

## How to fix problems with gas on 3 way fridges

Ok .... i've seen lot of questions on facebook of people having trouble starting a fridge on gas, so thought I'd share some knowledge.

Bit of background on me, I'm a (ex)caravan tech who specialises in problem fixing on vans, I have worked on hundreds if not thousands of vans of all makes and was usually selected from others in the workshop to diagnose a problem with a van appliance ... be it gas or electric or electronics

Now onto the fridges, I'll start with the manual controlled 3/way fridges as they seem to have the most problems.

**Fact: a properly adjusted igniter will start a fridge with a charged gas line on first or second click ... if you have to press it hundreds of times then either the gas isn't to the burner yet or you have an igniter problem.**

First step to fixing the problem is identify the cause:

Remove outside bottom cover for the fridge, on the right you will see the chimney which contains the 12v, 240v elements and the gas burner underneath .. the gas burner is usually behind a cover fastened with one screw down from the top of the cover, remove this screw and remove the cover, sometimes they are a bit tricky to get out due to clearance etc. I find if I push the cladding up slightly on the chimney it helps.

Behind this you should see something like in this blurry photo (but obviously not running)



The white piece at the front is the igniter, while the rear part in the flame is the thermocouple (which turns off gas if flame goes out, more on that later)

The Biggest problem with the fridges not lighting on gas is the spark gap for the igniter, usually the gap is so great that the spark jumps up to the chimney and not down onto the burner.

