



STEM ON TRACK



COMPONENTS
2026/27

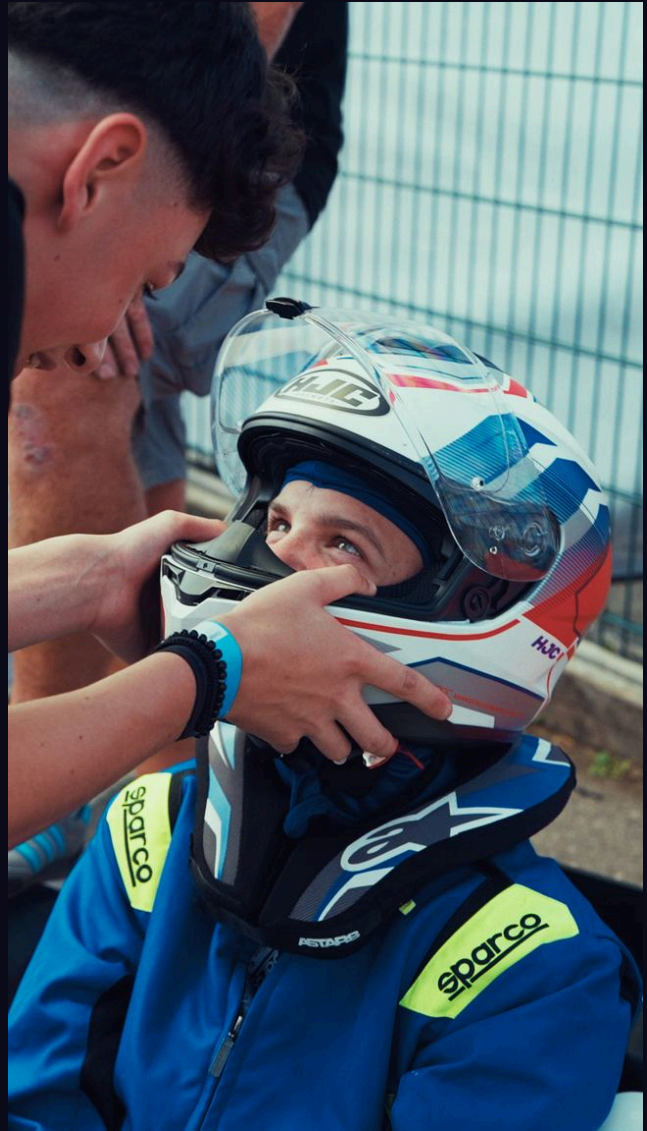
STEM
ON TRACK

WELCOME TO STEM ON TRACK

Welcome to STEM On Track. Inside this booklet you will find a complete coded list of every component included in your kart-kit, along with reference images and part descriptions. As well as some handy top-tips for a smooth build process.

YOU MUST use this checklist, alongside the self-certification form on the Race Academy platform, as soon as your delivery arrives to ensure that all components are present and accounted for; reporting any missing pieces immediately to STEM On Track. This is called, 'The Self Certification Process'.

Before your team begins building, use this guide to lay out and double check the parts required for each stage of the build. It will save time, prevent confusion and help all participants to work safely and efficiently.



KEY INFO

READ CAREFULLY

Every kit is built from real-world components, so you may notice some minor variations between your kit and the images in this booklet. This is completely normal and will not affect the build process or overall performance of your kart. Please note the following:

GENERAL POINTS

- Colour and shape may vary on a number of components throughout the kit. This is purely cosmetic and has no effect on function.
- Fixings may differ slightly. For example, some bolts may be cap-head rather than button-head (*meaning the top of the bolt is a slightly different shape). Some may appear slightly longer with a smooth section, instead of fully threaded.
- Some parts shown may be 'extra' and therefore not be required for your specific kit build, where this applies, the accompanying video will explain.
- If a component is difficult to insert, try gently scraping away a small amount of paint from the inside edge of the hole/area you're trying to thread into. If it still won't go, don't force it.
- Take care with plastic components, do not overtighten fixings into plastic parts, as they can crack.
- Extras and spares, some packs intentionally include extra items (e.g. 7x instead of 6x) as spares.
- Optional extras, such as a kart stand/trolley and additional tool-sets can be ordered separately via the STEM On Track Club Shop; this is especially recommended for larger groups or fast builds.

MODULE SPECIFIC

- Module 10: Orientation is sometimes flexible. For example, the rear bumper tabs can be manufacturer pointing up or down.
- Module 10: If you're struggling to insert the tight rear-bumper rubbers into the chassis tubing, then a quick sanding of the internal tube surface, removing any excess paint and applying a dot of washing-up liquid, should allow them to slide straight in.
- Module 15: The brake fluid bottle, if not found loose in the box, will be inside Pack 15.
- Module 17: Seats require precise fitting, measure from a flat, weighted-down base and fit spacers as needed to close any gaps.
- Dismantling 37 & 38: Engine storage, always store the engine upright and flat to avoid excess oil leaking into unwanted areas.

As always: "measure twice, cut once"... and if in doubt, refer to the build video for clarification.

COMPONENTS KEY NOTES

COMPONENT	NOTES
1b & 1c	Colour may vary
1f	Colour & shape may vary
1g	Number of grub screw holes may vary from 3 to 2
2j	Colour & shape may vary
3c	You may only have 4x grub screws (*2x for each side) — that's OK
6f	Colour may vary
7f	Colour may vary
8b	Colour may vary
9e & 9g	Colour and shape may vary
10e & 10f	Not needed in some kits
11c(L)	Can have a smooth unthreaded section
14c & 14g	Colour may vary
16b	Colour may vary
20a & 20e	May have a slight bend - that's OK
21e	May appear slightly flakey - that's OK
26c	2x spacers - Not required for some kits
Td	Appearance may differ, *looking more like (Te).

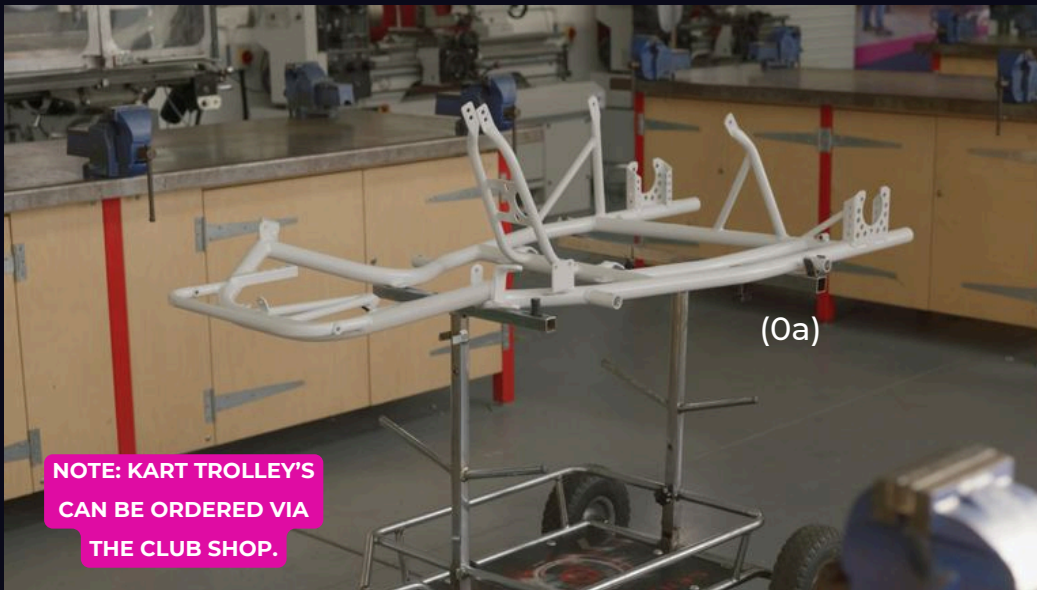
MODULE 0

Chassis & Engine

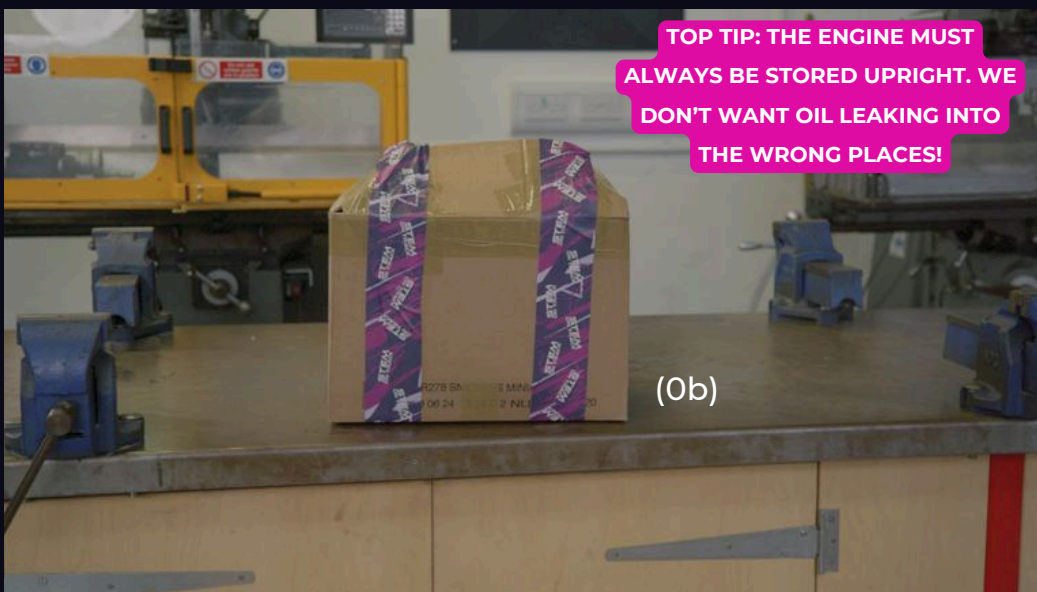
Preparing for: UNBOXING & SET-UP

Students & adults unpack and check all components of the kart, learning how to handle and store equipment safely, including brake fluid. By the end of the session, the team will have:

- A fully audited and self-certified kit
- A list of any missing components to be sent to STEM On Track
- An organised workspace ready for the build phase.



0a. 1 x STEM ON TRACK Chassis. [Chosen colour]



0b. 1 x HONDA GX160 Engine [De-governed]

MODULE 0

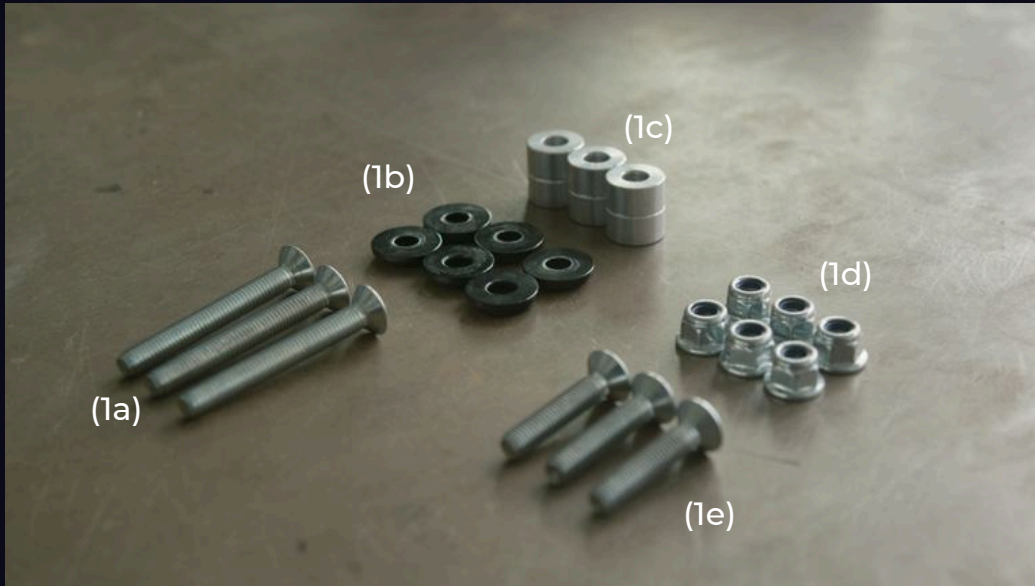
Toolbox



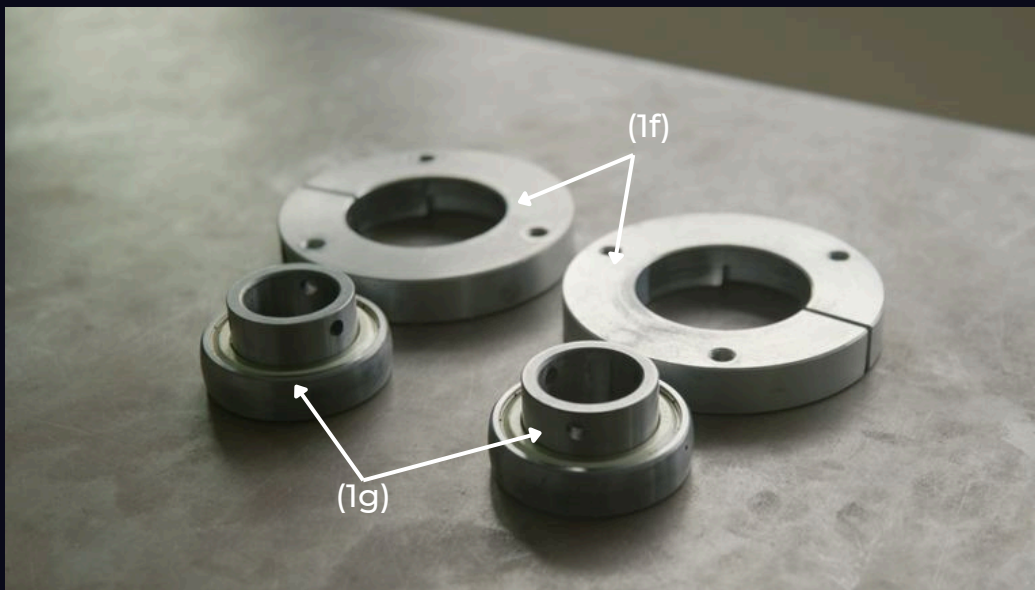
- Ta. 1 x Toolbox
- Tb. 1 x Electrical Tape (Black)
- Tc. 1 x Cable Ties (Set of 10x)
- Td. 1 x Spark Plug Spanner
- Te. 1 x Metric Box Spanner (22x23mm)
- Tf. 1 x Circlip Pliers
- Tg. 1 x Plier Snips
- Th. 1 x 10mm T-Bar
- Ti. 1 x Tape Measure
- Tj. 1 x Spanner Set
- Tk. 1 x 13mm T-Bar
- Tl. 1 x Allen Key Set

