Introduction to Manual

PURDUE UNIVERSITY

EPICS AT PURDUE

Manual Guide

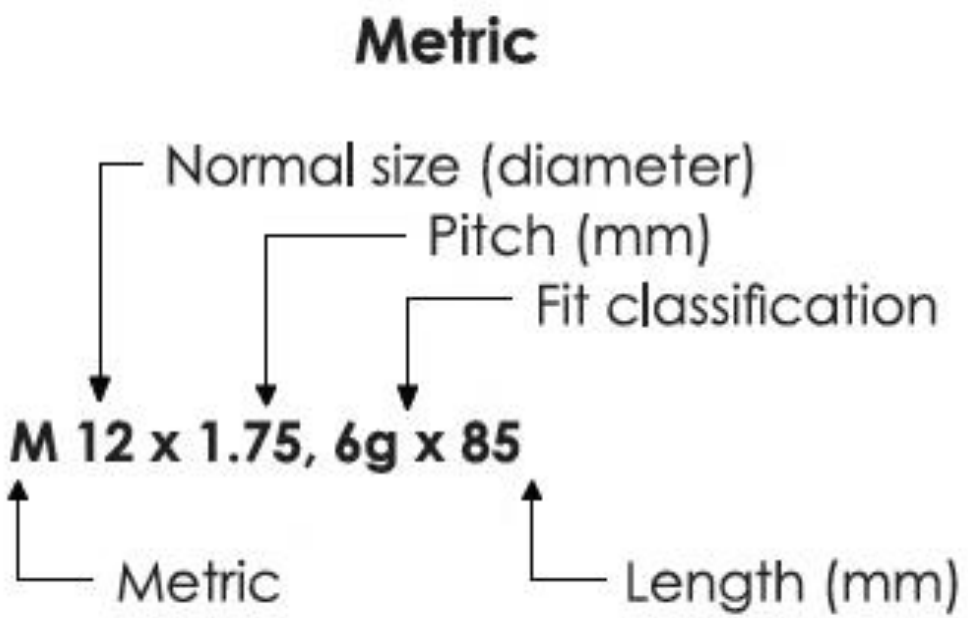
1 This manual is meant to be used in tandem with any additional documentation provided by your school & Top Kart USA.

2 The photos in the overview pages may be out of date.

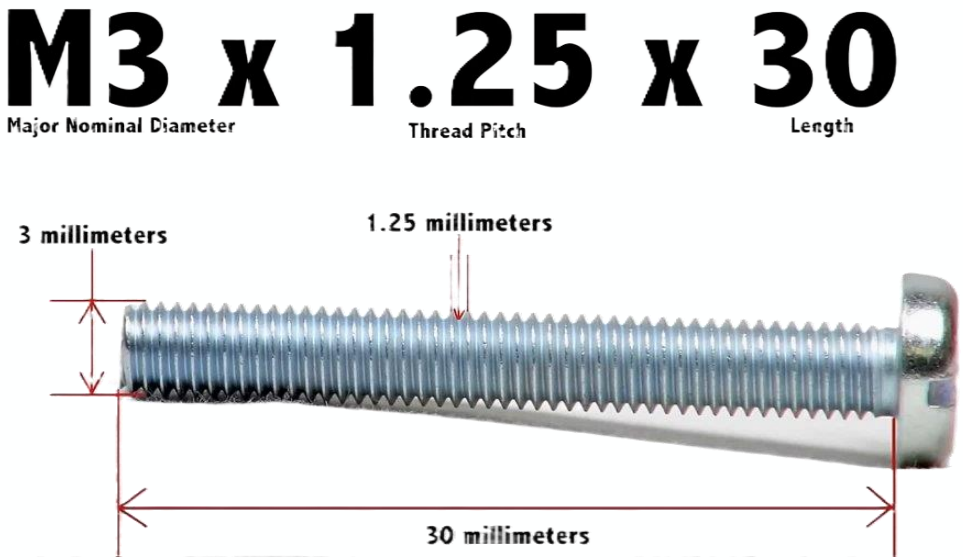
Sequence of Subassemblies	
1. Floor Pan	7. Rear Bumper
2. Steering System Assembly	8. Fairing Assembly
3. Pedals	9. Front Bumper
4. Side Pod/Battery Box Supports	10. The Seat
5. Rear Axle Assembly	11. Drivetrain and Electronics
6. Brake System	

Understanding Tool Nomenclature

Metric Terminology:



Example:



*all measurements in this guide will exclude pitch and fit classification

Floor Pan Module

EV Kart Manual

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EPICS AT PURDUE

Table of Contents

Overview

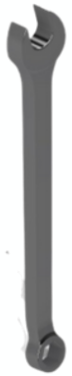
This module will be divided into 2 steps:

1. Align Floor Pan
2. Attach Floor Pan

Tools

Required Tools for Module

1. 10mm Wrench

1. 

Parts

Floor pan

M6x16 Hex Screws x2

Rubber Washer x4

M6 Nuts x6

M6x20 bolt x4

Metal Washer x2

Step 1: Align Floor Pan (0:27 – 0:31)

Floor Pan Module

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Placing Floor Pan on Tabs

Floor pan

1.1

1. Slide the front of the floor pan over the front tabs.
2. Tuck the floor pan underneath the middle and rear tabs.

Step 2: Attach Floor Pan (0:35 – 0:57)

Floor Pan Module

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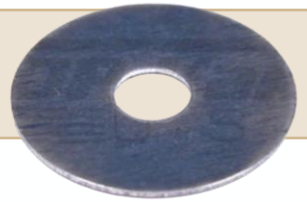
EPICS AT PURDUE

Attach Front Tabs

M6x16 bolt x2



Metal washer x2

M6 nut x2

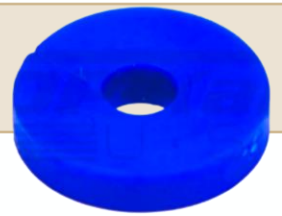
2.1

Use the m6x16 bolts (the ones without the blue washers) to attach the front tabs to the pan.

- Put the bolt in place and screw in the metal washer in the bottom side of the pan.
- Screw the nut in after the metal washer.

Attach Middle and Rear Tabs

M6x20 bolts x4



Blue rubber washers x4

M6 nut x4

2.2

For the middle and rear tabs, use the m6x20 bolts with the blue rubber washers.

- Repeat the same installation process.

Appendix and References

Floor Pan

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EPICS AT PURDUE

Top Kart Video Demonstration

Steering System Module

EV Kart Manual

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EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into 6 steps:

1. Steering Shaft
2. Tie Rods
3. Spindles
4. Connecting Tie Rods and Spindles
5. Steering Wheel Hub
6. Steering Wheel

Tools

Required Tools for Module

1. 14mm Wrench
2. 10mm Wrench
3. 6mm Hex Key

1. 

2. 

3. 

Parts

Steering Shaft

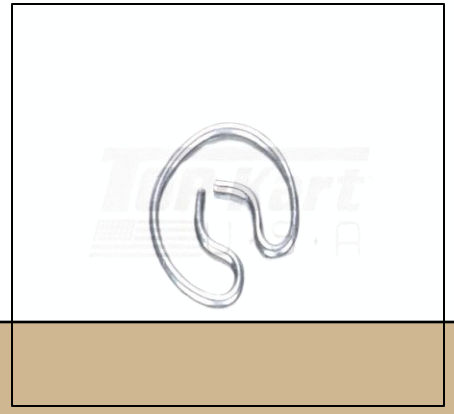
Tie Rods

Spindles

Steering Wheel

M6 Washer

Nyloc nut



Safety "C" Circlip

Spindle Bolt

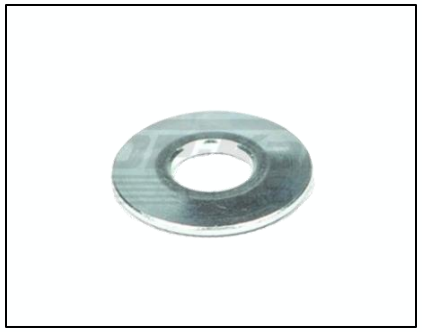
Parts

Brass Washer

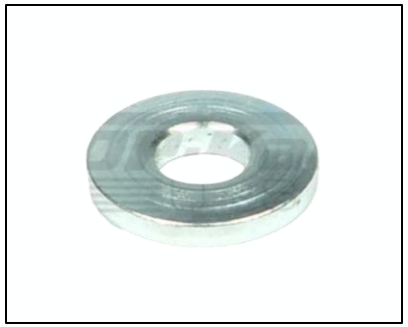
0° Lower Eccentric Pill

0° Upper eccentric pill

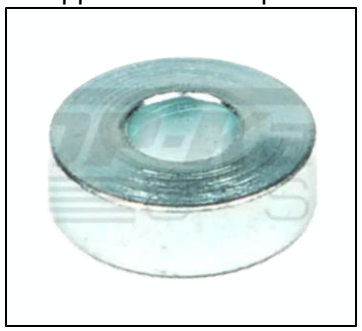
Angled Steering Hub



Small Spacer



Medium Spacer



Large Spacer

Steering Shaft Bolt M6x40

Parts

M6 Countersunk washer

M6x30 Flathead Screw

M8x30 Flathead Screw

Step 1: Steering Shaft (0:19 - 0:56)

Steering System Module

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Inserting Steering Shaft


Nyloc Nut

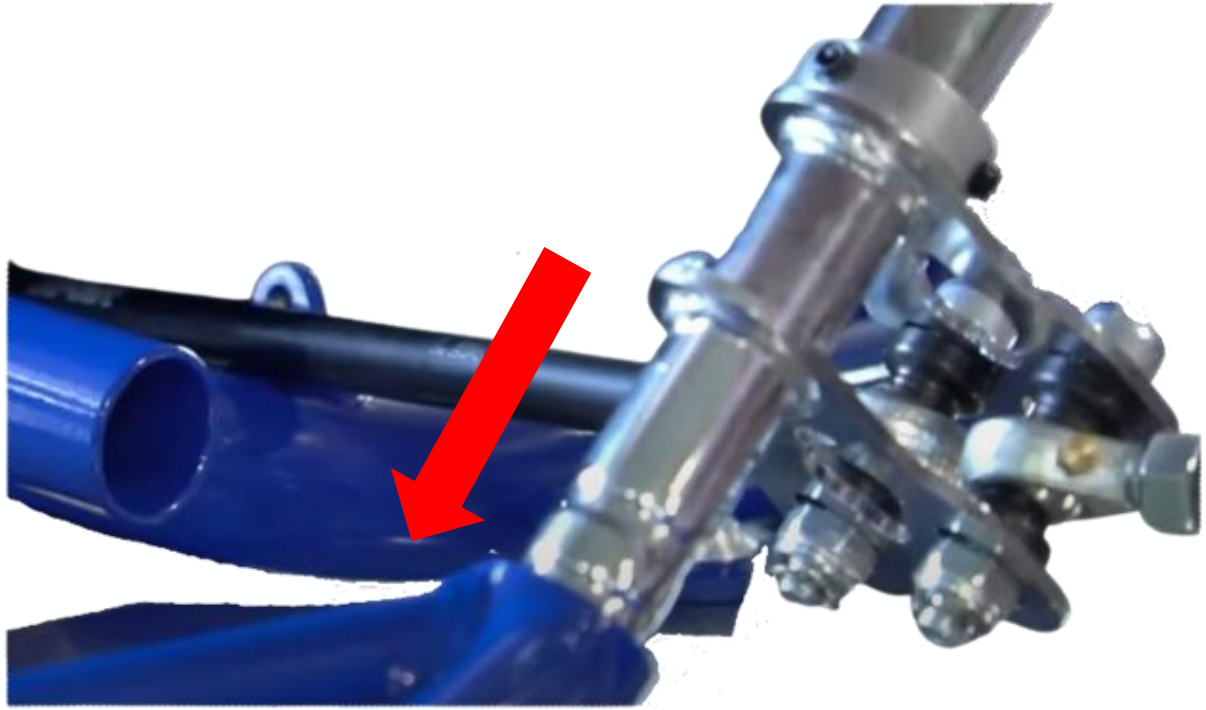

Circlip


M6 Washer


Steering Shaft

1.1

1. Insert the steering shaft into the Uniball bearing housing
2. To secure on the bottom, use the washer, Nyloc nut, and circlip



Securing Shaft

Nyloc Nut

Steering Shaft Bolt

Steering Shaft

1.2

1. Place the fairing support brackets
2. Push the steering shaft bolt through the support brackets and the steering shaft
3. Install the nut on the other side of the steering shaft

Step 2: Tie Rods (0:57 – 1:12)

Steering System Module

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EPICS AT PURDUE

Connecting Tie Rods

2.1

Tie Rod

1. Screw on both tie rods to the heim joints attached to the steering shaft

Step 3: Spindles (1:13 – 2:11)

Steering System Module

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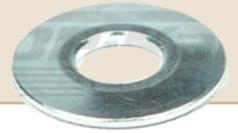
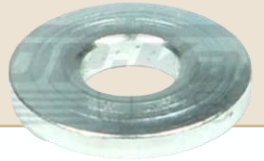
EPICS AT PURDUE

Installing spindles

0° eccentric (upper)



Small Spacer



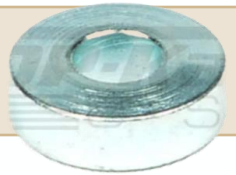
Medium Spacer

3.1

1. Place the 0° spindle eccentric on top of the top hole of the C bracket
2. Place 2 small spacers and 1 medium spacer on the bottom of the top hole of the C bracket
   - 1 medium spacer can be used in place of the 2 small spacers if needed

Installing spindles

Spindle Bolt



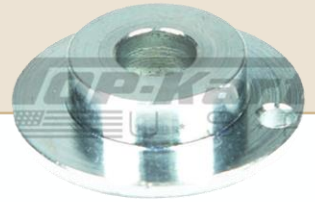
Large Spacer

3.2

1. Run the spindle bolt through the eccentric and the spacers
2. Place spindle under the spacers
3. Run the bolt through the spindle
4. Place the large spacer under the spindle

*Note : Make sure the spindle bolts properly goes through

Installing spindles



0° Eccentric (lower)

Brass Washer

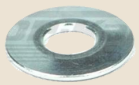
Nyloc Nut

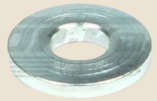
3.3

1. Run the bolt all the way through
2. Insert the 0° eccentric
3. Insert the brass washer
4. Tighten the nut on the bottom

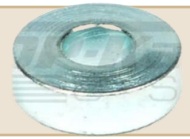
Spindles


0° eccentric (upper)

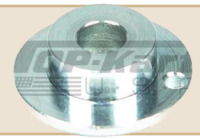

Small Spacer


Medium Spacer


Spindle Bolt


Large Spacer


Nyloc Nut


0° Eccentric (lower)


Brass Washer

3.3

1. Repeat the procedure for the other side

Step 4: Connecting Tie Rods (2:12 – 2:26)

Steering Module

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Connecting tie rods to spindles

Countersunk Washer

M8x30 Screw

4.1

1. Place a countersunk washer on top of the heim joint
2. Run a bolt through the countersunk washer and the heim joint

Connecting tie rods to spindles

Brass Washer

Nyloc Nut

4.2

1. Place a brass spacer on top of the hole of the spindle arm
2. Run the bolt through the brass spacer and the spindle arm hole
3. Secure from the bottom with a nut

Connecting tie rods


Countersunk Spacer


Nyloc Nut


M8x30 Hex Screw


Brass Washer

3.3

1. Repeat the procedure for the other side

Step 5: Steering Wheel Hub (2:27 – 2:52)

Steering System Module

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EPICS AT PURDUE

Mounting the hub

5.1

Nyloc Nut

Steering Shaft Bolt

Wheel Hub

1. Push the hub on the shaft and align the holes on both parts
2. Insert the bolt through the holes
3. Tighten the nut on the other side to secure

Step 6: Steering Wheel (2:53 – 3:25)

Steering Module

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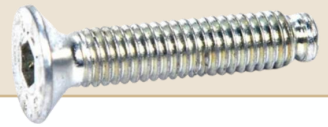
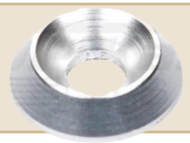
EPICS AT PURDUE

Mounting steering wheel

Steering Wheel



M6x30 Flathead Screw



Countersunk Washer

6.1

1. Place the steering wheel flat side up on the wheel hub
2. Place a countersunk washer on top of the steering wheel hole x3
3. Screw in a flat head screw with an Allen wrench x3

Appendix and References

Steering System Module

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Top Kart Video Demonstration

Pedals Module

EV Kart Manual

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EPICS AT PURDUE

Table of Contents

Overview

This module will be a single step:

1. Installing Pedals

Tools

Required Tools for Module

1. 17mm Wrench

1. 

Parts

Throttle Pedal

Brake Pedal

Pedal Bolt x2

Pedal Spring x2

Washer x4

M6 Nut x4

Step 1: Installing Pedals (0:00 – 1:12)

Pedals Module

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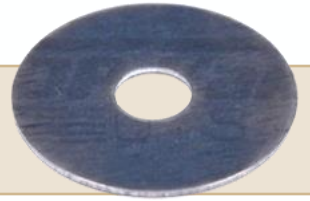
EPICS AT PURDUE

Installing Pedals

Pedal Bolt



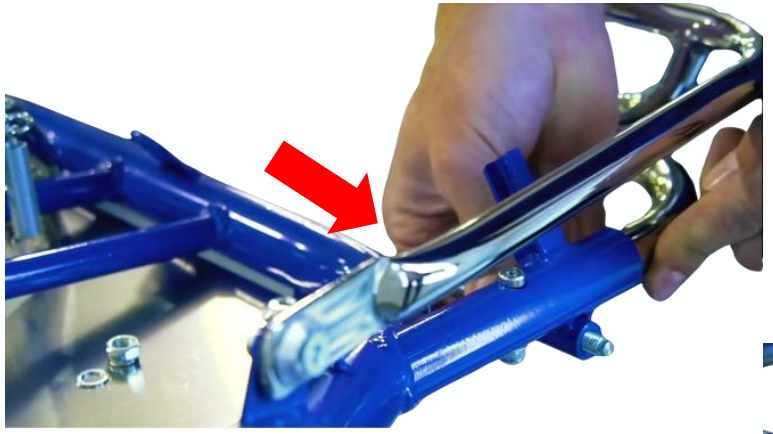
Metal washer

M6 nut

1.1

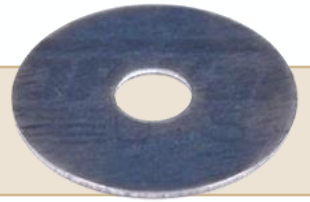
1. Install the pedal bolt from the inside into the spuds connected to the front lower bumper support.
2. Screw in the washer and nut into the bolt from the other side.

***Note** : If the spud is a little tight, you might need to open it up using an 8 mm drill bit.



Installing Pedals

Throttle Pedal



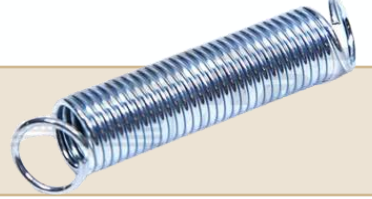
Metal washer

M6 nut

1.2

1. Slide the pedal onto the inner part of the bolt.
2. Tighten the bolt all the way and screw in the washer and nut.

Installing Pedals

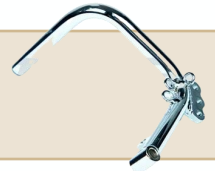


Pedal Spring

1.3

1. Attach the spring to the small hoop located just in front of the upper front bumper tab.

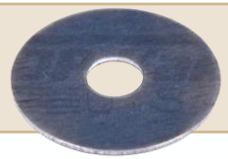
Installing Pedals



Brake Pedal

Pedal Bolt

Pedal Spring



Metal washer x2

M6 nut x2

1.4

1. Repeat the procedure for the pedal on the other side.

Appendix and References

Pedals Module

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Top Kart Video Demonstration

Side Pod Module

EV Kart Manual

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EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into 3 steps:

1. Placing Side Pod Support Mounts
2. Inserting Side Pod Support Bar
3. Securing Side Pod Support Bar

Tools

Required Tools for Module

1. WD-40 / Lubricant
2. Rubber Mallet
3. Electric Drill
4. 10mm Wrench

1. 

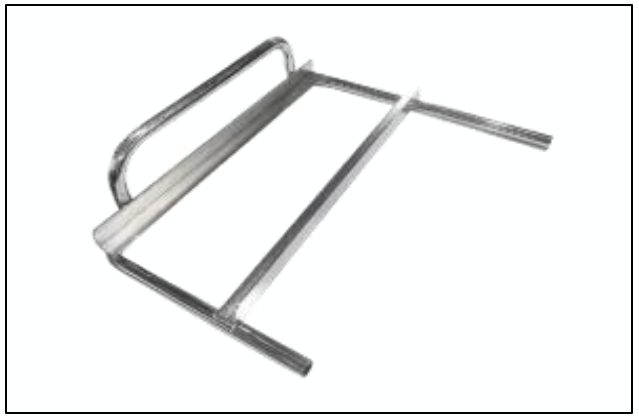
2. 

3. 

4. 

Parts

Side Pod Support Mount x4



Side Support Bar x2

Side Pod Support Bolts x4

Step 1: Placing Side Pod Support Mounts (0:16 – 0:26)

Side Pod Module

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Placing Side Pod Support Mounts

Side Pod Support Mount x4

1.1

1. Insert the side pod support rubber mounts into the frame tubes.
   - Repeat for both sides of the kart.

Step 2: Inserting Side Pod Support Bar (0:26 – 0:43)

Side Pod Module

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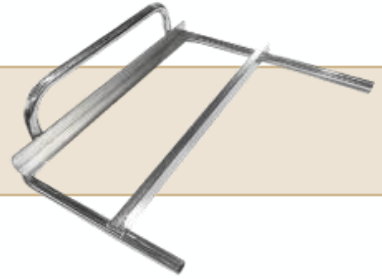
Inserting Side Pod Support Bar



2.1

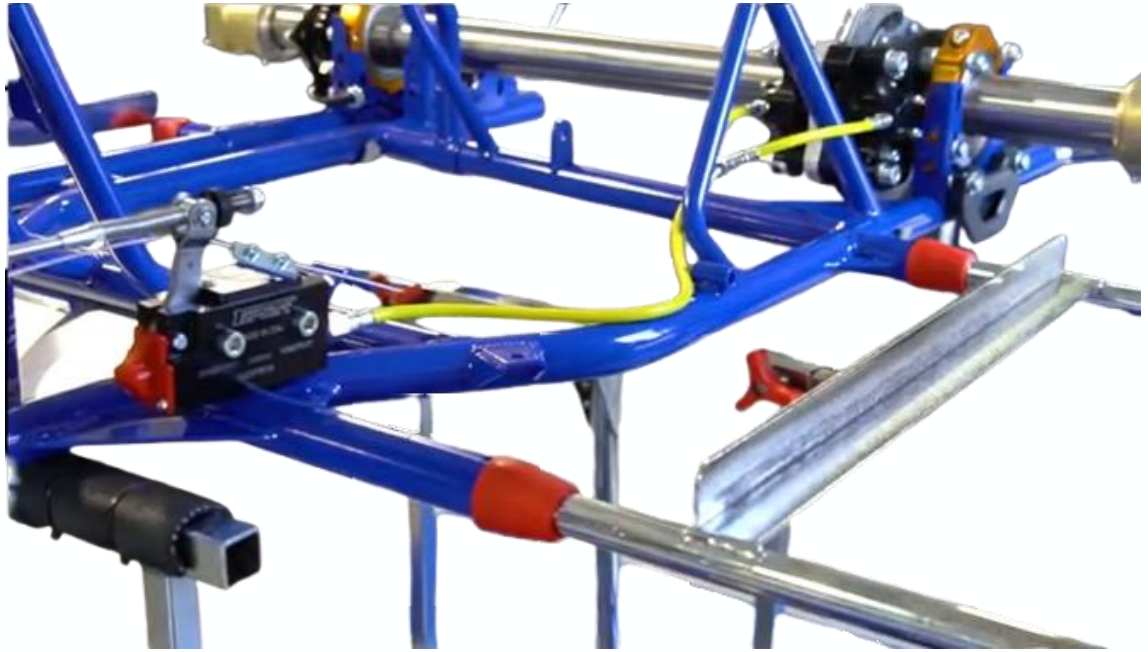
1. Take the support bar and insert it into the side pod support rubber mounts.

2. Use a WD-40 solution onto the bar for easier installation

3. Due to the tight fit, use a dead blow hammer or a rubber mallet to assist in getting the support bar into the frame.

4. Repeat for both sides.

Side Pod Support Bar x2



Step 3: Securing Side Pod Support Bar (0:43 – 1:00)

Side Pod Module

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Securing Side Pod Support Bar

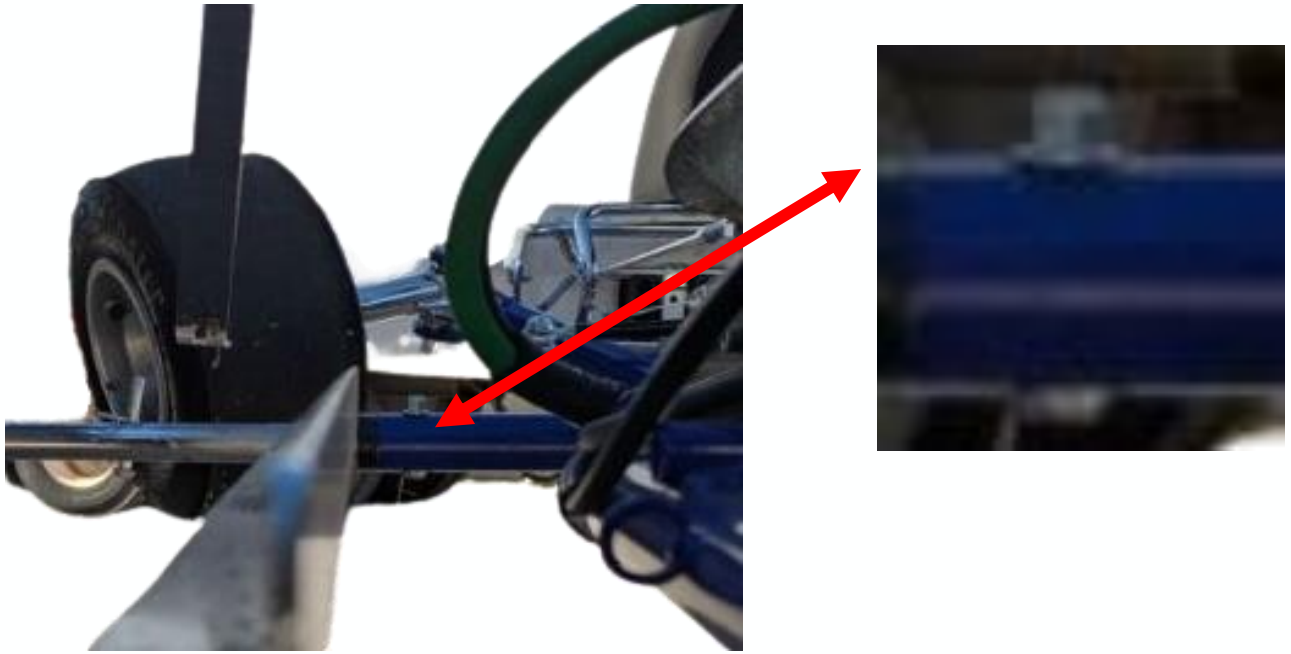
Nyloc Nut x4

Side Pod Support Bolts x4

3.1

Using a drill, drill through the holes on the side pod support of the frame.

