

Build the

C57

Steam
Locomotive

Pack 04





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Editorial and design by Continuo Creative, 39-41 North Road, London N7 9DP.
Published in the UK by De Agostini UK Ltd, Battersea Studios 2, 82 Silverthorne Road, London SW8 3HE.
Published in the USA by De Agostini Publishing USA, Inc. 121 E. Calhoun Street, Woodstock, IL 60098.
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Warning: 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.

The leaf springs

Your parts

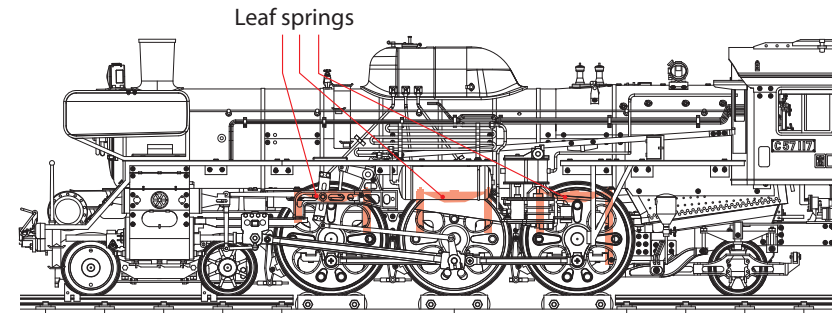


Leaf springs × 6
Links (medium) × 8
Links (long) × 2
Links (short) × 2
Screws (2 × 8mm) × 11
Screws (2 × 7mm) × 7
Screws (2 × 6mm) × 13
Nuts × 2
Bushes (4.5mm) × 8
Bushes (3.5mm) × 2

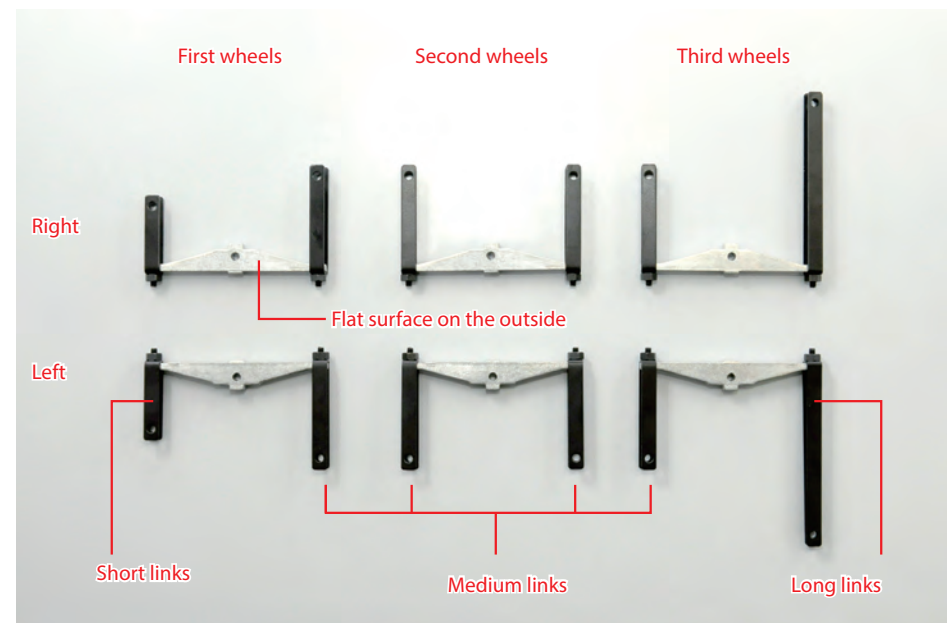
Tools

Phillips screwdriver
Pliers
Socket wrench (4mm)

Where your parts fit



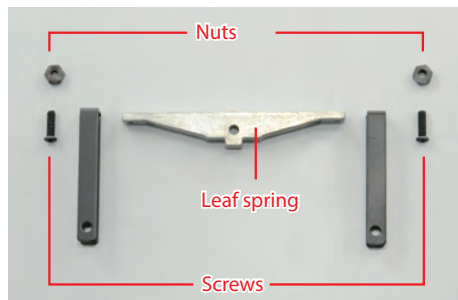
1



The six leaf springs fit together with the three sizes of links, as shown above.



2

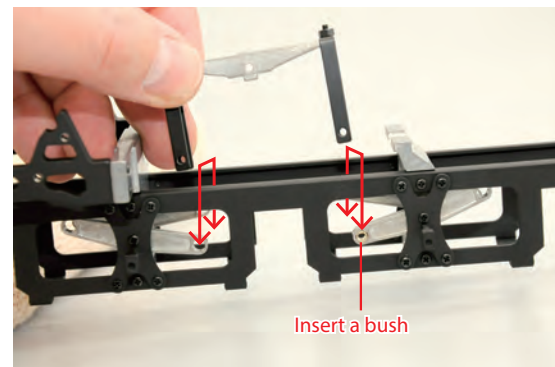


Here you can see how the leaf springs and links fit together, secured by the 2 × 6mm screws and nuts.



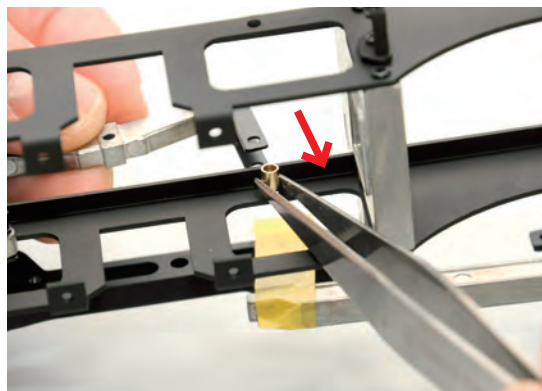
Place the links over the ends of the springs and pass a screw up through the aligned holes. Tighten a nut onto the end of the screw. Repeat this process, following the photo in the previous step to assemble all the leaf springs.

3

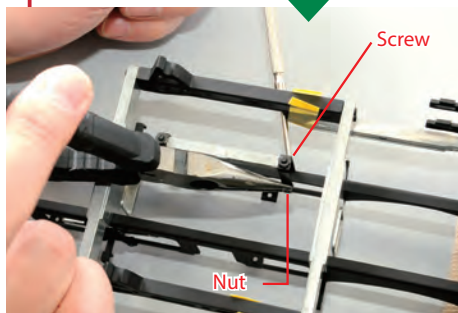


Insert a 4.5mm bush into the front hole of the rear equalising bars. Then, take the second wheel leaf spring and place over the underframe, so the bottom of the links are positioned over the ends of the equalising bars.

4

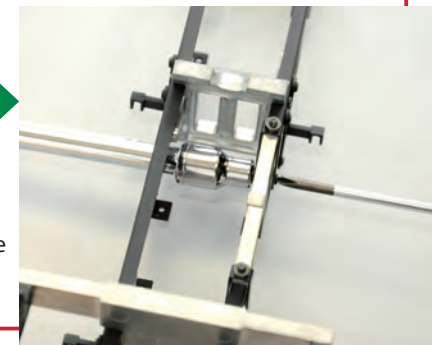


Take one of the first wheel leaf springs and place over the underframe, inside the motion frame. Place a 3.5mm bush between the underframe and the end of the short link.

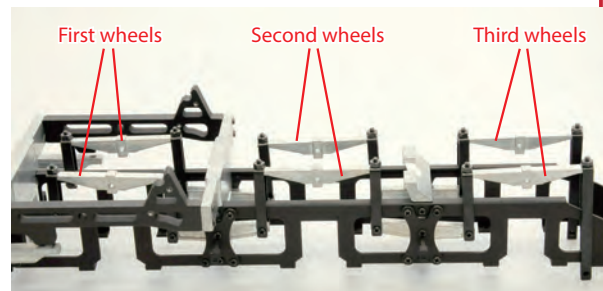


Pass a 2 × 8mm screw through the hole and secure with a nut. Repeat this step to fit the other first wheel leaf spring to the right side of the underframe.

Pass a 2 × 8mm screw through the hole in the rear link and equalising bar, and secure with a nut. Repeat this step to fit the right second wheel leaf spring on the other side.

