

## Pingel® All Electric Speed Shifter Kit #77405 Universal ATV Installation Instructions

***Read all instructions thoroughly, look at photos and all components before attempting installation. This product is not designed or intended to be used as an assistive device for any particular disability.***

All the components of this All Electric Speed Shifter Kit have been assembled and tested as a unit before leaving our factory and have been found to be in working order at the time of shipping. **We strongly recommend that you bench test this unit following the directions included on the separate page.** Installation of this kit requires detailed knowledge of the ATV model, its electronics and mechanics. It is assumed that the installer has access to the proper tools and a working knowledge of them, test equipment (such as a volt meter), and factory service manuals. The following instructions must be read in their entirety and any questions should be answered prior to attempting installation. Incorrect installation will result in damage to Electric Speed Shifter components. If after reading the instructions you do not feel comfortable installing the kit, please find a qualified technician to do the installation. Installation time is 2-3 hours.

### **Disconnect negative battery cable before attempting any work on ATV.**

#### **INSTALLATION OF DUAL BUTTON HANDLEBAR CONTROL:**

Loosen the clutch perch and slide it toward the steering shaft so there is at least 5/8" between the left factory switch housing and the clutch perch. Disassemble the switch housing. Looking at the inside of the switch housing you may notice a locating pin on the housing that fits into a hole in the handlebar. If this locating pin is present, use a drill bit the same diameter as this hole, drill a new hole in the handlebar 5/8" towards the steering shaft from the original hole then move the switch housing to the newly drilled location and tighten. If the locating pin is not present, just move the switch housing towards the steering shaft 5/8" and tighten. Remove the left handgrip. Note: WD-40 sprayed inside grip will aid in removal. This is also easiest done with the switch housing removed and swung out of the way.

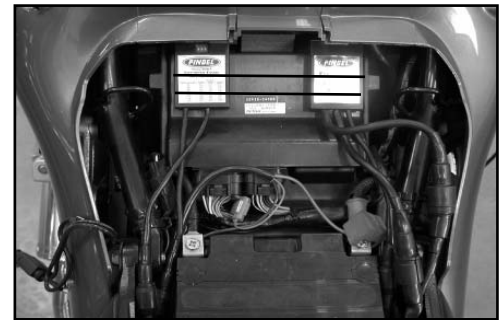


Slide the clutch perch as close to the factory switch housing as possible and retighten the clutch perch. Install the dual button handlebar control on to the handlebar as close to the turn signal switch housing as possible and tighten the set screw located on the backside of the dual button handlebar control. Reinstall the handgrip back onto the ATV securing it with some type of grip glue.

Route the cable from the dual button handlebar control neatly along the handlebar and to the final location of the Pingel control module. The photo to the above right is an installed example.

#### **INSTALLATION OF CONTROL MODULE AND FUSED WIRE HARNESS:**

Mounting location of the control module: we found that in most installations mounting the control module under the seat is a suitable location, as shown in photo. **Note:** the control module has optional Velcro to use on the bottom of the box to secure it. The wire assembly previously run from the handlebar control will now be connected to the control module. The handlebar connector has 4 pins and should be connected to the appropriate male receptacle on the control module.



The large 4-pin connector coming from the control module should be connected to the large 4-pin connector from the fused wire harness. The small 3-pin connector on the fused harness is used for the electronic engine kill module. There are 3 loose wires coming from the fused wire harness; the black (negative) and large red (positive) go directly to the battery, the small red is for switched 12v power. The large red and black wires should be cut to the shortest length needed to reach the battery posts which will give maximum power for the Electric Speed Shifter kit. **Note:** leave the small red wire as long as possible until the next step. Solder the ring terminals provided onto the cut ends of the large red and black wires then attach them to the battery posts, black to the negative and large red to the positive. Find a wire that has switched 12v positive power. The small red lead can be connected to this wire. Cut the small red wire to proper length and use a blue quick tab connector provided to make this connection (soldering is preferred).

