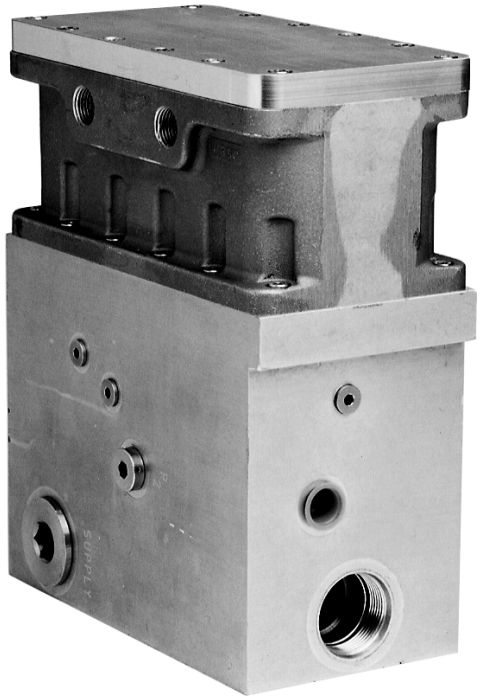
Liquid Shutoff Valve 25

Applications



The liquid shutoff valve is a three-way valve designed to rapidly shut off all liquid fuel flow and prevent leakage to the turbine. In the de-energized state, the valve diverts inlet flow to bypass ports, preventing pressure damage to positive displacement fluid systems.

Normal installation of the 45 lb (20 kg) valve is in the fuel line between the fuel regulating valve and the turbine.

The valve diverts flows from the discharge to bypass ports any time the operating electrical signal is lost. The valve is available in two voltage configurations.

The valve is designed for a normal operating supply pressure of up to 1200 psig (8274 kPa) and has a rated flow of 30 000 lb/h (13 608 kg/h) based on US MIL-C-7024 calibrating fluid at 70 °F (21 °C).

Description

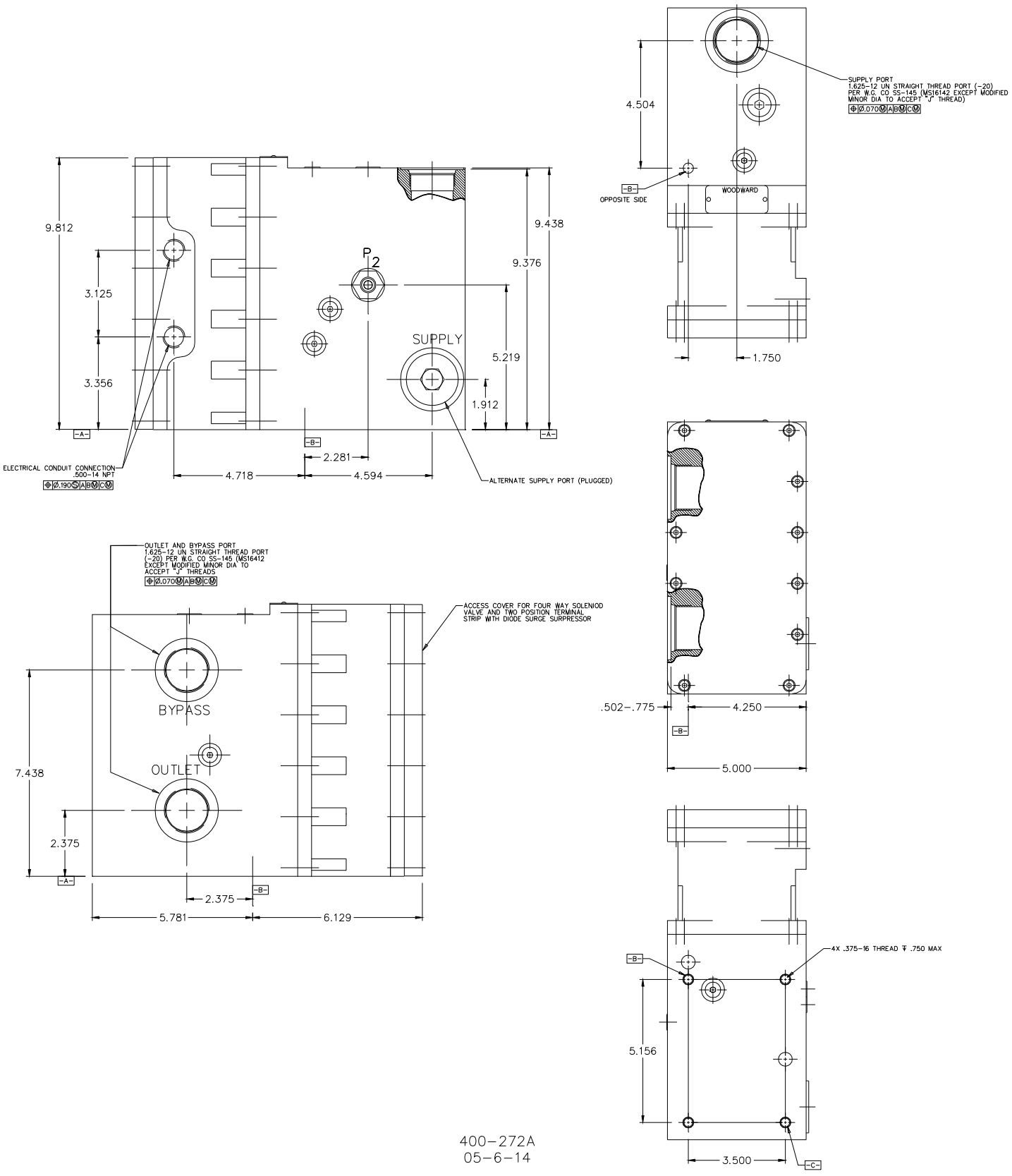
The Woodward liquid shutoff valve is a two-stage valve. It uses supply pressure to provide a complete shutoff of fuel flow in 0.09 seconds or less after termination of a solenoid current. Valve closure is due to spring compression assisted by supply pressure.

