

PRESSURE INDEPENDENT CONTROL VALVE



The pressure independent control valve allows adjusting and keeping the flow rate constant to the desired value, within a wide differential pressure range upstream and downstream. Therefore, it encloses the functions of a automatic flow control valve and a control valve in a single product.

The flow rate value is adjusted in the following ways:

- Through a cartridge adjustable from outside (manual operation to be carried out using a special accessory spanner) so as to limit the maximum set value.
- Through an electrothermal or electrical motor (automatic operation) according to the thermal loads required by the system.

During these operations/adjustments the valve does not need to be shut off.



USE

It is particularly indicated in the following cases:

- Adjustment for pumping stations in central thermal fluid systems.
- Terminal balancing and adjustment on customer junctions.
- Third way adjustment and balancing on thermoregulation units.

CHOICE

It is advisable to choose the pressure independent control valve, the pressure adjustment degree corresponding to about half the cartridge flow rate range.

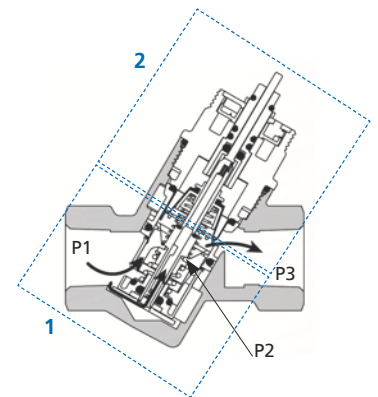
In this way, with the design nominal flow rate, a sufficient calibration margin is preserved so as to cope with any corrections due to inevitable route changes during work.

OPERATING PRINCIPLE

Pressure P2 is determined by the membrane reacting to pressure P1 acting on the membrane upper chamber. Interacting with the spring, the difference (P1-P2) remains constant, while maintaining a steady ΔP through the orifice. As a result, a **constant flow rate through the valve is obtained regardless of variations in the pressure difference between upstream and downstream, which can be adjusted by the motor depending on the system thermal requirements.**

KEY:

- 1 Control device ΔP
- 2 Flow rate adjustment device
- P1 and P3: Circuit pressure values
- P2: Pressure determined by membrane
- $\Delta P = (P1-P3) =$ Total pressure difference between upstream/downstream



POSSIBLE APPLICATIONS

Pressure independent control valves are mainly used on the hydraulic circuit return pipe. Below are some typical application examples:

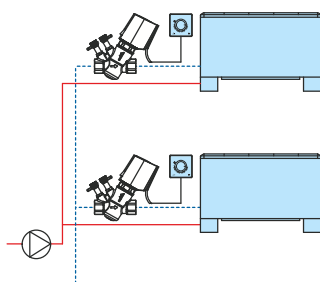


FIGURE 1

Pressure independent control valve with the function of serving in-line terminal elements (radiators, convectors, fan-coils, etc.). Each valve provided with an electrothermal motor is controlled by a thermostat/chronothermostat.

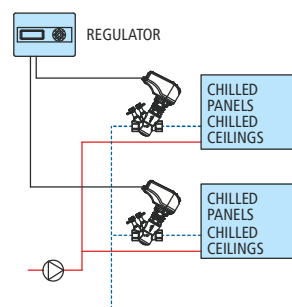


FIGURE 2

Pressure independent control valve with the function of serving terminal elements (chilled panels, chilled beams, etc.). Each valve provided with an electrical motor is managed by a controller (signal 0÷10V / 230V / 24V).

3535

Differential pressure control and balancing valves.

This keeps the pressure difference between two points of a hydraulic circuit constant at the predefined value.

Brass body.

Polymer cartridge with elastomer diaphragm.

Copper capillary pipe.

Threaded connections FF UNI-EN-ISO 228.

- Max operating pressure 16 Bar
- Allowed temperatures -20 ÷ +120 °C
- Allowed fluid water and water+glycol 50%
- Pressure gauge plugs connection G1/8"
- Capillary pipe length 1 m



- Control and balancing valve for differential pressure
- Vanne de contrôle et d'équilibrage de la pression différentielle
- Клапан контроля и балансировки дифференциального давления
- Supară de control și echilibrare a presiunii diferențiale
- Válvula de control y balance de la presión diferencial
- Steuer- und Ausgleichsventil für Differentialdruck

Code Code Артикул Cod Código Code	Size Taille Размер Dimensiune Medida Abmessung	DP - kPa DP - kPa DP - kPa DP - kPa DP - kPa	Flow rate - m ³ /h Débit - m ³ /h Hanop - m ³ /ч Debit - m ³ /h Caudal - m ³ /h Durchflussmenge - m ³ /h	EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
3535.04.20	1/2"	20	0,050 - 0,960	-	1	1
3535.04.30	1/2"	30	0,050 - 1,419	-	1	1
3535.05.20	3/4"	20	0,050 - 0,960	-	1	1
3535.05.30	3/4"	30	0,050 - 1,419	-	1	1
3535.06.20	1"	20	0,050 - 0,960	-	1	1
3535.06.30	1"	30	0,050 - 1,419	-	1	1



Replaceable cartridge. See spare parts pricelist.

