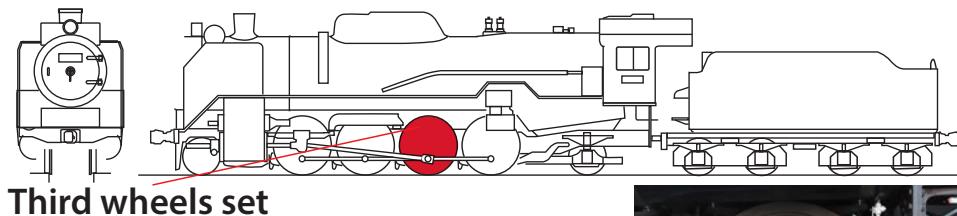
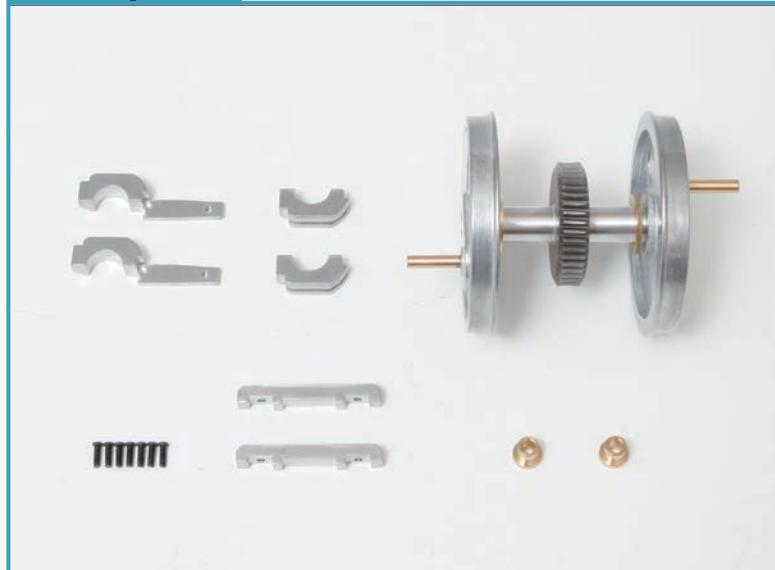


# The third wheels set



## Your parts



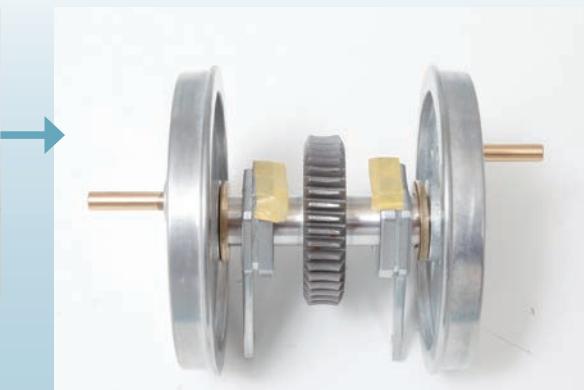
Wheels  
Axe boxes A x 2  
Axe boxes B x 2  
Axe box guards x 2  
Bushes x 2  
2 x 6mm screws x 7

**Required tools**  
Masking tape  
Pliers  
Tweezers  
Phillips screwdriver  
File

## 1 Preparing the parts



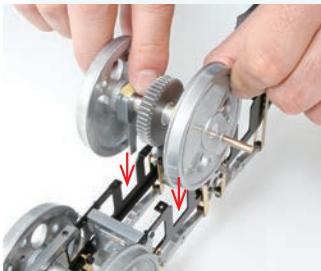
Temporarily assemble axle boxes A and B. Place some masking tape on the flat area of the temporarily assembled axle boxes, as shown above.



Place the assembled axle boxes over the axle of the wheels, inside of the bush at each end of the axle, with the long part of the axle boxes closer to the wheels.

2

## Fitting the wheels



Turn the assembly over and place the wheels into the cut-outs at the front of the underframe.



Position the wheels so that the underframe rests in the groove of the axle boxes.



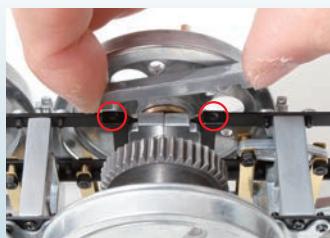
Remove the tape from the axle boxes. Then check that the wheels rotate smoothly.

If the wheels don't rotate smoothly, check the inside edges of the axle boxes for any burrs, and remove any found with a half-round file.



