

PQS-402 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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1. INTRODUCTION

Thank you for selecting the German Physiks PQS-402 for your audio system. It uses an array of two DDD drivers to cover all frequencies above 215Hz. The low frequencies are handled by a system using two 10 inch drivers combined with four 8 inch passive radiators. The PQS-402 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 you attempt to use the loudspeakers. The supplying audio dealer is responsible for assembling and setting up the loudspeakers. This should not be attempted by the customer. Information on these topics contained in this manual is intended for general use only.

2. UNPACKING YOUR LOUDSPEAKERS

NOTE: The customer should not attempt to assemble the loudspeakers. This will be done by the supplying audio dealer.

The crates and their contents are heavy. To avoid injury, please ensure that 2 people are available to unpack and position the loudspeakers.

The DDD drivers may be protected with clear film or cardboard covers. We recommend that these be left in place until the loudspeakers have been placed in their final location, so as to guard against accidental damage during handling.

The PQS-402 is supplied in 3 crates. Before opening them, please inspect them for damage. If you see any damage to the crates, please contact the supplying audio dealer immediately and provide them with a full description of the damage. Do not attempt to unpack the loudspeakers until you have spoken with the dealer and have been advised how to proceed.

The woofer module assemblies for the left and right channels are packed in separate crates which are marked "left" and "right" on the outside. Take care not to mix components from these two crates up. The two DDD towers are packed together in the third crate.

Please retain all of the packing as you will need this should it be necessary in the future to ship the loudspeakers. Should you need to return the loudspeakers to the factory, you must use the original packing. 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.

Use Figure 1 to identify the major components of the loudspeaker and confirm that the crates contain the following items:

Item	Quantity	Description
1	2	Bottom Plates
2	2	Lower Modules
3	2	Distance Frames
4	2	Upper Modules
5	2	Top Plates
6	2	DDD Towers
7	24	Inter-Cabinet Connecting Cables
8	1	User Manual
9	4	Cleaning Cloths

If any items are missing, or show signs of damage, please contact the supplying audio dealer immediately.