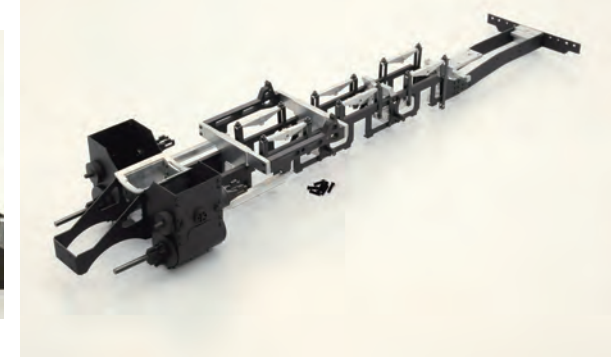


5



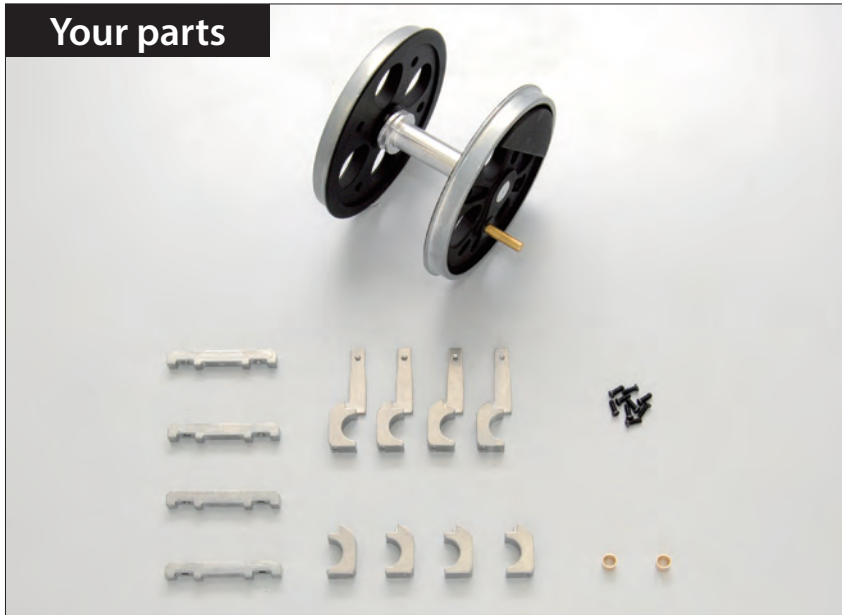
Fit the third wheel leaf springs to the rear holes of the rear equalising bars. The holes in the equalising bars should all have a 4.5mm bush in them.

Complete



The second wheels

Your parts

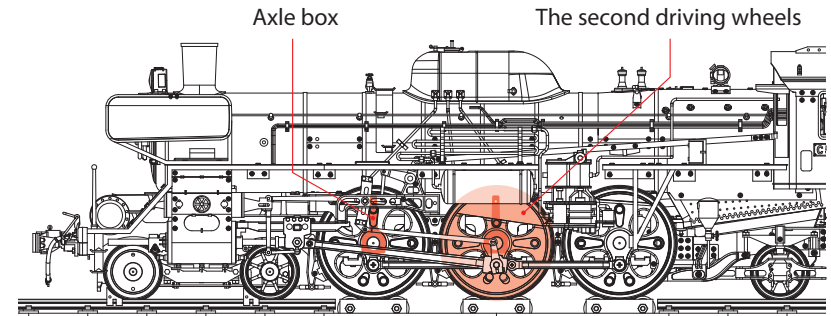


Second wheels
Axle box A \times 4
Axle box B \times 4
Axle box guards \times 4
Screws (2 \times 5mm) \times 9
Bushes \times 2

Tools

Phillips screwdriver

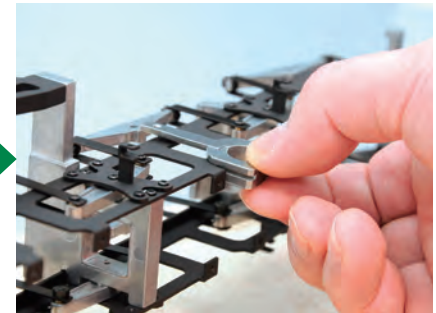
Where your parts fit



1

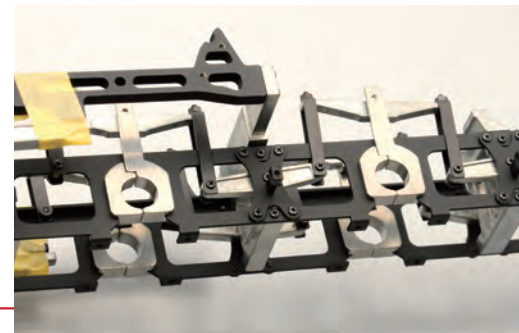


Assemble axle boxes A and B as shown above. Complete the four sets.

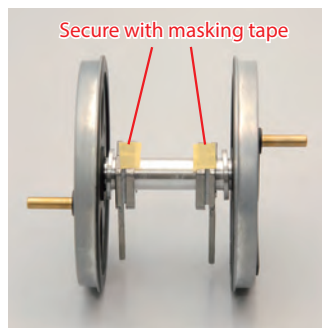


Take one of the axle boxes and slide it up into the gap in the underframe, positioning the frame in the grooves at the side of the axle box.

Test-fit the remaining three axle boxes in the other spaces in the underframe.



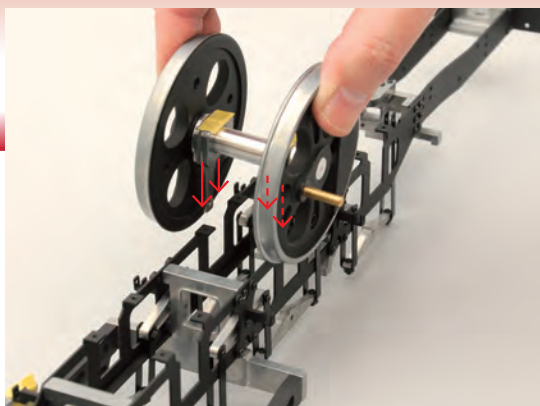
2



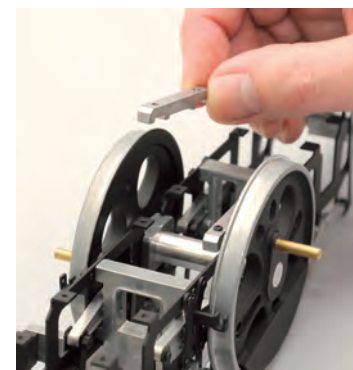
Place the assembled axle boxes over the axles of the wheels, inside the washer at each end of the axle, with the long part of axle box A closer to the wheels.

Turn the underframe over and lower the axle boxes back into place, as shown.

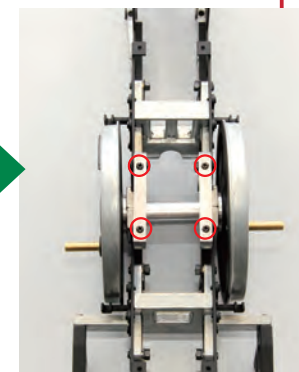
Once they are pushed all the way in, you can remove the masking tape.



3



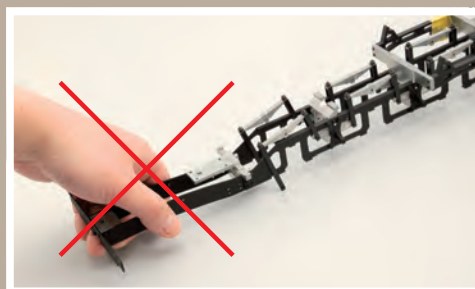
Place an axle box guard onto the underframe, aligning the holes with those on either side of the axle box.



Tighten a 2 × 5mm screw into each of the four circled holes.

Tip

When lifting the underframe to fit the axle boxes and wheels, don't lift it at the rear, as the weight of the front may cause distortion, and the two sides of the frame may get squeezed together. Instead, carefully lift the underframe at both ends.



