FlowCon GreEQ.0 / GreEQ.1 / GreEQ.2

Pressure Independent Control Valves
Equal% Characteristics
DN15-40 / 1/2”-1 1/2”

SPECIFICATIONS

Insert:

Static pressure:	2500 kPa / 360 psi
Ambient temperature:	+1°C to +50°C / +34°F to +122°F
Media temperature[1]:	-20°C to +120°C / -4°F to +248°F
Material:	
- Insert:	Glass-reinforced PSU/POM/PPS
- Metal components (internal):	Stainless steel
- O-rings:	EPDM
- Cone:	PPS
- Diaphragm:	20 mm / 3/4” insert: EPDM
	40 mm / 1 1/2” insert: Hydrogenated acrylonitrile-butadiene-rubber
- Head nut:	Forged brass ASTMA CuZn40Pb2
Stroke:	20 mm / 3/4” insert: 3.4 mm / 0.13 in
	40 mm / 1 1/2” insert: 5.2 mm / 0.2 in
Maximum close off pressure:	800 kPa / 116 psi
Maximum operational ΔP:	800 kPaD / 116 psid
Control characteristic:	Equal% (on insert)
Control range:	1:1000 / IEC 60534
Rangeability:	100:1
Turn down ratio:	100:1
Shut-off leakage:	ANSI / FCI 70-2 2006 / IEC 60534-4 - Class IV
Flow Range:	20 mm / 3/4” insert: 0.00482-0.244 l/sec / 0.0763-3.54 GPM
	40 mm / 1 1/2” insert: 0.236-0.600 l/sec / 3.74-9.52 GPM

Note 1: Stated temperature rating is defined due to no external insert condensation.

SPECIFICATIONS (...continued)

Valve:

Material:

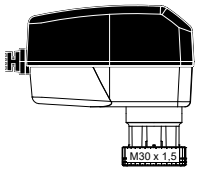
- Housing:	Forged brass ASTM CuZn40Pb2 or DZR CuZn36Pb2As	
- Ball valve:	ABV:	Chemically nickel-plated brass ball
End connections[2]:	A:	Fixed female ISO or NPT (only available for GreEQ insert 20 mm / 3/4")
	AB:	Fixed female ISO or NPT
	ABV:	Union end connection in brass alloy ISO or NPT.
Housing taps:	AB/ABV:	1/4" ISO

Note 2: NPT only available ex. US-factory.

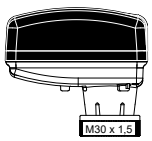
FlowCon Actuator:

FlowCon Actuator[3]	FNR.0.2	FNJ.1.2	FN.0.2-BUS
Supply voltage	24V AC/DC ±15%, 50/60 Hz	24V AC/DC ±15%, 50/60 Hz	24V AC/DC ±10%, 50/60 Hz
Type	Electrical, bi-directional step motor	Electrical, bi-directional synchronous motor	Electrical, bi-directional synchronous motor
Power consumption	24V AC: 1VA standby / 6VA operating / 6VA max. 24V DC: 0.5W standby / 4W operating / 4W max.	24V AC: 2.5VA standby/operating / 5VA max. 24V DC: 1.5W standby/operating / 3W max.	24V AC: 2.1VA standby / 3.6VA operating / 5.4VA max. 24V DC: 1.0W standby / 1.8W operating / 2.7W max.
Control signal	Analog 0-10V DC	Analog 0-10V DC, linear	0-100% (BACnet or Modbus)
Feedback	No	Yes, 0-10V DC	Yes, 0-100% (BACnet or Modbus)
Failsafe function	Fail in place	Close, optional open	Fail in place
Auto stroke	No	No	Yes
Operation time	5.5 sec/mm	8 sec/mm	22 sec/mm (alternatively 16 sec/mm or 28 sec/mm)
Ambient temperature	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F	0°C to +50°C / +32°F to +122°F
Media temperature	0°C to +120°C / +32°F to +248°F	0°C to +95°C / +32°F to +203°F	-10°C to +120°C / +14°F to +248°F
Humidity rating	0..80% rH, no condensation	10..90% rH, no condensation	0..85% rH, no condensation
Protection	IP54, class III incl. upside-down, indoor use only	IP54 no upside-down mounting, class III, indoor use only	IP54 including upside-down, class III, indoor use only
Cable	Fixed, 3 x 0.22 mm^2, 1.5 m / 3 x AWG24, 4.9 ft	Plug-in, 4 wires x 0.35 mm^2 halogen free, 1.5 m 4 wires x AWG22 halogen free, 4.9 ft	Group1: Fixed, 2 x 2 wires x 0.34 mm^2, 1.5 m / 2 x 2 wires x AWG22, 4.9 ft Fixed, 2 wires x 0.50 mm^2, 1.5 m / 2 wires x AWG20, 4.9 ft Group 2: Fixed, 4 wires x 0.50 mm^2, 1.5 m / 4 wires x AWG20, 4.9 ft
Closing point adjustment	During operation the actuator will self-adjust according to the closing point and stroke length of the valve	During operation the actuator will self-adjust according to the closing point of the valve	During operation the actuator will self-adjust according to the closing point and stroke length of the valve
Weight	0.23 kg / 0.50 lb	0.30 kg / 0.66 lb	0.35 kg / 0.77 lb

