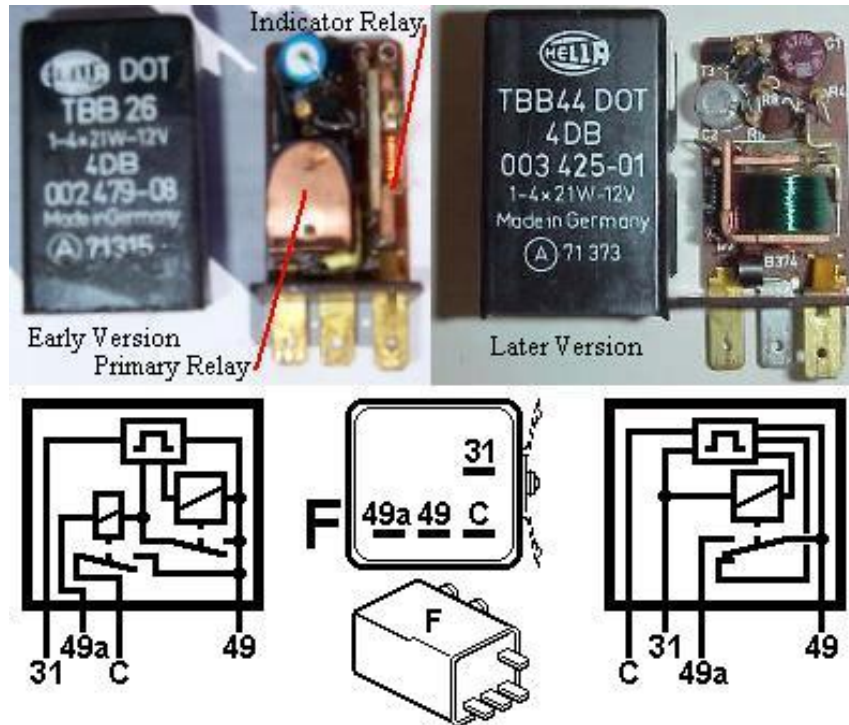


2479 Hella oem turn signal flasher relay short diagnosis and repair

Identifying the Hella relay in your headlight bucket:



Early Hella 2479

current Hella 3425

The /6s were all supplied with the early Hella #2479. At some later date (1979?) the relay was updated to the currently available Hella relay #3425, BMW part #61 31 1 358 194. Both Hella relays have a “bulb out feature” which means when one of your bulbs is burned out (or you have a bad ground- which is very common on /6s) the remaining turn signal (on the burned out side) will continue to blink, but the dash indicator, will blink once, then stop.

Diagnosing the 2479 internal short

As in the picture above, inside the 2479 there is a main relay (flashes turn signals) and an indicator relay (flashes the instrument pod indicator light) mounted to a printed circuit board. The problem is there are tiny sub-micron metal particles that evolve from the main relay contacts during use. These particles float around inside the relay housing and get re-deposited on the PCB (gray dust).

Initially, the relay will short intermittently causing the led KATDASH turn signal indicator to sometimes glow dimly or flicker intermittently. It may stop and act normally for a while, then do it again. After enough time, the short builds up between the 'C' (dash light) and the 49 terminals inside the relay, and it will cause the oem 3w dash bulb to glow dimly as well; usually only visible in a dark garage or at night. At this point, if the KATDASH led dash board is installed- the turn signal dash indicator will glow all the time, and not flash with the turn signals at all- though the turn signals themselves will still flash normally.

Disassembly and repair of the 2479 internal short

In order to completely clean all of the “shorting dust” out of the contacts, repairing this relay will require you to drill off the rivet head, clean all the particulates from between the layers, then re-rivet, or use a 4-40 screw and small pattern nut. If you do not have the skill or the desire to go to this depth, then replace the turn signal relay.

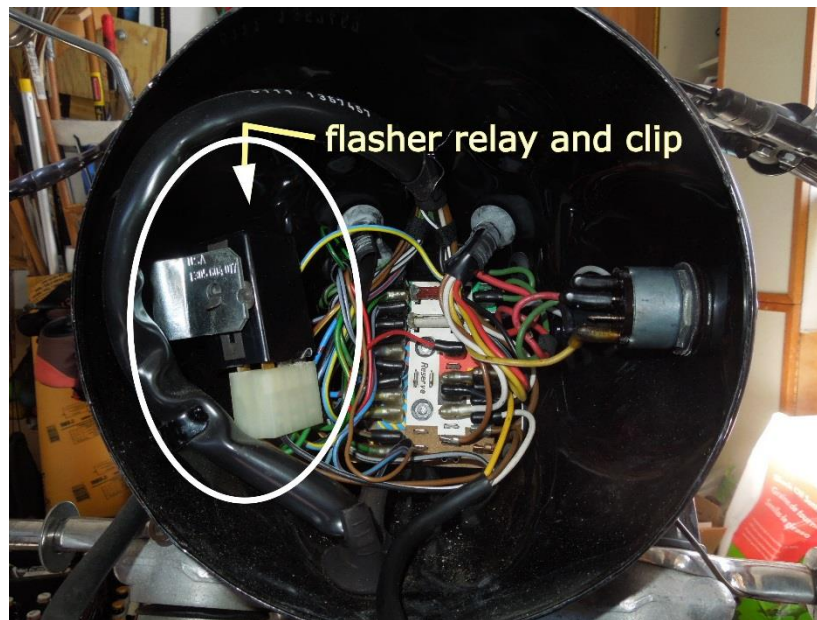
All the 1974-1980 bikes, with this turn signal relay can use any of the following relays:

Hella oem #61 31 1 358 194 available at BMW dealers (expensive but easiest to install – it clips right in)

3- terminal: EL13 or 550 turn signal relays, available at auto parts stores. (no ground wire req'd)

3- terminal: FL3 electronic flasher relay, available at katdash.com (no ground wire req'd)

Disassembly procedure: notes and photos by Randy Tribe



Remove the flasher relay from your headlight bucket

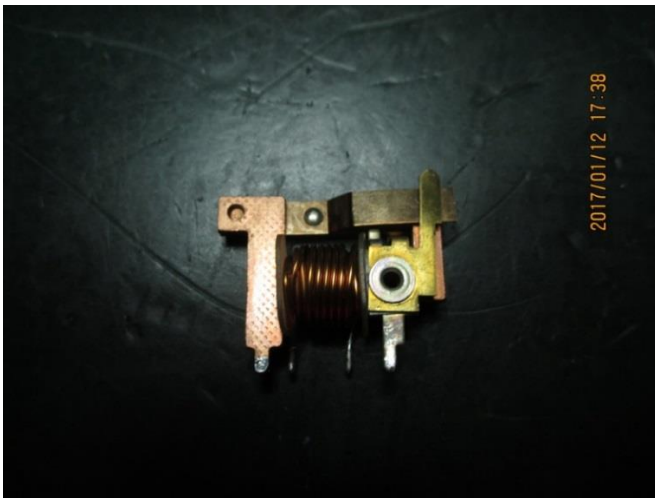


Remove the outer shell, and inspect interior. These photos show lots of grey (shorting) dust.

I disassembled the 2479 relay and found it to be a mess inside.

The PCB was covered with a fine gray dust that I assume is from the main flasher relay contacts spewing out particles over time. I flushed the PCB with acetone and used an acid brush, blew it out good and it cleaned up nicely. But (wait for it) the OEM pod lamp went from dim and got very bright! DOH! My guess is some of the gray dust got flushed even more into the relay problem area. I ohmed between C and 49 and got about 70 ohms.

For troubleshooting purposes I de-soldered and removed the indicator relay from the PCB and sure enough it was the culprit. I tried again to flush it and blow it out but no joy. See the photos below- It shows the relay edge on:



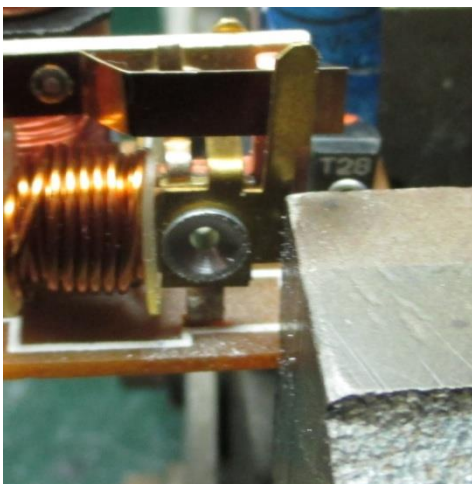
Indicator relay



indicator relay edge on

The copper bar (relay frame) on the right is C and the black bar sandwiched in the middle with insulator pads on either side is 49. The dust shorting the two together is in that area. I re-soldered the relay to the PCB. It's easier to hold the PCB in a small machinist's vise for the next step.

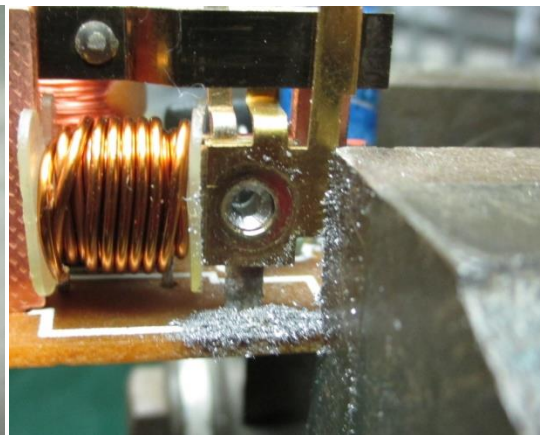
Next I drilled off the rivet head fixing the relay contacts assembly, just to see where the dust settled into and couldn't be flushed out. As soon as the pressure from the rivet was removed the short circuit went away. No surprise there. I examined the contacts and didn't see any large build-up of the gray metallic dust that would have shorted out the contacts. The dust must have settled on the edges of the insulator pads.



