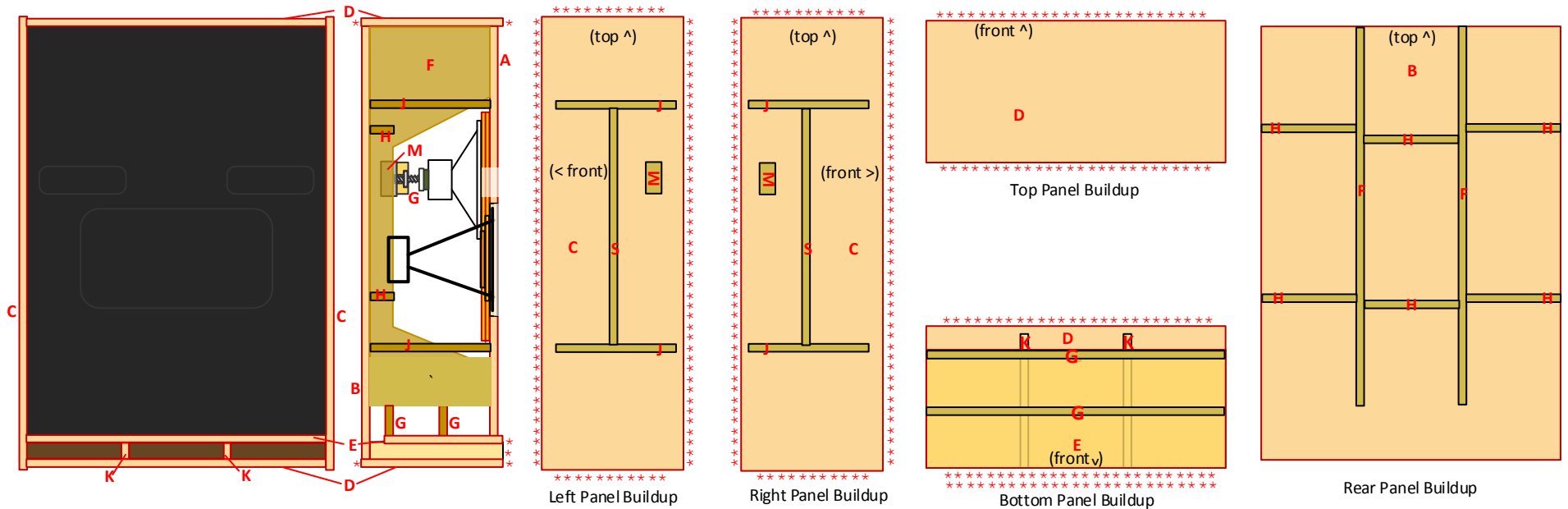


# SmallSyns, Shelf Ported (v2) Cabinet Plan

Overall dimensions: 20"w x 28.75"h x 9"d  
(Front panel/baffle "A" shown on later page)



