FLOWSERVE GESTRA

GESTRA Steam Systems

CB 1...
CB 2...

GB

Installation Instructions 810707–02

Swing Flap Non–Return Valves
CB 1..., CB 2...

Contents

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Parts Drawing CB 1...

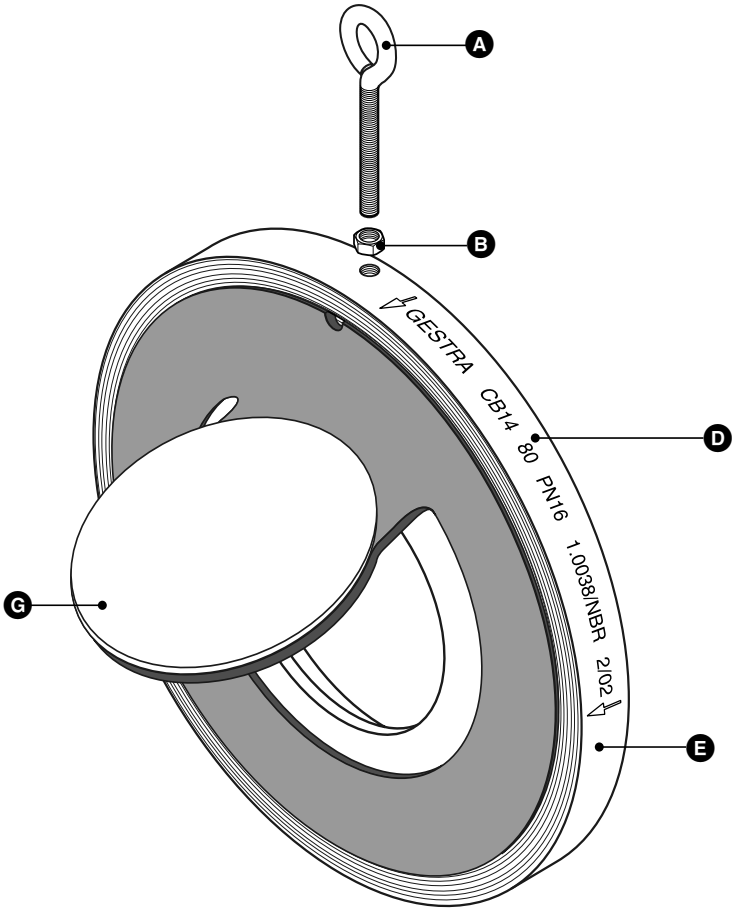

Fig. 1

Parts Drawing CB 2...

