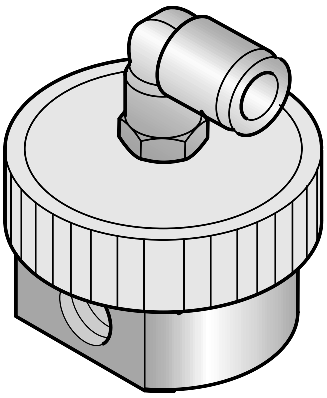
From February 1st, 2017 SAMES Technologies SAS becomes SAMES KREMLIN SAS
A partir du 1/02/17, SAMES Technologies SAS devient SAMES KREMLIN SAS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User manual

EUROPE
Paint Regulator

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EUROPE

Paint Regulator

1. Theory of Operation

In the rest state, with a trigger pressure of zero, there is no paint flow.
The poppet rests on the seat and ensures correct sealing due to the action of 2 forces:
- that applied by the spring: Fr - which is approximately 100 to 200 g;
- that applied to the poppet by the pressure of the paint: Pe at the inlet of the regulator:

Fpr = Pe x s
where s is the shaped section to which the pressure forces are applied.

$$s = \pi \frac{D^2}{4} = \pi \frac{0.62^2}{4} \approx 0.28 \text{ cm}^2$$

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whence for a pressure of 6 bar:

$$Fpr = 6 \times 0.28 = 1.7 \text{ daN}$$

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This gives an overall bearing force of approximately:

$$1.7 + 0.2 \approx 2 \text{ daN}$$

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During operation with a trigger pressure Pp, the poppet lifts off from its seat and the paint flows from the inlet to the outlet.
Paint flow is laminar between the poppet and its seat resulting in the creation of local head loss.
The regulated outlet pressure in the chamber under the diaphragm is, of course, necessarily lower than the inlet pressure.
The regulator is a passive component and can never raise the outlet pressure to a value higher than the available inlet pressure.
With a trigger pressure of Pp and a regulated outlet pressure from the regulator of Pr, the forces applied to the diaphragm of cross-sectional area S are balanced.

$$Pp \times S = (Pr \times S) + (Pe \times s) + Fr$$

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2 daN
As in:

$$s = \pi \frac{D^2}{4} = \pi \frac{5^2}{4} \approx 20 \text{ cm}^2$$

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and:
the terms (Pe x s) + Fr become negligible and: Pr = Pp.

$$Pp \times S = 6 \times 20 = 120 \text{ daN}$$

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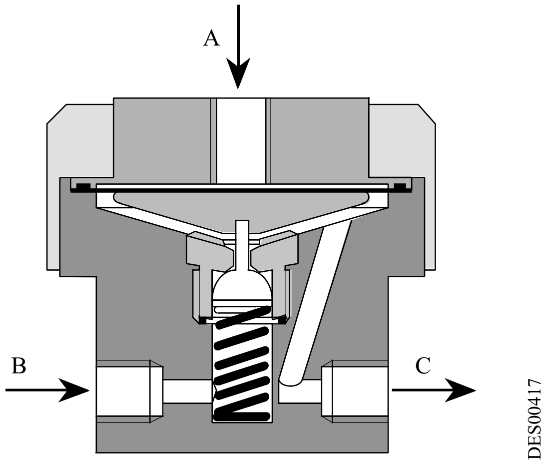
The regulator is the actuator used to control the flow of paint.



In other words, the regulator outlet pressure or regulated pressure is more or less equal to the regulator trigger air pressure. Any slight difference between these values decreases with the ratio between s/S (seat and diaphragm cross-sectional areas).
Of course Pr = Pp only if Pe > Pp.

There is no point in triggering the regulator with an air pressure above the paint inlet pressure. The regulator is wide open in this case and the outlet pressure will be the same as the inlet pressure at the head loss area close to the regulator.

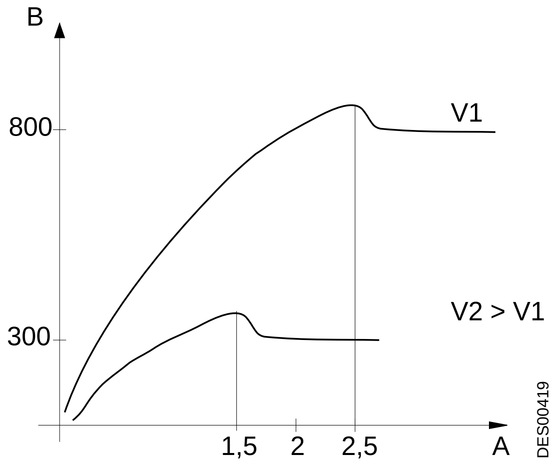
WARNING : This regulator modulates pressure, not flow.

For a given trigger air pressure, the flow rate depends on the head loss downstream from the regulator (pipe, restrictors, injectors, etc.) and on fluid viscosity.

Note: The ambient temperature affects paint viscosity (i.e. when the temperature rises, the viscosity drops).

