



DIY Harb Carver Assembly Guide

Important! Neither Harb Carver in the photos was built to the spec of the drawings. However, each one of them enables you to see how to assemble the various components.

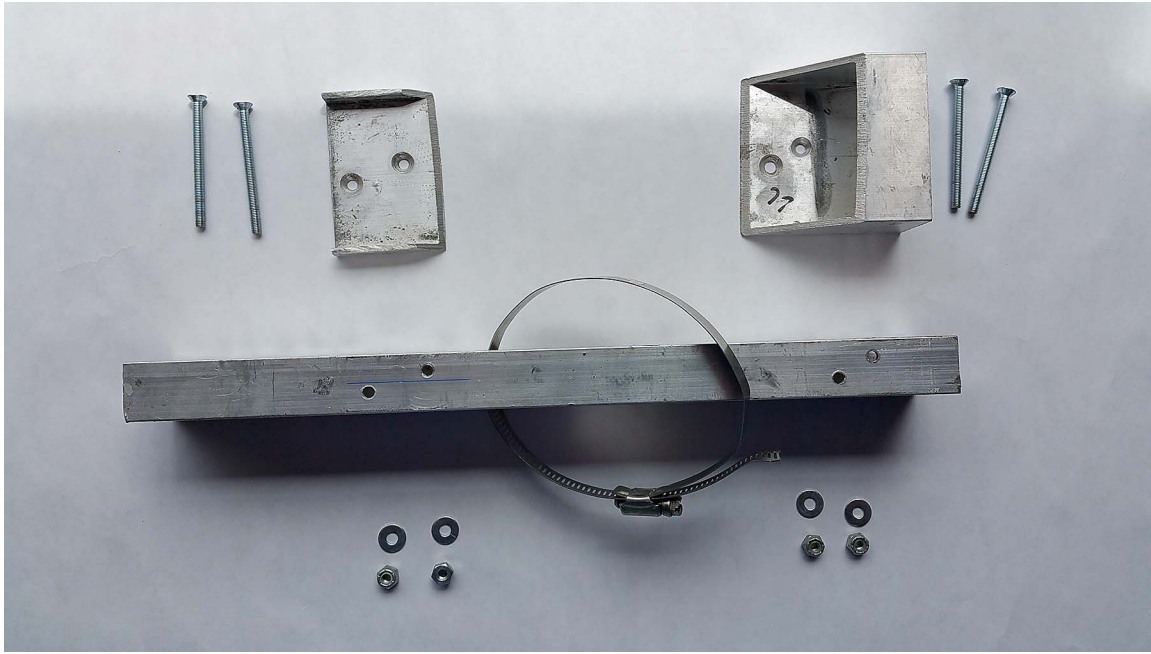
The aluminum-colored DIY Harb Carver in these photos was a DIY testbed for wheelbase testing. We have taped over the extra holes to make it clearer. The blue Harb Carver is an original Comp model, with a wider and taller chassis than the one specified in the drawings.

Fabricate (or have a machine shop fabricate for you) two chassis, two toe bindings, two heel bindings, and one or two brake levers (depending on if you want one or two). Obtain all the other hardware on the component list.

If you are not confident assembling the parts, or do not have the tools to do so, have the machine shop do it for you or enlist a DIY-capable friend.

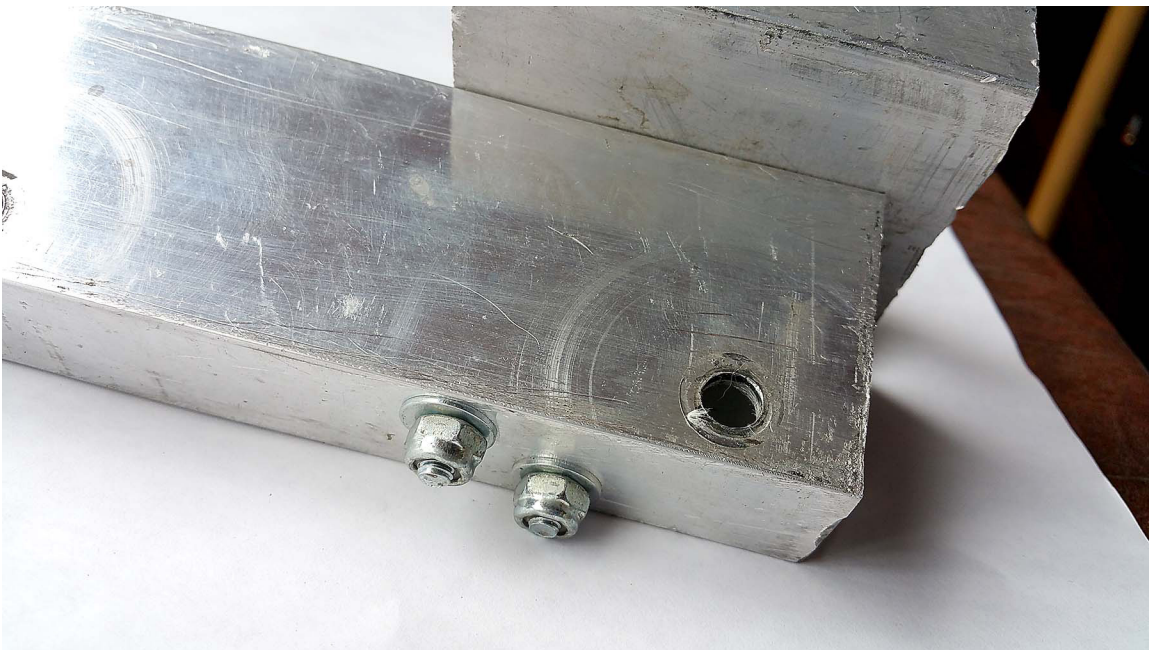
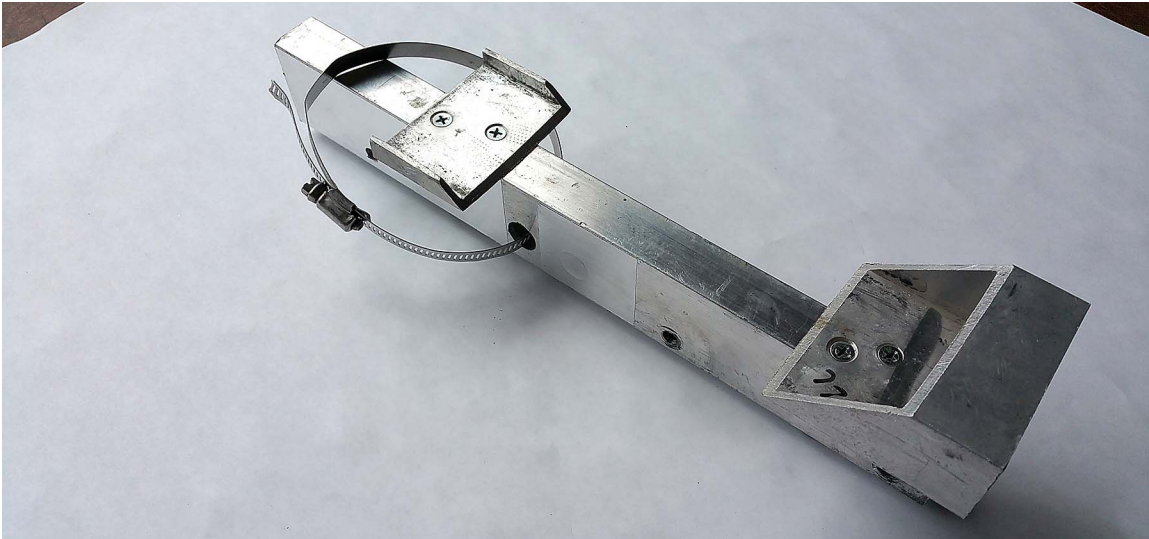
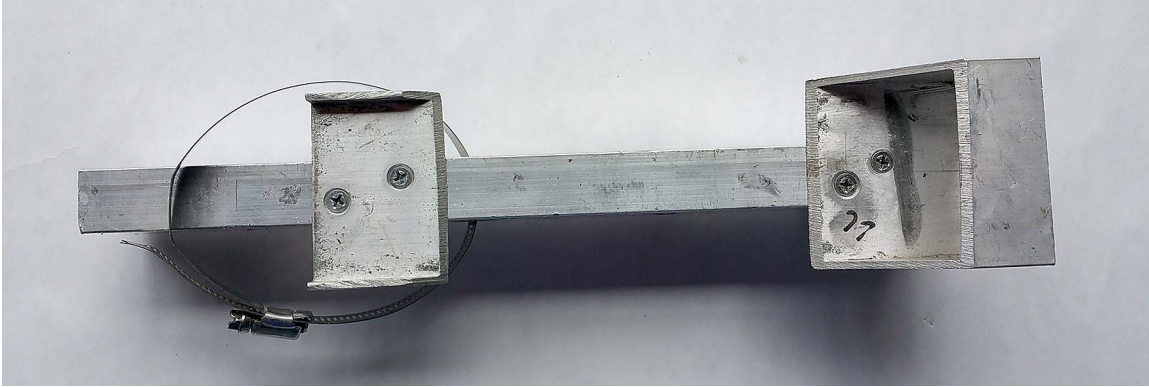
Set out the chassis, bindings, and hardware

