Tornado rookie suffix A basic build points

Chassis

In the kit you have 500 4.8x10mm rivets and 500 4.8x12mm rivets, when building the car use the 10mm rivets where there are 2 layers of aluminium to go through and use the 12mm when there are 3 as a basic rule. You will run out of the 10mm rivets and the 12mm are fine for all thicknesses, it just saves on riveting time using the shorter rivets. Use the 3d view link on the website rookie page to see where parts go. Parts should fit either perfectly or with slight filing, if big sanding is needed there is either a fault with your part or it is being constructed incorrectly.

1. Sand the sides of the bottoms of the chassis (Tr059 and TR060) where the chassis bush (TR156) inserts. when it is folded this part slightly misses the V and the chassis needs to be flat against the top and bottom.
2. Assemble chassis building up 1 chassis rail at a time and fit bulkhead front supports and all outriggers as you build them as well as the rear shock mounts. **Do not forget to insert the spacers TR156 for the axle pivots as you build the rails**, I recommend bolting these in temporarily.
3. Fit Panhard rod mounts onto rh chassis rail as shown in the 3d diagram.
4. Once all rails are complete join them together by fitting the skid plate x members and then work forward fitting the Panhard rod brace and front x member with steering rack mount. Then work backward from the skid plate mount inserting the A frame X member with A frame mounts and TR033 seat mount to a frame brackets. Next fit the TR043, 044 and 045 X members
5. Fit front shock mount tower
6. Fit the front bumper with all back supports
7. Fit the skid plate, if you have built it correctly this should align perfectly with all the rivet holes.
8. Fit rear x member with tailgate hinges using M5x16 bolts and flange nuts, as there is slight adjustment on this.
9. Rivet body mounting plates to top of rear x member

Bulkhead

You can build the bulkhead on or off the car, it does support it well if you build it on the car but its not essential.

1. Start with the bulkhead back with vin number TR070, join on to it TR071 with the overlapping flanges in the middle.
2. Fir the bulkhead pillars 072 and 073 making sure the hinge offset is forward on the car. These just form by hand into shape until all the holes line up
3. Fit main footwell section on the front and then the 2 side panels
4. Fit the brake pedal pivot and underneath cable support plates
5. Fit steering column side brackets

Windscreen

If you build this off the bulkhead you can get all the rivets in and it should thread over the steering column brackets and slot into place.

1. Get screen front 085 and screen outer 087 and curve it round so all the slots close up and it forms the shape of the screen then rivet it all on with the 3.2mm rivets
2. Fit upper screen bead 088 buy curving it the opposite way and opening up the corners then riveting it in. Do the same for the lower screen bead
3. Fit 086 screen back onto all this.

Rear body and internal floors

These can all be mounted as you go, all the rear floor holes are for the seat in various positions so just loosely push some bolts down to align

1. Test fit rear floor and once aligned mark position of rear shock main 12mm bolt and 4x 5mm rivet holes. Remove rear floor and drill these holes, I recommend drilling the rivet holes 10mm to clear the rivets on the

shock mounts. You get away without drilling these but will slightly pull the floor in when the 12mm bolt is tightened.

2. **Before fitting the floor in properly, Fit the rear shocker internal washer TR041 inside the rear shock mount with rivets from the centre of the car outwards. Slide the 18mm spacer tube in and fit the outer washer TR042 to hold that it.**
3. Join the front and rear floors together making sure the flanges are all on the underside.
4. Fit the rear wings to the tub floor, these holes are slightly tight and are 3mm instead of the 3.2mm so might need a slight drill.
5. Fit the front of rear wing panel and the fit the top capping's, bending by hand the rear corner
6. Fit the lower rear capping's but ignore the lowest rivet
7. Fit the door stop plates at the front for the door.
8. The arch might be too close to the rear shock front mount bracket so the bracket might need trimming slightly
9. Build tailgate, bend the corners of TR134 so it fits the shape of or TR133 and fit together making sure they sit flush all the way round
10. Fit centre rib then lower corner brackets and top stops
11. Fit hinges and test fit on car, adjust hinges up and make sure it clears the rivets of the rear floor, lightly tap the rivets into the tailgate if these foul until tailgate fits correctly

Doors

1. The doors simply slot together but make sure you remember to put the bracing plates in as you assemble at the front TR130 and TR131
2. Once finished fit upper capping TR129
3. When mounting to car use normal rivets in the stainless hinges and they should line up ok, adjust if necessary

