PROVAN



RAINWATER RETENTION AUTOMATED SYSTEM

ML-PLUVIAL 4.0

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ML-Pluvial

Background



Urban growth, increasing runoff volumes and climate change have forced cities and municipalities to re-evaluate their stormwater management criteria, methods and practices.

In the face of these changes, Provan now offers a complete automatic rainwater retention system.

Description

Provan's ML-Pluvial system offers the flexibility and versatility to adapt to different types of installations and environments.

The ML-Pluvial system includes:

- Basic System:
  - A rainfall detection element
  - A control panel
  - An electric retention valve

- Complete System:
  - A rainfall detection element
  - A control panel
  - An electric retention valve
  - A Vortex flow regulator
  - A non-return valve

The panel can be powered from 120 Vac to 575 3ph, 60HZ, as desired.

A few options are available in terms of the detection method, the type of environment and the location of the panel.

The panel is equipped with an indicator light indicating the position of the valve, the time remaining before release, alarms, water level (LT version) or rainfall intensity (PL version)

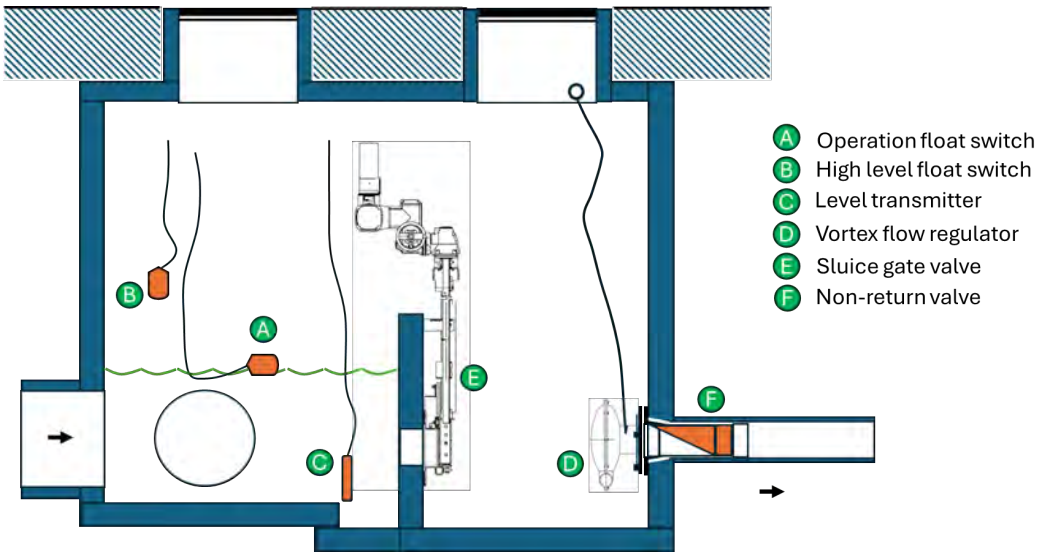
Alarm outputs are available for connection to the building management system.

Electrical Classification

The origin of the rainwater, as rooftops and/or outside parking lots, can affect the electrical classification of the retention chambers. That's why Provan offers the ML-Pluvial system in both General Purpose and Class 1 Div 1 versions.

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Typical Retention Chamber



Rain detection can be done by float (A), by level transmitter (C) or by a rain gauge installed outside the chamber.

A high-level float (B) is also available for overflow detection (high-level) or high-level alarm in a valve chamber.

The ML-Pluvial system can include a Vortex flow regulator and the check valve.

The ML-Pluvial system does not include the holding chamber.

Installation

All mechanical elements are fixed using chemical or mechanical fasteners.

