A new era in 4WD

Content

1 Introduction

Welcome and thank you for choosing the Elcon Models FourteX 4WD off-road buggy!

In this quick guide for assembly, we hope the provided information will help you to build your car. It can be used also as a help finding part numbers.

As a general guide line we advise you to use blue Loctite (243) on screws/nuts. Items under high load can be glued with a higher grade (green) Loctite. We advise to use a higher grade of Loctite at the wheel squares and at securing the output shafts in the planet gear carriers.

When taking out the car for the first time, allow a short time to run in gears and check bolts coming loose, especially after building the car the first time.

The manual follows the building of the car from front-end to rear. It is possible to follow a different order when building the car. Front/middle/rear can be build independent from each other.

NOTE: Each item in the building kit is packed with its needed assembly materials.

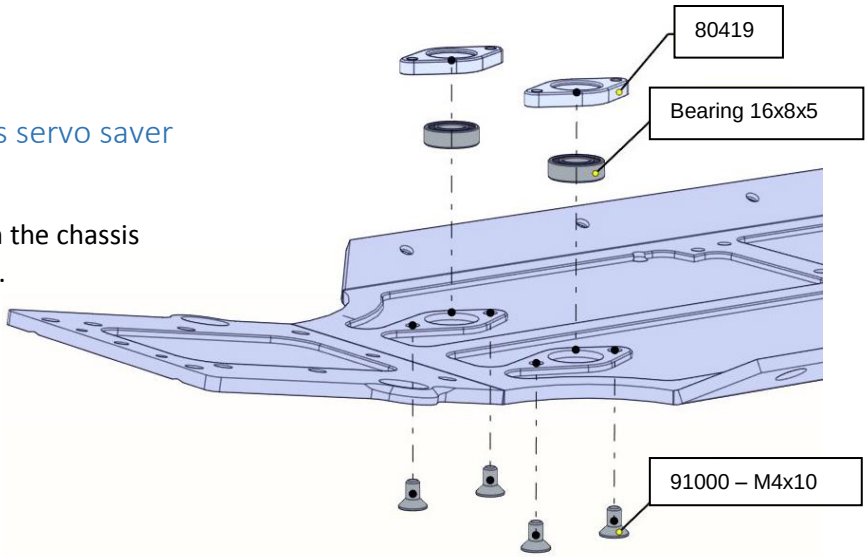
We advise you to unpack only the part(s) needed per building step to prevent mixing and loss of needed bolts/nuts/rings etc.

Pictures, colours, items can be subject of change and might differ from the part delivered.

We wish you a lot of pleasure in building and driving the car and hope to meet you on track.

2 Front-end

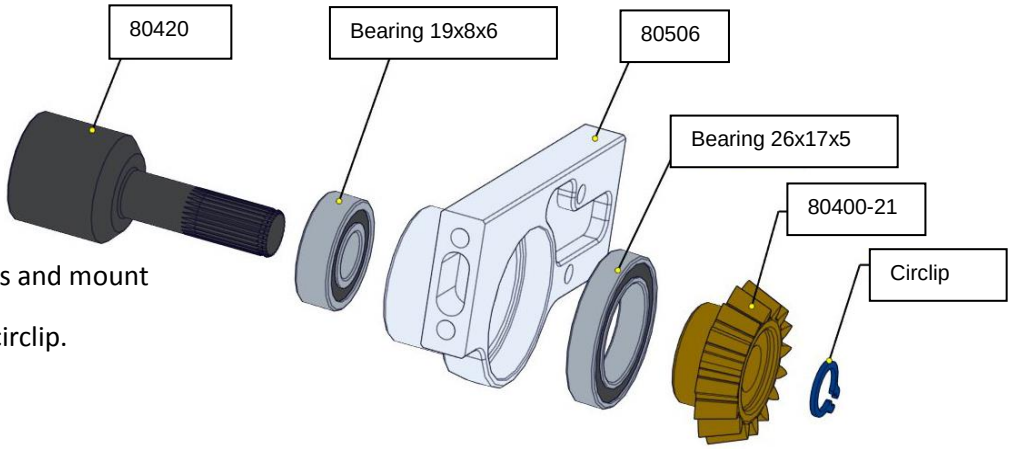
2.1 Mounts and bearings servo saver



Bearing 16x8x5 is fitted partly in the chassis and partly in the bearing mount.

Secure the mounts with bearings as shown onto the chassis.

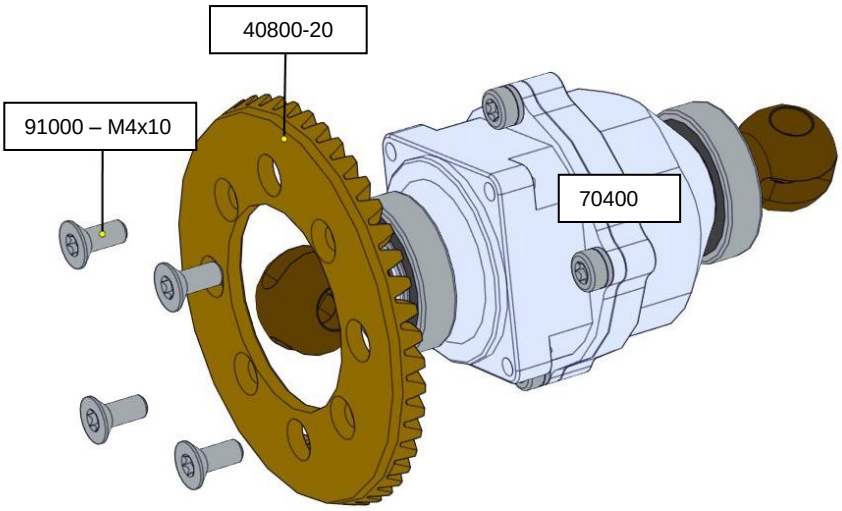
2.2 Pinion carrier



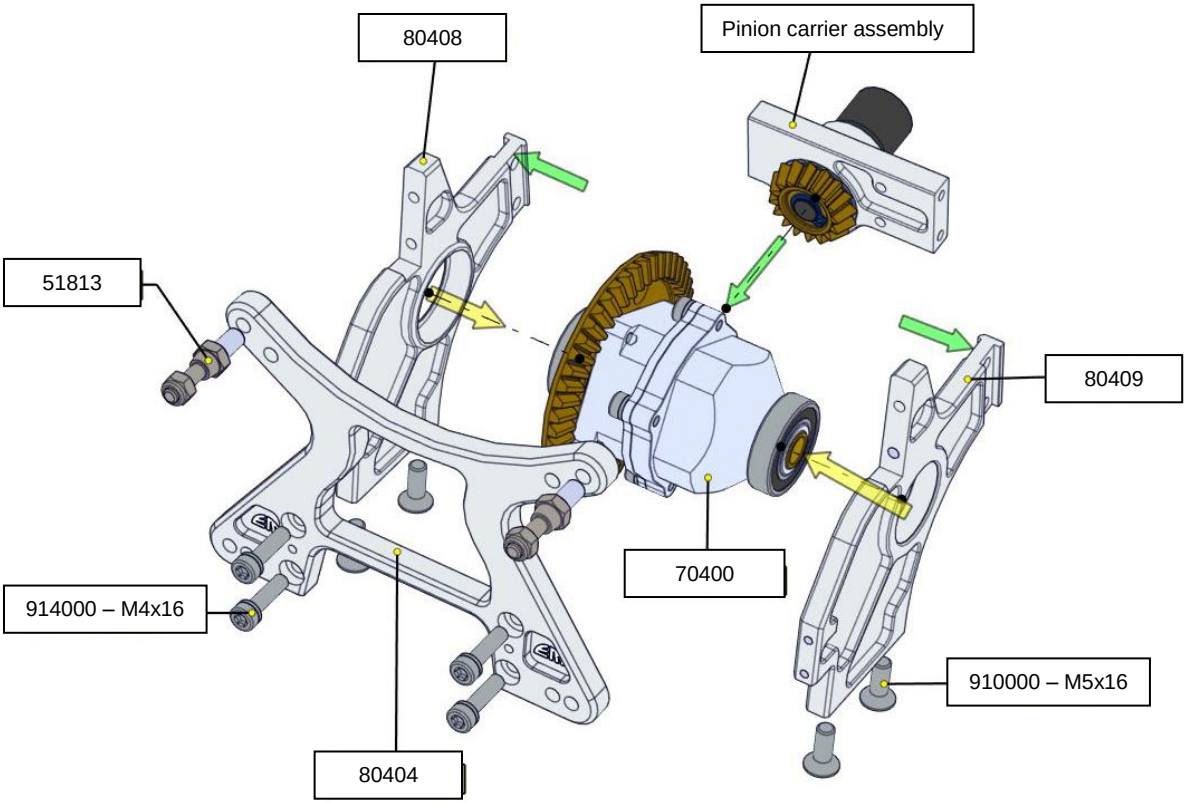
Press bearings into the front pinion carrier.

Place drive cup in bearings and mount pinion gear. Secure with circlip.

2.3 Differential, gear and dif mounts



Mount crown wheel to the differential with the countersunk bolts.



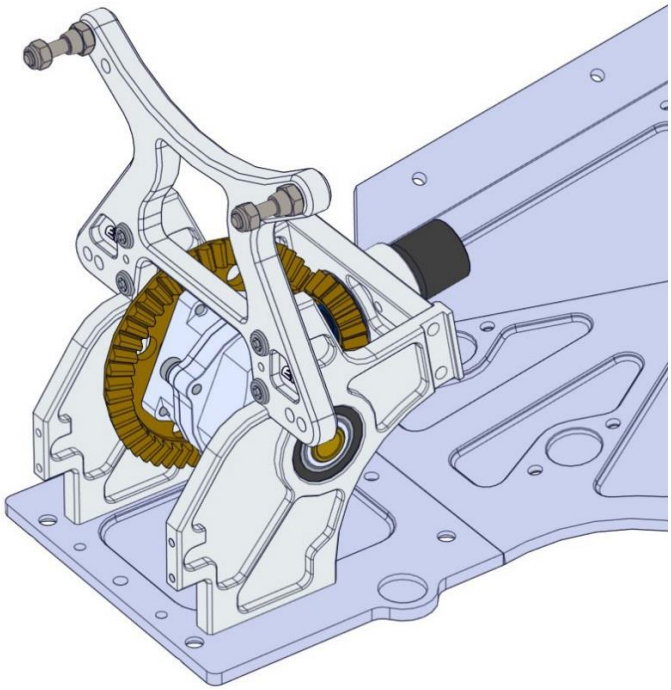
The differential is mounted in the dif mount 80408 and 80409.

The pinion carrier assembly is put in between the dif mounts.

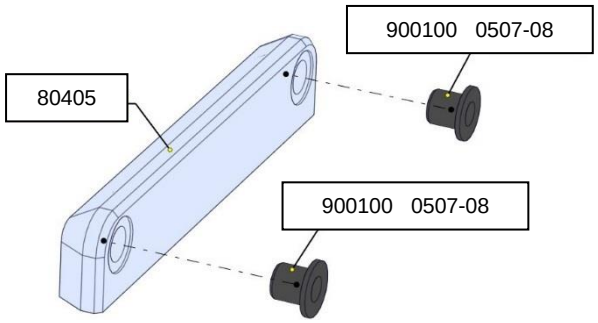
Fixate the dif mounts using the front shock plate 80408, secure with bolts and lock rings.

Shock bolts 51813 are mounted on the top.

The front assembly is secured on the chassis using the countersunk bolts



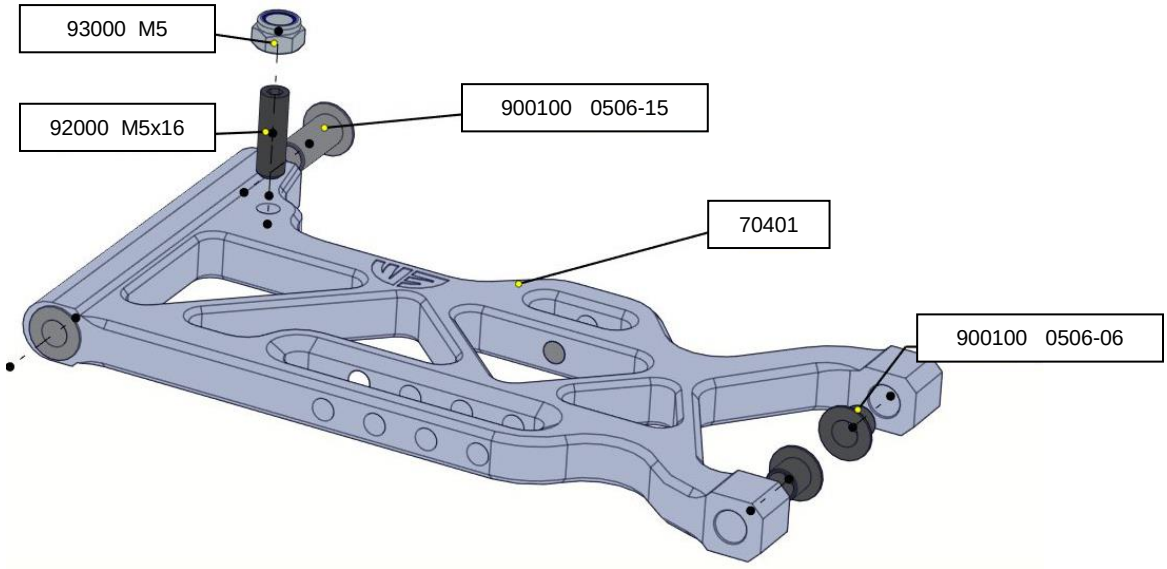
2.4 Wishbones and bulkhead



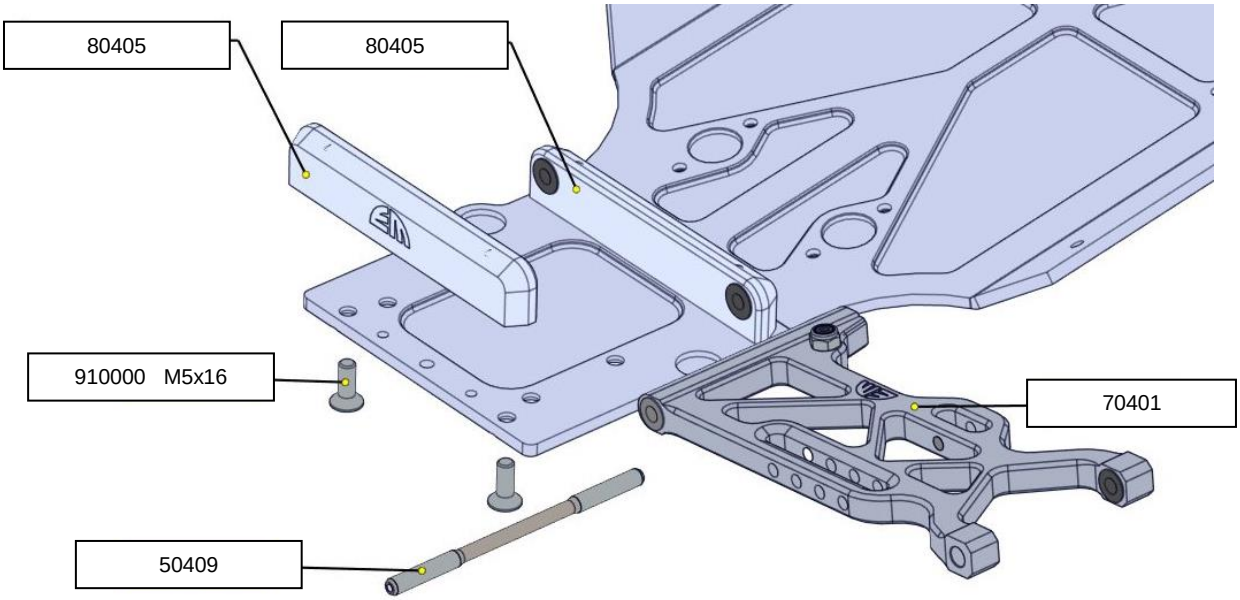
Press in the bushing in the bulkhead.

