

Borderland Mk IV User Manual Carbon Mk IV User Manual



This product complies with European Union EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EC)

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TABLE OF CONTENTS

1. INTRODUCTION	3
2. UNPACKING YOUR LOUDSPEAKERS	3
3. PRINCIPLE FEATURES OF THE BORDERLAND MK IV	6
4. CONNECTING YOUR LOUDSPEAKERS	6
High Frequency Level Control	7
Loudspeaker Cables	7
Input Terminal Connections	7
Single Wire Connection	7
Bi-Wire Connection	8
5. REMOVING THE DDD SHIPPING COVERS	8
6. LOUDSPEAKER PLACEMENT AND SET-UP	8
Listening Room Layout	8
Loudspeaker Placement	9
Fitting and Adjusting the Spikes.....	11
7. LOUDSPEAKER BREAK IN.....	12
8. CARE OF YOUR LOUDSPEAKERS.....	13
9. WARRANTY	13
10. SERVICE AND SUPPORT	13
11. HOW TO CONTACT US	14
12. BORDERLAND MK IV SPECIFICATIONS.....	15
13. CARBON MK IV SPECIFICATIONS	16
14. WARRANTY REGISTRATION	17

NOTE: This manual covers both the German Physiks Borderland Mk IV and Carbon Mk IV models. The Carbon Mk IV is identical in all respects to the Borderland Mk IV, except that it is finished in carbon fibre.

For clarity, the following text will only refer to the Borderland Mk IV.

1. INTRODUCTION

Thank you for selecting the German Physiks Borderland Mk IV loudspeakers for your audio system. The Borderland Mk IV is a 2-way design using a single German Physiks DDD driver and a high performance woofer coupled to a Helmholtz resonator. It is entirely handmade and is built and tested by highly skilled technicians at our factory in Germany. Every step in the design and manufacture of this product has been dedicated to producing a loudspeaker that will provide a lifetime of musical enjoyment.

We strongly recommend that you read this manual before attempting to use these loudspeakers, as it will enable you obtain the best performance from them.

2. UNPACKING YOUR LOUDSPEAKERS

NOTE: When lifting the loudspeakers out of the shipping carton, hold them around the cabinet.

Do not lift them by the DDD driver support pillars (figure 5) as this may damage the driver.

Do not lift them by the cabinet supports (figure 5) as this may damage the cabinet.

Each Borderland Mk IV weighs approximately 54 kg (119 lbs) and should not be lifted by one person alone. Always have help when lifting a loudspeaker.

The DDD drivers may be protected with clear film. This should be left in place until the loudspeakers have been placed in their final location, so as to guard against accidental damage during handling.

Each Borderland Mk IV is packed in a single carton. This must be kept horizontal as shown in figure 1. Before opening the cartons, please inspect them for damage. If you see any damage, please contact the supplying audio dealer immediately and provide them with a full description of the damage. Do not unpack the loudspeakers until you have spoken with the dealer and have been advised how to proceed.

To unpack the loudspeakers please follow the instructions below:

NOTE: When cutting the sealing tape on the top of the cartons make sure that the cutter blade does not penetrate more than 1cm into the carton.

1. Place the carton as shown in figure 1 and carefully cut the sealing tape on the top flaps.

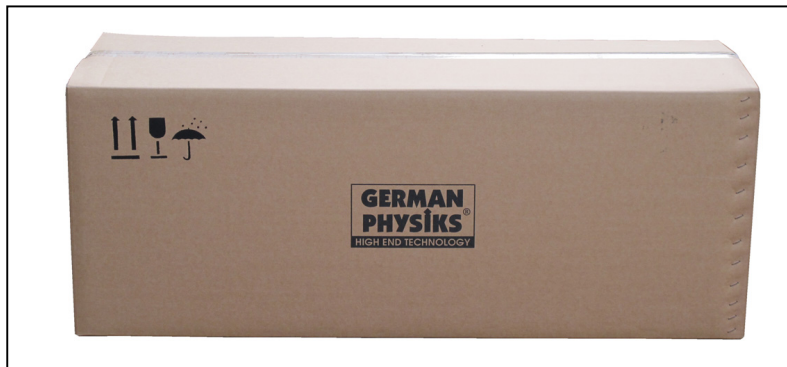


Figure 1. Borderland Mk IV shipping carton

2. Open the carton flaps. The wallet containing the spikes and other accessories will be found on the top packing piece of one of the cartons as shown in figure 2.



Figure 2. Borderland Mk IV accessories

In addition to the user manual this wallet should contain:

Item	Quantity	Description
1	8	Spikes
2	8	Spike locking nuts
3	8	Spike cups
4	1	Hex key for removing transit screws from base
5	8	Self adhesive felt pads – for use under spike cups
6	1	Cleaning cloth

If any of these items is missing please contact the supplier.