3

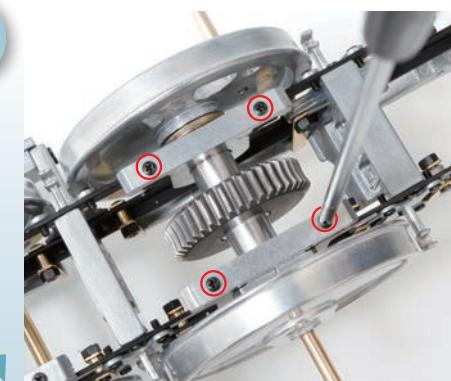
## Fitting the guards



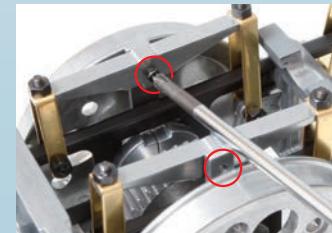
Place the first axle box guard onto the underframe, aligning the holes with those circled.



Tighten a 2 x 6mm screw into the two holes on the axle guard.



Place the second axle box guard onto the underframe, aligning the holes with those circled.



If the wheels don't rotate smoothly, check the inside edges of the axle boxes for any burrs, and remove any found with a half-round file.

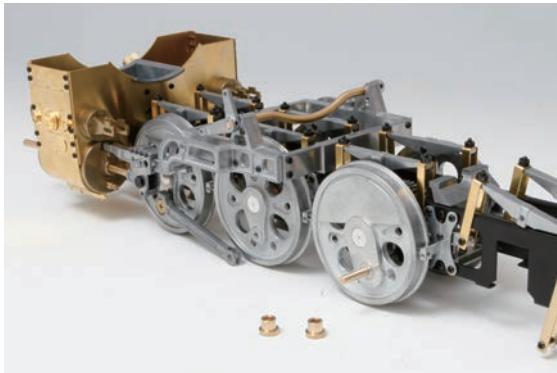
## Handling Precautions

You will have noticed that the weight of the model has increased considerably. So, from now on you will need to handle it carefully to avoid dropping or damaging it.

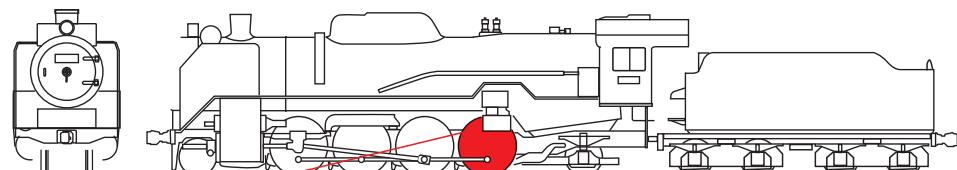


When moving the model, always make sure that you pick it up at both ends, never from just one.

## Assembled parts



# The fourth wheels set



Fourth wheels set



## Your parts



Axe boxes A x 2

Axe boxes B x 2

Side rods x 2

Wheels

Axe box guards x 2

Rod pins (large) x 2

Rod pins (small) x 2

2 x 6mm screws x 7

Bushes x 2

Bushes (small) x 2

Nuts x 2

## Required tools

Pliers

Tweezers

Phillips screwdriver

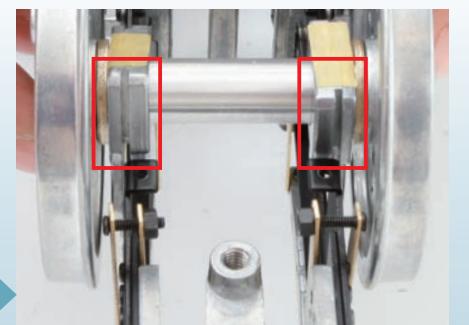
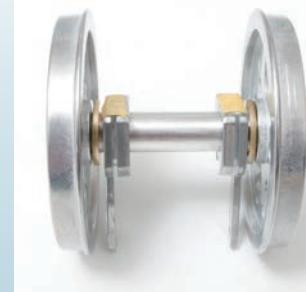
File

Wet and dry paper

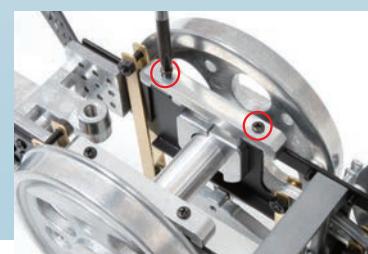
1

## Fitting the wheels

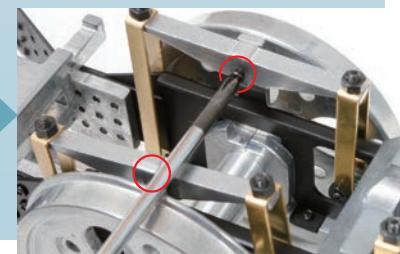
Assemble axle boxes A and B. Place the assembled axle boxes over the axle of the wheels, with the long part of the axle boxes closer to the wheels.



