Since 1984

Boulder

3050 Mono Power Amplifier

Instruction Manual

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Thank You

Congratulations and thank you for selecting the Boulder 3050 Mono Power Amplifiers for your high-performance music system. We are certain they will provide you with years of listening pleasure.

The 3050s represent the concerted efforts of numerous Boulder craftsmen, designers, engineers, and technicians working to bring you the very finest audio playback components in the world. These Amplifiers are the pinnacle of Boulder's product line which only a select few owners will be privileged to experience.

Please take a few minutes to read through this owner's manual prior to using your 3050s. This will help you to understand the basic functions and outstanding capabilities of the amplifiers. It will also allow you to maximize the exceptional performance for which they were designed.

Your Boulder 3050 Mono Power Amplifiers have undergone an extensive laboratory tests for safety, functionality and technical performance. In addition, your amplifiers have been individually subjected to rigorous listening trials in our listening room, utilizing a wide range of musical material. No amplifier ever leaves our factory until we are totally satisfied it is capable of achieving its full potential as designed.

Boulder Amplifiers, Inc.

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Getting Started

Placement of the 3050 Mono Power Amplifier

Your Boulder 3050 Power Amplifier is designed to reduce interference from external magnetic and radio fields (RF). While placement is not critical, known magnetic fields should be avoided.

An isolated base has been included with the Boulder 3050. The base is intended to serve as a platform on which to place the power amplifier. Choose a solid stable surface for the granite base and amplifier. The granite base should be selectively located prior to placing the amplifier on it. Moving these components will require at least four people, as they are very heavy. Professional movers are recommended.

The 3050 Mono Power Amplifier will generate some heat. Therefore, it should be located in an area with ample air circulation. Specifically, be certain that the heat sinks are unobstructed by objects that could potentially block air-flow.

You may want to have access to the rear panel for cable changes. It is recommended that speaker cables be as short as possible, while input cables can be as long as necessary.

Connecting to the Mains Outlet

Your 3050 Mono Power Amplifier is supplied with a mains power cable suitable to the location where it was purchased. It is constructed of large enough wire gauge and a plug appropriate for 240v AC line voltage. Do not substitute another power cable.

Exact voltage and frequency compatibility is stated in the specifications section.

Once the 3050 Power Amplifier is connected to a live mains outlet, an outline of the power button on the front panel will become illuminated and blink for a short time. The outline will then glow white steadily, indicating that the supervising microprocessor is powered up and the amp is ready to be turned on.

Getting Started

Getting Started

Connecting to a Balanced Source

To fully realize the sonic potential of your 3050 Mono Power Amplifier, use balanced connections. Balanced cables minimize interference from magnetic and RF sources.

Connect your preamplifier output to the input provided on the rear panel of the 3050.

Connecting to an Unbalanced Source

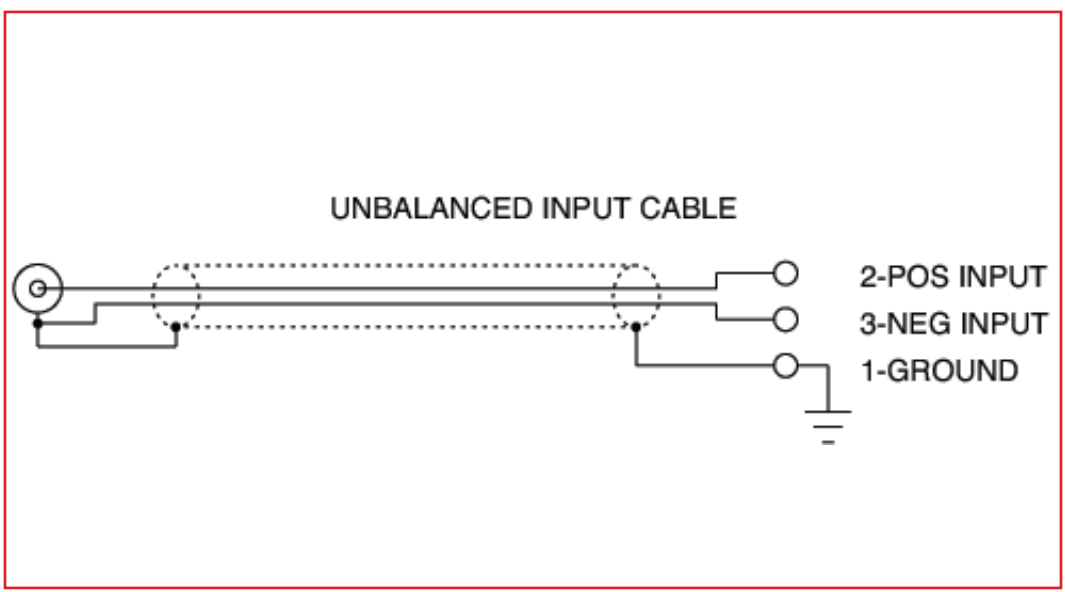
Although the inputs are of the 3-pin type, an unbalanced source is easily accommodated by using a special cable. This cable has an RCA type connector on the source end, and a 3-pin connector for going to the input of the 3050 Power Amplifier.

