Stage 17

Assembling the front left wheel and tyre

Your parts

Tyre
Wheel
Hub cap

Tools and materials

Wet and dry paper (600 grit)
Instant adhesive
Knife
Tweezers
Sticker sheet (Stage 2)
Washing-up liquid and sponge
Sealable plastic bag

Wash the tyre with some washing-up liquid, paying especially close attention to the areas that will be in contact with the wheel rims.

While waiting for the tyre to dry, use wet and dry paper to remove the paint from the wheel rims provided in Stage 1. This will help with adhesion.

Hold the tyre and wheel as shown. The wheel must enter the tyre through the wider hole.

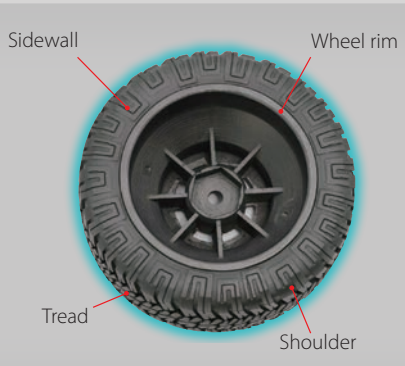
Insert the wheel into the tyre.

Working around the wheel, pull the shoulder of the tyre back slightly to help ease it into the groove on the inside of the rim.

Turn the wheel assembly over and position the other side of the tyre into the groove on the other side of the wheel.

Tyre & Wheel

Familiarise yourself with the different parts of the wheel and tyre, as they will be referred to in the steps.



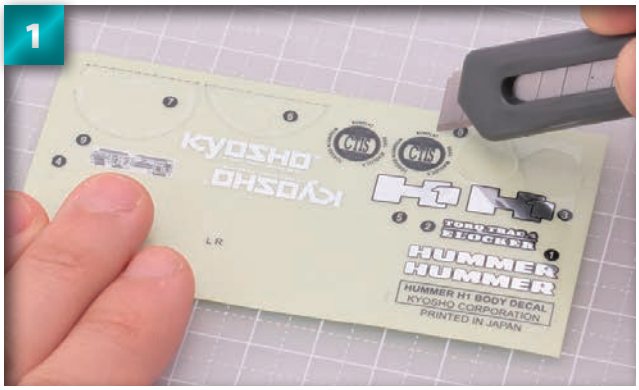
Ease the sidewall back a little, creating a small gap between the tyre and the wheel rim, then squeeze a small amount of instant adhesive into the gap. See the Tip box below for the recommended technique for applying the glue.

Tip

When applying instant adhesive to the wheel, follow the order shown in the photo. This method will secure the wheel to the tyre without the tyre becoming distorted.

When the glue is dry, turn the wheel assembly over and repeat Step 7 for the other side.

Applying the stickers



Carefully cut out decal Number 8 from the sticker sheet provided with Stage 2.

Using tweezers, very carefully remove the decal from the sticker sheet and place in the centre of the hub cap.

Make sure the two depressions on the hub cap (circled) are aligned horizontally with the lettering 'CTIS' on the sticker.

Assembled parts

Your completed assembly should look like this. Check that the sidewall is securely glued to the wheel rim. If a section comes away, simply reapply a little instant adhesive and wait to dry.

Storing your assembly

Store your completed assembly in a plastic bag, preferably one which can be sealed, such as a sandwich bag. Keep this safely, avoiding direct sunlight, as ultraviolet rays can have a detrimental effect on the rubber of the tyre.

Stage 18

Assembling the front left shock

Your parts

Shock case
Shock spring spacer
Front shock spring
Shock spring stopper
2.6mm nut
2.3mm washers x 2
Shock piston
Stopper ring
3mm O-rings x 2
Shock shaft
11mm O-ring
Shock cap
6.8mm ball end
3mm flange nut
5.8mm ball pivot
3 × 20mm cap screw
3 × 20mm screw shaft
6.8mm pillow ball

Tools and materials

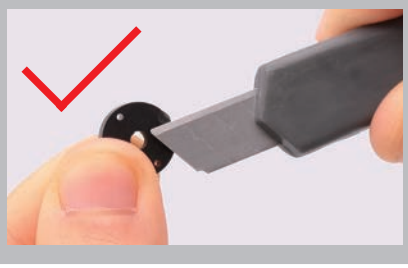
Pliers
Knife
Callipers (or ruler)
Tissue paper
Shock assembly rod (Stage 4)
Shock oil (Stage 9)

Check the parts for any burrs and scrape off any that you find with a cutting knife, following the advice shown on the right.

