

# Food safety first

## Accept **no risks** in your CO<sub>2</sub> system

Danfoss ball valves, type GBC, and check valves, type NRV, are designed to withstand the high pressures (90 bar MWP) experienced during standstill conditions enabling the system to be shut down and serviced without auxiliary cooling systems.

**90 bar**  
capability

for complete  
standstill security in  
CO<sub>2</sub> systems





## High pressure ball and check valves from your CO<sub>2</sub> expert

Our new range of high pressure GBC ball valves and NRV check valves, designed for 90 bar MWP, offers you a full CO<sub>2</sub> component portfolio designed to withstand high working pressures that can occur when the system is non-operational.

With the GBC and NRV high-pressure line components designed for intrinsic standstill security you avoid expensive backup systems and you can quickly get back up and running, regardless of whether the downtime was due to power outages or due to planned service.

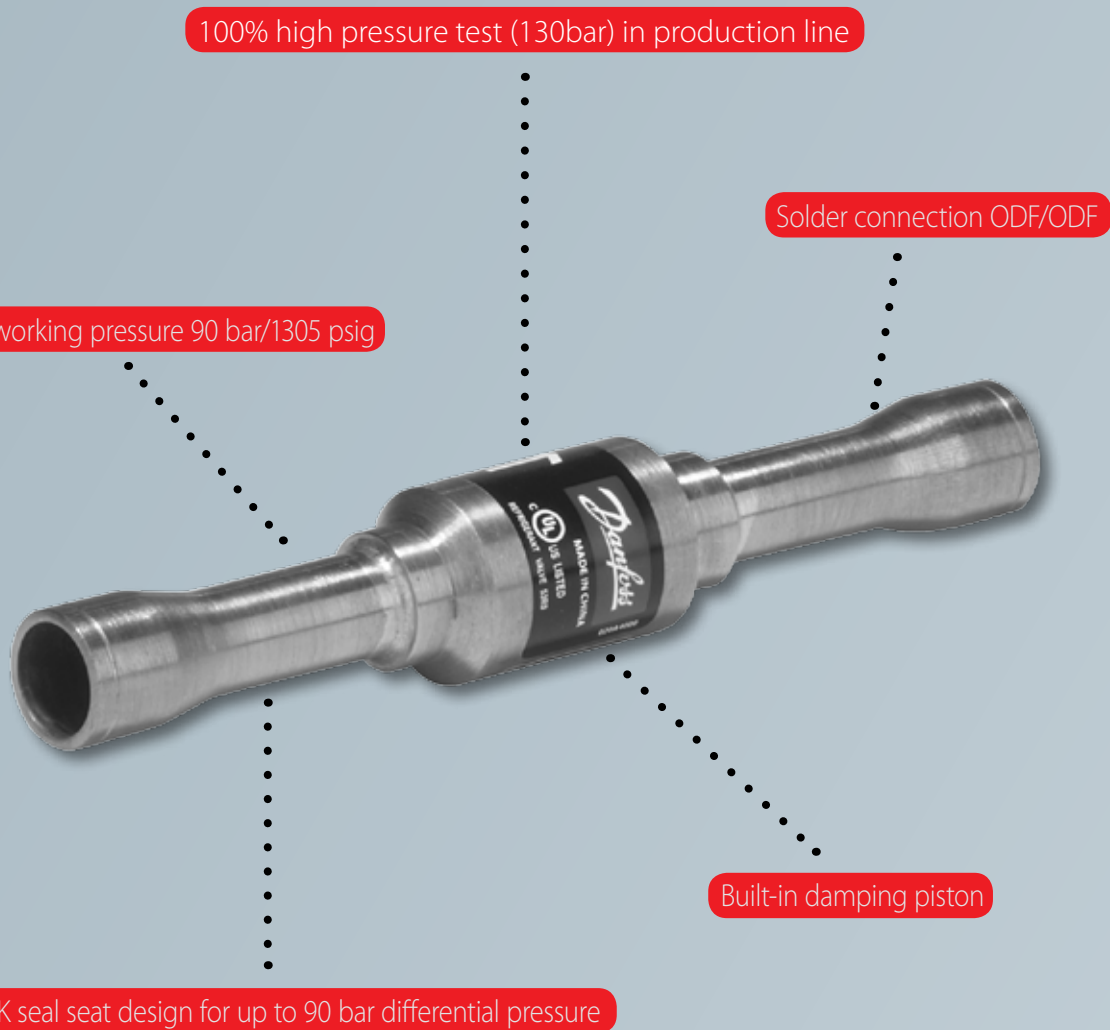
In latest generation of CO<sub>2</sub> ball valves we now ensure full bi-flow function. The ball includes pressure equalization to prevent trapped pressure and has access port for convenient service. The bi-flow function is enabled regardless of valve installation (horizontally or vertically) and assures leak tight sealing.

