

Linear flow controls VFC

Linear flow controls with actuator IFC

TECHNICAL INFORMATION

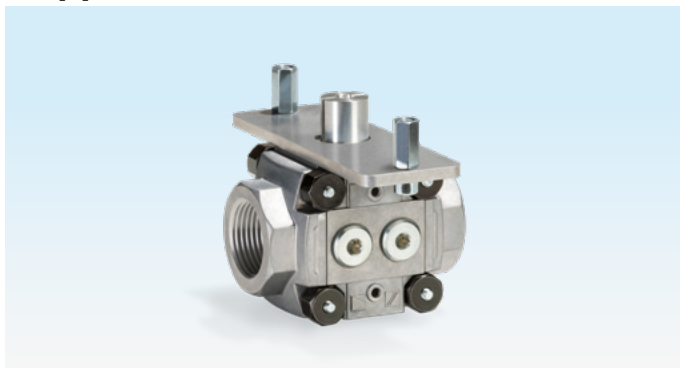
- Linear relationship between adjustment angle and flow rate
- Large control ratio of 25:1
- Actuators IC 20 or IC 40 mounted directly
- Actuator IC 30 (24 V DC) can be mounted
- For gas and air
- Low leakage rates
- High control accuracy
- EU certified



Contents

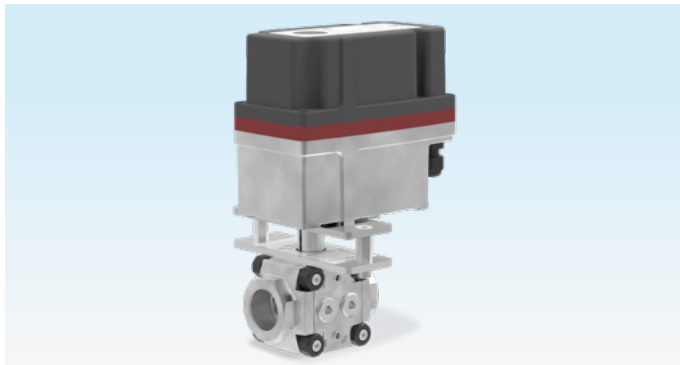
Contents	2	7 Accessories	17
1 Application	3	7.1 Pressure switch for gas DG..C	17
1.1 Application examples	5	7.2 Pressure test nipples	18
1.1.1 Lambda control	5	7.3 Fastening set IC 20, IC 40	18
1.1.2 Adjusting the burner capacity	5	7.4 Adapter set IC 30	18
1.1.3 Zone control	6	7.5 Seal set for sizes 1 and 3	18
1.1.4 Excess air burner	6	8 Technical data	19
2 Certification	7	8.1 Ambient conditions	19
2.1 Certificate download	7	8.2 Mechanical data	19
2.2 EU certified	7	8.3 IC 20	20
2.3 UKCA certified	7	8.4 IC 30	21
2.4 Eurasian Customs Union	7	8.5 IC 40	21
3 Function	8	8.6 Dimensions of IFC [mm]	23
4 Flow rate	9	8.7 Dimensions of VFC with IC 30 [mm]	24
4.1 Calculating the nominal size	9	8.8 Dimensions of IFC [inch]	25
4.2 k_v value	10	8.9 Dimensions of VFC with IC 30 [inch]	26
5 Selection	11	9 Maintenance cycles	27
5.1 ProFi	11	For more information	28
5.2 Linear flow controls with actuator IFC	11		
5.2.1 Selection table	11		
5.2.2 Type code IFC	12		
5.3 Linear flow controls VFC	13		
5.3.1 Selection table	13		
5.3.2 Type code VFC	14		
5.4 Control characteristic	15		
6 Project planning information	16		
6.1 Installation	16		
6.1.1 Installation position	16		

1 Application



VFC

The linear flow control is designed to adjust volumes of gas and cold air on various appliances.



VFC with IC 30

Actuator IC 30 (24 V DC) can also be combined with a VFC.

Linear flow control VFC and actuator IC 30 are supplied separately.



IFC

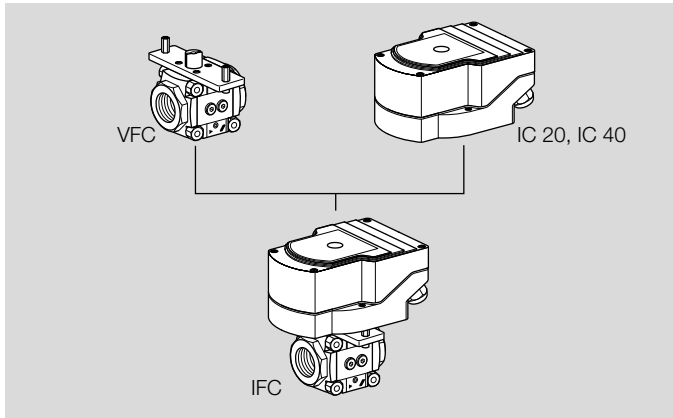
The IFC is composed of linear flow control VFC and actuator IC 20 or IC 40.

The IFC is designed for control ratios up to 25:1 and is suitable for regulating flow rates for modulating-controlled or stage-controlled combustion processes.

Actuator IC 20 is controlled by a modulating signal or three-point step signal. Actuator IC 40 offers additional functions. It can be adjusted using the BCSoft programming software via an optical interface. The control type (two-point signal, three-point step signal or continuous control), running times, angles of rotation and intermediate positions can thus be programmed.

Linear flow control VFC and actuator IC 20 or IC 40 can be supplied separately or assembled.

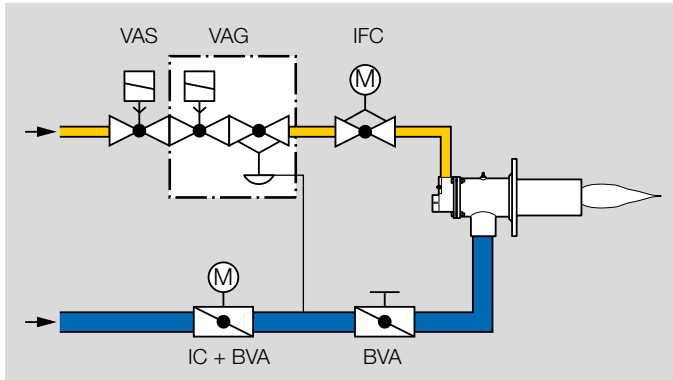
1 Application



Subsequent assembly with the actuator using 2 screws can be carried out either before or after installation of the linear flow control in the pipework.