3. Remove the top packing piece shown in figure 3.



Figure 3. Borderland Mk IV shipping carton top packing piece

NOTE: A label attached to the underside of the packing piece shows which way up it should be fitted in relation to the loudspeaker when repacking.

4. Remove the foam packing pieces between the top and bottom of the loudspeaker and the carton – A and B figure 4 – then, with the help of another person, lift the loudspeaker out of the carton by holding it around the top and bottom of the cabinet and stand it up on its base.

NOTE: Do not lift by the DDD driver support pillars or by the cabinet supports – see figure 5.

Before attempting to lift the loudspeaker from the carton, ensure that your hands are adequately supporting the underside of the cabinet. If you are attempting to hold it by its sides, it may slip inside the protective cover causing you to drop the loudspeaker and possibly damaging it.

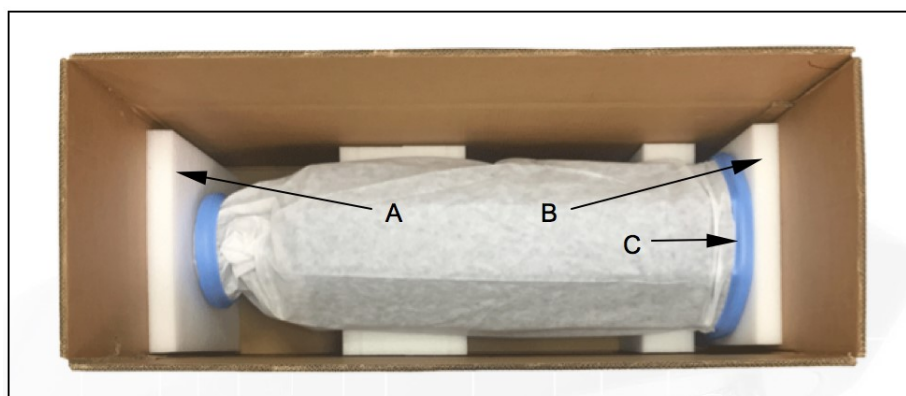


Figure 4. Borderland Mk IV shipping carton

5. Remove the blue protective ring from the top of the loudspeaker and pull the white cover up and off. Leave the blue ring on the base of the loudspeaker – C figure 4 – in position for the time being, as this will protect the base of the cabinet while it is being moved.

Please retain all of the packing, as you will need this should it be necessary in the future to ship the loudspeakers. The use of any other packing may result in the loudspeakers sustaining damage in transit. Such damage is not covered by the warranty. Should you require replacement packing, please contact your German Physiks dealer, the national distributor or the factory directly.

If it is necessary to ship the loudspeakers, they must be shipped securely strapped to a Euro size pallet. Failure to use a pallet may result in damage that will not be covered by the warranty.

3. PRINCIPLE FEATURES OF THE BORDERLAND MK IV

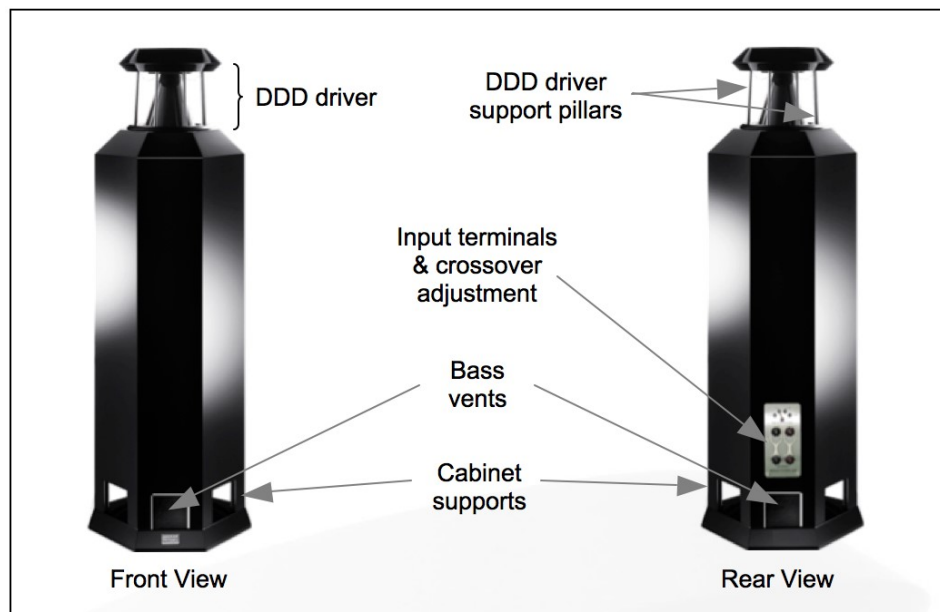


Figure 5. Principle Features of the Borderland Mk IV

4. CONNECTING YOUR LOUDSPEAKERS

NOTE: An amplifier capable of delivering at least 160W into 4 ohms per channel should be used for each loudspeaker.