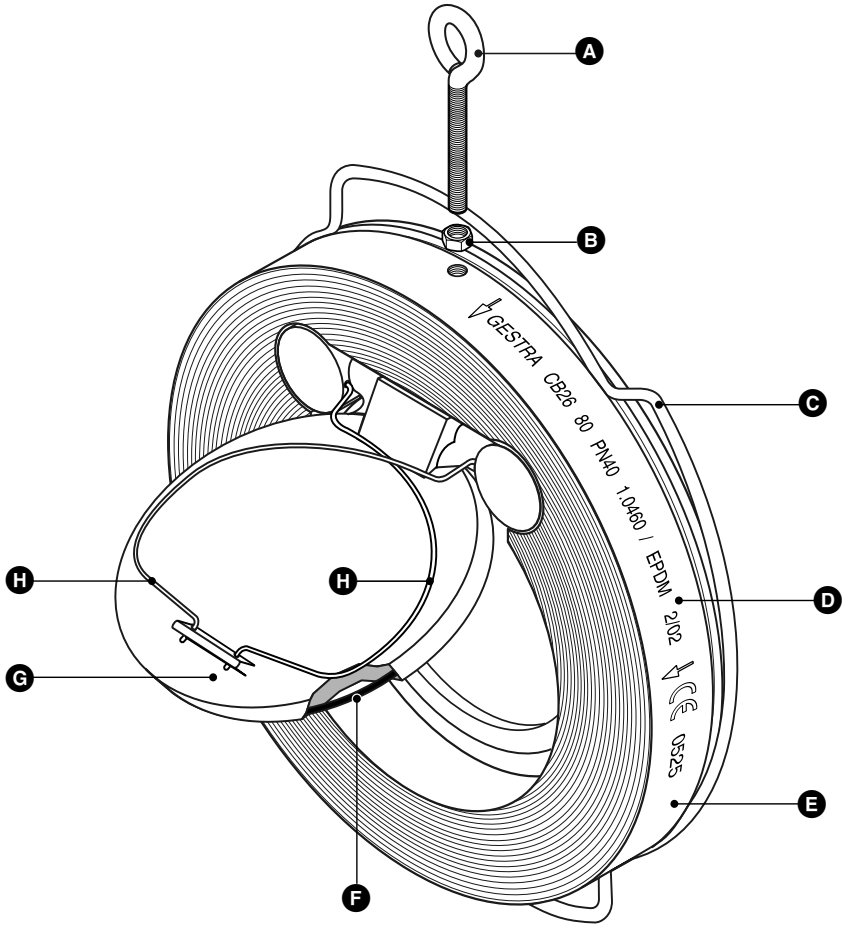

Fig. 2

Key

- **A** Eye bolt
- **B** Lock nut
- **C** Centering ring
- **D** Type designation (on name plate or impressed on valve body)
- **E** Body
- **F** O–ring
- **G** Disc
- **H** Spring

Pressure Drop Chart CB 1...

