

Application:

The “Unofix” system is used for the refurbishment of one pipe heating systems with horizontal and vertical heating circuits. The system can take a few simple steps which will result in noticeable energy savings.

The basic model “Unofix QB”, consisting of the pressure independent control valve “Cocon QTZ”, is used to achieve a hydronic balance between the various one pipe circuits.

The system “Unofix QT” allows to make additional energy savings by a reduction of the volume flow in the ring circuit, for instance by setting back the temperature at night with the help of an additional room thermostat and actuator.

The combination “Unofix QR”, “Cocon QTZ” and “Uni RTLH” is not only used for hydronic balancing but it also limits the return temperature during low demand periods in the one pipe riser.

Technical data:

“Unofix QB / QT”

Operating temperature t_s : -10 °C up to +120 °C
 Max. operating pressure p_s : 16 bar (PN 16)

“Unofix QR”

Operating temperature t_s : -10 °C up to +100 °C
 Max. operating pressure p_s : 16 bar (PN 16)
 Temperature range: 10 °C up to 70 °C

Further information can be obtained from the respective data sheets of the below system components.

System components:

“Unofix QB”

Pressure independent control valve “Cocon QTZ”	1145...
Plastic cap	1146091

“Unofix QT”

Pressure independent control valve “Cocon QTZ”	1145...
Electrothermal actuator “Aktor T 2P”, 230 V	1012415
Electrothermal actuator “Aktor T 2P”, 24 V	1012416
Room thermostat, flush mounting 230 V	1152561
Room thermostat, flush mounting 24V	1152562

“Unofix QR”

Pressure independent control valve “Cocon QTZ”	1145...
Thermostat “Uni RTLH”	1149068
Distance piece, with fixed minimum piston stroke	1149090
Distance piece, with adjustable minimum piston stroke	1149091

Application:

Horizontal and vertical one pipe heating systems with closed circuits, for operation with non-aggressive, harmless fluids (e.g. water or suitable water and glycol mixtures (max. glycol proportion 50 %) according to VDI 2035/ÖNORM 5195).

Advantages:

- only one refurbishment set “Unofix” per one pipe circuit required
- time- and cost-saving installation
- no modifications to the radiator
- hydronic balance between the one pipe circuits - for horizontal and vertical heating circuits
- setting of low return temperatures - ideal for district heating and condensing technology
- installation of high-efficiency pumps is recommended due to the reduction of the volume flow
- Refurbishment without auxiliary energy (except for “Unofix QT”)



“Unofix QB”



“Unofix QT”



“Unofix QR”

General information regarding the refurbishment of one pipe heating systems

Existing one pipe heating systems which have not yet been renovated feature an almost constant volume flow. During low demand periods, for instance when individual radiators have been adjusted downward, the return temperature increases. For this reason, energy efficient heating systems requiring as low a return temperature as possible, such as condensing boilers or district heating transmission stations, cannot be operated efficiently in such old systems.

The Oventrop refurbishment system “Unofix” for one pipe heating systems can take a few simple steps which will result in noticeable energy savings and will increase the benefits of comfort for the user. This applies to horizontal and vertical one pipe heating systems.

Refurbishment of one pipe heating systems with horizontal heating circuits

The radiators are installed in a ring circuit. The radiators are integrated into the ring circuit via special valves (such as valves installed in risers or valves with insertion tube) or are installed “astride”. A partial flow of, for instance, 30 % related to the total volume flow in the ring circuit (100 %) is assigned to each radiator.

Different construction stages of the “Unofix” system allow for energetic improvements of such ring circuits.

In addition to the refurbishment with the “Unofix” system, the energy efficiency of one pipe heating systems can also be improved by the installation of regulated standard pumps or high-efficiency pumps which will lead to a reduction of the current consumption.

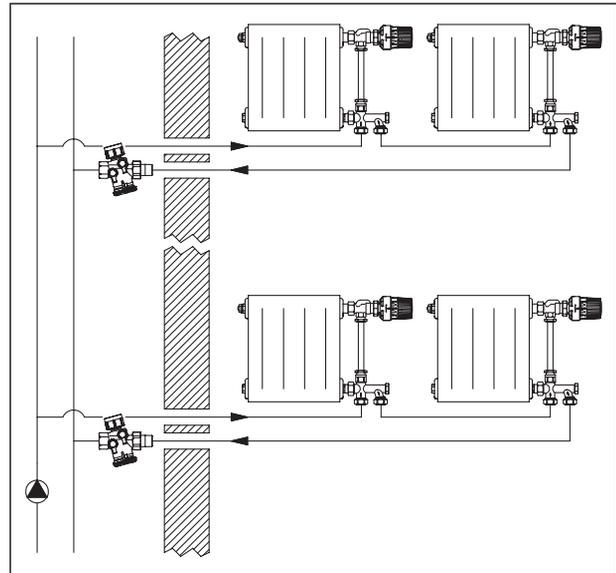
“Unofix QB” is the basic model which limits the volume flow in each ring circuit to a maximum value via the pressure independent control valve “Cocon QTZ” (see top illustration on the right hand side). The one pipe risers do no longer influence each other and undersupply is avoided.

