

Build your own

McLaren

VODAFONE McLAREN MERCEDES MP4-23

2008 WORLD CHAMPIONSHIP WINNING CAR

Part 5



Build your own
McLaren

Contents

Packs 29-35

3 PACK 29: Assembling the rear suspension 1

In this pack, you begin assembling your model's rear suspension by attaching the lower suspension arms to the brake units you assembled in Pack 19.

5 PACK 30: Assembling the rear suspension 2

In this pack, you complete the assembly of your model's rear suspension by attaching the rear upper suspension arms.

8 PACK 31: Assembling the left rear wheel and tire

Fit spacers (supplied with Pack 13) onto the wheel that you received last time and then fit the rear left tire supplied with this pack.

10 PACK 32: Assembling the injector unit 1

This time you begin putting together the injector unit. Some of the parts are tiny, but they add realism to this essential device.

13 PACK 33: Assembling the injector unit 2

Continue to assemble the injector unit, this time sticking the rear panel you put together in Pack 32 onto the injector cover and adding the induction box.

15 PACK 34: Assembling the engine cover 1

This pack includes the first set of components to cover the rear of your McLaren's engine and the front of its gearbox.

18 PACK 35: Assembling the engine cover 2

This pack includes the second set of components to cover the rear of your McLaren's engine and the front of its gearbox.



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NOT SUITABLE FOR CHILDREN UNDER THE AGE OF 14. THIS PRODUCT IS NOT A TOY AND IS NOT DESIGNED OR INTENDED FOR USE IN PLAY. ITEMS MAY VARY FROM THOSE SHOWN.

Assembling the rear suspension 1

It's time to start joining the rear suspension to the engine/gearbox assembly. The first step is to attach the lower suspension arms to the two rear brake units that you finished putting together in Pack 19. The upper suspension arms supplied this time will be fitted in the next pack, so store the parts carefully until then.

PARTS SUPPLIED WITH THIS PACK

1 – * Rear upper suspension arms



2 – * Type 'E' screws x 7 †



* This part is for next pack's assembly

† A spare screw is provided

TOOLS & MATERIALS REQUIRED

Phillips screwdriver (size 00) – supplied with Pack 1

OPTIONAL EXTRAS

Screwdriver adapter – supplied with Pack 8

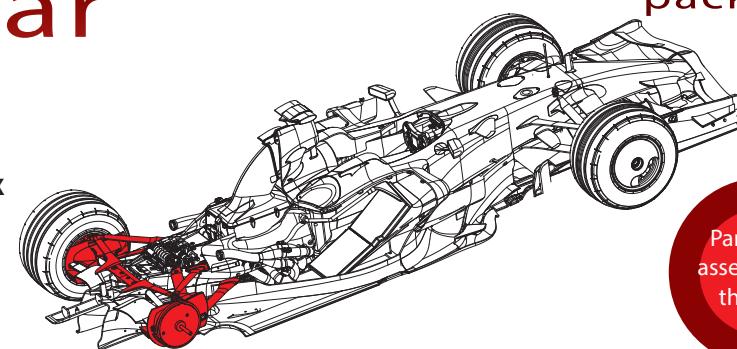
ITEMS TO HAVE READY

Left and right rear brake units – assembled in Pack 19

Left and right rear upright lower holders – supplied with Pack 19

Engine and gearbox – assembled in Pack 28

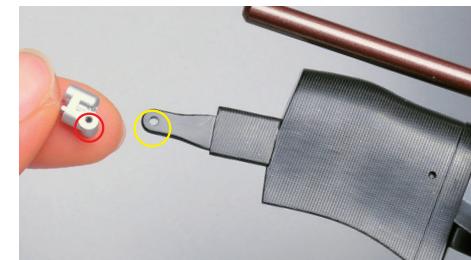
Type 'E' screws x 4 – supplied with previous packs



Parts to be assembled in this pack

ADD THE REAR UPRIGHT LOWER HOLDERS TO THE DIFFUSERS

1 Identify the left rear upright lower holder, supplied with Pack 19, and match it to the left tension rod diffuser, assembled in Pack 28. Ensure the parts are the facing the right way, then join them by inserting a type 'E' screw through the hole in the diffuser (ringed in yellow) into the screwhole (ringed in red).



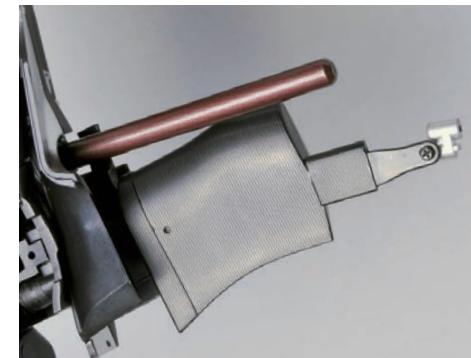
2

Tighten the screw until the holder is still just loose enough to swivel.



3

Repeat Steps 1 and 2 to attach the right rear upright lower holder to the end of the right tension rod diffuser.

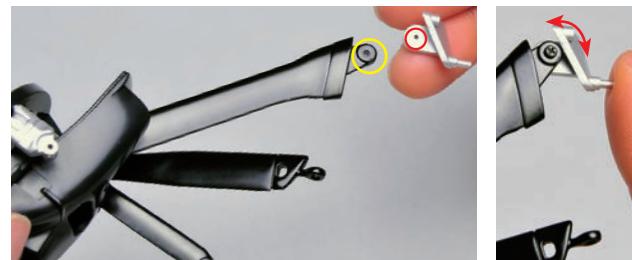


ATTACH THE LOWER SUSPENSION ARMS

1 Take the left rear brake unit, assembled in Pack 19. Unscrew the left suspension arm stay from the gearbox, to which it is loosely attached (see Pack 24). Look after the screw, as you will use it to re-attach the stay to the gearbox.



2 Insert a type 'E' screw through the hole (ringed in yellow) in the lower suspension arm, then screw it into the hole (ringed in red) in the stay. Do not overtighten the screw – the stay should be free to swivel.



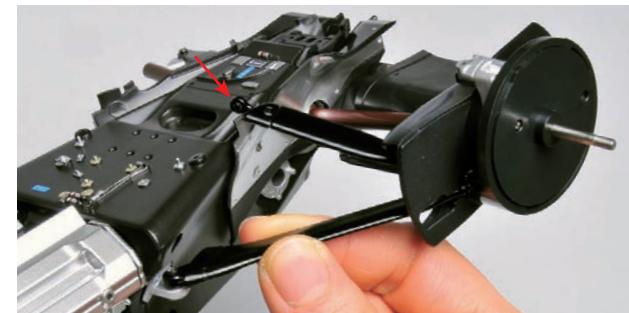
3 Fit the holder on the end of the left diffuser into the hole (ringed in yellow) in the upright. Angle it so the screw (arrowed yellow) does not catch. Gently push the holder all the way in.