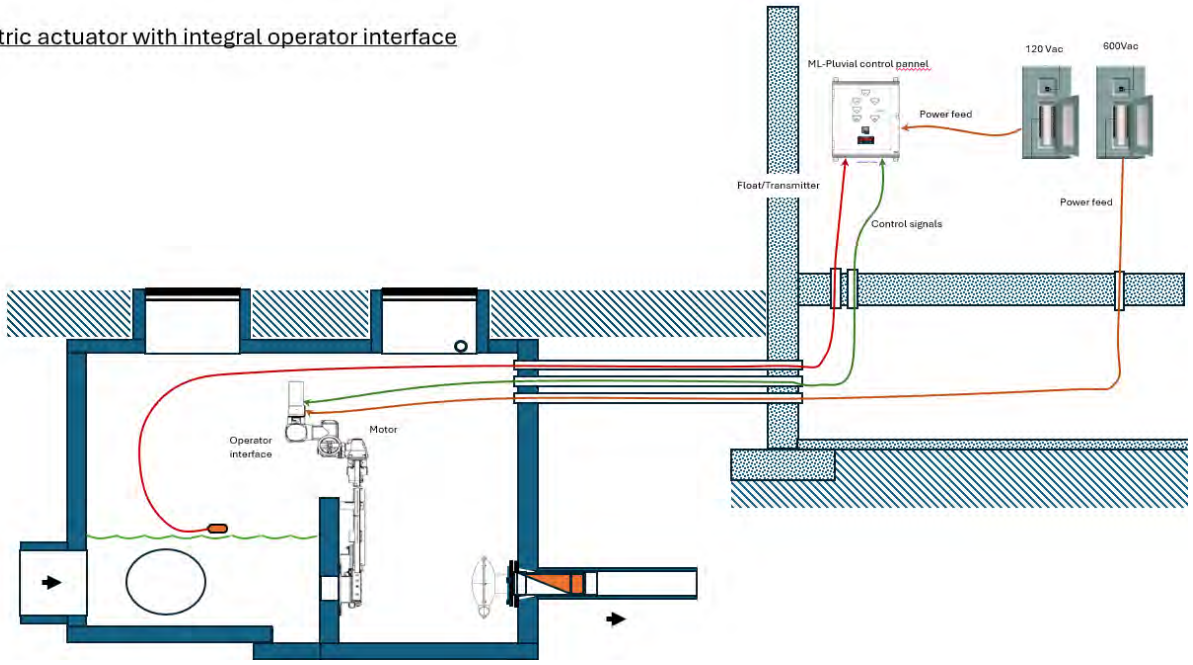
The typical height of a sluice gate, from the center of the pipe to the top of the actuator, for a DN200 sluice gate is 1.5m.

