

valve cimberio®

technological solutions



**Pressure independent control
balancing valve**



cim 777



Cim 777 Pressure independent control balancing valve

Cim 777 balancing valve is designed for the automatic balancing of heating and cooling systems, regardless of fluctuating pressure conditions of the system.

Thanks to its unique design, **Cim 777** balancing valve is able to perform three functions:

REGULATION

Selection of required flow rate;

CONTROL

Constant flow rate independent of pressure fluctuations;

MODULATION

“Full authority” flow rate modulation.

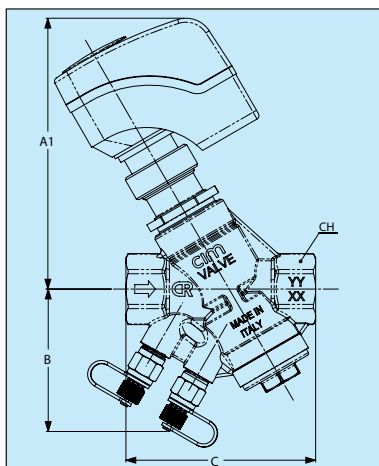
The main features of **Cim 777** are the following:

- Easy required flow rate selection using presetting dial;
- Automatic balancing in the event of fluctuating pressure conditions in system branches;
- Flow rate modulation along the whole electric actuator stroke;
- Flexibility if the system is modified after the first installation;
- Reduction of balancing costs, improved energy saving and high environmental comfort;
- Easy flushing procedure thanks to quick and simple removal of differential pressure control cartridge placed inside valve body;
- Reduced installation dimensions thanks to compact valve construction, which does not require inlet and outlet straight pipelines to stabilize the flow.

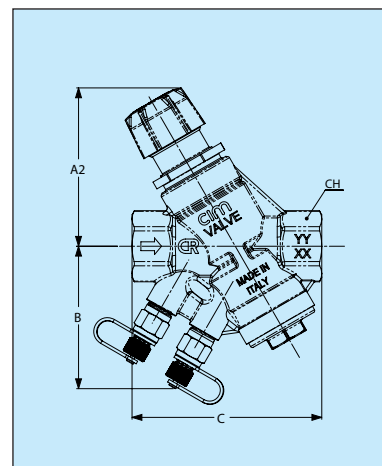
cim 777

PRESSURE INDEPENDENT CONTROL BALANCING VALVE

cim 776



DN	Grms.	Cim 777 - Cim 776				
		A1	A2	B	C	CH
1/2	1105	138	81	72	95,5	27
3/4	1125	138	81	72	96,5	32
1	1255	138	81	72	102,5	39
1 1/4"	1550	144	87	76	128	49





cim776



Technical Data

Cim 777 range is available with two pressure levels:

- "Low Flow": flow rate from 75 l/h up to 1500 l/h
- "High Flow": flow rate from 200 l/h up to 3000 l/h
- Working pressure: PN 25
- Working temperature: from 0°C up to 120°C

Cim 777 is available in sizes from DN 15 up to DN 32 (up to DN 25 for "Low Flow" version only), with "CR - Corrosion Resistant" brass body.

Cim 777 series work properly within a differential pressure operating range between minimum values as specified in the below tables and a maximum value of 400 KPa.

Installation remarks

- Before installation, make sure that required flow rate is within operating range of valve;
- Valve may be installed either in horizontal or vertical position with facing-up electric actuator;
- No minimum pipe length required either before or after the valve;
- Valve is supplied with a cap allowing (when screwed) the manual opening of the valve;
- After DPC cartridge removal and manual full opening of the valve, it is possible to flush the system branch where the valve is installed; when flushing process is over, reposition the DPC control cartridge.