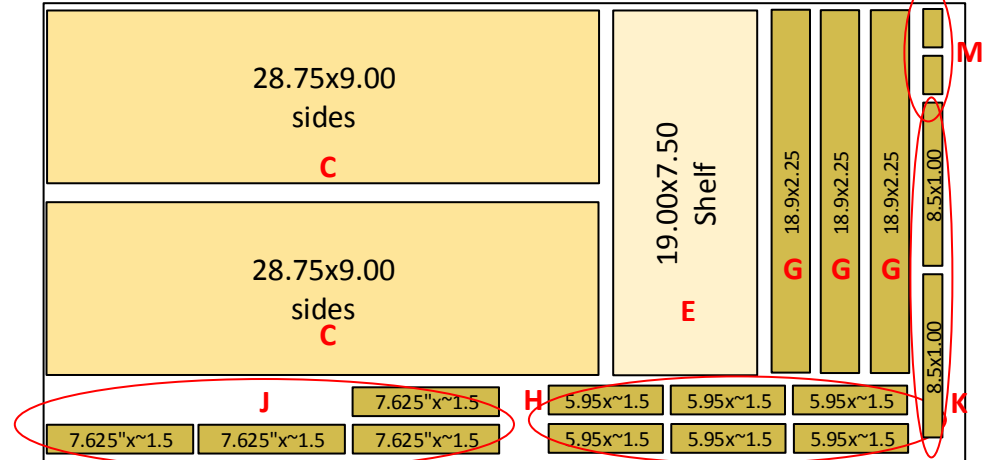
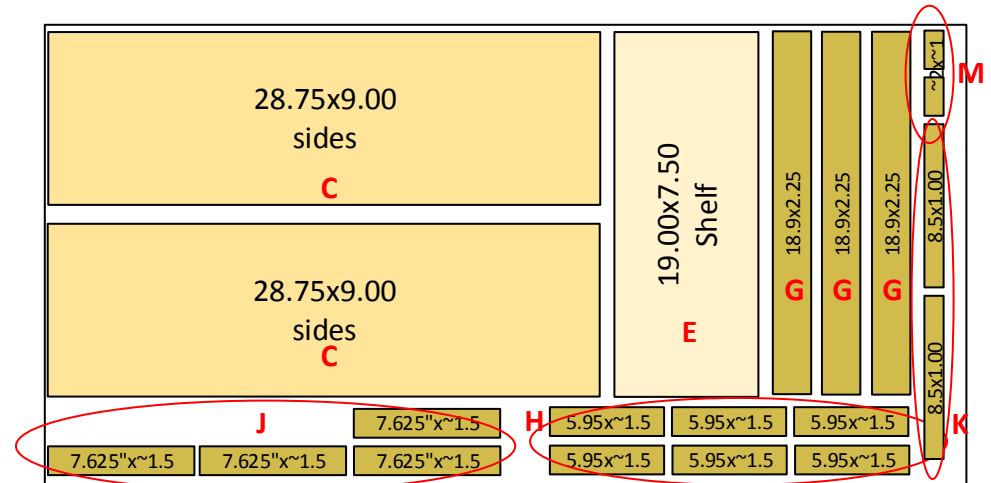
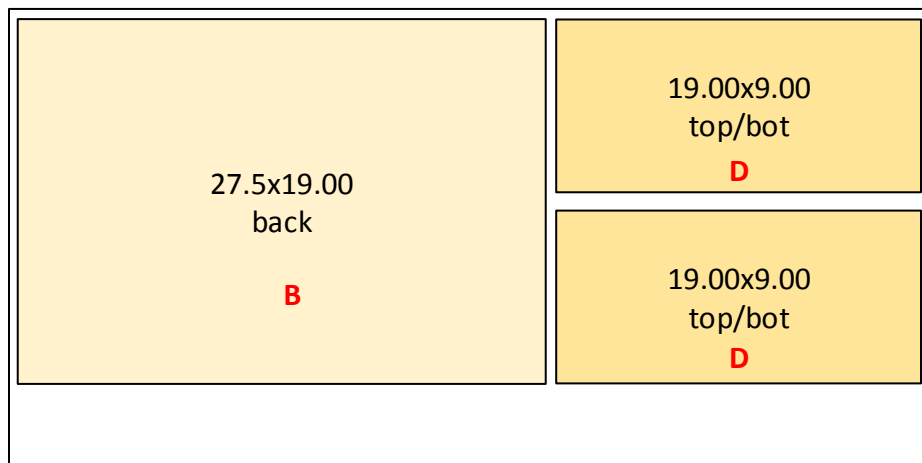
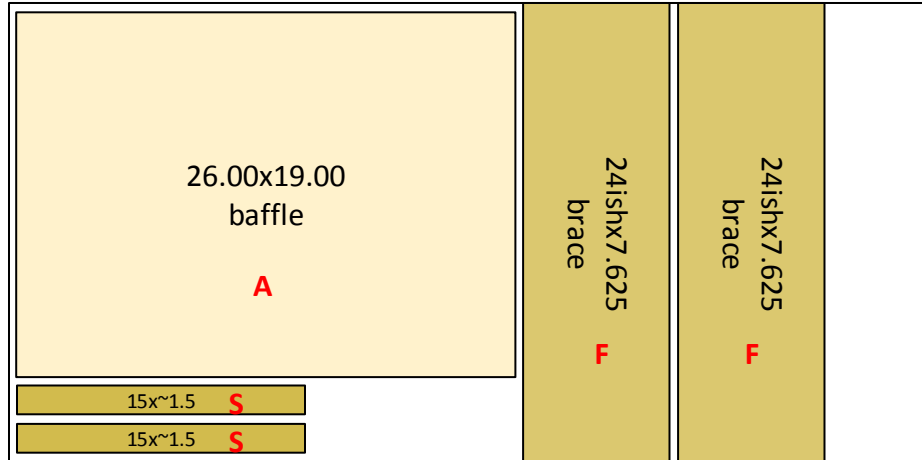
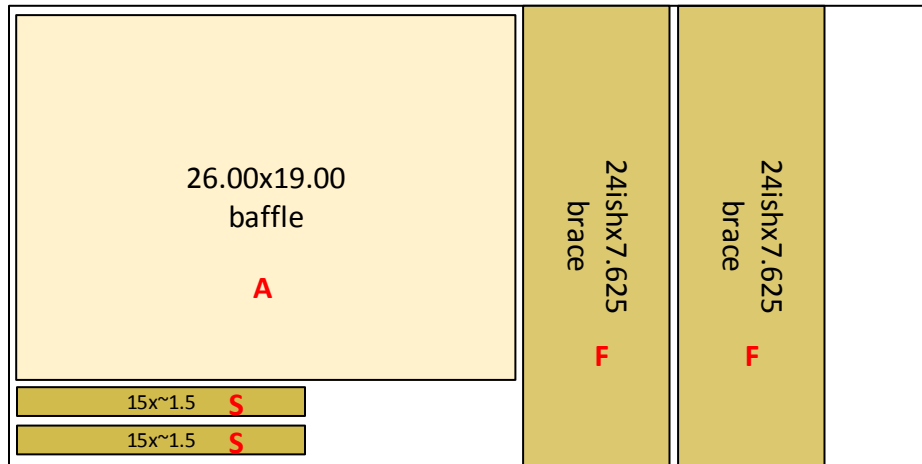
## Piece Quantities (per speaker) :

