Installation Manual
Triumph
Rocket III
Version 2

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Introduction

This manual covers installation of the LegUp Landingear system by Chopper Design Services. This system should only be installed by a qualified technician, or those with above average mechanical skills. If you are not SURE that you can perform this installation, please contact us and we will help you find a qualified shop to assist you.

If you have been looking for a system that will keep your feet on the pegs, this is NOT the system for you! On the other hand, if a system that will relieve you of the weight of the bike and help you avoid balance problems as you approach a stop, LegUp is what you need.

Improper installation will void your warranty, so please be very careful!

Thanks for choosing LegUp!

Warranty

Chopper Design Services warrants the LegUp system for a period of 120 days from date of purchase. This warranty covers replacement parts and/or manufacturer defects. Incidental damages or costs are the responsibility of the purchaser.

Defective parts are to be returned to Chopper Design at the address below. Purchaser must contact Chopper Design to receive a Return Material Authorization, prior to returning defective parts to Chopper Design.

Abuse, improper installation or use, collisions or accidents, are not covered under this warranty. Replacement parts for this type of damage are available through Chopper Design.

Users of the LegUp system agree that Chopper Design is NOT responsible for personal injuries or damage to property arising from the use of the system. While we believe this system to be safe and reliable, the user is advised that use of LegUp is done so at the users' own risk. Use of the system implies agreement to the above statements. If you can't agree with the above, Chopper Design and its dealers would be happy to refund your full purchase price, before you use the LegUp System.

Chopper Design Services
1365 Bennett Dr #101
Longwood, FL 32750

407-834-5007
LegUp@LandinGear.com

Installation Instructions

The LegUp® system has many components. Pleased be sure you have them all before starting your installation.

COMPONENTS:

1) **Control Switch Box**

2) **Linear Actuator**

3) **On-board Computer Module**

4) **Proximity Sensor**

5) **Leg Support Stand**

6) **Leg/Wheel System**

7) **Hardware Bag**

8) **Actuator Bracket**

If you believe you are missing any parts, please contact Chopper Design at 407-834-5007, and we will rectify the situation.

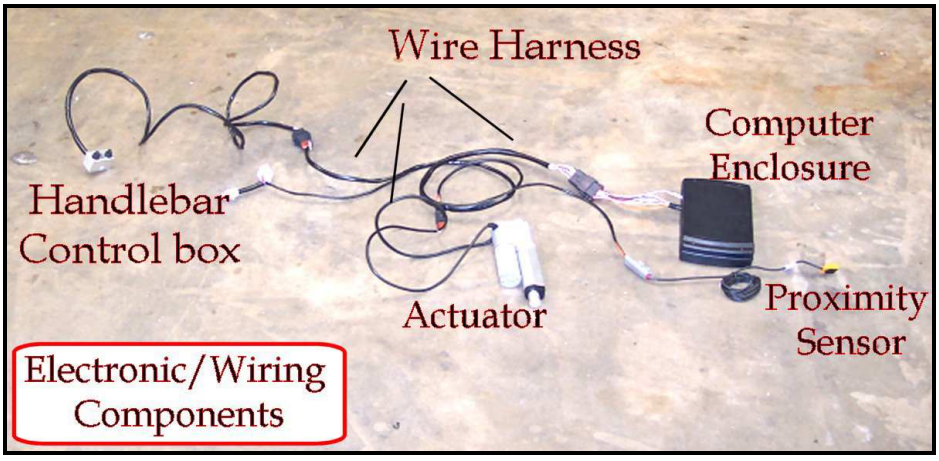


Figure 1

PREPARE FOR INSTALLATION

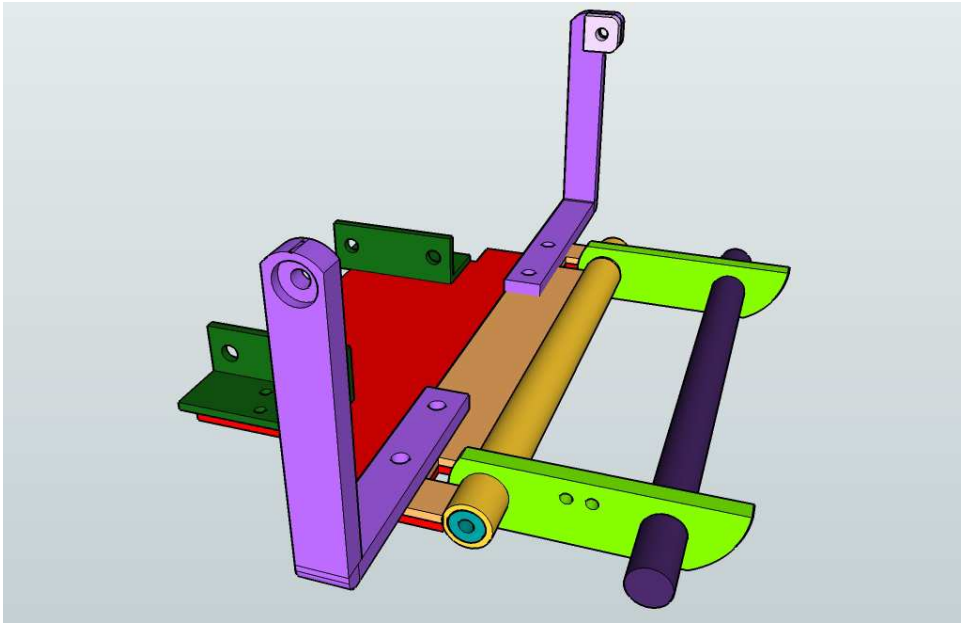
Place the motorcycle on an acceptable bike lift. You will need to keep the bike on its wheels for most of the installation, and jack the rear wheel off the lift for some portion of the installation. Make SURE the motorcycle is secure on the lift!

