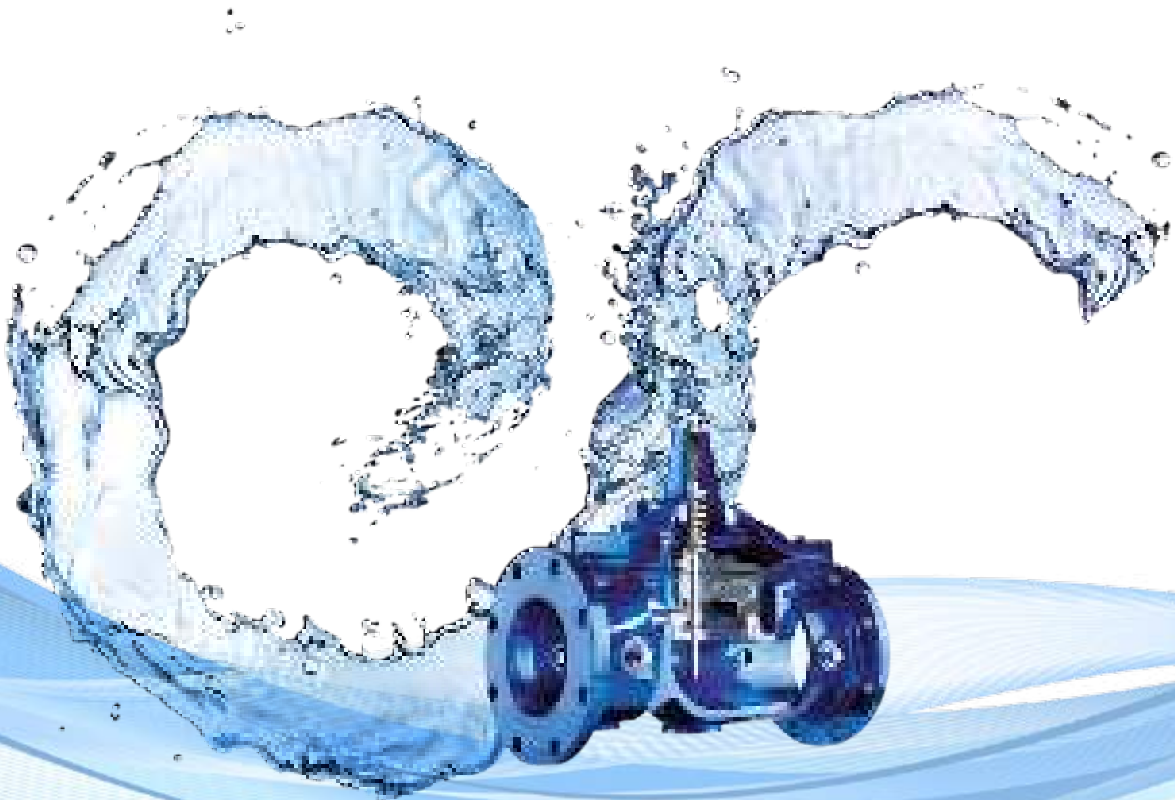




# Waterworks Brochure





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# COMPANY OVERVIEW

Since 1936, the Cla-Val Group is the “LEADING” supplier of diaphragm actuated control valves, used worldwide for the distribution of drinking and industrial water, fire protection systems, fuel supplies and industrial applications. Our desire for unsurpassed quality and commitment to continuous improvement can be found in every product we produce. With manufacturing facilities, warehouses and sales offices in the US, Canada, Switzerland, France, the United Kingdom, New Zealand and Mexico, Cla-Val truly is a global company, with a reputation for excellence around the world.

Cla-Val produces the world’s highest quality automatic control valves, achieved through a unique combination of engineering expertise, craftsmanship, quality materials, sophisticated manufacturing processes, superior customer service and the best warranty in the business.

For more than 30 years Cla-Val’s reputation for reliability and accuracy have set the benchmark for Pressure management throughout the UK water industry. Cla-Val UK are committed to maintaining high levels of customer service and support. We stock large quantities of valves in common sizes including spare parts. Our servicing department offers comprehensive commissioning and valve servicing capabilities.

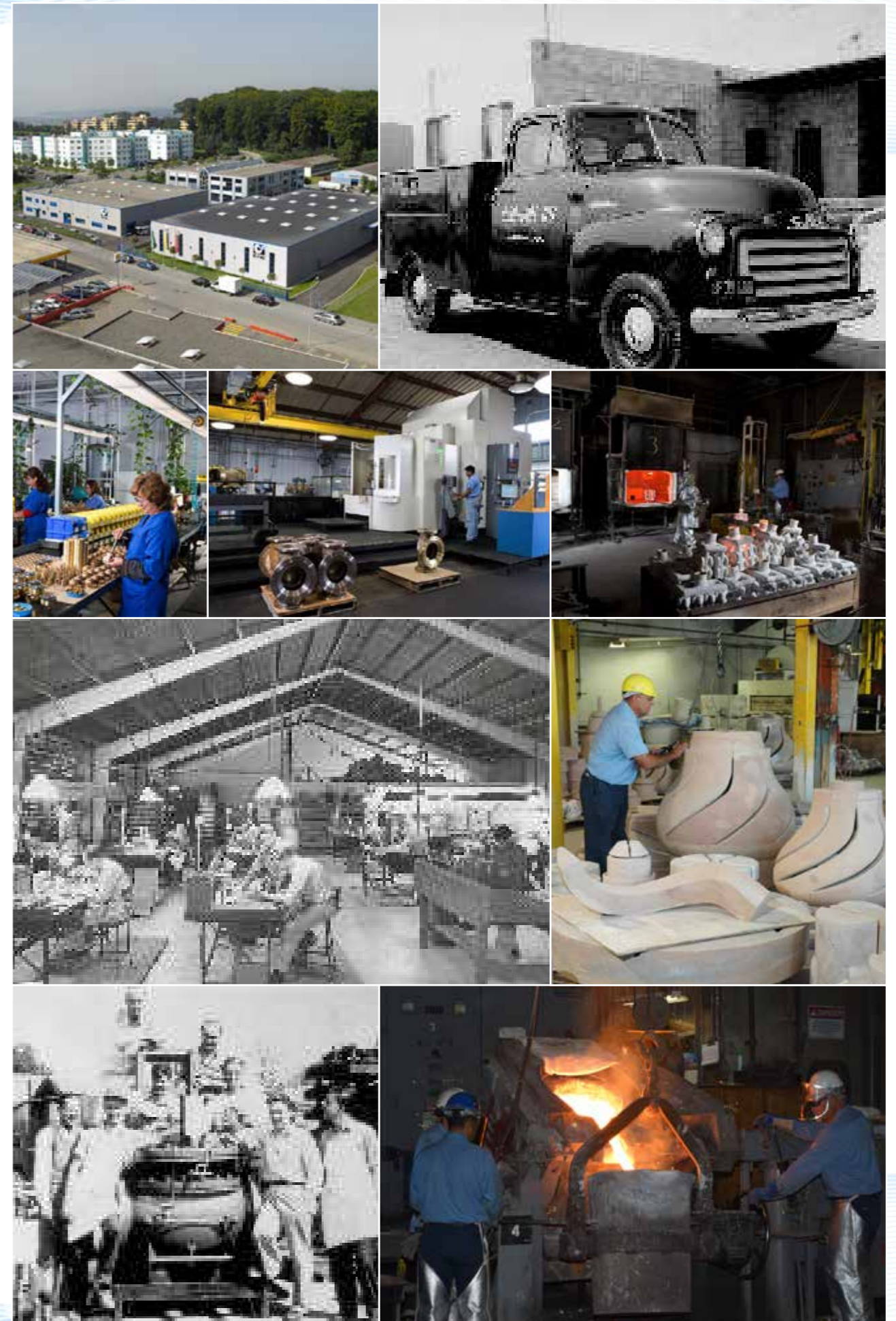
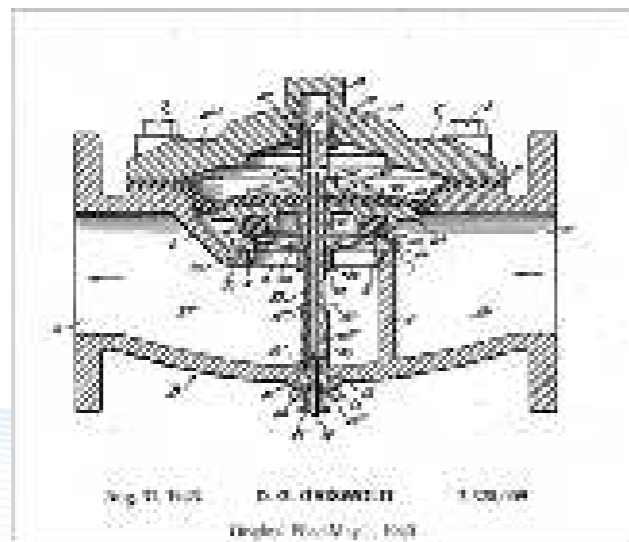
We are also ISO 9001, 14001 and 18001 compliant.

## Experience and Technology

Cla-Val automatic control valves reflect the lessons learned from more than 80 years of demanding real-world use in applications such as waterworks distribution systems, fire protection systems, farm irrigation, naval ship systems, fuelling, mining and industrial fluid handling systems. Our aggressive research and development programs have resulted in the design and production of technologically advanced electronic and hydraulic control systems that consistently meet the challenges of increasingly complex and diverse applications.

### Inventor and manufacturer of the diaphragm actuated automatic control valve

‘Registered on May 1, 1940’



# TRAINING

Cla-Val UK offers a wide range of training courses and seminars tailored to suit your individual needs.

Cla-Val control valves play a critical role in regulating pressures and flows within water distribution networks. At the design stage, it's important to understand the guidelines for sizing and specifying the most cost-effective solution. Our purpose-built training facility provides trainees with an opportunity to gain experience in the commissioning, servicing and troubleshooting of valves in a live system.

Our training programs cover a wide range of topics including:

- Principals of Pressure management
- Advanced pressure management
- Reservoir management solutions
- Electronic control valve solutions
- Surge management

Training programs can be tailored to suit your individual needs, just call us to discuss your requirements. Our facilities at Tunbridge Wells training include a demonstration rig incorporating a fully functional pumping system allowing us to offer practical demonstrations of pressure reducing, Pressure Relief, Pressure sustaining, Modulating Pressure control and electronic Flow control.

Alternatively, training can be undertaken at the customer's premises with the aid of a cutaway valve. All training is accompanied by comprehensive handouts and a certificate on completion.



# FIELD SERVICES

One of the best ways to ensure that your system operates at peak efficiency is to perform preventive maintenance on a regular basis. When it comes to Cla-Val automatic control valves, no one can do a better job at keeping your valves in tip-top shape than our own in-house team of factory trained field service engineers.

With over 30 years of experience our teams of highly skilled engineers are fully trained and equipped with the knowledge to maintain, service and commission the complete range of Cla-Val products from basic hydraulic functions to sophisticated electronic interfaces. The team are experienced in the installation and commissioning of a variety of flow modulation devices, in conjunction with the optimization of DMA's - including Calm Networks.

All Cla-Val engineers have confined spaces, street-works and hygiene certifications and all works are carried out diligently and within the companies 18001, 14001 and 9001 accreditations.

## Available Services

- Emergency repairs performed by certified engineers on call.
- Periodic inspection, maintenance and upgrading of installed valves, without removal from the pipeline
- Complete on-site valve refurbishment, including replacement of rubber goods and change-out of metal parts as needed
- Complete valve rebuilds in the workshop
- Field retrofits of a wide array of accessories and components to enhance valve function, including the addition of the following:
  - Pressure Management Pilot Systems and Controllers
  - Solenoid valves and E-Line Electronic Actuators for advanced electronic control
  - Hydro-powered turbines
  - Anti-Cavitation trim to protect valve from cavitation damage
  - Installation of pressure gauges, position indicators, limit switches, etc.



Preventative maintenance and emergency service

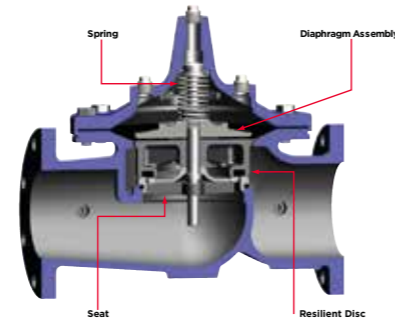


Electronics field retrofit and commissioning

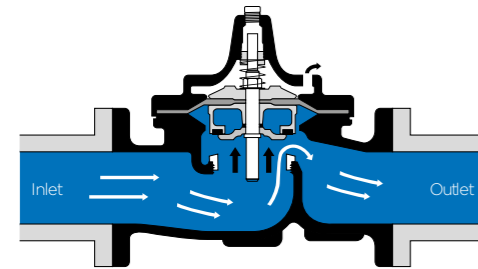
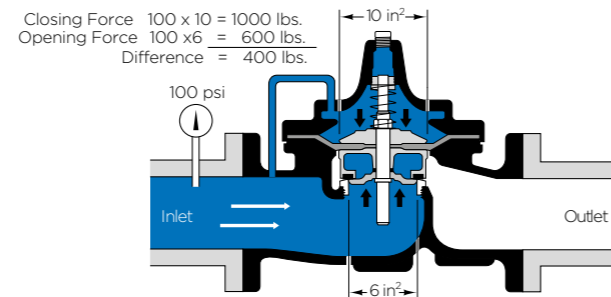
# HOW IT WORKS

## BASIC MAIN VALVE

Most Cla-Val valves consist of a main valve and pilot control system. The basic main valve is called a Hytrol Valve.



When no pressure is in the valve, the spring and the weight of the diaphragm assembly hold the valve closed.



