

FBX-900

FEEDBACK EXTERMINATOR

OPERATING GUIDE

R 6.1

WHAT IS THE FBX FEEDBACK EXTERMINATOR?

The Sabine **FBX** automatic feedback controller (AFC) is a digital signal processor (DSP) controlled filtering device which automatically finds and eliminates feedback in sound systems. It does it quicker and with less tonal degradation than any other method.

WHAT DOES IT DO?

The **FBX** AFC quickly senses if a sound system is experiencing feedback and determines its pitch. It then assigns one of its very narrow digital notch filters to the resonating frequency and quickly eliminates the feedback. In almost every case, the **FBX** AFC automatically controls feedback faster, and with less sound muffling, than the best graphic or parametric equalizer.

WHERE DO YOU INSTALL THE FBX?

The **FBX** AFC is a single slot, road worthy, rack mount device. It can be placed anywhere in the sound system that a graphic equalizer might be used. The most common place to install the **FBX** AFC is between the output of a mixer and the input of a power amp. In this position, the **FBX** AFC can sense and eliminate feedback occurring in any channel of the mixer.

HOW DOES IT WORK?

The **FBX** AFC utilizes nine narrow band, independent, digital notch filters - any of which may be Fixed or Dynamic. The user selects the number of Fixed versus Dynamic filters. The Fixed filters enable increased gain before feedback. The **FBX** AFC sets the Fixed filters to control the strongest feedback frequencies. The Fixed filters remain set on the strongest resonating frequencies until the user resets the **FBX** AFC. The Dynamic filters control intermittent feedback that may develop during a program. They are automatically reassigned new frequencies as feedback occurs. Total feedback control is now achieved with fewer filters and less program degradation than with any other method.

PROBLEMS WITH GRAPHIC EQUALIZERS:

Until the introduction of the **FBX** AFC, parametric and graphic equalizers were the only practical devices available for controlling feedback in live performances. Unfortunately, parametric EQs are too slow, and graphic equalizers have several inherent disadvantages. The most obvious disadvantage is that they are not automatic. A sound technician must be on duty during the entire program, ready to jump at the first sign of feedback. Once feedback occurs, the technician must determine which slider

controls the feedback frequency and how much attenuation is necessary. This process takes too much time and is prone to error.

There is a common misconception that 1/3 octave EQ filters are only 1/3 of an octave wide. Actually, most are at least one full octave wide. However, they are placed on 1/3 octave center points, hence their name. The filters must be so wide because the center points are fixed. On the other hand, the **FBX** can place the center point of its filters within a few Hertz of the actual feedback frequency so the filters need be only 1/10 octave wide. In fact, all nine **FBX** AFC filters cause much less muffling than only two 1/3 octave EQ sliders.

EQs typically provide only 12dB maximum attenuation at the center point of their filters. Their maximum attenuation is less between the filter center points. This severely limits their maximum amount of gain before feedback. In contrast, the **FBX** AFC operates with pinpoint accuracy and provides a minimum of 20dB attenuation throughout the audio spectrum.

In every case, the **FBX** AFC provides more gain before feedback automatically, and with less muffling than any other method.

WHO NEEDS THE FBX?

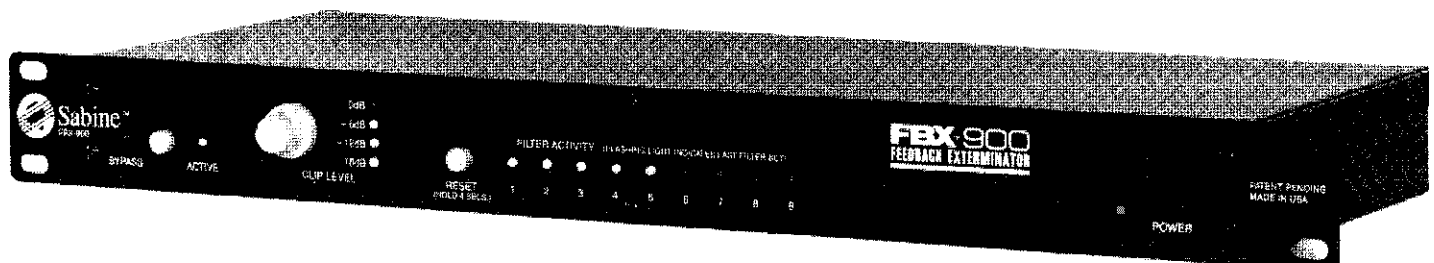
Virtually every sound system will be improved with the **FBX** AFC. Small bands that do not have sound technicians can now increase their monitor volumes so that they can hear themselves without worrying if the program is going to be ruined by feedback.