An inlet screen in the valve prevents contaminants in excess of 40 µm, nominal, from damaging the pilot valve section.

The valve housing is constructed of anodized aluminum. Hardened stainless steel is used for all internal parts. The valve is designed for proof pressures of 1800 psig (12 411 kPa) and burst pressures of 6000 psig (41 370 kPa).

An optional closed valve position switch is available.

- 30 000 lb/h (13 608 kg/h) rated flow
- Closes in 0.100 seconds
- 1200 psig (8274 kPa) maximum operating pressure
- Models are available with certification for North American Hazardous Locations
- Models are available compliant with the applicable CE Directives: ATEX, PED, and Machinery



Outline Drawing of Liquid Fuel Shutoff Valve without Proximity Switch
(Do not use for construction)

Specifications

ELECTRICAL REQUIREMENTS	
Voltage Available	Nominal 24 Vdc, 125 Vdc
Power Consumption	20 W nominal
Resistance to Ground	10 MΩ minimum at 500 Vdc
Dielectric Strength	Leakage current less than 0.5 mA at 1000 Vac plus twice the rated solenoid voltage for one minute
GENERAL	
Fuel Type	The valve is compatible with most types of diesels, kerosenes, gasolines, heavy and light distillates including naphtha, gas turbine fuels and fuel oils, and other liquid fuels such as biodiesel that are compatible with fluorocarbon (FKM) type elastomers and conform to international standards for utility, marine, and aviation gas turbine service. Ultra low sulfur diesels are also acceptable with proper lubricity additives. Other fuels such as ethanol or methanol may be acceptable with internal seal compound substitutions. Contact Woodward for these and other special fuel applications.
Fuel Viscosity	Fuel viscosity must be between 0.5 and 12.0 centistokes.
Fuel Cleanliness	Liquid fuel must be filtered to limit particulate size to 20 µm or smaller. Water content must be limited to 0.1% by volume. Solids, sediment, and particulates must be limited to 1.0 mg per liter of fuel.
Fuel Temperature	0 to +250 °F (–18 to +120 °C)
Rated Flow	30 000 lb/h (13 608 kg/h) based on US MIL-C-7024 calibrating fluid at 70 °F (21 °C)
Cycle Life	10 000 cycles
Weight	45 lb (20 kg)
Construction	Anodized aluminum housing. Hardened stainless steel internal components
Fittings	Fuel inlet, fuel outlet, and bypass ports machined to accept –20 (SAE 070120) straight thread fittings
Electrical	0.500-14 NPTF conduit connector or M20-1.5 cable entries
OPERATING SPECIFICATIONS	
Opening Time	Maximum of 0.400 seconds after admission of fuel and solenoid current
Closing Time	Within 0.100 seconds after the solenoid is de-energized with 100–1200 psig (690–8274 kPa) fuel applied to the inlet
Pressure Drop	53 psid (365 kPa) inlet to discharge at 30 000 lb/h (13 608 kg/h) 139 psid (958 kPa) inlet to bypass at 30 000 lb/h (13 608 kg/h)
Internal Leakage Shutoff	From inlet to discharge: None From inlet to bypass: 500 ccm maximum at 800 psid (5516 kPa)
Reverse Pressure Condition	900 psig (6206 kPa)
Fluid Supply Pressure:	
Normal	1200 psig (8274 kPa) range
Proof	1800 psig (12 411 kPa)
Burst	6000 psi (41 370 kPa)
Maximum Bypass Pressure	250 psig (1724 kPa)
Cracking Pressure	100 psi (690 kPa) above reference pressure (bypass)

REGULATORY COMPLIANCE

European Compliance for CE Marking:

These listings are limited only to those units bearing the CE Marking.

