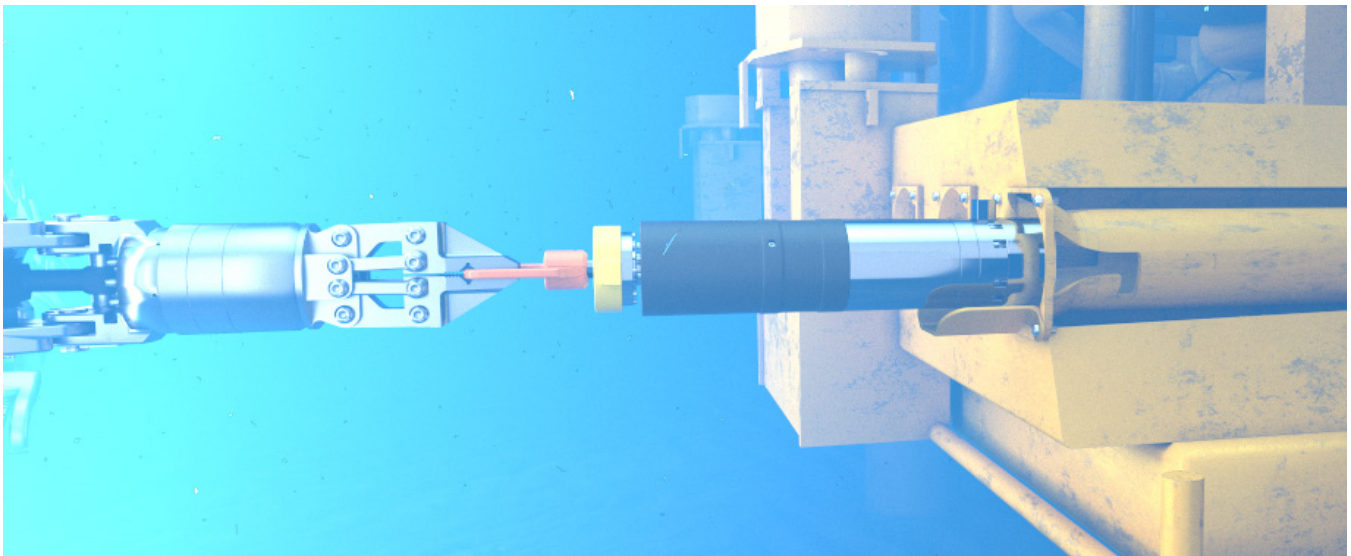


Chemical Injection Throttle Valve (CTV)

Ultra Flow (CTV-UF)