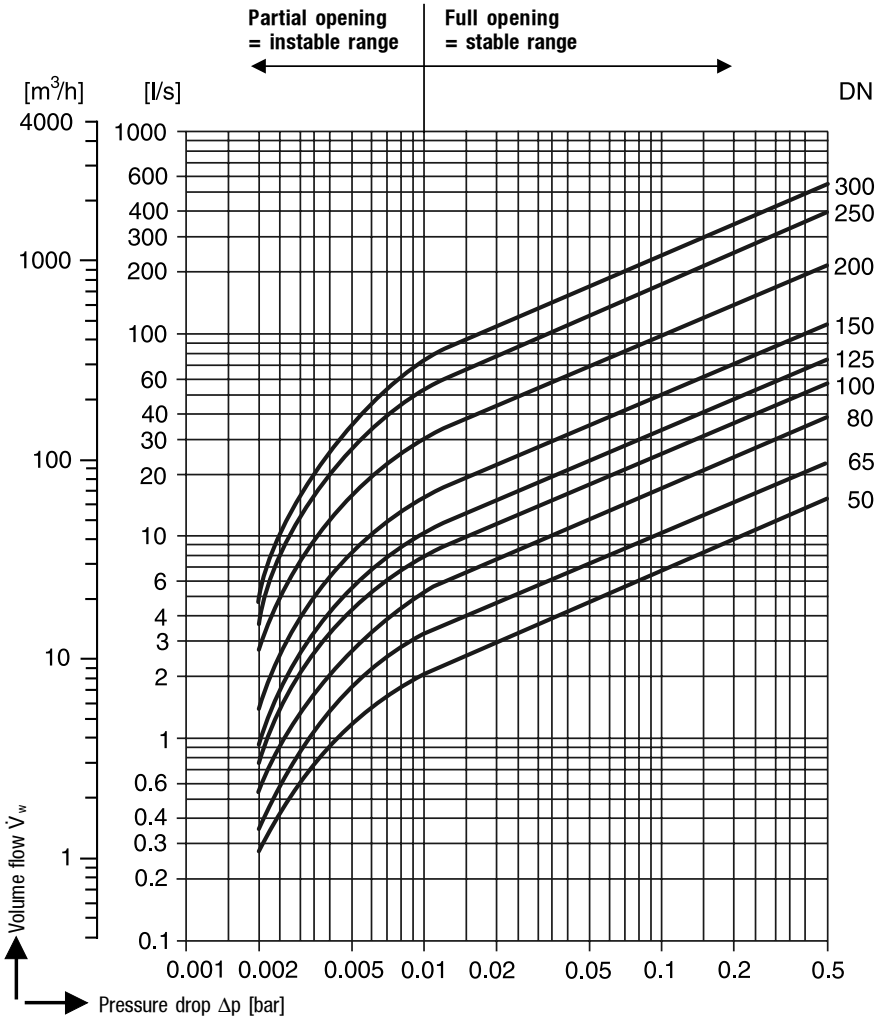

Fig. 3

The curves given in the chart are valid for water at 20 °C. To read the pressure drop for other fluids the equivalent water volume flowrate must be calculated and used in the graph.
The values indicated in the chart are applicable to valves with horizontal flow. With vertical flow insignificant deviations occur only within the range of partial opening.

$$\dot{V}_w = \dot{V} \cdot \sqrt{\frac{\rho}{1000}}$$

$\dot{V}_w$ = Equivalent water volume flow in [l/s] or [m³/h]

ρ = Density of fluid (operating condition) in kg/m³

$\dot{V}$ = Volume of fluid (operating condition) in [l/s] or [m³/h]

Pressure Drop Chart CB 2...

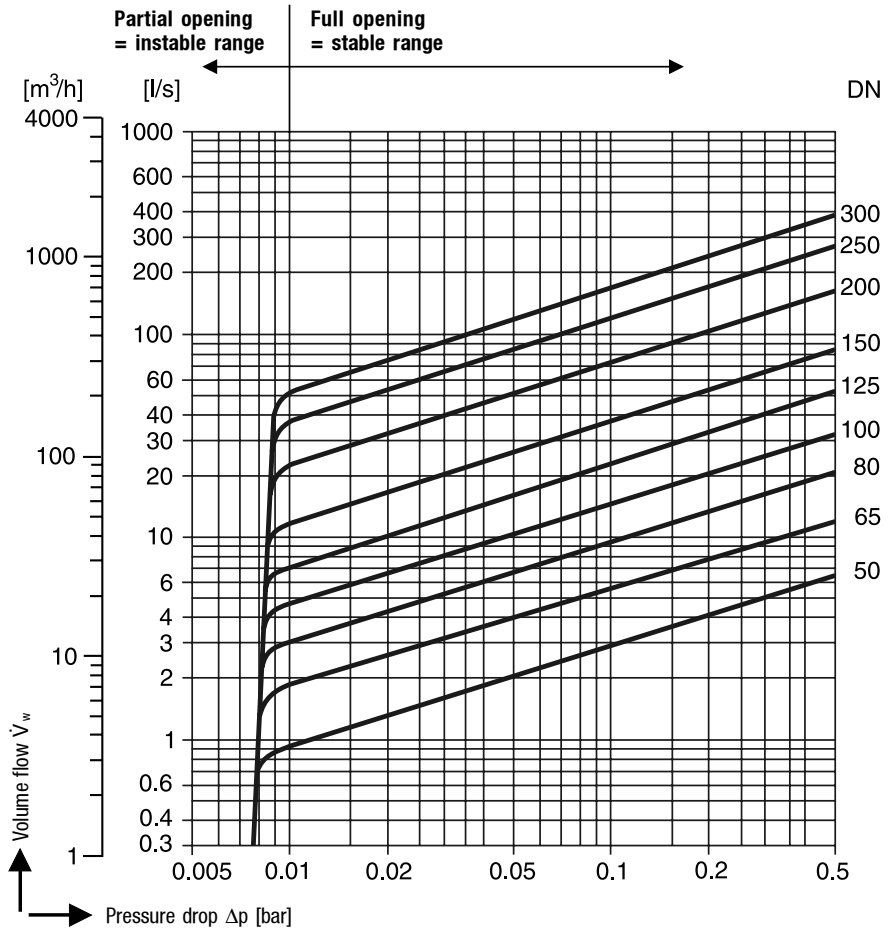

Fig. 4

The curves given in the chart are valid for water at 20 °C. To read the pressure drop for other fluids the equivalent water volume flowrate must be calculated and used in the graph.
The values indicated in the chart are applicable to valves with horizontal flow. With vertical flow insignificant deviations occur only within the range of partial opening.