- A 1 baffle assembly  
(+ subbaffle pieces and spacers)
- B 1 back panel
- C 2 side panels
- D 2 top and bottom panels
- E 1 bass port shelf
- F 2 inner braces
- G 3 damper mount, cross braces
- H 6 horiz. stiffener, back panel
- J 4 horiz. stiffener, side panels
- K 2 port spacers/stiffeners
- M 2 mounting blocks
- S 2 vert. stiffener, side panels

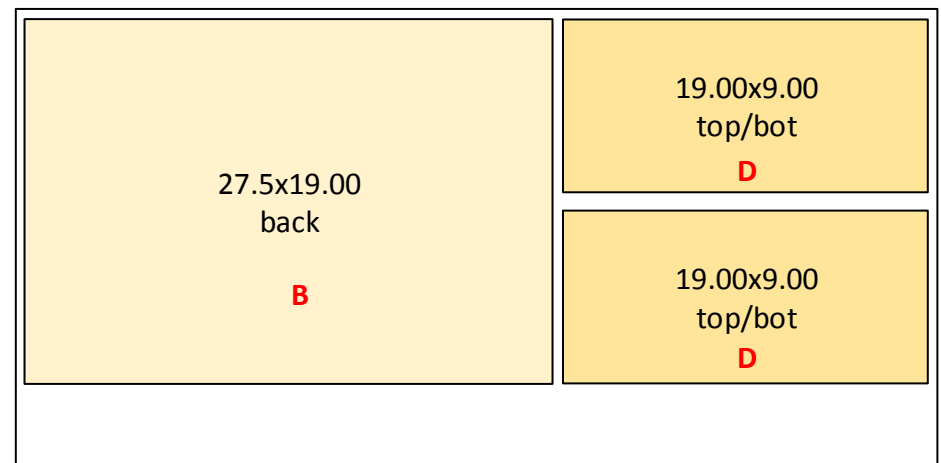
## Construction Order (further detail on later pages):

- 1) Buildup the front panel; veneer the woofer ports; Put dampers in damper mount (a G piece)
- 2) Apply iron-on veneer strip to top, bottom, left, right, shelf (E), and (K) panels where marked with "\*\*\*"
- 3) Buildup Rear Panel; Buildup Bottom Panel (trim G pieces for the actual size of F pieces);  
Buildup Left and Right Panels
- 4) Glue Bottom Panel to Rear Panel (check for alignment and fit of Front Panel)
- 5) Glue Front Panel to Rear Panel and Bottom Panel
- 6) Glue Top Panel to Rear and Front
- 7) Glue damper mount (a G piece) to F pieces of Rear Panel
- 8) Glue Side Panels to damper mount, and to everything else

½" ply cutting plan (from 4'x2' quarter sheets). Shown for two speakers.