MODULE 1

Axle Bearing



- 1a. 3 x M8 Counter Sunk bolt (65mm)
- 1b. 6 x M8 Counter Sunk Washer - (narrow)
- 1c. 3 x M8 Barrel Spacer - Doubles
- 1d. 6 x M8 Flange Nyloc Nut
- 1e. 3 x M8 Counter Sunk bolt (40mm)



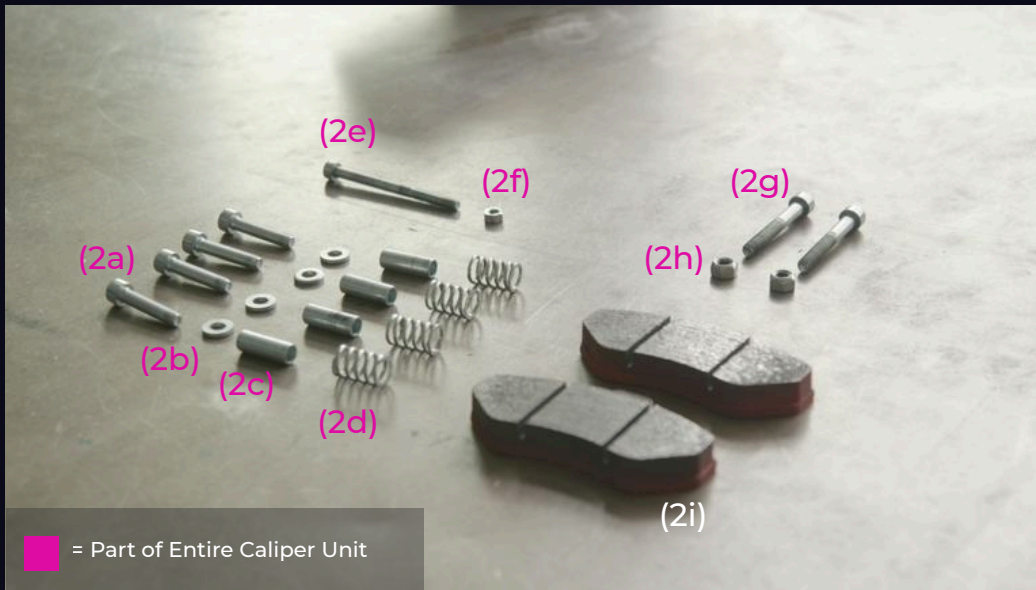
- 1f. 2 x 30mm Axle Bearing Carrier (with clamping bolt).
- 1g. 2 x 30mm Axle Bearing. .

AXLE BEARINGS: Assembly and Fitment

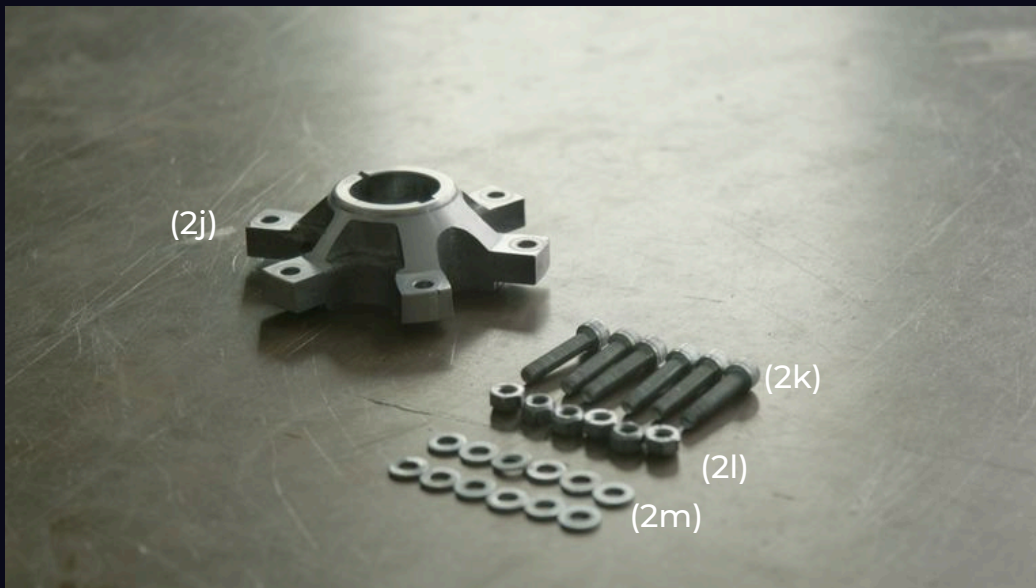
Learn to position and secure the axle bearings. Twist and place two bearings into their carriers, and attach them to the chassis hangers with bolts. Ensure the grub screw holes face inward and use the axle for leverage if needed.

MODULE 2

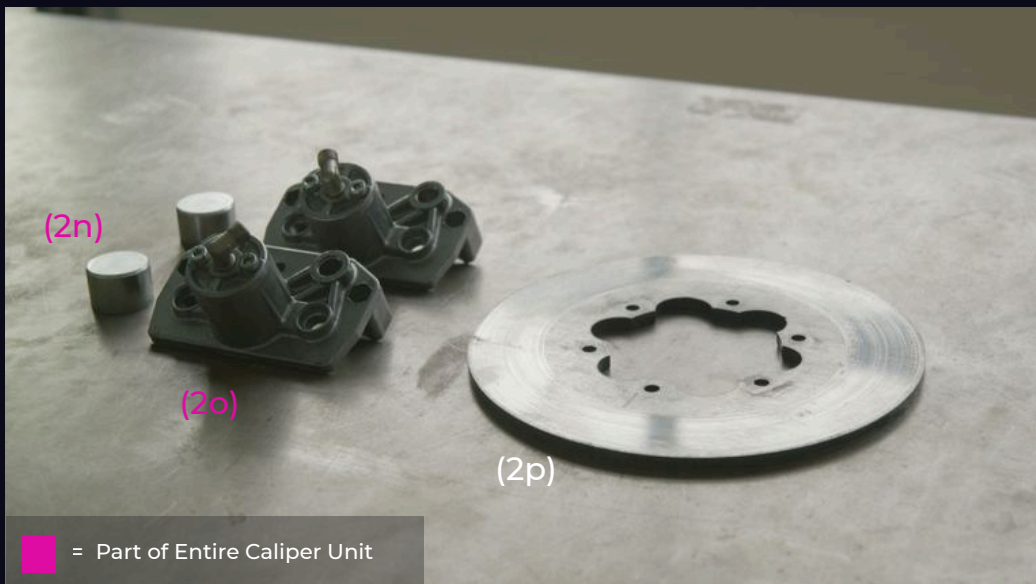
Brake Disk



- 2a. 4 × Brake Pad retaining bolt
- 2b. 4 × Brake Pad bolt washer
- 2c. 4 × Brake Pad bolt sleeve
- 2d. 4 × Brake Pad bolt spring
- 2e. 1 × Brake Pad central alignment bolt
- 2f. 1 × Brake Pad central alignment bolt nut
- 2g. 2 × Brake Caliper clamping bolt
- 2h. 2 × Brake Caliper clamping bolt retained nut
- 2i. 1 × Pair of RR Brake Pads (red)



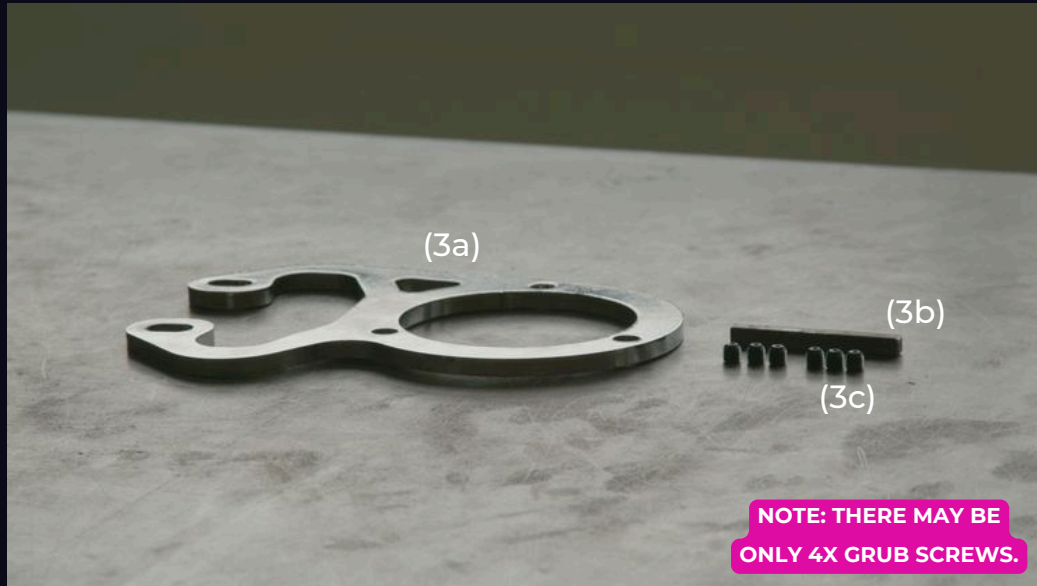
- 2j. 1 × Brake Disk Carrier
- 2k. 6 × M6 Cap Head bolt (30mm)
- 2l. 6 × M6 Self-locking Metal Nut (oval internal)
- 2m. 12 × M6 Washer (standard)



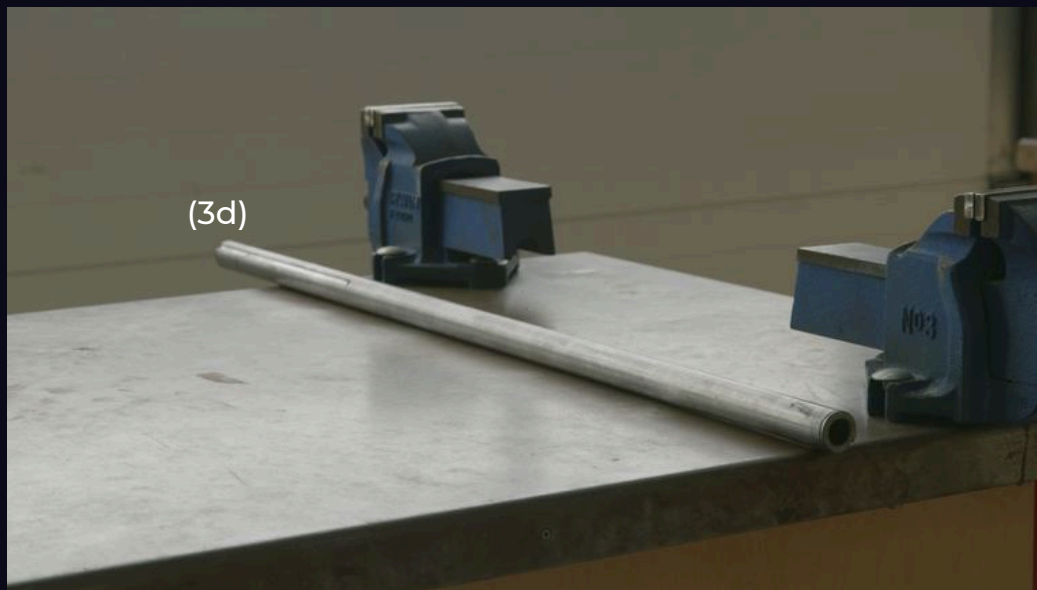
- 2n. 2 × Brake Caliper Piston
- 2o. 2 × Brake Caliper Half (with bleed nipples and elbow)
- NOTE:** Replacements above can only be purchased as half caliper units.*
- 2p. 1 × Brake Disk (non-vented)

MODULE 3

Rear Axle



- 3a. 1 x Brake Caliper Mounting bracket
- 3b. 1 x Keyway 55mm length (1mm shallower)
- 3c. 6 x (*or 4x) Grub screws



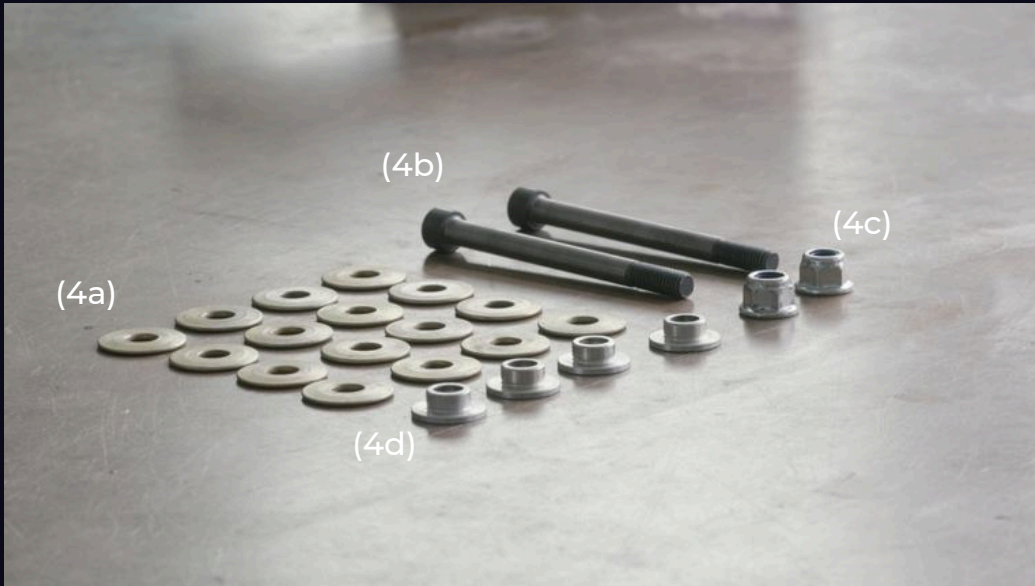
- 3d. 1 x 30mm Rear Axle

Centering the: REAR AXLE

Slide the axle through the bearings, centering it with 22.4 cm on each side. Include the brake disk, carrier, and caliper mounting bracket on the axle. Partially secure the brake disk carrier to hold the keyway in place. Center the axle, fasten with grub screws, and wrap with insulation tape and cable ties for extra security.