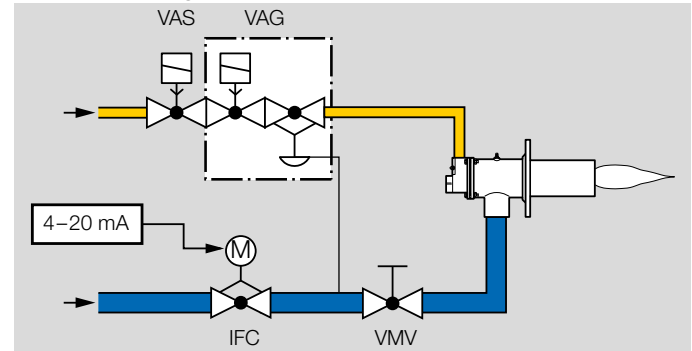
1.1 Application examples

1.1.1 Lambda control



If the burner is to be operated with different lambda values for process reasons, the IFC can be used to correct the lambda value.

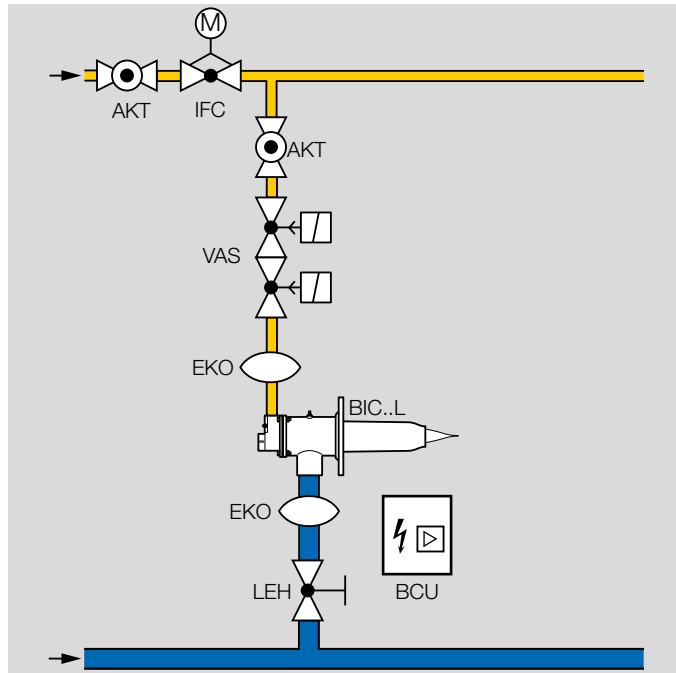
1.1.2 Adjusting the burner capacity



In pneumatic ratio control systems, the IFC with actuator IC 20..E determines the air volume for the required burner capacity.

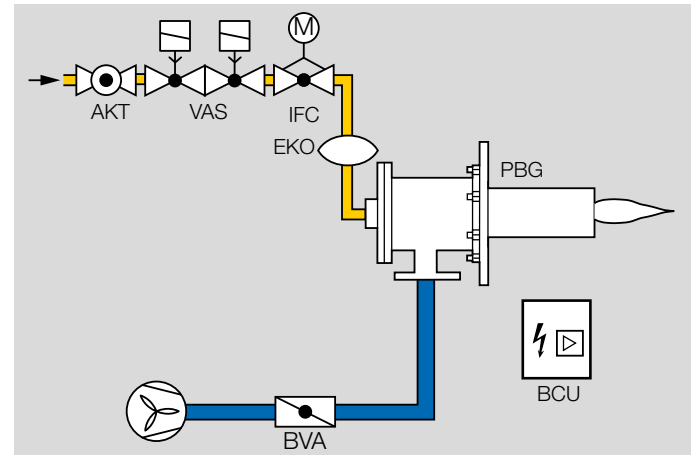
The fine-adjusting valve VMV is used to adjust the high-fire rate.

1.1.3 Zone control



After being released by the burner control unit, the gas solenoid valves open and the IFC is set to ignition position. The burner is ignited by the burner control unit BCU. The gas flow rate can be adjusted continuously using the IFC. The air flow rate remains constant.

1.1.4 Excess air burner



After initiating the burner control unit, the IFC moves to ignition position. The burner is ignited by the burner control unit BCU. The gas flow rate can be adjusted continuously using the IFC. The air flow rate remains constant.

2 Certification

2.1 Certificate download

Certificates for VFC – see www.docuthek.com

Certificates for IC – see www.docuthek.com

2.2 EU certified



VFC

- (EU) 2016/426 (GAR), Gas Appliances Regulation

IC 20, IC 40

- 2014/35/EU (LVD), Low Voltage Directive
- 2014/30/EU (EMC), Electromagnetic Compatibility Directive

2.3 UKCA certified



Gas Appliances (Product Safety and Metrology etc.
(Amendment etc.) (EU Exit) Regulations 2019)

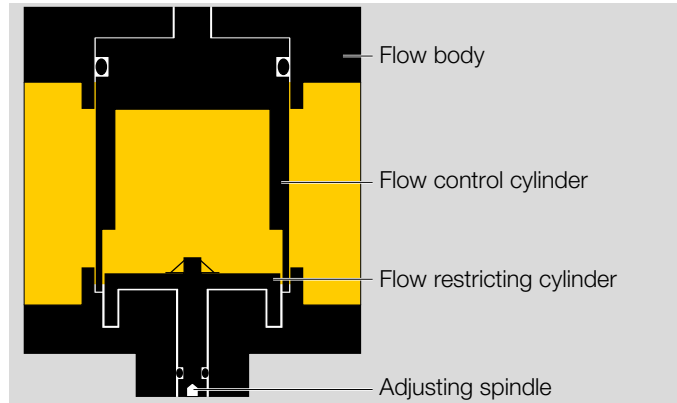
BS EN 13611:2015

2.4 Eurasian Customs Union

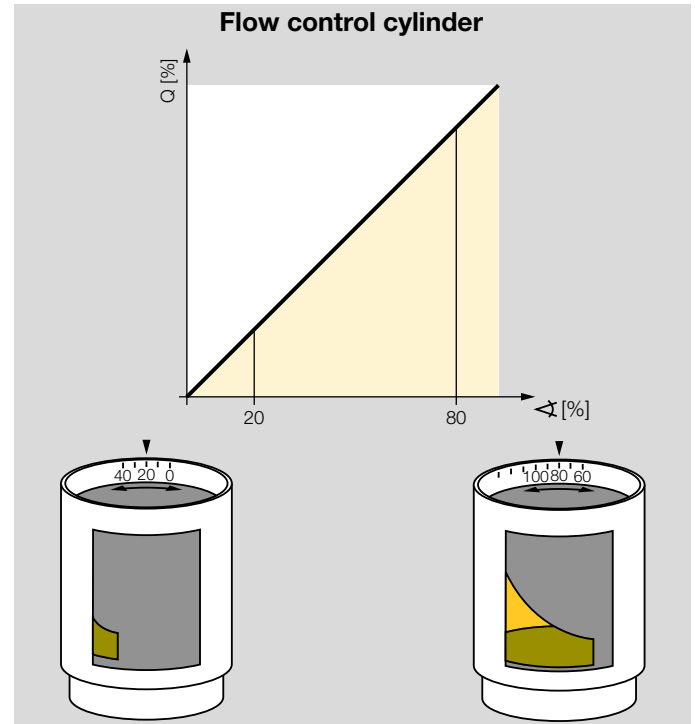


The products VFC, IFC meet the technical specifications of the Eurasian Customs Union.

