ALEMBIC SF-2 Bass Superfilter™
Owner's Manual

Version 2.0

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Introduction

Overview

The SF-2 Bass Superfilter™ is a unique rackmounted filtering unit. Each channel of the SF-2 consists of a three-mode second-order filter and a mixing section for blending the filtered and direct signals. By mixing the original tone from your bass with the filtered tone from the SF-2, you can get sounds that don't exist in an equalizer.

The line level input and output connections are located on the rear panel of the SF-2. In addition, a preamp and a front panel jack are provided for direct connection of a bass.

The SF-2 works in a very different manner from the parametric and graphic equalizers most of us are familiar with. The original sound is always present at full strength in an equalizer; there is no adjustment for the original sound.

What it Does

The SF-2 Bass Superfilter™ gives an almost infinite amount of tone variation because it allows the *blending* of:

1. Your bass's original sound
2. The spectral variations from filter channel A
3. The spectral variations from filter channel B

To maintain the integrity of your original bass sound, the input gain control should be kept in the full open (10) position. This will allow you to gradually blend in the other frequencies boosted by the SF-2. To blend in these boosted frequencies, turn the filter gain control up. The higher the setting, the more you blend in the sound of the SF-2.

Each channel of the SF-2 has the original sound (Direct Gain) and boosted sound (Filter Gain) so you can make your blends independently of each channel or between each channel.

Why We Choose to Filter

Natural acoustic instruments behave in large part as filters. All that statement means is that these filters tend to resonate in response to some signal – and acoustic instruments certainly do resonate. Low-pass filters are the closest electronic equivalent to these natural acoustic sounds.

This is precisely the reason we chose to use low-pass filters in our Alembic instruments. As a result, our instruments preserve the natural sound of the string's vibration and a variety of pleasing sounds are achieved. They were, in fact, the first active electronics ever to be used in guitars and basses.

The high-pass and band-pass filters also have a significant use in musical applications. They allow you to exactly pin point what frequencies you want to address. With a little experience, you can predict what the filter will do, imagine a sound in your head, and then immediately achieve it with your SF-2. In short, the SF-2 gives you total control over the sound of your bass, from the full and punchy tones, to amazing lows, to the literally absurd.

How to Think About Filtering

Filtering your bass sound works the way other filters work. Your fuel filter removes unwanted dirt from your fuel. Your coffee filter keeps the coffee grounds from getting in to your brewed coffee. In black and white photography, a filter in front of your camera lens can provide a different interpretation of the same reality, for example, enhance the contrast of clouds which might otherwise disappear against the sky.

You can use the SF-2 to remove unwanted sounds from your signal. That's just like the fuel filter. The SF-2 can also keep sounds (like high frequency fingering noises) from entering your signal like a coffee filter. You can also use the SF-2 to emphasize a particular aspect of the tone you already have. That is very much like the camera filter.

Listen to your current bass sound. What do you like about it? What don't you like? Now, read on and discover how to get what you want from your tone with your SF-2!

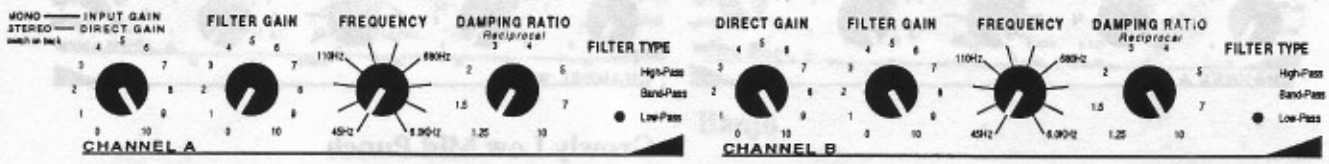
Connecting Your SF-2

You will start using the SF-2 in the mono mode with a mono bass. Connect your bass to the front input jack on the SF-2. Set the mode switch on the back to mono and plug the mono output into your power amp. See Appendix Two for the block diagram of "Instrument Preamp."

You'll find more connection methods in Appendix One.

Sample Settings

Low Pass Filter Mode

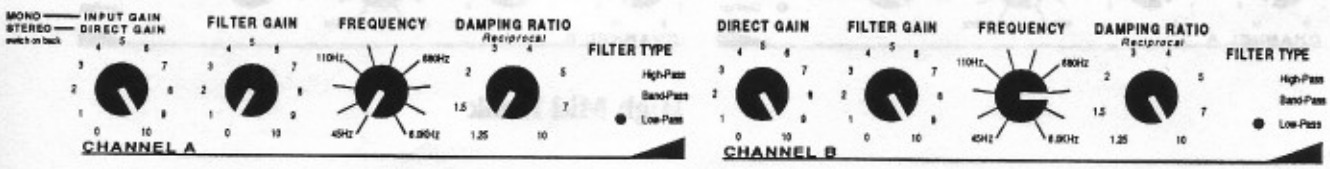


Ultra-low Frequencies

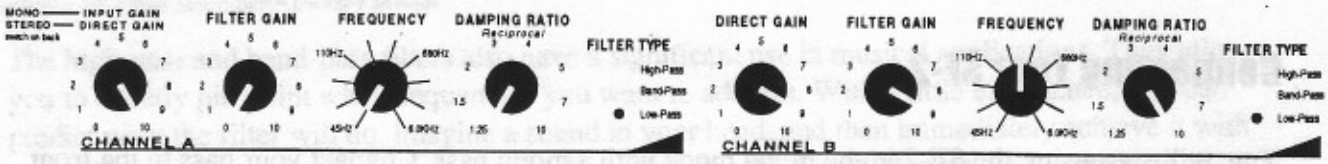
Wall Shaking Low Frequencies

Jaco Mid Punch (med)

Low Mid Punch

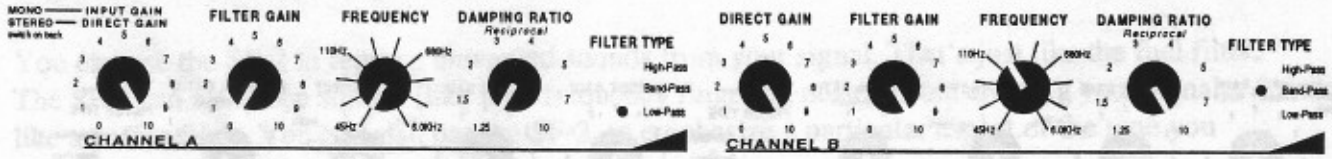


Clear Low End



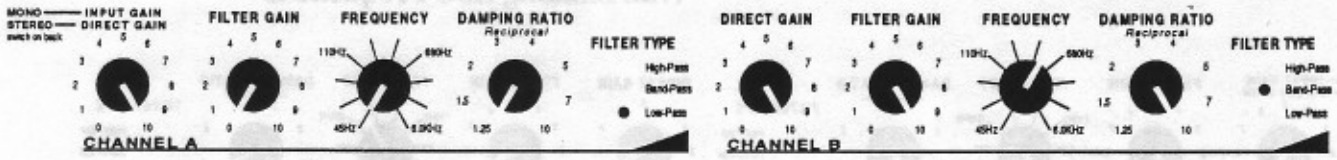
Nasal Mid Punch (low)