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ρ = Density of fluid (operating condition) in kg/m³
$\dot{V}$ = Volume of fluid (operating condition) in [l/s] or [m³/h]

Important Notes

Usage for the intended purpose

The swing flap non–return valves CB 1.../CB 2... ensure unidirectional flow in pipes by preventing a backflow of liquids or gases.

Use this equipment only within the specified pressure and temperature ratings and check corrosion resistance and chemical suitability for the application in question.

Safety note

The valve must only be installed by qualified staff.

Qualified staff are those persons who – through adequate training in engineering, the use and application of safety equipment in accordance with regulations concerning safety systems, and first aid & accident prevention – have achieved a recognised level of competence appropriate to the installation and commissioning of this device.

Danger

The valve is under pressure during operation.

When loosening flanged connections or sealing plugs, hot water, steam, corrosive liquids or toxic gases may escape. This presents the danger of severe burns and scalds to the whole body or severe cases of poisoning.

Installation and maintenance work should only be carried out when the system is depressurized.

The valve becomes hot or extremely cold during operation. This presents the risk of severe burns to hands and arms. Installation and maintenance work should only be carried out at room temperatures.

Sharp edges on internals present a danger of cuts to hands. Always wear industrial gloves for installation and maintenance work.

Important Notes – continued –

Ratings pursuant to article 9 of the PED[1])

Fluid group	Gas		Liquid	
	1	2	1	2
Use CB 14 CB 24 S	no	yes	no	yes
CB 26 CB 26 A	yes	yes	yes	yes

Category	Exception pursuant to article 3.3	I	II	III	IV
Nominal size	**DN**	**DN**	**DN**	**DN**	**DN**
CB 14	50–80	100–200	250–300		
CB 24 S	50–80	100–200	250–300		
CB 26			50–100	125–300	
CB 26 A			50–100	125–300	
CE marking	no	yes	yes	yes	no

[1]) PED = Pressure Equipment Directive

Explanatory Notes

Scope of supply

CB 14

1 Swing flap non–return valve CB 14

1 Installation manual

CB 24 S

1 Swing flap non–return valve CB 24 S

1 Installation manual

CB 26

1 Swing flap non–return valve CB 26

1 Installation manual

CB 26 A

1 Swing flap non–return valve CB 26 A

1 Installation manual

Description

The CB 1.../CB 2... are very compact swing flap non–return valves used to prevent the backflow of fluids. The flap opens and closes automatically as a function of the direction of flow, thus ensuring unidirectional flow of the fluid. The opening pressure and closing time can be matched to the application in question by adjusting the spring characteristic. However, this does not apply to CB 14 since this valve is **not** fitted with a spring. Installation in horizontal or vertical upward flow lines, with due regard to our installation recommendations.

The CB 1.../CB 2... are equipped with an eyebolt for ease of installation and transport.

Please note that dual–plate check valves should not be used on reciprocating compressor, piston pumps or where pulsating flow exists.

Function

As the pressure and volume flow rise, the opening angle of the flap increases symmetrically. If centrifugal pumps are installed upstream of the valve it becomes necessary to arrange for a defined stabilizing section. Installation in horizontal or vertical upward flow lines, with due regard to our installation recommendations.
Please observe our installation recommendations outlined in the following pages.

Explanatory Notes – continued –

Technical Data

Pressure/Temperature Ratings*) CB 14, steel down to –10 °C at nominal pressure													
DN 50 – 300													
Temperature	[°C]	20	40	60	80								PN
Max. service pressure	[bar]	16	10	6	4								6–16

*) When used for its intended purpose.

