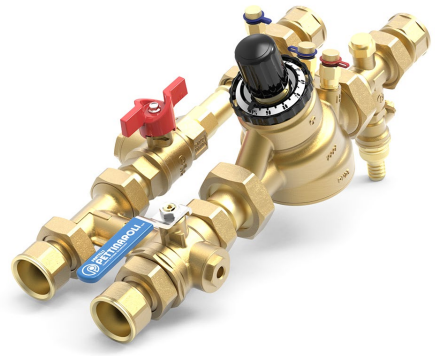


DESCRIPTION

XT851 – XT851G – X851GA

Prefabricated kit PCS "Pettinaroli Commissioning Solutions" with 80 mm flushing by-pass, EvoPICV **93** (**equal percentage PICV**), **Filterball®** shut off valve with integrated strainer, drain valve with hose connection, air vent and additional test point.

The PCS kit is ready to be installed and provides all components required for commissioning and operation of the terminal unit. By-pass avoids reverse flushing across the PICV.

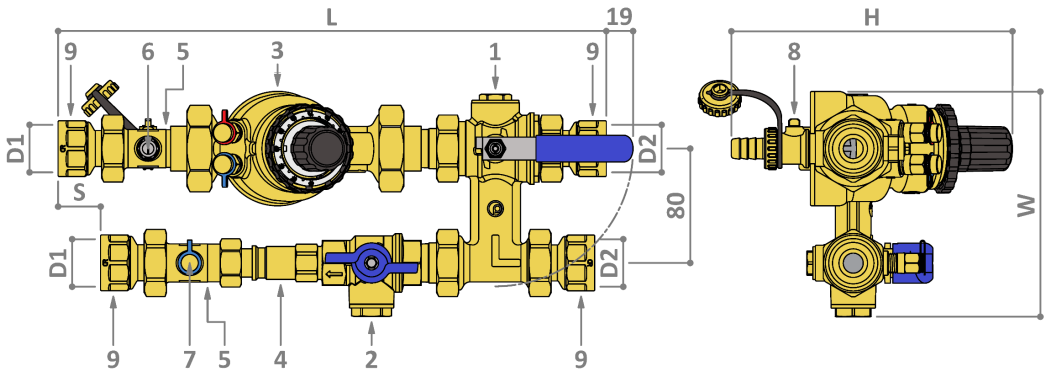
Each kit is 100% factory tested against leakage: this way the risk of leakages due to assembling phases on the construction site is eliminated. The **PICV** is fully maintainable and has got two test points for commissioning and system optimization.

The **Filterball®** is a ball valve with an integrated strainer in the sphere. Main features: blowout proof stem, triple sealing technology, adjustable packing gland and lower pressure drop compared to a normal Y strainer. Stainless steel filter FM28: very easy to inspect and maintain.

Soft thermal insulation case available, if included the product part number becomes ***XT851G***. For further information please refer to the "INSULATION" chapter.

Flexible hoses series **EvoFLEX** available, if included (with also the insulation) the product part number becomes ***X851GA***. For further information please refer to the "FLEXIBLE HOSES" chapter.

DIMENSIONS



Dimensions in **mm**

Kit	H	W	S	L	D1*	D2*	Weight [kg]
XT851 – 1” x 1” – 2200 l/h	197	158	30	384	1”	1”	~5,3
XT851 – 1” x 1” – 2700 l/h	197	158	30	384	1”	1”	~5,3
XT851 – 1” x 1” – 3000 l/h	197	158	30	384	1”	1”	~5,3

*Available version with **NPT** thread on request.

CONVERSION OF UNITS OF MEASUREMENT

PRESSURE	→→→→	Multiply by	→→→→	PRESSURE
kPa	0,01	Bar	100	kPa
kPa	0,1	mH_2O	10	kPa
kPa	0,145	psi	6,895	kPa
bar	14,503	psi	0,0689	bar

FLOW RATE	→→→→	Multiply by	→→→→	FLOW RATE
m^3/h	1000	l/h	0,001	m^3/h
m^3/h	0,277	l/s	3,6	m^3/h
m^3/h	4,403	GPM (US)	0,227	m^3/h
l/h	0,0044	GPM (US)	227,1	l/h

