PRESSURE REGULATORS

RP Series

EMERSON™
Process Management

RP Series Regulators

RP Series Pressure Regulator

The regulators of the RP series due to their operating specifications are mainly used in those system where sudden capacity variations are required, or else, where the cut-off of the gas distribution is controlled by solenoid valve, such as for the feeding of burners. This product has been designed to be used with fuel gases of 1st and 2nd family according to EN 437, and with other non aggressive and non fuel gases. For any other gases, other than natural gas, please contact your local sales agent.

The RP Series regulators are direct-operated with non-balanced trim. Normally they are fitted with a built-in filter and can be also provided with shut-off device for minimum pressure, maximum pressure or minimum and maximum downstream pressure.

The regulators of the series RP have been devised keeping in consideration the functionality of maintenance, in fact is possible to replace the seat or the seals without removing the body from the line.

Main features:

- ***"Fail open" reaction***
- ***Control Accuracy***
- ***Wide regulated pressure range***
- ***Easy maintenance without removing body from line***
- ***Overpressure and Underpressure Shutoff Valve***

Configurations

Version Without Shut-off Device

RP/011 - RP/022 - RP/033

Version With Shut-off Device

RP/011/66 - RP/022/66 - RP/033/66

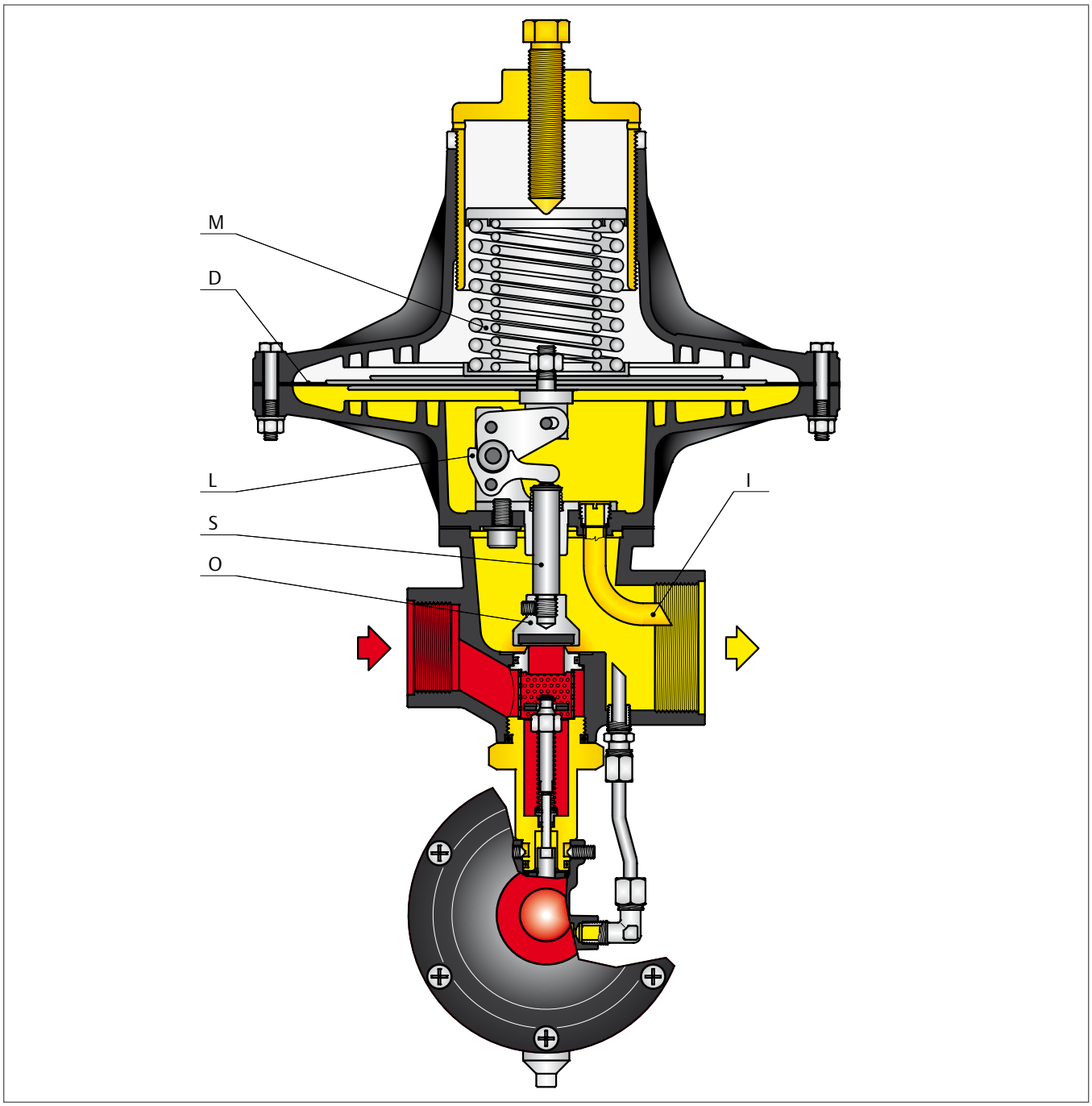
Regulator Operation

The movements of the diaphragm (D) are transmitted to the valve disc (O) by the stem (S) and the levers system (L).

The downstream pressure through the pulse pipe (I) exerts a force under diaphragm (D) and this force is counteracted by the adjusting springs (M).

