GEMÜ D41

Pneumatically operated diaphragm valve

Features

- Suitable for use in hygienic and aseptic applications (CIP/SIP capable)
- Fast, safe and simple diaphragm and actuator mounting via a central gearbox due to EasyLock technology
- Low maintenance thanks to the encapsulated diaphragm, which requires no retightening
- Very high Kv values due to flow-optimised valve body
- Identification of the mounting angle (hash mark)
- Optical position indicator and transparent cap as standard
- Simple modular expansion possible with future-orientated automation components

Description

The pneumatically operated GEMÜ D41 diaphragm valve is designed for use in sterile applications.
The diaphragm hermetically separates the actuator from the working medium.
The GEMÜ D41 diaphragm valve with EasyLock technology is mounted entirely without loose components using a central gearbox. All actuator parts (except the seals and design elements) are made from stainless steel. The normally closed, normally open and double acting control functions are available. The valve has an optical position indicator with a transparent cap as standard.

Technical specifications

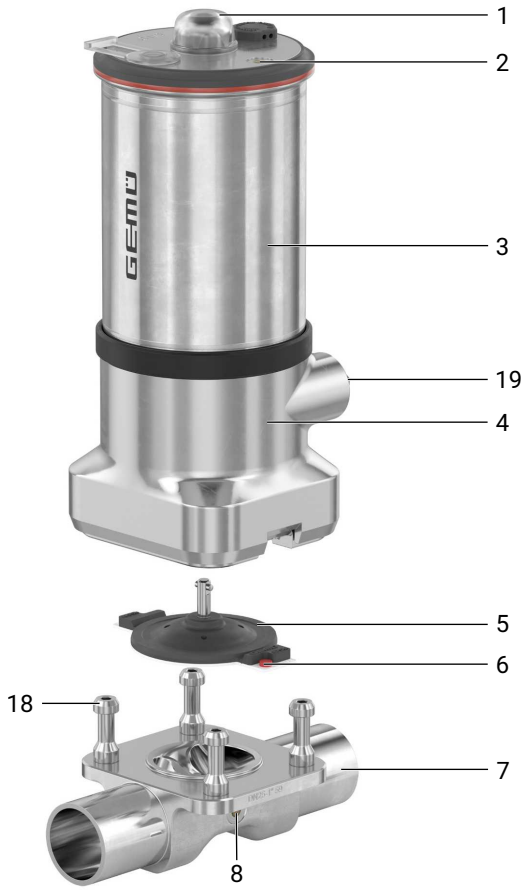
- **Media temperature :** -10 to 100 °C
- **Sterilization temperature:** max. 150 °C
- **Ambient temperature:** -10 to 80 °C
- **Operating pressure :** 0 to 10 bar
- **Nominal sizes:** DN 10 to 25
- **Body configurations:** Straight through body I T body
- **Connection types:** Clamp I Spigot
- **Connection standards :** ASME I DIN I EN I ISO
- **Body materials:** (316L), forging material I 1.4435 (316L), block material
- **Diaphragm materials:** PTFE/EPDM
- **Conformities:** ATEX I FDA I Reg. (EU) No. 10/2011 I Regulation (EC) No. 1935/2004 I USP

Technical data depends on the respective configuration

further information
webcode: GW-D41

Product description

Construction



Position	Name	Materials
1	Transparent cap	PC
2	CONEXO actuator RFID chip (see Conexo information)	
3	Actuator	1.4301 / 1.4308
4	Distance piece with leak detection hole	1.4308 / 1.4408
5	Diaphragm	PTFE/EPDM two-piece
6	CONEXO diaphragm RFID chip (see Conexo information)	
7	Valve body	1.4435, forged body (316L)
8	CONEXO body RFID chip (see Conexo information)	
18	Special stud bolts	
19	Hexagon SW6	

GEMÜ CONEXO

The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.

The diaphragm is read out using an RFID reader, the CONEXO pen. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves the “installation qualification” process, but also makes the maintenance process much more transparent and easier to document. The app actively guides the maintenance technician through the maintenance schedule and directly provides them with all the information assigned to the valve, such as test reports, testing documentation and maintenance histories. The CONEXO portal acts as a central element, helping to collect, manage and process all data.

