Stage 5

Assembling the differential gear

Your parts

Differential case
20T bevel gear
Differential cup joint
10T bevel gears × 2
Pin 2.5 × 10.3mm
12mm shim
6mm O-ring
Bearing 1510
Bevel gear shaft
Grease

Tools & materials

Tweezers
Toothpick

Fitting the bearing onto the differential case

Place the 1510 ball bearing over the projection on the differential case.

Press the bearing firmly into position on the projection. Make sure the bearing is aligned with the case.

Assembling the differential gear

Cut a corner from the grease bag and place a small amount of grease onto the end of a toothpick, or similar.

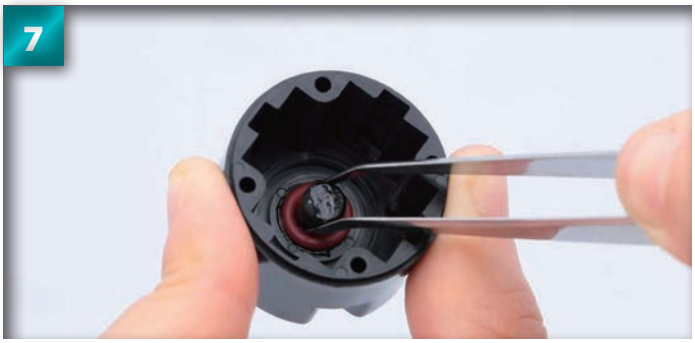
Apply some grease to the recess in the centre of the inside of the differential case.

Apply some grease to the differential cup joint.

Insert the joint into the hole, slowly rotating it back and forth to spread the grease.

Place the end of the joint into the hole of the projection on the inside of the bearing.

Place the 6mm O-ring over the joint on the inside of the case.



Push the O-ring down the joint until it sits in the recess that you greased in Step 2.

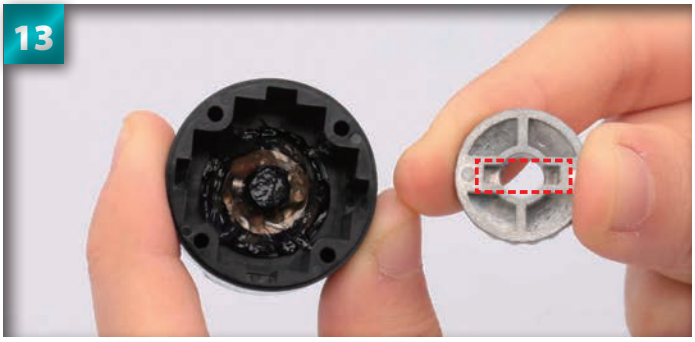
Place the 6 × 12mm shim over the joint and push down to rest on the O-ring.

Use tweezers to grip the 2.5mm x 10.3mm pin.

Insert the 2.5 × 10.3mm pin into the hole in the joint, just above the shim.

Adjust the position of the pin so that it protrudes evenly from both sides of the joint.

Smear some extra grease around the shim and the joint.

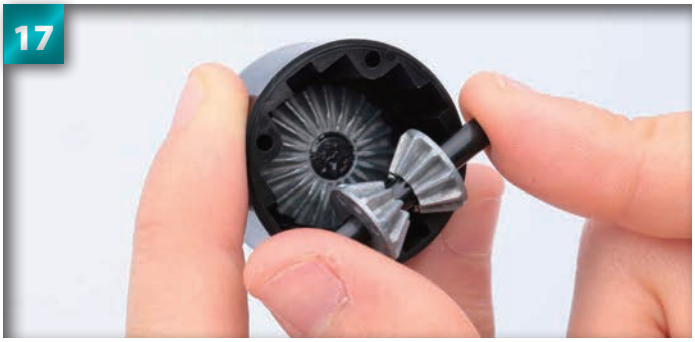


Hold the 20T bevel gear as shown. Locate the highlighted groove on the back of the gear.

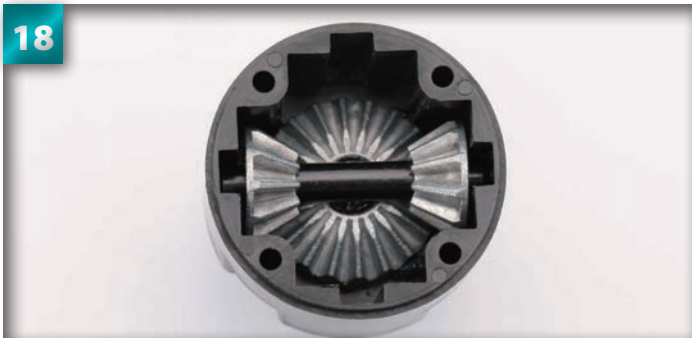
Align the groove on the back of the bevel gear with the position of the pin and insert the gear into the back of the case, sliding it over the joint and the pin.

