Toyota GT86/Subaru BRZ/Scion FRS subframe modification for Lexus IS 1st gen steering rack.

MODIFICATIONS MANUAL

FOR RACING USE ONLY

Toyota GT86/Subaru BRZ/Scion FRS subframe modification for Lexus IS 1st gen steering rack.

This manual describes the process of modification of the Toyota GT86/Subaru BRZ/Scion FRS front subframe which will allow to use the Lexus IS 1st gen (XE 1998-2005) hydraulic steering rack. With this modification new steering rack moves forward; rack is placed inside the subframe. Given setup is meant to be used with WISEFAB GT86 Front kit.

NB! Stock engine mounts could not be used with modified subframe.

All actions described below are for left-hand drive rack. In case of using right-hand drive rack: positioning of the templates, cuts, rack pins, brackets and rack itself should be mirrored.

1. 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
- Power drill with cone drill up to Ø28 mm. Angle grinder with cutting and sanding discs, Electric burr
- Welding equipment

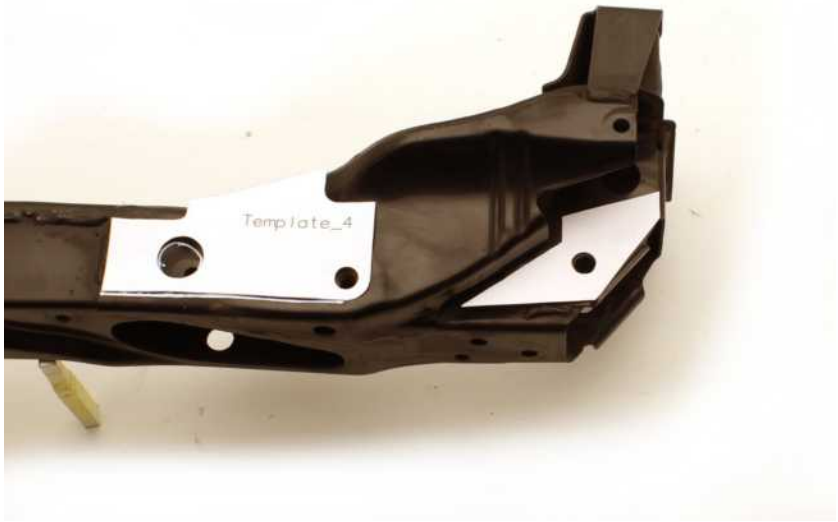
2. Print and cut the paper templates out. Dotted line on template is for positioning, bold solid line is for marking the cutting line. In a case you printed out the manual yourself, then there is scale check line 127mm or 5“ long. If actual measurement is not that, then check your printing settings and reprint it until actual measurement is 127mm.

3. Remove the tie rods and rubber boots from the steering rack. Press out the rubber bushings from the mounting points. Cut off the half from the lower mounting point. Grind excessive material from the upper mounting point (if wall thickness exceeds 9mm). See picture.

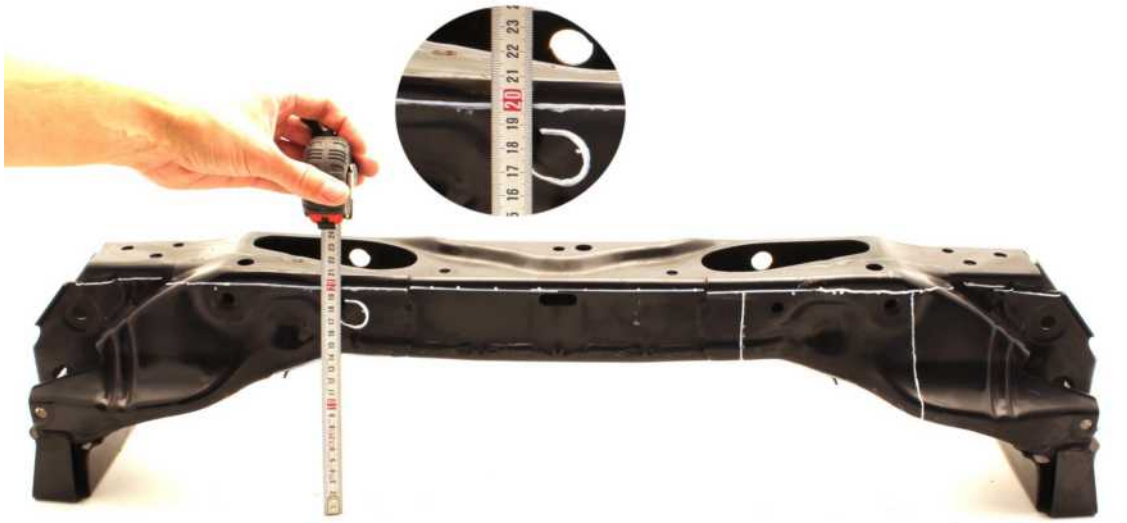
4. Clean the subframe from dirt/oil. Sandblast the subframe if possible.