Install your side pod bolts to secure the side pods to the frame.



Appendix and References

Side Pod Module

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Top Kart Video Demonstration

How To: Install Side Pod / Battery Box Supports

Rear Axle Module

EV Kart Manual

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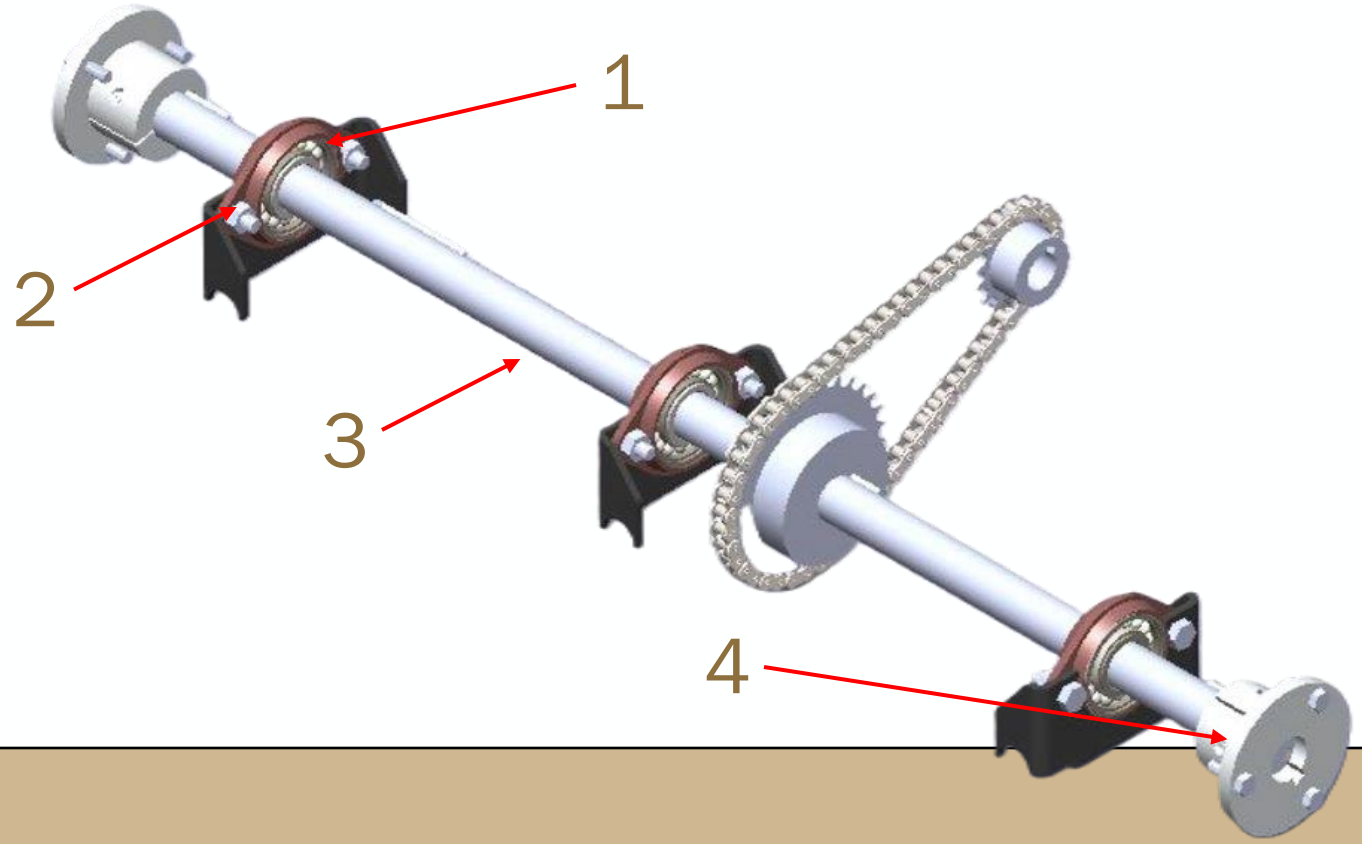
EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into four steps:

1. Bearings
2. Cassettes
3. Axle
4. Wheel Hub

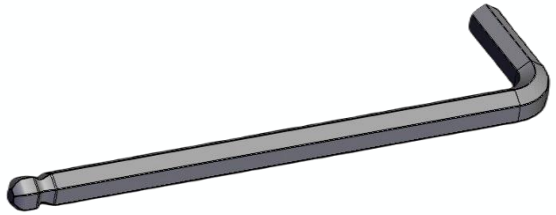


Tools

Required Tools for Module

1. 5mm and 6mm Allen Wrench
2. Tape measurer
3. 13/17mm wrench
4. 10,13,17mm socket wrench set
5. (Optional) Rubber Mallet for adjusting axle height

1.



2.

3.

4.

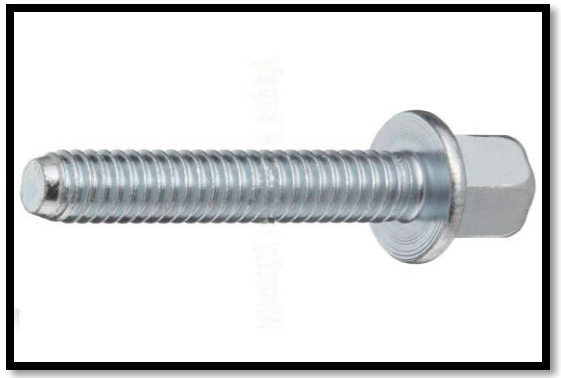
Parts

Required Parts for Module

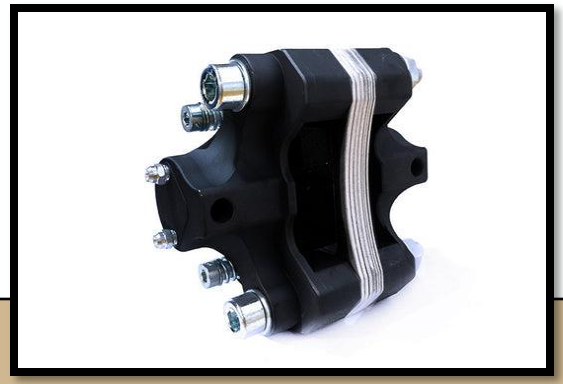
50mm Aluminum Bearing Cassette

Economy Caliper Bracket

Brake Caliper Spacer



M8x1.5x25mm Cassette Bolts



D.30 Brake Caliper

Economy Caliper Bolt M10 x 110

50mm PKT Axle

Parts

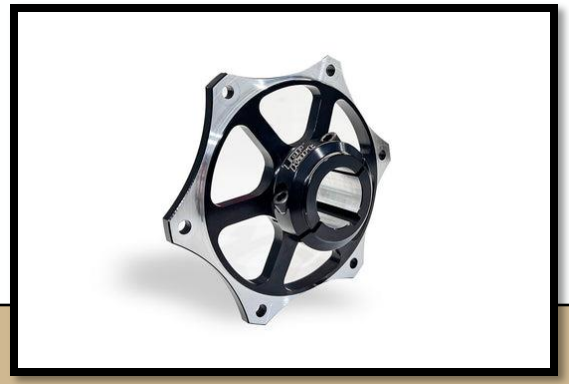
Required Parts for Module

Brake/Sprocket Hub Pinch Bolt M6 x 30

50mm Complete Brake Disc

M6 x 10 Set Screws

50mm Rear Wheel Hub Aluminum



30mm Sprocket Carrier

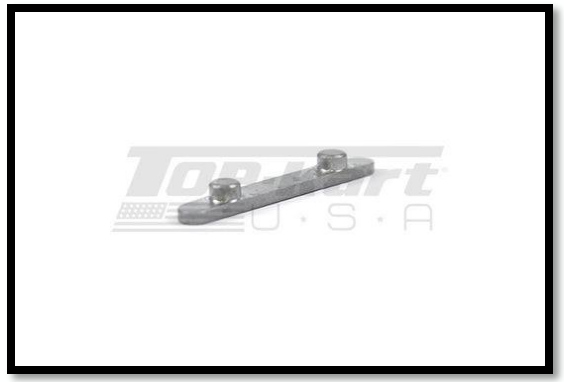
Engine Stop Bolt

M8 Flat Washer

50mm (ID) Axle Bearing

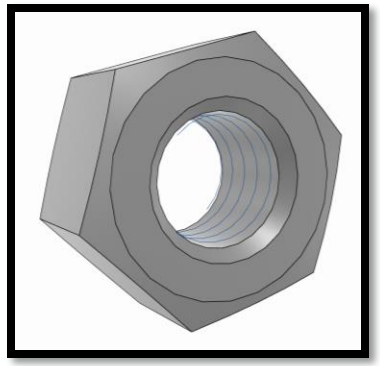
Parts

Required Parts for Module



2 Peg Key

Brembo Brake Hub



M10 Nylon Nut

Economy Bracket
Caliper Spacer

M8 Nylo Nut

M10x45 Cap Bolt

Step 1: Bearings (0:36-1:24)

Note: if bearings come pre-installed, skip this step.

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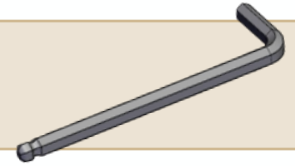
EPICS AT PURDUE

Pinch Bolt

50mm Aluminum Bearing Cassette

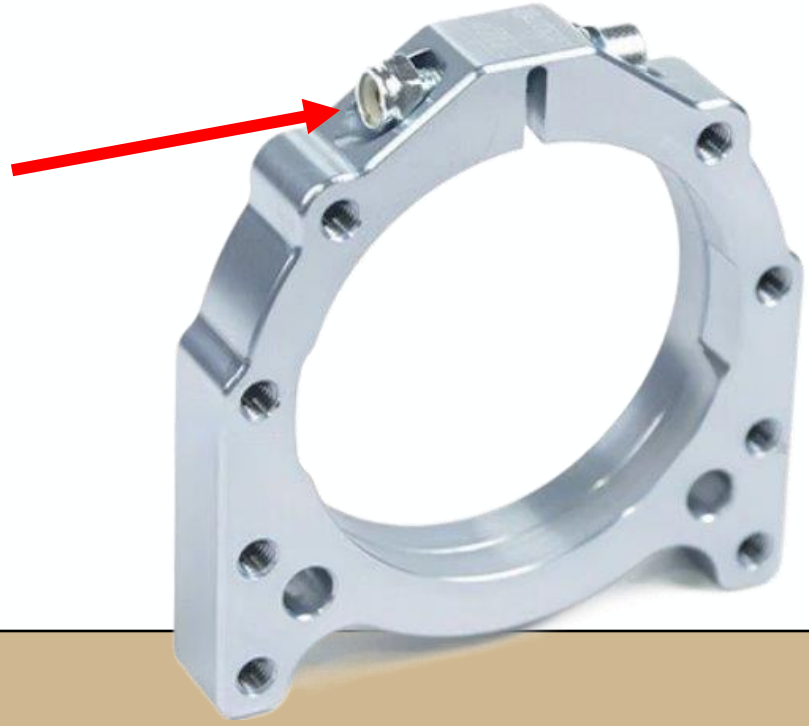
Brake / Sprocket Hub Pinch Bolt M6 x 30



5mm Hex Key

1.1

1. Check that the **M6x30 pinch bolt** is loosened.
2. Use a 5mm Hex key if needed.



Step 2: Cassettes (1:25-3:16)

Rear Axle Module

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EPICS AT PURDUE

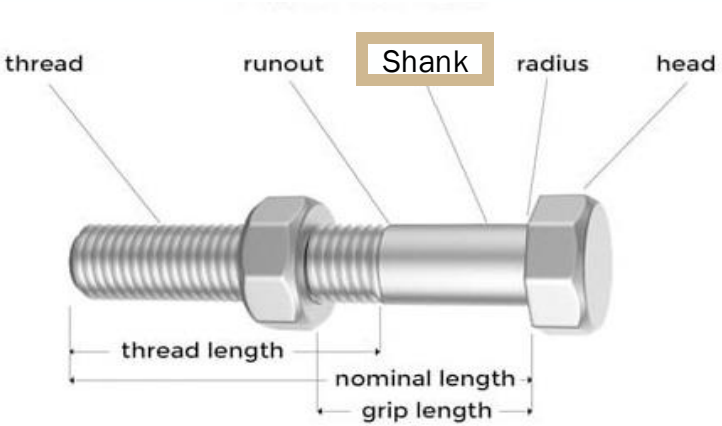
Bolt Washer Prep

M8 Washer

M8x25mm Cassette Bolts (12)

2.1

Prep a washer and M8x25mm bolt by placing the washer onto the bolt shank, such that the washer sits directly behind the bolt head. Repeat this for 12 washer-bolt pairings.



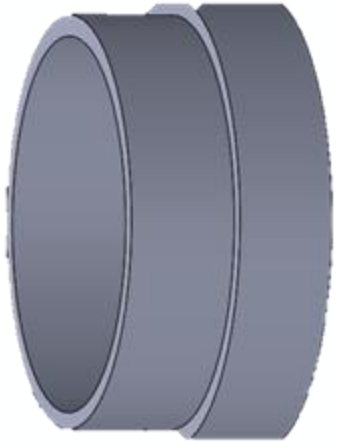
Bolt with washer:

Cassette Installation

Cassette with Bearing

2.2

Place the cassette into the frame hanger so that the set screws section of the bearing is facing inwards.



Set screw section

Cassette in frame hanger oriented correctly

Cassette Bolts

M8x1.5x25mm
Cassette Bolts (12)

M10 Flat
Washer (18)

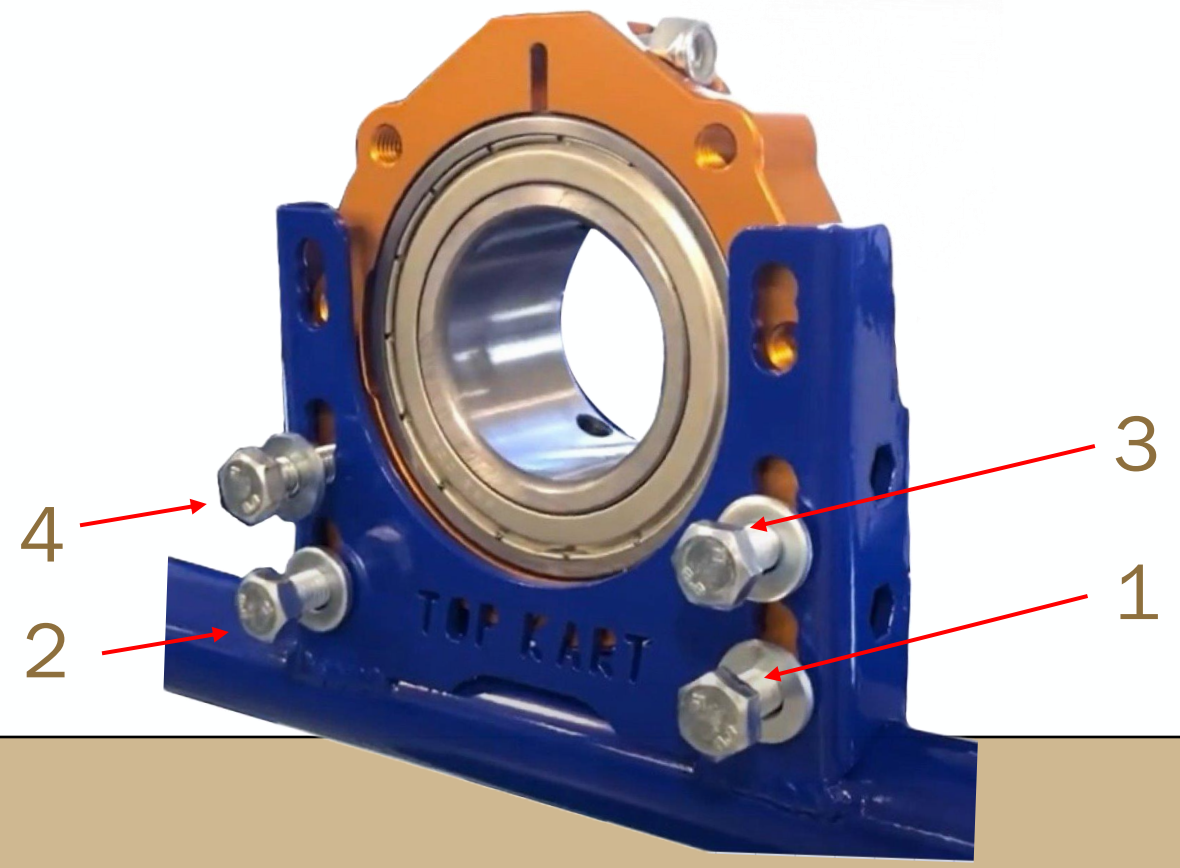
13mm Wrench

2.3

*start with the motor side and repeat for brake side

1. Insert cassette bolt with washer into the right-most bottom hole.
2. Screw in by hand until it remains firmly in hole without additional support.
3. Repeat for remaining 5 holes, starting with the bottom row and working upwards by row.
4. Note that the top row of holes should remain open.

Numbers indicate order of insertion of bolts



Cassette Bolts (pt2)

M10x1.5x25mm Cassette Bolts (12)

M10 Flat Washer (18)

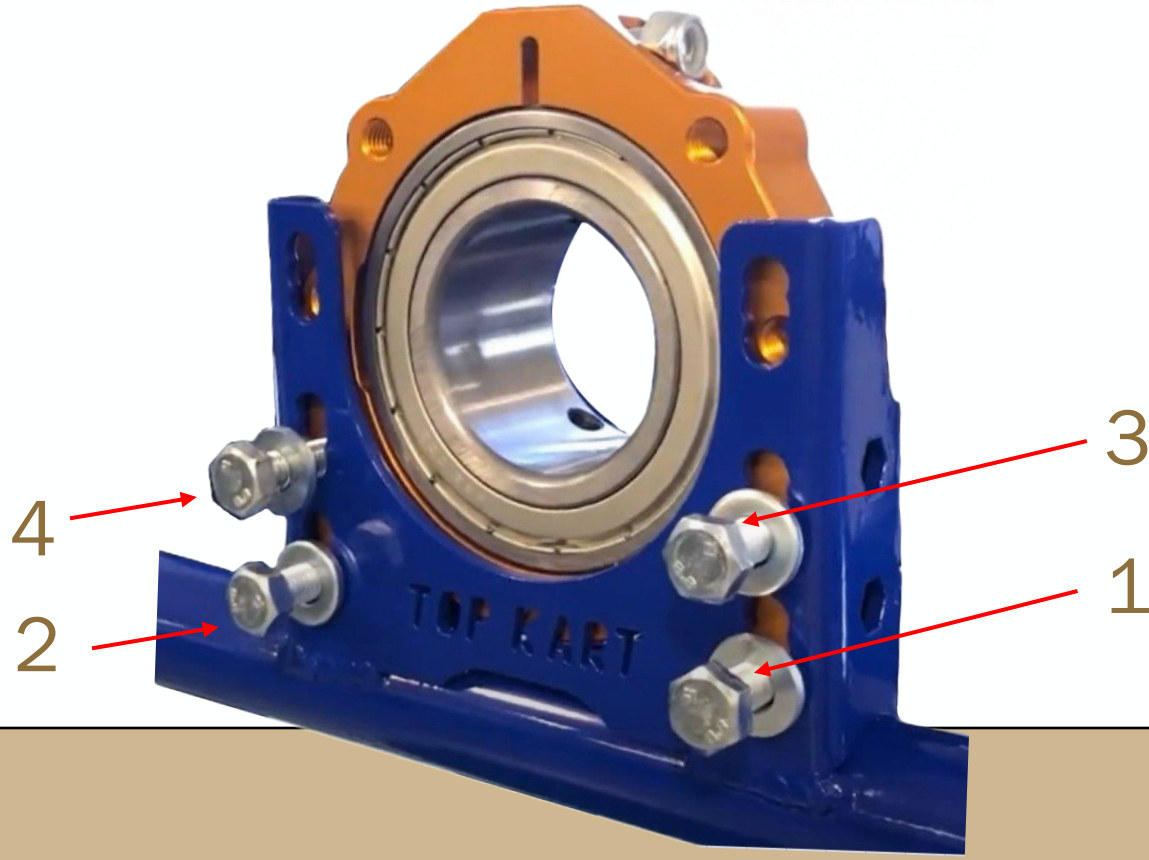
13mm Wrench

2.3

*start with the motor side and repeat for brake side

4. Go back and tighten all bolts by hand until the washer is snuggly pressed between the cassette and the bolt head.
5. Finish tightening all bolts with a 13mm wrench.
6. Repeat exactly for brake side.

Numbers indicate order of insertion of bolts



D.30 Caliper Bracket Prep

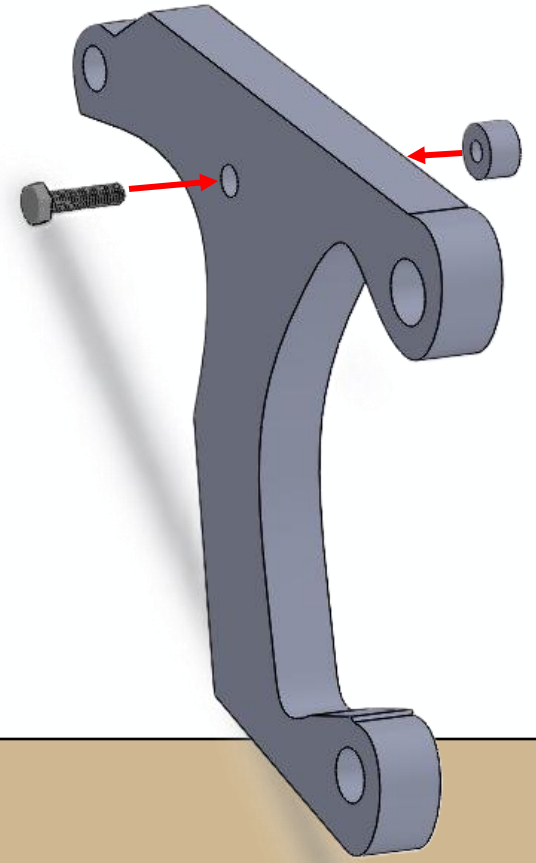
Economy Bracket Caliper Spacer

Economy Caliper Bracket

M8x45 Cap Bolt

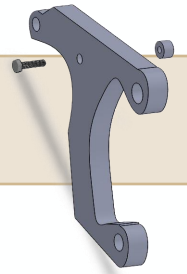
2.4

1. Prep a spacer and caliper bracket by inserting a M10x45 bolt through the middle hole of the caliper bracket so that the bolt head is pressed against the caliper bracket.
2. Then put the spacer on the threads of the bolt so that the caliper bracket is sandwiched between the spacer and the bolt head.

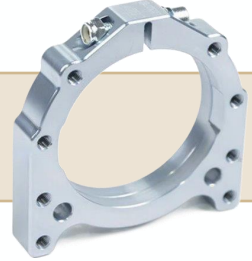


Economy Caliper Bracket Instillation

2.5a

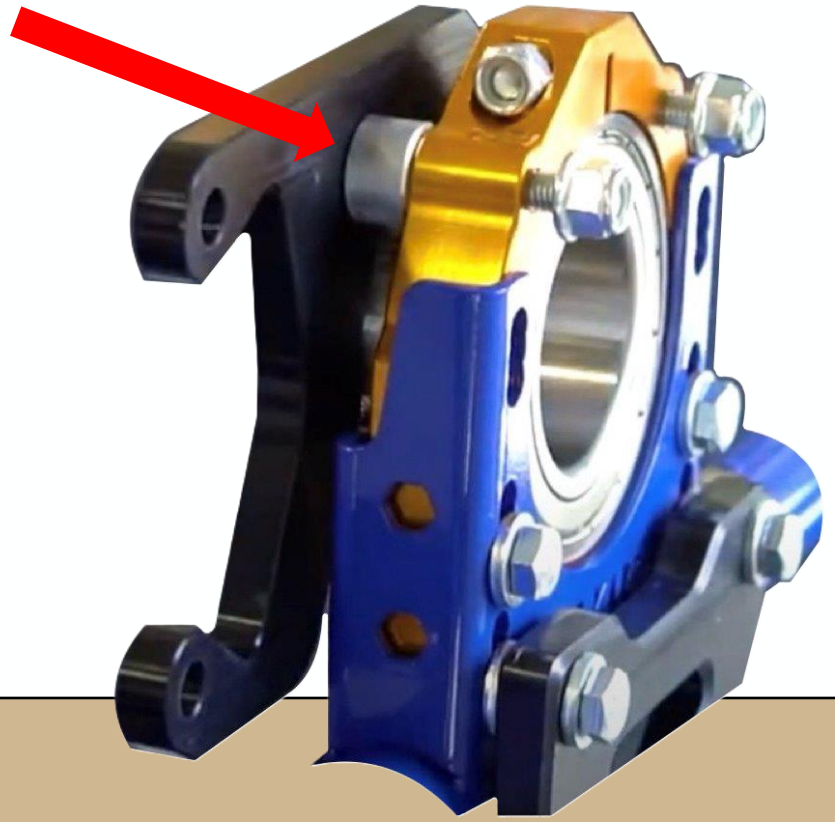


Prepped Economy Bracket



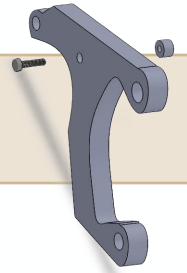
50mm Aluminum Bearing Cassette

On the inside of the brake side cassette, attach the caliper bracket to the top holes by inserting the prepped caliper with spacer and bolt into the top right hole and tightening by hand until the spacer is firmly held between the caliper bracket and the cassette.