Push the bevel gear down onto the joint until the pin slots into the groove.

Slide a 10T bevel gear onto each end of the bevel gear shaft, as shown.

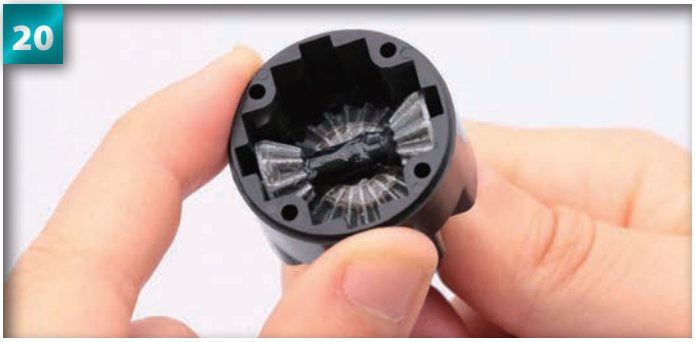


Insert the bevel gear shaft into the back of the case, fitting it into the grooves on the inside of the case wall.



Spread the two 10T gears apart as far as they will go.

Squeeze a generous amount of grease into the back of the differential case.



Hold the differential case and slowly turn the joint to spread the grease over the gears.

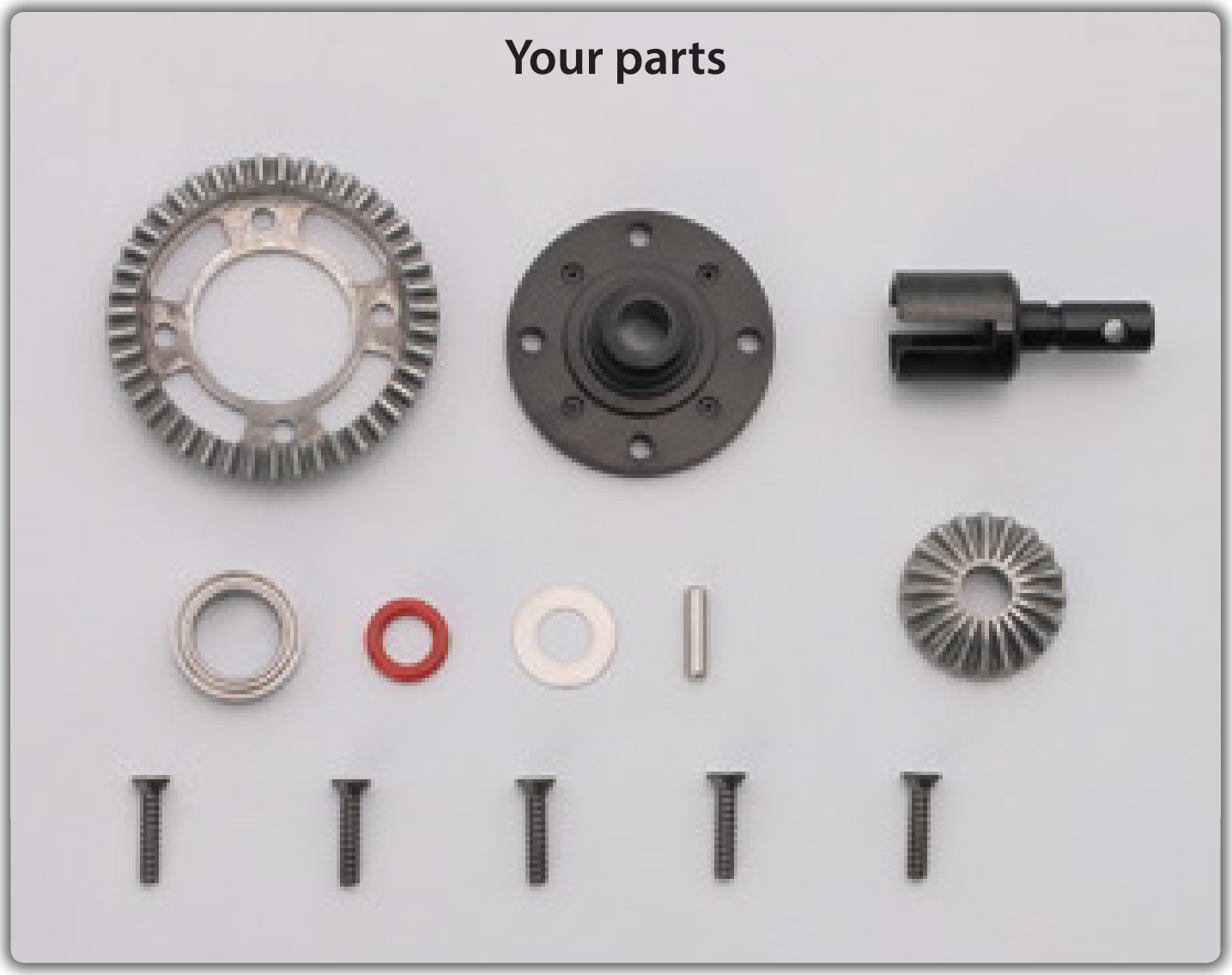
Assembled parts

Keep the differential case and grease bag in sealed containers or bags to prevent the greased case from attracting dust and the bag from leaking.

Stage 6

Assembling the differential gear

Your parts



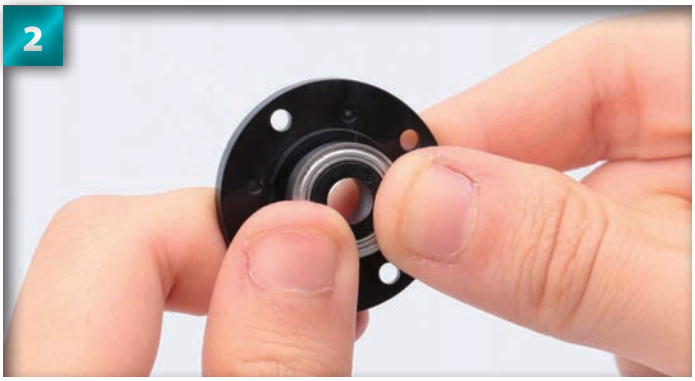
43T ring gear
Differential case
Differential cup joint
Bearing 1510
6mm O-ring
Shim 6 × 12mm
Pin 2.5 × 10.3mm
20T bevel gear
5 screws 2.6 × 12mm

Tools & materials

Tweezers
Toothpick
Phillips screwdriver

Fitting the bearing onto the differential case