Pressure Equipment Directive:	Certified to Pressure Equipment Directive 97/23/EC of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment, Category II
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. LCIE 0 03 ATEX 6100 Zone 1, Category 2, Group II G, EEx d IIB T4

Other European Compliance

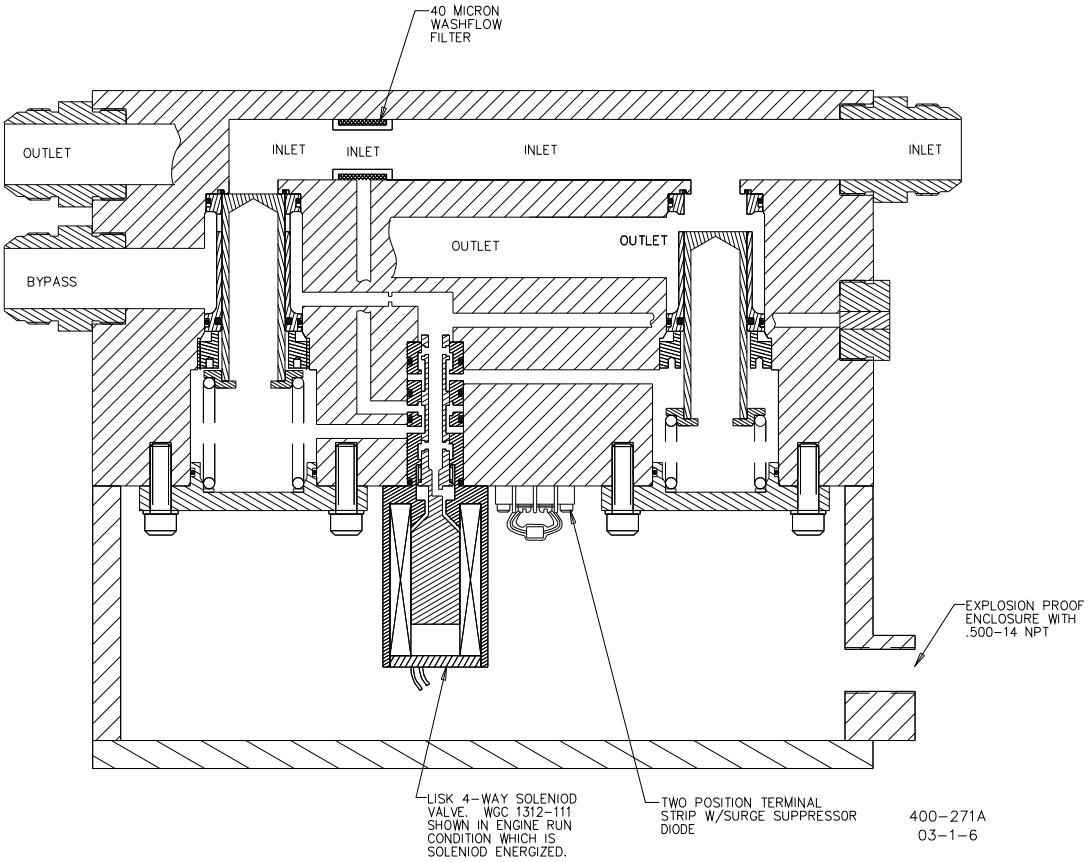
Compliance with the following European Directives or standards does not qualify this product for application of the CE Marking:

Machinery Directive:	Compliant as a component with 98/37/EC COUNCIL DIRECTIVE of 23 July 1998 on the approximation of the laws of the Member States relating to machinery.

North American Compliance:

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

CSA:	CSA Certified for Class I, Division 1, Groups C & D, and Class I, Division 2, Groups B, C, & D, T4 at 121 °C Ambient for use in Canada and the United States
Proximity Switch Version:	CSA Certified for Class I, Division 1, Group D and Class I, Division 2, Groups B, C, & D, T4 at 121 °C Ambient for use in Canada and the United States.



Schematic Diagram of Liquid Shutoff Valve in the Energized Mode without Proximity Switch

See the technical manual for more information on the proximity switch version.

Technical Manual 40148

WOODWARD

PO Box 1519, Fort Collins CO, USA 80522-1519
1000 East Drake Road, Fort Collins CO 80525
Tel.: +1 (970) 482-5811 ◆ Fax: +1 (970) 498-3058
www.woodward.com

Distributors & Service
Woodward has an international network of distributors and service facilities. For your nearest representative, call the Fort Collins plant or see the Worldwide Directory on our website.

For more information contact: