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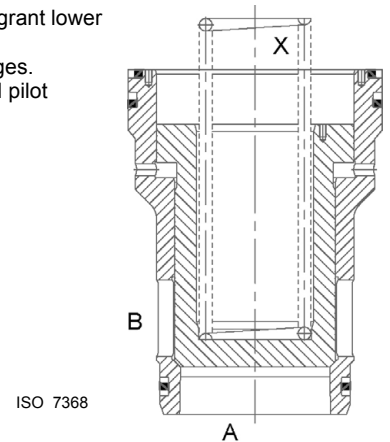
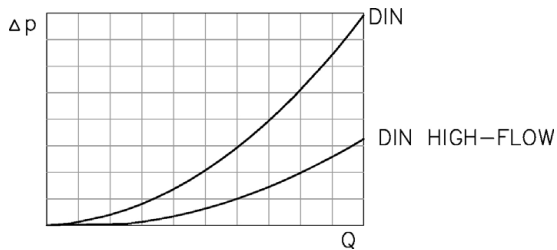
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1 General Description

2/2 way cartridge valves of type CHF are an advanced version of the standard CEE cartridge. They grant lower pressure loss at the same flow due to an additional pilot surface.

This high-flow version allows higher safety to keep a switched position as well as energetic advantages. CHF cartridges can be mounted into the same cavities as CEE cartridges, also the same covers and pilot valves can be used.

The valves are available in nominal size from 16 to 100.



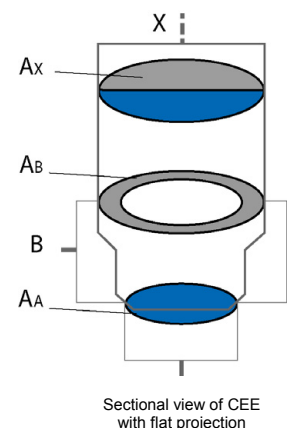
1.1 Applications

2/2 way cartridge valves could be used in multiple application. They can be used as directional valves, check valves or pressure relief valves up to complex control functionalities.

1.2 Function

2/2 way cartridge valves consists of a sleeve, a poppet and a spring which results in a normally closed position when the valve is unloaded. The cartridge is closed by a cover on the top. The cover connects the pilot port X with the control port of the valve. When used with a cartridge cover and corresponding pilot valve, the sum of the pressures applied to each of these control surfaces either opens or closes the cartridge valve. The surfaces A_A and A_B work to open the valve, while surface A_X together with the spring force work to close the valve. B, C and R poppets with a stepped shape have these three different surfaces while poppet A and D have only two control surfaces ($A_B = 0$). An overview of the surfaces can be seen on the graph on the right.

When in the open position, the poppet enables fluid flow in both directions, from A to B or B to A depending on the needs of the application. When the poppet is in the closed position, the valve seat design ensures a leak free separation of ports A and B:



1.3 Characteristics

- Very high power density
- compact design
- High flexibility in the control block design
- high reliability
- Increased pollution tolerance
- Short response times
- Leak-free check valve function
- Easy replacement of elements for Maintenance

2 Technical Data

Criteria	Unit	Value
Design		piloted throttle-seat valve
Direction of flow		A ↔ B (A → B)
Installation position		any
Porting pattern		DIN ISO 7368
Maximum inlet pressure port A, B, X	bar	420
Hydraulic fluid		Mineral oil (HL, HLP) conforming with DIN 51524, other fluids upon request
NBR		<ul style="list-style-type: none"> ▪ hydraulic fluids based on mineral oils ▪ HFD- hydraulic fluids
FKM		<ul style="list-style-type: none"> ▪ hydraulic fluids based on mineral oils ▪ HFB-, HFC- hydraulic fluids
Hydraulic fluid temperature range		
NBR	°C	temperature range -25 bis +80
FKM	°C	temperature range -20 bis +120
Ambient temperature:		
NBR	°C	temperature range -25 bis +80
FKM	°C	temperature range -20 bis +120
Viscosity range	mm ² /s	2,8 – 500
Contamination grade		Filtering conforming with NAS 1638, class 9, with minimum retention rate $\beta_{10} \geq 75$

3 Ordering Information

3.1 Type Code

CHF						
00		01	02	03	04	05
00	Product group	2/2 way cartridge valve				CHF
01	Design	DIN ISO 7368	16, 25, 32, 40, 50, 63			
02	DIN ISO 7368					B6
03	Cone design	S-cone (always with sleeve B)	1:1,49		S	
		T- cone (always with sleeve B)	1:1,49 same as S but with damping nose		T	
04	Spring		1,0 bar		S	
			2,0 bar		T	
			4,0 bar		U	
05	Seal	NBR	temperature range -25°C bis +80°C			N
		FKM / Viton	temperature range -20°C bis +120°C			V

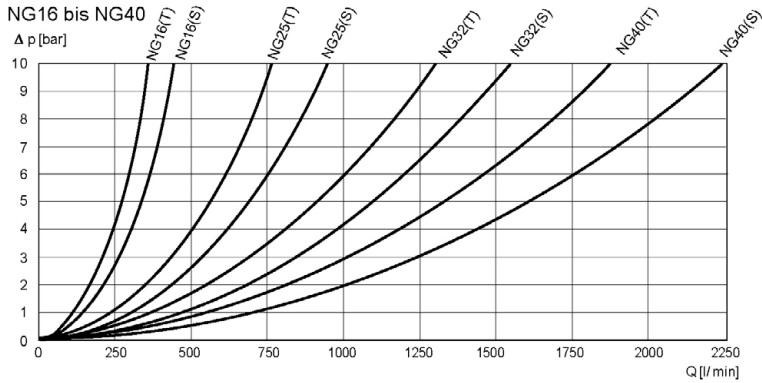
XXX – fixed features XXX – customer selectable features ■ available ○ not available

Some theoretical configurations might be not feasible for technical reasons. For relating questions please ask for our advice.