STE0431 rev.02 01/09/2025

MATERIAL LIST

#	Article*	Description	QTY	Material
1	XT3BP DN25	By-pass valve 80 mm	1	CuZn40Pb2 CW617N
2	52F ¾"	Filterball® valve	1	CuZn36Pb2As CW602N NDA
3	93L – 2200 l/h 93H – 2700 l/h 93H – 3000 l/h	PICV EvoPICV 93	1	CuZn36Pb2As CW602N NDA
4	1007M ¾" x 18 mm	Connection fitting	1	CuZn40Pb2 CW617N
5	1020P ¾" x 18 mm	Cross fitting	2	CuZn40Pb2 CW617N
6	699C ¼"	Air vent	1	CuZn39Pb3 CW614N
7	T90 ¼"	Pressure port	1	CuZn40Pb2 CW617N
8	148SC ½" x 15 mm	Drain valve	1	CuZn40Pb2 CW617N
9	B90CIL 1"	Connection fitting	4	CuZn36Pb2As CW602N NDA

*For further information about components and their maintenance please refer to their dedicated technical specifications.

TECHNICAL FEATURES

Center to center	Connections*	Flow rate range		PICV min ΔP	Kit min ΔP	Kv by-pass	Filtering capacity
		Minimum	Maximum				
[mm]		[l/h]	[l/h]	[kPa]	[kPa]	[m^3/h]	[µm]
80	1" F x 1" F	220	2200	25	30	8	700 (FM28)
	1" F x 1" F	270	2700	30	35		
	1" F x 1" F	300	3000	35	40		

**Terminal unit side:* ISO 226-1 female connections made via union. – *System side:* ISO 226-1 female connections made via union.

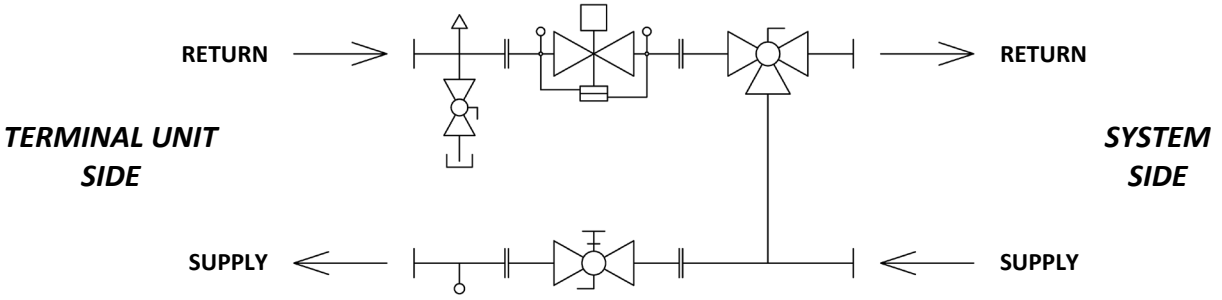
DATA

Features	
Pressure rating	PN25 (PN16 with flexible hoses)
Flow rate range	220÷3000 l/h; depending on PICV selected
Working temperature range*	-10÷100°C
Working differential pressure range	25÷600 kPa; minimum depends on PICV and setting
Flow control accuracy (linearity and hysteresis)	Pos.9 ±5% for ΔP < 1 bar. Others ±10% for ΔP > 1 bar at 100%
Control valve characteristic	Equal percentage
Control valve leakage rate to IEC 60534-4	Class IV
Thread types	BSP (**available also NPT**)
Medium**	Water or water+glycol 30%

*No frost and no steam. Under 0 °C glycol must be added. For temperature limits of the actuators and flexible hoses see their dedicated technical specifications.
**Water quality must comply requirements mentioned in PICV technical specifications.

STE0431 rev.02 01/09/2025

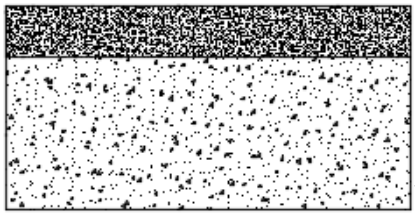
SCHEMATIC



INSULATION

Class 1 fire rated insulation case made by **2 shells** connected with **Velcro®** (multiple opening and closing). Realized with a sandwich structure with a total thickness of 20 mm and composed by two layers:

External layer: polyethylene cross linked foam with high density (80 kg/m³). This layer gives rigidity to the structure of the case.

