

## Data Sheet

Shut-off diaphragm valve  
Type **BML** and **BMT**

With and without handwheel



The shut-off diaphragm valves BML and BMT are designed for installation in the liquid, suction and hot gas lines of refrigeration circuits, in order to open and to shut off inner refrigerant flow path by operating the handwheel.

BML valves can be delivered with flare, ODF solder or ODF solder with extended ends.

In the same product category, BMT 6 is a three-way manual shut-off valve with similar characteristics.

**Features**

- Fitted with three stainless steel diaphragms that prevent leakage throughout the operating life of the valve.
- Valve plate of polyamide nylon to give complete shut-off with minimum torque.
- Valve cover with counter-seat to prevent the ingress of moisture.

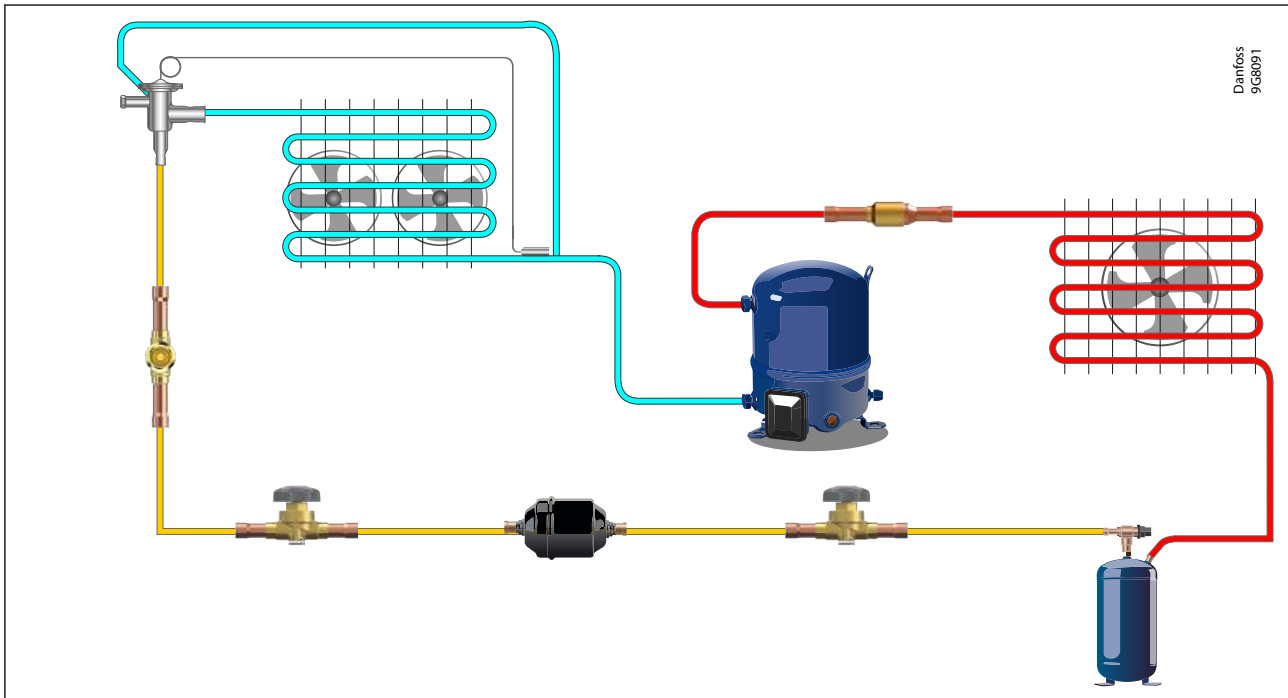
## Applications

### Application

Typical applications for BML and BMT valves are:

- Cold room
- Chiller
- Heat pump
- Transport refrigeration

Figure 1: Application



## Media

Table 1: Media features

Refrigerants	R134a, R22/R407C, R290, R404A/R507, R407H, R449B, R450A, R513A, R515B, R516A, R600, R600a, R1234ze(E), R1234yf, R1270
Refrigerant oil	POE, PAG (PVE, 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, R516A, R600, R600a, R1234ze(E), R1234yf and R1270 by ignition source assessment in accordance to standard EN ISO 80079-36.
- Flare connection is only approved for A1 and A2L refrigerants.

