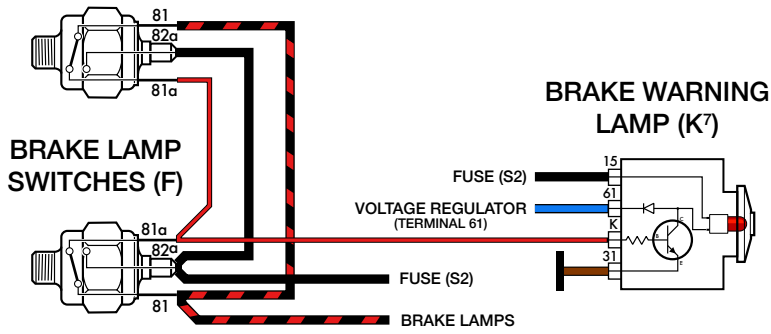


DUAL CIRCUIT BRAKE SWITCHES AND WARNING LAMP



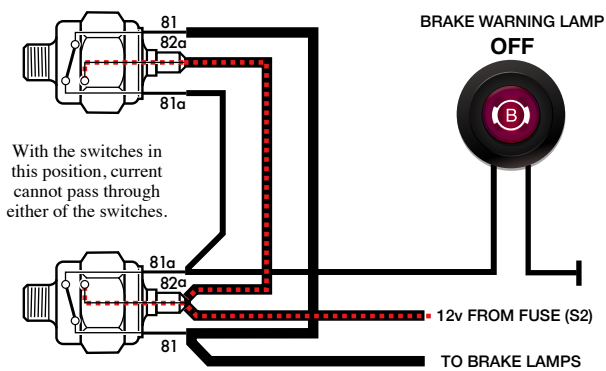
Since 1967 Volkswagen included a dual circuit brake system in all its vehicles. That means there are two independent hydraulic circuits in the brake system. This is a safety feature. Should one of the hydraulic circuits fail, the remaining working circuit will allow the driver to stop the car. A warning lamp will illuminate to notify the driver of the fault so that repairs can be made. When the ignition is switched on, current flows to terminal 82a of the brake lamp switches (F). (There are two brake lamp switches, one for each hydraulic circuit.) With the system in good condition, and with the brake pedal at rest, the current cannot flow through the switches. When the brake pedal is depressed both switches are actuated and contact is made between terminals 82a and 81,

thereby allowing current to flow through the switches and make its way to the brake lamps, which will then be illuminated. However, if there is a fault in either of the hydraulic circuits, then when the brake pedal is depressed only one of the brake switches will operate, thereby putting the switches in dissimilar positions. With the switches in an asymmetrical state, current is allowed to find its way to terminal 81a on one or the other of the switches (depending on which hydraulic circuit is faulty) and finally to the brake warning lamp which will then illuminate.

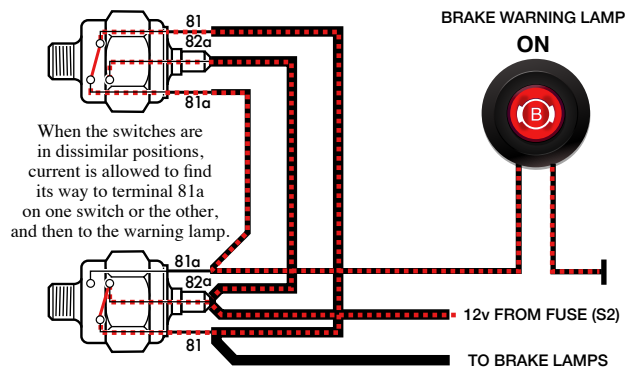
The brake warning lamp can be illuminated under two conditions. One is of course when there's a fault in the dual circuit hydraulic brake system. In this case, when the ignition is in the on position, terminal 15 on the brake warning lamp assembly is energized and power can pass into the assembly and to the bulb, after which it is interrupted by the transistor. When either of the brake switches sends a signal from terminal 81a via the red wire to terminal K of the brake warning lamp, the transistor inside (essentially, a relay) is triggered and allows current to pass from the bulb through the transistor and then to ground, and the bulb illuminates, making the driver aware of the fault.

The second condition for which the brake warning lamp will light up is for the purpose of a bulb check. This occurs whenever the ignition is switched on but the motor is not running. In this case, current flows from fuse 2 to terminal 15 of the warning lamp, through the bulb, past the diode, and out of the lamp via terminal 61. It then continues via the blue wire to the voltage regulator where it finds ground. When the motor is running, the voltage regulator interrupts the ground connection and the brake warning lamp goes out.

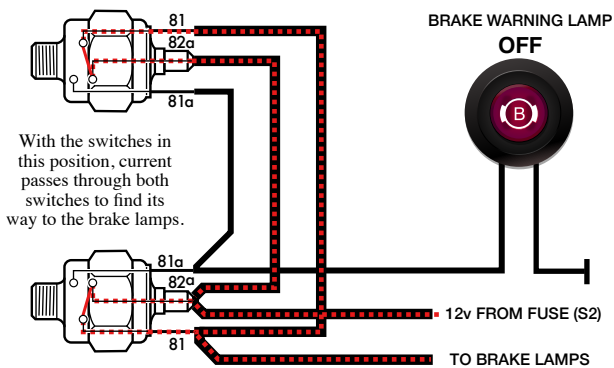
BRAKE SYSTEM WORKING, BRAKE PEDAL AT REST



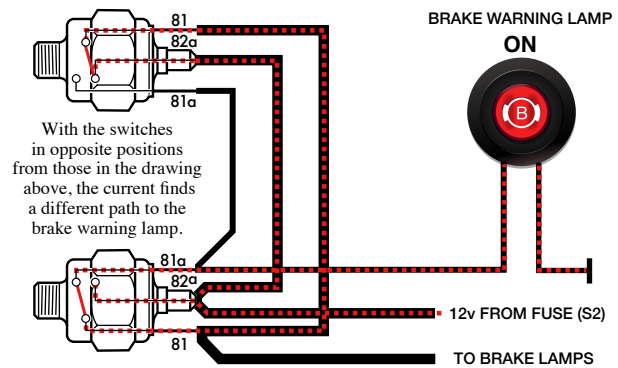
BRAKE SYSTEM FAULTY, FRONT CIRCUIT



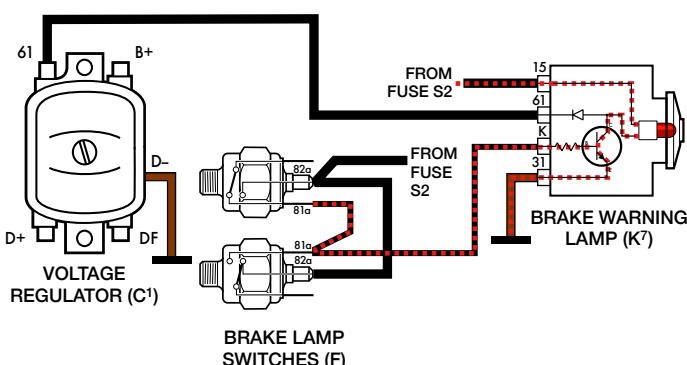
BRAKE SYSTEM WORKING, BRAKE PEDAL DEPRESSED



BRAKE SYSTEM FAULTY, REAR CIRCUIT



BRAKE WARNING LAMP ILLUMINATES, BRAKE FAULT



BRAKE WARNING LAMP ILLUMINATES, BULB CHECK