Mount bulkhead to chassis on rear position.

Press in bushings for the wishbones and mount the droop screw and lock nut.

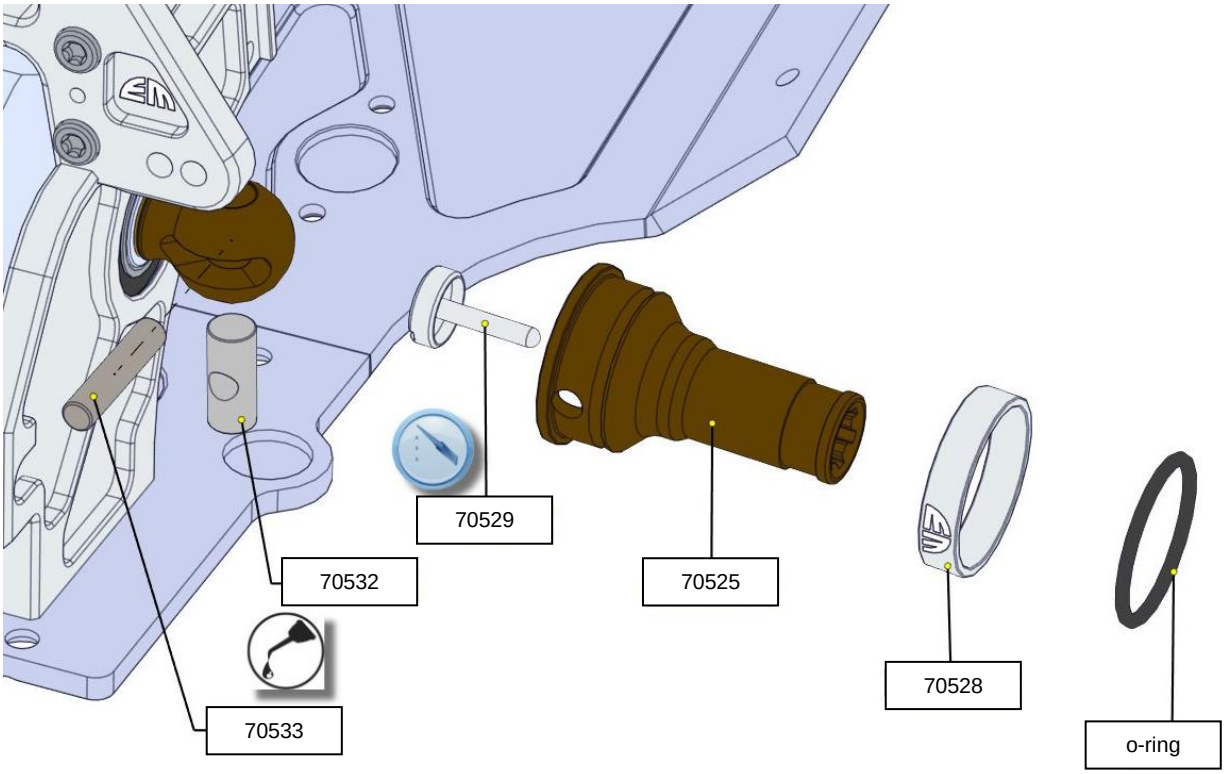


Mount the wishbones with the bulkheads and wishbone pin to the front part of the chassis.

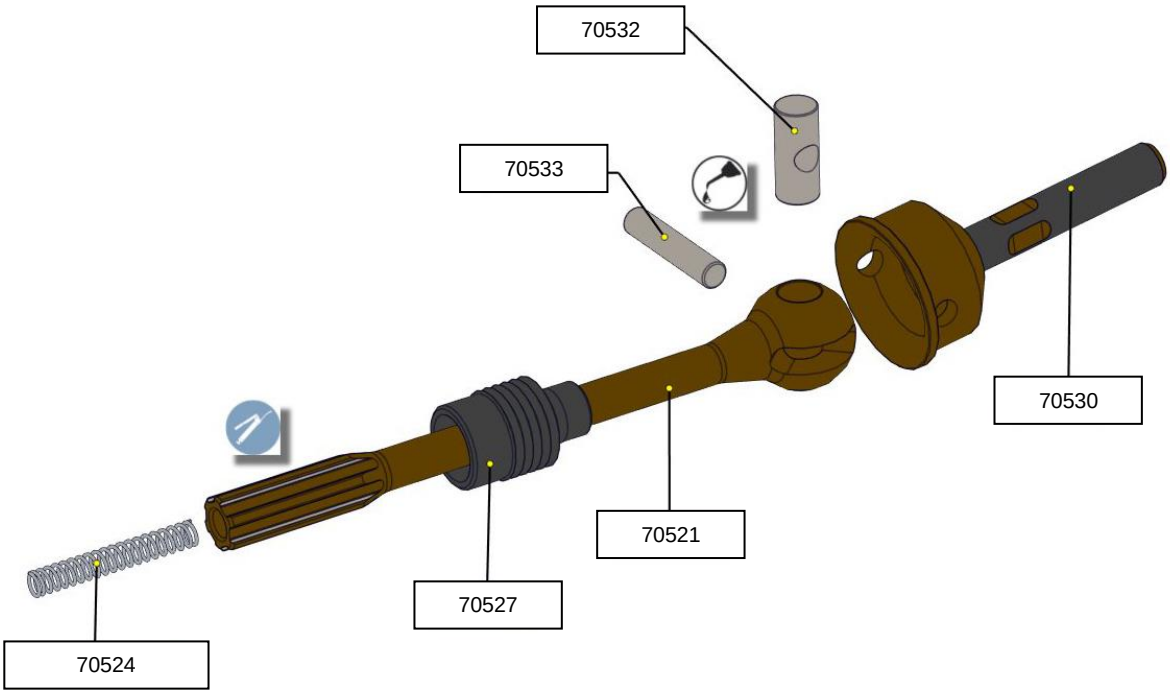


2.5 Spline drive, c-hub & upright

Assemble the spline drive, at the differential outdrive as pictured below.



Built the second part of the spline drive together as in the detail below.

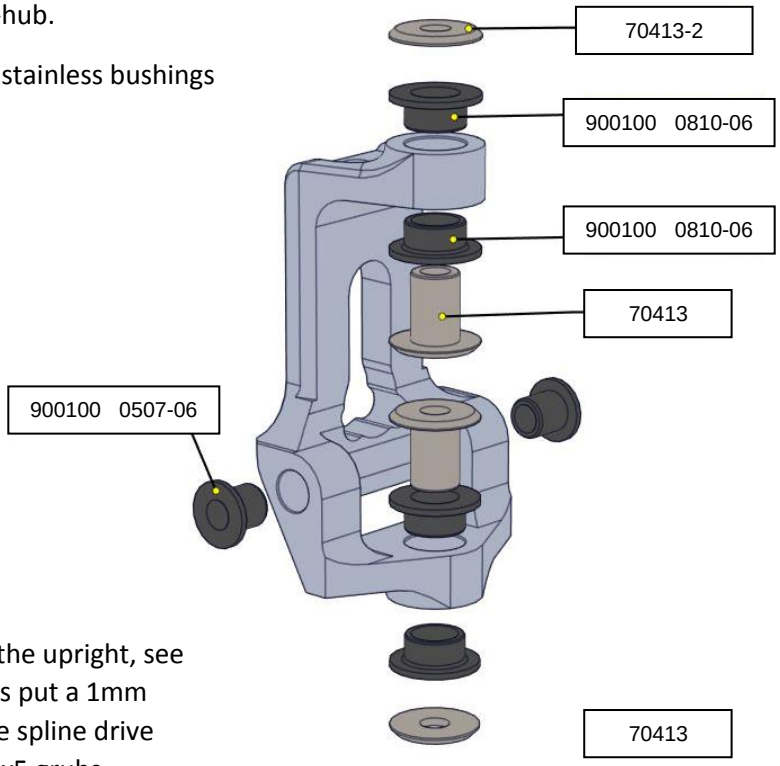


Note: Lubrication of the CVD joints after each tank is advised for the spline drive system.

The spline is greased and needs very little maintenance.

Press in the plastic bushings in the c-hub.

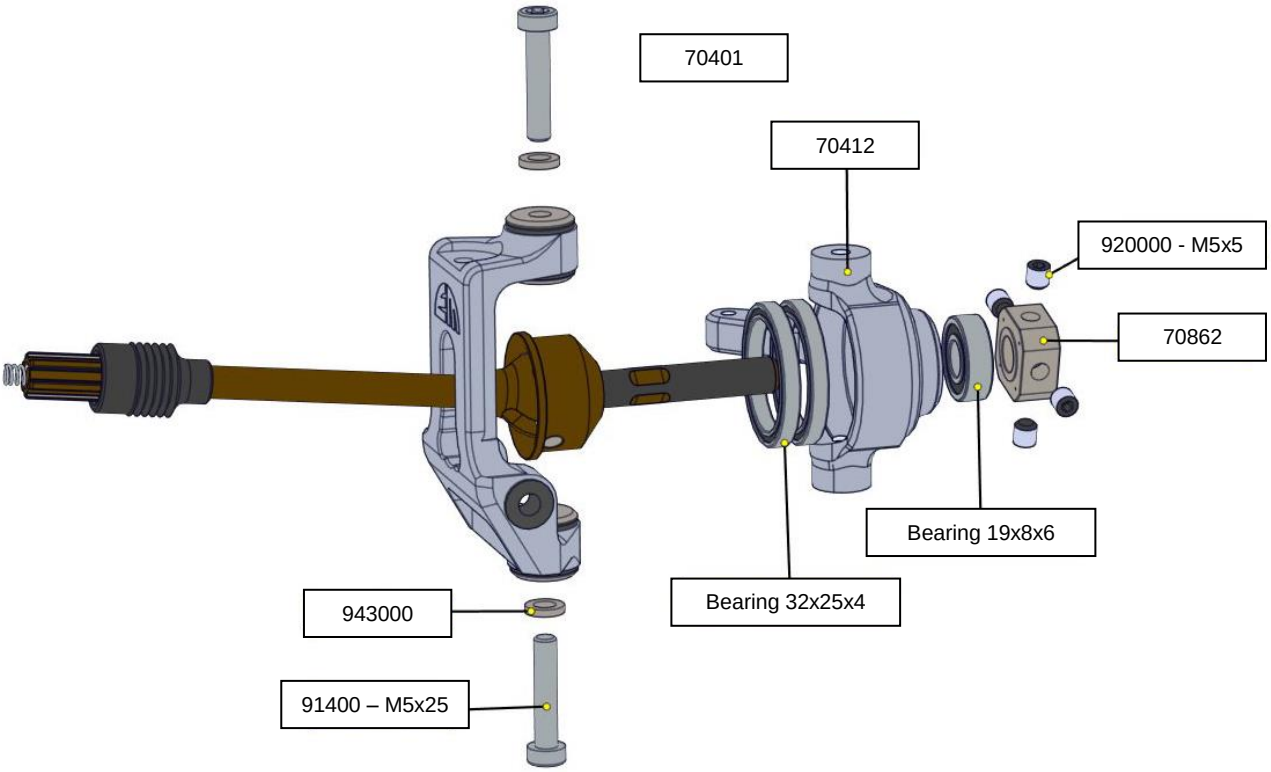
See the picture on the right on how stainless bushings and rings are placed.



Next step is to place the bearings in the upright, see bottom picture. On the wheel shaft is put a 1mm shim ring (not on picture). Secure the spline drive with the wheel square, using the M5x5 grubs.

Now the spline end is put through the slotted hole of the c-hub.

Put the upright in place and mount fix the upright using the M5x25 screws.



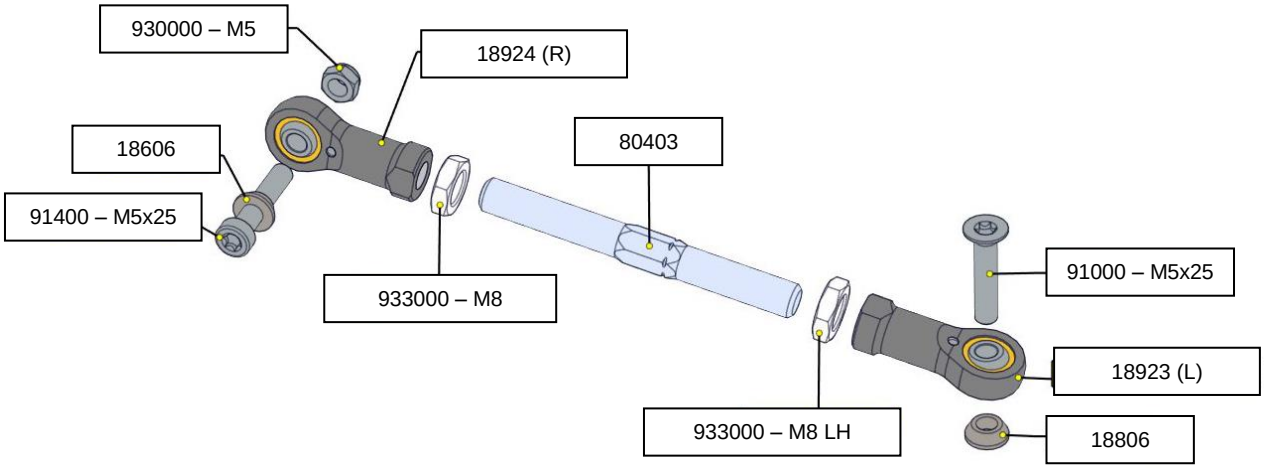
Note: pay attention to correct orientation (phasing) of the spline drive!