Two types of installations are available

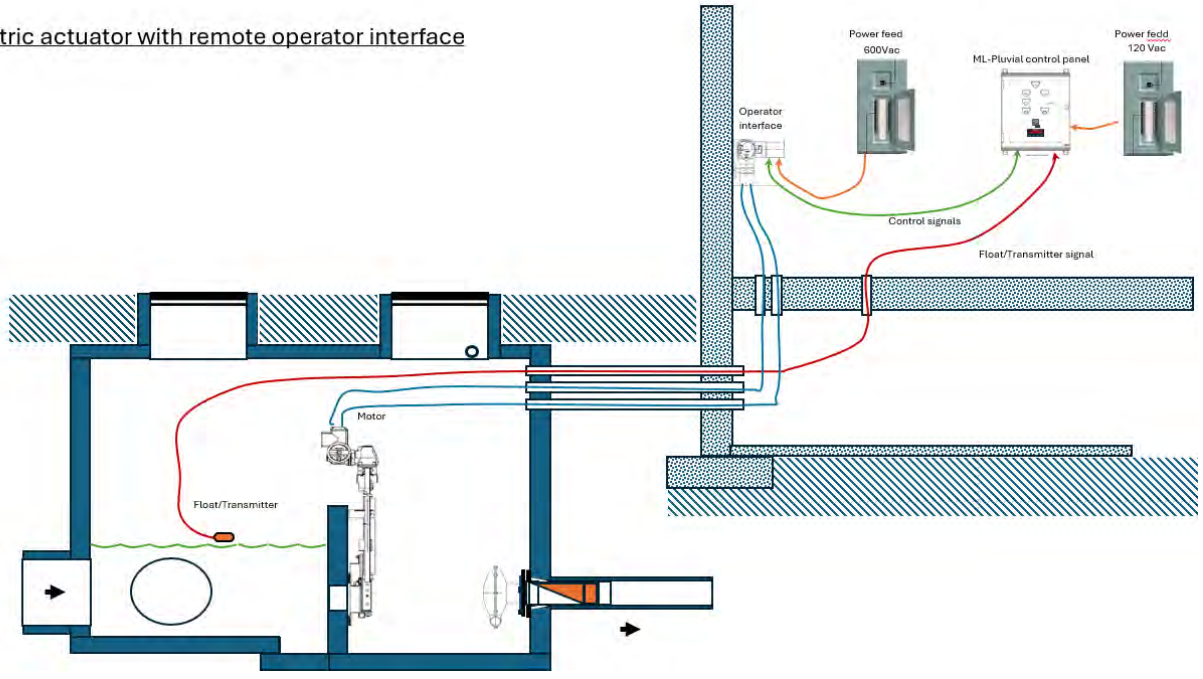
- Actuator Operating Interface: Integral to the actuator motor (inside the retention chamber)
- Actuator Operating Interface: Remote (outside the holding chamber)

ML-Pluvial

Electric actuator with integral operator interface



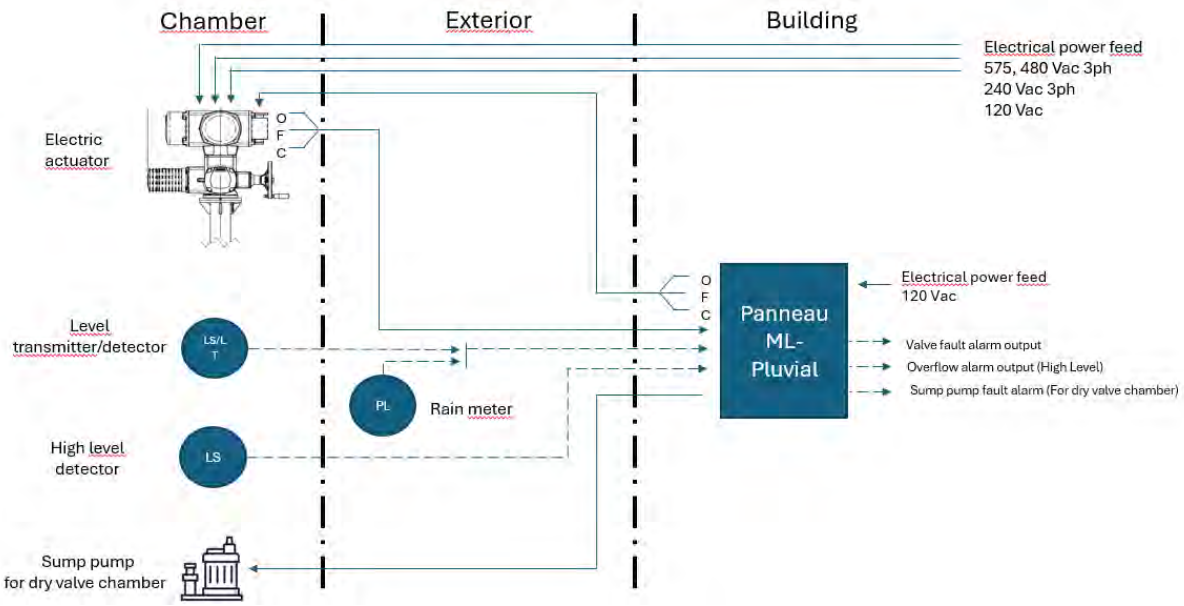
Electric actuator with remote operator interface



