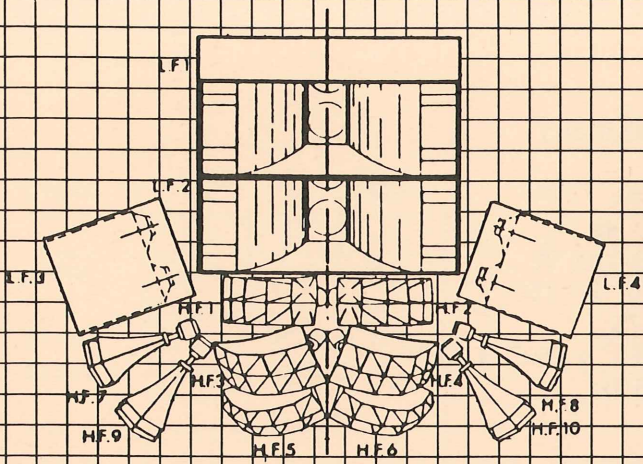


# ALTEC LANSING APPLICATIONS NOTES

AN #5



## CUSTOMIZING ALTEC LANSING LOUDSPEAKER ENCLOSURES

### Introduction

This Application Note describes a method of improving the low-frequency and transient response of Altec Lansing loudspeakers in 620, 614, 612 and 930 enclosures. Each enclosure may be "customized" by adjusting the port, thus tuning the box for the particular loudspeaker chosen. In most cases considerable improvement in the  $f_3$  (-3 dB downpoint), and ripple (min./max. variation from asymptotic) can be achieved by following the information given below.

### Method

Tables are supplied for each Altec Lansing enclosure. Choose a woofer and box combination that will provide the "preferred" results. Efficiency, power handling, and distortion should also be considered when choosing a woofer and box combination. Some

woofers do not belong in certain enclosures and are not listed below.

**Example 1:** 604's are required for a particular application. Space limitations preclude the use of a 620 cabinet and a 612 is chosen as the best compromise. The 612 table recommends a port area of 48.68 square inches, or a  $6\frac{1}{4}$ "  $\times$   $7\frac{3}{4}$ " cut-out for the port in the  $\frac{3}{4}$ " baffle. The user can expect his  $f_3$  to be 48.8 Hz, with a 1.3 dB peak in the response at 59.4 Hz, and a dip of 0.9 dB at 114.2 Hz (ripple).

**Example 2:** A user has a pair of 416-8C's in 620 cabinets, which he would like to put into smaller enclosures. A 904 cabinet is chosen. The  $f_3$  is shown in the table to be 52.8 Hz and the ripple to be no greater than 0.6 dB. The existing port can be used in the 930, and a duct or "tunnel length" of  $7\frac{1}{4}$ " is required. This duct length includes the thickness of the baffleboard.

### 612C Enclosure

Driver	$f_3$	$f_B$	Ripple	Peak	Dip			Port	Duct Length	Recommended Cut-Out
	Hz	Hz	dB	dB @ Hz	dB @ Hz	dB @ Hz	Sq. in.	In.	In.	
416-8C	42.4	37.0	0.0				13.96	0.75	3" $\times$ 4-5/8"	
515E	47.8	49.9	1.2	+0.6	61.8	-0.6	117.0	40.08	0.75	5-1/8" $\times$ 7-3/4"
515-8LF	43.3	41.8	0.3	-0.1	62.0	-0.3	100.0	21.32	0.75	3" $\times$ 7-1/8"
604-8K	48.8	52.9	2.1	+1.3	59.4	-0.9	114.2	48.68	0.75	6-1/4" $\times$ 7-3/4"
619-8A	44.2	41.3	0.3	-0.2	65.6	-0.3	97.5	20.23	0.75	3" $\times$ 6-3/4"
918-8A	54.9	60.4	2.6	+1.5	66.9	-1.1	126.1	80.29	0.75	7-3/4" $\times$ 10-3/8"
921-8A	46.9	49.4	1.5	+0.8	59.4	-0.7	114.2	38.60	0.75	5" $\times$ 7-3/4"

### Standard Specifications

Net Volume	6.51
Box Tuning ( $f_B$ )	41 Hz
Port Area	23.0 sq. in.
Port Cut-Out	3.0" x 7.75"
Duct Length	0.75
Dimensions (HxWxD)	29.5" x 25.5" x 20.0"
Weight (less loudspeaker)	75 lbs.