- Install one worm-drive hose clamp per chassis thru the 3/4" dia hole



Attach the bindings to the chassis

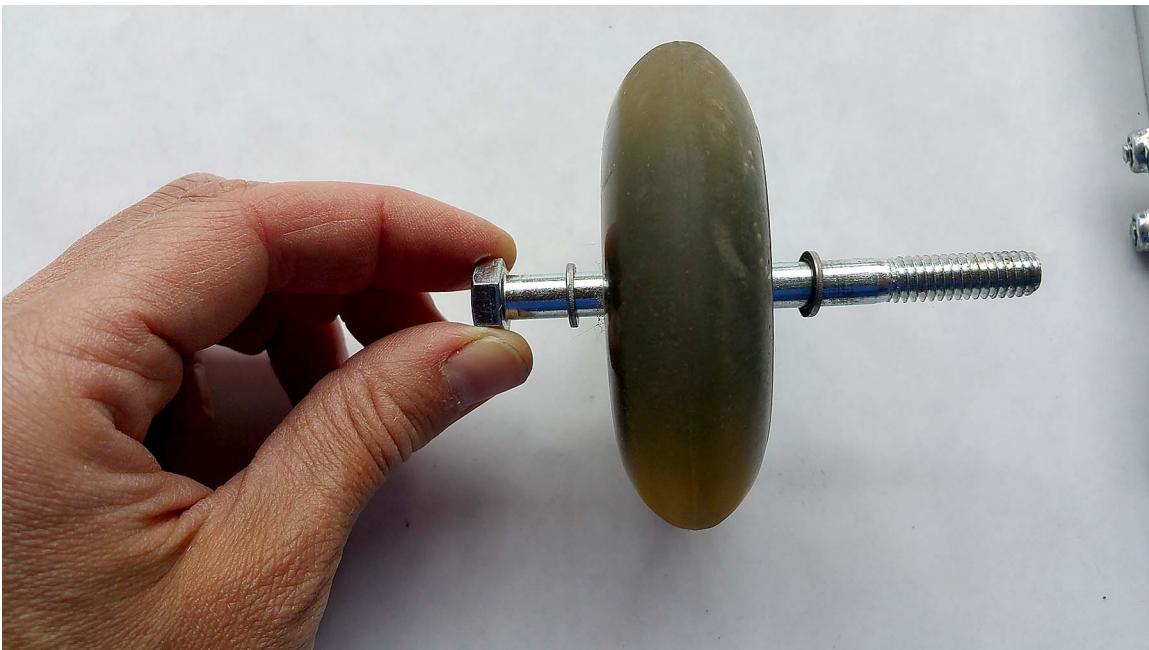
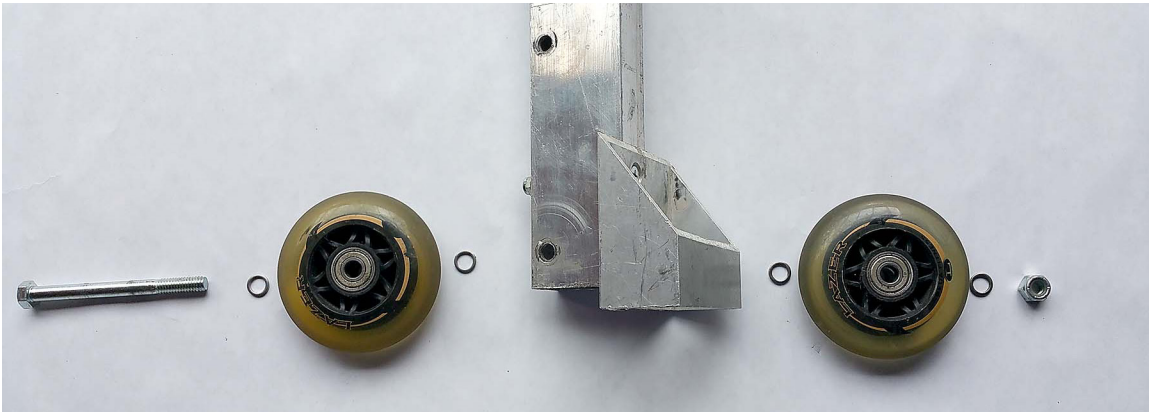
- Insert the Phillips-head machine screws into the countersunk holes in the binding heel and toepieces, and then all the way through the chassis from top to bottom
- For each screw, use a flat washer and then install and tighten the nylon lock nut



