



LIQUID CONTROLS®
When Accuracy Counts®

DCV Nxt

DIGITAL CONTROL VALVES



Liquid Controls is the global market leader with 70+ years of experience in precision measuring systems providing highly engineered and differentiated products used in custody transfer of highly valuable refined fuels.

Our cutting-edge facility, combined with a strong in-house engineering design and R&D center, along with a professionally managed team, distinguishes us and highlights our uniqueness. In India, we have approximately 20,000+ DCV installations across various sites.

Liquid Controls **DCV Nxt** valves are engineered to provide precise flow rate control and accurate batch delivery of petroleum products. These valves are hydraulically operated and electrically actuated piston-type control valves, designed for multi-stage flow rate control.

Hydro dynamically balanced "Y" type globe body design ensures high flow rates, minimum head loss and maximum cavitations resistance.

Our special valve design provides smooth, accurate and controlled operation assuring bubble tight shut offs.

The robust simplicity of the design and modular construction ensure a long-lasting, reliable, and trouble-free operation

FEATURES AND BENEFITS

- Precise flow rate and batch delivery
- Auto tuning without needle valve for secured operation & less manual intervention
- Fail-safe closure on loss of electrical power and/or mechanical failure
- Linear control characteristics with uniform response speed
- Bubble tight shut off as per ANSI B16.104 Class VI
- No more threat of manual throttling, thanks to Auto tuning feature
- Easy maintenance with In-line servicing
- Low pressure drop & high Cv



Precision in Flow, Excellence in Control

LC-DCV-A4-VER-A-2024
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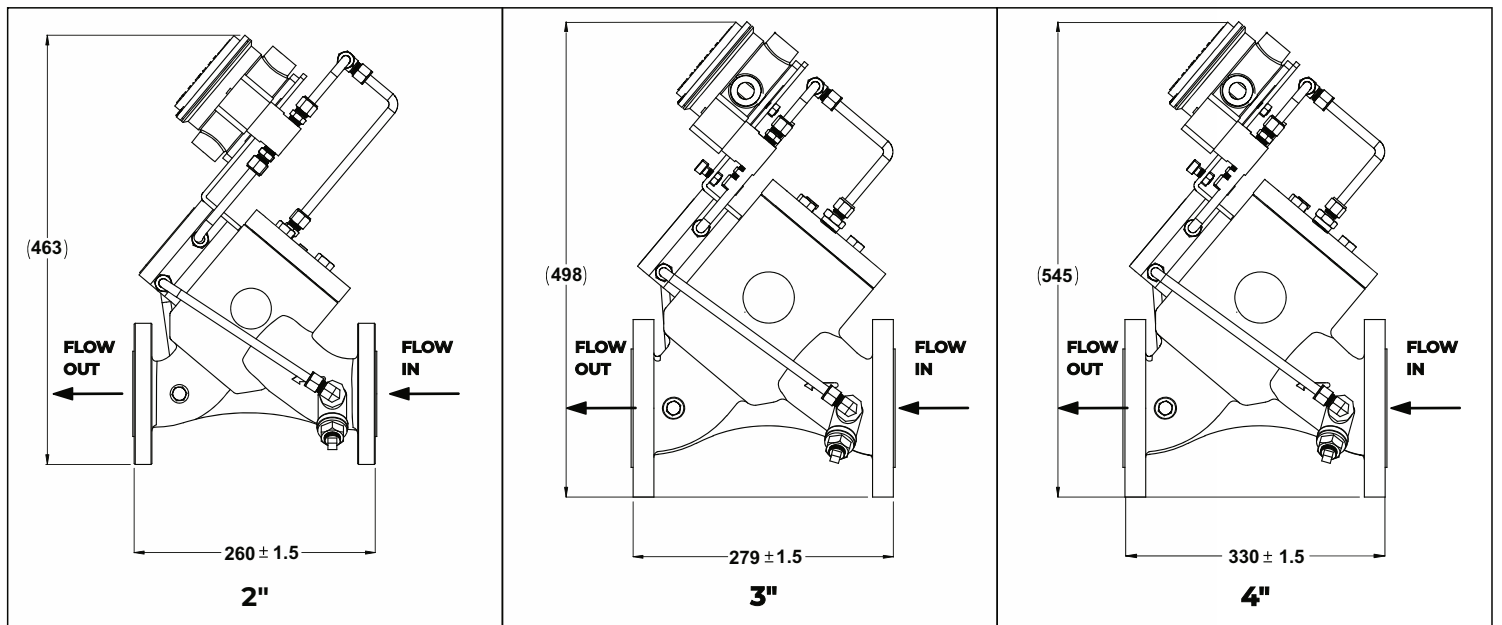
TECHNICAL SPECIFICATIONS

Sr. No.	Parameters	2"	3"	4"
1	Flow rate (Min-Max) in LPM	30 - 660	80 - 1500	150 - 2600
2	Operating Pressure in bar	1.5 - 10	1.5 - 10	1.5 - 10
3	Design Pressure in bar	19.6	19.6	19.6
4	Operating temperature in Deg C	-10 to 60° C	-10 to 60° C	-10 to 60° C
5	Flange connection	50 mm as per ASME B16.5, CI 150#RF	80 mm as per ASME B16.5, CI 150#RF	100 mm as per ASME B16.5, CI 150#RF
6	Solenoid Valve	Normally Open (1) and Normally Closed (1), 2 way valve		
7	Flange to Flange dimension in mm	260 ± 1.5	279 ± 1.5	330 ± 1.5
8	Approx. weight in Kg	28	38	50
9	Mounting	Horizontal / vertical		
10	Leakage class	ANSI B16.104 Class VI		
11	Approvals (Solenoid Valves)	PESO / ATEX		

MATERIALS OF CONSTRUCTION

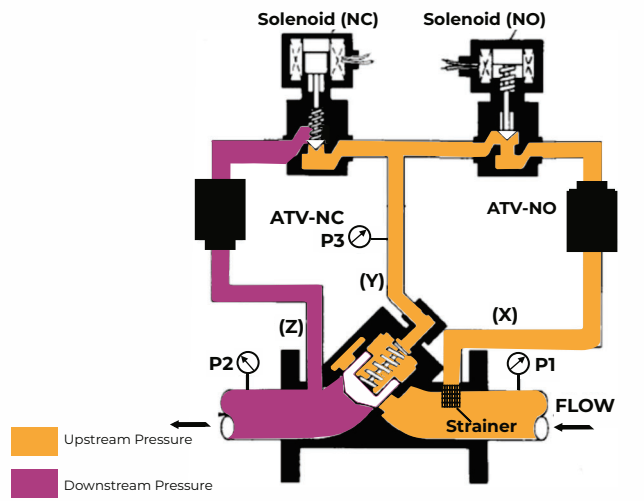
- Main Valve Body : Steel-ASTM-A216-GR-WCB
- Main Valve Cylinder : 17-4 Stainless Steel, Heat Treated
- Main Valve Piston : 17-4 Stainless Steel, Heat Treated
- Trim material : 17-4 Stainless Steel, Heat Treated
- Seat Ring : SS 304
- O-Rings / Pilot O-ring : NBR / Viton
- Seals : NBR / Viton
- Spring : Stainless Steel
- Strainer : Stainless Steel
- Tubings and Fittings : Stainless Steel
- Other Internal Parts : Stainless Steel

DIMENSIONS (in mm)



OPERATING SEQUENCE

CLOSE Condition



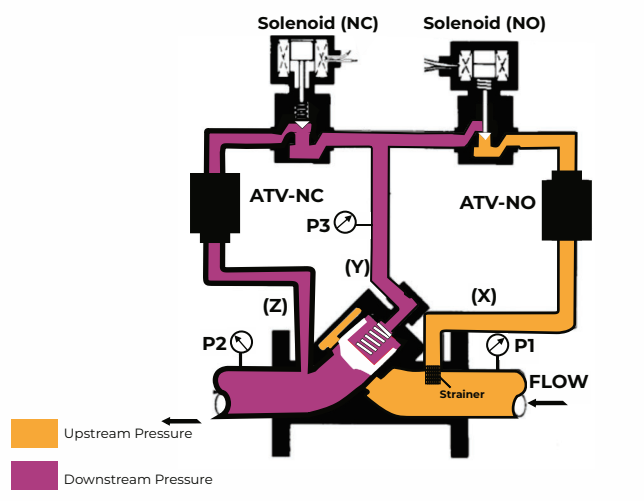
Initially, both the solenoids are in de-energised condition. Fluid flows from ATV-NO to SOV-NO to the top chamber of the piston.

The force acting on the top of the piston combines spring tension with inlet pressure. Conversely, the bottom of the piston experiences force from outlet back pressure (minor) and inlet pressure (major).

Because outlet pressure is significantly lower than inlet pressure, the resultant force on the top of the piston is notably high, prompting piston closure.

The ATV-NO mechanism functions by regulating flow to the upper chamber of the piston during closure. This ensures that the piston closes consistently, regardless of any variations in line pressure, making the valve highly reliable.

OPEN Condition

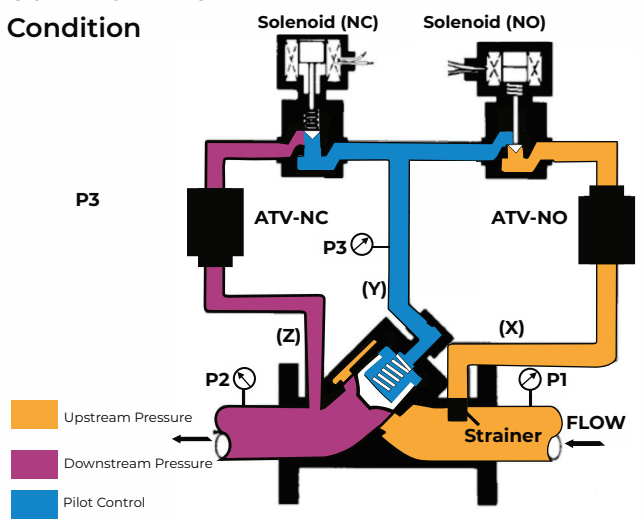


Both the solenoids are energized by the batch controller. NO restricts high upstream pressure; 'NC' allows pressure to vent downstream

Fluid from the piston's top chamber flows towards the valve outlet through SOV-NC and ATV-NC. As a result, the pressure in the piston's top chamber decreases, reducing the force acting on the top of the piston in comparison to the force acting on the bottom. This causes the piston to move upwards, thereby opening the valve.

The ATV-NC operates by regulating the flow from the piston's top chamber in the open condition. This ensures that the valve remains stable across varying pressures, maintaining consistent operation.

