

Motorized shut-off ball valve

GBC M + MQT

Description

Danfoss motorized shut-off ball valves, type GBC M+MQT, are electrically operated shut-off valves for refrigeration systems, in order to open and to shut off inner flow path by operating the valve spindle electrically.

The GBC M+MQT valves are used in liquid, suction and hot gas lines in refrigeration and air conditioning systems.

The GBC M bi-directional ball valves can be delivered with or without external access port.

Features & benefits

- ¼ turn from fully open to fully closed
- Rotation stops at fully open and fully closed position
- Indicator on actuator indicating open or closed position
- Optional wide voltage
- Optional fail-safe function, can shut off the valve automatically when power cut
- Quick responding, 5 seconds from close to open
- Full port design, minimum pressure drop, no impact to system efficiency
- Reliable internal tightness avoid loosen seal when close
- Customized brass material ensures consistent performance under aggressive environment
- Bi-directional flow

Applications

Typical applications for GBC M+MQT are:

- Cold room
- Chiller
- Heat pump
- Transport refrigeration

Ordering

Product code numbers

GBC M solder ODF/ODF, copper connections

Figure: GBC M, solder ODF/ODF

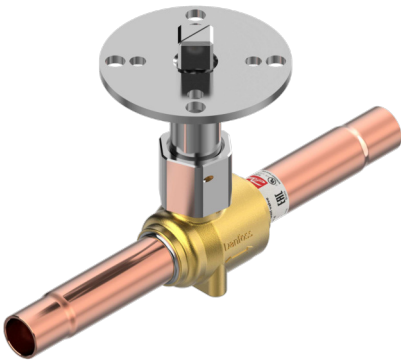


Table: GBC M solder ODF/ODF, copper connections

Type	Code no.		Connection		Kv ⁽¹⁾	Cv ⁽¹⁾	Multi pack	PED category		Max. working pressure: PS/MWP	Media temperature range
	Without access port	With access port	[in.]	[mm]	[m ³ /h]	[gal/min]	Qty/pack	Fluid Group 1 ⁽²⁾	Fluid Group 2 ⁽³⁾		
GBC 6M	009L2020	009L2050	¼	–	1.83	2.12	6	Art 4.3	Art 4.3	49 bar / 710 psig	-40 – 150 °C / -40 – 300 °F
	009L2030	009L2060	–	6	1.83	2.12	6				
GBC 10M	009L2021	009L2051	¾	–	8.04	9.29	6				
	009L2031	009L2061	–	10	8.04	9.29	6				
GBC 12M	009L2022	009L2052	½	–	13.17	15.22	6				
	009L2032	009L2062	–	12	13.17	15.22	6				
GBC 16M	009L2023	009L2053	¾	16	15.66	18.10	6				

⁽¹⁾ Calculated based on fluid dynamic equations.

⁽²⁾ Fluid group 1 (flammable or toxic refrigerants)

⁽³⁾ Fluid group 2 (non-toxic and non-flammable refrigerants)

Contents of accessory bag

- Screws M5×10 (4pcs)
- Washer M5 (4pcs)

MQT for GBC M valves

Figure: MQT for GBC M valves



Table: MQT for GBC M valves

Type	Code no.	Power supply AC/DC	Torque	Max. power	Running time	With fail-safe function
		(V)	(Nm)	(W)	(s)	
MQT 010 F	009L2187	24	10	18	5	Yes
MQT 010 F	009L2186	95 – 265	10	18	5	Yes
MQT 010 N	009L2189	24	10	12	5	No
MQT 010 N	009L2188	95 – 265	10	12	5	No

Spare parts code numbers

Figure: Bracket kit



Table: Bracket kit

Type	Industrial pack [pcs.]	Code no.
GBC 6 – 16M	12	009G7084

Figure: Schrader valve**Table: Schrader valve**

Type	Industrial pack [pcs.]	Code no.
GBC 6 – 16M	10	009L7213

Media

Table: Refrigerants

Valve type	Refrigerants	Approval	Max. working pressure (PS/MWP)	Media temperature range
GBC 6M – 16M	R134a, R407C, R290, R32, R404A/R507, R407A, R407F, R407H, R410A, R448A, R449A, R449B, R450A, R452A, R452B, R454A, R454B, R454C, R455A, R463A, R513A, R515B, R516A, R1233zd(E), R1234ze(E), R1234yf	PED	49 bar / 710 psig	-40 – 150 °C / -40 – 300 °F

