

ELECTRO-VOICE
PROFESSIONAL SOUND REINFORCEMENT PRODUCTS
TL SERIES LOW-FREQUENCY
SPEAKER SYSTEMS SPECIFICATION SUMMARY

The Electro-Voice TL Series low-frequency loudspeaker systems are of direct-radiator (vented box) and folded-horn design and utilize EV's high-power EVM® speakers. Each system's low-frequency response is quite well behaved with no low-frequency peaking. All systems can handle full rated input power down to system cutoff. Further detailed information and construction plans are available.

All the single-driver direct-radiator TL systems have roughly the same efficiency and power handling capacity but have different low-frequency limits and box volumes. The larger boxes extend to lower frequencies. Two different low-frequency response curves on the direct-radiator systems can be selected by the use of a port cover and the addition of a simple low-level equalizer (step-down mode).⁵ Two equalizer alternatives are described in E.V. Form 1582-530. Systems may be used either singly or in stacked arrays to increase efficiency and output power (note "Quad" TL806Q and TL606Q, which are essentially 2 x 2 arrays in a single enclosure). The direct-radiator quad arrays approximately equal the efficiency of the two-speaker folded-horn systems while occupying less space with better low-frequency response.

The two folded-horn systems are best suited if high levels are desired in the 200 Hz to 500 Hz band or when the systems are mounted permanently in the outdoors. Their particular design protects the drivers from the weather.

NOTE:

1. System can generate one-half acoustic watt or more down to this frequency (8 acoustic watts for the TL806Q, TL606Q, TL5050, and TL4050).
2. Note that equalization has no effect on maximum output.
3. System is reasonably flat and exhibits a beamwidth no less than 80° up to this frequency (40° for the TL806Q, TL606Q, TL5050, and TL4050).
4. Equalizer is a second-order under-damped high-pass filter with a Q of 2 that provides a 6 dB peak boost at the listed frequency and rolls off at 12 dB per octave at lower frequencies.
5. SEE: D.B. Keele, Jr., "A New Set of Sixth-Order Vented-Box Loudspeaker System Alignments," J. Audio Eng. Soc., Vol. 23, pp. 354-360 — June 1975, (Reprint available from Electro-Voice.)

VENTED DIRECT-RADIATOR

FOLDED-HORN

	TL303	TL405	TL505	TL606	TL806	TL806Q	TL606Q	TL4050	TL5050
LOW FREQUENCY 3 dB DOWN POINT									
Normal	26 Hz	38 Hz	48 Hz	63 Hz	83 Hz	80 Hz	55 Hz	54 Hz	70 Hz
Step-down (without Eq)	30 Hz	51 Hz	55 Hz	78 Hz	130 Hz	125 Hz	73 Hz	--	--
Step-down (with Eq)	17.5 Hz	27 Hz	34 Hz	42 Hz	58 Hz	56 Hz	38 Hz	--	--
USABLE LOWER LIMIT FREQUENCY ¹									
Normal	20 Hz	29 Hz	36 Hz	45 Hz	62 Hz	60 Hz	42 Hz	44 Hz	55 Hz
Step-down ²	18 Hz	24 Hz	33 Hz	39 Hz	52 Hz	50 Hz	36 Hz	--	--
USABLE UPPER LIMIT FREQUENCY ³	600 Hz	1100 Hz	1100 Hz	1300 Hz	1600 Hz	800 Hz	600 Hz	700 Hz	850 Hz
EFFICIENCY (Half space)	5%	5%	5%	6%	6%	17%	18%	21%	20%
POWER HANDLING CAPACITY (continuous thermal limit)	60 W	100 W	100 W	100 W	100 W	400 W	400 W	200 W	200 W
MAXIMUM MIDBAND ACOUSTIC OUTPUT POWER	3 W	5 W	5 W	6 W	6 W	68 W	72 W	42 W	40 W
MAXIMUM SPL AT 10 FEET, FULL POWER (Avg. from 100 to 800 Hz)	112 dB	109 dB	109 dB	110 dB	109 dB	121 dB	123 dB	121.5 dB	121.5 dB
SPL AT 10 FEET, 1 WATT INPUT (Avg. from 100 to 800 Hz)	92 dB	89 dB	89 dB	90 dB	89 dB	95 dB	97 dB	98.5 dB	98.5 dB
BEAMWIDTH (—6 dB)									
400 Hz (Horizontal)	92°	120°	112°	121°	190°	91°	65°	71°	88°
800 Hz (Horizontal)	57°	83°	100°	90°	100°	42°	37°	35°	43°
400 Hz (Vertical)	92°	120°	112°	121°	190°	71°	50°	36°	52°
800 Hz (Vertical)	57°	83°	100°	90°	100°	32°	34°	15°	23°
BOX RESONANCE FREQUENCY									
Normal	23 Hz	35 Hz	45 Hz	55 Hz	75 Hz	75 Hz	53 Hz	Horn Loaded	Horn Loaded
Step-down	18 Hz	27 Hz	33 Hz	40 Hz	53 Hz	53 Hz	40 Hz		
DRIVER									
Type	30 W	EVM 18B	EVM 18B	EVM 15L	EVM 12L	EVM 12L	EVM 15L	EVM 15L	EVM 12L
Diameter	30 in.	18 in.	18 in.	15 in.	12 in.	12 in.	15 in.	15 in.	12 in.
Quantity	1	1	1	1	1	4	4	2	2
IMPEDANCE									
Nominal	8 ohms	4 ohms	4 ohms	8 ohms	8 ohms	8 ohms	8 ohms	5 ohms	5 ohms
Minimum	5.0 ohms	3.9 ohms	3.9 ohms	6.5 ohms	6.4 ohms	6.4 ohms	6.4 ohms	4.0 ohms	4.0 ohms
BOX PHYSICAL CHARACTERISTICS									
Gross Internal Volume	76 cu. ft.	13 cu. ft.	7.1 cu. ft.	3.2 cu. ft.	1.3 cu. ft.	5.2 cu. ft.	12.8 cu. ft.	32.3 cu. ft.	11.9 cu. ft.
External Height	96 in.	37 in.	30.5 in.	23.75 in.	17.75 in.	34 in.	46 in.	60 in.	40.75 in.
External Width	48 in.	32.25 in.	24.5 in.	19.25 in.	14.5 in.	27.5 in.	37 in.	35 in.	27.75 in.
External Depth	32 in.	23.75 in.	21.5 in.	17.0 in.	13.5 in.	13.5 in.	17 in.	30 in.	21.5 in.
Net Weight	550 lb	114 lb	77 lb	54 lb	37 lb	140 lb	200 lb	325 lb	170 lb
EQUALIZER ⁴									
6 dB Peak Frequency	19 Hz	29 Hz	35 Hz	45 Hz	60 Hz	60 Hz	45 Hz	--	--
Presently Available Equalizers	--	SEQ	INT-A	--	--	--	--	--	--