The negative input (pin 3) should be wired to ground only at the RCA connector. This brings the negative input reference of the 3050 to the unbalanced source ground, thus reducing loops.

Another option for accommodating unbalanced sources is that of the Boulder ABL2 Input Adapter. It converts a balanced input into an RCA input right at the rear panel of the 3050.

Like the above cable, the negative input of the 3050 is connected to the ground of the RCA connector. However, this negative side will then share the shield wire with the chassis ground and will not have very good hum rejection.

Getting Started



Getting Started

Polarity

Please note that the 3050 Mono Power Amplifier conforms to the standard of pin 2 as the “high” or “hot” pin for the balanced input.

The Polarity of the 3050 Mono Power Amplifier is such that a positive-going transition at pin 2 will produce a positive-going transition at the “+” output terminal.

Connecting Your Loudspeakers

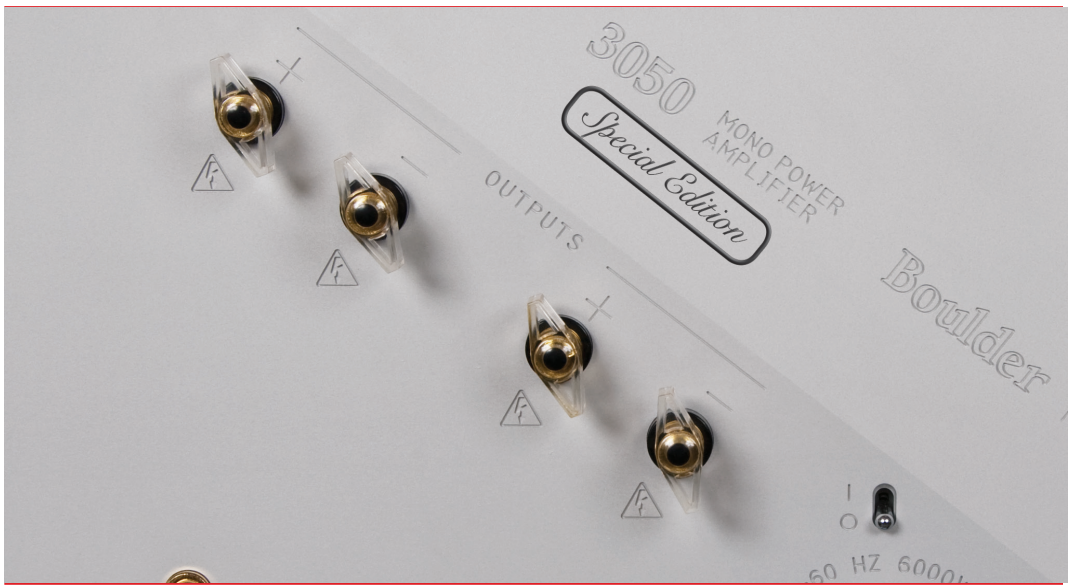
Do not use any wrenches on the loudspeaker binding posts. Tighten these connectors only by hand.

WARNING: This is a high-power amplifier. When driven, there is high voltage potential at the terminals. Connections should be made with the mains disconnected.

Select spade terminals which accept 6 mm or .250 inch diameter binding posts. Two sets of output connections are provided to enable easy passive biamping.

