

Pressure-controlled shut-off valve type CNE

Product documentation



Screw-in valve

Operating pressure p_{\max} : 500 bar

Flow rate Q_{\max} : 30 lpm



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Contents

1	Overview of shut-off valves type CNE.....	4
2	Available versions, main data.....	5
2.1	Basic version (screw-in valve).....	5
2.2	Version with single connection block.....	6
3	Parameters.....	7
4	Dimensions.....	9
4.1	Basic version (screw-in valve).....	9
4.2	Mounting hole.....	10
4.3	Version with single connection block.....	11
4.4	Tapped plugs.....	11
5	Assembly, operation and maintenance recommendations.....	12
5.1	Intended application.....	12
5.2	Assembly information.....	12
5.2.1	Screwing in the screw-in valve (basic version).....	13
5.2.2	Adjusting pressure.....	13
5.2.3	Creating the mounting hole.....	13
5.3	Directives.....	14
5.4	Maintenance information.....	14
6	Other information.....	15
6.1	Schematic sectional drawing and connection example.....	15

1**Overview of shut-off valves type CNE**

Shut-off valves or accumulator charging valves are a type of pressure control valve. They switch the delivery flow of a pump to unpressurised circulation if the pressure value set is reached. During this process the consumer side is separated from the idle circulation by a zero-leakage check valve. If the pressure drops in the consumer side, the idle circulation is interrupted and the oil fed to the consumer again.

Via a control line the higher pressure holds open the pressure-controlled 2 directional valve type CNE and with it the idle circulation. In the low-pressure circuit the valve acts simultaneously as a pressure-limiting valve. The valve type CNE can be screwed-in and can be integrated into control blocks. The necessary mounting holes are straightforward to make.

Features and benefits:

- Compact design
- Easily produced mounting hole

Intended applications:

- Accumulator charged systems
- Jigs

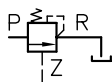


Basic version (cartridge valve)

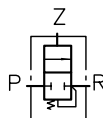
2 Available versions, main data

2.1 Basic version (screw-in valve)

Symbol:



(detailed)



Order coding example:

CNE 2	C	- 50	- 1/2
CNE 22	B	- 350	

Version Table 3 Version with indiv. single connection block

Pressure setting (bar) Pressure setting within the various pressure ranges

Pressure range Table 2 Pressure range

Basic type and size Table 1 Basic type and size

Table 1 Basic type and size

Basic type and size	Flow rate Q_{max} (lpm)	Description
CNE 2	30	Shut-off valve
CNE 21		Shut-off valve, additional thread seal
CNE 23		Shut-off valve, additional thread and piston seal
CNE 22		

Table 2 Pressure range

Basic type and size	Pressure range from ... to (bar)						
	L	M	A	B	C	D	E
CNE 2	120 ... 150	95 ... 120	75 ... 95	60 ... 75	45 ... 60	30 ... 45	20 ... 30
CNE 21							
CNE 23							
CNE 22	--	--	--	320 ... 450	150 ... 320	--	--

2.2 Version with single connection block

Order coding example:

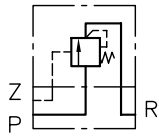
CNE 2 C - 50 - 1/2

Indiv. single connection block Table 3 Version with indiv. single connection block

Pressure setting (bar) Pressure setting within the various pressure ranges

Basic type, size and pressure range Table 1 Basic type and size, Table 2 Pressure range

Table 3 Version with indiv. single connection block

Coding	Description	Symbol
No designation	Cartridge valve	See Chapter 2.1, "Basic version (screw-in valve)"
- 1/2	For pipe connection (G 1/2 (BSPP))	

3 Parameters

General information

Description	Pressure-controlled shut-off valve
Design	Piston valve
Model	Screw-in valve, valve for pipe connection
Material	Steel; nitrided valve housing, electrogalvanised sealing nuts and connection block, hardened and ground functional inner parts
Installation position	As desired
Ports	<ul style="list-style-type: none"> ▪ Port P = input (pump side) ▪ Port R = output (reflux $p_R \leq 50$ bar) ▪ Port Z = control connection
Hydraulic fluid	<p>Hydraulic oil: according to Part 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity limits: min. approx. 4, max. approx. 1500 mm²/s opt. operation approx. 10... 500 mm²/s. Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.</p>
Cleanliness level	<p>ISO 4406</p> <hr style="width: 50%; margin-left: 0;"/> 21/18/15...19/17/13
Temperatures	<p>Ambient: approx. -40 ... +80°C, Fluid: -25 ... +80°C, Note the viscosity range! Permissible temperature during start: -40°C (observe start-viscosity!), as long as the service temperature is at least 20K higher for the following operation. Biologically degradable pressure fluids: Observe manufacturer's specifications. By consideration of the compatibility with seal material not over +70°C.</p>

