

# **Alfa Romeo 147**

**Brake pads and discs change guide (front)**



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## Brake pads and discs change guide (front)

This guide will help you to change front brake pads and discs on Alfa Romeo 147. Photos used in this guide are from Alfa Romeo 147, but many other Alfas, Fiats and Lancias share the same brakes.

### **Note:**

*During the installation showed in this guide I was installing aftermarket brake components (Galfer Extreme brake kit 37.09.500). Nevertheless this kit is direct replacement for OEM components so even though the parts you can see on the pictures look different, the procedure is exactly the same (with one difference of anti squeal carbon shims described in the later text). I think this guide is detailed enough to be usable for beginners and I tried to describe in the text alternative ways to do certain task as well.*

### **Quick guide (for advanced alfisti):**

1. Get new brake components (pads and discs if needed).
2. Lift the bonnet and unscrew the brake fluid filler cap. Fluid level will rise during installation so if the level is close to max suck some fluid out.
3. Lift the car and remove front wheel.
4. Remove pad spring.
5. Remove covers on caliper mounting bolts, unscrew them (7mm hex key) and pull them out.
6. Lift the caliper with pads off the discs, remove old pads and hang the caliper on some wire/cable but NEVER let it hang on its hose.
7. Compress the caliper piston to make space for new pads (described more in text).
8. Clean the caliper as much as you can off dirt and rust. Check if it is not damaged (rubbers).

### ***If changing discs as well:***

9. *Remove the caliper mounting bracket (19mm hex socket).*
10. *Unscrew the disc holding pin (12mm hex socket) and lift the disc off the hub.*
11. *Clean everything you can from rust.*
12. *Install new disc and secure it with its pin (10-14 Nm).*
13. *Refit caliper mounting bracket with its screws (111-123 Nm).*
14. Fit the new pads. Inner pad has a spring clip that fits into the piston.
15. Slide the caliper/pads assembly onto the disc.
16. Fit the caliper mounting bolts (117 Nm) and fit their protective caps.
17. Install pad spring.
18. Refit the wheel (88 – 108 Nm) and lower the car to the ground
19. Change pads (and discs) on the other wheel.
20. Check brake fluid level and close the cap.
21. Go for a drive. Start VERY slowly till you are sure your brakes work fine. Drive gently for the first 100 – 200 km to bed in the pads. *(In case you installed aftermarket pads, run them in according to manufacturer advice)*

## Step by step guide:

1.

Get new brake components. You can go for OEM components but you can get aftermarket ones as well. They are usually only slightly more expensive and most of them (made by some well known manufacturer) are usually better (at least definitely not worse) than original ones.

2.

Open the bonnet and unscrew the brake fluid reservoir cap so that air can run out as the fluid level rises during installation of new pads. In case your fluid level is close to max, you can suck some fluid out of the reservoir to make some space.

Put the sucked out fluid into a small bottle/container and close it. Don't leave it exposed to the air. Glycol based brake fluids (Dot 4, Super Dot 4, Dot 5.1) are hydroscopic and easily absorb air humidity. This lowers their boiling point. This is the reason why the brake fluid should be changed every two years.

Be very careful when manipulating with brake fluid as it is a very good paint stripper. Don't drop it on the paint.



Alternatively, you can cover the top of the reservoir with some cloth and tighten it with rubber band so that in case it overflows, the damage is minimal. This prevents impurities and air entering the system as well.



3.

Raise the vehicle. If you can't raise the vehicle completely, secure the car against movement (pull handbrake, cog the rear wheels) and lift the front wheel with a jack. (preferably lift both sides if you have 2 hydraulic jacks). Put the car on axle stands if you can as **it is not safe to work under the vehicle lifted on jack(s) only!!!** If you don't have them, push a spare wheel, brick or a wooden log under the car so that it doesn't fell on you or on the ground in case the hydraulic jack lets go...



4.

