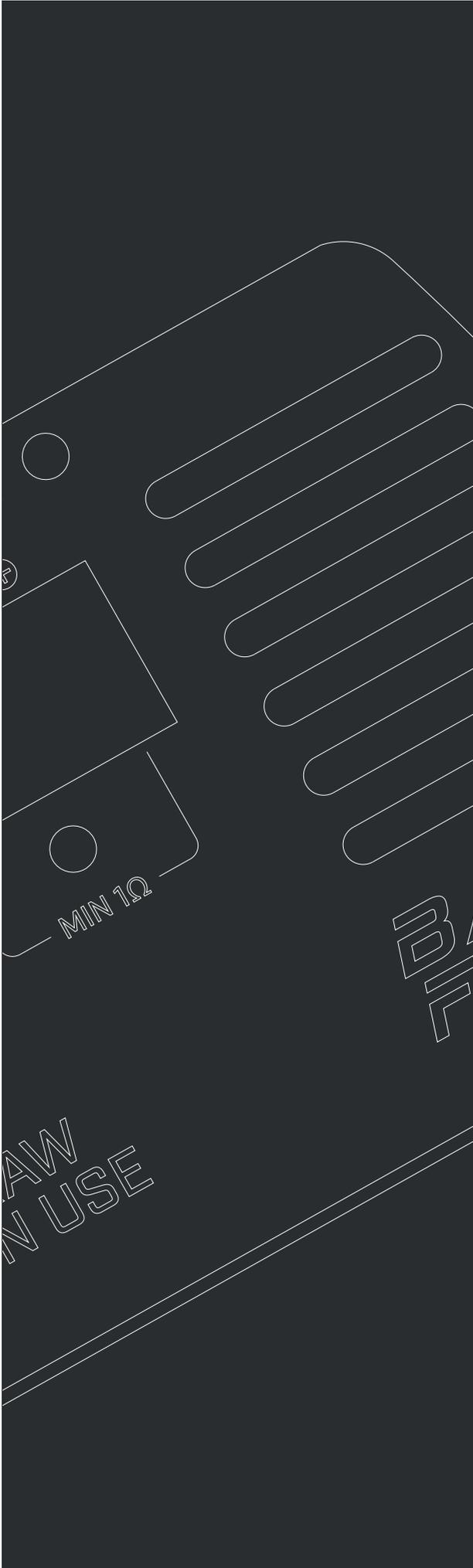




## Car Audio Amplifier Product Manual





## Content

|   |        |
|---|--------|
| Introduction & Thanks .....                         | page 3 |
| Cautions & Warnings .....                           | page 3 |
| Warranty & Development .....                        | page 3 |
| Preparation & Amplifier Physical Installation ..... | page 3 |
| Amplifier Electrical Installation .....             | page 4 |
| Crossover Understanding & Setup Help .....          | page 5 |
| Gain Structure & Commissioning .....                | page 5 |
| Servicing & Care .....                              | page 5 |
| Conclusion .....                                    | page 6 |

## Product certification standards



## Introduction & Thanks

Thank you for purchasing your new Bassface amplifier. Every element of these products has been designed to give you the best possible performance for your money. Please take the time to read these instructions carefully as they contain useful and important information. Spending time getting the installation and setup right will be rewarded by many years of listening enjoyment. This manual is a detailed resource and contains a lot of important information. It is designed to be read in conjunction with the Specification Data Sheet and Controls & Connections sheet included with your amplifier.

Do not discard the original packaging for this amplifier. It is needed for warranty service to ensure safe transit, and to preserve resale value.

## Cautions & Warnings



Modern high power audio systems can generate AC voltages at the speaker similar to mains operated equipment. Your wiring needs to be good to be safe. Please remember this and take your time. Always use appropriate hand and eye protection when working with tools, and always work within your capabilities as an installer. Please make sure that your installation and any partnered product is suitable and compatible. If you are unsure please seek qualified advice before proceeding.

Take care touching the amplifier when in use as it may be hot. Always allow amplifier to run at low level for at least 15 minutes before high volume use. This allows components to come to operating temperature.