4



Disassemble the first wheels from Stage 3.

Fit the remaining two axle boxes to the first wheels. Then fit them all into place, securing them with an axle box guard and two 2 × 5mm screws.



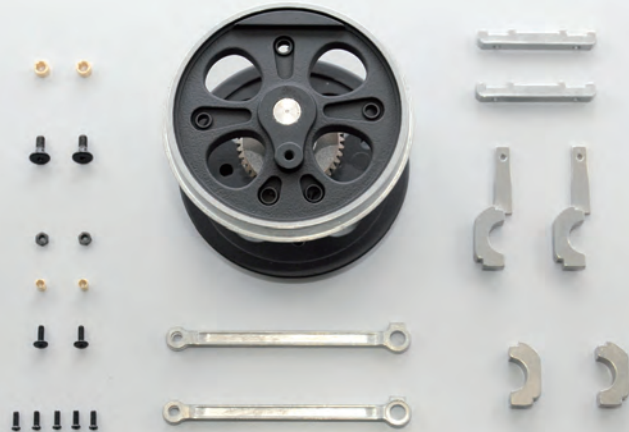
Complete



The parts from Stage 3

The third wheels

Your parts

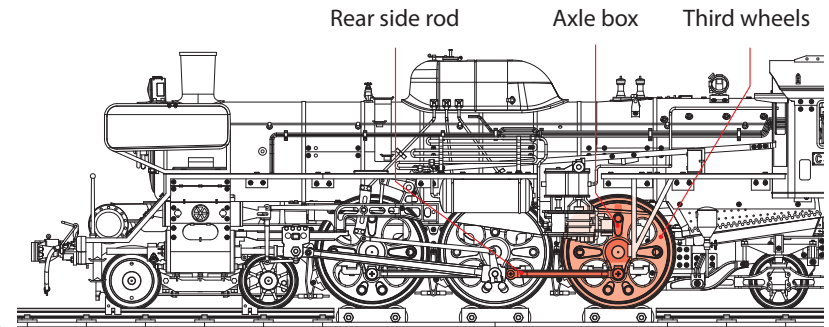


Bushes (large) × 2
Rod pins × 2
Nuts (M2) × 2
Bushes (small) × 2
Screws (2 × 6mm) × 2
Screws (2 × 5mm) × 5
Third wheels
Connecting rod A
Connecting rod B
Axle box guards × 2
Axle box A × 2
Axle box B × 2

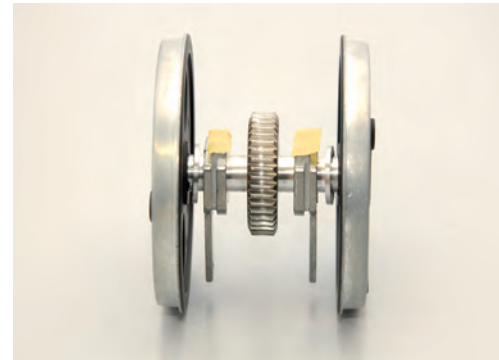
Tools

Masking tape
Phillips screwdriver
Pliers
File
Socket wrench (4mm)

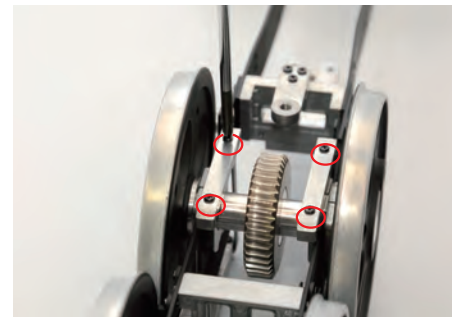
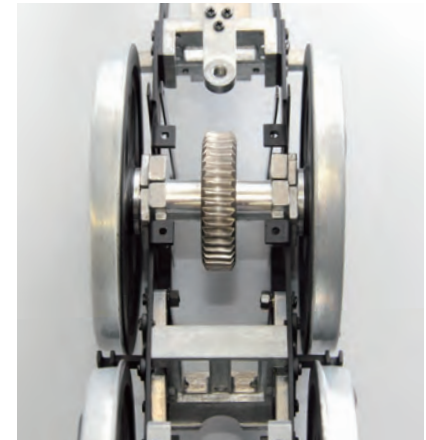
Where your parts fit



1

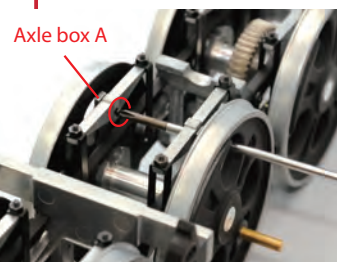


Assemble the axle boxes over the axle of the third wheels and temporarily secure with masking tape.



Fit the axle boxes into the underframe, remove the masking tape and then secure with two axle box guards and 2 × 5mm screws.

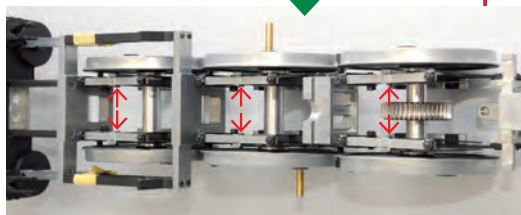
2



Axle box A

Secure the leaf spring to the long part of the axle box with a 2 × 7mm screw (Stage 21), as shown.

Repeat this to secure the other five leaf springs to the corresponding axle boxes.

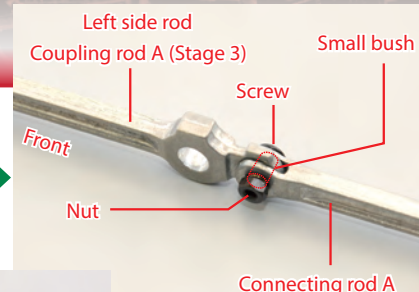
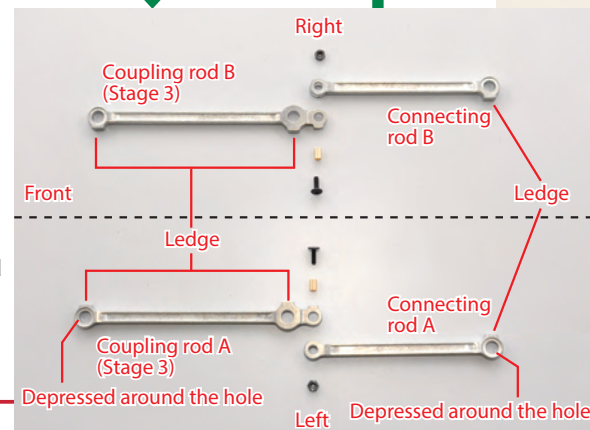


3



Check the connecting rods for any flash. Remove any you find with a file.

Prepare and lay out the parts from this stage and Stage 3, as shown in the photo, right.



Insert the rear end of the coupling rod into the front of the connecting rod. Push a small bush through the aligned holes, then pass a 2 × 6mm screw through the bush and holes, and tighten a nut onto the end of the screw.

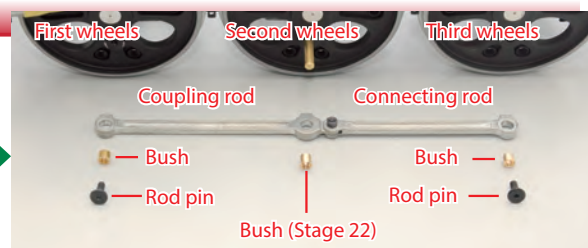
4

Second wheel bush (Stage 22)
Slightly longer, inner diameter is larger



First and third wheel bushes
Shorter, inner diameter is smaller

Identify the two types of bush: the shorter ones with smaller central holes and the longer with the larger holes.



Position the assembly from Step 3 along with the three bushes needed and two rod pins, as shown.

