

## Evolution 2L

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### DATA SHEET

#### *Description*

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The Evolution 2L Liquid Throttle Valve (EVO 2L) is a mechatronic valve assembly similar in form and function to the Evolution 2G Gas Fuel Throttle Valve (EVO 2G) but for liquid fuels. The description is the same as the EVO 2G gas fuel throttle except for the following features.

The Evolution 2L liquid throttle valve uses a wafer type Fisher V200 V ball valve fitted between an ANSI class 600 flange and a special block containing a recycle pressure regulator block. The recycle regulator valve acts to maintain reasonably constant pressure drop of around 50 psi across the throttle valve by 'spilling' unrequired fuel back to the tank or high pressure pump inlet by means of a third connection on the block. Fisher V200 valves are available in 1 inch reduced and 1 inch sizes to support flow requirements for gas turbines up to over 100MW shaft power.

The Evolution 2L liquid throttle valve may be supplied with or may accept a process signal from a transmitter connected to instrument tappings on the block to measure the valve differential pressure. The EVO 2L flow controller can use this measurement to compensate for the natural pressure drop of the mechanical regulator thus improving the flow accuracy of the system. The measurement also provides increased protection by allowing the flow controller to monitor the correct operation of the recycle regulator valve. The differential pressure sensor is therefore recommended for larger turbines.

HEINZMANN will supply EVO 2L liquid valves ready for use with configuration set for the appropriate valve and fuel characteristics but Evolution 2L is fully user configurable using a PC software application according to instructions which we provide in the installation and operations manual.

#### *Application range*

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➔ Gas turbines

#### *Certificates*

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On request

#### *Features*

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Integrated recycle regulator block ready to use

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BSPP ports to accept standard compression fittings for pump, manifold and tank connections

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ANSI class 600 pressure rating for pressure atomised burner systems

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Cartridge type recycle regulator valve for easy inspection/replacement