Remove the seat, plastic side covers, left and right muffler covers, and left chrome cover under passenger floorboard; they are not needed until the very end of the installation.

We are now ready to begin!

INSTALL LEG SUPPORT STAND

LegUp has developed a new, stronger attachment system which attaches to the Triumph Rocket III® via the bolt holes for the front floorboard supports, and the two bolts just forward of these supports. Remove the lower left bolt from the left floorboard support bracket, & the upper left bolt from the right floorboard support bracket.



Leg Support Stand

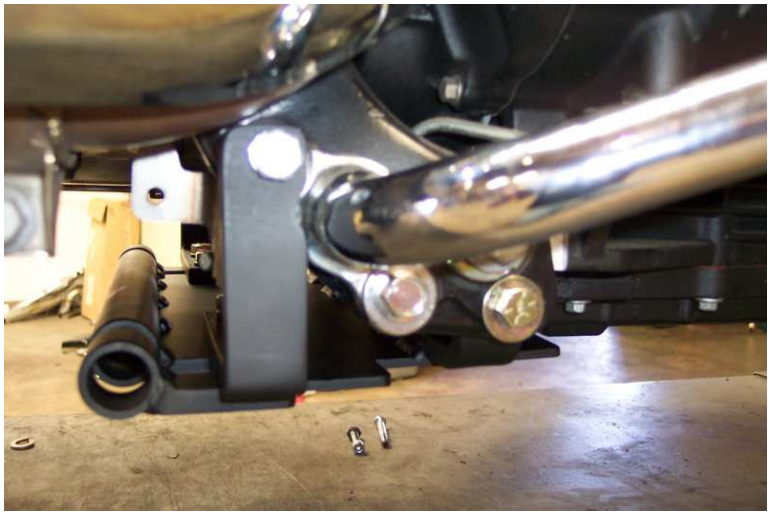
If you haven't already done so, install the uprights (purple above) to the plate. These uprights bolt to the plate on the top with (4) 3/8" bolts and lock washers. Once this is done, use a helper and gently slide the plate (red above) under the bike. The green brackets above will line up with the empty holes in the frame we use to secure the front of the plate.

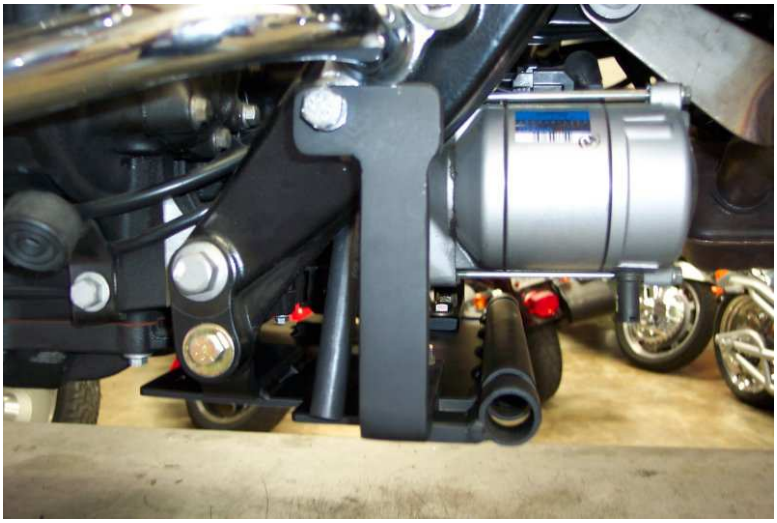
The next step is to swing the back of the stand up and line up the two uprights with the holes that held the bolts you removed from the floorboard supports (notice the right support has a curved clearance cut in it to clear the support!). Use 2 longer bolts supplied to go through the tall uprights, into the holes and threads on the bike (use some blue thread locker on these). DO NOT TIGHTEN YET! Next find 2 bronze colored bolts, 4 washers and 2 nuts. Put a washer on the first bolt, and push this bolt through the hole in the frame in front of the saddlebag support bar, and through the short forward uprights on the plate. Put a washer and a nut on the end, and repeat the same on the other side.

We want the uprights to be as perfectly vertical as they can be, so set the plate up this way and just snug these two bolts a bit. Now tighten all the fasteners a little at a time, while trying to keep these upright vertical. There are a total of 10 bolts to tighten/check:

- The (2) bolts holding the uprights
- The (4) 3/8” bolts holding the uprights to the support plate
- The (2) bolts that attach the front uprights to the frame.

See the pictures below for a better look as to what it all looks like once installed.