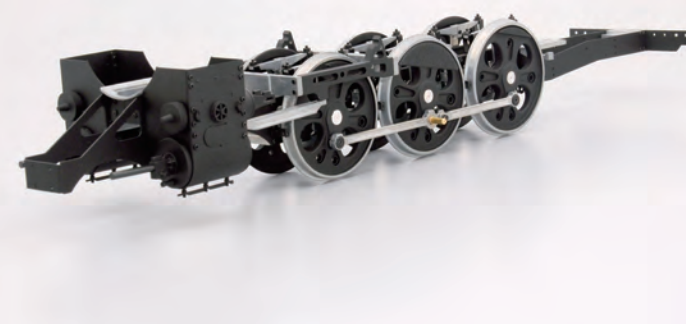


Align the hole in the coupling rod with the hole off-centre of the first wheel. Insert a bush into the hole in the rod and then place the rod pin into the bush, then tighten it into the wheel. Do this for the third wheel as well.

Place the hole at the rear of the coupling rod over the pin projecting from the second wheel, then place the bush (Stage 22) between them. Repeat this step for the other side of the model.

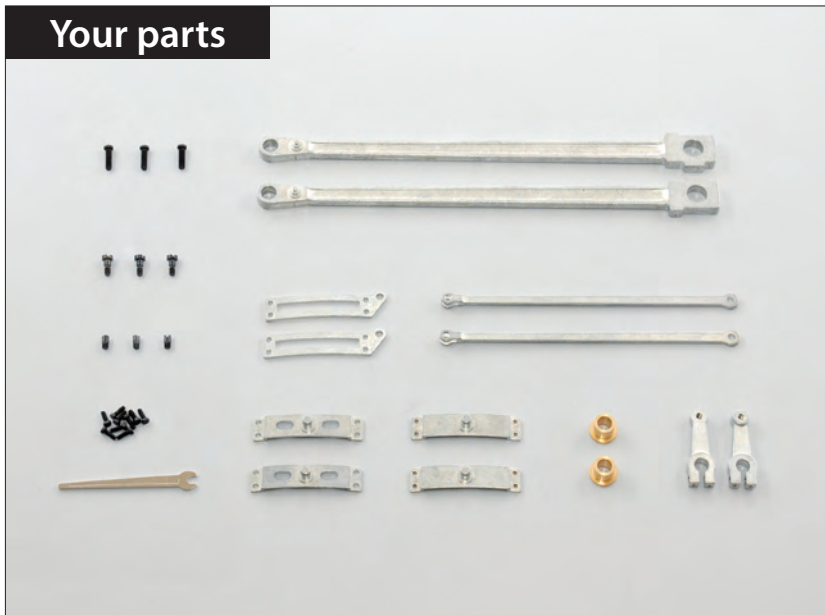


Complete



The connecting rods

Your parts

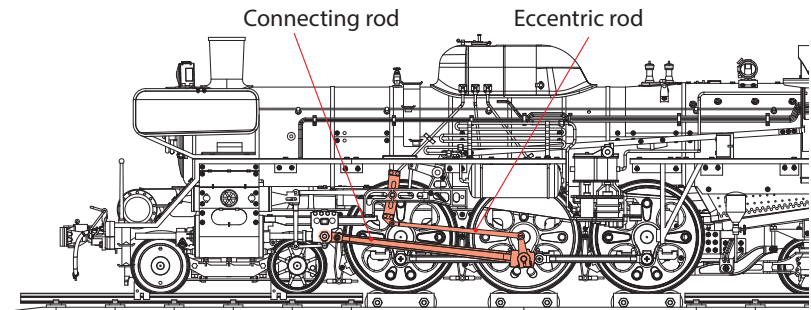


Screws (2 × 7mm) × 3
 Stepped screws (2 × 4.8mm) × 3
 Set screws (2 × 3.8mm) × 3
 Hex head screws (1.4 × 4mm) × 9
 Wrench
 Right connecting rod
 Left connecting rod
 Eccentric rods × 2
 Expansion link central plates × 2
 Expansion link outer plates × 2
 Expansion link inner plates × 2
 Bushes × 2
 Eccentric arms × 2

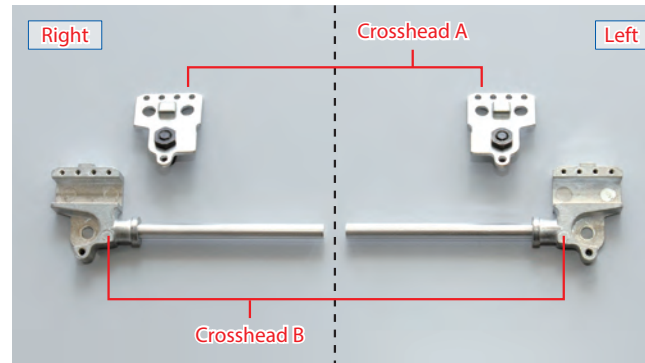
Tools

Phillips screwdriver
 Flat-head screwdriver
 Tweezers

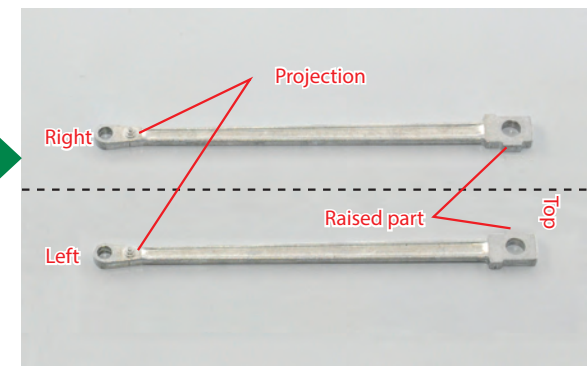
Where your parts fit



1



Prepare the crossheads from Stage 16. Arrange them as shown here.



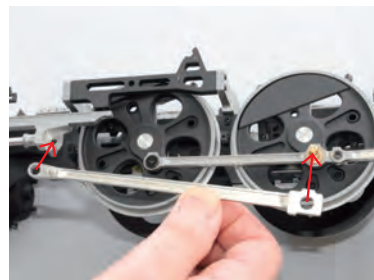
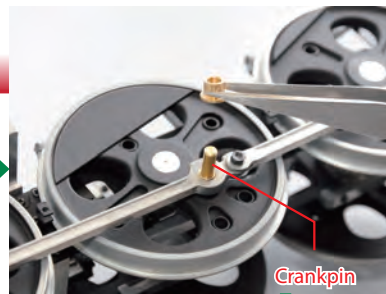
Place the two connecting rods in front of you, as shown here, to identify the front and rear, and top and bottom. Check over the rod for any flash, and remove any you find.

2



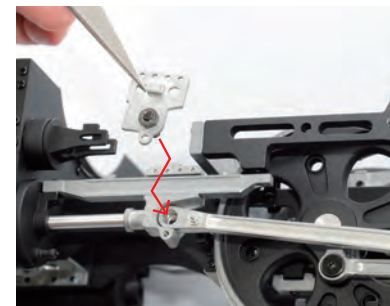
Take crosshead B and slide it over the motion bar, then insert the piston rod into the hole in the cylinder cover.

Place a bush onto the crankpin.



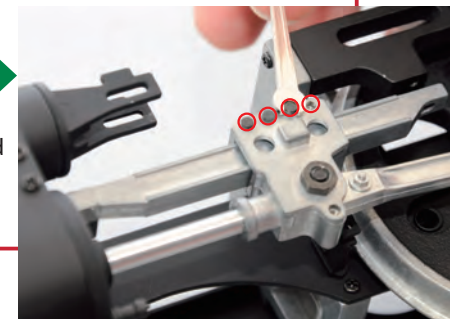
Place the hole at the rear of the left connecting rod over the crankpin and place the front end of the bar into the crosshead.

3



Place crosshead A onto crosshead B, inserting the pin into the hole in the connecting rod.

Tighten a hex head screw into each of the four holes at the top of the crosshead using the wrench.