Band Pass Filter Mode

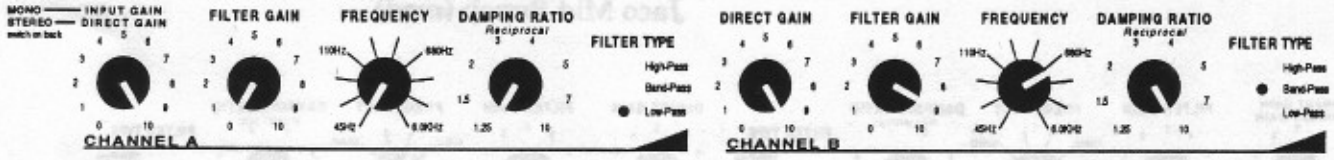


Growly Low Mid Punch

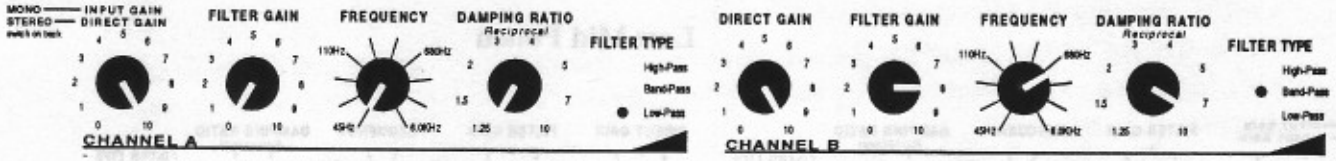
Nasal Mid Punch (Jazz bass bridge pickup sound)



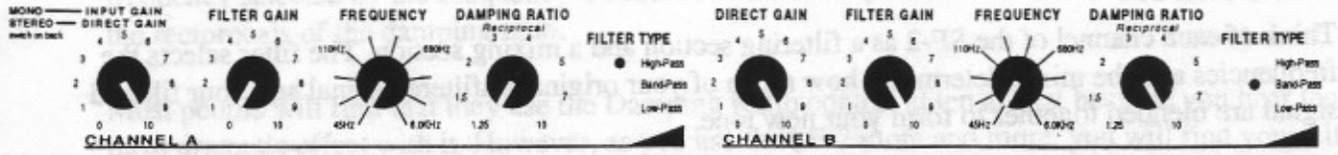
Nasal Mid Punch (Jazz bass bridge pickup sound)



Mid Music Man Honk

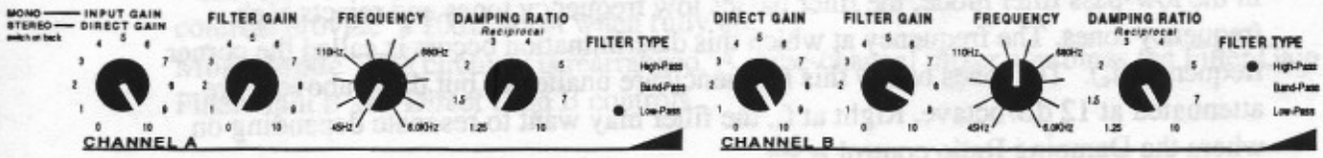


High Mid Honk

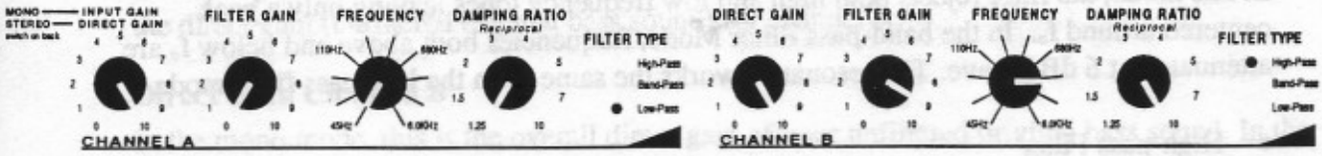


Wall Shaking Lows with Definition

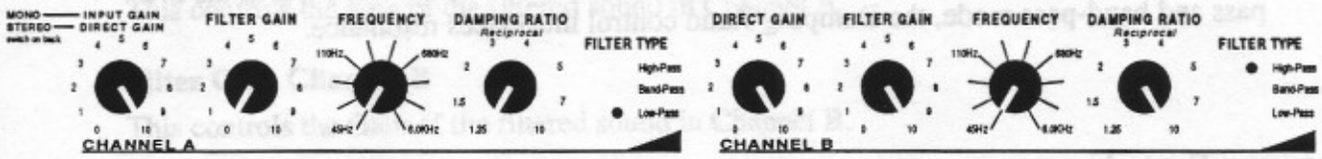
High Pass Filter Mode



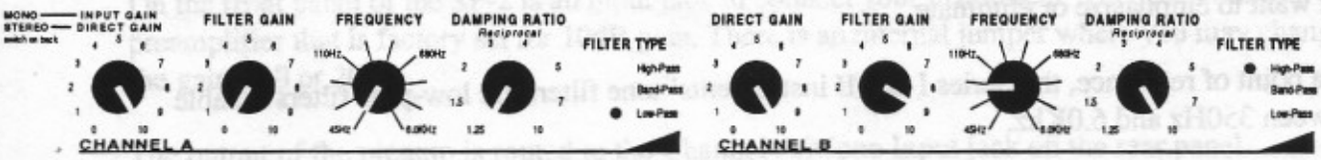
Banjo



Bad Transistor AM Radio Sound



Thunder Low with Clear Highs



P Bass Power

The Controls

Think of each channel of the SF-2 as a filtering section and a mixing section. The filter selects the frequencies and the mixer determines how much of your original unfiltered signal and your filtered signal are blended together to form your new tone.

The Filtering Section

Filter Mode

The filter mode selects the type of filter you want to use in each channel.

- Low-pass Filter

In the low-pass filter mode, the filter passes low frequency tones and rejects high frequency tones. The frequency at which this discrimination occurs is called the corner frequency (f_c). The tones below this frequency are unaltered, but those above it are attenuated at 12 dB/octave. Right at f_c, the filter may want to resonate depending on where the Damping Ratio control is set.