## Product specification

### Technical data

Table 2: Technical data

Technical data	Values
Max. working pressure	PS/MWP = 28 bar / 406 psig
Media Temperature range	-55 – 100 °C / -67 – 212 °F
Environmental transport/storage temperature and humidity	-40 – 65 °C / -40 – 150 °F Air humidity: RH≤95%

## Shut-off diaphragm valve, Types BML and BMT

Technical data	Values
Working range	$\Delta p = -1 - 21 \text{ bar} / -14 - 304 \text{ psig}$
Serviceable	Yes
Flow direction	Single flow

### Identification

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

Table 3: Box label (example)

Box label	Handwheel

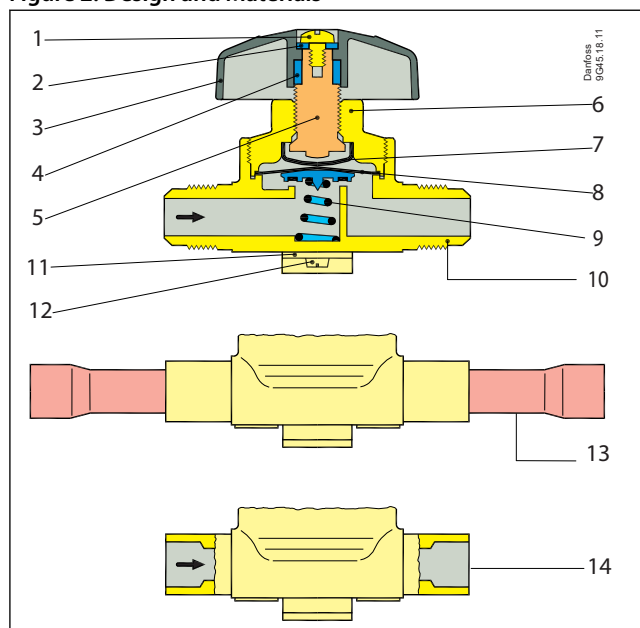
Danfoss  
9G8092

Table 4: Product and label text

Position	Inscription	Explanation
Box label	Shut-off diaphragm valve	Product name
Box label	BML 6s	Product type
Box label	009G0202	Code number
Box label	Straightway	Direction
Box label	With Hand wheel	Hand wheel type
Box label	¼ in Extended ends, ODF	Connection size and type
Box label	PS 28 bar/MWP 406 psig	Max. working pressure in bar and psig
Box label; Handwheel	Additional information: Relevant approval authority logos	
Box label	BE2720E	Code for production place and time (BE = Wuqing, week 27, year 2020, weekday E = Friday)
Box label; Handwheel	MADE IN CHINA	Manufacturing site acc. to EN standards
Box label	EAN code	Barcode for individual code no. identification according to EAN standard
Handwheel	OPEN	Open direction

## Design and Materials

Figure 2: Design and Materials



Position	Description	Material
1	Screw	Steel with plating Zn
2	Lock washer	Steel with plating Zn
3	Handwheel	Plastic
4	Driver	Al alloy
5	Spindle	Brass
6	Cover	Brass
7	Thrust pad	Stainless steel
8	Diaphragm with sealing ring	Stainless steel + nylon
9	Spring	Steel with plating Zn
10	Flare connection	Brass
11	Bracket	Steel with plating Zn
12	Screw	Steel with plating Zn
13	ODF solder with extended ends	Copper
14	ODF solder connection	Brass

The shut-off diaphragm valves are fitted with three diaphragms of stainless steel which ensure long operating life. BM valves are available in straightway, and three-way versions (BMT). The side connection of the three-way BMT can be shut off, but the end connections will always remain open. The BM can be fitted with a mounting bracket. Valve body, cover and spindle are made of brass, the handwheel (3) of coloured plastic. BM valves have a triple diaphragm seal (8) which is designed in such a way that the tension in the diaphragms lift the valve plate from the seat when the valve is opened.

