

Toyota GT86 Front Steering Rack Conversion Kit

Lexus LS UCF30 Hydraulic Steering Rack

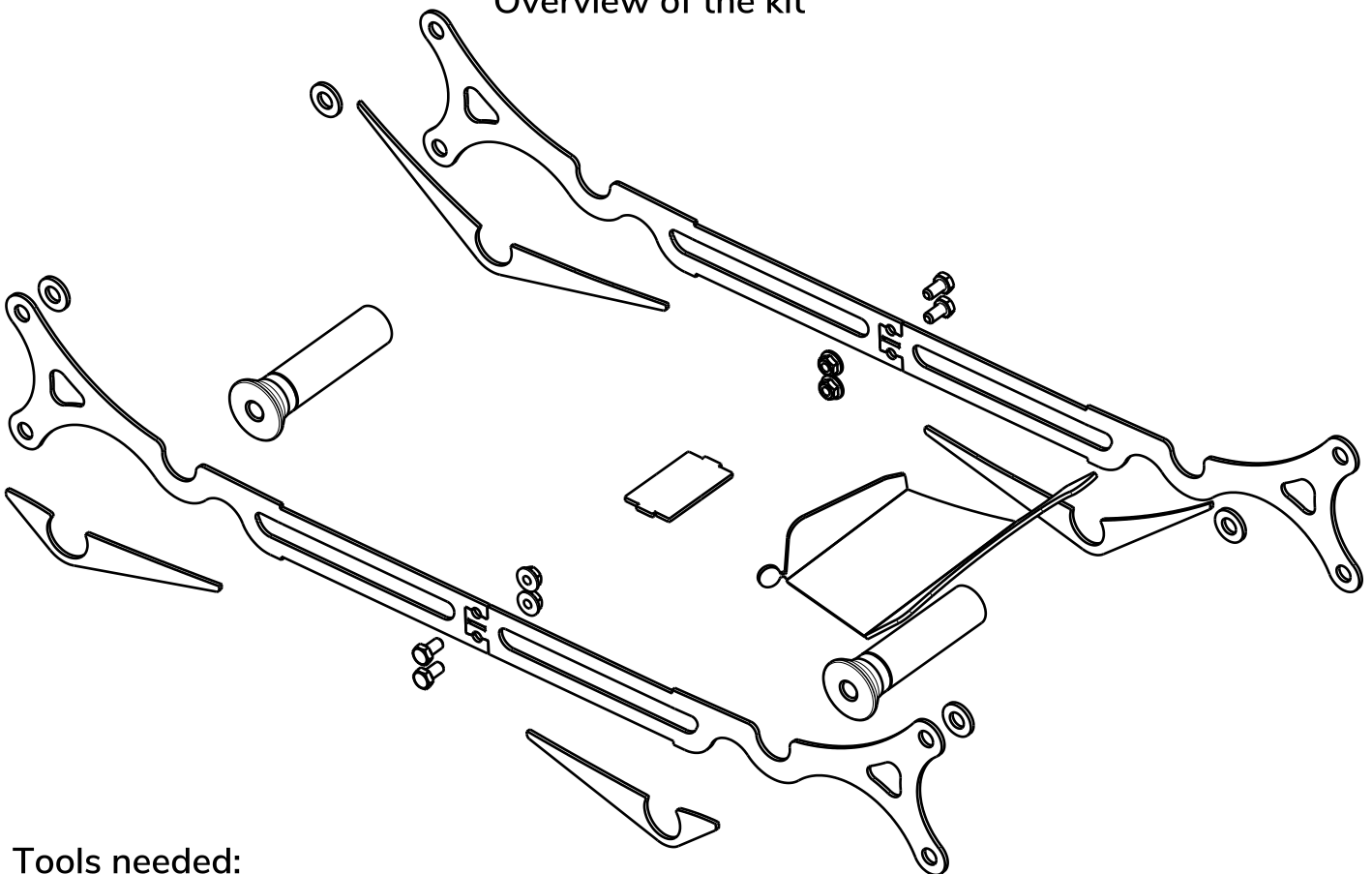
This manual describes the process of modifying the Toyota GT86/Subaru BRZ/Scion FRS front subframe to allow the use of the Lexus LS UCF30 front mounted hydraulic steering rack. With this modification new steering rack will be fitted in front of the subframe. This setup can only be used with WISEFAB GT86 V2 Front kit. Stock engine mounts can be used with modified subframe but stock engine can not be used. Engine mountings and oil pan modifications may be needed but with different engine setups different modifications are needed and this is not covered in this manual.

