BUSTA LIME GO KART PLANS

PROJECT TITLE:
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INTRODUCTION / CONTENTS

PLEASE READ THIS. IT LOOKS BORING, BUT IT’S WORTH IT - WE PROMISE!

First off, thank you for downloading these free go kart plans from Antics Garage. Go karts are a lot of fun, and a great way to expand your mechanical knowledge without spending a ton of money. Before you dive in, please read this page, and review the entire document so you know what’s ahead.

WHAT THESE PLANS ARE... AND AREN’T.
This set of plans is NOT intended to be a step-by-step guide for how to build an entire go kart. The plans cover the basic parts, dimensions and assembly of our “Busta Lime” go kart frame only. There are many options for engines, clutches, CVT/ torque converters, wheels, tires, steering wheels, pedals, linkage, cables, etc. You can watch our series of build videos to get a better idea of what we did, but ultimately you’ll need to figure out some of the specifics based on what components you have. We also included a photos section (pages 10 & 11) that shows close-ups of some of the more complicated areas.

MATERIALS NEEDED FOR BUILDING THE FRAME
The main frame structure is made of 1” x 1.5” rectangular steel tubing (14 gauge or 11 gauge). You’ll need about 25 feet. The upper rails of the frame, the seat supports and the steering post are made of 1” x 1” square tubing (14 gauge), and you’ll need about 20 feet of that. For the steering column, you’ll need 2 feet of 3/4” O.D. round tubing, and 1 foot of 1” O.D. round tubing (11 gauge/.120 wall). The floor pan is 16 gauge steel, and you’ll need a 36” x 21” piece. If you want to build your own steering spindle brackets, it will require about 6” of 3”x3” square tubing (.250 wall or .1875 wall).

YOU’RE GOING TO NEED SOME TOOLS, AND YOU’RE GOING TO NEED SOME SKILLS!
If you’re going to tackle a project like this, we assume that you have both the tools and skills necessary for the job. You’ll be cutting, welding, grinding, and drilling steel, with a reasonable level of precision. We used a horizontal band saw, portable band saw, angle grinder, drill press, disc sander, belt sander, an assortment of hand tools, and of course, a welder. But honestly, you could build this entire frame with just an angle grinder (with cut-off and grinding wheels) and a welder.

FEEL FREE TO TWEAK / CHANGE / MODIFY AS YOU WISH.
We designed this kart for a teenager/adult to ride. So it’s a very comfortable fit for a 6ft tall person. However, if it’s being built for a smaller person, it should be easy enough to shorten the main frame rails, and adjust the steering column height and angle accordingly. Also, the rear frame section, which will house the engine and drivetrain, is quite large. It can accept a wide variety of engines, torque converters, jack shafts, etc. If you plan on using a smaller engine package, you can shorten the rear frame section a few inches if desired. This is also why we didn’t include plans for an engine plate. Build whatever you need to fit your drivetrain. (You can also purchase pre-made engine plates if desired).

A FEW TIPS BEFORE YOU GET STARTED...
It’s definitely worth the time to draw up a full size template or at least a grid to lay out your frame parts on. Using a piece of plywood, particle board, or similar material, draw a centerline down the middle, then mark out some of the key points/intersections, measuring out from the centerline and using a square to make sure the frame stays true and straight. A little planning up front can save a lot of headaches later. Also, it’s very helpful to make wooden jigs and fixtures to hold everything together while tacking. If you don’t already have some, we recommend buying some cheap “F” style clamps in various sizes. They’re ridiculously handy.

BUT WHERE DO I GET THE REST OF THE STUFF?
We purchased many of our parts from gopowersports.com, which is a great resource if you’re in to karts and mini bikes. But you should also check out farm supply stores, as they’ve usually got a lot of drivetrain related parts and even wheels and tires. These plans are for a “live axle” go kart. When looking for an axle, search for one that’s about 40” long. That size should work best on this kart. Harbor Freight is a cheap source for engines, but don’t forget to look on Craigslist or other local classified type sites. You can get a lot of good stuff from an old riding mower or other used piece of power equipment. Finally, search on Amazon and Ebay.