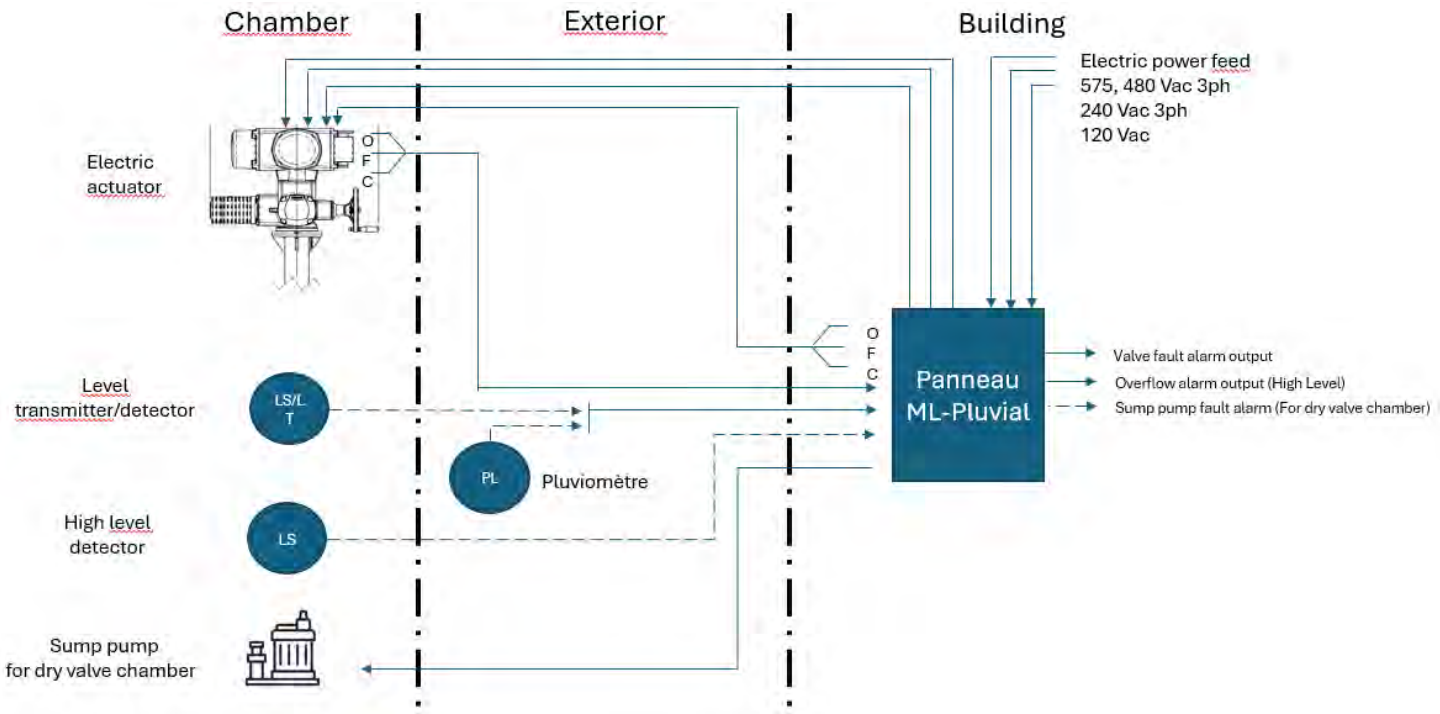
Electrical connection

Because valve chambers and/or manifolds can be inside or far from a building, a few electrical connection configurations are available.

