

Triumph Street Triple – VSM Grip Heater Install

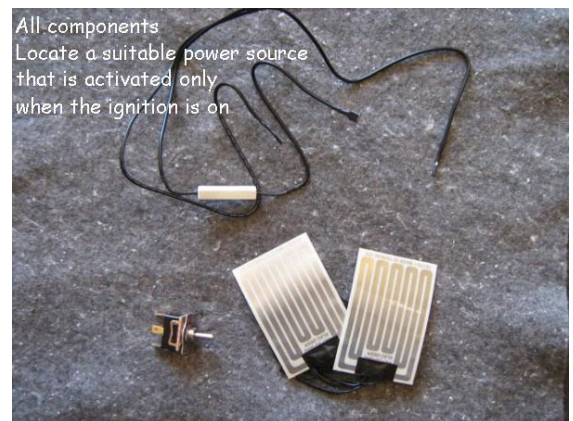
Introduction:

With winter fast approaching and with painful memories of last winter riding with the club it was time to do something about getting some grip heaters.

I wanted an OEM finish and where possible minimal cost. This is what I did.

Parts Used

1. VSM Grip heater kit \$59
2. 3 position double pole toggle switch \$4.50 – Jaycar
3. Waterproof cover for toggle switch \$1.50 - Jaycar
4. 1.5m 5mm shrink wrap \$6 – Jaycar
5. Assorted cable ties, automotive silicone, solder, electrical tape.

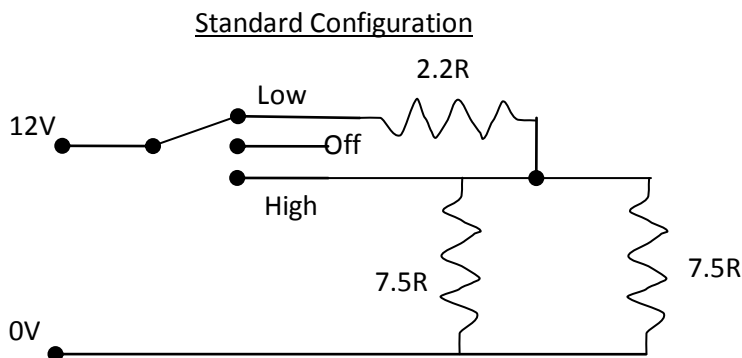


<http://www.vincestrangmotorcycles.com.au/gripheaters.html>

Step 1, Electrical Design

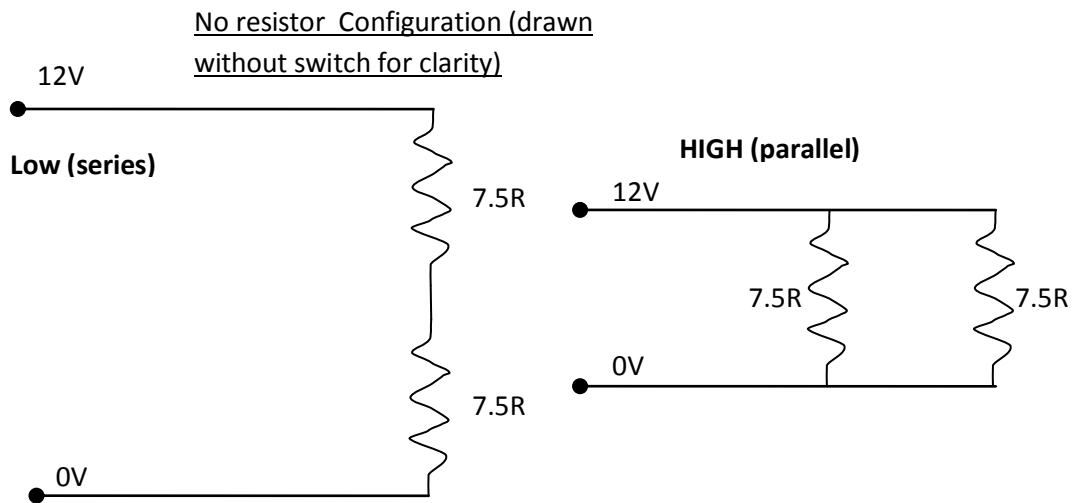
Ok, the first thing is to work out how your going to wire them. The standard kit has a resistor for the low setting and a [frankly huge] 3 position single pole switch to switch between high and low.