4 Push the drive shaft into the hole in the brake unit in the direction shown by the yellow arrow.



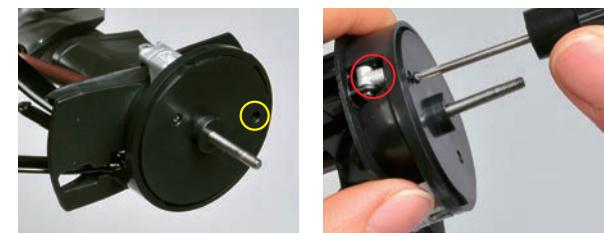
5 Locate the suspension arm stay you fitted in Step 2 against its mounting point on the gearbox. Ensure the pushrod fits in the cutout (arrowed red) on top of the gearbox.



6 Replace the screw you removed in Step 1, re-attaching the stay to the gearbox. This time tighten the screw fully.

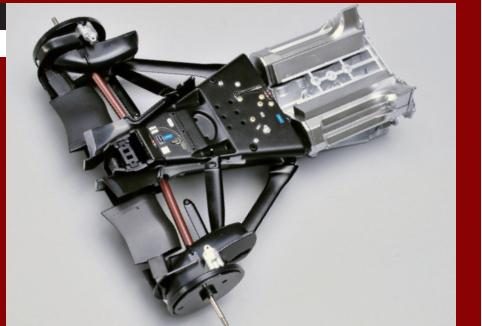


7 Put a type 'E' screw through the hole (ringed in yellow) on the brake unit into the holder (ringed in red). Tighten it until there is no gap between the brake unit and holder. Then mirror Steps 1-7 on the right hand side of the model.



THAT'S IT FOR THIS PACK!

The rear brake units are now attached to the gearbox and engine assembly. Be careful not to place any strain on the suspension arms. Next time you will attach the rear upper suspension arm, using the screws supplied with this pack.



Assembling the rear suspension 2

Complete the main parts of the rear suspension by fitting the rear upper suspension arms (supplied with Pack 29) onto the gearbox/engine and brake unit assembly that you have already put together. Store the rear wheel supplied this time, as you will need it for next pack's assembly.

PART SUPPLIED WITH THIS PACK

1 – * Rear wheel



* This part is for next pack's assembly

TOOLS & MATERIALS REQUIRED

Phillips screwdriver (size 00) – supplied with Pack 1

OPTIONAL EXTRAS

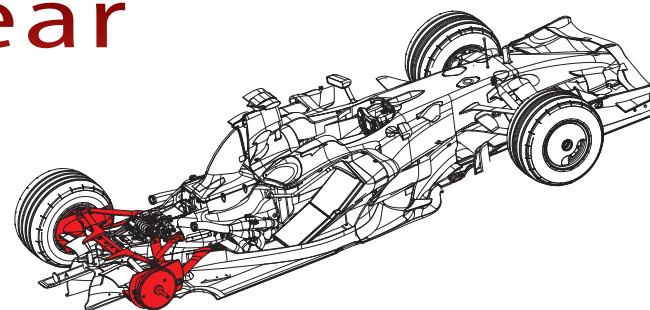
Screwdriver adapter – supplied with Pack 8

ITEMS TO HAVE READY

Rear upper suspension arms – supplied with Pack 29

Engine/gearbox and rear brake assembly – assembled in Pack 29

Type 'E' screws x 6 – supplied with Pack 29

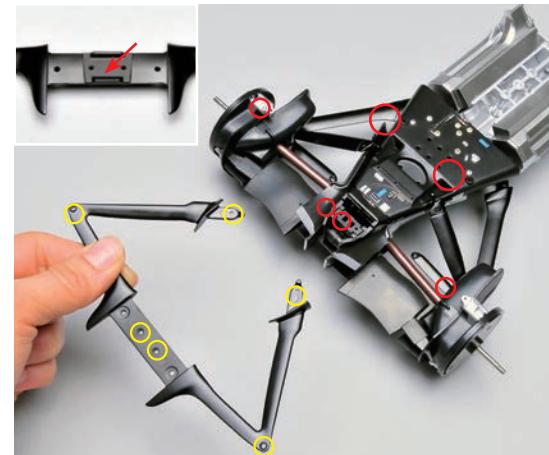


Parts to be assembled in this pack

ATTACHING THE UPPER SUSPENSION ARMS

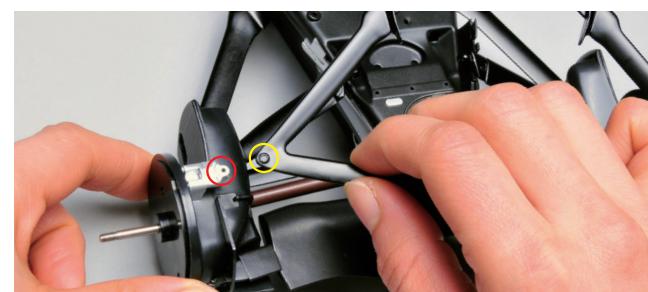
1

The rear upper suspension arms (supplied with Pack 29) are attached to the engine/gearbox and rear brake unit assembly with six type 'E' screws. These are inserted through the holes ringed in yellow into the corresponding screwholes, ringed in red. Make sure that the component is the right way up. The inset photo shows a detail (arrowed in red) of the side that should face **down**.



2

Start by attaching the tip of the left wishbone to the left rear upright holder on the left upright. The hole in the arm is ringed in yellow and the screwhole in the holder is ringed in red in the photo on the right.

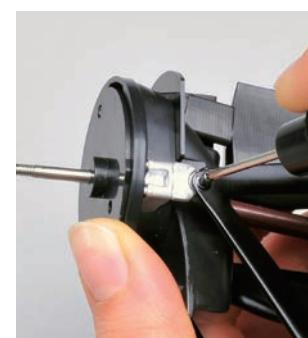


3 Join the parts with a type 'E' screw, leaving a little slack until you have fitted the other screws.

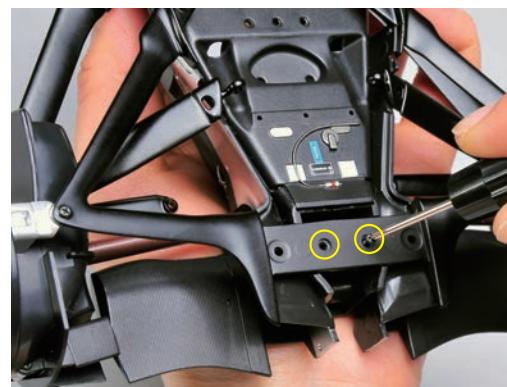


4

Now attach the tip of the right wishbone in a similar way. You may have to maneuver the parts a little to align the screwholes, which is why you needed to leave some slack.