MODULE 4

Stub Axles

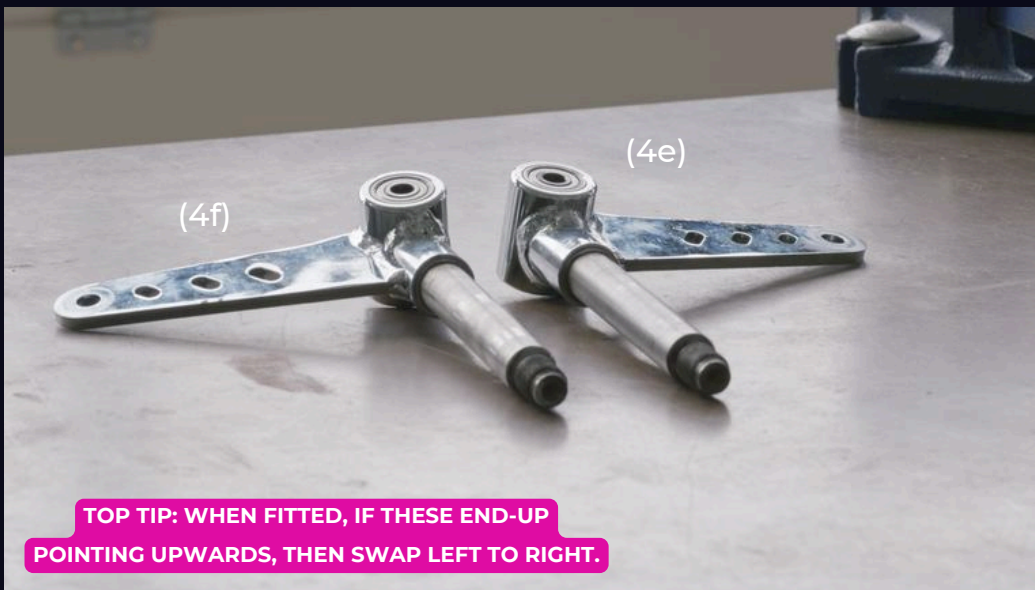


4a. 16 × Ride Height spacer
(2mm)

4b. 2 × King Pin bolt
(90mm)

4c. 2 × M8 Flange Nyloc
Nut

4d. 4 × Top Hat spacer
(7mm)



**TOP TIP: WHEN FITTED, IF THESE END-UP
POINTING UPWARDS, THEN SWAP LEFT TO RIGHT.**

4e. 1 × Stub Axle (Right)

4f. 1 × Stub Axle (Left)

Positioning the: STUB AXLES

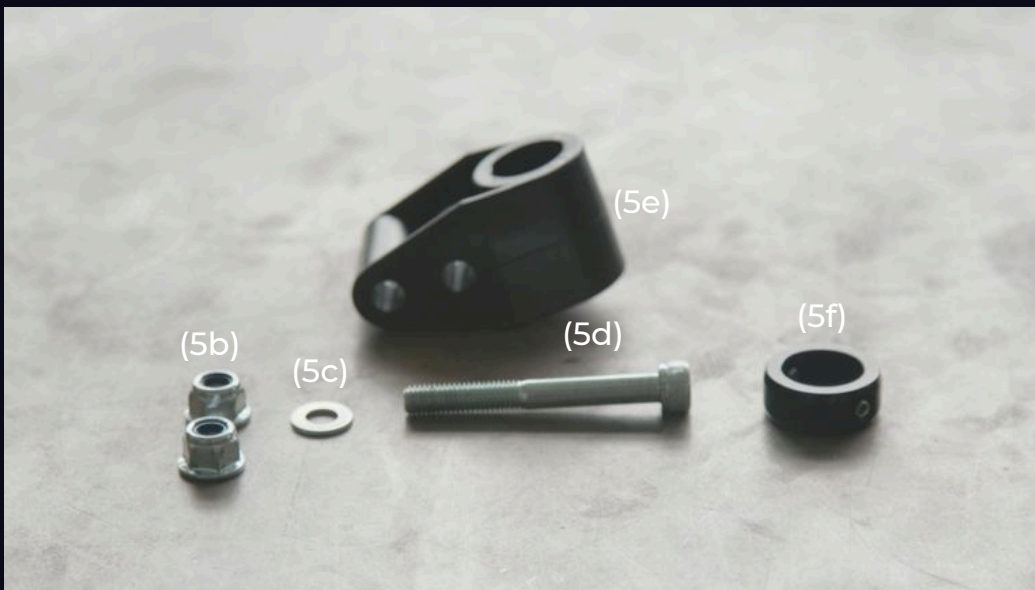
Attach left and right stub axles to the chassis using king pin bolts and ride-height spacers. Ensure proper alignment and adjust the height as necessary for ideal steering response.

MODULE 5

Steering Column



5a. 1 x Steering Column



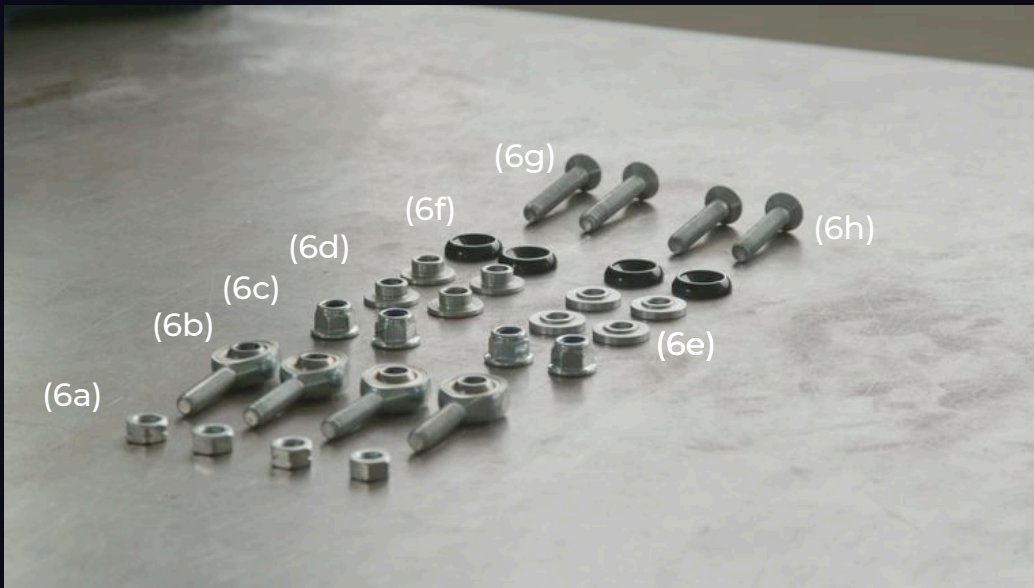
- 5b. 2 x M8 Flange Nyloc Nut
- 5c. 1 x M8 Washer
- 5d. 1 x M8 Cap Head bolt (65mm)
- 5e. 1 x Steering column central mount
- 5f. 1 x Steering column locking collar

STEERING COLUMN: Centering and Securing

Bolt the steering column's central bracket in place (do not overtighten). Thread the safety collar and slide the column through the bracket and into the ball bearing. Tighten below and recheck after fitting the steering wheel for final adjustments.

MODULE 6

Track Rods



6a. 4 x Rose joint locking nut

6b. 4 x Rose joint (left & right)

6c. 4 x M8 Flange Nyloc Nut

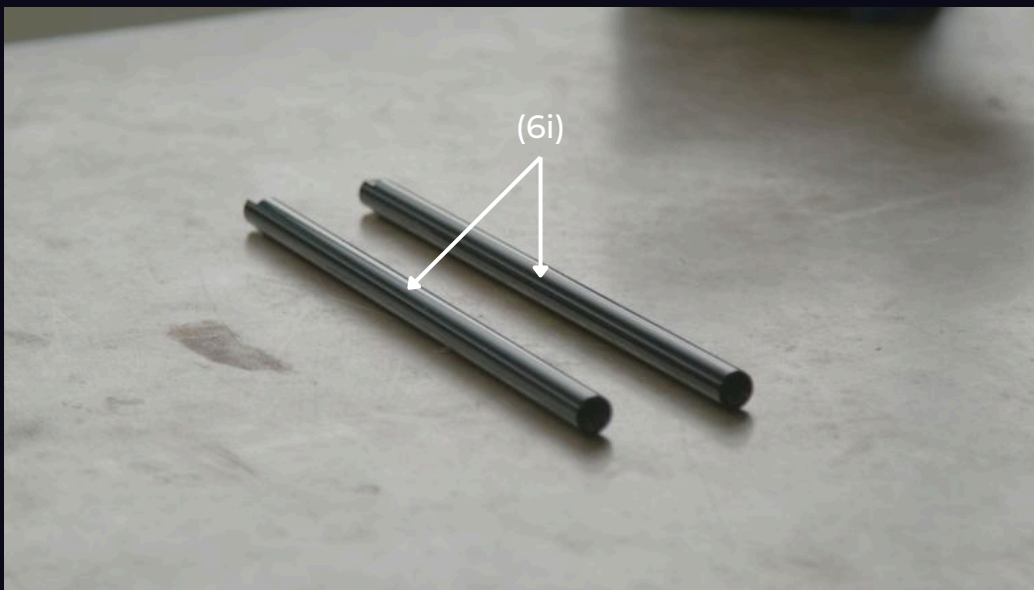
6d. 4 x Top Hat spacer (7mm)

6e. 4 x Top Hat spacer (4mm)

6f. 4 x M8 Counter Sunk Washer - (narrow)

6g. 2 x M8 Counter Sunk bolt (50mm)

6h. 2 x M8 Counter Sunk bolt (45mm)



6i. 2 x Track Rods

Assembly & Fit the: TRACK RODS

Assemble the left and right track rods with rose joints, noting the reverse threads. Attach to the stub axles and steering column using stepped washers. Perform a visual tracking alignment, secure with bolts, and adjust using the 10mm slot on each rod.

MODULE 7

Steering Wheel



- 7a. 1 x M6 Flange Nyloc Nut
- 7b. 1 x M6 Cap Head bolt (35mm)
- 7c. 1 x Angled steering boss
- 7d. 3 x M6 Nyloc Nut
- 7e. 3 x M6 Washer
- 7f. 3 x M6 Counter Sunk Washer - (narrow)
- 7g. 3 x M6 Counter Sunk bolt (25mm)



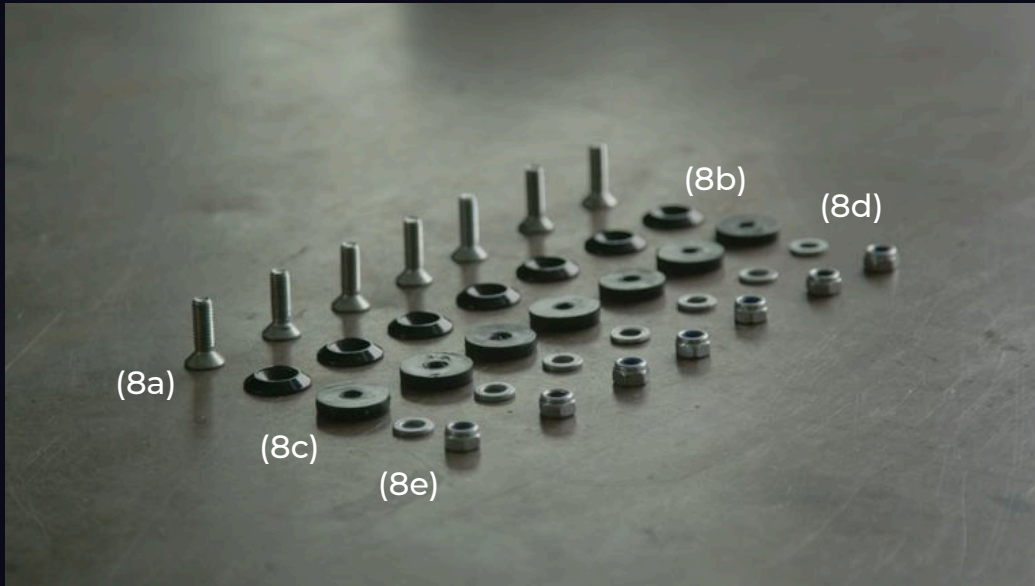
- 7h. 1 x Steering Wheel

Fitting the: STEERING WHEEL

Attach the steering wheel to the boss and secure the boss onto the steering column. Choose from two positions for optimal reach. Ensure bolts are correctly oriented and tighten the bottom column nut once the steering wheel is in place.