Pressure/Temperature Ratings*) CB 24 S, bronze down to –200 °C at nominal pressure													
DN 50 – 300													
Temperature	[°C]	20	100	150	200	250							PN
Max. service pressure	[bar]	16	16	16	14	13							6–16

*) When used for its intended purpose. With springs made of bronze up to max. 90 °C.

Pressure/Temperature Ratings*) CB 26, steel down to –10 °C at nominal pressure													
DN 50 – 200													
Temperature	[°C]	20	100	150	200	250	300	350					PN
Pressure DN 50–200	[bar]	40	38	34	30	27	24	20					6–40
Pressure DN 250–300	[bar]	40	32	29	27	24	21						6–40

*) When used for its intended purpose.
Use CB... without springs for temperatures above 300 °C.

Pressure/Temperature Ratings*) CB 26 A, stainless steel down to –10 °C at nominal pressure													
DN 50 – 300													
Temperature	[°C]	20	100	150	200	250	300	350	400	450			PN
Max. service pressure	[bar]	40	38	35	32	30	29	28	27	26			6–40

*) When used for its intended purpose.
Use CB... without springs for temperatures above 300 °C.

Corrosion Resistance

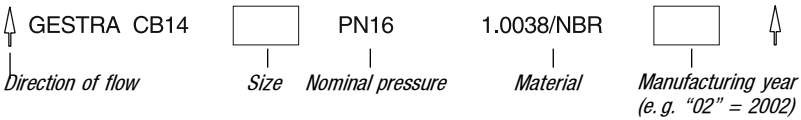
If the unit is used for the intended purpose, its safety is not impaired by corrosion.

Sizing

The valve body must not be subjected to pulsating loads. Welds and flanges of the valve are designed to withstand dynamic loading (bending and alternative stress).
The dimensional allowances for corrosion reflect the latest state of technology.

Explanatory Notes – continued –

Name Plate / Marking

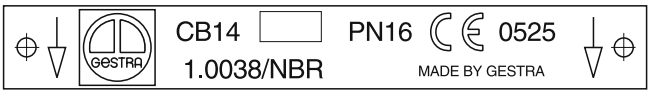


Specification impressed on valve body: **CB 14, DN 50–80** to EN 19

Fig. 5

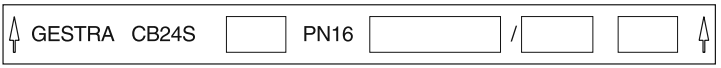
Specification impressed on valve body: **CB 14, DN 100–200** to EN 19

Fig. 6



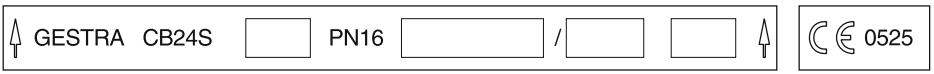
Specification (plate): **CB 14, DN 250–300** to EN 19

Fig. 7



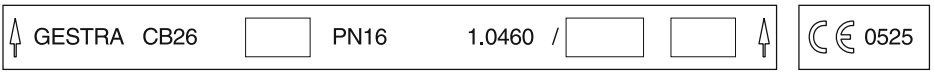
Specification (plate): **CB 24 S, DN 50–80** to EN 19

Fig. 8



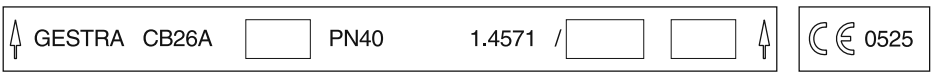
Specification (plate): **CB 24 S, DN 100–200** to EN 19

Fig. 9



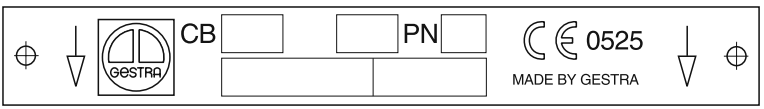
Specification (plate): **CB 26, DN 50–200** to EN 19

Fig. 10



Specification (plate): **CB 26 A, DN 50–200** to EN 19

Fig. 11



Specification (plate): **CB 24 S, CB 26, CB 26 A, DN 250–300** to EN 19

Fig. 12

Installation

Note

When the volume flow reaches the instable range (see Pressure Drop Chart) during operation clatter may occur which gives rise to wear on the oscillating flap**. Fig. 3, Fig. 4**

Do **not** install swing flap non–return valves in vertical **downward flow** lines.

