

VariFuel2-TEM

Air/Gas Mixer for **MWM**[®] Gas Engines



Air/Fuel Ratio Control Systems

VariFuel2-TEM Air/Gas Mixer

The VariFuel2-TEM air/gas mixer is based on the proven design of the VariFuel2 series and is specially designed for use with MWM® gas engines. Designed as a replacement and plug-and-play solution for the gas mixers used on the TBG/TCG series, the VariFuel2-TEM easily fits into the existing engine structure without any mechanical modifications.

In addition to full compatibility, both mechanically and in connection with existing TEM controllers, the VariFuel2-TEM contributes to an improvement of the starting behavior and mixture control via its variable fuel ring and enables low-maintenance operation over a long period of time.

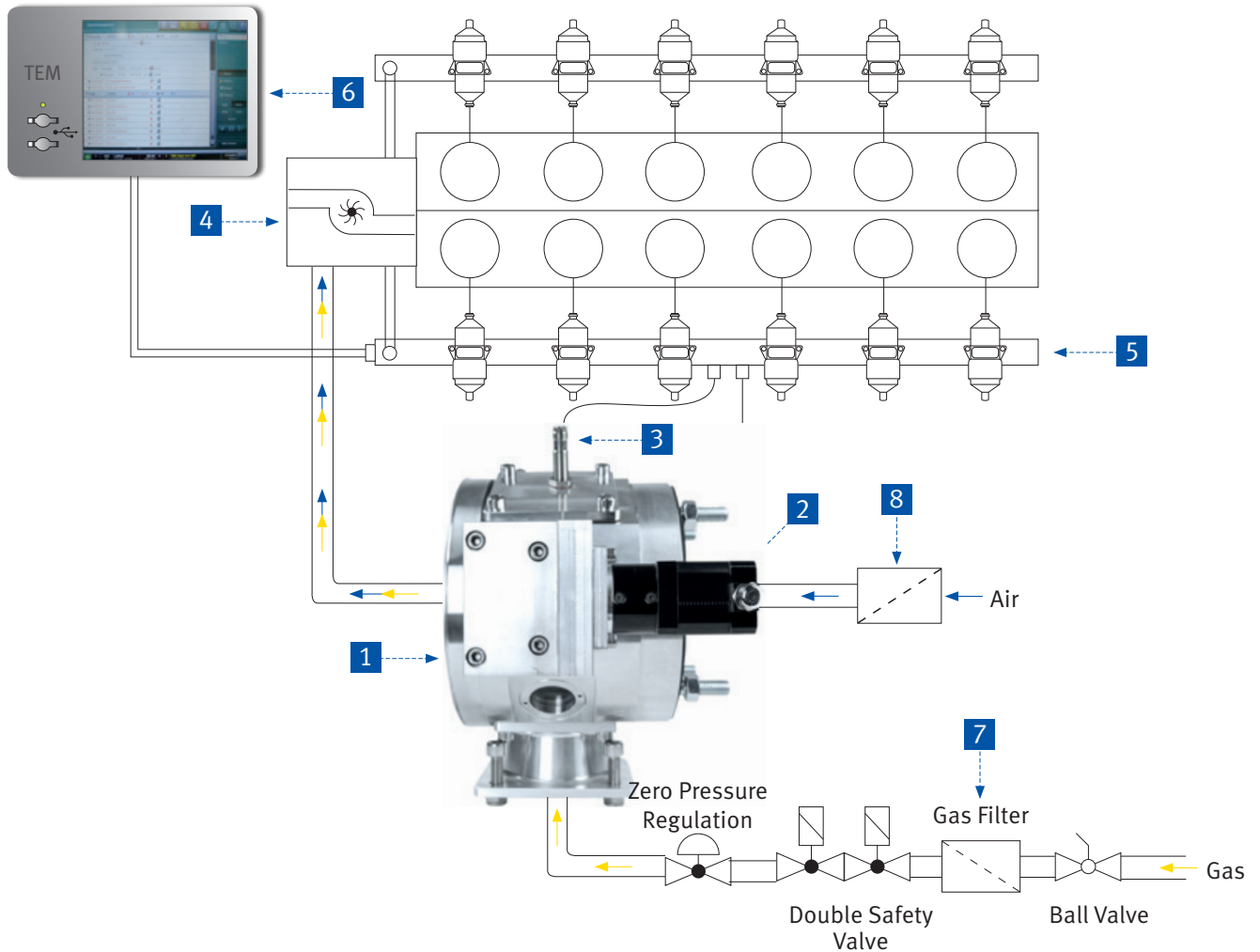


Features

- Plug-and-play solution for easy replacement of the original gas mixer without mechanical modifications or cabling adjustments
 - 1 Suitable flanges for direct connection to existing intake manifold, suction hose and gas train
 - 2 Stepper motor with connecting cable and mating connector to multifunction rail
 - 3 Position sensor suitable for cabling of the multifunction rail
- Direct control by existing TEM management system
- The variable fuel ring of the VariFuel2-TEM improves the mixture control behaviour and thus enables an optimized starting behaviour and performance, especially in operation with special gases
- Low-maintenance part reduces operating costs by saving expensive repair kits
- No further need for vulnerable flowbody rod of original mixer



System Overview



Description

- | | |
|--|--------------------------------|
| 1 VariFuel2-TEM air/gas mixer | 5 Multifunction rail |
| 2 Stepper motor with connecting cable and connector | 6 TEM management system |
| 3 Position sensor | 7 Gastrain |
| 4 Turbo charger | 8 Air filter |

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VariFuel2-TEM Air/Gas Mixer for **MWM**® Gas Engines

