

# Toyota GT86 Front Steering Rack Conversion Kit BMW E90 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 BMW E90 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.

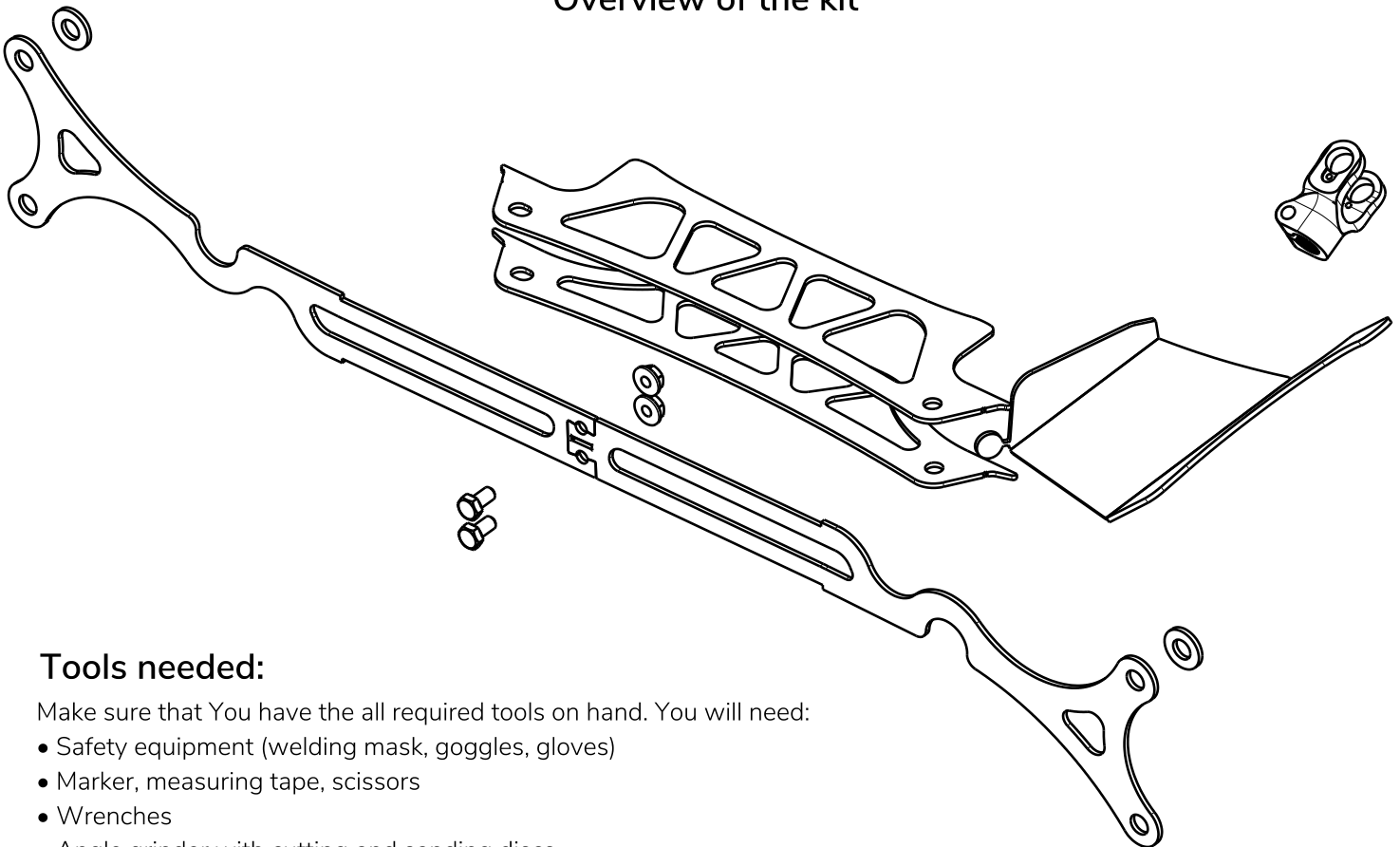
All actions described below are for right-hand drive rack. In case of using left-hand drive rack: positioning of the templates, cuts, rack pins, brackets and rack itself should be mirrored.

Parts in the pictures may appear different from the real ones.