## Technical data

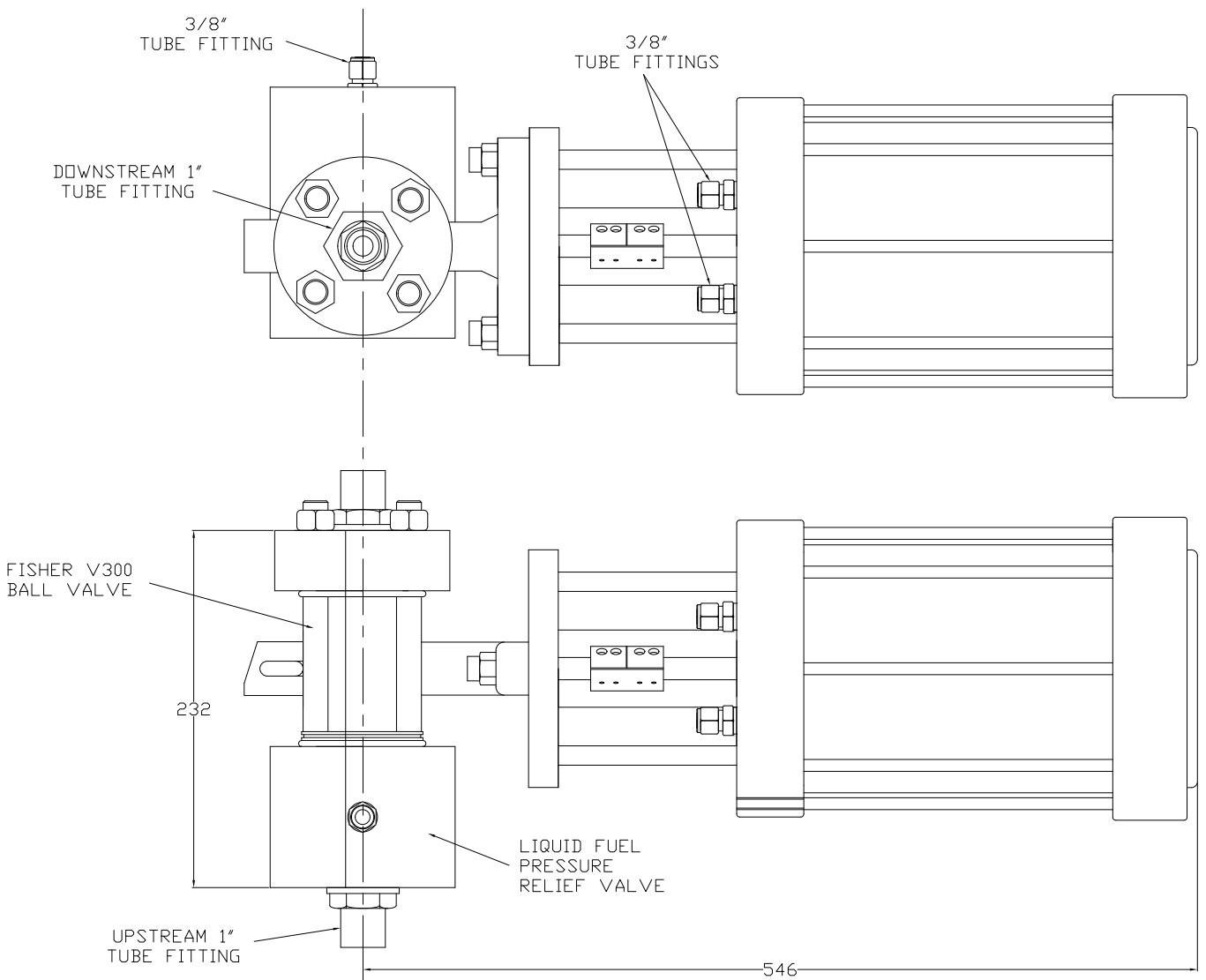
<b>Designation</b>	<b>EVO 2L</b>
Overall weight	34 kg
<b>Electronic controller/positioning servo</b>	
Power supply voltage range	18 through 32 VDC
Power supply current range	< 1 A (steady state) through 6 A (accelerating)
Ambient temperature range	-20 through 60 °C
Environmental rating	IP56
Hazardous area certification	Ex'd' IIC T4 Zone 1 ATEX and Class 1 Division 1 IIC T4 CSA
Maximum torque	40 Nm
Maximum power	250 W
Small signal bandwidth	5 Hz
10-90 % position transit time	300 ms
Fuel liquid pressure measurement range	0 through 10 bar differential standard, other pressures to special order
Position feedback accuracy	Accuracy 0.024 % with no short or long term drift (measured at valve shaft)
Signal demand	4-20 mA isolated user scaleable to heat (kW thermal), mass (kg/min) or volume (l/min) flow units
Position achieved feedback	4-20 mA isolated equivalent to 0 through 90 degrees valve position
Dry contact output 1	Throttle valve open (NC)
Dry contact output 2	Fault detected (NC)
Faults monitored	Watchdog timeout
	Differential pressure sensor out of range (if configured)
	Valve position sensor out of range
	Valve position error
Fault log	Event counter for each fault type since last reset
Fieldbus network types available	DeviceNet, Profibus, Modbus RTU, Ethernet IP, CAN Open (1)
Flow metering algorithm	IEC standard for liquids
Flow control recursion rate	5 ms
Position servo recursion rate	1 ms
Final drive type and frequency	Four quadrant pulse width modulated 5 kHz
Transient maximum current limit	10 A at motor
Steady state current limit	1 A at motor
Servo gearbox type and ratio	20:1, two stage planetary low backlash
Field electrical connections	Screw terminals at non valve end accessed through threaded cover in end plate. Cable entry through four radial M20 x 1.5 threaded gland holes.
Maintenance connection	Ex'd' connector, RS232 protocol, for freeware PC application supplied by HEINZMANN UK
Valve actuation shaft	15 mm keyed
<b>Throttle, block and recycle valve</b>	
Valve adapter	Three legged type to suit standard valve yokes
Valve coupling	Keyed solid type supplied to suit standard valve shaft diameters
Valve type	Flangeless Fisher V200 V ball valve
Valve size	1" reduced trim (micronotch) or 1" standard trim (2)
Valve characteristic	Approx. equal percentage
Turbine application (distillate fuel)	1 through 70 MW shaft power
Valve body material	Cast steel standard, stainless steel optional
Valve shaft and trim material	Stainless steel

Valve seal	Heavy duty metal:metal spring loaded
Valve stem packing	PTFE chevrons spring loaded and adjustable for valve lifetime
Recycle valve	Cartridge type, 50 psi non-adjustable fitted in block in unit with valve on upstream side
Block	Nodular cast iron standard, aluminium optional
Process fittings (pump, return, manifold)	1 inch BSPP female
Instrument fittings	1/4" BSPP female in block and downstream flange
Valve assembly pressure and temperature rating	To ANSI class 600
Valve assembly gaskets	Spiral wound graphite loaded
Valve line bolting	To 1" ANSI class 600 specification
Valve leakage	Better than ANSI class 6

**Notes:**

1. Device-Net and Ethernet IP are trade names of Allen-Bradley. Profibus is a trade name of Siemens. Must be specified at the time of ordering. Where the protocol is master-slave type, all implementations are slave type.
2. Micronotch is a trade name of Fisher Controls.

**Dimensions**



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