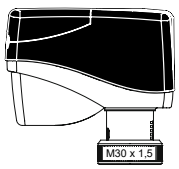
Note 3: FlowCon warranty is voided using other actuators than supplied by FlowCon International.



FlowCon FNR.0.2



FlowCon FNJ.1.2

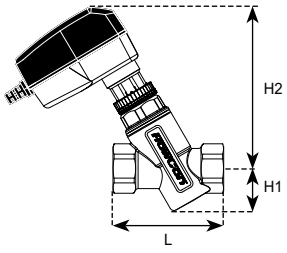


FlowCon FN.0.2-BUS

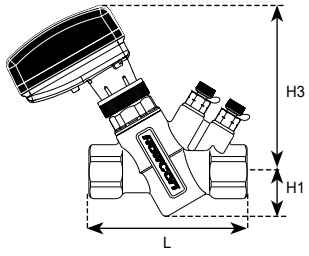
DIMENSIONS AND WEIGHTS (NOMINAL)

Model no.	Valve model	Valve size	Insert size	L	H1	H2	H3	H4	End connections C[4]			Weight[5]
						Actuator FNR.0.2	Actuator FNJ.1.2	Actuator FN.0.2-BUS	Female	Male	Sweat	
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	ISO (NPT)	ISO (NPT)	ISO	kg (lb)
GEQ.X.XX.04	A	15 (1/2)	20 (3/4)	80 (3.15)	31 (1.22)	130 (5.12)	112 (4.41)	124 (4.88)	-	-	-	0.50 (1.10)
GEQ.X.XX.05		20 (3/4)										0.44 (0.97)
GEQ.X.XX.06		25 (1)		91 (3.58)								0.60 (1.32)
GEQ.X.XX.01	AB	15 (1/2)	20 (3/4)	81 (3.19)	31 (1.22)	130 (5.12)	112 (4.41)	124 (4.88)	-	-	-	0.50 (1.10)
GEQ.X.XX.02		20 (3/4)		85 (3.35)								0.52 (1.14)
GEQ.X.XX.07		25 (1)		102 (4.02)								0.69 (1.52)
GEQ.2.XX.14		25 (1)	40 (1 1/2)	128 (5.04)	47 (1.85)	153 (6.02)	132 (5.20)	144 (5.67)	-	-	-	1.86 (4.10)
GEQ.2.XX.15		32 (1 1/4)										1.70 (3.75)
GEQ.X.XX.03	ABV	15 (1/2)	20 (3/4)	122 (4.80)	33 (1.30)	130 (5.12)	112 (4.41)	124 (4.88)	22 (0.87)	24 (0.95)	20	0.90 (1.98)
		20 (3/4)							22 (0.87)	25 (0.99)	20	
		25 (1)							-	39 (1.54)	22	
GEQ.2.XX.17		25 (1)	40 (1 1/2)	162 (6.38)	42 (1.65)	153 (6.02)	132 (5.20)	144 (5.67)	35 (1.38)	40 (1.57)	34	2.14 (4.72)
		32 (1 1/4)							33 (1.30)	40 (1.57)	34	
		40 (1 1/2)							33 (1.30)	42 (1.65)	-	

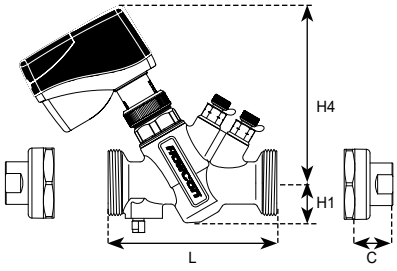
Note 4: Add end connection length to body length.
Note 5: Weight does not include end connections or actuator.