CB 1..., CB 2...

1. Observe installation instructions on page 14.
2. Clean seating surfaces.
3. Installation in **horizontal lines**: Insert bolts through lower flange holes, fasten nuts. Insert off–the–shelf seals.
4. Install and align swing flap non–return valve CB.... Make sure that eyebolt Ⓐ is on top. Insert bolts and tighten them evenly.
5. Installation in **vertical lines**: Insert off–the–shelf seal (bottom).
6. Install and align swing flap non–return valve CB... Insert off–the–shelf seal (top). Insert bolts and tighten them evenly.

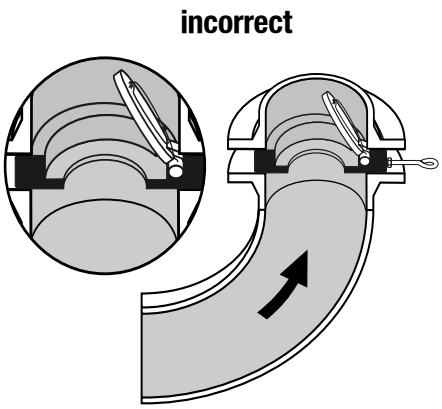


Fig. 13

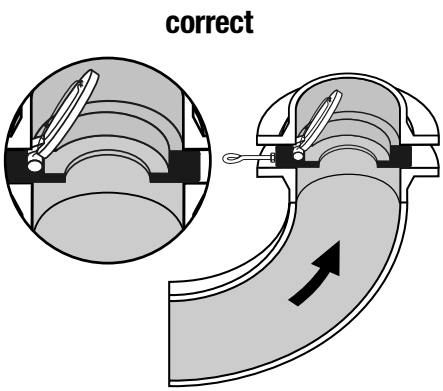


Fig. 14

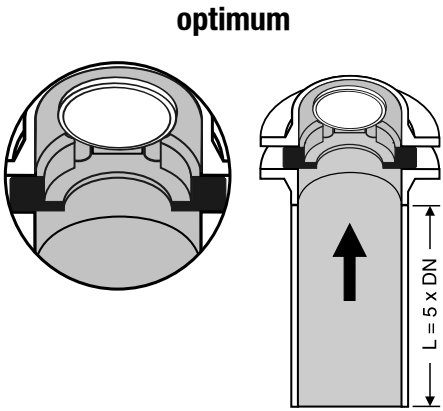


Fig. 15

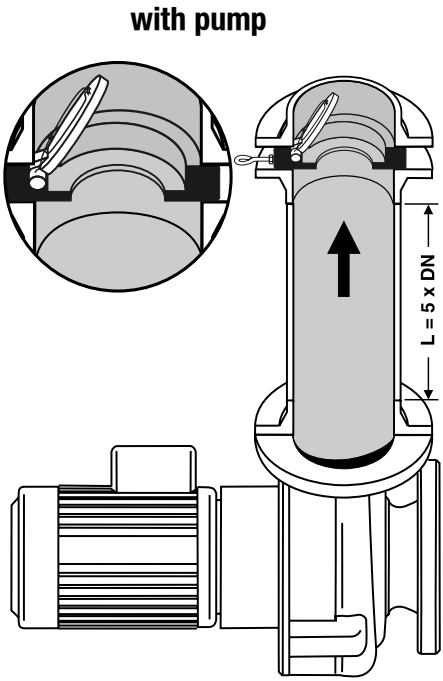


Fig. 16

Commissioning

CB 1..., CB 2...

Swing flap non–return valves do not require any special preparation prior to commissioning.

Unfavourably or incorrectly positioned swing flap non–return valves will lead to loud clattering of the oscillating flap.