3 Function

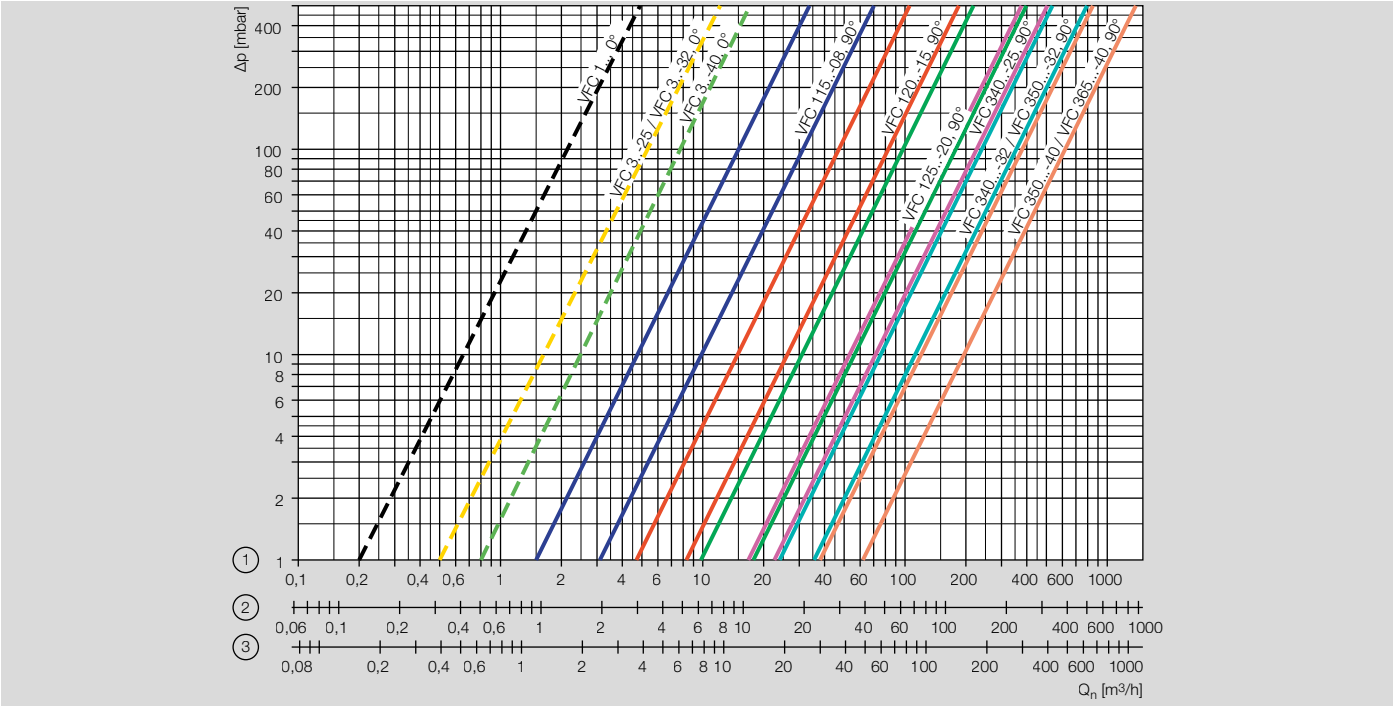


Linear flow control VFC



The linear flow control VFC uses the rotary valve principle. A flow control cylinder with an opening specially designed for linear flow is installed in the flow body. This flow control cylinder sets the desired flow rate, page 9 (4 Flow rate), by being turned. The maximum flow can be limited in broad ranges by means of a flow restricting cylinder. This allows optimum adaptation to the capacity required, without limiting control quality. Adjustment is carried out using an adjusting spindle.

4 Flow rate



- 1 = natural gas ($\rho = 0.80 \text{ kg/m}^3$)
2 = propane ($\rho = 2.01 \text{ kg/m}^3$)
3 = air ($\rho = 1.29 \text{ kg/m}^3$)

The characteristic curves are measured at 15°C (59°F) with a measurement set-up in accordance with the standards EN 13611/EN 161. This involves measuring the pressure 5 × DN upstream and downstream of the unit under test. The pressure drop of the pipe is also measured but is not compensated for.

Dotted line: max. flow rate with flow restricting cylinder closed.
Left curve: max. flow rate limited by flow restricting cylinder.
Right curve: max. flow rate with no limitation.

4.1 Calculating the nominal size

A web app for calculating the nominal size is available at www.adlatus.org.

4.2 k_v value

The size of the flow control cylinder is determined using the flow rate diagram or by calculation using the k_v value.

Q_(n) = flow rate (standard state) [m³/h]

kv_v = valve coefficient

Δp = pressure loss [bar]

p_d = outlet pressure (absolute) [bar]

ρ_n = density [kg/m³] (air 1.29/natural gas 0.83/propane 2.01/butane 2.71)

T = medium temperature (absolute) [K]

$$k_v = \frac{Q_{(n)}}{514} \cdot \sqrt{\frac{\rho_n \cdot T}{\Delta p \cdot p_d}} \qquad Q_{(n)} = 514 \cdot k_v \cdot \sqrt{\frac{\Delta p \cdot p_d}{\rho_n \cdot T}}$$
$$\Delta p = \left(\frac{Q_{(n)}}{514 \cdot k_v} \right)^2 \cdot \frac{\rho_n \cdot T}{p_d}$$

Type	k _v value		
	Closed	Open, restrict- ed	Open, not re- stricted
VFC 115/15-08	0.2	1.38	2.87
VFC 120/20-15	0.2	4.31	7.55
VFC 125/25-20	0.2	8.92	16.3
VFC 340/40-25	0.5	15.41	20.68
VFC 340/40-32	0.5	21.80	32.38
VFC 350/50-32	0.5	21.92	32.46
VFC 350/50-40	0.7	34.75	56.63
VFC 365/65-40	0.7	33.89	58.05

The flow rate can be set using the integrated flow restricting cylinder.

5 Selection

5.1 ProFi

A web app selecting the correct product is available at www.adlatus.org.