PLEASE REFER TO OUR VIDEO SERIES ON YOUTUBE FOR MORE INFO!
Search for “Antics Garage Go Kart”

BE SAFE!
Using powertools can be dangerous! Riding a go kart can also be dangerous! (Ask us how we know!) Your safety is YOUR own responsibility. Wear proper PPE (personal protective equipment) while building, and proper protective gear while riding. Build and ride this go kart at your own risk!

USER’S PERSONAL RESPONSIBILITY
By downloading and using these plans, you accept full personal responsibility for the results of your actions. You agree to take full responsibility for any harm or damage you may suffer as a result of the use, or non-use, of the information available in these plans. You also agree to take full responsibility for any harm or damage you may suffer by riding a go kart built from or inspired by these plans. You agree to use judgement and conduct due diligence before taking any action suggested or recommended in this document.
BASIC FRAME STRUCTURE
Parts Detail / Cut List

Material: 1” x 1.5” Rectangular Steel Tube

<table>
<thead>
<tr>
<th>Length</th>
<th>QTY</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8”</td>
<td>2</td>
<td>Front Bumper Supports</td>
<td>Cut square on both ends</td>
</tr>
<tr>
<td>17”</td>
<td>1</td>
<td>Front Bumper</td>
<td>Cut square on both ends</td>
</tr>
<tr>
<td>18”</td>
<td>2</td>
<td>Seat Uprights</td>
<td>Cut one end at a 15° angle - see Side View</td>
</tr>
<tr>
<td>18.5”</td>
<td>1</td>
<td>Steering Column Crossmember</td>
<td>Grind a slight angle (approx 2°) on each end - see Top View</td>
</tr>
<tr>
<td>20”</td>
<td>3</td>
<td>Rear Crossmembers (2), Upper Seat Bar (1)</td>
<td>Cut square on both ends</td>
</tr>
<tr>
<td>22”</td>
<td>2</td>
<td>Rear Frame Rails</td>
<td>Cut one end at a 15° angle - see drawing</td>
</tr>
<tr>
<td>24”</td>
<td>1</td>
<td>Front Axle</td>
<td>Cut square on both ends</td>
</tr>
<tr>
<td>38”</td>
<td>2</td>
<td>Main Frame Rails</td>
<td>Cut one end at a 15° angle and grind a slight 2° angle on each end for frame taper - see Side View and Top View</td>
</tr>
</tbody>
</table>

Tips

Using the top view on the next page as a reference, draw out a grid or at least some layout lines on a piece of plywood or particle board. A full size template will be very handy for laying out your parts and keeping everything square (especially since the sides taper in slightly).

The cut list shown is mostly square cuts or simple angle cuts. While those are easier to cut, you will end up with open ends of tubing in several places. To make everything look nicer (and keep out bugs and critters), you can cap, weld and smooth the open ends. It’s a little extra work, but it will look great.
NOTE: These ends of the Main and Rear Frame Rails and the Seat Uprights to be cut at a 15° angle. Additional gussets are recommended at these joints.

NOTE: The ends of the Main Frame Rails and Steering Column Support will need to be ground at a slight angle (approx. 2°) to allow for the taper of the frame and proper fit-up.
**Tips**

Marking some of the angles on the upper rails is a little tricky. It doesn't have to be perfect. Just line up the tubing against the main frame rails and mark accordingly. The exact dimensions aren't super important. Just try to make both sides match!

There's no magic to the location of the seat supports. Feel free to totally modify these however you'd like. We ended up making a seat out of plywood and just bolted it to the seat supports. But if you have a pre made seat or want to make something different, go ahead!

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**Material: 1” x 1” Square Steel Tube**  
14 gauge/.083” wall recommended.