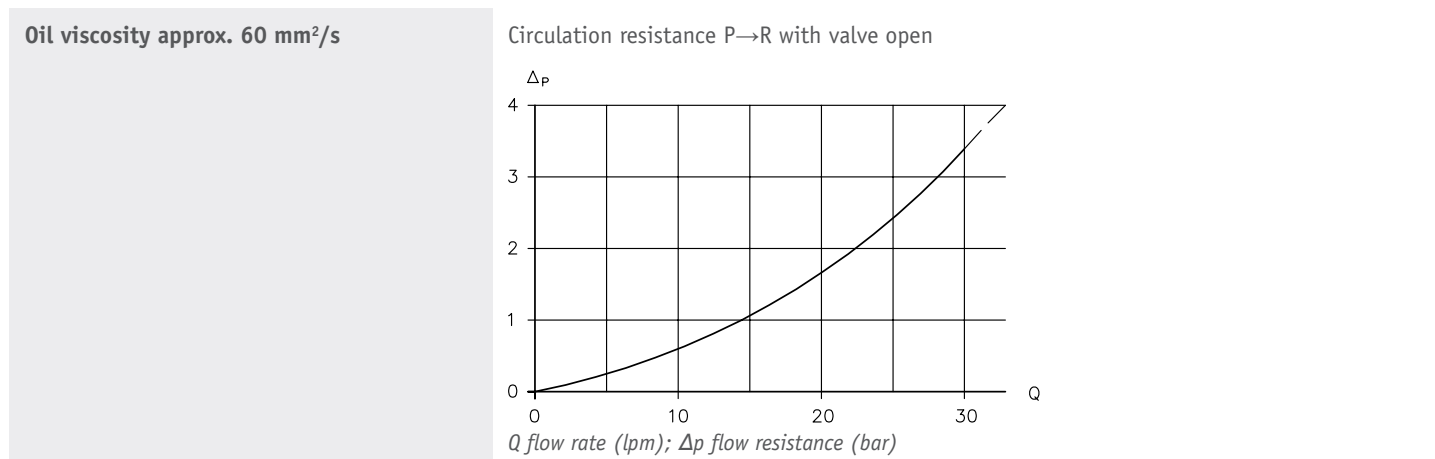
Pressure and flow rate

Operating pressure	$p_{\max} = 500 \text{ bar}$											
Static overload capacity	Approx. $2 \times p_{\max}$ – tightened and sealing nuts locked											
Flow rate	$Q_{\max} = 30 \text{ lpm}$											
Switching hysteresis	<table border="1"> <thead> <tr> <th>Type</th> <th></th> </tr> </thead> <tbody> <tr> <td>CNE 2</td> <td>Approx. 6 bar</td> </tr> <tr> <td>CNE 21</td> <td>Approx. 6 bar</td> </tr> <tr> <td>CNE 22</td> <td>Approx. 6 bar</td> </tr> <tr> <td>CNE 23</td> <td>Approx. 12 bar</td> </tr> </tbody> </table>	Type		CNE 2	Approx. 6 bar	CNE 21	Approx. 6 bar	CNE 22	Approx. 6 bar	CNE 23	Approx. 12 bar	
Type												
CNE 2	Approx. 6 bar											
CNE 21	Approx. 6 bar											
CNE 22	Approx. 6 bar											
CNE 23	Approx. 12 bar											
Leakage	<p>Type CNE 2 and CNE 21: There is a slight leakage between the ports Z→R and Z→P (low-pressure circuit) as a result of the control piston fit/thread clearance. It only needs to be taken into account in the case of a direct connection to the consumer without a directional valve in between.</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Leakage flow Z→P(R) (cm³/min)</th> </tr> <tr> <th>CNE 2</th> <th>CNE 21</th> </tr> </thead> <tbody> <tr> <td>$p_z = 200 \text{ bar}$</td> <td>100</td> <td>55</td> </tr> <tr> <td>$p_z = 500 \text{ bar}$</td> <td>250</td> <td>160</td> </tr> </tbody> </table>		Leakage flow Z→P(R) (cm ³ /min)		CNE 2	CNE 21	$p_z = 200 \text{ bar}$	100	55	$p_z = 500 \text{ bar}$	250	160
	Leakage flow Z→P(R) (cm ³ /min)											
	CNE 2	CNE 21										
$p_z = 200 \text{ bar}$	100	55										
$p_z = 500 \text{ bar}$	250	160										

