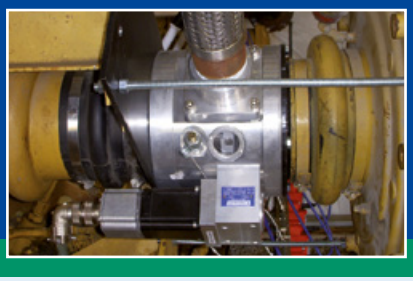
MOTORTECH®

VariFuel2
Air/ Fuel Ratio Mixer

VariFuel2
MOTORTECH AIR/FUEL RATIO MIXER

VariFuel2 Series
reliable • efficient • worldwide



VariFuel2

MOTORTECH AIR/FUEL RATIO MIXER

VariFuel2 – Air/Fuel Ratio Mixer

The VariFuel2 is a high-tech variable Venturi type mixer that can constantly adjust to any fuel changes and allows the engine to operate at its most efficient point. Series 100, 140, 200 and 250 are available for engines with an air requirement up to 5.200 m^3/h. Coupled to an air/ fuel ratio controller, lean-burn or stoichiometric, it precisely regulates the mixture. It is very popular for applications with constant changes in calorific value of fuel.

VariFuel2 uses a high precision stepper motor drive with an exclusive reprogrammable controller-board (VariStep). Various flow bodies and flexible inlet and outlet configurations allow fully flexible cross section adjustment.

Suitable for nearly all gas types:

- Natural gas
- Biogas
- Landfill gas
- Sewage gas
- Wood gas
- Wellhead gas
- Mine gas

Functional Description

Basic Design

The main task of the gas mixer is to mix the fuel (gas) and air so that the gas engine achieves optimal combustion. Here, the decisive optimization parameters are a high degree of efficiency and low emissions that comply with relevant regulations.

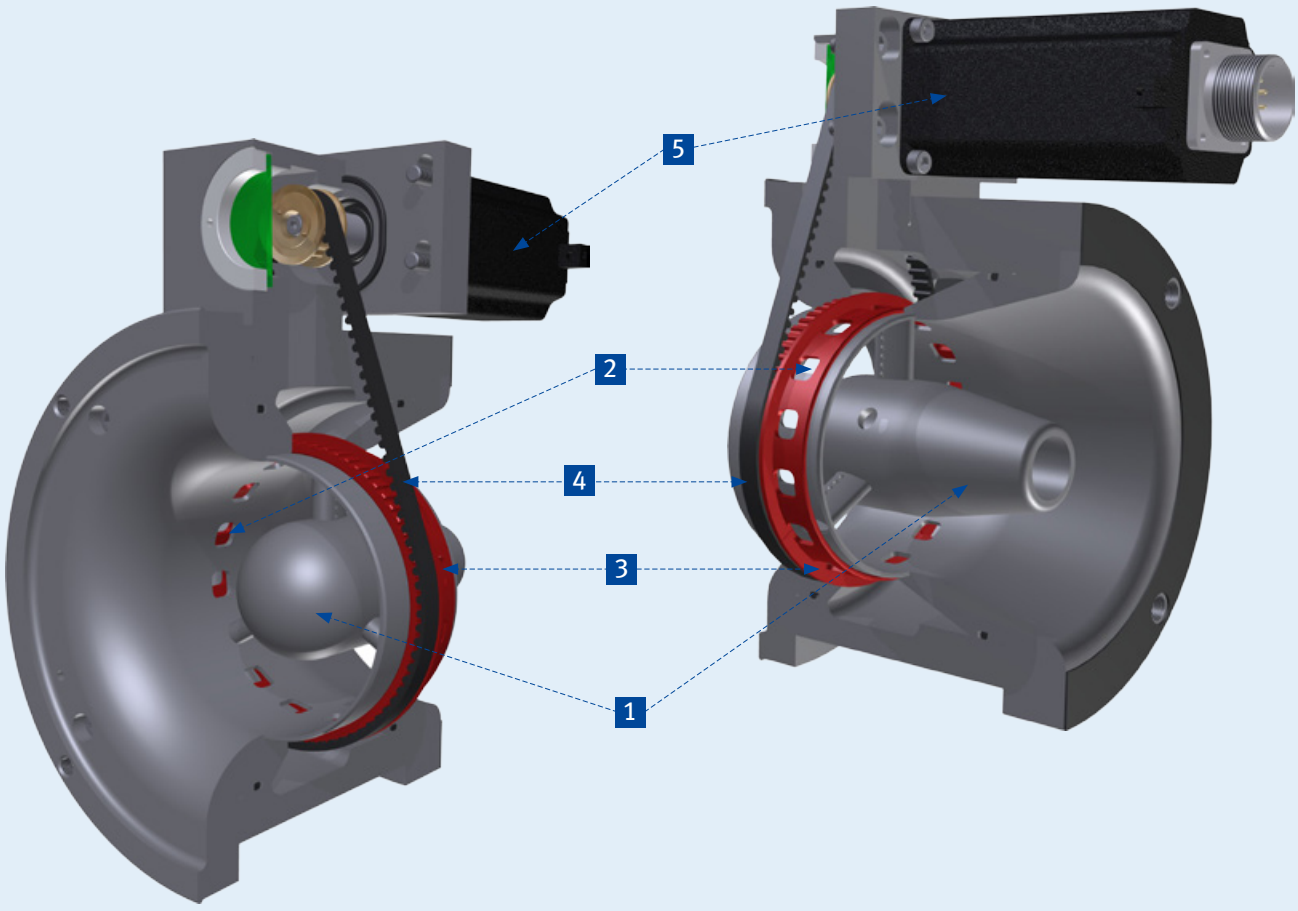
In the VariFuel2, gas and air are mixed based on the Venturi effect. Based on the suction vacuum of the engine, the air is sucked through the air inlet into the Venturi nozzle. The Venturi effect generates an underpressure at the narrowest point, which causes the gas to be sucked in through the gas inlet. This way gas and air are mixed and released at the Venturi outlet.