The sealing ring itself is made of nylon and gives complete shut-off when the handwheel is lightly tightened. The thrust pad (7) prevents direct contact between spindle (5) and diaphragms (8). This also contributes to increased valve life. The spring (9) is able to hold the valve open at operating pressures down to -1 bar (pe). The counter-seat in the cover (6) prevents the ingress of moisture in fully open position. When the valve is opened, the pressure on the outlet side must not exceed the pressure on the inlet side by more than 1 bar.

## Dimensions and weights

### Dimensions and Weights

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.

## Shut-off diaphragm valve, Types BML and BMT

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.

### Flare version

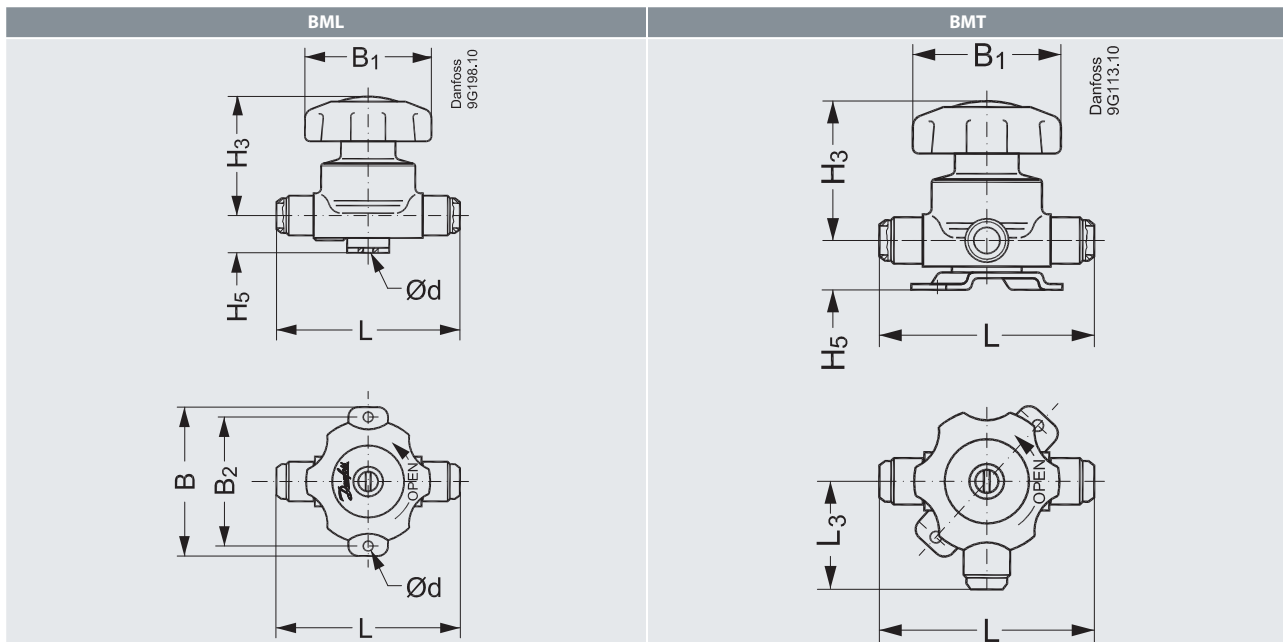


Table 5: Flare version

Type	SAE Flare	Flare Thread	Hand wheel	H3	H5	L	L3	B	B1	B2	ød	Net weight [kg]	Code no.
	[inch]			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
BML 6	1/4	7/16-20UNF-2A	Yes	46	15	77	—	62	50	50	5	0.3	009G0101
BML 6	1/4		No	47	15	77	—	62	—	50	5	0.3	009G0115
BMT 6	1/4		Yes	46	19	65	32.5	62	50	50	5	0.3	009G0105
BML 10	3/8	5/8-18UNF-2A	Yes	49	15	85	—	62	50	50	5	0.3	009G0127
BML 12	1/2	3/4-16UNF-2A	Yes	56	18	102	—	70	60	56	6	0.6	009G0141
BML 15	5/8	7/8-14UNF-2A	Yes	66	19	118	—	83	71	69	6	0.8	009G0168
BML 18	3/4	1 1/16-14UNS-2A	Yes	66	24	130	—	83	71	69	6	1.3	009G0183

ODF solder extended end + flare version

