GS Side-Stand Safety Interlock Bypass for Dummies (SSIBD)

Purpose and Goal:

This how-to guide is intended to provide instructions on how to bypass the side-stand safety interlock system found on late model BMW GS motorcycles. The goal is to allow for motorized propulsion out of potentially remote areas in the off chance that your side-stand safety interlock switch should become defective or damaged, thereby rendering your bike inoperable.

The main body of this guide is based on a BMW R1200GS with a manufacture date of 08/04. The steps outlined are based on analysis of the related schematics, and empirical observations and measurements made with a digital Volt/Ohm meter. Sections are also provided on the R1150 and R1100 GS's; the intent is to flesh out these sections as additional information is made available.

Warnings and Disclaimers:

Safety Note: The side-stand safety interlock mechanism serves a useful purpose and should never be disabled for arbitrary purposes. As noted above the goal of this guide is to accommodate an a relatively simple bypass while in the field to enable a safe return to civilizations; once back you are advised to seek professional repair action to return your machine to its original operating state. There are reports of folks that have been *injured*, or *killed*, because they attempted to motor off with their side-stand down. This is serious business.

Electrical Warnings: The steps and procedures outlined in this guide require only the most basic of electrical and mechanical skills. However, you will be working with wires and a 12V DC electrical system that can be damaged if appropriate precautions and care are not taken. Always ensure that your bike's electrical system is switched off before disconnecting any switches or wires, and never attempt to cut or splice wires when they are energized.

The author of this paper has taken significant care to ensure that the information contained is accurate at the time of writing, and for the bike in question. The reader is advised to consult the specific documentation for their machine wherever possible. This information is intended as a general guide only; the author is not responsible for damages or injury caused by machine variations, or a failure to act according to the instructions provided here. This paper was written by Harry Reynolds, who can be reached for comment at harry@dr-data.net.

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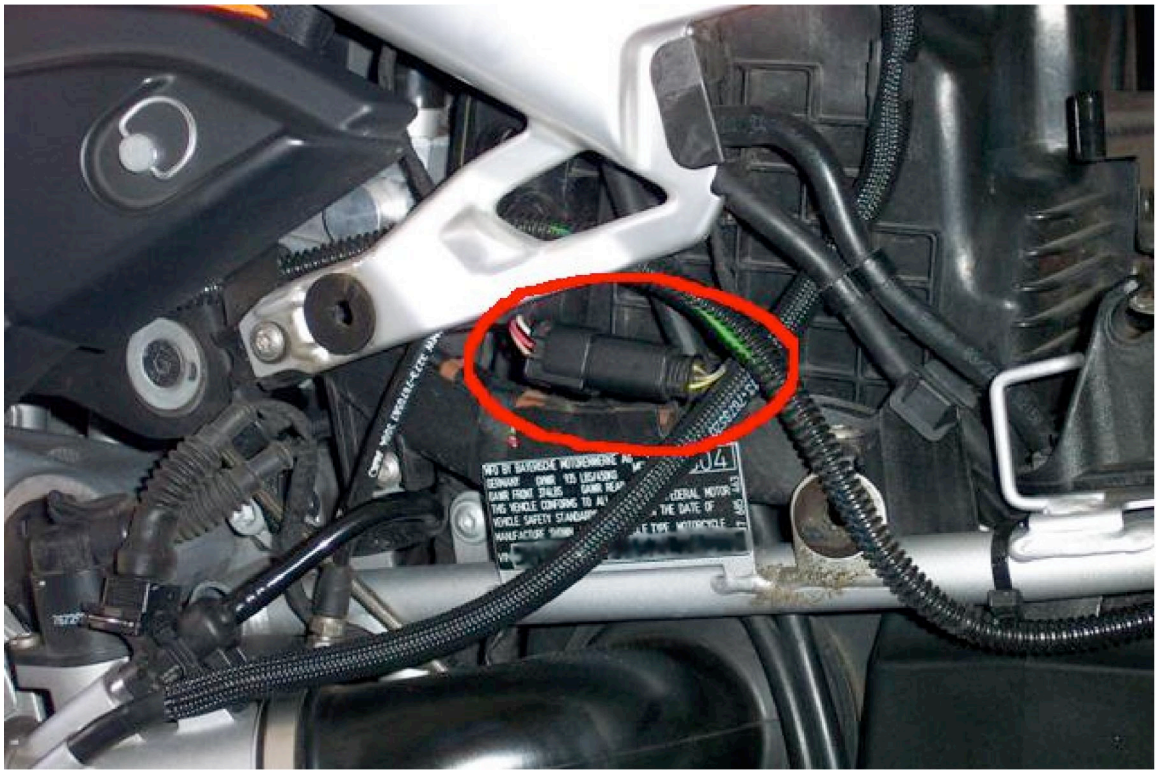
1 SIDE-STAND SAFETY INTERLOCK BYPASS PROCEDURE: R1200GS

1.1 SKIP THE DETAILS, LETS JUST GET MY BIKE RUNNING AGAIN PART:

This section focuses on the basic steps needed to by pass the side-stand safety interlock mechanism on the R1200 GS. The following section provides the details on what is actually being performed along with the associated portion of the schematics.