5



6

Now attach the forward end of the left wishbone to the top of the gearbox with a type 'E' screw. Note the small pin (arrowed in yellow) that fits into a small hole in the end of the arm. Be careful not to snap this when you tighten the screw.



7

Repeat Step 6 for the right wishbone. Then tighten all six screws fully to complete the assembly.



THAT'S IT FOR THIS PACK!

With the completion of this assembly, the rear of the car is really coming together. Put it away carefully for future use – you will need it for the pack after next. The wheel supplied this time is used in the next pack, when you fit a rear tire.



1

s-Benz

Henkel

SCHÜCO

Windows + Solar



Hilton

BRIDGESTONE

POTENZA

ENKEI

Assembling the left rear wheel and tire

The assembly in this pack is similar to the one you did in Pack 13, where you fitted spacers and tires to both front wheels. This time, the assembly involves fitting one of the sets of rear spacers supplied with Pack 13 to the rear wheel that was supplied with Pack 30. You can then fit this pack's left rear tire to the rear wheel.

PART SUPPLIED WITH THIS PACK

1 – Rear tire (left)



TOOLS & MATERIALS REQUIRED

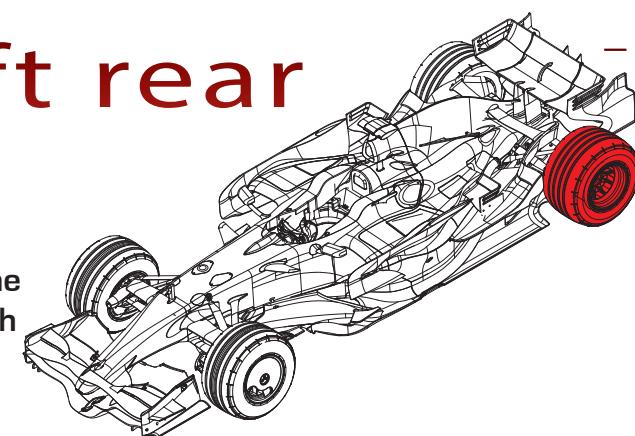
Craft knife
Cutting mat
Superglue

OPTIONAL EXTRAS

Small diagonal cutters, or nippers

ITEMS TO HAVE READY

Rear wheel spacers – supplied with Pack 13
Rear wheel – supplied with Pack 30



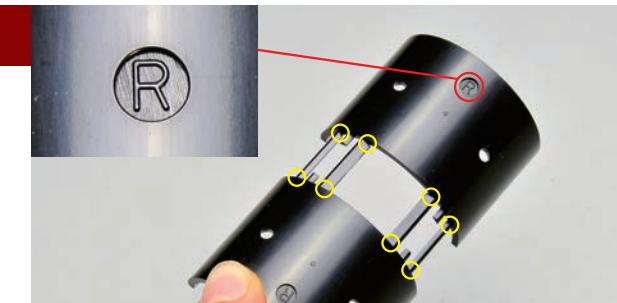
– pack 31

Parts to be assembled in this pack

SEPARATING THE WHEEL SPACERS

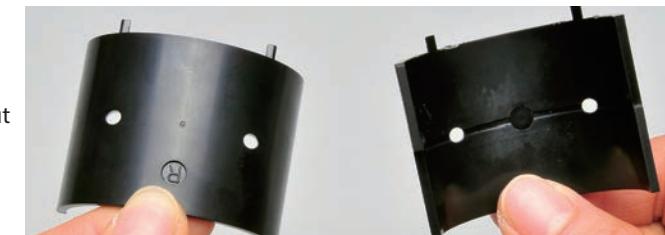
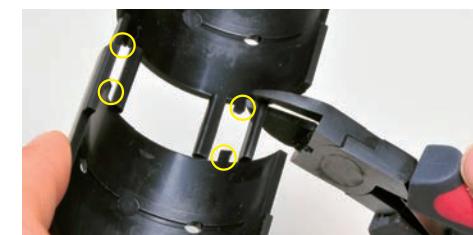
1

The rear wheel spacers (supplied in Pack 13) are identified by the stamped letter 'R' (ringed in red). They are supplied in pairs joined together by sprues, the ends of which are ringed in yellow in the photo.



2

Separate one pair by cutting the sprues close to the sides of the spacers. You can cut the sprues using nippers, as shown here, or a craft knife and a cutting mat. **Do not cut the projecting pins (ringed in yellow) between the sprues.** You should end up with two spacers, each with two pins sticking out as shown on the right. Put the other pair of rear wheel spacers aside for future use.



ATTACHING THE SPACERS TO THE WHEEL

1

Take the rear wheel and half a wheel spacer. Fit the spacer over the wheel with the pins touching the rim around the spoked side. Inject **one drop** of superglue through one of the holes in the spacer. It will run along the groove on the back of the spacer in the direction shown by the yellow arrow. Then turn the wheel so the glue will run back the other way, and put another drop in the same hole. Repeat this for the other hole in the spacer, then repeat the process to spread the glue thoroughly. **Ensure the spacer does not move until the glue sets.** Glue the other spacer to the other side of the wheel the same way.



3

Push the wheel firmly into place.



2

Use nippers or a craft knife to cut off the four temporary pins as close as possible to the spacer.



4

Check that the tire is fully seated in the groove formed between the wheel rim and the spacer, and that it is flush with the rim on the inside.



FITTING THE TIRE ONTO THE WHEEL

1

Make sure the left rear tire (part 1) is facing the right way. The outer bead has a step that fits the wheel rim, and the white triangles on the outside (arrowed) point in the direction that the wheel rotates when the car is going forward.



2

Match up the outside of the tire with the spoked side of the rear wheel. Align the 'E' in the middle of the name 'BRIDGESTONE' (ringed in yellow) with the space (arrowed in red) between the name 'ENKEI' and the logo on the wheel rim.



THAT'S IT FOR THIS PACK!