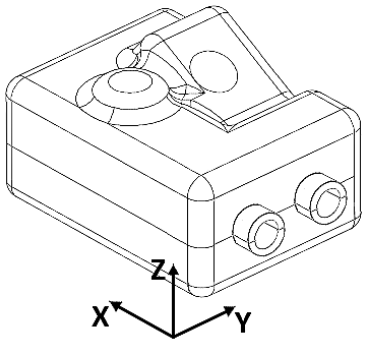


Internal layer: polyethylene cross linked foam with low density (29 kg/m³). This layer increases the insulation performances of the case.

For the properties of the insulation materials see the following table:

	Standard	Insulation material		Unit of measure
Density	ISO 845	29	80	Kg/m³
Compression stress (5% deflection)	ISO 3386/1	88	260	kPa
Tensile longitudinal strength	ISO 1798	0,18	0,80	MPa
Extension longitudinal stretch	ISO 1798	120 (rupture)	170 (rupture)	%
Residual distortion 22h at 23°C	ISO 1856	13	1,5	%
Operating temperature range	-	-60÷90	-60÷90	°C
Thermal conductivity at 40°C	EN 12667	0,040	0,049	W/mK
Fire resistance	UL94	HF1	HF2	-

If the insulation case is included with the kit, the product part number becomes ***XT851G***. Insulation cases dimensions are shown below:

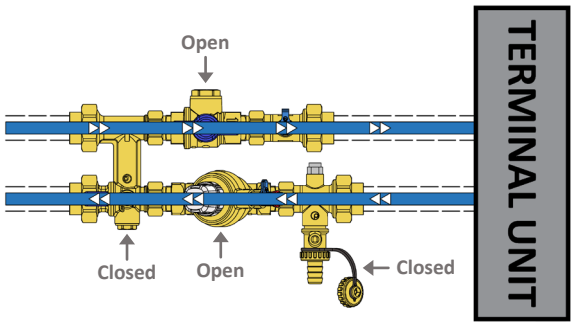


Kit	X [mm]	Y [mm]	Z [mm]
XT851G – 1” x 1” – 2200 l/h	500	200	185
XT851G – 1” x 1” – 2700 l/h	500	200	185
XT851G – 1” x 1” – 3000 l/h	500	200	185

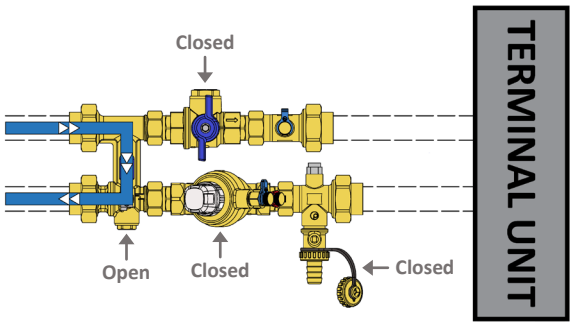
Picture shown is for illustration purposes only. The real shape of the insulation case will vary depending on the type of kit.

STE0431 rev.02 01/09/2025

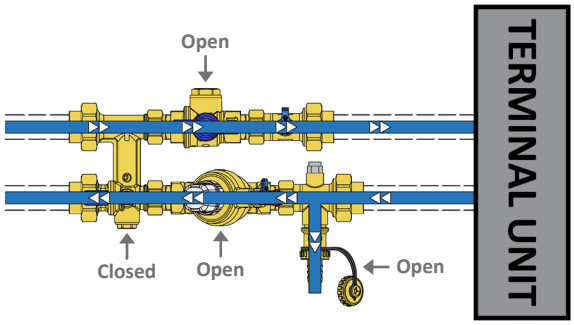
OPERATIONS



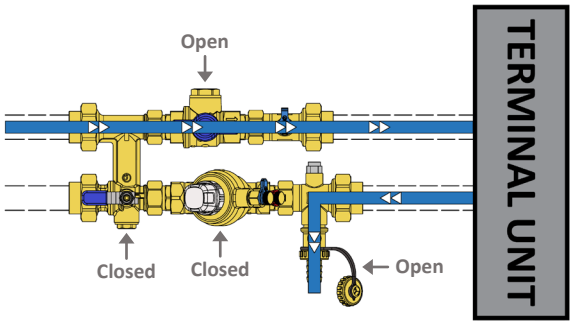
Operative mode: *normal operation of the terminal unit*



Flushing mode: *cleaning the circuit of the system side*



Filling and purging mode: *filling or emptying the circuit*



Back flush mode: *cleaning the circuit of the terminal unit side*

⚠ Pictures shown are for illustration purposes only. These represent the possible operating modes of a similar kit. The drain valve is shown turned for ease of understanding.

