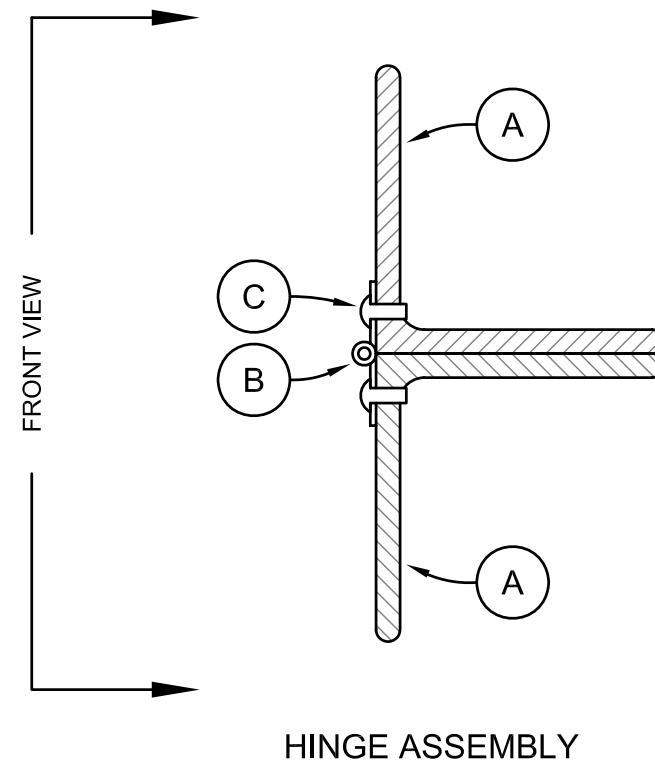
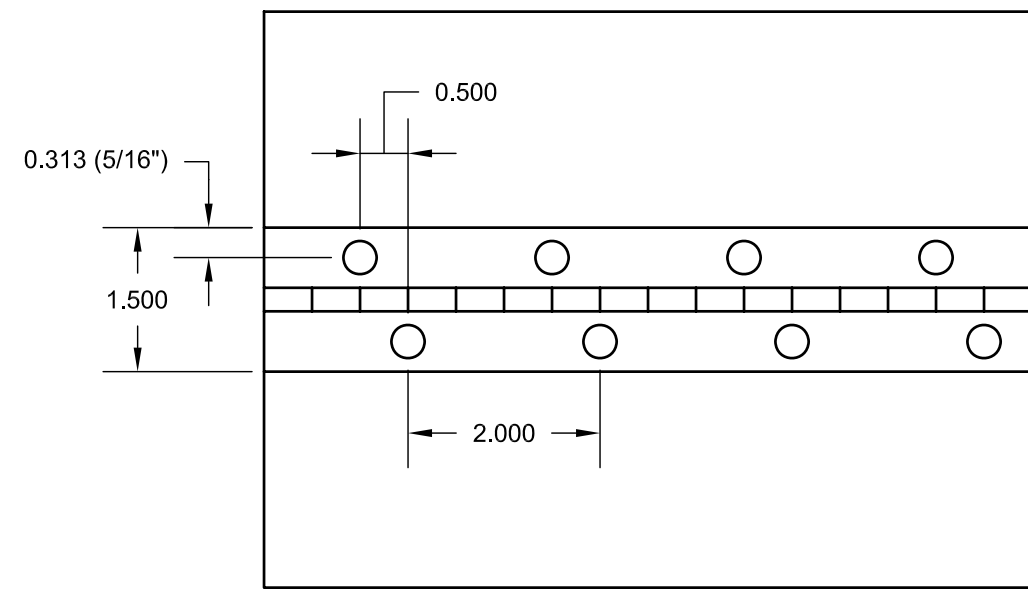