The left rear wheel and tire is now ready for fitting to the car. The remaining wheel spacers will be used when you assemble the right rear wheel and tire in a later pack, so be sure to store them carefully until then.

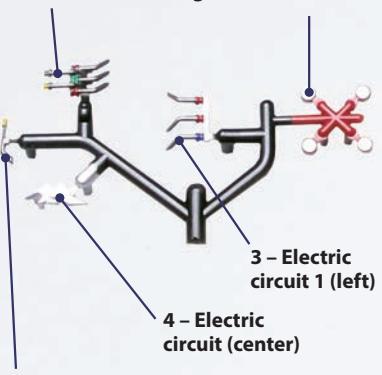


Assembling the injector unit 1

Start assembling the injector unit by mounting the control circuits on the rear panel. Some of the parts are quite small, so they are supplied on a sprue from which you have to cut them before use. As the assembly is a little detailed, make sure there is no risk of you dropping small parts and losing them.

PARTS SUPPLIED WITH THIS PACK

1 – Electric circuit (right) 2 – Electric circuit bush x 4



5 – Electric circuit 2 (left)



3 – Electric circuit 1 (left)

7 – Injector cover rear panel



8 – * Type 'E' screws x 5



* A spare screw is included

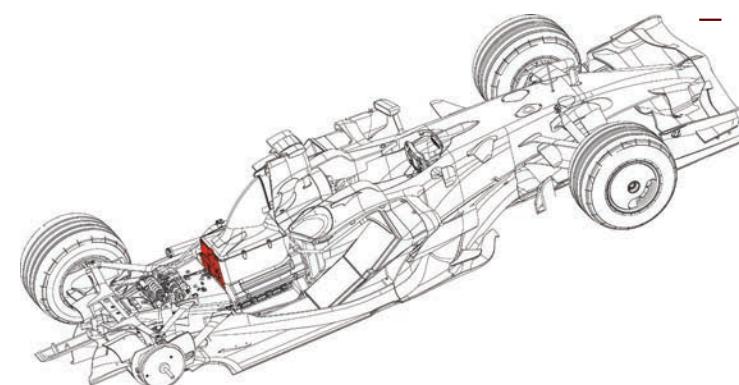
TOOLS & MATERIALS

REQUIRED

ABS adhesive
Craft knife
Cutting mat
Tweezers

OPTIONAL EXTRAS

Small diagonal cutters, or nippers



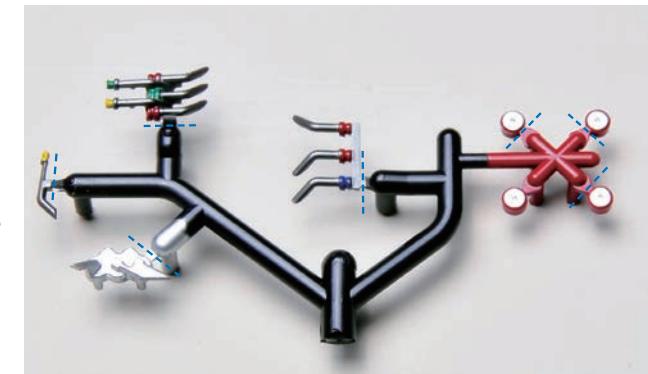
– pack 32

Parts to be assembled in this pack

SEPARATING THE PARTS FROM THE SPRUE

1

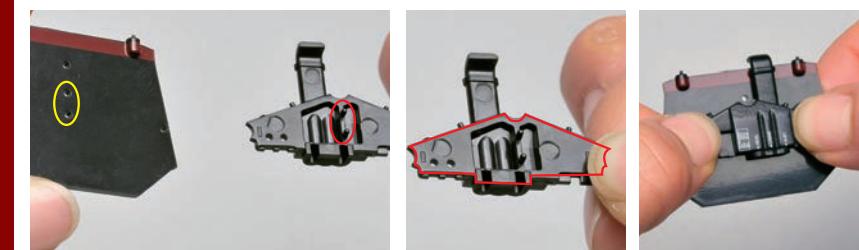
Carefully remove the parts from the sprue as you need them, using a craft knife and cutting board, or a pair of nippers. Cut along the blue lines as indicated. Note that you need only three of the electric circuit bushes (part 2).



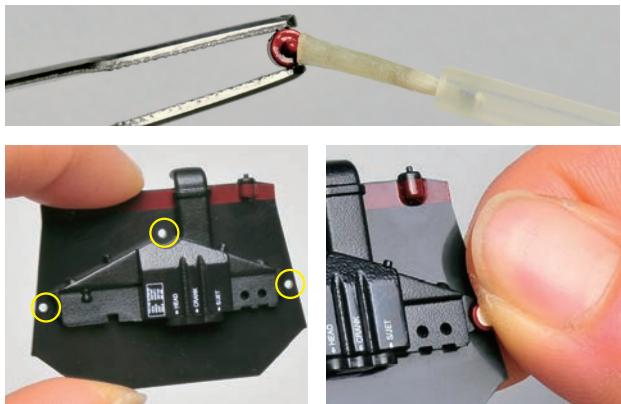
ADD THE CIRCUIT BASE AND BUSHES TO THE REAR PANEL

2

The electric circuit base (part 6) fits onto the injector cover rear panel (part 7). Test-fit it on the side that has the red stripe. It has two prongs (ringed in red) that fit into holes (ringed in yellow). Then apply ABS adhesive to the flat area of the circuit base inside the red outline in the center picture. Hold the parts together for two or three minutes so the adhesive can do its work.



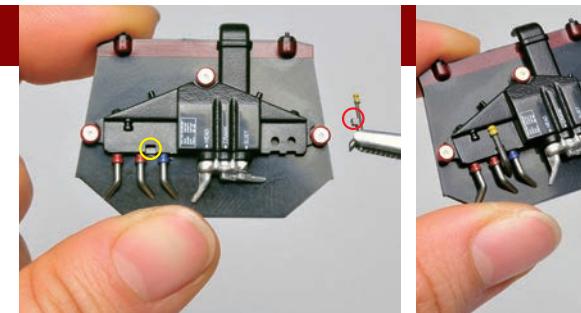
3



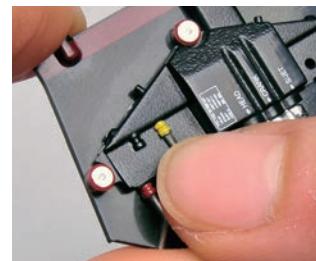
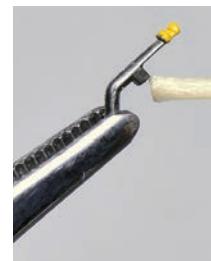
The electric circuit bushes (part 2) have pins that fit into holes in the circuit base (ringed in yellow). Hold each one with tweezers while you apply ABS adhesive to its pin, then push the pin into one of the holes. Hold the bush in place until the adhesive bonds. Repeat for all three bushes.

