

**STROKER™**

**SUBWOOFERS**

**U.S. PAT. #4,239,943**



**CERWIN-VEGA!**

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## **Attention!**

**PLEASE READ ALL WARNINGS FOUND IN THIS MANUAL. THIS INFORMATION IS HIGHLIGHTED IN BOLD ITALIC TYPE AND IS INCLUDED TO INFORM YOU OF THE POTENTIAL FOR PERSONAL INJURY OR DAMAGE TO PROPERTY.**

## **Hearing Damage**

**CONTINUOUS, EXCESSIVE EXPOSURE TO SOUND PRESSURE LEVELS IN EXCESS OF 85 DB CAN CAUSE A LOSS OF HEARING. CERWIN-VEGA STROKER SUBWOOFERS ARE CAPABLE OF PRODUCING SOUND PRESSURE LEVELS GREATER THAN 85 DB.**

## **Volume and Driver Awareness**

**USE OF STROKER SUBWOOFERS CAN IMPAIR YOUR ABILITY TO HEAR NECESSARY TRAFFIC SOUNDS AND MAY CONSTITUTE A HAZARD WHILE DRIVING. WE RECOMMEND USING LOW VOLUME LEVELS WHEN DRIVING YOUR VEHICLE.**

**CERWIN-VEGA ACCEPTS NO LIABILITY FOR HEARING LOSS, BODILY INJURY, OR PROPERTY DAMAGE AS A RESULT OF USE OR MISUSE OF THIS PRODUCT.**

Cerwin-Vega is constantly striving to maintain the highest consumer standards. As a result of these efforts, modifications may be made from time to time to existing products without prior notice. Specifications and appearance may differ from those listed or shown in this manual. Cerwin-Vega is a registered trademark of Cerwin-Vega, Inc. Stroker is trademark of Cerwin-Vega and is patented technology (U.S. Patent #4,239,943).

## Introduction

The Stroker™ subwoofer group is Cerwin-Vega's uncompromising achievement in ultimate low-frequency power response. Each of these unique subwoofers utilizes a proprietary dual-spider technology, which allows precise centering of the voice coil and high-excursion capability (as much as 1.5", peak-to-peak). The patented design yields unparalleled deep bass performance, as well as creating an exotic look that is quite distinctive.

All Stroker subwoofers also use the most rugged and reliable construction materials available to provide extremely high power handling and resistance to overpowering and abuse. When properly installed, Stroker subwoofers provide a new magnitude of heart-throbbing "punchy" bass that will be appreciated by even the most demanding mobile-audio enthusiast. Features include:

- Sand-cast frame to assure response stability and high accuracy
- Adjustable top spider for optimum tuning performance
- Thick gap plate and extended pole piece to provide high excursion capability and high efficiency
- Alloy voice coil bobbins for effective heat dissipation and greater power handling
- Extremely durable cone material that resists flexing under high power input conditions

## About This Manual

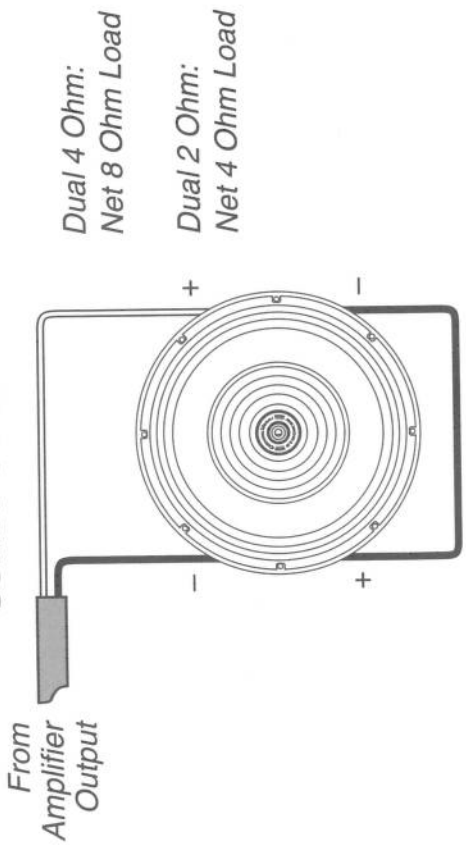
This manual covers application information for the Stroker 12D/12D2, Stroker 15D/15D2, and Stroker 18D/18D2 subwoofers. We assume you have a good knowledge of car speaker installation techniques, including subwoofer box construction. If not, please consult your authorized Cerwin-Vega mobile audio dealer for installation options.