Place the wheels into the cut-out at the front of the underframe.



Screw the two axle box guards in place on the underframe.



Insert a screw into the leaf springs and secure them to the axle boxes.

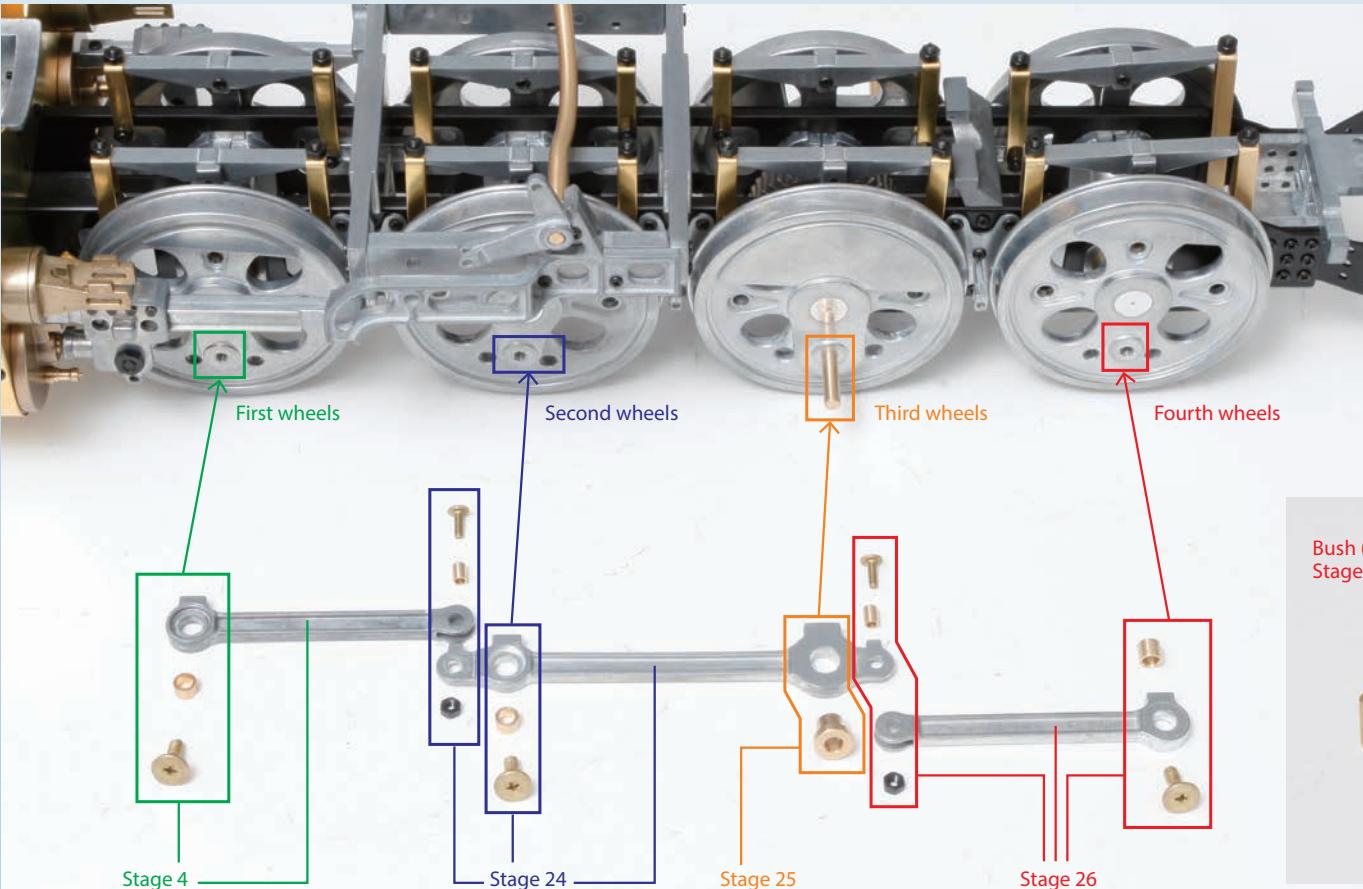
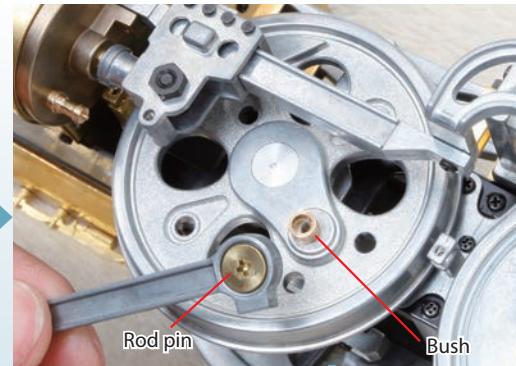
## 2

### Preparing the parts



Check over the coupling rods for any burrs or casting flash. Remove any you find with a file, and then smooth with wet and dry paper.

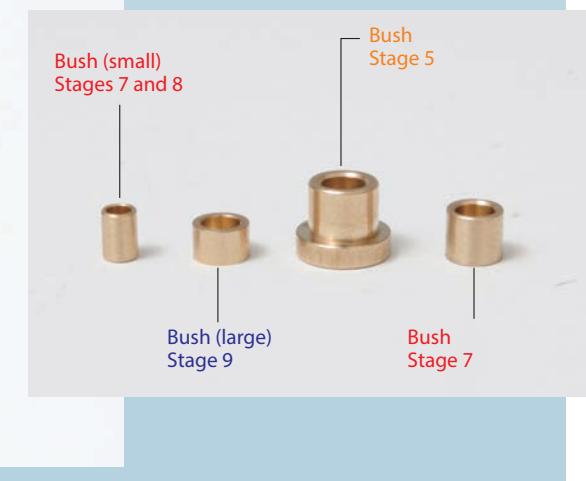
Remove the coupling rod, rod pin and bush from the first wheels. It is advised that you keep these parts to one side and separate from the other parts so you don't mix them up.



Lay the parts from Stage 4, 24, 25 and 26 (this stage) by the side of the model, as shown on the left. Try to keep the parts from the different stages separate to avoid getting them mixed up.

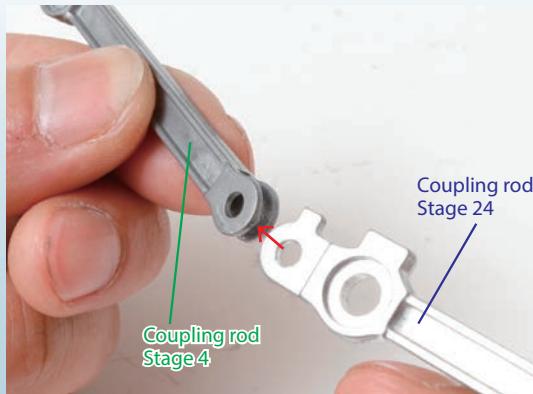
To make it easier when fitting the coupling rods to the wheels they have been colour coded, along with the rod pins and bushes.