Rivet head drilling



Drill and rivet head



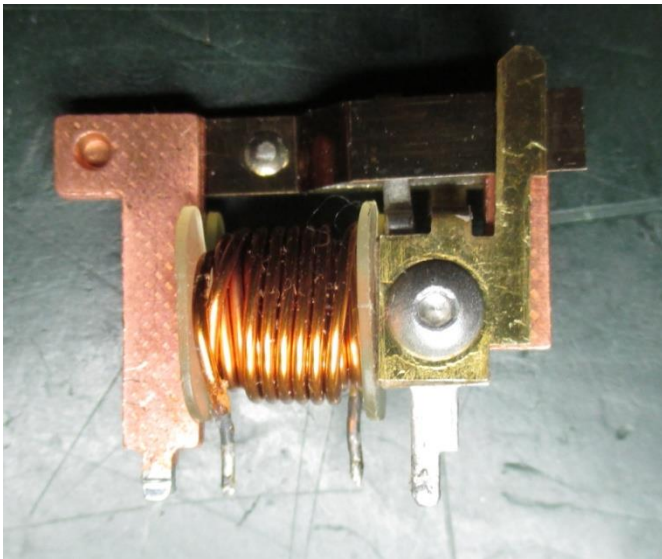
Rivet head removed

The indicator relay contact stack consists of the #49 (power) contact sandwiched between two di-electric insulator pads that are each only 0.015in thick. Over time the metal particles deposit on the edge of the insulator pads and provide a current path (not exactly a dead short) between #49 and #C (indicator lamp) of about 100 ohms or less. This current path allows the OEM pod turn signal lamp to glow dimly and the KATDASH LEDs to turn on brightly.

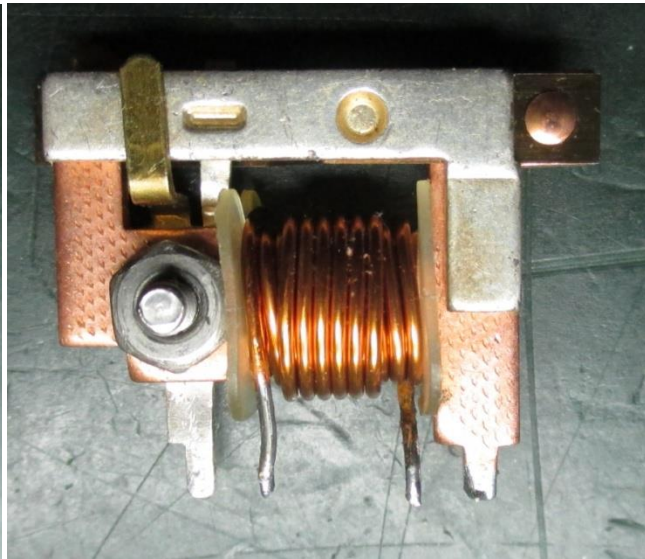


indicator relay contact stack

I wire brushed the metal parts of the contact stack and lightly scraped the edges of the insulator pads with an xacto blade. I reassembled the relay with a 4-40 button head screw, a small pattern nut and all relay functions work. I used a screw and nut in case I had to take it apart again. A 1/8in pop rivet would probably work also.



reassembled with 4-40 button head screw



reassembled 4-40 small pattern nut

This is probably a problem with all Hella 2479 relays and will show up with age. The replacement Hella 3425 relay will probably NOT have this problem since the relay circuit diagram shows the indicator lamp is switched electronically.

I did this as a curiosity project. If you don't like tinkering at this level and your 2479 relay is 40 years old like mine I would suggest just buying a new relay.

Randy Tribe

ADDITIONAL NOTE! The early /6 bikes had poorly grounded front turn signals. You can run into all sorts of intermittent & strange indications from the instrument pod turn-signal indicator lamp. While other causes, including a bad flasher relay, poor contacts & bad lamps, etc., can cause some similar problems, DO check and try improving the grounding. Test for the problem, & if you have it, fashion some grounds from the headlight bucket to each turn-signal pod. You can also purchase a retrofit ground wire kit for the front turn signals on the early /6s. Please use conventional color code, so that means solid brown insulation. BMW fixed the problem in ~1976.

Information for this document was compiled with thanks from:

Disassembly and diagnosis of his own shorting relay with photographs: Randy Tribe

Final notes on ground faults: Robert Fleischer aka Snowbum; 23. Turn Signal Flasher /Relays

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