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Install the wheels and axles

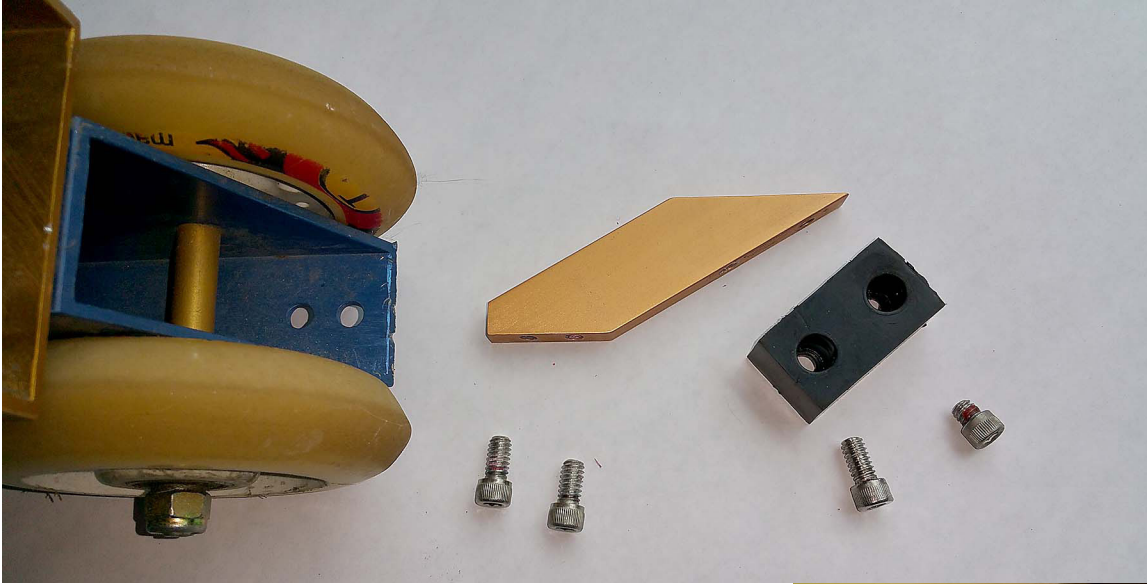
- For each axle, make sure you have the correct sequence of parts:
axle/washer/wheel/washer/chassis/washer/wheel/washer/nut
- If you bought the wheels without the bearings installed, then each wheel must have the correct sequence of parts inserted into the core of the wheel:
bearing/spacer/bearing
- Install washer/wheel/washer on the axle bolt; insert it through the chassis; install washer/wheel/washer/nylon lock nut
- Tighten until snug. Wheels must be able to turn, but there is a slight drag on the bearings when the axle nuts are tightened properly
- The DIY Harb Carvers are left and right-specific once you install the axles. The bolt head goes on the inside of the Harb Carvers (the big-toe side) and the nut goes on the outside (little-toe side). Make sure you install your axles in the correct direction for each foot.



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Install the brake bumper and lever

- Use the 0.5" long cap screws through the chassis into the brake lever
- Use one each 0.5" and 0.25" cap screws through the brake bumper into the brake lever



- Put a drop of red thread-locker on each screw before you tighten it into the brake lever
- Tighten until snug

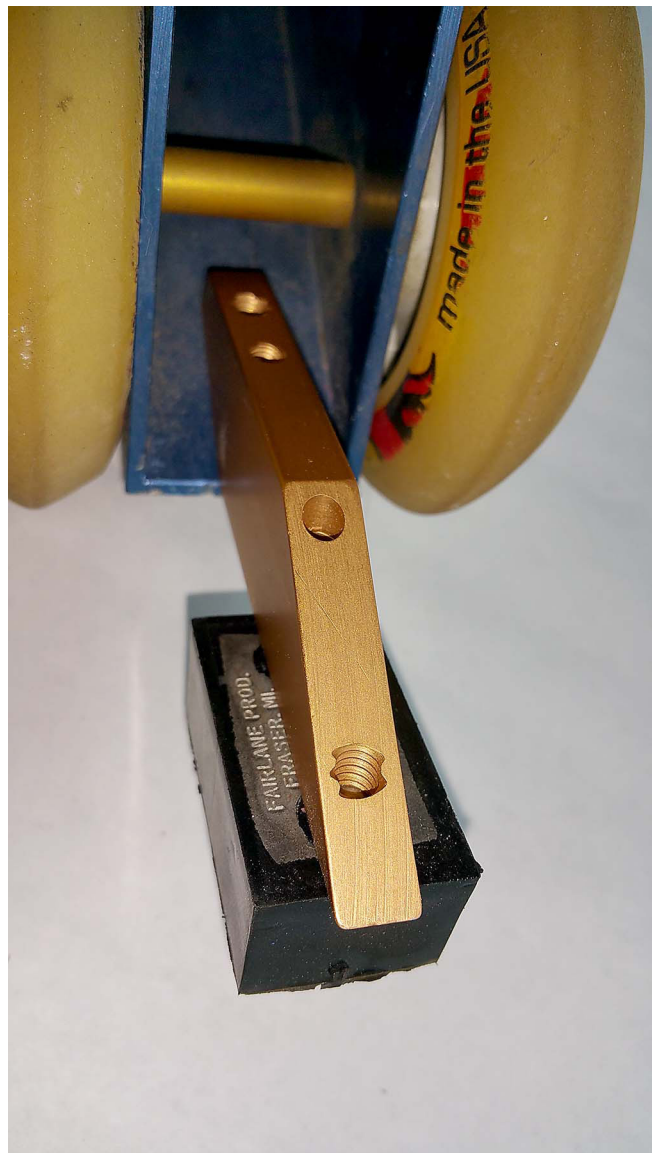


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Bottom view, brake lever installed in chassis

