

Basic Air Shifter Installation Instructions

Read Instructions Carefully. Look At Diagrams of Components Before Installation. These are general instructions and not model specific.

Caution: After Installation DO NOT attempt to engage transmission using the air shifter without engine running. Doing so can cause transmission damage. Never operate air shifter while motorcycle is on a swing arm motorcycle stand. Doing so can cause injury or death.

Drawing: Look at drawing to become familiar with the basic air shifter components and basic plumbing.

Fittings: All fittings have been installed loosely in the correct location/ports they need to be in to operate correctly. The air gauge and air filler fittings are to be assembled as well and can be remotely located for ease of access. You will need to apply thread sealer or Teflon tape to prevent air from escaping around port threads. These are small fittings so do not over tighten them as you could twist them off in the port. These are quick release fittings. To install the air shifter line you will just push the air shifter line in until it bottoms out and gently pull backwards. This will lock the air line in place. To release gently push down on the outer ring of fitting while pulling line out.

Air Line: Your kit comes with approximately 10 feet of black air line. Keep the air line away from heat sources. Route the line away from engine heat and never allow it to lay on valve cover, engine block, header, or mechanic linkages, ect. Pay attention while you decide how you want it to route to keep it away from items that can chafe the air line or wear a hole into it.

Shift Cylinder: The unit attaches to the shift linkage or pedal and engages the transmission on the shaft end. The other end will need to be mounted in a fixed but not solid manner. It can not be bolted down solid it will need a little free play so it will not bind up. The cylinder must pivot freely through the shaft travel. We do offer air shifter brackets and or shift cylinder mounts for some applications and they can be purchased at www.spencercycle.com. If you do not have a bracket or mount you will need to fabricate your own. The shift cylinder has 2 inches of travel and when connected to the shift lever it must extend 1 inch (half of it's travel) when the pedal is in neutral. You will need 1 inch of travel in each direction for downshifting and up shifting. Ideally when shifting you should have 1/16 to 1/8 of shift cylinder rod travel remaining. This will make sure that you are getting complete shifts. The shifter can be in a push or pull configuration. This is controlled by the fitting location on the shift cylinder. The port closest to the shift cylinder rod will retract the shift cylinder. The port near the end of the cylinder body will extend the shift cylinder. DO NOT plug or block off the unused hole. One should have a fitting and the other will remain open.

Electric Solenoid: This is the heart of the system. It keeps air in the tank and when the solenoid is activated by a push button you use to shift with it release the air to the shift cylinder. This solenoid should be mounted in a vibration free area and a area that is not or does not become wet. You can mount it close to the shift cylinder as you want or as far, but do not get to far way from the shift cylinder as this can effect the quickness of the shifting action. A general rule of thumb is to keep the solenoid no more than 15 inches away form the shift cylinder is possible. The solenoid has 3 ports. We assemble the fittings in the correct ports for you. The "T" fitting can be used to tee off a gauge to a remote location on the motorcycle. Never plug the unused port. This will not let the solenoid work correctly. A maximum of 120psi can be used with the electric solenoid. Any more than this can and will damage the unit. You do not need more than 120 psi to shift the motorcycle.

Wiring: The solenoid is a 12v unit and operates off a 12v power source. It has two black wires coming out of it. Either wire can be connected to a 12v power source. The other will be connected to a ground source. Wiring of the solenoid into your harness or aftermarket air shifter harness is something that you will need to do or have done by a professional. We also offer the harness for some models of motorcycles if you purchased a kit that did not include this.

Ignition Kill: Modern sport bikes use electronic engine kill boxes to interrupt the ignition system so as to unload the transmission for a few milliseconds so the air shifter can shift the transmission. We do sale these if you purchased a kit did not included one. Older style motorcycles use a analog style kill. Many newer bikes have ECU's that can be user programmed as well as modern Dynojet Power Commander offer this ability. In any case you will need to interrupt the ignition system for the transmission to shift while under acceleration.

Airtank: A air source is required such as a DOT approved air tank/bottle to provide air pressure for the air shifter system to operate. The air tank is a simple set up. A air fill valve is for the filling the tank. Choose a outlet port to connect to the "in" port of the solenoid. The other port can be used for a psi gauge location as shown in the diagram below.

Basic System Layout:

