

# FLOWROX

Proven Performance

## Flowrox Pinch Valves



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Flowrox pinch valves are ideal for shut-off or control applications that involve abrasive or corrosive slurries, powders or granular substances. Our advanced flow control solutions meet even the most demanding customer specifications. Flowrox valves improve our customers' productivity by improving process efficiency and extending service intervals.

## MODULAR DESIGN

Our modular valve design has three main components: the sleeve, the body and the actuator. The sleeve is the only part that is in contact with the process medium. The construction and materials of all three main components can be selected to suit most process conditions. Self-cleaning Flowrox valves provide 100% tight shut-off even if solids have built up on the sleeve wall. When compressed, any crystallized particles flake off the sleeve surface and are washed downstream.



The standard range is from diameters 25 mm to 1000 mm, temperatures from -50 °C to +160 °C, and operating pressures from vacuum to over 100 bar.

We provide tailor-made flow control solutions precisely in accordance with the customer specifications.

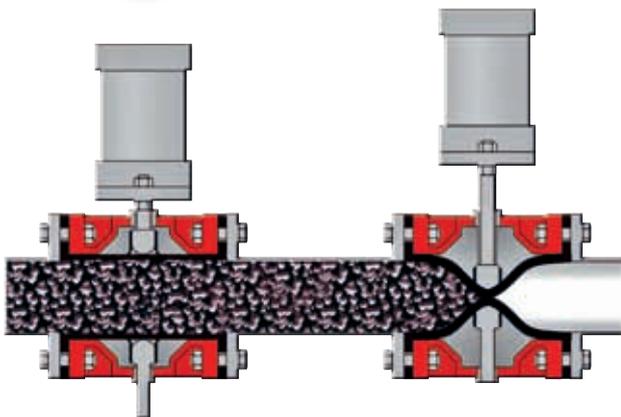


## TECHNICAL FEATURES

- 100% Tight
- Full Bore
- Only the Sleeve is in Contact with the Medium
  - Linear Control Curve
    - Centerline Closing
    - Flexible Sleeve

## RESULTING IN PROCESS BENEFITS SUCH AS

- Self-cleaning
- Trouble-free Operation
  - Long Service Intervals
- Excellent Wear Resistance
- High Corrosion Resistance
- No Jamming or Clogging
- Low Maintenance Costs
- Reduced Cost of Ownership



The operating principle of a Flowrox valve is simple. In the open position, the valve is at full bore with no flow restrictions thus making the valve an integral part of the pipeline. During closing, two pinch bars squeeze the sleeve shut on the centerline.



**METALLIC VALVE:** As abrasive particles and metal collide, the collision energy is absorbed into the metal, thus constantly wearing the surface.



**FLOWROX VALVE:** When particles hit the sleeve's rubber surface, the collision energy is absorbed and released immediately as the particle bounces back. This results in excellent wear resistance and long service intervals.

# Manual Valves

The manual valves are equipped with a handwheel actuator. To ensure reliable operation, the operating mechanism of the valve is totally enclosed giving full protection against dirt and corrosion. A reduction gear is provided to ease the manual operation in larger diameter valves and higher operating pressures.



Special body types are available for applications dealing with hazardous media.

## BODY TYPES

### ENCLOSED BODY

The enclosed body valve is the most common body type. Its enclosed design prevents premature sleeve deterioration and protects the sleeve from the environment, making it extremely safe to operate.

Enclosed body valves can be manufactured of cast iron, fabricated carbon steel, stainless steel, aluminium or plastic. Valve diameters begin from 25 mm.

### OPEN BODY

The open body valve is designed for non-hazardous media, lower pressures and operating temperatures. This design isolates vibration and tolerates minor misalignments of the pipeline. It is also light-weight and easy to service.

Material options include fabricated carbon steel and stainless steel. Open body range starts from 80 mm in diameter.