MODULE 8

Floor Tray



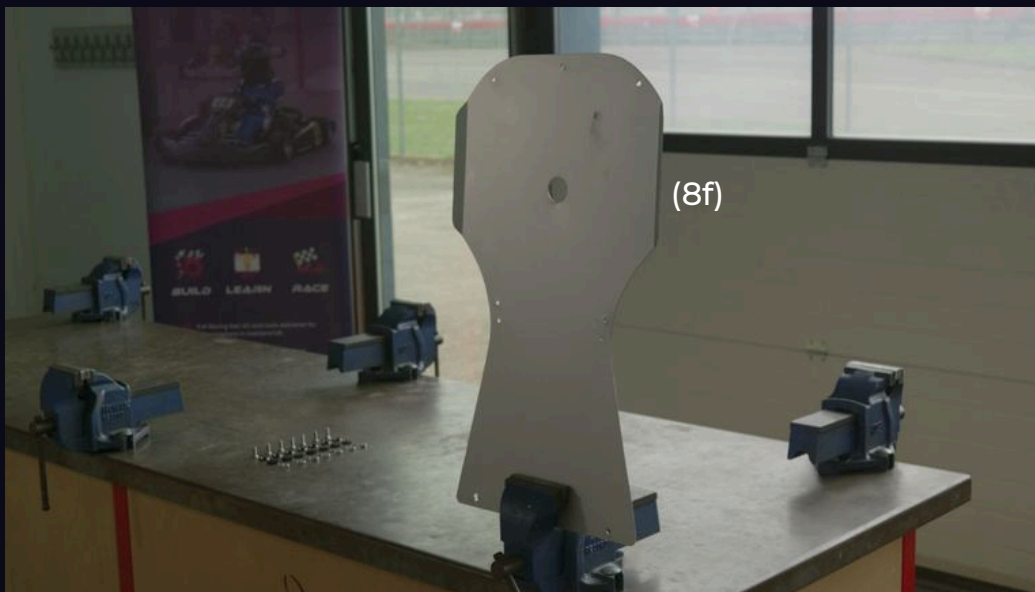
8a. 7 × M6 Counter Sunk bolt (20mm)

8b. 7 × M6 Counter Sunk Washer

8c. 7 × M6 Rubber washer

8d. 7 × M6 Washer

8e. 7 × M6 Nyloc Nut



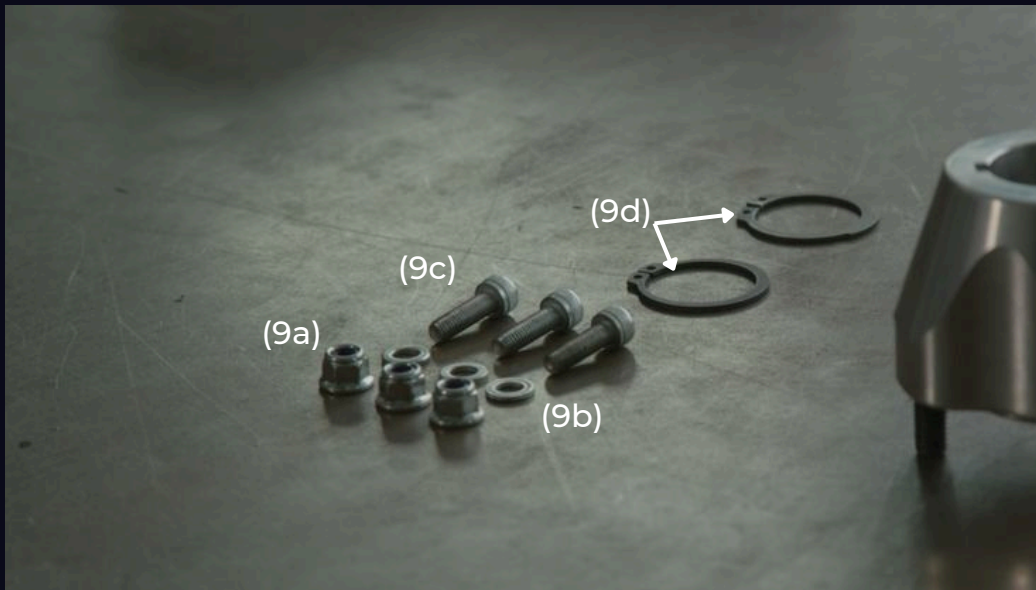
8f. 1 x Floor Tray

Securing the: FLOOR TRAY

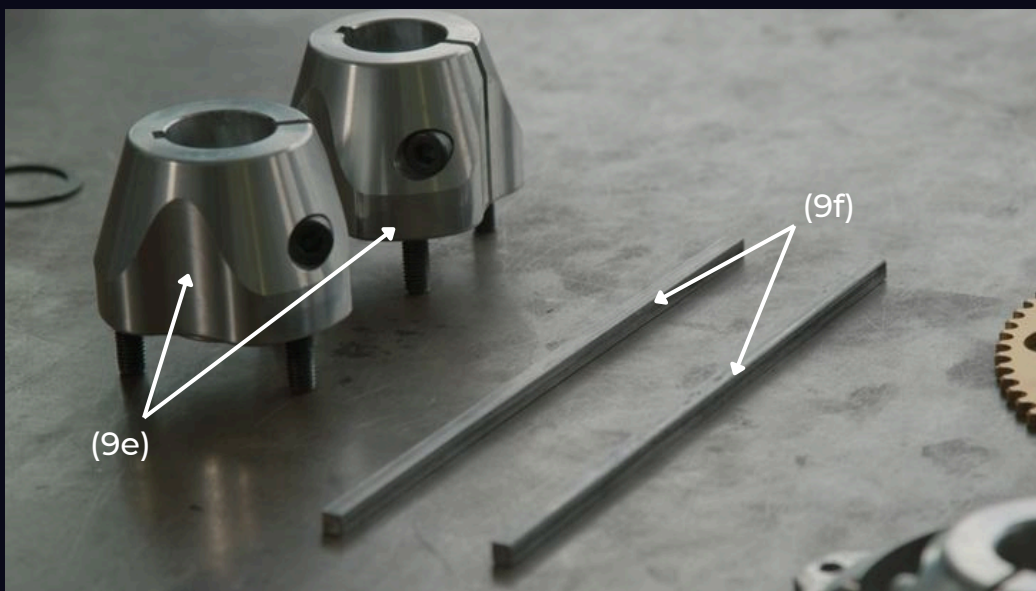
Fasten the floor tray with seven nuts and bolts, placing rubber disk washers between mounting tabs. Avoid fully tightening each bolt individually; instead, tighten all bolts together for a secure fit.

MODULE 9

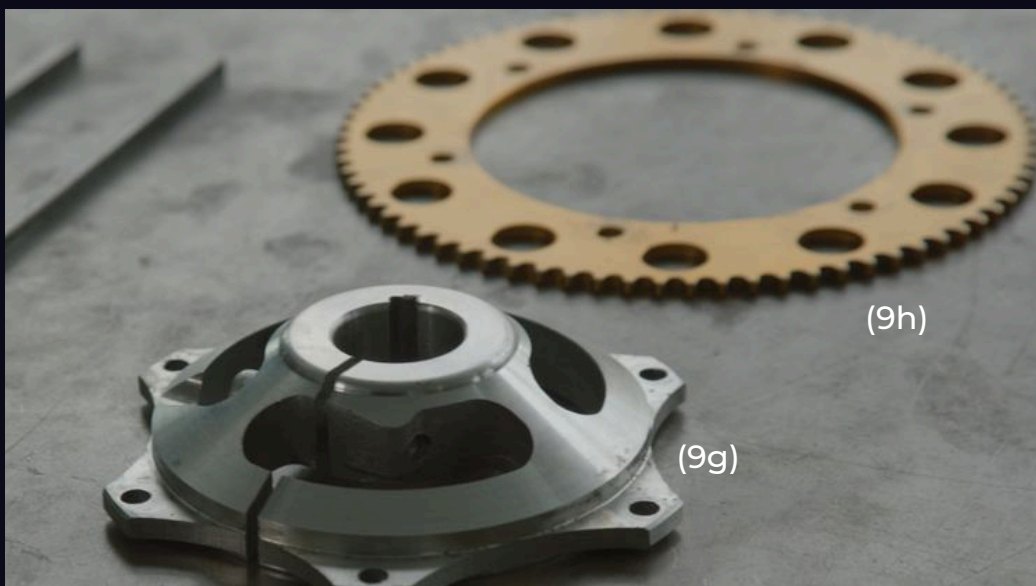
Brake Disk



- 9a. 3 × M6 Flange Nyloc Nut
- 9b. 3 × M6 Washer
- 9c. 3 × M6 Cap Head bolt (20mm)
- 9d. 2 × Circlip



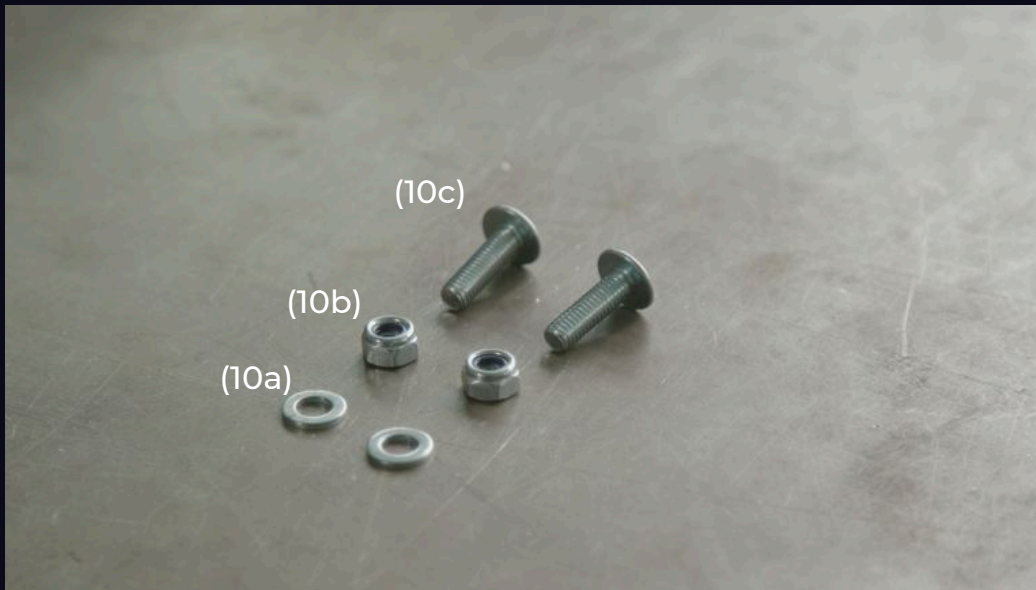
- 9e. 2 × Rear Hub
- 9f. 2 × Keyway 200mm length (1mm shallower)



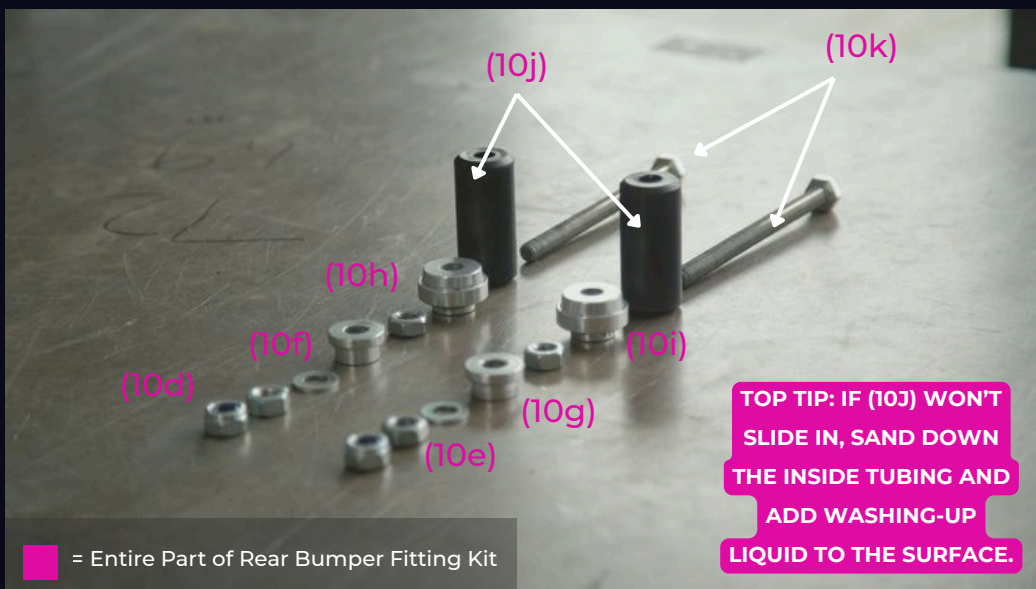
- 9g. 1 × Sprocket Carrier
- 9h. 1 × Sprocket (75 tooth)