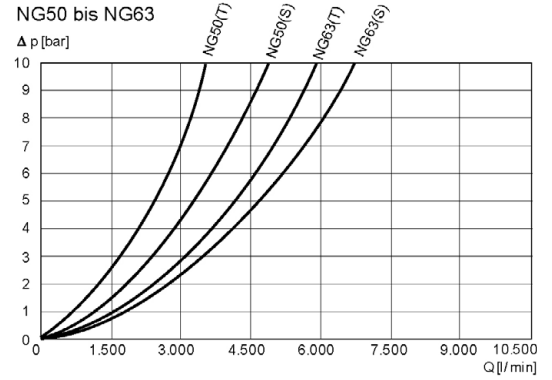
4 Description of Features according to Type Code

4.1 Feature 1: Cone design

4.1.1 Characteristic



(S) cone S, (T) cone T

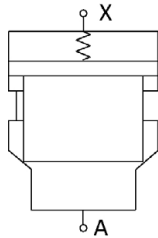


4.1.2 Cone

Pressure valve function

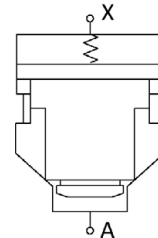
cone S:

control area ratio 1:1,49



cone S with additional damping nose:

control area ratio 1:1,49



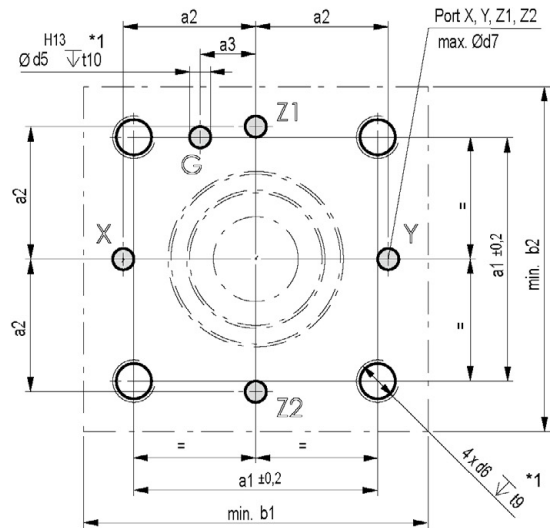
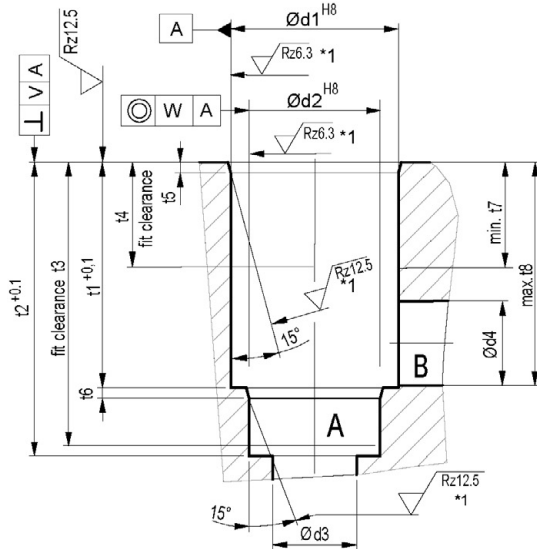
5 Installation

5.1 General Instructions

- Observe all installation and safety information of the machine manufacturer.
- Only technically permitted changes may be made on the machine.
- The user has to ensure that the device is suitable for the respective application.
- Use exclusively for the range of application specified by the manufacturer.
- Depressurize the hydraulic system prior to installation or dismantling.
- May only be adjusted by technical staff.
- May only be opened with the approval of the manufacturer, otherwise the warranty is invalidated.
- The enclosed connection recommendation is without guarantee. The functionality and the technical specifications of the machine require checking.

5.2 Stepped bore

5.2.1 stepped bore DIN ISO 7368



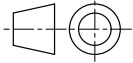
*1 Recommendation deviating from the norm

	NG16	NG25	NG32	NG40	NG50	NG63
d1	32	45	60	75	90	120
d2	25	34	45	55	68	90
d3	16	25	32	40	50	63
d4	16	25	31,5	40	50	63
d5	4	6	6	6	8	8
d6	M8	M12	M16	M20	M20	M30
d7	4	6	8	10	10	12
t1	43 ^{±0,2}	58	70	87	100	130
t2	56	72	85	105	122	155
t3	54	70	83	102	117	150
t4	20	30	30	30	35	40
t5	2	2,5	2,5	3	4	4
t6	2	2,5	2,5	3	3	4
t7	20	30	30	30	35	40
t8	42,5	57	68,5	84,5	97,5	127
t9 *	14	20	26	32	32	50
t10*	10	10	10	10	10	10
a1	46	58	70	85	100	125
a2	25	33	41	50	58	75
a3	10,5	16	17	23	30	38
b1	65	85	102	125	140	180
b2	65	85	102	125	140	180
V	0,05	0,05	0,1	0,1	0,1	0,2
W	0,03	0,03	0,03	0,05	0,05	0,05

6 Notes, Standards and Safety Instructions

6.1 General Instructions

- The views in drawings are shown in accordance with the European normal projection variant



- A comma (,) is used as a decimal point in drawings
- All dimensions are given in mm

6.2 Standards

The following standards must be observed when installing and operating the valve:

- DIN EN ISO 13732-1:2008-12, Temperatures on accessible surfaces

7 Accessories