All actions described below are for right-hand drive rack. In case of using left-hand drive rack: positioning of the templates, cuts, rack pins, brackets and rack itself should be mirrored. Parts in the pictures may appear different from the real ones.

Components needed:

Steering rack: Lexus LS UCF30 Hydraulic Steering Rack LHD or RHD

Overview of the kit



Tools needed:

Make sure that You have the all required tools on hand. You will need:

- Safety equipment (welding mask, goggles, gloves)
- Marker, measuring tape, scissors
- Wrenches
- Angle grinder with cutting and sanding discs
- Welding equipment



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1. Remove the tie rods and rubber boots from the steering rack and clean it.
2. Print and cut the paper templates out. Dotted line on template is for positioning, bold solid line is for marking the cutting line. In a case you printed out the manual yourself, then there is scale check line 127mm or 5" long. If actual measurement is not that, then check your printing settings and reprint it until actual measurement is 127mm.
3. Clean the subframe from dirt/oil. Sandblast the subframe if possible.

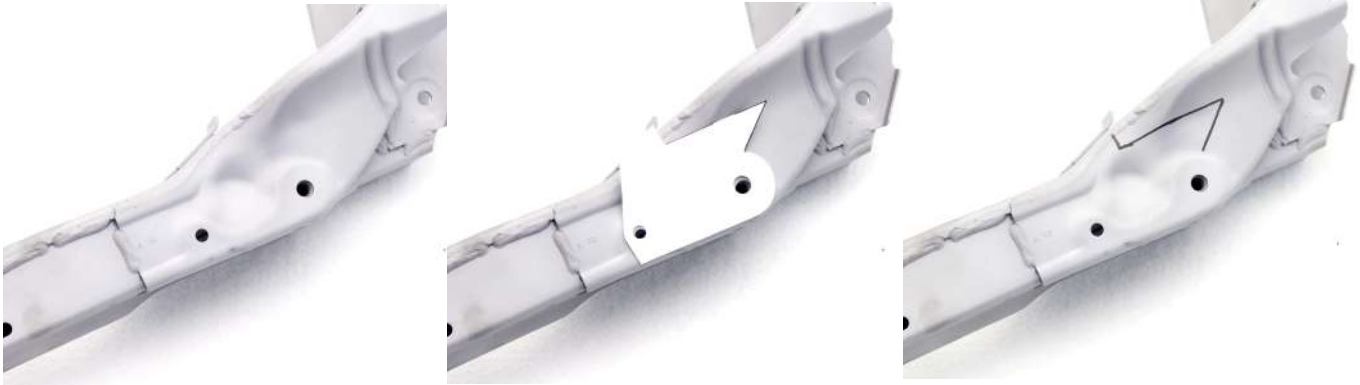


4. Position the Template 1 as shown on picture. Mark the cutting lines. Mark only the side were the steering shaft is. Right side for RHD and left side for LHD



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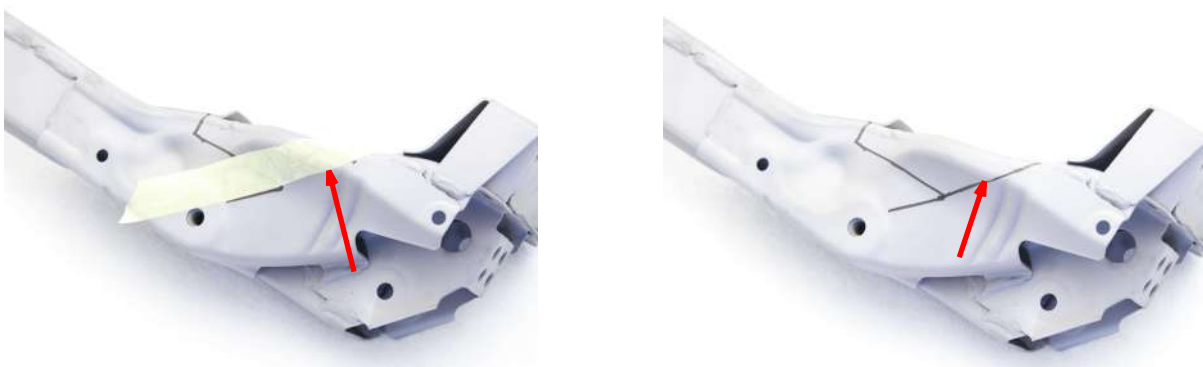
5. Position the Template 2 as shown on picture. Mark the cutting lines. Mark only the side where the steering shaft is. Right side for RHD and left side for LHD



