

ΣΤΟΙΧΕΙΑ ΔΥΝΑΜΙΚΗΣ ΡΥΘΜΙΣΗΣ

FlowCon Inserts/Cartridges



*FlowCon Green Inserts, E-JUST Cartridges,
Composite Cartridges and Stainless Steel Cartridges*

**CHRYSSAFIDIS**

FlowCon Green Inserts

Pressure Independent Control Valves



The FlowCon Green inserts ensure that the design flow will never be exceeded and with the matching modulating actuator any flow rate between closed and design flow is obtainable regardless of pressure fluctuations in the system maintaining 100% authority on the actuator always using full valve stroke independent of pre-set maximum flow.

Adjustment

The valve is adjusted to a maximum flow rate limit by setting the scale located on the top of the Green insert. The setting indicates one of maximum 41 possible max flow rates, but since the setting is step less, any flow rate in between minimum and maximum is obtainable. The setting is done by means of a special FlowCon key. With the actuator mounted, the pre-setting is "sealed" and the FlowCon Green insert eliminates any flow above the design flow.

For re-adjustment, simply remove power from the actuator and then remove the actuator from the valve. Hereafter dial in a new required maximum flow and re-apply the actuator and re-apply the power.

Applications

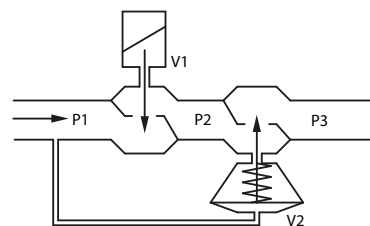
The FlowCon Green inserts can be used with the following FlowCon valves:

- FlowCon A (DN15/20/25)
- FlowCon AB (DN15/20/25/32)
- FlowCon ABV1 (DN15/20/25)
- FlowCon ABV2 (DN25/32/40)

Principle of Insert Operation

On closer examination of the inner workings of the FlowCon Green, the function is best described as 2 valves in 1. The second valve (V2) regulates the pressure differential across the first valve (V1) by means of a rolling diaphragm element counter-acted by a spring. The first valve is a calibrated variable orifice device adjusted by the actuator (similar to a standard modulating control valve).

The diaphragm reacts to the system and regulates the pressure differential across the actuated control valve orifice to maintain its flow rate.



When pre-setting the maximum flow rate, the inlet orifice is changed in size sideways which does not interfere with the length of the stroke. When modulating, the orifice areas are affected by the actuator using the full stroke which results in the fact that the orifice area is changed in size in a vertical movement.

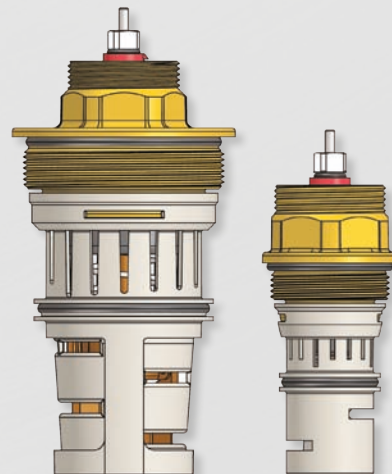




20mm (3/4") and 40mm (1 1/2") Green Inserts for DN15-DN40 Valves

FlowCon Green										
Insert: 20mm, 3/4"						Insert: 40mm, 1 1/2"			Setting	
16-200 kPaD · 2.3-29 psid			30-400 kPaD · 4.4-58 psid			16-400 kPaD* · 2.3-58 psid*				
Green.0 (grey o-ring)			Green.1 (black o-ring)			Green.2 (black o-ring)				
Nominal flow rate	I/sec	I/hr	GPM	I/sec	I/hr	GPM	I/sec	I/hr	GPM	
	-	-	-	0.0178	64	0.282	0.240	865	3.81	1.0
	0.0103	37	0.163	0.0393	142	0.624	0.282	1010	4.46	1.1
	0.0233	84	0.370	0.0580	209	0.920	0.322	1160	5.10	1.2
	0.0322	116	0.510	0.0743	268	1.180	0.361	1300	5.72	1.3
	0.0419	151	0.664	0.0887	319	1.41	0.399	1430	6.32	1.4
	0.0500	180	0.792	0.102	366	1.61	0.435	1570	6.90	1.5
	0.0569	205	0.902	0.113	408	1.80	0.471	1700	7.47	1.6
	0.0650	234	1.03	0.124	446	1.96	0.506	1820	8.02	1.7
	0.0719	259	1.14	0.134	482	2.12	0.540	1940	8.56	1.8
	0.0781	281	1.24	0.143	516	2.27	0.573	2060	9.08	1.9
	0.0839	302	1.33	0.152	549	2.42	0.605	2180	9.59	2.0
	0.0889	320	1.41	0.161	580	2.56	0.636	2290	10.1	2.1
	0.0942	339	1.49	0.170	611	2.69	0.667	2400	10.6	2.2
	0.0981	353	1.55	0.178	641	2.82	0.696	2510	11.0	2.3
	0.103	371	1.63	0.186	671	2.95	0.725	2610	11.5	2.4
	0.106	381	1.68	0.194	700	3.08	0.753	2710	11.9	2.5
	0.109	394	1.73	0.202	728	3.21	0.780	2810	12.4	2.6
	0.113	406	1.79	0.210	756	3.33	0.807	2900	12.8	2.7
	0.115	414	1.82	0.218	783	3.45	0.832	3000	13.2	2.8
0.119	428	1.88	0.225	810	3.56	0.858	3090	13.6	2.9	
0.122	439	1.93	0.232	835	3.68	0.882	3180	14.0	3.0	
0.125	449	1.98	0.239	860	3.79	0.906	3260	14.4	3.1	
0.127	458	2.02	0.245	883	3.89	0.930	3350	14.7	3.2	
0.130	468	2.06	0.252	906	3.99	0.953	3430	15.1	3.3	
0.133	477	2.10	0.257	927	4.08	0.975	3510	15.5	3.4	
0.135	486	2.14	0.263	946	4.17	0.997	3590	15.8	3.5	
0.137	494	2.17	0.268	965	4.25	1.02	3670	16.1	3.6	
0.140	503	2.21	0.273	982	4.32	1.04	3740	16.5	3.7	
0.142	511	2.25	0.277	998	4.39	1.06	3820	16.8	3.8	
0.144	518	2.28	0.281	1010	4.46	1.08	3890	17.1	3.9	
0.146	526	2.31	0.285	1020	4.51	1.10	3960	17.4	4.0	
0.148	532	2.34	0.288	1040	4.57	1.12	4030	17.7	4.1	
0.149	538	2.37	0.291	1050	4.61	1.14	4100	18.1	4.2	
0.151	544	2.39	0.294	1060	4.66	1.16	4170	18.4	4.3	
0.153	549	2.42	0.296	1070	4.70	1.18	4240	18.7	4.4	
0.154	553	2.43	0.299	1080	4.73	1.20	4300	19.0	4.5	
0.155	559	2.46	0.301	1080	4.77	1.21	4370	19.2	4.6	
0.156	563	2.48	0.303	1090	4.80	1.23	4440	19.5	4.7	
0.158	567	2.50	0.305	1100	4.83	1.25	4500	19.8	4.8	
0.159	571	2.51	0.307	1100	4.86	1.27	4570	20.1	4.9	
0.160	575	2.53	0.308	1110	4.89	1.29	4630	20.4	5.0	

Accuracy: Greatest of either $\pm 10\%$ of controlled flow rate or $\pm 5\%$ of maximum flow rate.
*at setting 2.6.





