JBL L-50 Loudspeaker System

Having followed the course of the production of a record last year, we were amazed how often JBL speakers turned up in recording studios. We discovered that JBL's various studio monitors (often slapdash home built units utilizing JBL drivers) as well as their consumer speakers (particularly the L-166 and L-65) turned up repeatedly for playback in the studio. When we questioned the respective studio engineers about this, the typical reply was that the JBL's provided exceptionally clean sound and were, they said, capable of withstanding "outrageous abuse."

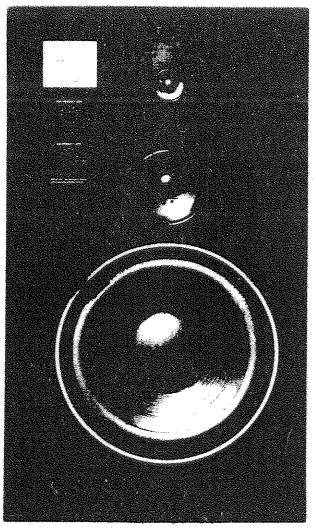
With that in mind, we paid particular attention to a recent demonstration of JBL's relatively new three piece L-212 system which offers two thin side speakers carrying all frequencies above 70 Hz and an "ultrabass" subwoofer. We came away from that demonstration thoroughly convinced it was one of the finest speakers we had ever heard, at least under the limited conditions of the test we auditioned. But, with a price hovering in the mid $2000 range, that speaker remained a bit too esoteric for our tastes.

It was with some joy, then, that we learned JBL had released the L-50 which was a direct result of the innovative engineering that produced the remarkable L-212. The L-50 is JBL's least expensive three way system and shares many of the best features of the old three-way L-110. With all of that in mind, we shipped the L-50's to the lab expecting nothing but the best.

From the outside, the JBL L-50 is typical of that company's product line. The speaker is flawlessly constructed and arrived at our offices without a single imperfection in the oiled walnut cabinetry. In fact, the speaker is assembled with such craftsmanship that its owners may wish to discard the grille (which, by the way, is fluted and heavily reinforced and comes in three different colours — blue, brown or rust). The connections at the rear are made via ingenious twist-to-lock connectors and are a joy to use. We did find that once the wire is locked in place, however, that a slight tug is in order to ensure you've inserted the wire far enough.

The L-50's are a medium sized speaker measuring approximately 24 inches tall, 14 inches across and 13 inches deep. At 47 pounds each, they are relatively easy to transport.

JBL tells us that this speaker contains their most advanced frequency dividing



JBL L-50

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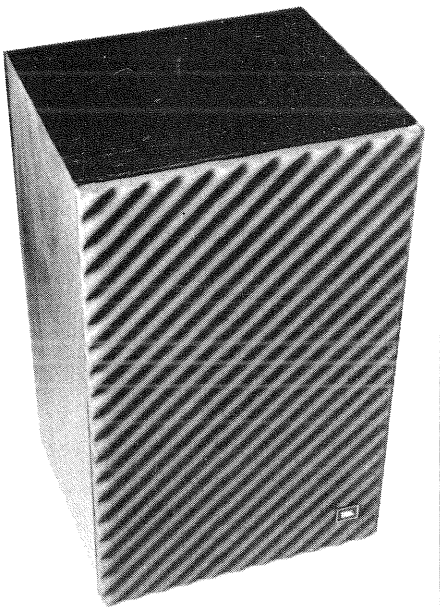


networks, designed, in fact, using computer analysis and laser interferometry. This is a superior way of designing speakers. It involves programming a computer with a mathematical model of a loudspeaker, then letting the computer produce the theoretical plots of impedance and frequency response. Since the resultant theoretical speaker may fail to produce a prototype which matches the highly subjective tastes of the human ear, several different designs are worked out, and the sweetest of these prototypes ultimately becomes the production model. We have seen this process work with amazing accuracy at KEF and Bose as well.

In designing this speaker, JBL also spent a great deal of time reworking the cone materials of the midrange, conducting holographic studies of that driver under actual dynamic conditions.

The low frequency driver in the L-50 is a new ten inch version with a prominent four inch centre dome. This driver makes use of a 2 inch voice coil and a large 2-1/2 pound magnetic assembly energized by an Alnico V magnet. Both the voice coil and magnet are thus relatively large in comparison to most loudspeakers of this size.

The midrange unit measures five inches and is housed in an isolated subchamber to prevent a conflict with the bass driver immediately beneath it. It makes use of a 7/8ths inch diameter copper voice coil, an extremely stiff cone, and an aluminum centre dome. The high frequency driver is small and measures only 1.4 inches. It is carefully surrounded by a hard plastic plate which slopes inward toward the face of the speaker itself, the intention here being to eliminate diffraction effects.

All three drivers are arranged in an exact vertical array, a system which usually minimizes interference in the horizontal plane.

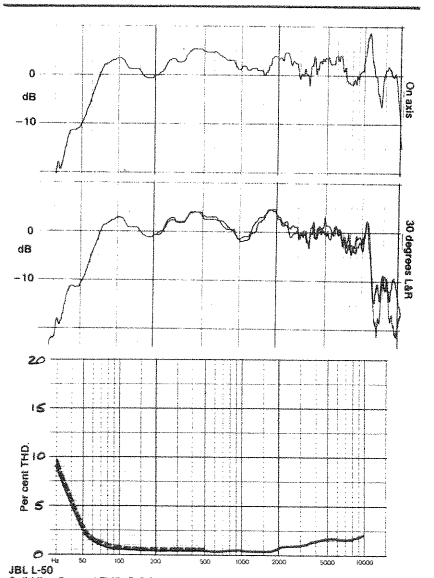
JBL states that this speaker can be driven by as little as 10 watts of clean power, but suggests using an amp of no less than 60 watts. We performed listening tests using two amps — one of 40 watts and one of 80 watts — and would recommend using at least 60 or more watts to get the most out of these speakers.

The enclosure of the L-50's includes a ducted port which extends right through the speakers' baffle. The enclosure panels are constructed of dense compressed wood 3/4 inch thick, and the side and back panels are lined with wadding. Also in the enclosure, for the benefit of the bass driver, is a rather unique fiberglass acoustic resistance shell. Its purpose is to provide further damping without restricting normal cone movement.

Measurements

JBL states that the nominal impedance of this speaker is 8 ohms and that the crossover frequencies are 800 Hz and 3 kHz.

In our lab tests, we found that the sensitivity (the power input required to produce



JBL L-50
Solid line-Percent THD @ 2.9 watts input (90 dB SPL @ 400 Hz @ 2 M on axis)
Broken line-Percent THD @ 9.1 watts input (95 dB SPL @ 400 Hz @ 2 M on axis)

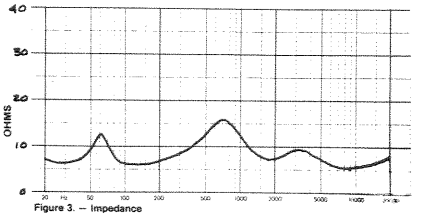


Figure 3. — Impedance

90 dB SPL at 400 Hz at 6 feet on axis) was 2.9 watts. The system resonance frequency was found to be 61 Hz.

A short tone burst of eight cycles was swept across the ausible frequency spectrum. Ideally, the speaker should only reproduce the same eight cycles, but if there are resonances in the system, some sound or ringing will continue after the input has ceased. We encountered Class II ringing, that is moderate ringing, at 1500, 2000, 2200, 3800, 6000 and 11,000 Hz.

Analyzing the graphs

The JBL L-50 on paper presents what would appear to be open sound, good bass, and a well balanced sound. This is quite an interesting speaker because the response is fairly flat. We see some warmth from the 400 cycle region and expect a bright tone, quite forward. It is a very efficient speaker, requiring 2.9 watts to drive it to 90 dB. The impedance curve tends to rise at points showing that the enclosure has been tuned by a long and narrow duct. It is well loaded, and the distortion is very low — the figure of 2% at 50 Hz with 2.9 watts (and then 9.1 watts) is remarkably good — and we'd expect this speaker to sound very clean. The sharp cut on the graphs just past 10 kHz will give the speaker a definite brilliance, though the spike there, with careful listening, may possibly be obtrusive — it will give a hiss to the background and a bit of colouration at the high end. The 30 degree up and down curve is typical and acceptable. The tweeter goes well down, and presents no problems other than the possibility of a slightly metallic sound on the high end. The class II ringing at 11000 Hz and 6000 Hz are, again, the fault of the tweeter, but this is nothing very serious. The even appearance of the impedance tells us that this speaker will give no problem to the amp. In the lab this speaker received excellent marks.

Listening tests

We conducted, ultimately, four blind listening tests comparing the JBL to six other speakers, then four more listening tests in a home environment comparing the JBL to a reference speaker.

The blind tests netted comments such as open and well balanced" and often the description "neutral." The bass was judged to be open and free from boomines or hangover and, in fact, the midrange and tweeter similarly failed to attract any particular complaints. Shrill female choral work and some of the upper frequencies sometimes sounded slightly metallic, but there was no question that they were clear and precise. The worst comments were hurled when the JBL was placed in a corner, and at that point it became clear that, to our ears at least, this speaker is not going to perform well in that particular position. The corner tended to emphasize upper bass and mids, created a rather hollow sounding boxy bass, and further exaggerated the highs.

We thus avoided the corner positioning at home and confirmed our good comments from the earlier test. Overall, we judged the bass to be firm and clean and particularly accurate on orchestral works.

With heavy rock music, the bass may well be considered under emphasized until a reasonable volume level is attained; but this is precisely to our tastes. This speaker tends to warmly emphasize the midranges, which gives it a richness not often found, but this same emphasis also seems to give spoken male speech a quality which is not entirely natural.

The L-50's come equipped with high frequency level and mid frequency level adjustments. In the blind tests, these levels were both set at 5 (from 1 to 10). At home, however, we ultimately found that setting the mid at 4 and the high at 7 netted the best result.

Overall, the speaker's clarity and definition were judged to be sharp and distinct; sonic perspective was judged to be very natural; and only a bit of colouration was evident in the bulk of musical material auditioned. The L-50's performed admirably.

Conclusions

The JBL L-50 speakers are exceptional speakers. The stereo imaging is open and altogether spacious and, if you want to get extremely subjective, we detected no hint of what pundits have heretofore called the "West Coast Sound." The crossover networks offer startling transparency and this speaker is capable of providing accurate, tight sound up to ear splitting levels. Its sound, in fact, becomes most favourable at relatively high volumes and thus its popularity with pop studio musicians who demand volume, clarity and accuracy is assured. This is a fine full-sized speaker and represents good value for your speaker dollars. Highly recommended.

Suggested retail price: $423 each.

For more information, contact E.S. Gould Marketing Ltd., 109 Montee de Liesse, Montreal, Quebec, H4T 1S9.