



5

Repairing a broken chain

Bike Maintenance

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Introduction

For safe and happy cycling, it's important to understand how to check your bicycle before you set off on your journey and how to keep it maintained for optimum performance.

This series of guides, produced by Cycling UK, provides some basic tips on maintenance and repair.

You'll find most of the common issues covered: the basic checks you should carry out before setting off, the essential tools you should always carry, how to fix a puncture, and how to adjust your brake and gear cables.

Here's what we'll cover

1 What you need

2 Repairing a broken chain

3 Mending a chain using a quick link

But remember, if unsure about your repairs, seek the advice of a qualified mechanic at your local bike shop.

1

What you need

It's a rare occurrence, but chains do break, especially if they're old or worn. And although it might seem like a major disaster if it happens to you while you're out and about, it's an easy repair if you're carrying your essential tools. When fixing a chain you will need:

1

Quick link pliers

2

Quick link (correct speed for chain)

3

Chain tool



In this guide we'll show you two quick and easy fixes to get you back on the move, using either a chain link extractor tool or a quick link connector.

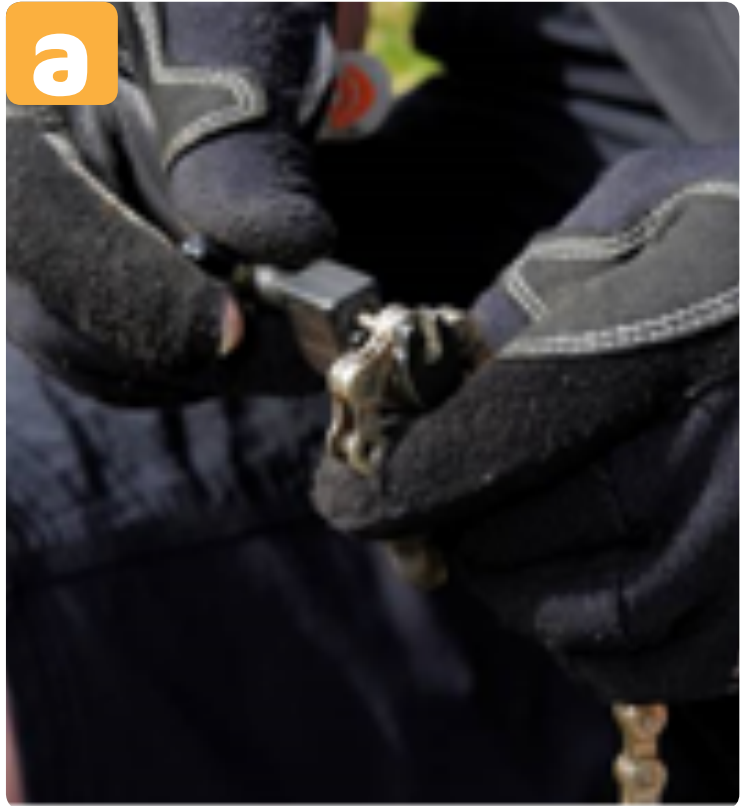
Before reading on, you might like to watch our short film on how to fix a broken chain

2

Repairing a broken chain

1

Firstly remove the broken link. Unless you are using a quick link connector (see section further) you will need to remove two sections of chain (one link is made up of an outer link connector and an inner link connector). Place the appropriate link in the first set of teeth of the link extractor. Wind the pusher pin so that it lines up with the chain link rivet (a).



2

Continue winding and the chain rivet will begin to emerge on the opposite side of the chain (b).



3

When the rivet has emerged sufficiently so that you think the links may be able to separate, unwind the extractor pin and take the chain off the extractor.

4

Bend the chain around the emerged rivet a little and the two parts may separate. If not, replace the chain into the extractor tool and push the rivet out another turn. Then try again. It is important not to go too far and push the rivet completely out of the other side again. If this happens, you have to start again with the next link, and the chain will end up being very short.

5

Ideally, a small amount of rivet is still protruding on the inside of the outer link plate as this helps hold the chain together when re-joining it.

6

Once the link is removed, the chain may need replacing around the drive system. To do this, use the male end of the chain (i.e. the one without the emerged rivet) to go from the chainset, through the front mech, round the sprockets and through the rear mech (c). You can then mend the chain at the bottom of the bike.