P/N	Description
30.45.200-120DG-XA	VariFuel2-TEM air/gas mixer for MWM® TBG 616 V8-V16 and TCG2016 V8-V16 gas engine
30.45.200-120D-XA ¹⁾	VariFuel2-TEM air/gas mixer for MWM® TBG 616 V8-V16 and TCG2016 V8-V16 gas engine, for Control Panel Upgrade with AIO/IntelSys Gas
30.45.250-150DG-XA	VariFuel2-TEM air/gas mixer for MWM® TBG 620 V12-V16 and TCG2020 V12-V16 gas engine
30.45.250-150D-XA ¹⁾	VariFuel2-TEM air/gas mixer for MWM® TBG 620 V12-V16 and TCG2020 V12-V16 gas engine, for Control Panel Upgrade with AIO/IntelSys Gas

¹⁾ Requires VariStep3 or comparable stepper motor card

VariFuel2 Air/Gas Mixer for **MWM**®

P/N	Description
30.45.200-120DG-XA2	VariFuel2-2PU air/gas mixer for MWM® TBG 616 V8-V16 and TCG2016 V8-V16 gas engines, Variant with 2 proximity sensors to determine the 0/100% fuel ring position (For 3rd party control panel upgrades)
30.45.250-150DG-XA2	Variant with 2 proximity sensors to determine the 0/100% fuel ring position (For 3rd party control panel upgrades) --> consult factory

Flow Bodies for VariFuel2-TEM Air/Gas Mixer for **MWM**® Gas Engines ¹⁾

P/N	Description	Diameter	Application	Fuel
31.01.720-85.0-3	Flow body	85.0 mm	MWM® TCG 2016 V08	Biogas
31.01.720-70.0-3	Flow body	70.0 mm	MWM® TCG 2016 V08	Natural Gas
31.01.720-60.0-3	Flow body	60.0 mm	MWM® TCG 2016 V12	Biogas
31.01.720-30.0-3	Flow body	30.0 mm	MWM® TCG 2016 V12	Natural Gas
31.01.720-65.0-3	Flow body	65.0 mm	MWM® TCG 2016 V16	Biogas
31.01.720-50.0-3	Flow body	50.0 mm	MWM® TCG 2016 V16	Natural Gas

¹⁾ Flow body needs to be ordered separately according to application. Other flowbody sizes are available depending on application.



Please note that mentioned flow bodies are specified on basis of available engine data and are for reference only. Please consult the factory or your nearest MOTORTECH distributor to get the correct flow body specified for your engine application.