FEATURES

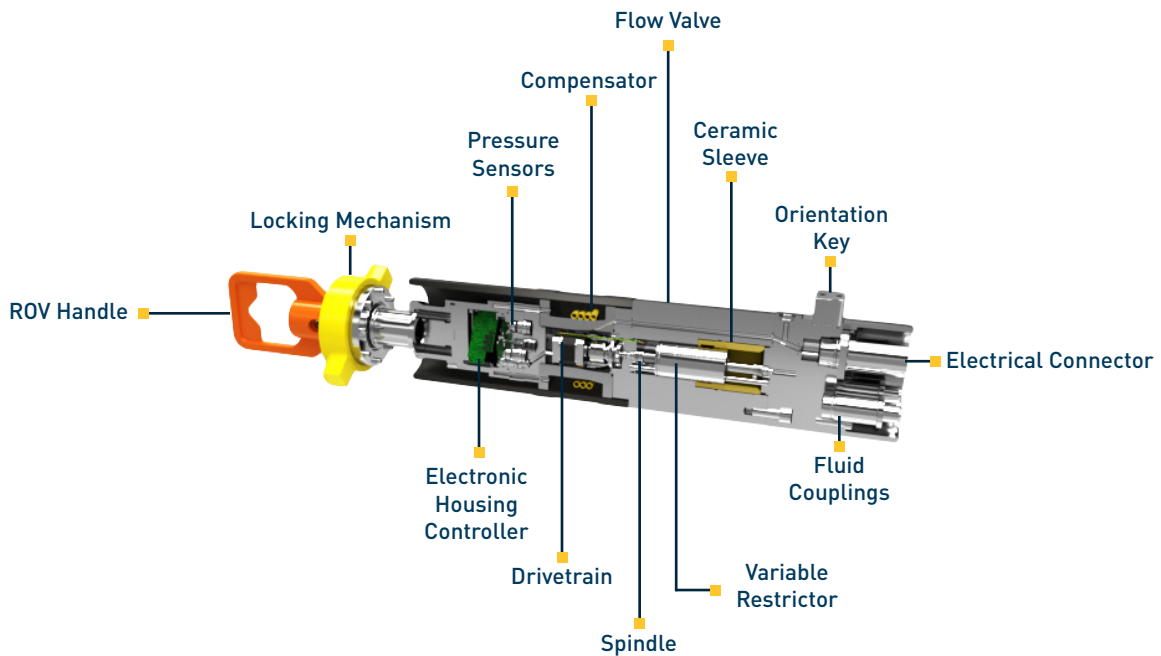
High performance with minimum footprint

Horizontal and vertical installation

Best value

Technical Data

Product data			
Manufacturer	Oceaneering Rotator AS		
Product description	Chemical Injection Throttle Valve, Ultra Flow (CTV-UF)		
Basic design data			
Rated working pressure	15,000 psi (1035 bar)		
Rated ambient pressure	5,800 psi (400 bar)		
Max. differential pressure (DP) across CTV	15,000 psi (1035 bar) 2,900 psi (200 bar) recommended maximum DP during flow valve operation		
Design life	30 years		
Operational life	Qualification tested to 1,000 cycles One cycle: 0-100-0%		
Engineering units reported by SW (SI units)	Flow rate	Pressure	Temperature
	l/min	Bar	°C
Power requirements			
Power supply	24 ±4 V DC		
Idle power consumption	3 W max (~2W nominal)		
Operating power consumption	During flow valve operation: 12 W max (~9 W nominal)		
Inrush current	< 250mA for 100 ms		
Interfaces			
ROV interface	D-handle		
Hydraulic coupling type	Parker 3/4" DST through-bore female coupling		
Electric connector	Siemens Digitron or Teledyne ODI, 4 or 7 way		
Pin-out	Pin 1: Pwr + Pin 2: Pwr - Pin 3: Can H / RS B (+) Pin 4: Can L / RS A (-)		
Communication	CANbus CiA 443 SIIS L2 v2 / Modbus RTU		



Installation and retrieval	
ROV and equipment	Standard work-class ROV manipulator for working pressures up to 6,670 psi (460 bar); torque tool required for working pressures up to 15,000 psi (1035 bar)
Installation torque	Up to 460 bar working pressure: Recommended 150 Nm (No torque tool) Up to 690 bar working pressure: Recommended: 300 Nm Up to 1035 bar working pressure: Recommended: 400 Nm Not to exceed torque: 400 Nm (Damage torque > 400 Nm)
Retrieval torque	Not to exceed torque: 400 Nm (Damage torque > 400 Nm)
Number of turns for installation/retrieval	16 ± 1 turns

Material data	
Parts in full or partial contact with seawater	Super Duplex (UNS S32750) Alloy 725 (UNS N07725) Nitronic 50 (UNS S20910) Hastelloy C-276 (UNS N10276) Alloy 625 (UNS N06625) AISI 316 (UNS S31600) Polyethylene (HDPE) Tygon-F-4040-A (compensation hose) Nylon 6.6 (compensation hose clip) El. Conn.: Super Duplex (UNS S32550) Fasteners: Alloy 725 (UNS N07725) Alloy 625 (UNS N06625) Hydraulic couplings: Nitronic 50 (UNS S20910) (body) ToughMet® 3 AT 110 (UNS C72900) (seal retainer insert/cartridge)
Parts in full or partial contact with injection chemical	Super Duplex (UNS S32750) Alloy 725 (UNS N07725) Nitronic 50 (UNS S20910) Alloy X750 (UNS N07750) Pressure sensor: Alloy 625 (UNS N06625) Hydraulic couplings: Nitronic 50 (UNS S20910) (body) ToughMet 3 AT 110 (UNS C72900) (between primary and secondary seal)

Seals	Chemical Wetted: PTFE 25C, FFKM, PEEK, gold plated alloy 718 (UNS-N07718). Seawater wetted: NBR, silver plated Hastelloy C-276 (UNS N10276) (dual redundant seals between seawater and electronics canister).
Dimensions and weight	
Length	~1065 mm (retracted) to ~1113 mm (extended) (42-44 in)
Diameter	6.7 in (170 mm)
Weight in air	~198 lb (~90 kg)
Weight in water	~168 lb (~76 kg)

Temperature ratings	
Mechanical design temperature	14°F to 158°F (-10°C to +70°C)
Electronics design temperature	0°F to 158°F (-18°C to +70°C)
Operating temperature	23°F to 104°F (-5°C to +40°C)
Storage temperature	0°F to 122°F (-18°C to +50°C)

Flow meter and pressure sensors	
Primary flow measurement	Integrated flow meter based on absolute pressure sensor measurements over a restriction.
Secondary flow measurement	Flow chart (part number specific) ³
Pressure differential requirement	DP over fixed restrictor > 0.1 bar for accurate flow measurement DP > 0.2 bar recommended
Pressure sensors	Quantity: 3 off Type: GE M&C Pressure Rating: 15K Calibrated range: 0-15,000 psi (0-1035 bar) (FS) Accuracy: < ± 0.025% FS (total error band) (within specified operating conditions)
Flow rate measuring accuracy	Better than < ±5% FS assuming known and constant viscosity