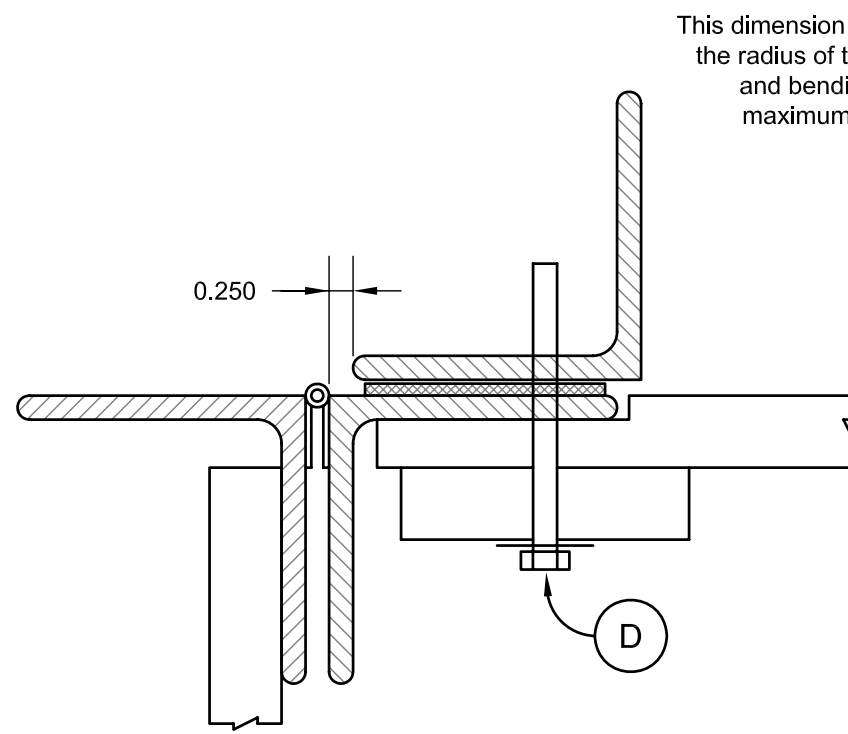
Rev #	Revision	Date	Zone
0	Original drawing	7/31/2009	
1	Revised notes for Radius Block, added General Notes	8/1/2009	