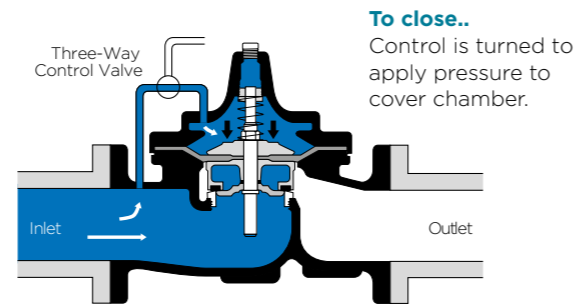
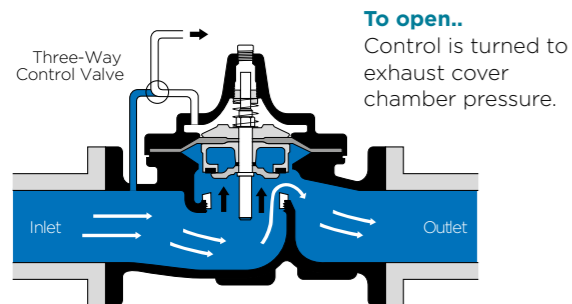
With the cover chamber vented to atmosphere, the valve will open from line pressure under the disc.

If inlet pressure is connected into the cover chamber, the valve closes tightly. In this example, the 400 pound difference is the force which pushes the disc against the seat and causes the valve to seal drip-tight.

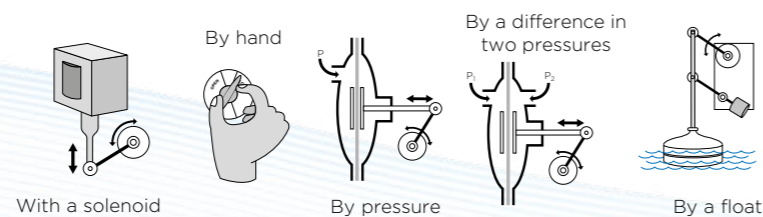
## NON-MODULATING CONTROLS

A simple control which either opens the valve wide or closes it tightly is a three-way valve. The type of operation this control gives is called "non-modulating" because the valve cannot pause in a partially open position.

Once the control is turned to either position, operating fluid flow into or out of the cover chamber until the valve is open or closed. For example...



Ordinary three-way valves usually are not satisfactory because they require so much force to operate. An easy-turning control which can be operated in a variety of ways is usually used. Several examples of controls and their operation are shown at right.

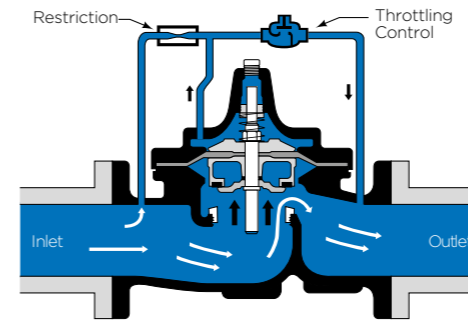


## MODULATING CONTROLS

The Cla-Val Automatic Control Valve modulates if the cover pressure is held between the inlet and outlet pressure. To achieve modulating operation, a slightly different type of control system is utilized.

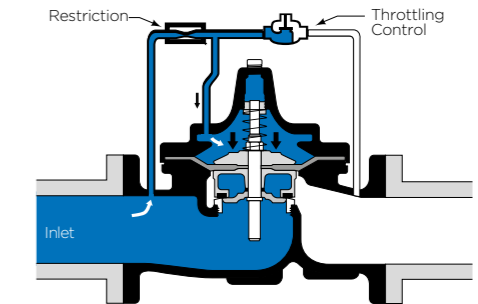
### Valve Open

When the throttling control opens to a point where more pressure is relieved from the cover chamber than the restriction can supply, cover pressure is reduced and the valve opens.



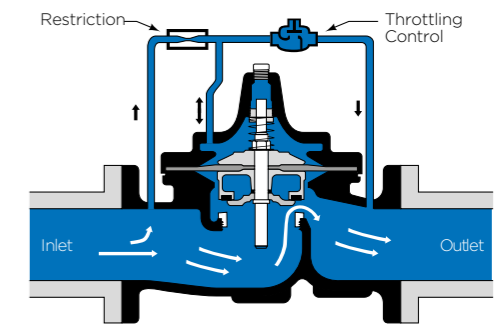
### Valve Closed

When the modulating control closes sufficiently to direct a great enough pressure into the cover chamber to overcome opening forces of line pressure, the main valve closes.



### Valve Throttling

The main valve modulates to any degree of opening in response to changes in the throttling control. At an equilibrium point, the main valve opening and closing forces hold the valve in balance. This balance holds the valve partially open, but immediately responds and readjusts its position to compensate for any change in the controlled condition.

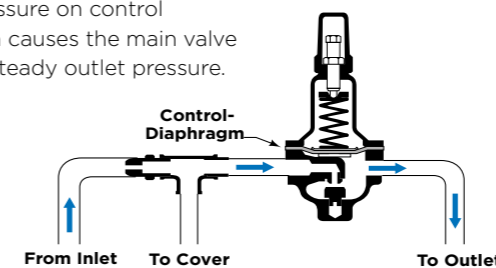


## AUTOMATIC CONTROLS

The following examples illustrate several different types of operation utilizing automatic controls.

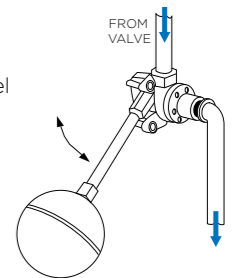
### Pressure Reduction

Outlet pressure on control diaphragm causes the main valve to hold a steady outlet pressure.



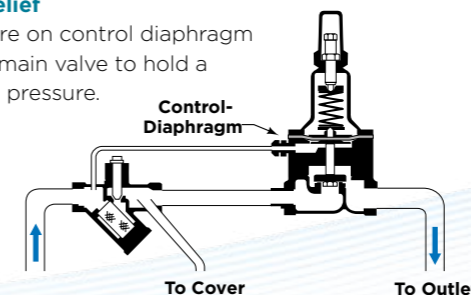
### Liquid Level Controller

Slight changes in flow through the float control causes main valve to counteract changes in reservoir level so liquid level is held constant.



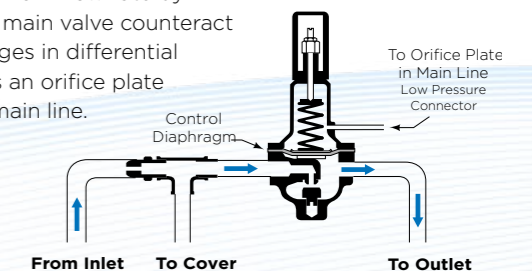
### Pressure Relief

Inlet pressure on control diaphragm causes the main valve to hold a steady inlet pressure.



### Rate of Flow Controller

Limits the maximum flow rate by changes to the main valve counteract any slight changes in differential pressure across an orifice plate located in the main line.



# BASIC VALVE 100-01

The Model 100GE-01/NGE100-01 is the basic valve used in nearly all Cla-Val Automatic Control Valves. It is the valve of choice for system applications requiring remote control, pressure regulation, solenoid operation, rate of flow control, liquid level control or check valve operation. The rugged simplicity of design and near frictionless actuation assure a long life of dependable, trouble-free operation. Its applications are unlimited.

- **Drip-Tight, Positive Seating**
- **Service Without Removal From the Line**
- **Threaded, Flanged or Grooved End Connections**
- **Globe or Angle Pattern**
- **Sizes: 40mm to 1400mm**
- **100% Factory Tested**

## Operation

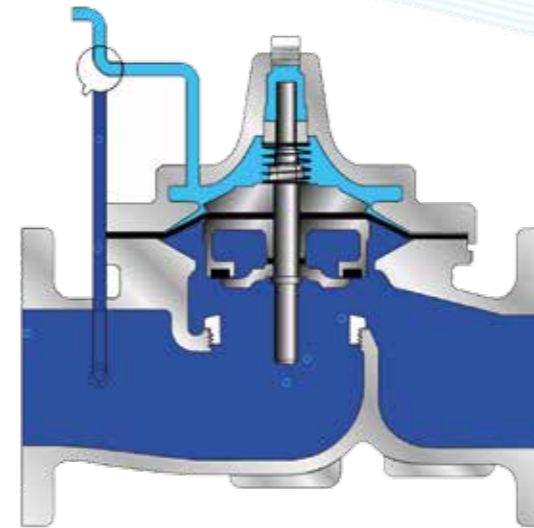
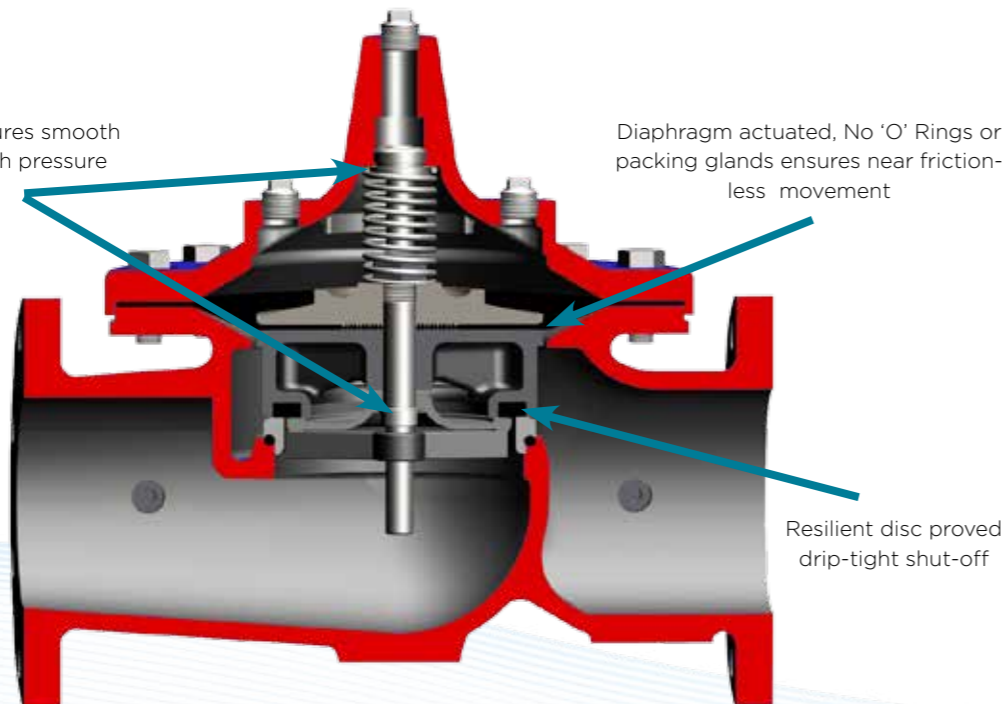
The Cla-Val Model 100-01 Hytrol Valve is a hydraulically operated, diaphragm actuated, Globe or Angle pattern valve. It consists of three major components: Body, Diaphragm assembly, and Cover. The diaphragm assembly is the only moving part. The diaphragm assembly is guided top and bottom by a precision machined stem. It utilises a non-wicking diaphragm of nylon fabric bonded with synthetic rubber. A resilient synthetic rubber disc retained on three and one half sides by a disc retainer forms a drip-tight seal with the renewable seat when pressure is applied above the diaphragm.



Fully supported stem ensures smooth actuation even under high pressure differentials

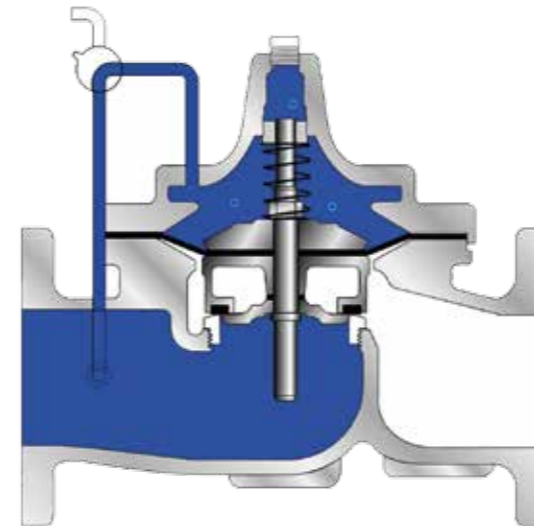
Diaphragm actuated, No 'O' Rings or packing glands ensures near frictionless movement

Resilient disc proved drip-tight shut-off



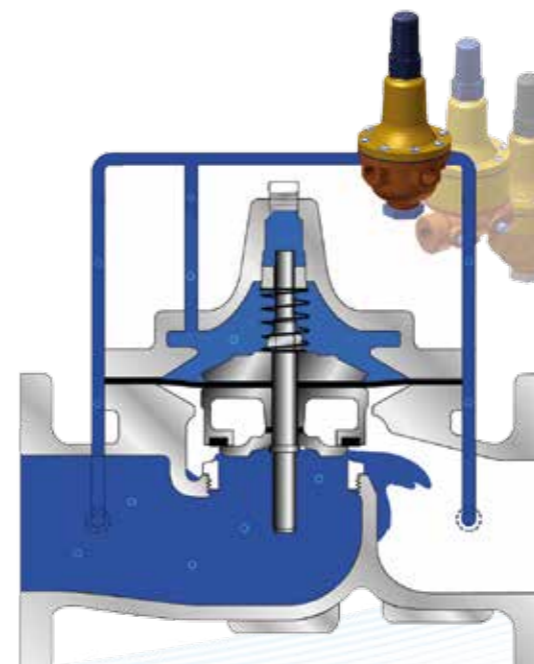
## FULLY OPEN OPERATION

When pressure in the diaphragm chamber is relieved to a lower pressure zone (or atmosphere), the inlet pressure opens the valve.



## TIGHT CLOSING OPERATION

When pressure from the valve inlet is applied to the diaphragm chamber, the valve closes drip tight.



## MODULATING ACTION

The valve modulates when diaphragm pressure is held at an intermediate point between inlet and discharge pressure. Utilising a suitable Cla-Val control pilot, which reacts to changes in line pressure, the pressure above the diaphragm is varied, allowing the valve to throttle and compensate for the changes.

