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Operating Instructions for QSC Power Amplifiers A3.7, A4.2, A5.1

INTRODUCTION. Thank you for investing in a QSC power amplifier. To help you get the most out of your amplifier, we ask that you review the following instructions.

RATINGS	A3.7	A4.2	A5.1
Output Power, 8-ohms	90W	40W x 2	80W x 2
Output Power, 4-ohms	150W	60W x 2	120W x 2
Distortion at Rated Power, 20-20KHz	0.1%-----		
Damping Factor, 20-20KHz	200-----		
Input Impedance (Balanced)	50K (25K per side)-----		
Input Impedance (Unbalanced)	25K-----		
Input Sensitivity	0.77V (0VU)-----		
Maximum Input Level	7.7V (20dB Headroom)-----		
Frequency Response	20-20K (-1dB); 8-50K (-3dB)		
Short Circuit Protection	Current Limit with Delayed Cutback		
Speaker Protection	DC Protected by AC-Coupled Output		
Cross-Talk, 20-20K	-70dB or Greater-----		
Signal/Noise Ratio (A Weighted)	-95dB or Greater-----		
Overtemp Protection	85°C (185°F) thermal cutout---		

AC POWER. Connect power cord to standard AC power only, as rated on the rear label of the amplifier. The power switch is located on the front panel next to the rectangular yellow pilot light. Move the rocker up to turn the amplifier on.

SPEAKER JACKS. Dual 1/4" phone jacks are provided on each channel for connecting one or two sets of speakers. The minimum rated load per channel is 4-ohms, which would normally consist of one 4-ohm speaker system or two 8-ohm speaker systems. To avoid loss of power, use heavy-duty two-conductor cable, in 16 or even 14 gauge. Shielded cable is not required.

INPUT JACKS. Dual 1/4" stereo phone jack inputs are provided for each channel. Two-conductor shielded cable wired to 1/4" stereo plugs should be used for balanced-line inputs. The amp will also accept single-conductor shielded cable, wired to 1/4" mono plugs, for unbalanced-line inputs.

CONNECTING ADDITIONAL CHANNELS. To operate more than one channel, or amplifier, from the same signal, you can cross-patch or "daisy-chain" as follows. Plug the signal into the first channel; come out of that channel's other input jack, and patch to the second channel. Repeat this hookup for as many channels as desired. If you are using balanced-line hookups, stay with balanced-line cables throughout.

GAIN CONTROLS. Each channel has its own Gain (volume) control located on the front panel. You will note that the Gain controls are calibrated in dB. The "0dB" position corresponds to the 26dB gain standard established by the original pro-audio amplifier companies. By setting any QSC amp to this value, you will get the same output volume for equivalent input signals. However, since more powerful amplifiers have the capability of reaching higher output volumes without distortion, we have put more gain "overrange" on our more powerful units. For example, the A4.2 amplifier, with 40 watts per channel, has the "0dB" reference at full Gain. The A5.1 has 80 watts per channel, which is 3dB higher, so its Gain control goes beyond zero, to +3dB. If you set the A5.1 at the "0dB" mark, it will sound just as loud as the A4.2, but it will have 3dB more undistorted volume (3dB more headroom) on peaks. On the other hand, if you set both amps full up, the A5.1 will always sound 3dB louder. Both amps will overload at the same input level, with the A5.1 having twice the power.

The normal position for full performance would be full Gain; however, minor adjustments can be made to balance speakers, etc. Always keep the Gain within 20dB of the maximum value to avoid premature input distortion.

COOLING. This series of amps uses the heavy aluminum faceplate as the heat sink for the power transistors. It will get hot in heavy-duty service, so allow plenty of cool air ventilation. There is an internal high-temperature cutout in case the heat reaches dangerous levels; if this happens, check for poor ventilation, blocked vents, or abnormal speaker loads or shorts. The amp should automatically come back on in several minutes.

RACK MOUNTING. All QSC products mount directly in standard 19" rack spaces. When mounting these power amps, you must be careful to allow adequate ventilation. Leave spaces between the amps, or mount a small fan in the rear of the rack, which should blow into the vents on one end of the amplifier chassis. This will prevent hot air build-up.

MONO OPERATION. In many cases, a stereo amp is used to reproduce the same signal in both channels. The easiest way to obtain mono operation is to use the dual input jacks to cross-patch both channels, as described above (Connecting Additional Channels). You must connect half the speakers to each channel, observing the usual 4-ohm minimum impedance per channel. Set the two Gain controls at equal levels, unless you need to compensate for imbalances, etc. **IMPORTANT: never** connect the speaker outputs of both channels to the same speaker; they will "fight" each other and probably blow the amp.

MAINTAINENCE. Your amplifier can be kept clean and new looking by occasionally wiping it off with a damp cloth and mild solution such as window cleaner. Avoid harsh solvents or abrasives which might damage the finish. Especially with fan cooling, internal dust build-up should be removed every few months. Have a serviceman remove the dust with a soft brush and air blast or vacuum cleaner. Occasionally inspect for loose parts, especially after accidents, and have any problems repaired before possible further damage.

Other than these basic points, there are no routine "tune-up" adjustments. There should be no doubt if the amp needs servicing; gradual "power loss" is very rare. Note that speakers and electronics lose some efficiency when hot; this combined with "ear fatigue" probably explains most complaints of losing power.

TROUBLESHOOTING. If your system fails to work, follow this guide to help locate the source of the problem.

1. No sound, no power, no pilot light: Check AC plug, AC Reset on back, AC Switch. If AC Reset shuts off immediately, or one channel of a stereo amp proves to be dead, you will need service.
2. Pilot Light comes on, but no sound: Check Gain control, input jacks and speaker jacks. Plug the speakers into a different amp. Try another speaker cable, which you know works. If one channel seems dead, reverse the speakers. If the same speaker is dead, it's in the speaker or cable. If the other speaker goes dead instead, the problem is in that amplifier channel or its input signal.
3. Faint or distorted sound: If amp is overheating, you probably have a shorted speaker cable. Look for damaged jacks or frayed, cut wires. You might also have a bad speaker--try a different speaker.
4. Hum, Crackles, or Radio/Machinery interference: These are difficult problems since the trouble could be almost anywhere in the system. Start by turning the power amp down. If the problem is still audible, it must be in the amp or possibly the speakers. If the noise goes away, we know the problem is earlier in the system. Work your way backwards through the system, temporarily reducing level on each preceding unit until you find the unit which does not affect the noise. At that point, you know that the problem is immediately after that unit. Check the connecting cables. You might even bypass that unit, if possible, and see if the noise persists. If removing the unit corrects the problem, it may be in the unit. However, many forms of hum or radio/machinery interference can be picked up in the connecting cables. Here is where the use of balanced-line cables can be a real help. Be careful when locating tape players or echo machines, since magnetic heads are subject to hum pickup from other electronic units, especially high-power amplifiers. Try relocating the various units to eliminate hum. A steady crackle is usually a sign of a bad part, and will need service. Crackles when a unit is bumped indicate some kind of loose connection, either internal or in one of the jacks.
5. Shut-downs. Amps may shut down for three reasons: Thermal cut-off will occur if overheated. Increase the ventilation, and check the load, and the amp should come on in several minutes. The AC reset may trip on sustained overloads, if using 4-ohm speakers. Press to reset; if it cuts right off again, you need service. If you want to use the amp for heavy overdrive (lead guitar), use 8-ohms per channel to reduce the load. If one channel shuts down, there has been an internal fault, which will need to be serviced.