Assembling the front left hub

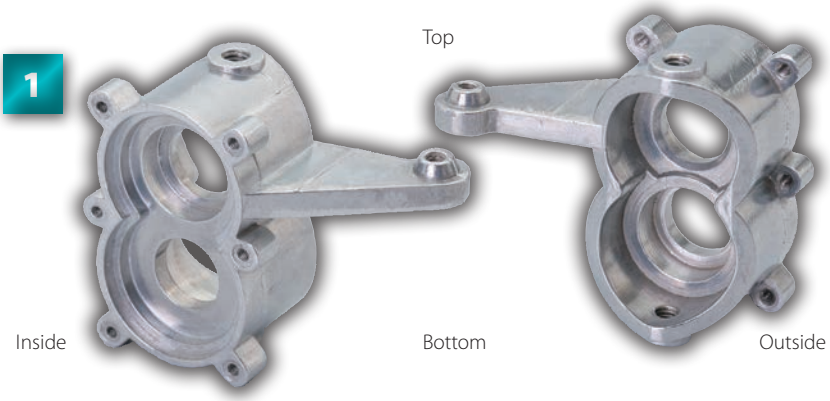
Your parts

Front left hub inside
Front reduction shaft
Grease
1260 metal bush
1480 metal bush
Reduction gear (15T)
E6 E-ring

Tools and materials

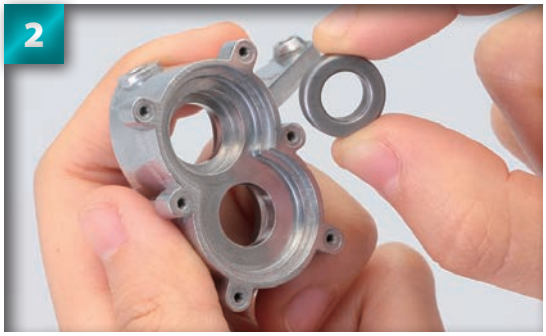
Scissors
Plastic bag
Cellophane tape
Marker pen

1



Familiarise yourself with the front left hub inside. The 'knuckle arm' is the triangular section that protrudes from just above the middle of the hub's body. Also, make a note from the photo of which is the inside and outside of this part.

2

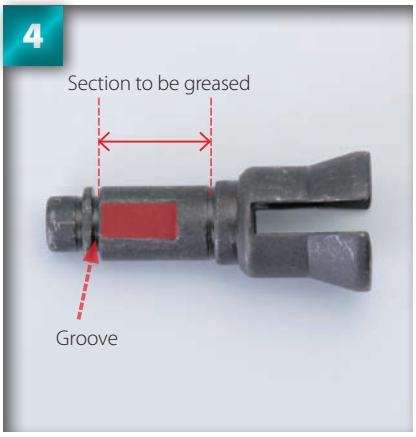


Place the 1480 metal bush into the recess in the top of the hub inside.

3

Evenly press the bush into place using both thumbs. It is important to push straight, as even a small angle will block the part. Do not force it, as this may damage the bush and cause problems at a later stage.

4



Inspect the front reduction shaft – on either side of the thinner section of the part there are flat sections (highlighted). There is also a narrow groove set around the tip of the shaft (arrow).

Cut a corner off the bag containing the grease. Make a small cut, or it will be more difficult to measure the amount of grease you apply.

5

Apply a little grease to the length of the reduction shaft marked in the photo for Step 4.

6

7

Insert the reduction shaft through the top hole of the hub, entering from the outside (the shaft will go through the metal bush on the inside).

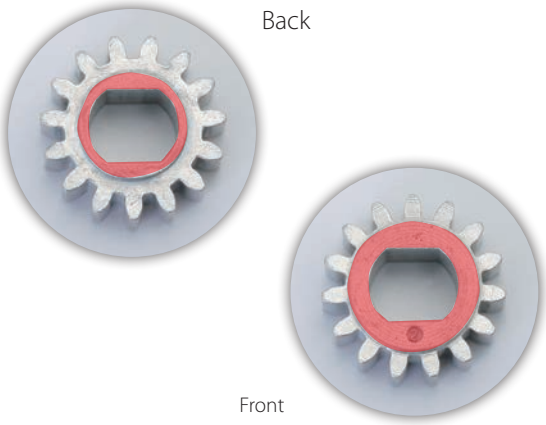
8

Hold the bush in place to stop it slipping, then turn the reduction shaft back and forth to spread the grease.

