

http://www.rangerovers.net/rupgrades/entertainment/headunitadapt.html

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Installing an Aftermarket Stereo Head Unit: Adapting the Built In P38 Stereo Amplifiers

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Introduction

Owners who want to install an aftermarket stereo head unit with more modern capabilities in their 1995-2002 Range Rovers are frustrated by the fact that most replacement head units are incompatible with the rest of the Range Rover stereo system -- namely the built-in amplifiers that drive the multitude of speakers, and the steering wheel controls. Ray Ambler, a Rangerovers.net member, has pioneered the process of interfacing these aftermarket units and has kindly provided the information on this page for making the built-in P38 stereo amplifiers and steering wheel controls work with any head unit. Ray's solution allows you to use the built in amps on a standard high level output from basically any stereo head unit!

Technical Background

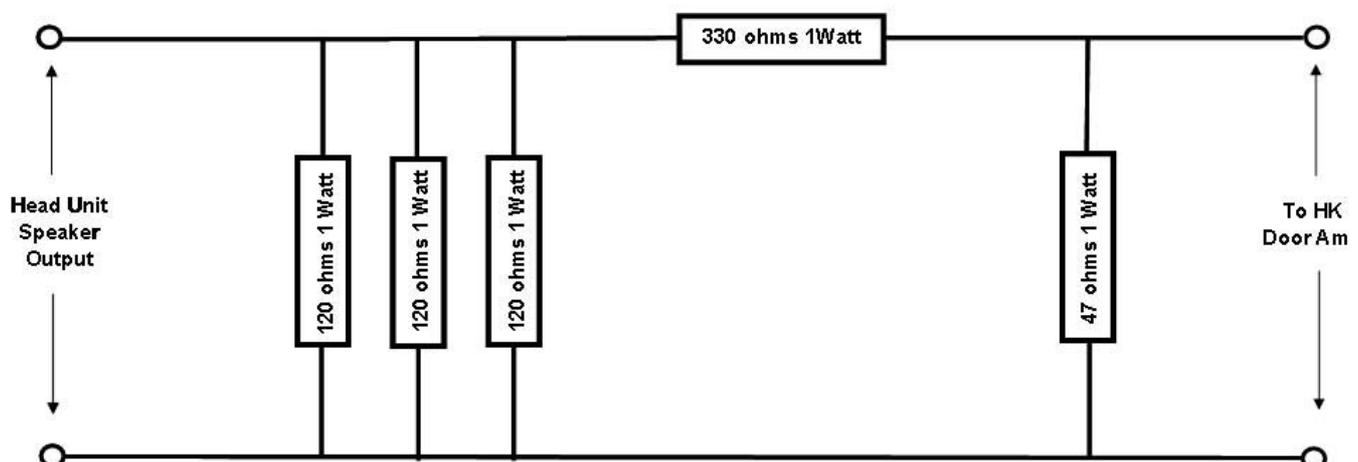
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The input impedance of the Range Rover's Harmon Kardan door amplifiers is approximately 70 ohms. This is why when you drive them with the full output from the usual aftermarket head (with an output impedance of 4 to 8 ohms) the volume has to be kept low. The "low power" original Alpine unit has an output impedance of about 70 ohms and this is what confuses most installers. When you use the line out feeds (1000 ohms or above) you will get hissing / interference or just low volume.

To solve this problem, you need to create an attenuator capable of giving a suitable load to the head unit, provide matching to the door amps and reduce the audio level by 20dB. Easily done with a pi or T attenuator. Remember that the attenuator has to handle the power from the head unit. In my case I tested the head unit into a 16 ohm load and it was fine. This means that full volume only requires the attenuator to handle about 2 watts making it small and easy to build using 1 watt resistors in series / parallel configuration. Remember to use carbon or metal film components, not wire wound or you will produce undesirable inductive loading.

Interface Diagram

Designed by Ray Ambler to allow the replacement of the original ALPINE radio in later P38a Range Rovers



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1. Purchase an ISO male to ISO female head unit lead from a motor factor or car audio stockist.
2. Construct 4 off the circuit shown. Parts from Maplin or similar. Use carbon or metal film resistors, not wire wound.
3. Cut each speaker pair of wires in turn and connect in the circuit.
4. Repeat for the other 3 channels.
5. Insulate the components so as not to short onto anything when installed.

You now have an inline adaptor lead that will attenuate the speaker level to the correct value and provide impedance matching for the head unit and HK door amplifiers.

Plug and Play!

Setup and Testing

For owners with the DSP system (Amplifier by subwoofer, not in doors), it must be pointed out that the original head unit volume must be turned up to set high volume on the DSP amplifier prior to removal. Ignoring this easy step will result in poor volume from the aftermarket head unit.

As a guide to volume levels with the attenuator fitted (4 needed), my volume goes from zero to 50. level 8 is fine for gentle listening. level 30 is mindblowing. Any higher is clear but should be listened to from another county / state! The JVC headunit has a software menu that limits the max volume to 30

Steering Wheel Control Interfacing

Note that most aftermarket head units may not allow immediate control from the Range Rover's steering wheel buttons. However this problem has also been solved by Ray Anderson. Steering wheel interfaces are available for all later Alpine equipped P38a to allow full use of the buttons. Ray specified the exact requirements and worked with www.nexxia.co.uk who now produce the necessary interface. Ray's prototype, interfaced to a JVC head unit has been perfect since install over 12 months ago.

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