Table: Refrigerant oil

Valve type	Refrigerant oil
GBC M	POE, PVE, PAG (Not compatible for Mineral oil and PAO)

NOTE:

- For a complete list of approved refrigerants, visit <http://store.danfoss.com/> and search for individual code numbers, where refrigerants are listed as part of product details.
- This product is approved for R290, R32, R452B, R454A, R454B, R454C, R455A, R516A, R1234ze(E), R1234yf by ignition source assessment in accordance to standard EN ISO 80079-36.

Product details

General data

Table: Technical data (GBC M)

Technical data	GBC M
Max. working pressure	49 bar / 710 psig
Media temperature range	-40 – 150 °C / -40 – 300 °F
Environmental transport/storage temperature and humidity	-40 – 65 °C / -40 – 150 °F Air humidity: RH≤95%
Flow direction	Bi flow

Table: Technical data (MQT)

Technical data	MQT	
Rated voltage	AC/DC 95 – 265 V	AC/DC 24 V
Voltage range	AC 95 – 265 V / DC 95 – 265 V	AC 20 – 26 V / DC 22 – 30 V
Max. power consumption	12 W (w/o fail-safe) / 18 W (with fail-safe)	
Rated current	43 mA	400 mA
Operating max. current	54 mA (w/o fail-safe) / 80 mA (with fail-safe)	500 mA (w/o fail-safe) / 750 mA (with fail-safe)
Electricity safety level	I type (ground protection)	III type (safety low voltage)
Max. torque	10 Nm	
Angle of rotation	90 ± 2° (1/4 turn)	
Running time	5s	
Ambient temperature	-40 – 45 °C	
Ambient humidity	5 – 95%	
Enclosure	IP67	
Interface allowable temperature	75 °C	
Connection cable	7x0.3 mm ² , length 800 mm	
Connection type (cable)	XH2.54	
Connection standard (flange)	ISO5211 F03/F05	

Main functionalities

Identification

Relevant product data is available on the product and box label. An example of a box label and product label are shown, including an explanation of the content.

Figure: Box label

GBC M

Shut-off ball valve
GBC 6M
009L2060
 PS 49 bar/MWP 710 psig
 Bi-flow With Access port
 Straightway
 6 mm ODF

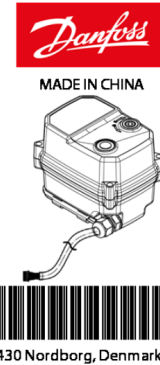


BE0126E

Danfoss A/S, 6430 Nordborg, Denmark

MQT

Electric Actuator
MQT 010 N
009L2188
 AC/DC 95-265V
 -40/+45°C
 Max Torque 10 Nm
 Speed: 5.0 s



BE0126E

Danfoss A/S, 6430 Nordborg, Denmark

Figure: Product label

GBC M

Shut-off ball valve
GBC 6M
009L2060
 TS -40/+150°C -40/+302°F
 PS 49 bar/710 psig
 BE0126E





MQT



Table: Product and label text (GBC M)

Position	Inscription	Explanation
Box label; Product label	Shut-off ball valve	Product name
Box label; Product label	GBC 6M	Product type
Box label; Product label	009L2060	Code number for ordering
Box label; Product label	PS 49 bar / MWP 710 psig	Maximum working pressure
Box label	Bi-flow	Flow direction
Box label	Straightway	Direction
Box label	6 mm ODF	Connection size and type
Product label	TS -40 – 150 °C / -40 – 302 °F	Temperature range
Box label; Product label	BE0126E	Code for production place and time (BE=Wuqing, week 01, year 2026, weekday E=Friday)
Box label; Product label	MADE IN CHINA	Manufacturing site acc. to EN standards
Box label	EAN code	Barcode for individual code no. identification according to EAN standard

Table: Product and label text (MQT)

Position	Inscription	Explanation
Box label; Product label	Electric Actuator	Product name
Box label; Product label	MQT 010 N	Product type
Box label; Product label	009L2188	Code number for ordering
Box label; Product label	Power supply: AC/DC 95 – 265 V	Rated voltage
Box label; Product label	Temperature range: -40 – 45 °C	Ambient temperature range
Box label; Product label	Max. torque 10 Nm	Max. open/close torque
Box label; Product label	Speed: 5.0s	Running speed
Product label	Max. power: 12 W	Max. power consumption
Product label	IP67	Enclosure ingress protection
Box label; Product label	CE	Product approval
Box label; Product label	MADE IN CHINA	Manufacturing site acc. to EN standards
Product label		Warning mark
Product label		Electricity safety level
Box label	EAN code	Barcode for individual code no. identification according to EAN standard
Product label	QR code	QR code link to product store

Design

Design and part name

The motorized shut off ball valves are bi flow electrical valves capable of ensuring a minimum internal loss when closed and a low pressure drop when open. The valves can be installed in liquid, suction and hot gas lines in refrigeration and air conditioning systems. The design of the ball valves guarantees the pressure balance with the valve closed.

Direct flow gives maximum through-flow with minimum pressure drop across valve. The combination of laser welded valve body (2) and valve tail (4), ball seat/seal (3), and double O-ring seal in spindle (6) provides the best tightness.

Figure: Design and materials

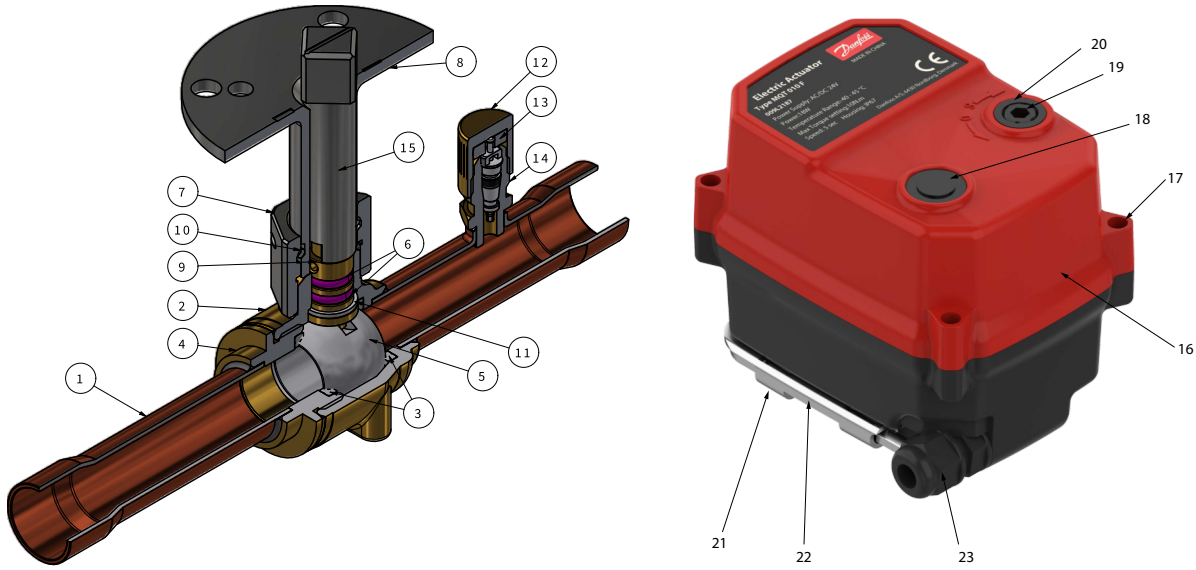


Table: Design and materials

Position	Description	Position	Description
1	Connection tube	13	Seal gasket
2	Valve body	14	Schrader valve
3	Ball seat	15	External spindle
4	Valve tail	16	Actuator housing
5	Ball	17	Screw
6	Double O-ring seal in spindle	18	Indicator
7	Adaptor coupling nut	19	Manual shaft
8	Adaptor coupling flange	20	Oil seal
9	Spindle	21	Wrench fixed
10	Locking pin	22	Hexagon wrench
11	Guide ring	23	Cable connector
12	Access port cap		