MODULE 10

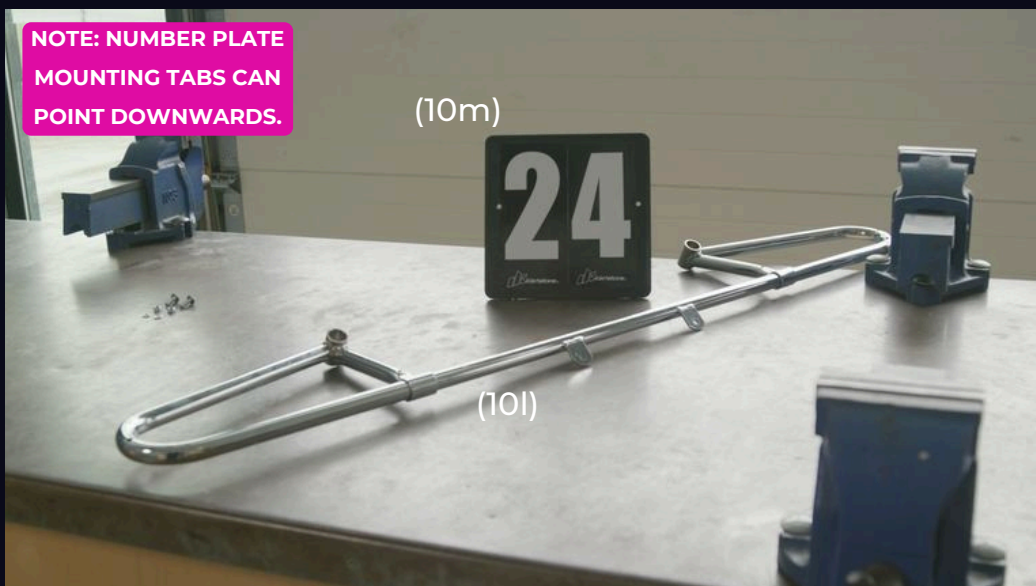
Rear Bumper



- 10a. 2 × M6 Washer
- 10b. 2 × M6 Nyloc Nut
- 10c. 2 × M6 Button Head flange bolt (16mm)



- 10d. 2 × M8 Nyloc Nut
- 10e. 2 × M8 Locking Nut (*not in all kits)
- 10f. 2 × M8 Washer (*not in all kits)
- 10g. 2 × M8 Bumper rubber spacer (small)
- 10h. 2 × M8 Locking Nut
- 10i. 2 × M8 Bumper rubber spacer (large)
- 10j. 2 × Bumper Rubber
- 10k. 2 × Bumper mounting bolt



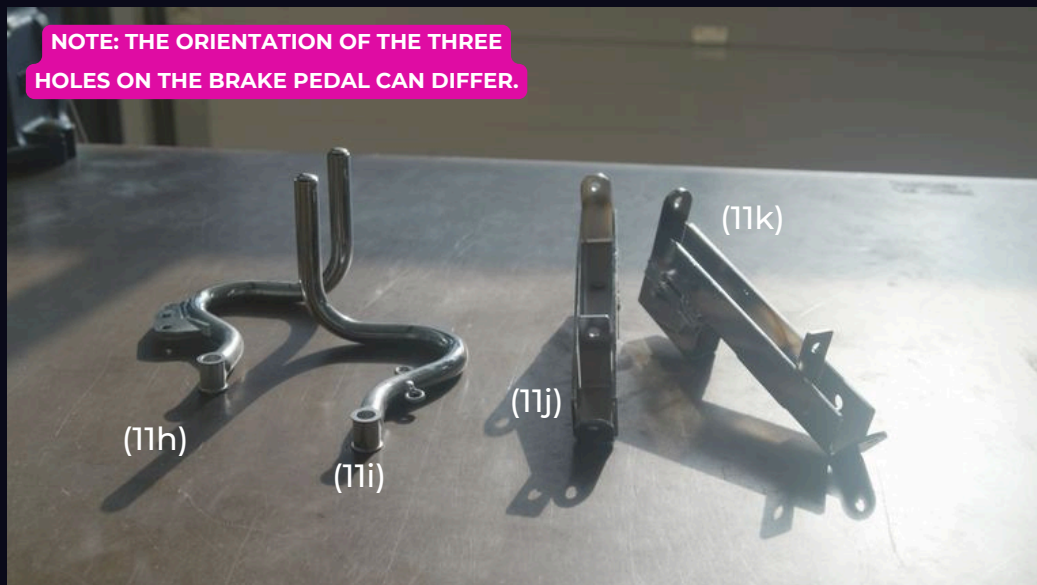
- 10l. 1 × Rear Bumper
- 10m. 1 × Rear Number Plate

MODULE 11

The Pedals



- 11a. 6 × M6 Locking Nut
- 11b. 3 × M6 Button Head bolt (50mm)
- 11c (LONG). 2 × M8 Cap Head bolt (35mm)
(*noticeably longer. Can have a smooth section)
- 11c (SHORT). 2 × M8 Cap Head bolt (30mm)
- 11d. 2 × Pedal return spring
- 11e. 2 × M8 Flange Nyloc Nut
- 11f. 2 × M6 Locking Nut
- 11g. 1 x Throttle Cable mounting point



NOTE: THE ORIENTATION OF THE THREE HOLES ON THE BRAKE PEDAL CAN DIFFER.

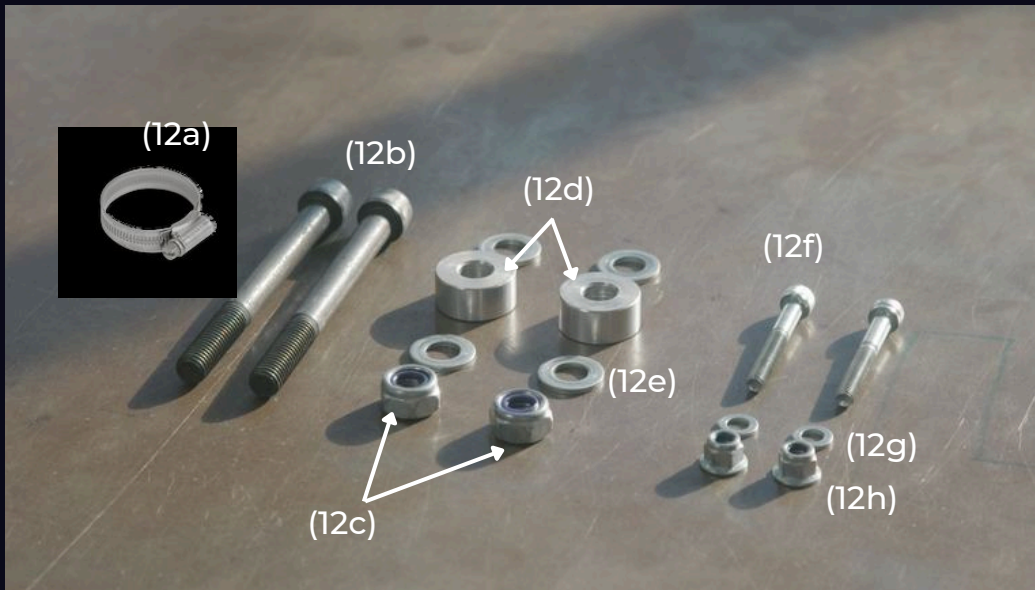
- 11h. 1 x Brake Pedal
- 11i. 1 x Throttle Pedal
- 11j. 1 x Pedal Mounting system (brake side)
- 11k. 1 x Pedal Mounting system (throttle side)

Constructing and Fitting: THE PEDALS

Mount the brake and throttle pedals onto the adjustable system. Attach fully to the chassis, being careful not to overtighten the pivot bolts, so pedals remain freely movable.

MODULE 12

Brake System



12a. 1 x Jubilee Clip (20-40mm diameter)

12b. 2 x M10 Cap Head bolt (brake caliper)

12c. 2 x M10 Nyloc Nut

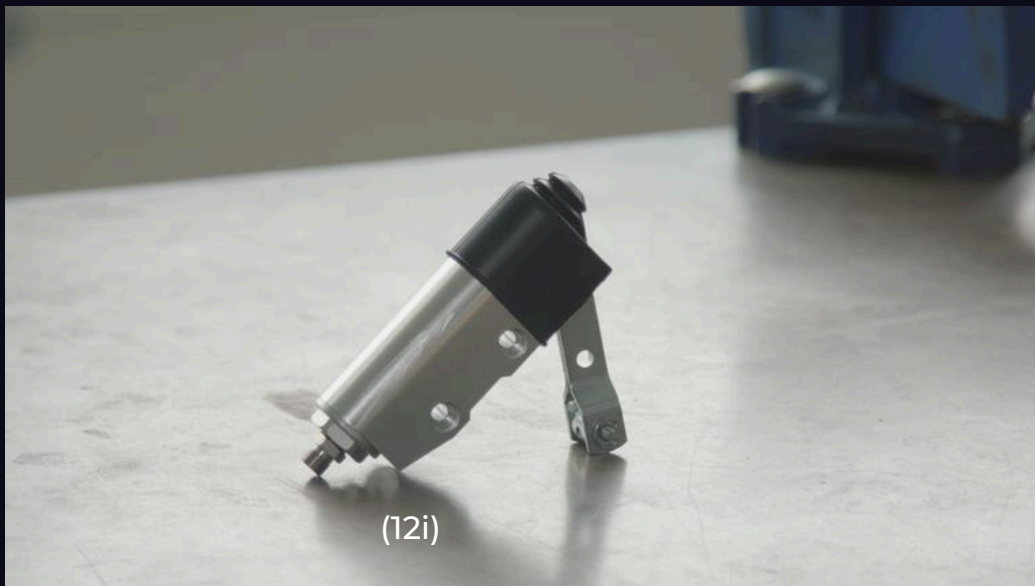
12d. 2 x M10 Spacer (11.5mm)

12e. 4 x M10 Washer

12f. 2 x M6 Cap Head bolt (40mm)

12g. 2 x M6 Washer

12h. 2 x M6 Flange Nyloc Nut



12i. 1 x RR Brake Master Cylinder



NOTE: The completed caliper from the previous module 2 is required here.

MODULE 13

Brake Line



NOTE: These caliper elbows come pre-fitted.

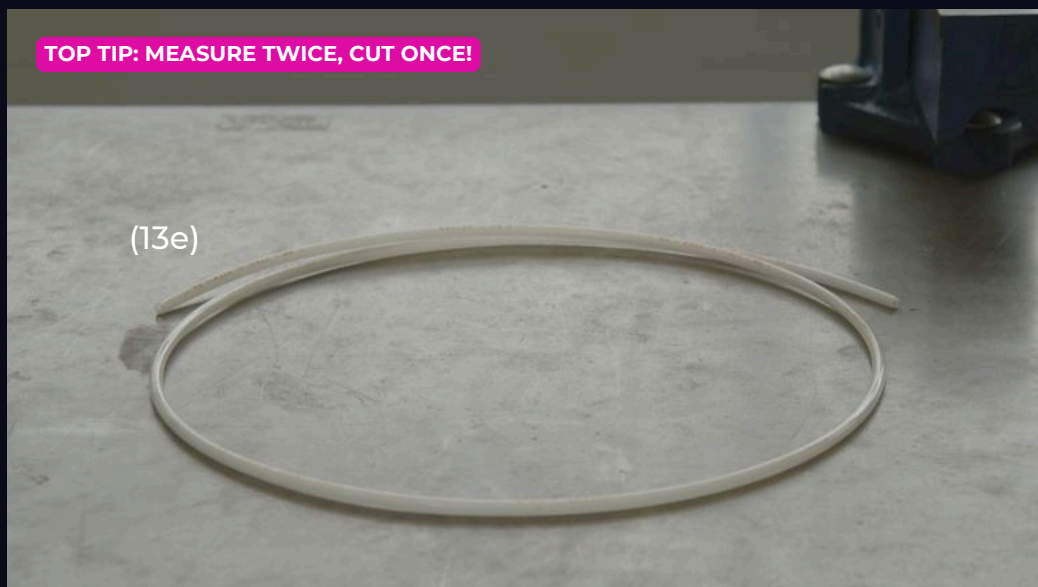
13a. 1 x Complete T-piece Brake line Junction

(*if assembled the t-piece includes 3x brass olive, 3x clamping nut)

13b. 6 x Brass Brake line insert (can contain +1 spare)

13c. 3 x Brass Brake line Olive

13d. 3 x Brake line clamping nut



TOP TIP: MEASURE TWICE, CUT ONCE!