Please exercise caution when setting volume levels – powerful audio equipment can easily produce enough sound to permanently damage hearing. Remember that audio competitors use ear protection when operating and competing.

## Warranty & Development

We offer a limited 12 month manufacturer warranty via your distributor or retailer. Please retain your purchase receipt as proof of purchase. Please note that Bassface operates a policy of continuous product development reserves the right to change specification without prior notice. You can follow our process on our website by reviewing the version history information. The latest version of this manual, and the product Data Sheet and Controls & Connections sheet can be downloaded from the product page for the model number of your amplifier.

Please undertake installation of the amplifier only if you have the skills, knowledge and tools required to do so. Failure to observe any of the installation points may invalidate your warranty. Product abuse or damage from running at over capacity is also not covered under warranty.

## Preparation & Amplifier Physical Installation

The first step is to lubricate the terminals. The reason for this is that sometimes the plating applied to the screws can rub off slightly in the threads, causing binding and damage to threads or screw heads. Use a drop of medium thickness general purpose oil per screw. Do not use spray lubricant for this job because it evaporates and also may damage the cosmetic surface of the product. Please make sure that you use the correct allen key or screwdriver when operating the amp terminals because the screws are made from relatively soft material and marr easily.

Before installation, disconnect the batteries, taking note of any required precautions suggested by the vehicle manufacturer such as alarm or radio codes, on board computer, AGM battery coding requirements and vehicle power-up procedures.

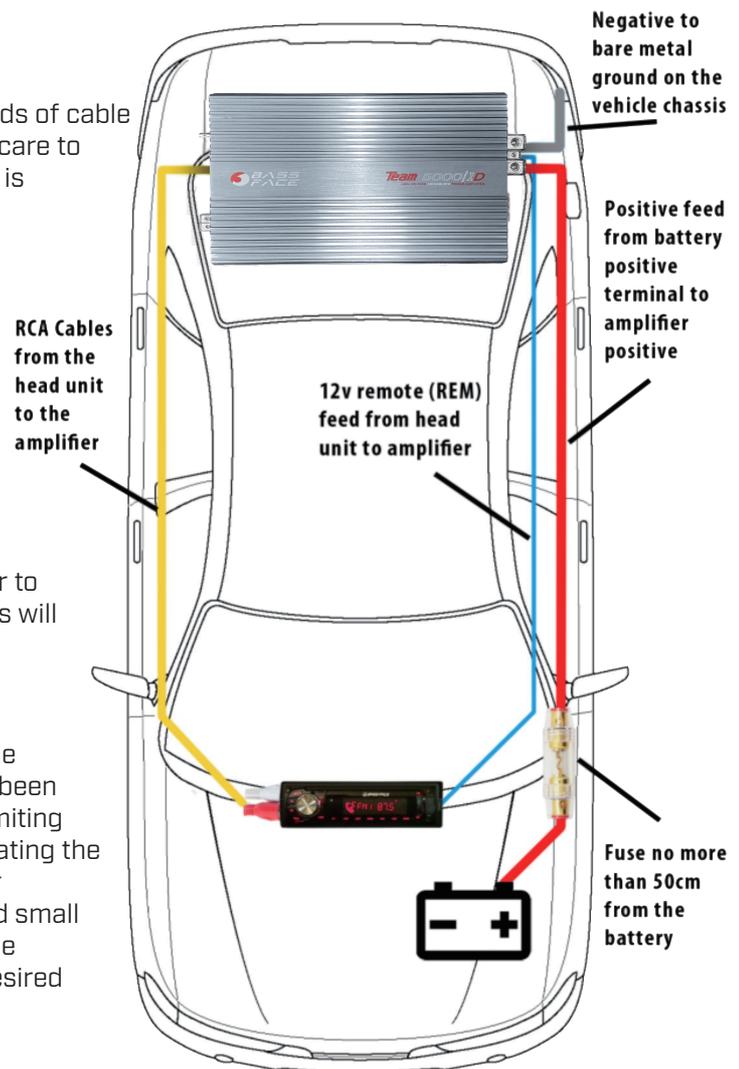
Check vehicle power supply is adequate by following the "Minimum Power Supply" figure in the Data Sheet. Do not let the small physical size of our modern amplifier designs deceive you. These units can draw an enormous amount of current in order to produce an enormous amount of power. Failure to install the required electrical upgrades where needed will lead to extensive damage and/or an electrical fire.