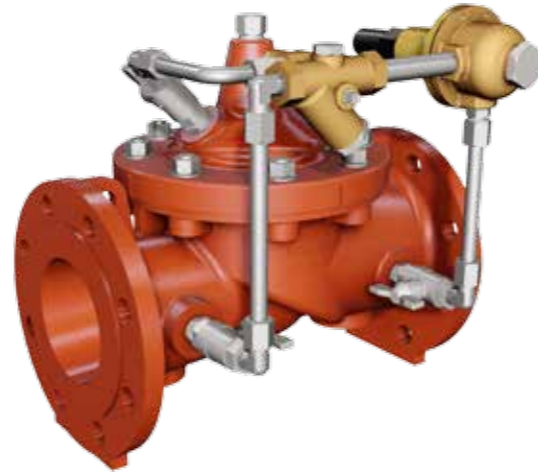
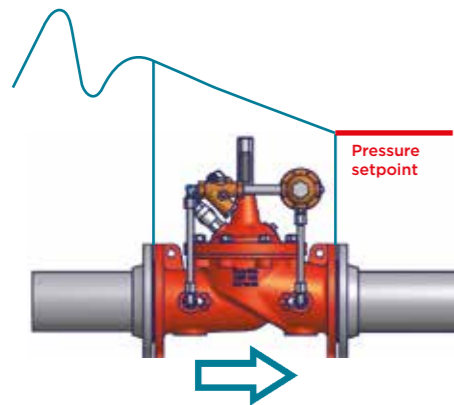
# PRESSURE MANAGEMENT

## Model: 90-01

### Pressure Reducing Valve

Cla-Val Models 90GE-01/NGE90-01 Pressure reducing valves automatically reduce a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure. This valve is an accurate, pilot-operated regulator capable of holding downstream pressure to a pre-determined limit.

> Refer to pages 34-36 for sizing and dimensions



Optional features:

 **Non Return (check feature)** Model: 91-01

 **Return Flow feature** Model: 90-05

Low Head-loss option: Model: 90-02

## Model: AQUA 80-681

### Pressure Reducing Valve - Direct Acting

The Cla-Val AQUA 80-681 pressure reducing valve, can be used in water distribution systems and on domestic distribution systems to protect installations from a high inlet (upstream) pressure. The pressure reducing valve will reduce and maintain a lower and constant outlet (downstream) pressure regardless of variations of inlet pressure. When downstream pressure exceeds the pressure setting, the valve will close drip-tight under zero demand conditions.

- **Sizes: 1/2" - 3/4" - 1" - 1 1/4" - 1 1/2" - 2"**
- **Pressure Rating PFA: 40 bar max.**
- **Downstream Adjustment Range: 0.5 - 15 bar (Depending on version)**
- **1/4" BSP/F Outlet Gauge / Test port**



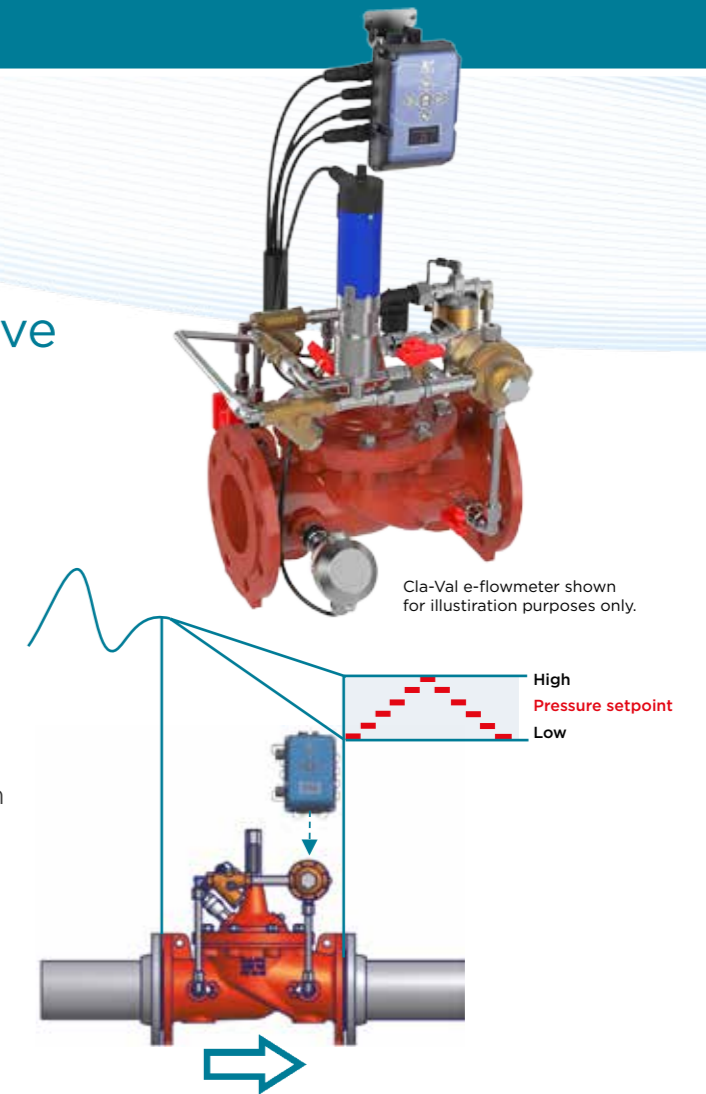
## Model: D12-99-01

### Pressure Management Valve

Cla-Val models D12-99GE-01/D12-NGE99-01 Pressure management valves regulate the downstream pressure to a pre-defined value based on time rules or a flow input. Flow based pressure management compensates for frictional losses within the distribution network to maintain a relatively constant pressure at the critical point under all operating conditions. The D12 also permits the combination of several modes operating together. The Cla-Val Link2Valves.com web portal allows the user to remotely program set-points and view graphical data uploaded from the D12 controller. It incorporates an intrinsically safe hydraulic limited Hi-Low pressure limit. The D12-99-01 easily retrofits to existing Cla-Val PRVs.

> Refer to pages 34-36 for sizing and dimensions

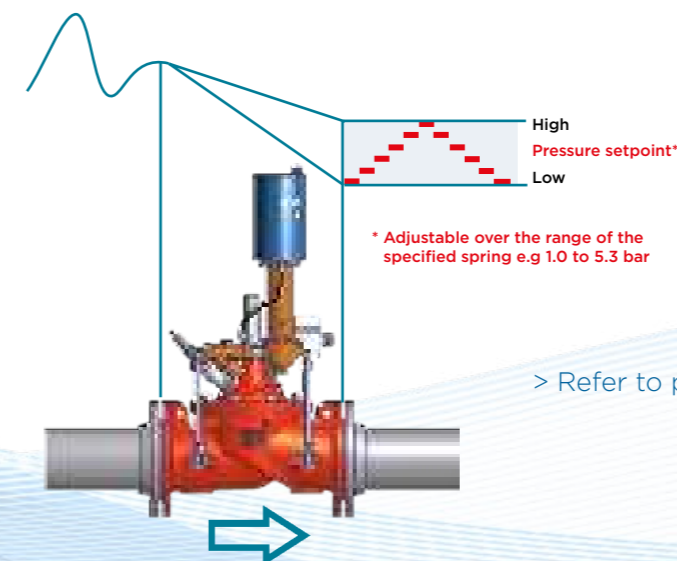
> Refer to page 28 for D12 controller details



## Model: PCM90-01

### Pressure Reducing Valve with 4-20mA Remote Setpoint

Cla-Val Models PCM90GE-01/PCM-NGE90-01 Pressure reducing valves automatically reduces a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure. The CRD-34 motorised pilot control, consisting of a hydraulic pilot and integral controller that accepts a 4-20mA remote set-point command input and makes smooth pressure set-point adjustments to the pilot.



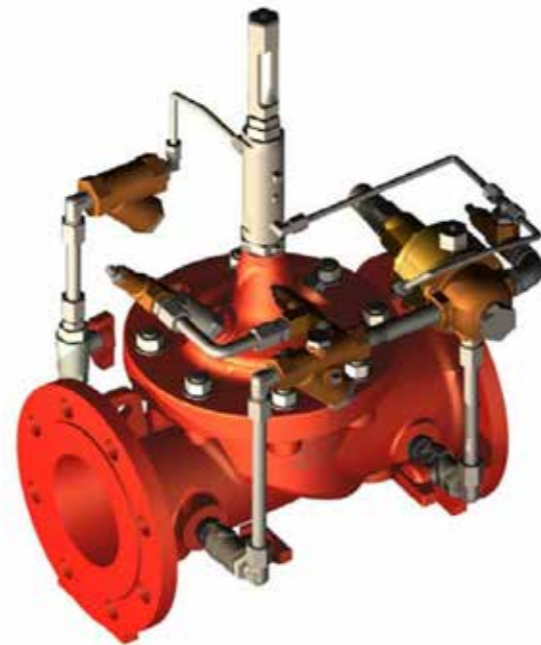
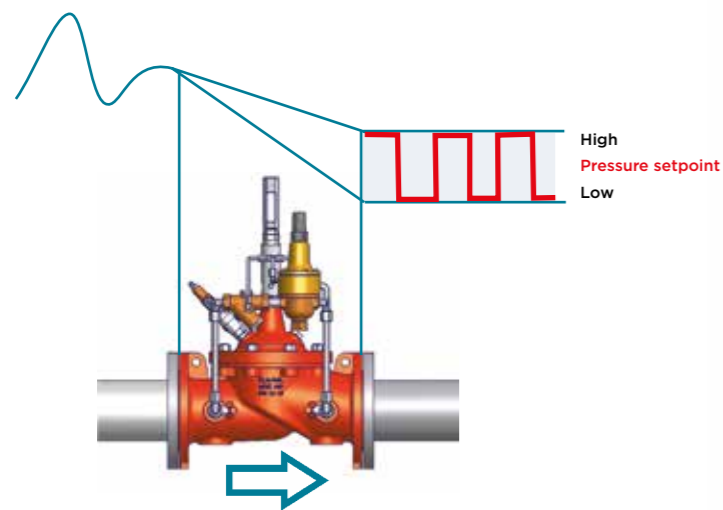
> Refer to pages 34-36 for sizing and dimensions

## Model: 98-04

### 2-Stage Pressure Management Valve

Cla-Val Models 92GE-04/NGE98-04 2-stage pressure management valves automatically and hydraulically adjust downstream pressure, based on demand changes in the system. The 98-04 is a fully adjustable control valve which automatically changes the downstream pressure value from a high setting during high flow conditions to a low pressure setting during low flow conditions. Smooth ramping is assured between setpoints.

> Refer to pages 34-36 for sizing and dimensions



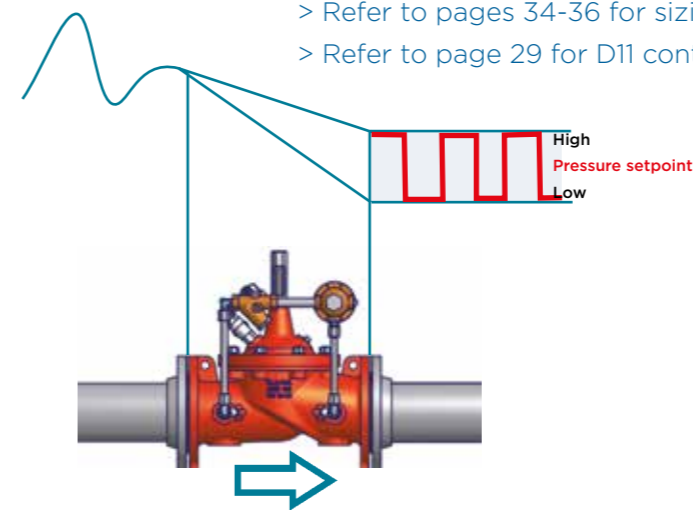
## Model: D11-90-01

### 2 Stage or 3 Stage Pressure Management Valve

The Cla-Val D11-90-01 pressure management valve provides simple 2 stage (pressure set-points) or 3 stage regulation of downstream pressure based on configurable time AND/OR flow set-points. The D11 also incorporates a large internal memory, allowing all the inputs and outputs to be logged and downloaded. Hi-Low pressure limited are easy to set via an intrinsically safe mechanical actuator fitted to the PRV pilot.

- 5 year battery life
- Simple retrofit to existing Cla-Val PRVs

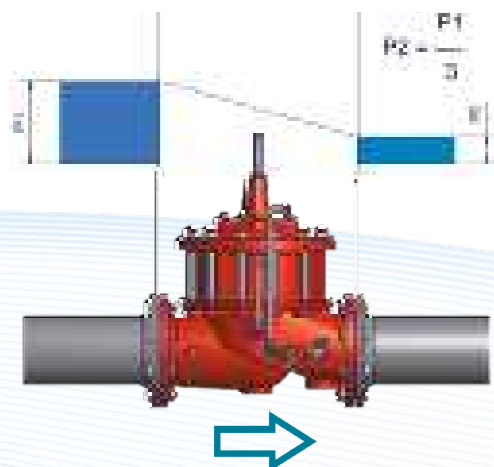
> Refer to pages 34-36 for sizing and dimensions  
> Refer to page 29 for D11 controller details



## Model: 250-02

### Proportional Pressure Reducing Valve

Cla-Val Models 250GE-02/NGE250-02 proportional pressure reducing valves are designed to sustain a constant pressure differential (ratio 3-1) between inlet and outlet of the valve regardless of variable upstream pressures and/or downstream demand. The valve is mounted upstream of a Cla-Val series 90-01 pressure reducing valve when a high level of pressure reduction is required. This enables a smooth and reliable reduction of the inlet pressure, using two valves instead of one.



