

GEFORCE GARAGE
SCRATCH BUILD SERIES

HOW TO CUT AND BEND SHEET METAL

FEATURING
DAVID “INSOLENTGNOME”
CATHEY



Now that we've got a 3D model of our Scratch Build to use as a blueprint, David “InsolentGnome” Cathey is going to show us how to carve up and bend metal to forge a custom chassis—*using only the power of our minds.*

Lol, just kidding. Actually, the tools and materials we'll be using for our Scratch Build will likely differ from the ones you'll be using for your own mods. So consider this video and PDF guide to be a starting point, walking you through the fundamentals of assembling our Scratch Build so that you can adapt the techniques for your own projects.



As always, safety gear is crucial. You don't get a lot of advance warning when a rogue splinter of metal comes flying at you so gloves, hearing protection, and goggles—or even better, a full face mask—should be worn at all times.

LEVEL: MASTER

TIME: 2 HOURS

COST: \$\$\$

TOOLS:

Clamps
Ruler/Square
Drill
Jigsaw
File
Goggles/face mask
Press brake
Protractor
Center punch

MATERIALS:

.08" 5052 aluminum (body)
.08" 6061 aluminum (sides)
Mod blocks
Button head screws
Permanent marker

STEP 1:

Measure out sheet metal

David's applying the measurements derived from our 3D model to mark out our sheet of aluminum.



STEP 2:

Clamp 'n cut

After clamping the steel to our worktable, David dons the safety goggles and uses the jigsaw to cut the aluminum to size.



STEP 3:

Apply measurements to new sheet

As in Step 1, David's using a marker to indicate where to cut and bend on our surface. Draw over a strip masking tape if your material doesn't have plastic film.





STEP 4:

Clamp 'n cut again

After donning the safety glasses, David drills a pilot hole for the CPU cutout, then puts the jigsaw to work. Afterwards, he finishes the sharp edges with files.



STEP 5:

Measure for the bend

David marks the back of our sheet aluminum in preparation for the brake machine we'll use to bend it.



Bending Leaf

Stationary Bed

STEP 6:

Brake prep I

After clamping the press brake to the worktable, David identifies the three components of the machine: the stationary bed, bending leaf, and clamping bar.



Clamping Bar



STEP 7:

Brake prep II

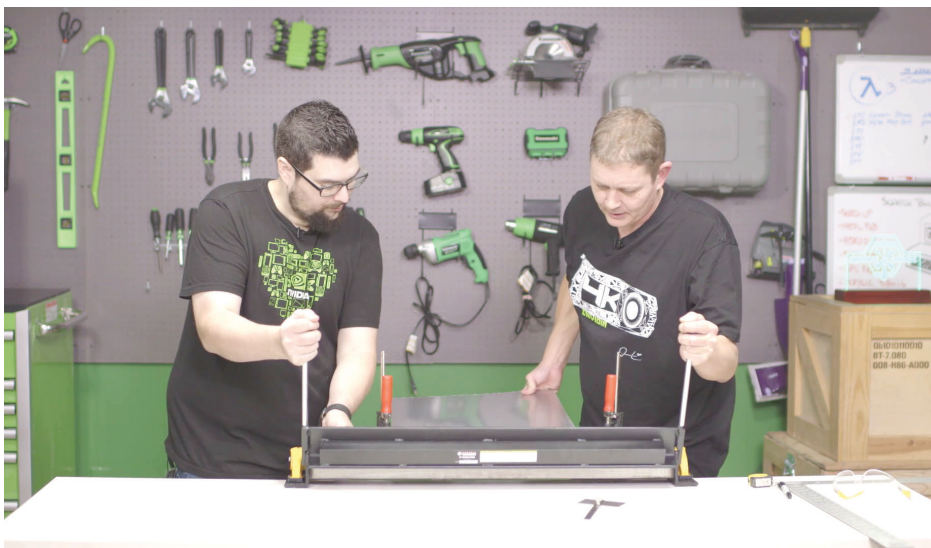
Place the sheet metal between the bed and the clamping bar, with your C-clamps close to the sheet's edges.



STEP 8:

Brake prep III

David's derived the angle we need—78 degrees—from our 3D model. We'll use a protractor to measure our angle as we bend.



STEP 9:

The bends I

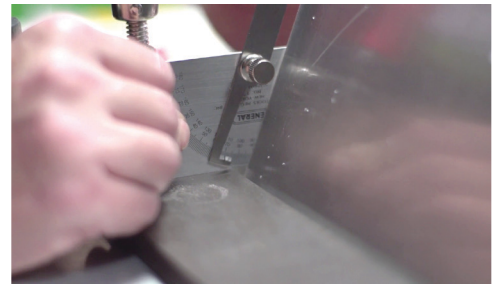
Eyeball the first bend, being careful not to hit the precise mark or overshoot it—fine adjustments can be made on subsequent passes after taking measurements.



STEP 10:

The bends II

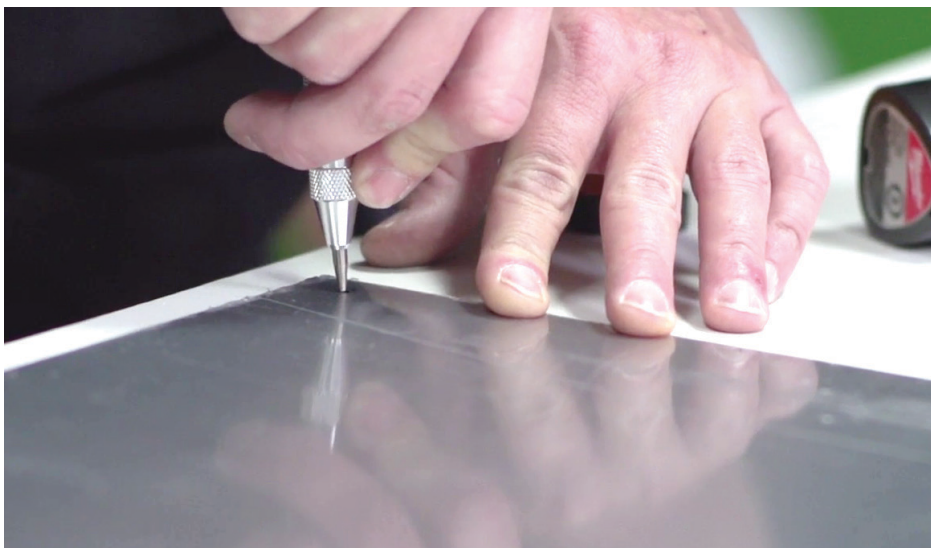
Here, David tackles the second bend at 110 degrees. Because it's on the back side, however, the bend will actually be at 70 degrees.



STEP 11:

The bends III

David completes the final bends to the chassis using the same procedure in Step 9.

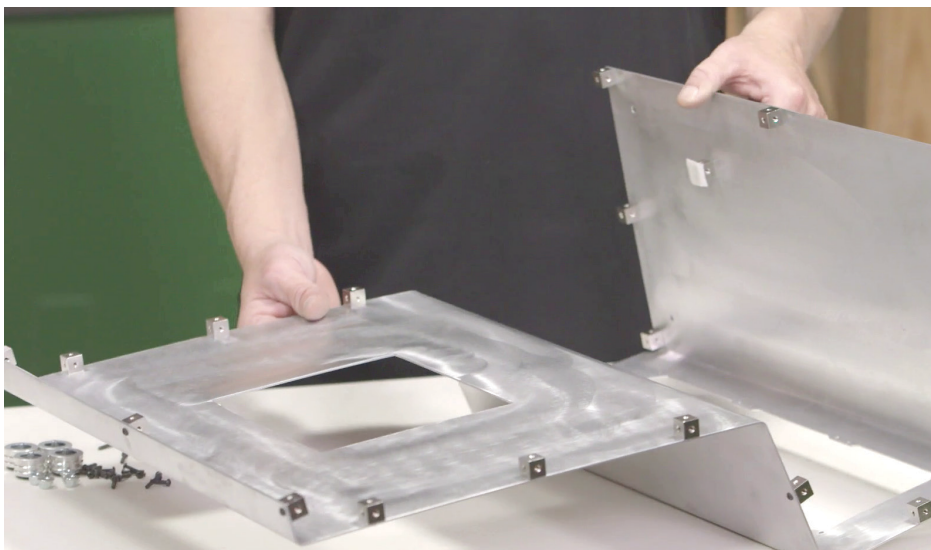


STEP 12:

Prep for cutout

In order to create holes to attach the side panels and cut out the panel for our radiator, David uses the center punch to create guides for the drill bit.

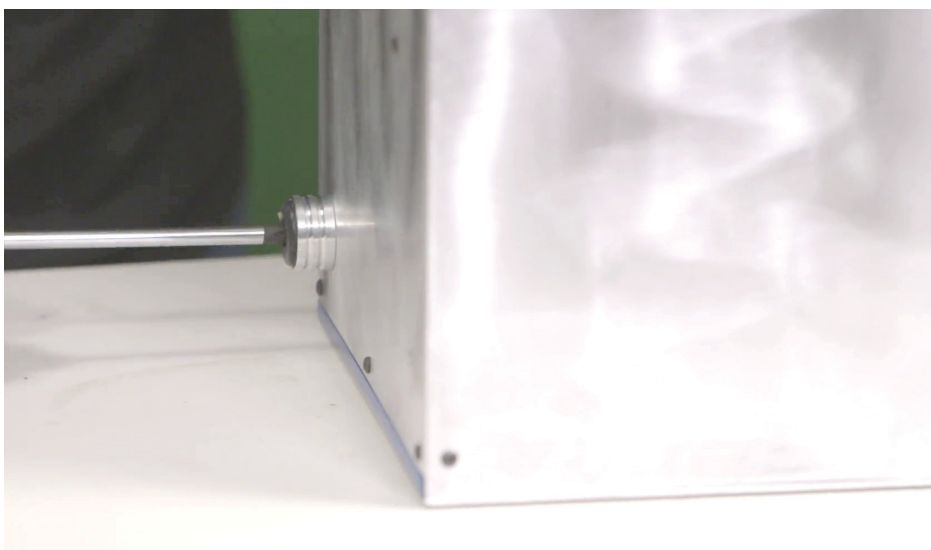




STEP 13:

Assembly

Instead of the usual nuts and bolts, we're using mod blocks and button head screws to attach the components of our chassis.

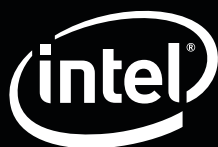


STEP 14:

The final touches include attaching the side panels and handsome billeted aluminum feet, then sanding the surface to prep for the next tutorial—hydro dipping!

GeForce Garage: Scratch Build Series

SPECIAL THANKS TO:



TOSHIBA

