

# **Operating Instructions for Flow Restrictors**

**Model: REG**



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## **2. Note**

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Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

### **as per PED 2014/68/EU**

In acc. with Article 4 Paragraph (3), "Sound Engineering Practice", of the PED 2014/68/EU no CE mark.

Diagram 8, Pipe, Group 1 dangerous fluids

## **3. Instrument Inspection**

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All instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- Flow Restrictors model: REG
- Operating Instructions

## **4. Regulation Use**

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Any use of the Flow Restrictor, model: REG, which exceeds the manufacturers specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

## 5. Operating Principle

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KOBOLD model REG flow restrictors serve to keep constant quantities of liquids in pipework systems. The REG rate regulators are ideally suited for the simple restriction of a preset value of throughputs of water or of liquids similar to water. The flow restrictors ensure an equilibrium, particularly in systems with many consumers and resulting pressure fluctuations caused by random flow conditions. In other words, the desired throughput is not exceeded.

Constant flow is achieved by two stainless steel spring plates that are crosswise mounted and riveted together. The gap between the spring-loaded stainless steel plate and the seal-surface is continuously varied as the differential pressure changes. As the differential pressure decreases, the gap widens, and it closes as the pressure increases, thus maintaining a constant flow volume through the device.

## 6. Mechanical Connection

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### Before installation:

- Remove all transport securing devices and make sure that there are no more packaging parts left in the device.
- Make sure that the permitted maximum operating pressures and temperatures for the device are not exceeded (see 7 Technical Information)
- Install the flow limiter into the piping without mechanical stress.
- Protect the measuring pipe against external damage.
- Avoid pressure surges in the measuring pipe e.g. by blocking the flow quickly.
- If possible, after mechanical installation, make sure that the connection between screw connection and pipe is tight and does not leak.

Maximum tightening torques for process connection:

G ½	30 Nm
G ¾	30 Nm
G1	38 Nm



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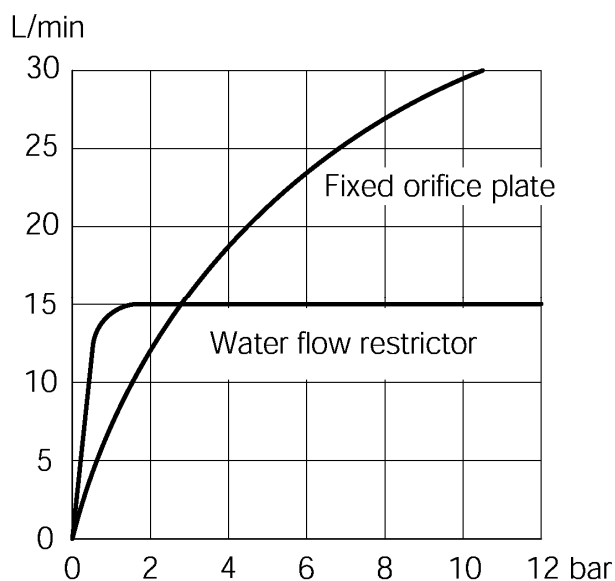
**Warning! The differential pressure must not exceed 10 bar.**

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## 7. Technical Information

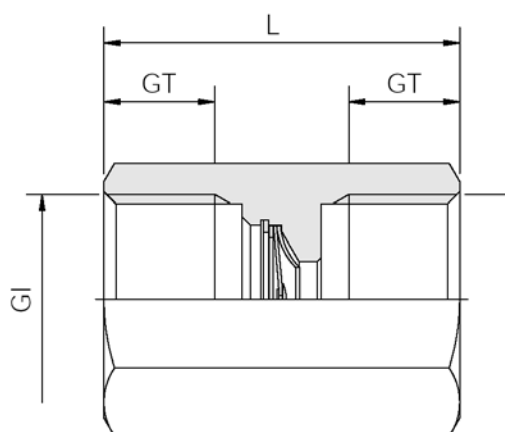
Connections:	female thread G ½, G ¾ female/male thread G 1/2-G ¾ male thread G ¾
	female thread ¾ NPT female/male thread ¾ NPT
	multiple element male thread G 1 ½, G 2, G 2 ¼, G 2 ½ Flange DN 20/25/32/40/50/65/80/100
Service temperature:	-10...+300 °C
Operating pressure:	max. 200 bar
Allowable operating pressure REG-82Fx:	see order details, page 11, table
Differential pressure:	min. 2.0 bar
Differential pressure:	max. 10 bar
Materials	
(see drawing for details):	
Brass-version	brass and stainless steel
Stainless steel-version	all stainless steel
Viscosity:	max. 30 mm <sup>2</sup> /s

