

GEMÜ Q51

Motorized pinch valve



Features

- Fast, safe tube replacement
- Minimized strain on the tube due to the optimized compressor
- Position indicator for precision control applications
- Tube replacement about digital interface
- On-site end position programming
- Simple replacement of inserts and compressors for various tube sizes with the same actuator
- Several installation options possible in the plant thanks to the mounting flange or female thread on the body

Description

The GEMÜ Q51 2/2-way pinch valve is electrically operated as a positioner. The valve guides a tube which is compressed from above by a compressor to control and regulate media. The compressor's specially developed contour and the tube holder's contour minimize the strain on the tube and thus increase the tubes' service life. Tubes can be safely inserted and removed in simple steps and without tools.

Technical specifications

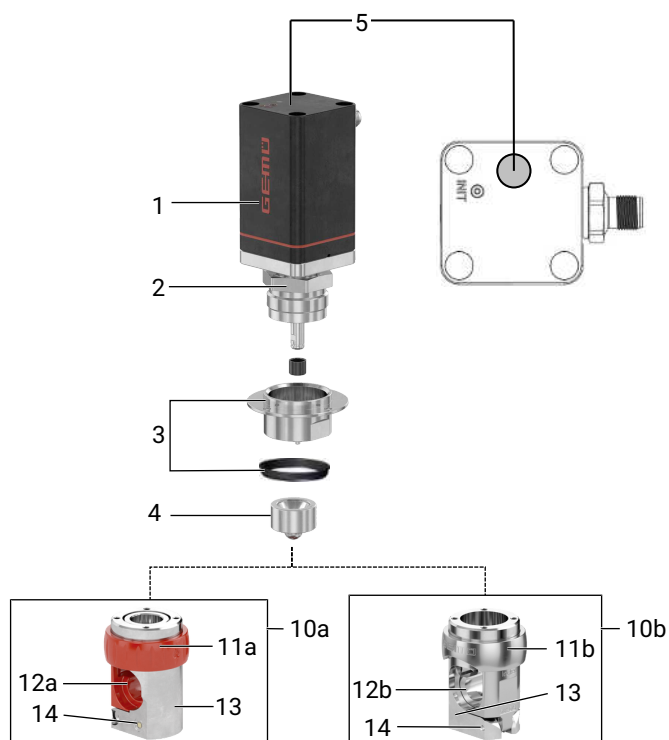
- **Media temperature:** Please observe the tube manufacturer's specifications
- **Ambient temperature:** Actuator: 0 to 40 °C, Tube: Please observe the tube manufacturer's specifications
- **Operating pressure:** max. 4.5 bar, Please observe the tube manufacturer's specifications
- **Tube outside diameter:** 1/4" | 3/8" | 7/16" | 1/2"
- **Tube inside diameter:** 3/16" | 5/16" | 1/8" | 1/4"
- **Body materials:** 1.4404 | 1.4408 | PA6
- **Supply voltage:** 24 V DC
- **Actuating speed:** Max. 2 mm/s
- **Protection class :** IP 65

Technical data depends on the respective configuration



Product description

Construction



Item	Name	Materials
1	Actuator	PP
2	Union nut	Stainless steel
3	Distance piece with mounting flange including EPDM seal	Stainless steel
4	Compressor	Stainless steel
5	Display of status LED*	
10a	Valve body	Stainless steel/PA6
10b	Valve body	Stainless steel
11a	Locking ring	PA6
11b	Locking ring	Stainless steel
12a	Tube holder	PA6
12b	Tube holder	Stainless steel
13	Tube carrier	Stainless steel
14	CONEXO RFID chip (see "GEMÜ CONEXO", page 11)	

*Status LED only available for control modules S0, S1, S2.

Availability

Valve body

	Valve body	
	7P	77
DA	X	X
DC	X	X
DD	X	X
DE	X	X

Tube sizes

			Tube outside diameter				
			OD	1/4"	3/8"	7/16"	1/2"
			inch	0.25	0.375	0.438	0.5
Tube inside diameter			mm	6.35	9.53	11.1	12.7
ID	inch	mm	Code	DA	DC	DD	DE
1/8"	0.125	3.180	2	X	X	-	-
3/16"	0.187	4.76	3	-	X	X	-
1/4"	0.250	6.350	4	-	X	X	X
5/16"	0.313	7.94	5	-	-	X	X

AD = outside diameter

ID = inside diameter

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
Pinch valve, electrically operated	Q51
2 Tube inside diameter	Code
3.180 mm (1/8") inside diameter	2
4.760 mm (3/16") inside diameter	3
6.350 mm (1/4") inside diameter	4
7.95 mm (5/16") inside diameter	5
3 Tube outside diameter	Code
6.350 mm (1/4") outside diameter	DA
9.530 mm (3/8") outside diameter	DC
11.110 mm (7/16") outside diameter	DD
12.700 mm (1/2") outside diameter	DE
4 Tube carrier version	Code
Plastic design, stainless steel tube carrier and PA tube holder	7P
Stainless steel design, stainless steel tube carrier and stainless steel tube holder, stainless steel locking ring	77
5 Voltage/Frequency	Code
24 V DC	C1