Repair Kits für VariFuel2-TEM 200-120er Air/Gas Mixer

P/N	Description
31.01.996-2A	Stepper motor kit with new stepper motor for all VariFuel2-TEM versions and VariFuel2-2PU
31.01.996-1-200-120A	Basis repair kit for VariFuel2-TEM and VariFuel2-2PU, series 200/120
31.01.997-3-200-120B	Inlet nozzle kit for VariFuel2-TEM and VariFuel2-2PU, series 200/120
31.01.997-1-250-150B	Basic repair kit for VariFuel2-TEM and VariFuel2-2PU, series 250/150
31.01.997-3-250-150	Inlet nozzle kit for VariFuel2-TEM and VariFuel2-2PU, series 250/150

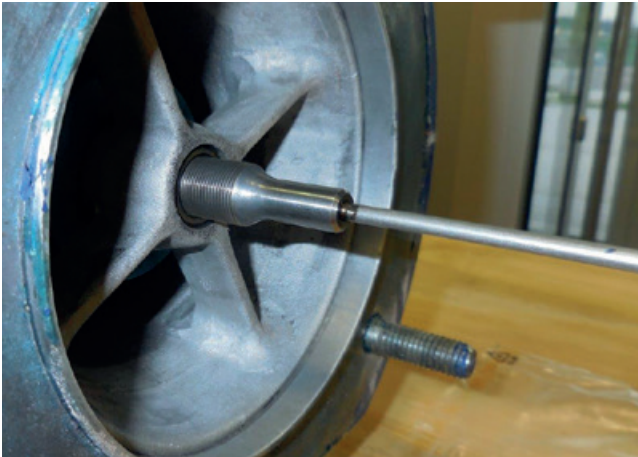
MOTORTECH Gas Mixer Variants for MWM® engines			
Description	VF2-TEM with 1 sensor as 1:1 replace of the RMG mixer	VF2-2PU with 2 sensors 0/100%	VF2 with 1:1 compatible flanges to MWM® RMG mixer
Motor / Controls	MWM® TEM-Evo® controller	Any PLC that requires 0/100% fuel ring position feedback	VariStep3 + AIO/InteliSys Gas
VariFuel2 200-120 series			
MWM® TBG 616 V8, V12, V16	30.45.200-120DG-XA	30.45.200-120DG-XA2	30.45.200-120D-XA
MWM® TCG2016 V8, V12, V16	30.45.200-120DG-XA	30.45.200-120DG-XA2	30.45.200-120D-XA
VariFuel2 250-150 series			
MWM® TBG 620 V12	30.45.250-150DG-XA	30.45.250-150DG-XA2 (consult factory)	30.45.250-150D-XA
MWM® TBG 620 V16	30.45.250-150DG-XA	30.45.250-150DG-XA2 (consult factory)	30.45.250-150D-XA
MWM® TCG2020 V12	30.45.250-150DG-XA	30.45.250-150DG-XA2 (consult factory)	30.45.250-150D-XA
MWM® TCG2020 V16	30.45.250-150DG-XA	30.45.250-150DG-XA2 (consult factory)	30.45.250-150D-XA
MWM® TBG 620 V20	⊘	⊘	⊘
MWM® TCG2020 V20	⊘	⊘	⊘

Air/Fuel Ratio Control Systems

The initial situation

The original RMG® Air/Gasmixer is designed with a vulnerable rod.

The flow body is connected to the stepper motor via a rod **1**. The rod loosens at the screw connection **2** – the connection is broken. This results in the stepper motor no longer being driven.



