Mercedes Benz ABC Hydraulic Valve Block Solenoid Oil Seal Repair Fix Rebuild Kit Seals O-Rings Overhaul Install Instructions

by x8rltd

The Problem

Vehicle sags on one or more corner after shut off.

The ABC system on Mercedes Benz vehicles is a computer controlled hydraulic system, the system adds / removes fluid from the struts, the objective being to keep the chassis level at all times. This is a great system when fully functional.

A common failure point of this system is the valve blocks. This manifest itself as one or more corners of the vehicle sagging or lowering when the vehicle is parked after a few hours or days (longer term sagging isn't necessary cause for concern). Or one or more corner raising shortly after vehicle shut off.

The valve block fails to make a good seal allowing fluid to escape the strut and return to the reservoir leading to the corner sagging. This failure to seal is more often than not caused by the O-rings deteriorating within the valve block solenoid, most likely the locking valve.

There are two valve blocks on each vehicle. One controls the front struts the other the rear. Each valve block has two locking valves and two control valves. The locking valve locks the level of the strut once the vehicle is turned off.

If any residue is stuck in the solenoid the plunger will not seal correctly and strut fluid will be lost resulting in that corner of the car sagging. Such residue is normally caused by the original O-rings deteriorating. Alongside the O-rings are backup rings to maintain the shape of the O-rings under pressure. Some valve block solenoids are fitted with nitrile back up rings, like the nitrile O-rings these deteriorate and can clog the plunger.

Symptoms of the fault

Car sagged, dropped, lower, down, lowered, at one or more corner after short period of time after vehicle shut off. Vehicle raised at one corner after shutting off. Common fault codes: "Too Low" warning on dash, C1525-001, C1525-002, C1525-004 or C1525-00.

Vehicles affected and compatibility

C215 CL Class 2000-2006 : CL500, CL600, CL55 AMG, CL63 AMG, CL65 AMG.

C216 CL Class 2006+ : CL500, CL600, CL55 AMG, CL63 AMG, CL65 AMG.

R230 SL Class 2003-2012 : SL320, SL500, SL550, SL55 AMG, SL600, SL65 AMG.

W220 S Class 1998-2006: S280, S320, S350, S430, S500, S600, S55 AMG, S65 AMG.

W221 S Class 2005-2013 : S280, S300, S350, S400, S450, S500, S550, S600, S63 AMG, S65 AMG .

In around 2007 the design of the valve block changed, our repair kit fits the design previous to the change in 2007. The later valves don't tend to fail in the same way. If your valve block has been changed in its life it is possible it was changed to the newer version. To determine this the ABC pump can be inspected on the upper right side of the engine; If a

black sphere is attached to the pump it is the 2007+ model.

Associated part numbers:

A2203280031, A2203200358, A2203201258, A2203200031.

Our solution

A full overhaul kit to repair the ABC valve, constructed of the finest materials to last the life of the vehicle.

Our complete overhaul kit includes all components required to restore the valve block. Our kit is for one valve block.

Our kit includes:

Replacement O-rings to replace original O-rings on the valve block solenoids. Our O-rings are constructed of Viton a vastly improved material suited to the fitting environment so will not deteriorate like the original part. Resolving existing faults and stopping them reoccurring.

Replacement support rings, these are constructed of PTFE to last the life of the vehicle. These replace the original nitrile support rings which if fitted to the valves tend to wear and cause issues. Our rings are a split design allowing easy install.

Replacement solenoid retaining clips x2, more often than not the originals snap when removing, we include x2 replacements to allow easy repair.

Replacement weather seals for the control valves. The original seals tend to deteriorate and are often damaged when removing the valves. Others try to seal this stacking O-rings we don't believe this is the best solution so have moulded replacement seals to ensure a weather tight seal.

All components are labelled for easy install. Please check out our picture instructions and videos to see our comprehensive repair kit in action. Designed and engineered to resolve ABC valve faults for the life of the vehicle.