Top-rear view of brake bumper and brake lever installed



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Attaching the DIY Harb Carvers to your ski boots

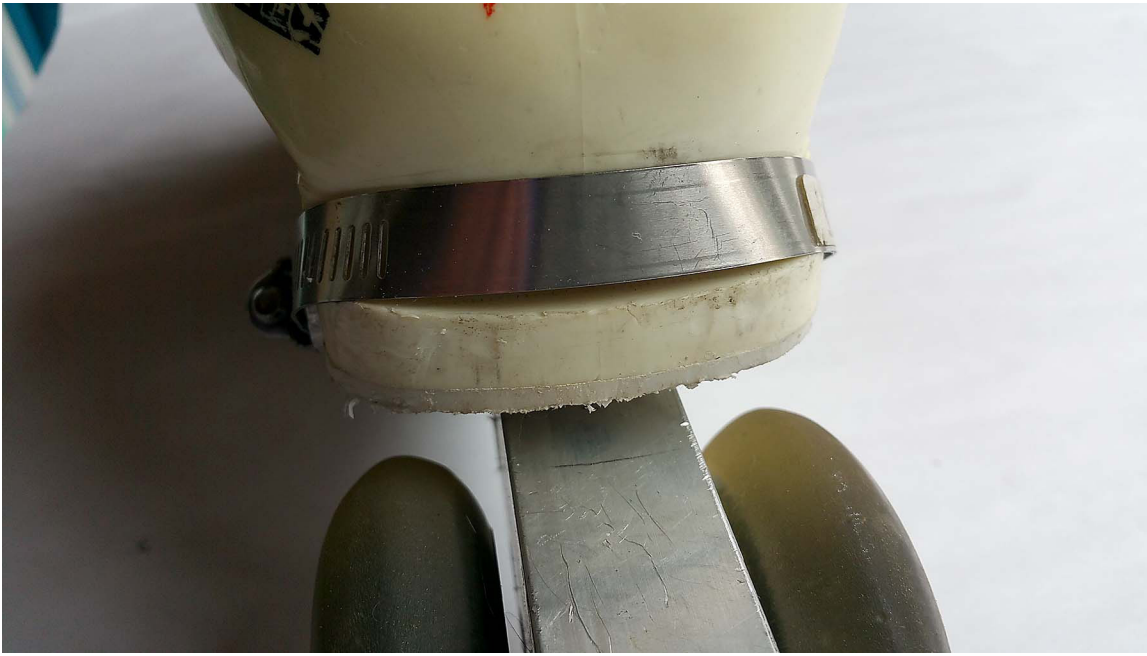
- If necessary, loosen the hose clamp so that it sits forward of the toe binding and permits the boot to sit flat in the binding
- Choose the correct boot, left or right, according to the direction of the axle (head on the inside, nut on the outside).
- Slide the heel of the boot rearwards into the heel binding until the front edge of the binding is touching the back of the boot heel
- Make sure that the boot is sitting flush on the bottom of the binding



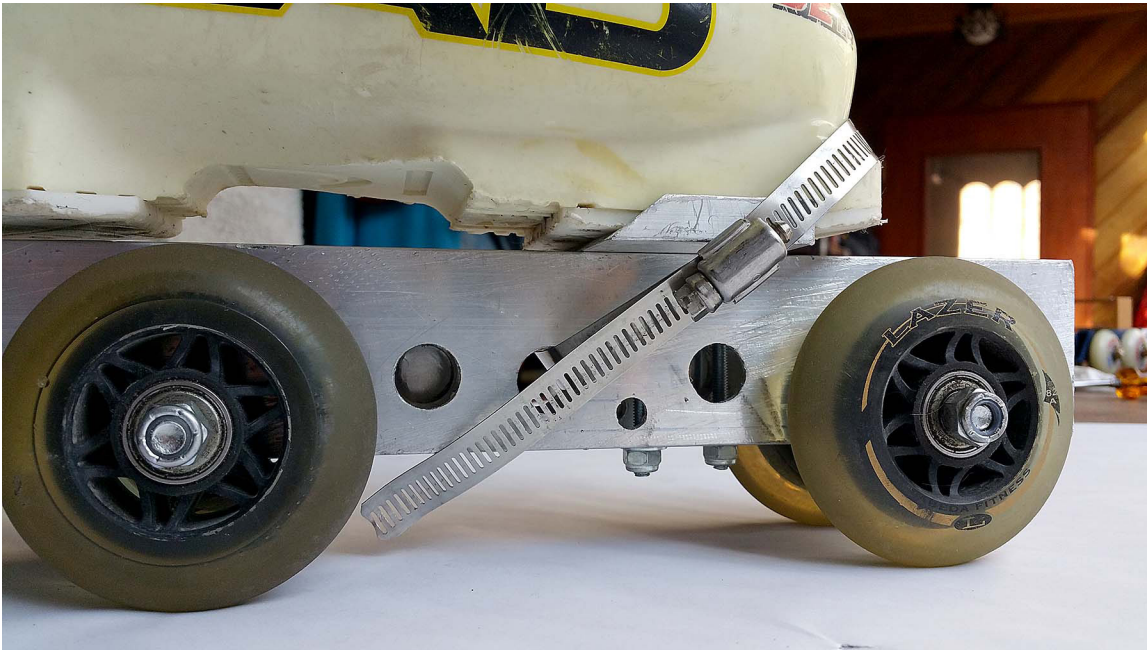
- Press the toe of the boot downward into the toe binding until it sits flush
- Turn the hose clamp until the tightening screw (and the loose end) are on the outside (little-toe side) of the boot sole.
- Slide the hose clamp up onto the toe lug of the boot. Hold it there as you tighten the hose clamp.
- Tighten the clamp until the boot is held snugly in the binding, with no slip or movement between the boot and DIY Harb Carver. Do not overtighten.