Use the chart shown below to size your power cables. Other brands of cable will have different and often inferior characteristics. Please take care to observe this point if you are not using Bassface cable. This chart is designed to provide high, safe performance.

Use high quality, non-combustible, correctly rated cables only with appropriate crimped or bolted terminals. Failure to observe this point can result in damage to product or vehicle or even an electrical fire.

Ensure good circulation of air around the amplifier. Securely mount the amplifier to a prepared flat horizontal surface designed for temperatures up to 90°C. Do not mount the amplifier to the bass cabinet because the vibration passed from the speakers will damage the circuit board.

Vertical mounting or "hot boxing" can cause severe damage to the amplifier. Also take care mounting an amp onto a board that has been covered in carpet. This can restrict airflow under the amplifier, limiting the amount of convection cooling that can be achieved and insulating the amplifier underneath which can build up heat inside the amp. For installations that are space compromised the installer should add small PC style fans to circulate air. In this case do be sure to monitor the temperature of the amplifier to ensure the fans are having the desired effect.



**Table Assumes A Short Ground Cable No More Than 12 Inches Long Of Exact Same Specification Cable**

| Wire Length                        | 0-5ft(0-1.5m)                                | 5-10ft(1.5-3m) | 10-15ft(3-4.5m) | 15-20ft(4.5-6m) | 20-25ft(6-7.5m) |
|------------------------------------|--|----------------|-----------------|-----------------|-----------------|
| <b>Gauge AWG(mm<sup>2</sup>)</b>   | <b>Power Handling(Amps)-Bassface CCA/OFC</b> |                |                 |                 |                 |
| <b>8 AWG(8.35mm<sup>2</sup>)</b>   | 175/215                                      | 87/100         | 58/67           | 45/55           | 29/36           |
| <b>4 AWG(21.2mm<sup>2</sup>)</b>   | 442/512                                      | 222/251        | 149/171         | 112/145         | 73/94           |
| <b>2 AWG(33.6mm<sup>2</sup>)</b>   | 710/845                                      | 354/410        | 237/279         | 178/234         | 116/152         |
| <b>1/0 AWG(42.4mm<sup>2</sup>)</b> | 1133/1345                                    | 567/669        | 378/445         | 283/320         | 184/208         |
| <b>00 AWG(53.5mm<sup>2</sup>)</b>  | 1253/1495                                    | 627/750        | 420/493         | 298/345         | 194/224         |

## Amplifier Electrical Installation

Never insert or remove any wires from the amplifier whilst it is powered up. The output speaker terminals on many of our amplifier designs have DC half rail power on them. This means that if a tool shorts to the case the amplifier will be immediately damaged, even if no music is playing. This damage is NOT warrantable.

Connect the ground first to the amplifier, then the main power. Then the speaker load and finally the remote terminal.

If you can, run the power and the signal (RCA) cables down opposite sides of the vehicle. If the wires you are running have to run over or go alongside other looms of the car, try to cross them at right angles to avoid unwanted interference in the signal, and try not to run them parallel with other cables either.



Bolt the earth point to bare metal chassis, ensuring a resistance better than 0.02 ohms. We recommend drilling a hole in a safe area of the boot floor to mount the earth bolt. It is essential to sand off any paint where the wire will be connected. Do not use a self-tapping screw to fasten the earth down as it will come loose which will result in damage to the amplifier. Once the installation is complete you can prevent the exposed bare metal from corroding by applying a thin coat of primer over the top.

Find a suitable run for the main power wire to access the battery. If you have to drill a hole in metal sheet you must carefully fit a rubber grommet to ensure the wire does not get damaged. A short can cause a fire. The positive wire needs to go to the "+" (positive) terminal on the battery. A fuse of appropriate size to protect the cable absolutely must be fitted in line and no more than approximately 50cm from the battery and before the cable passes any danger or possible chafe point. Note that this amplifier is only compatible with a 12V electrical system with negative grounding.