2.6 Top wishbone

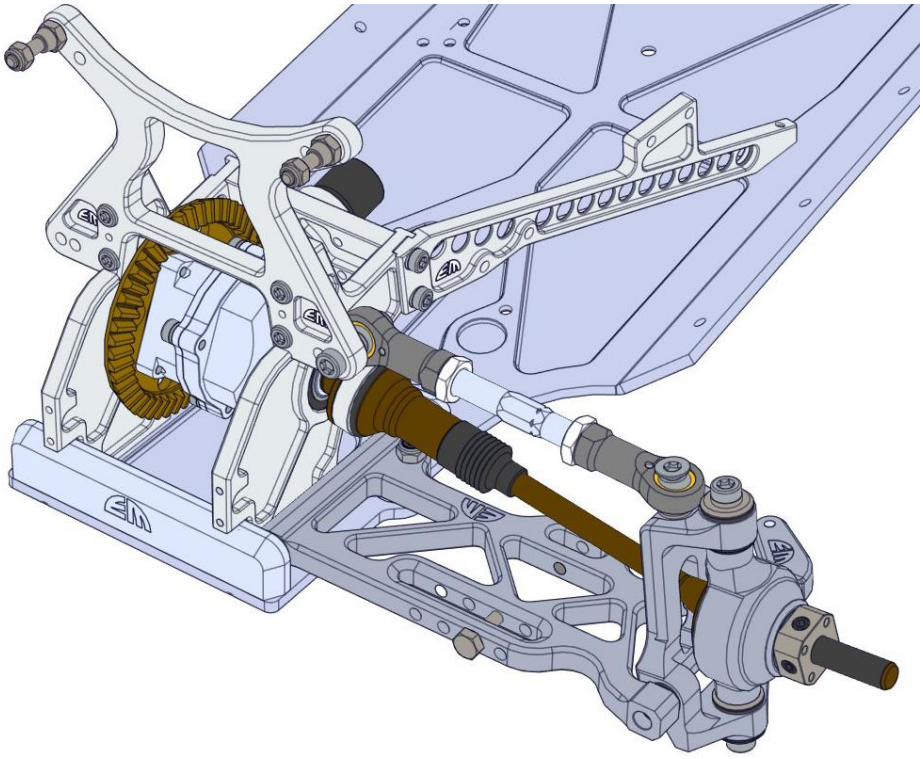
The top top wishbone uses Left and Right handed thread on the rod. The side with Left handed thread is marked with a small cut on the hex part.

The ball joints are marked with R/L. The left handed nut is also marked with either an arrow or cut on the outside.

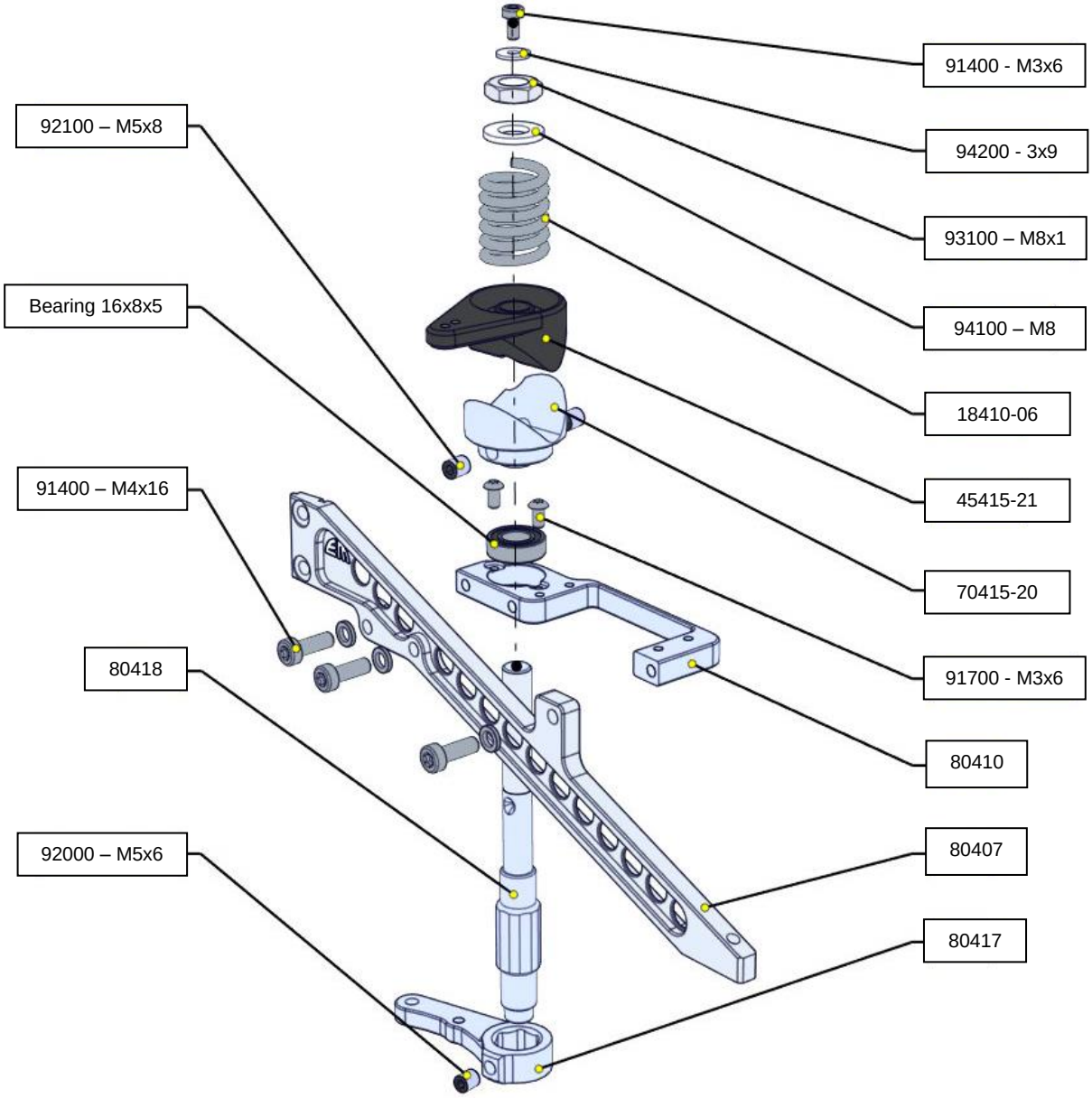
Assemble the top wishbone as below.



Now assemble the top wishbone to the front end together with the pre-build c-hub, upright and spline drive.



2.7 Servo supports and saver



Fit bearing in servo support and secure with panhead bolt.

Insert saver axle and fixate the alloy saver part with the cone end grub screws.

Fit the Delrin saver horn with saver spring. Mount ring and the flat nut on the saver axle. Apply a full turn as pre-tension on the saver spring. Mount on top the small cylindrical bolt with ring to prevent loss of the saver nut.

Mount the steering lever to the main axle, fix with flat-end grub.

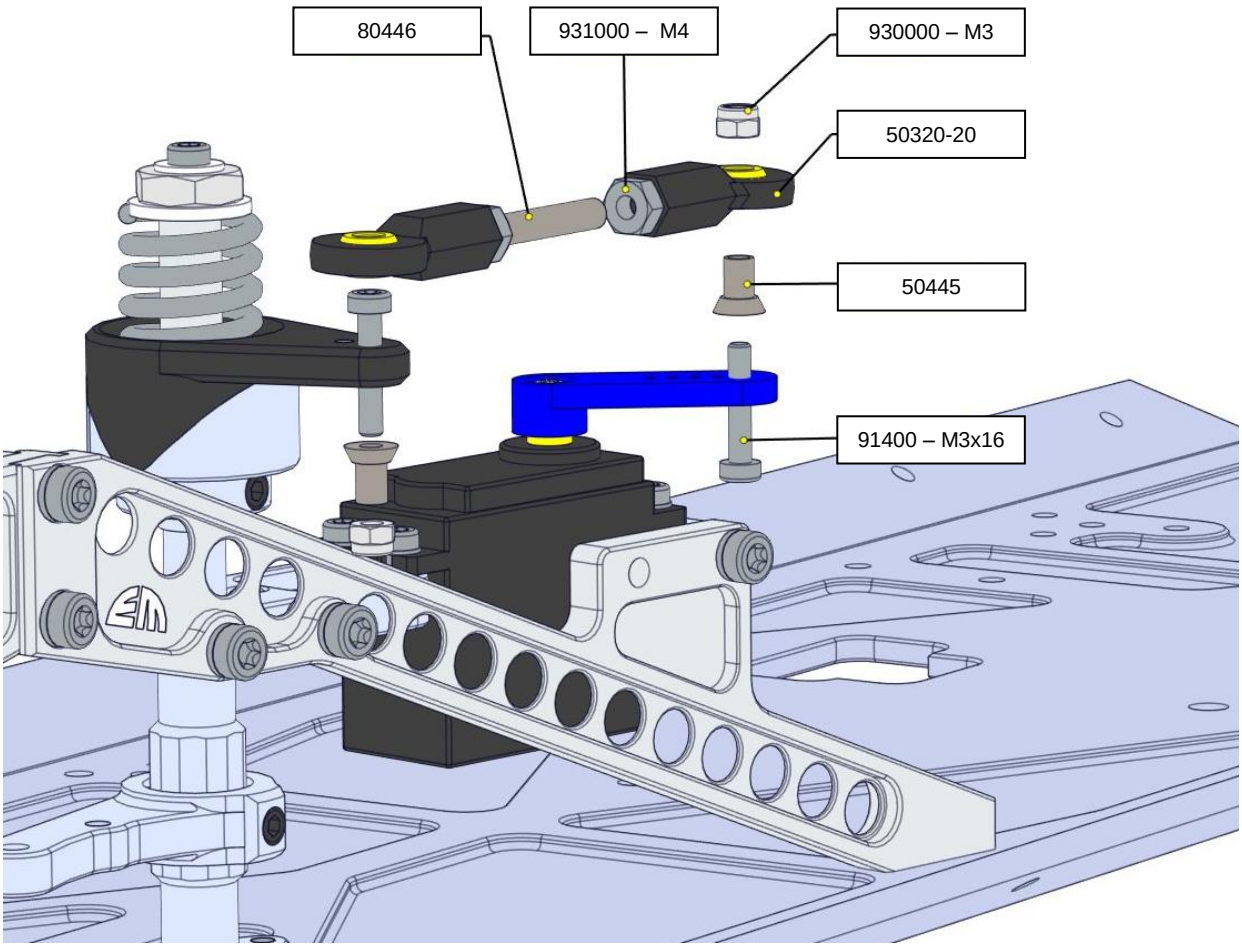
Mount the servo support with saver to the strut of the front end using the 3 cylindrical bolts and lock rings.

2.8 Servo links

The steering servos can be mounted in at the front. The horn of servo and saver are linked using ball joints a rod and nuts to counter lock the servo rod.

Adjust to proper length when setting up your radio, this depends on the type of servo used.

Mount the ball linkage with M3 bolts/nuts and the proper bushing with conical edge to the saver and servo horn.



2.9 Steering links

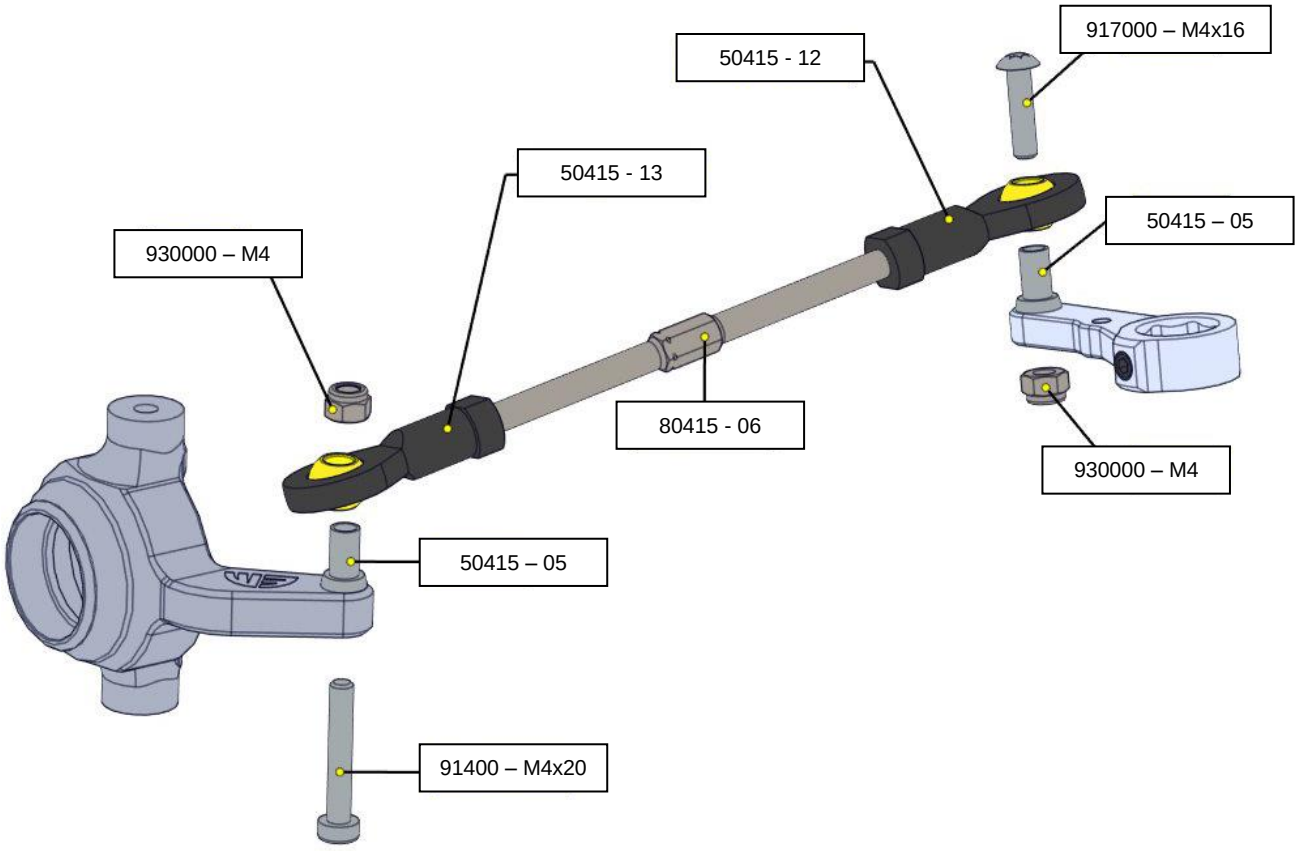
Steering links are assembled as per the picture below.

Apply the same amount of turn in for each ball joint.

Pay attention to left hand and right handed thread on the link.

On the ball joints you will find marking with KB**R**M and KB**L**M for the right and left hand side of internal thread.

Note : There is a left side and right side lever. On the bottom is made a chamber to accommodate and retain the nyloc nut.



3 Center part with engine

We will build the full center part separately off the chassis, on the engine. At the end this complete sub-assembly is placed into the car.

3.1 Engine and flywheel

Take off the pull starter from the engine, you will not need it anymore, starting is done using an electric starter.

Dismount the flywheel from the engine. Mount the new supplied flywheel on the motor.