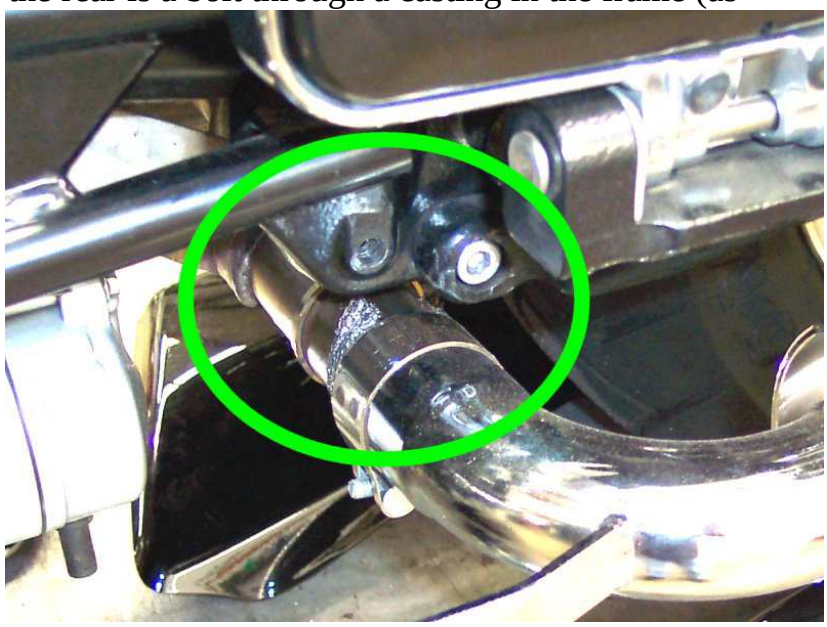


The long stainless steel shaft with the small bolts in the end will slide into the pipe on the support stand. Just set this aside for now.

Once the support stand is installed, we can move onto the installation of the actuator bracket.

ACTUATOR BRACKET

The actuator bracket mounts to the vehicle in two spots. The bracket is the big black thing with a rectangular box that holds the top of the actuator. The forward bolt for this bracket is the upper right floorboard support bolt, and the rear is a bolt through a casting in the frame (as shown inside the green circle below). We start by drilling out the casting to 11/32” or slightly larger. Just carefully open up this unused hole in the frame to allow us to us a bolt from behind into our bracket. Once this is done, remove the bolts from the top right floorboard mounting bracket, align our bracket with the hole and put the bolt back in with some blue thread locker (do not tighten yet!). Take the 1” X 5/16 inch bolt supplied and run it into the hole you just drilled from under the bike. Line up the bracket with the bolt, and tighten this bolt snugly (again blue thread lock). Now you can tighten the front bolt we installed a moment ago.



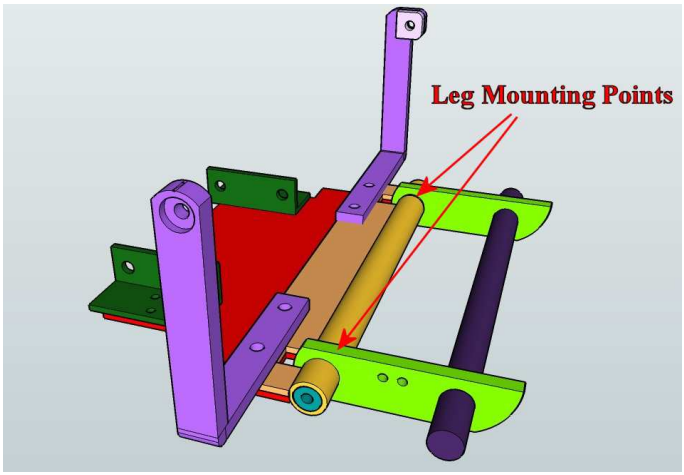
Depending on which actuator was supplied with your LegUp system, you will want to mount the proper actuator mount to the actuator bracket before installing the bracket.

Now we need to clearance the lower chrome side cover to go around this bracket. The photo to the left shows what we did. Just cut as little as you can and reinstall the cover when complete.

Now we can mount the wheels!

LEG/WHEEL ASSEMBLY

First remove the bolts from the stainless steel rod in preparation for mounting the legs. With help from an assistant, slide the Leg/Wheel Assembly around the rear tire (careful of the finish!), and align the Leg Mounting Points (green) with the slots in the Support Stand. If available a very small amount of 'Never Seize' on the shaft is in order here. Then start the stainless steel shaft in from one side through the tube on the support stand, and through the first leg mounting point and its bushing. The fit is tight, so take your time. Carefully work the shaft through the tube and the second leg mounting point. The shaft is inserted properly when it is inserted just past (approximately 1/8") the end of the tube. This distance should be about the same on both sides, but it is not critical as long as both sides are inside the tube. If you need to, you can tap lightly on the shaft (brass drift is preferred here). Once the shaft is in place, use a small amount of blue thread locker and install the (2) chrome bolts and washers on the end of the shaft to finish it off.



Make sure the legs move up and down without any binding!

MOUNT ACTUATOR

We have to mount the actuator to the bracket we installed earlier. We start by inserting a chrome 1/4X 20 bolt through the actuator bracket, then through one of the two small round spacers (looks like a thick washer), then through the actuator as shown below, then another spacer, and thread the bolt into the actuator mount hole (thread locker here please!).

You may notice that the bolt goes through the bracket on a slight angle. It is supposed to in order to get the actuator on the correct angle.

NOTE: The actuator mounts with the fat side down and the wires facing forward!