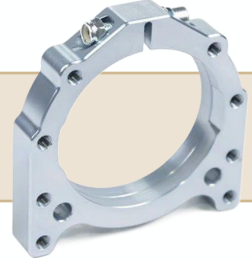


Economy Caliper Bracket Instillation

2.5b



Prepped Economy Bracket



50mm Aluminum Bearing Cassette

1. For the second bolt of the caliper bracket, first hold a spacer in front of the left hole so that it is sandwiched between the caliper and cassette. Then insert the bolt through the caliper, spacer, and cassette.
2. Place an M8 Nylon nut on the backside of each bolt and tighten by hand as much as possible.

Brake Caliper Installation

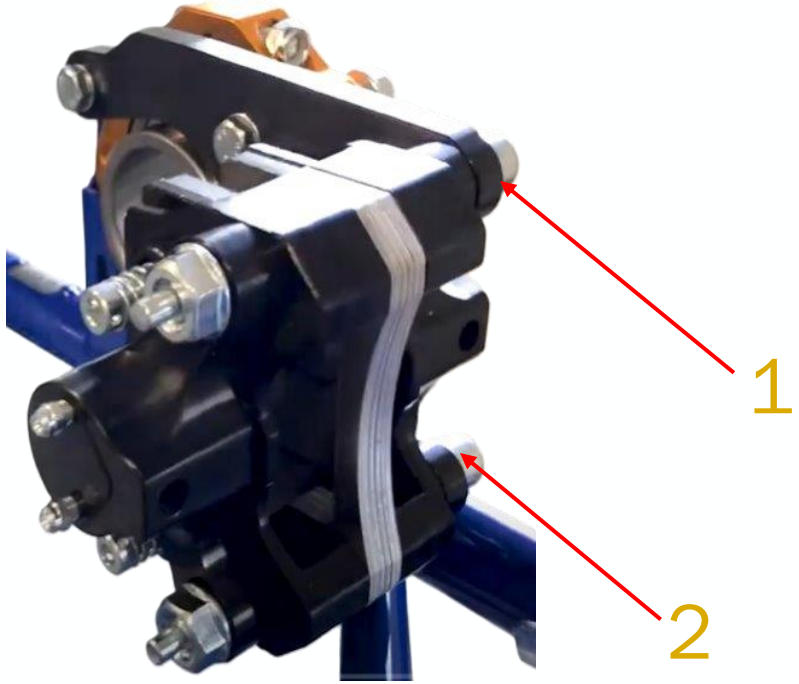

Brake Caliper


M10x110 bolt


M10 Washer

2.6

1. Insert an **M10x110 bolt** with **M10 washer** into the front hole of the economy caliper bracket. Then push it through the entire brake caliper. Repeat for bottom hole of economy **caliper bracket**.
2. Place an **M10 nut** on the backside of each bolt and tighten with **17 mm Allen Wrench.**



Step 3: Axle (3:18-6:25)

Rear Axle Module

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EPICS AT PURDUE

Axle Alignment

3.1

1.Stand behind the kart on the brake side.

2. Insert the axle into the brake-side bearing and push it through until it is directly in front of (but not through) the motor-side bearing.

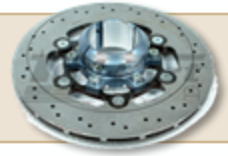
3. The axle should be directly aligned with the opening of the opposing bearing. If it is not aligned, then adjust the axle by hitting it in the direction opposite of misalignment.

4. Remove axle from bearings and repeat exactly on the motor side.

5. After aligning the axle on both sides, insert the axle through both bearings, starting from the motor-side bearing. Make sure that the axle is still moving easily through the bearings.

6. Tighten both cassette pinch bolts with a **5mm hex key**.

Brake Disc Installation

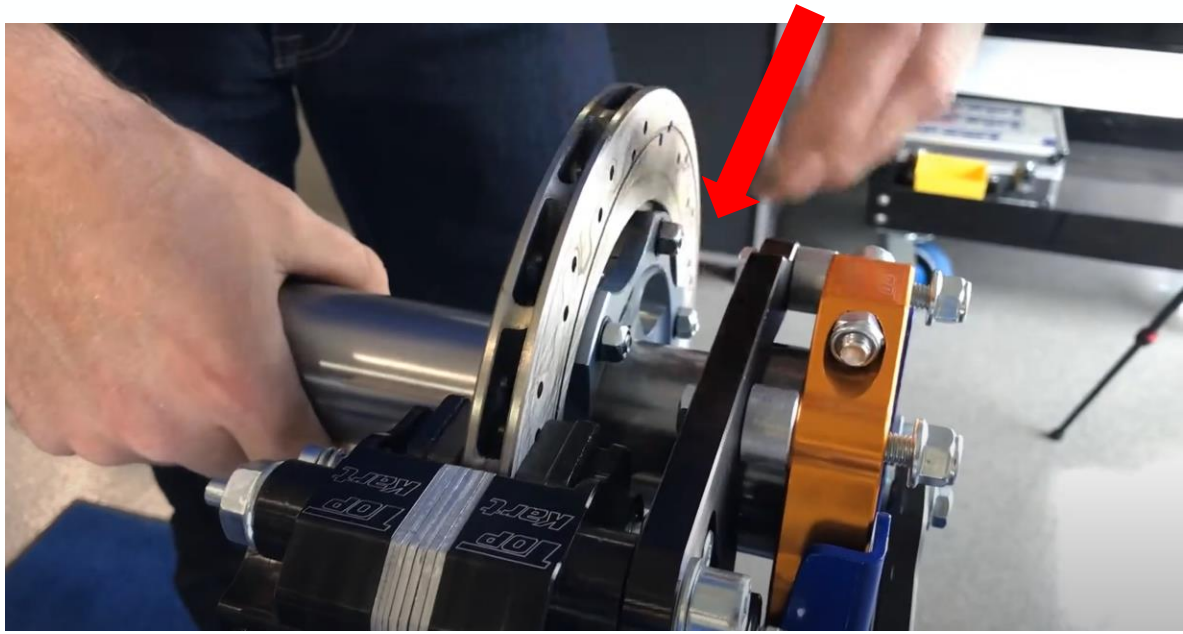


50mm Complete
Brake Disc

3.2a

1. Stand behind the kart with the brake disc in your left hand. With your right hand, slide the brake pad side of the axle out of its bearing.
2. Position the brake disc between the brake caliper and the axle, with the pinch bolts of the brake hub facing right (towards the chassis).

Keyway Under Brake Disk

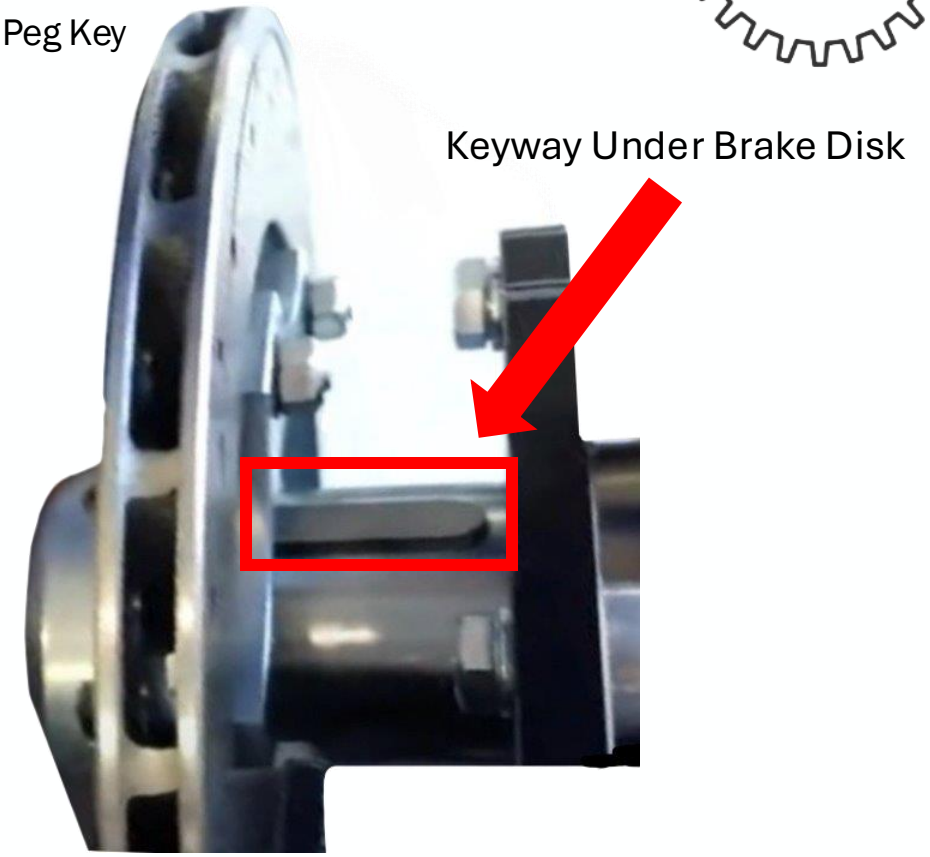


Brake Disc Installation

50mm Complete Brake Disc

2 Peg Key

3.2b



Then slide the axle through the disc so that the keyway is on the axle. Once the disc is held in place, insert key into the designated spots on the axle. Continue sliding the axle back through the brake caliper and bearing until the key is inserted fully into the keyway.

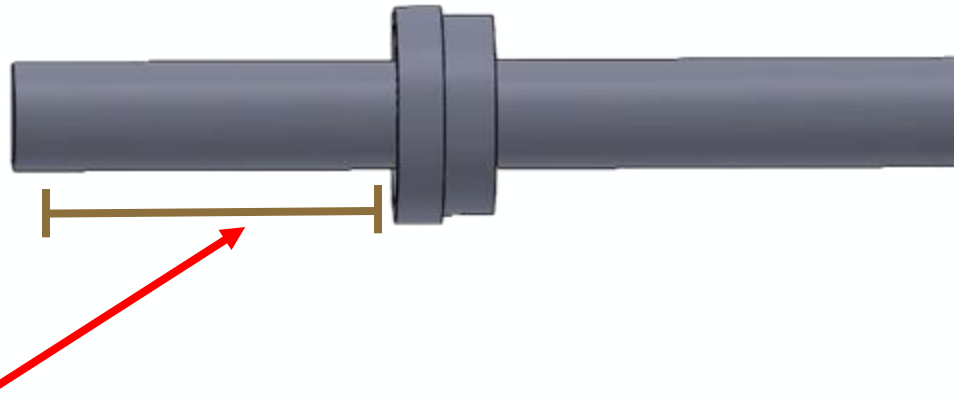
Centering Axle

30mm PKT Axles

Tape Measurer

3.3

Center the axle. Use a tape measure to determine the length of the axle extending past the bearing on each side of the kart. Shift the axle so that the length is the same on both sides



Measure distance between axle end and bearing

Secure Axle Position

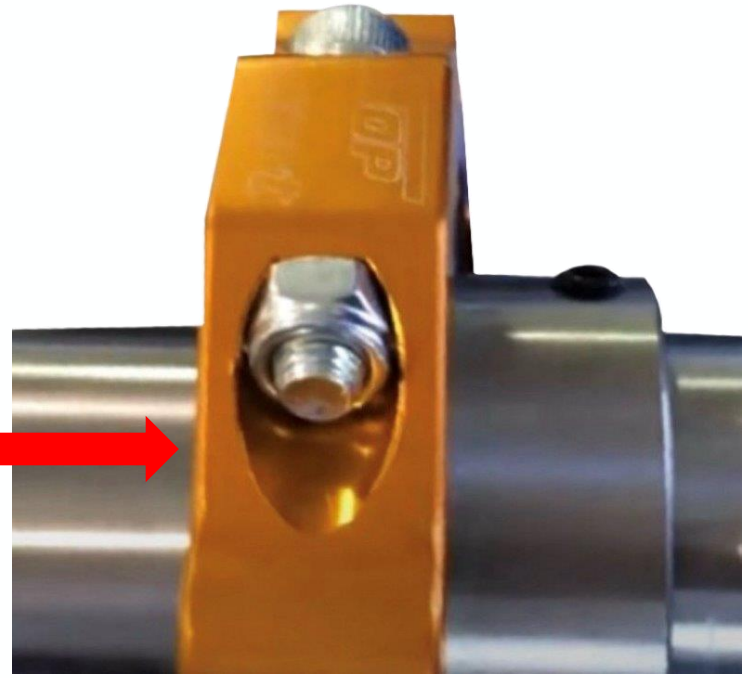
50mm PKT Axles

4mm Allen Wrench

3.4

Tighten the set screw of each bearing using a **4mm Allen Wrench**. Tighten until you feel the set screw contact the axle, then tighten another half a turn.

Bearing Set Screw



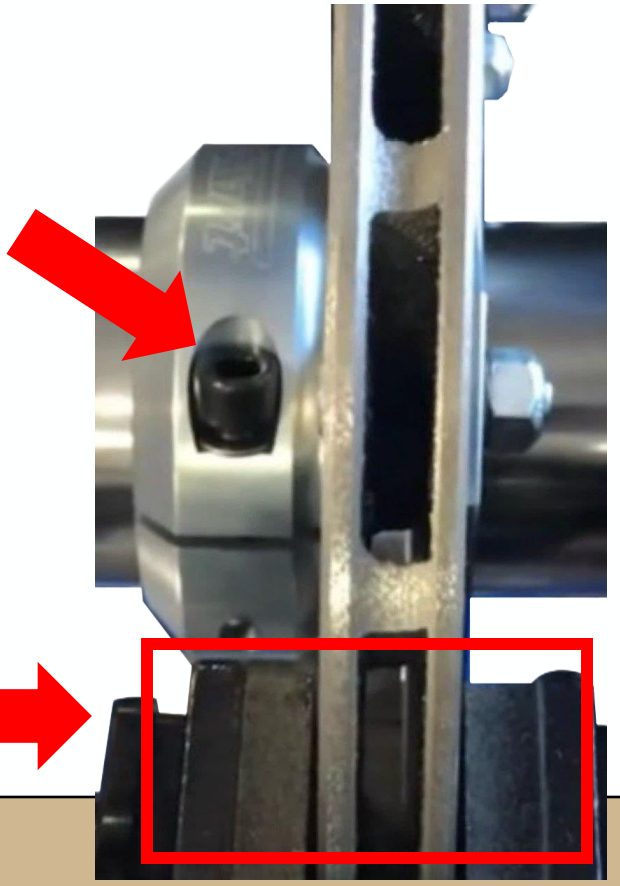
Secure Brake Disc

M6x30

5mm Allen Wrench

3.5

Center the brake disc over the brake pads. After centering, tighten the brake disc hub's two pinch bolts with a 5mm Allen wrench.



Step 4: Wheel Hub (6:26-7:35)

Rear Axle Module

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EPICS AT PURDUE

Wheel Hub Keyway Installation

2 Peg Key

4.1a

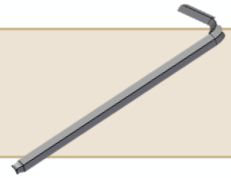
*start with the brake side and then repeat for motor side as instructed in next steps.

Place the **key** onto the end of the axle and push the **50mm rear wheel hub** onto the end of the axle until it stops.

Key under wheel hub

Brake Side Wheel Hub Installation

Brake/Sprocket Hub
Pinch Bolt M6 x 30

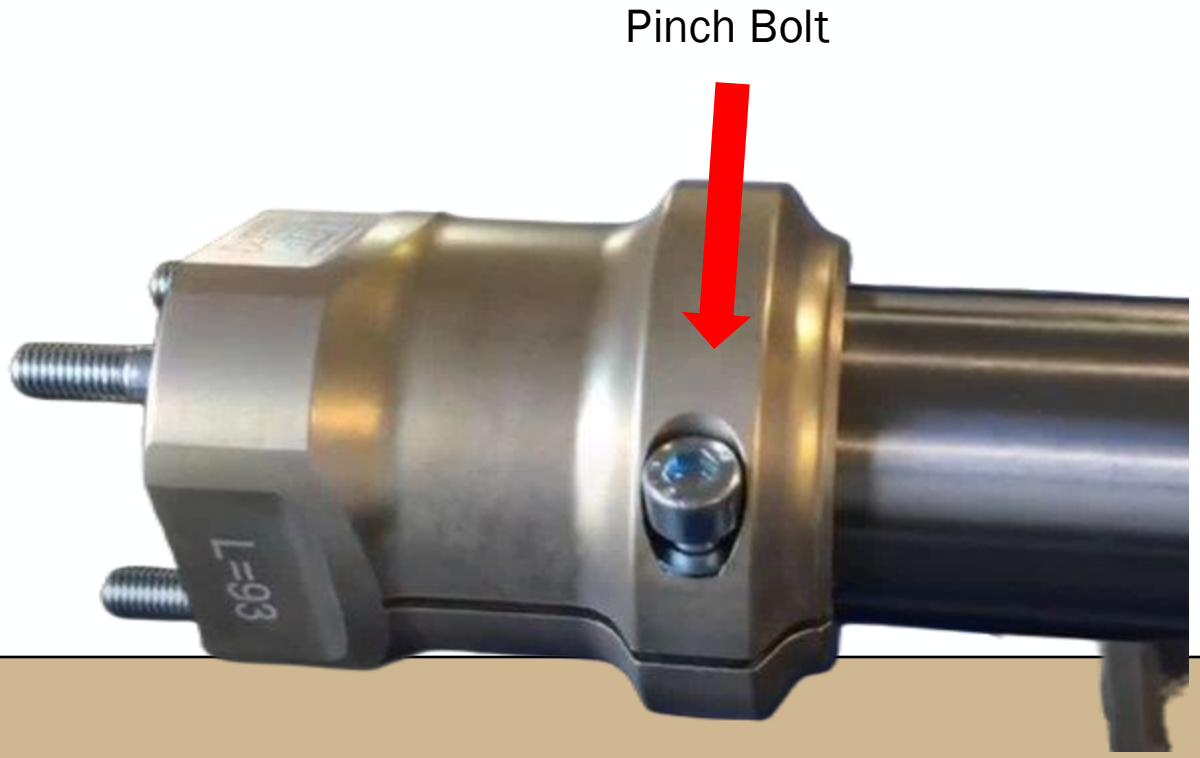


6 mm Allen Wrench

4.1b

*start with the brake side and then repeat for motor side as instructed in next steps.

Tighten the two M6x30 pinch bolts with an 6mm Allen wrench.



Sprocket Installation

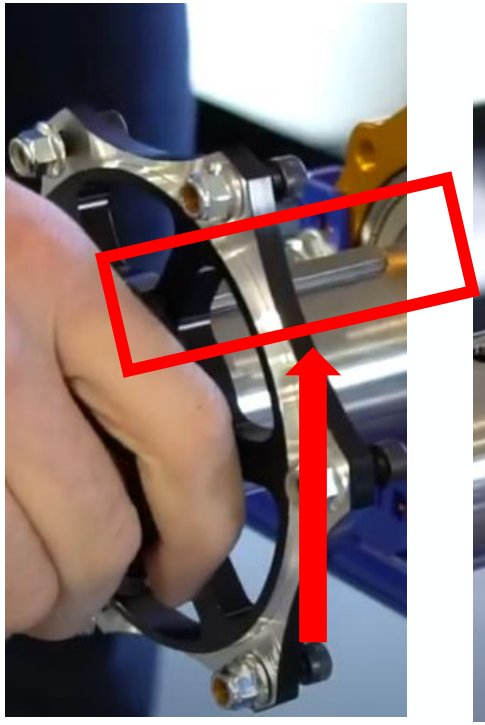
50mm Sprocket Carrier

2 Peg Keyway

4.2

1. For the motor side, place the axle keyway closest to the bearing and slide the sprocket over it.

2. Repeat keyway and wheel hub installation on the motor side as instructed in 4A and 4B.

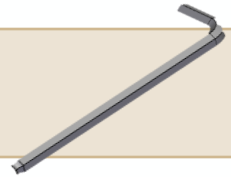


Key under sprocket hub

Installed sprocket

Motor Mount Stop Bolt

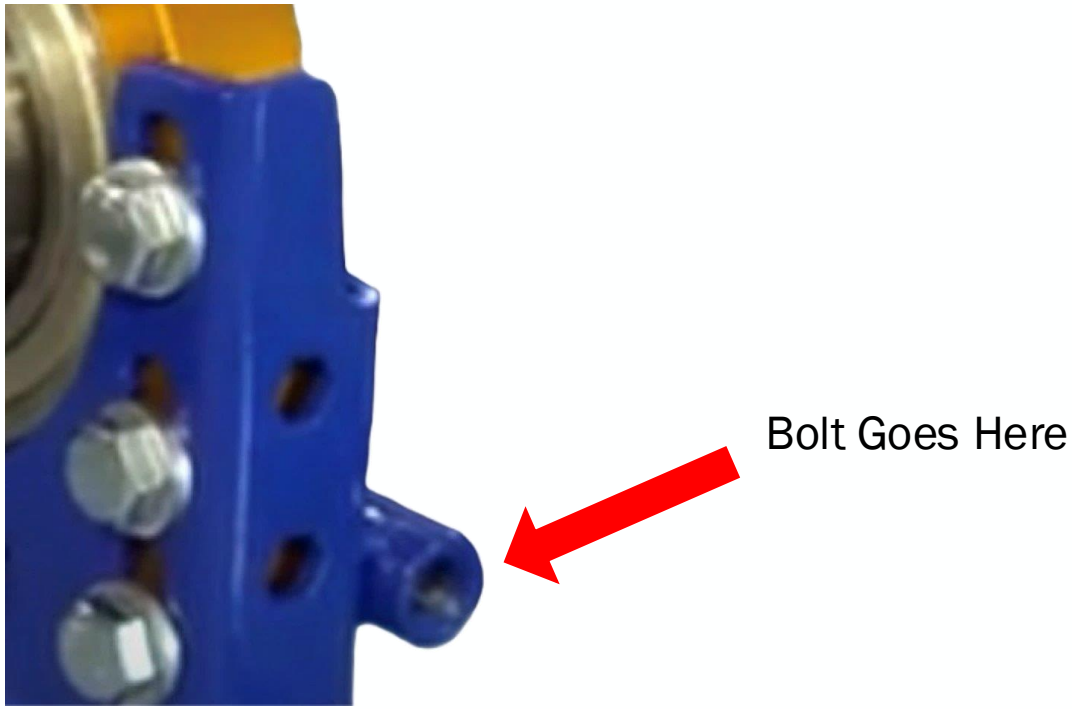
M10 Motor Stop Bolt x 30



6 mm Allen Wrench

4.3

- Place an M10 nut on the threads of the motor mount stop bolt.
- Insert the bolt with nut into the side of the frame hanger, as instructed in the image to the right.



Appendix and References

Rear Axle Module

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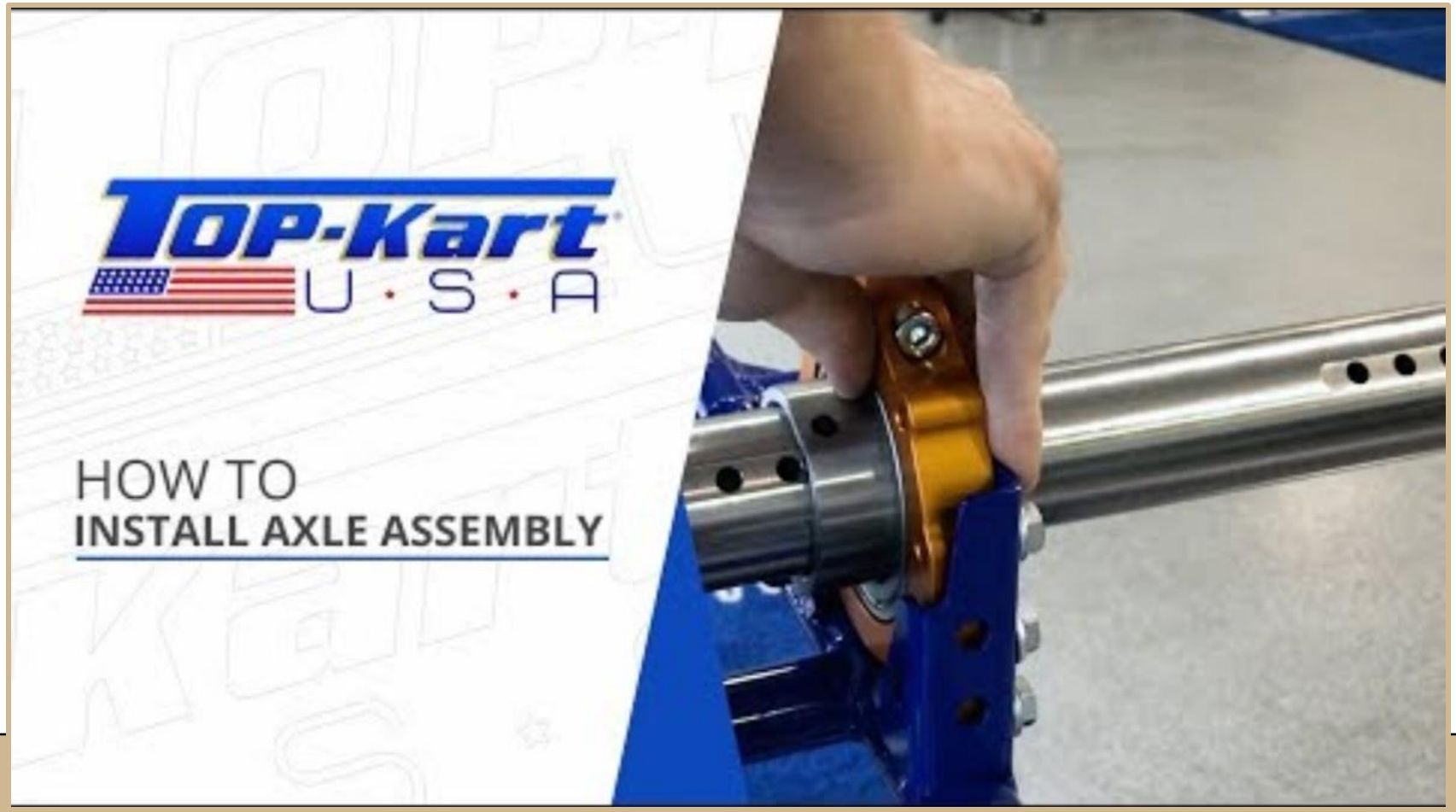
EPICS AT PURDUE

Top Kart Video Demonstration



Brake System Module

EV Kart Manual

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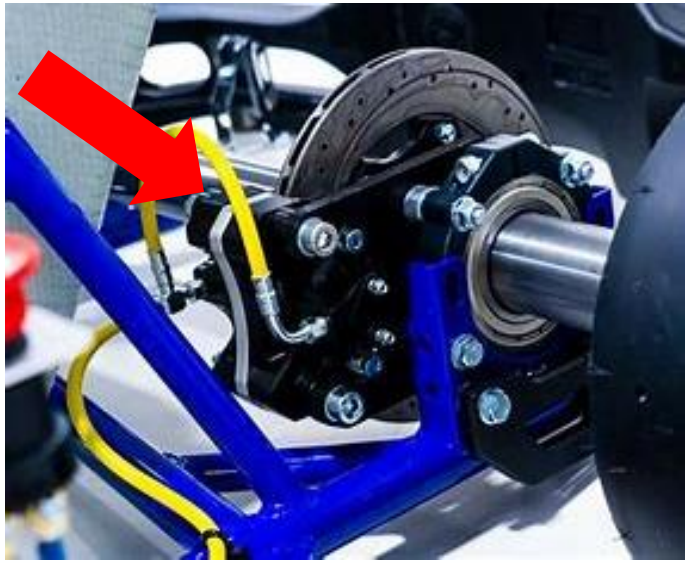
EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into four steps:

1. Master Cylinder
2. Brake Line
3. Brake Rod
4. Brake Safety Cable

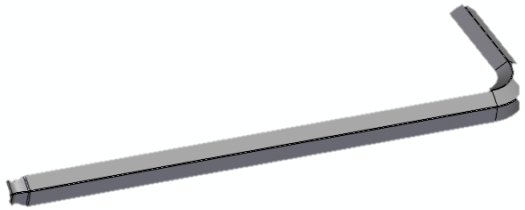


Tools

Required Tools for Module

1. 5mm and 6mm Allen Wrench
2. (Optional) 13/17mm Wrench

1.



