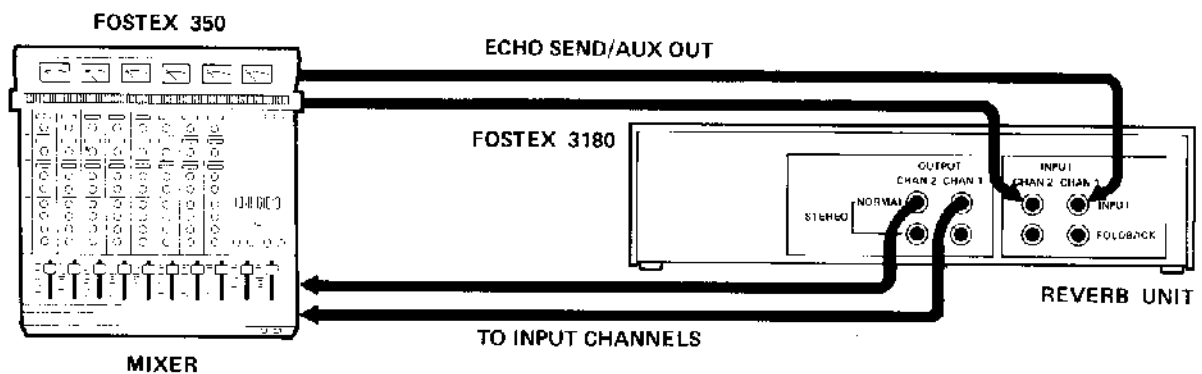


Fig. 4. Alternate hook-up with a mixer.

As an alternative patch, you might want to connect the output of the 3180 to the mixer's input channel(s) for further signal processing of the reverberated audio and console controlled mixing of the dry-to-reverb sound as shown in Figure 4.

Another variation would be to connect the outputs of a stereo tape recorder directly to the 3180, and mix the final dry-to-reverb ratio as you make a dub. This method is an effective way to enhance old 2-track tapes you may have made before you had a reverberation unit.

(4) Front Panel Connections

The standard phone jacks on the front panel will probably be your typical patch source on the road. But they will also be useful

in the studio when a sudden inspiration hits, and you want to connect a synthesizer, for example, quickly -- and without disturbing your normal hook-up. Since the front panel jacks are wired in parallel and have priority over the rear panel, it is extremely easy to make such a connection.

(5) Stereo Effect

Because of the unique drive circuit in the 3180, you can achieve a stereo effect from a mono signal, and open a new acoustic dimension right before your very ears. See Figure 5 for connection.

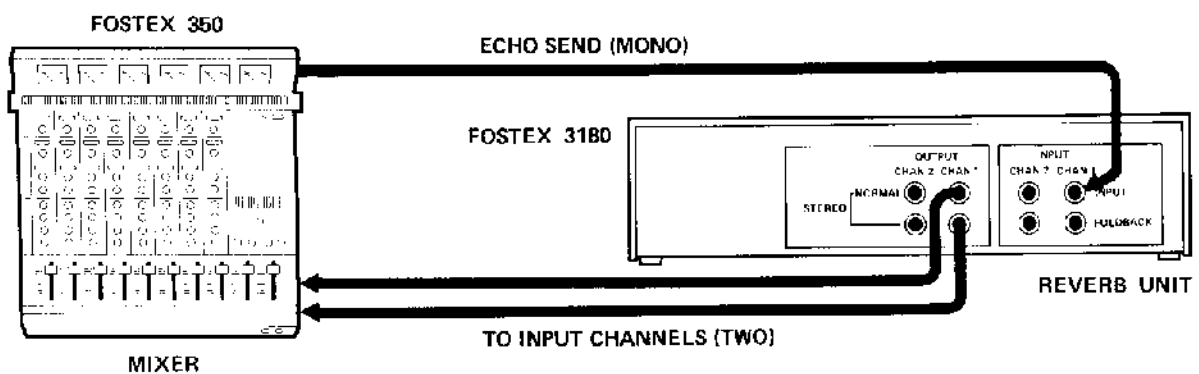


Fig. 5. Typical hook-up of 3180 for stereo effect.