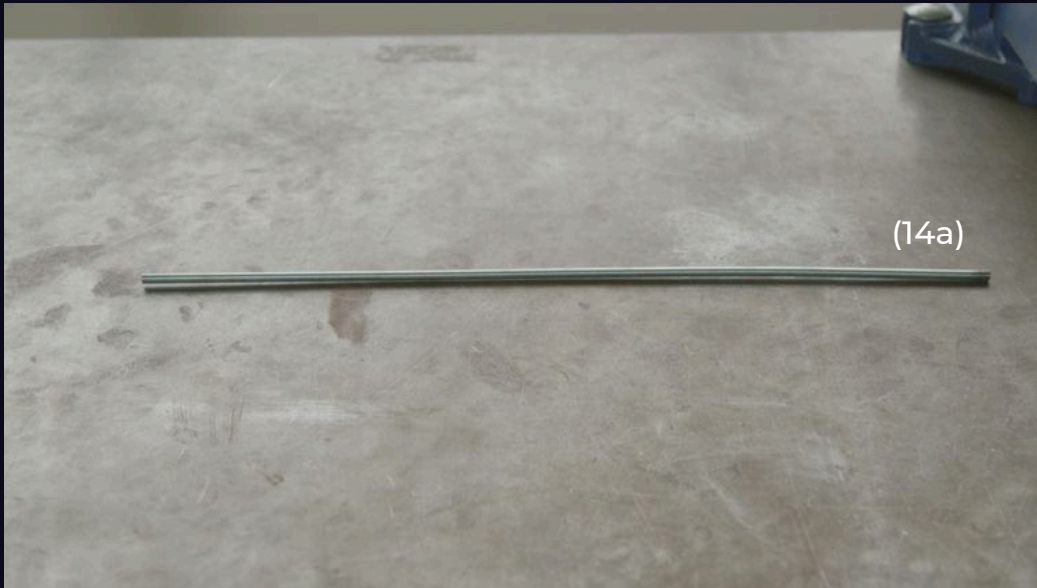
13e. 1 x Clear brake pipe length (150cm minimum)

Constructing the: BRAKE LINE

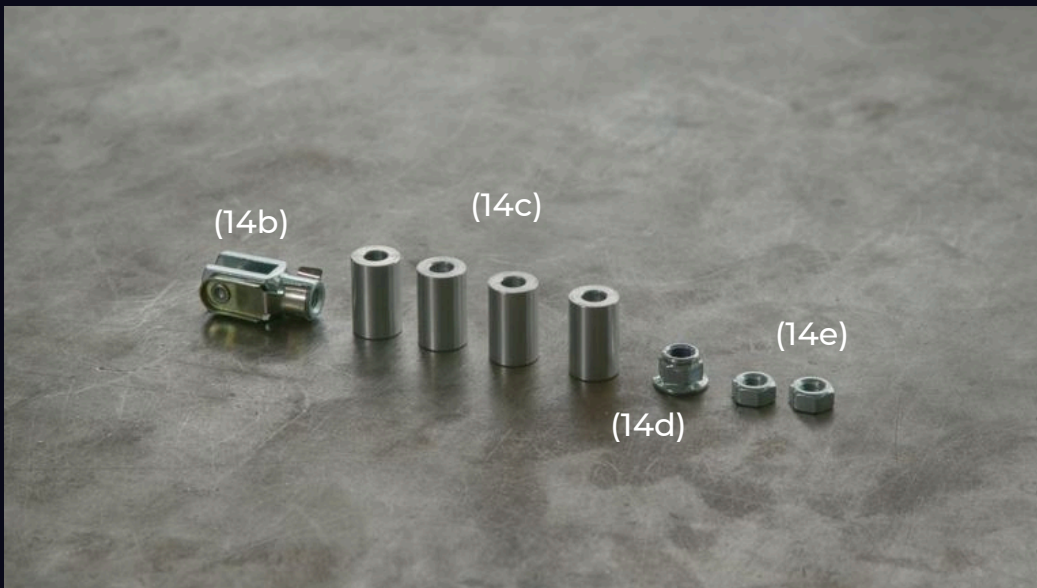
Insert caliper shoulders into the brake calipers, then measure and cut the brake line. Secure the line with joints, using electrical tape and cable ties for grip. Measure accurately, start by hand to protect threads, and double-check that all joints are well-fastened.

MODULE 14

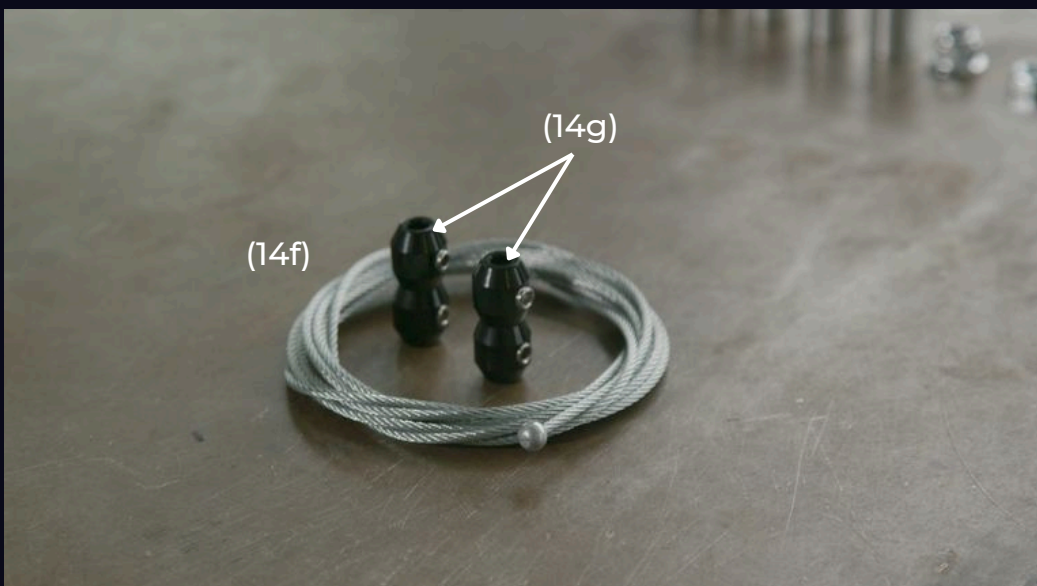
Brake Bar



14a. 1 x M6 Threaded Bar
length (430mm)



14b. 1 x Slide Clip Short
Clevis (complete with clip)
14c. 4 x Large Packer
(20mm)
14d. 1 x M6 Flange Nyloc
Nut
14e. 2 x M6 Locking Nut



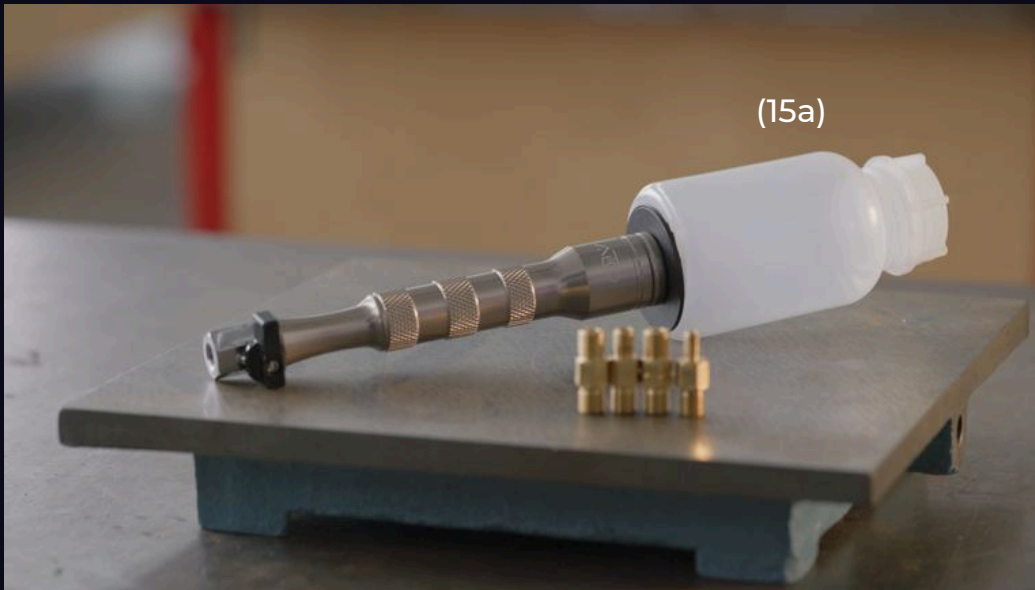
14f. 1 x Secondary brake
cable (ball-ended)
14g. 2 x Bullet Clamp

MODULE 15

Brake Bleeding

Completing the: BRAKE Bleeding

The brake bleeding process is an essential step to ensure your kart's braking system operates smoothly and reliably. This task removes air bubbles from the hydraulic brake lines, which can otherwise compromise braking efficiency.



15a. 1 x Brake Bleeding Tower (with adapters)
15b. 1 x Brake Fluid Bottle



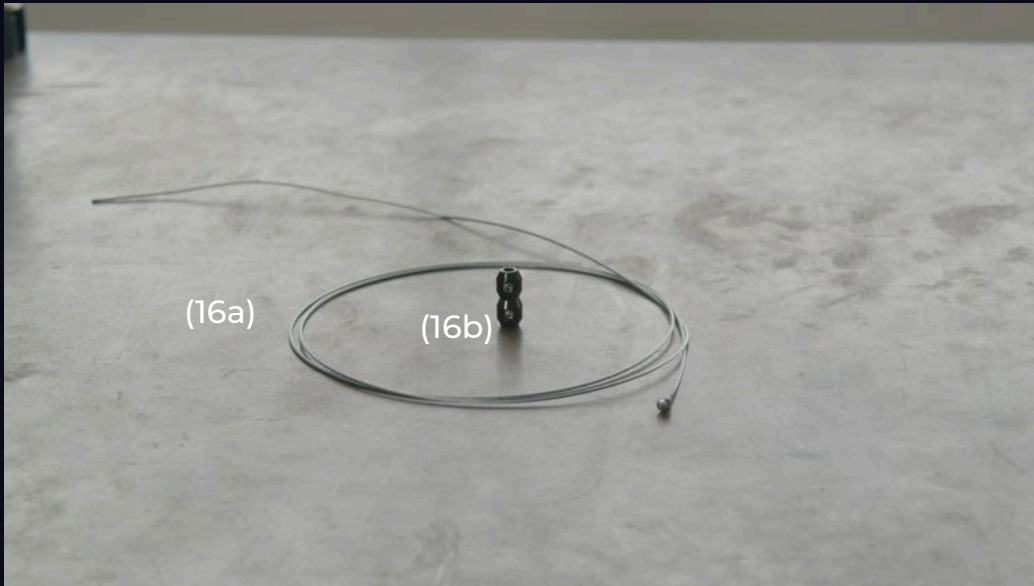
15b. 1 x Brake Fluid Bottle

What You'll Need

- Brake Bleeding Tower: No additional parts are required for this process other than the brake bleeding tower, which attaches to the master cylinder.
- Brake Fluid: Ensure you have the appropriate brake fluid for your system on hand.
- Blue Roll or Old Rags: Be prepared for brake fluid to leak during this process. Plenty of absorbent material will help prevent spills and protect surfaces.
- Spanner & Allen Key: Both are necessary for loosening and tightening the bleed nipples and tower adapters.

MODULE 16

Throttle Cable



16a. 1 x HONDA Throttle Cable

16b. 1 x Bullet Clamp



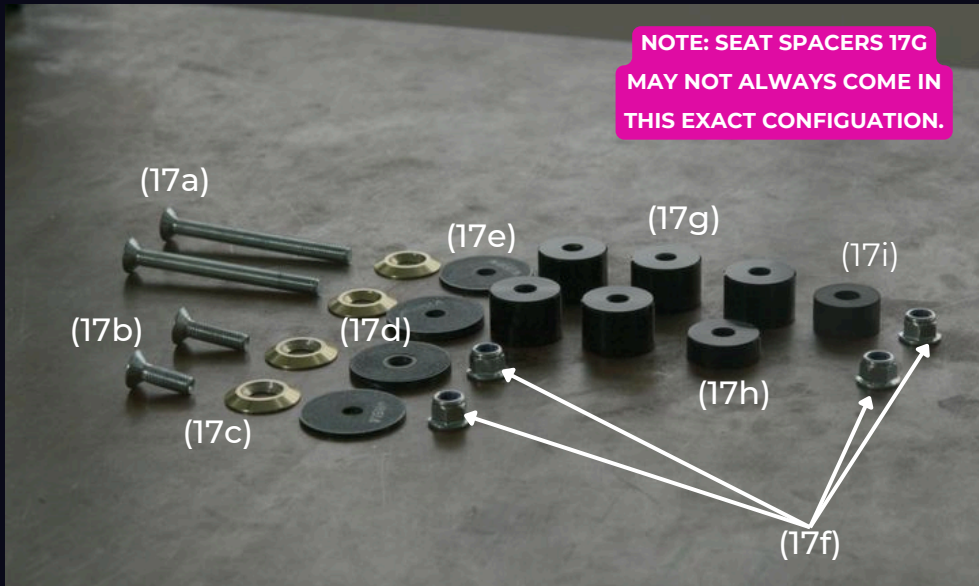
16c. 1 x Throttle Cable Outer (HONDA Pro-Kart 1440mm)

THROTTLE CABLE: Assembly & Fitting

Run the throttle cable through its outer casing, securing it along the chassis and into the pedal housing. The engine end should have the metal sheath along with the cable ball end. Secure cable to throttle pedal with clamps.

MODULE 17

Seat Fitting



- 17a. 2 x M8 Counter Sunk bolt (90mm)
- 17b. 2 x M8 Counter Sunk bolt (25mm)
- 17c. 4 x M8 Counter Sunk washer - (wide)
- 17d. 2 x Seat Washer (4mm)
- 17e. 2 x Seat Washer (2mm)
- 17f. 4 x M8 Flange Nyloc Nut
- 17g. 5 x Seat Spacer (20mm)
- 17h. 1 x Seat Spacer (10mm)
- 17i. 1 x Seat Rubber



- 17j. 1 x Kart Seat (medium)

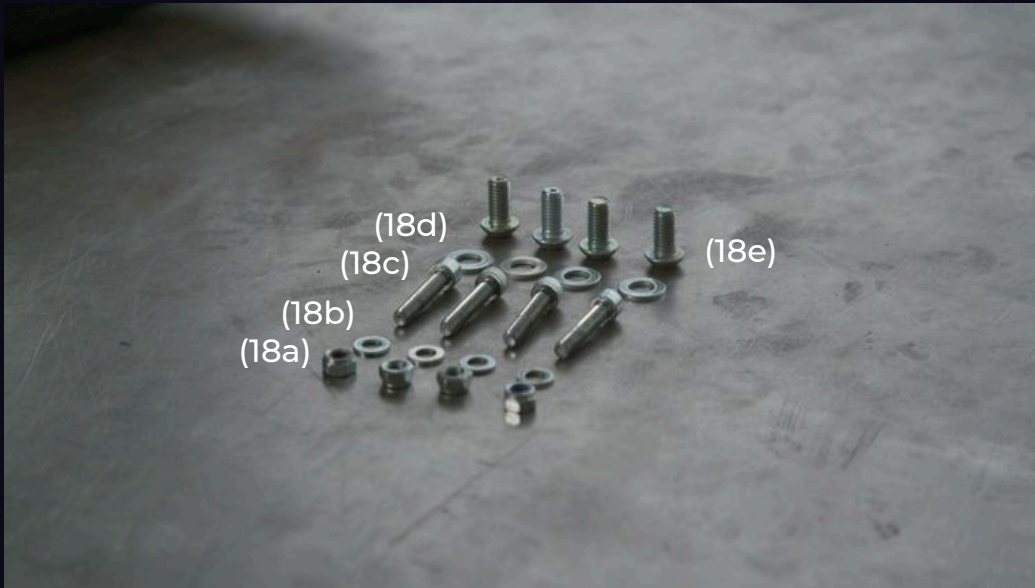
Completing the: SEAT FITTING

Place the kart on a flat surface and position the seat with a small weight. Measure and mark drill points, then bolt the seat into place, adding spacers to prevent tension.