We have tested our new series of valves in the field for more than 2 years to ensure good material compatibility and robust function that live up to the demands of the industry.

Danfoss ball valves, type GBC,  
and check valves, type NRV

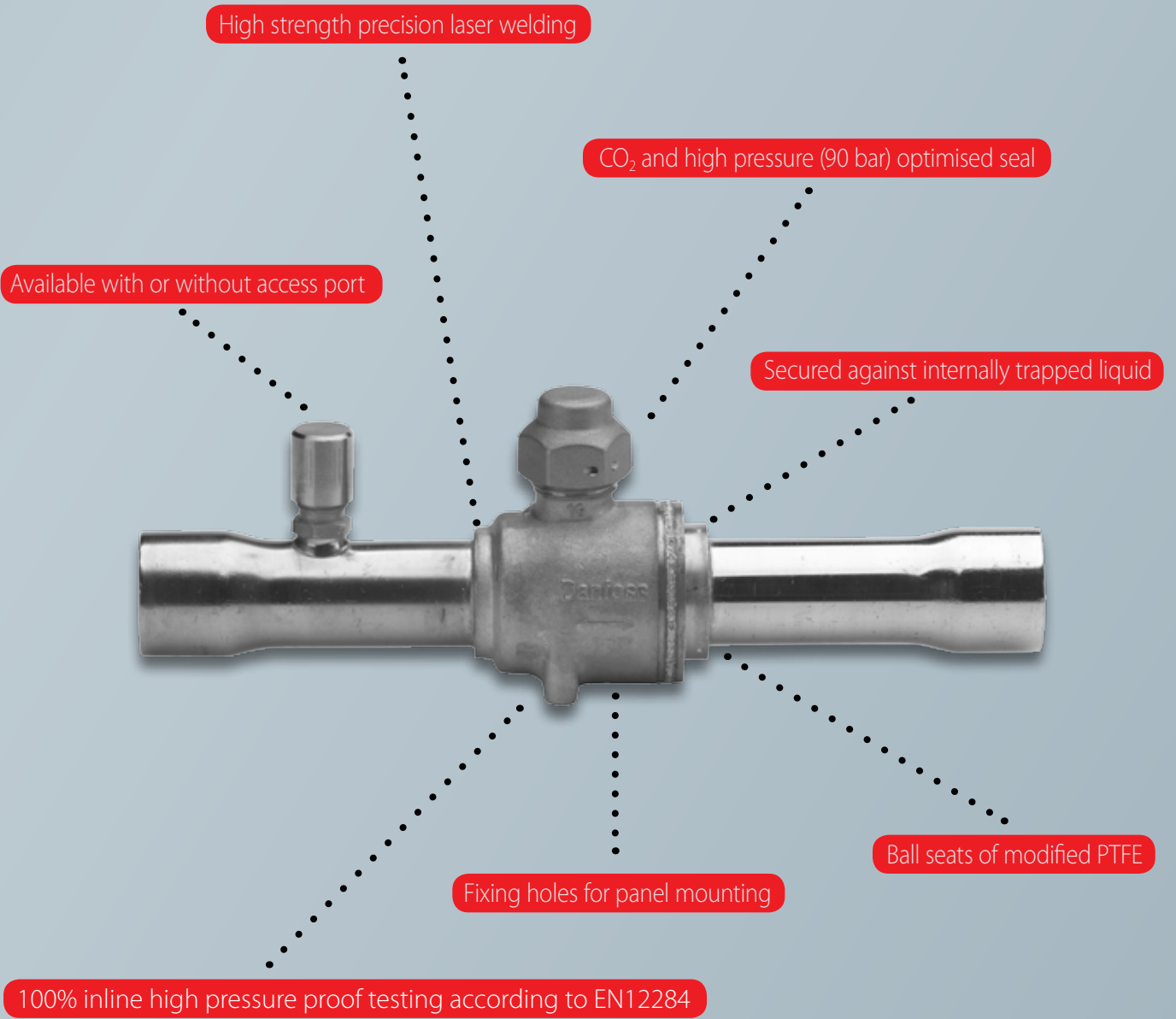


# NRV



## What's in it for you

- › Full CO<sub>2</sub> component portfolio
- › Reduced downtime in event of power fault
- › Food safety and improved quality
- › Availability
- › Eliminated risks
- › Reduced capital cost