The gas pressure on the diaphragm tends to close the valve disc; the antagonist action of the adjustment springs tends to open it. Under normal conditions the balance between these antagonist actions positions the valve disc in such a way as to ensure a constant pressure and therefore the downstream capacity.

Upon any capacity variation tending to cause an increase or decrease of pressure in relation to the pre-set pressure, the moving unit reacts and finds a new balance, so re-establishing the pressure.



RP Series Regulators

Shut-off Device Operation

The A/140 series pressure regulators can be fitted with an OS/66 slam-shut valve.

This safety device operates independently of the regulator and, according to customer request, can be made to trigger by any pressure variation, whether above or below set point, or by both.

Outlet pressure acting upon diaphragm (D) is counteracted by maximum pressure spring (M2), thus overcoming the action of the minimum pressure valve (M3).

Under such conditions, the moving part (E) of the valve is held in balance so that lever (L) is aligned with the projecting part of lever (L1).

In addition, the balls (S) are held in their seat by bush (B) and, in turn, these hold the valve disc (O) open.

Any outlet pressure variation over and above preset value breaks the existing balance.

In fact, in case of an increase in outlet pressure, spring (M2) load is overcome by pressure load; in case of a decrease in outlet pressure, spring (M3) load overcomes pressure load.

In both cases, moving part (E) is activated, causing lever (L) to move with it so that lever (L) is no longer aligned with lever (L1).

In this way, lever (L1) releases balls (S), thereby allowing valve disc (O) to close under the action of spring (M4).

The safety device is fitted with an internal by-pass for easy resetting even in case of high inlet pressure. For resetting, proceed as follows: Remove rear cap (C), screw it to stem (H) and pull outwards. Allow a few moments for inlet pressure to flow downstream.