The circuit looks like this (the 7.5R resistors are the two heating elements):



However this circuit uses a large resistor that is hard to hide and needs to be kept cool. It also wastes power on the low setting.

An alternate idea is to use a double pole switch to connect the two grips together in series when low power is required and parallel when high power is needed.



The table below summarises the two configurations. Power is the power consumption of the two grips combined.

Configuration	LOW		HIGH	
	Power (W)	Current (A)	Power (W)	Current (A)
Standard (with resistor)	15.3	2.02	38.4	3.2
No Resistor (double pole switch)	15.0	0.8	38.4	3.2

I tried the no resistor switch configuration as it draws much less current on the low setting.

Step 2, Finding Power and Ground

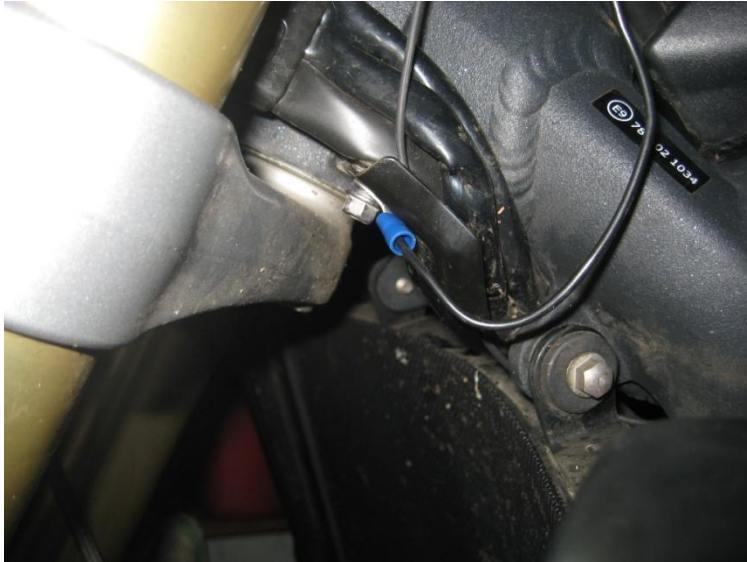
This depends largely on your bikes wiring. You will need a circuit that is capable of handling the extra 3-4amps. If not then you will need a relay and a trigger from an ignition switched source. For the Triumph the horn, indicators and Alarm (not fitted to my bike) are all connected to the same fuse



(10Amp) and are switched with the ignition. However the horn only draws 3 Amps and the indicators 1.5amps

The horn is near the front of the bike, which is good for wiring. You could also tap into the headlights but they are on a 20A fuse and will provide a lot of power before blowing, also it's no good for a short to take out your headlights also! Thus I connected the 12 wire to the positive side of the horn. You can test this by operating the horn; the connector which doesn't go to 0V is 12V.

I used a soldering iron to solder the 12V wire directly to the horn connector.



Next I used a crimp connector and connected the ground wire to a bolt which had a good connection to the negative side of the battery (use the resistance measurement on your multimeter). You can see this below, it was on a bracket near the lower triple clamp. The standard instructions recommend wiring straight to the battery but it's really not needed as the frame is grounded and has very low resistance. Note all the bolts on the handlebars do not have a good connection to the

battery due to the bearings and grease in the head stem. Then run the wires together in some heat shrink and up to the handlebars.