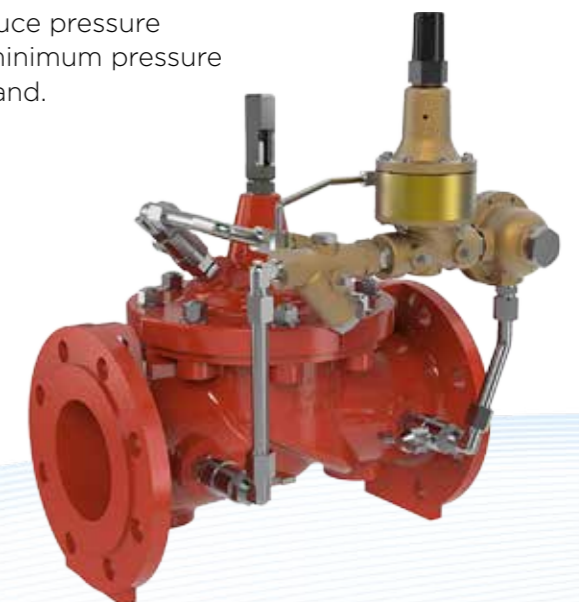
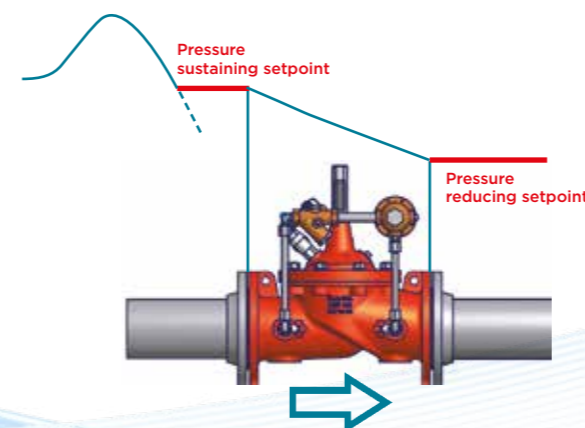
## Model: 92-01

### Pressure Reducing And Pressure Sustaining Valve

Cla-Val Models 92GE-01/NGE92-01 Combination pressure reducing and pressure sustaining valves automatically performs two independent functions. It maintains a constant downstream pressure, regardless of fluctuating demand and sustains the upstream pressure to a pre-determined minimum.

**Typical application** - Use this valve to automatically reduce pressure for the downstream distribution network and sustain a minimum pressure in the high pressure main regardless of distribution demand.

> Refer to pages 34-36 for sizing and dimensions





# LEVEL MANAGEMENT

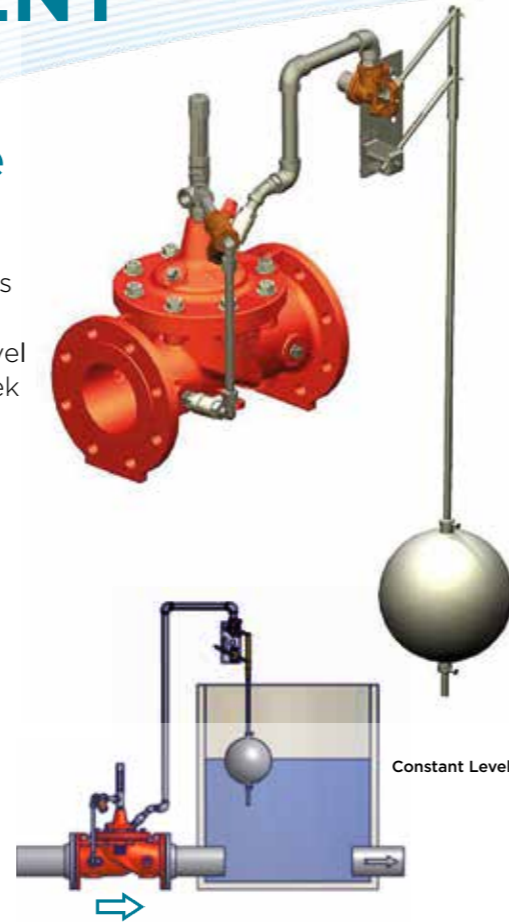
## Model: 427-01 & 429-01 Modulating Float Control Valve

The Cla-Val Models 427GE-01/NGE427-01 and 429GE-01/NGE429-01 Modulating Float Level Control Valves maintains a constant water level in a reservoir by compensating for variations in supply or demand. A slight change in liquid level moves the Float Control which makes the main valve to seek a new position.

The Cla-Val 429-01 is designed for high pressures (less than 16 bar) and where tank levels change rapidly. Break tanks for example.

Series 429 is recommended for sizes up to 150mm, and series 427 for valves over 150mm.

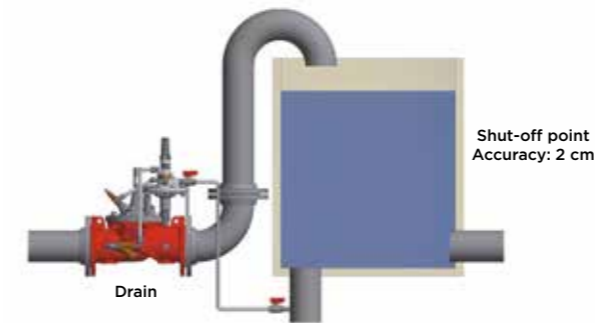
> Refer to pages 34-36 for sizing and dimensions



## Model: 270-01 On/Off Altitude Level Control Valve

The Cla-Val Models 270GE-01/NGE270-01 On/Off Altitude Level Control Valve controls the high water level in a reservoir or closed tank without the need for floats or other devices. It is a non-throttling valve that remains fully open until the shut-off point is reached.

The valve is typically designed for closed reservoirs where water is withdrawn through a separate line. The desired water level is set by adjusting the spring force. The pilot control operates on the differential in forces between a spring load and the water level in the reservoir. The valve is one way flow only.



> Refer to pages 34-36 for sizing and dimensions

## Model: 100/CF9 & 113-CF9 On/Off Float Control Valve

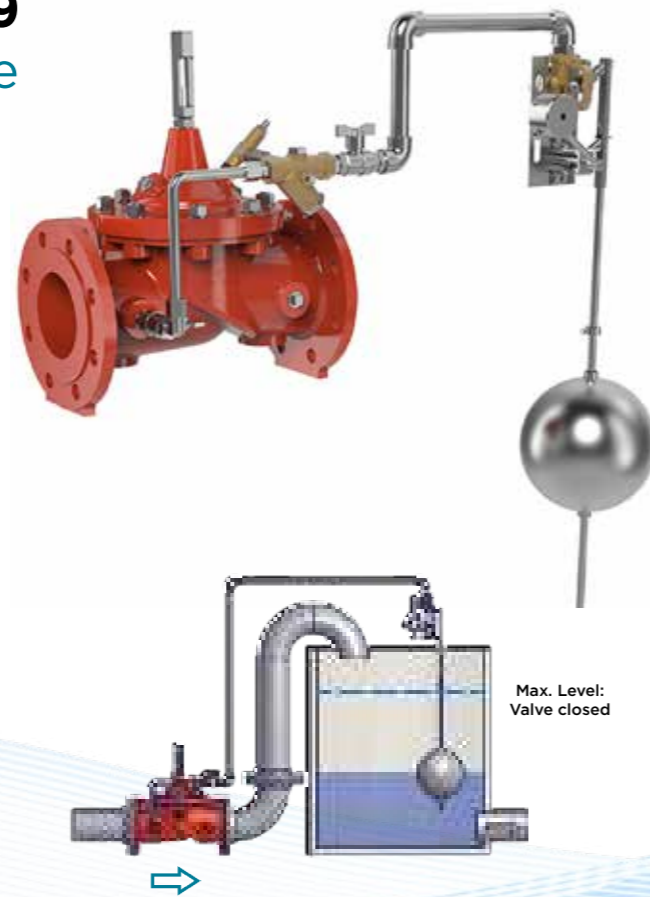
The Cla-Val Series 100 On/Off Float Level Control Valve is a non-modulating valve which accurately controls the liquid level in a tank. This valve opens fully when the liquid level reaches a pre-set low level and closes drip tight when the liquid level reaches a high level.

The Cla-Val 100-CF9 & 113-CF9 is equipped with a 2-way pilot control including a frost-free protection by maintaining a constant flow through the pilot circuit of the main valve.

The Cla-Val 100-CF9 & 113-CF9 is designed to open when the liquid level reaches a pre-set min. level and closes drip tight when the filling of the tank reaches the pre-set max. level.

The Cla-Val 113-CF9 is equipped with a closing speed control to protect upstream network against surges.

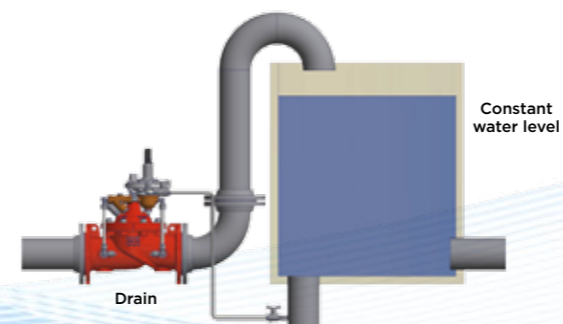
> Refer to pages 34-36 for sizing and dimensions



## Model: 278-01 Modulating Altitude Level Control Valve

The Cla-Val Models: 278GE-01/NGE278-01 Constant Altitude Level Control Valve maintains a constant water level in closed tanks by compensating for variations in supply or demand. It can be installed to control the flow into or out of the reservoir by closing on rising level or opening on decreasing level.

The Cla-Val 278-01 is typically designed for closed reservoirs where water is withdrawn through a separate line. The desired water level is set by adjusting the spring force. The Cla-Val 278-01 is one way flow only.



> Refer to pages 34-36 for sizing and dimensions

# NETWORK PROTECTION

## Model: 50-01

### Pressure Relief / Pressure Sustaining Valve

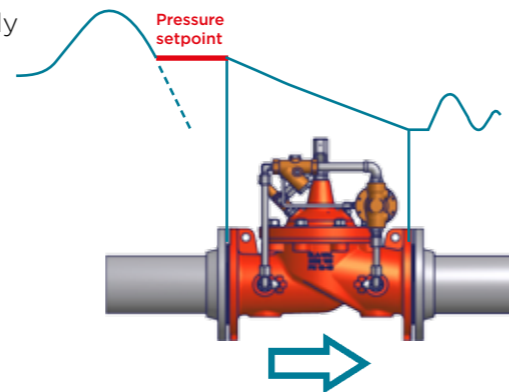
Cla-Val Models 50GE-01/NGE50-01 Pressure sustaining/Relief valves are hydraulically operated, pilot-controlled, modulating valves designed to maintain constant upstream pressure within close limits. The valves can be used for pressure relief, sustaining, back pressure, or unloading functions in a by-pass system. In operation, the valve is actuated by line pressure through a pilot control system, opening fast to maintain steady line pressure but closing gradually to prevent surges. Operation is completely automatic and pressure settings may be easily changed.

> Refer to pages 34-36 for sizing and dimensions

Optional features:

 **Non Return (check feature)** Model: 51-01

 **Return Flow feature** Model: 50-08



## Model: 55B-60

### Pressure Relief Valve

Cla-Val Model 55B-60 Pressure relief valve is a spring loaded, diaphragm type relief valve. The valve may be installed in any position and will open and close within very close pressure limits. The bottom plug may be removed and installed in the inlet to convert it to an angle pattern flow path.

- **Sizes: 1/2", 3/4" and 1"**
- **Precise pressure control**
- **Drip Tight Closure**
- **Globe or Angle configurations**
- **Pressure rating PFA: 25 bar max.**
- **Upstream pressure adjustment range: 0.1 to 20 bar (depending on version)**
- **1/8" BSP/F Pressure gauge port**

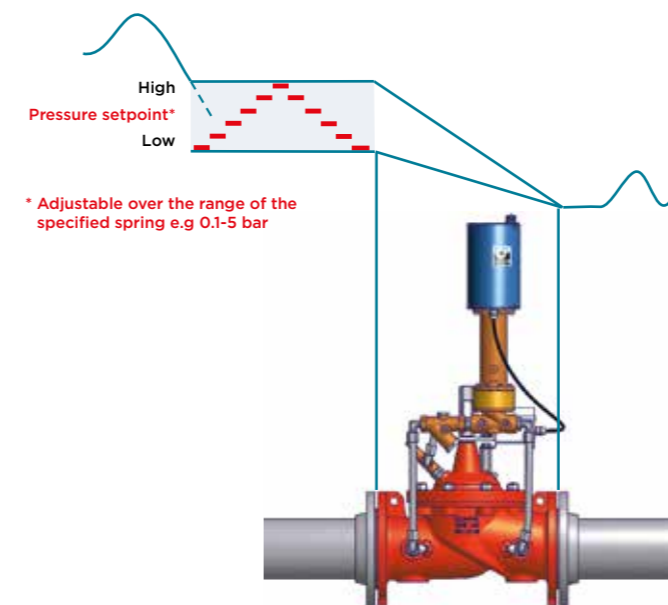


## Model: PCM50-01

### Pressure Sustaining Valve with 4-20mA Remote Set-point

Cla-Val Models PCM-50GE-01/PCM-NGE50-01 Electronically actuated pressure sustaining control valves combines precise control of the Cla-Val hydraulic pilot and simple, 4-20mA remote set-point control. The hydraulically operated, pilot controlled, modulating valve is designed to maintain a constant upstream pressure within close limits. The CRL-34 pilot control, consisting of a hydraulic pilot and integral controller, that accepts a remote pressure set-point command and makes smooth pressure set-point adjustments to the pilot.

> Refer to pages 34-36 for sizing and dimensions



\* Adjustable over the range of the specified spring e.g 0.1-5 bar

CRL-34 motorised  
Pressure sustaining pilot



# PUMPING STATION PROTECTION

## Model: 750-SP

### Pressure Relief Valve with Standpipe Connections

The Cla-Val model 750-SP is a lightweight and compact pressure relief valve designed to relieve potentially damaging pressures within a pipe. The valve is equipped with a male standpipe adapter fitted to the inlet and female standpipe adapter fitted to the outlet and includes a quick release coupling for a pressure gauge. As inlet pressure begins to exceed the pre-set pressure, the valve will open and modulate to relieve line pressure and keep it below the set point maximum.