1. Locate the X9093 connector, which serves to connect the wires coming up from the side-stand to the K module. The connector is behind the plastic trim piece, just about where your left knee would be when riding. The X9093 connector is circled in red in the photo below, and also identified in the R1200 GS schematics:



Location of connector X9093 on R1200GS

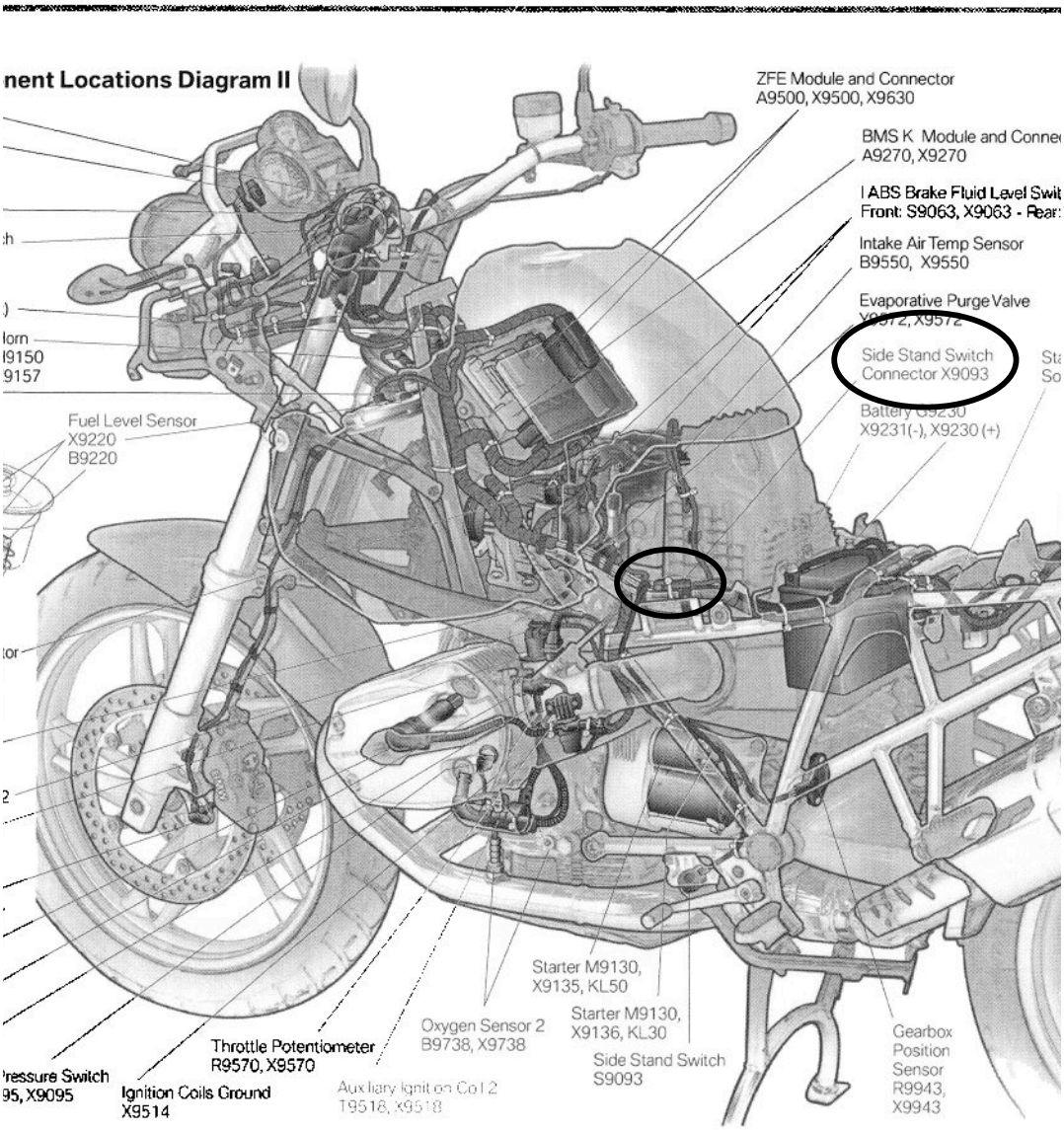


Figure 1: Location of Connector X9093 (R1200GS)