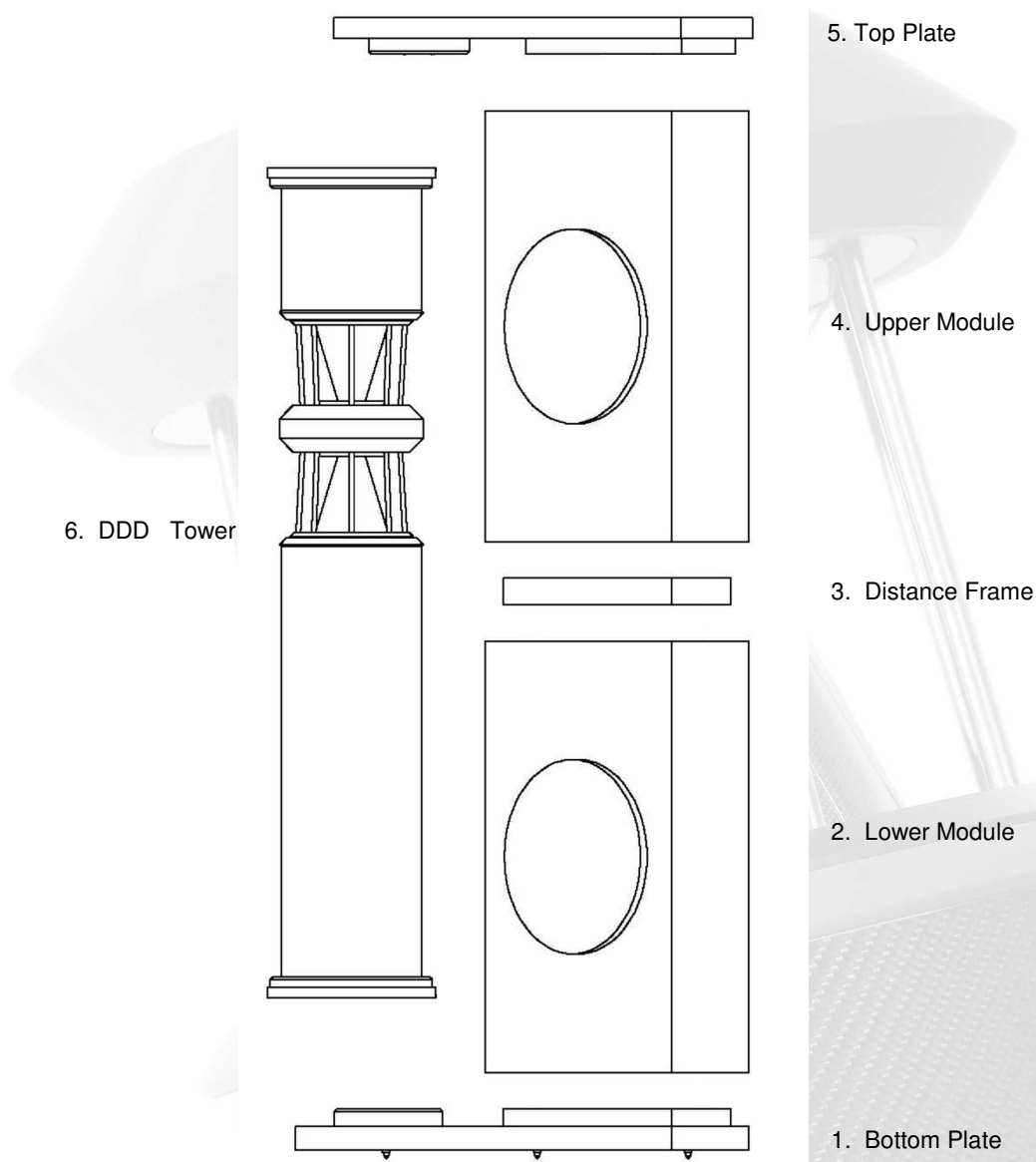


Figure 1. PQS-402 Major Components

3. ASSEMBLING YOUR LOUD SPEAKERS

Introduction

Because of the complexity of the PQS-402, customers are strongly requested not to attempt to assemble or set up the loudspeakers on their own. These tasks will be carried out by the supplying dealer who has received detailed training from German Physiks engineers. Many of the component parts are very heavy and personal injury could result if they are inappropriately lifted. Component parts could also be damaged by inexperienced handling and any resulting damage would not be covered by the warranty.

The following description of the assembly process is for general information only. It is not intended to be used as a guide for assembling the loudspeakers, as it has been simplified for the sake of clarity. Please refer to figure 1 to familiarise yourself with the major components.

We will describe the assembly process for the left loudspeaker. This has its two 10 inch drivers located on the right side of the woofer modules, as can be seen in figure 2 below.

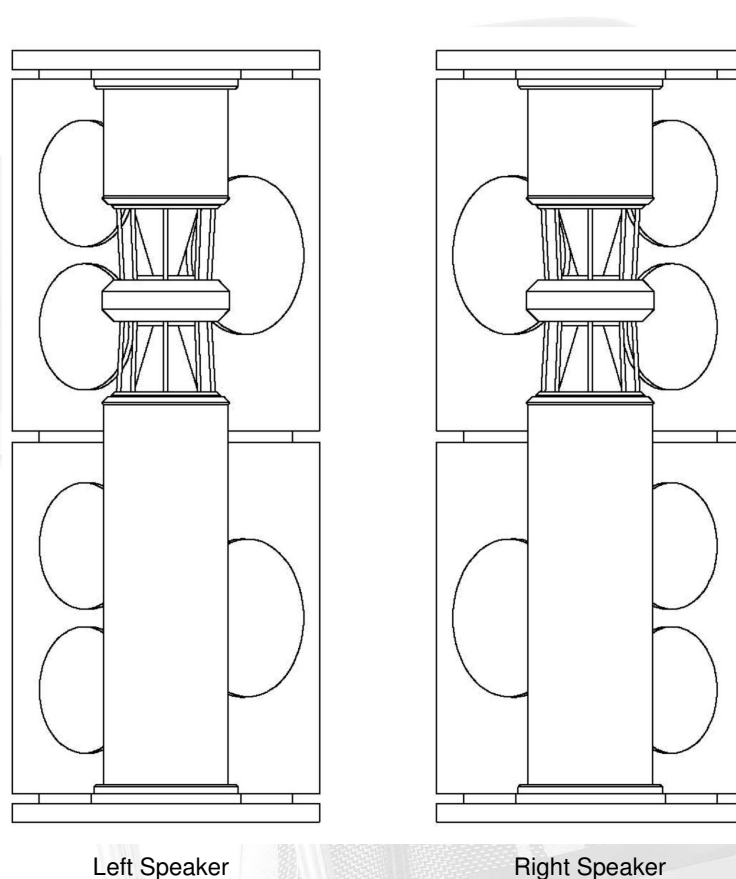


Figure 2. PQS-402 Front View

Assembly Procedure

1. Place the left loudspeaker bottom plate on the floor in the position where the speaker is to be sited. Please refer to figure 9 for guidance. Ensure that it is sitting squarely on all 5 support points and that it is level.

