

Check valve type RC

Product documentation



Screw-in valve

Operating pressure $p_{\max}$:

700 bar

Flow rate $Q_{\max}$:

60 l/min



D 6969 R

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1**Check valve type RC overview**

Check valves with hydraulic release are a type of check valve. They block the oil flow in one direction and open in the opposite direction. In the closed state they have zero leakage.

An RK, RB, RC and RE type check valve can be screwed in, while the ER type can be plugged in.

The spring-loaded manifold valve type RC can be screwed in in any direction and is particularly suitable for fast switching sequences.

Features and advantages

- Operating pressures up to 700 bar
- Simple fastening holes
- Robust and dirt resistance
- Ideally suited for fast switching sequences

Intended applications

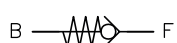
- General hydraulic systems
- Hydraulic pre-loading



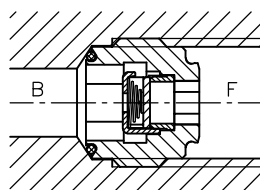
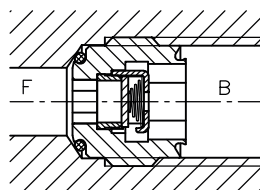
Screw-in valve Type RC

2 Available versions

Circuit symbol



Section view



i INFORMATION

Delivery condition: Fit O-ring on B-side.

O-ring can be removed depending on the installation position.

Ordering examples

RC 1
RC 2 -E

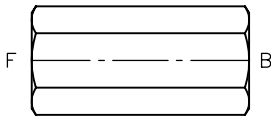
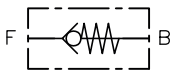
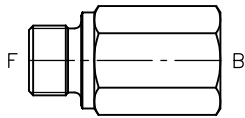
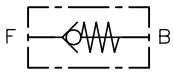
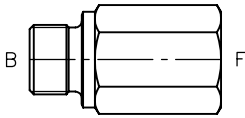
2.2 "Versions"

2.1 "Basic type and size"

2.1 Basic type and size

Type	Flow rate Q_P (l/min)	Pressure p_{max} (bar)	Ports	Opening pressure (bar)
RC 1	20	700	G 1/4 (A)	0.05 ... 0.07
RC 1/1	20	700	G 1/4 (A)	1.5
RC 2	35	700	G 3/8 (A)	0.05 ... 0.07
RC 2/1	35	700	G 3/8 (A)	1.5
RC 3	60	500	G 1/2 (A)	0.05 ... 0.07
RC 14	20	700	M14x1.5	0.05 ... 0.07
RC 26	35	700	M16x1.5	0.05 ... 0.07
RC 28	35	700	M18x1.5	0.05 ... 0.07
RC 30	60	500	M20x1.5	0.05 ... 0.07
RC 32	60	500	M22x1.5	0.05 ... 0.07

2.2 Versions

Model	Description	View	Circuit symbol
without coding	Screw-in valve		
G	Pipe connection on both sides		
E	Tapped journal on one side		
F			

! NOTICE
Thread equivalent ISO 228-1, (-UNF) or JIS B 2351-1.

3 Parameters

3.1 General data

Designation	Check valve
Design	Shim check valve
Model	Screw-in valve, Housing version
Material	Steel; Hardened and ground functional inner parts
Installation position	As desired; for housing version type RC .. G(E, F) specified
Flow direction	- F → B = free flow - B → F = blocked
Hydraulic fluid	Hydraulic fluid, according to DIN 51524 Parts 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity range: 4 - 1500 mm²/s Optimal operating range: 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.
Cleanliness level	ISO 4406 21/18/15...19/17/13
Temperatures	Environment: approx. -40 to +80 °C, hydraulic fluid: -25 to +80 °C, pay attention to the viscosity range. Start temperature: down to -40 °C is permissible (take account of the start viscosities!), as long as the steady-state temperature is at least 20 K higher during subsequent operation. Biologically degradable hydraulic fluids: note manufacturer specifications. With consideration for the seal compatibility, not above +70°C.