Place the 1510 ball bearing over the projection on the differential case.



Press the bearing firmly into position on the projection. Make sure the bearing is aligned with the case.

Assembling the differential gear

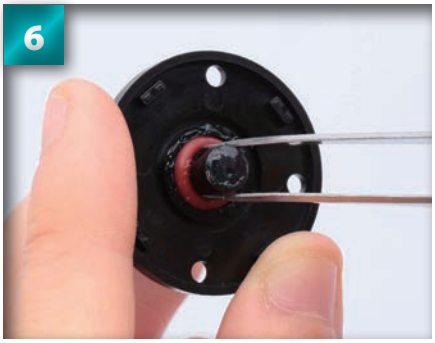
Place a small amount of grease onto the end of a toothpick, and apply some grease to the recess in the centre of the inside of the differential case.

Apply some grease to the differential cup joint.

Place the end of the joint into the hole on the inside of the projection that the bearing was placed over.

Insert the joint into the hole, slowly rotating it back and forth to spread the grease.

Place the 6mm O-ring over the end of the joint.



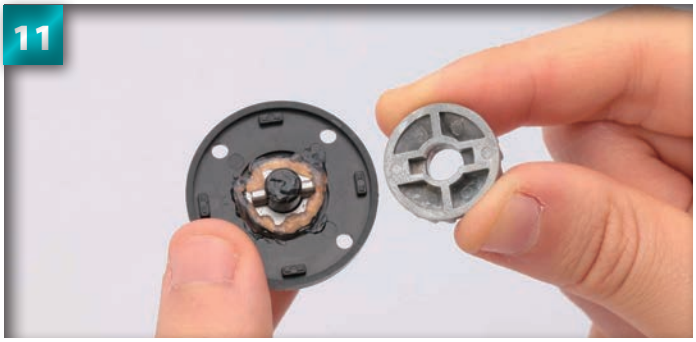
Push the O-ring down onto the joint until it sits in the recess from Step 1.

Place the 6 × 12mm shim over the joint and push it down to rest on the O-ring.

Insert the 2.5 × 10.3mm pin into the hole in the joint, just above the shim.

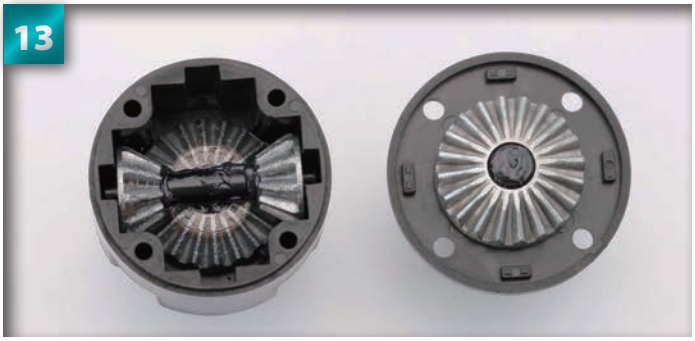
Adjust the pin so it is positioned evenly in the joint, as shown.