Based on different design sizes and different flow bodies 1 in the Venturi nozzle, it is possible to achieve various volume flows.

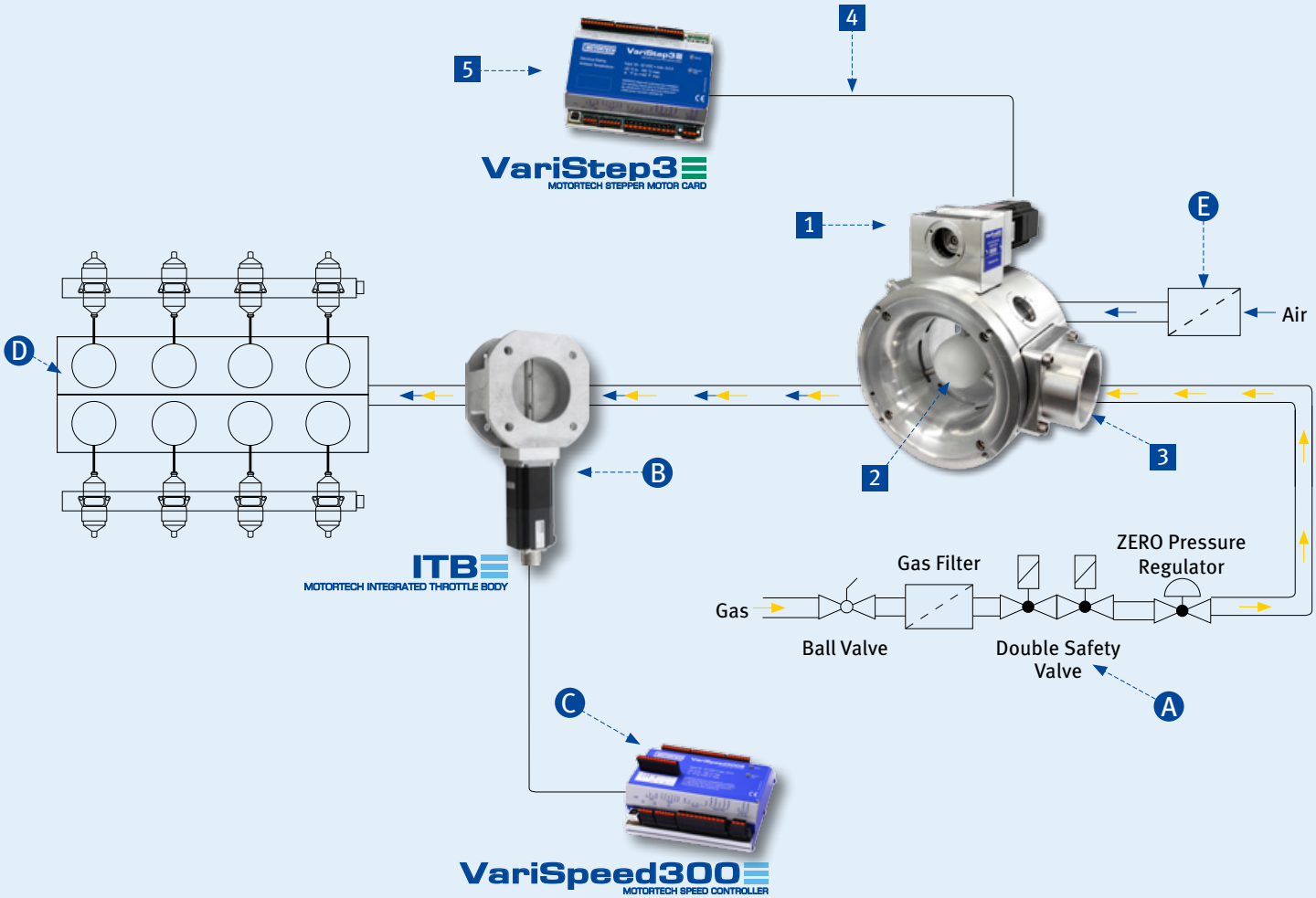
Regulation of the Air/Fuel Mixture

The fuel (gas) is drawn into the nozzle via the adjustable openings 2 in a fuel ring 3. The openings of the fuel ring are adjusted using a drive belt 4 either manually or, normally, via a stepper motor, depending on the VariFuel2 type. The stepper motor 5 can be controlled using a stepper motor card (VariStep3) which can process the signals of a master control.

In addition, the VariFuel2 gas mixers are equipped with a port for an air pressure gauge and a connection for the pulse line of a zero pressure regulator.