- Band-pass Filter

In this mode, the filter rejects both high and low frequency tones leaving only a peak centered around f_c. In the band-pass Filter Mode, frequencies both above and below f_c are attenuated at 6 dB/octave. The resonance works the same as in the low-pass filter mode.

- High-pass Filter

In the band-pass filter mode, the filter passes the high frequencies of your tone and rejects low frequencies, exactly the opposite of the low-pass filter. The tones above this frequency are unaltered, but those below it are attenuated at 12 dB/octave. As in the low-pass and band-pass mode, the Damping Ratio control introduces resonance.

Frequency Control

This control has a very wide range, tunable in a single band from 45Hz to 6.0Khz. The Frequency Control selects the frequency the filter is tuned to. This is where you decide which frequencies you want to emphasize or eliminate.

As a point of reference, the Series I and II instruments' tone filters are low-pass filters tunable between 350Hz and 6.0Khz.

Damping Ratio Control

To get the most effect out of the frequency range chosen by the frequency control, you can leave the damping ratio control set to ten. For less peak or boost of that frequency, set the damping ratio control lower.

The damping ratio, also referred to as "Q" works with the filter. It adds a resonant peak to the frequency selected by the Frequency Control. The numbers printed on the SF-2 dial indicator are the reciprocals of the damping ratio.

Most people will find that they use the Damping Ratio control at ten at first because you hear the most dramatic effect with it. However, as you use the SF-2 more and more, you will find yourself naturally backing off on this control and appreciating its subtleties.

The Mixer

This is where you get to blend in the filtered sounds you just created with the filter section.

- **Stereo Mode** There are two independent two-channel mixers. Each with a Direct Gain and a Filter Gain control. When fully open, the Direct controls provide unity gain while the Filter controls provide a 10dB boost when fully up.
- **Mono Mode** The circuitry is rearranged. A three-channel mixer combines the Filter Gain A, Filter Gain B and Direct Gain B controls.

Input Gain / Direct Gain Channel A

This control changes function with the stereo/mono switch. When using the mono mode, this is the input gain and controls the volume of the entire SF-2. When in the stereo mode, it becomes the direct gain (unfiltered original bass sound) for channel A.

Direct Gain Channel B

In the mono mode, this is the overall direct gain of your unfiltered original bass sound. In the stereo mode, it is the direct gain of channel B.

Filter Gain Channel A

This controls the gain of the filtered sound in Channel A.

Filter Gain Channel B

This controls the Gain of the filtered sound in Channel B.

The Front Panel Input Jack

On the front panel of the SF-2 is an input jack to connect your instrument. The jack connects to a preamplifier that is factory set for 10dB gain. There is an internal jumper where you may change the gain to 0 or 20dB.

The output of the preamp is routed to the Channel A/Mono Input jack on the rear panel.

The Rear Panel

Notice the arrangement of the output jacks on the back of the SF-2. The stereo/mono switch effects the function of the jacks. When the unit is in the stereo mode, the labels above the jacks apply. When in the mono mode, the "IN" and "OUT" labels under the jacks apply.

When a plug in inserted in the Channel A / Mono Input, the instrument preamplifier is automatically disconnected.

Furthermore

Background Hiss or Noise

The SF-2 as a unit is virtually silent, but since it has the ability to boost the frequencies of any incoming signal, it is possible to boost the noise from that incoming signal. For example, if your bass has a high end buzz or hiss, then the SF-2 will boost this hiss when the SF-2 is set to boost these same high frequencies.

The good news is that the SF-2 gives you the ability to boost other high frequencies that won't pick up the hiss from your bass. Or, if you like, you can choose to filter out the offending frequencies all together.

The best way to keep noise out of your sound is to turn the gain on your bass, as well as any pre-amp or effect going into the SF-2, nearly or fully open to keep the incoming signal as clean as possible.

Think Backwards

Sometimes this helps. Too much midrange? Want to cut it down? Try boosting the right highs and lows instead. With two channels, the SF-2 can do this like nothing else. The SF-2 requires different thinking from parametric and graphic EQ's. Always remember that you can emphasize a frequency by boosting it or by filtering out adjacent frequencies.

How to Contact Us

Keep in touch! Please contact us and let is know what you think of the SF-2 and also suggestions you may have for future editions of the owner's manual. Updates of the SF-2 owner's manual are yours for the asking.

