

TECHNICAL DATA SHEET

PROPORTIONAL SOLENOID FLOW CONTROL (PATENT PENDING)



DESCRIPTION

The **Proportional Solenoid Valve** provides variable flow control of hot and cold water supplies. When used in conjunction with flow signal and feedback loop regulation of < 0.2 lit/min. Key attributes are:

- **Small compact size**
- **Exception stability and fast response times**
- **Potable water and safety standards WRAS & ENEC & UL CSA**
- **Customer specific body options available**

APPLICATIONS

The Proportional Valve is ideally suited to applications in domestic and commercial showers and faucets, typical applications are:

- **Electrically heated Showers for gravity and mains fed water systems**
- **BEAB CARE Shower systems**
- **Thermostatic Mixing valve (TMV) for gravity and mains fed water systems**
- **Digital Thermostatic valve systems for Showers and faucets**

GENERAL PERFORMANCE DATA

RATED VOLTAGE:	24 DC PWM Drive
POWER DRAW:	9 Watts
COIL INSULATION:	Class F (Max Temp - 140°C), Class A (USA Max Temp - 105°C)
TERMINALS:	Two 6.35 x 0.8 mm male tab
AMBIENT TEMPERATURE:	60°C maximum
MEDIUM:	Potable Water
DUTY CYCLE 100%:	Tu 60°C (ambient), Tm 25°C (Cold Water)
DUTY CYCLE 3 MIN ON / 5 MIN OFF:	Tu 60°C (ambient), Tm 85°C (Hot Water)
APPLICATION PRESSURE:	0.2 Bar to 10 Bar
OPERATIONAL PRESSURE:	0.5 Bar to 5 Bar (Dynamic)
OPERATIONAL FLOW RANGE:	0.5 Bar to 5 Bar (Dynamic)
SECURITY PRESSURE:	> 50 Bar
FILTER REQUIREMENT:	0.2 mesh
APPROVALS:	EN 60 730-2-8, WRAS
SERVICE LIFE:	25,000 operations

STANDARDS

The Proportional Valves range is subjected to compliance testing and approval to following standards:

- **WRAS: Water Research Advisory Scheme (Hot & Cold Water 85°C)UL – USA: File No E101614**
- **VDE – ENEC: File 40028210, DIN EN 60730-1:2009-06; EN 60730-2000+A1+A12+A13+A14+A16+A2, DIN EN 60730-2-8 :2004-08; EN 60730-2-8:2002 + A1:2003**
- **RoHS: Hydrelectric certifies all solenoid valves are compliant to European Directive 2002/95/EC**

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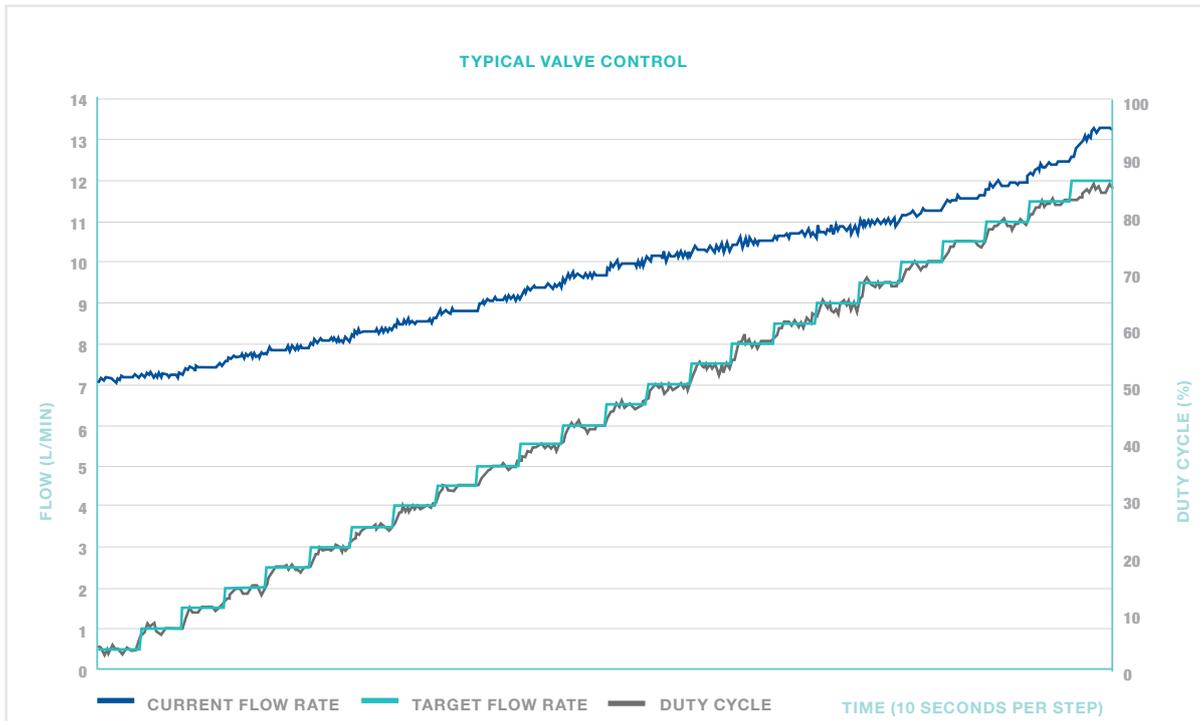
PROPORTIONAL SOLENOID FLOW CONTROL