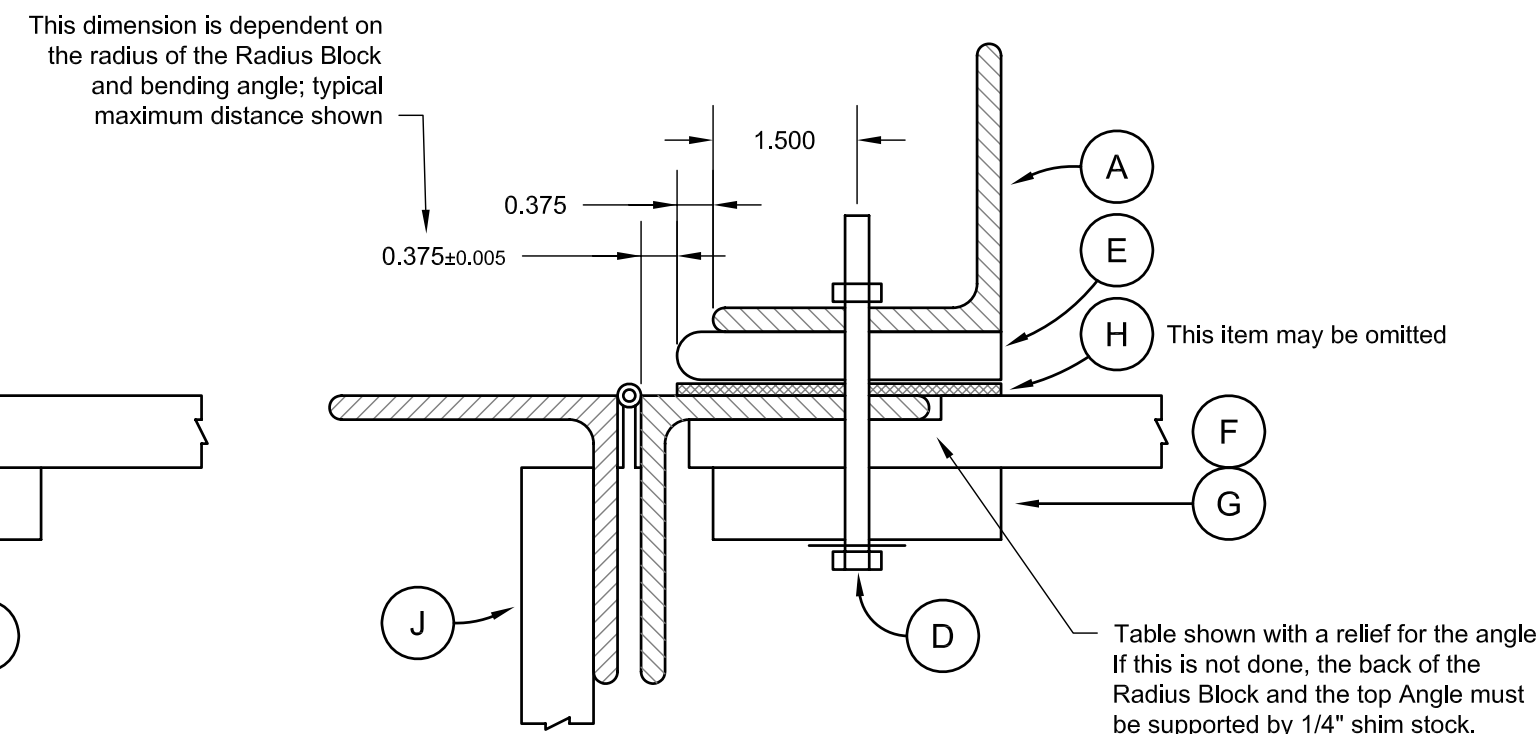
HINGE ASSEMBLY



HINGE ASSEMBLY FRONT VIEW

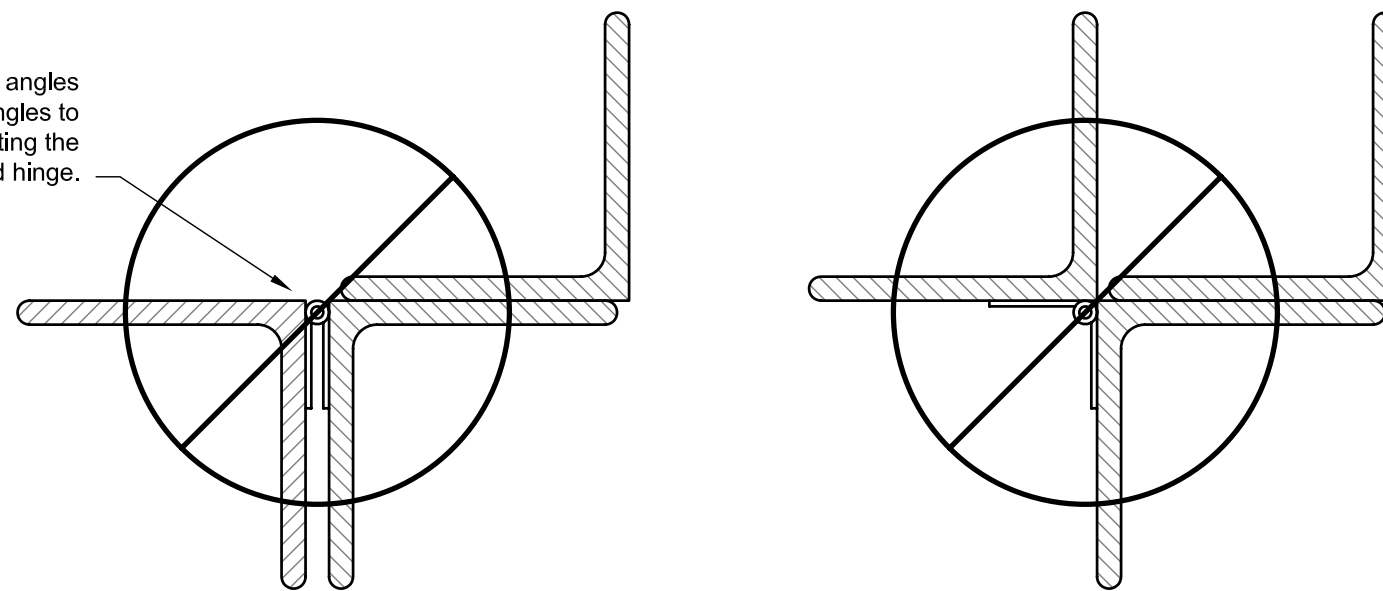


WITHOUT RADIUS BLOCK



WITH RADIUS BLOCK

Do not install the hinge and the angles flush. This will cause the angles to make contact prior to completing the bend resulting in a stretched hinge.



