

# B&W LOUDSPEAKERS LM1 Mk2

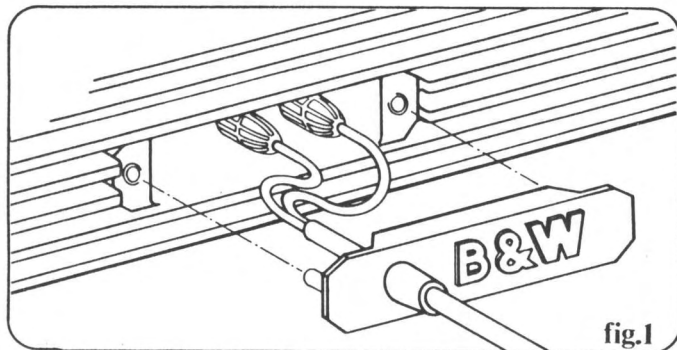


fig.1

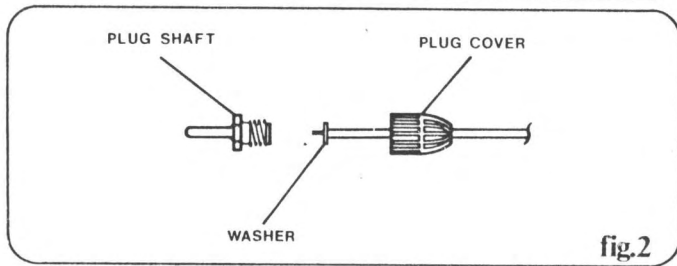


fig.2

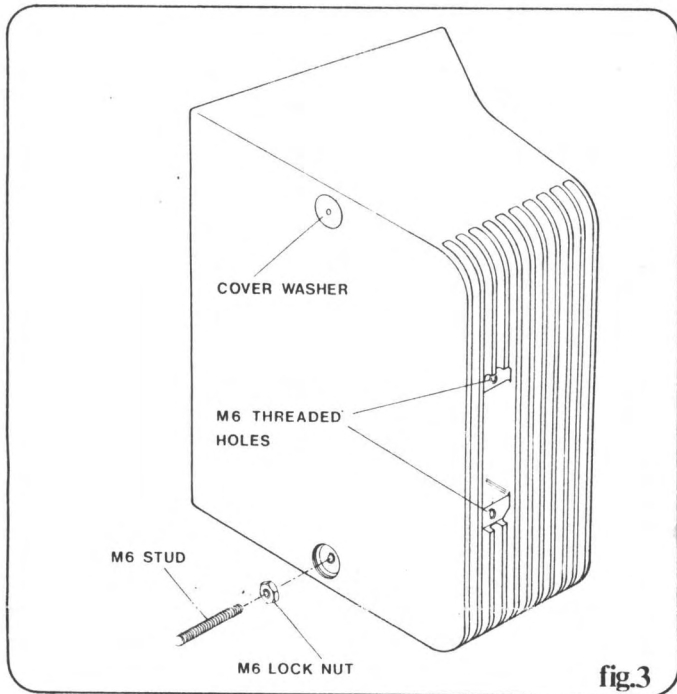


fig.3

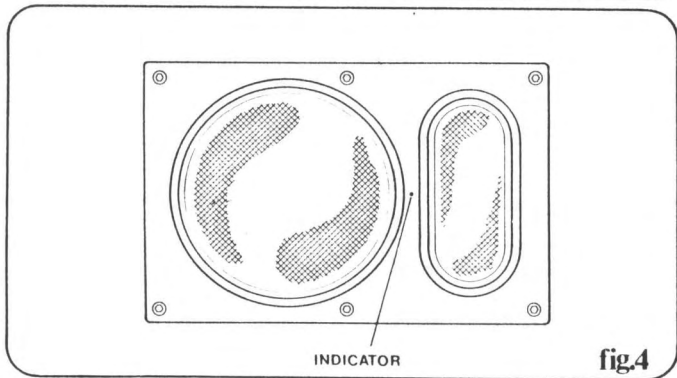


fig.4

## INSTRUCTIONS FOR LM1 Mk2

### 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 loudspeakers supplied in the form of a "mirror-image" pair. The loudspeakers are not designated as being for either the right or left channel as this decision is dependent on the way the loudspeakers are positioned. The choice is thus left to the user. The input terminal connections of the LM1 are located at the rear of the enclosure as shown in Figure 1. Two 4 mm "banana" sockets are fitted here and are coloured red and black to denote positive and negative connections respectively. The 4 mm plugs provided can be attached to the loudspeaker connecting cable by soldering the washer enclosed inside each screw-on plug cover onto the bared ends of the cable as shown in Figure 2. If a soldering iron is not available, a good connection can still be made by looping the bared end of the cable through the washer. The plug cover should then be screwed on tightly to trap the wires against the metal plug shafts. When connecting the second loudspeaker to a stereo amplifier 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 (red) 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 or perhaps consider moving the amplifier nearer to the loudspeakers. The connections at the rear of the enclosure can be hidden from view, if desired, by passing the loudspeaker cable through the hole in the cable cover provided, and then sliding the cover along the cable and into the location holes on either side of the 4 mm connection sockets. The fitting of the cable cover is illustrated in Figure 1.

### POSITIONING AND MOUNTING

Because of their small size, the LM1 loudspeakers can be easily accommodated within a bookshelf or on a desk in a small or medium-sized room. For the best stereo effect, the loudspeakers should be placed about two or three metres apart with both loudspeakers about the same distance away from your normal listening position. It is also advisable to position the loudspeakers at roughly the same height as your head when you are seated, so that you are listening approximately "on axis" with the loudspeaker drivers. Alternatively, it may be convenient to make use of the sloping front of the LM1 enclosures so that the loudspeaker drivers are angled towards you. When the LM1's are to be used in the car, the most convenient mounting position will probably be on the rear window shelf. To obtain the best stereo effect the high-frequency drivers (located behind the oval-shaped grilles) of the stereo pair should be positioned 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.