2. Identify the left lower module. This has the input terminals and level selectors on its rear face. This module is very heavy and you may find it easier to grip if the woofer grills are removed first. Place it carefully on top of the bottom plate as shown in figure 3. Ensure that it is properly seated.

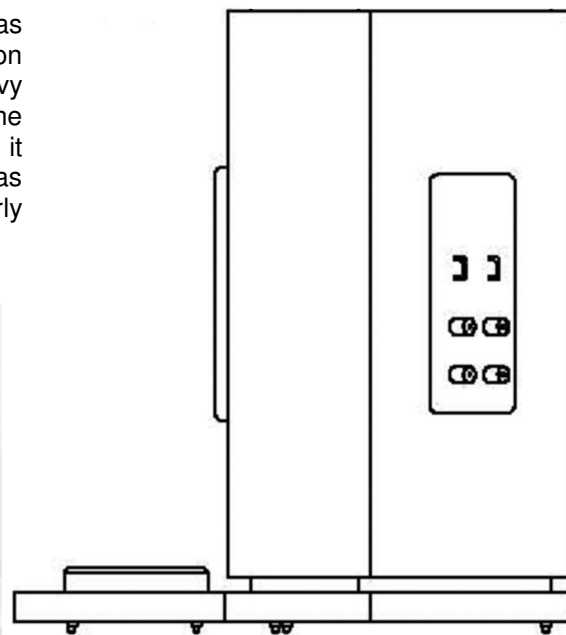


Figure 3. Lower Module on Bottom Plate

3. Replace any grills that have been removed and then place the distance frame on top of the lower module as shown in figure 4. Ensure that it is properly seated.