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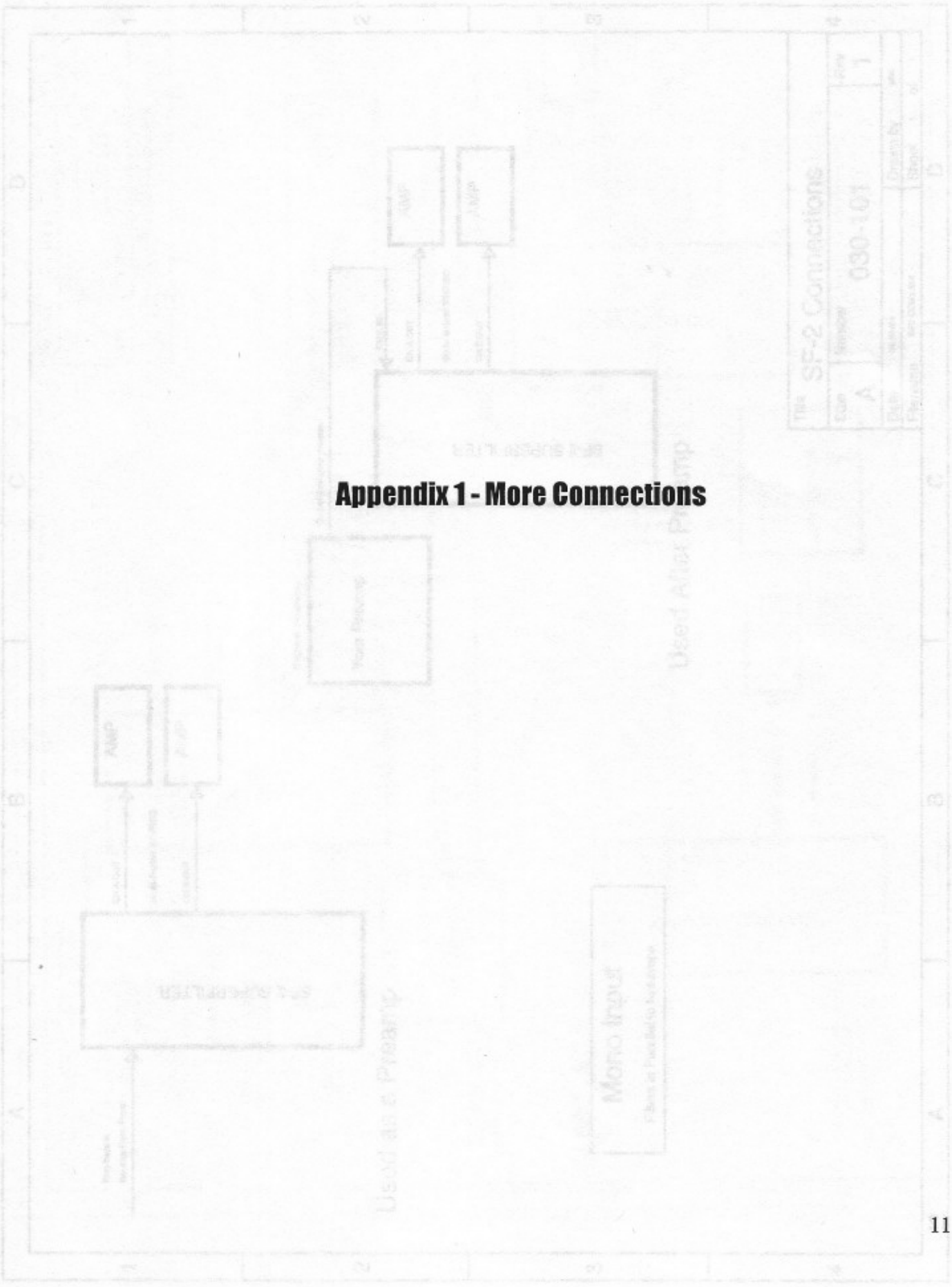