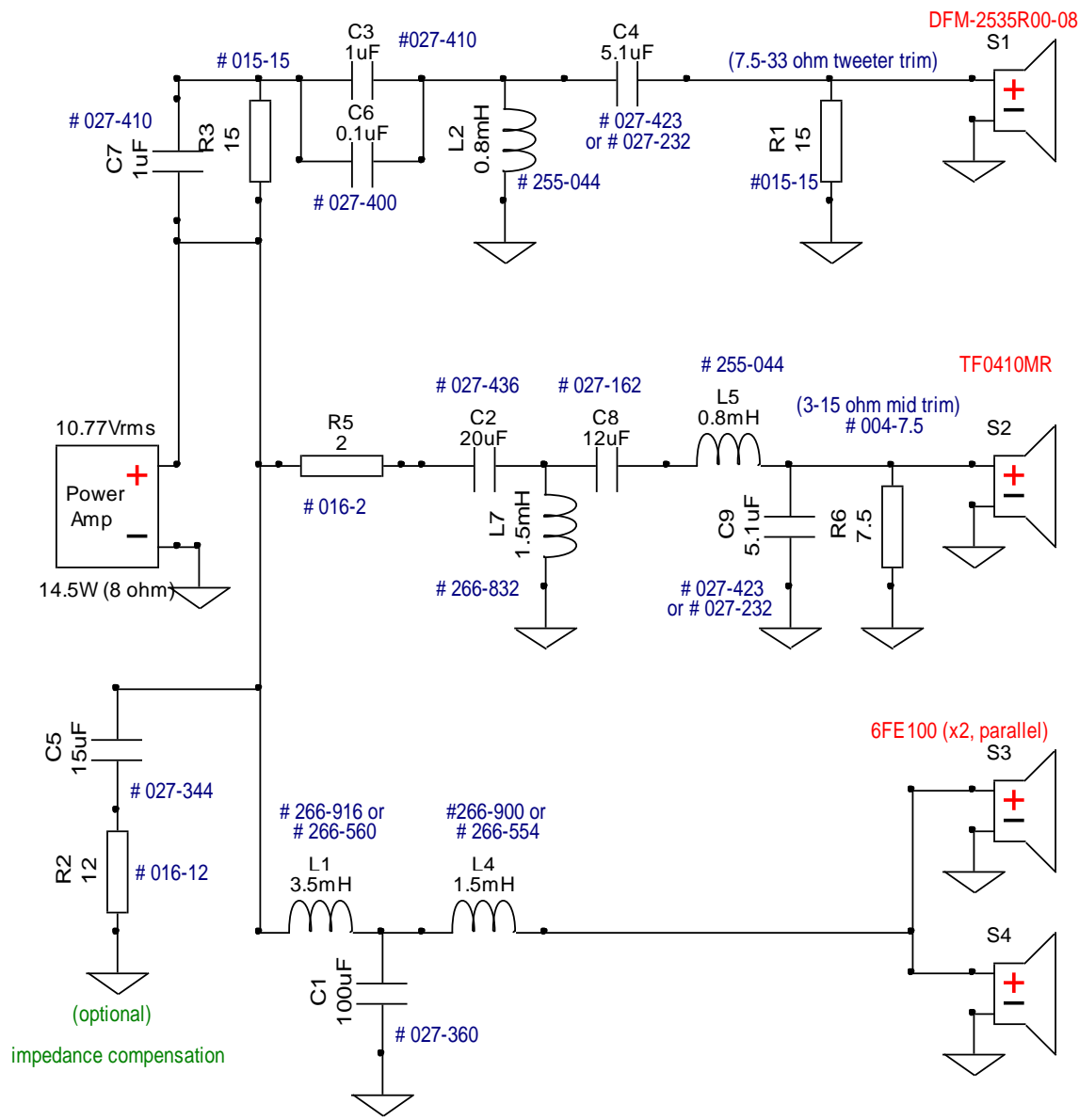
48x24



### SmallSyns Shelf Ported v2, Cabinet Parts List (per speaker)

<u>Qty</u>	<u>Description</u>
3	~23.75"x~47.75"x1/2" red oak pre-veneered plywood panels, minimum voids.
2.5	~24"x~24"x1/4" panels of MDF or ply ( <u>not</u> HDF -- must be glue-able). Includes two 6"x6" pieces for crossover boards.
1/2	part number 34210 Band-It Iron-on Red Oak veneer tape, 25'x3/4" (one roll does two speakers)
1	>4.5"x>9"x1/4" ply or 0.062" FR4 board, must be glue-able.
6	#6 x 3/4" black flat-head wood screws (phillips or socket head preferred) for waveguide mounting (the two screws that fall in front of woofer cones must be no longer than 7/8"!)
12	8-32 x 1.5" socket head caps screws. (8-32 x 1.5" Flat head screws also usable).