5.2 Linear flow controls with actuator IFC

5.2.1 Selection table

Option	IFC 1	IFC 1T	IFC 3	IFC 3T
DN – inlet	–, 10, 15, 20, 25	–, 10, 15, 20, 25	–, 40, 50, 65	–, 40, 50, 65
DN – outlet	/–, /10, /15, /20, /25	/–, /10, /15, /20, /25	/–, /40, /50, /65	/–, /40, /50, /65
Pipe connection	R	N	R, F*	N
Inlet pressure	05	05	05	05
Cylinder	-08, -15, -20	-08, -15, -20	-25, -32, -40	-25, -32, -40
Accessories, right, inlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Accessories, right, outlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Accessories, left, inlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Accessories, left, outlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Actuator IC	/20, /40	/20, /40	/20, /40	/20, /40
Running time in s/90°	-07, -15, -30, -60	-07, -15, -30, -60	-07, -15, -30, -60	-07, -15, -30, -60
Mains voltage	W, Q, A	W, Q, A	W, Q, A	W, Q, A
Torque	2, 3	2, 3	2, 3	2, 3
Control	T, E, D, A	T, E, D, A	T, E, D, A	T, E, D, A
Feedback potentiometer	R10	R10	R10	R10

* Only available for IFC 350

Order example

IFC 115/15R05-15PPMM/20-60W3T

5.2.2 Type code IFC

IFC	Linear flow control with actuator
1, 3	Sizes
T	T-product
10–50	Inlet flange nominal size
/10–/50	Outlet flange nominal size
R	Rp internal thread
F	Flange to ISO 7005
N	NPT internal thread
05	p _u max. 500 mbar
-08, -15, -20, -25, -32, -40	Cylinder
P	Accessory, right, inlet: screw plug
M	Accessory, right, inlet: pressure test point
1	Accessory, right, inlet: pressure switch DG 17/VC
2	Accessory, right, inlet: pressure switch DG 40/VC
3	Accessory, right, inlet: pressure switch DG 110/VC
4	Accessory, right, inlet: pressure switch DG 300/VC
P	Accessory, right, outlet: screw plug
M	Accessory, right, outlet: pressure test point
1	Accessory, right, outlet: pressure switch DG 17/VC
2	Accessory, right, outlet: pressure switch DG 40/VC
3	Accessory, right, outlet: pressure switch DG 110/VC
4	Accessory, right, outlet: pressure switch DG 300/VC
P, M, 1, 2, 3, 4	The same accessories can be selected for the left- or right-hand side.
/20	Actuator IC 20
/40	Actuator IC 40
07-60	Running time in s/90°

W	Mains voltage 230 V AC, 50/60 Hz
Q	Mains voltage 120 V AC, 50/60 Hz
A	Mains voltage 100–230 V AC, 50/60 Hz
2	Torque 2.5 Nm
3	Torque 3 Nm
T	Three-point step control
E	Controlled by continuous signal
D	Digital input
A	4–20 mA analogue input
R10	With 1000 Ω feedback potentiometer
P	Parameter set No.
-I	Cable glands on the inlet side (no specification: on the outlet side)

5.3 Linear flow controls VFC

5.3.1 Selection table

Option	VFC 1	VFC 1T	VFC 3	VFC 3T
DN – inlet	–, 10, 15, 20, 25	–, 10, 15, 20, 25	–, 40, 50, 65	–, 40, 50, 65
DN – outlet	/–, /10, /15, /20, /25	/–, /10, /15, /20, /25	/–, /40, /50, /65	/–, /40, /50, /65
Pipe connection	R	N	R, F*	N
Inlet pressure	05	05	05	05
Cylinder	-08, -15, -20	-08, -15, -20	-25, -32, -40	-25, -32, -40
Accessories, right, inlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Accessories, right, outlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Accessories, left, inlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4
Accessories, left, outlet	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4	P, M, 1, 2, 3, 4

* Only available for VFC 350

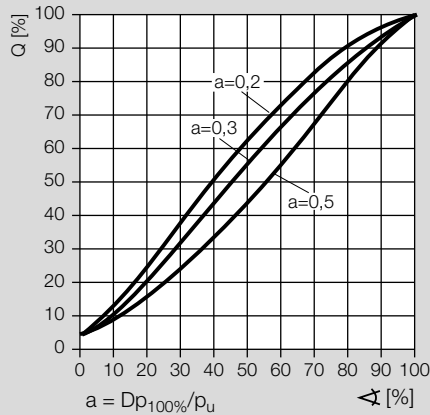
Order example

VFC 115/15R05-15PPMM

5.3.2 Type code VFC

VFC	Linear flow control
1, 3	Sizes
T	T-product
10–65	Inlet flange nominal size
/10–/65	Outlet flange nominal size
R	Rp internal thread
F	Flange to ISO 7005
N	NPT internal thread
05–	p_u max. 500 mbar
08–40	Cylinder
P	Accessory, right, inlet: screw plug
M	Accessory, right, inlet: pressure test point
1	Accessory, right, inlet: pressure switch DG 17/VC
2	Accessory, right, inlet: pressure switch DG 40/VC
3	Accessory, right, inlet: pressure switch DG 110/VC
4	Accessory, right, inlet: pressure switch DG 300/VC
P	Accessory, right, outlet: screw plug
M	Accessory, right, outlet: pressure test point
1	Accessory, right, outlet: pressure switch DG 17/VC
2	Accessory, right, outlet: pressure switch DG 40/VC
3	Accessory, right, outlet: pressure switch DG 110/VC
4	Accessory, right, outlet: pressure switch DG 300/VC
P, M, 1, 2, 3, 4	The same accessories can be selected for the left- or right-hand side.

5.4 Control characteristic



In order for the IFC to be able to influence the flow rate, a proportion of the pressure loss Δp of the entire system has to be caused by the linear flow control. Taking into consideration the fact that the overall pressure loss Δp should be kept to a minimum, a control characteristic/valve authority $a = 0.3$ is recommended for the IFC. This means that of the overall inlet pressure, there is a 30% drop on the fully opened IFC.

Example

We want to find the IFC for gas to be used for modulating control of a gas burner:

Δp on the IFC is determined using the control characteristic a and the outlet pressure p_d .

Recommended control characteristic $a = 0.3$.

$$\Delta p = \frac{a \times p_d}{1 - a}$$

Outlet pressure: $p_d = 30$ mbar

Gas flow rate: $Q_{(n)} = 20$ m³/h

Control characteristic: $a = 0.3$.

