

Airtail I.A.S. Suspension System for Harley Davidson Setup Instructions & Troubleshooting Guide Compressor Kit

Note: Please read and follow the Installation Instructions first, then read and follow these Setup Instructions completely before riding the motorcycle.

Caution

The use of "lowering kits" on Progressive Suspension Airtail I.A.S is not recommended- or necessary. Use of a "lowering kit" may void the warranty or damage the shock/motorcycle.

Progressive Suspension Airtail I.A.S shocks are designed to work on the OEM (Original Equipment) frame and swing arm. Use of these shocks on a frame or swing arm other than OEM may produce an unsatisfactory ride and void the warranty.

Lowering your motorcycle will decrease initial ground clearance. The motorcycle will be lower to the ground and care should be taken, especially over bumps or in turns. Lowering a motorcycle can change the handling characteristics. Always use extreme caution when riding after a change is made and take time to get accustomed to any handling change.

How it works...

Progressive Suspensions Airtail I.A.S. suspension system is like no other motorcycle suspension. Though the dampers used on this system have vastly improved damping, what makes this system unique is the dual air chamber design.

One air chamber, referred to as the "Bottoming Control" chamber, holds the bike up and keeps it from bottoming out. The other chamber, referred to as the "Ride Height control" chamber, pushes the bike down, lowering the ride height.

To vary the pressure, you can use compressed air such as that produced by a compressor (not to exceed 65 psi) or a high-pressure, low-volume manual pump (such as Progressive Suspensions part number GP3-100)

NOTE: With the bike sitting on the ground under its own weight (no rider on it), make sure the "Bottoming Control" chamber has at least 10 psi in it before riding the bike. Another thing to note is due to the "high-pres-

sure", "low-volume" nature of this system, each time you check the pressure in either one of the air chambers (manual fill or E.C.C. systems only) it will appear as though the pressure has dropped. This is due to extra volume of the pump/gauge, which can show a pressure drop of approximately 5 to 10 psi each time it is hooked up.

By varying the pressure in these chambers, you can generate forces that far exceed those generated by a conventional coil type spring. For this reason, it is extremely important that you follow the proper, two-step set up procedure to achieve the maximum performance from the Airtail I.A.S. suspension system.

Step 1: Set the Bottoming Control

This is the most important step and needs to be done first. This particular measurement procedure takes two people to complete properly. Ideally, this is done with the bike off the ground, upright and level with right side saddlebag removed (where applicable). With shocks, airlines and compressor kit installed correctly, pressurize the Bottoming Control chamber to 45 psi. (air will slowly bleed off from air pressure gauge, this is normal and does not effect pressure inside the shock chambers). This will "top out" the shocks. It is necessary to "bleed" the Ride Height chamber as you pressurize the bottoming control chamber, as pressure will build up due to change of volume.

Once the Bottoming chamber is filled to the correct pressure and the Ride Height chamber has been emptied, measure the vertical distance between the rear wheel axle and the fender or fender rail as shown below.



Our measurement fully extended is 11 1/2"
(your measurement may vary)

Step 1 (alternate setup)

With this measurement recorded, it is time to take the second measurement. Lower the bike onto the ground, do not release or add any air to either chamber. Have the appropriate rider(s) sit on the bike, bounce the suspension up and down slightly and let it settle under all the weight of the rider(s). Now take a measurement at the same location you did when the suspension was fully extended. You want a measurement that is 1" - 1 1/4" shorter than the first one, this is called ride sag. If the difference between the measurements indicates too little ride sag, let some air pressure out of the Bottoming Control chamber until you get the desired measurement. Or if you are sagging too much, add some pressure to the Bottoming Control chamber.



With bike on the ground and with rider weight, we released air from the Bottoming Control Chamber until we reached a measurement of 10 1/2"*** (1" lower than our first measurement)

Once you have achieved the proper ride sag, have the rider(s) step off the bike, put the bike on its center or side stand and pull the rear suspension to its full extension (Topped Out). Tap the Rocker Switch to pressurize the bottoming control chamber, the compressor should run for no more than a 1/2 second. Immediately note the air pressure you see in the positive chamber at this time. Record both measurements and air pressure; this will be your sag setting. When riding with a passenger or extra load a new sag setting must be determined using these same steps.

**This measurement may be different on some models.
The difference between the first and second measurement is what matters.

The alternate setup is ideal for a one-person sag setup. The precision of this setup is not that of the recommended first setup, therefore, ride quality may not be as satisfactory initially. With bike on side stand, pressurize the Bottoming Control chamber to 45 psi. while "bleeding" off Ride Height chamber air that has built up. Lightly lift up on rear end of bike to ensure shock is topped out. If for any reason the shocks have not topped out, continue to pressurize Bottoming Control chamber while bleeding Ride Height. Do NOT pressurize to more than 60 psi.

Now that the shocks are completely topped out, stand bike upright and release air from the Bottoming Control chamber until you see the rear end of bike begin to drop.

