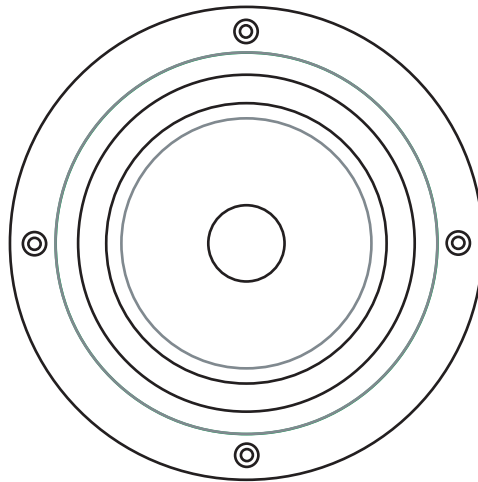
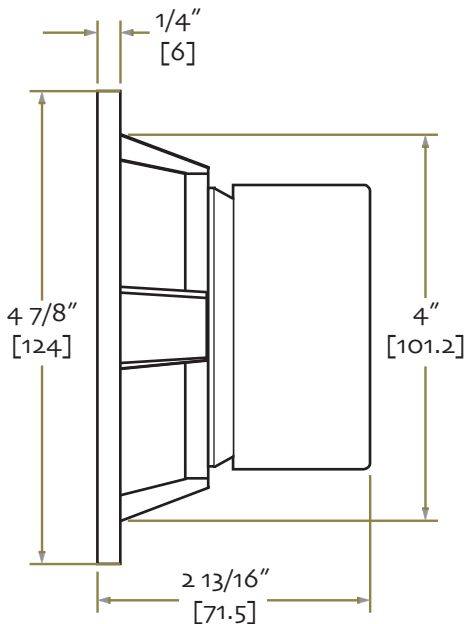


# CREATIVE SOUND SOLUTIONS EL70 FULLRANGE

CSS introduces a new paper cone full range driver. Featuring a proprietary 70mm cone from the creative mind of Mark Fenlon, principal designer at Mark Audio. Mark's attention to detail and very high levels of quality control aim the EL70 to set a new standard for speakers in the sub \$50USD market space.

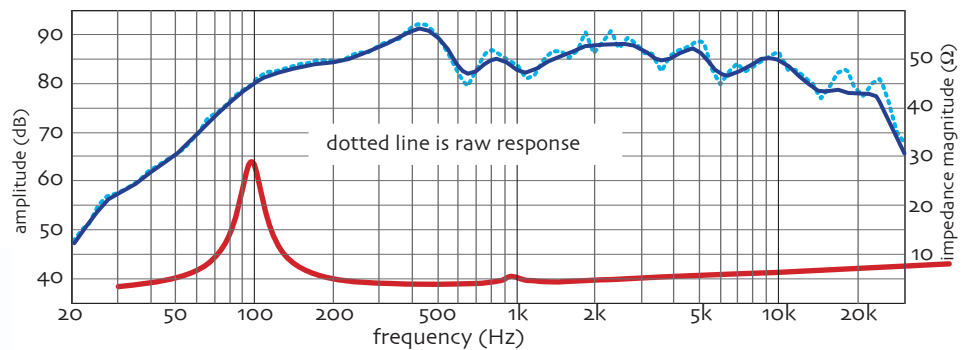
- Classic paper cone driver with extended frequency range
- Frequency range from 64Hz to 25kHz
- Low distortion, linear output design
- New low-mass paper cone using a 7-step Multi-form manufacturing process
- $Q_{ts}$  of 0.55 allows the speaker to be used in many cabinet designs
- unique very open, low resonance polymer basket to provide a stiff and stable platform
- proprietary 20mm voice coil
- high consistency proprietary rubber inverted half-roll surround



creative sound solutions

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CSS EL70 Thiele/Small Parameters

$F_s$ (Hz)	64	$R_e$ ( $\Omega$ )	3.6	$X_{max}$ (mm)	4.5
$Q_{es}$	0.66	$S_d$ ( $cm^2$ )	50.2	$BL$ (Tm)	2.85
$Q_{ms}$	3.23	$L_e$ (mH)	0.251	$N_0$	0.216%
$Q_{ts}$	0.55	$C_{ms}$ (m/N)	1.7	SPL (dB@1W 1m)	86
$V_{as}$ (litres)	6.1	$M_{ms}$ (g)	3.82	$P_e$ (W)	20
		$M_{md}$ (g)	3.62		

# Comments from the Designer of the EL70

Hi,

Bob has asked me to point out some features on the EL70. Much of the following info also applies to my other designs.

Please take a look at the picture as I've numbered the features.

1/ Surround: there's various grades of material available. Cheaper drivers will use single or dual mix butyl. The EL70 uses a tri-mix Ei grade, a type mostly found on more expensive units. We test each cone/surround sub-assembly to be within  $\pm 3$ (Fo-Hz) of its design rating. This is very close tolerance for a lower cost driver.

2/ Bonds: single bond glues cost less. On the EL70, an A/B mixed bond is used to get the solid connection needed to make the cap acoustically efficient.

3/ Cones: there's a lot of talk about paper cones. The EL70's cone paper is sourced from Japan, the source for most of the best papers. The material is important but also must be accurately moulded. Our new Multiform process give us micro-control over the complete surface of the cone, making all production cones precise at the micro level.

4/ Frame: is a mixed polymer. It is rigid, strong and acts as a resonance damping component. I make no apologies to those who love metal frames, many ring like a bell sending stray resonance's into the cabinet. We could have cut costs by using an "off the shelf" frame, instead the EL70 uses the same Markaudio custom frame found on the CHR-70.

5/ Connector: this humble part is custom sized. So many drivers come with this component straight from the parts bin, not the case for the EL70. Most cheap drivers have this part riveted to the frame. On the EL70, its glued and screwed.

6/ Coil to cone: the fit tolerance on many cheaper drivers is up to  $0/+0.5$ mm. On the EL70, its  $0/+0.1$ mm. We use less glue because the fit is more accurate. Less glue means less mass and less variation in the moving mass of the power-train.

7/ Spiders: cheaper drivers (and many expensive units) use Conex and similar grade materials. These grades of material are mostly fine depending on the weave selection for a given load. The factory standard tolerance is  $\pm 0.15$  on the specified stiffness rating. Typically, a spider can vary by as much as 35% of the mean stiffness within a batch. This can result in a wide range of variance in the resonance frequencies within a batch of drivers. This is not the case with the EL70. Each spider is individually checked to a working tolerance of  $\pm 0.1$ , much tighter than most other driver production.

8 - Power-train layout: This section of a driver design is critical. I design the layout to make sure there is no spider damage during the soldering process. One small undetected nick in the spider will reduce the life of the driver and results in an un-even distribution of the stiffness compliance. The flying leads are accurately positioned with enough room to remain clear of other driver parts while under LF loads.

These are some of the features, there's much more but I'll leave them for another time.

Some of you know my approach to building drivers. For those who are new to these drivers, I "engineer" these units in order to gain consistent high performance and reliable service life.

Cheers,

Mark.

EL70 Design and Build Features