Weight

Basic version	Type	
	CNE ..	= 0.2 kg
With single connection block	-1/2	= 0.45 kg

Characteristic curves

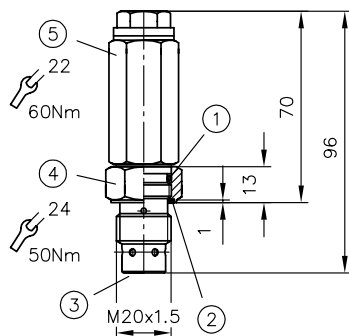


4 Dimensions

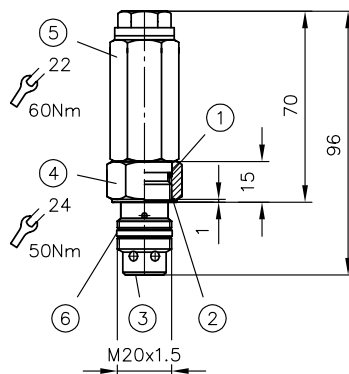
All dimensions in mm, subject to change.

4.1 Basic version (screw-in valve)

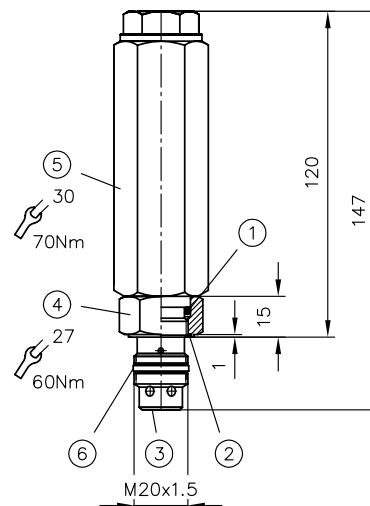
CNE 2



CNE 21
CNE 23



CNE 22



- 1 O-ring 17.17x1.78 AU 90 Sh
- 2 KANTSEAL DKAR 00018-N9011 NBR 90 Sh 18.77x22.13x1.68
- 3 Sealing edge
- 4 Sealing nut
- 5 Valve housing
- 6 Threaded sealing ring

4.2 Mounting hole

Kurzanleitung Ventile Aufnahmebohrung

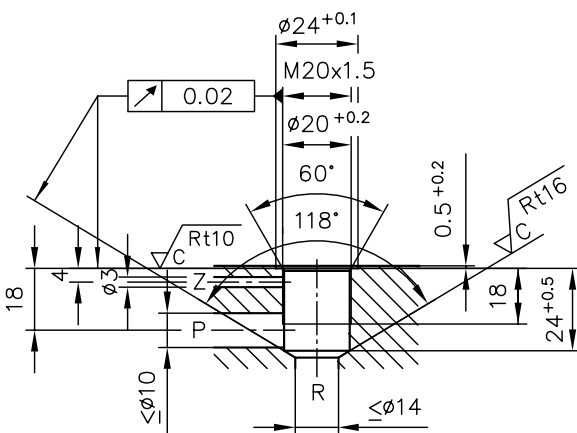
The sealing of the inlet to outlet takes place at the contact area between the facial sealing edge of the screwed-in end of the valve body and the stepped shoulder of the core diameter at the location thread.

The stepped shoulder is depicted with the normal 118° drill tip angle for steel.

Therefore reaming of the hole and bevels to help the seals slip in are not necessary.

The sealing of the attached valve and its fixing at the manifold body are made by a sealing nut with a fitting seal and an O-ring. Additionally the passage between port A and T is sealed at the screw in port and the internal piston.