INSTALLATION

The kit must be installed in compliance with the following orientation limits:

⚠ PICV EvoPICV 93: for electrical safety reasons, in case an actuator is mounted onto the valve, it can only be installed in a position between vertical and horizontal. Installation in an upside-down position must be avoided (***Fig.1***);

⚠ FilterBall® valve: as the valve is internally equipped with a filter, it must not be installed with the orientation of the flow from bottom to top: in this condition the captured impurities would have no way to deposit in correspondence of the device. Any other position is allowed (***Fig.2***).

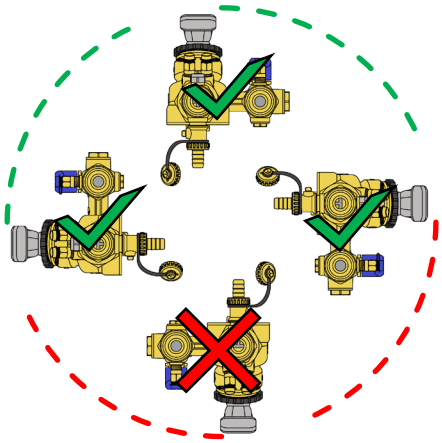


Fig.1

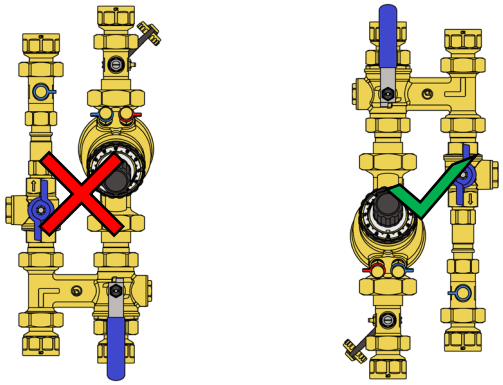


Fig.2

STE0431 rev.02 01/09/2025

FLEXIBLE HOSES

The **EvoFLEX** flexible hoses are connecting hoses made by synthetic rubber (EPDM) and covered with a stainless steel braid (AISI 304) to connect two pipe sections. High flexibility and resistance make **EvoFLEX** hoses able to clear obstacles and make narrow turns operating in very demanding conditions. This product is often exploited as anti vibration device to stop vibration propagation generated by pressurized pipes or machines (pumps, chillers, fans). The high quality of materials allows to get excellent performances and one of longest product life on the market.

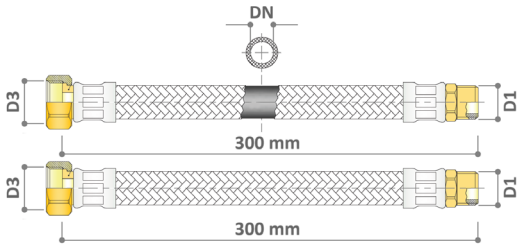
Available in the version 1 x 300 mm + 1 x 300 mm with the following features:

- *Nominal pressure:* 16 bar
- *Type of medium:* water or water+glycol
- *Maximum medium temperature:* 90°C
- *Minimum medium temperature (no frost):* 5°C (-10°C if glycol is added)

Used to simplify the connection operations between the kit and the terminal unit. If flexible hoses are included (with also the insulation), the product part number becomes ***X851GA***. The combinations to be used are listed below:

Kit	Flexible hoses	Article	D1*	D3*	DN
X851GA – 1” x 1” – 2200 l/h	1 x 300 mm + 1 x 300 mm	FXMUP	1” M	1” F	25
X851GA – 1” x 1” – 2700 l/h	1 x 300 mm + 1 x 300 mm	FXMUP	1” M	1” F	25
X851GA – 1” x 1” – 3000 l/h	1 x 300 mm + 1 x 300 mm	FXMUP	1” M	1” F	25

**D1 side:* ISO 228 male connections. – *D3 side:* flat end ISO 228 female connections made via nut.



FXMUP

The fittings indicated as D1 must be connected to the kit (connections D1). Based on specific requirements, the kit can be supplied in versions different from the standard ***X851GA***.