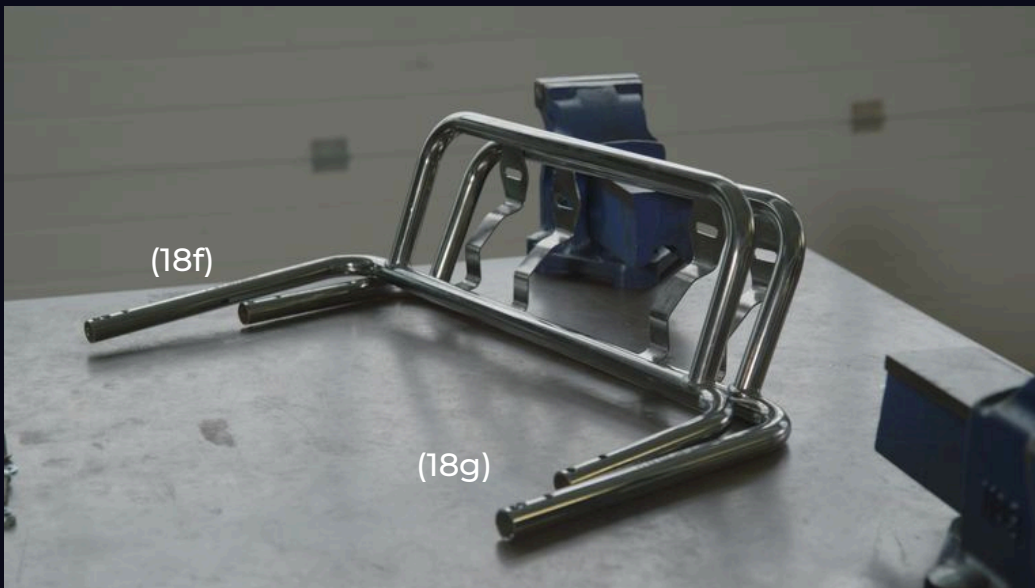


MODULE 18

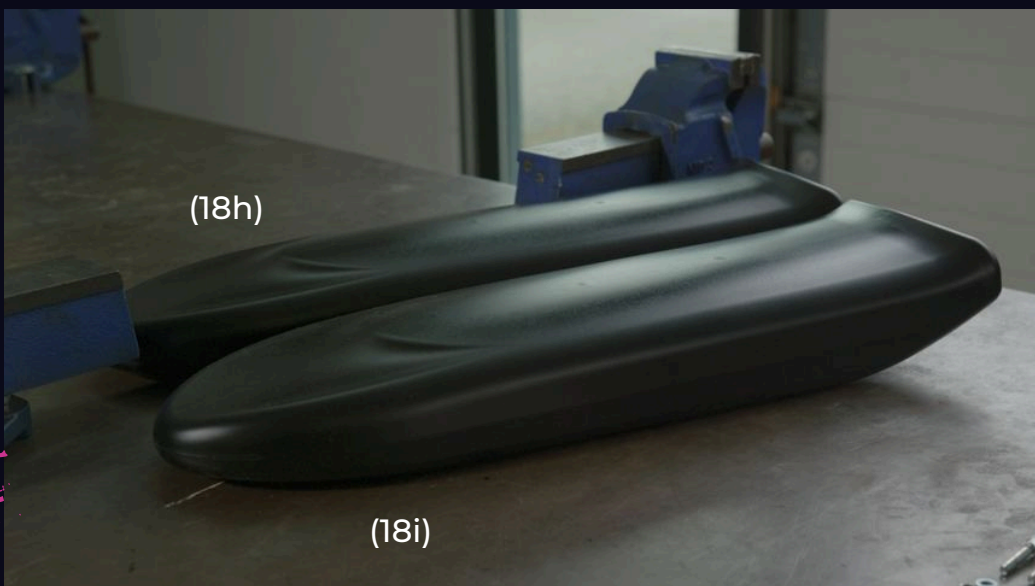
Side Pods



- 18a. 4 × M6 Nylock nuts
- 18b. 4 × Washers (small)
- 18c. 4 × Caphead side-pod M6 bolts (30mm)
- 18d. 4 × Washers (side-pod)
- 18e. 4 × Short Buttonhead M8 bolts (16mm)



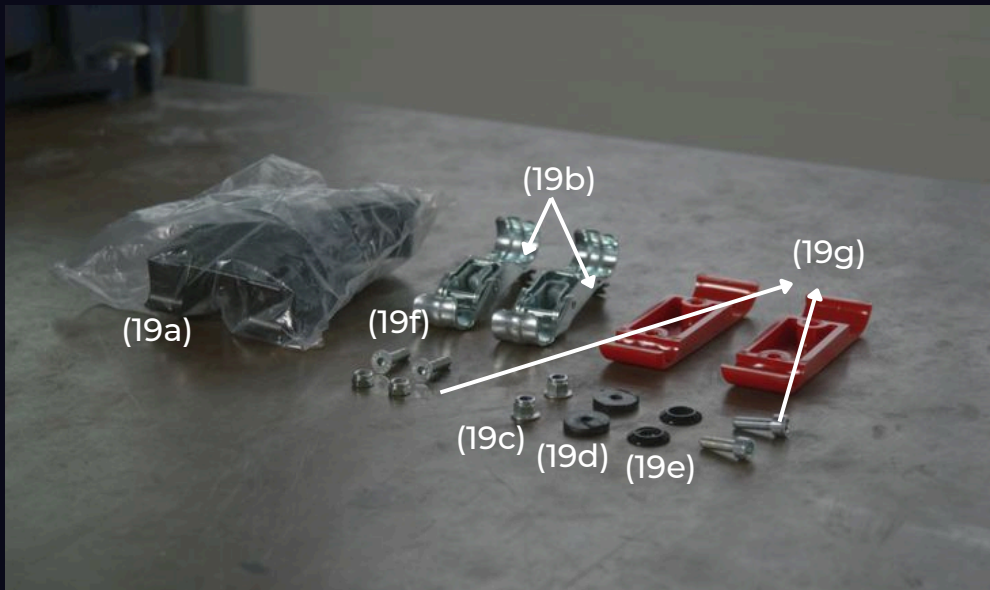
- 18f. 1 × side pod bar [pre drilled holes] (left)
- 18g. 1 x side pod bar (pre drilled holes) (right)



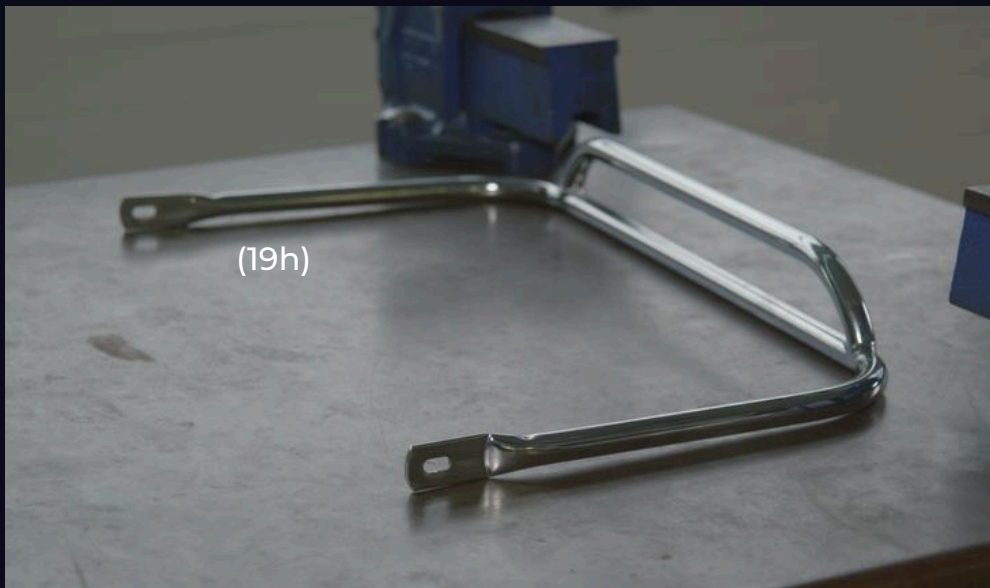
- 18h. 1 × [KG507] side pods (left)
- 18i. 1 x (KG507) side pods (right)

MODULE 19

Front Pod



- 19a. 2 x front pod mounting blocks
- 19b. 2 x front pod clips
- 19c. 2 x 10mm M6 nylock flange nuts
- 19d. 2 x soft rubber washers
- 19e. 2 x counter-sunk washers
- 19f. 2 x counter-sunk bolts
- 19g. 2 x front pod central clamp (2x halves). *(Includes: 2x caphead bolts (25mm), 2x nylock 10mm nuts.)*



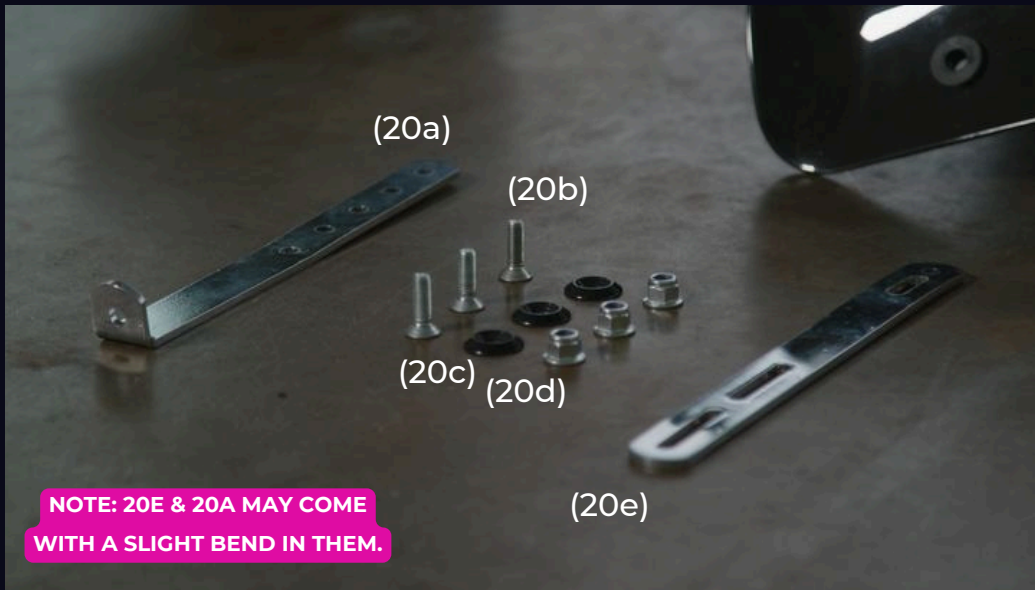
- 19h. 1 x Upper pod bar



- 19i. 1 x [MK20 – cadet] Front pod

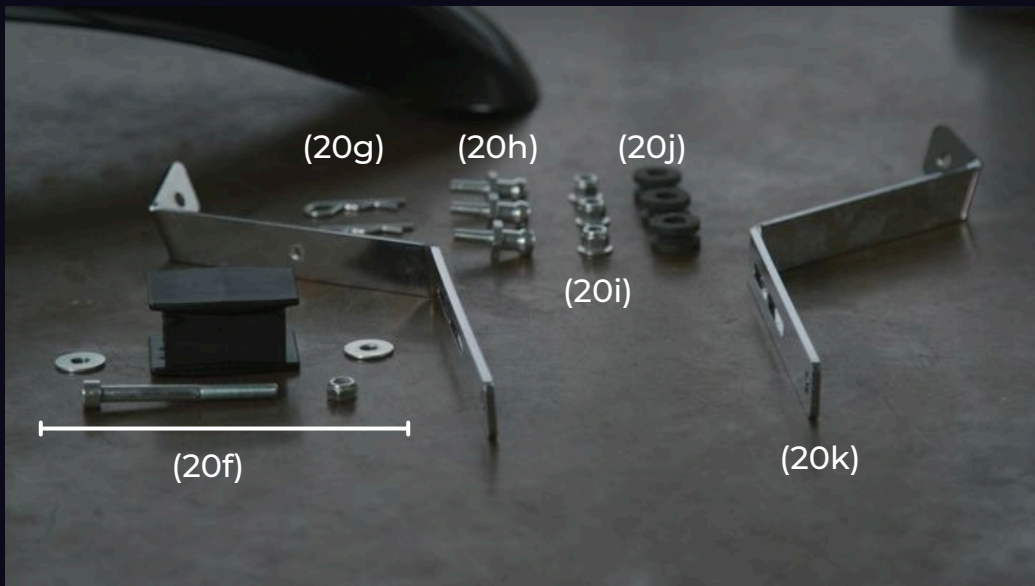
MODULE 20

Nassau Panel



NOTE: 20E & 20A MAY COME WITH A SLIGHT BEND IN THEM.