## Manual Valves in Energy Industry

**Products:** 31 pinch valves, sizes 200-250 mm  
**Medium:** Ash Slurry

DONG Energy, one of the largest coal power plants in Denmark, has gained valuable benefits with Flowrox valves in their boiler ash/slag slurry installation. In the application, boiler ash/slag is grinded, mixed with sea water and then pumped into settling ponds. In 1996, a total of 31 Flowrox pinch valves were installed in the application. This abrasive and aggressive slurry sets high requirements for on/off slurry valves, and Flowrox pinch valves have more than fulfilled them. Benefits for the customer include excellent wear resistance, reliable operation and extended sleeve lifetime.



Flowrox pinch valves at DONG Energy

# Automatic Valves

Flowrox has several valve options available for automated processes. Our expertise in selection, sizing and engineering provides the best fit for the customer's process requirements.



## PNEUMATIC ACTUATOR

The standard pneumatic actuator is double acting, therefore allowing fast opening and closing. Short cycle times are achieved by using quick exhaust valves.

Pneumatic actuators are suitable for a wide range of industrial applications. Epoxy paint can be applied to further improve corrosion resistance. The actuators can be equipped with an override hand wheel

for manual fail-safe and a mechanical or pneumatic spring for automatic fail-safe function.

## HYDRAULIC ACTUATOR

The compact, double acting hydraulic actuator is designed for applications where high closing forces or fast action are required (high operating pressure or large valve diameters).

## ELECTRIC ACTUATOR

The standard electric actuator incorporates built-in limit and torque switches, as well as a manual override hand wheel. Electric actuators are well suited for

applications requiring high closing forces such as large valve diameters or high operating pressures.

## SPECIAL ACTUATORS

Hydraulic actuators with an integrated power unit, pneumatic motor driven actuators, and water-hydraulic actuators are also available upon request.

## CONTROL VALVES FOR DEMANDING DUTIES

Flowrox control valves are designed for demanding control applications in which conventional valves encounter problems with turbulence and wear.

Controllability can be further improved with conical sleeves or smart positioners. Elastic sleeves have been applied for improved wear resistance.



Flowrox has a control valve sizing program available for control applications.

## Automatic Valves in Mining Industry

**Products:** 400 pinch valves, sizes 25-200 mm  
**Medium:** Iron concentrate & pellet coating slurry

Flowrox pinch valves were chosen in 2008 when Gulf Industrial Investment Company (GIIC) was commissioning their second iron ore pelletising plant in the Kingdom of Bahrain. Flowrox pneumatically actuated PVE 100 – 150 mm valves are operating in pellet coating and iron ore slurry lines as well as in various side applications. The GIIC plant provides the highest quality pellets to markets all over the world. The best flow control solution was built in cooperation



Flowrox pinch valves at GIIC

with the customer. Apart from the control valves, the valves have been working for 3 years without need for sleeve change.

# PVEG Valves

The PVEG is a robust yet compact and light-weight pinch valve engineered with the highest quality standards that Flowrox is known for. It is applicable in industries that require bubble tight shut-off involving aggressive slurries, abrasion, corrosion, and pressure resistance.

The PVEG has a symmetrical two piece polyamide body that is both durable and cost efficient. It offers substantial savings through improved performance, longer service lifetime, and lower maintenance costs.

In many applications, the PVEG valves can easily replace often problematic ball, plug and diaphragm valves. When closed, the closing element squeezes the sleeve shut against the lower body half, providing a 100% tight shut-off.



## TECHNICAL FEATURES

- Enclosed body type
- Size range: 50 mm, 80 mm, 100 mm, 150 mm
- Working pressures: 0 to 10 bar (manual), 0 to 6 bar (actuated)
- Temperatures: -50 °C to +70 °C
- Body material: polyamide
- Sleeve materials: SBRT, EPDM
- Flange drillings: DIN PN10, ANSI 150
- Air supply pressure for actuated models: min 6 bar
- Auxiliaries for actuated models: magnetic limit switches, solenoid valve

## PVEG VALVE MODEL SELECTION Example: PVEG50M10, SBRT

PVEG	50	M	10		SBRT
TYPE	SIZE (DN)	ACTUATOR	PRESSURE CLASS (PN)	AUXILIARIES	SLEEVE MATERIAL
PVEG	50 mm	A = pneumatically actuated	6 = 6 bar (actuated)	S = magnetic limit switches	SBRT = Styrene butadiene (PVEG)
PVEG/C	80 mm 100 mm 150 mm	M = manual	10 = 10 bar (manual)	Z = solenoid valve	EPDM = Ethylene propylene (PVEG/C)