“Unofix QT” features the same characteristics as “Unofix QB” but energy can additionally be saved by a reduction of the volume flow in the ring circuit if the temperature in connected room is set back, for instance at night. Such intervals can be programmed via a room thermostat with adjustable timed programmes passing on control commands to an actuator mounted onto the pressure independent control valve “Cocon QTZ” (see centre illustration on the right hand side).

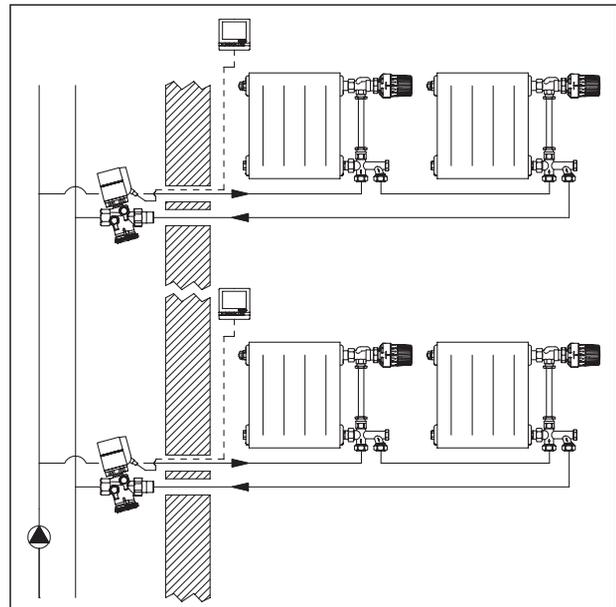
Temperature control of a reference room can also be carried out via the room thermostat. The nominal value set at the thermostat is the upper limit for all rooms of the dwelling. When this value has been reached, the return temperature of the ring circuit is reduced.

“Unofix QR” features the same characteristics of the “Unofix QB”. Energy is saved by limiting the return temperature during low demand periods.

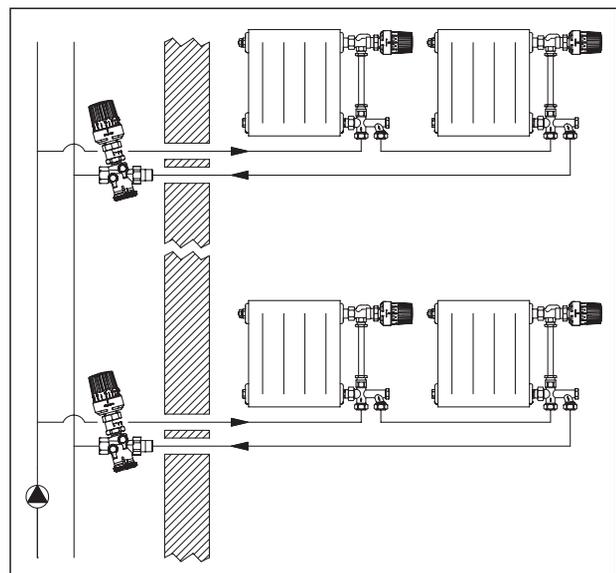
Limitation of the return temperature is carried out via the thermostat “Uni RTLH” which is mounted onto the pressure independent control valve “Cocon QTZ”. The limitation also entails a reduction of the volume flow. This way, overheating is avoided and room temperature control is improved. To ensure a quick reactivation of room temperature control after setback operation, a minimum volume flow is maintained with the help of a distance piece which is installed between the thermostat and the “Cocon QTZ” (see lower illustration on the right hand side; advice regarding the setting of the minimum volume flow see page 4).