Stage 4	Green
Stage 24	Blue
Stage 25	Orange
Stage 26	Red



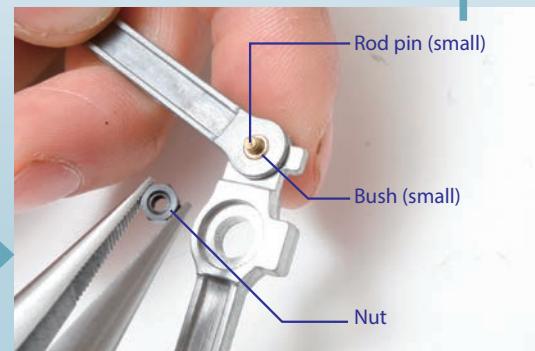
## 3

### Assembling the coupling rods

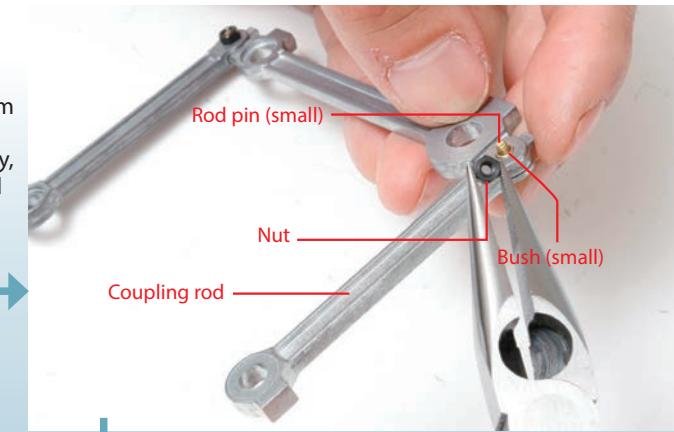


Insert the bush and rod pin from Stage 24 into the hole created by the two coupling rods. Then, tighten a nut onto the end of the rod pin.

Hold the left coupling rods from Stages 4 and 24, as shown, and insert the front portion of the rod from Stage 24 between the split at the back end of the rod from Stage 4 (arrow).



Combine the front end of the coupling rod from Stage 26 with the back end of the rod assembly, insert the bush and rod pin into the hole and tighten a nut onto the end of the pin.



Complete this process for the right coupling rods as well.

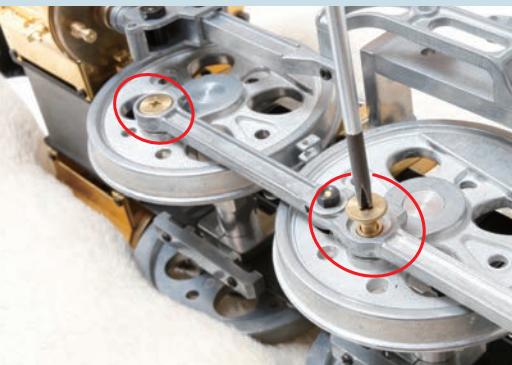


## 4

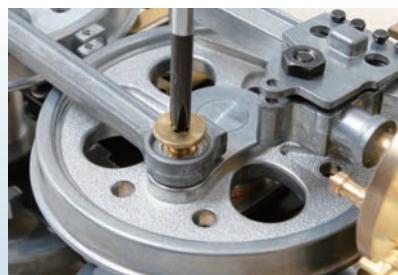
### Fitting the coupling rods



Insert the bushes and rod pins into the corresponding holes in the coupling rods over wheels 1, 2 and 4, as specified in Step 2. Tighten all of the rod pins into the holes.



Lay the model on its side and position the left coupling rod assembly over the pin projecting from the third wheels and align with the corresponding holes on the other wheels.

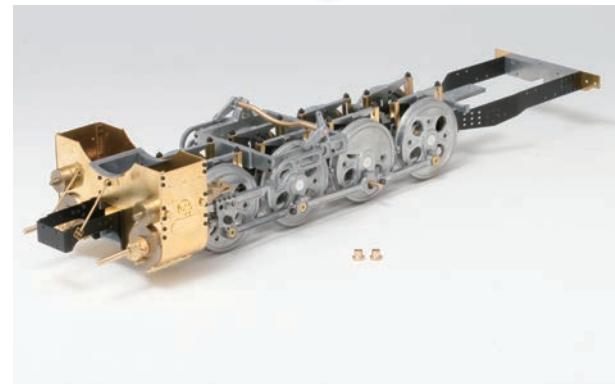


Repeat this process for the coupling rods on the right side of the model.

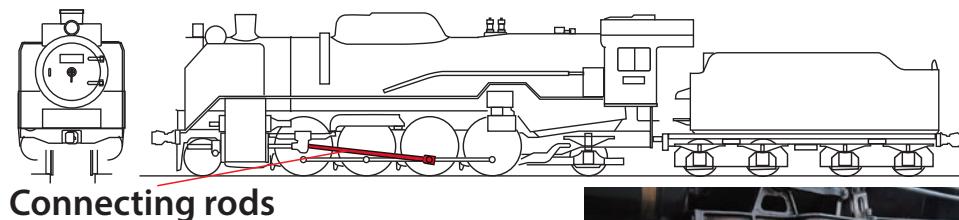


Turn the model over and use the rod on the third wheels to check that the wheels spin together, as shown.