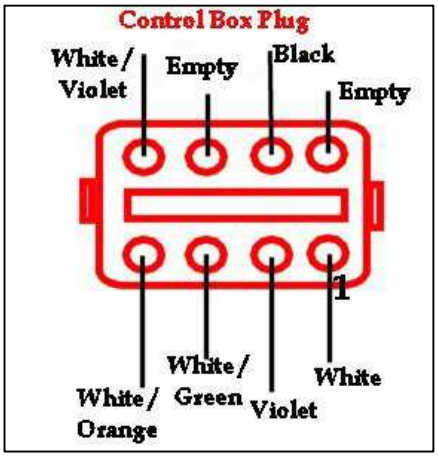
With someone supporting the wheel assembly, raise the legs until the mounting hole in the actuator is aligned with the actuator mount built into the leg system. Install the ¼" bolt through this mount and the actuator with Locktite on the bolt. (Some wiggling may be required!).

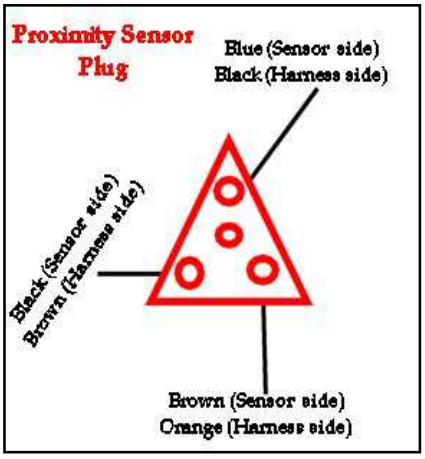
NOTE: ***If the actuator is too short to reach the other mount you may have to lengthen it using the system. Temporarily plug the wiring harness into the bike, attach the power plug connector to the plug on the bike right side (as described on page 15), and follow the directions for 'Maintenance Mode' in the 'Initial System Test' section below. Using what would be the left button on the switch box, just add a small amount of length to the actuator so you can align the mounts, then turn the bike back off.***

At this point you need to make sure that the mounts are in alignment and the actuator is not in any sort of bind!

CONTROL SWITCH BOX

NOTE: If you have a LITE System, Please refer to the addendum at the end of this manual, for differences between a Regular and LITE system. The Proximity sensor is NOT part of the LITE system! Ignore any references to the Proximity Sensor, its' mount & wiring.



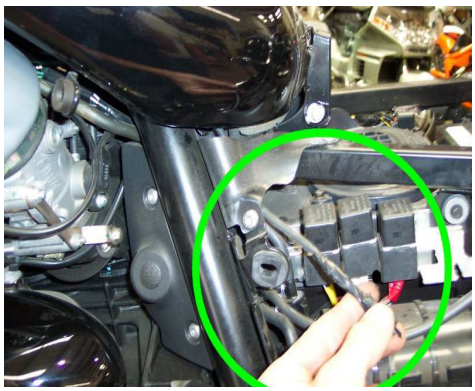


The switch box should already be mounted to a black mounting plate. The switch box mounts above the left grip and attaches to the left switch housing by a single bolt. Remove the bolt from left rear of the left switch housing using a Phillips screwdriver.

Using the bolt provided, slip the bolt through the black plate and thread it into the switch housing. This bolt needs to be snug as when the buttons are pressed, we don't want the housing to pivot on the bolt (picture below left). Square the box before tightening the bolt. Route the wire down the handlebar and leave it loose near the front forks to be routed under the seat. Use wire ties to hold the wire to the bar.

Find the proximity bracket (yellow little box on a black bracket) and run the wires up the left side of the front fork, to join the wires from the switch box. Remove the wires from the plug attached to the handlebar switch box as well as those attached to the proximity sensor wire. Wrap these nine wires together in tape and fish them under the tank to reach the seat area (shown below right, exiting the tank).

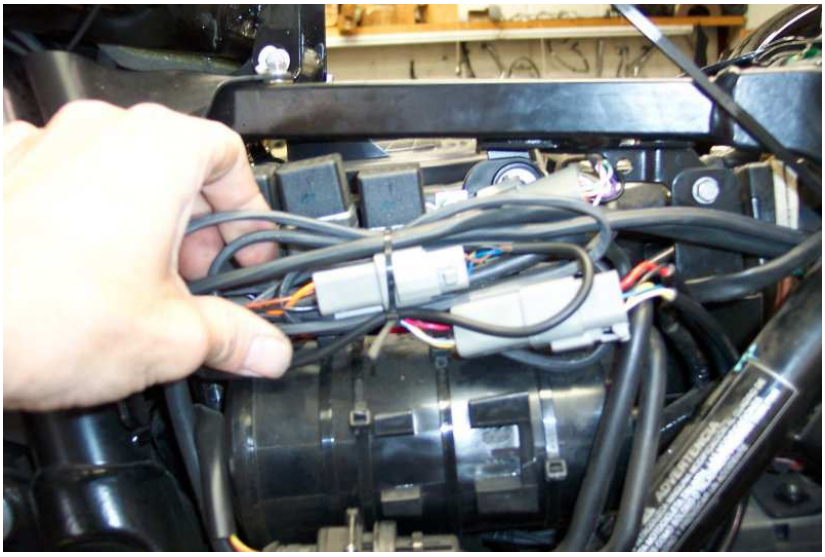
(Instructions on how to disassemble and assemble plugs can be found at: **http://www.whelen.com/install/131/13137.pdf**



Once this works out, carefully remove the tape to expose the silver pins. Route the wires carefully into the side cover area, and pull any extra slack into this area to be tied up later. Make sure the wires under the fork have enough room to allow the bars to be turned and that they don't get caught on anything. The next step is to reassemble the plugs. Use the diagram at the start of this section. Be very careful to make sure the wire colors all match those in the mating plug and the diagram. Now onto the rest of the wiring harness!