Electro-Voice
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DESCRIPTION

The Electro-Voice TL806 low frequency loudspeaker system is a vented-box (bass-reflex) design with gross internal volume of 1.3 cu. ft. The system has been designed for use with the Electro-Voice EVM12L 12 inch loudspeaker. The usable frequency range of the TL806 is roughly 60 to 1600 Hz. The efficiency of the TL806 is 6% (half-space load, 100 to 800 Hz, 8 ohm nominal impedance) and as a result will generate outputs of 6 acoustic watts at the rated input of 100 watts.

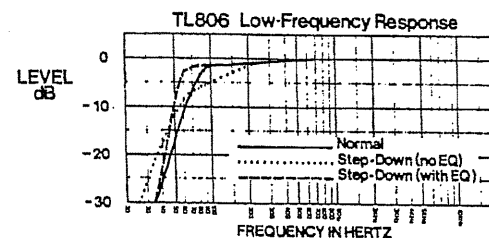
The design provides a selection of two different low frequency response curves by the optional use of a removable port cover. In the normal configuration (port cover off) the response is flat down to the lowest possible frequency. In the step-down configuration (port cover on) the response exhibits a sloping gradual low frequency rolloff but with about a one-half octave extension of low end response. The step down mode of operation is intended to be used with simple before-the-power-amp equalization to flatten the response (only 6 dB maximum boost required, equalizer details available on request).

The following table lists the box resonance frequency (f_B), the 3 dB down frequency (f_3) and the usable lower limit frequency (f_{LL}) for both configurations.

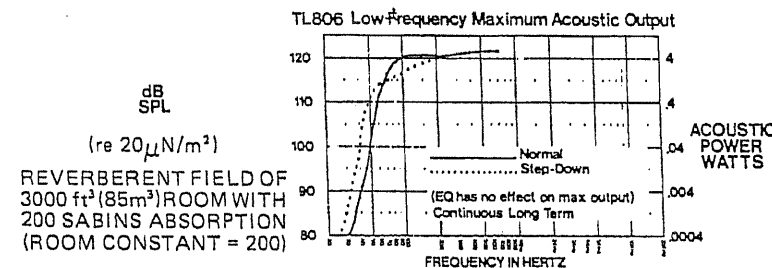
FREQUENCY	NORMAL	STEPDOWN
f_B	75 Hz	53 Hz
f_3	83 Hz	130 Hz
f_3 (with EQ)	—	58 Hz
f_{LL}^*	62 Hz	52 Hz

*The system can generate one-half acoustic watt or more down to f_{LL} .

The following graph shows the system's power output low frequency response in both the normal and step-down modes.