Figure 3: ODF solder extended end + flare version

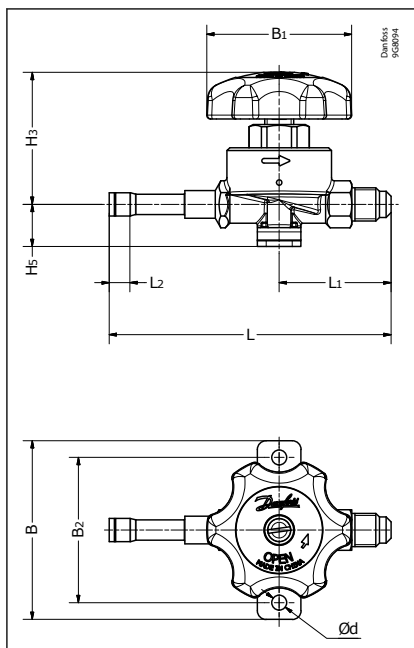
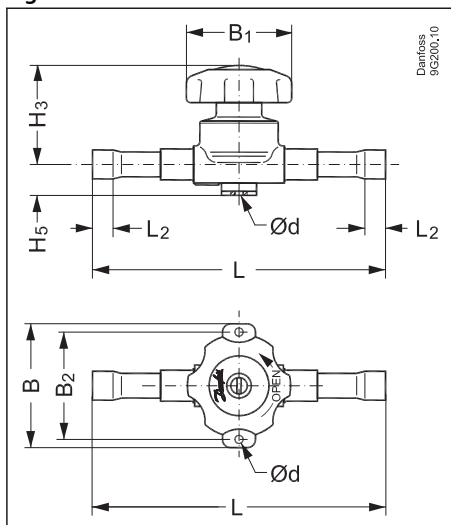


Table 6: ODF solder extended end + flare version

Type	Inlet connection		Outlet connection SAE Flare	Flare Thread connection	Hand wheel	H3	H5	L	L1	L2	B	B1	B2	Ød	Net weight [kg]	Code no.
	[inch]	[mm]				[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
BML 6	1/4	-	1/4	7/16-20UNF-2A	Yes	45	15	97	39	7	62	50	50	5	0.29	009G0119
BML 6	-	6	1/4		No	47	15	97	39	7	62	—	50	5	0.24	009G0117

ODF solder extended ends version

Figure 4: ODF solder extended ends



## Shut-off diaphragm valve, Types BML and BMT

Table 7: ODF solder extended ends

Type	Connection size		Connection tolerance [mm]	Hand wheel	H3	H5	L	L2	B	B1	B2	ød	Net weight [kg]	Code no.
	[inch]	[mm]			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
BML 6s	1/4	6	+0.065/+0.155	Yes	46	17	117	7	62	50	50	5	0.3	009G0202 / 009G0208
BML 6s	-	6	+0.065/+0.155	No	47	17	117	7	62	50	50	5	0.3	009G0209
BML 10s	3/8	10	+0.06/+0.13	Yes	49	16	117	9	62	50	50	5	0.3	009G0222 / 009G0228
BML 10s	-	10	+0.06/+0.13	No	50	16	117	9	62	50	50	5	0.3	009G0230
BML 12s	1/2	12	+0.065/+0.155	Yes	55	18	128	10	70	60	56	6	0.5	009G0242 / 009G0248
BML 12s	-	12	+0.065/+0.155	No	57	18	128	10	70	60	56	6	0.5	009G0249
BML 15s	5/8	16	+0.065/+0.155	Yes	66	20	165	12	83	71	69	6	0.8	009G0262
BML 22s	7/8	22	+0.06/+0.13	Yes	66	22	181	17	83	71	69	6	0.9	009G0291