Assembled parts



# The connecting rods



## Your parts

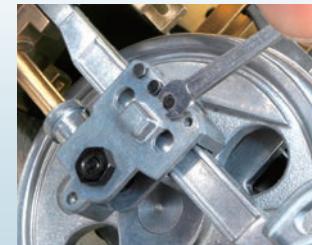


Right connecting rod  
Left connecting rod  
Eccentric rods x 2  
Bushes x 2  
Eccentric arms x 2  
2 x 7mm screws x 3  
2 x 6mm screws x 3

## Required tools

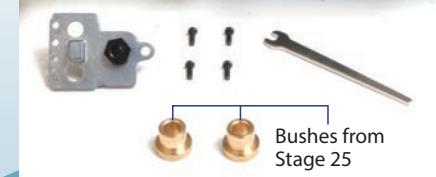
Pliers  
Tweezers  
Phillips screwdriver  
Flat-head screwdriver  
File  
Wet and dry paper  
Wrench (Stage 17)  
Masking tape

## 1 Preparing the parts



Ensure the nut is secured on the end of the pin of the crosshead cover.

In order to fit the connecting rod, you will need to remove the crosshead cover. Use the wrench that was supplied with Stage 17.

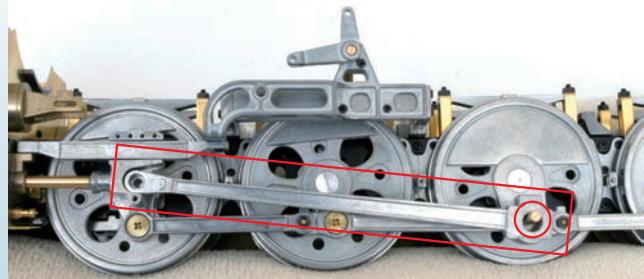


Lay out the crosshead cover, screws and wrench, along with the two bushes from Stage 25.

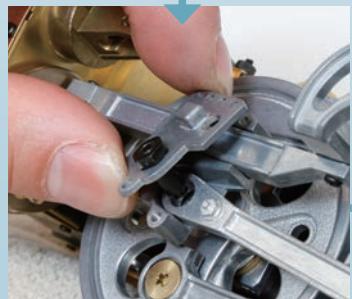


Locate and remove any burrs on the connecting rods.

## 2 Fitting the connecting rod



Position the left connecting rod over wheels 1-3, placing the larger hole over the pin projecting from wheels 3 and the smaller hole into the recess in the crosshead.



Place the crosshead cover back into position, with the pin in the hole of the connecting rod.

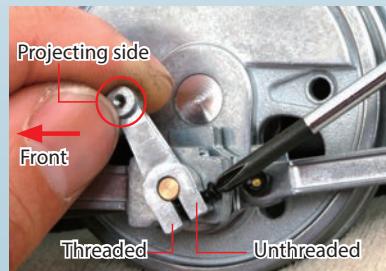


Tighten the screws back into place.

## 3 Fitting the eccentric arms

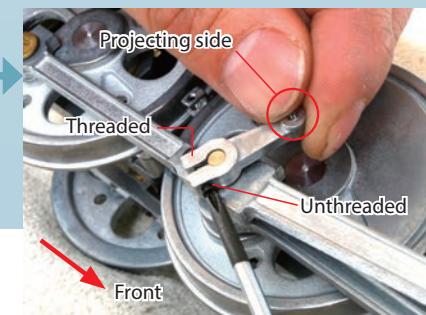


Lift the connecting rod off of the pin of the third wheels and place the bush from Stage 25 over the pin and into the hole in the coupling rods.



Place a bush from this stage over the pin and then fit the connecting rod over the bush.

Repeat this process to fit the connecting rod and eccentric arm on the right side of the model, as shown below.



## 4 Fitting the eccentric rods



Test-fit a spare screw

Eccentric rod

Outer side  
Not threaded

The front end is split

Inner side  
Threaded

Rotate the wheels to check that the wheels and rods are all working together.

Align the hole at the back end of the eccentric rod with that of the left eccentric arm and secure with a flat-head screw.

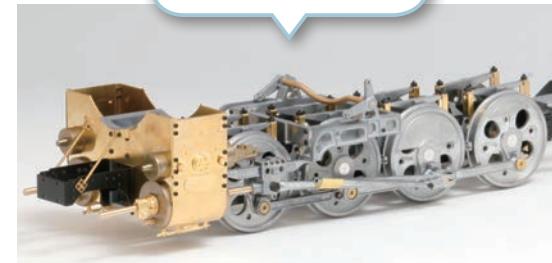


Now you can fit the eccentric rods. Use the photo on the left to familiarise yourself with them, to make sure you are fitting the correct one.