There is no provision for the use of banana plugs. These plugs have been proven to come loose over time which increases the contact resistance and distortion. For the same reasons we also do NOT recommend the use of banana plugs at the speaker end.

Getting Started



Powering Up

With all your connections made, you are ready to listen to your Boulder 3050 Mono Power Amplifier.

To turn the amplifier on, press the POWER button on the front panel. The amplifier will perform a warm up cycle and the power-button indicator will blink white and red. This power up sequence is mandatory and cannot be avoided.

Because of the large inrush currents associated with the powerful quadruple Toroidal transformers, eight power relays are used to turn on the amplifier. These are under control of the supervising microprocessor. During the power up sequence, you will hear four sets of two relay clicks, separated by intervals of two seconds.

The indicator will then steadily glow white and remain this way to indicate normal operation.

To turn the amplifier off, press the POWER button again. The indicator will then slowly and continuously change from white, to dark, and back to white. This indicates that the amplifier is in “Stand-By” mode.

Operation

Operation

Input DC Offset Voltage Detection

The Boulder 3050 Mono Power Amplifier is a direct-coupled power amplifier with a servo for zeroing out any DC voltage offset coming from the preamplifier or other sources connected to the amplifier's input.

If this input DC is sufficient to cause three volts or more at the output, a loudspeaker protection circuit will mute the amplifier output by electronically disconnecting itself from the loudspeaker. The power indicator will turn red. This condition will continue until the DC is removed.

If the indicator remains red, it is recommended that the user correct the DC offset of the source device before continuing.

Clip Detection

Clipping of the waveform results when any amplifier is driven at too high a level. A clip detection circuit is included in the 3050 Mono Power Amplifier.

The indicator will indicate clipping by momentarily turning from white to red. Both voltage and current modes of clipping will be detected, although generally it is only voltage clipping which occurs.

Thermal Protection

A thermal protection circuit prevents high case temperatures which are unpleasant to touch and potentially harmful to the amplifier. The thermal cutout circuit will mute the amplifier when the transistor cases reach 85°C, and the indicator will turn red.

If this happens, more ventilation should be provided for the amplifier.

Maintenance

No routine maintenance is required for the Boulder 3050 Power Amplifier. However, to keep the operating temperatures at a minimum, do not block the heat sink fins, and remove any dust buildup that may occur.

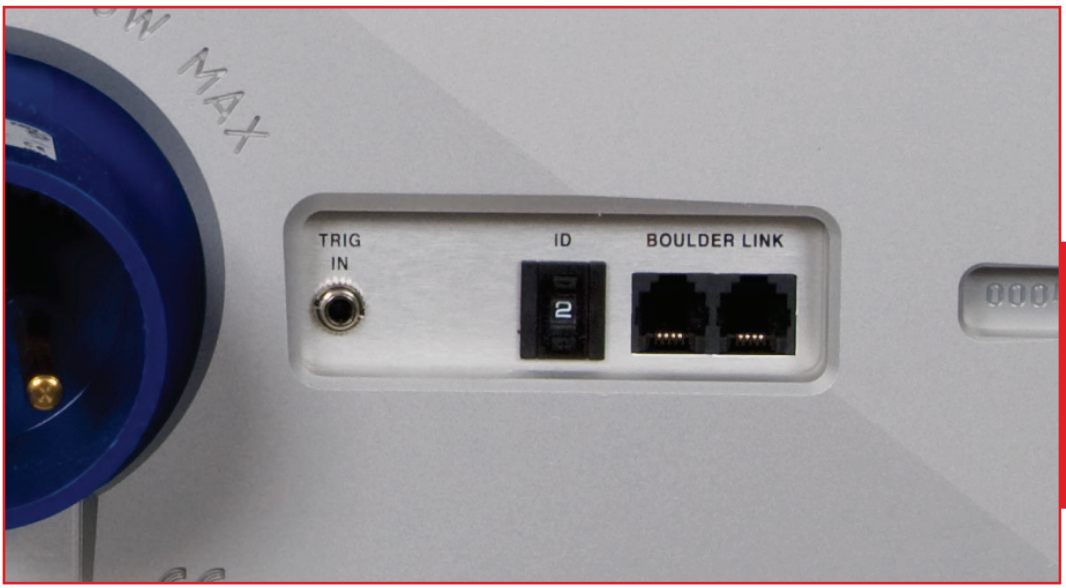
Operation

Remote Control Operation

Operation of the Boulder 3050 Mono Power Amplifier by remote control is possible by use of a Boulder Link cable to a Boulder preamplifier.