Remove brake pad spring. Just prise it off. If you have painted the calipers be careful as the spring likes to scratch them. In my case they need repaint anyway.



5.

Release brake hose from the bracket. It might be useful to clean it now and check if the rubber has no cracks and connecting pins are in good condition.



6.

Remove plastic caps on the bolts holding the caliper (from the inner side of the caliper). With 7mm hex key unscrew the screws holding the caliper and take them out. In fact they are not screws, but sliding pins allowing the caliper to slide/float on them.



7.

Now the caliper is released and theoretically you can slide the caliper/brake pads assembly off the disc. In my case of worn discs the disc had a recess on its edge and the pads were actually bitten into the disc and could not slide over its edge.

In this case now is a good time to directly compress the caliper piston. At this moment you can compress it with the old brake pads on and you don't risk its damage as in the case you try to compress it later and you don't have the right tool.

At this moment it is very important that you have opened the brake fluid reservoir in the step 2 so that the brake fluid flowing away from the caliper piston has enough space to flow back.

When compressing the piston, **WORK SLOWLY!!!** Give the fluid some time to flow through the valves in opposite direction.

Alternatively you can open the caliper bleeding nipple and push the fluid out through it. In case you have a suitable hose to fit the nipple and container for the fluid this might be a way to do it as well. Don't forget to close the bleeding nipple immediately after pushing the caliper piston back to prevent air entering the system. If you use this procedure, you don't need to open the brake fluid reservoir showed in the steps 2 and 3. After the job is done press the brake pedal 2-3 times so that the new pads catch the disc surface and than check brake fluid level. It might need topping up.

In my case, I used a big clamp to compress the piston. I put it over the inner side of the caliper and outer brake pad. This way you can SLOWLY!!! compress the caliper piston and make enough space to take the caliper with pads out and have the piston in the right position to install new pads.



8.

In my case this method worked like a charm, the piston was pushed back and the caliper assembly could be taken off already compressed and ready for new pads.



9.

When the caliper is released you can take the old pads out. Outer pad is immediately loose, inner pad has a metal spring clip fitting into the piston. You have to pull the pad out of it.

Clean the caliper piston from the rust; check its rubbers if they are not damaged and in case you didn't push the piston back enough in the previous step, now you can do it. You can use a proper caliper piston retraction tool (elegant and professional way to do the job) or you can push it back when the inner pad is still installed with any sort of lever or clamp (emergency solution). It is always better to damage/scratch the old pad as the caliper or its piston.



When you put the caliper aside NEVER HANG IT ON ITS HOSE!!! Use any wire or string to hang the caliper but the hose shouldn't be strained or bend too much.

**Note:**

*If you are changing the pads only, skip to step 16. If you are going to change the brake disc as well, follow to the next step.*



10.

Remove caliper holding bracket. It is held by two bolts, you need a 19mm hex socket to unscrew them. They might be stuck and you need some brute force to loosen them. You can use some penetrating oil to make the job easier. It is not exactly necessary to remove the brackets, you can remove one bolt only, loosen the second one and turn the bracket around the bolt few cm to make space to remove the disc. I removed the bracket to clean it from rust with a steel brush, especially where the pads slide.



11.