FlowCon E-JUST Cartridges

Externally Adjustable Flow Rate Cartridges for FlowCon Valves



The E-JUST automatic flow rate cartridges ensure that the design flow will not be exceeded regardless of pressure fluctuations in the system.

Adjustment

By means of a specially designed key each cartridge can be easily adjusted to one of 41 different flow rates. Adjustment is managed externally without isolating the valve or removing the cartridge from the system, which means that the desired maximum flow rate can be set while the system is operating.

The adjustment key turns the display mechanism and the graduation on the 'handle' of the cartridge shows the setting indicated by two scales; one black reflecting full turns numbered 1 through 5, and one red at the top reflecting tenths of full turns numbered 0 through 9. The number of turns reflects the flow rate selected (please see the next five pages in this brochure). The color of the pawl shows the selected control range, e.g. white = 17-210 kPaD for the 20mm black and green cartridges.

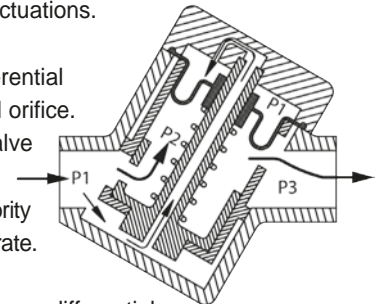
The FlowCon E-JUST cartridge is tamper-proof since the adjustment is operated by means of the mentioned special key. Further, the setting can be protected with a colored top cover. The color of the cover and the o-ring on the spindle under the cover indicates the color and flow range of the cartridge, e.g. red for flow rates between 0.113-0.352 l/sec, ΔP 30-400 kPaD (grey pawl). E-JUST cartridges size 40mm and 50mm will, as standard, always be with a black cover and black o-ring, as only one type per size is available.

Principle of Cartridge Operation

The principle of operation is shown below. P1 and P3 are system pressures. P1-P3 is the total pressure drop across the valve. P2 is set by the diaphragm acting

in reaction to P1 in the upper diaphragm chamber. Interacting with the spring, P1-P2 remains constant, keeping a constant ΔP across the orifice areas. The result is a constant flow rate through the valve, independent of pressure fluctuations.

Below its pressure differential range, it acts as a fixed orifice. This allows a control valve in the same circuit to operate with valve authority up to the specified flow rate.



Within the defined pressure differential regulation range the pump supplies sufficient pressure to affect the spring and diaphragm in the cartridge.

In case the differential pressure is higher than the defined max. ΔP for the cartridge, the diaphragm may be damaged.

Applications

The FlowCon E-JUST cartridges (20mm, 40mm and 50mm) can be used with the following FlowCon valves:

- | | |
|--------------|-----------------------------|
| 20mm E-JUST: | - FlowCon A (DN15/20/25) |
| | - FlowCon AB (DN15/20/25) |
| | - FlowCon ABV1 (DN15/20/25) |
| | - FlowCon EVC (DN15/20) |
| | - FlowCon ABM1 (DN15/20/25) |
| 40mm E-JUST: | - FlowCon AB (DN25/32) |
| | - FlowCon ABV2 (DN25/32/40) |
| | - FlowCon ABM2 (DN25/32/40) |
| 50mm E-JUST: | - FlowCon AB (DN40/50) |



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20mm (3/4") E-JUST Cartridges for DN15-DN25 Valves

20mm · 3/4" · E-JUST · Y-type · White pawl					
Pressure range, ΔP: 17-210 kPaD · 2.5-30 psid					
Nominal flow rate	Model no.			E-JUST1.Y.B	E-JUST1.Y.G
	l/sec	l/hr	GPM	Black	Green
				Setting	Setting
0.0278	100	0.440	1.0		
0.0299	108	0.475	1.1		
0.0321	116	0.509	1.2		
0.0343	123	0.543	1.3		
0.0364	131	0.578	1.4		
0.0386	139	0.612	1.5		
0.0408	147	0.646	1.6		
0.0429	155	0.681	1.7		
0.0436	157	0.691			1.0
0.0451	162	0.715	1.8		
0.0468	168	0.741			1.1
0.0473	170	0.749	1.9		
0.0494	178	0.784	2.0		
0.0499	180	0.791			1.2
0.0516	186	0.818	2.1		
0.0530	191	0.841			1.3
0.0538	194	0.852	2.2		
0.0559	201	0.887	2.3		
0.0562	202	0.890			1.4
0.0581	209	0.921	2.4		
0.0593	214	0.940			1.5
0.0603	217	0.955	2.5		
0.0624	225	0.990	2.6		1.6
0.0646	233	1.02	2.7		
0.0656	236	1.04			1.7
0.0668	240	1.06	2.8		
0.0687	247	1.09			1.8
0.0689	248	1.09	2.9		
0.0711	256	1.13	3.0		
0.0719	259	1.14			1.9
0.0733	264	1.16	3.1		
0.0750	270	1.19			2.0
0.0754	272	1.20	3.2		
0.0776	279	1.23	3.3		
0.0781	281	1.24			2.1
0.0798	287	1.26	3.4		
0.0813	293	1.29			2.2
0.0819	295	1.30	3.5		
0.0841	303	1.33	3.6		
0.0844	304	1.34			2.3
0.0863	311	1.37	3.7		
0.0876	315	1.39			2.4
0.0884	318	1.40	3.8		

Continue next column...