You can find further information on GEMÜ CONEXO at:
www.gemu-group.com/conexo

Range overviews

Range overview of surface finishes

Internal surface finishes for block material body [1)]

Process contact surfaces	Mechanically machined [2)]		Electropolished	
	Hygiene class DIN 11866	Code	Hygiene class DIN 11866	Code
Ra ≤ 0.40 µm	H4	1536	HE4	1537

Process contact surfaces in accordance with ASME BPE [3)]	Mechanically machined [2)]		Electropolished	
	ASME BPE surface designation	Code	ASME BPE surface designation	Code
Ra max. = 0.51 µm (20 µinch)	SF1	SF1	-	-
Ra max. = 0.38 µm (15 µinch)	-	-	SF4	SF4

Ra acc. to DIN EN ISO 4288 and ASME B46.1

1) Surface finishes of customized valve bodies may be limited in special cases.

2) Or any other finishing method that meets the Ra value (acc. to ASME BPE).

3) When using these surfaces, the bodies are marked according to the specifications of ASME BPE.
The surfaces are only available for valve bodies which are made of materials (e.g. GEMÜ material codes 40, 41) and use connections (e.g. GEMÜ connection codes 59, 80, 88) according to ASME BPE.

Range overview of valve bodies

Range overviews of spigots 17, 59, 60

MG	DN	Connection type code		
		17	59	60
		Material code		
		40		
B	**10**	X	-	X
	15	X	X	X
	20	X	X	-
	25	-	X	-

MG = diaphragm size, X = standard

Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Type	Code
Diaphragm valve, pneumatically operated, stainless steel piston actuator, EasyLock	D41

2 DN, connection 1	Code
DN 10	10
DN 15	15
DN 20	20
DN 25	25

3 Body configuration	Code
2/2-way body	D

4 Valve body connection type, connection 1	Code
Spigot EN 10357 series A/DIN 11866 series A	17
Spigot ASME BPE/DIN EN 10357 series C (from 2022 edition)/DIN 11866 series C	59
Spigot ISO 1127/DIN EN 10357 series C (2014 edition)/ DIN 11866 series B	60
Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D	80
Clamp DIN 32676, for pipe DIN 11866 series B, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	82
Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	88
Clamp DIN 32676, for pipe DIN 11866 series A, face-to-face dimension FTF acc. to EN 558 series 7, length only for body configuration D	8A
Clamp DIN 32676, for pipe DIN 11866 series C, face-to-face dimension FTF ASME BPE, length only for body configuration D	8P
Clamp DIN 32676, for pipe DIN 11866 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D	8T

5 Valve body material	Code
1.4435 (F316L), forged body	40

6 Diaphragm material	Code
PTFE/EPDM, two-piece	T1

7 Control function	Code
Normally closed (NC)	1
Normally open (NO)	2

7 Control function	Code
Double acting (DA)	3
Normally closed (NC), interface/hexagon 90° offset to the pipework direction	Q
Double acting (DA), interface/hexagon 90° offset to the pipework direction	T
Normally open (NO), interface/hexagon 90° offset to the pipework direction	U

8 Actuator spring set	Code
Standard spring set	1

9 Diaphragm size	Code
Diaphragm size B	B

10 Actuator size	Code
Actuator size 2	2

11 Valve body surface	Code
Ra ≤ 0.4 µm for media wetted surfaces, in accordance with DIN 11866 H4, mechanically polished internal mechanically machined internal	1536
Ra ≤ 0.4 µm for media wetted surfaces, in accordance with DIN 11866 HE4, electropolished internal/external	1537
Ra max. 0.51 µm (20 µin.) for media wetted surfaces, in accordance with ASME BPE SF1, mechanically machined internal	SF1
Ra max. 0.38 µm (15 µin.) for media wetted surfaces, in accordance with ASME BPE SF4, electropolished internal/external	SF4