### 614D Enclosure

Driver	$f_3$	$f_B$	Ripple	Peak	Dip	Vent	Vent Length	Recommended Cut-Out
	Hz	Hz	dB	dB @ Hz	dB @ Hz	Sq. in.	In.	In.
414-8E	56.0	60.7	2.0	1.2 @ 69.6	-0.9 @ 131.0	19.30	.75	2" x 9-5/8"
9177-8A	54.9	59.7	1.7	1.0 @ 68.3	-0.7 @ 128.7	18.21	.75	2" x 9-1/8"
617-8A	60.6	65.9	2.7	1.6 @ 72.4	-1.1 @ 139.3	24.58	.75	2" x 12-1/4"

### Standard Specifications

Net Volume	2.97 cu. ft.
Box Tuning ( $f_B$ )	55 Hz
Vent Area	14.0 sq. in.
Vent Cut-Out	2" x 7"
Vent Length	0.75
Dimensions (HxWxD)	24.0" x 20.5" x 15.25"
Weight (less loudspeaker)	35 lbs.

### 620C Enclosure

Driver	$f_3$	$f_B$	Ripple	Peak	Dip	Port	Port Length	Recommended Cut-Out
	Hz	Hz	dB	dB @ Hz	dB @ Hz	Sq. in.	In.	In.
416-8C	38.4	37.0	0.3	-0.2 @ 57.0	-0.3 @ 88.0	21.62	0.75	2-1/2" x 8-5/8"
515E	45.9	49.0	2.0	+1.2 @ 56.0	-0.9 @ 106.0	59.06	0.75	5-3/8" x 11"
515-8LF	40.8	41.8	0.9	+0.4 @ 53.0	-0.5 @ 97.0	33.34	0.75	2-1/2" x 13-1/4"
604-8K	45.9	50.8	2.8	+1.7 @ 55.0	-1.2 @ 106.0	67.07	0.75	6-1/8" x 11"
619-8A	40.8	41.3	0.7	+0.2 @ 53.8	-0.5 @ 97.5	31.70	0.75	2-1/2" x 12-3/4"
921-8A	45.0	48.4	2.3	+1.4 @ 54.0	-0.9 @ 104.0	56.85	0.75	5-1/8" x 11"

### Standard Specifications

Net Volume	8.33 cu. ft.
Box Tuning ( $f_B$ )	40 Hz
Port Area	27 sq. in.
Port Cut-Out	2-1/2" x 11"
Duct Length	0.75 in.
Dimensions (HxWxD)	40" x 26" x 18"
Weight (less loudspeaker)	104 lbs.

### 930 Enclosure

Driver	$f_3$	$f_B$	Ripple	Peak		Dip			Port	Duct	Notes
	Hz	Hz	dB	dB	@ Hz	dB	@ Hz	Hz	Sq. in.	In.	In.
416-8C	52.8	37.0	0.6	+0.6	101.0				20.00	7.21	2" x 10" (7-1/4 duct length)
515E	56.0	49.9	0.2	-0.2	98.0	-0.2	117.2		16.05	0.75	2" x 8"
515-8LF	52.8	41.8	0.2	+0.2	112.0				20.00	4.75	2" x 10" (4-3/4 duct length)
604-8K	54.9	53.9	0.5			-0.5	128.7		20.54	0.75	2" x 10-1/4"
619-8A	53.8	41.3	0.3	+0.3	109.8				8.30	0.75	2" x 4-1/8"
904-8A	66.9	72.5	2.3	+1.3	81.6	-1.0	153.8		59.13	0.75	6" x 10"
918-8A	61.8	62.8	0.9	+0.3	80.0	-0.6	148.0		35.97	0.75	3-1/2" x 10"
921-8A	53.8	49.4	0.3	-0.2	84.9	-0.3	116.5		15.48	0.75	2" x 7-3/4"

### Standard Specifications

Net Volume	3.95 cu. ft.
Box Tuning ( $f_B$ )	53 Hz
Port Area	20 sq. in.
Port Cut-Out	2" x 10"
Duct Length	0.75
Dimensions (HxWxD)	26" x 22" x 17"
Weight (less loudspeaker)	81 lbs.