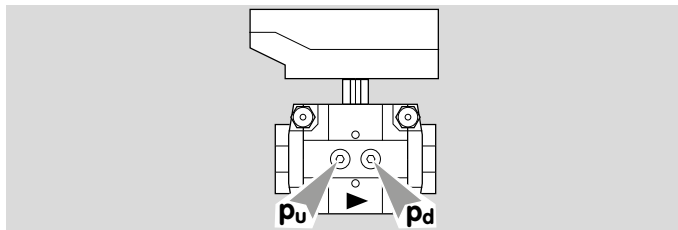
$$\Delta p = \frac{0.3 \times 30 \text{ mbar}}{1 - 0.3} = 12.9 \approx 13 \text{ mbar}$$

Select the appropriate IFC for the required flow rate $Q_{(n)} = 20$ m³/h and the calculated $\Delta p = 13$ mbar:

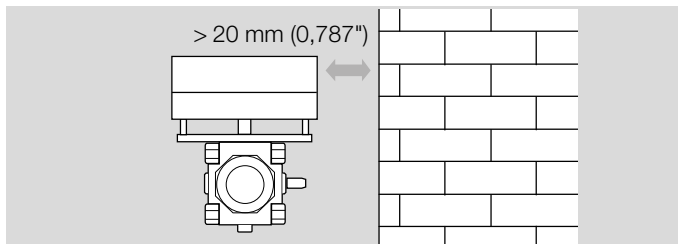
IFC 1..-15, page 9 (4 Flow rate).

6 Project planning information

6.1 Installation

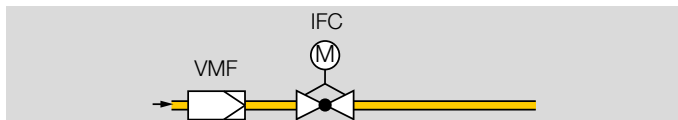


The inlet pressure p_u and the outlet pressure p_d can be measured at the pressure test points.



Actuators IC 20, IC 30, IC 40 and the linear flow control VFC must not be in contact with masonry. Minimum clearance 20 mm (0.787").

Do not store or install the unit in the open air.



Sealing material and thread cuttings must not be allowed to get into the flow body. A filter or dirt trap must be installed upstream of every system.

IC 20, IC 40 with VFC

Linear flow control VFC and actuators IC 20 and IC 40 can be supplied separately or assembled. Easy assembly with the actuator using 2 screws can be carried out either before or after installation of the linear flow control in the pipework.

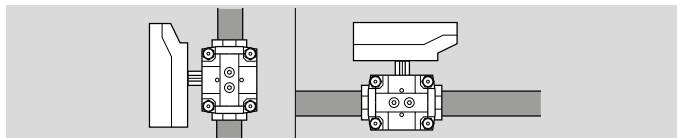
IC 30 with VFC

Linear flow control VFC and actuator IC 30 are supplied separately.

6.1.1 Installation position

VFC with IC 30: as required.

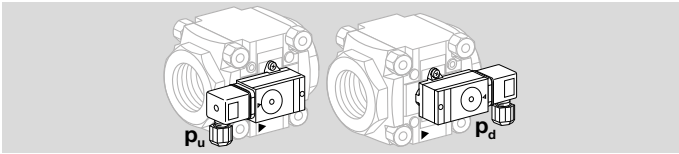
VFC with IC 20 (IFC../20) or VFC with IC 40 (IFC../40): vertical or horizontal, never upside down.



7 Accessories

7.1 Pressure switch for gas DG..C

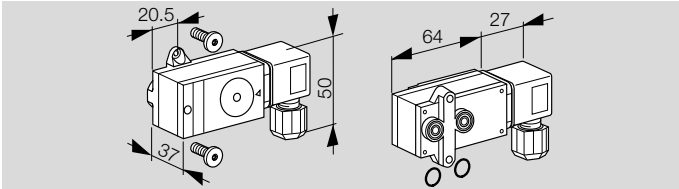
Monitoring the inlet pressure p_u : the electrical plug of the pressure switch for gas points towards the inlet flange.
Monitoring the outlet pressure p_d : the electrical plug of the pressure switch for gas points towards the outlet flange.



Scope of delivery:
1 x pressure switch for gas,
2 x retaining screws,
2 x sealing rings.

Also available with gold-plated contacts for voltages of 5 to 250 V.

DG..VC

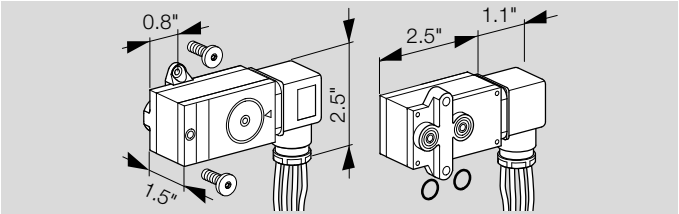


Type	Adjusting range [mbar]	Order No.
DG 17VC	2 to 17	75455241
DG 40VC	5 to 40	75455243
DG 45VC	10 to 45	75455244
DG 110VC	30 to 110	75455245
DG 300VC	100 to 300	75455246

Type	Adjusting range [mbar]	Order No.
With gold-plated contacts for voltages of 5 to 250 V		
DG 17VC..G	2 to 17	75455247
DG 40VC..G	5 to 40	75455249
DG 45VC..G	10 to 45	75455250
DG 110VC..G	30 to 110	75455251
DG 300VC..G	100 to 300	75455252

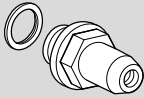
DG..VCT

With AWG 18 connection conductors



Type	Adjusting range [°WC]	Order No.
DG 17VCT	0,8 to 6,8	75454583
DG 40VCT	2 to 16	74214174
DG 110VCT	12 to 44	75454585
DG 300VCT	40 to 120	75454586
With gold-plated contacts for voltages of 5 to 250 V		
DG 17VCT..G	0,8 to 6,8	75454587
DG 40VCT..G	2 to 16	75454588
DG 110VCT..G	12 to 44	75454589
DG 300VCT..G	40 to 120	75454590

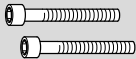
7.2 Pressure test nipples



Test nipples to check the inlet pressure p_u and outlet pressure p_d .

Scope of delivery: 1 x test nipple with 1 x profiled sealing ring,
Order No. 74923390

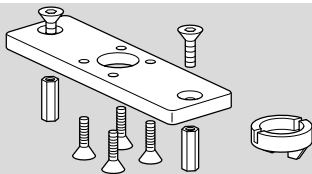
7.3 Fastening set IC 20, IC 40



To attach an IC 20 or IC 40 to a butterfly valve BV or a linear flow control VFC. The fastening set is delivered enclosed as an additional item.