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Front view, hose clamp correctly installed over the top of the toe lug



Lateral side view, hose clamp correctly installed over the top of the toe lug, and on the outside (litle-toe side) of the boot. If the loose end of the clamp points upward, you can leave it. If it points downward, bend it under the chassis so that it does not catch on the ground.



Inside of boot, heads of axle bolts



Outside of boot, axle nuts, screw and loose end of hose clamp

Rotating your Wheels

Wheel quality is very important in the turnability of your Carvers. Using a top-quality urethane wheel will give you the best performance and wear. As you use the Carvers, the wheels will wear. The rear wheels wear the fastest, as they take the most load. Riding on steeper hills, and making turns with speed and high edge angle will wear your wheels more quickly (but it’s the most fun). Rotating the wheels frequently will give you the most consistent ride. As the wheels wear, they develop a flat surface. When this flat surface reaches 1/4 to 1/2 inch in width, it’s time to rotate your wheels.

Each wheel can be used in two directions: label facing in, label facing out. As well, each wheel can be used in the inside and the outside row (big-toe and little-toe rows). When you rotate wheels, move the rear wheel to the middle, the middle wheel to the front, and the front wheel to the rear. Always aim to have the “roundest” wheel on the inside row on the rear axle.

To rotate your wheels, use two, 1/2 inch wrenches or a wrench and ratcheting socket. Loosen and remove the nuts, pull off the wheel, then pull the axle bolt through the other side. Make sure not to lose any of the washers - sometimes they stick to the bearings of the wheel. There are 4 washers per axle, one on each side of each wheel. Wipe the bearings with a soft cloth to remove road grit.

When you reassemble the axle, make sure you have the right sequence of parts:
axle/washer/wheel/washer/chassis/washer/wheel/washer/nut.

Also, make sure to assemble the Carver with the bolt head on the inside of the chassis, and the nuts on the outside.

Stay Safe!

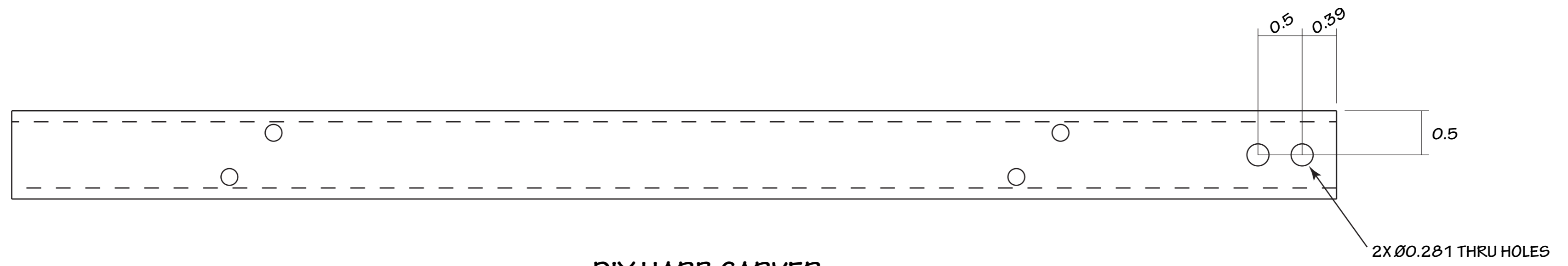
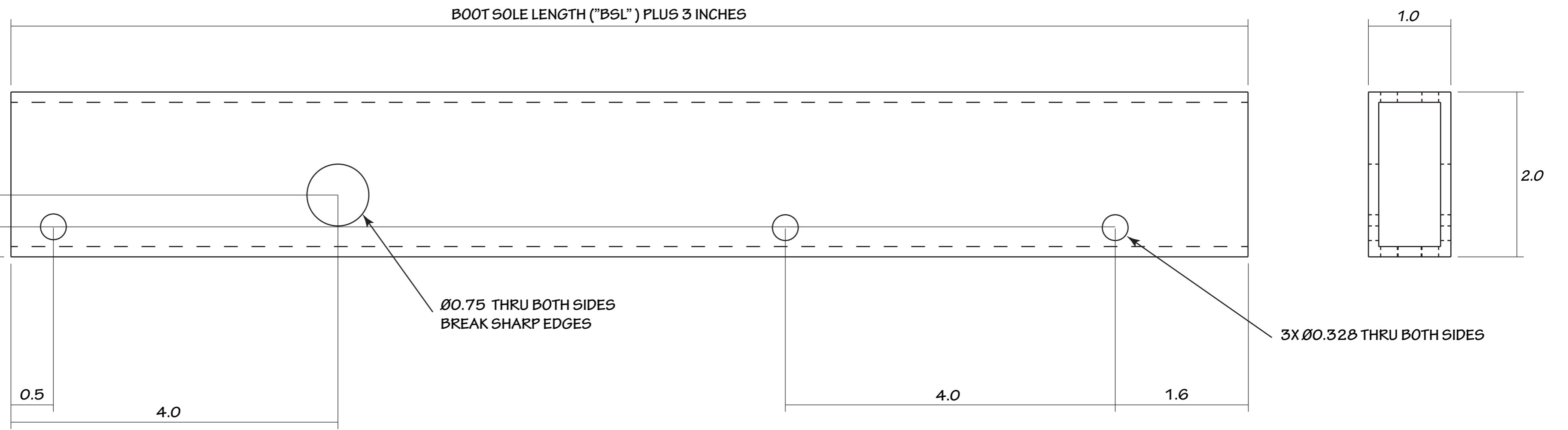
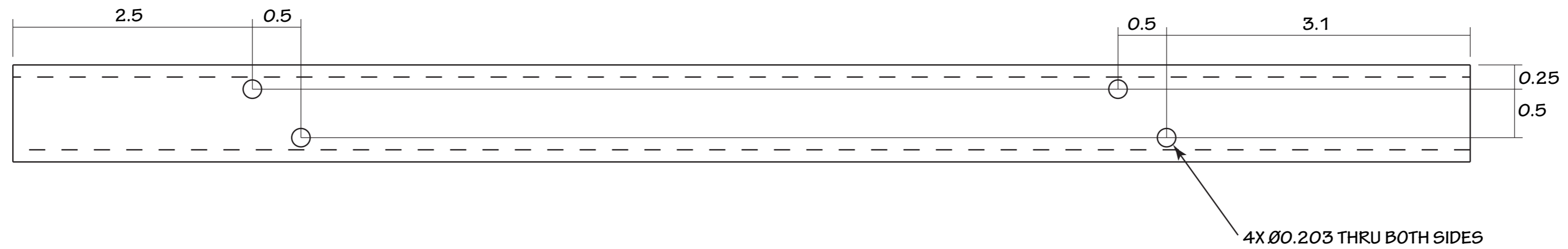
- Choose a safe location - away from traffic, flat or bowl-shaped, smooth pavement, little gravel or other road debris
- Always wear full safety gear - even if you are just going out for a brief spin. At the minimum that means helmet, gloves, hard wrist guards, knee and elbow pads. We highly recommend long pants and protective shorts (hard-shell, street-hockey-type).
- Watch the Harb Carver How-To videos on our web site and practice all the basics on flat terrain. Do not go onto a hill until you can curve to a stop in both directions.