20mm · 3/4" · E-JUST · Y-type · White pawl					
Pressure range, ΔP: 17-210 kPaD · 2.5-30 psid					
Nominal flow rate	Model no.			E-JUST1.Y.B	E-JUST1.Y.G
	l/sec	l/hr	GPM	Black	Green
				Setting	Setting
0.0906	326	1.44	3.9		
0.0907	327	1.44			2.5
0.0928	334	1.47	4.0		
0.0938	338	1.49			2.6
0.0949	342	1.50	4.1		
0.0970	349	1.54			2.7
0.0971	350	1.54	4.2		
0.0993	357	1.57	4.3		
0.100	360	1.59			2.8
0.101	365	1.61	4.4		
0.103	372	1.64			2.9
0.104	373	1.64	4.5		
0.106	381	1.68	4.6		
0.106	383	1.69			3.0
0.108	389	1.71	4.7		
0.110	394	1.74			3.1
0.110	396	1.75	4.8		
0.112	404	1.78	4.9		
0.113	406	1.79			3.2
0.114	412	1.81	5.0		
0.116	417	1.84			3.3
0.119	428	1.89			3.4
0.122	440	1.94			3.5
0.125	451	1.98			3.6
0.128	462	2.03			3.7
0.132	473	2.08			3.8
0.135	485	2.13			3.9
0.138	496	2.18			4.0
0.141	507	2.23			4.1
0.144	519	2.28			4.2
0.147	530	2.33			4.3
0.150	541	2.38			4.4
0.153	553	2.43			4.5
0.157	564	2.48			4.6
0.160	575	2.53			4.7
0.163	586	2.58			4.8
0.166	598	2.63			4.9
0.169	609	2.68			5.0

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate



FlowCon E-JUST Cartridges

20mm (3/4") E-JUST Cartridges for DN15-DN25 Valves

20mm · 3/4" · E-JUST · Y-type · White pawl				
Pressure range. ΔP: 17-200 kPaD · 2.5-29 psid				
Nominal flow rate	Model no. E-JUST1.Y.R			Red
	l/sec	l/hr	GPM	Setting
				0.0767
0.0813	293	1.29	1.1	
0.0860	310	1.36	1.2	
0.0907	326	1.44	1.3	
0.0953	343	1.51	1.4	
0.100	360	1.58	1.5	
0.105	377	1.66	1.6	
0.109	393	1.73	1.7	
0.114	410	1.80	1.8	
0.118	426	1.88	1.9	
0.123	443	1.95	2.0	
0.128	459	2.02	2.1	
0.132	475	2.09	2.2	
0.136	491	2.16	2.3	
0.141	507	2.23	2.4	
0.145	523	2.30	2.5	
0.150	539	2.37	2.6	
0.154	554	2.44	2.7	
0.158	569	2.51	2.8	
0.162	584	2.57	2.9	
0.166	599	2.64	3.0	
0.170	614	2.70	3.1	
0.174	628	2.76	3.2	
0.178	642	2.83	3.3	
0.182	655	2.89	3.4	
0.186	669	2.94	3.5	
0.189	682	3.00	3.6	
0.193	695	3.06	3.7	
0.196	707	3.11	3.8	
0.200	719	3.17	3.9	
0.203	731	3.22	4.0	
0.206	742	3.27	4.1	
0.209	753	3.32	4.2	
0.212	764	3.36	4.3	
0.215	774	3.41	4.4	
0.218	784	3.45	4.5	
0.220	793	3.49	4.6	
0.223	802	3.53	4.7	
0.225	810	3.57	4.8	
0.227	818	3.60	4.9	
0.229	825	3.60	5.0	

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate

20mm · 3/4" · E-JUST · G-type · Grey pawl				
Pressure range. ΔP: 30-400 kPaD · 4.4-58 psid				
Nominal flow rate	Model no. E-JUST1.G.R			Red
	l/sec	l/hr	GPM	Setting
				0.113
0.119	427	1.88	1.1	
0.125	449	1.98	1.2	
0.131	470	2.07	1.3	
0.137	492	2.17	1.4	
0.143	513	2.26	1.5	
0.149	535	2.36	1.6	
0.155	556	2.45	1.7	
0.161	578	2.54	1.8	
0.167	599	2.64	1.9	
0.172	621	2.73	2.0	
0.178	642	2.83	2.1	
0.184	664	2.92	2.2	
0.190	685	3.02	2.3	
0.196	707	3.11	2.4	
0.202	728	3.21	2.5	
0.208	750	3.30	2.6	
0.214	771	3.40	2.7	
0.220	793	3.49	2.8	
0.226	814	3.59	2.9	
0.232	836	3.68	3.0	
0.238	857	3.78	3.1	
0.244	879	3.87	3.2	
0.250	900	3.96	3.3	
0.256	922	4.06	3.4	
0.262	943	4.15	3.5	
0.268	965	4.25	3.6	
0.274	987	4.34	3.7	
0.280	1010	4.44	3.8	
0.286	1030	4.53	3.9	
0.292	1050	4.63	4.0	
0.298	1070	4.72	4.1	
0.304	1090	4.82	4.2	
0.310	1120	4.91	4.3	
0.316	1140	5.01	4.4	
0.322	1160	5.10	4.5	
0.328	1180	5.20	4.6	
0.334	1200	5.29	4.7	
0.340	1220	5.38	4.8	
0.346	1240	5.48	4.9	
0.352	1270	5.57	5.0	

Accuracy: Greatest of either ±5% of controlled flow rate or ±2% of maximum flow rate