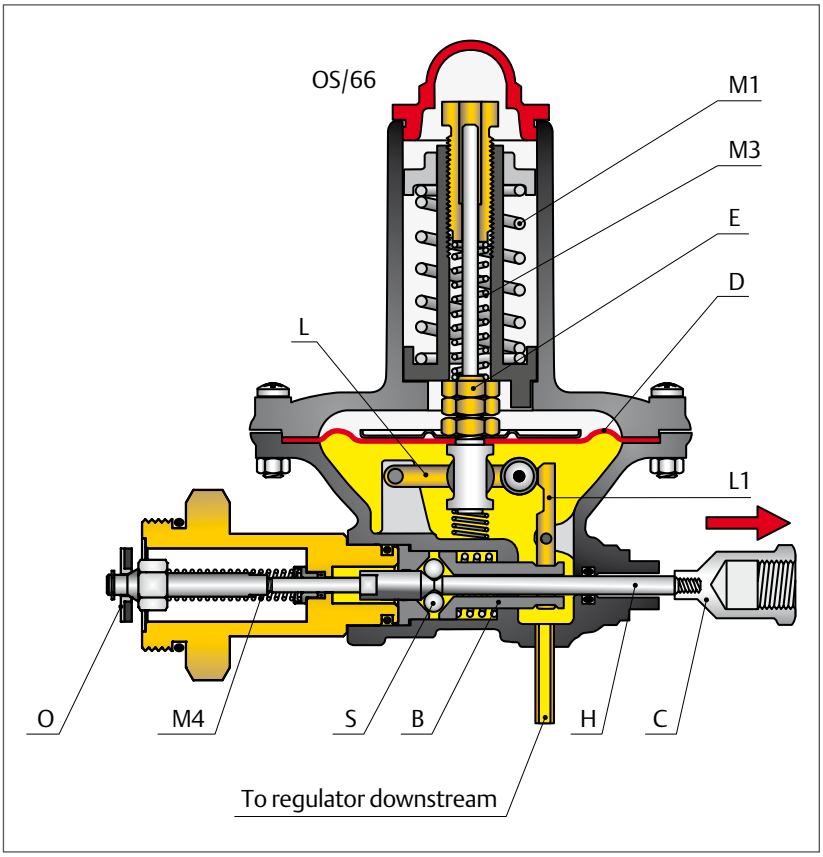
Next, pull cap fully outwards.

Allow a few moments for outlet pressure to stabilize.

Next, release cap and make sure that device remains in the reset position.

If not, repeat the above steps. Once reset, replace cap in its initial position.

The maximum and minimum trip values are independently set by springs (M2) and (M3), respectively.



Features

Technical Features

Allowable pressure			
	Body	PS	: 20 bar
	Actuator	PS	: 4 bar
Maximum Operating Inlet Pressure		Pu_{max}	: 20 bar
Inlet pressure range		bpu	: 0,2 to 20 bar
Outlet Set Pressure Ranges			
	RP/011	Wd	: 0,1 to 2 bar
	RP/022/033	Wd	: 0,1 to 4 bar

Functional Features

Accuracy class	AC	: up to ± 5%
Lock-up pressure class	SG	: up to +10%

Shut-off device Independent pneumatic control

Accuracy class	AG	: ± 5%
Response time	ta	: ≤ 1 second

Orifice

12,7 - 16 - 20 mm

Threaded Connections

RP/011: 1 x 1-1/4" BSP
RP/022: 1-1/4 x 2" BSP
RP/033: 2 x 3" BSP

Flanged Connections

RP/011-FS: DN 25 x 32 PN 16, 25, 40 / CL150, CL300
RP/022-FS: DN 32 x 50 PN 16, 25, 40 / CL150, CL300
RP/033-FS: DN 50 x 80 PN 16, 25, 40 / CL150, CL300

Temperature

Standard version : Working -10° to 60°C
Low temperature version : Working -20° to 60°C

Materials

Covers	Aluminium
RP/011/022/033 Body	Ductile iron
RP/022/033 Body	Steel
Membrana	Fabric Nitrile (NBR)

RP Series Regulators

Slam-Shut Device

The following slam-shut controller are used with A/140 series regulators with built-in shut-off device:

- **OS/66** Spring loaded

Technical Features

Model	Servomotor Body Resistance (bar)	Overpressure Set Range W_{do} (bar)		Underpressure Set Range W_{du} (bar)	
		Min.	Max.	Min.	Max.
OS/66	6	0.022	0.6	0.007	0.450
OS/66-AP		0.2	5	0.1	2.5

OS/66

Materials

Body	Aluminium
Cover	Steel
Diaphragm	NBR Rubber

RP/033-FS

Flow Tables

Following flow tables (referred to Natural Gas) are advised for an optimal use of the RP series regulators.
For other gases with different densities, the flow rate must be multiplied by the correction factor:

$$F = \sqrt{\frac{0,6}{d}}$$

Gas	Relative Density d	Factor F
Air	1	0.78
Butane	2.01	0.55
Propane	1.53	0.63
Nitrogen	0.97	0.79