Have Fun!

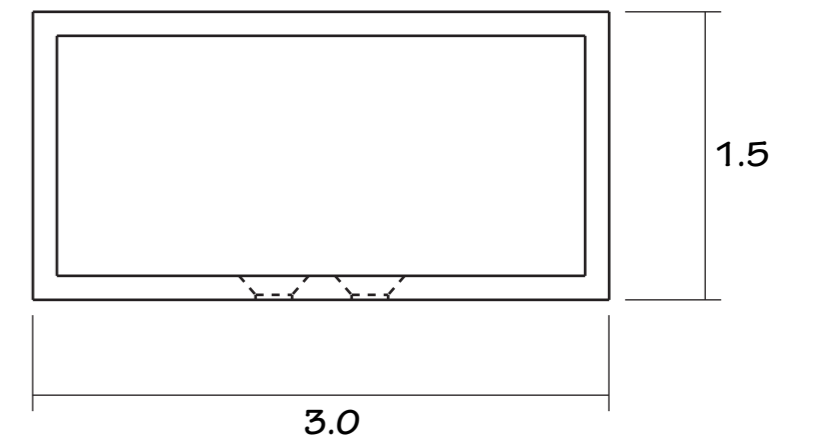
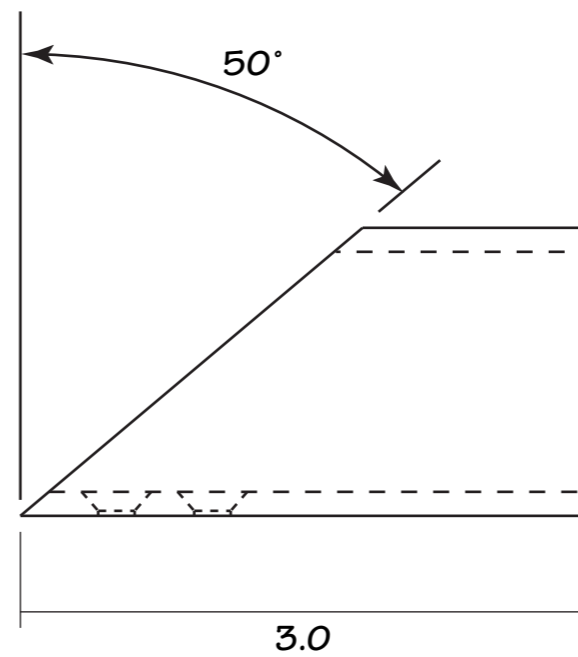
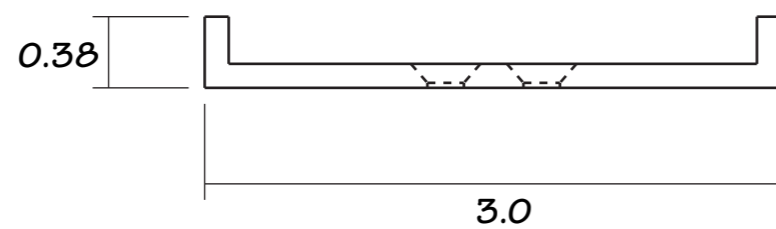
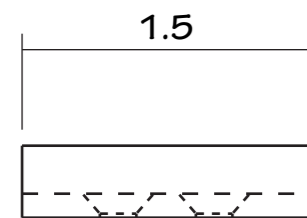
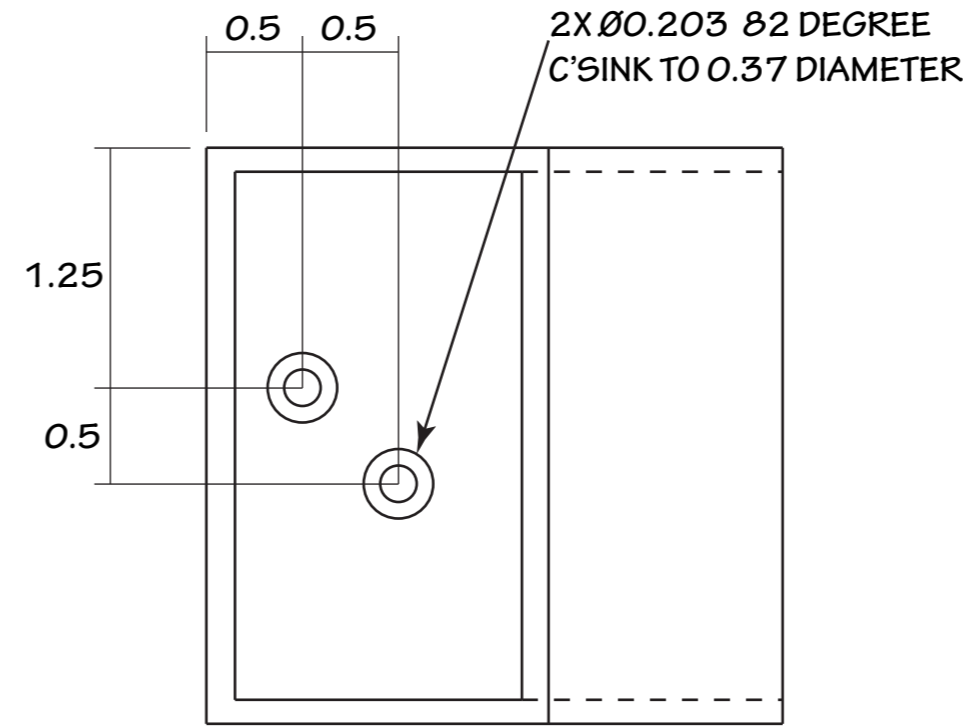
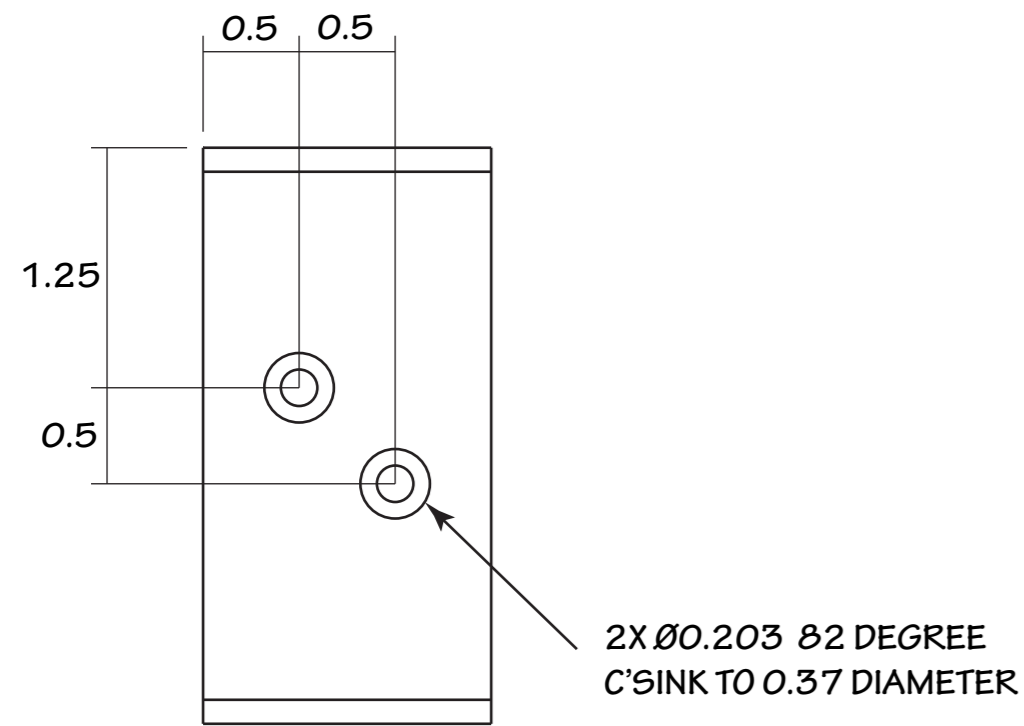