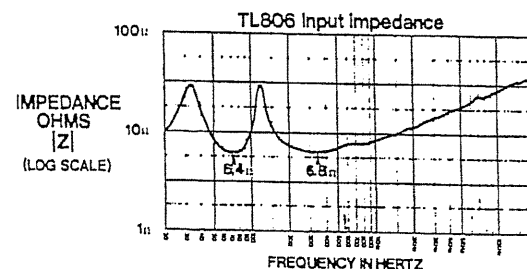


The curve which follows shows the system's low frequency maximum acoustic power output versus frequency. The maximum output is limited by either (1) the thermal power handling capacity of the speaker, or (2) the speaker's maximum linear cone excursion capabilities, whichever occurs first.



Note that some 2 to 3 dB of maximum output in the 80 to 130 Hz range is sacrificed when the step-down mode is used.

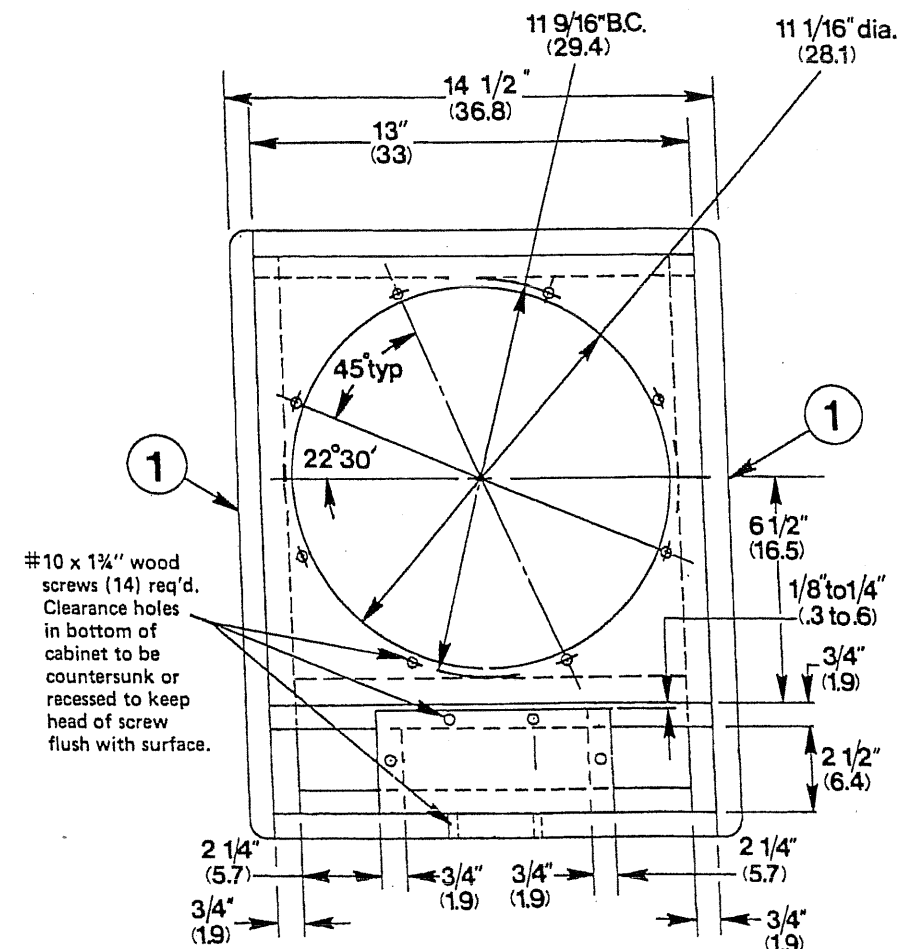
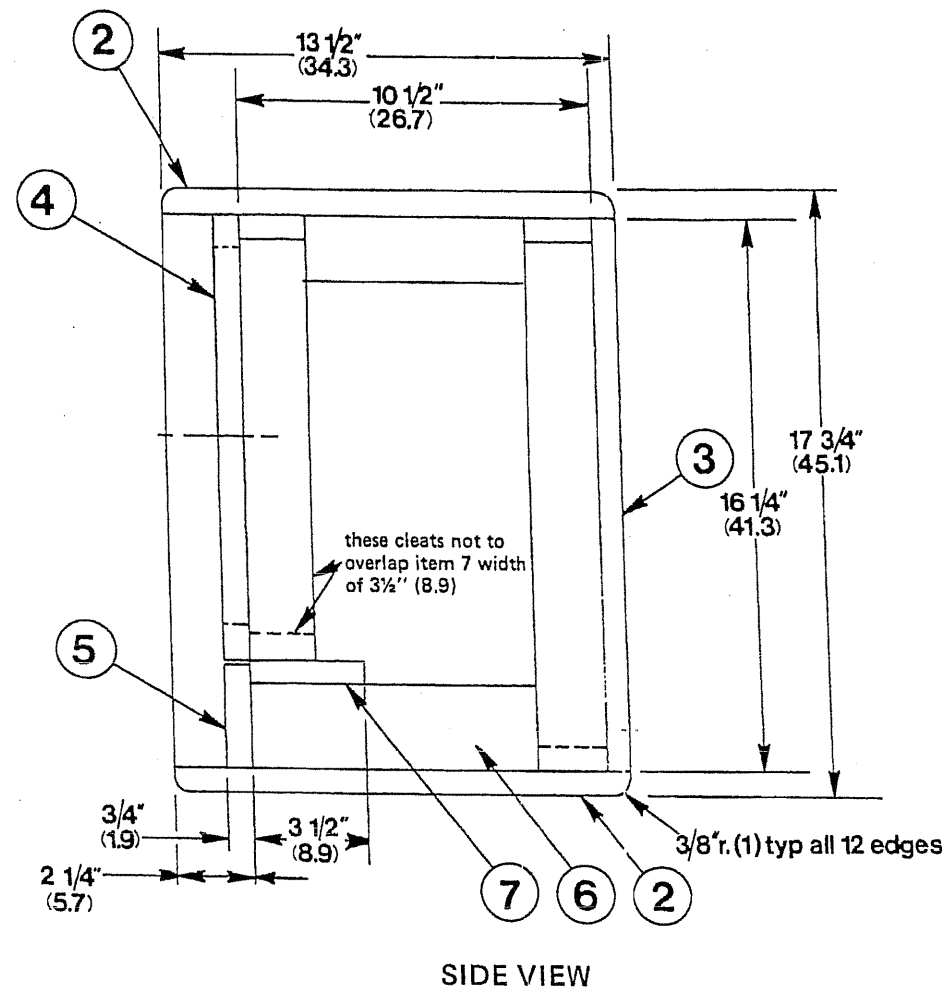
The TL806 input impedance versus frequency is shown in the following graph (normal mode).



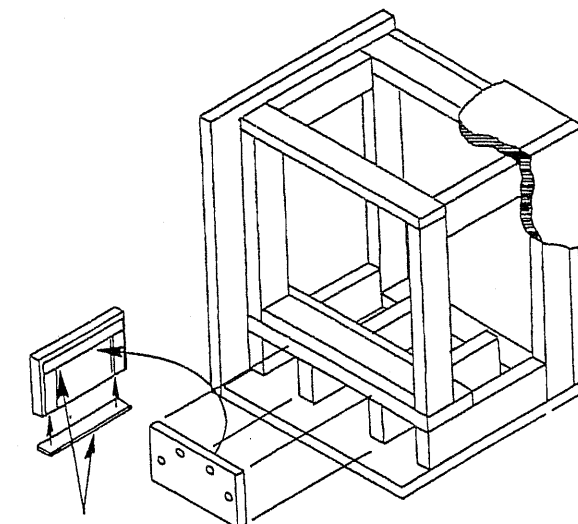
EV

TL806 Builders Plans

EVM12L 1.3 CU. FT. BASS BOX



FRONT VIEW



see note 3

CONSTRUCTION VIEW

CONSTRUCTION NOTES:

1. All joints should be securely glued and nailed (or stapled).
2. All joints must be airtight. Seal questionable joints with silicon based caulking compound.
3. Use 1/2" wide weather stripping tape around port cover (item 5) for airtight seal.
4. Speaker must be mounted from front of cabinet.
5. Handles, trunk corners, and furniture glides or casters may be added at builders option.
6. Input connector should be selected by builder and mounted on rear.
7. Grille not shown.
8. Parts listed and dimensioned in chart below must conform to dimensions on drawing for proper cabinet tuning.
9. The builder may select material and dimensional fit for parts not listed in chart.
10. The cleats (items 6) to be flush with rear of baffle (item 4) and run completely back to rear cleats.
11. Line top, both sides, and back with 3" fiberglass insulation. Insulation must not block port opening on inside of cabinet.

PARTS LIST - TL806

ITEM	MATERIAL	SIZE	QTY.	REMARKS
1		13-1/2" (34.3) x 17-3/4" (45.1)	2	Sides
2	3/4" (1.9) Plywood	13" (33.0) x 13-1/2" (34.3)	2	Top and bottom
3	or particle board	13" (33.0) x 16-1/4" (41.3)	1	Back
4		13" (33.0) x 13" (33.0)	1	Baffle
5		3-1/16" (7.8) x 7" (17.8)	1	Port cover
6	3/4" (1.9) x 2-1/2" (6.4) Fir	See Note 10	4	Cleats
7	3/4" (1.9) x 3-1/2" (8.9) Fir	13" (33.0)	1	Port Top

EV

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