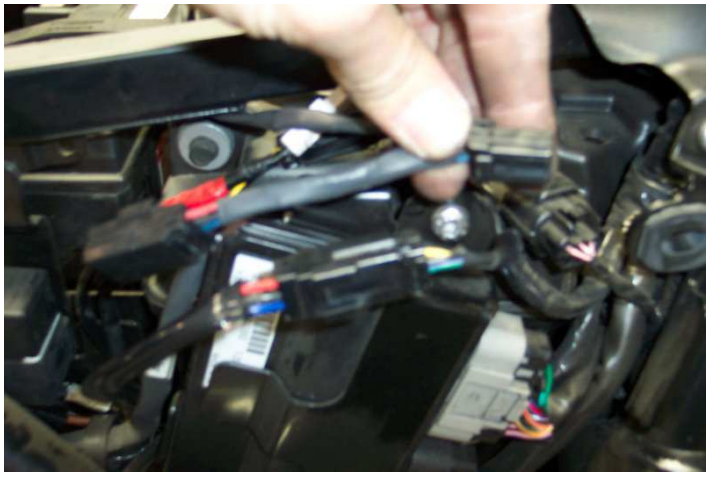
WIRING HARNESS

NOTE: If you have a LITE System, Please refer to the addendum at the end of this manual, for differences between a Regular and LITE Harness!



The next step is to route the wiring harness. The harness and the plugs are routed mostly under the left & right side covers.

Route the wires from the actuator up into this area, leaving enough slack to allow the actuator to move. The computers is attached to the twelve pin plug inside the bag, so leave some slack and runs the rest of the harness under the left side cover. Find the thin wire with two plugs on it (this is the power wire). Run this under the seat and over to the right side cover area, and attach it between the matching plugs there that run the wires for the rear fender (picture at right).



Now we can plug in the plugs from the handlebar switch, the proximity sensor (you put these plugs back together earlier) & the actuator to their mating connectors. You cannot plug these in the wrong way, so don't be shy!

Now would be a great time to carefully move the wires under the seat area around and tie them off so they don't interfere with anything.

The wire for the computer should be run into the bag and a small notch should be made to allow the wire to clear the lid without being cut. Use a bur or whatever you need to make this notch as shown to the left. Attach Velcro to the computer and place it against the inside of the bag, Leave a little slack so you can plug & unplug the computer and pull all the excess slack into the left side cover area, tying the wire down as needed. On to the Initial System Test!

INITIAL SYSTEM TEST

NOTE: If you have a LITE System, Please refer to the addendum at the end of this manual, for differences between a Regular and LITE system. Skip this section if you have a LITE System.

Turn your bike to ***ON Mode***. At this point, have a look at the yellow proximity sensor (it should be dangling by its wire near the front left rotor). The LED Should Not Be Lit. Take a metal object (screwdriver, wrench, etc) and hold it on the flat face of the sensor (it has a circle embossed in it). The LED should light up, and go out when you move the metal away. If not, check all your connections.

Next, press the rightmost pushbutton and hold it for at least 3 seconds. One or both LEDs on the switch panel should light up; we really don't care which at this point. If this occurs, you are doing well. If both LEDs are flashing (maintenance mode) you can skip the next step which is to press both buttons until both LEDs flash.

Next press both buttons for just an instant! If everything is working, the bottom or yellow LED on the switch box should flash, and the top LED should be out. The next step, and be careful here, is to touch the left button for a split second. The legs should move down just a bit. Touch the right button, and they should move up. With the bike on the lift, ***you have to be very careful here!***

If all of the above has occurred, raise the legs. Press and hold the right button until it stops, and turn the ignition switch off!

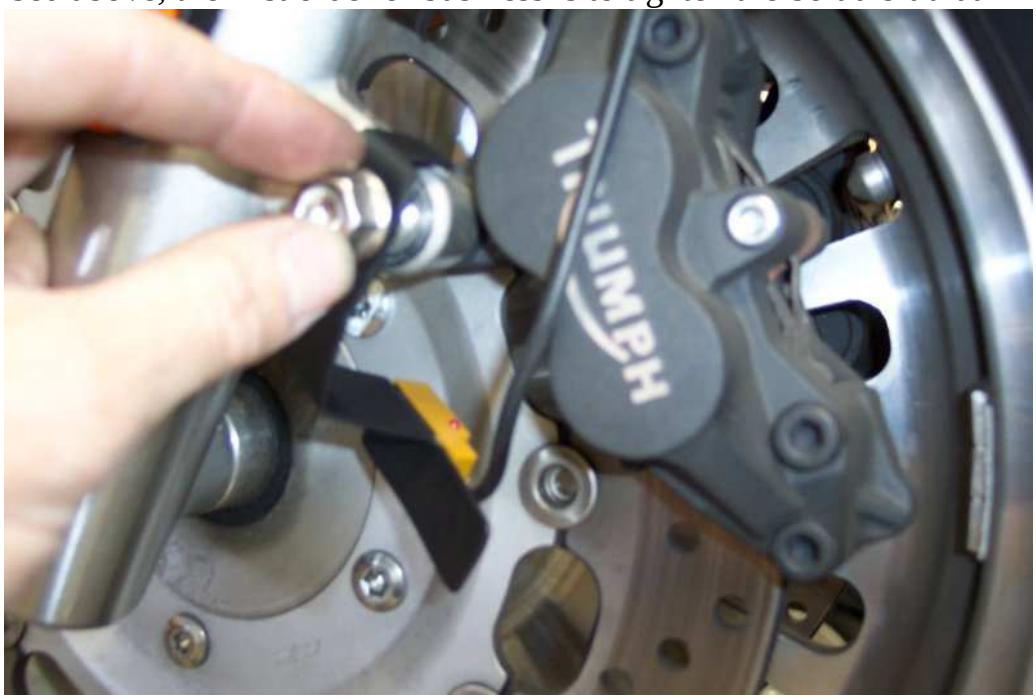
The test is now complete. Let's move on to mounting the Proximity Sensor.