- 20a. 1 x Bottom strut (tab)
- 20b. 3 x Counter sunk M6 bolts (20mm)
- 20c. 3 x Counter sunk washers
- 20d. 3 x 10mm nylock flange nuts
- 20e. 1 x Bottom strut (flat)



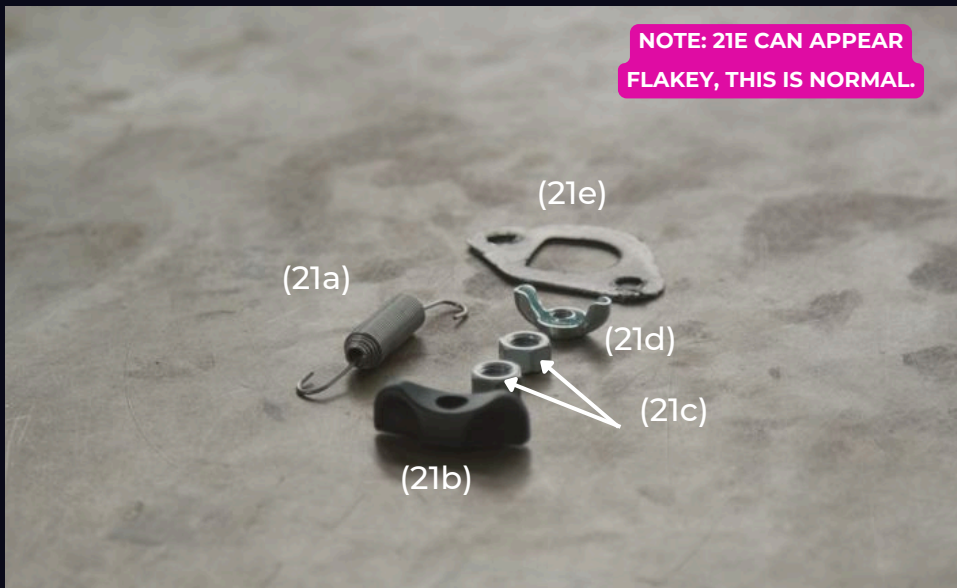
- 20f. 1 x Central plastic block kit (Incl. 2 x Washers, 1 x Caphead bolt, 1 x 10mm nylock nut, 1 x Central plastic block.)
- 20g. 3 x R Clips
- 20h. 3 x R-clip mounting point fitments
- 20i. 3 x 10mm Nylock flange nuts
- 20j. 3 x Rubber bushes
- 20k. 1 x Pair Central Upper struts (left & right pair)



- 20l. 1 x [MK20 – cadet] Nassau panel

MODULE 21

Air Filter & Exhaust



- 21a. 1 x 100c carb return spring
- 21b. 1 x Plastic Butterfly
- 21c. 2 x Exhaust manifold nuts
- 21d. 1 x Metal Butterfly
- 21e. 1 x Exhaust gasket

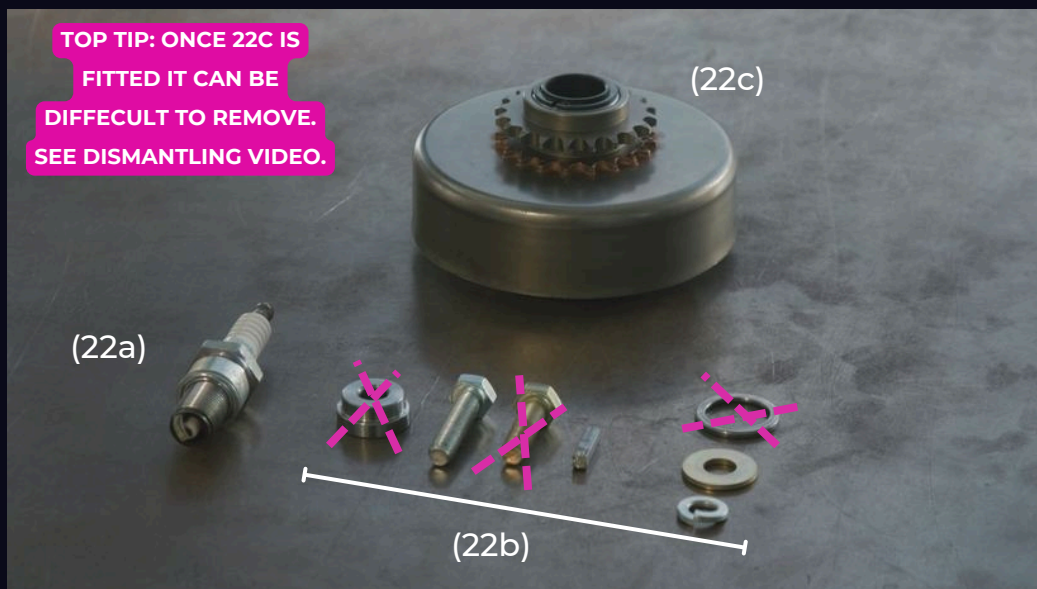


- 21f. 1 x Air filter cover
- 21g. 1 x Air filter
- 21h. 1 x GX160 Exhaust

MODULE 22

Clutch & Spark Plug

(i) Part-built engine. Continuing from previous module.



- 22a. 1 x GX160 Spark plug
- 22b. Clutch fitting kit (Incl. 1x long bolt, keyway, 1x small spring washer, 2x medium washers *unpictured)
- 22c 1 x GX160 Clutch

Fitting the: CLUTCH & SPARK-PLUG

Mount the clutch onto the crankshaft with the keyway and insert the spark plug into the engine.

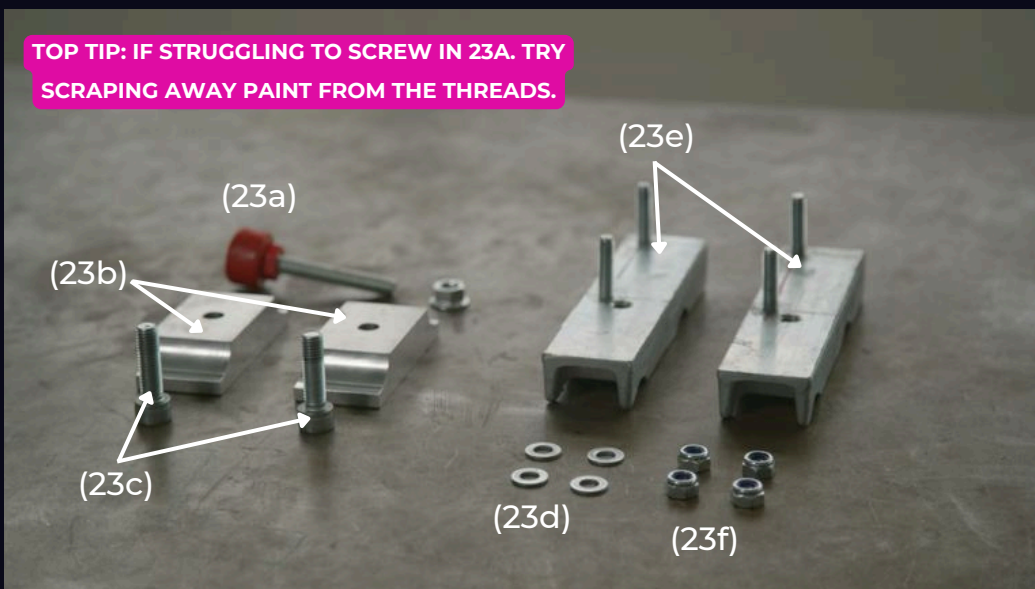
MODULE 23

Engine Mount

(i) Fully assembled engine, ready to fit to Chassis.



TOP TIP: IF STRUGGLING TO SCREW IN 23A. TRY SCRAPING AWAY PAINT FROM THE THREADS.



- 23a. 1 x Short Engine Stop Bolt kit (including nut)
- 23b. 2 x Engine clamps (32mm)
- 23c. 2 x M10 Caphead Bolts (40mm)
- 23d. 4 x Washers
- 23e. 1 x Front & Rear Pair of off-set engine mounts, x4 caphead bolts.
(*bolts may be set directly into the mounts, as pictured here. Others will come as 4x loose bolts)
- 23f. 4 x 13mm Nylock nuts

Securing the: ENGINE MOUNT

Attach front and rear engine mounts, noting the offset direction. Place the engine onto chassis rails, securing underneath with clamps.

Aligning the: SPROCKET & CHAIN

Align the front and rear sprockets, fit the chain around them, and adjust chain tension by resetting the engine stop. Attach the throttle cable and set the throttle stop.



24a. [114 link] Chain

Additional Notes

- Take your time lining up the sprocket. A straight chain run reduces drag and prevents the chain from coming off during racing.
- Medium-tighten the sprocket bolts first. Only fully tighten once alignment is confirmed.
- Use a straight edge or ruler against the sprocket to check alignment with the engine sprocket, subtle adjustments make a big difference.
- Chain tension is critical. Too loose and it can derail; too tight and it creates unnecessary strain on the engine, reducing performance.
- When setting chain tension, pull the engine forward first, then gently wiggle the chain. The tiny movement helps find the right slack.
- Aim for just over a 50p coin's width of movement up and down on the chain.
- When routing the throttle cable, keep it neat and tight to the chassis. Avoid sharp bends and keep it away from hot surfaces.

MODULE 25

Chain Guard



25a. 1 x Clear Chainguard
(Blank, not drilled)



25b. 1 x Mounting Bracket
& Fitting Kit (incl. 2 x
'Space ship' washers, 2 x
Washers, 1 x Silver spacer, 1
x Short 13mm Hex bolt, 1 x
Long 13mm Hex bolt)

CHAIN GUARD: Aligning & Drilling

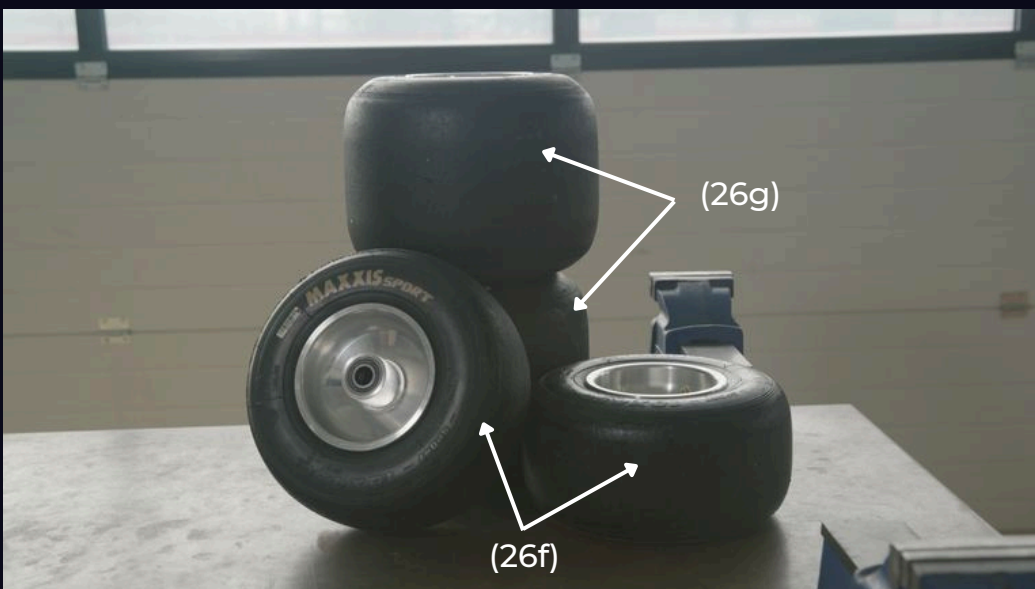
Position the chain guard without contact to mark drilling points. Attach the guard to the mount, tightening without over-securing.

MODULE 26

Wheels & Tyres



- 26a. 2 × 22mm Nylock nuts
- 26b. 2 × Small 5mm Black stub spacers
- 26c. 2 × Medium 10mm Black stub spacers
- (*Not needed in all kits)
- 26d. 4 × Large 20mm Black stub spacers
- 26e. 6 × Bronze K-Nuts



- 26g. 2 × Front Tyres on rims (120mm offset flush)
- 26h. 2 × Rear Tyres on rims (210mm)

Fitting the: WHEELS & TYRES

Mount the front tyres with spacers and nuts and secure rear tyres with 10mm K-nuts for stability.

THAT'S A WRAP

If you're reading this, your kart is built. Well done.

Take a second to look at what you've made. A few weeks ago it was a chassis and a box of parts. Now it's a race kart, built by your team, start to finish.

Before you get carried away, a few last things.

Check it over. Every bolt, nut and clip. Run back through this booklet one more time and make sure nothing's loose, missing or half-finished. A kart is only as good as its weakest fixing.

Then complete your final self-certification on the Race Academy platform. That's the bit that confirms your kart is safe and ready to run. Don't skip it.

After that? Go racing.

You've learned how every part works and why. You've done the hard bit. The rest is track time, teamwork and a bit of healthy competition.

Thanks for building with us. Now go and make it fast.

STEM
ON TRACK

STEM ON TRACK

For instant help and guidance: please use the 'support' feature on the Race Academy platform. If your problem isn't resolved, it'll refer you directly to a member of the STEM On Track team who can.

If you need more complex support at any point, our contact details are listed below and we will be happy to help.

 Email us: support@espireeducation.co.uk

 Call James: +44 (0) 7585 721939

 Call Adam: +44 (0) 7814 274241