5. Position the Template_1 and Template_2 as shown on picture. Mark the cutting lines.

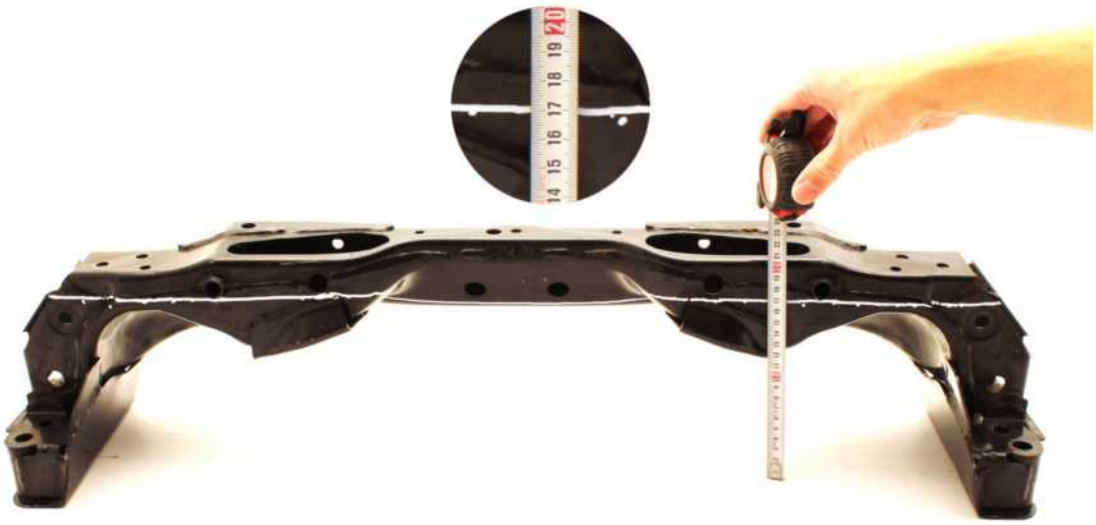
6. Position the Template_3, Template_4 and Template_5 as shown on pictures. Template_5 is symmetrical and could be used on both sides of the subframe. Mark the cutting lines.



7. Put the subframe upside down on an even surface with back side of the subframe facing towards You. Draw the horizontal line 197mm high from the surface. See picture.



8. Turn the subframe around, front of the subframe should be facing towards You. Draw horizontal line 170mm high from the surface. See picture.



9. Connect the cutting lines according to the pictures.

10. Drill hole dia 28mm according to the Template_4. See picture.

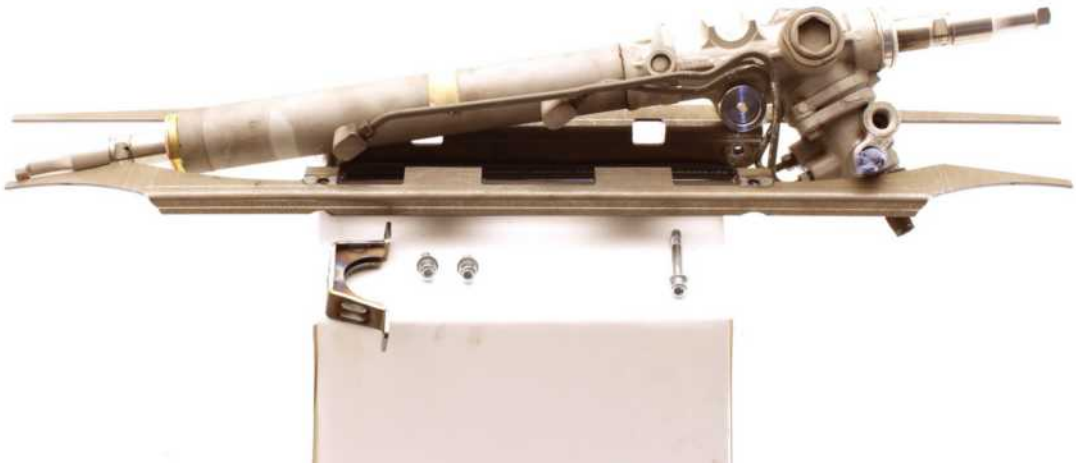
11. Start cutting the subframe.

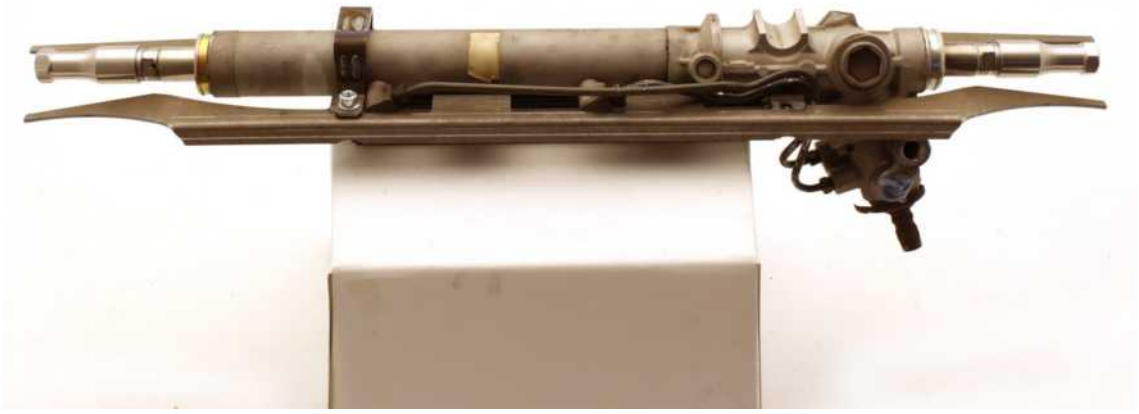
12. Cut out the inner wall and remove the inserts used as mounting ponts for the stock rack.

13. Attach the welding jig to the subframe. This will add stiffness to the weakened subframe. Proceed with cutting.

14. Mount the grooved support into the insert. Position of the support depends on the type of rack used; for left-hand drive or right-hand drive. See pictures.

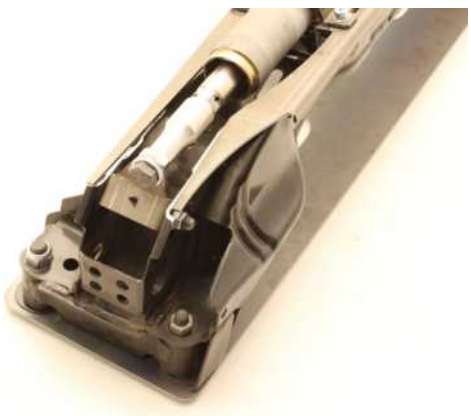
15. Make sure that the rack itself is centered and add extensions. Insert the pin into the upper mounting point of the steering rack. Put washer to the other side of the mounting point and while holding the washer slide rack into the insert. Bend the brake lines so that the brackets could be inserted. Put brackets and fasteners. See pictures.



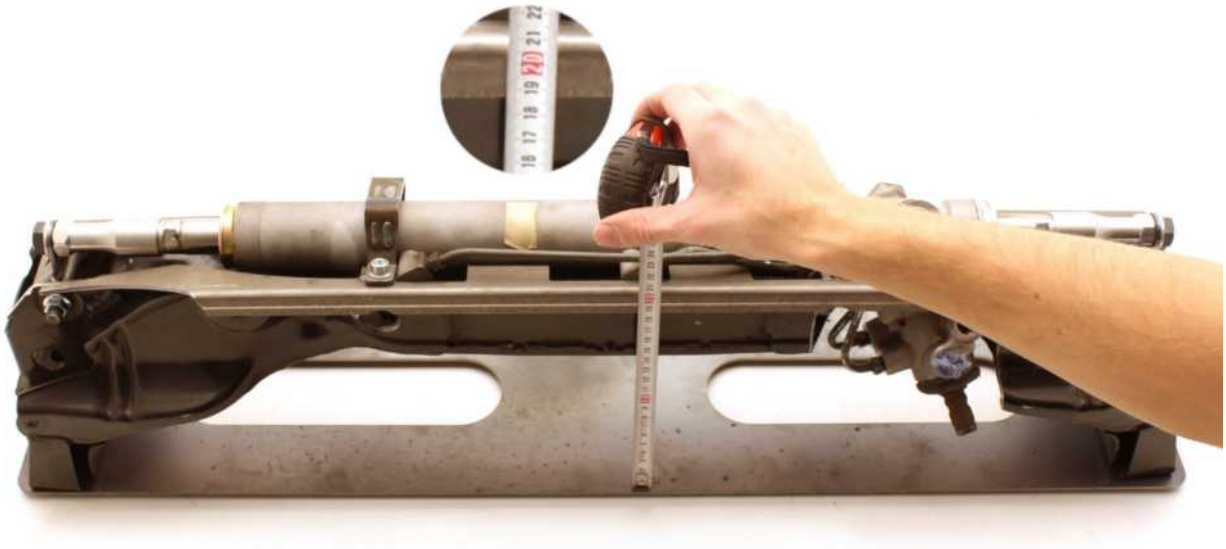


16. Add positioning brackets to the subframe. Arrow on the bracket should be faced towards the nose of the car.

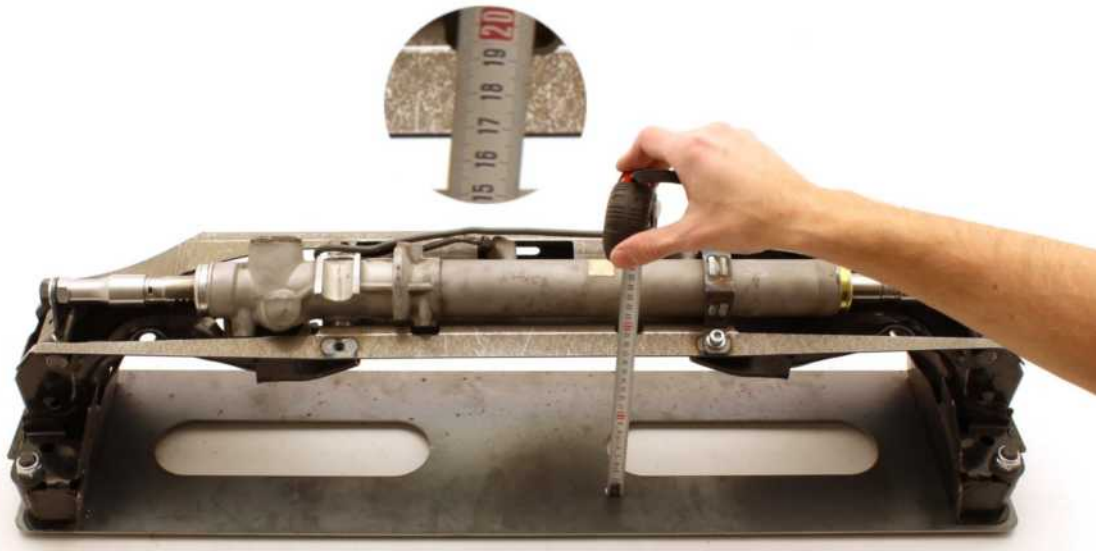
17. Put the rack into the insert assembly and slide the whole assembly into the subframe. Check the alignment of the holes. Positioning brackets should be easily bolted to the lower control arm mounting point. Remove material from the subframe if needed. See pictures.