You will receive

14x Viton O-rings

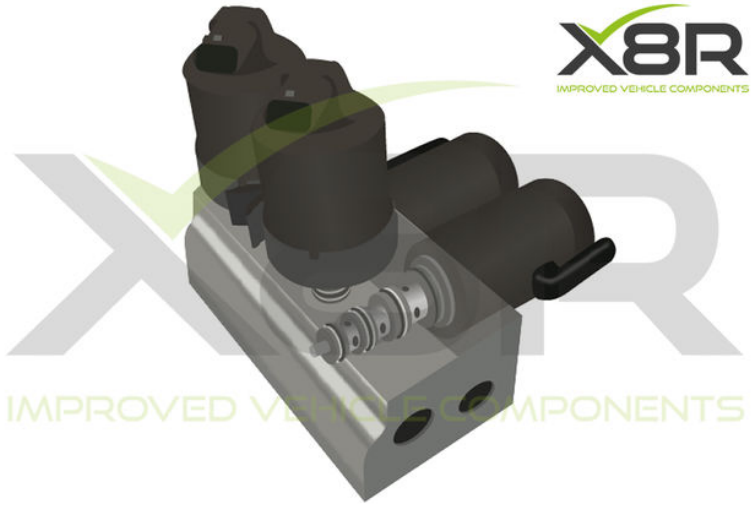
14x PTFE split design support rings

2x Replacement valve retaining clips

2x Weather seals for control valves

4x Stickers to mark valve positions

This allows repair of 1 valve block, front or rear. If you wish to repair front and rear you will need two kits.



https://youtu.be/llVbZmFiufg

Step 1: Before Commencing Repair

Before removing the valve from the vehicle carry out a 5 liter flush of the system through a new filter (MB part number: 0031846101) using CHF 11S hydraulic fluid. We recommend this is done twice. The valves fail due to debris and this needs to be flushed out.

Before removing the valve clean around the valve and lines to prevent any debris entering the system.

Remove the valves as per manufacturers instructions.

Be sure to clean around the externals of the valve block / solenoids before removing the solenoids to prevent any contaminates entering the internals.

We recommend labeling each solenoid valve with a different colour sticker (included) so that you can reinstall in the same position. Fit stickers as per the image here and match this for reinstall.

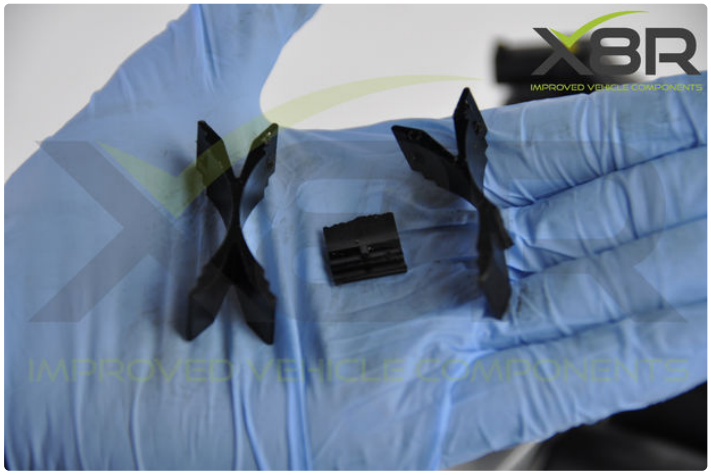
We recommend that you have some CHF 11S hydraulic fluid (see image) on hand for re-lubrication during installation and refitting.

Step 2: Remove the Solenoid Retaining Clips

The first thing to do is remove the solenoid retaining clips. There are two, one between the two control valves and one between the locking valves. The best tool to use for this is a flat headed screwdriver.

Lever one end of the clip away from the solenoid on one side. This should allow the solenoid to be twisted slightly. Repeat the process for the other side of the clip. The clip should now be free to move upwards. You may need the screwdriver to lever it upwards.

These can be fragile and break but our kit comes with replacement clips so do not worry if you break them.