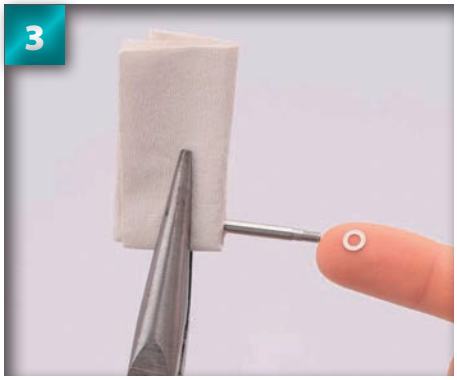
Tip!

Don't cut away anything on the outer surface of the piston unless it protrudes by a few millimetres, as it would be very easy to distort the shape.

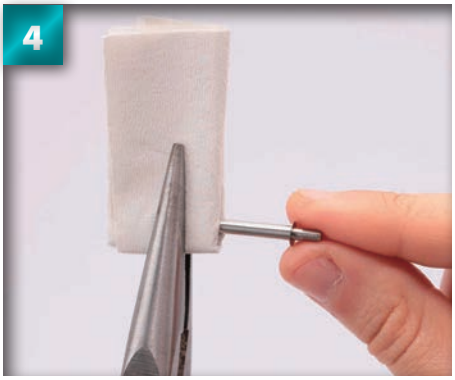
When removing burrs from the larger surface, cut away from you, moving the knife along the flat side of the piston.



To protect the thread on the shaft, wrap some folded tissue paper around it.

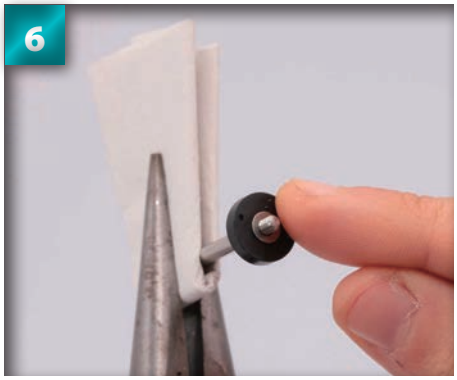


Hold the end of the shock shaft wrapped in tissue paper with pliers. Pick up one of the 2.3mm washers.



Place the 2.3mm washer over the exposed end of the shaft.

Place the shock piston onto the end of the shaft, up against the washer.



Place the second 2.3mm washer onto the end of the shaft, sandwiching the piston.

Tighten the 2.6mm nut onto the thread at the end of the shaft.

When you can no longer turn the nut by hand, use pliers to turn it by one more revolution.

Place the stopper ring on a flat surface, with the projections around the sides angled up.

Place the stopper ring onto the end of the shock assembly rod.

Ensure that the projections of the stopper ring are angled towards the rod.

Place one of the 3mm O-rings over the end of the rod.

Slide the second O-ring onto the rod up against the first.

Apply a small amount of shock oil to the O-ring at the end of the rod.

Place the shock cap onto the end of the rod, over the two O-rings and the stopper ring.

Hold the base of the rod and push straight down on the shock cap.

Push down hard on the shock cap until the tip of the rod is flush with the cap. The stopper ring's angled projections (see Step 9) should slot into the ridge on the inside of the shock cap, so that the two O-rings remain inside when the rod is removed (see photo in Step 18).

Remove the shock cap from the rod and check that the two O-rings are held in place by the stopper ring. If not, repeat Steps 16 and 17.

Holding the cap with tissue paper, pour a few drops of shock oil over the O-rings and stopper ring.

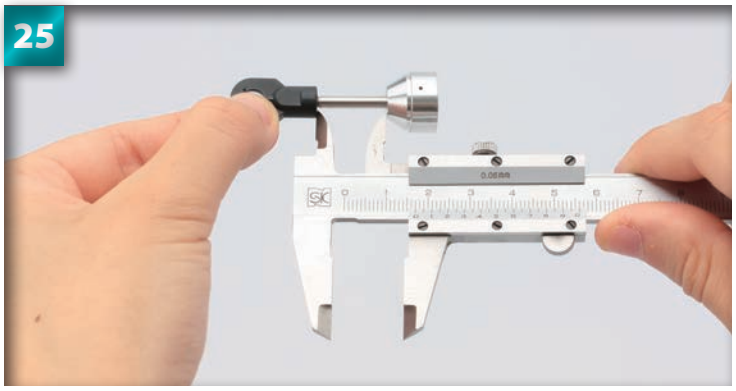
Take the shock shaft assembly and insert it into the hole in the centre of the shock cap.