Standpipe shown for illustration purposes only and is not included

## Model: 60-31/02 & 60-81

### Pump Control Valve

Cla-Val models 60GE-11/NGE60-11 Booster Pump Control Valves are pilot-operated valves designed for installation on the discharge of booster pumps to eliminate pipeline surges caused by the starting and stopping of the pump. The pump starts against a closed valve. When the pump is started the valve begins to open slowly. When the pump is signalled to shut-off, the valve begins to close slowly, while the pump continues to run. When the valve is closed, a limit switch assembly, releases the pump starter and the pump stops. Should a power failure occur, a built-in lift-type check valve closes the moment flow stops, preventing reverse flow.

> Refer to pages 34-36 for sizing and dimensions



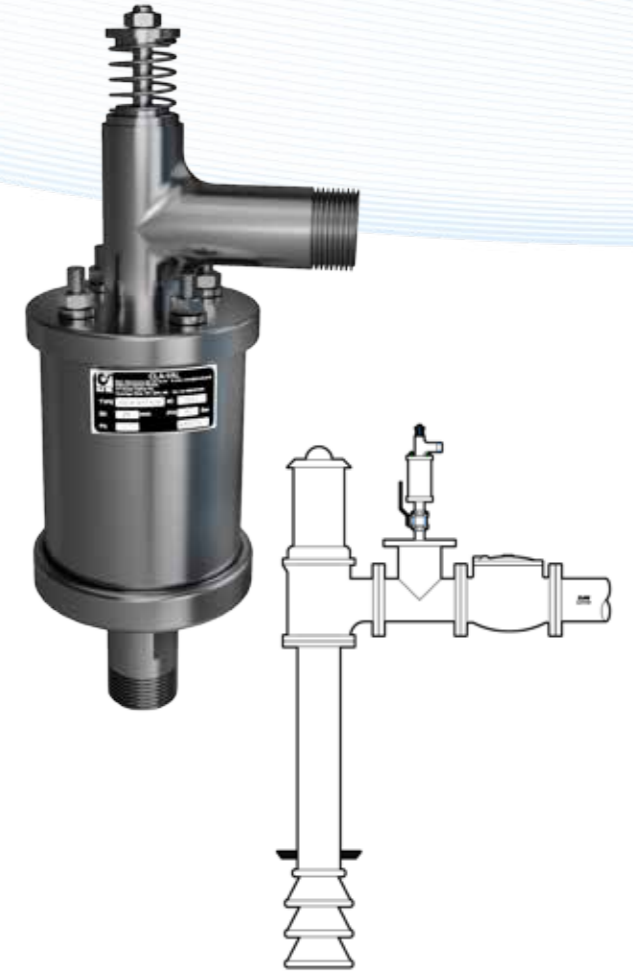
## Model: AQUA B70-516b

### Anti Surge Air Release and Vacuum Breaker Valve

Cla-Val Model AQUA B70-516 has been specifically developed for installation prior to the pump discharge check valves in borehole pump and vertical turbine pump applications to fulfill the following functions:

- **Controlled release of air in the vertical riser upon pump startup**
- **Dampen surge pressures upon pump startup**
- **Vacuum protection when the pump stops and the vertical column drains**

Operation of conventional air valves in this application allows air in the vertical riser to be released very rapidly upon pump startup, resulting in very high pressure transients when the water column slams the air valve shut and/or slams into the closed discharge check valve.



## Model: 52-03

### Surge Anticipator and Pressure Relief Valve

Cla-Val Models 52GE-03/NGE52-03 Surge anticipator and pressure relief valves are indispensable for protecting pumps, pumping equipment and all applicable pipelines from dangerous pressure surges caused by rapid changes of flow velocity within a pipeline. When using this valve, pumping systems are started and stopped gradually preventing harmful surges from occurring. The Cla-Val series 52-03 anticipates the surge by opening on the low pressure wave in order to be fully open on the returning high wave diverting the excess pressure to drain.

> Call Cla-Val for sizing guidance



# ON-OFF VALVES

## Model: ECO32-27 Flushing Valve

The Cla-Val ECO 32-27 is a flushing valve designed to Open/Close valves allowing smooth flushing of a pipeline or network. The user defines the Opening/Closing times.

Programming is time based only. Water velocity through the valve is controlled by adjusting cover mechanical opening control. The electronic controller e-Timer-33 is programmed according to customer needs. When opening time is reached valve opens automatically allow smooth flushing of the pipe line.

- **Size range: 32mm (1 1/4") to 80mm**
- **Maximum operating pressure: 10 bar**



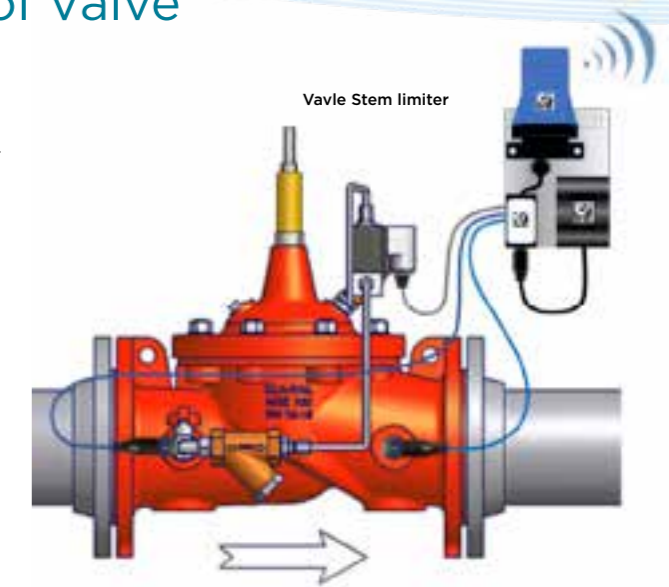
## Model: 136-01-CV-Log+ Dynamic Boundary Control Valve

The Cla-Val Model 136-01-CV-Log+ provides a simple and robust solution for sharing demand between paired DMA's. Using time-based rules for valve open and closing actions together with a mechanical stem lift limiter, the valve opens each day then closes at night to segregate the DMA's for leakage management purposes. The Cla-Val Link2valves.com web portal, provides the user with complete remote timed control and a graphical interface to view logged data (Inlet Press, Outlet Press, Valve Cover Press., Flow & Battery Voltage).

- **Available in size: 32mm to 150mm\***
- **Maximum operating pressure: 10 bar**
- \* **Max. operating pressure: 6 bar in sizes 100mm and 150mm**

> Refer to page 29 for CV-Log+ details

> Refer to pages 34-36 for sizing and dimensions



## Model: 136E/D-1 &03 On/Off Electrical Remote Control Valve

The Cla-Val Models 136GE-01/NGE136-01 Solenoid Control Valves are on-off control valves that either opens or closes upon receiving an electrical signal to the solenoid pilot control. These valves consists of a Hytrol main valve and a three-way solenoid valve that alternately applies pressure to or relieves pressure from the diaphragm chamber of the main valve. It is furnished either normally open (de-energized solenoid to open) or normally closed (energized solenoid to open).

Industrial uses for the solenoid control valve are many and include accurate control of process water for batching, mixing, washing, blending or other on-off type uses.

Liquid level control can be provided by using a float switch or electrode probe which sends an electrical signal to open or close the valve as needed..

> Refer to pages 34-36 for sizing and dimensions



# FLOW CONTROL

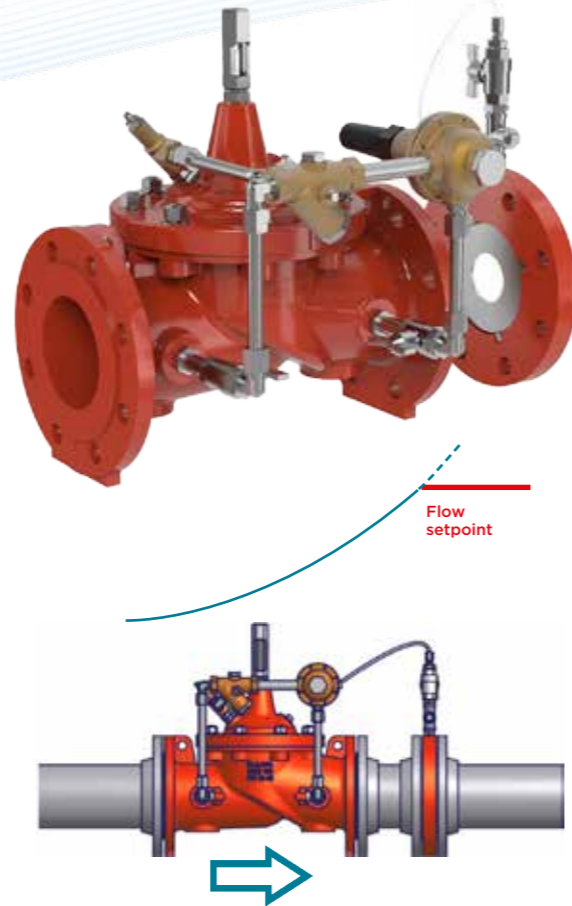
## Model: 40-01 Flow Limiting Valve

Cla-Val Models 40GE-01/NGE40-01 Flow limiting valves prevents excessive flow by limiting flow to a preselected maximum rate, regardless of changing line pressure. The pilot control responds to the differential pressure produced across an orifice plate installed downstream of the valve. Accurate control is assured as very small changes in the controlling differential pressure produce immediate corrective action of the main valve.

> Refer to pages 34-36 for sizing and dimensions

Optional feature:

 **Non Return (check feature)** Model: 41-01

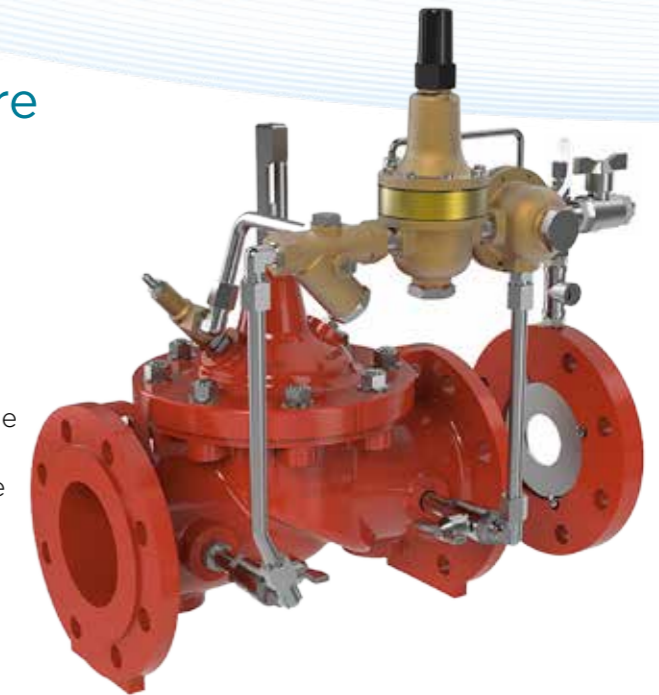


## Model: 49-01 Flow Limiting and Pressure Reducing Valve

Cla-Val models 49GE-01/NGE49-01 Flow limiting and pressure reducing valve automatically limits flow to a preselected maximum value, regardless of changing line pressure. The pilot control responds to the differential pressure produced across an orifice plate installed downstream of the valve. It also reduces a higher inlet pressure to a steady lower downstream pressure as long as the flow rate is below the preset maximum.

**Typical application** - Where a system must be limited to a preset flow to prevent lowering the supply pressure and protects the downstream pipework from over pressure.

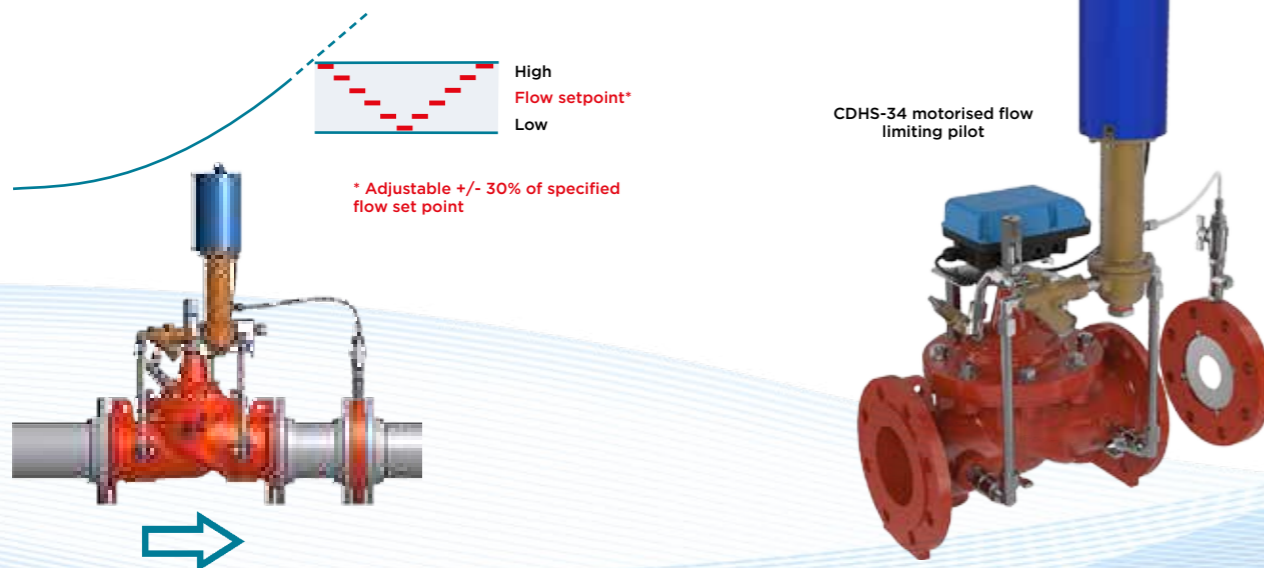
> Refer to pages 34-36 for sizing and dimensions



## Model: PCM40-01 Flow Limiting Valve with 4-20mA Remote Set-point

Cla-Val models PCM-40GE-01/PCM-NGE40-01 limit flow to a preselected maximum rate (adjustment range +/-30%), regardless of changing line pressure. It is a hydraulically operated, pilot controlled, diaphragm actuated control valve. The valve uses a CDHS-34 actuated pilot control, consisting of a hydraulic pilot and integral controller that accepts a remote set-point command input and makes set-point adjustments to the pilot.