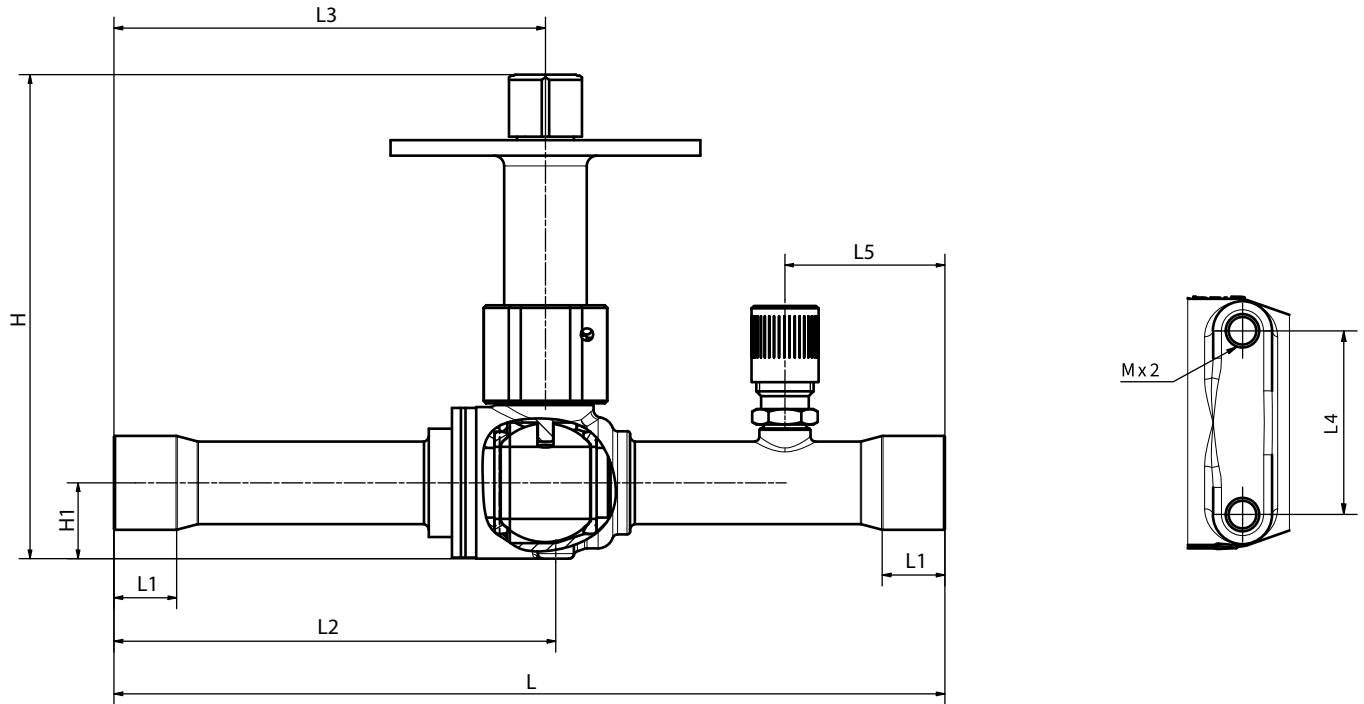
Dimensions

We have chosen to show dimensions of the major versions.

You will find downloadable dimension drawings for individual code numbers on Danfoss store as part of the Visuals tab for individual code numbers.