6 Control module	Code
Positioner	S0
Positioner 4–20 mA Close error position	S1
Positioner 4–20 mA Open error position	S2

7 Mounting option	Code
Without mounting flange, with 4 x threaded holes in the body	0
With mounting flange above	FT

8 Actuator version	Code
Actuator size 0	0A

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

Order example

Ordering option	Code	Description
1 Type	Q51	Pinch valve, electrically operated
2 Tube inside diameter	2	3.180 mm (1/8") inside diameter
3 Tube outside diameter	DA	6.350 mm (1/4") outside diameter
4 Tube carrier version	7P	Plastic design, stainless steel tube carrier and PA tube holder
5 Voltage/Frequency	C1	24 V DC
6 Control module	S0	Positioner
7 Mounting option	FT	With mounting flange above
8 Actuator version	0A	Actuator size 0
9 CONEXO		Without

Technical data

The media-conveying tubes are not part of the scope of delivery. All technical data applies solely to the valve itself. The suitability and selection of the media-conveying tubes for the intended process is the user's responsibility. For tested tube combinations that are compatible with the valve, please refer to the chapter "Tested tube combinations" (see "Tested tube combinations", page 7).

Medium

Working medium: Please observe the tube manufacturer's specifications

Temperature

Media temperature: Please observe the tube manufacturer's specifications

Ambient temperature: Actuator: 0 – 40 °C, Tube: Please observe the tube manufacturer's specifications

Storage temperature: -10 – 40 °C

Pressure

Operating pressure: max. 4.5 bar
Please observe the tube manufacturer's specifications

Product compliance

Machinery Directive: 2006/42/EC

EMC Directive: 2014/30/EU

RoHS Directive: 2011/65/EU

Mechanical data

Protection class: IP 65 acc. to EN 60529

Actuating speed: Max. 2 mm/s

Weight: Approx. 1.2 kg

Mechanical environmental conditions: Class 4M8 acc. to EN 60721-3-4:1998

Vibration: 5g acc. to IEC 60068-2-6 Test Fc

Shock: 25g acc. to 60068-2-27 Test Ea

Duty cycle and service life

Service life:	Control operation – Class C acc. to EN 15714-2 ($\pm$ 1,800,000 start-ups).
Duty cycle:	60% duty

Electrical data

Supply voltage

Voltage:	24 V DC $\pm$ 10%
Rating:	$\leq$ 24 W (24 V DC)
Reverse polarity protection:	Yes

Analogue input signals

Set value as current signal, control module code S0 / S1 / S2

Input signal:	4–20 mA
Input type:	passive
Input resistance:	50 Ω
Control accuracy:	$\pm$ 1%

Digital input signals

Function:	Tube replacement function
Voltage:	24 V DC
Logic level "1":	$>$ 15 V DC
Logic level "0":	$\leq$ 5 V DC

Analogue output signals

Actual value as current signal, control module code S0 / S1 / S2

Output signal:	4–20 mA
Output type:	Active
Load resistor:	650 Ω
Short-circuit proof:	Yes

Behaviour in the event of an error

Function:	In the event of an error the valve moves to the error position. Notes: Moving to the error position is only possible with full power supply. This behaviour is not a safety position. The valve must be operated with a GEMÜ 1571 emergency power supply module (see accessories) to ensure the function in case of voltage loss.
Error position:	Hold – Actuator stays in the approached position (control module S0) Close – Actuator moves to the closed position (control module S1) Close – Actuator moves to the open position (control module S2)