LOW FLOW	Cim 776 - Cim 777			
Size	Flow (l/h)	Flow (l/s)	Flow (gpm*)	Min ΔP (KPa)
1/2 DN 15	78 ÷ 625	0,022 ÷ 0,174	0,34 ÷ 2,75	16
3/4 DN 20	131 ÷ 1050	0,036 ÷ 0,292	0,58 ÷ 4,62	16
1" DN 25	231 ÷ 1722	0,064 ÷ 0,478	1,06 ÷ 7,58	16

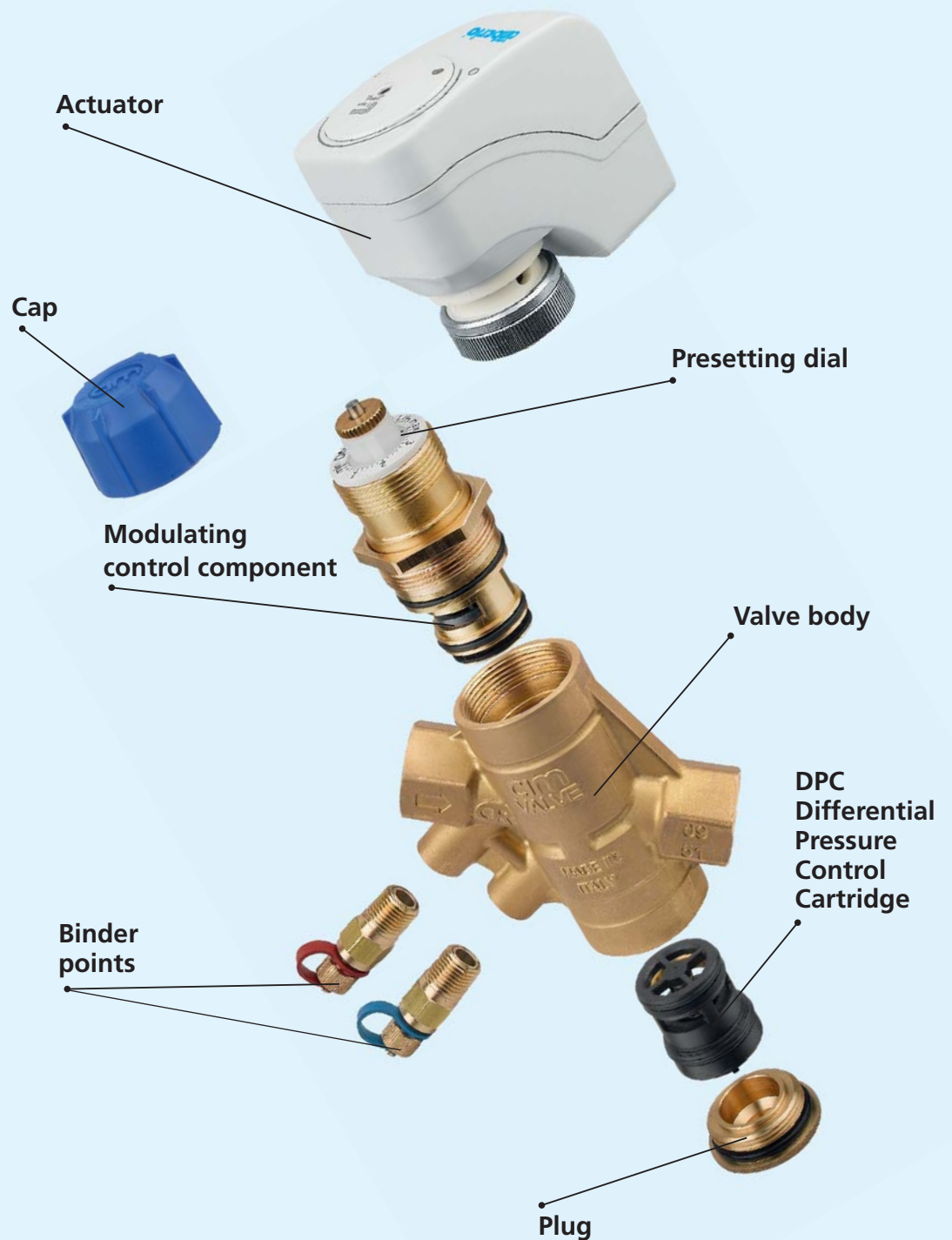
HIGH FLOW	Cim 776 - Cim 777			
Size	Flow (l/h)	Flow (l/s)	Flow (gpm*)	Min ΔP (KPa)
1/2 DN 15	244 ÷ 1724	0,068 ÷ 0,479	1,08 ÷ 7,59	18
3/4 DN 20	292 ÷ 2039	0,081 ÷ 0,566	1,28 ÷ 8,98	22
1" DN 25	292 ÷ 2039	0,081 ÷ 0,566	1,28 ÷ 8,98	22
1 1/4" DN 32	465 ÷ 3056	0,129 ÷ 0,849	2,05 ÷ 13,45	18

* The "gpm" values are corresponding to US gallon per minute.



Balancing process

- Totally open the valve by means of the presetting dial;
- Check the differential pressure, which shall be higher than the minimum value stated on relevant tables;
- Adjust the flow rate up to the required flow rate value. For each adjustment position, tables on the following pages show the relevant flow rate;
- Lock presetting dial position and assemble the electric actuator.



Operation principles

REGULATION

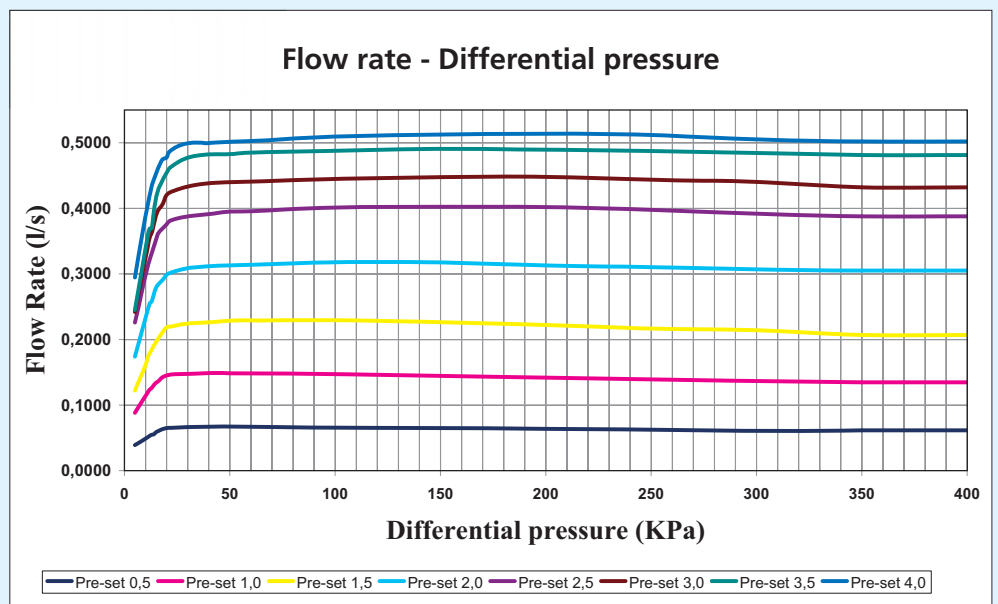
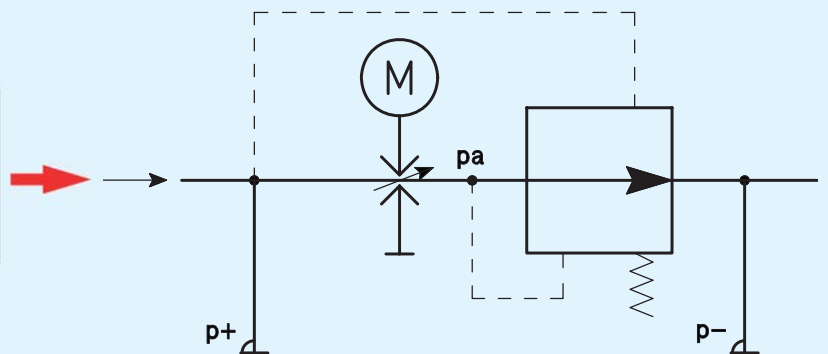
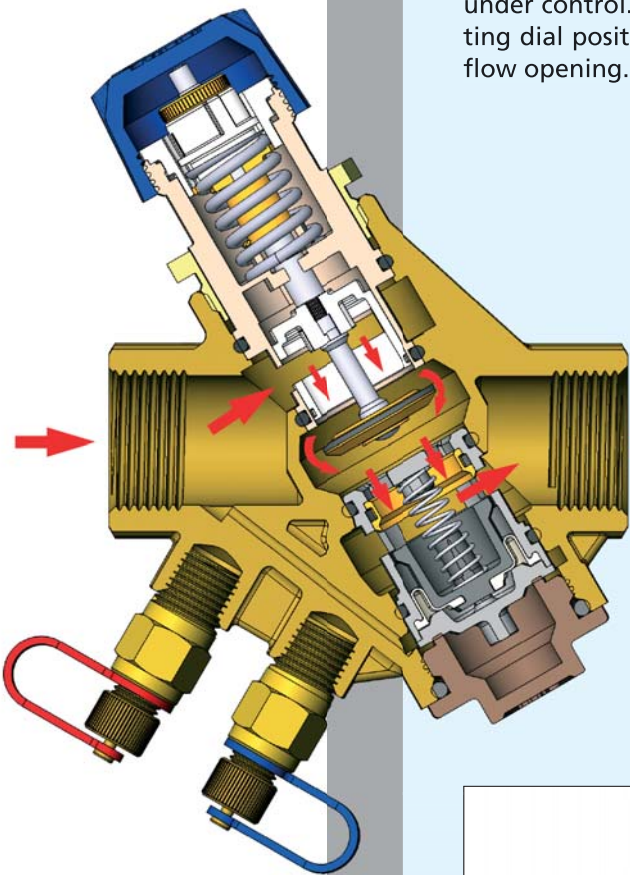
The presetting dial device shows an index scale ranging from a minimum value of 0,5 up to a maximum value of 4. Each point of this scale is corresponding to one flow rate listed in the tables of following pages. The inlet water goes through a modulating control component whose geometry can be modified by turning the presetting dial.

CONTROL

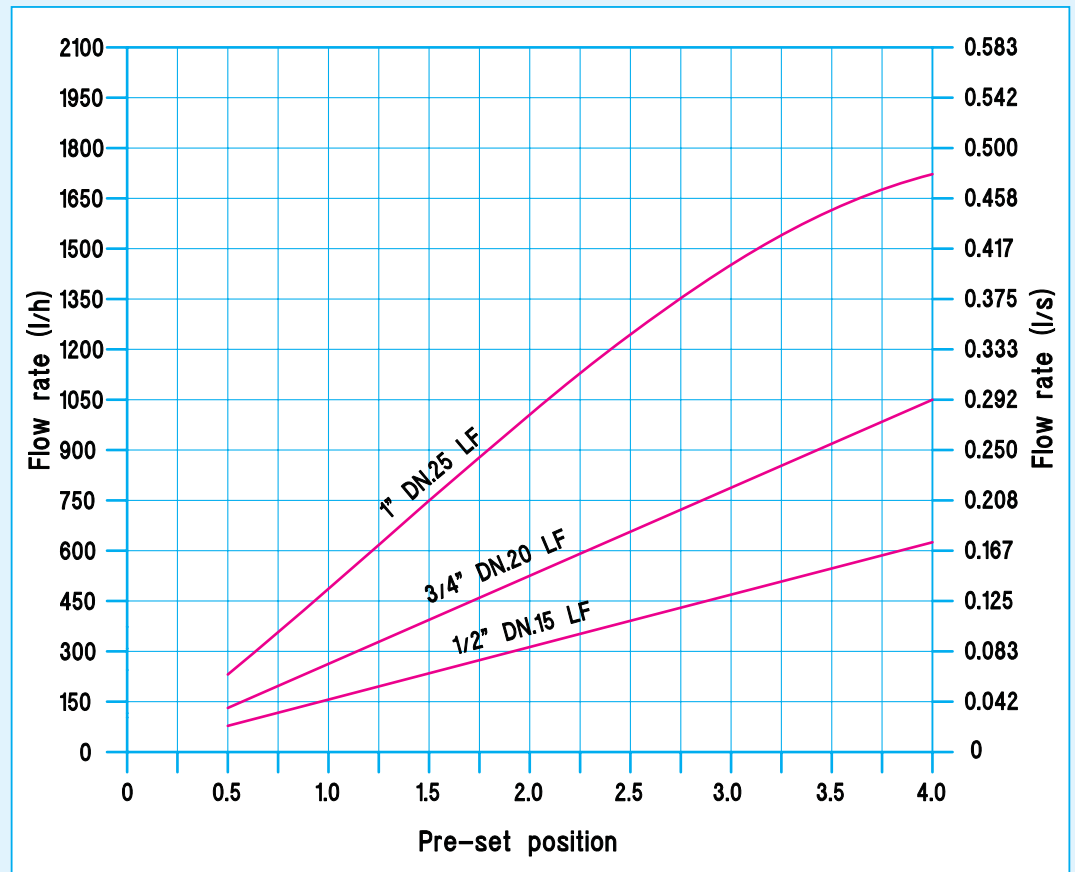
Two different pressures operate on the DPC cartridge. The first one is transmitted through the passage connecting the valve inlet to the lower section of "p+" cartridge. The second one is registered at valve outlet by the flow rate selecting device "pa". In order to keep constant the difference between the mentioned pressures, the cartridge obturator operates by closing the water outlet bore to reach the pre-set flow rate, regardless of fluctuating pressure conditions of the system.