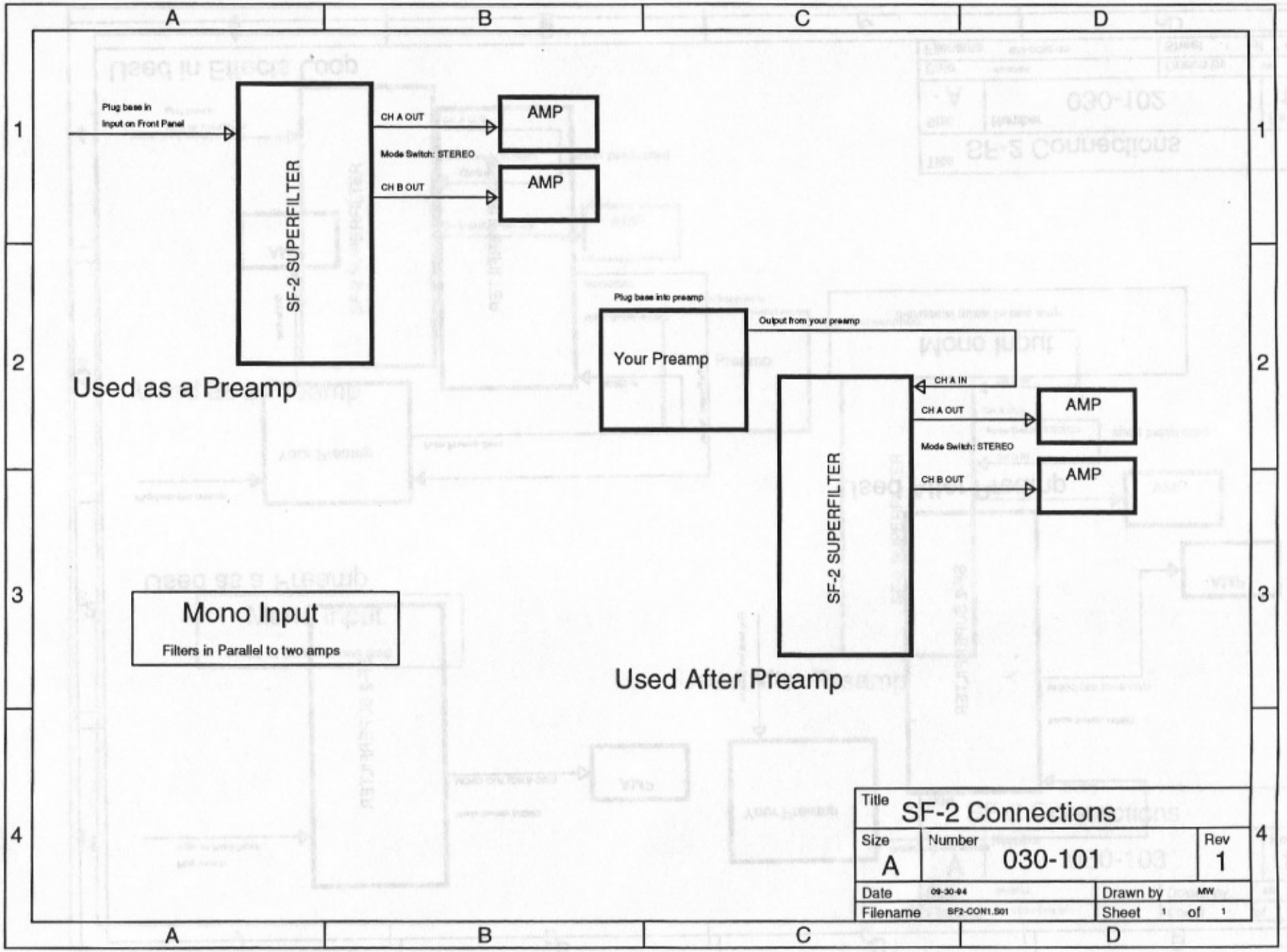
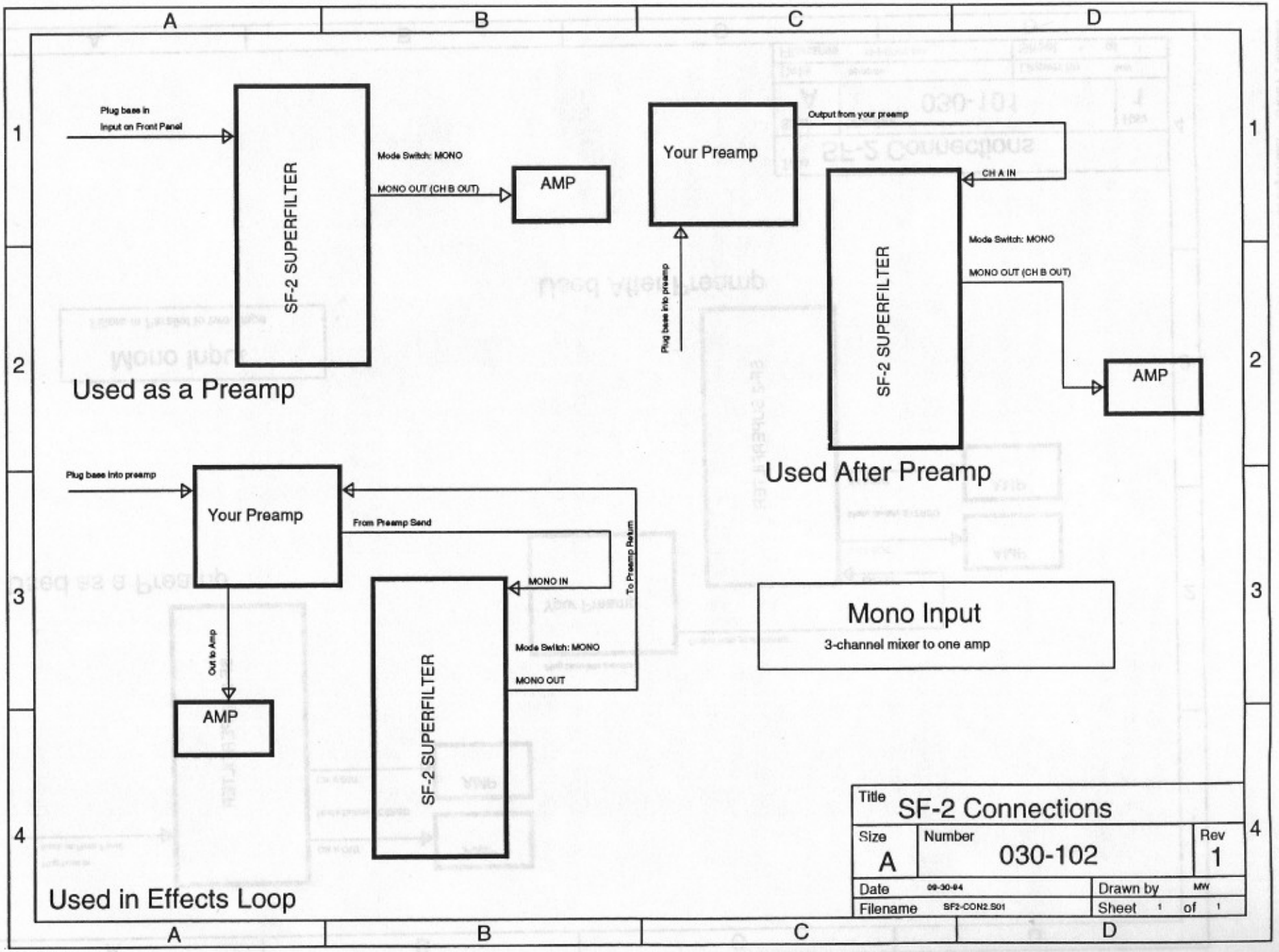