12	8-32 nuts (preferred and easiest is nut with attached external tooth lockwasher, check "jsfastener" on ebay)
12	#8 steel flat washers, approx. 0.375" diameter
(12)	#8 lockwashers (only if the attached external tooth lockwasher type nuts are unavailable)
4	#6 x 3/8" pan-head wood screws (sheet metal screws can also work)
1	2oz stick of hand-workable Epoxy Putty (use about half or more and use rubber gloves to apply!). (in most hardware stores).
as req'd	Can water base clear polyurethane finish
as req'd	120 or 150 grit sandpaper (for wood)

## SmallSyns Crossover, 12/2016



## SmallSyns Driver and Crossover Parts List (as of 12/2016)

"PN" is Parts Express part number

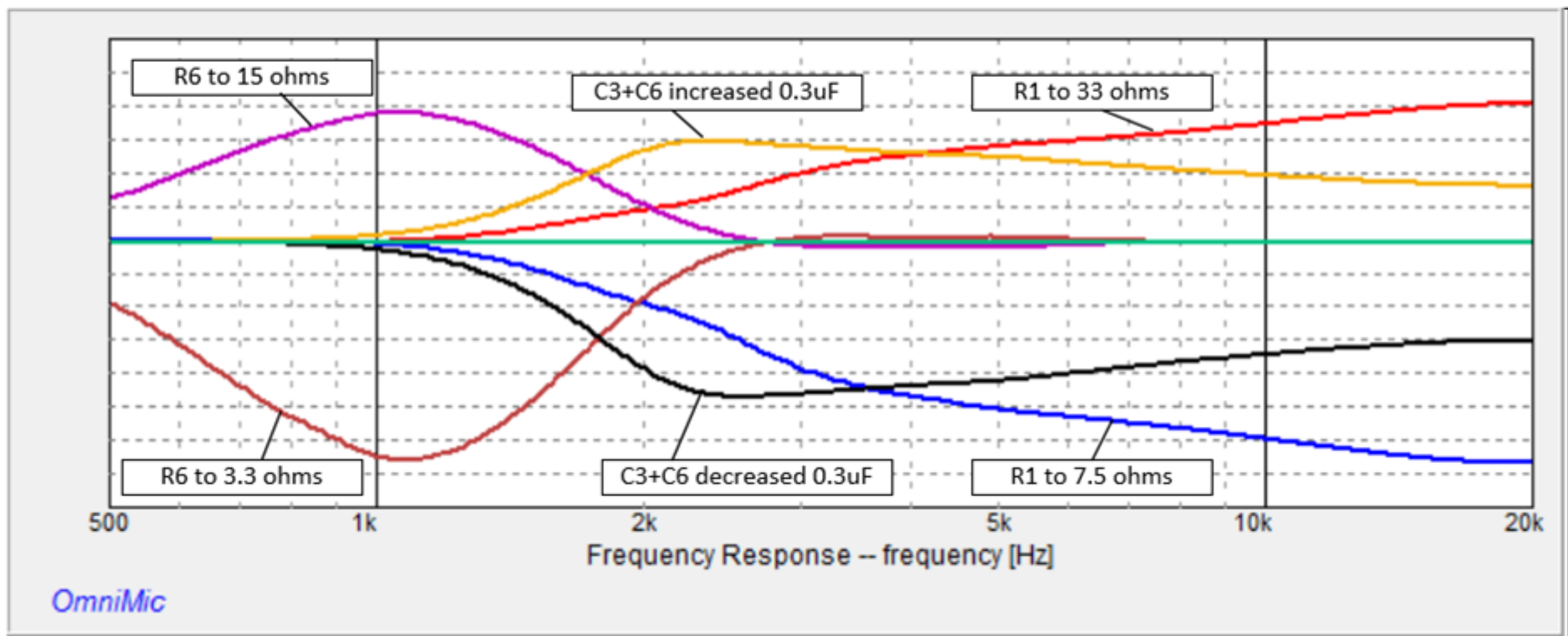
Parts marked with asterisk (\*) can be tweaked for custom voicing

Qty	PN	Description	RefDes
1	264-1420	DFM-2535R00-08	S1
1		TF0410MR	S2
		(from DIYSoundGroup, VIP Pro Audio, or Loudspeakers Plus)	
2	294-1150	6FE100	S3, S4
1	260-242	terminal cup	
5		ft. 16 gauge speaker wire	
1	027-360	100uF (NP)	C1
1	027-436	20uF	C2
2	027-410	1uF	C3*, C7
2	027-423	5.1uF	C4, C9
1	027-344	15uF (NP)	C5 (optional)
1	027-400	0.1uF	C6*
1	027-162	12uF	C8
2	015-15	15 ohm	R1*, R3
1	016-12	12 ohm	R2 (optional)
1	016-2	2 ohm	R5
1	004-7.5	7.5 ohm	R6*
1	266-916	3.5mH	L1
2	266-044	0.8mH	L2, L5
1	266-900	1.5mH (steel)	L4
1	266-832	1.5mH (air)	L7

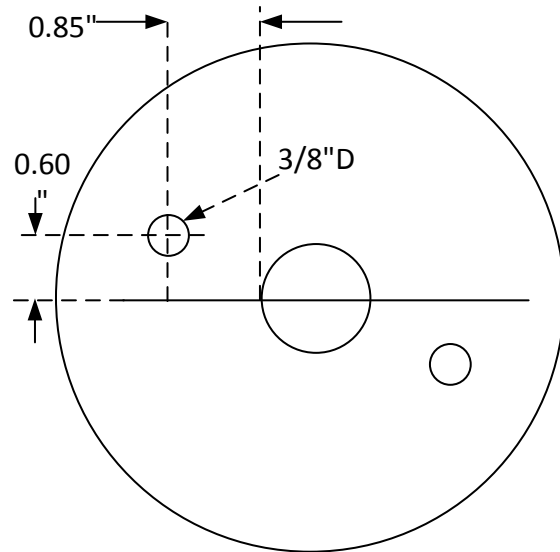
## SmallSyns: Crossover Voicing Adjustment Effects

These parts can be varied to adjust for driver sensitivity variations or listener preference

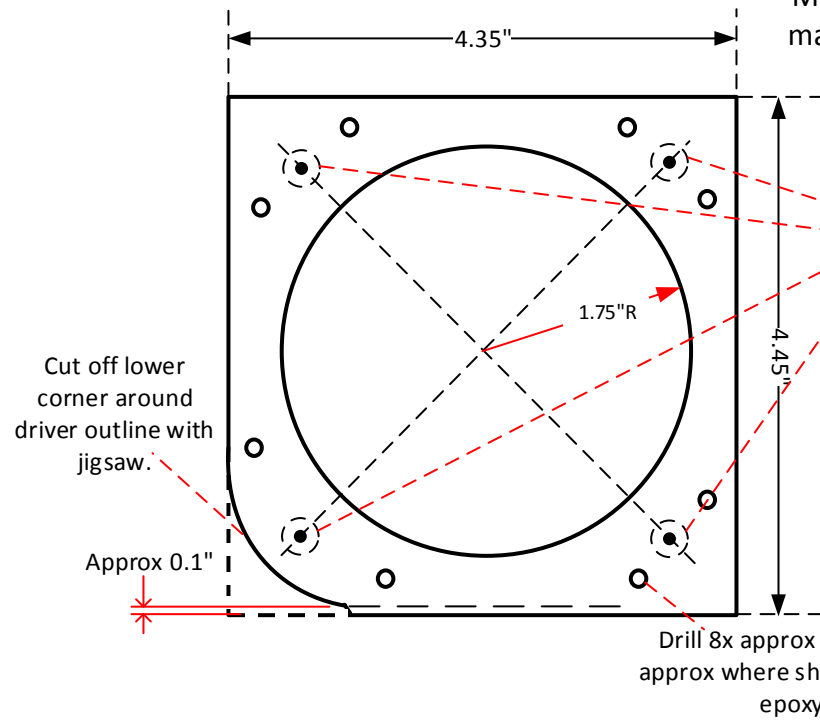
Changes shown are 0.5dB/division, relative to crossover parts as listed in the schematic