## PVEG Valves in Metal Recycling

**Products:** 15 PVEG valves, sizes 80-150 mm

**Application:** Pump and tank isolation in Dense media separation (DMS)

Early 2011, Flowrox PVEG valves were chosen by Sims Metal Recycling at one of their recycling plants in the UK. The light-weight manual operated PVEG valves are used to isolate pumps and tanks in their DMS plant. Flowrox products form a key part of Sims' continued investments in the latest products and separation technologies, allowing them to recover maximum metal at minimum cost.



Flowrox PVEG valves at Sims Metal Recycling

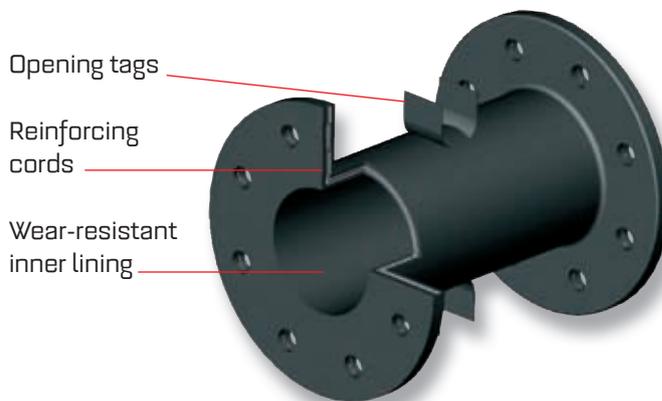
# The Core of Our Valves

The core of the Flowrox pinch valve is the elastic sleeve, which is the only part in contact with the medium. The full bore sleeve integrates the valve to the pipeline. This full bore design eliminates turbulence and minimizes pressure losses.

Technologically advanced Flowrox sleeves guarantee high wear and corrosion resistance, a trouble free operation, and extended lifetime. The sleeve is a reinforced construction making it the pressure containing part of the valve. Standard Flowrox sleeves for dual pinching are equipped with opening tags to ensure full valve opening in all conditions.

### Special sleeve design options include:

- a conical sleeve for control valves
- a vacuum sleeve for negative pressure applications
- SensoMate sleeve detecting and signalling critical wear
- polyurethane lined sleeve with improved protection against wear



To cover a wide range of applications, several rubber qualities are available.

## SLEEVE MODEL SELECTION Example: SBRT10300/750/3L2

SBRT	10	300	/	750	/	3	L	2
SLEEVE MATERIAL	PRESSURE CLASS (PN)	SLEEVE INNER DIA (mm)	/	SLEEVE LENGTH (mm)	/	SHAPE OF FLANGE	OPENING TAGS	FLANGE DRILLINGS
SBRT = Styrene butadiene	1 = 1 bar	25 - 1000	/	Depends on the sleeve inner diameter	/	type 1	L = opening tags	1 = -
EPDM = Ethylene propylene	6 = 6 bar					type 3		2 = DIN PN 10
NR = Natural rubber	10 = 10 bar					type 4		3 = DIN PN 16
NBR = Nitrile	16 = 16 bar					Determined by the valve manufacturer  (depending on the valve diameter/pressure class)		4 = DIN PN 25
CSM = Hypalon	25 = 25 bar							5 = DIN PN 40
EPDMB = Green liquor sleeve	40 = 40 bar							6 = ANSI 150
CR = Chloroprene	64 = 64 bar							7 = ANSI 300
IIR = Butyl	100 = 100 bar							8 = BS TABLE D
NRF = Foodstuff natural rubber								9A = AS TABLE D
NBRF = Foodstuff nitrile								9B = AS TABLE E
HNBR = Hydrogenated nitrile								9C = JIS 10
FMP = Fluorine rubber								9D = JIS 16
PU = Polyurethane								9 = OTHER
/M = Flowrox SensoMate sleeve								
/PU = PU-coating inside the sleeve								
/VAC = Vacuum sleeve								