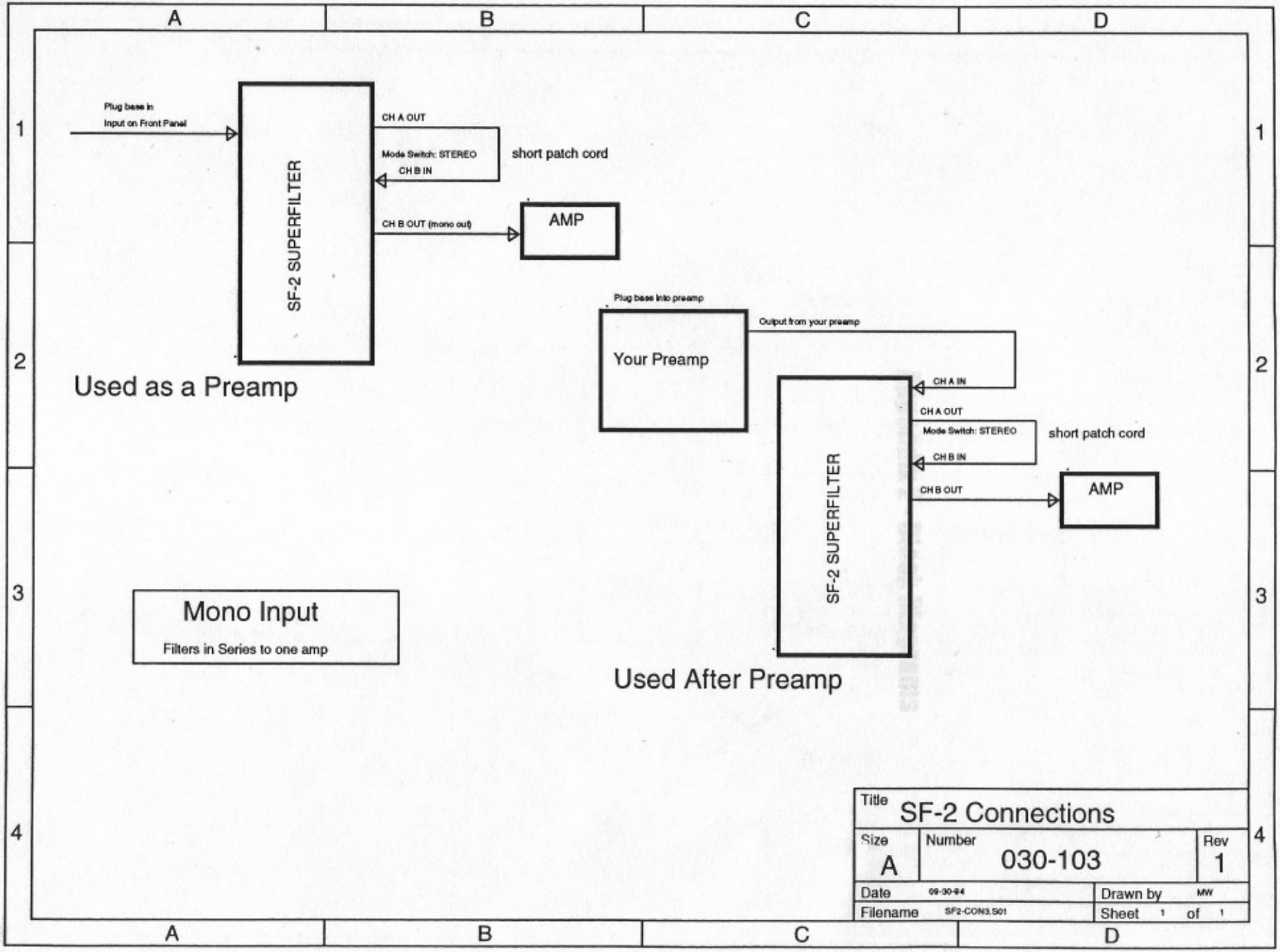
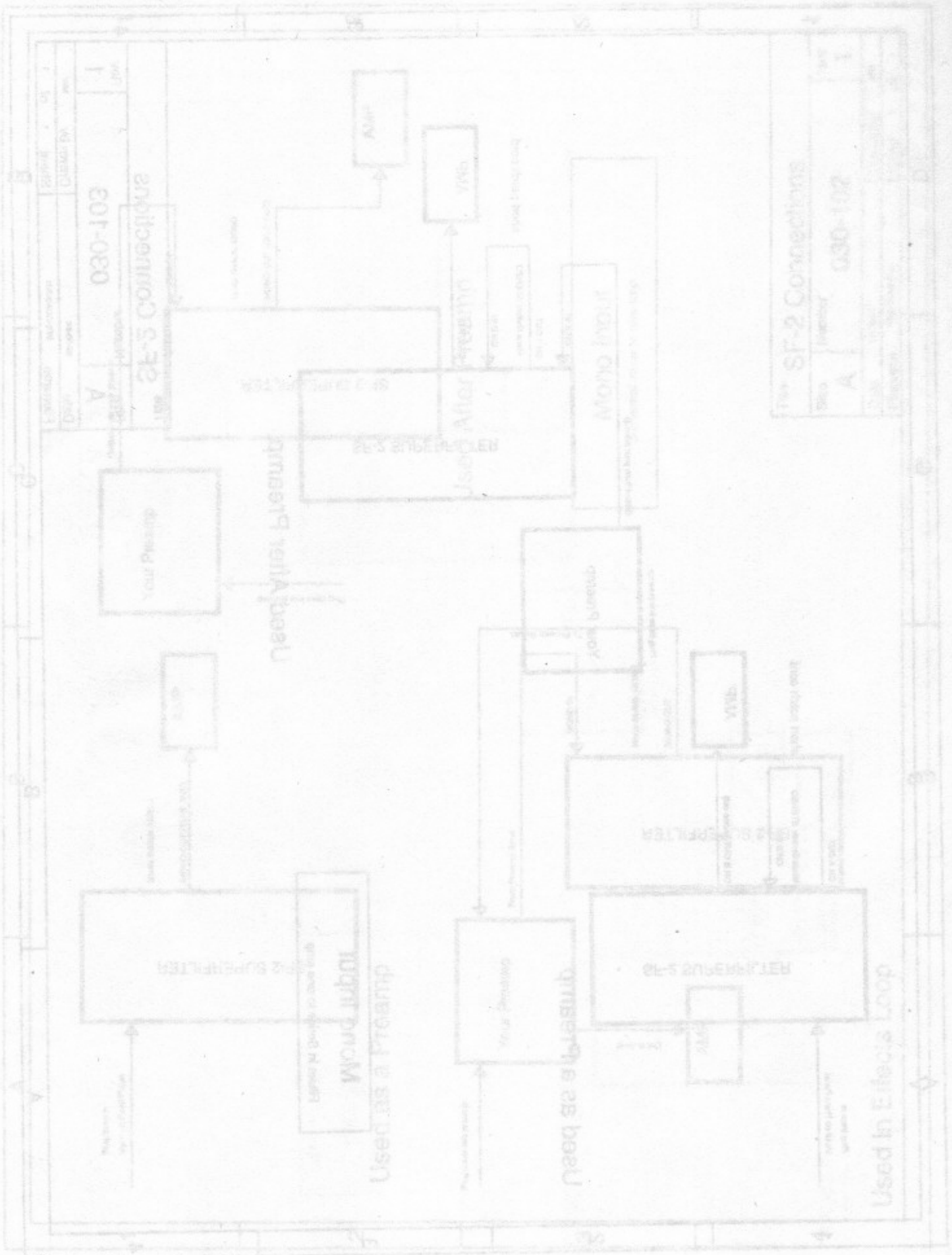