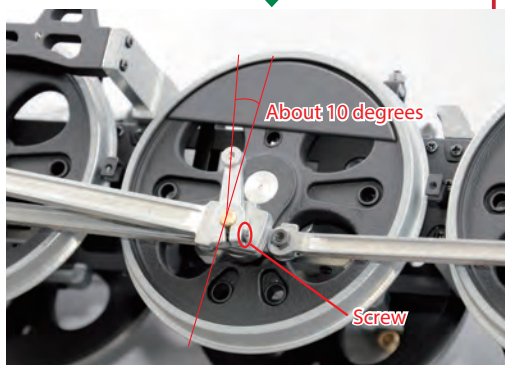


4

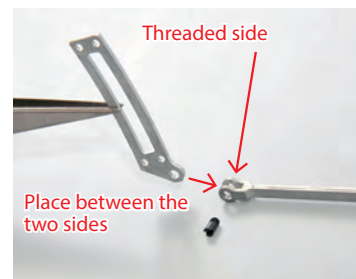


Tighten a 2 x 7mm screw into an eccentric arm, as shown.

Place the eccentric arm onto the crank pin, as shown. Rotate the arm so the top is about 10 degrees closer to the front. Tighten the screw (circled) to hold the arm in place. Repeat Steps 2-4 on the right side of the model.

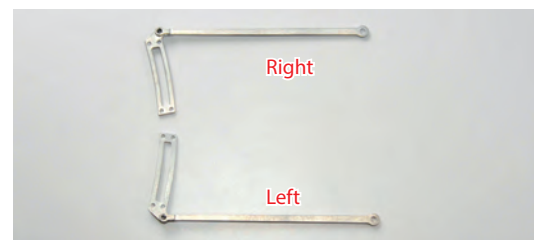


5



Put the hole of an expansion link central plate into the end of an eccentric rod. Tighten a 2 x 3.8mm set screw in the hole.

Assemble a second set of the expansion link central plate and an eccentric rod. To tell the left and right assemblies apart in the future, tighten the screws from the opposite side.

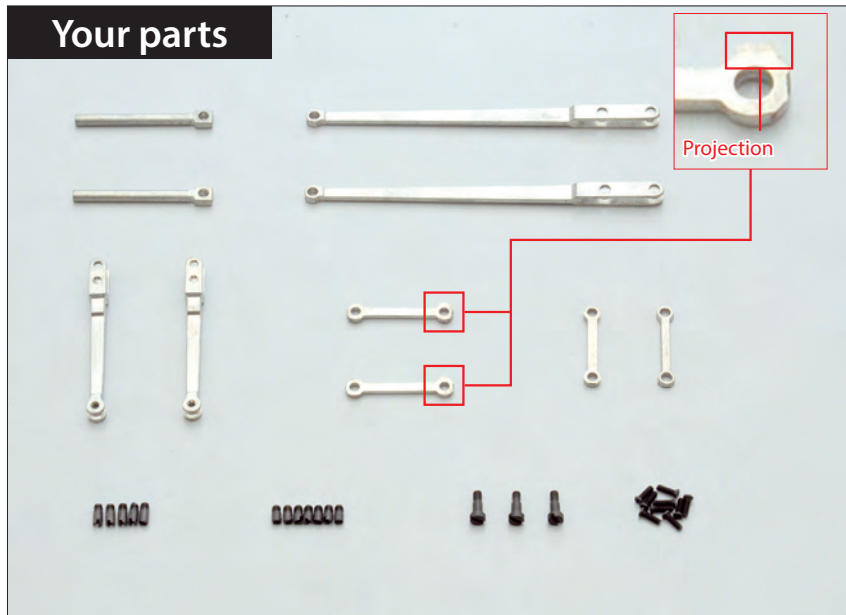


Complete



The valve gear

Your parts

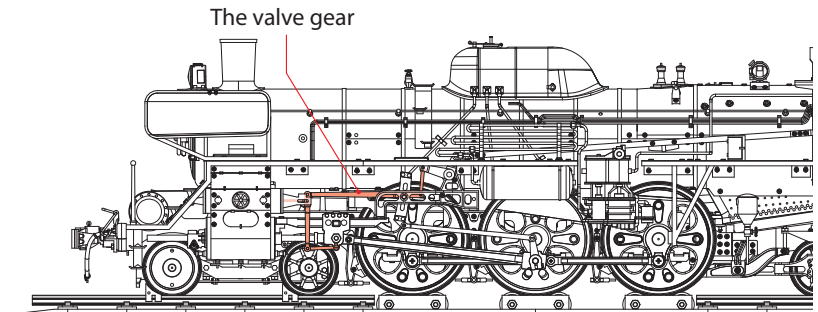


Radius rods $\times 2$
Hanging links $\times 2$
Connecting links $\times 2$
Combination levers $\times 2$
Piston valve spindles $\times 2$
Set screws ($2 \times 4.5\text{mm}$) $\times 5$
Set screws ($2 \times 3.6\text{mm}$) $\times 7$
Stepped screws ($2 \times 6\text{mm}$) $\times 3$
Screws ($1.4 \times 4\text{mm}$) $\times 9$

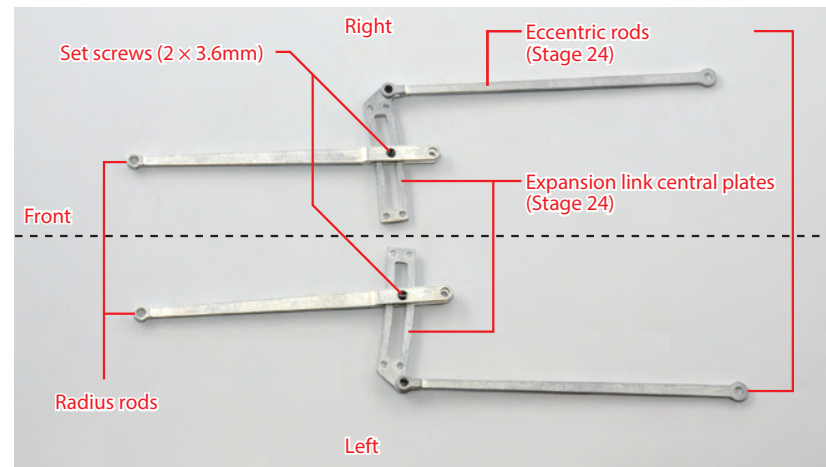
Tools

Phillips screwdriver
Flat-head screwdriver

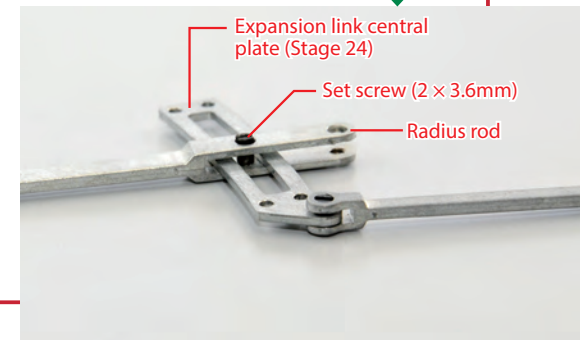
Where your parts fit



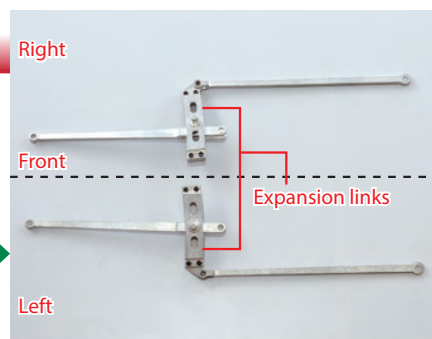
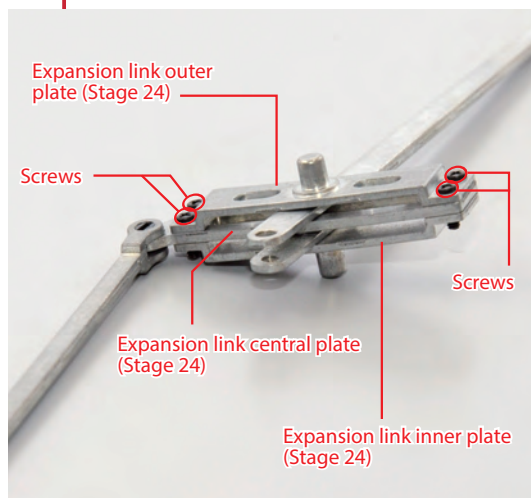
1



Prepare the eccentric rod assemblies from the previous stage and the radius rods. Place the split end of each radius rod over the central plates and tighten a $2 \times 3.6\text{mm}$ set screw into the hole in the rods, securing them to the plates, as shown.