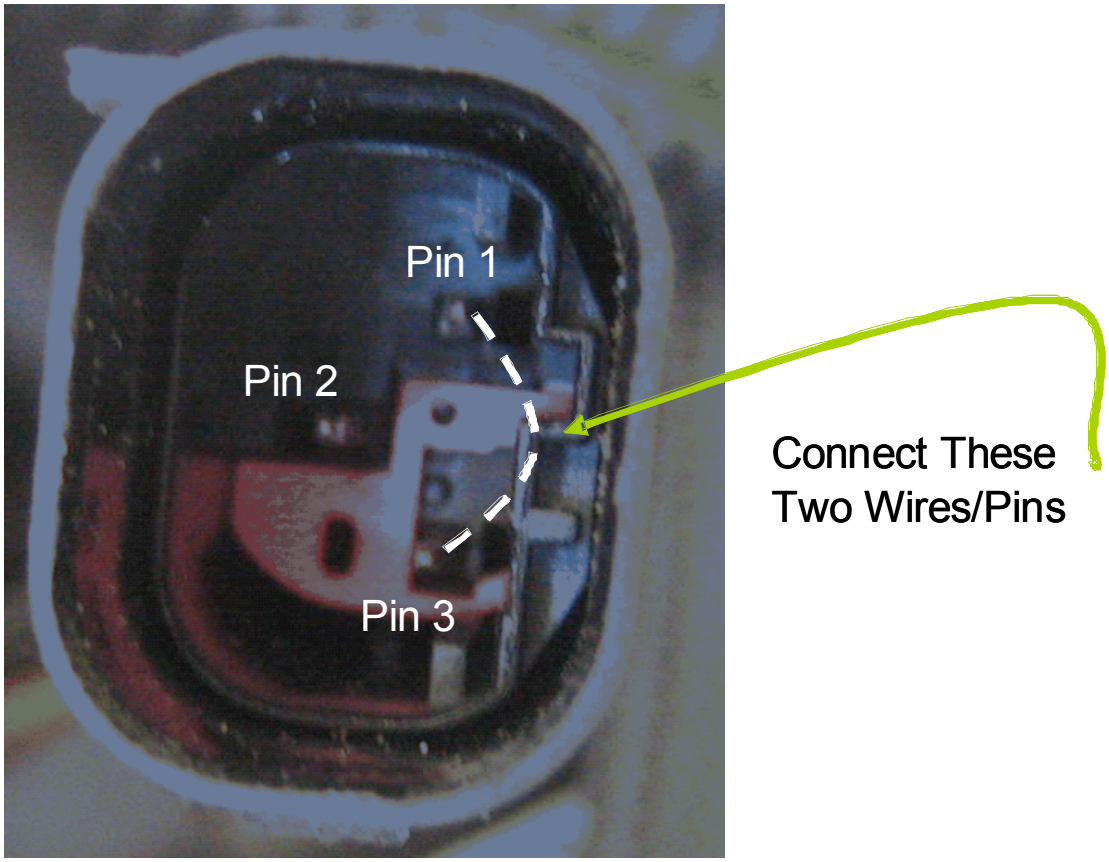
2. You should see three wires leading from the left side of the connector down to the side-stand. These wires should be brown, red, and white. On the right hand side you should see three wires leading away to the K module; these wires are multicolored and use a primary color as well as an identifying stripe (or band). When referencing these types of wires the convention is to give first the primary color and then the identifying stripe/band, i.e., Brown/Yellow indicate a brown wire with a yellow stripe. These wires should be brown/green, yellow/green, and green/yellow.

3. Your goal is to open up the X9093 connector, which isolates the entire side-stand switch mechanism and its related wring in the event that it is defective, and then splice together (connect), the brown/green and yellow/green wires, which "tells" the engine that the side-stand is safely retracted. (You did remember to retract the side stand after performing this modification, correct?) To open the X9093 connector remove the tie-

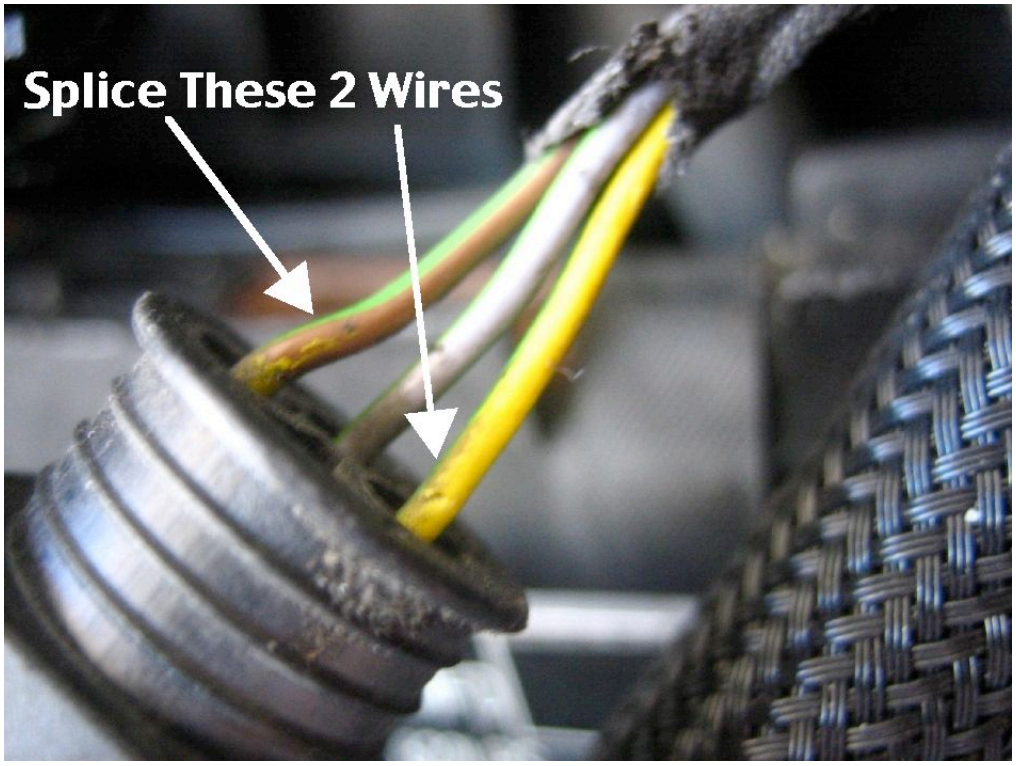
wrap (if present), and depress the locking mechanism while gently pulling the connector apart.