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FlowCon E-JUST Cartridges

20mm (3/4") E-JUST Cartridges for DN15-DN25 Valves

20mm · 3/4" · E-JUST · G-type · Grey pawl					
Pressure range, ΔP: 35-400 kPaD · 5.1-58 psid					
Nominal flow rate	Model no.		E-JUST1.G.B	E-JUST1.G.G	
	l/sec	l/hr	GPM	Black	Green
				Setting	Setting
	0.0383	138	0.607	1.0	
	0.0416	150	0.660	1.1	
	0.0449	162	0.712	1.2	
	0.0483	174	0.765	1.3	
	0.0516	186	0.817	1.4	
	0.0549	198	0.870	1.5	
	0.0582	210	0.922	1.6	
	0.0615	221	0.975	1.7	
	0.0648	233	1.03	1.8	
	0.0660	238	1.05		1.0
	0.0681	245	1.08	1.9	
	0.0706	254	1.12		1.1
	0.0714	257	1.13	2.0	
	0.0748	269	1.18	2.1	
	0.0751	271	1.19		1.2
	0.0781	281	1.24	2.2	
	0.0797	287	1.26		1.3
	0.0814	293	1.29	2.3	
	0.0843	304	1.34		1.4
	0.0847	305	1.34	2.4	
	0.0880	317	1.40	2.5	
	0.0889	320	1.41		1.5
	0.0913	329	1.45	2.6	
	0.0934	336	1.48		1.6
	0.0946	341	1.50	2.7	
	0.0979	353	1.55	2.8	
	0.0980	353	1.55		1.7
	0.101	365	1.61	2.9	
	0.103	369	1.63		1.8
	0.105	377	1.66	3.0	
	0.107	386	1.70		1.9
	0.108	388	1.71	3.1	
	0.111	400	1.76	3.2	
	0.112	402	1.77		2.0
	0.115	412	1.82	3.3	
	0.116	419	1.84		2.1
	0.118	424	1.87	3.4	
	0.121	435	1.92		2.2
	0.121	436	1.92	3.5	
	0.124	448	1.97	3.6	
	0.125	452	1.99		2.3
	0.128	460	2.03	3.7	
	0.130	468	2.06		2.4
	0.131	472	2.08	3.8	
	0.134	484	2.13	3.9	
	0.135	485	2.13		2.5
	0.138	496	2.18	4.0	
	0.139	501	2.21		2.6
	0.141	508	2.24	4.1	
	0.144	517	2.28		2.7
	0.144	520	2.29	4.2	
	0.148	532	2.34	4.3	
	0.148	534	2.35		2.8
	0.151	544	2.39	4.4	
	0.153	550	2.42		2.9
	0.154	556	2.45	4.5	
	0.157	567	2.50		3.0
	0.158	567	2.50	4.6	
	0.161	579	2.55	4.7	
	0.162	583	2.57		3.1
	0.164	591	2.60	4.8	
	0.167	600	2.64		3.2
	0.168	603	2.66	4.9	
	0.171	615	2.71	5.0	

Continue next column...

20mm · 3/4" · E-JUST · G-type · Grey pawl					
Pressure range, ΔP: 35-400 kPaD · 5.1-58 psid					
Nominal flow rate	Model no.		E-JUST1.G.B	E-JUST1.G.G	
	l/sec	l/hr	GPM	Black	Green
				Settings	Settings
	0.171	616	2.71		3.3
	0.176	633	2.79		3.4
	0.180	649	2.86		3.5
	0.185	666	2.93		3.6
	0.189	682	3.00		3.7
	0.194	699	3.08		3.8
	0.199	715	3.15		3.9
	0.203	731	3.22		4.0
	0.208	748	3.29		4.1
	0.212	764	3.37		4.2
	0.217	781	3.44		4.3
	0.221	797	3.51		4.4
	0.226	814	3.58		4.5
	0.231	830	3.66		4.6
	0.235	847	3.73		4.7
	0.240	863	3.80		4.8
	0.244	880	3.87		4.9
	0.249	896	3.95		5.0

Accuracy: Greatest of either
±5% of controlled flow rate or
±2% of maximum flow rate

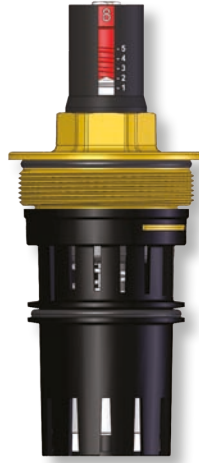


FlowCon E-JUST Cartridges

40mm (1 1/2") E-JUST Cartridges for DN25-DN40 Valves

40mm · 1 1/2" · E-JUST · Y-type · White pawl			
Pressure range, ΔP: 17-400 kPaD · 2.5-58 psid			
Model no.			E-JUST2.Y.G
l/sec	l/hr	GPM	Setting
0.149	535	2.36	1.0
0.220	793	3.49	1.1
0.289	1040	4.58	1.2
0.355	1280	5.63	1.3
0.418	1510	6.63	1.4
0.479	1730	7.60	1.5
0.538	1940	8.52	1.6
0.594	2140	9.41	1.7
0.647	2330	10.3	1.8
0.699	2520	11.1	1.9
0.748	2690	11.9	2.0
0.795	2860	12.6	2.1
0.841	3030	13.3	2.2
0.884	3180	14.0	2.3
0.925	3330	14.7	2.4
0.965	3470	15.3	2.5
1.00	3610	15.9	2.6
1.04	3740	16.5	2.7
1.07	3870	17.0	2.8
1.11	3990	17.6	2.9
1.14	4100	18.1	3.0
1.17	4220	18.6	3.1
1.20	4320	19.0	3.2
1.23	4420	19.5	3.3
1.26	4520	19.9	3.4
1.28	4620	20.3	3.5
1.31	4710	20.7	3.6
1.33	4800	21.1	3.7
1.36	4890	21.5	3.8
1.38	4970	21.9	3.9
1.40	5050	22.3	4.0
1.43	5130	22.6	4.1
1.45	5210	23.0	4.2
1.47	5290	23.3	4.3
1.49	5370	23.6	4.4
1.51	5440	24.0	4.5
1.53	5520	24.3	4.6
1.55	5600	24.6	4.7
1.58	5670	25.0	4.8
1.60	5750	25.3	4.9
1.62	5830	25.7	5.0

Nominal flow rate



Accuracy: Greatest of
either ±5% of controlled flow rate
or ±2% of maximum flow rate



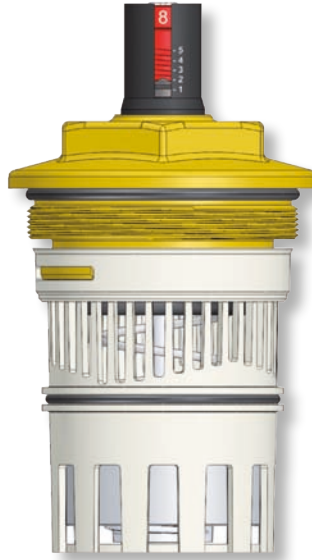
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FlowCon E-JUST Cartridges

50mm (2") E-JUST Cartridges for DN40 and DN50 Valves

50mm · 2" · E-JUST · G-type · Grey pawl				
Pressure range. ΔP: 20-400 kPaD · 2.9-58 psid				
Nominal flow rate	Model no.			E-JUST3.G.B
	l/sec	l/hr	GPM	Setting
	0.883	3180	14.0	1.0
	1.14	4100	18.0	1.1
	1.37	4940	21.7	1.2
	1.59	5710	25.1	1.3
	1.78	6420	28.3	1.4
	1.96	7070	31.1	1.5
	2.13	7660	33.7	1.6
	2.28	8200	36.1	1.7
	2.42	8700	38.3	1.8
	2.54	9150	40.3	1.9
	2.66	9570	42.1	2.0
	2.77	9960	43.8	2.1
	2.86	10300	45.4	2.2
	2.95	10600	46.8	2.3
	3.04	10900	48.2	2.4
	3.12	11200	49.4	2.5
	3.19	11500	50.6	2.6
	3.26	11700	51.7	2.7
	3.32	12000	52.7	2.8
	3.39	12200	53.7	2.9
	3.45	12400	54.6	3.0
	3.51	12600	55.6	3.1
	3.56	12800	56.5	3.2
	3.62	13000	57.3	3.3
	3.67	13200	58.2	3.4
	3.73	13400	59.1	3.5
	3.78	13600	59.9	3.6
	3.83	13800	60.8	3.7
	3.89	14000	61.6	3.8
	3.94	14200	62.4	3.9
	3.99	14400	63.3	4.0
	4.05	14600	64.1	4.1
	4.10	14800	65.0	4.2
	4.15	14900	65.8	4.3
	4.20	15100	66.6	4.4
	4.25	15300	67.4	4.5
	4.30	15500	68.2	4.6
	4.35	15700	68.9	4.7
	4.39	15800	69.6	4.8
	4.44	16000	70.3	4.9
	4.48	16100	70.9	5.0