#### **INSTALLATION OF ELECTRONIC ENGINE KILL MODULE:**

We found that in most installations mounting the electronic engine kill module under the seat is a suitable location, as shown in photo. The module may be secured with the supplied Velcro to install on the bottom of the box. Insert the small male plug of the electronic engine kill module into the small female plug located on the fused wiring harness. Plug in the cable (included loose in kit) which has a two pin male rubber plug on one end and has no rubber plug on the other end into the small female plug of the electronic engine kill module.

The next step has two different ways to run the wiring, depending on if your ATV is fuel injected or not.

**Method #1** Non fuel injected models: Route the loose end (has no rubber plug) of the cable which was just plugged into the electronic engine kill module to the wire loom that comes from the stock handlebar kill switch. Note: Possession of the factory wiring diagram for the following procedure would be extremely helpful. You will need to locate the wire in this wire loom that comes from the stock kill switch and cut this wire in two, securing the red wire in the Pingel cable to the wire that has 12v positive when the ignition key is on. Note: Make certain that the kill switch on the handlebar is in the 'run' position when doing the test for voltage. Cut the cable to the correct length and use a blue quick tab connector provided to make this connection (soldering is preferred). Secure the remaining yellow wire in the Pingel cable to the other end of the wire which was cut in two. Secure this cable with the wire ties provided.

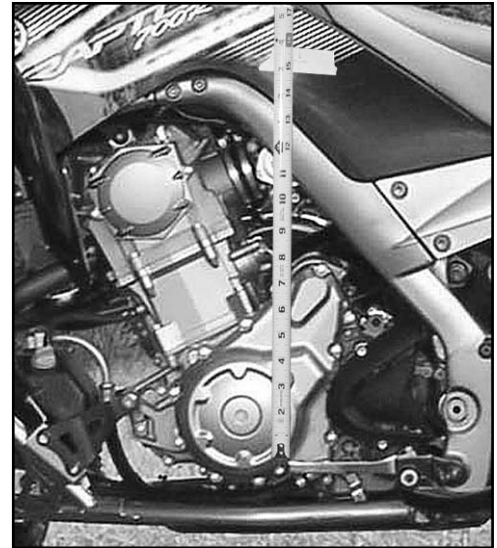
**Method #2** Fuel injected models: Route the loose end (has no rubber plug) of the cable which was just plugged into the electronic engine kill module to the wire loom that comes from the fuel injector. Note: Possession of the factory wiring diagram for the following procedure would be extremely helpful. You will need to locate the wire in this wire loom that the power to the fuel injector and cut this wire in two, securing the red wire in the Pingel cable to the wire that has 12v positive when the ignition key is on. Note: Make certain that the kill switch on the handlebar is in the 'run' position when doing the test for voltage. Cut the cable to the correct length and use a blue quick tab connector provided to make this connection (soldering is preferred). Secure the remaining yellow wire in the Pingel cable to the other end of the wire which was cut in two. Secure this cable with the wire ties provided.

**INSTALLATION OF ELECTRIC SHIFT CYLINDER:**

A steel shift cylinder support bracket with half of the Pingel shift cylinder clamp is supplied. This steel support bracket can be altered to fit your application. This steel support bracket needs to be mounted in a position so that the electric shift cylinder can pivot on the same plane as the shift lever arm plane, and so that the shift cylinder is 80-90 degrees to the shift lever pivot point, as shown in photo. Some installations may require a bracket to be welded or bolted to your existing shift lever; you must still maintain 80-90 degrees from the pivot point. See final page for sample installation photos. Install electric shift cylinder onto shift cylinder support bracket using supplied Pingel clamp and (2) 1/4-20 X 3/4" socket head cap screws. Just snug these bolts for now, as adjustment will be needed.



The rod end on the shift cylinder must be located in the middle of its side play. The point of mounting is the flat surface upon which the rod end bolts to the shift lever bracket, as shown in photos. Now attach the rod end to its mounting location.