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DIY Harb Carver				
Component List				
Item	Quantity	Units	Description	Example
Wheels		12 items	80mm, 82A inline skate wheels	http://www.inlinewarehouse.com/fitwheelssearch.html?type=WHEEL#search=args&type=FITWHEEL&sref_size=37653&sref_hard=37659&cat=
Bearings		24 items		(included with wheels)
Bearing spacers		12 items	Floating type	(included with wheels)
Axles		6 items	5/16-18, 3.5 long, high strength steel, corrosion resistant	http://www.mcmaster.com/#91257a597/=xjyfcu
Axle nuts		6 items	5/16-18 nylon lock nut, high-strength steel, corrosion resistant, 11/32 tall	http://www.mcmaster.com/#97135a220/=xjyh6w
Axle washers		24 items	Screw shoulder shim, 18-8 stainless steel, .314 ID, .438 OD, .060 th	http://www.mcmaster.com/#shoulder-shims/=xjyi5e
Binding mount screws		8 items	#10-24, 2.5" long, 18-8 Stainless steel flat-head phillips machine screw	http://www.mcmaster.com/#91771a256/=xjyjof
Binding mount nuts		8 items	#10-24 nylon lock nut, 18-8 stainless steel	http://www.mcmaster.com/#91831a011/=xjyl49
Binding mount washers		8 items	#10 flat washer, 18-8 Stainless steel	http://www.mcmaster.com/#92141a011/=xjylq2
**Brake lever material (single)		5 inches	6061-T6511 aluminum bar, 3/8" thick, 1" wide	http://www.mcmaster.com/#8975k54/=xjynyv
**Brake bumper		2 items	Fairlane RB 1175-35 Bumper (Qty 2 is to have one extra)	https://www.motionindustries.com/productDetail.jsp?sku=03023580
**Brake lever & bumper hardware		3 items	1/4-20, 0.5 long, socket head cap screw, stainless steel	http://www.mcmaster.com/#92185a537/=xjyqnn
		1 item	1/4-20, 0.25 long, socket head cap screw, stainless steel	http://www.mcmaster.com/#92185a501/=xu6jaq
** If you want two brakes, one on each foot, double these quantities				
Red thread-locker		1 small tube	heavy duty	http://www.amazon.com/LOCTITE-37421-Heavy-Duty-Threadlocker/dp/B0028OJAIY/ref=sr_1_1?ie=UTF8&qid=1435618406&sr=8-1&keywords=red+loctite
Binding material		10 inches	6063-T52 aluminum rectangular tubing, 3x1.5x1/8 wall	http://www.mcmaster.com/#standard-aluminum-hollow-tubing/=xjysg2
Chassis material	2x(boot sole length PLUS 3")	inches	6061-T6 aluminum rectangular tubing, 2x1x1/8 wall	http://www.mcmaster.com/#6546k39/=xjytyq
Hose clamp		2 items	Worm-drive hose clamp, stainless steel, 1/2" band width, 3-5/8 to 6-1/2 diameter range	http://www.mcmaster.com/#5415k37/=xjyw0n
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**DIY HARB CARVER
CHASSIS
2 REQUIRED**
6061-T6 ALU. RECTANGULAR TUBING, 2X1X1/8 WALL
(HIDDEN LINES FOR HOLES NOT SHOWN EXCEPT IN END VIEW)