Check the pressure in the Bottoming Control chamber for a reference and note current air pressure. Test ride the bike and increase or decrease pressure to the Bottoming Chamber until a satisfactory ride quality has been achieved. Finally note the pressures in both chambers of the most desirable setup to help in an easy setup for your next ride.

Remember, to get accurate pressure readings for each chamber, first tap the rocker switch (1/2 Second) for the chamber you want to check, then read the gauge.

Step 2: Set the Ride Height

After you have set the bottoming control, you can now adjust the Ride Height chamber. This is a much simpler adjustment to make. Simply pressurize the Ride Height chamber until the bike is lowered to the desired height. To raise the height back up, release the pressure in the ride height chamber. Remember, the pressure in this chamber "holds" the bike down- the more pressure the lower it goes.

Though the bike may feel "stiffer" the lower you go, do NOT re-adjust the Bottoming Control chamber. Essentially, what's happening here is as you've reduced your wheel travel, you've proportionally increased the forces that keep you from bottoming out with what wheel travel you have left. If you do need to re-adjust the Bottoming Control chamber due to the addition (or subtraction) of a passenger or extra load, release the pressure from the Ride Height chamber first, then repeat step 1.

Fine Tuning

The Airtail I.A.S. suspension system allows for virtually unlimited adjustment when it comes to spring forces; and it's much easier to adjust. Small adjustments can make big differences. We suggest making your adjustments in 5 psi increments. We have found for the smoothest ride, you'll want to run your Airtail I.A.S. with the 1" rider sag (as explained in step 1) and no air in the Ride Height chamber. This may produce a slightly lower than stock ride height even with minimal air in the Bottoming Control chamber. Riding with 10 psi or less in the Bottoming Control chamber may lead to harsh bottoming conditions and is not recommended. Each rider is different and has their own personal preference. It will be worthwhile to do some experimenting to find what works best for you. Once you know and understand how your Airtail I.A.S. suspension system works, you'll be able to easily adjust it to yield the best possible ride for you, under any circumstance.

For a balanced suspension, we highly recommend installing a pair of Progressive Suspension fork springs or fork lowering kit. Also, you can make you Airtail I.A.S. suspension system even easier to adjust by adding Progressive Suspensions "E.C.C" (electronic control center). Visit www.progressivesuspension.com for further information.

Airtail I.A.S. Troubleshooting— Compressor Kit

Certain questions and issues may arise while installing the Airtail I.A.S.

Please let this guide be the first step in troubleshooting. Any problems or questions not resolved or covered by this should be directed to Progressive Suspensions technical support at 714-523-8700. Thank you.

1. Nothing happens when switch is activated.
2. Pump works intermittently.
3. Bike goes up regardless of which direction switch is rocked (sometimes intermittent)
4. Bike won't stay up.
5. Bike won't stay down.
6. Bike won't go all the way down.
7. Bike won't go all the way up.
8. Pressure in gauge drops (slowly or quickly) after I pressurize the system
9. Even with maximum pressure in bottoming control, bike still bottoms out.
10. System seems to work fine (goes up & down and holds pressure) until ridden.
11. When I rock the switch, the fuse immediately blows.

1. Problem: Nothing happens when switch is activated
Possible Cause(s) Dead battery, incorrect wiring, blown fuse, faulty rocker switch, faulty pump

Solution: Check battery for proper voltage. If proper voltage is present, check fuse and wiring for secure and correct connections. Check to see if battery voltage is getting to the switch via the red wire(s). Then, while rocking the switch either direction, check to see if voltage is getting to the pump via the orange wire(s). If voltage is not lost, make sure the connection between the pump and the switch (orange to orange) is secure and also make sure the pump's ground wire is grounded. If this is true and pump doesn't work, then it may be defective. Contact technical support.

2. Problem: Pump works intermittently
Possible Cause(s) Loose connection, faulty rocker switch.

Solution: Check battery for proper voltage. If proper voltage is present, check fuse and wiring for secure connections. Check to see if battery voltage is getting to the rocker switch via the red wire(s). Then, while rocking the switch in either direction, check to see if voltage is getting to the pump via the orange wire(s). If voltage is lost in either of the two directions, then the rocker switch is defective.

3. Problem: Bike goes up regardless of which direction switch is rocked (sometimes intermittent)
Possible Cause(s) Faulty rocker switch, faulty solenoid switch

Solution: Check battery for proper voltage. If proper voltage is present, check fuse and wiring for secure and correct connections. Check to see if there is consistent voltage coming from the rocker switch via the black wire when you rock the switch ONE of the two directions (preferably down). If consistent voltage is not present, the rocker switch is faulty. If voltage is present all the way to the solenoid switch, and the solenoid is properly grounded, then the solenoid switch may be faulty.