Auditoriums and churches of all sizes will enjoy reliable feedback control. Hotels and conference centers can offer meeting rooms with sound systems that won't howl during programs.

Professionals mixing sound for large bands are often simultaneously responsible for a number of performers - each of whom have separate monitor mixes. If feedback occurs, it is very difficult to tell which of the many monitor mixes is resonating. If **FBX** AFCs are substituted for graphic EQs, the feedback will automatically be eliminated without any effort from the sound technician.

WHY THE FBX?

The simple beauty of the **FBX** AFC is its ability to quickly and effectively eliminate feedback with fewer and narrower filters than ever before possible. The **FBX** AFC delivers superior sound quality automatically.



INSTRUCTIONS FOR OPERATION

HOW TO USE THE FBX FEEDBACK EXTERMINATOR AUTOMATIC FEEDBACK CONTROLLER:

The **FBX** automatic feedback controller (AFC) will improve any sound reinforcement system even if it is used incorrectly. By following these simple suggestions, you will be assured of the most benefit from your **FBX AFC** and sound system. The instructions presume that you are familiar with the fundamentals of sound reinforcement. If any of the terms are not clear, or if the system does not perform as expected, contact your **SABINE** dealer for further information.

WHERE TO PLACE THE FBX IN YOUR SOUND SYSTEM:

Place the **FBX AFC** anywhere in the sound system that a graphic equalizer might be used to control feedback. The most common place is between the mixer and the power amp. Many PA systems are divided into three sections: the right main send, the left main send, and the monitor send. If only the monitors experience feedback, then you will need only one **FBX AFC** between the monitor send and the monitor power amp. If the mains also ring, you will need an **FBX AFC** for each main send.

GRAPHIC EQUALIZERS:

The **FBX AFC** is designed to replace the graphic equalizer's function for eliminating feedback. In many applications, such as churches, auditoriums or small acoustic ensembles, the mixing board provides all the tonal control that is necessary, and the **FBX AFC** can replace the graphic EQ altogether.

If an equalizer is desired, place the **FBX AFC** just before or just after the EQ in the signal path. Use the EQ's controls to shape the tonal response of the sound system but **DO NOT NOTCH FOR FEEDBACK**. EQs are not as effective or as tonally transparent as the **FBX AFC**. The EQ's wide filters noticeably degrade the quality of sound, when used for feedback control.

FIXED Vs. DYNAMIC FILTERS:

The **FBX AFC** has two types of filters: **FIXED** and **DYNAMIC**. **FIXED FILTERS** retain their frequency center-points until the unit is reset by the user. The system's gain before feedback is limited by the number of **FIXED FILTERS**; i.e., increasing the number of **FIXED FILTERS** increases the system's gain before feedback. The **FBX AFC**'s **DYNAMIC FILTERS** control intermittent feedback that comes and goes throughout the program. They are continually and automatically reset to different frequencies as new feedback occurs during the program. **For most applications, the optimal setting is six FIXED and three DYNAMIC FILTERS.** The **FBX AFC** is set to this configuration at the factory and usually will never need resetting.

HOW TO CHANGE FIXED AND DYNAMIC FILTERS:

The filters can be easily reconfigured to any other combination. For example, the following procedure will set five filters **FIXED** and four filters **DYNAMIC**:

1. Place the unit in **BYPASS MODE**.
2. Turn the unit off.
3. While depressing the reset button, turn the unit on.
4. Release the **RESET** button. The **FILTER INDICATOR** LEDs will now light in sequence.
5. When the fifth LED is lit, press the reset button.
6. Notice that the five LEDs on the left flash three times to verify that they are now the **FIXED** filters.

It is easy to verify how many of the filters are **FIXED**. The **FIXED FILTERS** flash three times every time the unit is powered up.

SYSTEM INITIALIZING PROCEDURE:

Follow these steps to obtain the maximum gain before feedback without changing the tonal quality of your program.