System Overview



Required Accessories

1. VariFuel2
2. Flow body
3. Gas inlet flange
4. Wiring harness
5. VariStep3

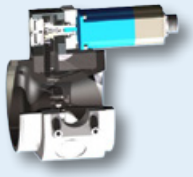
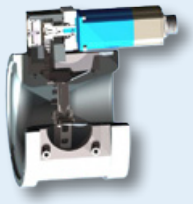
Accessories

- A Gastrain
- B ITB throttle body with integrated stepper motor
- C VariSpeed300 speed controller

Description

- D Engine
- E Air filter

Operating Range

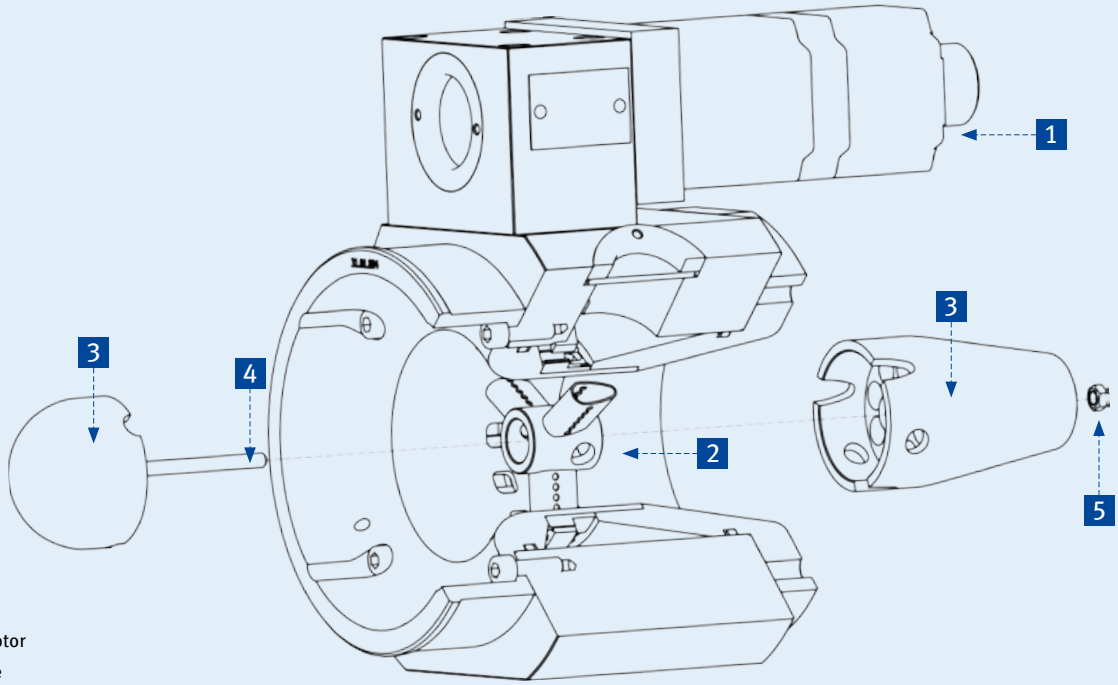





VariFuel2 Series	100-60	140-80	200-120	250-150
Air requirement m³/h	100-650 m³/h	200-1.350 m³/h	500-3.200 m³/h	1.800-5.200 m³/h
100				
200				
300				
400				
500				
750				
1.000				
1.250				
1.500				
2.000				
2.500				
3.000				
3.500				
4.000				
4.500				
5.000				
5.500				