## SmallSyns: SEOS15 waveguide modifications

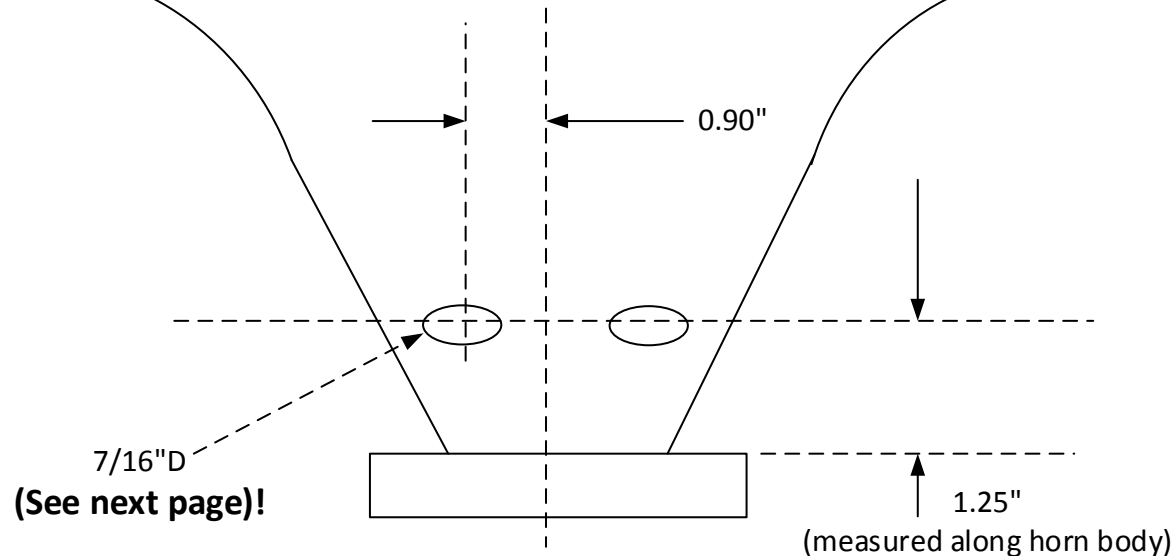


Relocation of tweeter compression driver mounting holes



Midrange Mounting Panel.  
material: 1/8" ply or 0.062"  
FR4 circuit board stock

Center driver on upper end of panel, mark mounting holes positions with pencil. Draw cross lines between hole center locations to find the center. Draw 1.75" radius circle using compass. Cut out the circle using jigsaw. Drill small holes for sheet metal screws for driver mounting



- 1) Cut/file away support ridge from top of waveguide
- 2) Drill small ( $\sim 1/16^{\text{th}}$ " ) guide hole at marked locations - drill this **vertical from the table (with waveguide lying as shown) - NOT** from waveguide wall!
- 3) Protect the inside of waveguide with scrap board to prevent marring walls when large drill pulls through (it can be smoothed with putty if it still happens).
- 4) Use 7/16"D Brad Point wood drill bit, start drilling on guide hole **vertical from horn wall** until full diameter of drill bit begins to cut, **then** slowly angle bit to be vertical from the **table** and drill through (be careful, it will come through with some force when it clears the wall!)





## Midrange driver mounting panel and compression chamber

Scuff up (or drill shallow holes in) the outer surface of the waveguide where the midrange mounting panel will attach to improve bonding of epoxy putty. Attach panel using epoxy putty with the chopped corner at the lower left near the CD mount (for bolt access). Make sure the space between the panel and the waveguide outer surface is sealed with the epoxy, but keep the apertures clear as shown below.

Fill in the volume between the waveguide and the outer edge of the big opening in the panel with (preferred, but messy) Durham's Rock Hard Water Putty or Plumber's putty (there has been some question about its oils possibly spreading to the midrange cone?). Form smoothly expanding open channels from the waveguide's holes toward the center of the cone area.