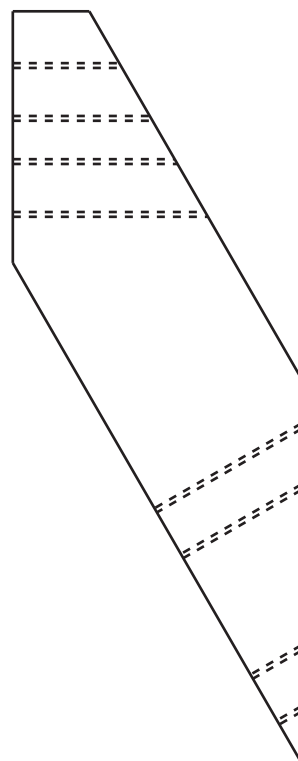
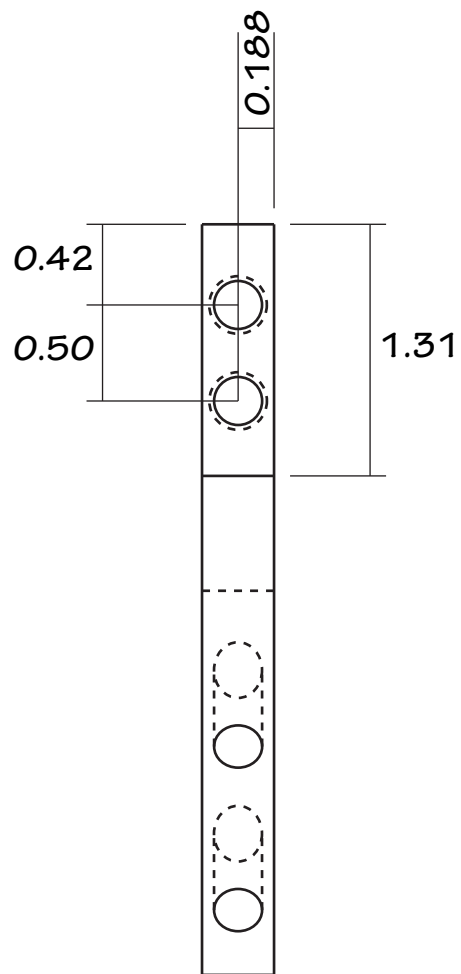
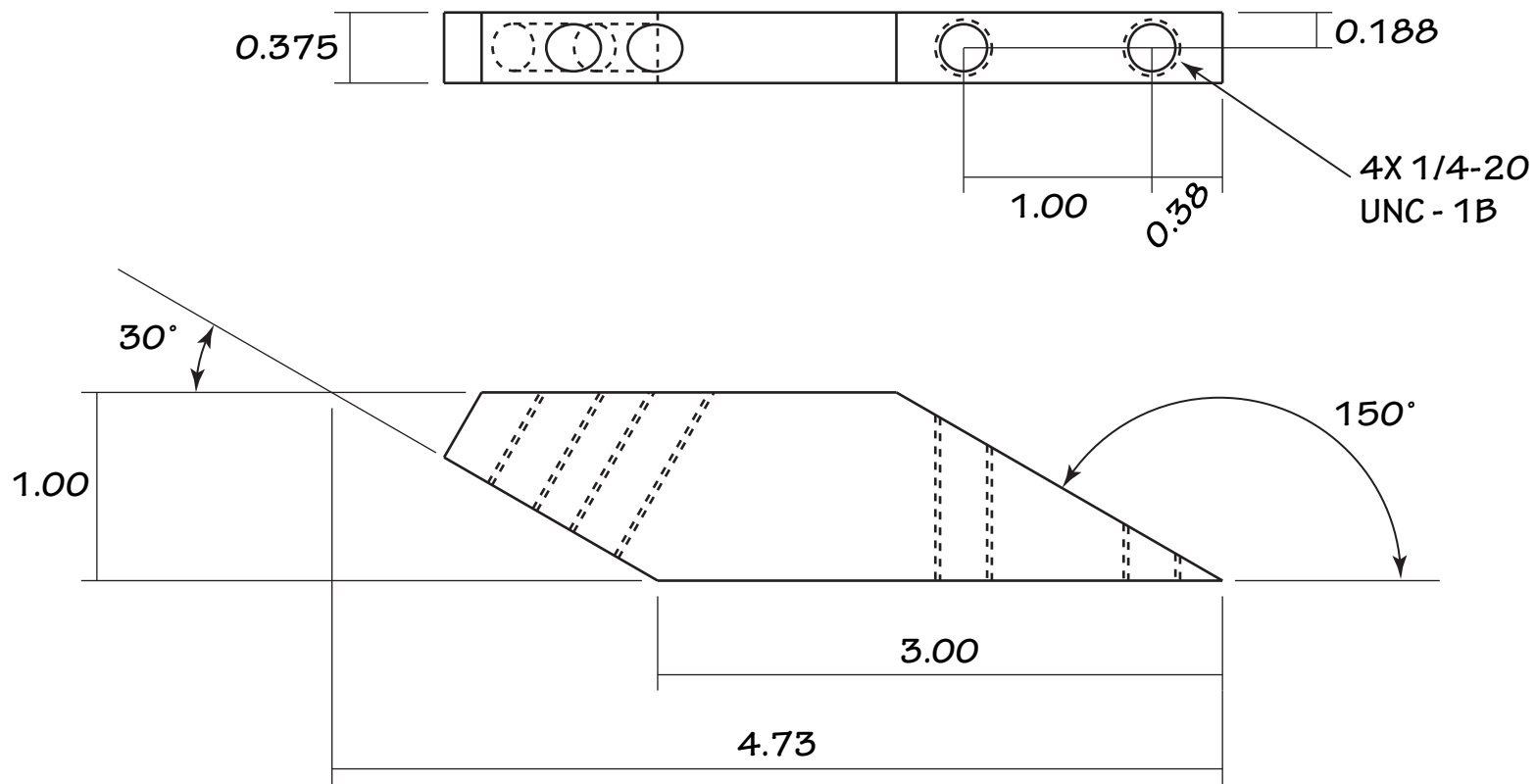


DIY HARB CARVER
TOE BINDING
2 REQUIRED

6063-T52 ALU. RECTANGULAR TUBING, 3X1.5X1/8 WALL

DIY HARB CARVER
HEEL BINDING
2 REQUIRED

6063-T52 ALU. RECTANGULAR TUBING, 3X1.5X1/8 WALL



**DIY HARB CARVER
BRAKE LEVER
1 REQUIRED
2 OPTIONAL
6061-T6511 ALU. BAR,
3/8 THICK X 1 WIDE**