## 8. Differential Pressure Curve

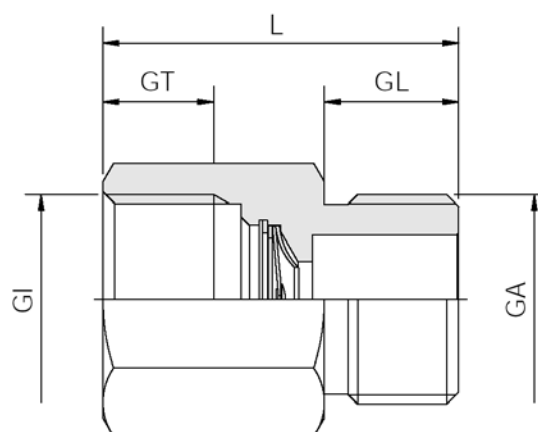


## 9. Dimensions and Order Codes

REG-1x/REG-2x/REG-5x

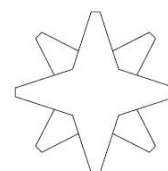
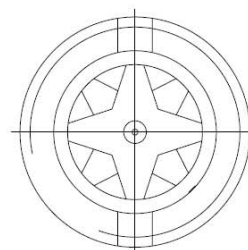
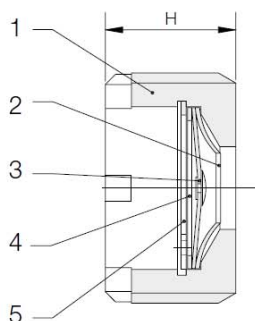


REG-3x/REG-4x/REG-6x



### REG-0x...6x with Design and Materials

1 Valve body	Brass Ms 58 or st. steel 1.4301
2 Pan	St. steel 1.4301
3 Spring star	St. steel 1.4310
4 Ring	St. steel 1.4301
5 Circlip	St. steel 1.4122