# Valve Model Selection

Example: PVE300A10-203LR2Z3, SBRT

PVE	300	A	10	-	2	0	3	L	R2Z3	SBRT
TYPE	SIZE (DN)	ACTUATOR	PRESSURE CLASS (PN)	-	FLANGE DRILLING	BODY MATERIAL	SHAPE OF FLANGE	OPENING TAGS	AUXILIARIES	SLEEVE MATERIAL
PV = open	25 - 1000	A = pneumatic	1 = 1 bar		1 = --	0 = GRS/Fe	type 1	L = opening tags	R = readiness for ind. limit switches	SBRT = Styrene butadiene EPDM = Ethylene propylene NR = Natural rubber NBR = Nitrile CSM = Hypalon EPDMB = Green liquor sleeve CR = Chloroprene IIR = Butyl NRF = Foodstuff natural rubber NBRF = Foodstuff nitrile HNBR = Hydrogenated nitrile FMP = Fluorine rubber PU = Polyurethane /M = Flowrox SensoMate sleeve /PU = PU-coating inside the sleeve /VAC = Vacuum sleeve
PVE = enclosed		AB = with manual override	6 = 6 bar		2 = DIN PN 10	2 = AISI 316	type 3		R1 = AC/DC	
PVE/S = enclosed/sealed		AK = with el.pneum. positioner	10 = 10 bar		3 = DIN PN 16	3 = aluminium	type 4		R2 = DC, PNP	
PVS = sealed		AKU = with el.pneum. positioner and pneum. spring	16 = 16 bar		4 = DIN PN 25	4 = other	Determined by the valve manufacturer		R3 = DC, NPN	
		AKV = with el.pneum. positioner and mech. spring	25 = 25 bar		5 = DIN PN 40	5 = polyurethane/polyamide			S = magnetic limit switches	
		AKX = with integrated el.pneum. positioner	40 = 40 bar		6 = ANSI 150				T = mechan. limit switches	
		AN = with pneum. positioner	64 = 64 bar		7 = ANSI 300				Q = quick exhaust valve	
		AU = with pneum. spring	100 = 100 bar		8 = BS TABLE D				Z1 = solenoid valve, 24VDC	
		AV = with mech. spring			9A = AS TABLE D				Z2 = solenoid valve, 230V, 50/60 Hz	
		E = electrical			9B = AS TABLE E				Z3 = solenoid valve, 110V, 50/60 Hz	
	EO = with electrical positioner			9C = JIS 10		X = must be specified				
	H = hydraulic			9D = JIS 16						
	M = manual			9 = OTHER						

\*) Fe 25-200: cast iron EN-GLJ-250, GG25 (0,6025), epoxy painted K18b:EP160/2-FeSa2 1/2 (EN 12944-5)  
 250...: fabricated steel S235JRG2, DINRSt37-2 (1,0038), epoxy painted K18b:EP160/2-FeSa2 1/2 (EN 12944-5)

AISI 316 25-200: cast GX6CrNiMo1810 (1,4408), CF8M  
 250...: fabricated X2CrNiMo17-12-3, (1,4432), 316L

Aluminium DN25-150 3.2581 EN AC-44200

For special materials or designs, please contact Flowrox.



# FLOWROX

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## Proven Performance with Flowrox

Our customers work in some of the most challenging conditions on the planet. They run extremely abrasive or corrosive processes, often in remote locations. Whether they do business in mining, metallurgy, energy, cement, pulp & paper, chemical or other heavy duty industries, we are there for them.

And we are glad to help.

Flowrox (former Larox Flowsys) is a privately held family owned company with over 30 years of experience and more than 100 000 global deliveries. We value long partnerships with our customers, and are inspired by their success. Our products increase our customers' productivity and offer the lowest total costs of ownership. Flowrox is the benchmark in heavy duty valves and pumps.

Experience with Insight • Participating Partner • Facilitating Performance



Contact our nearest office or one of our 50+ partners we have all over the world.

[www.flowrox.com](http://www.flowrox.com)