RP/011 Flow Tables Stm³/h - Pressures in bar

Tolerance RG 5

Pu / Pd	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	1.25	1.5	1.8	2	3	5	8	9	10	11	12	13	14	15	16	17	18	19	20
0.2			20	30	60	70	80	90	105	120	135	150	175	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215
0.3				20	50	65	75	85	100	115	130	150	175	190	235	235	235	235	235	235	235	235	235	235	235	235	235	235
0.4					40	55	65	80	95	110	125	150	175	190	205	250	250	250	250	250	250	250	250	250	250	250	250	250
0.5						40	55	70	90	105	120	145	175	190	205	225	251	251	251	251	251	251	251	251	251	251	251	251
0.6							40	60	85	100	115	140	165	190	205	225	250	285	285	285	285	285	285	285	285	285	285	285
0.7								35	60	75	90	110	120	160	240	300	300	300	300	300	300	300	300	300	300	300	300	300
0.8									50	70	85	105	115	160	240	320	320	320	320	320	320	320	320	320	320	320	320	320
1										60	80	100	110	160	240	360	360	360	360	360	360	360	360	360	360	360	360	360
1.5												70	90	155	240	360	450	450	450	450	450	450	450	450	450	450	450	450
2														140	240	360	410	530	530	530	530	530	530	530	530	530	530	530

Tolerance RG 10

Pu / Pd	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	1.25	1.5	1.8	2	3	5	8	9	10	11	12	13	14	15	16	17	18	19	20
0.2			30	40	70	80	90	100	115	130	150	170	195	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215
0.3				30	60	75	85	95	110	125	145	170	195	210	235	235	235	235	235	235	235	235	235	235	235	235	235	235
0.4					50	65	75	90	105	120	140	170	195	210	230	250	250	250	250	250	250	250	250	250	250	250	250	250
0.5						50	65	80	100	115	135	165	195	210	230	250	251	251	251	251	251	251	251	251	251	251	251	251
0.6							50	70	95	110	130	160	185	210	230	250	280	285	285	285	285	285	285	285	285	285	285	285
0.7								50	75	95	115	135	150	195	320	300	300	300	300	300	300	300	300	300	300	300	300	300
0.8									65	90	110	130	145	195	320	320	320	320	320	320	320	320	320	320	320	320	320	320
1										70	100	125	140	195	320	360	360	360	360	360	360	360	360	360	360	360	360	360
1.5												95	130	190	320	440	450	450	450	450	450	450	450	450	450	450	450	450
2														175	320	440	470	530	530	530	530	530	530	530	530	530	530	530

RP Series Regulators

RP/022 Flow Tables Stm³/h - Pressures in bar

Tolerance RG 5

Pu / Pd	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	1.25	1.5	1.8	2	3	5	8	9	10	11	12	13	14	15	16	17	18	19	20
0.08	50	70	95	110	140	160	175	185	200	215	240	270	310	400	400													
0.1	45	65	90	105	135	155	170	180	195	215	240	270	310	410	410	410												
0.15		45	80	100	130	150	165	175	190	210	240	270	310	435	435	435	435	435	435	435								
0.2			65	95	125	145	160	170	185	205	240	270	310	380	450	450	450	450	450	450	450	450	450	450				
0.3				80	115	135	150	165	180	200	230	270	310	380	430	490	490	490	490	490	490	490	490	490	490	490	490	490
0.4					90	115	140	160	175	195	225	270	310	380	430	480	525	525	525	525	525	525	525	525	525	525	525	525
0.5						90	120	140	170	190	215	260	310	380	430	480	510	565	565	565	565	565	565	565	565	565	565	565
0.6							90	120	160	180	205	250	310	380	430	480	510	550	600	600	600	600	600	600	600	600	600	600
0.7								50	80	110	130	155	170	230	350	520	560	640	640	640	640	640	640	640	640	640	640	640
0.8									70	105	130	150	170	230	350	520	580	675	675	675	675	675	675	675	675	675	675	675
1										80	115	145	160	230	350	520	580	610	650	690	755	755	755	755	755	755	755	755
1.5												100	130	220	350	520	580	610	650	690	770	800	830	855	880	900	920	930
2														200	345	520	580	610	650	690	770	800	830	855	880	900	920	930
3															320	520	580	610	650	690	770	800	830	855	880	900	920	930
4															260	520	580	610	650	690	770	800	830	855	880	900	920	930