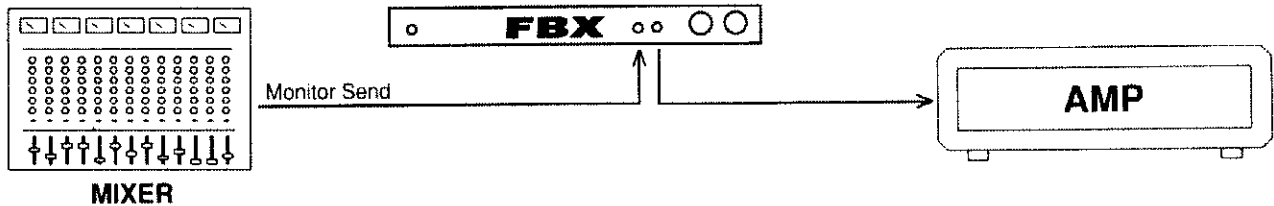
1. Place the speakers and microphones in the positions they will be used during the program. Avoid placing microphones directly in front of speakers.
2. Place the **FBX AFC** in **BYPASS MODE**.
3. Set the master volumes to their lowest positions. Turn on the mixer, then the **FBX AFC**, then any other accessories and finally the power amp.
4. If you are using a graphic EQ, adjust only for the desired tonal qualities, but **DO NOT NOTCH FOR FEEDBACK**.
5. Adjust the balance for each mixer channel.
6. Set the sound system's master volume to minimum.
7. Turn the **FBX Automatic Feedback Controller (AFC) CLIP LEVEL ADJUST** clockwise to the two o'clock position.
8. Press the **RESET** for 4 seconds to clear out filters set previously.
9. Place the **FBX AFC** in **ACTIVE** mode.
10. **Slowly** raise the sound system's master volume until feedback occurs. The **FBX AFC** should quickly remove the feedback. The first **FILTER LED** will then blink to indicate a filter has been set.
11. Repeat the procedure described in line 10 until all of the **FIXED FILTERS** and one of the **DYNAMIC FILTERS** are set.
12. Now lower the master volume slightly so that the system is not on the verge of another feedback point. This is the maximum volume level that the **FBX AFC** will be able to provide. Higher levels will cause uncontrollable feedback.
13. Finally, during sound check, adjust the **CLIP LEVEL ADJUST** (called **INPUT LEVEL** on earlier models) so that the red 0dB LED blinks intermittently, as you would adjust the recording level of a tape recorder. The unit will clip and distort the program if the **CLIP LEVEL ADJUST** is set too high. If it is set too low, the signal-to-noise ratio will degrade and the system may hiss. The best adjustment occurs when the clip levels of the **FBX AFC** and the final power amplifier are matched. This occurs when the clip level indicators on the **FBX AFC** and the final amplifier blink at the same time. Don't be surprised if the **CLIP LEVEL ADJUST** appears low after adjustment during sound check. In some cases, the proper **CLIP LEVEL ADJUST** setting will be as low as the nine o'clock position. This is normal and will not affect the performance of the **FBX AFC** or your sound system.
 - **Please Note:** If you are using a mixer with unbalanced 1/4" outputs, you must use standard unbalanced cables and connectors when connecting it to the **FBX**. Similarly, if your mixer is wired for balanced 1/4" (Ring/Tip/Sleeve) outputs, you must use that type of connector. If you do not follow this procedure, you may experience a loss of gain when using the **FBX**.

IF YOU NEED MORE VOLUME:

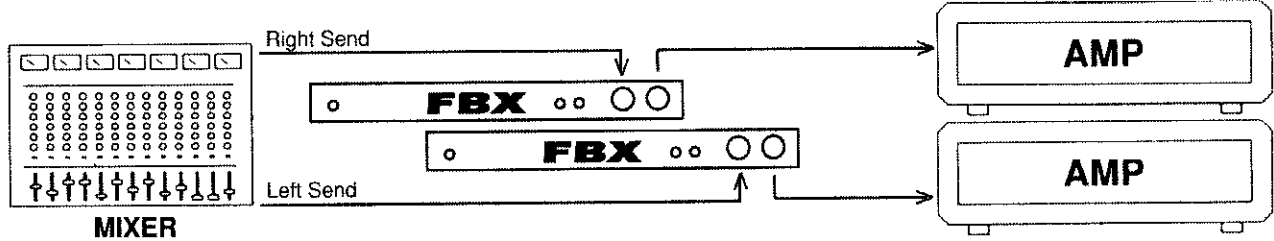
If one **FBX AFC** does not provide enough gain before feedback, you can place a second **FBX AFC** in series with the first. The setup procedure for two in series is as follows:

1. Put the second **FBX AFC** in bypass mode.
2. Set all nine filters in the first unit in **FIXED** mode.
3. Set the desired number of **FIXED** filters in the second unit.
4. Proceed with the **SYSTEM INITIALIZING PROCEDURE** above, until all of the filters in the first unit have been set.
5. Place the second unit in **ACTIVE** mode.
6. Follow the **SYSTEM INITIALIZING PROCEDURE** above until the second **FBX AFC** sets all of the **FIXED** filters and one **DYNAMIC** filter.
7. Read and heed the **CAUTION** in this booklet concerning the relationship between loud music and hearing loss.

Typical FBX Set-Up (Monitor)

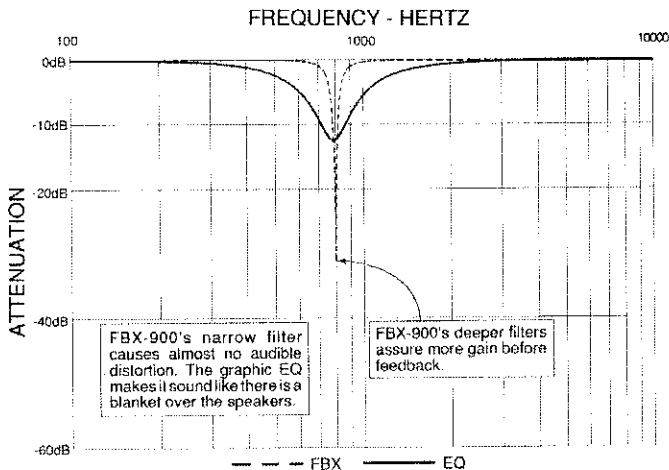


Typical FBX Set-Up (Mains)

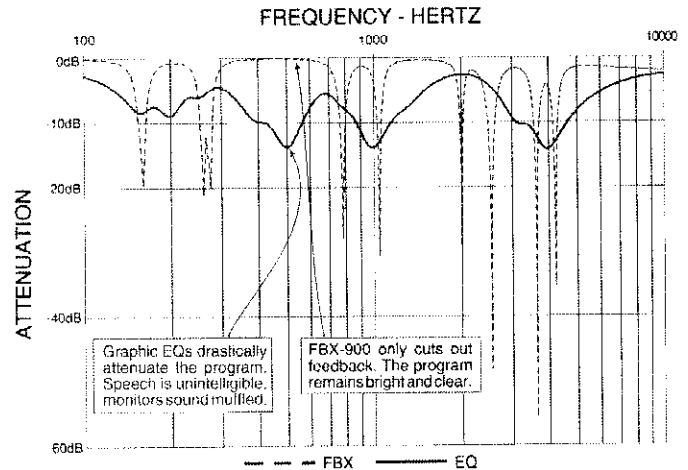


COMPARISONS OF FBX-900 WITH GRAPHIC EQUALIZERS

FREQUENCY RESPONSE - SINGLE FILTER FBX-900 vs 1/3 OCTAVE GRAPHIC EQUALIZER



FREQUENCY RESPONSE - FULL SET-UP FBX-900 vs 1/3 OCTAVE GRAPHIC EQUALIZER

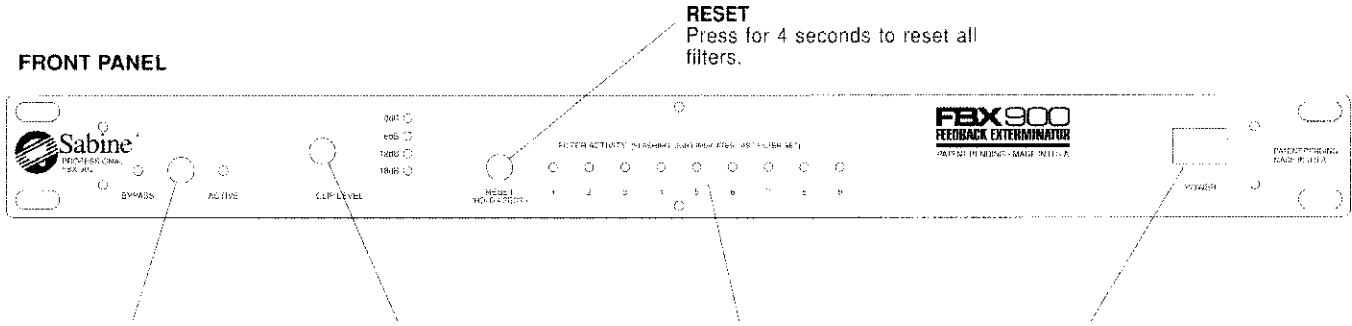


Full Set-Up Test Procedure: A PA system was set up using a microphone, mixer, FBX-900, power amp, and two speakers. The system's gain was raised until the FBX-900 removed nine feedback points. Next, the FBX-900 was replaced with a 1/3 octave graphic EQ. The EQ was adjusted while the system gain was raised to the same level achieved with the FBX. The frequency response curves of each device were then plotted.

ANSWERS TO THE MOST FREQUENTLY ASKED QUESTIONS:

- Q. Can I place the **FBX** AFC in the mixer's EQ loop?
A. Yes.
- Q. Can I place the unit in the mixer effects loop?
A. Avoid this configuration if possible. You can configure the system this way only if each effects send of each mixer channel is set so that all of the signal is routed completely through the effects loop. You cannot mix dry signal with effects signal and still control feedback.
- Q. The LEDs on the CLIP LEVEL ADJUST do not light. The unit will not catch feedback. Why?
A. The unit is not in the signal path. Check the connections. Be sure that the program is interrupted when the input is disconnected from the back of the unit.
- Q. Can I mix Balanced and Unbalanced inputs?
A. Yes, but the signal may be disconnected in BYPASS MODE.
- Q. Why does one of the FILTER ACTIVITY LEDs blink?
A. The last filter to be automatically updated blinks. During normal operation, the blinking will move from filter to filter as they are reset. This gives the user a visual confirmation that the unit is responding to new feedback and is functioning properly.
- Q. Occasionally, one of the FIXED FILTER LEDs will blink during the program, indicating that the filter has been reset. I thought the FIXED FILTERS never changed position and were never reset.
A. The FIXED FILTERS can be set deeper during a program if feedback reoccurs at that filter's frequency. The blinking indicates the filter has been deepened, not moved to a different frequency.
- Q. Sometimes during the initial set-up, the first filter LED will blink before any feedback has been introduced into the system. Why?
A. The **FBX** AFC will set a filter if the system has a hum. Check for bad grounds. Turn the CLIP LEVEL all the way clockwise, reset the filters, and try again.
- Q. Sometimes the FILTER ACTIVITY LED indicates that filters are being placed when there is not feedback. What's going on?
A. Occasionally, the **FBX** will mistake music for feedback and place a DYNAMIC filter where it is not really needed. Typically, the filter will be only 3 dB deep and 1/10 of an octave wide. This narrow filter will not be audible and should be ignored. However, if you wish, you may prevent this from happening by making all of the filters FIXED.
- Q. Why does the **FBX** AFC cause a noticeable hum?
A. The **FBX** AFC will hum if the main power voltage drops below 10% of the specified voltage. Check the A/C power mains.
- Q. Why does my system sound thin and muffled?
A. Place the **FBX** in BYPASS MODE. If the system still sounds thin, your problem is probably with improper use of a graphic EQ. If the problem is really the **FBX** AFC, reinitialize the system. Also, be sure that the unit's CLIP LEVEL is properly adjusted.

FRONT PANEL



RESET
Press for 4 seconds to reset all filters.

ACTIVE/BYPASS

Bypass mode takes the unit out of the signal path so that it will have no effect on the program. In Active mode, the unit controls feedback automatically. LEDs indicate whether the unit is in Active or Bypass mode.

CLIP LEVEL ADJUST

Adjust the CLIP LEVEL so that the 0dB LED blinks intermittently. Higher levels will cause distortion and lower levels will cause an increase in sound system noise level. The **FBX AFC** combines the input and output levels into one control so that there is no net gain or loss of signal through the unit regardless of where the CLIP LEVEL is set.

FILTER STAGE ACTIVITY

When one of the unit's filters is activated, the corresponding LED is lit. A blinking LED indicates the filter that was most recently activated.

ON/OFF SWITCH

The ON/OFF switch is a two-position rocker-type switch. The LED marked ON will light when the unit is turned on.

BACK PANEL



A/C ADAPTOR

The **FBX** external power supply is included with the unit. Use of any other power supply may cause permanent damage to the unit and **WILL VOID THE WARRANTY. DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE OR DEFEAT THE GROUND PIN.**

THE INPUTS AND OUTPUTS

1/4 inch unbalanced and XLR balanced.

MEMORY:

The **FBX** stores the positions and depths of the filters in nonvolatile internal memory when the unit is turned off or during a power failure. The unit will return all filters to their previous frequencies and depths when it is turned back on.

RESETTING THE FILTERS:

The user must reset the **FBX AFC** if the microphones or speakers are moved significantly. To reset the unit, place the PA system's master volume to minimum and then press the reset button for four seconds until the FILTER LEDs stop flashing. Then follow the system initialization procedure above.

BYPASS MODE:

The **FBX AFC** has a true power-off bypass. The signal is unaffected in BYPASS MODE even if the unit is turned off. Please note that if a combination of BALANCED and UNBALANCED inputs and outputs is used, the signal will be disconnected in BYPASS MODE.