2

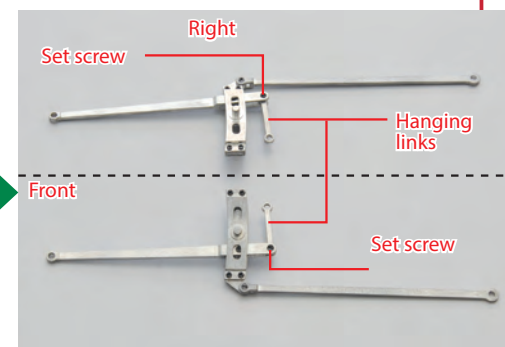


Place the outer and inner expansion link plates (Stage 24) either side of the central plate and fix with 1.4 x 4mm screws.

3

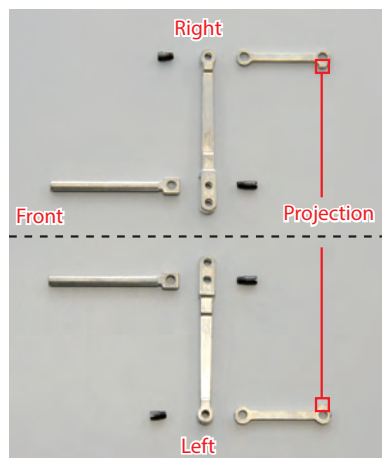


Fit a hanging link at the end of the left radius rod and secure with a 2 x 3.6mm set screw (circled).



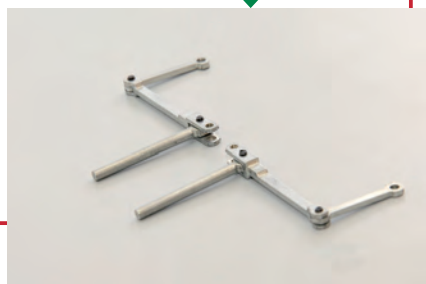
Do this for the right hanging link as well.

4

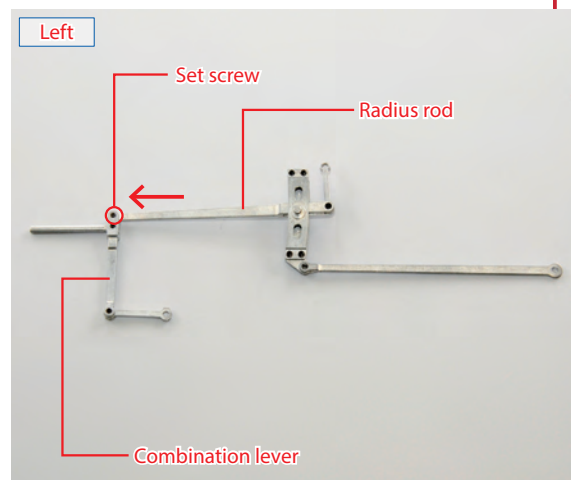


Prepare the connecting links, combination levers, piston valve spindles, along with two of each of the set screws. Lay the parts out, as shown.

Assemble the two sets.



5



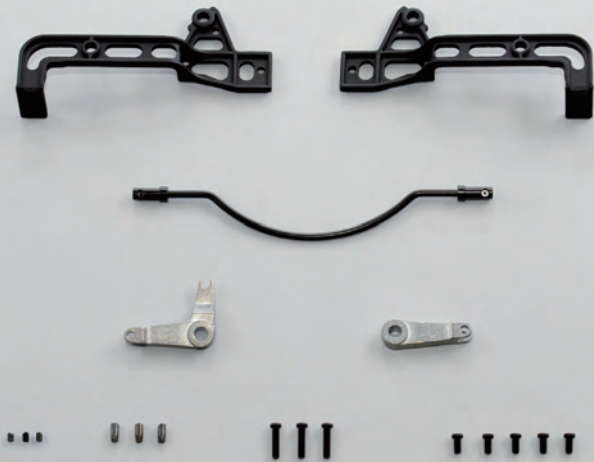
Combine the end of the radius rod with the end of the combination lever and secure with a 2 x 4.5mm set screw (circled).

Complete



The motion plates

Your parts

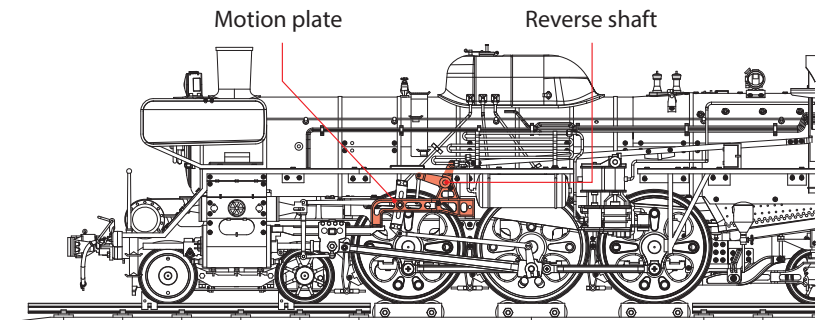


Left motion plate
Right motion plate
Reverse shaft
Reverse link left
Reverse link right
Set screws ($2 \times 2.4\text{mm}$) $\times 3$
Set screws ($2 \times 4.5\text{mm}$) $\times 3$
Screws ($2 \times 8\text{mm}$) $\times 3$
Screws ($2 \times 4\text{mm}$) $\times 5$

Tools

Phillips screwdriver
Flat-blade screwdriver
(Precision screwdriver)

Where your parts fit

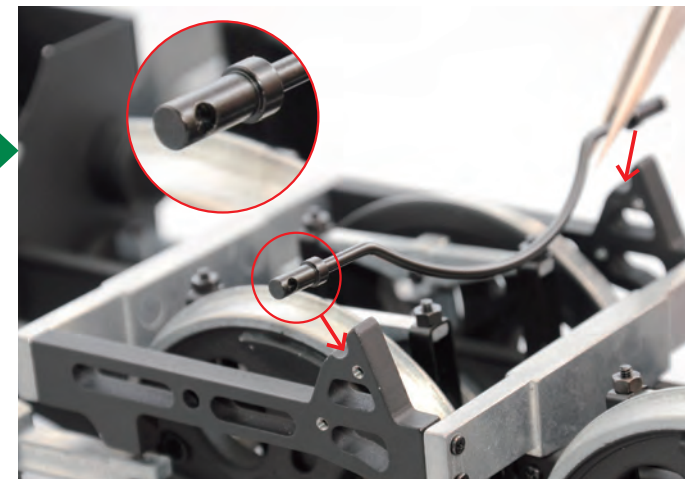


1

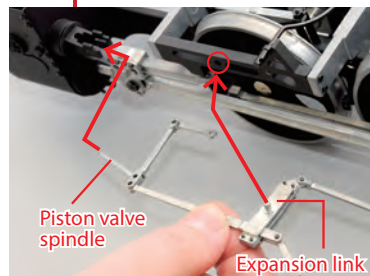


The reverse shaft has a recess at each end.

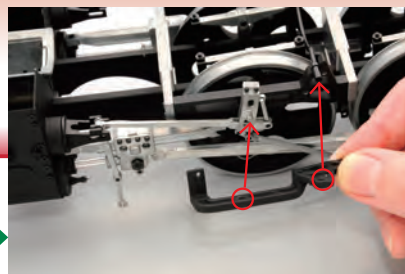
Hold the shaft over the motion frame and turn it so the recesses at the ends (circled) are facing towards the rear.



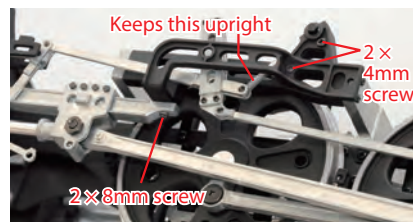
2



Insert the piston valve spindle into the hole in the piston valve tail guide. Then, put the projection on the expansion link inner plate into the hole in the motion frame.



Fit the left motion plate to the side of the motion frame, placing the two holes (circled) onto the reverse shaft and the expansion link.