The four cap-head socket screws which are fitted flush with the underside of each base plate should not be removed at this stage. These are fitted to prevent dirt entering the spike mounting inserts during shipping. They will be removed when the final position of the loudspeakers has been determined and the spikes are fitted.

Referring to the instructions on page 8 and figure 7, move the loudspeakers to their initial position and then follow the instructions below to connect the loudspeaker cables.

The Borderland Mk IV is a 2-way design with separate input terminals for the low frequency and high frequency sections of the crossover. These drive the woofer and DDD drivers respectively and are labelled accordingly. The loudspeaker also has a high frequency level control.

The input terminals and high frequency level control are located on a panel fitted on the back of the cabinet – figure 6.

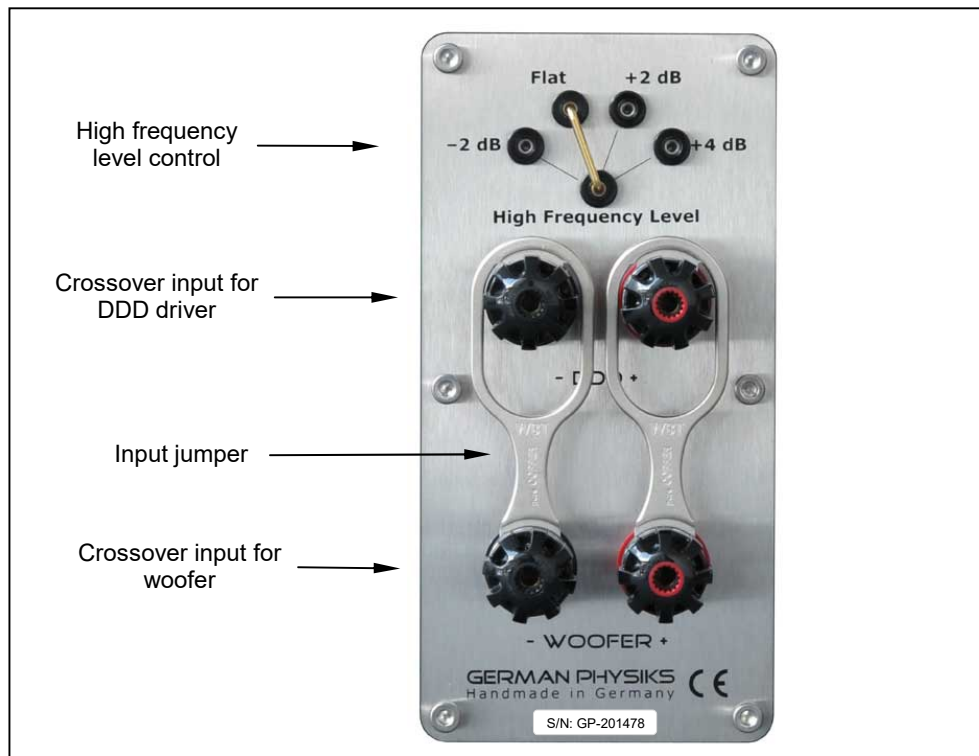


Figure 6. Input Terminals and High Frequency Level Control

High Frequency Level Control

This adjusts the output from the DDD driver and is centred at 8,000Hz. 4 settings are provided: -2dB, Flat, +2dB and +4dB. To adjust the control, pull the jumper out and then push it back into the appropriate pair of sockets. For the initial setting of the loudspeakers this should be set to the Flat position. The final setting should be made once the loudspeakers have been broken in and the final position in the listening room established. We suggest that you experiment with different settings to determine which gives the most satisfactory frequency balance.

Loudspeaker Cables

We recommend that you use loudspeaker cables terminated with high quality spade lugs, as these provide the best electrical connection. The lugs should be either soldered or crimped to the loudspeaker cable – the latter is preferred. We do not recommend the use of bare wire to connect to the loudspeaker terminals. This produces an inferior connection that will further degrade as the bare conductors become tarnished.

Input Terminal Connections

NOTE: The loudspeaker terminals should be tightened as firmly as possible by hand. Do not use pliers or any other tools as this may damage the terminals.

There are two recommended methods of connecting the Borderland Mk IV to the amplifier.