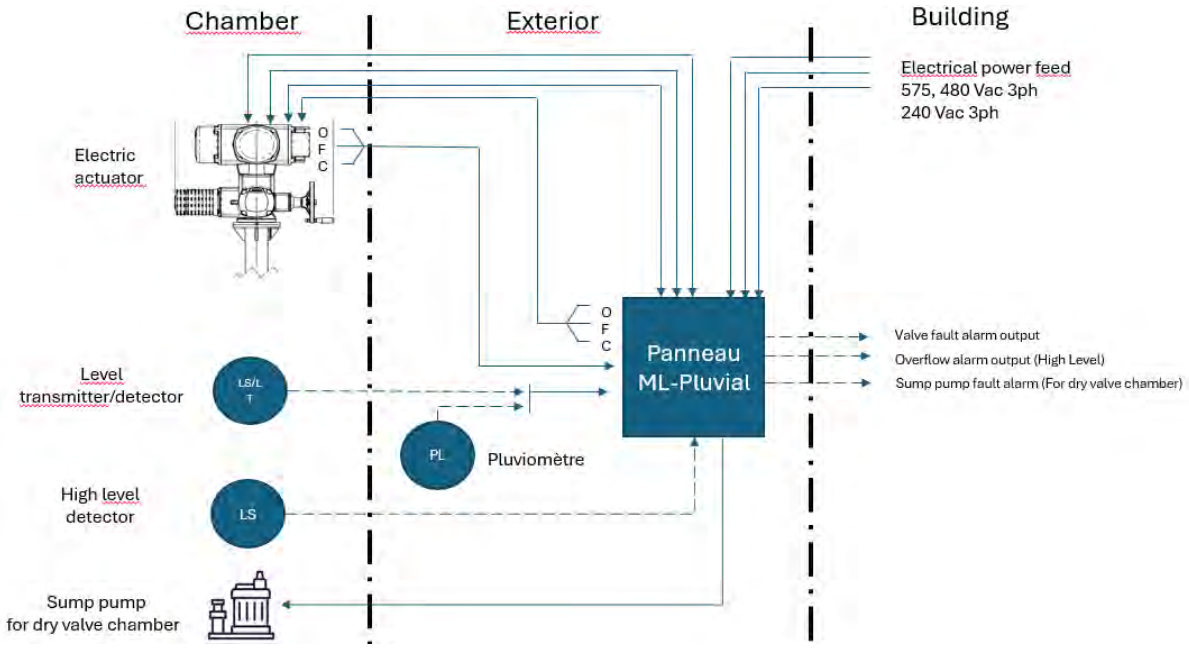
Separate valve supply



Centralized valve supply



Centralized power supply for outdoor use



ML-Pluvial

Compliances

City of Montreal

BY-LAW 20-030 RESPECTING CONNECTIONS TO PUBLIC WATER AND SEWER SYSTEMS AND STORMWATER MANAGEMENT

CHAPTER IV - STORMWATER MANAGEMENT

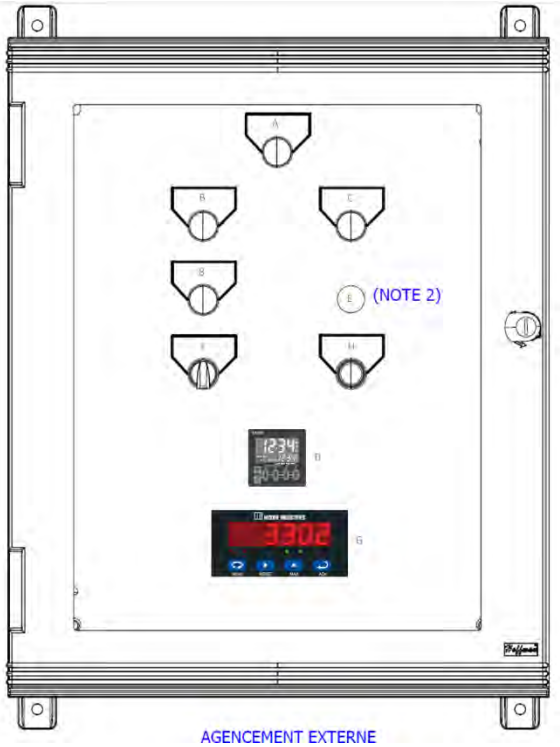
Requirement to hold stormwater until the stormwater level inside the holding chamber is stable for at least 6 hours, or 12 hours after the onset of a rainfall period.