## ODF solder version

Figure 5: ODF solder

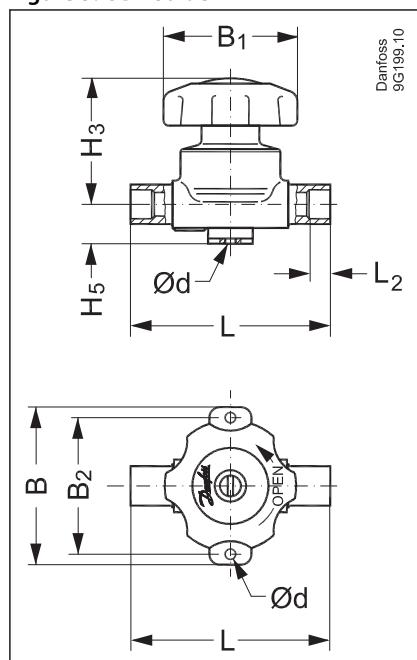


Table 8: ODF solder

Type	Connection size		Connection tolerance [mm]	Hand wheel	H3	H5	L	L2	B	B1	B2	ød	Net weight [kg]	Code no.
	[inch]	[mm]			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
BML 6s	1/4	6	+0.06/+0.13	Yes	46	17	65	7	62	50	50	5	0.3	009G0102 / 009G0108
BML 10s	3/8	10		Yes	49	16	72	9	62	50	50	5	0.3	009G0122 / 009G0128
BML 12s	1/2	12		Yes	55	18	87	10	70	60	56	6	0.5	009G0142 / 009G0148
BML 15s	5/8	16		Yes	65	20	106	12	83	71	69	6	0.8	009G0170
BML 18s	3/4	18		Yes	66	22	103	14	83	71	69	6	0.8	009G0181 / 009G0184
BML 22s	7/8	22		Yes	66	22	103	17	83	71	69	6	0.8	009G0191

## Connections

Standard BML versions are with connection types flare, ODF solder or ODF solder with extended ends in a wide variety of connection sizes. BMT versions are with flare connection. For details on availability, see Ordering section.

## Shut-off diaphragm valve, Types BML and BMT

**Table 9: Connection diagrams**

Connection type	Inlet	Outlet	mm connections	Inch connections
Flare	Flare	Flare	-	1/4 in x 1/4 in 3/8 in x 3/8 in 1/2 in x 1/2 in 5/8 in x 5/8 in 3/4 in x 3/4 in
ODF solder extended end + flare	ODF solder with extended end	Flare	6 mm x 1/4 in	1/4 in x 1/4 in
ODF solder extended ends	ODF solder with extended end	ODF solder with extended end	6 mm x 6 mm 10 mm x 10 mm 12 mm x 12 mm 16 mm x 16 mm 22 mm x 22 mm	1/4 in x 1/4 in 3/8 in x 3/8 in 1/2 in x 1/2 in 5/8 in x 5/8 in 7/8 in x 7/8 in
ODF solder	ODF solder	ODF solder	6 mm x 6 mm 10 mm x 10 mm 12 mm x 12 mm 16 mm x 16 mm 18 mm x 18 mm 22 mm x 22 mm	1/4 in x 1/4 in 3/8 in x 3/8 in 1/2 in x 1/2 in 5/8 in x 5/8 in 3/4 in x 3/4 in 7/8 in x 7/8 in

### Ordering

BML code numbers described in this data sheet are standard code numbers, i.e. made to stock. Besides code numbers made to stock

BML is also made to order. Make to order options include:

- Mechanical connection type
- Mechanical connection size

Multipack contains several items, individually packed, so that customers can purchase 1 item and receive all relevant documentation.