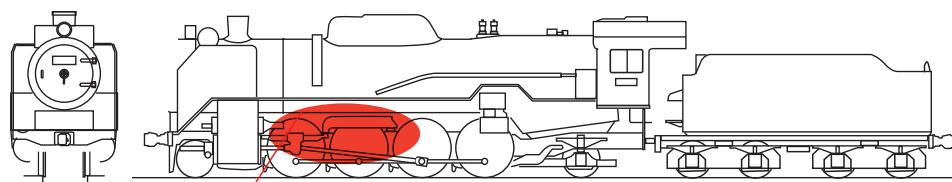


Using masking tape, temporarily secure an eccentric rod to each connecting rod.

## Assembled parts



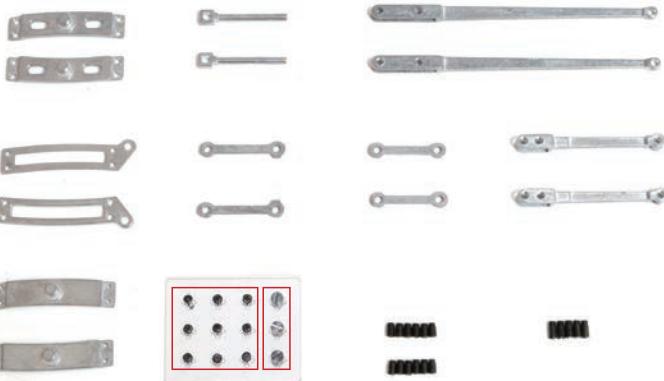
# The valve gear



The radius rods and expansion links



## Your parts



Expansion link outer plates x 2

2 x 3.6mm set screws x 12

Expansion link central plates x 2

2 x 4.5mm set screws x 5

Expansion link inner plates x 2

Piston valve spindles x 2

Connecting Links x 2

1.4 x 4mm screws x 9

2 x 6mm screws x 3

Radius rods x 2

Combination levers x 2

Hanging links x 2

## Required tools

Pliers

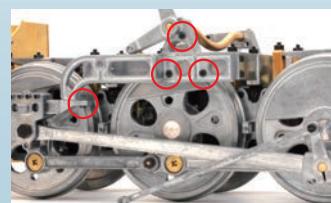
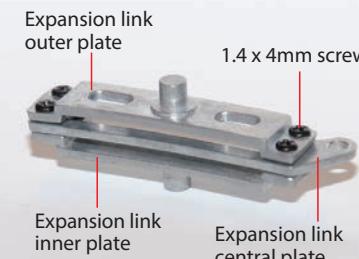
Tweezers

Phillips screwdriver

Flat-head screwdriver

1

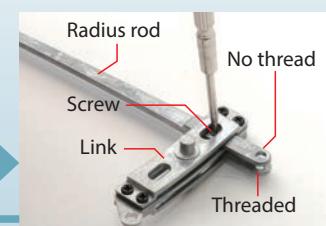
## Assembling the expansion links



To make the following steps easier, it is advised that you remove the motion plates, reverse shaft and reverse links.

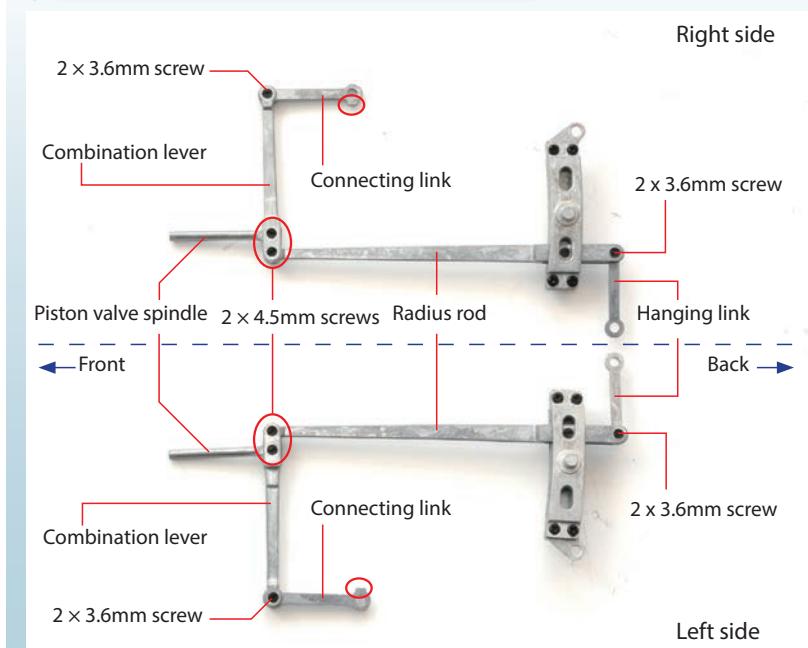
Using the photo on the left as a guide, assemble two expansion links by screwing the three plates together with four 1.4 x 4mm screws for each link.