Automatic deferred rejection system

Our system offers several methods of stormwater management. It can be operated by the raise of the water level in a manhole or collector chamber, using a float or level transmitter, as well as using an externally installed rain gauge.

The panel is equipped with LEDs indicating:

- (A) The power supply status.
- (B) The position of the valve (open/closed)
- (C) A valve malfunction alarm.
- (D) The time remaining before the rainwater releases.
- (E) A high-level alarm (Option for overflow or dry valve chamber)
- (G) The value of the water level or precipitation intensity (Option)
- (F) Operation selector Open/Auto/Close



AGENCEMENT EXTERNE

ML-Pluvial

Basic operating mode

All versions of our system have the sole purpose of retaining rainwater for a predetermined time, once a rainwater level increases or a rain rainfall is detected.

The initial state of the valve/valve can be closed or open for systems using a rain gauge.

LS Version (Level Switch)

- Starts a countdown once a high water level is detected above the drain pipe base.
- Once the countdown is complete, the discharge valve opens.
- The valve closes when the level falls below the starting threshold.

LT Version (Level Transmitter)

- Starts a countdown once a high level is detected above the drain pipe, indicating a rainfall, and the rate of change of the level is low indicating the end of this rainfall.
- The countdown is reseted if the rate of change of the level becomes high again during the holding period, indicating a new rainfall.
- The countdown is reset if the level reaches overflow level and will be restarted when this level is back to normal.
- Once the countdown is complete, the discharge valve opens.
- The valve closes when the level falls below the starting threshold.

PL version (rain gauge)

- Starts a countdown once a downpour is over.
- If during the countdown, a new downpour occurs, the countdown is reset to zero.
- Once the countdown is complete, the drain valve opens.
- The valve can remain open or close when the level falls below the starting threshold.

An optional high-level alarm can be provided using a float located in the holding chamber.

Option (dry valve chamber)

This option includes a level float for a dry valve chamber and a submersible pump.
The operation of this pump is supervised by the ML-Pluvial system. A failure alarm for this pump is included.

Option (Communication)

The ML-Pluvial Basic System, provides the building management system or fire system, with dry contacts to inform managers of the status of the system.

The ML-Pluvial system is also available with Modbus/TCP communication

Special Version

The ML-Pluvial system can be adapted for unique modes of operation.

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Operation

The ML-Pluvial system is designed to operate in automatic mode, at all times.

The system offers the possibility of forcing the valve open or closed in manual mode, for maintenance and functional verification purposes, from the panel.

In the event of a system failure, the valve can be operated from the valve actuator interface module.

In the event of a complete failure (such as a power outage, fire, etc.), the valve can be operated from the manual handwheel of the electric actuator.

Operation thresholds and retention periods are adjusted at the time of commissioning.

Technical specifications

Std Panel

- Dimensions: 20" wide x 24" high x 10" deep
- Wall mounting.
- Available in steel, fiberglass, or stainless steel.
- Power supply 120 Vac, 5 A
    - Optional 208, 240, 480, 575 Vac
- CSA approved for general purpose or for Class 1 Div 1 holding chamber
- Digital relay outputs of replaceable interfaces.

Valve Actuator

- Power supply 120, 240, 480, 575 Vac
- Power< 1.5KW
- CSA approves for general purpose or Class 1 Div 1 environment.