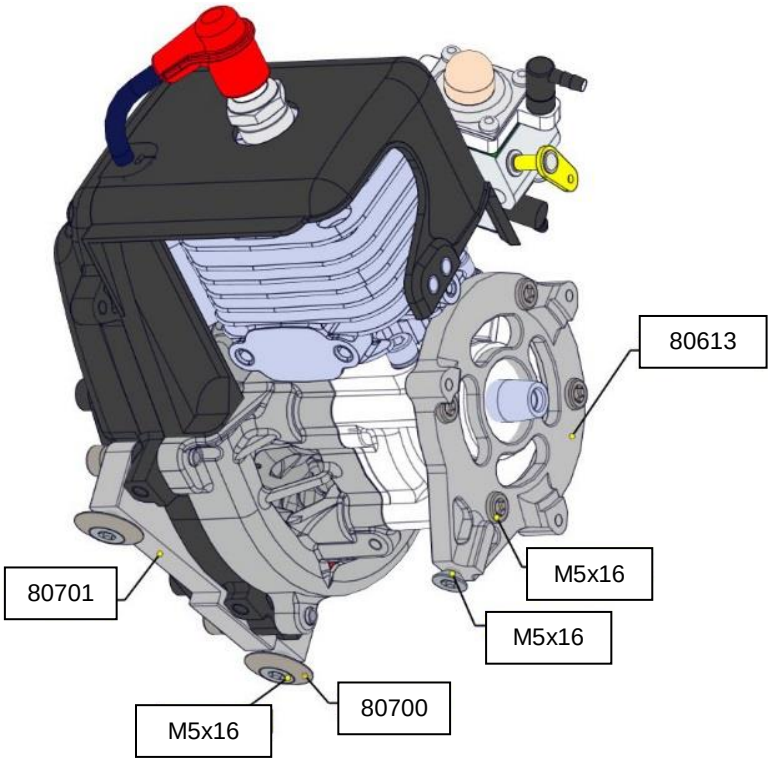
Mount back the flywheel cover.

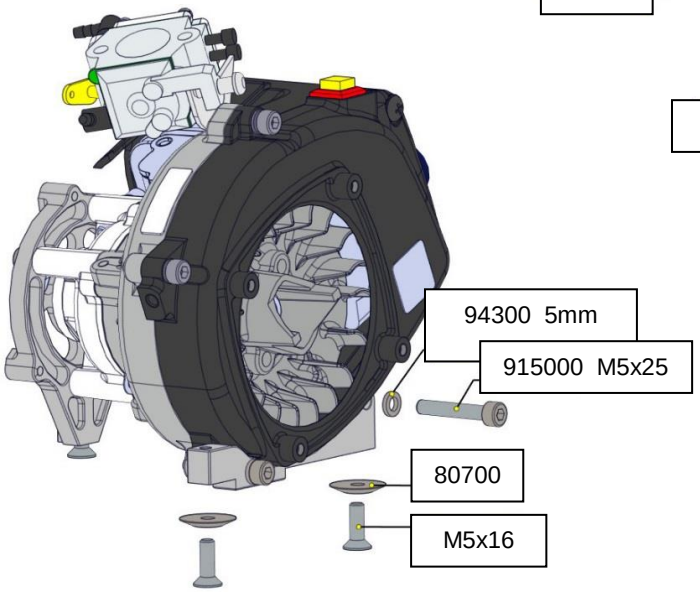
3.2 Engine mounts

The motor plate is to be mounted at the standard clutch side.

The small engine mount is mounted sideways to the fan cover.

The engine is mounted afterward on the chassis using mounting rings and countersunk bolts.



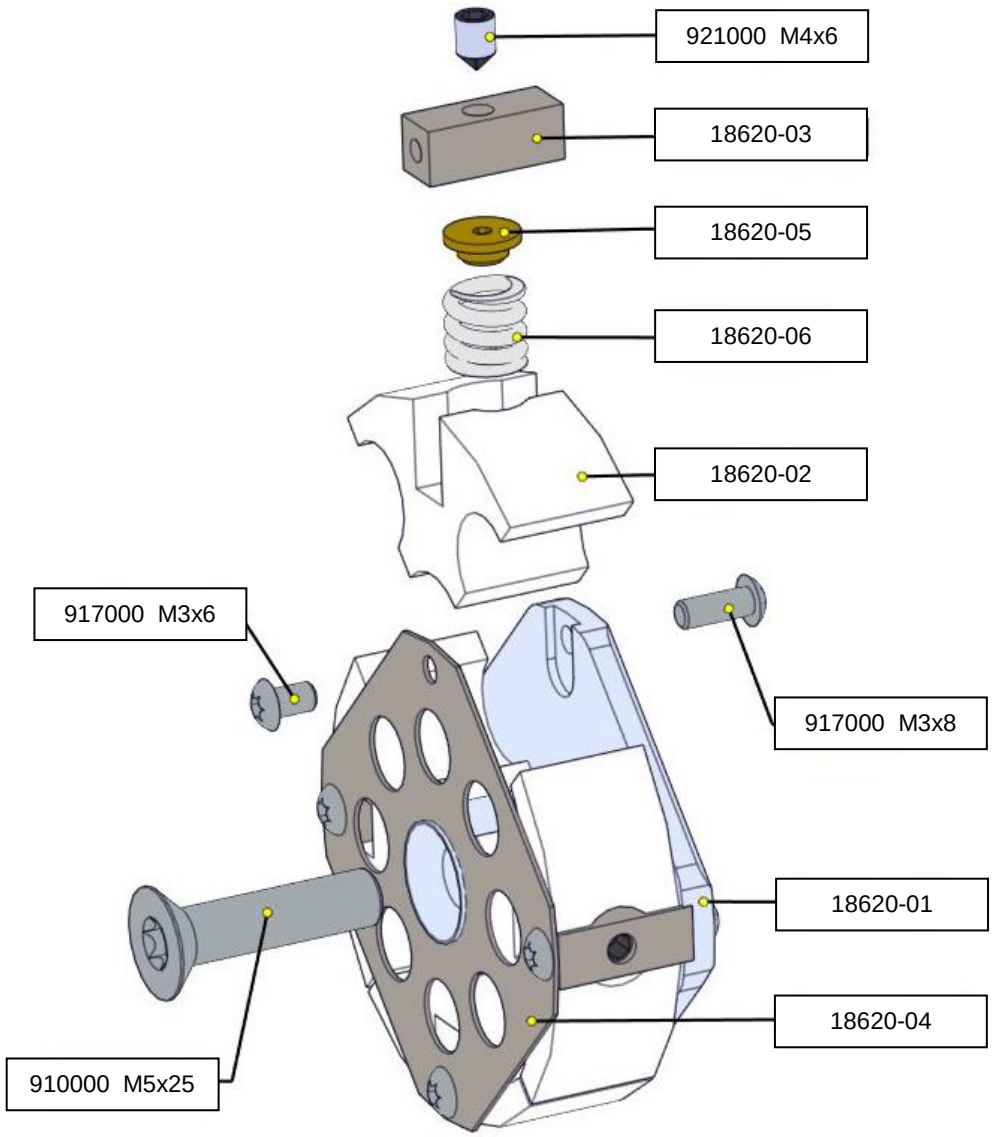


3.3 Clutch

There are used 2 clutches in the FourteX, front and rear.

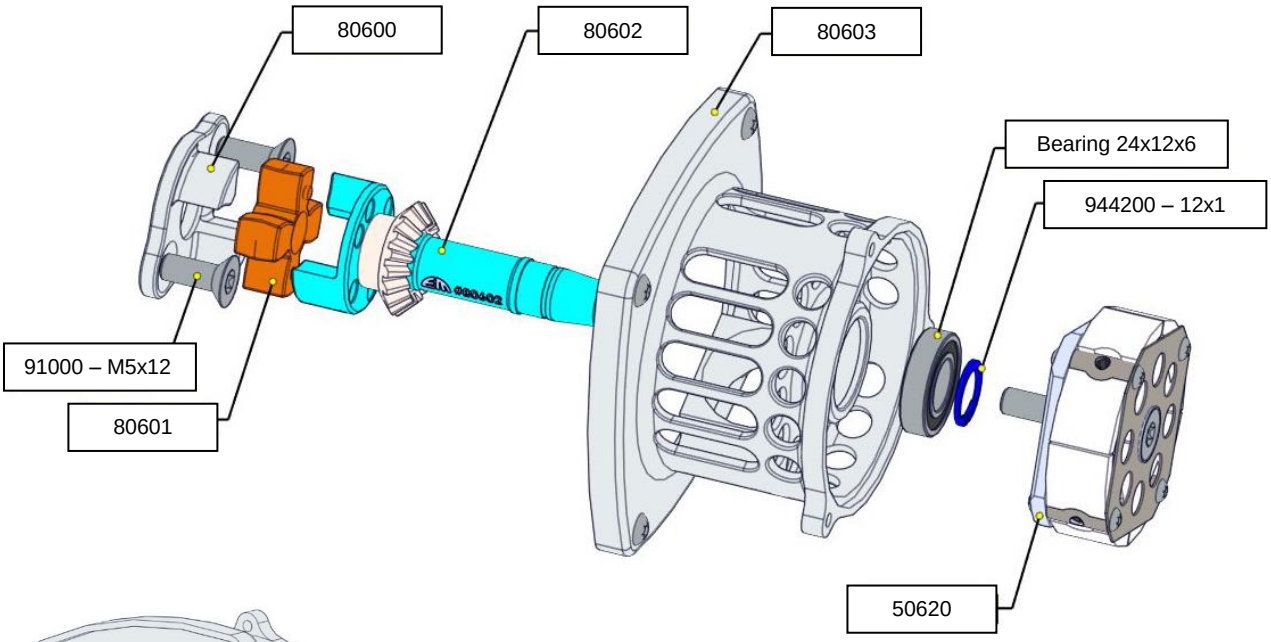
Assemble each clutch with shoes, springs, disc, distance barrel.

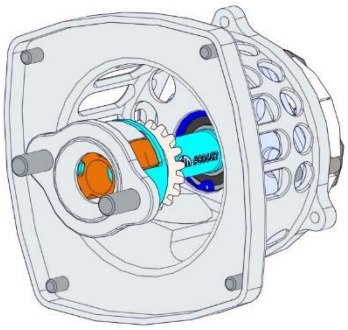
Pay attention to orientation of the square distance barrel, this part is not symmetric. Make sure the middle hole for the set screw lines up correctly on the center of the spring.



Adjustment: when the set screw touches the brass disc, apply one full turn in as pre tension on the clutch spring.

3.4 Starter housing and starter shaft





The most left part 80600 is mounted with the countersunk bolts to the engine flywheel.

Insert the bearing into the starter housing 80603, secure with circlip 24mm. Insert the starter shaft 80602 into the starter housing.

Mount the starter housing to the starter side of the engine. Use the orange rubber coupling 80601 in between.

The clutch can be mounted on the conical part of the starter shaft, secure it with the countersunk bolt.

3.5 Gear carrier planet gear

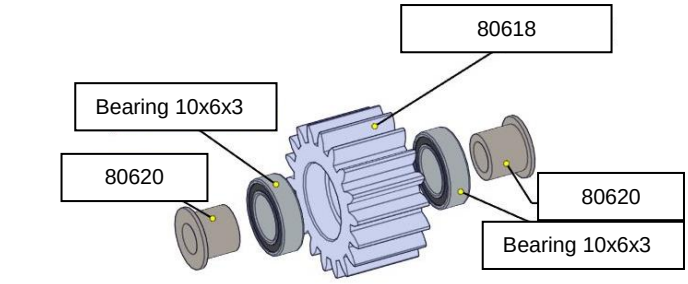
Place the bearings into the delrin gears. Place on each side the stainless bushing in the bearing. Slide wheel in the carrier and fix the gear with the screw.

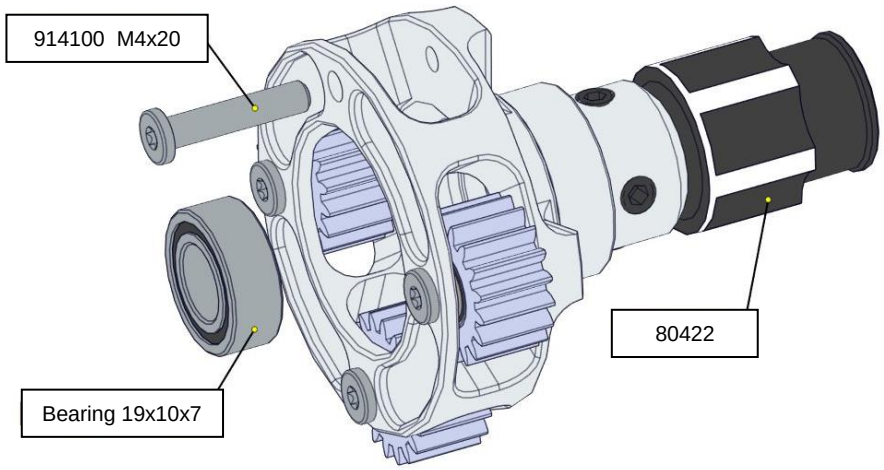
Insert the outdrive cup and fix in place with the 4 grubs.

It is advised to give a bit of grease on the planet gears.

Displayed is the front gear carrier with the outdrive suitable for a brake disc.

The other gear carrier will have a standard outdrive (cilindrical).

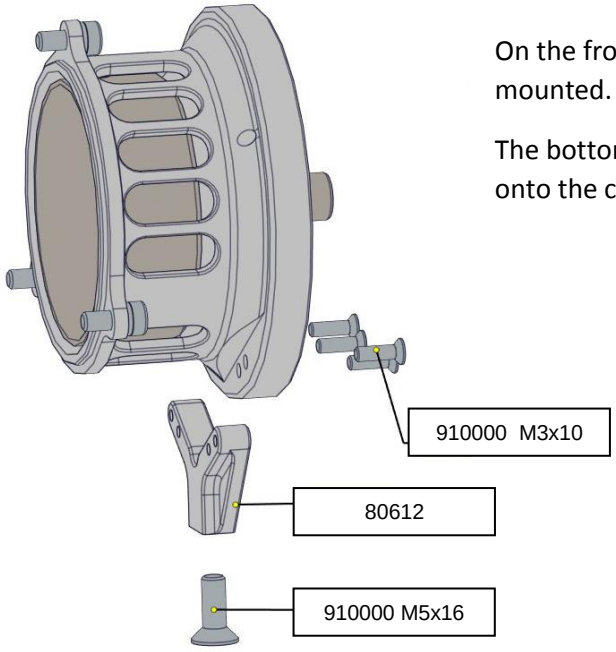




Note: Planet gears and gear carriers **cannot** be inter changed.

Changing gear ratio can **only** be done by changing the full gear carrier with gears and the pinion sun gear. Sun gear and planet gear are a fixed combination.

3.6 Center drive support



On the front support 80612 for the center drive unit is mounted.

