

Data sheet

Shut-off ball valve for high pressure

Type GBC for R744 (CO₂ - 90 bar / 1305 psi)



Danfoss shut-off ball valves, type GBC for R744 (CO₂) are manually operated shut-off valves for CO₂ systems.

The valves are specifically designed for intrinsic standstill security, meaning that the valves can withstand pressures normally arising when the refrigeration system is shut off, i.e. during serving or during unexpected power failure.

The valve structure and materials are designed and tested specifically for use with CO₂ refrigerant. The valves are approved for use in all parts of the system with pressure ratings lower than the below stated Maximum Working Pressure, typically the liquid, suction, gas-bypass lines.

Features

- Slimline body – easy to install and service.
- ¼ turn from fully open to fully closed.
- GBC for R744 is designed for:
GBC 6s H – GBC 28s H: 90 bar / 1305 psig
GBC 35s H – GBC 42s H: 75 bar / 1088 psig max. working pressure.
- Rotation stops at fully open and fully close positions.
- Indicator on spindle top shows if the valve is open or closed.
- Precision laser welded construction.
- Burst-proof spindle design.
- Valve seal of low friction, tight-sealing modified PTFE Teflon®.
- Drilled and tapped for panel mounting.
- Relief hole design to release entrapped liquid.
- Selected O-ring material for CO₂ refrigerant.
- Advanced design ensures trusted bi-flow function.

Approvals

Technical data

- Refrigerants: R 744 (CO₂)
- Oils: POE, PAG
- Media temperature range: -40 – +100 °C / -40 – +212 °F.
- Max. working pressure (PS/MWP):

GBC 6s H – 28s H	: 90 bar / 1305 psig
GBC 35s H – 42s H	: 75 bar / 1088 psig
- Max. test pressure:

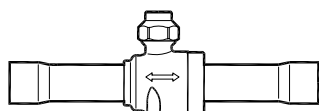
GBC 6s H - 28s H	: 149 bar / 2161 psig
GBC 35s H - 42s H	: 124 bar / 1799 psig

Warning! The GBC for R744 (CO₂) are designed and qualified for normal food retail applications. For the usage in more aggressive environments like marine applications please consult Danfoss.

Notes: For the application use with R744 as part of a secondary loop or cascade:

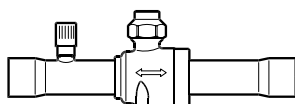
The design pressure of the refrigerant containing component is not less than the design pressure of the associated components.

1. The component is not provided with any pressure relief or pressure regulating relief valve and that a sufficient number of valves having capacity deemed adequate shall be field-installed on the refrigeration system.
2. When the refrigeration system is de-energized, venting of R744 may occur through the pressure regulating relief valves, and may need to be recharged, but the valve should not be defeated or bypassed.
3. A sufficient number of pressure relief and pressure regulating valves may need to be provided based upon system capacity and located such that no stop valve is provided between the relief valve and the parts or section of the system being protected.

Ordering

GBC without access port, solder ODF/ODF, Copper connections

Type	Solder ODF/ODF connection		K _v value ¹⁾	C _v value ¹⁾	Max. working pressure (PS/MWP)		Code no.
	[inch]	[mm]			[bar]	[psig]	
GBC 6s H	1/4	-	1.78	2.06	90	1305	009G7415
	-	6	1.78	2.06	90	1305	009G7395
GBC 10s H	3/8	-	6.31	7.29	90	1305	009G7416
	-	10	6.31	7.29	90	1305	009G7396
GBC 12s H	1/2	-	12.87	14.88	90	1305	009G7417
	-	12	12.87	14.88	90	1305	009G7397
GBC 16s H	5/8	16	11.77	13.61	90	1305	009G7418
GBC 18s H	3/4	-	31.07	35.92	90	1305	009G7419
	-	18	31.07	35.92	90	1305	009G7399
GBC 22s H	7/8	22	24.47	28.29	90	1305	009G7420

¹⁾ calculated based on fluid dynamic equations

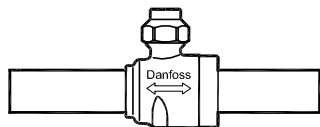

GBC with access port, solder ODF/ODF, Copper connections

Type	Solder ODF/ODF connection		K _v value ¹⁾	C _v value ¹⁾	Max. working pressure (PS/MWP)		Code no.
	[inch]	[mm]			[bar]	[psig]	
GBC 6s H	1/4	-	1.78	2.06	90	1305	009G7581
	-	6	1.78	2.06	90	1305	009G7580
GBC 10s H	3/8	-	6.31	7.29	90	1305	009G7582
	-	10	6.31	7.29	90	1305	009G7583
GBC 12s H	1/2	-	12.87	14.88	90	1305	009G7585
	-	12	12.87	14.88	90	1305	009G7584
GBC 16s H	5/8	16	11.77	13.61	90	1305	009G7586
GBC 18s H	3/4	-	31.07	35.92	90	1305	009G7588
	-	18	31.07	35.92	90	1305	009G7587
GBC 22s H	7/8	22	24.47	28.29	90	1305	009G7589

