

AB INTERNATIONAL

Professional Series

Model 1590B Owners Manual



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General

AB International amplifier products are designed to deliver uncompromised performance in continuous duty commercial and professional audio applications. These operating instructions cover the installation and operation of the **PROFESSIONAL SERIES** amplifiers. New owners are encouraged to read the entire contents prior to placing amplifiers into service.

Introduction

The AB International **PROFESSIONAL SERIES MODEL 1590B** is a professional two-channel amplifier featuring two full-range stereo channels. This compact (two rack unit) instrument features balanced input circuitry with signal select for paralleling the inputs, mono bridging and stereo operation, individual channel level control, signal & clip indicators, soft clip speaker protection and three dual speed, temperature activated rear mount D.C. fans to make sure your amplifier stays cool even when the music is hot. The 1590B delivers 500 watts per channel into 8 ohms, 800 watts per channel into 4 ohms and 1050 watts per channel into 2 ohms.

Circuit Description

To assure absolute long-term reliability, the output section of each channel incorporates multiple Motorola (On) Power Transistors, which provide three times the amplifiers rated power in watts of dissipation per channel. The output stage is arranged in a fully complementary format for class AB/2 operation. The bias current is evenly distributed among all output devices. Bias thermal compensation is accomplished by thermally mating a bipolar semiconductor junction to the heat producing output device. Triple diffused high power driver transistors are employed along with high speed, high voltage silicon annular devices for the pre-driver and inverter stages. Utilization of these components provides the required separation of Ft break points for absolute stability. Fully complementary drive and loading is utilized throughout. Only 20dB of negative feedback is used to reduce forward transfer distortion to minimum levels. VI type energy limiters are incorporated for short circuit protection of the amplifier. Due to the unusually large safe operating area of the output stage, the limiters do not actuate until driving a forty-five degree reactive load at less than 2 ohms at full power.

Construction

The amplifiers are designed on an all-modular concept permitting rigorous pre-assembly module testing and maximum service accessibility. Each functional module is fully tested before final assembly. Although components of the highest quality are used throughout, each amplifier is burned in, prior to shipment, at the worst case operating point and is vibrated on a shake table while operating with signal applied to eliminate any possibility of component malfunction. All chassis components are precision machined from high quality aluminum and 14-gauge sheet steel stock. The entire package concept is directed toward maximum efficiency of space and structure, accounting for the compact size and lightweight.

Installation

All AB International amplifiers are designed for mounting in a standard 19-inch equipment rack, or many of the 19-inch rack type portable cases available. The amplifier requires 3-1/2 inches of vertical panel space, with 15 inches required behind the panel. Total depth including the handles is 16-1/2 inches. Front panels are machined from solid aluminum stock; with a black powdercoat finish and sturdy rack mount handles.

Placement of the amplifier is not critical for normal operation, provided sufficient airflow is allowed to reach the heatsink array. If the unit is to be placed on a shelf, or a similar unenclosed area, allow four inches of clearance behind the fan air intake to permit airflow through the array. If the amplifier is to be mounted in an equipment rack or cabinet with heat producing equipment, be sure that environmental operating temperatures do not exceed 55 degrees C (131F). Should overheating occur because of inadequate ventilation, the temperature protection circuitry will automatically protect the amplifier. When a safe operating temperature is restored, the amplifier will return to normal operation.

Because the amplifiers are capable of delivering high power from a relatively small physical package, considerable heat can develop in cabinets containing several components. A good rule of thumb to adopt is to provide forced air-cooling in any enclosure containing four or more electronic components.

Power Connections

The Professional Series power amplifiers are specified for operation from 120/240 Volt 50/60 Hz mains supply. Your new **1590B** employs a captive cord with a three pin polarized plug. **DO NOT REMOVE THE CENTER GROUNDING PIN!**

Model 1590B amplifiers ship from the factory internally pre-wired for the line voltage of 120 Volts AC, unless specifically ordered. Units that are specifically ordered for other than 120 Volts AC will have that voltage indicated on the power cord of the amplifier. Please contact the factory in the event a line voltage conversion is necessary.

In new installations and portable sound systems, or any situation in which the mains power is suspect, it is wise to confirm appropriate voltage and line polarity **BEFORE** connecting the instrument to power sources.

Thermal Protection

Certain conditions of operation (restricted airflow cooling, sustained high power operation into low impedance loads) can result in a rise in output device case temperature, which can be sufficient to affect the amplifiers performance.

Should either channel reach 95 degrees C, that output channel will automatically be muted and will remain muted until the temperature drops below 95 degrees C. The action of muting has the effect of eliminating output current. This, in turn, results in an immediate and rapid drop in temperature. The output channel will automatically become un-muted when the temperature drops below 95 degrees C.

Fan Assist Cooling

The **Professional Series 1590B** is equipped with three fans controlled by a dual-two speed fan circuit. The amplifier heatsink temperature and the airflow from rear to front of the amplifier determine the fan speed. At maximum speed, the dual fan system has a 125 CFM output to assure proper cooling under severe conditions.

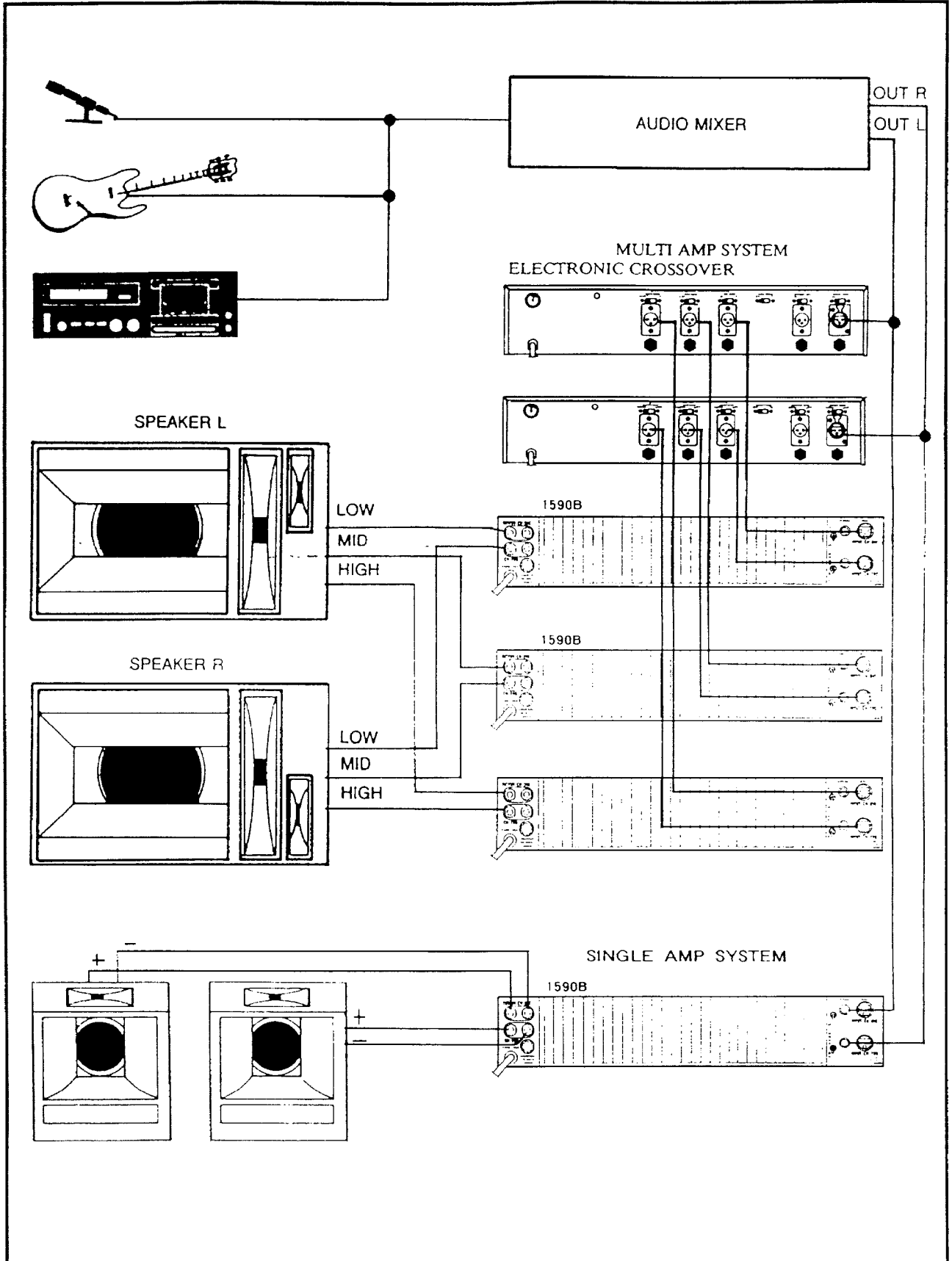
Soft Clip Speaker Protection

The **1590B** incorporates Soft Clip Speaker circuitry. This circuitry prevents the amplifier from being driven into a hard clip state, which prevents speaker damage caused by the amplifier being over driven or into DC condition.

Selectable Input Sensitivity

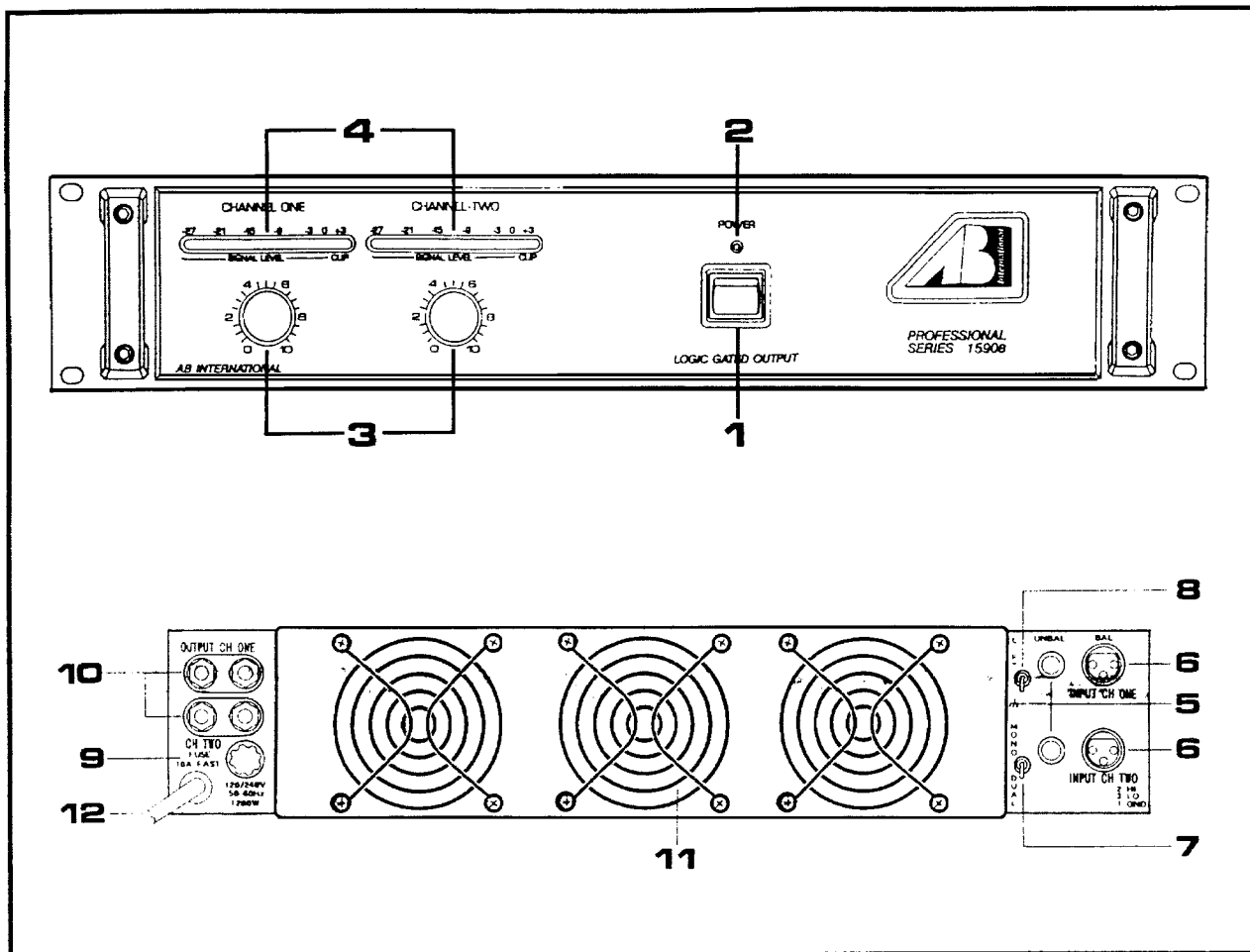
The **1590B** is equipped with selectable input sensitivity. The factory setting is 1 volt for rated output, .775 volt and 1.5 volt are also available. If you would like to change the input sensitivity set by the factory you may contact your AB International dealer, or the factory for instructions.

Rear Panel Connections



Professional Series Amplifiers

Front and Rear Panel Controls



1. Power Switch

To turn the Amplifier ON or OFF, press the upper or lower portion of this switch rocker.

2. Power Indicator LED

This LED when illuminated indicates that the amplifier is on.

3. Level Controls

Each channel has a separate low-noise, 41-click detent rotary level control. Rotate controls clockwise to increase level.

4. Signal Status Display

An “11 LED STRIP” output display is normally off when no signal is present and illuminates progressively as the input signal increases. The Green and Yellow LED’S represent the amount of signal (in dB) present at the output of the amplifier. The RED LED will illuminate when the output level exceeds the rated output and the amplifier has gone into “SOFT CLIP” If this situation occurs you should re-adjust the output level to prevent any possible speaker damage.

5. ¼” Jack Input Connections

Unbalanced inputs can be accepted via the ¼” jack. These inputs take priority over the XLR input jacks.

6. Balanced XLR Female Input Connections

XLR input connectors are provided for the balanced input circuit. Please note that Pin 1 = Ground, Pin 2 = High, Pin 3 = Low.

7. Input Signal Select Switch

1. **DUAL:** This is the amplifiers standard mode of operation, where as channel inputs and outputs correspond directly.
2. **MONO:** This mode is used to obtain the highest power output levels possible from the amplifier. Both channels combine to form a single high power mono output. **See Bridge Mono Operation** (p. 9).

8. Ground / Lift Switch

The GROUND/LIFT is provided to eliminate ground loops, between this amplifier and a preamplifier, which can occur in certain installations.

9. AC Fuse Holder

The Fuse Holder contains the Primary AC FUSE. The fuse should only be replaced with one of the same type. If the fuse continues to blow out, stop replacing the fuse and refer to a qualified person for servicing. Never replace the fuse with a larger amperage fuse or in any way try to bypass the fuse in order to operate the amplifier.

10. Output Connections

Output connections are via five-way binding posts, identified as to polarity with red and black terminals. We suggest the use of dual banana plugs as a convenient and reliable method of hook-up. They allow rapid removal for polarity reversals. This feature is often necessary in the check out and adjustment of multi-element bi-amplified and tri-amplified sound systems. Unscrewing the large plastic portion of the output terminal and inserting the wire into the hole provided may be used by heavy Class II wire. **NOTE:** It is extremely important when making wire connections that no wire strand or end touches an adjacent terminal!

11. Air Intake

Three Variable DC fans which operate at 125 cfm at maximum speed are provided. Fan guards are provided to protect from any large debris stopping the fans or getting inside the amplifier.

12. AC Power Cord

The **1590B** is pre-wired at the factory for the voltage indicated on the rear panel or on the power cord of the amplifier. Plug the power cord into an AC outlet that will deliver the proper voltage and current for the amplifier operation.

Caution:

The **1580B** amplifier is a product of the most advanced technology and manufacturing techniques and is fully protected against overheating, input overload and shorted or mismatched loads. As is the case with any precision instrument, some care should be taken in the unit's operation. The following precautions should be noted and adhered to. Damage resulting from their omission is not covered under the terms of the warranty.

DO NOT PARALLEL THE OUTPUTS OF ANY CHANNELS BY CONNECTING THEM TOGETHER OR PARALLELING THEM WITH ANY OTHER AMPLIFIER OUTPUT. UNDER NO CIRCUMSTANCES SHOULD THE AMPLIFIER BE OPERATED WITH THE COVER REMOVED. THERE ARE NO USER SERVICEABLE COMPONENTS INSIDE. AVOID POTENTIALLY DANGEROUS SHOCK HAZARDS, KEEP THE COVER CLOSED AT ALL TIMES!

Bridged Mono Operation

1. Set the INPUT SELECTOR SWITCH to BRIDGED.
2. Connect the input signal to Channel One input jack.
3. Connect the speaker load to the two red terminals of each channel. Confirm the (+) terminal of the speaker load to the channel one (red) terminal and the (-) of the speaker load to channel two (red) terminal.
4. **DO NOT** use the black terminal of either channel.
5. Assure the speaker impedance is 4 ohms or above.
6. Adjust the output level by adjusting channel one and channel two level controls equally.

AB Model 1580B Specifications

Type:	Two channel audio amplifier
Power Output:	500 watts per channel @ 8 ohms 800 watts per channel @ 4 ohms
Continuous Average Power (120 VAC):	1050 watts per channel @ 2 ohms 1300 watts bridged mono @ 8 ohms 1650 watts bridged mono @ 4 ohms
Gain:	33dB
Control and Indicators:	AC mains power switch, power on LED indicator, channel one and two level controls, an LED VU output display for each channel, input signal selectable, balanced inputs, ground lift switch.
Turn-On Delay:	3 second, solid state activated
Special Feature:	“Soft Clip” speaker protection
Cooling:	Three, dual-speed temperature controlled fans with rear to front cooling
Crosstalk:	-86 dB
Damping Factor:	1000:1 at 1kHz
Slew Rate:	Closed-loop, greater than 40V per micro second
Frequency Response:	Plus/Minus 0.25dB 20Hz-20kHz
Distortion:	No more than 0.1% THD or IM, 0.01W to rated output, 20 Hz to 20kHz (typically 0.02%)
Hum and Noise:	-101 dB below rated output (unweighted, 20kHz bandwidth)
Input Sensitivity:	Selectable: .775V, 1.0V, 1.5V, shipped at 1.0V for rated output
Input Impedance:	15k ohms nominal
Input Connectors:	(2) ¼” phone jacks (unbalanced) ; (2) XLR female receptacles (balanced)
Output Connectors:	Dual 5-way binding posts
Mains Input:	1800W Max. 15A @ 120VAC & 7.5A @ 240VAC 50/60Hz
Dimensions:	3 ½”H (8.89cm), 19”W (48.3cm), 15” (38.1cm) behind Panel, 16 ½” (41.6cm) overall
Unit Weight:	39 lbs (17.70 kg)
Shipping Weight:	42 lbs (18.85 kg)

AB International

LIMITED WARRANTY

All AB International electronic components receive careful inspection and thorough testing prior to shipment from the factory and are warranted to the original purchaser, to be free from defects in material and workmanship and to meet or exceed all performance specifications applicable at time of manufacture. AB International will provide, without charge, necessary parts and labor to correct operation for a period of 36 months from date of original purchase provided that the defective system is returned, freight prepaid to such location as may be specified by AB International. The warranty coverage of any AB International product is contingent upon its purchase from an authorized AB International dealer. The AB International warranty is nontransferable.

Warranty coverage will not be extended to any AB International product on which the serial number has been removed or defaced or on which repair has been attempted by any person or agency not authorized by Amplified Design International or if in the sole opinion of AB International the system shows evidence of tampering, abnormal or unreasonable abuse, accident or operation without regard for the restrictions specified in the instructions which accompany the system. AB International further reserves the right to readjust prices or other design parameters and specifications without incurring the responsibility for modifying previously purchased systems.

AB International specifically excludes from this warranty any responsibility for consequential damages.

To obtain warranty service, you must take the product, or deliver the product prepaid, to an authorized AB International. Customers outside the U.S.A. please contact your authorized dealer or distributor.

This warranty does not cover any damage due to accident, misuse, abuse or negligence. This warranty is valid only in the United States and Puerto Rico.

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER. AB INTERNATIONAL SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

For the names of your nearest AB International service facility, contact: AB International (916) 652-9214, Fax (916) 652-9218.

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