## Dimensions and Order Details G screw thread (example: REG-0101)

Dimensions		Male thread G 3/4		Female/female thread G 1/2		Female/female thread G 3/4		Female/male thread G 1/2		Female/male thread G 3/4	
L [mm]		-		42		50		42		50	
GT [mm]		-		14		16		14		16	
GL [mm]		-		-		-		14		16	
GI		-		G 1/2		G 3/4		G 1/2		G 3/4	
GA		-		-		-		G 1/2		G 3/4	
AF [mm]		-		27		36		27		36	
H [mm]		15		-		-		-		-	
Through- put L/min	Tolerance L/min	Brass	Stainless steel	Brass	Stainless steel	Brass	Stainless steel	Brass	Stainless steel	Brass	Stainless steel
0,5	± 0.2	REG-0100	REG-0200	REG-1100D	REG-1200D	REG-2100D	REG-2200D	REG-3100D	REG-3200D	REG-4100D	REG-4200D
1	± 0.2	REG-0101	REG-0201	REG-1101D	REG-1201D	REG-2101D	REG-2201D	REG-3101D	REG-3201D	REG-4101D	REG-4201D
2	± 0.2	REG-0102	REG-0202	REG-1102D	REG-1202D	REG-2102D	REG-2202D	REG-3102D	REG-3202D	REG-4102D	REG-4202D
3	± 0.4	REG-0103	REG-0203	REG-1103D	REG-1203D	REG-2103D	REG-2203D	REG-3103D	REG-3203D	REG-4103D	REG-4203D
4	± 0.4	REG-0104	REG-0204	REG-1104D	REG-1204D	REG-2104D	REG-2204D	REG-3104D	REG-3204D	REG-4104D	REG-4204D
5	± 0.5	REG-0105	REG-0205	REG-1105D	REG-1205D	REG-2105D	REG-2205D	REG-3105D	REG-3205D	REG-4105D	REG-4205D
6	± 0.5	REG-0106	REG-0206	REG-1106D	REG-1206D	REG-2106D	REG-2206D	REG-3106D	REG-3206D	REG-4106D	REG-4206D
8	± 0.5	REG-0108	REG-0208	REG-1108D	REG-1208D	REG-2108D	REG-2208D	REG-3108D	REG-3208D	REG-4108D	REG-4208D
9	± 0.7	REG-0109	REG-0209	REG-1109D	REG-1209D	REG-2109D	REG-2209D	REG-3109D	REG-3209D	REG-4109D	REG-4209D
10	± 0.7	REG-0110	REG-0210	REG-1110D	REG-1210D	REG-2110D	REG-2210D	REG-3110D	REG-3210D	REG-4110D	REG-4210D
11	± 0.7	REG-0111	REG-0211	REG-1111D	REG-1211D	REG-2111D	REG-2211D	REG-3111D	REG-3211D	REG-4111D	REG-4211D
12	± 0.7	REG-0112	REG-0212	REG-1112D	REG-1212D	REG-2112D	REG-2212D	REG-3112D	REG-3212D	REG-4112D	REG-4212D
16	± 1.2	REG-0116	REG-0216	REG-1116D	REG-1216D	REG-2116D	REG-2216D	REG-3116D	REG-3216D	REG-4116D	REG-4216D
20	± 1.2	REG-0120	REG-0220	REG-1120D	REG-1220D	REG-2120D	REG-2220D	REG-3120D	REG-3220D	REG-4120D	REG-4220D
25	± 1.5	REG-0125	REG-0225	REG-1125D	REG-1225D	REG-2125D	REG-2225D	REG-3125D	REG-3225D	REG-4125D	REG-4225D
30	± 1.5	REG-0130	REG-0230	REG-1130D	REG-1230D	REG-2130D	REG-2230D	REG-3130D	REG-3230D	REG-4130D	REG-4230D
40	± 2	REG-0140	REG-0240	REG-1140D	REG-1240D	REG-2140D	REG-2240D	REG-3140D	REG-3240D	REG-4240D	REG-4240D

## Dimensions and Order Details NPT screw thread (example: REG-5101)

Dimensions		Female/female thread ¾ NPT		Female/male thread ¾ NPT	
L [mm]		45		45	
GT [mm]		14		14	
GL [mm]		-		17	
GI		¾ NPT		¾ NPT	
GA		-		¾ NPT	
AF [mm]		30		30	
H [mm]		-		-	
Throughput L/min	Tolerance L/min	Brass	Stainless steel	Brass	Stainless steel
0,5	± 0,2	REG-5100	REG-5200	REG-6100	REG-6200
1	± 0,2	REG-5101	REG-5201	REG-6101	REG-6201
2	± 0,2	REG-5102	REG-5202	REG-6102	REG-6202
3	± 0,4	REG-5103	REG-5203	REG-6103	REG-6203
4	± 0,4	REG-5104	REG-5204	REG-6104	REG-6204
5	± 0,5	REG-5105	REG-5205	REG-6105	REG-6205
6	± 0,5	REG-5106	REG-5206	REG-6106	REG-6206
8	± 0,5	REG-5108	REG-5208	REG-6108	REG-6208
9	± 0,7	REG-5109	REG-5209	REG-6109	REG-6209
10	± 0,7	REG-5110	REG-5210	REG-6110	REG-6210
11	± 0,7	REG-5111	REG-5211	REG-6111	REG-6211
12	± 0,7	REG-5112	REG-5212	REG-6112	REG-6212
16	± 1,2	REG-5116	REG-5216	REG-6116	REG-6216
20	± 1,2	REG-5120	REG-5220	REG-6120	REG-6220
25	± 1,5	REG-5125	REG-5225	REG-6125	REG-6225
30	± 1,5	REG-5130	REG-5230	REG-6130	REG-6230
40	± 2	REG-5140	REG-5240	REG-6140	REG-6240