Single Wire Connection

This uses one cable to connect each loudspeaker to the power amplifier. The two red terminals and the two black terminals on the input terminal plate should be linked together as shown in figure 6. The loudspeakers will be shipped with high quality jumpers in this position.

Connect the loudspeaker cable to the DDD input terminals taking care to ensure that the DDD positive terminal is connected to the power amplifier positive output terminal and the DDD negative terminal is connected to the power amplifier negative output terminal.

Bi-Wire Connection

In this method of connection the DDD driver and woofer inputs are connected to the power amplifier with separate loudspeaker cables. Ensure that the jumpers between the two red terminals and the two black terminals on the crossover panel have been removed.

Connect one loudspeaker cable to the DDD driver input terminals taking care to ensure that the positive terminal is connected to the power amplifier positive output terminal and the negative terminal is connected to the power amplifier negative output terminal.

Connect the other loudspeaker cable to the woofer input terminals taking care to ensure that the woofer positive terminal is connected to the power amplifier positive output terminal and the woofer negative terminal is connected to the power amplifier negative output terminal.

5. REMOVING THE DDD SHIPPING COVERS

NOTE: Do not touch the DDD driver diaphragms.

If the DDD drivers are covered with plastic film, carefully remove this by hand. Do not use a knife or any other tool.

6. LOUDSPEAKER PLACEMENT AND SET-UP

Listening Room Layout

The following points will help you optimise your listening room layout.

1. The left and right sides of the room should be symmetrical. If the room is asymmetrical, this will degrade the quality of the stereo image. This is because most of the sound energy that you hear is reflected before it reaches your ears.
2. Place the loudspeakers symmetrically in the room, i.e. the same distance from the centre line of the room and the same distance from the front wall.
3. Avoid placing the loudspeakers similar distances from the side and front walls, as this may lead to an uneven bass response.
4. Avoid having any hard surfaces between your listening position and the loudspeakers. This will generate additional reflections that may degrade the stereo image. For this reason, wherever possible the electronics should be located at the side of the room. If you have a hard floor (tile or wood), it may be advantageous to place a carpet on the floor covering the area between the loudspeakers and the listening position, as this will reduce unwanted early reflections.
5. Avoid having the listening position closer than 1.2m from the rear wall, as early reflections from this wall will degrade the stereo image. If you must have the listening position close to the rear wall, it may be helpful to have some sound absorption on the wall behind the seat to reduce reflections.
6. If your room has acoustic treatments installed, we suggest that this be removed for the time being. Room treatment arrangements that work well with a conventional loudspeaker can be excessive with an omnidirectional design, as this type of loudspeaker relies on reflections to generate its stereo

image. Once the optimum position in the room has been established, the treatments can be re-introduced piece by piece, to see what arrangement produces the best result.

Loudspeaker Placement

Figure 7 gives a general guide to loudspeaker positioning and the location of the listening position. Note how the recommended listening position varies with the separation between the loudspeakers. Because the Borderland Mk IV is an omnidirectional design, there is no need to adjust the toe-in angle. They should always be set with the German Physiks logo on top of the loudspeaker facing forward.

In most cases the initial position will produce a good sound to start with. Experimenting with the distances between the loudspeakers and the side and front walls should provide improvements. If the loudspeakers are new and have not been run very much, we recommend that they be run for at least 24 hours to loosen up the bass units before you attempt to do any serious position adjustment. See section 7 for more information on the break in process.

Omnidirectional loudspeakers interact with the room very differently to conventional loudspeakers, so be prepared to try them closer together than you would with a conventional design. Let your ears be your guide and don't be afraid to try out that, based on your experience with conventional loudspeakers, you may think are unusual positions.

Distance from the Front Wall

We recommend that you start with the loudspeakers positioned 1.5m from the front wall. As you move the loudspeakers closer to the wall, the level of the bass response will be increased. The converse will be true as you move the loudspeakers away from the front wall. In most cases, the Borderland Mk IV should not be placed closer than 1m from the front wall. If the loudspeakers are too close to the front wall, not only will the bass response be excessive, but the stereo image will be degraded due to an increase in early reflections. Aim to find a position that provides an even bass response, combined with the best-defined and most realistic stereo image when you are seated at the listening position.

Distance from the Side Wall

We recommend that the distance of the listening position from the loudspeakers be 1.5 to 2 times the distance between the centres of the loudspeakers – please see figure 7 below. Moving the loudspeakers further apart will degrade the stereo image.

We do not recommend placing the loudspeakers closer than 1m from the sidewalls, as the early reflections will degrade the stereo image. Positioning the loudspeakers too close to the sidewalls will also lead to an uneven bass response. Aim to find a position that provides an even bass response, combined with the best-defined and most realistic stereo image when you are seated at the listening position.