**Safety Warning**

The electric shift cylinder has 2-1/4" of total travel. When installed you must use nearly all the travel of the shift cylinder, make sure that the travel in each direction is stopped by the shifter linkage and not by bottoming out the electric shift cylinder. This can be done by shifting the transmission completely in one direction and holding it. Undo the bolt through the rod end and see that the rod end can still move 1/32" in the same direction. Repeat for the other direction. Not following this procedure could cause damage to the shift cylinder and loss of shifting ability.

This electric shift cylinder gains power as the travel is used in each direction. If all the possible travel is not used, inconsistent shifting can result. Now with help from another person, find the furthest up shift position on the shift lever arm, by measuring to a set location like a decal on the fuel tank, as shown in photo. Measure each gear; rocking the ATV forward and backward or turning the rear wheel will assure full movement into the next gear. Once each gear has been measured, put the ATV in the gear with the longest travel. While holding the shifter in the full up position, loosen the two bolts in the Pingel shift cylinder clamp. This will allow the shift cylinder to slide up or down.

While still holding shift lever up push the shift cylinder down, the cylinder should just bottom out of its travel. Move the shift cylinder back 1/32" and tighten cylinder clamp bolts while holding the shifter in the full up position. Note that some applications may have a longer up shift than down shift or vice versa. The electric shift cylinder will still accommodate this difference as long as the complete travel of the shift cylinder is 2-3/16" up and down inclusive. This leaves 1/32" in each direction so as not to bottom out the electric shift cylinder. **Note:** If mounting the shift cylinder parallel and/or horizontal to the ground, you must install the Pingel shift cylinder clamp 3/4 of the way back on the shift cylinder or shaft binding will occur.



### COMPLETING INSTALLATION:

Your Electric Speed Shifter Kit installation should now be complete. Reconnect negative battery cable. In the interest of safety this is the recommended starting procedure: To arm the electric shifter, make sure the ATV is in neutral and pull in the clutch lever, then start the engine. With the clutch lever pulled in, push either button on the handlebar control and **hold it for five seconds**; release the clutch lever slowly (in case the ATV is accidentally in gear). The system is now turned on and will shift when either button is pressed. When the key is turned off, the power to the control module is disengaged so this procedure must be performed every time the ATV is turned back on. Pull in the clutch lever and check shifter movement by pushing either button on the handlebar control.

It will only be necessary to use the clutch when starting, stopping and finding neutral. Upshifting and downshifting will not require the use of the clutch. The operator may use the clutch manually without harm to any components.

### TESTING ENGINE KILL MODULE:

Unplug the electric shift cylinder from the control module. Take note of the positions of the dipswitches on the electronic engine kill module. Position all three of the dipswitches to the off position. Pull in the clutch lever (hold it in until the end of the test), start the ATV and put it into neutral. Arm the system by holding one of the buttons for five seconds as explained in the previous instructions. Rev the engine to approximately 1500-2000 rpm and hold it there, push either button and listen for the engine to miss as one of the buttons is pushed. If the miss is not present, your kill is not correctly installed. Recheck your connections, making certain all wires are properly connected per the wiring instructions. Reconnect the shift module after verifying the kill module is working properly. Return the dipswitches on the kill module to the position noted before the test was started.

### HOW TO ADJUST KILL TIME:

The factory preset kill time may not be correct for every application. Kill adjustment is set by moving the dipswitches on the electronic engine kill module to the desired time on the chart.

### ADJUSTING KILL TIME OR ADJUSTING CYLINDER:

Pull the clutch lever in, start the ATV and let it warm up. Arm the system by holding one of the buttons for five seconds as explained in the previous instructions and depress the downshift button. If the ATV stalls adjust the kill time shorter. Continue adjusting kill time shorter until ATV does not stall. Once the ATV is adjusted so it does not stall go for a ride and depress the upshift button while leaving the throttle open and do not pull in the clutch. The ATV should slide right onto the next gear; if the ATV goes into a false neutral or stays in the same gear, you will need to adjust the kill time longer.

Trail riding may require the electronic kill module to be set to a longer kill time.