2.

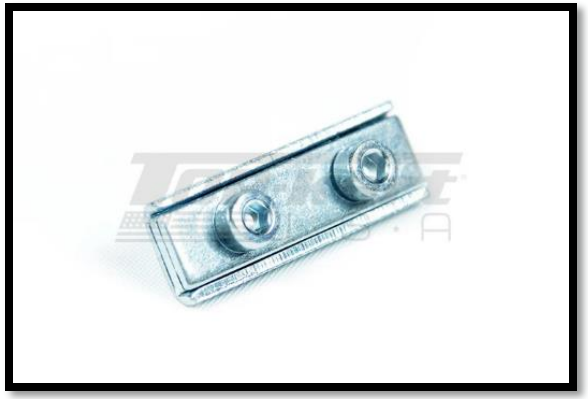
Parts

Required Parts for Module

Brass Washer

Master Cylinder Cap Washer

Brake Safety Line



Double Screw Clamp

Master Cylinder Lever

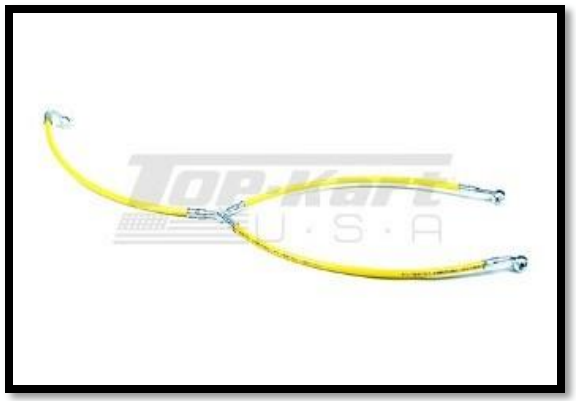
Brake Safety Cable Fork

Brake Line Connector

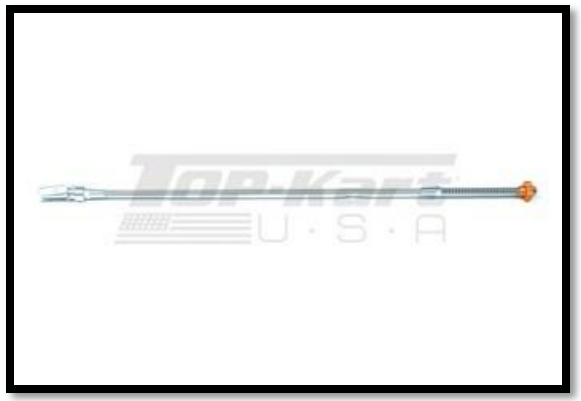
Master Cylinder

Parts

Required Parts for Module



Brake Line



Brake Flash Rod

M6 X 45 Master Cylinder Bolt

Brake Pedal

Long Brake Fork Celvis

Step 1: Master Cylinder (0:33-1:00)

Brake System Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Master Cylinder Mount

Master Cylinder Bolt M6 x 45

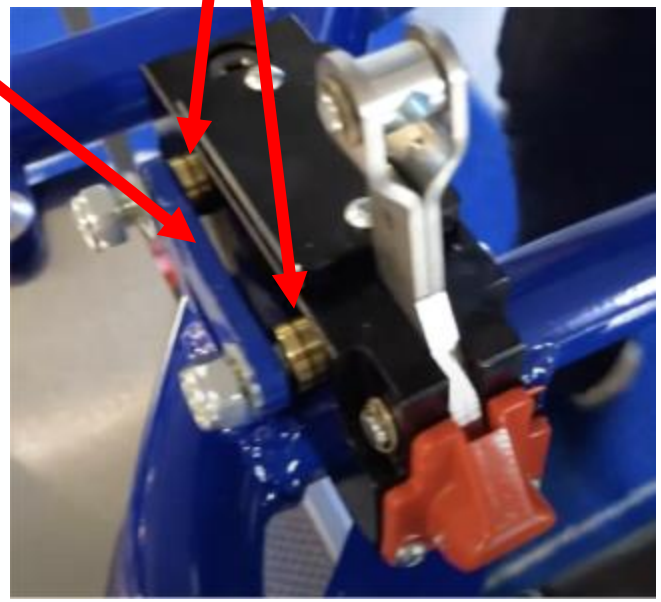
Master Cylinder

Brass Washer

1.1

1. Locate the master cylinder mount
2. Insert bolts through the master cylinder.
3. Place brass washers on the ends of the bolts protruding from the master cylinder, ensuring the washers are positioned between the master cylinder and the frame bracket.
4. Align ends of the bolts with bracket holes and push through the frame.

Master Cylinder Mount



Secure Master Cylinder

Master Cylinder Bolt M6 x 45

Master Cylinder

1.2

1. Place Master Cylinder Cap Washer onto the bolts and screw the nut onto the washer.
2. Tighten them firmly using a wrench to prevent movement.

Secure Master Cylinder

1.3

Master Cylinder Bolt M6 x 45

Master Cylinder

1. Locate the fitting on the back of the master cylinder.
2. Ensure it is tightened properly to prevent fluid leaks.

Rear Fitting

Step 2: Brake Line (1:00-2:20)

Brake System Module

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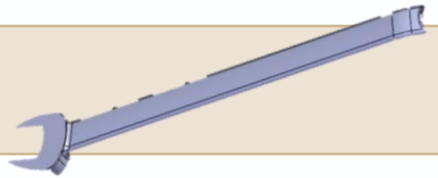
EPICS AT PURDUE

Master Cylinder Connection

Brake Line

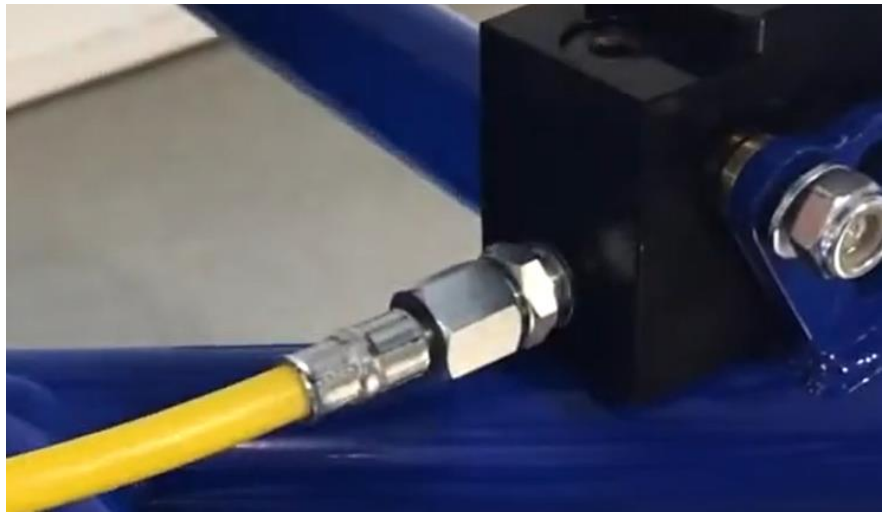


13 mm Wrench

2.1

1. Locate the **yellow brake line** with a **single-end fitting**.
2. Screw this end into the rear fitting of the master cylinder.
3. Use a wrench at the end to ensure the line is not loose (do not overtighten).

***Note** : Do not use any kind of Thread Seal



Brake Line Routing

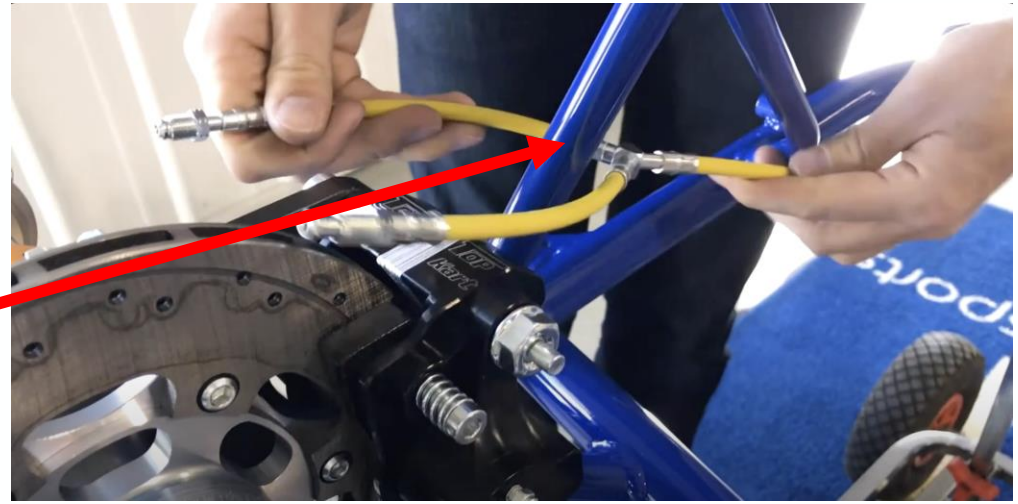
Brake Line

2.2

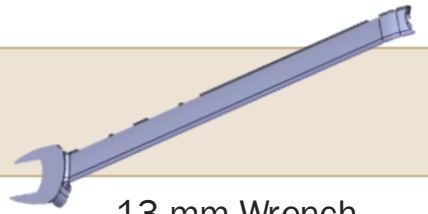
1) Identify the **Y-shaped split** in the brake line.

2) Run each side of the split **around the frame strut post**.

Frame Strut Post



Brake Line – Caliper Connection

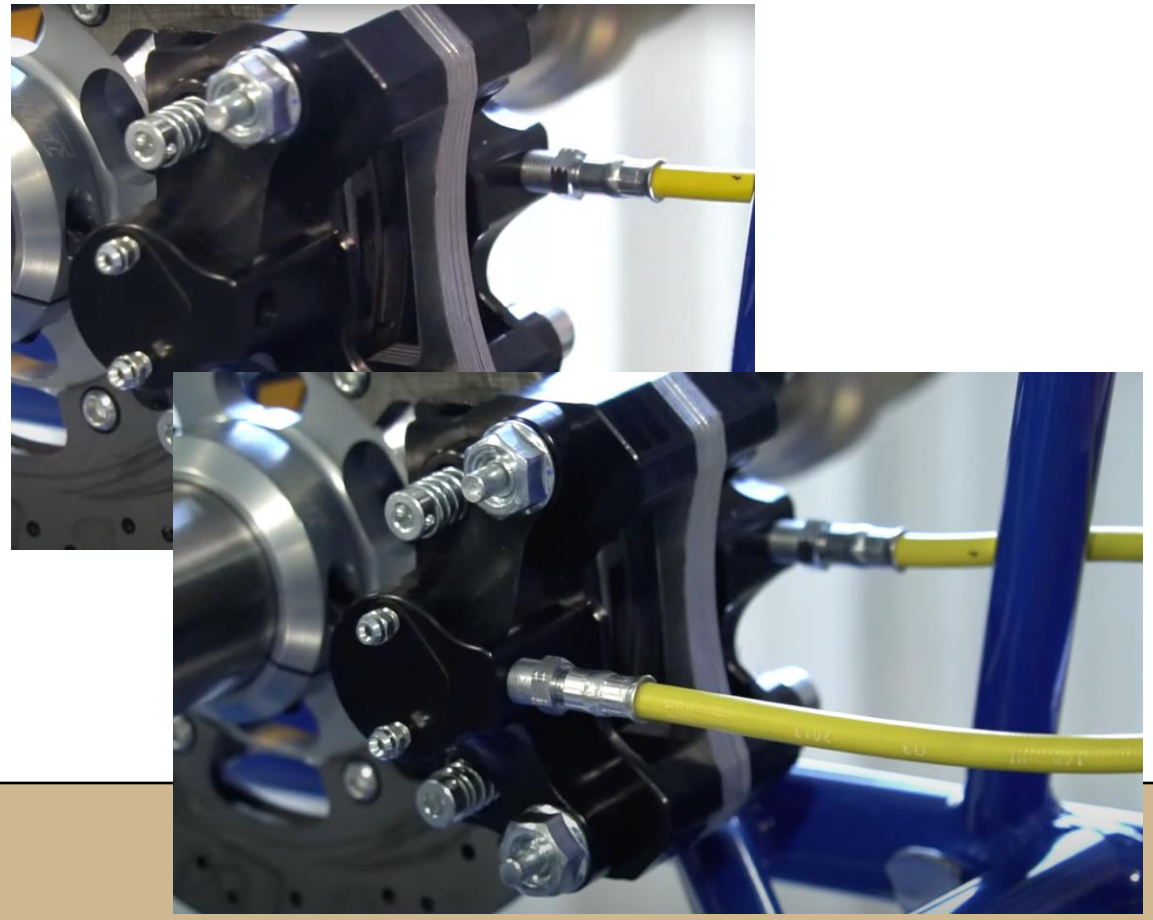


13 mm Wrench

2.3

1. Align each brake line end with the **caliper fittings**.
2. Carefully screw in each fitting by hand first.
3. Tighten with a wrench, ensuring **no cross-threading occurs**.

***Note** : both ends must be completely parallel, or line will become damaged



Step 3: Brake Rod (2:20-3:11)

Brake System Module

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EPICS AT PURDUE

Pedal Attachment

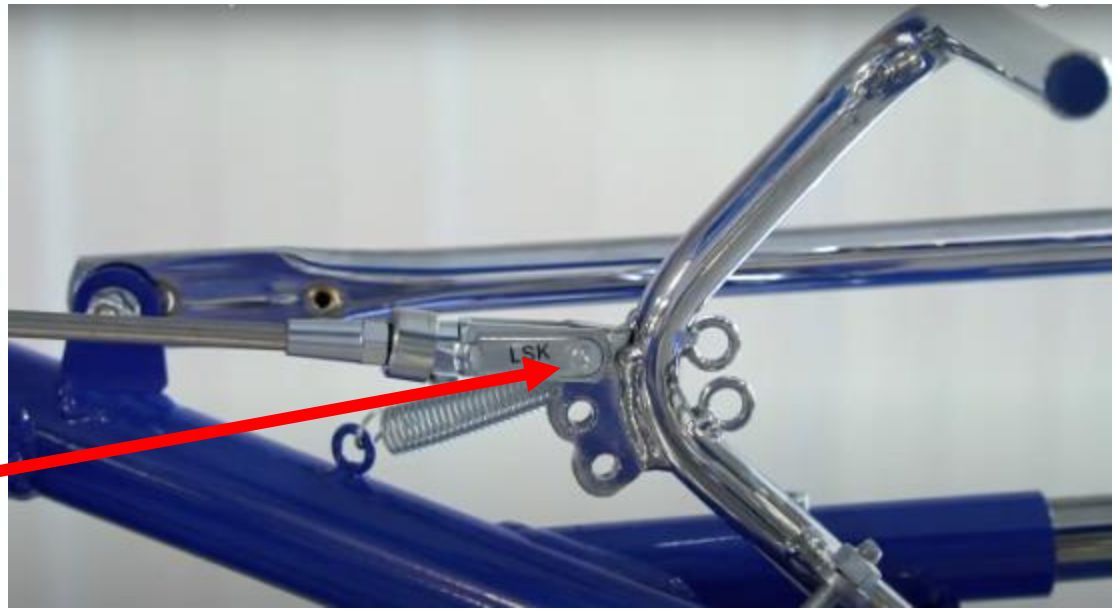
Brake Rod

Brake Fork Clasp

3.1

1. Locate the three mounting holes on the brake pedal.
2. Insert the open end of the rod around the top hole of the pedal and secure it with a clasp.

Clasp over top hole

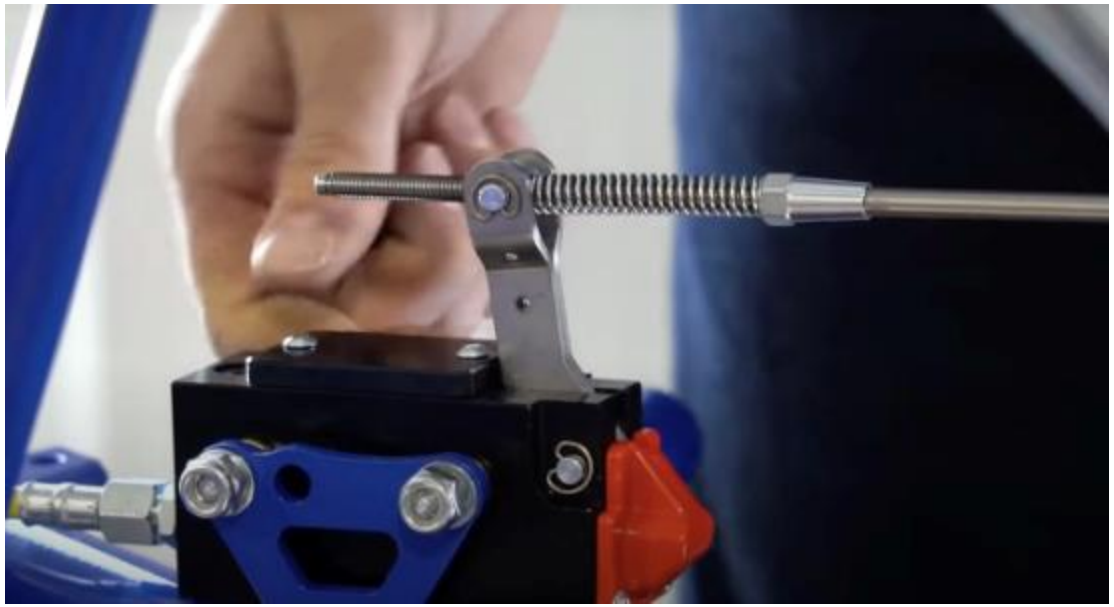


Master Cylinder Attachment

Safety Nut

3.2

1. Remove the bolts at the end of the brake rod
2. Push back the rod and align it with the swivel piece on the master cylinder.
3. Insert it through the swivel hole.



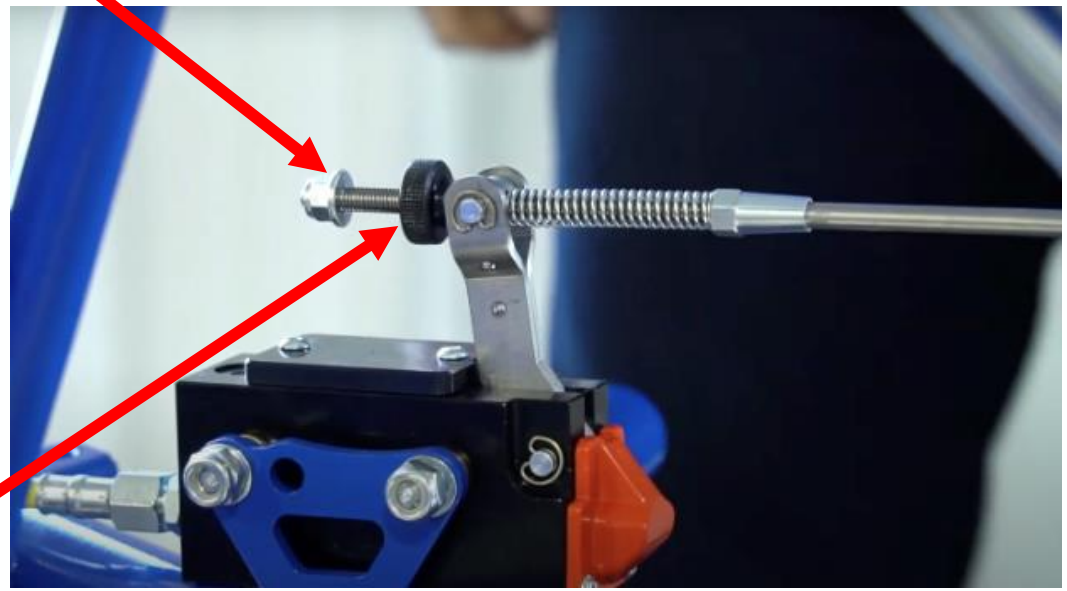
Securing Rod

Safety Nut

3.3

1. Screw on **adjuster nut** at end of rod and tighten it to swivel hole. Once it has pressure, turn 2-3 times to apply light tension on the rod.
2. Hand tighten the **safety nut** onto the end of the rod.

Safety Nut



Adjuster Nut

Step 4: Brake Safety Cable (3:11-3:35)

Brake System Module

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EPICS AT PURDUE

Pedal Attachment

Brake Safety Line

4.1

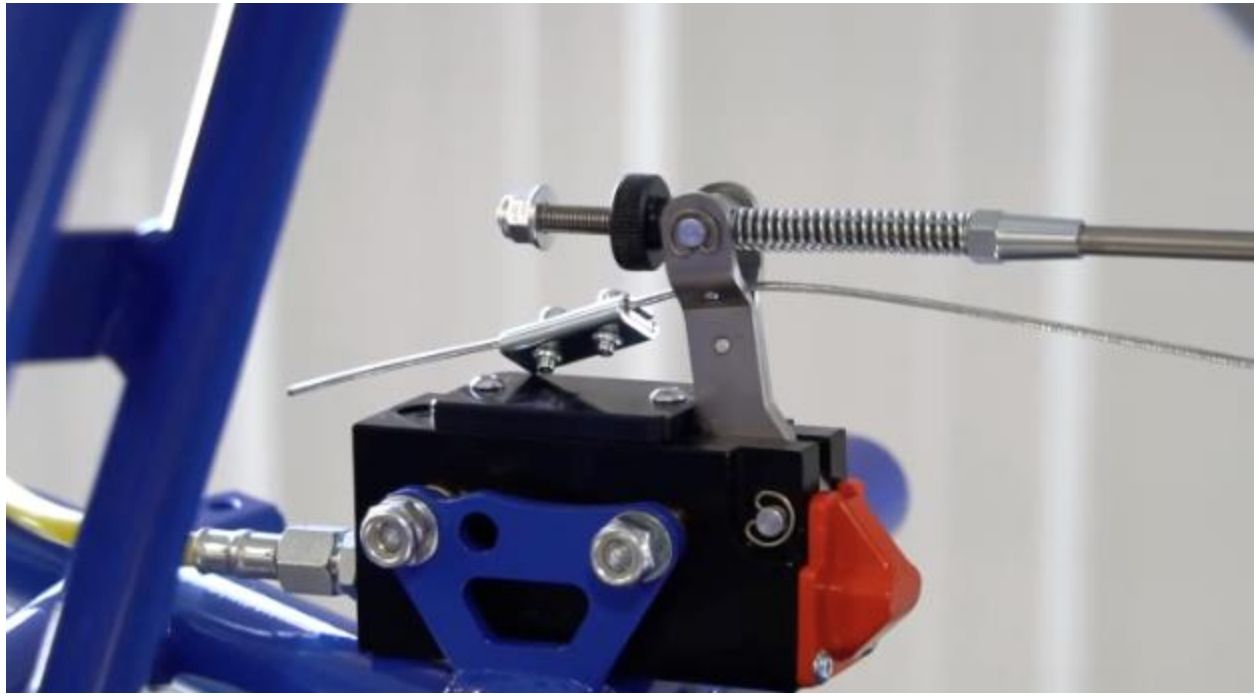
1. Insert one end of the cable into the bottom hole of the brake pedal.
2. Secure it using the clasp.

Master Cylinder Attachment

Brake Safety Line

4.2

Run the cable through the wider section of the master cylinder (below the rod).



Secure Cable

Double Screw Clamp

Brake Safety Line

4.3

1. Attach a double screw clamp to the cable's loose end.
2. Tighten the screws firmly to hold the cable in place.

Appendix and References

Brake Assembly

PURDUE UNIVERSITY

EPICS AT PURDUE

Top Kart Video Demonstration

Rear Bumper Module

EV Kart Manual

PURDUE UNIVERSITY

EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into two steps:

1. Inserting the Bumper Bolt
2. Attaching the Bumper Bar

Tools

Required Tools for Module

1. 17mm Wrench
2. WD40 / Lubricant

1. 

