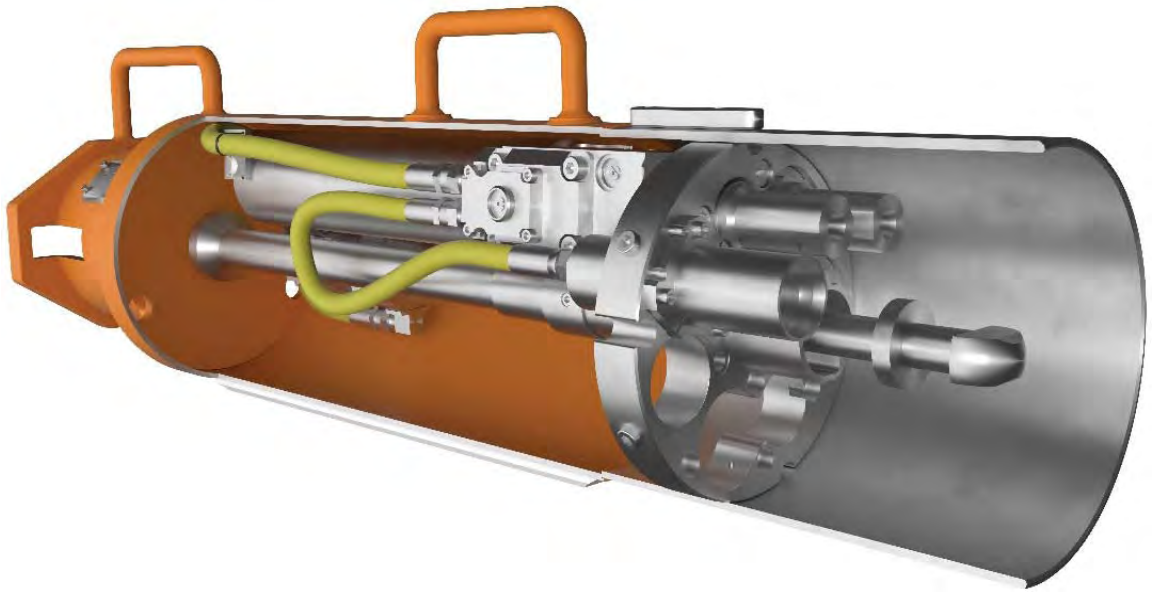


General Design Features

- Pressure-balanced piston: Pressure independence, which is unique to SkoFlo Chemical Injection Metering Valves, constantly delivers accurate and precise chemical injection.
- SkoFlo's Chemical Injection Metering Valve (CIMV) maintains set chemical injection flow rates regardless of upstream (platform to the valve) and downstream (valve to the well) pressure fluctuations. Upstream and downstream pressure fluctuations create a net force on the piston, which is countered by a spring force to maintain constant flow.
- Innovative pressure-balanced piston design that allows chemicals to be distributed at different injecting points from a common line. This reduces the number of umbilicals, and in turn, significantly reduces the cost to the operator. The spring balanced piston also provides a means of control that is more tolerant to debris and fluid filming than a throttling stem directly driven by a gear motor.
- Large particle debris produce a net force on the piston; pressure created on the piston surfaces by debris is pushed out through the outlet instantaneously. Response time occurs within milliseconds with no "hunting" or controls iterations as opposed to a motor operated stem that needs to open and close, also known as dithering.
- Fail "as-is without drift" – During loss of power the valve will continue to regulate flow at the set flow rate, regardless of debris or system pressure fluctuations.
- Unmatched Stability – The near instantaneous response results in a stable system when higher flows create large pressure fluctuations in parallel systems.

SkoFlo Benefits

- 30-years of experience, industry expert and solution provider
- Pressure Independent Valve Technology (PIVT)
- Significant chemical **OPEX** cost savings
- Unmatched flow delivery, accuracy and field proven reliability

