



FLOW RATE REGULATOR



Product key: **CX8/9/12**

CAN BE REFITTED WITH EASE INTO ANY SHOWER SYSTEM
IDEAL FOR HOTELS AND CONDOMINIUMS.

- » ***Due to the flexible membrane a blockage of the flow rate regulator is impossible***
- » ***Flexible O-ring with integrated membrane, which controls the pressure and thus guarantees an even water flow in the entire water installation system.***
- » ***Balances the water pressure in high-rise buildings and other large***
- » ***buildings***
- » ***No risk of temperature loss or temperature fluctuation***
- » ***Can be installed and ready to use in only a few minutes***
- » ***Available as an 8, 9 or 12 litre/minute flow rate regulator***
- » ***Average amortization time of 1-3 months***

ADVANTAGES WHEN USING INTELLIGENT, MECHANICAL FLOW RATE REGULATORS IN COMPARISON TO BASIC LIMITERS

1. Pressure-dependent – not pressure-dependent control systems: LIMITERS vs. FLOW RATE REDUCERS

**Every reduction in the flow rate is caused by a restriction of the water passage outlet.
Professionals generally use two types of flow rate reducers:
limiters and flow rate regulators (stabilisers):**

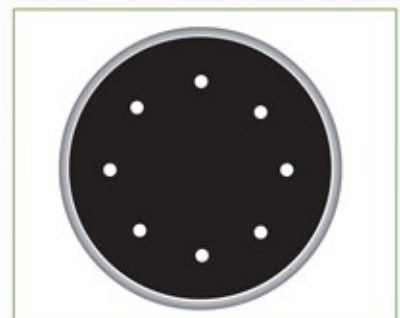


COMPARISON OF FLOW RATE REDUCERS / WATER SAVERS - BRIEF OVERVIEW

method, function, characteristic	LIMITER (*)	Flow rate regulator (stabilisers)
Water passage outlet	fixed perforated disk/strainer	variable, self-regulating
Increase in pressure (valve opening)	-	regulator closes, opening becomes smaller
Reduction in pressure	-	regulator opens, opening widens
Flow rate during increasing pressure	increases (above demand!)	does not increase, constant
Savings efficiency Savings potential	lower, not used properly	optimal
Minimum flow pressure	high (approx. 2-3 bar)	low (approx. 0.5 – 1.0 bar)
Flow rate with low pressure, washing comfort	low, comfort loss	normal, no comfort loss
Blockage and calcification risk	high (fixed opening)	low (variable opening)
Low pressure flow heater	use not permitted	use not permitted
High pressure flow heater	use not possible	use possible, suitable

LIMITER WITH FIXED OPENING(S) (PERFORATED DISK, SIEVE) PRESSURE-DEPENDENT

Limiters work according to the principle of a perforated disk, whereby the flow rate will be reduced variably according to the flowing pressure. This causes a flow rate that increases progressively with pressure (see flow-rate curve below). When it comes to water savings, this means that even under normal pressure conditions (approx 3 to 5 bar) the flow rate is above the actually needed rate.



LIMITER
Fixed opening(s)
Pressure-dependent flow rate:
Increasing pressure = increasing flow rate
Decreasing pressure = decreasing flow rate

1.2. Flow rate regulator with variable, controlled opening pressure-independent flow rate

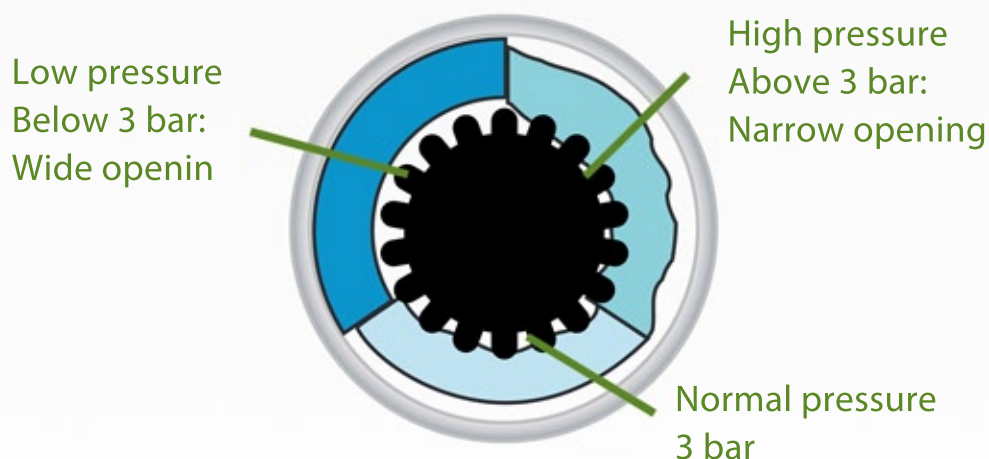
Professionals generally recommend the far better flow rate regulators with a pressure-independent, constant flow-rate reduction, partly also called regulators, flow rate regulators or stabilisers. Because, these will reduce the flow rate restrictively to an adjusted, constant amount no matter how much pressure is available.

FUNCTIONALITY OF FLOW RATE REGULATORS WITH EXPOSED, ELASTIC O-RING:

The water flows between a star and an elastic, rubber O-ring. If the water tap is opened, an increase in flow pressure will increase the speed of the water between the star and O-ring. This will cause a reduction in water pressure in that area (Bernoulli effect). As the outer adjacent pressure remains the same, the O-ring is pressed inwards into the rills of the star. The water flow opening becomes narrower. If the water tap is closed, the opposite happens. The O-ring will expand again and the constriction or opening will widen again.

FLOW CONTROLLER

Star (1) with elastic O-ring (2,3) Flow between ring and star



Pressure-independent, constant flow from approx 0.5 to 10 bar

Self-regulating opening:

Low pressure -> wide opening

High pressure -> wide opening

The principle that high pressure = smaller opening and low pressure = wide opening causes an almost constant water amount to flow through per minute irrespective of the flow pressure (divergence approx. +/- 10%). Due to the stabilising effect and the constant flow rate in a very wide pressure range of 0.3 to 10 bar, the flow rate regulator is also called a stabiliser. With flow rate regulators the flow rate is specified by the design of the profile of the star. This has the essential advantage for actual use, that no previous knowledge on existing pressure conditions is required and that the flow rate does not have to be adapted or adjusted to the pressure or controlled in any way.

Flow rate regulators are available in various versions or flow rates respectively. The most common flow rates for example are 5, 6 and 8 litres per minute for wash basin fittings and 9, 10 or 12 litres per minute for shower fittings. Flow rate regulators with elastic, exposed O-rings were first used in the 70s (Keppel & Mannesmann) to control/limit the water amounts in continuous-flow water heaters. When used in fittings, usually integrated into aerators, they present an especially effective, reliable and affordable technique of setting flow rates to suitable amounts.

2. ADVANTAGES OF FLOW RATE REGULATORS WITH FLOW RATE REDUCTION THAT IS INDEPENDENT OF PRESSURE

2.1 Improved water and energy savings

In the end, how much water actually flows through a tap is decided by the available water pressure or flow pressure respectively and is stated in so-called flow rate curves. Taps and armatures with limiters that are dependent on pressure have a progressively increasing curve that is dependent on pressure.

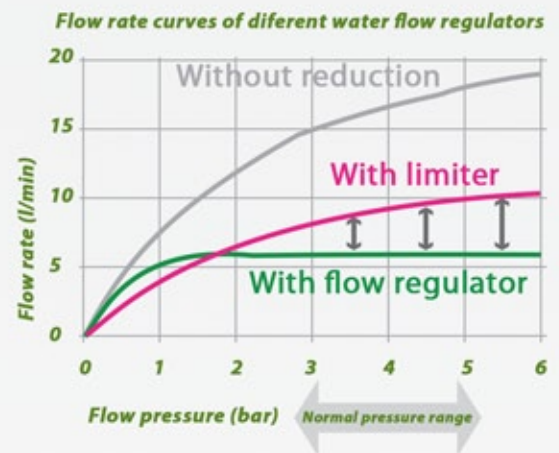
Taps with flow rate regulators have a linear, constant curve that is independent of pressure:

By comparing both curves, the advantages of improved water savings through reducers that are independent of pressure becomes clear. Even with normal pressures of 3 to 5 bar the flow rate for limiters is above what is required. For flow rate regulators the flow rate is constant and in accordance with what is required. The available savings potentials are completely utilized. Flow rate regulators are somewhat more expensive than simple limiters due to the fact that they are more complicated to manufacture. However, when buying water savers, it must be noted that the extra costs will be saved severalfold in the course of the years.

2.2 SUFFICIENT WATER AMOUNTS WITHOUT ANY LOSS OF COMFORT EVEN WITH LOWPRESSURE

A further advantage of flow rate regulators is the fact that these will only begin to close after a specified flow rate or certain pressure rate (minimum flow pressure) has been reached. With low pressures the regulator is still wide open. This means that only very little pressure (minimum flow pressure) is required to achieve the specified flow rate.

The minimum flow pressure is a very important statistic when it comes to choosing water withdrawal systems (taps, armatures, geysers, etc.). Because, it determines whether enough water will flow in the case of low pressure (less than 3 bar) such as during high peak loads, after flow heaters or in upper floors or at the end of long feed pipes. Due to the low pressure demand or the minimum flow pressure, flow rate regulators can also be easily used in high-pressure flow-heaters or geysers (not low-pressure flow-heaters or geysers).



2.3 HIGH RELIABILITY, LONGER SERVICE LIVES, LOW SERVICING COSTS, INCREASED HYGIENE

Due to the larger and variable, flexible openings as well as the extremely high flow speeds, flow regulators have a much lower risk of blockage with limescale and dirt than limiters with fixed openings.

As smaller dirt particles are flushed through, the risk of microbial contamination is also reduced. Because, studies in hospitals have shown that flow obstructions such as small, fixed opening or sieves will hold back the dirt in the piping system and thus be ideal breeding grounds for germs that could lead to infections (G. Silge et al., Mikrobielle Kontaminationen von Wasser in medizinischen Geräten und an Entnahmestellen, Hyg. Med. 19, 322-326 (1994)).

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send us an email: info@calex.de**

**SAVES UP TO 70%
ON WATER AND
ENERGY COSTS!**