6. Connect the two lines



7. Extend the line. Easiest way is to use masking tape for it.



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8. Position the Template 3 as shown on picture. Mark the cutting lines. Mark only the side where the steering shaft is. Right side for RHD and left side for LHD



9. Position the Template 4 as shown on picture. Mark the cutting lines. Mark only the side where the steering shaft is. Right side for RHD and left side for LHD



10. Position the Template 5 as shown on picture. Mark the cutting lines. Mark both sides.



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11. Cut out the marked areas.



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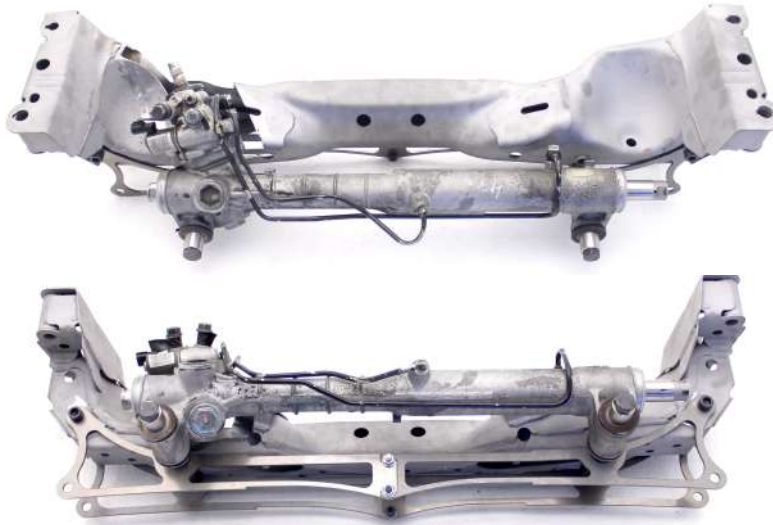


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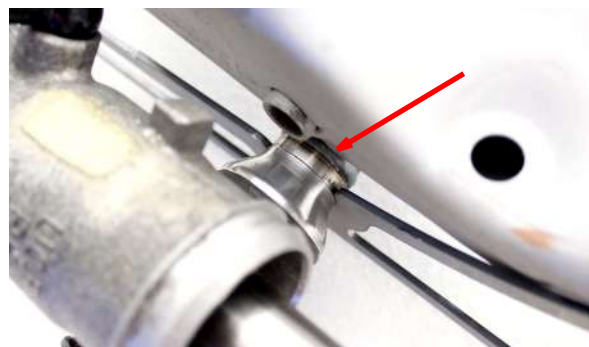
12. Assemble the welding jig



13. Bolt on the welding jig (using the OEM lower control arm bolt), new steering rack mounts and the steering rack to the subframe. Use the WFGD3_116 washers between the jig and subframe to space the jig away from the subframe. Then clamp the middle plate (plate between the 4 bolts) on the jig so there are no gaps between and tack weld it to the jig.