When Boulder Link is connected correctly, the 3050 will turn on and off with the preamplifier. Moreover, the Boulder 3050 is capable of issuing on/off commands to all other Boulder equipment attached by Boulder Link, including it's paired amplifier.

Remote Control



Boulder Link

Boulder Link is a means of interconnecting most of Boulder products so that their microprocessors can talk to each other, pass important information, and issue commands. Among the key features, Boulder Link allows sequential initiation of power amplifiers' and other products. Boulder power amplifiers can send messages to Boulder preamplifiers which are then shown on its display.

Connecting The Boulder Link

Turn off all Boulder products which are to be linked before connecting Boulder Link cables and setting the Boulder Link ID and Master/Slave switches.

Boulder Link cables in various lengths are available as an accessory from you Boulder dealer. Two connectors are provided on the rear panel of the 3050 and other Boulder products.

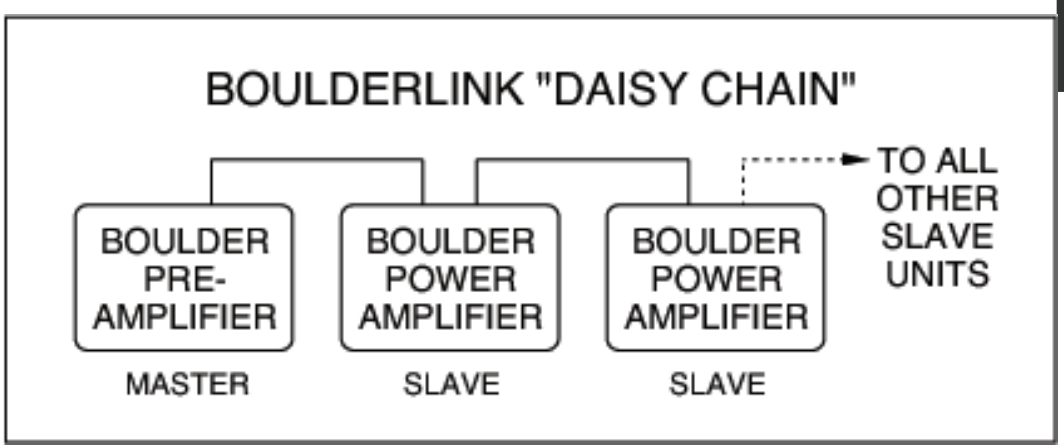
All the chassis are connected together in a daisy chain manner. Start by connecting one chassis to another—then from that chassis to the next until all are connected. The order does not matter.

A special interface may be obtained to enable Boulder Link to be used with other control systems. Contact your Boulder dealer for more details.

Setting Boulder Link Switches

Every Boulder Link system must have one, and only one "MASTER" component. Usually this is the preamplifier. In the case of the 3050 Power Amplifier, one channel should be set to "MASTER" as long no preamplifier is connected by Boulder Link. Other Boulder Link products which do not have a MASTER/SLAVE switch are not eligible to be "MASTER".

Boulder Link



Setting Boulder Link ID Numbers

Every component is required to have a unique Boulder Link ID number.

Each Boulder 3050 Mono Power Amplifier has an amplifier ID switch on the rear panel. Starting by setting the first switch to “0” or “1” by pressing on the either button above or below the ID window. Once the first amplifier is set at either “0” or “1”, assign other amplifiers numbers, moving up in sequence without duplication. Use of the lowest numbers will hasten the turn on processor, as each amplifier is allowed three seconds to initialize before the next. This spreads out the power line inrush currents preventing the house circuit breakers from unnecessarily tripping. Up to 16 power amplifiers may be connected together in one Boulder Link daisy chain.