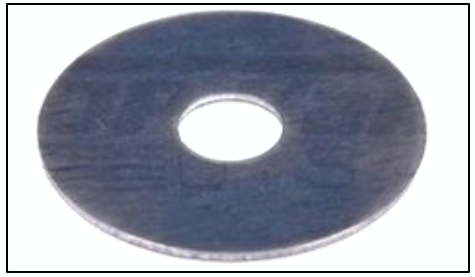
2. 

Parts

Bumper Bar

Bumper Bolt x2

Flange Nut M10 x2



Metal Washer x2

10mm Acorn Nut x2

Step 1: Inserting the Bumper Bolt (0:17-0:40)

Rear Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Unscrew Bumper Bolt

Bumper Bolt

1.1

1. Unscrew the nut and remove the outer washer and bushing, leaving only the bolt, yellow rubber, and aluminum bushing.
2. Repeat for both sides.

Insert Bumper Bolt

Bumper Bolt

1.2

1. Insert the Bumper Bolt into the frame
   - Apply some WD-40 on the yellow rubber before inserting.

2. Repeat for both sides.

Step 2: Attaching the Bumper Bar (0:43-1:40)

Rear Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

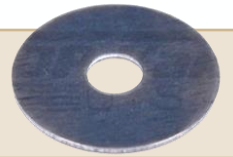
Attaching the Bumper Bar

Bumper Bar

2.1

Insert bumper bar over the bolt and onto the bushings.

Attaching the Bumper Bar



Metal Washer x2

Flange Nut M10 x2

2.2

1. Tighten the bumper bar onto the bushing by screwing the washer and flange nut in place

2. Repeat for both sides.

Attaching the Bumper Bar

Acorn Nut

2.3

1. Using the 17mm wrench, further tighten each nut.

2. Put the acorn nut at the end of the bolt and tighten it against the flange nut for both sides.

Appendix and References

Rear Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Top Kart Video Demonstration

Fairing Assembly Module

EV Kart Manual

PURDUE UNIVERSITY

EPICS AT PURDUE

Table of Contents

Overview

This module will be made up of 1 step:

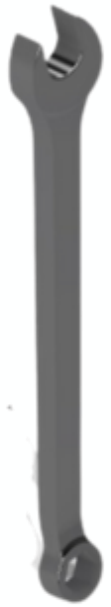
1. Installing the Fairing

Tools

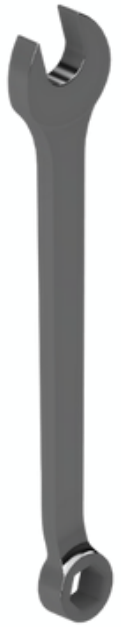
Required Tools for Module

1. 10mm Wrench
2. 11mm Wrench

1.



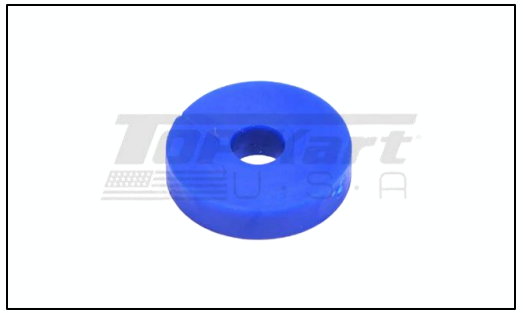
2.



Parts

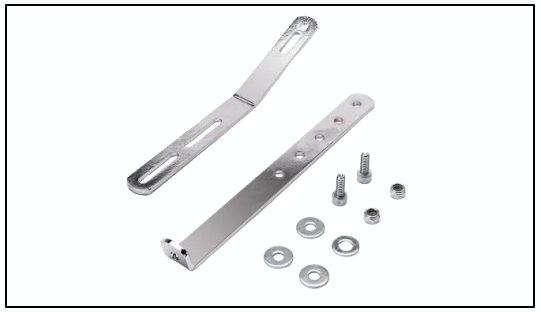
Rubber Grommet

Front Fairing Pivot



Rubber Washer

Fairing Panel Assembly



Lower Fairing Bracket Kit

Plastic Driver Fairing

Nasal Panel Clip

Installing the Fairing

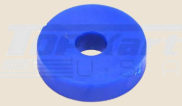
Fairing Assembly Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Installing the Fairing

Lower Fairing Bracket Kit



Rubber Washer

1.1

1. Take your lower fairing bracket and position it on top of the lower fairing bracket tab located on the front of your frame.
2. Place a rubber washer between the bracket and the tab.
3. Run the screw through the hole and tighten the nut on the other side, both parts are included in the kit.

Installing the Fairing

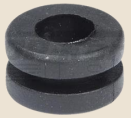
Front Fairing Pivot

1.2

1. Install the fairing pivots onto the upper brackets.
    - You should already have your upper fairing brackets installed from the steering assembly

Installing the Fairing

Plastic Driver Fairing



Rubber Grommet

1.3

1. Push the rubber grommets through the holes on the plastic driver fairing panel.

Installing the Fairing

Lower Fairing Bracket Kit

Rubber Grommet

1.4

1. Once all 3 grommets are installed on the plastic fairing, you can place it onto the pivot's position on the lower and upper brackets.
    - As you place each bracket, run the fairing clip through the hole to secure it

Appendix and References

Fairing Assembly Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Top Kart Video Demonstration

Front Bumper Module

EV Kart Manual

PURDUE UNIVERSITY

EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into 5 steps:

1. Securing lower bumper bar
2. Securing upper bumper bar
3. Connecting bumper bars
4. Securing mounting bracket kit
5. Placing hook clamps

Tools

Required Tools for Module

1. 6mm Hex Key
2. 10mm Wrench

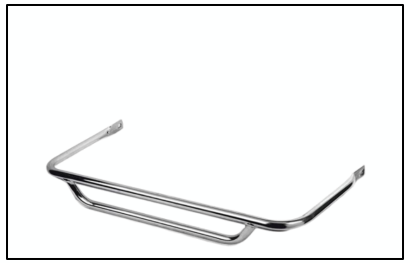
1. 

2. 

Parts

Bumper Support Piece

Bumper Bolt x2



Upper Front Bumper Bar

Lower Front Bumper Bar

Bumper Nut x4

Mounting Bracket Kit

Hook Clamps x2

Step 1: Securing Lower Bumper Bar (0:20 - 1:10)

Front Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Securing Lower Bumper Bar

Lower Front Bumper Bar

1.1

Insert the lower front bumper loop into the frame.

Securing Lower Bumper Bar

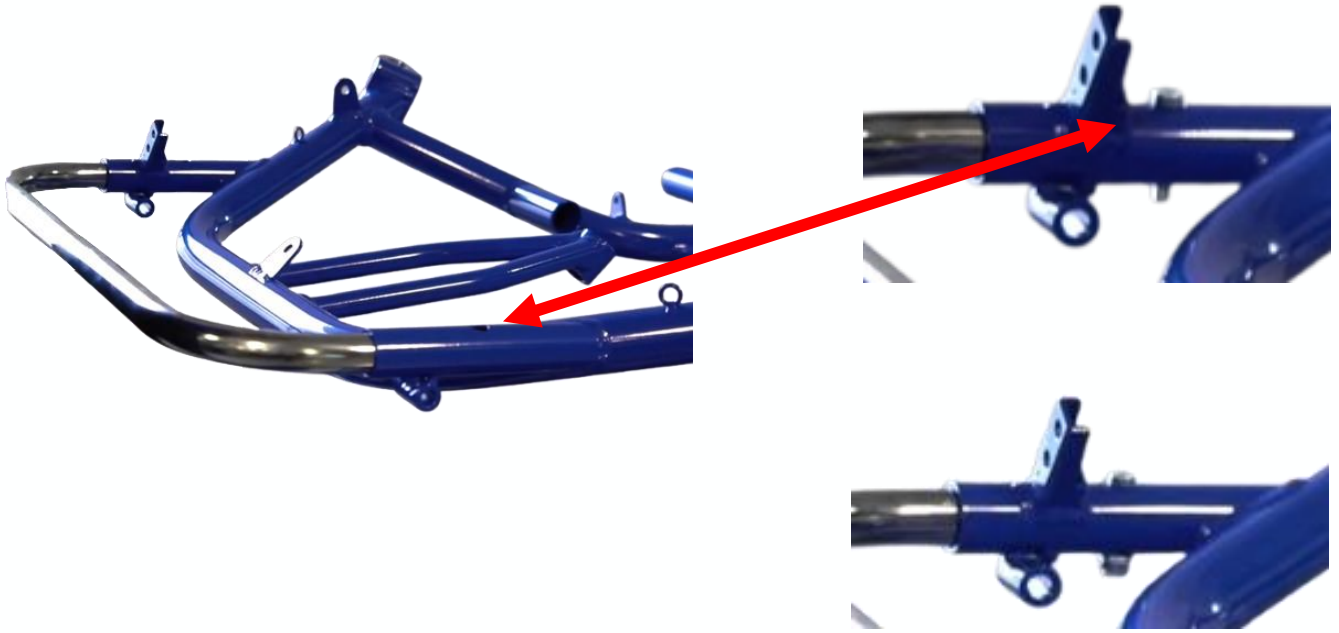
Bumper Bolt x2

Nut x2

1.2

Secure the front bumper loop by screwing in the bolts on each side of the frame.

Screw in a nut on the other side of the bolt (for both sides).



Step 2: Securing Upper Bumper Bar (1:11 – 1:48)

Front Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Securing Upper Bumper Bar

Upper Front Bumper Bar

Nut x2

2.1

Place the upper bumper bar on the outside of each tab.

Secure it with a nut on the inside and a screw it on the outside of the tab (for both sides).

Step 3: Connecting Bumper Bars (1:48 – 2:38)

Front Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Connecting Bumper Bars

Bumper Support Piece

3.1

Connect the upper and lower bars together with the bumper support piece.

- This is a plastic piece that splits in half over the bars and then gets bolted together.
- Make sure the oblong opening is at the bottom.

Connecting Bumper Bars

Bumper Support Piece

3.2

Tighten the bolts on the bumper support.

Step 4: Securing Mounting Bracket Kit (2:39 – 3:01)

Front Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Securing Mounting Bracket Kit

4.1

Take the mounting bracket kit and screw it into the nose.

*Note : Make sure the arrows on the black bracket are facing upwards.

Mounting Bracket Kit

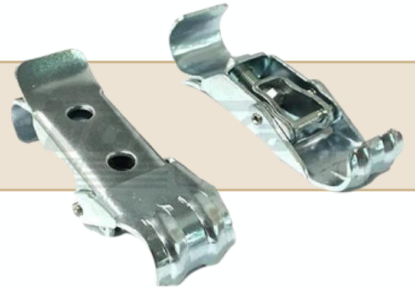
Step 5: Placing Hook Clamps (3:02 – 3:29)

Front Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Placing Hook Clamps

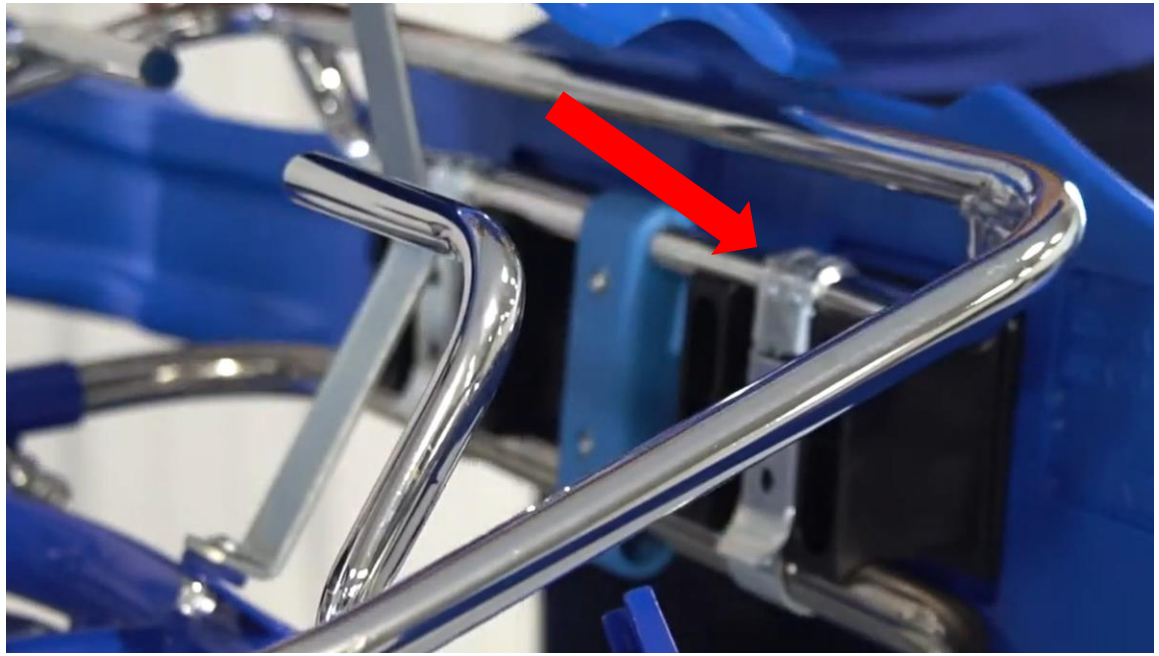


5.1

Hook Clamps x2

Place the two front clamps over the bumper bars.

- You may need to adjust the tension of the clamps by spinning the nut on the clamps.
- This could be a trial-and-error process based on your desired tension.



Appendix and References

Front Bumper Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Top Kart Video Demonstration

Seat Module

EV Kart Manual

PURDUE UNIVERSITY

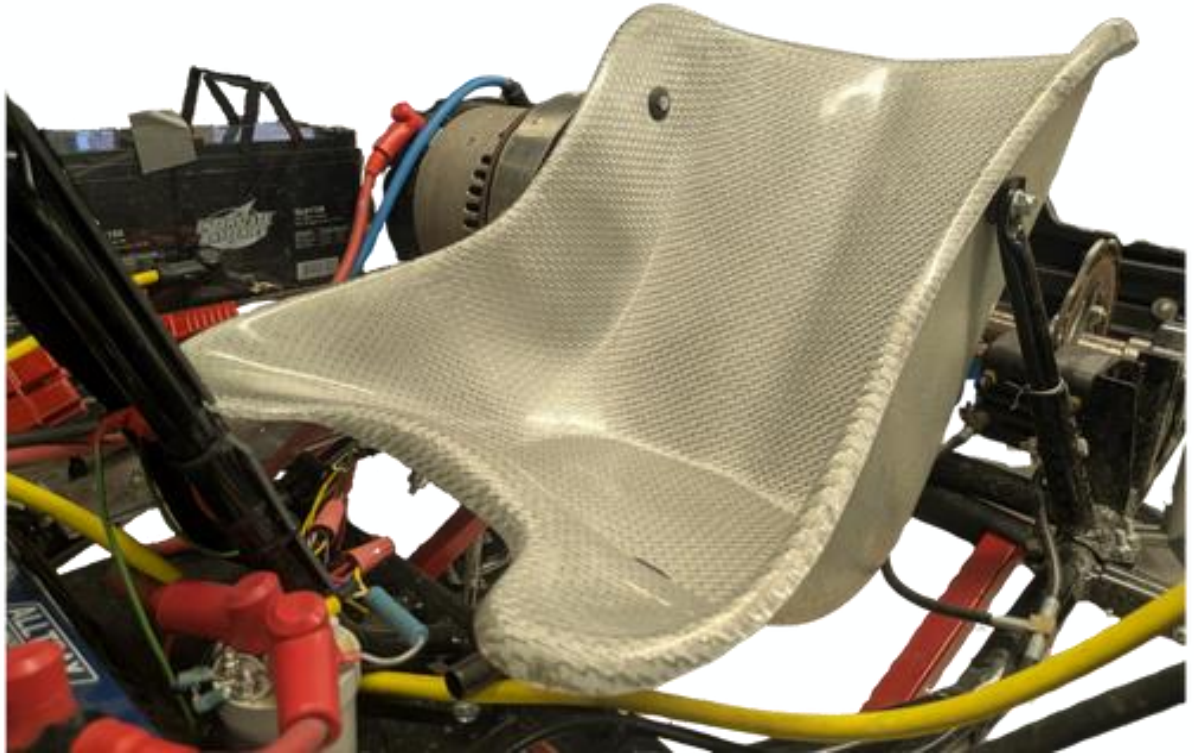
EPICS AT PURDUE

Table of Contents

Overview

This module will be divided into steps:

1. Aligning the Seat
2. Securing the Seat



Tools

Required Tools for Module

1. Tape Measure
2. Power Drill with 5/16" Bit
3. 11mm Wrench

1.

2.

3.

Parts

Seat

Spacer D.40x20

Seat Mounting Kit

Large Flat Washer M6

Step 1: Aligning the Seat (0:05 - 0:48)

Seat Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Seat Jig

1.1

1. Secure a flat plate on the bottom of the frame to support the seat

Seat Jig

1.2

1. 2x4 boards are a common method if a seat jig is not available. Place additional objects (5-15mm high) on top for preferred height

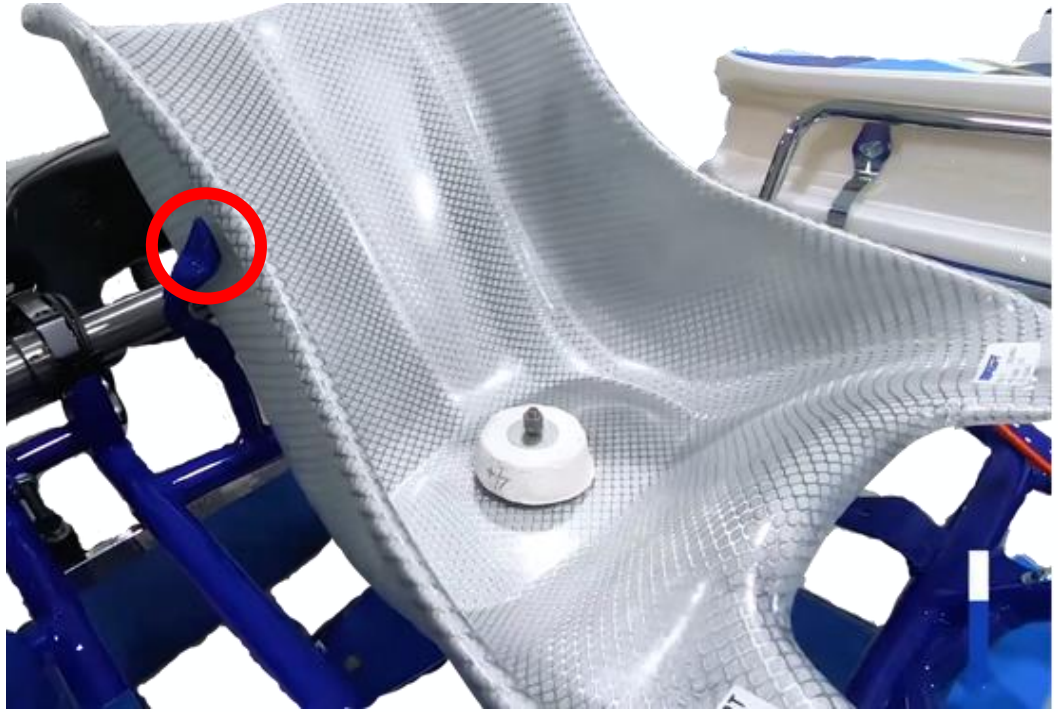
***Note** : This part will be removed after the seat is installed

Placing the Seat

Seat

1.3

1. Set the seat on support and between frame struts. Seat should be snug with about 2-3mm of space on either side



Aligning the Seat

Tape Measure

Seat

1.4

1. Measure distance from chassis front rail to lip of seat edge
    - Use factor measurements recommended for your chassis model to start

Step 2: Securing the Seat (0:48 - 2:29)

Seat Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Securing the Seat

Power Drill

2.1

1. Drill side of seat hole. Firmly grip seat to keep from moving during drilling

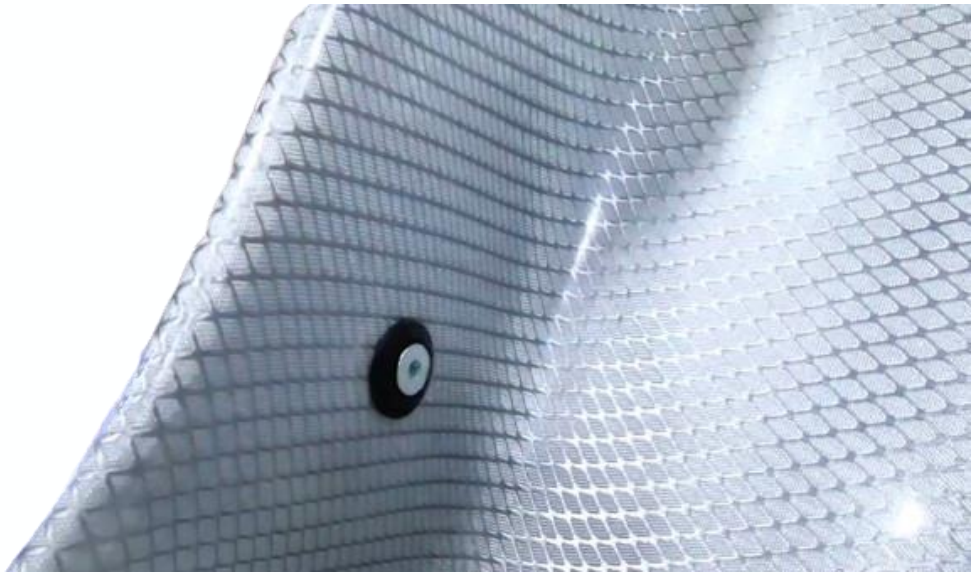
Securing the Seat

Seat Mounting Kit

2.2

1. Insert bolt assembly to hold seat in position. Don't tighten just yet

2. Repeat steps 4 and 5 on the opposite side of the seat



Securing the Seat

Seat

2.3

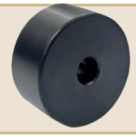
1. Bend lower mount tabs adjusting flush with contour of seat bottom

Securing the Seat

Seat Mounting Kit

Large Flat Washer M6

Power Drill



D.40x20 Spacer

Seat

2.4

1. Insert your seat spacers to fit between the frame tab and seat, then drill a hole up through the seat

2. Insert bolt assembly for both sides of the bottom section of the seat

Securing the Seat

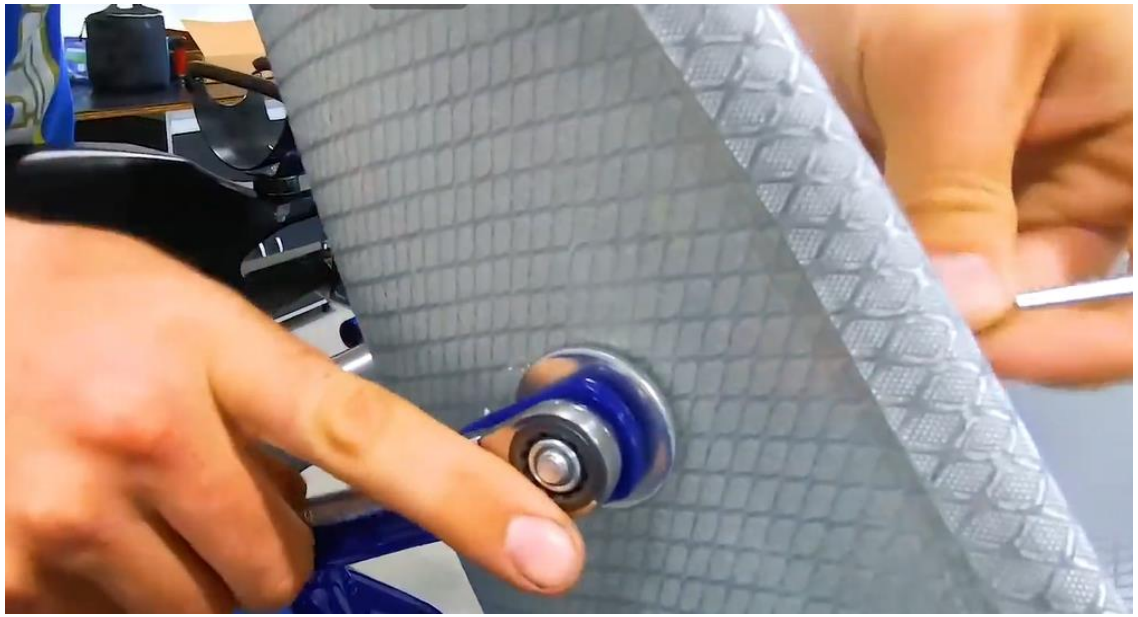

11mm Wrench


Seat

2.5

1. Insert your seat spacers to fit between the frame tab and seat, then drill a hole up through the seat

2. Insert bolt assembly for both sides of the bottom section of the seat



Securing the Seat

11mm Wrench

2.6

1. Tighten bolt assemblies attached to lower seat supports on both sides

Appendix and References

Seat Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Top Kart Video Demonstration

Drivetrain & Electronics Module

EV Kart Manual

PURDUE UNIVERSITY

EPICS AT PURDUE

Table of Contents

Table of Contents

Overview

This module will be divided into **12** steps:

Step 1: Download and print installation guide

Step 2: Preparing Floor pan with template guide

Step 3: Installing Floor pan

Step 4: Install controller and contactor components

Step 5: Mounting On/Off kill switch

Step 6: Mounting harness and connecting wires

Overview

This module will be divided into **12** steps:

Step 7: Build and install E Stop switch

Step 8: Install battery and connect wires

Step 9: Install throttle potentiometer

Step 10: Installing motor mount and motor to chassis

Step 11: Installing drivetrain components

Step 12:Detail finish your wiring harness

Tools

Required Tools for Module

1. Electrical tape
2. Drill
3. Drill Bits (6MM)
4. Allen Wrenches (3MM, 4MM, 5MM, 6MM, 8MM)

1.

2.

3.

4.

Tools continued

Required Tools for Module

5. Wrenches (8MM, 10MM, 13MM,14MM)
6. Zip-Ties
7. UNIBIT
8. Phillips Screwdriver

5.

6.

7.

8.

Tools continued

Required Tools for Module

9. Socket Wrench with 10MM Socket
10. Flush Cut Pliers
11. Sharpie Marker
12. Adjustable Wrench

9.

10.

11.

12.

Tools continued

Required Tools for Module

13. 1/8” Allen Wrench
14. Chain Break Tool
15. Sniper Laser Chain Aligner

13.