Secure the motion bar to the plate with a 2 x 8mm screw. Secure the motion plate to the motion frame with two 2 x 4mm screws.

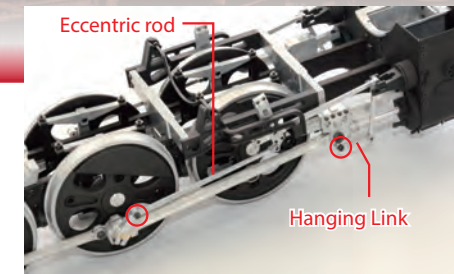
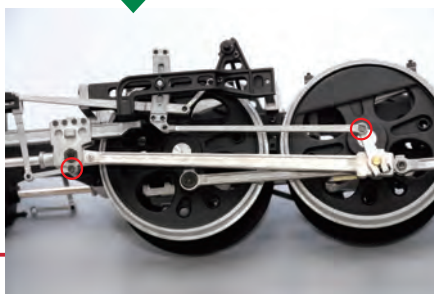


Repeat this process on the right side of the motion frame.

3



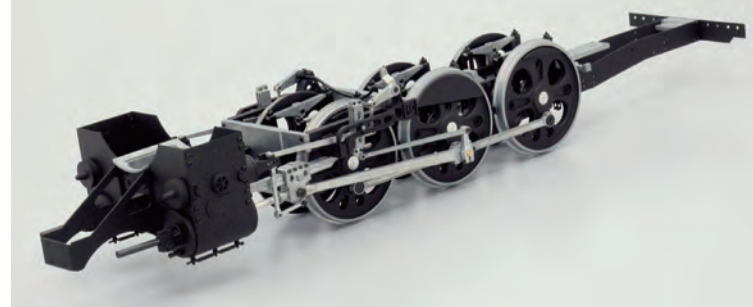
Prepare the two types of stepped screws shown in the photo.



Align the holes of the eccentric rod and the return crank, and the holes of the hanging link and the crosshead.

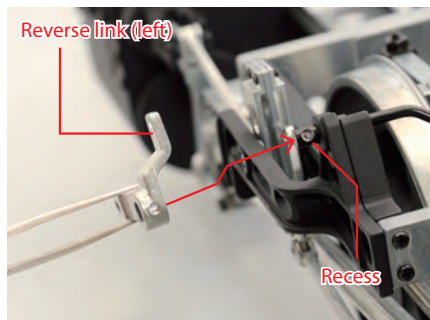
Secure the hanging link to the crosshead with a 2 x 6mm stepped screw. Secure the eccentric rod to the return crank with a 2 x 4.8mm stepped screw.

Complete

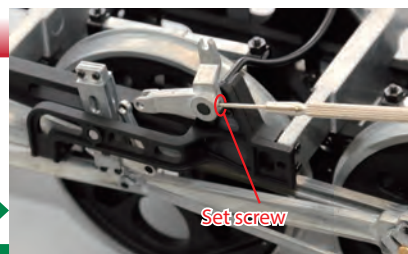


Move the assembly back and forth on a flat surface to test the movement of the wheels. If they get stuck at all, try to identify the cause of the problem. Inspect each part, in particular the screws in the motion bar, as they may be loose. Tighten them if they are.

4

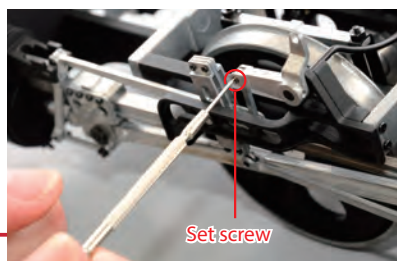


Fit the left reverse link onto the left end of the reverse shaft, aligning the hole with the recess.

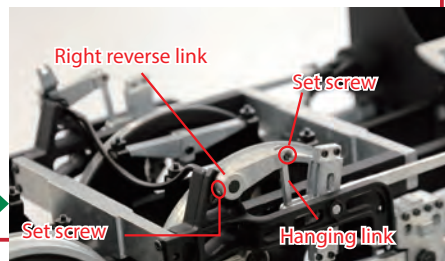


Tighten a 2 x 2.4mm set screw into the hole in the link, securing it to the shaft.

Repeat this step on the right end of the reverse shaft with the right reverse link.

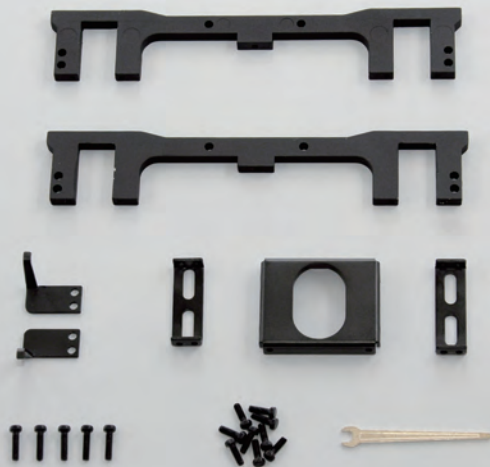


Insert the end of the hanging link into the reverse link and secure with a 2 x 4.5mm set screw.



The leading truck 1

Your parts

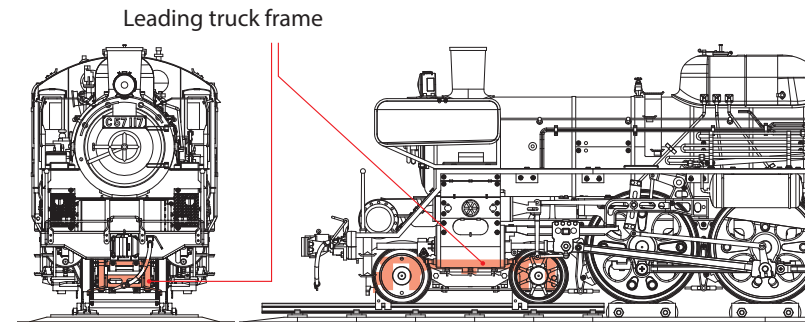


Truck frames × 2
Front bracket
Centre beam
Rear bracket
Guard iron (left)
Guard iron (right)
Hex head screws (2 × 8mm) × 5
Hex head screws (2 × 6mm) × 9
Wrench

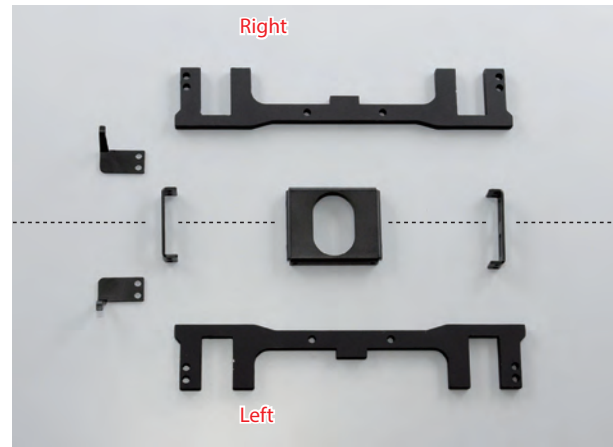
Tools

Wrench
Socket wrench (3mm)

Where your parts fit



1



Lay out the parts of the leading truck in the orientation shown.

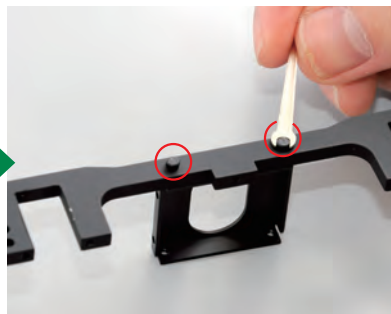
As shown here, the rear bracket is slightly longer than the front.



2



Align the holes in the centre beam with those in the truck frame.



Half-tighten a 2 x 6mm hex head screw in each of the aligned holes using the wrench.



Align the holes in the second truck frame with the holes on the other side of the beam and fix the parts together with two more half-tightened 2 x 6mm hex screws.

3

Place the rear bracket at one end of the truck frame assembly.