Tested tube combinations

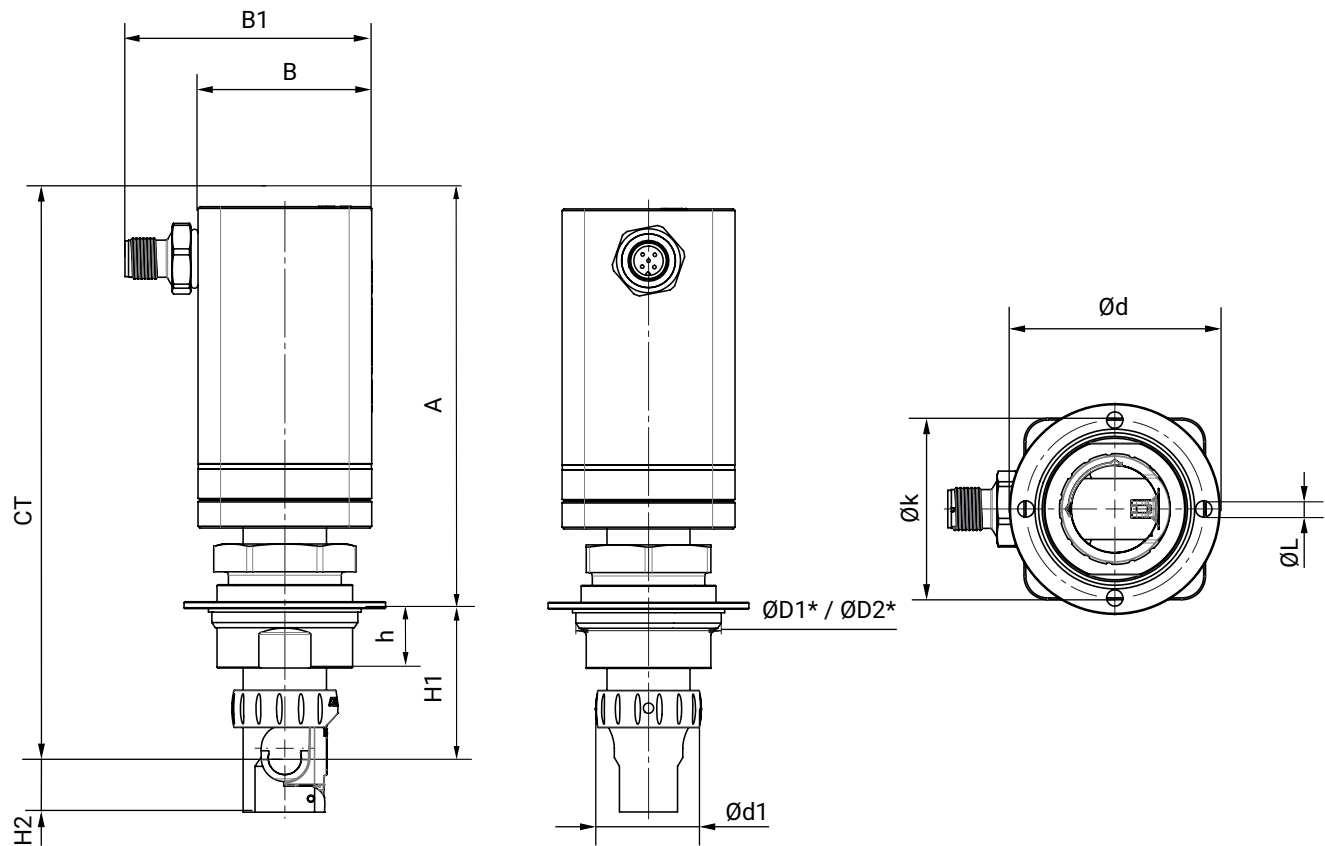
The following tube combinations have been tested taking into account the specifications of the respective tube manufacturer and have been found to be suitable for use in our pinch valves.*

However, the versions below are not a substitute for the user testing the tube for its suitability for the intended process.

Inside diameter (order code)	Inside diameter [inches]	Inside diameter [mm]	Outside diameter (order code)	Outside diameter [inches]	Outside diameter [mm]	Tube type	Clocking	Pressure [bar]	Service life until breakage
2	1/8"	3.18	DA	1/4"	6.35	Silicone	2/2 s	1.6	10,000 cycle duties
2	1/8"	3.18	DC	3/8"	9.53	reinforced	2/2 s	6	7250 cycle duties
3	3/16"	4.76	DC	3/8"	9.53	TPE	2/2 s	2.0	25,000 cycle duties
3	3/16"	4.76	DC	3/8"	9.53	Silicone	2/2 s	1.4	25,000 cycle duties
3	3/16"	4.76	DC	3/8"	9.53	reinforced	2/2 s	4.0	7000 cycle duties
3	3/16"	4.76	DD	7/16"	11.11	Silicone	2/2 s	1.7	25,000 cycle duties
4	1/4"	6.35	DD	7/16"	11.11	Silicone	2/2 s	1.2	10,000 cycle duties
4	1/4"	6.35	DE	1/2"	12.70	reinforced	2/2 s	6	1 x 3200 cycle duties 1 x 7700 cycle duties
4	1/4"	6.35	DE	1/2"	12.70	reinforced	2/2 s	3.8	8000 cycle duties
5	5/16"	7.94	DD	7/16"	11.11	N/A	2/2 s	1.0	23,000 cycle duties
5	5/16"	7.94	DE	1/2"	12.70	Silicone	2/2 s	1.2	20,000 cycle duties
5	5/16"	7.94	DE	1/2"	12.70	TPE	2/2 s	1.6	15,000 cycle duties

* Test medium: Water. The results in use may vary from those of the test environment due to the influence of deviating media.