MOUNT PROXIMITY SENSOR

NOTE: If you have a LITE System, Please refer to the addendum at the end of this manual, for differences between a Regular and LITE system. Skip this section if you have a LITE System.

This step is crucial!! Understand it before starting. The proximity sensor tells the system how fast the bike is traveling. The proximity sensor mounts to the lower bolt that holds the front left caliper to the forks. Remove this bolt, insert it through the proximity sensor bracket and reinstall with blue thread locker. Do not tighten completely yet! You need to jack up the front wheel so we can spin it to test the sensor and its placement. Take the bike off the lift or jack it in place on the lift, whichever is easier for you.

With the bike up as described above, the first order of business is to tighten the bolt a bit that holds the bracket until it is snug.



Turn the bike on. If the square part of the sensor is not lined up with one of the five bolts holding the rotor on, the LED on the sensor should be off. Line up the sensor with one of these bolts by turning the wheel. Move the bracket as needed to line it up to where the main part of the sensor is aiming at the one of the bolts, and is 5MM away from the bolt or less. What we are looking for is for the LED to go on and off as the bolts pass the sensor. Play with this by rotating the wheel back and forth while adjusting the bracket in, out, left or right until the light blinks consistently.

Once you feel you have the right place, tighten the bracket down and slowly rotate the wheel. Every time a bolt passes, the light should get bright when the bolt is nearby and off after it passes.

If this is not happening, you may need to get the sensor a bit closer to the bolts (5MM is a very small distance!). If you have to move the sensor closer, just loosen the bolt again, and re-adjust the sensor. No matter what you need to do, you MUST make sure that as the wheel turns, the light works as described above! Once you are certain, tighten the bracket down very firmly! Re-check that everything functions properly by spinning the wheel past all 5 bolts slowly and verifying that the LEDS changes as described above. The automatic retraction of the legs as well as their deployment RELIES on this sensor being placed perfectly!

Once satisfied with the mount, make sure the wire running up the fork leg has some slack, is tied in place, is clear of everything and can’t get damaged by anything.

FINISHING UP

Now it is time to reinstall all the covers and extra pieces that were removed to allow the installation. Get that saddlebag back on and the rest. Make sure that everything is clear. This would be a great time to double check all the bolts and see to it that none of the wires are in any kind of distress!

Once you are comfortable that everything is correct, get the bike off the lift so you can dial in the actuator, and adjust the wheels.

ACTUATOR ADJUSTMENT (Maintenance Mode)

NOTE: If you have a LITE System, Please refer to the addendum at the end of this manual, for differences between a Regular and LITE system. Skip this section if you have a LITE System.

Once you have the bike on the ground, turn the ignition to the accessory position and start the LegUp System (hold right button for 3 seconds). The system should enter maintenance mode automatically (Both LEDs Flash), but if it does not, enter maintenance mode manually (Both buttons for 3 seconds). With a helper nearby, straddle the bike, and hold it level. Hit both buttons for an instant to get the system in the "DOWN" setting mode (yellow LED flashing). Straddle the bike so your weight is NOT on the seat, hit and hold the left button until the wheels contact the ground and stop. Make sure that the suspension raises a bit as you do this. If not, the legs are not going down far enough, the bottom actuator mount may need to be moved left or right a bit to get the wheels all the way down (Contact LegUp for assistance if you need help with this). Once these wheels are down as described above, try to put both feet on the floorboards. The bike should be reasonably stable and you should be able to lean a bit in both directions without the bike falling over. The DOWN stop is now set!

Hit both buttons for a moment to get into the "UP" stop mode (top LED blinking).

Carefully use the right button to raise the legs. Have your helper let you know as you approach anything that may come in contact with the wheels or the legs. You also need to make sure the system clears pipes, clamps etc. If you can't make the clearance to allow the legs to come up all the way, you can set the up stop just below whatever is interfering (if not, you will likely set up a permanent rattle!) Hit both buttons when complete, and you will be done with these adjustment.

Now press the left button and the legs should lower. Hit it again and the legs should retract. If you are satisfied with these limits, you have successfully installed the LegUp System. Time for a test ride!

TEST RIDE

NOTE: If you have a LITE System, Please refer to the addendum at the end of this manual, for differences between a Regular and LITE system. Deployment and Retraction of the wheels is COMPLETELY MANUAL if you have a LITE System.

Get the bike to a clear paved mostly level area where you can test ride it. Start the bike, turn on the LegUp system and lower the legs. The first test should be done in a straight line. Put the bike in gear and slowly accelerate. You may notice that the bike tends to want to steer a small amount left or right. This is normal unless it is severe. Once underway, the top LED should flash at around 6 MPH, meaning the legs are retracting. You can lean on one wheel or the other as you leave to reduce any darting the system may be giving you.