## Warranty Information

Your Stroker Series subwoofer is covered by Cerwin-Vega's limited one-year warranty. Please read the enclosed warranty card for all the details.

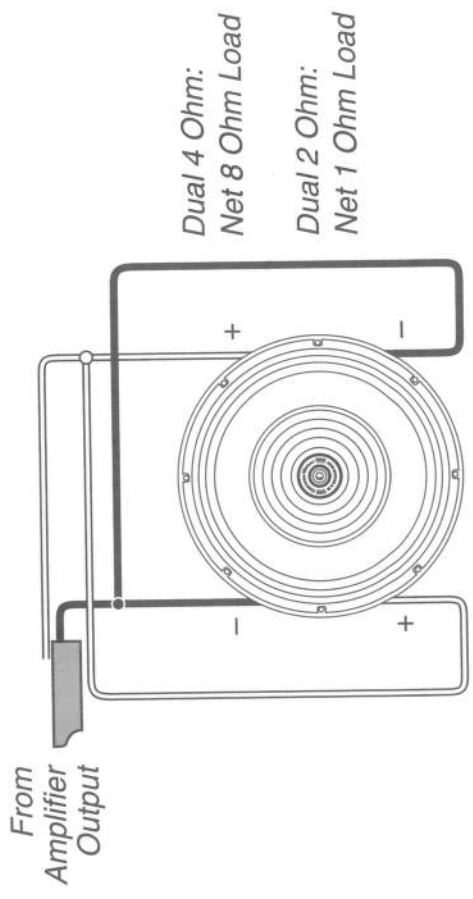
### Stroker Dual Voice Coil Subwoofers (Stroker 12D/12D2, Stroker 15D/15D2, or Stroker 18D/18D2)

#### Series Connection



### Stroker Dual Voice Coil Subwoofers (Stroker 12D/12D2, Stroker 15D/15D2, or Stroker 18D/18D2)

#### Parallel Connection



# Applications

## Factory-Set Voice Coil Bias

THE VOICE COIL BIAS HAS BEEN PRECISELY ALIGNED AT THE FACTORY USING SPECIAL TEST EQUIPMENT AND IS LOCKED WITH A SET SCREW, AS SHOWN IN FIGURE 1. DO NOT LOOSEN THE SET SCREW!