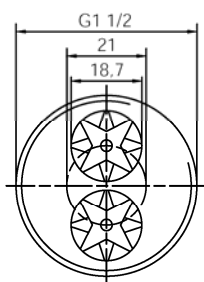
## Order Details multiple element (example: REG-92 R402 080)

Design	Size	Throughput* in L/min
<b>REG-92...</b> Multiple element made of stainless steel 1.4301	..R402..=G 1 1/2; 2-fold	<b>1.0...080</b>
	..R403..=G 1 1/2; 3-fold	<b>1.5...120</b>
	..R503..= G 2; 3-fold	<b>1.5...120</b>
	..R504..= G 2; 4-fold	<b>2.0...160</b>
	..R585..=G 2 1/4; 5-fold	<b>2.5...200</b>
	..R656..=G 2 1/2; 6-fold	<b>3.0...240</b>
	..R657..=G 2 1/2; 7-fold	<b>3.5...280</b>

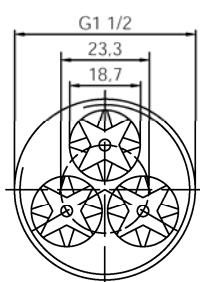
\*The throughput is calculated by adding the regulating inserts (see also single elements).

**Example: The throughput 55 L/min is obtained with one restrictor with two regulating inserts (30 plus 25 L/min).**

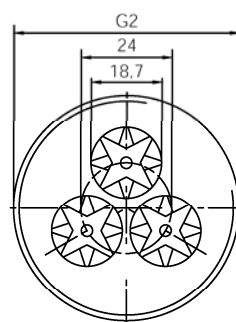
REG-92R402



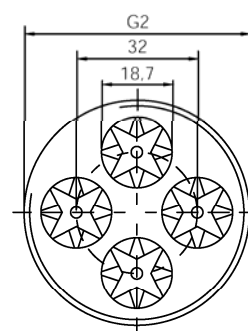
REG-92R403



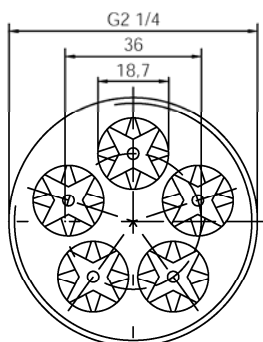
REG-92R503



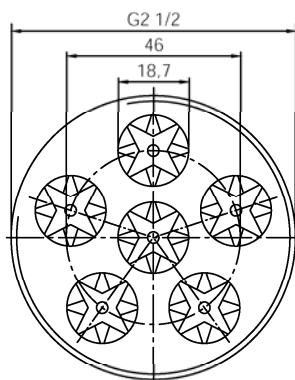
REG-92R504



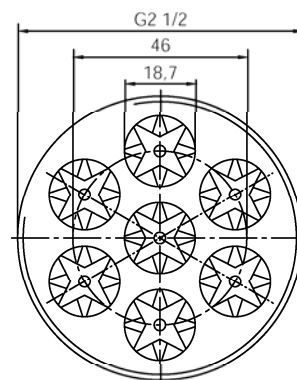
REG-92R585



REG-92R656



REG-92R657



**Thickness: 15 mm**

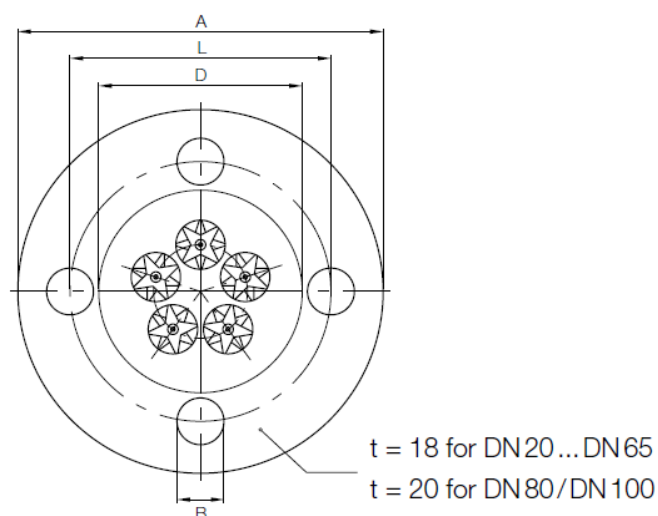
## Order Details multiple element – flange version (example: REG-82 F32 2 080)

Design	Flange	Number of elements	Flow rate* in L/min
<b>REG-82...</b> Multiple element with flange EN 1092-1, PN 16-40 stainless steel 1.4301/1.4571	..F20..= DN 20	..1.. = 1-fold	0,5... <b>040</b>
	..F25..= DN 25		
	..F32..= DN 32	..2.. = 2-fold	1... <b>080</b>
	..F40..= DN 40	..2.. = 2-fold	1... <b>080</b>