Note: The design of the safety interlock is such that opening the X9093 connector mimics a side-stand down condition that disables engine run as soon as the transmission is placed into gear. If so feel that the side-stand inter-lock is preventing your bike from operating it is worth confirming that the connector x9093 is free of dust/contamination and correctly attached before attempting any type of bypass.

4. To perform the bypass you must connect pins 1 and 3 together, either within the connector by bending the pins towards each other so they make contact, or externally by cutting/splicing the related wires. Whatever you do make sure that you have a *good* electrical connection that will not vibrate loose as this will result in engine kill, unless you happen to cruise in neutral. Pins 1 and three are identified in the picture below, and should attach to the brown/green and yellow/green wires on the right of the connector:



Chassis side of connector X9093 Showing Which Pins/Wires to Connect
(Note male pins and connector orientation)



Rear of Connector X9093 (Chassis Side) Showing the Wires that Need to be Spliced

You can easily locate the associated wires, either by their color or by their physical orientation to the back of the connector using the pin orientation shown in the photo as identified below:

```
Brown/green        Yellow/green
     1                  3

                2
           Grey/green
```

Pin#/Wire color identification for the right-hand side of connector X9093

1.2 DETAILS BEHIND THE MODIFICATION PART:

First, the related part of the schematic; note the arrows, which indicate signal directionality, the presence of connector X9093, the wire color identifications on either side of this connector, and the side-stand switch mechanism itself. The schematic color code is also provided for reference.

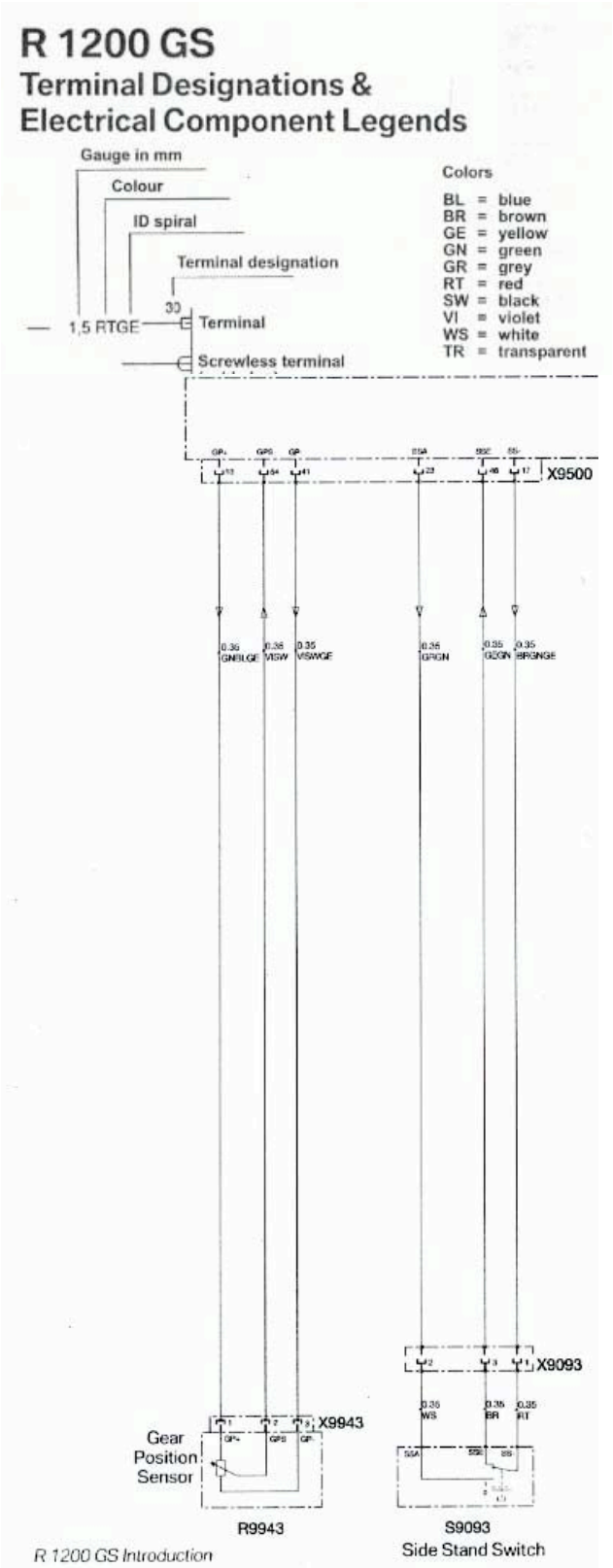


Figure 2: R1200 Side-Stand Safety Interlock Schematic

The schematic indicates that pin 1 on the left hand side of connector X9093, which leads back down to the side-stand switch, should be red (RT), that pin 2 should be white (WS), and that pin 3 should be brown (BR). In my case the wires on pins 1 and 2 of the side-stand switch side of connector X9093 were transposed, i .e, pin 1 was white and pin 2 was red. See the note below for details. In the end this transposition does not seem to matter as both pins 1 and 2 seem to be +12V outputs.