|  |                         | Standard subcritical | Subcritical w. low temp. hot gas defrosting | Standstill capable subcritical series | Transcritical series  |
|--|-------------------------|----------------------|---|---------------------------------------|-----------------------|
| <b>Danfoss CO<sub>2</sub> product highlights</b> |                         | PS 46 bar [667 psi]  | PS 52 bar [754 psi]                         | PS 90 bar [1305 psi]                  | PS 140 bar [2031 psi] |
| <b>Solenoid Valves</b>                           | EVR 2 - EVR 15          | ●                    |   |                                       |                       |
|  | EVUL                    | ●                    | ●   | ●                                     |                       |
| <b>Shutoff Valves (Ball Valves)<sup>1</sup></b>  | GBC for CO <sub>2</sub> | ●                    | ●   | ● <sup>2</sup>                        |                       |
| <b>Check Valves</b>                              | NRV for CO <sub>2</sub> | ●                    | ●   | ●                                     |                       |
| <b>Expansion Valves</b>                          | AKVH 10                 | ●                    | ●   | ●                                     |                       |
|  | CCM10-40                | ●                    | ●   | ●                                     |                       |
|  | CCMT2-8                 | ●                    | ●   | ●                                     | ●                     |
|  | ICMTS                   | ●                    | ●   | ●                                     | ●                     |
| <b>Automatic Pressure Regulators</b>             | ICV                     | ●                    | ●   |                                       |                       |
| <b>Filter Driers</b>                             | DCR                     | ●                    |   |                                       |                       |
|  | DML                     | ●                    |   |                                       |                       |
|  | DMT                     | ●                    | ●   | ●                                     | ●                     |
| <b>Sight Glasses</b>                             | SGP                     | ●                    | ●   |                                       |                       |

<sup>1</sup> CO<sub>2</sub> valves now available in sizes up to DN42 and 1 1/8" providing a full line of valves needed for pack installation. Sizes DN28, 1 1/8" and up are with steel butt weld connections.

<sup>2</sup> For sizes 28, 35, and 42 1 1/8", 1 3/8", 1 5/8" the maximum working pressure is 75 bar (1090 psi.)

Danfoss is your reliable partner for CO<sub>2</sub> refrigeration, offering you the widest product portfolio of high quality components for CO<sub>2</sub> systems.

**60%**  
**Reduction in CO<sub>2</sub>**  
 Equivalent emissions can be achieved by replacing synthetic refrigerants with CO<sub>2</sub>.

### GBC without access port - copper connections, solder ODF connections

| Type      | In. | Code no. | K <sub>v</sub> value <sup>1)</sup><br>m <sup>3</sup> /h | C <sub>v</sub> value <sup>1)</sup><br>(gal/min) | mm. | Code no. | K <sub>v</sub> value <sup>1)</sup><br>m <sup>3</sup> /h | C <sub>v</sub> value <sup>1)</sup><br>(gal/min) | Multi-pack | MWP<br>bar | PS<br>psi |
|-----------|-----|----------|---|---|-----|----------|---|---|------------|------------|-----------|
| GBC 6s H  | 1/4 | 009G7415 | 0.94  | 4.14  | 6   | 009G7395 | 0.73  | 3.21  | 25         | 90         | 1305      |
| GBC 10s H | 3/8 | 009G7416 | 3.04  | 13.39   | 10  | 009G7396 | 3.42  | 15.05   |            |            |           |
| GBC 12s H | 1/2 | 009G7417 | 6.96  | 30.64   | 12  | 009G7397 | 5.96  | 26.24   |            |            |           |
| GBC 16s H | 5/8 | 009G7418 | 9.60  | 42.27   | 16  | 009G7418 | 9.60  | 42.27   |            |            |           |
| GBC 18s H | 3/4 | 009G7419 | 15.45   | 68.02   | 18  | 009G7399 | 12.52   | 55.56   |            |            |           |
| GBC 22s H | 7/8 | 009G7420 | 21.30   | 93.78   | 22  | 009G7420 | 21.30   | 93.78   |            |            |           |