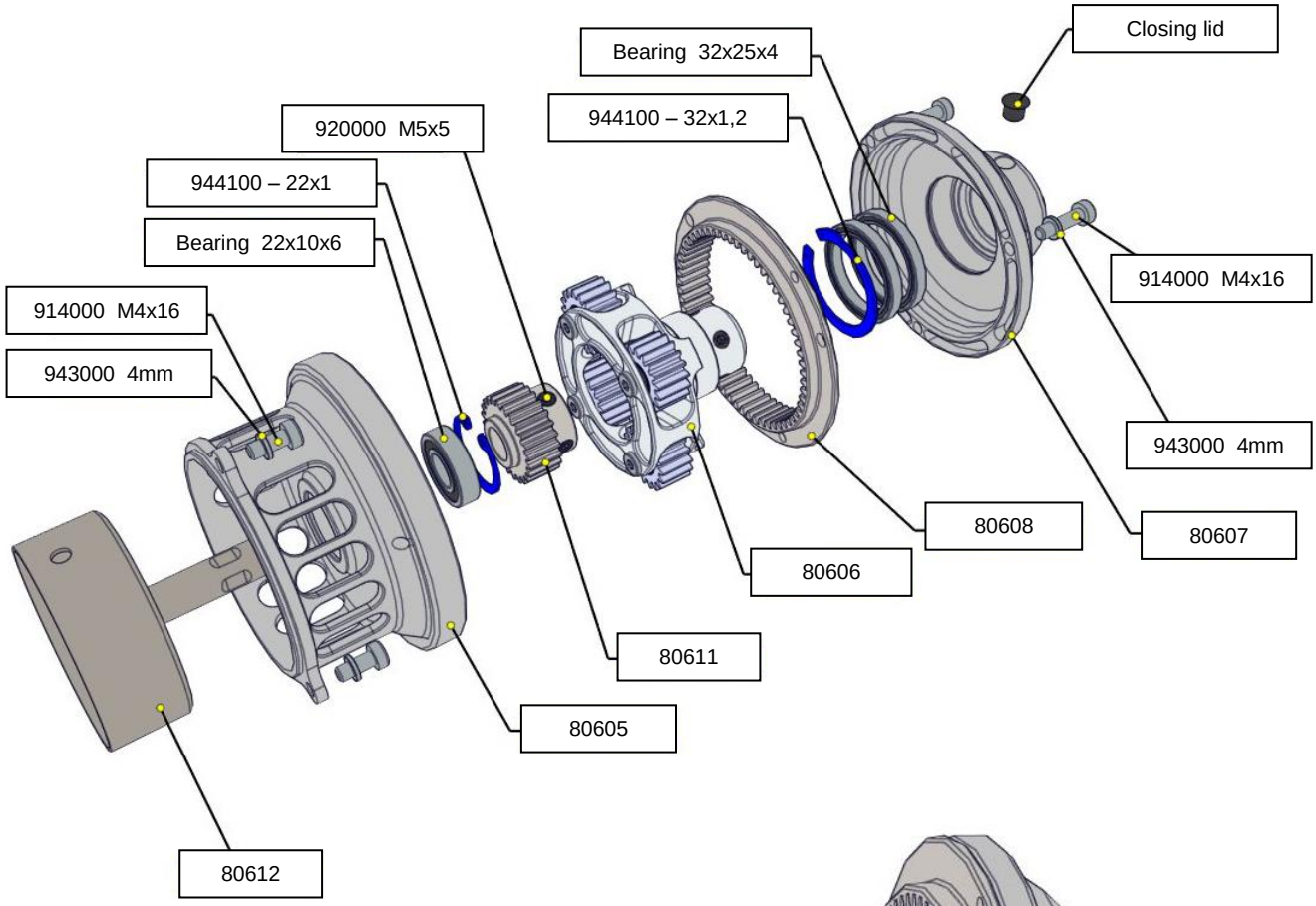
The bottom bolt is used when the whole unit is mounted onto the chassis.

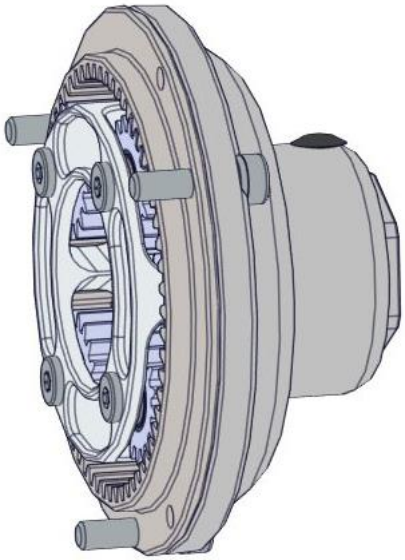
3.7 Housing for clutch bell & planet carrier

This part is build identical on both sides of the engine. Mount the bearings into the housings and secure these with the circlips.

Place the clutch bell 80612 and secure the pinion sun gear with the 4 grubs.

In the outer housing 80607 the planet gear carrier with the 4 small gears is placed.





Note: Teeth from ring gear 80608 and planet gears 80606 should align and be flush with each other when fitted in housing 80607.

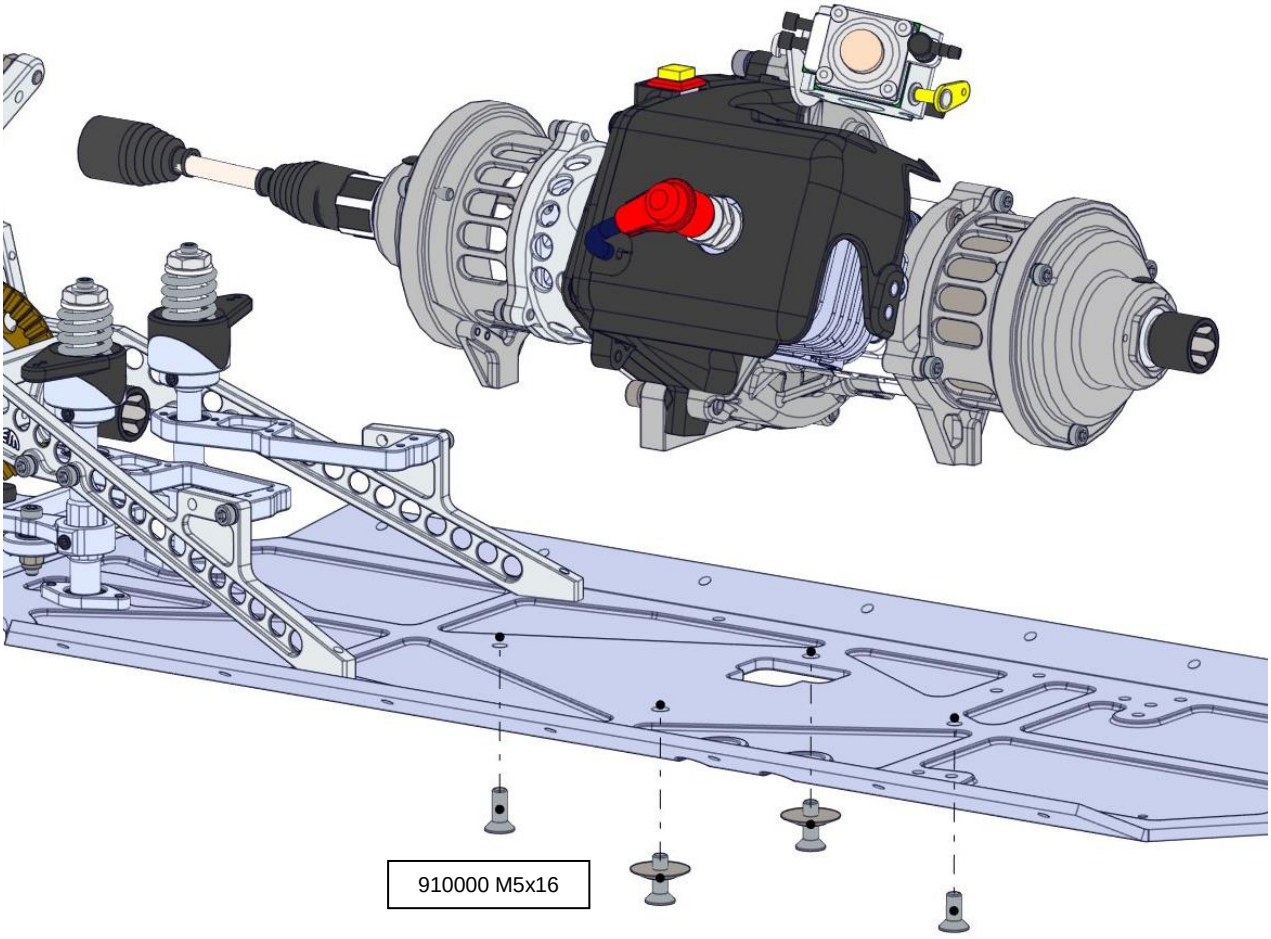
3.8 Drive shaft and assembly in car

Insert the conical springs in the front drive cups, apply grease in cups.

Slide over the grommets on the drive shaft and press in the balls in the drive shaft.

While inserting the center drive unit place the drive shaft in the drive cup.

Fix the center drive with 4 screws and 2 rings to the chassis.

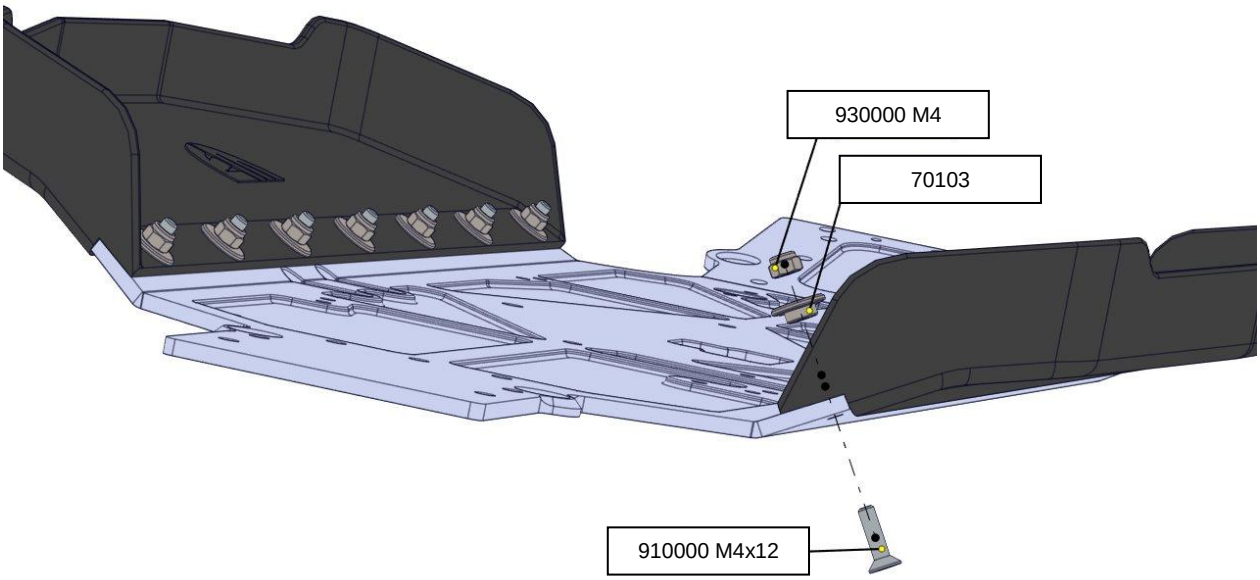


Tip: During maintenance or at races you will find it is easy to remove this whole drive line in 1-go.

Installing this complete drive line back in the car is also a very quick and easy way. This can be done including exhaust, (not displayed above).

3.9 Side guards

Mount side guards to the car.

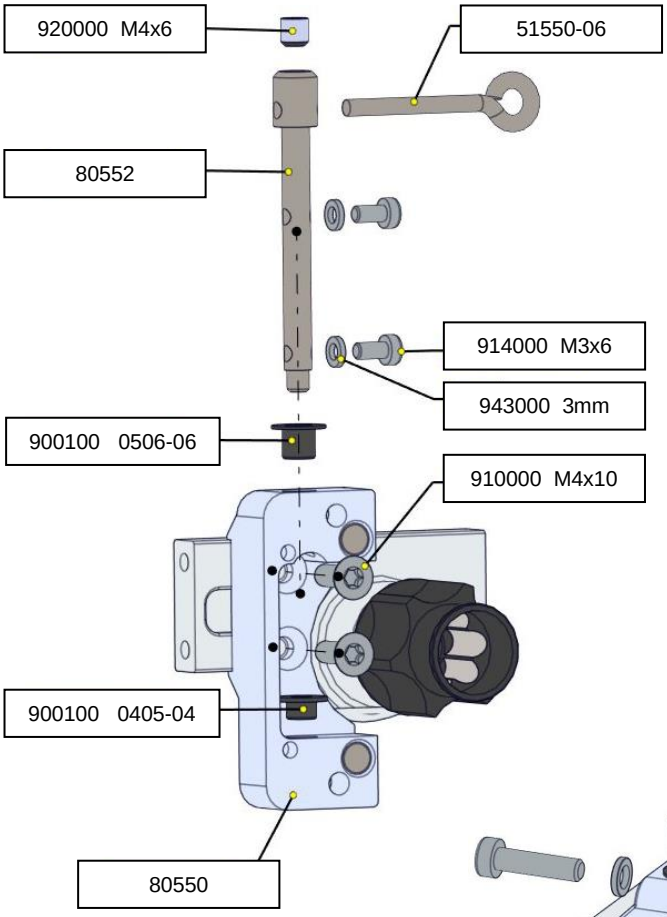


4 Rear-end

The rear-end will be assembled partly off the chassis.

4.1 Brake

Build the rear pinion carrier analogue to the front pinion carrier. On the rear a different drive cup is mounted, suitable for brake discs. We start building the main brake housing.



See the left picture:

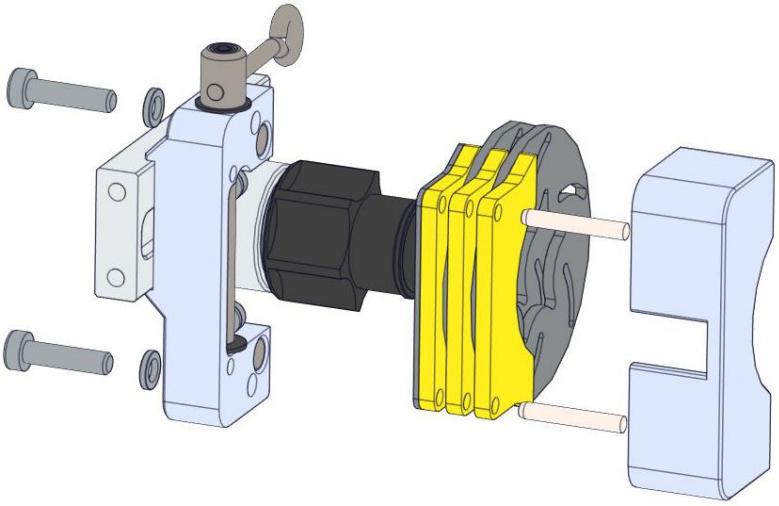
The brake is built on the pinion carrier.

Press in bushings into the brake housing, mount the brake housing 80550 to the pinion carrier.

Insert the central brake shaft and fix the 2 cylinder head screws and their spring rings in the central brake axle.