The ASCII art wire connections shown below use the pin numbers and wire colors identified on the provided schematic for consistency.

```
Left side of X9093          Right side of X9093
To Side-stand               To Engine K module

Side-Stand Up:

Red (pin1) ----------------------<------Brown/green (pin 1, +12 output)
V
V
Brown (pin 3)------------------>-----Yellow/green (pin 3, enable input)


Side-Stand Down:

Red (pin 1) -------------------<------Brown/Green (pin 1, +12 output)
V
^
White (pin 2)-----------------<------Grey/Green (pin 2, +12 output)
```

Its worth noting that with this design when the side-stand down/engine disable mode results in two +12V outputs tied together. This is a somewhat novel design, with seemingly added complexity that is lost on this author. The important thing here is that pin 3, which is the engine run enable input, does not have a +12V input when the side-stand is down and this will kill the motor as soon as you leave neutral.

1.3 MISCELLANEOUS NOTES AND MUSINGS:

CAN Bus Note: There should be little chance of damage to CAN system. We are dealing with a 3 pole switch that either connects two +12V outputs to each other, or connects one of the outputs to an input that enables engine run. Given this it design the wiring seems idiot proof as long as you do not tie one of the 12V leads to a ground. However, I still suggest that you not attach things in a way that the side stand would not normally permit. At the time of this writing its unclear as to why BMW would use a three wire design when two wires would seem to suffice... . Also, there is a note below about the schematic color codes not matching the specific wire colors on my bike. In this case the two wires in question both appear to be +12V outputs so it would not matter if they were transposed in the connector; this makes me think that either of the two +12V outputs could be used

to drive the enable input equally, but I only tested the output/input combination that occurs naturally given the way my bike is wired. Perhaps the reason for the three pole switch is to provide ease of assembly (works with two orientations), or to provide some future functionality.

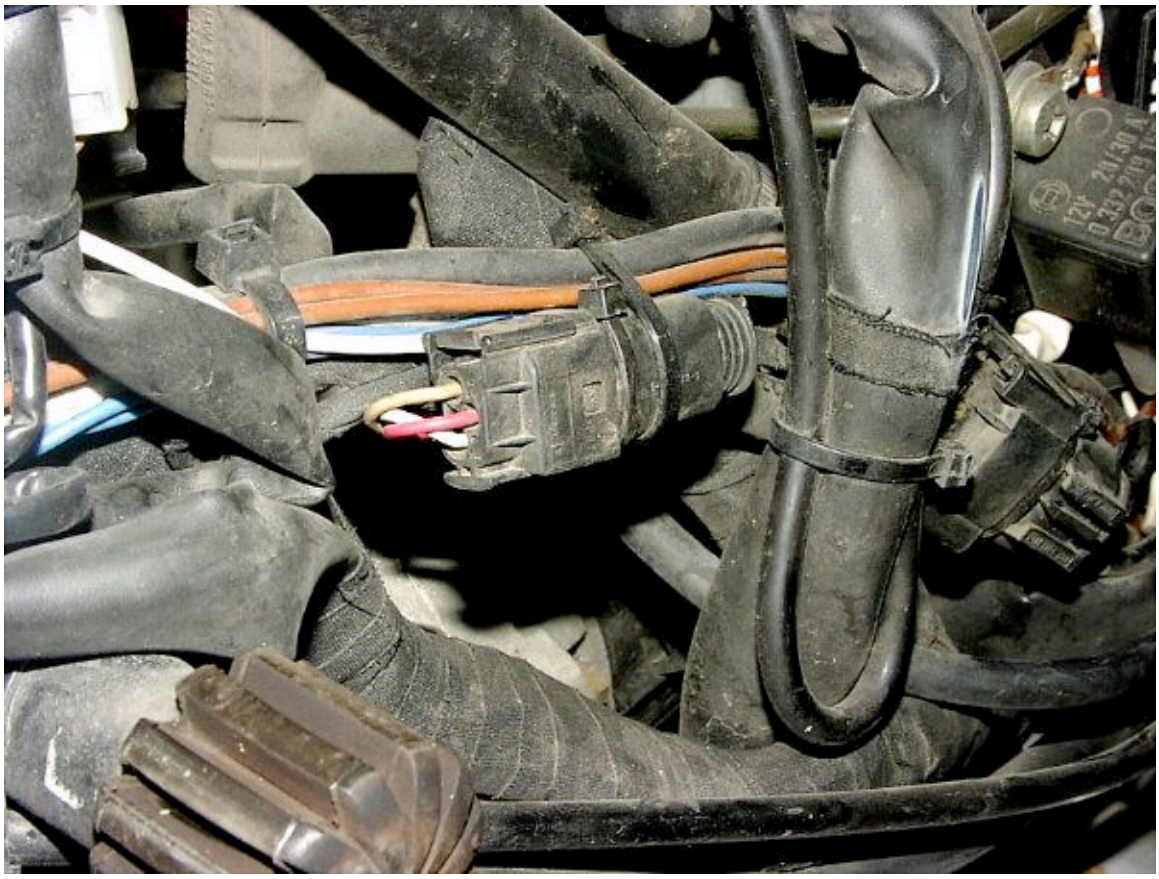
Schematic Color Discrepancy with my R1200GS:
When researching this modification I discovered a discrepancy between the wire color/pin assignments on my bike versus those called out in the copy of the R1200GS schematics that I used as reference. According to my bike they have the colors associated with the side-stand switch pins 1 and 2 transposed. These are the wires that are seen on the left side of connector X9093 and which lead down to the actual side-stand switch mechanism.
The schematic says pin 1 is red but on my bike it was actually white. The schematic indicates that pin 2 should be white while on my bike it was actually red. This error does not seem to have any practical impact as both the red and white wires are +12V outputs. It would seem from this that either wire could be used to drive the engine enable input but I only tested with the combination that results from normal side-stand operation.

