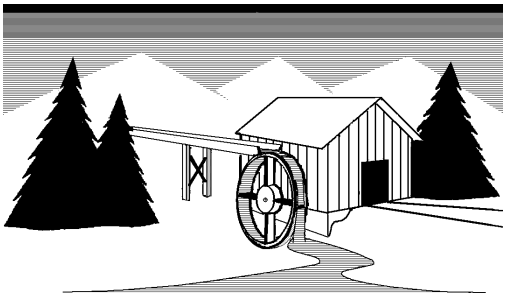
North Creek



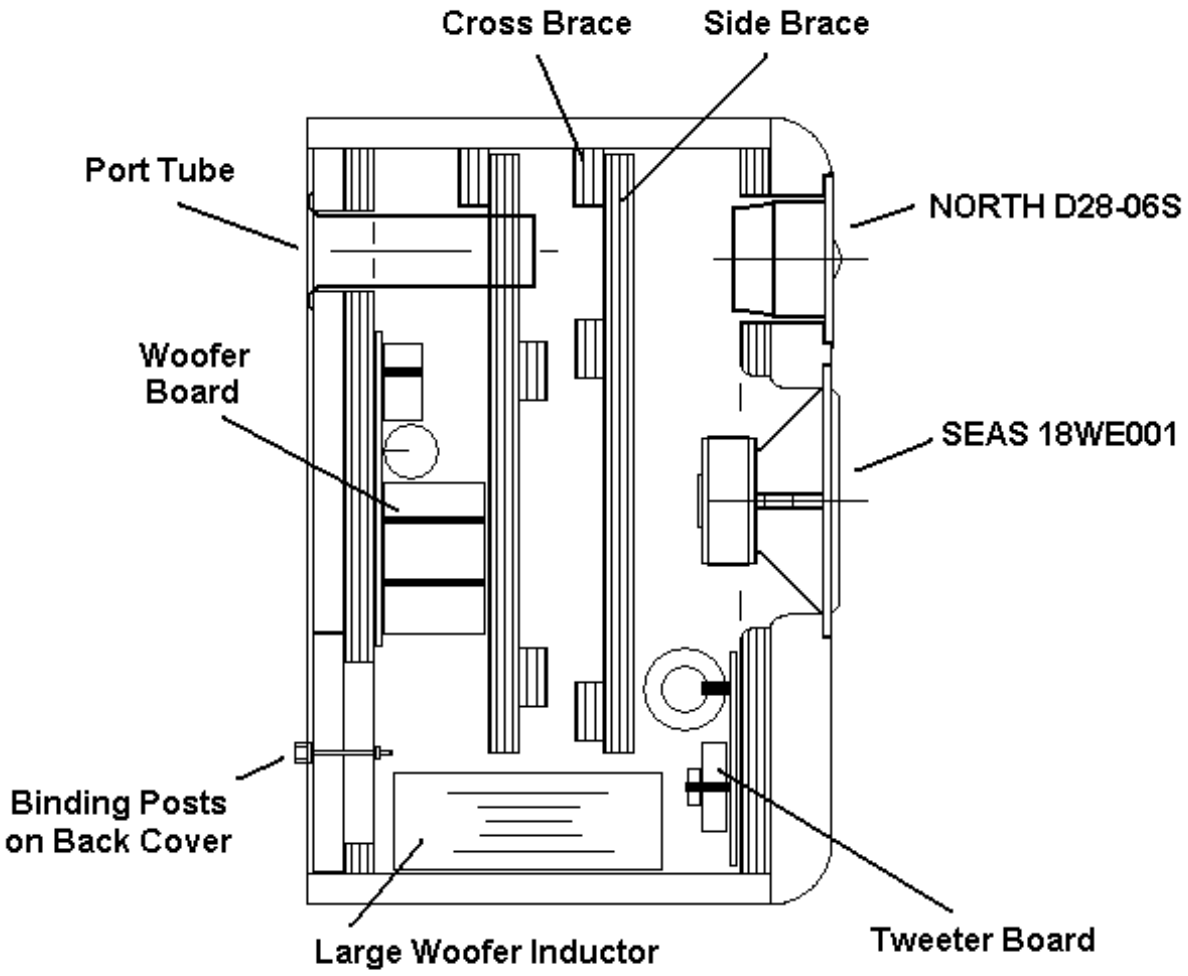
Music Systems

Pegasus

Loudspeaker Cabinet

Reference Monitor Loudspeaker
featuring the
SEAS W18E001 and NORTH D28-06S
in a QB3 Vented Cabinet.

North Pegasus



This carton contains:

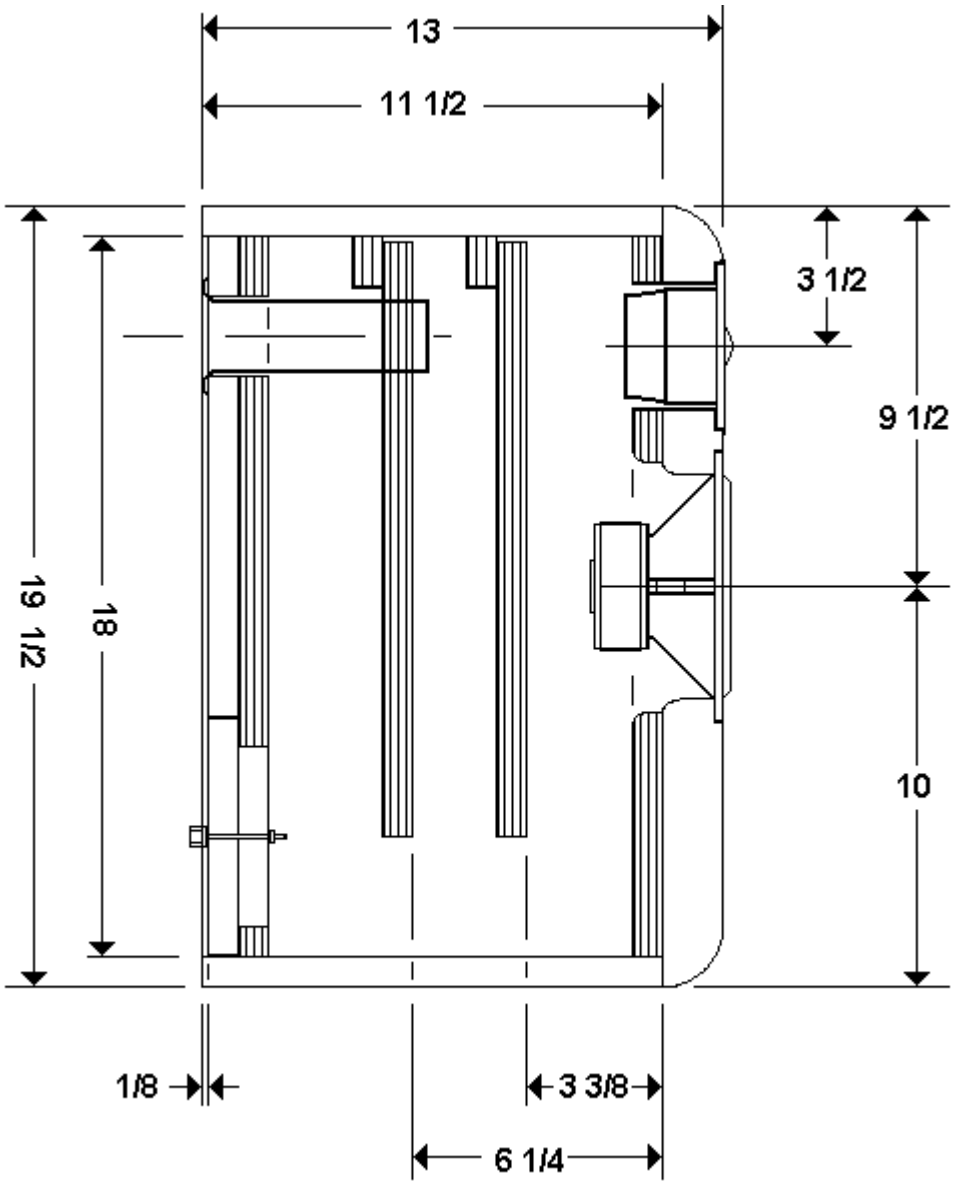
(1) Instruction package.
Response Curves
North Creek *Cabinet Handbook*
North Creek Wiring Guide

(2) 6 oz. Rolls of Dacron stuffing.
(1) Tube of "Liquid Nails" adhesive.
(1) Quarts of NCMS Soft Glue (except for Lee Taylor cabinet owners).

(2) Rolls of gasket tape.
(2) 2" x 4" flared port tubes
(70) Black Straws
(8) Mushroom grille fasteners.
(20) #6- 1" black screws.
(16) #6- 1 5/8" black flat head screws.
(2) Sets of 4 North Creek Big as Texas Binding Posts

(2) Assembled woofer crossover networks.
(2) Assembled tweeter crossover networks.

(2) magnetically shielded North D28-06S Tweeters.
(2) SEAS W18E-001 Woofers.

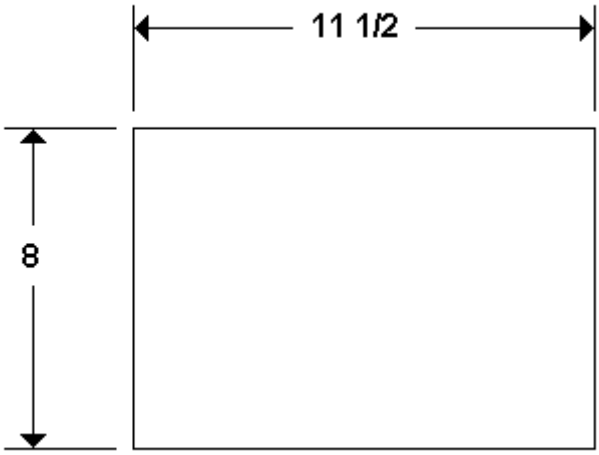


An overall dimensioned side view.

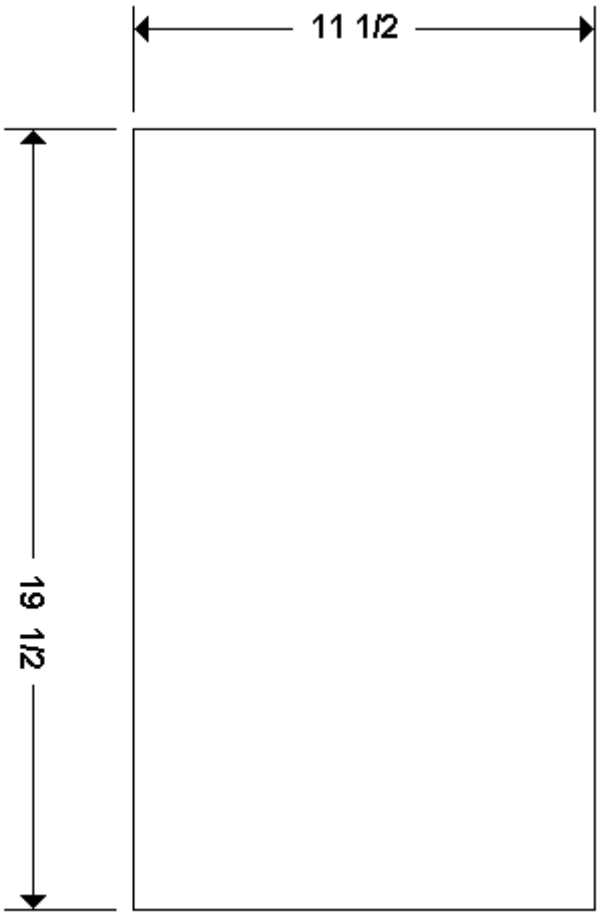
The fascia is 1 1/2" MDF. This can be made from two layers of 3/4" MDF glued together with Titebond.

Middle and bottom braces are not shown as they are added after the network is installed.

Top and bottom panels:
four pieces; 3/4" MDF, 8" x 11.5"

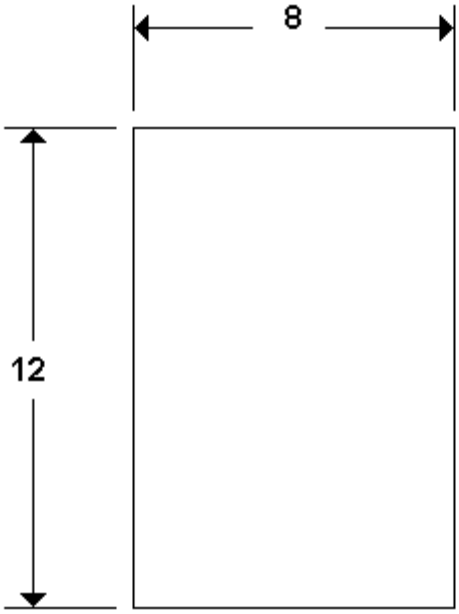


Side panels: 4 pieces, 3/4" MDF, 19.5" x 11.5"

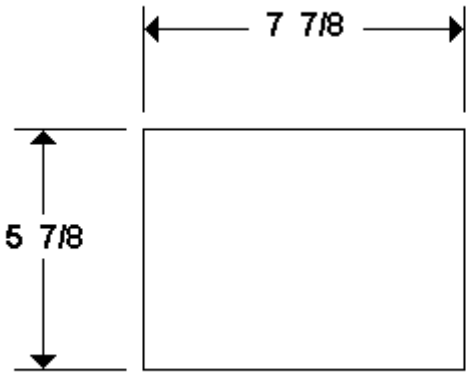


Outside Upper Back:

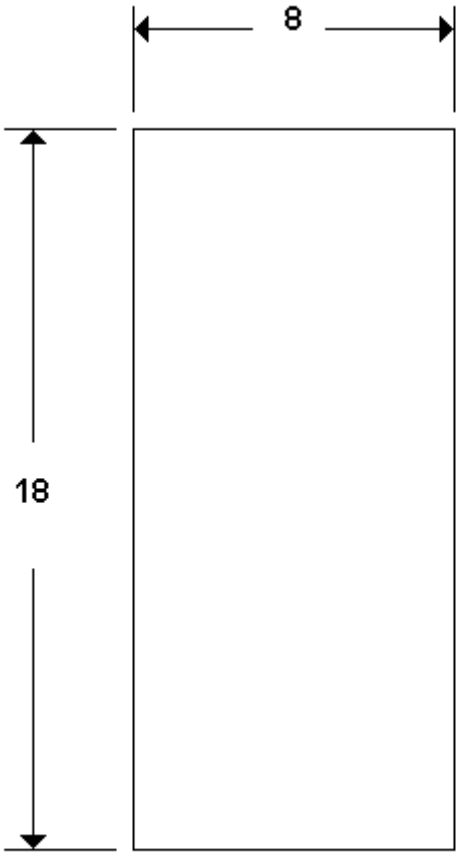
2 pieces 3/4" MDF 8 x 12



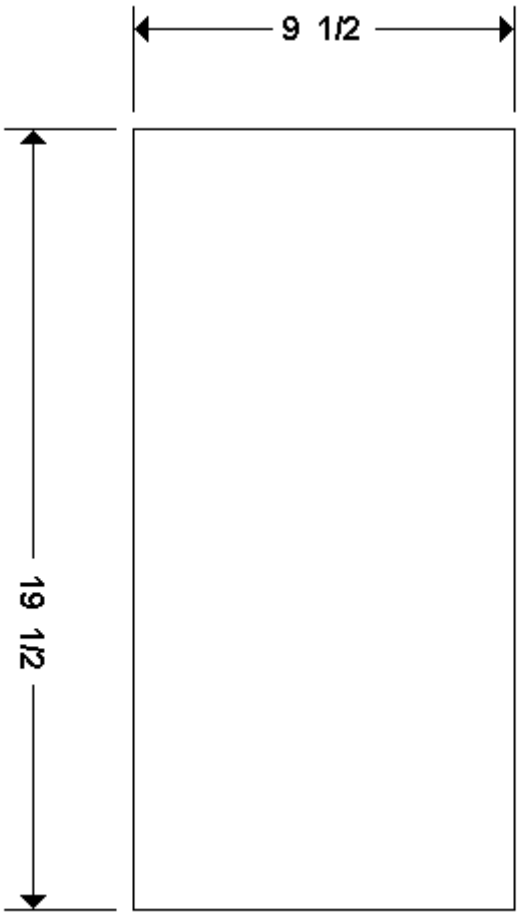
Lower Back Access Panel Cover
2 pieces 3/4" MDF 7 7/8" x 5 7/8"



Inner Back and Inner Front:
2 pieces 3/4" plywood 8" x 18"

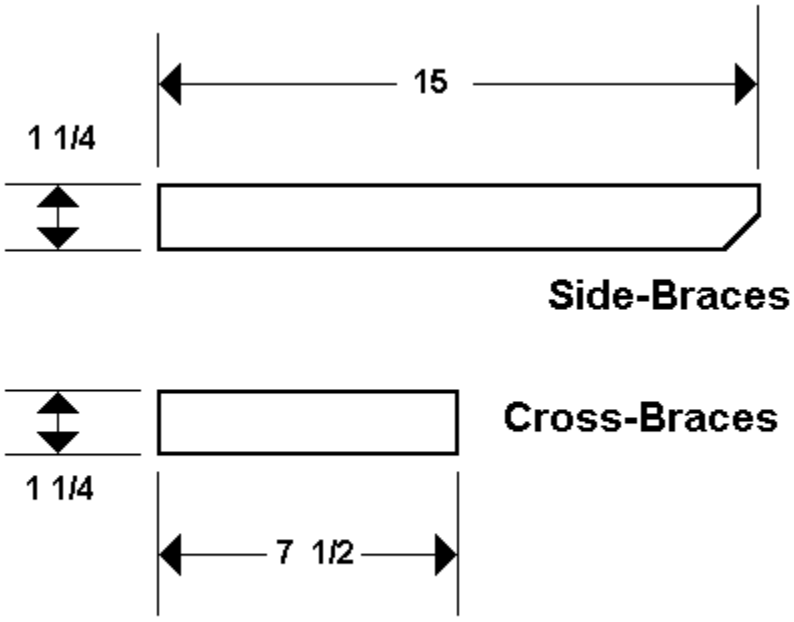


Fascia: 2 pieces 1 1/4" or 1 1/2" MDF
(may be a Titebond lamination of 2 x 3/4" MDF)
9.5" 19.5"



Braces:

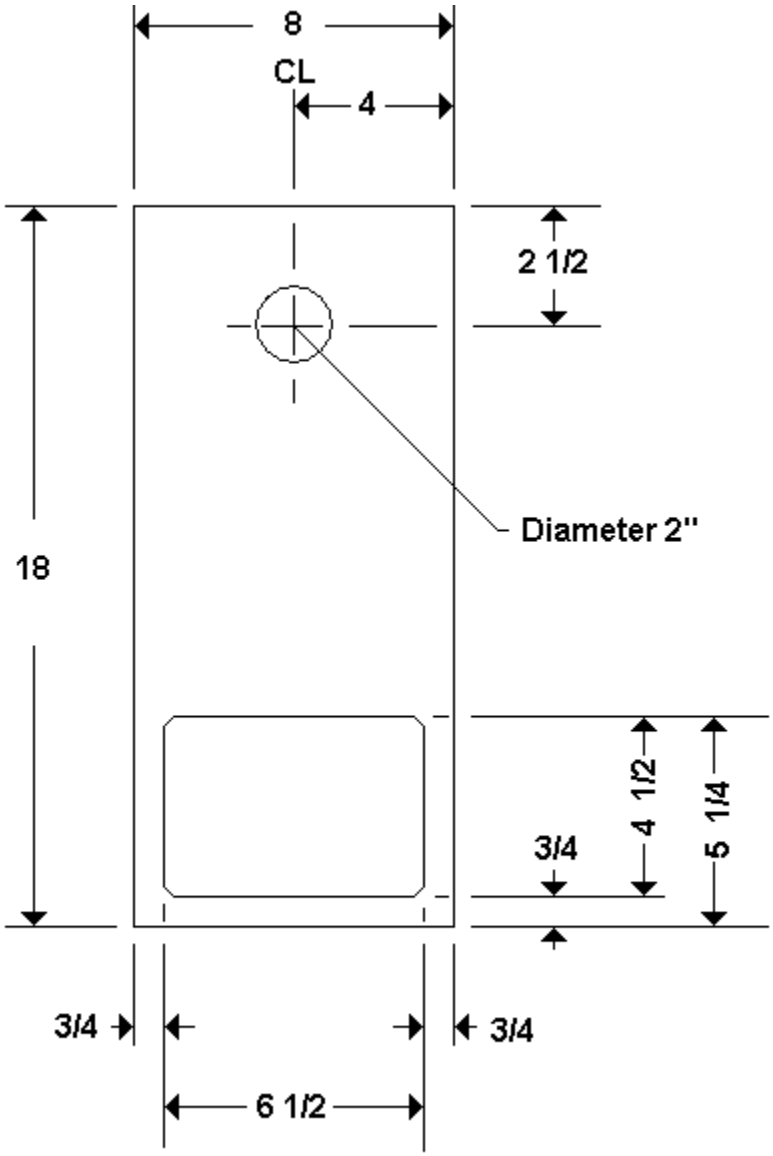
8 pieces 3/4" Plywood 1 1/4" x 15"
12 pieces 3/4" Plywood 1 1/4 x 7.5"



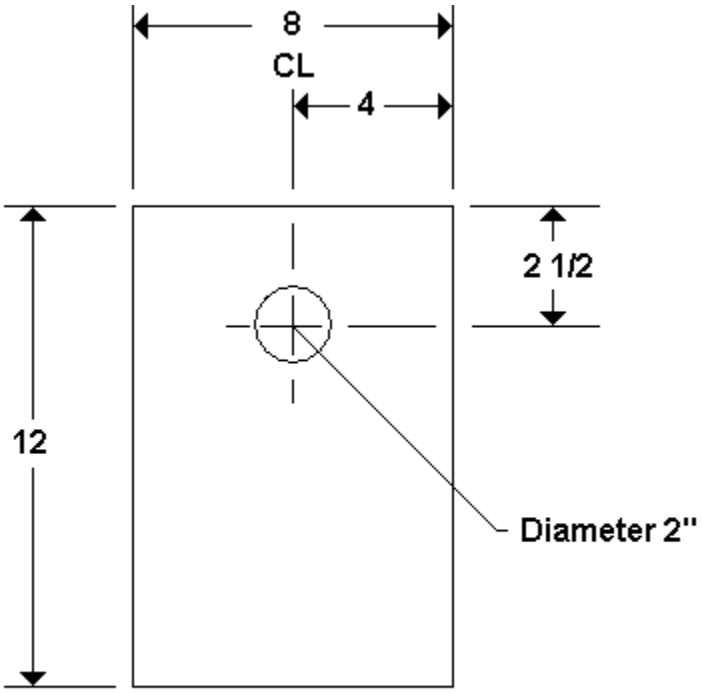
Back Panel Detail:

This panel is composed of one layer of MDF and one layer of plywood, laminated with NCMS soft glue. The MDF layer is on the outside top.

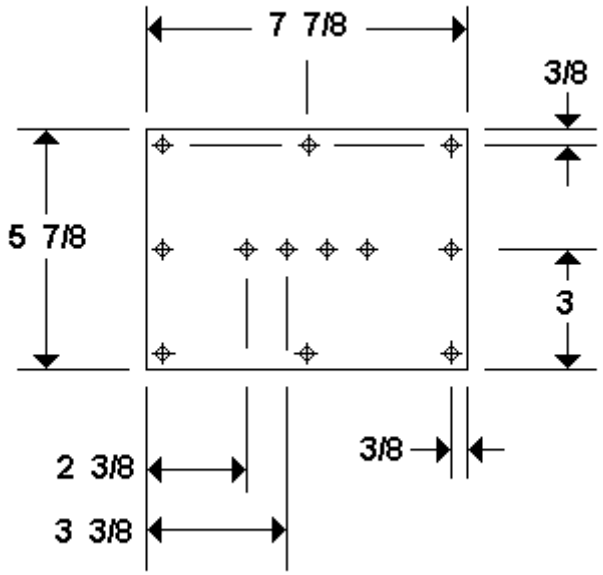
This is the plywood inner back detail:



This is the MDF outside upper back detail:



Outside Lower back Access Panel Cover Detail:
The Access Panel also holds the binding posts.



The Access Panel Cover is drilled as follow:

The 8 holes along the edge are through holes with countersinks for the 1 5/8" black flat head screws.

The four holes running along the horizontal center are 9/32" diameter for the binding posts. If a 9/32" bit is not available, one can use a 1/4" bit and the binding post will be drawn into the access panel cover when the binding post nut is tightened.

Fascia:

This panel may be either 1 1/4" MDF or 1 1/2" MDF. It may be constructed of a single layer, two layers of 3/4" material, or a layer of 3/4" and a layer of 1/2". If using two layers, the adhesive should be a hard glue such as Titebond.

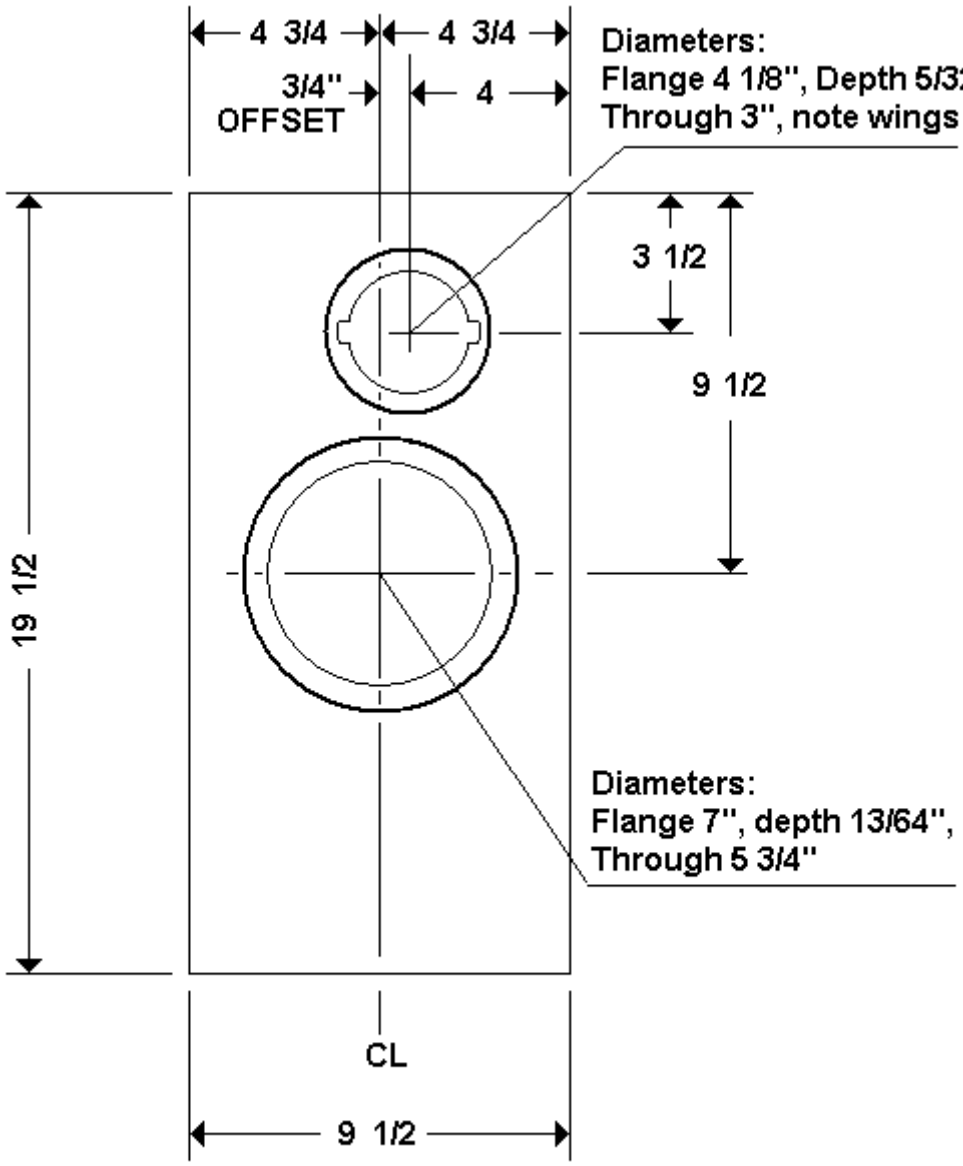
When machining the woofer and tweeter countersinks, measure carefully to be absolutely certain they are the correct diameter. The diameter we specify is actually very slightly larger than the flange driver flange diameters, to account for the thickness of any paint or surface finish.

The tweeter is offset 3/4" to the outside for a mirror image left-right pair.

Woofer and tweeter mounting holes should be drilled at this point.

The front edge of the fascia is rounded over with a minimum 3/4" diameter, maximum 1 1/4" diameter, roundover bit. If one chooses to veneer the front, roundover the side edges and leave the top and bottom square.

The inside edge of the woofer through hole should be flared with a 3/8" radius roundover bit, sanded smooth and sealed with a thin layer of glue.


4 3/4
4 3/4
3/4"
OFFSET
4
Diameters:
Flange 4 1/8", Depth 5/32"
Through 3", note wings
3 1/2
9 1/2
19 1/2
Diameters:
Flange 7", depth 13/64",
Through 5 3/4"
CL
9 1/2

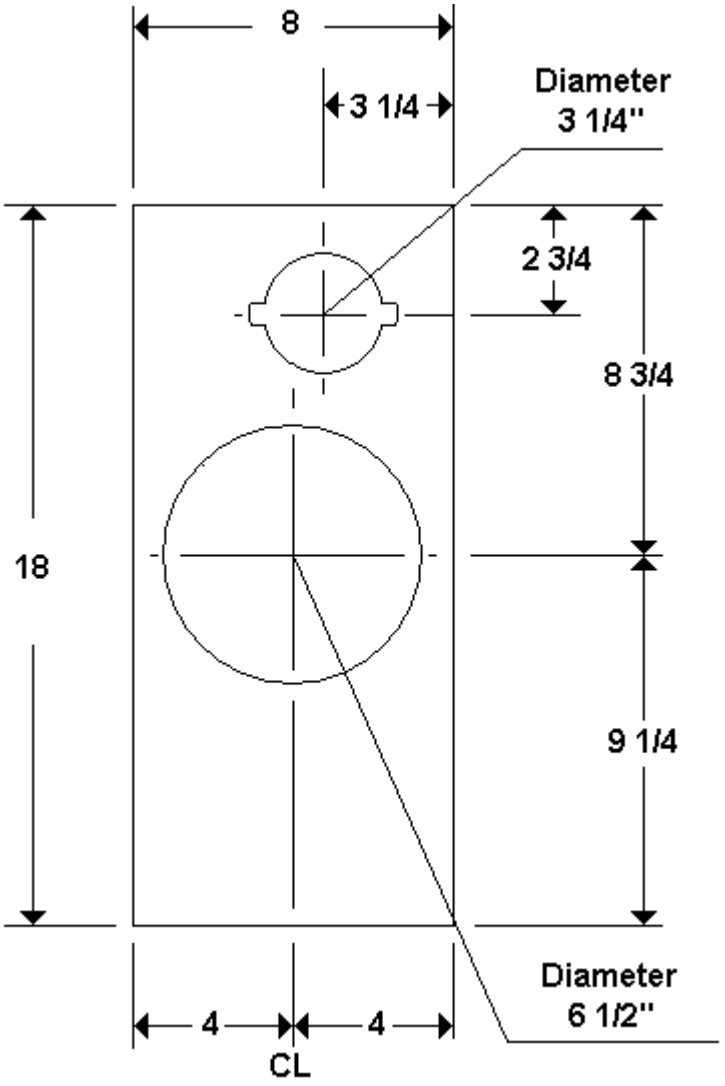
Inner Front:

This panel is machined from 3/4" plywood.

After machining, the inside edge of the woofer cut out should be flared by a 3/8" radius roundover bit . The roundover should then be sanded smooth.

Both the woofer and tweeter through holes should be sealed with a very thin layer of hard glue, to prevent any air leak due to the porosity of the plywood.

Note that these through hole diameters are larger than the matching holes in the Fascia. This is done to facilitate assembly and improve the aerodynamics behind the woofer.



Assembly

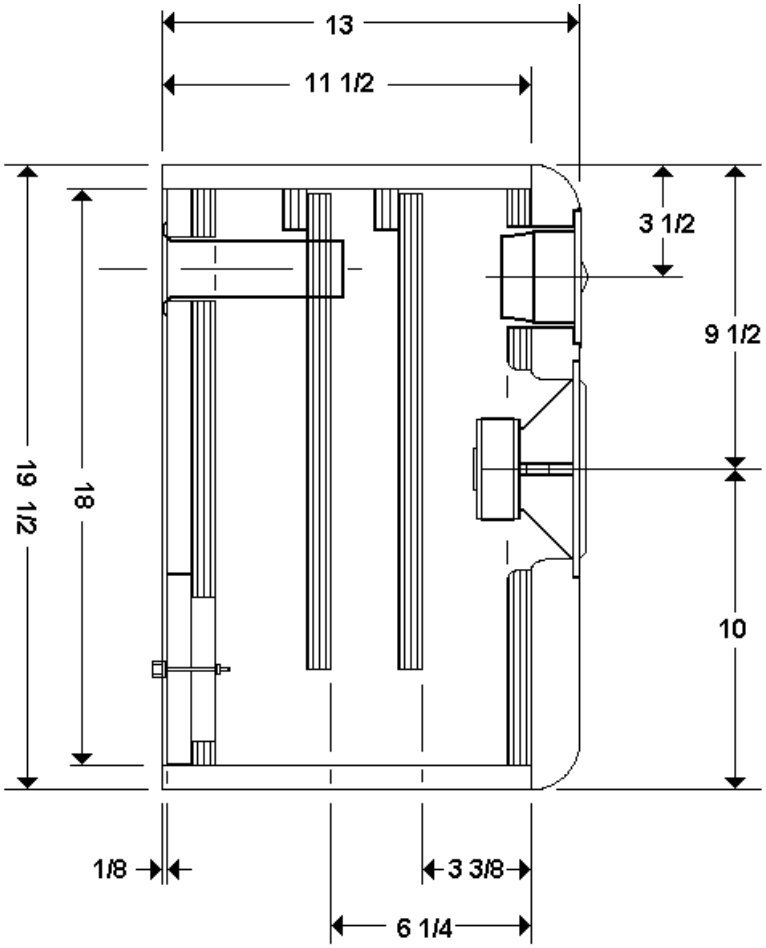
Label the side panels' inside top front corners, then mark the side brace positions. Remember opposite sides are mirror image! Glue on the side braces with Titebond. Make sure to leave a 1" gap at the top edge so the top can be attached. One can pin them with brads as well, then clamp them in a stack.

Meanwhile, lay up the backs using NCMS Soft Glue.

Using hard glue, assembly order is side + top + back; inner front; bottom; side; Top braces (pinch clamp). Do not install the middle or bottom cross braces.

Make "Glop" by mixing the remaining soft glue with pre-mixed drywall joint compound. Spread a layer of glop about 1/4" thick between the front and back brace in the area from the bottom edge of the woofer to the middle of the tweeter. Allow the glop to dry for a couple of days, then roll the cabinet to the opposite side and repeat the process. One can speed up the drying process considerably by aiming a fan into the cabinets; the glop will skin over, crack, then dry.

It is assumed the Fascia is finished separately and attached last.



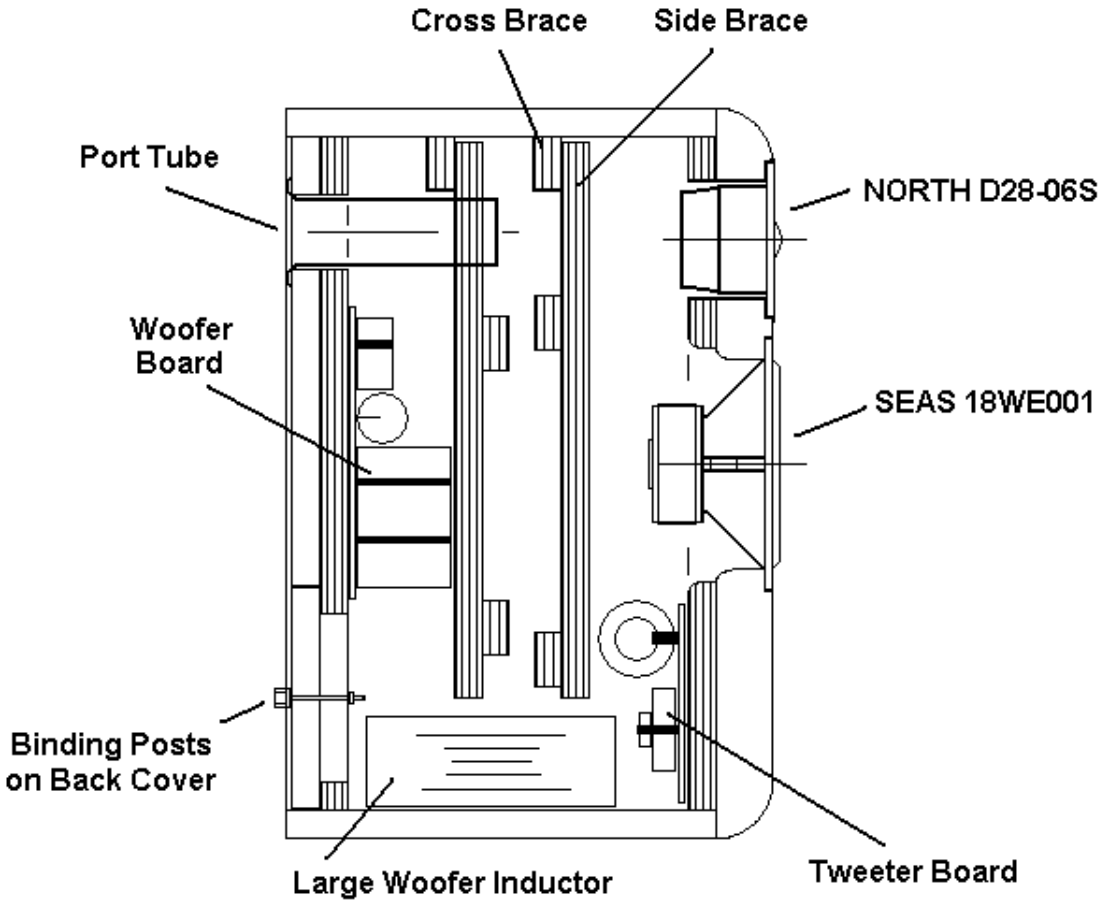
Crossover installation:

1) The tweeter crossover is installed through the woofer opening. The crossover is inserted inductor first, rotated under the brace and glued to the fascia with Liquid Nails. Place the cabinet on its face and reaching in through the rear access panel, wiggle the crossover in place to spread out the adhesive. Let gravity hold the network there for a couple of hours or overnight while the glue cures.