12 CONEXO	Code
Integrated RFID chip for electronic identification and traceability	C
Without	

13 Special function	Code
ATEX marking	X

Order example

Ordering option	Code	Description
1 Type	D41	Diaphragm valve, pneumatically operated, stainless steel piston actuator, EasyLock
2 DN, connection 1	15	DN 15
3 Body configuration	D	2/2-way body
4 Valve body connection type, connection 1	17	Spigot EN 10357 series A/DIN 11866 series A
5 Valve body material	40	1.4435 (F316L), forged body
6 Diaphragm material	T1	PTFE/EPDM, two-piece
7 Control function	1	Normally closed (NC)
8 Actuator spring set	1	Standard spring set
9 Diaphragm size	B	Diaphragm size B
10 Actuator size	2	Actuator size 2
11 Valve body surface	1537	Ra ≤ 0.4 µm for media wetted surfaces, in accordance with DIN 11866 HE4, electropolished internal/external
12 CONEXO		Without
13 Special function	X	ATEX marking

Technical data

Medium

Working medium: Corrosive, inert, gaseous and liquid media which have no negative impact on the physical and chemical properties of the body and diaphragm material.

Control medium: Inert gases

Temperature

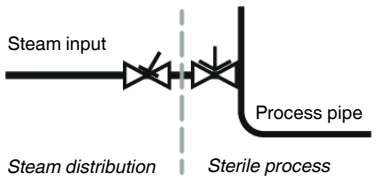
Media temperature:

Diaphragm material	Standard
PTFE/EPDM (code T1)	-10 to 100 °C

Ambient temperature: -10 — 80 °C

Control medium temperature: 0 — 60 °C

Sterilization temperature: PTFE/EPDM (code T1): Max. 150 °C, maximum 180 min per cycle
The sterilization temperature is valid for steam (saturated steam) or superheated water (max. 6 bar).
PTFE diaphragms can also be used as moisture barriers; however, this will reduce their service life. It is not possible to retighten the connecting screws between the actuator and the valve body. This also applies to PTFE diaphragms exposed to high temperature fluctuations. The maintenance cycles must be adapted accordingly. The following valve arrangement has proven itself for interfaces between steam and process pipes: A globe valve for shutting off steam pipes and a diaphragm valve as an interface to the process pipes.



Storage temperature: -10 — 40 °C

Pressure

Operating pressure: 0 — 10 bar

Information on operating pressures applied on both sides and for high purity media on request.

The operating pressures apply at room temperature. In case of deviating temperatures, observe the pressure / temperature correlation.

Control function 1

MG	DN	Actuator size	Diaphragm material
			PTFE
B	**10 - 25**	**2**	0–10.0

MG = diaphragm size

All pressures are gauge pressures. Operating pressure values were determined with static operating pressure applied on one side of a closed valve. Sealing at the valve seat and atmospheric sealing is ensured for the given values.

Vacuum: Can be used up to a vacuum of 70 mbar (absolute)

Pressure rating: PN 16

Leakage rate: Leakage rate A to P11/P12 EN 12266-1

Filling volume:

Actuator size	Diaphragm size	Control function		Valve stroke
		NC	NO	
2	B	0.06 dm³	0.05 dm³	7.5 mm

NC = filling volume in open position

Kv values:

DN	Diaphragm size	Connection type (code)		
		17	59	60
10	B	4.4	-	tbd.
15		9.5	3.9	9.5
20		9.5	9.5	-
25		-	10.0	-

MG = diaphragm size, Kv values in m³/h
Kv values determined in accordance with EN 60534, inlet pressure 5 bar, Δp 1 bar, stainless steel valve body and two-piece PTFE/EPDM diaphragm. The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature and process parameters, as a result of which the Kv values deviate beyond the tolerance limit of the standard. The Kv value curve (Kv value dependent on valve stroke) can vary depending on the diaphragm material and term of use.