In case of clattering increase pump capacity. Please observe the installation instructions on page 14.

Operation

CB 1..., CB 2...

Unfavourably or incorrectly positioned swing flap non–return valves will lead to loud clattering of the oscillating flap.

In case of clattering increase pump capacity. Please observe the installation instructions on page 14.

Maintenance

CB 1...

GESTRA Swing flap non–return valves CB 1... do not require special maintenance.
The swing flap non–return valves have to be replaced in case of damage or considerable wear. Parts subject to wear and spare parts are not available.

Maintenance – continued –

GESTRA Swing flap non–return valves CB 2... do not require special maintenance.
However, in certain cases it may be necessary to replace the springs or O–rings.

Danger

Note that springs are preloaded which means that they can jump out of the valve body when the valve is being installed or removed.

This presents the risk of injuries to hands, arms and face.

CB 2... Replace springs / O–ring

Swing flap non–return valve CB 2...

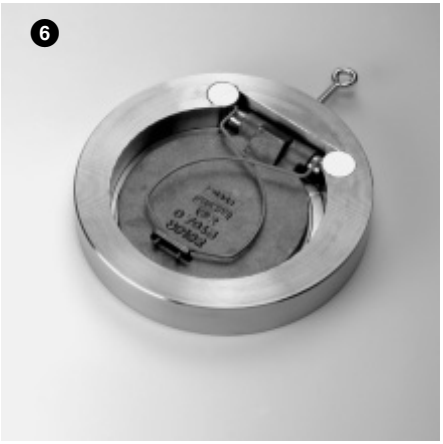
Detach springs from support.

Remove springs and O–rings (if fitted).
Insert new O–ring.

Insert new springs into the lateral guide.

CB 2... Replace springs / O–ring – continued –

Insert left and right spring into the support.



Check smooth operation of the flap. Install swing flap non–return valve in line.

Tools

- Combination pliers 180 mm, DIN 5244
- Aligning punch, 80 mm

Spare Parts

Spare Parts List CB 24 S

Item	DN	Stock code	Stock code	Stock code	Stock code
		O–ring EPDM	O–ring FPM	O–ring NBR	Spring
	50	039276	037556	038624	038626
	65	031443	033910	038633	038635
	80	031753	033911	038642	038644
	100	031493	033912	038651	038654
	125	031769	033913	038662	038665
	150	031525	033914	038673	038675
F	200	031540	033915	038683	038686
H	250	039283	033916	038694	038697
	300	031573	033917	038705	038708

Two springs are required per valve. Contact your local dealer for small quantities.

No spare parts available for CB 14.

Spare Parts List CB 26, CB 26 A

Item	DN	Stock code	Stock code	Stock code	Stock code
		O–ring EPDM	O–ring FPM	O–ring NBR	Spring
	50	039276	037556	175843	039294
	65	031443	033910	703368	039295
	80	031753	033911	173844	039296
	100	031493	033912	175839	039297
	125	031769	033913	703369	039298
	150	031525	033914	175841	039299
F	200	031540	033915	177839	039300
H	250	039283	033916	174450	039301
	300	031573	033917	175131	039302

Two springs are required per valve. Contact your local dealer for small quantities.

No spare parts available for CB 14.

Annex

CE Declaration of Conformity

We hereby declare that the pressure equipment **CB 1...** and **CB 2...** conform to the following European Directive:

■ EC Pressure Equipment Directive (PED) No. 97/23 of 29 May 1997

Swing flap non–return valves are pressure equipment as defined in article 1, section 2.1.4 of the PED.

Applied conformity assessment procedure as described in Annex III for CB 24 and CB 24 S: Module A1

Applied conformity assessment procedure as described in Annex III for CB 26 and CB 26 A: Module H – verified by the Notified Body (Registration No.0525).

This declaration is no longer valid if modifications are made to the equipment without consultation with us.

Bremen, 15th April 2002
GESTRA GmbH

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For your notes

For your notes

For your notes

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