<table>
<thead>
<tr>
<th>Length</th>
<th>QTY</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.75”</td>
<td>2</td>
<td>Upper Rail Supports</td>
<td>Cut both ends at approx. 12.5° angle - see Side/Rear View</td>
</tr>
<tr>
<td>19.125”</td>
<td>1</td>
<td>Seat Bottom Support (Front)</td>
<td>Grind a slight angle (approx 2°) on each end - see Top View</td>
</tr>
<tr>
<td>19.875”</td>
<td>1</td>
<td>Seat Bottom Support (Rear)</td>
<td>Grind a slight angle (approx 2°) on each end - see Top View</td>
</tr>
<tr>
<td>20”</td>
<td>2</td>
<td>Seat Back Supports</td>
<td>Cut square on both ends</td>
</tr>
<tr>
<td>21.5”</td>
<td>2</td>
<td>Rear Upper Rails</td>
<td>Cut square on both ends</td>
</tr>
<tr>
<td>41”</td>
<td>2</td>
<td>Front Upper Rails</td>
<td>Cut ends to proper angles to sit on top of Main Frame Rail and butt up to Rear Upper Rail. Mark in place using frame as template.</td>
</tr>
</tbody>
</table>

**SHADED** parts are referenced in the cut list below and on the following detail/assembly page.

**WHITE** parts are from the previous steps/pages.
NOTE: Cut Front Upper Rails at whatever angles are needed to sit on top edge of frame rail and butt up to Rear Upper Rail. Use frame as template, and mark accordingly.

NOTE: Upper Rail supports are cut to 4-3/4" overall length, with a 12.5° angle cut on either end. This allows 4-1/2" of vertical space between Frame Rail and Upper Rail.

NOTE: Upper Rails attach to outside edges of Seat Uprights. Upper Rails will NOT be directly in line vertically with the main frame rails.

NOTE: The ends of the Seat Bottom Support will need to be ground at a slight angle (approx. 2°) to allow for the taper of the frame and proper fit-up.
**Tips**

We highly recommend doing some research on basic steering geometry. We set our steering up to have about 7 degrees of positive caster, which means we tilted the Spindle Brackets back (so the kingpin bolt/steering pivot leans back). However, if you attach the Spindle Brackets vertically, the kart will still turn just fine.

The angles and dimensions shown on the following page should get you pretty close, but you’ll probably have to do some eyeballing to get everything lined up where it needs to be. It helps to have another person to hold parts while you tack them.

Add the floor pan LAST. It’s much easier to have unobstructed access all around the front end while building the steering system. THEN add the floor pan. Lay the frame on the floor pan, trace around it, then cut slightly inside the line.

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**Material: 1” x 1” Square Steel Tube** (14 gauge/.083” wall recommended.)

<table>
<thead>
<tr>
<th>Length</th>
<th>QTY</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12”</td>
<td>1</td>
<td>Steering Column Support Post</td>
<td>Cut one end at approx. 25° angle. Other end will need to be cupped/notched to accept 1” O.D. round tube.</td>
</tr>
</tbody>
</table>

**Material: 3/4” O.D. Round Steel Tube** (Use whatever you can find that is 3/4” O.D.)

<table>
<thead>
<tr>
<th>Length</th>
<th>QTY</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>24”</td>
<td>1</td>
<td>Steering Column Shaft</td>
<td>Cut square on both ends</td>
</tr>
</tbody>
</table>

**Material: 1” O.D. Round Steel Tube** (11 gauge/.120” wall recommended.)

<table>
<thead>
<tr>
<th>Length</th>
<th>QTY</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>2</td>
<td>Steering Column Sleeves</td>
<td>Cut square on both ends</td>
</tr>
</tbody>
</table>

**Material: 16 Gauge Steel Plate**

<table>
<thead>
<tr>
<th>Size</th>
<th>QTY</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>36” x 21”</td>
<td>1</td>
<td>Floor Pan</td>
<td>Trace bottom of frame, and cut accordingly</td>
</tr>
</tbody>
</table>
NOTE: Steering Flange details will vary based on steering wheel. Usually, a large, thick washer can be used, with appropriate holes drilled for attachment of wheel.