“Unofix QB” (horizontal heating circuits)



“Unofix QT” (horizontal heating circuits)

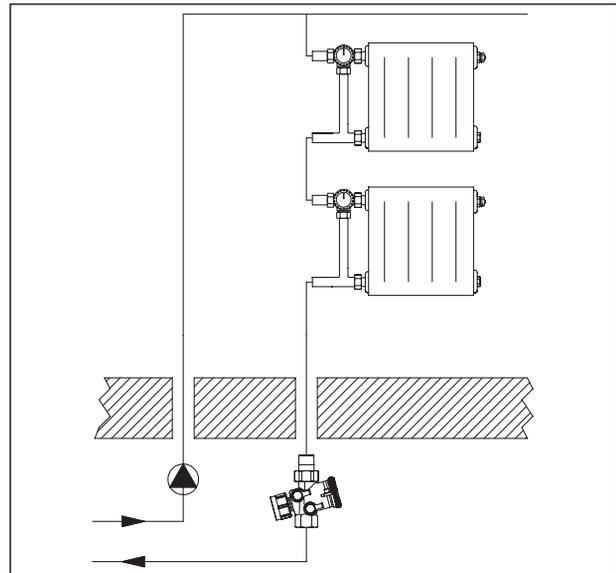


Refurbishment of one pipe heating circuits with vertical heating circuits

Proceeding from an upper distribution, the one pipe risers are installed vertically downwards. The radiators of dwellings lying one beneath the other are integrated into the risers via valves with a bypass. The radiator volume flow amounts, for example, to 30 %. The volume flow in vertical risers is often too high. High pump outputs and return temperatures do not allow for an energy efficient operation.

The Oventrop refurbishment system “Unofix” offers solutions for energy savings.

Installation of the basic model “Unofix QB” (see top illustration on the right hand side) is a quick and cheap measure which can be taken. The volume flow in each vertical one pipe riser is automatically limited to a presettable maximum value. Overheating or undersupply during heat transmission to the radiator is avoided and comfort is increased by an improved room temperature control.



“Unofix QB” (vertical heating circuit)

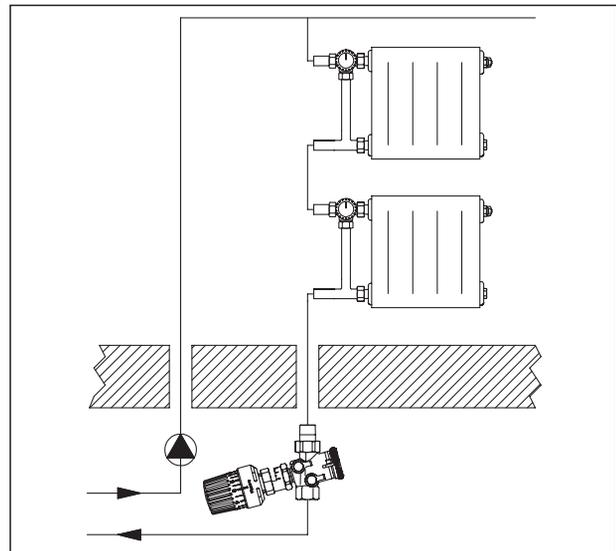
Even more energy can be saved by reducing the return temperature at the end of each one pipe riser by installing the refurbishment set “Unofix QR” (see lower illustration on the right hand side).

Procedure for the refurbishment with the “Unofix” system

- Determination of the heat load of the one pipe circuits.
- Determination of the volume flow for each one pipe circuit.
- Installation and setting of the “Unofix” system.
- Determination of the total volume flow and the pump head of the circulation pump.
- Installation of a high-efficiency pump if required (e.g. with the Oventrop boiler connection system “Regumat”). The electricity demand is reduced this way.

Note:

The replacement of radiator valves requires special measures.



“Unofix QR” (vertical heating circuit)

Function and setting of the “Unofix QR” system:

Function of the pressure independent control valve “Cocon QTZ”:

The Oventrop pressure independent control valve “Cocon QTZ” is a valve combination consisting of an automatic flow regulator and a regulating valve.

The required flow rate is set at the handwheel. The nominal value setting can be secured by engaging the handwheel and by inserting the locking ring which is lead sealable. During low demand periods, regulation can be carried out with the help of an actuator or a temperature controller which is screwed onto the valve.

The return temperature is set at the thermostat “Uni RTLH”. The return temperature of the one pipe riser has to be determined for the design point.

The flow temperature and the design temperature should always be kept at the same level. If the flow temperature is weather guided, the design return temperature has to be calculated at the maximum possible flow temperature.

If the weather guided control entails lower return temperatures (lower than the design return temperature), the temperature in the return pipe will be reduced less strongly.