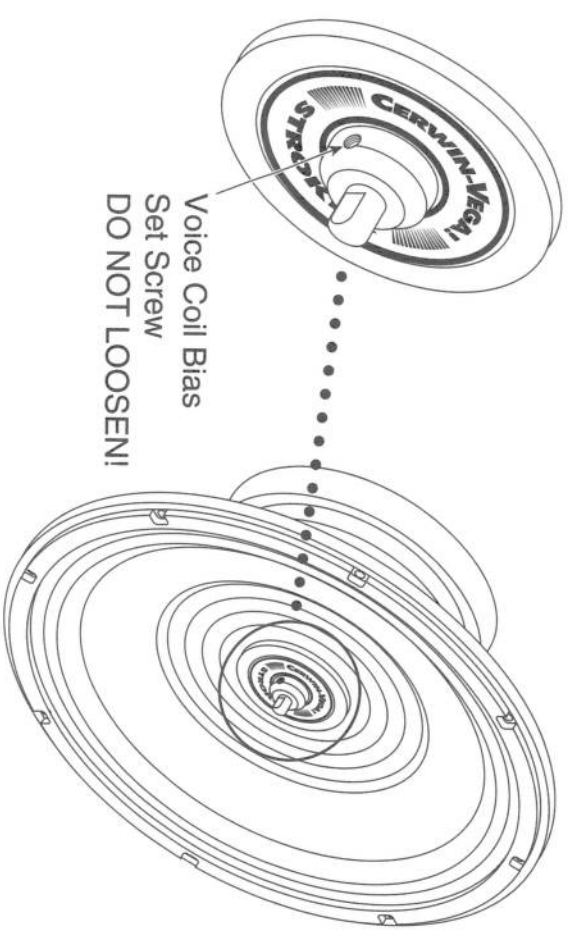


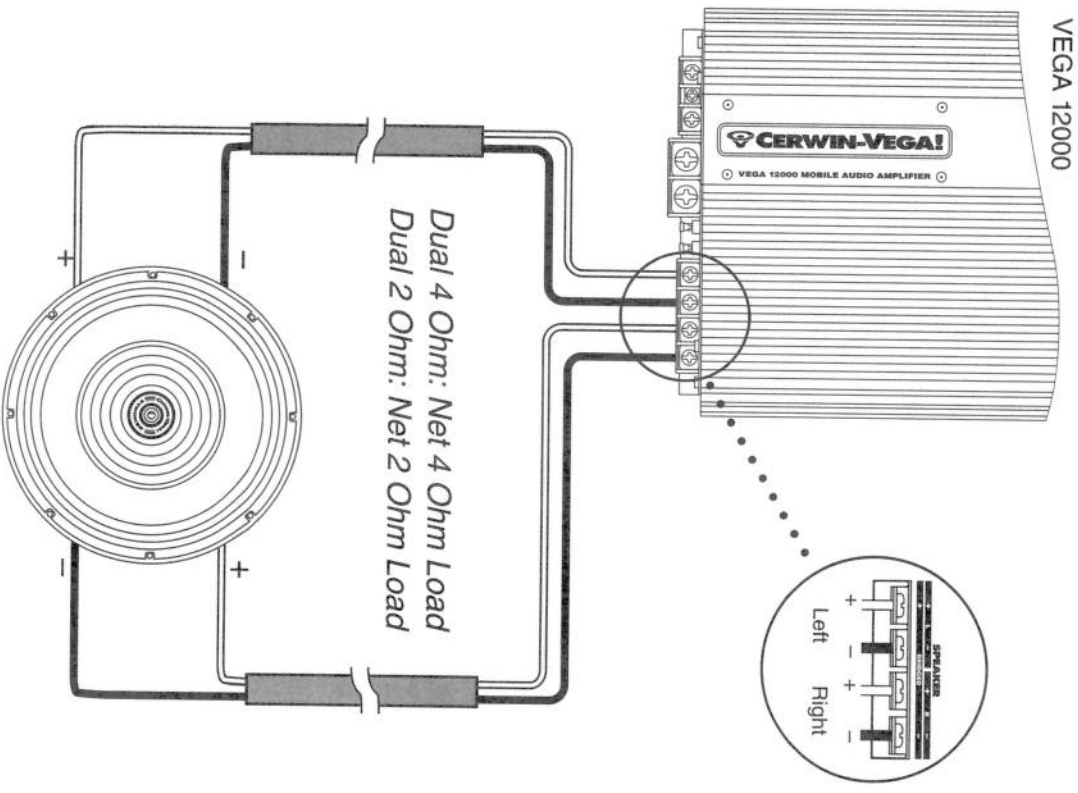
Figure 1. The voice coil bias on each Stroker subwoofer is aligned for maximum performance at the factory and is locked with a set screw.

## Enclosure Information

We recommend using the following enclosure specifications (as listed on the next three pages) to attain optimum performance:

## Stroker Dual Voice Coil Subwoofers (Stroker 12D/12D2, Stroker 15D/15D2, or Stroker 18D/18D2)

### Mono Input with Stereo Connection



## Stroker 18D2 Specifications

- Diameter:** 18"
- No. of Voice Coils:** 2
- Sensitivity (1W @ 1m):** 96 dB
- Power Handling:** 1,600 Wrms  
(cont. unclipped power (800 Wrms per voice coil) per EIA RS-426B)
- Frequency Response:** 31 - 200 Hz
- Nominal Impedance:** 2 Ω /ea. coil  
(Series Connection): 4 Ω  
(Parallel Connection): 1 Ω
- Voice Coil Diameter:** 3.0"
- Magnet Assembly:** 31 lbs, 10 oz (14.35 kg)
- Total Weight:** 39 lbs, 12 oz (18.03 kg)
- Mounting Diameter:** 16<sup>5</sup>/<sub>8</sub>" (42.20 cm)
- Mounting Depth:** 8<sup>5</sup>/<sub>8</sub>" (21.91 cm)