3

Now pick up the left electric circuit 2 (part 5) with tweezers. It has a small tab (ringed in red) that fits into the notch (ringed in yellow) on the circuit base. See how they go together during a test assembly.



4

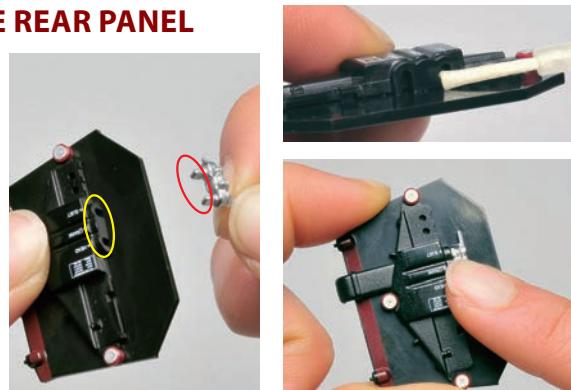


Apply ABS adhesive to the small tab, then carefully position the circuit and hold the parts together until the bond is set.

ADD THE CIRCUITS TO THE REAR PANEL

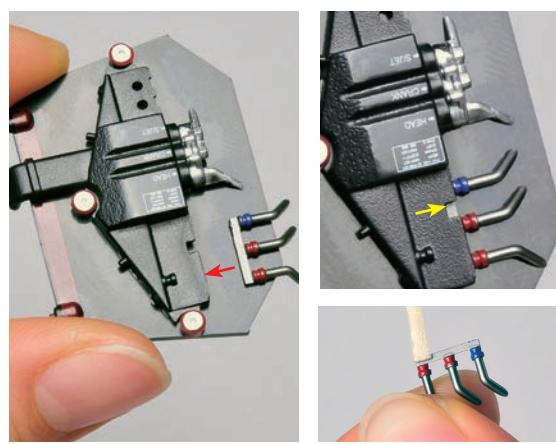
1

The center electric circuit (part 4) has two prongs (ringed in red) that fit into holes (ringed in yellow) on the rear panel. Do a test assembly to see how they go together, and then put ABS adhesive into the holes before bringing the parts together and holding them until the adhesive has bonded.



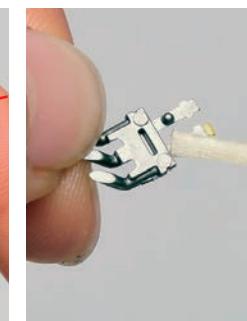
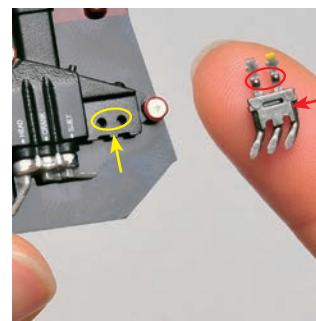
2

The left electric circuit 1 (part 3) fits into a slot (arrowed in red) between the rear panel and the circuit base. Do a test fit (middle picture), making sure that the notch on the circuit base (arrowed in yellow) is between the blue and red bases of the 'pipes'. Apply ABS adhesive to the area of the left electric circuit 1 that fits into the slot, then carefully bring the parts together and hold them until the bond has formed.



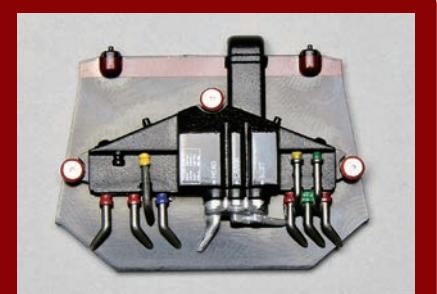
5

Two pins (ringed in red) on the right electric circuit (part 1) fit into holes (ringed in yellow) in the circuit base. Put ABS adhesive on the pins and the flat area (arrowed in red) then stick the circuit to the base.



THAT'S IT FOR THIS PACK!

That completes the external circuitry on the rear panel of the injector unit. Put it away carefully for next time, and save the screws for future use.



IDENTIFYING THE SCREWS

Through the series, you will receive a number of different types of screws. As these are all very small and some are very similar to each other, here is a handy checklist to help you to identify any that you have not used as the assembly went along.

TYPE	PACKS USED IN
A	1, 3, 22, 25, 27, 41, 42, 56, 72, 76, 82
B	3, 4, 18
C	3, 24, 43, 46, 56, 73
D	5, 22, 24, 32
E	10, 11, 17, 19, 25, 27, 29, 43, 44, 45, 54, 56, 58, 72
F	21, 23
G	21
H	23
I	23
J	46
K	82

mm 0 1 2 3 4 5 6 7 8 9 10

Assembling the injector unit 2

This time, you fit the rear panel onto the injector cover before assembling the induction box and screwing it to the top of the injector cover. Be careful when handling the rear panel, as the circuitry you attached to it last time is quite delicate.

PARTS SUPPLIED WITH THIS PACK



1 - Induction box (left)

2 - Injector cover



3 - Induction box (right)

TOOLS & MATERIALS REQUIRED

ABS adhesive
Masking tape
Scissors
Phillips screwdriver (size 00) – supplied with Pack 1