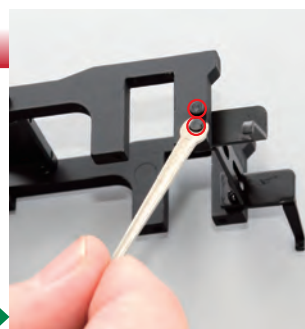
Place the bracket between the frames, align the holes and half-tighten a 2 x 6mm hex screw into them.

4



Turn the frame around and place the front bracket and guard irons next to it, as shown.

Place the right guard iron between the other side of the bracket and the frame. Secure with half-tightened 2 x 8mm screws.



Place the bracket between the frames, then place the left guard iron between them and secure with half-tightened 2 x 8mm screws.



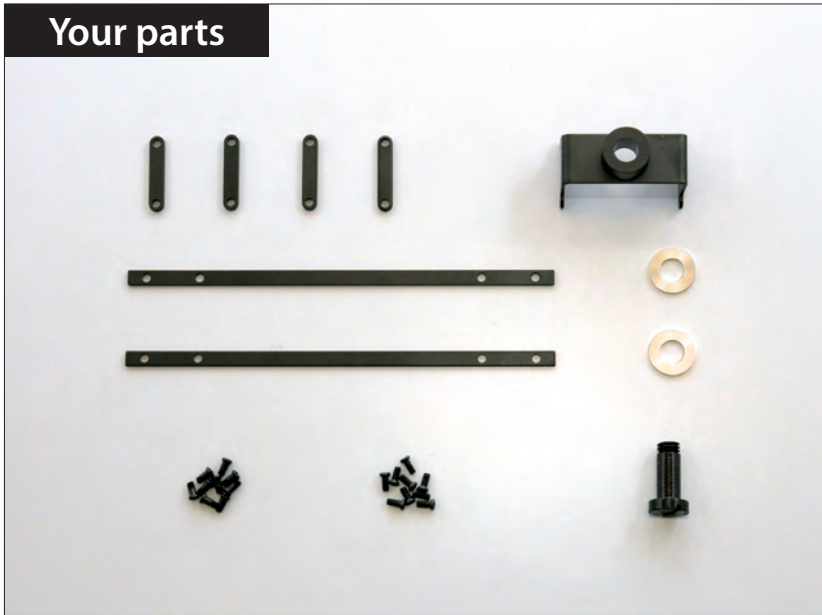
Fully tighten all the screws to fix the assembly together.

Complete



The leading truck 2

Your parts

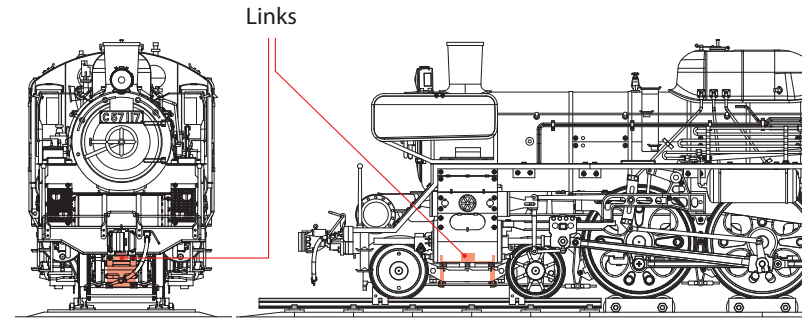


Leading truck mount
Links $\times 4$
Side stays $\times 2$
Washers $\times 2$
Stepped screws ($2 \times 3.8\text{mm}$) $\times 9$
Screws ($2 \times 4\text{mm}$) $\times 9$
Centre pin

Tools

Phillips screwdriver

Where your parts fit



1



The four links are all the same size and shape.

Here you can see the difference between the $2 \times 3.8\text{mm}$ stepped screws and the $2 \times 4\text{mm}$ screws.

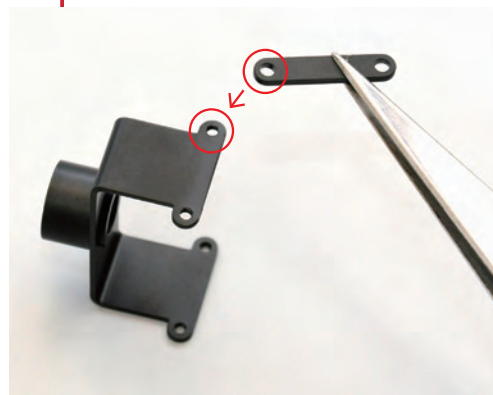


Stepped screw

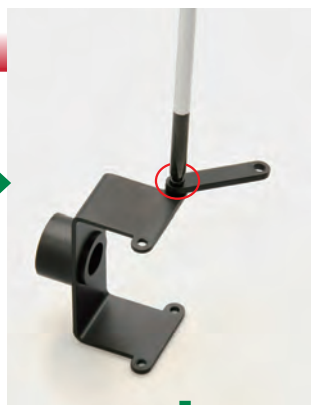
Screw



2



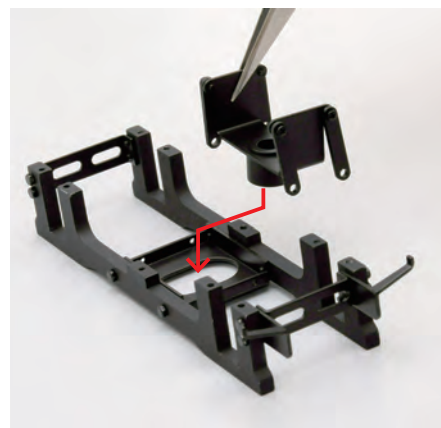
Tighten a 2 × 3.8mm stepped screw into the aligned holes.



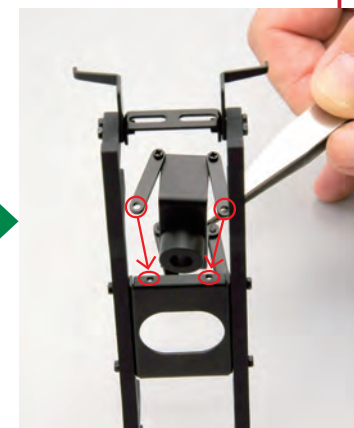
Align a hole at the end of one of the links with the circled hole in the leading truck mount.

Fit the remaining three links in the same way.

3

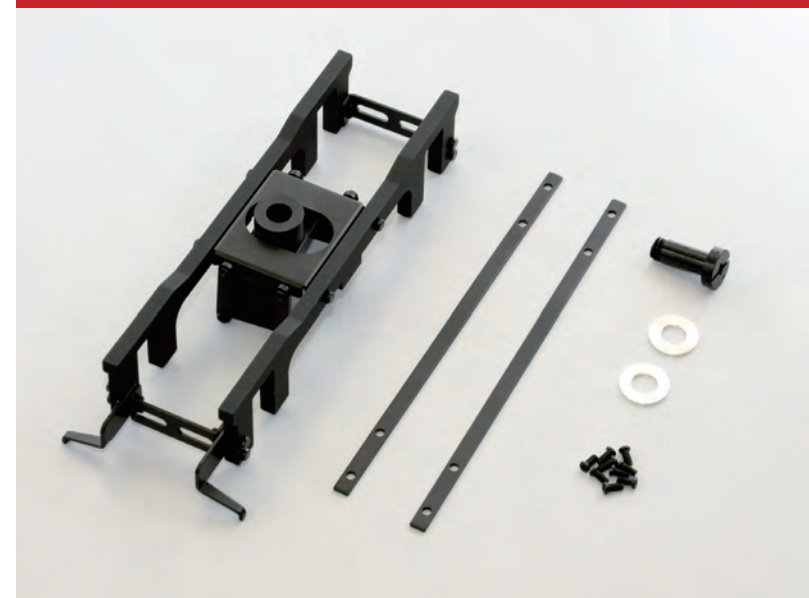


Hold the truck mount over the hole in the centre of the truck frame from the previous stage.



Align the holes in the links with the holes in the centre beam.

Complete



4



Tighten a 2 × 3.8mm stepped screw into the aligned holes.



Push the cylindrical part of the mount towards one side of the truck frame to test the movement of the links.