Valves

- Plug valve: Dezurik PEC Series
- Knife gate: Dezurik KGC Series
- Sluice gates: Wapro, Rodney Hunt, Elite

Electric actuators

- Auma
- Beck

Check valves

- Wastop from Wapro

Flow Regulator

- MFT

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Retention valve

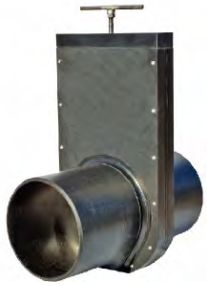
The ML-Pluvial system includes the retention valve. For small diameter pipes, we offer:

Motorized Ball Valve



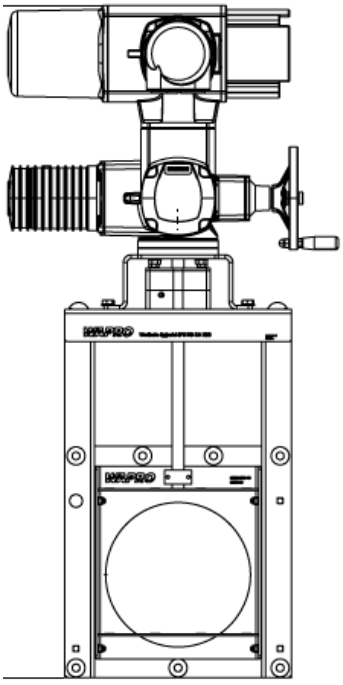
Motorized guillotine valve





For larger diameter pipes, we offer:







Motorized Sluice gate

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Electric Actuator

These valves are equipped with Auma, Beck or other electric actuators

- These actuators can be fed with
  120 Vac, 208 Vac, 240 Vac, 480 Vac and 575 Vac.

- They are all equipped with a manual operating handwheel.

- They are sized according to the type and size of the valves.



Note: All of these brands of electric actuators are equipped with a torque limiter, protecting the electric motor from overheating and breakage in the event of a blockage of the valve.

Actuator Operating Interface

The control module has a display and push buttons. All enclosures offer IP68 protection. The control module can be supplied as an integral version to the electric motor or for remote mounting.

Remote operation interface up to 100M



Integral operation interface



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Manual operation of the actuator

The regular actuator is supplied with a declutchable manual handwheel.

The actuator can be supplied with a square nut for operation using a wrench, from the top of the chamber.

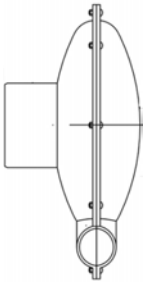
The complete actuator can also be installed on a pedestal outside the chamber.

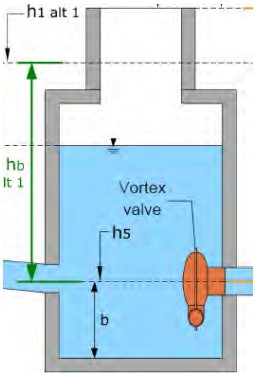


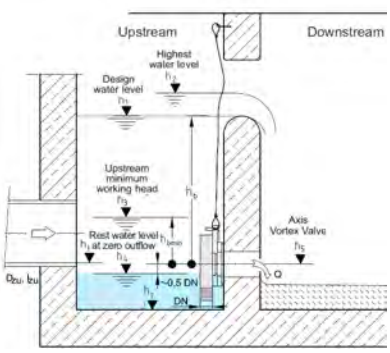


Flow Regulator

The ML-Pluviale system can include a Vortex flow controller of the MFT brand, Fluidvertic VSU or VSL series.
These regulators are available with sleeve or slip flange fittings.





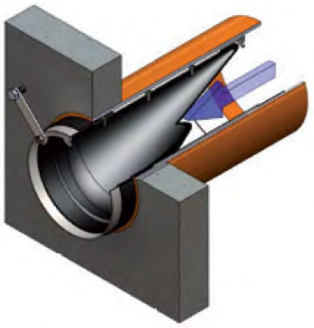


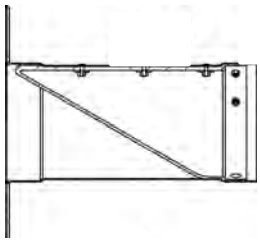
Check valve

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The ML-Pluviale system can include a Wapro brand Wastop check valve, in reverse configuration, to allow the evacuation of rainwater from inside the chamber, and prevent flow or gases backflows. These valves are simple to install and require a minimal head to open.







