

B&W LOUDSPEAKERS LM1PM

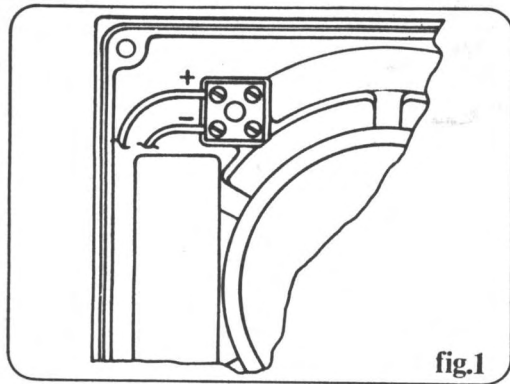


fig.1

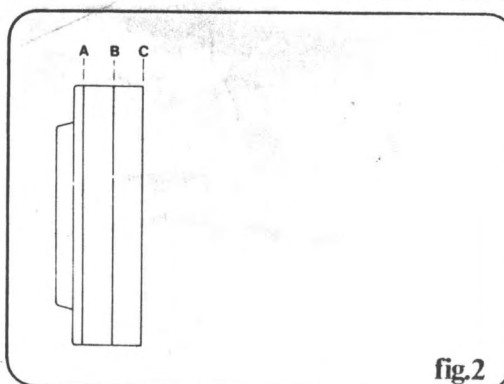


fig.2

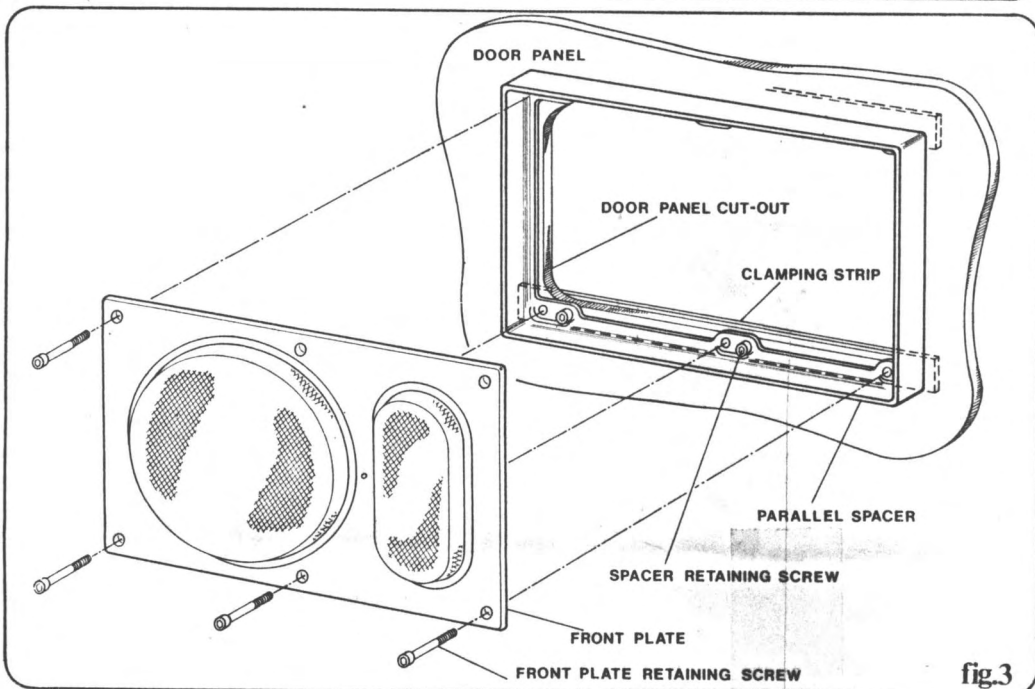


fig.3

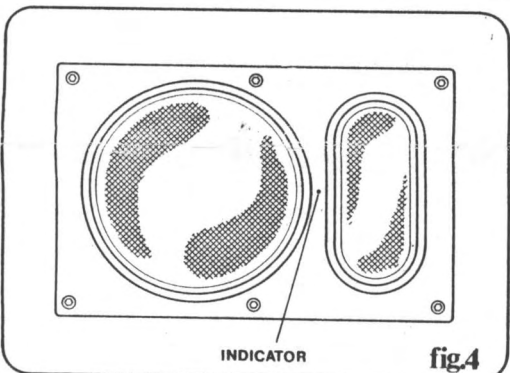


fig.4

INSTRUCTIONS FOR LM1 PM INTRODUCTION

The LM1 "Leisure Monitor" loudspeaker system has been designed with a very wide range of applications in mind. Indeed the diminutive and good-looking LM1's fit almost any application where high-quality sound reproduction is required. They are ideal for use in cars, boats and caravans etc, and for use in any small rooms at home, such as the kitchen or study. The B&W Leisure monitor is available in two versions: the fully enclosed version designated LM1, and the panel-mounting version designated LM1 PM. The enclosed version is small enough to be positioned on the rear window shelf of most cars, while the LM1 PM and its associated spacer rings provide several mounting options for fitting the systems into the rear window shelf or doors of a car, or into boat or caravan furniture etc.

CONNECTION

This carton contains one pair of LM1 PM loudspeakers supplied in the form of a "mirror-image" pair. The input terminal connections of the LM1 PM are located on the rear of the front plate casting as shown in Figure 1. The screw terminal connections are labelled "+" and "-" to denote positive and negative respectively. The loudspeaker cable should be connected by stripping back the insulation of the two cores by about 6 mm (1/4") and inserting the bared ends of the cable into the appropriate holes in the terminal block. The two screws on the left-hand side of the terminal block should then be tightly

screwed in using a small electrical screwdriver so that the cores are firmly trapped in place. The positive core of the cable is often marked with a coloured stripe or ridge in the plastic insulation. When connecting the second loudspeaker to a stereo amplifier or car stereo unit it is important to make sure that you follow the same convention regarding polarity as was used for the first. Thus, for example, if the positive (+) terminal of the first loudspeaker was connected to the positive (or "hot") terminal of one amplifier output, then the positive terminal of the second loudspeaker should likewise be connected to the positive terminal of the other output of the amplifier. The transient performance of your LM1 loudspeakers at low frequencies will be degraded if the loudspeaker connecting cables have a d.c. resistance which is greater than about 1 ohm. Because resistance is proportional to length, the cables should be kept as short as possible - and certainly less than about 15 m long when using 3A cable. If cables longer than 15 m are required you should use a heavier duty cable.