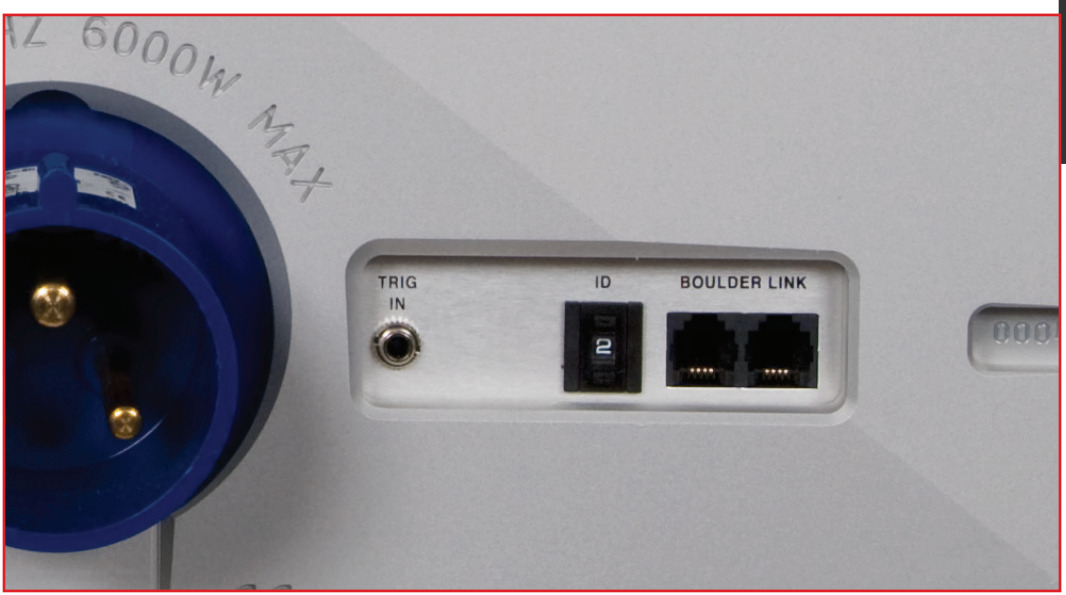
Power Up By Boulder Link

With each component connected together with a Boulder Link cable, and individually connected to a mains outlet, pressing the power amplifier or preamplifier’s “STANDBY” push button will initiate the turn on sequence of all components.

The first time a master is powered up, it will search for any “SLAVE” units connected to it. As the MASTER finds each SLAVE, the SLAVE’s ID number will be shown on the display.

If any of the connected SLAVEs are amplifiers, then each time the MASTER is turned on it will display “WAITING FOR AMPS.” Each amplifier will be turned on in the order of their Boulder Link ID. To minimize turn on time, the amplifier’s ID should be set to the lowest possible number in the sequence. For example, use “0”, “1”, and “2”, instead of “13”, “14”, and “15”. An Amplifier set to ID “15” will take 47 seconds to turn on.

Boulder Link



Boulder Link Messages

Each component in the system can send a message to the preamplifier which is then shown on its display. This is particularly helpful in confirming the operation status of each power amplifier in a multiple amplifier system. Typical messages on a 2010 Preamplifier are as follows.

“AMP 1 Error” means that an internal power supply has failed and the amplifier has turned itself off to protect the speakers from damage.

“AMP 1 DC” means that it has muted due to a DC offset voltage being detected at its inputs.

“AMP 1 HOT” means that the amplifier has muted due to a higher than normal temperature condition on the heat sinks.

“AMP CLIP” means that the amplifier’s output has momentarily reached its voltage limitation.

“1 OFFLINE” means that the slave is no longer responding via Boulder Link. Its Boulder Link cable may have become disconnected, or the mains power has been disconnected.

“1 ONLINE” means that the slave is now responding via Boulder Link in a normal manner and has been recognized by the master.

Boulder Link

Fault Conditions

Fatal Errors

If the indicator of the 3050 Mono Power Amplifier blinks white rapidly for a short time and a series of red flashes follows, a fatal error has occurred. The indicator will flash red in a specific sequence, defining its error code to an authorized Boulder technician. If you are experiencing this problem with your 3050, contact your Boulder dealer immediately.