7

Run the chain round the smallest sprocket (d). It helps if you have the rear mech also set to the smallest sprocket, so click through your gears to achieve this.



8

As you thread the chain, ensure that the chain runs through the front and rear mech cages as it should. Often rear mechs have a hidden bar near the top jockey wheel that the chain needs to go inside of (e).



9

It is useful when you replace the chain, that the emerged rivet is facing you, rather than the bike. This then makes re-joining the chain easier as the extractor tool is clear of the frame and rear wheel, so is easier to use.

10

To re-join the chain, place both free links together. Ideally you will need to bend the links to get them to re-sit together due to the small protrusion of rivet. Alternatively, you can use a small piece of bent wire to hold the chain in tension whilst the links you are working on are loose (f).



11

Place the chain in the first set of teeth on the chain link extractor and line the pushing pin up with the emerged chain rivet.

12

Gently rotate the pusher pin in keeping the two pins lined up. It can help to hold your thumb over the chain within the extractor to keep the chain in place.

9



13

As the rivet starts to go through the outer plate at the back of the chain, it may become a little tighter (g). If so, just unwind the pusher pin half a turn to allow the chain sections to line up before winding on.

14

Stop winding at the point that the rivet is equally protruding on both sides of the chain, this should just be a tiny bit, but you should just be able to see and feel it.

15

Unwind the extractor and release the chain to view and check the rivet is in the right place. Where you have further to go, or have gone slightly too far, you can return the chain to the first set of link extractor teeth and wind a further half a turn or so.

16

At this point you are likely to find the mended link is stiff. This is because using the first teeth set on the link extractor forces the chain links tightly together against the end block. To loosen the chain off and release the link, just place the link in the second set of extractor teeth.

17

Ensuring the pusher pin lines up with the rivet, wind the pusher pin until the chain twists against the extractor teeth (h). Once in position, wind the pusher pin in a further $\frac{1}{4}$ to $\frac{1}{2}$ turn. If you look carefully, you may see the link plates separate slightly.

h



18

The chain should release easily and the link should now be free. Check by bending the links around the area and pedal backwards before leaving.

3

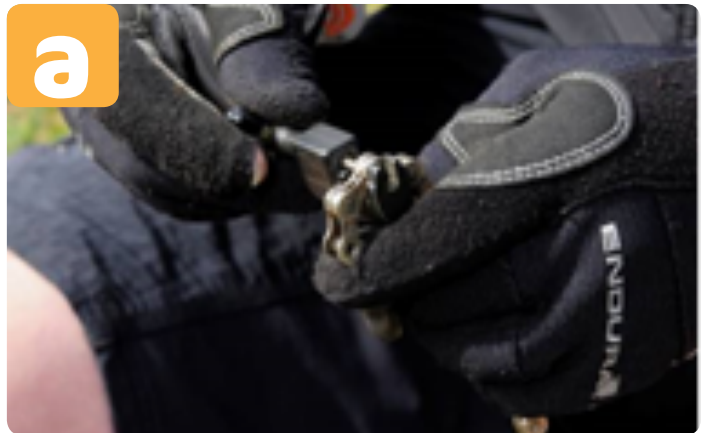
Mending a chain using a quick link

A quick link (sometimes known as a “powerlink”) is a method of joining a chain that uses a different, individual link made up of two pieces: each one a plate with a rivet attached.

These are set opposite each other with the rivet heads slotting into a keyhole slot in the opposite link. Using a quick link involves most of the processes outlined above, with only a few changes that greatly simplify fixing a broken chain.

1

The broken link still requires removal (a), but in this case, only one section of the link should be removed (the section with the outer plates). This leaves two ends that look identical, both with inner links



2

In this state, the chain should be fed back around the bike as outlined in points 2 6 to 8.

3

Each side of the quick link should then be set onto the chain (b). Slide each rivet through the chain ends, in opposite directions so that the link plates are on opposite sides of the chain.



4

The link can then be joined by placing each rivet through the keyhole in the opposite plate and pulling the chain tight so the rivets secure themselves in the keyhole slots (c).



5

The link can then be joined by placing each rivet through the keyhole in the opposite plate and pulling the chain tight so the rivets secure themselves in the keyhole slots (d).



6

Alternatively, if you do not have the quick link pliers, apply the rear brake and turn the pedal until you achieve the same result and the quick link is set (e) [image needs to be created].