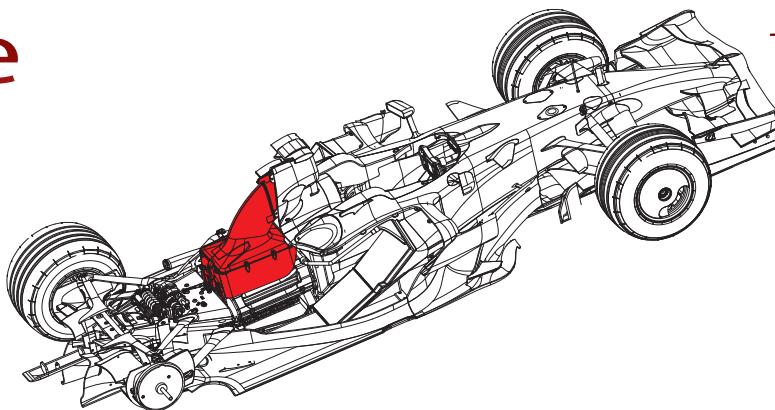
OPTIONAL EXTRAS

Screwdriver adapter – supplied with Pack 8

ITEMS TO HAVE READY

Injector cover rear panel – assembled in Pack 32

Type 'E' screws – supplied with Pack 32



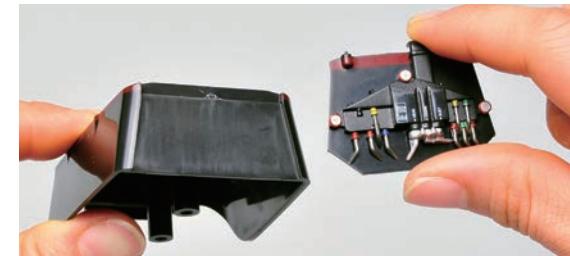
– pack 33

Parts to be assembled in this pack

ATTACHING THE REAR PANEL TO THE INJECTOR COVER

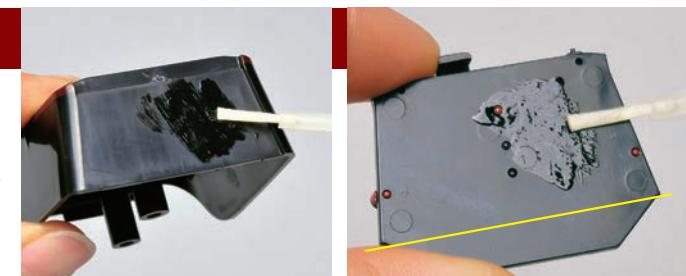
1

There is a tapering recess in the end of the injector cover, which matches the shape of the rear panel you assembled last time. Test-fit the two parts together so you know where to apply adhesive to the parts (see Step 2).



2

Apply a little ABS adhesive to both parts, stopping above the point indicated by the yellow line drawn across the rear panel in the second picture.



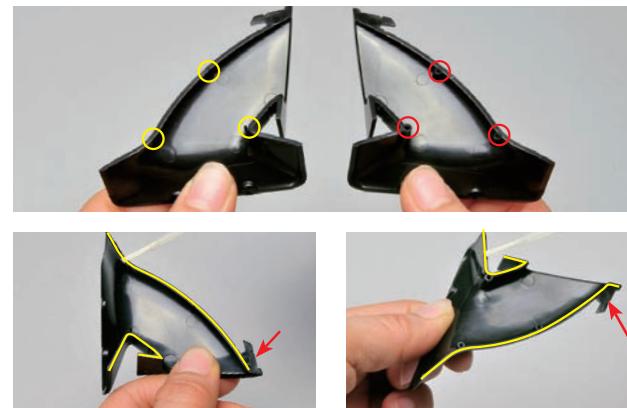
3

Hold the rear panel in place for a short while until the adhesive has had time to set.

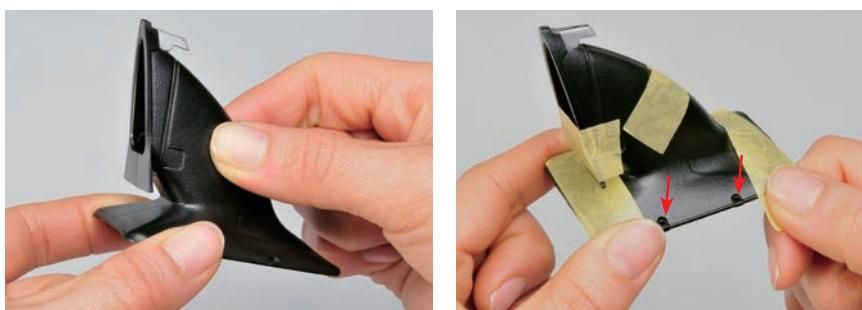


ASSEMBLING THE INDUCTION BOX

1 Test-fit the two halves of the induction box (parts 1 and 3) together, locating the pins (ringed in yellow) in the holes (ringed in red). Then cut four short strips of masking tape, before applying ABS adhesive along the yellow lines and the contact points of the fins arrowed in red.



2 Press the two sides together and hold them until the adhesive starts to set before taping them together with the strips of masking tape as shown. **Do not cover the four small holes (two of which are arrowed in red).**



3 To fit the induction box on top of the injector cover, you have to fit the rear end under the hooked duct projecting up from the rear panel (arrowed in red).



4 Fit one of the type 'E' screws through one of the holes (ringed in yellow) in the induction box and tighten it most of the way in with the screwdriver.



5 Repeat this for the other three screws. Then tighten all four screws fully.



6



Leave the masking tape on for about an hour to allow the bond to gain full strength, then remove it.

THAT'S IT FOR THIS PACK!

Store the completed assembly carefully until it's time to fit it on top of the engine.

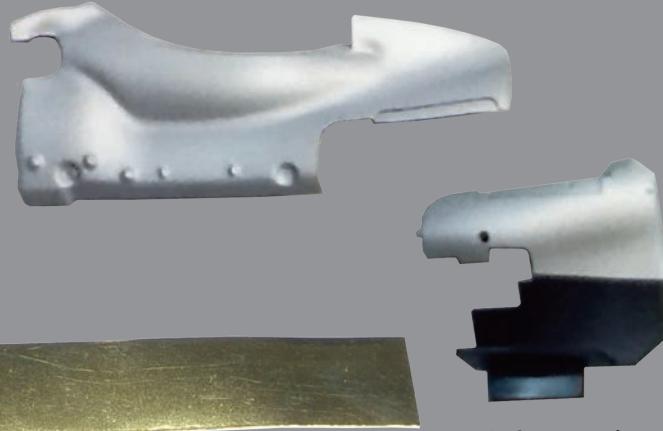


Assembling the engine cover 1

The parts provided include the first two halves of the covers that shroud the rear of the engine and the front sides of the gearbox. You will install them in the following pack. First, you need to add the gold reflective insulation to the injector unit that you assembled in Pack 33, ready to attach the unit to the top of the engine.

