A Review of the J R 149 Loudspeaker by Ralph L. West

TIME was when loudspeakers had to be big to be good. As knowledge and experience grew and domestic pressures increased, sizes fell gradually from around 9 cu ft (2,00 litres) to some 2 cu ft (56 litres). 1964 saw the breakthrough in the form of the Goodmans Maxim - about a quarter of a cubic foot (7 litres). It was by any standard a very good loudspeaker and really set engineers thinking. It WAS therefore possible to get the full frequency range from a very small cabinet and with it came a number of other advantages, both technical and commercial. Sixteen years on, and with hundreds of new and better plastics and adhesives, many usable up to high temperatures, even the power handling limitations of the very small loudspeaker has been overcome. We also have very much improved drive units, thanks to a large extent to the efforts of the BBC research team. It is, therefore, no longer necessary to have a large loudspeaker unless very high sound levels are needed in concert halls or studios. The JR is small - 0.35 cu ft (10 litres) - but of unusual design, wherein lies much of its excellence. There are a number of design factors we have known for years but not done very much about as there were bigger problems to overcome. The design of the JR has solved some of these so-called minor problems in a simple but cunning way. The basic structure is an aluminium cylinder 12 in (30 cm) high and 8 in (20 cm) in diameter. This bestows several benefits. Firstly it is a far, far more rigid structure than the same volume bounded by flat panels of the same material, so sound radiation from the cabinet itself is virtually zero -provided the two ends are made sufficiently rigid. They are, being braced by an axial steel rod which bolts the whole structure together. Even these ends are further stiffened by the visible wooden ends cemented on to them. One cannot hope to get a really smooth response if there is any measurable sound radiated from the cabinet wall. This cylinder is, of course, lined with absorbing coatings, both mechanical and acoustic. A small segment of the cylinder has had to be flattened to mount the two drive units, but this is internally braced to restore its rigidity.

The cylindrical shape confers two other technical benefits. 'the flat faces of all conventional cabinets produce small steps in the frequency response at frequencies mainly dependent on the distance of the base drive unit from the edges. The best one can normally do is to hope these steps will compensate some other disturbance in the response curve. This is a defraction effect and can be minimised by having no sharp angles on major surfaces. Spheres and cylinders are the best shapes, and microphone designers have long been awake to this. This cylinder also gives an interval volume with only two small flat reflecting surfaces instead of the usual five, so it can more easily be effectively damped acoustically. Other things then being equal, this design ought then to have a performance that is better than one might expect from its individual components and price. The JR loudspeaker most certainly bears this out. Looks, too, have not been forgotten. The cylindrical from has been continued over the driving units with a segment of metallic mesh and the whole cylinder covered with black acoustically transparent foam. The crossover network is cleverly housed in a hollow aluminium plinth, which balances the whole to produce most pleasing proportions and shape.

Having lived with a pair for over a month, I find myself as amazed and delighted as I was when I first heard them. They had been sitting on a pair of Spendcr BC1 cabinets and on instant switchover, (a most brutal test); we have been unable to say which we prefer. The 'we' includes my wife - the fair sex are well known as very hard judges of loudspeakers.... And they look at them too!

The amazement has still persisted during the laboratory tests. Not only is the overall response well in the monitor class, but the measured response from 100 Hz to 3,000 Hz is the smoothest I have yet encountered due most certainly to the cylindrical shape. The impedance curve shows nothing untoward that might embarrass either amplifier or its fuses.

In use, some bass boost is used, a little less than we were used to with the Maxim. This done, the changeover to a larger speaker minus the boost showed a perfectly adequate. Bass response practically all of the time. What is more, the JR will accept enough signals to allow one to enjoy even an organ recital to the full - feeling as well as hearing! Only the last half pedal octave benefits from the larger speaker, five times its volume. It does this; moreover, with a freedom from any suggestion of stress, and I frequently needed to look at the switch to be sure we were really listening to the smaller pair. This again is no doubt due at least in part to the extremely rigid enclosure construction that just won't 'talk' even at very high sound levels.

At the other extreme, all the more quiet and delicate sounds come over with a naturalness that makes one forget loudspeakers. In fact, it is usually difficult to hear the loudspeaker itself: one is merely conscious of a source of sound somewhere behind and between the actual cabinets. I has a few snippets of good quality recordings containing voices from friends and these have proved uncannily real. As expected from the close agreement of the two response curves, stereo images are very good indeed, with good source material, of course. Out here, in rural southwest France we can only get BBC long wave consistently, but France Musique provides FM stereo practically the whole day. Some of the quality is superb. I has also my own library of stereo tapes, most of them 15 i.p.s. Master recordings all done with straightforward undoctored Bluilllein technique using ribbon or capacitor microphones (Grampian, AKG C.451 and C.24) so there is enough material with discs and pick-up to catch them out, if indeed they could be.

The most searching test is long-term listening and the answer to the question 'is it ever a relief to switch over to another

loudspeaker?' This has already been answered satisfactorily.

Jim Rogers is no newcomer to high fidelity design and this fact is, of course, the most important ingredient in this revolutionary design. He is to be congratulated on producing such a gem of a loudspeaker.

Ralph L. West.

Manufactured in England by JR Loudspeakers Limited

Lw~akers

Distributed in U.K. by: -

Tape Music Loudspeakers Limited

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JR149MK2

ADDITIONAL INFORMATION

THIS SPEAKER WAS ALSO SIMUILAR IN SIZE TO MK1 DIFFERENCE BEING JR LOGO WAS NOW ON THE FOAM,A DIFFERENT CONSTRUCTION METHOD WAS USED, A MEDIATE FRONT BAFFLE OF 16 MM WAS USED AND A STRONGER ROD WHICH BRACED THE TOP TO THE BOTTOM WAS USED. THE 5" FOCAL BASS UNIT WAS OF VERY ADVANCED DESIGN WITH AN EXTRA LONG VOICE COILOF13MM,A MASSIVE MAGNET AND HEAVY GAUGE STEEL CHASSIS WHICH GAVE IMPROVED POWER HANDLING AND TRANSIENT RESPONSE. THE TWEETER FEATURED A HEXAGONAL WIRE VOICECOILAND A SUPERB POLAR RESPONSE ADD TO THAT THE CABINET DESIGN WHICH AGAIN ADDS A VERY GOOD POLAR RESPONSE AND YOU HAVE AN EXCELLENT SPEAKER. THE CROSSOVER USED AIR-CORED INDUCTOR FOR THE TREBLE AND LOW LOSS CAPACITORS, AND WAS AGAIN IN THE BASE OF THE SPEAKERS A WAY FROM MAGNETIC FIELDS.

SPECIFICATIONS FOR JR149 MK2.

IMPEDANCE 8 OHMS

EFFICIENCY 84.5DB FOR 1 WATT

POWER HANDLING 30-100WATTS PROGRAM

CROSSOVER 2.2KHZ

FREQUENCY RESPONSE 40HZ-25KHZ

PINK NOISE 1/3 OCTAVE RESPONSE 2DB 75 HZ-20KHZ

SYSTEM RESONANCE 60HZS

TREBLE UNIT SCANSPEAK 2CM DOME

BASS UNIT FOCAL 13 CMS

DIMENSIONS 15"X 9"

REVIEWS FOR THE JR149 MK1

HIFI FOR PLEASURE HAD TO SAY IN THERE TEST ON 30 LOUDSPEAKERS JUDGED IN COMPARISON TO SEVEN LIVE SOUNDS THAT THE JR WHERE OUT RIGHT WINNERS,

RANKED IN ORDER,

1ST JR 149 MK1

2ND SMC AS40

3RD YAMAHA NS500

4TH B&WDM5

5TH MORDAUNT -SHORT PAGEANT

6TH KJ LS35/A

7THPIONEER HPM60

8TH KEFR103

9TH CELEF MINI PRO

10TH ORTOFON P45

11TH ACOUSTIC RESEARCH AR12

12TH CELESTION UL10

13TH IMFTSL50-11

14TH QUASAR QS2

15TH STUDIO CRAFT 330

16TH TANDBERGTLS5020

17TH TANNOY DEVON

18TH SPENDOR BC1

19THQUAD ELECTROSTATIC

20TH TOSSHIBASS470

21ST SANSUI M330

22ND CHARTWELL PM400

23RD JBLL36

24TH EXACT RH14

25TH KLHCB10

26TH WHARFEDALE AIREDALE SP

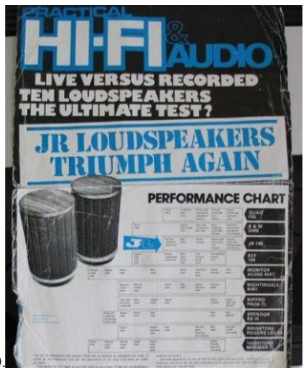
27TH GOODMAN'S ACHROMAT 400

28TH BOSE501

29TH SONYSS50530

30TH BIC VENTURI.

PRACTICAL HIFI & AUDIO HAD TO SAY



JR149'S TRIUMPH AGAIN IN THERE 10 SPEAKER TEST LIVE VERSUS RECORDED.

SPEAKERS IN THE TEST WHERE AS FOLLOWS,

JR149 MK1

QUAD ESL

B&WDM6

ROGERS LS3/5A'S

KEF104

NIGHTINGALE NM1

NIPPRO PRO9-TL

SPENDOR BC111

VIDEOTONE MINIMAX 2

MONITOR AUDIO MA1

Specification