3.2 Weight

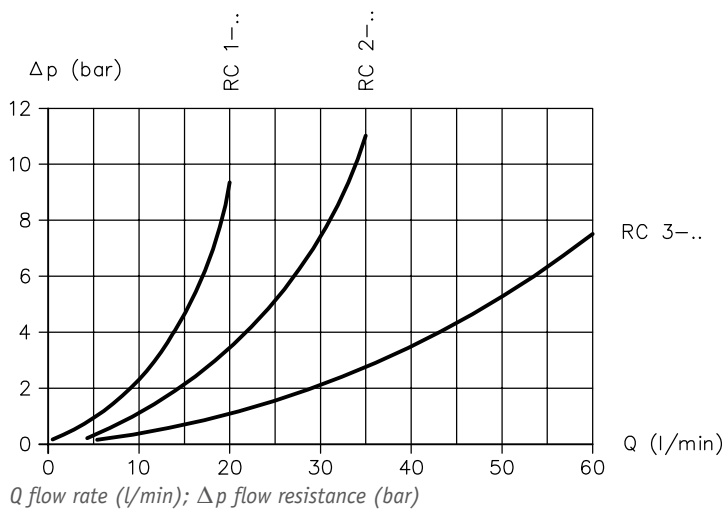
Screw-in valve	Type	
	RC 1, RC 1/1, RC 14	= 6 g
	RC 2, RC 2/1, RC 26, RC 28	= 15 g
	RC 3, RC 30, RC 32	= 25 g
Housing version	Type	
	RC 1 .. - G	= 75 g
	RC 2 .. - G	= 105 g
	RC 3 .. - G	= 170 g
	RC 1 .. - E, RC 1 .. - F	= 60 g
	RC 2 .. - E, RC 2 .. - F	= 85 g
	RC 3 .. - E, RC 3 .. - F	= 145 g

3.3 Characteristic lines

Viscosity of the hydraulic fluid approx. 62 mm²/s

! NOTICE

At viscosities above approx. 500 mm²/s the Δp values deviate increasingly upwards.



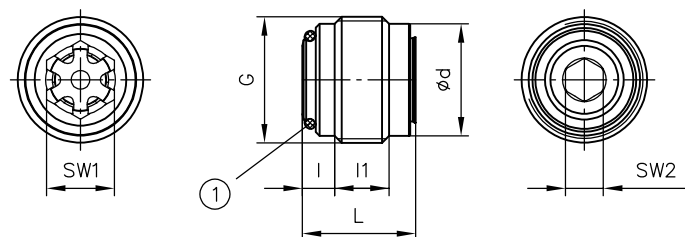
4 Dimensions

All dimensions in mm, subject to change.

4.1 Screw-in valve

Large wrench size for assembly
(connection B)

Small wrench size for assembly
(connection F)



SW = Width across flats

1 O-ring

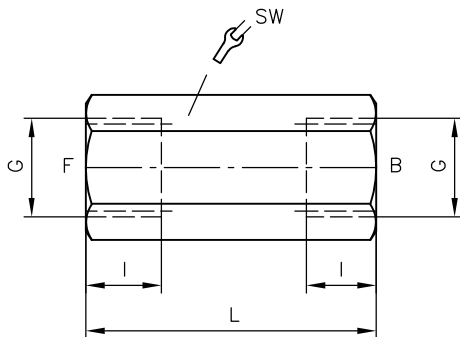
! NOTICE

Do not insert key with force during assembly to ensure the inner parts of the valve are not damaged.

Type	G	L	l	l1	Ød	SW1	SW2	O-ring NBR 90 Sh	Max. tightening torque M _A (Nm)
RC 1 RC 1/1	G 1/4 A	13	3.5	6	11.7	8	4	9x1	9
RC 14	M14x1.5	13	3.5	6	12.2	8	4	9x1	9
RC 2 RC 2/1	G 3/8 A	15	4.3	7.2	14.8	9	5	10x1.5	15
RC 26	M16x1.5	15	4.3	7.2	14.2	9	5	10x1.5	15
RC 28	M18x1.5	15	4.3	7.2	16	9	5	10x1.5	15
RC 3	G 1/2 A	18	5	8	18.5	12	8	14x1.5	40
RC 30	M20x1.5	18	5.5	7	18.2	12	8	14x1.5	40
RC 32	M22x1.5	18	5	8	20	12	8	14x1.5	40