Flow valve operation

Control	Electrical remote operated
Drive	Stepper motor with strain wave gear
Travel time	21 minutes \pm 10 sec (0-100% or 100-0% open)

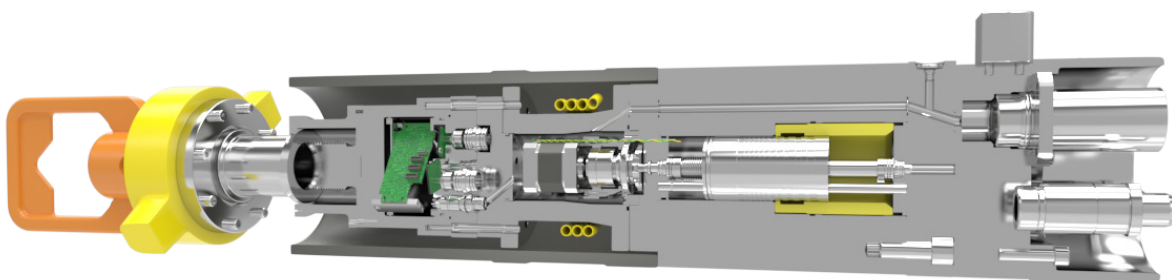
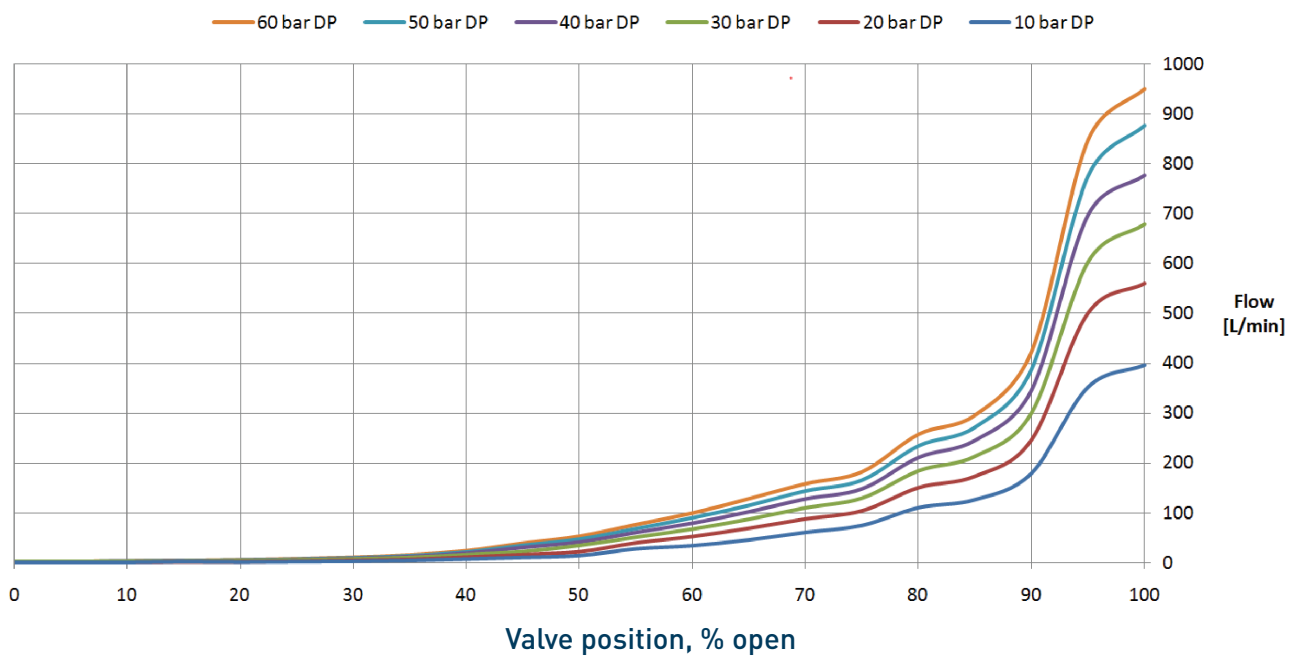
Operational safety margin

CTV will operate to 250 bar DP or higher.

Position indication

Stepper motor drive pulses

Operation verification

Secondary position indicator
(proximity switch verifying movement, resolution \sim 0.7%)**Flow Curves with Rotator Ultra Flow Test Fluid**

- For information, please contact: rotator@oceanering.com

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