14. Make sure everything lines up

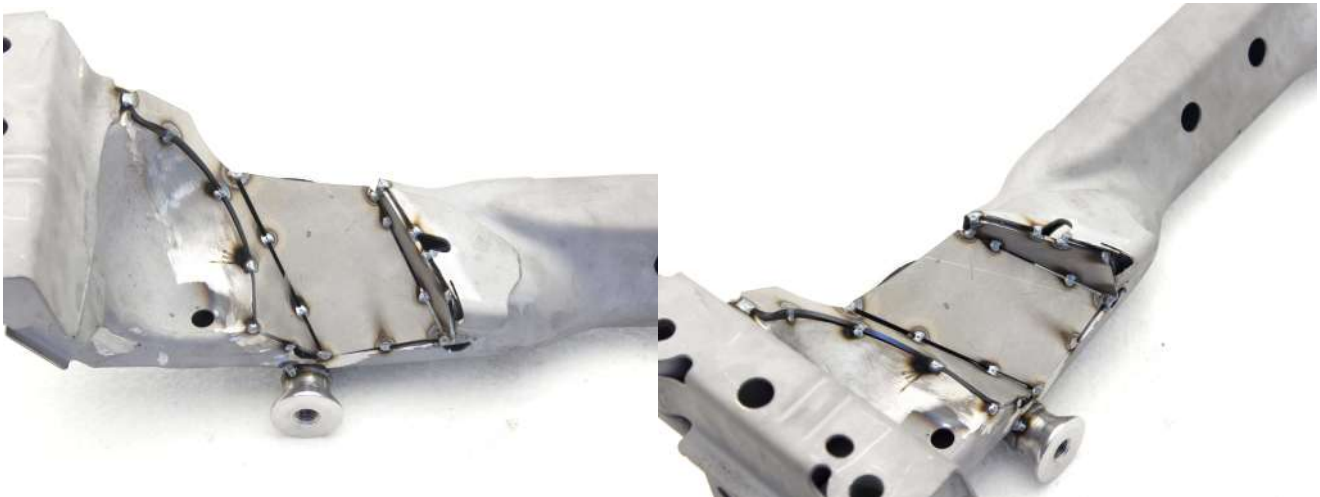


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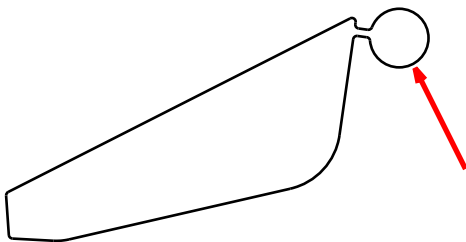
15. Tack weld the new mounts in place. DO NOT REMOVE THE STEERING RACK OR THE JIG WHILE WELDING.



16. Box in the subframe near the steering shaft and tack weld the plates in place

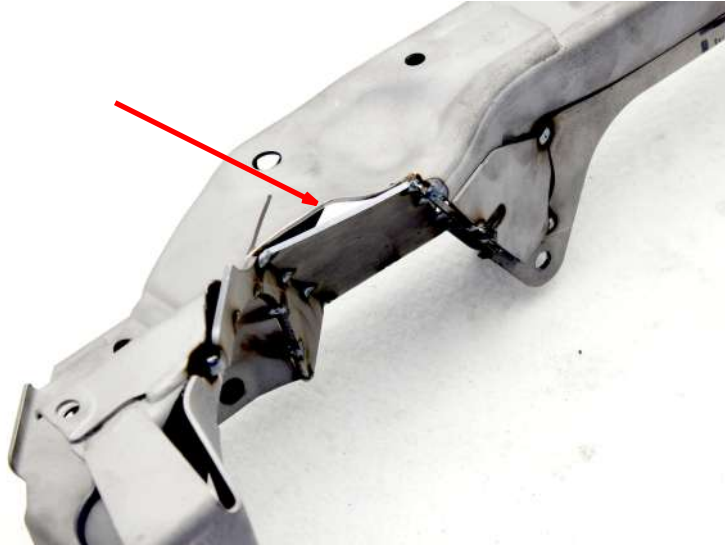


17. Use the circular part of the plate to fill the hole in the subframe



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18. Hammer the edge smooth with the box in plate.



19. Weld all the edges. DO NOT REMOVE THE STEERING RACK OR THE JIG WHILE WELDING. Avoid overheating the parts to minimize distortions. Remove the spatter and sharp edges after welding.



20. Add the strengthening plates. First tack weld and then seam weld them in place. DO NOT REMOVE THE STEERING RACK WHILE WELDING. Avoid overheating the parts to minimize distortions. Remove the spatter and sharp edges after welding.