Smear some extra grease around the shim and the joint.



Hold the 20T bevel gear, as shown. Locate the groove on the back of the gear.

Align the groove on the back of the bevel gear with the position of the pin and place the gear into the back of the case, sliding it over the joint.



Push the bevel gear down onto the joint until the pin slots into the groove. Retrieve the differential gear assembly from the previous stage.

Apply a large amount of grease into the back of the differential case.

15

Locate the four screw holes on both differential case assemblies.

16

Place the two assemblies together, aligning the screw holes of both.

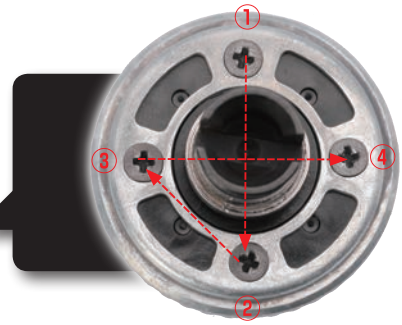
17

Place the 43T gear over the end of the joint.

18

Align the four screw holes of the gear with those of the case.

19

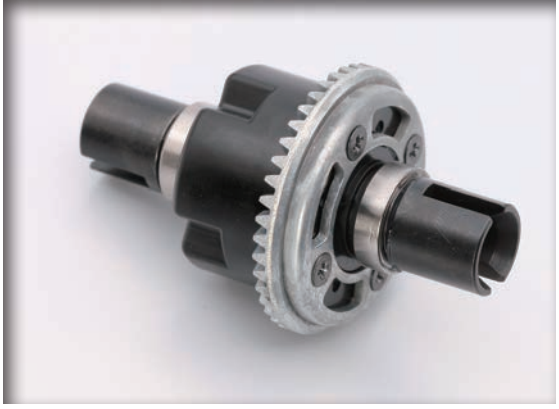


Insert one of the 2.6 × 12mm self-tapping countersunk screws into one of the holes and tighten until halfway in. Then, following the order shown in the diagram on the right, tighten the next three screws halfway into their holes, and when all four are in place, fully tighten them in the same order.

20

Turn the cup joints in opposite directions to spread the grease around the internal gears.