> Refer to pages 34-36 for sizing and dimensions



## Model: 45-01 Flow limiting and Pressure Sustaining Valve

Cla-Val Models 45GE-01/NGE45-01 Flow limiting and pressure sustaining valves prevents excessive flow by limiting flow to a preselected maximum rate, regardless of changing line pressure. The pilot control responds to the differential pressure produced across an orifice plate installed downstream of the valve. It also sustains upstream pressure to a pre-determined minimum.

**Typical application** - Where water supply to a lower system (industrial user, housing area, irrigation, etc.) must be limited to a maximum flow rate and when a minimum upstream pressure in a high pressure main and/or an upstream distribution network must be sustained.

> Refer to pages 34-36 for sizing and dimensions



# NON-RETURN VALVE

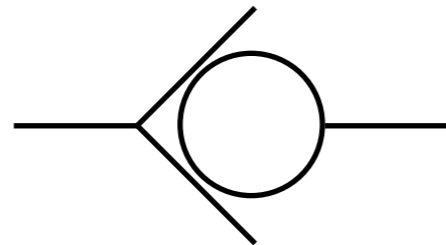
## Model: Aqua 30-601 Silent Globe Check Valve

### Main Function

The Cla-Val Model Aqua-30-601 is a spring loaded axially guided check valve which combines a valve with very low head-loss coupled with a fast acting closing characteristic on flow reversal to mitigate water hammer.

**Typical application** - The Cla-Val Model Aqua30-601 is typically installed on the discharge of pumps or well pumping systems to prevent back flow to protect the pumps from damage. They are commonly installed for the protection of low pressure water network systems from higher pressure sources. The valve is suitable for use in both potable water and strained raw water applications.

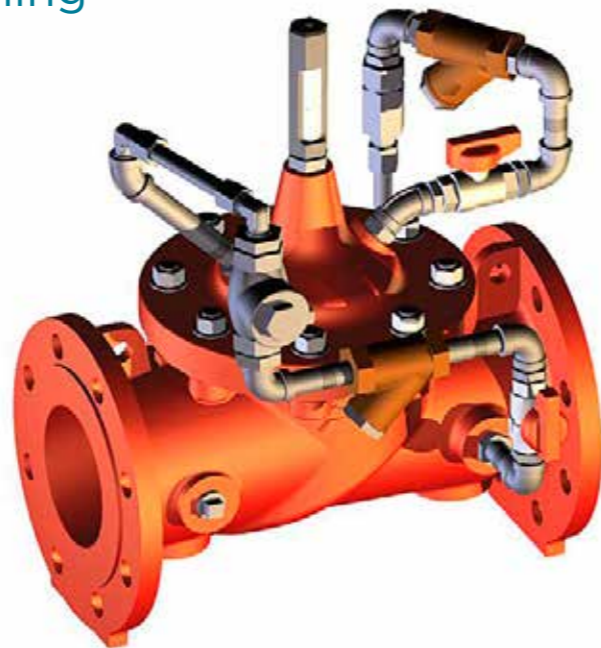
- Size range: 50mm to 250mm
- Maximum Pressure rating: 16 bar



## Model: 81-02 Non Return Valve With Opening and Closing Speed Control

Cla-Val Models 81GE02/NGE81-02 Check valves are hydraulically operated No-Slam Check Valves with dual speed controls. These valves open when the pressure at the inlet exceeds the discharge pressure. A gradual rate of opening prevents sudden opening surges. When a pressure reversal occurs, the higher downstream pressure is applied to the cover chamber and the valve closes drip tight.

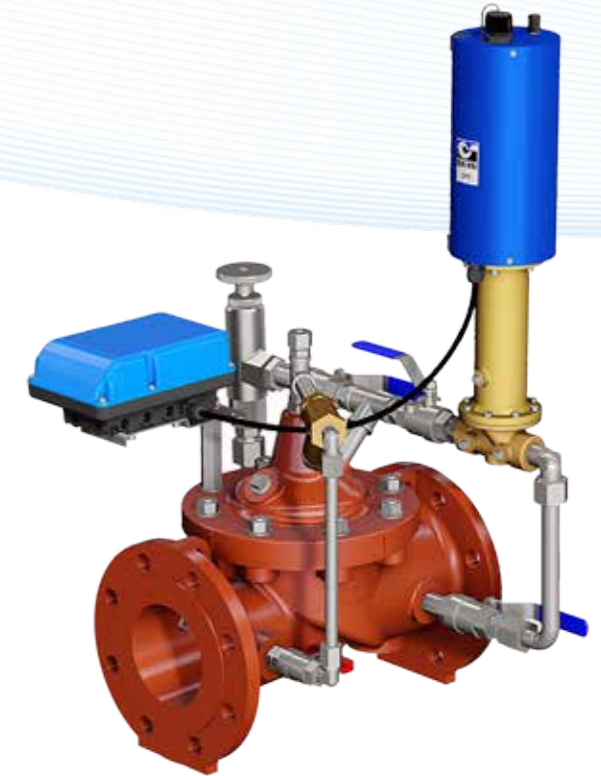
> Refer to pages 34-36 for sizing and dimensions



## Model: 138L-21 Position Control Valve

Cla-Val series 138GE-L21/NGE138-L21 Electrically Operated Position Control Valve regulates flow or pressure or other system parameters by changing valve position from full open to shut-off via a 4-20mA signal. The CPC motor controls valve position by limiting valve opening using hydraulically-assisted technology. The pilot sub-assembly has two calibrated orifices that are positioned proportional to valve position to vary main valve control chamber operating pressure.

> Refer to pages 34-36 for sizing and dimensions

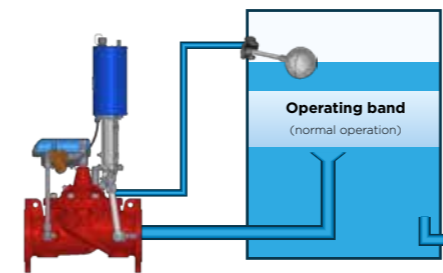


## TYPICAL VALVE APPLICATIONS

### Cla-Val 138 Series

Options for combining the flexibility of a 138 Series Position Control Valve with the security of hydraulic overrides

Position Control + High Level Hydraulic over-ride



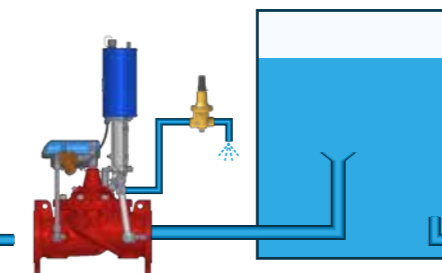
The Cla-Val Series 138L-21/CFM2 provides remote management of reservoir level with the protection of hydraulic back-up to avoid overflow in the event of power failure.

#### Alternative option

- Altitude control - no need for a float in the tank

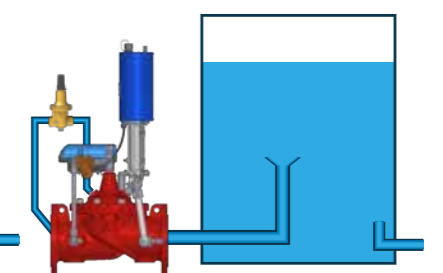


Position Control + Pressure Surge Relief



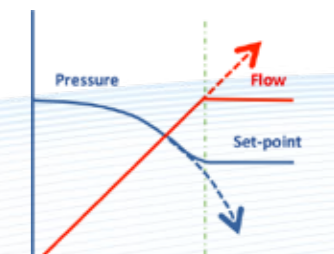
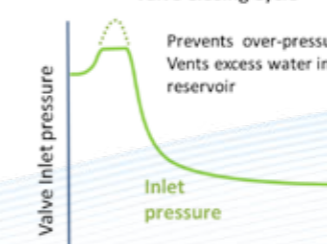
The Cla-Val Series 138L-21/N1 provides remote management of reservoir level with hydraulic surge relief control to protect pressure sensitive upstream pipework.

Position Control + Pressure Sustaining



The Cla-Val Series 138L-36 provides remote management of reservoir level with hydraulic pressure sustaining control to protect upstream pipework from low pressure.

#### Valve Closing Cycle



# ELECTRONIC VALVE CONTROLLERS

## Model: D22

### Electronic valve controller 24VDC

Cla-Val D22 is an intelligent valve controller designed to enable remote operation of electronic valves in water treatment facilities or potable water distribution systems. The D22 Valve Controller also serves as an interface between a SCADA system and other devices installed on or around the valve (such as a flow meter). Designed for easy user interface, the valve controller is pre-loaded with the most common valve applications (ValvApps™). The valve controller can also be customized with additional ValvApps™ to meet any operational requirement. Alternatively, logged data and control curves can be downloaded from the Cla-Val Link2Valves web portal. This requires an optional SIM card and antenna.

- **Highly accurate and stable valve control**
- **Programmed Control Curves for specialised level or pressure management control**
- **Internal logging to verify system performance**
- **Environmentally sealed to IP-68**
- \* **Multiple PID Functionality**
- \* **MODBUS or GPRS Communication**



## Model: D12

### Electronic valve controller 6-12VDC

Cla-Val D12 is an intelligent electronic valve controller capable of Flow or Time based Pressure modulation, Flow regulation or Valve position control with either single or combined modulation modes. The Remote Programming capability of the D12 allows sophisticated regulation profiles to be created, and changes made to the valve's set-point via the Cla-Val Link2Valves™ web platform, avoiding the inconvenience of sending an operator into the field.

- **Valve position vs time for dynamic boundary management**
- **Flow, time and closed loop control from CV-LOG logger installed at critical points**
- **Integral multi channel data logger**
- **Remote profile configuration**
- **Integral rechargeable battery powered by valve mounted micro turbine.**
- **Remote monitoring and control through PC based free issue software or web based Link2Valves™ platform**
- **Environmentally sealed to IP-68**



## Model: D11

### Electronic valve controller

Cla-Val D11 electronic valve controller is designed for enabling 2-stage or 3-Stage pressure control based on configurable time AND/OR flow set-point rules. The D11 incorporates a large internal memory, allowing all the inputs and outputs to be logged and downloaded. For convenience, Input channels and programming status can be viewed via a clear OLED. Programming is simple and intuitive, requiring a Windows based PC with in-built WIFI.

- **2-Stage or 3-Stage pressure modulation, as a function of time and/or flow rate**
- **WIFI interface for local programming for easy navigation and configuration**
- **5+ years battery life**
- **OLED display of key inputs**
- **Environmentally sealed to IP68**



## Model: CV-LOG+

### Datalogger with solenoid output

Cla-Val CV-Log+ is a communicating data logger with up to 4 sensors (3 analog channels and 1 digital channel) and transmits acquired data via GPRS\* to the Cla-Val Link2Valves™ platform. Configurable SMS alerts/alarms are also available. For example, to notify if pressure deviates from a programmed acceptable range. CV-Log+ is equipped with a digital output to activate a valve mounted solenoid, according to programmed rules, e.g Time based open-close valve command or high and low pressure set-points. Configuration and programming rules are simple and intuitive to set via the Cla-Val Link2Valves™ platform.

- **Up to 4 data acquisition channels**
- **SMS and GPRS communication**
- **SMS alarm setting conditions**
- **Interface to Cla-Val Link2Valves™ platform for data and event visualisation**
- **Remote Configuration**
- **5 Year Battery**
- **Environmentally sealed to IP68**

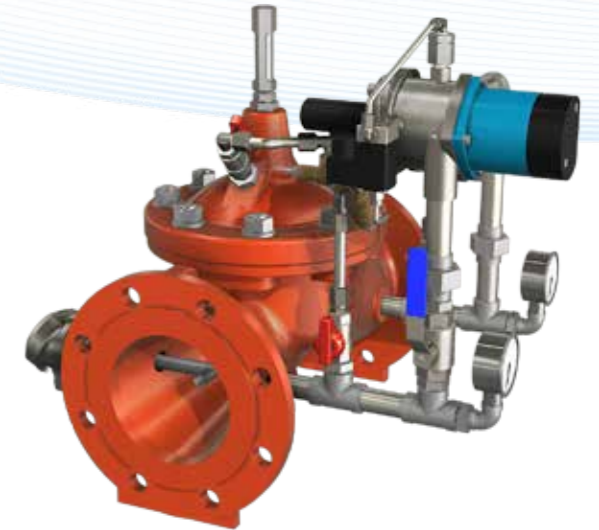
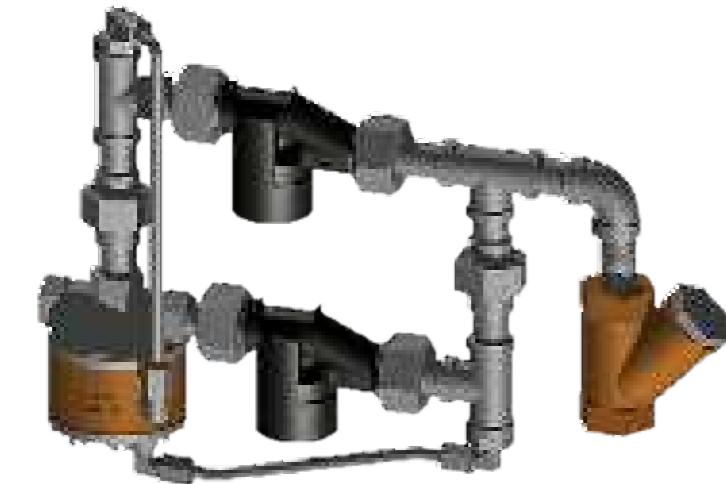
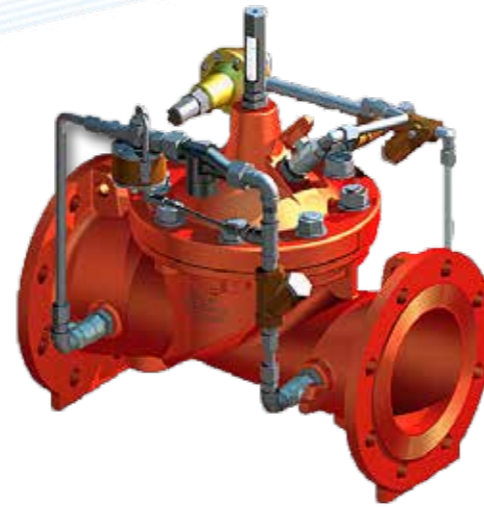