¹⁾ calculated based on fluid dynamic equations

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Ordering



GBC without access port, butt weld, Stainless steel connections

Type	Butt weld connection		K _v value ¹⁾	C _v value ¹⁾	Max. working pressure (PS/MWP)		Code no.
	[inch]	[mm]			[bar]	[psig]	
GBC 28s H	-	28	96.72	111.81	90	1305	009G7406
GBC 35s H	-	35	106.95	123.63	75	1088	009G7410
GBC 42s H	-	42	150.98	174.53	75	1088	009G7411

¹⁾ calculated based on fluid dynamic equations

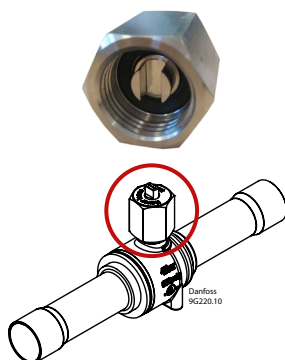
Spare parts

Bracket kit



Type	Valve connection size		Industrial pack [pcs.]	Code no.
	[inch]	[mm]		
GBC 6s - GBC 16s	1/4 - 5/8	6 - 16	12	009G7084
GBC 18s - GBC 22s	3/4 - 7/8	18 - 22	12	009G7085
GBC 28s	1 1/8	28	10	009G7086
GBC 35s	1 3/8	35	5	009G7087
GBC 42s	1 5/8	42	4	009G7088

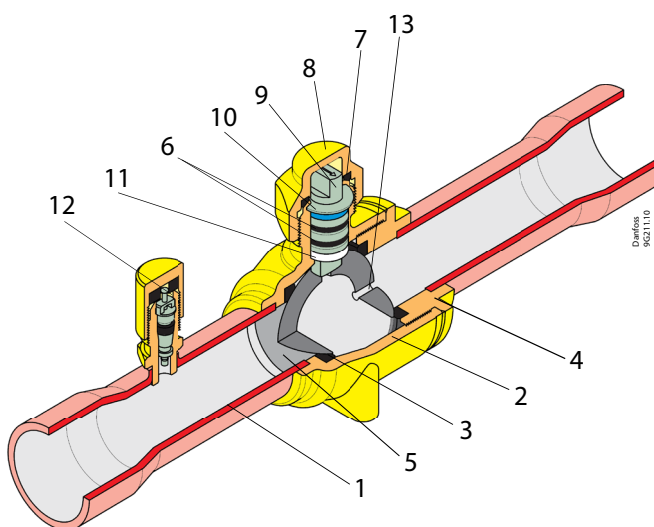
Service kit



Type	Valve connection size		Multi pack [pcs.]	Code no.
	[inch]	[mm]		
GBC 6s - GBC 22s	1/4 - 7/8	6 - 22	116	009G8012
GBC 28s - GBC 35s	1 1/8 - 1 3/8	28 - 35	60	009G8014
GBC 42s	1 5/8	42	50	009G8016

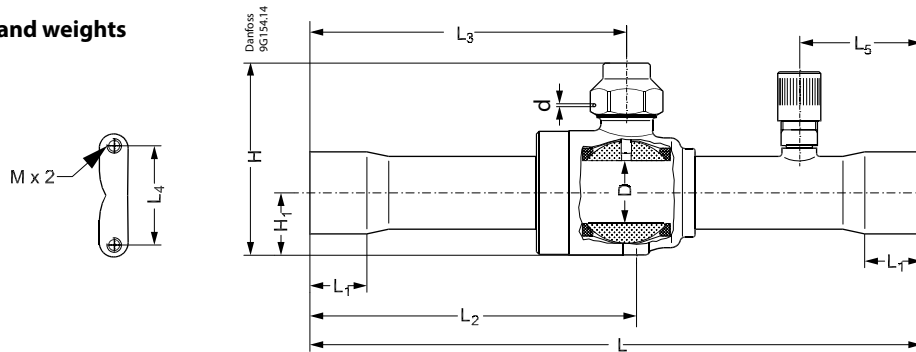
Function

1. Connection
2. Laser welded valve body
3. Ball seat (modified PTFE)
4. Valve adapter
5. Stainless steel ball
6. Double spindle O-ring seal
7. Cap O-ring seal (PTFE)
8. Seal cap
9. Spindle
10. Support gasket
11. Seal gasket
12. Schrader valve
13. Relief hole



Direct flow gives maximum through-flow with minimum pressure drop across valve. The combination of laser-welded valve body (2), ball seat/seal (3), double spindle O-ring seal (6), and cap seal (7) gives absolutely minimum leakage.

Dimensions and weights

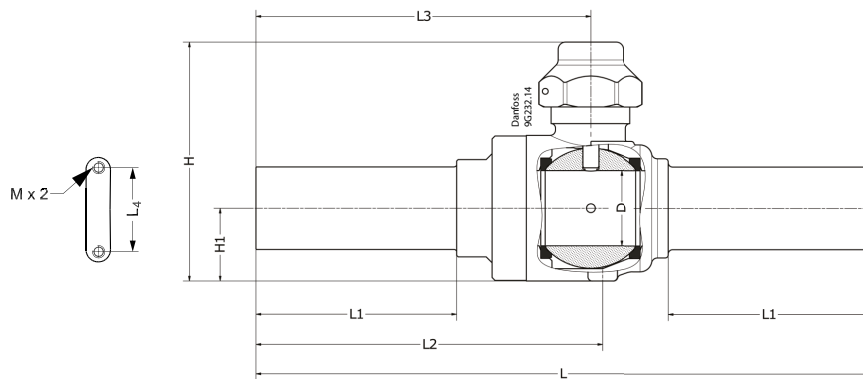


SI units

Type	Connection		Access port	H	H1	L	L1	L2	L3	L4	L5	M	D	Weight
	[inch]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
GBC 6s H	1/4	6	No/Yes	53	15	139	5	75	73	22	31	M4 x 0.7	14	225
GBC 10s H	3/8	10	No/Yes	53	15	139	7	75	73	22	31	M4 x 0.7	14	230
GBC 12s H	1/2	12	No/Yes	53	15	161	8	86	84	22	31	M4 x 0.7	14	245
GBC 16s H	5/8	16	No/Yes	53	15	161	10	86	84	22	31	M4 x 0.7	14	249
GBC 18s H	3/4	18	No/Yes	61	19	185	12	99	96	30	37	M4 x 0.7	19	445
GBC 22s H	7/8	22	No/Yes	61	19	185	15	99	96	30	37	M4 x 0.7	19	448

US units

Type	Connection		Access port	H	H1	L	L1	L2	L3	L4	L5	M	D	Weight
	[inch]	[mm]		[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[mm]	[inch]	[lbs]
GBC 6s H	1/4	6	No/Yes	2.09	0.59	5.47	0.20	2.95	2.87	0.87	1.22	M4 x 0.7	0.55	0.50
GBC 10s H	3/8	10	No/Yes	2.09	0.59	5.47	0.28	2.95	2.87	0.87	1.22	M4 x 0.7	0.55	0.51
GBC 12s H	1/2	12	No/Yes	2.09	0.59	6.34	0.32	3.39	3.31	0.87	1.22	M4 x 0.7	0.55	0.54
GBC 16s H	5/8	16	No/Yes	2.09	0.59	6.34	0.39	3.39	3.31	0.87	1.22	M4 x 0.7	0.55	0.55
GBC 18s H	3/4	18	No/Yes	2.40	0.75	7.28	0.47	3.90	3.78	1.18	1.46	M4 x 0.7	0.75	0.98
GBC 22s H	7/8	22	No/Yes	2.40	0.75	7.28	0.59	3.90	3.78	1.18	1.46	M4 x 0.7	0.75	0.99



SI units

Type	Connection	H	H1	L	L1	L2	L3	L4	M	D	Weight
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[g]
GBC 28s H	28	81	25	208	68	118	114	38	M4 x 0.7	25	869
GBC 35s H	35	91	30	251	81	144	138	48	M6 x 1.0	32	1317
GBC 42s H	42	111	35	281	90	159	153	55	M6 x 1.0	38	2171

US units

Type	Connection	H	H1	L	L1	L2	L3	L4	M	D	Weight
	[mm]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[mm]	[inch]	[lbs]
GBC 28s H	28	3.19	0.98	8.19	2.68	4.65	4.49	1.50	M4 x 0.7	0.98	1.92
GBC 35s H	35	3.58	1.18	9.88	3.19	5.67	5.43	1.89	M6 x 1.0	1.26	2.90
GBC 42s H	42	4.37	1.38	11.06	3.54	6.26	6.02	2.17	M6 x 1.0	1.50	4.79

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