Get someone to just click the igniter button **without** holding the gas button in and watch for a spark, you are after a nice fat spark that jumps down onto the burner (if there's no spark then I'll address that problem further on)

the ideal distance for the igniter from the burner is about 4mm above the burner, you can adjust it carefully with pliers or unscrew it's mounts and twist it slightly, test it after each adjustment and take care not to break the ceramic insulator (the white bit) with undue force

That's it for adjusting the igniter ... pretty easy ... and now should light on first or second click if the gas line is charged.

Now if you didn't see a spark at all then the fix for that is a bit more involved and will require pulling the fridge out a bit.

Most fridges are held in with an assortment of screws from the front and maybe 1 or 2 in the rear sled bases. In that photo above you can see 2 blurry screws in the bottom right holding the sled base to the cabinet, funny enough you don't often see them on that side, but usually on the left if fitted.

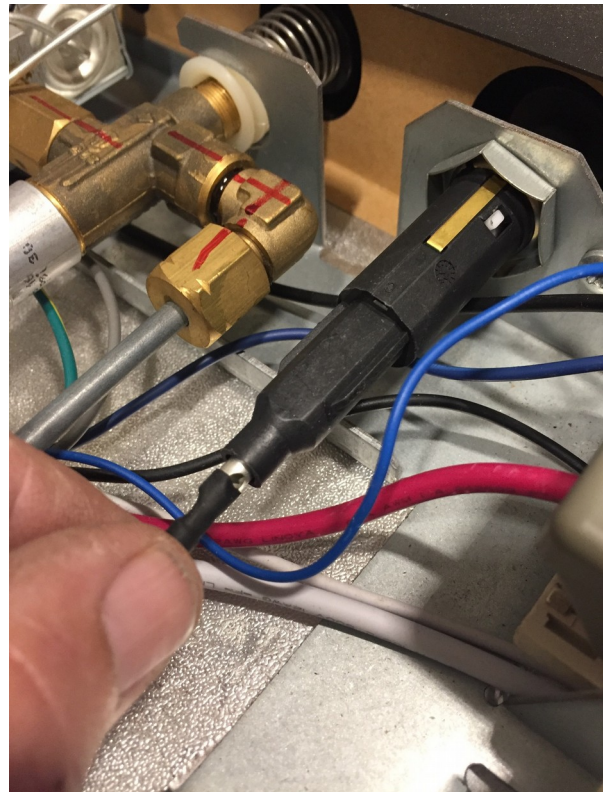
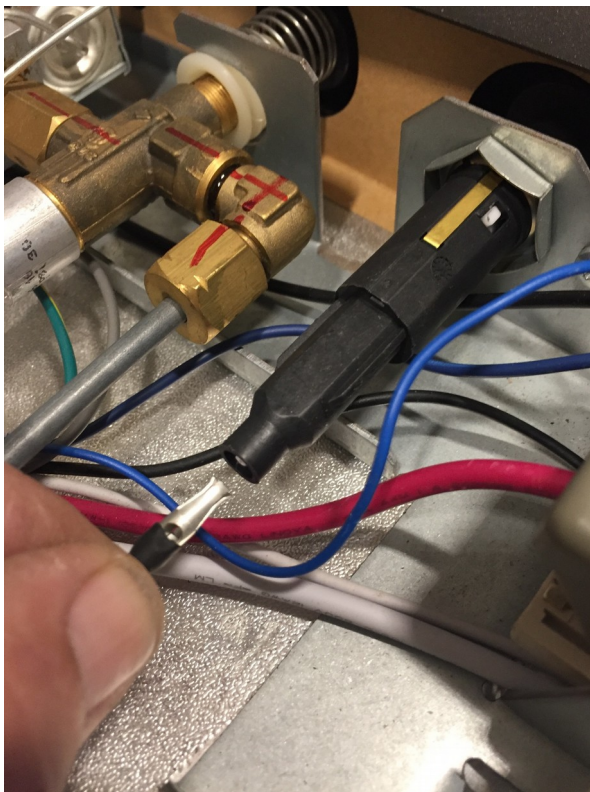
To describe where the screws are in the front is a bit beyond the scope of this help file, but usually 2 down each side, maybe 2 down the front into the floor under where the door sits when closed and there could be 2 up into the framework inside top edge, I'm sorry but you're going to have to figure out where they all are, once you get them out go back to the outside and disconnect the 12v supply wires, usually on the lower left. Gas line can usually stay connected, it depends where the junction is on the fridge. You will also need to remove the top elbow off the chimney as this can foul on cabinet (makes it easier to get it back in as well with it removed) this is done thru the top fridge vent, the elbow just sits on the chimney pipe and should come off without too much trouble.