4.2 Housing version

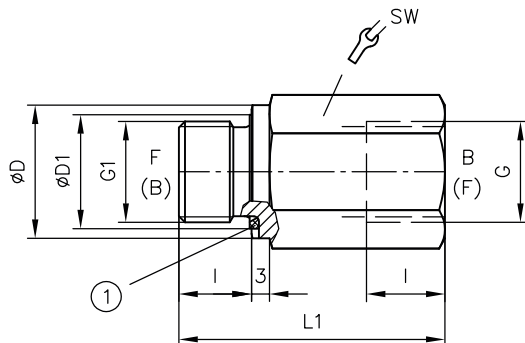
RC ... G



SW = Width across flats

RC ... E

RC ... F

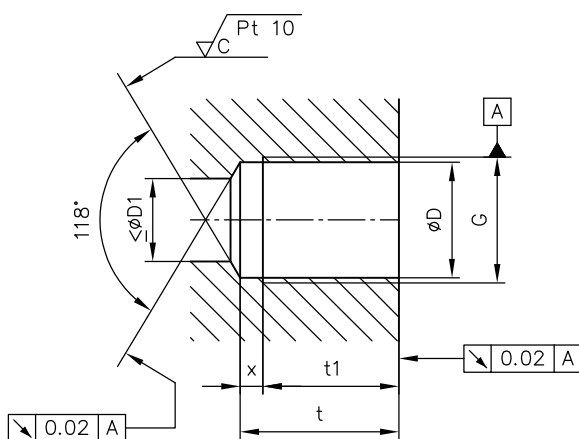


1 Thread seal

For RC 1 .. with fitting seal G 1/4 NBR, all others with cutting edge.

Type	G	G1	ØD	ØD1	L	L1	l	SW	Tightening torque (Nm)
RC 1 RC 1/1	G 1/4	G 1/4 A	19	--	46	43	12	19	40
RC 14	M14x1.5	M14x1.5	19	16	46	42	12	19	40
RC 2 RC 2/1	G 3/8	G 3/8 A	22	20.5	50	44	12	22	80
RC 26	M16x1.5	M16x1.5	22	20	50	44	12	22	80
RC 28	M18x1.5	M18x1.5	24	22	50	44	12	24	80
RC 3	G 1/2	G 1/2 A	26	24	56	52	14	27	150
RC 30	M20x1.5	M20x1.5	25	24	56	52	14	27	150
RC 32	M22x1.5	M22x1.5	27	26	56	52	14	30	150

4.3 Creating the mounting hole



Type	G	ØD	ØD1	t	t1	x
RC 1 RC 1/1	G 1/4	11.8 +0.1 -0.05	8	25.5	22.5	3
RC 14	M14x1.5	12.5 ±0.1	8	25.5	22.5	3
RC 2 RC 2/1	G 3/8	15.25 ±0.1	9	27	24	3
RC 26	M16x1.5	14.5 ±0.1	9	27	24	3
RC 28	M18x1.5	16.5 ±0.1	9	27	24	3
RC 3	G 1/2	19 ±0.1	12	32.5	28.5	3.5
RC 30	M20x1.5	18.5 ±0.1	12	32.5	28.5	3.5
RC 32	M22x1.5	20.5 ±0.1	12	32.5	28.5	3.5

5

Installation, operation and maintenance information

Observe the document B 5488 "General operating instructions for assembly, commissioning, and maintenance."

5.1 Intended use

This product is intended exclusively for hydraulic applications (fluid technology).

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

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 specialist personnel.
- ▶ The product must only be operated within the specified technical parameters described in detail in this document.
- ▶ All components must be suitable for the operating conditions when using an assembly.
- ▶ The operating instructions for the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. 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 and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

The product must be shut down correctly prior to disassembly (in particular in combination with hydraulic accumulators).



DANGER

Sudden movement of the hydraulic drives when disassembled incorrectly

Risk of serious injury or death

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

5.3 Operating instructions

Observe product configuration and pressure/flow rate.

The statements and technical parameters in this document must be strictly observed.

The instructions for the complete technical system must also always be followed.



NOTICE

- ▶ 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

Overloading components due to incorrect pressure settings.

Risk of minor injury. Parts may burst or fly off, and uncontrolled leakage of hydraulic fluid.

- Pay attention to the maximum operating pressure of the pump, valves and fittings.
- 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 the product. Contamination can cause irreparable damage.

Examples of fine contamination include:

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

NOTICE

New hydraulic fluid from the manufacturer may not have the required purity.

Damage to the product is possible.

- ▶ Filter new hydraulic fluid to a high quality when filling.
- ▶ Do not mix hydraulic fluids. Always use hydraulic fluid that is from the same manufacturer, of the same type, and with the same viscosity properties.

For smooth operation, pay attention to the cleanliness level of the hydraulic fluid (cleanliness level [see Chapter 3, "Parameters"](#)).

Additionally applicable document: [D 5488/1](#) oil recommendations

5.4 Maintenance information

Check regularly (at least once a year) by visual inspection whether the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the surface of the device regularly (at least once a year) (dust deposits and dirt).

6 Other information

6.1 Planning information

If using with classes of consumers in which pressure and oil flow surges (decompression) may occur in direction F → B due to the storage effect combined with fast-switching directional valves, throttling points (e.g. in line with small inflow bores) must be implemented and designed in such a way that a flow rate no greater than that permitted is reached during the pressure drop at the start of decompression.

References

Additional versions

- Restrictor check valve type BC: D 6969 B
- Check valve type RK and RB: D 7445
- Check valve type RE: D 7555 R
- Check valve type CRK, CRB and CRH: D 7712