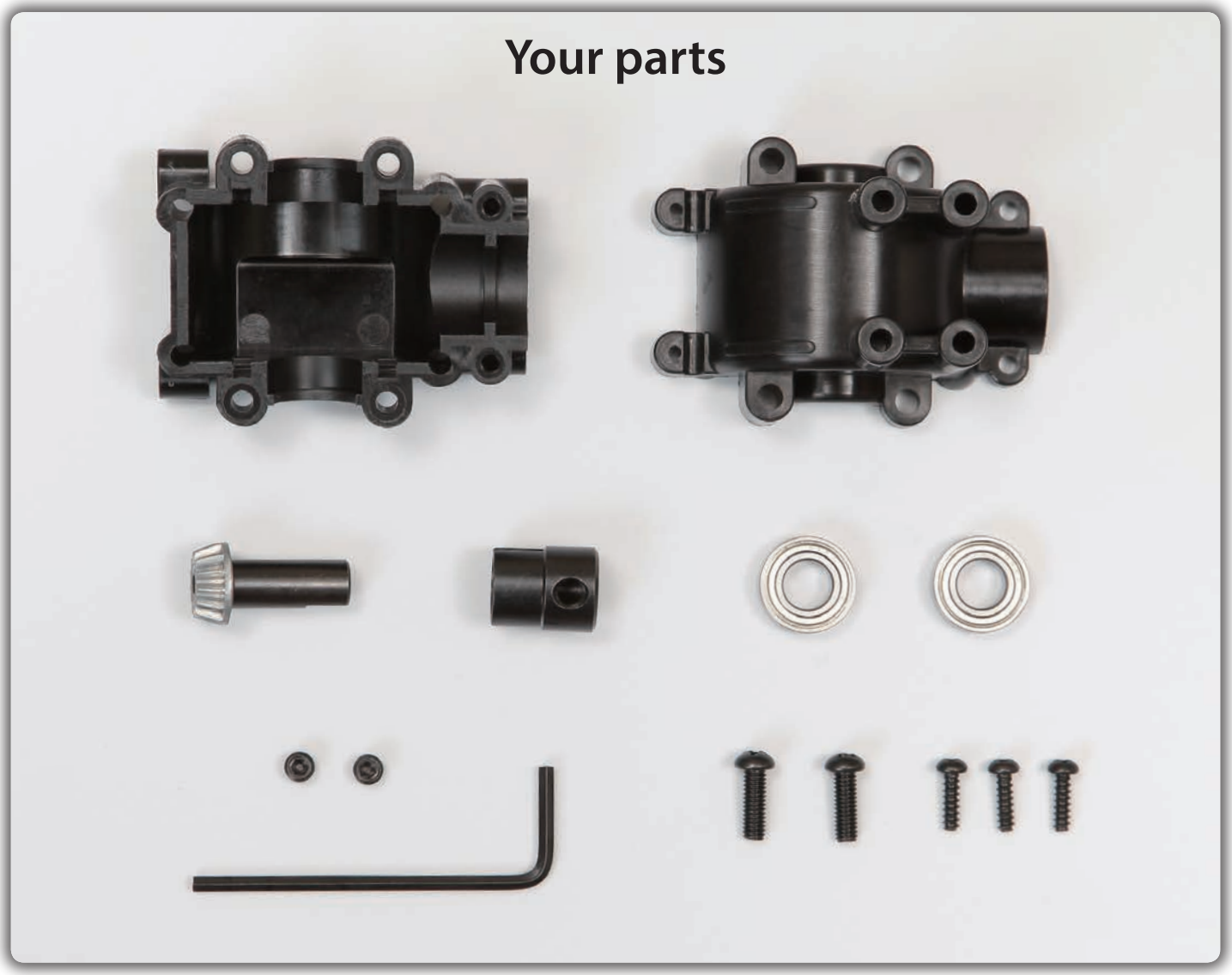
Assembled parts



Stage 7

Assembling the rear bulkhead

Your parts



Lower bulkhead
Upper bulkhead
Driveshaft (pre-assembled with a 13T gear)
Cup joint
2 bearings 1680
2 set screws 5 × 4mm
2.5mm Allen key
2 screws 4 × 12mm
3 screws 3 × 10mm

Tools & materials

Phillips screwdriver
Thread lock agent or rubber-based adhesive

Assembling the driveshaft

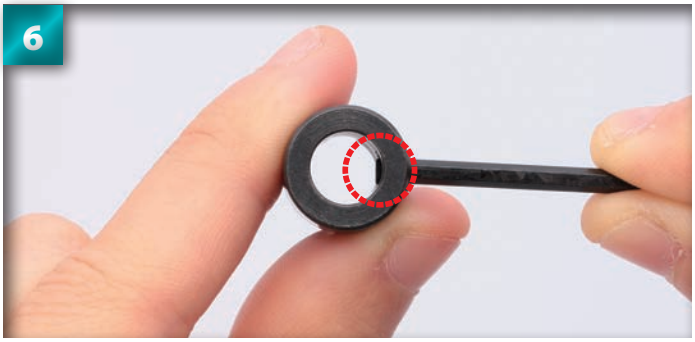
Hold the pre-assembled driveshaft and place the bearing 1680 onto the shaft so that it rests behind the gear.

Place the second bearing onto the driveshaft, up against the first.

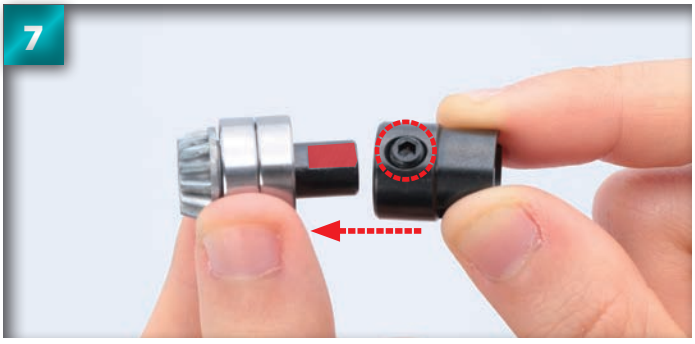
You will need a thread lock agent such as Kyosho Loctite to prevent the screws from loosening during use. If you are unable to use this, use a rubber-based adhesive instead.

Insert the tip of the Allen key into the hexagonal hole in the 5 × 4mm set screw and apply a small amount of lock agent to the thread of the screw.

Insert the set screw into the hole in the side of the cup joint.



Keep tightening the set screw into the hole until about 0.5mm of the tip is visible from the inside of the cup joint.



