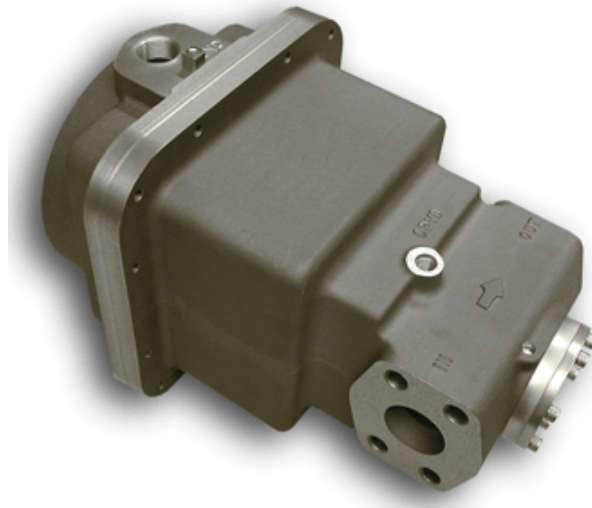


Low Pressure Water Metering Valve (WT6)

Applications

The Woodward WT6 water metering valve is designed to meet the high performance standards required for the control of water to industrial gas turbines for power augmentation or other peak demand applications. The high bandwidth driver/actuator/valve combined with Woodward application expertise can be customized for the most demanding water flow needs. The assembly provides reliable, cost-effective interfaces between the electronic control system and the gas turbine as applied in power generation, compressor, or mechanical-drive applications.



Description

The WT6 valve incorporates the highly robust Woodward self-cleaning metering valve design with a high-torque actuator to ensure extended operation in all types of service. Special considerations for operation with de-ionized or de-mineralized water applications have been incorporated into the design for long-term use at high differential pressures. The valve features an on-board electric actuator driver for ease of packaging and installation. Valve versions with dual position feedback resolvers are available for critical applications. The drivers supplied with these valves incorporate dual signal conditioning, resolver fault detection, and selectable failure management options.

The WT6 is an electrically actuated metering valve with an on-board electronic position controller. Highly accurate flow control is achieved by the use of a spherical metering element with a precision machined metering port. A seal shoe is located against the spherical valve element to allow accurate flow area control and the achievement of position flow shut-off. The use of rare earth permanent magnets in a highly efficient electromagnetic circuit provides high actuation forces while minimizing package size. The closely integrated mechanical design eliminates backlash and provides virtually infinite valve positioning resolution.

The self-cleaning, shear-type metering action keeps the metering port free from performance-limiting deposits of condensates, contaminants, and system debris.

The valve uses a single moving part with the metering element, actuator rotor, and single or dual redundant position feedback resolvers mounted on a solid, single-piece shaft. Accurate flow versus input signal characteristics are achieved on each valve version by precision forming of the valve metering port, the use of extended valve travel, and high precision resolvers for valve position feedback. Integral pressure taps in the valve body allow for ease of external pressure measurement.

- Single moving part for reliable performance
- All-electric actuation
- On-board driver
- Fast dynamic response
- Robust self-cleaning valve
- Digital and/or analog interface
- Highly accurate water metering
- Discrete fault output and independent shutdown
- Certified for use in Hazardous Locations

Specifications

Electrical Characteristics

Input voltage range:	18–32 Vdc
Normal input current range (steady-state, maximum):	0.2 to 2 A
Maximum continuous input current:	3 A
Maximum transient input current:	7 A

Mechanical Characteristics

Weight	
WT6 Single Resolver	18 kg (40 lb)
Mounting	See installation drawings
Fluid connections	See installation drawings

Environmental

Process Fluid	Water or De-mineralized water (PH must be between 6 and 9)
Ingress Protection	IP56 per IEC EN 60529

Pressure

Operating pressure range:	690 to 2413 kPa (100 to 350 psig) (6.9 to 24.1 bar)
Proof pressure:	3620 kPa (525 psig)
Burst pressure:	12066 kPa (1750 psig)
Nominal piping size (NPS):	38.1 mm (1.5 inches)
Maximum Overboard Drain Port (OBVD) Backpressure:	69 kPa (10 psig)

Temperature

Ambient: (restriction for CE Marking)	+2 to +93 °C (+36 to +200 °F)
Process Fluid Temperature:	+7 to +65 °C (+45 to +150 °F)
Unpowered Heat Soak:	125 °C, 2 hours

Vibration and Shock

Swept sine vibration:	Per US MIL-STD-810C, Method 514.2, Procedure I, Figure 514.2-2, Curve AR (2g)
Shock:	Per US MIL-STD-810C, Method 516.2, Procedure I, (10g)

Flow Characteristics

Flow Area (Max Cv)	97 mm ² (0.15 in ²). 100% valve open Cv = 6.03 Valve orifice plate Cv = 3.99 Total Effective Valve Cv = 2.83 [based upon full flow conditions at 76 L/min (20 US gallons/min) and 345 kPa (50 psid / 3.45 bar)]
Digital Accuracy	Better than: 5% of point for Cv's from 0.12 - 0.3; 2% of point for Cv's greater than 0.3
Analog Accuracy	Comparable to digital accuracy when used in a temperature range of 10 to 43 °C (50 to 110 °F). For temperatures outside these limits, digital demand is recommended.
Temperature Drift	The maximum temperature drift for positional accuracy will be 0.05% of full-scale input demand (4–20 mA) per degree F.
Common Mode Rejection	Maximum common mode error for positional accuracy will be 0.025% of full-scale input demand per volt common mode. Common mode voltage being the average voltage at 4–20 mA inputs with respect to power supply ground.

Woodward Flow Control Systems For accuracies and performance in a Woodward indirect flow measurement & control system please see Application Note 51469.

Regulatory Compliance

European Compliance for CE Marking:

EMC Directive:	Declared to 2004/108/EC COUNCIL DIRECTIVE of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and all applicable amendments.
ATEX – Potentially Explosive Atmospheres Directive:	Declared to 94/9/EEC COUNCIL DIRECTIVE of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres. Zone 2, Category 3, Group II G Ex nA IIC T3

Other European and International Compliance:

IECEX: Certified for use in hazardous locations. IECEx CSA 13.0021X Ex nA IIC T3 Gc IP56

Compliance with the following European Directive does not qualify this product for application of the CE Marking:

Machinery Directive:	Compliant as partly completed machinery with DIRECTIVE 2006/42/EC of the European Parliament and the Council of 17 May 2006 on machinery.
Pressure Equipment Directive:	Compliant as “SEP” per Article 3.3 to Pressure Equipment Directive 97/23/EC of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment.

North American Compliance:

These listings are limited only to those units bearing the CSA identification.

CSA: CSA Certified for Class I, Division 2, Groups A, B, C, D T3 at 93 °C ambient. For use in Canada and the United States. Certificate 1214202.



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