Tolerance RG 10

Pu / Pd	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	1.25	1.5	1.8	2	3	5	8	9	10	11	12	13	14	15	16	17	18	19	20
0.08	60	80	105	120	150	175	190	200	215	235	260	290	330	405	405													
0.1	55	75	100	115	145	170	185	195	210	235	260	290	330	410	410	410												
0.15		55	90	110	140	165	180	190	205	230	260	290	330	435	435	435	435	435	435	435								
0.2			75	105	135	160	175	185	200	225	260	290	330	420	450	450	450	450	450	450	450	450	450	450				
0.3				90	125	150	165	180	195	220	250	290	330	420	470	490	490	490	490	490	490	490	490	490	490	490	490	490
0.4					100	130	155	175	190	215	245	290	330	420	470	520	525	525	525	525	525	525	525	525	525	525	525	525
0.5						105	135	155	185	210	235	280	330	420	470	520	550	565	565	565	565	565	565	565	565	565	565	565
0.6							105	135	175	200	225	270	320	420	470	520	550	590	600	600	600	600	600	600	600	600	600	600
0.7								70	130	155	190	230	250	300	410	600	660	640	640	640	640	640	640	640	640	640	640	640
0.8									120	150	205	220	240	300	410	600	660	675	675	675	675	675	675	675	675	675	675	675
1										135	195	215	230	300	410	600	660	690	720	750	755	755	755	755	755	755	755	755
1.5												175	220	290	410	600	660	690	720	750	840	890	915	930	960	975	990	1000
2														265	405	600	660	690	720	750	840	890	915	930	960	975	990	1000
3															380	600	660	690	720	750	840	890	915	930	960	975	990	1000
4															320	600	660	690	720	750	840	890	915	930	960	975	990	1000

Flow Tables Stm³/h - Pressures in bar

Tolerance RG 5

Pu / Pd	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	1.25	1.5	1.8	2	3	5	8	9	10	11	12	13	14	15	16	17	18	19	20
0.08	80	105	145	175	210	235	255	280	330	370	410	460	600	720	720													
0.1	70	100	140	170	205	225	245	270	320	360	405	455	600	720	720													
0.15		70	120	160	200	220	240	265	315	355	400	450	600	875	875	875												
0.2			105	145	190	215	235	260	310	350	395	445	600	960	960	960	960	960	960	960								
0.3				105	165	200	230	250	305	345	390	440	600	800	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085			
0.4					120	165	210	240	295	340	385	435	600	800	950	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1100
0.5						125	180	220	280	335	380	430	600	800	950	1190	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
0.6							130	200	260	330	375	425	593	800	950	1190	1270	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350
0.7								80	135	180	215	270	285	385	570	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410
0.8									115	170	210	265	280	385	570	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410
1										135	190	235	260	375	570	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410
1.5												165	210	370	570	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410
2														330	565	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410
3															525	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410
4															515	850	950	1040	1140	1190	1240	1280	1315	1350	1370	1385	1400	1410