Check valve in direct configuration, supplied in forward or reverse configurations

Documentation : https://wapro.com/sites/default/files/2023-05/WaStop%20USA%20Eng%204.2.pdf

Commissioning

Provan includes technical support to plan installation, onsite verification and commissioning.

Documentation technique

Detailed and specific technical documents are submitted for approval.

ML-Pluvial

ML-Rainwater System BOM

ML-Pluvial	Rainwater retention system	
(A)	Type	
	S	Separated power feeds
	C	Centralized power feed
(B)	Electrical Classification of the Restraint Chamber	
	GP	General Purpose
	C1D2	Class 1, Division 2
(C)	Panel Power	
	0	120 Vac (Type S or C)
	1	240 Vac 2Ph (Type C only)
	2	480 Vac 3ph (Type C only)
	3	575 Vac 3ph (Type C only)
	4	208 Vac 1ph (Type C only)
(D)	Case	
	F4X	Nema 4X Type S fiberglass only
	A4	Nema 4 Steel
	I4X	Nema 4X Stainless Steel
(E)	Installation	
	IP	Interior (public space)
	SM	Mechanical/electrical room
	EP	Outdoor (public space)
(F)	Upstream chamber level measurement/detection	
	LS	Float
	EN	Level Transmitter
	PL	Rain gauge
(G)	High-level detection	
	0	None
	1	Float
(H)	Alarm output	
	0	Fault valve only
	1	Valve Fault / High Level / Pump Fault
(I)	Valve	
	B	Bushel
	G	Guillotine
	M	Mural

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(J)	Actuator Power	
	0	120 Vac
	1	240 Vac 2Ph (Such as panel if type C)
	2	480 Vac 3ph (As panel if type C)
	3	575 Vac 3ph (As panel if type C)
	4	208 Vac 1ph (Such as panel if type C)
(K)	Electrical Actuator	
	STD	IP68 with full display
	REM	IP68 with remote display
	15M	IP68-15M permanent submersible with remote display
	60M	IP68-60M permanent submersible with remote display
	IP65 REM	IP65 with remote display.
(S)	Diameter of the pipe for the valve.	
	(XXXX mm)	50 to 1200 mm
(M)	Flow Regulator	
	RD(XXXX mm/XX.XX LPS)	Nominal Diameter/Nominal Flow Rate
	X	None
(N)	Check valve	
	CAR(XXXX mm)	Pipe diameter
	X	None
(O)	Submersible Pump	
	PS	Submersible Pump & Supervision
	X	None
(P)	Communication	
	MB	Modbus TCP
	X	None

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Model Type

ML-Pluvial/S/0/A4/SM/LS/0/0/M/3/STD/(100mm)/RD200mm-4.0LPS/CAR200mm/PS/MB

(A)	S	Separate Feed System
(B)	GP	General Purpose Electrical Classification
(C)	0	120 Vac panel power supply
(D)	A4	Nema 4 steel housing
(E)	SM	For mechanical/electrical room
(F)	LS	Storm water level switch
(G)	0	No level detection for valve chamber
(H)	0	Valve fault alarm only
(I)	M	Sluice gate
(J)	3	Actuator power supply 575 Vac 3Ph
(K)	STD	Actuator with full display IP68
(S)	800mm	8" (200mm) valve
(M)	RD 200mm-4.0 LPS	Flow Regulator 200mm (8 in.), 4.0 LPS
(N)	CAR 200mm	Check Valve 200mm (8 in.)
(O)	PS	Submersible Pump & Supervision
(P)	MB	Communication Modbus TCP



PROVAN

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