Front wings

1. Join outer and inner skins together, the holes are there as a rough guide but how it fits externally is the crucial part, use the small rivets to join these
2. Fasten the wings to the bulkhead and the use the m5 bolts to join the wings to the wing brackets and front panel.
3. Position bonnet and drill the rear for the bonnet hinges, mount bonnet pits to top of wings inner corner and then mark bonnet and drill to suit. Lock tight the internals of the bonnet pin as these un screw and the bonnet fly's open losing the parts

Axles

1. Fit outer swivels to front axle centre making sure the main steering arms are at the back with the pan hard rod hole on the LH side of the car. Insert he 16mm brass bushed into the bushes on the hubs the bolt on through the axle. Once tight this should still be easy to turn
2. Fit rear track rod with track rod ends and locknuts and measure tracking, adjust till straight.
3. Fit front hubs with bearing each side on stub ales and tightly until play is removed but still spin freely, don't forget to grease!
4. Find radius arm plates bolt together so they are double thickness and push bushes in.
5. Fit radius arm to axles using 2x M10 washes each side of the bushes.
6. Fit radius arms to car using the M10x 90 bolts and the 12mm spacers 1 each side
7. Fit rose joints to each end of pan hard rod bar (350mm alloy bar) with lock nuts and wind all the way in.
8. Fit rose joint to axle using M10x90 bolt with m10 washer , then rose joint, then 16mm spacer then through axle tube then washer and nut on the back
9. Fit other rose joint to pan hard bracket on chassis using the 2x 5mm spacer shims
10. fit steering rack onto chassis using 2x 25mm U-bolts and point input shaft backwards.
11. Fit 2x 13mm brass bushes through chassis steering pivot holes the front one goes in forward and the rear one(which goes through TR016) backward so the top hats are facing each other.

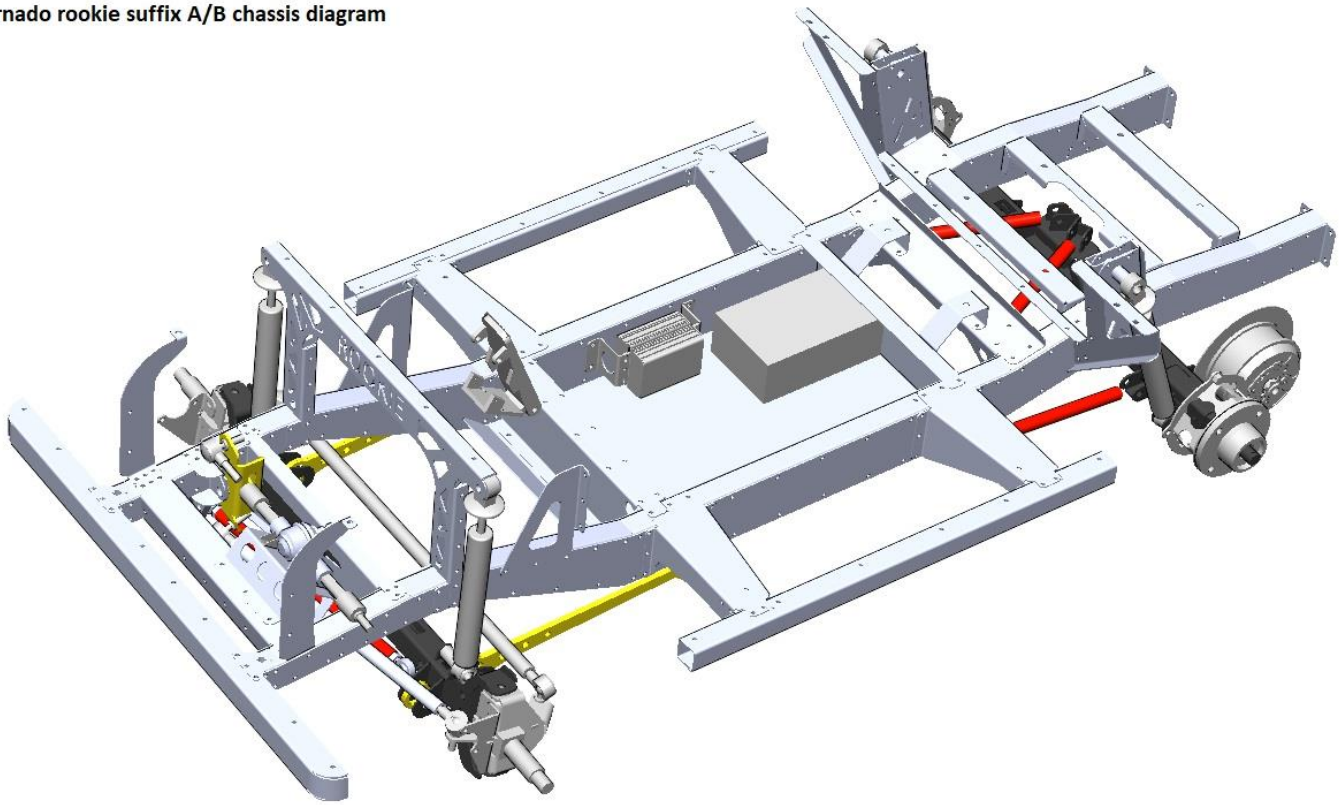
12. Fit other 2 13mm brass bushes into steering pivot bracket from the outside inward and fit to the chassis in between the other bushes with the angled face downward.
13. Shorten a rh track rod end down and fasten to the LH end of the rack using TR164 to connect with 2 x locknuts. Adjust until full travel of the rack can be used
14. Fit track rod ends to front track rod bar with lock nuts and fit to the car, using the furthest out hole on the stub axle. Adjust that and the pan hard until the axle is roughly central and the steering goes equal amounts each way
15. Fit front shocks after cutting springs approximately 2", strip the shock and have the cut end at the bottom (the rod is at the top of these shocks)
16. Fit 30mm spacers in between front shock mounts on axle and insert m10x 75 bolt and fit the shocker. (They were designed for m12 shocker bolts but the bushes were 10mm on these and it works ok)
17. Fit the top shocker bolt which again is a 10mm bolt
18. Rear axle, remove studs from hubs fit drive adapters and refit studs
19. Bolt on drive cog as central as you can, if this appears to be out of true later undo and tap until true
20. Fit hubs onto stub axles with grease us the have no pay and are free running.
21. Fit calliper brackets to swinging motor brackets, Fit motor shafts into swinging motor arms, they might need squeezing in, fit approx. central position and fit the 4mm plats underneath with m8x20 bolts and flange nuts.
22. Fit these onto the axle either side of the brackets where it mounts to the axle, which ever way aligns better with the cogs. Fine tune by sliding the motor in its mount till they are fully aligned.
23. Swing upward and fit chain till you work out the correct length, once correct make 2 chains the same and fit.
24. Fit rear callipers on brackets and use washers if you run out of adjustment (there is a brake upgrade coming out for front brakes so you might want to fit this instead)