2. Characteristics of a Unit Fitted with a Regulator

Example shown for 2 viscosity values V1 and V2

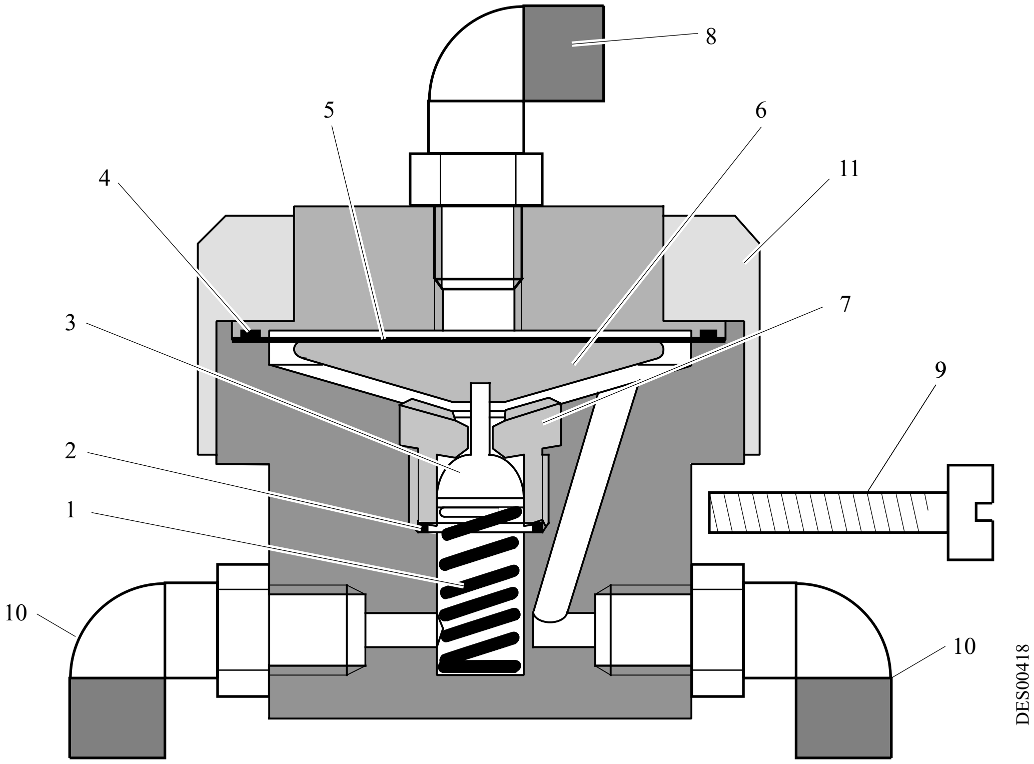


A	Injection air pressure
B	Flow in cc/mn

- For the lower viscosity value, V2, the maximum saturation flow is 800 cc/mn. Beyond a trigger pressure of 2 bar, the regulator is wide open and stops regulating.

- For the higher viscosity value, V1, the maximum flow of 300 cc/mn is reached with a trigger pressure of 1.5 bar. The regulator inlet pressure has dropped as a result of considerable head loss upstream. This head loss is greater than in the case of the lower viscosity value, V2.

3. Spare Parts



3.1. Standard Regulator

Item	Item Code	Name	Qty	Sales Unit
	750016	Regulator assembly		1
1	742759	Spring	1	1
2	J3TTCN007	O-ring 10,5 / 2 - PTFE	1	2
3	740511	Poppet	1	1
4	J3ETOR097	O-ring 47,6 / 2,4	1	1
5	449550	Diaphragm	1	5
6	449545	Diaphragm holder	1	1
7	742761	Seat	1	1
8	F6RPCT138	Elbow union 1/8“ 2,7 x 4	1	1
9	X9NVCB230	Screw C M 6 / 40 nylon	2	10
10	F6RPDK302	Elbow union 1/8“ 8	2	1
11	449699	Regulator nut	1	1

Note: The white PTFE side of the diaphragm must be facing the paint flow.

3.2. Low-flow Regulator

Item	Item Code	Name	Qty	Sales Unit
	758180	Regulator assembly (low-flow option)		1
1	749525	Spring	1	1
2	J3TTCN007	O-ring 10,5 / 2 - PTFE	1	2
3	740511	Poppet	1	1
4	J3ETOR097	O-ring 47,6 / 2,4	1	1
5	449550	Diaphragm	1	5
6	449545	Diaphragm holder	1	1
7	742761	Seat	1	1
8	F6RPCT138	Elbow union 1/8“ 2,7 x 4	1	1
9	X9NVCB230	Screw C M 6 / 40 nylon	2	10
10	F6RPDK302	Elbow union 1/8“ 8	2	1
11	449699	Regulator nut	1	1

Note: The white PTFE side of the diaphragm must be facing the paint flow.

3.3. Heavy-duty Regulator

Item	Item Code	Name	Qty	Sales Unit
	757175	Regulator assembly (heavy-duty)		1
1	749525	Spring	1	1
2	J3TTCN007	O-ring 10,5 / 2 - PTFE	1	2
3	740511	Poppet	1	1
4	J3ETOR097	O-ring 47,6 / 2,4	1	1
5	449550	Diaphragm	1	5
6	449545	Diaphragm holder	1	1
7	742761	Seat	1	1
8	F6RPCT138	Elbow union 1/8“ 2,7 x 4	1	1
9	X9NVCB230	Screw C M 6 / 40 nylon	2	10
10			0	1
11	742759	Regulator nut	1	1

Note: The white PTFE side of the diaphragm must be facing the paint flow.

3.4. High-pressure Regulator (20b)

Item	Item Code	Name	Qty	Sales Unit
	759817	Regulator assembly (20 bar option)		1
1	742759	Spring	1	1
2	J3TTCN007	O-ring 10,5 / 2 - PTFE	1	2
3	740511	Poppet	1	1
4	J2FTDF472	O-ring 47,6 / 2,4	1	1
5	544731	Diaphragm	1	5
6	449545	Diaphragm holder	1	1
7	742761	Seat	1	1
8	F6RPCT138	Elbow union 1/8“ 2,7 x 4	1	1
9	X9NVCB230	Screw C M 6 / 40 nylon	2	10
10			0	1
11	548532	Regulator nut	1	1

Note: The white PTFE side of the diaphragm must be facing the paint flow.