Push the shaft all the way into the cap. Wipe off any oil from the shaft.

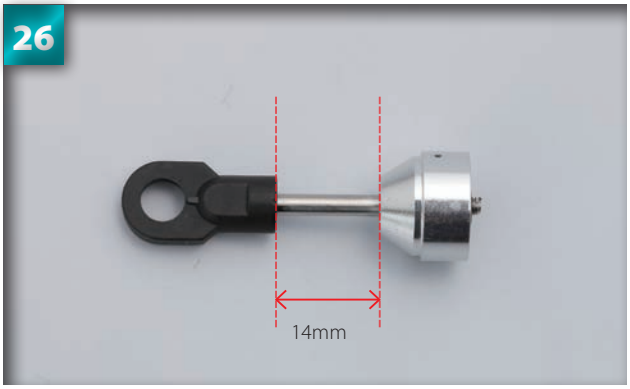
Wrap folded tissue paper around the shaft and grip with pliers.

Insert the shaft into the hole on the 6.8mm ball end.

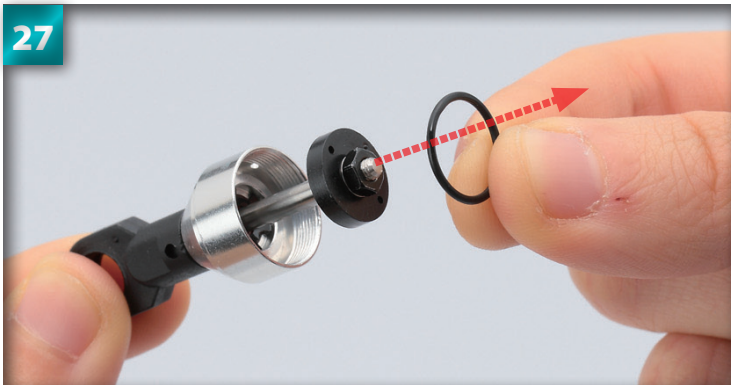
Screw the ball end onto the shaft until you can no longer see the thread of the shaft.



Measure the gap between the cap and the ball end. The ball end should be positioned 14mm away from the cap, so adjust the fit if necessary by either tightening or loosening it.



The gap between the cap and the ball end must be 14mm. If you don't have any callipers to measure it, just use a ruler.



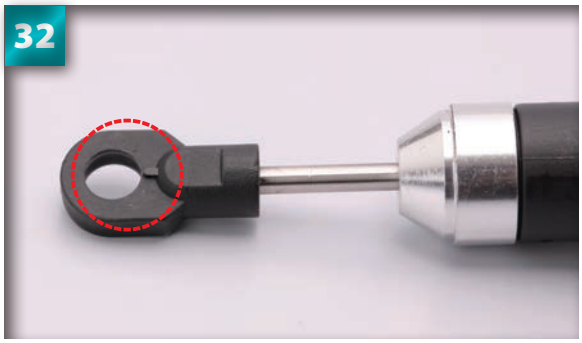
Push the shaft through the cap and then pass the piston through the 11mm O-ring.

Once the piston is through the 11mm O-ring, drop the ring down inside the shock cap.

The O-ring should rest in the groove on the inside of the shock cap, as shown.

Temporarily assemble the shock by inserting the shaft assembly into the shock case.

Screw the two parts together to temporarily secure them.

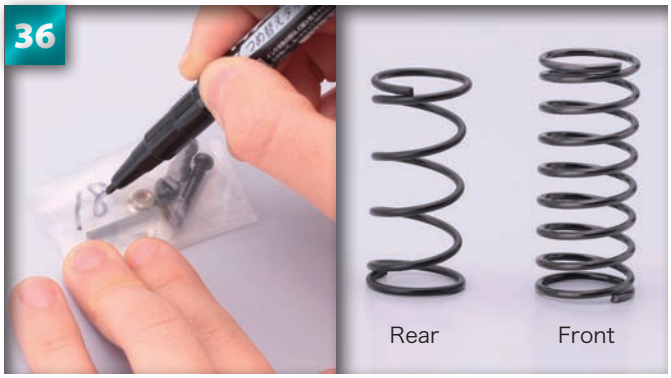


If you look carefully at the hole in the ball end, you'll see that it's smaller on one side than the other.