once you think you have all the screws out give the fridge a little push from the back, if it moves then you got 'em all ... sometimes the fridge is very tight in the opening and if it's mounted up off the ground it can catch on timber work at the front. One trick I do is use the door for a bit of leverage and gently lift the fridge with it to clear a stuck lip, don't get too forceful, but I've never broken a door or fridge with this method.

Once the fridge is moving freely pull it out a bit at a time while someone watches from the back to make sure no cord or gas lines are stopping it ..... you need to pull it out about 200mm to gain access to the top workings behind the buttons.

The biggest culprit up here for no spark is the wire has pulled out of the back of the igniter button. To gain access to this you may need to remove a cover plate, either plastic or on the older models tin plate.

Once this is removed look at the back of the ignitor button for the wire. Like in these 2 pictures



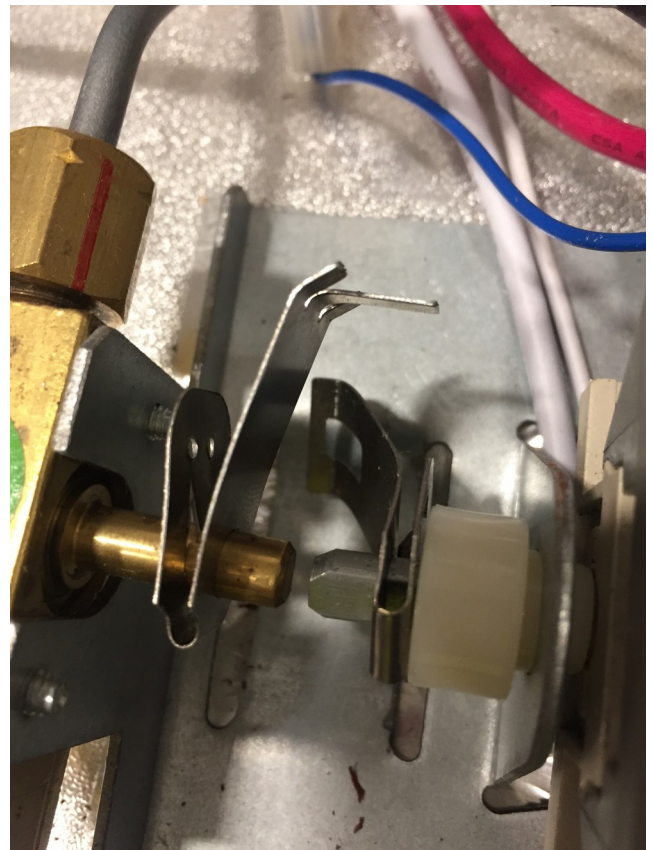
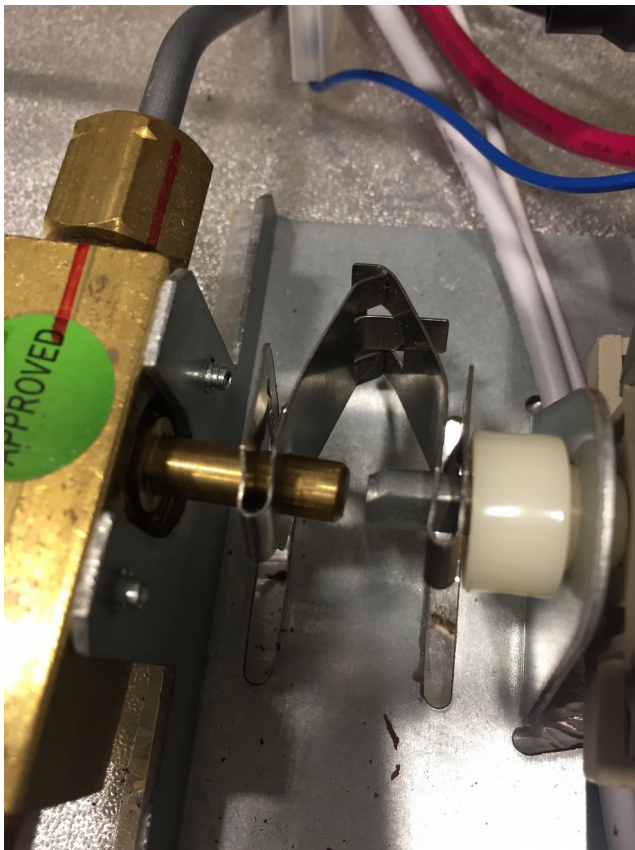
Push the wire back in and firmly secure it with electrical tape. Test if you now have a spark. it's safe to test with the fridge out, just don't hold in the gas button. (well that's still safe, but if it lights the heat has nowhere to go) if you still have no spark then it's probably the igniter button itself, you can see this is just held in place by by a tin nut and removal and exchange is easy. One thing to try before exchanging it is if it still feels fine to click it may just

have an earth problem, the copper strip on the top edge of the button (as pictured) has to be in contact with the mounting bracket or nut, a gentle bend away from the button might be all it needs.

While the fridge is out we'll look at a couple more issues that could stop it lighting (and staying alight)

First one is you have spark but won't light even with a bbq lighter, usually means no gas. And the biggest culprit here is the spring arm on the gas valve at the back of the fuel selector

These 2 pictures show the spring arm engaged and disengaged (don't ask me how they get disengaged I dunno)



It's a simple matter of clicking the arm back into place and then it should turn easy when you move the fuel selector.

That's usually the only problem with gas supply for a manual operation fridge, but while we have it out let's look at another problem area ....

If fridge lights easy but goes out when you release the gas button then the thermocouple is the usual cause and this can be broken down into a few separate causes.