Assuming the legs are retracted, you should try to deploy the wheels. As you come to a stop, the Green LED should be on. As you slow down (**almost stopped**), the Yellow LED should illuminate at the proper speed. Once it does (sometimes hard to see), hit the left button and put your feet down near the ground. The top LED should flash and you should soon feel the wheels deploying underneath you! Make sure you are ready to balance the bike! Uneven ground or lack of familiarity could make the bike want to lean one way or the other. With your feet ready to balance the bike, this should be no big deal. The slower you are going when deploying the wheels, the smoother the transition will be from wheels up to wheels down. Practice these maneuvers until you are comfortable with the wheel adjustments and the system operation.

SEMI-AUTOMATIC DEPLOYMENT: Another way to deploy the legs is to hit the left button while you are running at any speed over 10MPH with the wheels up. The bottom or yellow LED should start to flash. When you slow down to around 8MPH the wheels will start to deploy (see the red/green flash on top LED). Again prepare to put your feet down.

NOTE: The bottom LED Should not be LIT if the legs are up over 10MPH! In the event it is, the wheels will deploy instantly if you try to set them as above; this is dangerous! You MUST re-visit the sections on testing the proximity sensor. You should always be aware that this light should NOT be on if you are traveling at speed, and 'Arming' the system for deployment should only be attempted if the lower LED is Not Lit! Please see the User Manual for more information on Proximity Sensor Failure!

The next thing to try is to make a turn right after a dead stop with the wheels down. As soon as you start the bike moving, try a left or right turn immediately by leaning into that turn. You may find that you have to nudge the bike a little bit more than usual to get the bike to lean, and you won't be able to lean as far as you can with the wheels up. Once into the turn, accelerating will raise the wheels. You will hardly notice the wheels coming up unless you see the top LED blinking!

The next thing to try is slow speed maneuvering with the wheels lowered. In a straight line on level ground, you should be able to keep your feet on the floorboards and move the bike forward at very slow speeds (simulate stop and go traffic). I like keeping my feet near the ground during these maneuvers! You can also try small 'Trike' turns; keeping the bike upright at slow speed and making turns as you would in a parking lot. Be aware that if you get over the speed that the legs come up, they will!!! Another thing I like to do is donuts. Start out slow, lean the bike left or right, and make circles at very slow speeds (throttle on, rear brake on, clutch slipping… you know like the cops do!). This helps you get familiar with the wheels being on the springs and allowing a lean angle! Practice, practice, practice!! Enjoy your LegUp System!

LEGUP LITE - ADDENDUM

If you have a Lite System, there are a few differences in the wiring compared to our Regular system.

The plugs and their locations don't change at all! Instead of plugging in the computer to the twelve pin plug, the Relay-Pack gets plugged into this plug. The Relay-Pack will be attached with Velcro as the computer would have been in the same location.

On the LITE system there is no proximity sensor, so ignore the testing and mounting of this sensor, and realize that the three pin plug will be left without a mating connector. We keep this plug in the wiring harness in case you upgrade to a regular system in the future.

Using Your Lite System:

Unlike our Regular System, you don't turn the **LITE** system on, or adjust the legs as described in the **'Maintenance Mode'** section of the manual. When you turn your bike on, the LITE system is ready to go! Press and hold the left button to lower the wheels, press and hold the right button to raise them. No lights will flash; it is up to you to control the system manually!

Please use EXTREME Caution when using the LITE System! Keeping the wheels lowered at speeds over 9MPH can be dangerous. Since the system is manual, please don't allow its' operation to distract you from controlling the vehicle!

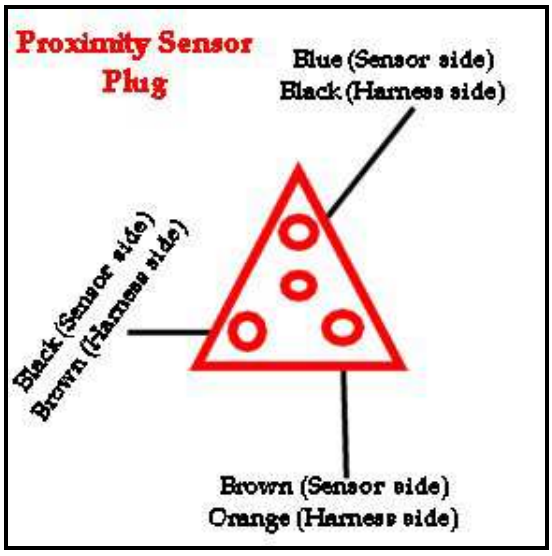
Upgrading you LITE System:

If you have a LITE System and have chosen to upgrade it to the regular system, there are just a few things you need to do. Unplug the Relay-Pack, and plug the computer in where the Relay-Pack was attached. Run the wire for the proximity bracket and plug it in, test it, and mount it, as described in the '**MOUNT PROXIMITY SWITCH'** section of this manual.

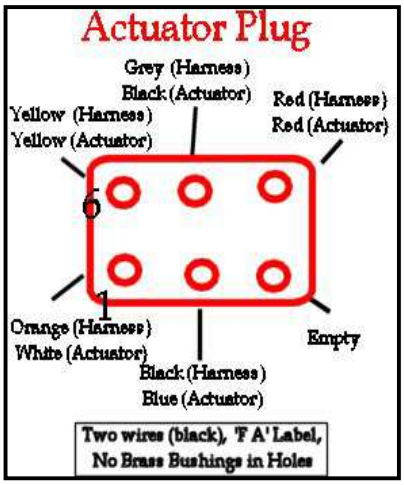
Once the new pieces are attached and plugged in, refer to '**ACTUATOR ADJUSTMENT (Maintenance Mode)',** earlier in this manual to set the lower and upper stops for the computer.