..3.. = 3-fold		1,5... <b>120</b>	
<b>REG-82...</b> Multiple element with flange EN 1092-1, PN 16 made of stainless steel 1.4301/1.4571	..F50..= DN 50	..2.. = 2-fold	1... <b>080</b>
		..3.. = 3-fold	1,5... <b>120</b>
		..4.. = 4-fold	2... <b>160</b>
		..5.. = 5-fold	2,5... <b>200</b>
	..F65..= DN 65	..4.. = 4-fold	2... <b>160</b>
		..5.. = 5-fold	2,5... <b>200</b>
		..6.. = 6-fold	3... <b>240</b>
		..7.. = 7-fold	3,5... <b>280</b>
	..F80..= DN 80	..5.. = 5-fold	2,5... <b>200</b>
		..6.. = 6-fold	3... <b>240</b>
		..7.. = 7-fold	3,5... <b>280</b>
		..8.. = 8-fold	4... <b>320</b>
	..F1H..= DN 100	..9.. = 9-fold	4,5... <b>360</b>
		..6.. = 6-fold	3... <b>240</b>
..7.. = 7-fold		3,5... <b>280</b>	
..8.. = 8-fold		4... <b>320</b>	
..Z.. = 10-fold		5... <b>400</b>	
..B.. = 12-fold		6... <b>480</b>	
..D.. = 10-fold	7... <b>560</b>		

\*The throughput is calculated by adding the regulating inserts (see also single elements).

**Example: The throughput 55 L/min is obtained with one restrictor with two regulating inserts (30 plus 25 L/min).**

### REG-82F322



**REG-82 Fxx-Flange-dimensions for PN 16-40**

<b>DN</b>	<b>PN</b>	<b>Outer-Ø [A]</b>	<b>Holecircle-Ø [L]</b>	<b>Hole- Ø [B]</b>	<b>Screws</b>	<b>Sealing sirfaces- Ø* [D]</b>
20	16-40	105	75	14	4 x M12	58
25	16-40	115	85	14	4 x M12	68
32	16-40	140	100	18	4 x M16	78
40	16-40	150	110	18	4 x M16	88
50	16	165	125	18	4 x M16	102
65	16	185	145	18	8 x M16	122
80	16	200	160	18	8 x M16	138
100	16	220	180	18	8 x M16	158

\* Sealing surfaces on both sides