Appendix 1 - More Connections

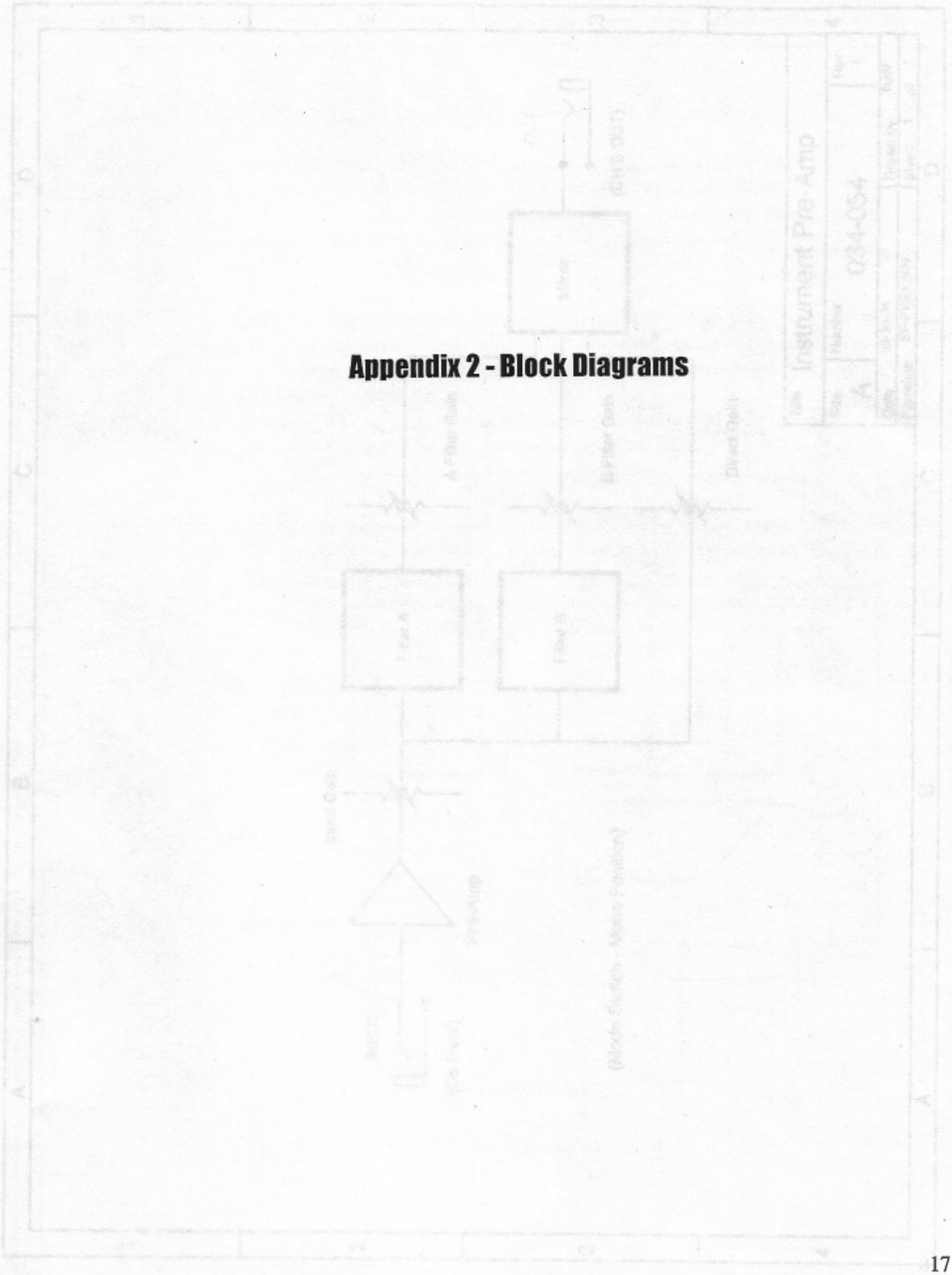

A
B
C
D
1
2
3
4
Plug bass in
Input on Front Panel
SF-2 SUPERFILTER
CH A OUT
Mode Switch: STEREO
CH B OUT
AMP
AMP
Used as a Preamp
Plug bass into preamp
Your Preamp
Output from your preamp
CH A IN
CH A OUT
Mode Switch: STEREO
CH B OUT
AMP
AMP
SF-2 SUPERFILTER
Used After Preamp
Mono Input
Filters in Parallel to two amps
Title
SF-2 Connections
Size
A
Number
030-101
Rev
1
Date
09-30-94
Drawn by
MW
Filename
SF2-CON1.S01
Sheet
1
of
1

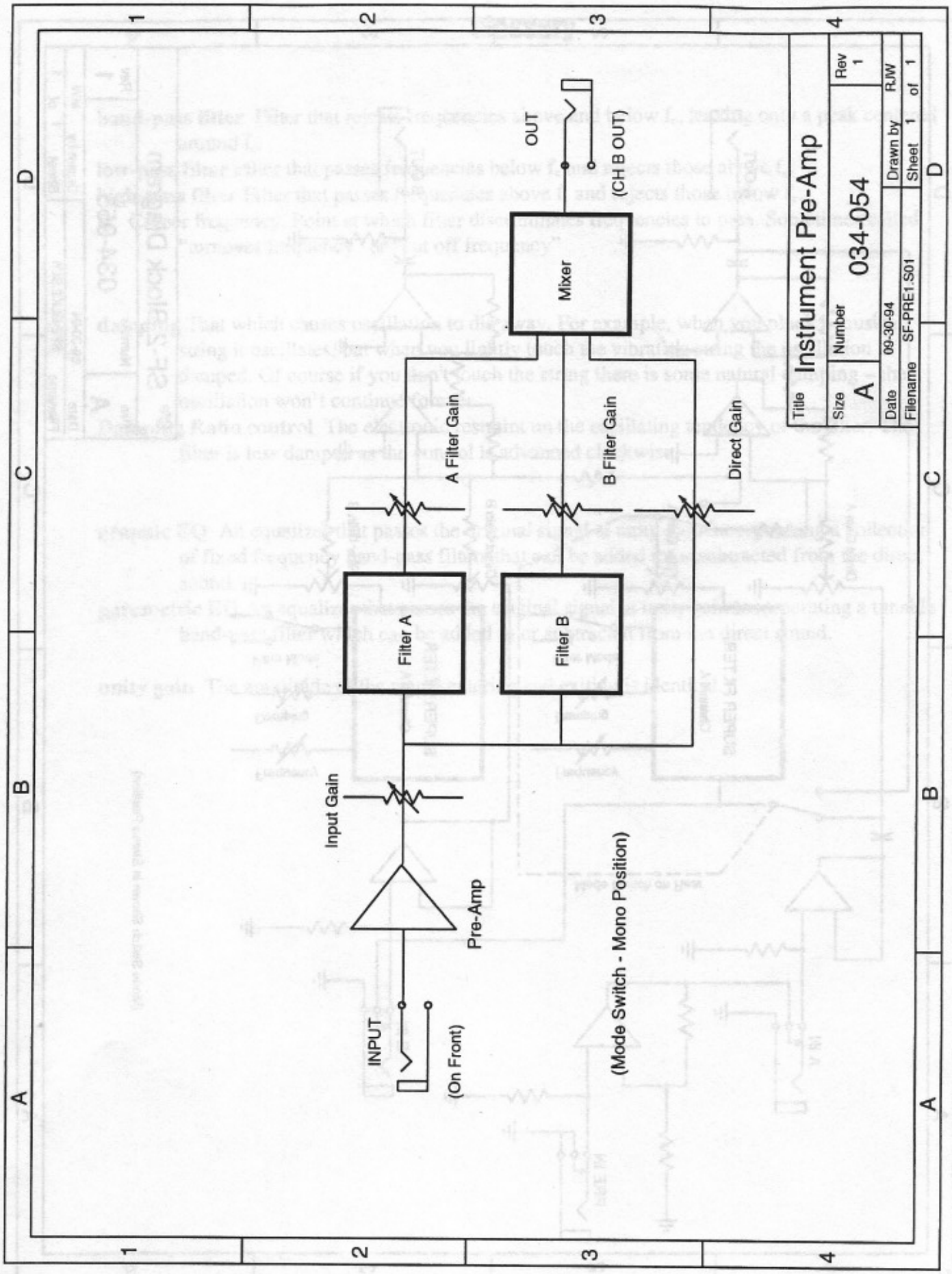

A
B
C
D
1
2
3
4
Plug base in
Input on Front Panel
SF-2 SUPERFILTER
Mode Switch: MONO
MONO OUT (CH B OUT)
AMP
Used as a Preamp
Your Preamp
Output from your preamp
Plug base into preamp
CH A IN
SF-2 SUPERFILTER
Mode Switch: MONO
MONO OUT (CH B OUT)
AMP
Used After Preamp
Plug base into preamp
Your Preamp
From Preamp Send
To Preamp Return
MONO IN
Out to Amp
AMP
SF-2 SUPERFILTER
Mode Switch: MONO
MONO OUT
Used in Effects Loop
Mono Input
3-channel mixer to one amp
Title
SF-2 Connections
Size
A
Number
030-102
Rev
1
Date
09-30-94
Drawn by
MW
Filename
SF2-CON2.S01
Sheet
1
of
1