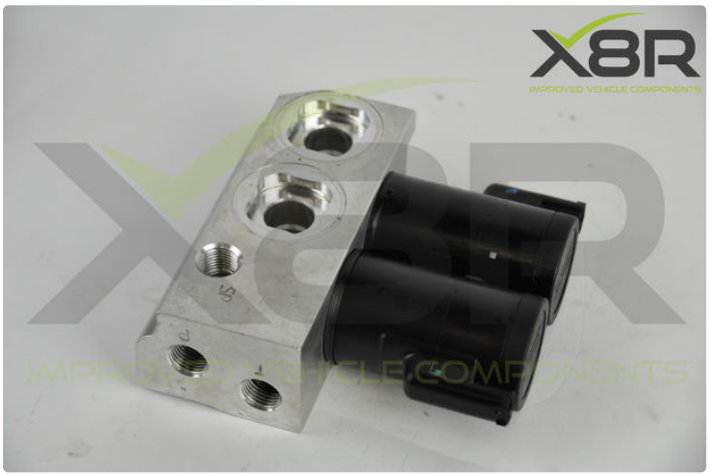
Step 3: Remove the Solenoid From the Valve Block

It is now time to remove the solenoids from the valve block. The smaller locking valves can be turned approximately 45 degrees and then pulled upwards and the larger control valves can be turned approximately 90 degrees and then pulled upwards.

If at first they do not come up easily, you may need to use a flat headed screwdriver to gently lever the valves upwards.

At the bottom of the taller control valves is a large rubber circular weather shield, which as shown in the pictures, can get worn over time. Our kit will include new, tougher replacement weather shields.

Be aware that there will likely be hydraulic fluid in the valve block and also covering the solenoids so be careful to protect your working space from spillages and drips.






Step 4: Clean the Components

Once all the valves are removed, it is time to clean them up to remove any dirt and debris that may have accumulated in the valve block. Remove any excess fluid as well with paper towels. Dirt and debris can be removed with a soft toothbrush if necessary.


Step 5: Remove the Old O-rings

It is now time to start removing the old nitrile o-rings. We have found the best way to do this is to use a small flat headed screwdriver to carefully lift the edge of the o-rings upwards and over the retaining lips. Once free, you can remove them fully by hand.

Be careful with the screwdriver not to scratch or damage the solenoid shaft.

Once all the o-rings are removed, you can see in the pictures how many you should have. The smaller locking valves also have two large o-rings at the base which can be removed in the same fashion as the small o-rings.

Step 6: Remove the Back Up Rings

Please follow this step if your valve block has nitrile rubber spacer rings. These deteriorate and cause issues. If your valve already has White PTFE spacer rings these don't tend to fail so don't need replacing. If you wish to replace these that can be done fine with our replacements.

Once the o-rings are removed, you can now more easily remove the back up rings. These will need to be cut away. The best tool for this is a small sharp blade. The rings will cut easily enough but again, be careful not to damage the solenoid shaft.

The final picture shows everything that has been removed from the solenoids (apart from the large o-rings on the locking valve as these are still in place in this picture)

Step 7: Fit the New O-rings and Back Up Rings

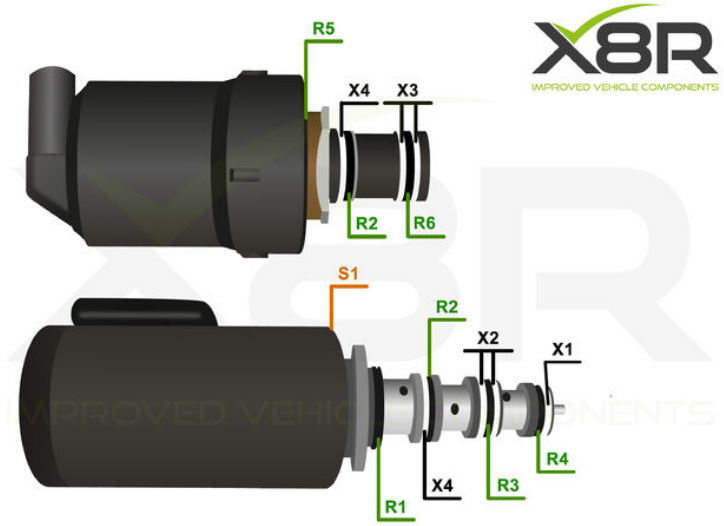
You can now fit our new Viton o-rings and PTFE split back up rings.