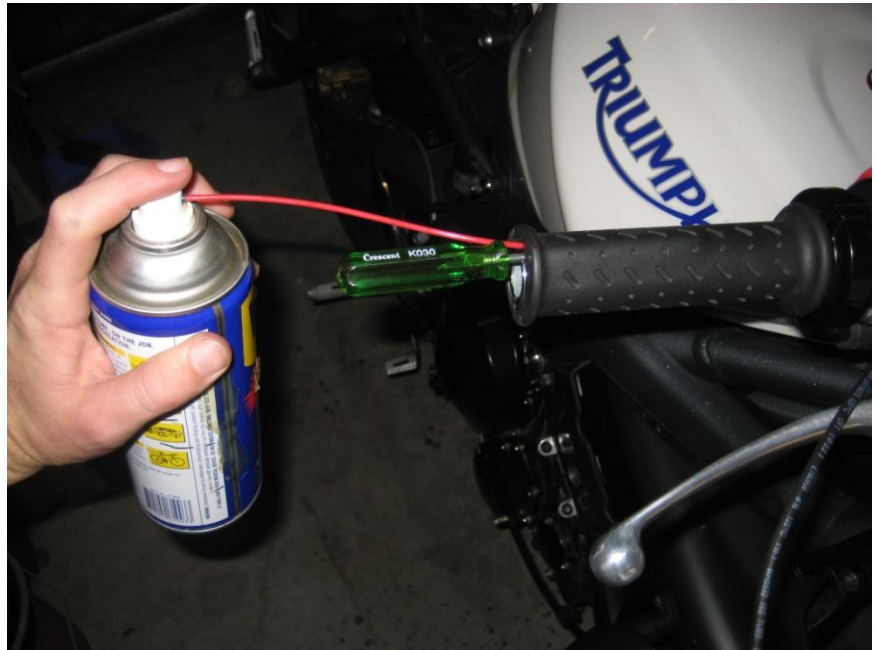
Step 3, Removing the old grips and installing the elements

There are lots of opinions on how to do this on the internet, however I found the best way was to use a bit of WD40 and a small screwdriver. By working the screwdriver around the inside of the grip and spraying WD40 inside, the grip came off quite easily. As far as I could tell there was no glue holding the standard grips on.

Don't try and hammer the grips off, you will damage the bars and the throttle tube.

After they were off I sprayed the grips and bars with brake cleaner and rinsed them with water to get all the WD40 off.

Once the surface is clean and dry stick the heating elements on. The glue is VERY strong so get it positioned right first. The throttle side is not big enough to go all the way around the grip so think where your fingers will go.



Step 5, Installing the Switch

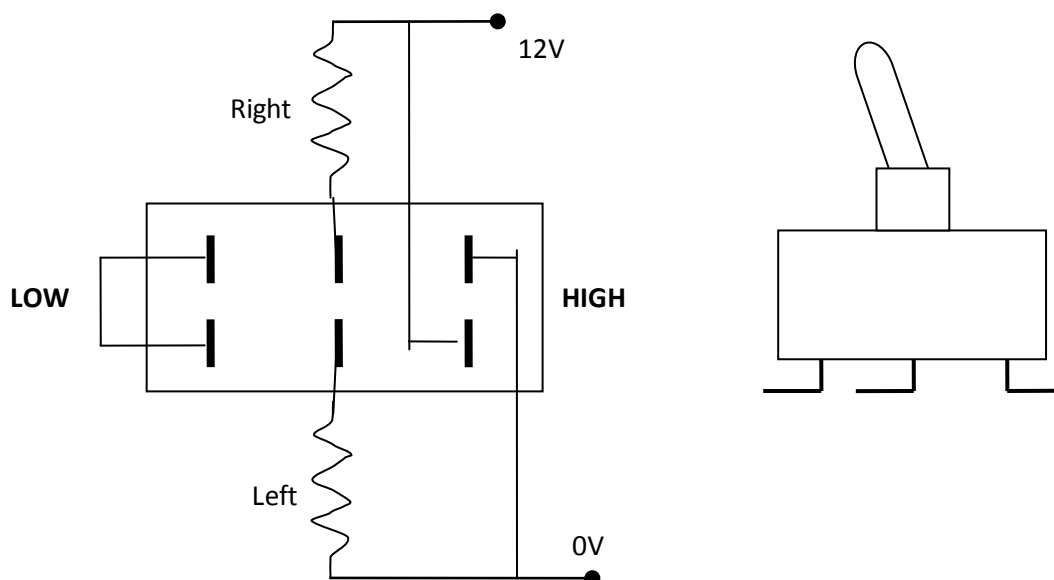
I wanted a factory look so I decided to mount the switch inside the left hand switch block. A few years back triumph had a headlight switch, but this was deleted and a blanking plate installed. I tried to find an original switch but no luck so I bought one from Jaycar. The first step was to remove the cover and using the dremel (or 7mm drill bit) drill out the slot.

Then I tested the switch for fit. Space was tight between the handlebar and the bottom of the switch so I had to bend the connectors on the bottom flat.

To achieve the connection I wanted the switch is wired as shown below.