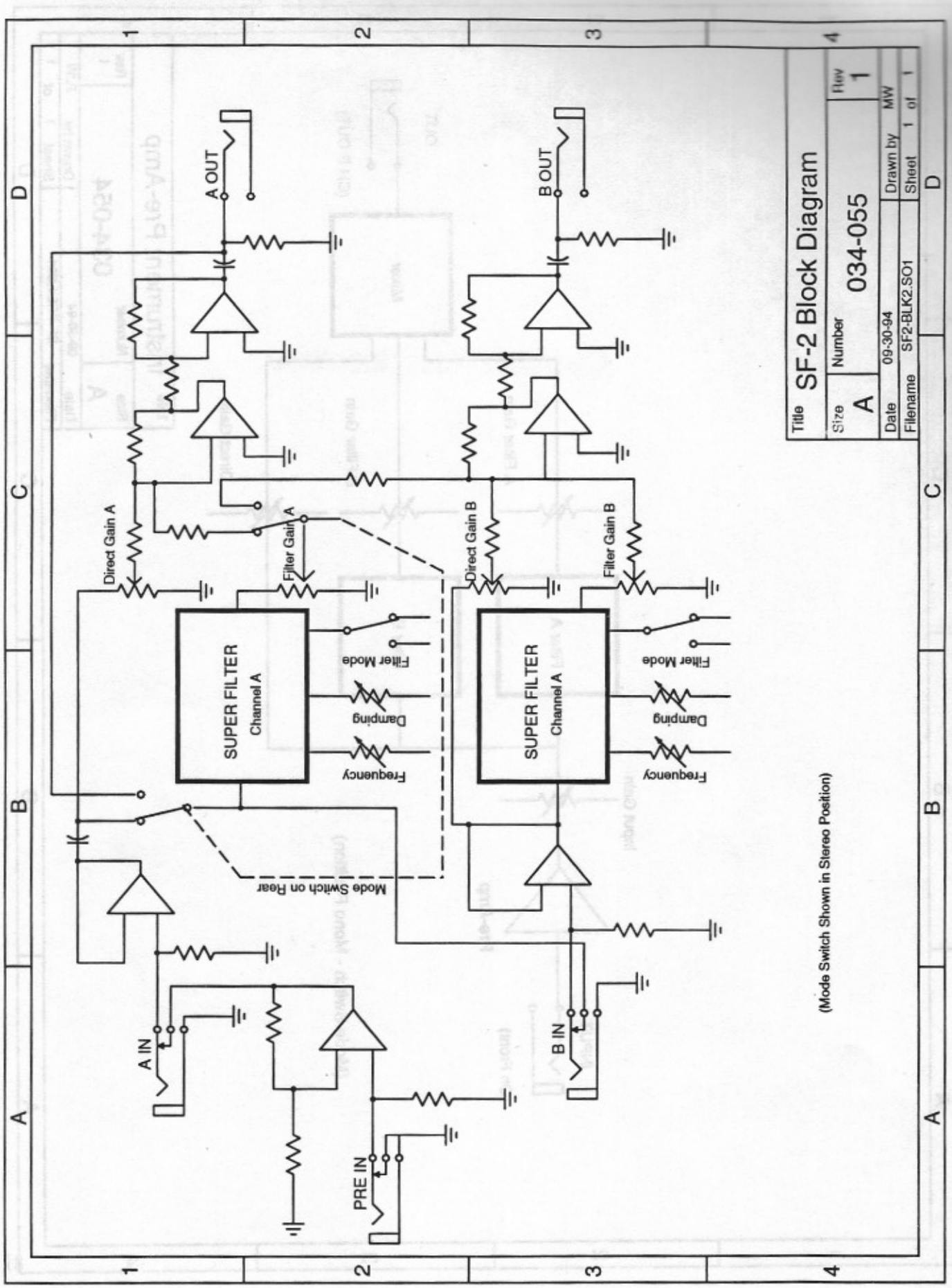

A
B
C
D
1
2
3
4
Plug base in
Input on Front Panel
SF-2 SUPERFILTER
CH A OUT
Mode Switch: STEREO
CH B IN
short patch cord
CH B OUT (mono out)
AMP
Used as a Preamp
Plug base into preamp
Your Preamp
Output from your preamp
CH A IN
CH A OUT
Mode Switch: STEREO
CH B IN
short patch cord
CH B OUT
AMP
SF-2 SUPERFILTER
Mono Input
Filters in Series to one amp
Used After Preamp
Title
SF-2 Connections
Size
A
Number
030-103
Rev
1
Date
09-30-94
Drawn by
MW
Filename
SF2-CON3.S01
Sheet
1
of
1



Appendix 2 - Block Diagrams




INPUT
(On Front)
Pre-Amp
Input Gain
Filter A
Filter B
A Filter Gain
B Filter Gain
Direct Gain
Mixer
OUT
(CH B OUT)
(Mode Switch - Mono Position)
Title Instrument Pre-Amp
Size A
Number 034-054
Rev 1
Date 09-30-94
Drawn by RJW
Filename SF-PRE1.S01
Sheet 1 of 1


A OUT
B OUT
Direct Gain A
Filter Gain A
Direct Gain B
Filter Gain B
SUPER FILTER
Channel A
Filter Mode
Damping
Frequency
SUPER FILTER
Channel A
Filter Mode
Damping
Frequency
Mode Switch on Rear
A IN
B IN
PRE IN
Title SF-2 Block Diagram
Size A
Number 034-055
Rev 1
Date 09-30-94
Drawn by MW
Filename SF2-BLK2.SO1
Sheet 1 of 1
(Mode Switch Shown in Stereo Position)

Glossary

band-pass filter Filter that rejects frequencies above and below f_c, leaving only a peak centered around f_c.

low-pass filter Filter that passes frequencies below f_c and rejects those above f_c.

high-pass filter Filter that passes frequencies above f_c and rejects those below f_c.

f_c Corner frequency. Point at which filter discriminates frequencies to pass. Sometimes called "turnover frequency" or "cut off frequency"

damping That which causes oscillation to die away. For example, when you pluck a musical string it oscillates, but when you lightly touch the vibrating string the oscillation is damped. Of course if you don't touch the string there is some natural damping – the oscillation won't continue forever.

Damping Ratio control The electronic restraint on the oscillating tendency of the filter. The filter is less damped as the control is advanced clockwise.

graphic EQ An equalizer that passes the original signal at unity gain incorporating a collection of fixed frequency band-pass filters that can be added to or subtracted from the direct sound.

parametric EQ An equalizer that passes the original signal at unity gain incorporating a tunable band-pass filter which can be added to or subtracted from the direct sound.

unity gain The amplitude of the signal entering and exiting is identical.