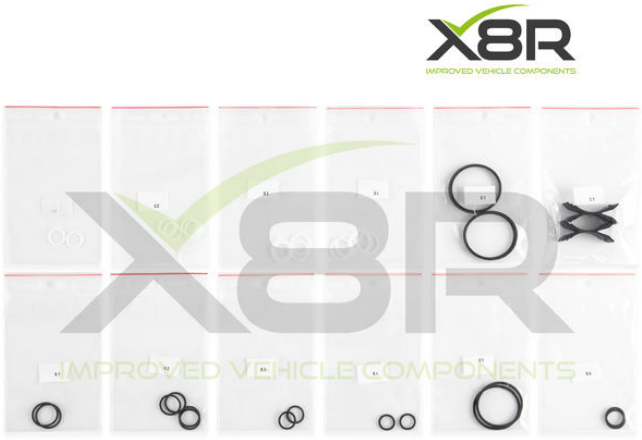
Please see the illustration this shows where to fit our new o-rings and back up rings, the letters and numbers will link up to the poly bags which the rings come in so you can identify where to fit.

Make sure you take care to get them in the correct order and take your time not to damage them on installation.

A little hydraulic fluid will help lubricate the o-rings into place.

If the spacer rings overlap on themselves when installed on the solenoid use lots of lubrication and manipulate by hand around the solenoid so they close correctly.





Step 8: Install New Weather Shield

We supply new weather shields with this kit to help seal the control valve more efficiently. They are tapered to help them fit around the base of the solenoid more easily. For now, they just sit loosely on the control valve.

Step 9: Reinstall Control Valves Into Valve Block

It is now time to reassemble the valve block. This is done by inserting the solenoid into the valve block, again using some hydraulic oil as lubrication.

Before inserting make sure the back up rings are circular and not overlapping, apply lots of hydraulic fluid to the solenoids and the block to insert. If you are finding it tough to push in the solenoid check all seals, lubricate and retry.

Once the solenoid is fully inserted in the valve you should (with a little pressure) be able to rotate it 360 degrees within the block without any catching. If you feel any caching of the internal parts remove and check all seals.

Once the solenoid is fully inserted and able to be rotated freely, remove check all components then reinstall with lots of lubrication for the final time.

You may need a small flat headed screwdriver just to prise the edges of the new weather shield from out under the valve in case they get trapped during installation. The weather shield should raise up slightly from the base of the valve to create a good seal.

Step 10: Reinstall the Locking Valves

Again, carefully lower the locking valve into its hole using some hydraulic fluid for lubrication. Be careful that the spring does not drop off before installation.

Before inserting make sure the back up rings are circular and not overlapping, apply lots of hydraulic fluid to the solenoids and the block to insert. If you are finding it tough to push in the solenoid check all seals, lubricate and retry.

Once the solenoid is fully inserted in the valve you should (with a little pressure pushing down) be able to rotate it 360 degrees within the block without any catching. If you feel any caching of the internal parts remove and check all seals.

Once the solenoid is fully inserted and able to be rotated freely, remove check all components then reinstall with lots of lubrication for the final time.

Before reinstalling the retaining clips, check to make sure the valves are in the correct locations by checking the photo from earlier to make sure the colours match.





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Step 11: Refit the Retaining Clips

Using the new retaining clips, slide these down into the positions shown. Make sure the clips catch on the small lugs protruding from the valves on both ends of the clips. If the clips or the valves move, the they will need adjustment to secure properly.

The locking valve clip secures at the bottom of the valve, and the control valve clip secured about half way down the valve.

This completes the repair. If you need any further guidance on this install or would like to purchase the parts shown please call us on +44 01843 446643 or email us at sales@x8r.co.uk. Please also check out our instruction guide on YouTube. www.x8r.co.uk

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