To connect the capillary pipe to the control well, set up the required series 3537 reduction (see page 3.08).

004

3536

Differential pressure control and balancing valves, fitted with pressure outlets.

This keeps the pressure difference between two points of a hydraulic circuit constant at the predefined value.

Brass body.

Polymer cartridge with elastomer diaphragm.

Copper capillary pipe.

Threaded connections FF UNI-EN-ISO 228.

- Max operating pressure 16 Bar
- Allowed temperatures -20 ÷ +120 °C
- Allowed fluid water and water+glycol 50%
- Pressure gauge plugs connection G1/8"
- Capillary pipe length 1 m



- Control and balancing valve for differential pressure equipped with pressure outlets
- Vanne de contrôle et d'équilibrage de la pression différentielle dotée de prises de pression
- Клапан контроля и балансировки дифференциального давления оснащен штуцерами замера давления
- Supară de control și echilibrare a presiunii diferențiale prevăzută cu prize de presiune
- Válvula de control y balance de la presión diferencial equipada con tomas de presión
- Steuer- und Ausgleichsventil für Differentialdruck mit Druckanschlüssen

Code Code Артикул Cod Código Code	Size Taille Размер Dimensiune Medida Abmessung	DP - kPa DP - kPa DP - kPa DP - kPa DP - kPa	Flow rate - m ³ /h Débit - m ³ /h Hanop - m ³ /ч Debit - m ³ /h Caudal - m ³ /h Durchflussmenge - m ³ /h	EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
3536.04.20	1/2"	20	0,050 - 0,960	-	1	1
3536.04.30	1/2"	30	0,050 - 1,419	-	1	1
3536.05.20	3/4"	20	0,050 - 0,960	-	1	1
3536.05.30	3/4"	30	0,050 - 1,419	-	1	1
3536.06.20	1"	20	0,050 - 0,960	-	1	1
3536.06.30	1"	30	0,050 - 1,419	-	1	1



Replaceable cartridge. See spare parts pricelist.

Valve provided with two pressure taps.

To connect the capillary pipe to the control well, set up the required series 3537 reduction (see page 3.08).

004



3566

Portable electronic differential pressure and flow rate measuring instrument. Suitable for detecting work parameters of balancing valves and of measuring stub pipes. Battery-operated.

Supplied complete with professional case and holes for connection to circuit.
Pair of adapters code 932.01.00 not included.

- Max allowable static pressure: 20 Bar
- Measurement range: 2 kPa ÷ 600 kPa
- Accuracy: +/-2% of reading or +/-0.2 kPa whichever is the greater

- Portale electronic measuring instrument
- Mesureur électronique portatif
- Электронный измеритель давления
- Dispozitiv de măsurare electronic portabil
- Medidor electrónico de diferencial para determinación del caudal
- Tragbares elektronisches Messgerät

Code Code Артикул Cod Código Code	EURO EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
3566.00.00	-	1	1



Instrument with the following accessories:

- Pair of pressure outlets code 621.01.50
- Adapter kit code 1422.02.00
- Cartridge adjustment spanner code 2961.00.02

Option of using the instrumental rental service. Contact RBM's sales department for the terms, conditions and prices.

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932

Pair of needle adapters to measure pressure. Connection of electronic differential pressure measuring instrument to pressure plugs present on measuring stub pipes and RBM balancing valves.

Brass body.
Steel needle.
Threaded connections F UNI-EN-ISO 228.

- Max operating pressure 16 Bar
- Max operating temperature 120 °C

- Needle adapters
- Adaptateurs à aiguille
- Игольчатый адаптер
- Adaptoare cu ac
- Par adaptadores de aguja para tomas de presión
- Nadeladapter

Code Code Артикул Cod Código Code	Size Taille Размер Dimensiune Medida Abmessung	EURO EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
932.01.00	1/8"	-	1	1



Used to connect pressure plugs code 621.01.50 to digital measuring instrument code 3566.00.00

004



621

Pair of pressure plugs.

Body and plugs in brass.
Elastomer pressure plugs internal seals.
Threaded connections M UNI-EN-ISO 228.

- Max operating pressure 16 Bar
- Max operating temperature 120 °C

- Pressure plugs
- Prises de pression
- Штуцеры давления
- Prize de presiune
- Par tomas de presión para tronco medidor de caudal y válvula de equilibrado
- Drückanschlüsse

Code Code Артикул Cod Código Code	Size Taille Размер Dimensiune Medida Abmessung	EURO EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
621.01.50*	1/8"	-	1	10

*Pressure plugs for Balancing valves and threaded stub pipes



Pressure plugs for needle adapters code 932.01.00

Accessory supplied with the digital meter code 3566.00.00

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1422

Reduction torque 1/4" M X 1/8" F. To adapt 1/8" pressure gauge plugs code 621.01.50, to stub pipes and RBM flanged balancing valves with thread 1/4".