FLOW

The graph demonstrates the range of flow rates achievable verses the (% duty cycle) applied.

Duty Cycle: Functional Range 45 - 90%, demand may increase over life time by up to 10%

Flow Stability: +/- 0.2lpm



GENERAL REQUIREMENTS

The proportional valve has been tested in accordance with following requirements:

MINIMUM OPERATING PRESSURE:	0.5 Bar dynamic (Typically 2.5Bar static) with no restriction on outlet
MINIMUM DIFFERENTIAL PRESSURE:	0.2 Bar
FLOW RANGE:	0.5 - 12 litres/min at 3 Bar dynamic
EFFECTIVE CONTROL RANGE:	45 - 90% Duty Cycle
INLET FILTER:	0.2mm mesh size, failure to use a filter upstream of valve can cause failure
WATER QUALITY:	Solenoid valves are designed for use on potable clean water systems, excessive particulates can cause failure
MOUNTING ORIENTATION:	Mounting can be in horizontal or inverted positions
PURGING AIR:	Guide tube assembly must be purged of excessive air during initial installation
ENDURANCE TESTING:	25,000 cycles of duty cycle ramp up/down between 0 and 100% in 10% increments at 5 Bar dynamic pressure. Duty cycle drift after testing <10%. 50,000 on/off cycles at 10 Bar static pressure, zero leakage.

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QUALITY ASSURANCE

The proportional valve is manufactured within the scope of ISO 9001 and under strict quality systems to verify compliance to Client and International standards for safety and correct operation. All valves are subject to following development and production compliance:

TEST	DEVELOPMENT	MANUFACTURING BATCH
LEAK TEST	Material, Process & new Product	100%
FUNCTIONAL TEST	Material, Process & new Product	100%
RELIABILITY	Material, Process & new Product	NA
COIL RESISTANCE TEST	New Product	100%
COIL SURGE TEST - > 110VOLTS	Material, Process & new Product	100%
DIELECTRIC TEST	Material, Process & new Product	100%

PORT CONNECTIONS & BODY TYPES

	SINGLE VALVE 180° BODY (STRAIGHT THROUGH)		
	INLET	OUTLET	
	3/4 BSP	3/4 BSP	
	1/2 BSP	1/2 BSP	
	3/8 BSP	3/8 BSP	
	3/8 Push fit	3/8 Push fit	
	10mm Push fit	10mm Push fit	

CHEMICAL RESISTANCE

If the application requires strong or aggressive chemicals verify valve materials will not be affected. Chemical resistance tools are available on Hydraelectric website www.hydraelectric.com.

GENERIC CONSTRUCTION AND MATERIAL DATA

COMPONENT	MATERIAL
BODY	NYLON PA 6.6 30% Glass Filled
GUIDE TUBE	NYLON PA 6.6 30% Glass Filled
SPRINGS	AISI 316 stainless steel
ARMATURE	Stainless Steel Z6CDF18.2 (ASTM XM 34)
DIAPHRAGM AND ARMATURE TIP	Ethylene Propylene Diene Monomer (EPDM) Elastomer
DIAPHRAGM PLATE	NYLON PA 6.6 30% Glass Filled
COIL BOBBIN	Nylon PA 6.6 heat stabilised
COIL ENCAPSULATION	Nylon PA 6.6 heat stabilised
MAGNETIC CIRCUIT	Mild Steel 1.2 Galvanised bichromated
MOUNTING BRACKET	Mild Steel 1.2 Galvanised bichromated

TECHNICAL ASSISTANCE

Please contact our Sales or Technical Support team on **0044 (0) 1932 334200**, or visit our website www.hydraelectric.com.