\*data communication package sold separately

# POWER

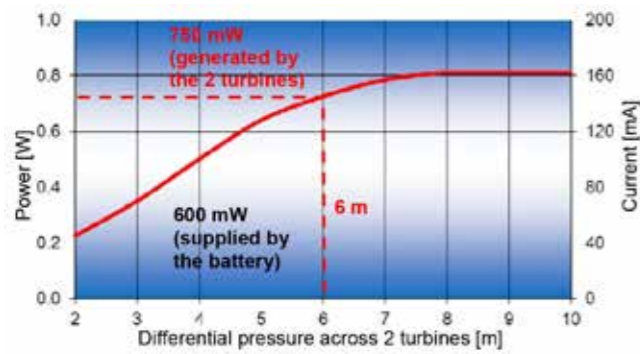
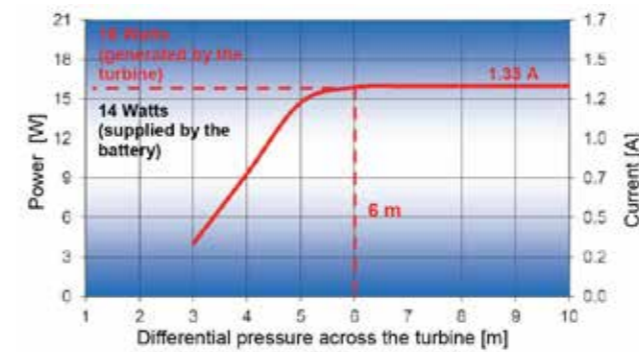
## Model: e-Power MP & e-Power 2MP Turbine - 6VDC/12VDC

The Cla-Val e-Power MP turbine is self-contained power generation system designed to be mounted into the bypass of Cla-Val Automatic Control Valves. They use the hydraulic energy of the system to power products including: Sensors, Actuators, Loggers. They are suitable for Retrofit to an existing Cla-Val Control Valve or can be specified on a new valve making them ideal for isolated locations and confined spaces.

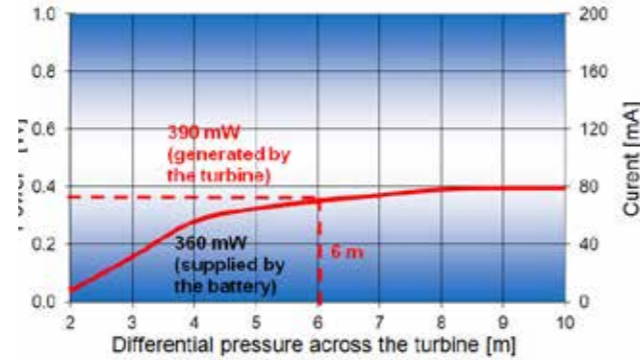


## Model: e-Power IP Turbine - 12/24VDC

The Cla-Val e-Power IP turbine is self-contained power generation system designed to be mounted into the bypass of Cla-Val Automatic Control Valves. They use the hydraulic energy of the system to power products including: Telemetry outstations, Cla-Val Actuators and Sensors. They are suitable for Retrofit to an existing Cla-Val Control Valve or can be specified on a new valve making them ideal for isolated locations and confined spaces.



e-Power 2MP



e-Power MP



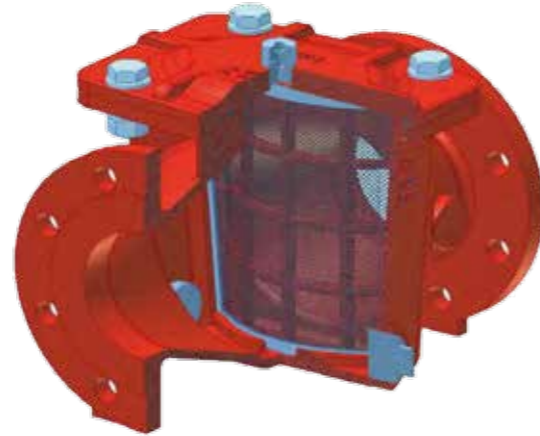
# ACCESSORIES

## Model: Aqua 90-501

### H - Strainer

The AQUA 90-501 strainer is used when effective filtration is required. Of compact design, maintenance is fast and easy and requires only top cover removal. The flat, stainless steel strainer mesh perpendicular to flow optimizes pressure drop. Moreover, the AQUA 90-501 model can be equipped with an autonomous programmable flushing valve (Cla-Val SERIES ECO) allowing fast flushing without removing top cover. The strainer may be installed in any position, however installation with the cover on top side is recommended.

- **Sizes: 40mm to 800mm**
- **Pressure rating PN 10 - 16 - 25 - 40**
- **Max. temperature 80° C**



## Model: e-Lift-34

### Valve Position Transmitter

The e-Lift-34 transmits the position of a Cla-Val regulating valve via a 4-20mA signal. When linked to a supervision system, the valve position is accessible in real-time. Valve position is determined via magnetic field instruments, avoiding direct physical friction and consequent mechanical degradation ensuring outstanding product longevity. The e-Lift-34 includes a calibration tool allowing very easy on-site calibration without the need to open the valve.

Two push-buttons are directly integrated in the junction box (or within the Cla-Val D22 Electronic Valve Controller) allowing simple and intuitive calibration.



## Model: e-Flowmeter

### Vortex Flowmeter

The Cla-Val Model e-Flowmeter is a vortex shedding insertion electronic flow meter designed to provide accurate flow measurement data, thus avoiding associated installation costs of a separate in-line flowmeter.

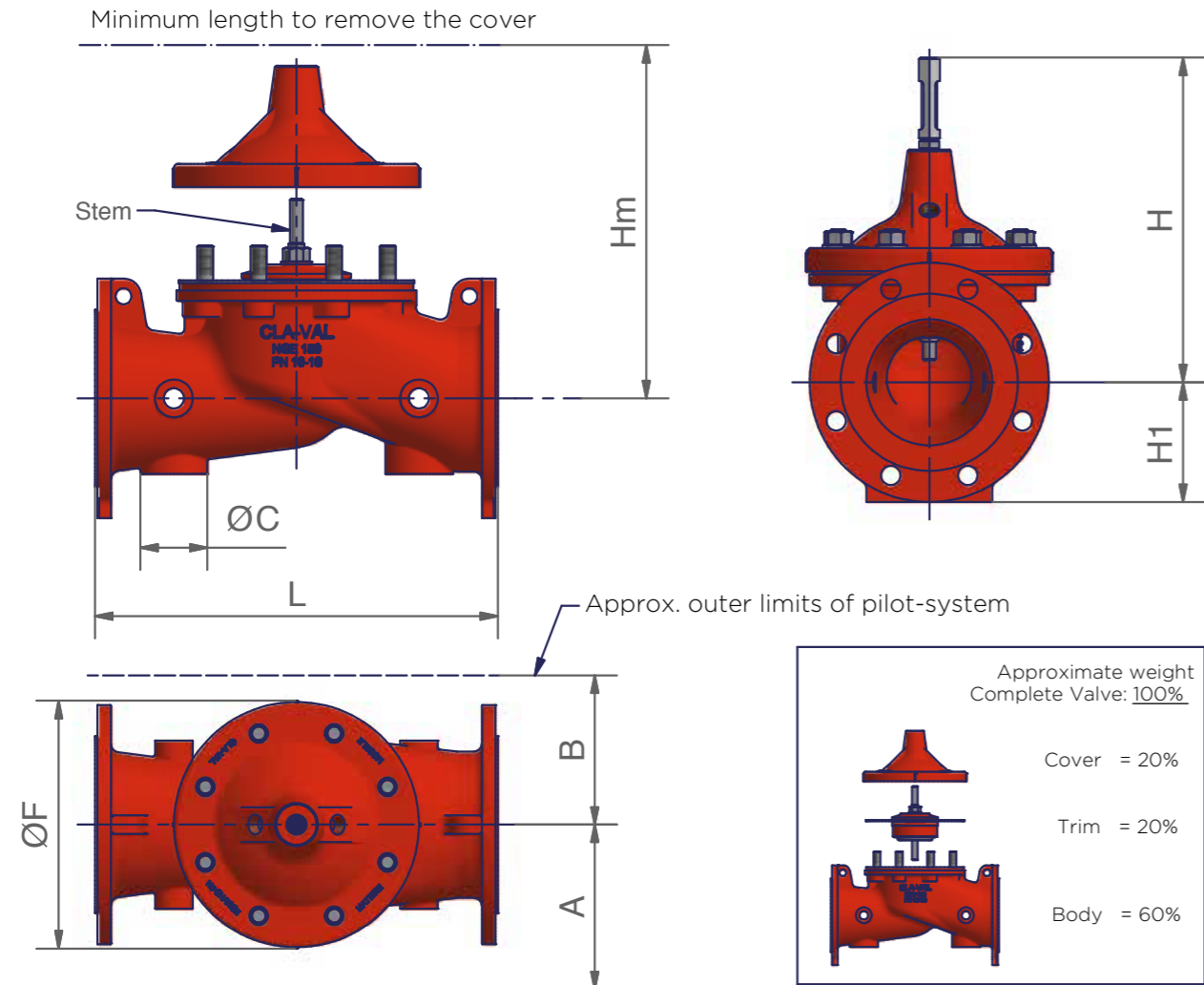
- **Simple to fit or retrofit to existing Cla-val valves**
- **Accuracy: 2% full scale**
- **Environmentally Sealed to IP68**
- **Flexible - A choice of 4-20mA or Pulse outputs**



# TECHNICAL DATA

## Cla-Val 100-01 NGE

### Weights and dimensions



#### Technical Data:

Flanged (mm)	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350	DN 400	DN 450	DN 500	DN 600
L	230	290	310	350	400	480	600	730	850	980	1100	1200	1250	1450
F	145	170	170	235	295	295	400	510	600	712	712	712	900	900
H	220	250	260	305	395	410	490	590	730	850	850	850	1030	1030
H1 (PN10)	82.5	93	100	110	125	142.5	170	200	227.5	260	290	325	370	430
H1 (PN16)	82.5	93	100	110	125	142.5	170	200	227.5	260	290	325	370	430
H1 (PN25)	82.5	93	100	117.5	135	150	188	225	242.5	277.5	310	335	370	430
Hm	255	290	300	390	470	480	585	700	890	1030	1030	1030	1310	1310
A	200	210	210	220	235	250	270	310	365	400	425	435	520	520
B	145	150	150	160	165	165	220	255	345	385	380	400	460	470
øC	45	60	60	60	60	80	80	80	80	80	80	80	-	120
Weight (Kg)	15	20	25	40	60	70	120	190	350	540	620	650	980	1080

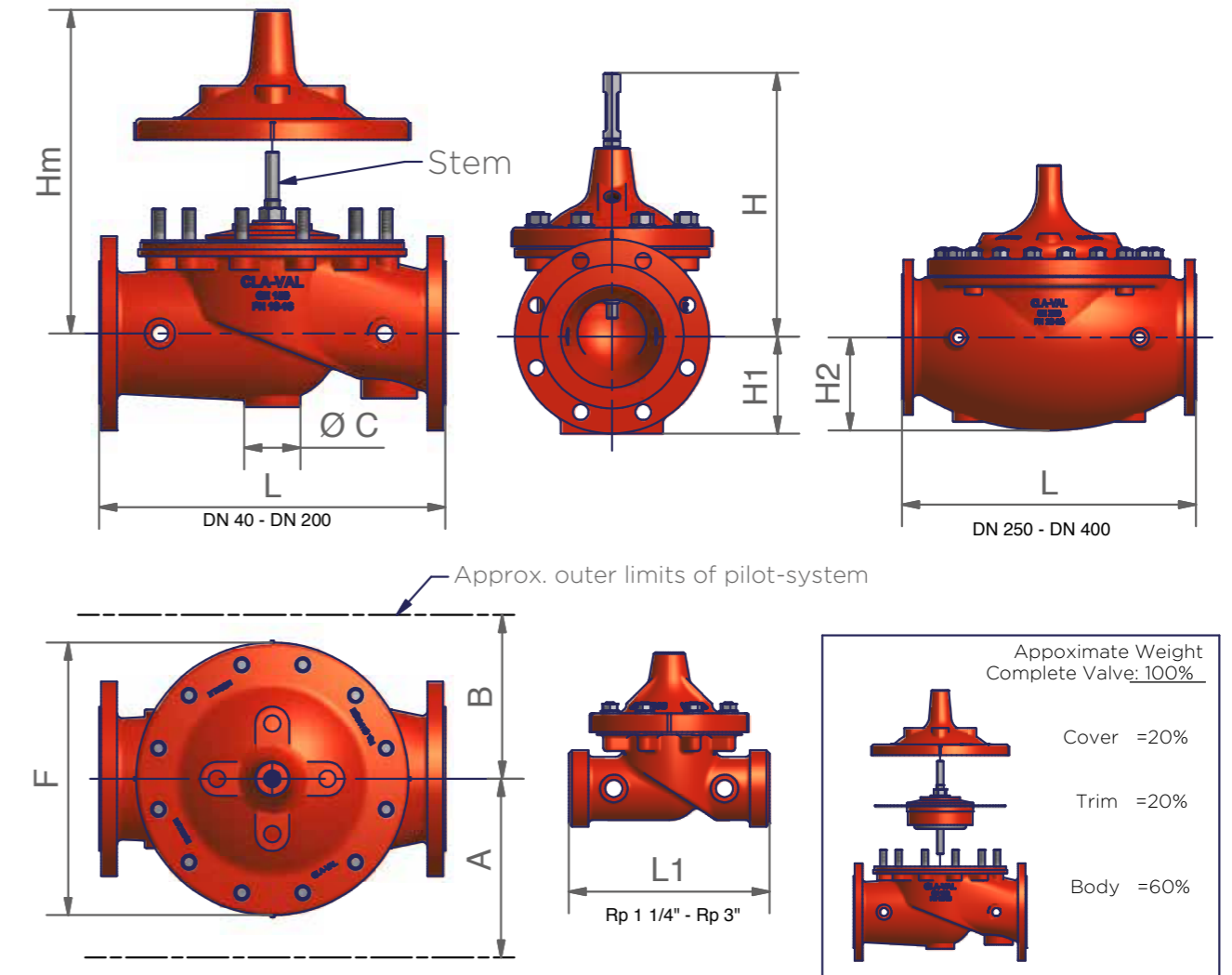
#### Hydraulic Data:

Flanged (mm)	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350	DN 400	DN 450	DN 500	DN 600
Kv (m <sup>3</sup> /h)	32	43	58	119	162	209	479	799	1292	1638	1789	2070	3049	3222
Cv (l/s)	9	12	16	33	45	58	133	222	359	455	497	575	847	895

Kv or Cv = m<sup>3</sup>/h or l/s @ 100kPa (1 bar) head loss with 15°C water (valve totally open).