POSITIONING AND MOUNTING

The "PM" version of the LM1 supplied in this package is designed to be mounted into the door or rear window shelf panels of a car, or into boat or caravan furniture etc. different mounting options are provided by virtue of the two parallel spacers. The options are illustrated in Figure 2 and are denoted B, C, with respect to the corresponding mounting plane or surface. Thus, for example, option B consists of the front plate mounted on one parallel spacer. The parallel spacers are provided with location pegs and slots to facilitate stacking. One further option, denoted A in Figure 2, is also possible, i.e. direct mounting of the front plate onto a surface. This option is not practical when using the screws provided unless there is access to the rear of the mounting surface. When you have selected the mounting option to be used, the holes to be cut out in the mounting surface can be marked out using the template printed on the carton. Four shapes of cutout are shown on the template and are labelled with the mounting option for which they are suitable. The template also shows the mounting holes required.

Figure 3 shows a typical mounting arrangement (in this case using option B). Having made the cutout in the mounting surface and drilled the twelve 6-mm diameter holes required, one parallel spacer is fixed to the mounting surface by threading six M5 x 16 mm long spacer retaining screws through the spacer and mounting surface and into the tapped holes in the clamping strips as shown in Figure 3. (An allen key is provided for tightening the screws). The clamping strips should be positioned so that the three remaining holes in each strip line up with the holes in the parallel spacer which are adjacent to the spacer retaining screws. The front plate assembly can now be fitted onto the parallel

spacer using six M5 x 30 mm long front plate retaining screws. For option C the same procedure should be used except that a second parallel spacer should be interposed between the front plate and the spacer attached to the mounting surface. In this case the front plate is retained using six M5 x 50 mm long screws.