Hold the shock assembly so that the larger side of the ball end is uppermost. The 6.8mm pillow ball will fit into the hole in the ball end.

Push the pillow ball into the hole in the ball end, keeping the hole in the ball aligned with that of the ball end.

Place folded tissue paper around the ball end and press into place with pliers.



Store the unused parts safely in a plastic bag, marking the stage number for reference. Also, note the difference between the front and rear shock springs: the front has a greater number of coils than the rear, giving it a higher 'pitch'.

Assembled parts

As this is only a temporary assembly, leave out the front shock spring, spring spacer and stopper, as well as any other unused parts, and store these away safely for future use.

Assembling the front right wheel and tyre

Your parts

Tyre
Wheel
Hub cap

Tools and materials

Wet and dry paper (600 grit)
Instant adhesive
Knife
Tweezers
Sticker sheet (Stage 2)
Washing-up liquid and sponge
Sealable plastic bag

Wash the tyre with some washing-up liquid, paying especially close attention to the areas that will be in contact with the wheel rims.

While waiting for the tyre to dry, use wet and dry paper to remove the paint from the wheel rims provided in Stage 1. This will help with adhesion.

Hold the tyre and wheel as shown. The wheel must enter the tyre through the wider hole.

Insert the wheel into the tyre.

Working around the wheel, pull the shoulder of the tyre back slightly to help ease it into the groove on the inside of the rim.

Turn the wheel assembly over and position the other side of the tyre into the groove on the other side of the wheel.

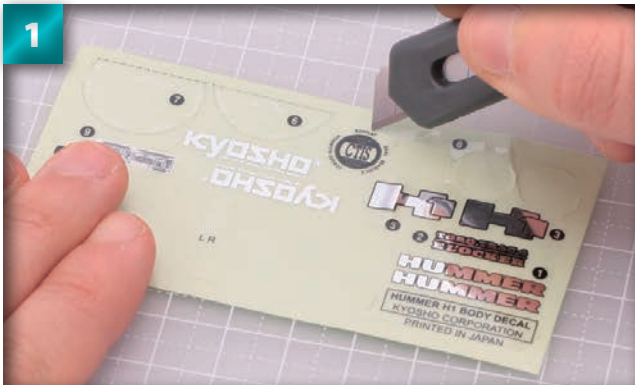
Ease the sidewall back a little, creating a small gap between the tyre and the wheel rim, then squeeze a small amount of instant adhesive into the gap. See the Tip box below for the recommended technique for applying the glue.

Tip

When applying instant adhesive to the wheel, follow the order shown in the photo. This method will secure the wheel to the tyre without the tyre becoming distorted.

When the glue is dry, turn the wheel assembly over and repeat Step 7 for the other side.

Applying the stickers



Use a knife to carefully cut out decal Number 8 from the sticker sheet provided with Stage 2.

Using tweezers, very carefully remove the decal from the sticker sheet and place in the centre of the hub cap.

Make sure the two depressions on the hub cap (circled) are aligned horizontally with the lettering 'CTIS' on the sticker.

Assembled parts

Your completed assembly should look like this. Check that the sidewall is securely glued to the wheel rim. If a section comes away, simply reapply a little instant adhesive and wait to dry.

Storing your assembly

As with the other wheels you have assembled, store this stage's assembly in a plastic bag, preferably one which can be sealed, such as a sandwich bag. Keep this safely, avoiding direct sunlight, as ultraviolet rays can have a detrimental effect on the rubber of the tyre.

Stage 20

Assembling the front right shock

Your parts

Shock case
Shock spring spacer
Front shock spring
Shock spring stopper
2.6mm nut
2.3mm washers x 2
Shock piston
Stopper ring
3mm O-rings x 2
Shock shaft
11mm O-ring
Shock cap
6.8mm ball end
3mm flange nut
5.8mm ball pivot
3 × 20mm cap screw
3 × 20mm screw shaft
6.8mm pillow ball

Tools and materials

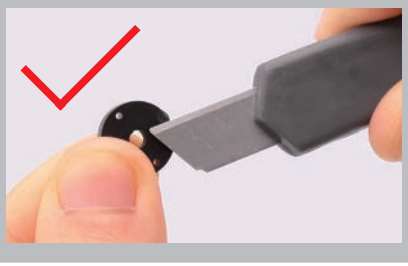
Pliers
Cutter knife
Callipers (or ruler)
Tissue paper
Shock assembly rod (Stage 4)
Shock oil (Stage 9)

Check the parts for any burrs and scrape off any that you find with a cutting knife, following the advice shown on the right.