Industrial pack contains several items that are not individually packed. Industrial packs cannot be broken down, and will only contain documentation on pack level, not on item level.

### Straightway version with hand wheel



**Table 10: BML with flare connections**

Type	Connection Type	SAE Flare	Kv value	Cv value	Multi pack	
		[in.]	[m <sup>3</sup> /h]	[gal/min]	Code no.	Qty/ pack
BML 6	Flare ext. x ext.	1/4	0.3	0.35	009G0101	20
BML 10		3/8	0.84	0.98	009G0127	20
BML 12		1/2	1.5	1.75	009G0141	12
BML 15		5/8	2.2	2.57	009G0168	12
BML 18		3/4	2.9	3.38	009G0183	12



## Shut-off diaphragm valve, Types BML and BMT



**Table 11: BML with ODF solder connections**

Type	Connection Type	ODF solder connection		Kv value	Cv value	Multi pack	
		[in.]	[mm]	[m3/h]	[gal/min]	Code no.	Qty/ pack
BML 6s	Solder ODF × ODF	1/4	-	0.3	0.35	009G0102	20
		-	6	0.3	0.35	009G0108	20
BML 10s		3/8	-	0.84	0.98	009G0122	20
		-	10	0.84	0.98	009G0128	20
BML 12s		1/2	-	1.5	1.75	009G0142	12
		-	12	1.5	1.75	009G0148	12
BML 15s		5/8	16	2.2	2.57	009G0170	12
BML 18s		3/4	-	2.9	3.38	009G0181	12
		-	18	2.9	3.38	009G0184	12
BML 22s		7/8	22	2.9	3.38	009G0191	12



**Table 12: BML with extended ODF solder connections**

Type	Connection Type	Extended ODF solder connection		Kv value	Cv value	Multi pack	
		[in.]	[mm]	[m3/h]	[gal/min]	Code no.	Qty/ pack
BML 6s	Solder ODF × ODF	1/4	-	0.3	0.35	009G0202	20
		-	6	0.3	0.35	009G0208	20
BML 10s		3/8	-	0.84	0.98	009G0222	20
		-	10	0.84	0.98	009G0228	20
BML 12s		1/2	-	1.5	1.75	009G0242	12
		-	12	1.5	1.75	009G0248	12
BML 15s		5/8	16	2.2	2.57	009G0262	12
BML 22s		7/8	22	2.9	3.38	009G0291	12



**Table 13: BML with extended ODF solder + flare connections**

Type	Connection Type	Inlet connection		Outlet connection	Kv value	Cv value	Multi pack	
		Extended ODF solder		SAE Flare			Code no.	Qty/ pack
		[in.]	[mm]	[in.]	[m3/h]	[gal/min]		
BML 6	Solder ODF × Flare ext.	1/4	-	1/4	0.3	0.35	009G0119	20

### Threeway version with hand wheel



Table 14: BML with flare connections

Type	Connection Type	SAE Flare	Kv value	Cv value	Multi pack	
		[in.]	[m <sup>3</sup> /h]	[gal/min]	Code no.	Qty/ pack
BMT 6	Flare ext. x ext.	1/4	0.3	0.35	009G0105	20

### Straightway version without hand wheel



Table 15: BML with flare connections

Type	Connection Type	SAE Flare	Kv value	Cv value	Multi pack	
		[in.]	[m <sup>3</sup> /h]	[gal/min]	Code no.	Qty/ pack
BML 6	Flare ext. x ext.	1/4	0.3	0.35	009G0115	20