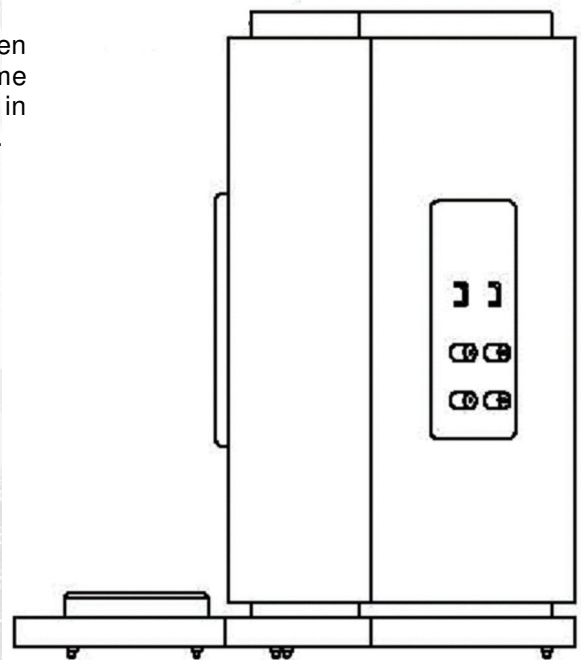


Figure 4. Lower Module with Distance Frame

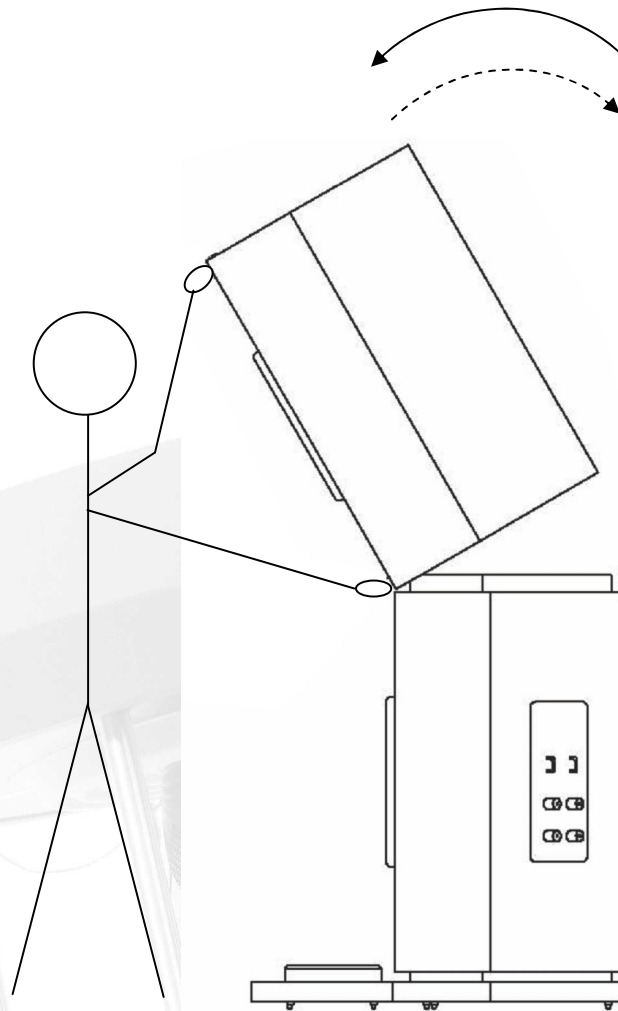


Figure 5. Fitting Upper Module and Connection Cables

4. The next operation must be carried out by two people. You will need 8 of the black inter-cabinet connecting cables ready to hand. Identify the left loudspeaker upper module. As with the lower module, you may find it easier to handle if you remove the grills. Place the module on top of the distance frame and ensure that it is properly seated. One person should stand at the front of the speaker and with their hands placed as shown in figure 5, carefully tilt the upper module forward over one edge sufficiently to allow the second person to fit the inter-cabinet connecting cables between the two modules. The upper module may be tilted forward on either edge. Choose the one that is most convenient. Take great care to ensure that it cannot slip forward whilst being tilted. The sockets are colour coded. Please ensure that all the cables are correctly connected.

When all the cables have been fitted, slowly tilt the upper module until it is fully upright, while taking care that none of the cables become pinched between the upper module and the distance frame. Take great care also that you do not trap any fingers under the module as it is put into position. Replace any grills that have been removed.

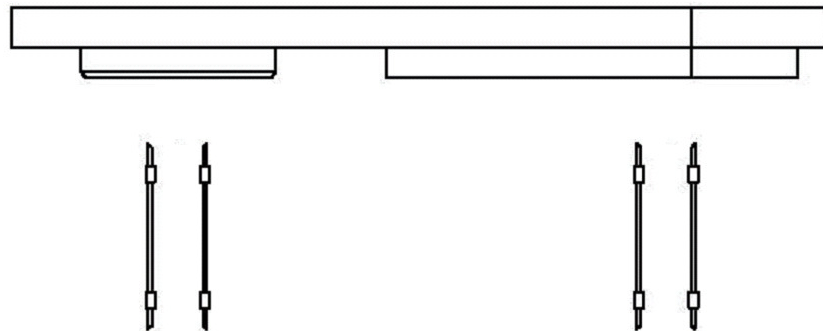


Figure 6. Top Plate Cable Connection

5. Identify the left loudspeaker top plate and fit one black and one red cable to each pair of sockets as shown in figure 6.

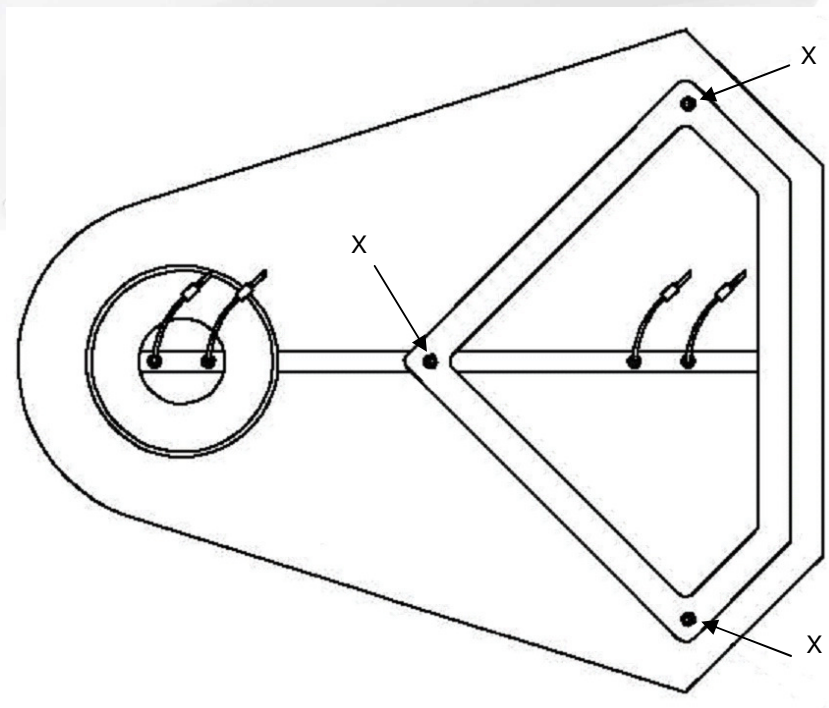


Figure 7. Top Plate Adjusting Screws

The top plate has 3 screws, marked X in figure 7, which will be used by the dealer to adjust the module stack for any variation in verticality. The customer should not attempt to adjust these.

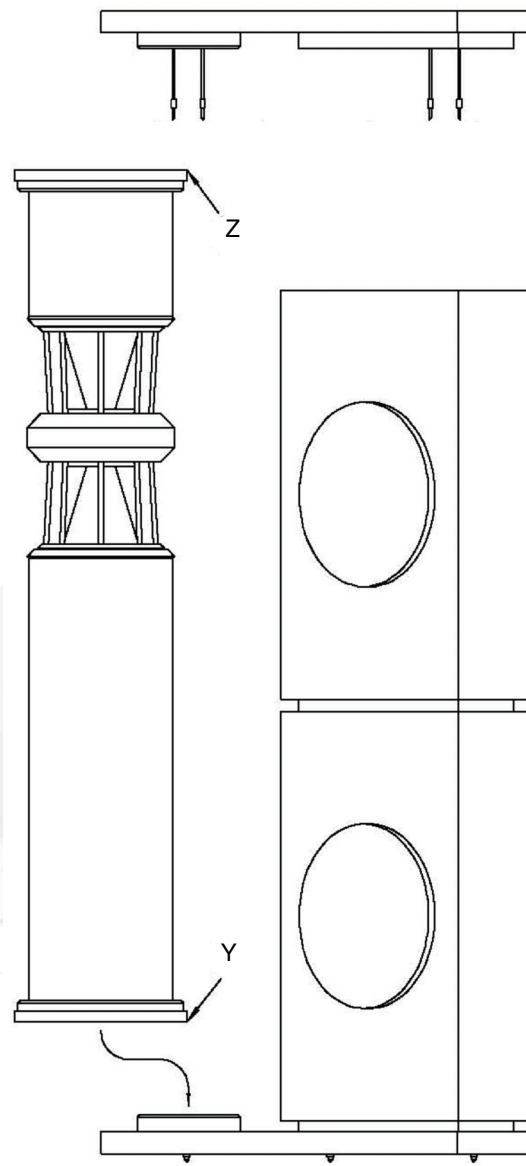


Figure 8. Fitting the DDD Tower and Top Plate

6. Identify the DDD tower. Referring to figure 8, carefully fit the base of the DDD tower, Y, over the locating disc on the bottom plate and ensure that it is sitting squarely. Take great care not to damage the front of the lower bass module with the DDD tower, as there is very little clearance between where the DDD tower fits and the bass module.

Offer up the top plate and plug the 4 connecting cables into their respective sockets on the top of the upper module and DDD tower. These sockets are colour coded. Please check that like colours are connected.

Carefully lower the top plate onto the upper module and DDD tower. Take especial care that the locating disc on the top plate sits squarely inside the top of the DDD tower and is not simply resting on the point Z. Also take care the cables do not become pinched as the top plate is lowered onto the upper module and DDD tower.

4. LOUDSPEAKER PLACEMENT AND SET-UP

NOTE: DO NOT place the loudspeakers close to cathode ray type monitors or projectors, as the very powerful magnets used in the drivers may affect the picture. We recommend a minimum separation of 2m.

The German Physiks PQS-402 is an extremely high performance loudspeaker and optimum performance will only be achieved when set up by a trained technician. For this reason the supplying audio dealer will carry out the set-up for the customer.

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 rear wall.
3. Avoid placing the loudspeakers similar distances from the side and rear 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, where ever possible, equipment should be located at the side of the room. If you have a hardwood floor, 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.

Loudspeaker Placement

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. The PQS-402 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 DDD towers. Moving the loudspeakers further apart will degrade the stereo image.

We do not recommend placing the loudspeakers closer than 1m from the side walls, as the early reflections will degrade the stereo image.

Positioning the loudspeakers too close to the side walls 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 9 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 DDD towers and also how as the listening position is moved away from the loudspeakers, the woofer modules need to be toed in by rotating them towards the adjacent side walls, while keeping the DDD tower centres in the same position.

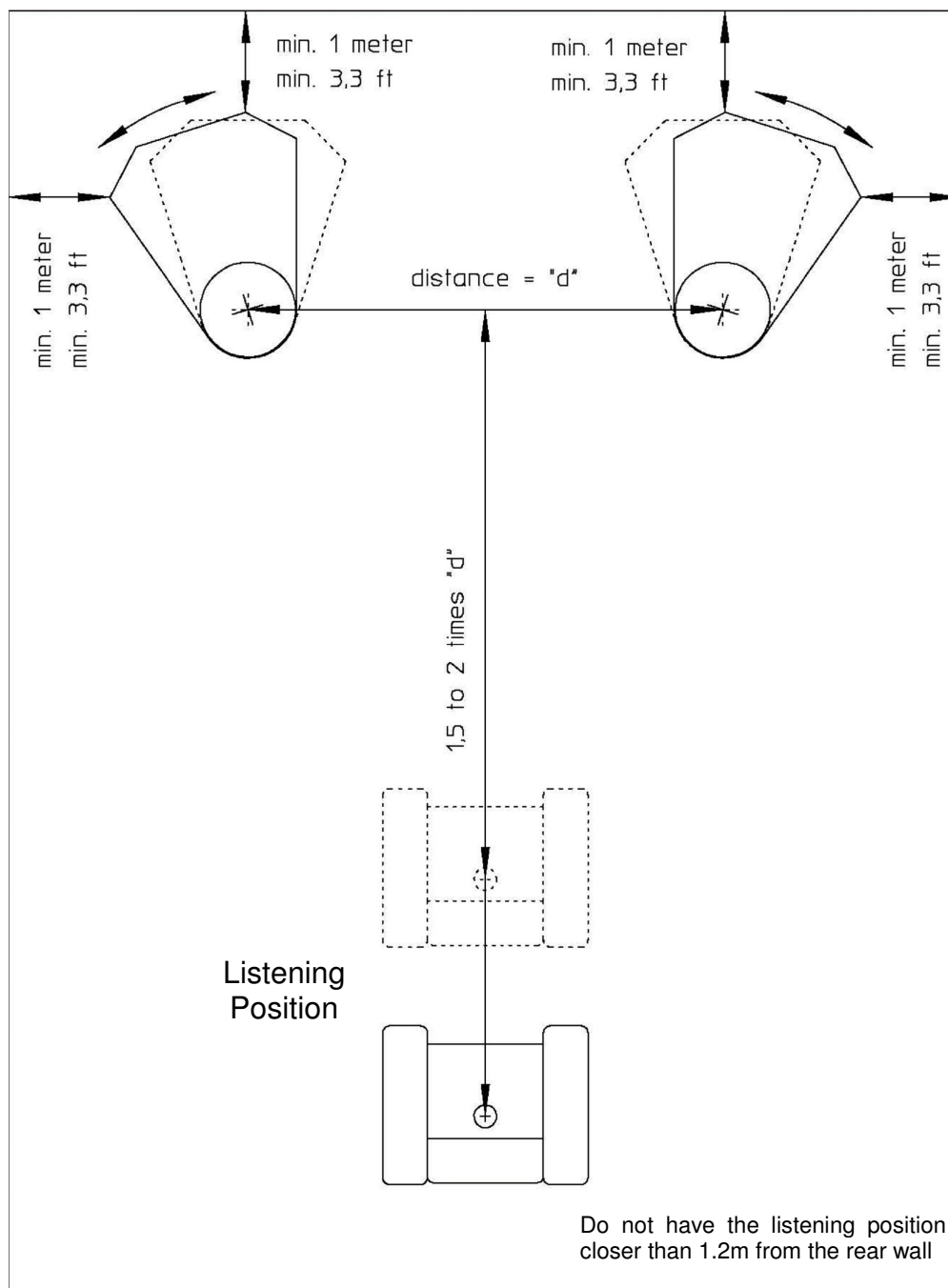


Figure 9. Listening Room Arrangement

5. CONNECTING YOUR LOUDSPEAKERS

The German Physiks PQS-402 is a 2-way loudspeaker with separate input terminals for the low frequency and high frequency sections of the crossover. These drive the woofers and DDD drivers respectively and are labelled as such. Provision is also made to allow the level of the low and high frequencies to be adjusted.

The input terminals and crossover adjustment points are located on a panel fitted on the back of the lower woofer cabinet. Figure 10 identifies the features on this panel.