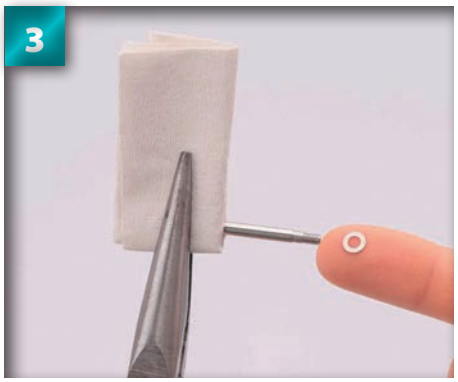
Tip!

Don't cut away anything on the outer surface of the piston unless it protrudes by a few millimetres, as it would be very easy to distort the shape.

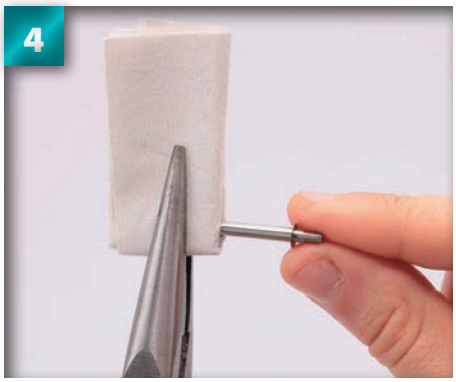
When removing burrs from the larger surface, cut away from you, moving the knife in line with the piston.



To protect the thread on the shaft, wrap some folded tissue paper around it.

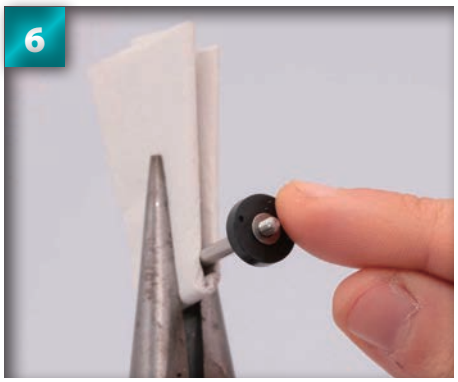


Hold the end of the shaft wrapped in tissue paper with pliers. Pick up one of the 2.3mm washers.



Place the 2.3mm washer over the exposed end of the shaft.

Place the piston onto the end of the shaft, up against the washer.



Place the second 2.3mm washer onto the end of the shaft, sandwiching the piston.

Tighten the 2.6mm nut onto the thread at the end of the shaft.

8

When you can no longer turn the nut by hand, use pliers to turn it by one more revolution.

9

Place the stopper ring on a flat surface, with the projections around the sides angled up.

10

Place the stopper ring onto the end of the shock assembly rod.

11

Ensure that the projections of the stopper ring are angled towards the rod.

12

Place one of the 3mm O-rings over the end of the rod.

13

Slide the second O-ring onto the rod up against the first.

14

Apply a small amount of shock oil to the O-ring at the end of the rod.

15

Place the shock cap onto the end of the rod, over the two O-rings and the stopper ring.

16 Hold the base of the rod and push straight down on the shock cap.

17 Push down hard on the shock cap until the tip of the rod is flush with the cap. The stopper ring's angled projections (see Step 9) should slot into the ridge on the inside of the shock cap, so that the two O-rings remain inside when the rod is removed (see photo in Step 18).

18 Remove the shock cap from the rod and check that the two O-rings are held in place by the stopper ring. If not, repeat Steps 16 and 17.

Holding the cap with tissue paper, pour a few drops of shock oil over the O-rings and stopper ring.

19

20 Take the shock shaft assembly and insert it into the hole in the centre of the shock cap.

21 Push the shaft all the way into the cap. Wipe off any oil from the shaft.

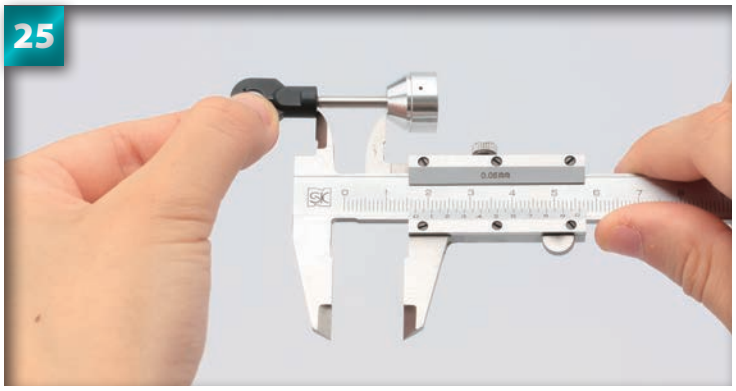
Wrap folded tissue paper around the shaft and grip with pliers.