FlowCon GreEQ.0/1 in FlowCon A valve DN15/20/25 (1/2", 3/4", 1") with FlowCon FNR.0.2 actuator



FlowCon GreEQ.0/1 in FlowCon AB valve DN15/20/25 (1/2", 3/4", 1") w. FlowCon FNJ.1.2 actuator



FlowCon GreEQ.0/1 in FlowCon ABV1 valve DN15/20/25 (1/2", 3/4", 1") w. FlowCon FN.0.2-BUS actuator

MODEL NUMBER SELECTION

GEQ . . . . . .

Flow range:
0 = 20 mm / 3/4” insert (low flow)
1 = 20 mm / 3/4” insert (medium flow)
2 = 40 mm / 1 1/2” insert

Type of actuator:
36 = FNR.0.2
39 = FN.0.2-BUS
40 = FNJ.1.2

Type of housing:
20 mm / 3/4” insert:
01 = AB DN15, 1/2”
02 = AB DN20, 3/4”
03 = ABV.1 DN15-25, 1/2”-1”
04 = A DN15, 1/2”
05 = A DN20, 3/4”
06 = A DN25, 1”
07 = AB DN25, 1”
40 mm / 1 1/2 insert:
14 = AB DN25, 1”
15 = AB DN32, 1 1/4”
17 = ABV.2 DN25-40, 1”-1 1/2”

P/t plug requirements:
B = pressure/temperature plugs
P = taps plugged
- leave **blank** if A housing or no p/t plugs required

Union end connections (inlet x outlet):

Model and size	Female threaded	Male threaded	Sweat
ABV.1 with GreEQ insert, 20 mm	**E** = 15 mm / 1/2” **F** = 20 mm / 3/4”	**H** = 15 mm / 1/2” **I** = 20 mm / 3/4” **J** = 25 mm / 1”	**K** = 15 mm **L** = 18 mm **M** = 22 mm
ABV.2 with GreEQ insert, 40 mm	**G** = 25 mm / 1” **P** = 32 mm / 1 1/4” **Q** = 40 mm / 1 1/2”	**J** = 25 mm / 1” **S** = 32 mm / 1 1/4” **T** = 40 mm / 1 1/2”	**N** = 28 mm **W** = 35 mm

- leave **blank** if A- or AB housing or no end connections required

Connection standard:
I = ISO
N = NPT

Example:
GEQ.1.36.03.B.F.F.I = 20 mm (3/4”) FlowCon GreEQ, medium flow, with an ABV.1 housing with p/t plugs and a 24V modulating actuator and DN20 (3/4”) ISO female union end connections.

DESCRIPTION

The FlowCon GreEQ series is a range of pressure independent control valves with equal percentage characteristics that are two-way, modulating to accept analog input signal. The valves accept 0-10V input signal. Each valve has an adjustable maximum flow rate setting maintaining a full stroke to enable flow limitation and balancing to the coil or zone that the valve is controlling.

For use in fan-coil units, VAV applications and cooling ceilings for activation of the heating or cooling.
They are available in three different valve bodies, i.e. FlowCon A, AB or ABV.