4. Problem: Bike won't stay up
Possible Cause(s) Air leak

Solution: The bottoming control chamber is what holds the bike up. Assuming that no lines are crossed (bottoming control airline inserted in a ride height "T" fitting or vice versa) then the problem should be narrowed down the bottoming control airlines, fittings and valves. First, check the both of the "T" fittings. This can be done using soapy water. If air leak is present, bubbles will form. If bubbles are found, disconnect airlines, re-cut and install (see Airtail I.A.S. Installation Instructions for tips on cutting and inserting airlines). In the event of finding and repairing an air leak, continue in checking all airlines, fittings and valves as there may be more than one leak contributing to the problem. Other pos-

sible leak areas include airline connection to switch manifold release valve and solenoid air outlet (larger of the two valves).

5. Problem: Bike won't stay down

Possible Cause(s) Air leak

Solution: The ride height control chamber is what holds the bike down. Assuming that no lines are crossed (bottoming control airline inserted in a ride height "T" fitting or vice versa) then the problem should be narrowed down the ride height control airlines, fittings and valves. First, check the both of the "T" fittings. This can be done using soapy water. If air leak is present, bubbles will form. If bubbles are found, disconnect airlines, re-cut and install (see Airtail I.A.S. Installation Instructions for tips on cutting and inserting airlines). In the event of finding and repairing an air leak, continue in checking all airlines, fittings and valves as there may be more than one leak contributing to the problem. Other possible leak areas include airline connection to switch manifold release valve and solenoid air outlet (smaller of the two valves).

6. Problem: Bike won't go all the way down

Possible Cause(s) Operator error, travel obstruction, non-OEM frame and or swing arm, faulty or damaged shock(s)

Solution: To lower the bike all the way down (for show purposes ONLY) one must simultaneously pressurize the ride height chamber while bleeding off all the pressure in the bottoming control chamber. If this is done and the bike still doesn't go all the way down, check for some sort of travel obstruction or binding (is something hitting the shocks or swing arms?). Some sort of obstruction or binding is more likely if the system is installed on a non-OEM (non-Harley-Davidson) frame and/or swing arm.

7. Problem: Bike won't go all the way up

Possible Cause(s) Operator error, travel obstruction, faulty or damaged air shock

Solution: To raise the bike all the way up (for sag setup) one must simultaneously pressurize the bottoming control chamber while bleeding off all the pressure in the ride height chamber. If this is done and the bike still doesn't go all the way up, check for some sort of travel obstruction or binding (is something hitting the shocks or swing arms?). Some sort of obstruction or binding is more likely if the system is installed on a non-OEM (non-Harley-Davidson) frame and/or swing arm.

8. Problem: Pressure in gauge drops (slowly or quickly) after I pressurize the system

Possible Cause(s) by design (nothing wrong)

Solution: As stated in the instructions, this is normal.

The gauge only reads the pressure going into the shock- at the time the shock is being pressurized. As soon as

the rocker switch is released, the gauge is "out of the loop" and vents back to atmosphere (either slowly or quickly depending on which side was last adjusted).

9. Problem: Even when I put maximum pressure in the bottoming control I still bottom out

Possible Cause(s) Lack of initial volume in bottoming control chamber, bike severely overloaded

Solution: Unload the bike as much as possible in your situation. (Best-case scenario, bike off ground completely) With bike unloaded, pressurize the bottoming chamber. As with any air spring, the effective rate is a result of not only pressure, but volume as well. For example, if the system starts with no pressure in the bottoming control chamber and two people sitting on the bike, the bottoming control chamber has very little volume. If you put 50 psi into that limited volume the shock will not raise the bike that much - nor will it do much to keep it from bottoming. However if the two riders get off the bike and put the same 50 psi into the bottoming chamber it will not only raise the bike and keep it from bottoming, it will likely be too stiff to ride. Another way to look at it is it takes a lot more pressure to inflate an air mattress if you're laying on it.

10. Problem: System seems to work fine (goes up & down and holds pressure) until ridden

Possible Cause(s) Incorrect plumbing, faulty or damaged check-valve, faulty or damaged shock

Solution: Make sure the bottoming control airlines (airlines that are black in color) are connected properly to appropriate "T" fittings and to the LARGE check valve (located on the pump assembly). If it's incorrectly connected to the smaller check valve, under normal use the shock will generate pressures above what the smaller check valve was designed for- which will bypass and or damage the smaller check valve, allowing the bike to go down. If the plumbing is correct, the problem could still be a faulty LARGE check valve, though this is not likely. Even less likely, but possible, would be a seal in the air shock that only leaks when it sees normal operating pressures (which are much higher than the compressor generates).

11. Problem: When I rock the switch the fuse immediately blows

Possible Cause(s) Incorrect wiring, faulty or damaged pump

Solution: Be sure the wiring connections are correct. A common wiring error is when the black wire coming from the rocker switch is plugged into the black wire going to the ground- it should go to the solenoid switch. If all the wiring is correct and there are no shorts ("hot" wires directly contacting a ground) anywhere, it's possible the pump is faulty or damaged (though not likely).