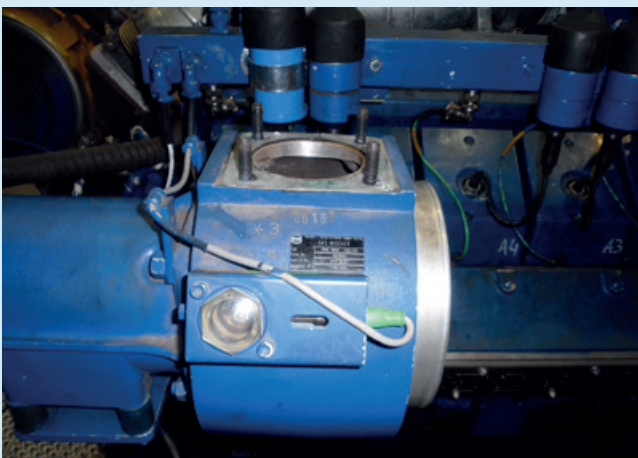
1 Rods on flowbody



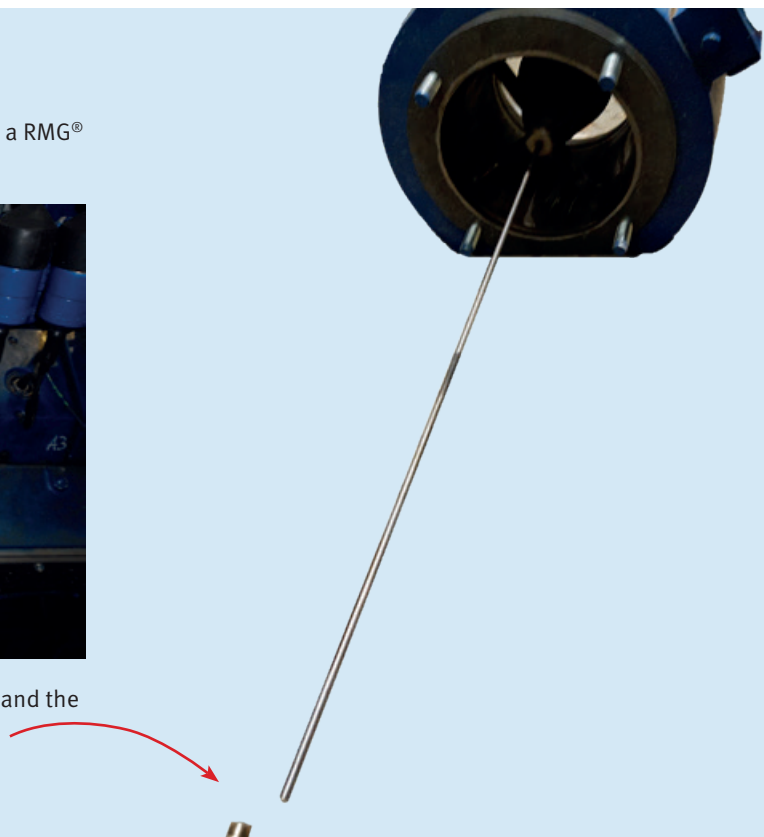
2 Screw connection on stepper motor

Practical example “Before”

This engine (TCG2016V12) is originally equipped with a RMG® (RMG985B-250/125) air/gas mixer.



The rod loses the connection to the screw connection and the contact to the stepper motor is broken:



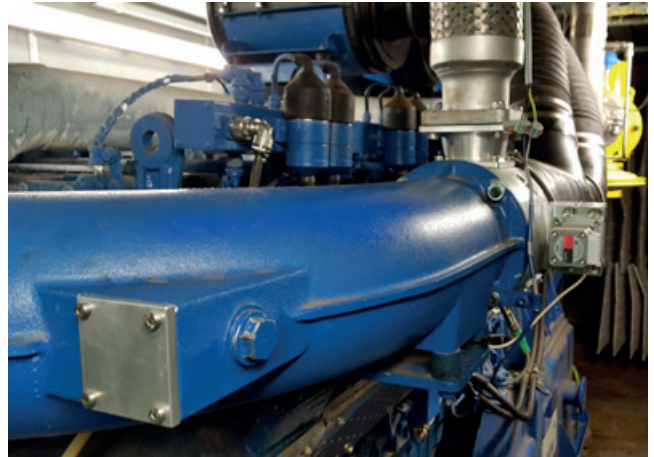
Practical examples “After”

The engine will be equipped with a 200-120 VariFuel2-TEM air/gas mixer from MOTORTECH.

The stepper motor **3** is located directly on the air-gas mixer. The vulnerabel rods are eliminated. The opening is closed with a plate **4** which is included in MOTORTECH scope of supply of TEM Air/Gas mixer.



3 VariFuel2-TEM with stepper motor



4 Opening on the motor that is no longer needed is closed with a plate

This engine (TBG620 V16) will be equipped with a 250-150 VariFuel2-TEM air/gas mixer from MOTORTECH.



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GAS ENGINE TECHNOLOGY

Ignition Systems	Red
Spark Plugs & Accessories	Orange
Gas Engine Control Systems	Light Blue
Sensor Systems	Yellow
Air/Fuel Ratio Control Systems	Green
Exhaust Gas Aftertreatment	Green
Gas Engine Accessories	Grey

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