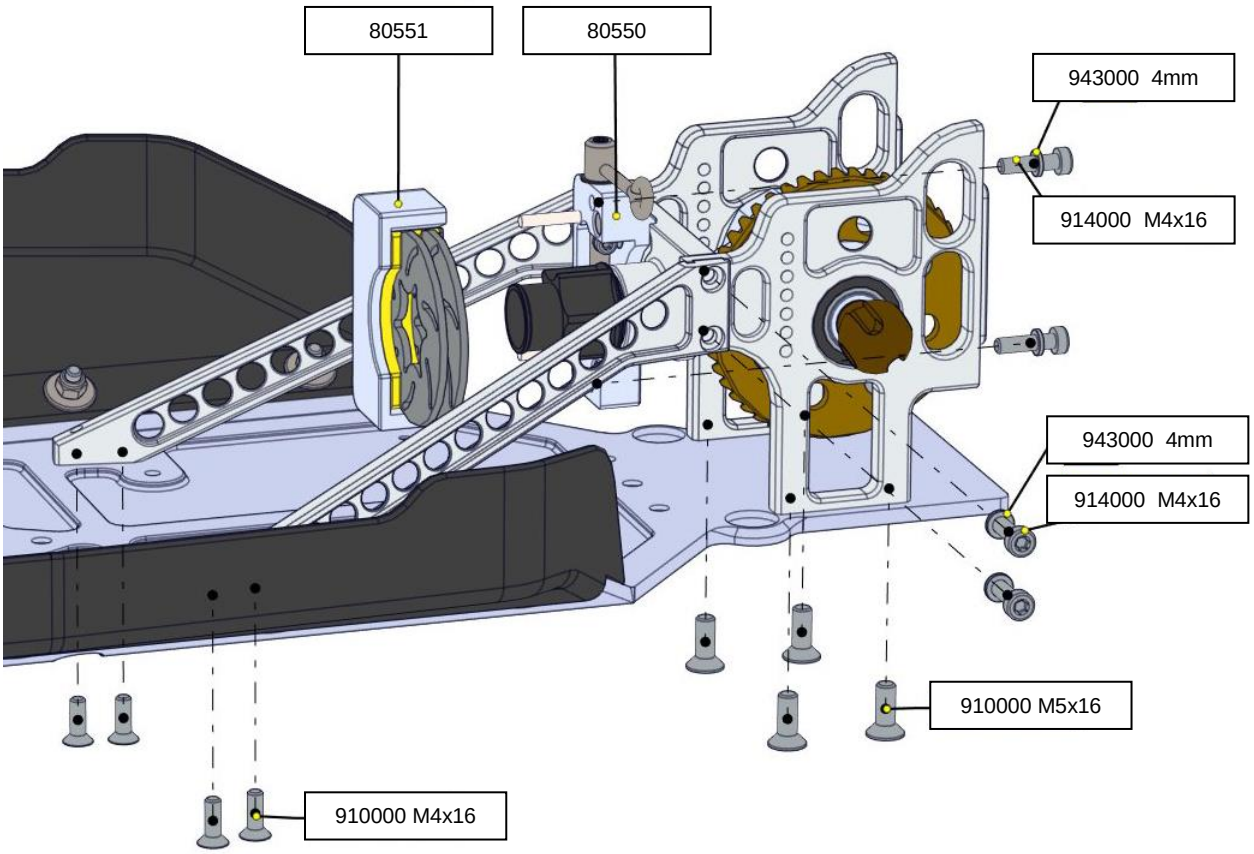
Put the lever in the top hole and secure the lever with the grub screw on top.

Place the guiding pins in the holes and slide on the brake pads with brake discs. Place the outer brake housing and fixate with screws from the rear.



4.2 Differential, dif mounts, brake carrier and supports

Build crown wheel to the differential as on the front side. The crown wheel sits on the rear directly next to the left dif mount. Pinion carrier and support can be mounted to this left dif mount, analogue as done at the front. Fixate pinion carrier in place with support.



Analogue to placement of the front drive shaft, place the conical springs in the cups and grommets and balls on the drive shaft. Slide in drive shaft in both cups and place rear-end on the chassis. Fixate rear end to the chassis.

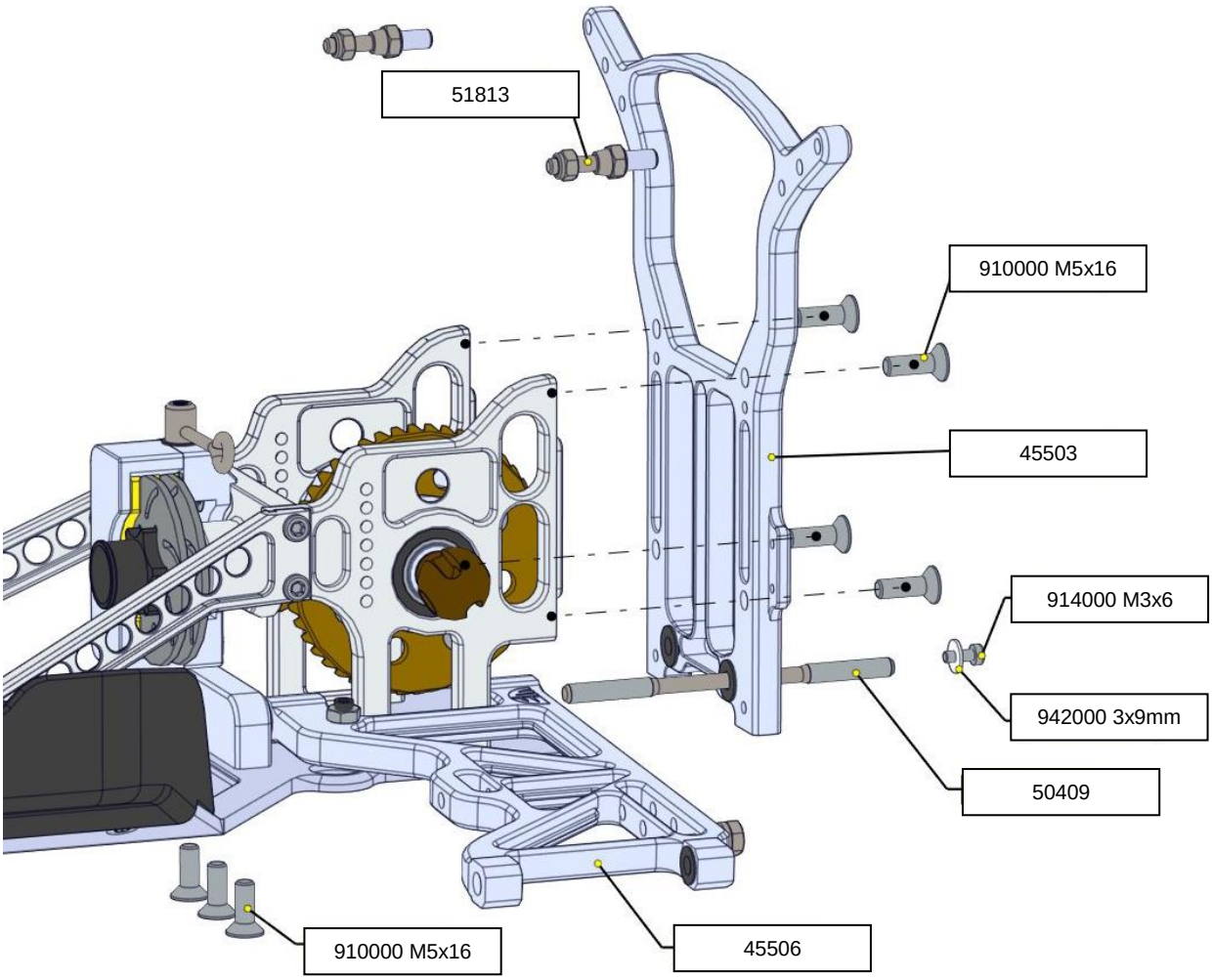
4.3 Bulkhead, rear shock tower and lower wishbone

Press in the bushings in the bulkhead and mount bulkhead to the chassis.

Press in the bushings in the rear shock tower and rear lower wishbone.

Mount the rear shock tower to the dif mounts. Place the wishbone between bulkhead and shock tower and secure in place with wishbone pin.

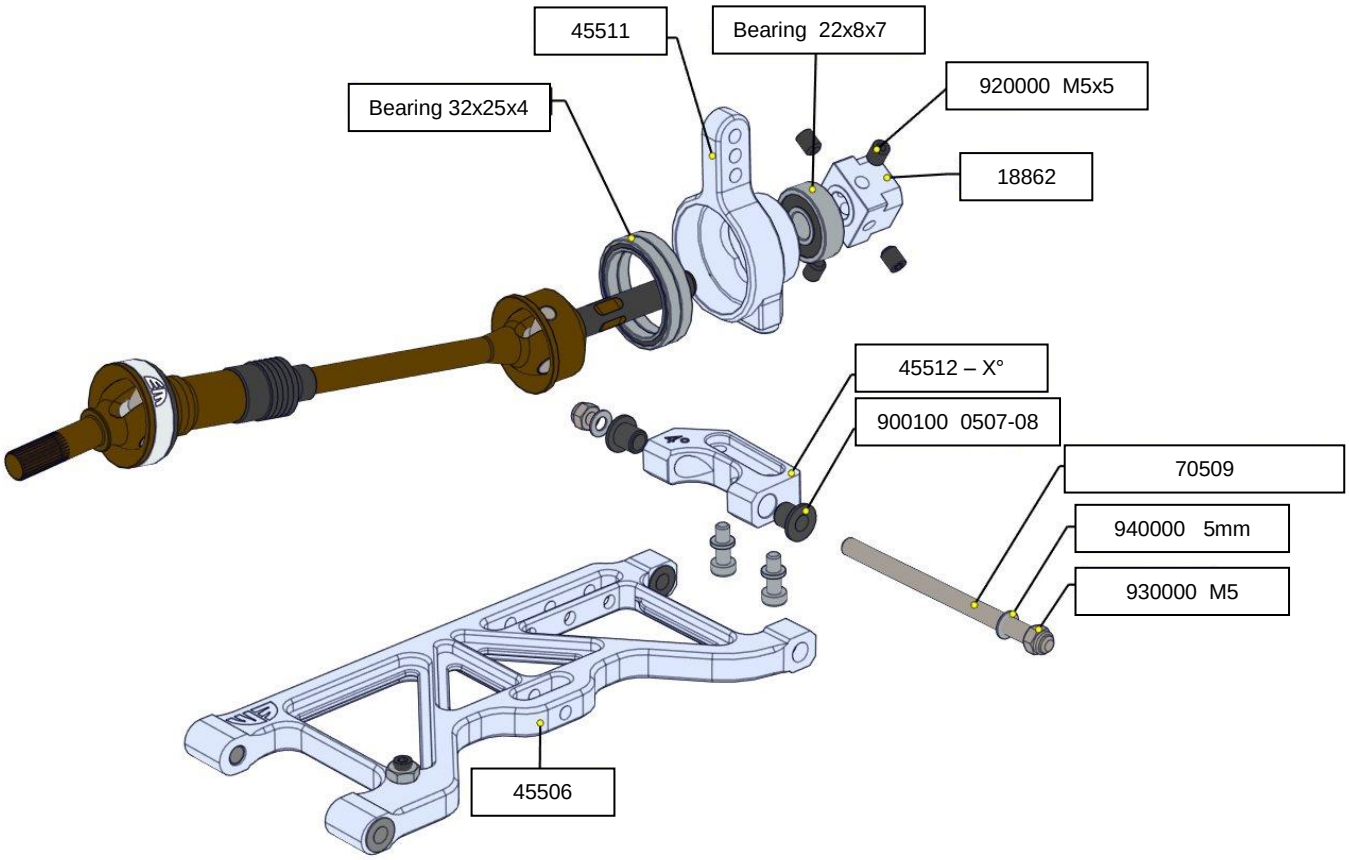
Wishbone pin is locked using the M3 bolt with the ring 3x9mm.



4.4 Toe-in block, spline drive, upright and upper wishbone

As many parts build the same way, internal assembly of the spline drive is not shown here. See chapter 2 when guide lines are needed.

Below is shown the assembly of the rear upright with toe-block in combination with the wishbone and spline drive.

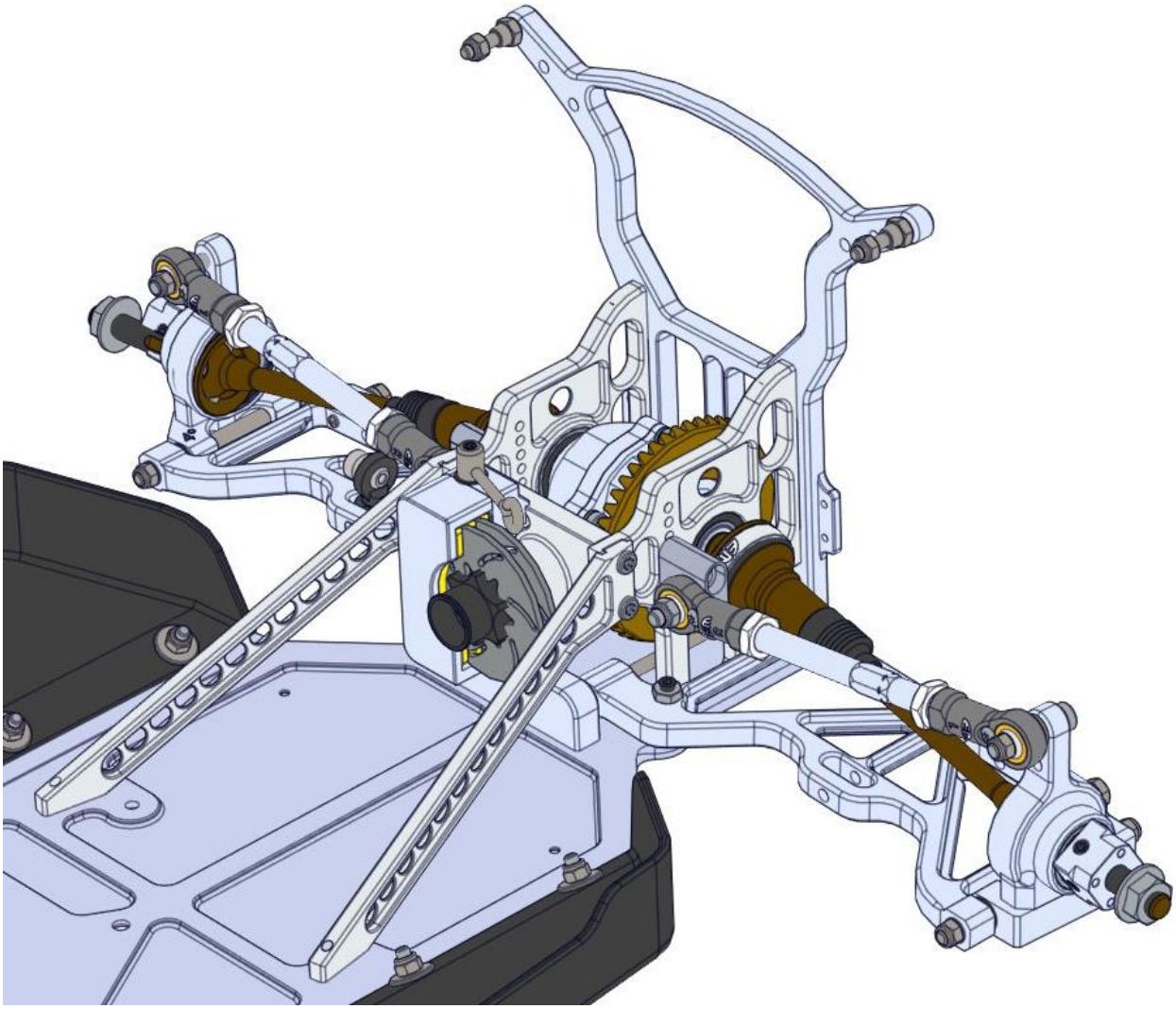


The toe-in block 45512 is mounted with pin 70509 to the lower wishbone, using rings and lock nuts. The upright is fixed to the toe-in block using screws with spring lock rings.