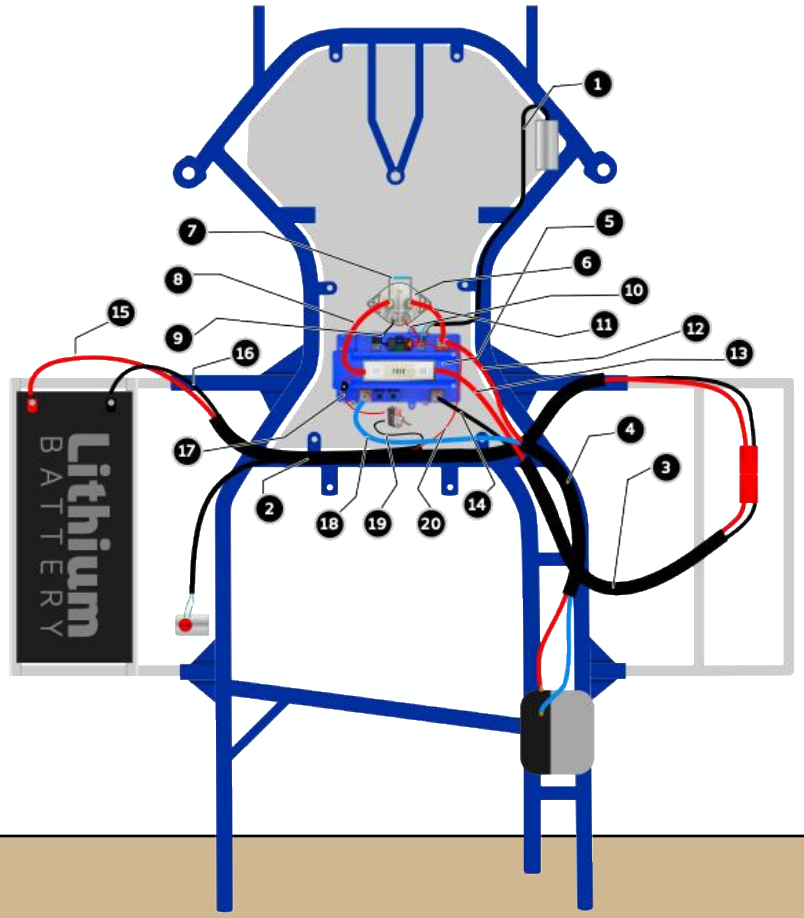
14.

15.

Parts

Wiring Diagram

Alltrax SR48300 System / 48V LiTime Lithium Battery



Wiring Diagram Index

Alltrax SR48300 System / 48V LiTime Lithium Battery

1. Throttle Potentiometer Wire to Alltrax SR48300 (J4 & J5 Terminals)
2. Harness A
3. Harness B.1
4. Harness B.2
5. Alltrax SR48300 Controller
6. Contactor
7. Contactor Resistor
8. RED 2G Wire from Contactor (+A1 Terminal) to Main Fuse
9. Black 16G wire from Contactor small terminal left to Controller (J1 Grey Terminal)
10. Red 16G wire from Contactor small terminal right to Controller (J1 Red KSI Terminal with spade connector)
11. RED 2G Wire from Contactor (-A2 Terminal) to Controller B+ Terminal
12. RED 2G Wire from Controller B+ Terminal to Motor (Front Side Terminal)
13. RED 2G Wire from Main Fuse to Anderson Connector Plug (Harness B.1)
14. BLACK 2G Wire from Anderson Connector Plug (Harness B.1) to Controller (B- Terminal)
15. RED 2G Wire from Anderson Connector Plug (Harness A) to Battery (+ Terminal)
16. BLACK 2G Wire from Anderson Connector Plug (Harness A) to Battery (- Terminal)
17. 5Amp Fuse Wire from Main Fuse to On/Off Killswitch.
18. BLUE 2G Wire (Harness B.2) from Controller (J7 Terminal) to Motor (Top Side Terminal)
19. BLACK 16G Wire (E-Stop Assembly) from E-STOP Switch to On/Off Killswitch
20. RED 16G Wire (E-Stop Assembly) from E-STOP Switch to Controller (J1 Red KSI Terminal with spade connector)

https://topkartusa.net/EV/resources/Frame%20with%20Wiring%20Installation_LiTime%20Battery%20EVGP.pdf

Parts

Wiring Harness Components

Alltrax SR48300 System / 48V LiTime Lithium Battery

Wiring Harness Components

Alltrax SR48300 System / 48V LiTime Lithium Battery

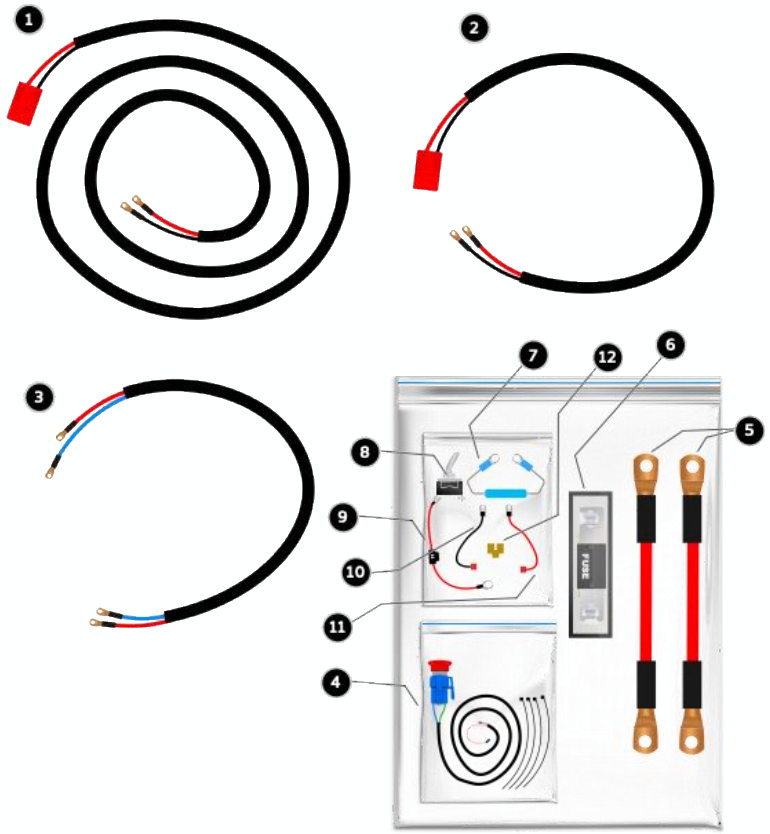


FIGURE	COMPONENT DESCRIPTION
1	Harness A
2	Harness B.1
3	Harness B.2
4	Emergency Stop Switch Assembly
5	Contactor to Main Fuse (Wiring Diagram #8) / Contactor to Controller (Wiring Diagram #11)
6	Main Fuse Holder with Fuse
7	Ohm Resistor
8	On/Off Toggle Switch
9	5Amp Fuse Wire
10	Contactor to Controller J1 Terminal Grey (Wiring Diagram #9)
11	Contactor to Controller J1 Terminal Red (Wiring Diagram #10)
12	Double Spade Connector J1 Terminal Red (Wiring Diagram #10)

https://topkartusa.net/EV/resources/Frame%20with%20Wiring%20Installation_LiTime%20Battery%20EVGP.pdf

Step 1: Download Installation Guide (0:00 –0:35)

Drivetrain & Electronics Module

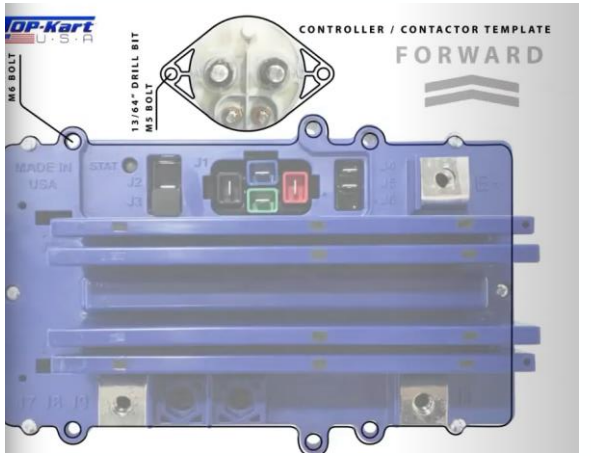
PURDUE UNIVERSITY

EPICS AT PURDUE

Step 1

1.1

Download and print the Controller & Contactor Installation Guide.



Step 2: Preparing Floor Pan with Template Guide (0:41 – 2:26)

Drivetrain & Electronics Module

PURDUE UNIVERSITY

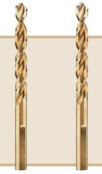
EPICS AT PURDUE

Step 2

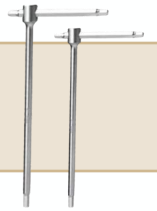
2.1

Electric tape

Drill



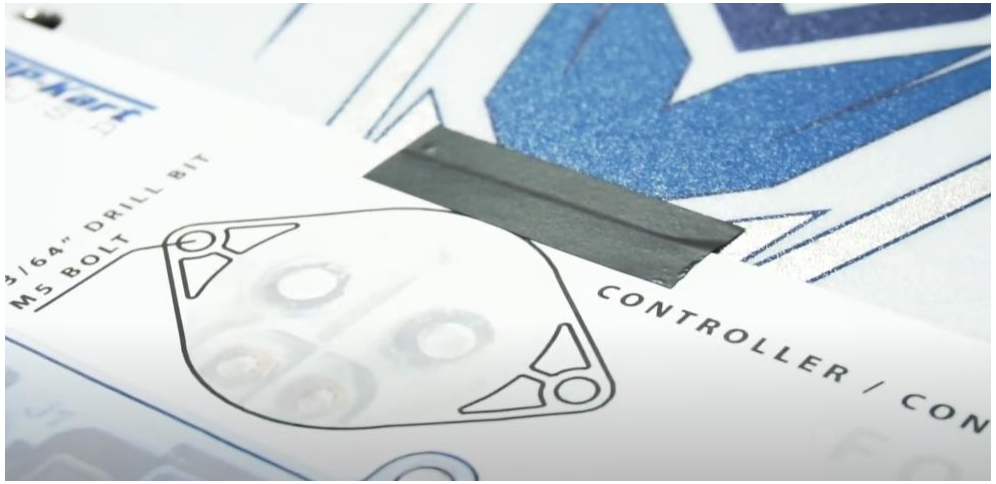
Drill Bits



Allen Wrenches(3MM, 4MM)

Place the guide template on the floor pan, positioning the front sheet so that it covers approximately half of the center hole in the floor pan. Ensure the controller is centered properly on the floor pan before proceeding.

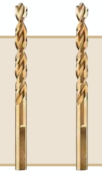
*Note : Always take proper safety precautions while using power tools



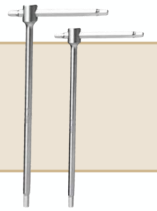
Step 2

Electric tape

Drill



Drill Bits

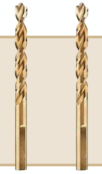


Allen Wrenches(3MM, 4MM)

2.2

When the guide template is placed at your desired location, keep it in place with small pieces of electrical tape so that it doesn't easily move.

Step 2



Drill Drill Bits (6mm)

2.3

Begin drilling the six mounting holes with the ¼” (6mm) drill bit

*Note : Always take proper safety precautions while using power tools

Step 2

Drill

Drill Bits (5mm)

2.4

Begin drilling the two mounting holes with the 13/64” (5mm) drill bit

*Note : Always take proper safety precautions while using power tools

Step 3: Installing Floor Pan (2:26 – 4:23)

Drivetrain & Electronics Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Step 3

Drill

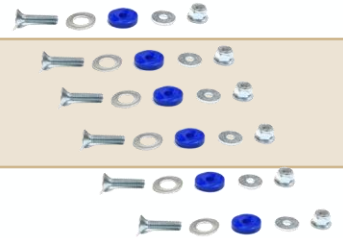
Drill Bits

3.1

Begin drilling the two mounting holes standing at the front of the kart. Lift frame up slightly to slide floor pan into place.

*Note : The floor pan will rest below the back and middle frame tabs and on top of the front most frame tabs. The 13/64 (5mm) drill Bit.

Step 3



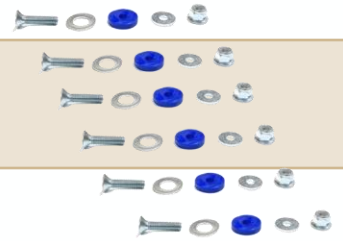
Mounting Harness

3.2

Begin installing hardware to mount floor pan to frame

- Make sure to put rubber washer between the frame and the floor pan.
- The bolts should be inserted upward through the floor pan, with the bolt head and washer positioned underneath and the nuts secured on top to maintain ground clearance.

Step 3



3.3

Mounting Harness

Secure all (6) floor pan bolt hardware so that pan is properly mounted to frame.

Step 4: Install Controller and Contactor Components (4:19 – 7:44)

Drivetrain & Electronics Module

PURDUE UNIVERSITY

EPICS AT PURDUE

Step 4

4.1

Controller (SR 48300)

Place controller onto floor pan overtop pre-drilled holes from Step 3.

Step 4

4.2

Contactor

Contactor mounting hardware

Utilize contactor mounting hardware that come within your wiring harness kit to fasten to floor pan.

Step 5: Mounting On/Off Killswitch (7:44 – 9:21)

Drivetrain & Electronics Module

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EPICS AT PURDUE

Step 5

Drill

UNIBIT

Box Wrenches
(14MM)

5.1

Take a drill with an UNIBIT and increase diameter of the hole on the frame plate between chassis uprights where the On/Off kill switch is mounted.

Step 5

Box Wrenches
(14MM)

5.2

Install On/Off switch and secure to frame.

Step 6: Mounting Harness and Connecting Wires (9:22-19:20)

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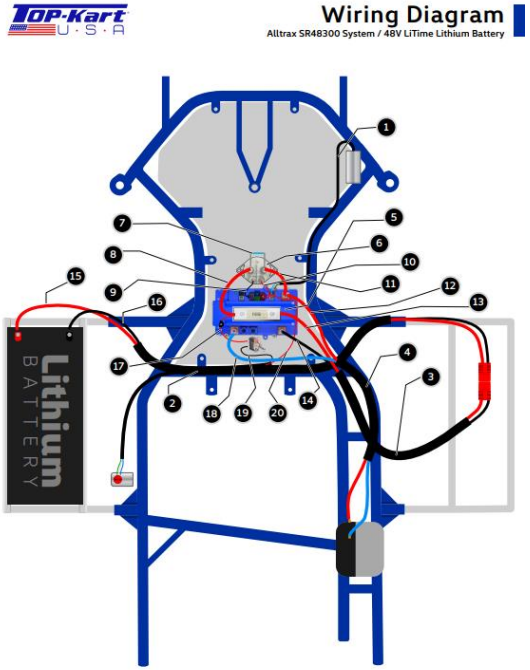
EPICS AT PURDUE

Step 6

6.1

Download the Alltrax SR48300 Wiring Diagram to reference during this portion of the project.

- Following along with the steps of this video will help with laying out your harness connecting each wire.



Step 6

6.2

Take Figure 7, the resistor, and lay it overtop the contactor.

- Can loosely screw on the nuts for the time being, but they will have to be removed in future steps.

Step 6

6.3

Take the small 16G Red and Black wires with eyelet terminal ends and place onto small studs of Contactor. Please see references number 9 and 10.

Step 6

6.4

Install the 16G Black wire onto controller terminal (J1-Grey). Please see reference 9 in wiring diagram.

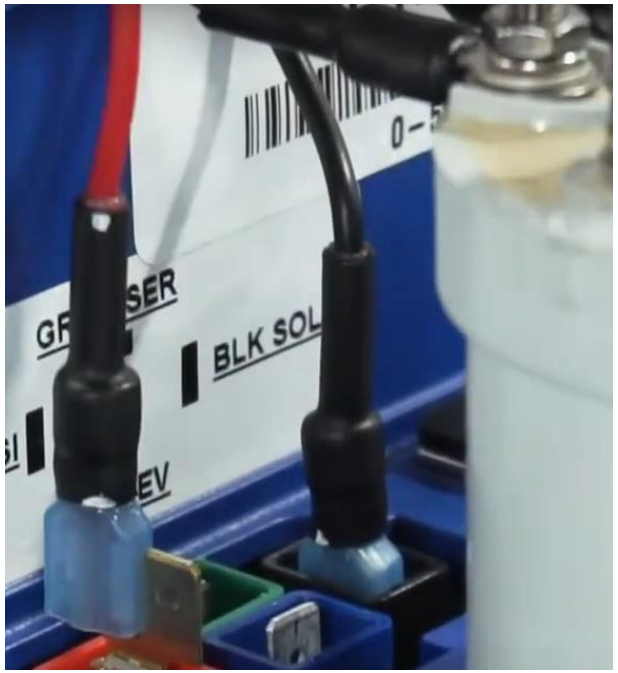
Step 6

6.5

Install the 2 spade connector onto the controller terminal (J1 Red KSI).

Connect the 16G Red wire onto one of the spades.

- Refer to number 10 in Wiring diagram.



Step 6

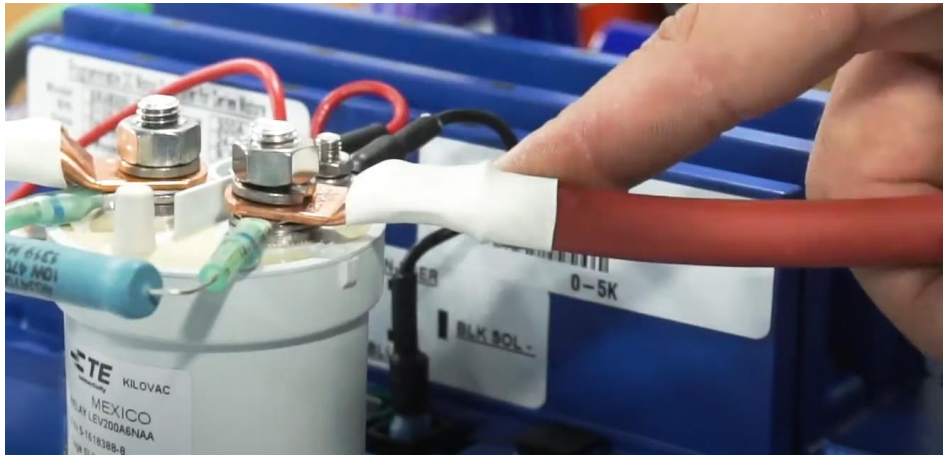
6.6

Take Figure 5 and install Red 2G wire from contactor (-A2 Terminal) to controller B+ Terminal. Please refer to number 11 in wiring diagram.

Step 6

6.7

Take Figure 5, install Red 2G wire connecting contactor to Main 250A Fuse Block. Please refer to number 8 in wiring diagram.



Step 6

6.8

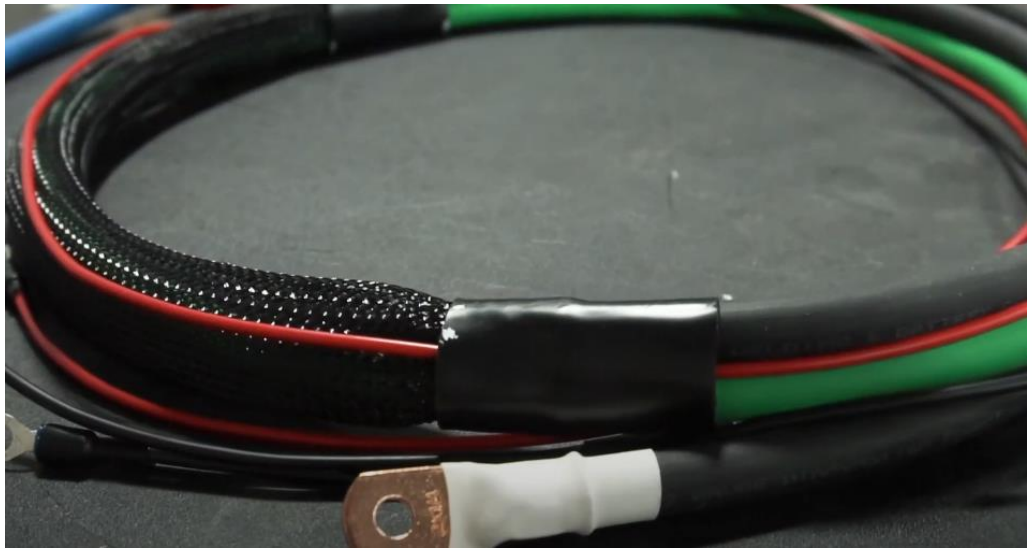
Insert the 250A Fuse into the fuse block and tighten down with your 6mm Allen wrench to secure.

***Note** : Avoid making loose connection

Step 6

6.9

Take Figure 1, and lay out across frame as shown in wiring diagram reference number 2. To keep it fairly secure at this time you may want to fasten with a couple of zip ties.

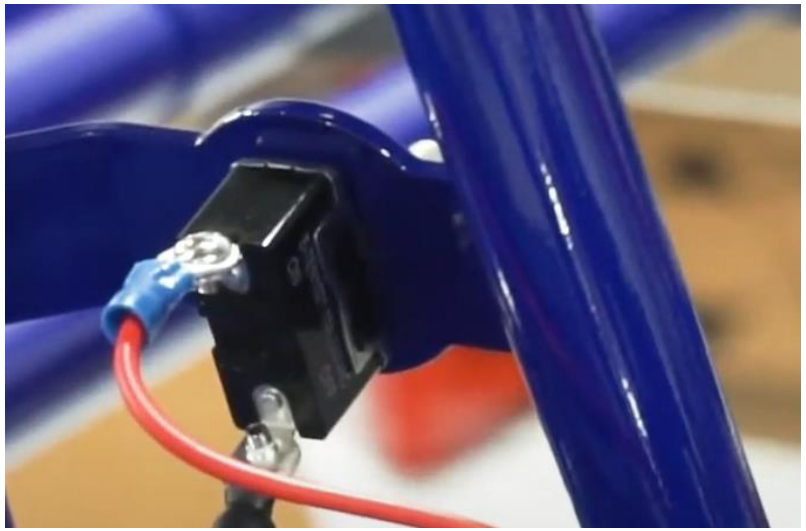


Step 6

6.10

Connect 16g Black wire (E-Stop switch wire) with small terminal end onto the lower terminal of the On/Off Killswitch mounted on frame from Step 6.

Please refer to number 19 in wiring diagram for placement.



Step 6

6.11

- Connect 16g Red Wire with 5Amp Fuse to 250Amp Fuse. Take Large Terminal End and place that under nut that holds 250Amp Fuse onto place.
- Place small terminal end onto top of On/Off Killswitch mounted on frame from Step 6. Please reference number 16 in wiring diagram for placement.

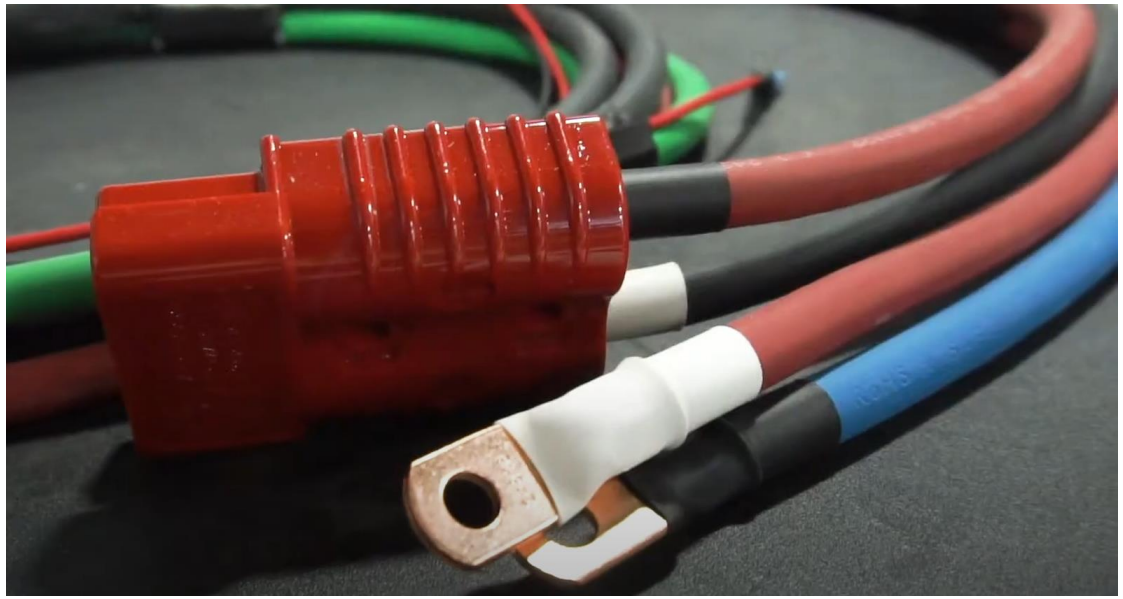
Step 6

6.12

- Connect 16g Red Wire with 5Amp Fuse to 250Amp Fuse. Take Large Terminal End and place that under the nut that holds 250Amp Fuse into place.
- Place small terminal end onto top of On/Off Killswitch mounted on frame from Step 6.
  Please refer to number 17 in wiring diagram for placement.

Step 6

- Take Figure B (Harness B), and lay out across frame as shown in wiring diagram reference number 3.
- To keep it fairly secure at this time you may want to fasten with a couple of zip ties.