2 SIDE-STAND SAFETY INTERLOCK BYPASS PROCEDURE: R1150GS

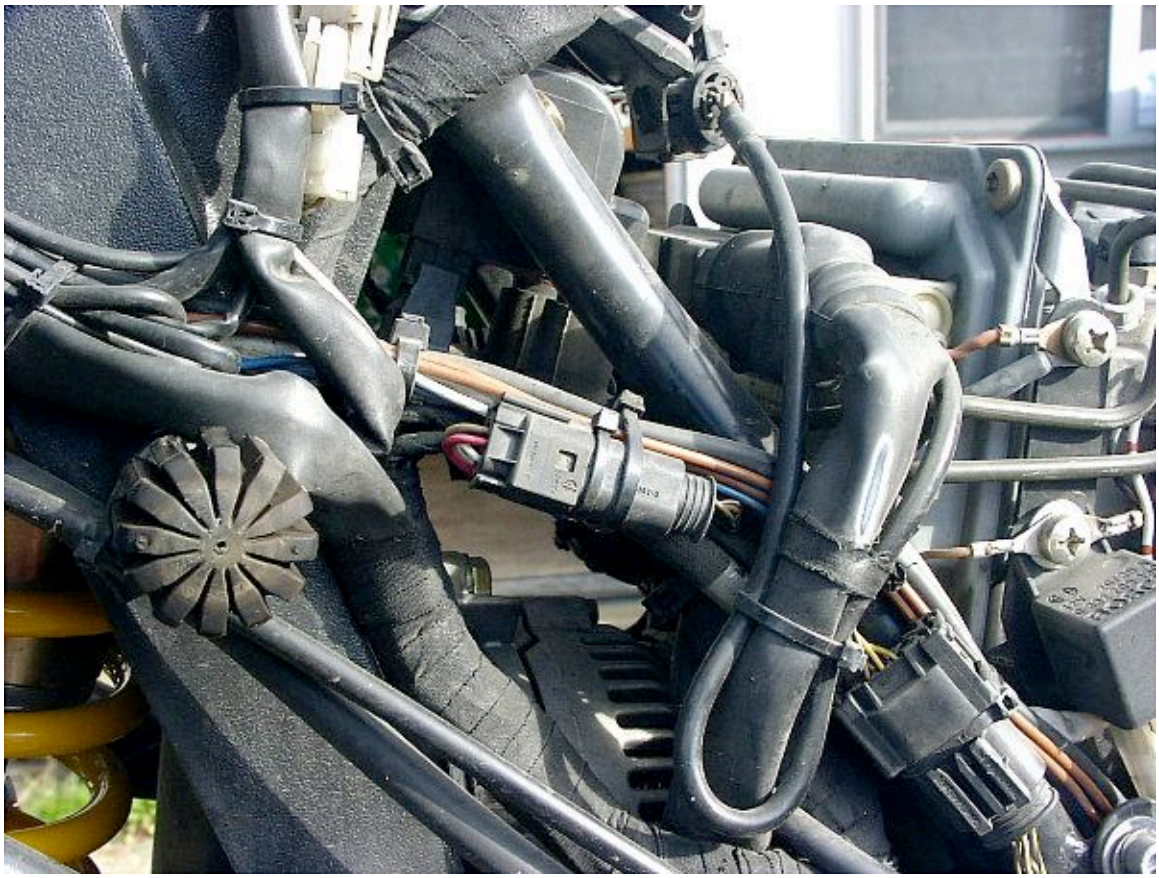
Note: This section is based on an examination of a ’00 1150GS, schematic analysis, and some commonalities between the R1200 GS and the R1150 GS.

