

VARIFUEL2 – TROUBLESHOOTING GUIDE

General Information

This document contains information on solving typical problems during the installation and operation of the VariFuel2 air/fuel ratio mixer.

The information is aimed exclusively at personnel that is tasked with the operation of gas engines. In addition to this document, the operating manuals for the VariFuel2 air/fuel ratio mixer and the applied stepper motor card must be regarded.

Safety Instructions



Danger to life!

The area around the engine and the ignition system holds the risk of danger due to high voltage.



Explosion hazard!

The area around the engine holds the risk of explosion due to gas leaks. When the system is powered up, do not remove any connectors, unless the system is located in a non-explosive environment.



Explosion hazard!

If the system is not entirely tight and sealed, gas might escape and lead to an explosion hazard. Upon completion of all assembly works, always check the system's tightness. Also ensure that the gauge ports of the VariFuel2 are closed.

All works involving gas-carrying parts must be executed by trained personnel only.



Explosion hazard!

Improper handling can damage the VariFuel2, the stepper motor and the engine. Prior to all works on the VariFuel2, the stepper motor card and the engine, read and understand the appropriate operating manuals.

Troubleshooting

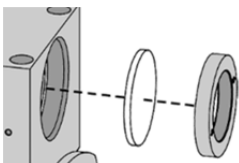
Problem	Possible Cause	Solution
Movement of the fuel ring lags.	Shaft has loosened from the stepper motor.	Tighten the shaft with the set screw. Upon completion, check if the system is properly sealed!
	Belt tension is too low.	Adjust the belt tension with the VariFuel2 adjustment tool for belt tension. Afterwards, adjust the fuel ring (see page 2).
Fuel ring does not move.	Fuel ring is dirty.	Disassemble and clean the VariFuel2 and replace all wearing parts. For this operation, you need special repair kits from MOTORTECH.
	Influence of the master control	Check the master control.
	Shaft has loosened from the stepper motor.	Tighten the shaft with the set screw. Upon completion, check if the system is properly sealed!
	Stepper motor is damaged.	Replace the stepper motor. For this operation, you need special repair kits from MOTORTECH.
	Stepper motor card is in error mode.	Confirm all error messages.
	Wrong configuration of the stepper motor card.	Configure your stepper motor card – the VariFuel2 stepper motor card via DIL switches, the VariStep via the MICT. Afterwards, adjust the fuel ring (see page 2).
	Stepper motor card is not compatible.	Use a compatible stepper motor card (see possible combinations on page 2).
	Wiring of stepper motor and/or stepper motor card is faulty.	Check the wiring and make sure that the required supply voltage is applied.
	Toothed pulley has come off the shaft of the stepper motor.	Tighten the toothed pulley with the VariFuel2 Locking Tool for Toothed Pulley and adjust the fuel ring (see page 2).
Belt tension is too high.	Adjust the belt tension with the VariFuel2 Adjustment Tool for Belt Tension. Afterwards, adjust the fuel ring (see page 2).	

Problem	Possible Cause	Solution
Traverse range of the fuel ring corresponds to the size of one opening of the fuel ring. However, the location of the movement is wrong.	Incorrect adjustment of the fuel ring	Adjust the fuel ring (see below).
Traverse range of the fuel ring is too small / too big.	A wrong VariFuel2 is configured in the stepper motor card.	Configure your stepper motor card – the VariFuel2 stepper motor card via DIL switches, the VariStep via the MICT. Afterwards, adjust the fuel ring (see below).
Fuel ring scale is not in the inspection window.	Home position lost.	Adjust the fuel ring (see below).
POWER-LED of the stepper motor card does not light up although it is connected to the supply voltage.	Stepper motor card is defective.	Replace the stepper motor card.
Stepper motor does not move without interruptions.	This is not a malfunction. When the air/fuel ratio is correct, the motor remains in its position.	

Adjusting the Fuel Ring and Tightening the Toothed Pulley

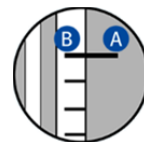
In order to adjust the fuel ring, the VariFuel2 must be connected to the stepper motor card. Adjust the fuel ring as follows:

1. Stop the gas supply.
2. Remove the inspection window from the upper part of the housing with the VariFuel2 Tool for Inspection Window.



3. Loosen the toothed pulley in the upper part of the housing with the VariFuel2 Locking Tool for Toothed Pulley and a hex key.
4. Move the motor into the closed position.

5. Move the toothed belt by hand to turn the reference scale of the fuel ring into the inspection window on the side of the VariFuel2. Set the closed position of the fuel ring – indicator **A** must point at the upper line of the reference scale **B**.



6. Tighten the toothed pulley with the VariFuel2 Locking Tool for Toothed Pulley and a hex key (2.5 Nm / 1.9 lb-ft).
7. Initiate a reference run with the stepper motor card.
8. Close the inspection window in the upper part of the housing with the VariFuel2 Tool for Inspection Window.



Explosion hazard!

Upon completion of all assembly works, always check the system's tightness. If the system's tightness cannot be fully guaranteed, the VariFuel2 must not be used under any circumstances.

- ▶ The fuel ring has been adjusted.

Possible Combinations of VariFuel2 Variants with Stepper Motor Cards

The stepper motor card **VariStep** is compatible with *all* VariFuel2 air/fuel ratio mixers.

The **VariFuel2 Stepper Motor Card** is *only* compatible with the following VariFuel2 air/fuel ratio mixers:

- 30.45.100-50D with stepper motor revision A
- 30.45.140-65D with stepper motor revision A
- 30.45.200-100D with stepper motor revision A

Stepper motors of revision B or higher are marked with a corresponding label.

Customer Service Information

You can reach our customer service during business hours at the following phone and fax number, or by email:

Phone: +49 5141 93 99 0

Fax: +49 5141 93 99 99

Email: service@motortech.de