For example, a lead vocal ordinarily occupies one track on the multitrack master and is mixed to center position during the mix-down. Usual procedure would be to pan the reverberated return either left or right of center for an effect of added depth. The 3180, however, can process a single channel into two output signals with a random phase correlation for a superior stereo effect. Using the same example, the dry lead vocal would appear in the center position, but the reverberated stereo return could be panned across the entire stereo panorama, left to right, for a much more realistic presentation.

To our knowledge, this is the first time such an effect has been available in a low cost unit.

(6) Remote Foot Pedal

This optional accessory is useful for both on-stage as well as in studio situations. A live guitar solo, for example, may only

require a reverberation effect at the end, and so the 3180 may be punched in and out during the appropriate part, while passing the dry signal before and after the punch.

(7) On the Road

Your 3180 will be a top road performer as long as you treat it with the same respect and care you would give a \$450 microphone. Just like the microphone transducer element, the spring transducer is maintained in precise mechanical alignment. Extreme physical shock should always be avoided.

NOTE: The Fostex optional flight case Model 9040 is recommended when you travel with your 3180.

5. APPLICATION NOTES

(1) Commercial Audio - the subtle effect.

Subconsciously, everyone is aware of the presence of reverberation, and a small amount added to an announcer's voice can have a positive subliminal effect on the listener. Speech treated in this manner will likely appear clearer because of the added warmth and fullness; plus, brief, silent gaps between words are occupied by some sound -- a very helpful aid when you're dealing with a hesitant or unevenly paced reading.

Broadcasters and audio visual producers have long realized and appreciated the benefits of the subtle use of reverberation in commercial audio.

(2) Creative Audio - the exaggerated effect.

As Paul Simon has said, "One man's ceiling is another man's floor." Don't be afraid to turn it up in the spirit of rock and roll enthusiasm. Experiment, by all means. You run very little risk of damaging anything other than your ego. And you may well find a grain of truth in the cynical re-statement of a famous maxim: "Nothing succeeds like excess."

(3) Subjective Value Judgments

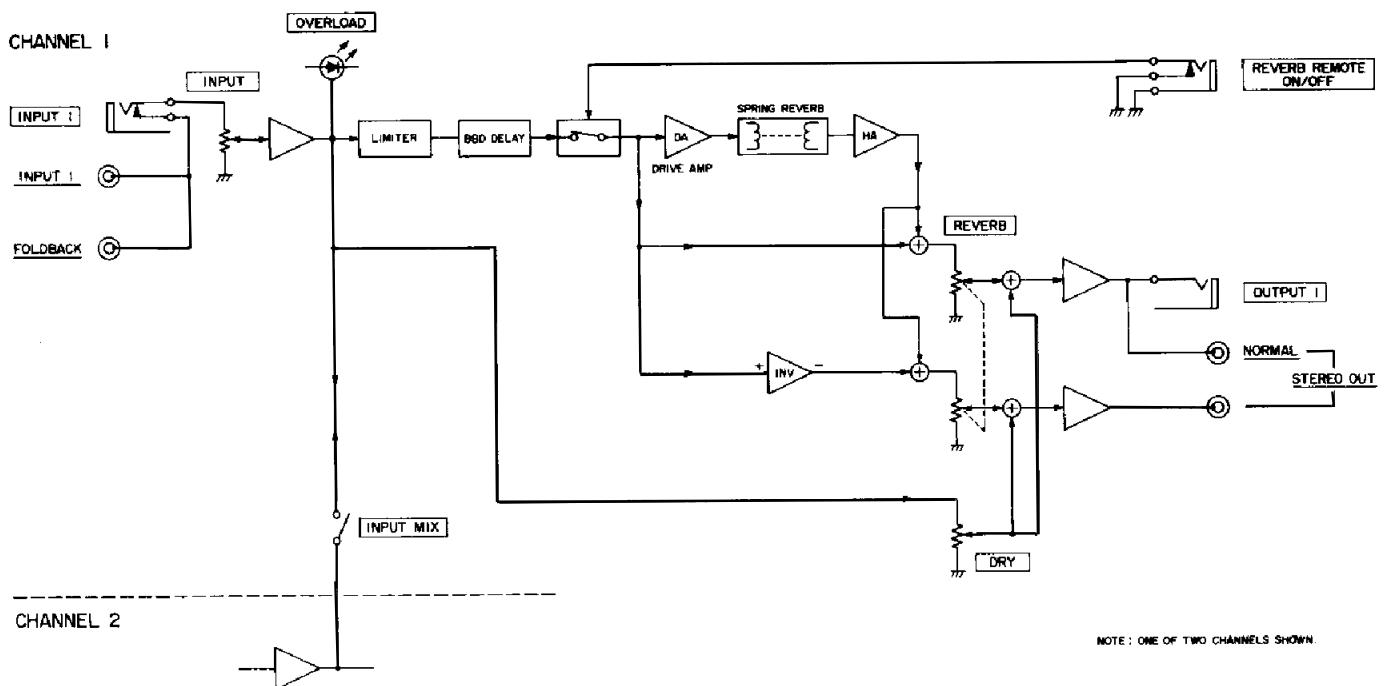
No matter how classically pure your tastes and inclinations, it's a relatively easy matter to "listen through"