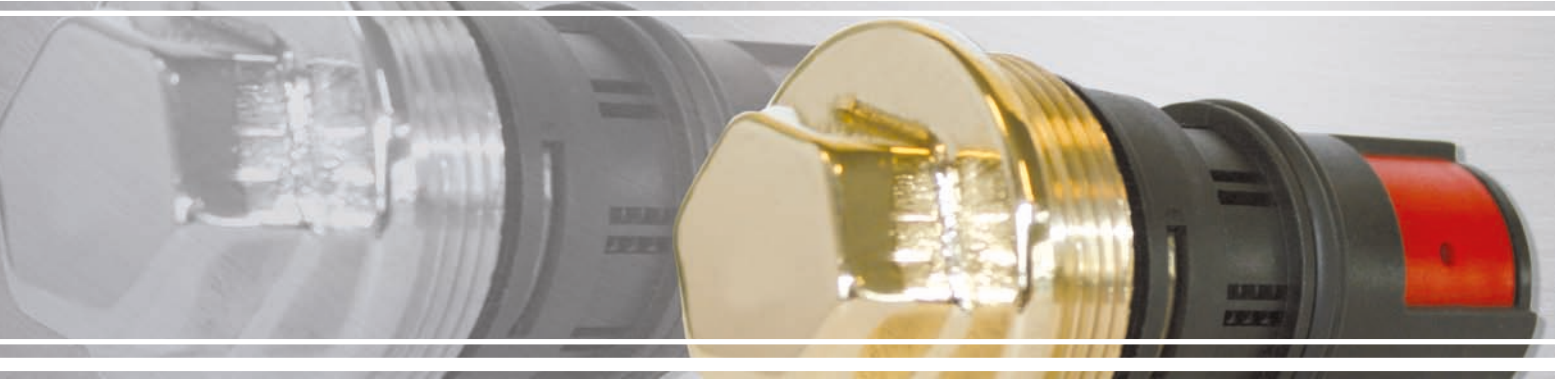
Accuracy: Greatest of
either ±5% of controlled flow rate
or ±2% of maximum flow rate



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FlowCon Composite Cartridges

Adjustable Flow Rate Cartridges for FlowCon Valves



20mm (3/4") Composite Cartridges for DN15-DN25 Valves

20mm · 3/4" · composite cartridge · Y-type								
Pressure range, ΔP: 20-130 kPaD (15-130 kPaD)* · 2.9-18.9 psid (2.2-18.9 psid)*								
Nominal flow rate	Model no.		ABV1.Y.Y	ABV1.Y.R	ABV1.Y.U	ABV1.Y.B	ABV1.Y.G	
	l/sec	l/hr	GPM	Grey*	Red	Blue	Black	Green
0.0081	29.2	0.128	1					
0.0133	47.9	0.211	2					
0.0175	63.0	0.277	3					
0.0222	79.9	0.352	4					
0.0311	112	0.493	5					
0.0353	127	0.560	6					
0.0383	138	0.607	7					
0.0431	155	0.683	8					
0.0450	162	0.713					3	
0.0575	207	0.911		4				
0.0619	223	0.981			4			
0.0669	241	1.06				4		
0.0922	332	1.46		5				
0.0978	352	1.55						1
0.105	378	1.66		6				
0.114	409	1.80		7				
0.115	415	1.83			5			
0.118	426	1.88						2
0.119	430	1.89		8				
0.136	489	2.15						3
0.137	492	2.17			6			
0.138	498	2.19						4
0.146	524	2.31			7			
0.146	526	2.32			8			
0.155	557	2.45					5	
0.176	635	2.80					6	
0.180	647	2.85					7	
0.193	695	3.06					8	
0.231	830	3.66						5
0.237	854	3.76						6
0.253	909	4.00						7
0.273	984	4.33						8

Accuracy: Greatest of either ±10% of controlled flow rate or 20 l/hr (0.0056 l/sec or 0.088 GPM).

20mm · 3/4" · composite cartridge · G-type								
Pressure range, ΔP: 40-400 kPaD (30-400 kPaD)* · 5.8-58 psid (4.4-58 psid)*								
Nominal flow rate	Model no.		ABV1.G.Y	ABV1.G.R	ABV1.G.U	ABV1.G.B	ABV1.G.G	
	l/sec	l/hr	GPM	Grey*	Red	Blue	Black	Green
0.0117	42.1	0.185	1					
0.0189	68.0	0.300	2					
0.0247	88.9	0.392	3					
0.0325	117	0.515	4					
0.0472	170	0.748	5					
0.0528	190	0.837	6					
0.0564	203	0.894				3		
0.0597	215	0.946					3	
0.0639	230	1.01	7					
0.0694	250	1.10	8					
0.0781	281	1.24		4				
0.0908	327	1.44			4			
0.0958	345	1.52					4	
0.137	493	2.17		5				
0.147	529	2.33						1
0.161	581	2.56		6				
0.173	624	2.75		7				
0.181	652	2.87			5			
0.181	653	2.88		8				
0.186	670	2.95						2
0.210	755	3.32						3
0.216	779	3.43			6			
0.218	785	3.46			7			
0.220	792	3.49			8			
0.237	853	3.75					5	
0.241	869	3.83						4
0.266	957	4.21					6	
0.269	968	4.26					7	
0.277	998	4.39					8	
0.365	1320	5.79						5
0.369	1330	5.85						6
0.392	1410	6.21						7
0.408	1470	6.46						8

Accuracy: Greatest of either ±10% of controlled flow rate or 20 l/hr (0.0056 l/sec or 0.088 GPM).





The composite automatic flow rate cartridges ensure that the design flow will not be exceeded regardless of pressure fluctuations in the system.