Dimensions



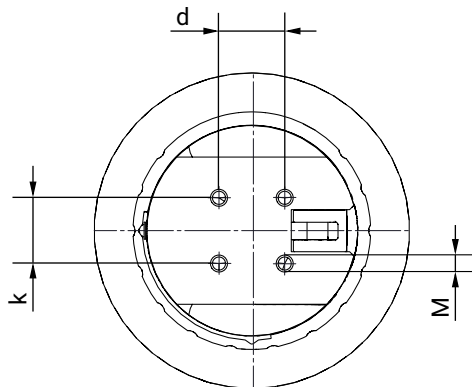
A	B	B1	CT	$\varnothing D1^*$	$\varnothing D2^*$	$\varnothing d$	$\varnothing d1$	H1	H2	$\varnothing k$	$\varnothing L$	h
115.7	50.0	71.0	158.7	39.0	42.0	58.0	30.5	43.0	15.6	49.0	4.5	17.1

Dimensions in mm

* D1 = diameter without seal, D2 = diameter with seal

Valve bodies, without mounting flange

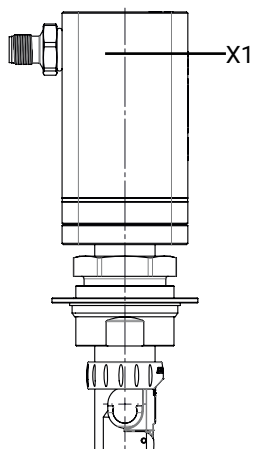
Dimensions in mm



d	k	M
7.0	7.0	M2

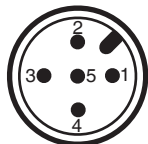
Electrical connection

Position of the connectors



Electrical connection

Connection X1



Five-pin M12 built-in socket, A-coded

Pin	Signal name
1	24 V supply voltage
2	I+/U+, set value input
3	GND
4	I+/U+, actual value output
5	Digital input 1 / tube replacement function

Troubleshooting

Error	Possible cause	Troubleshooting
The product is leaking downstream (does not close or does not close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Tube leaking or damaged	Check tube for potential damage, replace tube if necessary
The product does not open or does not open fully	Actuator defective	Replace valve
Valve does not open/close or does not open/close fully	Voltage is not connected	Connect voltage
	Cable ends incorrectly wired	Wire cable ends correctly
	Initialization has not been carried out fully	Carry out initialization again
Valve moves to error position	Set value signal < 3.5 mA	Check set value
The tube is damaged	The tube is slipping out of the tube holder	Route the tube such that it is centred and fully in the tube holder; if necessary, use external tube holders to position the tube upstream or downstream of the valve

GEMÜ CONEXO

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



Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. 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 him 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.

For further information on GEMÜ CONEXO please visit:

www.gemu-group.com/conexo

Ordering

GEMÜ Conexo must be ordered separately with the ordering option "CONEXO".

Accessories



GEMÜ 1219

Cable socket / cable plug M12

The GEMÜ 1219 is a connector (cable socket / cable plug) M12, 5-pin. Straight and/or 90° angled plug type. Defined cable length or with threaded connection without cable. Various materials available for the threaded ring.

Description	Length	Order number
5-pin, angle	without cable	88205545
	2 m cable	88205534
	5 m cable	88205540
	10 m cable	88210911
	15 m cable	88244667
5-pin, straight	without cable	88205544
	2 m cable	88205542
	5 m cable	88205543
	10 m cable	88270972
	15 m cable	88346791

provided in the scope of delivery

**GEMÜ 1571****Emergency power supply module**

The GEMÜ 1571 capacitive emergency power supply module is suitable for valves with motorized actuators such as GEMÜ eSyStep and eSyDrive as well as the GEMÜ C53 iComLine control valve. In the event of a power failure, the product provides an uninterrupted power supply so that the valve can be moved to the safety position. The emergency power supply module is available individually or with an expansion module and can supply several valves. The input and output voltage is 24 V.

GEMÜ 1571 emergency power supply module			
Input voltage	Output voltage	Capacity	Item number
24 V	24 V	1700 Ws	88660398
24 V	24 V	13200 Ws	88751062

**GEMÜ 1573****Switching power supply unit**

The GEMÜ 1573 switching power supply unit converts unstable input voltages from 100 to 240 V AC into a continuous DC voltage. It can be used as an accessory for valves with motorized actuators e. g. GEMÜ eSyLite, eSyStep und eSyDrive and for additional devices with a 24 V DC power supply. Different power levels, output currents and a 48 V DC version for servoDrive actuators are available.

GEMÜ 1573 switching power supply unit			
Input voltage	Output voltage	Output current	Item number
100 - 240 V AC	24 V DC	5 A	88660400
		10 A	88660401



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