Step 6

6.14

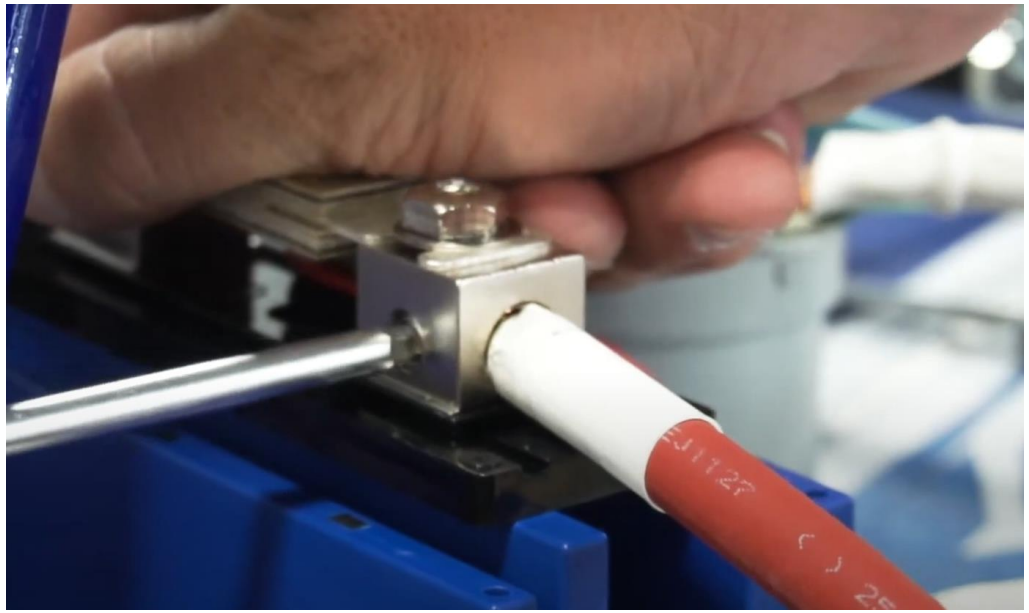
- Connect the red 2G wire from Harness B to the Alltrax Controller (B+ terminal) as shown in wiring diagram 12.

- Remove the wire from step 6.7 and attach both wires to this terminal. The other end will be connected later, after the motor installation

Step 6

6.15

Connect Red 2G Wire from Harness B with stripped wire end into available open terminal of the 250Amp Fuse Block and secure wire.
Please refer to number 11 in wiring diagram for placement.



Step 6

6.16

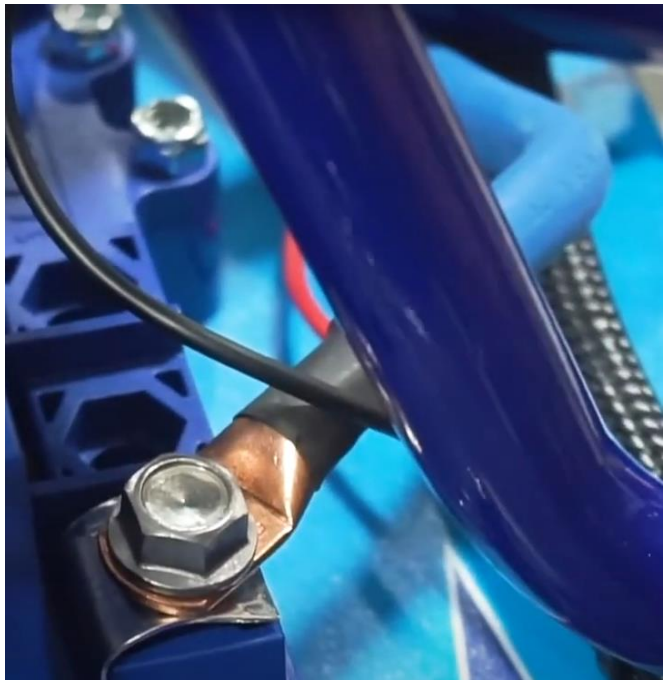
Connect Black 2G Wire from Harness B1 Anderson Plug with terminal end to Alltrax Controller (B- Terminal).
Please refer to number 14 in wiring diagram for placement.

Step 6

6.17

Connect Blue 2G Wire from Harness B2 with terminal end to Alltrax Controller (J7 Terminal).
Please refer to number 17 in wiring diagram for placement.

*Note : The other end of this wire will be installed on a later step after motor is installed onto the kart.



Step 7: Build and install E Stop Switch (19:20-22:22)

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EPICS AT PURDUE

Step 7

7.1

Prepare the E stop switch to be placed into the E stop switch Mount brackets.

Step 7

7.2

Secure the E stop switch to mount bracket and finish assembling before mounting onto kart.

Step 7

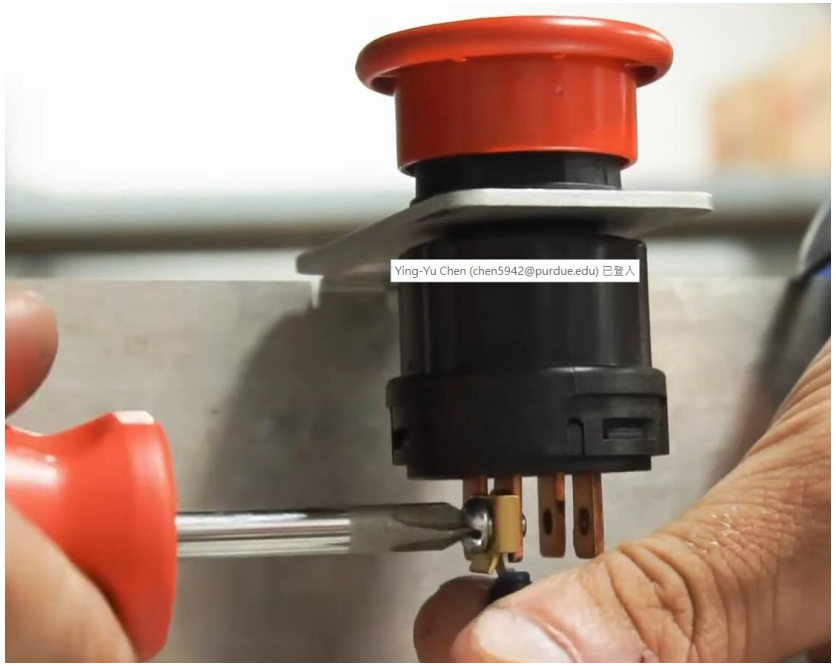
7.3

Fit mounting bracket up to rear of battery box tab and mark your desired placement to drill hole into bracket. Once finished you may secure the E stop Switch Bracket to the battery box tab.

Step 7

7.4

Once the E Stop Switch is mounted, connect the red and black 16G wires with terminal eyelet ends. Be sure that you have both wires connected on the same side of the E Stop switch.



Step 8: Install Batteries and Connect Wires (22:22-25:55)

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EPICS AT PURDUE

Step 8

8.1

Insert Battery into the left side of the kart battery box. Remove the battery terminal hardware from all terminals to prepare for mounting wiring to each battery.

Step 8

8.2

Take Harness A Red 2G wire and install onto battery (+ Terminal).

Step 8

8.3

Take Harness B.1 Black 2G wire and install onto battery (- Terminal).

Step 9: Install Throttle Potentiometer (22:22-35:32)

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EPICS AT PURDUE

Step 9

9.1

Remove the components from hardware bag that has the throttle pot mounting bracket and connect the rod with heim joints.

Step 9

9.2

Assemble and connect the Throttle Potentiometer onto the mounting bracket with the provided hardware

Step 9

9.3

Move the throttle pot mount assembly over to the go kart and test-fit into position. Once desired location, mark holes with a marker.

Step 9

9.4

Once marked, drill the mounting holes with the ¼” bit.

Step 9

9.5

Take the M6 hardware and mount the throttle pot assembly to the floor pan.

Step 9

9.6

Run the wires coming out of front of throttle pot long chassis frame rail nice and clean back towards the Alltrax controller to plug the two wires into the J4 and J5 Terminals.

***Note** : It does not matter which wire goes onto which terminal.

Step 9

9.7

With the provided connection hardware, attach the threaded tie rod to the accelerator pedal.

Step 9

9.8

Attached tie rod to the throttle pot arm. Typically is best fit at one of the upper two holes.

Step 9

9.9

Adjust threaded rod forward or backward to move pedal to desired position. Once placement is where you want, secure the m6 nuts against the Heim joints so that it fastens and will not move.

Step 9

9.10

Install and adjust accordingly the acceleration pedal stop bolt to the frame at desired position.

Step 10: Installing Motor Mount and Motor to Chassis (35:32-42:13)

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EPICS AT PURDUE

Step 10

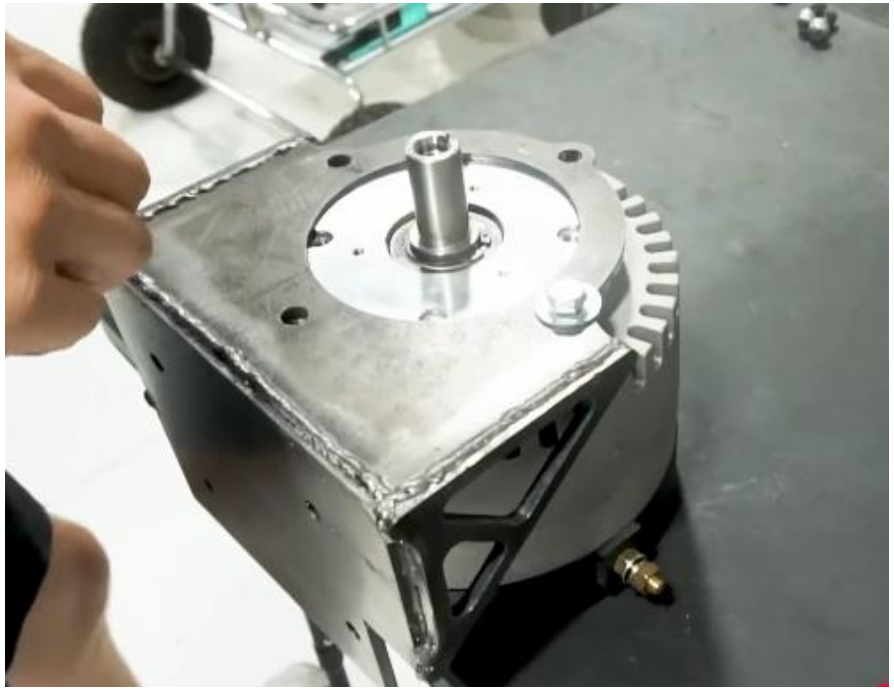
10.1

Lay motor onto table with the shaft facing straight upwards. Allow 1 terminal to be facing 12 o'clock and the other facing 3 o'clock.

Step 10

10.2

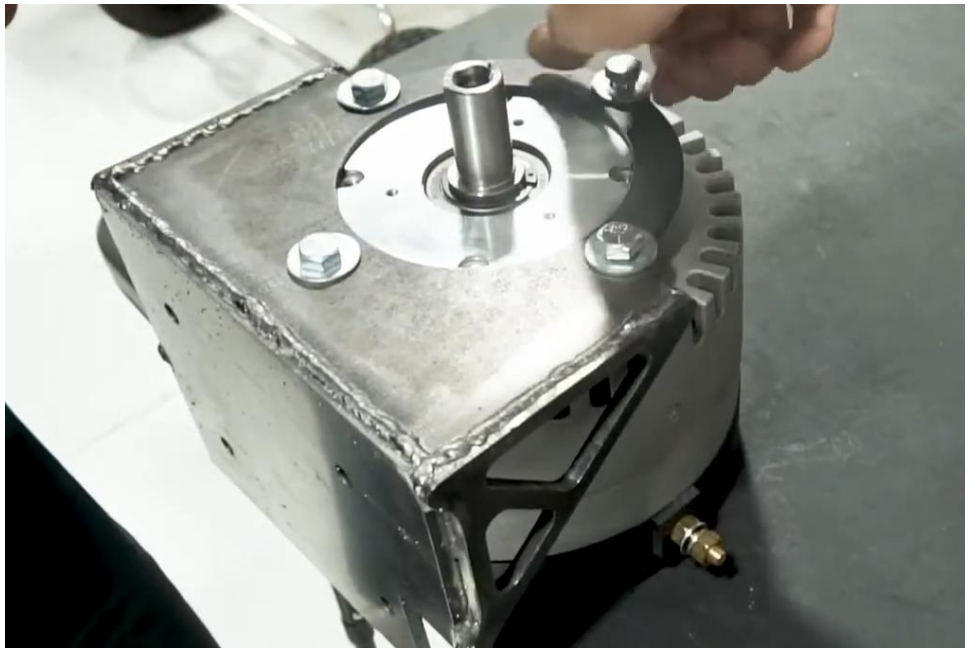
Bring edge of motor to end of table. As you lay the upper mount plate onto the top of motor it overhangs so that will need room to hang off edge of work bench to provide nice and easy fitting.



Step 10

10.3

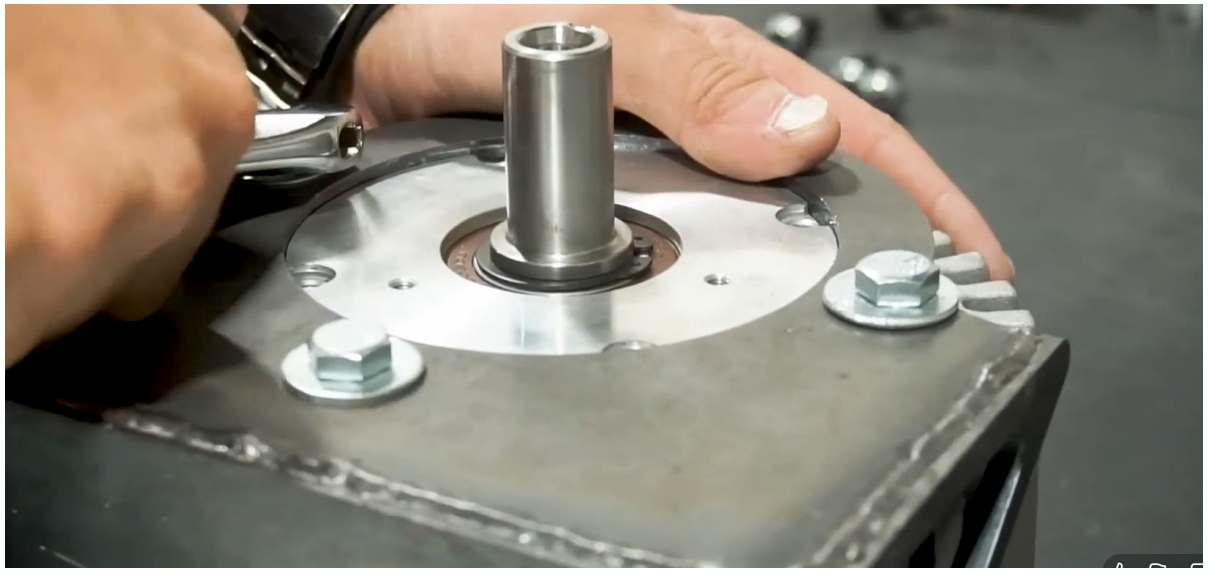
Once upper motor mount is positioned with all holes aligning overtop motor begin to insert the washer and bolt hardware by hand tightening into the motor.



Step 10

10.3
(Continued)

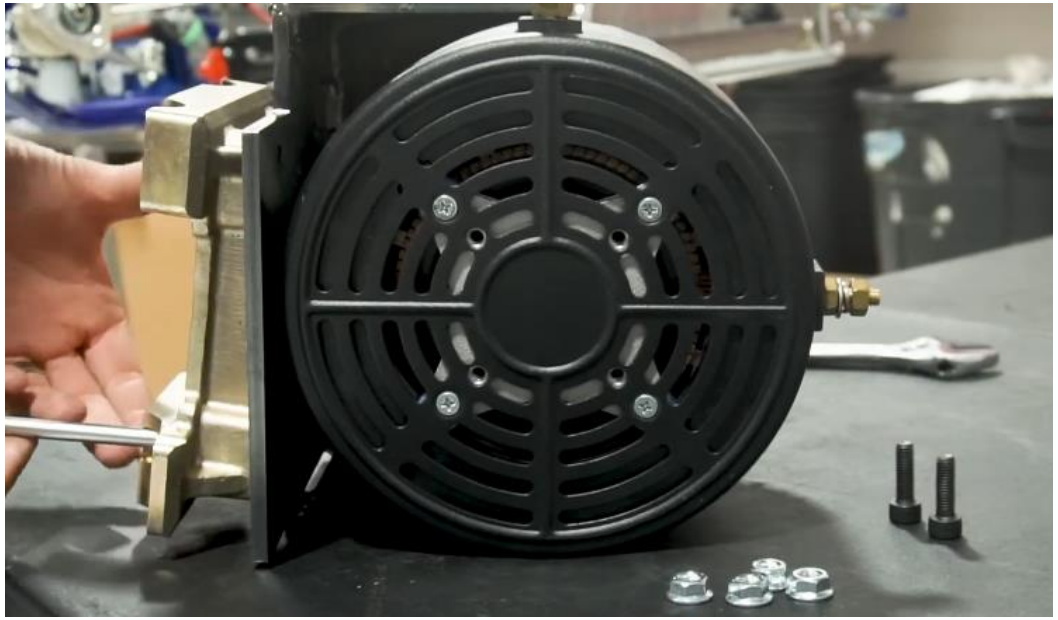
After all are finger tight, take the adjustable wrench and firmly snug the bolts to secure the mount onto motor. After they are firmly snug, make one more trip around to confirm.



Step 10

10.4

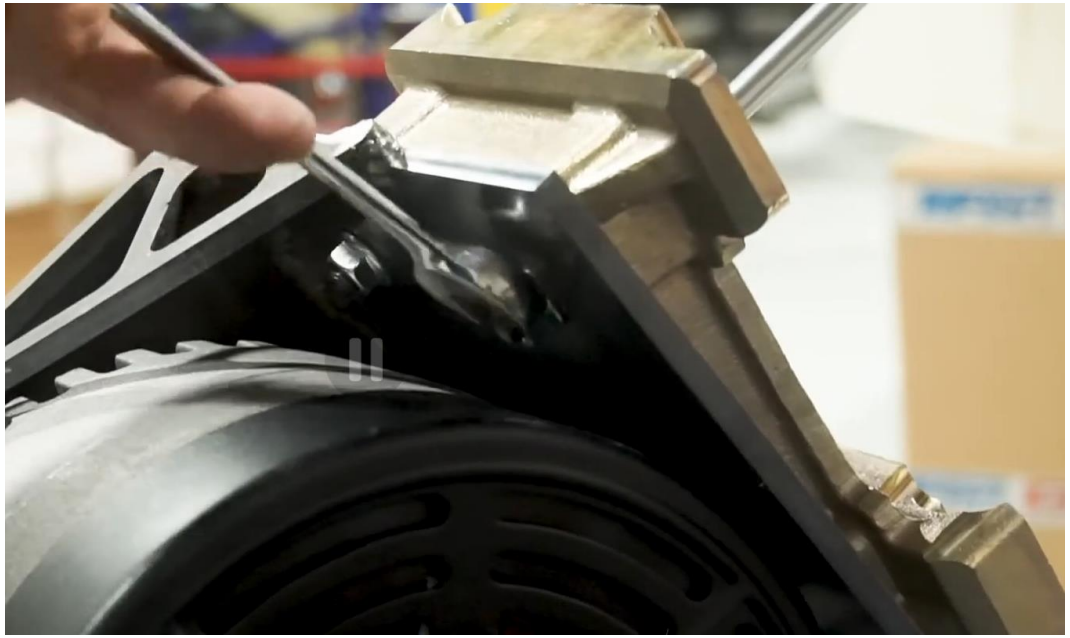
Flip motor so that you can more easily install the lower motor mount to the upper mount plate. The lower motor mount is angled so be sure that the slimmer portion is towards the direction of motor front(terminal facing forward).



Step 10

10.5

Insert the M8 hardware to connect motor mounting components.

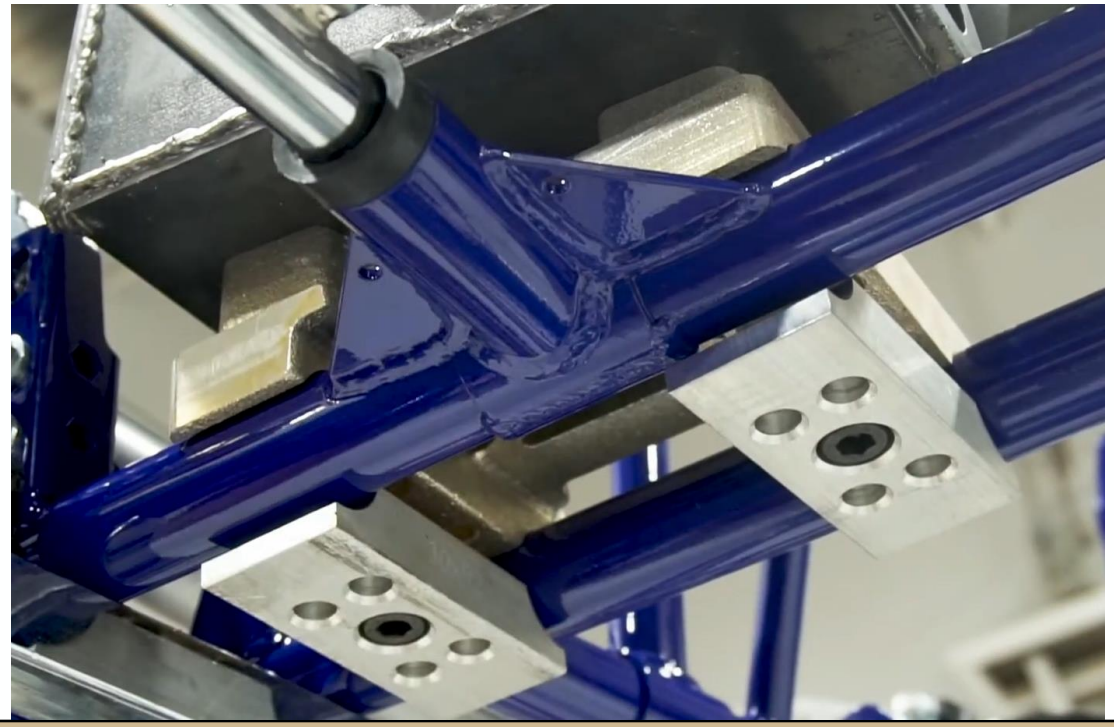


Step 10

10.6

Motor Installation Preparation

- Ensure the motor is ready for installation onto the kart.
- Have the lower motor mount clamps prepared before placing the motor on the frame.
- Installing the clamps immediately will prevent the motor from slipping or falling.
- Do not fully tighten the clamps yet; leave them slightly loose.
- This allows for forward or backward adjustment of the motor to achieve proper positioning on the frame.



Step 10

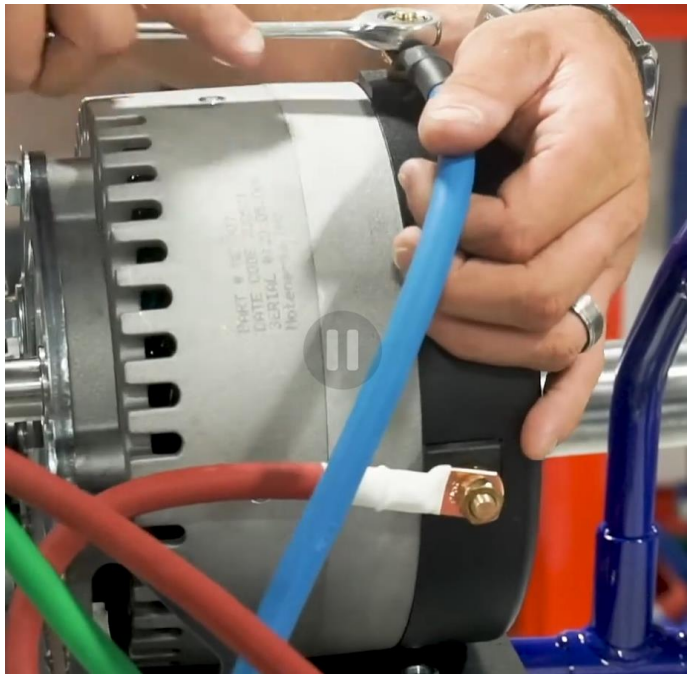
10.7

Connect Red 2G wire from controller (B+ Terminal) to motor front side terminal. Please refer to number 12 in wiring diagram for placement.

Step 10

10.8

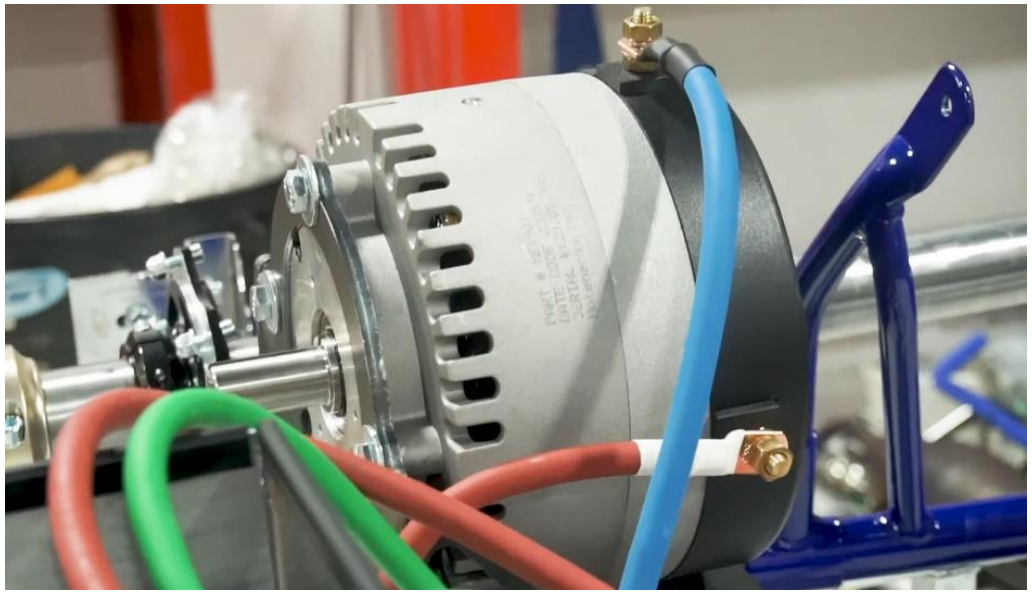
Connect Blue 2G wire (Harness B.2) from Controller (J7 Terminal) to Motor (Top side Terminal).



Step 10

10.9

Have the Anderson connectors plug into each other. Turn on switches and test that your system works. A green indicator light should flash on the Alltrax controller.