PARTS SUPPLIED WITH THIS PACK

1 – Upper engine cover (left)



2 – Lower engine cover (left)



3 – Gold reflectors

TOOLS & MATERIALS REQUIRED

Ruler

Pencil

Scissors

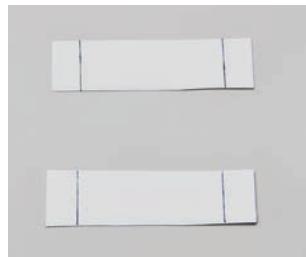
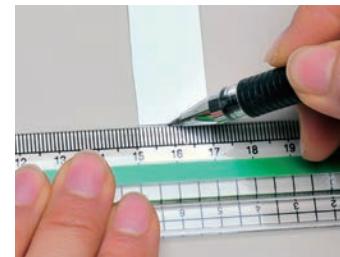
ITEMS TO HAVE READY

Injector unit – assembled in Pack 33

PREPARING THE GOLD REFLECTORS

1

Turn both the self-adhesive gold reflectors over and draw pencil lines 10 mm from each end of the white backing paper.



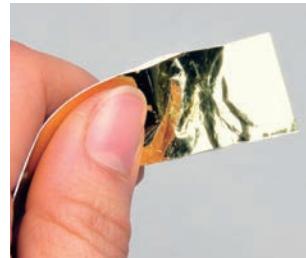
2

Take the reflector between the fingers and thumbs of both hands and gently wrinkle and twist it at a point about a third of the way along it.

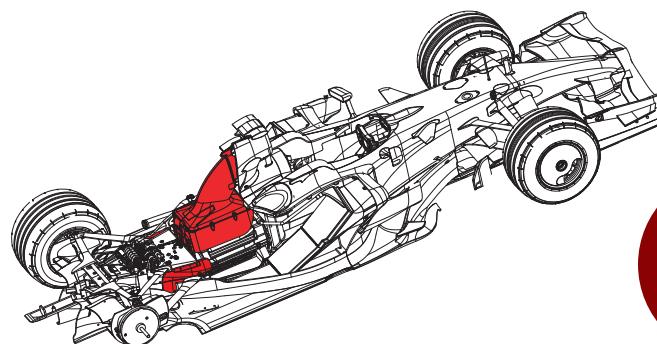


3

The metallic surface will gradually soften and start to separate from the backing paper. Make sure the ends that you marked remain firmly in contact with the backing paper.



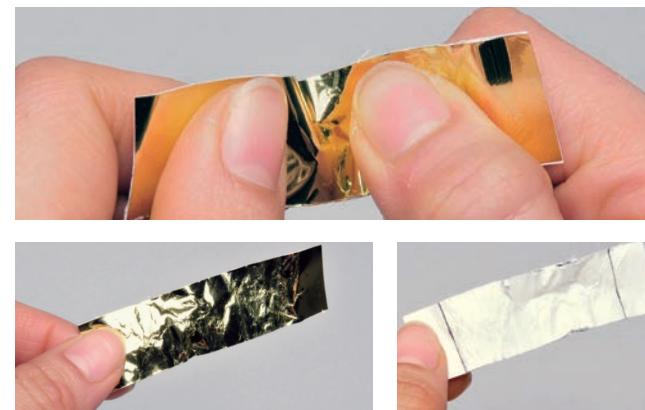
– pack 34



Parts to be assembled in this pack

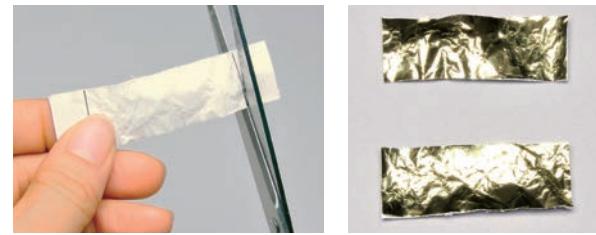
4

Work your way slowly along the reflector, wrinkling the surface in the same way until the whole of it is crumpled and starting to separate from its backing paper – apart from the ends that you marked.



5

Repeat the process with the second gold strip. Then trim the reflectors to size by cutting along both the lines you marked, using a pair of scissors.



3

Gently press the foil into place, taking care not to rub out the wrinkles.



4

Use the scissors to trim off any surplus foil projecting beyond the edge of the molding, particularly at the curve indicated by the red arrow. Then repeat Steps 1-4 on the other side of the injector unit.



ATTACHING THE GOLD REFLECTORS TO THE INJECTOR UNIT

1

Take the injector unit that you assembled in Pack 33, and check the positions of the gold reflectors. They go on the flat areas of each side, so that they fit between the two rounded ends and just below the red line.



2

Peel off the backing paper and gently place the gold foil in position, lining it up as in the previous step.



THAT'S IT FOR THIS PACK!

Store the completed injector unit carefully until it's time to fit it on top of the engine.





2009

Santander

Mobil 1
Mercedes-Benz

Santander

BRIDGESTONE

2009

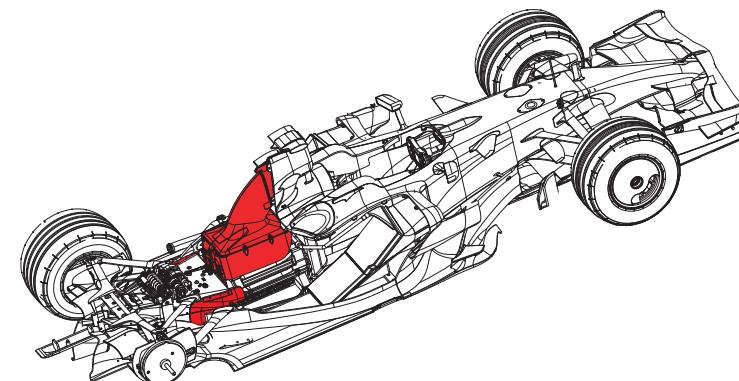
BRIDGESTONE

BRIDGESTONE

Assembling the engine cover 2

The parts provided are the second two halves of the covers that shroud the rear of the engine and the front sides of the gearbox. In this pack, you fit the lower sections of these covers, after attaching the injector unit that you completed in Pack 34 to the top of the engine.