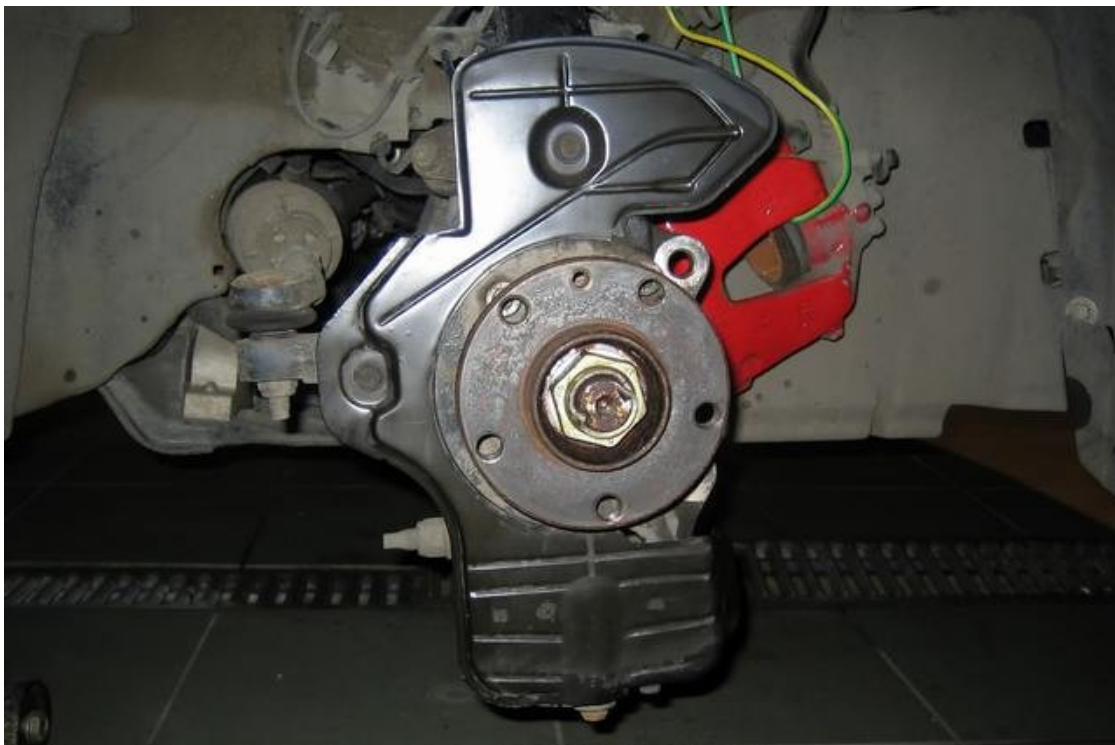
Unscrew the disc holding pin (12mm hex socket).



12.  
Lift the disc off the wheel hub.



13.  
Clean the wheel hub from the dirt and rust. The surface where the disc sits has to be flat and clean.



14. Install the new brake disc and secure it with its pin (12mm hex socket, tightening torque 10-14 Nm)
15. Install the caliper holding bracket (19mm hex socket, tightening torque 111 – 123 Nm)
16. Install the new inner pad. It clips into the caliper piston. Alternatively you can use some copper grease (copperslip) on its back to avoid brake squeal and vibration.

My personal opinion is not to do it. What is more important than this, all parts should be clean from rust, dry and freely moving. Any additional grease only catches dirt and makes thing messy. The only parts that should be greased are the caliper holding screws/sliding pins (see step 6) as the caliper slides on them. Cleaning everything with a steel brush can do for the caliper function the same job as copperslip.

Anyway, copperslip on the back of the pad is widely used practice. In case you decide to use it, just make sure it doesn't get onto the disc and pad surface.

In my case the pads came with anti-squeal carbon shims to be put on their back. It is basically a thin sticker made of carbon mesh imbedded in some soft rubber-like material to be put on the back of the pad. It works better than copperslip but is not widely spread and not easy to get.



17.

Install the outer pad into the caliper holding bracket; just put it onto the disc surface.