IC-BVG/BVA/BVH/VFC /B, Order No. 74921082

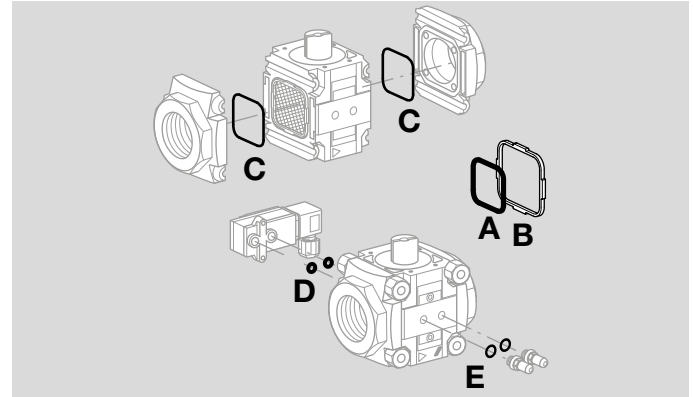
7.4 Adapter set IC 30



To attach the IC 30 to the linear flow control VFC.
The adapter set is delivered enclosed as an additional item.
IC 30/VFC /B, Order No. 74340194

7.5 Seal set for sizes 1 and 3

When retrofitting accessories or a second valVario control or when servicing, we recommend replacing the seals.



Size 1, Order No. 74921988.

Size 3, Order No. 74921990.

Scope of delivery:

- A** 1 x double block seal,
 - B** 1 x retaining frame,
 - C** 2 x O-rings (flange),
 - D** 2 x O-rings (pressure switch),
- for test nipple/screw plug:
- E** 2 x sealing rings (flat sealing),
 - 2 x profiled sealing rings.

» The double block seal and retaining frame are not required for the VFC.

8 Technical data

8.1 Ambient conditions

Icing, condensation and dew in and on the unit are not permitted.

Avoid direct sunlight or radiation from red-hot surfaces on the unit. Note the maximum medium and ambient temperatures!

Avoid corrosive influences, e.g. salty ambient air or SO_2 .

The unit may only be stored/installed in enclosed rooms/buildings.

The unit is suitable for a maximum installation height of 2000 m AMSL.

Ambient temperature: -20 to $+60^\circ\text{C}$ (-4 to $+140^\circ\text{F}$), no condensation permitted.

Long-term use in the upper ambient temperature range accelerates the ageing of the elastomer materials and reduces the service life (please contact manufacturer).

Storage temperature = transport temperature: -20 to $+40^\circ\text{C}$ (-4 to $+104^\circ\text{F}$).

This unit is not suitable for cleaning with a high-pressure cleaner and/or cleaning products.

8.2 Mechanical data

Gas type: natural gas, LPG (gaseous), biogas (max. 0.1 %-by-vol. H_2S) or clean air; other types of gas on request.
The gas must be dry in all temperature conditions and must not contain condensate.

Medium temperature = ambient temperature.

Max. inlet pressure $p_{u \text{ max.}}$: 500 mbar (7.25 psi).

Control ratio: 25:1.

Leakage rate: $< 2\%$ of k_{VS} value

Running times:

IC 20: 7.5 s, 15 s, 30 s, 60 s

IC 30: 30 s, 60 s

IC 40: 4.5 s–76.5 s

Connection flanges: Rp internal thread pursuant to ISO 7-1.

Housing material: aluminium,
control cylinder: aluminium,
flow restricting cylinder: POM/aluminium,
seal: HNBR/NBR.

8.3 IC 20

Angle of rotation: 0–90°, adjustable.
Holding torque = torque.
Duty cycle: 100%.
Contact rating of the cam switches:

Voltage	Min. current (resistive load)	Max. current (resistive load)
24–230 V, 50/60 Hz	1 mA	2 A
24 V DC	1 mA	100 mA

Line entrance for electrical connection:
3 × M20 plastic cable glands.
Screw terminals using the elevator principles for cables up to 4 mm² (single core cables) and for cables up to 2.5 mm² with wire end ferrules.
Typical designed lifetime:

Switching current	Switching cycles	
	cos φ = 1	cos φ = 0.3
1 mA	1,000,000	–
22 mA	–	1,000,000
100 mA	1,000,000	–
2 A	100,000	–

1) Typical contactor application (230 V, 50/60 Hz, 22 mA, cos φ = 0.3)
Three-point step signal to terminals 1 and 2: minimum pulse duration: 100 ms,
minimum pause between 2 pulses: 100 ms.
Enclosure:
IP 54, in conjunction with BVH: IP 65,
Nema 2, in conjunction with BVG, BVA or BVH: Nema 3.
Safety class: I.

Ambient temperature: -20 to +60°C, no condensation permitted.
Storage temperature: -20 to +40°C.
Mains voltage:
120 V AC, -15/+10%, 50/60 Hz,
230 V AC, -15/+10%, 50/60 Hz.

Type	Running time [s/90°]		Torque [Nm]	
	50 Hz	60 Hz	50 Hz	60 Hz
IC 20-07	7.5	6.25	2.5	2
IC 20-15	15	12.5	3	3
IC 20-30	30	25	3	3
IC 20-60	60	50	3	3

Power consumption: 4.9 VA at 50 Hz, 5.8 VA at 60 Hz.
Resistance of the feedback potentiometer: 1 kΩ,
max. 0,5 W.

IC 20..E

Power consumption:
terminals 1, 2 and 5:
4.9 VA at 50 Hz, 5.8 VA at 60 Hz,
terminal 3:
8.4 VA at 50 Hz, 9.5 VA at 60 Hz,
in total not exceeding:
8.4 VA at 50 Hz, 9.5 VA at 60 Hz.
Position feedback output:
4–20 mA, electrically isolated, max. 500 Ω load impedance.
The output is always active when supply voltage is applied to terminals 3 and 4.
Input: electrically isolated,
0 (4)–20 mA: load impedance switchable between 50 Ω and 250 Ω,
0–10 V: 100 kΩ input resistance.

8.4 IC 30

Angle of rotation: 0–90°, adjustable.
Holding torque = torque.
Mains voltage: 24 V DC, ±20%.
Line entrance for electrical connection:
3 x M16 plastic cable glands (enclosed).
Screw terminals using the elevator principles for cables up to 2.5 mm² with wire end ferrules.
The running time changes depending on the load. It refers to the torque, see type label.
Contact rating of the cam switches:

Voltage	Min. current (resistive load)	Max. current (resistive load)
24–230 V, 50/60 Hz	1 mA	2 A
24 V DC	1 mA	100 mA

Minimum pulse duration: 100 ms.
Minimum pause between 2 pulses: 100 ms.
Enclosure: IP 65.
Duty cycle: 100%.
Power consumption: 4 W,
when switching on: briefly 8 W.
Ambient temperature:
-15 to +60°C, no condensation permitted.
Storage temperature: -15 to +40°C.
Resistance of the feedback potentiometer:
1 kΩ, < 50 V,
recommended wiper current: 0.2 μA.