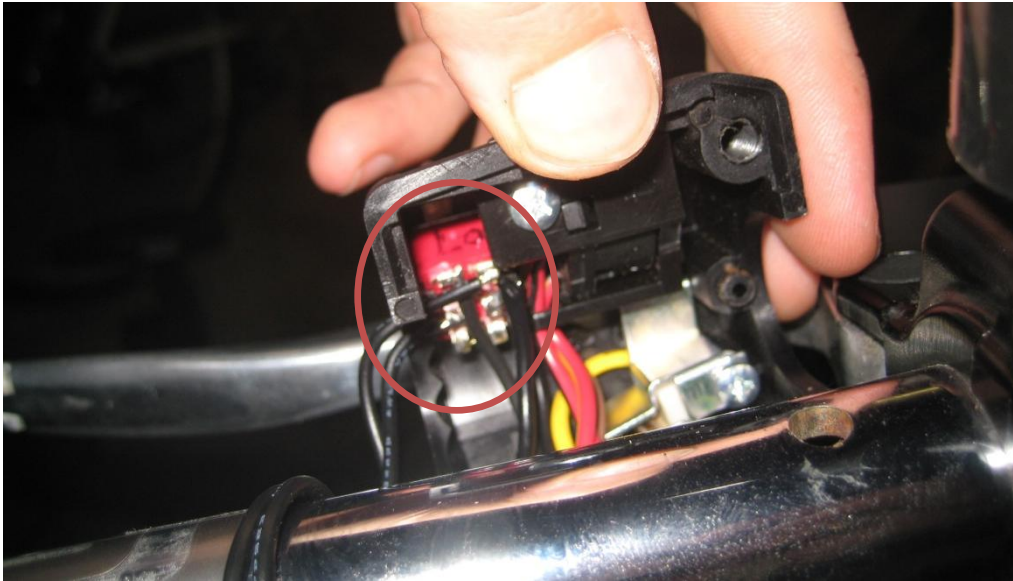


Switch Wiring



So to wire as shown above, 12V, 0V and one wire of the right hand grip are needed to be routed through the switch block. Both the wires from the left hand grip can be passed into the block by making a small hole just above the bar and then connected to the middle connector and 0V on the switch as shown. The remaining wire from the right hand side can be connected to 12V outside the switch block.

A shot of the switch wired in place is shown below. Note how I wrapped the wires of the left hand grip once around the bar, later these will tuck under the grip, but for now they give you some slack for wiring.



And pictures showing how the 12V, ground and RH heating element wires were routed into the switch block (a dremel was used to widen the hole where the standard wiring goes).



Note that shrink wrap makes the installation neater.



Once all the wiring is done, run around with your multimeter to make sure everything is connected correctly and nothing is grounded out. Check that the wiring does not ground out on the metal of the handlebar. I used a little square of electrical tape on the handlebar beneath the switch for extra safety.

Step 6, Re-installing Grips and Finishing.

Now that all the wiring is done give it a quick test to check that everything is working and the fuse doesn't blow. Check this by starting the engine and running everything connected to that circuit at the same time.

On the throttle side the two wires should be covered in shrink wrap and wrapped once around the throttle tube. I made the wire exit straight down as this gave the least interference with my hands. Check that the throttle opens and shuts without resistance. When the grip is in place it should be enough to hold the wires without moving.

When re-installing the grips, I used hairspray. I was sceptical at first but it actually works really well!

Spray the inside of the grip and along the bar. Then quickly before it dries slide the grip on and tuck any wires away. The 'glue' will dry in a few hours. I would avoid turning on the grips until then.



Around the switch I used black silicone to seal the hole against water and used a rubber switch cover over the switch itself. When putting in the silicone I put Vaseline on the area's where i didn't want it to stick. Later this was wiped off.



Results!

So how do they work?

High is really hot, it's more like a boost setting to warm the grips up fast. It takes about 90sec to warm up from cold on high.

Low is more like a 'keep warm' setting, generally you switch it to high to get up to temperature then low to hold it. If you go with a resistor setup try one that is about 1.5ohm to increase the temperature of low as a bit more power would be helpful.

The only issue is that the left hand grip warms up noticeably slower than the right hand side. This might be able to be fixed by putting a large diameter piece of shrink wrap on the handlebar to insulate it before you stick the heating element on. However they both stabilise at the same temperature in the end.

The switch (before silicone)



The wiring across the handlebars:



12V and Ground wires come up here. RH grip 12V connection here.