Control pressure: 4.0 Up to 8.0 bar

Product conformities

Machinery Directive: 2006/42/EC

Pressure Equipment Directive: 2014/68/EU

Explosion protection: ATEX (2014/34/EU), order code Special version X

ATEX marking: Gas: Ⓔx II 2 G Ex h IIC T6 ... T3 Gb X
Dust : Ⓔx II -/2 D Ex h -/IIIC T150 °C -/Db X

Food: FDA
Regulation (EC) No. 1935/2004 (only for material code C3, 40, 42, 41, 43)
Regulation (EC) No. 10/2011
USP Class VI

Mechanical data

Weight: Body

MG	DN	Spigot		
		Connection type code		
		17	59	60
B	10	0.28	-	0.28
	15	0.28	0.28	0.28
	20	0.28	0.28	-
	25	-	0.28	-

Weights in kg
MG = diaphragm size

Weight:

Actuator (control function 1, NC)

MG	Actuator size	Control function 1 (NC)	Control function 2 (NO)
B	2	1.78	1.71

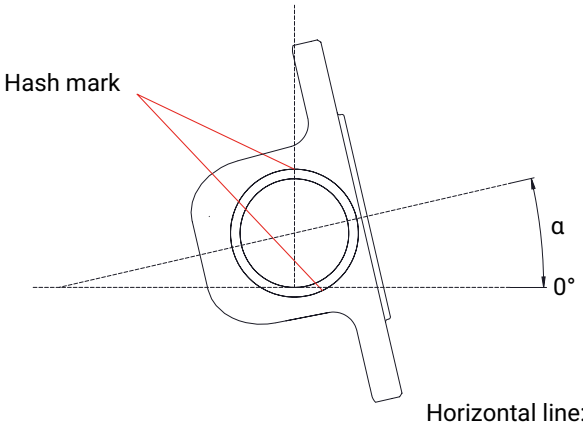
Weights in kg
MG = diaphragm size

Angle of rotation:

MG	DN	Connection type (code)		
		17	59	60
		α		
B	**10**	36.3°	-	23.4°
	15	18.0°	38.1°	12.3°
	20	7.9°	18.3°	-
	25	-	3.0°	-

MG = diaphragm size

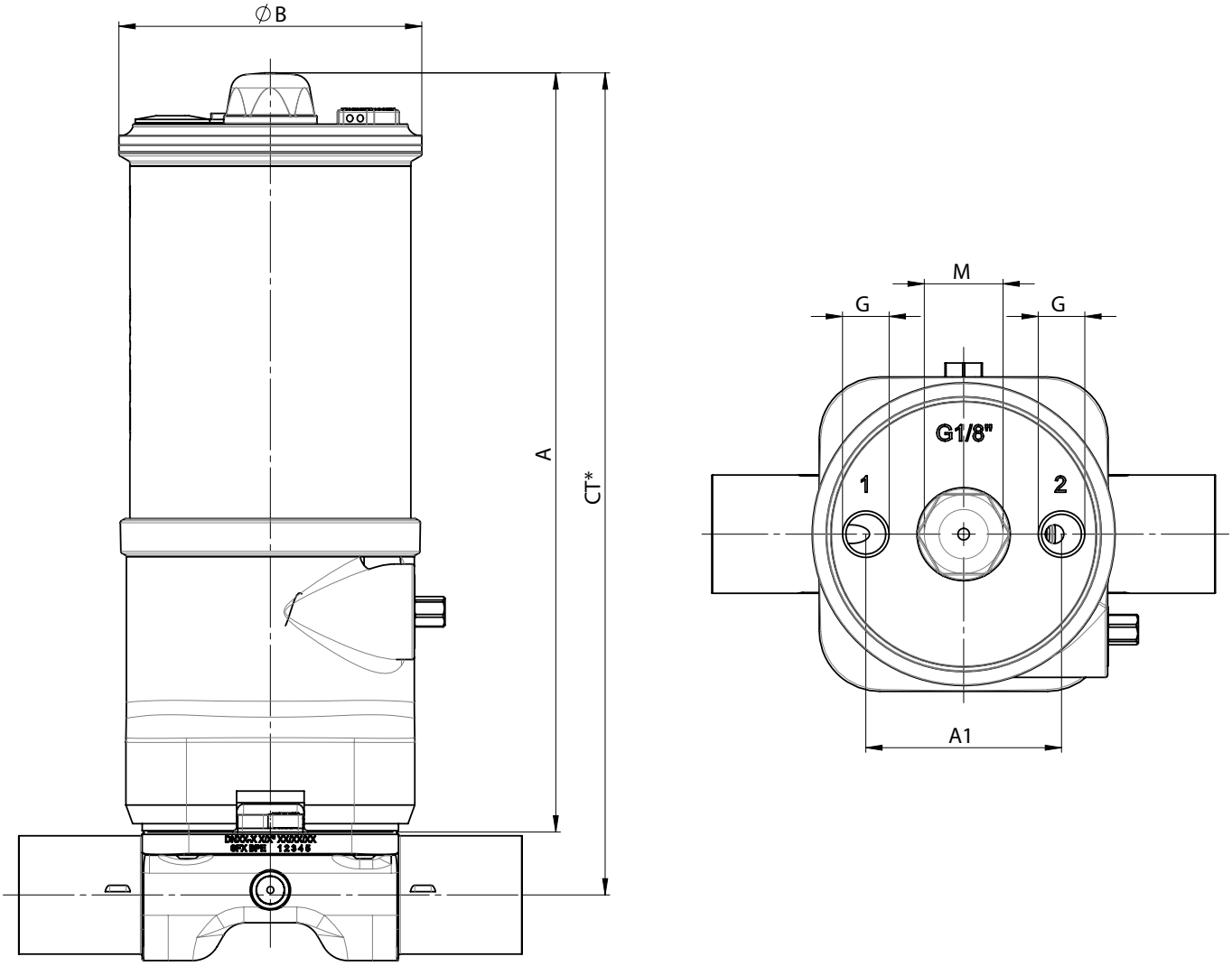
Vertical line:
Reference line for hash mark