Adjustment

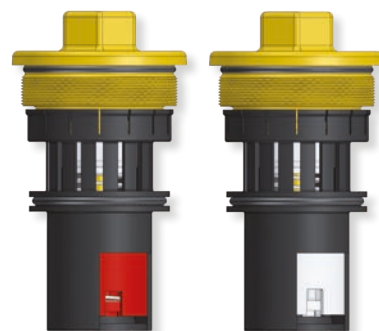
By means of a Hex key each cartridge can be easily adjusted to one of eight different flow rates. Adjustment is managed 'internally' and therefore the valve must be isolated and the cartridge removed from the valve body, before adjusting is possible.

The groove at the bottom of the cartridge indicates the selected flow rate setting, numbered 1 through 8 (please see below and previous page). The color of

the cartridge shows the selected flow range and the letter stamped on the cap of the cartridge indicates the control range, e.g. Y-GREEN = 20-130 kPaD and flow rates from 0.0978-0.273 l/sec.

Applications and

Principle of Cartridge Operation are similar to the ones for E-JUST cartridge.



40mm (1 1/2") Composite Cartridges for DN25-DN40 Valves

40mm · 1 1/2" composite cartridge · X-type					40mm · 1 1/2" composite cartridge · C-type					40mm · 1 1/2" composite cartridge · D-type					
Pressure range, ΔP: 15-130 kPaD · 2.2-18.9 psid					Pressure range, ΔP: 22-300 kPaD · 3.2-43.5 psid					Pressure range, ΔP: 30-410 kPaD · 4.4-59.5 psid					
Model no.		ABV2.X.W	ABV2.X.R	Model no.		ABV2.C.W	ABV2.C.R	Model No.		ABV2.D.W	ABV2.D.R				
Nominal flow rate	l/sec	l/hr	GPM	White	Red	l/sec	l/hr	GPM	White	Red	l/sec	l/hr	GPM	White	Red
	0.17	612	2.69	1		0.23	828	3.65	1		0.27	972	4.28	1	
	0.23	828	3.64	2		0.31	1120	4.91	2		0.36	1300	5.71	2	
	0.26	936	4.12		1	0.38	1370	6.02		1	0.44	1580	6.97		1
	0.33	1190	5.23	3		0.42	1510	6.66	3		0.52	1870	8.24	3	
	0.38	1370	6.02	4		0.47	1690	7.45	4		0.58	2090	9.19	4	
	0.39	1400	6.18		2	0.50	1800	7.93		2	0.60	2160	9.51		2
	0.48	1730	7.61	5	3	0.60	2160	9.51	5		0.74	2660	11.7	5	
	0.54	1940	8.56	6		0.64	2300	10.1		3	0.76	2740	12.0		3
	0.62	2230	9.83	7		0.68	2450	10.8	6		0.83	2990	13.2	6	
	0.63	2270	9.99		4	0.78	2810	12.4	7		0.93	3350	14.7	7	
	0.66	2380	10.5	8		0.83	2990	13.2		4	0.99	3560	15.7	8	4
	0.67	2410	10.6		5	0.84	3020	13.3	8		1.07	3850	17.0		5
	0.76	2740	12.0		6	0.90	3240	14.3		5	1.28	4610	20.3		6
	0.85	3060	13.5		7	1.07	3850	17.0		6	1.39	5000	22.0		7
						1.17	4210	18.5		7	1.43	5150	22.7		8
					1.21	4360	19.2		8						

Accuracy: Greatest of either ±10% of controlled flow rate or 20 l/hr (0.0056 l/sec or 0.088 GPM).

Stainless Steel Cartridges

Pre-Set Flow Rate Cartridges for FlowCon Valves



The stainless steel flow rate cartridges ensure that the design flow will not be exceeded regardless of pressure fluctuations in the system. Since the cartridge is factory pre-set, the flow rate cannot be adjusted on the cartridge. The advantage of this type of cartridge is that it works at lower pressure differentials and with higher flows.

Principle of Operation

Below the stainless steel cartridge's pressure differential range it acts as a fixed orifice.

Within operating pressure differential range, the effective open orifice area of the cartridge is automatically adjusted to the point where the specified flow rate will be delivered (as the pressure differential increases, the open area closes and as it decreases, the area opens).

When the pressure differential range is exceeded, the valve again becomes a fixed orifice device. This ensures that no part of the system is starved or shut down.

20mm (3/4") Stainless Steel Cartridges for DN15-DN25 Valves

20mm · 3/4" · stainless steel cartridge											
Pressure range, ΔP:			10-95 kPaD 1-14 psid		22-210 kPaD 2-32 psid		40-390 kPaD 4-57 psid		90-880 kPaD 8-128 psid		
Nominal flow rate	l/sec	l/hr	GPM	Type 1		Type 2		Type 4		Type 8	
				Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	Marking	FlowCon
0.0210	75.7	0.333		11-1	F360111						
0.0315	114	0.500		01-1	F360101						
0.0347	125	0.550				11-2	F360211				
0.0421	151	0.667		02-1	F360102						
0.0473	170	0.750				01-2	F360201	11-4	F360411		
0.0631	227	1.00		03-1	F360103	02-2	F360202	01-4	F360401		
0.0694	250	1.10								11-8	F360811
0.0841	303	1.33		04-1	F360104			02-4	F360402		
0.0946	341	1.50				03-2	F360203			01-8	F360801
0.105	379	1.67		05-1	F360105						
0.126	454	2.00		06-1	F360106	04-2	F360204	03-4	F360403	02-8	F360802
0.147	530	2.33		07-1	F360107						
0.158	568	2.50				05-2	F360205				
0.168	606	2.67		08-1	F360108			04-4	F360404		
0.189	681	3.00				06-2	F360206			03-8	F360803
0.210	757	3.33		10-1	F360110			05-4	F360405		
0.221	795	3.50				07-2	F360207				
0.252	908	4.00		12-1	F360112	08-2	F360208	06-4	F360406	04-8	F360804
0.294	1060	4.67		14-1	F360114			07-4	F360407		
0.315	1140	5.00		16-1	F360116	10-2	F360210			05-8	F360805
0.336	1210	5.33						08-4	F360408		
0.379	1360	6.00				12-2	F360212			06-8	F360806
0.421	1510	6.67						10-4	F360410		
0.442	1590	7.00				14-2	F360214			07-8	F360807
0.505	1820	8.00				16-2	F360216	12-4	F360412	08-8	F360808
0.589	2120	9.33						14-4	F360414		
0.631	2270	10.0						16-4	F360416	10-8	F360810
0.757	2730	12.0								12-8	F360812
0.883	3180	14.0								14-8	F360814
1.01	3630	16.0								16-8	F360816