22

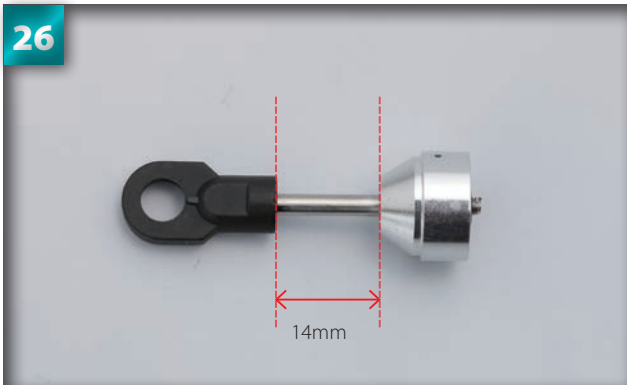
Insert the shaft into the hole on the 6.8mm ball end.

23

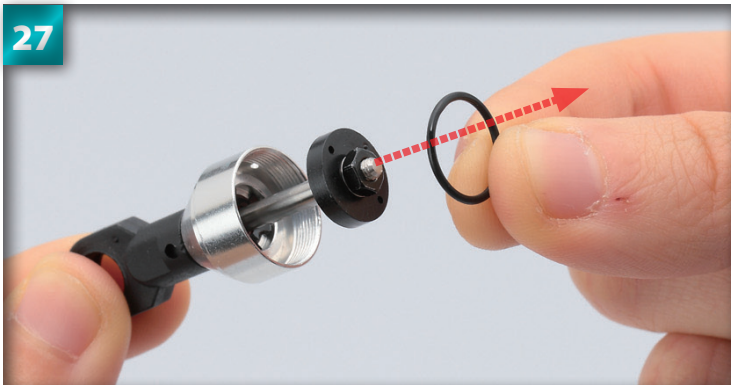
Screw the ball end onto the shaft until you can no longer see the thread of the shaft.



Measure the gap between the cap and the ball end. The ball end should be positioned 14mm away from the cap, so adjust the fit if necessary by either tightening or loosening it.



The gap between the cap and the ball end must be 14mm. If you don't have any callipers to measure it, just use a ruler.



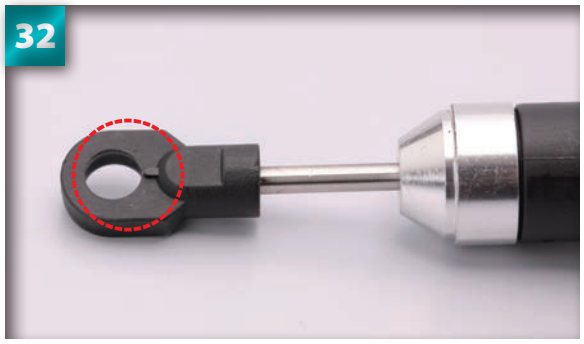
Push the shaft through the cap and then pass the piston through the 11mm O-ring.

Once the piston is through the 11mm O-ring, drop the ring down inside the shock cap.

The O-ring should rest in the groove on the inside of the shock cap, as shown.

Temporarily assemble the shock by inserting the shaft assembly into the shock case.

Screw the two parts together to temporarily secure them.



If you look carefully at the hole in the ball end, you'll see that it's smaller on one side than the other.

Hold the shock assembly so that the larger side of the ball end is uppermost. The 6.8mm pillow ball will fit into the hole in the ball end.

Push the pillow ball into the hole in the ball end, keeping the hole in the ball aligned with that of the ball end.

Place folded tissue paper around the ball end and press into place with pliers.

Store the unused parts safely in a plastic bag, marking the stage number for reference. Also, note the difference between the front and rear shock springs: the front has a greater number of coils than the rear, giving it a higher 'pitch'.

Assembled parts

As with the previous shocks you have assembled, leave out the shock spring, spring spacer and stopper, as well as any other unused parts, and store these away safely for future use.