Step 11: Installing Drivetrain Components (42:13-53:15)

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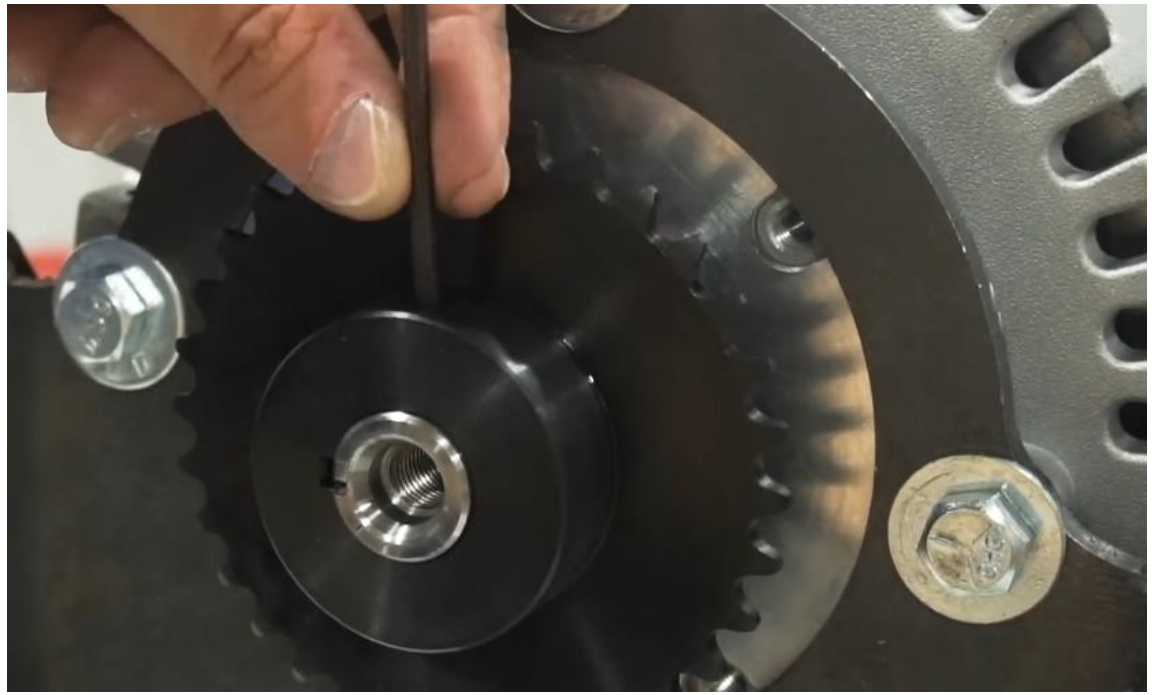
EPICS AT PURDUE

Step 11

11.1

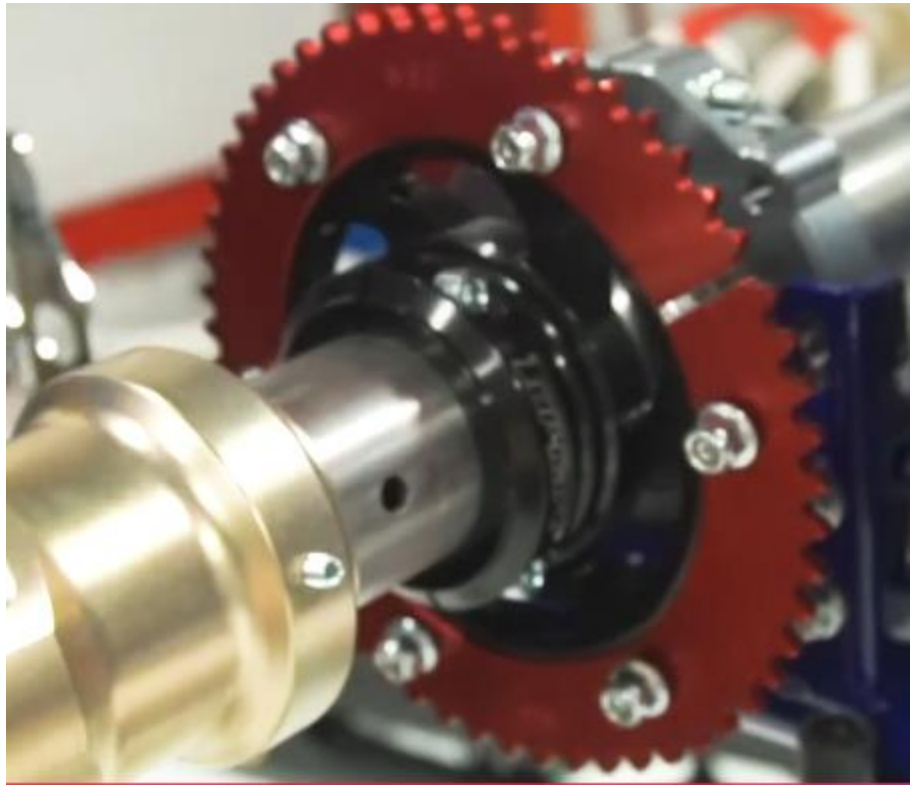
Insert the keyway into the crankshaft slot and slide the sprocket onto the shaft, aligning the keyway. Since the sprocket position is flexible, place its outer edge slightly past the crankshaft edge, then tighten the set screws to secure it.



Step 11

11.2

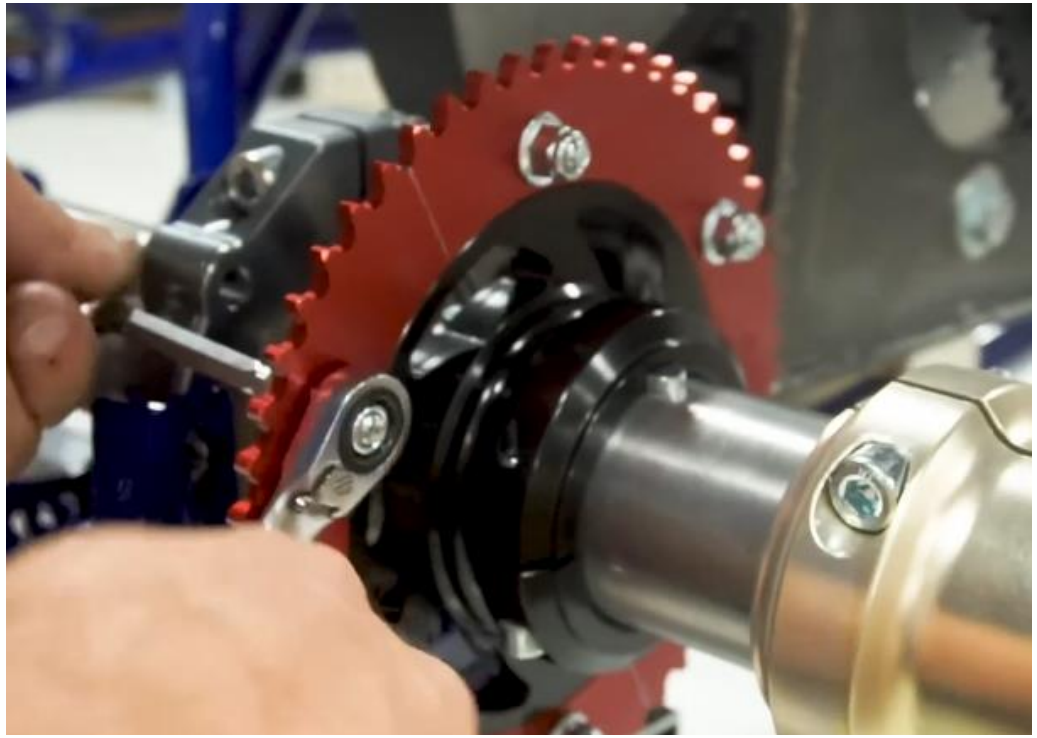
Choose the rear axle sprocket size you want. Install one half onto the carrier hub and finger-tighten the bolts until the nylock nuts stop. Repeat with the other half, making sure the indicator marks align so both halves face the same direction.



Step 11

11.3

Use a 5 mm Allen and 10 mm wrench to lightly snug all six bolts on the sprocket. Keep the halves just loose enough to adjust the gap between them—this alignment is crucial to prevent the chain from skipping.



Step 11

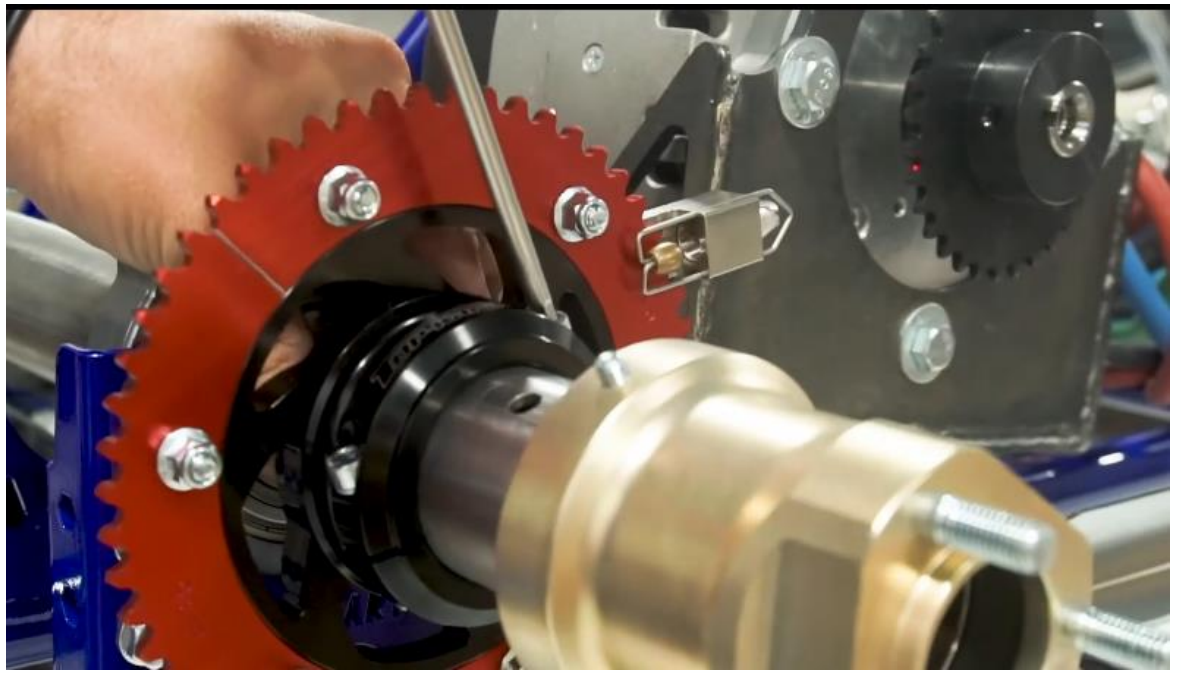
11.4

When the gap is equal on both sides, begin fully tightening the bolts typically starting with the one on each side of the line so that helps prevent from moving again. Flip to other side and repeat process. Then tighten the middle bolts per sprocket side.

Step 11

11.5

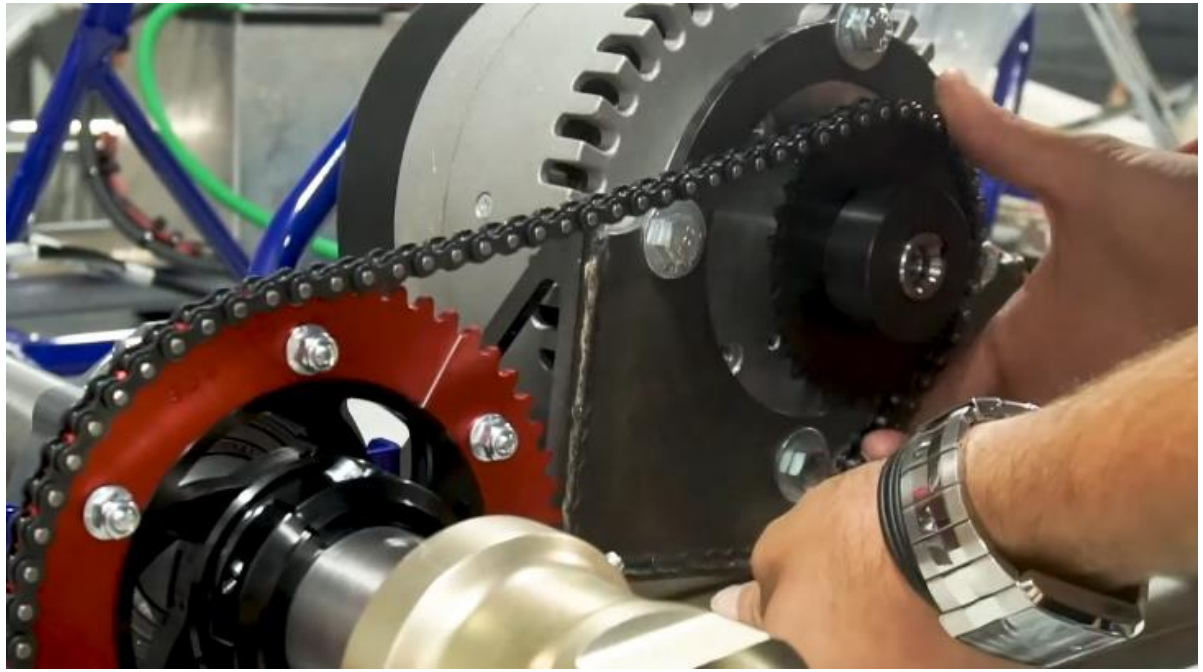
With the sniper Chain Aligner Tool, insert onto rear sprocket an adjust sprocket carrier hub to align directly with the motor driver sprocket. Once it is aligned, take the 5mm allen wrench and tighten the carrier hub to the axle to prevent from moving.



Step 11

11.6

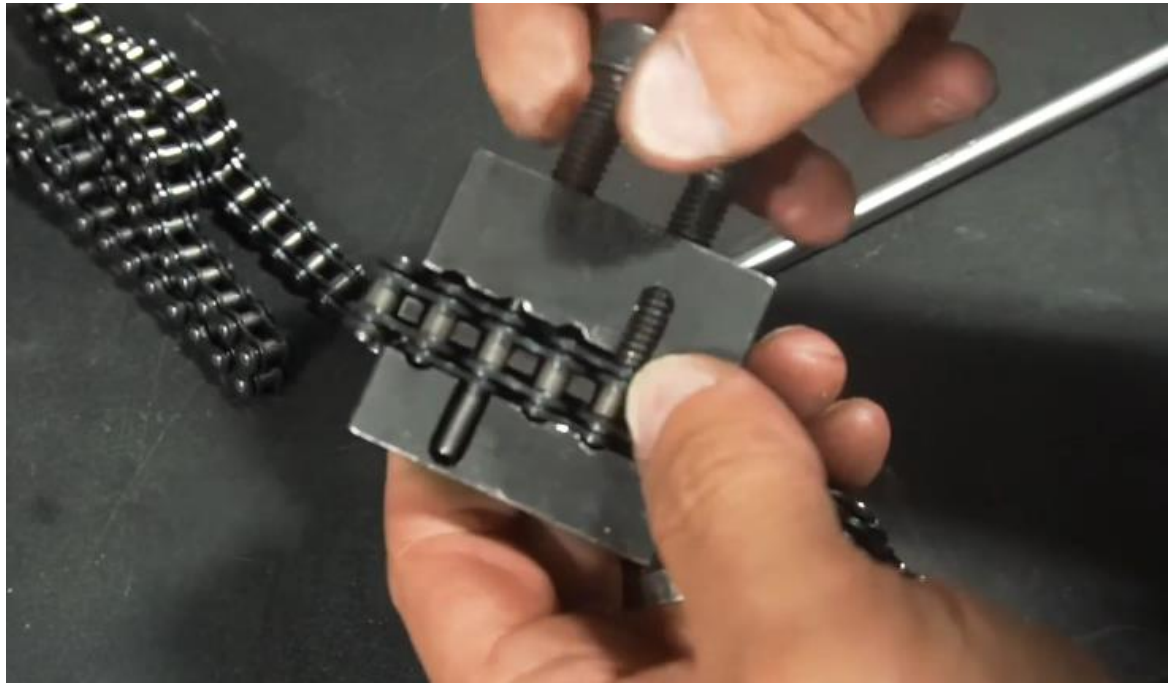
Lay the chain across both sprockets to measure how many links need to be removed, which will vary by sprocket size. Once you determine the length, use the chain breaker to remove the necessary links.



Step 11

11.7

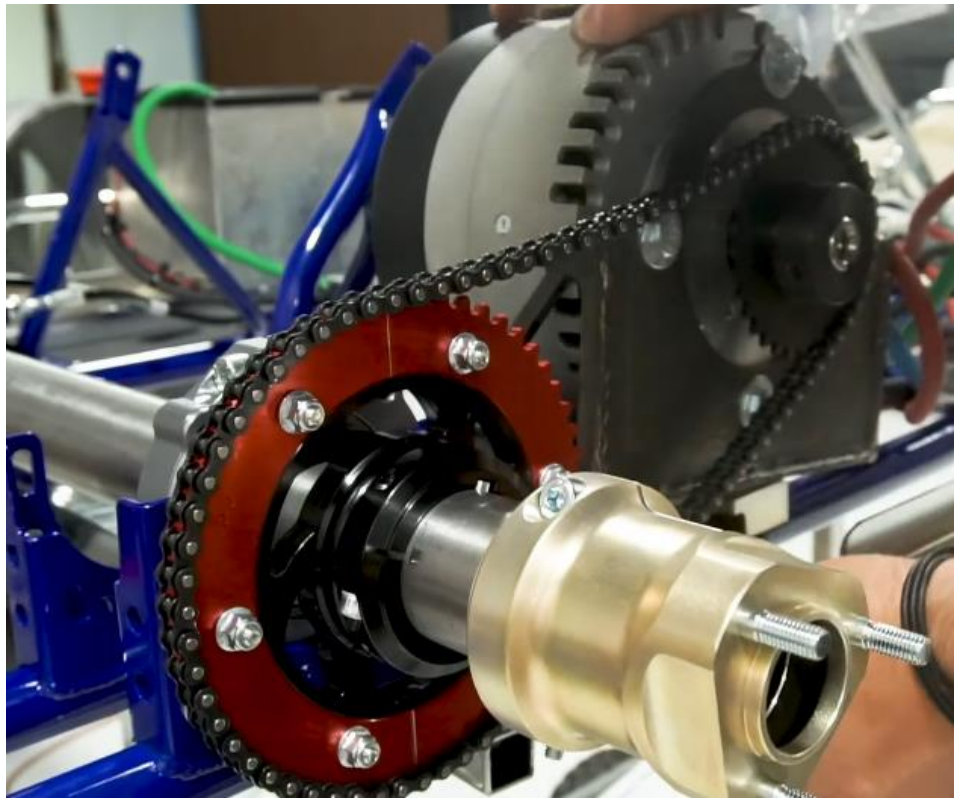
Upon linking chain back together, a pro tip is to run the pin back 90% with the bolt end, and then fine tune it with the push pin. Running it all the way into can potentially crush the side of link and then chain will not move properly.



Step 11

11.8

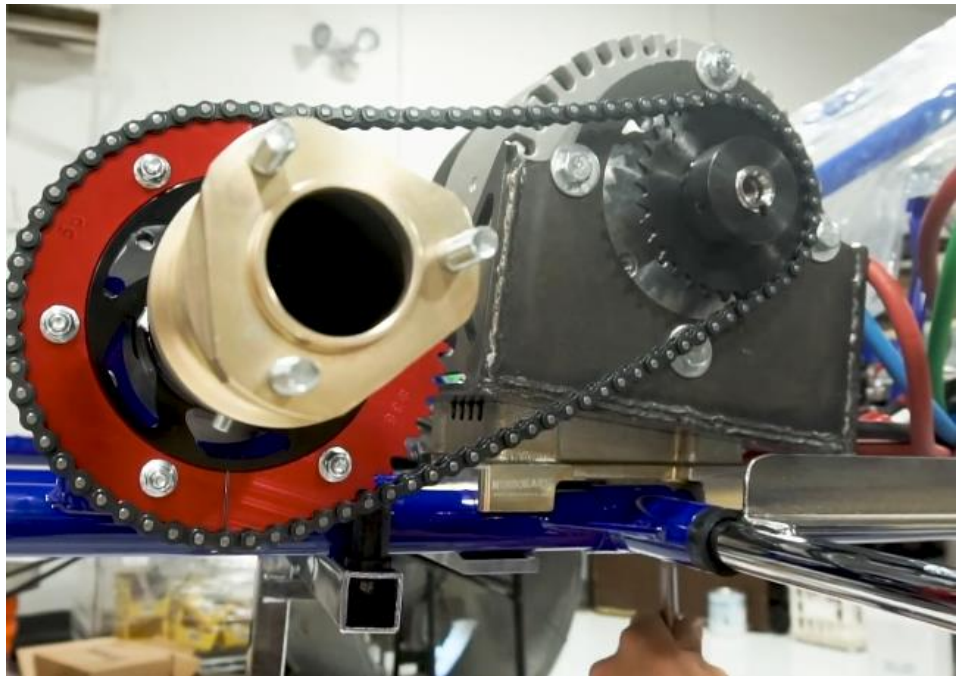
Install newly lengthened chain onto sprockets. Fit the chain onto driver sprocket first and then onto rear axle for easiest installment.



Step 11

11.9

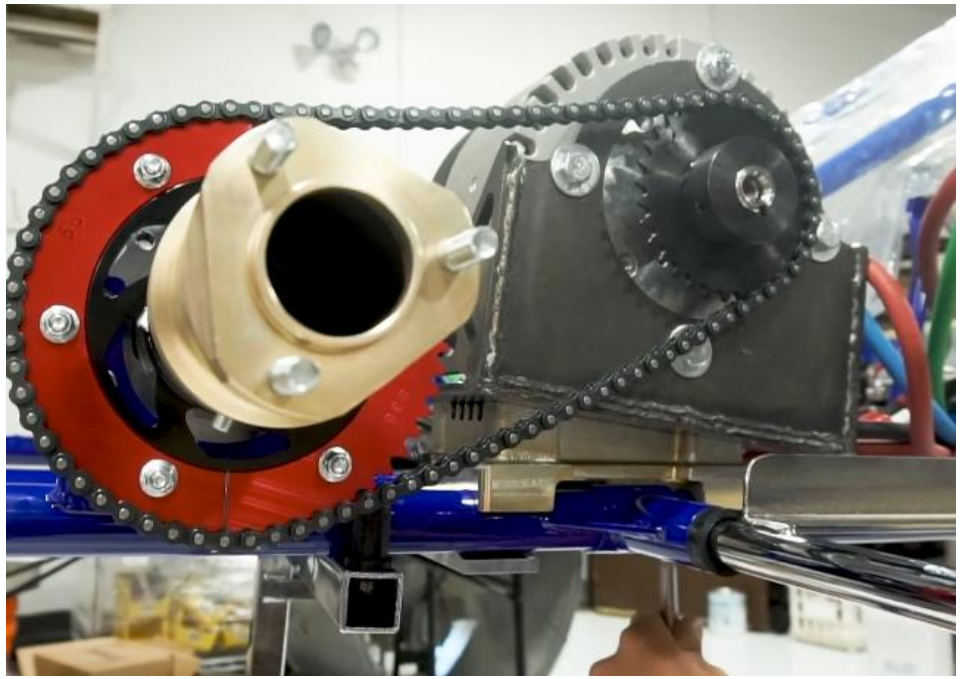
Slide the motor forward or backward to set proper chain tension. Too tight wastes power; too loose can cause the chain to come off. When the motor clamps are tight, aim for about ½ tooth of play at the top of the rear axle sprocket.



Step 11

11.9 continued

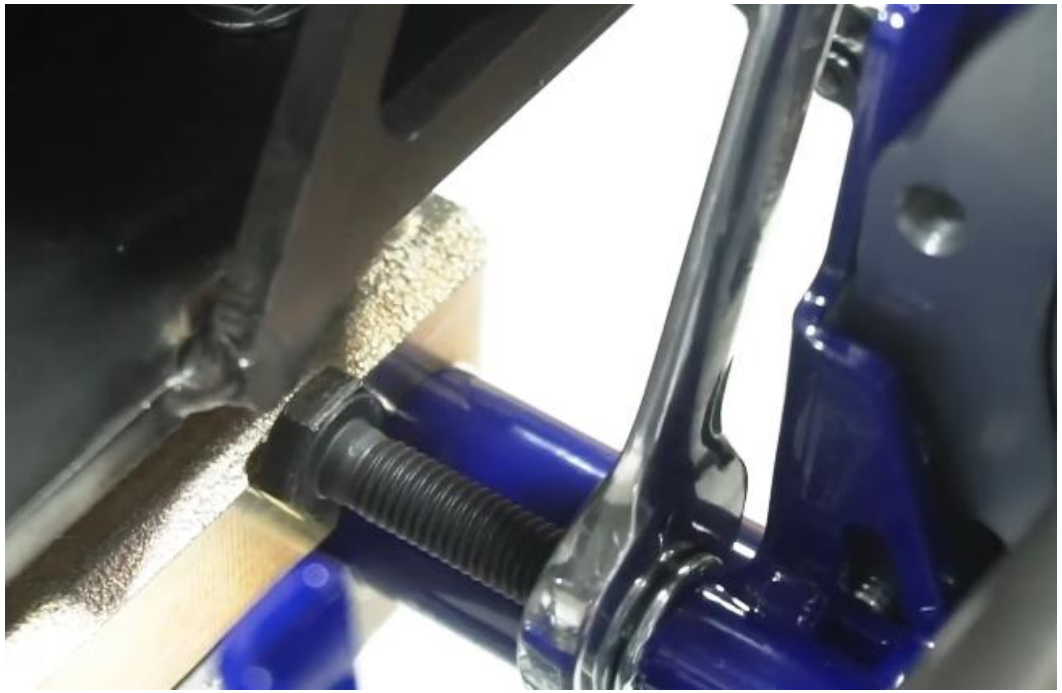
Please note, this is somewhat of a trial and error process to get the desired tension. When you tighten the lower engine clamps the chain tension may get either looser or tighter so it is possible you will need to loosen and reposition again for best tension result.



Step 11

11.10

After motor is tight and chain tension is set, run the motor stop bolt up to back of motor mount to prevent motor from sliding back if lower mount clamps are to loosen up on track by chance.



Step 12: Detail Finish Your Wiring Harness (53:15-54:45)

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EPICS AT PURDUE

Step 12

12.1

Make sure all of your electrical system wires are safely secured to the kart and none are dragging below the frame rail as that will severely cause issues with your kart system when on track. All wires need to be well insulated to pass technical inspection. Having clean wires also helps with troubleshooting if needed in the future.

Appendix and References

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Top Kart Video Demonstration