MODULATION

The electrical actuator performs the modulating function changing the section of flow passage. When continuous modulation is carried out, the temperature is kept under control. Cim 777 keeps the same obturator stroke, regardless of the presetting dial position. With continuous modulation, control is excellent even with small flow opening. This eliminate on/off effect.



Cim 776 - Cim 777 Low flow - Graphs



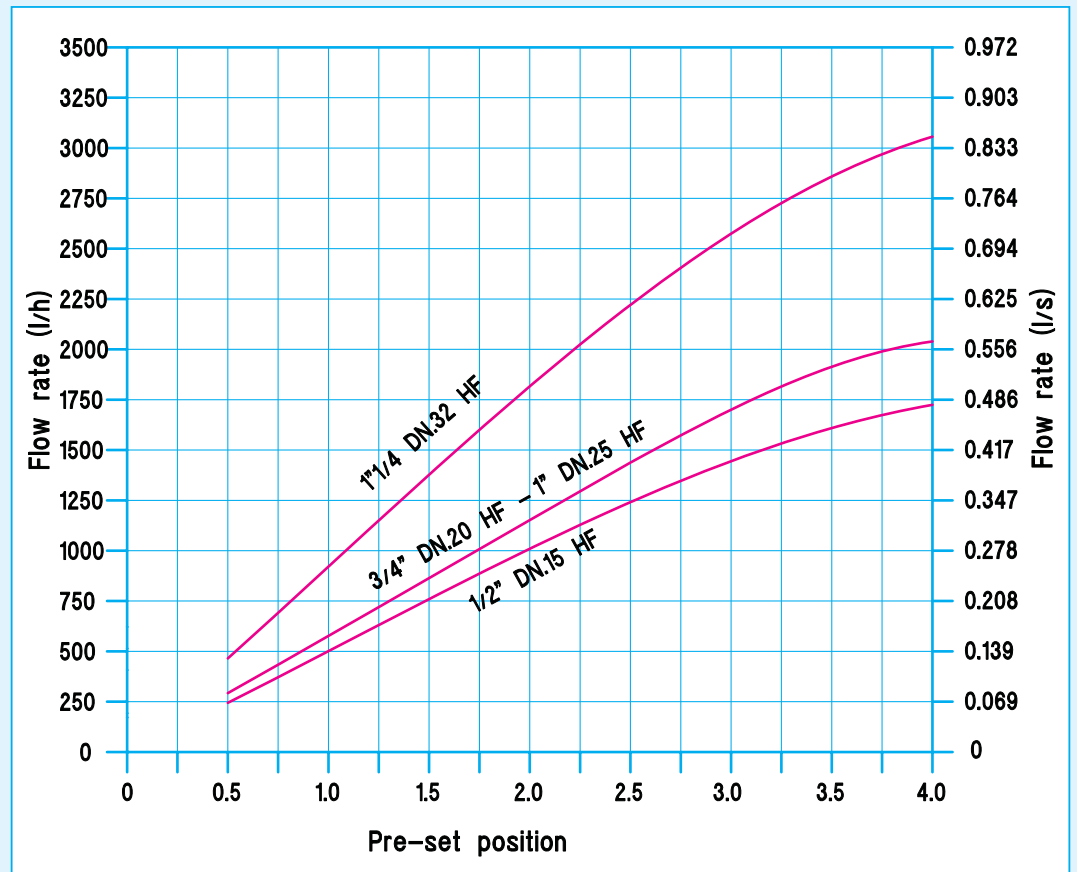
		Cim 776 - Cim 777 - LOW FLOW - 1/2" DN 15															
Pre-set position		0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
FLOW RATE	l/h	78	117	156	195	234	274	313	352	391	430	469	508	547	586	625	
	l/s	0,022	0,033	0,043	0,054	0,065	0,076	0,087	0,098	0,109	0,119	0,130	0,141	0,152	0,163	0,174	
	gpm*	0,34	0,52	0,69	0,86	1,03	1,20	1,38	1,55	1,72	1,89	2,06	2,24	2,41	2,58	2,75	
min. ΔP (kPa)		14,5	14,5	14,5	15,1	15,1	15,1	15,1	15,7	15,7	15,7	15,7	16,0	16,0	16,0	16,0	
Kv		0,21	0,31	0,41	0,50	0,60	0,70	0,81	0,89	0,99	1,08	1,18	1,27	1,37	1,47	1,57	