9

Apply a little more grease to the protruding section of the reduction shaft.

10



Look at the reduction gear. The front has a larger surface area than the back (red-shaded areas).

11

The reduction gear will fit over the tip of the reduction shaft back side first.

12

Line up the gear so that the flat sections of the hole in the middle fit against the corresponding flat portions on either side of the reduction shaft.

13

Push the gear firmly into place so that the thin groove at the tip of the reduction shaft (labelled in Step 4) is visible above the front surface of the gear.

Assembled parts

This is only a temporary assembly, so keep all the parts in a plastic bag for later use, preferably sealing with cellophane tape to prevent any parts falling out. It is a good idea to mark the stage number on the plastic bag for future reference.

Stage 30

Completing and mounting the front left hub

Your parts

Front left driveshaft
3mm Allen key
2.5 x 12mm pin
Front wheel reduction shaft
Front left hub outside
1680 metal bush
1480 metal bush
Reduction gear (16T)
E7 E-ring
6mm flange nut
Wheel hub adaptor
Wheel hub
2.5 x 14mm pin
Knuckle collars x 2
2 x 10mm cap screws x 7 (1 is a spare)
4 x 10mm cap screws x 2

Tools and materials

1.5mm Allen key (Stage 11)
Pliers
Grease (Stage 29)
Tweezers

Front left hub inside assembly (Stage 29)
1260 metal bush (Stage 29)
E6 E-ring (Stage 29)
Main chassis assembly (Stage 28)

Prepare the front left hub inside you assembled in Stage 29 by carefully removing the reduction shaft and 15T gear.

Apply a little grease to the front wheel reduction shaft and insert it through the centre of the 1480 metal bush. Turn the shaft slowly to spread the grease.

Pull the wheel reduction shaft and bush through the bottom hole of the front left hub inside, from the angle shown in the photograph.

Turn the assembly over, and insert the 2.5 x 12mm pin through the hole in the wheel reduction shaft. Using tweezers will make this easier.

Make sure that equal parts of the pin are visible on either side of the shaft, then slide on the 16T reduction gear. The tips of the pin should sit inside the grooves in the back of the gear (see circles).

Fit the E7 E-ring around the groove in the wheel reduction shaft (see arrow), with its rounded side facing up. Make sure you use the E7 E-ring – the smaller E6 E-ring will be used in a later step.

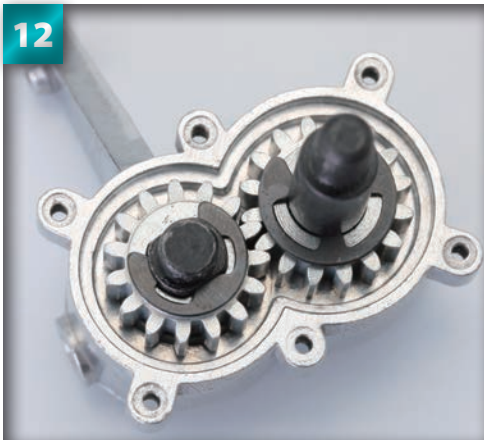
Clip the E-ring into place with pliers, making sure that the flat back of the E-ring is touching the gear, and the rounded front is facing upwards.

Now re-insert the reduction shaft you removed in Step 1, from the direction of the arrow. Once in place, grease the protruding section of the shaft a little.

Slide on the 15T gear, back side first. The teeth should interlock with those of the 16T gear when level.

Place the E6 E-ring around the groove in the tip of the reduction shaft, with the rounded top side of the E-ring facing upwards.

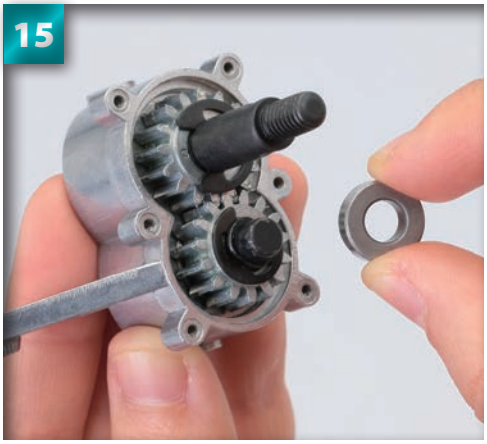
Clip into place with pliers.