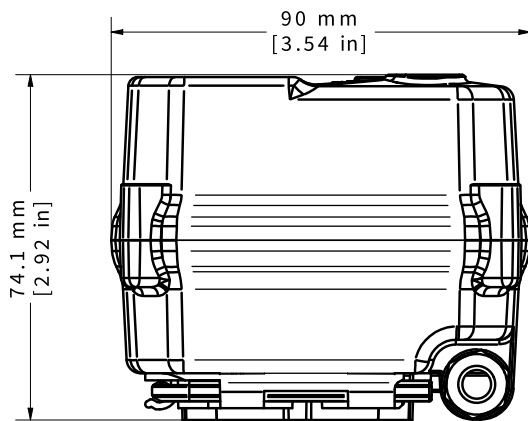
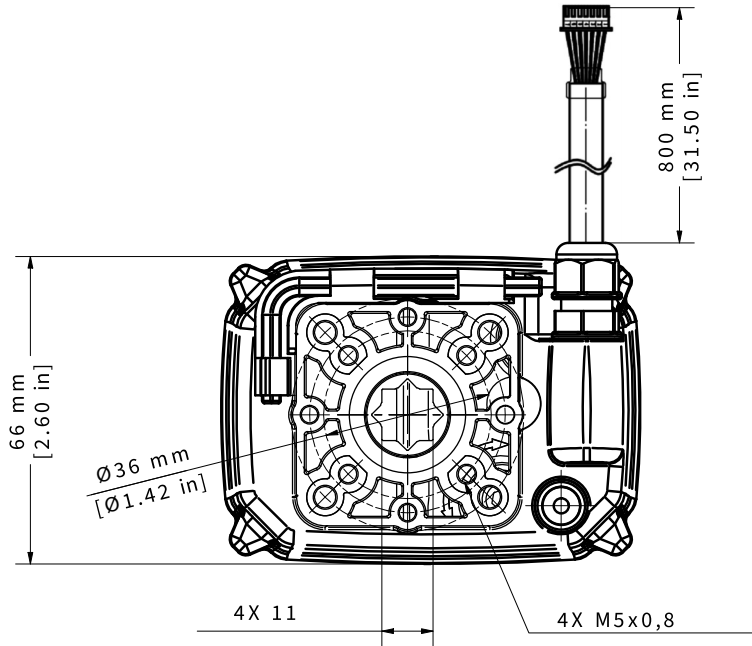
Weights also differ depending on the design of the individual code numbers. Weights are available as part of the technical data for individual code numbers on Danfoss store.