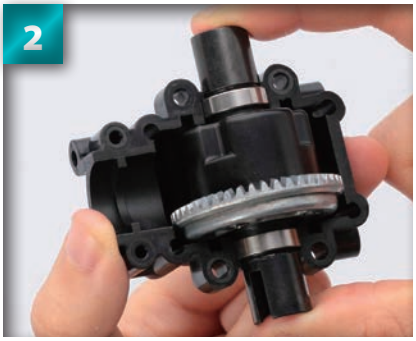
Slide the cup joint onto the end of the shaft, positioning it so the set screw is placed over the flat section of the shaft (red rectangle).

Tighten the set screw slightly, just enough to stop the cup joint moving around the shaft.

Keep the driveshaft assembly close to hand as it will be used a few steps further on.

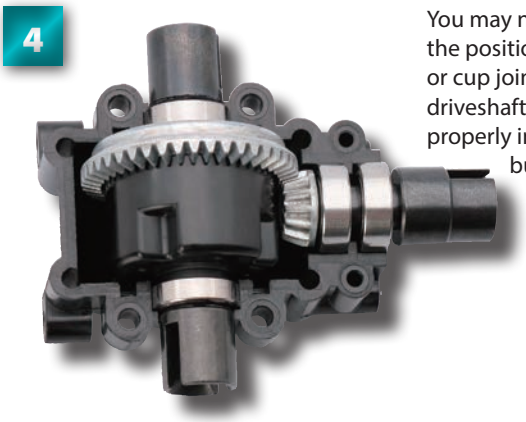
Assembling the rear bulkhead

Take the lower bulkhead and retrieve the differential assembly.

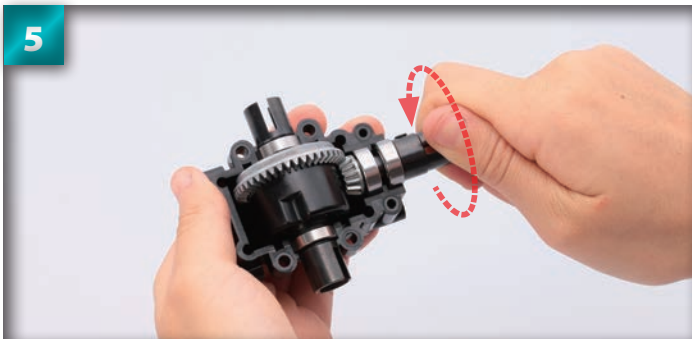


Place the differential assembly into the recess in the lower bulkhead, as shown in the photo.

Place the driveshaft in the cylindrical recess to the side of the differential in the lower bulkhead.



You may need to adjust the position of the gears or cup joint on the driveshaft to fit them properly in the lower bulkhead.



Slowly turn the driveshaft clockwise to check that the differential gear rotates smoothly. When doing so, make sure that the parts remain in their correct positions in the bulkhead.

Spread some grease over the 13T and 43T gears, and rotate them to ensure that the grease gets onto all the teeth.

7

Place the upper bulkhead over the differential and shaft, aligning it with the lower bulkhead.

8

Adjust the position of the upper bulkhead so that its screw holes are aligned with those of the lower bulkhead.

9

Place one of the 4 × 12mm screws into the hole to the right of the joint shaft.

10

Tighten the screw into the hole, keeping it as straight as possible.

11

Place the second 4 x 12mm screw into the hole on the opposite side of the assembly, next to the other joint shaft of the differential.

12

Insert a 3 × 10mm screw into the holes either side of where the driveshaft is held.

13

Tighten the first 3 x 10mm screw into the hole.

14

Finally, tighten the second 3 x 10mm screw into the hole on the other side of the assembly.

15

Once the upper bulkhead is secured, test the driveshaft. Turn it from left to right while moving it back and forth slightly to find the best position for it, where the gears and joints of the assembly rotate smoothly.

16

If the fit is too tight, loosen the set screw with the Allen key.

17

Wedge a piece of thin card or similar between the joint and bearing to hold the cup at the correct distance.

18

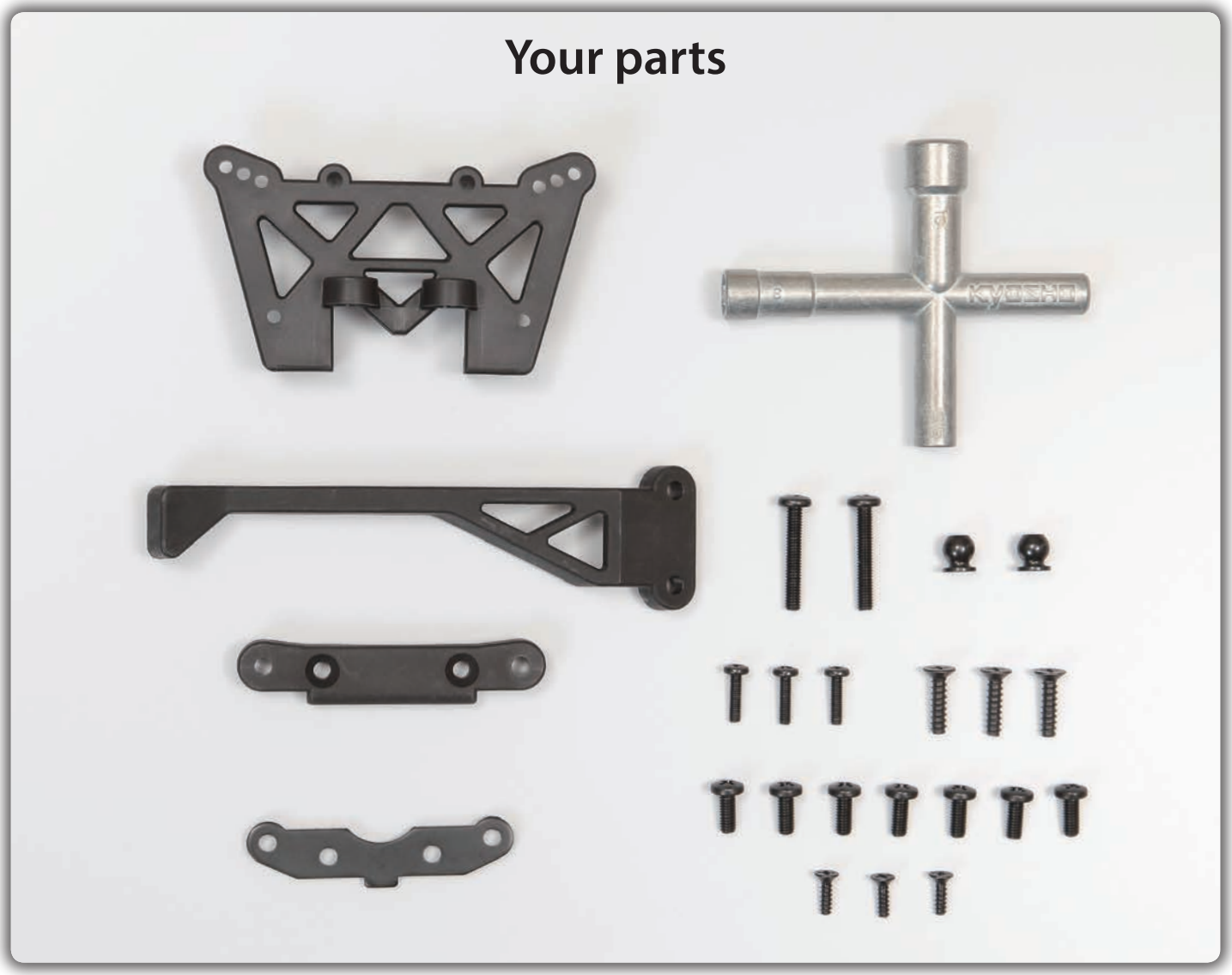
Use the Allen key to tighten the set screw again, to secure the joint in place, and then remove the wedge.

Assembled parts

Stage 8

Fitting the rear suspension and damper stays

Your parts



Rear damper stay
Rear torque rod
Rear lower suspension holder
Rear lower suspension plate
Cross wrench
2 screws 4 × 25mm
2 flange balls 7.8mm
3 screws 3 × 12mm
3 screws 4 × 16mm
7 screws 4 × 10mm
3 screws 3 × 10mm

Tools & materials

Phillips screwdriver
Thread lock agent

Fitting the suspension plate and holder

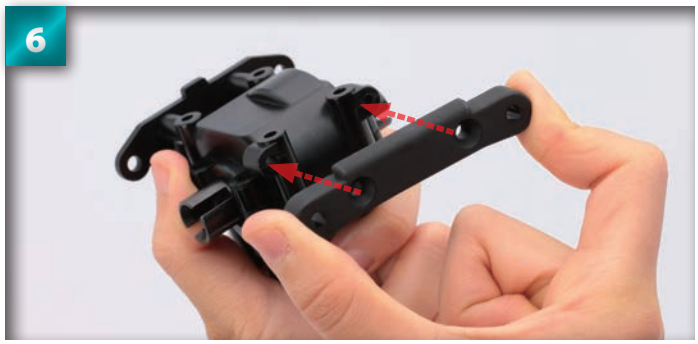
Holding the assembly from the previous stage as shown, position the rear lower suspension plate below the driveshaft. The red circle should help you identify the position of the plate.