Never switch the amplifier on unless there is an appropriate speaker level load across the speaker terminals on all channels or pairs of bridged channels. Running an amplifier with unloaded channels can cause extensive damage to the circuit board and even an electrical fire.

Make sure the speaker load on the amplifier is within the suitable range listed on the specification sheet. When choosing a speaker impedance remember that bridging a pair of output halves the impedance – So for example a 4 ohm woofer bridged the amp sees 2 ohms per side. Thus to run a 2 ohm load on a bridged amplifier it must be capable of seeing only 1 ohm per side.

Connect the remote feed "REM" to a switched 12V source (normally supplied by the head/source unit) to facilitate switching on and off. Do not leave the amplifier switched on all the time. Failure to do this will lead to a flat battery and can also damage the amplifier.

Due to manufacturing tolerances of amplifier components we do not recommend to run dual coil woofers from separate mono channels or amplifiers. This also applies (but less so) to single coil speakers in the same enclosure air space run from separate mono channels. We always recommend the use of a larger amplifier with bridged output when possible in this case.

## Crossover Understanding & Setup Help

The following is designed to give an explanation of the fundamentals of using the different crossover controls that you will see on our amplifiers.

"Low Pass Filter" (LPF). This will filter out the high frequencies, allowing the subwoofer or woofer to only play the lower notes that it is designed to play. For subwoofers we recommend an LPF of about 100Hz initially. Try 80Hz and 120Hz too- you will notice the sound change. As a guide, if you are running a 15 inch woofer then you will want to be looking at a lower crossover frequency like 80Hz – if it's an 8 inch driver then you may want to go up to 120 or even 150Hz. Setting the control (where appropriate) to FLAT will switch off this filter.

"High Pass Filter" (HPF). This will filter out the low frequencies, saving amplifier energy and allowing the speakers to operate in the desired frequency range. For full range speakers in a system with a subwoofer, try a HPF set to the same frequency as you set the subwoofer LPF. You can experiment because smaller speakers generally will not tolerate as low frequencies as larger ones without compromising power handling. For example, a typical 6.5 inch driver will play from 80Hz and up and a 4 inch driver around 200Hz and up. If you are not running a subwoofer in the system and will tolerate lower overall volume in return for increased audio fidelity then you may be able to disable the HPF altogether where applicable (set to FLAT).



"Subsonic Filter" (Subsonic). This is a special form of high pass filter, designed to help protect your subwoofer and amplifier from damage caused by over excursion and clipping. We recommend to set the "Subsonic Filter" 5Hz below the tuning frequency of your bass box as a good starting point. If you don't know that, we recommend to start at 20Hz.

"Phase Control" (Phase). Some amplifiers are equipped with a phase switch. This is designed so that you can quickly flip the polarity of the connected driver(s), instead of taking out the wires and changing the + and - around. This can be very useful if you are trying to get a specific sound or if you have wired your door speakers and subwoofer out of phase to each other by accident.

## Gain Structure & Commissioning

Now that the crossover points are roughly set turn the gain to minimum and reconnect the batteries, reboot the vehicle and power up the system. You should check that each speaker is operating, and start the engine to ensure no interference is present. Check balance and fader controls and allow the amplifier to operate at a low level for around 2 hours. This "burn in" will warm the components through without any stress. Bassface amplifiers are bench run before shipment at the factory for a short time to ensure power up and output, but this initial warm up will be the first time the components have worked together to produce actual music. It is vital that you monitor the amplifier, speakers carefully during the entire setup and commissioning process.

Adjusting the gain is a crucial part of the setup process. It is every bit as important as the physical installation. Some help from an experienced installer can be really useful at this point. The professionals sometimes use expensive hardware (clip detectors and oscilloscopes) which most DIY installers do not have access to. However, it is absolutely possible to set the gain structure with a little effort and common sense and the following is the method we like to use. There are other ways to do it but the message is always the same. Don't overdrive components or distort the music because heat will build up and things will become damaged during extended use. Always leave a bit of level "in reserve".