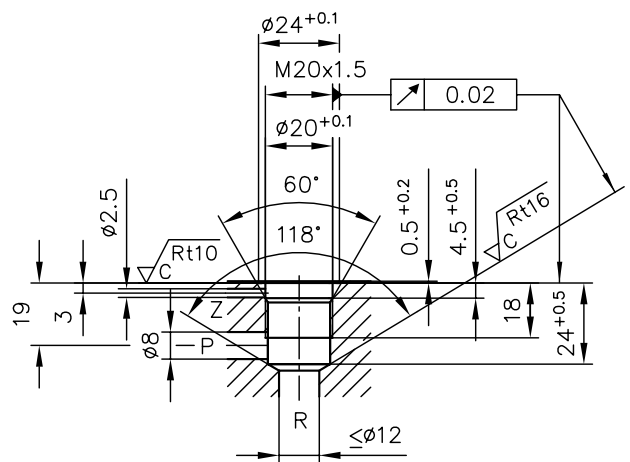
CNE 2



CNE 21

CNE 22

CNE 23

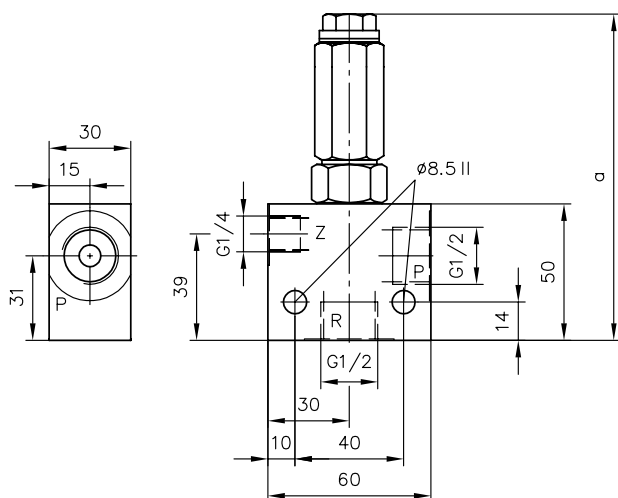


Note

For tapped plugs for the mounting holes, see [Chapter 4.4, "Tapped plugs"](#).

4.3 Version with single connection block

Pipe connection

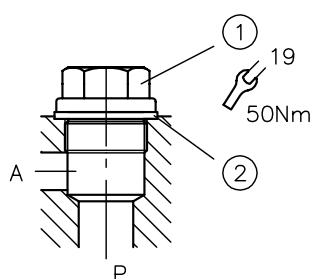


	a
CNE 2	
CNE 21	120
CNE 23	
CNE 22	170

4.4 Tapped plugs

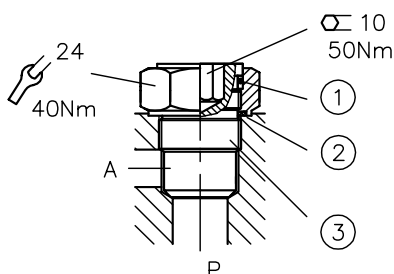
The mounting holes can be sealed with tapped plugs if necessary; for example, if the assembly of standardised basic bodies is to be carried out with or without screw-in valves as required.

Passage open



- 1 Tapped plug M20x1.5 DIN 910
- 2 Sealing ring A20x24x1.5 DIN 7603-Cu

Passage blocked



- 1 O-ring 17.17X1.78 AU 90 Sh
- 2 KANTSEAL DKAR 00018-N9011 NBR 90 Sh 18.77x22.13x1.68
- 3 Tapped plug and locking tapped plug complete

Type	Order no.
CNE 2	Z 7715 019
CNE 21	
CNE 22	Z 7748 050
CNE 23	

5.1 Intended application

This valve is intended exclusively for hydraulic applications (fluid engineering). The valve meets high technical safety standards and regulations for fluid and electrical engineering.

The user must observe the safety measures and warnings in this documentation.

Essential requirements for the product to function correctly and safely:

- All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- The product must only be assembled and put into operation by qualified personnel.
- The product must only be operated within the specified technical parameters. The technical parameters are described in detail in this documentation.
- The operating and maintenance manual of the specific complete system must also always be observed.

If the product can no longer be operated safely:

Remove the product from operation and mark it accordingly. It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard connection components that comply with market requirements (screw fittings, hoses, pipes, etc.).

The hydraulic system must be shut down correctly prior to dismantling; this applies in particular to hydraulic systems with hydraulic accumulators.

**Danger**

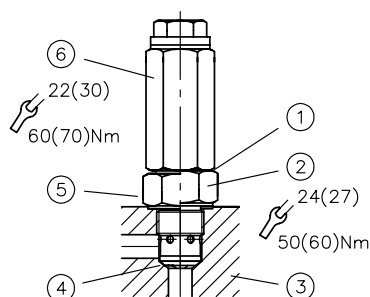
Risk to life caused by sudden movement of the hydraulic drives when dismantled incorrectly!