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20. Test fit the steering rack to the subframe. If everything is fine then apply the appropriate coating (Black powder coating in the picture)



21. Assemble the kit.



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Steering shaft modification

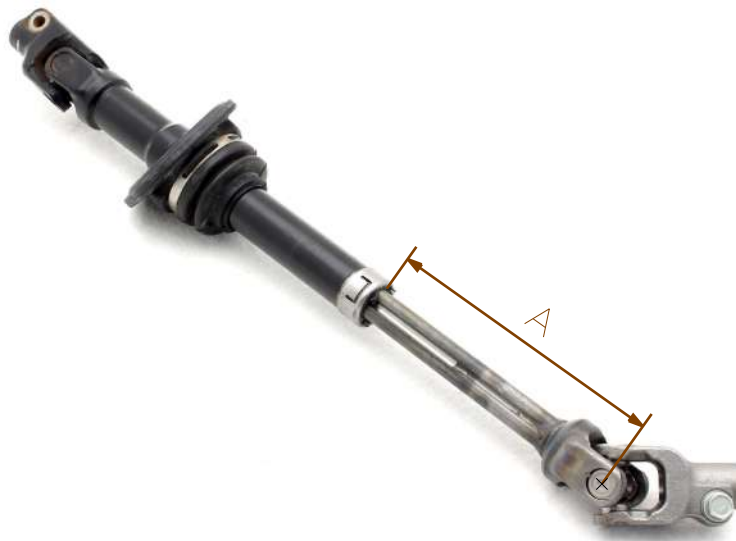
Most of the cars with swapped engines has the steering shaft modified in some way and one setup that fits all is not possible. The next steps will show the possibilities to get the steering shaft fitted.

1. Use the Lexus LS UCF30 OEM steering shaft extender.

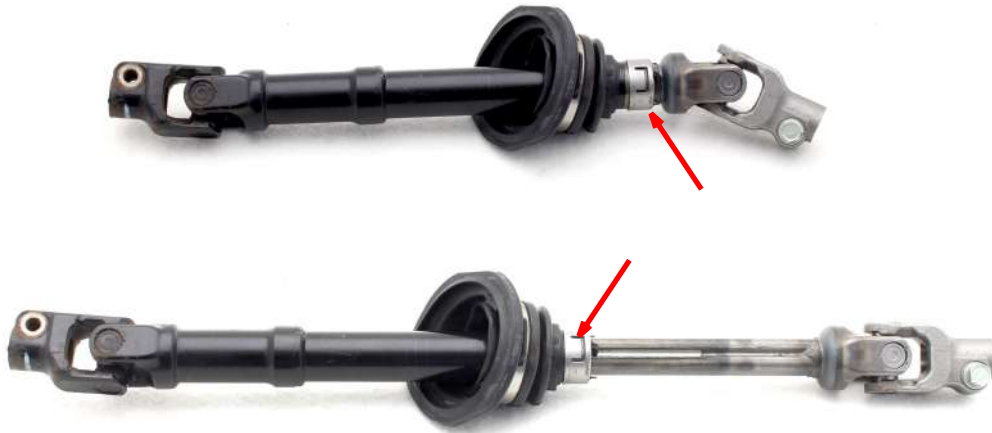


2. If the steering shaft is too long and cannot be fitted with the OEM steering shaft extender, then it can be installed without it.

3. If the steering shaft is too short without the OEM steering shaft extender, then the steering shaft has to be shortened and used with the OEM steering shaft extender. Before removing the steering shaft from the car, measure the distance A. The next steps will show how to shorten the OEM steering shaft.



4. The OEM steering shaft is expandable. To shorten the shaft the extended part has to be shorten. First take of the cap.



5. Pull the steering shaft apart. Do not lose any of the bearing balls.



6. Cut of as much as it is needed from the engine side part. It is best to use a turning machine for it because then the cap locking groove can be cut also. If this is not possible then it can be cut with a angle grinder or a saw and the locking cap can be tack welded in place.



7. Test fit the inner side of the steering shaft with the shortened part. If the dimension A (that was previously measured) can be achieved and there is room for the inner side to slide in extra 40 mm, then the inner side can be left uncut. If it can not move in the extra 40 mm then it needs to be shortened. For example if it goes in only about 25 mm from the A dimension then the inner part has to be shortened by 15 mm.



8. Grind down all the sharp edges and tack weld the end of the slot on the inner part.



9. Clean all the parts and assemble. Use bearing grease between the sliding element. If the locking cap does not have groov to lock on to then tack weld it place



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127 mm

4