Before you begin setup make sure any sound enhancements such as "Bass Boost or "Loudness" are disabled. If you have a bass remote then we also suggest you turn that level to a mid-setting to allow adjustment later to taste.

You turned the gain to minimum before power up and burn in. Choose some music that you're not particularly keen on that has a good range of bass, treble and vocals (helps not to get lost in the music whilst you work on the system.) Then go to your head unit and gradually turn up the volume until you begin to hear slight distortion from the speaker system. This is normally about 3/4 the way up the scale. This is the maximum setting that you will EVER use from now on - make a mental note of it.

Next, turn the head unit down from here by around 1/4. This builds in a little bit of "headroom" so should you have a track that is recorded quieter than the others or is at a lower bit rate, you can boost the volume without pushing anything into distortion.

Once the volume is set on the head unit, go to the amplifier and slowly start to turn the gain knob up. Keep going till it is at a level you are happy with or until your driver(s) are just about to distort. If they do start to distort, turn back down till they sound perfectly clear.

One thing that you need to learn is how to actually hear a speaker "distort"; you may hear a cracking, a metallic slapping sound or a rattle as well as just that thrashing distorted tone. It is CRITICAL that you detect this sound and back the amp off to stop it NOW before you damage something/everything.

If you have separate amplifiers running your subwoofer(s) or speaker(s) it can be helpful to switch on only one at a time and set the maximum levels independently, before running them together and blending them all to your chosen sound by reducing levels as appropriate (clearly you can't increase levels as you already set the maximums!)

You will notice that earlier in the text we set the bass boost to off. This is because these EQ controls are often misunderstood and can cause damage. On our latest amplifiers we call this "EQ Boost" and we sometimes cover the control with a sticker. This is to draw attention to the fact that this is a powerful and potentially damaging control if mis-used.

The bass boost control ramps a range of frequencies in the bass region that will cause more bass to be created. It will also consume more power and can push a system into distortion if the settings are not made carefully. An example of a valid use of bass boost might be where your woofer system has an uneven response – as you turn up the gain the upper region of the output becomes strained and begins to distort but yet with low frequencies you are able to turn up the bass without distortion. In this case, you would go back to the beginning of the setup instructions, get the woofer playing at a modest level and then swing in some bass boost until the distortion happens at the same volume level, regardless of the music you are playing. Then, you would set the gain with the bass boost control in THAT position – to take account of that level of boost. You ABSOLUTELY cannot increase the bass boost once you have already set the gain level – you’ll overdrive the amplifier and burn something out.

Treat a bass remote control with similar caution. It is effectively an overdrive gear – designed to allow you to fine tune the sound to your preference. It cannot, however, make the system more powerful than it already is! For example, as you drive slowly with little tyre noise you might want to reduce the setting on the cockpit knob to reduce the bass level. Or perhaps if you are listening to a track with a low recording level and you fancy a bit more output you might increase the setting. But it is your responsibility to listen for “dynamic compression” (where you are turning the system up on the knob and yet the actual volume is not increasing) since this is an indicator that the limits of the power available have been reached and over- reached!