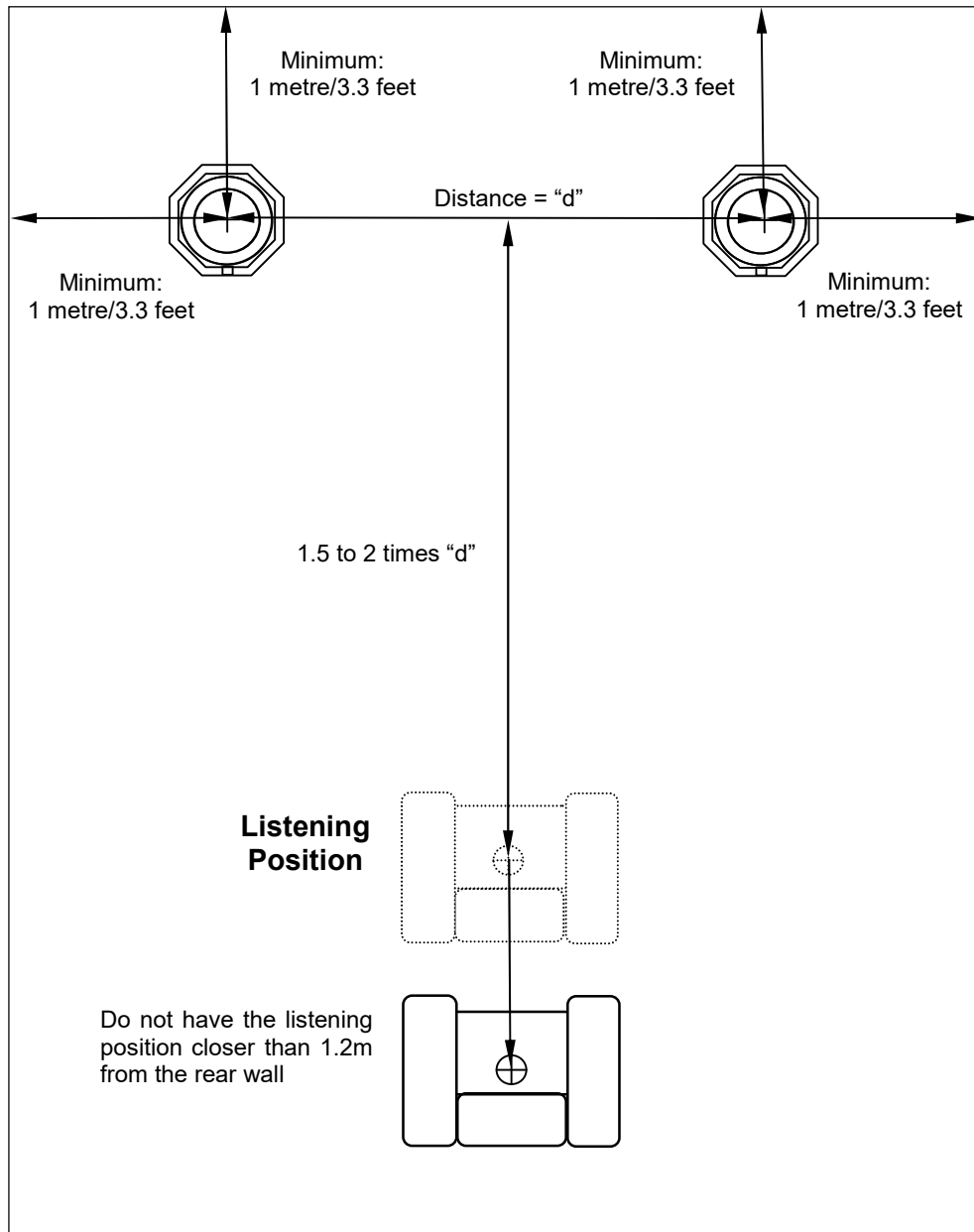


Figure 7. Listening Room Arrangement

Fitting and Adjusting the Spikes

NOTE: We strongly recommend having an assistant help to hold the loudspeakers while the spikes are being fitted and adjusted.

The Borderland Mk IV is supplied with four heavy-duty spikes, which screw into inserts in the cabinet's base plate. Knurled, circular lock nuts are supplied to enable the spikes to be locked in the inserts. To protect wooden floors, the spike cups supplied may be placed under the spikes. Self-adhesive felt pads are included which the user may attach to the underside of the spike cups to give further protection to wooden floors.

