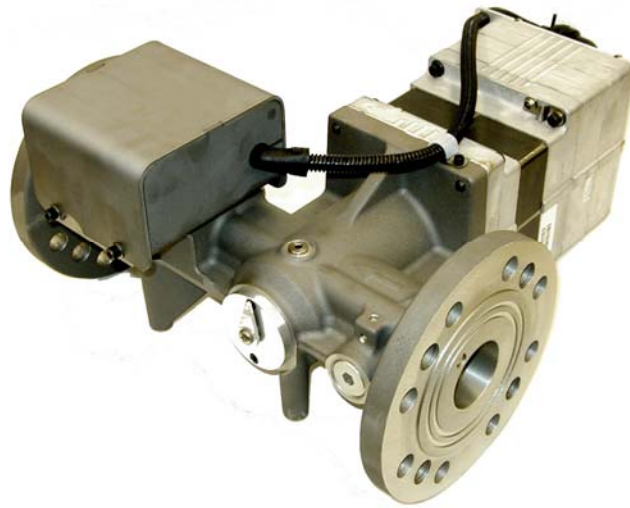




Application Guidelines for TecJet™ with E3 Fuel Blending System

System Part Numbers 9906-720 & 9906-721

Application Guidelines for TecJet™ with E3 Fuel Blending System

Introduction

The E3 Fuel Blending System uses TecJet™ fuel metering valves for independent, full-authority control of two different fuel streams into a single engine. The system is designed to be able to meter the two fuels in any ratio from 0% to 100%. However, except for the TecJet Precision Flow variants, TecJet valves are unable to meter fuel down to 0% flow due to leakage past the butterfly valve when fully closed. This means the system will be unable to reach target blend ratios approaching 0% or 100% while in fuel blending mode.

TecJet Application Recommendations

TecJet for Biogas

Since blending a very small percentage of biogas with pipeline gas is not a typical operating condition, it is recommended that the externally requested fuel blending ratio via the fuel blending ratio analog input or via CANopen be set to a value always greater than 0% (for example, 10%) that allows the biogas TecJet to be in control at the required flow rate. The actual minimum ratio should be determined experimentally during commissioning by observing the blend ratio at the minimum expected load for fuel blending at which the biogas TecJet begins to approach 0% open. This should be considered the minimum blend ratio to be requested externally. If, during fuel blending operation it is desired to operate at ratio less than the minimum ratio as determined above, it will be necessary to exit fuel blending mode and shut off the biogas supply completely.

TecJet for Pipeline Gas

If the engine's maximum desired load on 100% pipeline gas can be met with a Precision Flow TecJet, then we recommend using a Precision Flow TecJet for pipeline gas, since this TecJet can effectively meter fuel down to nearly zero flow.

If a larger TecJet is needed, we recommend that the externally requested fuel blending ratio via the fuel blending ratio analog input or via CANopen be limited to a value less than 100% (for example, 90%) that allows the pipeline gas TecJet to be in control at the required flow rate. The actual maximum ratio should be determined experimentally during commissioning by observing the blend ratio at the minimum expected load for fuel blending at which the pipeline gas TecJet begins to approach 0% open. This should be considered the maximum blend ratio to be requested externally. It is also possible and recommended to set a maximum fuel blending ratio internally in the fuel blending system. On ToolKit screen 1.5, the user-configurable parameter "Ratio maximum limit" (see Figure 1) will limit the fuel blending ratio to the user-specified value and override any higher requested blend ratio received via the fuel blending ratio analog input or via CANopen. If, during fuel blending operation it is desired to operate at ratio greater than the minimum ratio as determined above, it will be necessary to exit fuel blending mode and shut off the pipeline gas supply completely.



Figure 1. Fuel Blending Ratio Maximum Limit (ToolKit Screen 1.5)

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You can also contact the Woodward Customer Service Department at one of the following Woodward facilities to obtain the address and phone number of the nearest facility at which you can obtain information and service.

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General

Your Name _____

Site Location _____

Phone Number _____

Fax Number _____

Prime Mover Information

Manufacturer _____

Engine Model Number _____

Number of Cylinders _____

Type of Fuel (gas, gaseous, diesel,
dual-fuel, etc.) _____

Power Output Rating _____

Application (power generation, marine,
etc.) _____

Control/Governor Information

Control/Governor #1

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number _____

Control/Governor #2

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number _____

Control/Governor #3

Woodward Part Number & Rev. Letter _____

Control Description or Governor Type _____

Serial Number _____

Symptoms

Description _____

If you have an electronic or programmable control, please have the adjustment setting positions or the menu settings written down and with you at the time of the call.

We appreciate your comments about the content of our publications.

Send comments to: icinfo@woodward.com

Please reference publication **51388**.



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