<sup>1)</sup> Values calculated according to IEC standard

### GBC with access port - copper connections, solder ODF connections

| Type      | In. | Code no. | K <sub>v</sub> value <sup>1)</sup><br>m <sup>3</sup> /h | C <sub>v</sub> value <sup>1)</sup><br>(gal/min) | mm. | Code no. | K <sub>v</sub> value <sup>1)</sup><br>m <sup>3</sup> /h | C <sub>v</sub> value <sup>1)</sup><br>(gal/min) | Multi-pack | MWP<br>bar | PS<br>psi |
|-----------|-----|----------|---|---|-----|----------|---|---|------------|------------|-----------|
| GBC 6s H  | 1/4 | 009G7581 | 0.94  | 4.14  | 6   | 009G7580 | 0.73  | 3.21  | 25         | 90         | 1305      |
| GBC 10s H | 3/8 | 009G7582 | 3.04  | 13.39   | 10  | 009G7583 | 3.42  | 15.05   |            |            |           |
| GBC 12s H | 1/2 | 009G7585 | 6.96  | 30.64   | 12  | 009G7584 | 5.95  | 26.24   |            |            |           |
| GBC 16s H | 5/8 | 009G7586 | 9.60  | 42.27   | 16  | 009G7586 | 9.60  | 42.27   |            |            |           |
| GBC 18s H | 3/4 | 009G7588 | 15.45   | 68.02   | 18  | 009G7587 | 12.52   | 55.56   |            |            |           |
| GBC 22s H | 7/8 | 009G7589 | 21.30   | 93.78   | 22  | 009G7589 | 21.30   | 93.78   |            |            |           |

<sup>1)</sup> Values calculated according to IEC standard

### GBC with stainless steel connections, butt welding

| Type      | mm. | Code no. | K <sub>v</sub> value <sup>1)</sup><br>m <sup>3</sup> /h | C <sub>v</sub> value <sup>1)</sup><br>(gal/min) | Multi-pack | MWP<br>bar | PS<br>psi |
|-----------|-----|----------|---|---|------------|------------|-----------|
| GBC 28s H | 28  | 009G7406 | 56.5  | 248.8   | 5          | 90         | 1305      |
| GBC 35s H | 35  | 009G7410 | 82.2  | 361.9   | 5          | 75         | 1085      |
| GBC 42s H | 42  | 009G7411 | 121.7   | 535.8   | 4          | 75         | 1085      |

<sup>1)</sup> Values calculated according to IEC standard

### NRV straightway, solder ODF connections

| Type      | Connection size |     | Code no. | Differential pressure to start opening the valve ΔP1 | Pressure drop across valve ΔP2 bar <sup>1)</sup> | K <sub>v</sub> value <sup>2)</sup> m <sup>3</sup> /h | C <sub>v</sub> value (gal/min) | Multi pack | MWP bar | PS psi |
|-----------|-----------------|-----|----------|--|--|--|--------------------------------|------------|---------|--------|
|           | In.             | mm. |          |  |  |  |                                |            |         |        |
| NRV 10s H | 3/8             |     | 020-4000 | 0.4  | 1.1  | 0.9  | 3.96                           | 25         | 90      | 1305   |
| NRV 10s H |                 | 10  | 020-4300 | 0.4  | 1.1  | 0.9  | 3.96                           | 25         | 90      | 1305   |

<sup>1)</sup> ΔP1 = the minimum pressure at which the valve start opening

ΔP2 = the minimum pressure at which the valve is completely open

<sup>2)</sup> The kv value is the flow of water in m3/h at a pressure drop across valve of 1 bar, ρ = 1000 kg/m3

## Thinking about Climate Sustainability

Danfoss encourages the industry to continue to speed up its contribution to a cleaner environment and a cleaner image. We are committed to improve the climate by providing the world of refrigeration and air conditioning with greener technology. For many years, Danfoss has focused on natural refrigerants (low GWP) and today we present a broad product range for NH<sub>3</sub>, HC and CO<sub>2</sub> refrigerant applications. With the many technologies, products and services from Danfoss already available you can save energy and minimize the Green House Gasses (GHG) emissions. And we continue to develop new components suitable for natural refrigerants.

### CO<sub>2</sub> Myths & Facts

Check out the CO<sub>2</sub> myths and facts or calculate your potential energy savings.  
Visit our CO<sub>2</sub> Myths & Facts website – <http://co2facts.danfoss.com/>

For more information please visit us at [www.danfoss.com/co2](http://www.danfoss.com/co2)