Product Specification
Subsea High Flow CIMV

GENERAL

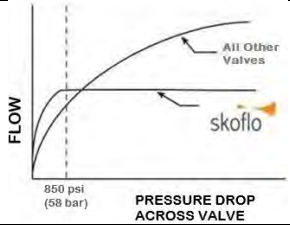
Product	Chemical Injection Metering Valve (CIMV)				
Design Standards	ISO 13628-6 (API 17F) ISO 13628-8 (API 17H), ASME B31.3, ASME BPVC Sec. VIIII				
Design Life	25 Years				
Temperature Rating Ops / Storage	23°F to 104°F (-5°C to 40°C) / 0°F to 158°F (-18°C to 70°C)				
Pressure Rating Working / Proof	10,000 psig (689 barg) / 15,000 psig (1034 barg)				
Depth Rating	10,000 ft (3,048 m)				
Injection Fluid Cleanliness Classification	SAE AS4059 Class 12B-F				
Viscosity	0.5 – 100 cP				
Seawater Wetted Materials	- Nitronic 50 HS / Nitronic 60 - PVC NBR Blend (Proprietary) - Silver (plating on metal seal)	- Aluminum Bronze - Alloy/Inconel 625 - Alloy/Inconel 718	- Alloy/Monel K500 - 316/316L - SuperDuplex 2507	- EPDM - Elgiloy - Acetal Resin	- PEEK - Delrin - Nylon
Chemically Wetted Materials	- SuperDuplex 2507 - Nitronic 50 HS - Gold (plating on metal seal) - Silver (plating on metal seal)	- Carbide Coating (Proprietary) - Alloy/Inconel 600 - Alloy/Inconel 625	- Alloy/Inconel 718 - Alloy/Inconel X-750 - Alloy/Monel K500 - 316/316L	- Chemraz 510 - Carbide - Elgiloy	- PEEK - PTFE - GTFE

ELECTRICAL

Electrical Connector	4-Pin, Teledyne ODI or Siemens Tronic	
Electrical Connector Location	Electrical Connector located in the stab plate or ROV-deployed.	
Motor	High Efficiency Servo	
Voltage Supply[1]	24±4 VDC	
Power Consumption Max, steady state[1]	2W, idle	4W, stem/motor adjustment
Pressure Transducers (digital)	If pressure sensors are specified, four digital diagnostic sensors will monitor inlet and outlet pressures. Sensor accuracy is ± 0.05% of full scale (15,000 psi rated).	
Pressure Transducers (analog)	Alternate analog diagnostic sensors available upon request. Sensor accuracy ± 0.75% of full scale (18,000psi rated).	
Electronics Housing	2 atm nitrogen. Separated from chemical by welded Inconel bellows, from sea water by oil bathed penetrator and oil bathed double elastomeric seals.	
Communications Protocol	CANbus (SIIS Rev2 compliant for level 2 device) or Modbus	

HIGH FLOW CIMV PERFORMANCE[2]

Flow Range	Model H120	0.10 to 1.5 US GPM (12 to 341 LPH)	Model H125	1.00 to 20.0 US GPM (227 to 4542 LPH)
	Model H121	0.13 to 2.5 US GPM (25 to 568 LPH)	Model H126	1.50 to 30.0 US GPM (341 to 6814 LPH)
	Model H122	0.25 to 5.0 US GPM (57 to 1136 LPH)	Model H127	2.00 to 40.0 US GPM (454 to 9085 LPH)
	Model H123	0.50 to 10.0 US GPM (114 to 2271 LPH)	Model H128	2.40 to 48.5 US GPM (550 to 11015 LPH)
	Model H124	0.75 to 15.0 US GPM (170 to 3407 LPH)	**Dual Core** H128: Flows up to 97 US GPM (22,030 LPH)	

Measurement Accuracy	Calculation from differential pressure sensing across a precision orifice.	±3% of Full Scale[4]
Flow Delivery Accuracy[3]	Valve mechanically maintains set flow rate, with instantaneous mechanical response to debris and pressure fluctuations, independent of feedback from flow measurement device.	
Secondary Measurement	Flow by Stem	
Loss of Power/Communications	Fail as is without drift. In event of loss of power or communication, valve will continue to control set flow rate.	
Minimum dP	850 psi (58.6 bar) required to regulate flow independent of pressure at max flow capacity. Min dP criteria decreases when flow decreases. (25% MEG in water at room temperature) For special projects or applications requiring a lower min dP please contact the factory.	

[1] Information is for reference only, for the most updated information and additional details regarding valve power requirements, see the currently released revision of SkoFlo specification SPEC-10609
[2] Data is applicable to 25% monoethylene glycol in water injection fluid. Refer to project specific configuration sheet for requirements based on injected fluid properties.
[3] The Minimum Differential Pressure will be lower than the published value when the flow rate is below Full Scale.
[4] Measurement accuracy shown when high-accuracy digital pressure sensors are used. Measurement accuracy using analog pressure sensors is ±5%.