## Components needed:

Steering rack: BMW E90 Hydraulic Steering Rack LHD or RHD (Active steering and Electric power steering rack can not be used or may need more modification than there are in this manual)

## 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



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

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



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

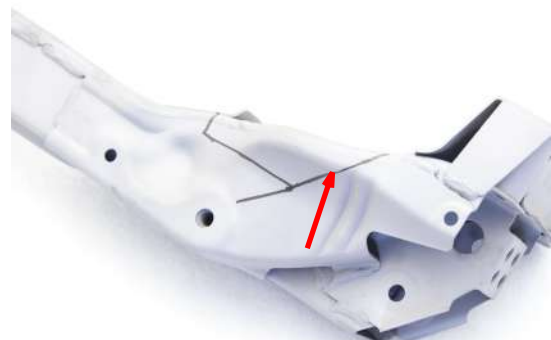
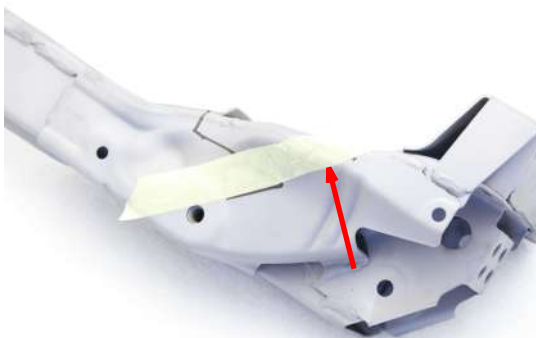
5. Position the Template 2 as shown on picture. Mark the cutting lines. Mark only the side where the steering shaft is. Right side for RHD and left side for LHD



6. Connect the two lines



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



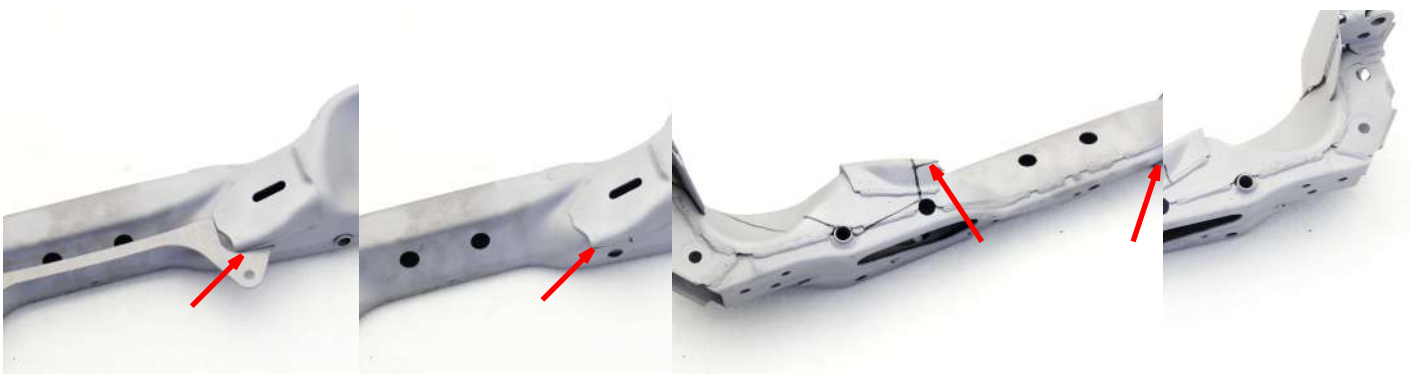
8. Position the Template 3 as shown on picture. Mark the cutting lines. Mark only the side where the steering shaft is. Right side for RHD and left side for LHD



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. If the OEM engine mounting points on the subframe are not use then remove them from the subframe. If they are still needed then use the WF8691\_101 to mark the cutting lines. Both engine mounts has to be marked.