– pack 35



Parts to be assembled in this pack

PARTS SUPPLIED WITH THIS PACK

1 – Upper engine cover (right)



2 – Lower engine cover (right)



TOOLS & MATERIALS REQUIRED

Superglue
Toothpick or cocktail stick for applying superglue
Phillips screwdriver (size 00) – supplied with Pack 1
Masking tape

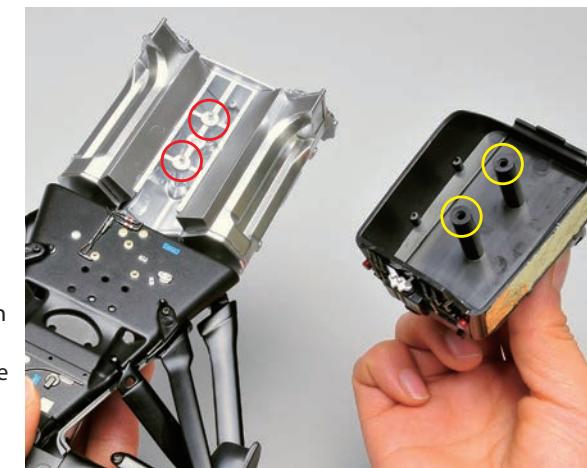
ITEMS TO HAVE READY

Injector unit – completed in Pack 34
Engine/gearbox unit – completed in Pack 30

ATTACHING THE INJECTOR UNIT TO THE ENGINE

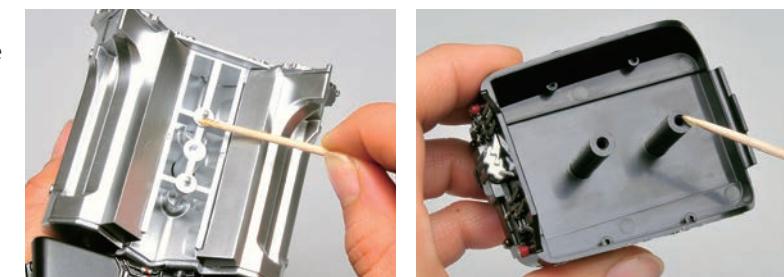
1

Take the engine/gearbox unit you completed in Pack 30 and the injector unit you completed in Pack 34 and test-fit them together (Step 3 shows which way they go). Note the two projecting lugs on top of the engine (circled in red), which go into the matching sockets in the ends of the two posts under the injector unit (circled in yellow).

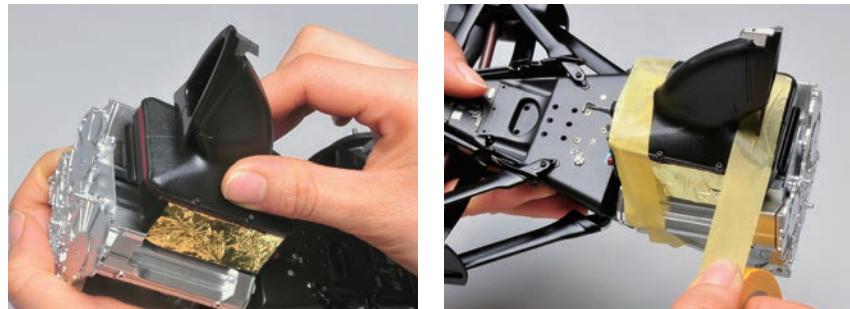


2

Apply drops of superglue to these contact points using a cocktail stick or toothpick.



3



Press the parts together and hold them for a couple of minutes until the glue bonds. Then tape the injector in place with strips of masking tape. Leave for 24 hours to ensure that the bond is permanent before removing the tape.

3

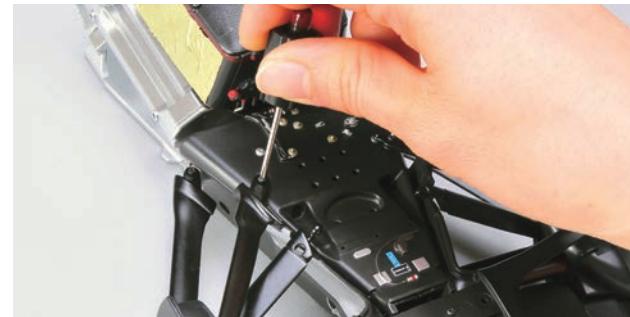
Refit and tighten the screw you removed in Step 1 (again taking care not to damage the pin), so that the suspension arm traps the top of the lower engine cover. The engine cover may appear a little loose at this stage. Do not be concerned about this, as the cover will be fixed rigidly when you install the chassis in a later pack.



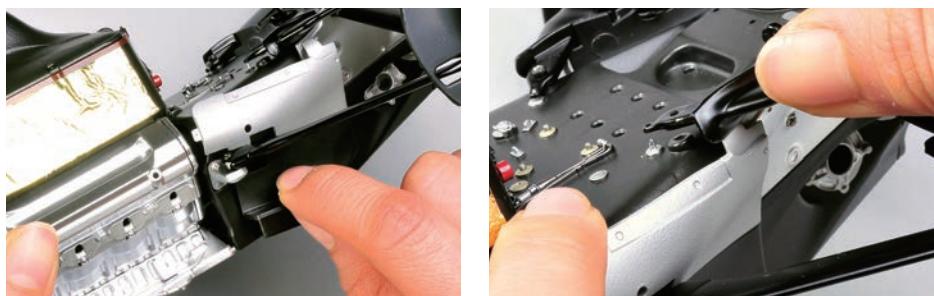
ATTACHING THE LOWER ENGINE COVERS

1

Carefully remove the type 'E' screw that holds the forward end of the left upper wishbone to the top of the gearbox. Take care not to damage the small pin at the end of the arm.



2



Fit the left lower engine cover around the lower wishbone. The rear upper corner of the cover has a recessed area that matches the end of the suspension arm you just unscrewed. Carefully fit this under the suspension arm.

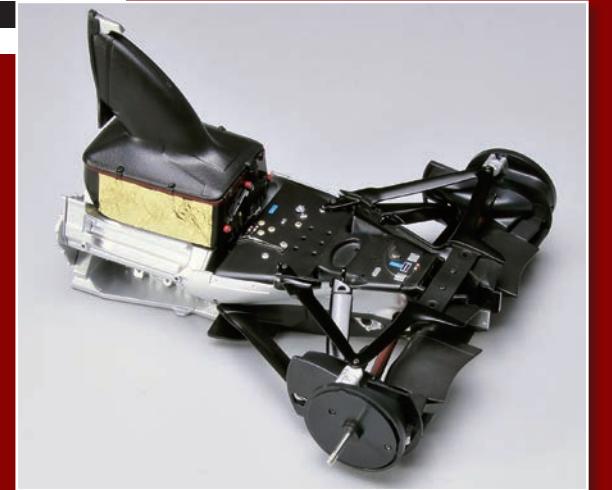
4

Repeat Steps 1-3 to fix the right lower engine cover.



THAT'S IT FOR THIS PACK!

The injector unit is now fixed in place on top of the engine, and the lower engine covers have tidied up the area where the engine joins the gearbox. Keep the upper engine covers safe for now – you will fit them at a later stage.



Coming in Part 6

Complete the assembly of the third element damper unit, and begin and complete the assembly of the underbody.