8.5 IC 40

Purpose of control: operating control, electric actuator.
Mains voltage:
100–230 V AC, ±10%, 50/60 Hz; the actuator automatically adjusts to the respective mains voltage.
Power consumption: 10.5 W/21 VA at 230 V AC,
9 W/16.5 VA at 120 V AC.
Switch-on peak current: max. 10 A for max. 5 ms.
Screw terminals using the elevator principles for cables up to 4 mm² (single core cables) and for cables up to 2.5 mm² with wire end ferrules.
Angle of rotation: 0–90°, setting accuracy < 0.05°.
Holding torque = torque as long as mains voltage is applied.
Independently mounted control.
Pollution degree: 3 (outside of enclosure)/
2 (within enclosure).
Rated impulse voltage: 4000 V.
Impedance protected motor.
2 digital inputs:
24 V DC or 100–230 V AC each.
Current requirement of digital inputs:
24 V DC: approx. 5 mA eff,
230 V AC: approx. 3 mA eff.
1 analogue input (optional):
4–20 mA (load impedance switchable from 50 Ω to 250 Ω).
Potentiometer (optional): 1 kΩ ± 20%.
Linearity tolerance: ± 2%, max. capacity: 0.25 W, conductive plastic element.
Tap wiper at high resistance.

8 Technical data

2 digital outputs:
Signalling contacts designed as relay change-over contacts.
Contact current of digital outputs: min. 5 mA (resistive) and max. 2 A (resistive).
Enclosure:
IP 64, in conjunction with BVH: IP 65,
Nema 2, in conjunction with BVG, BVA or BVH: Nema 3.
Safety class: I.
Duty cycle: 100%.
Type of action to EN 60730: type 1C.
Software class A.
Overvoltage category III.
Electrical connection: line entrance: 3 x M20 plastic cable glands.
Ambient temperature:
-20 to +60°C, no condensation permitted.
Storage temperature: -20 to +40°C.
Max. installation altitude: 2000 m AMSL.

Running times and torques

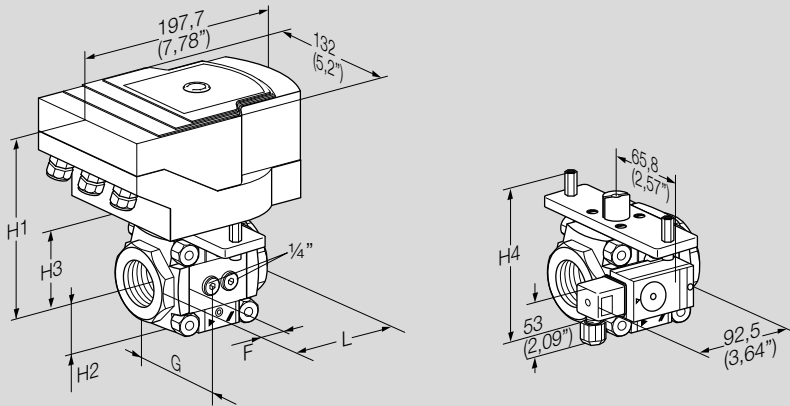
Type	Running time [s/90°]		Torque [Nm]	
	50 Hz	60 Hz	50 Hz	60 Hz
IC 40	4.5–76.5	4.5–76.5	2.5	2.5
IC 40S	4.5–76.5	4.5–76.5	3	3

On the IC 40, the running time and torque are independent of the mains frequency. The running time can be freely programmed between the limits of 4.5 and 76.5 s.
The following specifications on the designed lifetime of the actuator relate to typical applications with BVA, BVAF, BVG, BVGF, BVH, BVHS and VFC.

Mechanical switching cycles
(0°–90°–0°/0%–100%–0%):
IC 40 with VFC: 5 million cycles
IC 40 with BVA/BVG: 5 million cycles
IC 40 with BVAF/BVGF: 5 million cycles
IC 40 with BVH/BVHx: 3 million cycles
Typical number of operating cycles of the digital outputs
RO 1 and RO 2:

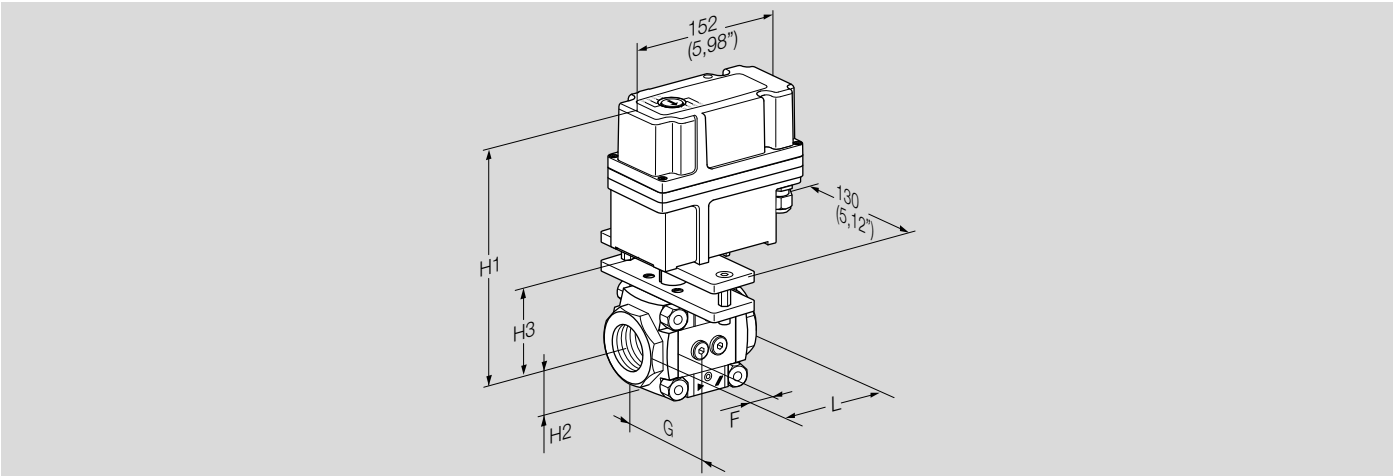
Switching current	Switching cycles
5 mA	4,000,000
2 A	250,000