The 1150 GS also uses a three wire side-stand interlock switch. The schematic shows pins 1 and 3 being connected in the engine-run position, as is the case with the R1200.

To enable the engine to run on the 1150GS, simply connect pins 1 and 3, just like the R1200 GS, but for the R1150GS this means splicing together the brown and white wires on the switch side of the connector (S9093) Note, these colors are ***different*** than those in R1200GS. By using the wires on the switch side we minimize future problems by leaving the wiring of the existing chassis harness alone and only modify the (relatively) easy to replace switch harness.



Location of Connector X9093 on R1150GS: Shot 1



Location of Connector X9093 on R1150GS: Shot 2

According to the schematic, the side stand switch (S9093) wiring runs through a connector (see pictures for location and connector type). This connector is hidden behind the tank so access requires tank removal. As you can see, the color code for the wires coming from the switch to the connector does not match those on the other side of the connector. The colors are white – red – brown (as can be seen in the pictures) which matches up to the colors shown on the schematic as follows.

The 1150 GS Color Code:

	Switch Wire Color	***Schematic Color***		***Function***
Pin #1	White	BRWS	Brown/White	Stand Up
Pin #2	Red	BRGE	Brown/Yellow	Stand Down
Pin #3	Brown	BR	Brown	Ground

Use the Brown wire (Ground) and the White wire (Stand Up) to bypass the Side Stand Switch and allow the starter relay to start the bike.