Fault Conditions

Appendix

Specifications

Continuous Power, Each Channel			
Watts	**Ω**	**THD 20-2kHz**	**THD 20kHz**
1500	8	0.0005%	0.0035%
1500	4	0.0008%	0.0045%
1500	2	0.0014%	0.0110%

Peak Power, Each Channel	
Watts	**Ω**
2100	8
3000	4
6000	2

Equivalent Input Noise (EIN), 20kHz BW	1.5 μV
Magnitude Response, 20 to 20KHz	+0.00, -0.04 dB
Magnitude Response, -3dB at	0.015Hz, 200kHz
Voltage Gain	26dB
Input Impedance	Balanced: 200KΩ, Unbalanced 100KΩ
Common Mode Rejection (Balanced only)	60 Hz: 90dB, 10kHz: 70dB
Inputs	3-pin Balanced
Output Connectors	2 sets of 6 mm / .250 inch wingscrews
Power Requirements	220-240 VAC 50-60 Hz, 300W nominal, 6000 W at maximum output

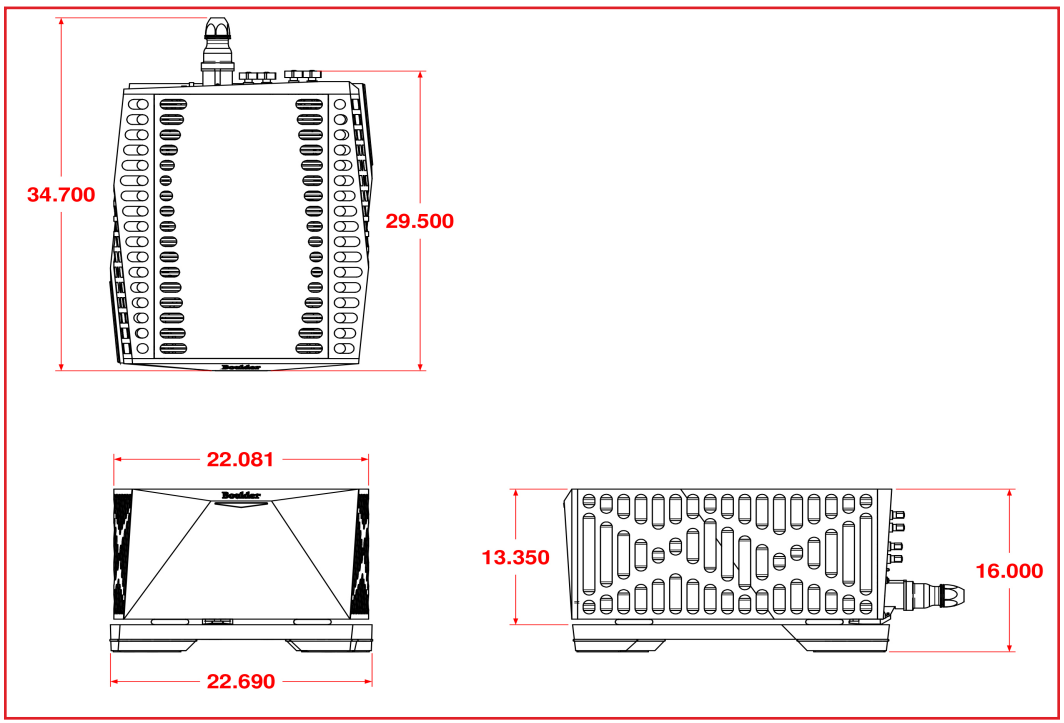
Appendix

All specifications taken at 240 VAC mains Power

Weight

Amplifier: 355 lbs. (161 kg),
Base: 86 lbs. (39 kg),
Shipping: 563 lbs. (256 kg).

Amplifier Dimensions, Inches:



Troubleshooting

SYMPTOM	CAUSE	REMEDY
No Power Indication	Rear panel power switch is not on	Turn on power switch
	Power amplifier is not plugged in	Connect to an AC Mains outlet
	Home circuit breaker is tripped	Have line voltage checked
Red power indication	Low line voltage	Reset breakers on rear panel
	Defective power cable	Have cable tested
	Defective power supply	Return to dealer for service
White power indication, but no sound from one channel	No signal from one channel of source	Check source controls, cables, and connections
	One Channel is muted by balance control	Re-center balance on preamp
	No signal out to power amplifier	Check connections from preamplifier.

Appendix

Notes:

Appendix

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