		Cim 776 - Cim 777 - LOW FLOW - 3/4" DN 20															
Pre-set position		0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
FLOW RATE	l/h	131	197	263	328	394	459	525	591	656	722	788	853	919	984	1050	
	l/s	0,036	0,055	0,073	0,091	0,109	0,128	0,146	0,164	0,182	0,201	0,219	0,237	0,255	0,273	0,292	
	gpm*	0,58	0,87	1,16	1,44	1,73	2,02	2,31	2,60	2,89	3,18	3,47	3,76	4,04	4,33	4,62	
min. ΔP (kPa)		14,5	14,5	14,5	15,1	15,1	15,1	15,1	15,7	15,7	15,7	15,7	16,0	16,0	16,0	16,0	
Kv		0,34	0,52	0,69	0,84	1,01	1,19	1,35	1,49	1,65	1,83	1,99	2,13	2,30	2,46	2,63	

		Cim 776 - Cim 777 - LOW FLOW - 1" DN 25															
Pre-set position		0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
FLOW RATE	l/h	231	357	486	617	749	878	1005	1128	1244	1352	1452	1540	1615	1676	1722	
	l/s	0,064	0,099	0,135	0,171	0,208	0,244	0,279	0,313	0,346	0,376	0,403	0,428	0,449	0,466	0,478	
	gpm*	1,02	1,57	2,14	2,72	3,30	3,87	4,43	4,96	5,48	5,95	6,39	6,78	7,11	7,38	7,58	
min. ΔP (kPa)		14,0	14,0	14,0	14,8	14,8	14,8	14,8	15,5	15,5	15,5	15,5	16,0	16,0	16,0	16,0	
Kv		0,62	0,95	1,30	1,60	1,95	2,28	2,61	2,86	3,16	3,44	3,69	3,85	4,04	4,19	4,30	

* The "gpm" values are corresponding to US gallon per minute.

Cim 776 - Cim 777 High flow - Graphs



		Cim 776 - Cim 777 - HIGH FLOW - 1/2" DN 15															
Pre-set position		0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
FLOW RATE	l/h	244	372	501	630	759	886	1009	1128	1241	1347	1444	1532	1609	1673	1724	
	l/s	0,068	0,103	0,139	0,175	0,211	0,246	0,280	0,313	0,345	0,374	0,401	0,426	0,447	0,465	0,479	
	gpm*	1,08	1,64	2,20	2,77	3,34	3,90	4,44	4,97	5,46	5,93	6,36	6,74	7,08	7,37	7,59	
min. ΔP (kPa)		14,0	14,0	14,0	15,8	15,8	15,8	15,8	17,0	17,0	17,0	17,0	18,0	18,0	18,0	18,0	
Kv		0,65	0,99	1,34	1,58	1,91	2,23	2,54	2,73	3,01	3,27	3,50	3,61	3,79	3,95	4,06	