Your assembly should look like this. Make sure the teeth of the gears are interlocked, and the rounded top sides of the E-rings are facing upwards.

Apply a little grease to both gears.

Rotate the wheel reduction shaft to evenly disperse the grease.



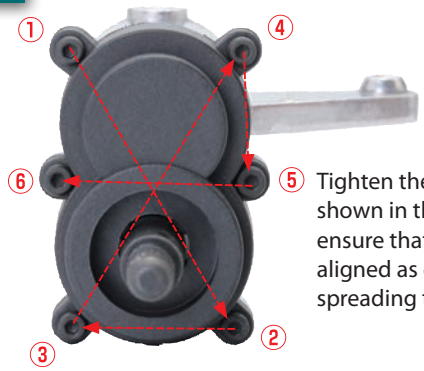
Apply a little grease to the tip of the reduction shaft, then slide the 1260 metal bush over it, so that it sits on top of the E-ring.

It is time to close the hub, which is done by joining the hub outside to this session's assembly. Line up the screw holes, as shown, with the tip of the wheel reduction shaft fitting through the hole in the outside hub.

17

Using the 1.5mm Allen key, tighten a 2 x 10mm cap screw into the first of the holes.

18



Tighten the screws in the order shown in this diagram. This will ensure that all the holes remain aligned as each is tightened, spreading the pressure evenly.

Apply a little grease to the recess in the outside hub casing, around the protruding portion of the wheel shaft.

19

Slide the1680 metal bush over the wheel shaft and into the recess. Turn back and forth to spread the grease evenly inside.

20

21

Slide the wheel hub over the wheel shaft, so that the side with the raised circle (see photo) sits on top of the bush.

22

Position the wheel hub so that the hole in its side lines up with that of the wheel shaft.

With the holes aligned, use tweezers to insert the 2.5 x 14mm pin through both parts.

23

Make sure that both ends of the pin are sitting flush to the side of the wheel hub.

24

Cover the wheel hub with the wheel hub adaptor.

Press down firmly on the adaptor so that it conceals the wheel hub inside completely.

Place the 6mm flange nut onto the threaded tip of the wheel shaft, with the toothed side down.

Tighten the flange nut with your fingers – at this stage it is not necessary to use a tool.

Position the chassis assembly on your work surface, so that the front left suspension system is facing you. Insert the front left driveshaft through the gap in the hub carrier, then slot its head into the differential cup joint, as shown.

Hold the other end of the driveshaft level, and position the cup joint at the back of the hub so that it accommodates the head of the driveshaft. Line up the circled pins with the slots on the cup joint.

Next, line up the holes on the metal part of the hub with the wider holes of the hub carrier. Make sure the driveshaft doesn't get dislodged.

Make a note of the shape of the knuckle collars – the outside has a wide, flat surface, while the inside is smaller and rounded.

Hold the hub assembly in place, and check that the holes are aligned.

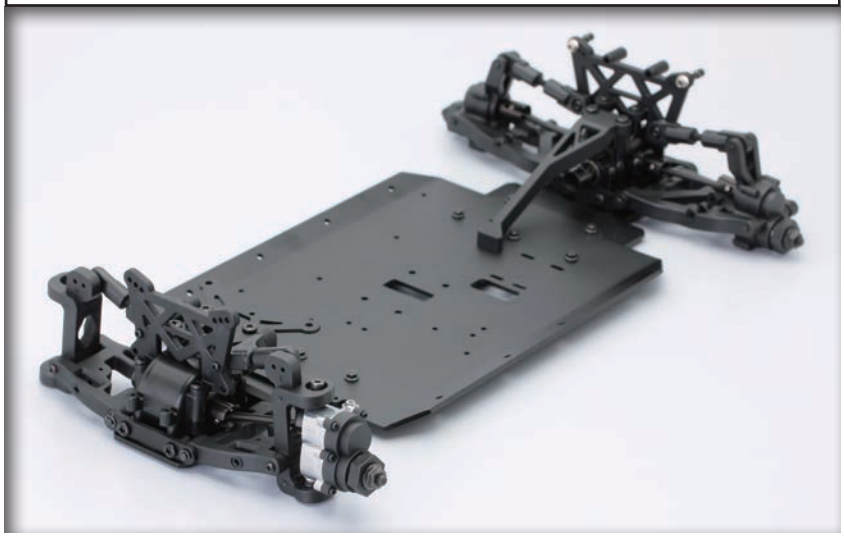
Carefully place the first knuckle collar into the hole in the hub carrier, with the narrower inside edge facing down. It may help to use tweezers for this.