Risk of serious injury or death.

- Depressurise the hydraulic system.
- Perform safety measures in preparation for maintenance.

5.2.1 Screwing in the screw-in valve (basic version)

Screw in and locking



- 1 Stopper
- 2 Lock nuts and sealing nuts
- 3 Basic body
- 4 Sealing edge
- 5 Locking
- 6 Valve housing

1. Before screwing in the valve, loosen the lock nut and sealing nut until the travel stop.
2. Screw in the valve and tighten to the specified torque. The metallic sealing of the inlet to the outlet is formed between the facial sealing edge of the valve and the shoulder of the stepped hole in the basic body.
3. Tighten the counter/sealing nut to the specified torque.

5.2.2 Adjusting pressure



Caution

Risk of injury on overloading components due to incorrect pressure settings!

Risk of minor injury.

- Always monitor the pressure gauge when setting and changing the pressure.

The pressure setting can be changed by adding washers.

Pressure range	Pressure alteration approx. (bar) per mm		Washer order no.	Thickness
	CNE 2, CNE 21, CNE 23	CNE 22		
A	4.2	--	7748 013 a	0.5 mm
B	2.5	32	7748 013 b	1.0 mm
C	1.7	11	7748 013 c	1.2 mm
D	1.1	--	7748 013 d	2.0 mm
E	0.9	--		
L	10.5	--		
M	6.3	--		

For pressure range A to M see also [Chapter 2, "Available versions, main data"](#)

5.2.3 Creating the mounting hole

See description in [Chapter 4.2, "Mounting hole"](#)

5.3 Directives

Product configuration and setting the pressure and flow rate

The statements and technical parameters in this documentation must be strictly observed.
The instructions for the complete technical system must also always be followed.



Note

- Read the documentation carefully before usage.
- The documentation must be accessible to the operating and maintenance staff at all times.
- Keep documentation up to date after every addition or update.



Caution

Risk of injury on overloading components due to incorrect pressure settings!

Risk of minor injury.

- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of a hydraulic power pack. Contamination can cause irreparable damage.

Examples of fine contamination include:

- Metal chips
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid



Note

Fresh hydraulic fluid from the drum does not always have the highest degree of purity. Under some circumstances the fresh hydraulic fluid must be filtered before use.

Pay attention to the cleanliness level of the hydraulic fluid in order to maintain faultless operation.
(Also see cleanliness level in [Chapter 3, "Parameters"](#).)

5.4 Maintenance information

This product is largely maintenance-free.

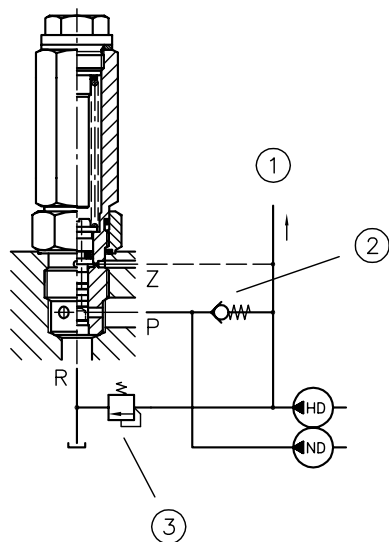
Check that the product is securely fastened in the mounting hole at regular intervals, but at least once per year.

Conduct a visual inspection at regular intervals, but at least once per year, to check if the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the device surface of dust deposits and dirt at regular intervals, but at least once per year.

6 Other information

6.1 Schematic sectional drawing and connection example



- 1 To directional valve and consumer
- 2 Check valve, e.g. type CRK as per [D 7712](#)
- 3 High-pressure pressure-limiting valve, e.g. type CMV as per [D 7710 MV](#)

Further information

Additional versions

- Throttle valve and shut-off valve CAV: D 7711
- Check valve type CRK, CRB and CRH: D 7712
- Flow control valve type CSJ: D 7736
- Pressure-dependent shut-off valve type CDSV: D 7876
- Pressure valve type CMV, CMVZ, CSV and CSVZ: D 7710 MV
- Pressure-reducing valve type CDK: D 7745
- Pressure-reducing valve type CLK: D 7745 L
- Two-stage valve type NE: D 7161

Application

- Connection blocks type A for hydraulic power packs: D 6905 A/1