Once more: pay attention to a correct orientation of the spline drive (correct phasing).

Upper wishbones are build analogue to the front wishbones.

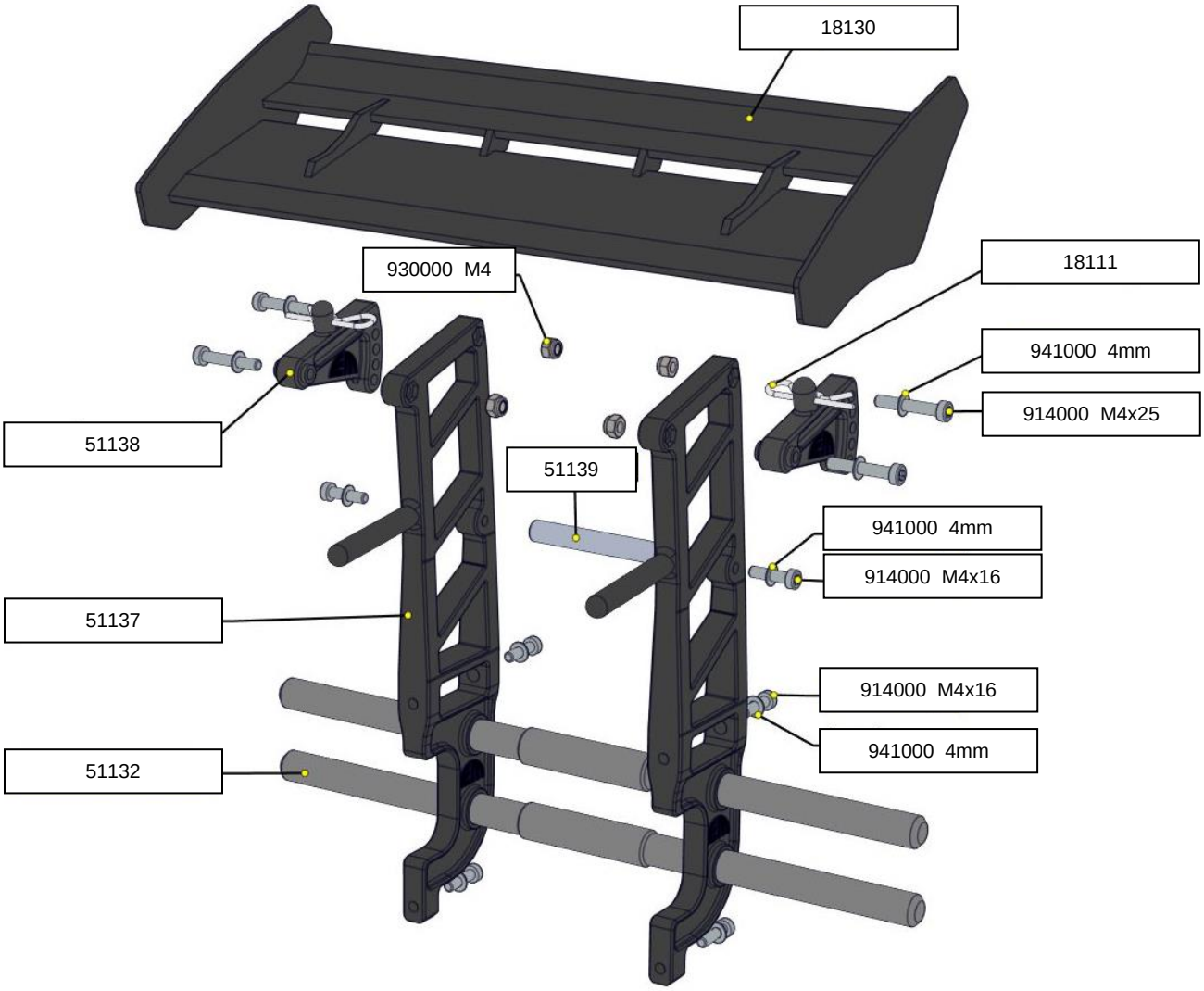
On the inner side the upper link block is mounted to the dif mount. This parts allows to change the roll centre of the car as it can be changed in height.



4.5 Spoiler & carrier

Assemble spoiler carrier as shown below and mount it to the rear shock tower of the car.

Holes have to be drilled by you in the spoiler.



5 Miscellaneous

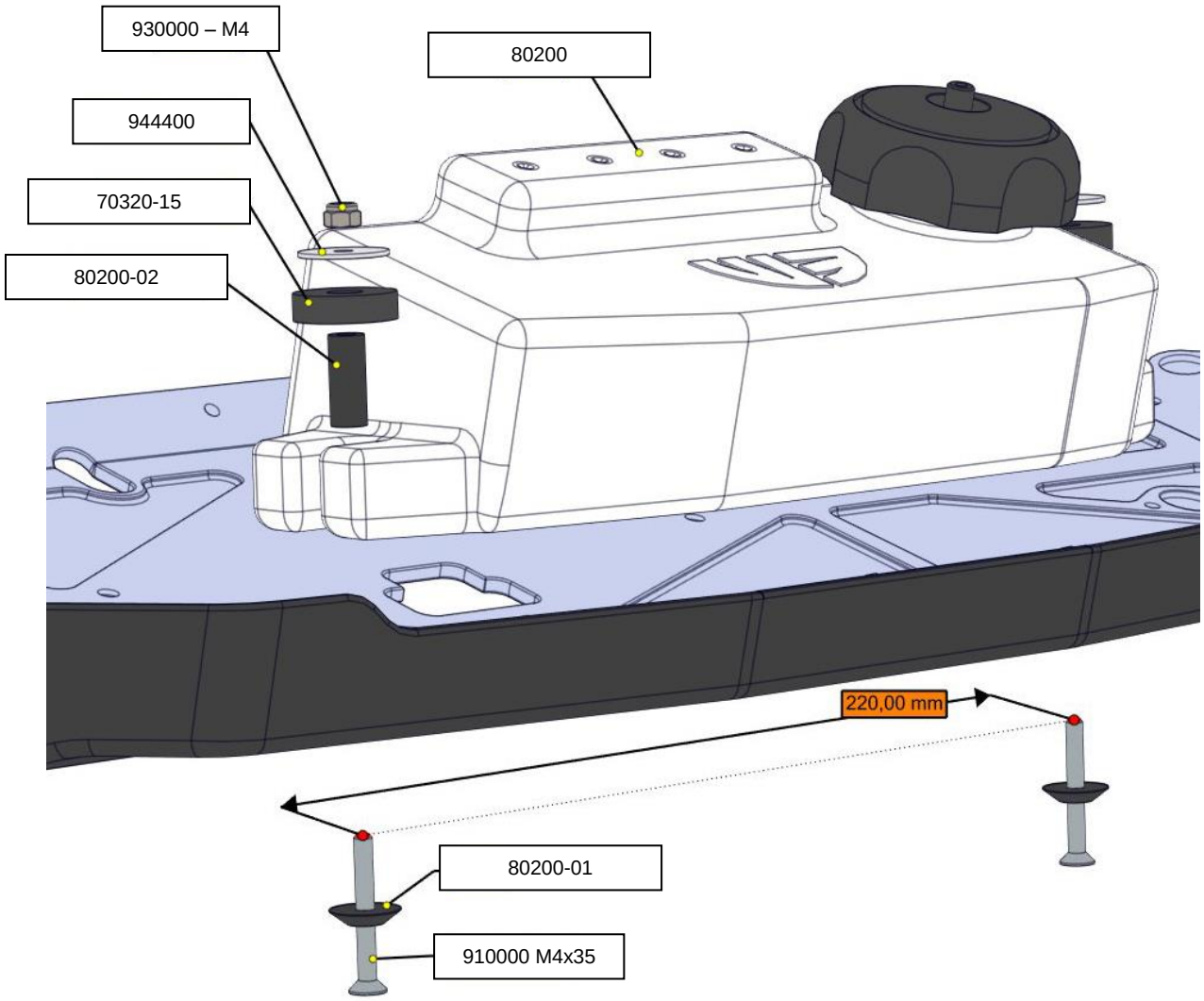
5.1 Fuel tank

The fuel tank should be mounted on the right side guard.

The outline of the fuel tank copies the shape of the side guard.

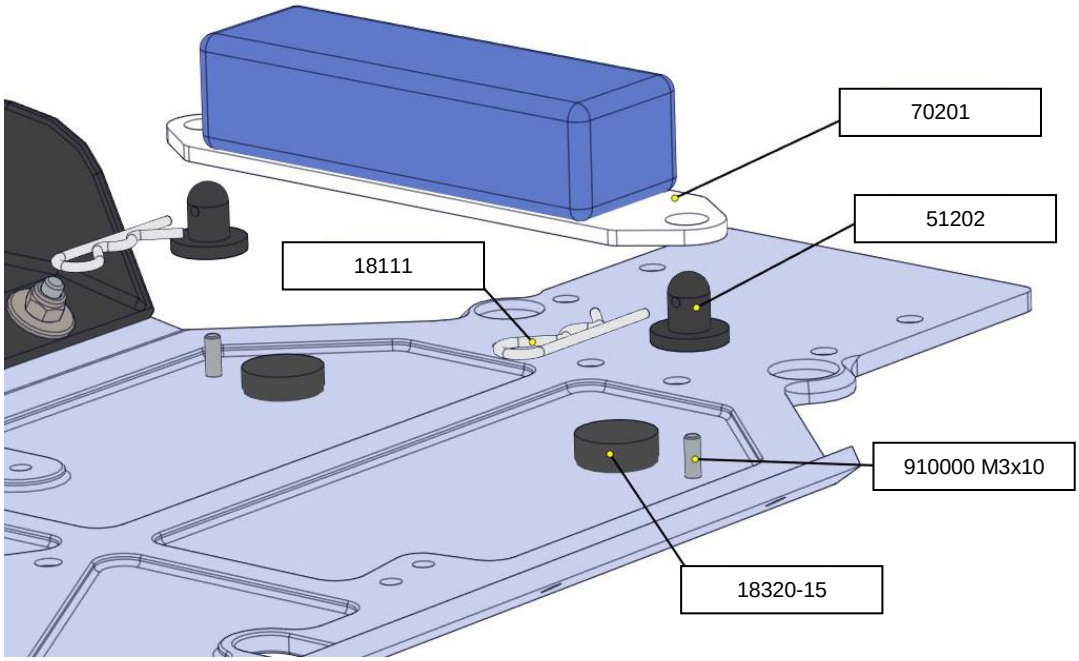
Place the fuel tank in the side guard and mark the points for drilling holes.

Note: A fuel tank will expand in time as the tank material absorbs part of the fuel. Allow approximately 2mm space at the feet of the tank so it can grow a little bit. Drilling on centre distance of about 220mm



Assemble tubes and fuel filter into the fuel tank.

5.2 Battery mounting



Battery is mounted at the rear of the car.

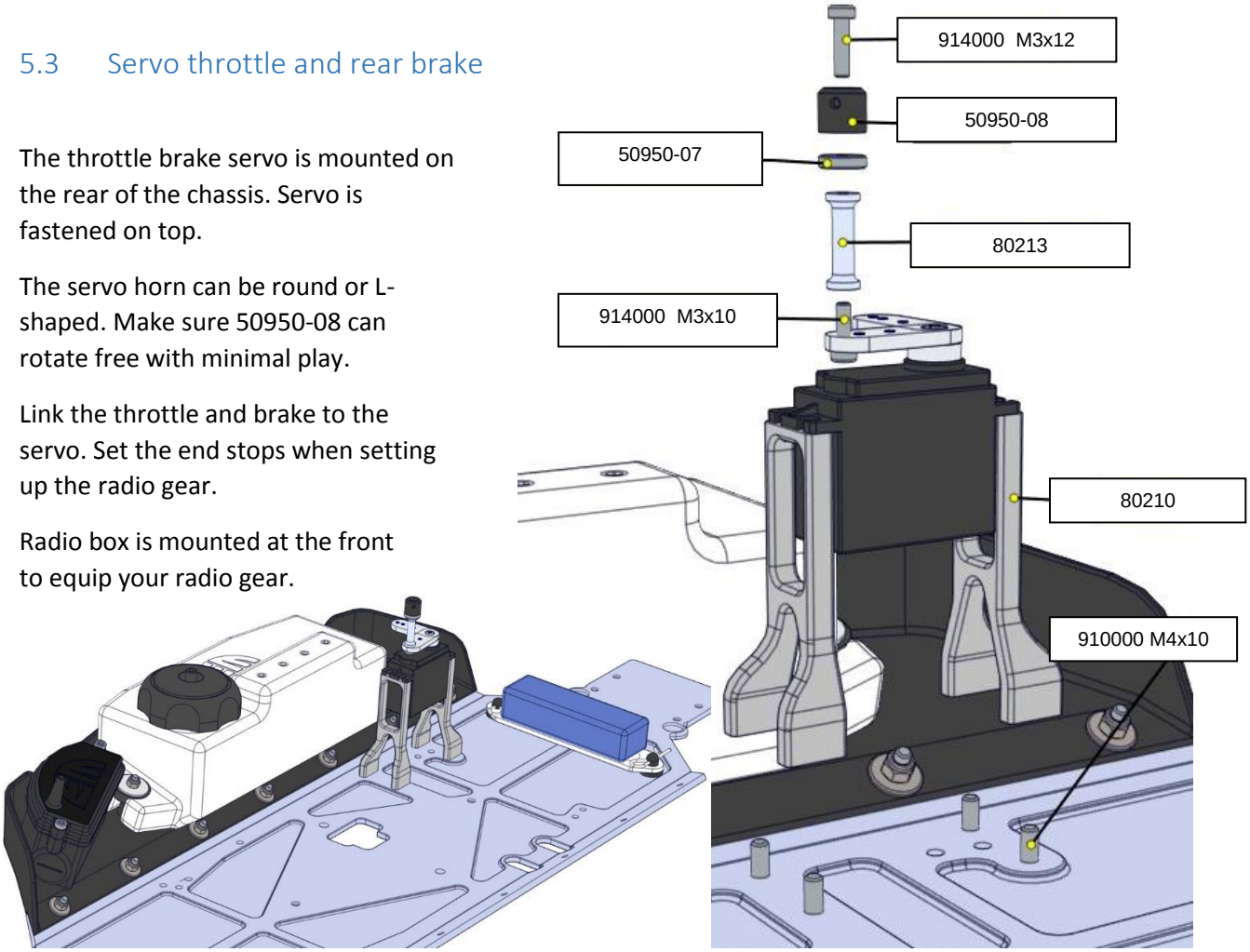
5.3 Servo throttle and rear brake

The throttle brake servo is mounted on the rear of the chassis. Servo is fastened on top.