Because the LM1's are of considerable weight, it is strongly recommended for safety reasons that the LM1's be anchored to the rear window shelf. To facilitate this, each LM1 enclosure is provided with two threaded holes in the bottom side. Access to these holes can be obtained by pulling out the cover washers (see Figure 3) using a small screwdriver. An M6 threaded stud should be screwed into each hole and locked into place using an M6 nut as shown in Figure 3. These protruding studs should then be passed through suitable holes drilled through the rear window shelf. A washer followed by an M6 nut should be threaded over each stud and the nuts tightened up with a spanner.

### FREQUENCY RESPONSE LINK SELECTION

This link selection is to enable the frequency response characteristic of the system to be adjusted to suit the listening environment. The "0" position is the nominally flat position and should be selected when the LM1's are used in normal small rooms. The "+" position provides mid- and high-frequency boost and should be selected when the LM1's are used inside a car or small confined space. This change can be adjusted inside the model see fig. 5.

### 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

Mode link, "0" position as suited to use in normal rooms:  
95 Hz to 25 kHz + 4 dB on listening axis at 2 metres measured using sinewave excitation with the loudspeaker in a free-field environment.

Mode link in "+" position as suited to use inside cars: as set at production.  
Typically 80 Hz to 16 kHz  $\pm$  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  $\pm$  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, TP26. 26-mm diameter soft dome. 26-mm diameter high-temperature voice coil.

### Impedance

Mode link in "0" position: Nominally 8 ohms. Impedance magnitude does not fall below 6.4 ohms throughout the frequency range 20 Hz to 200 kHz.

Mode link in "+" position: Nominally 4 ohms. Impedance magnitude does not fall below 3.2 ohms throughout the frequency range 20 Hz to 200 kHz.

### Sensitivity

81 dB at 1 metre for 1 watt into 8 ohms, mode in "0" position.

85 dB at 1 metre for 1 watt into 4 ohms, mode in "+" position. Normal setting.

### Power Handling

For car use a minimum amplifier power output of 10 W into 4 ohms is recommended. For home use a minimum amplifier power output of 20 W into 8 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:

Enclosed version:  
Length 240 mm - Width 155 mm - Depth 195 mm

### Weight

Enclosed version: 5.2 Kg

Finishes Nextel finish available in five colours: beige, brown, charcoal grey, blue and red.

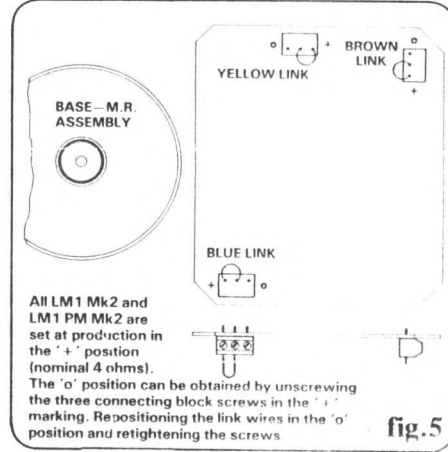


fig.5