		Cim 776 - Cim 777 - HIGH FLOW - 3/4" DN 20								Cim 776 - Cim 777 - HIGH FLOW - 1" DN 25							
Pre-set position		0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
FLOW RATE	l/h	292	435	577	719	863	1007	1152	1296	1437	1573	1700	1815	1913	1990	2039	
	l/s	0,081	0,121	0,160	0,200	0,240	0,280	0,320	0,360	0,399	0,437	0,472	0,504	0,531	0,553	0,566	
	gpm*	1,28	1,91	2,54	3,17	3,80	4,43	5,07	5,70	6,33	6,92	7,48	7,99	8,42	8,76	8,98	
min. ΔP (kPa)		14,0	14,0	14,0	18,0	18,0	18,0	18,0	20,0	20,0	20,0	20,0	22,0	22,0	22,0	22,0	
Kv		0,78	1,16	1,54	1,70	2,04	2,38	2,72	2,90	3,21	3,52	3,80	3,87	4,08	4,24	4,34	

		Cim 776 - Cim 777 - HIGH FLOW - 1 1/4" DN 32															
Pre-set position		0,50	0,75	1,00	1,25	1,50	1,75	2,00	2,25	2,50	2,75	3,00	3,25	3,50	3,75	4,00	
FLOW RATE	l/h	465	692	921	1150	1377	1600	1816	2024	2221	2405	2574	2726	2858	2969	3056	
	l/s	0,129	0,192	0,256	0,319	0,382	0,444	0,504	0,562	0,617	0,668	0,715	0,757	0,794	0,825	0,849	
	gpm*	2,05	3,05	4,05	5,06	6,06	7,04	7,99	8,91	9,78	10,59	11,33	12,00	12,58	13,07	13,45	
min. ΔP (kPa)		14,5	14,5	14,5	16,0	16,0	16,0	16,0	17,0	17,0	17,0	17,0	18,0	18,0	18,0	18,0	
Kv		1,22	1,82	2,42	2,87	3,44	4,00	4,54	4,91	5,39	5,83	6,24	6,42	6,74	7,00	7,20	

* The "gpm" values are corresponding to US gallon per minute.

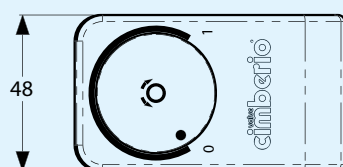
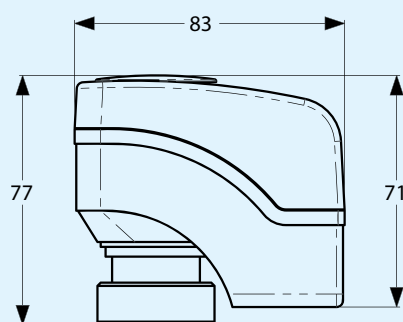


Electric actuators

- **Cim EMV210/145:** 24VAC - proportional;
- **Cim EMV210/146:** 24VAC - 3 positions;
- **Cim EMV210/147:** 230VAC - 3 positions.

Their main features are the following:

- Maximum stroke: 5,5 mm;
- 3 positions or 0..10Vdc control signal;
- Swivel nut easy assembling;
- Manual operation by 3 mm hexagonal key;
- Short circuit resistance;
- Protection against polarity reversal.



Voltage:	230VAC; 24VAC
Frequency:	50/60 Hz
Manual operation:	3mm hexagonal key
Cable length:	1,5
Protection Class:	IP 40
Ambient operating conditions:	0°C ÷ 50°C - Warehousing + 10°C ÷ 80°C - Humidity rate according to EN 60730-1
Weight:	350 grms
Actuating force:	250N
Input impedance:	> 100 k Ohm (DC 0-10v)

cav. uff. 
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