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

11. Cut out the marked areas.



**FOR RACING  
USE ONLY** 

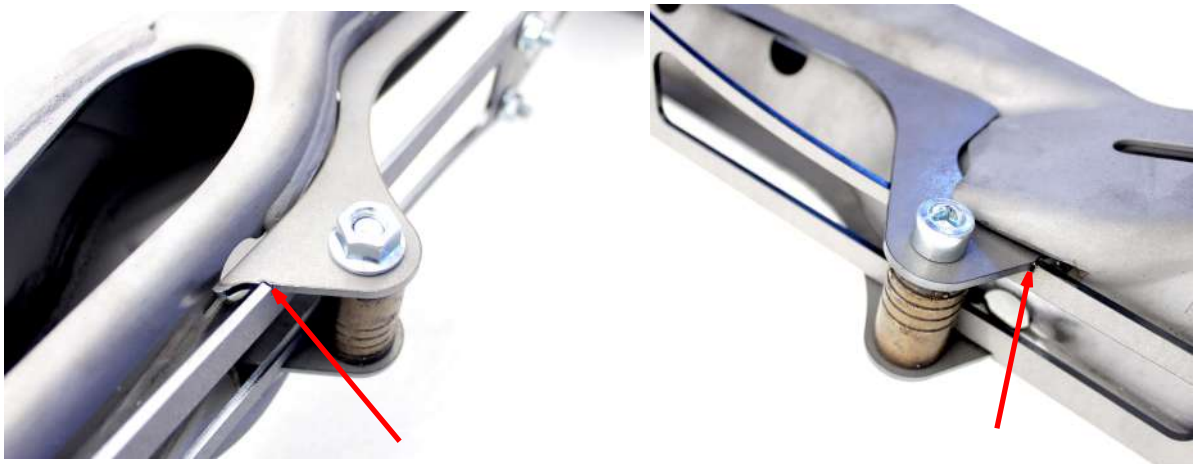
If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669



12. Bolt on the welding jig, new steering rack mounts and the steering rack to the subframe. Use WFGD3\_116 washers between the jig and subframe to space the jig out. (for illustration purposes there is no steering rack in the pictures)



13. Make sure everything lines up

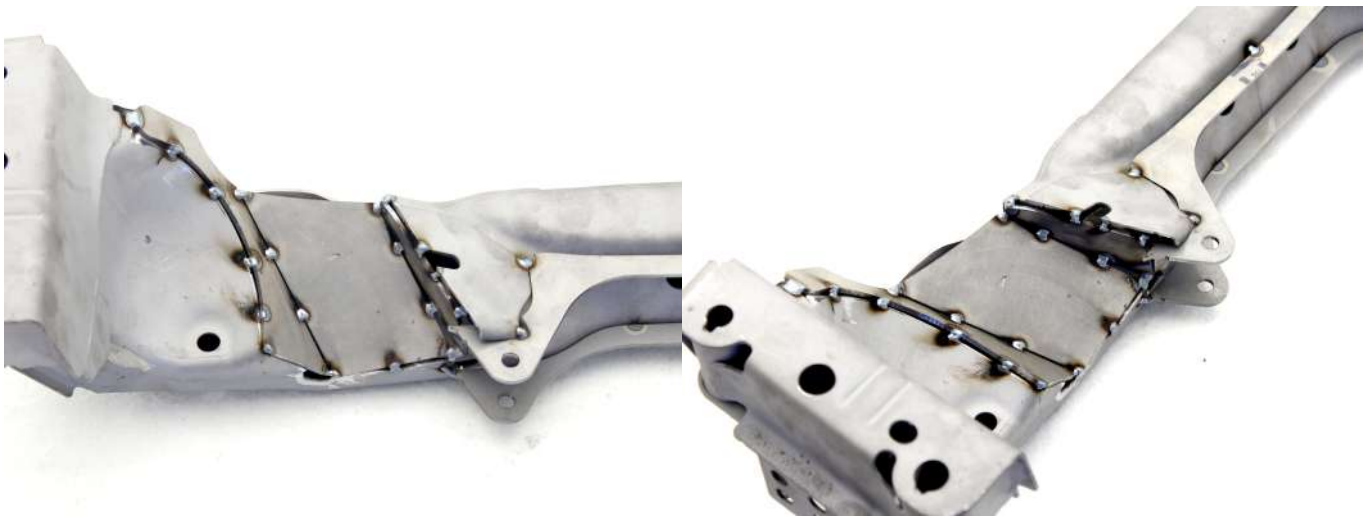


If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

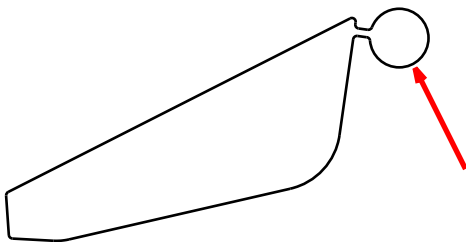
14. Tack weld the new mounts in place. DO NOT REMOVE THE STEERING RACK OR THE JIG WHILE WELDING.



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

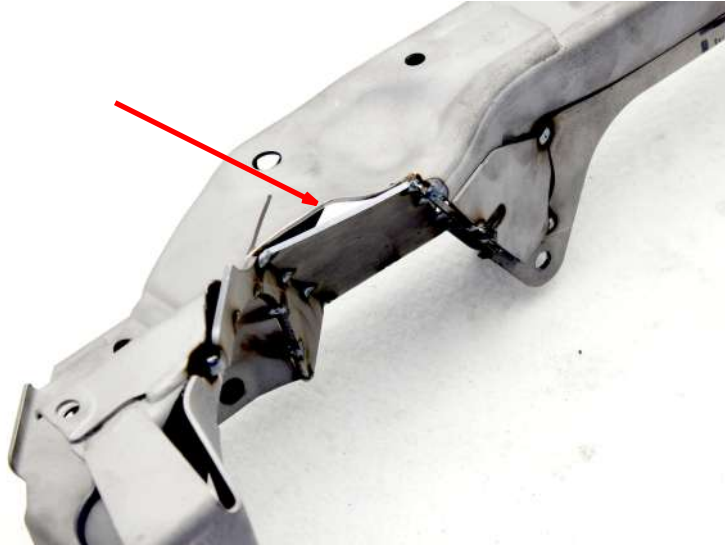


16. Use the circular part of the plate to fill the hole in the subframe



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

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



18. 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.



**FOR RACING  
USE ONLY**



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669





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



20. Assemble the kit.



## Steering shaft modification

OEM steering rack and the BMW E90 steering rack has different steering shaft splines. For that Wisefab kit provides a new steering shaft universal joint with custom universal joint housing.

1. Remove the engine side steering shaft universal joint.



2. Clean the universal joint housing bearing cup surface and make sure there are no sharp edges or score marks.

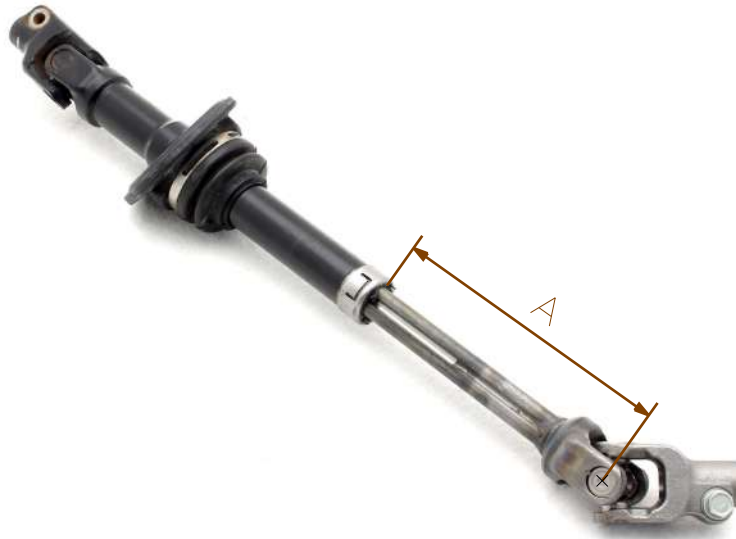


3. Remove the two bearing cups from the universal joint. Insert the universal joint cross with pre fitted Wisefab universal joint housing in the steering shaft universal joint housing and press in the two bearing caps. After the two bearing caps are pressed in fix them by hitting the top part of the universal joint housing with a chisel.

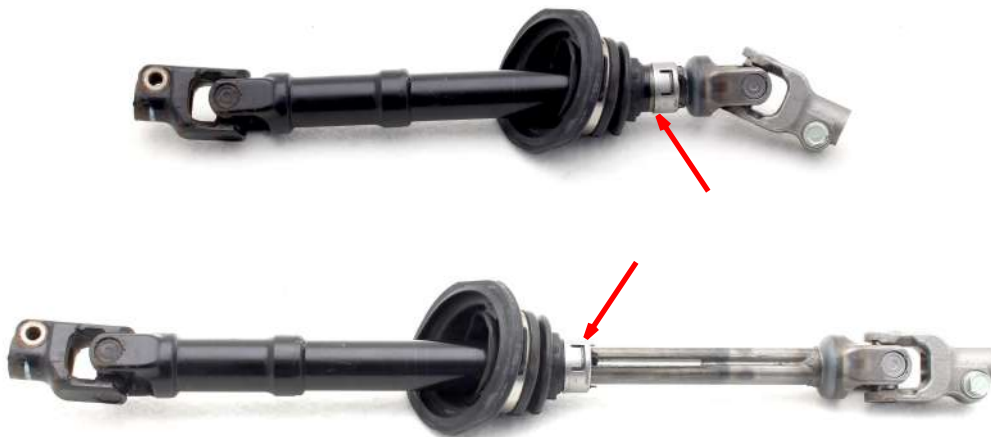


If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

4. If the steering shaft is too long then the steering shaft has to be shortened. Before removing the steering shaft from the car measure the distance A. The next steps will show how to shorten the OEM steering shaft.