The servo horn can be round or L-shaped. Make sure 50950-08 can rotate free with minimal play.

Link the throttle and brake to the servo. Set the end stops when setting up the radio gear.

Radio box is mounted at the front to equip your radio gear.



5.4 Exhaust

Mount the exhaust to the cylinder of the engine.

It is most convenient doing this having the full centre drive line in hand.

Tip: Use the big head exhaust gasket #970044 to divert cooling air to the rear. Mounting this gasket and the air tunnel makes a difference of about 25~30°C under the body. Keeping a lower temperature under the body improves your engine performance and prolong life time.

Tip: Mount back full center drive line in one-go the easy way.

Insert front drive shaft with grommet in front pinion carrier (chassis front end).

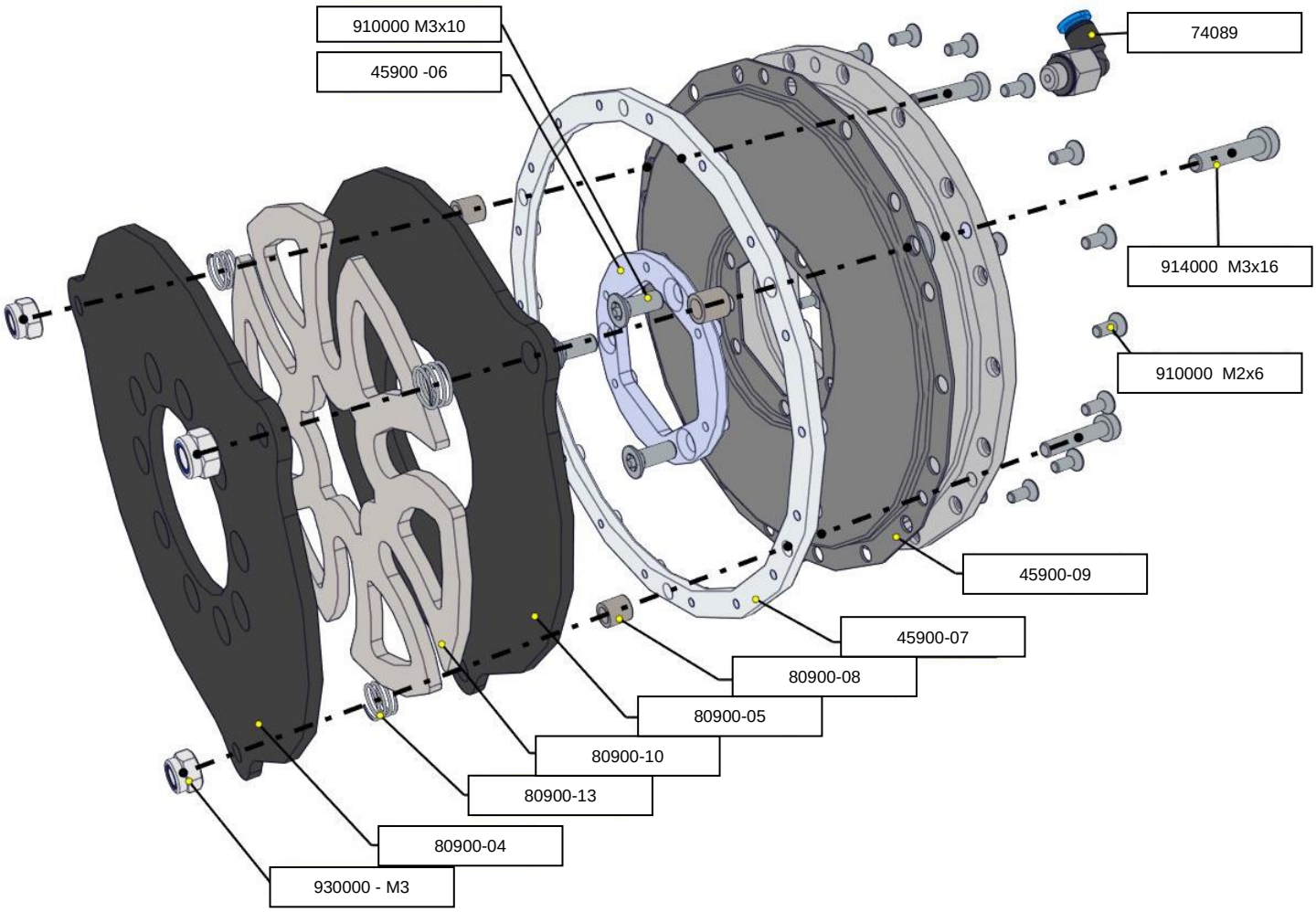
Insert rear drive shaft with grommet in the drive cup of the center unit.

Now slide in the full center drive unit and start inserting the rear drive shaft in the drive cup. To insert the front drive shaft in its cup just lift the front of the center unit, gently push the whole unit to the rear and let the front shaft slide in its front cup. Now position the drive unit in place and fixate with screws.

Fixate the exhaust to the side guard using the tie-wrap, exhaust support and heat resistant ring.

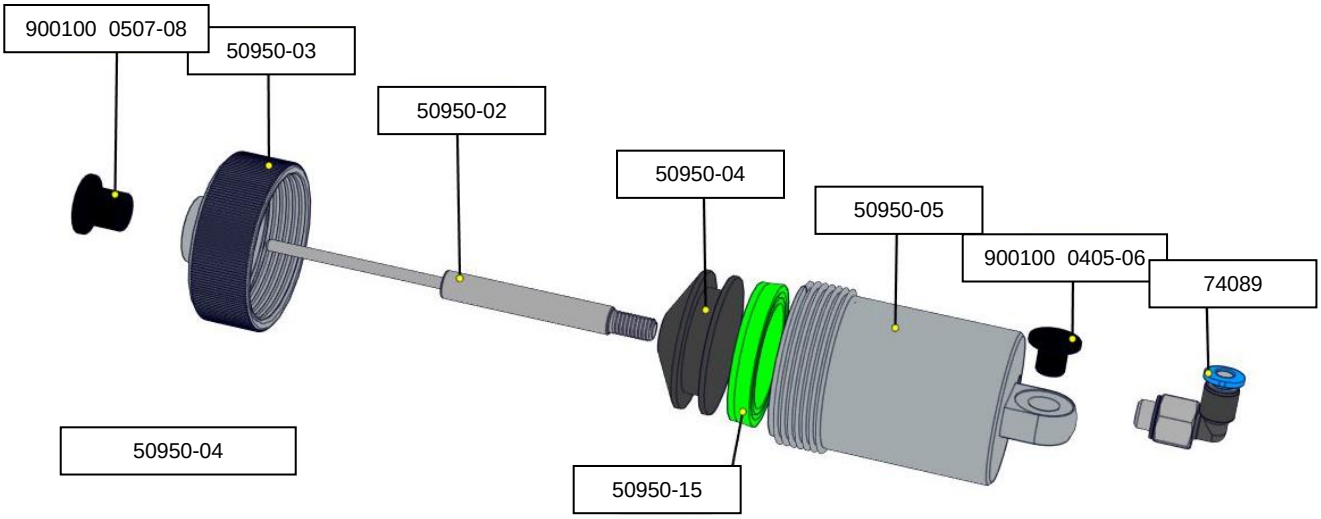
6 Upgrades

6.1 Air brake front



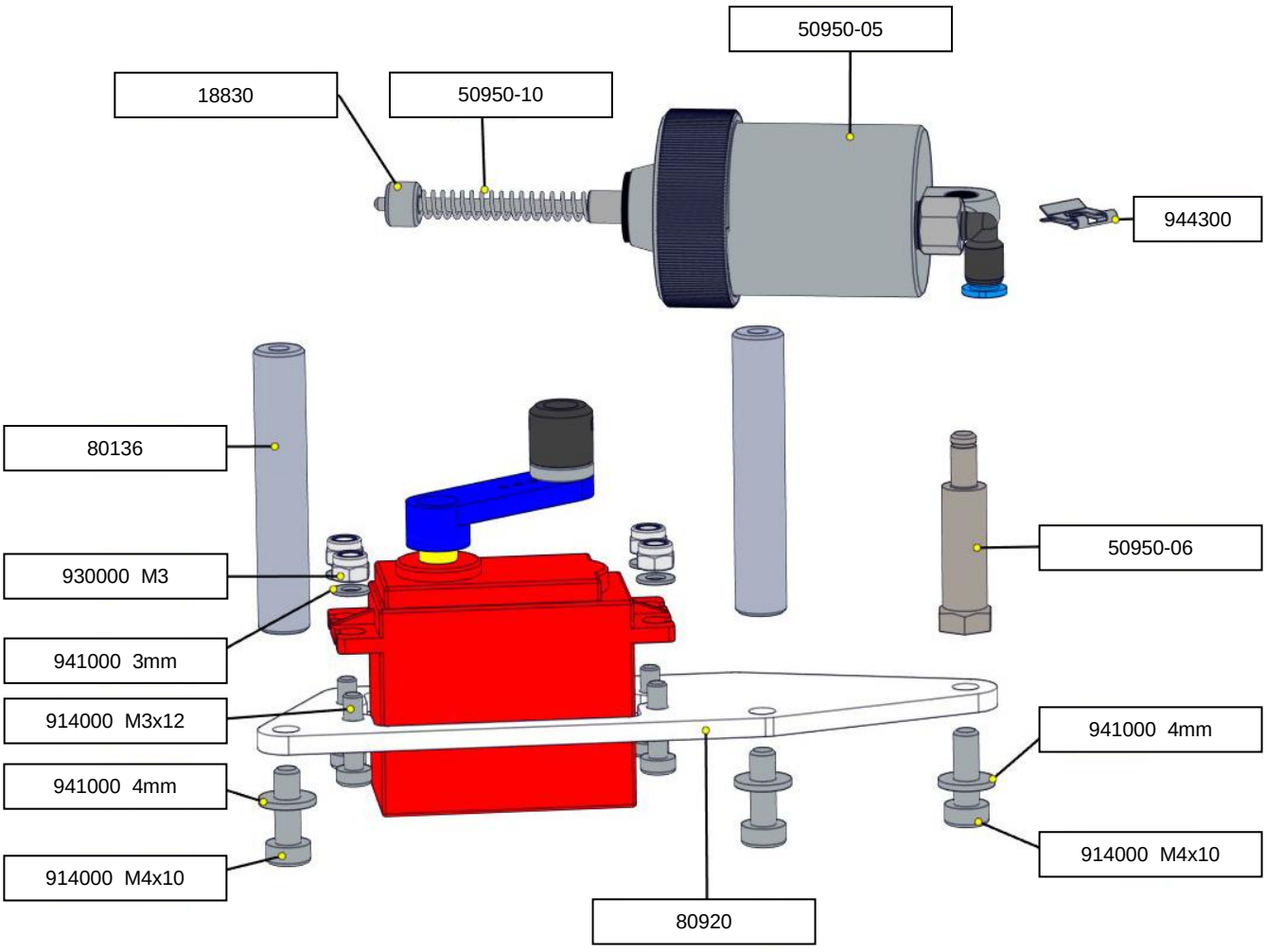
When assembling the air brake, start mounting the rubber membrane to the ground plate. Secure the rubber membrane using the inner+outer clampring (45900-06 and 45900-07). Tightening should be done evenly. Screw in tube connector 74089 and put in a piece of tube. Put the unit under water and blow air in the tube, check if no bubbles appear, the system should be air tight.

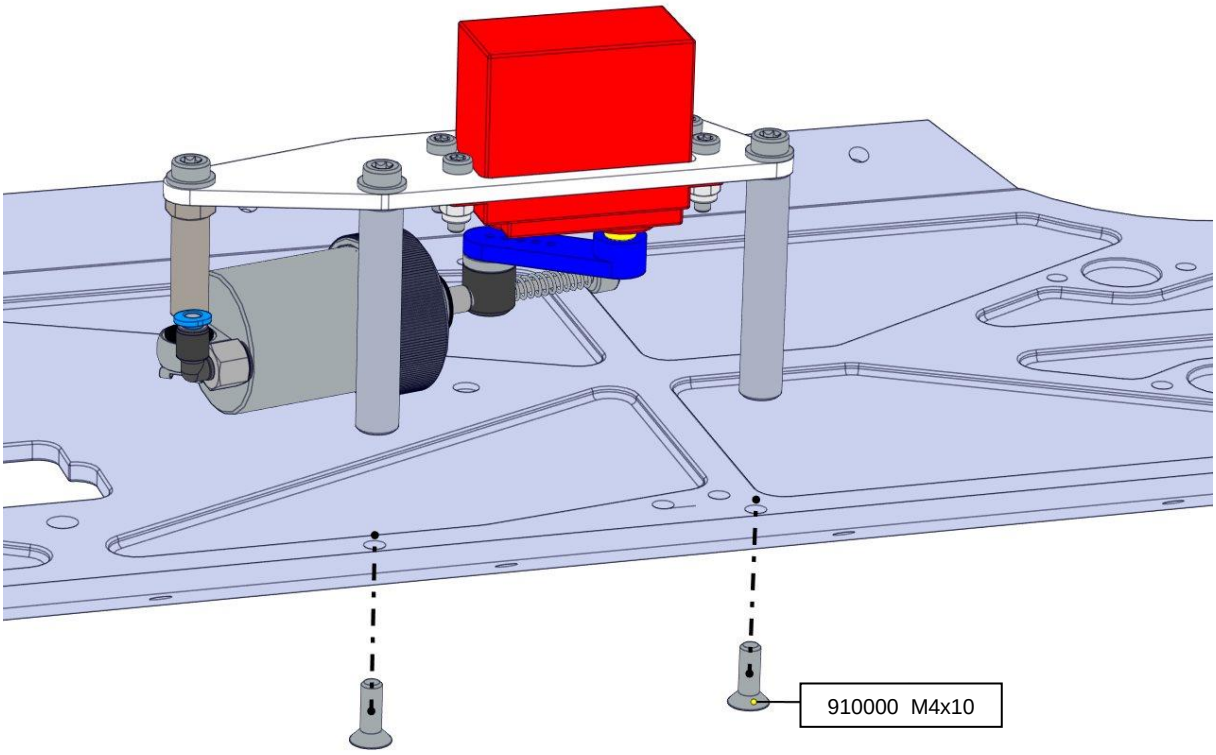
Other parts are assembled as per the directions in the explosion drawing above.



Mount the pump unit as above. Apply grease in the seal groove and in the pump housing. When build, pull over the textile pump cover (not displayed) to prevent dirt getting sucked in through the hole on the side of the pump housing.

Tip: It might be needed to drill the plastic bushing after pressing it in the closing lid (drill 5.1mm). The piston rod must move easily in/out through the bushing.





Mount the unit in place as above.

Make sure all rotates free and does not interfere with other components.