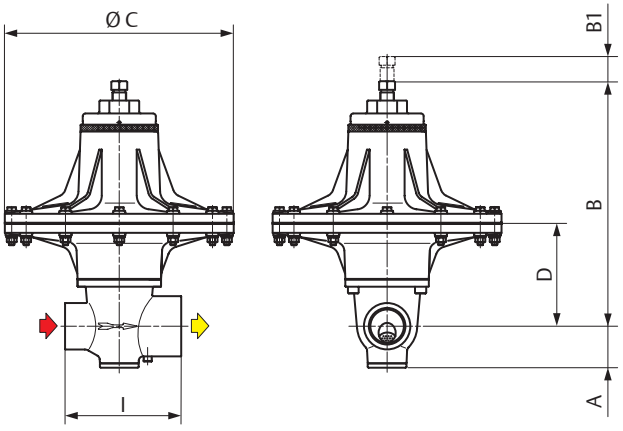
Tolerance RG 10

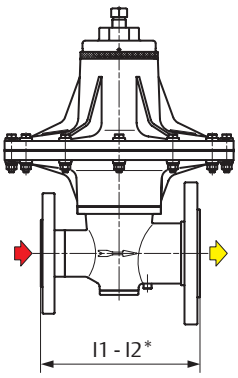
Pu / Pd	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1	1.25	1.5	1.8	2	3	5	8	9	10	11	12	13	14	15	16	17	18	19	20
0.08	90	115	160	190	240	255	285	310	360	400	460	510	650	760	760													
0.1	80	110	155	185	225	245	275	300	350	390	455	505	650	760	760													
0.15		80	135	175	220	240	270	295	345	385	450	500	650	940	940	940												
0.2			120	160	210	235	265	290	340	380	445	495	650	1050	1050	1050	1050	1050	1050	1050								
0.3				120	185	220	260	280	335	375	440	490	650	860	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085	1085			
0.4					140	180	240	270	325	370	435	485	650	860	1000	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1150	1100
0.5						140	210	250	310	365	430	480	650	860	1000	1240	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
0.6							160	230	290	375	425	475	645	860	1000	1240	1240	1330	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350
0.7								160	215	260	295	350	365	465	650	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510
0.8									195	250	290	345	360	465	650	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510
1										215	270	315	340	455	650	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510
1.5												245	290	450	650	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510
2														410	645	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510
3															605	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510
4															595	930	1030	1220	1215	1280	1335	1380	1415	1450	1465	1490	1500	1510

RP Series Regulators

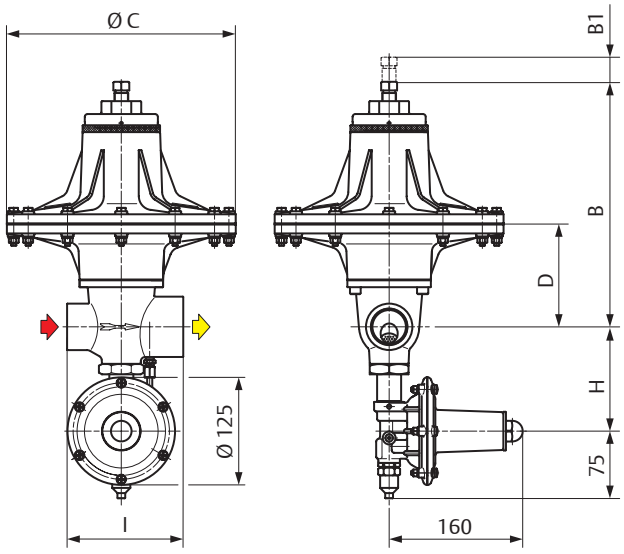
Dimensions (mm) and Weights (kg)

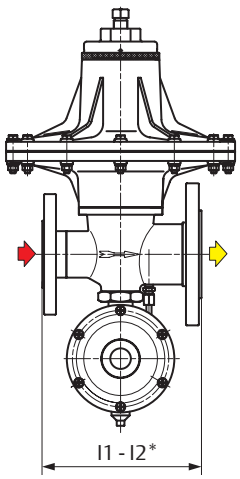
RP/011 · RP/022 · RP/033
Without Shut-off Device





RP/011/66 · RP/022/66 · RP/033/66
With Shut-off Device





Type	DN		A	B	B1	C	D	I	I1*	I2*	H	Weight
	Inlet	Outlet										
RP/011	1"	1 1/4"	50	280	120	206	102	135	185	195		6,5
RP/011/66	1"	1 1/4"		280	120	206	102	135	185	195	125	7,7
RP/022	1 1/4"	2"	50	300	120	266	106	135	185	200		10,5
RP/022/66	1 1/4"	2"		300	120	266	106	135	185	200	125	11,7
RP/033	2"	3"	70	300	120	266	120	160	230	270		13
RP/033/66	2"	3"		300	120	266	120	160	230	270	142	14,2

* I1 Flanged connections PN 16-25-40 • I2 Flanged connections CL 300

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Our Global Product Brands:

FISHER FRANCEL™ TARTARINI™

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EMERSON™
Process Management