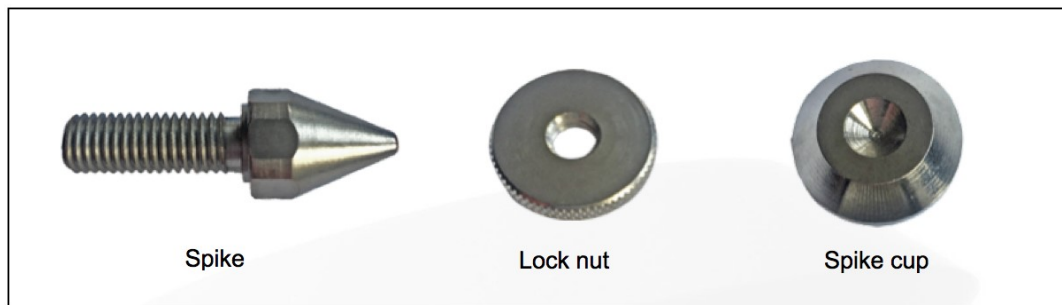


Figure 8. Spikes and support hardware

When placing the loudspeakers on a carpeted floor, ensure that the spikes are set to protrude sufficiently from the base plate so that they pass through the carpet and make firm contact with the underlying floor.

To fit the spikes you will need to lay the loudspeaker on its side. We suggest you lay it on to a soft clean blanket to protect the finish. When laying the loudspeaker down, support it by the cabinet and **not** by the DDD driver.

Using the supplied hex key, remove the four cap-head socket screws from the spike inserts – figure 9. These are fitted when the loudspeaker is shipped in order to keep foreign matter out of the insert. **Do not** disturb the screws located in the recesses of the base plate.

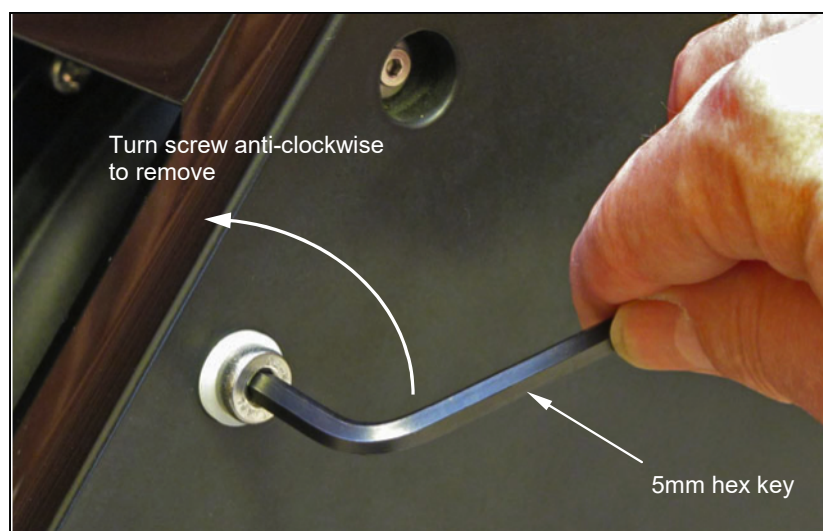


Figure 9. Removing transit screw

NOTE: If the loudspeaker is to be shipped the cap head screws must be replaced. Do not ship the loudspeakers with the spikes fitted.

Fit the lock nuts to the spikes and screw them all the way down the thread. Fit a spike into each insert with at least 5mm of thread inside the insert. Adjust the spikes so that they all protrude about the same amount from the base plate. Adjust the lock nuts on the rear two spikes and front left spike so that they are screwed up against the base plate and the spikes are locked. Only do the lock nuts up finger tight. Do not use any tools. Do not lock the front right spike. We want this spike to be free to turn so that it can be adjusted to level the loudspeaker.

If the blue protective ring is still fitted to the base plate, remove it now. Keep it safe with the rest of the packing in case it is ever necessary to ship the loudspeakers.

Stand the loudspeaker up. If the spike cups are to be used and the loudspeaker is to stand on a polished wooden floor, you may wish to fit the supplied self-adhesive felt pads under the cups to protect the floor from scratches. This will also make it easier to move the loudspeaker should any small changes in position be necessary. Place a cup under each spike, making sure that the end of the spike is properly located in the bottom of the cup.

If the loudspeaker is to be placed on a carpet, push downwards on the cabinet at the base of the DDD driver and ensure that the spikes are in firm contact with the underlying floor. **Do not** push on the top of the DDD driver.

To check that the loudspeaker is sitting squarely on its spikes:

1. **If the loudspeaker can be rocked in the 10 o'clock to 4 o'clock direction**, lean the loudspeaker to the left and screw **out** the right hand front spike by the amount of movement you saw at the base of the cabinet. It is best to have an assistant to help hold the loudspeaker. Stand the loudspeaker back up and repeat the process until it is sitting squarely on its spikes. Lean the loudspeaker to the left again and lock the nut on the right front spike, taking care not to change the spike's setting. Only do the lock nut up finger tight. Do not use any tools.