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40mm (1 1/2") Stainless Steel Cartridges for DN25-DN40 Valves

40mm · 1 1/2" · stainless steel cartridge											
Pressure range, ΔP:			10-95 kPaD 1-14 psid		22-210 kPaD 2-32 psid		40-390 kPaD 4-57 psid		90-880 kPaD 8-128 psid		
l/sec	l/hr	GPM	Type 1		Type 2		Type 4		Type 8		
			Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	
0.189	681	3.00	09-1	F361109							
0.210	757	3.33	10-1	F361110							
0.252	908	4.00	12-1	F361112							
0.284	1020	4.50			09-2	F361209					
0.294	1060	4.67	14-1	F361114							
0.315	1140	5.00			10-2	F361210					
0.336	1210	5.33	16-1	F361116							
0.379	1360	6.00	18-1	F361118	12-2	F361212	09-4	F361409			
0.421	1510	6.67	20-1	F361120			10-4	F361410			
0.442	1590	7.00			14-2	F361214					
0.463	1670	7.33	22-1	F361122							
0.505	1820	8.00	24-1	F361124	16-2	F361216	12-4	F361412			
0.547	1970	8.67	26-1	F361126							
0.568	2040	9.00			18-2	F361218			09-8	F361809	
0.589	2120	9.33	28-1	F361128			14-4	F361414			
0.631	2270	10.0	30-1	F361130	20-2	F361220			10-8	F361810	
0.673	2420	10.7	32-1	F361132			16-4	F361416			
0.694	2500	11.0			22-2	F361222					
0.715	2570	11.3	34-1	F361134							
0.757	2730	12.0	36-1	F361136	24-2	F361224	18-4	F361418	12-8	F361812	
0.799	2880	12.7	38-1	F361138							
0.820	2950	13.0			26-2	F361226					
0.841	3030	13.3	40-1	F361140			20-4	F361420			
0.883	3180	14.0	42-1	F361142	28-2	F361228			14-8	F361814	
0.925	3330	14.7	44-1	F361144			22-4	F361422			
0.946	3410	15.0			30-2	F361230					
1.01	3630	16.0			32-2	F361232	24-4	F361424	16-8	F361816	
1.07	3860	17.0			34-2	F361234					
1.09	3940	17.3					26-4	F361426			
1.14	4090	18.0			36-2	F361236			18-8	F361818	
1.18	4240	18.7					28-4	F361428			
1.20	4320	19.0			38-2	F361238					
1.26	4540	20.0			40-2	F361240	30-4	F361430	20-8	F361820	
1.32	4770	21.0			42-2	F361242					
1.35	4850	21.3					32-4	F361432			
1.39	5000	22.0			44-2	F361244			22-8	F361822	
1.43	5150	22.7					34-4	F361434			
1.51	5450	24.0					36-4	F361436	24-8	F361824	
1.60	5750	25.3					38-4	F361438			
1.64	5910	26.0							26-8	F361826	
1.68	6060	26.7					40-4	F361440			
1.77	6360	28.0					42-4	F361442	28-8	F361828	
1.85	6660	29.3					44-4	F361444			
1.89	6810	30.0							30-8	F361830	
2.02	7270	32.0							32-8	F361832	
2.15	7720	34.0							34-8	F361834	
2.27	8180	36.0							36-8	F361836	
2.40	8630	38.0							38-8	F361838	
2.52	9080	40.0							40-8	F361840	
2.65	9540	42.0							42-8	F361842	
2.78	9990	44.0							44-8	F361844	



Accuracy: ±5% of controlled flow rate.

Stainless Steel Cartridges

50mm (2") Stainless Steel Cartridges for DN40-DN80 Valves

50mm · 2" · stainless steel cartridge											
Pressure range, ΔP:			10-95 kPaD 1-14 psid		22-210 kPaD 2-32 psid		40-390 kPaD 4-57 psid		90-880 kPaD 8-128 psid		
			Type 1		Type 2		Type 4		Type 8		
			Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	
Nominal flow rate	l/sec	l/hr	GPM								
	0.757	2730	12.0	36-1	F3C2136						
	0.883	3180	14.0	42-1	F3C2142						
	1.01	3630	16.0	48-1	F3C2148						
	1.14	4090	18.0	54-1	F3C2154	36-2	F3C2236				
	1.26	4540	20.0	60-1	F3C2160						
	1.32	4770	21.0			42-2	F3C2242				
	1.39	5000	22.0	66-1	F3C2166						
	1.51	5450	24.0	72-1	F3C2172	48-2	F3C2248	36-4	F3C2436		
	1.64	5910	26.0	78-1	F3C2178						
	1.70	6130	27.0			54-2	F3C2254				
	1.77	6360	28.0	84-1	F3C2184			42-4	F3C2442		
	1.89	6810	30.0	90-1	F3C2190	60-2	F3C2260				
	2.02	7270	32.0	96-1	F3C2196			48-4	F3C2448		
	2.08	7490	33.0			66-2	F3C2266				
	2.15	7720	34.0	102-1	F3C21102						
	2.27	8180	36.0	108-1	F3C21108	72-2	F3C2272	54-4	F3C2454	36-8	F3C2836
	2.40	8630	38.0	114-1	F3C21114						
	2.46	8860	39.0			78-2	F3C2278				
	2.52	9080	40.0					60-4	F3C2460		
	2.65	9540	42.0			84-2	F3C2284			42-8	F3C2842
	2.78	9990	44.0					66-4	F3C2466		
	2.84	10200	45.0			90-2	F3C2290				
	3.03	10900	48.0			96-2	F3C2296	72-4	F3C2472	48-8	F3C2848
	3.22	11600	51.0			102-2	F3C22102				
	3.28	11800	52.0					78-4	F3C2478		
	3.41	12300	54.0			108-2	F3C22108			54-8	F3C2854
	3.53	12700	56.0					84-4	F3C2484		
3.60	12900	57.0			114-2	F3C22114					
3.79	13600	60.0					90-4	F3C2490	60-8	F3C2860	
4.04	14500	64.0					96-4	F3C2496			
4.16	15000	66.0							66-8	F3C2866	
4.29	15400	68.0					102-4	F3C24102			
4.54	16400	72.0					108-4	F3C24108	72-8	F3C2872	
4.79	17300	76.0					114-4	F3C24114			
4.92	17700	78.0							78-8	F3C2878	
5.30	19100	84.0							84-8	F3C2884	
5.68	20400	90.0							90-8	F3C2890	
6.06	21800	96.0							96-8	F3C2896	
6.44	23200	102							102-8	F3C28102	
6.81	24500	108							108-8	F3C28108	
7.19	25900	114							114-8	F3C28114	

Accuracy: ±5% of controlled flow rate.