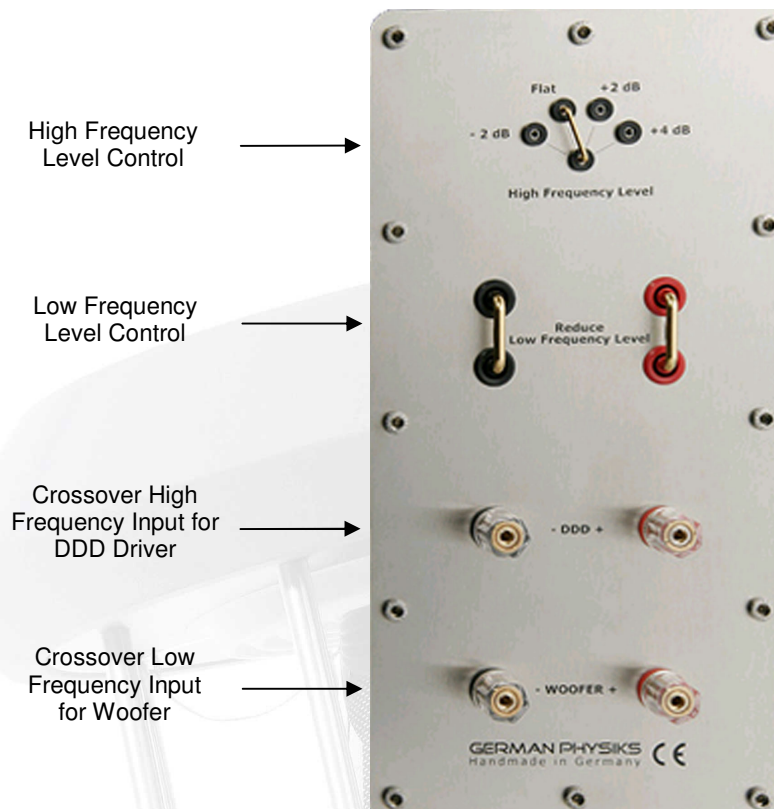


Figure 10. Input Terminals and High Frequency Level Control

High Frequency Level Control

This adjusts the output from the DDD drivers. 4 settings are provided: -2dB, Flat, +2dB and +4dB. The centre frequency for this control is 8,000Hz. 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 loudspeaker 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.

Low Frequency Level Control

This adjusts the output from the woofers. 3 settings are provided:

No jumpers fitted	+10dB
Red socket jumper only fitted	+5dB
Red and black socket jumpers fitted	Flat

The centre frequency for this control is 60Hz.

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.

The provision of separate inputs for the low frequency and high frequency sections of the crossover allows the PQS-302 to be operated in 3 modes:

Single wire connection
Bi-wire connection
Bi-amp connection

Single Wire Connection

This is the most commonly used method of connecting a loudspeaker and power amplifier. Only one loudspeaker cable is used for each loudspeaker. The PQS-402 will be shipped configured for this mode of operation. In this case the red terminals on the DDD and woofer inputs will be connected together and the black terminals on the DDD and woofer inputs will be connected together. These connections must be made using the special links provided.

Connect the 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.

An amplifier capable of delivering at least 340W into 4 ohms per channel should be used for each loudspeaker.

Bi- Wire Connection

In this method of connection the woofer and DDD inputs are connected to the power amplifier with separate loudspeaker cables. Ensure that the links fitted between the woofer and DDD input terminals 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.

An amplifier capable of delivering at least 340W into 4 ohms per channel should be used for each loudspeaker.

Bi- Amp Connection

In this method of connection the woofer and DDD inputs are driven by separate power amplifiers. Ensure that the links fitted between the woofer and DDD input terminals 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 first power amplifier positive output terminal and the negative terminal is connected to the first 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 second power amplifier positive output terminal and the woofer negative terminal is connected to the second power amplifier negative output terminal.

An amplifier capable of delivering at least 200W into 4 ohms per channel should be used for the woofer input and one capable of delivering at least 140W into 4 ohms per channel should be used for the DDD input.

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.

NOTE: Do not switch on the power amplifier until the DDD shipping covers have been removed as shown in section 6.

6. REMOVING THE DDD SHIPPING COVERS

NOTE: Do not touch the DDD driver diaphragms.

If your loudspeakers are fitted with titanium DDD drivers, these will be covered with either a layer of clear film or cardboard to protect them whilst in transit. This should now be removed. The film should be peeled off by hand. Do **not** use a knife.

To remove the cardboard protector, slit the adhesive tape securing it by sliding a **short** bladed knife between the two layers of cardboard whilst holding the knife as shown in figure 11. Do not cut in the way shown in figure 12, as there is a danger that you will cut the DDD driver diaphragm.



Figure 11. The Correct Way to Remove the DDD Driver Cover



Figure 12. The Wrong Way to Remove the DDD Driver Cover

8. 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. 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 10 hours play the loudspeakers at low 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 be complete after 200 to 300 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 cloths supplied with the loudspeakers. These cloths should be used dry. Do not use any form of liquid with them. Additional cloths may be obtained via 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 in this manual within 7 days of purchase. They must also return a copy of the receipt issued at the time of purchase. 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 61 09 50 29 823, by fax on + 49 61 09 50 29 826, 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.

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 be replaced with new packing at the owner's expense. If you need new packing, please contact your German Physiks dealer or the factory.

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 9.30 a.m. to 5.00 p.m. Monday to Thursday, 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 61 09 50 29 823
Fax	+ 49 61 09 50 29 826
Email	service@german-physiks.com
Web	www.german-physiks.com

12. PQS-402 SPECIFICATIONS

Version	With Titanium DDD Drivers	With Carbon DDD Drivers
Impedance	2.2 ohms at 1,200Hz	2.2 ohms at 1,200Hz
Frequency Response	25 – 21,500Hz	25 – 24,000Hz
Power Handling Nominal Short term	450W 750W	450W 750W
Amplification required	One power amplifier per channel Minimum power: 200W/4ohms or 2 power amplifiers per channel DDD Section: Minimum 140W/4 ohms Woofer: Minimum 200W/4 ohms	
Crossover frequency	215 Hz	
Crossover slopes DDD section Woofer section	12dB/octave electronic and 18dB/octave acoustic 18dB/octave electronic and 18dB/octave acoustic	
High frequency adjustment	-2dB, Flat, +2dB or +4dB. Centre frequency: 8,000Hz	
Low frequency adjustment	+10dB, + 5dB or Flat. Centre frequency: 60 Hz	
Sensitivity	88.4dB for 1 watt at 1m	88.8dB for 1 watt at 1m
Maximum output level	112dB	118dB
Operating principle	2 way loudspeaker using DDD Bending Wave Converters giving a 360° radiation pattern.	
Input connectors	2 sets of binding posts allowing bi-amping and bi-wiring	
Drivers	2 x Titanium DDD drivers 2 x 10 inch woofers 4 x 8 inch passive radiators	2 x Carbon DDD drivers 2 x 10 inch woofers 4 x 8 inch passive radiators
Dimensions	620mm W x 1560mm H x 750mm D 24.4" W x 61.4" H x 29.5" D	
Weight	Approx 165kg Approx 363lbs Actual weight depends on detailed specification	
Warranty	5 years	
As part of our process of continually improving our products, we reserve the right to change specifications without notice		

13. 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

Name	
Address	
Country	
Zip/Post Code	
Speaker Model	PQS-402
DDD Type Delete as necessary	Titanium/Carbon
Serial Number See label under speaker	
Finish	
Date of Purchase	
Where Purchased	
Address	
Country	
Zip/Post Code	