25. Make up top and bottom links with rose joints and lock nuts each end. Top bars are 180mm bottom 270mm adjust fully in for now
26. Fit axle to car, top links all have 3mm spacers each side of the rose joints and the bottom ones have 5mm each side of rose joint at the axle end then a 16mm between the chassis side and the rose joint.
27. Shorten rear spring the same as the front and then fit to the car using M12 top bolt and m10 bottom.
28. Fit all wheels making sure the direction tread is correct both sides.
29. Fit steering column adjuster plate and the build up steering column with the bearing centre shaft and outer.
30. Clamp the outer to the mounting plate using 45mm u bolts
31. Cut steering UJ shaft in the middle and tap on stainless extension tube, till it is the required length to suit the car. When you are happy with the steering position either tack this shaft together or drill and bolt it.
32. Fasten back bracket onto brake pedal and fit to bulkhead
33. Fit brake cables through car and adjust to get working. (There are upgrade parts for all of this so please see other listing)
34. Fit seat to the required position
35. Fit door and tailgate slide catches
36. Check tailgate to wing alignment, adjust appropriately and then drill through the lower capping rivet holes through the body mount and rivet on as well as the 2 rear wing mounts each side. The rear x member bolts can also be done up now.

Electrical parts

1. Fit switches and change over switch into floor panel
2. Fit motor controllers to motor controller bracket and fasten to the side of the chassis as shown in pictures
3. Fit battery leaving room for wiring to pass by, ideally mount the middle side level with the centre of the car so you can fit 2 batteries' if required. Fasten the battery down with a clamp or strap. (Not supplied)
4. Fit fuse box to skid plate making sure switched don't hit the top of it.
5. Fit throttle pedal opposite brake pedal to bulkhead and drill grommet hole. You will need to pack this up to make sure full throttle can be archived
6. Wire up following wiring diagram included

Tornado rookie suffix A/B chassis diagram



Battery, throttle and speed controller postions