Align the screw holes of the rear lower suspension plate with those of the bulkhead.

Insert a 4 × 10mm screw into the hole on the right of the suspension plate and tighten into place.

Tighten another 4 x 10mm screw into the suspension plate hole to the left of the one in the previous step.

This is how the assembly should look now, with the rear lower suspension plate attached.



Turn the assembly upside down and position the rear lower suspension holder at the opposite end to the plate.

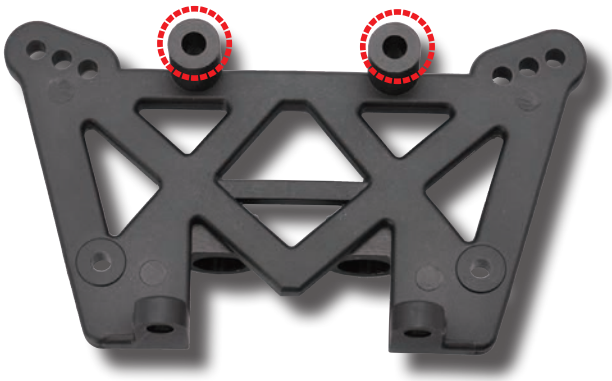
Align the screw holes of the lower suspension holder with those of the bulkhead.

Insert one of the 4 × 16mm countersunk screws into one of the holes of the holder and tighten it to the bulkhead.

Tighten a 4 × 16mm screw into the second hole of the suspension holder.

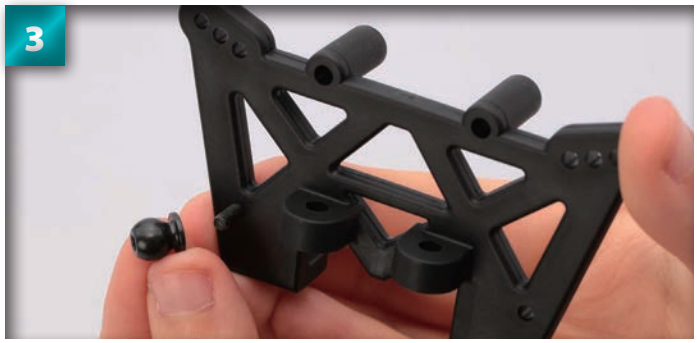
Your assembly should now look like this. Check that the suspension holder and plate are parallel.

Fitting the rear shock stay

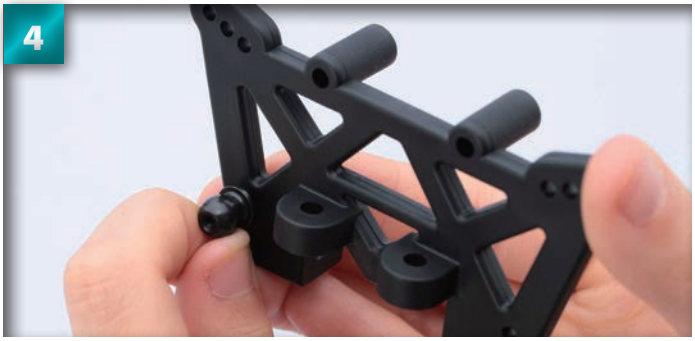


Identify the rear damper stay. The two posts (circled) project in only one direction, to the rear.

Insert a 3 × 12mm screw into the hole on the rear of the damper stay and apply some lock agent to the thread (inset).



Hold the screw in place and fit a 7.8mm flange ball onto the end of the screw.



Use your fingers to turn the flange ball onto the screw.

When you can no longer turn the flange ball with your fingers, tighten it fully onto the screw with a Phillips screwdriver.

Insert a second 3 × 12mm screw into the hole on the other side of the damper stay.

Holding the screw in place, turn the second flange ball onto it with your fingers.

Tighten the screw completely into the flange ball with a Phillips screwdriver.

Place the rear damper stay on top of the bulkhead, over the higher projections (arrowed).

Align the holes of the semicircular projections on the front of the damper stay with those of the two projections on the bulkhead.

When viewed from the side, the assembly should appear like this.

Insert one of the 4 × 10mm screws into one of the holes in the semicircular projections on the front side of the damper.

Tighten the screw into place with a screwdriver.

14

Repeat this process, tightening a 4 x 10mm screw into the hole on the other side.

15

Insert one of the 4 × 25mm screws into the hole on the lower projection on the rear of the stay.

16

Tighten the 4 x 25mm screw into the hole.

17

Fit the second 4 x 25mm screw into the hole in the projection on the other side and tighten it, securing the stay to the bulkhead.

Assembled parts