## **Servicing & Care**

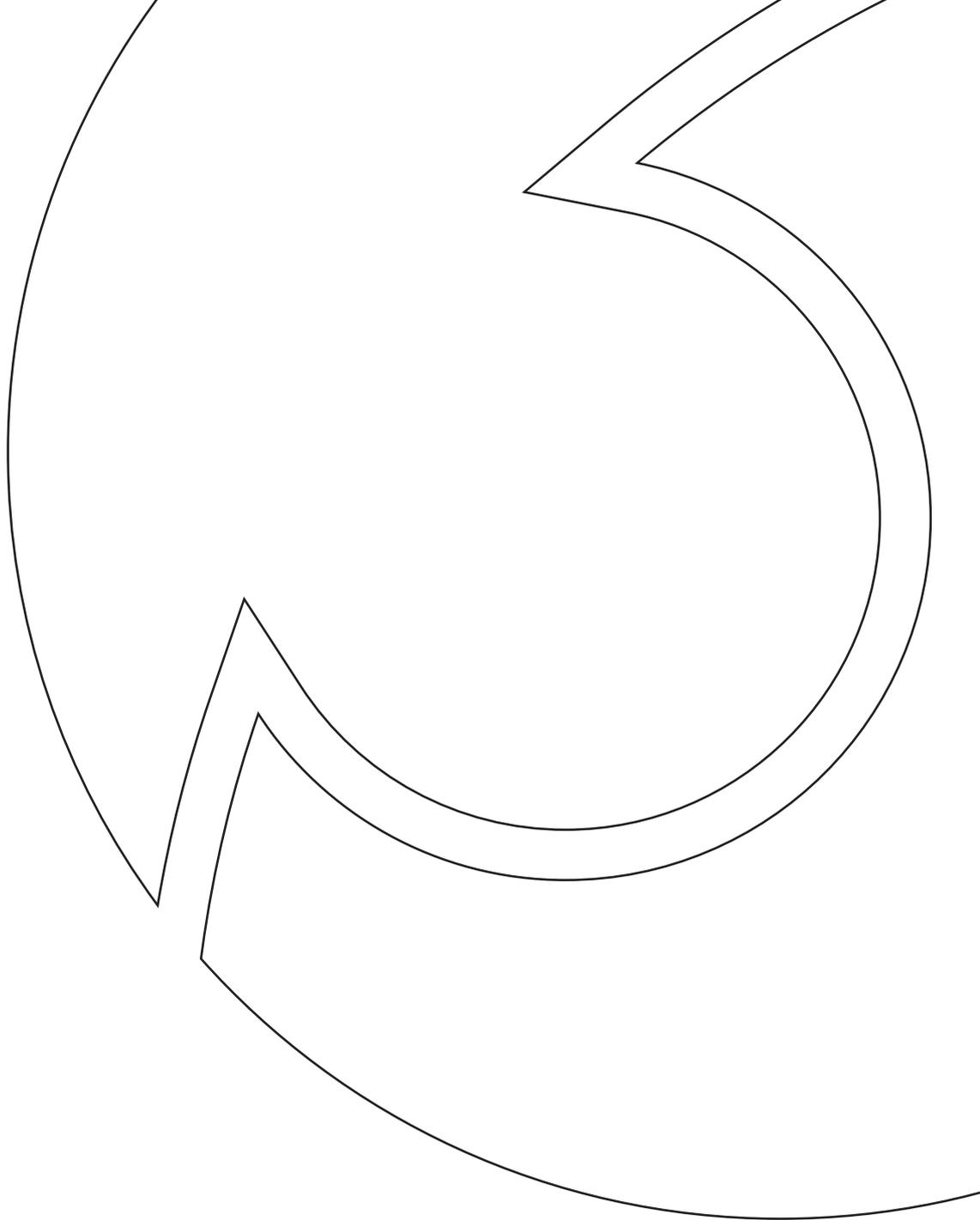
If the amplifier will be unused for a long time, carefully remove from the vehicle and store in the original packaging, ensuring that a new sachet of silica gel is included in the package. Do not ever allow the amplifier to get wet. Ensure the terminals are periodically checked for contamination and tightness.

Contact your authorised dealer or country distributor should your amplifier fail to function as expected. We recommend that the amplifier only be transported for service in the original packaging, since that includes foam to cushion the unit from transit damage.

For some of our amplifiers, especially those likely to be used in competition where they are often pushed to destruction, we offer replacement circuit boards to keep ongoing system running costs at a minimum. See the spare parts section of [www.bassfacecaraudio.co.uk](http://www.bassfacecaraudio.co.uk) for details.

## **Conclusion**

We hope this guide proves to be helpful to you during the installation of your new amplifier. If you are unsure of any step in the process we urge you to talk to your supplying dealer, country distributor or even to our UK headquarters for help before you do anything that might damage yourself, your vehicle or your new amplifier. We are all here to help and always welcome questions from new owners. You can reach us in English at [info@bassfaceaudio.com](mailto:info@bassfaceaudio.com).



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