## Cla-Val 100-01 GE

### Weights and dimensions



#### Technical Data:

Flanged (mm)	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 150	DN 200	DN 250	DN 300	DN 400
Screwed (in)	1 1/4"	1 1/2"	2"	2 1/2"	3"	-	-	-	-	-	-
L	215	215	254	280	305	381	508	645	756	864	1051
L1	184.5	184.5	238	280	318	-	-	-	-	-	-
F	145	145	170	205	235	295	400	510	600	712	900
H	191	191	215	245	260	345	415	495	595	695	850
H1 (PN 10-16)	-	75	82.5	93	100	110	142.5	170	-	-	-
H1 (PN 25)	-	75	82.5	93	100	117.5	150	180	-	-	-
H2	-	-	-	-	-	-	-	-	236	274	395
Hm	252	252	285	320	345	450	540	645	780	905	1120
A	150	150	150	165	203	216	230	285	330	370	475
B	100	100	100	115	127	152	205	260	305	362	450
øC	-	-	47	60	60	82	82	82	82	-	-
Weight (Kg)	13	13	20	25	30	50	95	170	310	470	970

#### Hydraulic Data:

Flanged (mm)	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 150	DN 200	DN 250	DN 300	DN 400
Screwed (in)	1 1/4"	1 1/2"	2"	2 1/2"	3"	-	-	-	-	-	-
Kv (m <sup>3</sup> /h)	26	28	47	72	101	173	400	666	1076	1490	2542
Cv (l/s)	7	8	13	20	28	48	111	185	299	414	706

Kv or Cv = m<sup>3</sup>/h or l/s @ 100kPa (1 bar) head loss with 15°C water (valve totally open).

# Cla-Val 100-01

## Quick Valve Selection: Guide

Size	End Details	Normal Flow Range [l/s]			Maximum Continuous Flow [l/s]
		New Globe Execution NGE	Angle Execution AE	Globe Execution GE	
CAPACITY		★ ★ ★	★ ★ ★	★ ★ ★	
PATTERN					
CAVITATION RESISTANCE		★ ★ ★	★ ★	★ ★	
MATERIAL STANDARD		★ ★ ★	★ ★	★ ★	
DN [in]	SCREWED				
1 1/4"			0.6 - 2.4	0.6 - 2.4	
1 1/2"			1.0 - 3.8	1.0 - 3.8	
2"			1.6 - 6	1.6 - 6	
2 1/2"			2.5 - 10	2.5 - 10	
3"		4 - 15	4 - 15		

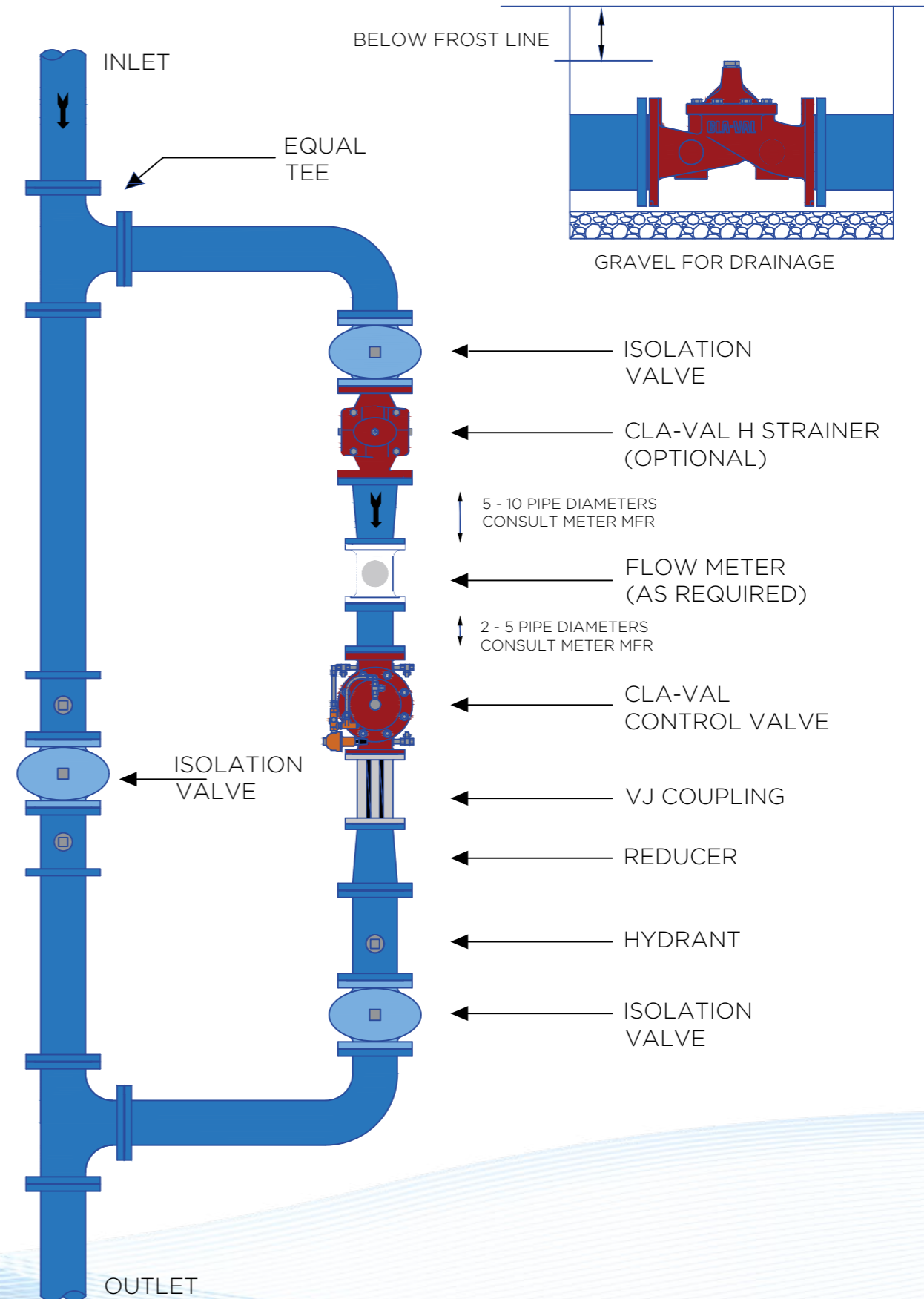
\* (Auxiliary Hytrol Valve 3/8", 1/2", 3/4", 1" refer to 000130TT)

DN [mm]					
32			0.6 - 2.4	0.6 - 2.4	4
40			2 - 3.8	1.0 - 3.8	6
50		1.6 - 6	1.6 - 6	1.6 - 6	10
65		2.7 - 10	2.7 - 10	2.7 - 10	16
80		4 - 15	4 - 15	4 - 15	25
100	FLANGED	6 - 24	6 - 24	6 - 24	40
125		10 - 37			61
150		14 - 53	14 - 53	14 - 53	88
200		25 - 94	25 - 94	25 - 94	157
250		39 - 147	39 - 147	39 - 147	245
300		56 - 212	56 - 212	56 - 212	353
350		77 - 289			481
400		100 - 377	100 - 377	100 - 377	628
500		157 - 589			982
600		226 - 848		226 - 848	1414
700		307 - 1154			1924
800		402 - 1508			2513

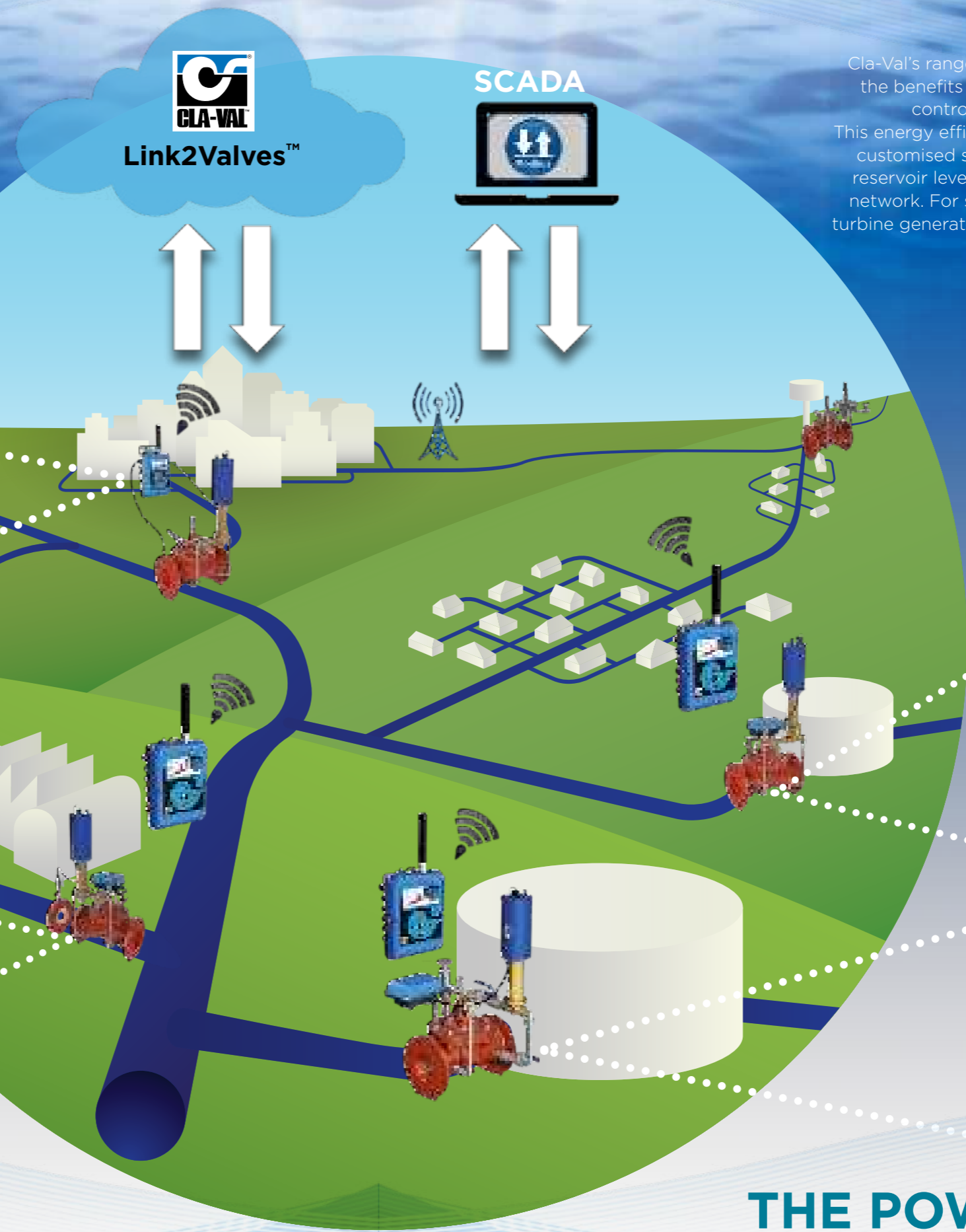
- Note**
  - Normal Flow Range based on 1 m/s to 3 m/s
  - Maximum Continuous Flow based on 5 m/s
  - Surge Flow up to 10 m/s consult factory
  - > Refer to 000121DE-3 to -5 for friction losses
  - ★ Low   ★ ★ Normal   ★ ★ ★ High
  - Available Sizes

- More Information**
  - Quick Valve Selection (Cavitation Chart) 000121DE-1
  - Quick Valve Selection (Performance Chart) 000121DE-2
  - Sizing Software Run CLA-VAL Softwares

## Typical Valve Installation on a Bypass



# TYPICAL APPLICATIONS FOR MANAGING FLOWS AND PRESSURES



Cla-Val's range of automated control solutions combine the benefits of precise and robust hydraulic actuation, controlled by low powered electronic interfaces. This energy efficient combination is capable of delivering customised solutions for regulating flows, pressures or reservoir levels within a water treatment or distribution network. For sites without mains power, our e-Power IP turbine generates enough energy to power (with minimal differential) your complete installation.

**Series PCM90**  
**Pressure management valve**  
 protecting distribution networks from potentially disruptive pressure fluctuations

**Series PCM50**  
**Pressure sustaining control**  
 Balances demand between distribution networks and reservoirs by maintaining a minimum upstream pressure

**Series PCM40**  
**Flow limiting control**  
 Limits the maximum flow to pre-defined limits e.g mitigating demand spikes from Industrial users

**Series 138**  
**Position control valve**  
 Delivers precise regulation of flows into reservoir to help maintain water quality and protect upstream pipework from excess pressure

## THE POWER TO CALM

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## **Cla-Val UK Limited**

Dainton House  
Goods Station Road  
Tunbridge Wells  
Kent TN1 2DR

**t: 01892 514400**

**e: [info@cla-val.co.uk](mailto:info@cla-val.co.uk) | web: [www.cla-val.co.uk](http://www.cla-val.co.uk)**

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