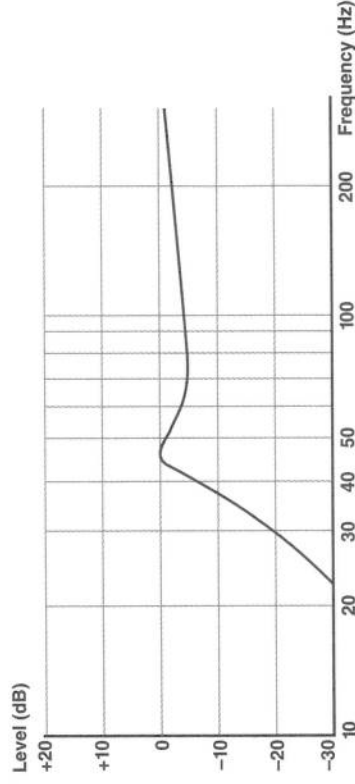
## Stroker 18D2 Thiele-Small Parameters

- Free-Air Resonance:**  $f_s$  31 Hz
- Total Q:**  $Q_{ts}$  0.191
- Mechanical Q:**  $Q_{ms}$  7.923
- Electrical Q:**  $Q_{es}$  0.196
- Comp. Vol.:**  $V_{as}$  5.78 ft<sup>3</sup>
- Max. Excursion:**  $X_{max}$  1.50" (±0.75")  
38 mm (±19 mm)
- Voice Coil DC Resistance:**  $R_{evc}$  1.7 Ω per voice coil
- Vol. Displace.:** 750 in<sup>3</sup> (0.43 ft<sup>3</sup>)

## Stroker 12D Optimum Enclosure

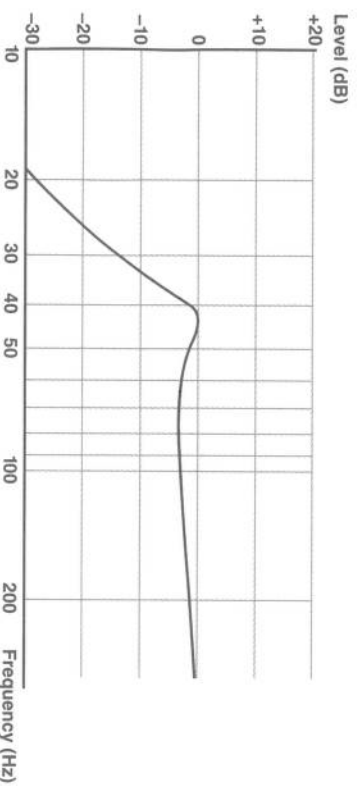
- Type:** Box Reflex (ported)
- Box Volume:** 2.70 ft<sup>3</sup> (net) + 0.15 ft<sup>3</sup> for driver displacement + port displacement
- Tuning Freq.:** 45 Hz

## Stroker 12D Frequency Response



## Stroker 12D Port Specifications

- Port Dimensions:** 4" x 12" (rectangular) 4" dia. (circular) 6" dia. (circular)
- Port Area:** 48.00 in<sup>2</sup> 50.24 in<sup>2</sup> 28.26 in<sup>2</sup>
- Number of Ports:** 1 4 1
- Port Length:** 17.75" 18.75" 9.50"
- Port Displacement:** 852 in<sup>3</sup> 942 in<sup>3</sup> 268 in<sup>3</sup>  
(0.49 ft<sup>3</sup>) (0.55 ft<sup>3</sup>) (0.16 ft<sup>3</sup>)
- Total Box Volume:** 3.34 ft<sup>3</sup> 3.40 ft<sup>3</sup> 3.01 ft<sup>3</sup>

**Stroker 15D Optimum Enclosure****Type:** Bass Reflex (ported)**Box Volume:** 3.50 ft<sup>3</sup> (net) + 0.27 ft<sup>3</sup> for driver displacement  
+ port displacement**Tuning Freq.:** 36 Hz**Stroker 15D Frequency Response****Stroker 15D Port Specifications**

<b>Port Dimensions:</b>	4" x 10" (rectangular)	4" dia. (circular)	6" dia. (circular)
<b>Port Area:</b>	40.00 in <sup>2</sup>	50.24 in <sup>2</sup>	28.26 in <sup>2</sup>
<b>Number of Ports:</b>	1	4	1
<b>Port Length:</b>	20.02"	26.65"	12.17"
<b>Port Displacement:</b>	801 in <sup>3</sup> (0.46 ft <sup>3</sup> )	1,339 in <sup>3</sup> (0.77 ft <sup>3</sup> )	344 in <sup>3</sup> (0.20 ft <sup>3</sup> )
<b>Total Box Volume:</b>	4.23 ft <sup>3</sup>	4.54 ft <sup>3</sup>	3.97 ft <sup>3</sup>

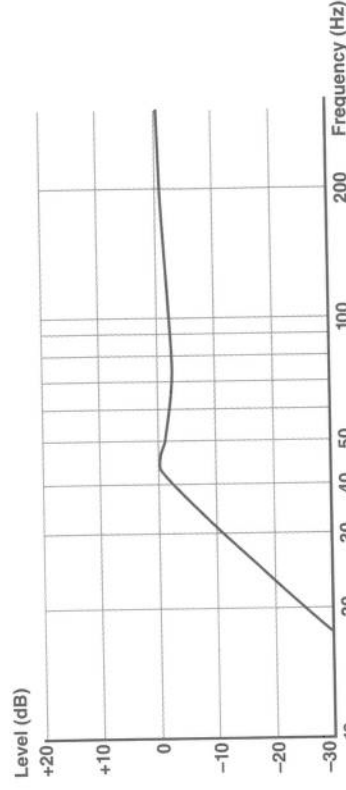
**Stroker 15D2 Specifications****Diameter:** 15"**No. of Voice Coils:** 2**Sensitivity (1W @ 1m):** 95 dB**Power Handling:** 600 Wrms/ea. coil  
(cont. unclipped power  
per EIA RS-426B)**Frequency Response:** 36 - 200 Hz**Nominal Impedance:** 2 Ω /ea. coil  
(Series Connection): 4 Ω  
(Parallel Connection): 1 Ω**Voice Coil Diameter:** 3.0"**Magnet Assembly:** 25 lbs, 2 oz (11.4 kg)**Total Weight:** 31 lbs, 4 oz (14.18 kg)**Mounting Diameter:** 14" (35.56 cm)**Mounting Depth:** 6<sup>5</sup>/<sub>8</sub>" (16.83 cm)**Stroker 15D2 Thiele-Small Parameters**

<b>Free-Air Resonance:</b>	<b><math>f_s</math></b>	36 Hz
<b>Total Q:</b>	<b><math>Q_{ts}</math></b>	0.217
<b>Mechanical Q:</b>	<b><math>Q_{ms}</math></b>	9.120
<b>Electrical Q:</b>	<b><math>Q_{es}</math></b>	0.223
<b>Comp. Vol.:</b>	<b><math>V_{as}</math></b>	3.11 ft <sup>3</sup>
<b>Max. Excursion:</b>	<b><math>X_{max}</math></b>	1.950" (±0.45") 23 mm (±11.5 mm)
<b>Voice Coil DC Resistance:</b>	<b><math>R_{vc}</math></b>	1.7 Ω/coil
<b>Vol. Displace.:</b>		469 in <sup>3</sup> (0.27 ft <sup>3</sup> )

### Stroker 18D Optimum Enclosure

**Type:** Bass Reflex (ported)  
**Box Volume:** 4.50 ft<sup>3</sup> (net) + 0.43 ft<sup>3</sup> for driver displacement + port displacement  
**Tuning Freq.:** 36 Hz

### Stroker 18D Frequency Response



### Stroker 18D Port Specifications

<b>Port Dimensions:</b>	4" x 18" (rectangular)	4" dia. (circular)	6" dia. (circular)
<b>Port Area:</b>	72.00 in <sup>2</sup>	50.24 in <sup>2</sup>	56.52 in <sup>2</sup>
<b>Number of Ports:</b>	1	4	2
<b>Port Length:</b>	19.75"	12.75"	14.75"
<b>Port Displacement:</b>	1,422 in <sup>3</sup> (0.82 ft <sup>3</sup> )	641 in <sup>3</sup> (0.37 ft <sup>3</sup> )	834 in <sup>3</sup> (0.48 ft <sup>3</sup> )
<b>Total Box Volume:</b>	5.75 ft <sup>3</sup>	5.30 ft <sup>3</sup>	5.41 ft <sup>3</sup>

### Stroker 12D2 Specifications

**Diameter:** 12"  
**No. of Voice Coils:** 2  
**Sensitivity (1W @ 1m):** 92 dB  
**Power Handling:** 1,000 Wrms (500 Wrms per voice coil)  
**(cont. unclipped power per EIA RS-426B)**  
**Frequency Response:** 40 - 200 Hz  
**Nominal Impedance:** 2 Ω /ea. coil (Series Connection): 4 Ω (Parallel Connection): 1 Ω  
**Voice Coil Diameter:** 3.0"  
**Magnet Assembly:** 25 lbs, 2 oz (11.40 kg)  
**Total Weight:** 29 lbs, 4 oz (13.27 kg)  
**Mounting Diameter:** 11<sup>5</sup>/<sub>32</sub>" (28.34 cm)  
**Mounting Depth:** 5" (12.70 cm)

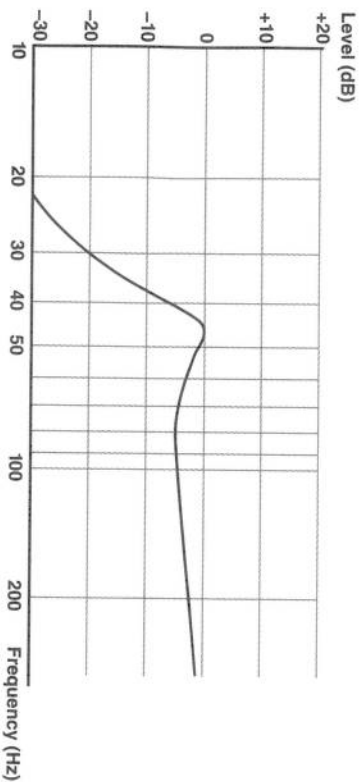
### Stroker 12D2 Thiele-Small Parameters

<b>Free-Air Resonance:</b>	<b>f<sub>s</sub></b>	45 Hz
<b>Total Q:</b>	<b>Q<sub>ts</sub></b>	0.230
<b>Mechanical Q:</b>	<b>Q<sub>ms</sub></b>	8.880
<b>Electrical Q:</b>	<b>Q<sub>es</sub></b>	0.231
<b>Comp. Vol.:</b>	<b>V<sub>as</sub></b>	0.76 ft <sup>3</sup>
<b>Max. Excursion:</b>	<b>X<sub>max</sub></b>	0.90" (±0.45") 23 mm (±11.5 mm)
<b>Voice Coil DC Resistance:</b>	<b>R<sub>vc</sub></b>	1.65 Ω per voice coil
<b>Vol. Displace.:</b>		255 in <sup>3</sup> (0.15 ft <sup>3</sup> )

### Stroker 12D2 Optimum Enclosure

**Type:** Box Reflex (ported)  
**Box Volume:** 2.10 ft<sup>3</sup> (net) + 0.15 ft<sup>3</sup> for driver displacement + port displacement  
**Tuning Freq.:** 45 Hz

### Stroker 12D2 Frequency Response



### Stroker 12D2 Port Specifications

<b>Port Dimensions:</b>	4" x 12" (rectangular)	4" diam. (circular)	6" diam. (circular)
<b>Port Area:</b>	48.00 in <sup>2</sup>	50.24 in <sup>2</sup>	28.26 in <sup>2</sup>
<b>Number of Ports:</b>	1	4	1
<b>Port Length:</b>	24.00"	26.00"	18.00"
<b>Port Displacement:</b>	1,152 in <sup>3</sup> (0.67 ft <sup>3</sup> )	1,306 in <sup>3</sup> (0.76 ft <sup>3</sup> )	509 in <sup>3</sup> (0.29 ft <sup>3</sup> )
<b>Total Box Volume:</b>	2.92 ft <sup>3</sup>	3.01 ft <sup>3</sup>	2.54 ft <sup>3</sup>

### Stroker 18D Specifications

**Diameter:** 18"  
**No. of Voice Coils:** 2  
**Sensitivity (1W @ 1m):** 96 dB  
**Power Handling:** 1,600 Wrms  
*(cont. unclipped power per EIA RS-426B)* (800 Wrms per voice coil)  
**Frequency Response:** 31 - 200 Hz  
**Nominal Impedance:** 4 Ω /ea. coil  
*(Series Connection):* 8 Ω  
*(Parallel Connection):* 2 Ω  
**Voice Coil Diameter:** 3.0"  
**Magnet Assembly:** 31 lbs, 10 oz (14.35 kg)  
**Total Weight:** 39 lbs, 12 oz (18.03 kg)  
**Mounting Diameter:** 16<sup>5</sup>/<sub>8</sub>" (42.20 cm)  
**Mounting Depth:** 8<sup>5</sup>/<sub>8</sub>" (21.91 cm)

### Stroker 18D Thiele-Small Parameters

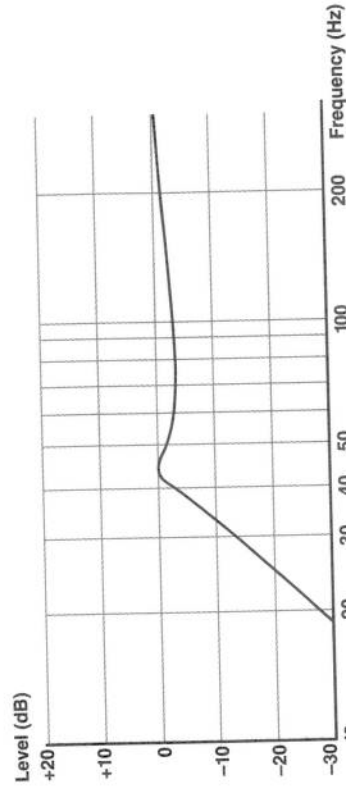
<b>Free-Air Resonance:</b>	$f_s$	34 Hz
<b>Total Q:</b>	$Q_{ts}$	0.262
<b>Mechanical Q:</b>	$Q_{ms}$	8.248
<b>Electrical Q:</b>	$Q_{es}$	0.271
<b>Comp. Vol.:</b>	$V_{as}$	5.20 ft <sup>3</sup>
<b>Max. Excursion:</b>	$X_{max}$	1.50" ( $\pm 0.75$ ) 38 mm ( $\pm 19$ mm)
<b>Voice Coil DC Resistance:</b>	$R_{vc}$	3.4 Ω per voice coil
<b>Vol. Displace.:</b>		750 in <sup>3</sup> (0.43 ft <sup>3</sup> )



## Stroker 15D2 Optimum Enclosure

**Type:** Bass Reflex (ported)  
**Box Volume:** 3.50 ft<sup>3</sup> (net) + 0.27 ft<sup>3</sup> for driver displacement + port displacement  
**Tuning Freq.:** 36 Hz

### Stroker 15D2 Frequency Response



### Stroker 15D2 Port Specifications

**Port Dimensions:** 4" x 10" (rectangular) 4" diam. (circular) 6" diam. (circular)  
**Port Area:** 40.00 in<sup>2</sup> 50.24 in<sup>2</sup> 28.26 in<sup>2</sup>  
**Number of Ports:** 1 4 1  
**Port Length:** 20.02" 26.65" 12.17"  
**Port Displacement:** 801 in<sup>3</sup> (0.46 ft<sup>3</sup>) 1,339 in<sup>3</sup> (0.77 ft<sup>3</sup>) 344 in<sup>3</sup> (0.20 ft<sup>3</sup>)  
**Total Box Volume:** 4.23 ft<sup>3</sup> 4.54 ft<sup>3</sup> 3.97 ft<sup>3</sup>

## Stroker 15D Specifications

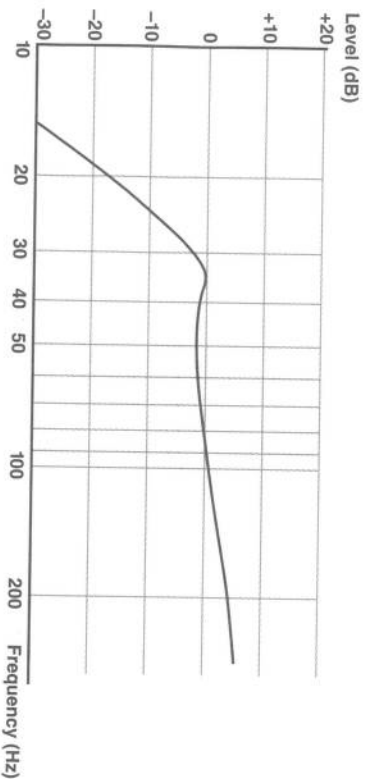
**Diameter:** 15"  
**No. of Voice Coils:** 2  
**Sensitivity (1W @ 1m):** 95 dB  
**Power Handling:** 1,200 Wrms (600 Wrms per voice coil)  
**Frequency Response:** 36 - 200 Hz  
**Nominal Impedance:** 4 Ω /ea. coil  
 (Series Connection): 8 Ω  
 (Parallel Connection): 2 Ω  
**Voice Coil Diameter:** 3.0"  
**Magnet Assembly:** 25 lbs, 2 oz (11.40 kg)  
**Total Weight:** 31 lbs, 4 oz (14.18 kg)  
**Mounting Diameter:** 14" (35.56 cm)  
**Mounting Depth:** 6 5/8" (16.83 cm)

## Stroker 15D Thiele-Small Parameters

**Free-Air Resonance:**  $f_s$  43 Hz  
**Total Q:**  $Q_{ts}$  0.282  
**Mechanical Q:**  $Q_{ms}$  7.616  
**Electrical Q:**  $Q_{es}$  0.293  
**Comp. Vol.:**  $V_{as}$  2.26 ft<sup>3</sup>  
**Max. Excursion:**  $X_{max}$  0.90" ( $\pm 0.45"$ )  
 23 mm ( $\pm 11.5$  mm)  
**Voice Coil DC Resistance:**  $R_{vc}$  3.2 Ω per voice coil  
**Vol. Displace.:** 469 in<sup>3</sup> (0.27 ft<sup>3</sup>)

### Stroker 18D2 Optimum Enclosure

**Type:** Bass Reflex (ported)  
**Box Volume:** 4.50 ft<sup>3</sup> (net) + 0.43 ft<sup>3</sup> for driver displacement + port displacement  
**Tuning Freq.:** 31 Hz



### Stroker 18D2 Frequency Response

### Stroker 18D2 Port Specifications

<b>Port Dimensions:</b>	4" x 18" (rectangular)	4" diam. (circular)	6" diam. (circular)
<b>Port Area:</b>	72.00 in <sup>2</sup>	50.24 in <sup>2</sup>	56.52 in <sup>2</sup>
<b>Number of Ports:</b>	1	4	2
<b>Port Length:</b>	37.50"	25.25"	28.75"
<b>Port Displacement:</b>	2,700 in <sup>3</sup> (1.56 ft <sup>3</sup> )	1,269 in <sup>3</sup> (0.73 ft <sup>3</sup> )	1,625 in <sup>3</sup> (0.94 ft <sup>3</sup> )
<b>Total Box Volume:</b>	6.49 ft <sup>3</sup>	5.66 ft <sup>3</sup>	5.87 ft <sup>3</sup>

### Stroker 12D Specifications

**Diameter:** 12"  
**No. of Voice Coils:** 1  
**Sensitivity (1W @ 1m):** 93 dB  
**Power Handling:** 1,000 Wrms  
*(cont. unclipped power per EIA RS-426B)* (500 Wrms per voice coil)  
**Frequency Response:** 40 - 200 Hz  
**Nominal Impedance:** 4 Ω /ea. coil  
*(Series connection):* 8 Ω  
*(Parallel connection):* 2 Ω  
**Voice Coil Diameter:** 3.0"  
**Magnet Assembly:** 25 lbs, 2 oz (11.40 kg)  
**Total Weight:** 29 lbs, 4 oz (13.27 kg)  
**Mounting Diameter:** 11<sup>5</sup>/<sub>32</sub>" (28.34 cm)  
**Mounting Depth:** 5" (12.70 cm)

### Stroker 12D Thiele-Small Parameters

**Free-Air Resonance:**  $f_s$  51 Hz  
**Total Q:**  $Q_{ts}$  0.237  
**Mechanical Q:**  $Q_{ms}$  5.491  
**Electrical Q:**  $Q_{es}$  0.248  
**Comp. Vol.:**  $V_{as}$  0.78 ft<sup>3</sup>  
**Max. Excursion:**  $X_{max}$  0.90" (±0.45")  
 23 mm (±11.5 mm)  
**Voice Coil DC Resistance:**  $R_{vc}$  3.3 Ω per voice coil  
**Vol. Displace.:** 255 in<sup>3</sup> (0.15 ft<sup>3</sup>)