Place one of the assembled expansion links over the split end of the radius rod and secure with a 2 x 3.6mm set screw.



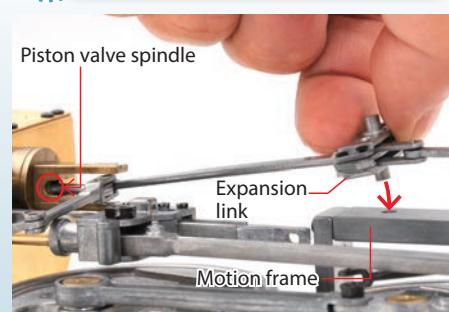
After removing these parts, keep them to one side, laid out as shown.

## 2 Assembling the valve gear

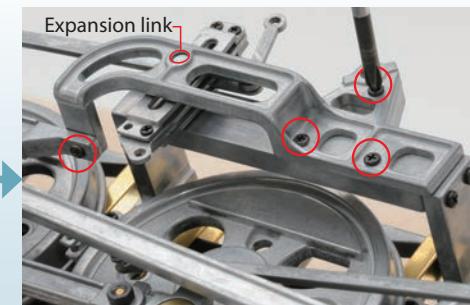


Assemble the parts as shown in the photo above, one set for the right side (top) and one for the left (bottom). The circled areas should help you position the parts correctly.

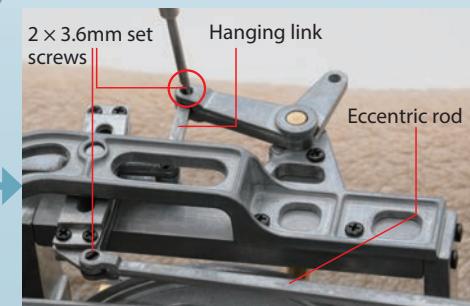
## 3 Mounting the gears



Lay the model on its right side. Insert the piston valve spindle into the hole in the piston valve tail guide, and the projection on the expansion link inner plate into the hole in the motion frame.

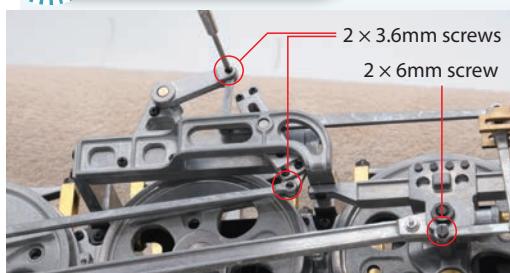


Re-fit the left motion plate to the side of the motion frame.



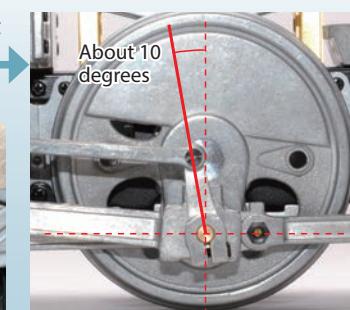
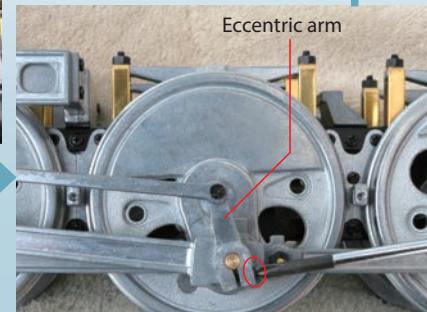
Re-fit the reverse link to the motion frame and use a 2 x 3.6mm set screw to secure the hanging link in the split at the end (circled). Similarly, fix the split end of the eccentric rod to the bottom of the expansion link.

## 4 Finishing off



Follow the same process for the right side of the model and then re-fit the motion plate.

Loosen the screw holding the left eccentric arm in position (circled). Repeat for the right eccentric arm.



Adjust the position of the left eccentric arm so that it is angled about 10 degrees away from the vertical line.

## Assembled parts