GBC M

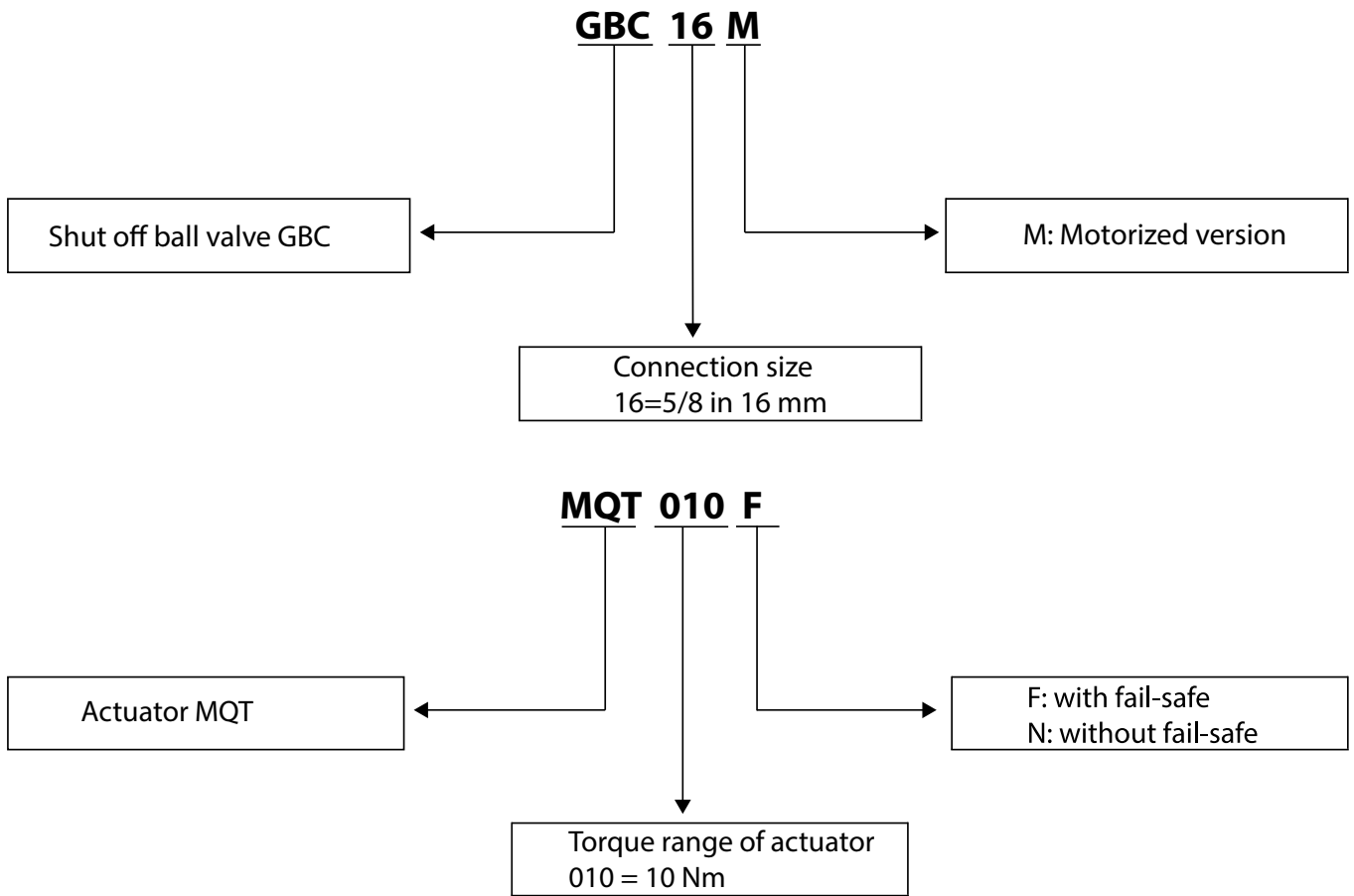


Type	Size	Connection	Connection tolerance	H	H1	L	L1	L2	L3	L4	L5	M	Weight	Code no.	
		[mm]	[mm]											without access port	with access port
GBC 6M	¼ in.	6.35	+0.065 / +0.155	94	15	139	7	75	73	22	31	M4x0.7	0.35	009L2020	009L2050
	6 mm	6.00		94	15	139	7	75	73	22	31	M4x0.7	0.35	009L2030	009L2060
GBC 10M	¾ in.	9.52		94	15	139	8	75	73	22	31	M4x0.7	0.35	009L2021	009L2051
	10 mm	10.00		94	15	139	9	75	73	22	31	M4x0.7	0.35	009L2031	009L2061
GBC 12M	½ in.	12.70		94	15	161	10	86	84	22	31	M4x0.7	0.36	009L2022	009L2052
	12 mm	12.00		94	15	161	10	86	84	22	31	M4x0.7	0.36	009L2032	009L2062
GBC 16M	¾ in.	16.00		94	15	161	12	86	84	22	31	M4x0.7	0.36	009L2023	009L2053

MQT



Designation



Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

When you click on the link you will be directed to the latest version of the 'Declaration of Conformity'. Products developed and sold before this date of issue conform to the directives/standards in force at the time of their sale.

Approval type	Title	Certification body	Approval topic
Manufacturer's Declaration	Danfoss MD 033F4017.AF	Danfoss	
Manufacturer's Declaration	Danfoss MD 033F4001.AL	Danfoss	PED, Pressure
Export Control Declaration	Check valve, Shut-off diaphragm valve, shut-off ball valve and differential pressure valve	Danfoss	
Manufacturer's Declaration	Danfoss MD 033F4006.AC	Danfoss	China RoHS
Export Control Declaration	Electric Actuator	Danfoss	

Contact details

Online support

Danfoss offers a wide range of support along with our products, including digital information, software, mobile apps and expert guidance. See the possibilities below.



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