2. **If the loudspeaker can be rocked in the 2 o'clock to 8 o'clock direction**, lean the loudspeaker to the right and screw **in** the right hand front spike by the amount of movement you saw at the base of the cabinet. It is best to have an assistant to help hold the loudspeaker. Stand the loudspeaker back up and repeat the process until it is sitting squarely on its spikes. Lean the loudspeaker to the right again and lock the nut on the left front spike, taking care not to change the spike's setting. Only do the lock nut up finger tight. Do not use any tools.

7. LOUDSPEAKER BREAK IN

Like all audiophile equipment, German Physiks loudspeakers require a break in period from new before they reach their optimum level of performance. Initially the sound may seem harsh and the bass may be restricted. Please do not be concerned. The sound will become more relaxed and smooth as the break in progresses. The music used for the break in should be dynamic in order to properly exercise all the components of the loudspeakers.

For the first 5 hours play the loudspeakers a moderate level only. This is a level where you would easily be able to carry out a conversation without needing to raise your voice.

After this, the loudspeakers may be played at normal listening levels. The break in process will usually be complete after 40 to 50 hours.

8. CARE OF YOUR LOUDSPEAKERS

NOTE: NEVER attempt to open the cabinets. There are no user serviceable parts inside the loudspeakers.

NEVER touch the diaphragms on the DDD drivers, or allow any object to come into contact with the diaphragms.

NEVER attempt to clean dust off the diaphragms. Dust has no affect on their performance and may be safely ignored.

NEVER attempt to clean the loudspeakers with any abrasive materials or any cleaners containing ammonia, alcohol or other solvents, as these may damage the finish.

The only maintenance the loudspeakers will require is periodic dusting to remove dust and any finger prints from the cabinets. Please use the cleaning cloth supplied with the loudspeakers. This cloth should be used dry. Do not use any form of liquid with it. Additional cloths may be obtained from your local German Physiks dealer, national distributor or direct from German Physiks.

9. WARRANTY

These German Physiks loudspeakers are warranted to be free from defects if used under normal conditions for a period of 5 years from the date of purchase, provided that the customer registers their purchase by completing and returning the registration form at the end of this manual within 7 days of purchase. A copy of the receipt issued at the time of purchase must also be returned. If this is not done the warranty period will be 5 years from the date of shipment from the factory. This warranty is transferable to subsequent owners, who must register their purchase with us.

Modifications or repairs performed by the factory, or by an authorised repair agent, shall be guaranteed for the remaining period of the warranty, or for 1 year, which ever is greater.

Any unauthorised modifications or repairs will invalidate the warranty. The warranty will also be invalidated if German Physiks determines that the loudspeakers have been subject to misuse including, but not limited to, burnt out voice coils and dents or scratches on driver diaphragms or cabinets.

There is no other express warranty on German Physiks products. This warranty shall not extend beyond the stated warranty period. No responsibility is assumed for incidental or consequential damage.

10. SERVICE AND SUPPORT

In the first instance please contact your local German Physiks dealer or distributor. They will diagnose the fault and liaise with German Physiks to decide the best way to affect a repair. If they are unable to assist you, please contact German Physiks by phone on + 49 6109 502 9823, by fax on + 49 6109 502 9826, or by email at service@german-physiks.com. You may also contact us via our web site at www.german-physiks.com. Please take into account time differences between Germany and where you are calling from should you need to phone us. Email is our preferred method of initial contact. Please supply the model name and serial numbers of your loudspeakers and as much information about the problem as possible. The serial number is printed on a label attached to the input terminal panel. It will also be printed on the front cover of the user manual supplied with the loudspeaker.

In the vast majority of cases, the repair will be dealt with by sending spare parts from the factory. In the unlikely event that it becomes necessary to return your loudspeakers or any part of them to the factory, you will be given a Return Authorization (RA) number. This number must be clearly marked on the outside of the packing. Returns made without a RA number will not be accepted. Any returned items must be shipped in the original packing. German Physiks will not be responsible for any damage that occurs as a result of the use of non-standard packing. Returns received in non-standard packing will have this replaced with new packing at the owner's expense. If you need new packing, please contact your German Physiks dealer or the factory.

Please also be aware that if it is necessary to ship the loudspeakers, they must be shipped securely strapped to a Euro size pallet. Failure to use a pallet may result in damage that will not be covered by the warranty. Spikes, if fitted, must be removed and the transit screws securely fitted in their place. Do not over tighten them. If the spikes or any other hardware are being returned with the loudspeakers, place them in the original plastic pouch, or a strong plastic bag, seal this with self-adhesive tape and then place it on top of one of the top packing pieces. Do not leave any loose items in the shipping cartons that could damage the drivers or cabinet. Any such damage will not be covered by the warranty.