Table 16: BML with extended ODF solder connections

Type	Connection Type	Extended ODF solder connection		Kv value	Cv value	Multi pack	
		[in.]	[mm]	[m <sup>3</sup> /h]	[gal/min]	Code no.	Qty/ pack
BML 6s	Solder ODF x ODF	-	6	0.3	0.35	009G0209	20
BML 10s		-	10	0.84	0.98	009G0230	20
BML 12s		-	12	1.5	1.75	009G0249	12



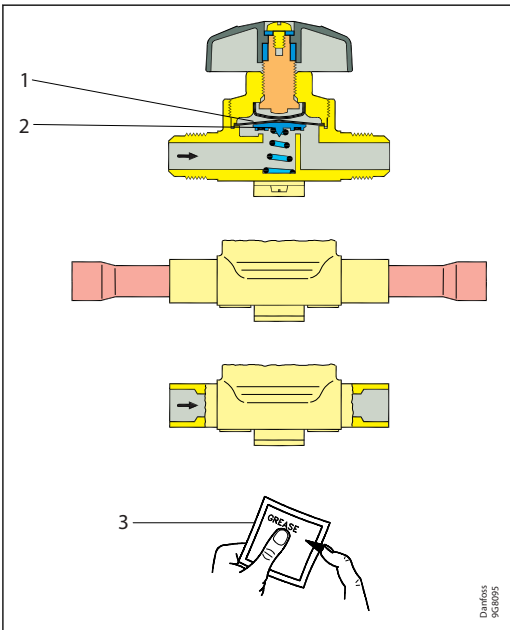
## Shut-off diaphragm valve, Types BML and BMT

Table 17: BML with extended ODF solder + flare connections

Type	Connection Type	Inlet connection Extended ODF solder		Outlet connection SAE Flare	Kv value	Cv value	Multi pack	
		[in.]	[mm]	[in.]	[m3/h]	[gal/min]	Code no.	Qty/ pack
BML 6	Solder ODF x Flare ext.	-	6	1/4	0.3	0.35	009G0117	20

### Accessories

Figure 6: Accessories



Position	Description	Qty.
1	Diaphragm assembly with sealing ring	1
2	Diaphragm	2
3	Bag with grease	1

Figure 7: Diaphragm kit



## Shut-off diaphragm valve, Types BML and BMT

Type	Valve connection size		Multi pack	
	[inch]	[mm]	Code no.	Qty/ pack
<b>BML 6 and BMT 6</b>	1/4	6	<b>009G0025</b>	12
<b>BML 10</b>	3/8	10	<b>009G0026</b>	12
<b>BML 12</b>	1/2	12	<b>009G0027</b>	12
<b>BML 15</b>	5/8	16	<b>009G0028</b>	12
<b>BML 18 and BML 22</b>	3/4 – 7/8	18 – 22	<b>009G0029</b>	12

Figure 8: Diaphragm with sealing ring



Table 18: Diaphragm with sealing ring

Type	Valve connection size		Industrial pack	
	[inch]	[mm]	Code no.	Qty/ pack
<b>BML 6 and BMT 6</b>	1/4	6	<b>009G0020</b>	75

## 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.

Some approvals may change over time. You can check the most current status at [danfoss.com](http://danfoss.com) or contact your local Danfoss representative if you have any questions.



Table 19: Certificates, declarations, and approvals

File name	Document type	Document topic	Approval authority
RU Д-ДК.БЛ08.В.03634	EAC Declaration	Machinery & Equipment	EAC
033F4001.AE	Manufacturers Declaration	PED	Danfoss
033F4006	Manufacturers Declaration	China RoHS	Danfoss
033F4010	Manufacturers Declaration	RoHS	Danfoss
033F4017.AA	Manufacturers Declaration	EN ISO 14903:2017 Level B1	Danfoss
UA.089.D.00188-17	UA Declaration	PED	LLC CDC EURO TYSK
UA.TR-089.0993-17	Pressure - Safety Certificate	PED	LLC CDC EURO TYSK
UL SA7200	Mechanical - Safety Certificate	UL	UL

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