Insert a 4 x 10mm cap screw through the hole in the knuckle collar and into the hole in the top part of the hub.

Tighten the cap screw into place with the 3mm Allen key.

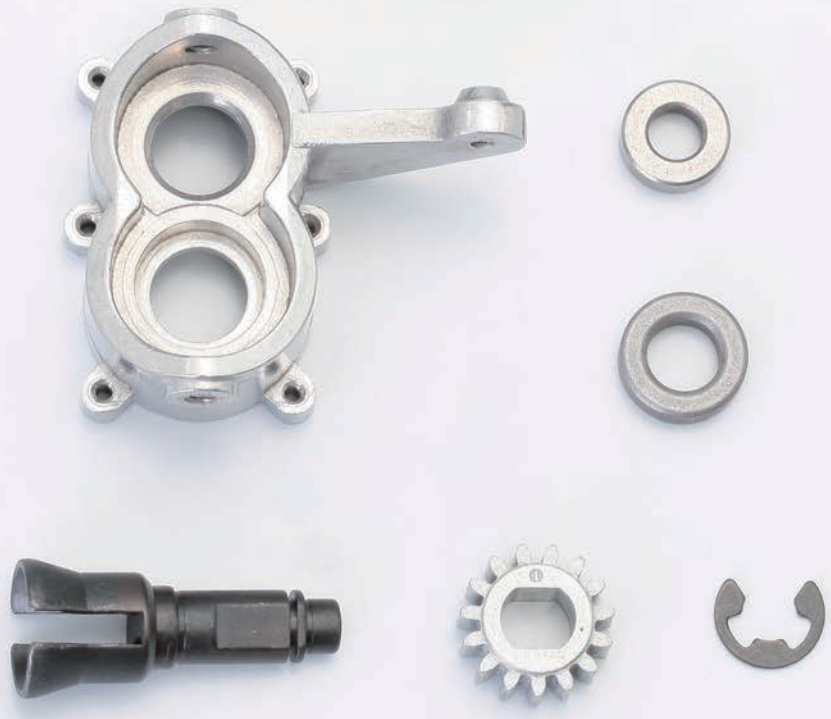
Holding the hub in place, turn the assembly over so that you have access to the underside of the suspension system. Place the second knuckle collar into the hole in the bottom side of the hub carrier; then, as you did in Step 36, tighten into place with the second 4 x 10mm cap screw, using the 3mm Allen key.