Horizontal line:
Reference line for the angle of rotation

Dimensions

Actuator dimensions



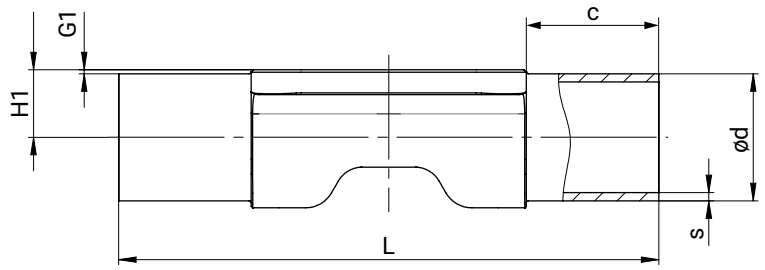
Actuator size	MG	A	ØB	A1	G	M
2	**B**	163.0	65.0	42.0	G 1/8	M16x1

Dimensions in mm
MG = diaphragm size
* CT = A + H1 (see body dimensions)

Body dimensions

Spigot DIN/EN/ISO/ASME (code 17, 59, 60), forged material (code 40)

Connection type spigot DIN/EN/ISO/ASME (codes 17, 59, 60) [1], forged material (code 40, 42)



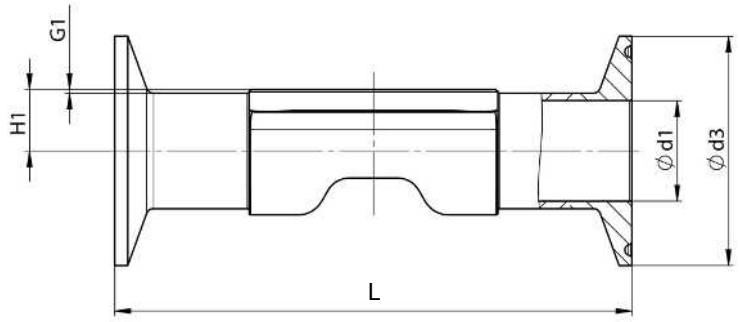
MG	DN	Pipe standard			EN 10357 series A/DIN 11866 series A			ASME BPE/DIN 11866 series C			ISO 1127/EN 10357 series C/DIN 11866 series B		
					Connection code								
					17			59			60		
		L	c (min)	G1	H1	Ød	s	H1	Ød	s	H1	Ød	s
B	10	108.0	25.0	0.8	7.3	13.0	1.5	5.57	9.53	0.89	9.4	17.2	1.6
	15	108.0	25.0	0.8	10.3	19.0	1.5	7.15	12.70	1.65	11.45	21.3	1.6
	20	108.0	25.0	0.8	12.3	23.0	1.5	10.33	19.05	1.65	-	-	-
	25	108.0	25.0	0.8	-	-	-	13.50	25.40	1.65	-	-	-

