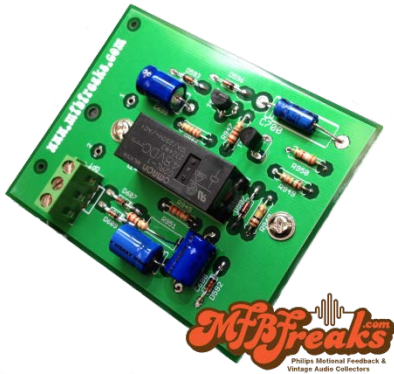


**Philips 22RH545 MFB- STUDIO**  
**Woofer DC Protection Unit as described in Service Update PL05**



**Introduction.**

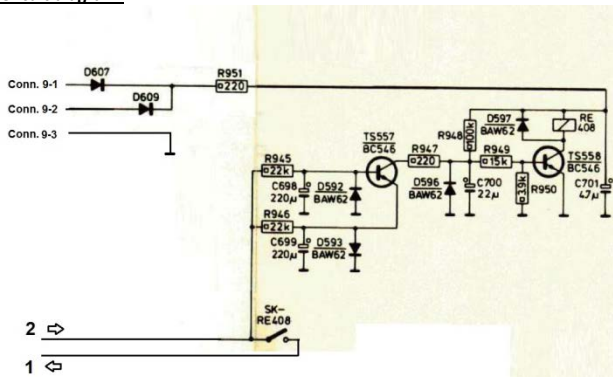
This is a DC Protection DIY kit for the Philips 22RH545 Motional Feedback Box. To protect the Woofer against DC voltage in case of amplifier malfunction, a DC Protection module has been added to the 22RH545 circuit as of factory revision PL05. This module is mounted inside the amplifier chassis and connected to the power supply. The module features DC detection and switch-on delay, causing the woofer to behave more calm.

To upgrade older versions of the 22RH545, MFBfreaks have developed an exact copy of the 22RH545 DC Protection module. This module is supplied as a DIY kit and can be mounted inside any 22RH545 MFB box. Assembly instructions are provided as well as a connection diagram for installation inside the 22RH545. Please read the instructions carefully before assembly and/or installation!

**Disclaimer:**

**MFBfreaks cannot be held responsible for any damage to your equipment due to improper assembly or installation of this unit. Also, no claims can be made regarding the malfunctioning of this unit and/or any damage caused by the unit. Install and use on your own risk! If you are not a skilled technician, please refer to a professional for help.**

**Circuit diagram:**



**Parts list:**

- 1x PCB with silk screen and double sided tracks
- 2x metal mounting spacer Metric M3 10mm
- 1x 90cm 0,35mm<sup>2</sup> wire for power supply connection

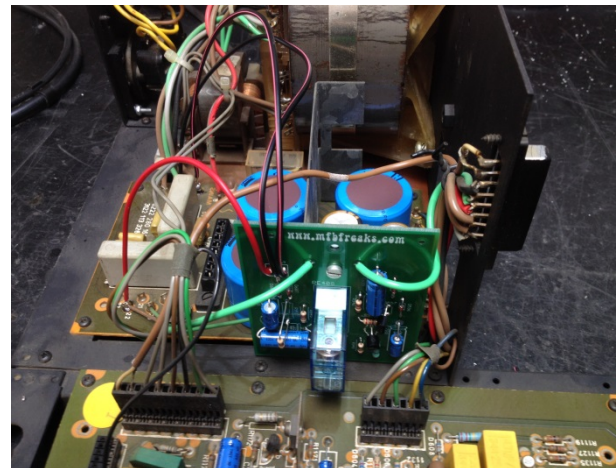
Conn. 9	: 3P screw connector terminal
Re408	: 48VDC SPDT Relay
D592... D609	: BAW62
TS557, TS558	: BC546
R945, R946	: 22 k Ohm (red-red-orange-gold)
R947, R951	: 220 Ohm (red-red-brown-gold)
R948	: 100 k Ohm (brown-black-yellow-gold)
R949	: 15 k Ohm (brown-green-orange-gold)
R950	: 3,9 k Ohm (orange-white-red-gold)
C698, C699	: 220 uF, 16 V
C700	: 22 uF, 63 V
C701	: 47 uF, 63 V

**Assembly instructions:**

All parts are to be mounted on their designated positions on the PC board. When mounting the diodes D592... D609 please note the correct mounting direction. The ring marking on the diode should match the "!" dash on the PC board marking. Resistor R951 should be mounted at some height above the PC board for thermal purposes. Conn. 9 should be mounted so, that the wires can be inserted via the top side. Cut the piece of wire in three equal parts and connect them to the screw terminals.

**Installing and connecting the module:**

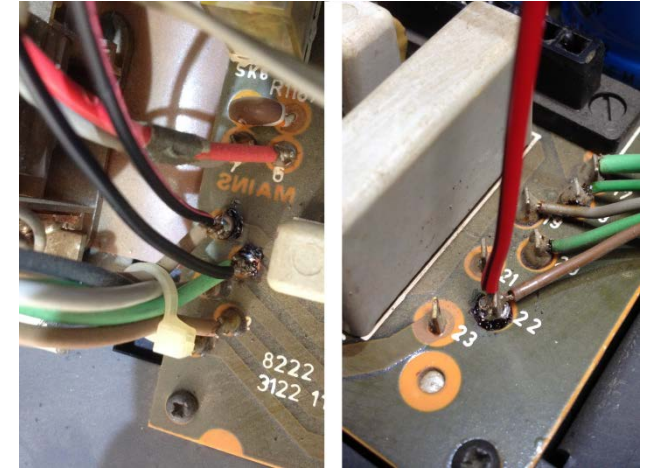
Once the module is assembled, it can be mounted inside the 22RH545 MFB box. For disassembling instructions, please refer to the 22RH545 Service Manual. The module can be mounted on the metal bracket next to the power supply board, close to the speaker connector. Use the two supplied metal mounting spacers to fasten the PC board to the bracket. In some cases, an extra hole must be drilled in the metal bracket to fasten the second mounting spacer.



Cut the existing green wire and connect both ends to positions 1 and 2 on the DC protection module.

Connect the three wires of CONN. 9 to the following positions on the Power Supply Board:

- CONN. 9 – 1 (left wire) to PIN 22 on the PSU board (GROUND)
- CONN. 9 – 2 (center wire) to PIN 4 on the PSU board (AC)
- CONN. 9 – 3 (right wire) to PIN 5 on the PSU board (AC)



**Testing and operation:**

Please note that the 22RH545 amplifier module requires the speakers to be connected for proper function. Check if you have connected everything as indicated and mount the amplifier module back in the 22RH545 cabinet. Supply mains power and audio signal to the amplifier and check if the box powers on. There will be a little delay before the woofer is switched on, indicating the protection module delay is working. You will also hear the switching click from the relay.

**Adjusting delay time:**

In some cases, the 22RH545 woofer may still switch on louder than desired. This can be suppressed by extending the delay time to 5-6 seconds before the woofer switches on. To achieve this, R948 may be increased to 120 k Ohms and C700 may be increased to 330uF.