MAXIMUM FLOW RATE LIMITATION SETTINGS

FlowCon GreEQ										
Insert size: 20 mm · 3/4"						Insert size: 40 mm · 1 1/2"			
Nominal flow rate	16-600 kPaD · 2.3-87 psid[6]			30-800 kPaD · 4.4-116 psid[6]			16-800 kPaD · 2.3-116 psid[7]			Setting
	GreEQ.0 (grey O-ring)			**GreEQ.1** (black O-ring)			**GreEQ.2** (black O-ring)			
	l/sec	l/hr	GPM	l/sec	l/hr	GPM	l/sec	l/hr	GPM	
	0.00482	17.3	0.0763	0.00764	27.5	0.121	0.236	850	3.74	1.0
	0.00548	19.7	0.0868	0.00880	31.7	0.139	0.252	908	4.00	1.1
	0.00629	22.6	0.0995	0.0102	36.7	0.162	0.256	923	4.07	1.2
	0.00724	26.1	0.115	0.0119	42.8	0.188	0.264	950	4.19	1.3
	0.00836	30.1	0.132	0.0139	49.9	0.219	0.281	1010	4.45	1.4
	0.00965	34.7	0.153	0.0161	58.0	0.255	0.300	1080	4.76	1.5
	0.0111	40.0	0.176	0.0187	67.3	0.296	0.303	1090	4.80	1.6
	0.0128	45.9	0.202	0.0216	77.6	0.342	0.353	1270	5.59	1.7
	0.0146	52.5	0.231	0.0248	89.1	0.392	0.375	1350	5.95	1.8
	0.0166	59.7	0.263	0.0283	102	0.448	0.400	1440	6.34	1.9
	0.0188	67.7	0.298	0.0322	116	0.509	0.422	1520	6.70	2.0
	0.0212	76.3	0.336	0.0364	131	0.576	0.444	1600	7.05	2.1
	0.0238	85.6	0.377	0.0409	147	0.647	0.464	1670	7.36	2.2
	0.0266	95.6	0.421	0.0457	164	0.723	0.481	1730	7.62	2.3
	0.0295	106	0.467	0.0508	183	0.805	0.497	1790	7.89	2.4
	0.0327	118	0.517	0.0563	202	0.891	0.511	1840	8.11	2.5
	0.0360	129	0.569	0.0620	223	0.982	0.522	1880	8.28	2.6
	0.0394	142	0.624	0.0680	245	1.08	0.533	1920	8.46	2.7
	0.0431	155	0.681	0.0743	267	1.18	0.542	1950	8.59	2.8
	0.0468	168	0.741	0.0809	291	1.28	0.550	1980	8.72	2.9
	0.0507	182	0.803	0.0876	315	1.39	0.556	2000	8.81	3.0
	0.0547	197	0.866	0.0946	340	1.50	0.561	2020	8.90	3.1
	0.0588	212	0.931	0.102	366	1.61	0.567	2040	8.99	3.2
	0.0630	227	0.998	0.109	392	1.73	0.572	2060	9.07	3.3
	0.0673	242	1.07	0.117	419	1.84	0.575	2070	9.12	3.4
	0.0716	258	1.13	0.124	446	1.96	0.578	2080	9.16	3.5
	0.0760	273	1.20	0.132	474	2.08	0.581	2090	9.21	3.6
	0.0804	289	1.27	0.139	501	2.21	0.581	2090	9.21	3.7
	0.0847	305	1.34	0.147	529	2.33	0.582	2100	9.25	3.8
	0.0890	320	1.41	0.155	557	2.45	0.584	2100	9.25	3.9
	0.0933	336	1.48	0.162	584	2.57	0.585	2110	9.27	4.0
	0.0975	351	1.54	0.170	611	2.69	0.586	2110	9.29	4.1
	0.102	365	1.61	0.177	637	2.80	0.588	2120	9.34	4.2
	0.105	379	1.67	0.184	662	2.91	0.589	2120	9.34	4.3
	0.109	393	1.73	0.191	687	3.02	0.590	2120	9.34	4.4
	0.113	406	1.78	0.198	711	3.13	0.592	2130	9.38	4.5
	0.116	417	1.84	0.204	733	3.22	0.593	2140	9.43	4.6
	0.119	428	1.88	0.209	754	3.32	0.595	2140	9.43	4.7
	0.122	438	1.93	0.215	773	3.40	0.596	2150	9.47	4.8
	0.124	447	1.97	0.220	790	3.48	0.598	2150	9.47	4.9
	0.126	454	2.00	0.224	805	3.54	0.600	2160	9.52	5.0

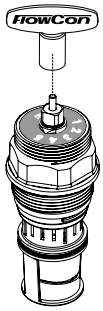
Note 6: Accuracy is ±10% of controlled flow and for flows below 0.06 l/sec (0.95 GPM) the standard deviation is less than 0.003 l/sec (0.048 GPM).
Note 7: Accuracy is greatest of either ±10% of controlled flow or ±5% of maximum flow rate.