18. Check that there is 185 mm from the welding jig to the edge of the bend. See picture.



19. Check that there is 165 mm from the welding jig to the edge of the insert. See picture.

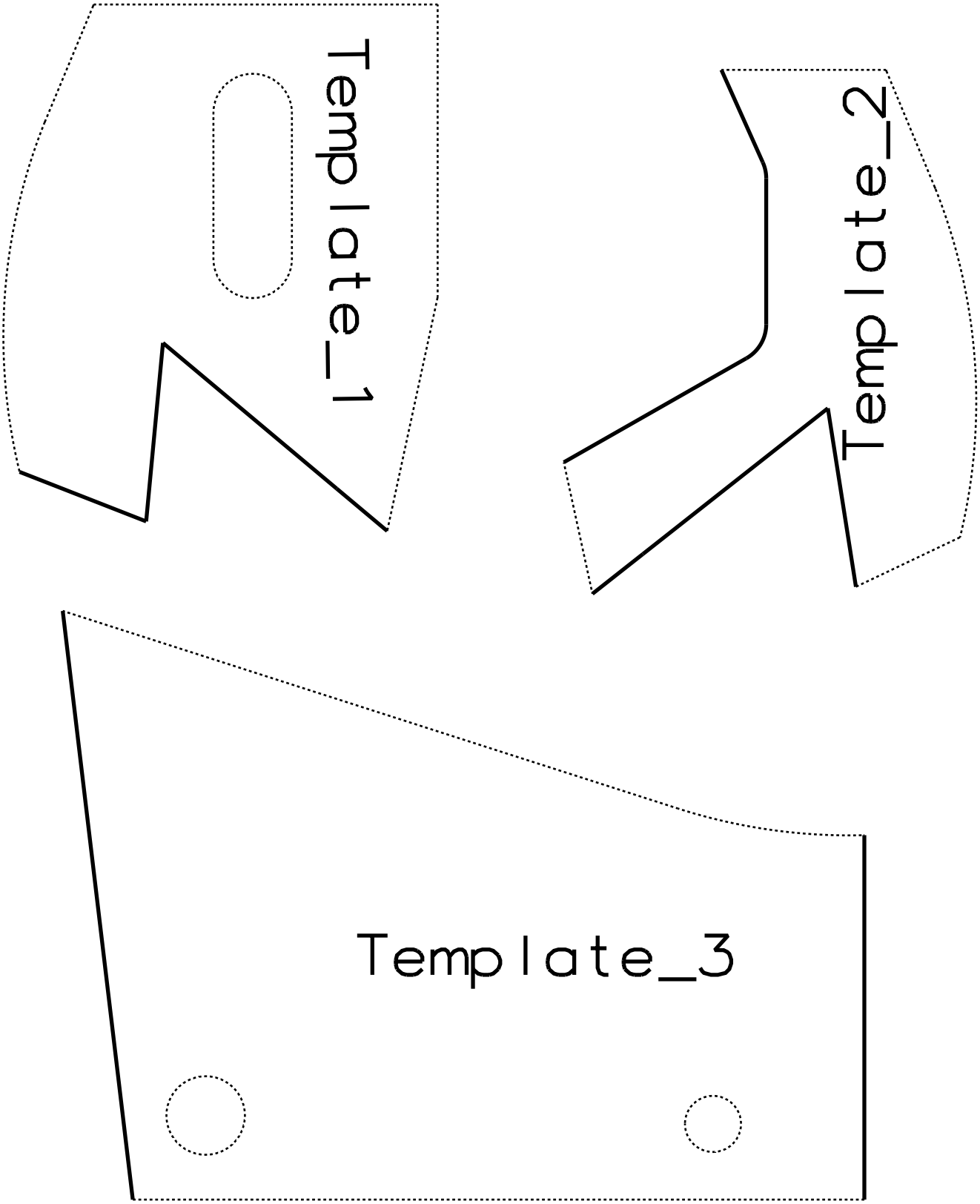


20. Remove the paint/rust from the subframe in places where welding beads will be.Using the Template_6 mark the position of the reinforcement rib. Check that there is enough space between the reinforcement rib and pinion shaft extender.

21. With welding jig attached and steering rack bolted with positioning brackets - tack the insert with several points. Make sure that the steering rack could be easily removed from the assembly and all fasteners are accessible.