For further information about flexible hoses, such as materials, length, possible fittings and insulation, please refer to their dedicated technical specifications.

STE0431 rev.02 01/09/2025

ACTUATORS

THERMOELECTRIC

A562O2 – A564O2

- **Type of control:** ON/OFF or PWM
- **Supply voltage:** 230V AC (*A562O2*) or 24V AC/DC (*A564O2*)
- **Stroke:** 6,5 mm (≈270 s)
- **Fluid temperature:** 0÷100°C
- **Ambient temperature:**0÷60°C
- **Adapter** *VA64**

A561O2

- **Type of control:** ON/OFF or PWM
- **Supply voltage:** 120V AC
- **Stroke:** 6,5 mm (≈270 s)
- **Fluid temperature:** 0÷100°C
- **Ambient temperature:**0÷60°C
- **Adapter** *VA64**

A564P3

- **Type of control:** proportional 0-10 V
- **Supply voltage:**24V AC
- **Stroke:** 6,5 mm (≈195 s)
- **Fluid temperature:** 0÷100°C
- **Ambient temperature:** 0÷60°C
- **Adapter:** *VA64**

**Adapter included* ***Adapter not included*

The actuator is intended as an additional accessory. It is not included with the kit and must be ordered separately.

If the selected kit includes an insulation case, the installation of the actuator must be carried out after positioning the shell on the kit. The adapter, however, can be positioned previously.

STE0431 rev.02 01/09/2025

ACTUATORS

ELECTROMECHANICAL

VA7481

- **Type of control:** ON/OFF or 3 points
- **Supply voltage:** 230V AC or 24V AC/DC (to specify)
- **Corsa:** 6,3 mm (50,4 s)
- **Fluid temperature:** 0÷95°C
- **Ambient temperature:** 0÷50°C
- **Adapter:** *0A748X***

VA7482-A

- **Type of control:** proportional 0-10 V
- **Supply voltage:** 24V AC/DC
- **Stroke:** 6,3 mm (50,4 s)
- **Additional features:** autostroke and EQM curve
- **Fluid temperature:** 0÷95°C
- **Ambient temperature:** 0÷50°C
- **Adapter:** *0A748X***

VA7483

- **Type of control:** proportional 0-10 V
- **Supply voltage:** 24V AC/DC
- **Stroke:** 6,3 mm (50,4 s)
- **Additional features:** autostroke, EQM curve and feedback
- **Fluid temperature:** 0÷95°C
- **Ambient temperature:** 0÷50°C
- **Adapter:** *0A748X***

VA7484

- **Type of control:** proportional 0-10 V
- **Supply voltage:** 24V AC/DC
- **Stroke:** 6,3 mm (50,4 s)
- **Additional features:** autostroke, EQM curve, feedback and failsafe
- **Fluid temperature:** 0÷95°C
- **Ambient temperature:** 0÷50°C
- **Adapter:** *0A748X***

VT192O3 – VT194O3

- **Type of control:** ON/OFF or 3 points
- **Supply voltage:** 230V AC (*VT192O3*) or 24V AC/DC (*VT194O3*)
- **Stroke:** 9 mm (108 s)
- **Additional features:** LED display
- **Fluid temperature:** 0÷95°C
- **Ambient temperature:** -20÷50°C
- **Adapter:** *0A7010***

VT194P4

- **Type of control:** proportional 0-10 V
- **Supply voltage:** 24V AC/DC
- **Stroke:** 9 mm (108 s)
- **Additional features:** LED display, autostroke and feedback
- **Fluid temperature:** 0÷95°C
- **Ambient temperature:** -20÷50°C
- **Adapter:** *0A7010***

**Adapter included* ***Adapter not included*

The actuator is intended as an additional accessory. It is not included with the kit and must be ordered separately.

If the selected kit includes an insulation case, the installation of the actuator must be carried out after positioning the shell on the kit. The adapter, however, can be positioned previously.

STE0431 rev.02 01/09/2025