Note: If the return temperature increases (exceeds the selected design temperature) during low demand periods, the flow rate in the ring circuit is reduced in proportion to the return temperature modification.

Determination of the graduation figure to be set at the thermostat “Uni RTLH”:

Determine the set value e with the help of the chart at the top on the right hand side.

Determine the correction value f with the help of the chart in the centre on the right hand side.

Graduation figure “Uni RTLH” = set value e + correction value f

Setting of the minimum flow rate:

The minimum flow rate is achieved when the maximum return temperature is reached. It has to be high enough so that an excessive cooling down of the return temperature is avoided.

The following applies:

- Long pipe length of the one pipe riser → high minimum flow rate
- High flow temperature → high minimum flow rate
- Poor ring circuit insulation → high minimum flow rate

The smallest possible minimum flow rate must be set to enable a maximum limitation of the return temperature. If the regulation reacts too sluggishly and the room temperature rises too slowly, for instance after setback operation, than the minimum flow rate has to be increased.

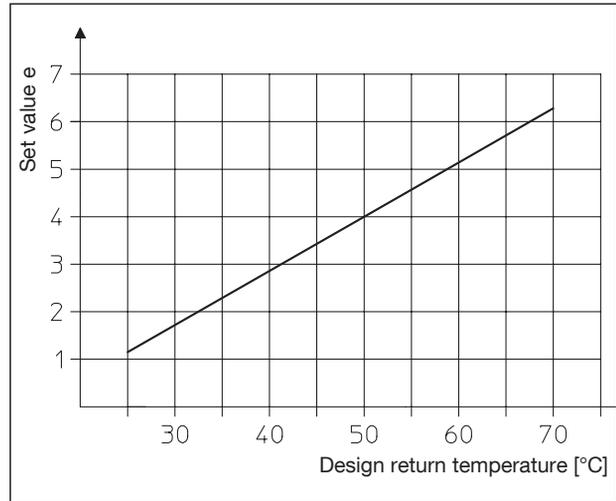
Distance piece with adjustable minimum piston stroke, item no. 1149091:

Distance piece for the adaptation to the closing dimension of the valve.

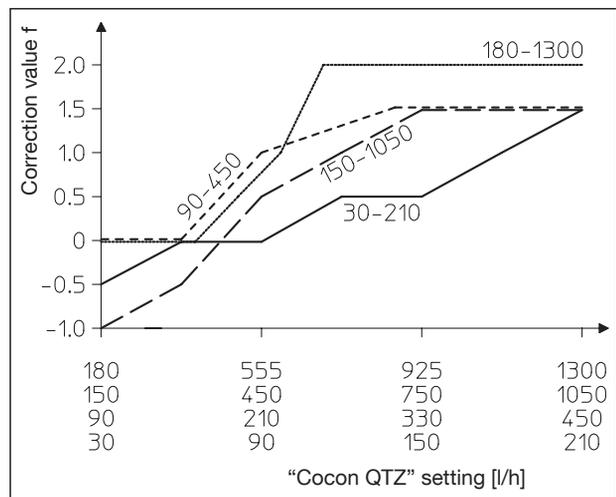
The minimum flow rate is infinitely adjustable via the piston stroke with the help of a scale (see lower illustration on the right hand side).

Distance piece with fixed minimum piston stroke, item no. 1149090:

The distance piece is designed for a fixed minimum flow rate of about 20 % of the maximum flow rate.



Return temperature setting- Set values



Return temperature setting - Correction value f

“Cocon QTZ”	Flow rate during full demand periods	Standard value for the minimum flow rate depending on the presetting at the distance piece [l/h]			
		2	3	4	5
DN 10/15 30-210 l/h	30-90 l/h	20	25	28	30
	91-150 l/h	30	35	40	45
	151-210 l/h	30	40	45	50
DN 10/15 90-450 l/h	90-150 l/h	30	40	60	70
	151-250 l/h	40	65	85	95
	251-450 l/h	50	75	95	105
DN 15/20 150-1050 l/h	150-300 l/h	35	100	135	150
	301-600 l/h 601-1050 l/h	45 55	110 140	190 220	265 300
DN 20 180-1300 l/h	180-400 l/h	10	40	85	125
	401-500 l/h	10	45	90	130
	501-600 l/h	15	55	110	165
	601-1300 l/h	15	60	115	170

Setting of the minimum flow rate

Subject to technical modifications without notice.

Product range 1
ti 318-EN/10/MW
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