2) The woofer board and large woofer inductor is then installed through the access panel: With the cabinet on its side, slide the woofer board behind the rear brace, then slide the large woofer inductor in below the bracing. Now, slide the woofer board back down and liberally cover the rear of the board with Liquid Nails, beginning as close to the top edge as possible. Slide it back into place, make sure no wires are caught under it, and roll the cabinet onto its back. Through the driver cut-outs, reach in and wiggle the board while pressing hard, to distribute the adhesive. Make sure it is not covering the port tube cut out. Let the glue dry overnight (this board is heavy!).

3) The cabinet is then rotated onto its bottom, the large woofer coil should be glued to the bottom and right side with lots of adhesive. Make sure it is not too close to the back of the cabinet as it will interfere with the binding posts. This should be allowed to dry overnight as this inductor is very very heavy.

4) Install the back two cross braces with pinch clamps. When these have dried, remove the clamps and install the front two cross braces. Note: If one is shipping this loudspeaker, it can be made more transport-safe by using a wider bottom cross brace, topping the large woofer inductor with silicone and pinning it with the bottom cross brace. This brace is then glued to the side braces.



Final Assembly

1) Attach the Big as Texas binding posts to the access panel cover as follows: Outside is hex head, floating circle washer, knurled washer with knurls against the access panel cover;
Inside is Star washer, color coded nylon washer, nut. Tightening the nut securely will draw the post tightly to the access panel cover.

The easy way to get all the posts to line up perfectly is to install one red/black pair loosely, then open the outside hex heads completely and push a long nail into the post shaft through holes just below the hex heads such that the nail goes though both posts. This keeps the posts lined up and prevents them from spinning with the inside nut is tightened.

2) Feed the heat-shrinked Red, Black, White and Blue crossover input wires through the rear access panel opening. Turn the cabinet on its face. Attach the crossover wires to the color coded posts on the cup (red = woofer (+) to right Red Post; black = woofer (-) to right Black Post; white = tweeter (+) to left Red Post; blue = tweeter (-)to left Black Post). Dab a tough of red nail polish onto the outermost nuts to assure they will not come loose over time. Rotate the cabinet onto its front. The access panel cover is screwed to the cabinet with 1 5/8" black flat head screws.

3) The port tube is installed by thinly coating it with adhesive or hot melt just below the flange. Drop the port into place, cover the end with a small block of scrap wood, and give the block one good rap with a hammer to seat the port flush.

4) The cabinet is then returned to its back, the woofer and tweeter wires pulled through their respective driver openings. Cut the stuffing in thirds. Cut a slit about half way down the first piece, and push it behind the first brace such that the slit end goes around the port tube but does not block the end of the port tube. Do the same with the next piece, keeping it away from the end of the port tube as well. The last piece goes between the braces and cabinet front such that the woofer motor will push it in when the woofer is installed..

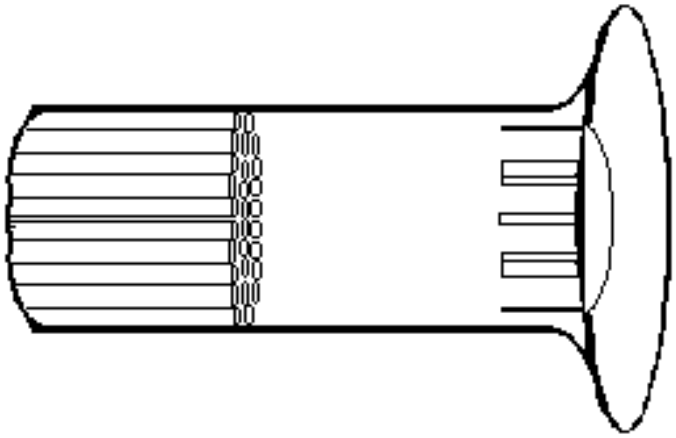
5) Adhere gasket tape to the woofer countersinks, beginning at the upper right screw hole so it is easy to find later, and trim off excess. Puncture through the gasket tape to mark the mounting screw positions.

6) The white (+) and blue (-) leads are attached to the tweeter, red (+) and black (-) to the woofer. If the quick connects are loose, the way to tighten them is to pinch them back by the solder joint to the wire with needle nose pliers. Be very careful not to pinch the open end that goes onto the drivers. Then, as the quick connect is slid onto the driver lead it will get tighter and tighter as one pushes on.

Optimum placement is on a 24" to 30" stand. The cabinet should be set up with the tweeters to the outside and angled back about 6 degrees by adjusting the spikes on the top of the stand. Optimum listening axis is on to just below the woofer axis. The rear of the cabinet should be no closer than two feet from the rear wall, and may be as far as 40 inches out.

Port Optimization

North Creek Loudspeaker Kits can be tuned over about an octave by adjusting the length of straws inside the port tube. The following facilitates port tube removal:



1) Insert the straws into the end of the tube with about 4" sticking out the back. The fit should be so tight that the straws begin to go out of round (65 straws for a 2" port, 125 straws for a 3" port). Wrap the end in tape, then pull out the bundle of straws and push the taped end into the port, again such that about 4" sticks out the back. Wrap this end in tape as well.

2) Remove the straw bundle and cut each end into a 3" length.

3) Slide the 3" straw bundle into the port such that they end just as the flare begins. One can adjust the length of straws emerging into the cabinet from the port to lower the tuning frequency by ear. We have found the optimum to be between flush and 1" sticking into the cabinet.

For those that are curious about the origin of this procedure, to the best of my knowledge it was first discussed in writing by Neville Theile himself. The earliest reference I know of was in an article by Dr. Theile in an ASA journal from the mid '60's, on non-linear port behavior. Which article and year it was precisely is now unknown to me. -GS

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