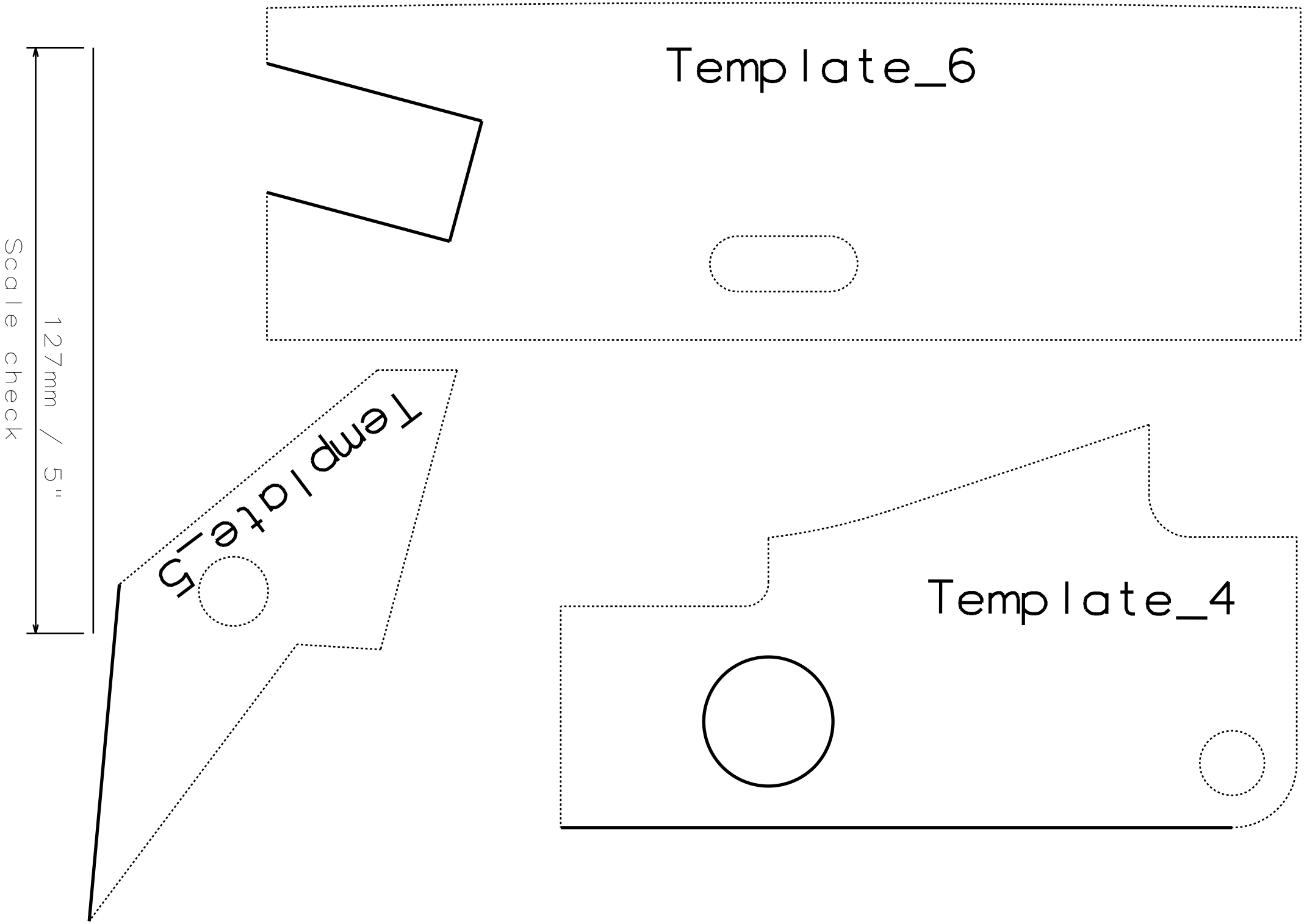
22. Remove the steering rack and positioning brackets. Welding jig should stay attached at this step. Complete the welding of the insert. Avoid overheating the parts to minimize distortions. Weld the reinforcement rib into place according to the markings. Remove welding jig. Remove the spatter and sharp edges. Apply appropriate coating.

23. Assemble the kit.



127mm / 5"

Scale check


Template_6
Scale check
127mm / 5"
Template_5
Template_4