8.6 Dimensions of IFC [mm]



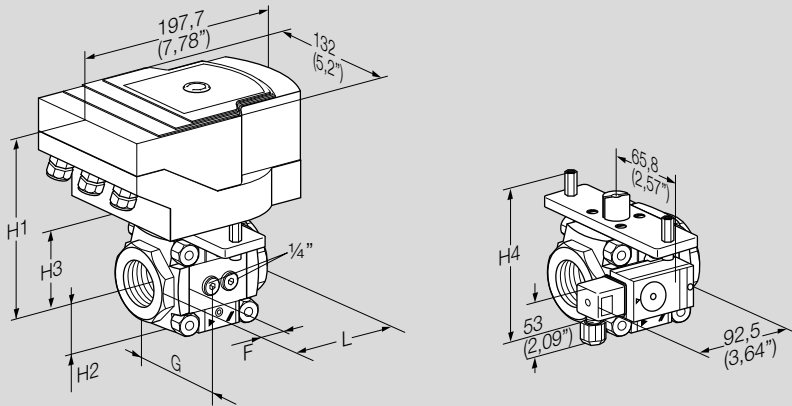
Type	Connection		L	F	G	H1	H2	H3	H4	Weight
	Rp	DN	mm	mm	mm	mm	mm	mm	mm	kg
IFC 110	3/8	10	75	15	67.3	155	37.5	58	95.5	2.65
IFC 115	1/2	15	75	15	67.3	155	37.5	58	95.5	2.60
IFC 120	3/4	20	91	23	67.3	155	37.5	58	95.5	2.75
IFC 125	1	25	91	23	67.3	155	37.5	58	95.5	2.65
IFC 340	1½	40	154.5	36	113.3	181	59	84	143	4.92
IFC 350	2	50	154.5	36	113.3	181	59	84	143	4.75
IFC 365	2½	65	154.5	36	113.3	181	59	84	143	4.45
IFC 350..F	–	50	230.5	74	113.3	181	59	84	143	6.81

8.7 Dimensions of VFC with IC 30 [mm]



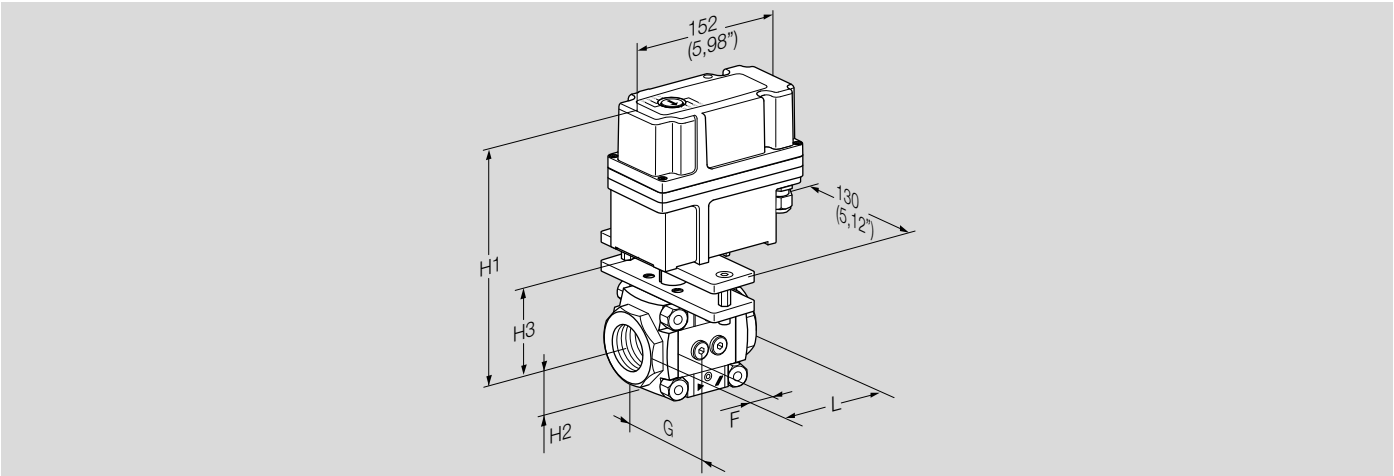
Type	Connection		L mm	F mm	G mm	H1 mm	H2 mm	H3 mm	Weight kg
	Rp	DN							
VFC 110 + IC 30	3/8	10	75	15	67.3	204	37.5	71	2.60
VFC 115 + IC 30	1/2	15	75	15	67.3	204	37.5	71	2.55
VFC 120 + IC 30	3/4	20	91	23	67.3	204	37.5	71	2.70
VFC 125 + IC 30	1	25	91	23	67.3	204	37.5	71	2.60
VFC 340 + IC 30	1½	40	154.5	36	113.3	230	59	97	4.85
VFC 350 + IC 30	2	50	154.5	36	113.3	230	59	97	4.70
VFC 365 + IC 30	2½	65	154.5	36	113.3	230	59	97	4.40
VFC 350..F + IC 30	-	50	230.5	74	113.3	230	59	97	6.75

8.8 Dimensions of IFC [inch]



Type	Connection		L	F	G	H1	H2	H3	H4	Weight
	NPT	DN	inch	inch	inch	inch	inch	inch	inch	lbs
IFC 1T10	3/8	10	2.95	0.59	2.65	6.1	1.48	2.28	3.76	5.83
IFC 1T15	1/2	15	2.95	0.59	2.65	6.1	1.48	2.28	3.76	5.72
IFC 1T20	3/4	20	3.58	0.91	2.65	6.1	1.48	2.28	3.76	6.05
IFC 1T25	1	25	3.58	0.91	2.65	6.1	1.48	2.28	3.76	5.83
IFC 3T40	1½	40	6.08	1.42	4.46	7.13	2.32	3.31	5.63	10.8
IFC 3T50	2	50	6.08	1.42	4.46	7.13	2.32	3.31	5.63	10.5
IFC 3T65	2½	65	6.08	1.42	4.46	7.13	2.32	3.31	5.63	9.79

8.9 Dimensions of VFC with IC 30 [inch]



Type	Connection		L	F	G	H1	H2	H3	Weight
	NPT	DN	inch	inch	inch	inch	inch	inch	lbs
VFC 1T10 + IC 30	3/8	10	2.95	0.59	2.65	8.03	1.48	2.8	5.73
VFC 1T15 + IC 30	1/2	15	2.95	0.59	2.65	8.03	1.48	2.8	5.62
VFC 1T20 + IC 30	3/4	20	3.58	0.91	2.65	8.03	1.48	2.8	5.95
VFC 1T25 + IC 30	1	25	3.58	0.91	2.65	8.03	1.48	2.8	5.73
VFC 3T40 + IC 30	1½	40	6.08	1.42	4.46	9.06	2.32	3.82	10.70
VFC 3T50 + IC 30	2	50	6.08	1.42	4.46	9.06	2.32	3.82	10.4
VFC 3T65 + IC 30	2½	65	6.08	1.42	4.46	9.06	2.32	3.82	9.7

9 Maintenance cycles

At least once a year, at least twice a year in the case of biologically produced methane.

For more information

The Honeywell Thermal Solutions family of products includes Honeywell Combustion Safety, Eclipse, Exothermics, Hauck, Kromschroder and Maxon. To learn more about our products, visit ThermalSolutions.honeywell.com or contact your Honeywell Sales Engineer.

Elster GmbH
Strotheweg 1, D-49504 Lotte
T +49 541 1214-0
hts.lotte@honeywell.com
www.kromschroeder.com

© 2022 Elster GmbH

We reserve the right to make technical modifications in the interests of progress.