Please consult the factory or your nearest MOTORTECH® Sales Partner to get the correct VariFuel2 series, specified for your engine application. Question Form to identify your suitable VariFuel2 Air/Fuel Ratio Mixer:

Engine manufacturer		Series	
Engine model		Nominal speed (rpm)	
Stroke	☐ 2 stroke ☐ 4 stroke		
Cylinder arrangement	☐ In-line engine ☐ V-engine		
Turbocharged engine	☐ Yes ☐ No		
Intercooler	☐ Yes ☐ No		
Fuel		Fuel consumption	
Air consumption			
Calorific value			
Air ratio λ			

Accessories



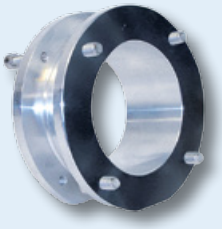
Description

1 Stepper motor
2 Inlet nozzle
3 Flow body (two part)
4 Threaded rod
5 Self-locking nut

Flow Bodies

In order to adjust the airflow, differently sized flow bodies are used, depending on the application

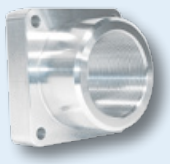
- Flow bodies are made of aluminum. If their diameter is 60 mm and above, they are made of highly resistant thermoplastic material.



Outlet Flange Kits

Outlet flanges for easy connection of a VariFuel2 air/ fuel ratio mixer to a gas engine

- Standard and engine-specific types are available.



Gas Inlet Flanges

Gas inlet flanges for connection of the gas train to a VariFuel2 air/ fuel ratio mixer

- Variants with different thread sizes are available for every air/ fuel ratio mixer series.

VariStep3

MOTORTECH STEPPER MOTOR DRIVER CONTROL

VariStep3 – Stepper Motor Driver Control

The stepper motor driver control developed by MOTORTECH guarantees the ideal control of the various types of MOTORTECH VariFuel2 air/gas mixers and throttle bodies with integrated stepper motor.

- Precise mixer and throttle adjustment due to microstep operation
- LEDs displaying unit status and activity
- Combination of several units without signal amplifier/splitter
- Integrated CANopen and Modbus RTU interface
- Configuration via MICT software
- Error data logging
- Compact design
- Plug-in terminals
- Easy access to connectors and switches
- Switch board installation on DIN rail

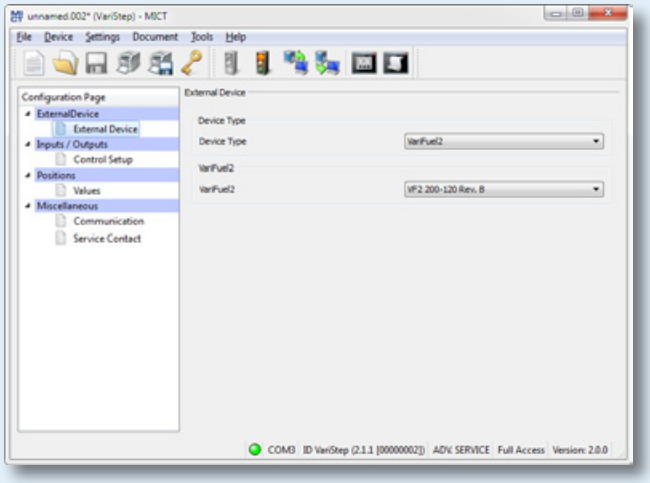
MICT

MOTORTECH INTEGRATED CONFIGURATION TOOL

MICT – MOTORTECH Integrated Configuration Tool

The MICT is the graphical user interface for the VariStep stepper motor card. All functions of the VariStep are user programmable and can be displayed individually.

- Language selectable (DE/EN/CN)
- Microsoft® Windows XP/Vista/7 compatible
- Print function of a snap-shot in the operation can be used for external problem analysis, etc.
- Context sensitive online help
- Different access levels to avoid accidental misconfigurations



We aim at your problems!

Regardless of which part of the globe we need to travel to.

We know that the stakes are high, and therefore we outperform the others. That is because we want everything to run smoothly at your site, everywhere and at any time.

This is entirely in keeping up with our motto:
Let us drop everything and work on your problem!

Distribution partner for DENSO spark plugs

DENSO

MOTORTECH GmbH
Hogrevestr. 21-23
29223 Celle, Germany
Phone: +49 5141 93 99 0
Fax: +49 5141 93 99 99
www.motortech.de
motortech@motortech.de

MOTORTECH Americas, LLC
1400 Dealers Avenue, Suite A
New Orleans, LA 70123
Phone: +1 504 355 4212
Fax: +1 504 355 4217
www.motortechamericas.com
info@motortechamericas.com

Distributed by:

P/N 01.55.002-EN | Rev.10/2015 | MOTORTECH SalesFlyer VariFuel2