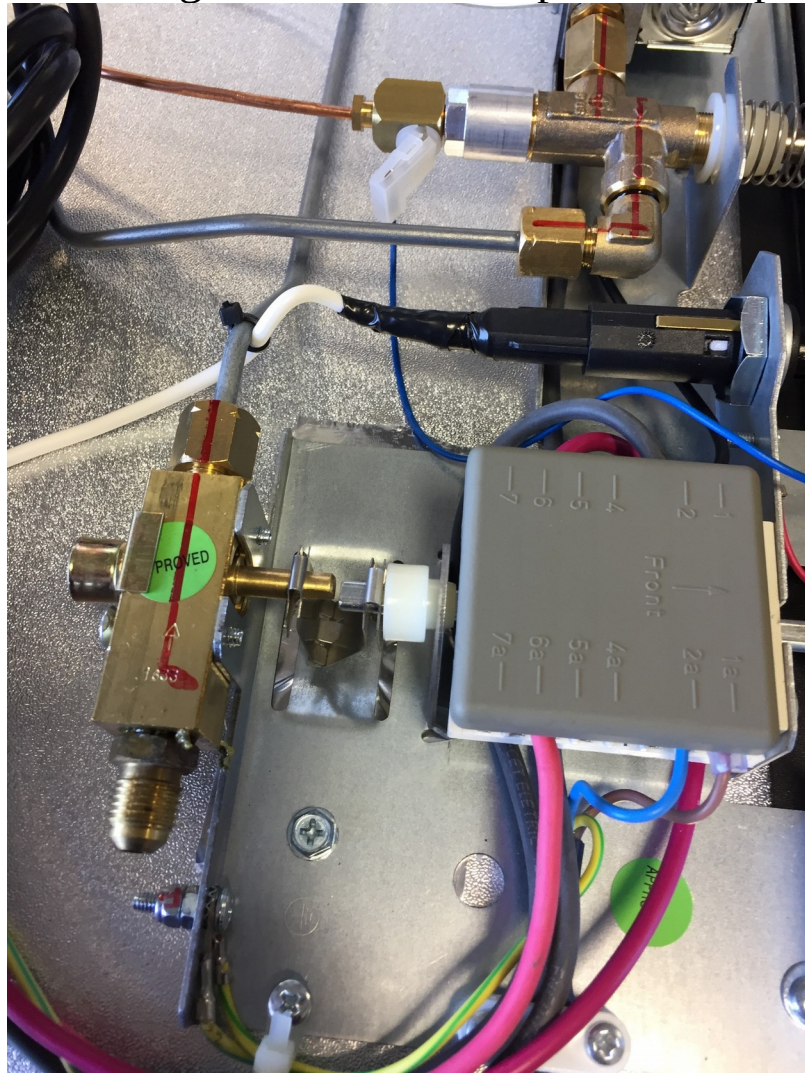
First off how it works:

the thermocouple sits in the flame and by it's design generates a few millivolts of electricity, this power is fed to the gas valve behind the button you hold in. it energises an electromagnet that holds the valve open. When you were told to hold the button in for a while this is just to let that magnet "grab" the valve part and get a good grip. So if the flame goes out the valve is spring loaded to close and shut off gas supply ... pretty simple how it works.

First point of call is the thermocouple itself, the part in the flame. It may be in the wrong place and not getting enough heat or it could be covered with soot effectively sealing out a lot of heat, you can bend the mounting point slightly to get it into the flame and clean it off with a bit of emery paper or the like till it's nice and clean.

Second problem is the tube itself that carries the power to the valve, this is a small diameter copper line, and it's not uncommon for any joiners in this line to come loose ... usually (but not always) has a joiner on the left hand side as seen from back of fridge, test that this is tight, but don't get carried away. Next check the connector up on the back of the gas valve (the button you hold in)

should look something like this in the top center of photo:



make sure this is tight and it should eliminate the staying alight problem. You may also notice the wire coming off which goes to the tell-tale gauge, this also uses those millivolts to show the fridge flame is on .... the further up the gauge the needle goes is no reference on how it's running, just that it moves up and stays up is all you need to know. Actually the further up it goes is more an indication on the amount of millivolts generated, so could be used as an indicator of how clean the thermocouple is.

Please don't remove the grey cover in the picture unless you have 240v disconnected, there are bare contacts under that and you could get a shock .... but once it's safe by all means remove it and have a look and you'll see how it rotates the contacts to select the

power source. A lot of the time this is where you need to disconnect the 240v element if changing that.

Now onto electronic fridges.

Really it's much the same with the igniter gap if it keeps erroring out on startup. But the other big problem is just a stuck solenoid gas valve ... usually located inside bottom outside fridge vent, it's a brass coloured valve on the left with a black plastic box on top of it. Tap the brass part sharply while the igniter is clicking and it should open.

If not then it's usually a control board failure which are quiet expensive (\$500 + labour) and beyond the scope of this help file to repair, best option is a repairer who specialises in electronic control board replacement. I've replaced quiet a few and they do seem to have a high failure rate for reasons unknown.

One other thing ... don't be tempted to poke anything into the gas jet to try and clean it ... under examination with a magnifying glass they have an extremely small hole, which in a lot of cases is inside a glass (or similar) piece in the end, you may think this glass piece is the hole and accidentally enlarge the hole too much. I only ever removed them and cleaned as a last resort and then only with a solution of lighter fluid to give them a wash. If nothing i've already mentioned fixes the fridge the next thing i'd look at is replacing the gas regulator on the bottle ... and maybe getting the lines blown clear by a professional.

Check the fridge regularly for wasp nest build-up, can occur in the burner tube or in the top of the chimney, there's really no mechanical way to stop them .. any mesh etc will impact on air flow too much ... maybe covers while the van is in storage, but thats about all apart from inspection