For items returned to the factory under warranty during the first year, German Physiks will pay for the shipping charges both ways. A shipping company approved by German Physiks must be used and the items will be returned to the customer using the same carrier, or an equivalent service.

For loudspeakers returned to the factory under warranty after the first year, the customer is responsible for paying all shipping and related charges back to the factory. A shipping company approved by German Physiks must be used. Providing this condition is met, German Physiks will pay the cost of shipping the loudspeakers back to the customer.

German Physiks will not pay any shipping costs if:

- a. Loudspeakers or parts are returned without a RA number.
- b. No fault is found.
- c. If the fault is judged to be due to misuse such as, but not limited to, burnt out voice coils and dents or scratches on driver diaphragms or cabinets.

Customers are responsible for all freight, duties and related shipping charges for loudspeakers returned for non-warranty repairs.

11. HOW TO CONTACT US

If you wish to get in touch with us please use the contact information shown below. Please note that our office hours are from 10.00 a.m. to 5.00 p.m. Monday to Friday, excluding public holidays and that we cannot respond to enquiries outside of these hours. We recommend that where ever possible you contact us by email, as this will allow us to give your enquiry more consideration and thus provide a more detailed reply.

Address	DDD-Manufactur GmbH Gutenbergstrasse 4 D-63477 Maintal GERMANY
Telephone	+ 49 6109 502 9823
Fax	+ 49 6109 502 9826
Email	service@german-physiks.com
Web	www.german-physiks.com

12. BORDERLAND MK IV SPECIFICATIONS

Version	With DDD Titanium Driver	With Carbon fibre DDD Driver
Impedance	3.5 ohms at 375Hz	3.7 ohms at 375 Hz
Frequency Response	28 - 21,500Hz	28 - 24,000Hz
Power Handling		
Nominal	300W	
Short term	600W	
Amplification required	Minimum 160W/4 ohms	
Crossover frequency	200Hz	190Hz
Crossover slopes		
DDD section	12dB/octave electronic & 18dB/octave acoustic	
Woofer section	18dB/octave electronic & 18dB/octave acoustic	12dB/octave electronic & 18dB/octave acoustic
High frequency adjustment	-2dB, Flat, +2dB or +4dB centred at 8,000Hz	
Sensitivity	86.0dB for 1W at 1m	86.1dB for 1W at 1m
Operating principle	2-way loudspeaker with 360° radiation using the German Physiks DDD driver.	
Input connectors	2 sets of binding posts	
Drivers	1 x Titanium DDD driver 1 x 12-inch woofer	1 x Carbon fibre DDD driver 1 x 12-inch woofer
Dimensions	404mm W x 1,229mm H x 404mm D 15.9" W x 48.4" H x 15.9" D	
Weight	55kg 121lbs	54kg 119lbs
Warranty	5 years	
As part of our process of continually improving our products, we reserve the right to change specifications without notice		

13. CARBON MK IV SPECIFICATIONS

Impedance	3.7 ohms at 375Hz
Frequency Response	28 – 24,000Hz
Power Handling	
Nominal	300W
Short term	600W
Amplification required	Minimum 160W/4 ohms
Crossover frequency	190Hz
Crossover slopes	
DDD section	12dB/octave electronic & 18dB/octave acoustic
Woofer section	12dB/octave electronic & 18dB/octave acoustic
High frequency adjustment	-2dB, Flat, +2dB or +4dB centred at 8,000Hz
Sensitivity	86.1dB for 1W at 1m
Operating principle	2-way loudspeaker with 360° radiation using the German Physiks DDD driver.
Input connectors	2 sets of binding posts
Drivers	1 x Carbon fibre DDD driver 1 x 12-inch woofer
Dimensions	404mm W x 1,229mm H x 404mm D 15.9" W x 48.4" H x 15.9" D
Weight	54kg 119lbs
Warranty	5 years
As part of our process of continually improving our products, we reserve the right to change specifications without notice.	

14. WARRANTY REGISTRATION

In order to register your purchase and obtain the full 5 year warranty, please complete the form below within 7 days of purchase and return it by post together with a copy of the receipt of purchase to:

DDD-Manufactur GmbH
Gutenbergstrasse 4
D-63477 Maintal
GERMANY

Title (Mr, Mrs, Dr. etc)	
Name	
Address	
Country	
Zip/Post Code	
Model	BORDERLAND MK IV/CARBON MK IV*
Serial Number	
Finish	
Date of Purchase	
Where Purchased	
Address	
Country	
Zip/Post Code	

* Delete as necessary