A micrometer **setting of 3.4** as illustrated above corresponds to a maximum flow rate of

GreEQ.0: 0.0673 l/sec (1.07 GPM)

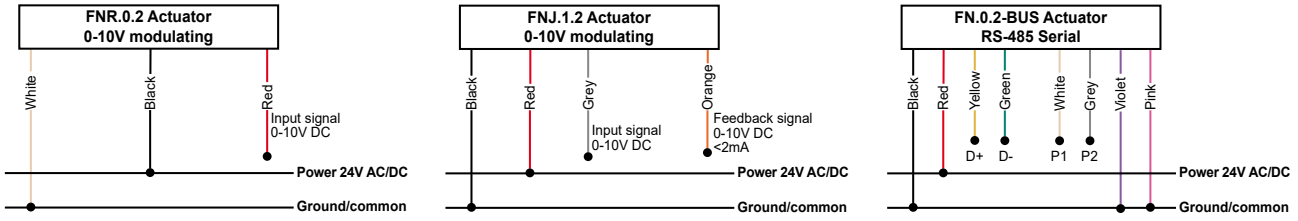
GreEQ.1: 0.117 l/sec (1.84 GPM)

GreEQ.2: 0.575 l/sec (9.12 GPM)



Use the special designed key (FlowCon part no. ACC0001) for micrometer setting.

WIRING INSTRUCTION



GENERAL SPECIFICATIONS

1. PRESSURE INDEPENDENT DYNAMIC CONTROL VALVE - FLOWCON GREEQ

1.1. Contractor shall install the pressure independent dynamic control valves where indicated in drawings.
1.2. Valve shall be an electronic, dynamic, modulating, 2-way, pressure independent control device with equal percentage characteristics.
1.3. Pressure independent dynamic control valve shall accurately control flow, independent of system pressure fluctuation.
1.4. Maximum flow setting shall be adjustable to 41 different settings within the range of the valve size.
1.5. Valve housing shall be permanently marked to show direction of flow.

2. VALVE ACTUATOR

2.a. **<u>FlowCon FNR Actuator</u>**
2.a.1. Actuator housing shall be rated to IP54. 360° mounting shall be acceptable.
2.a.2. Actuator shall be driven by 24V AC/DC, and shall accept 0-10V DC control signal.
2.a.3. Actuator shall use full stroke and provide full authority.
2.a.4. Actuator shall have visible indication of stroke position.
2.a.5. Manual override shall be possible.

OR....

2.b. **<u>FlowCon FNJ actuator</u>**
2.b.1. Actuator housing shall be rated to IP54. 180° mounting shall be acceptable.
2.b.2. Actuator shall be driven by 24V AC/DC, and shall accept 0-10V DC control signal.
2.b.3. Actuator shall use full stroke and provide full authority.
2.b.4. Actuator shall have visible indication of stroke position.
2.b.5. Feedback signal of 0-10V DC shall be standard.
2.b.6. Failsafe version shall be standard.

OR....

2.c. **<u>FlowCon FN-BUS Actuator</u>**
2.c.1. Actuator housing shall be rated to IP54. 360° mounting shall be acceptable.
2.c.2. Actuator shall be driven by 24V AC/DC and shall accept RS-485 serial communication.
2.b.3. Actuator shall use full stroke and provide full authority.
2.c.4. Actuator shall have visible indication of stroke position.
2.c.5. Feedback signal equal to control signal shall be standard.
2.c.6. Optional auto stroke function shall be available.
2.c.7. Override shall be possible.
2.c.8. Bus version, with choice of BACnet or Modbus, shall be available. Bus version shall provide remote setting and control of actuator.

GENERAL SPECIFICATIONS

3. VALVE HOUSING

3.a. **<u>FlowCon A</u>**

3.a.1. Valve housing shall consist of forged brass ASTM CuZn40Pb2 or DZR ASTM CuZn36Pb2As, rated at no less than 2500 kPa (360 psi) static pressure at +120°C (+248°F).

OR….