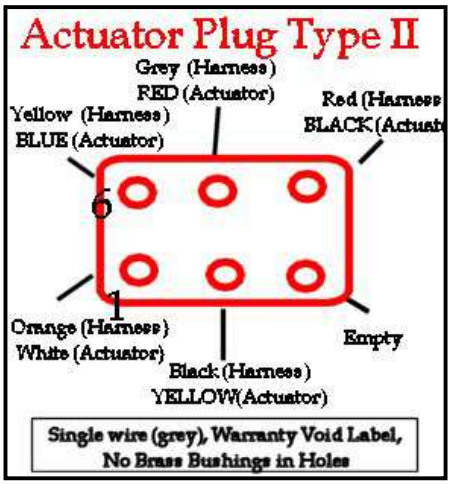
That's all it takes!

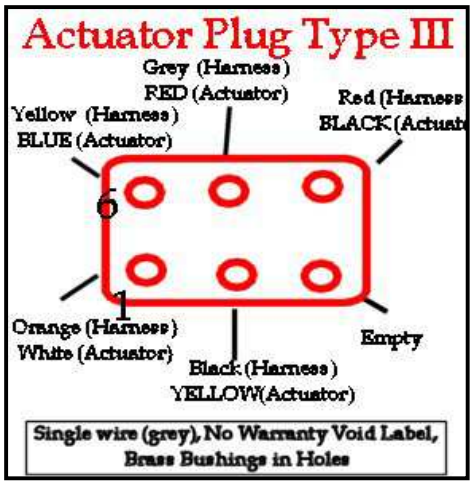
ILLUSTRATIONS



Wiring 1

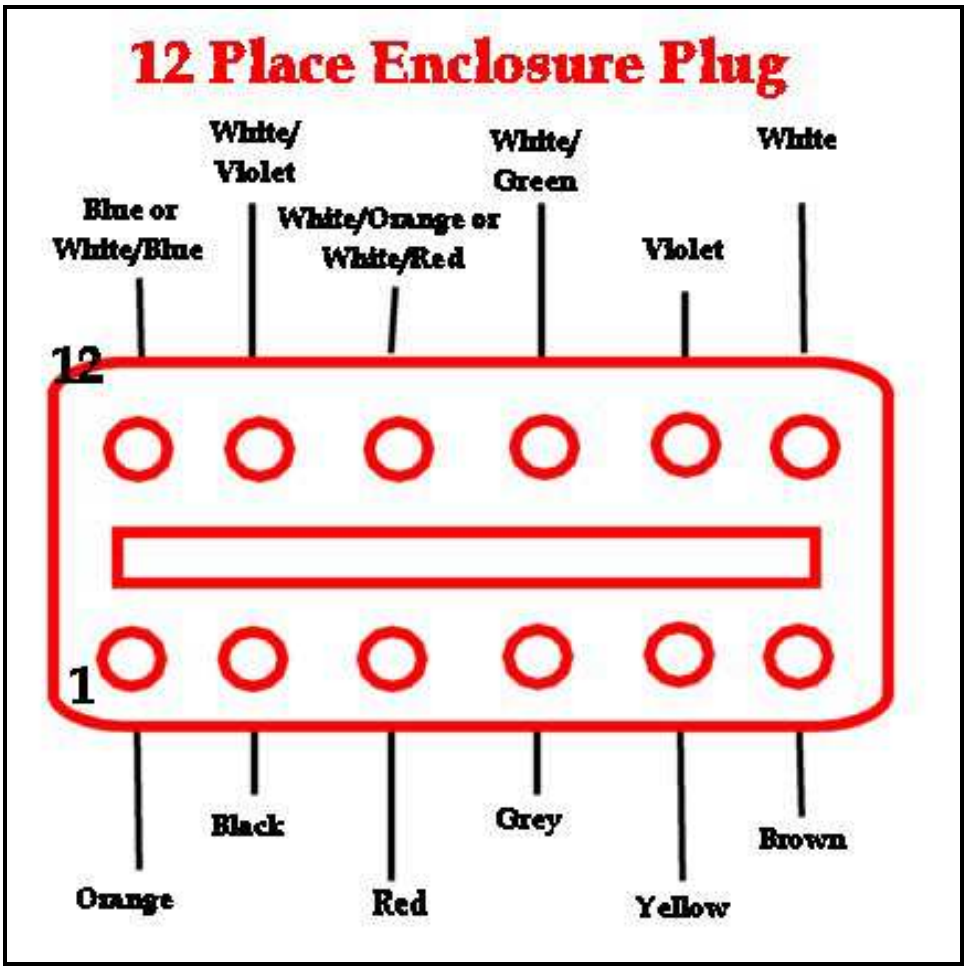






There are three different types of actuators with three different wiring configurations. Refer to the notes at the bottom of the pictures above so you can match your actuator with its wiring scheme!

Wiring 2


12 Place Enclosure Plug
White/
Violet
White/
Green
White
Blue or
White/Blue
White/Orange or
White/Red
Violet
12
1
Black
Grey
Brown
Orange
Red
Yellow

Wiring 3