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Stainless Steel Cartridges

80mm (3") Stainless Steel Cartridges for DN50-DN1000 Valves

80mm · 3" · stainless steel cartridge										
Pressure range, ΔP:			10-135 kPaD 1-20 psid		22-210 kPaD 2-32 psid		40-390 kPaD 4-57 psid		90-880 kPaD 8-128 psid	
l/sec	l/hr	GPM	Type 1		Type 2		Type 4		Type 8	
			Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	Marking	FlowCon
0.883	3180	14.0	35-1	F324135						
1.01	3630	16.0	40-1	F324140						
1.10	3970	17.5			35-2	F324235				
1.14	4090	18.0	45-1	F324145						
1.26	4540	20.0	50-1	F324150	40-2	F324240				
1.39	5000	22.0	55-1	F324155						
1.42	5110	22.5			45-2	F324245				
1.47	5300	23.3					35-4	F324435		
1.51	5450	24.0	60-1	F324160						
1.58	5680	25.0			50-2	F324250				
1.64	5910	26.0	65-1	F324165						
1.68	6060	26.7					40-4	F324440		
1.73	6250	27.5			55-2	F324255				
1.77	6360	28.0	70-1	F324170						
1.89	6810	30.0	75-1	F324175	60-2	F324260	45-4	F324445		
2.02	7270	32.0	80-1	F324180						
2.05	7380	32.5			65-2	F324265				
2.10	7570	33.3					50-4	F324450		
2.15	7720	34.0	85-1	F324185						
2.21	7950	35.0			70-2	F324270			35-8	F324835
2.27	8180	36.0	90-1	F324190						
2.31	8330	36.7					55-4	F324455		
2.37	8520	37.5			75-2	F324275				
2.40	8630	38.0	95-1	F324195						
2.52	9080	40.0	100-1	F3241100	80-2	F324280	60-4	F324460	40-8	F324840
2.65	9540	42.0	105-1	F3241105						
2.68	9650	42.5			85-2	F324285				
2.73	9840	43.3					65-4	F324465		
2.78	9990	44.0	110-1	F3241110						
2.84	10200	45.0			90-2	F324290			45-8	F324845
2.90	10400	46.0	115-1	F3241115						
2.94	10600	46.7					70-4	F324470		
3.00	10800	47.5			95-2	F324295				
3.03	10900	48.0	120-1	F3241120						
3.15	11400	50.0	125-1	F3241125	100-2	F3242100	75-4	F324475	50-8	F324850
3.28	11800	52.0	130-1	F3241130						
3.31	11900	52.5			105-2	F3242105				
3.36	12100	53.3					80-4	F324480		
3.41	12300	54.0	135-1	F3241135						
3.47	12500	55.0			110-2	F3242110			55-8	F324855
3.53	12700	56.0	140-1	F3241140						
3.58	12900	56.7					85-4	F324485		
3.63	13100	57.5			115-2	F3242115				
3.66	13200	58.0	145-1	F3241145						
3.79	13600	60.0	150-1	F3241150	120-2	F3242120	90-4	F324490	60-8	F324860
3.94	14200	62.5			125-2	F3242125				
4.00	14400	63.3					95-4	F324495		
4.10	14800	65.0			130-2	F3242130			65-8	F324865
4.21	15100	66.7					100-4	F3244100		
4.26	15300	67.5			135-2	F3242135				
4.42	15900	70.0			140-2	F3242140	105-4	F3244105	70-8	F324870
4.57	16500	72.5			145-2	F3242145				
4.63	16700	73.3					110-4	F3244110		
4.73	17000	75.0			150-2	F3242150			75-8	F324875
4.84	17400	76.7					115-4	F3244115		
5.05	18200	80.0					120-4	F3244120	80-8	F324880
5.26	18900	83.3					125-4	F3244125		
5.36	19300	85.0							85-8	F324885
5.47	19700	86.7					130-4	F3244130		
5.68	20400	90.0					135-4	F3244135	90-8	F324890
5.89	21200	93.3					140-4	F3244140		
5.99	21600	95.0							95-8	F324895
6.10	22000	96.7					145-4	F3244145		
6.31	22700	100					150-4	F3244150	100-8	F3248100
6.62	23800	105							105-8	F3248105
6.94	25000	110							110-8	F3248110
7.26	26100	115							115-8	F3248115
7.57	27300	120							120-8	F3248120
7.89	28400	125							125-8	F3248125
8.20	29500	130							130-8	F3248130
8.52	30700	135							135-8	F3248135
8.83	31800	140							140-8	F3248140
9.15	32900	145							145-8	F3248145
9.46	34100	150							150-8	F3248150

Accuracy: ±5% of controlled flow rate.



Stainless Steel Cartridges

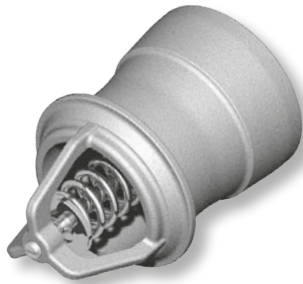
80mm (3") Hi-capacity Stainless Steel Cartridges for DN50-DN1000 Valves



80mm · 3" · hi-capacity stainless steel cartridge								
Nominal flow rate	Pressure range, ΔP:			28-135 kPaD 4-20 psid		55-210 kPaD 8-32 psid		
	l/sec	l/hr	GPM	Type 1		Type 2		
				Marking	FlowCon	Marking	FlowCon	
	5.68	20400	90.0	220-1	F3241220			
6.94	25000	110	270-1	F3241270	220-2		F3242220	
8.20	29500	130	320-1	F3241320				
8.52	30700	135			270-2		F3242270	
10.1	36300	160			320-2		F3242320	

Accuracy: ±5% of controlled flow rate.

80mm (3") Hi-flow Stainless Steel Cartridges for DN150-DN1000 Valves



80mm · 3" · hi-flow stainless steel cartridge										
Nominal flow rate	Pressure range, ΔP:			20-125 kPaD 3-18 psid		35-220 kPaD 5-32 psid		55-220 kPaD 8-32 psid		
	l/sec	l/hr	GPM	Type 3		Type 5		Type 6		
				Marking	FlowCon	Marking	FlowCon	Marking	FlowCon	
	6.31	22700	100	100-3	F117100					
8.52	30700	135			135-5	F118135				
10.1	36300	160			160-5	F118160				
12.6	45400	200			200-5	F118200				
18.9	68100	300					300-8	F119300		

Accuracy: ±5% of controlled flow rate.



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