music with a lot of compression, limiting and filtering. FM radio is a prime example. But an overdose of reverb, where everything begins to sound mushy and muddy, is awfully difficult for most people to tolerate. Of course, the very point in question here is that terms such as "overdose", "mushy" and "muddy" are all subject to personal evaluation.

Reverberation units, like speakers and microphones, are ultimately a matter of personal opinion. Naturally, we have a rather high regard of your personal opinion because you purchased a 3180 which, in our opinion, represents the best value for a product of its kind on the market today.

We thank you for that purchase and we wish you much success in all your recording endeavors. In the course of your experimentation, if you should find a particularly satisfying reverb effect from the 3180, please send us the details, and we'll be happy to pass the information along to other discerning customers who, like you, had the good sense and personal taste to buy a Fostex 3180.

6. BLOCK DIAGRAM



7. SPECIFICATIONS

Input	Unbal. phone jack (Front panel) Unbal. RCA phono jack (Rear panel)
Input Impedance	50 Kohms
Input Level	Minimum -30dB (30mV) Maximum +30dB (30V)
Output, Normal	Unbal. phone jack (Front panel)
Normal	Unbal. RCA Phono jack (Rear panel)
Stereo	Unbal. RCA Phono jack (Rear panel)
Output Load Impedance	5 Kohms or higher
Output level	0dB (1V), adjustable
Maximum output level	+17dB (7V)
Reverberation decay time	3 sec. (ref. to 1 KHz)
Pre-Delay Time	24 msec
Frequency range	
Dry	20 Hz ~ 20 KHz
Reverb	200 Hz ~ 7 KHz
T.H.D. . . . Dry	Less than 0.02%
Signal to Noise Ratio	
Dry	80dB unwt'd, 82dB wtd.
Reverb	58dB unwt'd, 60dB wtd.
Power Requirements	120V AC, 60 Hz, 9W (U.S.A./Canadian models) 220V AC, 50 Hz, 9W (European models) 240V AC, 50 Hz, 9W (UK/Australian models) 100/120/220/240V AC, 50/60 Hz, 9W (General export models)
Dimensions	17" (W) x 3-1/2" (H) x 8-1/4" (D) [430(W) x 88(H) x 210(D)mm]
Weight	Net 8-1/4 lbs. (3.7 Kg) Shipping 9 lbs. (4.1 Kg)
Optional accessories	Model 9903 Rack mount adaptor Model 8050 Foot switch

* Specifications subject to change without notice.

Fostex

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