5. The OEM steering shaft is expandable. To shorten the shaft the extended part has to be shortened. First take off the cap.



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



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669

7. Cut off 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 an angle grinder or a saw and the locking cap can be tack welded in place.



8. 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 cannot 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 a groove to lock on to then tack weld it in place.

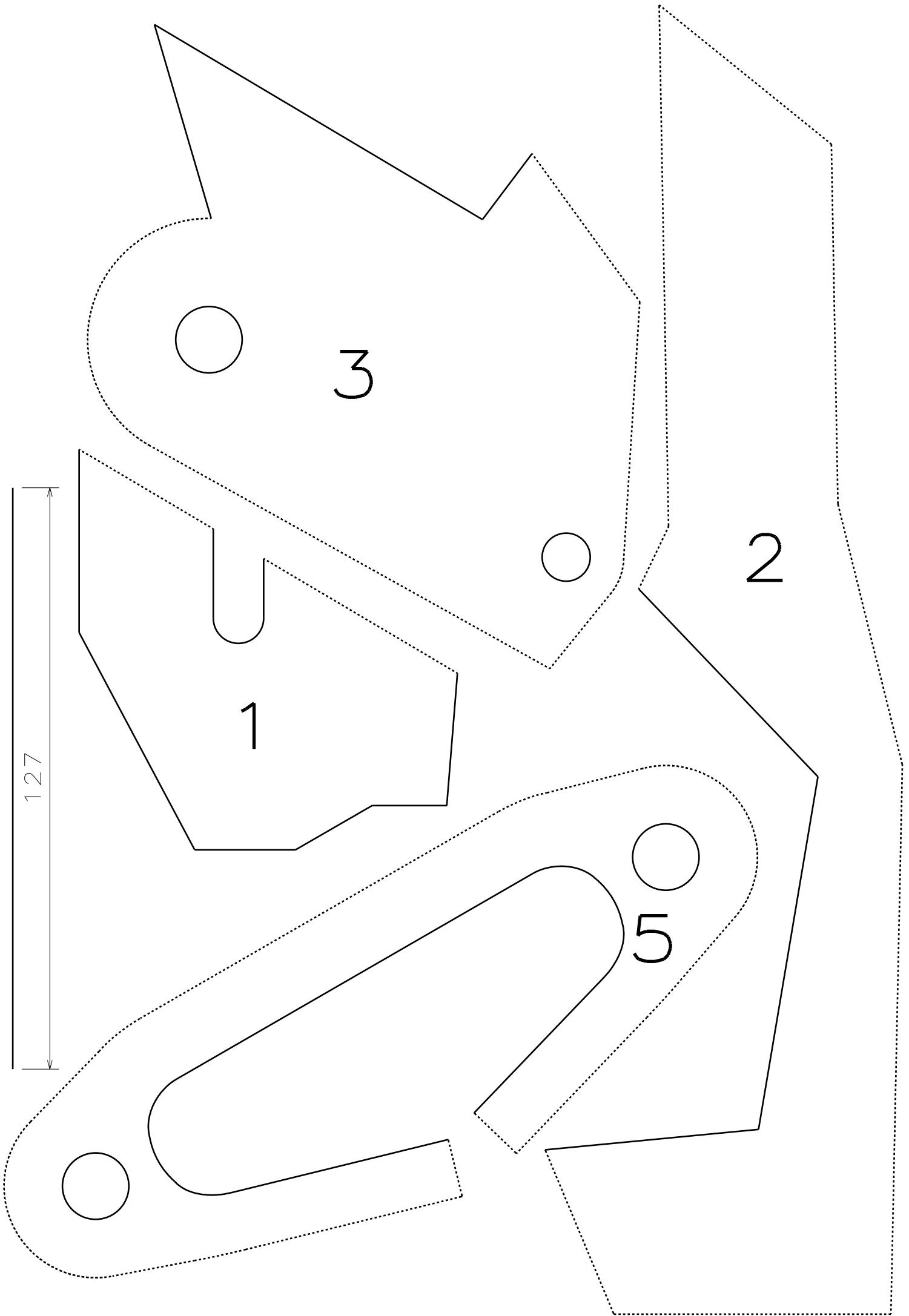


**FOR RACING  
USE ONLY**



If you still have some trouble installing the kit, contact us at [sales@wisefab.com](mailto:sales@wisefab.com), or call us +372 5562 5669







127 mm

4