Assembled parts



Assembling the front right hub

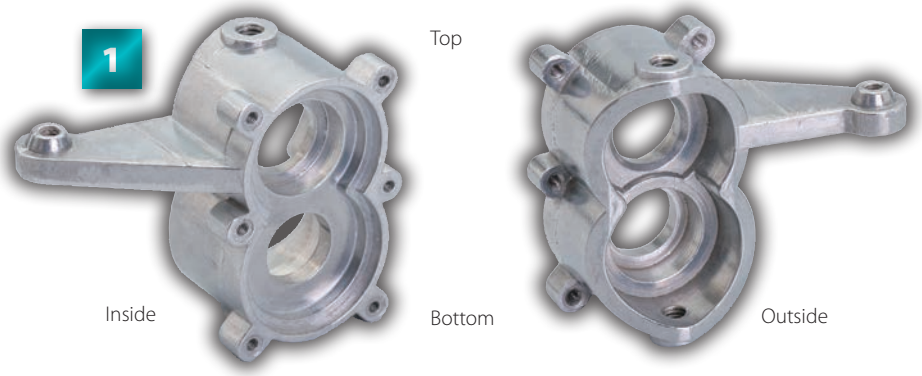
Your parts



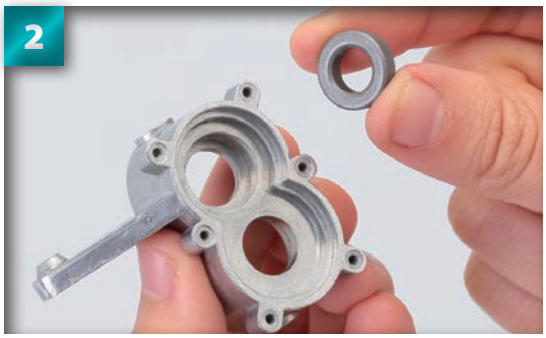
Front right hub inside
1260 metal bush
1480 metal bush
Front reduction shaft
Reduction gear (15T)
E6 E-ring

Tools and materials

Plastic bag
Grease (Stage 29)

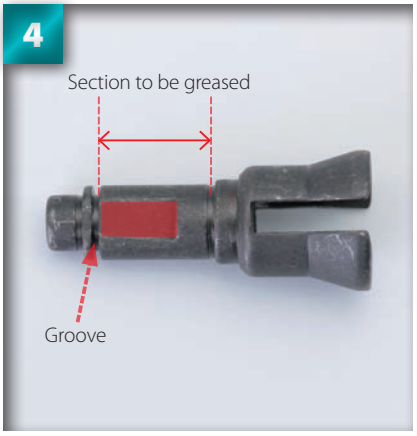


Familiarise yourself with the front right hub inside. The 'knuckle arm' is the triangular section that protrudes from just above the middle of the hub's body. Also, make a note from the photo of which is the inside and outside of this part.



Place the 1480 metal bush into the hole at the top of the hub inside.

Evenly press the bush into place using both thumbs. It is important to push straight, as even a small angle will block the part. Do not force it, as this may damage the bush and cause problems at a later stage.



Inspect the front reduction shaft – on either side of the thinner section of the part there are flat section (highlighted). There is also a narrow groove near the end of the shaft (arrowed).

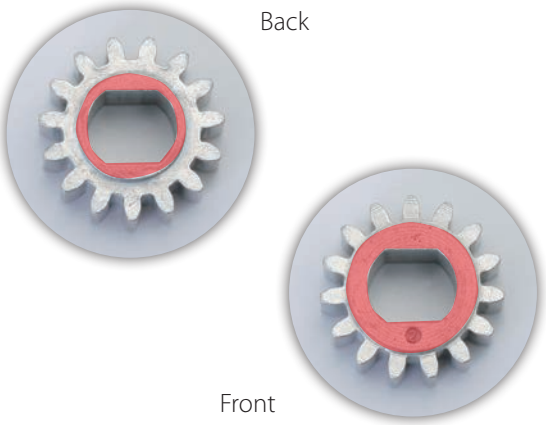
Apply a little grease to the section of the reduction shaft marked in the photo for Step 4.

Insert the reduction shaft through the top hole of the hub, entering from the outside (the shaft will go through the metal bush on the inside).

Turn the reduction shaft back and forth to spread the grease.

Apply a little more grease to the protruding section of the reduction shaft.

9



Look at the reduction gear. The front has a larger surface area than the back (red-shaded areas).

10

The gear will fit over the tip of the reduction shaft, back side first.

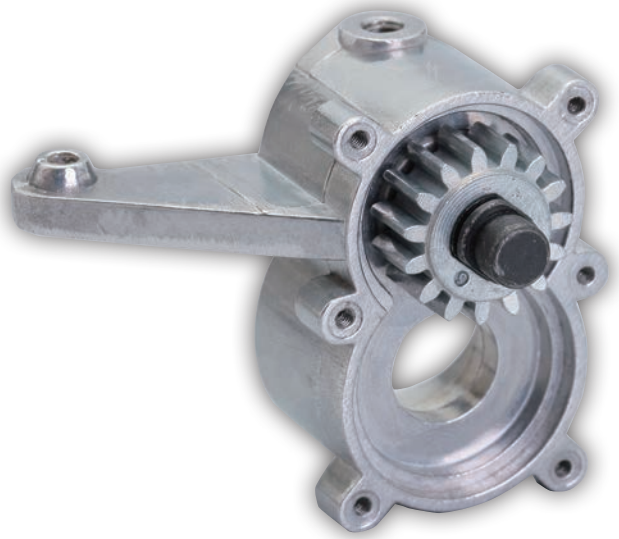
11

Line up the gear so that the flat sections accommodate those on either side of the reduction shaft.