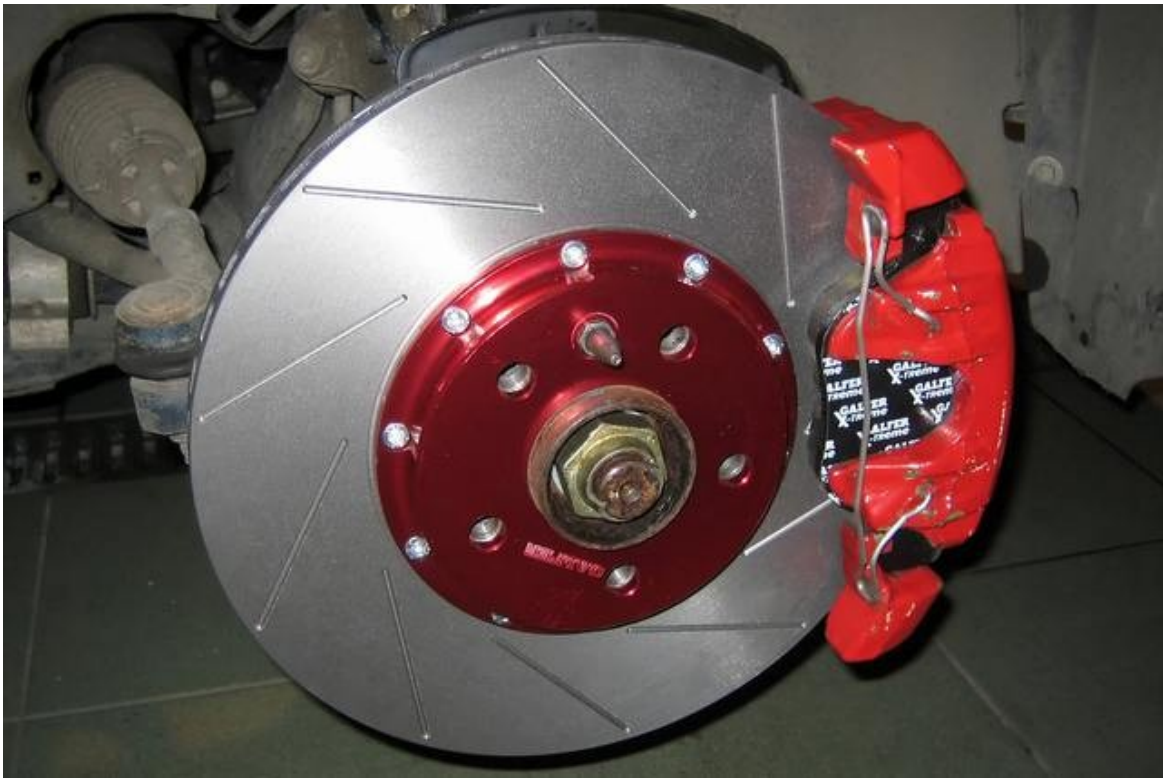


18.

Slide the caliper with the inner pad installed on the bracket with outer pad and secure it with its bolts (7mm hex key, tightening torque 117 Nm). Put plastic protective caps onto the bolts.



19.  
Fit the pad spring.



20.  
Refit the wheel (alloy wheel bolts torque 88 – 108 Nm) and lower the car to the ground.



21.

Go for a drive. Start VERY slowly till you are sure your brakes work fine. Drive gently for the first 100 – 200 km to bed in the pads.

If you installed new pads on old discs the run-in period might take a little longer till the pads wear to the worn disc shape (disc is most probably not totally flat so the pad surface doesn't have perfect contact).

In case you installed aftermarket pads, run them in according to manufacturer advice. Some pads might require a special run-in procedure depending on their manufacturing process and whether they passed scorching or not.

22.

Job done ☺

**Note:**

*On some cars the pads might have a brake pad wear indicator. On Alfa 147 it is fitted only on the inner pad of front left wheel. Disconnect the connector, slide it out of its bracket and remove with the brake pad.*

*In case your new pads have connectors on both sides, you can cut the unnecessary one on the right wheel.*

*In case your new pads don't have indicators, tie the sensor cable on the car out of the way.*



Disclaimer:

*This guide describes how I did the job. It may not be complete or something may not be described detailed enough. Follow this guide at your own risk. Please only attempt this if you feel you are competent. I'm not responsible for any damage you might cause. Always use common sense not excessive force. Don't blame me or this guide if you break something. It was your choice to try this.*

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