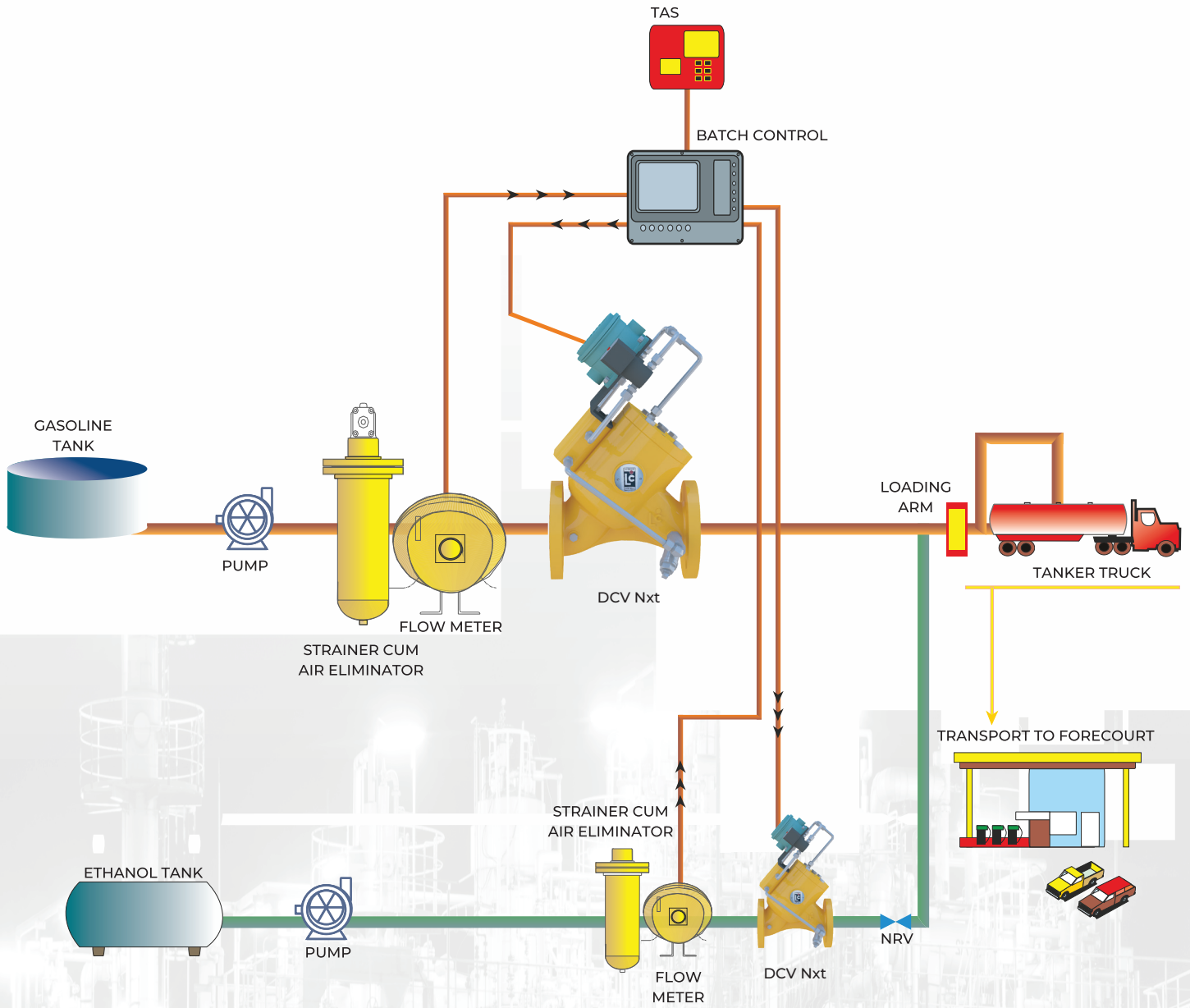
CONTROLLING Condition



As the flow rate reaches low flow set value in the batch controller, 'NC' is de-energised, locking the piston hydraulically at low flow rate. 'NC' is again energised to further open the valve until flow rate reaches high flow set value in batch controller. 'NC' is de-energised, locking the piston hydraulically at high flow rate. Once the quantity nears to completion as defined in the batch, the batch controller ramps down the flow rate in a multi-stepping manner to prevent line shock. On reaching the set quantity, high upstream pressure closes the piston and keeps it seated completely.

During this stage both ATV-NO/NC are functional so as to ensure smooth ramp up & ramp down of the valve without hunting across varying pressure.

TANKER LOADING APPLICATION



IDEX India Pvt. Ltd.

Corporate Office:

S14 Solitaire Corporate Park, 167 Guru Hargovindji Road,
Chakala, Andheri East, Mumbai - 400093, India

Registered Office & Plant:

Survey No. 256, GIDC, Manjusar, Savli, Near Bombardier Circle,
Dist. Vadodara - 391770 India

✉ marcomindia@idexcorp.com ☎ Toll Free: 1800 267 9955

🌐 www.idexindia.in

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