12

Push the gear firmly into place so that the thin groove near the tip of the reduction shaft (labelled in Step 4) is visible above the surface of the gear.

Assembled parts



This is only a temporary assembly, so keep all the parts in a plastic bag for later use. It is a good idea to mark the stage number on the plastic bag for future reference.

Stage 32

Completing and mounting the front right hub

Your parts

Front right driveshaft
Front right hub outside
2.5 x 12mm pin
Front wheel reduction shaft
1480 metal bush
1680 metal bush
Reduction gear
E7 E-ring
Knuckle collars x 2
6mm flange nut
Wheel hub adaptor
Wheel hub
2.5 x 14mm pin
4 x 10mm cap screw x 2
2 x 10mm cap screws x 6

Tools and materials

1.5mm Allen key (Stage 11)
3mm Allen key (Stage 30)
Pliers
Grease (Stage 29)
Tweezers
Front right hub inside assembly (Stage 31)
1260 metal bush (Stage 31)
E6 E-ring (Stage 31)
Main chassis assembly (Stage 30)

1

Prepare the front right hub inside you assembled in Stage 31 by carefully removing the reduction shaft and 15T gear.

2

Slide the 1480 metal bush to the base of the wheel reduction shaft, apply some grease, then pull through the bottom hole in the hub inside.

3

Grease the base of the reduction shaft, then use tweezers to insert the 2.5 x 12mm pin through the hole arrowed.

4

Make sure equal parts of the pin are visible on either side of the shaft, then slide on the 16T reduction gear, back side first. The grooves on the back of the gear should accommodate the tips of the pin (see circles).

5

Position the E7 E-ring around the thin groove in the shaft, just above the surface of the gear. The rounded side of the E-ring should be facing upwards. Be sure to use the E7 E-ring – the smaller E6 E-ring will be used in a later step.

6

Use pliers to carefully clip the E-ring around the groove.

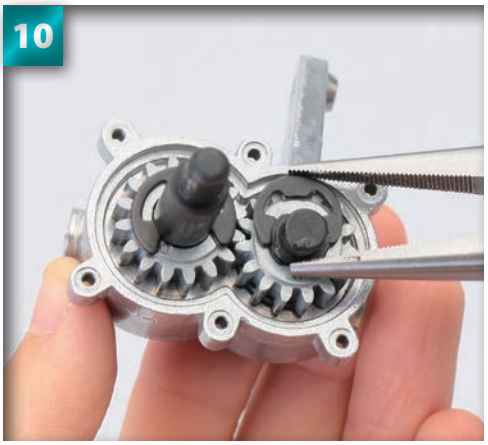
7

Re-insert the reduction shaft you removed in Step 1. Once in place, apply some grease to the protruding end of the shaft.

8

Slide the 15T reduction gear over the shaft, so that it rests on top of the greased bush, with its teeth engaging those of the 16T gear.

As you did with the E7 E-ring in Step 5, position the E6 E-ring around the thin groove in the reduction shaft. Again, the side with rounded edges should face upwards.



Clip into place with pliers.

Your assembly should look like this, with the gears interlocked neatly.

Apply a good amount of grease to both gears.

Slowly rotate the wheel reduction shaft to spread the grease evenly across the gears.

Grease the tip of the reduction shaft, then slide on the 1260 metal bush.