POWER DOWN:

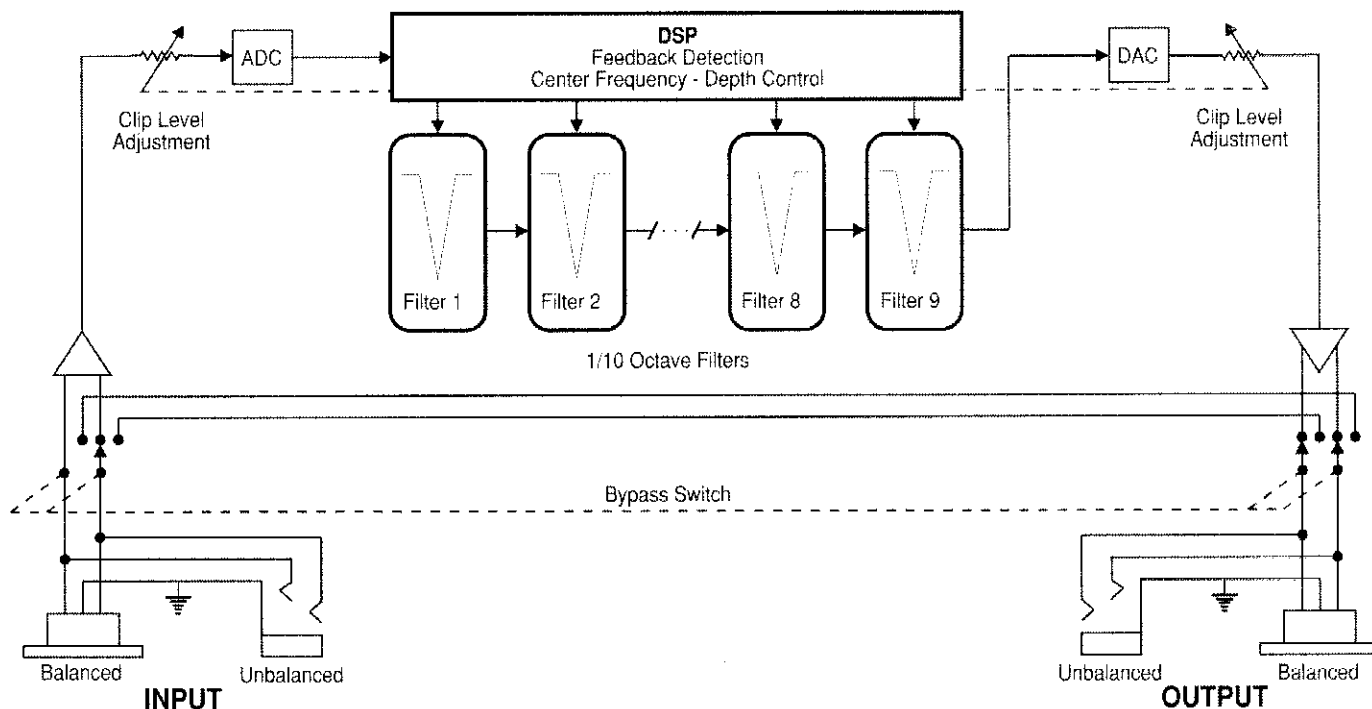
Place the unit in BYPASS MODE before turning the unit off.

OPTIONAL TRANSFORMERS:

Optional transformers are available for program levels above 10dBV. The model **FBX-900** is available with Jensen balanced line transformers that will provide up to 24dBV. (Higher levels can be accommodated on special request. Contact Sabine for more information.)

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

SIMPLIFIED BLOCK DIAGRAM



ENGINEERING SPECIFICATIONS

VERSION R 6.1

FILTERS

Nine independent DSP controlled digital notch filters
 Feedback filter range: 55 - 13,250Hz
 Filter width: 1/10 octave, typical
 Filter depth: DSP controlled, variable to -50dB
 Resolution: 2.5Hz 50 to 600Hz; 10Hz 600 to 2300Hz; 40Hz 2300 to 13,250KHz
 Time required to find and eliminate feedback: 0.4 seconds, typical @ 1KHz
 Number of Dynamic vs. Fixed filters (user selectable)

INPUT/OUTPUT

Input Impedance: Unbalanced 10K Ohms
 Balanced >10K Ohms, PIN 2 high
Output Impedance: Unbalanced 10 Ohms nominal
 Balanced 10 Ohms nominal, PIN 2 high
Input/Output Maximum Signal Levels: Unbalanced +17dBV peak
 Balanced +25dBV peak
Bypass: True Power Off Bypass
 Balanced to Balanced; Unbalanced to Unbalanced

Headroom: Unbalanced +13dB peak @ +4dBV nominal input
 Balanced +21dB peak @ +4dBV nominal input
Performance*: Spectral Variation < ±1.5dB, 20Hz to 17,000Hz
 Signal to Noise Ratio >86dB typical (balanced)
 Total Harmonic Distortion <0.02% typical
 Dynamic Range >92dB
 Input to Output Gain Variation ± 1dB
Option: Input/Output Transformers
 Input/Output Maximum Signal/Levels: +27dBV peak
 Headroom: 23dB peak @ +4dBV nominal input
 Input/Output Impedance: 600 Ohms nominal, PIN 2 high

Power Supply: 27VCT, 50/60Hz available in 120V, 220V or 240V

Memory Backup: battery life 10 years

Dimensions: 19 x 1.75 x 6.5 ins. nominal (rack mountable)
 48.3 x 4.5 x 16.5 cms. nominal (rack mountable)

Weight: 5.80 lbs (2.5 kg) nominal

* Tests performed using HP8903B Audio Analyzer or equal with 30KHz Lowpass filter

(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)

FBX Feedback Exterminator is a registered trademark of Sabine Musical Manufacturing Co., Inc., and is the brand name of its line of automatic feedback controllers. Covered by U.S. Patent No. 5,245,665.

CAUTION

EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS, BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME. THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS	SOUND LEVEL dBA, SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

ACCORDING TO OSHA ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS. EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS DEVICE IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS AS SET FORTH ABOVE. TO ENSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS SUCH AS THIS DEVICE BE PROTECTED BY HEARING PROTECTORS WHILE THIS UNIT IS IN OPERATION.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the unit.

4. All operating instructions should be followed
5. This product should not be used near water, i.e. a bathtub, sink, swimming pool, wet basement, etc.
6. This product should be located so that its position does not interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air
7. This product should not be placed near a source of heat such as a stove or radiator
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord.
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
13. This unit should be checked by a qualified service technician if:
 - A. The power supply cord or plug has been damaged.
 - B. Anything has fallen or been spilled into the unit
 - C. The unit does not operate correctly.
 - D. The unit has been dropped or the enclosure damaged.
14. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.



Limited Warranty

THIS LIMITED WARRANTY VALID ONLY WHEN PURCHASED AND REGISTERED IN THE UNITED STATES OR CANADA. ALL EXPORTED PRODUCTS ARE SUBJECT TO WARRANTY AND SERVICES TO BE SPECIFIED AND PROVIDED BY THE AUTHORIZED DISTRIBUTOR FOR EACH COUNTRY.

Ces clauses de garantie ne sont valables qu'aux Etats-Unis et au Canada. Dans tous les autres pays, les clauses de garantie et de maintenance sont fixées par le distributeur national et assurées par lui selon la législation en vigueur.

Diese Garantie ist nur in den USA und Kanada gültig. Alle Export-Produkte sind der Garantie und dem Service des Importeurs des jeweiligen Landes unterworfen.

Esta garantía es válida solamente cuando el producto es comprado en E.U. continentales o en Canadá. Todos los productos que sean comprados en el extranjero, están sujetos a las garantías y servicio que cada distribuidor autorizado determine y ofrezca en los diferentes países.

ONE-YEAR LIMITED WARRANTY/REMEDY

SABINE MUSICAL MANUFACTURING CO., INC. ("SABINE") warrants this product, to be free from defects in material and workmanship for a period of one (1) year from date of purchase, PROVIDED, however that this limited warranty is extended only to the original retail purchaser and is subject to the conditions, exclusions and limitations hereinafter set forth:

CONDITIONS, EXCLUSIONS AND LIMITATIONS OF LIMITED WARRANTIES

These limited warranties shall be void and of no effect if:

- The first purchase of the product is for the purpose of resale; or
- The original retail purchase is not made from an AUTHORIZED SABINE DEALER; or
- The product has been damaged by accident or unreasonable use, neglect, improper service or maintenance, or other causes not arising out of defects in material or workmanship; or
- The serial number affixed to the product is altered, defaced or removed; or
- The power supply grounding pin is removed or otherwise defeated.

In the event of a defect in material and/or workmanship covered by this limited warranty, Sabine will repair the defect in material or workmanship or replace the product, at Sabine's option; and provided, however, that, in any case, all costs of shipping, if necessary, are paid by you, the purchaser.

THE WARRANTY REGISTRATION CARD SHOULD BE ACCURATELY COMPLETED AND MAILED TO AND RECEIVED BY SABINE WITHIN FOURTEEN (14) DAYS FROM THE DATE OF YOUR PURCHASE.

In order to obtain service under these warranties, you must:

- Bring the defective item to any AUTHORIZED SABINE DEALER and present therewith the ORIGINAL PROOF OF PURCHASE supplied to you by the AUTHORIZED SABINE DEALER in connection with your purchase from him of this product. If the DEALER is unable to provide the necessary warranty service you will be directed to the nearest other SABINE AUTHORIZED DEALER which can provide such service.

OR

- Ship the defective item, prepaid, to:
SABINE MUSICAL MFG. CO., INC.
4637 N.W. SIXTH STREET
GAINESVILLE, FL 32609

including therewith a complete, detailed description of the problem, together with a legible copy of the original PROOF OF PURCHASE and a complete return address. Upon Sabine's receipt of these items:

If the defect is remedial under the limited warranties and the other terms and conditions expressed have been complied with, Sabine will provide the necessary warranty service to repair or replace the product and will return it FREIGHT COLLECT, to you, the purchaser.

Sabine's liability to the purchaser for damages from any cause whatsoever and regardless of the form of action, including negligence, is limited to the actual damages up to the greater of \$500.00 or an amount equal to the purchase price of the product that caused the damage or

that is the subject of or is directly related to the cause of action. Such purchase price will be that in effect for the specific product when the cause of action arose. This limitation of liability will not apply to claims for personal injury or damage to real property or tangible personal property allegedly caused by Sabine's negligence. Sabine does not assume liability for personal injury or property damage arising out of or caused by a non-Sabine alteration or attachment, nor does Sabine assume any responsibility for damage to interconnected non-Sabine equipment that may result from the normal functioning and maintenance of the Sabine equipment.

UNDER NO CIRCUMSTANCES WILL SABINE BE LIABLE FOR ANY LOST PROFITS, LOST SAVINGS, ANY INCIDENTAL DAMAGES OR ANY CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT. EVEN IF SABINE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THESE LIMITED WARRANTIES ARE IN LIEU OF ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE; PROVIDED, HOWEVER, THAT IF THE OTHER TERMS AND CONDITIONS NECESSARY TO THE EXISTENCE OF THE EXPRESS, LIMITED WARRANTIES, AS HEREINABOVE STATED, HAVE BEEN COMPLIED WITH, IMPLIED WARRANTIES ARE NOT DISCLAIMED DURING THE APPLICABLE ONE-YEAR PERIOD FROM DATE OF PURCHASE OF THIS PRODUCT.

SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THESE LIMITED WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

THESE LIMITED WARRANTIES ARE THE ONLY EXPRESS WARRANTIES ON THIS PRODUCT, AND NO OTHER STATEMENT, REPRESENTATION, WARRANTY OR AGREEMENT BY ANY PERSON SHALL BE VALID OR BINDING UPON SABINE.

In the event of any modification or disclaimer of express or implied warranties, or any limitation of remedies, contained herein conflicts with applicable law, then such modification, disclaimer or limitation, as the case may be, shall be deemed to be modified to the extent necessary to comply with such law.

Your remedies for breach of these warranties are limited to those remedies provided herein and Sabine gives this limited warranty only with respect to equipment purchased in the United States of America.

INSTRUCTIONS — WARRANTY REGISTRATION CARD

- Mail the completed WARRANTY REGISTRATION CARD to:
SABINE MUSICAL MFG. CO., INC.
4637 N.W. SIXTH STREET
GAINESVILLE, FL 32609
 - Keep the PROOF OF PURCHASE. In the event warranty service is required during the warranty period, you will need this document. **There will be no identification card issued by Sabine Musical Mfg. Co., Inc.**
- IMPORTANCE OF WARRANTY REGISTRATION CARDS AND NOTIFICATION OF CHANGES OF ADDRESS:
 - Completion and mailing of WARRANTY REGISTRATION CARDS — Should notification become necessary for any condition that may require correction, the REGISTRATION CARD will help ensure that you are contacted and properly notified.
 - Notice of address changes — If you move from the address shown on the WARRANTY REGISTRATION CARD, you should notify Sabine of the change of address so as to facilitate your receipt of any bulletins or other forms of notification which may become necessary in connection with any condition that may require dissemination of information or correction.
- You may contact Sabine directly by telephoning (904) 371-3829.
- Please have the Sabine product name and serial number available when communicating with Sabine Customer Service.