**If no further adjustments need to be made, remove each clamp bolt on the shift cylinder and apply thread locker to the end threads, but remove only one clamp bolt at a time so as not to lose your adjustment of the shift cylinder location.**

If shifting up or down is not achieved, loosen the Pingel clamp on the shift cylinder and adjust it up or down 1/16" to 1/8" at one time. Retighten the Pingel clamp and test ride the ATV. This adjustment is fastidious and patience is required. **Remove each clamp bolt and apply thread locker to the end threads, but remove only one clamp bolt at a time so as not to lose your adjustment of the shift cylinder location.**

**Be certain that all of the round connectors are properly coupled and tight. If the ATV is not shifting or the kill module is not working, check that these plugs are properly seated and that the internal connector pins are making good contact with their sockets (i.e. no pins are bent). Also check that one of the pins has not moved off to the side of their respective sockets when pushing the plug together.**

**Note:** in the wire harness we have installed one 40-amp fuse for constant power. A spare 40-amp fuse is also supplied. In the event of an electronic engine kill module failure, a yellow jumper plug has been supplied to put on the lead attached to the module allowing the ATV to start and run.

**Prolonged repeated operation of the shifter (actuating the shifter repeatedly in rapid succession beyond normal use) can discharge the ATV battery and damage the shift cylinder and/or the control module and cause missed shifts. The normal battery takes 30-60 minutes to recharge after starting the ATV so use the shifter sparingly in this time.**

**If using this product in conjunction with nitrous oxide, the nitrous system must be killed with the ignition in order to prevent engine damage.**

**This unit is not waterproof. Do not subject it to pressure washing or extreme moisture.**

Installation of Electric Speed Shifter Kit still maintains OEM Shifting.

**If you have any questions please call 608-339-7999**

***Thank you for purchasing a Pingel Enterprise, Inc. product.***

## Items Included: UNIVERSAL ATV #77405 KIT

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|---|--|
| <ul style="list-style-type: none"> <li>1 - Electronic engine kill module</li> <li>1 - Electronic engine kill module wire leads</li> <li>1 - Electric shift cylinder support bracket with cylinder clamp (threaded)</li> <li>1 - Cylinder clamp (thru-holes)</li> <li>1 - Fused wiring harness</li> <li>1 - 7/8" handlebar button assembly</li> <li>1 - Control module</li> <li>1 - Electric shift cylinder</li> </ul> | <ul style="list-style-type: none"> <li>2 - Ring terminals</li> <li>3 - Blue quick tab connector</li> <li>10 - Wire ties</li> <li>1 - Tube - thread locker</li> <li>1 - 40-amp fuse</li> <li>1 - Yellow Jumper plug for emergency use</li> <li>1 - Jumper plug for reversing the switches on the handlebar control</li> </ul> |
|---|--|

## Sample shift cylinder installation photos



**2007 Suzuki LTR450**



**2005 Yamaha YFZ450**



**2008 Honda TRX450R**

**Dear Valued Customer,**

**Pingel Enterprise, Inc. would like to take this opportunity to thank you for purchasing one of our All Electric Speed Shifter Kits.**

**We would also like to know what you think of the product and how your installation went. Your assistance can help us overcome any technical issues that other installers may experience. You can reach us toll free at 1-888-474-6435 or email us at [info@pingelonline.com](mailto:info@pingelonline.com).**

**We are also requesting photos of your installation. Your photos may be selected for publication in the Pingel catalog or at [www.pingelonline.com](http://www.pingelonline.com). Photos may be submitted by emailing them to [info@pingelonline.com](mailto:info@pingelonline.com). When submitting a photo, please include the motorcycle model and year.**

**Thank you again for your purchase!**

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**Dispute Resolution:** All disputes, claims or controversies of any kind that may arise between you and Pingel Enterprise, Inc. shall be brought in the state court located in Adams County, Wisconsin. You agree that the sole venue and jurisdiction for such disputes shall be the above named court and hereby submit to the jurisdiction of that court.

*THANK YOU* for purchasing a PINGEL ENTERPRISE, INC., product. View our entire product line at [www.pingelonline.com](http://www.pingelonline.com)