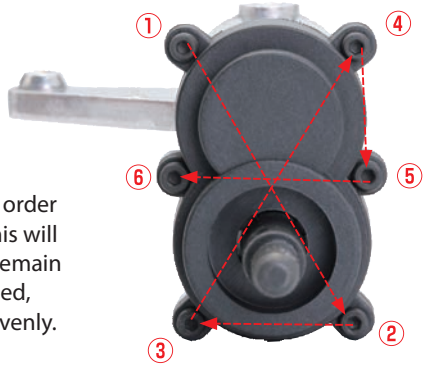
To close the hub, line up the front right hub outside with the assembly produced in this session. The wheel reduction shaft will fit through the hole in the hub outside, and the six screw holes should meet.

Press firmly together with your fingers and thumbs.

17

Insert a 2 x 10mm cap screw into one of the holes on the hub outside and tighten with the 1.5mm Allen key.

18



Tighten the screws in the order shown in this diagram. This will ensure that all the holes remain aligned as each is tightened, spreading the pressure evenly.

Apply some grease to the recess surrounding the wheel reduction shaft, as shown.

19

Slide the 1680 metal bush over the shaft and into the recess. Turn from left to right a few times to spread the grease.

20

21

Slide the wheel hub over the wheel shaft, so that the side with the raised circle (see photo) sits on top of the bush.

22

Turn the wheel hub until the hole in its side lines up with that of the wheel shaft.

With the holes aligned, use tweezers to insert the 2.5 x 14mm pin through both parts.

23

Make sure that both ends of the pin are sitting flush to the side of the wheel hub.

24

25

Cover the wheel hub with the wheel hub adaptor.

26

Press down firmly on the adaptor so that it conceals the wheel hub inside completely.

Place the 6mm flange nut onto the threaded tip of the wheel shaft, with the toothed side down.

27

Tighten the flange nut with your fingers – at this stage it is not necessary to use a tool.

28

29

Position the chassis assembly on your work surface, so that the front right suspension system is easily accessed. Insert the front right driveshaft through the gap in the hub carrier, then slot its head into the differential cup joint, as shown.

30

Hold the other end of the driveshaft level, and position the cup joint at the back of the hub so that it accommodates the head of the driveshaft. Line up the circled pins with the slots on the joint.

Next, line up the holes on the metal part of the hub with the wider holes of the hub carrier. Make sure the driveshaft doesn't get dislodged.

31

Make a note of the shape of the knuckle collars – the outside has a wide, flat surface, while the inside is smaller and rounded.

32

Hold the hub assembly in place, and check that the holes are aligned.

Carefully place the first knuckle collar into the hole in the hub carrier, with the narrower inside edge facing down. It may help to use tweezers for this.

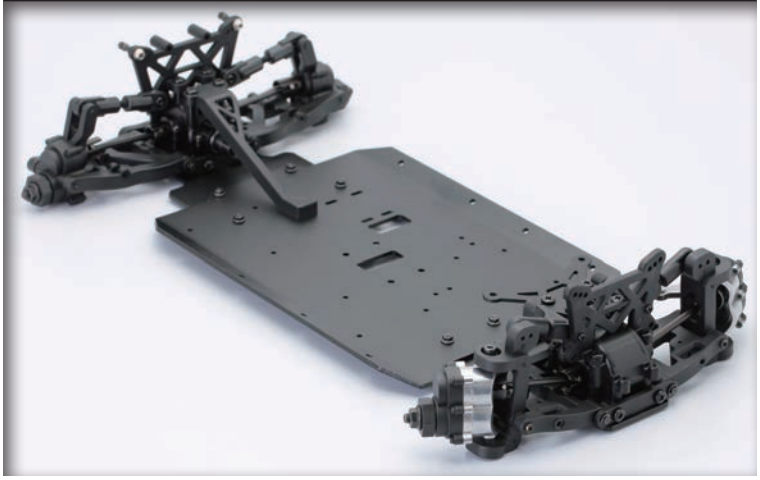
Insert a 4 x 10mm cap screw through the hole in the knuckle collar and into the hole in the top part of the hub.

Tighten with the 3mm Allen key.

Holding the hub in place, turn the chassis assembly upside down to gain access to the underside of the hub carrier. Repeat Steps 33 to 35 for the set of holes on this side.

Tighten the cap screw into place with the 3mm Allen key.

Assembled parts



This stage is now complete. Your Hummer has its front and back suspension systems and all four wheel hubs installed, ready for the next stages. Store your assembly away safely until next time.