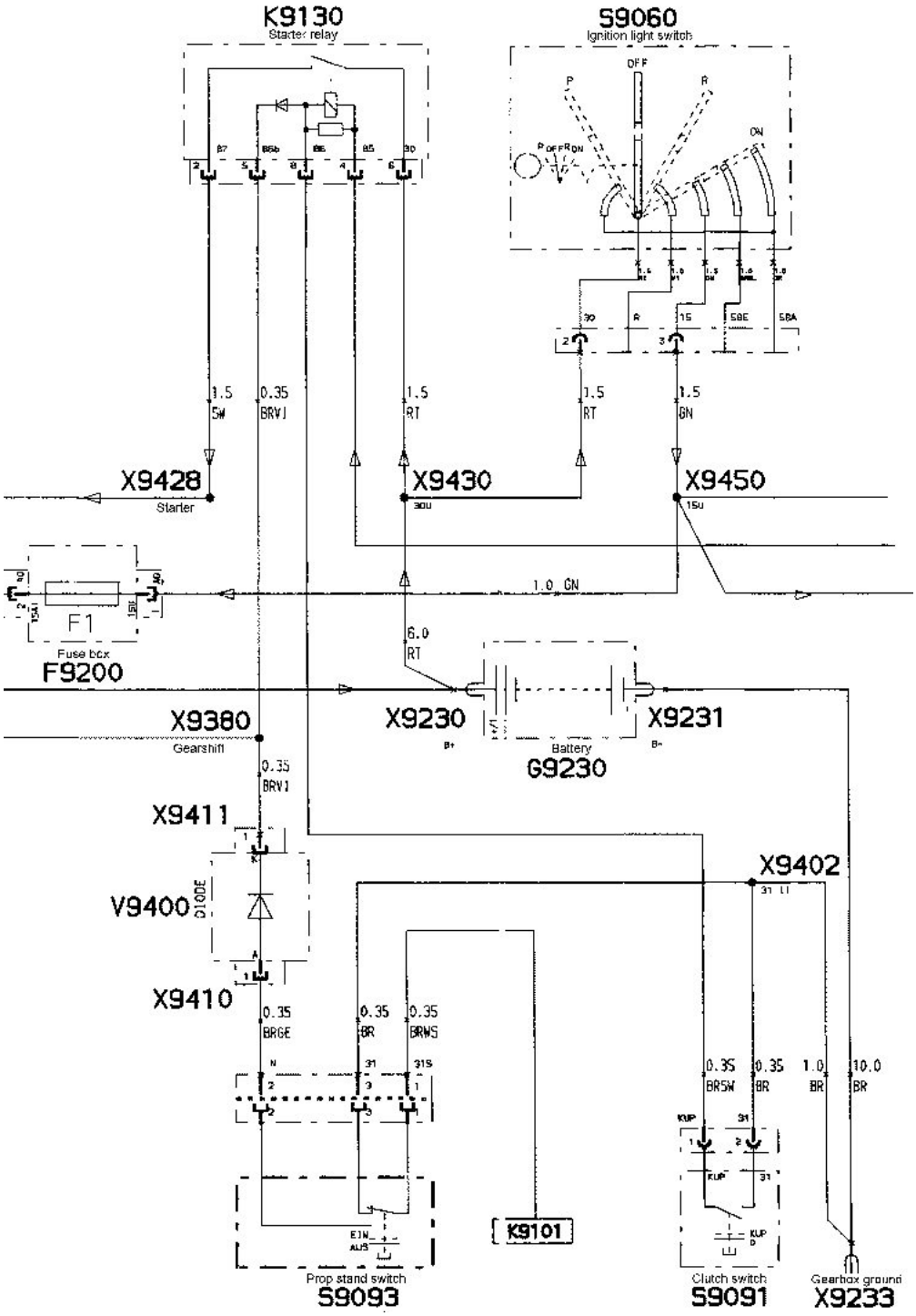
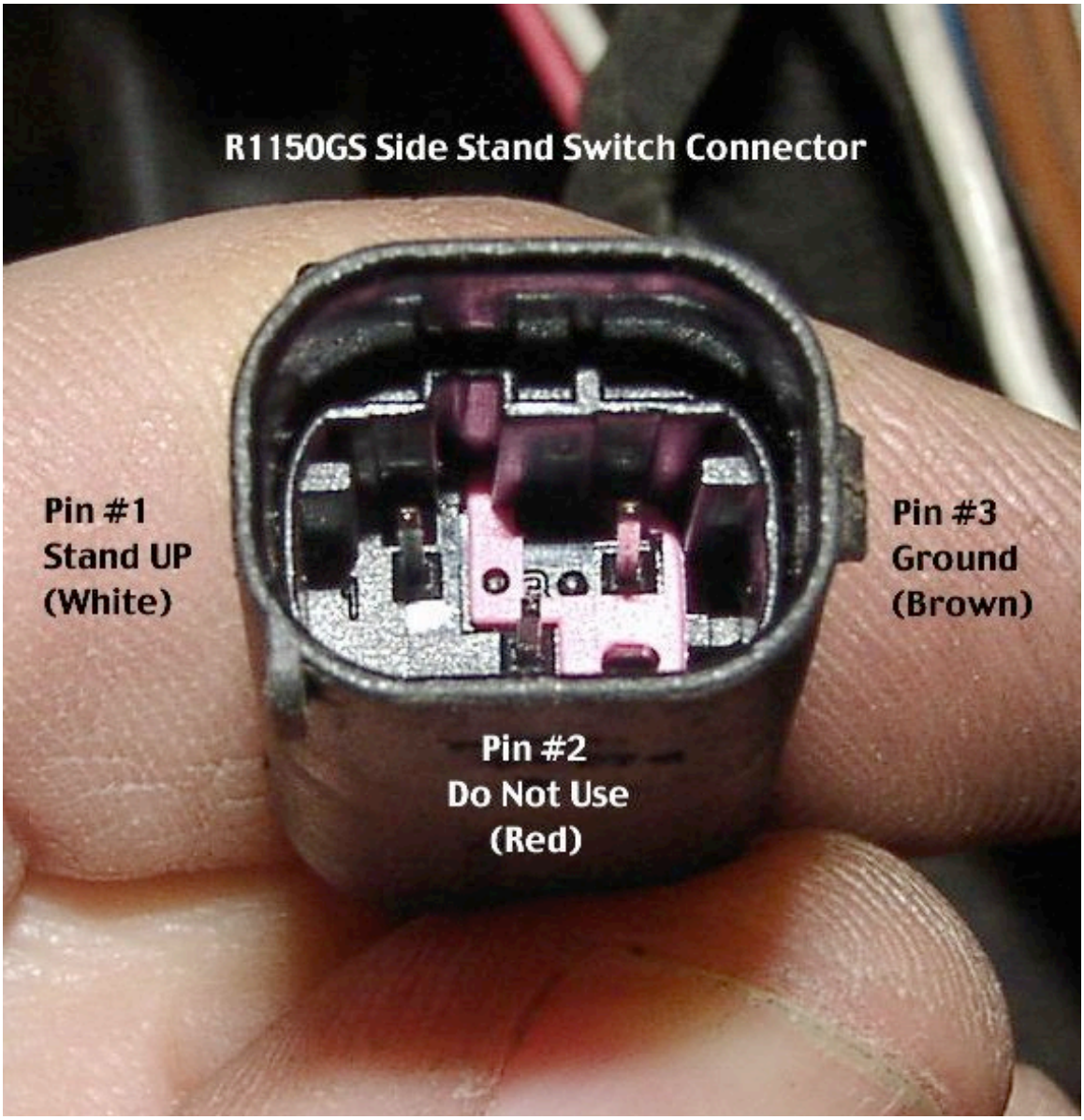


Figure 3: R1150 Side-Stand Safety Interlock Schematic

A solid brown wire almost always designates a direct ground connection, as is the case here. The diode in the schematic acts as a 'buffer' to override the ground connection via the clutch switch for the starter relay. This buffer action prevents the relay from finding a ground and thus activating the relay and the starter.



Close-up of Connector X9093 on R1150GS

It should be noted that this picture of the plug showing the male pins is the chassis side of the wiring harness connector NOT the switch side. It is used because it shows the connections more clearly.

3 SIDE-STAND SAFETY INTERLOCK BYPASS PROCEDURE: R1100GS

This section will be completed when additional information is available on the R100GS (photos and schematics). . At the time of this writing it seems that the R1100 GS uses a two-wire side-stand safety interlock system. The assumption is that one need only access these wires and tie them together to effect bypass of the side-stand interlock. At the time of this writing I have not seen the related schematics so this information should not be relied upon.