When using the parallel spacers in combination with the front plate it is important to make sure that the location pegs on the rim of the parallel spacers face forward so that they locate with the slots in the rear of the front plate.

If the LM1's are to be mounted on the rear window shelf of a car, the best stereo effect will be obtained by positioning the high-frequency drivers (located behind the oval-shaped grilles) as far apart as possible. Thus when looking towards the rear window from the driving seat, the left-hand loudspeaker should have the oval-shaped grille to the left of the circular grille. When fitting LM1's into the doors of a car it is a worthwhile precaution to fit the enclosed polythene rain shields to protect the loudspeakers from any water which might enter through the window seals. The shields can be fixed in place by clamping their top edges between the rear side of the door panel cutouts and the uppermost clamping strips. Alternatively, the top edges of the shields can be attached to the rear side of the door panel using a good adhesive tape.

IMPORTANT ADDITIONAL INSTRUCTIONS FOR MOUNTING OF B&W LM1 PM LOUDSPEAKERS

When mounting the PM (panel-mounting) version of the B&W LM1 Loudspeaker to the door of a car, it may be found to be impracticable in some cases to make use of the clamping strips described in the instructions. Some car doors have unevenly-shaped metalwork which would prevent the clamping strips from lying flat behind the door panel. To enable the LM1 PM to be mounted under these circumstances, six captive M5 nuts have been provided per model. These nuts are provided with a steel clip which enables them to be slotted onto the edges of a hole cut out of the steel door panel. The captive nuts should be positioned (with the aid of the template printed on the carton) so that they line up with the six mounting holes in the front panel.

OVERLOAD PROTECTION CIRCUIT

The LM1 is equipped with B&W's patented overload protection device APOC. This electronic circuit monitors the voltages across the low-frequency and high-frequency drivers such that in the event of an overload condition occurring, the drive signals being fed to the loudspeaker drivers are removed before any mechanical or thermal damage can be caused. When an overload condition occurs the small red indicator positioned on the front panel (see Figure 4) is illuminated and the sound output is cut off. As soon as the overload condition ceases, or the volume control is turned down, the indicator light will extinguish and the loudspeaker will automatically return to normal operation. Because the protection circuit derives its power from the audio input signal it requires no battery.

Amplitude/Frequency Response

Typically 80 Hz to 16 kHz ± 4 dB measured using 1/3rd-octave pink noise excitation with the loudspeaker positioned on the rear window shelf of a car and with the microphone placed near the driver's head.
Typically 31 Hz to 16 kHz ± 5 dB measured using 1/3rd-octave pink noise excitation with the loudspeaker (panel-mounting version) mounted into a door or the rear window shelf of a car and with the microphone placed near the driver's head.

Drive Units

Bass/Mid-range driver, BM100/LM1:
100-mm diameter Kevlar cone treated with several special damping compounds.
26-mm diameter high-temperature voice coil, phenolic resin impregnated on a foil-lined former. The materials used for the inner and outer suspensions are specially selected to provide high compliance as well as good stability in high ambient temperatures.

High-frequency driver, TW20/LM1:
20-mm diameter polyester weave dome treated with a special combination of sealing and damping compounds to ensure reliable operation at high ambient temperatures. 20-mm diameter high-temperature voice coil.

Impedance

Nominally 4 ohms. Impedance magnitude does not fall below 3.2 ohms throughout the frequency range 20 Hz to 200 kHz.

Sensitivity

85 dB at 1 metre for 1 watt into 4 ohms.

Power Handling

For car use a minimum amplifier power output of 10 W into 4 ohms is recommended.

There is no upper limit in normal use because of the electronic overload protection device.

Operating Temperature Range

Ambient temperatures up to 80°C.

Dimensions:

Panel-mounting version:
Length 240 mm - Width 155 mm - Depth 70 mm

Weight Panel-mounting version: 2.8 Kg