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 17: Spigot EN 10357 series A/DIN 11866 series A, formerly DIN 11850 series 2
Code 59: Spigot ASME BPE/DIN EN 10357 series C (from 2022 issue)/DIN 11866 series C
Code 60: Spigot ISO 1127/DIN EN 10357 series C (2014 issue)/DIN 11866 series B

Clamp DIN/EN/ISO/ASME (codes 80, 82, 88, 8A, 8P, 8T), forged material (code 40)

Connection type clamp DIN/ASME (codes 80, 88, 8P, 8T) [1], forged material (code 40, 42)



MG	DN	NPS	ød1		ød3		H1	L	
			Connection type		Connection type			Connection type	
			80, 8P	88, 8T	80, 8P	88, 8T		80, 8P	88, 8T
B	10	3/8”	-	-	-	-	-	-	-
	15	1/2"	9.40	9.40	25.0	25.0	7.2	88.9	108.0
	20	3/4"	15.75	15.75	25.0	25.0	10.3	101.6	117.0
	25	1”	22.1	22.1	50.5	50.5	13.5	114.3	127.0

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 80: Clamp ASME BPE, face-to-face dimension FTF ASME BPE, length only for body configuration D
Code 88: Clamp ASME BPE, for pipe ASME BPE, face-to-face dimension FTF EN 558 series 7, length only for body configuration D
Code 8P: Clamp DIN 32676 series C, face-to-face dimension FTF ASME BPE, length only for body configuration D
Code 8T: Clamp DIN 32676 series C, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

Connection type clamp DIN/ISO (code 82) [1], forged material (code 40, 42)

MG	DN	NPS	ød1	ød3	H1	L
			Connection type	Connection type		Connection type
			82	82		82
B	10	3/8”	14.0	25.0	9.4	108.0
	15	1/2"	18.1	50.5	11.4	108.0
	20	3/4"	-	-	-	-
	25	1”	-	-	-	-

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 82: Clamp DIN 32676 series B, face-to-face dimension FTF EN 558 series 7, length only for body configuration D

Connection type clamp DIN/EN (code 8A) [1], forged material (code 40, 42)

MG	DN	NPS	ød1	ød3	H1	L
			Connection type	Connection type		Connection type
			8A	8A		8A
B	10	3/8”	10.0	34.0	7.3	108.0
	15	1/2"	16.0	34.0	10.3	108.0
	20	3/4"	20.0	34.0	12.3	117.0
	25	1”	-	-	-	-

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 8A: Clamp DIN 32676 series A, face-to-face dimension FTF acc. to EN 558 series 7, length only for body configuration D

Accessories

GEMÜ 12A0

Intelligent electrical position indicator

Independent of the actuator size and control function, the GEMÜ 12A0 electrical position indicator, as an automation module, is compatible with all pneumatically operated process valves of the new valve generation and with quarter turn valves. Contactless position detection determines the valve position precisely, reliably and without being subject to wear. The current valve position is displayed via high visibility LEDs, and fed back via electrical signals. In addition to this, there is an integrated mechanical position indicator. Modern communication interfaces, an integrated sensor system and the GEMÜ app operating option are all features that characterize the innovative electrical position indicator.

GEMÜ 44A0

Multi-functional valve actuation

Independent of the actuator size, the GEMÜ 44A0 multi-functional valve actuation, as an automation module, is compatible with all pneumatically operated process valves with single acting linear actuator of the new valve generation. Depending on the order variant and the set device functions, the connected process valves can be controlled conventionally open/closed (combi switchbox) or the valve position can be precisely controlled (positioner). Contactless position detection determines the valve position precisely, reliably and without being subject to wear. The current valve position is displayed via high visibility LEDs, and fed back via electrical signals. In addition to this, there is an integrated mechanical position indicator. Modern communication interfaces, an integrated sensor system and the GEMÜ app operating option are all features that characterize this innovative product.

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