Brass body.
Elastomer seals.
Threaded connections MF UNI-EN-ISO 228.

- Max operating pressure 16 Bar
- Max operating temperature 120 °C

- Reduction kit 1/4" M x 1/8" F
- Kit de réduction 1/4" M x 1/8" F
- Редуционный комплект 1/4 нар" x 1/8" вн.
- Kit de reducție 1/4" M x 1/8" F
- Par reducciones para tomas de presión en tronco medidor de caudal para bridas y válvula de equilibrado embridada, 1/4" M x 1/8" H
- Bausatz Reduzierung 1/4" M x 1/8" F

Code Code Артикул Cod Código Code	Size A Dimension A Размер A Dimensiunea A Medida A Abmessung A	Size B Dimension B Размер B Dimensiunea B Medida B Abmessung B	EURO EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
1422.02.00	1/4" M	1/8" F	-	1	10



In case the dimensions of pressure gauge plugs are not standard (G 1/4" F), please contact RBM offices for more information regarding adapter for connecting measure instrument.

Accessory supplied with the digital meter code 3566.00.00

004

2961

Cap adjusting wrench.

It allows to adjust the flow rate to the desired value, by acting on the cartridge.

Such operation does not involve the valve.



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- Cap adjusting wrench
- Clé pour réglage tamis
- Ключ для регулировки картриджа
- Cheie de reglare a cartuşului
- Llave de regulación cartucho
- Schlüssel zur Einsatzregulierung

Code Code Артикул Cod Código Code	EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
2961.00.02	-	1	1



Specific accessory for automatic flow control valve and independent pressure control valve series 2873 and 2874.

Accessory supplied with the digital meter code 3566.00.00

2882

**Electromechanical actuator.
Complete with ring nut clamping to valve body in electric power cable.**

Normally closed valve position when power missing.

- Power supply 24/230 V
- Consumption 5 W
- Frequency 50Hz
- Electric protection IP54
- Cable length 1 m



004

- Electromechanical actuator
- Servomécanisme électromécanique
- Электромеханический сервопривод
- Servocomandă electromecanică
- Servomando electromecánico
- Elektrothermische Servosteuerung

Code Code Артикул Cod Código Code	Power supply Alimentation Питание Alimentare Alimentación Versorgung	EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
2882.00.02	24V AC 0÷10V	-	1	1
2882.00.12	110-230V AC 3 PUNTI	-	1	1
2882.00.22	24V AC 3 PUNTI	-	1	1



Specific accessory for independent pressure control valve series 2873 and 2874.

2881

**Thermo-electric actuator.
Complete with ring nut clamping to valve body in electric power cable.**

Normally closed valve position when power missing.

- Power supply 24/230 V
- Consumption 2.5 W
- Frequency 50Hz
- Electric protection IP54
- Cable length 1 m
- Nominal thrust 170N



004

- Thermo-electric actuator
- Servomécanisme électrothermique
- Электротермический сервопривод
- Servocomandă electrotermică
- Servomando electrotérmico
- Elektrothermische Servosteuerung

Code Code Артикул Cod Código Code	Power supply Alimentation Питание Alimentare Alimentación Versorgung	EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
2881.00.12	24V AC/DC	-	1	50
2881.00.22	230V AC	-	1	50

Version without auxiliary microswitch (2 wires)



Specific accessory for independent pressure control valve series 2873 and 2874.

3537

Adapter for the series 3535 and 3536 differential pressure control and balancing valve capillary pipe.

Brass body.
Threaded connections M UNI-EN-ISO 228.

- Max operating pressure 16 Bar
- Max operating temperature 120 °C



004

- Adapter for the series 3535 and 3536 differential pressure control and balancing valve capillary pipe
- Adaptateur pour tube capillaire des vannes de contrôle et d'équilibrage de la pression différentielle séries 3535 et 3536
- Адаптер для капиллярной трубки клапанов контроля и балансировки дифференциального давления серии 3535 и 3536
- Adaptor pentru tub capilar supape de control și echilibrare a presiunii diferențiale seria 3535 și 3536
- Adaptador para tubo capilar de válvulas de control y balance de la presión diferencial serie 3535 y 3536
- Adapter für Kapillarschlauch Steuer- und Ausgleichventile für Differentialdruck, Serie 3535 und 3536

Code Code Артикул Cod Código Code	Size Taille Размер Dimensiune Medida Abmessung	EURO EURO EURO EURO EURO	Pack Cond. Упак. Cutie Caja Pack.	Carton Emballage Кор. Ambalaj Embalaje Verpack.
3537.01.00*	1/8"	-	1	1
3537.02.00**	1/4"	-	1	1

*Suitable for connection with series 619 Balanflow balancing valves.

**Suitable for connection to ball valves with series 3465 water discharge (consult Sferika catalogue).



To be used to connect the capillary pipe of the series 3535 and 3536 differential pressure control and balancing valves to control wells with 1/8" or 1/4" connection.