NOTE: Top end of support post will need to be notched to accept a 1" dia. tube. No good math for this one. Just grind it until it fits!

NOTE: See Pitman Arm details on next page.

NOTE: Floor Pan is approx. 36" x 21"

NOTE: Weld a 3/4" I.D. washer or a short piece of the 1" tubing to the Shaft on either side of the Sleeve. This keeps the shaft in place, but lets it rotate freely.

NOTE: Bottom end of Post is cut at a 25° angle, and attached to the top of the Steering Column Crossmember.

NOTE: Engine Mounting Plate details will vary based on what engine and drivetrain is used. Location shown is approximate.

NOTE: Triangular gussets should be added where the sleeve attaches to the top of the front axle, and where the post attaches to the top of the crossmember.

NOTE: See Pitman Arm details on next page.

NOTE: Steering Spindle Brackets available from gopowersports.com or other retailers. If you'd like to make your own, construction details are on next page!

NOTE: Bearing Hanger Bracket shown is available from gopowersports.com. If a different bracket is used, dimensions may need to be adjusted accordingly.

NOTE: Engine Mounting Plate details will vary based on what engine and drivetrain is used. Location shown is approximate.

NOTE: Triangular gussets should be added where the sleeve attaches to the top of the front axle, and where the post attaches to the top of the crossmember.
### Steering Spindle Brackets (Qty: 2)
**Material:** 3” x 3” Square Steel Tube, .250” Wall

Instead of fabricating this part, it may also be purchased from gopowersports.com or other retailers.

- **Front View**
  - Scale: 1/2” = 1”
  - Bracket is cut/fabricated from a section of 3” square tubing

- **Side View**
  - Scale: 1/2” = 1”
  - 2.25”

- **Top View**
  - Scale: 1/2” = 1”
  - 1.5”
  - .5” dia. Hole

### Steering Pitman Arm
**Material:** 1/4” x 1” Flat Steel Bar

- **Top View**
  - Scale: 1/2” = 1”
  - 3.5”
  - .375” dia. Hole

- **Side View**
  - Scale: 1/2” = 1”
  - 1/8”

### Bearing Hangers (Qty: 2)
**Sourced from gopowersports.com**

Due to the precise nature of the bearing hanger brackets, we recommend that they be purchased from gopowersports.com or another retailer. Alternatively, you could source pillow block bearings or another style of axle bearing.
Frame Rail, Seat Uprights and Upper Rails Intersection.
You can also see the linkage for the brake band/drum.

Rear of frame. Note how we used premade plastic caps for the ends of the 1" tubing on the upper rails. The Main Frame rails below were capped/welded. Either way works.

Steering Column Support Post. Note the triangular gussets and the washers welded on either side of the sleeve.

Attachment of our engine mounting plate to the crossmember. Note the slotted holes, which allow the engine to move to tension the chain.

Attachment of Bearing Hanger to frame. Note the additional triangular gussets to resist twisting.

Brake linkage support bracket and compression spring setup. Janky? Yes. But it works great.
Attachment of brake pedal. Note that the pedal pivots on a bolt. Hole is drilled directly through the frame rail.

Brake linkage attachment to pedal. Our pedals are homemade, but you can buy them cheap. Note the linkage bracket welded to the frame.

Pitman arm welded to end of steering shaft. Note the triangle gussets on the pitman arm and where the sleeve attaches to the frame.

Seat pad attachment to seat supports. Apparently we were confused as to which way was up.

Seat detail. Nothing fancy, just some foam and vinyl stapled to a piece of plywood.

Throttle cable bracket. (Ignore the zip tie holding the return spring). The actual spring broke, so we improvised!