3.b. **<u>FlowCon AB</u>**

3.b.1. Valve housing shall consist of forged brass ASTM CuZn40Pb2 or DZR ASTM CuZn36Pb2As, rated at no less than 2500 kPa (360 psi) static pressure at +120°C (+248°F).

3.b.2. Pressure/temperature test plugs for verifying accuracy of flow performance shall be available for all valve sizes.

OR….

3.c. **<u>FlowCon ABV</u>**

3.c.1. Valve housing shall consist of forged brass ASTM CuZn40Pb2, rated at no less than 2500 kPa (360 psi) static pressure at +120°C (+248°F).

3.c.2. Valve ball shall consist of chemically nickel plated brass (ASTM CuZn40Pb2).

3.c.3. Pressure/temperature test plugs for verifying accuracy of flow performance shall be available for all valve sizes.

4. FLOW REGULATION UNIT

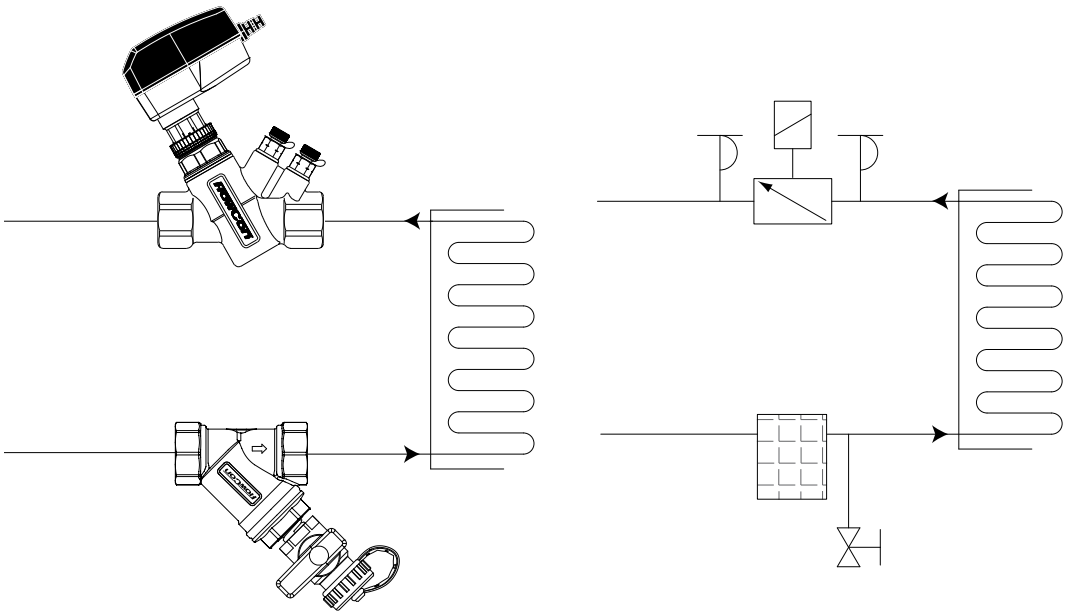
4.1. Flow regulation unit shall have equal percentage characteristics.

4.2. Flow regulation unit shall consist of glass-reinforced PSU/POM/PPS with an EPDM diaphragm (20 mm / 3/4” insert) or a hydrogenated acrylonitrile-butadiene-rubber diaphragm (40 mm / 1 1/2” insert).

4.3. Flow regulation unit shall be readily accessible, for change-out or maintenance. Flow regulation unit shall be adjustable with the valve in-line and the system in operation.

4.4. Flow regulation unit shall be externally adjustable to 1 of 41 different flow rates without limiting the stroke length; shall be available in 2 different operational pressure ranges for DN15/20/25 (1/2”, 3/4”, 1”) and 1 operational pressure range for DN25/32/40 (1”, 1 1/4”, 1 1/2”); minimum range shall be capable of being activated by 16 kPaD (2.3 psid). Further, the flow regulation unit shall be capable of controlling the flow within ±10% of controlled flow or ±5% of maximum flow, and for flows below 0.06 l/sec (0.95 GPM) standard deviation is less than 0.003 l/sec (0.048 GPM).

APPLICATION AND SCHEMATIC EXAMPLE



UPDATES

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