GENERAL NOTES

1. The brake is limited to approximately 110° to 135° of bend rotation, depending on bending radius and material thickness.
2. These plans have been generated for those who wish to construct their own brake and accept all responsibility for doing so. No performance is guaranteed and no liability is accepted. Use these plans at your own risk.

CONSTRUCTION NOTES

1. Clamp the two hinged Angles (Items A) together as shown in the Hinge Assembly detail. Several clamps placed along the length works well. Using 2x4 blocking, the assembly can be placed on the worktable with the Front View facing up.
2. Mark the drill locations on the Hinge (Item B) as shown. With the Hinge centered along the joint between the two Angles, drill through the Hinge and the Angle with a 5/32" or #21 bit. Use Cleco fasteners to hold the Hinge in place.
3. A5 steel rivet may work at this point, but my experience shows that they loosen. Screws are stronger.
4. Once drilled, remove the Hinge and drill out the holes for clearance of the screws (Item C). Use a drill bit just slightly larger than the screw (anywhere from #12 to #7 depending on the screw tolerance). A #11 bit worked well on the prototype.
5. Using a #10-24 H2 taper tap, tap the holes in the Angles. To speed things up, use a cordless reversible drill driver set on low speed with the cam set on medium. A full pull of the trigger (maximum speed) is not recommended. Use a drop of cutting fluid in each hole and blow the tap clean after each hole.
6. Screw the Hinge to the Angles.
7. Clamp the hinged Angles, the top Angle (Item A), the Radius Block (Item E), the Doubler (Item G), and the Spacer (Item H) to your table top (Item F) and match drill for the 1/4" bolt (Item D). Make sure the front edge of the Radius Block and the Hinge are spaced evenly along the entire length.
8. The gap from the front edge of the Radius Block and the hinge line is dependent on the bend radius and the bend angle (3/8" is currently shown). For an 1/8" radius and a 90° bend, a gap of 1/8" make a more accurate and tighter bend. The minimum distance is a function of how far the hinged Angle needs to rotate before it contacts the Radius Block (and starts damaging the Hinge).
9. Place the bolt holes evenly spaced along the entire length.
10. Remove the Radius Block to match drill the other Radius Blocks.
11. On the front hinged Angle, attach a Handle (Item J). This could be two pieces of angle iron or steel tubing welded or bolted on or a 24" x 48" piece of plywood bolted on. It should be roughly about 2' in length and about 4' wide but the dimensions are not critical.
12. The aluminum to be bent is placed in between the Spacer and the Radius Block. The bolts are then tightened and the bend is made. This arrangement will allow for a bent flange of up to 1-3/4" without removing any bolts.
13. The Spacer may be omitted. Without the Spacer in place, the aluminum to be bent will contact the top of the Hinge and interfere with placing the aluminum and tightening the top Angle. This is not a major concern, but for thicker material a preliminary bend may be necessary followed by re-tightening the bolts and completing the full bend.

J	1	Handle, 3/4" Plywood / Angle Iron / Etc.
H	1	1/8" Plywood / Nylon / Aluminum Spacer, 8'-0" Long This item may be omitted
G	1	3/4" MDF / Plywood / Particle Board Table Top Doubler
F	1	3/4" MDF / Plywood / Particle Board Table Top
E	1	1/2" MDF / Plywood / Nylon / Aluminum, 8'-0" Long "Radius Block" (1) with 1/8" bottom radius (1) with 1/4" bottom radius Top edge to be milled for clearance (1/4" radius or 45° angle)
D	9	1/4" x 3-1/2" Bolt, Nut, and Washers 1/4" x 3" Bolt, Nut and Washers (Alternate for use without Radius Block)
C	96	#10-24 x 3/8" Round Head Screw #10-24 x 1/2" Round Head Screw (Alternate)
B	1	1-1/2" x 0.060" Steel Continuous Hinge, 1/8" Pin, Undrilled, 8'-0" Long 1-1/2" x 0.040" (Alternate, but not as strong) (2) 4'-0" Long Hinges (Alternate)
A	3	3" x 3" x 1/4" Steel Angle, 8'-0" Long
Item	Qty	Material

ANGLE IRON METAL BRAKE

Scale: 1/2" = 1"

Robert Haines
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